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Route to:

PATENTS

August 6, 1985

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DEPARTMENT
OF COMMERCE

Patent
and
Trademark
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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 6, 1985 Volume 1057 Number 1

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 3, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,342,121 through 4,343,043
Reissue Patents based on the above identified patents.	

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees.

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,017,127, Re. S.N. 748,414, Filed June 24, 1985, Cl. 384/294, SLEEVE TYPE FLANGED BEARING, John R. Smith, et al., Owner of Record: *Federal-Mogul Corp., Southfield, Mich.,* Attorney or Agent: Robert F. Hess, et al., Ex. Gp.: 245

4,381,582, Re. S.N. 729,695, Filed June 14, 1985, Cl. 17/44.3, PLANT AND GRIPPING MEANS FOR CUTTING UP MEAT, Kaarlo J. Korhonen, Owner of Record: *AB Proman, Klippman, Sweden,* Attorney or Agent: Benton S. Duffett, Jr., Ex. Gp.: 327

4,395,463, Re. S.N. 748,806, Filed June 24, 1985, Cl. 428/447, ARTICLE COMPRISING SILICONE RESIN COATED, METHACRYLATE-PRIMED SUBSTRATE, William D. Kray, Owner of Record: *General Electric Co., Waterford, N.Y.,* Attorney or Agent: John L. Young, et al., Ex. Gp.: 154

4,488,644, Re. S.N. 737,505, Filed June 26, 1985, Cl. 206/387, PACKAGING SYSTEM FOR VIDEO CASSETTES, Robert M. Wynalda, Owner of Record: *Wynalda Litho, Inc., Rockford, Mich.,* Attorney or Agent: Peter P. Price, et al., Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,449,911, Reexam. No. 90/000,806, Requested: June 19, 1985, Cl. 60/453, POWER TRANSFER SYSTEM, Paul W. Schlosser, Owner of Record: *Muncie Power Products, Inc., Muncie, Ind.,* Attorney or Agent: Geoffrey R. Myers, Ex. Gp.: 340, Requester: Dana Corp., Toledo, Ohio

3,995,018, Reexam. No. 90/000,807, Requested: June 27, 1985, Cl. 424/1.1, METHOD OF BINDING IMMUNOGLOBULIN EMPLOYING A POLYPEPTIDE FROM MICROORGANISMS, John A. Sjoquist, Owner of Record: *Pharmacia Aktiebolag, Uppsala, Sweden,* Attorney or Agent: Fred Philpitt, Ex. Gp.: 223, Requester: Roman Salwanchik, Richland, Mich.

4,315,963, Reexam. No. 90/000,805, Requested: June 18, 1985, Cl. 428/35, THERMOPLASTIC FILM WITH INTEGRAL RIBBED PATTERN AND BAG THEREFROM, Carl B. Havens, Owner of Record: *Dow Chemical Co., Midland, Mich.,* Attorney or Agent: Lloyd E. Hessenaur, Jr., Ex. Gp.: 150, Requester: Morris Fidelman, Washington, D.C.

4,373,058, Reexam. No. 90/000,803, Requested: June 17, 1985, Cl. 524/705, POLYMER CONCRETE COMPRISING FURFURYL ALCOHOL RESIN, Lowell C. Horton, Owner of Record: *Horton Co., Gulf Breeze, Fla.,* Attorney or Agent: Raiford A. Blackstone, Ex. Gp.: 151, Requester: Quaker Oats Co., Chicago, Ill.

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Dec. 22, 1981, was ordered cancelled and restored to pendency as Trademark Serial Number 73/210,944, as being inadvertently issued by an order dated Oct. 19, 1982, signed by the Assistant Commissioner for Trademarks:

1,182,708	TM 369 and TM 371	Dec. 22, 1981

Consequently, the certificate of registration bearing the above-identified registration number has been cancelled as inadvertently issued. The registration number accordingly has been vacated.

Serial Number 73/210,944 subsequently matured into Registration Number 1,304,710 on Nov. 13, 1984 at page TM 375.

PATRICIA M. DAVIS,
Administrator,
for Trademark Operations.

July 10, 1985.

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of Nov. 9, 1982, was listed inadvertently:

1,216,234	TM 297	Nov. 9, 1982

Consequently, the certificate of registration bearing the above-identified registration number was not issued on the date indicated, and the registration number has been vacated.

PATRICIA M. DAVIS,
Administrator,
for Trademark Operations.

July 3, 1985.

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of June 4, 1985, was listed inadvertently:

1,339,690	TM 217	June 4, 1985

Consequently, the certificate of registration bearing the above-identified registration number was not issued on the date indicated, and the registration number has been vacated.

PATRICIA M. DAVIS,
Administrator,
for Trademark Operations.

June 28, 1985.

Errata

The following registration numbers, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of June 18, 1985, were listed inadvertently:

1,341,919	TM 194	June 18, 1985
1,342,234	TM 201	June 18, 1985
1,342,428	TM 204	June 18, 1985
1,342,726	TM 211	June 18, 1985
1,343,165	TM 219	June 18, 1985
1,343,251	TM 221	June 18, 1985
1,343,341	TM 223	June 18, 1985
1,343,544	TM 228	June 18, 1985
1,343,548	TM 228	June 18, 1985
1,343,568	TM 228	June 18, 1985

Consequently, the certificates of registration bearing the above-identified registration numbers were not issued on the date indicated, and the registration numbers have been vacated.

PATRICIA M. DAVIS,
Administrator,
for Trademark Operations.

July 2, 1985.

Errata

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of June 25, 1985, was listed inadvertently:

1,344,671	TM 227	June 25, 1985

Consequently, the certificate of registration bearing the above-identified registration number was not issued

on the date indicated, and the registration number has been vacated.

PATRICIA M. DAVIS,
Administrator,
for Trademark Operations.

July 2, 1985.

Errata

"All reference to Patent No. 4,526,829 to James S. Holtrop, et al., of Conn. for 'THERMOFORMABLE LAMINATE STRUCTURE' appearing in the Official Gazette of July 2, 1985, should be deleted since no patent was granted."

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-332,906 (4,517,080). APPARATUS FOR ENCAPSULATING ADDITIVES IN RESEALED ERYTHROCYTES.
SN 6-380,374 (4,516,385). WRAPPING MACHINE.
SN 6-738,707. CONTROL OF EASTERN BLACK NIGHTSHADE WITH A FUNGAL PATHOGEN.
SN 6-738,815. OIL-ABSORBENT CELLULOSIC DERIVATIVES.

DEPARTMENT OF COMMERCE

SN 6-436,124 (4,525,067). TWIN-ETALON SCANNING SPECTROMETER.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-553,387 (4,517,665). ACOUSTICALLY TRANSPARENT HYDROPHONE PROBE.
SN 6-706,622. USE OF PARAMAGNETIC METALLOPORPHYRINS AS CONTRAST AGENTS FOR TUMORS IN NMR IMAGIING.
SN 6-717,613. THERAPEUTIC AND DIAGNOSTIC MONOCLONAL ANTIBODY SPECIFIC FOR HUMAN T-CELL LEUKEMIA VIRUS TYPES I ENVELOPES PROTEIN.
SN 6-729,206. VACCINE AGAINST NEISSERIA MENINGITIDIS GROUP B SEROTYPE 2 INVASIVE DISEASE.
SN 6-740,171. MEDICAL APPARATUS.

DEPARTMENT OF THE AIR FORCE

SN 6-465,227. OPTICAL CORRELATOR.
SN 6-547,610. ANAGLYPHIC STEREOSCOPIC IMAGE APPARATUS AND METHOD.
SN 6-632,179. ELECTROCHROMIC DISPLAY DEVICE.
SN 6-657,092. TRANSCEIVER TEST DEVICE.
SN 6-689,700. MICROCOMPUTER CONTROLLED IMAGE PROCESSOR.
SN 6-690,212. REMOVABLE CLEANABLE ANTI-REFLECTION SHIELD.
SN 6-696,129. SOIL EXTRACTION KIT.
SN 6-706,205. PROCESS FOR IMPROVING THE QUALITY OF EPITAXIAL SILICON FILMS GROWN ON INSULATING SUBSTRATES.
SN 6-716,863. METHOD OF CHARACTERIZING CRITICAL TIMING PATHS AND ANALYZING TIMING RELATED FAILURE MODES IN VERY LARGE SCALE INTEGRATED CIRCUITS.
SN 6-720,126. ROBOTIC ORDER PICKING.
SN 6-721,836. BRUSH AND COMMUTATOR SEGMENT TORQUER MOTOR.
SN 6-721,977. DIFFERENTIATING SPATIAL LIGHT MODULATOR.
SN 6-724,714. WIDE-BAND PHASE LOCKED LOOP AMPLIFIER APPARATUS.
SN 6-724,719. CARBON/CARBON COMBUSTOR EXTERNAL INSULATION.
SN 6-726,558. LOW NOISE POLYCRYSTALLINE SEMICONDUCTOR RESISTORS BY HYDROGEN PASSIVATION.
SN 6-729,389. HERMETIC CHIP CARRIER.
SN 6-731,646. REDUCING GRATING LOBES DUE TO SUBARRAY AMPLITUDE TAPERING.
SN 6-733,991. MAINTENANCE PORT SYSTEM.
SN 6-737,377. ROTOR BLADE TEST APPARATUS.

DEPARTMENT OF THE ARMY

SN 6-737,627. MICROWAVE SAW MONOCHROMATOR.

Department of the Treasury
United States Customs Service
Application for Recordation of Trade Name:
"INTERNATIONAL BUSINESS MACHINE CORPORATION"

Agency: U.S. Customs Service, Department of the Treasury.

Action: Notice of Application for Recordation of Trade name.

Summary: Application has been filed pursuant to section 133.12, Customs Regulations (19 CFR 133.12), for the recordation under section 42 of the Act of July 5, 1946, as amended (15 U.S.C. 1124), of the trade name "INTERNATIONAL BUSINESS MACHINES CORPORATION" used by the International Business Machines Corp., a corporation organized under the laws of the State of New York, located at Old Orchard Rd., Armonk, N.Y. 10504.

The application states that the trade name is used in connection with the following merchandise manufactured in numerous foreign countries: information handling systems and associated components and supplies including data processing equipment; copying machines; printers; word processing; electro-mechanical office equipment; computers; terminals; input and output devices, computer programs; magnetic tape; magnetic disks; diskettes; modems; books, business forms, typewriter ribbons; educational publications; and type fonts.

Before final action is taken on the application, consideration will be given to any relevant data, views, or arguments submitted in opposition to the recordation of this trade name. Notice of the action taken on the application for recordation of this trade name will be published in the Federal Register.

Date: Comments must be received on or before Aug. 26, 1985.

Address: Written comments should be addressed to the Commissioner of Customs, Attention: Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Rm. 2417, Washington, D.C. 20229.
For Further Information Contact: Beatrice E. Moore, Entry, Licensing and Restricted Merchandise Branch, 1301 Constitution Ave., NW., Washington, D.C. 20229 (202-566-5765).

June 20, 1985.

EDWARD T. ROSSE,
Acting Director,
Entry Procedures and Penalties Division.

Service by Publication

A petition to cancel each of the registrations identified below having been filed, and the notice of such proceedings sent by registered mail to each registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrants listed herein, their assigns or legal representatives, shall enter an appearance within thirty days of this publication, the cancellation will be proceeded with as in the case of default.

Armor Coatins, Inc., Suffield, Conn., Reg. No. 1,134,391, for the mark "ARMORTHANE", Canc. No. 14.490.

New York Airways, Inc., Flushing, N.Y., Reg. No. 807,662, for the mark "SKY BUS" and design, Canc. No. 14,786.

ERMA S. BROWN,
Administrator
Trademark Trial and Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner for Trademarks.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 6, 1985

PP. 5,418	4,465,427	4,491,493	4,501,426
Re. 31,733	4,467,166	4,491,506	4,501,627
D. 274,168	4,468,316	4,491,782	4,501,750
D. 276,453	4,470,226	4,491,859	4,502,248
D. 277,872	4,470,653	4,491,888	4,502,298
3,678,155	4,471,995	4,491,927	4,502,492
3,923,876	4,473,462	4,491,934	4,502,557
3,990,753	4,475,328	4,492,693	4,503,001
4,122,261	4,475,516	4,493,227	4,503,057
4,175,987	4,476,636	4,493,805	4,503,082
4,221,961	4,476,905	4,493,837	4,503,315
4,259,092	4,477,230	4,494,542	4,503,339
4,318,298	4,477,587	4,494,591	4,503,545
4,348,791	4,477,726	4,494,914	4,504,196
4,352,740	4,477,950	4,495,255	4,504,323
4,360,937	4,478,307	4,495,405	4,504,456
4,373,920	4,479,050	4,495,443	4,504,501
4,393,637	4,479,100	4,495,642	4,504,510
4,399,195	4,480,404	4,496,784	4,504,532
4,402,172	4,481,026	4,496,785	4,504,645
4,402,951	4,481,271	4,496,889	4,504,959
4,409,339	4,481,610	4,496,899	4,505,082
4,409,664	4,483,243	4,497,019	4,505,293
4,413,576	4,484,293	4,497,203	4,505,501
4,427,452	4,484,582	4,497,452	4,505,907
4,428,382	4,484,636	4,497,498	4,506,296
4,440,636	4,485,858	4,497,566	4,506,298
4,440,843	4,486,090	4,497,591	4,506,660
4,443,331	4,486,485	4,497,597	4,506,785
4,445,933	4,486,708	4,497,663	4,507,174
4,447,268	4,487,004	4,497,786	4,507,237
4,449,182	4,487,216	4,497,970	4,508,171
4,451,396	4,487,688	4,498,068	4,508,183
4,451,618	4,488,187	4,498,118	4,509,007
4,452,683	4,488,744	4,499,285	4,510,287
4,454,915	4,488,886	4,499,314	4,510,775
4,455,301	4,488,946	4,499,498	4,510,854
4,455,401	4,489,261	4,499,834	4,510,962
4,457,374	4,489,319	4,500,321	4,511,318
4,460,898	4,489,397	4,500,548	4,511,338
4,462,362	4,489,539	4,500,581	4,511,532
4,463,267	4,489,721	4,500,589	4,512,897
4,464,993	4,491,009	4,501,117	4,524,771
4,464,994	4,491,247	4,501,333	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 6, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-20-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-11-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	7-16-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-11-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-14-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-27-83

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,390,405 to 3,395,405, inclusive

Plant Patents ..... Numbers 2,817 to 2,824 inclusive

DEFENSIVE PUBLICATIONS

PUBLISHED AUGUST 6, 1985

Published at the request of the applicant or owner in accordance with the Notice of Dec. 16, 1969, 869 O.G. 687. The abstracts of Defensive Publication applications are identified by distinctly numbered series and are arranged chronologically. The heading of each abstract indicates the number of pages of specification, including claims and sheets of drawings contained in the application as originally filed. The files of these applications are available to the public for inspection and reproduction may be purchased for 30 cents a sheet.

Defensive Publication applications have not been examined as to the merits of alleged invention. The Patent and Trademark Office makes no assertion as to the novelty of the disclosed subject matter.

T105,701
METHOD TO IMPROVED ACIDULATION QUALITY OF NORTH CAROLINA PHOSPHATE ROCK

Alexander D. Mair, Rte. 7, Box 143, Florence, Ala. 35630

Filed Sep. 10, 1984, Ser. No. 649,034
Int. Cl.[3] C01B *25/30*
U.S. Cl. 423—167
No Drawing. 23 Pages Specification

Phosphate rock is heated under controlled conditions to essentially eliminate organic impurities and sulfides from the rock when subsequently leached with water to thereby substantially increase the porosity and surface area of the calcined solid and remove any traces of sulfide still remaining in the calcine. This process yields an improved calcined product rendered more suitable for acidulation to wet-process phosphoric acid and is of benefit for unweathered apatitic phosphate rocks of the mineral class known as francolites posessing a moderate to high content of organic impurities and a high degree of carbonate substitution in the apatite crystal lattice, such as that rock originating from the Pungo River Formation of North Carolina. For North Carolina rock, inclusion of the leaching step after calcination at about 800° C. may beneficially provide up to a twentyfold increase in calcine surface area to a level of at least 2 m^2/g and a sulfide content decreased to less than about 0.01 percent by weight.

T105,702
NONDIFFUSIBLE PHOTOGRAPHIC COUPLERS AND PHOTOGRAPHIC ELEMENTS AND PROCESSES EMPLOYING SAME

Gregory J. Lestina, Kodak Park Works, Rochester, N.Y. 14650

Continuation of Ser. No. 474,372, Mar. 11, 1983, abandoned, which is a division of Ser. No. 366,885, Apr. 18, 1982, Pat. No. 4,443,536, which is a continuation-in-part of Ser. No. 296,086, Aug. 26, 1981, abandoned. This application May 25, 1984, Ser. No. 613,993
Int. Cl.[3] C07D *249/08*
U.S. Cl. 548—262
No Drawing. 55 Pages Specification

Photographic couplers comprising a coupler moiety and a ballast moiety have advantageous properties when the ballast moiety is terminated with a hydroxyphenylsulfonyl or hydroxyphenylsulfinyl group. The couplers are useful in photographic emulsions and element.

REISSUES

AUGUST 6, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

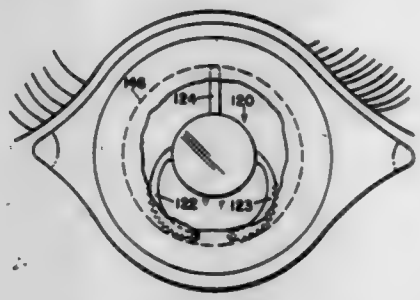
Re. 31,963
INTRAOCULAR LENSES

Charles D. Kelman, North Shore Towers, 269 Grand Central Pkwy., Floral Park, N.Y. 11005

Original No. 4,343,050, dated Aug. 10, 1982, Ser. No. 167,923, Jul. 14, 1980. Application for reissue Feb. 4, 1983, Ser. No. 463,845

Int. Cl.³ A61F *1/16, 1/24*

U.S. Cl. 623—6. 24 Claims



24. An intraocular lens with flexible support suitable for use as an artificial lens in the interior of a human eye and insertable through an incision in said eye, said eye interior having first and second groove portions extending peripherally at lower and upper portions of the eye when viewed in cross-section, said lens comprising a light-focusing lens body, position fixation means and a stabilizing member joined to said lens body and extending generally beyond the periphery of said lens body, said position fixation means being engageable with said first groove portion and being resiliently deformable in response to a force applied thereto, between a first undeformed condition, in which the distance between the peripherally most remote edges of said position fixation means precludes insertion of the lens through an incision of a given length, and a second deformed condition, in which the distance between the peripherally most remote edges of said position fixation means is such as to permit insertion of the lens through said incision of given length, said position fixation means being capable of spontaneously returning toward substantially said first condition thereof upon removal of said applied force after said lens has been inserted into the eye, said position fixation means comprising first and second support portions disposed generally outwardly of said lens body, said first and second support portions each having a seating portion which contacts said first groove portion of the eye, said first and second support portions of said position fixation means in said second condition being generally "C" shaped, the respective concave edges of the support portions facing each other and the outer edge of each of the seating portions comprising at least one protrusion.

Re. 31,964
AUTOMATIC DEVELOPMENT ELECTRODE BIAS CONTROL SYSTEM

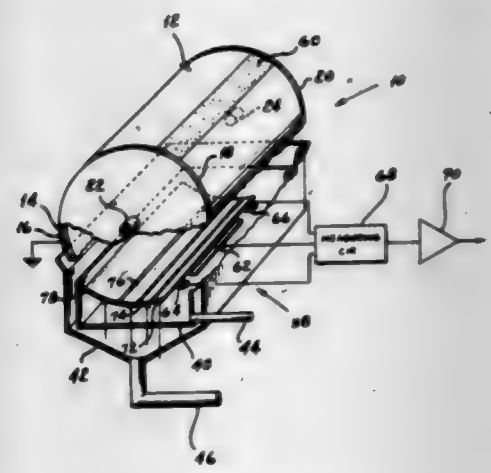
Louis F. Schaefer, Palo Alto, and Kenneth W. Gardiner, Menlo Park, both of Calif., assignors to Savin Corporation, Stamford, Conn.

Original No. 3,892,481, dated Jul. 1, 1975, Ser. No. 479,659, Jun. 17, 1974. Continuation of Ser. No. 811,460, Jun. 29, 1977, abandoned. Application for reissue Jun. 27, 1983, Ser. No. 507,958

Int. Cl.³ G03G *9/04*

U.S. Cl. 355—10 42 Claims

1. A system for automatically controlling the biasing potential on a developer electrode in an electrostatic copying machine including in combination, a support, a surface layer of photoconductive material on said support adapted to receive a latent electrostatic image to be developed, a developer unit for contacting developer fluid with said image to develop the same, a biasing electrode in said developer unit, a sensing electrode insulated from ground, means mounting said sensing electrode in said developer unit at a location at which developer fluid is positioned between and in contact with both said



photoconductive surface and said sensing electrode to enable said sensing electrode to assume substantially the potential on said surface by conduction, and means responsive to the potential of said sensing electrode for applying a biasing potential to said biasing electrode.

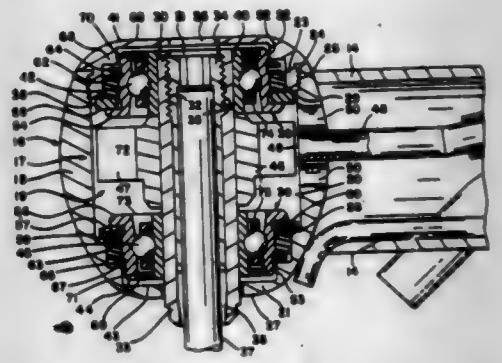
Re. 31,965
COMPLIANTLY MOUNTABLE TURBINE CARTRIDGE ASSEMBLY FOR GAS-DRIVEN DENTAL HANDPIECE

Frank W. Kerfoot, Jr., Newtown Square, Pa., assignor to Syntex (U.S.A.) Inc., Palo Alto, Calif.

Original No. 4,249,896, dated Feb. 10, 1981, Ser. No. 947,215, Sep. 29, 1978. Application for reissue Nov. 2, 1981, Ser. No. 317,698

Int. Cl.³ A61C *1/05*

U.S. Cl. 433—132 67 Claims



1. A dental handpiece comprising a gas-driven motor, said motor including a housing and a turbine cartridge assembly within said housing, said housing defined by a substantially cylindrical side wall and by a pair of oppositely disposed end walls transverse to said side wall, said housing having turbine cartridge assembly support means located on portions of said walls for supporting said turbine cartridge assembly, said turbine cartridge assembly removably positionable as a unitary assembly within said housing, said turbine cartridge assembly comprising:

a rotor shaft having a plurality of vanes thereon, said rotor shaft having an axis of rotation substantially coincident with the axis of said substantially cylindrical side wall of said housing;

a first bearing assembly comprising an inner race fixed to said rotor shaft, an outer race, and a plurality of movable bearing elements frictionally engaged with and confined between said inner race and said outer race;

a second bearing assembly comprising an inner race fixed to said rotor shaft, an outer race, and a plurality of movable bearing elements frictionally engaged with and confined between said inner race and said outer race of said second bearing assembly;

radial support means associated with each of said first and second bearing assemblies, said radial support means providing radial support for said turbine cartridge assembly upon said substantially cylindrical side wall of said housing;

rigid axial support means connected to said outer race of said first bearing assembly for axially supporting said first bearing assembly outer race upon said turbine cartridge support means of said housing;

bearing pre-load means comprising flexible axial support means associated with said outer race of said second bearing assembly for yieldingly supporting said outer race upon said turbine cartridge support means of said housing;

first retaining means for retaining said radial support means upon said outer race of said first bearing assembly, said first retaining means preventing movement of said radial support means in an axial direction away from said rotor shaft vanes; and

second retaining means for retaining said radial support means and said flexible axial support means upon said outer race of said second bearing assembly, said second retaining means preventing movement of said radial support means and said flexible support means in an axial direction away from said rotor shaft vanes;

whereby said rigid axial support means and said flexible axial support means coact with turbine cartridge support means of said housing to provide axial pre-loading of said first and second bearing assemblies when said turbine cartridge assembly is operatively positioned within said housing.

Re. 31,966

MULTIPLE FILTER VESSEL

Donald A. Sillers, Jr., Dallas, Tex., assignor to Peerless Manufacturing Company, Dallas, Tex.

Original No. 4,298,474, dated Nov. 3, 1981, Ser. No. 103,857, Dec. 14, 1979. Application for reissue Jun. 11, 1984, Ser. No. 619,365

Int. Cl.³ B01D *46/00*

U.S. Cl. 210—238 **38 Claims**

1. A filter vessel comprising:

a longitudinal vessel body having forward and rearward ends;

an inlet port in said vessel body for admitting fluid to be filtered;

an outlet port in said vessel body for discharging filtered fluid;

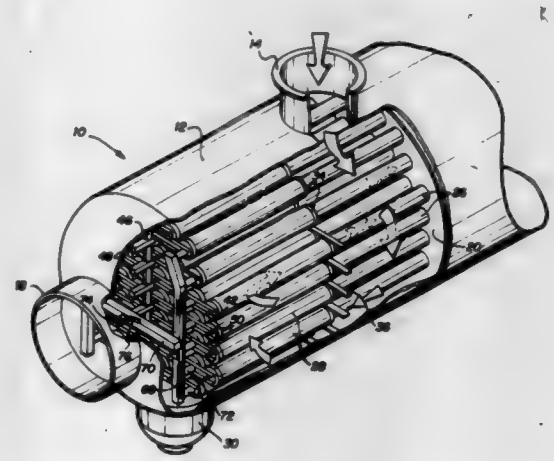
an access port in said forward end of said vessel which is smaller in diameter than said vessel and large enough to permit passage of the arm of a person therethrough;

a plurality of horizontally disposed longitudinal elongated filter elements having an enclosing peripheral wall and forward and rearward ends positioned intermediate said inlet and outlet ports for filtering said fluid; [and]

mounting means, for mounting said filter elements longitudinally and horizontally within said vessel body proximate said forward end such that one or more of said filter elements is non-aligned with said access port, said mounting means comprising;

(a) support means for said forward end of said filter elements positions sufficiently close to the access port in the forward end of said vessel to permit placement and removal of the filter elements by a person whose body remains outside the vessel, and,

(b) locking means for allowing lateral movement of said filter elements in an unlocked mode and for retaining said filter elements in a horizontally disposed position



intermediate said inlet and outlet ports in a locked mode;

said filter elements further comprising forward and rearward ends and wherein said forward ends of said filter elements are proximate said forward end of said vessel body and longitudinally spaced therefrom by a distance which is less than the longitudinal length of said filter elements;

a cap sealingly attached to and closing said forward ends, said cap having a pointed stud extending therefrom which can be grasped by a human hand to manipulate the filter element to which said cap is attached and to support said forward end of said filter element with said support means; and

a plurality of annular reception fittings mounted within said vessel body rearwardly of said filter elements and communicating with said outlet port, and wherein said filter elements are tubular members closed at said forward ends thereof and open at said rearward ends thereof, said mounting means in said locked mode mounting said filter elements in longitudinal alignment with and said open rearward ends thereof in sealing engagement with respective annular reception fittings.

PLANT PATENTS

GRANTED AUGUST 6, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,527

AFRICAN VIOLET PLANT NAMED SLEEPING BEAUTY

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Oct. 7, 1983, Ser. No. 539,828
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet plant named Sleeping Beauty, as described and illustrated, and particularly characterized by its large white, slightly ruffled flowers; compact rosette habit, with the flowers being carried on erect peduncles; floriferous habit, and its medium-light green foliage.

5,528

CARNATION NAMED LONDESTY

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, Antibes, France

Filed Jul. 11, 1983, Ser. No. 512,730
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. The new and distinct carnation cultivar, substantially as herein shown and described, characterized by the very light yellow and white coloration of its medium sized blooms which are carried on long, straight, stiff stems; and by its advantageous growth habit and abundant production of flowers during its blooming seasons.

5,529

CARNATION NAMED STANARTHUR

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij/M. C. van Staaveren, Aalsmeer, Netherlands

Filed Nov. 30, 1983, Ser. No. 556,613
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. The new and distinct carnation variety, substantially as herein shown and described, characterized by its continuous production of medium sized blooms of almost white color variegated by longitudinal stripes appearing at the outer ends of most of its petals and its apparent resistance to *Fusarium oxysporum*.

5,530

CARNATION NAMED LONDAXIE

Nicole Barberet, and Yves Ducloux, both of Antibes, France, assignors to Laboratoire de Physiologie Vegetale de la Londe, Antibes, France

Filed Jul. 11, 1983, Ser. No. 512,884
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. A new and distinctive carnation cultivar, substantially as herein shown and described, characterized by the unique coloration of its medium sized blooms and its abundant production of flowers during each of its recurrent blooming seasons.

5,531

CHRYSANTHEMUM PLANT NAMED POWERHOUSE

Leonard Shoesmith, deceased, late of Westfield, England (by May V. Shoesmith, executrix), assignor to Pan American Plant Company, Parrish, Fla.

Filed Aug. 18, 1983, Ser. No. 524,348
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—77 1 Claim

1. A new and distinct cultivar of chrysanthemum plant named Powerhouse, as described and illustrated, and particularly characterized by its flat capitulum form and decorative capitulum type; white ray floret color; diameter of 70–100 mm. across face of the capitulum; medium pot plant height and compact growth habit; semi-upright branching pattern, and approximately nine week flowering time.

PATENTS

GRANTED AUG. 6, 1985

ERRATA

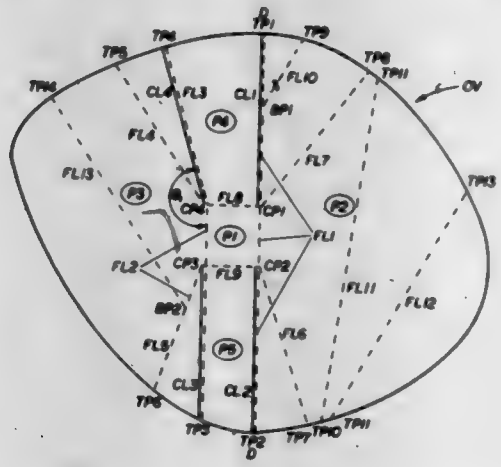
For CLASS	See PATENT NO.
623–002	4,532,659
623–018	4,532,660
623–023	4,532,661
403–028	4,532,681
356–073	4,532,723
172–266	4,532,790
119–004	4,532,883
132–007	4,532,950
181–280	4,533,015
546–008	4,533,502
427–372	4,533,524
428–469	4,533,525
514–054	4,533,548
514–056	4,533,549
514–256	4,533,550
514–411	4,533,551
514–460	4,533,553
514–464	4,533,554
514–303	4,533,734

PATENTS

GRANTED AUGUST 6, 1985

GENERAL AND MECHANICAL

4,532,653
BASEBALL GLOVE
Peter Riaboff, 403 25th Ave., San Francisco, Calif. 94121
Filed Feb. 21, 1984, Ser. No. 581,861
Int. Cl.[3] A41D *13/10, 19/02*
U.S. Cl. 2—19 **14 Claims**



1. A method of making a paperboard sheet foldable to form a cavity for catching a baseball from a sheet of paperboard, the method comprising the steps of:

cutting a generally ovular blank having a maximum diameter of at least 25 cm. from the sheet of paperboard;

making a first fold line along a diameter line across the ovular blank, with the diameter line thus defining a left half oval, a right half oval, a left half circumference and right half circumference;

making a first cut along the diameter line from it's first termination point on the circumference of the blank inward for a length of substantially 45% of the length of the diameter ine to a first cut point, with this cut defining a first cut line;

making a second cut along the diameter line from it's second termination point on the circumference of the blank inward for a length of substantially 40% of the length of the diameter line to a second cut point, with this cut defining a second cut line;

making a second fold line along a line lying in the left half oval and being parallel to the diameter line and spaced apart from the diameter line by substantially 3 cm., with the length of the second fold line being substantially 55% of the length of the first fold line, with one end of the second fold line terminating on the left half circumference at a point adjacent to, but spaced apart substantially 3 cm. from the second termination point of the first fold line, and the other end of the second fold line terminating in the left half oval at a fourth cut point;

making a third cut along the second fold line from its termination point on the left half circumference to a third cut point, with this cut defining a third cut line where the length of the third cut line is substantially equal to the length of the second cut line;

making a third fold line from the fourth cut point to the left half circumference along a line oriented rightward a first angle (θ_1), of substantially 170° away from the second fold line;

making a fourth cut along the third fold line from the fourth cut point to the left half circumference; thus defining a fourth cut line

making a fourth fold line from the fourth cut point to a termination point on the left half circumference along a line oriented leftward at a second angle (θ_2) of substantially 18° away from the third fold line;

making a fifth fold line from the third cut point to a termination point on the left half circumference along a line oriented rightward at a third angle (θ_3) of substantially 10° away from the second fold line;

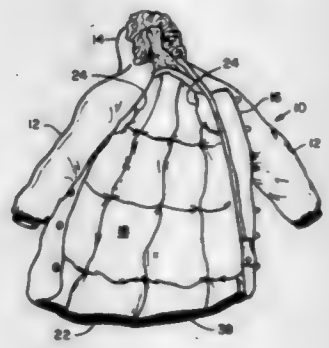
making a sixth fold line from the second cut point to a termination point on the right half circumference along a line oriented leftward at a fourth angle (θ_4) of substantially 13° away from the second cut line;

making a seventh fold line from the first cut point to the right half circumference along a line oriented rightward at a fifth angle (θ_5) of substantially 32° away from the first cut line;

making an eighth fold line from the first cut point to the fourth cut point; and

making a ninth fold line from the second cut point to the third cut point.

4,532,654
BLIZZARDKOAT
Michael Sigismonde, Sound Beach, N.Y., assignor to Christopher B. Guzowski, Mt. Sinai, N.Y., a part interest
Filed Jun. 4, 1984, Ser. No. 616,806
Int. Cl.[3] A41D *23/00*
U.S. Cl. 2—69.5 **5 Claims**



1. In an insulated jacket having a front opening and sleeves, and means to close and unclose said front opening about the upper body portion of the wearer of said jacket, the improvement comprising an insulated lining attached along the bottom edge of said jacket and normally extending up the inside of said jacket, said lining having openings to correspond with the openings into said sleeves, means to maintain during normal wear of said jacket said lining in its upwardly extending position, and means on said lining when the latter is pulled out of said jacket to extend away from the latter to wrap around the legs of said wearer and to maintain said lining in its wrapped position around said legs.

4,532,655
METHOD OF GENERATING A PATTERN OF A FLAT SEAM GARMENT
Philip N. Bowditch, Cohasset, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.
Division of Ser. No. 500,080, Jun. 1, 1983, Pat. No. 4,510,626.
This application Dec. 27, 1983, Ser. No. 565,377
Int. Cl.[3] A41D *27/00*
U.S. Cl. 2—243 B **12 Claims**

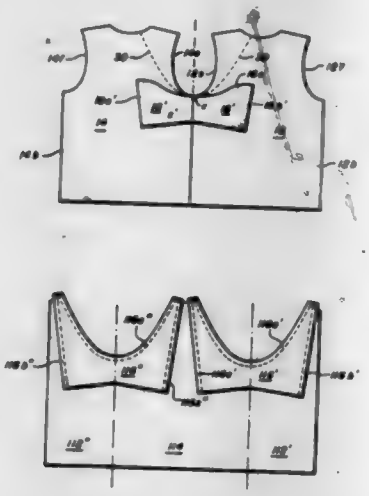
1. Method for converting a pattern for a first garment to a pattern for a second garment, wherein

said first garment includes front and back body and shoulder portions with a shoulder hole between those front and back portions, and a separate, generally tubular sleeve portion having a sleeve seam extending along its length, one end of said sleeve portion being joined to the perimeter of said shoulder hole along a sleeve-to-shoulder seam whereby the regions of said sleeve portion adjacent to said

sleeve-to-shoulder seam are non-parallel with respect to regions of said body and shoulder portions adjacent to said sleeve-to-shoulder seam when said body and shoulder portions are positioned in a plane, wherein,

said first garment pattern includes at least one first planar pattern corresponding to said front and back body and shoulder portions positioned in a plane and a second planar pattern corresponding to said sleeve portion positioned in a plane without its sleeve seam being joined, and wherein

said second garment includes body portions including front and back body portions with a shoulder hole between those front and back body portons, and a separate, generally tubular sleeve and shoulder portion having a sleeve and shoulder seam extending along its length, one end of said sleeve and shoulder portion being joined to the perimeter of said shoulder hole along a shoulder-to-body seam, and wherein the regions of said body portions adjacent to said shoulder-to-body seam are substantially parallel to the regions of said shoulder and sleeve portion adjacent to said shoulder-to-body seam when said regions of said body portion adjacent to said sleeve-to-shoulder seam is positioned in a plane without the sleeve and shoulder seam being joined, and wherein the regions of the said body portions adjacent to said sleeve-to-shoulder seam are



non-parallel with respect to the regions of said shoulder and sleeve portion adjacent to said sleeve-to-shoulder seam when said regions of said body portions adjacent to the said sleeve-to-shoulder seam are positioned in a plane with said sleeve and shoulder seam being joined, wherein

said second garment pattern includes at least one third planar pattern corresponding to said front and back body portions positioned in a plane and a fourth planar pattern corresponding to said sleeve and shoulder portion positioned in a plane without its sleeve and shoulder seam joined, wherein the outer contour of said first garment is substantially the same as the outer contour of said second garment, comprising the steps of:

A. generating a fifth planar pattern from said second planar patter, said fifth planar pattern corresponding to said sleeve portion wherein the sleeve seam of said sleeve portion is adapted to extend from the uppermost point of said shoulder hole, said fifth planar pattern including an end portion having a perimeter corresponding to the perimeter of said sleeve hole,

B. overlaying said fifth planar pattern on said first planar pattern with the center point of said perimeter of said end portion of said fifth planar pattern being positioned for its joinder to the lowermost point of said perimeter of said shoulder hole portion of said first planar pattern, said first and fifth patterns lying in substantially parallel planes,

C. identifying a reference line in the plane of said first planar pattern, said reference line being defined by the mid-points of line segments connecting pairs of associated points on said perimeter of said end portion of said fifth pattern of pattern and said perimeter of said shoulder hole of said first pattern, the distances from the points in each pair of associated points from a respective one of said lowermost and center points being a relatively fixed ratio, said distances being measured along the contours defined by said perimeter of said shoulder hole of said first pattern and said perimeter of said end portion of said fifth pattern, respectively,

D. generating said third planar pattern having areas corresponding to said first patterns less the area between said reference line and said perimeter of said shoulder hole of said first planar pattern,

E. generating said fourth planar pattern having an area corresponding to said fifth planar pattern plus the area between said reference line and said perimeter of said end portion of said fifth planar pattern.

4,532,656

POCKET STRUCTURE IN A SOCK OR THE LIKE

Tokuo Suzuki, No. 91, Norborito Shin-machi, Tama-ku, Kawasaki-shi, Kanag, Japan

Filed Jul. 11, 1983, Ser. No. 512,599
Int. Cl.[3] A41D *27/20*
U.S. Cl. 2—247 2 Claims



1. A pocket structure for a garment, comprising:

a strip, said strip having first and second portions, said first portion having a rear surface for attachment to a garment and a front surface, said second portion having a rear surface and a front surface, said front surface of the first portion including a first binding means, said front surface of the second portion including a second binding means, said first and second binding means being releasably bindable to each other upon folding the front surface of the second portion over the front surface of the (second) first portion; a pocket, said pocket including a rear portion having a first area and a second area, said first area including a third binding means for releasably binding the first area to the first binding means of the strip, said second area including a fourth binding means for releasably binding the second area to the second binding means of the strip, whereby the pocket is releasably bound to a strip on (a) the garment, and upon removal of the pocket, the front surface of the second portion of the strip may be folded over the front surface of the first portion of the strip and releasably bound thereto.

4,532,657

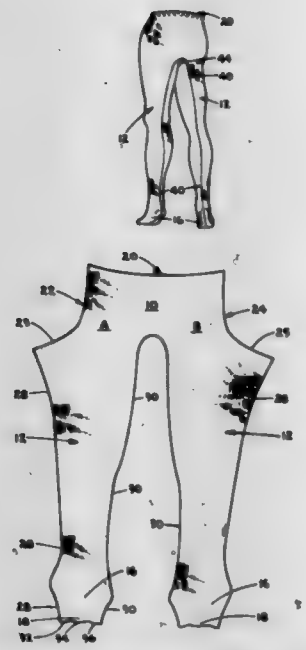
ONE-PIECE TIGHTS-TYPE GARMENT

Nadine Revene, New York, N.Y., assignor to Aris Isotoner Gloves, Inc., New York, N.Y.

Filed May 21, 1984, Ser. No. 612,552
Int. Cl.[3] A41B *9/04*
U.S. Cl. 2—409 10 Claims

1. A tights-type garment comprising a single fabric blank defining a trunk portion and a pair of elongated depending portions, said trunk portion including a relatively straight edge defining a waist section for encircling the waist of a wearer, each of said pair of elongated depending portions including a

leg section and a foot section having a toe portion, said leg and foot sections of each of said pair of elongated depending portions having edges joined together by a first seam, said first seam extending from the toe portion of one foot section, along



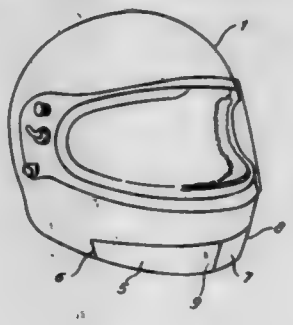
the leg section to the juncture of said trunk portion with said elongated depending portions, and to the toe portion of the other foot section, said trunk portion including edges secured together by a second seam extending from said waist section to said first seam.

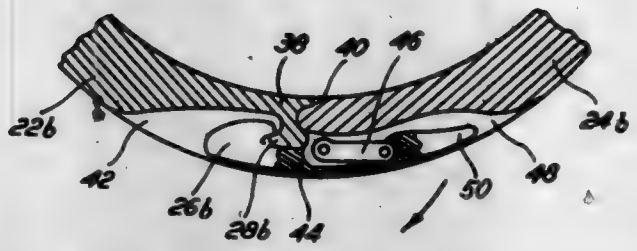
4,532,658

PROTECTIVE HELMET FOR THE HEAD WITH LOCKING MEANS

Gianni Zago, Pordenone, Italy, assignor to Patents Engineering S.r.l., Pordenone, Italy

Filed Nov. 12, 1981, Ser. No. 320,575
Claims priority, application Italy, Nov. 19, 1980, 60475/80[U]
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—421 **5 Claims**





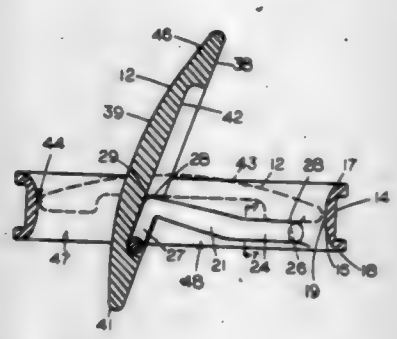
1. Integral helmet having a cap and a front bottom opening which is provided with two arched complementary segments engagable with the neck of the wearer and which are pivotable so that the helmet is free to pass over the head of the wearer when the segments are not engaged, said two arched segments which complete the bottom opening of the helmet being connected to the cap of the helmet only at ends hinged to the cap of the helmet by vertical axes hinges while the other ends of said arched segments are provided with joining detachable members for the opening of said segments during the removal and/or the putting on of the helmet, said members holding said segments engagable when the helmet is on.

4,532,659

PROSTHETIC HEART VALVE WITH PLANO-CONVEX DISK OCCLUDER

Robert L. Kaster, Plymouth, Minn., assignor to Angicor Limited, Minneapolis, Minn.

Continuation-in-part of Ser. No. 415,283, Sep. 7, 1982, abandoned. This application Jan. 9, 1984, Ser. No. 568,944
Int. Cl.³ A61F *1/22*
U.S. Cl. 623—2 **15 Claims**



1. In a prosthetic heart valve of a type having a valve housing adapted to be attached to a blood carrying vessel; a passageway disposed through said housing for permitting blood to flow therethrough, said passageway having a proximal inlet side and a distal outlet side; disk occluder means disposed within said passageway in the valve housing for permitting the flow of blood from the proximal inlet side of the passageway to the distal outlet side of the passageway and for substantially preventing the flow of blood from the distal outlet side to the proximal inlet side of the passageway, said disk occluder means including a disk disposed within said passageway, said disk having an outer peripheral edge, a proximal side and a distal side; means for causing said disk to be free floating and rotatably disposed within said passageway for preventing wear thereof, and means associated with said housing for causing said disk to be pivotable within said passageway between a closed position wherein the outer peripheral edge is in close proximity to the passageway and an open position wherein a substantial portion of said peripheral edge is spaced from said passageway to permit flow through said passageway; the improvement comprising:

(a) a substantially planar surface on the proximal inlet side of said disk, said planar surface being located radially inwardly from said outer peripheral edge; and

(b) a concentrically disposed well formed in said planar surface, the area of said well comprising no more than approximately thirty-six percent of the total area of said proximal side of said disk whereby the position of the disk can be controlled.

4,532,660

ENDOPROSTHETIC BONE JOINT DEVICES

Richard E. Field, Near Masham, England, assignor to National Research Development Corporation, London, England

Filed May 17, 1983, Ser. No. 495,553
Claims priority, application United Kingdom, May 17, 1982, 8214347
Int. Cl.³ A61F *1/00*
U.S. Cl. 623—18 **12 Claims**

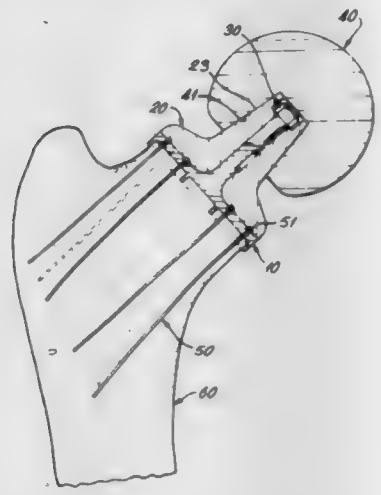
1. An endoprosthetic bone joint device comprising:

a first part defining a support surface to engage a complementery surface of a bone of said joint, said first part having a plurality of longitudinal transverse passageways extending completely through said support surface;

a second part defining an articulation surface for said joint,

said second part being connectable with said first part remotely from said support surface;

and a multiplicity of transversely flexible filamentary elements, each said element having a diameter in the range 0.25 to 2.0 mm and a length of at leas 3 cm, and each said



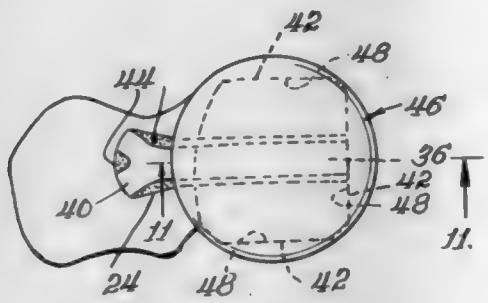
element having an enlargement at one end thereof captively located between said first and second parts with the remainder of such element passing through a respective one of said passageways to project from said support surface into said bone thereby anchoring said bone joint device to said complementary surface of said joint.

4,532,661

FEMORAL HEAD REMODELING AND PROSTHETIC MEANS THEREFOR

Alan A. Halpern, 2830 Duke St., Kalamazoo, Mich. 49008

Filed May 7, 1982, Ser. No. 376,111
Int. Cl.³ A61F *1/04, 5/04*
U.S. Cl. 623—23 **44 Claims**



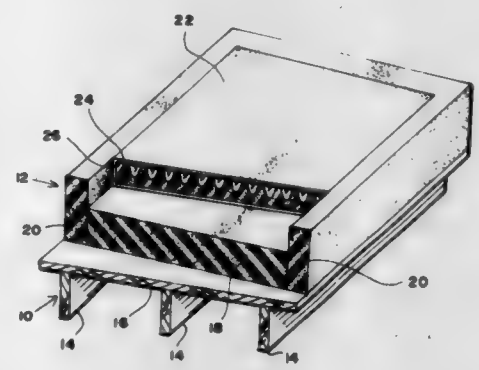
1. A femoral insert, adapted to be secured in a femoral shank as a part of a femoral hip joint replacement, comprising an elongated shaft with a longitudinal axis generally corresponding to the vertical axis of a femoral shank, said insert comprising a stem portion, a neck portion, and a head portion constituting an offset to the longitudinal axis of said shaft, said stem, neck, and head portions being both solid and integral, said head portion having a cross-section when viewed from its top of the nature of an elongated rectangle, to permit seating thereof between two vertically-upstanding portions of a remodeled femoral head having an opening therebetween generally corresponding to the cross-section of said head portion, and including a femoral cap on said head portion, wherein said shaft is flanged along at least a lower portion thereof and wherein a groove is formed on a posterior surface of said shaft along its longitudinal axis, so as to permit three-point contact of said shaft with the interior cortex of said femoral shank when said flanged portion is in place therein.

4,532,662

MODIFIED WATERBED

Nicholas Sama, 19120 Bel Aire Dr., Miami, Fla. 33157

Filed Dec. 27, 1983, Ser. No. 565,706
Int. Cl.³ A47C *27/08*
U.S. Cl. 5—450 **18 Claims**



1. A modified waterbed assembly adapted to diminish the physiological sensations that are associated with "bottoming" comprising:

a bladder impermeable to, and for containing, a liquid;

a resilient insert disposed within the bladder and having a vertical dimension substantially identical to that of the bladder, which insert comprises a resiliently compressible, elastic material porous as to the liquid, said insert having, as a property, firmness characteristics defined as displacement force divided by penetration depth

a resilient base disposed at least in part beneath the bladder and comprising a resiliently compressible, elastic material, with firmness characteristics defined as displacement force divided by penetration depth, that is substantially identical to the firmness characteristics of the resilient insert whereby displacement across a boundary between the insert and the base cannot be physiologically perceived;

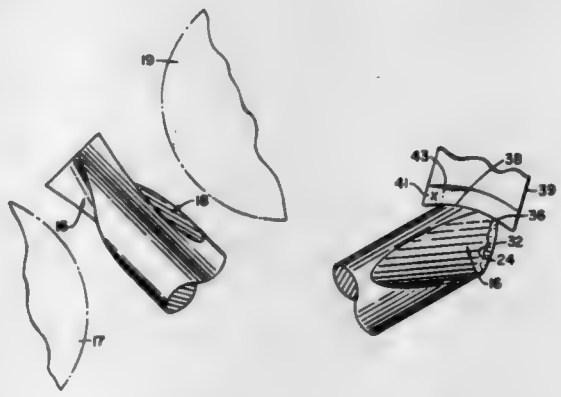
said insert and base providing substantially all of the support to a user of the waterbed assembly while the liquid substantially serves only as a load distribution means; the thickness of the bladder being no more than approximately three inches and the thickness of the base being about four inches.

4,532,663

METHOD OF MANUFACTURING A DRILL SCREW

Henry A. Sygnator, Arlington Heights, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Division of Ser. No. 279,103, Jun. 30, 1981, Pat. No. 4,395,173.
This application Jul. 14, 1983, Ser. No. 513,582
Int. Cl.³ B23G *9/00*; B21K *1/56*
U.S. Cl. 10—10 R **5 Claims**



1. A method of manufacturing a drill screw having a pair of oppositely disposed flutes and a pair of oppositely disposed terminal end surfaces, said end surfaces intersecting to form a chisel, each end surface being bounded by a drag edge and a

cutting edge, said method comprising the steps of heading a first end of a screw blank; forming two flutes in a second end of said screw blank; milling a first terminal end surface on said second end by rotating peripheral teeth of a milling cutter in a direction from a first drag edge toward a first cutting edge formed at the intersection of a first of said two flutes and said first terminal end surface; milling a second terminal end surface on said second end by rotating peripheral teeth of a milling cutter in a direction from a second drag edge toward a second cutting edge formed at the intersection of a second of said two flutes with said second terminal end surface; leaving first and second burrs positioned along outer portions of said first and second cutting edges at positions spaced from said chisel; performing subsequent operations on said drill screw.

4,532,664

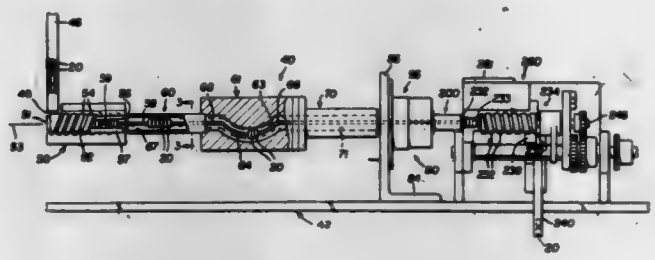
FASTENER ORIENTING, TAPPING AND COLLECTION SYSTEM

John H. Steward, Bloomfield Hills, and Harold A. Ladouceur, Livonia, both of Mich., assignors to Multifastener Corporation, Detroit, Mich.

Division of Ser. No. 395,410, Jul. 6, 1982, Pat. No. 4,476,599, which is a division of Ser. No. 151,549, May 20, 1980, Pat. No. 4,338,694. This application Mar. 29, 1984, Ser. No. 640,418

Int. Cl.³ B23G *11/00*

U.S. Cl. 10—162 A **7 Claims**



1. In a continuous motion machine for orienting nuts, each nut havng a body portion with generally rectangular top and bottom faces and a pair of oppositely extending flange portions such that one flange portion extends from each end of the nut, each nut including a pair of opposed sides, and a central bore extending through each nut body portion with the bore axis generally perpendicular to the top and bottom faces, the combination comprising:

conveyor means advancing nuts in substantially continuous succession on an established feed path with the nuts aligned in face-to-face abuttment with each nut bore slidably received on rod means being aligned on the feed path and with the nuts in random angular orientation;

orienting means having passage means receiving the nuts aligned on said rod means sized such that each nut is free to rotate in said passage means about its bore axis, with each nut bore axis being maintained in coincidence with the feed path as it is being advanced through said passage means;

said orienting means having a first pair of diagonally opposed camming means in said passage means successively engaging each nut of a first group of the randomly oriented nuts and rotating same in a first direction to an initial first predetermined oblique angle;

said orienting means having a second pair of diagonally opposed camming means in said passage means successively engaging each nut of a second remaining group of the randomly oriented nuts and rotating same in a second direction to an initial second predetermined oblique angle complementary to said first predetermined oblique angle; and

said orienting means having a third pair of opposed camming means successively engaging each nut of the first group of nuts and rotating same about the feed path in the first direction from said first oblique angle, whereby each first group nut is successively advanced from said orienting means with its sides disposed, respectively, in a given pair of parallel planes;

and said third pair of opposed camming means successively engaging each nut of the second group of nuts and rotating same about the feed path in the second direction from said second oblique angle, whereby each second portion nut is successfully advanced from said orienting means on said rod means with its sides disposed, respectively, in said given pair of parallel planes.

4,532,665

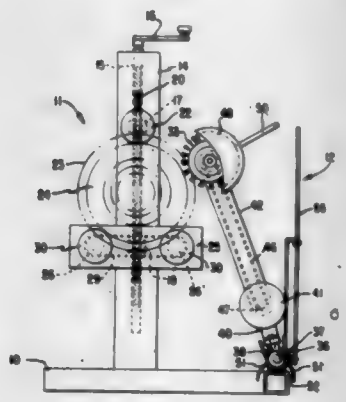
WHEEL RIM BUFFING DEVICE

Maurice L. Evans, 1401 Peninah; Clark M. Mola, 500 E. 21st St., both of Yankton, S. Dak. 57078, and Richard D. Beringer, 417 N. Pearl, Tyndall, S. Dak. 57066

Filed Mar. 26, 1984, Ser. No. 593,645

Int. Cl.³ A46B *13/02*

U.S. Cl. 15—21 D **10 Claims**



1. Rim buffing means comprising a base, rim holding means mounted on said base, said rim holding means including a substantially vertical column, at least two sheave means slidably mounted on said column, means to move said sheave means slidably toward and away from each other, said sheave means adapted to engage and hold a rim, drive means adapted to drive at least one of said sheave means to cause said rim to rotate, and buffer means on said base adjacent said rim holding means and including a driven buffer wheel adapted to engage said rim to clean it.

4,532,666

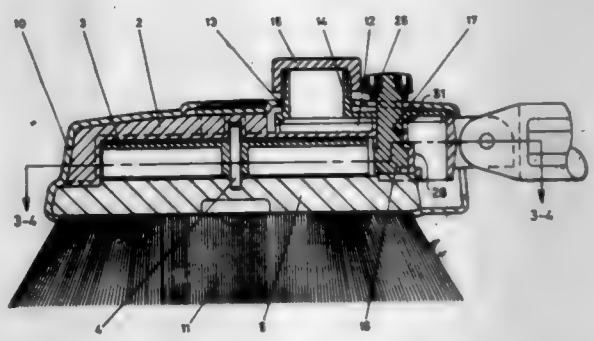
BRUSH WITH DETERGENT FEED

Donald N. Smyth, South Plympton, Australia, assignor to Sabco Limited, Albert Park, Australia

Filed Mar. 22, 1983, Ser. No. 478,067

Int. Cl.³ A46B *13/06*

U.S. Cl. 15—22 R **3 Claims**



1. Means for adding a supply of detergent to a flow of fluid over a surface of a housing, characterised in that said means comprises a detergent tank supported by said housing and situated adjacent said surface, a bore in said housing parallel to said surface and opening into said surface, a rotatable valve element in said bore and having a blade adapted to be positioned in said opening, said valve element having axial passages connecting to each side of said blade, whereby said blade

element interrupts said flow to form a vortice on each side of said blade which causes fluid to flow up one axial passage into said tank to be mixed with said detergent and be dispensed down said other axial passage into the fluid flow over the surface.

4,532,667

FLOOR CLEANING DEVICE HAVING A REPLACEABLE BRUSH ASSEMBLY

Heinrich Komesker, Wuppertal, and Ludger Helmes, Velbert, both of Fed. Rep. of Germany, assignors to Vorwerk & Co. Interholding GmbH, Wuppertal, Fed. Rep. of Germany

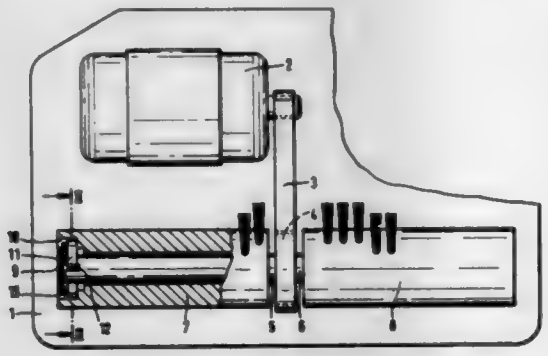
Filed Jul. 25, 1984, Ser. No. 634,401

Claims priority, application Fed. Rep. of Germany, Sep. 10, 1983, 3332743

Int. Cl.³ A47L *11/18*

U.S. Cl. 15—49 C

8 Claims



1. A replaceable brush assembly for a floor cleaning device such as an electric carpet sweeper having a drive for rotatably driving a shaft for receiving the replaceable brush assembly thereon, the replaceable brush assembly comprising:

a tubular brush defining an elongated opening for accommodating the shaft therein when the brush assembly is placed thereon;

ring-shaped cavity means formed in said tubular brush in surrounding relation to said shaft; and,

coupling-decoupling means arranged in said cavity means for coupling said tubular brush to said shaft during normal operation of the floor cleaning device and for decoupling said tubular brush in response to an overload condition applied to the latter.

4,532,668

FOOT SCRUBBER WITH SOAP DISPENSER FOR USER WHO CANNOT REACH HIS FEET

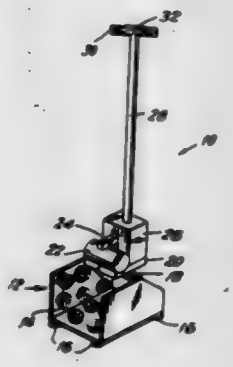
Alex Slonicki, 1050 Tower Rd., Winnetka, Ill. 60093

Filed Oct. 24, 1983, Ser. No. 544,532

Int. Cl.³ A47K *7/00*

U.S. Cl. 15—104.92

11 Claims



1. A foot scrubber comprising:

(a) a frame comprising two substantially parallel sidewalls and a bottom plate supporting said sidewalls;

(b) support means mounted on said sidewalls;

(c) scrubbing means arranged on said bottom plate and on said sidewalls;

(d) a first suction means mounted on said bottom plate for affixing said frame to a surface by suction;

(e) compressible storage means removably mounted on said support means for storing liquid soap, having an outlet directed for dispensing liquid soap onto said bottom plate only in response to the application of pressure on said compressible means;

(f) linearly displaceable pressing means arranged to apply pressure on said compressible storage means by downward displacement;

(g) manually operable means including a handle rigidly connected to a shaft, said manually operable means being rotatable about and displaceable along the axis of said shaft; and

(h) guiding means for guiding said pressing means and said manually operable means during displacement, wherein said manually operable means has recesses formed therein, and said pressing means and said guiding means each have engaging means formed thereon for engaging said recesses, said recesses being arranged so that said pressing means are displaced downward during downward displacement of said manually operable means, said manually operable means being displaceable downward only when said handle is in a predetermined angular position with respect to said guiding means.

4,532,669

CHIMNEY CLEANING APPARATUS

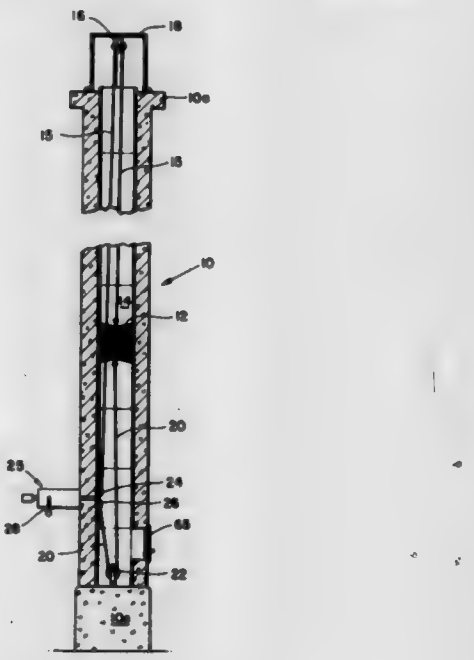
Wilfred J. Desjardins; Wayne W. Desjardins, and Glen R. Desjardins, all of Main St., R.F.D. #1, Box 2, Van Buren, Me. 04785

Filed May 23, 1984, Ser. No. 613,168

Int. Cl.³ F23J *3/00*

U.S. Cl. 15—249

20 Claims



1. Apparatus installed in a chimney for cleaning a flue of the chimney by manual or automatic operation comprising:

a flue brush seated in the flue of the chimney;

a first flexible cable secured to the top of the brush;

a second flexible cable secured to the bottom of the brush;

first pulley means mounted above the top of the chimney for reversing the direction of the first cable, said first cable extending upward from the top of the brush through the flue to the top of the chimney, over the first pulley means and back down the flue;

second pulley means mounted in the flue at the base of the chimney, said second cable extending downward from the bottom of the brush through the flue to the base of the

chimney, around the second pulley means and back up the flue;

a control box mounted on the outside of the chimney and constructed and arranged for fitting over first and second holes to be formed through the side of the chimney extending from said control box to the inside of the flue;

first guide means constructed and arranged to be mounted in the first hole extending into the flue for guiding the first cable passing back down the flue with reduced friction into the control box;

second guide means constructed and arranged to be mounted in the second hole extending into the flue for guiding the second cable passing back up the flue with reduced friction into the control box;

said control box comprising a crank shaft with at least first and second reels mounted on the crank shaft for free wheeling of the first and second reels on the shaft, clutch means constructed and arranged for engaging the shaft with either the first or second reel for rotation of either the first or second reel with the shaft while the other reel is free wheeling and clutch actuating means;

said first cable constructed and arranged for passing back down the flue through the first guide means to the first reel, said first cable secured at its end to the reel with sufficient length stored on the reel to permit the flue brush to pass through the flue from the base of the chimney to the top of the chimney;

said second cable constructed and arranged for passing back up the flue through the second guide means to the second reel, said second cable secured at its end to the second reel with sufficient length stored on the reel for passage of the chimney flue brush through the length of the flue from the base of the chimney to the top of the chimney;

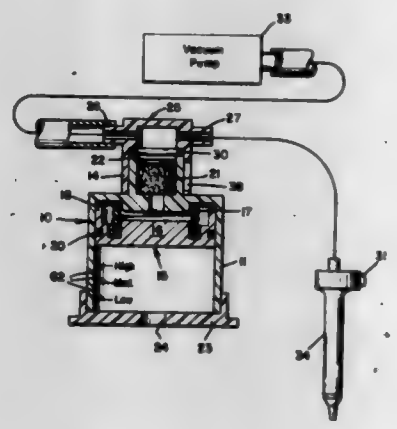
and means for turning the control box crank shaft while actuating the clutch means to engage either the first or second reel for pulling the chimney flue brush either up the chimney or down the chimney, said first and second reels therefore turning in opposite directions on the crank shaft during cleaning of the chimney flue.

4,532,670

VACUUM BOOSTER AND FILTER

William S. Fortune, 29866 Cuthbert St., Malibu, Calif. 90265

Filed Jan. 31, 1983, Ser. No. 462,650
Int. Cl.[3] A47L *5/38*
U.S. Cl. 15—314 10 Claims



7. A vacuum booster and filter system comprising:

(a) a plurality of vacuum boosters, each including a manifold having four nipples for connection to a vacuum sourbe and at least one vacuum-operated desoldering instrument, each booster comprising:

(b) a relatively large hollow cylinder and a relatively small cylindrical neck of unitary construction, said manifold having a skirt extending over said neck;

(c) filter means disposed in said neck, said cylinder and neck being transparent and said skirt being opaque;

(d) a window disposed in said skirt to permit viewing of said filter means;

(e) a piston slidably arranged in said cylinder and being sealed with respect thereto;

(f) a base connected outwardly of said cylinder for supporting it and disposed opposite said manifold, said base having an opening communicating with the atmosphere to permit air between said piston and said base to escape; and

(g) a compression spring urging said piston toward said base; said system further including:

(h) a vacuum source connected to all of said boosters through at least one of said nipples of each booster;

(i) at least two vacuum-operated utilization devices connected to at least two of the nipples of each of said boosters;

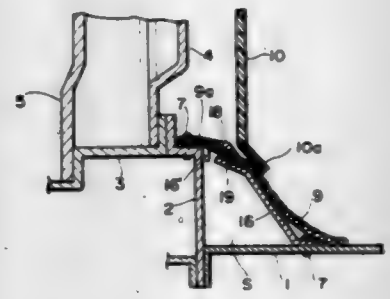
whereby a vacuum applied by the vacuum source tends to pull said piston against the force of said spring toward said manifold.

4,532,671

RESILIENT STRUCTURE FOR SECURING CARPETING OF DIFFERENT THICKNESSES

Toshio Endo, Koshigaya, Japan, assignor to Nissan Motor Company, Limited, Kanagawa, Japan

Filed Jul. 11, 1983, Ser. No. 512,563
Claims priority, application Japan, Aug. 25, 1982, 57-146184
Int. Cl.[3] A47G *27/04*
U.S. Cl. 16—7 6 Claims



1. A structure for attaching floor carpeting to a vehicle body, the vehicle body including a floor panel, a side sill inner panel, the lower edge of which is attached to one edge of the floor panel, a side sill outer panel, one upper edge of which is attached to an upper edge of the side sill inner panel and the lower edge of which is attached to a lower edge of the side sill inner panel, a pillar inner member, the lower edge of which is attached to an upper edge of the side sill outer panel, the structure comprising:

(a) a carpet support member located below the pillar inner member and serving as a substrate for a layer of the floor carpeting, a first edge of which is attached to the upper end of the side sill inner panel and the other edge of which is attached to the floor panel to form a space of a substantially triangular cross-section in conjunction with the side sill inner panel and the floor panel, said carpet support member having a substantially trapezoidal cutout edged with a plurality of resilient structural members and located along the first edge at a point opposite the lower end of the pillar inner member; and

(b) a pillar casing mounted on the pillar inner member such that the lower end thereof compresses the floor carpeting against the edges of said cutout, whereby said plurality of resiliently structural members flex into the space of substantially triangular cross-section when the lower end of said pillar casing compresses the floor carpeting against the edges of said trapezoidal cutout to thereby reduce the

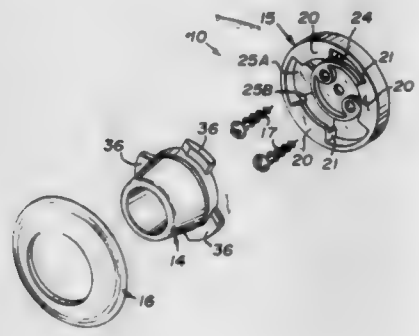
reactive force of the floor carpeting against the pillar casing so that the floor carpeting of nearly any thickness can be secured.

4,532,672

DOORSTOP HAVING BAYONET ENGAGEABLE BRACKET AND SEPARATELY MOUNTED SHIELD

William J. Anderson, Taylorsville, Miss., assignor to Enamel Products & Plating Co, McKeesport, Pa.

Filed May 23, 1984, Ser. No. 613,331
Int. Cl.[3] E05F 5/06
U.S. Cl. 16—86 A 7 Claims



1. A wall mountable doorstop comprising a disc-shaped bracket having a base and circumferential side wall extending therefrom, the base including wall mounting means and a concentric ridge spaced inwardly of said side wall and forming a circular channel therewith, said side wall having a plurality of evenly spaced-apart and inwardly directed flanges extending over said channel, a resilient bumper having a cup-shaped front portion and a bracket-engageable rear portion having an outer wall spaced from a central core to form an annular cavity therewith, the outer wall terminating in a rear edge having an internal diameter no less than the concentric ridge of the bracket, a plurality of evenly spaced-apart tabs extending outwardly from said outer wall generally adjacent the rear edge thereof, said tabs defining an outside diameter no greater than the bracket side wall diameter whereby to be capable of being arranged within said circular channel of the bracket so that upon rotating said bumper said tabs wedge beneath said bracket flanges, said outer wall further including an external continuous groove therearound, and, a bracket-concealing cover shield having a circular opening therethrough with an internal edge thereof having a diameter sufficient for said edge to engage within the continuous groove whereby the cover shield is adapted to be solely supported and carried by said bumper, wherein the bracket wall mounting means facilitates a mechanical fastening of the bracket to a wall independently of said cover shield, and wherein the bumper is engageable directly to the bracket and separately engageable directly with the cover shield, said cover shield thereby capable of being secured to and carried by the bumper and adapted to be arranged to conceal the bracket after said bracket is mounted to a wall, whereby the improved doorstop eliminates separate mechanical fastener means for mounting the bumper with the bracket and for engaging the bumper with the cover shield.

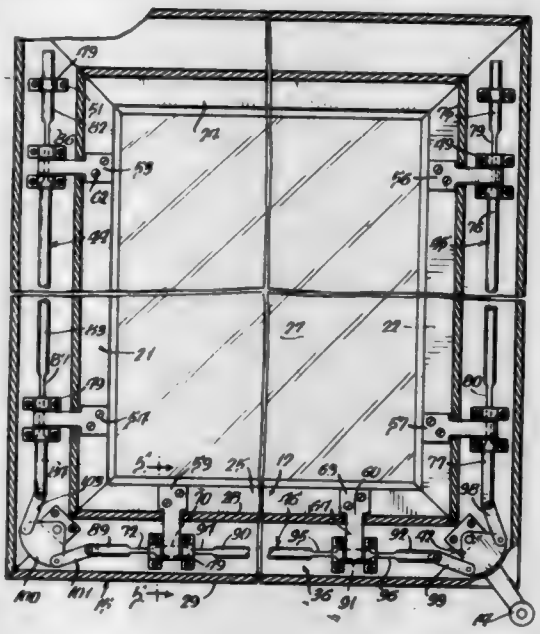
4,532,673

PIVOT MECHANISM FOR MULTIPLE AXES OPENING WINDOW OR CLOSURE

Sam K. Kim, 2516 W. Pratt Blvd., Chicago, Ill. 60645

Filed Aug. 5, 1983, Ser. No. 520,542
Int. Cl.[3] E05D 15/524
U.S. Cl. 16—233 11 Claims

1. In a hinge and locking mechanism for a generally rectangular closure member that may be opened by pivotal movement about at least two axes, a stationary generally rectangular frame member surrounding and supporting the closure member, hinge means on each of the axes mounted on one of the members, the improvement comprising; two spaced hinges on each of said axes on one of said members, two spaced pivot pins on each of the axes mounted on the other of said members selectively positionable in each of the hinges to define pivot axes for the closure member when the pins are in the hinges, and a common operator for all of the pins, said pivot pins on



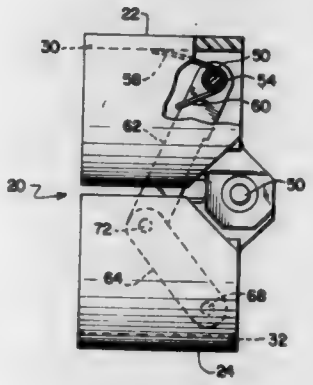
each axis being formed integrally and coaxially with an actuator rod connected to the common operator, said pivot pins being shiftable axially to a position freeing the hinges from the pivot pins without shifting the closure member laterally in the plane of the closure member.

4,532,674

HINGE ASSEMBLY WITH OVER-CENTER LATCH

William H. Tobey, Littleton; Donald A. Thomas, Englewood, and William J. Gardner, Littleton, all of Colo., assignors to Martin Marietta Corporation, Bethesda, Md.

Filed Apr. 30, 1982, Ser. No. 373,579
Int. Cl.[3] E05F 1/08
U.S. Cl. 16—295 2 Claims



1. A hinge assembly comprising:

(a) first and second generally cylindrically-shaped sleeves including cutouts near adjacent ends thereof;

(b) first and second U-channels fixedly disposed within said first and said second sleeves, respectively, each U-channel comprising a curved base portion, two substantially straight leg portions, and a tab extending from each leg portion through the cutout in said first or said second sleeve in which said U-channel is disposed, the tabs of said first and said second U-channels being pivotally connected for thereby enabling relative pivotal movement between said first and said second sleeves;

(c) a primary link and two secondary links, each of said primary and said secondary links having flat sides, a small thickness and an elongated length for fitting side-by-side between said leg portions of said second U-channel when

said first and said second sleeves are in an unfolded configuration, said secondary links being disposed parallel to each other each having one end pivotally connected to said second U-channel and the other end pivotally connected to an end of said primary link, the other end of said primary link being pivotally connected to said first U-channel, said primary and said secondary links being sized and arranged for comprising an overcenter latch; and

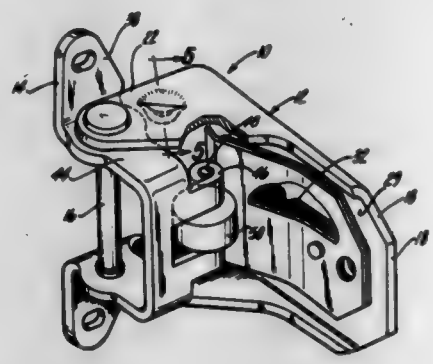
(d) a torsion spring mounted on said first U-channel, having an arm positioned against said primary link and having a plurality of windings extending between said leg portions of said first U-channel sufficient to provide the spring force necessary for, through the pivotal connections among said primary link, said secondary links and said second U-channel, urging said second sleeve to pivot into said unfolded configuration abutting end-to-end with said first sleeve and also urging said primary link into a position together with said secondary links between said leg portions of said second U-channel and at an angle to said secondary links sufficient to lock said sleeves in said unfolded configuration.

4,532,675

DOOR HINGE WITH INTEGRAL CHECK

Sumorfin Salazar, Toledo, Ohio, assignor to Ford Motor Company, Dearborn, Mich.

Continuation of Ser. No. 378,546, May 17, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 640,221
Int. Cl.[3] E05D *11/10*
U.S. Cl. 16—335 6 Claims



1. In an improved hinge assembly of the type having a body plate adapted to be secured to the body of a vehicle, a door plate pivotally connected about a vertical hinge axis to the body plate and adapted to be secured to a door of the vehicle, and a check spring mounted on one of the plates operatively engageable with a striker member carried by the other of the plates to hold the door plate in a door-open position, the improvement wherein:

the check spring comprises a curved resilient spring member having an end fixed to said body plate and another, free end located at a position intermediate said body plate and said door plate and proximate the point of pivotal connection of the body plate and the door plate and having a detent portion bent over in a direction away from said striker member at said free end toward said body plate; and

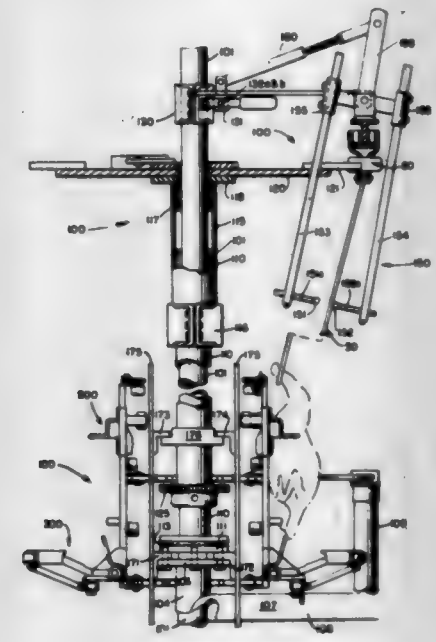
the striker member comprises a roller member rotatably mounted on said door plate about another vertical axis displaced from said vertical hinge axis, said roller member being operative upon movement of said door plate from a door-closed position wherein said roller is spaced from said spring member to said door-open position to engage said spring member in rolling contact to effect deflection thereof until passing over said detent portion, whereupon said roller member is moved completely free of said detent portion and out of contact with said spring member and further away from said detent portion and said spring member during all further movement toward and into said door-open position and reverse movement of said door plate is resisted by said spring member when the roller is moved in the reverse direction into engagement with the detent portion, movement into the door open position is limited by stops formed in the side of the body plate when said stops are abuttingly engaged with edges of the door plate.

4,532,676

POULTRY OIL SAC REMOVAL METHOD AND APPARATUS

Lacy W. Simmons, 101 Simmons Industrial Blvd., Dallas, Ga. 30132

Continuation-in-part of Ser. No. 873,370, Jan. 30, 1978, abandoned. This application Jul. 16, 1981, Ser. No. 284,087
Int. Cl.[3] A22C *21/00*
U.S. Cl. 17—45 19 Claims



1. A method of removing the oil sac from a bird in a poultry processing operation, including the steps of:

(a) engaging the bird in such a manner so as to identify the location of the bird's tail section containing the oil sac;

(b) holding the bird's tail section against displacement;

(c) applying pressure to the bird's tail section around the oil sac to cause the oil sac to protrude outwardly, said pressure being applied first in a direction generally away from the bird's head and along a path forming an acute angle with a line drawn generally parallel to the bird's back; and,

(d) engaging a portion of the peripherial edge of the protruding oil sac and effecting displacement of the oil sac while holding the bird's tail section against displacement and while maintaining pressure on the tail section around the sac whereby displacement of the oil sac will cause the oil sac to be effectively removed from said bird.

4,532,677

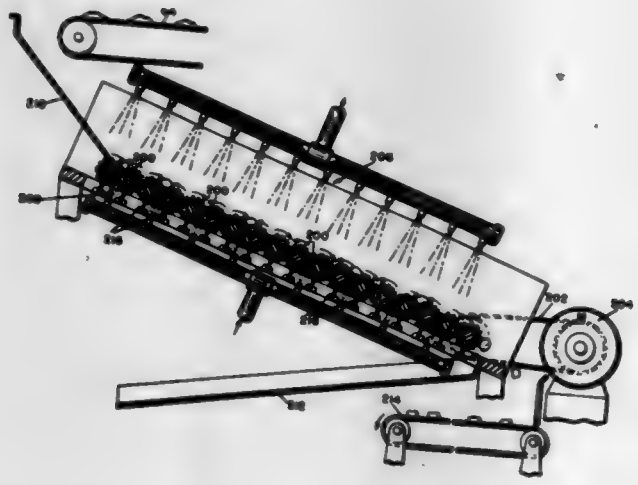
APPARATUS FOR OPENING AND EVISCERATING SCALLOPS

Richard T. Wenstrom, Hampton, Va., and Thomas S. Gorton, Jr., Medford, Mass., assignors to Slade Gorton & Co., Inc., Boston, Mass.

Continuation of Ser. No. 950,711, Oct. 12, 1978, abandoned, which is a continuation of Ser. No. 225,730, Feb. 14, 1973, abandoned, which is a division of Ser. No. 71,730, Sep. 14, 1970, Pat. No. 3,662,432, which is a division of Ser. No. 659,274, Jul. 17, 1967, Pat. No. 3,528,124, which is a continuation-in-part of Ser. No. 627,470, Mar. 31, 1967, abandoned. This application Nov. 23, 1981, Ser. No. 324,270

Int. Cl.³ A22C *29/00*

U.S. Cl. 17—74 3 Claims



1. An aparatus for extracting the adductor muscle from other components of scallops, said apparatus comprising:

(a) means for separating scallop shells from scallop flesh, the flesh comprising the adductor muscles and viscera attached thereto,

(b) an eviscerator for removing the viscera from the adductor muscles of the scallop flesh after the shells have been separated from the scallop flesh by the separating means, said eviscerator having an input end and an output end,

(c) means for transporting the scallop flesh, without the shells, from the separating means to the input end of the eviscerator,

(d) said eviscerator comprising at least one pair of rollers aligned in parallel adjacent relationship to provide a nip between adjacent rollers, each roller in each said pair of rollers having a surface that is roughened so as to facilitate gripping of viscera in the nip between adjacent rollers, said rollers defining a path of travel for the scallop flesh from the input end of said eviscerator to the output end thereof, positive drive means connected to each pair of rollers for nonfrictionally driving each pair of rollers so that the upper portions of said rollers in each pair are alternately (1) rotated towards each other to pinch and pull viscera downwardly through the nip of said rollers and retain the scallop muscles on the upper surface of said rollers, thereby to tear viscera away from the muscles, and (2) rotated away from each other, whereby the viscera are removed from the muscles as the muscles move over the upper surfaces of said rollers from said input end to said output end of said eviscerator.

4,532,678

NEEDLE BAR DRAWING DEVICE

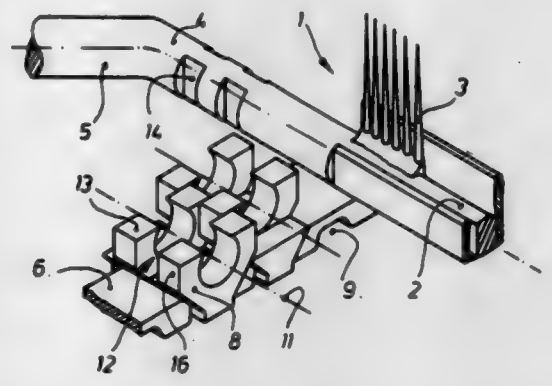
Helmut Kunig, Bad Schwartau, Fed. Rep. of Germany, assignor to S.A. Des Ateliers, Houget Duesberg Bosson, Ensival, Belgium

Filed Jun. 13, 1983, Ser. No. 503,712

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222600

Int. Cl.³ D01G *19/26*; D01H *5/08*

U.S. Cl. 19—129 R 9 Claims



1. A needle bar drawing device (gill box) for card slivers, said device comprising rotatingly driven gilling area means defining two sides and including a plurality of needle bar means, each provided with needle means and carried on both said sides of said gilling area means by flexible driving means, wherein said driving means are designed as standard toothed belt means defining a tooth comb and a pitch and carrying support elements on which said needle bar means are mounted rotatably, each of said support elements being formed to be fixedly clamped to the respective one of said driving means.

4,532,679

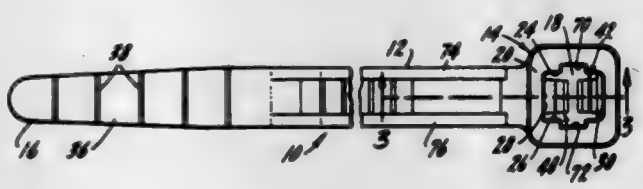
CABLE TIE

William J. Scott, Sycamore, Ill., assignor to Ideal Industries, Inc., Sycamore, Ill.

Filed Jan. 3, 1984, Ser. No. 567,813

Int. Cl.³ B65D *63/00*

U.S. Cl. 24—16 PB 8 Claims



1. An integral one piece cable tie to encircle and be tensioned about a bundle of wires or the like, comprising an elongated flexible strap, ratchet teeth formed on opposite sides of the strap, a frame at one end of the strap and integral therewith, the frame having a channel therethrough disposed on an axis generally at right angles to the free orientation of the strap and having openings on the end faces of the frame, a free end on the strap remote from the frame and constructed to be inserted and drawn through the channel in the frame when the strap is reversely flexed, the channel through the frame being defined at least in part by two longitduinally disposed side walls and two laterally disposed end walls positioned about the axis of the opening, a pair of laterally disposed opposed pawls in the opening integrally formed on the end walls thereof and terminating laterally in sapced relation to the side walls, the pawls being constructed and arranged to engage and interlock with the ratchet teeth on the strap when it is reversely flexed and inserted through the frame channel, each of the pawls being hinged to its end wall toward one of the end faces of the channel and extending axially somewhat toward the other end face, the free side pawl being more flexible than the strap side

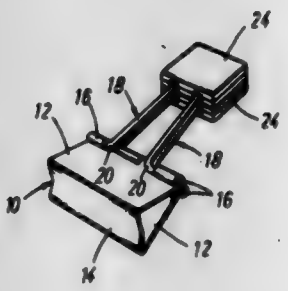
pawl, the pawls being formed with opposed abutments spaced apart from each other somewhat less than the minimum strap width the pawls including opposed risers above the abutments which contact the sides of the strap under substantial stress conditions to resist further withdrawal of the strap from the frame.

4,532,680

DOUBLE CLIP FOR OFFICE USE

Seiichi Hashimoto, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Taiyo Hatsujyo Seisakusho, Osaka, Japan

Filed Jul. 20, 1983, Ser. No. 515,569
Claims priority, application Japan, Aug. 6, 1982, 57-119596[U]
Int. Cl.³ B42F *1/02*
U.S. Cl. 24—67 R 3 Claims



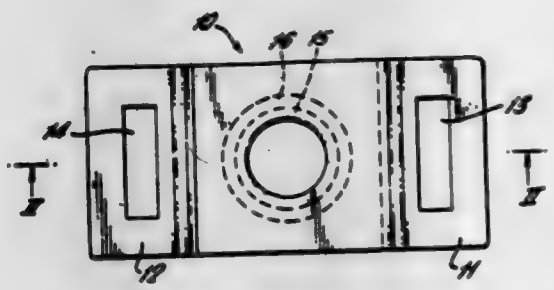
1. A double clip for office use comprising a clip main body of metal spring sheet bent into an isosceles triangular cross-section with the base of the triangle forming the back wall of the clip main body, and operating levers of metal wire tiltably and pivotally connected to the clip main body to open the apex of the clip main body against the spring force, wherein a pair of index caps of flexible synthetic resin serving as knobs are removably fitted on the loops at the front end of each lever in such a manner as to resiliently clamp to said end, whereby said index caps provide indicia for indexing.

4,532,681

RESTRAINING BELTS

Edward H. Baker, 38 Lowther Rd., Barnes, London SW13 9ND, Great Britain, and George R. King, 14 Springfield, Nyetimber, Bognor Regis, Sussex, England

Filed Mar. 23, 1981, Ser. No. 246,321
Int. Cl.³ A44B *11/00*
U.S. Cl. 403—28 1 Claim



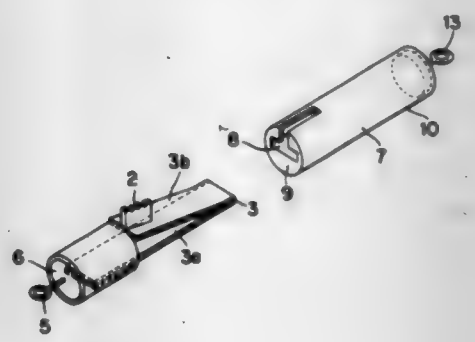
1. A heat-releasable safety belt coupling for connecting together two parts of a safety belt assembly, comprising a pair of interengaging attachment members for securing to parts of a safety belt assembly, a heat-releasable adhesive connection between said interengaging attachment members, said heat-releasable adhesive connection being capable of degradation at a predetermined temperature to release the attachment member from interengagement, and biasing means to urge the interengaging attachment members to separate on degradation of the heat-releasable adhesive connection.

4,532,682

CONNECTION FOR A JEWELRY BAND

Masami Murao, Tokyo, Japan, assignor to Kabushiki Kaisha Murao Shoten, Tokyo, Japan

Filed Sep. 13, 1983, Ser. No. 531,699
Claims priority, application Japan, Sep. 17, 1982, 57-139942
Int. Cl.³ A44B *11/25*; A44C *5/08*
U.S. Cl. 24—616 20 Claims



1. A connection for a jewelry band, comprising:
(a) a male clasp member;
(b) a resilient detent member in the form of a folded leaf spring having a long tongue section extending from said male clasp member at a first end thereof and a short tongue section extending from said long tongue section at a second end thereof to normally maintain an angular posture but resiliently deflective to lie flatly against said long tongue section;
(c) a female clasp member having at least one peripheral wall forming a hollow body and an end wall to define an insertion chamber in cooperation with said hollow body, said end wall being formed with a slot extending to permit insertion of said long and short tongue sections while flatly lying against each other and to divide said end wall into an upper wall section and a lower wall section;
(d) means for supporting said resilient detent member within said chamber to prevent said resilient detent member from wobbling therewithin; and,
(e) said supporting means includes a rigid folded plate member having a long arm section extending longitudinally within said chamber from said lower wall section and a short arm section extending at an angle to said long arm section to receive said resilient detent member therein.

4,532,683

DEVICE FOR CUTTING SEAMS FREE IN A CORDUROY CUTTING MACHINE AND METHOD FOR OPERATING THE SAME

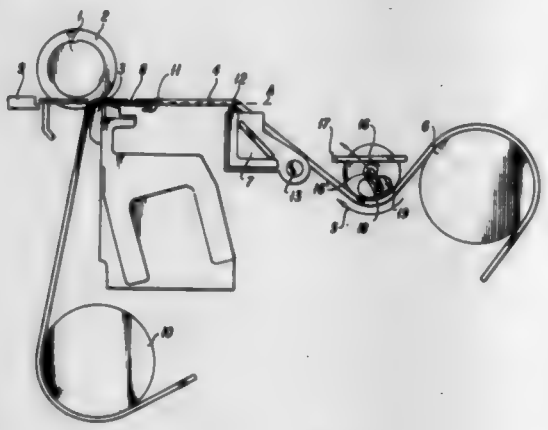
Albert Vroomen, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Franz Müller GmbH & Co., Monchen-Gladbach, Fed. Rep. of Germany

Continuation of Ser. No. 299,520, Sep. 4, 1981, abandoned. This application Apr. 17, 1984, Ser. No. 600,604
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033792
Int. Cl.³ D06C *13/08*
U.S. Cl. 26—10 C 7 Claims

1. Corduroy cutting machine, comprising a shaft, a multiplicity of circular knives laterally aligned on said shaft, a cutting edge associated with said knives, a plurality of needles having points and longitudinal slots formed therein and being insertible against a given travel direction of a web of material into floating wefts of the material to be cut open, each of said knives being immersible into one of said slots, a contact table disposed beneath the points of said needles, means for tensioning the web of material, a motor for driving the tensioning means, a switch connected to said needles and to said contact table for stopping the motor driving the tensioning means by accidental contact between said contact table and needles, a working plane being disposed upstream of said contact table in

travel direction of the web of material on which the web of material can be fed from below, a feed cylinder disposed upstream of said working plane in travel direction of the web of material around which the web of material to be cut can be looped from below and fed past said contact table to said cutting edge, a rear table disposed between said feed cylinder and said contact table upstream of said points of said needles for supporting the web of material, means for lowering said rear table for cutting the needles free, said working plane being defined by said needles, contact table, rear table and feed cylinder, and means for lowering said contact table below said working plane by the tension on the web of material when said rear table is lowered.

7. Method of operating a corduroy cutting machine, including a shaft, a multiplicity of circular knives laterally aligned on the shaft, a cutting edge associated with the knives, a plurality of needles having points and longitudinal slots formed therein and being insertible against a given travel direction of a web of material into floating wefts of the material to be cut open, each of the knives being immersible into one of the slots, a contact table disposed beneath the points of the needles, means for



tensioning the web of material, a motor for driving the tensioning means, a switch connected to the needles and to the contact table for stopping the motor driving the tensioning means by accidental contact between the contact table and needles, a working plane being disposed upstream of the contact table in travel direction of the web of material on which the web of material can be fed from below, a feed cylinder disposed upstream of the working plane in travel direction of the web of material around which the web of material to be cut can be looped from below and fed past the contact table to the cutting edge, the working plane being defined by the needles, contact table and feed cylinder, a rear table disposed at a distance from the contact table upstream of the points of the needles in travel direction of the web of material, the rear table being held in the working plane during cutting operation, means for lowering the rear table from the working plane, and means for lowering the contact table below the working plane by the tension applied to the web of material when the rear table is lowered for cutting the needles free, which comprises bending the web of material in the vicinity of the needles by lowering the rear table and the contact table, and forcing egress of all of the needles upward for automatically cutting the needles free.

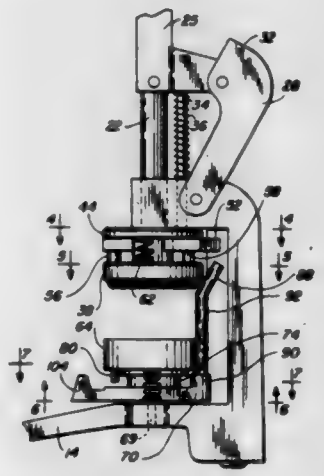
4,532,684

BUTTON ASSEMBLER

Malcolm J. Roebuck, Williamsburg, Va., assignor to Bagde-A-Minit Ltd., La Salle, Ill.

Filed Dec. 5, 1983, Ser. No. 557,748
Int. Cl.³ B21F *45/28;* D04D *7/04*
U.S. Cl. 29—4 **3 Claims**

1. A button making apparatus having a movable upper die having an inner shiftable portion and a stationary lower die, an annular plate above said upper die, an annular collar positioned between said plate and said upper die and secured to both, said collar having a horizontally disposed, through, rectangular aperture therein and shiftable therein, an elongated, rectangular in vertical cross-section bar in said aperture and extending outwardly thereof, a medial opening in said bar and a compres-



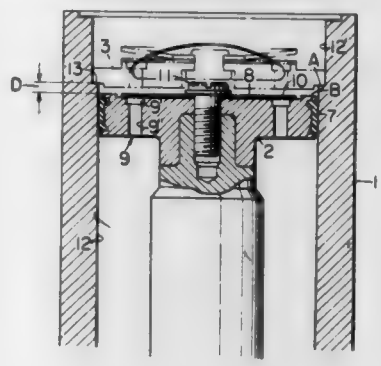
sion spring in said opening to urge the bar in inoperative position, a pair of opposed rods depending from said bar to contact the periphery of said upper die in inoperative position.

4,532,685

METHOD OF ASSEMBLING A RECIPROCATING COMPRESSOR

Kazuhiro Itoh, Wako; Mutsuo Sugisaki, Kamifukuoka, and Hiroshi Tanaka, Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 22, 1983, Ser. No. 468,660
Claims priority, application Japan, Feb. 23, 1982, 57-27668
Int. Cl.³ B23P *15/00*
U.S. Cl. 29—156.4 R **1 Claim**



1. A method of assembling reciprocating compressors in order to increase the volumetric efficiency of said compressors by eliminating any irregularity in minimum volume of compression chambers for said respective compressors, which volume of each of said compression chambers is determined when a piston within the compression chamber is positioned at the top of its stroke thereby minimizing a top clearance of said piston, in which method a cylinder is provided including a first bore section and a second bore section of a diameter smaller than that of the former, into which second bore section is telescoped said piston for confronting across said compression chamber a closure end plate to be secured to said cylinder at the end of said first bore section, the method comprising the steps of:

(a) manufacturing in advance a plurality of groups of said end plates, each group of the end plates having an annular projection of a predetermined height h which differs from the heights of projections of the end plates in the other groups;

(b) defining a first reference position at a predetermined position of said piston at the top of its stroke and a second reference position on the wall of said cylinder and measuring an interval D between said first and second reference positions;

(c) selecting one appropriate group from said plurality of

groups of the end plates for each pair of the cylinder and the piston fitted therein so that the difference D-h becomes a predetermined value common to all the pairs of the cylinder and piston for the compressors;

(d) securing an end closure plate of the selected group to the cylinder, thereby providing the reciprocating compressors of which compressor chambers have their minimum volume equalized to one another.

4,532,686

METHOD OF MAKING A PISTON BOTTOM

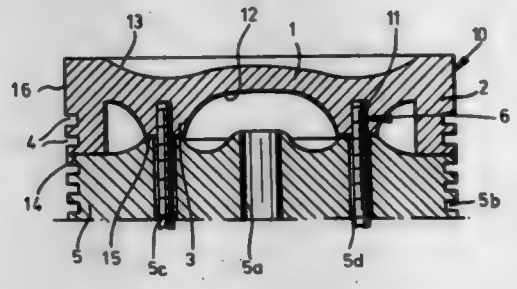
Rütger Berchem, Gelsenkirchen, Fed. Rep. of Germany, assignor to Berchem & Schaberg GmbH, Gelsenkirchen, Fed. Rep. of Germany

Filed Jun. 10, 1983, Ser. No. 503,317

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222582

Int. Cl.³ B23P *15/10*

U.S. Cl. 29—156.5 R **5 Claims**



1. A method of making a piston bottom for an internal-combustion engine piston, comprising the steps of:

forging a saucer-shaped blank from a refractory forging steel with a flat blank rim, a dished recess in said blank on one side thereof, a central convexity projecting into said recess and, on the opposite side of said blank, an annular bulge;

forging said saucer-shaped blank into a cup configuration whereby said rim is transformed into a cylindrical shoulder extending axially in the direction opposite that in which the convexity projects while shaping said bulge into an annular boss for attachment to a piston body on assembly of said piston; and

subjecting the cup formed in the second forging step to a homogenizing heat treatment.

4,532,687

DEVICE FOR ATTACHING A HOSE JOINT

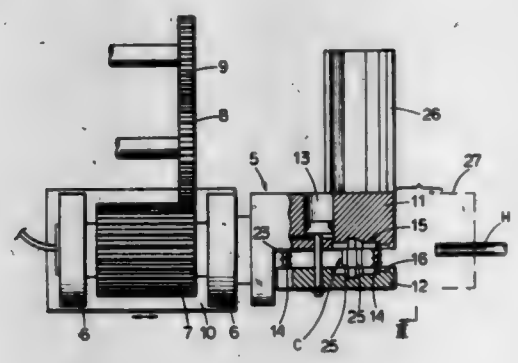
Toshiyuki Souchi, Inazawa, and Isoo Todaka, Aichi, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Apr. 28, 1983, Ser. No. 489,673

Claims priority, application Japan, Apr. 28, 1982, 57-72246

Int. Cl.³ B23P *19/02*

U.S. Cl. 29—235 **1 Claim**



1. In a device for attaching a hose joint having a sleeve to one end of a hose body having a predetermined length before the joint is secured thereto by caulking,

the improvement which comprises:

a chuck body which is rotatable about its own axis, and reciprocable along the longitudinal axis of the hose body;

said chuck body having a stationary portion and a movable portion which are divided from each other by a plane passing through the longitudinal axis of said chuck body;

said movable portion being reciprocally movable in a direction perpendicular to said plane, whereby the joint can be chucked in axial alignment with the hose body;

a pair of symmetric holding recesses being formed in the mutually facing surfaces of said stationary and movable portions, respectively, and defining a chucking portion, in which the movement of said movable portion into contact with said stationary portion defines a joint holding cavity which is contiguous to a funnel-shaped hose guide cavity defining an inlet for the hose body;

said joint holding cavity having a hexagonal holding portion in its mid-portion and a sleeve holding portion and a threaded-end holding portion on the opposite sides, respectively, of said hexagonal holding portion;

said holding cavity having a first tapered shoulder defined between said hexagonal holding portion and said sleeve holding portion, and a second tapered shoulder between said sleeve holding portion and said hose guide cavity.

4,532,688

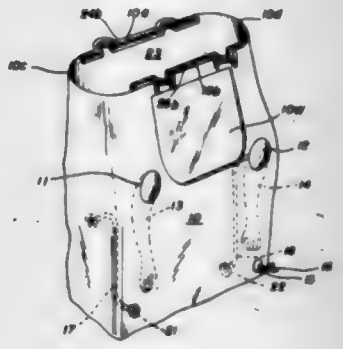
METHOD AND APPARATUS FOR SERVICING FLUID METERS

James R. Dewberry, 1125 Wedgefield, Marietta, Ga. 30064

Filed Jun. 15, 1983, Ser. No. 504,617

Int. Cl.³ F16L *55/18*; F17D *3/00*

U.S. Cl. 29—402.08 **14 Claims**



1. A method of interchanging a service meter having disjointable inlet and outlet couplings and arranged to measure the flow of fluid from a source of fluid under pressure to a point of use, the method comprising the steps of loosening said couplings sufficiently to accommodate manual manipulation thereof, placing a replacement meter within an enclosing element having a normally closed purge port, securing said enclosing element having said replacement meter therein about said service meter and about said inlet and said outlet couplings in substantially fluid tight relation therewith, opening said purge port, manually loosening at least one of said couplings slightly to cause fluid to bleed into said enclosing element at a rate such that flow of fluid to said point of use is not substantially reduced and such that air is purged from said enclosing element, closing said purge fitting, manually manipulating said couplings so as to disconnect said service meter, said enclosing element constituting the sole conduit of fluid between said inlet and said outlet couplings following disconnection of said service meter, manually manipulating said couplings so as to connect said replacement meter therewith in finger tight relation, removing said enclosing element from about said replacement meter and said inlet and outlet couplings, and fully tightening said inlet and said outlet couplings, said service meter being retained within said enclosing element until after disasso-

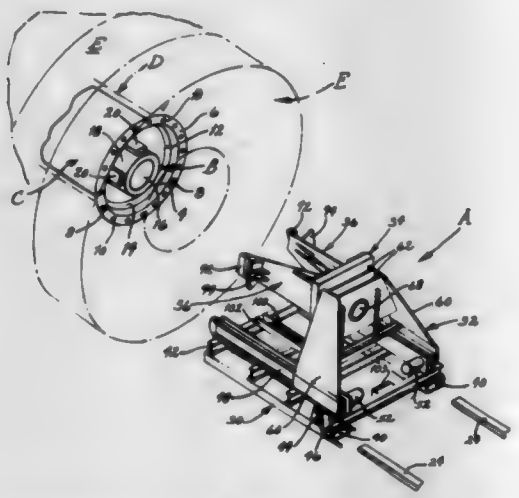
ciation of said enclosing element from said replacement meter and from said inlet and outlet couplings.

4,532,689

MACHINE FOR REMOVING ELECTRIC TRACTION MOTORS FROM WHEEL SPINDLES

John O. Harder, Maryland Heights; Doyle W. McCandless, St. Louis, and Michael W. Peterson, Maryland Heights, all of Mo., assignors to John Harder & Co., St. Louis, Mo.

Filed Sep. 29, 1982, Ser. No. 428,168
Int. Cl.[3] H02K *15/16*
U.S. Cl. 29—426.5 1 Claim



1. The combination comprising:
(a) a motor mounted in a surrounding tubular structure and including a stator and a rotor within the stator;
(b) a machine for extracting the rotor and stator from the surrounding tubular structure, wherein:
(1) the stator includes a hollow case that fits snugly in said tubular structure,
(2) the stator having an open end exposed in said tubular structure and providing an annular recessed surface adjacent the open end,
(3) the machine includes a carriage movable toward and away from said exposed open end of said stator,
(4) a pair of extractor arms supported on said carriage and operable to move toward and away from each other.
(5) said pair of extractor arms being provided with pads sized to engage in said annular recessed surface of said stator, and stops spaced from and fixed in position with respect to said pads and adapted to abut on said open end of said stator to locate said pads in alignment for engaging said annular recessed surface; and
(c) power operated means on said machine for moving said pair of arms apart to position said pads against said annular recessed surface and to move said carriage axially from said surrounding tubular structure so that said motor may be withdrawn from said surrounding tubular structure.

4,532,690

PROCESS FOR PRODUCING A VALVE-AND-LID ASSEMBLY

Luigi Del Bon, Feldstrasse 141, and Franco Del Bon, Feldstrasse 139, both of 4663 Aarburg, Switzerland

Continuation-in-part of Ser. No. 259,158, Apr. 30, 1981, Pat. No. 4,442,959, and a continuation-in-part of Ser. No. 347,321, Feb. 9, 1982, Pat. No. 4,493,444. This application Nov. 24, 1982, Ser. No. 444,351
Claims priority, application Ireland, Nov. 26, 1981, 2780/81; Apr. 19, 1982, 920/82
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—451 12 Claims

1. A process for producing a valve-and-lid assembly comprising a lid and a valve body, which assembly has a central assembly axis and is adapted for closing the open top end of a container, which process comprises the steps of

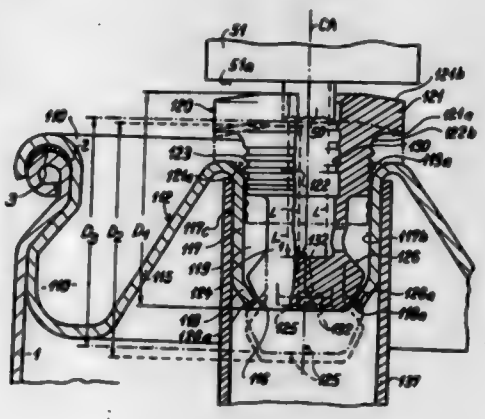
(A) producing, in finished condition, a lid, being rigid under conditions of filling product into, and discharging product from the interior of said container, the periphery of which lid is adapted for being sealingly connected with a top rim of a container sidewall surrounding the said open container top end, and which lid extends generally on a main lid plane transverse to said central assembly axis; said lid having a dome and a central opening in the middle of said dome;

at least a portion of said dome being an axially extending collar portion having an outer end zone destined to face away from, and an inner end zone destined to face toward, the interior of said container, and comprising at said inner collar end zone, an annular rim or shoulder edge about said central opening and adapted for sealing contact with said valve body, in a first contact zone of the latter;

(B) producing separately, from a synthetic resin of physical properties corresponding to those of Hytrel, with a Shore hardness A in the range of about 78 to 92, said valve body in finished condition, which valve body comprises

(a) a radially extending upper valve body portion having an outwardly facing upper surface, and an inwardly facing lower surface of a diameter larger than the diameter of said outer end zone of said collar portion,

(b) a valve stem centrally and axially protruding from said inwardly facing upper body portion surface and adapted for being lodged in said lid dome collar portion,



(c) a valve head at an end of said valve stem remote from said upper valve body portion and having a diameter, transverse to said central assembly axis, which is larger than the diameter of said valve stem; said valve head bearing said first annular contact zone so located thereon as to face, in the finished assembly, toward the inner collar end zone of said collar portion, and being adapted for making sealing contact with said annular rim or shoulder edge, when the assembly is in closed position, and, when said assembly is in open position, forming a gap therewith,

(d) a cavity having an opening in said upper surface of said upper valve body portion and extending axially at least into said valve stem and having a bottom end located near the radial plane in which said first contact zone on said valve head extends, and a determined axial depth from said valve body upper face to said cavity bottom end,

at least one of said upper valve body portions and said valve stem having an annular elastically resilient valve portion being deformable toward or in, axial direction,

(e) additional annular sealing means about said valve stem spaced from said valve head and adapted for making sealing contact at all times with said lid dome collar portion in a second zone axially spaced from said first contact zone,

(f) and duct means in said valve stem, having an exit opening for product flow into said cavity and an entry opening in a region of said valve stem extending from said first to short of said second contact zone;

(C) introducing said valve body into a part of said collar portion outside said central dome opening, and on a mandrel of such diameter as to fit axially and substantially snugly into said cavity and protruding from an annular frontal end face of a piston movably associated with a pressure cylinder, the frontal end face of which piston has an external diameter substantially larger than the cross-sectional diameter of said cavity in said upper surface of said upper valve body portion; said mandrel having a tip and an axial length greater than said determined axial depth of said cavity of the valve body when in undeformed state;

(D) striking said mandrel with sufficient force to drive the same together with said valve body abruptly into said collar portion of said lid dome with an impact pressure of about 2 to 8 bars depending on the Shore hardness of the valve body material; the distance by which the axial length of said mandrel exceeds said axial cavity depth and the length of travel of said mandrel during each stroke being sufficient to pass said valve head a short distance downwardly out of the annular rim or shoulder edge said central dome opening, with a limited stretching deformation of said elastically resilient valve portion;

(E) stopping the advance of the mandrel and the piston bearing the same when the mandrel has passed through said short distance; and

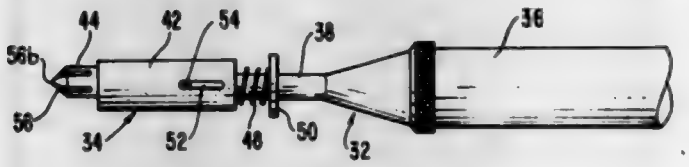
(F) withdrawing said mandrel upwardly out of engagement with said valve body, whereby said elastically resilient valve body portion contracts and moves said first contact zone of said valve head into sealing contact with said annular rim or shoulder edge at the central opening in said inner end zone of said dome collar portion.

4,532,691

WIRE TERMINATION TOOL

Edward P. Brandeau, Martinsville, N.J., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Dec. 7, 1982, Ser. No. 447,593
Int. Cl.³ H01R 43/04
U.S. Cl. 29—566.4 9 Claims



1. An apparatus for making an interconnection between an electrical wire and a conductive terminal having a wire receiving slot therein, comprising:

a support;

a wire insertion head on said support and having a pushing element at one end thereof for engaging and urging said wire into said slot, said wire insertion head including an elongate shaft, one end of which is resiliently movably supported by said support and the other end of which defines said pushing element; and

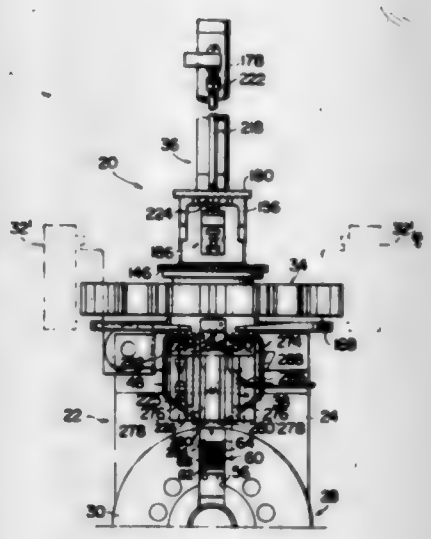
a member for indexing said wire to said terminal, said indexing member comprising a sleeve resiliently movable axially relative to said shaft.

4,532,692

CHUCK JAW CHANGER FOR A MACHINE TOOL

Chihiro Miyachi, Nagoya, Japan, assignor to Howa Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Oct. 14, 1983, Ser. No. 542,196
Claims priority, application Japan, Oct. 19, 1982, 57-183881; Mar. 28, 1983, 58-52228; Apr. 25, 1983, 58-73491; Apr. 25, 1983, 58-73492; May 24, 1983, 58-92084
Int. Cl.³ B23Q 3/157
U.S. Cl. 29—568 28 Claims



1. A chuck jaw changer for a machine tool having a work spindle, comprising:

a chuck having a chuck body adapted to be mounted on the work spindle of the machine tool and having a plurality of radial guideways therein for replacably receiving a set of gripping jaws therein, each gripping jaw being slidable into and out of one of the guideways when that guideway is in a preassigned jaw change position on the chuck body;

an indexing jaw magazine adapted to be rotatably mounted on the machine tool and having a plurality of holder portions therein for releasably holding additional sets of gripping jaws and for receiving gripping jaws withdrawn from said chuck body, said jaw magazine being indexable to a position for bringing any of the holder portions into line with the guideway in the chuck body which is in the jaw change position;

a jaw transfer mechanism for transferring a gripping jaw rectilinearly between the guideway in the chuck body which is in the jaw change position and the holder portion of said jaw magazine which is positioned in line therewith;

a jaw guide extending between said indexing jaw magazine and said chuck body and having a substantially continuous, rectilinear guide track thereon for guiding the gripping jaws during the transfer thereby by said jaw transfer mechanism, whereby any desired gripping jaw can be accurately transferred from the holder portions of the jaw magazine into one of the guideways in the chuck body and vice versa; and

a transport mechanism operatively associated with said jaw magazine, jaw transfer mechanism and jaw guide for moving them relative to the machine tool between a first position away from the chuck and a second position close to the chuck in which the jaw guide is aligned between said jaw magazine and said chuck.

4,532,693

TOOL EXCHANGING APPARATUS FOR A MACHINE TOOL HAVING A PLURALITY OF PROCESSING SPINDLES

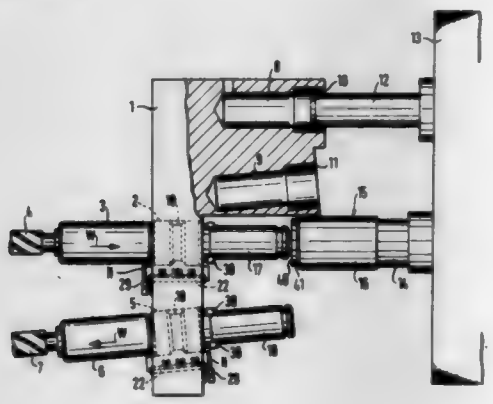
Karl Gücklhorn, and Wolfgang Carl, both of Aalen, Fed. Rep. of Germany, assignors to Alfing Kessler Sondermaschinen GmbH, Aalen-Wasseralfingen, Fed. Rep. of Germany

Filed Jul. 12, 1983, Ser. No. 512,954

Claims priority, application Fed. Rep. of Germany, Jan. 17, 1983, 3301334

Int. Cl.³ B23Q *3/157*

U.S. Cl. 29—568 25 Claims



1. Tool exchanging apparatus for a machine tool having a processing spindle, which has a quick-change adapter for receiving a tool holder, comprising: a tool holder; a tool carrier having an aperture for the receipt of the tool holder, means for moving said tool carrier from a tool charging position into a tool exchange position; means for moving the tool holder through the aperture of the tool carrier in a first direction; means for holding the tool holder, at least in its decoupling or coupling position, in said aperture in a manner such that movement in a second direction opposite to the first direction is blocked; biassing means; at least one engagement lug carried by said tool holder and which can be retracted by a limited distance relative to the tool carrier in said second direction against said biassing means; means for preventing rotary movement of said tool holder in said aperture of the tool carrier when the engagement lug is retracted; and means that enable the means for preventing rotary movement to be responsive to retraction of the engagement lug.

4,532,694

METHOD OF FABRICATING EMITTER/DETECTOR-IN-A-WELL FOR THE INTEGRATION OF ELECTRONIC AND OPTOELECTRONIC COMPONENTS

Robert M. Kolbas, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Division of Ser. No. 272,603, Jun. 11, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 507,846

Int. Cl.³ H01L *21/20, 21/208*

U.S. Cl. 29—569 L 12 Claims

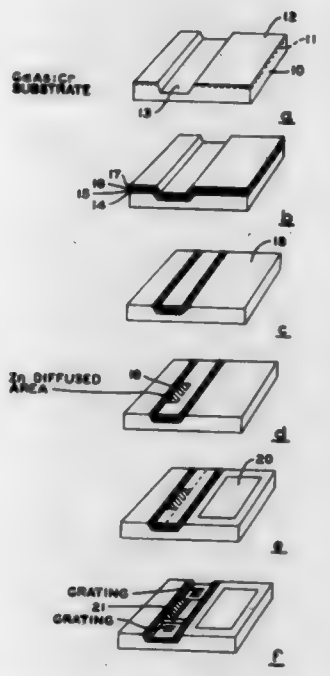
1. A method of fabricating planar structured solid state electro-optic elements comprising the steps of:

preparing a semi-insulating substrate having a substantially planar surface;

etching a wide depression on the order of 100–500 microns wide in the planar surface of the substrate to prepare a site for an optoelectronic component;

epitaxially growing over said depression and planar surface a thin semiconductor deposition to substantially fill said depression;

chemical-mechanical polishing said epitaxially covered planar surface to re-expose said substrate and establishing a new planar surface which surface effectively includes the epitaxially grown deposition in said depression; and,



doping a portion of said epitaxially grown deposition to form a diode, the diode being an active portion of the optoelectronic component.

4,532,695

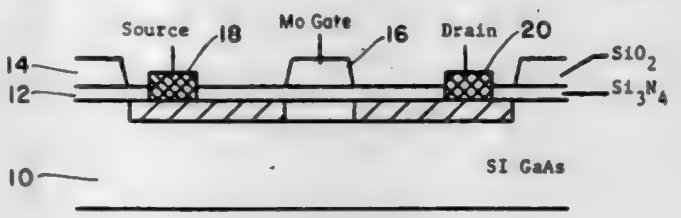
METHOD OF MAKING SELF-ALIGNED IGFET

Fritz L. Schuermeyer, Yellow Springs, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 2, 1982, Ser. No. 394,591

Int. Cl.³ H01L *21/265*

U.S. Cl. 29—571 15 Claims



1. A self-aligned process for fabricating a semiconductor device which comprises the steps of:

a. providing a semi-insulating GaAs substrate;

b. coating the substrate with a plasma enhanced deposited Si_3N_4 layer and a SiO_2 layer;

c. etching off the SiO_2 layer in areas where transistors will be located;

d. ion implanting, with the SiO_2 layer acting as a mask, which provides channel doping;

e. depositing and delineating a gate of conductive refractory material;

f. forming source and drain regions by ion implantation to provide n+ region extending to the gate region, with the SiO_2 layer and the gate acting as masks;

g. annealing with the Si_3N_4 acting as an annealing cap;

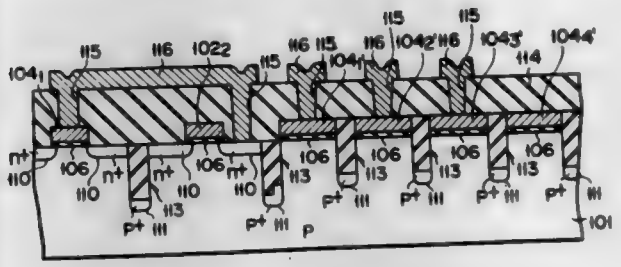
h. etching holes into the Si_3N_4 for source and drain contacts, depositing the source and drain contacts and sintering the device for activation of these contacts.

4,532,696

METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE FOR FORMING A DEEP FIELD REGION IN A SEMICONDUCTOR SUBSTRATE

Hiroshi Iwai, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Mar. 16, 1983, Ser. No. 475,944
Claims priority, application Japan, Mar. 26, 1982, 57-48573
Int. Cl.[3] H01L *21/283, 21/265*
U.S. Cl. 29—571 25 Claims



2. A method of forming a gate electrode of a semiconductor device comprising the steps of:

forming a gate electrode material pattern on a gate insulating film deposited on a conductive type semiconductor substrate;

forming a gate electrode by selectively forming a groove in said gate electrode material pattern; and

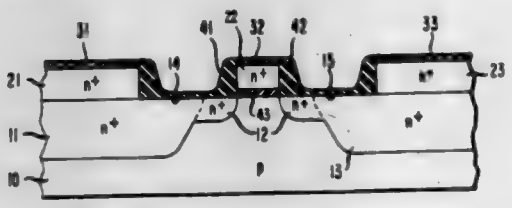
burying insulating material in said groove.

4,532,697

SILICON GIGABIT METAL-OXIDE-SEMICONDUCTOR DEVICE PROCESSING

Ping K. Ko, Ocean, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1983, Ser. No. 557,638
Int. Cl.[3] H01L *21/225, 21/425*
U.S. Cl. 29—571 9 Claims



1. A method of forming a channel region in a semiconductor substrate of first type conductivity, the substrate having a mesa of semiconductor material thereon and a layer of insulator material interposed between the mesa and the substrate, the method being characterized by the steps of

differentially oxidizing the mesa and substrate to cause an insulator material layer to grow thicker on the sides of the mesa than on the exposed surface of the substrate,

implanting dopant ions into at least the exposed surface of the substrate to cause a region of second type conductivity to be formed therein, and

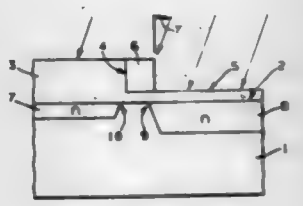
heating the mesa and substrate to diffuse the dopant ions into the substrate thereby defining the channel region in the substrate between the regions of second type conductivity, the channel region being substantially coextensive with the mesa.

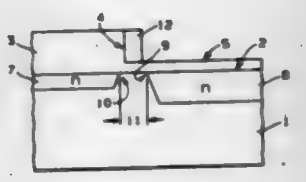
4,532,698

METHOD OF MAKING ULTRASHORT FET USING OBLIQUE ANGLE METAL DEPOSITION AND ION IMPLANTATION

Frank F. Fang, Yorktown Heights; Bertrand M. Grossman, New York, and Wei Hwang, Armonk, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,810
Int. Cl.[3] H01L *21/283, 21/22, 21/265*
U.S. Cl. 29—571 5 Claims





1. In the formation of semiconductor structures by the use of indirectly determined dimensions with respect to the surface of a semiconductor crystal, the improvement process comprising

forming by depositing at a low angle with respect said surface a mask member against a positioned locating face, said mask having a dimension parallel to said surface determined by both desired device dimension and processing tolerance movement, and

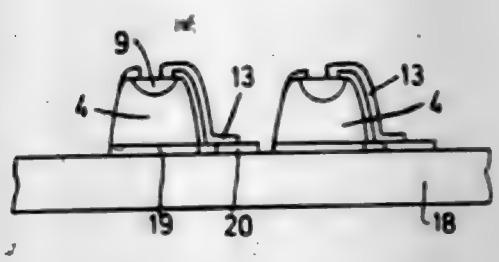
converting the conductivity of the region of said crystal adjacent said surface from an angular direction by ion implantation to cause said conversion to progress to a point under at least a portion of said mask.

4,532,699

PROCESS FOR MANUFACTURING A MATRIX INFRARED DETECTOR WITH ILLUMINATION BY THE FRONT FACE

Michel Bourdillot, Chasseneuil Du Poitoux; André Gauthier, Paris; Jacques Maillé , Paris, and Bernard Pitault, Paris, all of France, assignors to Societe Anonyme de Telecommunications, France

Filed Nov. 25, 1983, Ser. No. 555,163
Claims priority, application France, Nov. 30, 1982, 82 20031
Int. Cl.[3] H01L *21/302, 21/31*
U.S. Cl. 29—572 9 Claims



1. A process for manufacturing a matrix infrared detector with illumination on a front face, which comprises providing a first semi-conductor wafer of one conductivity type, p or n,

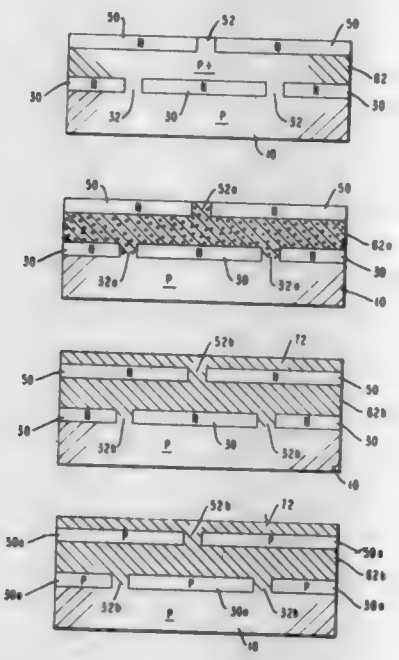
and forming thereon, from the front face to be illuminated, a relief in the form of islets or raised zones having top and bottom levels and side walls connecting said top and bottom levels; depositing a dielectric layer on said relief zones, opening a window in said dielectric layer, using said dielectric layer as a diffusion mask and as an insulating layer for a subsequently deposited metallization layer, diffusing through said window a dopant into the top level of the relief zones to form regions of an opposite conductivity type in order to define junctions and to form a matrix of elementary detectors; forming, in one step, a metallic connection on each said relief zone that extends from said region of an opposite conductivity type on said top level of said relief zone and thence over at least one of said side walls of said relief zone and thence to the bottom level of said relief zone adjacent said one side wall; thinning the wafer from its rear face up to the ottom level of the relief zone and isolating the contact terminals; disposing the thinned wafer, by its rear face, on a second semi-conductor processing wafer adapted to process the signals delivered by the elementary detectors of the wafer; and connecting said contact terminals to associated metallization zones of the processing wafer.

4,532,700

METHOD OF MANUFACTURING SEMICONDUCTOR STRUCTURES HAVING AN OXIDIZED POROUS SILICON ISOLATION LAYER

Wayne I. Kinney, Albuquerque, N. Mex.; Jerome B. Lasky, Essex Junction, and Larry A. Nesbit, Williston, both of Vt., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Apr. 27, 1984, Ser. No. 604,563
Int. Cl.³ H01L *21/20, 21/76*
U.S. Cl. 29—576 W **15 Claims**



1. A method of forming a semiconductor structure having dielectrically isolated monocrystalline silicon regions comprising:

(a) providing a silicon body of a predetermined conductivity;

(b) forming in said silicon body a set of buried regions which under predetermined anodizing conditions etch slower than the silicon regions adjacent them;

(c) forming a set of surface regions which under said anodizing conditions etch slower than the silicon regions around them wherein said surface regions overlie said regions between adjacent buried regions and partially overlie said adjacent buried regions and wherein said buried regions and said surface regions define a portion in said silicon body which etches faster than said buried and surface regions under said predetermined anodizing conditions;

(d) anodically etching said silicon body to selectively convert said silicon regions between buried regions and surface regions and said silicon portion between said two sets of regions into porous silicon material;

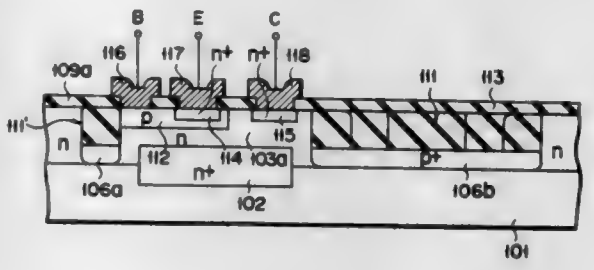
(e) subjecting said silicon body to oxidation to convert said porous silicon material into silicon dioxide.

4,532,701

METHOD OF MANUFACTURING SEMICONDUCTOR DEVICE

Shuichi Kameyama; Satoshi Shinozaki, both of Yokohama, and Hiroshi Iwai, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 19, 1982, Ser. No. 410,083
Claims priority, application Japan, Aug. 21, 1981, 56-131018; Dec. 25, 1981, 56-212459
Int. Cl.³ H01L *21/76*
U.S. Cl. 29—576 W **9 Claims**



1. A method of manufacturing a semiconductor device comprising the steps of:

forming a first groove having a large width in a semiconductor layer;

filling said first groove with a first insulating film;

forming a mask pattern on that portion of the first insulating film which fills the first groove;

selectively etching said first insulating film in said first groove using the mask pattern as a mask to form at least one second groove in said first insulating film, said second groove having a narrow width; and

filling said second groove with a second insulating film to form an isolation layer having a large width.

4,532,702

METHOD OF FORMING CONDUCTIVE INTERCONNECTION BETWEEN VERTICALLY SPACED LEVELS IN VLSI DEVICES

Joseph R. Gigante, Beltsville, and Rathindra N. Ghoshtagore, Columbia, both of Md., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 4, 1983, Ser. No. 549,125
Int. Cl.³ H01L *21/285*
U.S. Cl. 29—578 **6 Claims**



1. Method of depositing a thick conductive metal plug and barrier in an aperture in a dielectric layer over a semiconductive layer, which thick conductive metal plug and barrier permits electrical interconnection between the semiconductive layer and a conductive layer which is thereafter disposed atop the conductive plug, which method comprises:

(a) treating the semiconductive layer through the aperture in the dielectric layer with an activation agent;

(b) selectively depositing the conductive metal on the activated semiconductive layer to a predetermined thickness;

(c) treating the deposited conductive metal through the

aperture in the dielectric layer with the activation agent; and

(d) repeating the selective deposition of the conductive metal onto the activated surface and treating the deposited metal surface with activation agent, and selective deposition until the aperture is filled with conductive metal which serves as an electrical interconnection means and a barrier against conductor migration into the semiconductive layer.

4,532,703

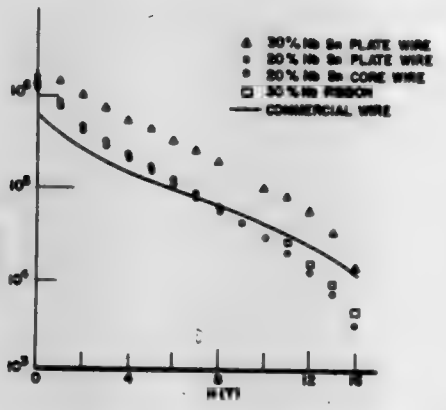
METHOD OF PREPARING COMPOSITE SUPERCONDUCTING WIRE

John D. Verhoeven; Edwin D. Gibson; Douglas K. Finnemore; Jerome E. Ostenson; Frederick A. Schmidt, and Charles V. Owen, all of Ames, Iowa, assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation-in-part of Ser. No. 85,653, Oct. 17, 1979, abandoned. This application Apr. 24, 1981, Ser. No. 257,013

Int. Cl.³ H01L *39/24*

U.S. Cl. 29—599 **29 Claims**



1. A method of preparing composite multifilament superconducting wire comprising:

providing a generalized cylindrical-shaped billet of an alloy of copper containing at least 15 weight percent niobium, the niobium being present in the copper as discrete, randomly distributed and oriented, elongated dendritic-shaped particles having an aspect ratio of about 50 to 100, the dendrites generally being from about 1 to 25 μm in diameter and from about 100 to 250 μm in length;

providing at least one longitudinal hole through the billet, the volume of the hole being such that when filled with tin it can contain a stoichiometric amount to react with the niobium in the tube to form Nb_3Sn;

filling the hole with tin to form a composite drawing rod;

cold-working the composite rod to form an elongated wire of a desired shape and size to orient the dendritic-shaped particles parallel to the longitudinal axis of the wire and to elongate the particles to form a wire containing a plurality of fine filaments of niobium and at least one filament of tin in a copper matrix.

4,532,704

DIELECTRIC WAVEGUIDE PHASE SHIFTER

Jerome J. Green, Lexington, Mass., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 272,809, Jun. 11, 1981,. This application Nov. 4, 1983, Ser. No. 548,810

Int. Cl.³ H01P *11/00*

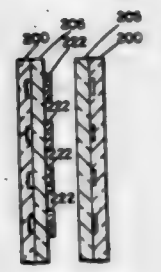
U.S. Cl. 29—600 **3 Claims**

1. A method of manufacturing a phase-shifter column comprising the steps of:

grinding parallel grooves in a first and second keeper ferrite sheets;

bonding a first and second phase-shifting ferrite sheet, respectively, said first and second phase-shifting ferrite sheets on the surface having said grooves to produce a first and second assembly bonding a sheet of dielectric to the phase-shifting side of said first assembly;

grinding through said dielectric sheet to produce parallel dielectric ribs opposite said grooves in said first assembly; and



bonding the phase-shifting side of said second assembly on the surfaces of said dielectric ribs, with the grooves of said second assembly opposite said dielectric ribs.

4,532,705

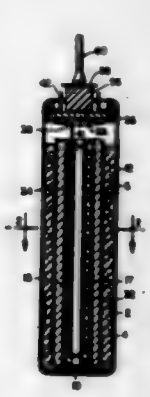
METHOD OF MAKING AN ELECTROCHEMICAL CELL HAVING A RESEALABLE VENT CLOSURE

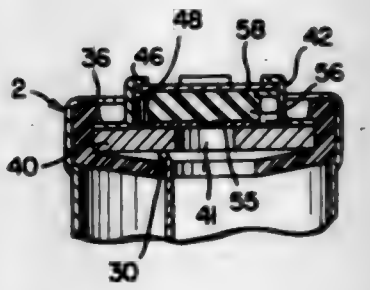
Ronald L. Zupancic, Parma Heights, and Lewis F. Urry, Columbia Station, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Continuation of Ser. No. 344,945, Feb. 2, 1982, abandoned, which is a division of Ser. No. 190,989, Sep. 26, 1980, Pat. No. 4,328,289. This application Jan. 16, 1984, Ser. No. 571,066

Int. Cl.³ H01M *2/12*

U.S. Cl. 29—623.2 **8 Claims**





1. A method for assembling an electrochemical cell comprising a solid component and a liquid component with a low pressure resealable vent closure which method comprises:

(a) placing the solid component of a cell within a container having an open end, said container having secured to said open end a cover, said cover having a vent orifice;

(b) securing a hollow retainer means to the cover such that said hollow retainer means surrounds the vent orifice, said retainer means having an open outer end having tabs extending therefrom;

(c) feeding the liquid component of the cell through the vent orifice into the container;

(d) placing a resilient deformable member of an elastomeric

material within said hollow retainer means and over the vent orifice;

(e) placing a retainer element within said hollow retainer means and over the resilient deformable member;

(f) compressing said resilient deformable member over said vent orifice thereby providing a fluid tight seal at said vent orifice; and

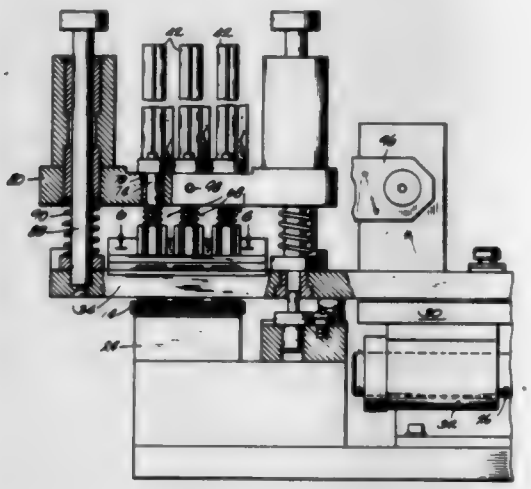
(g) securing the retainer element against the compressed resilient deformable member by turning over the tabs of the outer end of the hollow retainer means onto said retainer element.

4,532,706

RETAINING RING ASSEMBLY MACHINE

Edward R. Horn, Germantown, Wis., assignor to Aladdin Engineering, Brookfield, Wis.

Filed Jul. 28, 1983, Ser. No. 518,123
Int. Cl.³ B23Q *7/10*; B23P *11/02*
U.S. Cl. 29—809 18 Claims



1. Apparatus for use in placing a snap ring of the type including a generally circular inner surface and having a central longitudinal axis on a cylindrical pin of the type adapted to support a snap ring, the apparatus comprising:

means for supporting a cylindrical pin,

means for supporting a plurality of snap rings in aligned stacked relation, the stack of snap rings having a longitudinal axis,

means for moving a selected bottom one of the snap rings supported in aligned stacked relation in a direction transverse to the longitudinal axis of the stack of snap rings to a position wherein the selected snap ring is aligned with the cylindrical pin,

means for supporting the selected snap ring such that the longitudinal axis of the selected snap ring is aligned with the longitudinal axis of the cylindrical pin, and

means for forcing the selected snap ring in the direction of the longitudinal axis of the selected snap ring from the means for supporting the snap ring onto the end of the cylindrical pin.

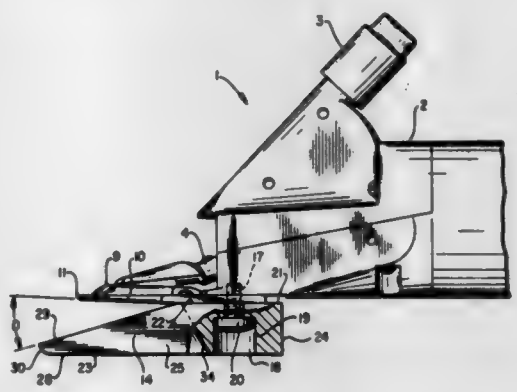
4,532,707

ANIMAL HAIR SHEAR AND CUTTING DEVICE

Gary D. Allen, Allen, Tex., assignor to Stone Manufacturing & Supply Co., Kansas City, Mo.

Filed Feb. 16, 1983, Ser. No. 445,415
Int. Cl.³ B26B *19/24*
U.S. Cl. 30—200 5 Claims

1. Electrical operated animal hair shearing or clipping device including an electric motor housing, blade means reciprocatable laterally by the motor, a first comb member carried by the device adjacent the blade means and a second comb member carried by the device adjacent the first comb member, with the first comb member being disposed between the blade means and the second comb member; wherein the first comb member is inclined outwardly and upwardly at an angle to the second comb member; the teeth of the second comb member extend outwardly a greater distance than the teeth of the first comb member; the first comb member has a plurality of teeth greater in number than the teeth of the second comb member; each pair of adjacent teeth of the first comb member diverge to their outer ends remote from the motor housing to form angled grooves open at their outer ends and the adjacent teeth of the second comb member extend from the motor housing substantially parallel to their outer ends to form a plurality of straight



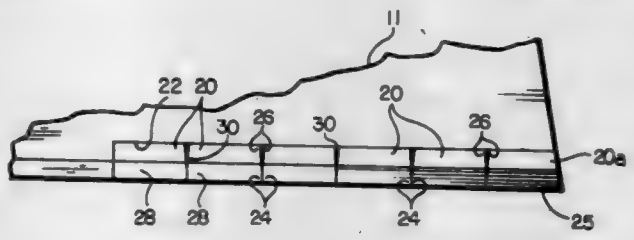
grooves open at their outer ends; the grooves of the first comb member are smaller in width than the grooves of the second comb member; the top surface of the second comb member includes a flat motor housing mounting surface and the top surface of the teeth of the second comb member are angled downwardly to the outer ends thereof; and wherein the flat surface of the second comb member is mountable to the underside of the motor housing and presents a flat bottom surface for the device.

4,532,708

ROTARY LAWN MOWER BLADE

Harold F. Mensing, 6394 Peninsula Rd., Erie, Mich. 48133

Filed Apr. 10, 1984, Ser. No. 598,667
Int. Cl.³ A01D *55/18*
U.S. Cl. 30—347 24 Claims

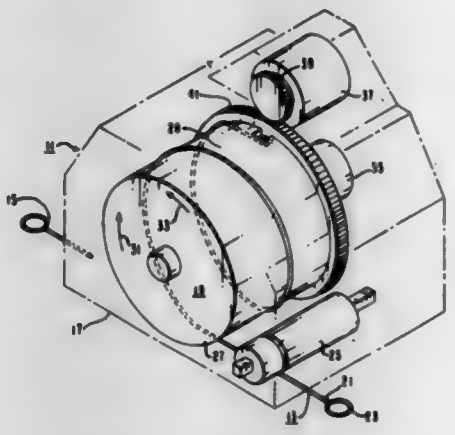


1. A rotary lawn mower cutter blade comprising: an elongated steel cutter bar adapted to rotate about an axis located in its center extending perpendicularly through a flat midsection, a plurality of cutter segments fusibly bonded along a leading edge of each end of said bar, said segments each having a cutting edge and a hardness greater than the hardness of said cutter bar, said segments being arranged in series with the outer end of each segment abutting the adjacent inner end of a succeeding segment in the series at the cutting edge, each of said segments having a cutting face angled upwardly and rearwardly from its cutting edge, said cutting edge being disposed at a non positive rake angle and a cutter tip segment fusibly bonded to said cutter bar adjacent to the outermost cutter segment of each of said series of cutter segments.

4,532,709
HIGH PRECISION ELECTRONIC DIGITAL MEASUREMENT SYSTEM WOUND ON CONSTANT-TORQUE-CONTROLLED DRUM

Hans E. Leumann, Washington; Kenneth S. Gerkey, and Mark E. Wylie, both of Mt. Lebanon, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 22, 1984, Ser. No. 663,264
Int. Cl.[3] G01B 7/02
U.S. Cl. 33—140 18 Claims



1. A measuring module comprising:

(a) support means;

(b) a drum member rotatably mounted on said support means;

(c) a measuring member operably associated with said drum member and having at least one end thereof extending from said drum member such that for the rotational movement of said drum member in a first direction said at least one end is drawn up onto said drum member and for rotational movement in a second direction said at least one end is played out from said drum member;

(d) means for providing a predetermined value of constant torque to said drum member in communication therewith in order to effect the rotational movement thereof whereby a constant and repeatable tensioning of said measuring member is effected; and

(e) means for generating an output signal reflective of the rotational movement of said drum member, operably associated with said drum member.

4,532,710
DISTANCE MEASURING DEVICE FOR GOLF CARTS AND THE LIKE

Philip C. Kinney; Mir Imran, and Edward J. Donnelly, all of Pittsburgh, Pa., assignors to Phyronics, Inc., Pittsburgh, Pa.

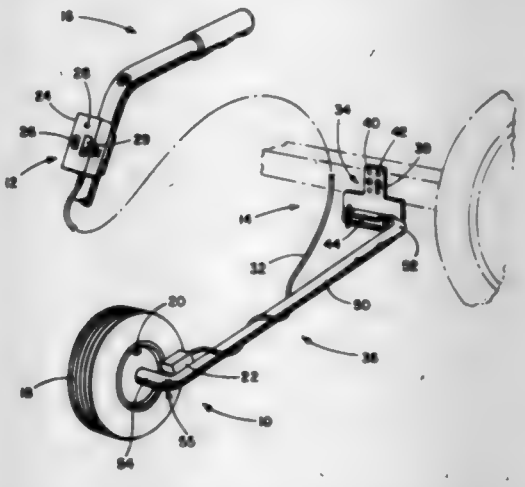
Continuation of Ser. No. 380,239, May 20, 1982, abandoned.
This application Aug. 6, 1984, Ser. No. 637,701
Int. Cl.[3] G01B 3/12; G01C 22/00
U.S. Cl. 33—141 E 6 Claims

1. A programmable device for measuring distance travelled by a golf cart or the like, comprising:

sensing means for sensing consecutive revolutions of a wheel, and providing corresponding consecutive sensor output signals;

programming means responsive to user operation for receiving operator input data representing a dimension of the wheel;

processing means responsive to said corresponding consecutive sensor output signals and to said operator input data from said programming means for deriving output data corresponding to distance travelled by the golf cart, said processing means including a clock proving clock pulses, a counter for counting in accordance with a clock input, a gate responsive to each occurrence of said corresponding successive sensor output signals for providing said clock pulses to said counter as said clock input thereto, causing said counter to count and to develop a count output therefrom, whereby to derive said data corresponding to said distance travelled by the golf cart; and

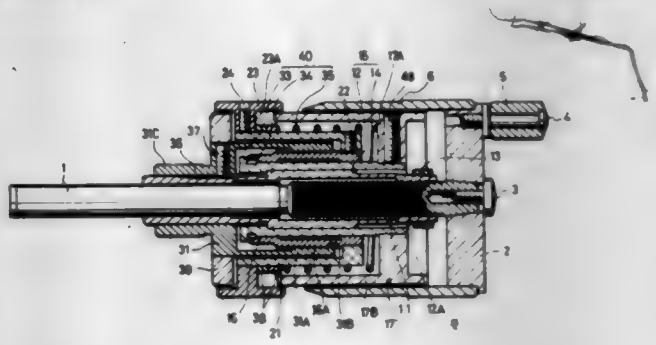


display means responsive to said output data derived by said processing means for displaying the distance travelled by the golf cart.

4,532,711
MICROMETER HEAD

Tamenori Shirai, Kure, Japan, assignor to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Jun. 24, 1983, Ser. No. 507,832
Claims priority, application Japan, Jul. 27, 1982, 57-114354[U]
Int. Cl.[3] G01B 3/18, 5/00
U.S. Cl. 33—164 R 11 Claims

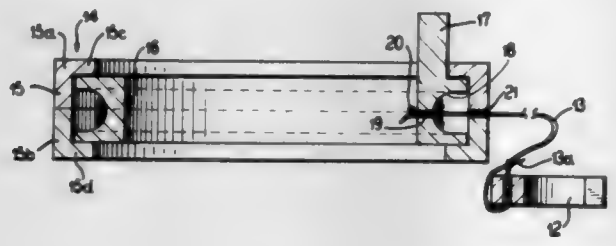


1. In a micrometer head wherein a spindle threadably coupled to a sleeve is moved in the axial direction relative to said sleeve in response to rotation of a thimble which is coupled to said spindle for synchronous rotation therewith, the improvement comprising an intermediate tubular member supported on said sleeve in a manner so as to be movable axially and rotationally relative to said sleeve, wherein said intermediate tubular member is connected to said sleeve through a connecting means in a manner so as to be simultaneously movable with said sleeve in the axial direction of said spindle, wherein said intermediate tubular member is synchronously rotatably connected with an adjusting ring spaced a predetermined distance apart from said thimble, wherein a graduation ring is disposed inside said thimble and has an outer peripheral surface exposed beyond one end edge of said thimble, said graduation ring being synchronously rotatably connected to said sleeve, wherein said intermediate tubular member is threadedly coupled to a mount fixable portion which is adapted to be mounted to a measuring instrument, and wherein rotation of said intermediate tubular member due to rotation of said adjusting ring relative to said mount fixable portion causes said sleeve, said spindle, said graduation ring and said thimble to be simultaneously moved in the axial direction of said spindle relative to said mount fixable portion.

4,532,712
PROXIMITY MEASURING DEVICE FOR GOLFERS

James E. Vistain, 1320 Bonnie Glen, Glenview, Ill. 60025

Filed Sep. 1, 1983, Ser. No. 528,645
Int. Cl.[3] G01B *3/10*
U.S. Cl. 33—180 7 Claims

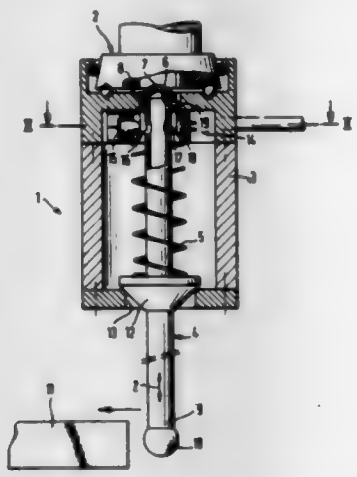


1. A proximity comparing device for golfers to determine relative distance of golf balls from a flagstick comprising:
a clamping ring releasably engageable with said flagstick and having a sufficiently low coefficient of friction to be slidable about the periphery thereof while engaging said flagstick,
a string having one end anchored to said clamping ring, and
a reel securing the opposite end of said string and providing a variable amount of string for measuring distances from said flagstick, said reel including a pair of concentric inner and outer rings rotatable relative to each other, the other end of said string being wound about said inner ring and said outer ring permitting entry and withdrawal of said string from about said inner ring.

4,532,713
MULTICOORDINATE SENSING HEAD

Kurt Feichtinger, Palling, Fed. Rep. of Germany, assignor to Dr. Johannes Heidenhain GmbH, Traunruet, Fed. Rep. of Germany

Filed Aug. 1, 1983, Ser. No. 518,928
Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3229992
Int. Cl.[3] G01B *11/24*
U.S. Cl. 33—559 8 Claims

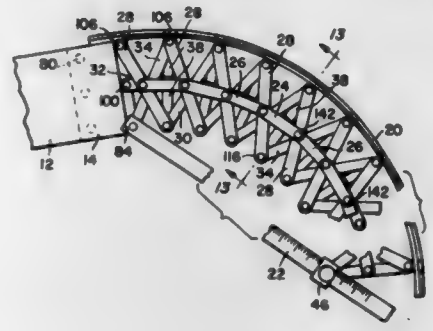


1. In a sensing head adapted to be mounted to a measuring or processing machine, said sensing head comprising a casing and a sensing pin having a sensing end and a mounting end, the improvement comprising:
means, included in the casing, for allowing the mounting end to move along a predetermined axial direction while constraining the mounting end of the sensing pin against radial movement perpendicular to said axial direction;
a first, rotationally symmetric element mounted to the sensing pin at a point intermediate of the sensing end and the mounting end;
a second element included in the casing adjacent the first element, said second element shaped to bear against the first element in order to center the sensing end of the sensing pin in a predetermined rest position in the absence of radial forces on the sensing end and to cause the mounting end of the sensing pin to move along the axial direction in response to radial deflection of the sensing end of the sensing pin; and
means, mounted adjacent the mounting end of the sensing pin, for sensing the axial position of the mounting end of the sensing pin and for generating a deflection signal in response thereto;
said first element mounted to the sensing pin comprising a truncated cone and said second element included in the casing comprising a torus defining a central opening sized to receive the sensing pin, said torus shaped to surround and contact the truncated cone to center the sensing pin.

4,532,714
ADJUSTABLE RADIAL CURVE

Richard R. Spinning, 8960 NW. 8th St., #207, Miami, Fla. 33172

Continuation of Ser. No. 454,527, Dec. 30, 1982, abandoned.
This application Aug. 22, 1983, Ser. No. 525,207
Filed Aug. 22, 1983, Ser. No. 525,207
Int. Cl.[3] B43L *13/20*
U.S. Cl. 33—177 21 Claims



1. An adjustable radial curve comprising:
a supporting bar;
a plurality of radial arms, long chords, diagonal braces and brace chords are fastened to each other and to the supporting bar
a flexible ruling edge attached to said radial arms and diagonal braces; and
a bar scale attached to one of said radial arms and one of said diagonal braces.

4,532,715
INSPECTION MACHINE AND METHOD FOR MEASURING THE CIRCULAR PITCH SPACING OF TEETH ON A MEASUREMENT CIRCLE OF A GEAR

Armin Sterki, Uetikon, Switzerland, assignor to Maag Gear-Wheel & Machine Company, Ltd., Zurich, Switzerland

Filed Feb. 27, 1984, Ser. No. 583,972
Claims priority, application Switzerland, Mar. 7, 1983, 1222/83
Int. Cl.[3] G01B *7/28*
U.S. Cl. 33—179.5 R 8 Claims

1. An inspection machine for measuring the circular pitch spacing of teeth on a measurement-circle of a gear, comprising:
a measurement sensor having a pre-loadable feeler capable of being deflected by a flank of a tooth of the gear being measured, having an active sensing range with a range of linear response and generating an output signal defining a linear measurement value;
a first transport carriage translatably drivable in a direction substantially radial to the gear for mounting said measurement sensor;
rotary drive means for angularly displacing the gear;
angular displacement sensing means capable of being operatively connected to the gear and generating a pulse signal defining an angular measurement value when said measurement sensor enters said range of linear response;
a control processor connected to said angular displacement sensing means for controlling measurement operations and for computing measurement values;

said measurement-circle of the gear having a radius;

a radius measuring system operatively associated with said first transport carriage for measuring a set value of said radius;

a multiplier unit operatively connected to said radius measuring system for generating a measurement value;

said multiplier unit having an output terminal;

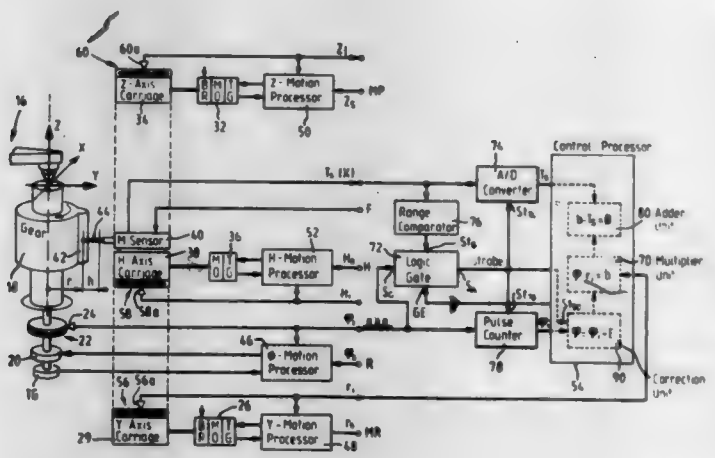
an angular displacement correction unit operatively connected to said multiplier unit and having a chip-select input terminal;

a storage flip/flop operatively connected between said angular displacement correction unit and said angular displacement sensing means and having a chip-select input terminal;

an analog-to-digital conversion unit operatively connected between said measurement sensor and said control processor for generating a measurement value and having a chip-select input terminal;

said analog-to-digital conversion unit having an output terminal;

a logic gate having an enable signal input terminal operatively connected to said control processor, a signal input terminal operatively connected to said angular displacement sensing means and a signal output terminal commonly operatively connected to respective ones of said



chip-select input terminals of the analog-to-digital conversion unit, the storage flip/flop and the angular displacement correction unit for latching said angular measurement value of the angular displacement sensing means into the storage flip/flop and said linear measurement value of the measurement sensor into the analog-to-digital conversion unit and for initiating an angular displacement correction operation in the angular displacement correction unit upon arrival of said pulse signal defining said angular measurement value;

a range comparator unit provided for the measurement sensor for responding to said output signal defining said linear measurement value of the measurement sensor when the measurement sensor enters the range of linear response and operatively connected to said chip-select input terminal of said logic gate and with the analog-to-digital conversion unit; and

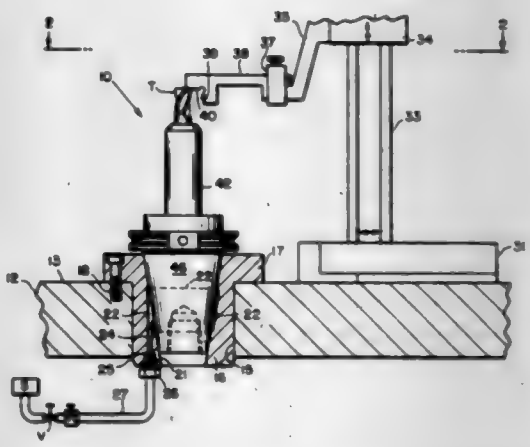
an adder unit provided in said control processor and operatively connected to respective ones of said output terminals of the analog-to-digital conversion unit and of the multiplier unit for performing an algebraic addition of said measurement value supplied by the analog-to-digital conversion unit and said measurement value supplied by the multiplier unit to determine a true acuate distance on the measurement-circle of the gear and to determine therefrom a circular pitch spacing of the gear.

4,532,716

TOOL PRESETTING DEVICE WITH TAPERED AIR SPINDLE MOUNT

Rudolph Steiner, Fairport, N.Y., assignor to Parlec, Inc., Fairport, N.Y.

Filed Oct. 31, 1983, Ser. No. 546,819
Int. Cl.³ G01B 5/02
U.S. Cl. 33—201 **6 Claims**



1. A tool presetting device, comprising

a support having an inverted, frusto-conically shaped opening in an upper surface thereof,

a tool holder disposed to have a tool releasably secured in one end thereof, and having on its opposite end an inverted frusto-conically shaped bearing surface similar in configuration to the wall defining said opening in said support, and disposed to be seated releasably in said opening coaxially thereof, thereby to support said one end thereof and any tool therein vertically above said support,

a gauge adjustably mounted adjacent said support and carrying a feeler element disposed to engage said tool in said holder during a presetting operation,

said wall having intermediate its ends a circumferential recess disposed to surround and to be sealed by said bearing surface on said holder, when the holder is releasably seated in said opening, and

means for supplying fluid under pressure to said recess, when said holder is seated in said opening, thereby to enable said holder to be urged slightly upwardly in said opening against the force of gravity, thereby enabling said holder readily to be rotated manually relative to said support.

4,532,717

BOW SIGHT

Ira L. Watson, and Craig V. Watson, both of 7377 W. Fremont Dr., Littleton, Colo. 80123

Filed Jul. 25, 1983, Ser. No. 516,924
Int. Cl.³ F41G 1/00
U.S. Cl. 33—265 **18 Claims**

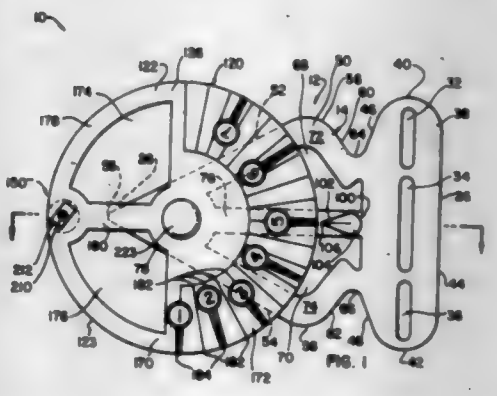


FIG. 1

1. A bow sight for use with an archery bow comprising:

(a) a mounting bracket having a flat body portion with an

inside face positionable against an abutting surface of a bow riser and an outside face surface positioned opposite and parallel said inside face surface; a plurality of linearly aligned elongate slots extending through said flat body portion and positioned at a first end thereof;

a raised boss portion projecting perpendicularly from said inside face of said flat body portion and positioned at a second end of said flat body portion opposite said first end, said boss portion having a truncated conical surface with an axially outwardly radially inwardly tapering peripheral surface portion and a radially extending surface portion positioned parallel said faces of said flat body portion; said boss portion having a centrally positioned bore passing therethrough in perpendicular relationship with said flat body face surfaces of said body portion;

a pointer portion positioned between said aligned slots and said boss portion said pointer portion projecting perpendicularly from said inside face surface of said flat body portion and having a pointer peripheral surface oriented generally perpendicular said flat body face surfaces and having a pointer face surface positioned substantially parallel said flat body outside face surface with a configuration having a pointed end directed toward said boss portion;

(b) at least one sight wheel having a flat substantially circular body portion having a circumferential edge surface and housing a wheel body inside face surface positionable in spaced apart adjacent relationship with said bracket body inside face surface and having a wheel body outside face surface positioned opposite and parallel said wheel body inside face surface; said wheel body having a wheel body central bore provided at the center of said wheel body in coaxial alignment with said bracket boss portion central bore;

a circular rib portion symmetrically positioned about said central bore and projecting perpendicularly from said wheel body inside face surface, said circular rib portion having an inner rib surface projecting axially outwardly and radially outwardly relative the central axis of said central bore; said inner rib surface being adapted to receive and frictionally engage said peripheral wall surface of said bracket boss portion;

a wheel cylindrical extension portion extending perpendicularly outwardly from said wheel body inside face surface, said cylindrical extension portion having a relatively small diameter relative the diameter of said wheel body portion and being positioned at a circumferential portion of said wheel circular body, said cylindrical extension portion having a circular face surface, and having a relatively large diameter bore extending from said circular face surface substantially half the length of said cylindrical extension and having a relatively small diameter tapped bore extending in coaxial alignment with said relatively large diameter bore through the remainder of said cylindrical extension portion and said through wheel body portion whereby a circular opening is provided on said wheel body outer face surface; said wheel body portion comprising a first semicircular section and a second semicircular section opposite said first semicircular section, said first semicircular section comprising two symmetrically positioned wheel cut out portions in quadrants thereof; said wheel cylindrical extension portion being positioned symmetrically within said first semicircular section between said wheel cut out portions; said outside face surface of said wheel body portion having radially projecting marks on the surface thereof in said second semicircular section and having an outside surface adapted to accept pressure sensitive adhesive material;

(c) a sight pin having a threaded exterior surface adapted to threadingly mate with said relatively small diameter tapped bore in said cylindrical extension portion of said sight wheel, said sight pin having a roughened relatively large diameter portion at a first end thereof to facilitate screwingly adjusting the position of said sight pin relative said cylindrical extension portion of said sight wheel, and having a tapered second end portion having a relatively small diameter bead at the terminal end thereof, said sight pin having a sight pin nut mounted thereon and abuttingly contacting said outside face surface of said wheel body portion;

(d) attachment means for rotatably attaching said sight wheel to said mounting bracket comprising a threaded bolt adapted to be received through said boss portion central bore and said wheel body portion central bore; an annular spring washer for biasing said sight wheel rib portion against said bracket boss portion positioned about said threaded bolt in abutting contact with said bracket outer face surface; an annular flat washer positioned about said bolt adjacent said spring washer; and a nut threadingly mounted at an end portion of said bolt in abutting contact with said flat washer; whereby a biasing force between said bracket and said sight wheel is adjustable by selective tightening or loosening of said nut on said bolt; and

(e) pressure sensitive adhesive markers mounted on said outside face surface of said wheel body portion within said second semicircular section at predetermined, calibrated positions thereon;

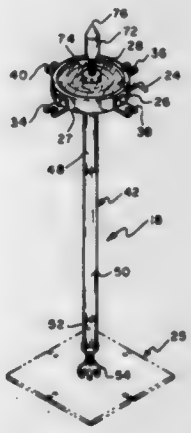
(f) said sight wheel and said bracket being constructed and arranged whereby said pointed end of said pointer portion is positioned in closely spaced relationship relative the circumferential edge surface of said wheel body portion.

4,532,718

PLUMBING APPARATUS

David C. Copeland, 36 Georgia Trail, Medford, N.J. 08055

Filed Dec. 30, 1983, Ser. No. 567,337
Int. Cl.[3] G01C 9/36
U.S. Cl. 33—390 17 Claims



1. A plumbing apparatus to carry a reference point exactly vertically comprising:

(a) a leveling means to determine level condition in all horizontal directions radial to an axis line of the plumbing apparatus,

(b) a marking guide means on the leveling means that guides marking on a surface to which the point is to be transferred that fix lines that pass through the axis line,

(c) a rod means attached to the leveling means to extend a rod plumb from the level condition, and

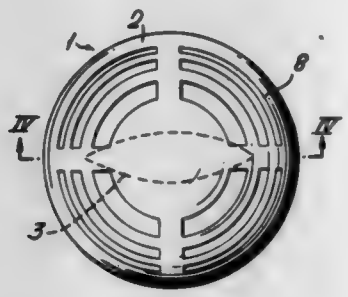
(d) a point location means on the end of the rod to define a point on the axis line.

4,532,719

METHOD AND DEVICE FOR CONDITIONING FABRICS IN A TUMBLE-DRYER

James F. Davies; Arthur G. Leigh, and George K. Rennie, all of Merseyside, England, assignors to Lever Brothers Company, New York, N.Y.

Filed Mar. 7, 1984, Ser. No. 586,957
Claims priority, application United Kingdom, Mar. 8, 1983, 8306308
Int. Cl.³ F26B *3/04*
U.S. Cl. 34—12 31 Claims



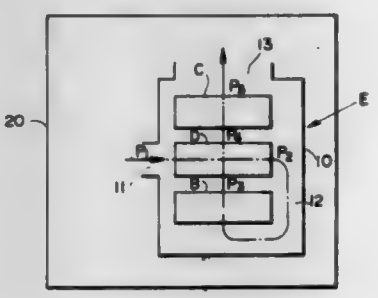
1. In a method of conditioning fabrics, which comprises tumbling damp fabrics under the action of heat in a laundry dryer together with a fabric conditioning agent in the form of a free-flowing powder having a particle size range within the range of from 20 to 1000 μm, the improvement wherein said powder includes at least 55% by weight of a blend of soaps of C_8 to C_{22} saturated or unsaturated fatty acids, said soap blend containing at least 5% by weight of C_{12} soap, at least 5% by weight of C_{14} soap, at least 12% by weight of C_{16} soap and at least 20% by weight of C_{18} soap, said soap blend being in the form of a powder free of any protective coating.

4,532,720

DRYING PROCESS AND ITS APPARATUS UTILIZING A REFRIGERATION CYCLE

Shiichiro Uchida, Fujisawa, Japan, assignor to Shonetsugaku Kenkyusho Co., Ltd., Tokyo, Japan

Filed Oct. 12, 1983, Ser. No. 541,035
Claims priority, application Japan, Nov. 2, 1982, 57-193072
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—27 1 Claim



1. A drying process utilizing a refrigeration cycle comprising the steps of:

supplying a part of hot air in a heat-insulated drying chamber having articles to be dried stored therein to a heat exchanger using an air suction or supply means to cool said air by heat exchange to between 25° and 35° C.;

cooling said air to between 5° and 15° C. by introducing said air into an evaporator to allow said air to be dried due to dehumidification by cooling;

guiding said dried air to said heat exchanger again to effect heat exchange for allowing said cooled and dried air to be heated by hot air in said drying chamber to between 35° and 50° C.;

introducing said dried air into a heater to further heat said air to a temperature sufficient to maintain a temperature of 60° to 80° C. in said drying chamber; and

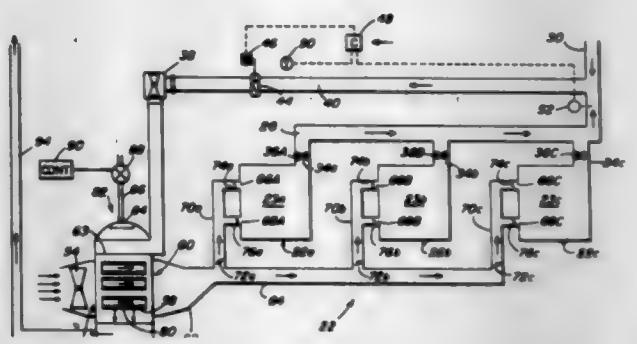
returning said dried and heated air to said drying chamber; whereby said articles stored in said drying chamber are dried by air circulation.

4,532,721

TEXTILE DRYER HEAT RECOVERY SYSTEM

James S. Gordon, Boston, Mass., assignor to MKF Energy Conservation Company, Manchester, N.H.

Filed Feb. 6, 1984, Ser. No. 577,179
Int. Cl.³ F26B *3/04, 21/12*
U.S. Cl. 34—34 10 Claims



1. A method for drying a textile material in a textile heat recovery system, the system including a direct fired textile dryer and a heat exchanger, the textile dryer exhaust gas including dye residue, lint and combustion products, said method comprising the steps of:

(a) feeding the textile material to be dried into the textile dryer;

(b) drawing fresh air into the textile dryer;

(c) heating the fresh air drawn into the textile dryer; p1 (d) directing the exhaust gas containing dye residue and lint from the dryer to the heat exchanger;

(e) drawing fresh air into the heat exchanger;

(f) heating the fresh air drawn into the heat exchanger with the exhaust gas from the textile dryer, the heated fresh air being free of the exhaust gas; and

(g) sensing the temperature of the exhaust gas from the textile dryer;

(h) generating data signals representing the sensed textile dryer exhaust gas;

(i) controlling the flow of textile dryer exhaust gas directed to the heat exchanger as a function of the data signals; and

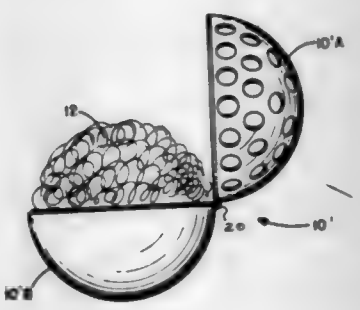
(j) directing the heated fresh air in the heat exchanger to the textile dryer as preheated fresh air.

4,532,722

FABRIC CONDITIONING DEVICE

Stephen H. Sax, 2402 - 3rd St., #101, Santa Monica, Calif. 90404

Continuation-in-part of Ser. No. 464,768, Feb. 7, 1983, abandoned. This application Oct. 31, 1983, Ser. No. 546,823
Int. Cl.³ F26B *19/00*
U.S. Cl. 34—60 13 Claims



1. A device for dispensing a liquid fabric conditioner for use in an automatic laundry dryer for removing static cling from fabric articles being dried in the dryer, said dryer circulating

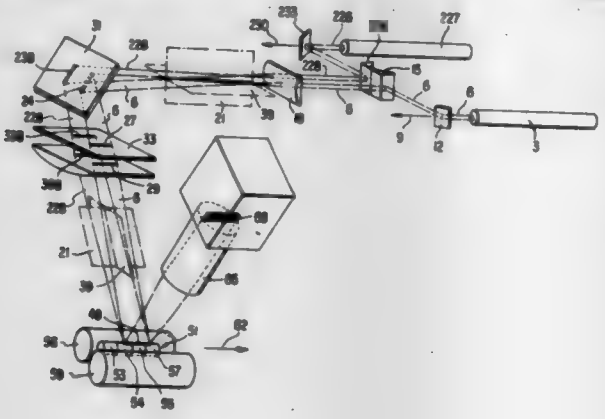
heated air through the fabric articles therein during the drying process, said device comprising: a reusable dispensing container having at least one opening therein; a quantity of absorbent material located within said container to be repeatedly impregnated with a liquid fabric conditioner; and a quantity of liquid fabric conditioner absorbed in said absorbent material to be vaporized by the heat of the dryer so that conditioning vapor is emitted through the opening of the container and into the dryer to condition the fabric articles in the dryer and remove static cling therefrom, whereby the user may apply a new quantity of liquid fabric conditioner to the absorbent material.

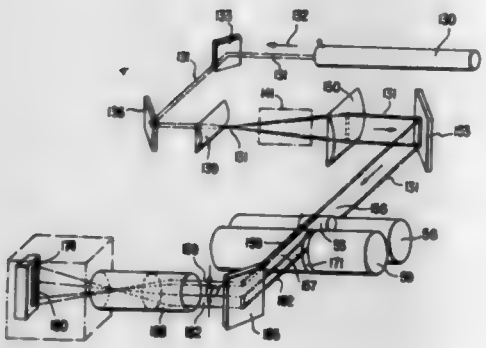
4,532,723

OPTICAL INSPECTION SYSTEM

Truman F. Kellie, Westchester, Ohio; J. David Landry, Wilmington, N.C., and Ching C. Lai, Pleasanton, Calif., assignors to General Electric Company, San Jose, Calif.

Filed Mar. 25, 1982, Ser. No. 361,992
Int. Cl.³ G01N *21/89*; G01B *11/10, 11/30*
U.S. Cl. 356—73 **1 Claim**





1. Apparatus for the optical inspection of the surface, the diameter, the roundness and chamfer of each of a succession of substantially cylindrical, coaxially contiguous pellets spiraling about a common axis while advancing through a viewing field;

said apparatus compriaing:

first illumination means effective to project at least first and second laser beams in a first direction of propagation;

a first anamorphic lens effective to diverge said first and said second laser beams in a first divergence plane substantially parallel to said first direction of propagation;

first collimation means effective to reduce the amount of divergence of said laser beams in said first divergence plane;

a second anamorphic lens effective to converge said first and second laser beams in a direction substantially perpendicular to said first divergence plane, said second anamorphic lens being further effective to confine said beams to a first elongate region of illumination having a large length-to-width ratio on the surface of the pellets under examination;

first detector means including a linear array of first photoresponsive elements and a large aperture, flat field relay lens which directs light to said first elements, each of said first elements being adapted to provide an output signal representative of the amount of light reflected thereto, the light received by said first elements being reflected by corresponding subregions of said first region of illumination on the surface of the examined pellet, said first elements being positioned to receive reflected light only when the angle and the locus of reflection respectively within the corresponding sub-region remain within predetermined limits;

second illumination means effective to project a third laser beam in a second direction of propagation;

a third anamorphic lens effective to diverge said third laser beam in a second divergence plan substantially parallel to said second direction of propagation;

second collimation means effective to reduce the amount of divergence in said second divergence plane and to direct said third laser beam to a second region of illumination, said second region being an elongate area, with large height-to-width ratio, intersecting the whole diameter of each of said pellets in succession;

second detector means including a linear array of second photoresponsive elements each adapted to provide an output signal representative of the amount of transmitted light from said third laser beam incident thereon, said examined pellet occupying a portion of said second region of illumination between said second illumination means and said second detector means so as to eclipse part of said third laser beam and causing two disconnected portions of said third beam to be directed to said second elements;

whereby said first, second and third laser beams each have a substantially uniform spatial intensity distribution and

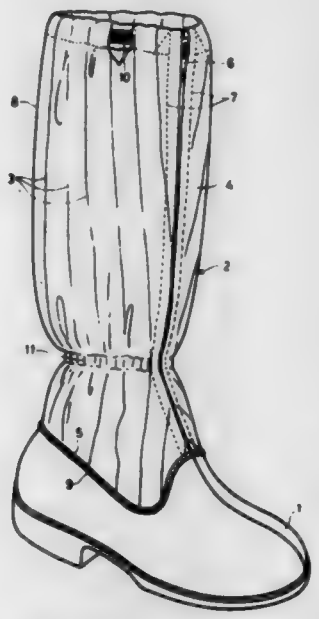
whereby said first output signals are representative of the condition of the surface of the examined pellet and said second output signals are representative of at least the diameter of said examined pellet transverse to said third laser beam.

4,532,724

ANTISTATIC FOOTWEAR

Koichi Okoshi, Tokyo, and Ryuichi Uematsu, Iwatsuki, both of Japan, assignors to Midori Anzen Industry Co., Ltd., Tokyo, Japan

Filed May 2, 1983, Ser. No. 490,776
Int. Cl.³ A43B *3/16*
U.S. Cl. 36—7.1 R **13 Claims**



1. Antistatic footwear comprising,

a shoe having a top portion with an upper edge and a sole assembly, said shoe being comprised of material having a predetermined electrical resistance to ground for regulating the discharge of static electricity from the body of the wearer,

a leg cover configured to encircle the leg of the wearer below the knee with the wearer's trousers being tucked between said cover and the encircled leg,

said leg cover being formed as a tubular body having an upper edge and being made of cloth threaded vertically with conductive fibers,

said leg cover having a lower edge portion affixed to said shoe and being comprised of electroconductive material so as to form an electric field between the leg cover and the encircled leg of the wearer and a conductive channel by corona discharge for controlled discharge of static electricity when the leg cover is worn around the leg of a wearer electrically charged with static electricity, and

means for maintaining the leg cover about the leg of the wearer, said means comprising an elastic strip inserted through the upper edge of said tubular body.

4,532,725

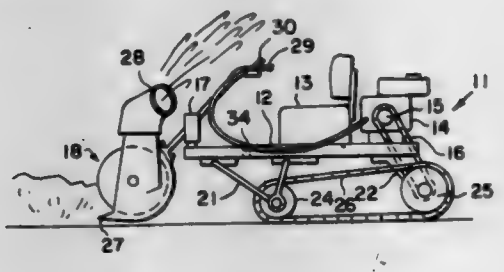
COMBINED SNOW PLOW, GRASS CUTTER & TILLER WITH ADJUSTABLE CHAIR

Jesse Trejo, and George Spector, both of 233 Broadway, Rm 3615, both of New York, N.Y. 10007

Continuation-in-part of Ser. No. 198,775, Oct. 20, 1980, abandoned. This application Jul. 19, 1984, Ser. No. 632,595

Int. Cl.[3] E01H *5/09*

U.S. Cl. 37—243 8 Claims



1. A work apparatus, rideable by an operator, and having a center of gravity, and snow plow, lawn mower and roto-tiller attachments all being simultaneously mounted thereon for selective contact with a working surface, comprising:

(a) a frame;

(b) a plurality of attachments all being simultaneously mounted to said frame and including a snow plow, a lawn mower, and a roto-tiller;

(c) means for selectively activating each of said simultaneously mounted snow plow attachment, lawn mower attachment, and roto-tiller attachment between retracted and operated positions;

(d) a seat adaptable for the operator and mounted to said frame for movement through a plurality of positions; and

(e) means for connecting said moveable seat to said attachment actuating means, so that when said attachment activating means lowers a respective one of said plurality of attachments to said operated position said moveable seat automatically displaces towards said respective one of said plurality of attachments that is in said operated position so that the center of gravity of the work apparatus and the operator is shifted closer to said respective one of said plurality of attachments that is in said operated position and increases contact between said respective one of said plurality of attachments that is in said operated position and the working surface.

4,532,726

TICKET HOLDERS FOR SHELVING

Richard E. H. Kenney, 126 Furnival Rd., Toronto, Ontario, Canada M4B 1W8

Filed Sep. 12, 1984, Ser. No. 649,604

Claims priority, application United Kingdom, Feb. 20, 1984, 8404404

Int. Cl.[3] G09F *3/18*

U.S. Cl. 40—16.4 4 Claims



1. A ticket holder for shelving comprising a front support surface with parallel channels along opposed sides to receive a panel carrying pricing or other information, the rear of the holder having means for engagement with a ticket rail said means comprising integral formations defining a first pair of spaced parallel edges which can be relatively flexed to engage one within each of opposed parallel channels of a ticket rail, one of said edges being spaced with respect to a further formation at a side of the support surface so as to define therewith a further pair of spaced parallel edges which can be relatively flexed to engage the channels of a ticket rail, the support surface lying in one of two angled positions according to which pair of edges is engaged with the ticket rail.

4,532,727

FRAME, ESPECIALLY A QUICK-CHANGE FRAME FOR PHOTOGRAPHS

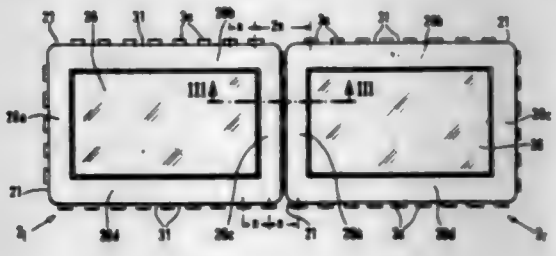
Odo Klose, Wupperal, and Jochen Jost, Essen, both of Fed. Rep. of Germany, assignors to FILMOSTO-PROJEKTION Johannes Jost GmbH & Co., Essen, Fed. Rep. of Germany

Filed Feb. 24, 1983, Ser. No. 469,530

Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206921; Apr. 6, 1982, 3212758

Int. Cl.[3] A47G *1/06*

U.S. Cl. 40—152 19 Claims



1. A frame for receiving loose objects and for mounting same on a vertical wall, said frame having a circumferential outer margin in a frame plane and having at least partially straight margin sections, and having:

a substantially planar back wall having a front side;

a frame rim protruding from said back wall towards the front and laterally surrounding a frame inner field on the front side of said back wall; and

locking elements formed on at least part of the straight margin sections of the outer margin, said locking elements projecting outwardly from the outer margin in a uniform pattern substantially in the frame plane, adjacent locking elements formed on each straight margin section defining pair-wise an intermediate space for accommodating lock-

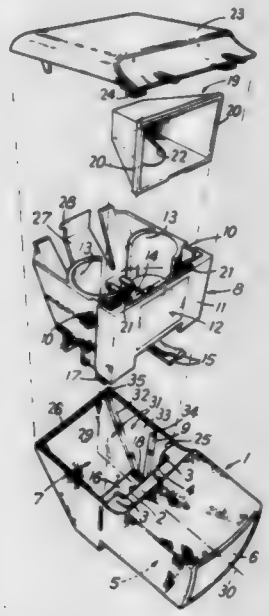
ing elements of like form, the pattern spacing n of said locking elements being such that the locking elements of one frame may engage the intermediate spaces between locking elements of a coupled adjacent frame forming a coupling seam between parallel straight margin sections of said coupled frames, the shape and arrangement of said locking elements being such that locked locking elements of two engaged frames can be disengaged only by movement of said frames in a direction perpendicular to said frame plane while said locking elements of said two engaged frames are non-disengageably interlocked in said frame plane in all directions, several locking elements being arranged in a pattern with uniform pattern spacing n in a row along each frame side, the locking element pattern spacing on aligned sides of coupled frames being continued beyond their coupling seam with the same pattern spacing n or an integral multiple of the spacing n, whereby a further frame may be coupled to the aligned sides of coupled frames in a position overlapping said coupling seam therebetween.

4,532,728

PORTABLE VIEWER FOR PHOTOGRAPHIC SLIDES

Patrick Posso, Lausanne, Switzerland, assignor to Posso S.A., Paris, France

Filed Jan. 31, 1984, Ser. No. 575,653
Claims priority, application France, Feb. 9, 1983, 83 02059
Int. Cl.³ G02B *27/02*
U.S. Cl. 40—367 **4 Claims**



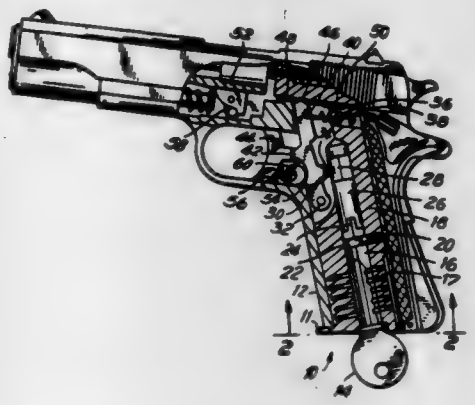
1. A portable viewer for photographic slides comprising a housing, a viewing lens mounted on said housing and defining an optical axis, a receptacle defined in said housing inward of said lens, light means for generating and supplying artificial light comprising a removable unit mounted in said receptacle and aligned with said lens along said optical axis, means for removably receiving and positioning a slide between said lens and said light means for illumination by said light means and viewing through said lens, a light reflecting surface aligned with said viewing lens inward of said light means removable unit, relative to said lens, and inclined at an acute angle to said optical axis, said light means removable unit, when mounted in said receptacle, being interposed between said light reflecting surface and said means for receiving and positioning a slide, and aperture means in said housing aligned with said light reflecting surface and laterally of said optical axis for a selective directing of light from a source remote from said housing to said light reflecting surface for reflection to said lens and along said optical axis upon removal of said light means removable unit, said light means removable unit being laterally slidable into and out of said housing through said aperture means.

4,532,729

FIREARM MAGAZINE LOCK

Francis Von Muller, 153 State St., Brooklyn, N.Y. 11201

Continuation-in-part of Ser. No. 183,426, Sep. 2, 1980, Pat. No. 4,384,420. This application Apr. 11, 1983, Ser. No. 483,782
Int. Cl.³ F41C *27/00, 17/08*
U.S. Cl. 42—1 LP **6 Claims**



1. In a firearm having receiving means for removably receiving a magazine containing cartridges, loading means for loading said cartridges in a firing chamber and trigger means for firing said cartridge, wherein the improvement comprises:

(a) a member adapted for use with said receiving means, and

(b) a means for coacting with said loading means in order to prevent operation of said firearm when said member is in said receiving means,

said means for coacting with said loading means further comprising a means for locking said member into said receiving means in order to prevent removal of said member,

said means for locking further comprising a lock means for preventing operation of said means for locking,

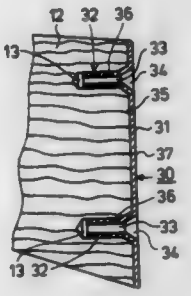
said member including means for coacting with said trigger means in order to further prevent operation of said firearm when said member is in said receiving means.

4,532,730

BUTT PLATE CONSTRUCTION OF A FIREARM AND IN PARTICULAR THAT OF A SHOTGUN

Timo Hyytinen, Jyväskylä , Finland, assignor to Valmet Oy, Finland

Filed Nov. 15, 1983, Ser. No. 552,076
Claims priority, application Finland, Nov. 16, 1982, 823924
Int. Cl.³ F41C *23/00*
U.S. Cl. 42—73 **12 Claims**



1. In a weapon adapted to be fired from the shoulder, such as a shotgun or the like, including a stock having a rearward end face, a butt assembly adapted to be coupled to the end face of the stock, comprising:

a body member mounted on the rearward end face of the weapon stock, said body member incluidng a plate-like portion having a forward face and body member mounting means for mounting said body member on said stock with said forward face of said plate-like portion being in relatively continuous surface engagement with the rearward end face of the stock, said body member mounting

means including substantially tubular mounting studs integral with said plate-like portion and projecting forwardly therefrom, said mounting studs extending into respective first bores formed in the weapon stock which open onto the rearward end face thereof to mount said body member thereon, each tubular mounting stud defining an interior second bore within it; and

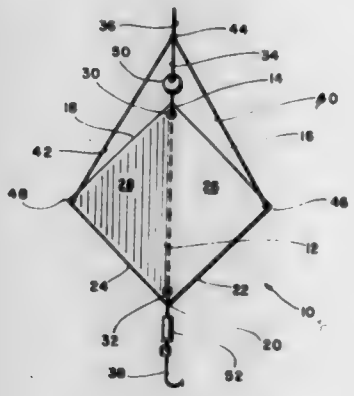
a butt plate mounted on said plate-like portion of said body member by butt plate mounting means, said butt plate mounting means including third bores formed in said butt plate, each third bore of said butt plate mounting means being in aligned relationship with a second bore defined by a respective one of said tubular mounting studs of said body member which extends into a respective one of said first bores formed in the weapon stock, said butt plate mounting means further including threaded fastener members extending through respective aligned third and second bores of said butt plate and mounting studs into respective first bores of the weapon stock.

4,532,731

FISHING LINE HEIGHT ADJUSTER AND FRICTION SLIDER

Robert Wheeler, 823A E. Gulf Blvd., Indian Rocks Beach, Fla. 33535

Filed Mar. 25, 1983, Ser. No. 478,682
Int. Cl.³ A01K *91/04, 93/00*
U.S. Cl. 43—43.13 **14 Claims**



1. A trolling depth adjusting device, comprising:

a vane having a generally square shape which is bent at an upwardly facing oblique angle along a diagonal bend axis between a forwardly directed corner formed by first and second sides of said square and an aftwardly directed corner formed by third and fourth sides of said square, forming a first upwardly facing vane surface bounded by said diagonal bend and said first and third sides and forming a second upwardly facing vane surface bounded by said diagonal bend and said second and fourth sides, said forwardly directed corner having a first hole therethrough and said aftward corner having a second hole therethrough;

a principal line having an upper end connected to a trolling line having a pulling force direction, passing from the upward facing surface of said vane, slideably through said first hole in said forwardly directed corner to the underside of said vane and then passing from said underside, slideably through said second hole in said aftwardly directed corner and terminating in a lower end connected to a fishing hook;

a first and second stabilizing lines fastened to a tie point at said upper end of said principal line, said first stabilizing line being fastened to a third corner of said vane formed by said first and third sides of said square and said second stabilizing line being fastened to a fourth corner of said vane formed by said second and fourth sides of said square;

a weight slideably mounted on said principal line between said tie point and said first hole in said vane;

an adjustable stop mounted on said principal line between said lower end thereof and said second hole in said vane;

said weight forcing said vane to slide downwardly on said principal line toward said stop when the tension between said trolling line and said hook is relatively low, causing said diagonal bend axis of said vane to be disposed at an acute attack angle with respect to said pulling force direction of said trolling line, enabling said first and second upwardly facing vane surfaces to apply a downwardly directed reactive force on said trolling line as said vane is pulled through the water;

said first and second stabilizing lines and said principal line forcing said vane to slide upwardly on said principal line toward said tie point when the tension between said trolling line and said hook is relatively high, causing said diagonal bend axis of said vane to be disposed in an approximately parallel orientation with respect to said pulling force direction of said trolling line, enabling said vane to apply a substantially lower reactive force on said trolling line as said vane is pulled through the water;

whereby a hooked fish can be more easily retrieved.

4,532,732

OXIME DERIVATIVES FOR PROTECTING PLANT CROPS

Henry Szczepanski, Wallbach, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

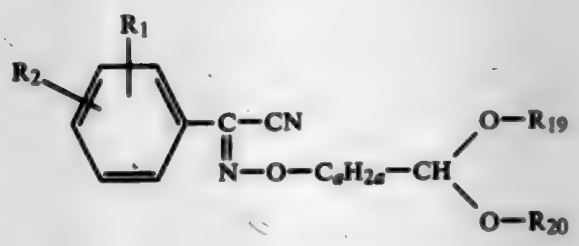
Continuation-in-part of Ser. No. 238,345, Feb. 26, 1981, Pat. No. 4,468,242, which is a division of Ser. No. 69,414, Aug. 24, 1979, Pat. No. 4,269,775. This application Feb. 1, 1982, Ser. No. 344,708

Claims priority, application Switzerland, Sep. 1, 1978, 9252/78

The portion of the term of this patent subsequent to Feb. 5, 2002, has been disclaimed.

Int. Cl.³ A01N *25/32*
U.S. Cl. 47—57.6 **169 Claims**

1. A composition for protecting sorghum, rice and barley crops gainst the action of 1,3,5-triazine, haloacetanilide or phenoxyphenoxypropionate herbicides which comprises (1) a crop protecting effective amount of a compound of the formula



wherein,

R_1 is hydrogen, methyl, methoxy, chlorine, cyano or trifluoromethyl,

R_2 is hydrogen or chlorine, or

R_1 and R_2 taken together is —CH=CH—CH=CH— attached to adjacent carbon atoms in the ring,

a is 1 or 2, and

R_{19} and R_{20} are each methyl, or ethyl

R_{19} and R_{20} taken together is C_2–C_7 alkylene having 2 or 3 carbon atoms in its principal chain and (2) a carrier.

4,532,733

IN VITRO PROPAGATION OF GRAPE

William R. Krul, Narragansett, R.I., assignor to The Board of Governors for Higher Education, State of Rhode Island and Providence Plantations, both of Providence, R.I.

Filed Dec. 3, 1982, Ser. No. 446,442
Int. Cl.³ A01G *1/00*
U.S. Cl. 47—58 **5 Claims**

1. A method for controlling the growth of plant embryos for

either self-replicative or vine development modes, which includes:

(a) initiating somatic embryogenesis by placing somatic embryos in a medium conducive for self-replication of the embryos for a first period of time during which the embryos germinate and are characterized by late torpedo stage embryos prior to root and shoot elongation;



(b) culturing for vine development at least some of the embryos of step (a) in a medium having cytokinin activity for a second period of time at the end of which time the embryos are characterized by green divided cotyledons;

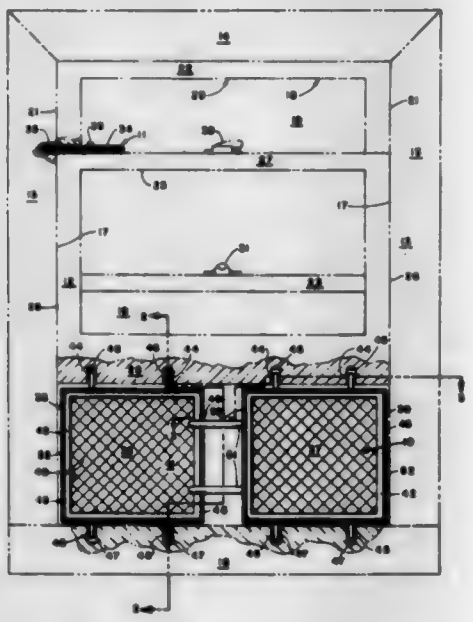
(c) transferring the embryo of step (b) to a medium free of cytokinin activity until such time that they develop sufficiently for transfer to a non-agar growth support medium.

4,532,734

WINDOW INTRUSION BARRIER

Isidore Jokel, 4201 Newport H, Deerfield Beach, Fla. 33441

Filed Jan. 25, 1984, Ser. No. 573,855
Int. Cl.³ E06B *3/68*
U.S. Cl. 49—55 **5 Claims**



1. A safeguard system for a window comprising:

(a) a barrier apparatus of adjustable horizontal length adapted for insertion into a window casement below a framed rectangular window slideably positionable within said casement, said barrier apparatus comprising:

(1) two gridwork panels,

(2) two rigid rectangular frames adapted to border and support said panels, each frame comprising horizontally disposed upper and lower borders, inner and outer vertically oriented side borders, and vertically spaced apertures in at least one inner side border,

(3) vertically oriented seating posts affixed to the upper and lower borders of said frames in substantially coplanar disposition with said frames and directed exteriorly therefrom,

(4) horizontally oriented mating posts affixed to the inner vertically oriented side border of one of said frames and adapted to slideably penetrate the vertically spaced apertures of the inner vertically oriented side border of the other frame, and

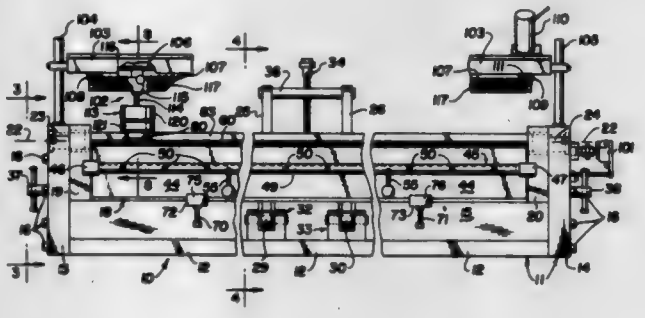
(b) locking means for immobilizing said slideably positionable window with respect to said casement.

4,532,735

VARIABLE ANGLE EXTRUDER BLADE SURFACING MACHINE

Harold P. Dahlgren; James E. Taylor, both of Dallas; Dwight W. Peters, Grapevine, and Donald R. Selby, Duncanville, all of Tex., assignors to Dahlgren Manufacturing Company, Dallas, Tex.

Filed Apr. 26, 1982, Ser. No. 371,521
Int. Cl.³ B24B *9/04*
U.S. Cl. 51—56 R **14 Claims**



1. A blade surfacing machine comprising: a frame; a work table; means movably securing said work table to said frame for rotation about an axis; means to clamp a blade to be surfaced on said work table; a guide plate having a planar guide surface lying in a plane; means securing said guide plate to said frame for transverse movement relative to said axis; means for moving said guide plate relative to a blade on said work table in a direction perpendicular to said axis a honing member having a major portion of a planar honing surface in engagement with said planar guide surface on said guide plate; and means positioning said work table and said guide plate such that a blade clamped to said work table is engaged by the planar surface on the honing member upon movement of the honing member relative to the guide plate.

4,532,736

SHARPENING DEVICE

Harold C. Shinneman, Jr., 890 Fremont La., Lake Havasu City, Ariz. 86403; Edward J. Rebish, 1804 Glenridge Rd., Euclid, Ohio 44117, and Harold C. Shinneman, Sr., 3400 Roadrunner Dr., Lake Havasu City, Ariz. 86403

Filed Oct. 4, 1982, Ser. No. 432,633
Int. Cl.³ B24B *9/04*
U.S. Cl. 51—218 A **11 Claims**

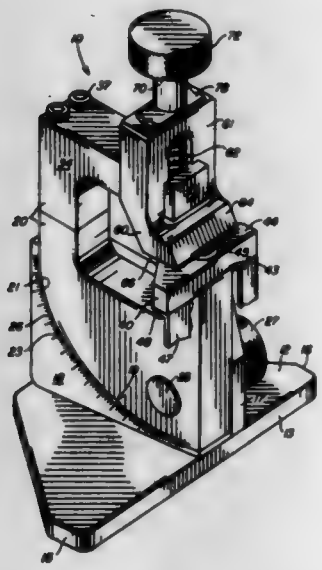
1. A freestanding manually operable clamping device for use in sharpening a workpiece in conjunction with a rotary grinding wheel having a horizontal centerline, said device comprising:

(a) a fixed base member;

(b) a fixture frame having a fixed jaw member and a moveable jaw member oppositely disposed one to the other at a forward location on said frame and each said jaws having a workpiece engaging surface and a front edge which will face the grinding wheel, one of which surfaces being positionable at the approximate horizontal centerline of the grinding wheel, said moveable jaw being adjustable to vary the space between the surfaces of the fixed jaw and the moveable jaw, one of said jaws being pivotal relative to the other jaw to vary the included angle between the

workpiece engaging surfaces, said frame and jaws providing clearance laterally and to a location rearward of said jaws;

(c) said fixture frame and base defining cooperating arcuate surfaces, said arcuate surfaces being defined by a radius of



curvature from a center point located forward the front edge of said jaws along said one of said surfaces whereby the edge to be sharpened will be presented to the wheel at a correct pre-set angle;

(d) locking means for selectively securing said fixture frame in a predetermined fixed position relative to said base.

4,532,737

METHOD FOR LAPPING DIAMOND

Herbert I. Moss, Yardley, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 16, 1982, Ser. No. 450,197

Int. Cl.³ B24B *1/00*; B24D *3/34*

U.S. Cl. 51—283 R 10 Claims

1. In a method for lapping a diamond which comprises coating a lapping disc with an abrasive slurry, positioning the diamond to be lapped in direct contact with the work surface of the lapping disc, and establishing relative motion between the disc and the diamond; the improvement which comprises:

employing a lapping disc whose work surface is fabricated from a ternary alloy comprising from about 2–20% by weight of aluminum, about 2–20% by weight of silicon and the balance iron.

5. A lapping disc for lapping a diamond comprising a disc having a work surface thereon, which work surface is coated with an abrasive slurry, wherein the work surface of the disc comprises a ternary alloy of about 2–20% by weight of aluminum, about 2–20% by weight of silicon and the balance iron.

4,532,738

METHOD OF REMOVING A COATING

David F. Sippel, Cincinnati, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed Dec. 19, 1983, Ser. No. 562,609

Int. Cl.³ B24C *1/00*

U.S. Cl. 51—319 10 Claims

1. A method of removing a selected coating from an article surface having a composition different from the coating, by impacting the coating with abrasive particles and concurrently inspecting the surface to determine that the coating has been removed, the coating being capable of emitting light in an impact intensity range, the steps of:

impacting the coating with abrasive particles in the impact intensity range and concurrently observing the light emitted as a first color;

selecting from the light spectrum a second color which provides a color contrast between the first color of light emitted from the coating and light reflected from the article surface during coating removal in the impact intensity range;

providing a light environment of the selected color;

placing the coated article surface in the light environment; and then,

impacting the coating with the abrasive particles in the impact intensity range to create the color contrast and to remove coating from the article surface, the impacting being conducted until the color contrast disappears.

4,532,739

ROOF RIDGE CAPPING SYSTEM

Christopher A. Cooper, Cranbrook, England, assignor to Marley Tile A.G., Switzerland

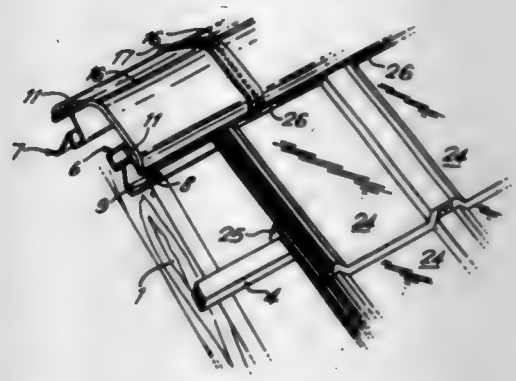
PCT No. PCT/GB80/00204, § 371 Date Mar. 9, 1982, § 102(e) Date Mar. 9, 1982, PCT Pub. No. WO82/00314, PCT Pub. Date Feb. 4, 1982

PCT Filed Nov. 28, 1980, Ser. No. 355,745

Claims priority, application United Kingdom, Jul. 23, 1980, 8024104

Int. Cl.³ E04D *1/30, 3/40*

U.S. Cl. 52—57 7 Claims



1. In a roofing structure, a system for attaching conventional ridge tiles along a ridge of the roofing structure, comprising:

(a) a pair of elongated members, each elongated member having a top flange, secured to the roofing structure adjacent to and on either side of the ridge such rigid conventional ridge tiles may be placed on the elongated members, such that they bear against an upper surface of the top flange and extend over the ridge; and,

(b) locating means extending over a portion of the rigid conventional tile from one elongated member to the other, the locating means comprising a strap element having at each end thereof inwardly curved portions which snap-fit in direct contact together with respective top flanges of the elongated members to retain the conventional tiles in position over the ridge.

4,532,740

ANCHORING TRACK WITH REMOVABLE FILLER BODY

Siegfried Fricker, Wurmberger Str. 30-34, 7135 Wiernsheim, Fed. Rep. of Germany

Filed Apr. 30, 1984, Ser. No. 605,695

Claims priority, application Fed. Rep. of Germany, Apr. 29, 1983, 33156328

Int. Cl.³ E04B *1/41*

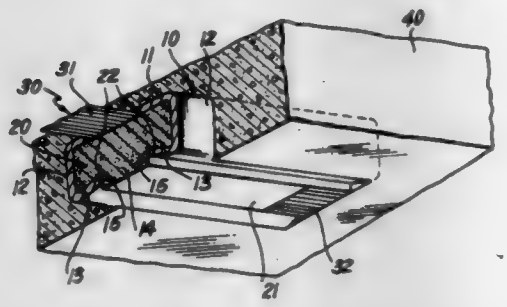
U.S. Cl. 52—98 12 Claims

1. An anchoring track adapted to be embedded in the surface of a structural member of cast concrete or a comparable mortar-cast material for the suspension thereon and/or attachment thereto, in a fixed or longitudinally displaceable relationship, of a object with the aid of at least one anchoring member which is received in the anchoring track behind oppositely facing flange portions of the track profile, the anchoring track comprising in combination:

an anchoring track body in the form of a continuous profile

defining a generally C-shaped cross section, said oppositely facing flange portions flanking a central longitudinal slot facing away from the surrounding surface of the structural member;

a filler body received inside the anchoring track profile, the cross section of the filler body matching the interior cross section of the anchoring track profile, so as to fill out the



latter and to close off both extremities of the anchoring track profile against the penetration of mortar during the embedding operation; and

means for tearing a central profile portion of the filler body out of the anchoring track, through the longitudinal slot of the track profile, so as to permit removal of the remaining profile portions of the filler body from behind the flange portions of the embedded anchoring track.

4,532,741

WINDOW PANE MOUNTING FOR VEHICLES

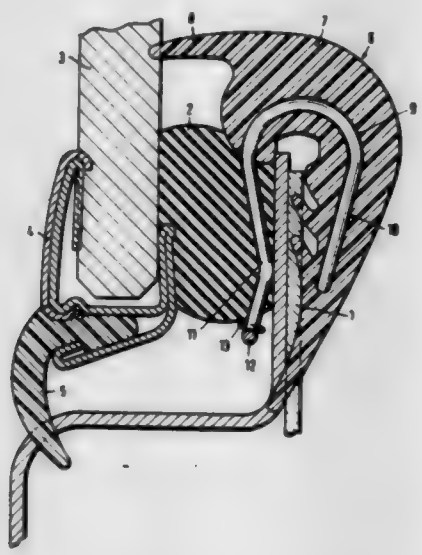
Günter Knüdel, Wolfsburg, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,546

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1983, 3332233

Int. Cl.³ B60J *1/00*

U.S. Cl. 52—99 **1 Claim**



1. A window pane mounting for a vehicle comprising:

a flange extending approximately parallel to the adjacent surface of a window pane and forming a window opening;

a cement bead disposed between the flange and the adjacent surface of the window pane to support the window pane;

a resilient molding mounted on the flange and having support elements projecting through the cement bead to the opposite side thereof; and

a flexible wire joining the portions of the projecting elements on the opposite side of the cement bead.

4,532,742

EXTENDIBLE STRUCTURE

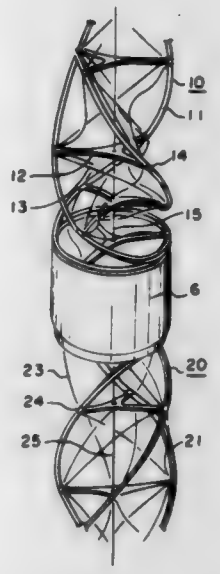
Koryo Miura, 9-7, Tsurukawa 3-chome, Machida-shi, Tokyo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha and Koryo Miura, both of Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 539,949

Claims priority, application Japan, Oct. 9, 1982, 57-178196; Mar. 2, 1983, 58-34168

Int. Cl.³ E04H *12/18*

U.S. Cl. 52—108 **9 Claims**



1. An extendible structure, comprising in combination:

(a) three or more numbers of extendible longerons;

(b) a plurality of joints provided on each of said longerons at predetermined space intervals along them;

(c) a plurality of integrated radial spacers, each having a plurality of legs integrally formed with said spacer and radially extending from the center part thereof, each leg being rotatably connected with said joint provided at differing position on each of said longerons; and

(d) a plurality of bridles for connecting one of said joints with adjacent another joint at a diagonally opposed position,

in the extended condition of said extendible structure, said three or more longerons being deployed in parallel one another with space intervals among them in the lateral direction which intersects with the direction of extension of said longerons, said spacers supporting said longerons with the horizontally spaced interval within a plane substantially perpendicular to the direction of extension of said longerons, and said bridles being extended to impart the tensile force between the joints which are at the diagonally opposed positions, and

in the collapsed condition of said extendible structure, each of said longerons being collapsed in a loop form, and said spacers being laid one upon another inside said loop formed by said longerons.

4,532,743

SLIDING DOOR ASSEMBLY

Alexander Miller; James E. Sweetman, and Douglas J. McDougall, all of 16295 NW. 13 Ave., Miami, Fla. 33169

Filed Jan. 31, 1983, Ser. No. 462,616

Int. Cl.³ E06B *1/04*

U.S. Cl. 52—207 **7 Claims**

1. A sliding door assembly of the type including at least a stationary panel and a movable panel, said door assembly comprising:

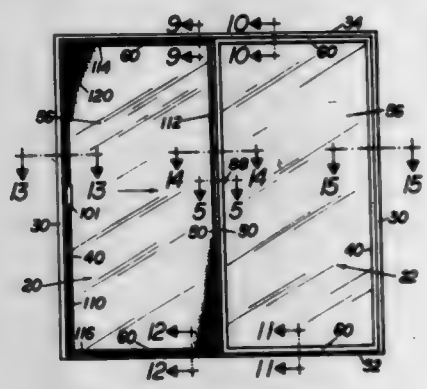
(a) a track assembly extending across a doorway and formed at least in part from extruded material and disposed in supporting relation to said panels,

(b) both said stationary and movable panels comprising an interlocking rail defining a lateral peripheral portion of each panel,

(c) said interlocking rails correspondingly configured and including a mating portion each of which is disposed in substantially mating engagement with one another when said panels are disposed in a closed position along the length of said track assembly,

(d) each mating portion comprising two flange elements spaced outwardly from a remainder of said respective interlocking rail and in offset, non-coplanar, spaced apart relation to one another, said two flange element of each interlocking rail extending outwardly in a common direction,

(e) said flange element of each interlocking rail being reversely oriented and disposed in parallel, substantially overlapping relation to correspondingly disposed flange elements of the other of said interlocking rails when said panels are disposed in said closed position,



(f) a lock assembly mounted on one of said interlocking rails and including a rod element rotatable about its own longitudinal axis and including a distal end portion transversly oriented relative to a length of said rod element and rotatable therewith,

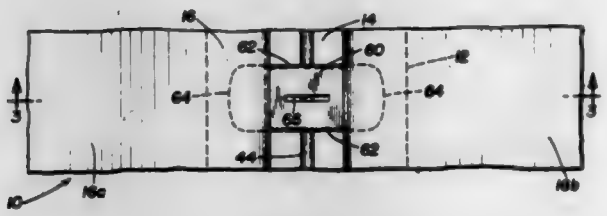
(g) said rod element extending into said one interlocking rail in substantially underlying relation to one flange element thereof, said distal end dimensioned and disposed for selective positioning into and out of blocking engagement with a correspondingly positioned and overlapping flange of the other of said interlocking rails, when said panels are in said closed position, upon rotation of said rod element, and whereby relative movement between said panels out of said closed position is prevented when said distal end is in said blocking position.

4,532,744

LOCKING DEVICE FOR MEMBRANE FASTENER APPARATUS

Heinz W. Beneze, Akron, and Walter Tomaszewski, Canton, both of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Sep. 6, 1983, Ser. No. 529,468
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—222 **12 Claims**



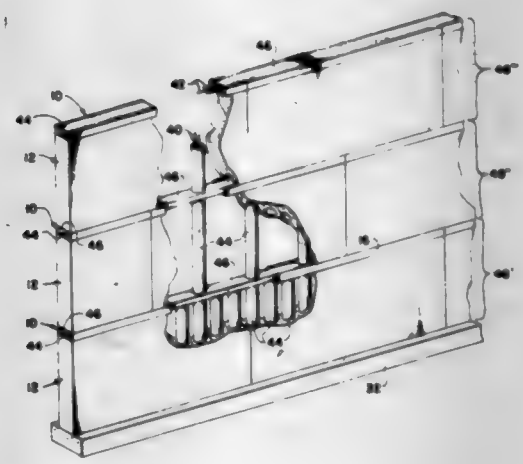
1. In an attachment device in combination with a roof and at least one elastic membrane for mechanically securing said membrane to the upper surface of said roof, said attachment device comprising channel member having a generally rectangular cross-section and a continuous, central longitudinal slot opening into said channel member, a bottom wall, an upper wall, and generally opposed sidewalls, said channel member having a width which is defined by said opposed sidewalls; and an insert member comprising means for maintaining said at least one elastic membrane within said channel member, said insert member having an integral central longitudinal portion and two adjacent wing portions located on opposed edges of said central longitudinal portion, said central longitudinal portion defining said two adjacent wing portions, said insert member being either substantially flat or slightly concave and comprising means for frictionally and non-bindingly maintaining said at least one elastic membrance against one wall of said channel member, thereby permitting lateral and vertical shifting of said insert member and said at least one elastic membrane within said channel member, said insert member having a width which is less than said channel member width; one of said insert and channel members being capable of deformation to permit the insertion of said channel member, the improvement comprising the addition of an independent locking device, into said channel member to prohibit the subsequent removal of said elastic membrane by elastic deformation of one of said channel and insert members.

4,532,745

CHANNEL AND FOAM BLOCK WALL CONSTRUCTION

George P. Kinard, Arvada, Colo., assignor to Core-Form, Broomfield, Colo.

Filed Dec. 14, 1981, Ser. No. 330,174
Int. Cl.³ F04B *2/24*
U.S. Cl. 52—251 **32 Claims**



1. A wall structure, comprising:

a plurality of foam plastic blocks, each block having a length and a height and a width dimension, each block having a top and a bottom surface extending in the longitudinal and width dimensions and separated from one another by the height dimension, each block positioned in said wall structure with its height dimension extending generally vertically and its longitudinal and width dimensions extending generally horizontally, each block having within its interior a plurality of block openings extending between its top and bottom walls, each of the block openings located at predetermined locations in the top surface along the longitudinal dimension of the block;

a channel member abutting the top surface of each block along substantially the full extent of the longitudinal dimension of each block, said channel member comprising a bottom wall and a pair of side walls extending upward from the bottom wall, the channel member thereby defining a U-shaped channel between the side walls and the bottom wall, the bottom wall having a configuration adapted to generally mate with the top wall of each block, said bottom wall having a plurality of channel openings therethrough at predetermined locations which correspond with the predetermined locations of the block openings in the top surface of each block with which the top surface mates, said side walls characterized by the capability to receive and retain fasteners inserted therein from an exterior surface extending in the height and length dimen-

sions of said wall structure, the fasteners adapted for attaching construction elements to said wall structure; and load-bearing concrete substantially occupying the block and channel openings and the U-shaped channel.

4,532,746

CORNER JOINT MEANS FOR USE IN WALL STRUCTURE OF BUILDINGS

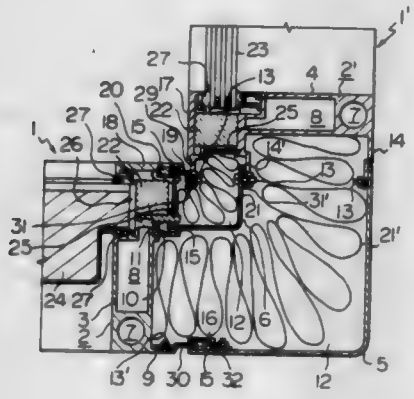
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,197

Claims priority, application Japan, Aug. 10, 1982, 57-121467[U]

Int. Cl.³ E04B *1/00*

U.S. Cl. 52—276 **3 Claims**



1. A corner joint means for connecting two wall members disposed ad cent to one another at a corner portion of a curtain wall construction of a building comprising a pair of foundation assemblies each having one end thereof fixedly connected to the associated wall member, and a plurality of separate plate-like attachment members spaced apart from each other in the depth direction of said corner portion and extending between said foundation assemblies so as to define therebetween a corner space enclosed between said two wall members, wherein one end of each attachment member is fixedly connected to one of said foundation assemblies while the other end of each attachment member is slideably connected to the other of said foundation assemblies.

4,532,747

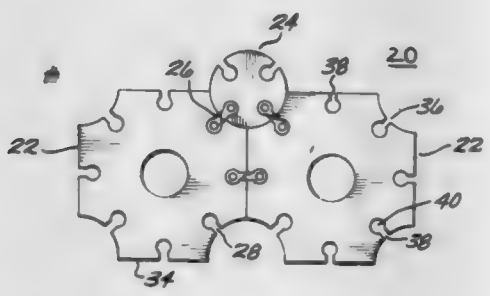
EXPANDABLE CONNECTOR AND METHOD OF USING SAME TO FORM CURVED STRUCTURAL FRAMEWORK

John R. Koetje, 1314 McLean Rd., Mount Vernon, Wash. 98273

Filed Jan. 20, 1983, Ser. No. 459,326

Int. Cl.³ E04C *1/10*

U.S. Cl. 52—586 **6 Claims**



1. A structural framework, comprising:

a plurality of elongate structural member means secured together in side-by-side relationship, each of said structural member means including a plurality of slots extending along the length of said structural member means with at least one of said slots in opposed alignment with a slot of an adjacent structural member means, each of said slots having a mouth portion intersecting an adjacent outer surface of said structural member means and a generally circular base portion intersecting the side of said slot mouth portion opposite said structural member means outer surface, said slot base portion in cross section being of a diameter larger than the width of said slot mouth portion; and

a unitary fastener member disposed within and extending between said aligned slots, said fastener member having a central portion of a width closely corresponding to the width of the mouth portions of the pair of aligned slots and generally circular end portions at each end of the central portion, each of said end portions being:

nominally, substantially smaller in diameter than the corresponding base portions of said structural member means slots; and,

defined by a generally circular, circumferentially continuous bore extending through each end portion and along the length of said fastener member, said bores being enlarged after insertion of said fastener member within said aligned slots thereby to expand said circular end portions to snugly occupy substantially the entire diameters of said base portions of said structural member means slots.

4,532,748

BUILDING BLOCK

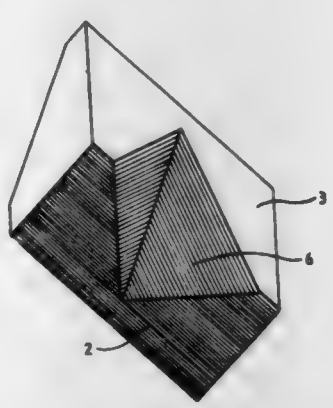
William D. B. Rotherham, 18 Hamilton House, 81 Southhampton Row, London, WCIB 4HA, England

Filed Jan. 3, 1983, Ser. No. 455,287

Claims priority, application United Kingdom, Jan. 6, 1982, 8200228

Int. Cl.³ E04B *5/04*

U.S. Cl. 52—605 **16 Claims**



1. A building block having a shape derived from that of a cuboid and having top, bottom, front and rear faces and upper and lower corners, wherein the upper corners of the front face of the cuboid are cut away, part of the top face being left intact, and wherein a recess communicates between the bottom face and the rear face only, part of the bottom face and the lower corners of the rear face being left intact, the sum of the depth to which said upper corners are cut as measured from said front face and the depth to which the recess extends forwardly as measured from the rear face being greater than the depth of the cuboid.

4,532,749

LOUVERED CEILING

William E. Perk, 3419 E. 65th St., Cleveland, Ohio 44127

Filed Feb. 17, 1983, Ser. No. 467,446

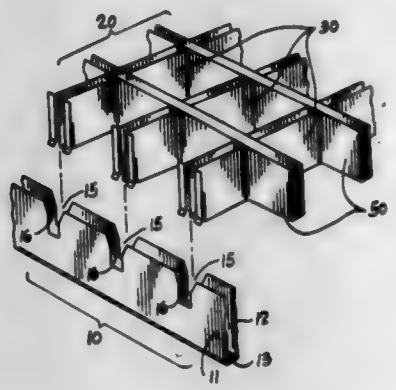
Int. Cl.³ E04C *2/42*

U.S. Cl. 52—668 **9 Claims**

1. In a louvered ceiling having at least one runner of upwardly open first channel section, comprising a first sidewall, a second sidewall and a first base wall joining said sidewalls, and having a louver adapted to be supported on said runner and comprising at least one upwardly open channel member having a third sidewall, a fourth sidewall and a second base wall joining said sidewalls, the improved assembly comprising

a substantially planar tab or tabs joined to the end of at least one of said sidewalls of said channel member along an upper length thereof, said length extending downwardly from the top of said end to a point above the bottom of said end; each of said tab or tabs extending from said end of said sidewall in a direction perpendicular to that sidewall and away from the other sidewall;

each of said tab or tabs defining one edge of a first slot between said end of said sidewall and said tab, said first slot extending upwardly from the lowermost portion of said tab to said point along said upper length along which said tab is joined to said end;



a downwardly extending second slot disposed in said first sidewall of said runner, said second slot having an outwardly widened upper portion and having a narrowed portion, said narrowed portion being of such width as to firmly but slidingly accommodate said sidewall or sidewalls of said second channel member which are provided with said tab or tabs;

said second slot being sufficiently narrow at all points so that when said sidewall or sidewalls of said second channel member which are provided with said tab or tabs are inserted into said second slot, the open area defined by said second slot is entirely overlapped by the combined areas of said tab or tabs and the space between said third and fourth sidewalls.

4,532,750

WINDING BODY FOR WINDING-UP CONTINUOUSLY ARRIVING FLAT STRUCTURES, ESPECIALLY PRINTED PRODUCTS IN AN IMBRICATED PRODUCT FORMATION

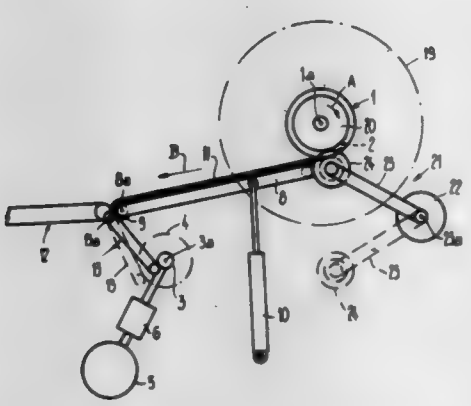
Jacques Meier, Bäretswil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Aug. 30, 1982, Ser. No. 412,843

Claims priority, application Switzerland, Sep. 18, 1981, 6047/81

Int. Cl.³ B65B *63/04*

U.S. Cl. 53—118 18 Claims



1. A winding body arrangement for winding-up continuously arriving substantially flat structures, particularly printed products, especially arriving in an imbricated product stream, comprising:

a winding body having a substantially cylindrical jacket;

at least one winding band interposed at the wound-up imbricated product stream;

storage means for the winding band arranged internally of said jacket of said winding body;

said jacket having an opening for the infeed and outfeed of said winding band;

drive means for outfeeding and again infeeding for storage at said storage means the winding band through said opening of said jacket of said winding body;

said storage means comprises a rotatably mounted and arrestable band spool which can be operatively coupled with said drive means;

a rotatable drive element with which there is rigidly connected for rotation said band spool; and

a drive member for driving said drive element.

4,532,751

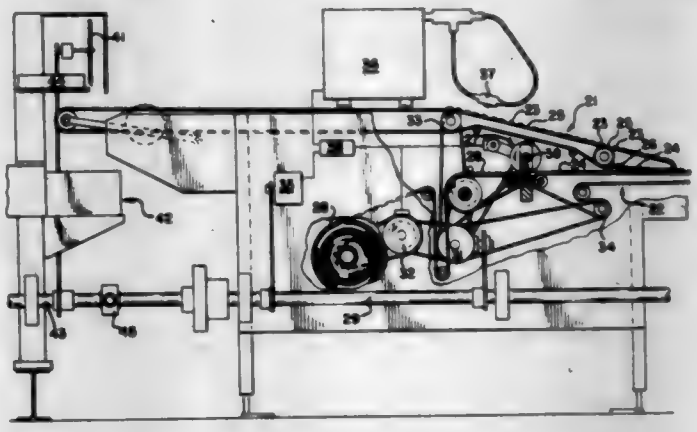
AUTOMATIC SHEET PRODUCT LINE

Timothy G. Mally, Oregon; James A. Rattmann, Sun Prairie, and Alvin Borsuk, Madison, all of Wis., assignors to Oscar Mayer Foods Corp., Madison, Wis.

Filed Apr. 16, 1984, Ser. No. 600,702

Int. Cl.³ B26D *5/00, 7/28*

U.S. Cl. 53—396 28 Claims



17. A method for automatically forming and stacking sheet products, comprising:

feeding a substrate web to a web cutting location;

providing a conveyed flow of products having a preselected spacing pattern including a gap between a grouping of said products;

monitoring said conveyed flow of products and signaling severance of the substrate web to a pre-cut substrate length defined by severance gaps;

providing the pre-cut substrate length to a substrate supply assembly in timed sequence with the conveyed flow of products;

operatively intersecting the pre-cut substrate with the conveyed flow of products, said timed sequence being such that said grouping of products is deposited onto the pre-cut substrate length and such that the gap between the grouping of products generally coincides with one of the severance gaps, thereby forming a sheet product;

conveying a flow of said sheet products for reducing the rate of flow thereof; and

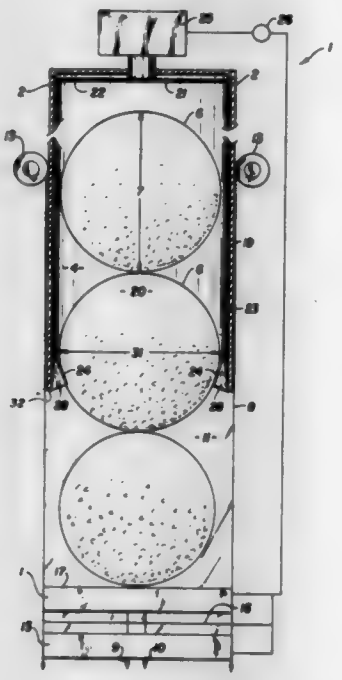
stacking the reduced rate flow of sheet products into a stack of a plurality of sheet products.

4,532,752

PRODUCT INDEXING DEVICE

Monroe F. Taylor, Greenville, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Sep. 27, 1983, Ser. No. 536,412
Int. Cl.[3] B65B *9/10, 35/12*
U.S. Cl. 53—451 11 Claims



1. In a vertical form, fill, and seal machine for individually packaging relatively heavy articles such as grapefruit and the like, the improvement comprising:

a substantially vertical mandrel means having an upper entrance orifice, an interior, and a lower orifice;

article indexing means comprising an inverted U-shaped flexible strip having a cross connecting portion and two leg portions with each of said leg portions having lower article retaining and engaging portions; and

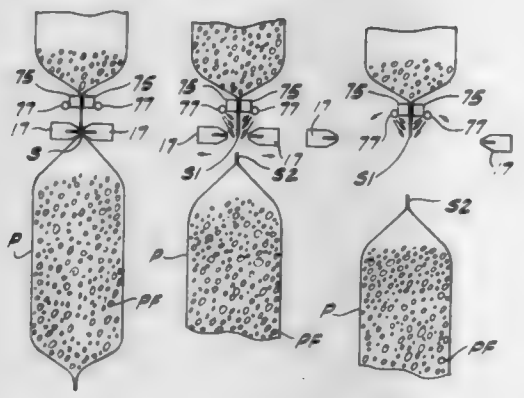
upper transverse heat sealing means having a top surface located a distance below a discharge orifice of said mandrel wherein said distance is less than twice an average vertical thickness of one of said articles.

4,532,753

METHOD OF AND APPARATUS FOR FORMING, FILLING AND SEALING PACKAGES

Lloyd Kovacs, Sheboygan, Wis., assignor to Hayssen Manufacturing Company, Sheboygan, Wis.

Filed Feb. 18, 1983, Ser. No. 467,595
Int. Cl.[3] B65B *9/06*
U.S. Cl. 53—451 10 Claims



1. The method of forming, filling, and sealing packages comprising:

forming flexible packaging material into tubing, the tubing extending downwardly;

feeding the tubing downwardly and heat sealing it to form transverse seals spaced at package length intervals, the seals being formed by a pair of sealing members movable relative to one another between a fully open position and a closed position in sealing engagement with the tubing; and

delivering a quantity of the product with which the packages are to be filled into the tubing to provide a fill for each package;

wherein the improvement comprises:

pinching the tubing closed above the sealing members after the tubing has been fed downwardly each package length interval and following the completion of the delivery of the fill for the next package to be formed, thereby to keep product for the next fill from dropping down in the tubing onto the next seal;

closing the sealing members to form the next seal;

opening the sealing members to their fully open position;

maintaining the pinch as the sealing members open generally until they reach their fully open position;

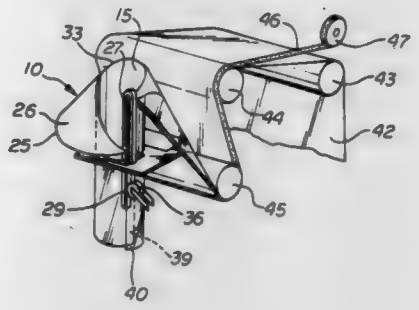
and, while so maintaining the pinch to keep product from dropping down onto the next seal as the sealing members open generally until they reach their fully open position, blowing air on the seal to cool it starting with the initial opening movement of the sealing members and continuing generally until they reach their fully open position.

4,532,754

TUBE FORMER APPARATUS

Ronald A. Hokanson, Pasadena, Tex., assignor to Formers of Houston, Inc., Pasadena, Tex.

Filed Apr. 20, 1983, Ser. No. 486,942
Int. Cl.[3] B65B *9/00, 61/18*
U.S. Cl. 53—451 13 Claims



6. A packaging apparatus including a winged tube former for forming strip tube stock into a tube on being drawn thereover, and laterally extending, spaced heat seal bars and a cutter positioned therebetween, positioned beyond said tube former, operable to produce lateral end seals converting the tube into bags, forming a top seal on one bag and a bottom seal on another bag and cutting between the seals to sever one bag from the other, in which

said former includes a former tube having a curved upper edge tapering from an apex downwardly on opposite sides thereof,

said former tube being of sheet metal and separated at one side along a longitudinally extending line with the lowermost edge portion extending behind the uppermost edge portion,

a winged guide sheet, of sheet metal, secured around said tube to said curved upper edge thereof to define a crown extending outwardly therefrom at an acute angle from the side of said tube and having longer and shorter side wing portions extending around said tube and overlapping in spaced relation substantially to the side thereof with said longer wing portion extending to said tube lowermost edge portion and curved inside said shorter wing portion,

said former tube including a supporting base on which said former tube and winged guide sheet are secured and being supported in said apparatus with said overlapping wing portions being at the side of said former tube and to the

side of the tube stock strip being formed into a tube so that a strip of thin tube stock drawn over said winged guide sheet and through said former tube will be formed into an elongated tube with overlapping edges at the side of the tube and on seaming and flattening in a direction from front and back relative to said former tube will have the longitudinal seam at the side of the flattened tube with the shorter portion of the tube wall overlying the longer portion of the tube wall, and said apparatus including

means for applying a narrow double sided adhesive strip to one edge of the strip tube stock forming said overlapping tube portion,

a backing member positioned beyond said former tube in the path of movement of said overlapping tube portion, a pressure member cooperable with said backing member positioned to press said overlapping tube portion and adhesive strip to form a releasable side seam, and

said heat seal bars being positioned to flatten said tube to form said lateral seals with said longitudinal seam positioned substantially at the side and the shorter edge of said tube outside the longer edge of said tube.

8. A method of producing packages from thin tube stock which comprises

passing a strip of thin tube stock over a winged tube former which comprises

a former tube having a curved upper edge tapering from an apex downwardly on opposite sides thereof,

said former tube being of sheet metal and separated at one side along a longitudinally extending line with the lowermost edge portion extending behind the uppermost edge portion,

a winged guide sheet, of sheet metal secured around said former tube along said curved upper edge and extending outwardly therefrom at an acute angle from the side of said tube,

said winged guide sheet having longer and shorter end portions in spaced overlapping relation at one side of said tube and spaced apart with said longer end portion extending to said tube lowermost edge portion and curved inside said shorter end portion,

said former tube including a supporting base on which said former tube and winged guide sheet are secured and being adapted to be supported in a tube forming apparatus with said overlapping wing portions being at the side of said former tube and to the side of the tube stock strip being formed into a tube so that a strip of tube stock drawn over said winged guide sheet and through said former tube will be formed into an elongated tube with overlapping edges at the side of the tube and on seaming and flattening in a direction from front and back relative to said former tube will have the longitudinal seam at the side of the flattened tube with the shorter portion of the tube wall overlying the longer portion of the tube wall,

and through said former tube so that said thin tube stock forms a tube with an overlapping portion substantially to the side thereof with the shorter portion of the tube wall overlying the longer portion of the tube wall,

applying a narrow double sided adhesive strip to one edge of said strip before passing over said former whereby said overlapping portion has said adhesive strip positioned therebetween,

moving said overlapping tube portion between a backing member positioned beyond said former tube and a pressure member positioned to press said overlapping tube portion and adhesive strip thereagainst to form a releasable side seam,

flattening said tube with said seam at the side and passing the flattened tube between laterally extending, spaced heat seal bars with a cutter positioned therebetween in a direction from front and back relative to said former tube,

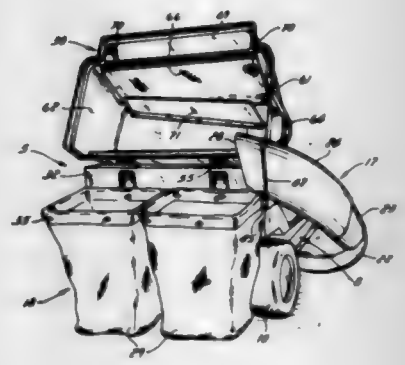
operating said heat seal bars and cutter to produce lateral end seals converting the tube into bags, forming a top seal on one bag and a bottom seal on another bag and cutting between the seals to sever one bag from the other.

4,532,755

CLIPPING COLLECTOR FOR RIDING MOWER

Michael P. Schemelin, West Bend; Tony L. Kaminski, and Paul T. Shupert, both of Milwaukee, all of Wis., assignors to Simplicity Manufacturing, Inc., Port Washington, Wis.

Filed Jul. 16, 1984, Ser. No. 630,985
Int. Cl.³ A01D 35/22
U.S. Cl. 56—16.6 **14 Claims**



1. Grass catcher means for collecting clippings from a rotary mower that is mounted beneath a riding vehicle and has a clipping outlet opening to one side of the vehicle, comprising upwardly opening clipping receptacle means on the rear of the vehicle, extending across substantially the full width of the vehicle, and a duct communicated with said clipping outlet, said duct extending rearward and upward from said clipping outlet along said side of the vehicle and having a rearmost portion that comprises an elbow which defines a duct outlet, said grass catcher means being characterized by:

A. substantially rigid suporting structure on the vehicle for supporting said clipping receptacle means;

B. the duct outlet defined by said elbow being supported by said supporting structure at said one side of the vehicle, above the receptacle means, and opening substantially towards the other side of the vehicle; and

C. a cover hingedly connected with said supporting structure to swing between an operative position overlying said receptacle means and said elbow and and inoperative position clear of the receptacle means, said cover having deflection means thereon for controlling the trajectory of clippings issuing from said duct outlet to constrain them to move downward into the receptacle means, said deflection means comprising

(1) a top wall on the cover at a level above said duct outlet;

(2) a side wall at each side of the vehicle projecting down from said top wall to substantially the level of the top of the receptacle means;

(3) a front wall extending between said side walls, said front wall projecting down from said top wall to near the front upper edge of the receptacle means and being forwardly adjacent to said duct outlet, and

(4) an elongated baffle projecting edgewise downward from said top wall a distance to have a bottom edge spaced above the top of the receptacle means but below the top of said duct outlet, said baffle having opposite ends inwardly adjacent to said side walls,

(a) its end at said one side of the vehicle being rearwardly adjacent to said duct outlet, and

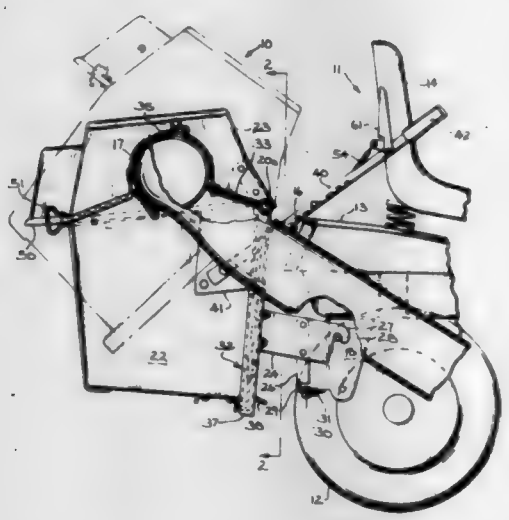
(b) its end at said other side of the vehicle being in rearwardly offset relation to its first mentioned end,

so that said baffle cooperates with the top and front walls to define a diverging channel that extends from the duct outlet towards said opposite side of the vehicle.

4,532,756
GRASS CATCHING RECEPTACLE FOR BOTH DUMPING AND BAGGING

Eugene C. Merkel, South Milwaukee, Wis., assignor to Bolens Corporation, Port Washington, Wis.

Filed Jul. 31, 1984, Ser. No. 636,339
Int. Cl.[3] A01D *35/22*
U.S. Cl. 56—202 4 Claims



1. A grass catching receptacle for mounting to a rear end of a ridable machine, the receptacle comprising:

a first hopper clamshell portion fixed across the rear end of the riding mower;

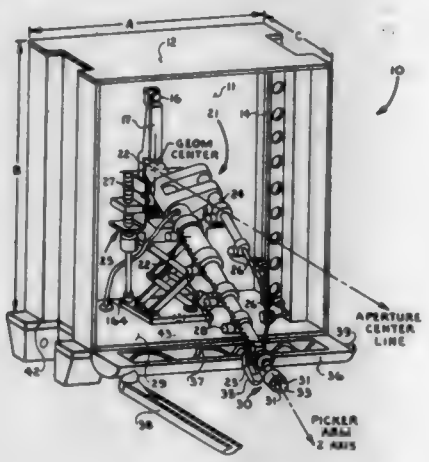
a second hopper clamshell portion with a top opening, with a front opening, and with an upper forward portion pivotally coupled at respective locations along an upper portion of the first hopper clamshell portion to overbalance the second hopper clamshell portion to close against the first hopper clamshell portion, the second hopper clamshell portion being pivotable away from the first hopper clamshell portion to dump material out of the front opening; and

a flip-up lid disposed to cover the top opening, the lid being mounted along one of its edge portions to pivot with the pivoting of the second hopper clamshell portion, and to pivot independently of the second hopper clamshell portion when lifted for access through the top opening.

4,532,757
ROBOTIC FRUIT HARVESTER

Edward G. Tutle, Orlando, Fla., assignor to Martin Marietta Corporation, Orlando, Fla.

Filed Sep. 30, 1983, Ser. No. 537,833
Int. Cl.[3] A01D *45/00, 69/00*
U.S. Cl. 56—328 R 39 Claims



1. A system for harvesting fruits from a tree comprising:

(a) mapping means having an aperture with positions of fruits on the tree relative to said aperture defined by horizontal and vertical coordinates thereof, said mapping means for electronically mapping said coordinates of fruits on the tree within said aperture;

(b) storage means for storing electrical signals representative of each of such mapped horizontal and vertical coordinates;

(c) extensible arm means adapted to be extended through said aperture at each of said horizontal and vertical coordinates;

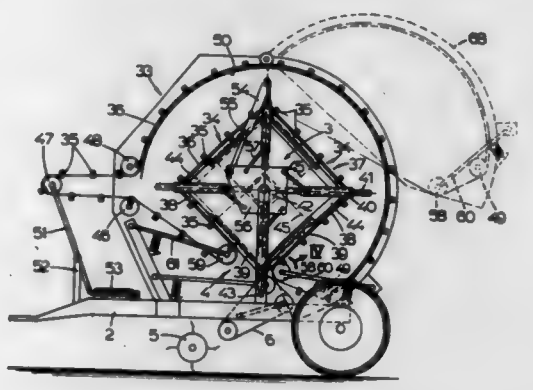
(d) fruit seeking means disposed at a distal end of said extensible arm means for optically locating a fruit and for controlling the extension and position of said arm means to contact the located fruit; and

(e) fruit severence means collocated with said fruit seeking means including fruit contact sensing means, said severence means controlled by said fruit contact sensing means to grasp a sensed fruit upon contact therewith and to sever the grasped fruit from its stem.

4,532,758
DEVICE FOR FORMING A COMPRESSED PRODUCE BALE

Cornelis H. Liet, Losser, Netherlands, assignor to Multinorm B.V., Netherlands

Filed Feb. 29, 1984, Ser. No. 584,803
Claims priority, application European Pat. Off., Mar. 1, 1983, 83.810086.5
Int. Cl.[3] B30B *15/32;* A01F *15/00*
U.S. Cl. 56—341 18 Claims



1. Device for forming a compressed produce bale, provided with a compacting cage supported on an undercarriage and having an inlet for the produce and a pick-up for picking up the produce, wherein the compacting cage has a polygonal cross section and is bounded by at least approximately planar, stiff side walls, the inlet and the compacting cage being mutually adjustable in such a manner that a uniform filling of the whole cross section of the compacting cage is achieved; the compacting cage being rotatable about its central longitudinal axis and can be driven in such a manner, that more produce is supplied per unit time to the corners of the compacting cage than to the middle section of the side walls.

4,532,759
METHOD AND APPARATUS FOR TIME-OPTIMIZING OCCURRENCE OF WORK AT INDIVIDUAL OPERATING POSITIONS OF TEXTILE MACHINES

Jürg Bischofberger, Elsau, Switzerland, assignor to Rieter Machine Works Ltd., Winterthur, Switzerland

Filed Mar. 28, 1983, Ser. No. 479,655
Claims priority, application Switzerland, Apr. 5, 1982, 2071/82
Int. Cl.[3] D01H *9/10, 9/14, 13/24, 13/32*
U.S. Cl. 57—264 19 Claims

1. A method of time optimization in the operation of a textile machine comprising a predetermined number of working positions at each one of which a yarn is wound up in a winding operation in order to produce an associated yarn package of a

predetermined set yarn length, and a working device traveling between the working positions for carrying out predetermined working operations at individual ones of said working positions, said method comprising the steps of:

determining and registering the instantaneous yarn length wound up at each yarn package while winding up thereon said yarn;

detecting at each one of said yarn packages a predetermined remainder yarn length which completes the predetermined set yarn length and said associated yarn package;

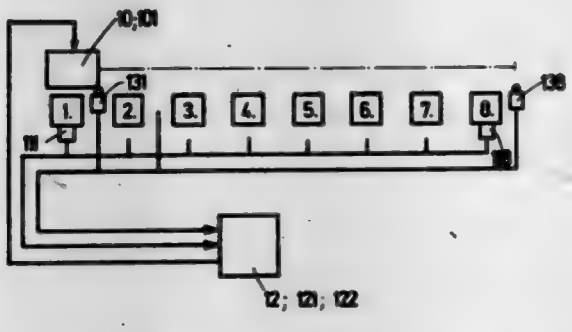
selecting a number of yarn packages at which said predetermined remainder yarn length has been detected and, while continuing the winding operation at said selected number of yarn packages, determining for each one of said selected number of yarn packages a remaining wind-up time required for winding up the remaining yarn length of the related predetermined set yarn length at the associated yarn package;

determining a momentary position of said working device, and further ascertaining:

(i) a working time required for said working device to perform said working operation at each said working positions at which an associated yarn package is produced, and

(ii) the traveling time of said working device from said momentary position thereof to each one of a selected number of working positions with each one of which a related one of said selected number of yarn packages is associated; and

comparing said traveling times plus said working times



required by said working device for performing said working operations at said selected number of working positions with said remaining wind-up times determined for each one of said selected number of associated yarn packages and, as a result of such comparison, controllably guiding said working device from said momentary position thereof to said selected number of working positions in a working sequence which results in a minimum total loss of yarn length or yarn quality, while said working operations are carried out at all of the selected number of working positions.

16. An apparatus for time-optimization in the operation of a textile machine comprising:

a predetermined number of yarn packages arranged at a predetermined number of working positions at each one of which a yarn is wound-up in a winding operation in order to produce an associated yarn package of a predetermined set yarn length;

a working device travelling between said predetermined number of working positions for carrying out predetermined working operations at individual ones of said predetermined number of working positions;

length measuring means determining the instantaneous length of the already wound-up yarn on each one of said predetermined number of yarn packages;

a computer operatively associated with said length measuring means;

said length measuring means generating signals corresponding to said instantaneous length of the already wound-up yarn on each one of said predetermined number of yarn packages and delivering said signals to said computer;

indicating means emitting a signal indicating the momentary position of said working device and operatively associated with said computer;

said computer registering the signals indicating said instantaneous yarn length and determining, at each one of said predetermined number of yarn packages, a predetermined remainder yarn length which completes the predetermined set yarn length;

said computer determining, for a pre-selected number of said predetermined number of yarn packages at which said predetermined remainder yarn length has been determined and on the basis of said momentary position of said working device indicated by said signal emitted by said indicating means,

(i) a working time required for said working device to perform said predetermined working operation at each one of said pre-selected number of yarn packages,

(ii) a travelling time of said working device from said momentary position thereof to each one of a pre-selected number of working positions which correspond to the working positions of said pre-selected number of yarn packages,

(iii) a remaining wind-up time required for winding-up the remaining yarn length of the predetermined set yarn length at each one of said pre-selected number of yarn packages; and

said computer containing comparison means comparing said travelling times plus said working times of said working device at said pre-selected number of working positions, with said remaining wind-up times at each one of said pre-selected number of yarn packages and, as a result of such comparison, controllably guiding said working device from said momentary position thereof to said pre-selected number of working positions in a working sequence which results in a minimum total loss of yarn length or yarn quality, while said working operations are carried out at all of the pre-selected number of yarn packages.

4,532,760

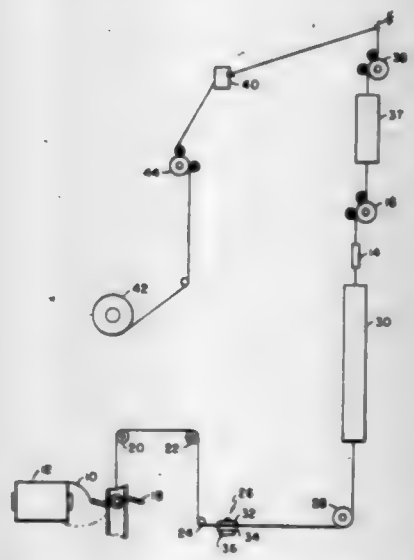
D. C. YARN TENSION CONTROL

Harold L. Johnson, Pauline, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Feb. 21, 1984, Ser. No. 582,044

Int. Cl.[3] D02G *3/34;* D01H *13/10;* B65H *59/22*

U.S. Cl. 57—283 6 Claims



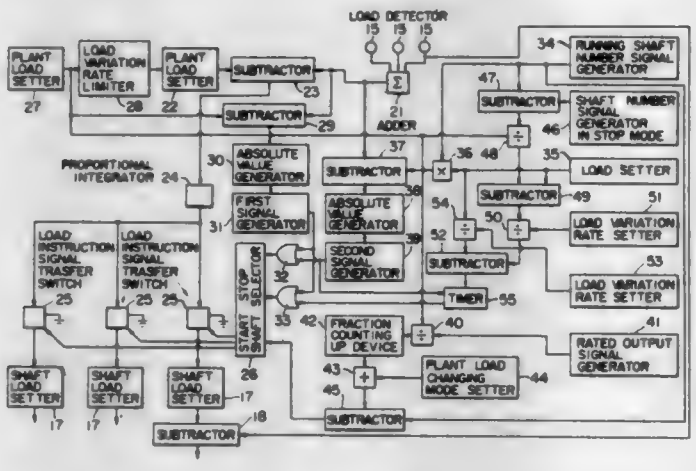
1. Apparatus to produce a yarn having areas of differential bulk throughout its length comprising: a texturing device, supply means supplying continuous filament, synthetic yarn to said texturing device, a heater means located between said texturing device and said supply means to heat the yarn passing to said texturing device, means taking up yarn from said texturing device and a disc tension device mounted between said

supply means and said heater means to vary the supply of yarn to said heater means, said disc tension including an electromagnet, a post member operably associated with said electromagnet, a first metallic disc member mounted on said post, a second metallic disc member mounted on said post adjacent said first disc member, means supplying direct current voltage to said electromagnet, said means to supply direct current voltage including a first means to randomly and intermittently increase the direct current voltage to said electromagnet and a second means to drive the increased direct current voltage to substantially zero to cause said first and said second disc members to move suddenly relative to one another.

4,532,761
LOAD CONTROL SYSTEM AND METHOD OF COMBINED CYCLE TURBINE PLANTS

Hiroshi Takaoka, Urayasu; Toshiki Furukawa, and Hiroshi Fukuda, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaka, Japan

Filed Sep. 9, 1983, Ser. No. 530,785
Claims priority, application Japan, Sep. 10, 1982, 57-157594
Int. Cl.³ F02C 6/02, 6/18
U.S. Cl. 60—39.13 6 Claims



1. A load control system of a combined cycle turbine plant including a plurality of single shaft type combined cycle systems, said load control system comprising:

a plant load setter for producing an output setting a desired plant load;

a load detector for indicating actual plant output;

a first signal generator for comparing said desired plant load set to said actual plant output and generating an output signal when a difference between said desired plant load set and said actual plant output becomes less than a predetermined value;

a shaft value means for producing an output indicating a set value of load of at least one shaft whose load variation rate changes;

a shaft running number indicator for providing an output indicating a number of running shafts;

a multiplier for producing an output indicative of a product of said shaft value means output and said shaft running number indicator output;

a subtractor for producing an output indicating a difference between said multiplier means output and said load detector output;

a second signal generator producing an output signal when said output of said subtractor means becomes less than a predetermined value;

means for calculating a number of shafts to be stopped in accordance with a decrease in the load set;

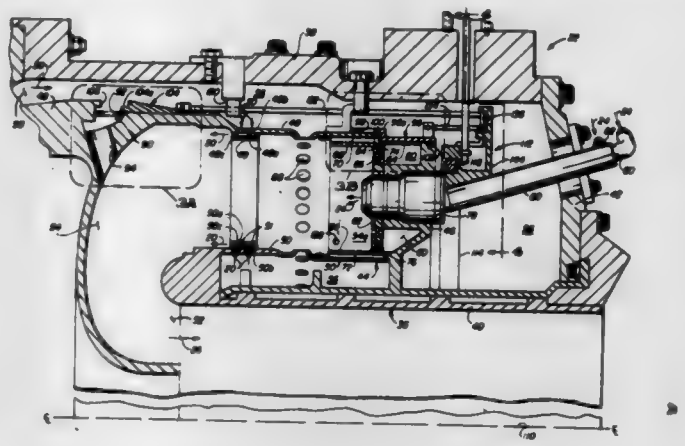
means for detecting an interval in which shafts which continue running are to be maintained at a predetermined load; and

shaft control means responsive to said first signal generator or said second signal generator and said calculating means for increasing or decreasing the number of running shafts to make the number of stopped shafts equal to that determined by said calculating means, said shaft control means including means for increasing the loads of the shafts which continue running in accordance with either one of a signal generated by said first signal generator or a signal generated by said running interval detecting means.

4,532,762
GAS TURBINE ENGINE VARIABLE GEOMETRY COMBUSTOR APPARATUS

Hukam C. Mongia; Edwin B. Coleman, both of Tempe, and Thomas W. Bruce, Pheonix, all of Ariz., assignors to The Garrett Corporation, Phoenix, Ariz.

Filed Jul. 22, 1982, Ser. No. 400,580
Int. Cl.³ F02C 7/00
U.S. Cl. 60—39.23 14 Claims



1. Variable geometry combustor apparatus comprising:

(a) a housing;

(b) a combustion liner at least partially enveloped by said housing and defining therewith a plenum in said housing for receiving pressurized air from a source thereof, said liner having:

(1) an upstream end wall positioned within said housing plenum,

(2) an interior wall positioned downstream from said end wall,

(3) a sidewall portion extending downstream from said end wall within said housing, said sidewall portion defining with said interior wall and said end wall an inlet plenum within said liner, and further defining a combustion flow passage extending downstream from said interior wall,

(4) inlet opening means for admitting pressurized air from said housing plenum into said liner plenum,

(5) swirler means for flowing pressurized air entering said liner plenum into said combustion flow passage in a swirling flow pattern,

(6) cooling passage means, communicating with said liner plenum and extending within said flow passage along a dome portion thereof positioned at the upstream end of said flow passage, for flowing pressurized air from said liner plenum along said sidewall portion to cool the same, and

(7) primary air inlet opening means, positioned downstream from said dome portion, for flowing pressurized air from said housing plenum into said combustion flow passage;

(c) nozzle means for injecting fuel into said dome portion for mixture and combustion with air entering said flow passage; and

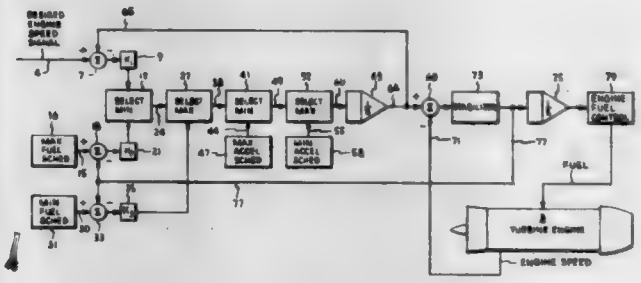
(d) means for selectively varying air inflow through said liner plenum inlet opening means to thereby simultaneously regulate air flow through said swirler means and said cooling passage means.

4,532,763

ISOCHRONOUS GAS TURBINE SPEED CONTROL

Alan D. Pisano, Chelsea, Mass., assignor to General Electric Company, Cincinnati, Ohio

Filed Jan. 28, 1983, Ser. No. 461,774
Int. Cl.[3] F02C 9/28
U.S. Cl. 60—39.281 3 Claims



1. Apparatus for controlling a fuel delivery signal in a gas turbine engine, comprising:

(a) means for receiving an input signal indicative of a desired rate of fuel delivery to the engine;

(b) fuel delivery rate bounding means for bounding the influence of the input signal between limits indicative of maximal and minimal fuel delivery rates;

(c) acceleration bounding means for bounding the influence of the input signal between limits indicative of maximal and minimal engine accelerations;

(d) first integration means for integrating the signal as bounded in (b) and (c) to produce a preliminary output signal;

(e) feedback means for modifying the input signal in accordance with the preliminary output signal;

(f) means for modifying the preliminary output signal in accordance with the rotational speed of a predetermined component of the engine;

(g) second integration means for integrating a signal derived from the preliminary output signal and for producing a signal for controlling fuel delivery; and

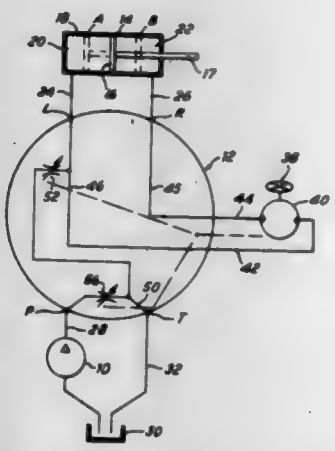
(h) means for modifying the limits imposed by the fuel rate bounding means of (b) as a function of a signal derived from the preliminary output signal, wherein the limits are modified as a function of the first time deriative of fuel flow by virtue of the second integration means.

4,532,764

REACTION TYPE HYDRAULIC STEERING CONTROL UNIT

Poul H. H. Pedersen, Nordborg, Denmark, assignor to Danfoss A/S, Nordborg, Denmark

Filed Jan. 7, 1983, Ser. No. 456,426
Int. Cl.[3] F15B 15/18
U.S. Cl. 60—384 2 Claims



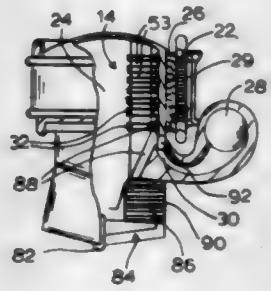
1. A hydraulic steering control system comprising, a bidirectional differential type servomotor having rod side and non-rod side operating ports on opposite sides thereof, pump and tank means, manually operable steering control means, a reaction type metering control unit having a housing, metering motor means in said housing, first and second relatively rotatable control valve means connected respectively to said steering control means and said metering motor means, spring means between said first and second control valve means, said housing having a supply port connected to said pump means and an exhaust port connected to said tank means, said housing having first and second control ports connected respectively to said rod and non-rod side servomotor operating ports, flow path means determined by said steering control means and controlled by said valve means for directing supply fluid from said supply port through said metering motor means to either of said control port connections and directing exhaust fluid from the other of said control port connections to said tank means, said flow path means including exhaust valve throttle means in passage means between said non-rod side servomotor port and said tank means controlled by said control valve means to be (1) open when said control valve means is in a neutral position to exhaust fluid from said non-rod side thereof to said tank means during centering of said servomotor towards said non-rod side and (2closed while supply fluid is being directed to either side of said servomotor.

4,532,765

STIRLING ENGINE WITH AIR WORKING FLUID

John A. Corey, North Troy, N.Y., assignor to Mechanical Technology Incorporated, Latham, N.Y.

Filed Apr. 30, 1984, Ser. No. 605,476
Int. Cl.[3] F02G 1/04
U.S. Cl. 60—517 8 Claims



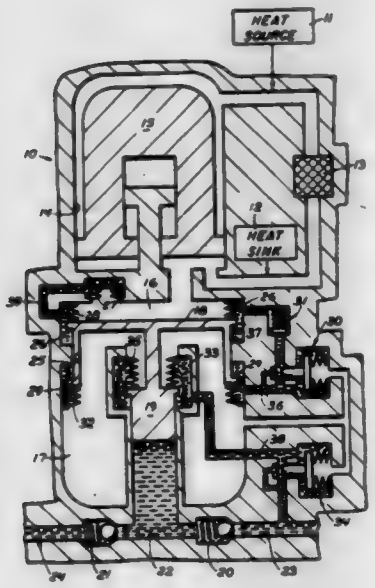
1. A Stirling engine which includes a compression means and expansion means; a combustion chamber for generating heat; a cylindrical shaped heat exchange module positioned about the combustion chamber to accept the transfer of heat therefrom, said heat exchange module includes a plurality of heater tube units positioned circumferentially about said combustion chamber and through which working gas passes and is heated, regenerator means in the form of a fiber matrix, cooling means for cooling the working fluid, said heating tube units, regenerator means and cooling means, each being cylindrical in shape and positioned respectively in a layered fashion each about the next; cold connecting duct means coupling the cooling means with the compression means so as to enable the passing of the working fluid therebetween; hot connecting duct means coupling the heating means with the expansion means so as to enable the passing of working gas therebetween; and said compression and expansion means operate to provide a periodic flow of working gas through the heat exchange module in a Stirling cycle of operation.

4,532,766

STIRLING ENGINE OR HEAT PUMP HAVING AN IMPROVED SEAL

Maurice A. White, 2802 S. Everett Pl., Kennewick, Wash. 99337; Peter Riggle, 616 Fuller, and Stuart G. Emigh, 67 Park St., both of Richland, Wash. 99352

Filed Jul. 29, 1983, Ser. No. 518,527
Int. Cl.[3] F02G *1/04*
U.S. Cl. 60—517 8 Claims



1. A Stirling cycle engine or heat pump having a volume of working gas exhibiting cyclical variations in instantaneous pressure, comprising:

a first machine element centered along an axis;

a second machine element coaxially arranged along said axis;

clearance seal means between complementary cylindrical surfaces of the first and second machine elements presenting a slidable interface for accommodating reciprocating movement of one machine element relative to the other along said axis for power transmission purposes;

a first gas-filled fluid region maintained at the instantaneous pressure of the working gas and partially bounded by portions of both the first and second machine elements;

a second liquid-filled fluid region partially bounded by other portions of both the first and second machine elements and leading axially to one end of the slidable interface presented by said clearance seal means;

means in the form of a cylindrical bellows arranged coaxially along said axis and sealed at its opposite axial ends to both the first and second machine elements, said bellows having opposite sides contacted by gas and liquid in communication with the first and second fluid regions, respectively, for hermetically separating the first and second fluid regions while permitting relative reciprocating movement between the first and second machine elements;

the nominal effective diameter of the cylindrical bellows being substantially equal to the effective diameter of the slidable cylindrical interface formed between the first and second machine elements by the clearance seal means;

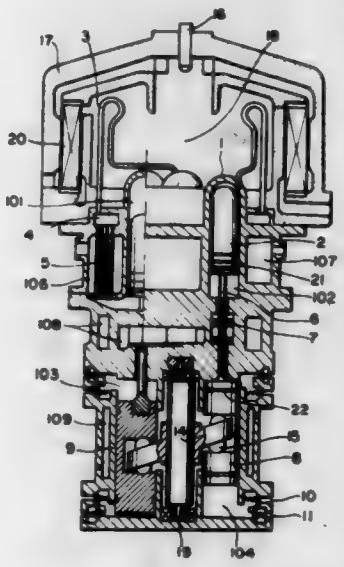
and hermetically sealed compensator means including a diaphragm or bellows having opposite surfaces in open communication with said first and second fluid regions, respectively, for causing instantaneous pressure changes in the liquid-filled fluid region in response to cyclical variations in the instantaneous pressure of the gas-filled fluid region.

4,532,767

ENGINE COMPRESSOR HAVING A STIRLING CYCLE ENGINE

Tetsumi Watanabe, Okazaki; Shigenori Haramura, Toyoake, and Yutaka Momose, Anjyo, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Continuation of Ser. No. 376,218, May 7, 1982, abandoned. This application Dec. 11, 1984, Ser. No. 680,589
Claims priority, application Japan, May 9, 1981, 56-70020
Int. Cl.[3] F02G *1/04*
U.S. Cl. 60—525 4 Claims



1. An engine-compressor comprising a stirling engine which includes a plurality of working cylinders arranged on a circle with the same phase angle difference, a plurality of working pistons respectively disposed in said working cylinders for axial reciprocating movements to thereby divide each of the cylinders into an expansion space and a compression space, the expansion space in one of the cylinders being connected through heating means and heat accumulating means with the compression space in another cylinder, a plurality of guide cylinders, a plurality of guide pistons disposed respectively in said guide cylinders for axial reciprocating movements due to the axial movement of the working pistons, said guide pistons being connected through piston rods with respective ones of the working pistons and defining in the respective guide cylinders compression chambers located at the opposite sides of the respective guide pistons, intake valve means provided in said compression chamber for admitting air or coolant thereto to be compressed by said guide piston, and outlet valve means provided in said compression chamber for removing compressed air or coolant from the compression chamber, and a swash plate operably connected to said guide pistons to be driven thereby, independently of the compressed air from said compression chambers, for converting the axial reciprocating movement of said guide pistons into rotating movement.

4,532,768

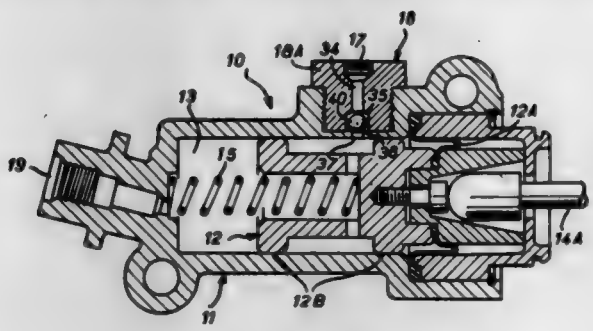
VALVE DEVICE FOR A HYDRAULIC CIRCUIT

Hervé Focqueur, Franconville, France, assignor to Valeo, Paris, France

Filed Feb. 22, 1983, Ser. No. 468,635
Claims priority, application France, Mar. 3, 1982, 82 03485
Int. Cl.[3] F15B *7/08;* F16K *25/02*
U.S. Cl. 60—585 8 Claims

1. A hydraulic valve device for a hydraulic circuit, comprising a cylinder, a piston mounted to slide in said cylinder and defining therein a chamber of variable volume for connection to the hydraulic circuit, control means for controlling the displacement of said piston, and a tank connected to said chamber by a passage having a non-return valve, wherein said passage is separate from the hydraulic circuit and incorporates a cylindrical cavity which has at its end adjacent said tank an orifice coaxial with said cavity and surrounded by a leak-proof

seat, said nonreturn valve incorporating a ball which is engaged with a slight play in said cylindrical cavity and operable to abut said leakproof seat when the pressure in the chamber is greater than that in the tank, and wherein said cavity incorporates, at its end adjacent said chamber, an orifice which is coaxial with the cavity and which is surrounded by a permeable seat for said ball, this permeable seat having a very substan-



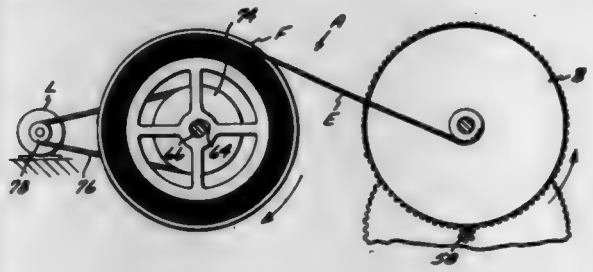
tially reduced communication cross-section when said ball is in engagement therewith, said reduced communication cross-section being operative to limit the flow of hydraulic fluid from the tank to the chamber in case of a negative pressure produced in the chamber by a sudden release of said control means, and restoring means for biasing said ball to said permeable seat.

4,532,769

ENERGY STORING FLYWHEEL ASSEMBLY

Lyle A. Vestermark, 714 Pacific Ave., #1108, Long Beach, Calif. 90813

Filed Sep. 4, 1984, Ser. No. 646,962
Int. Cl.³ B60K *9/04*
U.S. Cl. 60—698 **7 Claims**



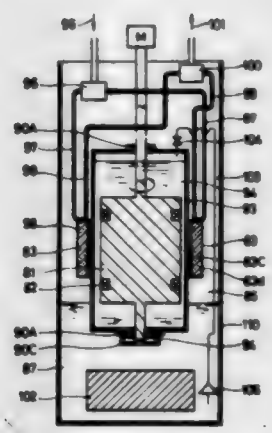
1. An energy producing fly wheel assembly that includes:
a. first and second laterally spaced, transversely aligned, rotatably supported first and second reels that have first and second hubs, said second hub of substantially greater diameter than said first hub;
b. an elongate coilable ribbon that extends between said first and second hubs and is secured thereto with said ribbon initially having the major portion thereof coiled on said second hub;
c. a first rotatably supported shaft;
d. a first fly wheel rotatably supported on said first shaft;
e. first means for rotating said first fly wheel with said first shaft only when said first shaft rotates in a first direction;
f. a first clutch that includes a power input and power output shaft and first movable clutch control means that can occupy either first or second positions, said first clutch transmitting rotational power from said power input to said power output shaft only when said clutch control means is in said second position;
g. second means for transferring rotational power from said first fly wheel to said power input shaft;
h. third means for transferring rotary motion of said second reel to said first shaft;
i. fourth means for intermittently rotating said first reel to wind said ribbon thereon when said first clutch is in said first position to accelerate the rotation of said second reel, and said first shaft and first fly wheel in said first direction until substantially all of said ribbon has been removed from said first hub and said first fly wheel is rotating at a predetermined maximum velocity, with said first clutch control means thereafter being moved to said second position for rotational power from said first fly wheel to be transferred to said power output shaft; and
j. fifth means for intermittently rotating said second reel in a direction to rewind said second ribbon on said second hub as said first fly wheel rotates for subsequent use in accelerating said first fly wheel to said predetermined maximum velocity.

4,532,770

MAGNETIC REFRIGERATOR

Yoshinori Hakuraku; Hisanao Ogata; Takahiro Daikoku, all of Ibaraki, and Noboru Suzuki, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,241
Claims priority, application Japan, Jun. 29, 1983, 58-115818
Int. Cl.³ F25B *21/02*
U.S. Cl. 62—3 **4 Claims**



1. In a magnetic refrigerator which is provided with a plurality of magnetic refrigeration working substances which generate heat when magnetized and absorb heat when demagnetized, a magnetic field generating device which magnetizes and demagnetizes said working substances periodically, a heat-releasing mechanism which releases heat to a high-temperature side when said working substances are magnetized, and a heat-absorbing mechanism which absorbs heat from a low-temperature side when said working substances are demagnetized, and in which said working substances operate in a stationary state, a magnetic refrigerator characterized by the provision of a rotor with a plurality of coils arranged around the circumference thereof and a means for driving said rotor, wherein a plurality of said working substances are arranged around the outer or inner periphery of said rotor, a current flows through said coils so as to form a distribution of magnetic fields around the periphery of said rotor such that the strength of said magnetic fields is increased and decreased, and said rotor is rotated to magnetize and demagnetize said working substances periodically.

4,532,771

COOLER MADE OF ALUMINUM FOR STIRLING ENGINES

Yutaka Momose, Anjyo; Kazuaki Yamaguchi, Kariya; Masayoshi Okamoto, Oyama; Ryoichi Hoshino, Oyama, and Hiroki Tanaka, Oyama, all of Japan, assignors to Showa Aluminum Corporation, Osaka and Aisin Seiki Co., Ltd., Aichi, both of, Japan

Filed Jul. 28, 1983, Ser. No. 518,031
Claims priority, application Japan, Jul. 30, 1982, 57-133902
Int. Cl.³ F25B *9/00*
U.S. Cl. 62—6 **4 Claims**

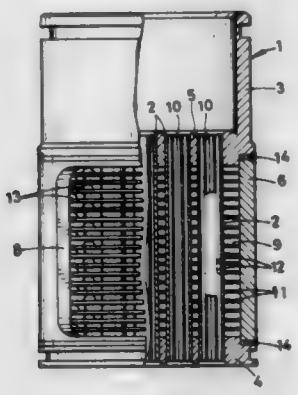
1. A heat exchange apparatus made substantially of alumi-

num to cool a working medium under high pressure, comprising:

(a) a multiplicity of cooling tubes for conducting a working medium,

(b) a pair of headers joined to opposite ends of said cooling tubes respectively,

(c) inner fins disposed longitudinally along the inner walls of said tubes,



(d) a multiplicity of plate fins intersecting and attached to the cooling tubes at spaced distances along the outer walls of said tubes,

(e) a shell surrounding the tubes and plate fins, joined to the headers to provide a closed cooling area, and

(f) an inlet and an outlet through said shell for passage of cooling water.

4,532,772

METHOD FOR PRODUCING MODEL ICE

Seppo Mäkinen, Espoo, Finland, assignor to Oy Wärtsilä Ab, Helsinki, Finland

Filed Dec. 8, 1983, Ser. No. 559,391

Claims priority, application Finland, Dec. 17, 1982, 824363

Int. Cl.³ F25C *1/00*

U.S. Cl. 62—74 **16 Claims**

1. A method of producing on a body of water a layer of ice suitable for ship model ice tests, comprising forming a layer of ice having physical properties for ship model ice tests by:

(a) creating a low-temperature atmosphere over the surface of the body of water;

(b) spraying water into the atmosphere over the water surface, in such a way that water droplets formed by the spraying freeze in the low-temperature atmosphere;

(c) directing the freezing spray onto the water surface, so that the frozen water droplets settle onto the water surface and form ice thereon; and

(d) continuing the spraying until substantially the entire desired thickness of the ice layer has been built up.

4,532,773

PROCESS FOR PRODUCING COLD AND/OR HEAT BY MEANS OF AN ABSORPTION CYCLE COMPRISING AT LEAST TWO ABSORPTION STEPS

Alexandre Rojey, Garches; Régis Bonifay, Asnieres, and Jean-Paul Cariou, Orgeval, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 10, 1984, Ser. No. 569,697

Claims priority, application France, Jan. 10, 1983, 83 00370

Int. Cl.³ F25B *15/00*

U.S. Cl. 62—101 **8 Claims**

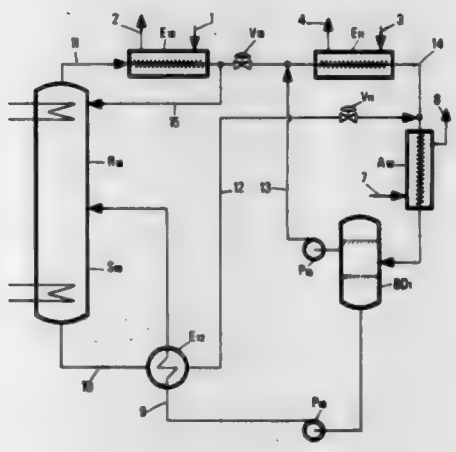
1. A process for producing cold and/or heat, comprising the following steps:

(a) contacting, in a first absorption step, a vapor phase (V_1) comprising a working fluid (F) and an auxiliary fluid (H) with a solution (S) of fluid (F) in a solvent (S) discharged from step (c), under operating conditions providing for absorption of fluid (F) and at most partial condensation of fluid (H), transferring heat to an external fluid so as to obtain a solution (S_2) of (F) in (S) of increased fluid (F) content and a vapor phase (V_2) comprising unabsorbed fluid (F) and uncondensed fluid (H), and separating said solution (S_2) from said vapor phase (V_2), said fluid (H) being at least partly immiscible with solvent (S) and with the solutions of fluid (F) in solvent (S);

(b) contacting, in a second absorption step, the vapor phase (V_2) issued from step (a) with a relatively lean solution (S_3) of fluid (F) in solvent (S) to absorb fluid (F) and condense fluid (H) contained in the vapor phase, transmitting the absorption heat and the condensation heat to an external fluid and recovering a mixture of liquid phase (L_1) of fluid (H) with a solution (S_1) of fluid (F) in solvent (S);

(c) separating the solution (S_1) of fluid (F) in solvent (S) from the liquid phase (L_1) of fluid (H) issued from step (b) and feeding said solution (S_1) of fluid (F) in solvent (S) to step (a);

(d) supplying at least a fraction of solution (S_2) of fluid (F) in solvent (S) issued from step (a) to a desorption step, subjecting said solution to desorption conditions and supplying the desorption heat from an external fluid, so as to obtain a vapor phase (V_3) of high fluid (F) content and a solution (S_3) of low fluid (F) content, separating the vapor phase (V_3) from solution (S_3) abd recycling said solution (S_3) to the second absorption step (b);



(e) condensing at least a portion of the vapor phase (V_3) of high fluid (F) content, issued from desorption step (d), while supplying heat to an external fluid to form a condensation liquid phase (L_2);

(f) admixing at least a portion of the condensation liquid phase (L_2) obtained in step (e) with at least a portion of the liquid phase (L_1) of liquid (H) issued from step (c) and vaporizing at least a portion of the resultant mixture by taking heat from an external fluid, the operating conditions being so selected as to provide for the vaporization of at least a portion of fluid (F) and at least a portion of fluid (H), thus obtaining a vapor phase (V_1), and

(g) recycling the resultant vapor phase (V_1) to step (a).

4,532,774

PORTABLE FIELD SITE PRE-COOLING APPARATUS

Daniel E. Burns, Camarillo, Calif., assignor to Demco, Inc., Oxnard, Calif.

Filed Nov. 21, 1983, Ser. No. 553,579

Int. Cl.³ B60H *3/04*

U.S. Cl. 62—239 **4 Claims**

1. A portable apparatus for pre-cooling produce at the field site where the produce is harvested, including, in combination:

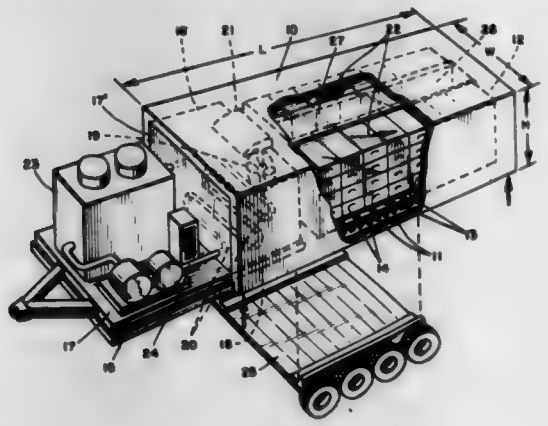
(a) an elongated refrigerated enclosure of given length, width and height having gravity conveyors on its floor;

(b) a rear end door substantially co-extensive with the width and height of said enclosure for enabling the loading of pallets supporting containers of freshly harvested produced onto said gravity conveyors;

(c) a movable platform extending partially into the front of said enclosure to define an inside platform area in said

enclosure and an outside platform area outside the enclosure;

(d) an air handling housing supported on said inside platform area in the front end of said enclosure including an exhaust fan, cooling coils and upper ducting for passing refrigerated air over the tops and around the outer sides and through said containers of produce to remove field heat



from the produce, the resulting heated air being drawn into said air handling housing by said exhaust fan;

(e) refrigeration equipment supported on the outside platform area outside said enclosure connected through the front of said enclosure to said cooling coils; and,

(f) a detachable dolly supporting said enclosure so that it can be transported in the manner of a trailer to a new field site if desired.

4,532,775

AIR COOLER WITH CONDENSATE TRAP

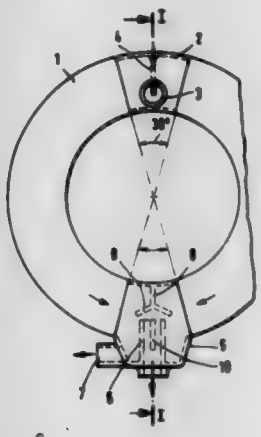
Rudolf Hofmann, c/o ISARTALER Schraubenkompressoren GmbH, Wallensteinstrasse 20, 8192 Geretsried 2, Fed. Rep. of Germany

Continuation of Ser. No. 230,516, Feb. 2, 1981, abandoned. This application Jul. 11, 1983, Ser. No. 512,573

Claims priority, application Fed. Rep. of Germany, Feb. 12, 1980, 8003708[U]

Int. Cl.³ F25D *21/00*

U.S. Cl. 62—272 **5 Claims**



1. A gas cooler and condensate trap comprising:

a housing defining a gas flow passage with an inlet at the top and an outlet at the bottom, gas entering the inlet being cooled as it flows through the housing to the outlet;

a wall extending upwardly around the periphery of said outlet, the cooled gas impinging on the outside of said wall enhancing the separation of condensate from the cooled gas, said wall preventing the separated condensate from reaching the outlet, said housing and wall forming a trap for said separated condensate;

a trap rib disposed above and described toward said outlet wall, said trap rib having cross pieces extending outwardly therefrom, the cross pieces being spaced from and projecting over said outlet wall to guide said gas and remove condensate therefrom; and

a condensate discharge from said trap.

4,532,776

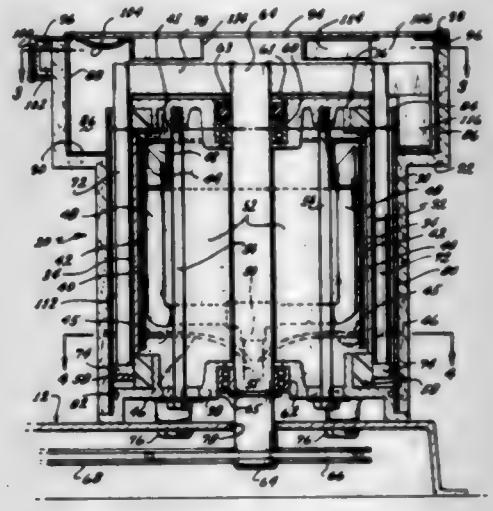
HIGH EFFICIENCY ICE MAKING MACHINE AND FAIL SAFE MECHANISM THEREFOR

Henio R. Arcangeli, 2406 30th St., Santa Monica, Calif. 90405

Filed Oct. 29, 1982, Ser. No. 437,831

Int. Cl.³ F25C *1/14*

U.S. Cl. 62—354 **16 Claims**



1. An ice making machine comprising:

a water tank including a refrigerated wall and a water tank wall terminating in a circular upper rim;

auger means rotatable relative to said refrigerated wall for breaking off flakes of ice from a layer of ice forming on said refrigerated wall;

means cooperating with said rotatable auger for raising flake ice out of said water tank;

overlying said upper rim so as to allow the flake ice to rise above said rim and form a structure of flake ice rotating in said headspace with said auger;

ice collecting means disposed exteriorly of said water tank and below said rim;

stationary deflector means disposed generally tangentially across the path of said moving flake ice structure for breaking up the circularly moving structure breaks up on contact with the deflector means into relatively small ice flake clusters which are deflected over said rim and into said collecting means; and

sweeper means rotatable with said auger means for sweeping flake ice out of said ice collecting means through a discharge opening formed in the ice collecting means.

4,532,777

TWO STAGE COOLING SYSTEM

Tommy L. Thompson, Tucson, Ariz., assignor to University of Arizona Foundation, Tucson, Ariz.

Filed May 23, 1983, Ser. No. 497,267

Int. Cl.³ F25D *17/02*

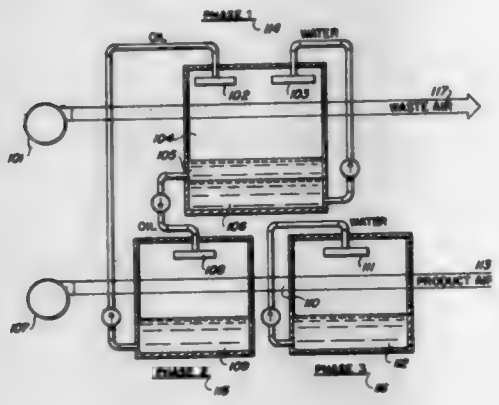
U.S. Cl. 62—434 **18 Claims**

1. A gas cooling system comprising:

A. means

1. for cooling a first liquid, and

2. for placing said first liquid in direct contact with a oil-like liquid, thereby cooling said oil-like liquid; and



B. means for placing the cooled oil-like liquid in direct contact with a gas stream, thereby cooling said gas stream.

4,532,778

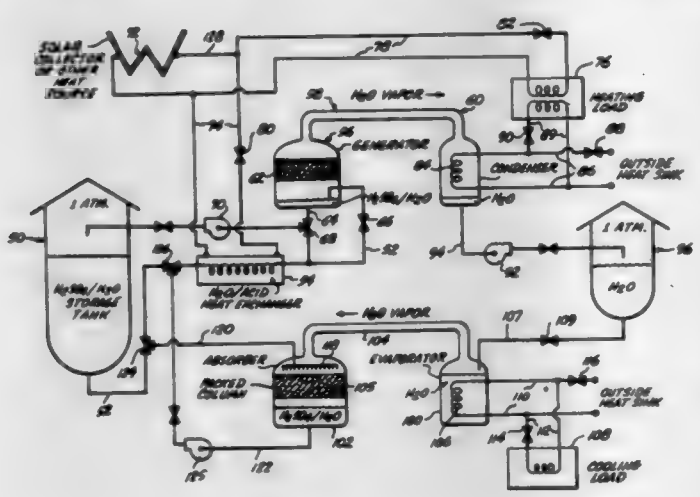
CHEMICAL HEAT PUMP AND CHEMICAL ENERGY STORAGE SYSTEM

Edward C. Clark, Woodinville, and Douglas D. Huxtable, Bothell, both of Wash., assignors to Rocket Research Company, Redmond, Wash.

Continuation-in-part of Ser. No. 91,828, Nov. 16, 1979, abandoned. This application Mar. 24, 1981, Ser. No. 247,004

Int. Cl.³ F25B *17/00*

U.S. Cl. 62—477 **21 Claims**



1. An energy storage and heat pump system comprising:

acid storage means for storing an aqueous sulfuric acid solution at atmospheric pressure,

generator means for removing water vapor from an aqueous sulfuric acid solution, condenser means for condensing water vapor, and conduit means for placing said generator means in vapor communication with said condenser means,

absorber means for absorbing water vapor into a sulfuric acid solution, evaporator means for producing water vapor from water, and conduit means placing said evaporator means and said absorber means in vapor communication, said generator means, condenser means, absorber means and evaporator means being maintained at a pressure other than atmospheric,

means for transferring sulfuric acid solution from said generator means to said acid storage means,

means for supplying sulfuric acid solution to and removing sulfuric acid solution from said absorber means, said sulfuric acid solution being supplied to said absorber means from said acid storage means, said acid being stored in concentrated form in said storage means, the heat of dilution and the heat of condensation being released upon the absorption of water onto said acid solution in said absorber, said acid solution when concentrated in said generator means and stored in said storage means thereby storing energy until released in said absorber means,

first heat transfer means for supplying heat to the sulfuric acid solution for evaporation of water vapor therefrom in said generator means,

second heat transfer means for removing heat from water vapor present in said condenser means,

third heat transfer means for supplying heat to water in said evaporator means,

means for removing water from said condenser means, and

means for supplying water to said evaporator means.

4,532,779

DEVICE FOR GENERATING A DRY, COLD AIR FLOW FOR TREATMENT OF RHEUMATIC DISEASES

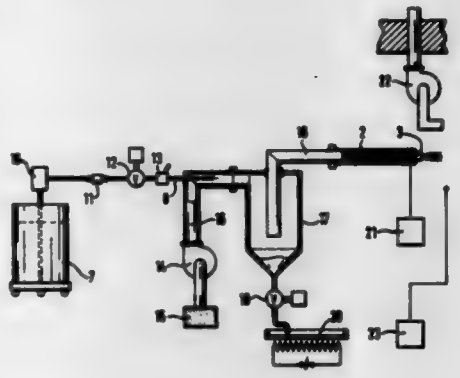
Thomas von der Bey, Ratingen; Detlef Jankowski, Duisburg; Hartmut Schmidt, Meerbusch; Klemens Thoma, Krefeld, and Wolfgang Volker, Tönisvorst, all of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,838

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1983, 3305434

Int. Cl.³ F25B *19/00*

U.S. Cl. 62—514 R **2 Claims**



1. In a device for generating a dry, cold air flow for treatment of rheumatic diseases, the device having a connection connected to a supply of a cryogenic liquefied gas, a blower in flow communication with the device and the gas supply for generating the air flow, and a unit communicating with the device for heat exchange between liquefied gas and air flow, with possibility of separating the frozen-out moisture, the improvement being said heat exchange unit being a cyclone separator, said cyclone separator having an intake line connected to the outlet line of said blower by means of a further line in which said connection for the liquefied gas feed ends, and said cyclone separator having an outlet opening at which an insulated, hand held flexible hose is attached.

4,532,780

PNEUMATIC FIBER RECOVERY AND REDISTRIBUTION SYSTEM FOR SLIVER HIGH PILE FABRIC KNITTING MACHINES

Alan L. Tilson; Earl R. Quay, both of Orangeburg, and John C. Knight, North, all of S.C., assignors to Mayer, Wildman Industries, Inc., Orangeburg, S.C.

Continuation-in-part of Ser. No. 539,801, Oct. 7, 1983, abandoned. This application Sep. 5, 1984, Ser. No. 647,632

Int. Cl.³ D04B *9/14*; D01G *15/40*

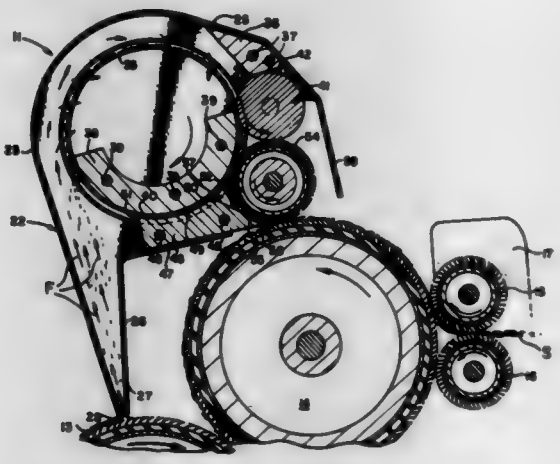
U.S. Cl. 66—9 B **22 Claims**

1. A fiber recovery and redistribution device for a fiber transfer and feeding unit for a sliver high pile fabric knitting machine, said unit including a doffer, a main cylinder and a pair of sliver feeding elements, said device being characterized by

(a) a suction chamber,

(b) suction means for removing fibers pneumatically from the doffer into the suction chamber,

(c) filter means for separating the air and removed fibers internally of the suction chamber,
(d) fiber discharge means for discharging the fibers from the suction chamber and



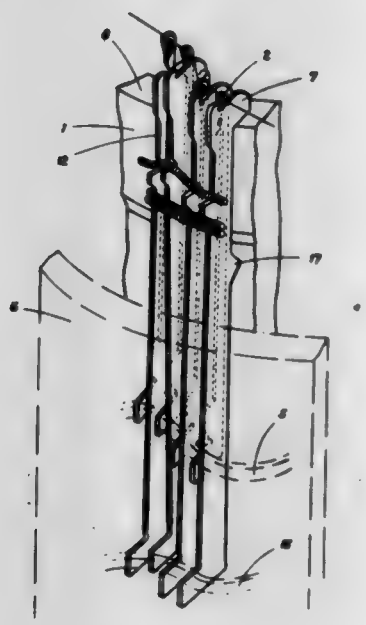
(e) fiber return feed means disposed externally of the suction chamber for delivering the discharged fibers to the main cylinder,
(f) said fiber return feed means including means for forming the discharged fibers into a uniform layer of aligned fibers for uniform redistribution upon the main cylinder.

4,532,781

KNITTING MACHINE

Alfred Buck, Bondorf, Fed. Rep. of Germany, assignor to Memminger GmbH, Freudenstadt, Fed. Rep. of Germany

PCT No. PCT/DE82/00039, § 371 Date Oct. 21, 1982, § 102(e) Date Oct. 21, 1982, PCT Pub. No. WO82/03096, PCT Pub. Date Sep. 16, 1982
PCT Filed Mar. 2, 1982, Ser. No. 438,890
Claims priority, application Fed. Rep. of Germany, Mar. 3, 1981, 3108041
Int. Cl.³ D04B *15/06, 15/14*
U.S. Cl. 66—104 19 Claims



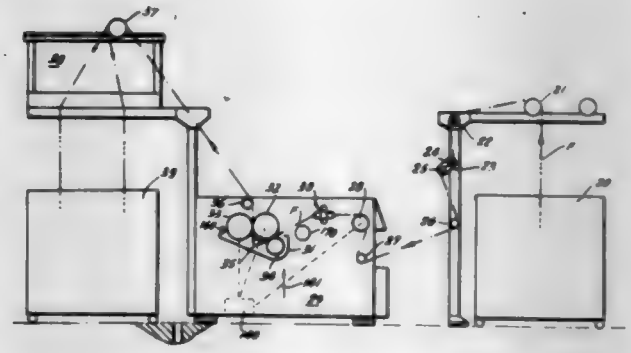
1. A knitting machine having
at least one needle carrier (1) formed with a bearing surface portion,
needles (2) with elongated shafts located on the carrier guided parallel to one another for longitudinally displaceable movement,
a needle cam curve (5) controlling longitudinal displacement of the needles;
sinkers (7) each having a throat, a looping edge, and an elongated, flat shaft (12) located on the carrier (1);
a sinker cam curve (15) controlling longitudinal displacement of the sinkers (7),
said sinkers protruding between the needles and beyond the needle carrier;
means (18) for supporting each sinker on the carrier for movement of said throat, looping edge, and shaft both transversely relative to the needles and in the longitudinal direction,
said sinker cam curve (15) controlling the sinkers such that at a given knitting location, after the closing of a knitting loop, they are moved contrary to the drawing-off movement of the associated needles and transversely thereto toward the outside away from the shank of the needle and, after the casting off of the loop, they are moved inward toward the shank of the needle and further contrary to the needle projection movement and transversely thereto, characterized in that
the sinker shafts (12) are supported and guided on the bearing surface portion of the needle carrier (1) and form lateral guide ribs for the needle shafts (3) of adjacent needles (2),
said sinker shafts (12) are of a length at least similar to the length of the needles to provide lateral support for the needles essentially throughout their lengths;
and wherein the needle cam curve (5) is located intermediate the length of the sinker shafts (12).

4,532,782

APPARATUS FOR PAD BATCH DYEING OF TUBULAR KNITTED COTTON FABRICS

John R. Sellers, Davidson, N.C., assignor to Samcoe Holding Corporation, Woodside, N.Y.

Filed Apr. 4, 1984, Ser. No. 596,615
Int. Cl.³ D06B *3/18*
U.S. Cl. 68—13 R 21 Claims



1. Apparatus for pad batch dyeing of tubular knitted fabric, which comprises
(a) means for supplying the tubular knitted fabric in generally flat form and under a relatively minimum lengthwise tension,
(b) a driven entry roller,
(c) means to guide the supplied tubular knitted fabric around a portion of the entry roller whereby the fabric is advanced under the control of the entry roller,
(d) width-adjustable ring guide means positioned immediately downstream of and in close coupled relation to said entry roller,
(e) said ring guide means engaging the tubular knitted fabric internally by its opposite edges and guiding said edges,
(f) said ring guide means being laterally adjustable to enable said tubular knitted fabric to be maintained at a relatively uniform width not significantly greater than its natural width,
(g) a dyeing-extracting means arranged downstream of and in close coupled relation to said ring guide means,
(h) said dyeing-extracting means comprising a pair of front and back resilient squeeze rollers mounted on parallel, horizontally spaced axes,
(i) a solution pan mounted below said squeeze rollers and

adapted to contain a treating solution at a level below the axes of said squeeze rollers and above the lower extremities of said rollers,

(j) a resilient dye roller mounted in said solution pan in submerged relation to the solution contained therein and in resilient contact with said front squeeze roller to form a dye nip,

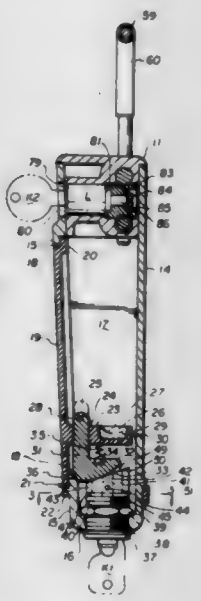
(k) a guide roller mounted in said solution pan in submerged relation to said said solution for redirecting said fabric to exit from said solution upwardly to the squeeze nip formed by the line of contact between said squeeze rollers.

4,532,783

DOUBLE LOCK LOCK BOX

Thomas A. Maurice, 9111 Orangevale Ave., Orangevale, Calif. 95662

Filed Dec. 27, 1982, Ser. No. 433,981
Int. Cl.[3] E05B *65/48*
U.S. Cl. 70—63 16 Claims



1. An article or key safe comprising in combination:

a housing,

said housing having an open top, side walls, a rear wall, a bottom wall, and a front wall with an opening therein,

a cap closing said open top,

said walls and said cap defining an interior chamber,

a shackle having a pair of spaced-apart legs slidably disposed through yet retained by said cap,

first locking means operatively associated with latch means carried within said cap to engage said shackle, whereby said shackle can move from a first locked position which secures said key safe to a door handle or the like, to a second open position allowing removal of said key safe,

a removable cover closing said opening in said front wall, whereby removing said cover allows access to said interior chamber and its contents,

second locking means operatively associated with said cover which in a first operative position secures said cover in a locked relationship with said front wall completely covering said opening, and in a second inoperative position allows the removal of said cover from said opening revealing said interior chamber wherein said cover has a rabbeted upper edge which engages a complimentary configured edge on an upper lip of said opening in said front wall such that the outer surface of said cover is flush with the outer surface of said front wall when said cover is in a locked position,

a transversely disposed web member extending inwardly from a bottom portion of said cover, an end of said web member being in close proximity to said rear wall and spring biased outwardly therefrom,

said web member having an upwardly disposed trough therein with a spring clip to retain small objects such as keys within said trough,

a vertical passage through said web member between said trough and a back surface of said cover,

said passage slidably retains a downwardly biased, substantially L-shaped cover latch with a beveled edge on a bottom surface thereof which coacts with a similar bevel on an inner face of a bottom lip of said opening in said front wall, whereby when said beveled latch surface is in contact with said beveled lip surface said cover is in locked relationship with and completely covers said opening in said front wall, preventing access to said interior chamber,

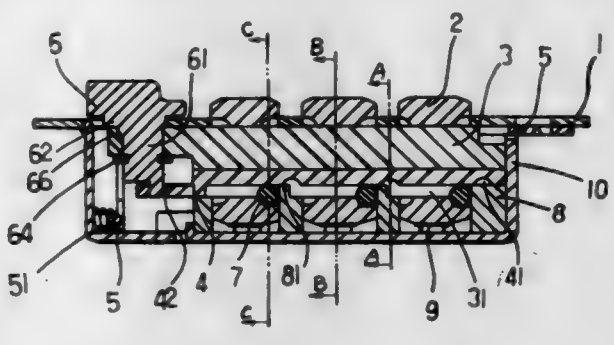
an arcuate cam surface on the bottom of said cover latch which when ramped upwardly disengages said beveled edge on said cover latch from said beveled face on said inner lip of said opening, whereby said cover pops open due to said spring disposed on said end of said web member.

4,532,784

COMBINATION LOCK

Ching C. Yeh, No. 139, Sec. 2, Chang Hsing Rd., Ho Mei Chen, Changhua, Taiwan

Filed Apr. 11, 1983, Ser. No. 483,538
Int. Cl.[3] E05B *37/02*
U.S. Cl. 70—312 1 Claim



1. An improved combination lock comprising:

a surface plate having three holes respectfully for mounting three tumblers and an opening for mounting an actuating button having a pin, said opening being formed by two holes of different diameters in said surface plate connected by a slot of a width approximating the diameter of the smaller one of said two holes;

an actuating button having a protuberance adapted to be received in said opening and a pin extending below said protuberance, said pin having a groove engaged by a retaining ring and an eccentric pin extending below said groove, said actuating button being further provided with another protuberance for limiting rotating range thereof;

a mounting plate for installing a bolt, said mounting plate being connected with a spring at an end near said actuating button, one part of said mounting plate being at a right angle to another part of said mounting plate, said mounting plate having a protuberance at the end remote from said actuating button;

a bolt having a cylindrical main body, said bolt being provided with a keyway and three grooves extending thereabout, said bolt having a planar surface near said actuating button, with said planar surface having a hole with a diameter similar to that of said pin of said actuating button;

a slotted rod formed with a plain surface on which there are a circular groove for mounting said eccentric pin of said actuating button and a rod on which there are three slots;

a fixing frame of rectangular shape and having means to accommodate said bolt and forming three compartments in which are mounted said tumblers associated with said bolt, said means having upwardly extending protuberances positioned to hold metal balls;

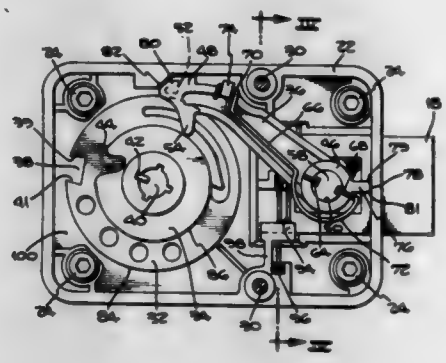
a metal ball for each of said grooves of said bolt;
a case for accommodating said fixing frame.

4,532,785

COMBINATION LOCK

Tim M. Uyeda, South San Gabriel, Calif., assignor to La Gard, Inc., Torrance, Calif.

Filed May 19, 1983, Ser. No. 496,171
Int. Cl.³ E05B *15/16, 63/00*
U.S. Cl. 70—333 R **15 Claims**



1. A lock assembly comprising:
a plurality of peripherally gated tumbler wheels supported for rotation about a common axis;
a peripherally gated control cam mounted to said common axis;
a bolt movable between an extended and a retracted position;
a fence lever having a first end adapted for rotatable mounting to said bolt and a second end having a fence for engagement with the peripheral gates on said tumbler wheels and a latch for engaging said peripheral cam gate only when said fence engages said peripheral tumbler wheel gates to provide cam operated movement of said bolt between said extended and retracted positions;
means for rotatably mounting said fence lever first end to said bolt;
spring means for serving the dual purpose of biasing said fence lever second end towards said control cam and securing said fence lever first end to said bolt;
a housing having a bolt opening through which said bolt is moved between said extended and retracted positions; and
means for precisely positioning said fence lever and bolt when said bolt is moved to said extended position, said precise positioning means including a detent extending outward from said fence lever first end having a face for abutting against said housing to position said bolt when said bolt is in said extended position to prevent further extension of said bolt.

4,532,786

METHOD FOR MANUFACTURING A VEHICLE WHEEL

Walter Schaible, Korntal, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,680
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1982, 3239675
Int. Cl.³ B21H *1/04*
U.S. Cl. 72—68 **4 Claims**

1. A method for manufacturing a one-piece vehicle wheel from light metal in which the wheel includes a hub portion and a rim portion, the method including pressing a wheel dish from a disk and forming a rim base from an edge of the disk, the forming of the rim base including the steps of bending the edge obliquely outwardly from a longitudinal plane of the wheel to form an outer edge portion, splitting the outer edge portion along the longitudinal plane of the wheel into two annular ring parts of substantially similar thickness with one of the ring parts having a larger accumulation of material associated with the distal end thereof, and extending the annular ring parts by



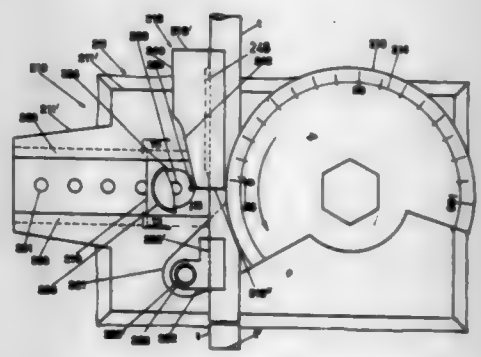
a rolling-pressing operation into a rim base having legs of different lengths and of generally equal thickness.

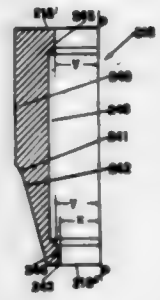
4,532,787

PORTABLE ELECTROMECHANICALLY-CONTROLLED PIPE-BENDING APPARATUS

Alessandro Caporusso, and Mario Caporusso, both of Frosinone, Italy, assignors to C.M.L. Costruzioni Meccaniche Liri S.r.l., Frosinone, Italy

Filed Mar. 9, 1982, Ser. No. 356,366
Claims priority, application Italy, Mar. 16, 1981, 48029 A/81; Nov. 12, 1981, 49701 A/81; Feb. 8, 1982, 47749 A/82
Int. Cl.³ B21D *7/04*
U.S. Cl. 72—158 **6 Claims**





1. A portable electromechanically-controlled pipe-bending apparatus for bending up to an angle of 180° pipes of materials which are particularly sensitive to the stretching stresses provided during a bending operation, comprising:
a. a main body in the form of a substantially parallelepiped-box wherein a driving motor-reducer is contained, on the output shaft of which is fastened the main bending matrix of the apparatus in order to be rotated at a suitable slow rotating speed;
b. said main bending matrix being in the form of a semi-pulley having a peripheral semicircular groove, which is driven in rotation by said driving motor-reducer about a first axis;
c. a second bending countermatrix which is provided with a concave groove facing said peripheral semicircular groove of the matrix and adapted to cooperate with the same so that a pipe to be bent may be held and bent therebetween when said matrix is rotated for a bending opera-

tion, the operative shaped surface of said countermatrix (218) comprising a shaped section (245) which begins on an input edge (218′) of the countermatrix and has a cylindrical semicircular groove with the same radius (y) as the pipe to be bent and as said groove (214) of said matrix (213), and a shaped section (246) which begins from an output edge (218″) of the countermatrix opposite from said input edge (218′) with a shallower depth (x) and extends progressively up to the end of said section (246) wherein the radius (y) is again that of the pipe to be bent;

d. means to support said countermatrix for movement toward and away from said matrix so that said countermatrix can be set at the right distance from the matrix in accordance with the diameter of the pipe to be bent, said support means comprising a cylindrical support member (224), the operative side of said countermatrix lying on a longitudinal plane (p-p) which also comprises a longitudinal plane along the pipe to be bent, said countermatrix having, on its side opposite said operative side, a surface (242) that inclines away from said plane from said output edge (218″) toward said input edge (218″) and that terminates in a concave arcuate section (241) the radius of which is that of said cylindrical supporting member (224); and

e. a pipe supporting member having a rectilinear concave groove which is connected with said matrix through a base plate and has the function of an auxiliary means freely rotating on said base plate about a second axis parallel to said first axis so as to co-operate with said matrix and said countermatrix during a bending operation;

all these grooved co-operating bending members being interchangeable in accordance with the diameter of the pipe to be bent.

4,532,788

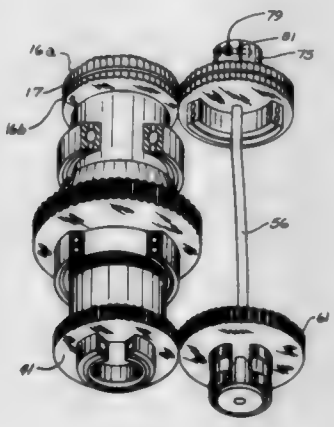
APPARATUS FOR MAKING SPINE FIN STOCK

Herbert J. Venables, III, Hunting Valley Village, Ohio, assignor to The Venables Machine and Tool Company, Cleveland, Ohio

Continuation-in-part of Ser. No. 392,575, Jun. 28, 1982, abandoned. This application May 24, 1983, Ser. No. 497,574

Int. Cl.³ B21D *53/04*

U.S. Cl. 72—186 **17 Claims**



1. Apparatus for transversely slitting a ribbon of sheet stock comprising a pair of cutter rolls forming a nip therebetween and each having peripheral cutting teeth adapted to cooperate with teeth on the other roll to cut slits at a cutting station formed at the nip, means for rotatively supporting said rolls for counter-rotation about spaced axes, means for adjustably fixing the center-to-center distance between said rolls to thereby achieve a desired radial spacing between opposed teeth, and positive drive means operatively interconnected between said rolls and arranged to maintain a desired circumferential orientation between opposed teeth passing through the nip during counter-rotation of the rolls, said positive drive means including means to permit center-to-center adjustment of said rolls independent of the circumferential orientation of opposed teeth in the nip, said drive means including a set of intermeshed gears each associated with one of said cutter rolls and each supported for rotation about an axis parallel to the axis of its associated roll, said gear supporting means at one of said gears including means to adjustably determine the center-to-center distance between said pair of gears, said drive means and gear supporting means being arranged to permit center-to-center adjustment of said pair of gears to be accomplished independent of the center-to-center spacing of said cutter rolls.

4,532,789

PROCESS FOR REDUCING THE WIDTH OF A FLAT METAL PRODUCT BY ROLLING

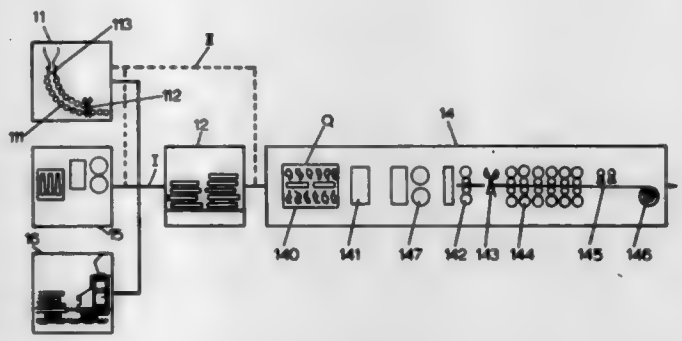
Hans Bruinsma, Uitgeest; Frans Hollander, Castricum; Rein L. Huisman, and Adrianus G. Reinen, both of Beverwijk, all of Netherlands, assignors to Estel Hoogovens B.V., Ijmuiden, Netherlands

Continuation of Ser. No. 238,965, Feb. 27, 1981, abandoned. This application Jun. 22, 1983, Ser. No. 506,583

Claims priority, application Netherlands, Feb. 28, 1980, 8001197

Int. Cl.³ B21B *27/06*

U.S. Cl. 72—202 **14 Claims**



10. In a process of hot rolling steel strip from a slab comprising heating the slab in a reheating furnace and thereafter rolling the hot slab into a strip in a finishing train having a plurality of roll stands in which the width of the slab is not substantially altered, the improvement comprising heating the slab in the reheating furnace, rolling the slab in a width-reducing roll train having at least one set of flat width rolls and only one set of thickness rolls and applying a traction force to the slab between a set of width rolls upstream of said thickness rolls and said thickness rolls so that plastic deformation of the slab occurs between the sets of rolls in the width-reducing roll train prior to rolling in said finishing roll train.

4,532,790

SPRING-LOADED GROUND ENGAGING TOOL

Douglas C. Nicholls, Yorkton, Canada, assignor to Morris Rod Weeder Co. Ltd., Yorkton, Canada

Filed Nov. 22, 1983, Ser. No. 554,283

Int. Cl.³ A01B *61/04*

U.S. Cl. 172—266 **3 Claims**

1. In an agricultural implement having a support,

a mount;

means for securing the mount to the support; and

a ground working assembly including:

an elongated arm extending at an angle downwardly and rearwardly from said mount,

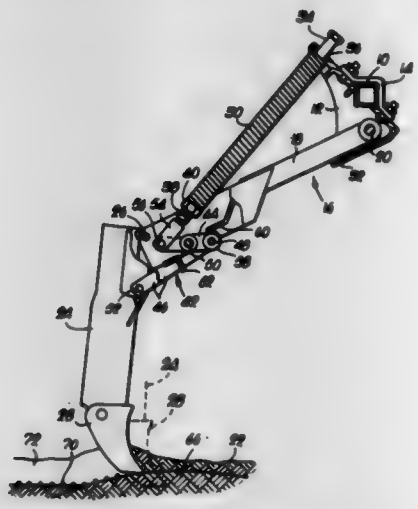
an elongated, normally upright shank,

pivot means at the lower end of the arm suspending the shank therefrom at the upper end of the shank for fore and aft swinging movement of the shank relative to the arm,

a ground working tool joined to the shank at the lower end of the latter,

a releasable locking device disposed forwardly of the shank and carried by said arm beneath the upper extremities of the latter,

said device including a pair of pivotally interconnected links,
there being an upper link and strap link,
means swingably mounting the upper link on the arm,
means pivotally connecting the strap link with the shank intermediate said ends of the shank,
said strap normally extending at an angle downwardly and rearwardly from the arm to the shank,
resilient means between the mount and the assembly yieldably biasing the latter downwardly,



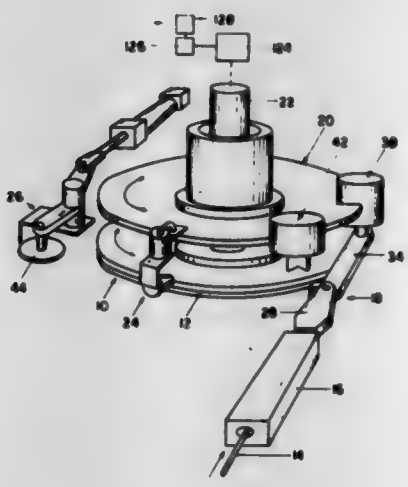
said resilient means being pivotally connected to said upper link and abutting the mount, and
means at the upper end of the arm pivotally connecting the same to the mount adjacent and beneath the support for up and down swinging movement of the assembly relative to the mount toward and away from the ground to be worked,
whereby the assembly provides, in combination, cushioning of the tool during normal operation and automatic tripping of the assembly when the tool encounters obstacles in the path of the tool.

4,532,791

ARRANGEMENT AND OPERATION THEREOF FOR THREADING A ROTATABLE ASSEMBLY

James L. McLaughlin; Donald J. Custer, both of Akron, and Richard J. Donze, Stow, all of Ohio, assignors to Morgan Construction Company, Worcester, Mass.

Filed Oct. 26, 1983, Ser. No. 545,711
Int. Cl.[3] B21C *1/14*
U.S. Cl. 72—275 21 Claims



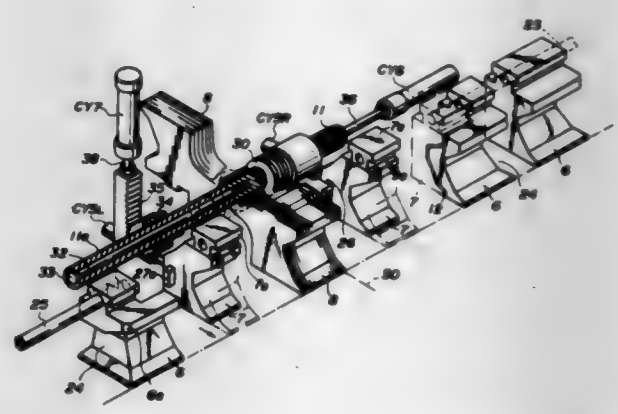
1. In a drawing arrangement for reducing elongated strand material, such as wire or tubing, comprising:
a die assembly through which said material is continuously drawn throughout a drawing process,
a rotatable block assembly located downstream from said die assembly having a cylindrial surface around which a length of said material is substantially wrapped so that a desired drawing tension is created to pull said material through said die assembly,
drive means for rotating said block assembly,
rotatable plate means constructed and arranged to be in close proximity and co-axial to said rotatable block assembly,
gripper means carried by said plate means constructed and arranged in a manner to selectively grasp a tapered end of said strand material immediately exiting said die assembly for threading phase of said drawing process and to release said tapered end after said threading phase, and
a shearing device carried by said plate means constructed and arranged in a manner to cooperate with said gripper means in a time sequence relationship during said threading phase to sever said tapered end from said length of said material after said length is arranged around said rotatable block assembly prior to said releasing of said end by said gripper means;
power transmitting means on said plate means or said block assembly for selectively causing said plate means to be engageable and disengageable with said rotatable block assembly, and constructed and arranged in a manner that upon said engagement said plate means rotates with said block assembly as a unit in the same direction and said gripper means places said strand of material on said cylindrical surface of said block assembly,
said power transmitting means including means for automatically effecting the disengagement of said plate means from said block assembly upon a predetermined rotation of said block assembly without interrupting said rotation of said block assembly.

4,532,792

APPARATUS FOR ADJUSTING TO TOOL LENGTH OF PANEL FORMING MACHINE

Toshio Hongo, Ichikawa, Japan, assignor to Maru Kikai Kogyo Co., Ltd., Japan

Filed May 31, 1983, Ser. No. 499,773
Claims priority, application Japan, Sep. 8, 1982, 57-136452[U]
Int. Cl.[3] B21D *11/04*
U.S. Cl. 72—319 6 Claims



1. A tool length exchanging device in a forming machine for bending the edge of a metal sheet comprising:
a ram (4) having a lower end,
a top tool body (5) mounted on the lower end of said ram (4),
a bottom tool (2) mounted below the top tool body (5),
a top tool including a group of top tool segments (6) slideable in a transverse direction of said top tool at the lower end of said body (5),
a number of thin top tool segments (8) invertably mounted at the center of said group of said top tool segments (6), each of said thin top tool segments having a thin width substantially less than each of said top tool segments,
a movable tool (3) rotating at 90° around both of said top

tool and said bottom tool (1, 2) and said top and bottom tools retaining the metal sheet (40),

a sheet finger driving mechanism (14) provided at the front of said body (5) to slide said top tool segments (6) in said transverse direction of the tool, and an inverting mechanism (32, 34, 35, Cy 7) provided at the rear side of said top tool body (5) to invert a predetermined number of said thin top tool segments (8) in a direction other than said transverse direction.

4,532,793

METHOD FOR DEEP-DRAWING SHEET METAL AND AN APPARATUS FOR CARRYING OUT THE METHOD

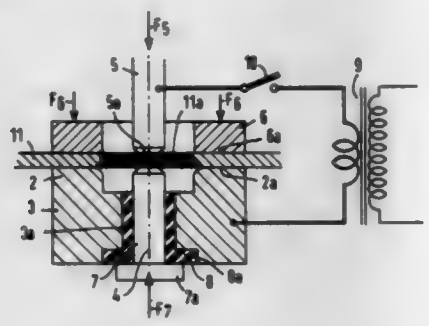
Helmut Bezold, Erlangen, Fed. Rep. of Germany, assignor to Kraftwerk Union Aktiengesellschaft, Mülheim an der Ruhr, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,549

Claims priority, application Fed. Rep. of Germany, Sep. 27, 1982, 3235716; Jul. 18, 1983, 3325820

Int. Cl.³ B21D *24/00*

U.S. Cl. 72—342 **2 Claims**



1. Method for deep-drawing sheet metal in a drawing apparatus having a drawing ring body, a pressure body, a drawing plunger, and a counter plunger, which comprises pushing a metal sheet having a deep-drawing region against the drawing ring body with the pressure body surrounding the deep-drawing region, pushing the drawing plunger and the counter plunger along the longitudinal axes thereof against the deep-drawing region for clamping substantially the center of the deep-drawing region from opposite sides of the metal sheet, and heating the deep-drawing region with an electric current flowing between at least one of the plungers and at least one of the bodies as well as through the deep-drawing region for deep-drawing.

4,532,794

STAMPING AND BENDING MACHINE FOR MANUFACTURING SHAPED PARTS

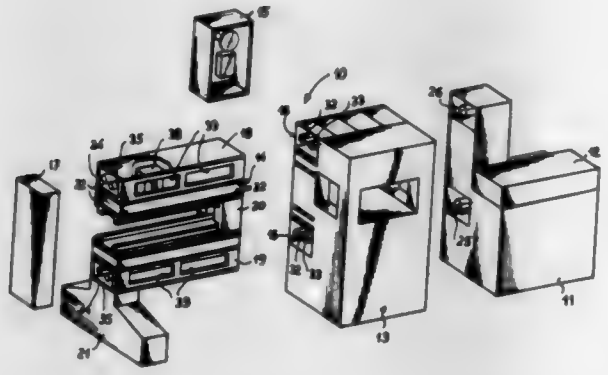
Ernst Mauderer, Hans-Pfann-Str. 62, 8000 München 82, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,787

Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3234981

Int. Cl.³ B21D *5/00, 28/00*

U.S. Cl. 72—442 **9 Claims**



1. An improved stamping and bending machine of the type having several interchangeable bending appliances arranged one behind the other, each supporting, adjustably and interchangeably, at least one bending attachment having a rotating shaft coupled with a bending appliance gearing to define a driving mechanism, every bending appliance having coaxial drive shaft stub ends at opposite sides, one of which ends will be coupled with the drive shaft stub end of the contiguous bending appliance, of one of the stamping press and a central drive unit, the improvement wherein each bending appliance comprises a top and a bottom shaft parallel to each other, and each bending attachment including a take-off gearing operatively connected to and driven directly by one of the top and bottom shaft.

4,532,795

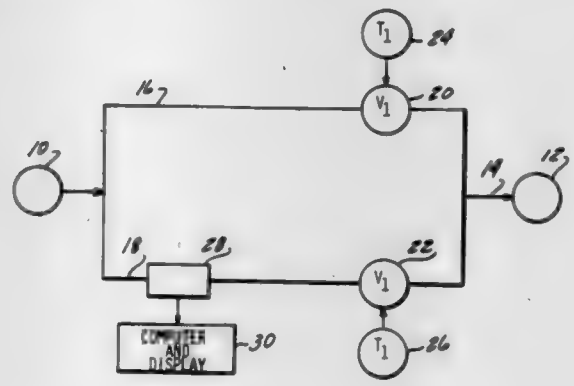
METHOD OF TEMPERATURE COMPENSATING LEAK RATE TESTING

Semyon Brayman, 28023 Berkshire, Southfield, Mich. 48076, and Ronald N. Bullock, 7520 Merrick, Taylor, Mich. 48180

Filed Apr. 23, 1984, Ser. No. 602,712

Int. Cl.³ G01M *3/26*

U.S. Cl. 73—40 **4 Claims**



1. A method of temperature compensating measurements of leak rates from a cavity in a part to be leak tested, said leak rate measurements achieved by placing said cavity in communication with a source of fluid under a predetermined pressure and measuring the flow rate to said cavity from said source, said method comprising the steps of:

initially establishing a temperature compensating function by:

placing said source of fluid pressure in communication with the cavity of a sample part, at each of a plurality of temperatures of said sample;

measuring the shift in flow rate to said cavity of said sample part caused by a change between said plurality of temperatures;

measuring each of said plurality of temperatures;

generating by linear regression from said measured temperatures and flow rates a temperature compensation function;

placing the cavity of each part to be leak tested in communication with said source of fluid at said predetermined pressure;

measuring the flow rate to said cavity from said source of fluid at said predetermined pressure;

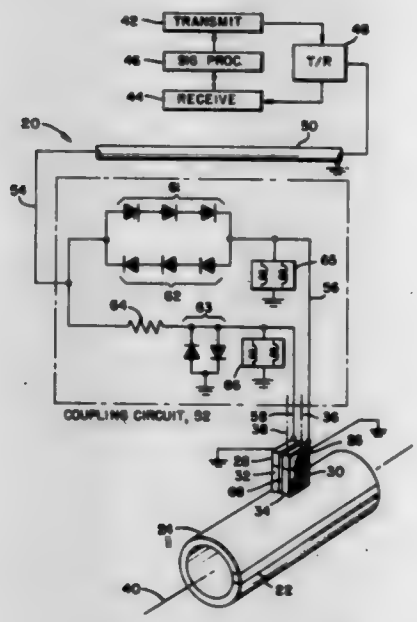
measuring the temperature of said part to be tested;

applying a temperature compensation factor from said generated temperature compensation function corresponding to said measured flow rate, whereby a temperature corrected flow rate to said cavity is determined.

4,532,796
DUAL TRANSDUCER CONNECTION BY A SINGLE CABLE

George D. Martens, New Milford; Alexander B. Smith, Milford, and Thomas D. Healy, Norwalk, all of Conn., assignors to Automation Industries, Inc., Greenwich, Conn.

Filed Nov. 7, 1983, Ser. No. 548,939
Int. Cl.[3] G01N *29/04*
U.S. Cl. 73—632 3 Claims



1. A coupling circuit for coupling a relatively large outgoing signal from one terminus of an electrical cable to a first device, and for coupling a relatively small incoming signal from a second device to said cable via said first terminus, said coupling circuit comprising:

a first channel and a second channel, said first channel being connectable between said one terminus and said second device, said second channel being connectable between said first terminus and said second device; and wherein

said first channel comprises a set of serially connected diodes being poled for the conduction of current of said outgoing signal towards said first device; and

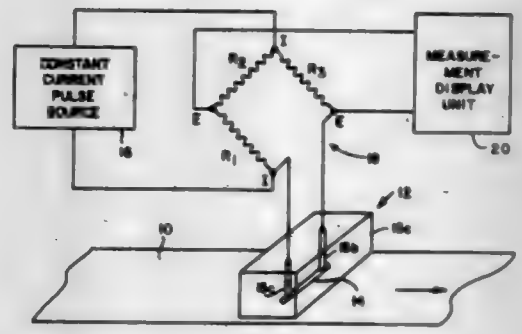
said second channel comprises a set of oppositely poled diodes connected in parallel across terminals of said second device, and a resistor connecting one node of said set of parallel diodes to said one terminal for attenuating any propagation of an outgoing signal in said second channel while said set of serially connected diodes attenuates any incoming signal propagating in said first channel, said outgoing signal having a voltage amplitude larger than the forward voltage drop of said serially connected diodes, the incoming signal from said second device having a voltage amplitude smaller than the forward voltage drop of said parallel connection of diodes.

4,532,797
INSTRUMENTATION FOR SENSING MOISTURE CONTENT OF MATERIAL USING A TRANSIENT THERMAL PULSE

Lien C. Yang, La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation of Ser. No. 325,885, Nov. 30, 1981, abandoned.
This application Dec. 22, 1983, Ser. No. 563,890
Int. Cl.[3] G01N *25/56*
U.S. Cl. 73—75 10 Claims

1. A transient method of measuring the moisture content of material using a short current pulse through a sensor having an element that is thermally and electrically conductive, the resistance of which varies as a function of its temperature, comprised of determining the resistance of said element on application of a short pulse of constant current energy, placing said element in thermal contact with said material, heating said element with said short pulse of constant current energy, determining the peak change in resistance of said element during the application of said short pulse of current while said element is

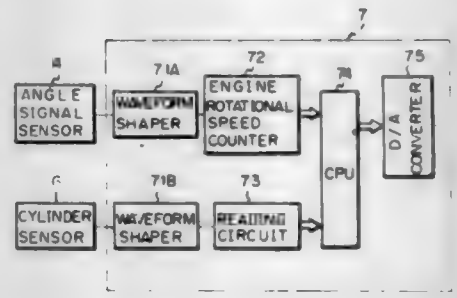


in contact with said material and always previous to any thermal equilibrium that would be reached by said element while in contact with said material, said peak change being a measure of moisture content of said material.

4,532,798
MEASUREMENT OF VARIATIONS IN INTERNAL COMBUSTION ENGINE OUTPUT

Tokio Kohama, Nishio; Hideki Obayashi, Okazaki; Hisasi Kawai, Toyohashi; Toshikazu Ina, Aichi; Takashi Shigematsu, and Setsuo Tokoro, both of Susono, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed May 31, 1984, Ser. No. 615,910
Claims priority, application Japan, Jun. 8, 1983, 58-100965; Jun. 16, 1983, 58-106699; Jun. 16, 1983, 58-106700
Int. Cl.[3] G01M *15/00*
U.S. Cl. 73—116 14 Claims



1. A method for measuring variations in output of an internal combustion engine, comprising the steps of: obtaining at least one of signals representing engine rotational speed, engine torque, and an internal cylinder pressure during firing strokes of the internal combustion engine; detecting periodical and pulsating changes in the obtained signal; and calculating a differential value of the change in the obtained signal at the portion where the gradient of the change is maximum.

4,532,799
LIQUID LEVEL SENSOR

Michael J. O'Neill, Wilton, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jun. 17, 1983, Ser. No. 506,232
Int. Cl.[3] G01F *23/24*
U.S. Cl. 73—295 2 Claims

1. An apparatus for use in remotely determining the level of a liquidified gas said apparatus comprising, in combination:

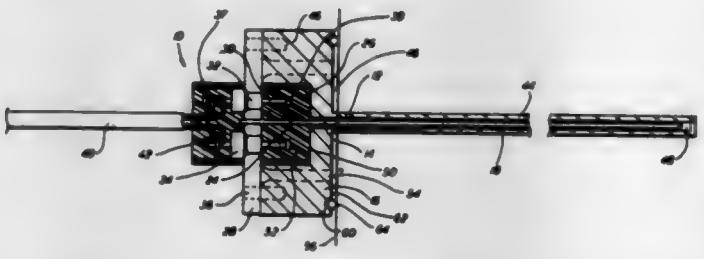
an elongated thin-walled hollow tubular metallic core;

an elongated sensor element in the form of a small diameter wire wound about, adjacent and coaxial with said core;

an elongated heating coil in the form of a wire wound about, adjacent and coaxial with said sensor element, said sensor

element and said heating coil being electrically insulated but in thermally conductive relationship with respect to each other;

an elongated probe sheath surrounding said tubular core and said sensor element and said heating coil to isolate said sensor element and said heating coil from said liquid and to prevent said liquid from entering the interior of said core;



said tubular core, sensor element, heating coil and probe sheath being partially immersible in the liquid whose changes in level are to be detected;

means for energizing said heating coil;

means for determining the ohmic resistance of said sensor element;

a base assembly including means for connecting said sensor element and said heating coil thereto; and

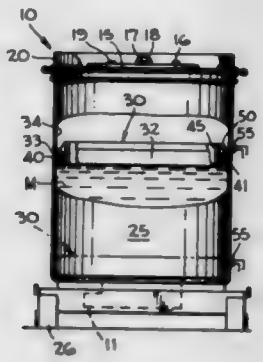
means for sealingly mounting said base assembly to a wall of a reservoir for containing said liquid.

4,532,800

LEVEL INDICATOR FOR LIQUID CONTAINER WITH A FOLLOWER

Clarence B. Coleman, Oakland, Calif., assignor to Fabricated Metals, Inc., San Leandro, Calif.

Filed Dec. 1, 1983, Ser. No. 557,045
Int. Cl.³ B65D *88/42;* G01F *23/12*
U.S. Cl. 73—308 **4 Claims**



1. A container for bulk material comprising:

(a) a shell for storing bulk material, said shell being formed with an upright cylindrical wall having an inner surface and an outer surface and a bottom wall, said bottom wall provided with means for removing the bulk material from the shell;

(b) a diaphragm follower disposed in said shell and dimensioned to engage flexibly the inner surface of said shell for wiping the inner surface of said shell as the bulk material is removed from said shell, said follower being movable over a vertical rectilinear path in constant contact with the upper surface of the bulk material stored in said shell;

(c) a magnet mounted on said follower interiorly of said shell for movement therewith; and

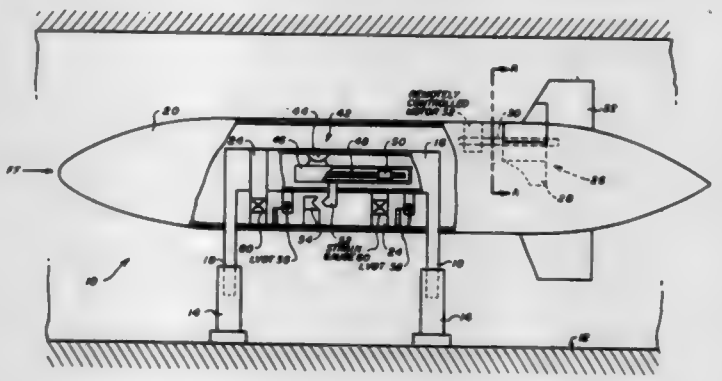
(d) means responsive to the magnetic field of said magnet and supported by said wall along said outer surface, said means connected to level indicating means, said means being activated by the magnetic field of said magnet when said follower moves to the approximate height of said means.

4,532,801

METHOD AND APPARATUS FOR DETERMINING SMALL MAGNITUDE FLUID-DYNAMIC DRAG RESISTANCE DIFFERENTIALS BETWEEN DIFFERENT STRUCTURAL CONFIGURATIONS OF A MODEL

David W. Coder, Bethesda; Benjamin B. Wisler, Jr., Cabin John; Albert P. Clark, Bethesda, and Raymond J. Ratcliffe, Silver Spring, all of Md., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 17, 1984, Ser. No. 611,444
Int. Cl.³ G01M *9/00;* G01N *33/00*
U.S. Cl. 73—432 R **12 Claims**



1. An apparatus for determining small magnitude fluid-dynamic drag resistance differentials acting on a variable model mounted in an environmental test facility, said environmental test facility including means for mounting said variable model therein, comprising:

a configuration conversion mechanism disposed within said variable model and cooperating therewith to alternately convert said variable model to a baseline configuration and a modified baseline configuration;

a nulling force mechanism disposed within said variable model and cooperating with said variable model and said mounting means to be selectively apply a nulling force to said variable model to null out a total fluid-dynamic drag resistance acting on said variable model due to a predetermined fluid flow in said environmental test facility such that said variable model is returned to an undeflected position; and

means for measuring deflections of said variable model caused by said small magnitude fluid-dynamic drag resistance differentials acting thereon, said measuring means being disposed within said variable model and cooperating with said variable model and said mounting means,

whereby after said predetermined fluid flow is initialized and stabilized in said environmental tunnel and said nulling force is applied to said variable model by said nulling force mechanism to return said variable model to said undeflected position, said variable model is alternately converted to said baseline configuration and said modified baseline configuration and said small magnitude fluid dynamic drag resistance differentials acting thereon to cause deflections of said variable model are measured by said deflection measuring means.

4,532,802

APPARATUS FOR ANALYZING THE INTERFACE BETWEEN A RECORDING DISK AND A READ-WRITE HEAD

Celia E. Yeack-Scranton, South Salem, N.Y., and Siegfried F. Vogel, Los Gatos, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 31, 1984, Ser. No. 615,638
Int. Cl.³ G01B *5/28;* G01N *19/08*
U.S. Cl. 73—432 R **15 Claims**

1. An improved apparatus for testing a recording disk for determining its quality, said apparatus comprising:

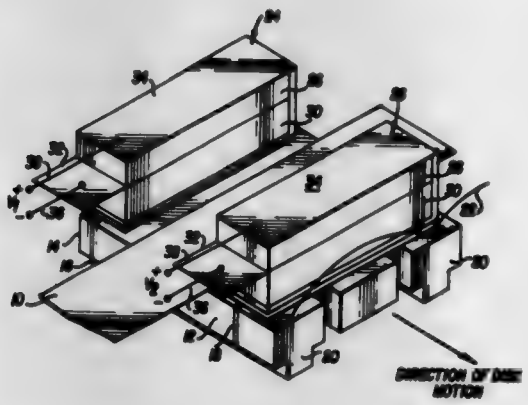
means for rotating such a disk;

means for simulating the geometry, weight and material properties of a read-write head;

means for moving said means for simulating to preselected positions across the surface of a recording disk while the disk is rotating on said means for rotating, whereby said means for simulating is spaced from the surface of the disk at a specified fly height due to rotation of the disk;

at least one piezoelectric transducer means, mounted on said means for simulating, for producing first signals in response to acceleration or flexure or both by said means for simulating, due to movement of said means for simulating relative to or contact thereof with the rotating disk, or both; and

means connected to said transducer means for selectively filtering said first signals to produce:



second signals in a first frequency range in which spectral components of said first signals are indicative of rigid body accelerations of said means for simulating;

third signals in a second, usually higher frequency range in which spectral components of said first signals are indicative of contacts between the disk and the means for simulating; and

fourth signals in a third frequency range between said first and second ranges, in which RMS spectral components of said first signals are indicative of the roughness of flight of said means for simulating over the surface of the disk,

where the frequency ranges are determined by the geometry of particular slider/transducer assembly chosen.

4,532,803

NON-SPINNING DYNAMIC BALANCING MACHINE AND METHOD

Richard P. Woolley, Boulder, Colo., assignor to Ball Corporation, Muncie, Ind.

Filed Jan. 9, 1984, Ser. No. 569,486
Int. Cl.³ G01M *1/16*
U.S. Cl. 73—471 **13 Claims**

1. Apparatus for detecting imbalance in an object comprising:

first means for supporting said object;

second means for supporting said first means;

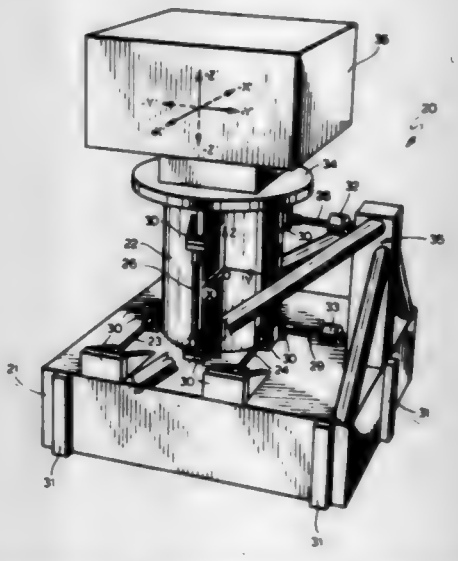
a base for supporting said second means;

a plurality of strut means coupling said second means to said base, said plurality of strut means including first strut means for holding said second means against translation in the direction of a vertical axis and against rotation about a first horizontal axis, second strut means for holding said second means against translation in the direction of a second horizontal axis and against rotation about the vertical axis, and third strut means for holding said second means against translation in the direction of said first horizontal axis and against rotation about said second horizontal axis;

means for angularly oscillating said first means and said object supported thereby relative to said second means;

detecting means coupled to said third strut means for detecting reaction forces exerted in the direction of said first horizontal axis and reaction torques exerted around said second horizontal axis as a result of effects caused by imbalance in said object; and

means for uncoupling said first means from said second



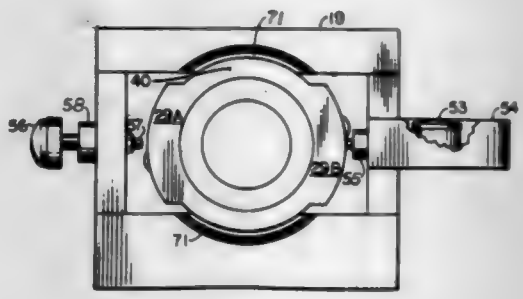
means for rotating said first means and said object supported thereby to different orientations relative to said second means to enable all horizontal reaction torques and forces to be detected.

4,532,804

DEVICE FOR RETAINING A TOOL IN EITHER A STATIONARY OR MOVABLE POSITION

Louis D. Wilson, and Patrick M. Jones, both of Folsom, Calif., assignors to Drive Line Service, Inc., West Sacramento, Calif.

Filed Jan. 6, 1984, Ser. No. 568,926
Int. Cl.³ G01M *1/04, 1/16*
U.S. Cl. 73—478 **6 Claims**



1. A locking and dynamic balancing assembly comprising a rotatable annular shell and a rocker bearing support for said rotatable shell;

said support comprising a pair of spaced elongated upper and lower members interconnected at their ends, the lower elongated member having a central curved support section with a rocker surface adapted to receive said annular shell, and having a pair of similar arcuate recessed zones of a different radius of curvature from said support section disposed forwardly and rearwardly of said support section;

said rotatable annular shell disposed within said rocker bearing support, within which shell is an inner race carrying a plurality of ball bearings,

said shell having a pair of spaced arcuate concentric lobes extending outwardly on opposite sides of the outer surface of said shell, said lobes being rotatable from a first position to a second position,

the radius of said annular shell being designated R_2 and the central support section of the lower member of the rocker bearing support having a radius of curvature R_3 which is greater than R_2,

the radius of said lobes corresponding to the radius of curvature of said recessed zones;

whereby when said lobes are rotated such that the annular shell is in an unlocked position, the outer surface of said annular shell rests on the curved central support section of the lower member of the rocker bearing support, and is restrained only by gravity force;

and when said lobes are rotated to a locked position, the lobes are engaged in both the upper and lower elongated member's arcuate recessed zones.

4,532,805

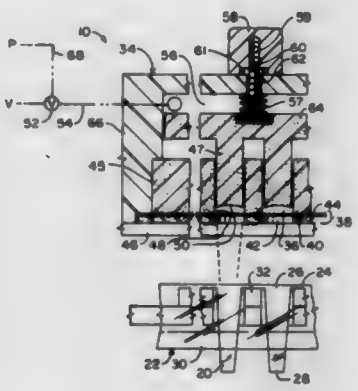
PIPETTE SYSTEM

Robert W. Flesher, 1836 Circle Rd., Towson, Md. 21204

Filed May 29, 1984, Ser. No. 615,070

Int. Cl.[3] B01L *3/02*

U.S. Cl. 73—863.32 **23 Claims**



22. In a system for micropipetting, of the type having structure defining a plurality of cavities, a membrane positioned from being drawn into the plurality of cavities, means for drawing the membrane into the plurality of cavities, and means connected with the membrane for metering fluid samples in proportion to the drawing of the membrane into the plurality of cavities, the improvement comprising: the structure defining the plurality of cavities being microporous structure, and a manifold associating the means for drawing with the plurality of cavities through the microporous structure.

4,532,806

SENSOR FOR MONITORING THE DEPOSITION OF FROZEN FOG AND/OR ICE ON SURFACES

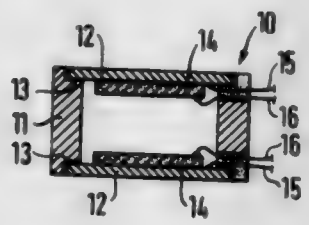
Hans-George Bruchmüller, Giengen, Fed. Rep. of Germany, assignor to Bosch-Siemens Hausgeraete GmbH, Munich, Fed. Rep. of Germany

Filed Feb. 15, 1983, Ser. No. 466,546

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1982, 3205370

Int. Cl.[3] G01N *29/00*

U.S. Cl. 73—579 **8 Claims**



1. Sensor for monitoring the deposition of frozen fog and/or ice on evaporator surfaces, comprising a can-shaped housing having opposite sides, means for heat conductingly connecting said housing to the evaporator, first and second membranes respectively disposed at said opposite sides of said housing, first and second electroacustic transducers each being attached to a respective one of said membranes, and means for applying alternating voltage to said first transducer causing said first transducer to oscillate said first membrane, said second membrane being spaced from said first membrane by a distance permitting oscillation of said first membrane to oscillate said second membrane.

4,532,807

METHOD AND APPARATUS FOR DETECTING SOUND SOURCE

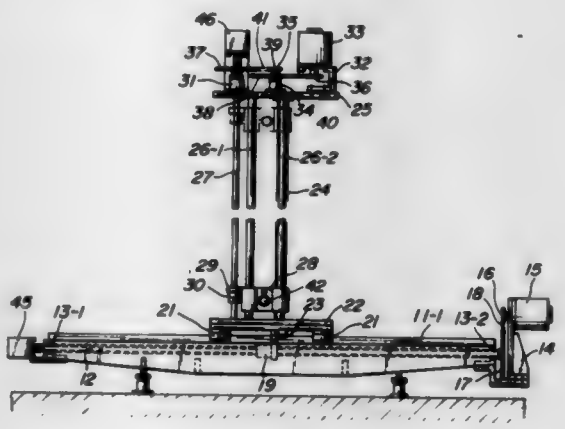
Naotaka Tomita, Sayama, and Toshiyuki Watanabe, Tokorozawa, both of Japan, assignors to Bridgestone Tire Company Limited, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,609

Claims priority, application Japan, Oct. 1, 1982, 57-172694

Int. Cl.[3] G01N *29/04*

U.S. Cl. 73—602 **11 Claims**



7. An apparatus for detecting a sound source comprising:

at least two microphones;

a traversing device for supporting said microphones and for moving said microphones in a two-dimensional manner to scan successive measurement regions in a measurement plane wherein said two microphones being spaced apart from each other in a direction substantially perpendicular to said measurement plane;

a fast Fourier transform circuit for calculating a cross power spectrum with respect to various frequencies in a given frequency range on the basis of outputs of said two microphones in respective measurement regions;

a computer for calculating acoustic intensities with respect to various frequencies in said respective measurement regions on the basis of said cross power spectrum derived from said fast Fourier transform circuit;

a storing means for storing said acoustic intensities with respect to various frequencies together with positional information of said two microphones arrange on said traversing device; and

a display device for indicating selectively said acoustic intensities with respect to respective frequencies in all the measurement regions stored in said storing means.

4,532,808

CORNER REGION ULTRASONIC INSPECTION DEVICE

Timothy H. Wentzell, South Windsor, and Mark V. Brook, West Hartford, both of Conn., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Oct. 13, 1983, Ser. No. 541,406

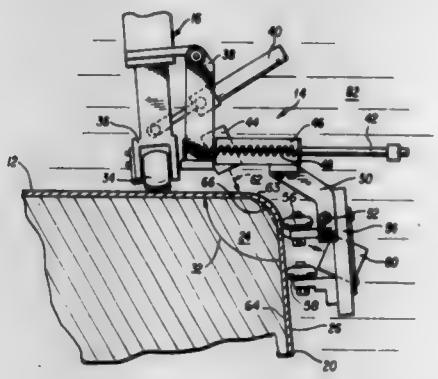
Int. Cl.[3] G01N *29/04*; G21C *17/00*

U.S. Cl. 73—640 **7 Claims**

7. A method for detecting radially oriented cracks beneath the corner region formed by the intersection of two cylindrical conduits, comprising the steps of:

transmitting a beam of ultrasonic sound energy into the corner region at an angle oblique to the inner surface of the first conduit and skewed with respect to the plane defined by the centerlines of the first and second conduits, and

directionally monitoring the surface of the second conduit for detecting the presence of reflected ultrasonic sound



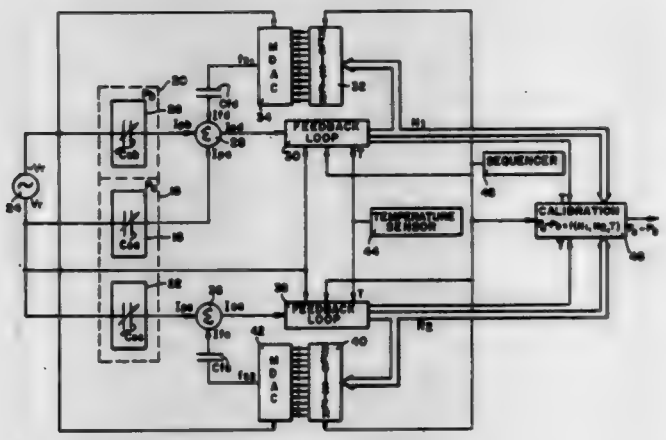
energy reflected by radially oriented cracks present within the corner region.

4,532,809

PRESSURE MEASURING SYSTEMS WITH INCREASED ACCURACY FOR A CONSTANT RESOLUTION

Frank J. Antonazzi, and Sudesh Bose, both of South Bend, Ind., assignors to Allied Corporation, Morristown, N.J.

Filed Oct. 5, 1981, Ser. No. 308,751
Int. Cl.³ G01L *9/12*
U.S. Cl. 73—701 **24 Claims**



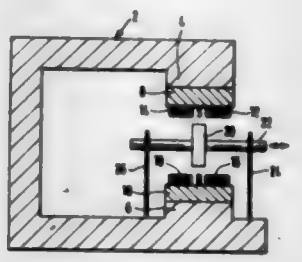
1. A pressure measuring system comprising first pressure sensing means for sensing a first pressure, second pressure sensing means for sensing a second pressure, means responsive to said first and second pressure sensing means for generating first and second pressure signals, means responsive to the first and second pressure signals, for generating a combining signal representing a combined variable which varies as a function of both said first and second pressure measurement signals, common mode sensing means for sensing said first pressure, common mode signal generating means responsive to said common mode sensing means for generating a common mode signal as a function of said first pressure, and calibration means responsive to said combining signal and said common mode signal for calibrating the combining signal as a function of the value of said common mode signal.

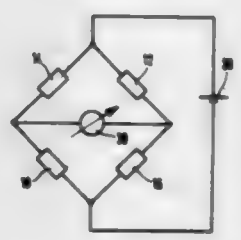
4,532,810

DEVICE FOR THE PICK-UP OF MEASURED VALUES

A. F. Rudolf Prinz, and Rudolf M. Charvat, both of Brunswick, Fed. Rep. of Germany, assignors to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V., Cologne, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,360
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224757
Int. Cl.³ G01B *5/00, 7/14;* G01D *5/20;* G01L *9/00*
U.S. Cl. 73—717 **20 Claims**





1. A device for the pickup of measured values having a frame as carrier for a first measurement reference, a carrier for a second measurement reference being movably mounted relative to said frame.

a mechanical to electrical conversion system provided at said frame, having a first element attached to said frame and a second element attached to said movably mounted carrier, including

two pairs of field plates, the field plates of each pair being located at a distance parallel to each other, said two pairs of field plates being arranged oppositely to each other on opposite parallel pole surfaces in the frame so that an air gap is present between said oppositely arranged two pairs of field plates;

magnetic means, the magnetic field of which is present at the pairs of said field plates and said air gap,

an armature connected to said carrier for a second measurement reference and being movable transversely with respect to said parallel pole surfaces in said air gap between said two pairs of field plates and in the general direction in which the field plates of each pair of field plates are separated and in the area between the field plates of each of said two pairs of field plates, whereby said armature causes the magnetic flux through the field plates to be varied depending on the position of said first and second measurement references relative to each other,

a bridge circuit having the field plates as elements, adapted to be connected to display and/or recording means for measured values of one diagonal of said bridge circuit, while voltage is applied to the other diagonal.

4,532,811

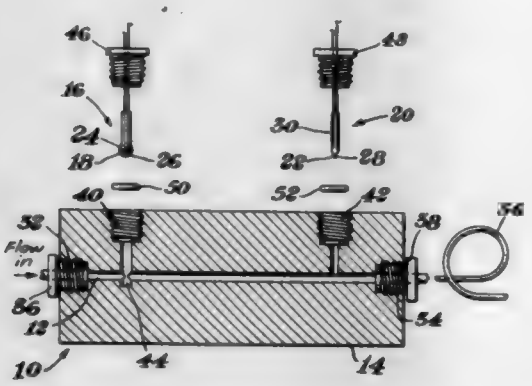
APPARATUS FOR METERING SUB-10 CC/MINUTE LIQUID FLOW

Theodore E. Miller, Jr., and Hamish Small, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jul. 6, 1981, Ser. No. 280,668
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—861.05 **18 Claims**

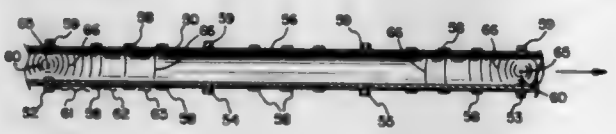
1. Apparatus for electronically metering volumetric liquid flow, which comprises:

(a) a flow cell having a flow-through passage;
(b) a resistance heating means comprising a semiconductor heating element, and circuit means to operate the semiconductor element as a resistance pulse heater, the resistance heating means having a heat emitting surface which is exposed in the flow passage;
(c) a heat sensing thermistor, and circuit means to operate the thermistor in the heat sensing mode, the heat sensing thermistor having a heat sensing surface which is exposed in the flow passage in fixed, spaced relationship with the heat emitting surface of the resistance heating means;



(d) a differentiating circuit means for outputting an electrical pulse signal which in magnitude is proportional to dR_t/dt, or a time derivative thereof, wherein dR_t/dt is the time rate of change of the resistance of the heat sensing thermistor with pulse temperature change in the liquid to be metered;
(e) said circuit means operating the resistance heating means comprising a timer circuit means which is activated by each event of a sensible outputted pulse of circuit means (d), to apply a timed voltage pulse to the resistance heating means.

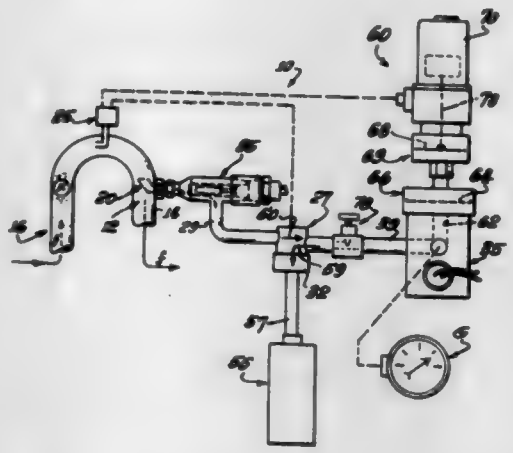
4,532,812
PARAMETRIC ACOUSTIC FLOW METER
James R. Birchak, Spring, Tex., assignor to NL Industries, Inc., New York, N.Y.
Filed Jun. 30, 1983, Ser. No. 509,520
Int. Cl.³ G01F *1/66*; E21B *47/00*
U.S. Cl. 73—861.27 **29 Claims**



1. Apparatus for measuring the velocity of a fluid flowing along a select region of a conduit by the utilization of acoustic pulses and application of the Doppler principle, said apparatus comprising:
transducer means comprising first and second acoustic pulse generation transducers longitudinally disposed on said conduit for producing combined dual frequency, primary acoustic pulses;
receiver means for receiving and detecting secondary acoustic pulses propagated in said fluid, said receiver means being longitudinally disposed on said conduit and longitudinally spaced relative to said transducers; and
means for directing said primary, dual frequency acoustic pulses toward a select region adjacent the walls of said conduit for generation of said secondary acoustic pulse within said fluid at the difference frequency between said primary pulses, said secondary pulses propagating axially from said region to said receiver means for determination of fluid flow velocity.

9. A method of measuring the flow of fluid along a conduit by utilizing Doppler shift principles comprising the steps of:
providing first and second acoustic pulse generators upon said conduit disposed longitudinally one from the other;
providing first and second acoustic pulse receivers upon said conduit;
alternately generating primary acoustic pulses comprising combined pulses having two different frequencies with said first and second pulse generators and directing said primary pulses into the fluid flowing along said conduit;
generating secondary acoustic pulses within said fluid of said conduit from the primary acoustic pulses having a frequency equal to the frequency difference between the primary pulses, said primary pulses being of sufficient strength to cause said secondary pulses to propagate axially to said first and second acoustic pulse receivers; and
detecting the pulse propagation between said pulse generators and said receivers and determining fluid flow rate from the Doppler shift thereof.

4,532,813
KINETIC FLUID SAMPLER
Nerl D. Rinehart, Bakersfield, Calif., assignor to Alpha Gauge & Instrument Company, Bakersfield, Calif.
Filed Jan. 3, 1984, Ser. No. 567,776
Int. Cl.³ G01N *1/14*
U.S. Cl. 73—863.02 **15 Claims**

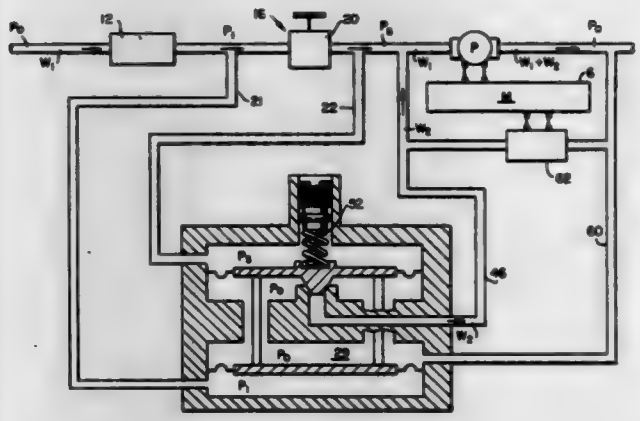


1. Apparatus for collecting discrete samples of fluid flowing in a conduit under pressure comprising:
a tap, said tap having a collector end thereof disposed in the fluid stream, said tap extending outwardly through the conduit wall;
sampler means connected to said tap at a remote end thereof, said sampler means including a plenum into which fluid from said conduit flows under pressure and is accumulated to form a sample;
collector means for receiving fluid samples;
switchable valve means interposed in said tap intermediate said collector end and said sampler means, and interconnected with said collector means so as to selectively direct fluid samples into said collector means;
said switchable valve means being operable between a receiving position to provide a fluid connection between said collector end and said sampler means to thereby permit fluid from the conduit to flow into and accumulate in said sampler means and a discharge position so as to interconnect said sampler means and said collector means to form a discrete isolated fluid sample under a predetermined pressure;
means in said conduit upstream from said tap for measuring fluid flow including signal means for transmitting electrical impulses to said switchable valve means upon passage of a predetermined volume so as to cycle said switchable valve means between its receiving position and its discharge position so as to sequentially accumulate and thereafter discharge periodic fluid samples.

4,532,814
FLUID SAMPLER AND GAS FLOW CONTROL SYSTEM AND METHOD

Hill S. Lalin, 10 Bonita Ter., Wayne, N.J. 07470

Filed Jul. 12, 1983, Ser. No. 512,935
Int. Cl.[3] G01N *1/24*
U.S. Cl. 73—863.03 17 Claims

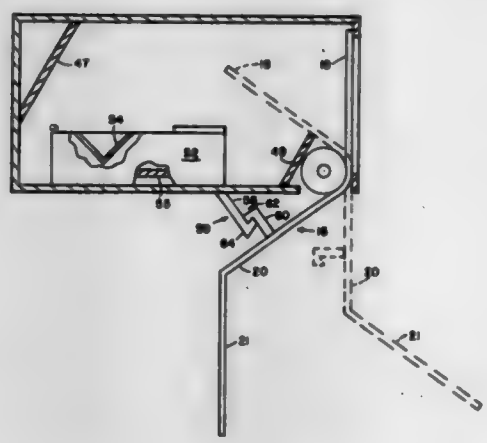


1. A fluid sampler for use in sampling a gaseous atmosphere in a collecting device at a constant preselected flow rate comprising: a flow control valve having a manually adjustable flow restricting orifice for preselecting said flow rate; a vacuum pump having a suction end and a discharge end and being connected in series with said flow control valve and the collecting device for drawing gas from the atmosphere through a primary flow line including, in combination, the collecting device, the flow control valve and the pump; means for sensing the pressure differential across said flow control valve; and a flow controller connected across the pump and being responsive to said sensing means for supplying a supplementary flow of gas from the discharge end of the pump into the suction end of the pump such that the flow through the pump equals the combination of the supplementary flow and the primary flow, with the flow controller having valve means for varying said supplementary flow in response to changes in pressure in said sensing means whereby the flow through said collecting device is maintained constant at said preselected flow rate.

4,532,815
DETONATION PRODUCTS CATCHER

Gary W. Gee, Huntsville; Daniel L. Shumate, Redstone Arsenal; John J. Nieder, Huntsville; Boyd E. Bump, Huntsville, and Robert D. Kource, Huntsville, all of Ala., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 22, 1983, Ser. No. 564,619
Int. Cl.[3] G01L *5/14*
U.S. Cl. 73—864.63 6 Claims



1. Apparatus for trapping a sample of detonation products which precedes the shock front during the detonation process comprising:

a. a rigidly mounted box, said box having substantially parallel upper and lower surfaces and substantially parallel sides, a closed aft end and an open forward end;

b. a container carried in said box for retention of said detonation products therein;

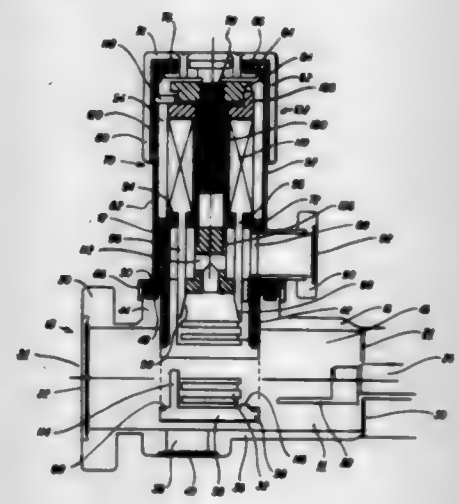
c. a pivotably mounted door having upper, lower and central sections disposed in angular relation, said upper door section carried in said box adjacent said open forward end, said central and lower sections of said box disposed outside of said box below said lower surface thereof, whereby responsive to said shock front applying pressure to said central and lower sections of said door, said door is moved to a closed position for retention of said detonation products in said box; and

d. locking means associated with said door and said box for retention of said door in said closed position.

4,532,816
SAMPLE VESSEL

Mark C. Miller, Chanhassen, Minn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Jul. 25, 1983, Ser. No. 516,827
Int. Cl.[3] G01N *37/00, 1/00*
U.S. Cl. 73—864.91 22 Claims



1. A sample vessel comprising:

an elongated hollow housing having two ends, one end thereof having an opening therethrough;

a carrier plate slidably positioned within said housing, said plate including means for supporting a specimen holder;

means for sealing said housing opening;

means, within said housing, for longitudinally translating said carrier plate; and

means distal said opening and located relatively closer to the end of said housing opposite to the open end to simultaneously control said translating means and said sealing means to seal said housing when a specimen holder carried by said carrier plate is within said housing, the seal being such that when said housing gets sealed the specimen holder is located interior to the sealed exterior of said housing.

4,532,817
TUNING SHAFT OF PUSHBUTTON TUNER

Takao Chaki, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

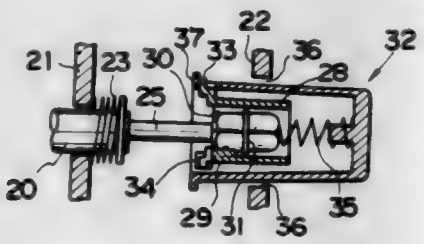
Filed Nov. 2, 1982, Ser. No. 438,438
Claims priority, application Japan, Nov. 6, 1981, 56-164912[U]
Int. Cl.[3] F16H *35/18;* G05G *1/10;* F16D *11/04;* H03J *5/06*
U.S. Cl. 74—10.33 2 Claims

1. A tuning shaft for use in switch-type pushbutton tuners which comprises:

a tuning shaft portion;

a clutch shaft portion engageable with a pushbutton of said pushbutton tuner;

said tuning shaft portion and said clutch shaft portion being formed in one single body, said clutch shaft portion being configured in a regular polygon in its section, wherein one end of said clutch shaft portion nearer to the tuning shaft



portion includes an axially straight surface and a sloping surface dully sloping down therefrom toward the periphery of the tuning shaft portion, and the boundary between each sloping surface and each associated axially straight surface of the clutch shaft portion is chamfered to form an arc.

4,532,818

CLUTCH INTERLOCKING MECHANISM

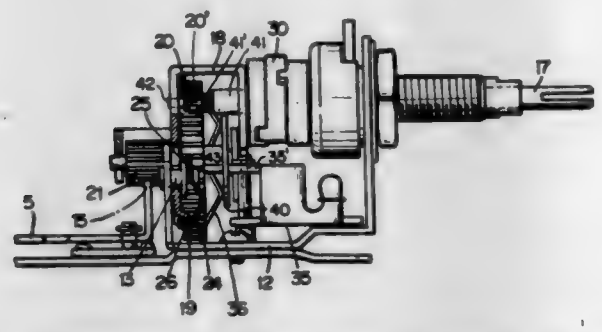
Yoshio Tanaka; Yasuhisa Nishikawa; Ryoichi Hasumi, all of Saitama, and Takashi Koizumi, Toda, all of Japan, assignors to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 26, 1980, Ser. No. 191,267

Claims priority, application Japan, Sep. 27, 1979, 54-132567[U]

Int. Cl.³ H03J *5/12*; G05G *1/02*

U.S. Cl. 74—10.33 **4 Claims**



1. In a pushbutton tuner having a plurality of manually operable tuning button slides, a memory slide coupled to said button slides to be moved a distance which varies according to the button slide selected for actuation, tuning means coupled to said memory slide for varying the tuning frequency of said tuner responsively to the displacement of said memory slide to effect a station tuning operation, a geartooth rack affixed to said memory slide, an output drive gear engaging said memory slide rack, a manually rotatable tuning shaft, rotary drive means coupling said drive gear to said tuning shaft, said rotary drive means including clutch means actuated by operation of any button slide from a normally engaged position which couples said tuning shaft to said drive gear to a disengaged position, the improvement comprising:

a support element;

a pivot pin rigidly affixed to said support element;

a support bracket carrying at least a portion of said rotary drive means, said portion including said drive gear and said clutch means, said support bracket having a hole therein for accepting passage of said pivot pin therethrough which pivotally supports said bracket, so that rotation of said support bracket in a first direction forces said drive gear into meshing engagement with said memory slide rack, said tuner further including resilient spring means connected between said support bracket and said support element for urging said support bracket in said first direction so as to keep said rack and said drive gear in meshing engagement; and

means for resiliently tensioning said support bracket against said pivot pin to force a portion of the wall defining said bracket hole against a portion of said pivot pin so as to eliminate looseness between said support bracket and said pivot pin.

4,532,819

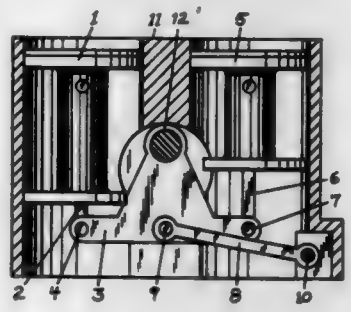
COMPACT CRANK DRIVE MECHANISM

M. Andrew Ross, 4195 Mumford Ct., Columbus, Ohio 43220

Filed Feb. 21, 1984, Ser. No. 581,683

Int. Cl.³ F16H *21/22*

U.S. Cl. 74—44 **6 Claims**



1. A crank drive mechanism for drivingly linking a crankshaft to two pistons which reciprocate along substantially parallel axes lying in a plane with a desired phase difference in two adjacent cylinders formed by cylinder walls of a housing, said mechanism comprising:

(a) A crankshaft journalled to said housing, the axis of said crankshaft being located between said cylinders, within the limits of reciprocation of at least one of said pistons, and transverse to the plane of the axes of said cylinders;

(b) A yoke with 4 pivot axes, said yoke rotatably attached to the throw of said crankshaft at a first one of said yoke pivot axes to define a circularly moving portion of the yoke;

(c) A pair of connecting rods, each rod pivotally connected at one end to said yoke at second and third yoke pivot axes, respectively, and pivotally connected at its opposite end to a different one of said two pistons; and

(d) A rocking lever pivotally attached at one end to said housing laterally of said yoke and pivotally attached to said yoke at a fourth yoke pivot axis;

wherein a portion of at least one cylinder wall is relieved and the circularly moving portion of the yoke passes through the relieved portion of the wall.

4,532,820

MOTION MULTIPLIER APPARATUS

Ralph D. Gerben, Glen Burnie, and Harry J. Walters, Fallston, both of Md., assignors to M. S. Willett, Inc., Cockeysville, Md.

Division of Ser. No. 919,591, Jun. 28, 1978, Pat. No. 4,256,218. This application Jul. 9, 1980, Ser. No. 167,284

Int. Cl.³ F16H *25/12, 21/44*

U.S. Cl. 74—56 **1 Claim**

1. Motion multiplier apparatus comprising

spaced parallel stationary rods,

parallel blocks mounted on the rods for axial movement with respect to the rods,

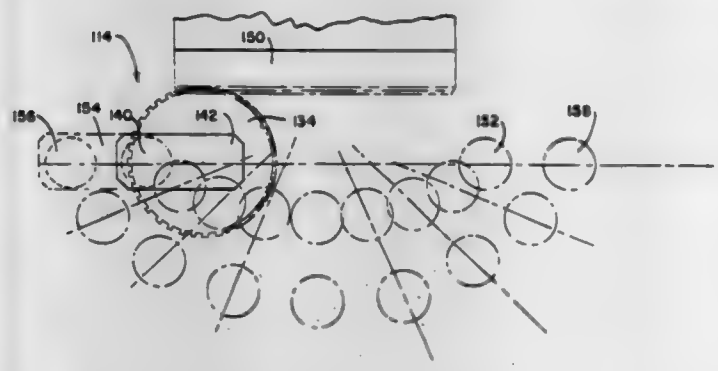
a toothed wheel rotatably mounted on one of the blocks

a stationary rack mounted parallel to the rods and engaging the toothed wheel,

an arm removably held in a radial notch in an end face of the toothed wheel and terminating radially outwardly beyond the toothed wheel in a follower positioned for movement within a transverse channel formed in the other of the blocks

said other of the blocks connected to a device for imparting movement to the device,

and cam means driveably connected to the block mounting the toothed wheel for imparting sufficient axial movement to said block to move said arm through about a 180° arc



from a first position substantially parallel to the rods to a second position substantially parallel to the rods,

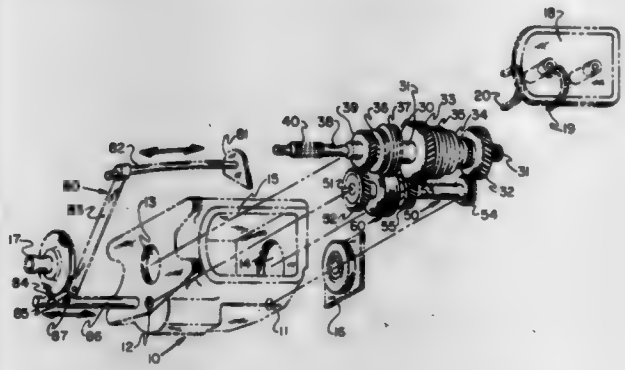
said cam means comprising a barrel cam having an axial curve cam ridge on an outer surface, said ridge positioned between cam followers connected to the block mounting the toothed wheel.

4,532,821

TRANSMISSION FOR RACING CARS

Thomas A. Hager, 410 Third St., W. Easton, Pa. 18042

Filed Oct. 21, 1983, Ser. No. 544,252
Int. Cl.³ F16H *3/08*
U.S. Cl. 74—370 **13 Claims**



1. In a modified manual synchronized transmission having a transmission drive shaft adapted to be operatively coupled to an engine, the improvement comprising:

(a) an output shaft on which is mounted at least one forward gear and which, as modified, contains at least one forward gear fewer than originally provided in an unmodified transmission of the same type;

(b) an abbreviated counter shaft, the axis of which is parallel to the axis of said output shaft;

(c) a stub shaft in co-axial alignment with said counter shaft, the adjacent ends of said counter shaft and said stub shaft being spaced apart;

(d) gear means for driving the stub shaft from the transmission drive shaft;

(e) a friction clutch mounted intermediate said stub shaft and said counter shaft, said clutch linking the adjacent ends of said two shafts to permit rotational linking thereof when said clutch is engaged, said clutch being normally biased in disengaged position—the total length of said abbreviated counter shaft, said stub shaft and said friction clutch approximating the length of the counter shaft provided in an unmodified transmission of the same type;

(f) at least one forward gear drive mounted on said abbreviated counter shaft which drive is the meshing companion of the forward gear on said output shaft;

(g) means for engaging said clutch by overcoming its normal bias;

(h) first synchronizer means for selectively rotationally linking said counter shaft and said output shaft via said forward gear and its companion forward gear drive, said means also including a neutral position;

(i) second synchronizer means for selectively rotationally linking the transmission drive shaft to said output shaft in direct drive, said means also including a disengaged position; and,

(j) a plurality of mechanically interlocked selector forks which control movement of said first and said second synchronizer means and permit selection of only predetermined gear orientations;

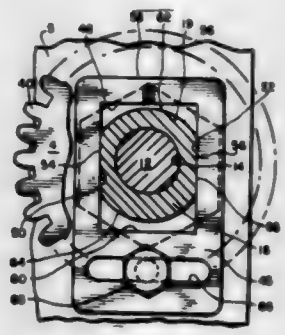
said modified transmission permitting a vehicle in which it is installed to move slowly forward when said first synchronizer means is in its forward position and said means for engaging said clutch is operated and, once forward motion has been established, permitting the direct linking of the transmission drive shaft and said output shaft to allow the vehicle to be driven forward at full speed.

4,532,822

SHAFT AND GEAR ADJUSTER

Edward S. Godlewski, 129 S. Spruce, Wooddale, Ill. 60109

Filed Sep. 24, 1982, Ser. No. 422,872
Int. Cl.³ F16H *35/06, 35/08, 55/18, 57/00*
U.S. Cl. 74—397 **5 Claims**



1. An adjuster for meshing gears mounted on generally parallel shafts carried in cylindrical bearings extending through complementary cylindrical openings in a support plate, comprising:

an eccentric bore in at least one of said bearings through which one of said shafts is journaled,

means for rotating said one of said bearings to shift the associated shaft to position the gears in proper meshing relationship,

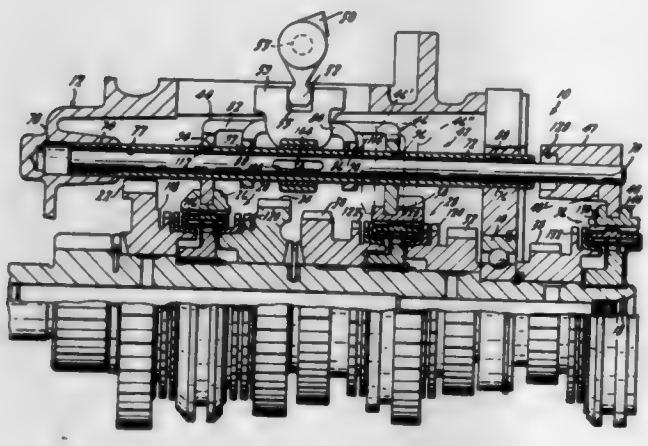
wherein said means for rotating comprises an elongated member having a first slot with essentially parallel side edges and said one of said bearings having diametrically opposite flat side edge portions extending chordally thereof in close fitting relation between the side edges of the slot and relatively slidable therewith as said member is rotated while restrained from rotary movement with respect to said one bearing, and wherein said member has a second slot elongated transversely of said side edges, and a securing means extending through said second slot for holding said member in secured rotatably displaced positions; said first slot being longer than the diameter of the bearing.

4,532,823

CONCENTRIC SHIFT RAIL MECHANISM

Syed T. Razzacki, Troy, Mich., assignor to Chrysler Corporation, Highland Park, Mich.

Filed Oct. 6, 1983, Ser. No. 539,509
Int. Cl.[4] G05G *9/12*
U.S. Cl. 74—473 R 3 Claims



1. In a manual gear selecting and shifting mechanism for a vehicle transmission change speed gearing including, a transmission casing, means for mounting a selector on said casing to control the selection of the desired speed gearing on a main gear shaft, a shifter rail assembly adapted to control the shifting movement of the speed gearing, said shifter rail assembly comprising;

a tubular member mounted on said casing for axial fore and aft sliding movement in the direction of its longitudinal axis;

a shift rod received within said tubular member for axial sliding movement relative thereto;

means fixedly mounting first operator means on said tubular member for movement therewith;

means mounting second operator means on said tubular member such that said second operator means is free to slide fore and aft relative to said tubular member;

each said first and second operator means respectively engaging an associated clutch sleeve;

a pair of diametrically opposed longitudinally extending control slots formed in said tubular member;

a control pin extending transversely through said shift rod and slidably engaged within each said control slot;

manual selector means operative for engaging said first operator means for axial reciprocal sliding movement of said first operator means and said tubular member fore and aft relative to said shift rod;

said control slots and pin enabling said tubular member to slide a predetermined distance fore or aft from its neutral position whereby said first operator means shifts its associated clutch sleeve into its respective fore or aft speed gear engaging position;

said manual selector means operative for engaging said second operator means for axial sliding such that said second operator mea ⁻ is free to slide axially relative to said tubular member a predetermined distance fore or aft of said cross pin neutral position whereby said second operator means shifts its associated clutch sleeve into its respective fore or aft gear engaging position; and

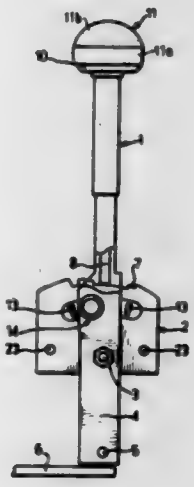
journal bearing means intermediate said tubular member and said shift rod such that said first operator means readily moves said gearing into its fore or aft gear engaging position thereby reducing manual gear shift operating effort.

4,532,824

AUTOMOBILE AUTOMATIC TRANSMISSION CONTROL DEVICE

Jean-Michel Lamy, Paris, and Joël Jacquet, Nanterre, both of France, assignors to Regie Nationale des Usines Renault, Paris, France

Filed Jan. 6, 1983, Ser. No. 456,295
Claims priority, application France, Jan. 6, 1982, 82 00108
Int. Cl.[3] G05G *5/14*
U.S. Cl. 74—475 6 Claims



1. A vehicle automatic transmission control device comprising:

a sector fixed to said vehicle, said sector including a plurality of lockout notches on one edge thereof and a plurality of self-locking notches in the body thereof;

a control lever pivoted about an axis fixed to said sector, said lockout notches and self-locking notches being respectively arranged on first and second loci about said pivot axis, said control lever being connected to said transmission, wherein said first locus is further from said pivot axis than is said second locus and wherein said lockout notches and said self-locking notches lie substantially in a common radial segment, wherein a width of said common radial segment substantially corresponds in extent to widths of each of said first and second loci;

a rod movable along a longitudinal axis of said control lever and within a portion of said control lever, a portion of said rod being engageable with said lockout notches when said rod is in a first position;

a trigger release mounted on one end of said control lever;

a hand grip fixed to said control lever;

biasing means associated with said hand grip and said trigger release for biasing said rod into said first position; and

elastic self-locking elements mounted on said control lever at positions corresponding to said self-locking notches and engageable with said self-locking notches,

whereby coaction of said self-locking notches and said self-locking elements define pivot positions of said control lever corresponding to transmission selection positions, and whereby coaction of said lockout notches and said rod prevents unintentional pivoting of said lever.

4,532,825

CONTROL DEVICE FOR A TWO STAGE DERAILLEUR

Masashi Nagano, Izumi, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan

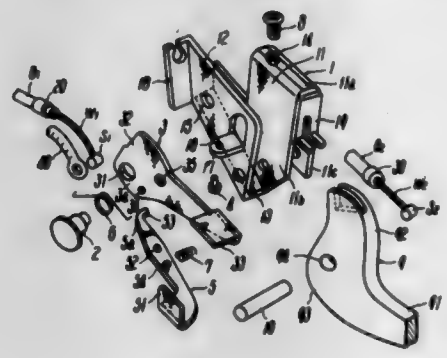
Filed Jun. 4, 1982, Ser. No. 385,126
Claims priority, application Japan, Jun. 15, 1981, 56-88520[U]
Int. Cl.[3] G05G *5/06;* F16C *1/10*
U.S. Cl. 74—532 8 Claims

1. A control device for controlling a two stage derailleur through a control wire, comprising:

a fixing member supporting a first lever shaft and a second lever shaft, the second lever shaft having an axis substan-

tially perpendicular to that of said first lever shaft, said fixing member having a fixing portion and a lever supporting portion, said lever supporting portion having a first supporting surface for supporting said first lever shaft and a support extending perpendicularly to said first supporting surface and having a second supporting surface for supporting said second lever shaft, so that said first lever shaft is supported to said first supporting surface and said second lever shaft is supported to said second supporting surface;

a control lever supported swingably to said first lever shaft, being displaceable between a first and a second speed change position corresponding to speed change positions



of said derailleur, and having a retaining means for retaining one end of said control wire;

a release lever supported swingably to said second lever shaft at said fixing member and displaceable at an utmost end thereof away from or toward said control lever;

a first biasing means for biasing said control lever always toward said first speed change position;

a second biasing means for biasing said release lever at an utmost end thereof always in the direction of approaching said control lever; and

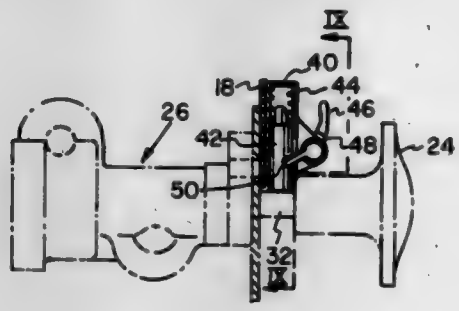
a holding means provided at said control lever and at the utmost end of said release lever for holding said control lever at said second speed change position against said first biasing means through said release lever.

4,532,826

BRAKE VALVE SAFETY DEVICE

James B. White, McClelland Rd., Box 45A1, Finleyville, Pa. 15332

Filed Apr. 20, 1983, Ser. No. 486,784
Int. Cl.³ G05G *1/10*
U.S. Cl. 74—553 **6 Claims**



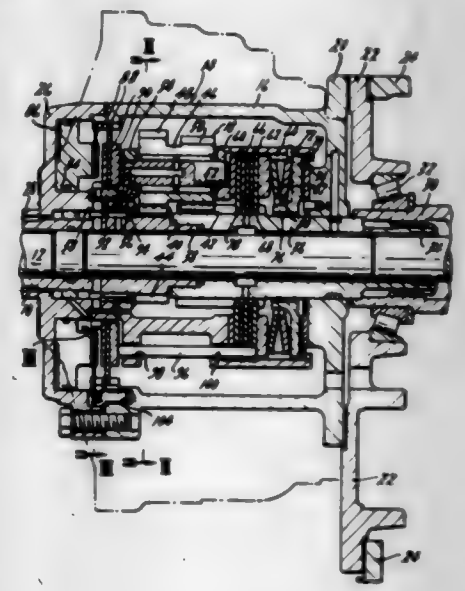
1. In a brake valve control device adapted to be secured to the dashboard of a motor vehicle and including a push-pull switch assembly having a body member for attachment to the dashboard, a stem extending through said body member, and a knob on said stem for moving the stem toi activate and deactivate the valve, the improvement in a safety device comprising releasable locking means on said body member, and engageable with said stem and knob for preventing release of the vehicle brakes by accidental movement of the valve stem and knob, said body member including a housing having a slidable pin therein, said pin being aligned with said stem and biased toward said stem and lever means on said housing and engaged with said pin for moving said pin against the bias, whereby when the stem of the switch assembly is pushed in the pin engages said knob, when the stem of the assembly is pulled out the pin extends under the force of the bias and engages the stem between the dashboard and the knob to prevent the stem from being pushed in, and when the lever means is operated to move said pin against the bias, the stem can be pushed in.

4,532,827

DUAL POWER TRANSMISSION FOR TRACTOR VEHICLES

Rudolf Beim, Southfield, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Sep. 21, 1983, Ser. No. 534,224
Int. Cl.³ F16H *3/02, 57/10*
U.S. Cl. 74—745 **4 Claims**



1. In a dual power tractor driveline for delivering torque from an engine to traction wheels comprising a multiple ratio torque transmitting gear assembly and an auxiliary gear assembly located between the multiple ratio gear assembly and the engine, the auxiliary gear assembly comprising:

a first input shaft adapted to be connected to the engine, a first sun gear formed on said input shaft, an intermediate shaft disposed coaxially with respect to said input shaft;

a second input shaft for said multiple ratio gear assembly connected to one end of said intermediate shaft, a second sun gear formed on said intermediate shaft, compound planet pinions connected together for joint rotation and having two pinion portions of unequal pitch diameter, one pinion portion engaging the sun gear on said first input shaft and the other pinion portion engaging the sun gear on said intermediate shaft, a carrier rotatably supporting said pinions;

a casing surrounding said sun gear and pinions, a fluid pressure operated brake actuator in said casing on one end of said carrier, brake discs carried by said casing and by said carrier adjacent said brake actuator, a clutch drum connected to said carrier on the side of said carrier opposite said brake actuator, clutch discs carrier by said clutch drum and by said intermediate shaft, spring means within said clutch drum for engaging said clutch discs to establish normally a 1:1 driving ratio between said input shaft and said intermediate shaft;

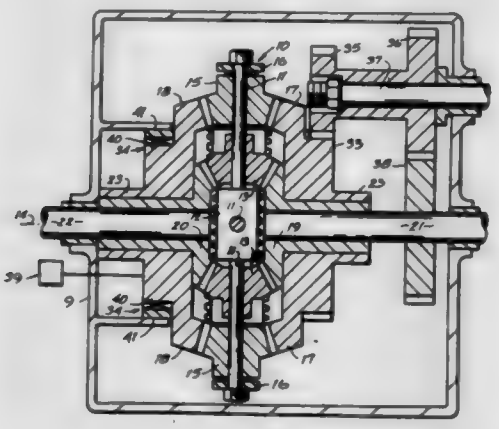
actuator rods supported slidably by said carrier and extending from said clutch discs to said brake discs whereby said clutch discs are moved out of clutching engagement against the opposing force of said spring means when clutch pressure is applied to the said brake actuator.

4,532,828

KINEMATIC MECHANISM

Francesco LaGuardia, Lavorate Centro 4, Sarno, Italy (84080)

Continuation-in-part of Ser. No. 966,791, Dec. 6, 1978, abandoned, which is a continuation of Ser. No. 503,132, Sep. 16, 1974, abandoned. This application Jun. 8, 1981, Ser. No. 271,628
Claims priority, application Italy, Jan. 23, 1974, 64802 A/74
Int. Cl.³ F16H *57/10*
U.S. Cl. 74—793 7 Claims



1. A kinematic mechanism, comprising:
a housing framework;
two crown plates having central hubs, one plate being a driven crown plate and the other being a driving crown plate;
a driving shaft journalled in the housing for rotation about a central axis, mounting the driving plate for free rotation thereon about said central axis;
a driven shaft journalled in the housing and axially spaced from the driving shaft for coaxial rotation with the driving shaft, mounting the driven plate thereon about said central axis;
a planetary conical pinion affixed to each shaft for rotation therewith;
said planetary conical pinions being mounted concentrically with the crown plates;
means supporting a group of radially extending cruciform axles perpendicular to the central axis and positioned axially between the crown plates and conical planetary pinions;
an outer set of satellite pinions mounted for free rotation on the cruciform axles, with each pinion of the outer set meshing with both crown plates;
an inner set of satellite pinions mounted for free rotation on the cruciform axles and spaced radially inward of the outer set, each pinion of the inner set meshing with both planetary conical pinions;
wherein said cruciform axles and satellite pinions form a cruciform reducer, effecting a double conical epicyclic train that will rotate in a plane perpendicular to the central axis and
rotary conditioning means interconnecting the driving shaft and the driving crown plate for rotating the driving shaft and the driving crown plate simultaneously and at different rotational speeds.

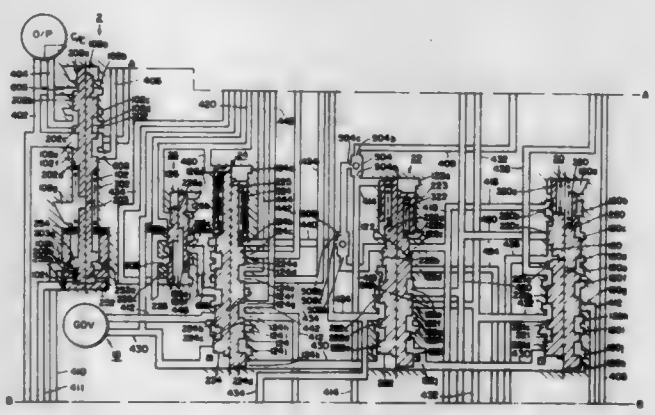
4,532,829

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Kazuhiko Sugano, Zama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Jul. 29, 1983, Ser. No. 518,681
Int. Cl.³ B60K *41/10*
U.S. Cl. 74—869 5 Claims

4. A hydraulic control system for an automatic transmission including a plurality of fluid operated friction units including a first fluid operated friction unit and a second fluid operated friction unit, the first fluid operated friction unit being discharged when the second fluid operated friction unit is pressurized during a shift between two speed ratios, the hydraulic control system comprising:
means for generating fluid pressure to be supplied to the first and second fluid pressure operated friction units;
means for defining a conduit having one end communicating with the first fluid operated friction unit and an opposite end;
a first shift valve communicating with said opposite end of said conduit, said first shift valve communicating with said fluid pressure generating means and including means for selectively supplying the fluid pressure to said opposite end of said conduit;
a second shift valve communicating with said fluid pressure generating means and the second fluid operated friction unit for selectively supplying the fluid pressure to the second fluid operated friction unit, said second shift valve including means for selectively supplying the fluid pressure to the second fluid operated friction unit;
means for controlling rate of fluid discharge from the first fluid operated friction unit through said conduit during



the shift between the two speed ratios such that the fluid discharge from the first fluid operated friction unit is effected at a first predetermined rate when the fluid pressure supplied to the second fluid operated friction unit is lower than a predetermined value, and is effected at a second predetermined rate which is higher than said first predetermined rate when the fluid pressure supplied to the second friction unit exceeds said predetermined value, said fluid discharge rate controlling means including a timing valve including a valve bore having a first port connected with said opposite end of said conduit and a second port communicating with the second fluid operated friction unit, said timing valve having an orifice and a spool movable within said valve bore between a first position wherein said first port is discharged through said orifice and a second position wherein said first port is discharged bypassing said orifice, said spool having a pressure acting area communicating with said second port, said spool being urged to move from said first position thereof to the second position thereof when the fluid pressure supplied to the second fluid operated friction unit acts on said pressure acting area.

4,532,830

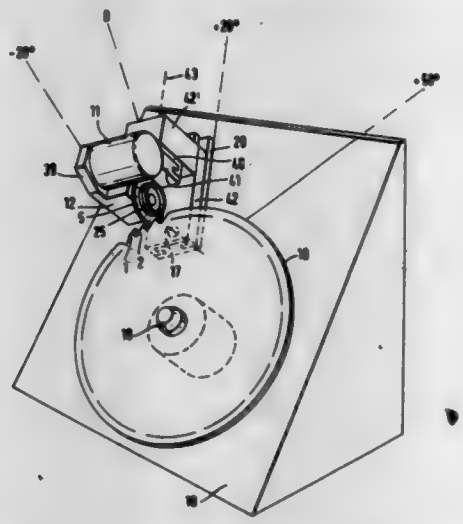
SAWTOOTH GRINDING MACHINE

Erwin H. Vollmer, Jahnstr. 4, D-7242 Dornhan, and Manfred Glatthaar, Ignaz-Rohr-Str. 24, D-7328 Hochmössingen, both of Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,671
Claims priority, application Fed. Rep. of Germany, Jan. 29, 1983, 3303075
Int. Cl.³ B23D *63/12*
U.S. Cl. 76—45 9 Claims

1. Sawtooth grinding machine for grinding saw blade teeth, such as teeth with hard metal inserts, including a single grinding head pivotable about a plurality of axes and capable of translatory movement in a plurality of directions, said grinding

head arranged to grind both the face and back of a tooth, wherein the improvement comprises an axially extending spindle shaft, a first grinding wheel and a second grinding wheel each suitable for grinding hard metal and mounted on said spindle shaft said first and second grinding wheels being secured together and forming a composite wheel, said first grinding wheel is a disk wheel having a disk side and an oppositely facing backside, said disk side extends perpendicularly of the axis of said spindle shaft, said backside extends transversely of the axis of said spindle shaft and tapers toward said disk side at the radially outer circumference of said disk wheel so that said



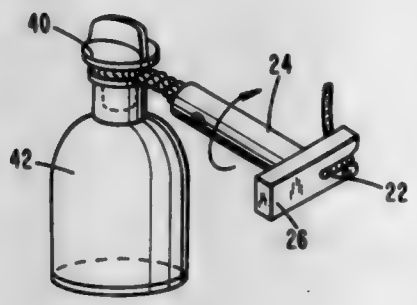
disk wheel has a minimum thickness in the axial direction of said spindle shaft at the radially outer circumference thereof whereby said disk wheel can be inserted into a narrow tooth gap for grinding the face of a tooth, said disk side having an annular abrasion coating at the radially outer circumference thereof, and said second grinding wheel is a cup wheel for grinding the back of a tooth, the radially outer circumference of said cup wheel has a smaller diameter than the radially outer circumference of said disk wheel and said cup wheel has an abrasive ring located on the radially outer circumference thereof with said abrasive ring located in spaced relation from said disk wheel.

4,532,831

METHOD OF AND APPARATUS FOR OPENING CONTAINER LIDS

Arthur O. Ackerson, III, 33 Boulder Dr., Bay Point, Key West, Fla. 33040

Filed Sep. 5, 1984, Ser. No. 647,467
Int. Cl.³ B67B *7/22*
U.S. Cl. 81—3.43 **6 Claims**



1. Apparatus for opening containers, comprising:
a cord having a diameter which reduces as the cord is stretched and rebounds as the cord is released;
an elongated member formed with first and second longitudinal bores for receiving said cord; and first and second longitudinal bores being parallel to each other and offset from the center of said elongated member;
a portion of said cord forming a loop at one end of said elongated member with the ends of the cord extending respectively through the first and second bores;
one end of said cord anchored to said elongated member; the opposite end of said cord extending through said elongated member and a gripper and forming a free end; and
said gripper being attached to said elongated member;
said gripper further being formed with a notch for receiving the free end of said cord.

4,532,832

DUAL-MODE RATCHET WRENCH

Wendell N. Christensen, 1304 Avondale Rd., Everett, Wash. 98204

Filed Oct. 3, 1983, Ser. No. 538,134
Int. Cl.³ B25B *17/00*
U.S. Cl. 81—57.29 **4 Claims**



1. A dual-mode ratchet wrench, comprising:
a wrench body, said wrench body having a head portion and a handle portion extending from said head portion, said head portion having first and second surfaces that are spaced from and substantially parallel to one another, said head portion including an aperture passing between said first and second surfaces, said aperture being generally cylindrical and having an axial centerline passing therethrough, the inner surface of said aperture including a circumferential row of gear teeth that extend substantially parallel to said axial centerline of said aperture, said head portion having a circumferential shoulder located within said aperture intermediate said first surface and said circumferential row of gear teeth, said head portion including a cavity that opens onto said second surface and is connected to said aperture, said handle portion having a cylindrical bore extending axially therethrough with said bore intersecting said cavity;
a drive unit, said drive unit having a first end and a second end, said drive unit being retained in said aperture of said head portion of said wrench with said first end of said drive unit positioned next to said first surface of said head portion, said first end of said drive unit having a circumferential projection positioned in juxtaposition with said shoulder of said aperture, said second end of said drive unit including a drive lug extending beyond said second surface of said head portion, said drive unit being rotatable about said axial centerline through said aperture, said drive unit having a recess in the first end of said drive unit and a slot connecting said recess to the outer surface of said drive unit;
a gear member, said gear member being affixed to said drive unit intermediate the first and second ends of said drive unit, said gear member having a bevel gear formed thereon;
ratchet means for determining the direction of rotation of said drive unit relative to said wrench body, said ratchet means including a spring-biased pawl pivotally mounted within said slot in said drive unit for projection through said slot and engagement with said circumferential row of gear teeth in said aperture;
a drive shaft, said drive shaft received by and extending coaxially along said cylindrical bore of said handle portion, said drive shaft having a first end and a second end and having a length greater than said handle portion, said drive shaft being rotatable in said bore about the axial centerline of said bore, said drive shaft being movable

axially within said bore between an engaged position wherein said first end of said shaft is positioned toward said aperture in said head portion and a disengaged position wherein said first end of said shaft is positioned away from said aperture;

a sleeve, said sleeve circumferentially surrounding the distal portion of said handle portion of said wrench and slidable therealong, said sleeve being connected to said second end of said drive shaft for both rotation and axial translation therewith;

a pinion, said pinion located on said first end of said drive shaft, said pinion configured for engagement with said gear member, said pinion being configured and arranged for axial and rotational movement with said drive shaft; and,

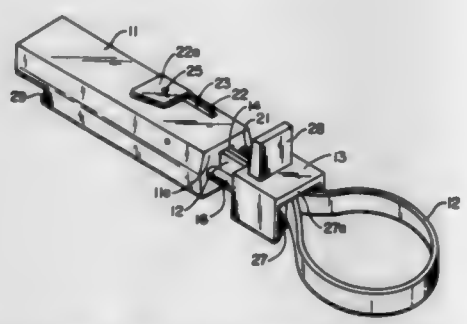
a detent mechanism, said detent mechanism including a spring-biased detent ball protruding from a wall of said cavity and a circumferential detent ridge formed on the surface of said pinion, said detent ridge being configured for movement past said detent ball as said drive shaft is moved between said engaged and said disengaged positions, said detent mechanism operable to retain said drive shaft in either said engaged or said disengaged positions by means of said detent ball abutting said detent ridge, said spring-biased detent ball being positioned to urge said pinion against said gear member when said drive shaft is in the engaged position.

4,532,833

STRAP-TYPE WRENCH FOR REMOVING ROTATABLE CLOSURES OR SIMILAR MEMBERS

Edgar S. Downs, P.O. Box 242, Worthington, Ohio 43085

Filed Jan. 24, 1984, Ser. No. 573,332
Int. Cl.³ B25B *13/52*
U.S. Cl. 81—64 **4 Claims**



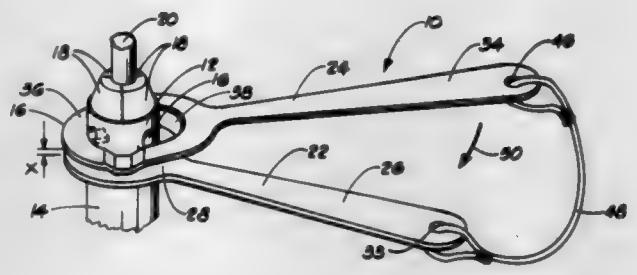
1. A wrench comprising an elongated handle with opposed ends, a flexible strip having ends which are overlapped to form a loop, means for anchoring the overlapped ends within the handle at an anchoring point longitudinally thereof with the loop extending outwardly from one end of the handle, a loop-adjusting slide member mounted on the handle at said end for slideable movement in and out relative thereto, said flexible member passing through the slide member into a central socket extending longitudinally from said end of the handle to said anchor point, said slide member being carried by a pair of parallel rods slideably mounted in sockets extending into the handle from said end and being parallel to each other and to the central socket, one of said rods having ratchet teeth formed thereon, a ratchet pawl pivotally mounted on said handle intermediate its length and extending into the socket for said ratchet rod into engagement with the teeth thereof for holding the slide in an outward position when it is moved outwardly of said end of the handle from loop-expanding position into loop-tightening position, a spring acting on the pawl to engage the ratchet teeth, and a spring in the socket of the other rod acting on it to return it to loop-expanding position upon release of the ratchet rod by the pawl.

4,532,834

TWO-PIECE DRILL CHUCK WRENCH

Clyde H. Hartman, R.R. #1, Newton, Kans. 67114

Filed Feb. 5, 1982, Ser. No. 346,003
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—16 **3 Claims**



1. A two-piece chuck wrench for receipt around a chuck body of a drill tool or the like, the wrench engaging beveled gear teeth of a ring gear around a top of a rotatably mounted chuck operating sleeve and engaging one of a plurality of bores in the side of the chuck body, the wrench loosening and tightening tool-engaging jaws in the chuck body, the wrench comprising:

a lower piece having a first handle with a first circular head integrally formed in one end thereof, the first head having an opening therein for receipt around the chuck body, the first head having beveled teeth around the opening and adapted for engaging all of the beveled gear teeth of the ring gear; and

an upper piece having a second handle with a second circular head integrally formed in one end thereof, the second head having an opening therein for receipt around the chuck body, the second head having a pin extending radially inward from the inner circumference of the second head, the pin adapted for receipt in one of the bore holes;

the bottom of the second head of the upper piece rests on the top of the first head of the lower piece and pivots thereon when loosening and tightening the tool engaging jaws; and

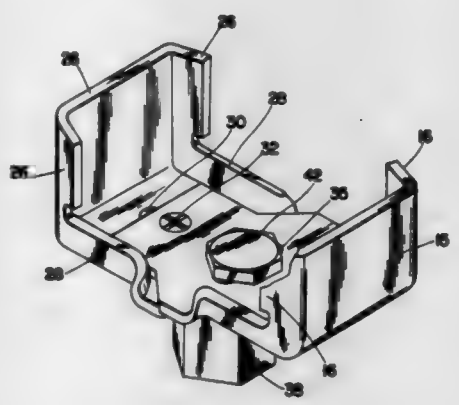
wherein opposite sides of the second head of the upper piece are tapered downwardly so the upper piece rests in a spaced relationship above the lower piece when loosening and tightening the tool engaging jaw.

4,532,835

BI-DIRECTIONAL FILTER WRENCH

Brian M. Schwitters, Clara City, Minn., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed May 7, 1984, Ser. No. 607,540
Int. Cl.³ B25B *13/18*
U.S. Cl. 81—128 **7 Claims**



1. A universal oil filter wrench for installing and removing filter cartridges from limited access locations in automobiles and the like, comprising:

an upper sheet metal stamping of generally rectangular configuration having a flat base portion and an upturned end,

a first pair of flanges at the sides of said upturned end on said upper stamping,

a lower sheet metal stamping of generally rectangular configuration having a flat base portion and an upturned end,

a second pair of flanges at the sides of said upturned end on said lower stamping, said first and second pairs of flanges being lateral edge portions of said upturned ends bent backwardly toward said respective base portions and flared outwardly of said upturned ends,

a pair of slots in said base portion, said slots being elongated in the direction of said upturned end,

a pair of fasteners in said slots interconnecting said upper and lower stampings for limited linear relative sliding movement over one another thereby allowing movement of said upturned ends toward and away from one another to move said pairs of flanges in a line toward one another for engagement with the generally cylindrical peripheral surface of an oil filter cartridge,

a circular opening in said lower stamping intermediate said pair of slots,

a further slot in said upper stamping elongated in a transverse direction and overlying said circular opening,

a nut having a cylindrical peripheral portion rotatably disposed in said circular opening, and

a cam member eccentrically located on said nut for rotation therewith and extending into said transverse slot for moving said upper stamping outwardly and inwardly relative to said lower stamping upon both clockwise and counterclockwise rotation of said nut.

4,532,836

ADJUSTABLE FULCRUM FOR TORQUE WRENCHES

Bosko Grabovac, Arcadia, Calif., assignor to Consolidated Devices, Inc., City of Industry, Calif.

Filed Jul. 25, 1983, Ser. No. 516,778

Int. Cl.³ B25B *23/14*

U.S. Cl. 81—483 **6 Claims**



1. An adjustable click-type torque wrench structure comprising an elongate, manually engageable tubular arm with a cylindrical interior surface and front and rear ends, an elongate, work-engaging head at the front end of the arm on an axis normal to the axis of the arm, an elongate lever projecting rearwardly from the head and freely into the arm, a first pivot means pivotally connecting the front end portion of the lever to the front end portion of the arm on an axis spaced rearward from and parallel with the axis of the head, an elongate link with front and rear ends positioned freely within the arm, a second pivot means pivotally connecting the front end of the link to the rear end of the lever on an axis parallel with the first pivot means, a rearwardly disposed front cam seat at the rear end of the link, an elongate annular fulcrum block engaged about the link between the ends thereof and shiftable circumferentially and longitudinally relative thereto and having a substantially radially outwardly disposed annular bearing surface with oppositely outwardly disposed work load transmitting sides slidably and pivotally engaging opposing sides of the interior surface of the arm on the central longitudinal radial planes of the link and arm which are normal to the axes of said pins, the radial plane of the annular bearing surface is angularly offset from normal to the central axis of the link at an angle of about 5°, lock means releasably locking the block in set longitudinal and circumferential position on the link, an elongate plunger with front and rear ends in the arm spaced rearward from the link and having a forwardly disposed rear cam seat, a cam block with cam faces normally in bearing engagement with the front and rear cam seats and spring means in the arm rearward of the plunger and yieldingly urging the plunger forward and holding the plunger, cam block and link in pressure engagement with each other; the position of said opposite work load transmitting sides of the annular bearing surface are moved longitudinally in opposite directions relative to the link, arm and to each other by circumferential movement of the block on the link and within the arm.

4,532,837

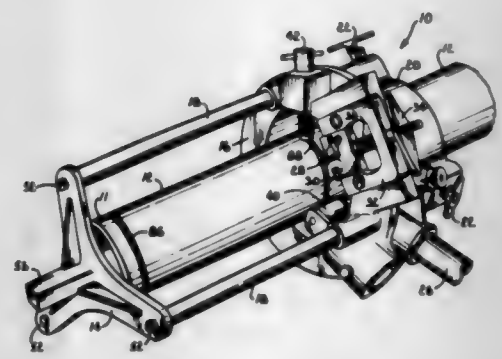
NIPPLE GROOVING DEVICE

Terry E. Cushenbery, 700 West Fourth, Kingman, Kans. 67068, and Jeffrey A. Bryant, 315 West First, Udall, Kans. 67146

Filed Sep. 13, 1982, Ser. No. 417,670

Int. Cl.³ B23B *3/22, 5/04;* B21B *3/06;* B26D *3/06*

U.S. Cl. 82—4 C **10 Claims**



1. For use with a pipe groover having an operable cutting member adapted for movement about pipe stock and means for moving said cutting member about said pipe stock for scoring first and second annular grooves about said pipe stock to form a pipe nipple on said stock having first and second annular seats thereon, the improvement comprising:

a stop member for contacting one end of said pipe stock;

fastener means releasably connecting said stop member to said groover in a first longitudinally-spaced apart relationship therebetween, said contact of said stop member positioning said groover at a first longitudinal displacement along the extent of said pipe stock relative to said same one end of said pipe stock for scoring said first annular groove about said pipe stock upon operation of said moving means and said cutting member; and

a first extension means releasably engageable with said fastener means and said groover and including at least one spacer pin having first and second longitudinally spaced-apart ends, said spacer pin having first means at said first end releasably engaging said fastener means upon release of said fastener means connection from said groover and second means at said second end releasably engaging said groover, said engagement of said spacer pin with said fastener means and said groover displacing said stop member from said groover in a second longitudinally-spaced apart relationship greater than said first spaced relationship whereupon said stop member contact of said same one end of said pipe positions said groover and said cutting member at a second greater longitudinal displacement along the extent of said pipe stock relative to said same one end of said pipe stock for scoring said second annular groove about said pipe stock upon operation of said moving means and said cutting member whereby to form said pipe nipple on said pipe stock with said seats corresponding to said grooves.

9. For use with a pipe groover having an operable cutting member and means for moving said cutting member about pipe stock having first and second ends for scoring annular grooves about said pipe stock to form a pipe-connecting nipple having first and second annular seats thereon corresponding to said grooves, the improvement comprising:

a separable stop member for contacting one end of said pipe stock;

fastener means releasably connecting said stop member to said groover in a first longitudinally-spaced relationship therebetween, said contact of said stop member positioning said groover and said cutting member at a first longitudinal displacement along the extent of said pipe stock relative to said one end of said pipe stock for scoring a first annular groove therearound upon operation of said cutting member; and

extension means releasably interposed between said fastener means and said groover, said interposed extension means further displacing said stop member from said groover in a second longitudinally-spaced relationship therebetween greater than said first spaced relationship whereupon said stop member contact of said same one end of said pipe positions said groover and said cutting member at a second greater longitudinal displacement along the extent of said pipe stock as measured from said same one end of said pipe stock for scoring a second annular groove therearound upon operation of said moving means and said cutting member.

4,532,838

METHOD IN A MICROTOME FOR CREATING THE POSSIBILITY THAT THE SLIT BETWEEN THE KNIFE EDGE AND THE SPECIMEN CAN BE MADE EXTREMELY NARROW

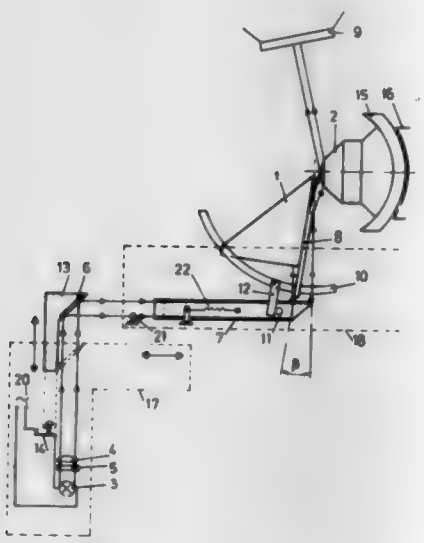
Anton Söderkvist, Vällingby, Sweden, assignor to LKB-Produkter AB, Bromma, Sweden

Filed Jun. 17, 1983, Ser. No. 505,200

Claims priority, application Switzerland, Jun. 28, 1982, 8203967

Int. Cl.³ G01N *1/06*

U.S. Cl. 83—13 **6 Claims**



1. A method for cutting sections from a specimen using a microtome, said microtome comprising:

a specimen holder;

a knife having a knife edge, said knife being turnable about said knife edge as an axis, said knife having a front surface facing said specimen holder;

drive means for moving said specimen holder and said knife edge toward one another, and for moving said specimen holder downwardly relative to said knife edge;

a light waveguide having one end disposed below said knife edge and arranged to direct light passing therethrough on to a portion of said front face of said knife adjacent said knife edge, said one end of said light waveguide being arranged to turn with said knife about said knife edge as axis; and

a light source for supplying light to the opposed end of said light waveguide, said light source being arranged to move with said opposed end of said light waveguide as said light waveguide is turned about said knife edge as axis,

said method comprising:

mounting said specimen in said specimen holder;

bringing said knife edge adjacent said specimen mounted in said specimen holder, thereby forming a slit between said knife edge and said specimen;

passing light from said light source through said light waveguide, thereby causing said light to impinge upon said front face of said knife, and at least part of said impinging light to be reflected from said front face of said knife on to said specimen, thereby forming on said specimen an illuminated area which, when viewed from a point lying above said knife edge and on the opposed side of the vertical plane containing the knife edge from the specimen holder, has a breadth proportional to the width of the slit;

bringing said knife edge and said mounted specimen closer together, thereby reducing the width of said slit, while observing said illuminated area from said point to ensure that said knife edge does not contact said mounted specimen; and

activating said drive means, thereby moving said specimen holder and said knife edge toward one another, and moving said specimen holder downwardly relative to said knife edge, and causing said knife to cut sections from said mounted specimen.

4,532,839

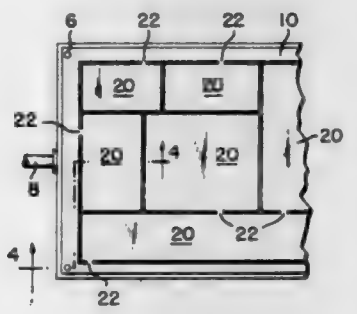
METHOD FOR SIMULTANEOUSLY CUTTING A PLURALITY OF CIRCUIT BOARDS

Thomas C. Easton, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Dec. 21, 1983, Ser. No. 564,817

Int. Cl.³ B26D *7/01*

U.S. Cl. 83—29 **7 Claims**



1. A method of cutting circuit boards comprising the steps of:

placing a stack of panels of board material upon locating pins;

cutting the major portion of the peripheral outline of a plurality of circuit boards leaving a tab on each board;

placing an impermeable sheet over the stack of panels;

applying a vacuum to the underside of the stack;

cutting the tabs;

removing the circuit boards.

4,532,840

SLICING MACHINE HAVING MEANS TO DETERMINE IF SUFFICIENT PRODUCT REMAINS TO CUT A WHOLE SLICE

Peter Antonissen, Norfolk, England, assignor to Thurne Engineering Company Limited, Norfolk, England

Filed May 29, 1984, Ser. No. 614,430

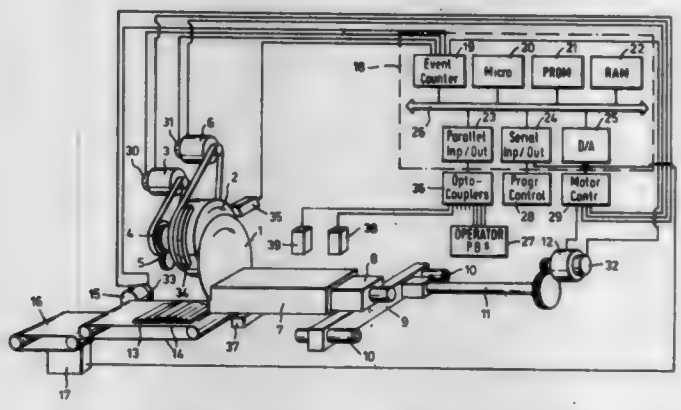
Claims priority, application United Kingdom, May 27, 1983, 8314766

Int. Cl.³ B26D *5/20*

U.S. Cl. 83—71 **9 Claims**

1. A slicing machine including a rotating blade adapted to cut slices from a product to be sliced, a feed head engaging said

product, feeding means driving said feed head whereby said feed head urges said product towards said blade, a position detector to detect when said feed head is a predetermined distance from said blade, an encoder associated with said feeding means to monitor movement of said feed head over said predetermined distance, monitoring means to monitor cutting



movement of said blade, and determining means responsive to said encoder and said monitoring means to determine when there is insufficient movement of said feed head remaining to allow another whole slice of product to be cut before said feed head reaches the end of its stroke, and to return said feed head to its starting position after completion of slicing of the last whole slice of said product.

4,532,841

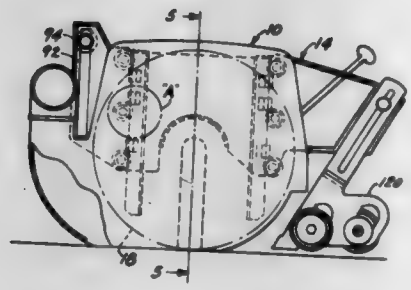
SAW BLADE GUARD

James L. Stackhouse, Jr., St. Louis, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Continuation of Ser. No. 356,321, Mar. 10, 1982, abandoned. This application Jun. 18, 1984, Ser. No. 697,997

Int. Cl.³ B26D *1/14*

U.S. Cl. 83—102.1 **3 Claims**



1. A guard assembly for a radial arm saw having a circular saw blade mounted on a horizontal shaft and a support therefor suspending the saw blade above a horizontal worktable comprising: a guard support frame mounted on said saw blade support, a one piece hood-like guard for extension over said entire saw blade, means mounting said guard for guided vertical movement on said frame and said means being constructed and arranged to permit said guard to fall freely to a downward position wherein it extends over said entire saw blade and permits free removal of said guard upward from said frame, said guard comprising front and rear vertical walls spaced from opposite faces of said saw blade, said walls having top, side and bottom edges and joining top and sidewalls, the lower portions of said side edges at both sides of said walls extending inward to said bottom edges, said joining sidewall at one side of said guard extending substantially to said bottom edges, the lower portions of said front and rear walls and said joining sidewall at one side of said guard being offset outward sufficiently to clear said saw blade, and the lower end of said joining sidewall at the other side of said guard being spaced upward from said bottom edges sufficiently to clear said saw blade whereby a lower portion of said guard at said other side is open, and a spreader and an anti-kickback device mounted for vertical adjustment on said frame and positionable to block approach to said saw blade through said other open lower side.

4,532,842

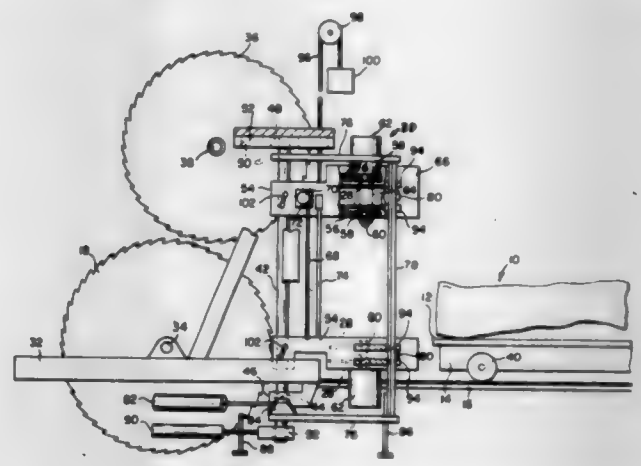
TILTABLE EDGER SAW MECHANISM

Arthur M. G. McFarlane, 1873 Redman Rd., Hamlin, N.Y. 14464

Filed Sep. 29, 1982, Ser. No. 428,285

Int. Cl.³ B27B *7/02*

U.S. Cl. 83—404.1 **19 Claims**



1. In a saw mill including means for moving a log along a first line past a series of saws for cutting said log into boards; an edger saw mechanism comprising:

a shaft;

an edger saw mounted on said shaft for rotation about an axis;

means for mounting said edger saw for tiltable and rotational movement;

means supporting said mounting means for axial movement while sawing; and

means for tilting said mounting means in a plane substantially parallel to said first line between a first position in which said edger saw is positioned to saw a board along one line, and a second position in which said edger saw is positioned to saw a board along a different line at an angle to said first line whereby the board area obtained from the log is increased.

4,532,843

PUNCH PRESS

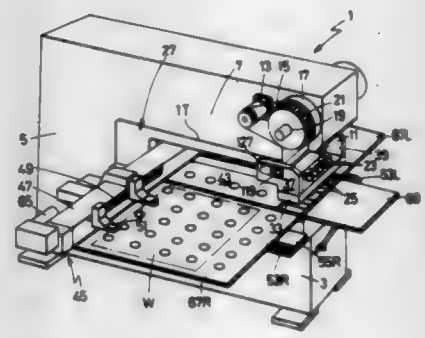
Hidetoshi Miyama, Hadano, Japan, assignor to Amada Company, Limited, Japan

Filed Nov. 2, 1983, Ser. No. 547,951

Claims priority, application Japan, Nov. 2, 1982, 57-165715[U]; Nov. 2, 1982, 57-165716[U]; Nov. 4, 1982, 57-166198[U]

Int. Cl.³ B21D *28/02*

U.S. Cl. 83—409 **10 Claims**



1. A punch press comprising:

a frame having an overhead beam and a base portion;

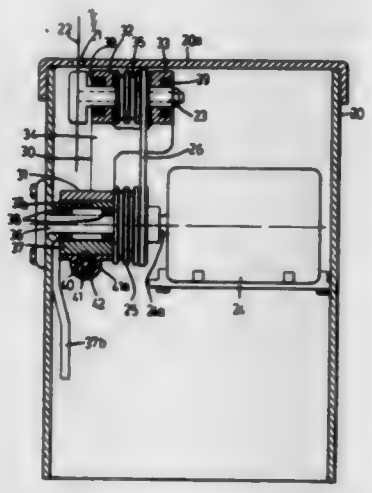
a vertically movable ram mounted at a front end of the overhead beam;
a tool holder having upper and lower arms and being disposed on the base portion of the frame with a gap between the tool holder and the overhead beam;
a plurality of upper punching tools disposed at a front end of the upper arm of the tool holder;
a plurality of lower tools corresponding to the upper tools disposed at a front end of the lower arm of the tool holder;
a striker mounted on the ram so as to hit each of the upper punching tools; and
a workpiece feeding and positioning means disposed on said tool holder;
said tool holder being disposed on said frame so as to reduce the amount of vibration and deflection that are transferred from the overhead beam to the punching tools and workpiece feeding and positioning means.

4,532,844

DEVICE FOR SUPPORTING A CIRCULAR SAW OF SAWING MACHINE

Jen W. Chang, and Hong-Tswen Chang, both of No. 68, Chung Cheng Rd., Fong Yuan City, Taichung Hsien, Taiwan

Filed Apr. 13, 1984, Ser. No. 600,262
Claims priority, application Taiwan, Sep. 16, 1983, 7226359
Int. Cl.[3] B27B *5/24, 5/30*
U.S. Cl. 83—477.1 **2 Claims**



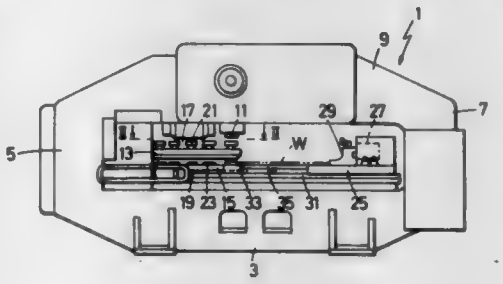
1. In a circular sawing machine of the type having a circular saw mounted on an arbor below a worktable for rotation about a first horizontal axis and a motor for driving the arbor having a driving pulley mounted on its horizontal output shaft and a transmission belt passing over said driving pulley, a device for supporting said circular saw comprising: a rotary eccentric member rotatably mounted on a second axis which is in alignment with the axis of the output shaft of said motor; a body having means for mounting said arbor at its upper portion, a driven pulley mounted on said arbor and connected to said driving pulley through said transmission belt, and a hollow cylindrical member at its lower portion and having its axis parallel to said first axis, said cylindrical member being sleeved onto said rotary eccentric member; a hydraulically operated means connected to said body for turning it about said second axis so as to raise or lower said circular saw relative to the worktable; a lever means attached to said eccentric member for rotating it relative to said hollow cylindrical member so as to adjust the distance of the axis of said arbor from the axis of said output shaft; and means for releasably locking said eccentric member.

4,532,845

TURRET PUNCH PRESSES

Katsumi Jinnouchi, Hatano, Japan, assignor to Amada Company, Limited, Japan

Filed Oct. 19, 1982, Ser. No. 435,317
Claims priority, application Japan, Oct. 20, 1981, 56-166451; Sep. 11, 1982, 57-137939[U]
Int. Cl.[3] B26D *5/02*
U.S. Cl. 83—552 **10 Claims**



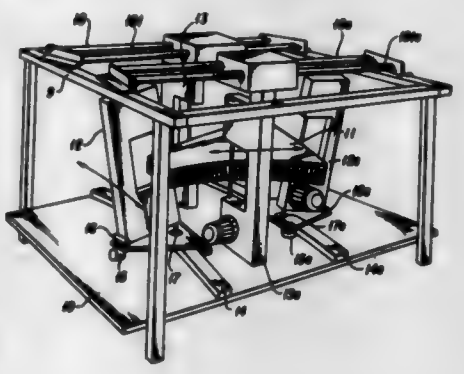
1. A turret punch press, comprising:
a rotatable upper turret;
a rotatable lower turret connected with the rotatable upper turret;
a plurality of upper tools held in the rotatable upper turret;
a plurality of lower tools, held in the rotatable lower turret, for coaction with the plurality of upper tools;
one drive means for rotating at least one tool in the upper turret and at least one tool in the lower turret;
means connected to the driving means for transmitting power to the plurality of upper and lower tools; and
means arranged between the transmitting means and the plurality of upper and lower tools for connecting and disconnecting the transmitting means and the plurality of upper and lower tools;
said connecting and disconnecting means each have a projecting end with a concavity which is radially inwardly tapered to be somewhat V-shaped in cross-section; and
rotating means connected to the one tools having a projecting end with a pointed portion which is radially outwardly tapered to be somewhat V-shaped in cross-section for engagement with the projecting end of the connecting and disconnecting means.

4,532,846

ARRANGEMENT FOR MANUFACTURING CURVED WALL PORTIONS OF HEAT INSULATING WALLS

Gerhardt Schmalz, Biedenkopf, Fed. Rep. of Germany, assignor to Wezel GmbH & Co KG, Biedenkopf, Fed. Rep. of Germany

Division of Ser. No. 277,216, Jun. 25, 1981,. This application Mar. 9, 1984, Ser. No. 587,940
Claims priority, application Fed. Rep. of Germany, Oct. 29, 1980, 3040694
Int. Cl.[3] B26D *1/50*
U.S. Cl. 83—796 **3 Claims**



1. An arrangement for manufacturing curved wall portions of a heat insulating wall for a container with a curved surface, the heat insulating wall having a heat-insulating layer of syn-

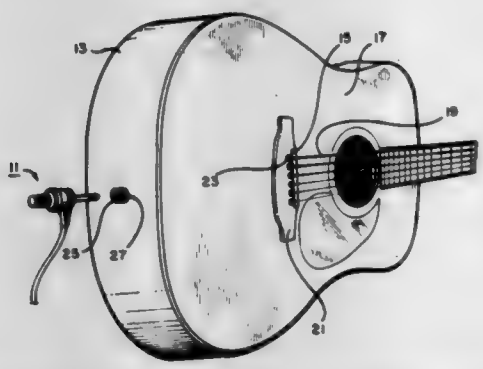
thetic foam material and a baffle layer associated therewith, the arrangement comprising a unit for cutting the curved blank coated with a baffle layer along joining surfaces so as to produce a wall portion with final dimensions, said unit being arranged for cutting the blank shaped as a circular segment and including a four-cornered frame element supported on upright posts at its corners, a four-sided table member arranged in a lower region between said posts and supporting the curved blank, two first band saws arranged on said table element at two opposite sides of the latter and movable along two circular lines to cut inner and outer circular sides of the blank formed as a circular segment, two second band saws suspended from said frame element at two other opposite sides of said table member and movable along radial lines so as to cut radial sides of the blank formed as a circular segment, first guiding means for guiding said first band saws and including two first guiding members curved in accordance with the two circular lines and movably supporting said first band saws during their movement along the circular lines, second guiding means for guiding said second band saws and including two pairs of substantially horizontal guiding members curved in accordance with the radial lines and each movably suspending a respective one of said second band saws during their movement along said radial lines, first means for inclining each of said first band saws about an axis parallel to their cutting direction between a plurality of first inclined positions and fixing the same in each of said first inclined positions, and second inclining means for inclining one said guiding member of each pair of said second guiding members relative to the other second guiding member of the same pair of said second guiding member between a plurality of second inclined positions and fixing the same in each of said second inclined positions.

4,532,847

CONTROL ACCESSORY FOR AN ACOUSTICAL GUITAR

Paul E. Youngblood, 361-A S. Riverside Dr., Fort Worth, Tex. 76104

Filed Sep. 6, 1983, Ser. No. 529,837
Int. Cl.³ G10H *3/00*
U.S. Cl. 84—1.16 **4 Claims**



1. A control accessory for a standard acoustical guitar which has been adapted to receive an electrical pickup, the pickup being mounted at the guitar saddle and being electrically wired to a female jack portion which protrudes from the button hole on the body of the guitar, the improvement comprising:

a male input jack having a jack case with a male portion extending therefrom which is engageable with said female jack portion on said guitar body;

an electrical cord running from said jack for electrically connecting said guitar pickup through said male and female jack portions to a power amplifier;

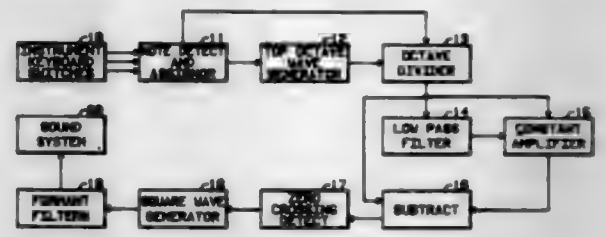
a volume control located on said male input jack for controlling the flow of electricity from said guitar pickup to said power amplifier to control the volume of said guitar, and wherein said volume control includes a pontentiometer located within said input jack case, said potentiometer having a control shaft which extends from said case and which is adapted to receive a control knob, said potentiometer being electrically wired between said electrical cord and said male input jack so that turning said control knob varies the electrical resistance of said control accessory to thereby control the volume of said guitar.

4,532,848

GENERATION OF MUTATION PITCHES IN AN ELECTRONIC MUSICAL INSTRUMENT

Ralph Deutsch, Sherman Oaks, Calif., assignor to Kawai Musical Instrument Mfg. Co., Ltd., Hamamatsu, Japan

Filed Jan. 9, 1984, Ser. No. 569,134
Int. Cl.³ G10H *5/07*
U.S. Cl. 84—1.19 **11 Claims**



7. In combination with an electronic musical instrument having a keyboard array of keyswitches, apparatus for producing musical tones at mutation pitches comprising;

a keyswitch state detect means wherein a detect signal is generated in response to each actuated keyswitch in said keyboard array of keyswitches,

a plurality of tone generators each of which generates a musical waveshape at a frequency determined by an associated assignment signal,

an assignment means responsive to each said detect signal whereby said associated assignment signal is generated,

a plurality of harmonic suppression means each of which is associated with a corresponding one of said plurality of tone generators whereby selected harmonics of said generated musical waveshape are attenuated to produce a suppressed wave signal,

a plurality of waveshape means each of which is associated with a corresponding one of said plurality of harmonic suppression means and responsive to a corresponding one of said suppressed wave signal wherein a rectangular waveshape signal is generated at a frequency which is a multiple of the frequency of said musical waveshape generated by the corresponding one of said plurality of tone generators, and

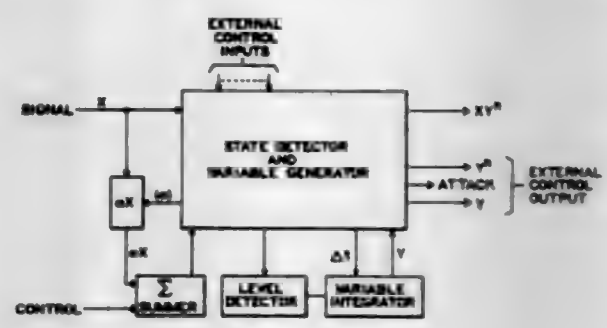
a tone production means responsive to said rectangular waveshape signal whereby said musical tone at a mutation pitch is produced.

4,532,849

SIGNAL SHAPE CONTROLLER

Dennis M. Drew, 35 Indiana St., Rochester, N.Y. 14609

Filed Dec. 15, 1983, Ser. No. 561,686
Int. Cl.³ G10H *1/057*
U.S. Cl. 84—1.22 **27 Claims**



1. A signal envelope shaper comprising:

a. means for producing an electronic signal X to be shaped;

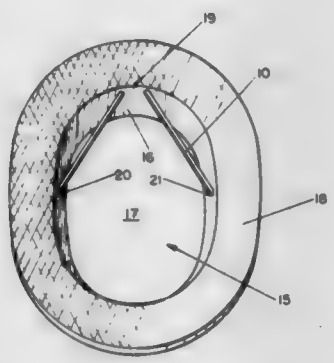
b. means for producing an electronic control signal Y for controlling the shape of signal X;
c. means for exponentially modifying said control signal Y and for multiplying said signal X by said exponentially modified control signal Y to form an output signal having the envelope shape XY^n;
d. means for providing exponent n with at least one value less than 1 and at least one value greater than 1; and
e. means for selecting a value of said exponent n in response to a state of said control signal Y so that said exponent n has different values in different regions of the envelope of said output signal XY^n.

4,532,850

MUSICAL RESILIENT BAND NOVELTY DEVICE

Engelbert J. Peham, St. Paul, Minn., assignor to Peham Plastics, Inc., St. Paul, Minn.

Filed Jul. 21, 1983, Ser. No. 515,651
Int. Cl.³ G10D *1/00*
U.S. Cl. 84—173 **11 Claims**



1. As a novelty device:
a resilient band characterized by producing a melodic tone when plucked while in a stretched condition;
means for anchoring said band;
spaced-apart means on said band for attaching said band to said anchoring means in a stretched condition; and
visible markings on said band located between said attaching means for designating locations on the band for pinching the band to produce melodic tones when plucked while anchored in a stretched condition.

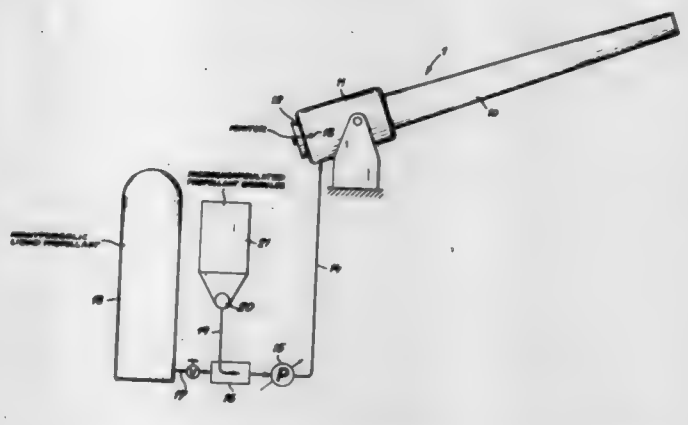
4,532,851

LIQUID-PROPELLANT SYSTEM

Karlheinz Reinelt, Hermannsburg, and Wolfram Witt, Düsseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Düsseldorf, Fed. Rep. of Germany

Filed Apr. 13, 1979, Ser. No. 31,112
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1978, 2817507
Int. Cl.³ F41F *1/00*; C06D *5/00*
U.S. Cl. 89—7 **10 Claims**

1. A method of operating a barrel-type weapon comprising the steps of:
feeding to a gasification chamber of said weapon a non-hypergolic liquid propellant and gasifying said propellant in said chamber to drive a projectile from the barrel of said weapon; and



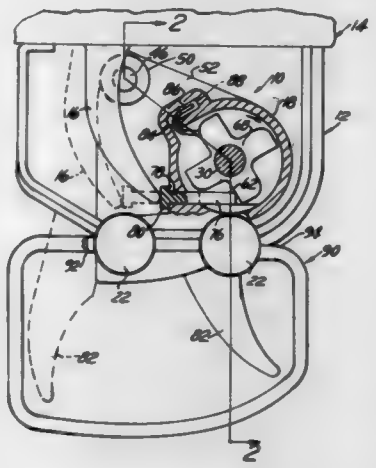
adding to said liquid propellant a dibasic propellant in the form of a spheroidal powder prior to introduction of the liquid propellant into said chamber.

4,532,852

RAPID FIRE ATTACHMENT FOR SEMI-AUTOMATIC FIREARMS

Richard O. Hance, 236 Evergreen Rd., and Gerald M. Hansen, Rte. 2, Box 428, both of North Fort Myers, Fla. 33903

Filed Jul. 25, 1983, Ser. No. 516,556
Int. Cl.³ F41C *19/00*
U.S. Cl. 89—136 **30 Claims**

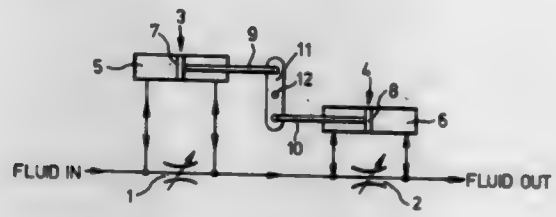


1. An apparatus for burst firing of a semi-automatic firearm, said firearm having a trigger enclosed within a trigger guard and said apparatus comprising a housing, clamp means for releasably attaching said housing within said trigger guard, rotor means rotatably supported in said housing, reciprocable striker means projecting at one end from said housing and being operable by said rotor means for actuating said firearm trigger upon rotation of said rotor means, lever means pivotably attached to said housing, said lever means having an end in the form of a trigger, and means coupling said lever means to said rotor means for driving said rotor means in rotation, and a secondary trigger guard disposed around said lever.

4,532,853
FLUID-POWERED ACTUATORS

James E. Stangroom, Castleton, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Oct. 8, 1980, Ser. No. 193,491
Claims priority, application United Kingdom, Oct. 24, 1979, 7936927
Int. Cl.[3] F01B 5/00
U.S. Cl. 91—165 9 Claims

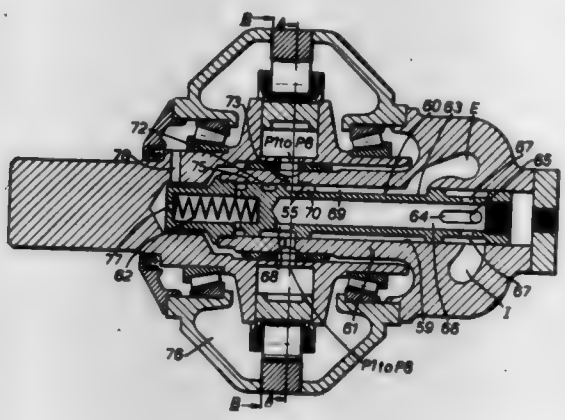


1. A fluid powered actuator including:
at least one pair of flow restrictors, at least one restrictor of the pair being variable, arranged for series flow connection in a fluid circuit;
a fluid pressure transmitting means arranged for parallel flow connection with each flow restrictor, having a linearly movable transmitting member responsive to the differential fluid pressure developed in use across the restrictor, the two transmitting members respective to each restrictor pair being mutually disposed for movement tangential to a common axis; and
an output member rotatable about each common axis, opposingly coupled to the two respective transmitting members so as to be angularly deflected by differential movement of the said two members.

4,532,854
SELECTIVELY OPERATIVE MULTI-DISPLACEMENT PUMP OR MOTOR

Kenneth W. S. Foster, Cheshire, England, assignor to Renold Plc, A British Company of Renold House, Manchester, England

Filed Dec. 20, 1983, Ser. No. 563,659
Claims priority, application United Kingdom, Dec. 24, 1982, 8236792
Int. Cl.[3] F01B 13/06
U.S. Cl. 91—472 16 Claims

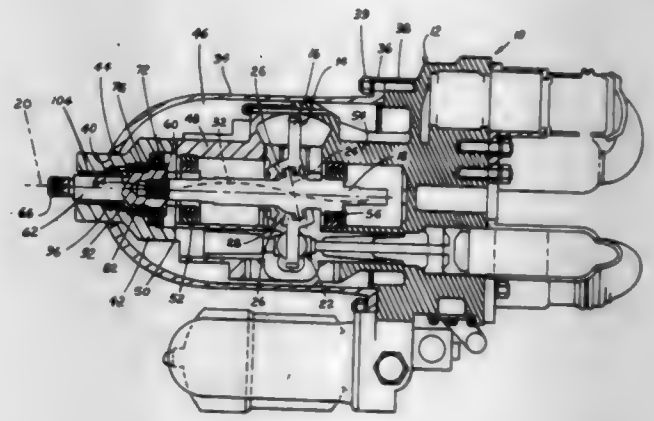


1. In a hydraulic piston and cylinder machine comprising a plurality of pistons and cylinders, a ring of ports for alternatively supplying working fluid into, and for allowing said fluid to be discharged from each cylinder, and a cam having a plurality of lobes to control the displacement of the pistons in a cylinder block with respect to relative progression of the cylinder block along the direction of the cam and in which each of the pistons traverses each of the cam lobes during a full rotation of the machine to undergo a number of piston strokes equal to the number of lobes, the improvement comprising:
valve means adjustable to route working fluid discharged through at least one of a number of fluid discharge ports of the machine cylinders to an exhaust fluid outlet of the machine during each full rotation of the machine, the discharge fluid being conducted to said exhaust fluid outlet through an isolated pressure zone of the machine;
said valve means including a displaceable valve element having passageways forming a part of said isolated pressure zone;
said isolated pressure zone also including, at any given time, the cylinders associated with at least one pair of pistons of the machine which pistons and cylinders discharge to and draw working fluid from other portions of said isolated pressure zone, wherein the total volume of said isolated pressure zone is constant during operation of the machine to reduce the capacity of the machine to receive and discharge working fluid; and
means for maintaining the pressure of the working fluid in said isolated pressure zone at all times during machine operation, at a pressure intermediate and a predetermined function of the supply and exhaust pressures of working fluid to and from the machine.

4,532,855
TWO-PART DRIVE SHAFT FOR THERMAL ENGINE

Roelf J. Meijer; Benjamine Ziph, and Ted M. Godett, all of Ann Arbor, Mich., assignors to Stirling Thermal Motors, Inc., Ann Arbor, Mich.

Filed Apr. 4, 1984, Ser. No. 596,222
Int. Cl.[3] F01B 3/02, 13/04, 29/10
U.S. Cl. 92—71 10 Claims



1. In a thermal engine in which thermal energy is converted to mechanical energy of rotation, said engine comprising housing structure, a drive mechanism cooperatively associated with said housing structure including a variable swashplate mechanism journaled on said housing structure for rotation about an axis to deliver mechanical energy of rotation via a drive shaft providing a power takeoff point on the exterior of the engine for delivery of engine power to any utilization mechanism which may be operatively coupled with the engine, and pressure sealing means for sealing said drive shaft with respect to said housing structure to prevent loss of internal pressure from the engine between said drive shaft and said housing structure, the improvement which comprises journal means for journaling said variable swashplate mechanism on said housing structure such that said housing structure reacts, via said journal means, bending loads developed by the operation of said swashplate mechanism, and a further shaft separate from the journaled swashplate mechanism but operatively coupled with said swashplate mechanism and disposed between said power takeoff point and said swashplate mechanism, further journal means journaling said further shaft on said housing structure, said further journal means and said first-mentioned journal means being independent of each other, whereby said further shaft is substantially isolated from such bending loads, and wherein said pressure sealing means has an operative association with said further shaft so as to also be substantially isolated

from such bending loads and said engine including pressure hull structure having a cooperative association with said housing structure whereby an interior space is cooperatively defined by said pressure hull structure and said housing structure and which is subjected to pressure different from that on the exterior of the engine, said pressure hull structure being cooperatively associated with said housing structure such that said housing structure passes through and is sealed relative to an aperture in said pressure hull structure which aperture is coaxial with said further shaft.

4,532,856

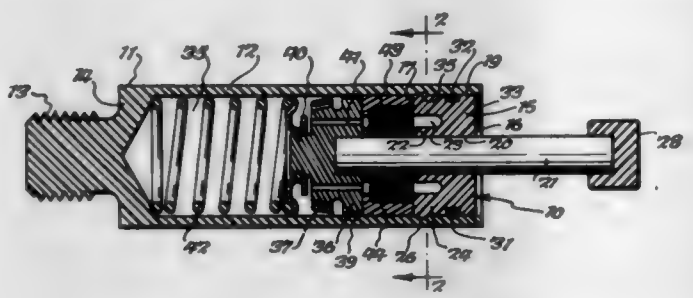
END CAP FOR FLUID CYLINDER

Douglas P. Taylor, North Tonawanda, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed Feb. 3, 1984, Ser. No. 576,890

Int. Cl.³ F16J *10/02, 15/18*

U.S. Cl. 92—168 **19 Claims**



1. An end cap for a cylinder comprising a plastic body portion having an outer surface and first and second ends, a bore in said body portion extending between said first and second ends, an annular flexible sealing lip surrounding said bore at said second end, an annular recess surrounding said annular flexible sealing lip at said second end, a flexible annular outer body portion surrounding said annular recess at said second end, said annular recess permitting radial flexing of said flexible annular outer body portion both toward and away from said annular flexible sealing lip and permitting flexing of said annular flexible sealing lip, and protuberance means on said outer surface extending in a circumferential direction about said flexible annular outer body portion.

4,532,857

TUNNEL FOR REFRIGERATING, HEATING, OR DRYING PRODUCTS OF THE FOODSTUFFS AND ESPECIALLY THE CONFECTIONERY INDUSTRY

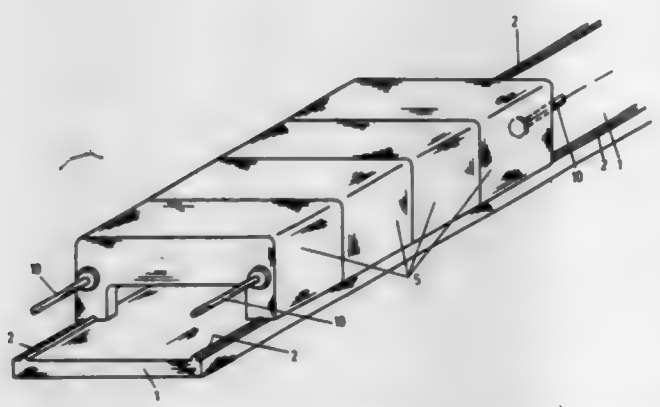
Helmut Sollich, Karschau 54, D - 2341 Rabenkirchen, Fed. Rep. of Germany

Filed Dec. 21, 1983, Ser. No. 564,092

Claims priority, application European Pat. Off., Dec. 7, 1983, 83112287.4

Int. Cl.³ A23L *3/00*

U.S. Cl. 99—483 **11 Claims**



1. Tunnel for refrigerating, heating, or drying products of foodstuffs and particularly the confectionery industry; comprising a plurality of hoods arranged in series along the length of the tunnel; base means for supporting said hoods, said hoods being arranged in substantially close contact on said base means; spreader means for lifting said hoods off said base means; conveyor belt means within said tunnel; said spreader means connecting said hoods to said base means; each hood being liftable off said base means and above said conveyor belt means independent of the other hoods.

4,532,858

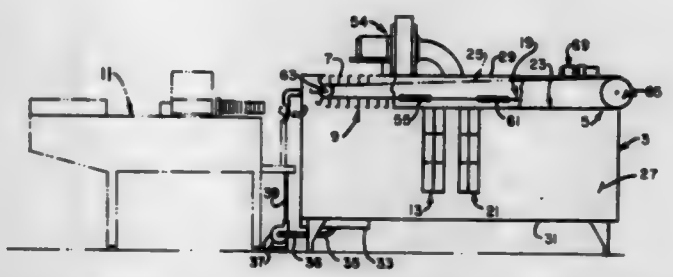
APPARATUS FOR SHOWER APPLYING LIQUID SMOKE

Robert R. Hershfeld, St. Louis County, Mo., assignor to The Baltimore Spice Company, Baltimore, Md.

Filed Sep. 19, 1983, Ser. No. 533,411

Int. Cl.³ A23B *4/00*

U.S. Cl. 99—534 **15 Claims**



1. Apparatus for the surface application of liquid smoke to edible articles, said apparatus comprising a conveyor movable along a path from a loading station into a smoke shower station, to a drying station, and thence to an unloading station, comprising, said apparatus including the liquid smoke shower station and having a chamber at least partially enclosing a portion of said conveyor with said edible articles thereon, a reservoir for the apparatus and holding a supply of liquid smoke, a plurality of shower nozzles operatively associated with the apparatus and positioned so as to spray liquid smoke on said edible articles carried by said conveyor within said chamber, a pump operatively associated with the apparatus and useful for drawing liquid smoke from said reservoir and for spraying said liquid smoke from said shower nozzles in large, discrete droplets or in a substantially continuous liquid stream onto said edible articles with the excess liquid smoke returning to said reservoir, said apparatus incorporating a cabinet having an inlet door for said conveyor and an outlet door for said conveyor, said conveyor being of the endless chain type and having a plurality of support means thereon from which the edible articles may be suspended, and said chain being entrained around a plurality of sprockets including a series of said sprockets maintained within the cabinet for movement of the endless chain therethrough, and a plurality of said sprockets being located exteriorly of said cabinet for support and movement of the endless chain along its predetermined path and to accommodate the loading and unloading of edible articles thereon.

4,532,859

METHOD FOR IDENTIFICATION OF METAL BOXES OR CANS AND AN APPARATUS FOR CARRYING OUT SAID METHOD

Steinar Solordal, Hvalstad, Norway, assignor to A/S Tomra Systems, Asker, Norway

Filed Nov. 1, 1983, Ser. No. 547,741

Claims priority, application Norway, Nov. 1, 1982, 823621

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—35 **19 Claims**

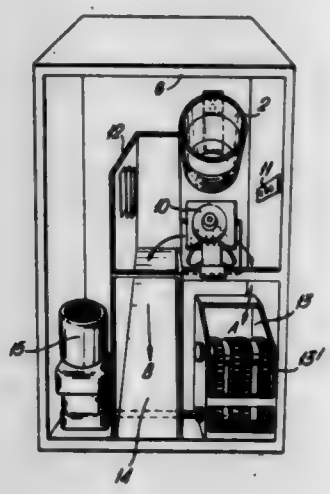
1. A method for identification and separation of metal boxes or cans comprising:

placing said can in a motor-controlled cradle;

rotating said cradle in a first direction from a starting position to a first position with a first stepping frequency;

rotating said cradle in a second and opposite direction into a second position with a second stepping frequency;

measuring the time required to return said cradle from said first position to said second position; and



discharging said can as a function of said time measurement either by further rotation of said cradle in said second direction or by rotating said cradle back in said first direction and past said first position.

4,532,860

APPARATUS FOR COLLECTING WASTE FROM A TEXTILE MACHINE

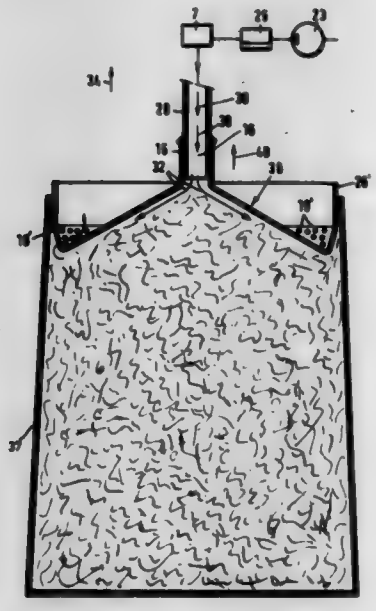
Dionizy Simson, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jan. 18, 1984, Ser. No. 571,688

Claims priority, application European Pat. Off., Jan. 21, 1983, 83 810024.6

Int. Cl.³ B30B *9/00*

U.S. Cl. 100—90 **10 Claims**



1. An apparatus for collecting waste from a textile machine, said apparatus comprising

a container;

first means defining an inlet to said container to deliver a flow of waste-laden carrier medium into said container;

at least one movable wall in said container for compressing waste therein; and

second means in said movable wall defining an outlet from said container to exhaust carrier medium from said container while retaining waste within said container.

4,532,861

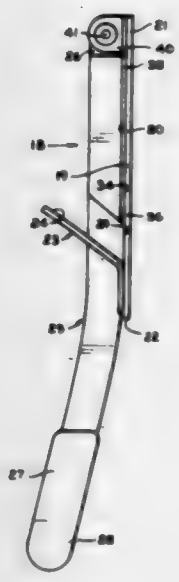
CAN CRUSHER

Paul D. Gisselberg, III, E. 610 - 42nd, Spokane, Wash. 99203

Filed Apr. 25, 1984, Ser. No. 603,714

Int. Cl.³ B30B *9/32*

U.S. Cl. 100—233 **8 Claims**



1. A can crusher, comprising:

a base having a flat anvil surface thereon extending between opposed base ends;

a rigid elongated lever having a handle at an outward handle end and a remaining inward end;

a crusher surface on the lever adjacent the remaining lever end extending along the lever from an end adjacent the remaining lever end to an outward end spaced toward the lever handle;

bracket means mounted on the base at one of the base ends thereof for mounting the lever at the end end for pivotal movement about an axis parallel to the flat anvil surface, between a closed position with the flat crusher surface in flush engagement with the anvil surface, and an open position wherein the flat crusher surface is pivoted away from the anvil surface to a can receiving position such that a can may be received between the crusher and anvil surface; and

a stationary abutment affixed to the base at the end thereof opposite the one end mounting the bracket means, having a can end abutment surface thereon inclined at an acute angle to the anvil surface and adjacent the outer crusher surface end, said abutment being slotted to receive the lever with the abutment surface extending to opposite sides of the lever at the closed position thereof.

4,532,862

PRINT HAMMER BANK

James R. Moss, Lum, Mich., assignor to Centronics Data Computer Corp., Hudson, N.H.

Filed Jul. 1, 1983, Ser. No. 509,925

Int. Cl.³ B41J *9/10*

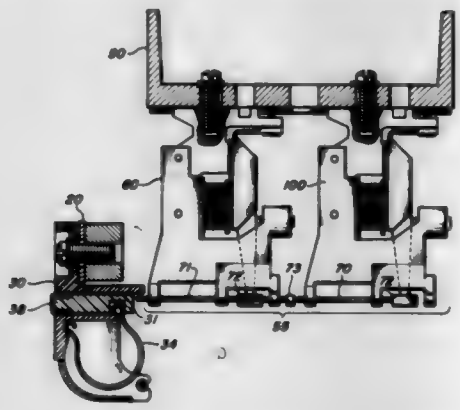
U.S. Cl. 101—93.32 **4 Claims**

1. A free-flight hammer, impact-printing apparatus utilizing a shifting hammer bank, the hammers of which strike a moving record medium normally relative to the medium surface, the apparatus comprising:

a plurality of interchangeable actuator modules responsive to electric signals, each of said actuator modules including at least one actuator assembly which includes a means for housing a stator, a solenoid assembly and an armature, said stator being locked in said stator housing, said solenoid assembly being mounted between said stator and said armature, said armature being attached to said stator and including flexure means which allows said armature to move relative to said stator, said stator housing further

including a guide means for pushrods, one of said pushrods being a capturing pushrod which includes means for capturing a portion of said armature to allow said armature to contol the movement of said capturing pushrod;

a plurality of interchangeable hammer modules including a plurality of individual linear motion, slidable hammers, said individual hammers being slidably mounted in a side by said relationship in a hammer housing which includes



means for capturing a hammer return spring for each hammer mounted in said hammer housing, one end of each of said springs being attached to a corresponding hammer, said hammers and springs being held in said hammer housing by a securing means positioned against said springs;

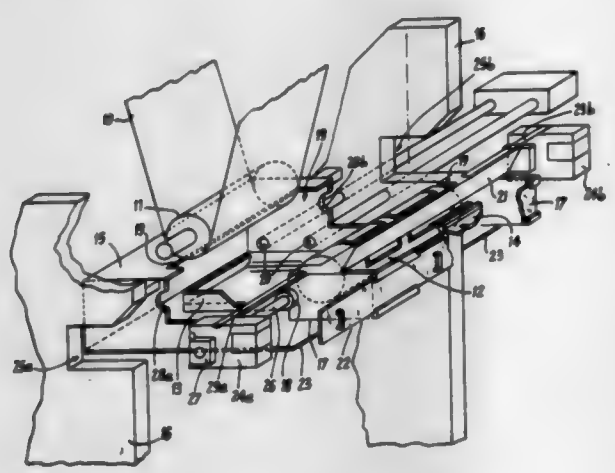
means for mounting said actuator modules relative to said hammer modules so that said pushrods cause the firing of individual hammers of said hammer modules.

4,532,863

METHOD AND APPARATUS FOR CONTROLLING THE TEMPERATURE IN ROTATING PRINTERS

Guy Bavoux, Coye la Foret, and Arthur B. Dallaserra, Aulnay Sous Bois, both of France, assignors to Herve Et Fils, S.A., Paris, France

Filed Nov. 15, 1982, Ser. No. 441,676
Claims priority, application France, Jan. 26, 1982, 82 01190
Int. Cl.³ B41F *9/06*
U.S. Cl. 101—153 **17 Claims**



1. A rotating printing device comprising:

(a) an enclosure containing a printing cylinder, said enclosure including a window;

(b) a pressure roller comprising means for supporting a web on which a product is to be applied, said window comprising means for allowing at least a portion of said pressure roller to pass into said enclosure simultaneously with at least a portion of said web, said pressure roller also comprising means for forming a contact zone with said web and means for applying said contact zone against said printing cylinders;

(c) a container comprising means for holding said product for application to said printing cylinder, said container being enclosed by said enclosure;

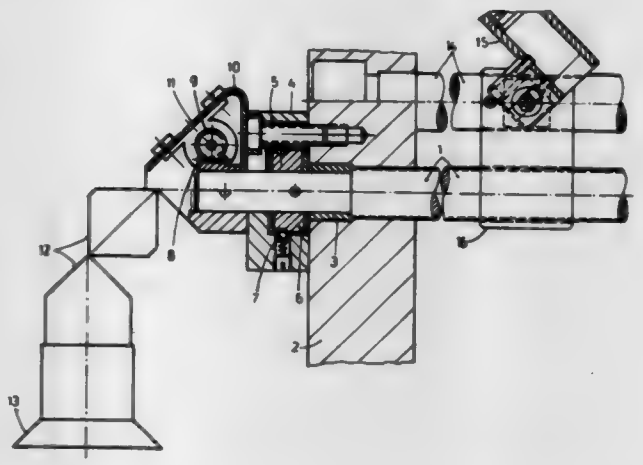
(d) gas flow means for providing a flow of gas at a controlled temperature to said enclosure, said contact zone being positioned in said flow of gas, said gas flow means comprising one gas conducting conduit having an inlet for pulsating air located in a lower portion of said enclosure, said inlet comprising means for conducting said controlled temperature gas flow into said enclosure, said gas flow means and said container together comprising means for maintaining the temperature within said product container and the temperature at said contact zone substantially equal.

4,532,864

PRINTING MACHINE WEB TURNING BAR ADJUSTMENT MECHANISM

Albert Heller, Pestenacker; Hubert Birkmair, Friedberg, and Hermann Grauberger, Augsburg, all of Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,803
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 8211907[U]
Int. Cl.³ B41F *13/06*
U.S. Cl. 101—219 **3 Claims**



1. Printing machine turning bar adjustment mechanism for a printing machine having a side wall (2) comprising

a side wall (2);

a turning bar (15) located inwardly of one side of the side wall;

a longitudinally extending cross bar (14), the turning bar being mounted on the cross bar for positioning the turning bar in adjustable positions along the length thereof, and including

a spindle (1) extending parallel to the cross bar (14);

coupling means (16) slidable on the cross bar (14) and engageable by the spindle to move the turning bar longitudinally along the cross bar upon rotation of the spindle;

an extending portion formed on the spindle, projecting from the spindle at the side of the side wall remote from the turning bar;

a holding flange (4) secured to the side wall and rotatably retaining the extending portion of the spindle;

a positioning wheel (6) located within the holding flange (4) coupled to the extending portion of the spindle (1) and having spring-loaded ball and detent means (7) for engaging the positioning wheel and locating the positioning wheel, and hence the spindle (1), at predetermined angular positions;

a worm (8) formed on the spindle (1);

a gear (9) in engagement with the worm and forming, in combination with the worm, a reduction gearing;

a numerical revolution indicator (10, 11) coupled to the gear

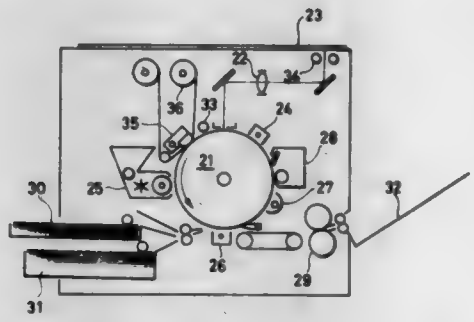
(9), the numerical revolution indicator including a plurality of number wheels;
and a drive wheel (13) coupled to the spindle, independently of the worm (8) and the gear.

4,532,865

ELECTROSTATIC PRINTING METHOD USING HEAT SENSITIVE THERMAL INK TRANSFER

Masaki Yoshino, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 22, 1983, Ser. No. 516,090
Claims priority, application Japan, Jul. 22, 1982, 57-126663
Int. Cl.³ B41C *1/00*
U.S. Cl. 101—426 **3 Claims**



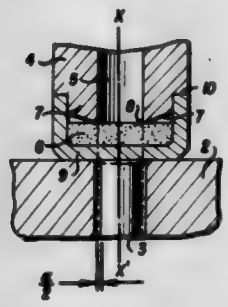
1. An electrostatic printing method comprising the steps of:
(a) operating a thermal head in accordance with electrical signals representative of image data;
(b) transferring heat-sensitive ink onto a photosensitive sheet from a donor sheet disposed between said thermal head and said photosensitive sheet to form a master sheet to thereby form ink images representative of said image data;
(c) charging said master sheet;
(d) uniformly exposing said master sheet to form an electrostatic latent image on said ink images;
(e) developing said latent image into a toner image with powdered toner;
(f) transferring said toner image to a recording sheet; and
(g) fixing said toner image on said recording sheet.

4,532,866

COMBUSTIBLE SAFETY PRIMER OF SELECTIVE PERCUSSION FOR CASE-LESS AMMUNITION OR AMMUNITION WITH COMBUSTIBLE CASE

Guy J. Lagofun, Tarbes, France, assignor to L'Etat Francais, Paris, France

Continuation-in-part of Ser. No. 322,876, Nov. 19, 1981, , which is a continuation of Ser. No. 61,024, Jul. 26, 1979,. This application Oct. 13, 1983, Ser. No. 541,508
Int. Cl.³ F42C *19/10*
U.S. Cl. 102—204 **7 Claims**



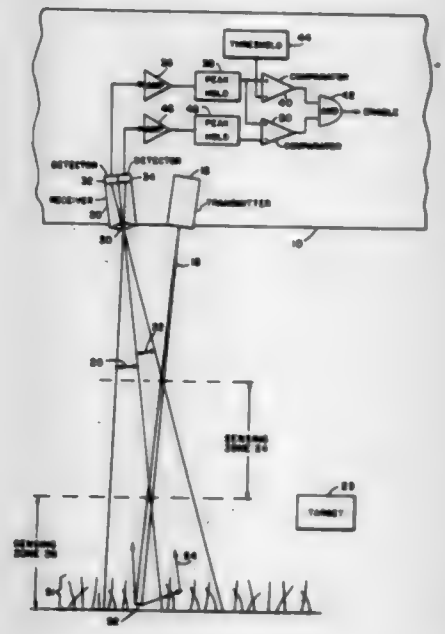
1. A percussion primer for case-less ammunition or ammunition with combustible case for a weapon utilizing a firing pin with a flat end, comprising:
a combustible propellant block, one end of which is in the form of a conical surface for functioning as an anvil and a vent formed in said block;
a wholly combustible sensitive primer composition;
and combustible means for holding the primer composition in contact with the conical anvil surface of said block;
said vent aligned to be coaxial with the firing pin of a weapon in which said ammunition may be fired and extending through the conical end of the block;
said anvil being defined by the sharply edged intersection of the conical end of the conical end surface of the block and the internal surface of the vent; and
the diameter of the cross section of the flat ended firing pin being less than that of said vent so that the clearance in mm between them will be $0<E\leqq 5/10$ so that the initiation of said primer composition is obtained substantially only by shearing of said primer composition.

4,532,867

DUAL FIELD-OF-VIEW OPTICAL TARGET DETECTOR

Robert R. Mitchell, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jul. 7, 1983, Ser. No. 511,602
Int. Cl.³ F42C *13/02*
U.S. Cl. 102—213 **6 Claims**



1. A dual field-of-view detection system comprising: a receiver having first and second detecting means therein disposed to provide respective adjacent directional fields-of-view for receiving reflected electromagnetic radiation, a transmitter for directing electromagnetic radiation into the fields-of-view of said receiver detection means for establishing first and second sensing zones where the respective fields-of-view and the transmitted radiation are coincident, and comparison means coupled to said first and second detection means for comparing reflected radiation from said first and second sensing zones as detected by said first and second detection means to provide an output signal when the radiation sensed by the first detection means exceeds both a predetermined bias level and the radiation sensed by the second detection means.

4,532,868

ROTATING BAND FOR PROJECTILES

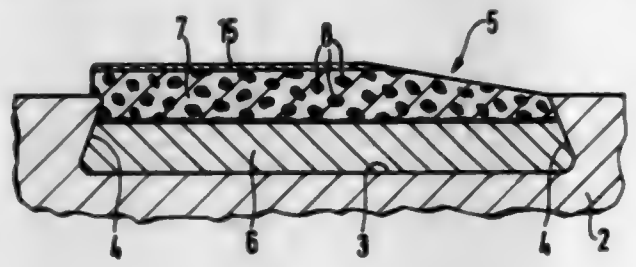
Winfried Gleichaut, Oberndorf; Oswin Günther; Dietrich Hoffmann, both of Schramberg, and Rolf Funke, Bad Schonborn, all of Fed. Rep. of Germany, assignors to Mauser-Werke Oberndorf GmbH and Karl Schmidt GmbH, both of, Fed. Rep. of Germany

Filed Dec. 22, 1983, Ser. No. 564,209

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3248011

Int. Cl.[3] F42B *31/00*

U.S. Cl. 102—527 11 Claims



1. A projectile having a caliber and adapted to be fired from a rifle bore having rifling with lands and grooves, comprising:

a projectile body having an external circumferential groove; and

a rotating band in said groove comprising a compound slide bearing;

said rotating band including a radial inner carrier having an outer diameter which is smaller than the projectile caliber so that the lands of the rifling do not cut into said carrier, a split annular one piece porous metal slide layer over and secured to the exterior surface of said carrier, said slide layer having ends, a polytetrafluoroethylene filling pores of said porous metal slide layer, a cover layer of polytetrafluoroethylene over said slide layer, said slide layer having an outer cylindrical surface covered by said cover layer, and means for positively engaging said ends of said slide layer which comprise a latch tongue on one end of said slide layer engaged with a receiving groove on the other end of said slide layer.

4,532,869

PALLET CONVEYING SYSTEM

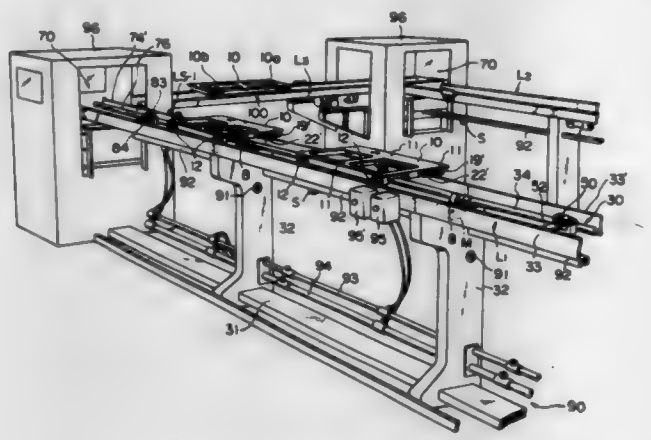
Hirokazu Kondo, and Shigekatsu Takino, both of Osaka, Japan; assignors to Tsubakimoto Chain Company, Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,375

Claims priority, application Japan, Aug. 24, 1982, 57-14557

Int. Cl.[3] B61B *13/00*

U.S. Cl. 104—166 9 Claims



1. A pallet conveying system for a pallet having stop and lock pins projecting therefrom, comprising pallet guide rails supported on a frame, a driving shaft extending along said guide rails, motor means for driving said driving shaft, a turntable mechanism disposed at the end of said pallet guide rails and having changeover rails alignable with said guide rails and a changeover driving shaft alignable with said driving shaft, a driven roller pivotally attached to the underside of a pallet and urged so as to be pressed against the circumference of said driving shaft with the axis of rotation thereof diagonally positioned with respect to the axis of said driving shaft, front and rear lever means pivotally mounted on and projecting from the front end and the rear end, respectively, of the pallet, link means connected between said driven roller and said front and rear lever means for causing the axis of rotation of said driven roller to be parallel to the axis of said driving shaft when either said lever means is retracted, a pallet stopping and positioning mechanism disposed at a predetermined position adjacent said guide rails for causing the axis of rotation of said driven roller to be approximately parallel to the axis of said driving shaft and for stationarily holding the stop pin projecting from the underside of the pallet when the mechanism is in a projected position, the mechanism including a stopper and a movable positioning member positioned adjacent the stopper for holding the stop pin therebetween, means for moving the mechanism into a retracted position, and locking means movable into a locking position for engaging and stationarily holding said lock pin when the pallet is stopped by said mechanism.

4,532,870

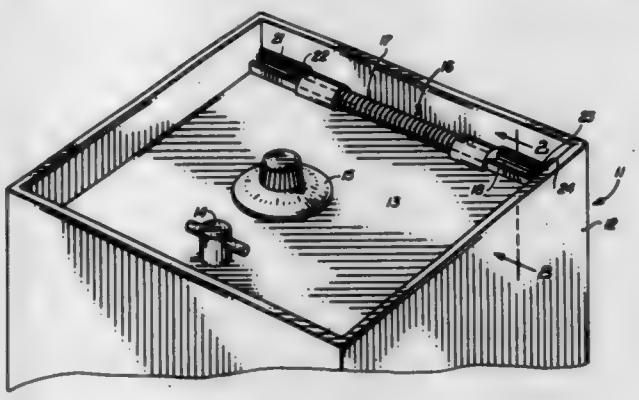
SAFE APPARATUS

Gary D. Hayman, 96 Mark David Ct., Casselberry, Fla. 32707

Filed Sep. 27, 1982, Ser. No. 424,032

Int. Cl.[3] E05G *1/026*

U.S. Cl. 109—58 8 Claims



1. A safe apparatus comprising in combination:

a security container having an opening thereinto;

a safe door covering said opening into said security container and having a lock attached thereto;

hinge means for hinging said safe door to said security container, said hinge means having at least one hinge pin attached to said door and a hinge pin support grooved for nesting said hinge pin therein, said hinge pin support groove being open along one side thereof at least the width of the diameter of said hinge pin to allow said safe door to be removed from said security container by separating said hinge pin from said grooved support upon lifting an opened safe door; and

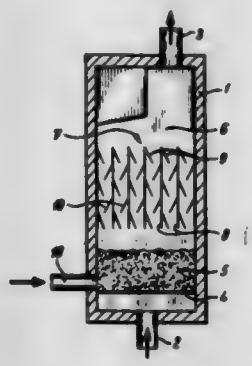
means for preventing the separation of said safe door from said container when said safe door is closed.

4,532,871

FLUIDIZED BED COMBUSTION APPARATUS

Max L. G. Van Gasselt, Apeldoorn, and Louis M. Rappoldt, Ugchelen, both of Netherlands, assignors to Nederlandse Centrale Organisatie Voor Toegepast, The Hague, Netherlands

Filed Feb. 15, 1984, Ser. No. 580,413
Claims priority, application Netherlands, Feb. 18, 1983, 8300617
Int. Cl.[3] F23J *3/00*
U.S. Cl. 110—216 9 Claims



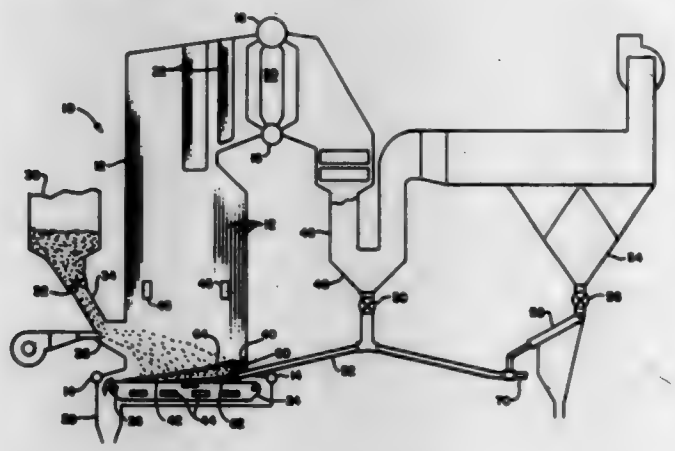
1. A fluidized bed combustion apparatus, comprising:
(a) a housing,
(b) support means in the housing adjacent the bottom thereof for supporting a bed of particulate material including particulate combustible material,
(c) particulate infeed means adjacent the support means for supplying particulate material to said support means,
(d) air inlet means in the housing below the support means for supplying combustion air to a bed of particulate material on the support means,
(e) combustion gas outlet means in the top of the housing,
(f) a plurality of upwardly directed channel walls in the housing above the support means defining a channel between adjacent walls, and
(g) a pair of opposed arrays of superimposed plates in each channel, the plates of one array of the pair extending obliquely downward and inward from one channel wall, and the plates of the other array of the pair extending obliquely downward and inward from the opposite wall of said channel.

4,532,872

CHAR REINJECTION SYSTEM FOR BARK FIRED FURNACE

David K. Anderson, East Longmeadow, Mass., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Dec. 17, 1984, Ser. No. 682,442
Int. Cl.[3] F23G *5/12*
U.S. Cl. 110—255 1 Claim



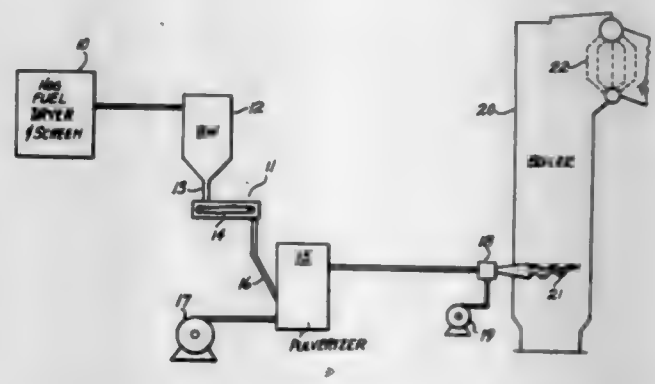
1. In combination, a furnace for burning cellulosic fuel therein, a traveling grate in the furnace bottom having an upper run and a lower run, and also having a first end positioned adjacent a first wall of the furnace, and a second end located adjacent a second opposite wall of the furnace, a discharge chute located beneath the second end of the traveling grate through which ashes fall, means for continuously moving the upper run of the grate towards the second wall, inclined baffle means extending outwardly and downwardly from the first wall so as to extend above a portion of the first end of the traveling grate, means for introducing raw cellulosic fuel into the furnace in such a manner that part of it lands on top of the baffle means, sliding down onto the upper run, means for separating char particles out the combustion gases leaving the furnace, means for introducing said char particles onto the upper run of the grate at a location beneath the baffle means, so that as they move from beneath the baffle means they are covered with a layer of cellulosic fuel sliding down off the baffle means, thus preventing the relatively light char particles from becoming reentrained in the combustion gases flowing upwardly through the furnace before they are completely combusted.

4,532,873

SUSPENSION FIRING OF HOG FUEL, OTHER BIOMASS OR PEAT

John Rivers, Normandy Park; Charles D. Kramer, Montesano, and Robert L. Cox, Hoquiam, all of Wash., assignors to Weyerhaeuser Company, Tacoma, Wash.

Continuation-in-part of Ser. No. 377,279, May 12, 1982, abandoned. This application Feb. 15, 1984, Ser. No. 580,407
Int. Cl.[3] F23D *1/00*; C10L *5/44*
U.S. Cl. 110—347 8 Claims



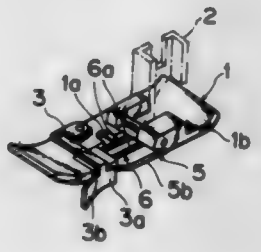
1. A process for burning a wet organic fuel in a water wall or other cold wall type boiler which comprises:
providing at least one swirl stabilized burner adapted for burning a powdered fuel;
drying the wet fuel to an average moisture content less than about 30% with at least a portion of the finer particles having a moisture content not exceeding about 20%;
pulverizing the dried fuel so that at least 60% by weight of the particles are finer than about 1000 microns and at least 15% of the particles are finer than about 150 microns,
adjusting the fraction of the less than about 150 micron particles in the pulverized portion so that the fuel will produce a self-sustaining flame;
conveying the dried and ground particles to the burner while suspended in a stream of primary air; and
igniting the particles, whereby the less than about 150 micron fraction provides sufficient ignition energy to sustain stable combustion of the entire fuel.

4,532,874

HEM STITCHING PRESSER FOOT FOR A ZIGZAG SEWING MACHINE

Yasukata Eguchi, and Mikio Inamori, both of Tokyo, Japan, assignors to Janome Sewing Machine Co. Ltd., Tokyo, Japan

Filed Jan. 3, 1984, Ser. No. 567,786
Claims priority, application Japan, Jan. 6, 1983, 58-89[U]
Int. Cl.³ D05B *29/12, 35/02*
U.S. Cl. 112—235 **10 Claims**



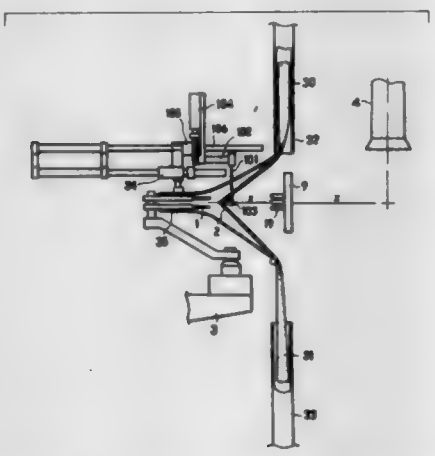
1. A hem stitching device, of a zigzag sewing machine, having a fabric feed direction, for forming a hem on a fabric, comprising: a presser holder; a fabric presser member pivotally mounted to said presser holder and having one end, a fabric presser portion and a needle drop hole; a fabric guide member disposed a distance from said presser holder; and a thread guide member having a thread guide portion fixed to said fabric guide member, said thread guide member being composed of a wire material, said fabric guide member being fixed to said fabric presser member at said one end, and said fabric presser portion located between and substantially opposite said needle drop hole and said thread guide member and being formed so as to press the fabric between said thread guide portion of said thread guide member and said needle drop hole of said fabric presser member.

4,532,875

PROCESS AND A MACHINE FOR THE AUTOMATIC TRANSFER OF PANTYHOSE FROM A MACHINE WHICH PRODUCES A PANTYHOSE WITH SEAMS TO A GUSSET-SEWING MACHINE

Vinicio Gazzarrini, Florence, Italy, assignor to Solis S.r.l., Florence, Italy

Filed Jan. 6, 1984, Ser. No. 568,700
Claims priority, application Italy, Jan. 21, 1983, 9316 A/83
Int. Cl.³ D05B *21/00, 97/00*
U.S. Cl. 112—262.2 **17 Claims**



1. A process for the automatic transfer of pantyhoses from a machine which produces pantyhoses with seams to a machine for sewing the gussets of pantyhoses, comprising:

leaving a preliminary horizontal opening out of the edge of the garment both after the garment has left the pantyhose machine and during the horizontal approach of the garment to a catching device,

leaving said preliminary opening during the separate drawing of the legs of the garment into appropriate tubes; and

leaving said preliminary horizontal opening out of the edge of the garment seamless, so that, when the garment reaches said catching device, the edge of said opening is arranged around closed prongs forming part of said catching device.

8. Apparatus for the automatic transfer of pantyhose from a first machine for seaming pantyhose to a second machine for applying a gusset to the pantyhose, wherein the pantyhoses leaving the first machine each have a transverse opening to which the gusset is to be applied, and the gusset applying machine includes tubes into which the legs of the pantyhose are drawn, comprising:

a pronged gripping device having prongs adapted to enter into the transverse opening for gripping the pantyhose;

a pair of arms symmetrically positioned relative to one of said tubes;

a shaft for each of said arms onto which said arms are articulated, said shafts being rotatable about their own axes and movable relative to each other;

claws for gripping the pantyhose at the edge of the transverse opening to permit said prongs to enter into said transverse opening; and

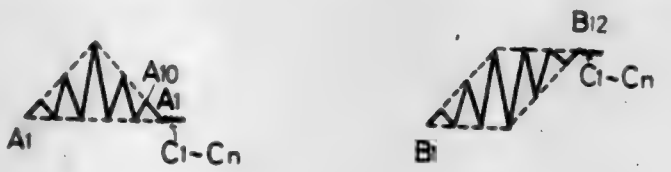
means to open said prongs to open the transverse opening to its maximum extent prior to applying the gusset.

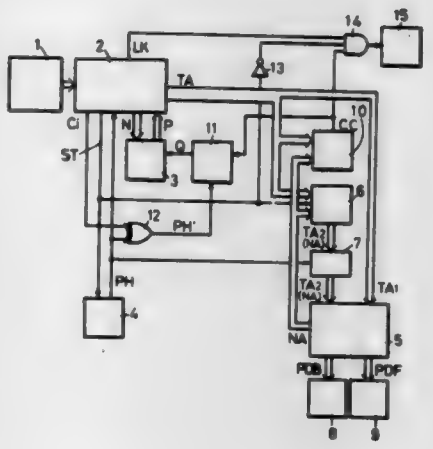
4,532,876

ELECTRONIC SEWING MACHINE

Takeshi Kongoh, and Haruhiko Tanaka, both of Tokyo, Japan, assignors to Janome Sewing Machine Industry Co., Ltd., Tokyo, Japan

Filed May 18, 1984, Ser. No. 611,680
Claims priority, application Japan, May 18, 1983, 58-85796
Int. Cl.³ D05B *3/02*
U.S. Cl. 112—454 **2 Claims**





1. An electronic sewing machine having stitch forming instrumentalities including a needle laterally swingable and vertically reciprocated to penetrate a fabric to be sewn and a fabric feeding device operated in a timed relation with the needle to transport the fabric, said electronic sewing machine comprising, in combination,

(a) an electronic memory storing stitch control data predetermined specific to respective stitch patterns which may be sequentially read out to control the stitch forming instrumentalities, said stitch control data being composed of a set of coordinate determining data of needle penetrat-

ing points which are sequentially connected to thereby form stitches of a selected pattern;

(b) switch means for selecting a desired one or combination of the stitch patterns to thereby give a corresponding pattern number for the selected pattern to address said electronic memory for sequentially reading out the stitch control data specific to the selected pattern;

(c) first detection means for detecting whether the selected combination of the patterns includes a lock stitch pattern at the last thereof, said means being adapted to produce a signal when the lock stitch pattern is included in the selected combination;

(d) stop means operated in response to said signal from said first detecting means for stopping the sewing machine operation after the lock stitch pattern is finished;

(e) second detection means for detecting whether the selected pattern designated to be followed by the lock stitch pattern belongs to a first or second group, said first group comprising stitch patterns whose stitch control data are preset in said memory such that the last one stitch line necessary for completing a configuration thereof does not extend to the first stitch of the next pattern, and said second group comprising stitch patterns whose stitch control data includes the coordinate determining data of the last needle penetrating point of a first pattern which is identical to the first needle penetrating point of a succeeding pattern, said second detection means being adapted to produce a selective one of a first group command signal and a second group command signal in accordance with the detection; and

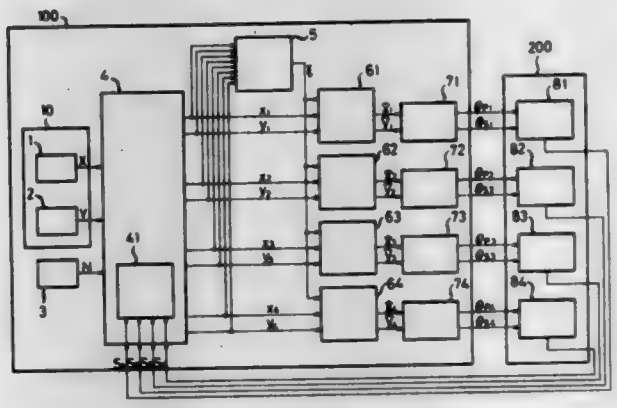
(f) control means operated in response to said first or second group command signal from said second detection means to control the operation of said memory for starting the lock stitch forming operation at a time differently determined in dependence upon the detection by said second detection means, whereby the lock stitch pattern is connected to the last point of the configuration of the pattern designated to be followed by the lock stitch, independently of whether the pattern belongs to said first or second group.

4,532,877

MANEUVERING SYSTEM OF WATERCRAFT AND THE LIKE

Osamu Nagata, Kobe; Masanari Inagaki, Akashi, and Hajime Yamada, Kobe, all of Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed May 10, 1983, Ser. No. 493,165
Claims priority, application Japan, May 18, 1982, 57-84497
Int. Cl.³ B63H *25/52*
U.S. Cl. 114—144 E **2 Claims**



1. A maneuvering system of watercraft provided with a plurality of thrusters, said maneuvering system comprising:

thrust setting means, and moment setting means for setting a thrust and a turning moment respectively, to be imparted to the watercraft;

thrust allocation means operatively connected to said thrust setting and moment setting means for having inputted thereto a resultant thrust instruction signal supplied from said thrust setting means, and a moment instruction signal supplied from said moment setting means, and for supplying thrust instruction signals to the respective thrusters for outputting corresponding thrusts, said thrusts being composed of a resultant thrust and a moment coincident with said set thrust and moment;

reduction rate operation means for comparing the thrust instruction signals supplied to the respective thrusters with signals of predetermined maximum allowable thrusts for the respective thrusters to calculate reduction rates for reducing the thrust instruction signals to the signals of said predetermined maximum allowable thrusts respectively and selectively and to select the maximum reduction rate signal among said reduction rate signals; and

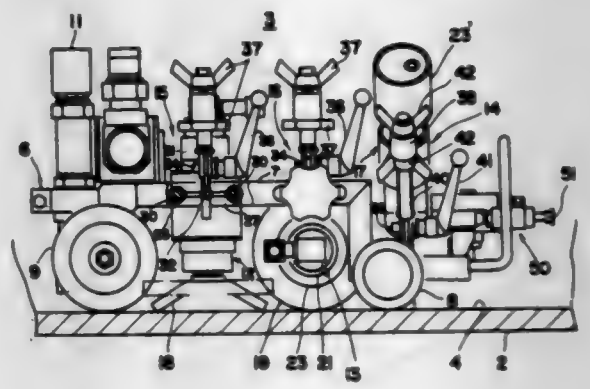
thrust reduction means performing a reduction operation on all of the thrust instruction signals supplied to the respective thrusters by said maximum reduction rate.

4,532,878

APPARATUS FOR ABRASIVE CLEANING

Minoru Shiraishi, Kumamoto; Yoshimi Numata, Nagasu; Hiroshi Tano, Maizuru, and Tatsumi Onaka, Amagasaki, all of Japan, assignors to Hitachi Zosen Corporation, Osaka, Japan

Filed Jan. 6, 1984, Ser. No. 568,616
Int. Cl.³ B24B *27/00*; B63B *59/00*
U.S. Cl. 114—222 **9 Claims**



1. An apparatus for abrasive cleaning comprising a truck adapted to run on a first surface and along a second surface substantially perpendicular to the first surface, a first abrasive cleaner mounted on the truck by first support means substantially perpendicularly to the first surface and having at its one end a first abrasive cleaning tool adapted to contact the first surface, first biasing means for pressing the first abrasive cleaner against the first surface, a second abrasive cleaner mounted on the truck by second support means substantially perpendicularly to the second surface and having at its one end a second abrasive cleaning tool adapted to contact the second surface, and second biasing means for pressing the second abrasive cleaner against the second surface,

wherein each abrasive cleaner comprises a main body having a substantially cylindrical outer surface, and the corresponding support means includes a holding cylinder surrounding the main body outer surface and provided at each of its opposite ends with inwardly directed annular flange means to define an adjoining annular channel, a gap being formed between the flange means and the main body outer surface, the annular channel radially movably retaining therein guide balls having a diameter larger than the depth of the annular channel and adapted to contact the main body outer surface, the difference between the ball diameter and the channel depth being smaller than said gap, whereby the first and second abrasive cleaners are supported by the first and second support means so as to be limitedly movable in the direction of first and second axes substantially perpendicular to the first and second surfaces, respectively, and so as to be limitedly tiltable in

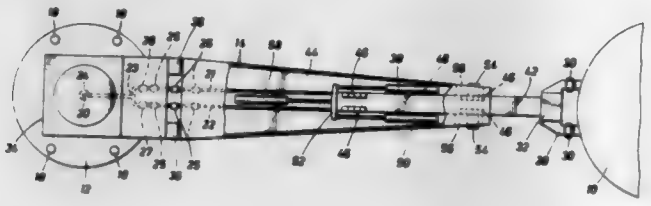
every direction with respect to the first and second axes, respectively.

4,532,879

COMBINATION MOORING SYSTEM

John E. Ortloff, Houston, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Jun. 4, 1984, Ser. No. 594,086
Int. Cl.³ B63B *21/00*
U.S. Cl. 114—230 **14 Claims**



1. An apparatus for mooring a floating vessel to a base, wherein the vessel is acted upon by a loading force induced by wind, waves, floating ice, or an ocean current, comprising:

a first mooring arm connected to the vessel;

a second mooring arm connected to said base such that said second mooring arm is in sliding engagement with said first mooring arm to permit movement between the vessel and the base, wherein said first mooring arm is initially at a mean position relative to said second mooring arm when the vessel is not acted upon by the loading force;

first hydraulic pressure means connected between said first mooring arm and said second mooring arm to furnish a restoring force, as the loading force urges the vessel away from the base to displace said first mooring arm from the mean position, for urging said first mooring arm toward the mean position; and

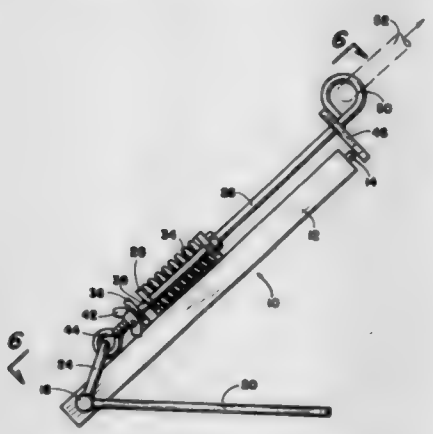
second hydraulic pressure means connected between said first mooring arm and said second mooring arm to furnish a restoring force, as the loading force urges the vessel toward the base to displace said first mooring arm from the mean position, for urging said first mooring arm toward the mean position.

4,532,880

BOAT ANCHOR

Richard J. Dyer, Broken Arrow, and Robert S. Tarpley, Mannford, both of Okla., assignors to Diamondback Marine Products, Inc., Tulsa, Okla.

Filed Apr. 16, 1984, Ser. No. 600,448
Int. Cl.³ B63B *21/24*
U.S. Cl. 114—298 **5 Claims**



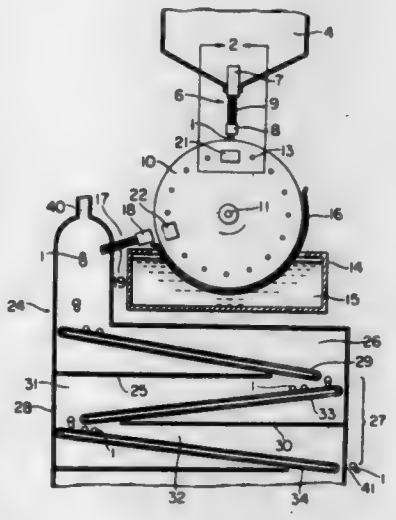
1. An anti-fouling anchor for boats and comprising shank means, transversely extending rod means journalled at one end of the shank means, anchor blade means secured to the transverse rod means for selective engagement with the bottom of a body of water for securing the boat in a preselected position therein, spring urged release rod means having a normal position of engagement with the shank means and releasable from the shank means upon a fouling of the anchor blade means whereby the anchor blade means may be released from the fouled position thereof, wherein the release rod means comprises connecting means pivotally secured to the transverse rod means, elongaged rod means having one end yieldably secured to the connection means and the opposite end releasably engagable with the shank means, and means provided at the outer end of the elongated rod means for engagement from the boat for actuation of the rod means for releasing the anchor blade means from the fouled position thereof, and including spring means for yieldably securing the elongated rod means to the connection means.

4,532,881

PROCESS FOR SEALING BODY AND CAP OF GELATIN HARD CAPSULE AND APPARATUS THEREFOR

Shigeru Sakashita, Gifu; Takeshi Nakagawa, Kagamigahara; Takayuki Ohwaki, and Yasuo Miyake, both of Inuyama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Division of Ser. No. 589,976, Mar. 15, 1984, Pat. No. 4,510,168.
This application Jul. 16, 1984, Ser. No. 631,423
Claims priority, application Japan, Mar. 24, 1983, 58-49579
Int. Cl.³ A23G *3/20*
U.S. Cl. 118—20 **7 Claims**



1. An apparatus for sealing a body and a cap of a gelatin hard capsule which includes a solvent tank receiving a solvent; a rotary disk which is mounted on a horizontal rotary shaft and provided on its outer periphery with capsule-receiving portions each of which receives one capsule separately, said capsule-receiving portions being designed to pass through the solvent stored in said solvent tank; and a drying means for separately drying the capsules taken out above the surface of said solvent from the capsule-receiving portions and accommodating a capsule transfer means therewithin, said capsule-drying means comprises a first drying chamber within which a cold wind zone is formed and a second drying chamber connected to said first drying chamber, inside said second drying chamber there being formed a hot wind zone.

4,532,882

MACHINE FOR SPREADING AND SMOOTHING SURFACE COVERINGS

Pierre H. Ciraud, 23, rue d'Isly, 16100 Cognac, France

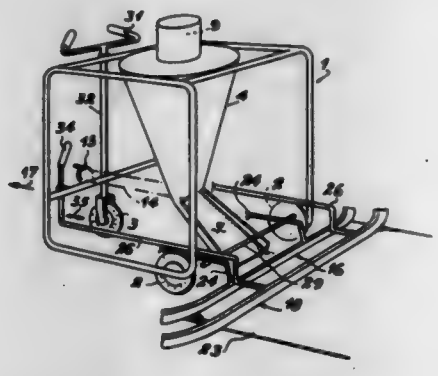
Filed Sep. 28, 1982, Ser. No. 425,399
Claims priority, application France, Oct. 15, 1981, 81 19563
Int. Cl.³ B05C *11/04*
U.S. Cl. 118—108 **2 Claims**

1. A machine for spreading and smoothing surface coverings such as those containing synthetic resins, comprising:

(a) a frame mounted on wheels, at least one of said wheels being steerable;

(b) a hopper for storing and dispensing surface covering material and being mounted on said frame;

(c) means for mixing and blending the surface covering material in said hopper;
(d) a chute for discharging the surface covering material from said hopper and mounted at the lower end of said hopper;
(e) means for adjusting the flow of said surface covering material into said chute;
(f) a spreading blade for spreading surface covering material discharged from said chute and a smoothing blade for smoothing surface covering material spread by said spreading blade,
(g) means for raising and lowering said spreading and smoothing blades, said spreading and smoothing blades



being disposed transversely to the direction of displacement of said machine, said spreading blade being arranged facing the discharge end of said chute and said smoothing blade being arranged behind said spreading blade relative to the direction of displacement of said machine, said blades comprising strips of flexible material bearing on the ground, the general plane (21) of the straight middle portions of said flexible strips, on a level with the supporting means (20), being sloped upwardly and forwardly relative to the direction of displacement of the machine while said plane has a constant and maximal slope in the middle portion of said strips and has a diminishing slope toward the extremities of said strips, and the free edge of said strips lying tangentially to the ground.

4,532,883

PROCESS FOR CONTROLLING THE MICROBIAL ENVIRONMENT IN ABALONE MARICULTURE

George S. Lockwood, Carmel Valley, and John H. Phillips, Pebble Beach, both of Calif., assignors to Monterey Abalone Farms, Monterey, Calif.

Filed Oct. 14, 1983, Ser. No. 541,993
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—4 25 Claims

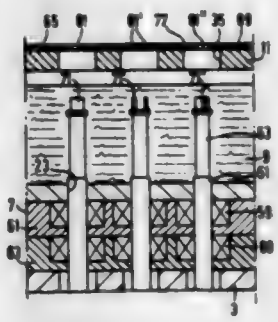
1. A process for culturing gastropod molluscs and other benthic motile marine and aquatic animals through the first months of life in a microbiologically controlled environment, comprising the steps of:
a. placing cleaned parent animals in bacteria-controlling baths of substantially bacteria-free seawater containing an antibiotic;
b. recovering eggs and sperm from the parent animals, and placing fertilized eggs in a hatching bath of substantially bacteria-free seawater containing an antibiotic;
c. separating hatched larvae from the hatching bath for immersion in a holding bath of substantially bacteria-free seawater containing an antibiotic; and
d. transferring developing larvae from the holding bath to a settlement bath of substantially bacteria-free seawater, the seawater containing an antibiotic and a selected species of beneficial bacteria resistant to the settlement-bath antibiotic.

4,532,884

DEVICE FOR APPLYING A FIXING MEDIUM TO COMPONENTS SUCH AS CHIP-TYPE COMPONENTS

Josephus M. M. van Gastel; Hendrikus T. van Nunen, and Leonardus C. M. Sanders, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 10, 1984, Ser. No. 598,634
Claims priority, application Netherlands, Nov. 4, 1983, 8303797
Int. Cl.[3] B05C *1/00*
U.S. Cl. 118—243 10 Claims



1. A device for applying a viscous medium simultaneously to the lower side of each of a plurality of components, comprising
a container having a bottom, for containing a quantity of viscous medium filling the container at least to a given level,
a plurality of stamps, each having a respective stamp head, arranged in a regular geometric pattern, and
means for simultaneously displacing said stamps from a lower rest position, in which each stamp head is below said level, to an upper working position in which each stamp head projects above the container,
characterized in that each stamp comprises a respective one of a plurality of identical stamp pins each having an upper end and a lower end, elongated in the displacement direction; and a respective exchangeable attachment disposed on the respective pin upper end, said attachment comprising the stamp head,
said means for displacing engages the respective lower ends of the stamp pins,
the device further comprises means for preventing rotation of said pins about an axis parallel to the displacement direction, and
said container further comprises a cover having a corresponding plurality of identical openings arranged in said pattern, aligned with said pins, each opening having a size permitting passage therethrough of the largest cross-section attachment; and means for supporting said plurality of components in line with respective openings in the cover.

4,532,885

APPARATUS FOR APPLYING INTERNAL COATINGS IN HOT VESSELS

Erwin J. Nunlist, Penfield, N.Y., assignor to Kennecott Corporation, Cleveland, Ohio

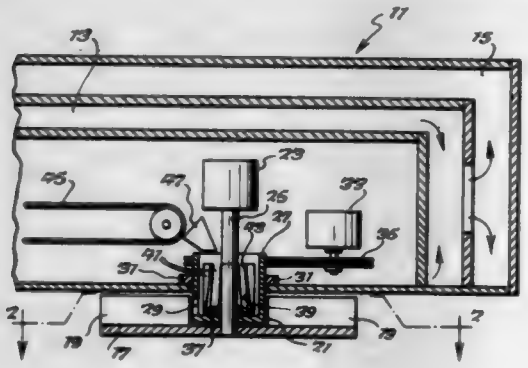
Filed Nov. 5, 1984, Ser. No. 668,587
Int. Cl.[3] B05B *7/00, 5/00*
U.S. Cl. 118—308 5 Claims

1. An apparatus for distributing a stream of solidifiable finely divided vitreous coating material onto a heated internal surface of a concave article which comprises:
(a) a substantially horizontal disc rotor having a plurality of radially directed vanes thereon for centrifugally outward distributing finely divided vitreous material,
(b) said vanes extending short of the rotor center portion, defining a central chamber,
(c) said rotor rotatably connected to a motor means by a shaft extending through said central chamber,
(d) a cylindrical cage means positioned within said central chamber having a discharge opening positioned along the bottom periphery thereof adapted to meter a supply of

finely divided vitreous material to the vane area of said rotor,

(e) means to rotate said cage means within said chamber to move said discharge opening,

(f) a hollow central impeller connected for rotation with said rotor spacedly positioned within said cage means, said



impeller having a plurality of openings in the lower periphery thereof adapted to receive a supply of finely divided vitreous material from said hollow area and feed such material into said cage means, and

(g) a means for supplying finely divided vitreous material to the hollow portion of said impeller.

4,532,886

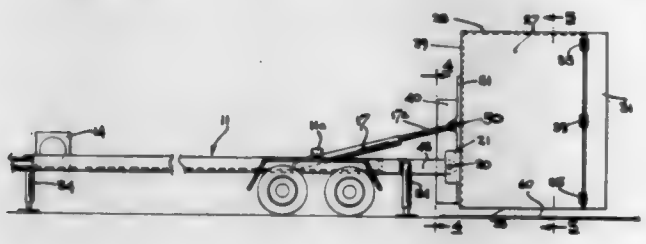
PORTABLE PAINTING ASSEMBLY

Roland D. Bouchard, 15419 Doty Ave., Lawndale, Calif. 90260

Filed Aug. 15, 1984, Ser. No. 641,066

Int. Cl.[3] B05B *1/28, 15/04*

U.S. Cl. 118—326 **7 Claims**



1. A portable painting assembly for use in painting an object standing on support means comprising,

a booth having an open bottom and forming an enclosure on at least three sides;

mobile means for supporting and transporting said booth and,

means for driving said booth between a first position supported on said mobile means for transportation and a second position wherein said booth is suspended from said mobile means over the object to be painted but separated from the support means on which said object is standing, said means for driving said booth comprising drive means having drive rods, said drive means being pivotally supported on said mobile means with the drive rods thereof pivotally connected to said booth, and means for pivotally supporting said booth on said mobile means.

4,532,887

LIFE EXTENSION OF CATALYST PREDIP BATHS

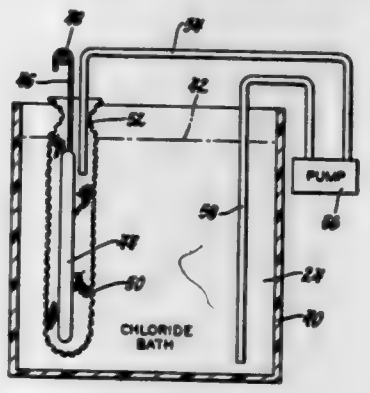
Robert B. Forsterling, Kokomo, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 490,313, May 2, 1983, Pat. No. 4,481,231. This application Jun. 21, 1984, Ser. No. 623,011

Int. Cl.[3] C23C *3/02*

U.S. Cl. 118—429 **1 Claim**

1. In an apparatus for electrolessly depositing copper, which apparatus serially includes a tank containing an acidic chloride activator dip protective solution and a following tank containing a stannous chloride activator dip that precedes a tank containing an electroless copper plating bath, the improvement wherein the first-mentioned tank includes means for extending the useful life of the acidic chloride solution in protecting the activator dip bath prior to electroless copper plating, said life extension means including a metallic tin rod supported within the tank without connection to means for applying an electrical potential to the rod, effective to provide a chemical reaction between the metallic tin rod and undesired copper ions introduced into the first-mentioned tank, a filter bag enclosing



the tin rod that entraps chemical reaction products of the undesired copper ions and the metallic tin rod but allows tin ions to pass through, and pump means for recirculating solution from the first-mentioned tank into the filter bag, whereby the undesired copper ions in the acidic chloride solution will precipitate and be trapped within the bag and replaced in the acidic chloride solution by tin ions, so as to permit the acidic chloride solution tank to have an extended useful life in protecting the stannous chloride activator dip tank.

4,532,888

ELECTRON-BEAM COATING OF VERY BROAD STRIPS

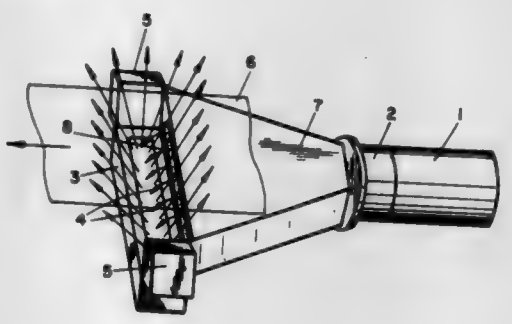
Manfred Neumann; Henry Morgner; Harry Förster; Günter Jäsch; Wilfried Kunack; Martin Godenschweg, and Peter Ungänz, all of Dresden, German Democratic Rep., assignors to Bakish Materials Corp., Englewood, N.J.

Filed Jul. 29, 1983, Ser. No. 518,473

Claims priority, application German Democratic Rep., Aug. 3, 1982, 2422022

Int. Cl.[3] C23C *13/12*

U.S. Cl. 118—718 **7 Claims**



1. Apparatus for electron-beam coating of broad strips comprising:

an elongated evaporation crucible;

means for transporting strip to be coated over said crucible in a direction normal to the long side thereof;

an electron gun above said crucible and spaced from said long side;

a first beam deflection system for spreading said beam;

a vacuum-tight beam shielding mantle extending from said first deflection means to said crucible;

a second beam deflection system for deflecting a beam emergent from said mantle downward into said crucible;

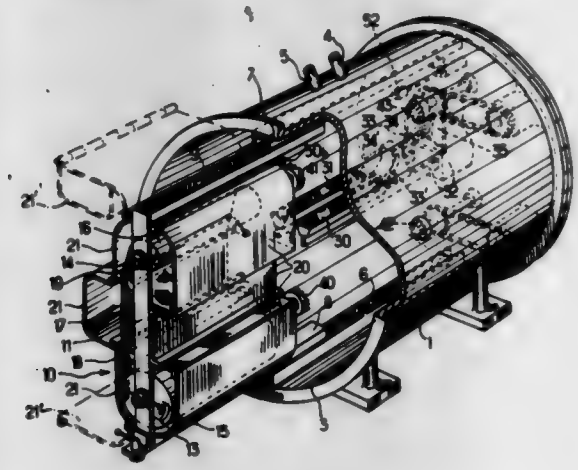
said mantle extending to the path of material vaporized from said crucible, so that the outlet of it is closed by the vapor stream.

4,532,889

PROCESS AND APPARATUS FOR METALLIC IMPREGNATION OF A WEB OF CONDUCTIVE FIBRES

René L. Coffy, Sausset-les-Pins, France, assignor to Societe Nationale Industrielle Aerospatiale, Paris, France

Filed Jul. 5, 1984, Ser. No. 627,713
Claims priority, application France, Jul. 7, 1983, 83 11336
Int. Cl.[3] C23C *13/08, 13/10*
U.S. Cl. 118—718 9 Claims



1. An apparatus for implementing a process for the metallic impregnation of a substrate that is in the form of a web of conductive fibers, characterised in that it comprises:

a chamber which is provided with means for closing it so that it is airtight and into which there run a duct for evacuating the chamber and a pipe supplying an inert gas to it,

a device for supporting the substrate comprising a carriage that can move between a first position inside the chamber and a second position outside the chamber through an aperture closed by the closing means, and comprising means for guiding the carriage with respect to the chamber when it moves from one of the positions towards the other, the said carriage being provided with means for rotatably accommodating a reel of web to be unwound and a reel for rewinding this web, the reels being spaced one from the other, and means for guiding the said web extending between the reels in a running plane which is fixed with respect to the carriage and is substantially parallel to the line of its displacement,

at least one crucible for receiving the molten metal, which crucible is mounted on the said chamber and inside it and is located substantially parallel to and adjacent the running plane of the web when the carriage is in its first position,

means for the electrical insulation of the said reels with respect to the said carriage, and

electrical contact means enabling the said reels to be connected to a source of potential when the carriage is in its first position.

4,532,890

PET LITTER

Tomio Ohki, and Toshio Yoshioka, both of Yokohama, Japan, assignors to Nippon Pet Food Company, Ltd., Japan

Filed Mar. 27, 1984, Ser. No. 593,811
Claims priority, application Japan, Apr. 5, 1983, 58-59752
Int. Cl.[3] A01K *1/015*
U.S. Cl. 119—1 6 Claims

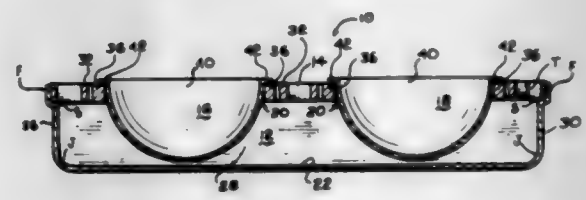
1. A process for the preparation of a pet litter, which process comprises adding to a chopped paper material for mixing, water and a ground product or pellets with a high content of chlorophyll selected from the group consisting of alfalfa grass, stems and leaves of ipil ipil niseacacia, and Spirulina scenedesmus in an amount of from 1 to 70% by weight based on the amount of the chopped paper material, pelletizing the resulting mixture and drying the resulting molded product.

4,532,891

PET FEEDER ASSEMBLY

Richard O. Jones, 1306 Frontera, Millbrae, Calif. 94030

Continuation-in-part of Ser. No. 538,164, Oct. 3, 1983, abandoned. This application Feb. 13, 1984, Ser. No. 579,705
Int. Cl.[3] A01K *5/00*
U.S. Cl. 119—51 FS 6 Claims



1. A pet feeder assembly comprising:

an upwardly opening receptacle for receiving and retaining liquid and solid matter, said receptacle including a base portion and contiguous sidewall portions rising from said base portion, said sidewall portions being provided with shoulder means proximate an upper edge thereof; and

feeder means including

a rigid, self-supporting, frameless, substantially planar lattice portion engaged with said shoulder means of said sidewall portions so as to be supported over and substantially parallel to said base portion and said receptacle, said lattice portion having a plurality of crossing bar members attached together at their junctures and having interstitial spaces large enough to pass particulate matter at least ¾ inch across; and

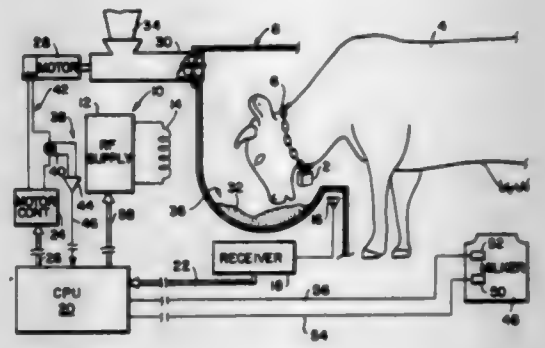
a bowl portion supported by and extending downwardly from said lattice portion, said bowl portion having a rim surface which is substantially even with said lattice portion, and a bottom surface which is located a small distance above said base portion of said receptacle relative the depth of said bowl portion.

4,532,892

ANIMAL FEEDING AND MONITORING SYSTEM

James H. Kuzara, Sheridan, Wyo., assignor to Ralston Purina Company, St. Louis, Mo.

Division of Ser. No. 293,314, Aug. 17, 1981,. This application May 2, 1984, Ser. No. 606,132
Int. Cl.[3] A01K *5/02*
U.S. Cl. 119—51 R 2 Claims



1. A system for feeding and monitoring a plurality of animals in a plurality of adjacent stalls comprising a plurality of electronic identity means for respectively identifying said plurality of animals, each of said plurality of electronic identity means including a power supply means for supplying operating power and a code generator means connected to receive operating power from said power supply means for generating a coded identifier signal uniquely associated with each said electronic identity means, a plurality of receivers respectively mounted in said plurality of adjacent stalls, each said receiver including a receiving circuit means for detecting said coded identifier signal whenever one of the animals carrying one of said electronic identity means enters the stall within which said

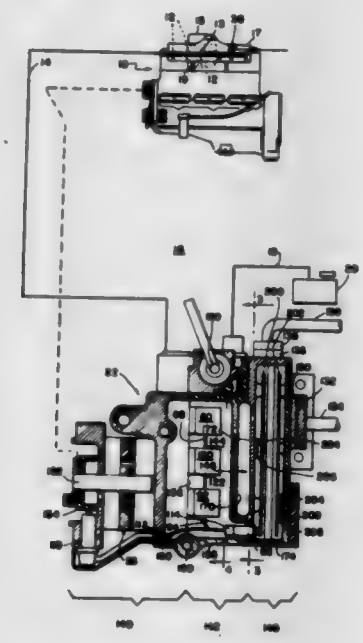
receiver is mounted, each said receiving circuit means having a means for decoding said coded identifier signal to produce a decoded identifier signal, a central control means connected to said plurality of receivers for receiving said decoded identifier signals therefrom and a multiplexer means connected between said central control means and said plurality of receivers for insuring that only one of said receivers is active at a time.

4,532,893

ELECTRONICALLY CONTROLLED FUEL PUMP

Eric Day, and Allen F. VanDerStuyf, both of Columbus, Ind., assignors to Cummins Engine Company, Inc., Columbus, Ind.

Filed Sep. 30, 1982, Ser. No. 435,573
Int. Cl.³ F02M *41/02*
U.S. Cl. 123—41.31 **11 Claims**



1. In a fuel system for an internal combustion engine having injectors which meter fuel to said engine, a fuel pump comprising:

means for forming a housing;

engine driven pump means within said housing means, and having an inlet, for pressurizing fuel;

electronic control means mounted within said housing for generating an electrical signal as a function of selected control inputs, and

means for providing a passage for fuel through said housing from an external source to the inlet of said pump means and to the exterior of said housing, at least a portion of said passage means being in heat transfer relation to said electronic control means whereby fuel is used to cool said electronic control means and auxiliary pump means connected to said passage means for pressurizing fuel for establishing a flow of fuel through said passage means and means for actuating said auxiliary pump means whenever a selected temperature in said housing means exceeds a predetermined limit above the temperature that occurs during operation of said engine driven pump means irrespective of operation of said engine driven pump means.

4,532,894

HEATING ARRANGEMENT FOR ELECTRICALLY DRIVEN VEHICLES

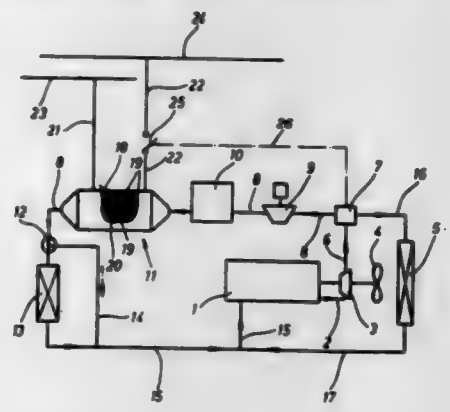
Helmut Wulf, Ostfildern, and Friedrich Baehrle, Kernen-Rommelshausen, both of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,307
Int. Cl.³ F02N *17/02*
U.S. Cl. 123—142.5 E **3 Claims**

1. In a dual-mode vehicle equipped to be powered by either an electrical power source or a water cooled internal combustion engine, the improvement comprising a heating system having:

electrical heat exchanger means powered by said electrical power source, said heat exchanger means including a continuous-flow heater connected to receive a through-flow of cooling water from said internal combustion engine;

an auxiliary fuel powered heater operable only when said vehicle is not powered by said electrical power source, said fuel powered heater being connected in series with



said continuous-flow heater to receive said flow of cooling water;

electric water pump means for circulating said flow of cooling water through said continuous flow heater and said fuel powered heater, said water pump means being operable at least during standing periods when said vehicle is not receiving power from said electrical power source and said internal combustion engine is not running; and

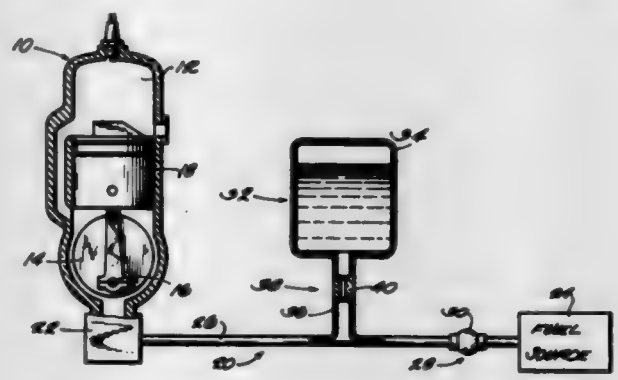
control means for energizing said continuous-flow heater when a cooling water temperature of said internal combustion engine reaches a pre-determined value.

4,532,895

PRIMER FOLLOW-THROUGH SYSTEM

Don F. Kueny, Waukegan, Ill., assignor to Outboard Marine Corporation, Waukegan, Ill.

Filed Feb. 28, 1984, Ser. No. 583,685
Int. Cl.³ F02M *1/16*
U.S. Cl. 123—187.5 R **15 Claims**



1. A fuel supply system for an internal combustion engine including a combustion chamber, said fuel supply system comprising means for priming said internal combustion engine by supplying priming fuel from a fuel source to the combustion chamber, said priming means including a fuel line communicating with the fuel source and with the combustion chamber, and including selectively operable means for causing fuel flow in said fuel line, and means connected to said fuel line for automatic accumulation of fuel during fuel flow through said fuel line to the combustion chamber, and for automatic delivery, after discontinuance of fuel flow in said fuel line, of the accumulated fuel into said fuel line, said means connected to said fuel line comprising a fuel passage communicating with said fuel line, and a fuel reservoir which is permanently closed from

the atmosphere and which solely communicates with said fuel passage.

4,532,896

TWO-CYCLE ENGINE

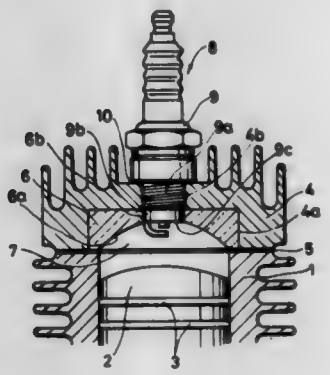
Kichio Nakahara; Hiroshi Matsui, and Harumichi Yoshiyama, all of Aichi, Japan, assignors to NGK Spark Plug Co., Ltd., Nagoya, Japan

Filed Nov. 17, 1983, Ser. No. 552,826

Claims priority, application Japan, Nov. 18, 1982, 57-202307

Int. Cl.³ F02B *75/08*

U.S. Cl. 123—193 H **1 Claim**



1. A cylinder head for a two-cycle engine comprising:

a cylinder head having an interior portion forming a combustion chamber, an opening in said head into said combustion chamber disposed to receive a spark plug, the inner surface of said combustion chamber adjacent said opening consisting essentially of a layer of sintered ceramic material selected from the group consisting of silicon nitride, zirconia, sialon, alumina and silicon carbide, wherein said layer has a thickness in the range from about 2 to 6 millimeters, said opening comprising an outer threaded portion and an inner unthreaded portion confined solely within said ceramic layer; and

a spark plug interposed within said opening, said spark plug having a tip comprised of an outer threaded portion, an inner unthreaded portion and electrodes, said unthreaded portion of said spark plug peripherally engaging said unthreaded portion of said opening within said ceramic layer.

4,532,897

INTERNAL COMBUSTION ENGINE FOR VEHICLES IN PARTICULAR, FOR MOTORCYCLES

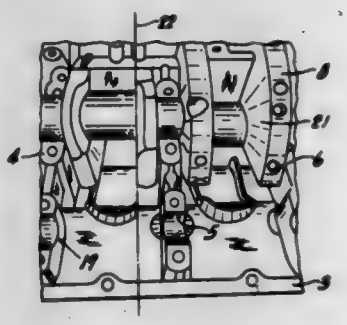
Hans Mezger, Freiberg, Fed. Rep. of Germany, assignor to Harley-Davidson Motor Co., Inc., Milwaukee, Wis.

Filed Jun. 11, 1984, Ser. No. 619,498

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1983, 3321751

Int. Cl.³ F01M *1/00*

U.S. Cl. 123—196 R **19 Claims**



1. In an internal combustion engine for motorcycles, said engine having a crankcase including an upper part and a lower part and a crankshaft mounted therebetween, said lower part including an oil space and an oil sump arranged at a lower level than said oil space, said crankshaft having crank webs mounted thereon which rotate partially in said lower part and said crankshaft being mounted in bearing seats having walls, the improvement comprising:

a curved shape floor in said lower part, said floor being spaced apart from the envelope sleeve defined by the paths of travel of said crank webs,

constricted oil return ducts in said floor disposed opposite said crank webs and in the paths of movement thereof, said ducts having a slope and extending between the walls of said bearing seats,

said ribs being disposed on said floor and said oil return ducts being formed between said ribs and said walls of said bearing seats.

4,532,898

FUEL INJECTION TYPE INTERNAL COMBUSTION ENGINE

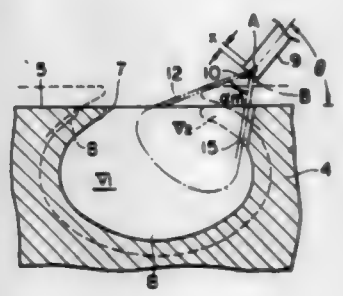
Kizo Hayakawa; Nobuyuki Mori; Yoshio Watanabe, and Kazumi Nakashima, all of Aichi, Japan, assignors to Kabushiki Kaisha Toyota Chuo Kenkyusho, Aichi and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, both of, Japan

Filed Dec. 9, 1983, Ser. No. 559,886

Claims priority, application Japan, Dec. 13, 1982, 57-218112

Int. Cl.³ F01L *3/00*; F02B *3/04*

U.S. Cl. 123—276 **6 Claims**



1. A fuel injection type internal combustion engine comprising:

a cylinder body formed with a cylinder chamber;

a cylinder head mounted on said cylinder body;

a piston adapted to be reciprocated within said cylinder chamber and to define a combustion chamber between the top thereof and said cylinder head;

an injection nozzle mounted at a predetermined position in one of said cylinder head and said cylinder body for injecting fuel into said combustion chamber at a large spray diverging angle, said injection nozzle having its central axis inclined at a predetermined angle with respect to the top of said piston and its leading end portion facing said combustion chamber in a manner that its injection port is offset from the center of said cylinder chamber; and

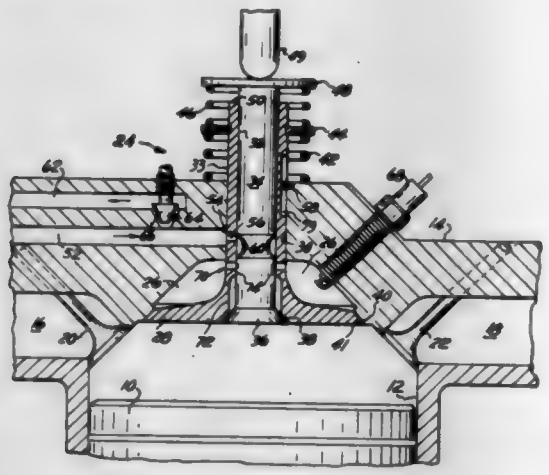
said combustion chamber comprising a combustion chamber cavity opened in the top of said piston and an auxiliary cavity formed in the opening portion of said combustion chamber cavity, said auxiliary cavity being defined by a notched wall with surfaces shaped so that the auxiliary cavity has a minimum required volume and so that injected fuel is prevented from contacting said notched wall, the shape of the notched wall being determined by following the shape of the fuel injection pattern at the maximum spray diverging angle at each piston position while the piston travels during the fuel injection,

thereby allowing fuel to be injected at a large spray diverging angle through said auxiliary cavity without colliding against the wall of said combustion chamber while minimizing the decrease of the compression ratio of the engine.

4,532,899
INTERNAL COMBUSTION ENGINE FUEL-INJECTION SYSTEM

Anthony Lorts, 441 S. Brooke, Apartment C, Alpena, Mich. 49707

Filed Jun. 23, 1983, Ser. No. 506,983
Int. Cl.[3] F02B *19/02*
U.S. Cl. 123—292 8 Claims

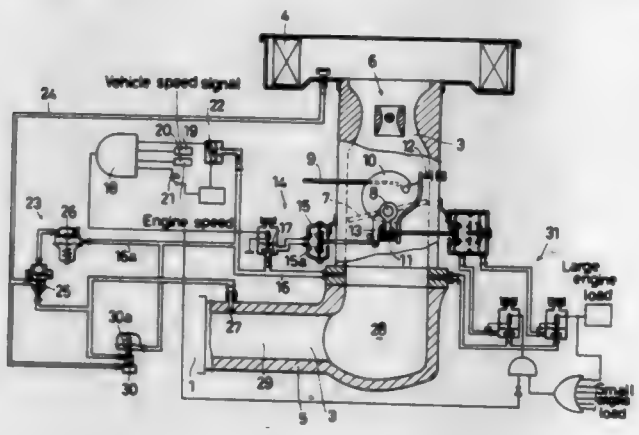


1. A fuel injection and combustion structure for an internal combustion engine having a cylinder, a cylinderhead and a piston reciprocable in said cylinder, said structure comprising a precombustion chamber formed in said cylinderhead, valve means for controllably placing said precombustion chamber in communication with said cylinder during a power stroke of said piston, an auxiliary chamber in said first valve means, second valve means for placing said auxiliary chamber in communication with said cylinder and for placing said chamber in communication with said precombustion chamber in the course of a compression stroke of said piston so as to introduce compressed air from said cylinder into said precombustion chamber, and means for injecting a measured amount of fuel in said compressed air passing from said auxiliary chamber to said precombustion chamber, wherein said first valve means comprises a first poppet valve having a longitudinal bore, said second valve means comprises a second poppet valve disposed concentric and reciprocable within said bore in said first poppet valve and said auxiliary chamber is formed by an enlarged end portion of said bore in said first poppet valve.

4,532,900
DECELERATION CONTROL APPARATUS FOR A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Yoshitaka Hibino, Kamifukuoka, and Syunzaburo Ozaki, Sakado, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 22, 1983, Ser. No. 477,667
Int. Cl.[3] F02M *23/06*
U.S. Cl. 123—327 6 Claims

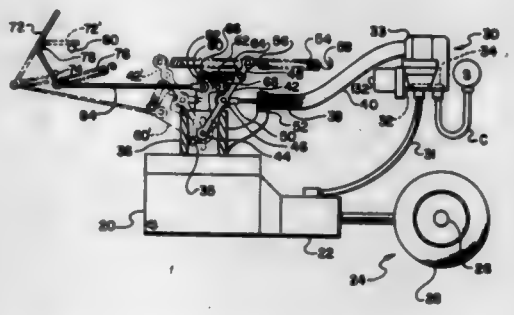


1. A deceleration control apparatus in a multi-cylinder engine, an intake passage including an intake manifold connected to respective cylinders of a multi-cylinder engine, said intake manifold including at least one diverging portion and a plurality of diverged passages downstream thereof, said apparatus comprising valve closing means for closing a throttle valve in the intake passage beyond an idling position thereof at the time of deceleration, and an air supply means for supplying secondary air to the intake passage, characterized in that the air supply means includes an air supply opening directly in only one of said diverged passages on the downstream side of said diverging portion of the intake manifold.

4,532,901
ENGINE GOVERNOR WITH FAST REFERENCE POSITIONING AND SLOW OPENING AND CLOSING MOVEMENT OF THROTTLE LIMITER

Harry D. Sturdy, Wilmington, N.C., assignor to Sturdy Truck Equipment, Inc., Wilmington, N.C.

Division of Ser. No. 471,904, Mar. 7, 1983, which is a continuation of Ser. No. 168,566, Jul. 14, 1980, abandoned, which is a continuation-in-part of Ser. No. 30,064, Jul. 4, 1979, abandoned. This application Nov. 18, 1983, Ser. No. 553,191
Int. Cl.[3] F02D *31/00*
U.S. Cl. 123—333 6 Claims



1. In an engine speed governor for an engine having a throttle movable between an open throttle position and a close throttle position for regulating the flow of fuel to the engine, said governor being of the type comprising an overriding throttle closing means, engine speed sensing means for producing a speed signal, and control means for moving the throttle closing means to a position for limiting the engine speed to a predetermined governed value, the improvement wherein said control means included:

actuating means including a reversible motor coupled with the overriding throttle closing means for driving it in the close throttle direction or the open throttle direction,

electronic circuit means coupled with said speed sensing means and with said motor for energizing the motor, said circuit means including means responsive to a predetermined speed signal for energizing the motor for relatively high speed operation in the close throttle direction until the overriding throttle closing means reaches a reference position,

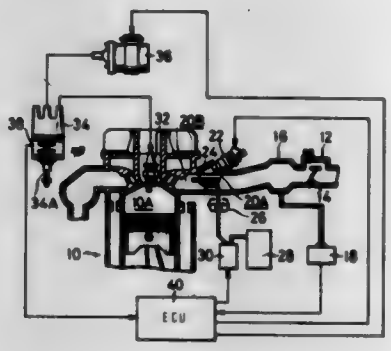
said circuit means including means for energizing the motor for relatively low speed operation in either the close throttle or open throttle direction after the overriding throttle closing means reaches said reference position,

said low speed operation of the motor being slower than the response capability of the engine to a change in flow of fuel to the engine whereby engine speed oscillations are minimized.

4,532,902
METHOD OF AND SYSTEM FOR CONTROLLING IGNITION TIMING IN INTERNAL COMBUSTION ENGINE

Hiroshi Mizuno, Toyota, and Hiroshi Ito, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 4, 1984, Ser. No. 606,967
Claims priority, application Japan, May 6, 1983, 58-79010
Int. Cl.³ F02P *1/00, 5/04;* F02B *31/00*
U.S. Cl. 123—417 **6 Claims**



1. A method for controlling ignition timing in an internal combustion engine having a throttle valve and an intake air control valve independent of said throttle valve, in which the ignition timing is controlled in synchronism with the operation of the intake air control valve, comprising:

determining whether or not there exist conditions where said intake air control valve is to be on-off operated;

controlling the operation of said intake air control valve when it is determined there exists a condition where said intake air control valve is to be on-off operated;

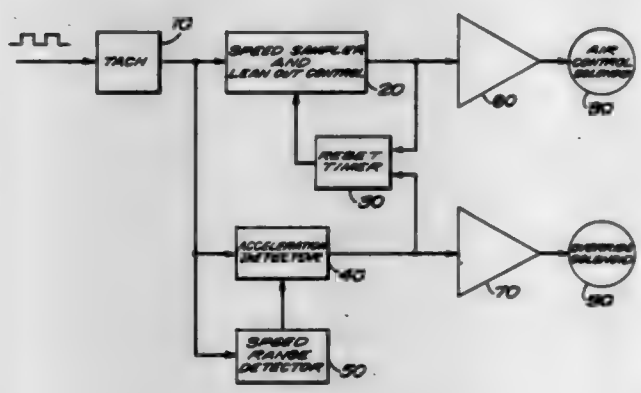
delaying a change in the timing of the ignition timing by a predetermined period of time corresponding to a delay time in effecting the on-off operation of said intake air control valve; and

changing the ignition timing in accordance with the on-off condition of said intake air control valve upon the end of said predetermined period of time.

4,532,903
BINARY AND PROPORTIONAL CONTROL FOR A FEEDBACK CARBURETOR

Richard E. Staerzl, Fond du Lac, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Filed Mar. 14, 1984, Ser. No. 589,235
Int. Cl.³ F02P *5/04;* F02B *33/00*
U.S. Cl. 123—436 **4 Claims**

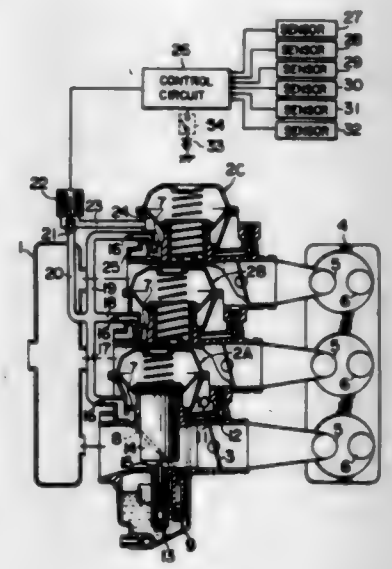


1. In an internal combustion engine, subject to rapid variations in the RPM rate of change, wherein a combustible air/fuel mixture is introduced into combustion chambers of the engine with the air/fuel ratio of the mixture being controlled by feedback carburetor means having associated therewith a fuel bowl to which a controlled vacuum is applied to control the fuel flow rate, the improvement comprising; means for generating an analog signal indicative of engine RPM, means responsive to said analog signal for determining a steady state RPM for said internal combustion engine, means responsive to operation of said engine at said steady state RPM for applying said vacuum to said fuel bowl at a fixed and predetermined controlled rate until a predetermined decrease in said engine RPM has been achieved, regardless of time duration required to achieve said predetermined decrease, means for indicating said predetermined decrease in engine RPM and means responsive to said predetermined decrease in engine RPM for reducing said vacuum applied to said fuel bowl, wherein there is further included means for timing a predetermined interval during which said vacuum applied to said fuel bowl is reduced and means responsive to the expiration of said predetermined interval for reapplying said vacuum to said fuel bowl.

4,532,904
AIR-FUEL RATIO CONTROL DEVICE FOR INTERNAL COMBUSTION ENGINES

Tadao Ōsawa, Katsuta; Toru Nakagawa, Mito; Masamitsu Okumura, Katsuta; Takashige Kohno, and Tokihiko Sakuma, both of Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 9, 1983, Ser. No. 465,182
Claims priority, application Japan, Feb. 17, 1982, 57-22645
Int. Cl.³ F02M *13/02*
U.S. Cl. 123—439 **2 Claims**

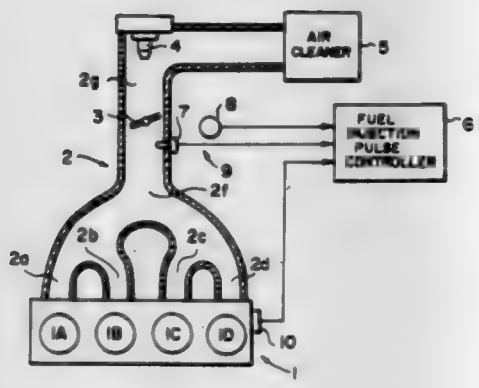


1. An air-fuel ratio control device for an internal combustion engine which controls the flow rate of air supplied to a plurality of variable venturi type carburetors with each of the carburetors having a slow system for controlling the air-fuel ratio to set the same at an optimum value in dependence upon operating conditions of the engine, the control device comprising a plurality of sensor means for sensing engine parameters including intake vacuum, engine oil temperature, intake air temperature and atmospheric pressure relating to operating characteristics of the engine, a control circuit means for receiving output signals from said sensor means and a signal indicative of a rotational speed of the engine as its inputs, and at least one solenoid valve means for controlling the flow rate of air flowing through air passages of said slow systems, said solenoid valve means being actuated by a current having an optimum duty ratio computed by said control circuit means in dependence upon the output signals from said sensor means and said rotational speed signal, and wherein the at least one solenoid valve means is associated with an upstream end of an air passage communicating at a downstream end with all upstream ends of slow air bleeds in the individual slow systems of said plurality of carburetors.

4,532,905
FUEL INJECTION CONTROL SYSTEM FOR CONTROLLING THE FUEL DISTRIBUTION TO THE CYLINDERS OF A MULTI-CYLINDER INTERNAL COMBUSTION ENGINE

Katsuhiko Yokooku; Tadashi Kaneko, and Tadataka Nakazumi, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Japan

Filed Feb. 23, 1984, Ser. No. 582,771
Claims priority, application Japan, Feb. 24, 1983, 58-29989
Int. Cl.[3] F02M *51/00*
U.S. Cl. 123—443 14 Claims



1. A fuel injection system for four-cylinder engines having an air intake passage consisting of a collective passage, the downstream end of the collective passage forming a first branch-off part; a pair of branch passages, the upstream ends of said pair of branch passages connected to said first branch-off part and the downstream ends of said pair of branch passages forming a pair of second branch-off parts; and two pairs of second branch passages, each pair of second branch passages extending from a respective second branch-off part, each second branch passage connected to a respective cylinder, the cylinders connected to a respective pair of second branch passages having intake strokes adjacent to each other; said system comprising:

a fuel injection valve provided in said collective passage;

an intake air flow detecting means for detecting the amount of intake air flow into said cylinders and generating a signal representative thereof;

a standard signal generating means for generating standard signals synchronized with rotation of the engine;

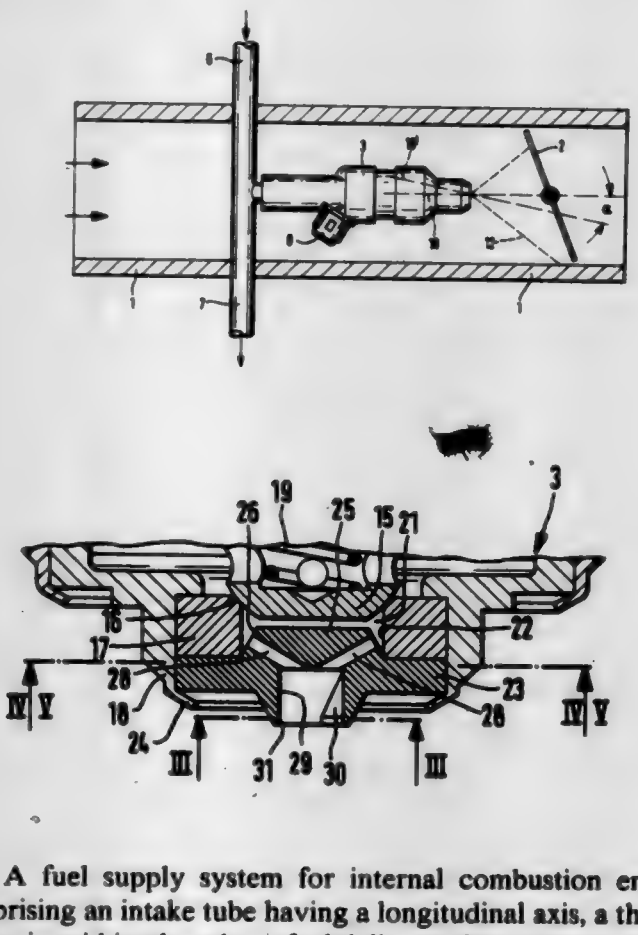
a fuel injection pulse control means, which receives signals from said intake air flow detecting means and said standard signal generating means, for forwarding to said fuel injection valve fuel injection pulses of a pulse duration proportional to said intake air flow to said cylinders in the intake stroke thereof at a predetermined timing determined by said standard signals; and

and an injection timing correction means for correcting said predetermined timing for one cylinder of each pair of cylinders connected to the same second branch-off part when said intake air flow is lower than a predetermined value and correcting said predetermined timing of the other cylinder of each pair of cylinders connected to the same second branch-off part when said intake air flow is higher than said predetermined value, the intake stroke of said one cylinder of each pair of cylinders being preceded by that of a cylinder of the other pair of cylinders.

4,532,906
FUEL SUPPLY SYSTEM

Rainer Höppel, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Apr. 20, 1983, Ser. No. 486,763
Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229716
Int. Cl.[3] F02M *55/02*
U.S. Cl. 123—470 6 Claims



1. A fuel supply system for internal combustion engines comprising an intake tube having a longitudinal axis, a throttle device in said intake tube, a fuel delivery element supported in said intake tube upstream of said throttle device such that incoming air surrounds said fuel delivery element, said fuel delivery element including injection means arranged to eject fuel asymmetrically toward said throttle device, said injection means including swirl means, said swirl means further provided with means defining apertures arranged to communicate with a swirl chamber and guide means in said swirl chamber adapted to partially divert said fuel stream downstream of said apertures.

4,532,907
SELECTIVE SINGLE FIRE/DOUBLE FIRE FUEL INJECTION CONTROL

Arthur J. Buglione, Garden City, and James M. Coats, Dearborn, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

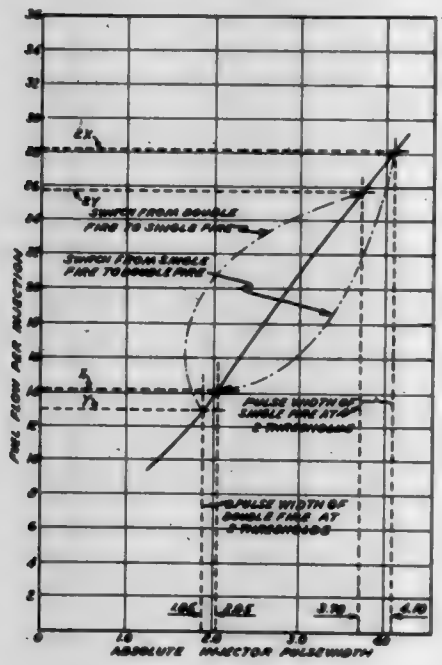
Filed Sep. 14, 1984, Ser. No. 650,399
Int. Cl.[3] F02M *51/02*
U.S. Cl. 123—490 5 Claims

1. An engine control system for controlling a fuel injector in response to a desired fuel flow magnitude including:

a control means for determining the fuel injector pulse width if one fuel injection pulse is made during each engine cycle; for determining each fuel injection pulse width if more than one fuel injection pulses are made during each engine cycle; and for selecting the number of fuel injection pulses during each engine cycle so as to provide operation of the fuel injector in an advantageously linear portion of a fuel injector characteristic curve relating injection pulse width to injector fuel flow rate; and

said control means being adapted to operate the fuel injector in a first mode with one fuel injection per engine cycle and to operate the fuel injector in a second mode with two fuel

injections per engine cycle, having a hysteresis effect so that a first threshold of fuel injected during an engine cycle for switching from the first mode to the second



mode is different from a second threshold of fuel injectd during an engine cycle for switching from the second mode to the first mode.

4,532,908

CONTROL DEVICE FOR METERING FUEL IN A SUPERCHARGED INTERNAL COMBUSTION ENGINE

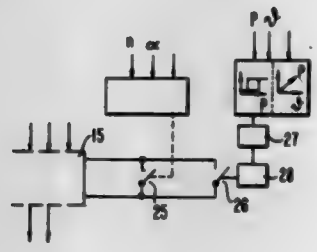
Ulrich Steinbrenner, Stuttgart, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 509,092

Claims priority, application Fed. Rep. of Germany, Sep. 24, 1982, 3235346

Int. Cl.³ F02D *5/00*

U.S. Cl. 123—493 **14 Claims**



1. A control device including means for controlling the metering of fuel in an internal combustion engine operated with supercharging and dependent, for instance, upon aspirated air quantity, rpm, air temperature and throttle valve position, comprising a first switching means connected to said controlling means for reducing the supply of fuel during overrunning, and a second switching means connected in parallel with said first switching means and responsive to charge pressures above a predetermined charge pressure for reducing the supply of fuel, whereby overrunning the supply of fuel is reduced during at least one of the following conditions: overruning and excessive charge pressures.

4,532,909

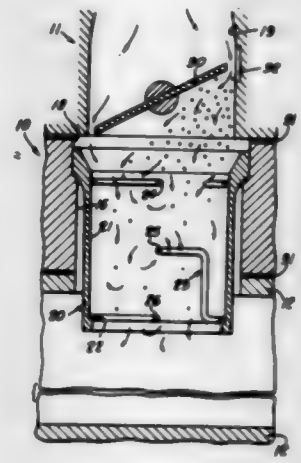
BUTTERFLY CARBURETION SYSTEM

Maurus E. Jackson, 1207 S. Flower St., Burbank, Calif. 91505

Continuation of Ser. No. 388,012, Jun. 14, 1982, abandoned, which is a continuation of Ser. No. 151,731, May 20, 1980, abandoned. This application Mar. 26, 1984, Ser. No. 593,497

Int. Cl.³ F02M *29/00*

U.S. Cl. 123—590 **18 Claims**



1. That improvement in the fuel supply system of a vehicle engine equipped with a butterfly regulated carburetor which comprises:

a riser plate device having upper and lower surfaces constructed for retrofit installation clamped between the fuel and air outlet of the engine's existing carburetor and the inlet of the engine's existing intake manifold for operation completely isolated from the engine's exhaust manifold;

said riser plate having a thickness approaching the diameter of said carburetor outlet and a non-perforated smooth-surfaced primary fuel and air mixing passage therethrough with the entrance thereof adjacent said upper surface of said riser plate;

said fuel and air mixing passage having smoothly merging first and second converging portions between the opposite ends thereof, said first portion being relatively short and obtusely tapering toward the adjacent end of said second portion, and said second portion being relatively long and slightly tapering toward the outlet end of said mixing passage and cooperating with said first portion to limit air flow therethrough of the order of 60% to 90% of the air flow which would occur through said carburetor without said riser plate device.

4,532,910

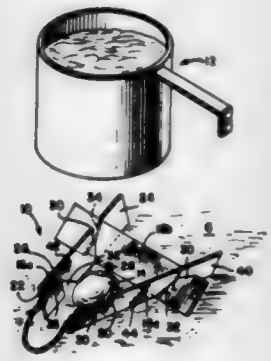
PORTABLE, KNOCKDOWN FIELD STOVE

James B. Longley, Jr., P.O. Box 1230, 671 Main St., Lewiston, Me. 04240

Filed Sep. 20, 1984, Ser. No. 652,270

Int. Cl.³ F24C *1/16*

U.S. Cl. 126—9 B **7 Claims**



1. A portable, knockdown field stove for supporting a cooking utensil above a portable heat source comprising:

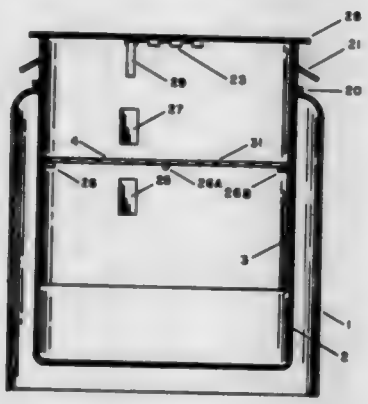
a plurality of interlockable elongated plate means for enclosing and supporting the portable heat source above ground, interlocking and ventilating means in each plate means for disengagably interlocking said each plate means to another plate means and defining a vent at the location of interlocking to provide a predetermined amount of ventilation to and from the portable heat source to support and sustain a predetermined rate of combustion of the portable heat source, said interlocking and ventilating means further in luding triangular notch means defined in each plate means to extend inwardly from a side edge of said each plate means for causing each plate means to tilt with respect to another plate means interlocked therewith so interlocked plate means converge toward each other and toward the ground at an angle for supporting said portable heat source on said plate means above the ground and for resolving forces generated by the weight of the cooking utensil in a manner which increases interlocking forces of said stove.

4,532,911

HEAT CONTROLLING COOKER

Ralph H. Orter, P.O. Box 2074, Prescott, Ariz. 86302

Continuation of Ser. No. 258,471, Apr. 23, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,658
Int. Cl.³ A47J *37/00;* F24B *3/00*
U.S. Cl. 126—27 **1 Claim**



1. A cooker for, use with a stove top burner or heating element heat source comprising;

a cylindrical base, including a cylindrical wall, an open bottom, and open top, the area of the bottom being sized to fit over and encircle the heat source;

a cylindrical vessel, including a cylindrical wall, a closed bottom, an open top and a plurality of handles located adjacent the open top and a band extending around the wall and located below the handles, the cylindrical wall including a plurality of vertically spaced aperatures, the area of the bottom being less than the area of the open top of the cylindrical base such that the cylindrical vessel is received within the open top of the cylindrical base, with the band of the vessel supported on the edge of the open top of the cylindrical wall of the base;

and a cylindrical insert including a cylindrical wall, an open top and an open bottom and including a band extending around the cylindrical wall at the open top, a plurality of supports extending from the cylindrical wall into the cylinder interior and a grate supported on the supports, the insert further including a plurality of vertically disposed aperatures, the spacing between the aperatures corresponding to the spacing between the aperatures of the vessel,

the area of the bottom of the insert being less than the area of the container top such that the insert is received in the vessel;

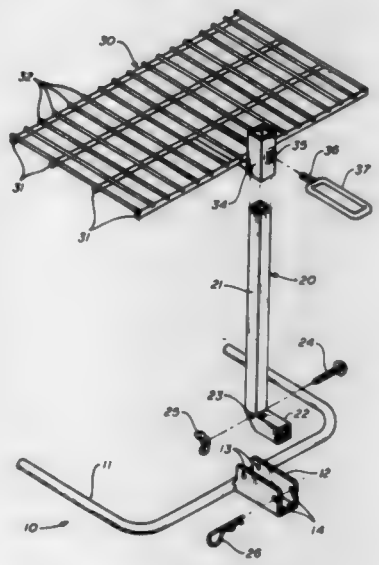
whereby, the insert is rotatable within the vessel, to adjust the overlap between the aperatures and to thereby control the quantity of heated air from the heat source entering the insert.

4,532,912

PORTABLE COOKING APPARATUS

Royal D. Burnside, III, 6427½ E. Wallisville Rd., Baytown, Tex. 77520

Filed Apr. 12, 1984, Ser. No. 599,588
Int. Cl.³ F24B *3/00;* F16M *11/38*
U.S. Cl. 126—30 **12 Claims**



1. Portable apparatus for cooking over a fire or other concentrated source of cooking heat comprising:

a support base for supporting said apparatus generally above said first or other source of heat;

a support column attached to said support base for pivoting movement from a first position, generally next to said support base, to a second position extending upwardly from said base; and

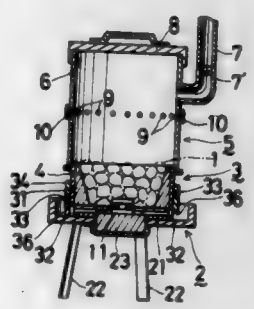
a grill member for attachment to said support column, when in said second position, for supporting said grill member above said first or other source of heat, said grill member being removable from said support column to permit said support member to be moved to said first position, said support column being provided near the base thereof with a relatively short arm extension substantially perpendicular thereto which, when said support column is in said first position, extends upwardly from said base for attachment of said grill member thereto to store said grill member in a position adjacent said base member.

4,532,913

COMBUSTION MEANS FOR SOLID FUEL OF LOW ASH CONTENT

Daihachiro Murase, 11-12 Mitsukeyama 1-chome, Ibaraki-shi, Osaka-fu, Japan

Filed Nov. 7, 1983, Ser. No. 549,544
Int. Cl.³ F24C *1/00*
U.S. Cl. 126—58 **15 Claims**



1. A combustion means for solid fuels of low ash content, comprising:

a holding board for holding solid fuels of low ash content, said board being free of grooves and slits and having, on

its upper surface, a heat-insulating and heat-retaining layer made of a heat-resistant material;

a cylindrical body defining a combustion chamber therewithin, said cylindrical body being removably mounted on said holding board and mounted above said heat-insulating and heat-retaining layer on said holding board for movement toward and away from said layer and said board and spaced from said layer and said board to define an air intake space therebetween the size of which can be freely regulated by said movement of said cylindrical body;

a further heat-insulating and heat-retaining layer made of a heat-resistant material on the inside of said cylindrical body;

a drum portion on the top of said cylindrical body and having an inlet opening therein for supplying fuel to said combustion chamber and a cover removably mounted over said inlet opening; and

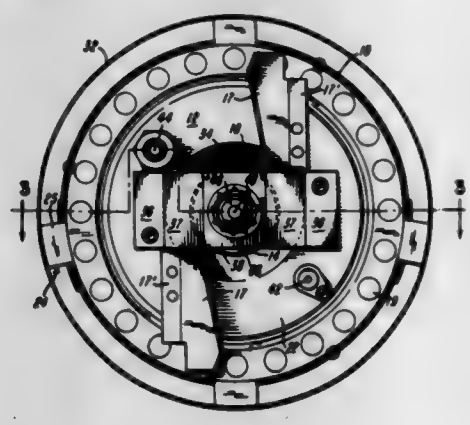
a chimney on said drum portion for discharging gaseous products of combustion from said drum portion.

4,532,914

PORTABLE LP SPACE HEATER

David Thomas, and Eugene C. Briggs, both of Bowling Green, Ky., assignors to Koehring Company, Brookfield, Wis.

Filed Dec. 2, 1983, Ser. No. 557,201
Int. Cl.³ F24H *3/02*
U.S. Cl. 126—110 C **23 Claims**



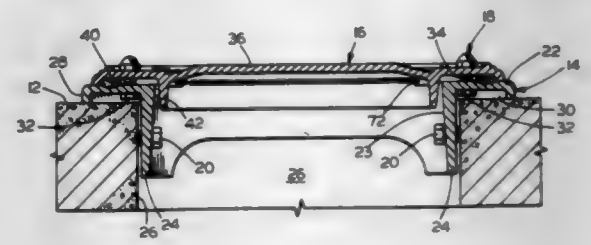
1. Heater apparatus particularly advantageous for use in providing an LP gas burning portable heater comprising means defining a combustion chamber having an inlet end and a discharge end, said inlet end being defined by plate structure having an inlet opening for the delivery therethrough of the primary air required for support of combustion within said chamber, a nozzle having means for connection thereof to and to discharge therefrom a supply of fuel, said means to discharge fuel providing for exit of the fuel from a portion of said nozzle which is projected inwardly of said primary air inlet opening to said chamber, means for igniting fuel delivered to said chamber in the presence of said primary air, means upstream of said plate structure for producing a flow thereto of air under pressure, said plate structure having therein a group of apertures defining inlets to said chamber for secondary air, said apertures being located within and adjacent the outer peripheral limit of said chamber, arranged in a single substantially ring-like pattern, the portion of said plate structure defining the inlet end of said chamber being essentially free of air inlets between said primary air inlet opening and said single ring-like pattern of apertures, said means to deliver a pressured flow of air being arranged to direct air to and through said primary air inlet opening and secondary air inlet apertures, means defining a surface within said chamber immediately of and transverse to said nozzle, in a closely adjacent relation to the fuel dis- charged therefrom and in line with said primary air inlet opening, said primary air, in the delivery thereof through said primary air inlet opening, passing immediately of said nozzle to intersect fuel exiting from said nozzle substantially immediately of said transverse surface to carry the fuel therewith as it impacts on said transverse surface to produce a turbulent intermixture of said air and fuel and a spread thereof laterally to move out of the outer peripheral limit of said transverse surface for a substantially instant ignition thereof immediately adjacent the outer peripheral limit of said transverse surface, and said single substantially ring-like arrangement of secondary air inlet apertures being arranged to provide a directed flow of secondary air passing to and through said chamber substantially encircling and containing the intermixture of air and fuel at ignition and the products thereof.

4,532,915

GAS TIGHT CHIMNEY ACCESS DOOR AND SHIELD FOR USE THEREWITH AND CHIMNEY ASSEMBLIES EMPLOYING SAME

Abbott B. de Rham, Stoney Meadow, Dorset, Vt. 05251

Filed Jun. 3, 1983, Ser. No. 500,639
Int. Cl.³ F23J *13/08*
U.S. Cl. 126—242 **10 Claims**



1. A chimney access door assembly for mounting in a chimney opening for convenient cleaning thereof comprising:

A. a frame member defining an aperture therewithin, said frame member having a face portion for disposition against the outer surface of the chimney and a mounting portion extending generally perpendicularly thereto for disposition against the side surfaces of the chimney opening, said mounting portion being of a length less than the thickness of the wall of the chimney;

B. fastener means in said mounting portion extending generally perpendicularly therethrough for mounting said frame member in an associated chimney opening by engagement in the chimney wall defining the opening;

C. a closure member dimensioned to close said aperture of said frame member and to overly at least the marginal portion of said face portion extending about said aperture;

D. gasket means between the opposed surfaces of said closure member and frame member face portion and extending about said frame member aperture; and

E. disengageable threaded fastening means on said closure member and said face portion of said frame member about said aperture for fastening said closure member securely to said frame face portion of said member about said aperture.

4,532,916

LINEAR CONCENTRATING SOLAR COLLECTOR

Naaman B. Aharon, P.O.B. 1016, Beer Sheva 84110, Israel

Filed Mar. 8, 1983, Ser. No. 473,203
Claims priority, application Israel, Mar. 14, 1982, 65238
Int. Cl.³ F24J *3/02*
U.S. Cl. 126—424 **5 Claims**

1. A segment of a linear concentrating solar collector comprising:

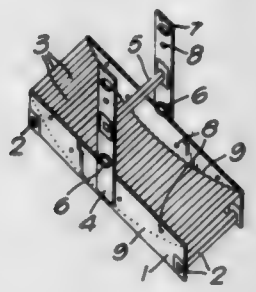
two plates spaced apart a predetermined distance with respect to each other and extending substantially in parallel relative to each other;

a connecting member operatively retaining said plates in said spaced apart relationship;

a plurality of holes positioned in each of said plates for defining a shape of a parabolic curve;

a plurality of reflective strips being operatively positioned between said plates and being disposed adjacent to each other to extend along said parabolic curve;

an absorber being operatively positioned at substantially an axial focal line of said parabolic curve;



adjustment means for individually adjusting each of said reflective strips for linearly focusing incident solar rays to coincide with said focal line of said absorber.

4,532,917

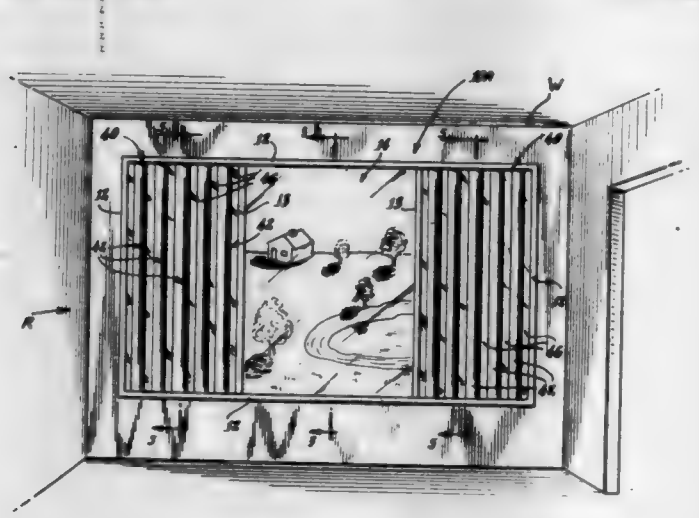
MODULAR PASSIVE SOLAR ENERGY HEATING UNIT EMPLOYING PHASE CHANGE HEAT STORAGE MATERIAL WHICH IS CLEARLY TRANSPARENT WHEN IN ITS HIGH-STORED-ENERGY LIQUID STATE

Douglas C. Taff, P.O. Box 85, and Robert B. Holdridge, P.O. Box 167, both of Hinesburg, Vt. 05461

Continuation of Ser. No. 562,715, Dec. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 444,607, Nov. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 226,395, Jan. 19, 1981, abandoned. This application Sep. 24, 1984, Ser. No. 653,923

Int. Cl.[3] F24J *3/02*

U.S. Cl. 126—430 27 Claims



1. A modular passive solar energy heating and outdoors viewing unit adapted to absorb and store solar energy and subsequently release said solar energy as thermal energy in an enclosed space comprising:

a fluid-tight rigid container member having two opposite surface areas clearly optically transparent and adapted to receive solar energy,

solar energy heat storage phase change material disposed in said container, said phase change material being polyethylene glycol characterized by a heat of fusion of about 33 to 37 ca./gm (4,170 to 4,670 Btu's per cubic ft.), a melting point of from about 13° to 25° C. (55° to 77° F.) and a specific gravity of approximately 1.125 at 20° C.,

said phase change material in said fluid-tight container member being translucent milky white when in its low-stored-energy solid state and being clearly optically transparent to visible light when in its high-stored-energy liquid state for enabling a viewer to look through said container member,

clearly optically transparent glazing in sheet form having an inner and an outer side, said transparent glazing being separated from said fluid-tight container member, and being positioned so as to permit solar radiation to pass through the glazing to a transparent surface area of the fluid-tight container member, the outer side of said glazing being disposed to face incoming solar radiation, said inner side of said glazing facing toward said transparent surface area of the fluid-tight container member, said inner side of the glazing being separated from said transparent surface area of the fluid-tight container member by a gas space,

said glazing transmitting short wavelength solar and visible light rays while preventing longer wavelength heat rays from radiating through the glazing,

said glazing being positioned on the opposite side of said fluid-tight container member from said enclosed space,

whereby when said phase change material is in its low-stored-energy solid state said fluid-tight container member presents a back-illuminated milky white appearance to a viewer in said enclosed space, and

whereby when said phase change material is in its high-stored-energy liquid state a viewer can see through said fluid-tight container and through said glazing.

4,532,918

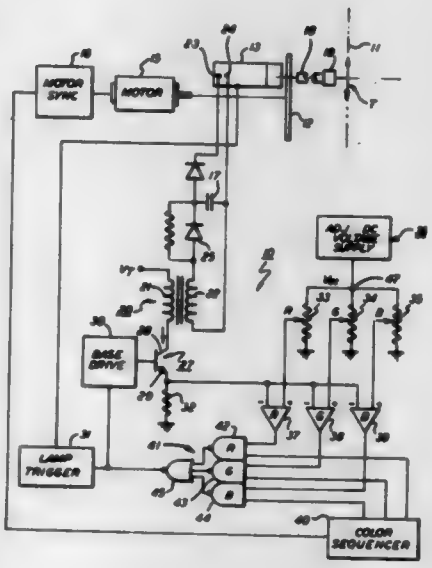
ENDOSCOPE SIGNAL LEVEL CONTROL

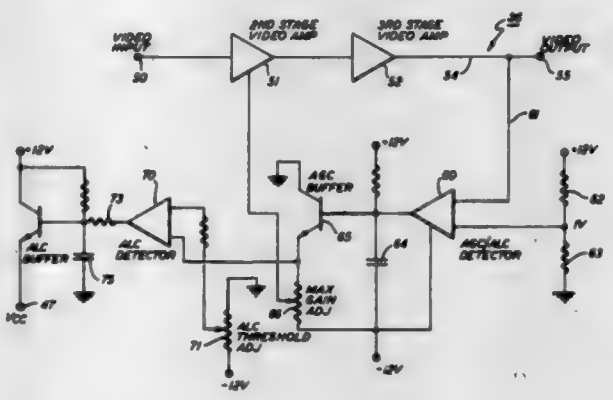
Robert C. Wheeler, Skaneateles, N.Y., assignor to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,138

Int. Cl.[3] A61B *1/04*

U.S. Cl. 128—6 7 Claims





1. In a video endoscope having a solid state image sensor located in the viewing head of an instrument for recording light images of a target and clocking out the image data in the form of a video signal, a video signal level control apparatus that includes

a lamp for illuminating a target in the viewing range of the image sensor whereby image data of the target recorded by the sensor is clocked out as a video signal,

a color wheel for passing a series of different color filters in series through the illumination beam of the lamp in syn-

chronism with each video field to image the target sequentially with light of each different color in synchronism with each said field,

lamp driver means having an individual lamp amplitude control for regulating the illumination intensity of the lamp during each color imaging sequence, each lamp amplitude control having an adjustable voltage divider for connecting the lamp to a common voltage supply so that the color intensity of the images recorded by the sensor during a field can be proportionally balanced,

detector means for sensing the level of the video signals clocked out of the image sensor and providing a variable output signal indicative of the video signal level, and

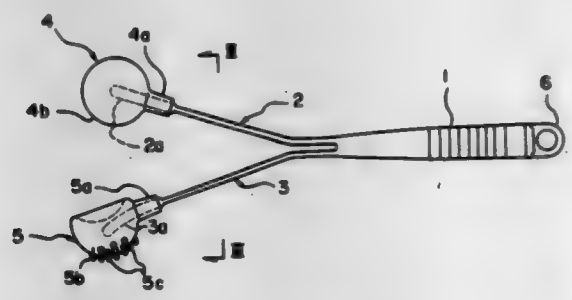
adjusting means for automatically regulating the common supply voltage to the lamp amplitude controls in response to the said variable output signal of the detector means to maintain the video signal at a desired level without disturbing the balance of the recorded color images.

4,532,919

SHOULDER PATTING MEANS

Shoji Iwahashi, and Ken Nakai, both of Kainan, Japan, assignors to Aisen Kogyo, Ltd., Wakayama, Japan

Filed Jun. 23, 1982, Ser. No. 391,269
Int. Cl.³ A61N *23/00*
U.S. Cl. 128—54 **3 Claims**



1. A shoulder patting means comprising:

a grip stick having one free end;

first and second resilient plates having substantially the same length and width extending from one end of said grip stick forming a one-piece, integral construction therewith and spaced from each other to form a Y-shape with said resilient plates normally diverging from each other in a direction away from said grip stick, said resilient plates being disposed in spaced relation with their width perpendicular to a swing direction of said grip stick, first and second tip members respectively secured to respective ends of said first and second resilient plates;

said first tip member formed of a truncated sphere with upper and lower portions, said upper portion being truncated with an upper surface parallel with said length of said first resilient plate and provided with a concave depression within said sphere for reception therein intermittently of said second tip member, said lower portion of said first tip member comprising substantially a hemisphere serving as a shoulder contacting surface when in use,

said second tip member having a substantially spherical configuration with a radius of curvature providing a complemental mating surface to that of said concave depression in said first tip member, both of said tip members being formed of an elastic material, said second tip member having a softer surface than that of said first tip member;

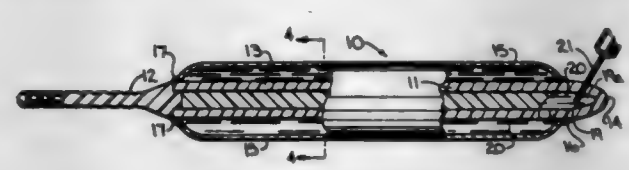
whereby a vibratory beating effect is conveyed to a user's body when said grip stick is swung in a direction such that the width of said first and second resilient plates are parallel with the user's body.

4,532,920

PENILE IMPLANT

Roy P. Finney, Tampa, Fla., assignor to Medical Engineering Corporation, Racine, Wis.

Continuation-in-part of Ser. No. 150,231, May 15, 1980, Pat. No. 4,318,396, and a continuation-in-part of Ser. No. 266,455, May 22, 1981, abandoned, and a continuation-in-part of Ser. No. 328,827, Dec. 9, 1981, Pat. No. 4,411,261. This application Mar. 24, 1983, Ser. No. 478,449
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—79 **5 Claims**



1. A rod-type penile implant which can be implanted completely within a corpus cavernosum of a penis and used to incrementally increase the girth of said penis, said implant consisting of:

(a) an elongated rod-like member of physiologically inert material having a relatively short proximal stem portion adapted to be inserted into the root end of the corpus cavernosum of a penis, and a longer distal portion with a tip adapted to be implanted in the corpus cavernosum of the pendulous penis;

(b) an integral sleeve axially positioned about an intermediate section of the distal portion of said member and sealed at each end to the member to form an elongated chamber for pressurizing fluid; and

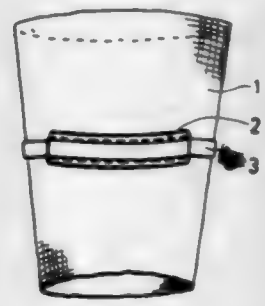
(c) a self-sealing valve means in said member rod-like and communicating with said chamber whereby pressurizing fluid can be added by means of a body piercing conduit to said chamber from the outside with a catheter so as to incrementally increase the size of said chamber and the girth of a penis in which it is implanted.

4,532,921

KNEE JOINT BANDAGE

Detlef von Torklus, Jungfrauenthal 20; Oskar Thum, Bebelallee 116, and Friedrich Wilharm, Martinistrasse, all of Hamburg, Fed. Rep. of Germany

Filed May 8, 1981, Ser. No. 261,711
Int. Cl.³ A61F *5/00*
U.S. Cl. 128—80 C **12 Claims**



1. A knee joint bandage, comprising a downwardly decreasing knee hose element composed of an elastic material and having a front side and a central region of its height; a supporting element connectable with said hose element at said front side and in said central region of the height of said hose element, said supporting element having a central supporting portion which is bent downwardly in correspondence with the user's knee disk so that upon putting the bandage on the user's leg said supporting portion abuts against the user's knee disk from below and thereby supports the user's knee disk from below; and means for connecting said supporting element with

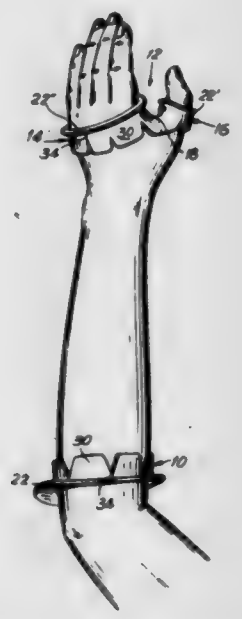
said hose element to effect support of the user's disk from below.

4,532,922

DEVICES AND METHOD FOR CORRECT APPLICATION OF PLASTER DRESSINGS TO TREAT FRACTURES AND DISLOCATIONS

Vladimir Golyakhovsky, 165 W. 91st St., New York, N.Y. 10024

Filed Mar. 5, 1984, Ser. No. 586,287
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—91 R **8 Claims**



1. A device for correctly applying a plaster dressing to treat a fracture or dislocation of a human body segment comprising,

(a) a split flexible plastic member normally urged into annular shape,

(b) said member having an outwardly turned peripheral edge for its entire extent and a skirt portion depending therefrom, the depth of said skirt portion being substantially uniform for the entire extent thereof,

(c) whereby said member is adapted to be placed on said body segment with said skirt portion in surrounding relation thereto and whereby said outwardly turned peripheral edge defines the limit of the plaster dressing,

(d) said member being removable from under the plaster dressing after said dressing has been applied to said segment and has been set, and

(e) said skirt portion being provided with cutouts so as to define a plurality of side by side scalloped sections for facilitating removal of said member from under the plaster dressing.

4,532,923

AIR BAG

Stephen D. Flynn, Oakville, Canada, assignor to D-Two Systems International Inc., Mississauga, Canada

Filed Aug. 2, 1983, Ser. No. 519,754
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.13 **1 Claim**

1. A manually operable resuscitator bag of one piece integral molded construction, formed of thermoplastic material, and comprising:

a generally elongated football shape, defining an enlarged center portion of maximum diameter, and two tapering end portions of progressively reducing diameter;

an opening at each end and inlet means at one said end, and outlet means at the other said end;

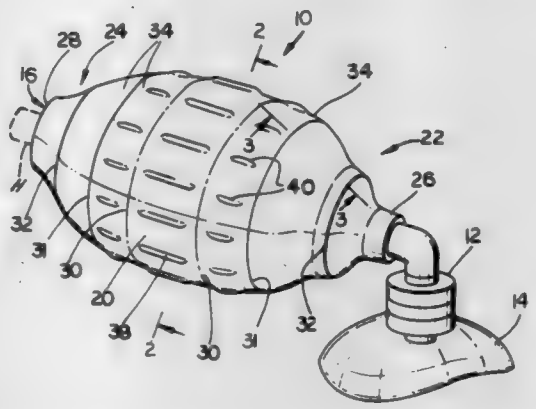
first fold-rings formed at about the transition from said centre portion to each of said tapering end portions, said first fold-rings comprising wall portions of reduced thickness and defining flex zones;

second fold-rings in each said tapering end portion comprising wall portions of reduced thickness, defining flex zones in said tapering end portions whereby said end portions may be telescoped, said second fold-rings being of reduced diameter relative to said first fold-rings;

ridges of thickened wall section between such fold-rings;

said centre portion having a wall thickness substantially equal to the thickness of said ridges in said tapering end portions between said rings;

a plurality of longitudinal ribs formed on the outer surface of



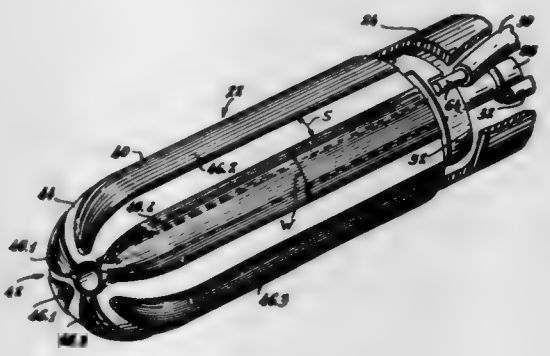
said centre portion at spaced intervals around the circumference thereof, and terminating short of said first fold-rings, and further reinforcing ribs formed in said two tapering end portions, said further ribs extending from said first to said second fold-rings, providing increased resiliency and a rapid recovery for the shape of the bag after compressing whereby the bag may be gradually manually compressed, and rapidly released without substantial delay caused by a delayed recovery of the shape of said bag.

4,532,924

MULTIPOLAR ELECTROSURGICAL DEVICE AND METHOD

David C. Auth, Bellevue; Eric A. Opie, Seattle, and Dale M. Lawrence, Lynnwood, all of Wash., assignors to American Hospital Supply Corporation, Evanston, Ill.

Continuation-in-part of Ser. No. 145,576, May 13, 1980, abandoned. This application Apr. 30, 1982, Ser. No. 373,652
Int. Cl.[3] A61B *17/39*
U.S. Cl. 128—303.17 **25 Claims**



1. An electrosurgical device for use in the treatment of tissue comprising:

a multipolar probe body sized to enable passage of the probe body through an endoscope channel, said probe body having a peripheral surface and a longitudinal axis extending from a proximal to a distal end of the probe body;

at least one electrically isolated conductor pair mounted on the probe body including means for connecting the conductor pair to a source of electrical energy, each conductor comprising at least two electrodes with each electrode of one conductor being separated from and being interposed with another electrode of the other conductor with a spacing therebetween, said different electrodes being

further so distributed and respectively so sized in width and length so as to extend in spaced apart relationship over the distal end and over the peripheral surface side which is located radially from said longitudinal axis, the ratio of the width of electrodes to the spacing between the different electrodes being so selected as to enable effective bipolar treatment of tissue with effectively omni-directional probe body orientations relative to the tissue to be treated when the probe body is used.

4,532,925

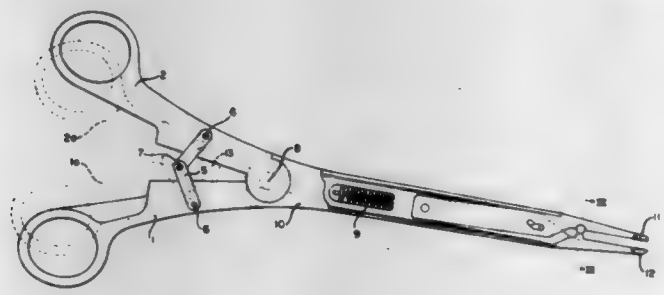
LIGATOR DEVICE

Joseph W. Blake, III, 88 Main St., New Canaan, Conn. 06840, assignor to Joseph W. Blake, III, New Canaan, Conn. and Jack W. Kaufman, Merrick, N.Y.

Continuation-in-part of Ser. No. 63,268, Aug. 2, 1979, Pat. No. 4,296,751. This application Oct. 20, 1981, Ser. No. 313,341

Int. Cl.³ A61B *17/12*

U.S. Cl. 128—325 **1 Claim**



1. A ligator device, comprising

a pair of handles;

a longitudinally movable center slide linked to said handles so as to move rearward when the handles are squeezed together;

a pair of jaws each slidably connected to a front portion of said center slide and each having a front end provided with an anvil;

means connecting said jaws to said center slide for said anvils to move together when said handles are squeezed and for said anvils to move apart when the handles are released;

a cartridge with a supply of ligating clips; and means for retracting all except the respectively leading clip located between said anvils, in direction rearwardly away from said anvils prior to movement of said anvils together,

said retracting means comprising a slot in one of said jaws and angled crosswise thereof in one direction, a slot in the other jaw and angled crosswise thereof in the opposite direction, and a pin integral with said front portion of said center slide and extending through said slots.

4,532,926

TWO-PIECE TISSUE FASTENER WITH RATCHET LEG STAPLE AND SEALABLE LATCHING RECEIVER

Robert H. O'Holla, Union, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jun. 20, 1983, Ser. No. 506,086

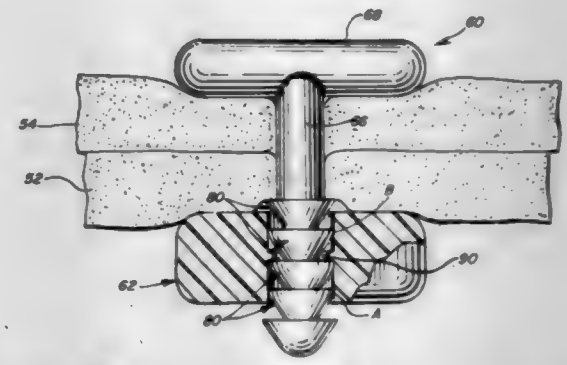
Int. Cl.³ A61B *17/04*

U.S. Cl. 128—334 C **6 Claims**

1. A fastener adapted to hold together two portions of mammalian tissue, such as are defined by a wound or incision, to facilitate healing of the wound or incision, said fastener being made from an absorbable polymer, said fastener comprising:

a fastening member including at least one leg with a distal end adapted to be passed through and project from said tissue portions, said fastening member also including a tissue clamp member connected to said leg and adapted to lie substantially against one of said tissue portions, said leg having on its exterior along at least a portion of its length a plurality of sealing members each defining (1) a resilient, annular sealing portion lying generally in a plane substantially normal to the longitudinal axis of said leg and (2) a surface tapering inwardly from said annular sealing portion towards the distal end of said leg; and

a receiver adapted to be disposed against the other of said tissue portions opposite said fastening member, said receiver defining an aperture therein for receiving and fastening member leg after said leg has been inserted through said tissue portions, said receiver defining an annular retaining



ring on the inside surface of said aperture for engaging said annular sealing portion of one of said sealing members of said leg to prevent withdrawl of said leg from said aperture after said leg has been received in said receiver with the sealing portions of adjacent sealing members sealingly engaging the surface of said receiver in said aperture, whereby said annular retaining ring is isolated from the mammalian tissue by the sealing portions to prevent immediate absorption of said ring.

4,532,927

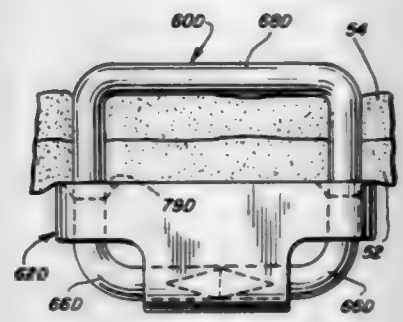
TWO-PIECE TISSUE FASTENER WITH NON-REENTRY BENT LEG STAPLE AND RETAINING RECEIVER

Anthony Miksza, Jr., Jersey City, N.J., assignor to Ethicon, Inc., Somerville, N.J.

Filed Jun. 20, 1983, Ser. No. 506,087

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—334 C **7 Claims**



1. A fastener adapted to hold together two portions of mammalian tissue, such as are defined by a wound or incision, to facilitate healing of the wound or incision, said fastener comprising:

an open loop fastening member, said fastening member comprising a pair of first and second legs with distal ends adapted to penetrate said tissue portions and a link connecting said legs that is adapted to lie substantially against one of said tissue portions; and

a receiver adapted to be disposed against the other of said tissue portions opposite said fastening member; said receiver having a leg receiving member for receiving one of said fastening member legs after said legs have been inserted through said tissue portions and having another leg receiving member for receiving the other of said fastening member legs after said legs have been inserted through said tissue portions; each of said leg receiving members having a first side adapted to be placed against one of said tissue portions and having a generally oppositely facing

second side; each of said leg receiving members defining a first passage extending between said first and second sides of said leg receiving member for receiving a portion of one of said fastening member legs; said receiver having a base between, and projecting outwardly from, said second sides of said leg receiving members; said base defining end walls projecting outwardly from said second sides of said leg receiving members; said base further having an additional passage or cavity extending completely through said base from one of said end walls to the other of said end walls for receiving another portion of each of said legs whereby a means for guiding said legs may be at least temporarily disposed adjacent said receiver for (1) directing the distal end of each of said legs at said leg receiving members second side from one of said first passage into said additional passage or cavity and (2) guiding said legs between said first passages and said additional passage or cavity as relative movement is effected between said fastening member and said receiver.

4,532,928

SURGICAL SUTURES MADE FROM ABSORBABLE POLYMERS OF SUBSTITUTED BENZOIC ACID

Rao S. Bezwada, Whitehouse Station; Shalaby W. Shalaby, Mountainville, and Dennis D. Jamiolkowski, Long Valley, all of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Division of Ser. No. 459,428, Jan. 20, 1983,. This application Jul. 5, 1984, Ser. No. 627,933

Int. Cl.[3] A61K *17/00*

U.S. Cl. 128—335.5 **23 Claims**

1. A surgical suture comprising a drawn and oriented fiber of an absorbable, radiation sterilizable, normally solid copolyester comprising the repeating divalent units of the formula:

$$\text{-(O-CO-Ph-X-CHR-CO-O)-},\ (G);\ \text{and}\ \text{-(O-CO-CHR')-}$$

wherein Ph represents 1,2-, 1,3-, or 1,4-phenylene, or lower alkyl- or lower alkoxy-substituted phenylene, wherein R represents hydrogen, lower alkyl, phenyl, or benzyl, wherein X represents oxy, thio, or sulfonyl, wherein G represents the residue after removal of the alcohol groups of a dihydric alcohol, wherein R' represents hydrogen or methyl, and wherein said divalent units are bonded to each other through ester groups contained in said units.

4,532,929

DRY COATING OF SURGICAL FILAMENTS

Frank V. Mattei, Piscataway, and Donald W. Regula, Flagtown, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 23, 1984, Ser. No. 633,759

Int. Cl.[3] A61L *17/00*

U.S. Cl. 128—335.5 **20 Claims**

1. A synthetic surgical filament having improved and substantially equal dry and wet tie-down properties, said surgical filament having been coated with from about 0.02 to 0.25 percent by weight of a composition consisting essentially of a dry, powdered, substantially water-insoluble, absorbable salt of a C_6 or higher fatty acid.

4,532,930

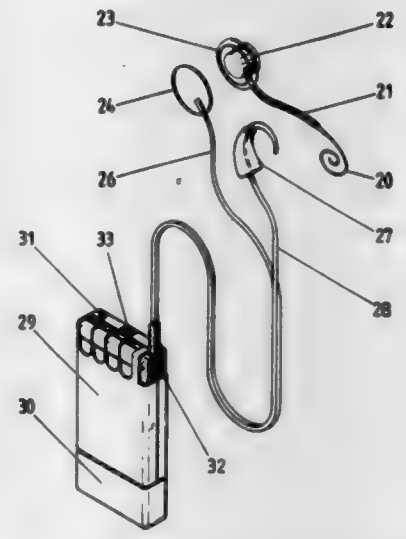
COCHLEAR IMPLANT SYSTEM FOR AN AUDITORY PROSTHESIS

Peter A. Crosby, Drummoyne; Christopher N. Daly, Bigiola Plateau; David K. Money, Pennant Hills; James F. Patrick, Lane Cove; Peter M. Seligman, Essendon, and Janusz A. Kuzma, Stanmore, all of Australia, assignors to Commonwealth of Australia, Dept. of Science & Technology, Belconnan, Australia

Filed Apr. 11, 1983, Ser. No. 483,806

Int. Cl.[3] A61N *1/30*

U.S. Cl. 128—419 R **68 Claims**



Cochlear Implant System - Pictorial Representation

1. In a cochlear implant system having a sound-to-electrical stimulation encoder means, a body-implantable receiver-stimulator and electrodes for receiving electrical signals from said encoder means, the improvement comprising

means in said receiver-stimulator for preventing the delivery of a stimulation signal to the electrodes except after the receipt of a correct predetermined sequence of numerical information from said encoder means and

means in said encoder means for encoding each item of numerical information as a number of pulses in a burst of pulses.

4,532,931

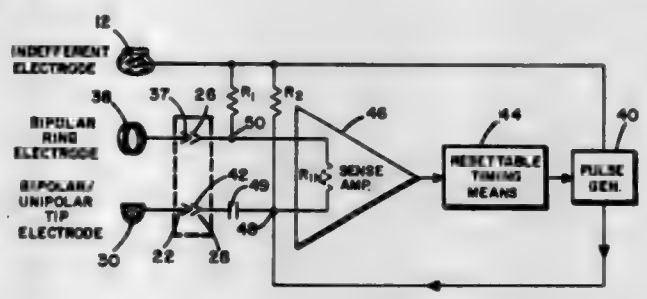
PACEMAKER WITH ADAPTIVE SENSING MEANS FOR USE WITH UNIPOLAR OR BIPOLAR LEADS

Perry A. Mills, Roseville, Minn., assignor to Cardiac Pacemakers, Inc., St. Paul, Minn.

Filed Jun. 29, 1984, Ser. No. 626,525

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 PG **4 Claims**



1. In a cardiac pacer system of the type having electrical lead means comprising one or more distally disposed electrodes coupled by one or more elongated conductors to spaced and electrically isolated contact areas on a proximal connector pin, an implantable pulse generator means, resettable timing means coupled to said pulse generator means for causing said pulse generator means to produce electrical stimulating pulses at predetermined intervals unless said timing means is reset prior

to the end of said predetermined intervals, sensing means coupled to said resettable timing means, said pulse generator means, said resettable timing means and said sensing means being housed in a moisture-proof container made at least in part from a conductive material which, when said housing is implanted in a living body, is in contact with tissue and body fluids, said container having terminal means for receiving said proximal connector pin, said terminal means having first and second spaced contacts for conductively engaging said spaced and electrically isolated contact areas on said proximal connector pin, an improved sensing means comprising:

(a) a sense amplifier exhibiting a predetermined input impedance characteristic between a pair of input terminals thereof, said sense amplifier having an output terminal coupled to said resettable timing means;

(b) first and second impedance elements, each of an impedance value which is at least ten times greater than the impedance of animal tissue and body fluids proximate the location of said distally disposed electrodes but less than ten percent of said predetermined input impedance of said sensing amplifiers;

(c) means coupling said first and second impedance elements between said conductive material of said housing and a first and a second of said pair of input terminals of said sense amplifier, respectively;

(d) means coupling said first spaced contact of said terminal means of said container to said first input terminal of said pair of input terminals of said sense amplifier means; and

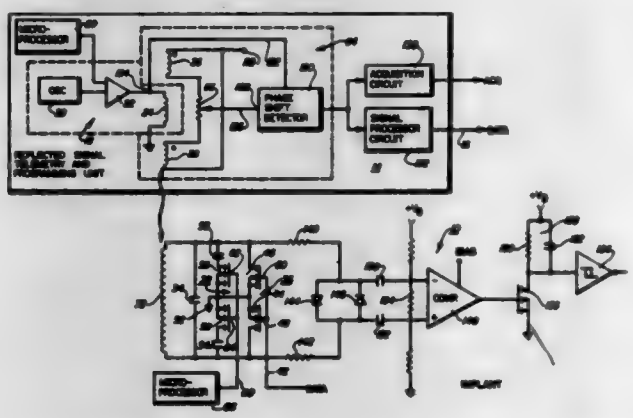
(e) means coupling said second spaced contact of said terminal means of said container to said second input terminal of said pair of input terminals of said sense amplifier means, said first and second spaced contacts in said terminal means of said container mating with said spaced and electrically isolated contact areas on said connector pin of said lead means.

4,532,932

IMPLANT COMMUNICATION SYSTEM WITH FREQUENCY SHIFT MEANS

John R. Batty, Jr., Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Jan. 3, 1984, Ser. No. 567,933
Int. Cl.[3] A61N *1/08*
U.S. Cl. 128—631 7 Claims



1. In an implant communication system for use with an external telemetry and programming unit which generates a magnetic carrier signal at a selected frequency, and in which an implanted enclosure carries a tuned coil and a low impedance shunt circuit connected across the tuned coil including a device for modulating the impedance of the shunt circuit in accordance with a data signal to alter the phase and amplitude of a signal reradiated by said tuned coil in the presence of an externally generated magnetic carrier signal at a selected frequency, the improvement comprising:

second shunt circuit means connected across said tuned coil including means for changing the tuning of the tuned coil to enable the tuned frequency to correspond to said selected frequency.

4,532,933

FOCUSING MECHANISM FOR AN ULTRASOUND DEVICE

D. Eugene Hokanson, 3324 - 72nd Ave. Southeast, Mercer Island, Wash. 98040

Filed Apr. 25, 1983, Ser. No. 487,934
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—660 13 Claims



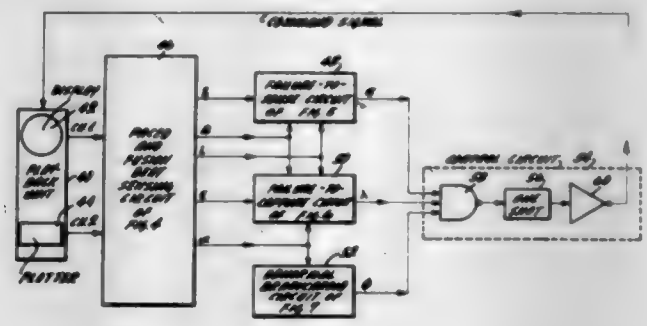
11. In a focusing mechanism for an ultrasound device having first transducer means for transmitting ultrasound waves through a wave-conducting medium toward matter spaced from such transducer means and second transducer means for receiving at least some of the transmitted ultrasound waves after impinging on such matter, the improvement comprising converging lens means for refracting the ultrasound waves and having an inner face adjacent to the first transducer means and an outer face remote from the first transducer means, said outer face having at least two curved portions of substantially different curvature for focusing ultrasound waves transmitted by the transducer means at different distances, respectively, from the first transducer means, the first and second transducer means being positioned in closely adjacent relationship and both curved portions of the lens means extending over portions of both of the transducer means.

4,532,934

PACEMAKER MONITORING RECORDER AND MALFUNCTION ANALYZER

George J. Kelen, New York, N.Y., assignor to Del Mar Avionics, Irvine, Calif.

Continuation of Ser. No. 214,955, Dec. 9, 1980, abandoned, which is a continuation of Ser. No. 956,878, Nov. 1, 1978, abandoned. This application May 17, 1983, Ser. No. 495,154
Int. Cl.[3] A61B *5/04*
U.S. Cl. 128—697 17 Claims



1. In a magnetic tape recording system including separate tracks for ambulatory monitoring of the operation of a pacemaker and of the response of a patient to the pacemaker as revealed by the timing relationship between a pacemaker spike signal generated by the pacemaker and an ECG signal generated by the patient equipped with the pacemaker, an apparatus comprising:

first means for in an ambulatory mode for sensing the occurrence of a pacemaker spike signal and ECG signal;

second means for producing in response thereto a pacer tag signal whose frequency spectrum lies within a predetermined frequency bandwidth;

third means for recording the pacer tag signal and ECG

signal on separate tracks on said magnetic tape, said fourth means characterized by said predetermined bandwidth, only signals having a frequency within said predetermined bandwidth being recorded on said separate tracks said first, second and third means being ambulatory;

fourth means for stationary operation for playing back the recorded magnetic tape recorded by said third means at a selected one of a plurality of speeds higher than the recording speed at which it was originally recorded;

fifth means for determining during the high speed playback a logical timing relationship between the ECG signal and the pacer tab signal;

sixth means for selecting on the basis of the logical timing relationship of the ECG signal to the pacer tag signal one of several different output signals indicative of the operation of the pacemaker and of the response of the patient to the pacemaker

wherein said fourth means further comprises:

a pacemaker channel;

a separate identical ECG signal channel; and

an analysis module receiving occasional pacemaker spikes in said pacemaker signal channel and receiving occasional QRS complexes in said ECG signal channel, the signals in the two channels being correlated in time by said analysis module, said analysis module producing signals indicative of the operation of the pacemaker, said analysis module including a conditional logic circuit for generating an abnormal bradycardia signal after the occurrence of a QRS complex in the ECG signal channel contingent on the failure of receipt of a signal in said ECG channel within a variable time interval T5 after receipt of a signal in said pacemaker channel, said variable time interval T5 being dependent on playback speed of said fifth means, said signal being indicative of a subsequent QRS complex in the ECG signal channel,

whereby proper operation of said pacemaker in response to heart activity is monitored and verified.

4,532,935

BRONCHOSCOPIC NEEDLE ASSEMBLY

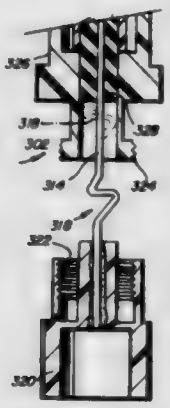
Ko P. Wang, 813 Jamieson Rd., Lutherville, Md. 21093

Continuation-in-part of Ser. No. 438,245, Nov. 1, 1982, which is a continuation-in-part of Ser. No. 260,602, May 6, 1981, abandoned. This application Mar. 7, 1983, Ser. No. 472,603

Int. Cl.³ A61B *10/00*; A61M *5/00*

U.S. Cl. 128—753

13 Claims



10. A completely flexible bronchoscopic needle assembly for use with a flexible bronchoscope comprising:

an elongated flexible catheter having proximal and distal ends and defining an interior cavity therebetween;

a hollow needle coaxially fixed to said catheter distal end, the hollow of said needle being in communication with said interior cavity;

a flexible stylet slideably received in said interior cavity and being of sufficient length to extend beyond the end of the needle and the proximal end of said catheter, said stylet being reciprocally moveable between an extended position wherein the distal end of the stylet extends beyond the end of the needle and a retracted position wherein the distal end of the stylet is retracted into said catheter;

means operatively associated with said distal end of said catheter for protecting said bronchoscope and said patient from inadvertent damage while yet permitting penetration of said tissue to obtain samples thereof when desired;

aspirating means in fluid communication with said inner cavity and connected to said stylet for relatively positioning said stylet in said catheter and for creating a suction source sufficient to transport said tissue samples through said catheter inner cavity so that said tissue samples will be collected for examination;

locking means operatively associated with said aspirator means for locking said stylet in said extended position;

retraction-preventing means operatively associated with said stylet for preventing retraction of said stylet in response to axial compressive forces acting thereon in a direction towards said retracted position when said stylet is in said extended position, said retraction-preventing means including (a) means defining a bearing surface, and (b) means defining a spring area integral with said stylet, said spring area-defining means for bearing against said bearing surface to be flexed thereagainst in response to said locking means locking said stylet in said extended position to exert a bias force against said bearing surface thereby biasing said stylet into said first position to resist axial compressive forces acting thereon tending to encourage said stylet to be withdrawn into said needle, whereby retraction of said stylet in response to said compressive forces is prevented.

4,532,936

AUTOMATIC URINE FLOW METER

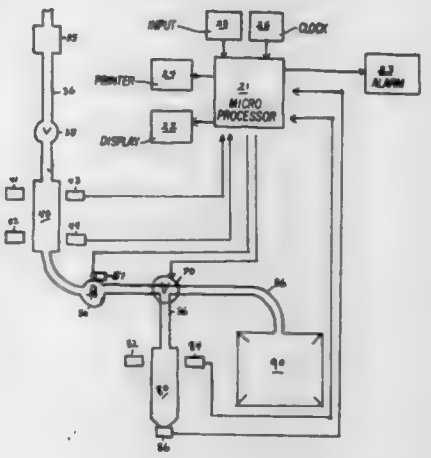
Eric G. LeVeen, 321 Confederate Cir., Charleston, S.C. 29407, and Robert F. LeVeen, 312 Lombard St., Philadelphia, Pa. 19147

Filed Aug. 21, 1981, Ser. No. 295,073

Int. Cl.³ A61M *1/00*

U.S. Cl. 128—762

4 Claims



1. A fluid measurement and collection apparatus, comprising a collection means adapted to collect urinary output from a patient and a microprocessor means adapted to measure urinary output in said collection means; said collection means comprising in combination, measurement column means, said measurement column means being adapted to receive and retain fluid for optical measurement, first and second optical sensor means positioned adjacent said measurement column means, said first optical sensor means being adapted to indicate whether said measurement column means is substantially empty, said second optical sensor means being adapted to indicate whether said measurement column is substantially full, pump means coupled to said measurement column means, said pump means being adapted to remove fluid from said measurement column means at a known pump flow rate, and collection bag means coupled to said pump means, said collection bag

means being adapted to receive fluid removed from said measurement column means by said pump means; clock means adapted to indicate time intervals, said clock means being coupled to said microprocessor means, said first and second optical sensor means and said pump means being coupled to said microprocessor means, said microprocessor means being adapted to activate said pump means when said second optical sensor means indicates that said measurement column means is substantially full, to drain said measurement column means and measure time intervals indicated by said clock means until said first optical sensor means indicates said measurement column means is substantially empty, and to determine volume of said fluid equal to the measured time intervals multipled by the known pump flow rate.

4,532,937

SEBUM COLLECTION AND MONITORING MEANS AND METHOD

David L. Miller, Dallas, Tex., assignor to Cuderm Corporation, Dallas, Tex.

Continuation-in-part of Ser. No. 453,836, Dec. 28, 1982, abandoned. This application Nov. 28, 1983, Ser. No. 555,817

Int. Cl.³ A61B *10/00*

U.S. Cl. 128—759 **15 Claims**

1. A device for collecting sebum as it is secreted from the sebaceous glands of a subject which comprises (a) an open-celled, microporous, hydrophobic polymeric film having coated on a major surface thereof (b) a layer of synthetic, pressure-sensitive adhesive consisting essentially of high molecular weight components that are resistant to migration into the pores of said microporous film, said layer of adhesive being sufficiently thick and continous to hold said microporous film in close proximity with the openings of said sebaceous glands, yet sufficiently thin to permit passage therethrough, and into said pores of said microporous film, of substantially all of the sebum secreted by said glands during a period of contact between said device and said sebaceous glands, said microporous film having a pore volume of from about 25% to about 50%, a film thickness of from about 0.01 mm to about 0.05 mm, the pores of said film having a mean effective diameter of less than about 0.1 micron, and said film being opaque to light or opolescent when its pores are filled with gaseous material but substantially translucent when said pores are filled with sebum or another hydrophobic substance.

4,532,938

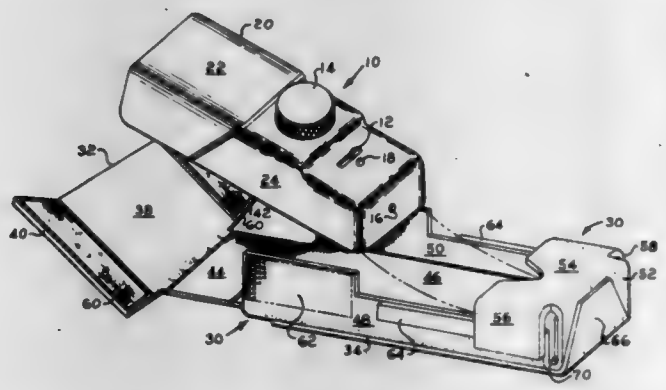
ELECTROTHERAPY APPARATUS

Floyd L. Carlisle, Clinton, Conn., assignor to Theratronics, Inc., Essex, Conn.

Filed May 4, 1983, Ser. No. 491,607

Int. Cl.³ A61N *1/04, 1/36*

U.S. Cl. 128—801 **4 Claims**



1. Electrotherapy apparatus comprising:

signal generator means, said signal generator means including a housing with first and second ends, a signal generator for providing output voltage pulses being disposed in said housing, said signal generator means further including an integral socket in said first end of said housing, said socket having at least a pair of electrical contacts, said signal generator being electrically connected to said contacts whereby output voltage pulses provided by said signal generator will be applied across said socket contacts; and

case means for receiving and supporting said signal generator means, said case means including:

a receptacle defining member, said receptacle defining member being adjustable between an open signal generator means receiving condition and a closed signal generator means retention condition, said receptacle defining member being comprised of a non-conductive material and having a first substantially continuous flat side, said receptacle defining member further having a first pair of oppositely disposed walls extending in the same direction from opposite edges of said first side, said receptacle defining member additionally having a first end defining member articulated to said first side at one end thereof and a first top member articulated to said first end defining member, said receptacle defining member also having a second pair of oppositely disposed walls articulated to said top member, said receptacle defining member additionally including complementary fastener means on said walls of said first and second pairs of oppositely disposed walls, said fastener means cooperating such that said walls of said second pair may be releasably coupled to said walls of said first pair to define a receptacle wherein said first flat side is disposed opposite to and displaced from said top member;

a generally L-shaped electrode support member, said electrode support member including a base portion and a leg portion extending generally transversely with respect to said base portion, said electrode support member base portion being secured in abutting relationship to said receptacle defining member first flat side, said electrode support member leg portion extending at least part way across the receptacle defined by said receptacle defining member at the second end thereof, said second end being opposite to the end defined by said first end defining member;

a pair of electrodes mounted from said electrode support member base portion, said electrodes being spacially displaced and being positioned on the exterior surface of said case means;

a plug having at least a pair of electrically isolated contacts, said plug being complementary in shape to said signal generator means integral socket;

mounting means for said plug, said mounting means supporting said plug so that said plug projects into said case means defined receptacle at the second end thereof, insertion of said signal generator means into said case means causing engagement of said plug with said socket to establish electrical contact between respective contacts of said plug and socket; and

conductors connected to and extending between individual of said electrodes and respective contacts of said plug contacts, said conductors being partly disposed between said electrode support member base portion and said receptacle defining member first flat side.

4,532,939

NONCONTACTING, HYPERTHERMIA METHOD AND APPARATUS FOR DESTROYING LIVING TISSUE IN VIVO

Tex Yukl, Pleasant Valley Rte., Box 21, Baker, Oreg. 97814

Filed Oct. 18, 1982, Ser. No. 434,823

Int. Cl.³ A61N *5/02*

U.S. Cl. 128—804 **5 Claims**

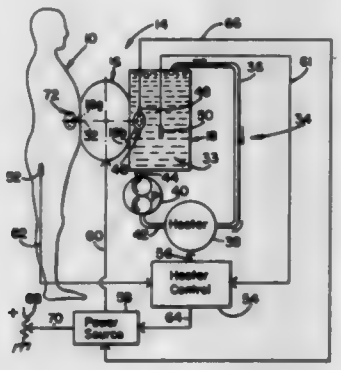
1. A noninvasive, noncontacting method for causing cell destruction in a preselected site in living tissue through a technique employing an external tissue simulator, said method comprising

creating a pair of spaced electromagnetic-energy focal re-

gions wherein energy-effected electrical/thermal changes occurring adjacent one produce related electrical/thermal changes adjacent the other,

placing one of such focal regions inside such tissue adjacent the location of such preselected site,

placing the other focal region inside such external tissue simulator,



monitoring the electrical/thermal conditions adjacent the location of the other focal region in such simulator, and

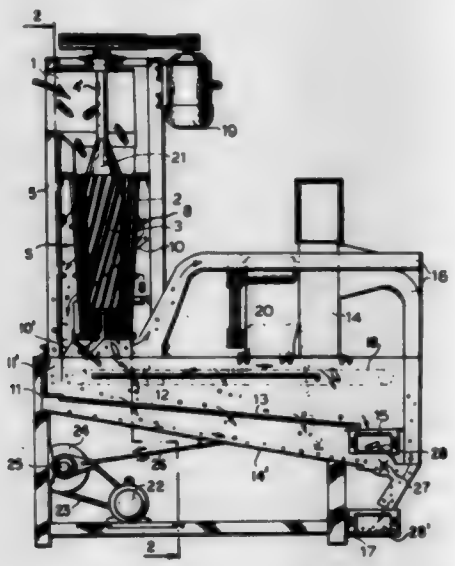
maintaining the placement of such one focal region until said monitoring indicates that a predetermined electrical/thermal condition has existed in such simulator over a predetermined period of time.

4,532,940

CORN SHELLER

Atanas L. Mitkov; Ivan N. Georgiev; Peter T. Radulov; Le K. Hung, and Atanas K. Atanassov, all of Russe, Bulgaria, assignors to V T U "Angel Kanchev", Russe, Bulgaria

Filed Jan. 20, 1983, Ser. No. 459,687
Int. Cl.[3] A01D *9/00*
U.S. Cl. 130—6 **7 Claims**



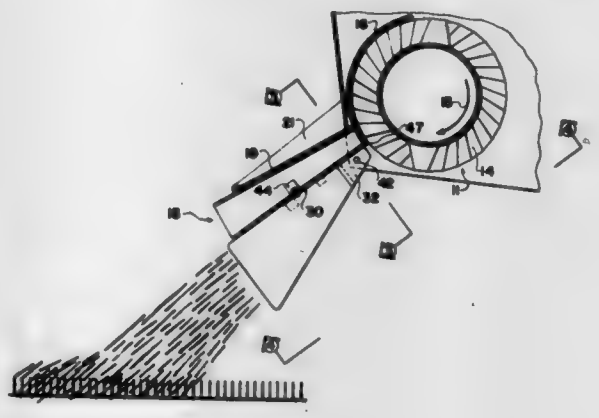
1. A corn shelling apparatus having a supporting frame and a receiving hopper mounted on its upper part, beneath the hopper there being at least one shelling unit made up of an inner drum and an outer counter-drum, the drum being fitted inside the counter-drum, and means connected by a fan and chute for removing the impurities, the stripped corn cobs, and the kernels, the improvement wherein the drum is cylindrical, the counter-drum is frusto-conical and has its larger diameter turned upwardly toward the receiving hopper, the axes of the drum and counter-drum are vertical, and the peripheral surfaces of the drum and counter-drum are made of rods, the rods of the drum being disposed parallel and skewed with respect to vertical axial sections of the drum, and the rods of the counter-drum are disposed along the generant of a cone, and comprising an inclined kernel-collecting plane member enveloping the counter-drum and mounted upon the supporting frame of the apparatus.

4,532,941

DISCHARGE CONTROL ATTACHMENT FOR A COMBINE HARVESTER

Alfred J. Gauthier, Box 212, St. Claude, Manitoba, Canada (R0G 1Z0)

Filed Aug. 31, 1984, Ser. No. 646,145
Int. Cl.[3] A01F *12/40*
U.S. Cl. 130—27 R **16 Claims**



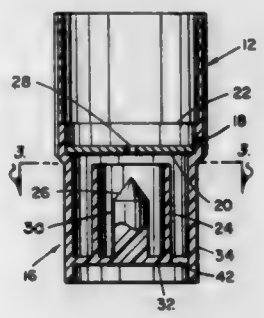
1. An attachment for a combine harvester of the type having a straw discharge including a straw chopper assembly rotatable about a substantially horizontal axis transverse to the combine harvester for chopping the straw and forcefully discharging the straw in a generally rearward direction from the combine harvester, and fins rearward of the chopper assembly for directing the discharged straw outwardly to the sides thereof, the attachment comprising a plate member, means arranged for mounting the plate member on the combine harvester rearwardly of the chopper assembly and generally transverse to the combine harvester with an underside surface thereof at an angle to the horizontal so as to cover the fins to prevent discharged straw from engaging said fins whereby, in use, the discharged straw from the chopper assembly directly contacts the surface and is directed thereby downwardly to engage the ground under force from the chopper assembly and two side guide members each extending generally downwardly from the underside of the plate member and arranged at respective ends of the plate adjacent the sides of the combine harvester and inclined inwardly relative to the rearward direction to direct the discharge straw inwardly whereby the straw engages the ground over a width less than the width of the combine harvester to form a swath.

4,532,942

MINIATURE TOBACCO FILTERS

Leslie N. Aikman, 3628 Ocean Blvd., Corona del Mar, Calif. 92625

Continuation-in-part of Ser. No. 104,875, Dec. 18, 1979, abandoned. This application Jun. 27, 1980, Ser. No. 163,607
Int. Cl.[3] A24D *3/04*
U.S. Cl. 131—198.1 **6 Claims**



1. For a cigarette filter of the type that includes a barrier which extends across the smoke flow path, an air and smoke mixing chamber upstream from the barrier and openings, one by which ambient air flows into the chamber and the other by

which a stream of smoke, air and condensate flows through the barrier, an improved condensate collector which comprises:

means in the form of a cone surface in the path of the stream of smoke, air and condensate and which is wetted by the condensate for intercepting condensate as it flows through the barrier;

said cone being oriented at an angle to the direction of flow of said stream such that the condensate intercepted at a point on said surface tends to adhere to the wetted surface and such that the smoke and air are directed against previously intercepted condensate and exert a force tending to move said condensate along said surface to a position beyond the point of interception; and

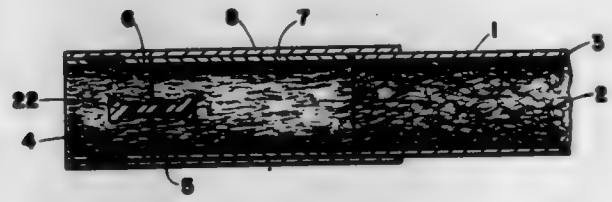
means for conducting ambient air into said chamber in parallel with said smoke path via a plurlaity of air inlet paths opening at spaced points around the periphery of said mixing chamber at its upstream end.

4,532,943

ADJUSTABLE FILTER CIGARETTE

Walter A. Nichols, and Reginald W. Newsome, both of Richmond, Va., assignors to Philip Morris Incorporated, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 429,392
Int. Cl.[3] A24D *1/04*; A24F *13/04*
U.S. Cl. 131—336 **27 Claims**



1. A filter cigarette comprising a tobacco rod, a substantially cylindrical filter plug, a plug wrapping circumscribing said filter plug, and tipping paper circumscribing and joining said filter plug and a portion of said tobacco rod, at least one of said plug wrapping and said tipping paper being substantially air-impermeable, said filter plug comprising a mouth-end segment of filter tow material axially connected to a rod-end segment of filter tow material for rotation about the axis of the cigarette, the filter tow material of the mouth-end segment being in direct contact with the filter tow material of the rod-end segment.

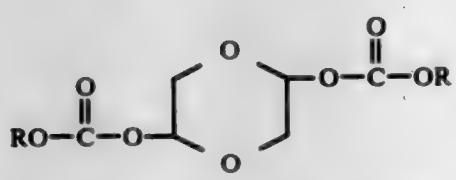
4,532,944

SMOKING COMPOSITIONS CONTAINING A DICARBONATE ESTER FLAVORANT-RELEASE ADDITIVE

Kenneth F. Podraza, Richmond, Va., assignor to Philip Morris Inc., New York, N.Y.

Filed Apr. 23, 1984, Ser. No. 603,035
Int. Cl.[3] A24B *3/12*
U.S. Cl. 131—277 **6 Claims**

1. A smoking composition comprising an admixture of (1) combustible filler selected from natural tobacco, reconstituted tobacco and non-tobacco substitutes, and (2) between about 0.0001 and 2 weight percent, based on the total weight of filler, of a dicarbonate ester flavorant-release additive corresponding to the formula:



where R is a substituent selected from aliphatic, alicyclic and aromatic radicals.

4,532,945

PROCESS FOR INCREASING AND MAINTAINING THE FILLING POWER OF TOBACCO

Gus D. Keritsis, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Oct. 14, 1983, Ser. No. 542,247
Int. Cl.[3] A24B *3/18*
U.S. Cl. 131—291 **8 Claims**

1. A process for increasing and maintaining the filling power of tobacco, comprising steps (a) and (b) in any order followed by step (c):

(a) applying an effective amount of a cross-linking agent to the tobacco;

(b) impregnating said tobacco with an expansion agent; and

(c) heating the tobacco containing the expansion agent and the cross-linking agent to react the cross-linking agent with the tobacco, to expand the tobacco, and to stiffen the tobacco;

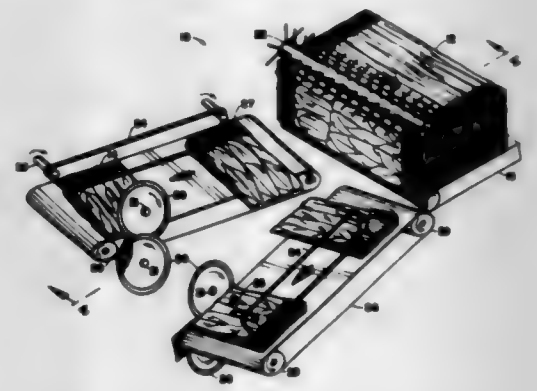
wherein the tobacco is selected from the group consisting of tobacco leaf, cured tobacco leaf, tobacco filler, and reconstituted tobacco sheet; and wherein the cross-linking agent is selected from the group consisting of polyfunctional carboxylic acids, acid anhydrides of polyfunctional carboxylic acids, acid chlorides of polyfunctional carboxylic acids, carbonyl chloride, aldehydes, dialdehydes, azides, diazides, $(NH_4)_2HPO_4$, ketones, polybasic inorganic acids and salts thereof, amides, lactones, aldehydic sugars, and keto sugars.

4,532,946

METHOD AND APPARATUS FOR TIPPING TOBACCO LEAVES PACKED IN BALES

Frank C. King, Jr., Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Apr. 12, 1984, Ser. No. 599,848
Int. Cl.[3] A24B *5/00, 7/06*
U.S. Cl. 131—327 **7 Claims**



1. A tobacco bale tipping apparatus comprising:

flaking means for removing slabs of tobacco from a tobacco bale;

spreading means for separating said slabs into right handed and left handed wedges of tobacco; and

tipping means for removing the tips of the tobacco leaves from said right handed and left handed wedges of tobacco.

4,532,947

FILTER FOR REDUCING THE TOXIC EFFECTS OF CIGARETTE TOBACCO SMOKE

Jane R. Caseley, Withyham, England, assignor to Windleshaw Enterprises Limited, East Sussex, England

Filed May 9, 1984, Ser. No. 610,084
Claims priority, application United Kingdom, May 12, 1983, 8313044
Int. Cl.[3] A24D *1/18, 3/00, 3/02, 3/06*
U.S. Cl. 131—331 **9 Claims**

1. A filter for use in association with cigarette tobacco, wherein the filter contains, as active component, at least one

non-toxic inorganic or organic salt of a compound of the general formula:

$$H—S—X—SO_3H$$

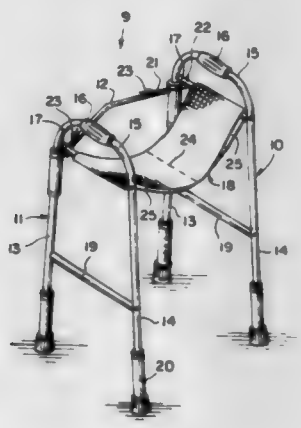
in which X is a straight or branched alkylene radical containing 2 to 6 carbon atoms, and/or cysteine and/or acetylcysteine.

4,532,948

WALKER WITH A FLEXIBLE SEAT

Esther J. Burrows, 57-132B Piedmont Dr., Port Jefferson, N.Y. 11776

Filed Feb. 21, 1984, Ser. No. 581,728
Int. Cl.[3] A61H *3/00*
U.S. Cl. 135—67 **15 Claims**



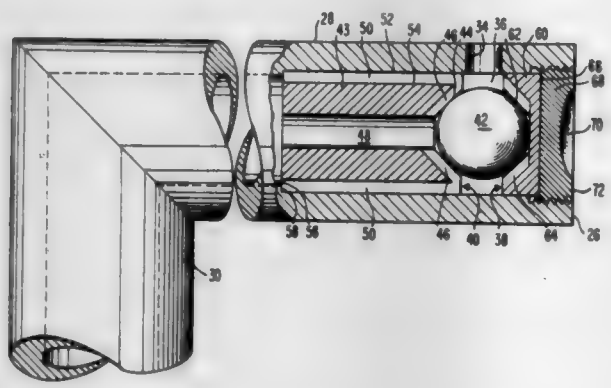
1. A seat for a walker comprising a substantially rectangular sheet of flexible material having fastening means on the narrow ends thereof for slidably fastening the seat to the opposite horizontal braces of a walker, to suspend the seat in a slack manner, whereby the seat can be used to support a seated person, and due to its slidable fastening means and the flexibility of the slack material, the seat can be readily pushed forward by the body of the user to not interfere with the usual walking attitude of the user.

4,532,949

ENERGY ABSORBER FOR HIGH ENERGY FLUID JET

Ed Frank, Glenolden, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Sep. 29, 1982, Ser. No. 427,358
Int. Cl.[3] F16L *55/02*
U.S. Cl. 137—1 **15 Claims**



1. An energy absorber for absorbing energy from a high energy fluid stream emanating from a high energy fluid nozzle, said energy absorber comprising:

an energy absorbing chamber adapted to receive the high energy fluid stream emanating from the high energy fluid nozzle and being defined by spaced first and second seats positioned within a fluid flow conduit which is spaced from the high energy fluid nozzle, said first and said second seats including first and second seat faces forming a portion of said energy absorbing chamber;

an inlet aperture in said fluid flow conduit, the high energy fluid passing through said inlet aperture and into said energy absorbing chamber;

a freely rotatable ball positioned in said energy absorbing chamber between said first and second seats generally in alignment with the high energy fluid stream, said ball being struck and caused to rotate by the high energy fluid stream to dissipate the energy of the high energy fluid stream; and,

means to exhaust the energy dissipated fluid from said energy absorbing chamber after the energy of the fluid has been absorbed and dissipated by causing said ball to rotate, said means including first and second fluid flow passages in said first and said second seat faces, said first and said second fluid flow passages directing said energy dissipated fluid from said energy absorbing chamber to said fluid flow conduit.

4,532,950

PROCESS FOR THE PERMANENT DEFORMATION OF HAIR

Günther Lang, Nieder-Beerbach, and Theodor Wajaroff, Darmstadt, both of Fed. Rep. of Germany, assignors to Wella AG, Darmstadt, Fed. Rep. of Germany

PCT No. PCT/EP80/00049, § 371 Date Feb. 20, 1981, § 102(e) Date Feb. 20, 1981, PCT Pub. No. WO81/00203, PCT Pub. Date Feb. 5, 1981
Continuation of Ser. No. 243,936, Feb. 20, 1981,. This PCT application Jul. 11, 1980, Ser. No. 504,841
Claims priority, application Fed. Rep. of Germany, Jul. 24, 1979, 2929865
Int. Cl.[3] A45D *7/00*
U.S. Cl. 132—7 **3 Claims**

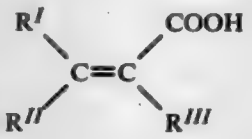
1. Process for the permanent deformation of hair, comprising the steps of

1. applying to the hair a freshly prepared aqueous composition obtained by mixture of two components

(a) component 1 of which containing as a hair keratin reducing substance alkalisulfite, ammonium sulfite, thioglycolic acid, thiolactic acid or a water soluble salt of thioglycolic acid or thiolactic acid and

(b) component 2 containing a compound selected from the group consisting of

(i) carboxylic acids with activated double bonds of the formula



in which the substituents R^I and R^{II} represent H, COOH, CH_2COOH, $CH(CH_3)COOH$, C_6H_5 or CH_3, and R^{III} represents H, C_1–C_6-alkyl or CH_2COOH, with the proviso that R^I is different from R^{II} and at least one of the substituents R^I and R^{II} represents COOH, or the salt thereof, and

(ii) carboxylic acids with activated triple bonds of the formula

$$HOOC—C{\equiv}C—R^{IV}$$

in which the substituent R^{IV} has the meaning H or COOH, or the salt thereof;

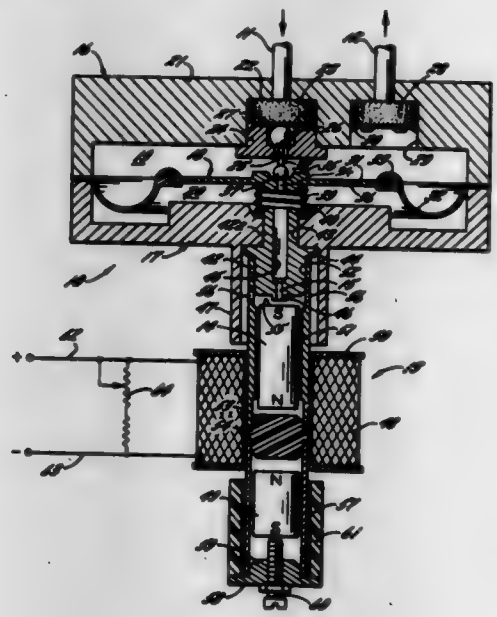
2. holding the hair at a temperature of 20° to 80° C. for a time period of 10 to 50 minutes in the desired shape;

3. fixing the hair in the desired shape by application of an aqueous hydrogen peroxide solution; and rinsing the hair.

4,532,951
TRANSDUCER UTILIZING ELECTRICAL AND PNEUMATIC SIGNALS

Raymond J. Fermanich, Rockford, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Mar. 28, 1983, Ser. No. 479,657
Int. Cl.[3] G05D *16/00*
U.S. Cl. 137—84 11 Claims



1. An electrical-pneumatic transducer having, in combination, a housing having a supply pressure inlet, a control pressure outlet and a regulating nozzle, said inlet being adapted for connection to a source of fluid under pressure, means disposed within said housing and operable to regulate the pressure of fluid at said outlet in response to the rate of fluid flow through said nozzle, a first elongated permanent magnet disposed coaxially with said nozzle, the ends of said magnet being of different polarity with one end of the magnet opposing the nozzle, a coil of electrically conductive wire disposed outside said housing coaxially with said nozzle and encircling at least a portion of said magnet, said magnet being urged axially endwise relative to said nozzle to vary the rate of fluid flow through the latter and being urged by the energization of said coil whereby the force on the magnet is correlated with the degree of energization of the coil and the pressure at said outlet is correlated with said force, a second elongated permanent magnet disposed end to end with said first magnet and spaced from the latter, the ends of said second magnet being of different polarity and oriented relative to said first magnet to urge said first magnet in an endwise direction, and means for manually moving said second magnet toward and away from said first magnet to vary the effect of the second magnet on the first magnet thereby to calibrate the transducer.

4,532,952
CONTROLLER FOR WELL INSTALLATIONS

William L. Norwood, San Antonio, Tex., assignor to Logic Controls Corp., Converse, Tex.

Division of Ser. No. 216,781, Dec. 15, 1980, Pat. No. 4,352,376.
This application May 14, 1982, Ser. No. 378,108
Int. Cl.[3] F16K *51/00;* F16J *15/14*
U.S. Cl. 137—240 12 Claims

12. A controller for use in the control of well installations, comprising:

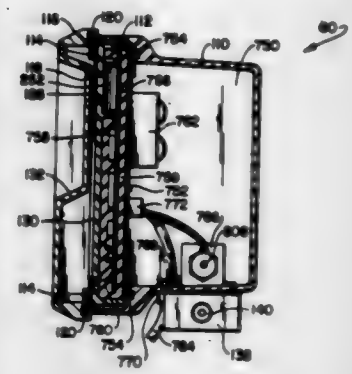
a principal housing having an enclosable cavity portion formed inwardly of a continuous peripherally disposed ledge;

a controller circuit mounted upon a circuit board and having a visual display mounted at a predetermined position thereon;

a circuit housing having a sealing cavity portion for supportably receiving said circuit board and formed having an opening therein for providing visual access to said visual display;

a polymeric sealing material positioned within said circuit housing cavity portion surrounding said circuit board in sealing relationship;

means for removably attaching said circuit housing in abutting engagement with said principal housing ledge to effect the enclosure of said cavity portion;



means defining a seal intermediate said principal housing ledge and said circuit housing;

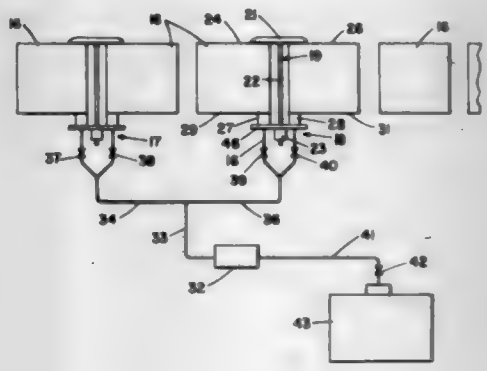
a gas driven valve actuated intermittently under the control of said circuit for introducing a non-corrosive hydrocarbon gas into said principal housing cavity to derive a positive pressure therewithin when enclosed; and

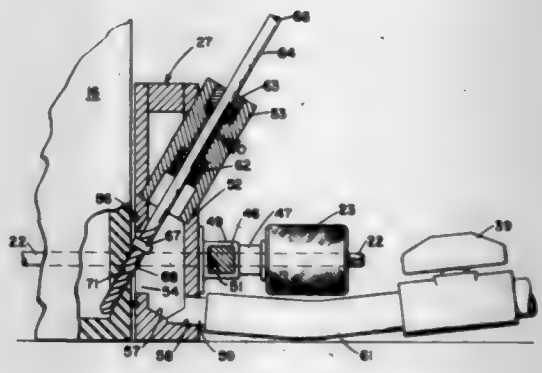
including check valve means mounted in said cavity for effecting control of said positive pressure.

4,532,953
APPARATUS FOR TAPPING AND DRAINING BATTERIES

Ambrose L. Rysewyk, Elgin, Ill., assignor to AT&T Technologies, Inc., New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,859
Int. Cl.[3] F17C *13/04*
U.S. Cl. 137—255 9 Claims





1. An apparatus for tapping and draining electrolyte from a pair of adjacent batteries, which comprises:

a pair of chambers each having an opening surrounded by a compressible seal;

a gripping device mounted on said chambers having means

positionable between a pair of batteries for gripping two walls of the pair of batteries;

means for moving said chambers relative to said gripping device to move said chambers towards the pair of batteries to press said compressible seals against the batteries;

means mounted on and extendable through said chambers and said openings therein for drilling holes in the batteries; and

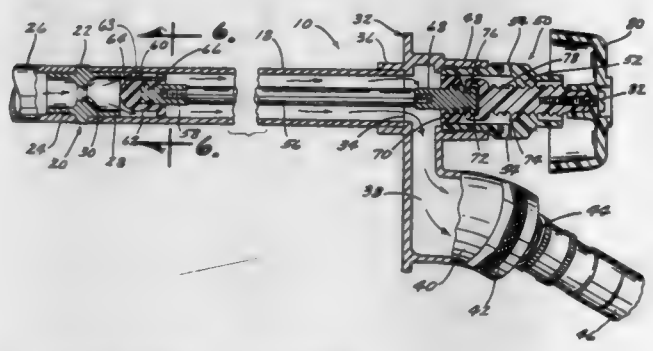
means for applying vacuum to the interiors of said chambers.

4,532,954

WALL HYDRANT

Russell E. Fillman, Colorado Springs, Colo., assignor to Woodford Manufacturing Company, Colorado Springs, Colo.

Filed Jul. 24, 1984, Ser. No. 633,908
Int. Cl.³ E03B 9/14
U.S. Cl. 137—302 **2 Claims**



2. A wall hydrant, comprising,

a hollow cylindrical tube having an inlet end and an outlet end,

an inlet valve seat connector having an outwardly facing inlet valve seat therein and opposite inner and outer ends,

means for connecting said inner end of said inlet valve seat connector to a source of fluid under pressure,

means for connecting said outer end of said inlet valve seat connector to the inlet end of said hollow tube,

an inlet valve means in said tube adjacent said inlet end, said inlet valve means comprising a cylindrical body portion having inward and outward ends, with the inward end terminating in an arcuate nose portion,

said inlet valve seat being complementary in shape to the arcuate nose portion of said inlet valve means,

valve control means extending through said tube and being connected to said inlet valve means to selectively longitudinally slide said inlet valve means inwardly to a closed position on said inlet valve seat, and to selectively slide said inlet valve means outwardly to an open position whereby fluid may enter the inlet end of said tube and flow outwardly therethrough around said nose portion and said body portion,

a fluid means located in said hollow cylindrical tube adjacent said outlet end,

a drain valve means connected to said valve control means adjacent said fluid drain means and adapted to control the flow of fluid from said hollow cylindrical tube to said drain means,

a drain valve seat in said hollow cylindrical tube adjacent said drain valve means,

said valve control means adapted to close said drain valve means when said inlet valve means is open, and to open said drain valve means when said inlet valve means is closed,

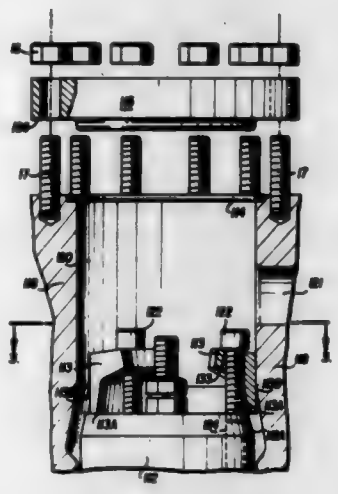
and said drain valve means having a longitudinally extending groove on the outer surface thereof and being adapted for only a limited fluid flow immediately prior to the time that said inlet valve means is fully open.

4,532,955

WEDGE LOCK VALVE RETAINER

V. Alan Squires, Grove City, Pa., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Mar. 9, 1984, Ser. No. 587,970
Int. Cl.³ F16K 43/00
U.S. Cl. 137—15 **21 Claims**



21. A method for retaining a compressor check valve assembly within a compressor cylinder using wedge segments, comprising the steps of:

locating the check valve assembly from within the cylinder;

disposing wedge segments between the check valve assembly and the cylinder; and

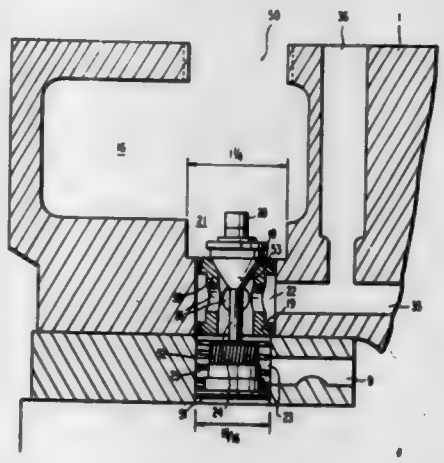
driving said wedge segments into frictional engagement with said check valve assembly and cylinder for retaining the check valve assembly within the cylinder.

4,532,956

SOLENOID ACTUATED VALVE BLOCKS FOR GLASSWARE FORMING MACHINES

Luis Cardenas-Franco, and Enrique Veazey-Menéndez, both of Monterrey, Mexico, assignors to Vitro-Tec Fideicomiso, Monterrey, Mexico

Division of Ser. No. 330,918, Dec. 15, 1981, Pat. No. 4,478,241.
This application Jan. 9, 1984, Ser. No. 569,094
Claims priority, application Mexico, Dec. 16, 1980, 185295
Int. Cl.³ F16K 49/00
U.S. Cl. 137—340 **7 Claims**



1. A solenoid actuated valve block for glassware forming machines, which comprises the combination of a metal block (1) provided with an inner longitudinal, operational air manifold (16); a plurality of valve chambers arranged in a staggered array and opening towards a lower surface of said metal block at one of their ends and towards said operational air manifold at the other one of their ends, each of said valve chambers comprising an upper cylindrical section (22) opening directly toward said operational air manifold and a lower cylindrical

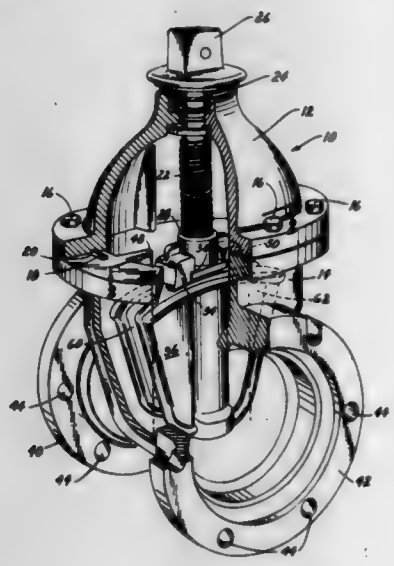
section (23) opening directly toward said lower surface of said metal block, said lower section of said chambers having a diameter which is smaller than the diameter of said upper cylindrical section thereof; a plurality of cartridge valves (17) arranged within said valve chambers, said cartridge valves comprising a valve body which comprises a cylindrical side wall (38) provided with a plurality of communicating openings (26), with said side wall spanning only the length of said upper cylindrical section of said valve chambers and being sealed at both ends thereof against said section, and a valve stem (24) having two oppositely arranged upper and lower plugs for obturating respectively upper and lower end openings provided in said valve body, said valve stem projecting outwardly and downwardly of said valve body to a distance sufficient to span the length of said lower cylindrical section of said valve chambers, a plunger (51) attached to a lowermost end of said valve stem and slidable over the inner surface of said lower cylindrical section of the valve chambers, and a return spring (25) arranged around said valve stem and lower plug, with the upper end of said spring bearing on the lower end of said valve body and the lower end of said spring bearing on said plunger; each valve chamber having a duct for operational air opening into the upper cylindrical section thereof and individually connected with a pneumatic operative line (35, 36) of the machine and an exhaust duct (9) opening into the lower cylindrical section thereof and communicated with the atmosphere; a plurality of solenoids arranged in bores (50) provided in an upper surface of said metal block and crossing said operational air manifold, said solenoids having a piston (31) coupled with an upper end of the valve stem of each cartridge valve for actuation thereof; and a closed chamber (37) on the upper surface of said metal block and housing all the solenoids to form a cooling manifold therefor.

4,532,957

GUIDES FOR GATE VALVES

Billy J. Battle, Birmingham, and Lawrence S. Jones, Hueytown, both of Ala., assignors to United States Pipe and Foundry Company, Birmingham, Ala.

Filed Jun. 24, 1983, Ser. No. 507,627
Int. Cl.³ F16K *27/00*
U.S. Cl. 137—375 **5 Claims**



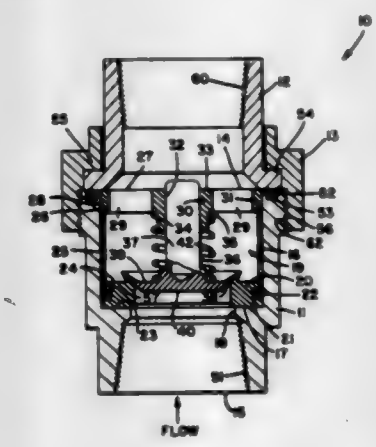
1. In a resilient seated gate valve comprising a valve body coating over its entire interior surface with a corrosion resistant coating, a gate, means for raising and lowering said gate, means for guiding said gate during raising and lowering, said means for guiding said gate comprising a groove in each side of said gate and a mating rail on the inside of said valve body, the improvement comprising a coating of a rubber material covering all of the outside surfaces of said gate except for each of said grooves in each side of said gate and a thermoplastic or thermosetting plastic insert held inside each of said grooves in said gate and forming a groove for engaging said mating rail inside said valve body whereby said corrosion resistant coating on said mating rail is protected from abrasion.

4,532,958

CHECK VALVE HAVING REPLACEABLE VALVE ASSEMBLY

Pellegrino E. Napolitano, Middletown, N.J., assignor to Hudson Engineering Company, Bayonne, N.J.

Filed Sep. 30, 1982, Ser. No. 428,764
Int. Cl.³ F16K *25/00*
U.S. Cl. 137—454.2 **1 Claim**



1. A replaceable check valve assembly comprising:

(a) an annular base member including a laterally outwardly opening peripheral groove to receive an outer peripheral seal in the form of a flexible O-ring positioned inwardly of the ends of said base member, said base member having a conical valve seat spaced inwardly of said peripheral seal and including a tapered extension which diminishes in thickness in an outward direction and is obliquely outwardly inclined relative to the axis of said assembly to define an opening;

(b) an annular sleeve having a first end removably secured to said base member and a second end;

(c) a spider member having an outer ring removably secured to the second end of said sleeve, said spider member including a plurality of radially inwardly directed ribs termination in a hub, said hub including a central bore;

(d) a valve member including a stem slidably received within said bore, said valve member having a conical valve face at one end including an outwardly extending tapered extension adapted to engage in surface contact with said tapered extension of said valve seat and close the opening defined thereby, said valve face including an inclined portion having a greater inclination relative to the axis of the assembly than the inclination of the valve face to define an annular space between said valve face and said valve seat and facilitate separation of said valve face and said valve seat; and

(e) biasing means to bias said valve member against said valve seat, said biasing means including a compression coil spring.

4,532,959

VALVING ELEMENT FOR A PLATE-TYPE VALVE

Kevin Hartshorn, Plainsboro, and Wallace A. McGahan, Lawrenceville, both of N.J., assignors to Ingersoll-Rand Company, Woodcliff Lake, N.J.

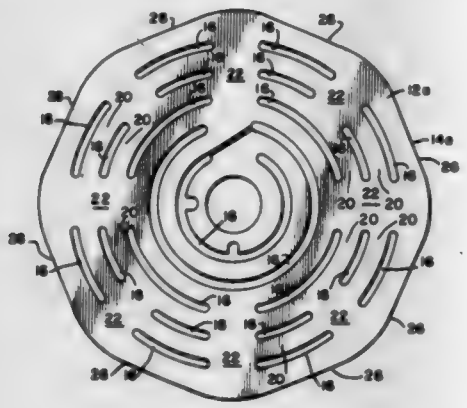
Filed Jan. 16, 1984, Ser. No. 570,949
Int. Cl.³ F16K *15/08*
U.S. Cl. 137—516.13 **21 Claims**

1. A valving element for a plate type valve, comprising:

a plate;

said plate having (a) apertures formed therein for the conduct of fluid therethrough, (b) a given center, and (c) an outer periphery defining the outermost edge of said plate; wherein

said apertures subtend given arcs drawn from said given center; and



given ones of said apertures each having a first portion intermediate the length thereof which is more proximate to said edge than are other portions thereof which subsist at either sides of said first portion.

4,532,960

CONTROL VALVE DEVICE

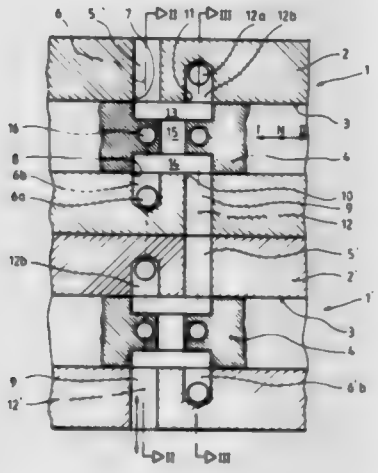
Rudolf Brunner, Baldham, Fed. Rep. of Germany, assignor to Heilmeler & Weinlein Fabrik Fuer Oel-Hadraulik GmbH & Co., KG, Fed. Rep. of Germany

Filed Mar. 9, 1984, Ser. No. 588,076

Claims priority, application Fed. Rep. of Germany, Oct. 3, 1983, 3308576

Int. Cl.³ F15B *13/08*

U.S. Cl. 137—596.13 **15 Claims**



1. A control valve device including at least one control valve, in particular for use with high-pressure hydraulic systems having high flow rates, comprising a housing within which a piston slide means can be displaced in at least one housing bore from a neutral position with zero-pressure flow to at least one control position for the purpose of controlling the pressure medium flow, the zero-pressure flow being blocked by said piston slide means in said control position, and further comprising at least one pressure passage leading to and at least one discharge passage leading away from the housing bore, said pressure passage and said discharge passage being adapted to be interconnected through flow conduits provided in the piston slide means, characterized in that the discharge passage (**9**, **12**, **35**) ends in the housing bore (**3**, **32**) at a location displaced relative to the pressure passage (**5**, **6**, **34**) in the longitudinal direction of the bore, that the pressure passage and the discharge passage orifices (**7**, **10**) in the housing bore are each diametrically opposed by a recess (**6*b***, **12*b***; **36**, **37**) of the same size which is open towards the housing bore (**3**), that each recess (**6*b***, **12*b***; **36**, **37**) has applied thereto the pressure existing within the respective opposite passage (**5**, **6**; **34**; **9**, **12**; **35**) via at least one pressure or discharge connection passage (**6*a***, **6**; **12*a***, **12**; **38**, **39**, **40**) and that the piston slide means has provided therein in front of each passage orifice (**7**, **10**) a longitudinally extending pocket (**13**, **14**; **41**, **42**) bridging in the neutral position the longitudinal displacement between the respective passage orifice (**7**, **10**) and the respective neighbouring recess (**6*b***, **12*b***; **36**, **37**).

4,532,961

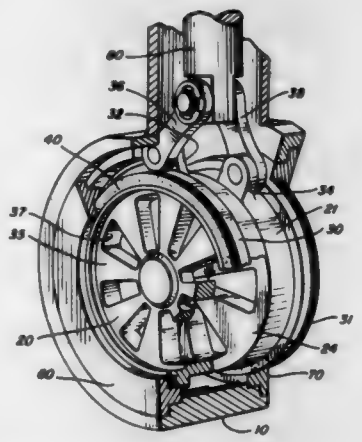
BIDIRECTIONAL DISC THROTTLING VALVE

Herbert H. Walton, and Steven D. Kehoe, both of Marshalltown, Iowa, assignors to Fisher Controls International, Inc., Marshalltown, Iowa

Filed Nov. 22, 1982, Ser. No. 443,704

Int. Cl.³ F16K *11/14, 31/52*

U.S. Cl. 137—625.31 **7 Claims**



1. A throttling valve comprising:

a body defining a cavity;

a pair of throttling discs, each defining at least one port, positioned for relative movement in a flowpath for varying the relationship between said port to control flow in said flowpath, said discs each having a smooth surface in wiping contact with each other for assisting in removal of contaminants thereon and each including an ear on the periphery thereof;

operating means, including an operating stem and a pair of toggle links engaging said ears and said operating stem in a toggle arrangement outside said flowpath, for effecting movement of said throttling discs, said discs being coupled to each other solely through said operating means;

end bearing means mounted in said cavity and defining a distance between bearing surfaces thereon; and

said pair of throttling discs having a combined thickness less than the distance between said end bearing surfaces whereby said throttling discs are permitted to move between said end bearing surfaces in the direction of said flowpath.

4,532,962

METERING APPARATUS FOR DISPENSING PRECISE VOLUMES OF LIQUID

Daniel N. Campau, 656 Duxbury Crt., SE., Grand Rapids, Mich. 49506

Filed Apr. 20, 1984, Ser. No. 602,383

Int. Cl.³ F15C *1/118*

U.S. Cl. 137—842 **25 Claims**

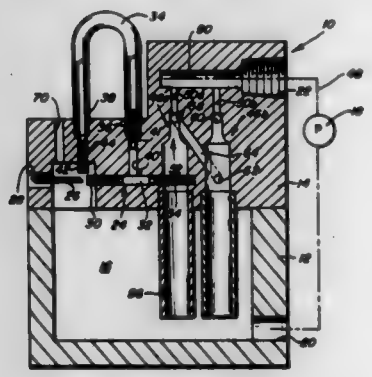
1. An apparatus for dispensing a precise volume of liquid, comprising:

emitter means for dispensing a stream of liquid to an appropriate collector, the emitter means including outlet restriction means for generating a positive pressure in the emitter means behind the outlet restriction means;

supply means for feeding liquid under pressure to said emitter means; and

time delay conduit means in communication with said emitter means behind said outlet restriction means for receiving liquid therefrom under the influence of said positive

pressure, the time delay conduit means being positioned for directing liquid received thereby against the stream of liquid dispensed by the emitter means and diverting the



stream of liquid away from said collector when the time delay conduit means becomes filled with liquid under pressure from the emitter means.

4,532,963

WEAVING MECHANISM WITH IMPROVED SELECTION OF THE HOOKS

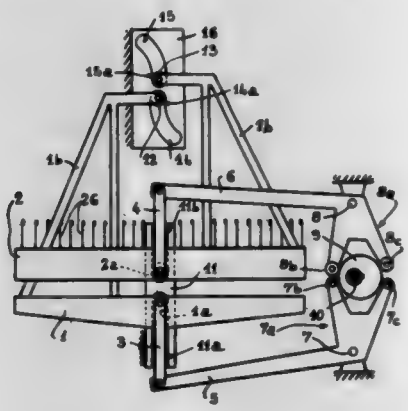
Patrick Bastion, Lyon; Francois Lhuillier, and Ulrich Mutschler, both of Caluire, all of France, assignors to Societe Staubli-Verdol, Lyon, France

Filed Nov. 2, 1983, Ser. No. 548,118

Claims priority, application France, Nov. 4, 1982, 82 18725

Int. Cl.³ D03C *3/00, 3/20, 13/00*

U.S. Cl. 139—59 **11 Claims**



1. An improved mechanism for selectively raising the heddle hooks of a weaving loom in response to control signals delivered by a pattern reader, the improvements comprising:

(a) a lower plate supporting the heddle hooks with their upper ends extending freely through the plate, the upper end of each hook having a beak thereon;

(b) an upper plate disposed above the lower plate;

(c) means for vertically reciprocating the plates oppositely to one-another in synchronism with the loom; and

(d) selection means mounted on and moving with the upper plate above the hooks and comprising, a flexible blade for each hook having a catch at its lower end disposed to engage and catch the beak of the associated hook to raise it when the plates reciprocate apart, a ramp associated with each hook and disposed to offset the lower end of the blade to a defelected position wherein the catch is spaced away from the beak when the plates are reciprocated closest together, the blade leaving the ramp as the plates begin to separate, and electrical means operative in response to said control signals for selectively retaining each blade in deflected position offset from the beak of the associated hook or for releasing the blade to engage the beak as the plates separate.

4,532,964

METHOD OF OPERATING AN AIR NOZZLE WEAVING MACHINE

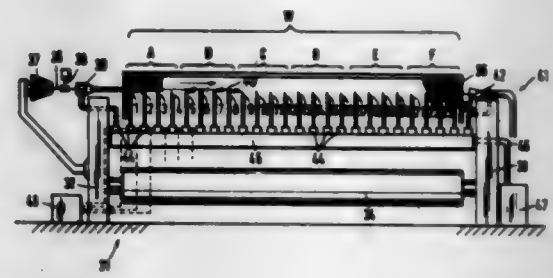
Hansueli Lerch, Elgg, Switzerland, assignor to Gebrüder Sulzer Aktiengesellschaft, Winterthur, Switzerland

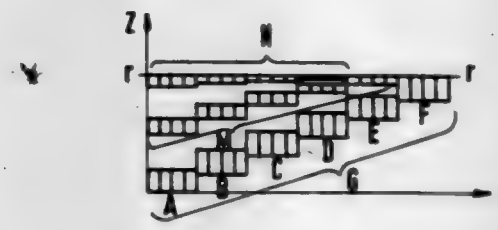
Filed Nov. 21, 1983, Ser. No. 554,077

Claims priority, application European Pat. Off., Dec. 24, 1982, 82810564.3

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **10 Claims**





1. A method of operating an air nozzle weaving machine containing air-operated weft insertion means and comprising auxiliary nozzles distributed across a predetermined weaving width, comprising the steps of:

cutting-in said auxiliary air nozzles to generate a pressure wave travelling through a weaving shed of the weaving machine together with a front end of a weft thread which is to be inserted through said weaving shed;

cutting-off those ones of said auxiliary nozzles which have been passed by said front end of said weft thread prior to completion of the weft insertion;

again cutting-in at least one of said auxiliary nozzles which have been passed by said front end of said weft thread prior to completion of the weft insertion in order to support said weft thread; and

again cutting-off said at least one renewed cut-in auxiliary nozzle prior to completion of said weft insertion.

4,532,965

WEFT YARN PICKING CHANNEL

Paul Lincke, Zell, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 31, 1983, Ser. No. 528,119

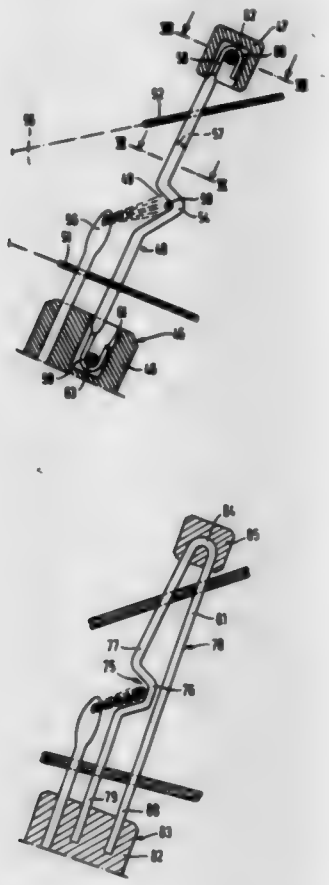
Claims priority, application Switzerland, Sep. 14, 1982, 5437/82

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **19 Claims**

1. A weft yarn picking channel for a pneumatic weaving machine, said channel including a sley and a plurality of discrete guide elements disposed on said sley in longitudinally disposed parallel relation, each said guide element being a one-piece wire structure of uniform cross-section having a

hook-shaped part mounted in and extending from said sley to form a guide for a weft yarn whereby said guide elements



define a picking path for picking of a weft yarn independently of a reed.

4,532,966

DEVICE FOR PRODUCING AND REMOVING SHAPED WIRE MATERIAL PIECES

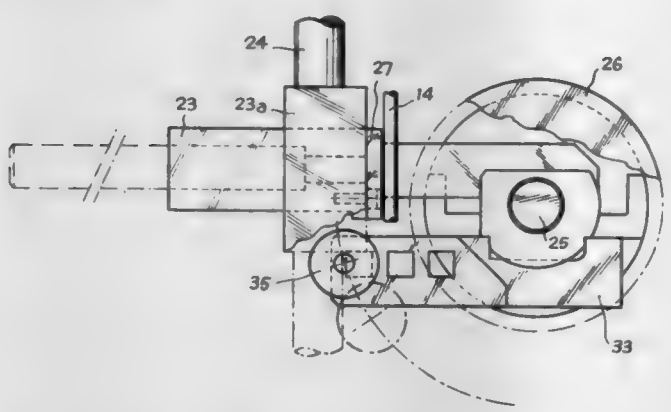
Bertrand L. de Bentzmann, Bragueze, 47800 Roumagne, France

Filed Apr. 7, 1983, Ser. No. 482,830

Claims priority, application France, Apr. 21, 1982, 82 06864

Int. Cl.³ B21F *1/00*

U.S. Cl. 140—105 **8 Claims**



7. Device for receiving, cutting, shaping and discharging elongated wire or bar material workpieces, said device comprising a generally rectangular frame, a beam mounted along one longitudinal edge of said frame and carrying thereon measuring, cutting and shaping means for receiving said material workpieces, said frame further including a plurality of supporting legs for supporting said frame above the ground, said frame and said legs arranged to define a space beneath said frame configured to accommodate receptacle means movable between receiving and discharing positions, to receive and selectively discharge shaped material workpieces from said device, and a receptacle means comprising a movable tray situated within the space beneath said frame.

4,532,967

METERING PUMP, AS WELL AS PROCESS AND APPARATUS FOR FILLING A CONTAINER EQUIPPED WITH A METERING PUMP

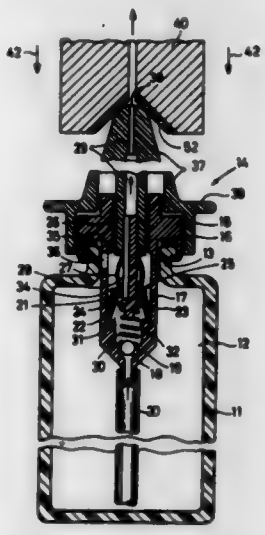
Lothar Graf, Rielasingen, Fed. Rep. of Germany, assignor to Firma Ing. Erich Pfeiffer GmbH & Co. KG, Fed. Rep. of Germany

Filed Jul. 6, 1983, Ser. No. 511,106

Claims priority, application Fed. Rep. of Germany, Jul. 9, 1982, 3225692

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—3 **17 Claims**



1. A process for filling a container provided with a discharge pump having a pump chamber and an outlet valve in an outlet passage thereof, and a filling medium to be disposed from the container, comprising the steps of:

filling the container with the filling medium;

fitting the pump tightly to an opening in the container;

opening the outlet valve of the pump;

exerting a vacuum on the outlet passage to draw the filling medium into the pump chamber; and,

closing the outlet valve to thereby maintain the filling medium in the pump chamber.

4,532,968

ROTARY FILLING APPARATUS AND METHOD

George E. Leonard, Bettendorf, Iowa, assignor to The Kartridg Pak Co., Davenport, Iowa

Filed Jun. 23, 1983, Ser. No. 507,087

Int. Cl.³ B65B *3/04*

U.S. Cl. 141—5 **22 Claims**

19. A method of the type which uses gravity for filling a liquid into a plurality of containers while they rotate about a rotary filling head, the method comprising:

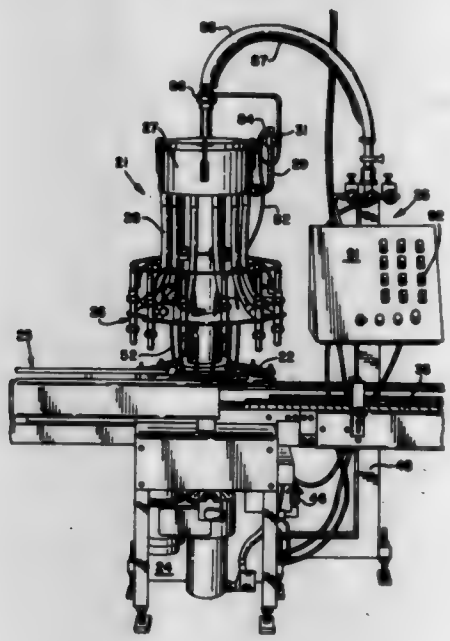
positioning a container to be filled onto a turntable;

rotating the turntable to bring the container into alignment with a dispensing nozzle;

flowing a predetermined amount of liquid from a reservoir and through the dispensing nozzle while the dispensing nozzle and the reservoir are rotating about a generally vertical axis;

sensing the level of liquid in the rotating reservoir, said sensing step taking place at a sensing location that is spaced from the generally vertical axis by a distance that is substantially the same as the distance between the generally vertical axis and the dispensing nozzle such that centrifugal force at the sensing location is substantially the same as that at said dispensing nozzle during rotation thereof;

adjusting the level of liquid within the rotating reservoir in response to the sensing step, whereby a substantially con-



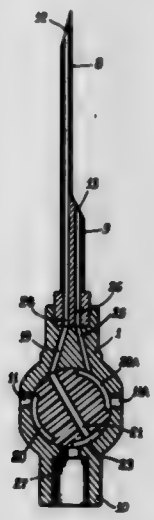
stant hydraulic head is maintained within the rotating reservoir.

4,532,969

FLUID WITHDRAWAL AND INSTILLATION DEVICE

Hau C. Kwaan, 347 Jeffrey La., Northfield, Ill. 60093

Filed Sep. 21, 1983, Ser. No. 534,342
Int. Cl.[3] B65B *3/02*
U.S. Cl. 141—27 5 Claims



1. A fluid withdrawal and instillation device for mounting a collecting means for the transfer of fluid from a first container to a second container, said device comprising:

an outer frame member having opposing side walls, an upper portion and a lower portion and containing as its lower portion, hollow attachment means for communication with a connecting portion of a fluid collecting means, a lower fluid passageway in alignment with and above said hollow attachment means, an air passage positioned in and through each opposing side wall of said outer frame member and first and second generally verticle passages positioned at and through the upper portion of said outer frame member;

a first hollow core needle vertically attached to the upper portion of said outer frame member such that the hollow core needle is in alignment with one passage in the upper portion of said outer frame member;

a second hollow core needle, in parallel alignment with said first hollow core needle and attached to the upper portion of said outer frame member such that the second hollow core needle is in alignement with a second passage in the upper portion of said outer frame member, said second hollow core needle being shorter in length than said first hollow core needles;

an inner, movable rotary core member, rotatably secured and in sealed communication with said outer frame member, said rotary core member having therein, a fluid passageway extending vertically therethrough and situated such that said fluid passageway is in alignment with the lower fluid passageway of said outer frame member, whether said rotary core member is in a switched position to withdraw or instill fluid and further situated such that said fluid passageway is in alignment with the second generally verticle passage in said outer frame member to which is attached the second hollow core needle when it is desired to withdraw fluid and which fluid passageway in said rotary core member is in moveably alternate alignment with the first generally verticle passage in said outer frame member to which is attached the first hollow core needle when said rotary core member is positioned so as to instill fluid, and which rotary core member also contains a first air passageway positioned such that when said rotary core member is positioned to withdraw fluid, air entering through a first air passage in said outer frame member enters said first air passageway and passes through the first generally verticle passage in the upper portion of said outer frame member and through the first hollow core needle attached thereto, and which rotary core member also contains a second air passageway positioned such that when said rotary core member is positioned to install fluid, displaced air passes through said second hollow core needle, through said second generally verticle passage in the upper portion of said outer frame member through said second rotary core air passageway and exits through a second air passage in said outer frame member;

positioning means whereby said rotary core member is restrainably aligned in the desired position, to withdraw and instill fluid; and

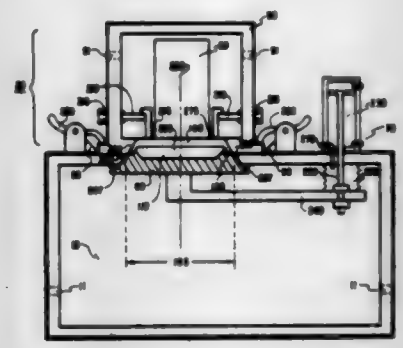
means on said rotary core member member for the manual rotation thereof to the desired position.

4,532,970

PARTICLE-FREE DOCKABLE INTERFACE FOR INTEGRATED CIRCUIT PROCESSING

Barclay J. Tullis, Palo Alto; Mihir Parikh, San Jose; David L. Thrasher, Menlo Park, and Mark E. Johnston, Saratoga, all of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Sep. 28, 1983, Ser. No. 536,600
Int. Cl.[3] B65B *1/04*
U.S. Cl. 141—98 1 Claim



1. An interface between first and second containers comprising:

alignment means for orienting the first container in a fixed position relative to the second container;

a first door for independently sealing the first container;

a second door for independently sealing the second container;

said first and second doors each having a closely contacting

mating outer surface of substantially equal exterior dimensions, so that substantially all particulate contamination which has accumulated on the exterior surface of the doors when the containers are separated will be trapped between said doors when the containers are positioned together with said alignment means;

a gutter around the lower perimeter of the lower of the first and second doors; and

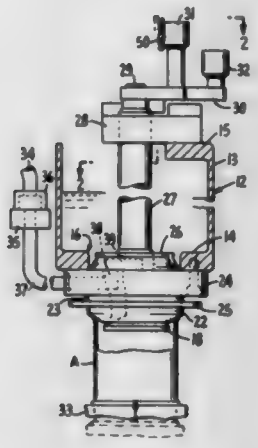
elevator means coupled to said doors for transporting said doors while coupled together at their mating outer surfaces into said containers as a single unit.

4,532,971

HIGH SPEED VACUUM SYRUPER

Konrad E. Meissner, Lafayette, Calif., assignor to Atlas Pacific Engineering Company, Emeryville, Calif.

Filed May 6, 1983, Ser. No. 492,407
Int. Cl.³ B65B *57/04*
U.S. Cl. 141—142 **4 Claims**



1. In a high speed vacuum syruper for containers having a bowl carrying filling fluid, a plurality of filling valves mounted on the bottom of said bowl, each filling valve having a valve element that rotates about a vertical axis, means for rotating said bowl and filling valves about a common vertical axis, means for moving a container into and out of engagement with each filling valve, and a control means for manipulating each filling valve in a repeating sequence through closed, vacuum, fill and vent positions, the improvement wherein said control means comprises:

a pair of horizontally displaced upper and lower cam followers connected to each valve element, the upper cam follower of each pair being rotatable in a common horizontal first path, the lower cam follower of each pair being rotatable in a common horizontal second path displaced from said first path; and

a control camming means comprising a pair of horizontally displaced upper and lower cam tracks, said upper cam track being engagable by said upper cam followers and said lower cam track being engagable with said lower cam followers as said bowl rotates about the common vertical axis.

4,532,972

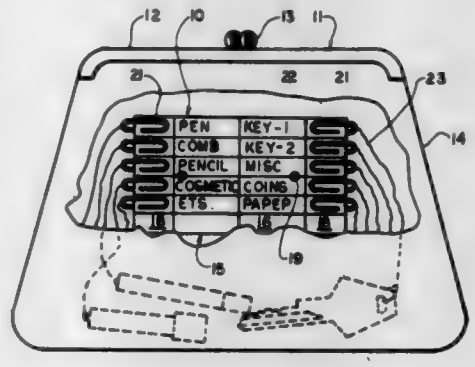
PURSE ORGANIZER

George V. Sinsko, Rte. 2, Box 158A, Russell Springs, Ky. 42642

Filed Sep. 20, 1984, Ser. No. 652,227
Int. Cl.³ A45C *1/02, 3/06, 13/02, 13/06*
U.S. Cl. 150—100 **4 Claims**

1. A device for rapidly locating articles contained within a purse and removing said articles from the purse comprising:

(a) an indicator panel of substantially rectangular configuration having a flat center portion provided with mounting holes, and flat vertically disposed coplanar end strips laterally displaced from said center portion as continuous integral extensions thereof,



(b) a number of releasable fasteners adapted to engage said end strips, and

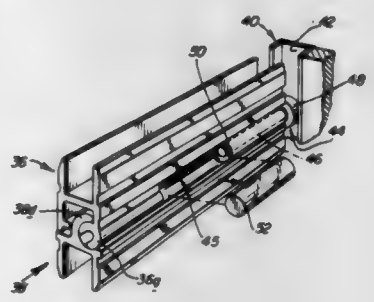
(c) a flexible tether line attached to each fastener.

4,532,973

OVERHEAD DOOR CONSTRUCTION

Ralph DeFalco, 10320 S. Kenneth, Oak Lawn, Ill. 60453

Filed Jun. 15, 1983, Ser. No. 504,445
Int. Cl.³ E06B *3/12*
U.S. Cl. 160—235 **16 Claims**



1. An upwardly acting overhead door which is adapted to be rolled along an L-shaped track between a substantially vertical closed position and a substantially horizontal storage position, said door having an outer face and an inner face, and said door including:

a plurality of adjacent laterally-extending door panel sections in edge-to-edge arrangement; and

hinge means sets for interconnecting adjacent panel sections along adjacent lateral edges thereof; wherein the improvement comprises:

each of said hinge means sets comprising a male member and a female member positioned between the side edges of said panels and between the inner and outer faces;

one of said male and female members being secured to the lower edge of the upper of the adjacent door sections and the other of said male and female members being secured to the upper edge of the lower of said adjacent door sections;

said male and female members defining separable hinge knuckle means which interconnect so as to hingedly interconnect the door sections along the lateral edges of said door sections;

said hinge means defining a door roller assembly receiving section at each lateral edge; said section being formed by the outboard end of the female member and an inwardly spaced terminal end of the male member;

wherein said inner door face is substantially smooth so as to minimize snagging of said door; and

wherein there is further provided a plurality of roller assembly means, each adapted for mounting in said door roller receiving section, each of said roller assembly means including a shaft having a roller mounted thereon, said shaft being of a length less than the distance between the door's lateral edge and the inwardly spaced terminal end of said male member, a bearing sleeve constructed to fit

within and be retained within said female member and being of a length substantially equal to that of the shaft and removable retainer means constructed to fit between said male member's terminal end and sleeve bearing and shaft to maintain the shaft and bearing sleeve in place during use.

4,532,974

COMPONENT CASTING

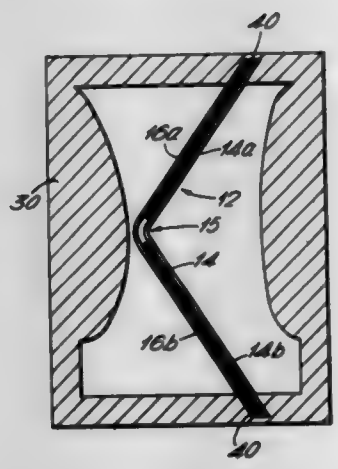
David Mills; Anthony T. Lindahl, and Alan D. Kington, all of Bristol, England, assignors to Rolls-Royce Limited, London, England

Filed Jun. 30, 1982, Ser. No. 393,549

Claims priority, application United Kingdom, Jul. 3, 1981, 8120598

Int. Cl.³ B22D *29/00*

U.S. Cl. 164—132 **11 Claims**



1. A method of casting a nickel- or cobalt-based superalloy component comprising the steps of:

(a) making a mold having a casting cavity in the shape of the component to be cast;

(b) locating a core within said casting cavity, said core comprising:

(i) a hollow member, said hollow member comprising two straight leachable ceramic refractory material portions interconnected by a bend; and,

(ii) a ceramic support member, said ceramic support member comprising material of greater refractoriness than said material of said hollow member, wherein said support member comprises two straight portions extending into said hollow member from opposite ends thereof and terminating adjacent said bend, and wherein said hollow member has a larger inside diameter than the diameter of said support member at the operating temperature of the core;

(c) filling the mold with molten superalloy component material and allowing the superalloy component material to solidify; and,

(d) removing the core from the component by withdrawing said support member portions from opposite ends of said hollow member and subsequently leaching said hollow member from the component.

8. A mold for casting nickel- or cobalt-based superalloy, said mold comprising a core for defining a passage in a nickel- or cobalt-based superalloy casting component, said core comprising:

(a) a hollow member, said hollow member comprising leachable ceramic refractory material, wherein said hollow member comprises two straight portions interconnected by a bend; and,

(b) a ceramic support member, said ceramic support member comprising material of greater refractoriness than said material of said hollow member, wherein said ceramic support member comprises two straight portions extending into opposite ends of said hollow member and terminating adjacent said bend; and wherein said hollow member has a larger inside diameter than the diameter of said support member at the operating temperature of the core.

4,532,975

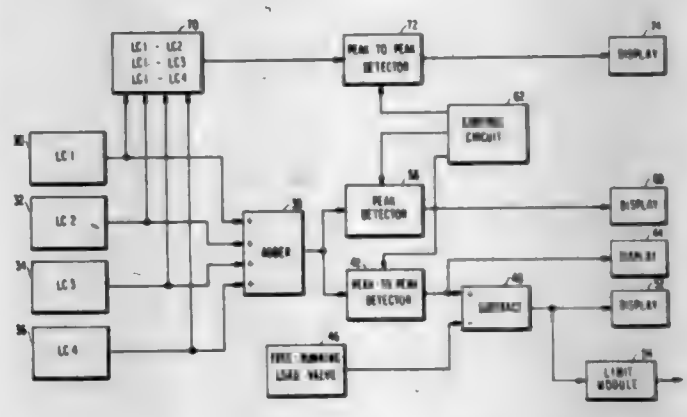
CONTINUOUS CASTING MOLD OSCILLATOR LOAD INDICATION SYSTEM

Kenneth D. Ives, Valparaiso, Ind., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Apr. 28, 1983, Ser. No. 489,619

Int. Cl.³ B22D *11/16*

U.S. Cl. 164—150 **20 Claims**



16. A continuous casting mold oscillator load indicating system for use in a continuous casting apparatus of the type including a mold for containing mold contents, oscillating means for imparting an oscillating motion to said mold and means for providing at least one signal having a component representing friction betwen said mold and said mold contents, said signal varying in magnitude over the course of a single oscillation cycle of said mold, said system further comprising means for monitoring the peak-to-peak value of said signal.

4,532,976

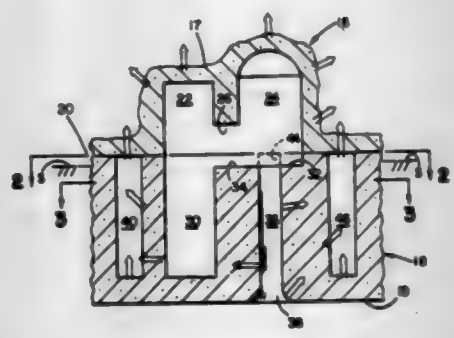
GAS PERMEABLE METAL CASTING MOLD HAVING GAS COLLECTION VOIDS

George D. Chandley, Amherst, N.H., assignor to Hitchiner Manufacturing Co., Inc., Milford, N.H.

Filed Jun. 13, 1984, Ser. No. 620,314

Int. Cl.³ B22C *9/08*

U.S. Cl. 164—363 **10 Claims**



1. In a unitary, rigid, self-supporting, gas permeable, low temperature bonded, sand grain mold having peripheral side surfaces extending between vertically spaced upper and lower surfaces with mold cavity means spaced therebetween connected to gate passage means having its lower open end exposed at said lower surface,

said mold cavity means being adapted to be filled with molten metal through said gate passage means by applying reduced pressure to the top surface of said mold while its lower surface with said gate passage means lower open end is submerged in molten metal,

that improvement comprising

enclosed gas collection void means adjacent to and spaced

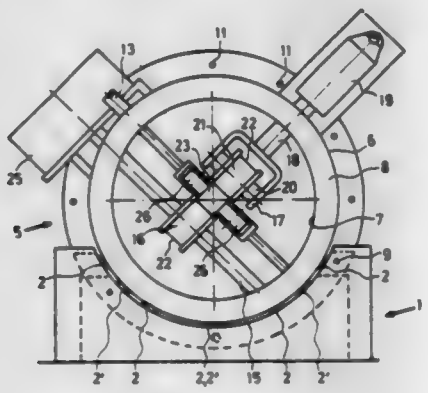
from said cavity means, gate passage means and upper and lower mold surfaces for collecting gases from said cavity means and gate passage means during filling of said cavity means for controlled removal of said gases from said void means through said upper mold surface by said application of reduced pressure thereto.

4,532,977

CONTINUOUS CASTING INSTALLATION

Hermann Schubert, Linz, Austria; Max Ahrens, and Manfred Haissig, both of Irvine, Calif., assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Oct. 15, 1982, Ser. No. 434,620
Claims priority, application Austria, Oct. 16, 1981, 4453/81
Int. Cl.³ B22D *11/00*
U.S. Cl. 164—442 **7 Claims**



1. In a horizontal continuous-casting installation comprising a take-off device for a casting having a longitudinal axis, said take-off device being supported on a frame and including

at least one drive roll having an axis and being secured to a drive shaft, said at least one drive roll being adapted to be driven by a motor means, and

at least one counter-pressure roll having an axis and an associated press-down device, said counter-pressure roll being adapted to be urged toward said drive roll by said press-down device,

preferably said axis of said at least one drive roll and said axis of said at least one counter-pressure roll being parallel, the improvement wherein,

said take-off device further comprises a mounting for supporting said drive shaft, said at least one drive roll, said at least one counter-pressure roll and said press-down device,

said mounting being supported relative to said frame for rotation about said longitudinal axis of said casting, and wherein there are further provided

cooperating means on said mounting and said frame for enabling selective locking of said mounting in any one of a plurality of predetermined positions relative to said frame.

4,532,978

ROLL FOR TRANSFERRING HOT METAL PIECES

Hironori Kuroki; Tsuguo Honda, and Toshihisa Mitsui, all of Fukuoka, Japan, assignors to Kuroki Kogyosho Co., Ltd., Kitakyushu, Japan

Continuation of Ser. No. 382,446, May 26, 1982, abandoned.
This application Apr. 16, 1984, Ser. No. 600,211
Int. Cl.³ B22D *11/128*
U.S. Cl. 164—448 **10 Claims**

1. A roll for transfering hot metal pieces of which the surface layer part comprises a ferritic steel consisting essentially of less than 0.1 percent by weight of carbon, 10.0–14.0 percent by



weight of chromium, 0.4–1.0 percent by weight of columbium and the balance iron.

4,532,979

IRON-BORON SOLID SOLUTION ALLOYS HAVING HIGH SATURATION MAGNETIZATION AND LOW MAGNETOSTRICTION

Ryusuke Hasegawa, Morristown, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 423,915, Sep. 27, 1982, Pat. No. 4,483,724.
This application Sep. 10, 1984, Ser. No. 648,563
Int. Cl.³ B22D *11/06*
U.S. Cl. 164—463 ***2* Claims**

1. A process for fabricating substantially continuous filaments of a ferromagentic material, having a high saturation magnetization, low or near-zero magnetostriction and having a body centered cubic structure, consisting essentially of 1 to 3 atom percent boron, balance essentially iron plus incidental impurities, which comprises

(a) forming a melt of the material;

(b) depositing the melt on a rapidly rotating quench surface; and

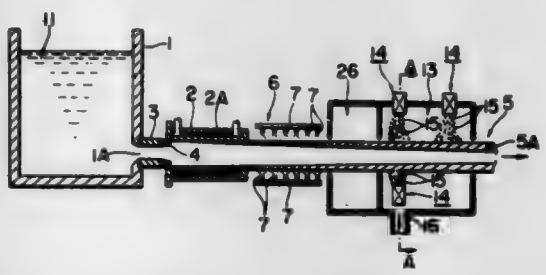
(c) quenching the melt at a rate of about 10^4 to $10^{6°}$ C./sec to form the continuous filament.

4,532,980

METHOD AND APPARATUS FOR REMOVING FINE COLD SHUT CRACKS ON HORIZONTALLY AND CONTINUOUSLY CAST STEEL STRAND USING EJECTION OF A PLURALITY OF METAL SHOTS

Yoshiharu Miyawaki, 4-1, Kitayoshizu-cho, Fukuyama City, Hiroshima Pref.; Takeshi Hirose, 1-2-19, Fujimi, Chiyoda-ku, Tokyo; Yoneichi Hamada, 1665-4, Zao-Cho, Fukuyama City, Hiroshima Pref.; Seishi Mizuoka, 161-38, Tsunoshita, Daimon-cho, Fukuyama City, Hiroshima Pref., and Masahiro Tsuru, 4-34-1, Kishiya, Tsurumi-ku, Yokohama City, Kanagawa Pref., all of Japan

Filed Oct. 11, 1983, Ser. No. 540,835
Claims priority, application Japan, Oct. 12, 1982, 57-178884; Jul. 22, 1983, 58-134189
Int. Cl.³ B22D *11/10, 11/12*
U.S. Cl. 164—475 **12 Claims**



1. A method for removing fine cold shut cracks on a horizontally and continuously cast steel strand using ejection of a plurality of metal shots, which comprises:

horizontally and intermittently withdrawing a cast steel

strand from a horizontal mould fitted to the lower portion of the side wall of a tundish containing molten steel by a plurality of cycles each comprising a pull and a push;

spraying cooling water, in a cooling zone provided following said horizontal mold on the same horizontal level as that of said horizontal mold, onto the surface of a solidified shell of said cast steel strand passing through said cooling zone, to cool said cast steel strand;

continuously ejecting a plurality of metal shots, in a shooting zone provided following said cooling zone on the same horizontal level as that of said cooling zone, onto the surface of said solidified shell of said cast steel strand passing through said shooting zone, to weld fine cold shut cracks produced on the surface portion of said solidified shell of said cast steel strand by said plurality of cycles each comprising a pull and a push under the pressure applied by means of said plurality of metal shots thus ejected, to remove said fine cold shut cracks;

discharging, after said ejection onto the surface of said solidified shell of said cast steel strand, said plurality of metal shots from said shooting zone; and,

directing said plurality of metal shots discharged from said shooting zone into said shooting zone for reuse in recycle;

characterized by:

providing a heat-restoring zone, substantially on the same horizontal level as that of said cooling zone and said shooting zone, between said cooling zone and said shooting zone, where the temperature of the surface portion of said solidified shell of said cast steel strand passing through said heat-restoring zone is re-increased with the use of heat of molten steel in the interior of said cast steel strand, to soften the surface portion of said solidified shell of said cast steel strand, thereby facilitating said welding and said removal of said fine cold shut cracks in said shooting zone.

4,532,981

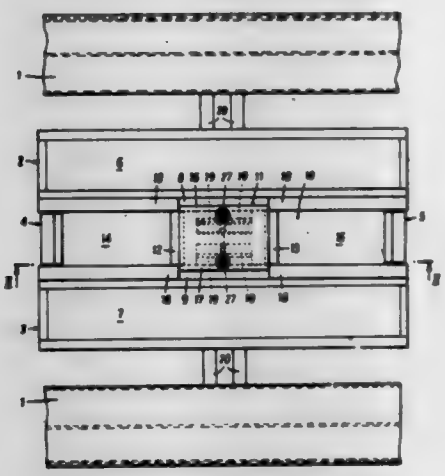
CONTINUOUS CASTING PLANT

Reinhard Hargassner, Linz, Austria; Thomas J. Nugent, Oakland, N.J.; Alois Scheinecker, Linz, and Kurt Engel, Leonding, both of Austria, assignors to Voest Alpine International Co., New York, N.Y.

Filed Jun. 3, 1983, Ser. No. 500,935

Int. Cl.³ B22D *11/08, 11/14*

U.S. Cl. 164—483 **7 Claims**



1. In a continuous casting machine to be used for selectively casting a single strand having slab cross section or at least two strands having smaller cross sections, and of the type including a plate mold having side walls and end walls including side wall copper plates and end wall copper plates, a support frame surrounding said mold and carrying said side and end walls, and further intermediate end walls having copper plates provided between said end walls for casting at least two strands, the improvement which comprises a hollow body carrying said intermediate end wall copper plates on both sides and inserted between said side wall copper plates, means for supplying a coolant flowing through said hollow body, supporting elements overlapping said side walls and supporting, on said side walls, said hollow body on its upper end, and coolant supply and discharge piping projecting from said support frame as far as into said hollow body and fixing said hollow body on its lower end, said coolant supply and discharge piping extending transversely to, and below, said side walls and being displaceable from an operating position projecting into said hollow body into a resting position releasing said hollow body.

4,532,982

HEAT EXCHANGING SYSTEM FOR A HEAT ENGINE

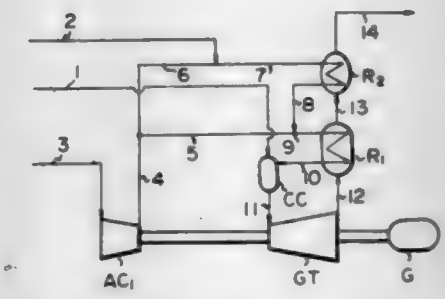
Hiromi Nakamura, Chiba, Japan, assignor to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Continuation of Ser. No. 271,935, Jun. 9, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 520,755

Claims priority, application Japan, Jun. 11, 1980, 55-78808

Int. Cl.³ F02C *3/20*; F02G *1/00*

U.S. Cl. 165—1 **5 Claims**



1. A heat exchange method wherein a part of a compressed gas from compressor means is fed to a first heat exchange means and a separate part of the compressed gas from the compressor means is fed to a second heat exchange means operating at a temperature that is lower than said first heat exchange means, the improvement comprising the step of adding water to said separate part of the compressed gas to form a mixture of compressed gas, steam and liquid water and feeding said mixture to said second heat exchange means where the water in said mixture will absorb a large quantity of heat from said second heat exchange means through evaporation thereof, the mixture then being mixed with the first part of the compressed gas so as to recover heat in the first heat exchange means.

4,532,983

WATER CURTAIN APPARATUS FOR HEAT ENERGY RECOVERY FROM ESCAPING STEAM

Norman F. Bradshaw, Surrey, England, and Gerald P. Schrubba, Huntington Woods, Mich., assignors to Haden Schweitzer Corporation, Madison Heights, Mich.

Division of Ser. No. 218,393, Dec. 19, 1980, Pat. No. 4,402,332. This application Jun. 6, 1983, Ser. No. 501,710

The portion of the term of this patent subsequent to Sep. 6, 2000, has been disclaimed.

Int. Cl.³ B08B *3/02*

U.S. Cl. 165—47 **1 Claim**

1. In a pretreatment facility for treating the surfaces of workpieces prior to a coating operation, said facility including a tunnel-like enclosure having an open entrance at one end for admitting workpieces and an open exit at an opposite end for exiting workpieces, said tunnel being of sufficient length to accommodate at least several said workpieces simultaneously therewithin, and means for spraying hot solution onto the workpieces within the enclosure, the improvement which comprises:

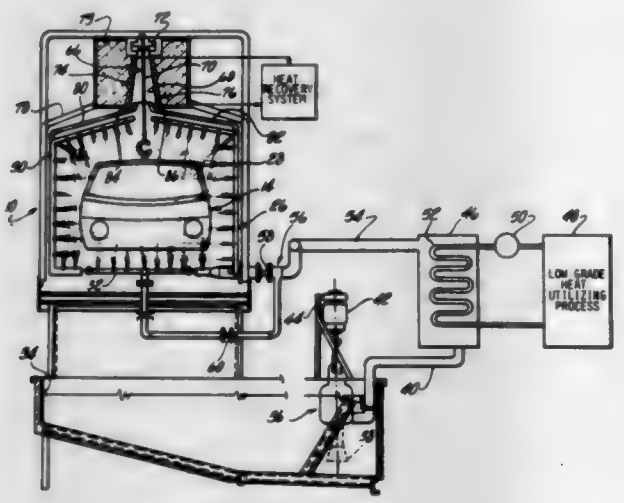
first conduit means framing a substantial portion of said entrance;

second conduit means framing a substantial portion of said exit;

means for supplying relatively cold water to said first and second conduit means;

nozzle means associated with each of said conduit means and directed across said entrance and exit for creating spray curtains within said entrance and exit, respectively;

means for catching condensate formed by the mingling of the spray curtains and steam within said enclosure; and



means for recovering heat from said condensate

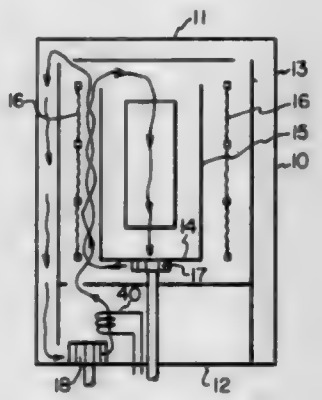
said recovering means comprising heat exchanger means having an input portion connected to receive and circulate said condensate, and an output portion connected to receive and circulate a second fluid, said input and output portions providing separate fluid paths but being operatively linked in heat transfer relation whereby heat from said condensate is effectively transferred to said second fluid for subsequent utilization.

4,532,984

RAPID COOL AUTOCLAVE FURNACE

Charles W. Smith, Jr., Fairview, Pa., assignor to Autoclave Engineers, Inc., Erie, Pa.

Filed Jun. 11, 1984, Ser. No. 618,930
Int. Cl.[3] F25B *29/00;* A21B *1/00;* F27B *5/04*
U.S. Cl. 165—61 **18 Claims**



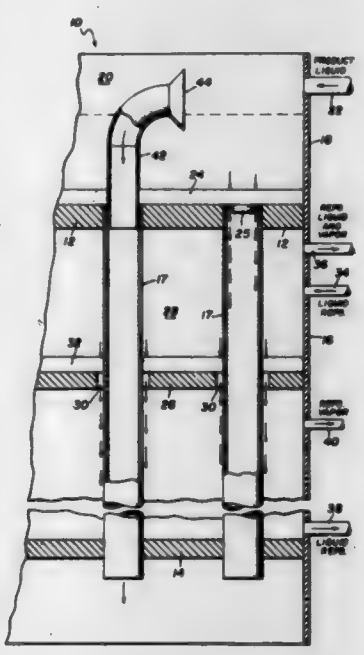
1. An apparatus for gas pressure bonding, hot isostatic pressing or the like in which a workpiece may be treated at elevated temperatures and pressures, said apparatus comprising a pressure vessel having an elongate cylindrical wall for enclosing a furnace; a furnace comprising an insulated bottom and an insulated hood with openings near the top and bottom thereof, said insulating hood resting upon the bottom for enclosing a workspace, means for heating the workspace, means for cooling the wall of the pressure vessel, means for establishing a first circulating flow of pressurized fluid down along the interior of the pressure vessel wall, means for establishing a second circulating flow of pressurized fluid down through the workspace, means for causing exchange of heat between the two circulating flows of pressurized fluid after the first flow has been cooled by flowing down along the interior wall of the pressure vessel and after the second flow has been heated by flowing down over the workpiece in the workspace, and means for positively establishing the flow rate of at least one circulating flow of pressurized fluid.

4,532,985

FALLING FILM HEAT EXCHANGER

Donald R. Cutler, Bolingbrook, Ill., assignor to Chicago Bridge & Iron Company, Oak Brook, Ill.

Filed Jan. 20, 1983, Ser. No. 459,474
Int. Cl.[3] F28D *3/00*
U.S. Cl. 165—118 **10 Claims**



1. A falling film heat exchanger comprising:

a plurality of spaced apart vertical tubes secured in, and with the tube ends penetrating, an upper and lower tube sheet;

a shell around the tube sheets and connected thereto;

means defining a feed box for containing a liquid pool above the upper tube sheet in communication with the upper ends of the tubes;

means to deliver a liquid feed stream into the feed box;

means to deliver a heat exchange liquid around the tubes inside of the shell between the upper and lower tube sheets and means to remove the heat exchange liquid therefrom;

means blocking all liquid flow downwardly through the upper ends of the tubes except for an interior circular area adjacent the inner surface of the tubes; and

means extending from the tube wall to the blocking means and spanning and extending around the entire interior circular area for distributing feed liquid along the inner surface of each tube as a thin falling film.

4,532,986

BITUMEN PRODUCTION AND SUBSTRATE STIMULATION WITH FLOW DIVERTER MEANS

Donald S. Mims, and Richard H. Widmyer, both of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed May 5, 1983, Ser. No. 491,832
Int. Cl.[3] E03B *3/11*
U.S. Cl. 166—50 **6 Claims**

1. Well completion for a substrate layer holding viscous hydrocarbons which are produced in response to thermal stimulation of the substrate through the injection of a hot stimulating fluid therein, which completion includes;

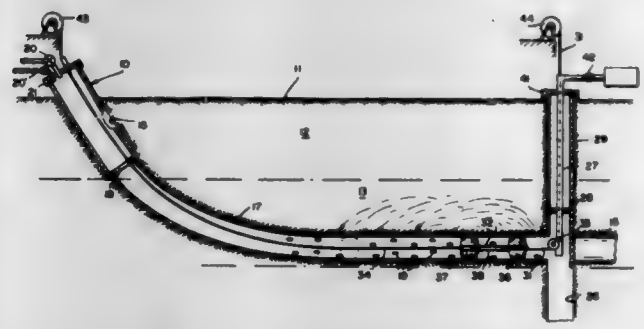
an elongated well liner at least a portion of which is disposed in a first well bore formed within the substrate, said at least portion of said elongated well liner being perforated and extending in a substantially horizontal alignment

through said substrate layer to receive a flow of hydrocarbon emulsion, and having a well head forming a liner production end,

at least one secondary well in the substrate and terminating with its lower end in a region adjacent to a portion of the first well bore,

a substrate stimulating system including; a conduit means in said at least one secondary well which is adapted at one end to communicate with a source of a hot pressurized stimulating fluid, said conduit means other end opening adjacent to the first well bore whereby to introduce a pressurized flow of the hot stimulating fluid into the liner remote end,

flow diverter means movably positioned within said well liner and being actuatable between expanded and con-



tracted modes to form a transverse barrier in the liner and to interrupt fluid flow therethrough,

flow diverter positioning means engaging said diverter means and being operable to controllably adjust the diverter means' location along the liner length thereby to alter the flow of stimulating fluid into the substrate, said flow diverter positioning means includes;

a discontinuous cable means extending through the respective first well bore and secondary well, and being connected to opposed ends of the diverter means whereby to reciprocally adjust the location of the diverter means within said liner and means to separately apply tension to the cable means in one of said wells while concurrently reducing tension to the cable means in the other well said discontinuous cable means being registered within said conduit means in said secondary well.

4,532,987

GEOTHERMAL EXPANSION SPOOL PISTON

Lehman T. Reed, 3505 Chester Ave., Bakersfield, Calif. 93301

Filed Feb. 21, 1984, Ser. No. 581,794
Int. Cl.³ E21B *33/03*
U.S. Cl. 166—75.1 **12 Claims**

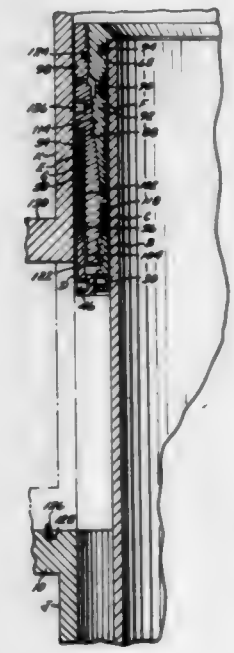
1. In a geothermal well that includes a well head through which a smooth external surfaced production casing that is anchored at the bottom extends upwardly for an end section of said production casing to be disposed above said well head, said section contracting and expanding longitudinally due to variations in temperature of said well, an expansion spool disposed above said well head, said expansion spool defining an upwardly extending smooth surfaced cylindrical passage of greater diameter than the external diameter of said end section and that extends completely around said end section when said expansion spool is mounted on said well head and secured thereto, the combination with said end section of a piston assembly removably mounted thereon that so supports packing that said packing may be manually adjusted to exert a sealing pressure of a desired magnitude on said cylindrical surface after a major portion of said piston assembly is in said passage and prior to said expansion spool being lowered onto said well head and secured thereto, said piston assembly including:

a. circumferentially extending mounting means that may be slid downwardly on said smooth external surfaced end section to a desired position thereon above said well head;

b. first means for removably securing said mounting means to said smooth external surfaced end section at said desired position;

c. first ring shaped resilient packing means that encircle said smooth external surfaced end section and are in abutting contact with said mounting means;

d. second means that are wrench operable and form a part of said piston assembly for longitudinally compressing said first packing means and radially deforming same into pressure sealing contact of a desired magnitude with said smooth external surfaced end section and said mounting means;



e. second ring shaped resilient packing means that encircle said smooth external surfaced end section and are disposed in abutting contact with said mounting means and having an external surface slightly smaller than that of said cylindrical passage; and

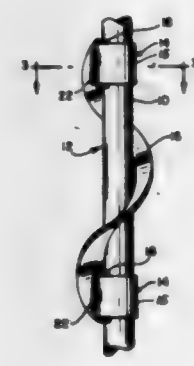
f. third means that form a part of said piston assembly that are wrench operable for longitudinally compressing said second packing means and radially deforming the same into pressure sealing contact of a desired magnitude with a portion of said expansion spool that defines said cylindrical passage and with said mounting means when at least a major portion of said piston assembly is within said cylindrical passage in said expansion spool.

4,532,988

SUCKER ROD SCRAPER METHOD AND DEVICE

Alvin E. Hickman, Pampa, Tex., assignor to Walter Beal, Odessa, Tex.

Filed Sep. 15, 1983, Ser. No. 533,061
Int. Cl.³ B23K *31/02*
U.S. Cl. 166—176 **15 Claims**



1. A method of making and attaching a spiral scraper assembly onto the exterior of a sucker rod comprising the steps of:

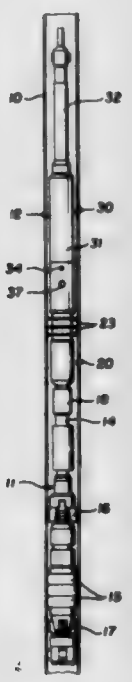
(1) forming a blade into a spiral which is wound about the surface of the rod;
(2) forming an inwardly directed tab at opposed marginal ends of the blade;
(3) placing a discontinuous U-band about the rod and at each marginal end of the spiral, and placing the confronting edges of the U-band closely adjacent to each of the tabs;
(4) placing a heat shield under the confronting marginal ends of the U-band; and,
(5) welding the opposed ends of the blade to the marginal ends of the U-bands.

4,532,989

VALVED PLUG FOR PACKER

James M. Barker, Carthage, Tex., assignor to Otis Engineering Corp., Dallas, Tex.

Continuation-in-part of Ser. No. 279,341, Jul. 1, 1981, abandoned. This application Mar. 1, 1982, Ser. No. 353,394
Int. Cl.[3] E21B *23/06*
U.S. Cl. 166—188 **28 Claims**



1. A valved plug for coupling to the mandrel of a well packer comprising

a fixed component, and a component movable axially relative to said fixed component between valve closed and valve open conditions;

said fixed component comprising an elongated tubular member closed at its upper end, having means at its lower end for coupling to a packer mandrel in sealing relation;

said movable component comprising an elongated outer member including a tubular housing closed at its upper end, enclosing the upper portion of said fixed component, and an elongated inner tubular member disposed within said fixed component;

said fixed component and said movable component having lateral port means disposed to be communicated with each other in the valve open condition of said movable component, and to be sealed from each other in the valve closed condition of said movable component; and

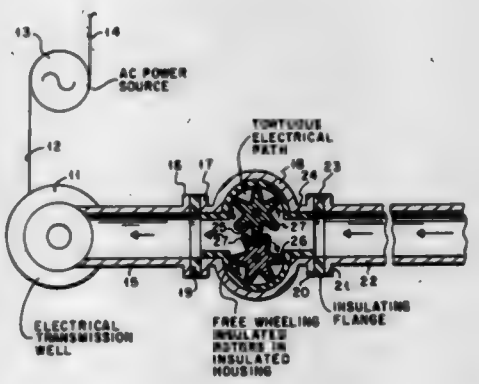
means coupling said elongated outer member with said elongated inner member forming said movable component into integral valve structure movable relative to said fixed component between said valve open and said valve closed conditions.

4,532,990

ISOLATION OF AN ELECTRICAL POWER TRANSMISSION WELL

Thomas K. Perkins, Dallas, Tex., assignor to Atlantic Richfield Co., Los Angeles, Calif.

Filed Jul. 1, 1983, Ser. No. 510,034
Int. Cl.[3] E21B *43/25*
U.S. Cl. 166—248 **8 Claims**



7. In a system wherein a well is used to transmit alternating current power into a subsurface formation, a method for heating a subsurface formation containing viscous hydrocarbons and for reducing power losses comprising:

(a) connecting an inlet end of an internally electrically insulated housing and flow deflecting means to an inlet flowline;

(b) connecting an outlet end of said electrically insulated housing and flow deflecting means to an outlet flowline, said housing and flow deflecting means being adapted to conduct liquids from said inlet flowline to said outlet flowline and to cause said liquid to follow a tortuous path through said housing and flow deflecting means;

(c) installing inlet insulating means between said inlet flowline and said inlet end of said housing and flow deflecting means, said inlet insulating means being adapted to prevent electrical contact between said inlet flowline and said housing and flow deflecting means;

(d) installing outlet insulating means between said outlet flowline and said outlet end of said housing and flow deflecting means, said outlet insulating means being adapted to prevent electrical contact between said outlet flowline and said housing and flow deflecting means;

(e) connecting one of said flowlines to said well;

(f) flowing salt water through said inlet and outlet flowlines and in a tortuous path through said housing and flow deflecting means; and,

(g) simultaneously with step "(f)", applying alternating current electrical voltage to said well to add heat to said formation.

4,532,991

PULSED RETORTING WITH CONTINUOUS SHALE OIL UPGRADING

George R. Hoekstra, Wheaton, and John M. Forgac, Elmhurst, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 22, 1984, Ser. No. 592,375
Int. Cl.[3] E21B *43/24*
U.S. Cl. 166—261 **15 Claims**

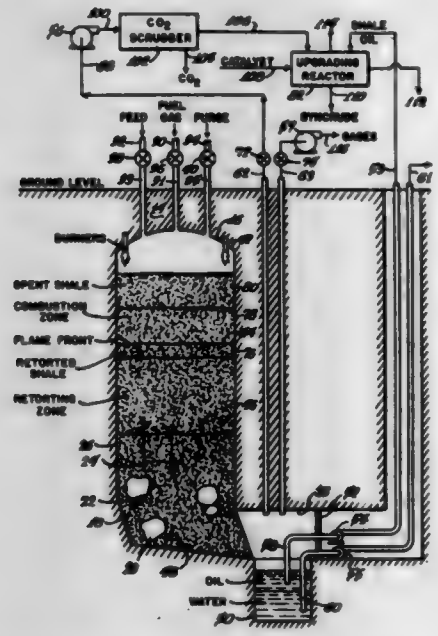
1. A process for producing shale oil, comprising the steps of:

(a) retorting a rubblized mass of oil shale of an underground retort to a sufficient temperature to produce shale oil, water, and off gases from said oil shale leaving retorted shale containing residual carbon by

(1) combusting said residual carbon in said oil shale in a combustion zone behind a retorting zone in said underground retort with a flame front fed by a feed gas comprising air to produce combustion off gases comprising hydrogen, carbon dioxide, and substantial quantities of

nitrogen, said flame front advancing generally in the direction of flow of said fed gas;

(2) purging said retort with a purging fluid selected from the group consisting essentially of steam, water, hydrogen, hydrogen-rich gases, and combinations thereof to quench said flame front while continuing to produce shale oil, water, and purge mode off gases from said retort, said purge mode off gases produced during said purging comprising hydrogen, carbon dioxide, and miminal quantities of nitrogen, said purge mode off gases having a substantially higher concentration of hydrogen and a substantially lower concentration of nitrogen than said combustion off gases produced during said combusting; and



(3) subsequently reigniting said flame front;

(b) withdrawing said shale oil and water from said underground retort;

(c) substantially removing at least said carbon dioxide from said purge mode off gses;

(d) upgrading said shale oil with said purge mode off gases produced during said purging, in the absence of said combustion mode off gases, after said carbon dioxide has been removed from said purge mode off gases; and

(e) said combustion off gases having an excessive amount of nitrogen and an insufficient amount of hydrogen for use in upgrading said shale oil.

4,532,992

METHOD FOR RECOVERING PETROLEUM

Hubert Coenen, and Ernst Kriegel, both of Essen, Fed. Rep. of Germany, assignors to FRIED. KRUPP Gesellschaft mit beschränkter Haftung, Essen, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 406,052

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132755

The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—267 **4 Claims**

1. Method for recovering petroleum from a deposit which has already been worked by primary extraction or is not suitable for primary extraction by extraction with a supercritical gas, comprising: introducing a gas in its supercritical state at a temperature which lies 10° to 100° C. above the critical temperature of the gas and at a pressure which lies 2 to 350 bar above the critical pressure of the gas through a bore hole into the deposit, wherein the supercritical gas becomes charged with petroleum to form a charged supercritical gas phase while the supercritical gas flows through the deposit; removing the charged supercritical gas phase from the deposit through a bore hole; and separating the petroleum from the charged supercritical gas into at least two separate fractions by stepwise pressure reduction and/or a change in temperature, characterized by introducing 8 to 10 kg of supercritical gas per liter of petroleum recovered.

4,532,993

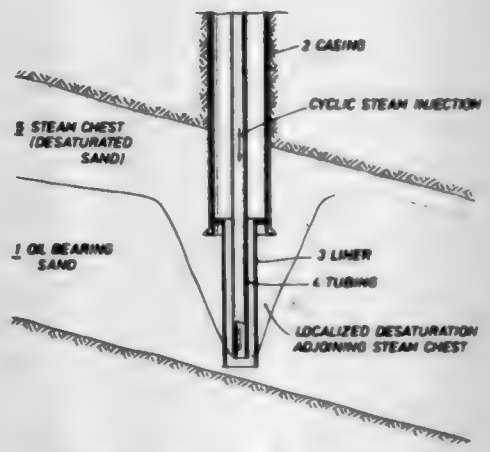
SELECTIVE STEAM FOAM SOAK OIL RECOVERY PROCESS

Richard E. Dilgren, Houston, Tex., and Paul B. Ritter, Bakersfield, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Sep. 7, 1983, Ser. No. 530,156

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—303 **4 Claims**



1. In an oil recovery process in which steam mixed with steam-foam-forming components is injected into a substerranean reservoir that contains a heavy oil and is susceptible to gravity override and, after a soak period, fluid is backflowed for production from the reservoir, an improvement which comprises:

mixing the steam injected into the reservoir with at least one each of noncondensible gas, monovalent cation salt and surfactant;

arranging the chemical compositions and proportions of the components mixed with the steam relative to both the quality of the steam and the chemical composition of the reservoir oil so that the foam formed by the mixture is significantly chemically weakened by contact with the reservoir oil; and

injecting the so-arranged mixture of steam and steam-foam-forming components and producing the fluid backflowed from the reservoir at rates and pressures such that the steam foam located within a zone of the reservoir in which the foam contacts a significant proportion of oil, tends to become chemically weakened and more mobile before the condensing of the steam from the gaseous component of the steam foam has become significant.

4,532,994

WELL WITH SAND CONTROL AND STIMULANT DEFLECTOR

Petre Toma; David A. Redford, both of Edmonton; Declan B. Livesey, Calgary, and Roy M. Coates, Ardrossan, all of Canada, assignors to Texaco Canada Resources Ltd., Calgary, Canada

Filed Jul. 25, 1983, Ser. No. 517,176

Int. Cl.³ E21B *43/24*

U.S. Cl. 166—303 **7 Claims**

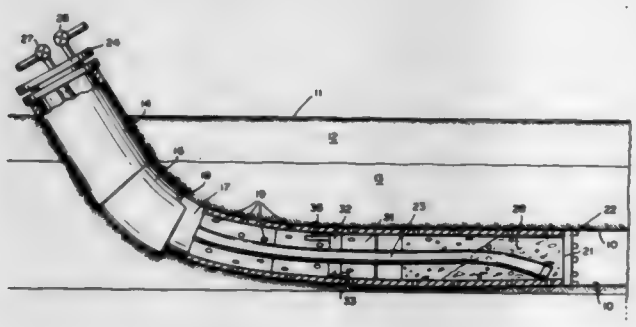
1. A well completion for producing hydrocarbons from a tar sand layer comprised of unconsolidated sand particles in which the hydrocarbon is releasably held, which well completion is registered within a wellbore disposed in a generally horizontal disposition along said tar sand layer, and including;

an elongated well liner having a perforated wall which is capable of transmitting a stream of hot stimulating fluid in one direction therethrough to penetrate said tar sand layer, and a flow of hydrocarbon emulsion together with

unconsolidated sand particles in a reverse direction through the wall and into the liner,

a well head at the upper end of said elongated well liner, and a transverse panel at the liner remote end forming at least a partial closure thereto,

a conductor depending from said well head and extending longitudinally of said liner and terminating in a discharge port adjacent to said panel,



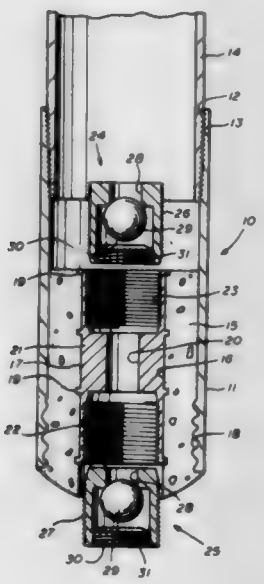
and means forming a longitudinally extendable gravel pack comprised of a mass of unconsolidated particulate matter disposed at the liner remote end to substantially cover at least some of the perforations therein and to deter inward flow of hydrocarbon emulsion and unconsolidated particulate matter into the liner through said covered perforations.

4,532,995

WELL CASING FLOAT SHOE OR COLLAR

Harry J. Kaufman, c/o Oilfield Supply Centre Ltd., Weatherford Oil Tools Ltd., P.O. Box 1518, Dubai, United Arab Emirates

Filed Aug. 17, 1983, Ser. No. 523,842
Int. Cl.[3] E21B *34/06*
U.S. Cl. 166—327 **26 Claims**



1. A casing float tool for wells comprising

a tubular metal housing having internal threads at one end for connection in a casing string,

a mass of cementitious material supported on and extending inwardly from the inner wall surface of said housing and having a longitudinal passageway therethrough,

a tubular supporting member secured in and filling said cementitious passageway and having a passageway therethrough with externally unobstructed internally threaded opposite ends, and

check valves removably secured one in each of said unobstructed internally threaded ends of said tubular supporting member,

said check valves each comprising a tubular housing with external threads sized for securing said valves threadedly in said supporting member an removable therefrom without interference from said cementitious material or other structure in said housing, and

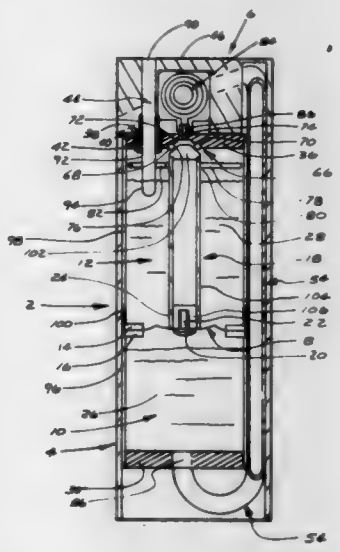
a check valve member closing in an upward direction and opening in a downward direction in each of said tubular valve housings.

4,532,996

AUTOMATIC FIRE EXTINGUISHER WITH ACOUSTIC ALARM

Christopher W. Wilson; Thomas M. Trujillo, and Dennis M. Zallen, all of Albuquerque, N. Mex., assignors to The University of New Mexico, Albuquerque, N. Mex.

Filed Aug. 31, 1983, Ser. No. 528,315
Int. Cl.[3] A62C *35/02*
U.S. Cl. 169—23 **10 Claims**



1. Fire extinguisher and alarm apparatus, comprising:

(a) a first reservoir;

(b) an orifice, connected to said first reservoir;

(c) fire detection means, connected to said orifice, for maintaining said orifice closed in the absence of fire, and for opening said orifice when said fire detection means is exposed to heat from a fire;

(d) a second reservoir, connected to a valve;

(e) a flexible diaphragm communicating on one side of said diaphragm with said first reservoir, and communicating on the opposite side of said diaphragm with said second reservoir;

(f) pressure coupling means, connected to said valve and to said first reservoir, for opening said valve when pressure is lost in said first reservoir;

(g) acoustic alarm means, connected to said second reservoir through said valve, for generating an audible alarm signal upon flow of fluid through said acoustic alarm means.

4,532,997

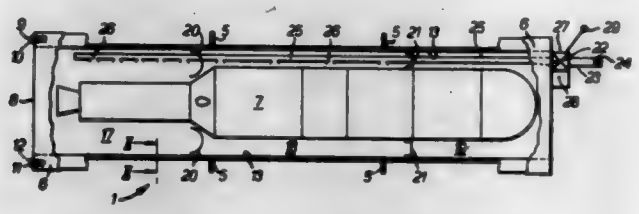
PROTECTIVE SYSTEMS

John R. Atherton, Corsham; John H. Sindall, Stourport-on-Severn, and Osmond R. Heathcock, Stourbridge, all of United Kingdom, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London and IMI Kynoch Limited, Birmingham, both of, England

Filed Oct. 4, 1979, Ser. No. 84,468
Claims priority, application United Kingdom, Oct. 4, 1978, 39317/78
Int. Cl.[3] F42B *37/02;* A62C *37/04*
U.S. Cl. 169—56 **14 Claims**

1. Portable apparatus for storing a missile or torpedo, said apparatus comprising a rigid, protective container including supporting means for supporting therein, in a stable manner, a missile or torpedo, openable closure means through which said missile or torpedo can be loaded into, and removed from, the

container, an inlet in a wall of the container for the passage of an aqueous quenching fluid into the container from an external pressurised source of said quenching fluid, a valve which normally prevents flow of said quenching fluid into the container through said inlet, and adjacent to the interior of a wall



of said container detector means that will be penetrated by a projectile or fragment that penetrates a wall of the container, said detector means, in the event of, and immediately upon, such penetration of said detector means occurring, causing the valve to open thereby enabling said quenching fluid to flow into the container through said inlet.

4,532,998

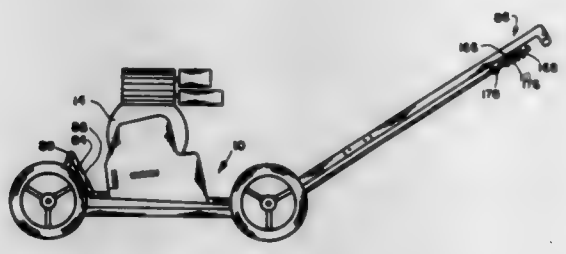
LAWN EDGER DEVICE

Roger H. Feikema, and Harry J. Bakker, both of 6050 Palmer Blvd., Sarasota, Fla. 33582

Filed Sep. 29, 1983, Ser. No. 537,072

Int. Cl.³ A01B *45/04*

U.S. Cl. 172—15 **19 Claims**



1. A lawn edger having a motor and a cutter blade and a handle mounted hand control for varying the depth of the cutter blade relative the ground, said edger comprising in combination:

a platform supporting said motor and cutter blade and having a first and a second end, said first and second ends of the platform being disposed in a plane which is angularly disposed relative to the longitudinal plane of the handle;

first wheel means connected relative to said first end of said platform for supporting said platform a fixed distance from the ground;

a first arm pivotally connected to said second end of the platform;

second wheel means for engaging the ground, said second wheel means being rotatable mounted relative said first arm;

a second arm rigidly connected to said first arm;

a connecting arm pivotally connected to said second arm;

a first portion of said connecting arm being disposed adjacent the distal end of said second arm;

a second portion of said connecting arm angularly connected to said first portion;

a position retaining means rigidly connected to and extending from the platform for slidably supporting said second portion of said third arm; and

said second portion and said position retaining means cooperating together for variably adjusting the longitudinal disposition of said second portion relative said position retaining means, said second portion being connected to the hand control for varying the disposition of the platform relative the ground.

4,532,999

SOIL CULTIVATING MACHINE

Ary van der Lely, Maasland, and Cornelis J. G. Bom, Rozenburg, both of Netherlands, assignors to C. van der Lely N.V., Netherlands

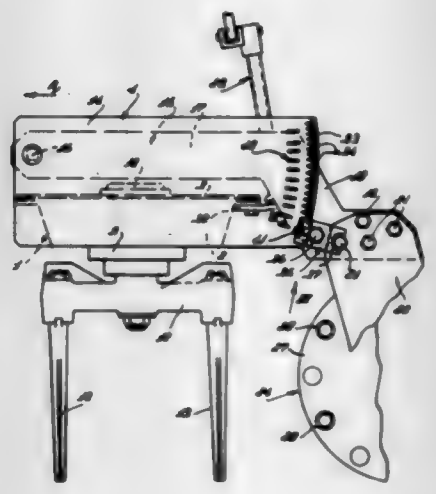
PCT No. PCT/NL82/00022, § 371 Date Mar. 2, 1983, § 102(e) Date Mar. 2, 1983, PCT Pub. No. WO83/00075, PCT Pub. Date Jan. 20, 1983

PCT Filed Jul. 2, 1982, Ser. No. 474,668

Claims priority, application Netherlands, Jul. 3, 1981, 8103195

Int. Cl.³ A01B *33/06, 49/02*

U.S. Cl. 172—68 **14 Claims**



1. A soil cultivating machine comprising soil cultivating members driven to rotate about upwardly extending axes and carried by a gear box extending transversely of the intended direction of operative travel and a roller located behind the cultivating members, said roller being arranged by means of carrying arms on said gear box so as to be adjustable in a direction of height, at least one end of said gear box comprising an end plate which is provided with a part extending above said gear box, a carrying arm for said roller having a lever part which is pivotally arranged on the side of said end plate's part facing inboard and a support part to which said roller is journalled and which is rigidly connected to said lever part so as to be outboard thereof and generally adjacent in a spaced edge-to-edge relationship with said end plate, and a locking element arranged between said end plate and said support part where they are in said relationship so that they are rigidly and releasably fastened together in a selected relative disposition for the desired adjusted height of said cultivating members relative to said roller.

4,533,000

SOIL CULTIVATING IMPLEMENTS

Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Jul. 21, 1983, Ser. No. 515,974

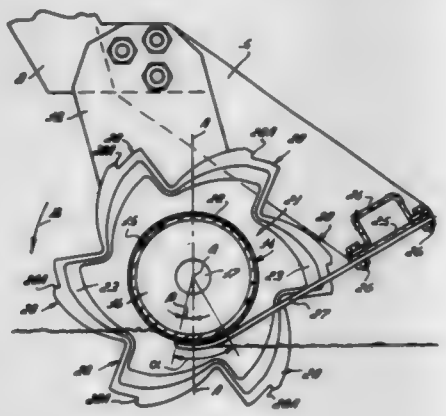
Claims priority, application Netherlands, Jul. 30, 1982, #203046

Int. Cl.³ A01B *29/04*

U.S. Cl. 172—68 **25 Claims**

1. A soil cultivating implement comprising a packer roller to be used in combination with soil working members for crumbling and consolidating the worked soil to produce a seedbed optimum for germination and growth of seeds planted in said seedbed, the roller having a central supporting ground engaging means and a plurality of radially extending projections therefrom, each said projection exhibiting a substantially radially extending and relatively blunt surface that is resistant to forward progress through the soil and a substantially tangential and relatively sharp surface for penetrating into the ground, said projections arranged and constructed so that said blunt surfaces facilitate uniform rotation of said roller about its axis and said sharp surfaces facilitate penetration of said projections

into the ground, each of said projections including said blunt and sharp surfaces comprising two plates which interengage at



their peripheries in a plane perpendicular to the axis of rotation of said roller.

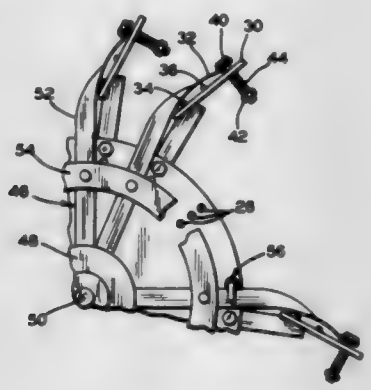


4,533,001

MULTIPLE FIXTURE FOR REPLACING WORN HOE BITS

Jack A. Tulen, R.R. #1, Coatsworth, Ontario, Canada NOP 1HO, and James L. Tulen, R.R. #1, Wheatley, Ontario, Canada NOP 2PO

Filed Jan. 13, 1984, Ser. No. 570,648
Int. Cl.[3] B25B *1/20*; A01B *23/02*
U.S. Cl. 172—438 19 Claims



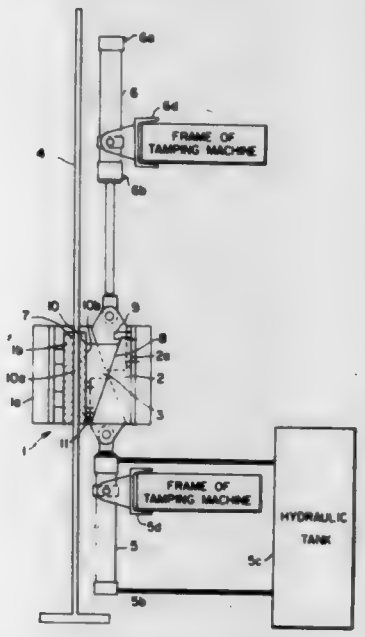
1. A fixture for welding a plurality of replacement spoons to worn free end portions of teeth of a rotary hoe wheel, the rotary hoe wheel having a hub from which the teeth extend in substantially uniformily spaced relationship around the hub, said hub also having a central shaft opening, said fixture comprising a hub, a shaft extending transversely outwardly from the center of the fixture hub, a plurality of mounting members supported outwardly beyond said fixture hub, there being one of said mounting members for each of the free end portions of the rotary hoe wheel, each of said members having means for supporting a replacement spoon thereon in a predetermined position.

4,533,002

DEVICE FOR GRIPPING AND RAISING TAMPING TOOLS OR FOR HOLDING RAISED TAMPING TOOLS IN A TAMPING MACHINE WHICH IS ESPECIALLY USED FOR THE PACKING OF COKING COAL

Kurt Leibrock, Völklingen, and Hans-Jürgen Killich, Sulzbach, both of Fed. Rep. of Germany, assignors to Saarbergwerke Aktiengesellschaft, Saarbrucken, Fed. Rep. of Germany

PCT No. PCT/DE81/00222, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982, PCT Pub. No. WO82/02055, PCT Pub. Date Jun. 24, 1982
PCT Filed Dec. 15, 1981, Ser. No. 407,921
Claims priority, application Fed. Rep. of Germany, Dec. 16, 1980, 3047339; Dec. 16, 1980, 3047400
Int. Cl.[3] E21B *1/00*
U.S. Cl. 173—53 13 Claims



1. A device for gripping and raising individual tamping rods in a tamping machine having a plurality of rods, said device comprising:

body means for being disposed about an associated one of said plurality of rods, said body means having a first portion on one side thereof;

a first frictional gripping means connected to said first portion and being disposed substantialy within said body means;

a frictional, first inner surface on said first frictional gripping means for being substantially parallel to and for making frictional contact with a first side of its associated tamping rod;

a second portion of said body means forming a second inner surface, said second portion being on a side of said body means opposite said first portion;

a cavity being formed in said body means by said first inner surface and said second inner surface, said cavity having a shape which is at least a portion of a wedge, said wedge-shaped cavity comprising an upper portion, opening upwardly, and a lower portion, said first inner surface and said second inner surface having an angular relationship therebetween and converging from said upper portion of said cavity towards said lower portion of said cavity such that said first inner surface and said second inner surface are further apart at said upper portion than at said lower portion of said wedge-shaped cavity;

slidable clamping means being disposed at least partially within said wedge-shaped cavity;

a second frictional gripping means disposed for making frictional contact with said associated tamping rod on a second side thereof opposite to said first side of said associate tamping rod of said body means;

a first part of said slidable clamping means being disposed to act upon said second frictional gripping means so that said second frictional gripping means and said frictional, first

inner surface of said first frictional gripping means grip said associated rod when said slidable clamping means is seated within said wedge-shaped cavity;

a second part of said slidable clamping means for making contact with said second inner surface of said second portion of said body means when said slidable clamping means is seated within said wedge-shaped cavity;

means for moving said slidable clamping means upwardly within said wedge-shaped cavity with respect to said body means for releasing the frictional contact between said slidable clamping means and its said associated tamping rod whereupon said associated tamping rod falls substantially freely from said gripping device; and

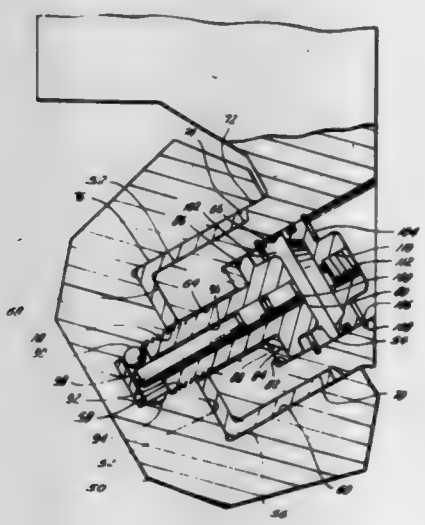
means for raising and lowering said body means.

4,533,003

DRILLING APPARATUS AND CUTTER THEREFOR

Thomas F. Bailey; John E. Campbell; Allen K. Rives, and Nehal M. Shah, all of Houston, Tex., assignors to A-Z International Company, Houston, Tex.

Filed Mar. 8, 1984, Ser. No. 587,490
Int. Cl.[3] E21B *10/32, 10/22*
U.S. Cl. 175—269 10 Claims



1. A drilling apparatus comprising

a body having a bore therethrough and a longitudinal slot in its wall,

an arm mounted at its upper end to said body and having a pin extending from its lower end with a central bore therethrough,

a conical cutter having formation cutting means around its outer periphery, a small diameter threaded bore, and an enlarged diameter counterbore defining a shoulder between said threaded bore and said counterbore,

means extending through the pin bore of said arm and into said cutter bore to secure said cutter rotationally on said pin, and

thrust bearing means including a cup-shaped bearing surrounding said pin and engaging said counterbore and the shoulder between said counterbore and said cutter bore.

4,533,004

SELF SHARPENING DRAG BIT FOR SUB-SURFACE FORMATION DRILLING

Gunes M. Ecer, Irvine, Calif., assignor to CDP, Ltd., Newport Beach, Calif.

Filed Jan. 16, 1984, Ser. No. 570,860
Int. Cl.[3] E21B *10/46*
U.S. Cl. 175—329 29 Claims

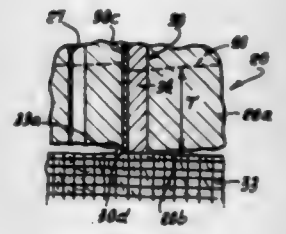
1. A self sharpening rotary drag bit assembly, comprising

(a) a carrier body adapted to be rotated about a first axis, and having a drilling end,

(b) cutters carried by the body to be spaced from one another and to be exposed for cutting at the drilling end of the body, the cutters having thereon layers of hard material defining cutting edges to engage and cut the drilled formation as the body rotates, the cutters also including reinforcement material supporting said layers to resist deflection thereof under cutting loads,

(d) said cutters being elongated in directions generally parallel to said axis, and extending individually in said body to be separated by body material, and to project at the cutting end of the body,





(e) the hardness of said layers exceeding the hardness of said reinforcement material, and the hardness of said reinforcement material exceeding the hardness of said body at the drilling end thereof,

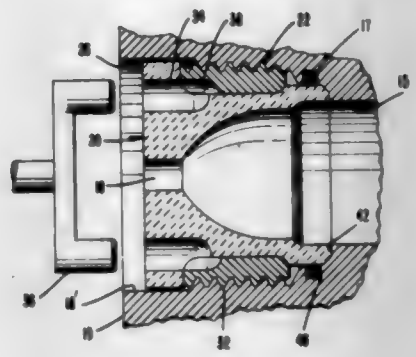
(f) whereby the hard material continually presents a cutting edge to the formation as the hard material, said reinforcing material, and said body abrade simultaneously, axially, during cutting.

4,533,005

ADJUSTABLE NOZZLE

Wilford V. Morris, Houston, Tex., assignor to Strata Bit Corporation, Houston, Tex.

Filed Nov. 21, 1983, Ser. No. 553,813
Int. Cl.[3] E21B *10/60, 43/11*
U.S. Cl. 175—393 17 Claims



1. A nozzle adapted for connection within a cavity of a member to discharge a jet of fluid, said nozzle comprising:

a nozzle body formed of a hard material and including:

an outer flange,

a jet opening arranged to discharge fluid and to be reoriented in response to rotation of said nozzle body about a longitudinal axis thereof,

first tool receiving means for receiving a tool to manually rotate said nozzle body about said axis, and

a sleeve retained longitudinally upon said nozzle body and being rotatable relative to said nozzle body, said sleeve including:

coupling means located inwardly behind said flange for coupling said nozzle to the cavity of the member in response to rotation of said sleeve, and

second tool receiving means, such that the tool is engage-

able with said second tool receiving means for rotating said sleeve to install said nozzle, and is engageable with said first tool receiving means and disengaged from said second tool receiving means for rotating said nozzle body relative to said sleeve to reorient said jet opening.

4,533,006

COMBINATORIAL MEASURING METHOD AND APPARATUS

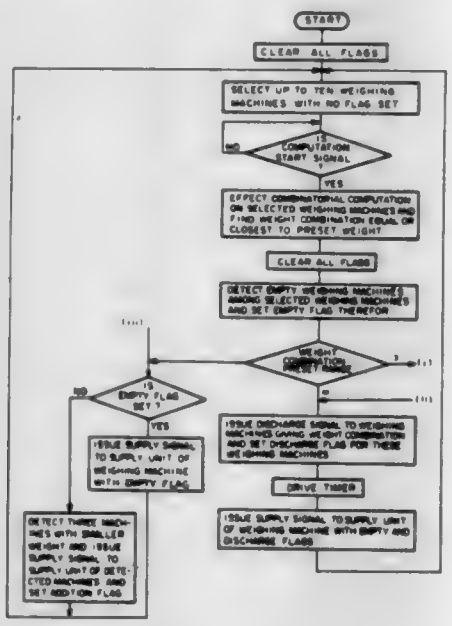
Kazukiyo Minamida, and Yoshiharu Asai, both of Shiga, Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 29, 1983, Ser. No. 489,839

Claims priority, application Japan, Apr. 30, 1982, 57-73656; May 10, 1982, 57-78638

Int. Cl.³ G01G *19/22, 19/52*

U.S. Cl. 177—25 **10 Claims**



2. A combinatorial measuring method for measuring a total quantity of articles using weight data from a plurality of weighing machines, comprising the steps of:

(a) performing cycles of combinatorial computation by combining the weight data from a selected group of the weighing machines to determine the optimum combination from the selected group of weighing machines for which the total quantity is closest to a preset value within an allowable preset range;

(b) periodically detecting whether any of the weighing machines in the selected group of weighing machines used in the combinatorial computation in said step (a) is empty; and

(c) supplying articles to the empty weighing machines detected in said step (b).

4,533,007

COMBINATION WEIGHING SYSTEM WITH SPAN ADJUSTMENT DEVICE

Oren A. Mosher; Oren G. Mosher, both of Hayward, and Ellwood S. Douglas, Orinda, all of Calif., assignors to Eagle Machinery Company, Oakland, Calif.

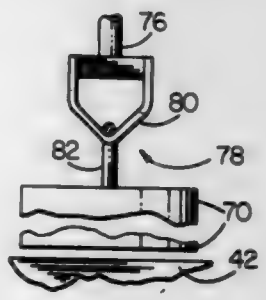
Division of Ser. No. 430,354, Sep. 30, 1982, Pat. No. 4,466,500. This application Mar. 16, 1984, Ser. No. 590,262

Int. Cl.³ G01G *23/01, 19/00, 23/14*

U.S. Cl. 177—50 **1 Claim**

1. In a weighing scale having a weighing tray structure for holding a product to be weighed, the tray structure being connected to a member strained by the weight of the tray sturcture and product during a weighing operation, signal generating means connected with the strained member for producing a signal representing the strain of the member caused by the tray structure and product, and calibration means for determining the parameters of tare and slope in the strain signal, the calibration means including a calibration weight of known amount, actuator means for lowering the calibration weight to a lowered position on the tray structure and forming a part of the weight thereof and for lifting the calibration weight to a raised position of the tray structure and free thereof, the improvement comprising:

a coupling connected between the actuator means and the calibration weight and having a first depending link member connected to the actuator means and a second link member coupling to and totally interlocking with the first



link member, the second member also forming part of the weight of known amount and projecting rigidly upward from a portion of the weight to interlock with the first link member, the first and second members being shaped to draw the weight into alignment under the actuator when the link members are in contacting and load transmitting relationship and the calibration weight is lifted off of the tray structure in the raised position, the members being disengaged in the lowered position when the calibration weight is on the tray structure.

4,533,008

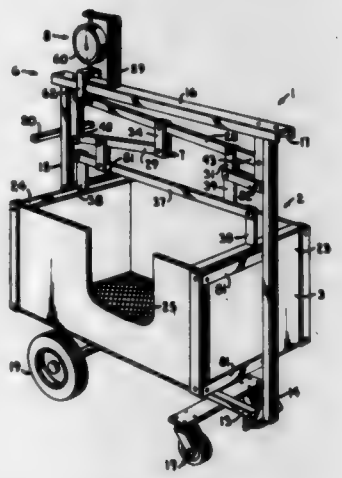
LIVESTOCK SCALE

Jerry L. Ostermann, R.R. 2, Sylvan Grove, Kans. 67481

Filed Mar. 6, 1984, Ser. No. 586,800

Int. Cl.³ G01G *19/52, 1/18, 21/28, 21/08*

U.S. Cl. 177—132 **14 Claims**



1. A livestock scale comprising:

(a) a weighing platform for receiving a load to be weighed:

(b) a support apparatus supporting said platform such that said platform is vertically movable relative to said support apparatus;

(c) a weighing mechanism cooperating with said platform for indicating the weight of a load received on said platform;

(d) said weighing mechanism including weight-transmitting means and weight-indicating means; and

(e) said weight-transmitting means comprising:

(1) a primary scale arm having first and second horizontally spaced locations therealong and being pivotally connected at said first location to said support apparatus;

(2) a secondary scale arm having third and fourth horizontally spaced locations therealong and being pivotally connected at said third location to said support apparatus; said first location being horizontally spaced from said third location;

(3) a primary hanging link being pivotally connected near one end thereof to said primary scale arm at said second location therealong; said primary hanging link being connected near another end thereof to said platform;

(4) a secondary hanging link being pivotally connected near one end thereof to said secondary scale arm at said fourth location therealong; said secondary hanging link being connected near another end thereof to said platform; said primary and secondary links being connected to said platform in horizontally spaced relationship relative to each other;

(5) a connecting link pivotally connecting said secondary scale arm and said primary scale arm, and being horizontally spaced from and positioned between said second and fourth locations; and

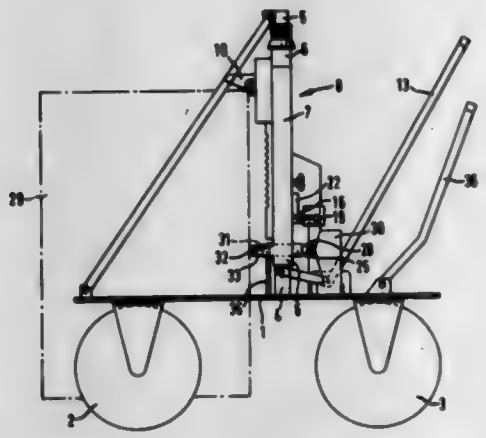
(6) said weight-indicating means being supported by said support apparatus and connected to said primary scale arm at a position therealong for indicating a weight in predetermined proportion to the weight of the load; such that a reaction force proportional to the weight being transferred to said weight-indicating means is transmitted through said primary and secondary hanging links and said connecting link to said secondary and primary scale arms, whereby the weight of the load is proportionally indicated by said weight-indicating means.

4,533,009

LIFTING AND TRANSPORTING DEVICES

David L. Evans, Hazeldene Cottage, Ford Rd., Litton, Nr. Bath, Somerset, England

Filed Apr. 5, 1984, Ser. No. 596,913
Int. Cl.³ G01G *19/08, 23/02*
U.S. Cl. 177—139 7 Claims



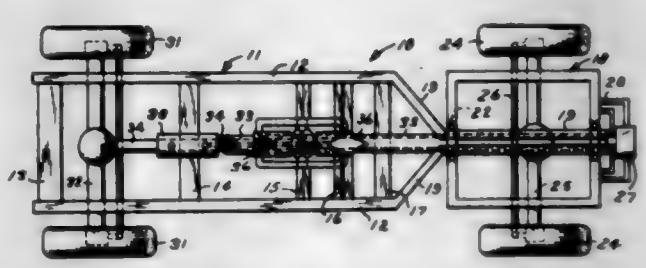
1. A device for lifting and transporting heavy objects, comprising a base frame having ground wheels, an upper frame slidable vertically on said base frame and provided with means for clamping an object thereto, a manually operable lever pivotally mounted on said base frame for movement about a horizontal axis to raise said upper frame, and releasable means for locking said upper frame in its raised position, characterised in that the upper and base frames are provided with cooperating means operable automatically in response to upward movement of the upper frame into a first or transport position, to retain the upper frame in that position with the weight of the container transmitted directly to the base frame, and operable automatically in response to further upward movement of the upper frame beyond said first position into a second or weighing position to divert the entire weight of the container through weighing mechanism mounted on said upper frame.

4,533,010

TRUCK HAVING A FRONT AXLE OSCILLATABLE RELATIVE TO A REAR AXLE

David Harder, 1100 Marron Cir., NE., Albuquerque, N. Mex. 87112

Filed Dec. 30, 1982, Ser. No. 436,276
Int. Cl.³ B62D *53/02*
U.S. Cl. 180—41 8 Claims



5. A vehicle which has a main frame supported on at least one axle, a sub-frame secured to said main frame and supported on at least one axle, a transfer case, an engine and transmission, a rear drive shaft housing; the combination with said vehicle of a torque tube, and a locking mechanism therefor;

means by which said sub-frame is pivotally mounted respective to said main frame;

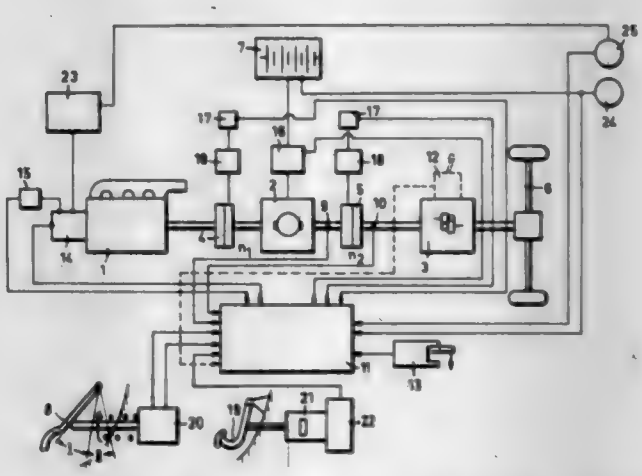
means by which said torque tube is attached to said drive shaft housing of said axle supporting said main frame, and is received in one end of said sub-frame for controlling the oscillation of said sub-frame and said supporting axle relative to said main frame and said supporting axle; means by which a pair of spaced sleeves are axially aligned and slidably mounted on said torque tube; a hydraulic cylinder secured to said main frame and to said sleeves whereby said sleeves and said hydraulic cylinder comprise a locking mechanism which controls the oscillation of said sub-frame.

4,533,011

HYBRID DRIVE FOR A VEHICLE, IN PARTICULAR AN AUTOMOBILE

Paulus Heidemeyer, and Werner Zantopp, both of Wolfsburg, Fed. Rep. of Germany, assignors to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Filed Oct. 24, 1980, Ser. No. 200,427
Claims priority, application Fed. Rep. of Germany, Oct. 27, 1979, 2943554
Int. Cl.³ B60K *1/00*
U.S. Cl. 180—65.2 33 Claims



1. In a hybrid drive for a vehicle, for example, an automobile, with an electric engine which can be supplied energy from an electrical energy storage device and is capable of supplying energy back into said energy storage device, said electric engine being in connection with a driving axle of the vehicle by means of a first disconnecting clutch and with an internal combustion engine arranged in series therewith by means of a second disconnecting clutch, wherein depending on the need,

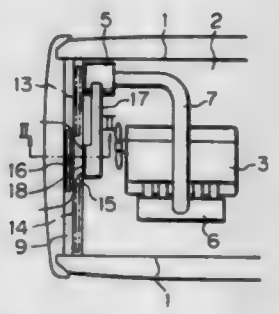
at least one of: neither of the two clutches, only one of the two clutches, and both clutches are engaged, the improvement wherein the internal combustion engine is designed without a flywheel and the flywheel mass required for its operation is an integral component of the rotating masses of the drive between the disconnection points of the two disconnecting clutches.

4,533,012

INTAKE DEVICE OF AN INTERNAL COMBUSTION ENGINE

Norio Komoda, Aichi, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Jul. 7, 1983, Ser. No. 511,492
Claims priority, application Japan, Apr. 15, 1983, 58-065609
Int. Cl.³ B60K *13/02*
U.S. Cl. 180—68.3 **11 Claims**



1. An intake device of a motor vehicle having a pair of fender panels that define an engine compartment therebetween, a radiator support member which has a top face and extends between the fender panels for supporting a radiator; and an engine hood which has a bottom face approachable to the top face of the radiator support member when the engine hood covers the engine compartment, said intake device comprising:

first seal means arranged between the top face of said radiator support member and the bottom face of said engine hood and having a cutaway portion of a given transverse width;

second seal means arranged between the top face of said radiator support member and the bottom face of said engine hood and upstream of said cutaway portion; and

an air cleaner arranged within said engine compartment and having an air suction inlet disposed immediately behind said cutaway portion wherein

said first seal means comprises a pair of band-like seal members each having an inside end that defines said cutaway portion, said seal members extending along said radiator support member from the center of said radiator support member to the opposite ends thereof;

said second seal means consists of a band-like seal member extending transversely along said radiator support member and having a transverse width that is slightly larger than the transverse width of said cutaway portion such that said second seal means covers the entirety of said cutaway portion;

the top face of said radiator support member extends between and interconnects said pair of fender panels and comprises a substantially vertical intermediate top wall portion, a substantially horizontal rear top wall portion extending backward from an upper end of said intermediate top wall portion and a substantially horizontal front top wall portion extending forward from a lower end of said intermediate top wall portion, and the bottom wall of said engine hood comprises a substantially vertical bottom wall portion, a substantially horizontal rear bottom wall portion horizontally extending backward from an upper end of said vertical bottom wall portion and facing said horizontal rear top wall portion of said radiator support member, and a substantially horizontal front bottom wall portion which horizontally extends forward from a lower end of said vertical bottom wall portion and faces said horizontal front top wall portion of said radiator support member; and

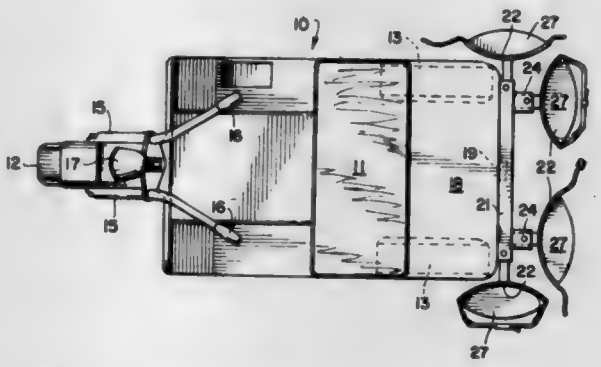
said first seal means is mounted so as to be secured between said horizontal rear top wall portion of said radiator support member and said horizontal rear bottom wall portion, and said second seal means is arranged between said horizontal front top wall portion of said radiator support member and said horizontal front bottom wall portion of said engine hood.

4,533,013

MOTORIZED GOLF CART

James H. Hightower, 1338 Patuxent Dr., Olney, Md. 20861

Filed Jun. 30, 1983, Ser. No. 509,377
Int. Cl.³ B62D *61/08*
U.S. Cl. 180—210 **1 Claim**



1. A motorized cart having a vertically disposed rear wall and a golf bag carrier appurtenance therewith, the appurtenance comprising:

(1) a vertically oriented post supported exteriorly on a central section of said rear wall;

(2) a pair of tubular arms fixed to each of the top and bottom of the post, extending normal thereto and parallel to the plane of said wall;

(3) arm extension means removably and telescopically mounted on the free end of each arm;

(4) further arm means removably and telescopically mounted on an intermediate section of each said tubular arm, extending outwardly therefrom and normal to a vertical plane;

(5) means for locking the parts in said telescoped disposition;

(6) an arcuate support band extending outwardly from the end of each of said arm extension means and further arm means;

(7) each said support band being operatively in vertical alignment with a second of said support bands;

(8) a horizontally disposed plate extending outwardly from the bottom of each lower support band whereby a golf bag may be supported thereon; and

(9) strap means associated with each upper arcuate support band whereby a said supported golf bag may be retained within an associated pair of vertically aligned support bands.

4,533,014

Patent Not Issued For This Number

4,533,015

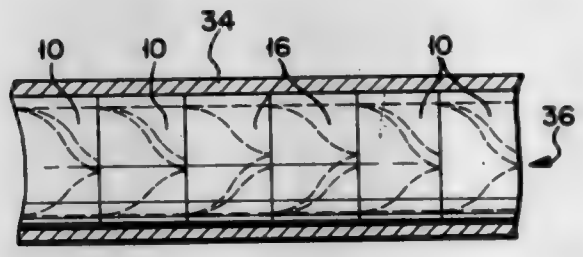
SOUND ARRESTING DEVICE

Hisao Kojima, 3-53-21, Shioiri-cho, Tsurumi-ku, Yokohama-shi, Japan

Filed Feb. 23, 1984, Ser. No. 582,714
Claims priority, application Japan, Feb. 28, 1983, 58-32040
Int. Cl.³ F01N *1/10, 1/12*
U.S. Cl. 181—280 **21 Claims**

1. A sound arresting device comprising a plurality of longitudinally coupled elements, each of the elements including a cylinder having an axis extending in a longitudinal direction and coupled to an adjacent cylinder of another element spaced therefrom along said longitudinal direction, and a blade formed in said cylinder so as to be integral therewith, each said blade being helically twisted along said longitudinal direction

of said cylinder and being arranged such that each end of each said blade crosses an adjacent end of an adjacent blade, so that



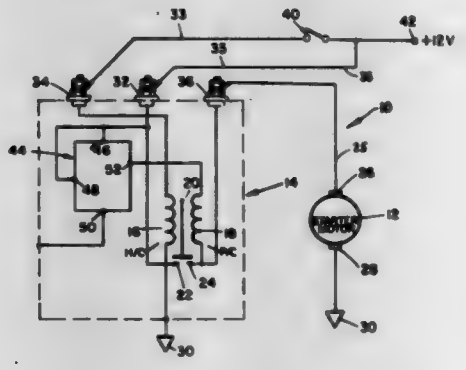
an inner portion of said cylinder is divided into plurality of channels through each of which a gas flows.

4,533,016

ANTITHEFT IGNITION SYSTEM AND SOLENOID APPARATUS FOR USE THEREWITH

Arnold L. Betton, Reseda, Calif., assignor to Phantom Systems, Inc., Van Nuys, Calif.

Filed Oct. 14, 1983, Ser. No. 541,866
Int. Cl.³ B60R *25/00*
U.S. Cl. 180—287 **19 Claims**



13. In a solenoid apparatus for use in a motor vehicle having a power source, an ignition switch, and a starter motor, the combination comprising:

a solenoid housing;

a spool within said housing having wound thereon first and second coils;

circuit means within said housing, said circuit means having controllable semiconductor means and control means;

first terminal means on said solenoid housing for connection to the power course of said vehicle, second terminal means on said solenoid housing for connection to the starter motor of said vehicle and third terminal means on said solenoid housing for connection to the ignition switch of said vehicle;

plunger means at least partially insertable within said spool for axial movement in response to electrical energization of both said first and second coils;

contact means actuated by actuation of said plunger means for electrically interconnecting said first and second terminal means to complete a circuit from the power source of the vehicle to the starter motor thereof;

means within said housing for connecting said control means of said circuit means to said third terminal means;

means within said housing for connecting said first coil between said third terminal means and ground;

means within said housing for connecting the input of said circuit means to said third terminal means for sensing closures of said ignition switch, said control means being responsive to a predetermined sequence of closures for enabling said controllable semiconductor means; and

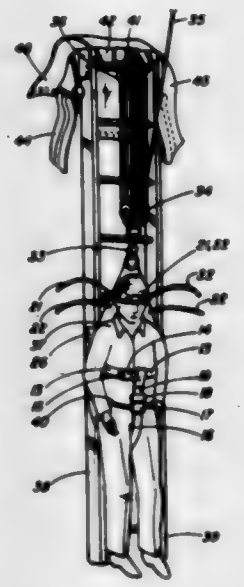
means for connecting said controllable semiconductor means to one end of said second coil, the other end of said second coil being connected to said third terminal means for deenergizing said second coil in response to actuation of said plunger.

4,533,017

SAFETY DEVICE AND HARNESS FOR USE IN SAME

Peter A. Litchfield, 335 A 37th St., SW., Calgary, Alberta, Canada T3C 1R5

Filed Feb. 3, 1984, Ser. No. 576,723
Claims priority, application Canada, Sep. 27, 1983, 437695
Int. Cl.³ A61F *5/04*; A62B *37/00*
U.S. Cl. 182—3 **13 Claims**



1. A rescue device of the type adapted to be applied to to the body of an injured person for lifting or lowering the injured person, said rescue device comprising, in combination:

(a) a body backing base section made of a foldable, flexible sheet material and including a normally upper end section provided with a fastening device for securing the base section to a rope or the like, said base section including a head portion disposed at a close spacing from said fastening device, a central portion spaced from said head portion a distance corresponding to the distance between the head and the level of the part of the human chest disposed slightly below the level of armpits of an average grown-up human body, and a lower portion disposed normally below said central portion;

(b) first strap means secured to said head portion for holding the head of an injured person in contact with said head portion;

(c) transverse second strap means connected with said central portion for wrapping around the chest of an injured person, thereby to hold the body of the injured person to the base section;

(d) a band (16) secured at one end to, and extending downwardly coextensively with the longitudinal certerline of, said base section lower portion; and

(e) buckle means for releasably fastening the other end of said band with said second strap means, said buckle means including a first part (17) secured to said other end of said band, and a complementary second part (18) secured to said second strap means.

4,533,018

LADDER SUPPORT

Sammie J. Tyson, 1501 NW. Ave. "F", Belle Glade, Fla. 33430

Filed Jul. 7, 1983, Ser. No. 511,483
Int. Cl.³ E06C *7/16*
U.S. Cl. 182—121 **2 Claims**

1. A platform adapted for use with a ladder, said ladder being in a plane and comprising rungs disposed in said plane, wherein:

said platform comprises a means for fixing said platform means to said ladder; and a generally planer elongate support means, the plane of said support means extending transverse to said plane of said ladder, said support means having first and second ends distally opposite along the

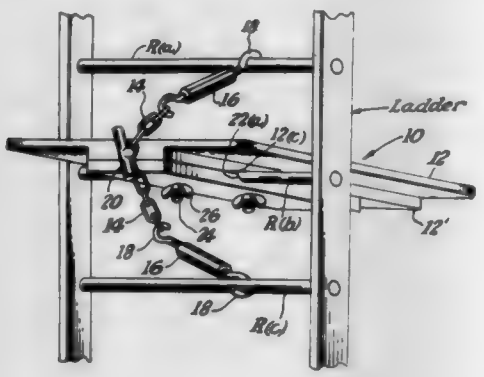
elongate length of said support means, said support means comprising a through hole means substantially mediate of said first and second ends, said through hole means adapted to surround a

preselected rung of said ladder;

wherein said through hole means is selected so that said support means is free to rotate about said preselected rung absent said means for fixing, each of said first and second ends threby rotating about said preselected rung and through hole;

whereby said plane of said support means substantially extends on either side of said plane comprising said rungs of said ladder;

wherein said means for fixing comprises at least two cable means, each said at least two cable means extending be-



tween and fixed to one of said ends of said platform means and a rung of said ladder, respective ones of said at least two cable means being fixed to rungs of said ladder other than of said preselected rung;

wherein one or more of said at least two cable means comprises a turnbuckle means for adjusting the length of said at least two cable means;

wherein said support means comprises first and second elongate members joined along their elongate lengths and coincident with the elongate length of said support means as a whole, each of said first and second elongate members comprising a depression transverse to said elongate length of said support means, said first and second elongate members joined so that said depressions mate to form said through hole in said support means.

4,533,019

MAXI-BALL LUBRICATOR AND DISPENSER FOR MUZZLE LOADING FIREARMS

Kenneth J. Leding, Ozark, Ark., assignor to Leding Loader, Inc., Ozark, Ark.

Filed Apr. 27, 1984, Ser. No. 604,527
Int. Cl.[3] F42B *31/02*; F41C *27/00*
U.S. Cl. 184—14 **5 Claims**

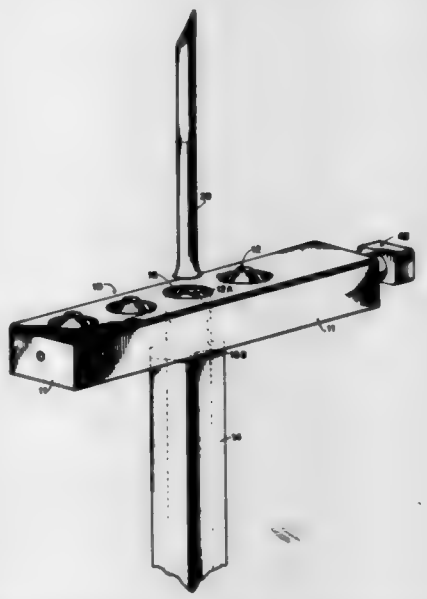
1. A portable maxi ball lubricator and dispenser for loading muzzle loading firearms, said dispenser comprising:

an elongated frame adapted to be hand-held by a shooter, said frame having a longitudinal axis;

a plurality of generally cylindrical bullet chambers defined in said frame adapted to at least temporarily store a bullet for subsequent loading into a muzzle loading firearm, each of said chambers being spaced-apart at regular intervals along the length of said frame and substantially centered thereupon in perpendicular relationship with respect to said longitudinal axis;

a grease reservoir defined in said frame for storing lubricating grease; and,

passageway means for delivering grease from said reservoir to said chambers to substantially uniformly lubricate said bullets disposed therewithin, said passageway means including a first tunnel interconnecting a first one of said chambers to said grease reservoir, a plurality of subsequent tunnels interconnecting adjacent subsequent chambers, and a terminal relief vent establishing fluid flow



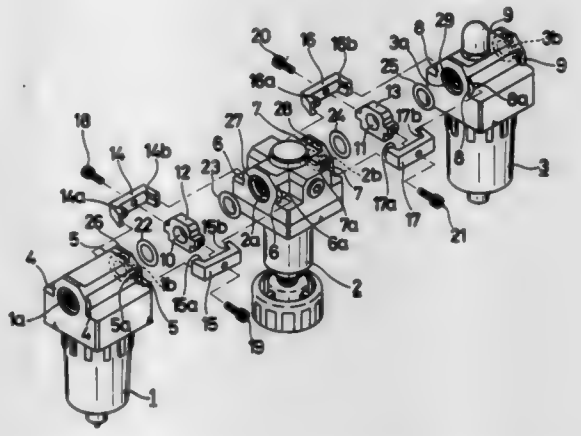
communication between the last one of said chambers and external atmosphere.

4,533,020

THREE-UNIT ASSEMBLY FOR PNEUMATIC CIRCUIT

Masamichi Yamazaki, Tokyo, Japan, assignor to Shoketsu Kinzoku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,193
Claims priority, application Japan, Jul. 6, 1982, 57-101273
Int. Cl.[3] F16L *15/00*; F16N *21/00*
U.S. Cl. 184—55.2 **4 Claims**



1. A three-unit assembly for a pneumatic circuit, comprising:

a filter including an inlet port and an outlet port;

a regulator including an inlet port and an outlet port;

a lubricator including an inlet port and an outlet port;

each of said filter, regulator and lubricator including a portion for defining an air passage between said inlet port and said outlet port thereof, respectively, each air passage defining portion including a pair of projections extending oppositely from each other adjacent its respective inlet and outlet ports, all of said projections being V-shaped and substantially the same size;

coupling members provided between adjacent ones of the filter, regulator and lubricator, each said coupling member defining an air passage for alignment between the outlet port of one of the filter, regulator and lubricator and the inlet port of the next adjacent one of the filter, regulator and lubricator, each said coupling member further including a pair of threaded bores extending generally transversly of the axis of its said air passage, the threaded bores opening generally in opposite directions;

striding members for engaging the projections of adjacent ones of the filter, regulator and lubricator, each said strid-

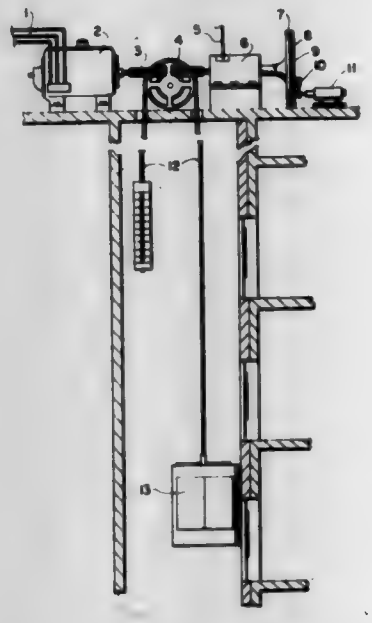
ing member including a pair of leg portions, each said leg portion having a V-shaped region complementarily configured to the V-shaped regions of the projections and adjacent ones of the filter, regulator and lubricator, each said striding member further including a center portion for joining the two leg portions, each said center portion including means defining a hole for alignment with a respective one of said threaded bores of a respective one of said coupling members when adjacent ones of the filter, regulator and lubricator are assembled with the respective coupling member between them, an O-ring between the respective coupling members and the adjacent ones of the filter, regulator and lubricator, and said striding members being positioned on at least two sides of the assembly with the V-shaped regions of the striding members engaging respective V-shaped regions of the projections on the adjacent ones of the filter, regulator and lubricator and bolts capturing the respective striding member center portions and engaging with a respective one of said threaded bores in the coupling members, the V-shaped regions of each one of said striding members being inclined away from each other so that the adjacent ones of the filter, regulator and lubricator are pulled together to compress the O-rings and seal the air passages as the bolts are tightened.

4,533,021

LIFT EXIT EMERGENCY SAFETY SYSTEM

Marcelino Perez de la Orden, Calle Sancho, Ramirez No. 15, Pamplona, Spain

Filed Nov. 15, 1983, Ser. No. 551,930
Claims priority, application Spain, Nov. 15, 1982, 517.396
Int. Cl.³ B66B 5/02
U.S. Cl. 187—29 R **5 Claims**



1. A safety device for the emergency evacuation of a cabin at a safe floor in an elevator shaft, comprising:

a main motor having an electrical input and a mechanical output;

a three-phase current cable means, electrically connected to the main motor, for supplying electrical energy to the main motor;

a conveyor means, mechanically connected to the main motor, for lifting and lowering the cabin in the elevator shaft;

an electric brake having an electrical input side and a mechanical output end and being connected at the output end to the conveyor means;

an inertia flywheel being connected at the input side of the electric brake and having an outer periphery;

wheel means, positioned around the outer periphery of the inertia flywheel, for driving and stopping the inertia flywheel;

gripper frame means, positioned around the outer periphery of the inertia flywheel, for pushing the wheel means against the outer periphery of the inertia flywheel;

electromagnetic means, connected to the gripper frame means, for actuating the gripper frame means; and

an auxiliary motor means, connected to the wheel means, for supplying mechanical energy to the wheel means;

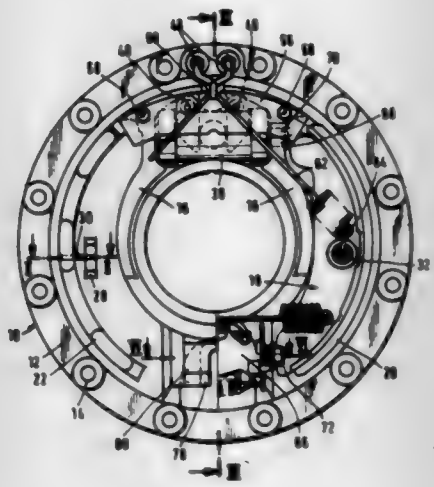
whereby the inertia flywheel rotates when actuated in an emergency so that the conveyor means lifts/lowers the cabin in the elevator shaft to the safe floor for evacuation.

4,533,022

HYDRAULICALLY OPERABLE BRAKE, IN PARTICULAR, A SERVO BRAKE

Wilhelm Schneider, Mannheim, Fed. Rep. of Germany, assignor to Deutsche Perrot-Bremse GmbH, Mannheim, Fed. Rep. of Germany

Filed Oct. 12, 1983, Ser. No. 541,073
Claims priority, application Fed. Rep. of Germany, Oct. 25, 1982, 3239455
Int. Cl.³ F16D 65/02
U.S. Cl. 188—18 R **9 Claims**



1. Hydraulically operable internal shoe-drum brake for vehicles, especially stacking vehicles, in which the axles of the driven wheels are connected each with a corresponding axle gear which is provided with a cover **(10)** arranged secure against turning on the vehicle, said axle gear cover forming a brake carrier and having a circumferential zone, said brake comprising a wheel cylinder **(38)** fastened to the circumferential zone of axle gear cover **(10)**, which wheel cylinder **(38)** is connected by hydraulic lines **(48)** with a pressure medium source, an automatic readjusting device **(66)** fastened to the circumferential zone **(12)** of the axle gear cover **(10)** lying opposite to the wheel cylinder **(38)**, two brake jaws **(18)**, the oppositely lying ends of which abut on the piston of the wheel cylinder and on the readjusting device **(66)**, a brake-jaw bracing angle piece **(16)** fastened to the axle gear cover and supporting said brake jaws, and restoring springs **(62)** which engage on the brake jaws and on the axle gear cover **(10)**.

4,533,023

ELASTIC AND SLIDING LOCKING DEVICE FOR DISC BRAKE WITH A FLOATING CALIPER SUPPORTED BY A SINGLE AXIAL PIN, AND DISC BRAKE EQUIPPED WITH SUCH A DEVICE

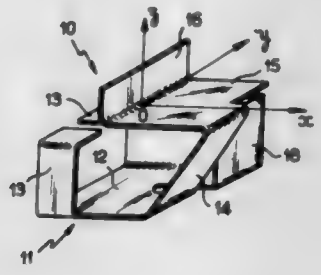
Jean-Jacques Carré, Le Raincy; Pierre Courbot, Villiers le Bel, and Jean-Claude Méry, Pavillons Sous Bois, all of France, assignors to Societe Anonyme D.B.A., Paris, France

Filed Jun. 13, 1983, Ser. No. 503,990

Claims priority, application France, Jun. 28, 1982, 82 11273

Int. Cl.³ F16D *55/224*

U.S. Cl. 188—73.34 **18 Claims**



1. An elastic and sliding locking device for a disc brake of the type comprising a floating caliper slidingly mounted on a fixed support by means of a single axially extending pin, the locking device being arranged between one lateral end of the caliper opposite said pin and an adjacent part of the fixed support by being fixedly mounted on a first component of a pair of components consisting of said caliper end and said adjacent part of the fixed support so as to cooperate in guiding the sliding of said two components relative to one another by means of an engagement portion of the device in sliding contact engagement with adjacent slide zones of the respective components in the normal operating position of said brake, at least said engagement portion of said locking device being capable of being retracted elastically so as to allow the caliper to pivot about the pin adjacent said normal operating position, the locking device being made from a spring steel sheet and comprising a mounting body portion for fixedly mounting the device onto said first component, the engagement portion consisting of a flat slide leaf surface connected to said mounting body portion by an intermediate leaf zone forming a flexible inclined ramp surface extending angularly away from said body portion and arranged so as to cooperate in contact engagement with the second component of said pair of components in order to cause a momentary displacement of said engagement portion when said caliper is pivoted to said normal operating position and said engagement portion resiliently returning to be interposed between said adjacent slide zones of the two components.

4,533,024

AUTOMATIC ADJUSTING DEVICE FOR A BRAKE

Heinrich B. Rath, Vallendar, Fed. Rep. of Germany, assignor to Lucas Industries, Birmingham, England

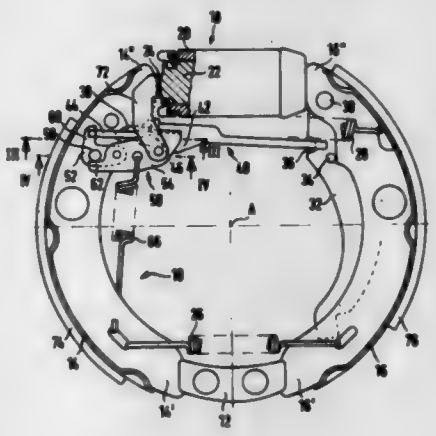
Filed May 24, 1982, Ser. No. 381,555

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1981, 3121985; May 18, 1982, 3218788

Int. Cl.³ F16D *65/56, 65/52*

U.S. Cl. 188—79.5 B **6 Claims**

1. An automatic adjusting device for a brake, in particular a motor vehicle brake, in which a strut (**40**) whose effective length depends on the relative positions of two strut portions (**44, 46**) adjustable with respect to each other is connected in parallel with a brake actuating mechanism (**18**), one of said strut portions being subjected to the force of a biasing adjustment member acting transversely of the longitudinal direction of the strut (**40**) and, upon actuating of the brake, tending to increase the length of the strut (**40**), the adjustment member cooperating with an intermediate member (**24**) which is disposed between and frictionally engaged by two structural members (**14''**, **22**) transmitting the actuating force (**P**) independently of the strut (**40**) and which is displaceable against the frictional resistance (**Q**) of said two structural members provided said resistance does not surpass a given value, the strut (**40**) comprising two strut portions (**44, 46**) which are threadedly engaged and one of which is fixed against rotation while



the other one is supported rotatably and provided with ratchet teeth (**48**) engaged by an adjustment member embodied by a pawl (**50**) having a pivot axis and loaded by an adjustment spring (**66**), characterized in that the intermediate member (**24**) is pivoted at the pawl (**50**) at a distance from said pivot axis.

4,533,025

DISC BRAKE WITH A SLIDING CALIPER

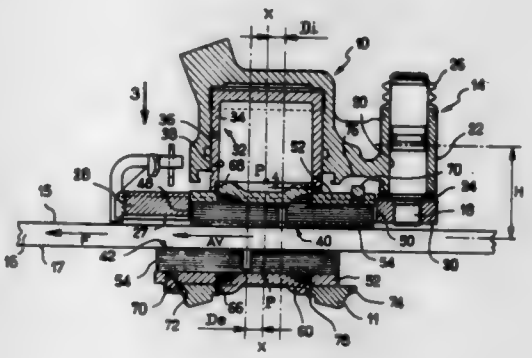
Jean-Jacques Carré , Le Raincy, France, assignor to Societe Anonyme D.B.A., Paris, France

Continuation of Ser. No. 445,131, Nov. 29, 1982, abandoned. This application Jan. 17, 1985, Ser. No. 692,328

Claims priority, application France, Nov. 30, 1981, 81 22345

Int. Cl.³ F16D *65/14*

U.S. Cl. 188—73.44 **5 Claims**



1. A disc brake, comprising a caliper mounted to slide on a fixed support by means of a pin extending parallel to the axis of the disc, said fixed support comprising two arms extending radially toward the periphery of the disc, the two arms comprising a front arm and a rear arm in accordance with the forward direction of rotation of the disc relative to the fixed support, a brake motor including a piston mounted to slide in a bore of the caliper and acting directly on an inner friction element and, as a result of reaction via the caliper, on an outer friction element, the friction elements each including a support plate to which a friction lining is fixed, upon actuation of the brake motor said inner friction element bearing on a bearing surface formed on said front arm and thereby retarding rotation in the forward direction of rotation of the disc, said outer friction element fixed to the sliding caliper to which is transmitted friction forces generated when the outer friction element engages frictionally the rotating disc and the friction forces communicated to said pin and rear arm, the friction forces from the friction elements being distributed substantially equally to the front and rear arms of the fixed support, and differential wear correction means comprising the center of the friction lining of the inner friction element being offset tangen-

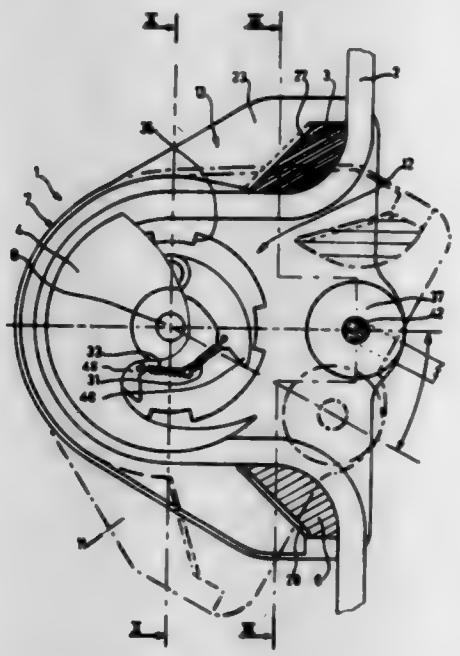
tially in the direction of said rear arm relative to a radial plane passing through the axis of said piston, and the center of the friction lining of the outer friction element being offset tangentially in the direction of the front arm relative to said radial plane, the centers of the friction linings being offset equal distances from said radial plane in order to prevent differential wear of said linings, said inner friction element and outer friction element being identical and each support plate provided with positioning means interacting with corresponding means formed on the brake to assure correct positioning of said friction elements, the positioning means comprising a central portion of the respective support plate projecting from the plane of the plate, the central portion of the outer friction element being received in an aperture of corresponding shape disposed in the caliper and the central portion of the inner friction element being received in a recess in the piston of the brake motor, the positioning means further including correcting means comprising a cylindrical stud fixed to the support plate and extending perpendicularly to the plate, the stud of said outer friction element being received in a corresponding hole in the caliper, and the stud of said inner friction element being received in a clearance disposed in the caliper.

4,533,026

DEVICE WHICH CAN BRAKE AND/OR STOP A LOAD SECURED TO IT AND WHICH FALLS, NOTABLY AN ANTI-FALL SAFETY DEVICE

Georges C. Bernard, Uriage, France, assignor to G.A.M.E.S., Uriage, France

Filed Oct. 7, 1982, Ser. No. 433,300
Claims priority, application France, Oct. 7, 1981, 81 18908
Int. Cl.³ B65H *59/16*
U.S. Cl. 188—184 **11 Claims**



1. A device which is movable along a preferably taut rope and is connectible to a load, said device being operable when the load falls to brake and/or stop the falling movement of the load comprising:

a casing having two opposite cheeks,

a shaft wxtending through the casing and supported by said cheeks,

a pulley supported on the shaft and located in the casing between said cheeks,

a pawl means operable in response to centrifugal force of pulley rotation to lock the pulley against rotation relative to the casing in at least one direction,

a first diverter mounted solely on one of said cheeks and a second diverter mounted solely on the other of said cheeks of the casing, each diverter extending from its respective cheek toward the other cheek, said diverters being disposed so that a rope which is diverted by one of said diverters passes about a portion of the circumference of said pulley and is diverted by the other diverter,

at least one of said cheeks being movable on said shaft between a closed position of the casing in which the cheeks are axially adjacent and an open position of the casing in which the cheeks are spaced apart along said shaft,

said cheeks comprising means which are operable to be engaged with each other to limit the relative rotational movement of the cheeks about the axis of said shaft when the diverters tend to move away from each other in response to tension of the rope, and also are operable to limit the relative translational movement of the cheeks along the axis of said shaft, said engageable means being operable when said cheeks are in the closed position,

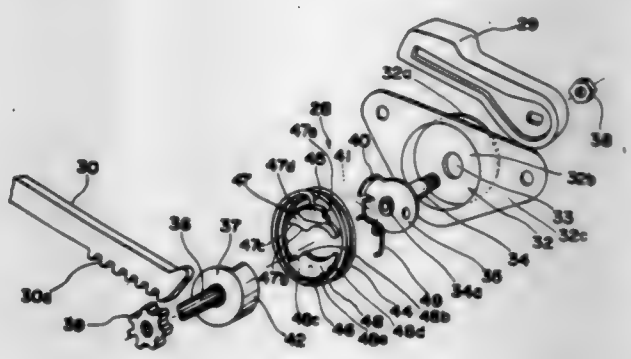
said device being constructed so that a rope can be introduced in the casing between its cheeks and disposed on said pulley and said diverters at any point of its length when said casing is in said open position, and said cheeks are maintained together by said engageable means in response to tension of the rope when said casing is in said closed position.

4,533,027

FRICTION BRAKE ASSEMBLY

Toshiaki Otani; Takeshi Chihara, and Tsutomu Nishikori, all of Hiroshima, Japan, assignors to Mazda Motor Corporation and Delta Kogyo Co., Ltd., both of Hiroshima, Japan

Filed Jul. 28, 1983, Ser. No. 518,012
Claims priority, application Japan, Aug. 9, 1982, 57-138827; Aug. 9, 1982, 57-121184[U]
Int. Cl.³ F16D *67/02*; B60T *13/04*
U.S. Cl. 192—8 C **8 Claims**



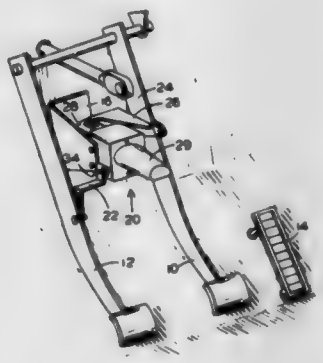
1. A friction brake assembly which comprises a brake drum accomodating therein an operating member mounted on a drive shaft for rotation together therewith, a hanger member mounted on a driven shaft for rotation together therewith, a coiled braking spring adapted to contact an inner peripheral surface of the brake drum to apply a braking force to stop the transmission of motion between the drive and driven shafts, and a pair of guide members interposed between the operating member and the hanger member and loosely pivotally connected to opposite ends of the braking spring, respectively, each of said guide members having a first abutment normally engageable with the hanger member, when and so long as the operating member is not rotated, to stop the motion of the hanger member, and a cam area engageable with the operating member during the rotation of the operating member, the normal engagement between the respective guide member and the hanger member being released by the pivotal movement of the respective guide member which takes place as a result of engagement between the cam area and the operating member at an initial stage of rotation of the operating member, a clearance necessary to release the braking spring, thereby permitting the operating member and the hanger member to rotate relative to each other, being formed between one of the operating member and the guide member and the hanger member subsequent to the disengagement between the respective guide member and the hanger member.

4,533,028

MECHANICAL BRAKE CONTROL DEVICE

Alistair G. Taig, South Bend, Ind., assignor to Allied Corporation, Morristown, N.J.

Filed Feb. 18, 1983, Ser. No. 467,701
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—13 A **25 Claims**



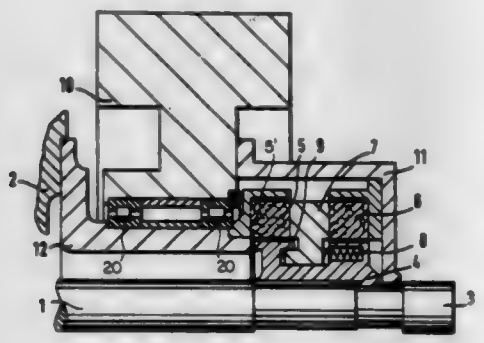
1. An improved mechanical brake control device for a vehicle including a brake pedal and a clutch pedal wherein the brake is movable to a brake applied position during braking and the clutch pedal is movable to an actuated position to control operation of a transmission or the like for the vehicle, the device comprising a housing associated with the vehicle, a connecting member coupled to the brake pedal and movable therewith relative to the housing, locking means carried by the housing and cooperating with the connecting member, control means coupled to the clutch pedal and cooperating with the locking means to alter the cooperation of the latter with the connecting member in response to the position of the clutch pedal, the locking means being engageable with the connecting member when the vehicle is on an incline and the clutch pedal is in its actuated position to resist movement of the connecting member and retain the brake pedal in the brake applied position whereby the vehicle is substantially prevented from rolling down the incline, characterized in that said connecting member is a resilient connecting member that deform slightly when said locking means is engaging said connecting member and the deformation of said resilient connecting member providing for gradual disengagement between said locking means and said resilient connecting member in response to operation of said control means.

4,533,029

CLUTCH AND BRAKE DEVICE FOR PRESSES, PUNCHES, AND THE LIKE

Heinz Weber, Wäschenbeuren, Fed. Rep. of Germany, assignor to L. Schuler GmbH, Fed. Rep. of Germany

Division of Ser. No. 503,085, Jun. 15, 1983, which is a continuation of Ser. No. 247,739, Mar. 26, 1981. This application Oct. 11, 1983, Ser. No. 540,355
Claims priority, application Fed. Rep. of Germany, Mar. 26, 1980, 3011589
Int. Cl.³ B60K *41/24*
U.S. Cl. 192—18 A **10 Claims**



1. A clutch and brake arrangement for a press or punch having a flywheel means, and a drive shaft means having an end projecting beyond a support frame of the punch or press, the arrangement including

a friction clutch means for selectively connecting the drive shaft means to the flywheel means,

a friction brake means for selectively braking the drive shaft means,

a hollow support means projecting beyond the support frame and extending through the flywheel means and surrounding the drive shaft means is provided for supporting the friction brake means,

an annular support means extends over the friction brake means and is attached to the flywheel means for enabling an engagement of the flywheel means with the drive shaft means by the friction clutch means,

a bearing means is provided for supporting the flywheel means on the hollow support means, and the bearing means is arranged between the support frame on the one hand and the friction clutch means and friction brake means on the other hand, wherein

the hollow support means includes a hollow support sleeve and a tubular extension attached to the support frame,

the bearing means includes a pivot bearing means and a bearing sleeve surrounding the hollow support sleeve, the latter being mounted to the flywheel on a side thereof facing the support frame, and

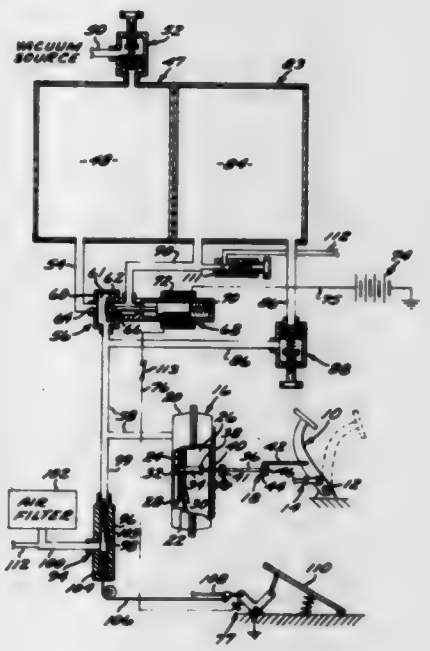
the tubular extension surrounds the hollow support sleeve and the bearing means.

4,533,030

CLUTCH ACTUATING SYSTEM

Albert L. Gabriel, 13853 Charlan Rd., Valley Center, Calif. 92082

Filed Jan. 22, 1982, Ser. No. 341,801
Int. Cl.³ B60K *41/28*
U.S. Cl. 192—0.052 **41 Claims**



1. A method for actuating a normally engaged clutch of a manual transmission type vehicle, which comprises:

applying a first pressure level that is different than atmospheric pressure to a pressure differential operated clutch servo to cause said servo to disengage said clutch;

establishing a second pressure level in clutch re-engagement control chamber means;

substantially simultaneously cutting off said application of said first pressure level to said servo and placing said control chamber means and its second pressure level in communication with said servo so as to allow partial release of said first pressure level into said control chamber means and thereby effect a first stage of clutch re-engagement; and

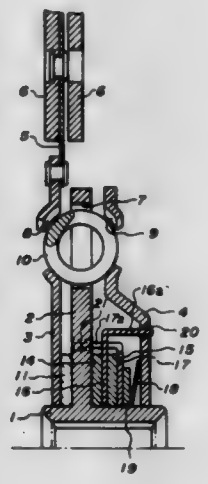
venting said servo to atmospheric pressure so as to allow complete release of said first pressure level from said servo and thereby allow said clutch to become fully re-engaged.

4,533,031

CLUTCH DISK HAVING ALTERNATINGLY CONNECTED SUBPLATES BETWEEN FRICTION WASHERS

Tamio Nagano, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jun. 29, 1982, Ser. No. 393,401
Claims priority, application Japan, Jun. 30, 1981, 56-98241[U]
Int. Cl.³ F16D *3/14, 3/66, 13/64*
U.S. Cl. 192—106.2 **5 Claims**



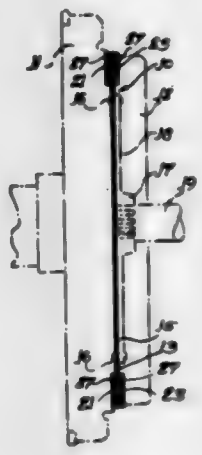
1. A clutch disk comprising:
a clutch plate,
cushioning plates fixed to an outer periphery of said clutch plate,
a retaining plate spaced apart from said clutch plate and connected thereto so as to rotate therewith,
a hub having a flange interposed between said clutch plate and said retaining plate,
spring means operatively interconnecting said flange with said clutch plate and said retaining plate for relative rotation therebetween,
a first friction washer interposed between said flange and said retaining plate,
a first subplate interposed between said first friction washer and said retaining plate,
a second friction washer interposed between said first subplate and said retaining plate,
a second subplate interposed between said second friction washer and said retaining plate,
a sliding member interposed between said second subplate and said retaining plate,
a cone spring interposed between said sliding member and said retaining plate biassing said sliding meber, said second subplate, said second friction washer, said first subplate and said first friction washer towards said flange,
means for connecting said first subplate to said retaining plate for rotation therewith,
means for connecting said second subplate to said flange for rotation therewith, and
a third friction washer interposed between said flange and said clutch plate.

4,533,032

FRICTION ENGAGING DRIVES WITH CERAMIC MATERIALS

Paul E. Lamarche, Utica, Mich., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Nov. 22, 1982, Ser. No. 443,839
Int. Cl.³ F16D *11/00*
U.S. Cl. 192—107 M **10 Claims**



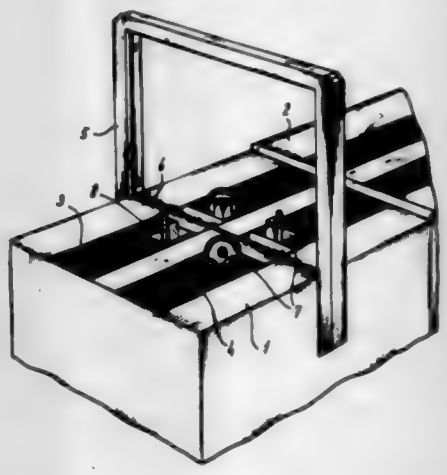
1. A clutch driven plate comprising an annular clutch plate operatively connected to a clutch hub on a transmission input shaft, a plurality of annular temperature and/or coefficient of friction sensitive friction buttons formed from a ceramic, cera-metallic or sintered metal powder, and means to rotatably mount the buttons on the annular plate adjacent its periphery to smooth the harsh feel of clutch engagement of the buttons with a flywheel and pressure plate, said rotatable mounting means comprising a plurality of openings in said clutch plate, an axle received in each opening, each friction button having a central opening therein receiving an end of the axle, the opposite ends of the axle being headed to retain the friction buttons on the clutch plate, and reduced diameter bearing means between each friction button and the clutch plate.

4,533,033

MECHANISM FOR ROTATING AN OBJECT OVER A DETERMINED ANGLE ABOUT A VERTICAL AXIS

Wilhelmus F. S. M. van Wegen, Maartensdijk, Netherlands, assignor to Metaverpa B.V., Maartensdijk, Netherlands

Filed Dec. 27, 1982, Ser. No. 452,926
Claims priority, application Netherlands, Dec. 30, 1981, 8105908
Int. Cl.³ B65G *47/24*
U.S. Cl. 198—413 **6 Claims**



1. In a strapping machine which includes a strapping mechanism and a conveyor system for rectilinearly moving objects to and away from said strapping mechanism, the strapping mechanism being operative in a vertical plane which is perpendicular to said rectilinear direction of movement of said objects, the

improvement wherein said conveyor system includes a working surface and four openings extending therethrough, two of said four openings being located on one side of said vertical plane and the remaining two of said four openings being located on the opposite side of said vertical plane; and wherein an object-turning mechanism is operatively positioned below the working surface of said conveyor system, said object-turning mechanism including a support frame, four rollers mounted on said support frame, said four rollers being positioned to be simultaneously positionable in a respective one of said four openings in the working surface of said conveyor system, each roller being rotatable about a horizontal axis and oriented so as to be tangent to the circumference of a common circle, two endless belts for rotating said four rollers in the same direction with respect to the circumference of said common circle, a first of said two endless belts driving a first pair of said rollers which are located on respective opposite sides of said vertical plane and a second of said two belts driving the second pair of said rollers which are located on respective opposite sides of said vertical plane, and means for moving said support frame vertically upwardly and downwardly such that at least a portion of each of said four rollers can be located in an active position above the working surface of said conveyor system or in an inactive position below said working surface.

4,533,034

METHOD AND APPARATUS FOR AUTOMATICALLY SUPPLYING AND REMOVING PALLETS OF A PALLET MAGAZINE TO AND FROM THE WORKING SPACE OF A MACHINE TOOL

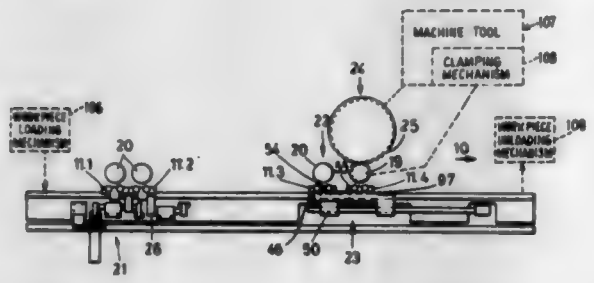
Hans Gregg, Woerthsee, Fed. Rep. of Germany, assignor to Carl Hurth Maschinen-und Zahnradfabrik GmbH & Co., Munich, Fed. Rep. of Germany

Filed Aug. 11, 1982, Ser. No. 407,182

Claims priority, application Fed. Rep. of Germany, Aug. 25, 1981, 3133588

Int. Cl.³ B65G *37/00*

U.S. Cl. 198—472 **11 Claims**



1. A method of automatically moving pallets which can each carry a workpiece between a support member and a pallet magazine which has endless chain means, a plurality of said pallets resting loosely on and being moved by said chain means, comprising the steps of: loading a workpiece to be machined on each said pallet of said pallet magazine as it passes a loading station, said chain means then carrying the loaded pallets from said loading station to a separating mechanism; causing said separating mechanism to produce a predetermined spacing in the direction of movement of said chain means between successive said pallets passing it, said chain means thereafter carrying the pallets to a pick-up station; utilizing a slide mechanism to lift each said pallet at said pick-up station off said chain means and move it to and place it on said support member, and simultaneously utilizing said slide mechanism to pick up a said pallet previously placed on said support member and to place it back on said chain means at a location therealong which is spaced in said direction of movement of said chain means from said pick-up station, said chain means then carrying such pallet to an unloading station; causing a clamping mechanism of a machine tool to pick up the workpiece supported by said pallet on said support member; causing said machine tool to perform a machining operation on the workpiece held by said clamping mechanism; causing said clamping mechanism to return the workpiece to said pallet on said support member before such pallet is moved from said support member by said slide mechanism; removing the machined workpieces from said pallets on said chain means as said pallets pass said unloading station, and thereafter moving the unloaded pallets from a location on said chain means downstream of said unloading station to a location on said chain means upstream of said loading station.

2. An apparatus for automatically carrying workpieces to and from a machine tool, comprising: elongate conveyor means supported for lengthwise movement in a generally horizontal direction of movement; a plurality of pallets removably supported on said conveyor means for movement therewith, each said pallet being adapted to support a workpiece; loading means provided at a location along said conveyor means for loading a workpiece to be machined onto each said pallet passing thereby; separating means provided at a location along said conveyor means spaced in said direction of movement from said loading means for imparting a predetermined spacing in said direction of movement between successive said pallets passing thereby on said conveyor means; a support arrangement provided at a location along said conveyor means spaced in said direction of movement from said separating means and adapted to support one of said pallets thereon; a slide mechanism provided along said conveyor means in the region of said support arrangement and having means for lifting one said pallet from said conveyor means at a pick-up location spaced in said direction of movement from said separating means and placing such pallet on said support arrangement while simultaneously lifting a further said pallet from said support arrangement and placing it back on said conveyor means at a return location spaced in said direction of movement from said pick-up location, said machine tool having means for clamping the workpiece from each said pallet placed on said support arrangement, for machining such workpiece, and for then releasing such workpiece before the pallet is moved from said support arrangement by said slide mechanism; and unloading means provided at a location along said conveyor means spaced in said direction of movement from said return location for removing the workpiece from each said pallet passing thereby on said conveyor means.

4,533,035

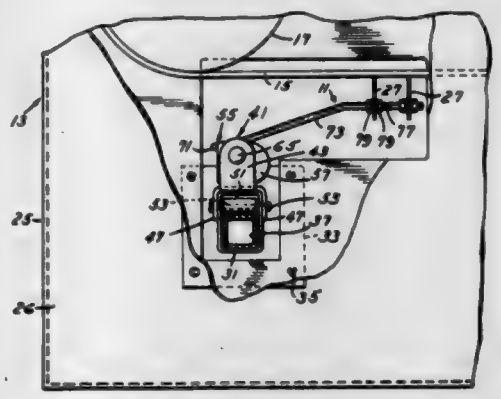
CONVEYOR BELT CLEANER

Robert C. Reiter, Darby, Mont., assignor to Material Control, Inc., Croswell, Mich.

Filed Jan. 4, 1984, Ser. No. 567,989

Int. Cl.³ B65G *45/00*

U.S. Cl. 198—499 **15 Claims**



1. A conveyor belt cleaner for use on a conveyor having an endless belt comprising;

an elongated support member having a first longitudinal axis adapted to extend transversely of the endless belt;

a blade support assembly mounted upon and overlying said support member and having a second longitudinal axis spaced from and parallel to said first axis;

said blade support assembly including a spring support of

U-shape having a first base overlying said support member and secured thereto;

a spring cradle of U-shape having a second base at a generally right angle to said first base and a pair of spaced apertured support arms nested within said spring support;

a pivot bolt assembly mounted upon and extending through said spring support and spring cradle along said second axis;

said blade support assembly also including a blade adapted to scrape the endless belt;

a spring arm at one end secured to said blade and extending towards said spring cradle;

and a helical spring within said spring cradle mounted upon said pivot bolt assembly and having one end anchored to said cradle and having its other end extending laterally of said second axis and connected to said spring arm;

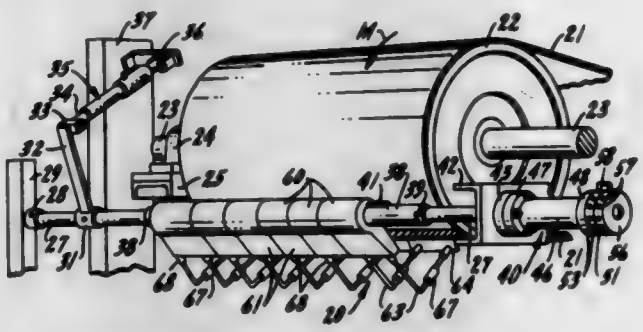
said spring cradle being adapted for angular adjustment relative to said spring support about said second axis to adjust said spring arm and to thereby position said blade in operative engagement with the endless belt.

4,533,036

CONVEYOR BELT SCRAPER

James R. Gordon, 301 W. Boling, Benton, Ill. 62812

Filed Oct. 14, 1983, Ser. No. 541,800
Int. Cl.³ B65G *45/00*
U.S. Cl. 198—499 **16 Claims**



1. A conveyor belt scraper comprising:

a shaft extending transversely of a conveyor belt in spaced relation to the surface of the belt to be scraped;

a plurality of molded, resilient elastomer blade supports mounted on the shaft in a longitudinal array extending across the belt, each blade support secured to the shaft for rotation therewith and each blade support including an integral flexurally resilient elastomer balde mount arm projecting outwardly from the blade support;

a plurality of scraper blades mounted on the blade mounts of the blade supports, each blade extending into engagement with the surface of the belt; and

torsion bias means, connected to the shaft, resiliently torsionally urging the shaft toward rotation in an angular direction such as to bias the scraper blades into continuing firm engagement with the conveyor belt surface, the torsion bias means comprising:

a torsion tube of elastomer material encompassing a portion of the shaft and having one end affixed to a fixed frame member;

first and second rigid collars, each affixed to one end of the torsion tube, the first collar being affixed to the fixed frame member;

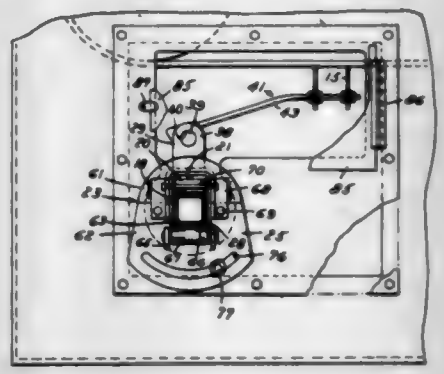
and adjustable link means for connecting the second collar to the shaft to maintain the second collar and the shaft in any one of a plurality of different angular orientations relative to each other to thereby adjust the effective bias force on the shaft.

4,533,037

TELESCOPING CONVEYOR BELT CLEANER

James F. Kerr, Croswell, Mich., assignor to Material Control, Inc., Croswell, Mich.

Continuation of Ser. No. 473,474, Mar. 9, 1983, abandoned. This application Oct. 11, 1984, Ser. No. 659,911
Int. Cl.³ B65G *45/00*
U.S. Cl. 198—499 **21 Claims**



16. A conveyor belt cleaner for a conveyor having an endless belt with upper and lower runs, having an elongate support member adapted to be secured near the lower run, and extending transversely across the lower run, first and second end supports interconnecting said support member to opposite sides of the conveyor, a blade carrying member moveably attached to the elongate support member and having means for attaching a blade thereto, said blade being a substantially rigid member adapted to engage the surface of the lower run of the endless belt to scrape debris therefrom in an operative position wherein the improvement comprises:

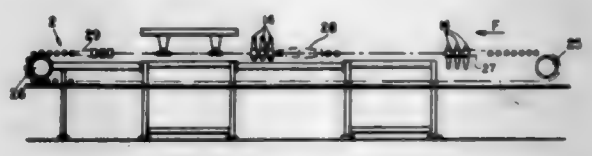
a plurality of rotatable members disposed between the elongate support member and said blade carrying member to facilitate moving said blade carrying member along the elongate support member, said blade carrying member substantially enclosing the rotatable members and the elongate support member when in its operative position to shield the same from debris falling downwardly from the lower run of the endless belt.

4,533,038

CONVEYOR FOR OBJECTS TREATED WHILE CONTINUOUSLY IN MOTION

Jacques R. Richard, Cachan, France, assignor to Manufacture de Machines du Haut-Rhin, Mulhouse, France

Continuation-in-part of Ser. No. 917,575, Jun. 21, 1978. This application Jul. 19, 1982, Ser. No. 399,801
Claims priority, application France, Jun. 22, 1977, 77 19197
Int. Cl.³ B65G *17/26*
U.S. Cl. 198—646 **8 Claims**



1. An endless chain conveyor adapted to transport objects in an installation for treating them while they are in continuous motion, the conveyor being made up of a plurality of simlar open-topped carriers which carry objects to be treated from one station of the installation to another, the conveyor further comprising means for connecting each pair of consecutive carriers with at least a degree of freedom of tipping of one carrier with respect to another in a direction angularly about the direction of travel of the chain conveyer, conveyer drive means for cooperating with an external drive means, means for turning the chain conveyor gradually about a first axis which extends in the direction of travel of the chain conveyor to invert the chain conveyor including its carriers, said means for

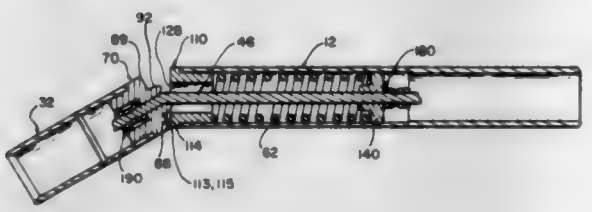
connecting each pair of consecutive carriers, and said conveyor drive means from their upright positions at a first location, and means for thereafter turning the entire chain conveyor gradually about a second axis parallel to the first axis to return the chain conveyor and the carriers to their upright positions.

4,533,039

DEFLECTABLE PIN ASSEMBLY

Conrad M. Grims, Golden, Colo., assignor to Adolph Coors Company, Golden, Colo.

Filed Sep. 9, 1983, Ser. No. 530,506
Int. Cl.³ B65G *47/84*
U.S. Cl. 198—651 **12 Claims**



2. A deflectable pin assembly mountable on a conveyor chain for use in transporting open ended containers comprising:

a. first elongate sleeve means having a forward end and a rear end for supporting an open ended container thereon;

b. second elongate sleeve means having a forward end and a rear end for mounting said deflectable pin assembly on a conveyor chain;

c. connection means for seating and pivotally connecting said first elongate sleeve means and said second elongate sleeve means;

d. biasing means for biasing said first sleeve means in a predetermined position relative said second sleeve means; wherein said biasing means comprises spring means mounted within one of said first sleeve means and said second sleeve means;

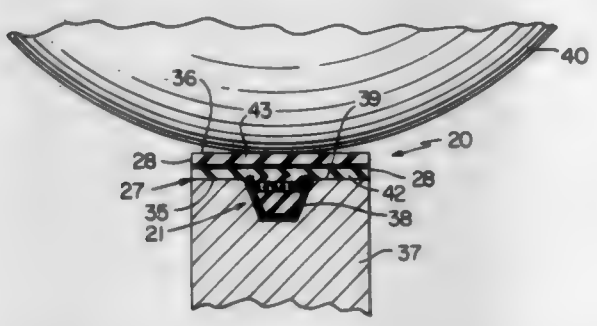
e. said pin assembly having a biased position wherein said first sleeve mens is positioned in substantially coaxial relationship with said second sleeve means, and said pin assembly having a plurality of deflected positions wherein said first sleeve means is positioned in obtuse angular relationship relative said second sleeve means.

4,533,040

BELT CONSTRUCTION AND METHOD OF MAKING THE SAME

Anderson W. Howerton, Christian County, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 530,568, Sep. 9, 1983, which is a continuation-in-part of Ser. No. 315,840, Oct. 28, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 621,967
The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.
Int. Cl.³ B65G *15/34*
U.S. Cl. 198—847 **12 Claims**



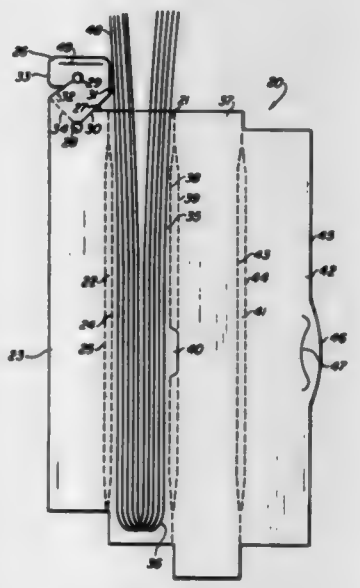
1. In a belt construction comprising a tension section having opposed sides and a top surface, a compression section, a load-carrying section intermediate said tension section and said compression section, a fabric covering means covering the exterior of said sections, and a load supporting top section secured to said top surface of said tension section and extending beyond said opposed sides of said tension section, the improvement wherein said fabric covering means is substantially U-shaped in cross section and has the free ends of the legs thereof extending beyond said top surface of said tension section in respective directions substantially the same as said opposed sides of said tension section and being fully embedded in said top section to tend to prevent said free ends from being delaminated form said belt construction.

4,533,041

MULTISTRAND SUTURE PACKAGE WITH SINGLE STRAND SUTURE DISPENSING

Jorge L. Aday, Lambertville, and Robert J. Cerwin, Pittstown, both of N.J., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jul. 31, 1984, Ser. No. 636,424
Int. Cl.³ A61L *17/02*
U.S. Cl. 206—63.3 **14 Claims**



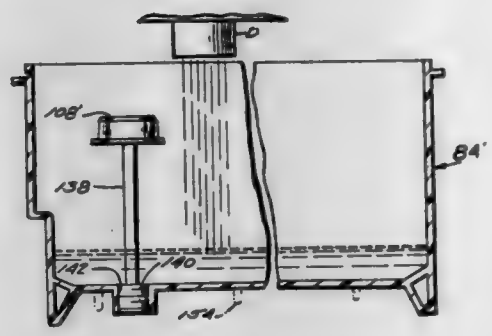
1. An elongated rectangular suture folder and retainer for a plurality of sutures which allows for single strand dispensing of the sutures said folder and retainer comprising; a first suture winding panel having an elongated rectangular shape, a second suture holding panel having an elongated rectangular shape and foldably connected to said first panel along a longer longitudinal edge thereof, one of said first or second panels having an extension extending beyond a shorter edge of said other panel, a first opening in the panel having said extension said opening being disposed within said panel and substantially adjacent said extension, the second opening being disposed in said extension, said openings being aligned with respect to each other at an angle of 45° or less as measured from a longitudinal extending line through the panel and extension, a first slit extending from an edge of the extension to the first opening, a second slit extending from an edge of the extension to the second opening, a third cover panel foldably connected to the free longitudinal edge of said first suture winding panel and a fourth locking panel foldably connected to the free longitudinal edge of said third cover panel.

4,533,042

MOTOR OIL CHANGE KIT AND CATCH PAN FOR USE IN CHANGING AUTOMOTIVE MOTOR OIL

William F. Pollacco, 3819 Burlingame Pl., Alexandria, Va. 22309

Continuation of Ser. No. 297,082, Aug. 27, 1981, Pat. No. 4,403,692. This application Jul. 29, 1983, Ser. No. 501,625
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.[3] B65B *39/00*; B65D *81/36*; F16N *31/00*
U.S. Cl. 206—223 15 Claims



1. A do-it-yourselfer's oil catch pan, for use with a jug of new oil sufficient to fill or at least substantially fill the engine oil reservoir of a pre-selected motor vehicle to its proper level, in an instance where the jug has an opening provided with an openable and closable closure cap,

said oil catch pan, comprising:

a self-supporting container sized and configured to be slid on the ground to a position under a motor vehicle crankcase and having a bottom wall and a peripheral sidewall with a top opening for receiving used oil drained from the crankcase;

said bottom wall of said container having means providing at least one seating surface thereon, each such seating surface being cooperable with said jug for enabling the oil catch pan to be seated on the jug in overlying relation thereto when the jug is upright, uncapped and has been emptied of new oil;

said bottom wall of said container having means defining an oil drain aperture formed therethrough;

said bottom wall sloping downwards toward said oil drain aperture;

at least one said seating surface being located distally of said oil drain aperture and being constructed and arranged to be supported upon a corresponding top portion of the jug distally of said opening of said jug;

a closure member for said oil drain aperture, said closure member being selectively and removably positionable in obstructing relation to said oil drain aperture to block flow of used oil through said oil drain aperture;

said oil drain aperture being constructed and arranged to register with said opening in the jug when the oil catch pan is seated on the jug in overlying relation thereto with the jug in an upright, uncapped, emptied of new oil disposition, for enabling used oil which has been drained into the oil catch pan from the preselected motor vehicle through said top opening to be transferred from the oil catch pan to the jug upon manipulation of said closure member to unblock said oil drain aperture, thereby making it unnecessary to pour the used oil out of the oil catch pan through said top opening by tilting or tipping the oil catch pan, so that the used oil may be drained from the oil catch pan into the jug and the jug re-capped for transporting the used oil to a disposal site without spillage;

said removing member being a gripping member which is constructed and arranged to extend to a level which lies above the level of the used oil in the oil catch pan; and

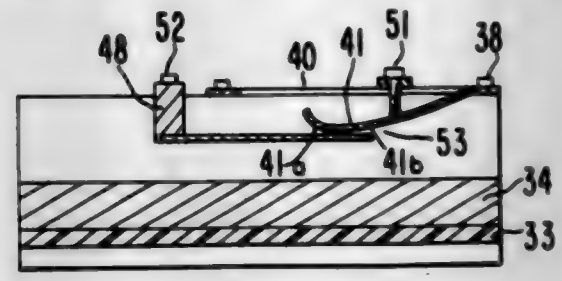
said gripping member comprising a cap constructed and arranged to openably and reclosably cap the jug, and a rod securing that cap to said closure member.

4,533,043

INTEGRATED CIRCUIT PACKAGE MAGAZINE AND RECEPTACLE

Thomas L. Swain, Barrington, R.I., assignor to Monolithic Memories, Inc., Sunnyvale, Calif.

Filed Apr. 5, 1983, Ser. No. 482,121
Int. Cl.[3] B65D *73/02*
U.S. Cl. 206—328 17 Claims



1. A magazine for multiple semiconductor packages comprising an elongated tube having an interior cross-sectional configuration adapted to confine in sliding orientation particularly shaped semiconductor packages:

means on at least one end of said tube for partially closing said end and preventing egress of packages confined in said tube,

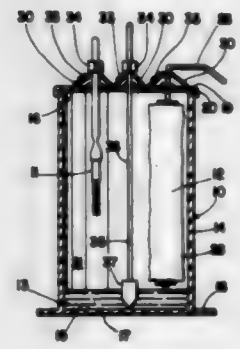
said means comprising a spring gate attached to said tube and extending inwardly from a wall surface of said tube to intersect in its normal neutral position a front end of a semiconductor package, said package facing said at least one tube end and slidable in said tube and wherein said spring gate is attached to said wall surface adjacent an end of said tube and extends angularly into said tube and in a direction away from said tube end, said spring gate being deflectable toward said tube wall surface out of intersection with said package front end to allow egress of a package from said tube.

4,533,044

STORAGE CONTAINER FOR PAINT APPLICATORS

Thomas E. Ban, 1156 Berwick La., South Euclid, Ohio 44121

Filed Jul. 19, 1984, Ser. No. 632,382
Int. Cl.[3] A45D *44/18*; B65D *81/24*
U.S. Cl. 206—362 10 Claims



1. A device for holding a paint applicator, such as a paint brush or paint roller, which has a handle for holding, comprising:

(a) a container for holding liquid, such as paint thinner, the container having a closed bottom and sides which define a liquid holding chamber, the container having an open top in vertical spaced relation above the bottom, when the container is vertically disposed;

(b) a cover sealing the open top of the container, the cover having at least one small opening from which a number of slits, cut through the cover, extend in radial directions to form therebetween, a plurality of pie-shaped segments which are flexible and deflectable upwardly and downwardly out of the plane of the cover, the opening and surrounding flexible segments designed to receive the

handle of the paint applicator, the handle extending through the opening exteriorly of the container and held therein such that the vertically lowermost portion of the applicator is maintained in spaced relation above the bottom of the container;

(c) means for detachably mounting the cover on the open top of the container; and

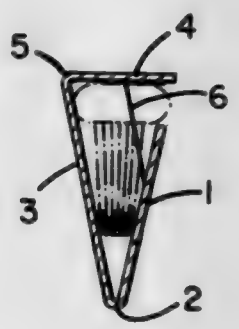
(d) a reusable, flexible steel, separate from the cover, for conically wrapping around the handle protruding from the container and opening, when the applicator is properly positioned in the container, the seal including (i) a specially shaped piece of elastomeric material which has a pair of opposing ends that are overlapped when the seal is conically wrapped around the handle, and (ii) means carried by each of the opposing ends of the material for repeated, detachable interlocking engagement when the ends of the material are overlapped, to hold the seal in tightly wrapped relation around the handle, the seal designed to rest in supported relation on the cover and to compressively engage the handle and cover the opening and radially oriented slits to seal the chamber from the ambient atmosphere and hold the handle to prevent it from slipping into the chamber of the container, the conical wrapping of the seal designed to form a sturdy support with, in effect, a variable size opening in which differently sized handles can be compressively engaged and supported.

4,533,045

TOOTHBRUSH HOLDER AND PRESERVER

Patrick G. Stein, 1153 Bowness Rd. NW., Calgary, Alberta, Canada T2N 3J6

Filed Nov. 15, 1984, Ser. No. 671,499
Claims priority, application Canada, Apr. 11, 1984, 451758
Int. Cl.[3] B65D *83/10*
U.S. Cl. 206—362.3 14 Claims



1. A holder for a toothbrush including:

(i) a first substantially rectangular side wall;

(ii) a second substantially rectangular side wall sharing a first common longitudinal edge with the first side wall and angulated thereto, said second side wall being wider than said first side wall; and

(iii) a third substantially rectangular side wall sharing a second common longitudinal edge with said second side wall, and extending substantially normal thereto;

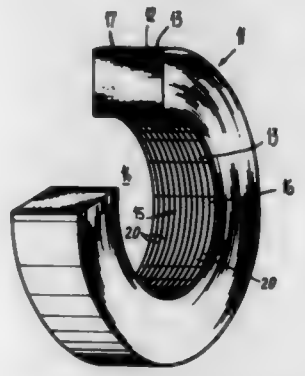
said first and second side walls defining therebetween a wedge-shaped chamber adapted to receive the bristles of said toothbrush and to bias the sides of said bristles inwardly whilst said third side wall defines retaining means for retaining said toothbrush in said holder, said bristles upon insertion into said holder thereby forming a wedge-shaped mass whereby they retain their natural operative direction without deformation during drying thereof.

4,533,046

WOUND BODY OR PACKAGE

Volker Kuhnert, Kerkrade, Netherlands, and Franklin Niedrig, Berikon, Switzerland, assignors to Strapex AG, Wohlen, Switzerland

Filed Jun. 25, 1984, Ser. No. 624,147
Claims priority, application Switzerland, Jul. 19, 1983, 3939/83
Int. Cl.[3] B65D *85/67.5, 85/67, 71/02*
U.S. Cl. 206—389 14 Claims



1. In a wound package composed of a wound-up band and a support body for supporting the wound-up band and possessing a continuous axial opening, the improvement which comprises:

forming the support body essentially from the wound-up band; and

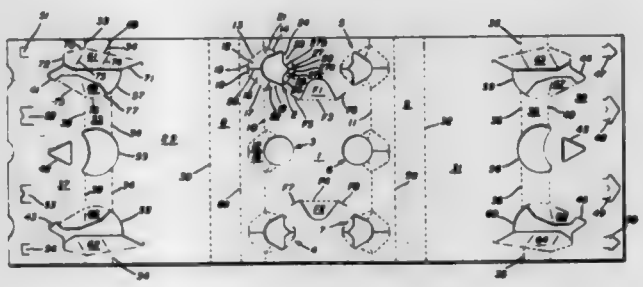
the band being wound onto the wound package such that the latter contains a plurality of essentially parallel windings formed of the wound-up band.

4,533,047

HEEL RETAINING STRUCTURE ON BOTTLE CARRIER

Rodney K. Calvert, Dunwoody, Ga., assignor to The Mead Corporation, Dayton, Ohio

Filed Aug. 1, 1984, Ser. No. 636,579
Int. Cl.[3] B65D *71/00*
U.S. Cl. 206—434 8 Claims

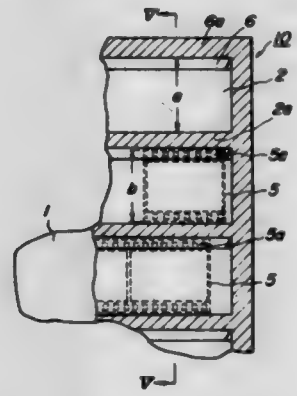


1. A bottle carrier of the wrap around type having top, bottom and side walls interconnected to form a tubular open ended structure wherein a sloping heel panel is interconnected with each side wall along a fold line and with an associated bottom lap panel along a fold line and wherein bottle heel receiving apertures are formed in each sloping heel panel which extend into the associated side wall and lap panel and wherein the improvement comprises combination bottle engaging and carrier reinforcing flaps foldably joined respectively along the outer edges of the bottle heel receiving apertures which are disposed immediately adjacent the open ends of the carrier, each bottle engaging and carrier reinforcing flap extending across the associated sloping heel panel and into the associated side wall and lap panel and having a fold line formed therein one end of which coincides with the fold line between the associated sloping heel panel and the associated lap panel and which is angularly disposed to said fold line and which is disposed in a plane which is substantially parallel with the inner surface of the associated lap panel.

4,533,048
FILM JACKET

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

Continuation of Ser. No. 311,021, Oct. 13, 1981, abandoned.
This application Aug. 22, 1983, Ser. No. 525,268
Claims priority, application Japan, Nov. 6, 1978, 53-136593
Int. Cl.[3] B65D *85/48*
U.S. Cl. 206—455 15 Claims



1. A film jacket for receiving and holding a film having a length dimension and a width dimension, the film having a central image bearing portion positioned between marginal side portions, said film jacket comprising a base sheet; at least one surface sheet made of a transparent plastic sheet and having three side edges thereof fixed to said base sheet while keeping one side edge thereof left open for forming a pocket between the base sheet and the surface sheet, said pocket having a first dimension larger than one of the dimensions of the film received in the pocket and a second dimension smaller than the other dimension of the film so that a portion of the received film extends outside of the pocket, said first and second dimensions being such that all of the central image bearing portion of the film is received within said pocket; and at least one cover member fixed at only one edge to said base sheet along said open edge of said surface sheet so that said cover member covers at least a portion of the film received in said pocket which extends outside the pocket, the portion of said cover member fixed to the base sheet and the portion of said surface sheet fixed to said base sheet being parallel to said open edge and the spacing between the fixed portions being slightly wider than the other dimension of the film received into said pocket, said at least one cover member having only one edge fixed to said base sheet, other said edges thereof being separated from said base sheet so that the other side edges of said at least one cover member are movable away from said sheet to facilitate insertion of film into said pocket.

4,533,049
SLIDE FILE SHEET

Jiro Ozeki, Tokyo, Japan, assignor to Slidex Corporation, Tokyo, Japan

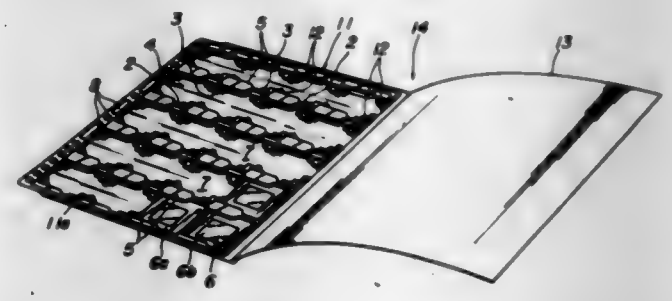
Filed Mar. 6, 1984, Ser. No. 586,731
Claims priority, application Japan, Apr. 9, 1983, 58-61548
Int. Cl.[3] B65D *85/48, 1/36*
U.S. Cl. 206—455 13 Claims

1. A slide file sheet comprising:

a film holding plate having a plurality of rectangular recesses aligned with each other in rows and columns,

frame supports for retaining frames of slide film in said respective rectangular recesses,

separating means for preventing said slide films from directly contacting respective bottoms of said rectangular recesses of the plate, and

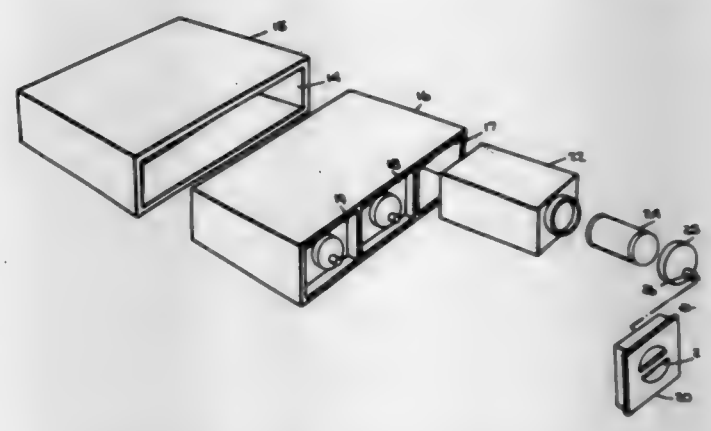


a flexible cover being at least partially transparent and attached at its one side edge to one side edge of said film holding plate.

4,533,050
CUSHIONED CONTAINER

Louis S. Bake, Jr., 4625 24th Rd. North, Arlington, Va. 22207

Filed Feb. 10, 1984, Ser. No. 579,166
Int. Cl.[3] A45C *11/20*
U.S. Cl. 206—545 14 Claims



1. A cushioned container capable of simultaneous use as a seat cushion and a receptacle for containing consumable materials comprising, an inner enclosure having an outer cushion layer bounding at least a portion of said inner enclosure, first container disposed in said inner enclosure having a plurality of compartments of first respective predetermined cross-sectional shapes, a corresponding plurality of second containers individually having first chambers for receiving temperature controlling materials, and individually having second chambers for receiving consumable materials, said second containers being adapted for disposition in the respective compartments of said first container, said second containers having second respective predetermined cross-sections of complementary shape and size with respect to said first respective cross-sectional shapes such that the combination of respective said second containers disposed in said first container furnish predetermined support for said outer cushion layer to permit use of said cushioned container as a seat cushion.

4,533,051
BOTTLE HOLDER

Ray D. Fleming, 803 Arrah, Friona, Tex. 79035

Filed May 4, 1984, Ser. No. 607,233
Int. Cl.[3] B65D *1/36, 6/04*
U.S. Cl. 206—563 4 Claims

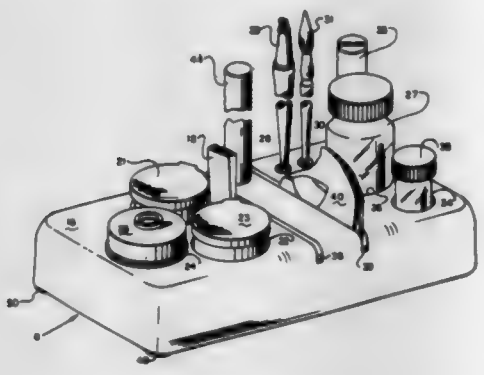
1. A holder for material comprising:

a. a rectangular base having a length of about 7" and a width of about 3.8" and a height of about 1.5",

b. a planer top,

c. a handle at about the center of gravity of the base which is about the middle of the planer top,

d. said handle projecting up from the planer top about 2" above the planer top,
e. two holes near the handle, each of about 1.5" in diameter and about 1" deep,
f. a center hole on the longitudinal center line of the base,
g. said center hole having a diameter of about 1.33" and a depth of about 0.66",
h. an opposite hole near the longitudinal center line on the opposite end of the rectangular base, having a diameter of about 1.33" and a depth of about 1.1",
i. two elongated slots,
j. said slots spaced apart about 0.8", and about 0.5" deep and extend from side to side.



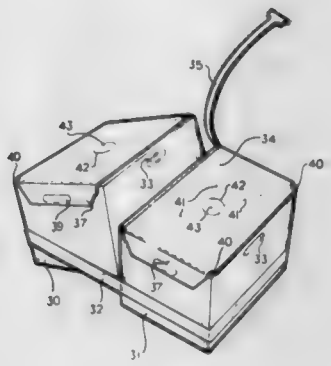
k. a dowel hole between the slots about 0.5" in diameter and about 1" in depth,
l. two brush holes in the top near the opposite hole,
m. each brush hole being about 0.2" in diameter and about 1.1" deep,
n. a dropper hole near the brush holes,
o. said dropper hole having a diameter of about 0.33" and a depth of about 1.1",
p. a small bottle hole near the opposite hole,
q. said small bottle hole having a diameter of about 0.75" and a depth of about 0.9".

4,533,052

DUAL CARTON

Melvin C. Fruchey, and Michael J. Kubicki, both of Toledo, Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Filed Feb. 27, 1984, Ser. No. 583,556
Int. Cl.³ B65D *5/34*
U.S. Cl. 206—602 **4 Claims**



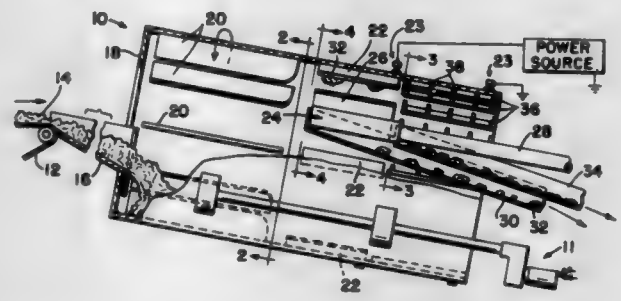
1. A multiple article package comprising, a first open-topped, four-sided carton with fully closed bottom, for holding a first array of articles, a second open-topped, four-sided carton for holding a second array of articles, said cartons being in abutting relationship, means adjacent the top of at least all of the non-abutting sides of both cartons for providing dual handgrips for each carton, easily severable means holding said open-topped cartons together with the abutting sides deining a vertical plane, a generally rectangular cap covering both open-topped cartons and attached thereto and wherein said cap is formed with means extending across the portion thereof overlying the abutment plane of said cartons for easy separation of the cap when separation of the package into two cartons is affected.

4,533,053

ROTARY DRUM MAGNETIC SEPARATOR

Garry R. Kenny, College Grove; Edward J. Sommer, Jr., and Charles E. Roos, both of Nashville, all of Tenn., assignors to Magnetic Separation Systems, Inc., Nashville, Tenn.

Continuation-in-part of Ser. No. 457,675, Jan. 13, 1983. This application May 25, 1983, Ser. No. 498,129
Int. Cl.³ B03C *1/02*
U.S. Cl. 209—636 **15 Claims**



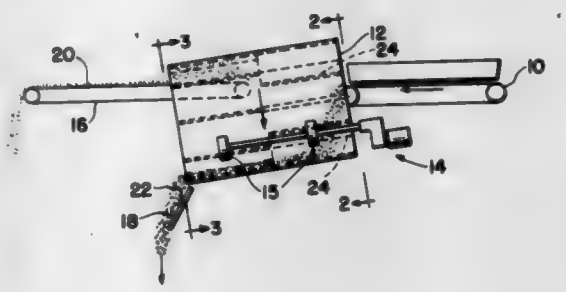
1. Material treating apparatus adapted to be rotated around a cylindrical axis comprising a cylinder open at least in part at both ends thereof and having spaced around the inside of the circumferential wall thereof a plurality of elongated magnetic flights extending toward the central axis of said cylinder, each running longitudinally along a substantial part of the length of said cylinder.

4,533,054

ROTARY FUEL HOMOGENIZER AND USE THEREOF

Edward J. Sommer, Jr., Nashville; Garry R. Kenny, College Grove, and Charles E. Roos, Nashville, all of Tenn., assignors to Magnetic Separation Systems, Inc., Nashville, Tenn.

Filed Jan. 13, 1983, Ser. No. 457,675
Int. Cl.³ B07B *13/05*
U.S. Cl. 209—687 **5 Claims**



1. A municipal waste treating apparatus comprising a single cylinder having an inner annular wall, adapted to be rotated around the axis of said single cylinder, said single cylinder being of substantially the same diameter along its entire length and open at least in part at both ends thereof; said cylinder having spaced around the inside of said annular wall thereof a first set of substantially straight extensions extending from an inner surface of said wall toward said axis of said cylinder and running parallel to said axis only a first half of the length of said cylinder, said substantially straight extensions having rodlike extensions at an angle at their inner ends, said rodlike extensions being knife blade-like to facilitate breaking open and emptying plastic bags, said cylinder having a second set of similarly positioned but much shorter extensions extending from said inner surface to said annular wall and running along only a second half of the length of said cylinder, said cylinder having discharge means and being substantially hollow and substantially unimpeded along said length thereof except for said extensions and except for said discharge means, and said

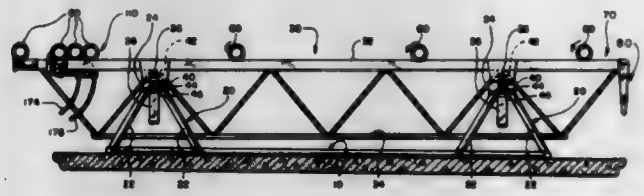
annular wall being substantially continuous except for said extensions and without perforations.

4,533,055

STORAGE RACK FOR DRILLING TUBULARS

Keith M. Haney, Wichita Falls, Tex., assignor to Walker-Neer Manufacturing Co., Inc., Wichita Falls, Tex.

Filed Jun. 2, 1982, Ser. No. 384,405
Int. Cl.³ A47F 7/00
U.S. Cl. 211—70.4 **11 Claims**



1. A rack for drilling tubulars, said rack comprising:
a base having two spaced support pedestals mounted thereon;
a support member having two spaced attachment members mounted thereon;
first and second columns;
means for mounting each of the first and second columns between a respective one of the support pedestals and a respective one of the attachment members to interconnect the base with the support member;
said base, support member, columns and mounting means configured to support a plurality of drilling tubulars extending transverse to the support member; and
means, included in the mounting means, for independently adjusting the positions of the first and second columns to independently control the tilt and the elevation of the support member with respect to the base such that either end of the support member can be elevated above the other end of the support member in order to cause drilling tubulars supported on the support member to roll to either selected end of the support member;
each of the pedestals comprising a plate having an opening passing therethrough, each of the columns being threaded and passing through the opening in a respective one of the plates, and the mounting means comprising a pair of nuts, each threadedly engaged to a respective one of the columns and positioned adjacent to and over the respective plate such that downward forces are passed via the columns, the nuts, and the plates to the pedestals.

4,533,056

SHELF AND BRACKET THEREFOR

George Krikorian, 39 Camp St., Paxton, Mass. 01612

Filed Feb. 13, 1984, Ser. No. 579,506
Int. Cl.³ A47F 5/00
U.S. Cl. 211—153 **2 Claims**



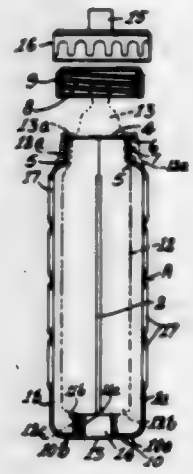
1. A wire shelf and bracket therefor comprising
an open wire frame including a rear longitudinal wire and several mutually spaced longitudinal wires of like diameter, crosswires fixed and connecting the rear and several wires,
the bracket comprising a rigid elongated member, projections on an edge thereof, said projections being adapted to extend from one side of the wires to the other, each projection including a curved edge forming a bight, a pair of bights facing each other, and being apart a distance to springily receive two of the wires, and a third bight facing oppositely and springily receiving a third wire, said bights fixing the shelf to the bracket, the bracket being positioned under the shelf, the projections rising through the shelf,
a series of wires parallel to the first named wires and lying between certain pairs thereof in mutually evenly spaced relation,
the last named series of wires being smaller in diameter and more closely spaced than the first named wires and certain of the series of wires being fixedly spaced from certain of the first named wires to a degree to just allow the entry of certain projections therebetween to provide for snapping the first named wires to the projections and to act to aid in preventing accidental dislodgement of the brackets, both series of wires being in fixed relation to each other.

4,533,057

FEEDING BOTTLE WITH TUBULAR HOUSING FOR CLAMPING FLEXIBLE CONTAINER

Klaus Klittich, P.O. Box 501, Germiston 1400, South Africa

Filed Mar. 17, 1982, Ser. No. 359,088
Claims priority, application South Africa, Mar. 31, 1981, 81/2145; May 4, 1981, 81/2939
Int. Cl.³ A61J 9/00
U.S. Cl. 215—11 E **8 Claims**

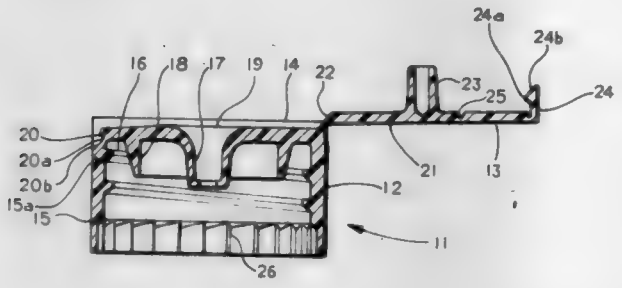


1. A feeding bottle housing of tubular configuration with an open upper end adapted to receive a teat and which is adapted to accommodate an open-ended flexible container in the interior of the housing with a mouth zone of the container folded over the upper end of the housing, the housing comprising two longitudinally divided sections which are linked together along a longitudinally extending hinge zone and are movable about the hinge zone between open and closed positions and clamping means located on a lower portion of the housing to anchor the base of a flexible container and fix the extent of the mouth zone of the container available for folding over the upper end of the housing, the clamping means comprising cooperating and elongated tongue and groove formations integral with the two housing sections, the formations presenting clamping surfaces of complementary curved cross-sectional configuration which are movable relative to each other in a direction transverse to the formations and about the longitudinally extending hinge zone between a separated, inoperative position when the two housing sections are in an open position and an operative position in which they mate to engage between them a base portion of the container when the two housing sections are in a closed position, the tongue formation also defining at least part of a socket adapted releasably to receive a projecting spigot formation on a removable teat cap.

4,533,058
ONE-PIECE THERMOPLASTIC CHILD-RESISTENT DISPENSING CLOSURE

Albert P. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 28, 1984, Ser. No. 676,029
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—216 14 Claims

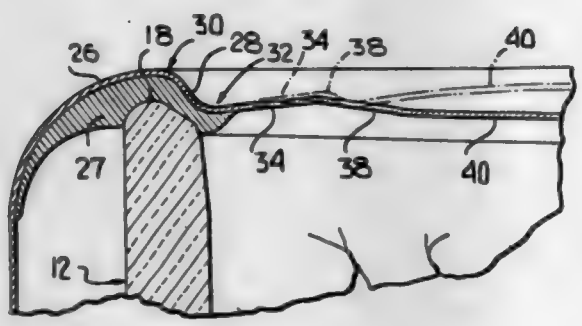


1. In a one-piece dispensing closure for a container with a closure receiving finish, which closure comprises; a body portion with a top panel and dispensing opening means in said top panel, an annular skirt depending from said top panel and adapted to surround the finish portion of said container, means extending inwardly from the annular skirt for engaging said finish to secure the closure to the container, and a locking flap hingedly connected to said body portion and comprising sealing means for sealingly engaging the dispensing opening means when the locking flap is in a closed position, said locking flap being foldable between said closed position and an open position to permit the dispensing of the contents of the container through the dispensing opening means when said locking flap is in said open position, said top panel containing a recess for receiving the locking flap when said locking flap is in the closed position, the improvement in which said recess is deeper than the thickness of the locking flap at the end of the locking flap away from the location of the hinged attachment of the locking flap to the body portion to permit said end of the locking flap to be depressed within said recess to expose said end for access to facilitate the movement of the locking flap to the opened position.

4,533,059
VACUUM-TAMPER INDICATING BUTTON FOR SMALLER DIAMETER CAPS AND THE LIKE

William J. Kapolas, Mt. Prospect; Peter A. Vercillo, Hinsdale; Daniel Dowling; George S. Beatovic, both of Chicago; Oscar N. Clifton, Schaumburg; Ronald Gatz, Park Ridge; Eugene W. Harford, Chicago; Chester Wilczenski, Lombard; John Dobbs, Des Plaines; Ronald Kowalczyk, Chicago; Derek G. Owen, Bensenville, and John N. Banich, Chicago, all of Ill., assignors to Continental White Cap, Inc., Northbrook, Ill.

Filed Jun. 13, 1984, Ser. No. 620,304
Int. Cl.[3] G01L *19/12*
U.S. Cl. 215—230 17 Claims

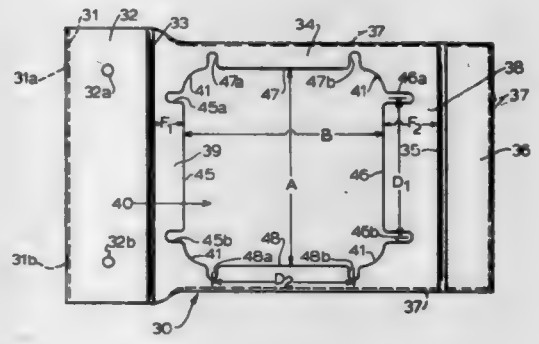


1. A closure cap for vacuum packed containers, said closure cap being in the form of a sheet metal shell configurated to include an outer skirt having at an upper edge thereof a downwardly opening channel for receiving a sealant, and an end panel recessed within said channel, said end panel being primarily in the form of a vacuum actuated tamper indicating button, said button including a radially outer upwardly sloping annular flange having a rise, an intermediate downwardly sloping annular flange having a dip and joined to said outer flange by a first radius, and an upwardly sloping central portion joined to said intermediate flange by a second radius, said central panel being movable downwardly under influence of a vacuum on said end panel to have a downward slope.

4,533,060
MOUNTING BRACKET FOR ELECTRICAL OUTLET BOXES

Lewis B. Medlin, P.O. Box 237, Blue Ridge, Va. 24064

Filed Jan. 9, 1985, Ser. No. 690,057
Int. Cl.[3] H02G *3/08*
U.S. Cl. 220—3.9 19 Claims



1. An electrical outlet box mounting assembly, comprising:

(a) a square outlet box having integrally joined base and sidewalls formed with a selected number and size of knock-out discs and on the outer edge of each sidewall of one opposed pair of said sidewalls having a pair of inwardly-directed, laterally-spaced screw receiving tabs with threaded holes and overlying an interior chamber formed by said box with the pair of tabs on one said sidewall opposing and being laterally spaced apart the same distance as the pair of tabs on the opposite said sidewall;

(b) a dry wall ring having a central opening and a peripheral plate flange with screw clearance openings arranged for being mated to said tab threaded holes;

(c) an L-shaped unitary mounting bracket formed of a single piece of stiff sheet material, including:

(i) first and second rectangular plate portions in right angular relation adapted for securement adjacent respective side and front surfaces of a construction stud; and

(ii) a plate body portion extending outwardly from said second plate portion having:

(aa) at an outer end a third rectangular flat plate end portion in the same plane as the plane of said second plate portion;

(bb) between said third plate portion and second plate portion having a fourth rectangular plate portion in a plane offset from and substantially parallel to the plane of said second and third plate portions by an amount substantially equal to the thickness of said dry wall ring flange, said fourth plate portion plane being established by parallel offsets formed on both sides of said fourth plate portion;

(cc) a substantially square opening in said fourth plate portion defined by opposed straight parallel upper and lower and opposed straight parallel right and left side edges formed in said fourth plate portion around said opening, said right and left edges being parallel to said offsets and said opening being sized to register with the interior chamber of said box with the width of said opening being substantially equal to the spacing between a tab on one of said sidewalls and the opposite tab on another of said sidewalls;

(dd) a first pair of laterally spaced screw slots extending from the said upper edge of said fourth plate portion opening, said slot lateral spacing being equal to the lateral spacing between the threaded holes in each of said pair of tabs;

(ee) a second pair of laterally spaced screw slots extending from the said lower edge of said fourth plate portion opening, said second pair of slots having a depth equal to the depth of said first pair of slots and sufficient for at least limited vertical box mounting adjustment on said bracket and being positioned opposite to said first pair of slots, said lateral spacing between said second pair of slots also being equal to the lateral spacing between the threaded holes in each of said pair of tabs;

(ff) a third pair of laterally spaced screw slots extending from the left edge of said fourth plate portion opening and having a lateral spacing and depth substantially equal to the depth of said first and second pair of slots;

(gg) a fourth pair of laterally spaced screw slots extending from the right edge of said fourth plate portion opening, said fourth pair of slots being positioned opposite to the position of said third pair of slots and having a lateral spacing equal thereto and a depth substantially twice the depth of said first, second and third pair of slots enabling horizontal box mounting adjustment on said bracket;

(hh) a flange ring turning surface established by the spacing of said right and left edges of said opening from the said respective offsets on either side thereof and formed such that when a selected screw clearance opening on said dry wall ring rotates around a screw installed in a selected one of said tab threaded holes as another diagonally opposite selected said screw clearance opening is positioned to engage another diagonally opposite screw in another diagonally opposite said tab threaded hole, the bottom surface of said dry wall ring is able to slide on said fourth plate portion;

(ii) between each pair of slots at the corners of said opening an outwardly curved edge serving as a continuation of the slot edge on either side thereof; and

(d) a plurality of screws adapted for being loosely fitted in said slots and for being secured in said tab threaded holes, whereby when an electric outlet box is positioned adjacent the inner side of said fourth plate portion in position with respect thereto so that the interior of said electric outlet box is accessible through said fourth plate portion opening and a dry wall ring is fixed to the outer side of said fourth plate portion, said slots enable said junction box, bracket and dry wall ring to be held in operative position with screws passed through said slots and secured in said tab-threaded holes independent of said tabs being oriented to mate with said right and left edges or alternatively with said upper and lower edges surrounding said opening and whereby the outer surface of the flange of said ring is maintained when said screws are tightened in substantially the same plane as the outer surface of said second and third plate portions.

4,533,061

FOOD TRAY AND LID WITH SEALED PANELS AND METHOD OF FORMING SAME

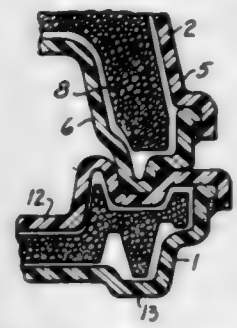
Walter B. Herbst, Evanston, Ill., assignor to American Hospital Supply Corporation, Evanston, Ill.

Filed Sep. 17, 1979, Ser. No. 76,516

Int. Cl.³ B65D *6/32*; A45C *11/20*

U.S. Cl. 220—4 B **8 Claims**

1. A food serving tray or lid therefore which includes an insulator permanently encased between thermoplastic top and bottom panels wherein the improvement comprises: a peripheral ledge portion formed on one panel, said ledge having a generally horizontal section and retaining lip formed thereon extending in a generally vertical direction when the tray is in a horizontal position; a peripheral tongue portion formed on the other panel, said tongue having a laterally extending spacer portion fitting against the ledge portion inside lip to provide a lateral gap between said lip and tongue on the side of said



spacer portion opposite said ledge portion; and a bonding material between said lip and tongue portions providing a peripheral seam that is protected from fracture when the tray is laterally impacted about said lip during handling.

4,533,062

CONTAINER CLOSURE FOR SUPPLYING AIR TO OR REMOVING AIR FROM A CONTAINER

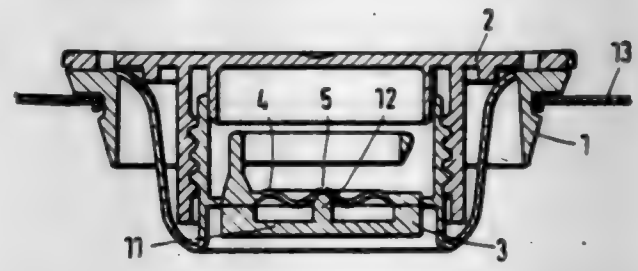
Günter Krautkrämer, Budenheim, Fed. Rep. of Germany, assignor to Jacob Berg KG, Bundenheim, Fed. Rep. of Germany

Filed Aug. 10, 1984, Ser. No. 640,031

Claims priority, application Fed. Rep. of Germany, Aug. 11, 1983, 3328953

Int. Cl.³ B65D *51/22*

U.S. Cl. 220—258 **20 Claims**



1. A container closure made from plastics, for supplying air to or removing air from a container, comprising a closure lower portion which can be connected to the container and has a diaphragm portion which comprises one piece with said lower portion, closes the pouring opening and can be torn out, and a cap which can be detachably connected to the closure lower portion characterised in that the diaphragm portion has a resilient diaphragm with an opening which in the normal position of the diaphragm portion is sealed in an air-tight manner by a projection of the container closure abutting with the opening, wherein the diaphragm of the diaphragm portion is prestressed against the projection of the container closure, and a hollow space of the cap adjoining the opening is in open connection with the atmosphere.

4,533,063

CONTAINER LID HAVING AN OPENING DEVICE

Norbert Buchner, Winnenden; Rolf Eberspächer, Rommelshausen, and Dieter Liede, Möglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,455

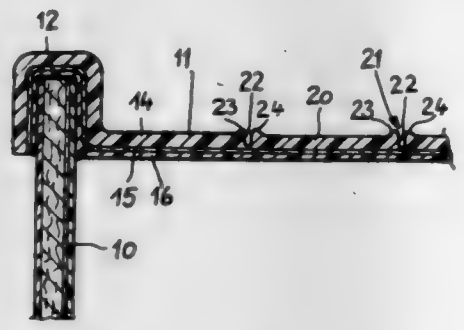
Claims priority, application Fed. Rep. of Germany, Sep. 23, 1982, 3235167

Int. Cl.³ B65D *17/34*

U.S. Cl. 220—270 **14 Claims**

1. A container lid having an opening device, said lid comprising at least an outer, thick carrier layer made of a thermoplastic synthetic material and an inner sealing layer capable of being welded to a container body, said carrier layer including

a weakened line indentation at least partially surrounding a tear-open portion, characterized in that the container lid is



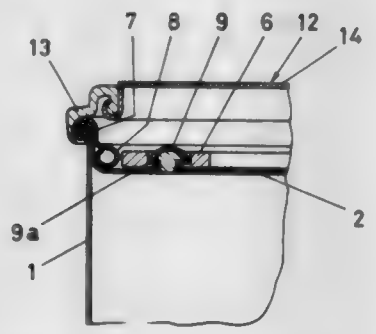
formed by a composite laminate material and that the weakened indentation line in the carrier layer of the composite material is embodied as a heat-impressed indentation.

4,533,064

CAN AND CLOSURE STRUCTURE

Kiyoshi Kawamata, and Seizi Kawamata, both of Ohomiya, Japan, assignors to Nihon Seikan Kabushiki Kaisha, Ohomiya, Japan

Filed Aug. 27, 1984, Ser. No. 644,675
Int. Cl.³ B65D *17/46*
U.S. Cl. 220—273 **4 Claims**



1. A can or similar container construction removably capped by a top cover having an intermediate film base partition detachably mounted over the open top of the can body, the partition carrying a peripheral score line and a straight score line across the partiton as well as a finger grip allowing the partition to be detached apart from the can body, comprising:

said finger grip having a mounting hole on one side acting as a pivotal or fulcrum point upon pulling the finger grip up from the other side thereof;

said intermediate film base partition having a hollow protrusion integrally formed thereon, for being inserted into said mounting hole; and

a reinforcing metal packing member backing said hollow protrusion from the inside thereof, whereby said finger grip is solidly secured to the partition by inserting the reinforced hollow partition into said mounting hole of the finger grip and subjecting said reinforced hollow protrusion to deformation for engaging the mounting hole of the finger grip.

4,533,065

CONTAINER HAVING ONE PIECE PERIPHERAL RIM, AT LEAST TWO CARDBOARD PARTS AND A SYNTHETIC MATERIAL LAYER

Guy A. Chazal, Sannois, and Jean A. Bodet, Versailles, both of France, assignors to Societe Parisienne D'Impression et de Cartonnage, Haute de Siene, France

Filed Oct. 2, 1981, Ser. No. 307,833
Claims priority, application France, Jul. 11, 1980, 80 23782
Int. Cl.³ B65D *5/32, 5/56, 5/48*
U.S. Cl. 220—462 **14 Claims**

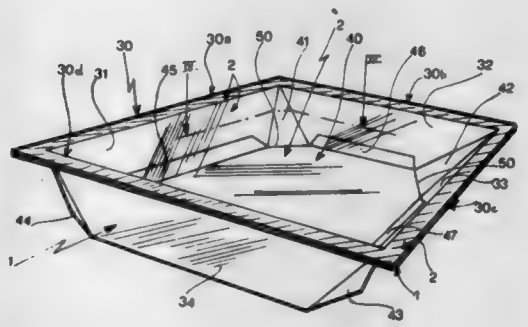
1. A container comprising:

an exterior cardboard portion and a portion of synthetic material;

said cardboard portion comprising distinct first and second cardboard pieces;

said first cardboard piece having a unitary rim with an upper side extending in a single plane and a plurality of first wall panels integral with the rim and being displaced below the said plane with adjacent edges of said displaced first wall panels being separated to form part of the complete side walls of the container;

said second cardboard piece having at least one bottom panel and a plurality of second wall panels integral with said bottom panel and displaced upwardly from said panel with edges of said displaced second wall panels being separated



from the edges of the other wall panels of the second piece to form a further part of the complete side walls of said container;

said portion of synthetic material being formed of a single layer adherently applied onto the bottom panel and onto a surface of the container side walls to form the interior of the container and onto the upper surface of the said rim; and

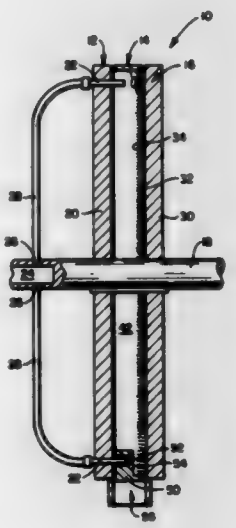
said complete side walls being formed by said first wall panels and said second wall panels being maintained in side-by-side interfitted juxtaposition by said single layer of synthetic material being adherently applied thereto with said first wall panels and said second wall panels being maintained in edge-to-edge juxtaposition, said second wall panels generally overlying the edges of said first wall panels.

4,533,066

SEED PLANTER, PLANTER ASSEMBLY AND METHOD OF PICKING UP AND DISCHARGING SINGLE SEEDS

Robert G. Holmes, and Scott A. Shearer, both of Columbus, Ohio, assignors to Ohio Agricultural Research & Development Center, Wooster, Ohio

Filed Sep. 29, 1982, Ser. No. 434,267
Int. Cl.³ B65G *15/02*; B65H *3/08*
U.S. Cl. 221—211 **20 Claims**



1. A seed planter comprising:

a seed transport member having a porous surface, said porous surface having an inner face adjacent to a seed loading station, said inner face supporting seeds in spaced

relationship to said transport member such that, when a seed is resting on said inner face of said porous surface and a jet of gas is directed at said seed normally and towards said porous surface, said inner face of said porous surface will allow air flow around the whole surface of said seed, including the side of said seed remote from said jet of gas;

a seed loading station;

a seed unloading station provided with seed removal means for removing a seed from said porous surface as said porous surface is moved past said seed unloading station;

gas jet means for directing a jet of gas substantially normally to the part of said porous surface lying adjacent said seed loading station as said part of said porous surface passes said seed loading station; and

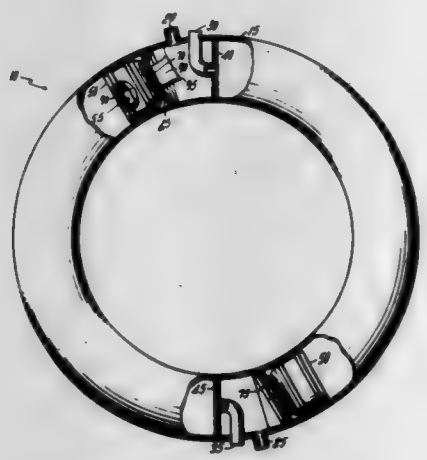
drive means for moving said porous surface past said seed loading station and thereafter past said seed unloading station.

4,533,067

FLUID MEDIUM STORAGE AND EXPULSION APPARATUS

Vincent J. Sansevero, Jr., East Hartford, and Walter F. Skrabal, Windsor Locks, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Aug. 9, 1982, Ser. No. 406,405
Int. Cl.³ F02K *9/50*
U.S. Cl. 222—135 **10 Claims**



1. Apparatus for the storage therewithin and expulsion therefrom of a primary fluid, said apparatus comprising a generally tubular tank radially spaced from and disposed about a central axis normal to the longitudinal axis of the tank, a piston slidably disposed in said tank for longitudinal movement therewithin, thereby expelling said primary fluid from said tank, said tank including an inlet port through which a secondary fluid is introduced into said tank for driving said piston, said apparatus being characterized by:

a flexible, expandable shield connected at one end thereof to said piston and an opposite end thereof to an inner wall of said tank, said shield being expanded by movement of said piston, thereby forming a lining for said tank by which said tank is shielded from the effects of said secondary fluid;

said piston having a hollow portion interiorly thereof, said shield being foldably received within said hollow portion in a nonextended condition when said piston is disposed in a postion proximal to said inlet; and

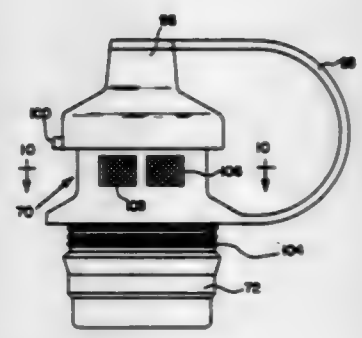
said hollow portion of said piston being provided with a tubular skirt extending therefrom interiorly of said shield for protecting said shield in a nonextended state from the initial effects of the admission of said secondary fluid into said tank.

4,533,068

STERILE SOLUTION DELIVERY AND VENTING DEVICES

Eugene J. Meierhoefer, Hackettstown, N.J., assignor to Health Care Concepts, Inc., Allamuchy, N.J.

Continuation-in-part of Ser. No. 293,519, Aug. 14, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 404,484
Int. Cl.³ B65D *37/00*
U.S. Cl. 222—189 **1 Claim**



1. A squeeze bottle for storing and dispensing multiple doses of a sterile liquid comprising:

a closed hollow body to contain said sterile liquid;

said body having a neck portion;

a normally closed deformable duck-bill valve mounted in said neck;

an air inlet port in said neck;

hydrophobic filter means mounted vertically behind said air inlet port;

captive cap means movable between an open dispensing position and a closed position covering said duck-bill valve and preventing finger touching contamination thereof;

co-operating means on said cap and the outside of said body to anchor said cap out of the flow of dispensed liquid when the cap is in open position;

said normally closed duck-bill valve operating, when the cap is on open position, in response to pressure created by squeezing said bottle to dispense sterile liquid and automatically closing on release of squeezing pressure;

said dispensing of sterile liquid creating a partial vacuum within said bottle;

said vacuum in cooperation with the structure of the squeeze bottle serving the dual purpose of causing sterile liquid remaining in the duck-bill valve and the space in the neck directly below the valve to be drawn back into the body of said bottle and providing a differential pressure between the vacuum within the bottle and the higher atmospheric pressure outside the bottle, whereby the external pressure compresses the deformable duck-bill valve down against said neck thus forcing any remaining sterile liquid back into the body of the bottle;

said hydrophobic filter means having a pore size which precludes passage of liquid and such that it sterilizes air passing into the bottle through the filter for equilibration of said vacuum;

said hydrophobic filter means and said air inlet port being spaced below said cap to permit said equilibration to take place even when the cap is in closed position;

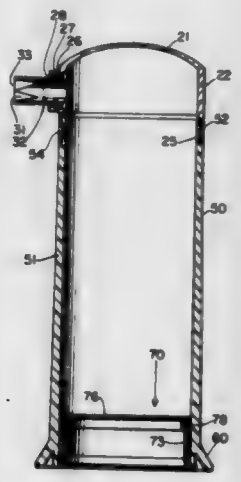
the vertical disposition of said hydrophobic filter preventing occlusion of said filter by external liquid when the squeeze bottle is in use position;

said cap when in closed position being tightly pressed against the external surface of the duck-bill valve thus preventing said valve from opening and discharging liquid no matter how the bottle is handled or squeezed when the cap is in closed position.

4,533,069
PUMP-TYPE DISPENSER

James L. Drobish, Wyoming, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 31, 1983, Ser. No. 546,343
Int. Cl.[3] B65D *37/00*
U.S. Cl. 222—209 7 Claims

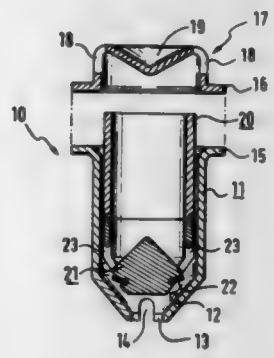


1. A pump-type dispenser for a fluid product, comprising:
(a) a tubular container body having an axially extending bore for housing said fluid product, said container body having an upper end in direct communication with a discharge passageway and an open lower end;
(b) a check valve dispensing outlet located adjacent said discharge passageway, said outlet permitting said product to be dispensed outwardly therethrough at a desired rate of flow when product pressure within said dispenser attains a predetermined required dispensing pressure and sealing said passageway when the product pressure is reduced to atmospheric;
(c) finger activated pump means on said dispenser to raise the product pressure within said dispenser and displace a charge of product and, on release, to establish a vacuum within said dispenser which persists until volumetric equilibrium is established within said dispenser; and
(d) a follower piston slidably mounted within the bore of said tubular container body and sealing the same against escape of product from said lower end, said piston being formed of resilient material and comprising a face portion and a peripherally attached sidewall, said piston face being in constant direct fluid communication with said check valve dispensing outlet, said sidewall being formed with a peripheral contact band conforming to the shape of the cross section of the bore and dimensioned to provide an interference fit within the bore which exerts a predetermined normal force against the inner surfaces of said bore in static condition thereby establishing a predetermined frictional resistance to movement of said piston within said bore, said frictional resistance being substantially equivalent in both upward and downward directions of axial movement within said bore, being greater than the force applied to said piston by said required dispensing pressure and less than that applied to said piston by pressure imbalance caused by the establishment of said vacuum within said dispenser, and being the sole means for inhibiting retrograde movement of the follower piston whereby upon application of pump pressure to said product said predetermined frictional resistance prevents movement of said piston toward the open end of said bore while allowing said required dispensing pressure to be attained within said dispenser for dispensing said product, and upon reduction of product pressure to below atmospheric permits ambient air pressure to move said piston toward the upper end of said bore a distance corresponding to the volume of said displaced charge of product thereby establishing volumetric equilibrium within said dispenser.

4,533,070
VARIABLE VOLUME METERING VALVE FOR DISPENSING BEVERAGE CONCENTRATES

Anton Deininger, Bachhagel; Hartmann Nelzow, and Karlheinz Färber, both of Giengen, all of Fed. Rep. of Germany, assignors to Bosch-Siemens Hausgeraete GmbH, Stuttgart, Fed. Rep. of Germany

Division of Ser. No. 299,640, Sep. 4, 1981,. This application Apr. 11, 1984, Ser. No. 599,266
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1980, 3033873
Int. Cl.[3] B67D *3/00*
U.S. Cl. 222—439 1 Claim



1. Metering valve, comprising a substantially vertically-disposed, tubular housing, said housing having an upper and a lower end, said lower end of said housing having a valve seat formed thereon and an outlet opening formed in said valve seat, a substantially tubular ram being axially liftable in said housing, said ram having an upper end and a lower end, said lower end of said ram having a sealing cone formed thereon engaging said valve seat when said ram is lowered, and said ram having drainage ports formed therein in vicinity of said sealing zone, said draining ports being operable to leak fluid below said ram when said ram is lifted, and interchangeable cap means attachable to the upper end of said tubular housing and having a convex impact surface thereon, said impact surface extending into the upper end of said tubular ram when said ram is lifted, said convex impact surface having predetermined dimensions for metering the volume of fluid that can be contained within said tubular ram, and said cap having an opening formed therein for admitting fluid into said ram.

4,533,071
DISPENSING CLOSURE VALVE

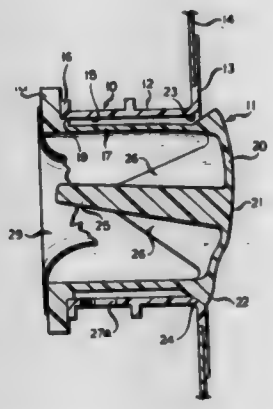
Albert R. Uhlig, Toledo, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Aug. 22, 1983, Ser. No. 525,075
Int. Cl.[3] B65D *47/08*
U.S. Cl. 222—498 8 Claims

1. A dispensing closure valve for a container comprising
a stem having a free end and an opposite end for attachment to the container,
said stem having an annular wall defining an opening through the stem, and
a closure made of plastic material such that it will flex in thin cross section,
said closure having an annular axial wall, a radial wall engaging the free end of said stem, and a transverse wall curved and defining a convex surface extending from said annular axial wall and facing inwardly of the container,
said closure including a radially outwardly and axially inwardly inclined integral annular sealing surface at the juncture of said axial wall and transverse wall,
said stem having a downwardly and outwardly inclined

sealing surface engaged by said downwardly and inwardly inclined sealing surface of said closure, and

an actuator comprising a tab extending axially from the inner



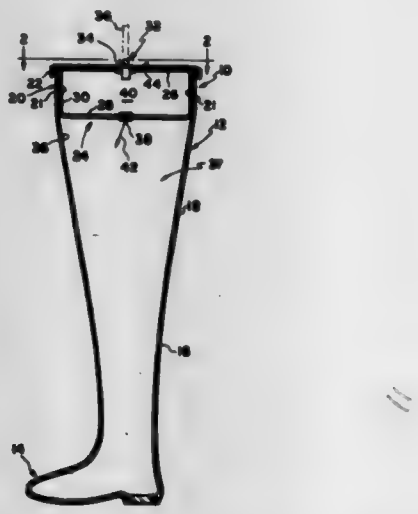
surface of the transverse wall for manipulation of the closure to flex the axial wall and the transverse wall and thereby permit the contents to flow between the wall of the stem and the wall of the closure.

4,533,072

INFLATABLE WADER TREE

David R. Craig, 362 Evergreen, Holland, Mich. 49423

Filed Sep. 13, 1982, Ser. No. 416,843
Int. Cl.[3] A43D *5/00*
U.S. Cl. 223—67 4 Claims



1. An inflatable tree for maintaining the shape of stored footwear, such as waders and the like, having a foot-receiving portion and an upstanding leg-receiving portion provided with an upper portion having an upwardly-opening, upper opening therein, said inflatable tree comprising:

inflatable and deflatable insert means, detachably receivable in the upper opening of said footwear, having a side wall and integral top and bottom walls;

said insert means, when inflated, being of such size and shape that said side wall is in sealing engagement with and detachably secured to said upper portion of said footwear and said bottom wall is vertically spaced from said foot receiving portion to form a sealed chamber within the footwear below the tree;

said insert means, when deflated, being of such size and shape that said side wall is not in sealing engagement with said upper portion to allow said insert means to be detached from said footwear;

openable and closeable air inlet means, at the upper end of said tree, for admitting air into said tree to inflate and expand said tree so that said side wall sealingly engages and is detachably secured to said upper portion of said footwear; and

air outlet means, in said bottom wall of said tree, for permitting air within said tree to escape outwardly therethrough to said sealed chamber to distend the lower portion of said footwear;

said air outlet means being of such construction as to permit substantially less air to pass outwardly therethrough than said air inlet means admits to said tree to allow said tree to inflate; and

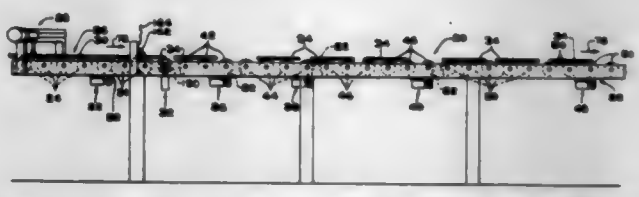
means for overlying said tree to preclude the upward movement of said tree through said upper opening.

4,533,073

METHOD OF SPACING SHEETS AND MOVING GROUPS OF SPACED SHEETS

David A. Bier, Houston, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Continuation of Ser. No. 968,335, Dec. 11, 1978, abandoned.
This application Jul. 14, 1980, Ser. No. 167,968
Int. Cl.[3] C03B *33/02*
U.S. Cl. 225—4 6 Claims



1. Method of spacing articles and moving groups of spaced articles, comprising the steps of:

moving an article at a receiving speed from a first position onto conveying means;

accelerating the conveying means to increase the speed of the article toward a speed greater than the receiving speed;

decelerating the conveying means to move the article at the receiving speed;

practicing said moving step to provide a plurality of spaced articles on the conveying means;

practicing said accelerating step to maintain the spacing between adjacent articles and to provide a spacing between last received article moved onto the conveying means and next article to be moved onto the conveying means;

practicing said decelerating step to maintain the spacing between adjacent articles on the conveying means and to receive the next article from the first position;

sequentially repeating said practicing steps to provide a group of spaced articles on the conveying means;

increasing the speed of the conveying means to move the group of spaced articles at a discharge speed greater than the receiving speed; and

maintaining the speed of the group of spaced articles to remove the group of spaced articles provided during said repeating step from the conveying means at the discharge speed into a third position.

4,533,074

ANTI-BACKLASH FORMS FEED MECHANISM

Ronald R. van Thiel, Fremont, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1983, Ser. No. 565,483
Int. Cl.[3] B65H *17/40;* F16D *1/08*
U.S. Cl. 226—74 1 Claim

1. An anti-backlash feeding mechanism for moving record material having perforations along its side edges, in forward and reverse directions, past a printing station, said feeding mechanism comprising:

rotatable driving means having a cross-sectional configuration of a given shape and including contiguous driving surfaces intersecting at a given angle,

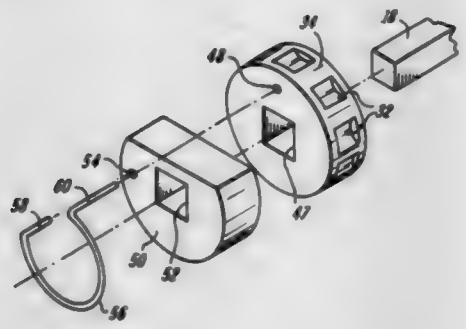
rotatable driven means having an opening therethrough with a cross-sectional configuration of substanially the same given shape and being slightly larger than said driv-

ing means cross-sectional configuration, for receiving said driving means in sliding engagement, and including contiguous driven surfaces intersecting at substantially the same predetermined angle, and

biasing means for urging said contiguous driving surfaces and said contiguous driven surfaces together, including

a hub located adjacent said driven means, said hub having a cross-sectional opening substantially identical to said driven means cross-sectional opening and encircling said drive means,

and a torsion spring encircling said drive means, said torsion spring comprising a planar arcuate portion cir-



cumscribing an arc of less than 360° and a pair of anchoring ends extending, in the same direction, substantially normally to said planar portion, one of said ends anchored in an opening in said driven means and the opposite end anchored in an opening in said hub, for urging said driven means and said hub in opposite directions relative to and into contact with said drive means, said hub further including access means for allowing said one of said ends of said torsion spring to pass to and into said driven means, whereby said torsion spring urges said driven means and said hub toward opposite corners of said driving means.

4,533,075

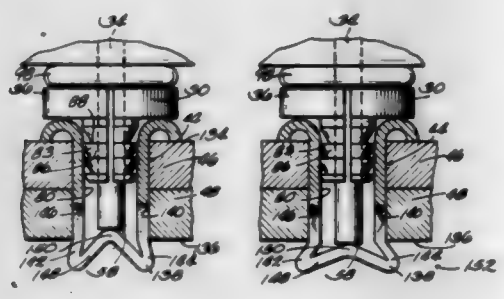
FASTENER SETTING TOOLS

Donald W. Hallock; Thomas M. Hartmann, both of Waupun, and Marvin Engebretson, Ripon, all of Wis., assignors to National Rivet & Manufacturing Company, Waupun, Wis.

Filed Apr. 28, 1983, Ser. No. 489,481

Int. Cl.³ B21J *15/04, 15/30, 15/10*

U.S. Cl. 227—55 **8 Claims**



1. A setting tool for fasteners of the type set by driving a pin into an opening surrounded by an interior wall of said fastener, said tool comprising:

A. a setting pin disposed along an axis and having a leading end and shaft for being driven into the opening of a fastener;

B. a collet for supporting a fastener while it is being positioned and set, said collet including plural segments enclosing an interior passage disposed along said axis, exterior surfaces formed by said segments, a leading end for being received within a fastener opening, outwardly opposed barbed jaws formed in the least two of said exterior surfaces adjacent said collet leading end, and spreader means for normally biasing said jaws apart into gripping contact with the interior wall of a fastener; and

c. drive means for propelling the leading end of said pin through the interior passage of said collet and axially engaging setting legs in the opening of a fastener carried on said collet, thereby setting said fastener; whereby the engagement between said jaws and a fastener prevents said tool from recoiling from said fastener while said fastener is being set.

4,533,076

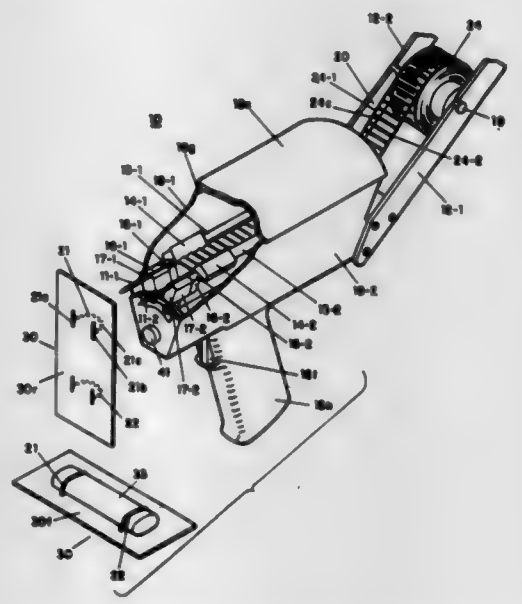
DISPENSING OF ATTACHMENTS

Donald L. Bourque, Millis, Mass., assignor to Dennison Manufacturing Company, Framingham, Mass.

Filed Nov. 25, 1981, Ser. No. 325,074

Int. Cl.³ B25C *1/00*

U.S. Cl. 227—67 **15 Claims**



1. Apparatus for dispensing fasteners, each fastener having a pair of side members coupled by a link, comprising:

at least one slotted hollow needle;

first means for expelling individual ones of said fasteners through said needle, said means being reciprocable in an expulsion direction and a withdrawal direction;

second means for advancing a connected plurality of said fasteners;

third means for actuating said first and second means, said third means reciprocating said first and second means along an expulsion and a withdrawal direction, said third means moving said first means in the withdrawal direction at the same time as it moves said second means in the expulsion direction.

4,533,077

STOP DEVICE FOR A DRIVING PISTON IN A FASTENING MEMBER SETTING DEVICE

Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Schaan Fürstentum, Liechtenstein

Filed Dec. 21, 1982, Ser. No. 451,922

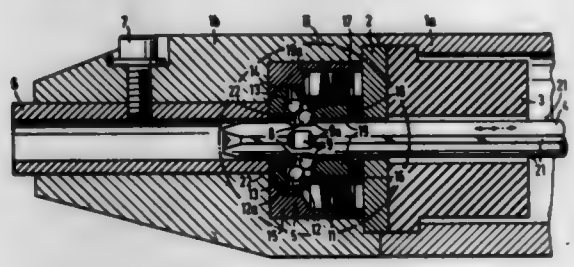
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151661

Int. Cl.³ B25C *7/00*

U.S. Cl. 227—156 **7 Claims**

1. Setting device such as for driving fastening members into a receiving material, comprising a casing, an axially elongated driving piston mounted in said casing arranged to be axially displaced relative to said casing by a propelling force directed against said driving piston, said driving piston having an axially extending outside surface thereon with a recess located in said outside surface, and a stop element mounted in said casing and engageable within said recess in said driving piston for securing said driving piston in a retracted position until the propelling force is directed against said driving piston, wherein the improvement comprises means for pressing said stop element

inwardly and transversely of the axis of said driving piston and securing said stop element in said recess, said means includes a first spring and a second spring each arranged for directing a biasing force against said stop element so that said stop element is directed radially inwardly into said recess with the biasing force of said first and second springs acting in the axial direction of said driving piston and being transmitted by said securing means directly to said stop element, said first spring having a greater spring force than said second spring and arranged for povіding a biasing action against said stop element so that the biasing action directs said stop element against said second spring as said driving piston experiences the propelling force and after said stop element is displaced radially outwardly out of said recess against the action of said means securing said stop element in said recess, securing means includes a pressure



transmitting member located radially outwardly from and in contact with said stop element when said stop element is located within said recess and said pressure transmitting member is arranged to transmit the biasing force of said first spring to said stop element, said pressure transmitting member is formed as a roller body, said securing means comprises an intermediate member located between said first spring and said pressure transmitting member, said first spring arranged to provide a biasing force extending in the axial direction of said working piston, said intermediate member having a contact face inclined obliquely to the axis of said driving piston and disposed in contact with said pressure transmitting member for transforming the axially directed biasing force of said first spring into a radially inwardly directed force acting through said pressure transmitting member against said stop element.

4,533,078

WELDING AND/OR CUTTING TORCH

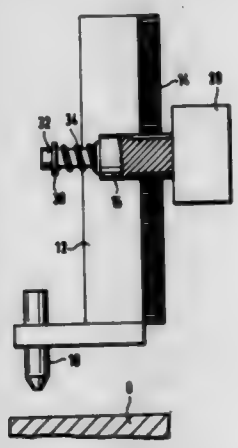
Werner Klein, Frankfurt, and Heinz Leo, Friedrichsdorf, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

Filed Mar. 16, 1983, Ser. No. 475,731

Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214717

Int. Cl.³ F16H *57/00*

U.S. Cl. 228—45 **2 Claims**



1. In a welding and/or cutting torch assembly having associated mounting and drive equipment for vertical operation of the torch, the improvement being said mounting including a gear rack and a pinion engaged with said gear rack, said drive equipment including a motor having a shaft, said shaft being externally threaded in its partially longitudinal zone, said pinion being internally threaded in its partial longitudinal zone, said pinion being threadably engaged with said shaft in such a manner that said pinion is selectively connected and disconnected to said shaft whereby said mounting is automatically disconnected from said shaft when said torch bumps into a workpiece with said pinion being disengaged from said shaft.

4,533,079

TRAY, PARTICULARLY FOR FOODSTUFFS

Karl R. Persson, Halmstad, Sweden, assignor to Sprinter System AB, Sweden

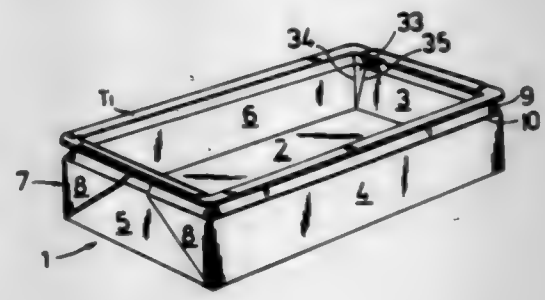
PCT No. PCT/SE82/00324, § 371 Date Jun. 7, 1983, § 102(e) Date Jun. 7, 1983, PCT Pub. No. WO83/01242, PCT Pub. Date Apr. 14, 1983

PCT Filed Oct. 8, 1982, Ser. No. 503,156

Claims priority, application Sweden, Oct. 9, 1981, 8106004

Int. Cl.³ B65D *5/24*

U.S. Cl. 229—31 R **8 Claims**



1. A tray produced from a stamped and creased blank made from carton or the like stiff material, said tray (1) consisting of a bottom (2) and four side walls (3–6), the latter being connected in pairs to each other by a corner structure (7) consisting of at least two substantially triangular areas (18, 19) in contact with adjacent side walls (3–6) having extensions in the form of folded-out flanges (11), lying in a plane parallel to the bottom (2) of the tray (1) and forming a continuous frame, for coaction with a separate lid with which the tray may be closed, characterized in that each of the side walls (3–6) consists of a lower and an upper wall portion, the former being folded up along a crease line (12–15) defining a bottom (2) such that it is substantially perpendicular to the bottom plane of the tray (1) and has a height from the bottom (2) attaining to at least half the tray height, said lower wall portion merging into the upper wall portion along a crease line (10) extending round the periphery of the tray (1) at a predetermined distance from the bottom crease line (12–15), said upper wall portion inclining at an acute angle to the bottom plane of the tray (1) and extending towards the interior of the tray (1) a distance substantially corresponding to the width of the continuous frame formed by the edge flanges (11), said frame being situated substantially within the outer contour of the bottom (2).

4,533,080

AIR TERMINAL—AIR HANDLER INTERFACE

William E. Clark, Syracuse, and James Carucci, Fayetteville, both of N.Y., assignors to Carrier Corporation, Syracuse, N.Y.

Continuation of Ser. No. 528,813, Sep. 2, 1983, abandoned. This application Jan. 16, 1985, Ser. No. 691,730

Int. Cl.³ F24F *7/00*

U.S. Cl. 236—49 **5 Claims**

1. A variable air volume distribution system for conditioned air comprising:

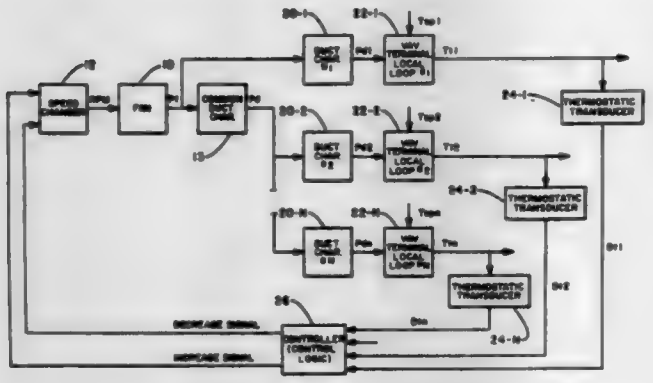
duct means including a main duct and a plurality of branches;

fan means for supplying variable amounts of conditioned air to said duct means;

means for controlling the amount of conditioned air supplied by said fan means;

at least one variable air volume terminal means connected to each of said branches for variably controlling the amount of conditioned air continuously supplied by each of said branches to its related zone; and

means for determining terminal satisfaction for at least one of said terminal means connected to each of said branches



and for regulating said means for controlling the amount of conditioned air supplied responsive to terminal satisfaction and including means for maintaining the number of dissatisfied terminals within a predetermined range whereby a minimum acceptable output for said fan means is maintained.

4,533,081

HEATING AND VENTILATION SYSTEM FOR VEHICLES

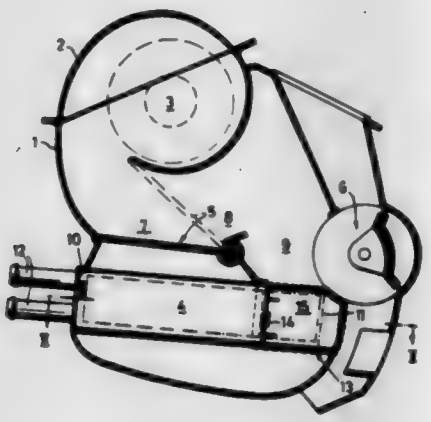
Bernd Forsting, Monchen-Gladbach; Joachim Zander, Frechen, and Jeske Gustav, Pulheim, all of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Sep. 6, 1983, Ser. No. 529,820

Claims priority, application Fed. Rep. of Germany, Nov. 15, 1982, 3242246

Int. Cl.³ B60H *1/02*

U.S. Cl. 237—12.3 B **1 Claim**



1. A heating and ventilation unit for a motor vehicle comprising a mixing chamber having a housing containing a heat exchanger disposed within the vehicle interior, pipe connections extending from the heat exchanger through the rear wall of the mixing chamber and an aperture in a wall of the mixing chamber for enabling the heat exchanger to be withdrawn from the mixing chamber into the vehicle interior, wherein the aperture is formed in a side wall of the chamber and is dimensioned to permit passage of the heat exchanger and the rearwardly projecting connections, and a closure and support element is provided which includes portions insertable through the aperture and which, when inserted, is operative to support the heat exchanger within the chamber and prevent forward displacement of the exchanger away from the rear wall of the mixing chamber, the support and closure element including a support wall maintaining the heat exchanger in an installed position and a closure wall fixedly attached to one end of the support wall and closing at least part of the aperture, and wherein the other end of the support wall is provided with a catch and the housing is provided with a slot and the catch engages with the slot to maintain the support and closure element in its installed position.

4,533,082

PIEZOELECTRIC OSCILLATED NOZZLE

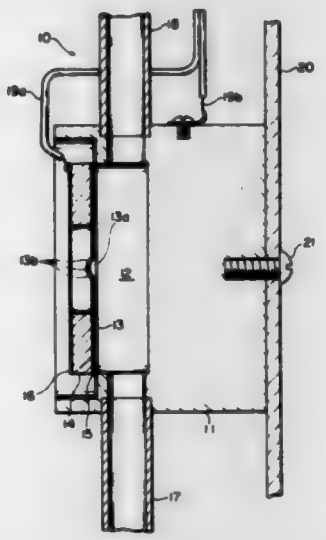
Naoyoshi Maehara, Nara; Kenkichi Hashido, Yamatokoriyama, and Hiroshi Hirata, Nara, all of Japan, assignors to Matsushita Electric Industrial Company, Limited, Japan

Filed Oct. 14, 1982, Ser. No. 434,533

Claims priority, application Japan, Oct. 15, 1981, 56-165198; Oct. 15, 1981, 56-165202

Int. Cl.³ G01D *15/18*; B05B *3/14, 1/08*

U.S. Cl. 239—102 **11 Claims**



1. An arrangement for discharging liquid droplets comprising:

a housing including a forwardly opening chamber for holding liquid therein having an intake port connected to a liquid supply container;

a vibrating member secured to a forward end of said housing defining a front wall of said chamber in rearwardly pressure transmitting relationship with the liquid in said chamber and having at least one nozzle opening therein;

means for maintaining the static pressure of said liquid in said chamber equal to or lower than the static pressure forwardly of said nozzle opening; and

a piezoelectric transducer secured to said vibrating member for inducing therein a rearward displacement to cause a small quantity of liquid to be discharged forwardly through said nozzle opening.

4,533,083

DRIP FEED DEVICE FOR IRRIGATION PURPOSES

Alfred D. Tucker, Adelaide, Australia, assignor to RIS Irrigation Systems Pty. Ltd., Elizabeth, Australia

PCT No. PCT/AU82/00099, § 371 Date Feb. 7, 1983, § 102(e) Date Feb. 7, 1983, PCT Pub. No. WO83/00003, PCT Pub. Date Jan. 6, 1983

PCT Filed Jun. 21, 1982, Ser. No. 474,675

Claims priority, application Australia, Jun. 22, 1981, PE9385

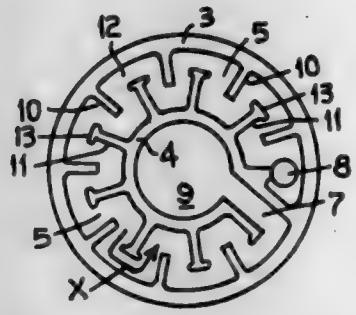
Int. Cl.³ B05B *1/02*

U.S. Cl. 239—542 **14 Claims**

1. A drip feed device for irrigation purposes in which a body (25) has a cylindrical wall (27) closed at one end by a transverse first wall (26) having on it an inlet member (32) for fluids, and a cap (17) is fitted to the body (25) having a cylindrical wall (20) and across it an intermediate transverse second wall (19) parallel to the first wall (26) and having through it an outlet aperture (18), the said body (25) and the said cap (17) forming between them a closed chamber (16) communicating on one side with the said inlet membrane (32) and on the other

side with the said outlet aperture (18), in which chamber (16) is a circular flow-restricting button (1) having flow-restricting channels (5) on each side of it connected in series between the said inlet member (32) and the said outlet aperture (18) of the said chamber (16), and having inwardly projecting flow-restricting baffles (10) and outwardly projecting flow-restricting baffles (11) extending into the said flow-restricting channels (5),

characterised in that the said chamber is bounded on the outside by the said cylindrical wall (20) of the said cap (17)



and the said button (1) has the inwardly projecting flow-restricting baffles (10) project into the space between and overlap the ends of the said outwardly projecting flow-restricting baffles (11) whereby flow is in counter direction around the ends of both the said inwardly flow-restricting baffles (10) and the said outwardly projecting flow-restricting baffles (11), and

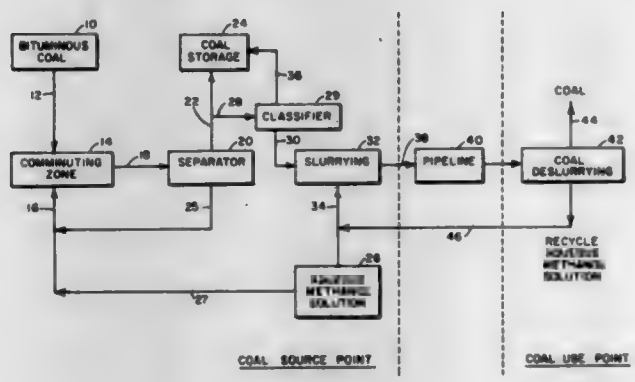
further characterised by the outwardly projecting flow-restricting baffles (11) having expanded ends (13) to increase resistance to flow in spaces (12) formed between the inwardly projecting flow-restricting baffles (10).

4,533,084

METHOD FOR COMMINUTING BITUMINOUS COAL USING AN AQUEOUS METHANOL SOLUTION

Ju-Nam Chew, and Joseph G. Savins, both of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,527
Int. Cl.³ B02C *19/00*
U.S. Cl. 241—1 **20 Claims**



1. A method for comminuting bituminous run-of-mine crushed coal comprising contacting said coal in a comminution zone with an aqueous methanol solution of a strength of about 51 to about 75 volume percent sufficient to give substantially better comminution reactivity than substantially anhydrous methanol and maintaining said contact for a time sufficient to comminute a substantial portion of said coal to a predetermined particle size.

4,533,085

METHOD FOR PRODUCTION OF A SUSPENSION OF ZIRAM

Jay A. Woods; Verle W. Woods, and Dale G. Woods, all of P.O. Box 1016, Yakima, Wash. 98907

Filed Jul. 29, 1983, Ser. No. 518,749
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—1 **2 Claims**

1. A method of synthesizing zinc dimethyl dithiocarbamate (Ziram) in a flowable water-based suspension, comprising the following steps:

continuously agitating an initial suspension containing a mixture of finely divided zinc oxide and carbon disulfide and liquid components including an emulsifier and water;

thoroughly dispersing finely divided dimethyl amine within the initial suspension;

continuing agitation of the suspension while maintaining it at a preselected reactive temperature range for a time period sufficient to assure that reactions between the mixture of finely divided zinc oxide and carbon disulfide and the finely divided dimethyl amine is completed by production of Ziram in the suspension;

the proportion of liquid components in the initial suspension being preselected so as to maintain the suspension in a fluid state suitable for agitation at all times while the reactions are occurring;

and subsequently mixing the suspension while adding fat, emulsifier or water as required to produce a stable flowable Ziram suspension.

4,533,086

PROCESS FOR GRINDING GRAPHITE

Jack D. Junttila, Country Club Hills, Ill., assignor to Atlantic Richfield Company, Philadelphia, Pa.

Filed Dec. 27, 1982, Ser. No. 453,071
Int. Cl.³ B02C *23/18, 23/36*
U.S. Cl. 241—16 **11 Claims**

1. A process for grinding graphite comprising:

(1) forming a mixture of graphite and a graphite grinding aid;

(2) grinding the mixture of graphite and graphite grinding aid to reduce the size of the graphite;

(3) forming an aqueous slurry of the graphite particles, graphite grinding aid and water;

(4) adding an amount of hydrocarbon oil to the aqueous slurry with agitation to form graphite-oil agglomerates;

(5) separating the graphite-oil agglomerates from the grinding aid and water; and

(6) removing hydrocarbon oil from the graphite-oil agglomerates to provide graphite particles reduced in size.

4,533,087

APPARATUS WITH HEAT EXCHANGE MEANS AND TRANSFER PIPE FOR TREATING SOLID, GRANULAR AND AGGREGATE MATERIALS

Vagn Deve, East Washington, Pa., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Aug. 8, 1983, Ser. No. 521,494
Int. Cl.³ B02C *19/12*
U.S. Cl. 241—65 **7 Claims**

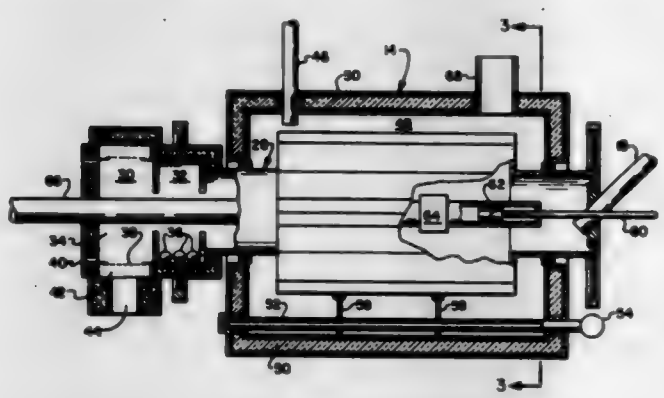
1. An apparatus for effecting the preheating, prereclamation, crushing, sizing, post reclamation and cooling of used foundry sand comprising:

a. a preheating and prereclamation chamber including inlet means provided adjacent one end thereof and outlet means provided adjacent the other end thereof, said inlet means providing an entrance to said preheating and prereclamation chamber for used foundry sand supplied thereto at a first temperature, said preheating and prereclamation chamber having a corrugated interior surface and being operative to retain the used foundry sand therewithin while the used foundry sand is being both preheated to a second temperature and prereclaimed during

the course of the passage thereof in a first direction through said preheating and prereclamation chamber, said corrugated interior surface being operative for purposes of effecting a mixing of the used foundry sand during the passage thereof through said preheating and prereclamation chamber and for purposes of providing said preheating and prereclamation chamber with increased heat transfer surface, said outlet means providing an exit from said preheating and prereclamation chamber for the used foundry sand following the preheating thereof to the second temperature and the prereclamation thereof in said preheating and prereclamation chamber;

b. a transfer chamber having one end thereof cooperatively associated with said outlet means of said preheating and prereclamation chamber for receiving the used foundry sand while at the second temperature from said preheating and prereclamation chamber, said transfer chamber being of lesser dimensions than said preheating and prereclamation chamber and having its longitudinal axis coincident with the longitudinal axis of said preheating and prereclamation chamber;

c. a crushing and sizing chamber having one end thereof cooperatively associated with the other end of said transfer chamber for receiving the used foundry sand while at the second temperature therefrom and having its longitudinal axis coincident with the longitudinal axis of said transfer chamber, said crushing and sizing chamber including a crushing area and a sizing area, said crushing area having a multiplicity of balls housed therewithin, said



multiplicity of balls being operative to effect the disintegration of friable lumps of used foundry sand during the passage of the used foundry sand through said crushing area of said crushing and sizing chamber, said sizing area having an opening formed therewithin and including screen means positioned over said opening, said screen means being operative to sift the used foundry sand during the passage thereof through said sizing area of said crushing and sizing chamber so as to effect a separation of oversize particles of used foundry sand from particles of used foundry sand of desired size;

d. post reclamation and cooling chamber having reentry means formed adjacent one end thereof and discharge means formed adjacent the other end thereof, said reentry means providing an entrance to said post reclamation and cooling chamber for used foundry sand supplied thereto at a third temperature, said post reclamation and cooling chamber being operative to retain the used foundry sand therewithin while the used foundry sand undergoes cooling during the course of the passage thereof in a second direction through said post reclamation and cooling chamber, said post reclamation and cooling chamber being positioned in surrounding relation to said preheating and prereclamation chamber such that by virtue of the heat transfer between the used foundry sand during the course of the passage thereof while at the third temperature through said post reclamation and cooling chamber and the used foundry sand during the course of the passage thereof while at the first temperature through said preheating and prereclamation chamber the used foundry sand within said preheating and prereclamation chamber while traversing said preheating and prereclamation chamber in the first direction is preheated from the first temperature to the second temperature and the used foundry sand within said post reclamation and cooling chamber while traversing said post reclamation and cooling chamber in the second direction is cooled from the third temperature to the fourth temperature, said discharge means providing an exit from said post reclamation and cooling chamber for the used foundry sand following the cooling thereof within said post reclamation and cooling chamber from the third temperature to the fourth temperature; and

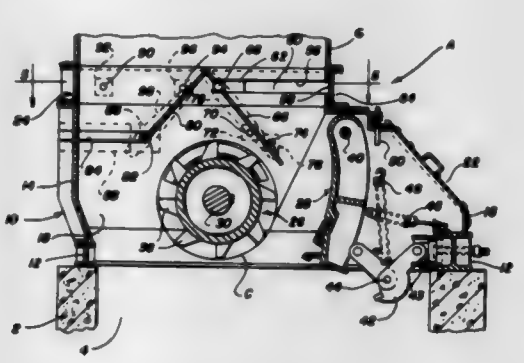
e. rotating means cooperatively associated with said preheating and prereclamation chamber, said crushing and sizing chamber, and said transfer chamber, said rotating means being operative to effect the rotation in unison of said preheating and prereclamation chamber as the used foundry sand traverses said preheating and prereclamation chamber in the first direction, said transfer chamber as the used foundry sand traverses said transfer chamber in the first direction, and said crushing and sizing chamber as the used foundry sand traverses said crushing and sizing chamber.

4,533,088

FROZEN COAL CRACKER

Edgar L. Lyston, St. Louis, Mo., assignor to American Pulverizer Company, St. Louis, Mo.

Filed Aug. 3, 1983, Ser. No. 519,926
Int. Cl.³ B02C *13/286*
U.S. Cl. 241—186.3 **5 Claims**



1. In a machine for accommodating coal flow during warm weather conditions and cold weather conditions and for further processing the coal during cold weather conditions when small lumps of coal are frozen together to form large lumps, and in which a housing having side walls defines a passage for coal flow from an inlet to an outlet and a frozen coal disintegrating rotor is operably mounted in the housing and spaced from opposite side walls; the improvement comprising: first and second baffle plates movably mounted with respect to the housing, said baffle plates having processing positions in which the first baffle plate is positioned to direct the frozen lumps of coal toward the rotor and the second baffle plate is retracted from the housing to permit frozen lumps of coal to reach and be broken up by the rotor; breaker means operably mounted in the housing in spaced relation to the rotor and movable between a first position to cooperate with the rotor for breaking up lumps of frozen coal and a position removed from cooperation with the rotor; means for arranging said pair of baffle plates in the housing in adjacent cooperating by-pass positions over the rotor for protecting the rotor from contact by the entering coal flow, the baffle plates when in their cooperating by-pass positions generally forming a peak over the rotor with the first plate sloping downwardly from the peak toward one side of the rotor and the second plate sloping downwardly from the peak toward the other side of the rotor; and means for positioning said breaker means in its retracted position relative to the rotor when the baffle plates are in the cooperating by-

pass positions, so that coal flows over the baffle plates and past both sides of the rotor.

4,533,089

APPARATUS FOR MAKING CRISSCROSS-WOUND LAYERS TO FORM WOUND BODIES

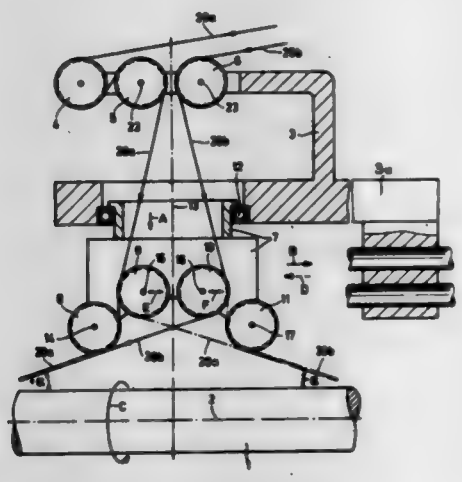
Bruno Sartor, Niederzier-Krauthausen, and Klaus Rode, Jülich, both of Fed. Rep. of Germany, assignors to Uranit GmbH, Jülich, Fed. Rep. of Germany

Filed Sep. 29, 1983, Ser. No. 536,957

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236946

Int. Cl.[3] B65H *54/64, 81/08*

U.S. Cl. 242—7.21 4 Claims



4. In an apparatus for making a rotationally symmetrical body formed of crisscross-wound layers, the apparatus including a winding mandrel rotatable about a longitudinal mandrel axis; a carriage arranged for reciprocating travel along said mandrel and thread laying means mounted on said carriage; the improvement in said thread laying means comprising:

(a) a pivotal device having a pivot axis oriented perpendicularly to said mandrel axis;

(b) spaced first, second, third and fourth thread laying rollers mounted for rotation on said pivotal device and each having a roller shaft; the roller shafts extending parallel to one another and being situated at points of an imaginary equilateral trapezoid having a plane perpendicular to the roller shafts; said first and fourth thread laying rollers being outer rollers and said second and third thread laying rollers being inner rollers; each said thread laying roller having a plurality of circumferential grooves for simultaneously guiding and depositing on said mandrel a plurality of parallel-running threads; the first and second thread laying rollers being situated on one side of said pivot axis and forming a first roller pair and the third and fourth thread laying rollers being situated on an opposite side of said pivot axis and forming a second roller pair; within each roller pair the grooves of one thread laying roller being in alignment with the grooves of the other thread laying roller; the grooves of said first roller pair being offset with respect to the grooves of the second roller pair in a direction parallel to said roller shafts by one half of the center-to-center distance between adjoining grooves; and

(c) first and second thread supplying rollers for guiding threads to said first and second roller pairs, respectively; said thread supplying rollers being supported for rotation externally of said pivotal device.

4,533,090

APPARATUS FOR TENSIONING BAND OR WEB PORTIONS RUNNING OFF AND ONTO TWO ROLLERS

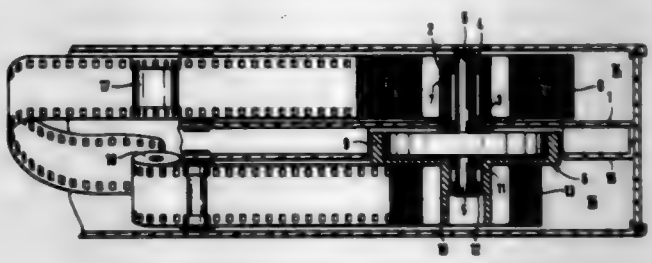
Otto Blaschek, Ascheim, Dornach, Fed. Rep. of Germany, assignor to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG., Munich, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,152

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1982, 3227137

Int. Cl.[3] G11B *5/48, 5/78*

U.S. Cl. 242—75 7 Claims



1. Apparatus for tensioning first and second portions of a strip or web unwinding from a feed roller and winding onto a takeup roller, such as film strip in a film cassette or camera, said apparatus comprising:

a housing wall;

a D.C. motor supported in the housing wall and including a stator and an armature shaft, both the stator and the armature shaft being rotatably carried in the housing wall, so that the stator and armature shaft are each rotatable relative to each other and are each rotatable relative to the housing wall;

first driving connection means extending between and interconnecting the rotatably mounted stator and one of the rollers;

second driving connection means extending between and interconnecting the rotatably mounted armature shaft and the other of the two rollers;

and feed means positioned to drivingly contact the strip or web between the rollers for feeding an unrolled third portion of the strip or web in untensioned condition while the first and second portions are in tension.

4,533,091

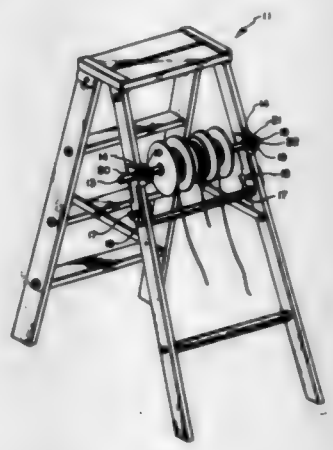
PORTABLE MULTIPLE SPOOL WIRE DISPENSER

Reed H. Knight, 2011 Todd Way, and Val L. Longmore, 4374 Alice Way, both of Salt Lake City, Utah 84199

Filed May 10, 1984, Ser. No. 608,701

Int. Cl.[3] B65H *49/00*

U.S. Cl. 242—129.6 3 Claims



1. A plural spool wire dispensing device for mounting on the spaced apart generally upright support legs of a free standing ladder said device comprising first and second brackets each bracket having a pair of oppositely facing primary channels secured in spaced relationship by an arm, said primary chan-

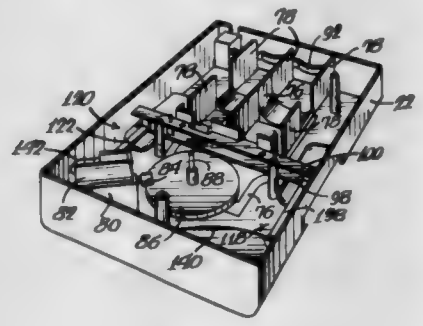
nels being adapted to fit over one of said support legs on a free standing ladder, clamp means on each bracket for securing it in selected position on a support leg on which it is mounted, an elongated shaft of length to at least span the distance between said brackets when the same are on said support legs, and means on each bracket for receiving and supporting opposite end portions of said shaft said last named means comprising on each bracket a secondary channel extending outwardly from and transverse to one of said primary channels.

4,533,092

VIDEO CASSETTE RAPID REWINDING/FAST FORWARDING DEVICE

Marino Cecchi, Lincolnshire; Gregory J. Borucki, Hinsdale, and Lawrence R. Happ, Mundelein, all of Ill., assignors to Suncom, Incorporated, Wheeling, Ill.

Filed May 29, 1984, Ser. No. 614,954
Int. Cl.[3] B65H *59/38*; G03B *1/04*; G11B *15/32*
U.S. Cl. 242—186 **10 Claims**



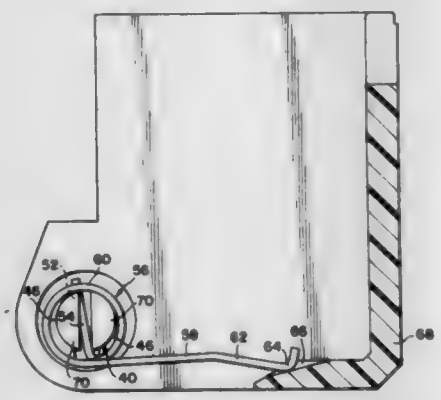
1. A device for rapidly rewinding and fast forwarding a conventional video tape cassette having a door along its front edge and first and second tape reels, comprising a housing having a surface for receiving the cassette thereon; rotatable drive and idler sprockets on said surface, each for operatively engaging a respective one of the reels in accordance with the orientation of the cassette on said surface; motor means in said housing for rotating said drive sprocket in first and second directions; and means responsive to the orientation of the cassette on said surface for controlling operation of said motor means to rotate said drive sprocket in said first direction when said drive sprocket engages the first reel and in said second direction when said drive sprocket engages the second reel to rapidly rewind or fast forward the cassette.

4,533,093

TAPE CASSETTE DUST DOOR SPRING ASSEMBLY AND METHOD FOR ASSEMBLING SAME

Paul J. Gelardi, Cape Porpoise, and Robert B. MacLeod, Jr., Biddeford, both of Me., assignors to Shape Inc., Biddeford, Me.

Filed Nov. 30, 1983, Ser. No. 556,545
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—197 **15 Claims**



1. A spring assembly for a tape cassette dust door, comprising:

(a) a polar member with a first end fixed to the dust door and a second free end, the second free end being rounded and having formed therein a first slit and a second relatively narrower slit extending from the first slit toward the first, fixed end of the polar member and the polar member being fixed substantially perpendicular to a surface of the dust door; and

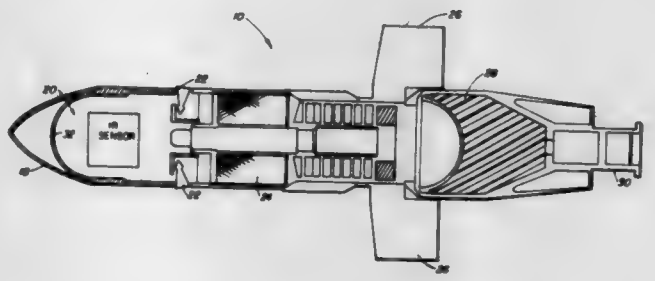
(b) a spring having a first leg, a coiled body and a second leg, the first leg being received by the second slit of the polar member, the body surrounding the polar member and the second leg of the spring being urged against the dust door, wherein the spring is held in torsion relationship.

4,533,094

MORTAR SYSTEM WITH IMPROVED ROUND

Norman P. Geis, Kensington, N.H., and Edward A. Chambers, Acton, Mass., assignors to Raytheon Company, Lexington, Mass.

Continuation of Ser. No. 434,783, Oct. 18, 1982, abandoned. This application Aug. 23, 1984, Ser. No. 643,758
Int. Cl.[3] F42B *13/32*
U.S. Cl. 244—3.22 **1 Claim**



1. In a mortar system, an improved round adapted to be guided during the terminal phase of flight its, said round comprising:

(a) a mortar shell having a first and a second nose cone, said first cone shaped as an ogive overlying said second cone, said second cone shaped as a hemisphere and fabricated from a material substantially transparent to infrared energy, said shell being spin-stabilized during the initial stage of flight its;

(b) an infrared seeker, mounted in said shell behind the second nose cone and gyroscopically stabilized to derive boresight error signals proportional, in inertial space, to the line-of-sight rate between said round and a selected target;

(c) wings, deployed from the rear of the mortar shell during the terminal phase of flight the of said round, to decrease the roll rate of said shell below the rate required for spin stabilization; and,

(d) jet control means, responsive to the boresight error signals out of the infrared seeker, to change the flight path of said shell to null said boresight error signals.

4,533,095

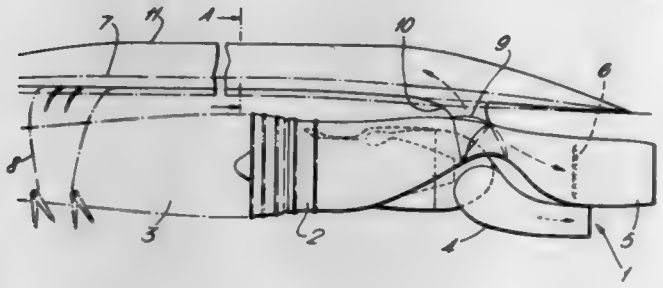
DUCT MEANS FOR AIRCRAFT

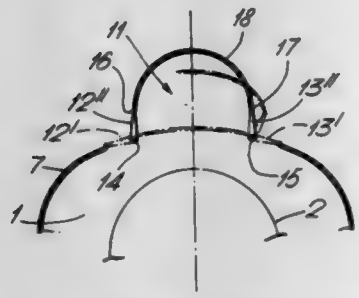
Ivan R. Yates, Kingston-upon-Thames, England, assignor to British Aerospace Public Limited Company, London, England

Filed Sep. 2, 1983, Ser. No. 528,963
Claims priority, application United Kingdom, Sep. 3, 1982, 8225181
Int. Cl.[3] B64C *29/04*
U.S. Cl. 244—23 D **9 Claims**

1. An aircraft having propulsive fluid outlet means and in which fluid is required to be ducted from a source of pressurized fluid to another part of said aircraft to be exhausted to provide a propulsion force, including elongate duct means having spaced inlet and outlet means, said inlet means being in flow communication with said source of pressurized fluid, and said outlet means being in flow communication with said pro-

pulsive fluid outlet means, said duct means including a relatively flexible imperforate panel element biased such that on introduction of pressurized fluid into said duct, said duct is caused to expand from a non-fluid conducting condition in





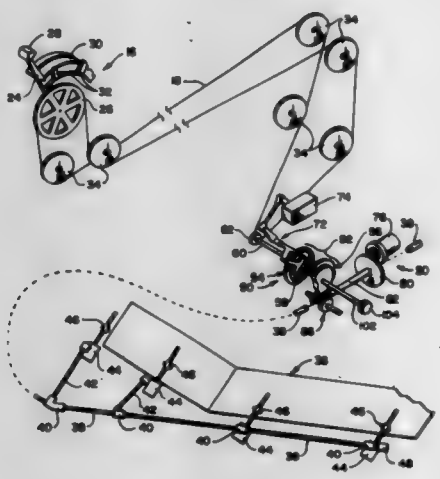
which said panel element together with adjacent external surface regions of said aircraft defines a substantially continuous surface and a fluid conducting condition of relatively large cross-sectional area in which said panel element protrudes from the aircraft surface.

4,533,096

HIGH LIFT SYSTEM CONTROL ASSEMBLY

Michael E. Baker, Kent, and Thomas M. Baker, Renton, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Dec. 30, 1982, Ser. No. 454,559
Int. Cl.³ B64C *13/32, 13/38*
U.S. Cl. 244—75 R **16 Claims**



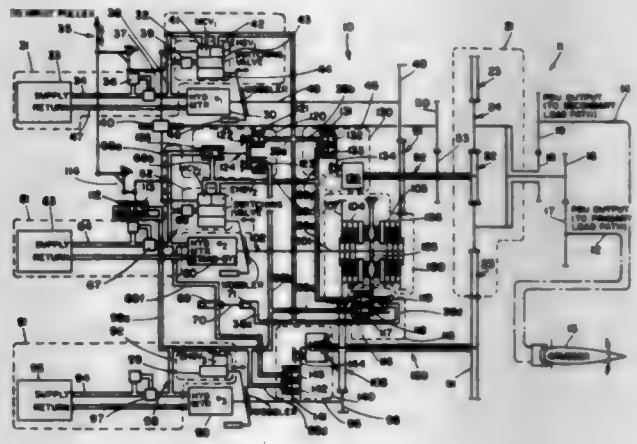
16. A control assembly for deployment of aircraft wing flaps, comprising an input cam mechanism, a feedback cam mechanism and a summing lever means operatively interconnecting said cam mechanisms for mechanically summing independent inputs therefrom to yield a mechanical output signal for actuating flap deployment means, wherein said input cam mechanism is comprised of a cam rotationally operable in response to a command input signal and a cam follower in mating engagement therewith for deflecting movement with rotation thereof to provide a first input signal to a first input leg of said summing lever characteristic of a predetermined flap configuration, and said feedback cam mechanism is comprised of a cam rotationally operable in response to movement of said flaps and a cam follower in mating engagement therewith for deflecting movement with movement of said flaps to provided a second input signal to a second input leg of said summing lever characteristic of the existing flap configuration; wherein said summing lever provides said mechanical output signal at an output leg disposed at a common point with said input legs, which output signal is derived as a sum of said input signals when said commanded flap configuration differs from said existing flap configuration.

4,533,097

MULTI-MOTOR ACTUATION SYSTEM FOR A POWER DRIVE UNIT

Allyn M. Aldrich, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 11, 1983, Ser. No. 512,798
Int. Cl.³ B64C *13/42*
U.S. Cl. 244—78 **22 Claims**



1. A hydromechanical system for a power drive unit having an output shaft drivingly coupled to a load, said system including in combination;

a differential means having first and second members drivingly coupled through a third member to said output shaft and said load,

first, second and third hydraulic motors each operating from an associated controllable independent hydraulic system,

said first and third hydraulic motors having outputs drivingly coupled respectively to said differential means first and second members,

a clutch means having an input shaft drivingly coupled to be driven by an output of said second hydraulic motor, said clutch means having first and second outputs respectively drivingly coupled to said differential means first member and said second member,

clutch actuation means controllingly coupled to said clutch means to cause said clutch actuation means to couple said input shaft to either said first or said second outputs,

said clutch actuation means having a normally neutral operative state whereby neither said first or second outputs are coupled to said input shaft,

hydraulic failure detection means controllingly coupled to the independent hydraulic system associated with said second hydraulic motor and to said clutch actuation means, and

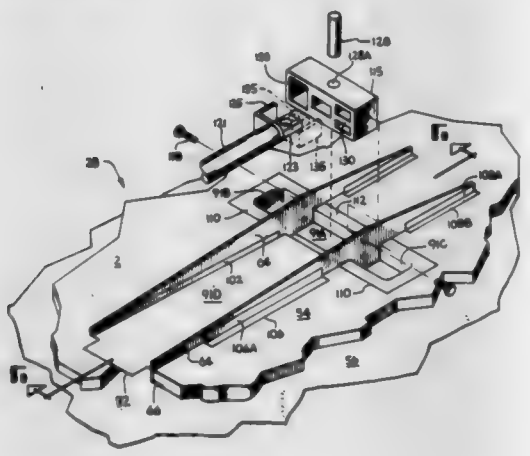
said hydraulic failure detection means responsive to a hydraulic system failure in said first and third hydraulic motor independent hydraulic systems to thereby cause said clutch actuation means to connect said second hydraulic motor output through one of said clutch means first and second outputs, dependent upon which one of said first and third hydraulic systems has failed whereby said load is always driven by at least two hydraulic motors via said differential means when one of said hydraulic systems of either said first or third hydraulic motors experiences a failure.

4,533,098

THRUST REVERSER ATTACHMENT

Bruno Bonini; Raymond G. Cook; Carl F. Holdren, all of Cincinnati, Ohio, and Everett A. Johnston, Baldwin, Md., assignors to General Electric Company, Cincinnati, Ohio

Filed Jun. 20, 1983, Ser. No. 505,586
Int. Cl.[3] B64D *33/04;* B64C *1/00*
U.S. Cl. 244—110 B 6 Claims



1. In a laminated material having a medial matrix laminated between first and second skins, an apparatus for receiving a force and transmitting the force to the laminated material, comprising:

(a) two elongated substantially parallel brackets each having

(i) a first segment fastened to the first skin,

(ii) a second segment fastened to a first region of the second skin, and

(iii) a third segment fastened to a second region of the second skin, the first and second regions being separated by a cavity in the second skin; and

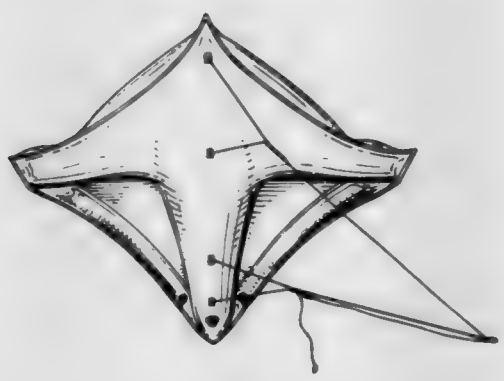
(b) a yoke fastened to the two elongated brackets and located in the cavity for receiving the force at a thrust point positioned approximately coplanar with the second skin.

4,533,099

KITE

Keith Stewart, Melbury, Osmond, Dorchester, United Kingdom DT20LS

Filed Sep. 24, 1982, Ser. No. 423,288
Int. Cl.[3] A63H *27/08;* B64C *31/06;* B64B *1/50*
U.S. Cl. 244—153 R 23 Claims



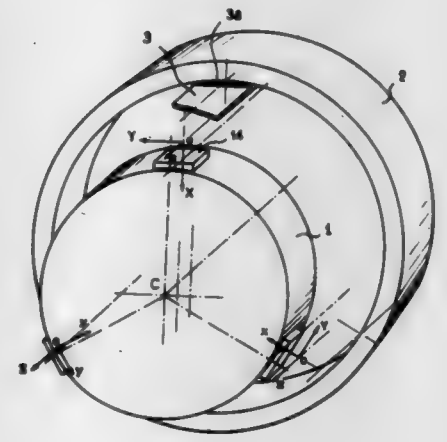
1. A kite having an inflatable body and flaps each of sheet material with each having a trailing edge, and means for varying the yaw of the kite in flight, said means being an individual independently inflatable tube provided along the trailing edge of each flap.

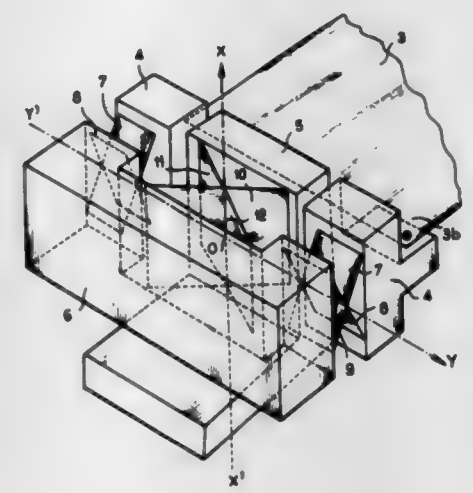
4,533,100

MOUNTING DEVICE FOR SUPPORTING A COMPONENT, ESPECIALLY A MIRROR OR AN ANTENNA REFLECTOR IN A SPACECRAFT

Jacques Paseri, Fontenay-les-Briis, France, assignor to R.E.O.S.C. (Recherches et Etudes d'Optique et de Sciences Connexes), Longjumeau and Societe Nationale Industrielle et Aerospatiale, Paris, both of, France

Continuation of Ser. No. 361,871, Mar. 25, 1982, abandoned.
This application Jul. 3, 1984, Ser. No. 626,484
Claims priority, application France, Apr. 3, 1981, 81 06724
Int. Cl.[3] B64G *1/66*
U.S. Cl. 244—158 R 11 Claims





1. A device for mounting a component in a support, especially an optical element or an antenna reflector in a spacecraft, said device comprising:

a first flexible plane blade rigidly secured to the support and extending along a first axis towards the component;

a first piece rigidly secured to said first blade and to which are fixed without clearance an end of each blade of a first pair of flexible plane blades, said blades of said pair extending in two secant planes the intersection of which is parallel to a second axis;

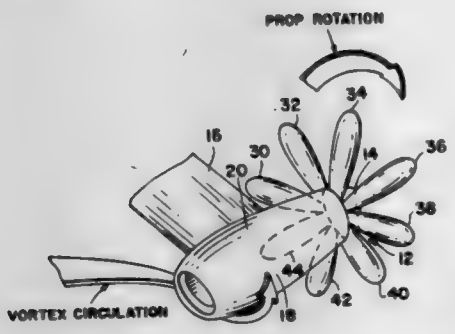
a second piece rigidly secured to said component and to which are fixed without clearance an end of each blade of a second pair of flexible plane blades, said blades of said second pair extending in two other secant planes the intersection of which is parallel to a third axis, said first, second and third axes being arranged according to the three directions of a triorthogonal system; and

an intermediate piece to which are fixed without clearance the other ends of the blades of said first pair and of said second pair; whereby said component may translate in a plane containing said first and third axes and rotate about said second and third axes, with respect to said support.

4,533,101
WINGTIP VORTEX PROPELLER

James C. Patterson, Jr., Yorktown, Va., assignor to The United States of America as represented by the Administrator of the National Aeronautics & Space Administration, Washington, D.C.

Filed Feb. 2, 1984, Ser. No. 576,308
Int. Cl.[3] B64D *27/02*
U.S. Cl. 244—199 11 Claims



1. An apparatus for generating thrust from and attenuating a vortex, comprising:

a moving vehicle;

lift-producing surface means on said vehicle inducing a wingtip vortex having a core and a crossflow;

power generating means; and

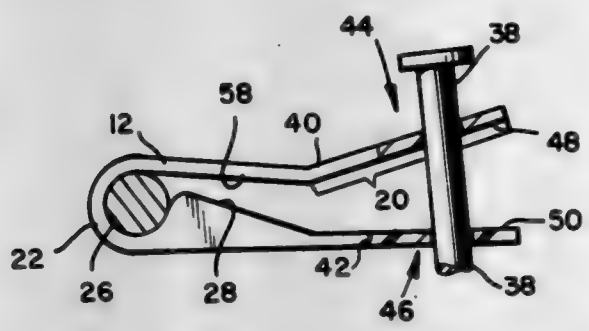
propeller means powered by said power generating means and positioned at the wingtip aft of the wing in a pusher configuration located in the highest energy area of said crossflow for simultaneous attenuating the vortex and converting a portion of the crossflow energy to vehicle thrust;

said propeller means having means for rotating the propeller means in a direction opposite to the flow of the wingtip vortex.

4,533,102
GROUNDING WIRE CLAMPING DEVICE

David R. Ferrell, 4125 Townhouse Rd., Apt. K, Richmond, Va. 23228

Filed Aug. 17, 1983, Ser. No. 523,866
Int. Cl.[3] F16L *3/08*
U.S. Cl. 248—74.1 9 Claims



1. A wire clamping and retaining device comprising:

first and second leg members;

connecting means connecting said first and second leg members to define a cavity for accepting a wire therein and to establish a normal position of said first and second leg members wherein a predetermined separation distance is defined therebetween and wherein said first and second leg members are angularly oriented relative to one another, said connecting means including biasing means for establishing a bias force to bias said first and second leg members into said normal position and to exert a clamping force against the wire in said cavity to prevent the device from slipping axially relative to the wire;

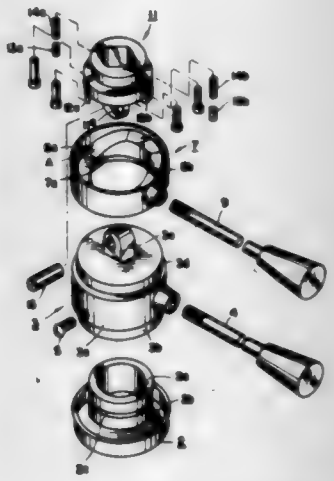
means associated with said first leg member defining a surface upwardly inclined in the direction of said connecting means, said inclined surface defining means for (a) establishing with a portion of said second leg member a wedge-shaped entranceway to said cavity through which said wire passes as said device is laterally moved relative to said wire, and (b) upwardly displacing the wire as the wire moves along said surface when said device is moved laterally relative to the wire to thereby cause said wire to assume a wedged relationship between said surface and said portion of said second leg member, wherein continued lateral movement of said device relative to said wire responsively effects relative outward displacement of said first and second leg members by virtue of the wedged relationship of the wire between said inclined surface and said portion of said second leg member to permit the wire to gain access to said cavity, said connecting means biasing said second leg member into said normal position upon acceptance of the wire in said cavity to frictionally engage the wire to substantially prevent axial slippage of the device relative thereto; and

means associated with said first and second leg members for defining paired nail-accepting apertures, said biasing means by virtue of biasing said first and second leg members into said angularly oriented normal position angularly offsetting one aperture relative to the other aperture to thus frictionally hold a nail spanning said first and second leg members and disposed in said paired apertures.

4,533,103
DEVICE IN UNIVERSAL HEAD FOR TILTING CAMERA TO THE LEFT AND RIGHT

Tatsuo Ina, 22-11 Sendagi 1-chome, Bunkyo-ku, Tokyo, Japan (112)

Filed Mar. 9, 1982, Ser. No. 356,388
Int. Cl.[3] F16M *11/12*
U.S. Cl. 248—179 8 Claims



1. A device for use in a universal head for a camera and adapted to tilt the camera in the lateral directions, said device comprising in combination:

(a) a tripod with legs, said legs having an upper portion, a table base plate (2) mounted on said upper portion, with a boss (2*a*) protruding from the center thereof, a rotary table (3), mounted on said boss (2*a*) said rotary table (3) having an upper neck (3*d*);

(b) a hollow rotary sleeve means (7) mounted on said neck (3*d*) with tapered cam portions (8*a*, 8*b*), said hollow rotary sleeve means (7) being mounted on said rotary table (3) for rotation in the horizontal plane;

(c) a tilt bed (11) attached to said boss (2*a*) cooperating with said rotary table (3) in clamping said hollow rotary sleeve means (7) therebetween, said tilt bed (11) being provided with cam receiving portions (12*a*, 12*b*) projecting downwardly therefrom and adapted to contact said cam portions (8*a*, 8*b*), so that a camera that is attached to said tilt bed (11) is tilted in one or the other lateral directions together with said tilt bed (11) as said rotary sleeve means (7) is rotated; and,

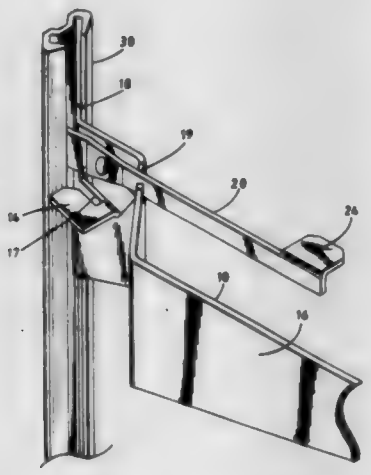
(d) handle means operatively coupled to said device to rotate said sleeve means.

4,533,104

INFINITELY ADJUSTABLE SUPPORT SYSTEM

George M. Bell, Revere, Mass., assignor to Hillel Stavis, Cambridge, Mass.

Filed Sep. 19, 1983, Ser. No. 533,359
Int. Cl.[3] A47G *29/02*
U.S. Cl. 248—245 10 Claims



1. Article support system comprising:
(a) means defining at least one structural support elongated channel;
(b) means defining at least one support bracket with a pivotable end insertable into said channel;
(c) means defining a latch member for latching and unlatching the bracket into and out of locking frictional engagement with the channel;
(d) means for pivotably mounting the latch from the bracket in a longitudinal and latitudinal direction;
(e) means for locking the latch to the bracket in a stressed arrangement in the latching position;
(f) fulcrum means for transmitting a first latch stress to the bracket end in the latching position and an opposing latch stress distributed among the fulcrum, and discrete areas of the latch and the bracket, the said means being constructed and arranged for applying primary frictional force between a bracket end inserted in the channel and an interior surface of the channel in the locked position and a secondary frictional force between the bracket and latch in the locked position as the latch and bracket go through relative pivotal movement about said pivot means and relative lateral movement, said forces being maintained by said means for locking.

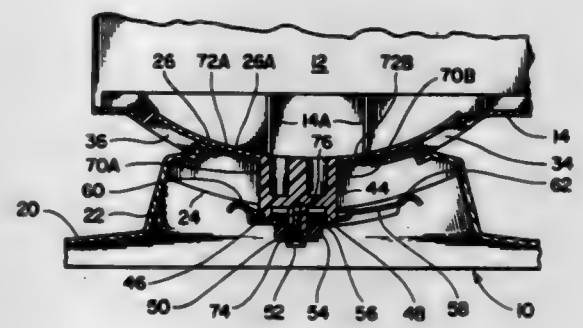
4,533,105

TILTABLE DISPLAY MONITOR ASSEMBLY

Ross E. Cornwell, Jr., Elmhurst; John F. Czech, Mount Prospect, and James D. Domoleczny, Vernon Hills, all of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 27, 1984, Ser. No. 605,016
Int. Cl.[3] A47G *29/00*
U.S. Cl. 248—371 9 Claims

1. A tiltable assembly for a display monitor haaving a convex lower portion for stably positioning said display monitor over a continuum of tilt angles, said assembly base comprising:
a housing having a concave upper portion adapted to receive the convex lower portion of said display monitor when positioned thereupon;
first and second parallel, elongated, arcuate guide rails located in said concave upper portion of said housing;
coupling means for slidably engaging a lower portion of said display monitor with said first and second guide rails, wherein the center of gravity of said display monitor exerts a rotational movement urging said display monitor in a first direction of rotation along said first and second guide rails; and
biasing means coupling a lower portion of said display monitor to said housing for urging said display monitor in a



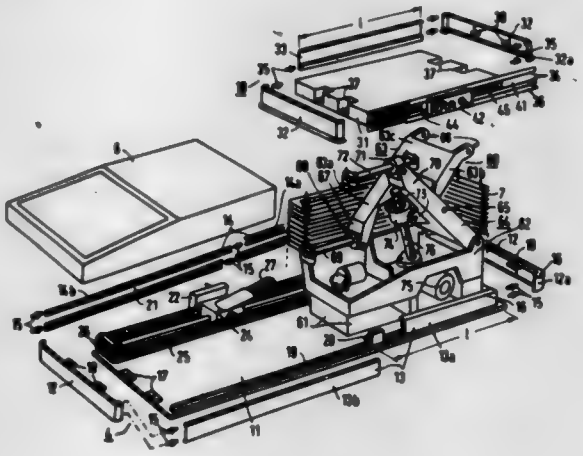
second, opposite direction of rotation along said first and second guide rails in counterbalancing the rotational moment of said display monitor's center of gravity in providing for the stable positioning of said display monitor over a continuum of tilt angles.

4,533,106

LIFTING DEVICE FOR A DENTIST CHAIR

Klaus Stöckl, Heppenheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 22, 1983, Ser. No. 516,212
Claims priority, application Fed. Rep. of Germany, Aug. 2, 1982, 3228834
Int. Cl.[3] A61G *15/00*
U.S. Cl. 248—421 6 Claims



1. A scissor action lifting device for a dentist chair with a base portion and a support portion which is height adjustable, said lifting device being mounted between said base portion and said height adjustable support portion which comprises, in combination:
(a) a pair of support arms, each arm having two arm parts, said arm parts comprising a longer arm part and a shorter arm part, said arm parts being joined at the area near one of their respective ends by a cross reinforcement member lying therebetween;
(b) a joint pivotally securing the support arms together in a manner that their shorter arm parts are on one side of the joint and their longer arm parts extend past the joint on another side thereof to form a scissors-type configuration which pivots about a horizontal axis; and
(c) upper and lower horizontal guides, each being slidably attached at an end of a corresponding one of the longer arm parts on said another side of said joint, the upper horizontal guide being attached to said support portion and the lower horizontal guide being fixed, whereby application of lifting or lowering forces to at least one of

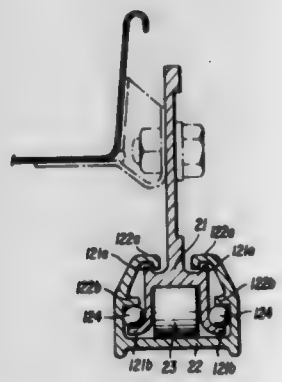
the support arms allows the support portion to be lifted or lowered.

4,533,107

SEAT TRACK APPARATUS FOR VEHICLE SEAT

Hiroshi Okazaki, and Motoi Hyodo, both of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Jan. 14, 1983, Ser. No. 458,036
Claims priority, application Japan, Jan. 21, 1982, 57-7850
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—430 **8 Claims**



1. A seat track apparatus for a seat of a vehicle, having a chamber floor comprising:

an upper rail fixedly attached to a lower portion of said vehicle seat and having a reverse U-shaped cross-sectional configuration so as to form opposed shoulders and opposed side walls and including a first pair of projecting portions longitudinally projecting from said opposed shoulders and a second pair of projecting portions longitudinally, laterally extending from said opposed side walls; and

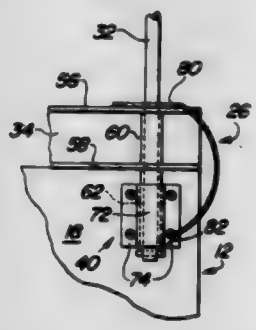
a lower rail fixedly attached to said floor of said vehicle chamber and having a U-shaped cross-sectional configuration, and including a pair of upper flanges at an upper end portion thereof and a pair of projecting portions corresponding to said pair of projecting portions of said upper rail at said opposed side walls.

4,533,108

DRAFTING TABLE ATTACHMENT

David A. Willer, Welland; John Rosbak, Fonthill, and Daniel G. McCombs, Port Colborne, all of Canada, assignors to Deere & Company, Moline, Ill.

Filed Oct. 17, 1983, Ser. No. 542,614
Int. Cl.³ A47G *1/16*
U.S. Cl. 248—467 **11 Claims**



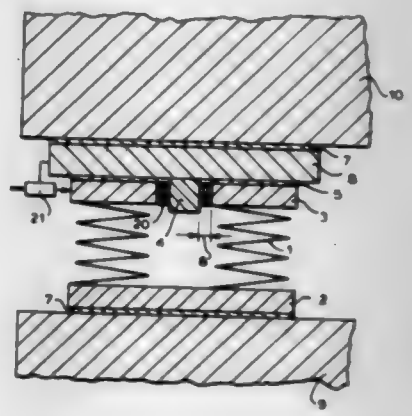
1. In a desk having a generally horizontal work surface with front and rear edges and a base extending downwardly from the work surface for supporting the surface above the floor, said base including a rear wall generally aligned with the rear edge, an upright document holder, comprising: a pair of upright rods, first and second rigid transverse members connected to the rods and extending therebetween in generally parallel, vertically spaced relationship, said transverse members transversely spacing the vertical rods and maintaining them in substantially fixed relationship with the uppermost transverse member defining the upper extremity of the holder, said rods including lower portions extending downwardly in parallel relationship from the lowermost transverse member, wherein the length of the lower portions of the rods are substantially greater than the vertical space between the first and second transverse members, bracket means connected to the desk and slidably receiving the lower portions of the rods for adjustably supporting transverse members above the rear edge of the work surface, means for securing the rods in a preselected adjusted vertical position relative to the work surface, and wherein the upright rods and transverse members form a rigid assembly movable with respect to the bracket means between a lowermost position wherein the ends of the lower portions of the rods are closely adjacent the floor and an upper position wherein said ends of said portions are positioned adjacent the work surface.

4,533,109

ELASTIC SUPPORT UNIT

Heinz Delam, Berlin, Fed. Rep. of Germany, assignor to Gerb Gesellschaft für Isolierung MBH & Co KG, Berlin, Fed. Rep. of Germany

Filed Oct. 19, 1981, Ser. No. 312,873
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1980, 3040181
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—542 **15 Claims**



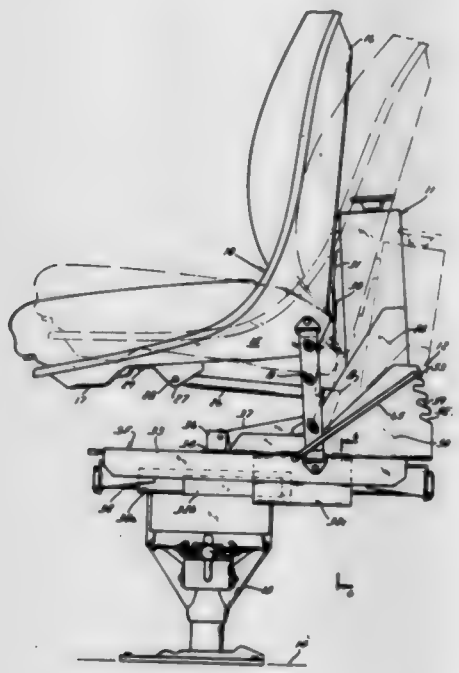
1. An elastic support unit, comprising a supporting element movable over a total path and including a rigid member connectable to an object, an elastic member which is elastic in a horizontal direction and in a vertical direction, and a sliding member located substantially between said elastic member and said rigid member and sliding over a sliding path dimensioned so that it starts to act upon exceeding the permissible elastic deformation of said elastic member said members being arranged so that first said elastic member deflects under the action of a horizontal force elastically horizontally until normally permissible stress in said elastic member so as to form a first elastic region, then after a horizontal restoring force of said elastic member exceeds a horizontal friction force between said sliding member and said rigid member said rigid member moves in a horizontal direction over the sliding path so as to form a second sliding region, and thereafter after exceeding said sliding path said elastic member is further elastically deformed by said rigid member with use of stress reserves between the permissible stress and a stress at the elasticity limit of said elastic element so as to form a third elastic region with the same elasticity as in said first elastic region and in said second sliding region, and then it is deformed plastically from a tensile limit stress to a breaking stress.

4,533,110

RESILIENTLY SUSPENDED, TILTABLE AND TETHERED VEHICLE OPERATOR'S SEAT HAVING FORE AND AFT ADJUSTMENT

Kevin E. Hill, Milwaukee, Wis., assignor to Milsco Manufacturing Company, Milwaukee, Wis.

Filed Sep. 26, 1983, Ser. No. 535,728
Int. Cl.³ B60N *1/02*
U.S. Cl. 248—573 **1 Claim**



1. A resiliently suspended, tiltable and tethered vehicle operator's seat assembly for an earth-working vehicle such as a backhoe wherein an earth-working bucket or the like is operative to form an excavation in the ground and at the rear end of the vehicle and the operator is positioned on a vehicle seat located adjacent said rear end of said vehicle whereby the operator must visually observe the excavation being done, said seat assembly comprising: a seat assembly supporting pedestal secured to said vehicle adjacent one end thereof, said pedestal having a pair of laterally spaced seat assembly guide tubes, a slidable sub-frame slidably mounted on said guide tubes, a seat support frame supporting an operator's seat and also supporting resilient means for supporting said seat on said seat support frame, pivot means for pivotally connecting said support frame about a transverse horizontal axis to said sub-frame to permit said seat support frame, said seat and said resilient support means to tilt as a unit about said axis; and tether belt means connected between said seat and said slidable sub-frame for limiting the tilting movement of said seat support frame, said seat and said resilient means regardless of the position of the slidable sub-frame relative to said pedestal, safety stop means located between said pedestal and said slidable sub-frame to limit relative movement therebetween when said tether belt means is tensioned excessively, said safety stop means including flat steel bar stops welded along the side of said guide tubes, and also includes upwardly facing hooks welded to said slidable sub-frame, said hooks engaging said bar stops when said tether belt means is tensioned excessively.

4,533,111

CONSTRUCTION SYSTEM FOR CAST-IN-PLACE CONCRETE BARRIERS FOR ROADWAYS

Charles M. Cousin, 3909 Ames Blvd., Marrero, La. 70072, and Frederick H. Gondrella, Sr., Rte. 1, Box 451F, Belle Chasse, La. 70037

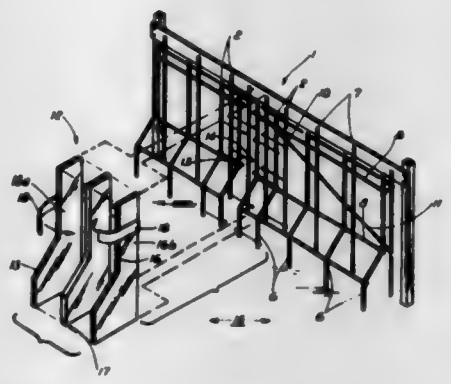
Filed Sep. 30, 1982, Ser. No. 428,528
Int. Cl.³ E01C *7/00*
U.S. Cl. 249—2 **6 Claims**

1. A system for constructing concrete barriers with spacing between sections of the barrier for proper drainage for the roadway and for expansion during changing atmospheric conditions, including the step of inserting a collapsable and removable core into the framework of the barrier at gaps in the framework left for this purpose before the pouring of the concrete which makes up the outer surface of the barrier; said framework and core comprising:

(a) a framework of rods or studs mounted in or on the surface on which the concrete barrier is to be built with pins positioned on the framework parallel to the ground at predetermined gaps in the framework, which pins stick into said gap a predetermined, set distance from either side of the framework on either side of the gap; and

(b) a vertically disposed, collapsable core, movable as a rigid unit prior to insertion in the gap, mounted snugly against and between the pins on either side of the barrier in the general shape of the frame, said collapsable core being at least in part supported by said pins, which collapsable core comprises

(i) a first, vertically disposed, extended, rigid sheet of material forming an outer surface facing the direction from which the concrete is to be poured, which surface fits snugly against said pins extending into the gap from the side of the framework from which the concrete is to be poured, said first surface being constructed of a



material, such as plywood or steel, with enough strength to withstand the pressure of the concrete being poured without breaking or deforming;

(ii) a second, extended, rigid sheet of material forming an outer surface at least generally parallel to said first outer surface, facing away from the direction from which the concrete is being poured and located on the side of the collapsable core opposite said first outer surface, the outer surface of which fits snugly against the pins mounted on the side of the gap of the framework opposite the direction of the pouring of concrete; and

(iii) at least one, vertically disposed, inner core member, the inner core member(s) extending at least about the full peripheral areas of said first and second surfaces, which inner core member(s) fit snugly against each other and against said first and said second outer surfaces about at least most of their extended, vertically disposed surfaces, the number and width of said inner core member(s) corresponding to the predetermined spacing desired between sections of the barrier, said first and said second outer surfaces with said core member(s) sandwiched between them forming a solid, rigid unit which can be moved about as a unit before being placed between said pins.

4,533,112

CURB STAKE WITH INTEGRAL SUPPORT

Theodore J. Santos, Jr., and Gordon E. Pearlman, both of Los Angeles, Calif., assignors to Western Steel Cutting, Inc., Los Angeles, Calif.

Filed Oct. 11, 1983, Ser. No. 540,519
Int. Cl.³ E01C *19/50*
U.S. Cl. 249—3 **8 Claims**

4. Concrete form apparatus for use in forming a concrete pad having a substantially vertical sidewall, comprising:

an elongated form disposed generally on or near the ground, the form having an inward side and an outward side and adapted to receive concrete adjacent to its inward side;

a plurality of curb stakes disposed adjacent to the outward side of the elongated form, each curb stake including

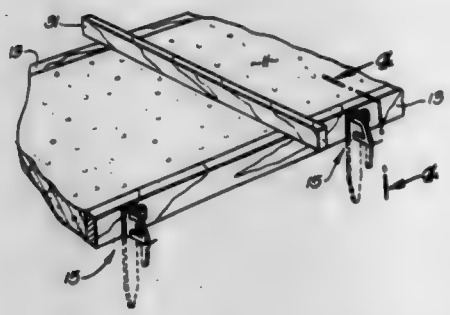
an elongated shaft having a lower end and an upper end, the lower end having a pointed tip to facilitate its being driven into the ground immediately adjacent to the form, and

support means integral with the shaft and disposed on the side of the shaft opposite the form, for engaging the ground when the shaft has been driven into the ground a predetermined distance; and

attachment means for securing the elongated form to each of the curb stakes;

wherein the support means of each curb stake prevents the shaft from pivoting in a direction away from the form, whereby the curb stake resists both outward displacement and outward pivoting of the form when concrete is poured on its inward side;

and wherein the support means of each curb stake includes first means defining a support surface secured to the



stake's elongated shaft, the support surface being oriented substantially perpendicular to the axis of the shaft and abutting the ground when the shaft is driven the predetermined distance into the ground,

second means defining an impact surface secured to the stake's elongated shaft at or near its upper end, the impact surface being oriented substantially perpendicular to the axis of the shaft and configured to be struck by a blunt instrument, to drive the lower end of the shaft into the ground, and

a second elongated shaft secured to the ends of the first and second means opposite the stake's first elongated shaft, the second elongated shaft including a spike projecting below the first means and in substantially the same direction as the lower end of the first elongated shaft, the spike including a pointed tip to facilitate its being driven into the ground along with the lower end of the first elongated shaft,

wherein the first means, second means, and second elongated shaft cooperate to form an opening therebetween sized to permit insertion of an elongated tool, for use in extracting the stake from the ground.

4,533,113

COMPACT HIGH TORQUE ROTARY VALVE OPERATOR FOR SIMULTANEOUS ACTUATION OF MULTIPLE ROTARY VALVES

Armand Francart, Jr., Rte. #2, Landenberg, Pa. 19350

Filed Apr. 24, 1984, Ser. No. 603,378

Int. Cl.³ F16K *31/163*

U.S. Cl. 251—63.4 **4 Claims**

1. A valve operator for operating at least one rotary valve, said valve operator comprising:

a valve operator housing including a housing wall,

a rod means capable of movement in the direction of its axis,

motor means mounted on said valve operator housing and operatively coupled to said rod means for axially reciprocating said rod means,

said at least one rotary valve having a valve housing for mounting to said valve operator housing,

said at least one rotary valve including a rotary valve stem mounted within said valve housing and being fixedly coupled to a rotatable valve element for rotation of said valve element between valve open and valve closed positions, and

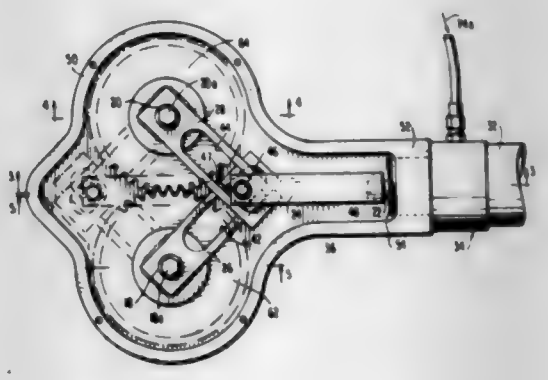
wherein said valve operator further comprises means within said valve operator housing for operatively connecting said rod means to said valve stem and for changing the reciprocating motion of said rod means to rotary movement of said valve stem,

the improvement wherein said connecting and motion changing means comprises:

first and second parallel shafts mounted within said valve operator housing wall for rotation about their axes at right angles to the axes of said rod means and positioned respectively to opposite sides of said rod means,

said first and second parallel shafts each include at least one means for connecting one of said shafts to said rotary valve stem of said at least one valve element,

arms fixed to respective shafts and projecting radially therefrom at different vertical heights, said arms having first and second ends wherein the first end of each arm is fixed to a respective shaft



longitudinal slots within said arms,

pin means fixed to said rod means and projecting right angles to the axis of said rod means and engaged commonly within said slots,

a pair of equal diameter gears coaxially fixed respectively to said shafts at a common level, rotatable therewith, and being intermeshed with each other,

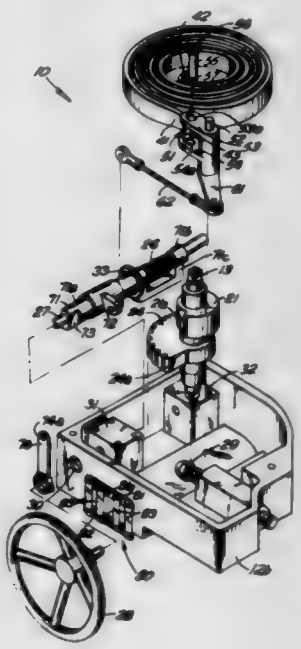
and wherein each of said shafts is positioned an equal distance from the axis of said rod means and in opposite sides of the axis of said rod means, said arms are of such length as to sweep across said rod means during rotation thereof such that said second ends of said arms overlap, wherein the length of said longitudinal slots and the positions of the same within said arms and wherein the extent of reciprocation of said rod means is such that during rod means reciprocation, said valve element is rotated from full open position to full closed position and vice versa;

whereby, said shafts rotate in unison, forces are evenly distributed from the motor means to said shafts, there is no side thrust acting on said rod by reaction torque from said at least one rotary valve, power losses are minimized, and breakout forces acting on the valve element are maximized.

4,533,114
FAIL-SAFE ACTUATOR FOR ROTARY VALVES

John M. Cory, Old Lyme; Edward W. Varney, Centerbrook, both of Conn.; Jon A. Babcock, Westerly, R.I., and Andrew Pupillo, Pawcatuck, Conn., assignors to Posi-Seal International, Inc., North Stonington, Conn.

Filed Feb. 8, 1983, Ser. No. 465,028
Int. Cl.[3] F16K *31/44*
U.S. Cl. 251—67 26 Claims



1. An actuator for a rotary valve having a rotatable closure member comprising:

a housing mountable on the valve adjacent to the valve closure member;

an output shaft member rotatably mounted in the housing and adapted to be coupled to the valve closure member such that rotation of said output shaft member effects the rotation of said closure member;

unitary biasing means having first and second end portions, the first end portion being coupled to said output shaft member for biasing said output shaft member to a first position;

means for rotating said output shaft member against the bias of said unitary biasing means from said first position to a second position, said rotating means being adapted to fix said output shaft member in said second position;

clutch means associated with said rotating means for selectively coupling said rotating means with said output shaft member, said clutch means having a first position which effects the uncoupling of said rotating means from said output shaft member and a second position which effects the coupling of said rotating means with said output shaft member said clutch means being coupled to said second end portion of said biasing means for biasing said clutch means to its first position;

clutch fixing means for selectively fixing said clutch means in its second position, against the bias of said unitary biasing means; and

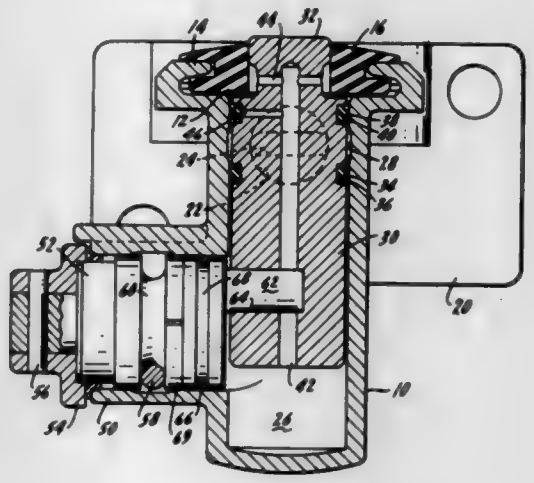
release means associated with said clutch fixing means for selectively releasing said clutch fixing means such that said unitary biasing means can return said clutch means to its first position, thus uncoupling said rotating means from said output shaft member and also permitting said unitary biasing means to return said output shaft member to its first position.

4,533,115
GLADHAND WITH DIRT PROTECTION PLUG

Frederic Lissau, Chicago, Ill., assignor to Sloan Valve Company, Franklin Park, Ill.

Filed Apr. 6, 1983, Ser. No. 482,502
Int. Cl.[3] F16L *37/28*
U.S. Cl. 251—142 3 Claims

1. A combination gladhand and dirt protection plug for use in gladhand coupling applications including a gladhand body having an air inlet and an air outlet, a seal member positioned to said air outlet, a chamber in said body connecting said inlet and outlet, a dirt protection plug in said chamber and an exterior handle for moving it between positions opening and closing communication between said inlet and outlet, said dirt protection plug carrying a nose portion which penetrates said outlet seal in the closed position and is in peripheral contact therewith to prevent dirt and other foreign matter from entering said chamber, closing seal means to close communication

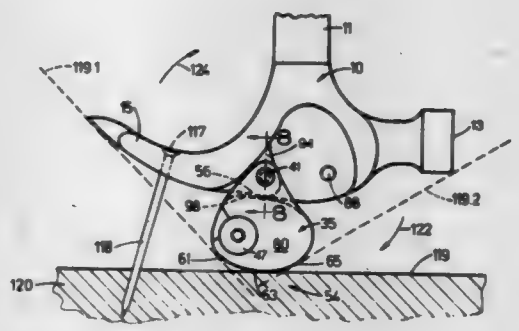


between said inlet and outlet in the closed position of said plug including spaced seal rings carried by said plug and in sealing engagement with said chamber wall, said spaced seal rings being positioned on opposite sides of said air inlet when said plug is in the closed position, vent passage means in said plug connecting opposite ends thereof to relieve pressure upon said plug during movement thereof, said vent passage means extending to an area behind said one of said seal rings closest to said nose and the exterior of said dirt protection plug to relieve back pressure thereupon.

4,533,116
CLAW HAMMER FOR DRIVING AND EXTRACTING NAILS

Vlatko Panovic, Vancouver, Canada, assignor to Drexore Resources Inc., Vancouver, Canada

Filed Jul. 5, 1983, Ser. No. 510,624
Int. Cl.[3] B66F *15/00*
U.S. Cl. 254—26 R 15 Claims



1. A hammer head adapted to be fixed to a hammer shaft, the head having a face at one end for striking a nail for driving the nail into a work surface, and a claw device at an opposite end for extracting the nail from the work surface, the head being characterized by:

(a) a fulcrum member having an inner portion hinged to the head by a hinge assembly for rotation between extended and retracted positions, the hinge assembly having a hinge axis disposed normally to the hammer shaft and normally to a head axis extending between ends of the hammer head,

(b) load relieving means characterized by the fulcrum member having a fulcrum member bearing surface and the hammer head having a head bearing surface, the two bearing surfaces being adapted to contact each other when the fulcrum member is in the extended position, so that a contact area between the bearing surfaces is disposed between the hinge pin and an outer periphery of the fulcrum member which is in contact with the work surface, so as to transfer load between the bearing surfaces, and to relieve load from the hinge assembly when extracting nails,

(c) the head having a recess to receive the fulcrum member in the retracted position,

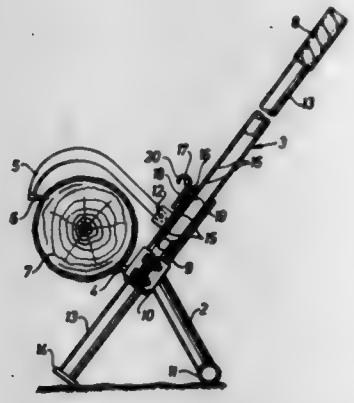
(d) retaining means cooperating with the fulcrum member and the hammer head to retain the fulcrum member in the retracted position while hammering.

4,533,117

LIFTING DEVICE

Per-Eric Schwang, Dannemansvägen 36, S-181 41 Lidingö, Sweden

Filed Feb. 8, 1983, Ser. No. 464,811
Claims priority, application Sweden, Feb. 11, 1982, 8200725
Int. Cl.³ B66F *7/22*
U.S. Cl. 254—94 **2 Claims**



1. A device for lifting objects from the ground, comprising:

a substantially L-shaped lever having a shorter leg and a longer leg, the end of the shorter leg forming a ground support and constituting a fulcrum for the longer leg;

engagement means being swingably connected to the longer leg so as to engage an object to be lifted upon actuation of the longer leg;

support means extensible in the direction of the longer leg for holding the object in the raised position;

said longer leg and said adjustable connecting means each including at least one bore through respective surfaces thereof;

pin means selectively insertable into said bores for interlocking said longer leg and said adjustable connecting means; and,

said adjustable connecting means including both swinging and stationary engagement means to engage an object to be lifted.

4,533,118

STRIPPER ASSEMBLY FOR REMOVING CARPET

Philip D. Thomas, and Harvel W. Thomas, both of 10471 SW. 40 Ter., both of Miami, Fla. 33165

Filed Jun. 17, 1983, Ser. No. 505,298
Int. Cl.³ B66D *1/00*; B32B *1/00*
U.S. Cl. 254—202 **14 Claims**

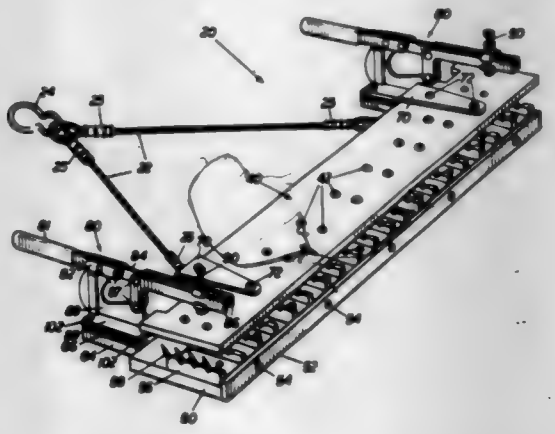
1. A stripper assembly primarily designed to remove carpeting of the type directly adhered to a floor or like surface, said stripper assembly comprising:

(a) gripping means structured for secure attachment to a portion of a carpet being stripped and comprising a jaw assembly including a first jaw element and a second jaw element cooperatively positioned to engage a carpet portion therebetween in secured relation to said gripping mens,

(b) driving means connected in substantially driving relation to said gripping means and structured to displace said gripping means and secured carpet portion upon activation of said driving means,

(c) anchor means connected to said driving means and structured for secured positioning of said driving means in a spaced location relative to said gripping means and secured carpet portion,

(d) said jaw assembly interconnected to said driving means to move with said second carpet portion towards said



driving means upon activation thereof and further comprising grasping means mounted between said first and said second jaw elements and structured to securely engage a carpet portion therebetween,

(e) said grasping means comprising a plurality of teeth disposed to extend upwardly from an inner surface of at least one jaw element, said teeth configured to penetrate the secured carpet portion between said jaw elements, and

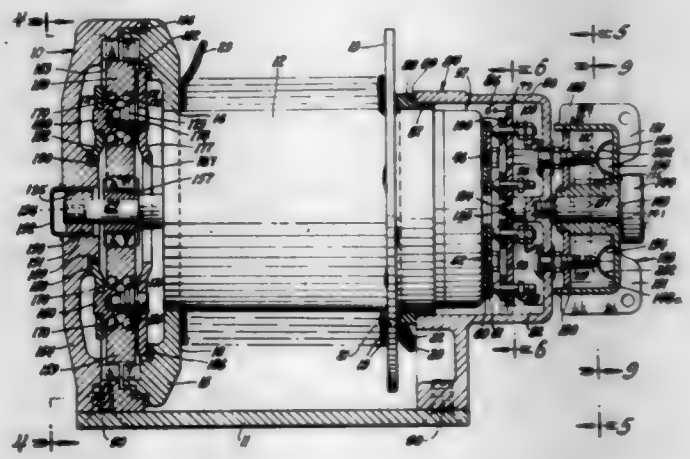
(f) said grasping means further comprising a plurality of positioning blocks disposed and configured to force the secured carpet portion into abutting engagement with the plurality of teeth so as to be penetrated thereby.

4,533,119

WINCH ASSEMBLY

Howard G. Liverance, 13149 Sycamore, Southgate, Mich. 48195, and Jack E. Wood, 7644 Plymouth, Ann Arbor, Mich. 48105

Filed Jan. 9, 1980, Ser. No. 110,620
Int. Cl.³ B66D *1/12, 1/22, 3/20, 3/26*
U.S. Cl. 254—344 **12 Claims**



1. A power winch mechanism comprising:

(a) a rotatable magnetic cable drum;

(b) an electric motor including an armature and a permanent magnet field integral with said magnetic cable drum to

combine with said magnetic cable drum to form a complete magnetic circuit:

(c) a base plate;

(d) means for rotatably mounting one end of said magnetic cable drum on said base plate;

(e) means carried by said magnetic cable drum for rotatably mounting one end of said electric motor armature;

(f) a gear housing mounted on said base plate and rotatably supporting the other end of said magnetic cable drum and the other end of said electric motor armature;

(g) a planetary gear type reduction unit operatively mounted in said gear housing and drivably connecting said other end of said electric motor armature to said other end of said magnetic cable drum with diametrically opposed, substantially co-planar, and equal driving forces;

(h) brush means operatively engaged with said electric motor armature and magnetic cable drum; and,

(i) switch means operatively connected to said brush means for conveying and controlling electrical energy through said brush means to said electric motor armature for operating said electric motor armature in a pre-determined direction of rotation to rotate said magnetic cable drum.

4,533,120

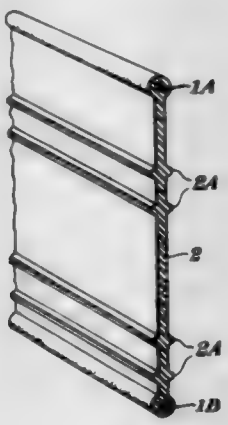
FENCING RAIL MEMBERS

Bernard J. Ruddock, Animart, Ashbrook, Shipley, Horsham, West Sussex, RH13 8PE, England

Filed Mar. 12, 1984, Ser. No. 588,729

Int. Cl.³ B21F *27/00*

U.S. Cl. 256—52 **6 Claims**



1. A fencing rail member comprising

a plurality of longitudinally extending wires,

a web of synthetic resin material covering and extending between said wires and maintaining said wires in spaced, parallel relationship,

said web having a transverse width at least ten times its thickness,

said web including a plurality of longitudinal ribs extending substantially parallel with said wires, the thickness of each of said ribs being substantially equal to the thickness of said wires and their covering, and

said ribs being offset different distances from the longitudinal center line of said web so as to interlock when the web is rolled.

4,533,121

VARIABLE PITCH STAIR RAILING ASSEMBLY

Gene Basey, 18447 Santar, Rowland Heights, Calif. 91748, assignor to Gene Basey, LaPuente, Calif.

Continuation-in-part of Ser. No. 157,186, Jun. 6, 1980, Pat. No. 4,352,485. This application Feb. 16, 1982, Ser. No. 348,970

The portion of the term of this patent subsequent to Aug. 17, 1999, has been disclaimed.

Int. Cl.³ E04H *17/14*

U.S. Cl. 256—67 **20 Claims**

1. A stair rail assembly which may be varied in its mounting angle from a neutral orientation of approximately 36 degrees by a predetermined angle up to about 10 degrees in either direction comprising:

a wooden handrail,

a wooden shoe rail,

wooden balusters extending between said handrail and said shoe rail,

means, including a pin extending into each end surface of each said baluster and into said shoe and handrails, for securing said balusters to said shoe and handrails, said pins having their longitudinal axis extending generally parallel to a vertical plane and to the plane of the overall stair rail assembly;

said pins being of high strength, having a very low elastic limit, and being permanently deformed when bent;



said handrail and said shoe rail being provided with recesses for receiving the ends of said balusters, and having additional holes at the bottoms of said recesses for receiving said pins; and

means for mounting said ends of said balusters in said recesses with clearance permitting angular movement of said balusters in said recesses and relative to said hand and shoe rails by said predetermined angle;

whereby said assembly may be racked to a different mechanically stable inclination within said predetermined angle, with said balusters remaining vertical, with said pins holding their new orientation, and with said recesses substantially concealing the small angular displacement of the ends of said balusters relative to said rails.

4,533,122

BARRIER SYSTEM

Brian C. Bannister, North Mymms, England, assignor to Marler Haley Exposystems Ltd., Hertfordshire, England

Filed Jun. 7, 1982, Ser. No. 386,038

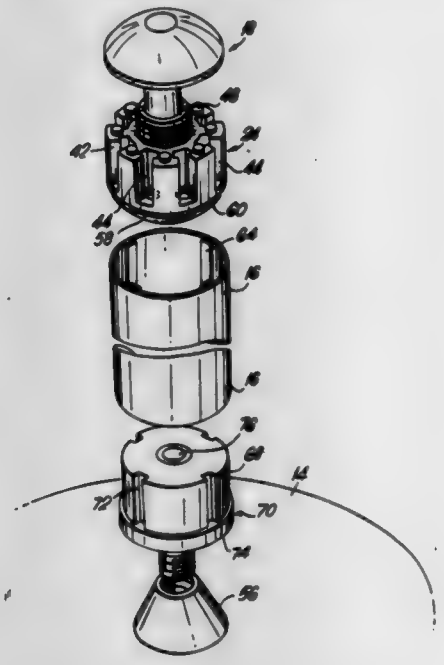
Claims priority, application United Kingdom, Jun. 10, 1981, 8117620

Int. Cl.³ E04F *11/18*

U.S. Cl. 256—69 **8 Claims**

1. An upright for a barrier system of the type comprising a plurality of uprights connected by rails, ropes or the like, the upright comprising a base, a column upstanding therefrom, a head member mounted on the column, the head member including a first part and a second part, means securing said first part to the column, said first part affording a plurality of peripheral slots each extending longitudinally and opening also onto one axial end face of the first part, said slots opening onto the periphery of said first part via respective restricted throat portions, whereby radial withdrawal of fitments of complementary form from said slots can be prevented, the first part including a central portion, said second part of the head member further comprising a cap having a central portion, a peripheral skirt spaced outwardly from said central portion of the cap and providing an end face opposing said end face of the first part, and capable of mating engagement with said end face of the first part to close off the axial ends of said slots, the central portion of the cap and the central portion of the first part having inter-engaging screw threads thereon about a longitudinal axis of the head member whereby the cap can be screwed

down into the first part, to engage, by said end face of said skirt, said end face of the first part, by rotation of the cap, relative to the slotted member, about said axis or can be unscrewed to move said end face of the cap skirt away from said end face of the slotted member to space said end faces from one another and allow insertion or removal of fitments into or from said slots, said head member having a passage extending there-



through along said longitudinal axis, through the slotted member and the cap member, an internal clutch within said passage including a collet carried by one of said part of the head member and means for contracting said collet carried by the other of said parts of the head member, whereby said collet contracting means can be operated to contract the collet by screwing said cap down onto the slotted member.

4,533,123

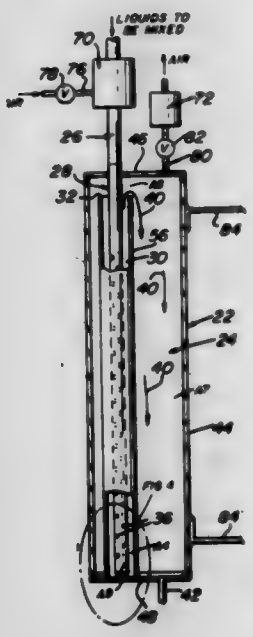
LIQUID MIXING DEVICE

Richard P. O'Leary, Wayne, Pa., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed May 7, 1984, Ser. No. 607,494

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—61 **18 Claims**



1. Apparatus for mixing at least two fluids to produce a homogenous mixture, said apparatus having an inlet adapted for receipt of at least two fluids, a hollow receiving chamber having an outlet, an elongated hollow cylindrical member defining a cavity therein and being located within said chamber, said member being closed at one end thereof and having an opening adjacent the other end thereof, said opening being in fluid communication with said chamber, and an elongated conduit located within said cavity and coupled to said inlet for receipt of said two fluids, said conduit including plural, longitudinally spaced stream producing means for producing at least two longitudinally spaced streams of fluid, with each stream being directed into said cavity in a respective direction to produce a respective eddy current therein, and with immediately adjacent eddy currents flowing in opposite rotational directions to to effect a mixing action of said fluids, whereupon said mixed fluid flows out of said opening in said member and into said receiving chamber for egress from said apparatus via said outlet.

4,533,124

DEVICE FOR DELIVERING GASEOUS AND SOLID MATERIALS TO A METAL POOL DURING A REFINING PROCESS

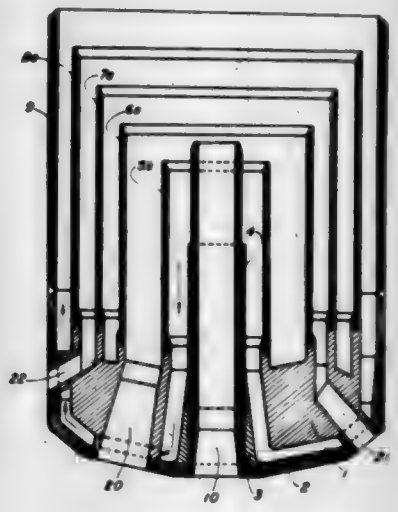
Robert Mercatoris, Eich, Luxembourg, assignor to MecanARBED-Dommeldange S.a.r.l., Luxembourg

Filed Oct. 17, 1983, Ser. No. 542,429

Claims priority, application Luxembourg, Oct. 22, 1982, 84433

Int. Cl.³ C21C *5/32*

U.S. Cl. 266—225 **15 Claims**



1. A blowing apparatus for simultaneously delivering gaseous and solid materials to a hot melt, the apparatus comprising:

a block, said block having an axis;

a plurality of annular elements in said block concentric with respect to said axis of said block, said annular elements forming the boundary walls for a plurality of corresponding concentric chambers therebetween;

at least one of said chambers forming a central longitudinal passage;

at least one nozzle in said block communicating with at least one other of said chambers;

a block sheath cooperating with and separable from said block, said block sheath including a substantially cylindrical side wall portion and forming a housing for said block;

a central opening in said block sheath communicating with said central longitudinal passage;

means for spacing said block and said block sheath;

at least one opening in said block sheath corresponding to each of said nozzles, each said nozzle communicating with its corresponding opening in said block sheath;

said spacing means acting to space said block from said block sheath, thereby forming body passage means for fluid to flow therethrough between said block and said block sheath;

a plurality of concentric tubes, each of said tubes corresponding to and being connected with one of said annular elements, at least one pair of adjacent concentric tubes cooperating to define a gas supply passage in flow communication with said one nozzle; and

a central longitudinal tube connected to said central opening in said block for the delivery of solid material therethrough, said central tube being within said plurality of concentric tubes, and said central tube and the innermost of said concentric tubes cooperating to define a fluid flow passage connected to and communicating with said body passage means.

4,533,125

APPARATUS FOR GUIDING AND CHANGING IMMERSION LANCES

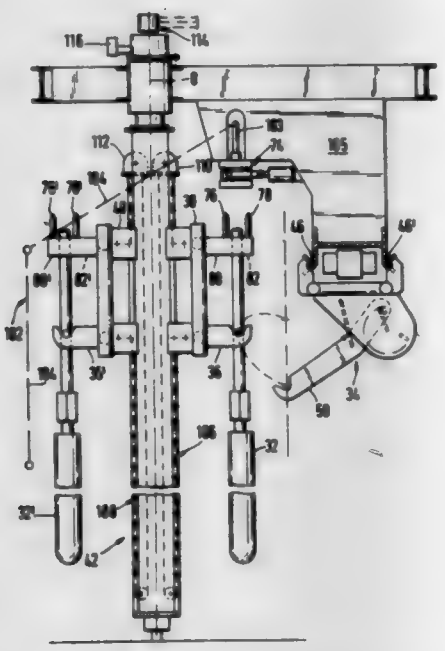
Pierre Mailliet, Howald; Radomir Andonov, Mamer; Hubert Stomp, Howald, and Jean Monai, Petange, all of Luxembourg, assignors to Paul Wurth S.A., Luxembourg, Luxembourg

Filed Dec. 20, 1983, Ser. No. 563,630

Claims priority, application Luxembourg, Dec. 21, 1982, 84543; Jun. 29, 1983, 84884

Int. Cl.³ C21C *5/30*

U.S. Cl. 266—226 **37 Claims**



1. Apparatus for guiding and changing lances for use with a metal melt comprising:

mounting means for mounting a plurality of lances, said mounting means having a vertical axis and being capable of rotating about said vertical axis;

at least two lance carriage means mounted on and vertically movable along said mounting means, each of said lance carriage means being capable of supporting a lance;

gas supply head means for providing flow communication between a supply system and the upper part of a lance supported in at least one of said lance carriage means;

lance storage means for storing lances at a location spaced from said mounting means; and

lance transfer means for transferring lances between said lance storage means and said lance carriage means.

4,533,126

THREE PIECE SNUBBER FOR AUTOMATIC WASHER

Dale E. Mueller, Benton Township, Berrien County, and Joel M. Snider, Lincoln Township, Berrien County, both of Mich., assignors to Whirlpool Corporation, Benton Harbor, Mich.

Filed Dec. 3, 1982, Ser. No. 446,782

Int. Cl.³ D06F *23/00*; B60T *7/12*

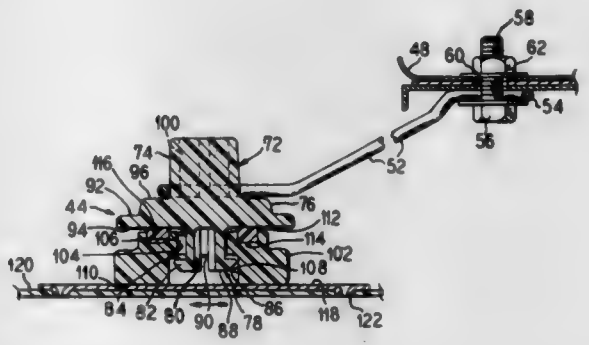
U.S. Cl. 267—141 **12 Claims**

1. In an automatic washer having a suspension system including a suspended mass susceptible to excursion, a dual friction snubber system comprising:

a snubber having first and second parallel uniplanar friction surfaces, said first surface providing high friction and said second surface providing low friction;

a support on said suspended mass against which said snubber first surface acts;

a spring means for holding said snubber against said support; and



means for permitting limited sliding uniplanar movement at said second surface for small movements of said mass and means for providing uniplanar movement at said first surface between said snubber and said support for large movements of said mass.

4,533,127

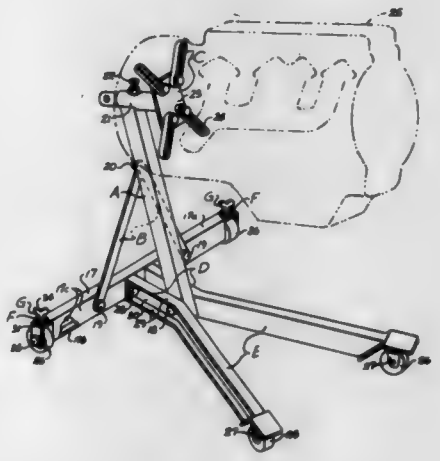
WHEELED STAND

Joel W. Hawkins, Box 3867, Greenville, S.C. 29608

Filed Oct. 6, 1983, Ser. No. 539,755

Int. Cl.³ B66F *3/00*

U.S. Cl. 269—17 **3 Claims**



1. An engine stand having a base formed from a transverse base member, and a longitudinal base portion extending forwardly from said transverse base member; said base being supported by wheels, comprising:

a post carried by said longitudinal base portion and being inclined rearwardly toward said transverse base portion;

a pair of upright straps carried by said transverse base member on one end and tapering inwardly toward and being removably connected to said post on the other end;

engine mounting means carried adjacent an upper end of said post extending outwardly above and in alignment with said longitudinal base portion;

said longitudinal base portion including

a pair of structural members each having a first section extending removably outwardly from said transverse base member in general longitudinal alignment;

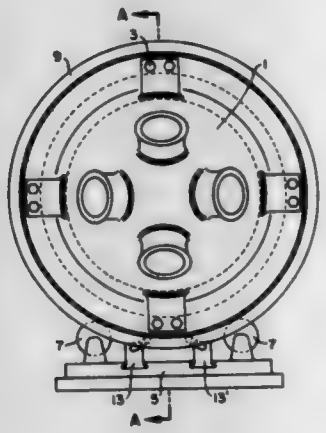
a second section diverging outwardly from each of said first sections; and

fastening means removably securing said post between said first sections remote from said transverse base member.

4,533,128
DEVICE FOR SUPPORTING AND ROTATING A PART OF LARGE DIMENSIONS

Jean-Paul Guigon, Givry, France, assignor to Framatome & Cie, Courbevoie, France

Filed Jul. 12, 1983, Ser. No. 513,203
Claims priority, application France, Jul. 20, 1982, 82 12613
Int. Cl.³ B23K *37/04*
U.S. Cl. 269—58 4 Claims



1. Device for supporting a part (1) of large dimensions, and permitting said part to be rotated about its horizontal axis, comprising

(a) a frame (5) carrying a plurality of pairs of rollers (6, 7) having horizontal axes, at least one of said pairs (6) consisting of driving rollers;

(b) a cylindrical support (4) provided with means (3) for fastening said part (1) in its interior and adapted to be positioned on said rollers (6, 7) in such manner as to be driven in a rotational movement about its horizontal axis when said driving rollers (6) are themselves given a rotational movement;

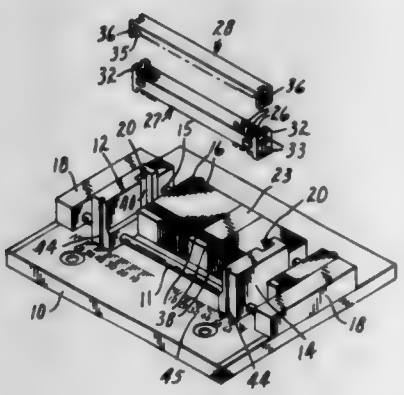
(c) means (13, 13') for stopping rotational movement of said driving rollers (6) in the event of incorrect positioning of said support (4) on said frame (5), said stopping means (13, 13') comprising at least one pair of rocking contactors (13, 13') disposed on said frame (5), and against which said support (4) abuts when it is correctly positioned on said frame (5); and

(d) means (14, 14', 9) for locking said support (4) against axial translation relative to said frame (5).

4,533,129
ELECTRICAL CONNECTOR LOCATOR PLATE

Jerome A. Malmquist, Shoreview, and Dean K. Reidt, Cottage Grove, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jan. 9, 1984, Ser. No. 569,276
Int. Cl.³ H01R *43/04*; B25B *1/02*
U.S. Cl. 269—207 11 Claims



1. A locator plate for positioning a plurality of different length multi-contact insulation displacement connectors for connection to multi-conductor flat cables, comprising:

a base plate,

an end guide support rod mounted parallel to said base plate,

a pair of connector end guides having facing connector end guide channels that extend perpendicular to said base plate, at least one of said end guides being slidable along said end guide support rod toward and away from the other end guide to change the spacing between said end guide channels,

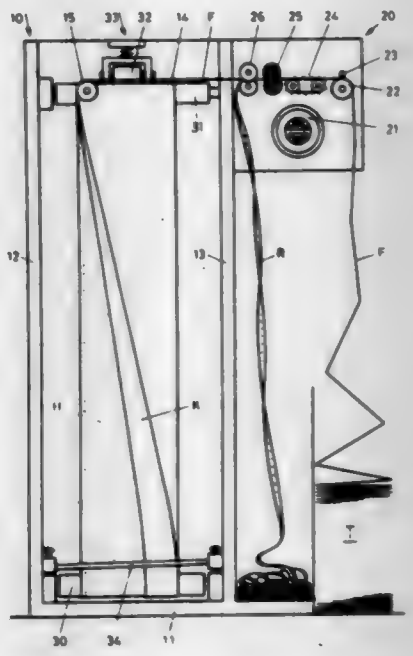
a shim support rod mounted parallel to and spaced from said end guide support rod,

a plurality of shims having parallel major faces mounted on said shim support rod with their major faces perpendicular to the axis of said support rod and being slidable along said shim support rod, said shims extending from said shim support rod a sufficient distance to extend into the space between said connector end guides to define the spacing between said end guides and being individually pivotable on said shim support rod out of the space between said connector end guides to permit said movable end guide to be slid closer to the other end guide.

4,533,130
APPARATUS FOR FOLDING A RUNNING WEB WITH FOLDING ROLLER AND ADJUSTABLE PARALLELLING BAR

Walter Suter, Ringlikerstrasse 39, CH-8142 Uitikon, Switzerland

Filed Sep. 24, 1984, Ser. No. 653,856
Claims priority, application Switzerland, Sep. 28, 1983, 5264/83
Int. Cl.³ B41L *43/04*
U.S. Cl. 270—41 6 Claims



1. An apparatus for folding a running web having a direction of advance through the apparatus; comprising

(a) a deflecting roller supporting the running web; said deflecting roller having a longitudinal axis;

(b) scoring means for providing a weakening score line in said running web parallel to the running direction thereof for dividing the web into side-by-side arranged first and second web portions;

(c) a folding roller supporting said running web; said folding roller being situated spaced from and downstream of said deflecting roller as viewed in said direction of advance; said folding roller having a longitudinal axis oriented at least approximately at right angles to the longitudinal axis of said deflecting roller, whereby said running web undergoes an approximately 90° twist and said first web portion of the running web folds over said second web portion

along said score line as the running web passes from said deflecting roller onto said folding roller;

(d) a parallelling bar arranged in the immediate vicinity of said folding roller and cooperating therewith for pressing the running web thereagainst; and

(e) adjusting means for arbitrarily varying the relative position between said folding roller and said parallelling bar for setting a desired wind round angle variation of said web about said folding roller along the longitudinal axis thereof.

4,533,131

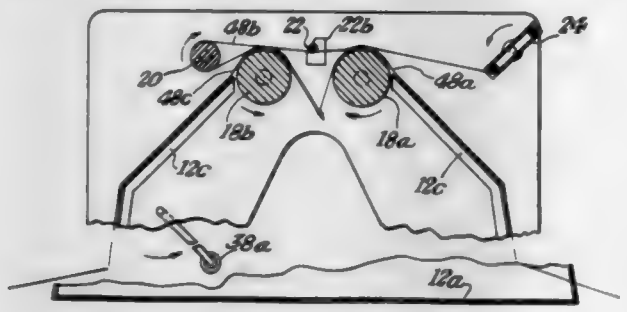
PORTABLE DECOLLATING MACHINE

James E. Burns, 4221 NE 25th Ave., Lighthouse Point, Fla. 33308

Continuation of Ser. No. 88,596, Dec. 26, 1979, abandoned. This application Nov. 9, 1981, Ser. No. 319,747

Int. Cl.³ B65H *41/00*

U.S. Cl. 270—52.5 **5 Claims**



1. A desk top deleaver for decollating an assembly of continuous forms including a plurality of continuous sheets into separate stacks comprising:

a housing including four sheet means for guiding the continuous forms, said four sheet means including two sheet means, a third sheet means and a fourth sheet means,

said two sheet means for decollating an assembly of continuous forms having at least a first sheet, a second sheet and a third sheet, said two sheet means comprising a first sheet means for supporting and changing the direction of travel of a first sheet toward one of the separate stacks and a second sheet means for supporting and changing the direction of travel of a second sheet toward another one of the separate stacks, said two sheet means connected to said housing, each of said first sheet means and said second sheet means having a center line positioned generally parallel to a transverse line across the first sheet and the second sheet, said two sheet means positioned in spaced apart relationship forming a working space between said two sheet means through which the continuous forms move in a direction from an entrance side of said working space between said two sheet means toward an exit side of said working space between said two sheet means, said working space lying in a generally horizontal plane,

a take-up means, for taking up the third sheet,

said third sheet means for changing and redirecting the third sheet toward said take-up means, said third sheet means having a center line generally parallel to said center lines of said two sheet means and connected to said housing and positioned adjacent said first sheet means and positioned near said working space with said working space generally between said third sheet means and said second sheet means,

said take-up means connected to said housing and positioned adjacent said second sheet means and positioned near said working space with said working space generally between said take-up means and said first sheet means, said take-up means constructed and arranged to pull the third sheet through said working space with the aid of said fourth sheet means,

said third sheet means and said take-up means connected to said housing and connected and arranged to position the third sheet with the aid of said fourth sheet means to frictionally engage the second sheet of the continuous forms after decollating to aid in properly separating the assembly of continuous forms moving through said working space,

said fourth sheet means having a center line generally parallel to said center lines of said two sheet means and connected to said housing, and said fourth sheet means positioned and arranged to engage the third sheet after the third sheet has been redirected by said third sheet means in a location between said third sheet means and said second sheet means, said fourth sheet means engaging said third sheet on a surface thereof opposite said working space to force said third sheet to track along a path in said working space between said two sheet means said working space, said third sheet positioned by said fourth sheet means to aid in proper decollating of the assembly of continuous forms by contacting and moving the second sheet over said second sheet means and by increasing the contact area between the second sheet and the third sheet when the second sheet attempts to move over said first sheet means thereby aiding in proper decollating.

4,533,132

COLLATING MACHINE

Jochen Wangermann, Appen, Fed. Rep. of Germany, assignor to Gruner & Jahr Ag & Co., Itzehoe, Fed. Rep. of Germany

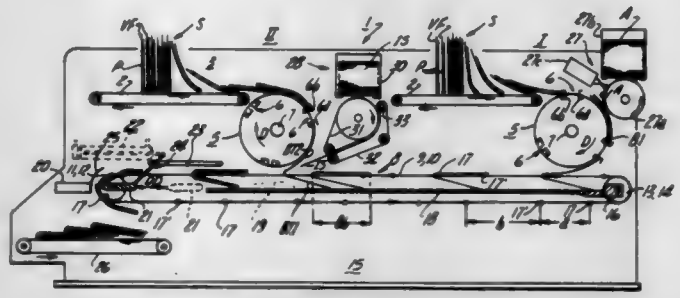
Continuation of Ser. No. 847,895, Nov. 2, 1977, Pat. No. 4,200,275. This application Jan. 7, 1980, Ser. No. 110,097

Claims priority, application Fed. Rep. of Germany, Sep. 7, 1976, 2631058

The portion of the term of this patent subsequent to Apr. 29, 1997, has been disclaimed.

Int. Cl.³ B42B *2/00*

U.S. Cl. 270—53 **3 Claims**



1. A process for collating a plurality of folded sheet products into a complete product, each of said plurality of folded product being folded along a fold into a least two folded portions, said process comprising the steps of:

conveying a first plurality of folded product from a first storage means to a first orientation unit on a first conveying means;

orienting said first plurality of folded product in said first orientation unit with the fold of each of said first plurality of folded product being in a first predetermined direction perpendicular to said conveying direction;

feeding each of said first plurality of folded product into a first delivery drum;

moving a plurality of interspaced driver bars and holder bars of said first conveyor means in said conveying direction towards a turn-round end, said plurality of driver and holder bars disposed between two continuous drive elements;

delivering each of said first plurality of folded product with said first delivery drum from said first orientation unit onto said plurality of driver bars with the fold of each of said first plurality of folded product leading in the conveying direction and one of the folded portions of each of said plurality of folded product supported by one of said driver bars and one of said holder bars;

conveying at least one additional plurality of folded product

from at least one additional storage means to at least one additional orientation unit;

orienting said at least one additional plurality of folded product in said at least one additional orientation unit with the fold of each of said at least one additional plurality of folded product being in said first predetermined direction perpendicular to said conveying direction;

feeding each of said at least one additional plurality of folded product onto at least one additional delivery drum located down stream of said first delivery drum in said conveying direction;

delivering each of said at least one additional plurality of folded product with said at least one additional delivery drum from said at least one additional orientation unit onto said plurality of driver bars in timed relationship to said first delivery drum, each of said one additional plurality of folded product nested over one of said first plurality of folded product, previously delivered to said driver bar by said first delivery drum to form a nested product;

conveying said nested product with said first conveyor means from said first and at least one additional delivery drum to a stitching station having a first member disposed adjacent to the turn-round end of said first conveyor means and a second member juxtaposed said turn-round end of said first conveyor means, one of said first and second members being a stitching member and the other being a counterpiece;

translating said second member in a direction parallel to said conveying direction to pass between the folded portions of said nested product to press the fold of said nested first and at least one additional plurality of folded product between said first and second members after said driver bar has passed the first member of said stitching station; and

stitching the fold of said nested product to produce a completed product and depositing said completed product onto a second conveyor, said completed product maintaining the fold of said first and said at least one additional plurality of folded product perpendicular to said conveying direction.

4,533,133

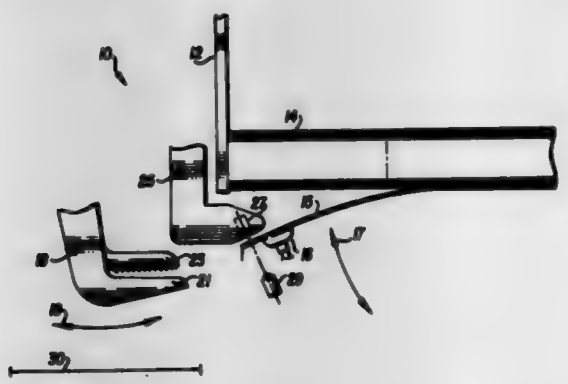
METHOD AND APPARATUS FOR PREVENTING INSERTION ERRORS

Kenneth A. Hams, Easton, Pa., assignor to Bell & Howell Company, Phillipsburg, N.J.

Filed Sep. 28, 1982, Ser. No. 425,220

Int. Cl.³ B65H *5/26*

U.S. Cl. 271—9 **26 Claims**



1. An insertion machine having at least one supply station located alongside a transport means, said machine comprising:

supply means at said supply station containing at least one piece of material;

selector means for selecting at least a portion of said material as being subject to extraction from said supply means;

monitoring means for detecting the quantity of material selected from said supply means by said selector means, said monitoring means further comprising:

(1) transmitting means for directing an infrared signal toward said selected material;

(2) means for receiving said infrared signal; and,

(3) means for determining whether the magnitude of said received infrared signal is in an acceptable range; and,

gripper means for extracting said selected material from said supply means and for depositing said extracted material on said transport means if said magnitude of said received infrared signal is in said acceptable range.

4,533,134

MECHANISM FOR THE LATERAL ALIGNMENT OF SHEETS IN A PRINTING MACHINE

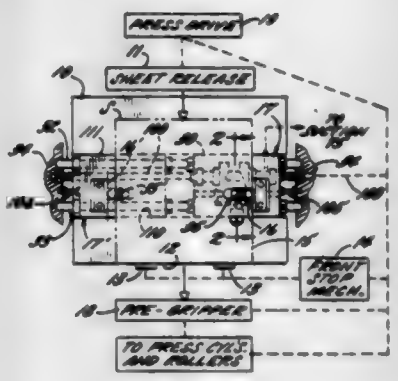
Hans-Peter Galster, Seligenstadt, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 451,255, Dec. 20, 1982, abandoned. This application Feb. 16, 1983, Ser. No. 466,878

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150169

Int. Cl.³ B65H *9/16*

U.S. Cl. 271—240 **9 Claims**



1. A device for registering a sheet at either one of the opposite lateral edges of a feed table in a printing press having a frame and a press drive and having means timed with the drive for releasing the sheets to the feed table for feeding one-by-one, the combination comprising a housing having a top surface flush with the feed table, first and second means for alternative mounting of a side stop at the respective lateral edges of the feed table, a suction head flushly recessed in the surface of the housing, means including a slide in the housing for mounting the suction head for limited reciprocating movement toward and away from the side stop mounting means, means mounting said housing for shifting between alternative working positions at the respective lateral edges of the feed table for the purpose of utilizing the suction head in the respective working positions for the selective alignment of a sheet at the respective lateral edges, first and second means carried by and shiftable with said housing between said respective working positions for alternatively driving of the suction head in its respective working positions, the alternative driving means being relatively out of phase by 180° to produce movement of the sheet into contact with the adjacent one of the side guides timed with the feeding of sheet on the feed table, and means for selecting the alternative driving means.

4,533,135

JAMMED SHEET REMOVAL AID IN A REPRODUCING MACHINE

Laurence S. Barker, Fairport, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jul. 29, 1983, Ser. No. 518,585

Int. Cl.³ B65H *5/02*

U.S. Cl. 271—275 **4 Claims**

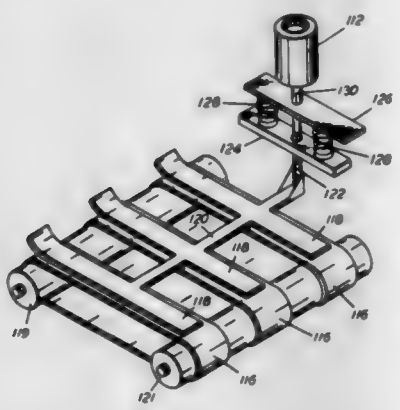
3. A sheet transport, including:

means for accessing the interior of the sheet transport;

means, disposed interiorly of the transport, for advancing sheet-like material;

means for holding the material on said advancing means;

means, operatively coupled to said accessing means, for storing a supply of fluid therein, said storing means includes a storage bellows coupled to said accessing means so that closing of said accessing means compresses said



storage bellows forcing fluid therefrom and opening said accessing means expands said storage bellows drawing fluid therein; and

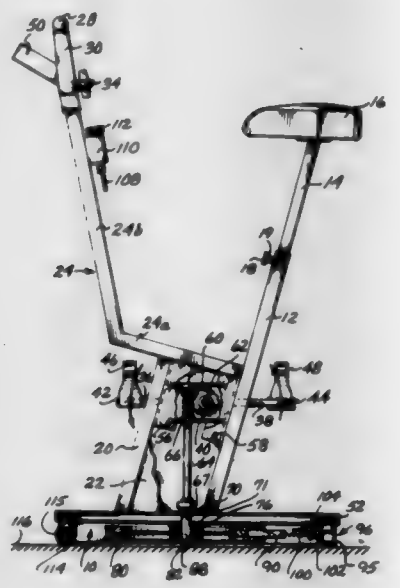
means, connected to said storing means, for moving said holding means to an operative position in response to said accessing means being closed and to an inoperative position in response to said accessing means being opened.

4,533,136

PEDAL-OPERATED, STATIONARY EXERCISE DEVICE

David B. Smith, Mercer Island; Randolph F. Miller, Mount Vernon, and John M. Moore, Woodinville, all of Wash., assignors to Precor Incorporated, Redmond, Wash.

Filed Oct. 9, 1984, Ser. No. 658,531
Int. Cl.[3] A63B *23/04*
U.S. Cl. 272—73 **7 Claims**



1. A stationary exercise apparatus comprising:

(a) a base;

(b) a flywheel rotatably mounted on said base for rotation about a first axis;

(c) first and second pedal cranks mounted on said base for rotation about a common second axis, said second axis substantially orthogonal to said first axis;

(d) drive means associated with said base drivingly coupling said pedal cranks to said flywheel, said drive means including:

a pedal shaft, said first and second pedal cranks fixed on, respectively, first and second ends of said pedal shaft;

a drive gear fixed to said pedal shaft for rotation in unison with said pedal shaft;

a driven gear drivingly engaged by said drive gear, said driven gear being directly coupled to said flywheel to drive said flywheel in response to rotation of said pedal cranks; and

wherein said drive gear is a worm gear and said driven gear is a worm;

(e) a flywheel shaft, said worm being formed in a first portion of said flywheel shaft; and,

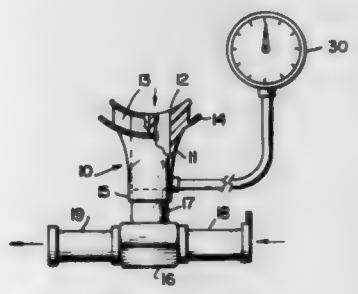
(f) a clutch means associated with said flywheel and engaging a second portion of said flywheel shaft to drivingly couple said flywheel shaft to said flywheel.

4,533,137

PULMONARY TRAINING METHOD

Leonard J. Sonne, Boston, Mass., assignor to HealthScan Inc., Upper Montclair, N.J.

Continuation of Ser. No. 340,734, Jan. 19, 1982, abandoned, which is a continuation of Ser. No. 128,283, Mar. 7, 1980, abandoned. This application Mar. 13, 1984, Ser. No. 587,863
Int. Cl.[3] A63B *23/00*
U.S. Cl. 272—99 **1 Claim**



1. A training method for a person having COPD for improving pulmonary endurance which comprises having such person engage in a daily pulmonary exercise session by inhaling through an adjustable restricted opening to provide resistance to inspiration and by exhaling without restriction, assessing said resistance to inspiration required to cause the patient to reach the point of stress by observing, but not limited to, symptoms as tiring, shortness of breath and increased pulse rate, adjusting the restricted opening such that the inspirational resistance throughout each daily session is less than that necessary to produce said stress, reassessing the resistance required to cause the patient to reach the point of stress by observing, but not limited to symptoms as tiring, shortness of breath, and increased pulse rate on a periodic basis, and increasing the inspirational resistance by decreasing the size of said opening for subsequent daily sessions, as tolerance to inspirational resistance increases.

4,533,138

MULTIPLE SPORT TRAINING DEVICE

Alfonzo S. Rodriguez, Jr., and Jeffrey A. Anderson, both of Belmond, Iowa, assignors to Robert L. Wright, Des Moines, Iowa

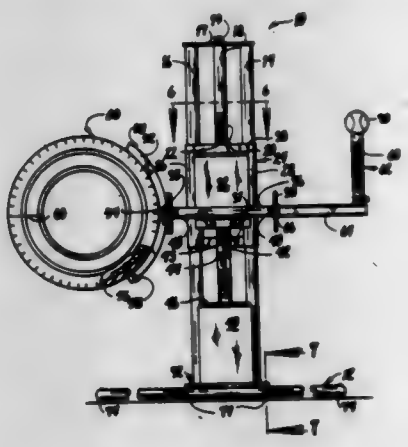
Filed Jun. 1, 1982, Ser. No. 384,105
Int. Cl.[3] A63B *69/40*
U.S. Cl. 273—26 R **9 Claims**

1. A multiple sport training device having interchangeable sport training attachments which may be selectively used and positioned at desired heights and angular orientations comprising:

a rigid support frame having a base and a generally vertically extending support having two parallel tubular members attached at their lower ends to said base and having cross supports between said tubes;

a vertically adjustable carriage mounted upon said vertically extending support, said vertically adjustable carriage comprising two tubular sleeves which slidably fit over said tubular members, said sleeves being inter-connected by a crossbar;

a vertical adjustment means comprising an elongated bar mounted between said tubular members, having a plurality of evenly spaced teeth along its length, said carriage being vertically adjustable along said elongated bar; means for changing and securing the position of said carriage along said vertically extending support; and



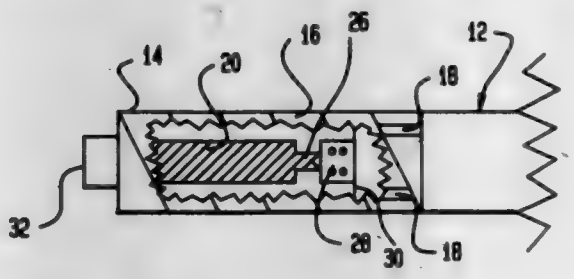
connector means mounted to said carriage for reception of said attachments, said connector means having means for selectively adjusting and securing said attachments at different attitudes around a horizontal axis so that said attachments can be presented at different selected attitudes to the user of said device.

4,533,139

NON-SLIP HANDLE WITH CODING MEANS

Abraham Goldin, 18 Russel Rd., North Haven, Conn. 06473, and Andrew G. Rodau, 17 Madison Ave. #11, Madison, N.J. 07940

Filed May 2, 1983, Ser. No. 490,438
Int. Cl.[3] A63B *49/08*
U.S. Cl. 273—73 J **1 Claim**



1. A sporting implement having a non-slip handle, said non-slip handle comprising:

(a) a shaft for a hand to grasp, said shaft having portions defining a hollow;

(b) a valve located in said hollow;

(c) a replaceable pressurized cylindrical carbon dioxide gas container located in said hollow;

(d) an end cap which holds said carbon dioxide gas container in said hollow and forces said pressurized carbon dioxide container into puncturable contact with said valve; and

(e) means for cooling said shaft's exterior surface with said carbon dioxide gas controllably released from said pressurized carbon dioxide container by said valve, wherein said means for cooling includes conducting means which provides a continuous conduction path between said hollow and said exterior suffface of said shaft, said conducting means comprising:

(1) a plurality of metallic members extending between said hollow and said exterior surface of said shaft;

(2) a metallic liner for said hollow, said metallic members being in conductive contact with said liner; and

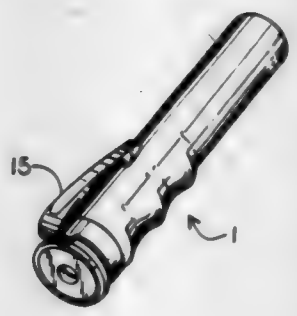
(3) metallized portions of said exterior surface, said metallized portions being in conductive contact with said metallic members, so that said continuous conductive path exists between said hollow and said exterior surface of said shaft.

4,533,140

ANIMAL DETERRENT DEVICE FOR JOGGERS

Preston L. Champion, 101 Independence Dr., Greenville, S.C. 29615

Filed Apr. 1, 1983, Ser. No. 481,337
Int. Cl.[3] A63B *59/00*
U.S. Cl. 273—84 R **5 Claims**



1. An animal deterrent apparatus, consisting essentially of:

a palm-sized handle of six to eight inches in length adapted for hand gripping, said handle defining a cavity therein to act as a housing;

a plurality of generally rigid, tubular sections telescoping one within the other and substantially totally located within said housing when retracted thereinto and approximately consuming the volume of said housing; and

a pocket clip attached to said handle;

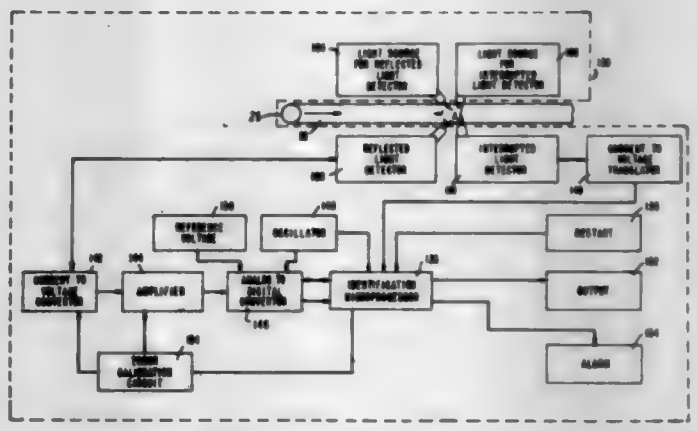
said plurality of sections when fully protracted extending to a length of substantially three feet and said apparatus weighing less than six ounces.

4,533,141

GAMING APPARATUS WITH COLOR SENSITIVE DETECTOR

Steven L. Foley, and David S. Bower, both of Ft. Lauderdale, Fla., assignors to Digital Products Corporation, Fort Lauderdale, Fla.

Filed Dec. 10, 1982, Ser. No. 448,829
Int. Cl.[3] A63F *9/14*
U.S. Cl. 273—86 C **7 Claims**



1. A game apparatus comprising:

a group of movable elements each having a unique identifiable characteristic;

path means, defining a playfield, which each of said elements travels;

sensing means disposed at a predetermined location along said path, said sensing means generating a sequence of signals, each of said signals being representative of one of said unique characteristics and indicative of which one of said group of movable elements has passed said predetermined location;

processor means for comparing all of said signals to one

another to assign one of said unique characteristics to each signal of said sequence thereby identifying the order in which said movable elements passed said predetermined location, and

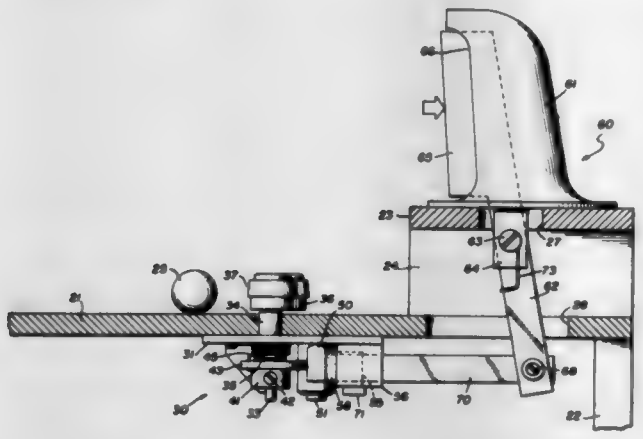
display means coupled to said processor means for displaying said order.

4,533,142

MECHANICALLY ACTUATED OBJECT-PROPELLING APPARATUS

Albin Peters, Chicago, Ill., assignor to Wico Corporation, Niles, Ill.

Filed Sep. 6, 1983, Ser. No. 529,349
Int. Cl.³ A63B *71/00*
U.S. Cl. 273—129 W **20 Claims**



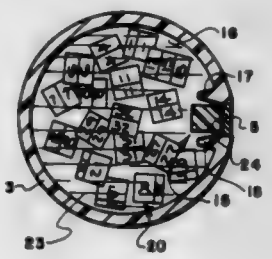
1. Propulsion apparatus for propelling an object along the playfield board of a game, said propulsion apparatus comprising: a permanent magnet mounted on the playfield board, object-propelling means, means movably mounting said object-propelling means on the playfield board and confining said object-propelling means to a predetermined oscillating movement thereto for propelling engagement with an associated object, said object-propelling means including a magnetic portion magnetically coupled to said permanent magnet and normally held in contact therewith by a predetermined magnetic coupling force, and manually operable actuating means coupled to said object-propelling means for applying thereto a force sufficient to overcome the predetermined magnetic coupling force to move said object-propelling means out of engagement with said permanent magnet and into propelling engagement with the associated object.

4,533,143

APPARATUS FOR RANDOM NUMBER SELECTION

Ronald G. Albright, and William D. Albright, both of Canton, Ohio, assignors to Fork, Inc., New Philadelphia, Ohio

Filed Jul. 6, 1984, Ser. No. 628,386
Int. Cl.³ A63F *3/06, 9/04*
U.S. Cl. 273—144 B **8 Claims**



1. A portable, hand held and manipulated apparatus for the random selection of numbers including:

(a) a cylindrical-shaped fluid tight container formed by an opaque cylindrical side wall and a pair of end walls;

(b) a fluid generally filling the container;

(c) a plurality of buoyant cubes having printed numerals on certain sides of the cubes contained in the fluid within the container;

(d) a rectangular-shaped transparent window provided in the side wall of the container and extending generally parallel with a longitudinal axis of said cylindrical-shaped container for viewing the printed numerals on a predetermined number of the cubes coming to rest and arranged in juxtaposition to each other and located adjacent said window after agitation of the cubes within the container by manually shaking the container; and

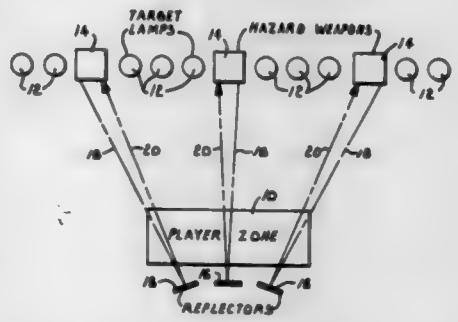
(e) an elongated channel located within the container and aligned with the window, said channel being formed by a pair of spaced projections formed integral with the cylindrical side wall and projecting inwardly into the interior of the container, said channel having a transverse width complementary to the width of the cubes and a length complementary to the total length of said predetermined member of juxtapositioned cubes whereby only the predetermined number of cubes are received within the channel and positioned adjacent the window for viewing by a user of said apparatus after agitation of the cubes within the container, with said agitation being assisted by the channel forming projections.

4,533,144

ELECTRONIC GAME

Manuel Juarez, 1403 Valentine Rd., Kansas City, Mo. 64111, and Neil Preston, Jackson County, Mo., assignors to Manuel Juarez, Kansas City, Mo.

Filed Jul. 11, 1983, Ser. No. 512,590
Int. Cl.³ A63F *9/02*
U.S. Cl. 273—311 **20 Claims**



1. Electronic game apparatus for use by a game participant stationed in a player zone of sufficient size to permit the participant to assume different positions in the player zone, said apparatus comprising:

a plurality of targets;

a target weapon for a game participant, said target weapon having trigger means for triggering the target weapon;

target hit indicating means for indicating when said target weapon is triggered while aimed at one of said targets;

hazard weapon means operable when activated to direct beams of simulated return fire at different areas of the player zone, said hazard weapon means emitting one active beam each time said hazard weapon means is activated whereby the game participant can evade each active beam by assuming a position in the player zone at which the active beam is not intercepted by the body of the game participant;

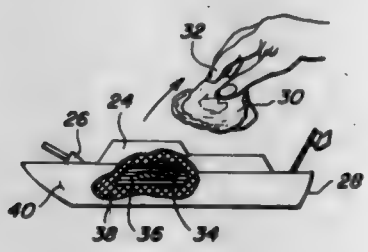
means for intermittently activating said hazard weapon means; and

player hit indicating means for indicating when an active beam or simulated return fire is intercepted by the body of the game participant.

4,533,145
LIQUID ABSORBING PLAYING PIECE

Bradley B. Liebman, Box 703, Germiston 1400, South Africa

Filed Aug. 22, 1984, Ser. No. 643,245
Int. Cl.[3] A63F 9/02
U.S. Cl. 273—378 6 Claims

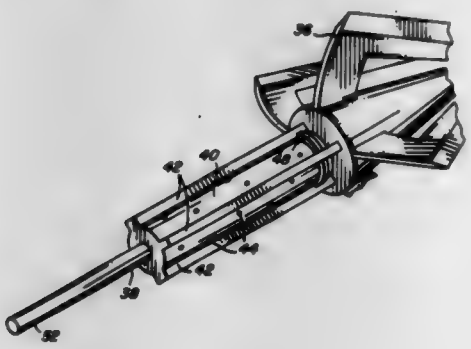


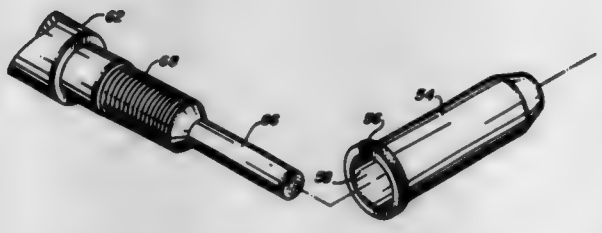
1. A playing piece for war game, comprising in combination:
(a) an inner core of permeable absorptive sheet material comprising a longitudinally rolled flattened ellipse wherein said inner core forms a hull structure of said playing piece in a war game;
(b) at least one intermediate layer of permeable absorptive sheet material rolled in layers perpendicular to the major axis of said inner core wherein said intermediate layer forms at least one layer of armor of said playing piece in a war game;
(c) an outer layer of permeable absorptive sheet material rolled in layers perpendicular to the major axis of said inner core wherein said outer layer forms an outer shell of said playing piece in a war game;
(d) means for varying the absorptive capacity of each of said inner core, intermediate and outer layers; and,
(e) means for visually identifying the extent to which a liquid incident upon said playing piece in said war game has penetrated said playing piece, thereby providing scoring data.

4,533,146
ARROW AND COMPONENTS THEREOF

John Schaar, 1048 W. Greenway Dr., Tempe, Ariz. 85282

Filed May 12, 1983, Ser. No. 493,958
Int. Cl.[3] F41B 5/02
U.S. Cl. 273—422 29 Claims



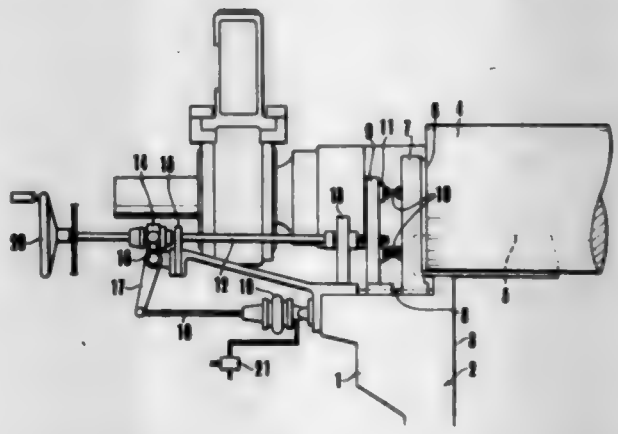


1. An adjustable weight arrow point assembly for use in conjunction with a tubular arrow shaft, comprising:
a point;
a rod coupled to said point and extending rearward thereof, said rod being trimmable to vary the weight of said point assembly;
a generally tubular insert adapted to be positioned within an end of said arrow shaft, said insert being provided with an outwardly extending annular flange portion at one end thereof which abuts against the edge of said end of said arrow shaft when said insert is positioned therein; and
a tubular sleeve fixedly coupled to and surrounding a portion of said rod adjacent said point, said sleeve being equipped with a plurality of projections on an outer surface thereof which frictionally engage an inner surface of said insert when said sleeve is positioned therein to secure said rod within said insert.

4,533,147
AUTOMATIC PRESSURE CONTROL APPARATUS FOR AN END-FACE SEAL PLATE IN SEAL MECHANISM OF HIGH PRESSURE STEAMER

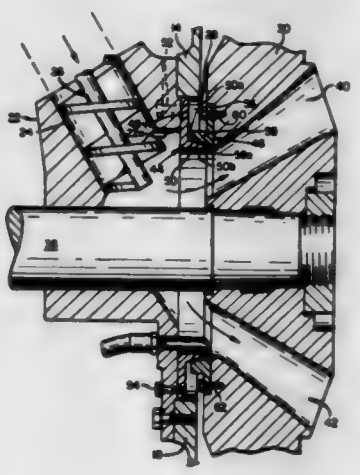
Yoshikazu Sando, and Hiroshi Ishidoshiro, both of Wakayama, Japan, assignors to Sando Iron Works Co., Ltd., Wakayama, Japan

Filed Jul. 24, 1984, Ser. No. 634,116
Claims priority, application Japan, Jul. 26, 1983, 58-115854[U]; Jul. 26, 1983, 58-115855[U]
Int. Cl.[3] F16J 15/54
U.S. Cl. 277—26 2 Claims



1. An automatic pressure control apparatus for an end-face seal plate in a seal mechanism of a high pressure steamer for wet-heat treatment of a textile product comprising: a seal mechanism, having a pair of seal rubber rolls located above a hole of the high pressure steamer body, through which a cloth is passed, for the purpose of sealing said hole, a seal block for supporting the seal rubber rolls which are freely rotatable, an end-face seal plate supported by the seal block and in pressure contact with the seal rubber rolls and the end face of the seal block so as to be freely slidable in the axial direction of the seal rubber rolls, an end-face seal plate support fitting for support of the end-face seal plate, a pressure control screw supported by means of a support fitting fixed to the seal block so as to be freely slidable in the axial direction of the seal rubber rolls, and a press-down plate movable in the axial direction of the seal rubber rolls by means of the pressure control screw, a pressure detector provided between said press-down plate and the end face of the seal rubber rolls for detecting the contact pressure between the end faces of the seal rubber rolls and the end-face seal plate, and an operation mechanism driven by means of a pressurized fluid so as to move said pressure control screw back and forth, thus allowing the end faces of the seal rubber rolls to make contact with the end-face seal plate under an appropriate amount of pressure.

4,533,148
SEALING RING ASSEMBLY FOR USE IN PULP REFINING EQUIPMENT
LeMoyne Lindahl, Rte. 2, Box 3340, Clatskanie, Oreg. 97018
Filed Oct. 4, 1984, Ser. No. 657,620
Int. Cl.[3] F16J *15/48*
U.S. Cl. 277—53 4 Claims

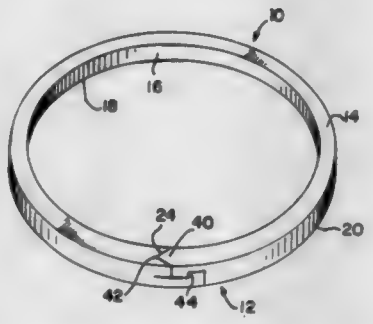


1. A sealing ring assembly for use in a pulp refiner unit including a housing which includes a pair of counter-rotating discs and a stock feed inlet mounted to the housing adjacent an opening provided therein for directing raw material toward the discs, comprising:

a seal ring defined by a circular flange section detachably mounted on the stock feed inlet within the housing opening and a projecting ring section extending from the flange section toward the discs; and

an inlet ring also defined by a flange section detachably mounted on the disc most adjacent the housing opening and a projecting ring section extending from the flange section toward the housing opening for concentrically receiving the seal ring's projecting ring section thereby defining an annular clearance region between the projecting ring sections.

4,533,149
SPLIT SEAL RING WITH INTERLOCKING CUT
George R. Vater, Clarendon Hills, and Aldo Allori, Brookfield, both of Ill., assignors to J. I. Case Company, Racine, Wis.
Continuation of Ser. No. 272,148, Jun. 10, 1981, abandoned.
This application Jun. 10, 1983, Ser. No. 501,557
Int. Cl.[3] F16J *9/14*
U.S. Cl. 277—221 2 Claims



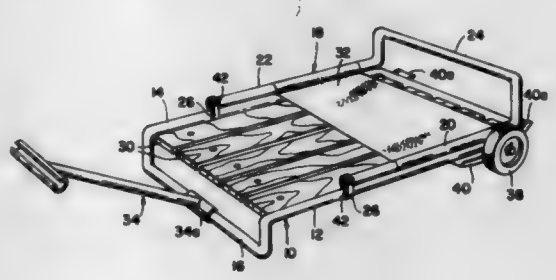
1. A split annular ring seal having a rectangular cross-sectional shape defined by spaced apart interior and exterior surfaces connecting top and bottom surfaces of said ring seal, the improvement comprising an interlocking fastening system connecting adjacent ends of said split annular ring seal by providing a detachable locking arrangement thereof in both radial and longitudinal directions including an interfitting wedge lock preventing radial displacement of said seal ends and a tongue and groove lock preventing longitudinal uncoupling thereof, each of said wedge and tongue and groove locks extends inwardly from one of said top and bottom surfaces and are circumferentially spaced from each other.

4,533,150
CURVED-BODY MANEUVERABLE SNOW BOARD
Carl D. Hardy, 113 Woodend La., Medfield, Mass. 02053
Filed Apr. 20, 1983, Ser. No. 486,850
Int. Cl.[3] A63C *5/04*
U.S. Cl. 280—12 H 24 Claims



1. A highly maneuverable rigid snow board comprising an elongated body, of substantially greater depth in midsection that at each end and substantially flat on the top surface, substantially vertical longitudinal side surfaces provided with equal opposing inwardly concave curves in the side surfaces forming a "waistlike" narrowed portion between wider front and rear sections in plan view, and a substantially arched bottom comprising a longitudinal downwardly convex curve forming a fulcrum point separating a substantially flat bottom sliding contact area from a smaller upturned rear backshift area, and further comprising, at a front end a small upturned tip portion, wherein the centerlines of both side concave curves and the centerline of the bottom fulcrum with each side curve forms a long continuous curved bottom turning edge, the major central portion of which curved bottom turning edge rests flush with a flat snow surface to steer the snow board approximately in the direction of edge curvature when the snow board is pivoted onto the fulcrum and tilted to either side onto the curved bottom edge.

4,533,151
COMBINATION CARRIER, CHAIR, AND LOUNGE/TABLE
Robert L. Maitland, R.F.D. #1, Lebanon, Conn. 06249
Filed Apr. 25, 1983, Ser. No. 488,142
Int. Cl.[3] B62B *1/02*
U.S. Cl. 280—47.25 17 Claims



1. A combination carrier, chair, and lounge/table assembly comprising a first frame that includes two parallel side pieces joined by a transverse cross piece that extends out of the plane defined by said two parallel side pieces, a second frame that includes a pair of parallel side members joined by a transverse cross member that extends out of the plane defined by said two parallel side members, said parallel side members being pivotally connected to said parallel side pieces to permit said first and second frames to lie in one position adjacent one another, with the transverse cross piece and transverse cross member extending in opposed directions, and to be pivoted approxi-

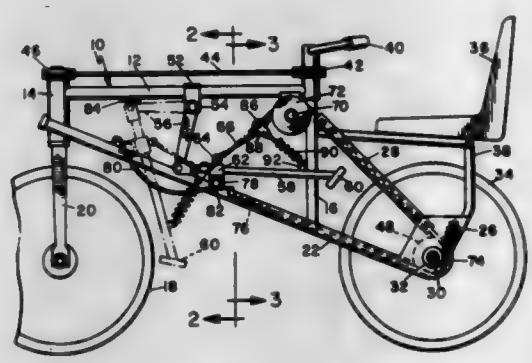
mately 180° to a second position in which said transverse cross piece and transverse cross member extend in the same direction, including an axle transversely spanning said side pieces at a location remote from said transverse cross piece and carrying a pair of wheels at the ends thereof, in which said transverse cross member and said axle are positioned adjacent each other in said one position of said first and second frames, including a pair of skids mounted adjacent said wheels to permit said assembly to be pulled along the ground on said skids and said wheels, said skids having end means that support the assembly in upright position in which said side pieces and side members are perpendicular to the ground.

4,533,152

AUTOMATIC VARIABLE SPEED LEVER ACTION DRIVE

Marion A. Clark, Tulare, Calif., assignor to Don Good, Tulare, Calif., a part interest

Filed Mar. 26, 1984, Ser. No. 593,518
Int. Cl.³ B62M *1/08*
U.S. Cl. 280—251 **7 Claims**



1. In a wheeled vehicle having a frame with a forward end portion and a rear portion with at least one driven wheel therein, an automatic variable speed lever action drive, comprising:

a pair of pedal levers having forward ends pivotally attached to said frame to swing substantially vertically on opposite sides of the frame, said levers extending rearwardly and having foot pedals on the rear ends thereof;

drive means connecting each of said levers to said driven wheel, each drive means including an extensible and retractable cable;

said cable being secured at one end to said lever adjacent the forward end;

a tension pulley mounted to roll on the cable; and

a tension spring connecting the tension pulley to the rear portion of the lever for applying a deflection to the cable in proportion to the existing tension on the cable.

4,533,153

FRONT BRAKE SYSTEM FOR MOTORCYCLES

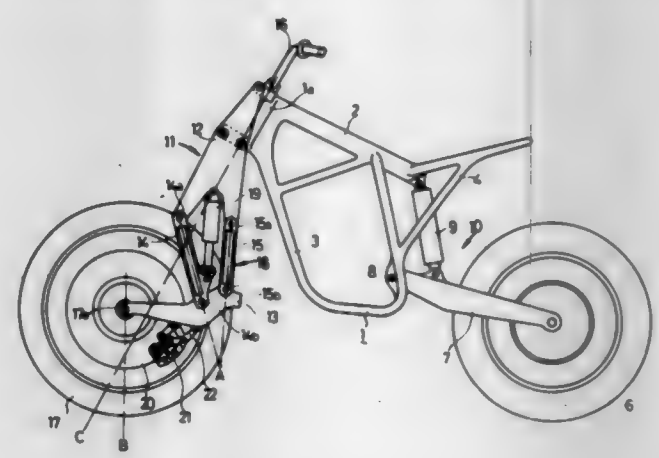
Kazuhiko Tsunoda, and Shigeru Hattori, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,308
Claims priority, application Japan, Sep. 7, 1981, 56-141526
Int. Cl.³ B62K *25/04*; B60G *17/06*
U.S. Cl. 280—277 **5 Claims**

1. In a motorcycle provided with a front suspension system comprising a link mechanism having a quadrilateral side configuration wherein an upper fork secured to the front of a vehicle body frame so as to be pivotable to the right and left and a lower fork which supports a front wheel are interconnected through two front arms and two rear arms, a front brake system comprising:

a brake disc integrally fixed to said front wheel and held rotatably thereby;

a brake caliper for braking said front wheel by pressing a brake pad thereof against said brake disc, said brake caliper being disposed below said lower fork and behind a perpendicular line passing through a front wheel axle; and



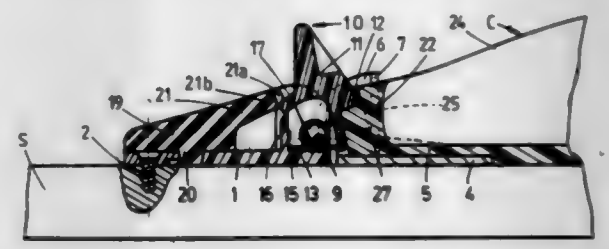
one end of said brake caliper being pivotably connected to an axle portion and the other end thereof being pivotably connected to a tip end of one said arm through a torque rod.

4,533,154

CROSS-COUNTRY SKIING ASSEMBLY

Jean Bernard; Jean J. A. Beyl, both of Nevers; Christian Campillo, Garchizy, and Daniel Le Faou, Varennes Vauzelles, all of France, assignors to Ste LOOK, Nevers, France

Filed Mar. 1, 1983, Ser. No. 471,212
Claims priority, application France, Mar. 5, 1982, 82 03673
Int. Cl.³ A63C *9/00*
U.S. Cl. 280—615 **9 Claims**



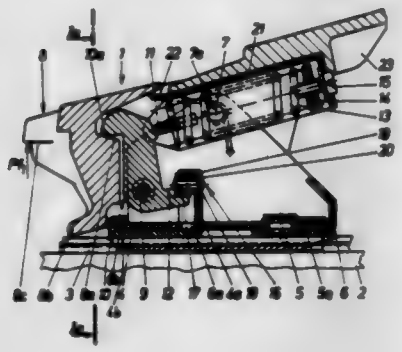
1. A cross-country skiing assembly comprising a ski shoe and a device for fixing said shoe on a ski, in which the front portion of the ski shoe has a fastening contour when looking from above whilst the ski binding device comprises a shoe-retaining stirrup provided with fastening means of complementary shape, wherein the shoe-retaining stirrup is pivotally mounted on the ski by means of a transverse pivot-pin placed immediately in front of the tip of the ski shoe, and a locking member acted upon by an elastic element and adapted to cooperate with the front portion of the ski shoe in such a manner as to permit automatic positioning of said shoe by downward engagement within the shoe-retaining stirrup and to prevent withdrawal of said shoe under an upwardly directed force, the front portion of the ski shoe having an inclined front face which is capable of thrusting back the locking member during positioning of the shoe and is provided with a top recess for receiving a nose of said locking member by snap-action engagement after positioning of the front end of said shoe within said shoe-retaining stirrup.

4,533,155

SAFETY SKI BINDING

Erwin Krob, and Helmut Bauer, both of Vienna, Austria, assignors to TMC Corporation, Baar, Switzerland

Filed Nov. 1, 1982, Ser. No. 438,549
Claims priority, application Austria, Nov. 5, 1981, 4743/81
Int. Cl.[3] A63C *9/085*
U.S. Cl. 280—628 8 Claims



1. In a safety ski binding which includes a sole holder which is pivotal about a transverse axis and a vertical axis and is held in a position in which it can releasably hold a ski shoe by a locking mechanism which yields only after a predetermined release force is exceeded, the magnitude of said predetermined release force decreasing as an angle between the direction of application thereof and a vertical reference increases, wherein first and second locking parts of said locking mechanism are provided at spaced locations on a pivotally supported lever, wherein a first complementary locking member which is cooperable with said first locking part is provided on a rear portion of said sole holder and a second complementary locking member which is cooperable with said second locking part is provided on a structural part which is fixed against movement with respect to the ski, and wherein said lever is supported for pivotal movement about a holding axle which extends parallel to said transverse axis and which is supported on a support member which is in turn pivotal about a pivot pin which defines said vertical axis and is anchored in a base plate, said lever having at a location remote from said first and second locking parts a control surface and said binding having a release spring and means for causing a biasing force from said release spring to be applied to said control surface, the improvement comprising wherein said structural part which is fixed against movement with respect to the ski includes a locking bolt and a roller rotatably supported thereon, said locking bolt extending approximately longitudinally of the ski and being supported by an abutment which is provided on said base plate, said locking bolt and roller being part of said second complementary locking member, and wherein said second locking part is an upwardly facing cam surface which is provided on said lever, which extends substantially transversely with respect to the longitudinal axis of the ski, which can engage an underside of said roller, which has a locking recess for receiving said roller and for preventing lateral movement thereof in a downhill skiing position of said binding, and which has adjacent and on each side of said locking recess a respective curve section which extends toward a respective side of the ski for controlling a release during a twisting fall.

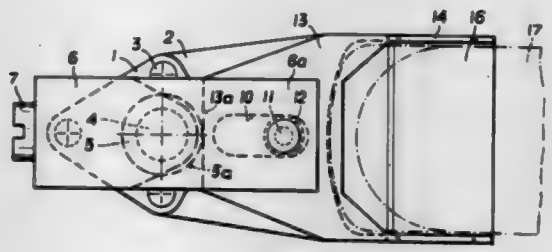
4,533,156

TOE MECHANISM FOR A SAFETY SKI BINDING

Ulrich Gertsch, Interlaken, Switzerland, assignor to TMC Corporation, Baar, Switzerland

Filed Dec. 22, 1981, Ser. No. 333,530
Claims priority, application Switzerland, Dec. 30, 1980, 9635/80; Oct. 13, 1981, 6522/81
Int. Cl.[3] A63C *9/085*
U.S. Cl. 280—629 18 Claims

1. A toe holding mechanism for a safety ski binding adapted to releasably hold a ski boot on a ski, comprising: a toe holder engageable with a front end of a sole of said ski boot; a support plate provided on said toe holder and extending under and supporting the sole of said ski boot when said front end thereof is engaging said toe holder, said support plate extending rearwardly below the sole of said ski boot a maximum distance of approximately half the length of the sole of said ski boot and being free of operative connection to the ski at a rear end thereof; means supporting said toe holder and support plate for pivotal movement about a generally vertical axis and for movement generally transversely of the ski; resilient means for yieldably resisting transverse movement of said toe holder and support plate in either direction away from an initial position; means supporting said toe holder and support plate for movement generally longitudinally of the ski after they have moved transversely a predetermined distance away from said initial position; and keying means cooperable with the sole of said ski boot and at least one of said toe holder and support plate for preventing pivotal movement about a further vertical axis of the sole of said ski boot relative to said toe holder and support plate during transverse movement of said toe holder and support plate until said toe holder and support plate have moved



at least said predetermined distance from said initial position thereof; wherein said means supporting said toe holder and support plate for pivotal and transverse movement includes a release member supported for pivotal movement about a generally vertical pivot axis, said resilient means yieldably resisting pivotal movement of said release member away from a position in which said toe holder is in said initial position, a generally vertical pin provided on said release member at a location spaced radially from said pivot axis thereof in a direction toward the rear end of the ski, and a recess which is provided in said toe holder and rotatably receives said pin; wherein said means supporting said toe holder and support plate for movement generally longitudinally of the ski includes said recess in said toe holder being a slot which slidably receives said pin and extends generally longitudinally of the ski when said toe holder is in said initial position; and including means for preventing longitudinal movement of said toe holder and support plate toward the tip of the ski relative to said release member until said toe holder and support plate have moved transversely at least said predetermined distance from said initial position.

4,533,157

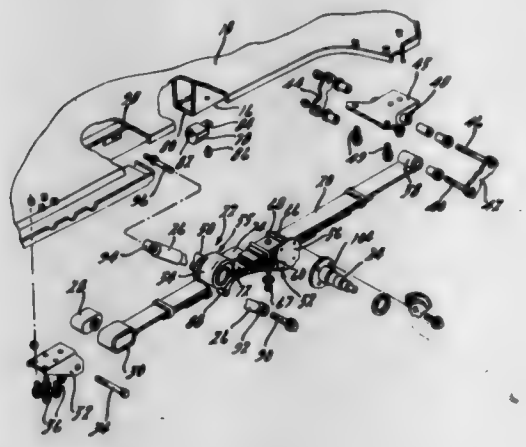
REAR OFFSET AXLE SUSPENSION SYSTEM FOR VEHICLE

Walter A. Hoenle, Warren; David J. Perkins, Royal Oak, and James L. Schenten, Sterling Heights, all of Mich., assignors to Chrysler Corporation, Highland Park, Mich.

Filed Mar. 19, 1984, Ser. No. 591,350
Int. Cl.[3] B60G *11/02*
U.S. Cl. 280—718 2 Claims

1. A rear axle suspension apparatus for the rear wheels of a motor vehicle, the vehicle having a body with laterally spaced apart left and right side frame members, each frame member having a jounce bumper supported on the underside thereof, the suspension apparatus comprising; left and right longitudinally extending leaf springs having their fore and aft ends pivotally connected on said body; a non-driving rear axle assembly rotatably supporting left and right road wheels on axially aligned spindle shafts; said axle assembly having a

transversely extending tubular axle member and a pair of mirror image left and right castings, each said casting having an inboard portion attached to one end of said tubular axle member and an outboard L-shaped angle portion formed intergral with an intermediate bridge portion; said L-shaped angle portion including a vertical spindle mounting plate and a horizontal attaching plate seating the central portion of its associated leaf spring; each said attaching plate positioned to locate its leaf spring intermediate portion a predetermined distance



above said tubular axle member and below the spindle shaft axis; each said casting having a substantially horizontally disposed jounce plate providing a jounce deflection stop for its associated side frame bumper; whereby said tubular axle member and said spindle shafts are constrained to move in substantially equal vertical paths throughout the travel of said axle assembly between its uppermost jounce and its lowermost rebound deflections so as to clear vehicle components supported on the underside of said body and reduce the height of said vehicle.

4,533,158

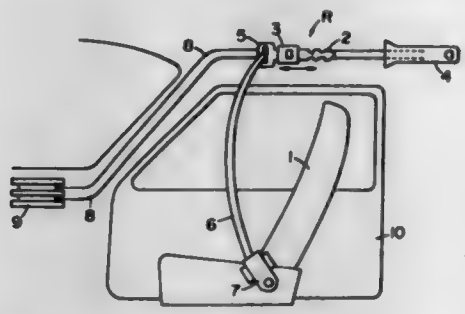
SEAT BELT LATCH DEVICE

Takeo Ueda, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Japan

Continuation of Ser. No. 62,550, Jul. 31, 1979, abandoned. This application Dec. 5, 1980, Ser. No. 213,475

Int. Cl.³ B60R *21/10*

U.S. Cl. 280—804 **3 Claims**



1. A latch device mountable within a vehicle for holding securely a tongue portion attached to the end portion of a seat belt unwound from a retractor secured to the vehicle, said latch device including a latch portion adapted to receive said tongue portion for holding it securely in place; drive means for moving said tongue portion toward said latch portion upon closing of the vehicle door and way from said latch portion during opening of the vehicle door; said latch portion including a movable retaining member biased into a position engaging said tongue portion in its forward position; said tongue portion including a base portion secured to the end portion of said seat belt, and a movable portion held slidably to said base portion and attached to said drive means so as to be slid rearwardly long said base portion when the vehicle door is opened; said base portion being adapted to be held by said retaining member and said movable member having a cam surface moving said retaining member out of engagement with said base member during rearward movement thereof to release said tongue portion during opening of the vehicle door; and further including means to dis-connect said movable member from said drive means when said drive means exerts on said movable member a force greater than a predetermined value.

4,533,159

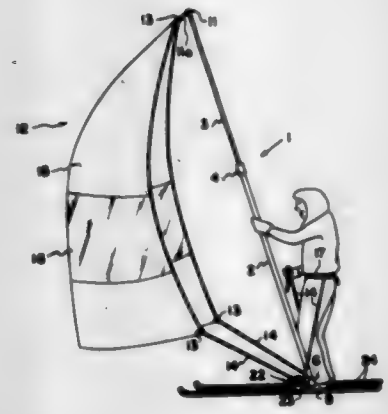
WIND PROPULSION APPARATUS

John C. Seidel, 1010 State St., Alma, Mich. 48801

Filed Apr. 27, 1984, Ser. No. 604,999

Int. Cl.³ A63C *3/00, 11/00*

U.S. Cl. 280—810 **12 Claims**



1. Wind propulsion apparatus for propelling a person equipped with skis or skates across a surface, said apparatus comprising a mast; a sail; means for connecting said sail to one end of said mast; means carried by said mast at its other end for supporting said mast in a generally upright condition; first and second guide means; mounting means for mounting said guide means on such person's feet; and first and second sheets secured to said sail and extending through and beyond the respective guide means for manipulation by such person.

4,533,160

GENERAL JOURNAL FORM

Harold H. Malone, 3900 E. Waterman, Wichita, Kans. 67218

Filed Dec. 6, 1982, Ser. No. 447,281

Int. Cl.³ B41L *1/24, 1/20, 3/00*

U.S. Cl. 282—23 R **1 Claim**



1. A general journal form comprising, in combination, a top record leaf;

a pressure sensitive self-contained leaf;

transfer means;

and a back record leaf, all bound together as pages of a book in order stated at a common border;

said top record leaf, said pressure sensitive self contained leaf, and said back record leaf all having identical printed matter and lines in overlying registry for record keeping extending transversely across each;

said identical printed matter and lines being repeated on said top record leaf, said pressure sensitive self contained leaf and said back record leaf at equally spaced intervals a plurality of times from the upper to the lower portion or each of the three leaves;

and parallel rows of perforations extending transversely across the entire width of said top record leaf and said back record leaf contiguous to the upper extremities of each of said equally spaced repetitive printed matter on said top record leaf and on said back record leaf to provide for detachable sections of said top and said back leaf;

said parallel rows of perforations on said top record leaf and on said back record leaf are in overlying registry;

said top record leaf and said back record leaf each include adhesive means on the back thereof such that when moistened the backs will adhere to a desired surface;

said transfer means is a carbon leaf, said carbon leaf having parall rows of perforations extending transversely across the entire width of the carbon leaf which overly in registry with the parallel rows of perforations of the top record leaf and the back record leaf;

a binding means for binding a plurality of said general journal form in an overlying relationship as pages of a book;

said top record leaf, said pressure sensitive self contained leaf and said back record leaf each include debit indicia and credit indicia;

said top record leaf and said record leaf additionally respectfully comprises a top record leaf border member and a back record leaf border member respectfully secured to each leaf by a vertical top record leaf perforate line and a vertical back record leaf perforate line;

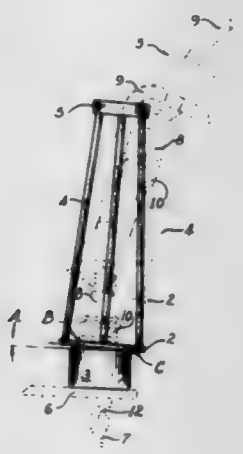
said pressure sensitive self contained leaf and said carbon leaf also respectfully comprises a pressure sensitive self contained border member and a carbon leaf border member respectfully secured to said pressure sensitive self contained leaf and carbon leaf by a vertical pressure sensitive self contained perforate line and a vertical carbon leaf perforate line.

4,533,161

AUTOMATIC HIGH PRESSURE HOSE UNCOUPLING DEVICE

Donald D. Burke, 9719 N. Flora, Kansas City, Mo. 64155, and Jerry L. Cloninger, 8212 Hadley, Overland Park, Kans. 66204

Filed Sep. 21, 1982, Ser. No. 420,646
Int. Cl.³ F16L *35/00*
U.S. Cl. 285—1 **1 Claim**



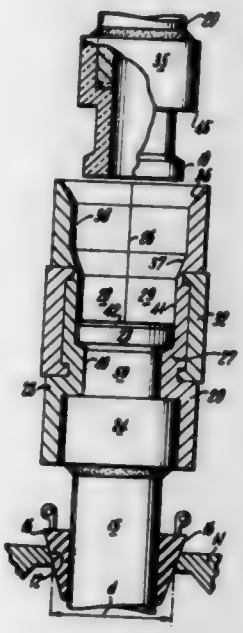
1. A high pressure coupling disconnecting device for use with a high pressure coupling means provided with male and female halves interlocked when coupled by engagement of a plurality of balls housed in the female half of said coupling which engage an annular recess in the male half of said coupling, the balls retained in place by a locking sleeve around the female half of the high pressure coupling such that movement of the sleeve away from the coupled end of the female coupling half allows the balls to retreat from the recess in the male coupling half permitting the high pressure coupling to seperate, said disconnecting device comprised of (a) an annular support ring means adapted to concentrically surrounding the high pressure male coupler means, said support ring adapted to be fixably attached by the high pressure male coupler means to a base element means, and (b) an elongated tower element means consisting of an annular release ring, a plurality of rods and a hose containment means, said annular release ring resting concentrically atop said support ring and adapted to be around the high pressure male coupler means, said release ring is provided with an aperture sized to permit its retension atop said support ring only by the locking sleeve of the female coupler while the female coupler means is coupled with the male coupler means said plurality of rods being circumferentially spaced around and fixed to said release ring and hose containment means, said hose containment means adapted to loosely encircle the high pressure hose at a location remote from said coupling while remaining unattached to the hose the high pressure hose is adapted to be attached only to said female coupler means, such that when the male and female couplers are connected and under pressure sufficient tension applied by the high pressure hose against said hose containment means from an angle will impart leverage through said tower element means displacing said release ring against both said support ring and the female coupler locking sleeve with sufficient force to displace the female coupler locking sleeve permitting the high pressure coupling means to disconnect.

4,533,162

STABBING BOX AND SAFETY SLIP FOR MAKING TUBING CONNECTIONS

Herbert A. Rundell, Houston, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 11, 1983, Ser. No. 474,407
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—27 **7 Claims**



1. Stabbing box and safety slip for use in making tubing connections during running of tubing into a well, said tubing having flanged tips on end connectors, said end connectors being adapted for abutting contact prior to clamping in order to join sections of tubing together, said stabbing box and safety slip comprising

a split body having one end adapted for clamping onto one of said end connectors and its flanged tip,

the other end of said body member having tapered guide means for receiving and guiding another one of said end

connectors and its flanged tip into abutting relation with said one connector in said one end of the body member.

4,533,163

METHOD AND APPARATUS FOR MAKING KNOTTED RUGS

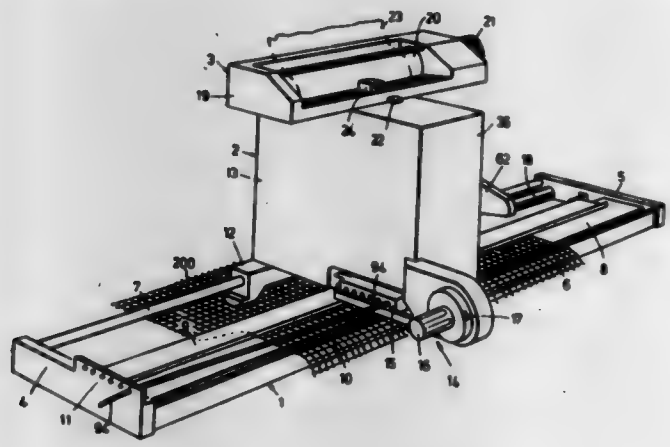
Stephan Rosenberg, Muri, Switzerland, assignor to MADAG Maschinen- und Apparatebau Dietikon AG, Zurich, Switzerland

Filed Jun. 22, 1983, Ser. No. 506,619

Claims priority, application Switzerland, Jun. 28, 1982, 3954/82

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—1.5 **16 Claims**



1. A method of making rugs by double knotting, of the type wherein a knotting apparatus is transported by a drive mechanism over a double-thread canvas fixed on a canvas holder, and the knotting yarn is fed by feed means, comprising the steps of:

setting cam plates in rotation by means of the drive mechanism for actuating various tools for carrying out the knotting operation,

drawing the yarn to be knotted into the knotting zone by means of first yarn-transport means,

conveying the yarn into the region of a needle by means of second yarn-transport means,

pushing the needle between the two threads of a double-thread pair in the canvas,

cutting off a piece of yarn,

leading both ends of the piece of yarn through the needle aperture by means of third yarn-transport means, and

retracting the needle to form a knot.

4,533,164

EQUIPMENT FOR KNOTTING AUTOMATICALLY THE OPENINGS OF FLEXIBLE CONTAINERS

Angel Lorenzo Barroso, Arquitecto Cabanes, s.n., Mataro (Barcelona), Spain

Filed Apr. 22, 1983, Ser. No. 487,766

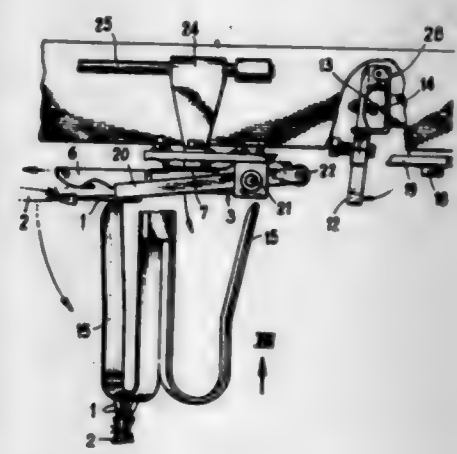
Claims priority, application Spain, Apr. 23, 1982, 512.263; Apr. 23, 1982, 265.171[U]

Int. Cl.³ B65H *69/04*

U.S. Cl. 289—2 **8 Claims**

1. An apparatus for knotting openings in flexible containers such as sausage skins including means for forming a loop with a string, the improvement comprising:

hook means for engaging a loop which is attached to a container, means for moving said hook means with reciprocating motion along the path between a loop engaging and a loop discharging position, means for discharging a



loop from said hook means when in said loop discharging position onto a storage means.

4,533,165

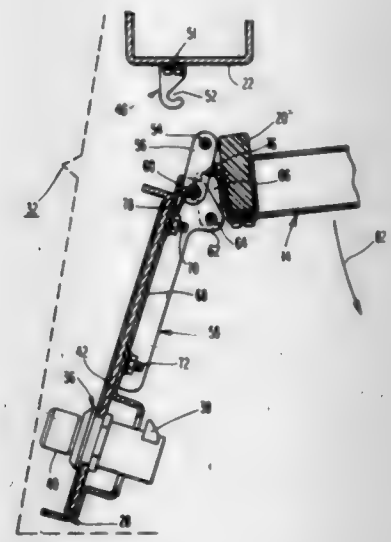
LATCHING SYSTEM

Robert D. Edelman, 6678 Pickwick Dr., Cornwells Heights, Pa. 19020

Continuation of Ser. No. 322,216, Nov. 17, 1981,. This application Jan. 23, 1984, Ser. No. 572,959

Int. Cl.³ E05C *9/00*

U.S. Cl. 292—68 **6 Claims**



1. The combination of a housing, a closure for said housing movable between opened and closed positions about a linear pivot axis, gasketing means between said closure and housing for assisting in providing a firm seal between said closure and said housing when said closure is locked in said closed position, and a latching system for releasably locking said closure to said housing when said closure is in a closed position; characterized in that the latching system includes an actuating handle means for controlling the operation of the latching system, said handle means being rotatably connected to said closure about a plurality of pivot mounting pin means, said pivot mounting pin means being aligned along an axis parallel to said linear pivot axis and each of said pivot mounting pin means being pivotally retained in axially spaced-apart members attached to said closure; a plurality of first latching members spaced-apart from each other in a linear direction parallel to the linear pivot axis, each of said first latching members being adapted to engage a second cooperable latching member connected to the housing for locking the closure to the housing; each of said first latching members being pivotally connected to the handle means at a fixed location through linearly aligned, spaced-apart connections for permitting rotational movement of each of said latching members relative to said handle means in a plane generally perpendicular to said linear pivot axis, said fixed location being

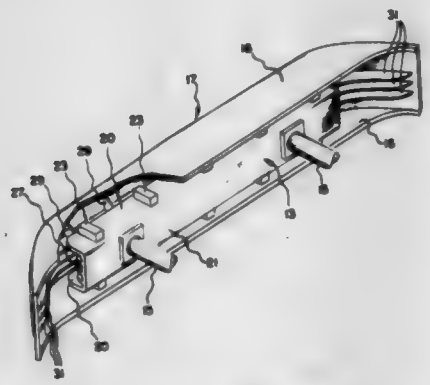
offset from the axis along which the plurality of pivot mounting pin means are aligned; spring means engaging each of said first latching members for biasing each of said latching members into a predetermined orientation relative to the handle means and for assisting in maintaining said predetermined orientation when said handle means is rotated in a first direction to move each of said plurality of first latching members into engagement with said second cooperable latching members, and to thereafter permit relative rotational movement between said first latching members and the actuating handle means as said handle means is continuously moved in said first direction to thereby draw said closure toward the housing into sealing engagement therewith; the rotatable connections of the handle means to the closure always being located on the same side of an imaginary line between the fixed location at which each of the first latching members is connected to the handle means and the location where the respective first latching member engages its cooperable second latching member for maintaining the housing and closure in sealing engagement with each other, whereby a non-overcenter latching system is provided for the housing and closure, and lock means for removably securing the handle means to the closure for maintaining the closure in sealing engagement with the housing, rotational forces imposed on the handle means in a direction for rotating the handle means in a second direction away from said closure when said lock is unsecured being provided solely by said gasket means and said spring means.

4,533,166

DOUBLE BEAM MOTOR VEHICLE BUMPERS

Vijay K. Stokes, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,681
Int. Cl.³ B60R *19/08*
U.S. Cl. 293—120 **4 Claims**



4. A bumper for a vehicle comprising:

an inner beam member of moldable thermoplastic;

two longitudinally separated bumper supports for affixing said bumper to said vehicle;

an outer beam member of moldable thermoplastic, said outer beam member being a channel section shaped member having two substantially parallel sides joined by a vertical portion; and

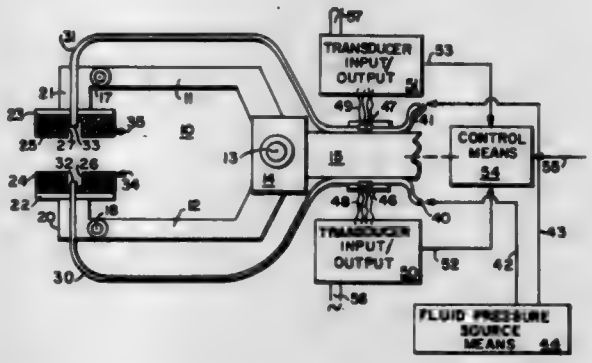
interbeam support means integrally joined to said parallel sides within the interior of said channel section shaped member, and interbeam support means being longitudinally displaced from said bumper supports so that said interbeam support means is not transversely aligned with said longitudinally separated bumper supports, said interbeam support means affixing said inner and outer beam members, said inner and outer beam members absorbing the impact force in a collision.

4,533,167

ROBOTICS MANIPULATOR WITH GRIPPING FORCE CONTROL MEANS

Robert G. Johnson, Minnetonka, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 13, 1984, Ser. No. 579,614
Int. Cl.³ B25J *15/02*
U.S. Cl. 294—86.4 **16 Claims**



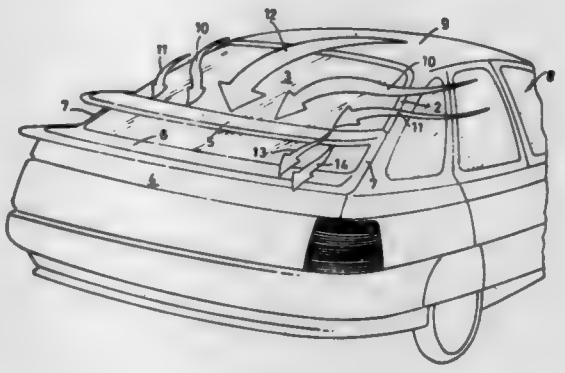
1. A robotics manipulator having a control system allowing said manipulator to be controlled with respect to a gripping force on an object, including: robotics manipulator means having at least two members that move relative to each other to provide a gripping force at a predetermined location; said manipulator means including control means; fluid pressure source means including connection means connected to fluid channel means; said fluid channel means having opening means in at least one of said two members near said predetermined location; variable fluid flow restriction means attached to said manipulator means with said variable fluid flow restriction means changing in fluid flow restriction characteristics as said two members increase said gripping force at said predetermined location upon said manipulator means gripping said object; said fluid flow restriction means changing the fluid flow and changing a fluid condition in said fluid channel means; transducer means responsive to said changing fluid condition in said channel means; and said transducer means connected to said manipulator control means to feed back a signal indicative of said gripping force.

4,533,168

MOTOR CAR WITH FLOW STEPPED TAIL AND AIR-CONDUCTING MEANS

Lutz J. Janssen, Munich, and Friedl W. Wülfing, Pulheim-Brauweiler, both of Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Aug. 17, 1982, Ser. No. 408,955
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1981, 3132369
Int. Cl.³ B62D *35/00*; B60J *9/00*
U.S. Cl. 296—1 S **1 Claim**



1. In a motor vehicle of the type having a tail window surface sloping downwardly and rearwardly from the vehicle roof and a rear spoiler positioned proximate the rear terminus of the tail window surface, the rear spoiler presenting an up-

wardly rearwardly extending upper surface to air flow proceeding downwardly along the tail window surface to define a transition area for the air flow at the juncture of the rear spoiler and the tail window surface wherein air flow is turbulent, a wing assembly having a wing including a rounded leading edge and a convex lower surface extending transversely across the tail window and being positioned above the transition area and longitudinally intermediate the vehicle roof and the transition area, and a pair of side arm members integrally formed with the wing and the rear spoiler to define a unitary assembly, the length of the arms and the angular relationship of the wing to the air flow down the tail window surface being fixed to minimize turbulent flow in the transition area, and to reduce air resistance.

4,533,169

SPARE WHEEL ARRANGEMENT IN MOTOR CARS

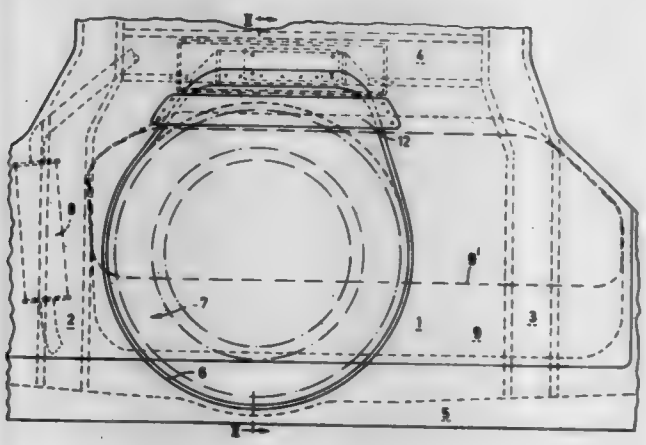
Axel Rauthmann, and Harry Pietsch, both of Pulheim, Fed. Rep. of Germany, assignors to Ford Motor Company, Dearborn, Mich.

Filed Dec. 14, 1983, Ser. No. 561,395

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247979

Int. Cl.³ B60P *3/22*

U.S. Cl. 296—37.2 **2 Claims**



1. A spare wheel arrangement for a motor car in which the spare wheel having a rigid rim and the fuel tank are disposed adjacent one another below the motor car rear loading area in a partly overlapping manner, and in which the spare wheel is disposed in a depression in the floor and the fuel tank is disposed below the floor, the spare wheel having a tendency to rise at its forward end from the depression in the case of a rear-end collision, characterized in that the front end of the depression is covered by a retaining plate which, in the event of a rear-end collision at relatively low speeds, acts in conjunction with the rim of the spare wheel to brace the floor against excessive deformation.

4,533,170

STROLLER COVER AND SUPPORT FRAME THEREFOR

Joseph R. Banks, 1436 Elizabeth Dr., and Dennis G. Banks, 2042 Boggs Ave., both of Pittsburgh, Pa. 15221

Filed Jul. 5, 1983, Ser. No. 510,676

Int. Cl.³ B60J *9/00*

U.S. Cl. 296—78 A **8 Claims**

1. A support frame adapted for supporting a protective cover with respect to an infant conveyance such as a stroller comprising:

a plurality of elongated resiliently flexible structural elements;

said plurality of elongated structural elements including a plurality of elongated resiliently flexible rod elements;

elongated bridge means interconnecting at least two of said plurality of rod elements which are spaced transversely apart;

flexible connecting means securing said bridge means with respect to said at least two rod elements in a manner that said frame is collapsible without disassembly thereof to form a bundle of said plurality of elongated resiliently flexible structural elements; and

securing means cooperable with such an infant conveyance for selectively securing longitudinal end portions of said at least two rod elements to such infant conveyance in a manner that said at least two rod elements are maintained



with respect to such infant conveyance in an outwardly bowed configuration and at a transverse spacing determined by said bridge means and by the relative locations of one of said securing means with respect to others of said securing means to provide a self supporting frame for support of such a protective cover with respect to such infant conveyance.

4,533,171

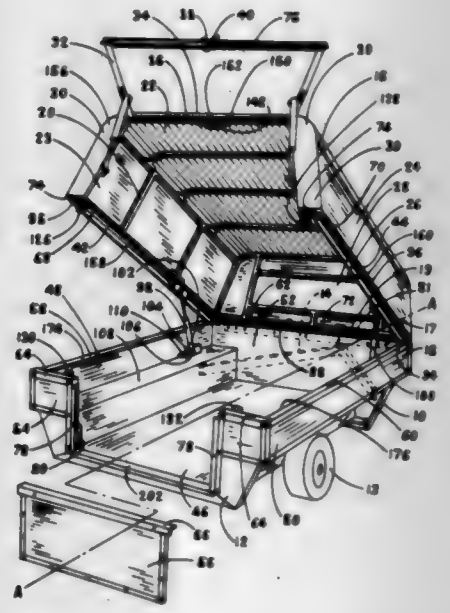
LIFT-ROOF TRAILER

W. H. Russell Lake, Lathrup Village, Mich., assignor to Trail-R-Van Inc., Lathrup Village, Mich.

Filed Mar. 14, 1983, Ser. No. 474,963

Int. Cl.³ B60P *3/32*

U.S. Cl. 296—173 **20 Claims**



1. A closed trailer comprising:

a cover having a roof, a left wall, a right wall, a forward wall and a rearward wall, each wall optionally including one or more windows and the rearward wall also including a door pivotally attached about a lateral axis in proximity to the rearward edge of the roof and having latching means lockable from an exterior location; said cover being pivotally attached about a lateral axis in proximity to the lower edge of the forward wall to the forward end of a suitable load bed;

said suitable load bed having wheels, coupling means, a floor, a left wall, a right wall, a forward wall and a rearward wall, said rearward wall including an opening, and/or removable, tailgate; said tailgate being retained as a closing portion of the rear wall in such a way as to be openable and/or removably only when the cover is raised

at its rearward end from a closed position and/or the cover rear door is in an unlatched or open condition;

said suitable load bed being of such dimensions relative to said cover that, with said cover in a fully lowered position relative to said load bed, opposing perimetral interfaces are formed between the lower edges of the walls and rear door of said cover and the upper edges of the walls and tailgate of said load bed such that insertion of suitable sealing means between said opposing perimetral interfaces shall provide a perimetral weather seal therebetween;

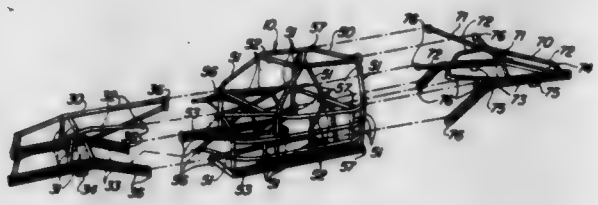
a left and right latching means between the cover and the load bed, each being located at a rearward position outboard of and on opposite sides of the cover rear door so that, with the tailgate in a fully closed position, said latching means are accessible from an outside location only when the cover is in a raised position relative to the load bed and/or said cover rear door is in an open position.

4,533,172

DISCONNECTABLE AUTOMOTIVE VEHICLE FRAME

Gary R. Oliver, c/o Tri-City Buggy, 2135 - 11th St., Rock Island, Ill. 61201

Filed Feb. 6, 1984, Ser. No. 577,172
Int. Cl.³ B62D *31/00*
U.S. Cl. 296—185 **1 Claim**



1. An automotive vehicle frame comprising front, intermediate and rear units disposed in end-to-end alignment to establish a fore-and-aft elongated rigid framework, each unit being of skeletal construction made up of horizontal and vertical rib elements rigidly united by welding to provide a unitized cage-like structure, basically independent of the other units, the elements of the intermediate unit being of relatively strong, stiff material affording substantial protection for a driver in crash conditions, and the members of each of the front and rear units being of relatively lighter material deformable under crash conditions and thus effective to cushion the intermediate unit against crash forces, the members of the intermediate unit being further weldable as among themselves, the material of the members of each of the front and rear units being such that the members of each front and rear unit are weldable as among themselves but non-weldable to the intermediate unit members, and first and second sets of disconnectable means rigidly securing the front and rear units respectively to the intermediate unit, each set including rigid cooperative elements rigidly attached respectively to the units and separable rigid fasteners rigidly interconnecting the respective elements.

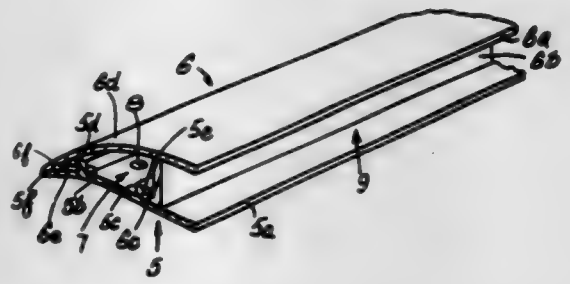
4,533,173

GUIDE RAIL FOR SLIDING ASSEMBLY

Bender A. Davis, Sandton, and Hendrik A. Louw, Port Elizabeth, both of South Africa, assignors to Carvalette Services Africa (Proprietary) Limited, Johannesburg, South Africa

Filed Apr. 26, 1983, Ser. No. 488,859
Int. Cl.³ B60J *7/02*
U.S. Cl. 296—216 **9 Claims**

1. A guide rail (1) for a sliding sun roof (2) of a motor vehicle, comprising: a first member (5) adapted to be secured to the roof (3) of the motor vehicle and having a first flange (5*a*), and a second member (6) adapted to be engaged with the first member and also having a first flange (6*a*) and a second flange (6*b*) generally perpendicular thereto, the first flanges of the first and second members and the second flange of the second member in an operative arrangement of the guide rail forming a guide channel (9) with the second flange being a base thereof, wherein the first and second members are provided with complementary formations adapted to be engaged with one another to permit sliding engagement of the second member with the first member, the first member being provided with an open ended channel (7) formed by a pair of flanges (5*b*, 5*c*) directed in a direction generally perpendicular to the first flange, the open ended channel being adapted to accommodate



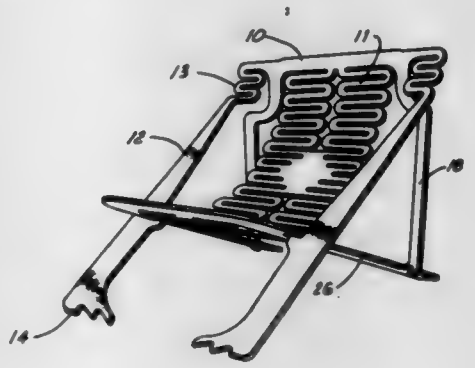
means (8) for securing the first member to the roof of the motor vehicle, the formations on the first member comprising a lip (5*d*, 5*e*) on each of the flanges which form the open ended channel on the first member, the lips on the flanges being directed away from one another and being parallel to the first flange of the first member, the formations on the second member comprising a pair of lips (6*c*, 6*e*) directed towards one another and adapted to engage beneath the lips on the first member.

4,533,174

PORTABLE FURNITURE

Gregg Fleishman, 6071 Hargis St., Los Angeles, Calif. 90034

Continuation-in-part of Ser. No. 123,903, Feb. 22, 1980, , which is a continuation-in-part of Ser. No. 866,837, Jan. 4, 1978, Pat. No. 4,202,581. This application Dec. 18, 1981, Ser. No. 332,151
Int. Cl.³ A47C *4/00*
U.S. Cl. 297—16 **3 Claims**



1. Portable furniture generally comprising at least one uniformly thick originally planar support member and a uniformly thick originally planar furniture member, wherein said furniture member is a chair seat,

said support member having integral portions adapted to be resiliently disposed in angular and curvilinear relationship to each other providing for support,

said support member having integral interlocking means for releasably securing said integral portions in said angular and curvilinear relationship,

said support member able to return to its original planar form when said interlocking means are disengaged,

said support member generally oriented vertically and said furniture member generally oriented horizontally,

said interlocking means additionally releasably securing said furniture member to said support member,

said integral portions of said support member comprising a back portion, two L-shaped main portions, and two brace arm portions,

said back portion and the lower part of said brace arm portions

comprised to be relatively more flexible and resilient than said other portions,

said back portion formed generally fan shaped and connected to the tops of said two "L"-shaped main portions at each end, said "L"-shaped main portions in opposed orientation angling down and inwardly,

when said furniture is in its assembled mode, said main portions are held vertically opposing each other by said interlocking means on side edges of said chair seat with the back portion in a rearward tilting cylindrical arc connected therebetween,

said main portions contacting the ground surface in parallel configuration pointing rearwardly with the front edges of said main portions integrally connected to the lower part of said brace arm portions,

said brace arms adapted to be angularly disposed inwardly with the top ends of said brace arms having interlocking means to the front of the bottom of said chair seat,

said back portion generally resiliently conforming to the shape of a seated person when said support and furniture members are in their assembled condition,

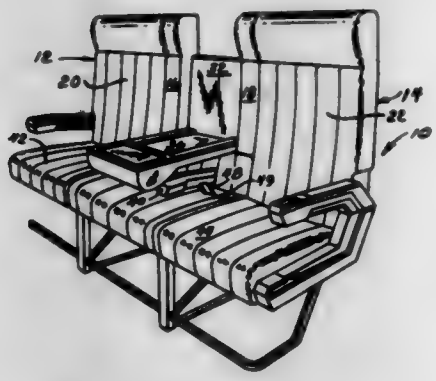
said members able to return to their original planar modes when disengaged.

4,533,175

CONVERTIBLE SEAT

Edward J. Brennan, Litchfield, Conn., assignor to PTC Aerospace Inc., Bantam, Conn.

Filed Dec. 23, 1983, Ser. No. 565,242
Int. Cl.³ A47C *15/00*
U.S. Cl. 297—232 **4 Claims**



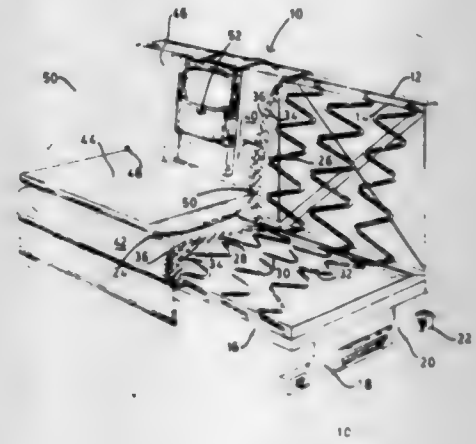
1. A convertible seat assembly which is quickly changeable between a first configuration having three relatively narrow seating positions with intermediate relatively narrow armrests, and a second configuration having two relatively wide seating positions with an intermediate relatively wide armrest, said assembly having three separately reclinable back frame members with the center seat back frame member being narrower than the end seat back frame members, the center seat back frame member having a back cushion portion which is pivotally mounted for movement between a generally vertical use position contacting said center back frame member in said first configuration for supporting an occupant's back, to a generally horizontal cocktail table and/or armrest position overlying the center seat bottom cushion in said second configuration, the center position back cushion portion having a width which is generally equal to the width of the center back frame member and less than the width of the end position back cushion portions, a pair of detachable back cushion extension members which are selectively attachable by complementary fastening means to each side of the center position back cushion portion in said first configuration, and to the inboard sides of the end cushion portions in said second configuration, said pair of narrow armrests being non-detachably mounted to the frame of said seat assembly for movement between a use position in a generally vertical plane where they separate the seating positions in said first configuration and a stowed position in a generally horizontal plane in which they underlie the center back cushion portion in its generally horizontal armrest position and overlie the center seat bottom cushion in said second configuration.

4,533,176

BUILT-IN AUTOMATIC INFANT RESTRAINT SEAT

Bill Wyttenbach, Rte. 5, Wheeler Rd., WL #12, Louisville, Tenn. 37777

Filed Jul. 21, 1983, Ser. No. 516,208
Int. Cl.³ A47C *15/00*
U.S. Cl. 297—238 **12 Claims**



1. A vehicle seat for adults in combination with a foldaway infant protection and restraining seat, said combination seat comprising:

a seat member suitable for supporting an adult person in a moving vehicle including a support frame with a back portion secured to the structure of said vehicle, and a contact portion including a back contact portion having a front section and a rear section, said rear section secured to said back support frame for receiving and contacting the body of a seated person, and said front section of said contact portion being rotatably attached to one of said rear section and said back support frame including a section rotatable to between a first location and a second location;

a restraining means secured to said support frame; and

a child's seat movably secured to said support frame, said child's seat and restraining member movably cooperating with each other and said support frame and said rotatable section of said contact portion of said seat member to provide a first position wherein said child's seat and said restraining member are concealed between said front and rear section by said front rotatable section of said contact portion being in said first location and said seat member is suitable for occupancy by an adult, and said child's seat movable to a second position whereby wherein said front rotatable section of said contact portion is moved away from said rear section to in said second location and said child's seat is accessible and available for receiving and protecting use by a small child, and wherein said restraining means and said child's seat are suitable for restraining a child in said child's seat against substantial impact forces.

4,533,177

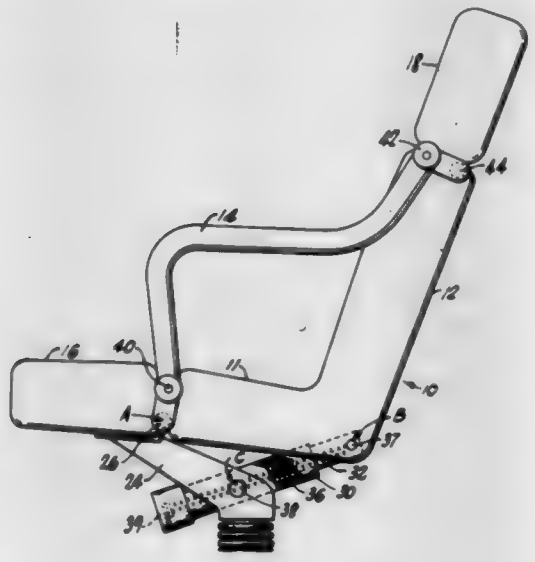
RECLINING CHAIR

Thomas L. Latone, Quakertown, Pa., assignor to Knoll International, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 046,010, Jun. 6, 1979, abandoned. This application May 21, 1980, Ser. No. 151,776
Int. Cl.³ A47C *3/00*
U.S. Cl. 297—301 **8 Claims**

1. A chair including a base portion, a seat portion connected pivotally at its forward end to said base portion and adapted to be reclined, and means including an arm compressible with progressive resistance for supporting a rear portion of said seat

portion, said arm having spaced-apart portions respectively connected pivotally to said rear portion and pivotally to said



base portion to form with said seat portion an angle continually decreasing during reclining of said seat portion.

4,533,178

ECCENTRICALLY ROTATABLE CHAIR

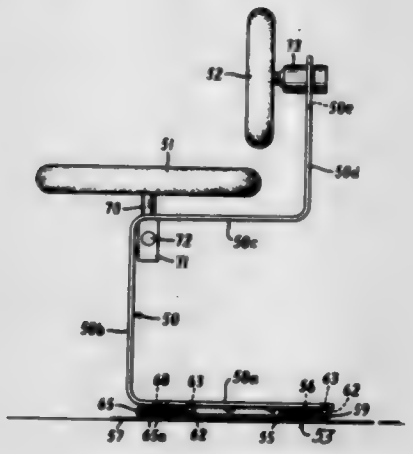
Harry R. de Polo, 480 Park Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 95,450, Nov. 19, 1979, Pat. No. 4,400,032, Continuation-in-part of Ser. No. 893,685, Apr. 5, 1978, abandoned. This application Jan. 15, 1982, Ser. No. 339,466

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.³ A47C *3/18*

U.S. Cl. 297—349 **20 Claims**



1. An eccentrically rotatable chair comprising:

a base having a horizontal surface,

central support means fixed on said base and having a vertical axis,

an elongated non-extensible horizontal arm embracing and extending horizontally from from said central support means and having a longitudinal axis and an outer end spaced from said central support means, said horizontal arm being hollow and said central support means comprising a pivot post extending up into said hollow arm,

single roller support means at said outer end of said arm rollable in all directions on said base and supporting said outer end of said arm,

a seat disposed above and supported by said arm, and

means connecting said arm with said central support means for rotation of said arm about the vertical axis of said central support means and for movement of said arm as a whole longitudinally relative to said central support means while restraining vertical movement of said arm and rotation of said arm about its longitudinal axis, said central support means and roller support means supporting said arm and seat and any load on said seat.

4,533,179

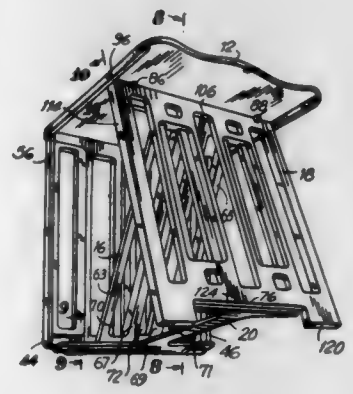
PORTABLE SEATING ASSEMBLY

James Nichols, Old Saybrook, Conn., and Franklyn M. Markus, 5725 Cote St. Luc, Hampstead, Quebec, Canada H3X 2E6, assignors to Franklyn M. Markus, Quebec, Canada

Filed May 20, 1983, Ser. No. 496,682

Int. Cl.³ A47C *7/00*

U.S. Cl. 297—440 **10 Claims**



1. A combination folding seat and table assembly, in combination, comprising:

a substantially flat first member including a top surface and an opposed undersurface and having at least one linear edge and an opposed end;

substantially flat second, third, fourth, and fifth supporting members;

said second member being rotatably connected to said first member at first coextensive linear edges;

said third member being rotatably connected to said second member at second coextensive linear edges;

said fourth member being rotatably connected to said third member at third coextensive linear edges; and

said fifth member being rotatably connected to said fourth member at fourth coextensive linear edges;

said linear edges being substantially parallel;

said assembly being movable between assembled and disassembled positions;

wherein in said assembled position;

said second member is upright with said second coextensive linear edges positioned closely spaced from a base surface and said first coextensive linear edges being positioned at an elevation, said second member having means for bearing against said base surface;

said third member is disposed angularly relative to said first member with said third coextensive linear edges positioned substantially at said elevation;

said fourth member extends between said third coextensive linear edges and said fourth coextensive linear edges, said fourth coextensive edges being positioned closely spaced from said base surface, said fourth member having means for bearing against said base surface;

said fifth member extends from said fourth coextensive linear edges closely spaced from said base surface to the bottom portion of said second member, said second and fifth members being detachably mounted at said bottom portion; and

said first member is detachably mounted on said third and fourth members at said third coextensive linear edges at said undersurface of said first member at a transverse position between said at least one linear edge and said opposed end, said first member being also detachably connected to said fourth member by detachable connecting means, and

wherein in said disassembled position said fourth and fifth members are detached from said second member, and said

first member is detached from said third and fourth members;

said first and second members are in mutual association,

said second and third members are in mutual association, and

said fifth member is in mutual association with said third and fourth members.

4,533,180

FLUID SUPPLY SYSTEM FOR ROTARY CUTTER HEADS FOR MINING EQUIPMENT AND TO MINING MACHINES COMPRISING ROTARY CUTTER HEADS HAVING FLUID SUPPLY SYSTEMS

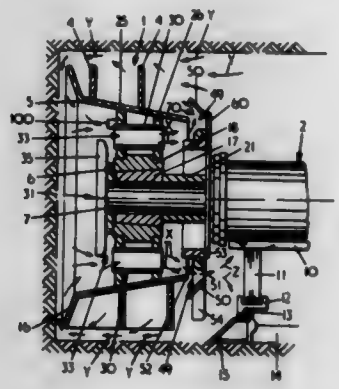
Albert G. French, Willington, England, and Brian A. Eagles, Johannesburg, South Africa, assignors to Coal Industry (Patents) Ltd., London, England

Continuation of Ser. No. 420,890, Sep. 21, 1982, abandoned. This application Jul. 26, 1984, Ser. No. 634,181

Claims priority, application United Kingdom, Oct. 13, 1981, 8130809

Int. Cl.[3] **E21C** *35/04*

U.S. Cl. 299—1 **1 Claim**



1. A mineral mining machine comprising a rotary cutter head having ventilating means including air flow passage means and a plurality of water nozzles fed by a water supply for directing air flow inducing water sprays into the vicinity of the air flow passage means, and sensor means located remote from the cutter head for sensing a preselected condition of the water supply fed to the plurality of nozzles during operation of the machine and for deriving a signal indicative of the sensed preselected condition, and means to de-activate the mining machine responsive to said signal should the water flow fall below a preselected volume.

4,533,181

METHOD FOR FORMING UNIFORM FLOW RUBBLE BED

Thomas E. Ricketts, Grand Junction, Colo., assignor to Occidental Oil Shale, Inc., Grand Junction, Colo.

Continuation of Ser. No. 484,378, Apr. 12, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,833

Int. Cl.[3] **E21C** *41/10;* **E21B** *43/247, 43/263*

U.S. Cl. 299—2 **57 Claims**

1. A method for recovering liquid and gaseous products from an in situ oil shale retort in a retort site in a subterranean formation containing oil shale, the in situ retort containing a fragmented permeable mass of formation particles within top, bottom, and four generally vertically extending side boundaries of unfragmented formation, the method comprising the steps of:

excavating at least one void in the subterranean formation within the boundaries of the retort site, while leaving at least one zone of unfragmented formation within the boundaries of the retort site having a generally horizontally extending free face adjacent the void;

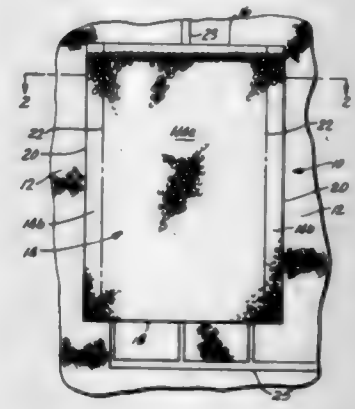
placing a plurality of horizontally spaced apart explosive charges in a selected pattern in such a zone of unfragmented formation, the selected pattern comprising:

an array of central explosive charges spaced apart from the side boundaries of the retort site, each of four outer rows of the array being about parallel to an adjacent retort side boundary; and

a plurality of perimeter explosive charges surrounding the central charges, the perimeter charges being in four rows with each of the rows adjacent one of the side boundaries, the spacing distance between each such row of perimeter charges and the adjacent outer row of central charges being about equal to the spacing distance between each other such row of perimeter charges and its respective adjacent outer row of central charges;

selecting a combination of spacing distance and powder factor for the central explosive charges for producing a center portion of the fragmented permeable mass having a first average particle size (d_1) and a first average void fraction (e_1);

selecting a powder factor for each row of perimeter charges and a spacing distance between each outer row of central



charges and the adjacent row of perimeter charges for producing a perimeter portion of the fragmented permeable mass having a second average particle size (d_2) different from the first average particle size (d_1) and a second average void fraction (e_2) different from the first average void fraction (e_1);

detonating the central and perimeter explosive charges for explosively expanding the zone of unfragmented formation toward the void to form the fragmented permeable mass of formation particles in the retort;

introducing an oxygen-supplying gas into the fragmented permeable mass, the second average particle size (d_2) and the second average void fraction (e_2) being related to the first average particle size (d_1) and the first average void fraction (e_1) so that the ratio of the superficial velocity (V_2) of such oxygen-supplying gas passing through the perimeter portion of the fragmented mass to the superficial velocity (V_1) of such oxygen-supplying gas passing through the center portion of the fragmented mass is from about 0.1 to about 6.0.

4,533,182

PROCESS FOR PRODUCTION OF OIL AND GAS THROUGH HORIZONTAL DRAINHOLES FROM UNDERGROUND WORKINGS

Walter L. Richards, Huntington Beach, Calif., assignor to Methane Drainage Ventures, Placentia, Calif.

Filed Aug. 3, 1984, Ser. No. 637,303

Int. Cl.[3] **E21B** *43/14;* **E21C** *41/10*

U.S. Cl. 299—2 **21 Claims**

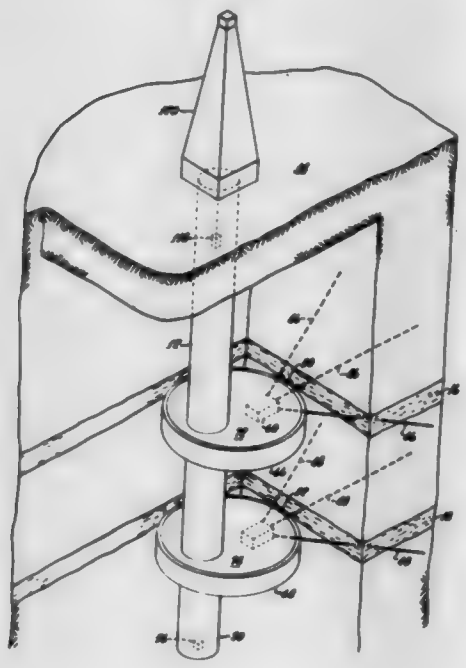
1. A method for collecting oil from a plurality of spaced-apart oil-bearing subterranean formations, said method comprising the steps of:

drilling a shaft from the earth's surface to a depth sufficient to intersect a plurality of spaced-apart oil-bearing subterranean formations;

excavating a working area at selected oil-bearing subterra-

nean formations with each said working area communicating with said shaft;

drilling a plurality of generally horizontal boreholes from each of said working areas into the selected oil-bearing subterranean formations; and,



collecting oil from said boreholes and conducting said oil through said working areas and through said shaft to the earth's surface.

4,533,183

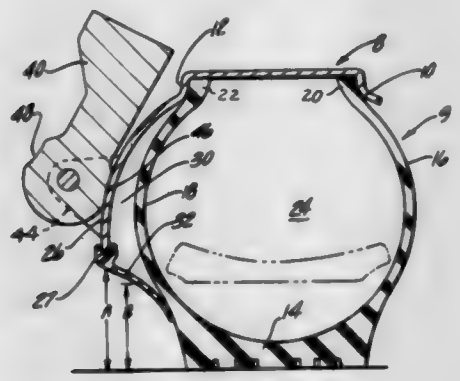
MILITARY WHEEL-TIRE ASSEMBLY

Lawrence A. Gant, Wayne, Mich., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Sep. 19, 1983, Ser. No. 533,078

Int. Cl.[3] B60B *7/00, 15/06*

U.S. Cl. 301—37 TC 1 Claim



1. In a wheel-tire assembly for a military vehicle; the wheel having inboard and outboard flanges; the tire comprising a tread wall, spaced side walls, and bead areas fitting within the wheel flanges: the improvement comprising an imperforate rigid armor wall extending from the outboard flange of the wheel alongside the associated side wall of the tire; said armor wall having an outer circular peripheral edge (27) spaced radially inwardly from the plane of the tire tread wall by a distance (A) that is slightly more than the expected radial deflection (B) of the tread wall during service on the road and over rough terrain, whereby the armor wall will at all times remain out of contact with the road or terrain surface; said armor wall being formed of armor material resistant to penetration by small arms fire, whereby said armor wall partially protects the tire from puncture due to enemy small arms fire; said armor wall diverging a significant distance away from the adjacent tire side wall in radial directions measured from the wheel outboard flange to the tire tread wall; the divergence of the armor wall from the tire side wall being sufficient to define a free space (30) sized to accommodate normal lateral flexure of the tire side wall during service operations, whereby the armor wall has no restraining action on tire flexure; an annular flexible sealing strip (32) having one peripheral edge thereof secured to the aforementioned peripheral edge of the armor wall, and another peripheral edge thereof adhesively secured to the tire side wall at a point near the tire tread wall; said sealing strip being effective to preclude entrance of debris into the free space used to accommodate flexure of the tire side wall; a series of circumferentially-spaced paddles carried by the armor wall for engagement with soft terrain to minimize tire slippage; each paddle being located on a radial line measured from the wheel rotational axis; means (42) swingably mounting each paddle for pivotal motion in a radial plane normal to the direction of tire motion, whereby each paddle is adjustable between a retracted position within the armor wall rotational envelope, and an extended position projecting radially beyond the armor wall rotational envelope; each paddle having a width dimension (C) normal to the tire radial cross section, and a thickness dimension (D) parallel to the tire rotational plane; the width dimension of each paddle being significantly greater than the thickness dimension whereby each paddle presents a substantial face area to the terrain after tire sinkage into the terrain; each paddle being swingable from its retracted position to its extended position through an arc that is slightly greater than one hundred eighty degrees; edge areas (48) of each paddle being contoured to forcibly engage outer surface areas of the armor wall for releasably retaining the respective paddle in its retracted position or its extended position.

4,533,184

DISC WHEEL WITH VENTILLATION PASSAGES

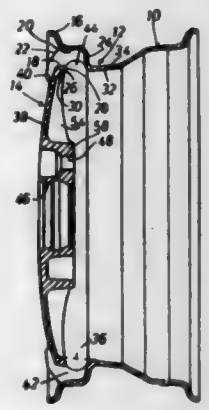
Alf Müller, Waiblingen; Hermann Schobbe, Fellbach; Bernd Löper, Korb, and Hartmut Binnewies, Wolfschlugen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed May 6, 1983, Ser. No. 492,057

Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217458

Int. Cl.[3] B60B *3/12, 3/04, 3/00*

U.S. Cl. 301—63 R 12 Claims



1. A wheel for motor vehicles exhibiting in use a front face facing outwardly and a rear face facing inwardly of a vehicle, comprising:

a rim defining an interior wheel space for accommodating brake means and the like, said rim having an inner diameter deep bed wall-portion at the minimum diameter of the rim,

a wheel disk disposed adjacent to said rim to form an annular gap between said wheel disk and rim,

said wheel disk including a stiffening ring, and

radial connecting webs bridging the annular gap between said rim and said wheel disk, said connecting webs subdividing the annular gap into individual ventilation pas-

sages, said passages having exit apertures into the interior of the wheel,

wherein said ventilation passages extend radially from outside the wheel disk and stiffening ring to respective exit apertures opening to the interior wheel space,

wherein the wheel disk and stiffening ring exhibit a minimum diameter at the ventilation passages which is approximately equal to the inner diameter of the deep bed wall-portion of the rim, such that said exit apertures are not visible from the front face, and such that contaminating particles are inhibited from traveling through the ventilation passages to the front face of the wheel.

4,533,185

CONTROL SYSTEM FOR ELECTRO-PNEUMATIC COMPRESSED AIR BRAKES FOR RAIL VEHICLES

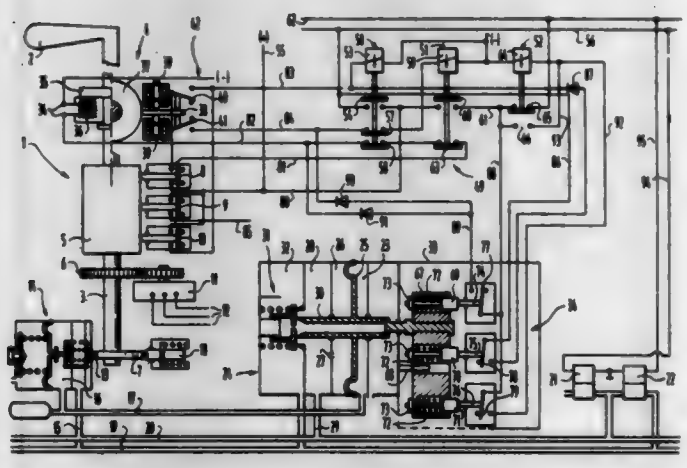
Friedrich Krause, Munich, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,061

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1983, 3301097

Int. Cl.³ B60T *13/68*

U.S. Cl. 303—3 **13 Claims**



1. Control system for electropneumatic compressed air brakes for rail vehicles, with a manually operable servo valve (1) monitoring a pilot pressure for the control of a main air line pressure with a first electrical switching system (42) arranged at said servo valve (1) and having contacts (41) which close only during adjustment of said servo valve (1) in the release direction, for the control of an electrical relay system (49) having a holding system and monitoring the excitation of a brake and a release circuit (56 and 62), with a second electrical switching system (34) controllable by a piston (25) on which the pilot pressure acts against the main air line pressure for monitoring said relay system (49), and with solenoid valves (22) excitable by said release circuit (62) for control of the main air line pressure, said first switching system (42) having additional contacts (40) which close only upon adjustment of said servo valve (1) in the braking direction, said relay system (49), with its selection, having contacts (58, 63) which interrupt the circuits monitored by the contacts (40, 41) of said first switching system (42), contacts (77, 78) of said second switching system (34) enabling said holding system to be cut in and out.

4,533,186

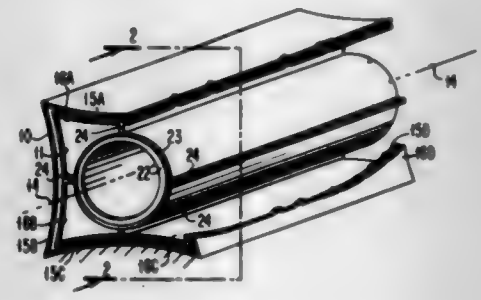
CYLINDRICAL TYPE SQUEEZE BEARING SYSTEMS WITH BEARING AND DRIVING ELEMENTS ATTACHED IN AREAS OF MAXIMUM DEFLECTION

Mats A. Engwall, Hollister, and Richard B. Mulvany, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 28, 1983, Ser. No. 470,660

Int. Cl.³ F16C *32/06*

U.S. Cl. 308—5 R **8 Claims**



1. A squeeze bearing system comprising:

a piezoelectric driving element having an operating frequency and antinodes when vibrating at said operating frequency;

a first bearing element also having antinodes at said operating frequency, said driving element and said first bearing element being coaxially nested about a longitudinal axis and spaced-apart radially about said axis, the radial spacing varying with angular position about said axis such that the configurations of said driving element and said first bearing element at cross sections perpendicular to said axis have substantially different geometric shapes;

a second bearing element coaxial with and radially spaced from said first bearing element; and

means, extending across the radial spacing between said driving element and said first bearing element at areas thereon determined by the location of said antinodes, for connecting said driving element to said first bearing element and for supporting said driving element and said first bearing element in their spaced-apart relationship, whereby when said driving element vibrates at said operating frequency said first bearing element changes its cross-sectional configuration cyclically to create a squeeze film between said first and second bearing elements.

4,533,187

DUAL BEAM CONNECTOR

Michael Kirkman, Barrington, R.I., assignor to Augat Inc., Mansfield, Mass.

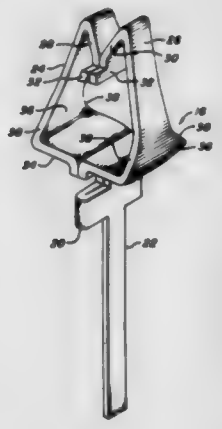
Filed Jan. 6, 1983, Ser. No. 455,945

Int. Cl.³ H01R *23/72*

U.S. Cl. 339—17 CF **1 Claim**

1. A connector for use with wave soldering, said connector having contacts with solder tabs on the leads thereof, which tabs are positioned above a printed circuit board, said printed circuit board having through-holes to accommodate said leads and to which said connector is mounted such that solder used to connect the leads to the board through-holes flows to the corresponding tabs for improved electrical contact between the connector contacts and respective printed circuit board through-holes, said connector including a housing which includes a number of sockets for receiving the pins of a mating connector, a number of contacts having coacting arms with flat portions for engaging opposite sides of said pins, said contacts being located in said sockets, each of said contacts having a lead which depends downwardly from the bottom surface of said housing, and a laterally running tab forming said solder tab, said laterally running tab being wider than the lead and folded on itself to form side by side tab portions in contact

with each other and with each said tab portion running in the same direction as that of the flat portions of the corresponding coacting arms, said laterally running tab extending from said lead below the bottom surface of said housing, said housing having standoffs depending from the bottom surface thereof, said standoffs spacing the bottom of said laterally running tabs from the corresponding through-holes so as to permit the



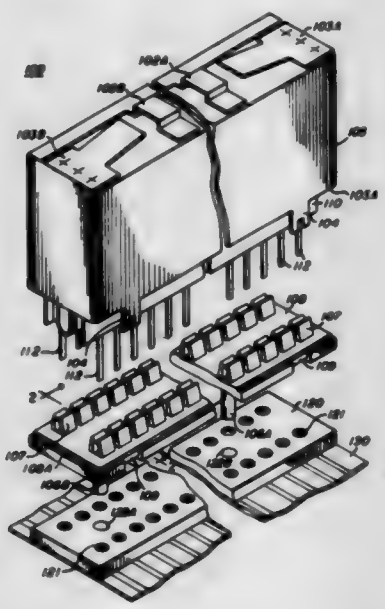
upflow of solder during wave soldering, such that when said connector is mounted to a printed circuit board having through-holes, the leads of said connector are inserted into corresponding through-holes, and with wave soldering, said connector leads are soldered to said printed circuit board, with solder extending through said through-holes and forming a solder bubble onto corresponding ones of said side by side tab portions of each laterally running tab.

4,533,188

HEADER AND HOUSING ASSEMBLY FOR ELECTRONIC CIRCUIT MODULES

Jay J. Miniet, Fort Lauderdale, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 15, 1983, Ser. No. 466,465
Int. Cl.³ H01R *4/02*; H05K *1/00*
U.S. Cl. 339—17 CF **8 Claims**



1. A header and module assembly for holding an electronic circuit module having a sheet of substrate with at least one row of leads which project away from the module, said assembly comprising:

a header member having a plurality of apertures arranged in a row so that each aperture accepts one of said leads of the electronic circuit module;

a jaw means adjacent each aperture on said header member for receiving said leads and captivating the module to the header,

said leads dimensioned to project substantially beyond the apertures when said sheet of substrate is seated within said channel, thereby allowing a direct electrical connection to be made to the portion of the leads which extend beyond the apertures; and

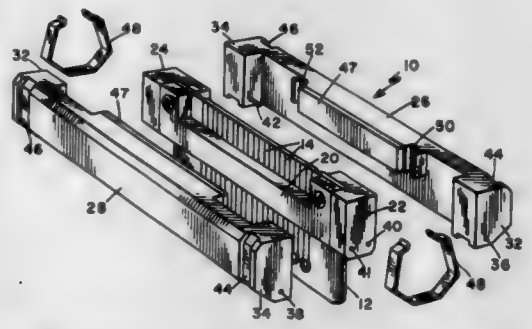
a flexible printed circuit board and a rigid interconnection board mounted to said flexible circuit board, said interconnection board having a plurality of apertures disposed to align with the corresponding apertures in said header member so that said leads of the electronic circuit module are received by the apertures in said interconnection board.

4,533,189

ZERO INSERTION FORCE CONNECTOR

Adelmo A. Scoccia, Upland, Calif., and Donald B. Schellin, deceased, late of Crestline, Calif. (by Gene Downes, administrator), assignors to General Dynamics Pomona Division, Pomona, Calif.

Filed Oct. 21, 1983, Ser. No. 544,157
Int. Cl.³ H05K *1/00*; H01R *13/629*
U.S. Cl. 339—17 CF **9 Claims**



1. A zero force multiple pin electrical connector, said connector comprising:

a first connector member including a central planar support member having a plurality of contacts aligned along at least one surface thereof;

opposed clamping means disposed adjacent said contacts and spring-biased toward said contacts for biasing connector pins into engagement with the contacts;

a second connector member having a plurality of aligned pins for engagement with said plurality of contacts; and

means for enabling the clamping means to be wedged apart by the insertion of a separate tool to thereby enable placement of said plurality of aligned pins adjacent the contacts;

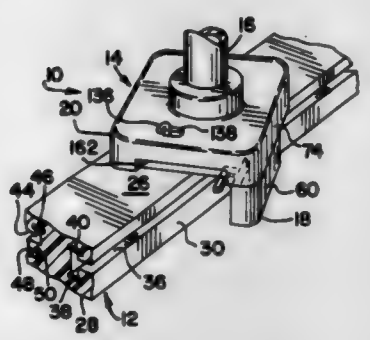
wherein said support member is a printed circuit wiring board and said plurality of contacts comprises contact strips disposed adjacent to one edge of said board.

4,533,190

ELECTRICAL POWER TRACK SYSTEM

Donald J. Booty, 521 Durham Dr., Frankfort, Ill. 60423

Filed Dec. 9, 1983, Ser. No. 559,902
Int. Cl.³ H01R *25/14*
U.S. Cl. 339—21 R **21 Claims**



1. An electrical power track system comprising an elongated track defining a pair of generally opposite side surfaces, each of

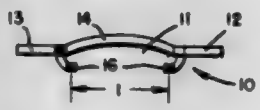
said side surfaces having at least one open slot extending longitudinally therealong, each of said slots providing access to at least one longitudinally extending electrical conductor positioned in offset relation to the corresponding slot, a gripper member including a gripper base having a channel therethrough enabling said gripper base to be mounted on said track in straddle fashion and be rotated relative to said track after mounting thereon in said straddle fashion such that surfaces defining said channel are disposed in generally confronting relation to said opposite track side surfaces, a pair of electrical contacts carried by said gripper base such that each contact extends outwardly from a corresponding one of said channel defining surfaces in a position to project into the corresponding slot when said gripper base is rotated so that said channel defining surfaces are in said generally confronting relation, and actuator means carried by said gripper base to cooperative association with said electrical contacts and being operative after said rotation of said gripper base to effect movement of said contacts so as to cause selective engagement of said contacts with said electrical conductors when said electrical contacts project into said slots.

4,533,191

IDC TERMINATION HAVING MEANS TO ADAPT TO VARIOUS CONDUCTOR SIZES

Harry P. Blackwood, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 21, 1983, Ser. No. 553,906
Int. Cl.³ H01R *29/00, 11/20, 43/04;* H05K *3/30*
U.S. Cl. 339—31 R **15 Claims**





1. An insulation displacement connector contact for electrically contacting a conductor by displacement of an insulating layer, said contact comprising a member including a slot having a desired width, said slot being defined by opposing legs of said member and a non-linear deformable web connecting said legs, wherein by deforming said web, it is possible to change said desired width of said slot to thereby adapt said contact to various conductor sizes and prongs supported by each of said legs at opposing sides of said slot for stabilizing the electrical connection between the contact and a shield of a coaxial cable by being adapted to be positioned within said shield.

4,533,192

INTEGRATED CIRCUIT TEST SOCKET

Lewis J. Kelley, Grapevine, Tex., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

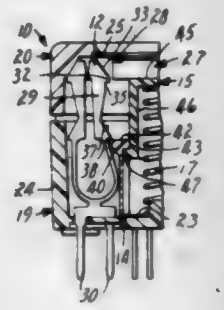
Filed Apr. 25, 1984, Ser. No. 603,616
Int. Cl.³ H01R *13/627, 13/635*
U.S. Cl. 339—45 M **10 Claims**

1. A test socket for integrated circuits in rectangular packages having contact pads or leads comprising:

an insulating body having a base wall, side walls and a top opening through which a said integrated circuit package may be inserted into said body,

a plurality of electrical contact elements in said body, one for each contact pad or lead to be test connected on a said integrated circuit package, each said contact element having a resilient contact leg extending in a direction from said base wall of said body toward said top opening and having its free end adjacent said top opening, each said contact leg being formed with an electrical contact portion and a latching projection adjacent its free end and extending generally perpendicular to the length of said leg toward the interior of said insulating body, said contact elements being mounted in said body such that when a said integrated circuit package is inserted into said top opening in said insulating body and pressed downward toward said body base wall its periphery contacts said contact element legs adjacent their free ends and forces them outwards until the base of said package passes said projections whereupon the resiliency of said legs causes them to move inward to bring said latching projections into contact latching positions over the outward facing surface of the package and said electrical contact portions of said legs into contact with the pads or leads on the package,

an unlatching cam in said insulating body, said unlatching cam having a rest position permitting said resilient contact legs to position said latching projections in their latching



positions and being movable toward said body base wall to an unlatching position to force said contact legs outward to move the latching projections outward beyond the periphery of the package,

an ejector member in said insulating body, said ejector member being formed with an integrated circuit package support surface that is accessible through said top opening in said body to receive and support a said integrated circuit package when said ejector member is in an unloaded position adjacent said top opening, said ejector member being movable from said unloaded position toward said body base wall to permit the package to be moved past said latching projections on said contact legs to cause the package to be latched into the test socket and being movable beyond the latched position to permit the package to contact said unlatching cam to move it toward said base wall to its unlatching position, and

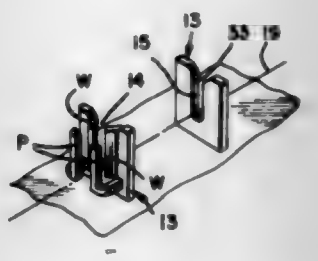
resilient means urging said ejector member toward its unloaded position.

4,533,193

IDC TERMINATION FOR COAXIAL CABLE HAVING ALIGNMENT & STABILIZING MEANS

Harry P. Blackwood, Wilton, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 21, 1983, Ser. No. 553,833
Int. Cl.³ H01R *13/20, 11/20, 43/04;* H05K *3/30*
U.S. Cl. 339—65 **27 Claims**



1. A connector for a coaxial cable, said cable comprising: at least one central conductor defining a cable axis; at least one

surrounding conductive shield element; a first insulating layer arranged between said shield element and said central conductor; and an outer insulating jacket arranged about said shield element; said connector comprising two independent electrical contacts each of a different structural configuration for simultaneously establishing electrical connections to said central conductor and said conductive shield including:

first insulation displacement contact means having a first means for electrically contacting said shield element by displacement of said insulating jacket, said first contact means including a second means for stabilizing the electrical connection between said first contact means and said shield element by being adapted to be positioned within said shield element;

a second insulation displacement contact means for electrically contacting said central conductor by displacement of said insulating layer; and

contact support means comprising a base member for supporting said first and second contact means, said contact means being arranged on said base member along a contact axis with said second contact means following said first contact means and being electrically isolated therefrom whereby when said cable is connected to said first and second contact means said contact axis corresponds to said cable axis.

4,533,194

PUSH-PULL TYPE CONNECTING DEVICE

Philippe Boichut, and Guy Jeunet, both of Dole, France, assignors to Allied Corporation, Morris Township, Morris County, N.J.

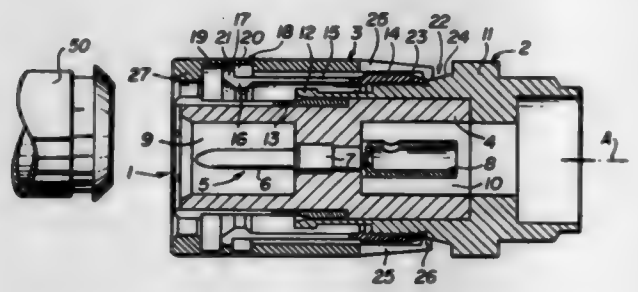
PCT No. PCT/FR82/00002, § 371 Date Sep. 7, 1982, § 102(e) Date Sep. 7, 1982

PCT Filed Jan. 6, 1982, Ser. No. 420,225

Claims priority, application France, Jan. 7, 1981, 81 00245

Int. Cl.³ H01R *13/627*

U.S. Cl. 339—91 R **19 Claims**



1. A "push-pull" connecting device, comprising first and second connectable connector elements, the said first connector element having a mechanical means designed to allow the coupling of the first and of the second connector elements and their locking in coupled position, said mechanical means comprising an outer cylindrical sleeve movable axially between a central locking position and two unlocked positions placed on both sides of the central position, an inner sleeve of cylindrical shape coaxial to the outer sleeve and provided with a series of small elastic tongues extending axially toward the coupling end of the said first connector element, said outer sleeve being movable with respect to said inner sleeve, each one of said small tongues having coupling members designed to cooperate with the complementary coupling elements provided on the second connector element, when the two connector elements are brought into coupling position, and an outer radial boss designed to cooperate with a cam surface arranged on the inside of the outer sleeve, so as to assure the locking and to allow the unlocking of the second connector element in relation to the first connector element, the outer sleeve also having a means for automatically returning it to its central locking position, characterized in that the means for returning the outer sleeve to its central locking position comprises a very wide V-shaped groove, this groove being placed in order to create two inclined ramps made up of the two walls of this groove, the width of the groove being at least equal to the travel of the movable outer sleeve, and spring means forming a crown at least partially around the inner sleeve and being urged by its elasticity toward its resting position, where it is lodged at the bottom of the V-shaped groove, and spring means being mounted between the inner sleeve and the outer sleeve in such a way that its position coincides with the locking position of the outer sleeve.

4,533,195

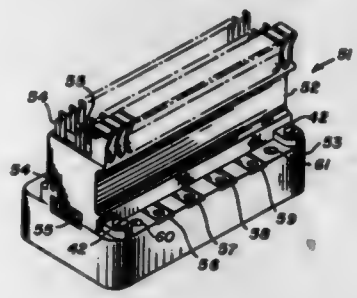
PRE-WIRED MODULAR CONNECTING BLOCKS

Robert H. Knickerbocker, Cheshire, Conn., assignor to The Siemon Company, Watertown, Conn.

Division of Ser. No. 937,043, Aug. 28, 1978, abandoned, which is a continuation-in-part of Ser. No. 815,270, Jul. 13, 1977, abandoned. This application Feb. 15, 1980, Ser. No. 122,017

Int. Cl.³ H01R *9/08*

U.S. Cl. 339—97 P **2 Claims**



1. A pre-wired modular connecting block comprising: a housing, said housing being formed from a dielectric material and including:

a body portion, said body portion having a shape of a parallelepiped, said body portion having a plurality of slots formed in a first planar surface portion thereof, said slots extending part way through said body portion, said body portion further having a plurality of apertures extending inwardly from a second face thereof disposed oppositely to said first face portion, said apertures communicating with said slots and being arranged in rows and columns;

a rim portion integral with and extending from said body portion second face, said rim portion defining an edge extending at least part way around at least a portion of said body portion second face, said rim portion and body portion second face cooperating to define a recessed area; and

a plurality of apertured securing protusions extending outwardly from said rim portion, said apertures in said protusions having axes which are generally parallel with said body portion apertures;

a plurality of insulation piercing electrically conductive contact members, said contact members being disposed in at least some of said slots in said housing body portion, said contact members each including:

a flat support portion having a pair of oppositely disposed edges;

at least one pair of oppositely disposed contact fingers projecting upwardly from and being integral with a first edge of said support portion; and

a tang of rectangular cross-section extending from the said second edge of said support portion, said tang being co-planar with said support portion and extending through one of said apertures into the said recessed area, said tang being engaged by said housing body portion to thereby retain the contact element in said housing with said fingers extending above the said first face portion of said housing body portion; and

wherein said contact member tangs extend outwardly beyond a plate defined by said housing rim portion;

base means, said base means being formed from a dielectric material, said base means having a pair of oppositely dis-

posed flat mounting surfaces which lie in parallel planes, said base means being provided with apertures extending therethrough between said mounting surfaces, said apertures being spaced apart by the same distance as said apertures in said housing securing protusions whereby said base means may be mounted on a support surface with a first mounting surface in abutting contact therewith and said housing may be mounted on said base means with said rim portion in contact with said second mounting surface, said base means when said housing is mounted thereon cooperating with said rim portion and body portion second face to define a cavity between said housing and said base means;

and wherein said base means is provided with a recess bounded by said second mounting surface, said recess forming part of said cavity and said tangs extending into said recess, and

wherein said base means recess is sub-divided by a plurality of parallel walls, said walls serving to prevent lateral movement of said tangs,

means removably securing said housing to said base means; and

circuit means disposed in part in said cavity and connected to said contact member tangs for electrically interconnecting said contact members in preselected groups, said circuit means including a plurality of conductors equal in number to said groups of contact members, said conductors extending outwardly from said cavity in a direction generally transverse to the axes of said securing protusion apertures so as to be available to the exterior of said connecting block.

4,533,196

DEVICE FOR MAKING A SOLDERLESS, NON-SCREWED AND UNSTRIPPED SINGLE OR MULTIPLE CONTACT AT A TERMINAL ELEMENT

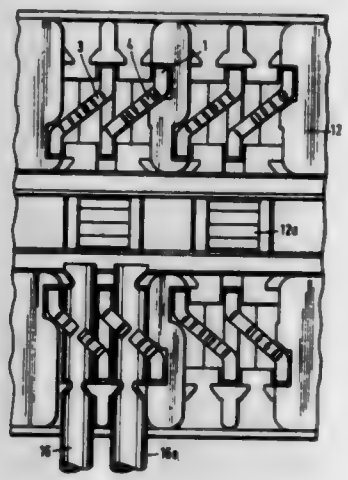
Horst Forberg; Klaus-Peter Achtnig; Gunter Hegner, and Gerhard Boes, all of Berlin, Fed. Rep. of Germany, assignors to KRONE GmbH, Berlin, Fed. Rep. of Germany

Filed Aug. 19, 1982, Ser. No. 409,370

Claims priority, application Fed. Rep. of Germany, Sep. 19, 1981, 3137429

Int. Cl.³ H01R *9/08*

U.S. Cl. 339—97 P **3 Claims**



1. A terminal element adapted to be mounted in a terminal strip, said terminal strip having the capability of retaining a plurality of said terminal elements, said terminal element comprising:

at least one pair of contacts made of resilient contact material, each said contact having a vertically extending slot with an open upper end for solderless, non-screwed and unstripped termination of at least one wire having insulation;

each said contact including a transverse web containing said slot and disposed at approximately 45° to the axis of the wire inserted in said slot, each said slot being defined by sharp edges and having a width which, due to the inclined orientation between said inserted wire and said contact, is smaller than the size of the metal core of the inserted wire so that when said wire is inserted in said slot, the wire insulation is severed by said sharp edges and electrical contact is made between said wire and said contact;

said transverse webs of said at lest one pair of contacts being in parallel relationship, each said contact having front and rear web portions extending from the respective ends of said transverse web, the front portion of one of said contacts and the rear portion of the other of said contacts being disposed in colinear relationship whereby the axial spacing of a pair of wires inserted into said slots of said pair of contacts is limited only by the wall thickness of said front and rear portions of said contacts;

said front and rear web portions including a horizontally extending portion disposed above said respective slot upper end opening in overlying, spaced-apart relationship therewith for guiding the wire as it is inserted into said slot; and

a connecting member below said slots at the lower end of said contacts for interconnecting said contacts.

4,533,197

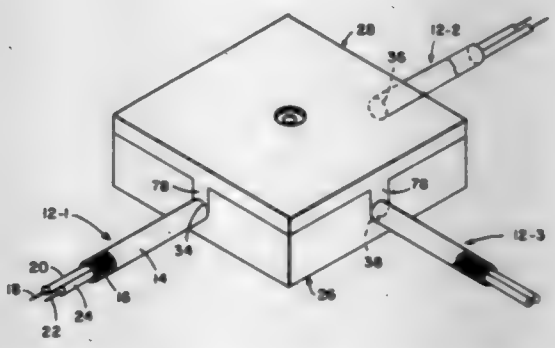
JUNCTION BLOCK FOR SHIELDED COMMUNICATIONS NETWORK LINE

Thomas F. Prince, 1175 Brook Rd., Milton, Mass. 02186, and Julian J. Bishop, 31 Beech St., Belmont, Mass. 02188

Filed May 18, 1983, Ser. No. 495,831

Int. Cl.³ H01R *4/02*

U.S. Cl. 339—97 R **12 Claims**



9. A junction block for providing connections among a plurality of lines, each line comprising an outer insulating sheath, a conductive shield of predetermined diameter thereunder, and a plurality of conductors therein each separately enclosed in an insulating layer, said junction block comprising

a base and a cover mutually engageable to define in an assembled condition a junction block body enclosing an interior space with a floor provided by the base, a top provided by the cover, and a perimeter wall provided cooperatively by the base and cover,

said base including

a shield bus made from a single piece of sheet metal stock and providing a shield bus wall positioned at right angles to said floor, an edge of said shield bus wall away from said floor having therein a plurality of insulation displacement slots sized to displace the outer insulating sheath of a line and make contact with the conductive shield thereunder,

one or more conductor buses, electrically isolated from said shield bus and each other if more than one, each made from a single piece of sheet metal stock and providing a conductor bus wall positioned within said interior space at right angles to said floor, an edge of each said conductor bus wall away from said floor having therein a plurality of insulation displacement slots sized to displace the outer insulating sheath of a conductor and make contact with the conductor therein,

said block in assembled condition providing a plurality of line entrance structures providing passage for a line through said perimeter wall while holding said line in place, said structures being sized to fit the outer insulating

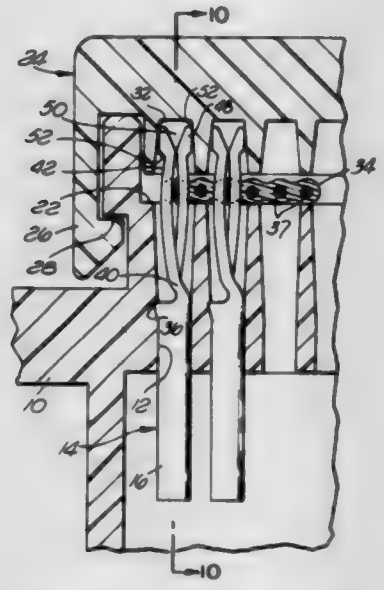
sheath and being aligned respectively to the plurality of insulation displacement slots in said shield bus.

4,533,198

INSULATION DISPLACEMENT CONNECTOR

John W. Anhalt, Orange, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,235
Int. Cl.³ H01R *13/39*
U.S. Cl. 339—99 R **14 Claims**



1. An electrical connector for a plurality of generally parallel conductors comprising:

an insulator having a front and a rear;

a plurality of contacts mounted in a row in said insulator, each said contact having a termination end extending outwardly from a rearwardly facing surface of said insulator;

the termination end of each said contact being bifurcated providing a pair of resilient arms, said arms of each contact being bent in opposite directions away from a plane extending transversely of said row providing therebetween a slot for reception of a respective conductor when the plurality of conductors is positioned transverse of said row and the conductors are pushed downwardly over the rear of said insulator;

said arms of each said contact having forward stationary portions and rear free end portions movable relative to said transverse plane therebetween, and intermediate conductor engaging portions;

a cap adapted to be mounted on the rear of said insulator;

said cap having a row of recesses therein spaced to receive therein said free end portions of said arms of the respective contacts when said cap is mounted on the rear of said insulator; and

each said recess embodying means for restricting the free end portions of the arms of the contact therein from moving outwardly away from said plane whereby when a conductor extending transversely of said row is pushed between said arms to said intermediate portions and said cap is mounted on said rear of said insulator, said intermediate portions of said arms will become bowed around said conductor so that said arms will produce a resilient engaging force against the opposite sides of the conductor;

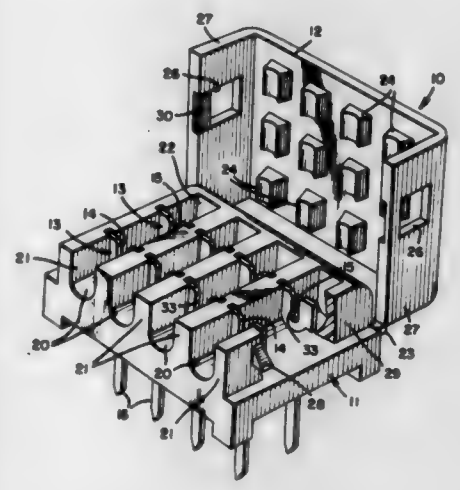
the slot in each contact has substantially zero width as viewed along the axis of the conductor immediately prior to reception of the conductor into the slot, and said means for restricting the free end portions of the arms holds said free end portions sufficiently close so they remain at substantially their original spacing and the middle portions of said arms are bowed around said conductor.

4,533,199

IDC TERMINATION FOR COAXIAL CABLE

Leonard Feldberg, Spring Valley, N.Y., assignor to Burndy Corporation, Norwalk, Conn.

Filed Nov. 14, 1983, Ser. No. 551,771
Int. Cl.³ H01R *11/20, 43/04;* H05K *3/30*
U.S. Cl. 339—99 R **6 Claims**



1. A connector for a coaxial cable, said cable comprising: at least one central conductor defining a cable axis; at least one surrounding conductive shield element; a first insulating layer arranged between said shield element and said central conductor; and an outer insulating jacket arranged about said shield element; said connector comprising:

first insulation displacement contact means for electrically contacting said shield element by displacement of said insulating jacket;

second insulation displacement contact means for electrically contacting said central conductor by displacement of said insulating layer;

said first contact means comprising a member including a first slot having a first width and wherein said second contact means comprises a member having a second slot having a second width narrower than said first width and wherein said slots are arranged along said contact axis whereby said cable is adapted to be pressed into said slots;

said first and second contact means having blade metal members including pin-positions for connection to a printed circuit board;

contact support means comprising a base member for supporting said first and second contact means, said contact means being arranged on said base member along a contact axis with said second contact means following said first contact means and being electrically isolated therefrom, whereby when said cable is connected to said first and second contact means said contact axis corresponds to said cable axis; and

a cover member and means for locking said cover member to said base member, the cover member being hinged to said base member to pivot between an open position for inserting said coaxial cable and a closed portion for locking said coaxial cable in place and wherein said cover member includes anvil portions for engaging said cable when said cover member is closed.

4,533,200

STACKABLE ELECTRICAL CONNECTOR

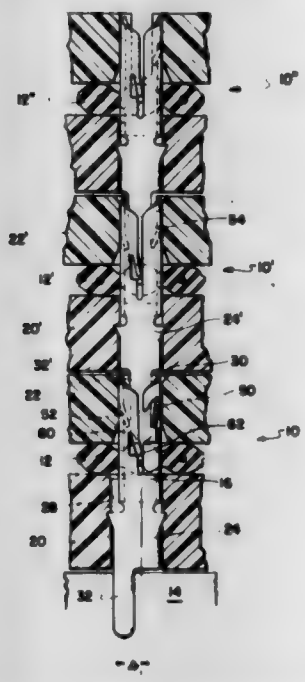
Albert H. Wilson, Los Angeles, Calif., assignor to Thomas & Betts Corporation, Raritan, N.J.

Filed Jun. 23, 1982, Ser. No. 391,211
Int. Cl.³ H01R *4/02*
U.S. Cl. 339—99 R **12 Claims**

1. An electrical connector for insulated conductor cable comprising:

a housing;

a contact mounted in said housing, said contact including a socket portion opening exteriorly of said housing, and an insertion portion extending exteriorly of a surface of said housing; said socket portion having a receiving slot including means for electrically engaging said contact to a conductor of said cable



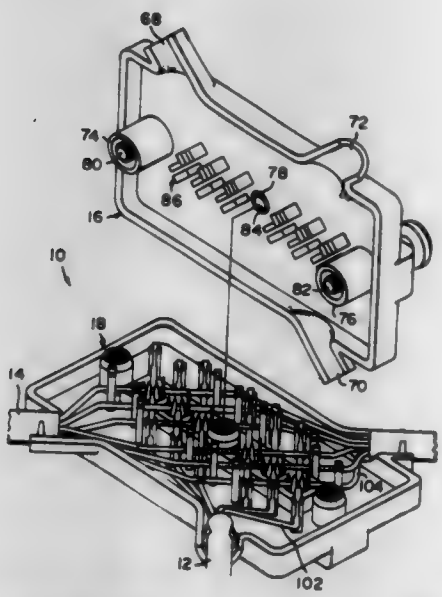
said socket defining a chamber in communication with said slot, tapering toward said inserting portion, said chamber adapted to receive a conductive element therein.

4,533,201

BRIDGE TAP

Henry G. Wasserlein, Jr., Seminole, Fla., assignor to AMP Incorporated, Harrisburg, Pa.

Filed Apr. 5, 1984, Ser. No. 596,972
Int. Cl.[3] H01R *4/24*
U.S. Cl. 339—99 R 14 Claims



1. A bridge tap connector for joining a multiconductor tap cable to a multiconductor continuous run cable, said bridge tap connector comprising:

a pair of mating bottom and top covers of rigid insulative material, said covers together defining a cavity therebetween,

a plurality of terminals fixed in said bottom cover, each terminal having first and second flanges extending normal to each other and to the plane of said bottom cover into said cavity, each said first and second flange having an insulation-piercing, conductor-engaging slotted profile,

a plurality of pairs of conductor gripping members, the members of each pair being integral with said bottom cover and spaced on opposite sides of a respective first or second flange aligned with the slotted profile thereof,

a plurality of conductor stuffer members integral with said top cover and extending integrally therefrom into said cavity, each said conductor stuffer member being aligned with a respective terminal and adapted to drive conductors of said tap and continuous run cables into said slotted profiles, and

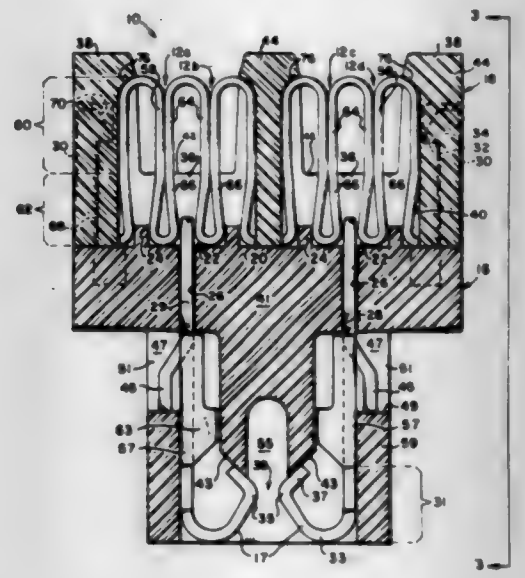
means to secure said covers together.

4,533,202

MULTIPLE ELECTRICAL CONNECTOR AND BLOCK WITH PRINTED CIRCUIT BOARD CONNECTOR CLIP

Karl-Heinz Pohl, Buffalo, Minn., assignor to The Siemon Company, Watertown, Conn.

Filed Sep. 29, 1983, Ser. No. 537,069
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.[3] H01R *9/09*
U.S. Cl. 339—176 MP 15 Claims



1. A block for housing electrically conductive wire-formed connector elements of the type having oppositely facing and interconnected upper and low rows of loops, the block including:

a retainer section, said retainer section having opposite first and second surfaces;

a plurality of rows of spaced slots in said retainer section first surface;

at least some of said spaced slots of said retainer section being provided with apertures and spacers, said apertures and said spacers each being positioned so as to be equidistant from the centers of an adjacent pair or loops of a connector element, said apertures communicating with said retainer section second surface, each of said spacers being a protrusion which will be positioned between and in contact with two adjacent lower loops of a connector element;

at least a pair of elongated electrically conductive printed circuit board connector pin means, said pin means being positioned and retained within said apertures of said spaced slots, a first end of said pin means extending outwardly beyond said first surface of said retainer section wherein said extended pin means first end is capable of being positioned between and in electrical contact with two adjacent lower loops of a connector element, a second end of said pin means having incorporated thereon a printed circuit board receiving means, a pair of said receiving means capable of electrical and mechanical connection and defining a printed circuit board connector clip;

a main body section;

a plurality of rows of spaced slots in said main body section in alignment with corresponding rows of slots in said retainer section;

a plurality of bridge elements on said main body section in bridging alignment with the slots in each row of said main body section, each bridge element defining a passage in alignment with corresponding slots in the main body section and the retainer section;

said corresponding retainer slots, main body slots and bridge passages in each main body section cooperating to define housings for electrically conductive wire connector elements;

said bridge elements in each row being spaced apart and in alignment with bridge elements in other rows to define spaced columns for connection of electrical conductors to wire connector elements; and

means for releasably joining said retainer section and said main body section together.

4,533,203

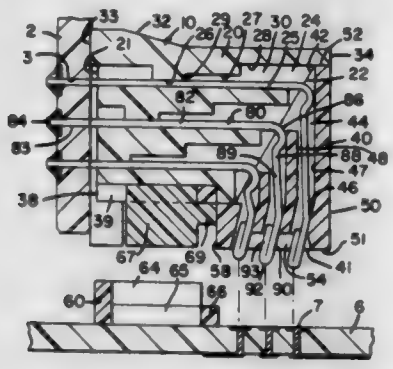
CONNECTOR FOR PRINTED CIRCUIT BOARDS

Steven Feldman, Seminole, and Richard J. Cihak, Largo, both of Fla., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Dec. 7, 1983, Ser. No. 559,129

Int. Cl.³ H01R *9/09*

U.S. Cl. 339—176 M **5 Claims**



1. Electrical connector having a plurality of elongate right angle spring metal contact elements mounted in at least one row of respective passages through a housing, said housing having a first portion with a first outside face and a second portion with a second outside face, said second outside face being substantially perpendicular to said first mating face, said passage having a first portion opening on said first face and a second portion opening on said second face, said elements each having a first arm in a respective first portion of passage, a second arm in a respective second portion of passage, and a substantially right angle bend between said arms, said arms having respective first and second ends remote from said bend, said connector being characterized in that each said first arm is fixed against lateral movement at a fixing point in said first portion of said passage remote from said bend, each said passage between said fixing point and said bend being enlarged so that said first arm between said fixing point and said bend is free to deflect away from said second face when said second arm is moved axially in said second portion of passage away from said second face, whereby said second ends will comply resiliently with contacts brought to bear thereagainst.

4,533,204

RESILIENT CIRCUIT BOARD CONTACT

Eugene E. Moynagh, Jr., Afton, and Donald J. Jansky, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

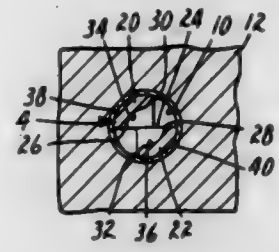
Filed Aug. 23, 1982, Ser. No. 410,321

Int. Cl.³ H01R *4/24*

U.S. Cl. 339—221 R **2 Claims**

1. A resilient contact including a mounting portion adapted for insertion into and engagement with a circular hole formed in a circuit board, said mounting portion having a longitudinal axis coincident with the axis of said circular hole when said mounting portion is inserted into said hole and comprising:

a thin spline having two major surfaces parallel to said longitudinal axis and a generally rectangular cross-section in a plane perpendicular to said longitudinal axis and two oppositely curved blades, each extending laterally outward from one of said major surfaces and being symmetrically disposed with respect to said longitudinal axis, the blades having inner edges which slide relative to one another each blade having an outer surface with an essentially constant maximum radius in said plane perpendicular to said longitudinal axis corresponding to the radius of said circular hole when said mounting portion is inserted into said circular hole and an essentially constant thickness substantially equal to the thickness of said spline so that said blades define substantially 90 degree sectors of a tubular cylinder in said plane perpendicular to said longitudinal axis, said outer radius of each of said blades decreasing in both longitudinal directions from said maximum radius so that said blades join said spline at opposite longitudinal ends to longitudinally bow said blades and facilitate insertion and removal of said mounting portion with respect to said circular hole.



4,533,205

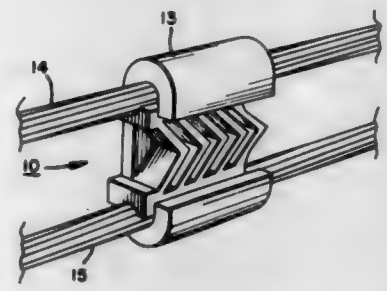
COLLAPSIBLE WEDGE FOR ELECTRICAL CONNECTOR

Walter Frank, Darien, Conn., assignor to Burndy Corporation, Norwalk, Conn.

Continuation of Ser. No. 431,916, Sep. 30, 1982, abandoned. This application Dec. 12, 1984, Ser. No. 681,075

Int. Cl.³ H01R *13/24*

U.S. Cl. 339—247 **11 Claims**



1. A wedge connector for holding a range of sizes of electrical conductors betwen an inner wedge member and a mating outer shell member, comprising: A wedge-shaped outer shell member having a generally "C" shaped cross-section forming a pair of diverging opposed inner contact surfaces for receiving a pair of electrical conductors and a mating wedge member therein; and a wedge member having a small end and a large end with a given length therebetween, said wedge member further comprising:

(a) A pair of diverging contact portions each extending in the lengthwise direction of said wedge from the small end to the large end, and each having a contact surface thereon for holding conductors against the outer shell member upon insertion of the wedge into the shell;

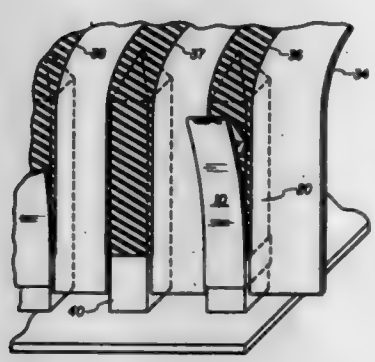
(b) a plurality of discrete ribs extending between the contact portions, spaced from each other in the lengthwise direction of said wedge, and each having a lengthwise dimension less than said given length;
(c) a first one of said ribs being located proximate the small end of said wedge and a second one of said ribs being located proximate the large end;
(d) each of said ribs having an offset between said contact portions which is displaceable in the lengthwise direction of said wedge, as said ribs are forced to collapse; and
(e) said ribs collapsing as said contact portions are displaced toward each other upon insertion of said wedge member into said outer shell member, thereby decreasing the spacing between the contact surfaces of said wedge so as to accommodate conductors of increasing size between said wedge member and said outer shell member.

4,533,206

FLEXIBLE PRINTED CIRCUIT CONNECTOR

Anthony J. Wilkis, Downers Grove, Ill., assignor to Rockwell International Corp., El Segundo, Calif.

Continuation of Ser. No. 373,574, Apr. 30, 1982, abandoned.
This application Jun. 12, 1984, Ser. No. 619,867
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 R **4 Claims**



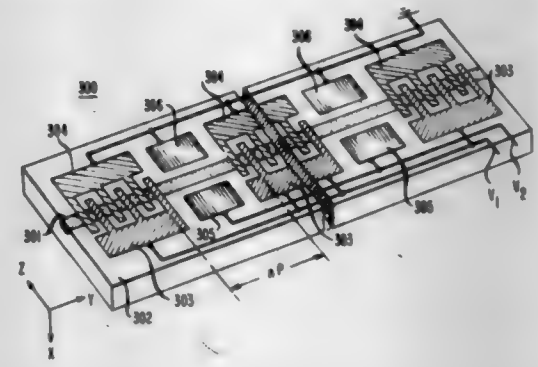
1. An electrical connector for mating a conductor path of flat flexible cable to a rigid terminal post, comprising:
a conductive base means having a longitudinal access with a rectangular cross-sectional shape substantially the same as the cross-sectional shape of said terminal post and four sides having a uniform longitudinal dimension and a gap extending along the entire longitudinal length of one side and circumferentially sized to provide a tight sliding fit over said terminal post, whereby electrical contact between said base means and said base post is established;
a conductive elongated finger resiliently fixed to said base means and extending from said base means in a direction generally parallel to said longitudinal access;
contact means connected to said finger and extending in a direction toward said base means longitudinal access in an amount sufficient to cause said finger to be deflected by terminal post surface making contact with the contact means when the terminal post is inserted into said connector and having a width substantially equal to said base means and said finger;
whereby, upon sandwiching said flat flexible cable conductor path between said terminal post and said contact means, an electrical connection is effected between said terminal post and said conductor path.

4,533,207

WAVELENGTH TUNABLE TE TO TM MODE CONVERTER

Rodney C. Alferness, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jun. 21, 1983, Ser. No. 506,456
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.14 **8 Claims**



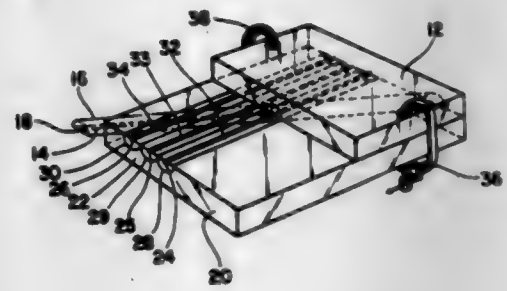
1. A wavelength tunable TE to TM optical mode converter comprising
a birefringent waveguide capable of guiding TE and TM optical signal modes;
means for converting from one of said signal modes to the other at a preselected wavelength by providing a first electric field in first spatially separated regions of said waveguide; and
means for shifting said preselected wavelength by providing a second electric field which is substantially confined to second regions of said waveguide which do not overlap said first regions.

4,533,208

EVANESCENT-WAVE STAR COUPLER ON A SUBSTRATE

David W. Stowe, Buffalo Grove, Ill., assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 21, 1983, Ser. No. 477,178
Int. Cl.³ G08C *19/00*
U.S. Cl. 350—96.16 **6 Claims**



1. A star coupler for coupling light from a single source to a plurality of output ports, comprising:
a first rigid substrate;
a first optical fiber having an outer cladding and an inner core, a portion of said cladding forming a molecular interface with said first rigid substrate to maintain said first fiber in a fixed spatial relationship with said first substrate;
a second rigid substrate;
a plurality of optical fibers, each of said plurality of optical fibers having an outer cladding, an inner core, and an output port, a portion of said cladding of each of said plurality of optical fibers forming a molecular interface with said second rigid substrate to maintain said plurality of optical fibers in a fixed spatial relationship with said second substrate, said first optical fiber and said plurality of optical fibers each having an exposed core zone; and

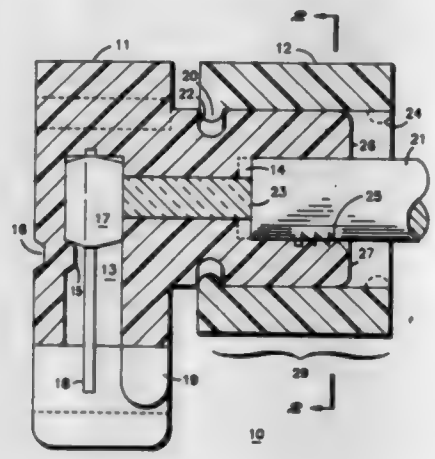
maintaining means for maintaining said first and second substrates in juxtaposition with one another to maintain said exposed core zone of said first optical fiber in nonparallel juxtaposition with said exposed core zone of said plurality of optical fibers, whereby light from said first fiber may be evanescently coupled into said plurality of optical fibers in said exposed core zone of said plurality of optical fibers, said plurality of optical fibers spaced a predetermined distance from another such that no evanescent coupling occurs directly between any of said plurality of optical fibers.

4,533,209

CONNECTORLESS FIBER OPTIC PACKAGE

Eugene E. Segerson, Tempe, and Floyd L. Thomas, Mesa, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 24, 1983, Ser. No. 544,679
Int. Cl.[3] G02B 7/26
U.S. Cl. 350—96.20 13 Claims



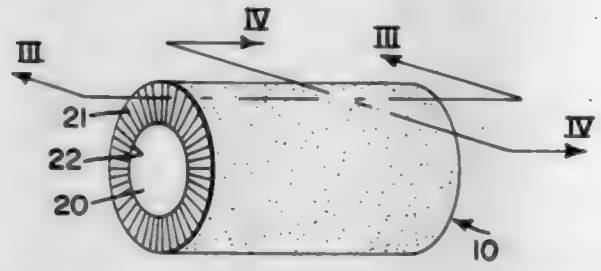
1. An article comprising:
a body of plastic material defining first and second chambers, the first of said chambers being adapted to receive an electro-optical device and the second of said chambers being adapted to receive the end of an optical fiber;
said first and second chambers being aligned so that the axis of the second chamber intersects the first chamber;
collar means surrounding at least a portion of said second chamber, said collar means being rotatable about said body and engaging said body for securing said optical fiber to said body.

4,533,210

OPTICAL FIBER LIGHT FILTER USING ELONGATED RADIATION ABSORBING ELEMENTS

Richard V. Jeskey, Southbridge, Mass., assignor to Incom, Inc., Southbridge, Mass.

Filed May 24, 1983, Ser. No. 497,665
Int. Cl.[3] G02B 5/172
U.S. Cl. 350—96.30 12 Claims



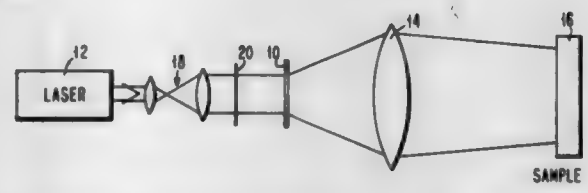
1. Off-axis radiation filter in the form of a faceplate for an optical device, comprising:
(a) a solid, cylindrical core which is transparent to at least a chosen band of radiation, the core having well-defined axis coincident with the central line-of-sight of the device,
(b) a layer of cladding having essentially the same index of refraction as the core, the cladding being attached to the core at an interface which is non-reflecting and non-refracting, said interface being parallel to the axis of the core, and
(c) a plurality of discrete, elongated, radiation absorbing elements embedded in the cladding, said elements extending from the core in a direction generally normal to the interface between the core and the cladding.

4,533,211

FREQUENCY MULTIPLEXED OPTICAL SPATIAL FILTER BASED UPON PHOTOCHEMICAL HOLE BURNING

Gary C. Bjorklund, Los Altos, and Glenn T. Sincerbox, San Jose, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,724
Int. Cl.[3] G01N 21/25; G06G 9/00
U.S. Cl. 350—162.12 9 Claims



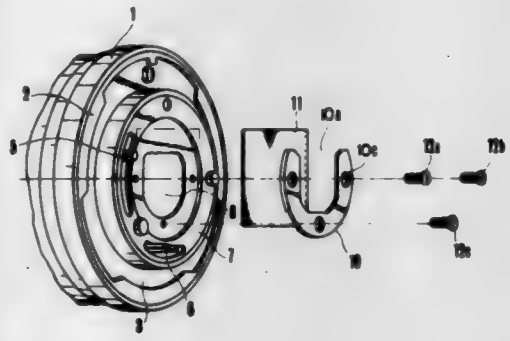
1. A frequency multiplexed optical spatial filter comprising:
a plurality of images stored in a photochemical hole burning storage medium, said images formed at different optical frequencies and co-existing in the same volume of said medium.

4,533,212

ACCESSORY HOLDING DEVICE FOR OPTICAL INSTRUMENT

Seiichi Shimizu, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 342,206, Jan. 25, 1982, abandoned. This application Jun. 22, 1984, Ser. No. 623,538
Claims priority, application Japan, Feb. 9, 1981, 56-16984[U]
Int. Cl.[3] G02B 7/00, 5/22
U.S. Cl. 350—318 4 Claims



1. An interchangeable lens assembly having a barrel adapted to have a filter element attached thereto comprising:
a lens barrel member having coupling means for engaging with complementary coupling means on a camera to mount said lens assembly on said camera by rotation of said lens barrel member relative to said camera;
a mount member rotatable relative to said lens barrel member and adapted to be held in nonrotative engagement with said camera when said coupling means are engaged with the complementary coupling means of said camera by rotating said lens barrel member to mount said lens assembly on said camera;
a sleeve portion on said mount member extending along the optical axis of said lens assembly in a direction toward said

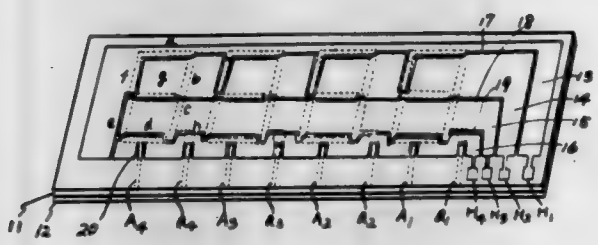
camera when said lens assembly is mounted thereon; and a filter holding member mounted on said sleeve portion having a cutout portion forming a gap together with said sleeve portion into which a filter may be inserted for fixture on said lens assembly.

4,533,213

LIQUID CRYSTAL DISPLAY

Isamu Washizuka, Soraku, and Yoshio Takeda, Nara, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 582,179, May 30, 1975, abandoned. This application Jan. 17, 1978, Ser. No. 870,210
Claims priority, application Japan, May 31, 1974, 49-62088
Int. Cl.³ G02F *1/133*
U.S. Cl. 350—332 **8 Claims**



1. A driving circuit for driving a liquid crystal display panel including two groups of segment electrodes provided at respective digit positions, four reflection electrodes continuously provided in common to the respective digit positions, thin gaps provided between adjacent reflection electrodes along the longitudinal edge of the liquid crystal display panel, and a liquid crystal composition filled between the segment electrodes and the reflection electrodes, comprising:

a. a register for storing numeral information to be displayed;

b. a binary counter for generating two timing signals;

c. a decoder for converting the numeral information into segment selection control signals to be applied to the segment electrodes in synchronization with the two timing signals; and

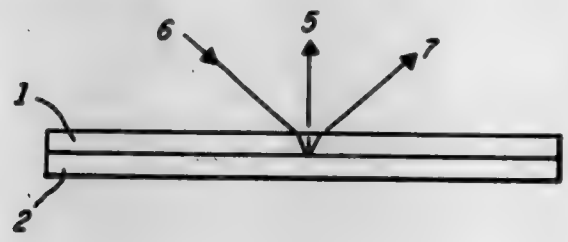
d. a quaternary counter for generating reflection electrode selection signals to be applied to the reflection electrodes in synchronization with the two timing signals.

4,533,214

BIAXIAL SUBSTRATES IN LIGHT MODULATING DEVICES

Perry A. Penz, Richardson, Tex.; Robert J. Petcavich, Carbondale, Pa.; William P. Stearns, Richardson, and Larry W. Sanders, Wylie, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 304,134, Sep. 21, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,574
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—334 **11 Claims**



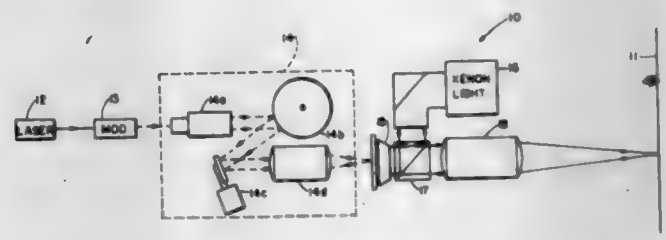
1. A light-modulating device structure comprising a light-modulating means having a substrate of anisotropic biaxial material, said biaxial material characterized by the angles between the normal to said substrate and each of its two optic axes being greater than the angles in said material between said normal and the light rays of interest being modulated by said means.

4,533,215

REAL-TIME ULTRA-HIGH RESOLUTION IMAGE PROJECTION DISPLAY USING LASER-ADDRESSED LIQUID CRYSTAL LIGHT VALVE

John A. Trias, La Mesa, and John Marez, San Diego, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 2, 1982, Ser. No. 446,292
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—347 E **1 Claim**



1. An apparatus for displaying real-time ultra-high resolution projected images on a distant screen at video scan rates comprising:

a laser directing a beam to a modulator for providing a modulated beam of coherent light;

a beam expander disposed to receive the modulated coherent light beam, an X-scanner and a Y-scanner receiving the expanded modulated coherent light beam and a field flattening lens orientated to receive the X and Y scanned expanded modulated coherent light beam disposed to receive the modulated coherent light beam for imparting a vertical and horizontal scanning thereof;

a nematic field effect liquid crystal light valve aligned to receive the scanned modulated coherent light beam for selectively changing its birefringence effect to modulate polarized light in direct response to the voltage pattern directly produced by photoactivation therein by the modulated coherent light beam;

a light source disposed for projecting a high intensity light beam in a light path to the nematic liquid crystal light valve; and

a polarized beam splitter interposed in the light path between the nematic liquid crystal light valve and the high intensity light beam source for polarizing and reflecting high intensity polarized light onto the nematic liquid crystal light valve and for directing reflected modulated polarized high intensity light modulated in accordance with the modulated coherent light beam onto the distant screen in the form of the real-time high-resolution images at video scan rates.

4,533,216

LIGHT VALVE PROJECTION SYSTEM WITH IMPROVED WRITING CONTROL AND REDUCED FLUID DEGRADATION

David A. Orser, North Syracuse, and Jeffrey A. Bulow, Syracuse, both of N.Y., assignors to General Electric Company, Portsmouth, Va.

Filed Jun. 13, 1983, Ser. No. 503,441
Int. Cl.³ G02B *5/20*; H04N *5/74*
U.S. Cl. 350—361 **8 Claims**

1. An improved light valve comprising:

a light modulating fluid;

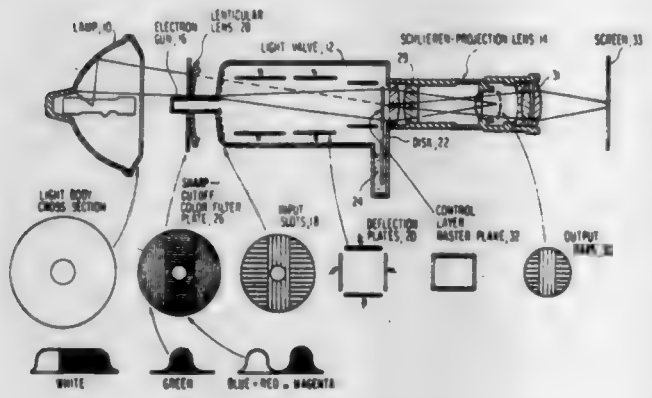
a light source positioned to project light through said light modulating fluid;

electron beam means for scanning an electron beam to form a raster, wherein there is formed within said raster at least one diffraction grating in said light modulating fluid to

diffract incident light from said light source for projection onto a viewing surface,

said electron beam means including vertical and horizontal deflection means for controlling the position of said electron beam and means for depositing charge to control depth and spacing of grooves in said diffraction grating thereby controlling the diffraction of said incident light, and

a sharp-cutoff filter positioned between said light source and said light modulating fluid, said sharp-cutoff filter being an optical filer having characteristics where below a specified wavelength the transmissivity is near zero percent



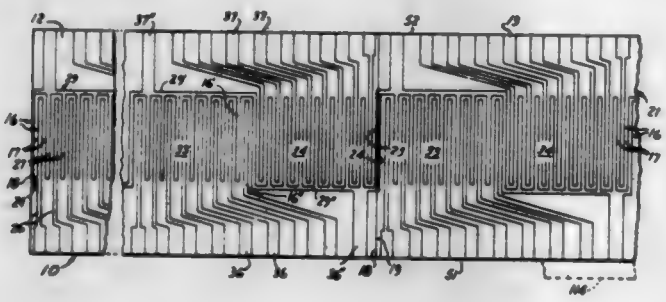
over a desirable range of the electromagnetic spectrum, including at least that part of the ultraviolet spectrum responsible for deleterious effects on the light modulating fluid, and near 100% over a range of the electromagnetic spectrum which is used for information imaging with the transition from near zero percent to near 100% transmission being defined by a steep positive going slope, said sharp-cutoff filter allowing the operation of the light valve at high brightness levels while reducing attendant degradation effects of said light modulating fluid and maintaining desired writing parameters of the light valve by decreasing the temperature of said light modulating fluid for said high brightness levels.

4,533,217

LIGHT GATE ASSEMBLIES, ELEMENTS AND MANUFACTURING METHODS

Norbert E. Samek, Sierra Madre, Calif., assignor to Transamerica Delaval Inc., Lawrenceville, N.J.

Division of Ser. No. 34,894, Apr. 30, 1979, Pat. No. 4,478,495.
This application Aug. 9, 1982, Ser. No. 423,496
Int. Cl.³ G02F *1/03*
U.S. Cl. 350—392 **31 Claims**



1. In a method of composing an elongate light gate structure of a plurality of individual chips of electrooptically active light gate material displaying field induced birefringence, the improvement comprising in combination the steps of:

providing said chips in rectangular configuration having parallel first and second sides and parallel edges extending between said sides;

providing on each chip a plurality of alternating electrodes and elongate light gate regions extending parallel to said first and second sides of the rectangular configuration;

subdividing the spaced parallel electrodes on each chip into complete first and second electrode arrays alternating with each other along an elongate region of said chip;

allocating to each of said electrode arrays a plurality of said electrodes;

providing on one side of said elongate region of said chip first individual terminals for the electrodes in each first electrode array;

spacing any first individual terminal of any one of the electrodes in any of said first electrode arrays from the first individual terminal of any other electrode in the particular first electrode array by a center-to-center distance greater than the center-to-center spacing between said one electrode and said other electrode, while arranging said first individual terminals side by side along one of said parallel edges to provide each first individual terminal with an individual connecting lead path being free of any other terminal and intersecting a plane through said one of said parallel edges for connection of a lead to the particular first terminal;

providing on the other side of said elongate region of said chip second individual terminals for the electrodes in each second electrode array;

spacing any second individual terminal of any one of the electrodes in any one of said second electrode arrays from the second individual terminal of any other electrode in the particular second electrode array by a center-to-center distance greater than the center-to-center spacing between the latter one electrode and the latter other electrode, while arranging said second individual terminals side by side along the other of said parallel edges to provide each second individual terminal with an individual connecting lead path being free of any other terminal and intersecting a plane through the other of said parallel edges for connection of a lead to the particular second individual terminal;

providing all individual first terminals and all individual second terminals for all of said complete first and second electrode arrays of each chip on that same chip;

arranging the chips side by side into an elongate light gate structure, with any two adjacent chips having said first side of one of these two chips placed in abutment with a said second side of the other of these two chips;

providing a first one of said electrodes in each chip along and coincident with said first side of the particular chip, and a second one of said electrodes in the particular chip along and coincident with said second side of the particular chip; and

arranging said chips side by side into an elongate light gate structure, with any two adjacent chips having a said first electrode of one of these two chips placed in abutment with a said second electrode of the other of these two chips.

4,533,218

ZOOM LENS OPERATING MECHANISMS

Kunio Nakazato, Machida, and Kazuya Ozawa, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 28, 1983, Ser. No. 518,135
Claims priority, application Japan, Jul. 30, 1982, 57-133209
Int. Cl.³ G02B *7/04*
U.S. Cl. 350—430 **8 Claims**

1. A zoom lens operating mechanism comprising:

a stationary cylinder;

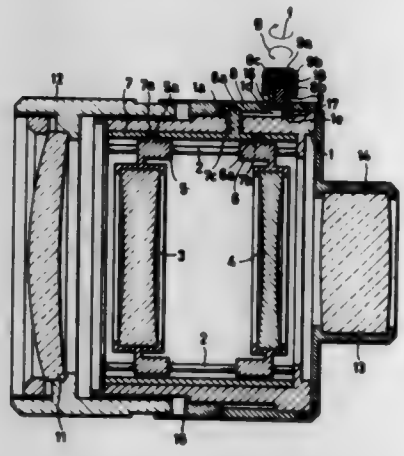
an operating ring mounted for rotation in respect to said stationary cylinder;

a cam cylinder mounted for rotation in respect to said stationary cylinder and coupled to said operating ring for rotation with said operating ring;

at least one lens group coupled to said cam cylinder for motion within a zoom range as said operating ring is rotated within a first angular range and for motion within a close-up range as said operating ring is rotated within a second angular range;

extended guide means formed in said stationary cylinder and having first and second contiguous lengths corresponding to said first and second angular ranges, respectively, and a stop portion between said contiguous lengths;

an operating manular member mounted on said operating ring for motion with the latter along said guide means and for rotation relative to said operating ring between first and second positions; and



locking means movable along said guide means with said operating member and coupled to the latter to move between a locking position engageable with said stop portion and a released position free of said stop portion in response to rotation of said operating member to said first and second positions, respectively,

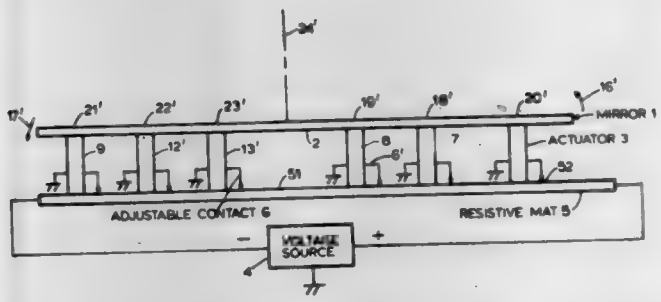
whereby said operating member may be moved from said first length to said second length only when said operating member is rotated into said second position.

4,533,219

TIP-TILT MIRROR ACTUATION SYSTEM EMPLOYING A SINGLE CONTROL VOLTAGE

Ralph E. Aldrich, Acton, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Mar. 14, 1984, Ser. No. 589,378
Int. Cl.³ G02B *7/18*
U.S. Cl. 350—487 **14 Claims**



1. In a tip-tilt control system for selectively controlling the orientation of an optical element having a central portion:

a plurality of electromechanical actuators, each having an input circuit, said actuators being coupled to said optical element for displacing a portion thereof by amounts proportional to voltages applied to the input circuits of said actuators;

a two-dimensional impedance network;

a control voltage source for producing voltage gradients across said network; and

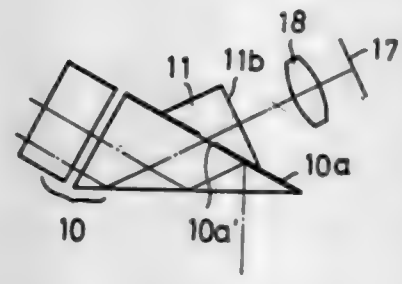
means for adjustably coupling the input circuit of each actuator to various points upon said impedance network until particular points are found for producing displacement of the optical element for a given voltage gradient applied across said network without inducing bending stresses in said optical element.

4,533,220

INDICATING DEVICE FOR INDICATING DATA WITHIN THE VISUAL FIELD OF MICROSCOPE

Hiroyuki Kurita; Yuko Kobayashi, both of Hachiouji; Shinichi Dosaka, Fujino; Juro Kikuchi, Hachiouji; Hiroshi Takase, Hachiouji, and Kenichi Harada, Hachiouji, all of Japan, assignors to Olympus Optical Co., Ltd., Tokyo, Japan

PCT No. PCT/JP82/00412, § 371 Date Apr. 11, 1983, § 102(e) Date Apr. 11, 1983
PCT Filed Oct. 15, 1982, Ser. No. 491,326
Claims priority, application Japan, Oct. 15, 1981, 56-164432
Int. Cl.³ G02B *27/34, 21/00*
U.S. Cl. 350—507 **1 Claim**



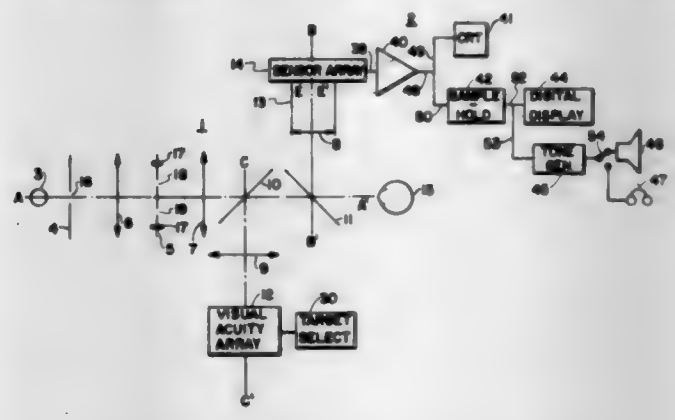
1. An indicating device for indicating data in a visual field of a microscope comprising: an objective lens, and eyepiece, a light reflecting means arranged obliquely to an optical axis of said objective lens and having a transparent portion at a site located outside of said optical axis; data display means arranged above said light reflecting means; a light leading optical system for leading thereinto an information light from said display means through said transparent portion; and a reflecting surface reflecting a light reflected by said reflecting means and a light led in through said transparent portion to direct them to said eyepiece.

4,533,221

METHODS AND APPARATUS FOR ACCOMMODATION TRAINING

Joseph N. Trachtman, 57 Hicks St., Brooklyn, N.Y. 11201

Filed Jan. 25, 1983, Ser. No. 460,850
Int. Cl.³ A61B *3/00*
U.S. Cl. 351—203 **64 Claims**



1. Accommodation training apparatus comprising:

optometer means for imaging radiation onto the plane of the pupil of an eye to form a retinal image and directly measuring the refraction of said eye as a function of said retinal image, said optometer means providing outputs representing said refraction of said eye on a periodic basis and at a rate corresponding to a plurality of measurements each second;

audio means responsive to each output of said optometer means for producing biofeedback tone information having a frequency representative of the refraction of an eye

being measured to provide an indication of the current state of accommodation during training; and

side channel means for selectively placing blur cue information into said optometer means for projection by said optometer means onto the retina of said eye during training to permit accommodation training to selectively occur in the presence of a focusing target.

4,533,222

EYE EXAMINING INSTRUMENT

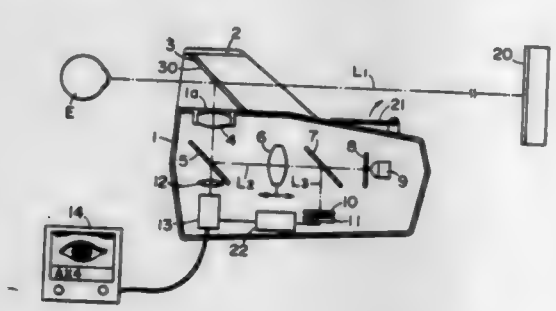
Yasuyuki Ishikawa, Kawaguchi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 521,015, Aug. 8, 1983, abandoned, which is a continuation of Ser. No. 197,593, Oct. 16, 1980, abandoned. This application Jul. 20, 1984, Ser. No. 632,680

Claims priority, application Japan, Oct. 25, 1979, 54-137944

Int. Cl.³ A61B *3/14, 3/10*

U.S. Cl. 351—206 **13 Claims**



1. An eye examining instrument comprising:

examining means, for measuring a refraction error of each eye of a person to be examined, said examining means projecting an invisible examining light to be directed to the examined eye and receiving the invisible examining light reflected from the examined eye;

a casing containing said examining means formed with an opening that opens upwardly through which the invisible examining light is projected to be directed to the examined eye and through which the invisible examining light is received from the examined eye;

beam splitting means disposed on the outside of said casing for directing said invisible examining light to the examined eye and permitting the person being examined to view a fixation object spaced from said casing, said beam splitting means including a mirror that transmits visible light and reflects the invisible examining light, said mirror having a sufficient width to allow both eyes of the person to be examined to view simultaneously the fixation object while either of the person's eyes can be examined by moving said instrument laterally with respect to the eyes; and

shielding means for covering said beam splitting means so as to shield it from undesirable light but for allowing the eye to view the fixation object through said beam splitting means, said shielding means having a top surface and two side surfaces, said side surfaces transmitting visible light, and said top surface being opaque.

4,533,223

PROCESS OF FORMATION OF AN IMAGE OF THE EYE FREE FROM REFLECTIONS FOR ITS RECORDING BY PICTURE TAKING AND/OR ITS OBSERVATION AND APPARATUS FOR PUTTING INTO ACTION OF THE PROCESS

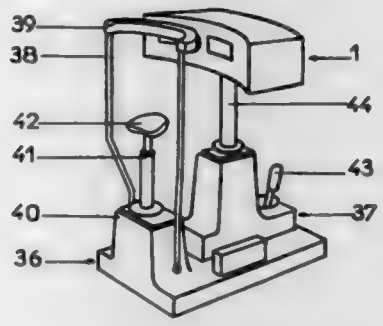
Jacques Duparchy, 10 Rue Alquier Bouffard, 8100 Castres, France

Filed Apr. 30, 1982, Ser. No. 373,631

Claims priority, application European Pat. Off., May 5, 1981, 81 400701.9

Int. Cl.³ A61B *3/14*

U.S. Cl. 351—206 **21 Claims**



1. A method of forming an image of an eye, comprising the steps of:

(a) partially coating the eye with a fluorescent substance;

(b) exposing the eye coated with fluorescent substance to radiation from a radiation source so as to excite the fluorescent substance to emit radiation, said radiation from said radiation source being reflected on the eye, the wavelengths of the radiation from the radiation source and reflected off the eye being less than or equal to the smallest wavelength of the radiation emitted by the fluorescent substance; and

(c) filtering radiation emitted by the fluorescent substance and radiation from the radiation source and reflected off the eye to select radiation emitted by the fluorescent substance, so as to increase the contrast between the portion of the eye coated with the fluorescent substance and the portion of the eye not coated with the fluorescent substance.

4,533,224

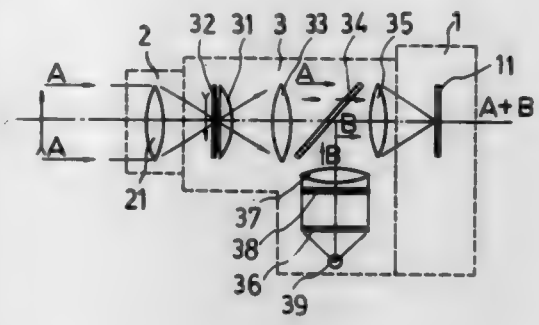
MULTI-IMAGE CAMERA

Jan-Chou Ou, No. 7-2, Lane 60, Ning An St., Taipei, Taiwan

Filed Dec. 10, 1982, Ser. No. 448,494

Int. Cl.³ G03B *29/00*

U.S. Cl. 354—77 **3 Claims**



1. A multi-image camera comprising a camera body, a camera lens set, and an attachable image transfer cartridge being attached between said camera body and said camera lens set, said image transfer cartridge comprising a field lens, a mask, an image transfer lens, a partial reflecting mirror, a slide transparency, an image converging lens, and a slide projecting lens, whereby an external picture image passes through said camera lens set, mask, field lens and projects onto said partial reflecting mirror, and upon said partial reflecting mirror said slide

transparency also has its subject image projected thereon, both said external picture image and said slide transparency image merge and form a combined image after leaving said partial reflecting mirror and projecting onto said image converging lens which focuses and projects said combined image on a negative film contained in said camera body, wherein said image transfer cartridge includes said mask positioned on the focal plane of said camera lens set, said field lens positioned behind said mask, said image transfer lens to convert the image light rays from the field lens into a parallel light beam, said partial reflecting mirror to receive and transmit the light beam coming from the image transfer lens and also to receive said light beam from said slide projecting lens, said slide projecting lens for projecting the slide image light beam on the backside of said partial reflecting mirror, said slide installed in front of said projecting lens, and a filter installed in front of said projecting lens, a lamp to illuminate the slide, and said convergent lens installed behind the partial reflecting mirror for superimposing the outside scenery image light rays entering through said camera lens set, the mask, the field lens, the transferring lens, the partial reflecting mirror and the subject image light rays of said slide coming through said slide projecting lens, the back of the partial reflecting mirror so as to form a combined image on the film, which is on the focal plane of said convergent lens.

4,533,225

SENSITIVE MATERIAL PROCESSING APPARATUS

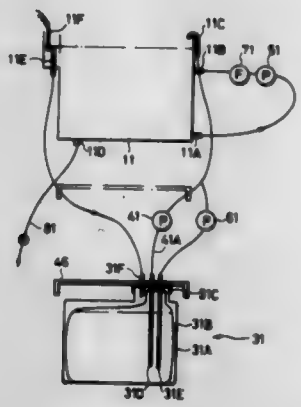
Koji Shiga, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 25, 1984, Ser. No. 573,756

Claims priority, application Japan, Jan. 25, 1983, 58-8752[U]; Jan. 25, 1983, 58-8756[U]; Jan. 25, 1983, 58-10238

Int. Cl.³ G03B *3/06*

U.S. Cl. 354—322 **6 Claims**



1. An apparatus for a processing sensitive material by conveying said sensitive material through a plurality of serially arranged processing sections including a developing section, a development-stopping section, a fixing section and a washing section, comprising; a plurality of removable cartridges for containing processing liquids and washing-water for use in respective ones of said sections; means for conveying said processing liquids and said washing-water from said cartridges to said respective ones of said sections; means for replacing any one of said cartridges; and movable platform means for separating said conveying means from respective ones said cartridges.

4,533,226

STILL OR MOTION PICTURE CAMERA

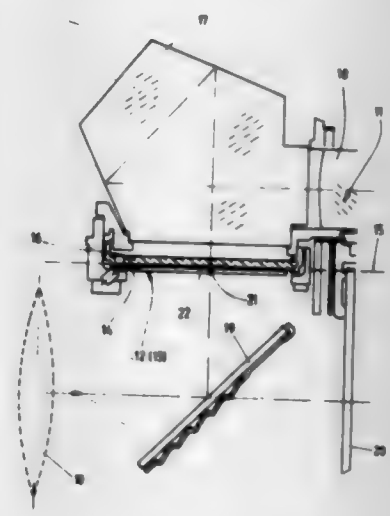
Giovanni Odone, CH-Saint-Sulpice, Switzerland, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,635

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211659; Jul. 13, 1982, 3226118; Aug. 30, 1982, 3232192

Int. Cl.³ G03B *7/099*

U.S. Cl. 354—403 **20 Claims**



1. A reflex camera having an objective adapted for focussing incoming light rays on a film plane, a viewfinder provided with means for deflecting the light rays from the objective on a viewfinder plane and an active rangefinder provided with an infrared transmitter for directing a beam of infrared light on a selected object, an infrared receiver comprising an infrared image plate extending along said viewfinder plane in the path of light rays reflected from said deflecting means, an infrared sensor arranged at a rim portion of said infrared image plate and an infrared light reflecting surface embedded in a portion of said infrared image plate and being inclined thereto at an angle for directing incoming infrared light rays towards said sensor.

4,533,227

DISTANCE MEASURING CIRCUIT

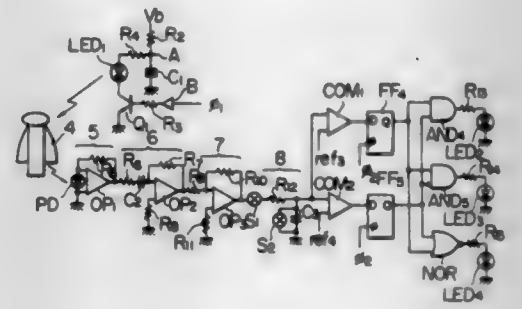
Akira Takahashi, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Continuation of Ser. No. 299,291, Sep. 3, 1981, Pat. No. 4,479,706. This application Apr. 13, 1984, Ser. No. 599,772

Claims priority, application Japan, Sep. 9, 1980, 55-125168; Sep. 9, 1980, 55-125169; Sep. 9, 1980, 55-125170; Sep. 30, 1980, 55-136366; Sep. 30, 1980, 55-136367

Int. Cl.³ G03B *3/00*

U.S. Cl. 354—403 **1 Claim**



1. A distance measuring circuit comprising:

a light projecting means for projecting a light beam toward a target;

a light receiver means for receiving reflected light from said target and outputting a signal; and

means for determining the level of said signal from said light receiver means including a plurality of amplifiers with each of said amplifiers having a different gain and each of

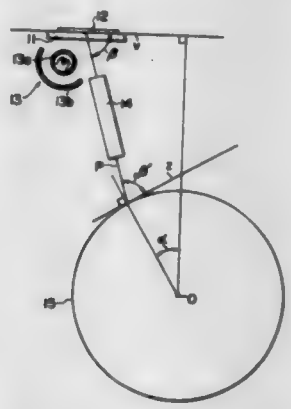
said amplifiers outputting an amplified signal and wherein said determining means further includes a plurality of comparison means for comparing the respective said amplified output signals from said plurality of amplifiers with respective associated reference voltages, wherein the gain of each of said amplifiers is determined in accordance with each of said respective reference voltages whereby the operation of said light projecting means, said light receiver means and said determining means is controlled in a predetermined sequence by control means.

4,533,228

OPTICAL IMAGE PROJECTOR FOR PROJECTING AN ERECT POSITIVE IMAGE OF UNITY MAGNIFICATION AND FOR MINIMIZING DEGRADATION IN RESOLUTION

Masaji Nishikawa, Hachioji, Japan, assignor to Olympus Optical Company Ltd., Tokyo, Japan

Filed May 16, 1983, Ser. No. 494,643
Claims priority, application Japan, Jun. 15, 1982, 57-102404
Int. Cl.³ G03B *27/70, 27/00*
U.S. Cl. 355—1 **8 Claims**



1. An optical image projector including an array of optical focusing elements which projects an erect positive image of unity magnification of an object onto an image receiving surface which is not parallel to a first plane in which the object is obtained;

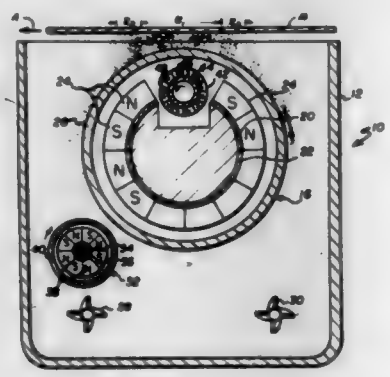
characterized in that the array, the first plane of the object and an image receiving surface are disposed in a manner such that an angle formed between the optical axis of the array and the plane of the object is substantially equal to an angle formed between the optical axis and the image receiving surface, and is located on the same side of the optical axis as the latter angle.

4,533,229

MAGNETIC BRUSH DEVELOPER APPARATUS

Wei C. Lu, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Mar. 14, 1983, Ser. No. 474,901
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **4 Claims**



1. In magnetic brush developer apparatus for developing an electrostatic charge pattern on a member by contacting the member with particulate magnetic developer material, said apparatus including applicator means for transporting such developer material in a non-agitated state into contact with such charge pattern, the improvement comprising:

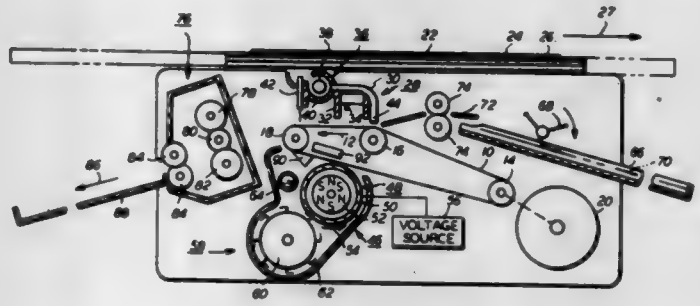
magnetic means, operatively associated with said applicator means, for agitating a portion of developer material in contact with such charge pattern to form in such material an agitated zone bounded by the non-agitated material to establish a sealing zone about the agitated zone.

4,533,230

PIN CHARGING DEVICE FOR USE IN XEROGRAPHY

Gerald M. Fletcher, Pittsford; Robert M. Jacobs, Rochester, and Kenneth W. Pietrowski, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1983, Ser. No. 461,074
Int. Cl.³ G03G *15/02*
U.S. Cl. 355—3 CH **3 Claims**



1. Charging apparatus for applying a uniform negative electrostatic charge to a charge retentive surface, said apparatus comprising:

an array of pin electrodes supported adjacent said surface in a non-contact relationship;

the end of each pin nearest said surface having radius small enough to provide uniform discharge with a predetermined current supplied thereto, said radius being less than 0.025 millimeter;

means for effecting relative movement between said pin electrodes and said charge retentive surface; and

a power supply operatively coupled to said pin electrodes for supplying said predetermined current to each pin electrode, the magnitude of said current being sufficient to insure substantially uniform discharge therefrom over the life of said pin electrodes, said predetermined current to each pin electrode being at least four microamperes.

4,533,231

FIXING DEVICE

Michio Shigenobu, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 19, 1984, Ser. No. 652,415
Claims priority, application Japan, Aug. 4, 1981, 56-122613; Dec. 4, 1981, 56-181274[U]; Feb. 5, 1982, 57-17206
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 FU **31 Claims**

1. A fixing device, comprising:

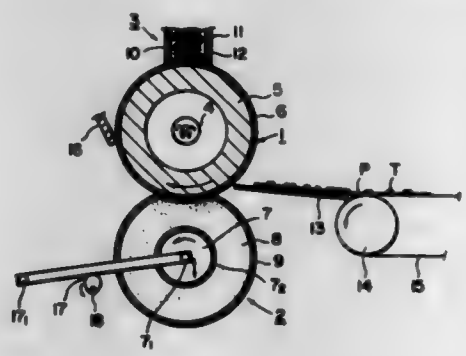
first and second rotating members arranged to form a nip therebetween to grip and transport therebetween an image bearing member having an unfixed image on one surface thereof and thereby to fix the image on the image bearing member;

means for urging one of said rotating members toward the other;

means for heating at least the first rotating member, said heating means being provided inside of said at least the first rotating member; and

said second rotating member having on its surface a first layer formed of heat-resistant resin and a second layer provided

inside of said first layer and formed silicone rubber sponge having a number of gas cells, said second rotating member



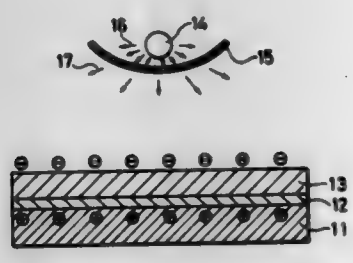
contacting the surface of said image bearing member opposite the surface bearing said unfixed image to urge said unfixed image to the first rotating member.

4,533,232

ELECTROPHOTOGRAPHIC PROCESS

Naoto Fujimura, Yokohama; Akihiro Sonobe, Tokyo; Toshiyuki Yoshihara, Mitaka; Norie Takebayashi, Tokyo; Takashi Tanaka, Kawasaki, and Masaki Kuribayashi, Higashi Kurume, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,178
Claims priority, application Japan, Mar. 18, 1982, 57-43836
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 R **47 Claims**



1. An electrophotographic copying machine comprising:

(1) an electrophotographic photosensitive member having a conductive substrate and a photosensitive layer including a charge generation layer and a charge transport layer;

(2) means for charging said electrophotographic photosensitive member;

(3) means for forming a latent image on said electrophotographic photosensitive member by exposing said electrophotographic photosensitive member to light, said latent image forming means including a light source and at least one of an ultraviolet-absorbing filter and a yellow filter disposed in the optical path between said electrophotographic photosensitive member and said light source; and

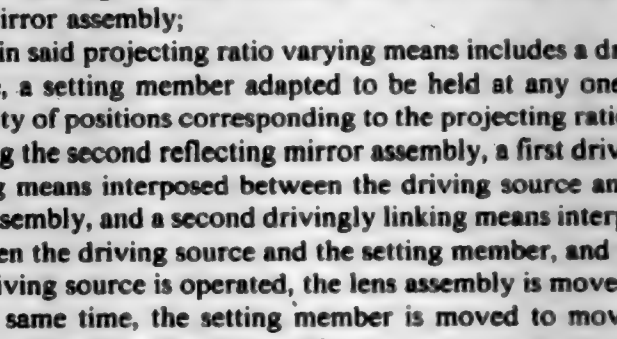
(4) means for developing the latent image formed on said electrophotographic photosensitive member with a developer.

4,533,233

ELECTROSTATIC COPYING APPARATUS

Hiroshi Kimura, Habikino; Masahiko Hisajima; Kiyoshi Shibata, both of Osaka; Yoichiro Irie, Suita; Kiyoshi Morimoto, Osaka; Takashi Nagashima, Sakai; Yasuhiko Yoshikawa, Ikoma; Kiyonori Yamamoto, Neyagawa; Masahiro Watashi, Ikoma; Shinsuke Yoshinaga, Sakai, and Toshihiko Yamamoto, Takaishi, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Apr. 14, 1983, Ser. No. 485,082
Claims priority, application Japan, Apr. 20, 1982, 57-64664
Int. Cl.³ G03G *15/28*
U.S. Cl. 355—8 **31 Claims**



1. A variable magnification electrostatic copying apparatus comprising

a stationary transparent plate on which to place a document to be copied,

an optical system for projecting the image of the document onto an electrostatographic photosensitive member at a desired projecting ratio selected from a plurality of projecting ratios in an exposure zone located along the moving path of the photosensitive member, said optical system including a first reflecting mirror assembly adapted for reciprocation along the transparent plate, a second reflecting mirror assembly adapted to be reciprocated in synchronism with the reciprocation of the first reflecting mirror assembly substantially parallel to the reciprocating direction of the first reflecting mirror assembly and at a speed one-half of the moving speed of the first reflecting mirror assembly, and a lens assembly adapted to be held at any one of a plurality of positions corresponding to the plurality of projecting ratios, the changing of the projecting ratio being effected by changing the position of the lens assembly and also changing the position of the second reflecting mirror assembly relative to the first reflecting mirror assembly in the reciprocating direction of the second reflecting mirror assembly,

a driving means for reciprocating the first and second reflecting mirror assemblies, and

means for varying the projecting ratio of the optical system by moving the lens assembly and the second reflecting mirror assembly;

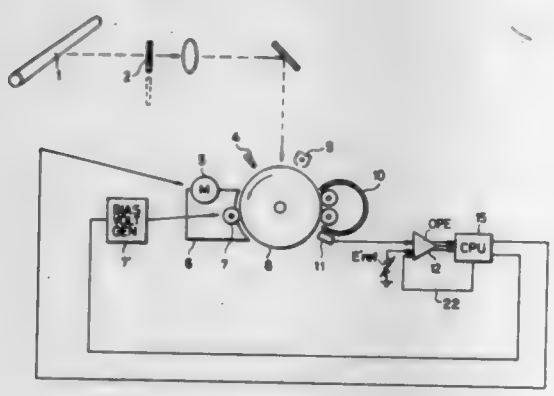
wherein said projecting ratio varying means includes a driving source, a setting member adapted to be held at any one of a plurality of positions corresponding to the projecting ratios for moving the second reflecting mirror assembly, a first drivingly linking means interposed between the driving source and the lens assembly, and a second drivingly linking means interposed between the driving source and the setting member, and when the driving source is operated, the lens assembly is moved and at the same time, the setting member is moved to move the second reflecting mirror assembly.

4,533,234

AUTOMATIC DENSITY CONTROL METHOD FOR A PHOTOCOPYING MACHINE

Yuji Watai; Hirokazu Yasui; Yoshiyuki Hirayama, and Akira Matsuura, all of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 3, 1982, Ser. No. 404,739
Claims priority, application Japan, Aug. 3, 1981, 56-122319
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—14 D **8 Claims**



2. In a photocopying device in which a light source transmit light through an optical path to the surface of a photosensitive drum, said device comprising means for supplying toner at a certain density to the surface of said drum, means for developing an image upon said surface of said drum, and means for cleaning said drum, a density controlling system comprising:

means for generating a signal indicative of an optimal value of said density of said toner;

means for sensing the amount of toner supplied to said surface of said drum by said toner supplying means and producing an output signal indicative of said sensed density;

means for comparing said output signal indicative of said sensed density with said signal indicative of said optimal density and producing a control signal;

means for sampling and stabilizing said control signal; and

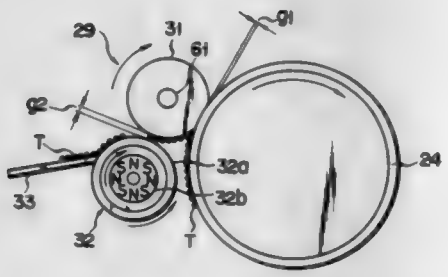
means for controlling both of said developing means and said toner supply means as a function of said stabilized control signal.

4,533,235

CLEANING DEVICE FOR USE IN AN IMAGE FORMING APPARATUS

Kohachi Uchida, Sagamihara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Dec. 23, 1982, Ser. No. 452,867
Claims priority, application Japan, Feb. 3, 1982, 57-14850
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **9 Claims**



1. A cleaning device for cleaning an image forming body by removing residual magnetic developer left on a surface of said image forming body which supports a visible image formed by the magnetic developer, after a transfer operation is finished, said cleaning device comprising:

rotatable cleaning roller means having a portion in contact with said image forming body, said cleaning roller means including a porous elastic member having a number of pores therein for retaining the residual magnetic developer left on the surface of said image forming body to remove the residual magnetic developer from the surface thereof, thereby cleaning said image forming body; and

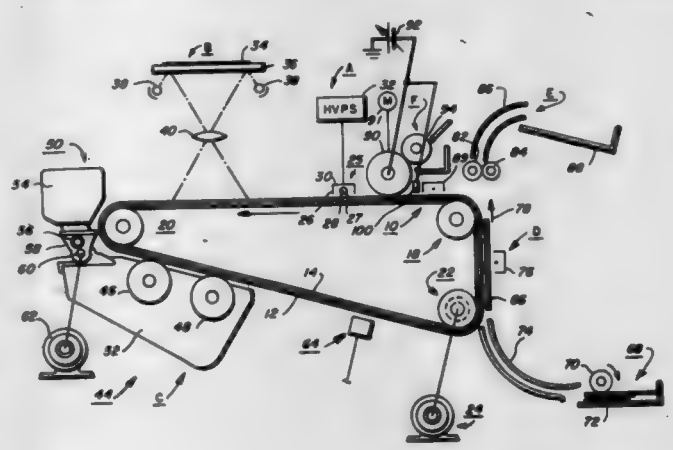
rotatable recovery roller means disposed in opposing relationship to said cleaning roller means to establish with said cleaning roller means a transfer gap to predetermined dimension, said recovery roller means for recovering the magnetic developer contained in said pores of said cleaning roller means, said recovery roller means including a nonmagnetic sleeve and magnetic field generating means disposed in said sleeve for generating a magnetic field to cause the magnetic developer retained by said cleaning roller means to be transferred to said sleeve across said transfer gap to thereby recover the magnetic developer from said cleaning roller.

4,533,236

CHARGE PARTICLE REMOVAL DEVICE

Paul A. Garsin, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 1, 1983, Ser. No. 556,801
Int. Cl.³ G03G *21/00*
U.S. Cl. 355—15 **10 Claims**



1. Apparatus for removing charged particles from a charge-retentive surface, said apparatus comprising:

a magnetic brush cleaner structure, including magnetically attractable elements;

means for applying a bias voltage to said brush cleaner structure;

means for moving said brush relative to said charge-retentive surface to thereby remove charged particles therefrom; and

means for maintaining constant the difference between said bias voltage and the potential on said charge-retentive surface.

4,533,237

METHOD AND DEVICE FOR REGISTERING THE USE OF COPYING MACHINES

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen; Hans-George Winderlich, Niedere Str. 36, D-7730 Villingen; Siegfried Bauer, Kussenhofstr. 16, D-7743 Furtwangen, and Zeljko H. Adamovic, Hochstr. 6, D-7730 Villingen/Schwenningen, all of Fed. Rep. of Germany

Continuation of Ser. No. 553,421, Nov. 18, 1983, abandoned, which is a continuation of Ser. No. 302,096, Sep. 14, 1981, abandoned. This application Jul. 9, 1984, Ser. No. 628,802
Claims priority, application Fed. Rep. of Germany, Nov. 7, 1980, 3042132; Mar. 23, 1981, 3111354; May 18, 1981, 3119756; Jun. 24, 1981, 3124836
Int. Cl.³ G03B *27/52*
U.S. Cl. 355—40 **7 Claims**

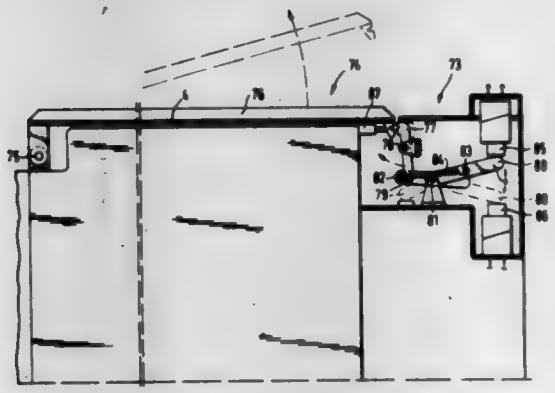
1. A copier system comprising:

(a) means for detecting user identity information,

(b) means for converting said detected user identity information into a form for recording such information on a record of a document,

(c) means for receiving a document to be copied, said means including a support and a cover,

(d) means for locking said cover to hold the document to be copied until such time as the cover is unlocked,



(e) means for recording said document with said user identity information on said record,

(f) means for storing said record of said document containing said user identity information in said copier system, and

(g) means for unlocking said means for locking to release the cover after determining that a record of said document containing said user identity information has been stored in said copier system.

4,533,238

EXPOSURE DETECTING DEVICE FOR COPYING MACHINE

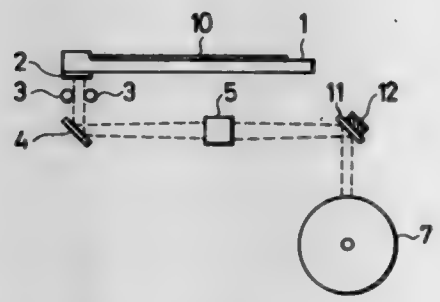
Seikichi Miyazaki, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 516,493

Claims priority, application Japan, Jul. 23, 1982, 57-128511

Int. Cl.³ G03B *27/74*

U.S. Cl. 355—68 **8 Claims**



1. A copying machine comprising: a light source for illuminating an original; an optical system for providing an image of the illuminated original on a photosensitive body, said optical system comprises:

a multilayer film interference filter which transmits light rays in one spectral range in which said photosensitive body is not sensitive and reflects light rays in all other ranges to said photosensitive body without attenuation;

a photosensor arranged on a rear surface of said multilayer film interference filter responsive to light rays in said one spectral range; and

control circuit means for varying an intensity of said light source in accordance with an output of said photosensor.

4,533,239

POSITIONING DEVICE FOR AN EXPOSING AND DEVELOPING APPARATUS

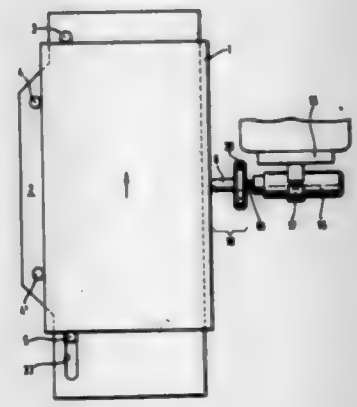
Günter Back, Diedenbergen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,466

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220861

Int. Cl.³ G03B *27/58*

U.S. Cl. 355—72 **19 Claims**



1. A positioning device for an exposing and developing apparatus for printing forms comprising:

an exposure table having an exposure position with a forward side, a rear side, and two lateral sides; and

said positioning device being capable of positioning individual printing forms on said exposure table, and comprising:

a mechanism for positioning individual printing forms in a transverse direction comprising: stop pins mounted on said exposure table on one side of said exposure position; a pressure member mounted opposite said stop members; and means for moving said pressure member laterally of said exposure position toward said stop pins for forcing a printing form laterally against said stop pins; and

a mechanism for longitudinally positioning individual printing forms comprising: a stop mounted on said exposure table on said exposure position front side; and a slide mounted for movement forward toward said exposure position for forcing a printing form toward said forward side stop;

wherein said transverse positioning mechanism and said longitudinal positioning mechanism are adapted to be actuated simultaneously.

4,533,240

FILM TO PANEL REGISTRATION DEVICE

Carl R. Jasperson, Anaheim, Calif., assignor to Lowell A. Rodgers and Vernon C. Rodgers, both of Anaheim, Calif.

Filed Jul. 30, 1982, Ser. No. 404,517

Int. Cl.³ G03B *27/28*

U.S. Cl. 355—125 **9 Claims**

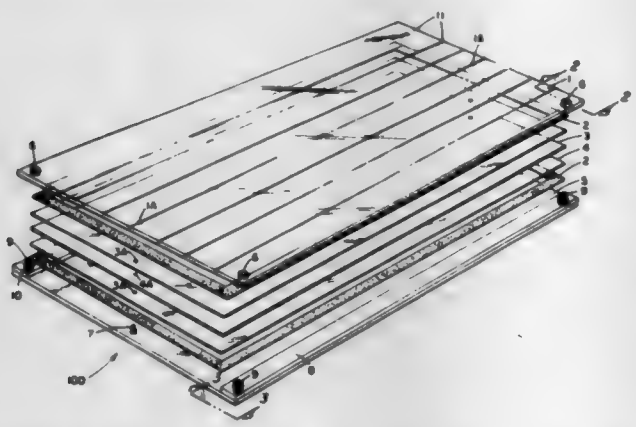
1. A registration device comprising,

a pair of planar members having relatively large surface area,

said planar members fabricated of a material which is selected to be substantially transparent to a specified radiation,

connector means mounted at two or more corners of said

pair of planar members to permit said planar members be selectively connected and disconnected, and



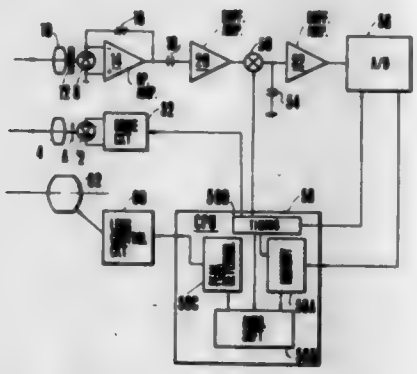
registration means mounted at at least one of said planar members for establishing registration of said pair of planar members and materials held therebetween.

4,533,241

DISTANCE MEASURING DEVICE AND AUTOMATIC FOCUSING SYSTEM USING SAME

Makoto Masunaga, and Hideo Taka, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 13, 1982, Ser. No. 397,880
Claims priority, application Japan, Jul. 22, 1981, 56-114851
Int. Cl.³ G01C *3/10*; G03B *7/08*
U.S. Cl. 356—1 **6 Claims**



1. A device comprising:

scanning means for scanning the area of an object by projecting a beam of modulated radiation and directionally sensing the reflections of the projected beam along a path while moving the beam and the path relative to each other;

conver ng means for converting the radiation sensed by said scanning means into digital data in synchronism with the modulation of the radiation being projected by said scanning means; and

means for processing the digital data formed by said converting means for every predetermined plurality of cycles of the digital conversion of said converting means;

said processing means including:

means for detecting the difference between the digital data formed by said converting means in each of the cycles, said difference detecting means producing difference data indicative of said difference; and

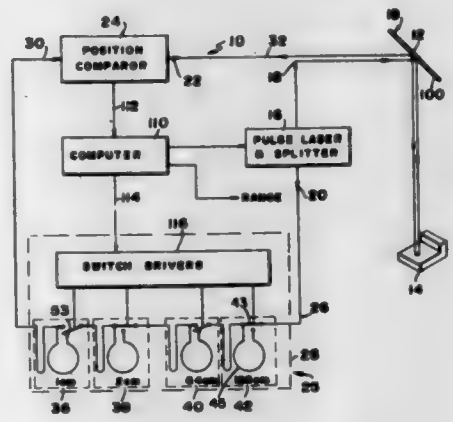
means for averaging the difference data produced by said difference detecting means every predetermined plurality of cycles of the converting means, said averaging means being arranged for producing averaged difference data which varies in accordance with the change in the energy intensity of the projected radiation on said sensing means.

4,533,242

RANGING SYSTEM WHICH COMPARES AN OBJECT-REFLECTED COMPONENT OF A LIGHT BEAM TO A REFERENCE COMPONENT OF THE LIGHT BEAM

John M. McLauchlan, Pasadena; John AuYeung, Alhambra; Eldred F. Tubbs, Claremont; Willis C. Goss, and Demetri Psaltis, both of Altadena, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Sep. 28, 1982, Ser. No. 425,202
Int. Cl.³ G01C *3/08*
U.S. Cl. 356—5 **5 Claims**



1. A distance measuring system comprising:

means for generating a pair of components of a pulse of light, including an object component and a reference component;

a detector assembly including a detector with opposite ends and a side, said detector formed of a material that produces a harmonic light output that can be detected at a side of the detector when components of a light pulse that are directed into the opposite ends of the detector pass simultaneously in opposite directions through at least a portion of the detector, said assembly also including means for indicating the position of harmonic light output from the detector;

means for directing the object component toward an object and directing light reflected from the object into a first end of the detector; and

means for directing the reference component along a reference path of known length and into the second end of the detector to determine the length of the object component path by the precise position at which it crosses the reference component path.

4,533,243

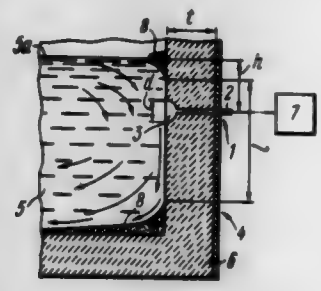
LIGHT GUIDE FOR TRANSMITTING THERMAL RADIATION FROM MELT TO PYROMETER AND METHOD OF MEASURING TEMPERATURE OF MOLTEN METAL IN METALLURGICAL VESSEL WITH THE AID OF SAID LIGHT GUIDE

Leonid F. Zhukov; Evgeny G. Chugunny, both of Kiev; Garold P. Samchenko, Lvov; Vladimir S. Shumikhin, Kiev; Mechislav V. Zhelnis, Kaunas; Ivan V. Kushinsky, Lvov, and Pranas V. Zemlyavichus, Kaunas, all of U.S.S.R., assignors to Institut Problem Litiya Akademii Nauk Ukrainskoi SSR, Kiev, U.S.S.R.

PCT No. PCT/SU80/00120, § 371 Date Mar. 15, 1982, § 102(e) Date Mar. 15, 1982, PCT Pub. No. WO82/00518, PCT Pub. Date Feb. 18, 1982
PCT Filed Jul. 31, 1980, Ser. No. 361,904
Int. Cl.³ G01J *5/08*
U.S. Cl. 356—44 **7 Claims**

1. A light guide for transmitting thermal radiation from a melt to a pyrometer, being substantially a rod made from a refractory light-permeable corrosion-resistant material having a narrow portion intended for transmitting radiation to the

pyrometer and a large portion with a flat end forming the operating end of the light guide, the lateral surface of said large portion providing reflection of radiation of the operating end of said large portion from the convex lateral surface of this



portion back to said flat operating end; the ratio of the cross-sectional area of said light guide narrow portion at the place of adjoining said large portion to the lateral surface area of this large portion not exceeding 0.5.

4,533,244

PROCESS FOR AUTHENTICITY DETERMINATION OF SECURITY DOCUMENTS WITH SECURITY FEATURES IN THE FORM OF LUMINESCING SUBSTANCES

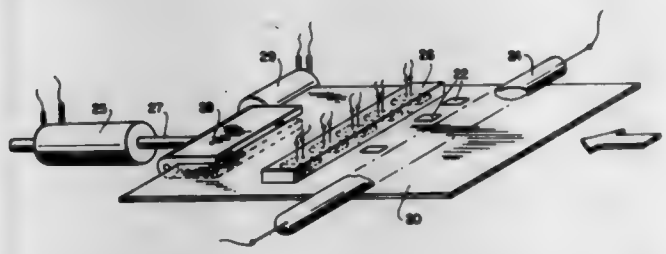
Wittich Kaule, Gauting; Gerhard Schwenk, Puchheim, and Gerhard Stenzel, Munich, all of Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation mbH, Munich, Fed. Rep. of Germany

Division of Ser. No. 314,840, Oct. 23, 1981, Pat. No. 4,442,170. This application Mar. 7, 1984, Ser. No. 586,962

Claims priority, application Fed. Rep. of Germany, May 30, 1980, 3020601

Int. Cl.³ G07D *7/00*; G01N *21/64*

U.S. Cl. 356—71 **12 Claims**



1. A process for authenticity determination of a security document, comprising:

providing said document with a luminescing substance having a known excitation spectrum and a known emission spectrum wherein at least a portion of said excitation spectrum and a portion of said emission spectrum are contained in a narrow band of wavelengths and at least a portion of said excitation spectrum overlaps at least a portion of said emission spectrum in said narrow wavelength band;

exciting said document within said narrow band; and

sensing the emissions of said security documents in said narrow band caused by said excitation in said narrow band.

4,533,245

INSPECTION LIGHTING SYSTEM

Franklin S. Love, III, Spartanburg, S.C., assignor to Milliken Research Corporation, Spartanburg, S.C.

Filed Sep. 30, 1982, Ser. No. 429,957

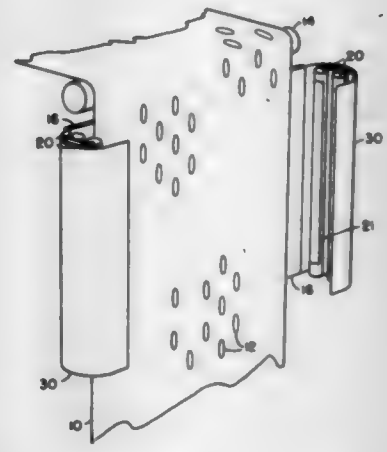
Int. Cl.³ G01N *21/47, 21/88*

U.S. Cl. 356—238 **7 Claims**

1. A method for illuminating an area of a textile substrate carrying sculptured areas comprising changes in the surface contour of the substrate of less than about 0.003 inches, for the purpose of facilitating visual inspection of the sculptured areas in said area while so illuminated, said method comprising the steps of:

(a) positioning said substrate carrying said sculptured surface in front of a visually dark, non-reflective visual background;

(b) placing said substrate under tension to remove wrinkles and other unintended surface irregularities; and



(c) substantially exclusively illuminating an area of said sculptured surface of said substrate with an opposed pair of light sources, each light source directing substantially all its illumination in the general direction of the opposing light source, each light source positioned so that light striking the central portion of said area of illumination does so at an angle, as measured from the plane of said substrate, of between about 3° and about 12°.

4,533,246

PHOTOMETER FOR MEASURING ATOMIC FLUORESCENCE

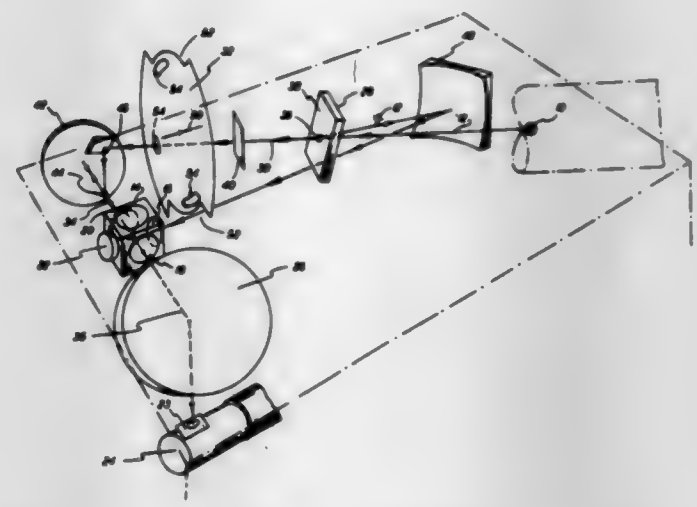
Klaus Braun, Uberlingen, Fed. Rep. of Germany, assignor to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Apr. 4, 1983, Ser. No. 482,086

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1982, 3215249

Int. Cl.³ G01N *21/64*

U.S. Cl. 356—317 **7 Claims**



1. Photometer for measuring atomic fluorescence, comprising:

a light source;

an optical system for generating an exciting light beam emanating from said light source; said optical system including a beam splitter, by means of which a partial light beam can be branched off said exciting light beam;

a measuring cell, said measuring cell including a first window through which said exciting light beam enters said measuring cell, a second window through which fluores-

cence radiation transverse to the direction of said exciting light beam can be detected and a third window disposed opposite said second window;

said optical system including means to direct said exciting light beam through said first window and means to direct said partial light beam through said third window in a direction transverse to the direction said exciting light beam enters said cell through said first window;

a photoelectric detector arranged such that the fluorescence radiation and said partial light beam emerging through said second window impinges thereon;

said optical system further including means to reflect fluorescence radiation emerging through said third window back through said third window and into said cell in a direction toward said detector;

a chopper positioned to differently modulate said exciting light beam and said partial light beam.

4,533,247

OPTICAL TRANSMISSION SYSTEM

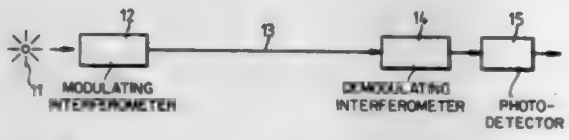
Richard E. Epworth, Bishop's Stortford, England, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,741

Claims priority, application United Kingdom, Sep. 3, 1981, 8126695

Int. Cl.³ G01B *9/02*

U.S. Cl. 356—345 **12 Claims**



1. An optical transmission system, comprising

a light source,

means for modulating the light emanating from said light source, including a first interferometer having variable optical properties and operative for issuing optical signals into an optical path for propagation therein, and means for imposing modulation onto said first interferometer to vary said optical properties thereof and thus to convert said optical output signals into modulated optical signals;

means for demodulating said modulated optical signals, including a second interferometer interposed in said optical path to receive said modulated optical signal propagating therein and operative for issuing a demodulated optical signal; and

means for converting said demodulated optical signal into an electrical signal, including a photodetector;

means for comparing said electrical signal with a fixed reference value and for generating an error signal representing the result of such comparison; and

means for adjusting said second interferometer in dependence on said error signal to maintain the same in constant phase relationship with said first interferometer.

4,533,248

RING LASER GYROSCOPE

Rainer Baumann, Bruchköbel, Fed. Rep. of Germany, assignor to Honeywell, Inc., Minneapolis, Minn.

Filed Sep. 23, 1982, Ser. No. 422,104

Claims priority, application Fed. Rep. of Germany, Dec. 18, 1981, 3150160

Int. Cl.³ G01C *19/64*

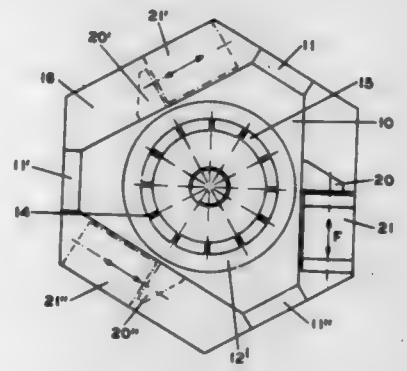
U.S. Cl. 356—350 **11 Claims**

1. A ring laser gyroscope comprising:

a first block for providing a path for light waves;

a mounting block;

torsion spring means for rotating said first block spring means having a first portion fixed to said first block and a second portion fixed to said mounting block; and



linear motor means positively locked and tangentially coupled to said first block for oscillating said first block relative to said mounting block in response to a driving signal.

4,533,249

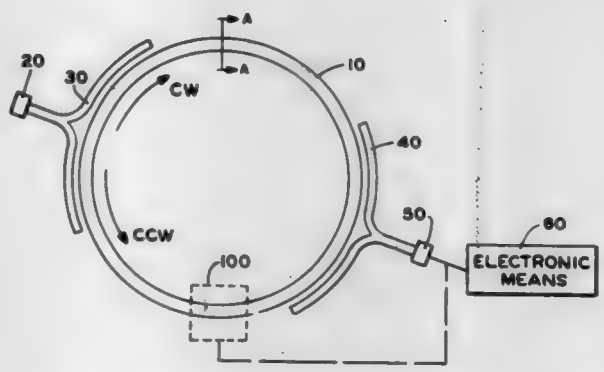
PASSIVE RING RESONATOR ANGULAR RATE SENSOR

George E. Webber, Buffalo, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Sep. 30, 1982, Ser. No. 431,502

Int. Cl.³ G01B *9/02*; G01C *19/64*

U.S. Cl. 356—350 **11 Claims**



1. A passive ring resonator angular rate sensor comprising:

a passive ring resonator waveguide structure for providing a closed-loop path capable of propagating first and second counter-propagating waves of energy about said closed-loop path, wherein the rate of rotation of said closed-loop path establishes an effective closed-loop path length defining at least one resonant frequency of said first wave and at least one resonant frequency of said second wave;

source means capable of producing broad band electromagnetic energy wave;

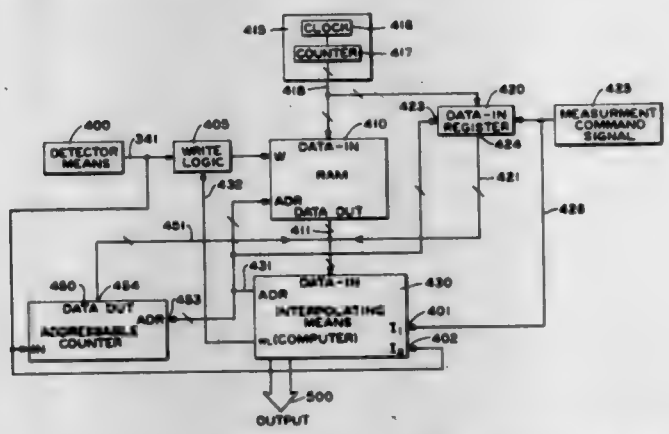
coupling means for concurrently introducing at least a portion of said broad band electromagnetic energy in opposite directions about said closed-loop path thereby providing coexisting first and second counter-propagating waves, each at its respective resonant frequency; and

combining means responsive to at least a portion of said first and second waves for combining said waves so as to produce an output signal having a difference signal component related to the difference between said resonant frequency of said first and second waves indicative of the rotation rate of said closed-loop path.

4,533,250
READOUT APPARATUS FOR A RING LASER ANGULAR RATE SENSOR

Timothy J. Callaghan, Minneapolis, Minn., and Robert M. Kay, Seminole, Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Apr. 11, 1983, Ser. No. 484,108
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **16 Claims**



1. An apparatus for counting fringe changes of a varying interference fringe pattern comprising:

detector means responsive to said varying interference fringe pattern capable of providing a selected signal for each occurrence of a selected fringe change of said varying interference fringe pattern;

timing means responsive to said selected signal having,

first means for determining an interpolation time where said interpolation time is the elapsed time between an occurrence of a measurement command signal and an immediately preceding occurrence of said selected signal, and

second means capable of determining at least a first intersignal time, said intersignal time being the elasped time between two selected occurrences of said selected signal; and

interpolation means responsive to said interpolation time and said at least a first intersignal time for providing an output signal representative of an interpolated fringe change, said interpolated fringe change being the fringe change of said varying interference fringe pattern occurring during said interpolation time.

4,533,251
APPARATUS AND PROCESS FOR AUTOMATICALLY MEASURING APERTURE SIZE OF APERTURED MATERIAL

Kenneth French, Merrimack, N.H.; Robert C. Kocher, Harvard, Mass.; Alfred Piorkow, Lancaster, S.C.; Kenneth Shaner, Towanda, Pa., and J. Thomas Smith, Acton, Mass., assignors to GTE Products Corporation, Stamford, Conn.

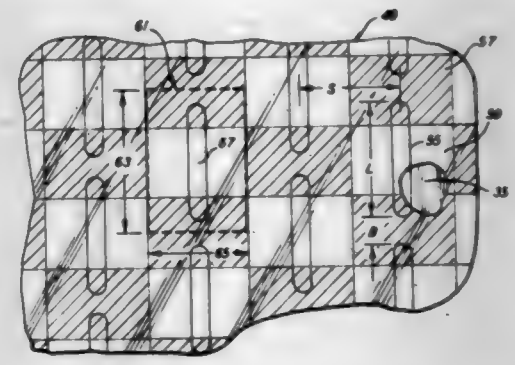
Filed Jun. 9, 1980, Ser. No. 158,023
Int. Cl.³ G01B *11/02*
U.S. Cl. 356—384 **17 Claims**

1. Apparatus for automatically measuring aperture size of a slotted apertured material including means for supporting and transporting the slotted apertured material and a light source and a light detector aligned therewith and disposed on opposite sides of the slotted apertured material said light source providing a light beam directed for passage through the slotted apertured material and impingement of the light detector, said apparatus characterized by the improvement comprising:

comparator mask means having a plurality of sections of alternate light opaque and transparent sectors, said sectors of each of said sections being of a given dimension;

means for supporting and transporting said comparator mask means; and

means coupled to said means for supporting and transporting the slotted apertured material, said means for supporting and transporting said comparator mask means, and said light detector for selecting a section of said comparator mask means having sectors of a length less than the length of an aperture of said apertured material and overlaying said slotted apertured material with said selected section in a manner to provide a light transparent length of aperture less than the length of said aperture of said slotted

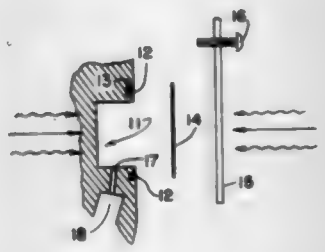


apertured material, said means responsive to a signal from said light detector representing light transmission of said slot of a given length for deriving a signal representative of the width of said slot of said slotted apertured material whereby slot length and light transmission of said slot of a given length are utilized to determine slot width.

4,533,252
DEVICE AND METHOD AND MEASUREMENT OF PHOTOSYNTHETIC ACTIVITY BY PHOTOACOUSTIC SPECTROSCOPY

David Cahen; Shmuel Malkin; Benjamin Horwitz, all of Rehovot, Israel, and Gerard Bults, Wageningen, Netherlands, assignors to Yeda Research and Development Company Ltd., Rehovot, Israel

Filed May 25, 1982, Ser. No. 381,767
Claims priority, application Israel, Jun. 5, 1981, 63053
Int. Cl.³ G01N *21/24*
U.S. Cl. 356—432 **10 Claims**



1. A portable cell for measuring the photosynthetic activity of photosynthetically active tissue, comprising:

a housing, said housing being open at one end;

an acoustic transducer, located within said housing;

securing means for securing said housing, at the open end thereof, to or over a photosynthetically active specimen to be measured;

a modulated light source;

a continuous light source;

first guide means for guiding modulated light from said modulated light source toward the specimen when in use; and

second guide means for guiding continuous light from said continuous light source toward the specimen when in use.

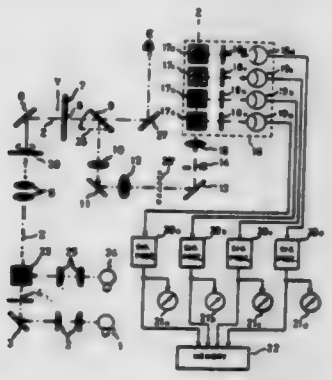
4,533,253
DEVICE FOR MEASURING DENSITY OF PHOTOGRAPHIC TRANSPARENCY

Takeshi Okano, Nishinomiya, Japan, assignor to Konan Camera Research Institute, Nishinomiya, Japan

Filed Sep. 7, 1982, Ser. No. 415,447
Claims priority, application Japan, Sep. 16, 1981, 56-146927
Int. Cl.³ G01N *21/59*
U.S. Cl. 356—443 **4 Claims**

1. A device for measuring density of photographic transpar-

ency, comprising a light source, a photoelectric element, at least two optical components having a polarizing feature and being disposed on a light path between said light source and photoelectric element, and a location on said light path between said optical components where a photographic transparency to be measured is to be located, optical means for restor-



ing polarized light to natural light, said means being disposed rotatably in said light path between said optical components, and the angle of rotation of said optical means being adjusted so that the amount of incident light on said photoelectric element is maximized when said photographic transparency is removed from said location.

4,533,254

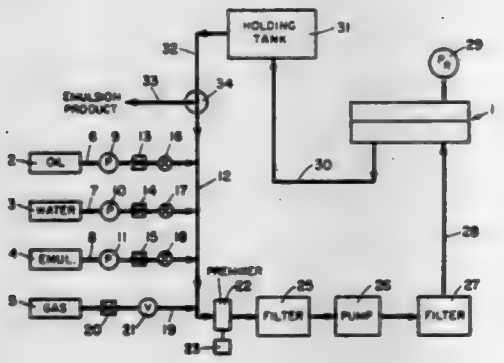
APPARATUS FOR FORMING EMULSIONS

Edward J. Cook, South Hamilton, and Arthur P. Lagace, Newtonville, both of Mass., assignors to Biotechnology Development Corporation, Newton Upper Falls, Mass.

Division of Ser. No. 255,239, Apr. 17, 1981,. This application Feb. 21, 1984, Ser. No. 581,568

Int. Cl.³ B01F *5/06*

U.S. Cl. 366—176 **19 Claims**



1. A liquid jet interaction chamber block for forming an emulsion, comprising in combination

(a) a plurality of submerged nozzles providing elongated orifices arranged to eject under pressure a plurality of thin sheets of an emulsion-forming liquid system, said nozzles being arranged to effect turbulent jet interaction of said sheets along a common liquid jet interaction front and said sheets being ejected by said nozzles into a low pressure zone filled with said liquid further creating turbulent jet interaction along a common boundary essentially defined and formed by said mixture in said low pressure zone and by said sheets ejected into said low pressure zone;

(b) jet interaction chamber-defining means arranged to provide said low pressure zone of said liquid system in which said turbulent jet interaction is effected;

(c) inlet channel means to deliver said liquid system under pressure to said nozzles; and

(d) discharge channel means to withdraw said liquid in the form of an emulsion from said zone.

4,533,255

PROCESS FOR MIXING LIQUID SAMPLES TO BE ANALYZED, AS WELL AS APPARATUS FOR PERFORMING THIS PROCESS

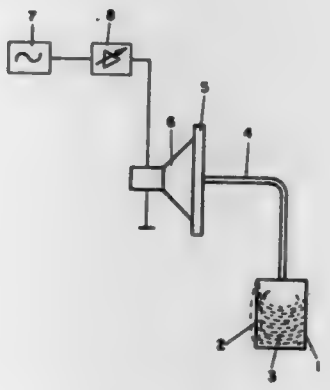
Claus Gronholz, and Hartmut Schmidt-Rabenau, both of Hamburg, Fed. Rep. of Germany, assignors to Eppendorf Geratebau Netheler & Hinz GmbH, Hamburg, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,674

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1982, 3224583

Int. Cl.³ B01F *13/02, 11/00*

U.S. Cl. 366—108 **9 Claims**



1. A process for mixing liquid samples to be analyzed, in which a liquid sample is placed in a sample container adjacent to and moved and mixed by an air column, the air column being mechanically oscillated and in contact with at least part of the liquid sample surface, wherein the air column is excited with a frequency that causes the system, comprising the air column and the sample liquid, to resonate.

4,533,256

DIVE TIMER

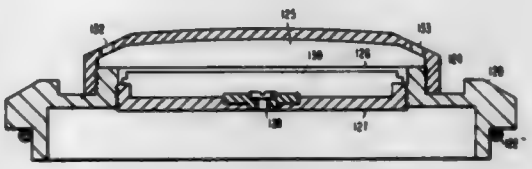
Larry P. Ostendorf, McCordsville, Ind., assignor to Divers Supply Co., Inc., Indianapolis, Ind.

Filed Dec. 29, 1983, Ser. No. 566,571

Int. Cl.³ G04F *8/00*

U.S. Cl. 368—111 **31 Claims**





1. A dive timer for divers, comprising:

(a) means for detecting submergence of said dive timer at a predetermined dive depth;

(b) programmed measuring means coupled to said detecting means for measuring bottom time, said programmed measuring means including electronic memory means for storing measured bottom time, said programmed measuring means being operative to store a first measured bottom time from a first dive in said memory means while measuring a second bottom time from a second dive;

(c) display means for providing a display of bottom time; and

(d) programmed circuit means for recalling said first bottom

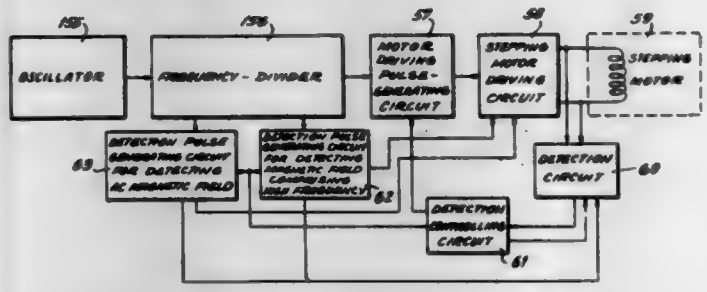
time from said memory means and supplying said first bottom time to said display means after said second diver is initiated.

4,533,257

ANALOG ELECTRIC TIMEPIECE

Masuo Kitano, and Masahito Yoshino, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,703
Claims priority, application Japan, Dec. 16, 1982, 57-220826; Sep. 28, 1983, 58-179839
Int. Cl.³ G04B *17/20*
U.S. Cl. 368—202 12 Claims



1. An electric analog timepiece including:
oscillator means having a high frequency standard signal as an output;
divider means having said high frequency standard signal as an input and having a timekeeping signal of lower frequency as an output;
pulse generating means having the timekeeping signal as an input and selectively providing, as an output, driving pulses having a first width and driving pulses having a second width, the second width being greater than the first width;
an electric stepping motor having a rotor, a stator, and a coil, said rotor being driven in rotation by the application of one of said driving pulses to said coil;
means for detecting non-rotation of said rotor in response to said driving pulse;
means for detecting comparatively low frequency external magnetic fields;
means for detecting comparatively high frequency external magnetic fields; and
control means responsive to at least one of the detection of non-rotation of said rotor, the detection of a comparatively low-frequency external magnetic field, and the detection of a comparatively high-frequency external magnetic field to cause said pulse generating means to drive said stepping motor with at least one driving pulse of greater width.

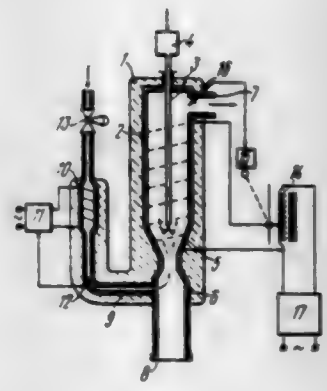
4,533,258

METHOD OF DETERMINING THE CONTENT OF COMBUSTIBLES IN THE END PRODUCTS OF FUEL COMBUSTION AND APPARATUS REALIZING SAID METHOD

Boris A. Milovidov, ulitsa Kalinina, 143, kv. 25, Pavlodar, U.S.S.R.

Continuation of Ser. No. 395,465, Jul. 6, 1982, abandoned. This application Jul. 2, 1984, Ser. No. 626,585
Int. Cl.³ G01N *25/22*
U.S. Cl. 374—36 4 Claims

1. A method of determining the content of combustibles in the end products of fuel combustion comprising the steps of:
taking a sample of end products of fuel combustion;
introducing said sample into a heating zone of an electric heater;
introducing an oxidizing agent into said heating zone;
heating said sample in the heating zone of said electric heater in the presence of said oxidizer to a temperature equal to or higher than the fire point of the combustibles present in said sample, ensuring the burning of said combustibles;
determining the temperature in the heating zone;
controlling said electric heater to maintain in said zone a constant temperature during the process of combustion of said combustibles in response to said determined temperature and said constant temperature;



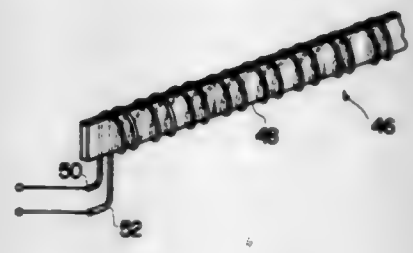
measuring the power consumed by said electric heater in maintaining said constant temperature in said heating zone; and
determining the content of said combustibles in response to said measured power.

4,533,259

APPARATUS FOR DETECTING THE LOCAL TEMPERATURE VARIATIONS OF AN OBJECT AND THE SITES OF THE TEMPERATURE VARIATIONS

Yasushi Wakahara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 274,193, Jun. 16, 1981, abandoned. This application Jan. 9, 1984, Ser. No. 568,512
Claims priority, application Japan, Jun. 23, 1980, 55-84902; Jun. 23, 1980, 55-84905; Sep. 26, 1980, 55-132843
Int. Cl.³ G01R *31/11*; G01K *7/38*
U.S. Cl. 374—166 8 Claims



1. An apparatus for detecting a site of a temperature variation in an object, comprising:
an elongate temperature-sensing member including two elongate conductors constituting a signal transmission circuit, an insulating core in which one of said conductors is disposed, a band-shaped elongate amorphous magnetic alloy element mainly consisting of a ferromagnetic transition metal, having a prescribed Curie temperature corresponding to the lower limit of an anticipated abnormal temperature range, and disposed on said insulating core to extend therealong, and an elongate insulating layer disposed on said amorphous magnetic alloy element and said insulating core to cover them, the other of said conductors being wound about said insulating layer;
a shielding member for electromagnetically shielding said temperature-sensing member;
a pulse generator for supplying a pulse signal to one end of said temperature-sensing member;
a pulse time difference detector for detecting a time difference between a point of time at which a pulse signal is

received from said pulse generator at said one end of said temperature-sensing member and a point of time at which the pulse signal reflected from a site of said temperature-sensing member, where the characteristic impedance of said temperature-sensing member has changed due to an increase in temperature above the Curie temperature, is received at said one end of said temperature-sensing member; and

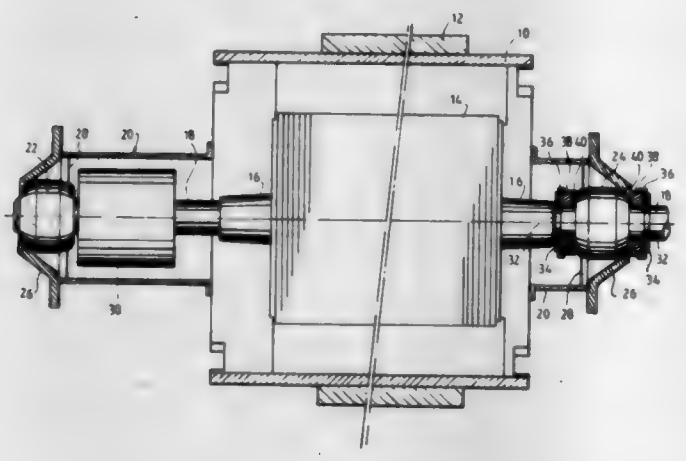
a temperature variation site detector responsive to said pulse time difference detector for determining the site of temperature variation from the detected pulse time difference.

4,533,260

POSITIONING AND PLAY-COMPENSATING DEVICE FOR THE SHAFT OF AN ELECTRIC MOTOR

Raymond Andrieux, Meudon, France, assignor to Valeo, Paris, France

Filed Feb. 9, 1984, Ser. No. 578,655
Claims priority, application France, Feb. 17, 1983, 83 02610
Int. Cl.³ F16C *25/04*
U.S. Cl. 384—206 **6 Claims**



1. A positioning and play-compensating device for a shaft of an electric motor, said shaft being guided in a swivel bearing means held by the motor casing, said device including two resilient retention members fixed to the shaft on either side of the swivel bearing means together with at least one damping washer and friction washer interposed between the retention members and the swivel bearing, means the improvement wherein at least one metal washer is mounted on the shaft, free to move axially between a corresponding one of said resilient retention members and said damping washer of rubber-like material, and wherein the face of said axially-free metal washer which is in contact with said damping washer includes axially directed projections suitable for penetrating to a variable distance into the material of the damping washer.

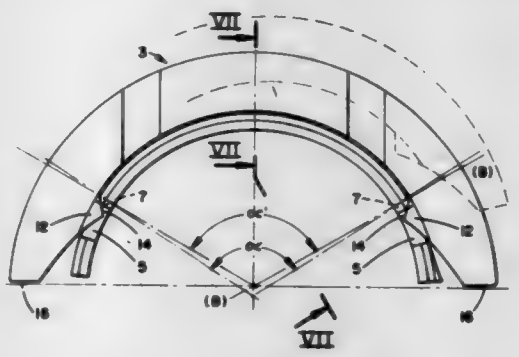
4,533,261

FLANGED HALF-BEARING FOR MOTOR APPLICATIONS

Gastone Losio, Trento, Italy, assignor to Clevite S.r.l., Trento, Italy

Filed Feb. 1, 1984, Ser. No. 575,778
Claims priority, application Italy, Feb. 3, 1983, 84909 A/83
Int. Cl.³ F16C *13/04, 33/04*
U.S. Cl. 384—296 **7 Claims**

1. A flanged half-bearing for motor applications comprising a substantially semi-cylindrical shell adapted to be fixed to a relative support with slight interference between said shell and said support, at least one axial thrust washer with generally prism-shaped hooking appendages for attachment to said shell, said shell having a curved edge in which is provided at least two cavities arranged symmetrically in relation to the axial plane of symmetry of the shell for receiving hooking appendages of said washer wherein each of said cavitites has at least one side wall having a lower part and an upper part, in which the lower part is parallel to the generatrices of the shell and the upper part is inclined toward the center of the cavity as it extends outward, the cavity having a length, in the circumferential direction, greater than the corresponding length of the appendages and partly inclined in relation to the generatrices of the shell, and a configuration such that, prior to coupling the shell and the washer, the angle at the center of curvature α, included between the cavitites, is less than the angle α' at the



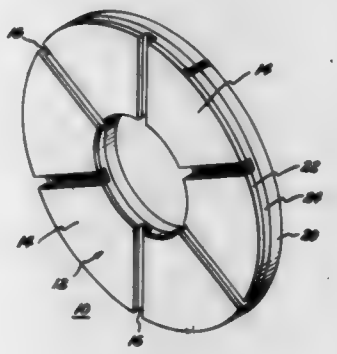
center, included between the appendages, the angle α increasing and remaining less than the angle α' during coupling of shell and washer, and the angle α becoming nearly equal to the angle α' after mounting of the half-bearing on the support by the circumferential compression action of the support on the shell, thereby providing for the shell coupling being stable before mounting on said support and partially mobile both circumferentially and axially after mounting on said support.

4,533,262

TRIMETALLIC BEARINGS

James R. Pedersen, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 534,263, Sep. 21, 1983, which is a continuation of Ser. No. 297,810, Aug. 31, 1981, abandoned. This application Sep. 12, 1984, Ser. No. 649,870
Int. Cl.³ F16C *17/02, 37/00*
U.S. Cl. 384—420 **6 Claims**



1. In a flood lubricated bearing associated with a rotatable shaft, a load-bearing element for minimizing localized peak temperatures, comprising:

an inner metallic layer having a bearing face for carrying a mechanical load transmitted from an adjacent portion of said shaft to said bearing face through an intervening lubricant film;

an outer metallic layer; and

an intermediate metallic layer having higher thermal conductivity than both said inner and outer layer, respectively, said intermediate layer sandwiched between and metallurgically bonded to said inner and said outer layer and effective to maintain a substantially even temperature distribution throughout said inner layer, wherein said outer metallic layer has greater structural rigidity than both said inner and intermediate layer, respectively; wherein the thickness of said inner layer is less than the thickness of said intermediate layer and the thickness of

said intermediate layer is less than the thickness of said outer layer; and wherein such load-bearing element is fabricated as a thrust plate for a tapered land thrust bearing.

4,533,263

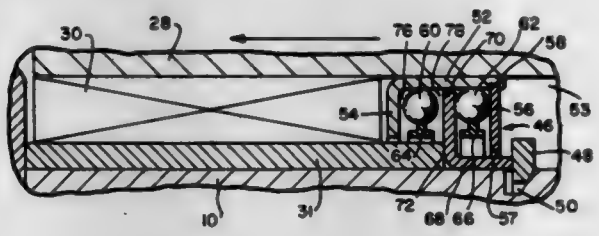
RADIAL BEARING AND BI-DIRECTIONAL THRUST BEARING ARRANGEMENT

Michael J. McGuffie, Harwinton, Conn., assignor to The Torrington Company, Torrington, Conn.

Filed Sep. 26, 1983, Ser. No. 535,762

Int. Cl.³ F16C *19/10, 19/49*

U.S. Cl. 384—454 **7 Claims**



1. A radial bearing and bi-directional thrust bearing arrangement comprising: an inner-annular race; a rotatable outer member having an inside diameter larger than the outside diameter of the inner-annular race to provide an annular space; a radial roller bearing mounted in the annular space; a bi-directional ball bearing also mounted in the annular space, said ball bearing being slip fit on the inner-annular race and having a metal cup with a radially extending end flange, the metal cup securely engaging the rotatable outer member; a ball and thrust plate assembly having balls and at least one thrust plate the ball and thrust plate assembly fitting loosely in the metal cup when no axial force is exerted against the cup and an axial force on the metal cup in a predetermined axial direction causes the end flange, balls, and at least one thrust plate to come into contact to form a thrust path from the end flange through the ball and thrust plate assembly, and an axial force in the other axial direction causes the end flange to move away from such contact to break the thrust path.

4,533,264

HOUSING FOR ROLLER BEARINGS WITH LUBRICATING MEANS

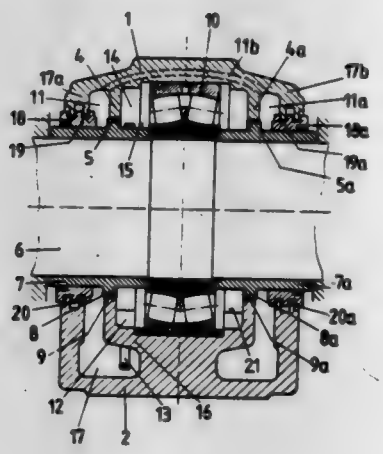
Werner Haugwitz, Schweinfurt, Fed. Rep. of Germany, assignor to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed Aug. 17, 1983, Ser. No. 524,086

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1982, 3231005

Int. Cl.³ F16C *33/66*

U.S. Cl. 384—472 **5 Claims**



1. A housing (1,2) for rolling bearings incorporating a lubricating ring (13) which extends continuously between a lubricant storage chamber (17) beneath a shaft (6) and is driven by the shaft (6) to convey lubricant for lubricating a bearing (10), said housing (1,2) including a pair of dividing walls (4,4*a*) located on either side of the bearing extending radially relative to the bearing axis thereby defining a separate chamber (12) for the rolling bearing and chambers (11,11*a*) spaced axially outwardly of the bearing chamber (12), one of said dividing walls (4) and an outer wall (17*a*) of the housing defining the lubricant chamber (17), said one of said dividing walls being constructed integrally as one piece with the housing, and at one side of the roller bearing (10) located opposite an outer space containing the lubricant chamber (17), the other of said dividing walls (4*a*) arranged at a distance from the roller bearing (10) which together with an outer limiting wall (17*b*) at that location of the housing (1, 2) forms an outer space (11*a*) corresponding to the outer space (11) containing the lubricant chamber.

4,533,265

ROLLING BEARING ASSEMBLIES FITTED WITH SEALS

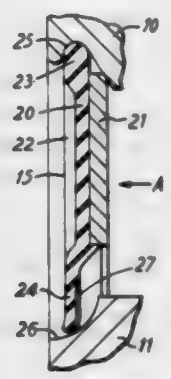
Keith W. Woodbridge, Luton, England, assignor to SKF (U.K.) Limited, Luton, England

Filed Feb. 7, 1983, Ser. No. 464,488

Claims priority, application United Kingdom, Feb. 9, 1982, 8203651

Int. Cl.³ F16C *33/78*

U.S. Cl. 384—477 **10 Claims**

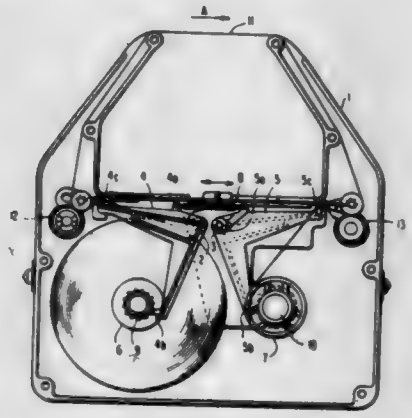


1. A rolling bearing assembly comprising a rotary component rotatably supported on another component of the assembly by a plurality of rolling bodies in an annular bearing chamber defined between the two components, and two annular seals disposed one at each end of the annular bearing chamber, each seal being mounted on one of the components and having a resilient sealing lip which is deflected by engagement with the other component in a direction away from the bearing chamber, the sealing lip under normal running conditions being in sliding sealing contact with a sealing surface on the other component, wherein part of each sealing lip is formed with one or more grooves, ribs or protrusions, and the sealing lip is deformable to bring said part thereof into contact with the associated sealing surface in response to pressure difference across the seal due to reduction of the pressure within the chamber to a value below that outside the chamber so that the grooves, ribs or protrusions permit flow of air or fluid past the seal.

4,533,266
INKED RIBBON CARTRIDGE FOR AN IMPACT SERIAL PRINTER

Shojiro Saito, and Noriyoshi Azumaya, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 434,071, Oct. 12, 1982, abandoned.
This application Oct. 16, 1984, Ser. No. 661,870
Claims priority, application Japan, Oct. 9, 1981, 56-150639[U]
Int. Cl.³ B41J *35/28*
U.S. Cl. 400—208
4 Claims

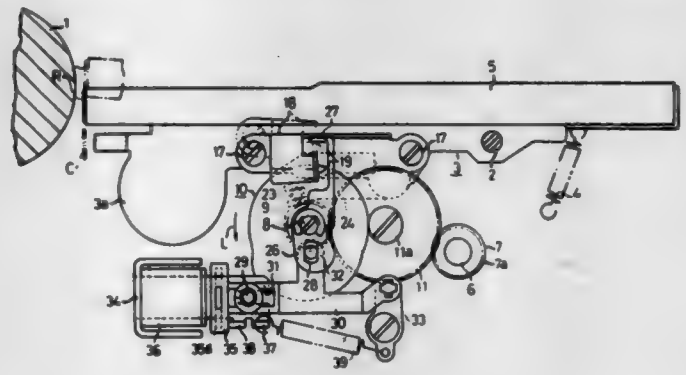


1. An inked ribbon cartridge, comprising:
an inked ribbon for use in printing by a printer;
a symmetrical casing for housing said inked ribbon, said casing including first and second sections symmetrical to each other with respect to a center line thereof;
first core means rotatably supported by said casing and disposed in said first section, said first core means having a rotational shaft, said rotational shaft including a plurality of ratchet teeth formed around its circumferential surface;
second core means rotatably supported by said casing and disposed in said second section;
driving means disposed in said second section, and driving means being used for pulling and unwinding said inked ribbon wound around said first core means and for supplying said inked ribbon for said second core means;
driven means disposed in said first section, said driven means being used for guiding said inked ribbon from said first core means toward said driving means;
a path of said inked ribbon formed in said casing, said path including an unwind portion from said first core means, a first engaging portion with said driven means, a second engaging portion with said driving means and a take-up portion to said second core means;
first L-shaped lever means consisting of first and second arms connected in the shape of an L, said lever means being rotatably supported about a rotational axis located at the connection of said first and second arms, said rotational axis being supported by a pivot formed in said casing, said pivot being positioned at a position apart from said first core means by a distance which is greater than the maximum radius of winding of said inked ribbon wound around said first core means, said first arm projecting from said rotational axis and reaching to said rotational shaft of said first core means, said second arm having substantially the same length as said first arm and projecting from said rotational axis toward said driven means and having a ribbon engaging projection on the end remote from said rotational axis;
spring means for urging said lever means in a first rotational direction such that an end of said first arm engages said ratchet teeth of said first core means to prevent the rotation of said first core means and said projection of said second arm contacts and bends said path of said inked ribbon between said unwind portion and said first engaging portion to detect a tension thereof;
said lever means being rotated in a second rotational direction opposite to said first rotational direction by the tension of said inked ribbon on the projection of said arm which contacts said ribbon to disengage said first arm from said ratchet teeth to permit the rotation of said first core means only when said inked ribbon wound around said first core means is fed by said driving means and said tension of said inked ribbon is sufficient to overcome the urging force of said spring means.

4,533,267
RIBBON DRIVING MECHANISM FOR TYPEWRITER

Hisao Kurachi; Takeo Ito; Takayuki Iwase, and Junji Shiota, all of Nagoya, Japan, assignors to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Filed Jul. 5, 1983, Ser. No. 510,614
Claims priority, application Japan, Jul. 13, 1982, 57-122496
Int. Cl.³ B41J *35/22*
U.S. Cl. 400—214
5 Claims



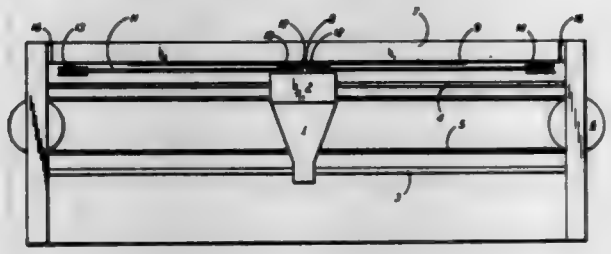
1. A ribbon driving mechanism for a typewriter, comprising
a frame;
a holder supported rotatably on said frame, for holding a printing ribbon and a correction ribbon, and for selectively positioning said printing ribbon or said correction tape at a printing position;
a first urging means for normally urging said holder toward said printing position;
a ribbon lifting cam comprising a first cam section for effecting the turning of said holder to position said printing ribbon at said printing position, a second cam section extending continuously from said first cam section for effecting positioning of said correction tape at said printing position, and a relieving section extending continuously from said first cam section and along said second cam section;
a driving motor for rotating said ribbon lifting cam;
a cam follower connected to said holder and adapted to be controlled by said ribbon lifting cam;
a stopping member capable of being shifted between a working position for guiding said cam follower from said first cam section into said relieving section in a given sense of rotation, thereby to effect holding of said printing ribbon at said printing position during printing mode of operation, and a resting position for permitting said cam follower to move from said first cam section into said second cam section in said same sense of rotation during a correction mode of operation;
a second urging means normally urging said stopping member toward said working position; and
actuating means adapted to be actuated during said correction mode of operation, to shift said stopping member to said resting position, against the urging force of said second urging means.

4,533,268

POSITION INDICATOR FOR HIGH SPEED PRINTERS

Roy C. Sanders, Jr., Burton Hwy., Wilton, N.H. 03086

Continuation of Ser. No. 436,949, Oct. 27, 1982, abandoned.
This application Sep. 5, 1984, Ser. No. 647,865
Int. Cl.[3] B41J *19/30*
U.S. Cl. 400—322 8 Claims



1. In a dot matrix printer for computer printout having an elongate platen and a print head carriage supported for relative movement therebetween longitudinally of the platen, a dot matrix print head on said carriage, said print head comprising a plurality of dot matrix print elements arranged transversely of the platen axis in a predetermined array, means for supporting said carriage for movement along said platen, means for activating said print elements at a predetermined location along said platen, means for driving said carriage with continuous motion along said platen, a position indicator, for ascertaining the position of said carriage longitudinally of said platen, comprising a rotary optical position encoder rotatably mounted on an axis fixed longitudinally of said platen, a carriage position responsive means connected to said encoder and to said carriage on opposite sides of said print head to transmit said relative movement to said encoder to rotate said encoder in synchronism with said relative movement, the connections between the print head and the responsive means being sufficiently close to said array of dot matrix print elements to accurately indicate the position of said dot matrix print head to within one or two mils of its true position despite play in the carriage support means, said position responsive means being flexible and non extensible under the forces necessary to drive said encoder and being separate from said carriage driving means, said flexible position responsive means being the sole means for driving said encoder, whereby said connections cause the encoder to accurately track the position of the dot matrix print array despite play in the carriage support, said encoder having a pattern of detectable indicia, and a detector responsive to said indicia to provide a signal indicative of the rate, amount and direction of movement rotation of said encoder, said encoder providing input to the means for activating said print elements in accordance with the indicated position.

4,533,269

WEB FEED WITH INCREMENTAL ADVANCE CONTROL FOR A PRINTER

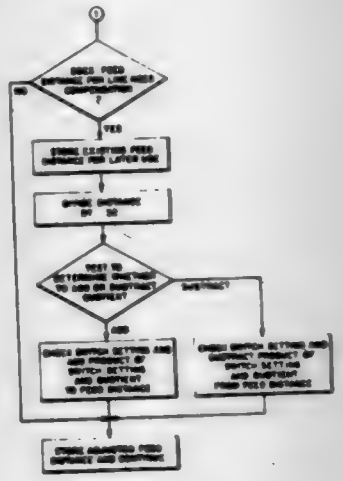
Frederick M. Pou, Dayton, and Richard L. Straub, Miamisburg, both of Ohio, assignors to Monarch Marking Systems, Inc., Dayton, Ohio

Division of Ser. No. 393,674, Jun. 30, 1982, Pat. No. 4,442,774.
This application Feb. 1, 1984, Ser. No. 575,943
Int. Cl.[3] B41J *11/42*
U.S. Cl. 400—582 28 Claims

1. In a printer for printing lines of information onto a web of sheet stock having means for printing the information onto the web, means for advancing the web past the printing means, and means for controlling the operation of the advancing means by providing advance signals representative of mechanical increments of advance required by the format of the information being printed, each of said increments of advance being defined by an advance signal defining a predetermined number of steps, the improvement comprising:

means for compensating for errors in the increments of advance defined by the advance signal caused by mechanical tolerances of the advancing means, said compensating means including;

means for manually entering an indication of the error in a predetermined increment of advance resulting from advancing the web a number of steps corresponding to the predetermined increment,



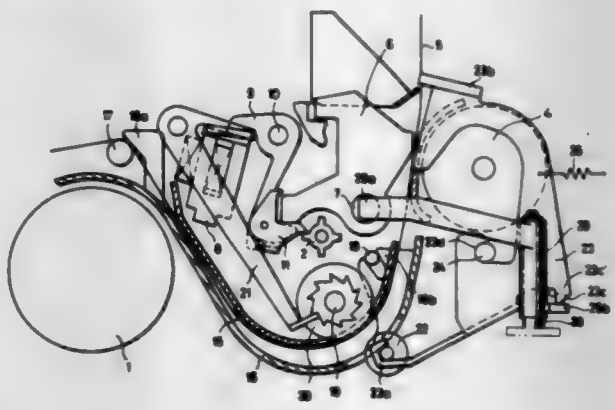
means responsive to both said error indication and each advance signal for compensating the advance signals to provide compensated advance signals, the amount of compensation being proportional to both the error indication and the number of steps defined by the advance signal, said advancing means being responsive to the compensated advance signals to advance the web the mechanical increments required by the format.

4,533,270

PRINTING PAPER FEED RELEASING DEVICE FOR PRINTERS

Munetaka Shimizu, Kawagoe, Japan, assignor to Copal Company Limited, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 428,611
Claims priority, application Japan, Sep. 30, 1981, 56-145904[U]
Int. Cl.[3] B41J *13/03*
U.S. Cl. 400—636 1 Claim



1. A printing paper feed release device for a printer, comprising:

printing paper to be printed on;

a pressure roller engageable with said printing paper to support said printing paper thereon;

a paper feed release lever means, rotatably supporting said pressure roller thereon, for selectively disengaging said pressure roller from said printing paper;

a lock release lever, engageable with said paper feed release lever means, for locking said paper feed release lever means in a position wherein said pressure roller is disengaged from said printing paper;

a supporting shaft, engageable with said lock release lever, means for reciprocating said supporting shaft in its axial

direction, said supporting shaft engaging and pivoting said lock release lever to automatically unlock said paper feed release lever means through said lock release lever when said printer is operated;

first spring means, connected to said lock release lever, for urging said lock release lever into engagement with said supporting shaft; and

second spring means, connected to said paper feed release lever means, for urging said paper feed release lever means to make said pressure roller engage with said printing paper; wherein

said lock release lever is rotated against said urging of said first spring means by movement of said supporting shaft to unlock said paper feed release lever means, and said paper feed release lever means is rotated by said urging of said second spring to move said lock release lever in a direction away from said supporting shaft.

4,533,271

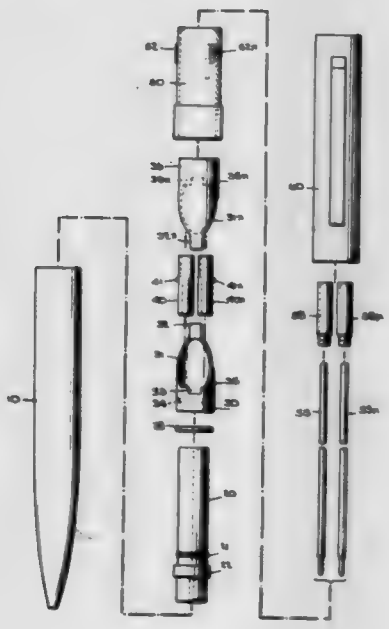
WRITING INSTRUMENT WITH PLURAL IMPLEMENTS CAM ACTUATED

Nick Sansevero, 2062 W. 4th St., Brooklyn, N.Y. 11223

Filed Oct. 12, 1983, Ser. No. 541,156

Int. Cl.³ B43K *24/10, 24/14, 27/12*

U.S. Cl. 401—29 **2 Claims**



1. A writing instrument comprising:

a cylindrical member having two longitudinal compartments therein, each said longitudinal compartment having a longitudinal slot in the periphery thereof; and

a tubular cam follower slidably located in each of said compartments, each of said followers having a lug extending radially outward from the body of said follower and through the said longitudinal slots; and

a tubular cam which is coaxial with and closely surrounds the said cylindrical member, said cam being capable of rotation about said cylindrical member, said tubular cam being formed of a lower section and an upper section, each said section having a tang projecting from the point of its longest linear dimension and each such section having a recess to accept said tang at the point of its shortest linear dimension, the said upper and lower sections being joined so as the tang of each engages the recess of the other, the said sections so joined forming two diameterically opposed helical slots in the periphery of the said tubular cam; and

a tubular retaining sleeve closely surrounding the said tubular cam; and

a lower tubular barrel with tapered lower end having a hole therein through which a writing element may project; and

two writing elements, each extending downwardly through one of said followers and through one of said compartments; and

means for securing each of said writing elements to one of said cam followers; and

a cap.

4,533,272

WRITING INSTRUMENT WITH MOVABLE CLOSURE

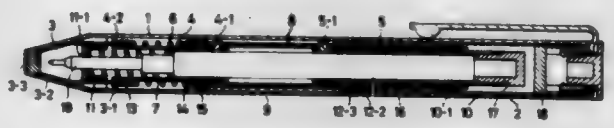
Kenji Sakai, Aichi, Japan, assignor to Pilot Ink Company, Japan

Filed Nov. 22, 1983, Ser. No. 554,409

Claims priority, application Japan, Nov. 26, 1982, 57-179259[U]

Int. Cl.³ B43K *9/00, 7/12*

U.S. Cl. 401—107 **3 Claims**



1. In a writing instrument with a movable closure fabricated to repeat the operation of operatively rotating a rear holder barrel (2) to actuate a cam sleeve (8) so that a writing section (19) of a writing unit is projected from an opening (1-1) in the holder barrel (1) into a writing operation and retracted and stored in an airtight condition within the barrel in a non-writing operation, said writing instrument with the movable closure including: a front holder barrel (1) with a tapered reduced diameter at its forward open-ended portion (1-1), an elastic snap member (3) including a cylinder (3-1) and a plurality of support segments (3-2) which extend from the cylinder and which are provided at one end thereof with inward covers (3-3), the snap member (3) being disposed on the inner surface of the front holder barrel (1) and being adapted to have its cylinder (3-1) loosely mounted over a first slider (4) having a forward positioned flange (4-2) for connection with the cylinder (3-1) and a rearwardly located pin (4-1), a cam sleeve (8) having cam grooves (8-1, 8-2), the cylinder (3-1) and the cam sleeve (8) being connected by a spring member (6) between the rear end of the former and the front end of the latter, the cam sleeve (8) having the front cam groove (8-1) for receiving the pin (4-1) of the slider (4), the writing unit (19) being disposed along the center axis of the holder barrel (1,2), its front end engaging a spring member (7), its rear end engaging a second slider (5), having a pin (5-1), the pin (5-1) being inserted in the cam groove (8-2), positioned at the rear of the cam sleeve, the pins (4-1) and (5-1) being arranged so that they are located in a slit (9-1) of a guide tube (9) fixed to the front holder barrel (1), whereby rotational operation of the rear holder barrel (2) in one direction causes the covers (3-3) to move into a closed position while rotation of the rear holder barrel in the opposite direction causes the covers (3-3) to be retracted causing a radial release of pressure on the support segments (3-2) causing the covers (3-3) to open simultaneously with the advance of the writing unit 19 to its projected position.

4,533,273

APPLICATOR FOR AEROSOL-TYPE CONTAINERS

Saburo Obata, Suma, and Kazuo Ito, Kamakura, both of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka and Toyo Seikan Kaisha, Ltd., Tokyo, both of, Japan

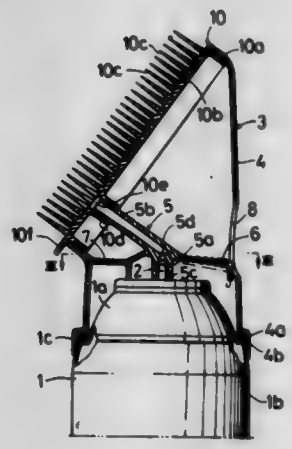
Continuation of Ser. No. 336,188, Dec. 31, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,200

Int. Cl.³ A46B *11/02*

U.S. Cl. 401—190 **2 Claims**

1. An applicator for an aerosol-type container having a container body and a movable nozzle projecting from the head of the container for discharging the contents thereof by gas pressure when the nozzle is pushed, the applicator comprising a cleaning brush and a cap including a peripheral wall fittable

to the head of the container body to surround the movable nozzle, a discharge tube disposed inside the cap peripheral wall and having one end fittable to the nozzle and extending in a direction having a radial component with respect to an axis of said nozzle, and a nozzle pushing member integral with the discharge tube, said discharge tube and pushing member being movably connected at a portion thereof by connector means to the cap peripheral wall, said connector means consisting only of a straight, flat, flexible strip, the nozzle pushing member being enclosed by said cap and being in facing relation to a finger aperture formed in the cap peripheral wall, the cap peripheral wall, the discharge tube and the nozzle pushing member being unitarily molded from substantially rigid synthetic resin, the cleaning brush being fitted to the forward end of the cap peripheral wall and slidably connected to the other end of the discharge tube with a bristle side of said cleaning brush in communication with said other end of said discharge tube, said cleaning brush having bristles formed of polyethylene resin, wherein said connector means extends in a substantially radial direction with respect to said axis of said nozzle and is positioned substantially circumferentially opposite side finger aperture and substantially in alignment with said radial component of said discharge tube, with respect to said nozzle axis, and wherein said cleaning brush includes a bottom from which said bristles extend, said brush being fitted to said cap such that said bottom extends at an acute positive angle with respect to said axis of said nozzle.



4,533,274

FLEXIBLE JOINT MEANS

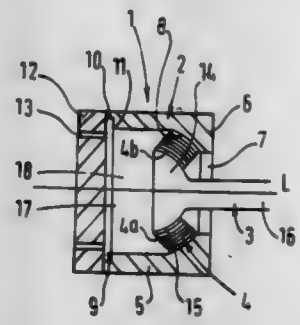
Alan F. Moore, Burbage, England, assignor to Dunlop Limited, London, England

Filed Sep. 24, 1982, Ser. No. 423,263

Claims priority, application United Kingdom, Jan. 27, 1982, 8202310

Int. Cl.³ F16D *3/80*

U.S. Cl. 403—31 **10 Claims**



1. Flexible joint means comprising a hollow outer member, an inner member having a body portion located within said outer member and a stem portion projecting outwards through an opening in said outer member, a flexible bearing of elastomeric material acting between and secured to confronting external and internal surfaces on said inner and outer members respectively for absorbing tension loads and for accommodating relative pivotal movement between said members, a fluid-tight chamber within said outer member and a substantially incompressible fluid contained within said chamber for absorbing compression loads, wherein said flexible bearing of elastomeric material is preloaded in compression by the pressure of the fluid within said chamber.

4,533,275

SWIVEL CONNECTOR FOR SECURING MOTORVEHICLE SUN VISORS

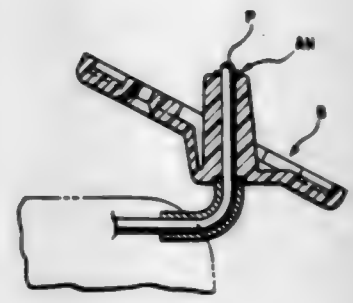
Giovanni Foggini, Turin, Italy, assignor to Lear S.n.c., Orbassano, Italy

Filed Jun. 29, 1981, Ser. No. 278,240

Claims priority, application Italy, Jul. 16, 1980, 68131 A/80

Int. Cl.³ F16D *1/12*

U.S. Cl. 403—165 **1 Claim**



1. A swivel connector for securing motorvehicle sun visors, comprising a base and a pivot pin connected together for mutual rotation under the braking effect of a frictional couple, characterized in that the pivot pin has a smooth cylindrical surface and is made of metal and simply force fitted into a seat in the synthetic resin base, and in that the ratio of the axial extension of the base-pin coupling to the pin diameter is equal to or greater than 4:1, an interference fit being provided between the pin and seat in the base in the 0.3 to 0.4 millimeter range and wherein the pivot pin has a smooth pivot pin proper portion and an extension thereof at an angle to the pivot pin proper and connected with the sun visor, said extension having along a length thereof a sleeve of elastometic material covering at least part of said extension, said sleeve having a portion extending over part of said pivot pin proper, said base having an undercut at the end of said seat facing said extension and said sleeve having its extremity facing said end of said seat in engagement of said undercut.

4,533,276

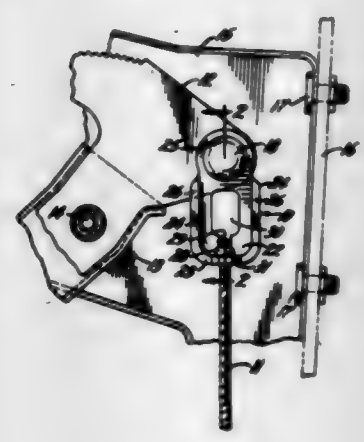
SWIVEL

Mark A. Stidham, Rockford, Ill., assignor to Atwood Vacuum Machine Company, Rockford, Ill.

Filed Jul. 13, 1984, Ser. No. 630,859

Int. Cl.³ F16D *1/12*

U.S. Cl. 403—165 **3 Claims**



1. A swivel adapted to connect a turning member to an

elongated element which is movable endwise and which has a head on its free end, said swivel being a rigid unitary sheet metal stamping and comprising, an elongated flat body portion, a hole formed through said body portion adjacent one end thereof for attaching said swivel to said turning member, an end flange projecting laterally from said body portion at the other end thereof, a pair of spaced side flanges, one projecting laterally from each side of said body portion and each merging with a side of said end flange, a window wider than the head on said elongated element and formed through said body portion adjacent the center thereof, a first slot formed through said body portion and extending longitudinally of the latter from said window to said end flange, and a second slot formed in said end flange and communicating with said first slot, said second slot having a closed end located adjacent the center of said end flange, and both of said slots being narrower than said head but wider than said element whereby the head may be inserted through said window and said element may be moved through said first slot to the closed end of said second slot.

4,533,277

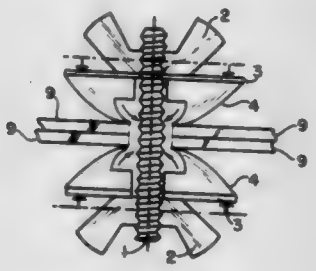
IN-PRESSING PLANAR EDGE JOINER CLAMP

Roy Alexander, 1575 Oak Ave., Evanston, Ill. 60201, and Robert Bokum, 19 Ledge Rd., Old Greenwich, Conn. 07670

Continuation of Ser. No. 45,314, Jun. 4, 1979, abandoned. This application May 11, 1982, Ser. No. 376,946

Int. Cl.³ F16B *2/00*

U.S. Cl. 403—408.1 **3 Claims**



1. A reusable panel fastener for joining panels, having adjacent notches to receive said fasteners, in an edge to edge relationship comprising:

an elongated threaded rod extending through adjacent notches in said panels and extending beyond said panels,

first and second frustoconical members of a resilient material each having a central aperture extending axially therethrough mounted with the smaller surfaces in an opposing relationship contacting said panels and a circumferential supporting surface at the larger outer end thereof,

a pair of flat metal washers, each having a central aperture minimally larger than the diameter of the threaded rod and mounted against the circumferential supporting surface of each frustoconical member, and

adjustable mounting means threaded onto both ends of the rod in contact with the washers to secure adjacent panels together by forcing said frustoconical members against said panels.

4,533,278

EXPANSION JOINT SYSTEM

William L. Corsover, 561 Haskell Dr., Akron, Ohio 44313; Kenneth P. Hoffman, 5305 Northfield Rd., #229, Bedford Heights, Ohio 44146; William F. McCann, 3542 Glencairn Rd., Shaker Heights, Ohio 44122, and Billy J. Wooden, 45 Hunting Trail, Moreland Hills, Ohio 44022

Filed Jul. 25, 1983, Ser. No. 516,509

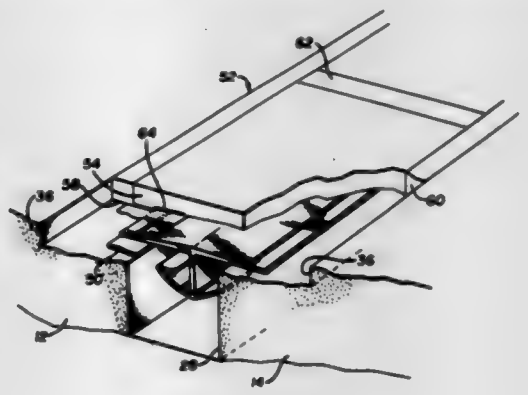
Int. Cl.³ E01C *11/10*

U.S. Cl. 404—65 **8 Claims**

1. An expansion joint system for coupling concrete segments having a slot and a boxed-out zone therebetween, such system comprising:

a plastic plate having resilient means, a support surface and a stem therebetween, said resilient means being positioned in the slot and extending outwardly in gripping contact with walls of the slot, and support surfaces having lower faces supported by the boxed-out zone and spanning the slot the plate being unattached to the segments,

a sealant slab positioned in the boxed-out zone to cover the plate and a part of the concrete with an exterior surface



substantially parallel with exterior surfaces of the concrete segments, and

nosings positioned to essentially fill between edge portions of the sealant slab and end concrete portion of the boxed-out zone, having exterior surfaces substantially parallel with exterior surfaces of the concrete segments and sealant slab.

4,533,279

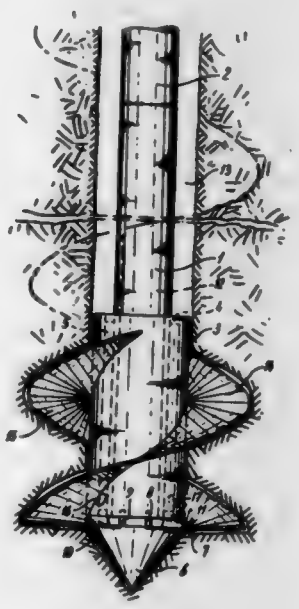
METHOD FOR MAKING A FOUNDATION PILE

Lambertus W. A. van den Elzen, Ijssel; Adriaan van der Wouden, Bergambacht, and Auke Meijer, Nigtevecht, all of Netherlands, assignors to Fundemantum B.V., Netherlands

Filed May 12, 1983, Ser. No. 494,095

Int. Cl.³ E02D *5/36*

U.S. Cl. 405—239 **5 Claims**

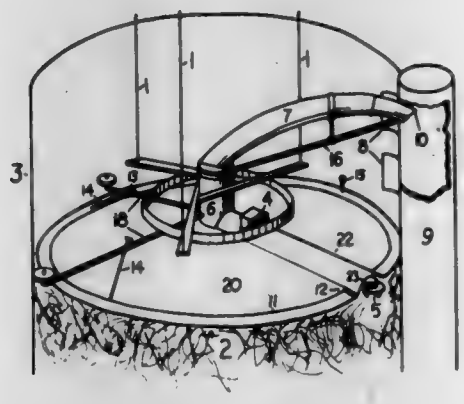


1. A tube for making a foundation pile in the soil which is vertically screwed into the soil, said tube having at least one screwing blade at its lower end, an orifice for hardenable liquid below the lower face of the blade, and a cone closing the lower end of said tube, characterized in that a cylindrical jacket is connected to the lower end of the tube by means of spacers so as to form an annular free space between the outer wall of the tube and the inner wall of the jacket, said space being open at the top and at the bottom and being in communication with the inside of the tube to supply said hardenable liquid to said space, and said blade being attached to said cylindrical jacket.

4,533,280
SURFACE REMOVAL SILO UNLOADERS

Thomas Elliott, R.D. #5, Box 298, Towanda, Pa. 18848, and Todd Knecht, Towanda, Pa., assignors to Thomas Elliott, Towanda, Pa.

Filed May 26, 1983, Ser. No. 498,305
Int. Cl.³ B65G *53/48, 65/38;* A01F *25/20*
U.S. Cl. 406—57 3 Claims



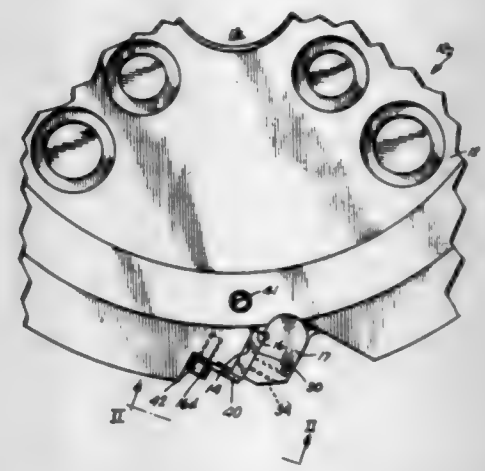
1. In a surface removal silo unloader, located within a silo for storing ensilage, the silo being of cylindrical form having a longitudinal axis and walls of circular cross-section forming the longitudinal axis, the unloader being located above the surface of the ensilage stored therein for unloading of the ensilage through doors located in the side of the silo; the unloader being of the type having a fixed portion comprising a stationary frame adapted for vertical movement along the longitudinal axis of the silo; means for supporting the frame above the surface of the ensilage; impeller means for forceably removing ensilage from under the center of the unloader, mounted on the frame means at the center thereof; chute means for guiding the ensilage removed by the impeller means to the doors in the side of the silo; and having a rotation portion comprising: gathering means for conveying ensilage from the periphery of the silo to the impeller means, mounted beneath the frame means with at least part adapted to contact the ensilage and draw it toward the impeller means, the entire gathering means being adapted for rotational movement around the longitudinal axis of the silo; the improvement comprising:

a. an ensilage cover constructed of air-impermeable thermally insulating material for limiting air contact with the surface of the ensilage, covering substantially all of the surface of the ensilage, and attached to the rotating portion of the unloader for movement therewith; comprising:
   1. first cover means closely surrounding the part of the gathering means which is not in contact with the ensilage;
   2. second cover means sealably mating with the first cover means, and comprising a circular planar sheet resting upon the surface of the ensilage, having a slot along a radius of the circle wide enough to accomodate the gathering means and first cover means;
b. the thermally insulating air impermeable material o the ensilage cover comprising a layer of insulating material between upper and lower air-impermeable layers; the air impermeable layers being plastic-coated canvas; and at least the lower air-impermeable layer being further coated with a bottom layer of material which is resistant to being adhered to by frozen ensilage;
c. the ensilage cover having an opening therein to allow unloading of ensilage through the cover;
d. seal means for limiting air flow between the cover and the circumference of the silo wall.

4,533,281
CUTTER BLADE RETENTION

Ralph W. Lacey, Grosse Pointe Park, Mich., assignor to Dijet Industrial Co., Ltd., Grosse Pointe, Mich.

Filed Oct. 14, 1983, Ser. No. 541,962
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—36 4 Claims



1. A milling cutter having insert blades free of clamping stress distortion and capable of blade axial runout variation without loosening and retightening of a clamp, comprising:

in combination with a cutter body having a back face, a front face, a generally cylindrical periphery, a center mounting bore or shank, and a plurality of circumferential, blade-receiving slots at the juncture of said periphery and said front face, to extend radially through said periphery and axially through said front face; each slot including a bottom seat, an axially extending, radially facing blade-locating surface, and a radially extending adjustable blade-seating surface; polygonal blades in said slots, each blade having a pair of flat sides, a plurality of edge surfaces and at least one cutting edge; one of said blade flat sides engaging said slot bottom seat, one of said blade edge surfaces abutting said blade-locating surface, and one of said blade edge surfaces abutting said blade-seating surface; a blade-retaining spring attached to said cutter body and bearing against a blade edge surface opposite said locating surface to retain said blade by a resilient biasing force; said spring being a leaf spring, means to secure one end of said spring to said cutter body and the other end bearing against said blade edge surface, and applying the sole radial retention for said blade, said blade being free of clamping force stress and being adjustably movable while retained by said spring; and means to adjust said blade-seating surface to vary the axial runout of said blade relative to said cutter body, while retained by the bias of said spring.

4,533,282
MILLING CUTTER

Wilhelm Lindlar, Cologne, and Günter Wermeister, Düsseldorf, both of Fed. Rep. of Germany, assignors to Santrade Limited, Lucerne, Switzerland

Filed May 24, 1983, Ser. No. 497,416
Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220363
Int. Cl.³ B26D *1/00*
U.S. Cl. 407—38 6 Claims

1. A milling cutter comprising:

a cutter body rotatable about an axis and containing a plurality of circumferentially spaced recesses,

each said recess including a reaction surfce, a support surface and a locating surface, said locating surface having axial and radial directional components relative to said axis,

a plurality of cutting inserts supported in respective ones of said recesses,

each of said inserts comprising a pair of opposing side faces interconnected by a plurality of edge faces,

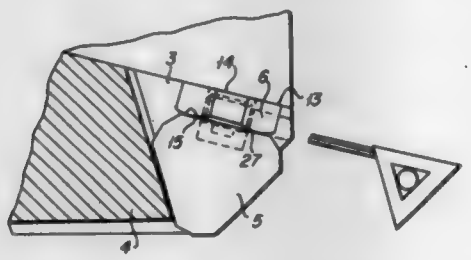
a plurality of clamp means for yieldably pressing said inserts against said support surfaces, each clamp means comprising:

a wedge member engaging one of said side faces of an associated insert, and

spring means arranged to yieldably urge said wedge member against said one side face to push one of said edge faces toward said reaction surface and to push the other of said side faces against said support surface in a direction oriented generally transversely with respect to said axis,

a plurality of adjusting means for adjustably moving respective ones of said inserts in a direction of adjustment having radial and axial components, each said adjusting means comprising:

a wedge pin wedgingly disposed in a respective recess and bearing against said reaction surface and said one of said edge faces of an associated insert, with another of said edge faces slidably engaging said locating surface, said wedge pin being movable linearly along a path oriented



parallel to said reaction surface and said support surface and at an inclination relative to said one edge face, and having radial and axial components, said wedge pin being held against rotation about said path as an axis,

said wedge pin including a laterally extending shoulder which includes a threaded bore extending substantially parallel to said path,

a threaded screw threadedly connected in said bore and aligned with a hole in said cutter body to be accessible to a tool from the outside to be rotated, means restraining said screw against movement along its longitudinal axis such that in response to rotation of said threaded screw in one direction of rotation said wedge pin is moved inwardly along said path to adjustably displace said insert outwardly along said locating surface in said direction of adjustment by means of the engagement between said wedge element and said one edge face, said insert sliding frictionally relative to said wedge member of said clamping means during displacement in said direction, with said wedge member retaining said insert in its adjusted position simultaneously with termination of said displacement.

4,533,283

TOOL HOLDER ASSEMBLY

Amir Satran, Kiriat Bialik, and Shmuel Elka, Nahariya, both of Israel, assignors to Iscar Ltd., Nahariya, Israel

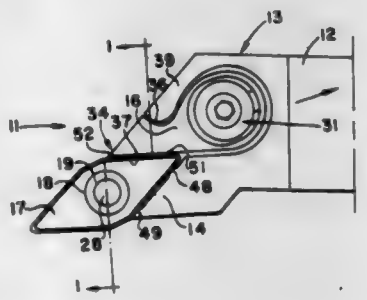
Continuation of Ser. No. 314,337, Oct. 23, 1981, abandoned. This application Mar. 16, 1984, Ser. No. 590,739
Claims priority, application Israel, Oct. 29, 1981, 61368
Int. Cl.³ B26D *1/11*
U.S. Cl. 407—111 **3 Claims**

1. A holder assembly for retaining a cutting tool having a V-shaped portion therein, comprising:

a cutting tool having a V-shaped portion and top and bottom surfaces;

a tool holder defining a recess, including a portion definable as the tool recess for receiving said V-shaped portion of said cutting tool, and having a fixed stationary post extending upwardly therefrom, with the tool having a hole extending between its top and bottom opposite surfaces whereby said tool is retainable in said tool recess by the post extending into the tool's hole and said tool holder further includes first and second stationary walls on opposite sides of said recess, said first stationary wall defining one side of said tool recess; said secondary stationary wall having a curved end surface;

clamp means in said recess and means pivotally and slidably mounting said clamp means in said recess, said clamp means including a wedge portion with a wedging wal facing said first wall and an opposite curved shaped side juxtaposed said curved end surface of said second stationary wall; and



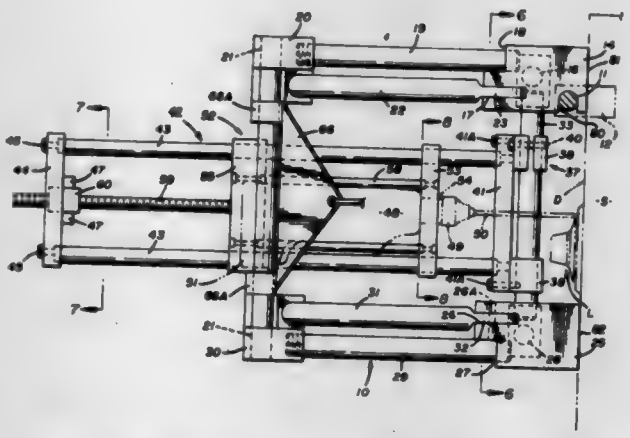
means for displacing said clamp means to slidably move in a direction so as to wedge the curved shaped side of said wedge portion about the curved end surface of said second wall at a single point of contact, and to pivot said clamp toward said first stationary wall so that the tool becomes wedged by the post, and the V-shaped tool portion is wedged between the first stationary wall and the wedging wall of the clamp, with the angle between the first stationary wall and said wedging wall being variable to accommodate variations in the angle between the tool's walls forming said V.

4,533,284

ADJUSTABLE DRILL MOUNT

Frank P. Agius, 909 Washington Ave., Alpena, Mich. 49707, and Darrell E. Sims, 4984 Haken Rd., Alpena, Mich. 49809

Continuation of Ser. No. 300,695, Sep. 10, 1981, abandoned. This application Dec. 22, 1983, Ser. No. 564,353
Int. Cl.³ B23B *47/28*
U.S. Cl. 408—92 **20 Claims**



1. A device for adjustably supporting a power drill for drilling a safe, said device being temporarily attachable to a safe; and comprising the combination of: a pair of vertically spaced, horizontally disposed frames, vertical body members joining said horizontally disposed frames, a vertically disposed mounting frame, a plurality of elongated rods attached to said vertically disposed mounting frame and extending outwardly therefrom and a plate attached to the outer ends of said elongated rods, said elongated rods and said vertically disposed mounting frame and plate forming an elongated support movable horizontally and vertically relative to said horizontally disposed

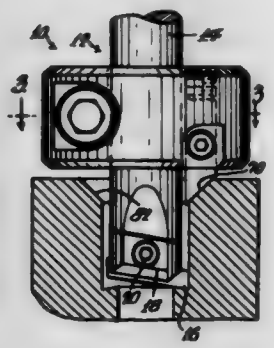
frames; means for adjustably positioning said power drill including a horizontally disposed rod in each of said horizontally disposed frames, a pair of secondary vertical body members and means on their upper and lower ends respectively slidably engaging said horizontally disposed rods, a carriage arranged to receive and hold a power drill, said carriage movably engaging said elongated support and means on said elongated support for moving said carriage relative thereto and means for temporarily clamping said horizontally disposed frames to a safe.

4,533,285

CUTTING ATTACHMENT FOR BORING TOOL

Charles A. Jorgensen, Antioch, Ill., assignor to Everede Tool Company, Chicago, Ill.

Filed Jun. 9, 1983, Ser. No. 502,502
Int. Cl.³ B23B *51/08*
U.S. Cl. 408—191 **13 Claims**



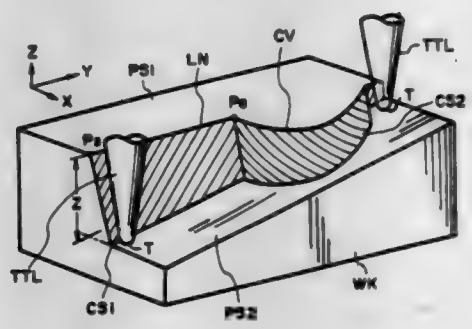
1. In combination with a boring tool having a cutting element adjacent an end of a bar for producing a hole in a working surface, a chamfering tool carried by said bar spaced from said cutting element for simultaneously producing a chamfer extending from said working surface to said hole, said chamfering tool comprising a collar having a slit dividing said collar into collar halves connected by an integral hinge with a fastener extending across said slit to releasably retain said collar on said bar, a removable cutting insert carried by said collar with a portion in said slit and having a cutting edge extending toward said end of said bar for simultaneously producing said chamber in said hole, and retainer means extending through said collar into said slit and engage said portion.

4,533,286

TOOL COMPENSATION METHOD

Hajimu Kishi, Hino; Masaki Seki, Suginami, and Masashi Kawasumi, Hino, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP82/00085, § 371 Date Nov. 17, 1982, § 102(e) Date Nov. 17, 1982, PCT Pub. No. WO82/03473, PCT Pub. Date Oct. 14, 1982
PCT Filed Mar. 30, 1982, Ser. No. 444,592
Claims priority, application Japan, Mar. 30, 1981, 56-047048
Int. Cl.³ B23G *1/00*
U.S. Cl. 409—80 **6 Claims**



1. A tool compensation method for offsetting a tapered tool by a distance corresponding to a tool radius from a commanded tool path for cutting a workpiece, wherein the tool path has a varied depth relative to a work surface, comprising the following steps:

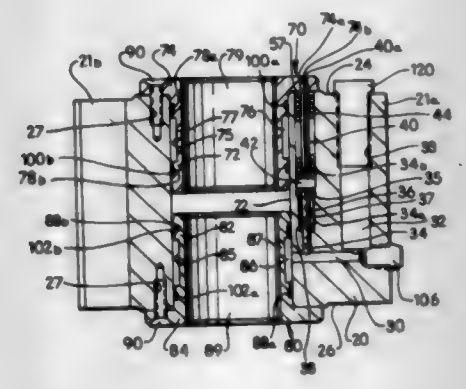
(a) storing data defining
  (i) the inclination a° of a uniform taper of the tapered tool, and
  (ii) a radius r of the tapered tool at a given height h above the tip of the tool;
(b) determining an offset value based on said data defining the inclination, said radius, and height; and
(c) offsetting the tool according to said offset value to cut the workpiece, thereby utilizing a corrected tool position dependent upon the depth of which the tool is infed.

4,533,287

CUTTER HEAD WITH LOCKING PRESSURE INDICATOR

Kenneth L. Hagemeyer, and Vernon W. Pearson, both of Rockford, Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 310,171, Oct. 9, 1981, abandoned. This application Jan. 10, 1984, Ser. No. 569,691
Int. Cl.³ B23C *5/26*
U.S. Cl. 409—234 **1 Claim**



1. In a tool cutter head of the type for mounting on a machine tool spindle and having a cutter body with first and second axial ends and a central bore therebetween, a first locking collar adjacent the first axial end and a second locking collar adjacent the second axial end with each locking collar having a radial flange portion fastened to the adjacent axial end and an expandable fluid pressure receiving portion extending partially into the central bore at that end expandable by fluid pressure to lock the cutter body to the spindle, and fluid pressure means in the cutter body for applying a preselected locking pressure to the fluid pressure receiving portions, the improvement comprising portions of said cutter body forming a first axial bore in fluid pressure communication with the first locking collar fluid pressure receiving portion adjacent said first axial end and extending axially therefrom to the opposite second axial end where the first bore terminates in an open end beneath the flange of said second locking collar, other portions of said cutter body forming a second axial bore in fluid pressure communication with the second locking collar fluid pressure receiving means adjacent said second axial end and extending axially therefrom to the opposite first axial end where the second bore terminates in an open end beneath the flange of said first locking collar, portions of the first and second locking collar flanges forming apertures coaxially aligned with the open bores therebeneath and also forming outer reference surfaces around the apertures, first and second pressure indicator means sealingly disposed in the respective open bores and movable through the coaxially aligned flange apertures in response to changes in locking pressure and first and second spring means in the respective open bores for biasing movement of the first and second pressure indicator means such that said first indicator means is positioned coincident with the second locking collar flange reference surface and the second indicator means is positioned coincident with the first locking

collar flange reference surface when locking pressure is at the preselected value, whereby the first pressure indicator means together with the second locking collar flange reference surface display locking pressure for the first locking collar at the second axial end opposite from said first locking collar and the second pressure indicator means together with the first locking collar flange reference surface display locking pressure for the second locking collar at the first axial end opposite from said second locking collar.

4,533,288

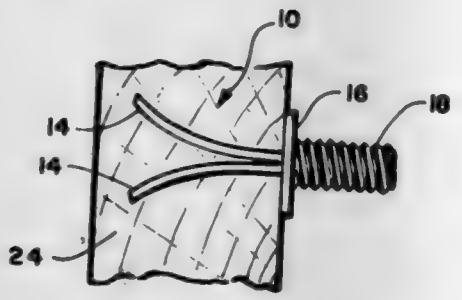
DRIVE FASTENER

Bernard W. Rivkin, Poway, and Michael R. Monfort, Ramona, both of Calif., assignors to P.P.M.D., San Diego, Calif.

Filed Jul. 29, 1982, Ser. No. 403,054

Int. Cl.³ F16B *13/06*

U.S. Cl. 411—176 **6 Claims**



1. An improved drive fastener comprising:

an elongated shank having a bifurcated end portion, the open distal end of said bifurcated end portion positioned at one end thereof and suitable for being driven into penetrable material and a threaded portion positioned at the opposite end of said shank; and

impact absorbing means comprising back-to-back nuts removably threaded on said threaded portion in a locked-together position and extending at least to the outer end thereof for receiving blows suitable for driving said drive fastener into penetrable material, the force of said blows causing the sides of said bifurcated end portion to spread apart as said fastener is driven into said penetrable material whereby the threaded portion of said fastener is not affected thereby.

4,533,289

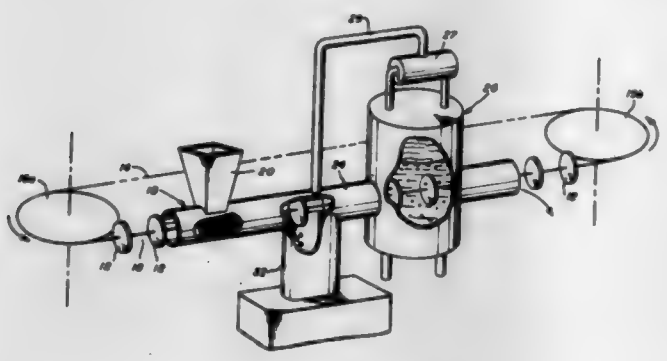
SEALING AND LIQUID DISPLACEMENT SYSTEMS FOR A LINEAR POCKET FEEDER

Adi R. Guzdar, Sudbury, Mass., assignor to Foster-Miller Associates, Inc., Waltham, Mass.

Filed Jun. 8, 1982, Ser. No. 386,256

Int. Cl.³ C10J *3/52*

U.S. Cl. 414—217 **16 Claims**



7. An improved linear pocket feeder for introducing granular solids into a vessel containing pressurized gas, the feeder having a sealed conveying tube, a plurality of pistons slidable within the tube and connected together to form pockets therebetween, means for feeding granular solids to the pockets, an unloading station for depositing the granular solids from the pockets into the pressurized vessel, means for driving the pistons through the tube in a desired direction of movement to transport the granular solids from the feeding means to the unloading station, wherein the improvement comprises:

at least one transfer tank disposed downstream from said unloading loading station with respect to the direction of movement of said pistons and through which the pistons and pockets travel;

a displacing liquid disposed within said transfer tank, said displacing liquid being less compressible than and more viscous than the gas disposed in said vessel;

means for supplying said displacing liquid to said transfer tank;

means for collecting gas displaced from said pockets by said displacing liquid;

means for conveying the displaced gas from said collecting means to said unloading station; and

means for maintaining a higher gas pressure in said transfer tank than in said unloading station.

4,533,290

FORK-LIFT ATTACHMENT WITH FOUR LATERALLY DISPLACEABLE PRONGS

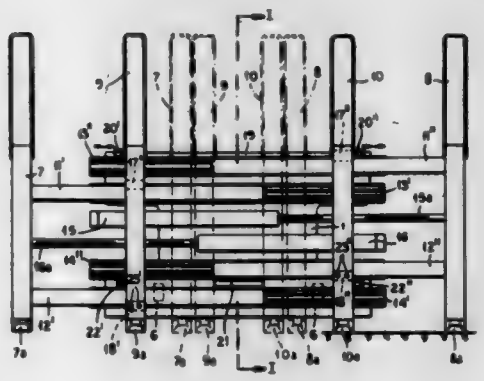
Klaus-Dieter Hackauf, Braunschweig-Timmerlah, Fed. Rep. of Germany, assignor to Hans H. Meyer GmbH Maschinenbau, Salzgitter, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 571,857

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301595

Int. Cl.³ B66F *9/12*

U.S. Cl. 414—667 **10 Claims**



1. A four-prong attachment for a fork-lift truck provided with a vertical lifting plate, comprising:

a vertical support plate attached to said lifting plate forwardly of a front face thereof;

two outer prongs and two inner prongs of generally L-shaped structure with upright legs lying in a plane forward of said support plate, the upright leg of each outer prong being provided with a pair of vertically separated horizontal mounting rails extending toward the other outer prong, said pairs of mounting rails being relatively offset in the vertical direction;

two pairs of horizontal guide rails fixedly mounted in vertically spaced-apart positions on said support plate with profiles complementary to those of said mounting rails, each pair of mounting rails slidably engaging a respective pair of guide rails;

two fluidic jacks respectively linked with said outer prongs and anchored to said support plate, said jacks being selectively operable to shift the respective outer prongs laterally in either direction with reference to said support plate, the upright leg of each inner prong being provided with holding means frictionally engaging the pair of mounting rails secured to the respectively adjoining outer prong for bidirectional entrainment by the latter upon a shifting thereof by the respective jack; and

abutment means carried on said support plate for arresting said inner prongs in internal and external limiting positions while enabling further shifting of said outer prongs by said jacks.

4,533,291

TURNOVER DEVICE

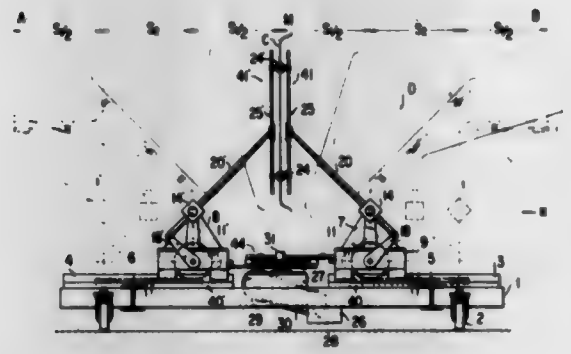
Kenji Nishida, Matsuto, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Aug. 9, 1984, Ser. No. 639,138

Claims priority, application Japan, Aug. 10, 1983, 58-123231[U]

Int. Cl.³ B65G *47/24*

U.S. Cl. 414—728 **4 Claims**



1. A turnover device adapted to receive a workpiece at its inlet end and deliver the workpiece in a turned over state from its outlet end at a distance from the inlet end, comprising a main body frame, first and second carriers supported on said main body frame so as to be movable in the inlet-outlet direction, first and second arm holders rotatably supported by said first and second carriers, respectively, first and second arm rods slidably held by said first and second arm holders, respectively, first and second workpiece holders fixedly secured to one end of said first and second arm rods, respectively, and adapted to detachably hold the workpiece, first and second crank drive mechanisms associated with said first and second carriers, respectively, and adapted to rock said first and second arm rods, respectively, in the inlet-outlet direction when said carriers are moved in the inlet-outlet direction, and carrier drive means for driving said first and second carriers simultaneously in the opposite directions so that they may approach to each other and they may separate from each other.

4,533,292

TURBINE ROTATABLE IN ONE DIRECTION IN A RECIPROCATING FLOW

Masahiro Sugihara; Etsuo Morishita; Tetsuo Hirai, and Shin Sekiya, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 17, 1983, Ser. No. 505,551

Claims priority, application Japan, Jun. 17, 1982, 57-106031

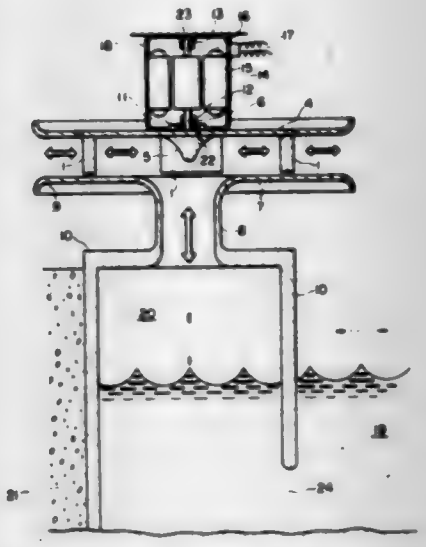
Int. Cl.³ F01D *5/04;* F03B *13/12*

U.S. Cl. 415—2 R **21 Claims**

1. A turbine rotatable in one direction in a reciprocating flow, comprising:

a rotary shaft;

a rotary pedestal fixed to said rotary shaft and provided with a plurality of rotor blades having a zero lift plane on a circular surface coaxial with said rotary shaft, said circular surface being generated by rotating a straight line about said rotary shaft, said straight line held at a non-zero angle to a plane, said plane intersecting said rotary shaft at a perpendicular angle; and



means for directing said reciprocating flow radially outward and radially inward when viewed from the center of rotation.

4,533,293

METHOD OF IMPROVING THE PART-LOAD BEHAVIOR OF A TURBO MACHINE, AND A COMPRESSOR OR PUMP ADAPTED FOR USE OF SUCH METHOD

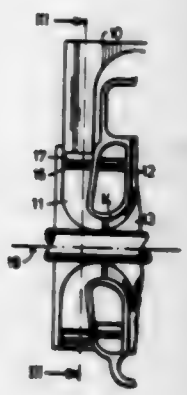
Rudolf Hendriks, Velp, Netherlands, assignor to Thomassen International, Netherlands

Filed Dec. 21, 1982, Ser. No. 452,022

Claims priority, application Netherlands, Dec. 22, 1981, 8105790

Int. Cl.³ F04D *29/68*

U.S. Cl. 415—117 **9 Claims**



1. A turbo machine adapted for use as a compressor or a pump, comprising:

a housing provided with an inlet and an outlet;

at least one driven rotor provided with rotor vanes in said housing, by means of which a free vortex flow of fluid is displaced in a path from the inlet to the rotor vanes without deflection by other vanes in said path, and then brought to a higher pressure level, and is finally discharged from the housing through the outlet; and

injection means provided in the region of the inlet for injecting extra fluid into the path of fluid from the inlet to the rotor, said injection means including a plurality of nozzles disposed in an annular array positioned concentrically with respect to the axis of the rotor at a greater distance than said rotor vanes from said axis, at least the majority of said nozzles being spaced substantially the same distance from said axis.

4,533,294

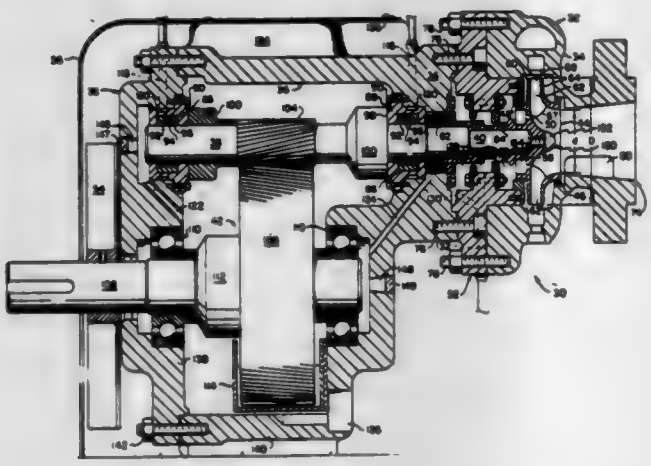
HIGH SPEED CENTRIFUGAL PUMP AND METHOD FOR OPERATING SAME AT REDUCED NOISE LEVELS

Hasan F. Onal, Denver, Colo., assignor to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 190,754, Sep. 25, 1980, abandoned. This application Jun. 20, 1983, Ser. No. 506,150

Int. Cl.³ F01D *5/08, 5/02*

U.S. Cl. 415—119 **12 Claims**



1. A single stage, single suction, high speed centrifugal pump comprising:

(a) a pump housing, said housing including a double volute portion,

(b) a bearing housing,

(c) a shaft mounted for rotation within said bearing housing with a portion of said shaft extending into said pump housing,

(d) means for rotating said shaft about an axis, said rotating means including a single-step helical gear arrangement,

(e) a closed Francis-van impeller mounted on said portion of the shaft extending into said pump housing for rotation therewith about the rotational axis of the shaft, said impeller having:

(i) an inlet eye having an inlet diameter,

(ii) a longitudinally extending hub portion and a radially extending vane support portion having an outer discharge diameter,

(iii) a plurality of vanes fixed to said vane support portion, said vanes spiraling outwardly to the outer periphery of said vane support portion and having leading and trailing edges and lead and trail angles,

(iv) an annular shroud fixed to said vanes,

(v) the lead angle of each leading edge of said vanes being about 60°40′ at said shroud and varying continuously to about 8° at said vane support portion,

(vi) the trail angle of each vane being about 16° at the trailing edge thereof,

(vii) each of said vanes having an angular extent of approximately 210° about the rotational axis of the impeller, and

(viii) each of said vanes being equally spaced peripherally about said impeller

(f) said double volute portion of said pump housing being mounted about said impeller to receive the discharge therefrom and having an inlet flow passage means with a portion thereof axially aligned and in fluid communication with the eye of the impeller,

(g) the ratio of the outer discharge diameter of said vane support portion to the inlet diameter of said impeller eye being at least approximately two, and

(h) means for controlling axial thrust along said shaft, said controlling means including:

(i) a pair of wear rings of predetermined diameter relative to each other formed between the pump housing and said impeller for separating the inlet pressure from the discharge pressure, and

(ii) at least one opening formed through said impeller, wherein said bearing housing includes a plurality of fins mounted thereon and extending outwardly of said bearing housing, and further including a fan mounted for rotation with said helical gear arrangement to drive ambient air by said fins whereby said bearing housing is air-cooled and the noise of said pump is attenuated.

10. A method for reducing the operating noise level of a single stage, single suction, high speed centrifugal pump for liquids operating at speeds up to 20,000 RPM, said method including the steps of:

(a) mounting a Francis-vane impeller including a radially extending vane support portion having an outer discharge diameter at least approximately twice the inlet diameter of the inlet eye of the impeller in an overhung manner on a first portion of a shaft within a double volute pump housing,

(b) rotatably mounting a second portion of said shaft within a bearing housing,

(c) driving said shaft at speeds up to 20,000 RPM, and

(d) maintaining said shaft under tension whereby vibration of said shaft is reduced as is the noise produced thereby.

4,533,295

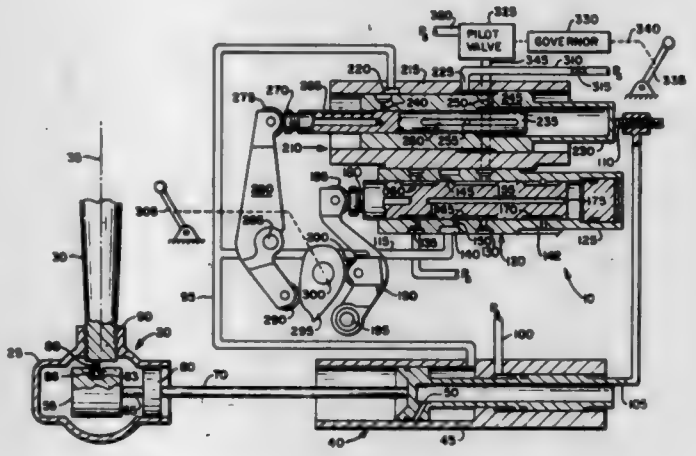
PITCH CONTROL SYSTEM FOR VARIABLE PITCH PROPELLER

Jerome G. Duchesneau, Andover, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 20, 1982, Ser. No. 451,637

Int. Cl.³ B64C *11/40*

U.S. Cl. 416—27 **12 Claims**



1. A pitch control system for a variable pitch propeller powered by an engine the output power of which is adjusted by a power lever, said pitch control system including an hydraulic actuator connected to the blades of said propeller for movement thereof in a pitch change direction, a propeller speed governor operating a pilot valve which provides an hydraulic signal indicative of desired propeller speed at engine power greater than a select power, said pitch control system being characterized by:

a first control valve set by said power lever for selectively applying said hydraulic speed signal to said actuator, said actuator adjusting the pitch of said blades in response to said hydraulic speed signal;

said first control valve including means for selectively blocking said speed signal from said actuator in response to a predetermined setting of said engine power lever corresponding to said select engine power setting; and

a second control valve, said second control valve, at a range of settings of said engine power lever corresponding to engine output powers of lesser magnitude than said select power, being hydraulically biased into operative connection between said engine power lever and said actuator for setting said actuator to control the pitch of said propeller blades by adjustment of said engine power lever at said

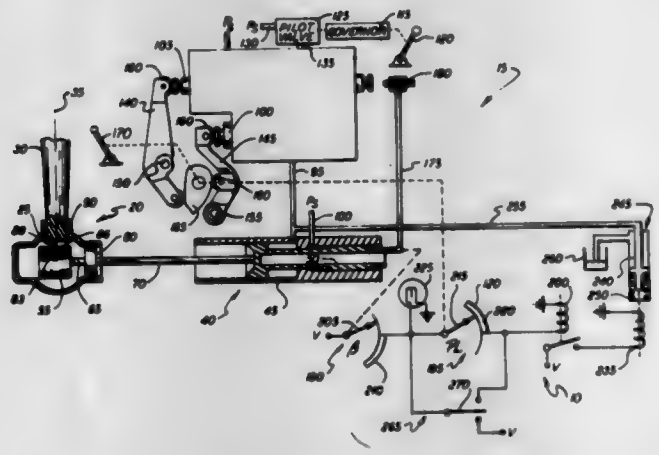
range of settings thereof independently of the operation of said governor and said pilot valve.

4,533,296

PITCH CONTROL SYSTEM FOR VARIABLE PITCH PROPELLER

Jerome G. Duchesneau, Andover, and Robert A. Schwartz, Vernon, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Nov. 7, 1983, Ser. No. 549,537
Int. Cl.[3] B64C *11/40*
U.S. Cl. 416—46 7 Claims



1. A pitch control system for variable pitch propeller powered by an engine, said pitch control system including means for controlling blade pitch in response to the output power of said engine being in a first range corresponding to a first range of blade pitch angle settings greater than a predetermined low pitch angle; beta means for controlling blade pitch in a second range of blade pitch angle settings less than said low pitch angle; and a mechanical low pitch stop for preventing control of blade pitch within said second range by other than said beta means, said system being characterized by an electrically operated backup for said mechanical low pitch stop, said backup comprising:

a voltage source;

a first switch actuatable by adjustment of blade pitch to angles less than said low pitch angle;

a second switch actuatable by adjustment of engine power to levels within said first range thereof; and

electrically operable means for adjusting the pitch of said propeller blades, said electrically operable pitch adjusting means being adapted for connection to a voltage source and actuation thereby for driving said blades toward feather by actuation of said first and second switching means under conditions of a malfunction of said mechanical low pitch stop.

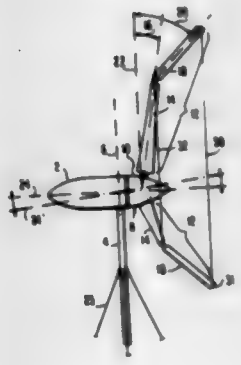
4,533,297

ROTOR SYSTEM FOR HORIZONTAL AXIS WIND TURBINES

David A. Bassett, 1708 Corwin Dr., Silver Spring, Md. 20910

Filed Sep. 15, 1982, Ser. No. 418,554
Int. Cl.[3] F03D *1/06*
U.S. Cl. 416—132 B 31 Claims

1. A rotor system for horizontal-axis wind turbines, including a rotor hub, a blade having an inner component mounted on said rotor hub to form a first fixed coning angle relative to a reference plane of blade rotation and an outer component extending from said inner component and ending in a blade tip, said outer component forming a second fixed coning angle



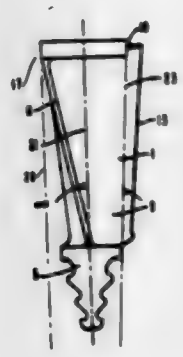
greater than said first coning angle relative to said reference plane of blade rotation.

4,533,298

TURBINE BLADE WITH INTEGRAL SHROUD

Albert J. Partington, and Ronald E. Warner, both of Media, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 2, 1982, Ser. No. 446,093
Int. Cl.[3] F01D *5/22*
U.S. Cl. 416—191 4 Claims



1. A plurality of rotatable blades to be disposed in a circular array on a turbine rotor, said blades comprising a root portion which fastens said blades to said rotor, an air foil shaped blade portion having a leading edge and a trailing edge and a shroud portion made integral with the blade portion and disposed on the radially outer end of the blade portion;

said shroud portion having a first planar surface and a second planar surface, the first planar surface being disposed generally parallel to an axial radial plane passing through the central portion of the root portion and the second planar surface if extended forming an angle with said axial radial plane generally equal in degrees to 360 divided by the number of blades forming said circular array.

4,533,299

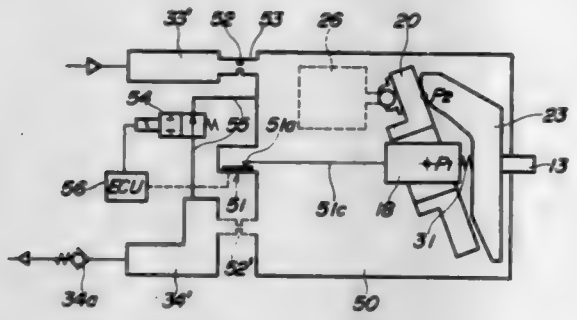
VARIABLE CAPACITY WOBBLE PLATE COMPRESSOR WITH PROMPT CAPACITY CONTROL

James C. Swain, and David L. Thomas, both of Columbus, Ohio, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed May 9, 1984, Ser. No. 608,566
Int. Cl.[3] F04B *1/26*
U.S. Cl. 417—222 11 Claims

1. A variable capacity wobble plate compressor comprising: a housing defining therein a crankcase, a lower pressure space, and a higher pressure space; a drive shaft rotatably disposed in said housing; a cylinder block arranged in said housing and defining therein a plurality of cylinders circumferentially arranged around said drive shaft and extending substantially parallel to the axis of said drive shaft, each of said cylinders having an interior thereof disposed for communication with said lower pressure space and said higher pressure space; pistons received in respective ones of said cylinders for recipro-

cating motions therein; said crankcase having an interior thereof disposed to be supplied with blow-by gas from said cylinders when said pistons thereof are on compression and suction strokes; a wobble plate arranged in said crankcase and pivotally and slidably fitted on said drive shaft for rotation together therewith, said pistons engaging said wobble plate for reciprocating motions in said respective ones of said cylinders as said wobble plate rotates; a pivot forming a first fulcrum supporting said wobble plate at a diametrically central location thereof and axially movable along said drive shaft; and an arm member rotatable together with said drive shaft about the axis of said drive shaft, said arm member forming a second fulcrum supporting said wobble plate at a location radially spaced from said drive shaft, whereby said second fulcrum is rotatable



about the axis of said drive shaft together with said arm member; said wobble plate having an angle of axial inclination thereof relative to said drive shaft variable about said second fulcrum for varying displacement of said pistons in response to the difference between resultant reaction force exerted by said pistons on compression strokes thereof and pressure in said crankcase acting upon said pistons as back pressure; a first passage having an orifice and communicating said lower pressure space with the interior of said crankcase for permitting escape of internal pressure in the latter into the former; a second passage communicating said higher pressure space with the interior of said crankcase for introducing internal pressure in the former to the latter; and a control valve means for controlling the opening of said second passage.

4,533,300

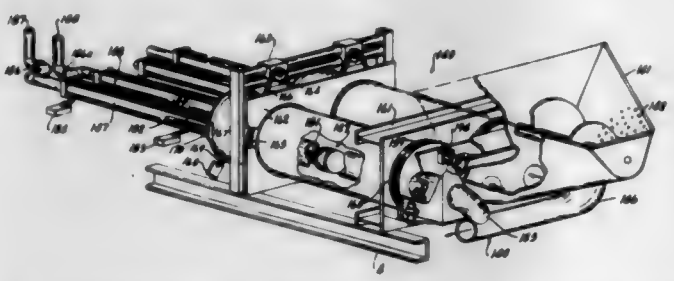
HIGH PRESSURE PUMPING APPARATUS FOR SEMI-FLUID MATERIAL

Robert E. Westerlund, 10409 N. Westview 41W, Mequon, Wis. 53092, and Wayne L. Read, West Bend, Wis., assignors to Robert E. Westerlund, Mequon, Wis.

Continuation of Ser. No. 366,596, Apr. 8, 1982, abandoned, which is a continuation of Ser. No. 112,420, Jan. 12, 1980, abandoned, which is a continuation-in-part of Ser. No. 47,301, Jun. 11, 1979, Pat. No. 4,345,883. This application Jun. 15, 1984, Ser. No. 620,898

Int. Cl.³ F04B *15/02*

U.S. Cl. 417—339 **9 Claims**



1. A continuous flow pumping system for high pressure pumping a semi-fluid material with a substantially constant and uniform pressure discharge, comprising

(a) a supply means having a power discharge means for forcing of the material from said supply means, said supply means having at least two spaced outlet opening means,

(b) a manifold means having at least two spaced inlet means connected to a common output means for establishing an output flow,

(c) a first pump means having first and second pump units separately operable to receive said material and to discharge said material,

(1) first support means mounting said first pump means adjacent said supply means and said manifold means with said first and second pump units aligned one each with a first of said outlet opening means and with a first of said manifold inlet means,

(2) said first support means including first transfer means for simultaneous movement of said first and second pump units to reverse said alignment with said first outlet opening means and said first manifold inlet means,

(d) a second pump means having third and fourth pump units separately operable to receive said material and to discharge said material, and

(1) second support means mounting said second pump means adjacent said supply means and manifold means with said third and fourth pump units aligned one each with a second of said supply outlet opening means and with a second of said manifold inlet means,

(2) said second support means including second transfer means for simultaneous movement of said third and fourth pump units to reverse said alignment with said second outlet opening means and said second manifold inlet means, and

(e) operating means for operating said first and second pump means and said first and second transfer means and including means to move one of said pump means with the other of said pump means held in position, and establishing alternating pumping cycles, each of which has three distinct pumping stages and with one cycle including a first stage in which said first pump means is positioned and discharging the first pump unit and charging the second pump unit with the second pump means completing the discharge of the third pump unit and the charging of the fourth unit and a second stage in which said first pump means continues to operate in the mode of the first stage and said second pump means is being transferred to reverse the position of the third and fourth pump units, and a third stage in which said first pump means continues to operate in the mode of the first stage and said second pump means is actuated to charge and discharge the third and fourth pump units and with the alternate second pumping cycle corresponding to said one cycle with said first and second pump means operating in the mode of the opposite pump means in said one cycle.

4,533,301

PUMP

Leslie W. Foster, 2154 Sheridan Hills Rd., Wayzata, Minn. 55391

Continuation of Ser. No. 484,473, Apr. 13, 1983, abandoned. This application Sep. 17, 1984, Ser. No. 650,998

Int. Cl.³ F04B *43/00*; F01B *31/10*

U.S. Cl. 417—437 **6 Claims**

1. A pump particularly adapted to produce a reliable highly pressurized liquid flow, said pump comprising:

an upper housing,

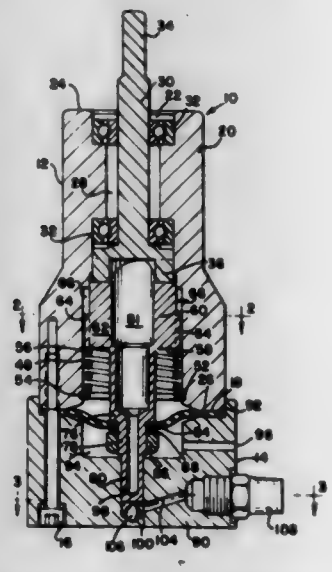
a lower cylinder connected to said housing,

a diaphragm interfacing between said housing and said cylinder to form a seal therebetween,

a drive shaft journaled in bearing means carried in a drive shaft chamber of said housing, said drive shaft having an end extending from said housing for connection with a source of rotary power and an opposite end formed with a camming surface,

a reciprocating member having an upper part slideably disposed in a lubricated reciprocating member chamber connecting with said drive shaft chamber in said housing

and supported on a spring carried in said pump with an outer surface of said member upper part fitting snugly in said chamber, said reciprocating member having a camming surface engaging with said drive shaft camming surface to produce a force continually aligned with a longitudinal axis of said member to move said reciprocating member in a first direction in alignment with said axis and compress said spring and free said reciprocating member to allow said spring to move said reciprocating member in a second opposite direction, said fit between said member upper part and said chamber having a length greater than said cam induced movement of said member, said member having a lower end extending beyond said diaphragm and including a piston positioned in a piston chamber in said cylinder with a diameter of said member upper part being greater than a diameter of said piston, and a set of slides on said member upper part with said



slides fitting within grooves in said member chamber to inhibit rotation of said member,

inlet and outlet valving devices connecting with said piston chamber to allow a flow of said liquid into and from said chamber, and

an overflow chamber in said cylinder and connecting with said piston chamber to receive liquid bypassing said piston with said overflow chamber connectable to a source of said liquid to provide for a return to said source,

wherein during operation of said pump, rotation of said drive shaft at about 800 rpm. reciprocates said reciprocating member to produce a liquid flow from said pump at pressures proximately 2500 psi., said fit between said member upper part and said member chamber and said alignment of said moving force promoting lineal alignment between said piston and said piston chamber to minimize wear between said piston and said piston chamber as said piston reciprocates therein.

4,533,302

GEROTOR MOTOR AND IMPROVED LUBRICATION FLOW CIRCUIT THEREFOR

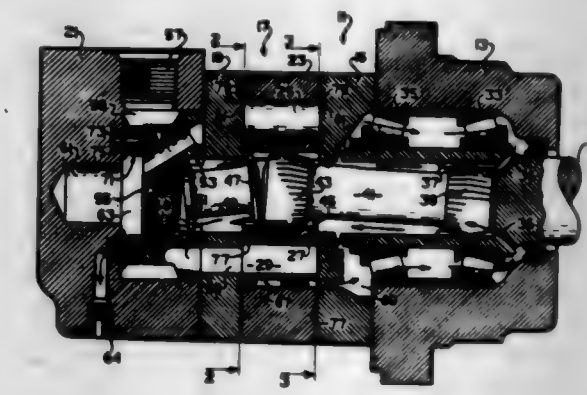
Benjamin D. Begley, Shawnee, Okla., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 17, 1984, Ser. No. 581,487

Int. Cl.³ F03C *2/08*

U.S. Cl. 418—61 B **19 Claims**

1. A rotary fluid pressure device of the type including housing means defining fluid inlet means and fluid outlet means; a gerotor gear set associated with said housing means and including an internally-toothed ring member, and an externally-toothed star member eccentrically disposed within sand ring member for relative orbital and rotational movement therein, said ring member defining a plurality of internal teeth, said internal teeth and the teeth of said star member interengaging to define expanding and contracting fluid volume chambers during said movement of said star member; valve means providing fluid communication between said fluid inlet means and said expanding volume chambers and between said contracting volume chambers and said fluid outlet means; input-output shaft means and main drive shaft means operable to transmit said rotational movement between one of said toothed members having rotational movement and said input-output shaft means; said main drive shaft means cooperating with said one of said toothed members to define first tongue transmitting drive means and cooperating with said input-output shaft means to define second torque transmitting drive means; means defining a lubrication flow path including said first and second torque transmitting drive means and means providing a generally continuous flow of lubrication fluid to said lubrication flow path, characterized by:



(a) said lubrication fluid providing means comprising each of said internal teeth including an axial end surface, said end surfaces cooperating with a first adjacent end surface of said housing means to define a first plurality of side clearance spaces, said first adjacent end surface defining a plurality of lubricant recesses, each of said recesses having a substantially greater axial extent than said clearance spaces and being disposed adjacent the radially outermost portion of said axial end surfaces of said respective internal teeth said side clearance spaces and said plurality of lubricant recesses providing fluid communication between said fluid volume chambers and said lubrication flow path.

4,533,303

HYDROSTATIC CONTROL DEVICE, PARTICULARLY STEERING DEVICE

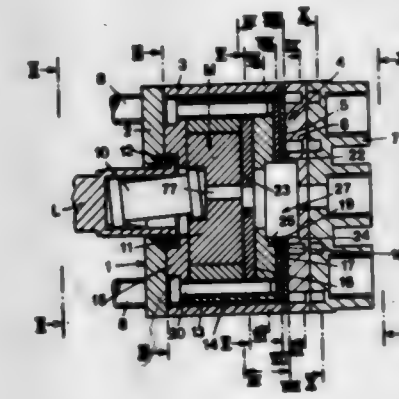
Hans C. Petersen, Nordborg; Erik Kyster, Augustenborg, and Svend E. Thomsen, Nordborg, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Nov. 21, 1983, Ser. No. 550,319

Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243400

Int. Cl.³ F03C *2/08*; F16H *31/02*

U.S. Cl. 418—61 B **11 Claims**



1. A hydrostatic steering control device, comprising, a housing have a plurality of ports including inlet and outlet ports and two motor ports connectable to an external servomotor, a metering motor having a casing rotatably mounted in said

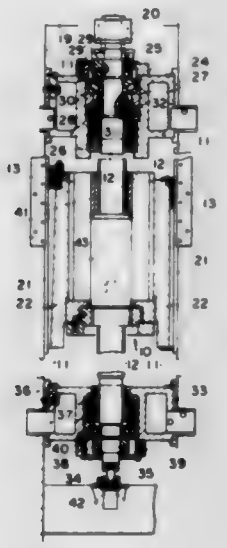
housing, a rotor mounted in said metering motor casing and being moveable relative thereto to form expansible and collapsible chambers, control shaft means for actuating said rotor, directional valve means for selectively directing pressurized fluid to and draining fluid from said motor ports, said directional valve means having opposite turn functions, said directional valve means having axially abutting planar faces respectively on said housing and said metering motor casing and being operable upon said shaft turning said casing and said rotor in unison, commutating valve means for selectively directing pressurized fluid to and drainage fluid from said motor means to impart directional movement thereto pursuant to the operation of said directional valve means, said commutating valve means being between said metering motor casing and said rotor, resilient means for maintaining said directional valve means in a neutral position in the absence of a turning force on said shaft, passage means cooperable with and connecting said housing ports with said directional valve means and said commutating valve means, said directional valve means being operable for each said turning function to (1) route pressure fluid from said inlet port through one side of said commutating valve means to expanding chambers of said metering motor and pressurized fluid from collapsing chambers of said metering motor to one of said motor ports and (2) route fluid from the other of said motor ports to said outlet port.

4,533,304

MOLD OPENING AND CLOSING MECHANISM FOR A TIRE VULCANIZER

Itaru Amano, Kobe, and Seisuke Fukumura, Hyogo, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Apr. 25, 1984, Ser. No. 603,892
Int. Cl.³ B29H *5/02*
U.S. Cl. 425—32 **4 Claims**



1. A mold opening and closing mechanism for a tire vulcanizer, comprising:

an upper movable mold and a lower fixed mold;

means for vertically moving said upper mold to open and closed positions with respect to said fixed lower mold wherein said means for moving said upper mold further comprises a ball-screw shaft assembly including a reversibly rotatable screw shaft and a threaded nut vertically movably and threadedly engaged with said screw shaft through a ball member; and

resilient buffer means resiliently supported on both upper and lower ends of the screw shaft.

4,533,305

SURFACE TREATED TIRE CURING BLADDER, TREATMENT COMPOSITION THEREFOR AND METHOD FOR CURING TIRES

Louis F. Comper, and Robert F. Scheiderich, both of Danville, Va., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation of Ser. No. 440,127, Nov. 8, 1982, abandoned, which is a continuation of Ser. No. 208,612, Nov. 20, 1980, Pat. No. 4,359,340. This application Sep. 17, 1984, Ser. No. 651,649
Int. Cl.³ B29D *29/00*
U.S. Cl. 425—43 **3 Claims**

1. A cured, rubber, expandable tire cure bladder having a coating on its outer exposed surface, where said coating consists essentially of the product of a mixture of:

(i) about 20 to about 40 parts by weight hydroxyl capped polydimethylsiloxane characterized by having a viscosity in the range of about 12 million to about 28 million centistokes at 25° C.;

(ii) about 35 to about 70 parts by weight of at least one silane selected from (a) a methyl hydrogen silane, characterized by having a viscosity in the range of about 20 to about 40 centistokes at 25° C., (b) dimethyl hydrogen silane characterized by having a viscosity in the range of about 80 to about 120 centistokes at 25° C. and (c) methyl trimethoxy silane;

(iii) optionally, about 3 to about 12 parts by weight of a metal salt of an organic acid selected from at least one of zinc, magnesium, manganese and cobalt acetate, stearate, propionate, glutonate and actoate thereof; and

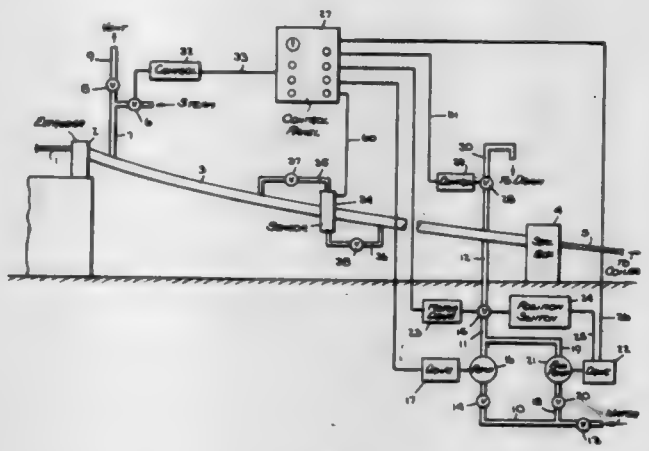
(iv) about 10 to about 25 parts by weight surfactant for said polydimethylsiloxane.

4,533,306

APPARATUS FOR MAINTAINING LEVEL OF LIQUID-GAS INTERFACE IN A VULCANIZING TUBE

John C. Frederick, Yuba City, Calif., assignor to Pirelli Cable Corporation, Union, N.J.

Filed Oct. 31, 1983, Ser. No. 546,857
Int. Cl.³ B29H *5/28*
U.S. Cl. 425—71 **14 Claims**



1. A catenary tube vulcanizer for vulcanizing extruded vulcanizable stock, said vulcanizer having a catenary tube through which the vulcanizable stock is passed and having a level control, a cooling medium supply line connected to one part of said tube, said vulcanizer further comprising:

a heating medium control valve on said heating medium line for controlling the supply of heating medium to said one part of said tube;

a cooling medium control valve on said cooling medium supply line for controlling the supply of cooling medium to said another part of said tube;

said level control comprising a magnetic float responsive to the level of said cooling medium in said tube and hence, to the interface between said cooling medium and said heat-

ing medium, and multiple switches controlled in accordance with the position of said float;

said cooling medium control valve having a bi-directional drive means for opening and closing said cooling medium control valve, said drive means being connected to said level control such as to be drivable one direction to close the water supply valve at a high cooling medium level and in another direction to open the cooling medium control valve upon occurrence of a low cooling medium level; and

said heating control medium valve also being connected with said level control for control of said heating medium valve by said level control.

4,533,307

APPARATUS FOR PREPARING THIN GEL SLABS FOR ELECTROPHORESIS

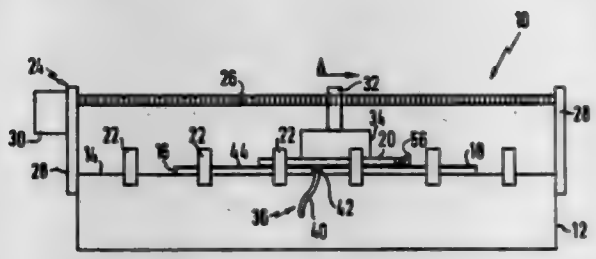
Wilhelm Ansorge, Heidelberg, Fed. Rep. of Germany, assignor to Europaisches Laboratorium fur Molekularbiologie (EMBL), Fed. Rep. of Germany

Division of Ser. No. 275,894, Jun. 22, 1981, Pat. No. 4,460,525. This application Jan. 27, 1984, Ser. No. 574,357

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024288

Int. Cl.³ B29C *15/00*; B01D *59/42*

U.S. Cl. 425—90 **20 Claims**



1. An apparatus for preparing a thin layer of a thickness and a material useful in electrophoresis, comprising:

(a) an elongate horizontal support having opposed sides;

(b) a bottom mold element supported on said support;

(c) opposed guide means on opposite sides of said support;

(d) a top mold element disposed between said guide means parallel to and spaced a distance equal to the thickness to a layer useful in electrophoresis from said bottom mold element for longitudinal movement over said bottom mold element; and

(e) a drive operatively attached to said top mold element for moving said top mold element relative to said bottom mold element in a forward direction parallel to said support.

4,533,308

MULTIMANIFOLD EXTRUSION DIE AND COEXTRUSION PROCESS

Peter Cloeren, 2206 N. 16th St., Orange, Tex. 77630

Continuation-in-part of Ser. No. 600,961, Apr. 16, 1984, abandoned. This application Apr. 27, 1984, Ser. No. 604,995

Int. Cl.³ A21C *3/00*

U.S. Cl. 425—131.1 **5 Claims**

1. A multimanifold extrusion die for minimizing or eliminating the curtaining effect that moreover automatically provides for convergence of molten thermoplastic streams at substantially equal flow velocities, said multimanifold extrusion die comprising

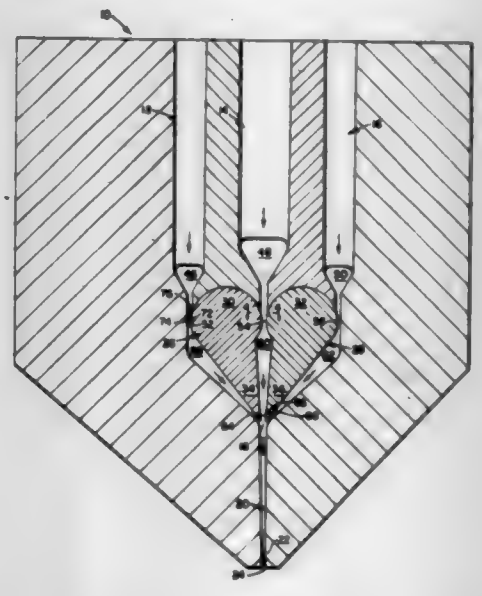
(a) a first and a second flow channel, which traverse said die and eventually converge at a point of convergence within said die; and

(b) free floating, pivoting divider means disposed between said flow channels;

wherein each of said flow channels comprises a manifold chamber situated upstream from said divider means, and further comprises in descending downstream order, a pressure compensating restriction channel, an expansion chamber, and a tapered flow restriction channel; said pressure compensating restriction channel being formed in part by a head portion of said divider means; and said expansion chamber having a cross-sectional area greater than that of any cross-section of said pressure compensating restriction channel, and being also of greater cross-sectional area than said tapered flow restriction channel;

wherein said manifold chamber has a longitudinal dimension of sufficient magnitude that a molten thermoplastic stream exiting from said manifold chamber is at a relatively greater pressure at a side-to-side midpoint than at the sides thereof;

wherein said pressure compensating restriction channel is of increasing cross-sectional area from the center to each end thereof so as to provide inverse resistance to flow



whereby the molten stream, which is at said relatively greater pressure at said midpoint prior to flowing through said pressure compensating restriction channel, is caused to exit from this channel at substantially equal pressure from side to side;

wherein said expansion chamber and said tapered flow restriction channel have a longitudinal dimension that maintains the molten stream at said substantially equal pressure;

whereby a molten stream exits at said substantially equal pressure from said tapered flow restriction channel of each of said flow channels, and convergence of the molten streams forms a layered melt stream that is flowing at said substantially equal pressure;

said free floating divider means automatically pivoting in response to any difference between the flow rates of said molten streams whereby said convergence is at substantially equal flow velocities.

4,533,309

COLLAPSING FRAME FOR MOVING TUBES OF PLASTIC MATERIAL

Mirek Planeta, 5396 Windermere Dr., Burlington, Ontario, Canada (L5L 3M5)

Filed Jun. 15, 1983, Ser. No. 504,570

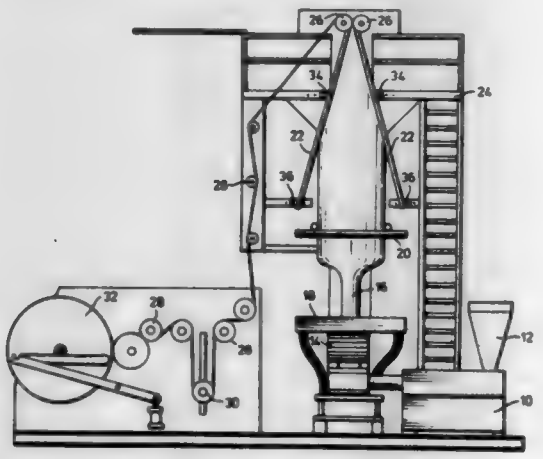
Int. Cl.³ B29C *15/00*

U.S. Cl. 425—326.1 **5 Claims**

1. A collapsing frame for collapsing a tube of plastic material from a tubular circular cross-section to a flattened form, the collapsing frame comprising:

two frame members each adapted to be disposed on a diametrically opposite side of the tube and converging toward one another in the direction of movement of the tube so as to collapse the tube upon movement of the tube in said direction of movement and engagement of the tube with the frame members,

each frame member having mounted thereon for engagement with the tube a plurality of parallel rollers mounted for free rotation about parallel axes that are perpendicular to the direction of tube movement, the width of said parallel rollers increasing progressively and symmetrically about a centre line in said direction of tube movement, so as to progressively contact a larger surface portion of the tube as it moves between the converging frame and guide the tube until its width is defined by the width of the frame,



each rollers comprising a plurality of independently rotatable rollers mounted side-by-side with one another to provide a substantially continuous surface of engagement with the tube, said independently rotatable rollers constituting means effective to permit said tube to have different speeds in the direction of movement of said tube and being of a material so as to provide a minimal coefficient of friction with said tube.

4,533,310

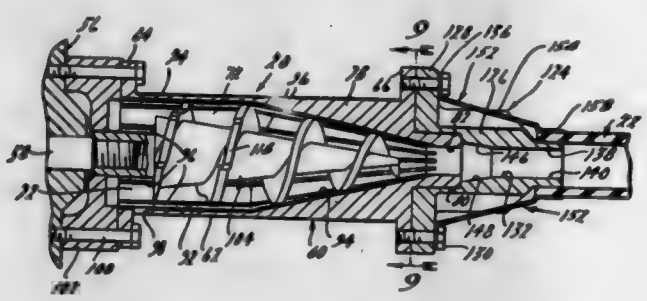
ICE MAKING APPARATUS

Joseph R. Spinner, Albert Lea, Minn., assignor to King-Seeley Thermos Co., Prospect Heights, Ill.

Division of Ser. No. 187,133, Sep. 15, 1980, Pat. No. 4,433,559, which is a continuation of Ser. No. 867,892, Jan. 9, 1978, abandoned. This application Jul. 28, 1982, Ser. No. 402,552

Int. Cl.³ B05B *3/00*

U.S. Cl. 425—376 R **9 Claims**



1. Apparatus for producing relatively solid ice bodies from crushed or flake ice comprising,

an extruder body having an axially extending generally horizontally disposed circular chamber therein having a wall section of progressively decreasing diameter,

a generally vertically disposed downwardly extending ice inlet the center line of which is laterally displaced from the axis of said chamber opening into the side of said chamber adjacent the larger end of said section through which said ice can enter said chamber in part at least under the influence of gravity,

an ice extruding auger rotatably mounted in said body and having a helical ice advancing flight thereon of substatially the same progressively decreasing diameter as the corresponding chamber section and forming with said wall section an annular space,

said auger acting to advance said ice from said inlet through said annular space and thereby compress and dewater the same and produce said relatively solid ice bodies,

means axially aligned with and disposed at the larger end of said chamber for rotating said auger,

and an axially extending outlet for said relatively solid ice bodies axially aligned with said chamber and positioned adjacent the smaller end of said auger body.

4,533,311

APPARATUS FOR PRODUCING DEEP, CONICAL OR CYLINDRICAL CERAMIC HOLLOW BODIES FROM A POWDERED OR GRANULAR PRESSED MASS BY ISOSTATIC COMPRESSION

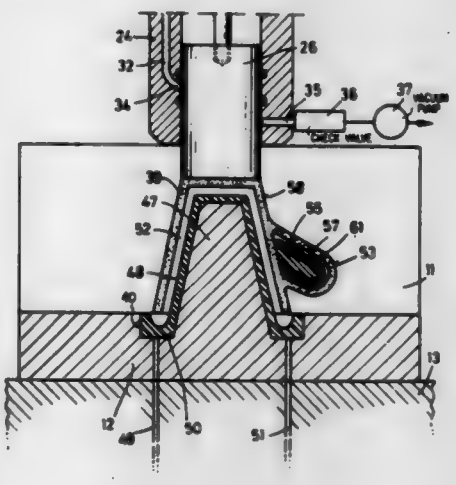
Wilhelm von Karchowski, Trier, Fed. Rep. of Germany, assignor to Laeis-Werke AG, Trier, Fed. Rep. of Germany

Filed Feb. 9, 1984, Ser. No. 578,572

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1983, 3304576

Int. Cl.³ B30B *5/02, 11/00*

U.S. Cl. 425—405 H **14 Claims**

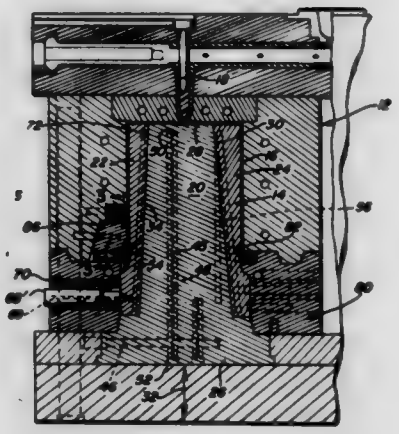


1. Apparatus for producing deep conical or cylindrical ceramic hollow bodies from a powdered or granular pressing material according to an isostatic compression process, said apparatus comprising, in combination: a hydraulic press including a machine base, a crosshead supported on and vertically disposed above said base; a storage container, including a dosaging member for the pressing mass, mounted on said crosshead; a pressure piston displacably mounted in a cylindrical body suspended from said crosshead; and a pressing mold mounted on said base beneath said cylindrical body, and including female and male mold portions, said female mold portion having a fill opening for the pressing mass in its upper surface with said fill opening being sealable by said pressure piston when it is lowered; said male and female mold portions defining, within said pressing mold, a major press chamber for forming a hollow body and an additional press chamber for forming at least one projection on said hollow body, with said additional pressure chamber being connected with said major press chamber, said female mold portion being divided into a plurality of sections along at least one parting surface extending through said additional press chamber for said at least one projection; means for maintaining said female mold sections in a closed position to form said press chambers during the pressing process and for moving said female mold sections apart in a direction perpendicular to the direction of movement of said pressure piston at the end of a pressing process; and isostatic pressure means, including at least one diaphragm which is disposed in said press chambers between said male and female mold portions to define a pressure chamber which is chargeable with a pressurized fluid, for compressing pressing material in said press chambers during the pressing process.

4,533,312
SIMPLIFIED COLLAPSIBLE MOLD CORE

John W. Von Holdt, 6864 Lexington La., Niles, Ill. 60648

Filed Dec. 27, 1982, Ser. No. 453,230
Int. Cl.[3] B29C *1/06*; B29F *1/022*
U.S. Cl. 425—438 12 Claims



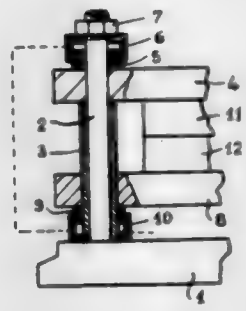
1. In molding apparatus a collapsible mold core and an outer mold half for defining a mold cavity therebetween, and means for placing molten material for molding into the mold cavity, said collapsible core defining outer core members movable between a molding position and a collapsed position to permit removal of the object mold, container lip forming means carried in said mold including an annular member extending axially of said core for defining an annular trough in said container lip, said container lip forming means and outer core members being movable by stripper plate means while the remainder of said core member is stationary, and further including cam means actuatable as said outer core members move longitudinally and inwardly in the motion of mold collapse to force said outer core members to move forward relative to said container lip forming means as the mold is opened.

7. A collapsible mold core for use with an outer mold half for defining a mold cavity therebetween and means for displacing molten material into the mold cavity for molding a part, said collapsible mold core comprising, in combination, central inner core means of the general shape of a truncated cone but having a plurality of substantially flat surfaces extending along the length of said inner core means in circumferentially spaced relation, a first plurality of outer core elements, one in engagement with each of said flat surfaces for longitudinal sliding movement relative to said flat surfaces, said flat surfaces being tapered relative to the longitudinal axis of said central inner core means, and a second plurality of outer core elements positioned around said central inner core means intermediate said first outer core elements and equal in number thereto, the outer surfaces of said first and second plurality of outer core elements together defining a generally cylindrical surface when in their expanded molding position, said central inner core means having arcuate surfaces intermediate said flat surfaces and said second plurality of outer core elements being in engagement with corresponding ones of said arcuate surfaces for longitudinal sliding movement relative to said arcuate surfaces, said first and second outer core elements being slidable relative to said central inner core means in one direction to form a molding configuration and in a second direction to define a collapsed configuration, said first plurality of outer core elements being interconnected with said second plurality of outer core elements by pins extending between side elements so that said second plurality of outer core elements vertically supports said first plurality of outer core elements.

4,533,313
PRESS WITH COLUMNS COMPENSATED FOR DEFORMATION DURING TIGHTENING

Pierre Poncet, 12 bis Rue Trarieux, 69003 Lyon, France

Filed Jun. 22, 1984, Ser. No. 592,310
Int. Cl.[3] B29F *1/06*
U.S. Cl. 425—451.2 6 Claims

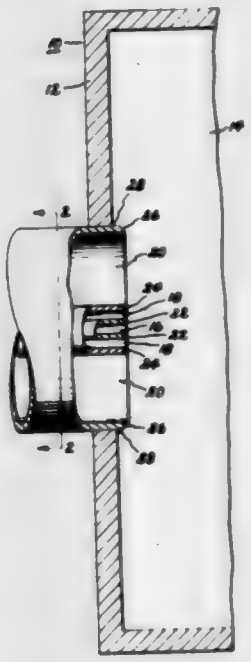


1. Press comprising columns of which each is constituted by a central core slidably surrounded by a sleeve, whilst an auxiliary jack is disposed between these two members for pre-stressing the core in traction and the sleeve in compression, characterized in that this auxiliary jack is controlled by the hydraulic tightening pressure so as to impose on the sleeve a pre-stress of compression equal or at least approximately equal to the force of traction imposed on the core of the column, so as to eliminate, or at least reduce to a large extent, the deformations of the sleeve during tightening of the press.

4,533,314
METHOD FOR REDUCING NITRIC OXIDE EMISSIONS FROM A GASEOUS FUEL COMBUSTOR

Paul V. Herberling, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 3, 1983, Ser. No. 548,374
Int. Cl.[3] F23J *7/00*
U.S. Cl. 431—4 7 Claims



1. A method for reducing nitric oxide emissions from a gaseous fuel combustor, comprising:

introducing a combustion gas containing nitrogen and oxygen into a combustion chamber;

introducing a fuel gas into said chamber;

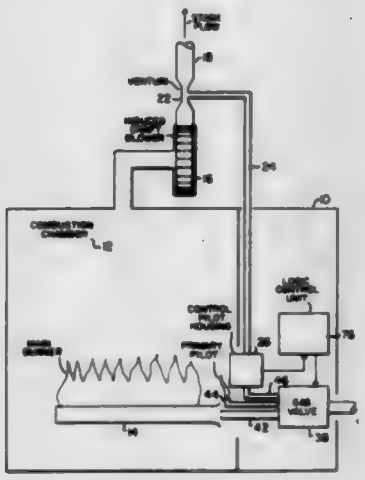
introducing a cooling gas into said chamber in such a manner that said cooling gas is interleaved between said combustion gas and said fuel gas substantially at the point where said gases are introduced into said chamber.

4,533,315

INTEGRATED CONTROL SYSTEM FOR INDUCED DRAFT COMBUSTION

Lorne W. Nelson, Bloomington, Minn., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Feb. 15, 1984, Ser. No. 580,325
Int. Cl.³ F23M *3/00*
U.S. Cl. 431—20 **6 Claims**



1. A system for controlling the fuel to air ratio in an induced draft combustion chamber comprising in combination:
a combustion chamber;
a gas fuel burner in said combustion chamber;
means for supplying fuel to said combustion chamber fuel burner;
means for inducing a flow of air in said combustion chamber to support combustion of said fuel;
a control pilot chamber;
a gas fuel burner in said control pilot chamber
means for supplying fuel to said control pilot burner;
means for establishing a proportional ratio between the quantity of fuel fed to the combustion chamber burner and the quantity of fuel fed to said control pilot burner;
means coupling said control pilot chamber to said means for inducing a flow of air so that a quantity of air drawn through said control pilot chamber is proportional to the quantity of air drawn through said combustion chamber; and
means for controlling the fuel to air ratio in said control pilot chamber.

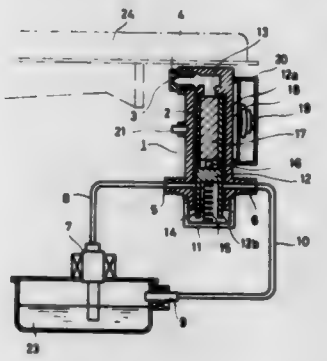
4,533,316

VAPORIZING TYPE FUEL COMBUSTION APPARATUS WITH TAR REMOVAL DEVICE

Kenichi Takino, Yao; Eiji Yamasaki, Nara, and Kenji Murakami, Takaishi, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Dec. 8, 1981, Ser. No. 328,664
Claims priority, application Japan, Dec. 8, 1980, 55-176001; Dec. 10, 1980, 55-174973
Int. Cl.³ F23N *5/24*
U.S. Cl. 431—32 **5 Claims**

1. A fuel combustion apparatus of a fuel vaporizing type comprising:
a fuel injector for receiving liquid fuel and dispensing vaporized fuel;
a vaporizing chamber being formed within said fuel injector;
a vaporizing cylinder operatively positioned within said vaporizing chamber;
a vaporizing core operatively positioned within said vaporizing cylinder;
a heater being positioned adjacent to said fuel injector for heating liquid fuel supplied thereto;
supply means for supplying liquid fuel to said vaporizing chamber for vaporization of said liquid fuel by said heater;
control means for selectively deactivating the supply means while activating the heater for removing tar from within said fuel injector;
wherein said control means includes a timer and a thermistor



for selectively controlling the heating of said fuel injector for a predetermined time at a predetermined temperature without fuel being supplied thereto for removing tar from said fuel injector.

4,533,317

YTTRIUM OXIDE MANTLES FOR FUEL-BURNING LANTERNS

Gilbert J. Addison, Wichita, Kans., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Aug. 29, 1983, Ser. No. 527,217
Int. Cl.³ F21H *3/00, 1/02*
U.S. Cl. 431—100 **9 Claims**

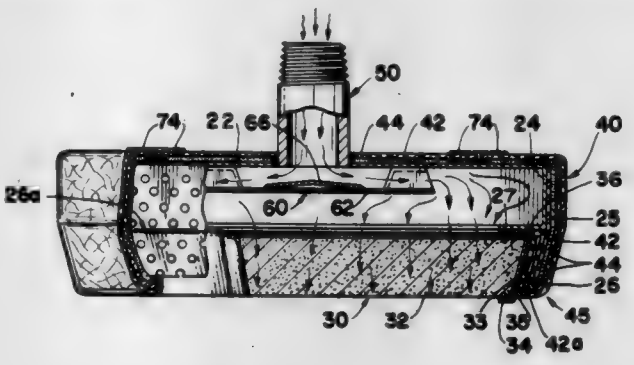
1. A mantle of improved strength and durability for a fuel-burning lantern, comprising an open-topped woven combustible mantle sack impregnated with a mixture of metal hydroxides convertible to the corresponding metal oxides on first firing to provide an incandescent metal oxide mantle, the upper portion of said mantle sack providing a hardened attachment head, wherein the improvement comprises having said mantle sack impregnated with a hydroxide mixture consisting essentially of yttrium hydroxide modified with a small proportion of cerium hydroxide, said hydroxides being present in relative proportions providing a metal oxide mantle containing from 1.8 to 3.8 parts by weight of cerium oxide per 100 parts of yttrium oxide.

4,533,318

RADIANT BURNER

Arnold L. Buehl, Solon, Ohio, assignor to Slyman Manufacturing Corporation, Cleveland, Ohio

Filed May 2, 1983, Ser. No. 490,343
Int. Cl.³ F23D *13/12*; F24C *3/04*
U.S. Cl. 431—328 **3 Claims**



1. In a gas-fired radiant burner including a gas-permeable matrix of refractory fiber material having a generally equal degree of porosity throughout, the matrix having an inner face, and outer face, and a gas nonpermeable peripheral edge separating the faces, the burner further including a plenum means sealed against the periphery of the inner face of the matrix to

supply a pressurized combustible gas thereto for burning at the outer face of the matrix, the burner further including a flexible blanket of thermal insulation material wrapped around the outside of the plenum means to thermally insulate the plenum means from high temperature gas byproducts generated by said burning, an edge portion of the blanket being biased against the edge of the matrix, the improvement comprising:

a strip of deformable material fixed to the plenum means and extending about the peripheral edge of the matrix, the strip being bent over toward the peripheral edge of the matrix to engage the edge portion of the blanket to bias it against the peripheral edge of the matrix whereby the inner face of the heating element is restrained in position against the plenum means, wherein said strip of deformable material is constituted by sheet metal extending generally continuously about the peripheral edge of the matrix, the bent metal strip being separated from the peripheral edge of the matrix by the edge portion of the blanket, the strip applying to the edge portion of the blanket a generally constant biasing force at generally all points about the peripheral edge of the matrix.

4,533,319

METHOD OF AND APPARATUS FOR MONITORING A ROTARY KILN ASSEMBLY

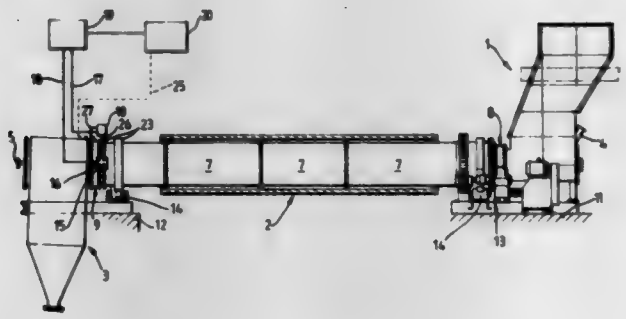
Clive A. Mathews, Preston, and George M. Gillies, St. Annes, both of England, assignors to British Nuclear Fuels Limited, Warrington, England

Filed Nov. 16, 1983, Ser. No. 552,440

Claims priority, application United Kingdom, Dec. 14, 1982, 8235591

Int. Cl.³ F27D *1/16, 21/00;* F27B *1/26*

U.S. Cl. 432—3 **6 Claims**



1. A method of monitoring a rotary kiln assembly which comprises, on a common longitudinal axis, a rotary kiln, an inlet arrangement for the kiln, an outlet arrangement for the kiln, seal means between the inlet arrangement and the kiln, further seal means between the kiln and the outlet arrangement, each of the seal means and the further seal means having a part rotatable with the kiln and another part secured to the respective inlet or outlet arrangement, the method comprising disposing a plurality of displacement transducers to detect relative displacement between the kiln and said inlet and outlet arrangements, which relative displacement is not restricted to movement in the common axis, transmitting from said transducers to a monitoring arrangement signals generated by said relative displacement, and monitoring said signals with the monitoring arrangement.

4,533,320

STABILIZING RETAINER SYSTEM

Jack Piekarsky, 23 Pilgrim Way, Wayne, N.J. 07470

Filed Jul. 26, 1984, Ser. No. 634,455

Int. Cl.³ A61C *3/00*

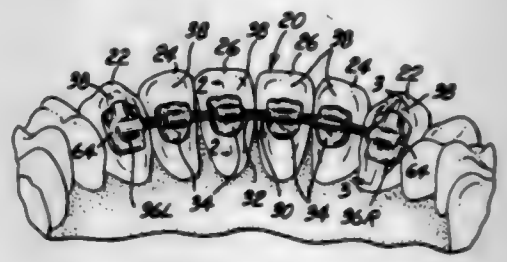
U.S. Cl. 433—9 **16 Claims**

1. A stabilizing retainer for maintaining the position of a series of teeth in the mouth, each tooth of the series including a surface area bounded by peripheral edges and having given surface contours, said stabilizing retainer comprising:

a relatively thin, conformable wire for placement in a predetermined position in which the wire spans the series of teeth and is conformed into contiguity with the series of teeth;

a plurality of individual, relatively thin bonding pads for being bonded, one each to each tooth of the series of teeth, each bonding pad including peripheral edges, an obverse surface and a reverse surface;

basal surface portions on the reverse surface of each bonding pad, the basal surface portions having a surface contour complementary to the surface area of a corresponding tooth of said series of teeth and a surface area less than the



corresponding surface area of said tooth such that the peripheral edges of each bonding pad will be spaced from the peripheral edges of the corresponding tooth when said bonding pad is bonded to said tooth; and

a transverse channel in each bonding pad, the transverse channel being generally complementary to the wire and open toward the reverse surface for receiving the conformable wire to locate each bonding pad and secure the conformable wire in said predetermined position when the bonding pads are placed over the conformable wire and bonded to said series of teeth.

4,533,321

BRAIDED ELASTOMER ORTHODONTIC TENSIONING DEVICE

Patrick D. Kidd, San Dimas; Terry L. Sterrett, Long Beach, and Craig A. Andreiko, Alta Loma, all of Calif., assignors to Sybron Corporation, Rochester, N.Y.

Filed May 1, 1984, Ser. No. 605,892

Int. Cl.³ A61C *3/00*

U.S. Cl. 433—18 **4 Claims**



1. An orthodontic tensioning thread comprising a braided plurality of elastomeric strands,

said plurality of strands having an overall outside diameter D and a combined cross sectional area A of elastomeric material,

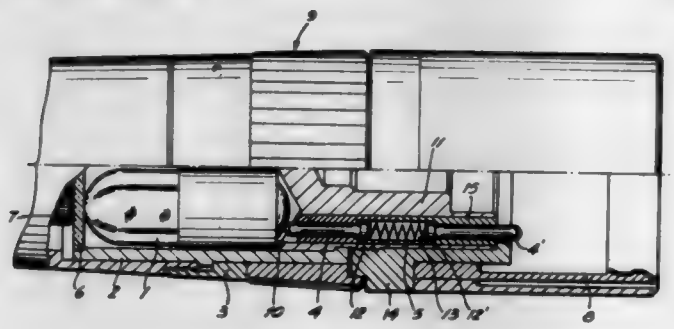
said strands interacting in tension to import to said thread properties of tensile strength, elasticity retention, tieability, and knot retention greater than corresponding properties of a monofilament of the same material and diameter D having a cross sectional area $\pi D^2/4$ greater than A.

4,533,322

DENTAL INSTRUMENT LIGHT

Philippe Garcia, Besancon, and Michel Seigneurin, Douvaine, both of France, assignors to Micro-Mega, Besancon, France

Filed Feb. 8, 1984, Ser. No. 578,278
Claims priority, application France, Feb. 8, 1983, 83 02092
Int. Cl.[3] A61C *3/00*
U.S. Cl. 433—29 3 Claims



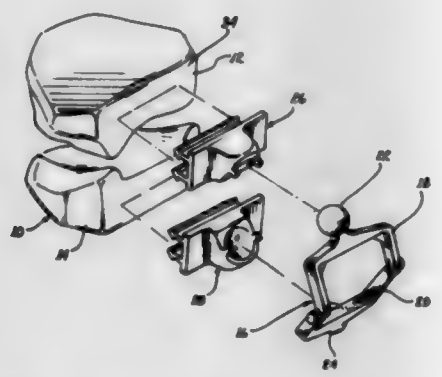
1. A device for supplying luminous energy to a dental instrument to illuminate an area of treatment on a tooth comprising, an electric bulb in the instrument, means for connecting the instrument to a head of an electrical energy supply cable, an optical fiber extends through the instrument having an end disposed for receiving luminous energy from the bulb for transmission therethrough, contact means for energizing the bulb immediately upon connection to the cable, the contact means comprising two conductive studs disposed separated from each other, a conductive biasing spring elastically separating the two studs, an insulating sleeve, and said studs being disposed axially spaced within said sleeve and said spring disposed in said sleeve maintaining the studs axially biased apart.

4,533,323

MOUNTING FOR DENTAL MODEL ARTICULATORS

Ronald E. Huffman, Tucson, Ariz., assignor to KV33 Corporation, Tucson, Ariz.

Continuation-in-part of Ser. No. 486,897, Apr. 20, 1983, Pat. No. 4,449,930. This application Sep. 19, 1983, Ser. No. 533,416
Int. Cl.[3] A61C *11/00*
U.S. Cl. 433—60 17 Claims



1. A one piece mounting for securing one part of an articulator to the rear face of a dental model cast made of flowable, curable, hardenable material, said mounting comprising in combination:

(a) plate means for bearing against the rear face and for positionally locating said mounting with respect to the dental model cast;

(b) a structure extending from said plate means for defining an element of a ball and socket joint; and

(c) locking means extending from another side of said plate means for insertion into th dental model cast through the rear face, said locking means including laterally expanded means for mechanically locking said member with the dental model cast upon curing of flowable, curable and hardenable material enveloping said laterally expanded means within the dental model cast;

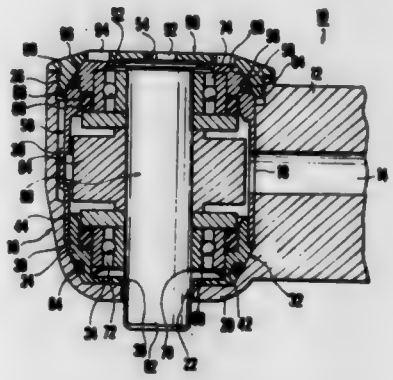
whereby, said mounting, upon mating of the other element of the ball and socket joint disposed upon the articulator with said structure, secures the dental model cast to the articulator.

4,533,324

AIR DRIVEN DENTAL HANDPIECE

Takasuke Nakanishi, Kanuma, Japan, assignor to Nakanishi Dental Mfg., Co., Ltd., Kanuma, Japan

Filed Feb. 7, 1984, Ser. No. 577,783
Claims priority, application Japan, Feb. 9, 1983, 58-17728[U]
Int. Cl.[3] A61C *1/05*
U.S. Cl. 433—132 1 Claim



1. An air driven dental handpiece comprising:

a handle portion having an axial passage for supplying air under pressure;

a turbine housing mounted on one end of said handle portion and having an axis extending perpendicular to the axis of the handle portion, said turbine having an opening therein communicating with said axial passage in said handle portion, having a bottom with a central opening therein, an outwardly and upwardly tapered annular surface around the inner bottom surface of said bottom, and internal threads around the inner peripheral surface of the top of said turbine housing;

a turbine cartridge removably mounted in said turbine housing, said turbine cartridge having a closed lower end and a closed upper end, said closed lower end having a central opening and an outwardly facing outwardly and upwardly tapered annular surface around the periphery thereof abutting said tapered annular surface on the inner surface of said bottom, said closed upper end having a central opening and an outwardly facing outwardly and downwardly tapered annular surface around the periphery thereof;

ball bearings in the lower and upper parts of said tubine cartridge;

an air turbine rotatably mounted in said turbine cartridge and having a rotor shaft mounted in said ball bearings and radially extending turbine blades mounted on said shaft, said rotor shaft extending perpendicularly to said handle portion and said shaft, blades and bearings being resiliently mounted in said cartridge in the direction of the length of said shaft;

a head cap having a central exhaust opening and external threads around the periphery thereof threaded into the internal threads around the peripheral surface at the top of said turbine housing, said cap having a downwardly and outwardly tapared annular surface on the under side thereof abutting said downwardly and outwardly tapered annular surface on the upper end of said turbine cartridge for holding said turbine cartridge in a single fixed position in said turbine housing;

at least one of said tapered annular surfaces in each pair of abutting tapered annular surfaces having an inwardly recessed slot therein; and

elastic sealing rings fitted in said inwardly recessed slots and

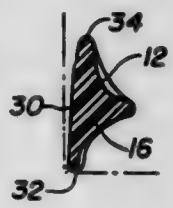
in sealing engagement with the other of the abutting pair of annular tapered surfaces.

4,533,325

METHOD AND APPARATUS TO PRODUCE ARTIFICIAL TEETH FOR DENTURES

John J. Blair; Frank P. Fonvielle, both of York; Richard A. Smith, New Freedom; Barry D. Dehoff, York, and Roger C. Shue, Red Lion, all of Pa., assignors to Dentsply Research & Development Corp., Milford, Del.

Filed Jul. 1, 1983, Ser. No. 510,405
Int. Cl.³ A61C *13/22*
U.S. Cl. 433—171 4 Claims



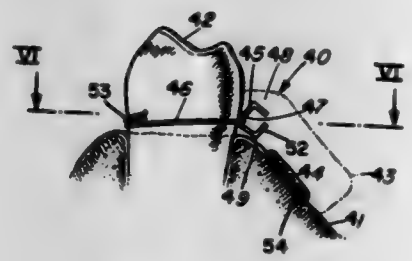
1. A plurality of integral artificial teeth comprising at least one anterior tooth having its labial face disposed at an angle from the vertical of about 0° to 10° sloping backward from the incisal edge for at least about 70 percent of the length of the tooth, and at least one posterior tooth having its buccal face disposed at an angle from the vertical of about 1° to about 10° sloping inward from the gingival edge for at least about 90 percent of the length of the tooth.

4,533,326

ORAL PACK RETENTION SYSTEM

Albert J. Anthony, 45 Central St., West Boylston, Mass. 01583

Continuation-in-part of Ser. No. 291,445, Aug. 10, 1981, abandoned. This application Jan. 13, 1983, Ser. No. 457,762
The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.
Int. Cl.³ A61C *19/06*
U.S. Cl. 433—229 14 Claims



1. An oral pack retention system for use in covering a location in the mouth, comprising:
(a) a retention fixture adapted to be located adjacent a tooth,
(b) a flexible wire adapted to extend tightly around the tooth and to be fastened to the fixture, and
(c) a mass of pack material cured to the fixture and covering the said location.

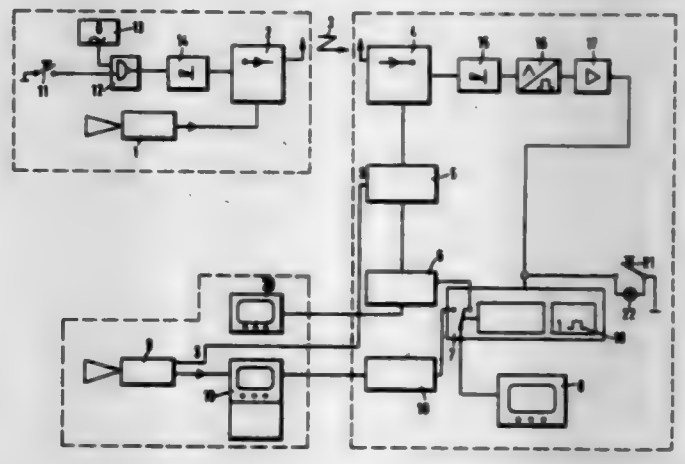
4,533,327

APPARATUS FOR THE SUPERVISION OF A COMBAT VEHICLE, ESPECIALLY AN ARMORED VEHICLE

Wolfgang Kratzenberg, Staufenberg, and Bernd Baeslack, Fuldabruck, both of Fed. Rep. of Germany, assignors to Wegmann & Co. GmbH, Kassel, Fed. Rep. of Germany

Filed Jun. 8, 1983, Ser. No. 502,355
Claims priority, application Fed. Rep. of Germany, Jun. 16, 1982, 3222970
Int. Cl.³ G09B *9/04*
U.S. Cl. 434—20 5 Claims

1. In an apparatus for supervising an armored battle vehicle from a control station during training in the field, the apparatus having a firing switch for producing a firing signal, at least one first television camera which is optically coupled to an aiming device in the vehicle and which produces a first video output signal, a television receiver disposed in the control station and means for transmitting the output signal of the first camera to the control station, the improvement comprising: a second television camera for producing a second video output signal



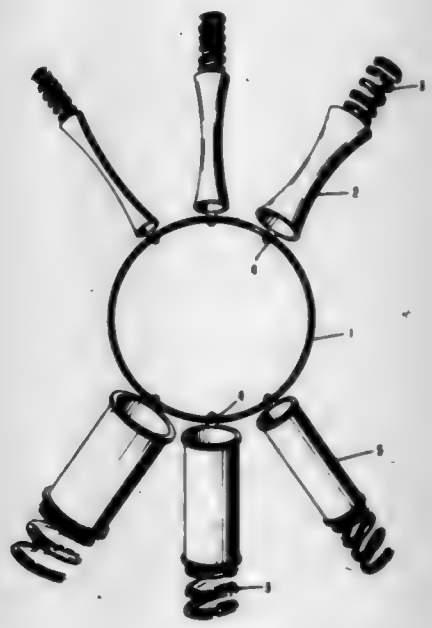
and disposed in a stationary location outside of the vehicle in the field and aimed at a target area; means conducting the second video output signal to the control station; means for effecting transmission of the firing signal to the control station by the transmitting means; and remotely controllable switching means disposed in the control station and actuated by the firing signal for applying either the output signal from the first camera or the output signal from the second camera to the television receiver in the control ration.

4,533,328

PERMANENT WAVE OR HAIR CURLING ROD AND ASSOCIATED HAIR CURL DISPLAY DEVICE

Francina E. McDaniel, 3320 Woodburn Village Dr., #23, Annandale, Va. 22003

Filed Mar. 15, 1984, Ser. No. 589,712
Int. Cl.³ G09B *25/00*
U.S. Cl. 434—94 18 Claims



1. A device for displaying the curls or waves produced by hair styling implements of different sizes comprising a support means to which is attached at least one of said hair styling implements or indicators thereof, each of said hair styling implements or indicators having a lock of hair intimately associated therewith, said lock of hair being representative of the

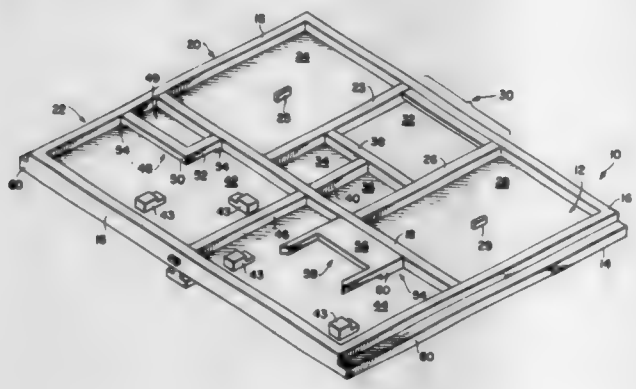
curl or wave produced by the hairstyling implement or indicator with which it is associated.

4,533,329

EDUCATIONAL DEVICE FOR TEACHING THE PROPER PLACEMENT OF INFORMATION

Corey N. Jones, Severn, and Patricia A. Hawkins, Laurel, both of Md., assignors to PSI Associates, Inc., Washington, D.C.

Filed Jun. 26, 1984, Ser. No. 624,735
Int. Cl.³ G09B *19/00*
U.S. Cl. 434—219 **16 Claims**



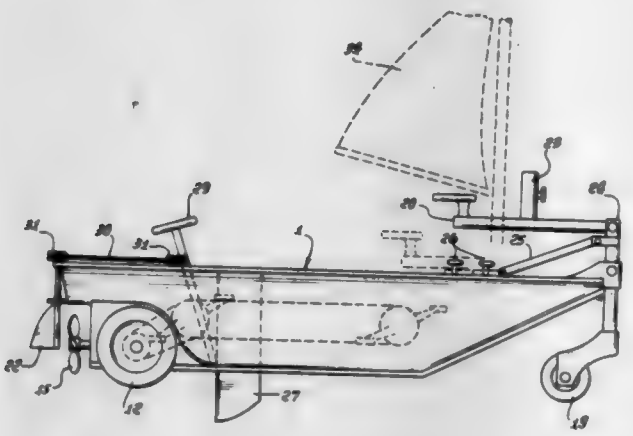
1. An educational device comprising:
a board having a top surface and a bottom surface, said top surface divided into a plurality of compartments, including
a holding compartment for holding a supply of information-receiving elements;
a processing compartment for positioning information receiving elements from said holding compartment, said processing compartment having retaining and guide means for retaining an information-receiving element and for guiding the placement of information onto a specific, desired position on the information-receiving element; and
a storage compartment for storing information-receiving elements processed in said processing compartment.

4,533,330

PEDAL POWERED SAILBOAT

Andrew Chun, #235, 3rd Ka, Nowon-dong, Puk-ku, Daegu, Rep. of Korea

Filed Aug. 18, 1983, Ser. No. 524,355
Int. Cl.³ B63H *16/00*
U.S. Cl. 440—30 **5 Claims**



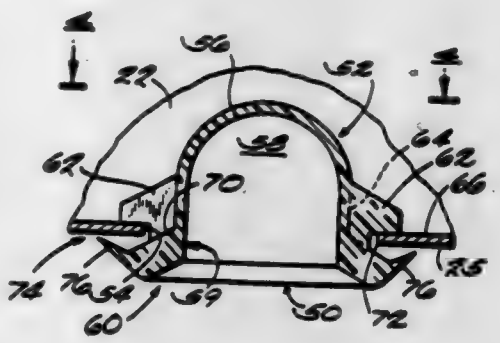
1. An amphibious pedal powered sailboat apparatus comprising in combination:
a relatively lightweight boat hull having an upper deck portion, a bow portion and a stern portion, said hull including peripheral air tanks mounted along the interior of said hull;
a front pair of wheels mounted on said hull for steering and to provide mobility of said apparatus on land and a rear pair of wheels mounted on said hull, to provide traction and mobility of said apparatus on land;
means for elevating said front pair of wheels mounted on said hull from ground level to deck level;
a first pedalling stand fixedly mounted in the bow portion of said hull and a second pedalling stand fixedly mounted in the stern portion of said hull;
said first and second pedalling stand each comprising a pair of foot pedals mounted on said pedalling stand for rotational movement about a horizontal axis transverse to the longitudinal axis of said hull;
drive means for coordinated operation of said pair of foot pedals on said pedalling stands;
said drive means including plural drive chains and plural sprocket wheels and gearing means for translating and apportioning the rotational movement of said foot pedals to a screw propeller mounted on said hull and to said pair of rear wheels mounted on said hull;
a sail for optionally powering said apparatus by wind power; and
steering means for controlling directional movement of said apparatus;
wherein rotational movement of said foot pedals by one or more occupants is transmitted to said gearing system of said drive means which synchronously powers said screw propeller and powers said rear pair of wheels to provide amphibious operation of said apparatus.

4,533,331

VENT AND DRAIN ASSEMBLY FOR MARINE PROPULSION DEVICE

Gerald F. Bland, Kenosha, Wis., assignor to Outboard Marine Corporation, Waukegan, Ill.

Continuation of Ser. No. 338,333, Jan. 11, 1982, abandoned. This application Nov. 14, 1983, Ser. No. 551,158
Int. Cl.³ B63H *21/26*; F16K *31/22*
U.S. Cl. 440—88 **13 Claims**



1. A marine propulsion device comprising a propulsion assembly including a lower unit having a gear case normally submerged in water and carrying a rotatably mounted propeller, an upper unit including a powerhead shroud normally located above the water, defining an engine compartment, and including a bottom wall with a portion extending forwardly of said lower unit, said portion having therein an aperture, and an outer, marginal wall surface extending from said aperture and intersecting said aperture to form an aperture edge, an internal combustion engine for driving said propeller disposed inside said engine compartment, and a vent and drain assembly including a valve member movably disposed in said aperture for movement between a normally open position and a closed position and including a sealing portion which is disposed exteriorly of said shroud bottom wall, and which is adapted to sealingly engage said marginal wall in an area in adjacently spaced relation from said aperture edge when said valve member is in the closed position, said valve member being in the normally open position to permit ventilation of said engine compartment to the atmosphere through said aperture and to afford drainage of liquid from said engine compartment through said aperture when the water level is below said

shroud bottom wall and being movable to the closed position to prevent ingress of water into said engine compartment through said aperture in response to a rise in the water level above said shroud bottom wall.

4,533,332

MOORING SYSTEM

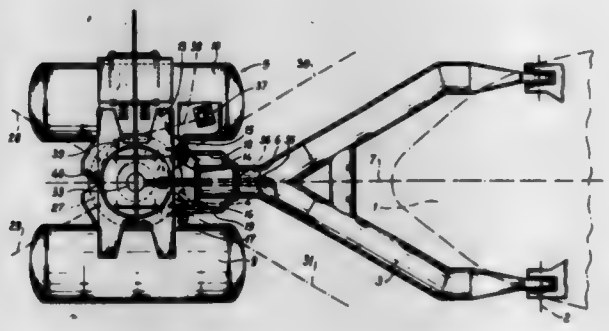
Anton Coppens, and Leendert Poldervaart, both of La Turbie, France, assignors to Single Buoy Moorings, Inc., Fribourg, Switzerland

Filed Feb. 1, 1983, Ser. No. 463,053

Claims priority, application Netherlands, Feb. 1, 1982, 8200358

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—3 **2 Claims**



1. In a mooring system comprising a buoy of the type floating at the water surface, which buoy is anchored by means of anchor chains, a floating vessel, a rigid arm interconnecting the vessel and buoy, said arm being connected with the vessel pivotably only about a horizontal axis extending transversely to the length of the arm and of the vessel; the improvement in which the buoy comprises at least two spaced-apart parallel elongated floats which are interconnected by a bridge member and which extend parallel to the length of the rigid arm and vessel, said bridge member having a turntable journalled thereon for rotation about a vertical axis, means connecting said anchor chains to said turntable, said arm being connected pivotably with the bridge member about a second horizontal axis parallel to the first mentioned horizontal axis, and means pivotably interconnecting said bridge member and said rigid arm for rotation relative to each other about an axis perpendicular to and passing through said second horizontal axis and extending lengthwise of said rigid arm.

4,533,333

HELICOPTER EXTRACTABLE COLD WEATHER/WATER LIFERAFT

Wesley A. Andrew, Woodbridge; Curtis E. Shields, Virginia Beach; Harry O. Hindlin, Virginia Beach, and Robert Hamilton, Virginia Beach, all of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Aug. 8, 1980, Ser. No. 176,376

Int. Cl.³ B63C *9/04*

U.S. Cl. 441—38 **7 Claims**

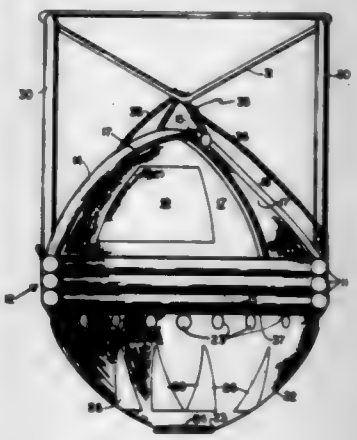
1. In an improved liferaft having a base supporting a continuous side above and a water filled ballasting chamber below for protecting survivors from exposure, an improvement therefor is provided comprising:

means extending beneath and across the base and terminating above it for cradling the base, sides and survivors;

means coupled to the cradling means at its termination above the base and sides for positioning a portion to engage a lifting hook;

means disposed on the ballasting chamber for providing at least one opening for dumping water from the ballasting chamber as the liferaft is lifted from the water by the lifting hook; and

means having three radially extending inflatable ribs supporting a covering which is coupled at its lower edge to the sides to form a protective enclosure for creating an aerodynamically stable body as the liferaft is being towed through the air after it has been lifted from the water, the covering is provided with an internally exposed layer that reflects heat in the interior to help prevent hypothermia, the cradling means has portions radially converging be-



neath and across the base and radially converges at the termination above the base and separated from and above the aerodynamically stable body creating means and the opening providing means is at least one panel having means between at least a portion of its periphery and the sides of the ballasting chamber for parting being subject to a predetermined pressure differential.

4,533,334

TOW LINE HANDLE

Joseph F. Ziomek, 3236 Pine Lake Rd., West Bloomfield, Mich. 48033

Continuation of Ser. No. 444,831, Nov. 26, 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,557

Int. Cl.³ B63B *21/56*

U.S. Cl. 441—69 **8 Claims**



1. A tow line handle adapted to be manually gripped in a generally upright orientation by a person being towed in a forward direction, said handle comprising an upwardly and forwardly sloping lower section adapted to be engaged by one hand of the towed person with a thumb of the one hand upwardly and the fourth finger of the one hand downwardly, said lower section of said handle including a lower end portion having first means for engaging a portion of a tow line to provide for the application of force to said handle by the tow line at a location beneath the fourth finger of the one hand, an

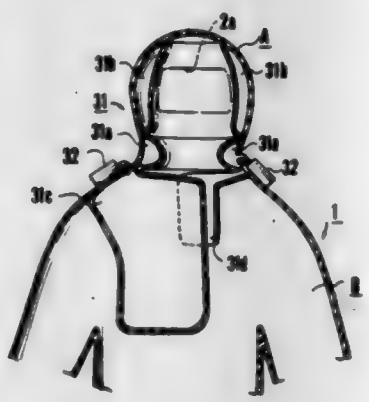
upwardly and forwardly sloping upper section adapted to be engaged by the other hand of the towed person with the thumb of the other hand upwardly and the fourth finger of the other hand downwardly adjacent to the thumb of the one hand, said upper section of said handle including an upper end portion having second means for engaging a portion of the tow line to provide for the application of force to said handle by the tow line at a location above the thumb of the other hand, and a connector section extending rearwardly from an upper end of said lower section to a lower end of said upper section to interconnect said upper and lower sections with the lower end of said upper section offset rearwardly of the upper end of said lower section so that the hands of the towed person are disposed with the palm of the one hand on a first side of said handle and the palm of the other hand on the opposite side of said handle and above the palm of the one hand, said connector section being disposed midway between said first and second means for engaging the tow line.

4,533,335

COLD-PROOF WATER-PROOF GARMENT

Takahiro Hoshino, Yokohama, Japan, assignor to Toyo Bussan Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 4, 1983, Ser. No. 472,021
Int. Cl.³ B63C *9/16*
U.S. Cl. 441—102 **10 Claims**



1. A method of facilitating rotation of a man wearing a full body suit with fluid buoyancy from a face-down prone position to a face-up prone position comprising the steps of:

(a) providing a full body suit having a buoyancy chamber internally of the suit asymmetrical over the chest of the wearer;

(b) inflating the body suit with a buoyant fluid adequate to float the wearer in a prone position; and

(c) inflating the buoyancy chamber (1) to provide asymetrical buoyancy within the body suit over the chest of the wearer and (2) to create additional space within the suit over the chest of the wearer asymmetrically for the buoyant fluid to collect to thus rotate the wearer from a face-down prone position to a position from which the wearer can complete the rotation to a face-up prone position.

4,533,336

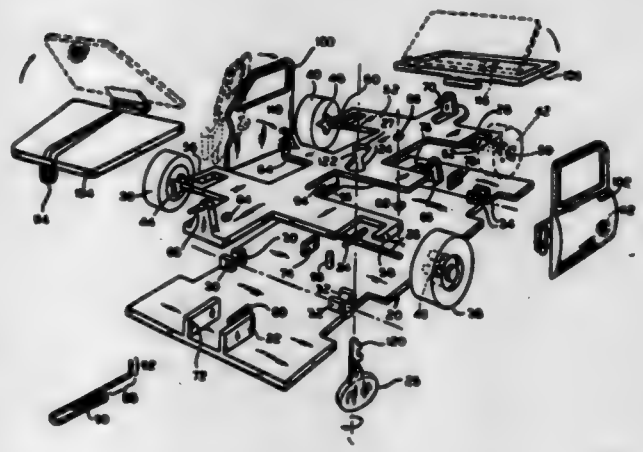
LOCKING TOY VEHICLE

John Dixon, and Peter Manning, both of Hayne Barton, Shillingford, Tiverton, Devon, England

Filed Apr. 29, 1983, Ser. No. 490,235
Int. Cl.³ A63H *17/00*
U.S. Cl. 446—465 **14 Claims**

1. A toy vehicle having a body with at least one part mounted thereon in movable relation thereto, a shackle on the interior of said part and projecting into the interior of said vehicle, a sliding lock member supported and positioned inside said body and slidable relative thereto to move between two positions, key means, means for permitting insertion of said key means into said body at a point which engages said sliding lock member is selectively move said lock member between said two positions responsive to a rotation of said key means, and bolt means on said sliding lock member for engaging said shackle in one of said two positions and disengaging said shackle in the other of said two positions;

wherein said at least one part mounted on said body in



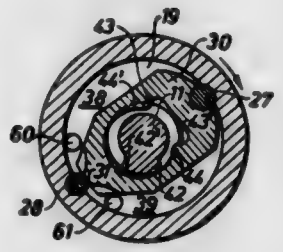
movable relation thereto includes a plurality of hinged body panels, each of said panels including a shackle, and a bolt means on said sliding lock member for engaging each of said shackles wherein said sliding lock member is in said one position for engaging each of said shackles.

4,533,337

HYDRAULIC TORQUE IMPULSE TOOL

Knut C. Schoeps, Tyresö, Sweden, assignor to Atlas Copco Aktiebolag, Nacka, Sweden

Filed Sep. 19, 1983, Ser. No. 533,500
Claims priority, application Sweden, Sep. 24, 1982, 8205485
Int. Cl.³ B25D *15/02*
U.S. Cl. 464—25 **10 Claims**



1. In a hydraulic torque impulse tool comprising a housing, a rotation motor, an inertia drive member rotatably supported in said housing and drivingly connected to said motor, said inertia drive member being rotatable about a rotation axis, a fluid chamber in said inertia drive member, and an output spindle having a rear end extending into said fluid chamber,

the improvement comprising:

a piston (30;130) movably supported in said fluid chamber (19;119) for performing alternate impulse generating strokes and return strokes therein in a plane transverse to the rotation axis of the inertia drive member (10;110), said piston (30;130) dividing said fluid chamber (19;119) into two compartments (38;39;138;139);

a first seal means (31;131) on said piston (30;130);

a second seal means (28;128) on said inertia drive member (10;110) arranged to cooperate with said first seal means (31;131) over only a limited portion of said piston strokes for sealing off one of said compartments from the other;

a first cam means (43,44;143;144) on said piston (30;130); and

a second cam means (42;142) on said output spindle (11;111);

said first cam means (43,44;143,144) engaging said second cam means (42;142) to reciprocate said piston (30;130) in said fluid chamber (19;119) and to transfer the torque impulses thereby generated to said output spindle (11;111)

during rotation of said inertia drive member (10;110) relative to said output spindle (11;111).

4,533,338

DAMPER DISC

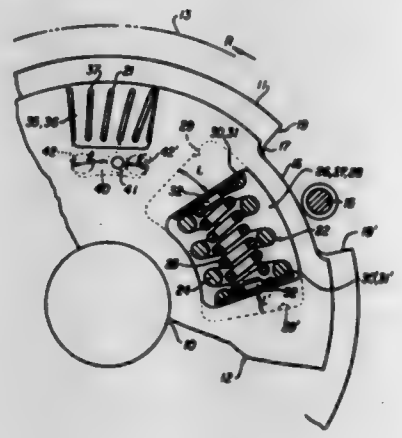
Tooru Hamada, Takatsuki, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Neyagawa, Japan

Filed Oct. 13, 1983, Ser. No. 541,641

Claims priority, application Japan, Oct. 13, 1982, 57-155394[U]

Int. Cl.³ F16D *3/14, 3/66*

U.S. Cl. 464—64 3 Claims



1. A damper disc comprising a hub adapted to be connected to an output shaft; a radial hub flange formed integrally with the hub; a pair of side plates having a torque input portion at the outer peripheral portion and disposed at the opposite sides of the hub flange; a pair of sub-plates disposed between the hub flange and the side plates; a sub-pin connecting the sub-plates together and passing through a circumferentially long recess in the hub flange radially outward from the hub, a circumferential space corresponding to a first torsion angle being formed between the sub-pin and the side edge of the recess; a first torsion spring mechanism radially outward from said sub-pin and having a low spring constant and operable to connect the sub-plates and the hub flange together at a torsion area below the first torsion angle; a second torsion spring mechanism having a large spring constant, connecting the side plates and the sub-plates together and operable to connect the side plates and the hub flange together at a torsion angle above the first torsion angle; and a stop pin connecting the side plates together and passing through recesses in said sub-plates and said hub flange radially outwardly from said second torsion spring mechanism.

4,533,339

CONSTANT VELOCITY JOINT

Sobhy L. Girguis, Magdalenestr. 19, D-5210 Troisdorf-Oberlar, Fed. Rep. of Germany

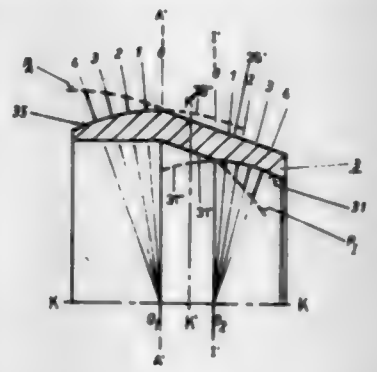
Filed Aug. 11, 1982, Ser. No. 407,096

Claims priority, application Fed. Rep. of Germany, Aug. 29, 1981, 3134272

Int. Cl.³ F16D *3/22, 3/30*

U.S. Cl. 464—146 10 Claims

10. In a constant velocity joint having a hollow outer component with longitudinal tracks in its inner surface, an inner component placed in said outer component with annular space therebetween, said inner component having tracks in its outer surface corresponding to those in said outer component, balls in said tracks of said outer and inner components for transmission of torque between the two, a cage having an axis and arranged in said annular space and having apertures retaining said balls in a ball plane, said cage having a spherical concave control surface having a concave center of curvature, said concave control surface facing a mating surface of said inner component, said cage having a convex spherical control surface having a convex center of curvature, said convex control surface facing a mating surface of said outer component, said concave and convex centers of curvature being located on said cage axis and being equally spaced on either side of said ball plane; the improvement comprising having said concave control surface extending substantially from a radial plane parallel to the ball plane and containing said concave center of curvature to the side remote from said ball plane, all other points on the remainder of the inner surface of said cage having a distance from said concave center of curvature greater than the radius of said concave control surface, said mating surface of said inner component passing substantially through said radial plane containing said convex center of curvature, the remainder of said outer surface of said inner component having a substantially similar contour as that of said inner surface of said



cage when articulated around said concave center of curvature by half the maximum joint angle, said convex control surface extending substantially from a radial plane parallel to the ball plane and containing said convex center of curvature to the side remote from said ball plane, all other points on said outer surface of said cage adjacent to said convex control surface having a distance from said convex center of curvature less than the radius of said convex control surface, said mating surface of said outer component passing substantially through said radial plane containing said convex center of curvature, the remainder of said inner surface of said outer member having a substantially similar contour as that of said outer surface of said cage when articulated around said convex center of curvature by half the maximum joint angle.

4,533,340

HYDRAULIC CONTROL SYSTEM FOR CONTINUOUSLY VARIABLE V-BELT TRANSMISSION

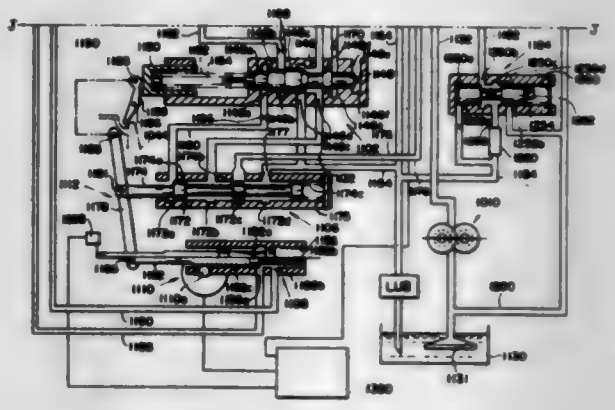
Keiju Abo, Yokosuka; Sigeaki Yamamuro, Zushi; Yoshikazu Tanaka; Haruyoshi Kumura, both of Yokohama, and Hiroyuki Hirano, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Oct. 20, 1983, Ser. No. 544,071

Claims priority, application Japan, Oct. 22, 1982, 57-184623

Int. Cl.³ F16H *11/04*

U.S. Cl. 474—28 8 Claims



1. A hydraulic control system for controlling a continuously variable transmission having a V-belt connecting a drive and a driven pulley, the drive pulley having a first cylinder chamber

and first and second conical discs, the driven pulley having a second cylinder chamber and third and fourth conical discs, the first conical disc being secured to a drive shaft, the third conical disc being secured to a driven shaft, the second conical disc being controllably movable in an axial direction with respect to the drive shaft in response to a fluid pressure in the first cylinder chamber, the fourth conical disc being controllably movable in an axial direction with respect to the driven shaft in response to a fluid pressure in the second cylinder chamber, the hydraulic control system comprising:

a source of hydraulic fluid pressure;

a line pressure regulator valve means for receiving and regulating said hydraulic fluid pressure and for generating a line pressure, said line pressure regulator valve means comprising a pressure regulating element having a pressure acting area exposed to said line pressure and being loaded by said line pressure in one direction, a member movable relative to said pressure regulating element, and spring means acting between said pressure regulating element and said member to bias said pressure regulating element in the opposite direction against said line pressure, said member being movable relative to said pressure regulating element to vary a length of said spring means, said spring means being constructed and arranged such that a force by which said spring means biases said pressure regulating element varies at a rate for a unit variation in said length thereof, which rate varies as said length varies, said pressure regulating element being movable in response to said force and said line pressure for effecting said regulation of said hydraulic fluid pressure thereby to generate said line pressure variable with said force;

a shift control valve means connected to said line pressure regulator valve means for receiving said line pressure and hydraulically controlling a reduction ratio between the drive and driven pulley; and

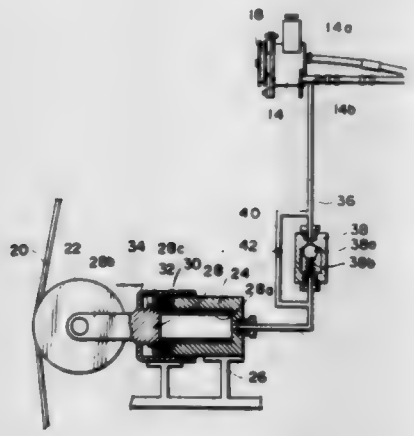
means responsive to said reduction ratio between the drive and driven pulley for urging said member toward said pressure regulating element so as to decrease said length of said spring means as said reduction ratio increases.

4,533,341

BELT TYPE POWER TRANSMITTING SYSTEM

Akira Yokota, Yokohama, Japan, assignor to Nissan Motor Company, Ltd., Yokohama, Japan

Filed Apr. 14, 1982, Ser. No. 368,677
Claims priority, application Japan, Apr. 20, 1981, 56-58434
Int. Cl.³ F16H *7/12*
U.S. Cl. 474—109 **8 Claims**



1. In a motor vehicle having a power steering pump driven by an engine of the vehicle and producing a hydraulic pressure indicative of a load on said pump, a power transmitting system for transmitting the power of the engine to said power steering pump, comprising:

an endless belt passing over both a first pulley directly driven by said engine and a second pulley securely mounted on a driving member of the power steering pump to rotate therewith;

an idler pulley rotatably engaging said belt to provide the same with tension; and

a hydraulic pressure-actuated device having mounted thereon said idler pulley, said device varying the position of the idler pulley relative to said belt continuously throughout a range in accordance with the load on said pump so that greater tension is provided between said idler pulley and said belt for greater loads on said pump and vice versa, said range having a predetermined minimum tension, said hydraulic pressure-actuated device being constantly and fluidly in communication with said pump irrespective of the magnitude of the pressure produced by said pump, wherein said hydraulic pressure actuated device comprises:

a movable member which is movable depending on the hydraulic pressure of hydraulic fluid supplied thereto, said movable member supporting thereon said idler pulley; and

a conduit fluidly connecting said hydraulic pressure actuated device with said pump for permitting fluid in said pump to flow toward said hydraulic pressure-actuated device when a predetermined minimum pressure corresponding to said predetermined minimum tension is exceeded and wherein said conduit comprises:

a check valve disposed in said conduit for closing said conduit when the pressure produced by said auxiliary device is lower than a predetermined value;

a bypass conduit bypassing said check valve; and

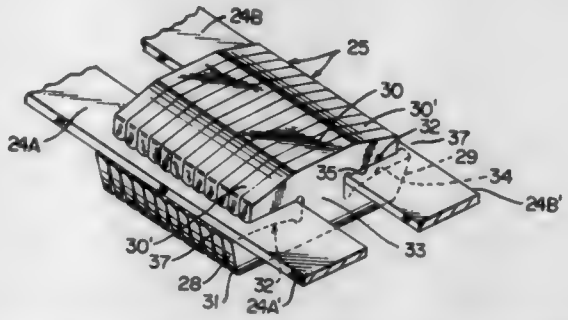
an orifice disposed in said bypass conduit for restricting the hydraulic fluid flow through said bypass conduit.

4,533,342

BELT CONSTRUCTION FOR A CONTINUOUSLY VARIABLE TRANSMISSION, TRANSVERSE BELT ELEMENT THEREFOR AND METHODS OF MAKING THE SAME

Joseph P. Miranti, Jr., Porter Township, Christian County; Larry R. Oliver, and Clyde O. Johnson, both of Springfield, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Jun. 6, 1983, Ser. No. 501,357
Int. Cl.³ F16G *5/00, 5/12*
U.S. Cl. 474—201 **16 Claims**



1. In a belt construction for a continuously variable transmission, said belt construction having an endless flexible band means, and a plurality of belt elements carried by said band means in sliding relation therewith, each belt element having slot means receiving said band means therein and having opposed faces disposed adjacent faces of adjacent belt elements, each belt element having opposed sides for respectively engaging pulley faces of said transmission, said slot means for each belt element defining a pair of slots respectively interrupting said opposed sides thereof and being spaced from each other by a central stem portion of said element, said pair of slots for each element receiving parts of said band means therein and respectively defining a pair of shoulders engaging said parts of said band means, each shoulder of each belt element having an arcuate transverse crown surface provided with an apex that engages its respective part of said band means, the improvememt wherein said apex of each transverse crown surface of its respective belt element is disposed closely adjacent to its respective side to tend to bias its respective part of said

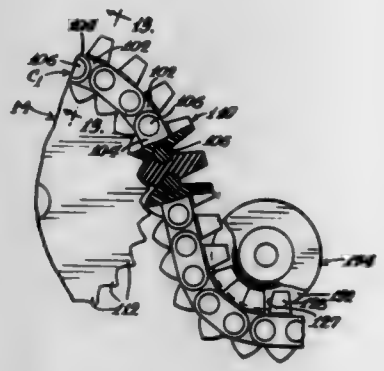
band means toward its respective central stem rather than toward its respective side.

4,533,343

ARTICLE STRAPPING METHOD AND APPARATUS, CHAIN ASSEMBLY FOR SUCH APPARATUS AND FOR OTHER APPARATUS, AND METHOD FOR MAKING SUCH CHAIN ASSEMBLY

Robert J. Kobiella, Rolling Meadows, Ill., assignor to Signode Corporation, Glenview, Ill.

Division of Ser. No. 442,524, Nov. 19, 1982, Pat. No. 4,479,834.
This application May 21, 1984, Ser. No. 612,572
Int. Cl.[3] F16G *13/02*
U.S. Cl. 474—207 **10 Claims**



1. A V-pulley-driven or sheave-driven chain assembly for use with a slip-feed type of strap carrier in a machine for automatically strapping articles, said chain assembly comprising:

a chain comprising alternate pairs of inner and outer links with the ends of each outer pair of links overlapping and pivotally connected to the ends of an inner pair of links, said chain also including at least a cross member extending between the inner pair of links along the pivot axis associated with each connected inner and outer link; and

a friction driven lug fabricated from resilient material, said driven lug including

(a) a mounting body portion for being mounted between two adjacent cross members, said mounting body portion defining a convex cavity on each of two opposite ends for receiving a portion of one of said cross members,

(b) a driven body portion extending from said mounting body portion below said chain, said driven body portion having a pair outwardly facing engaging surfaces for engaging a V-pulley or sheave, and

(c) an extension body portion projecting from said mounting body portion opposite said driven body portion, said extension body portion including

(1) a tapered portion decreasing in thickness with increasing distance from said mounting body portion ends to facilitate insertion of said lug between said two adjacent cross members, and

(2) a disposable portion projecting from the distal end of said tapered portion by which said lug can be pulled into position in said chain with said mounting body portion retained between said two adjacent cross members and which disposable portion can be subsequently severed from said lug.

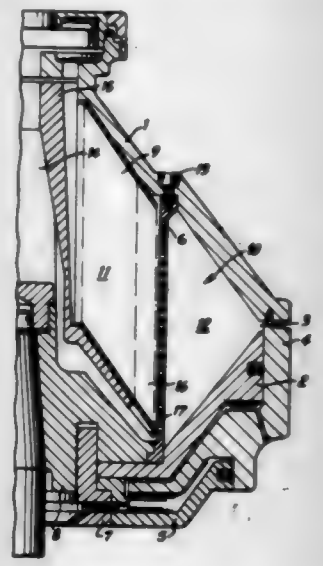
4,533,344

SELF-EMPTYING CENTRIFUGE DRUM

Hubert Gunnewig, Oelde, Fed. Rep. of Germany, assignor to Westfalia Separator AG, Oelde, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 629,937
Claims priority, application Fed. Rep. of Germany, Jul. 23, 1983, 3326708
Int. Cl.[3] B04B *7/16, 7/18*
U.S. Cl. 494—36 **8 Claims**

1. In a self-emptying centrifuge drum for clarifying and separating liquids, having two parts including a bottom and a cover and means rotation-symmetrically connecting the two parts to form an annular gap in the vicinity of the longest diameter for letting off separated solids, a plate insert for separating off solids and a piston slide for opening and closing the gap, the improvement wherein the connecting means comprises a strainer basket mounted concentrically inside the drum



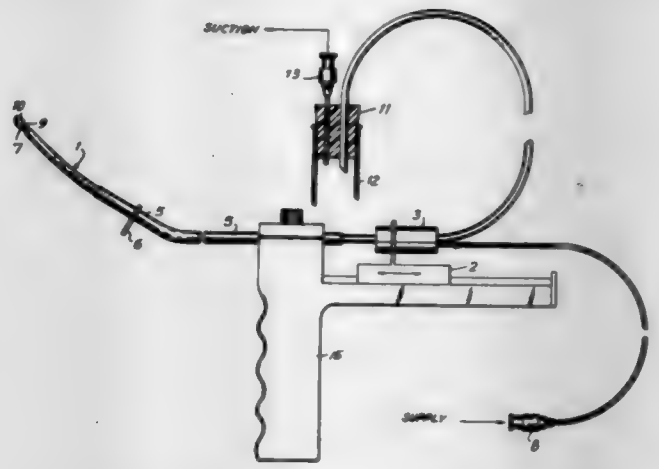
to surround the plate insert and means connecting an upper portion of the basket to the cover and a lower portion of the basket to the bottom, the basket being sufficiently rigid to prevent radial and tangential displacement of the bottom and cover with respect to each other and wherein the basket has a plurality of openings configured to allow separated solids from the plate insert to pass therethrough.

4,533,345

UTERINE CATHETER

John A. Louw, Temecula, Calif., assignor to Fertility & Genetics Associates, Chicago, Ill.

Filed Jun. 14, 1983, Ser. No. 504,282
Int. Cl.[3] A61M *3/00*
U.S. Cl. 604—43 **17 Claims**



1. An improved uterine catheter which comprises (a) at least two lumens at the forward distal end defined by an external tube and at least one internal tube, the tubes being coaxial to each other; (b) a forward distal end adapted for insertion into the human cervical canal and endometrial cavity and having a closed, rounded tip, said tip being adjacent to the forward distal end of the internal tube; (c) a cage attached distally to said closed tip and proximally to the distal end of the external tube, the cage surrounding the distal most end of the internal tube which is located coaxially therein, said distal most end of the internal tube having a means for delivering lavage fluid to the uterine cavity; (d) a rear proximal end, said end being adapted to permit separate connection of the internal and external tubes to a fluid supply and a recovery reservoir; said

catheter having an exterior diameter of about 7 to 16 French and having a combination of flexibility and stiffness sufficient to allow the catheter to describe a 10° to 30° angle per six centimeters when inserted into the uterine cavity, to conform to uterine contours and to be steerable within the uterine cavity.

4,533,346

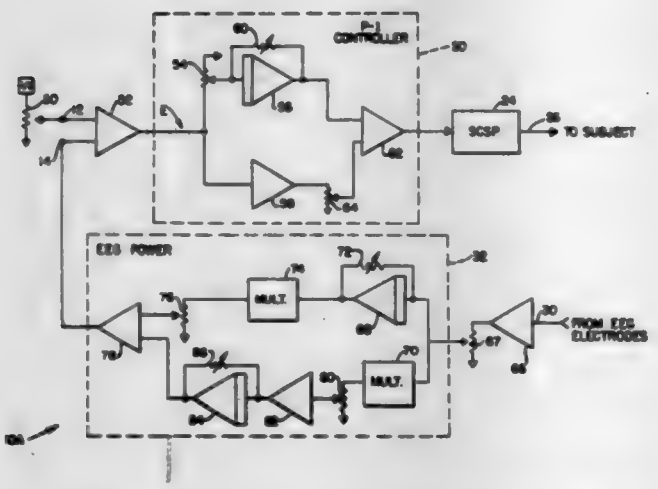
SYSTEM FOR AUTOMATIC FEEDBACK-CONTROLLED ADMINISTRATION OF DRUGS

Robert J. Cosgrove, Jr., Birmingham, Ala., and Victor F. Smolen, West Lafayette, Ind., assignors to PharmaControl Corporation, Englewood Cliffs, N.J.

Continuation of Ser. No. 239,818, Feb. 19, 1981, abandoned, which is a continuation of Ser. No. 52,242, Jun. 26, 1979, Pat. No. 4,280,494. This application Aug. 25, 1982, Ser. No. 411,473

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—66 **31 Claims**



1. An adaptive control system for administering a drug to a subject responsive to a drug/subject system model, comprising:

(a) means for sensing at least one physiological parameter of said subject and for converting said at least one parameter into a corresponding response signal;

(b) preset means for establishing a preset drug order signal;

(c) means for administering said drug to said subject in response to an actuating signal; and

(d) a control loop for providing said actuating signal to said means for administering, said control loop including:

(i) comparator means for accepting first and second input signals and producing an error signal representing the difference therebetween, said comparator means being connected to said preset means for accepting said order signal as a first input thereto;

(ii) response signal processing means connected to said sensing means for processing said response signal and for providing said processed response signal as a second input of said comparator means;

(iii) means for sampling said response signals and rates at which drugs are administered by said means for administering;

(iv) means for determining values for said drug/subject system model as a function of said sampled signals and rates and producing control signal information in accordance therewith;

(v) adaptive controller means for receiving said error signal from said comparator means and said control signal information from said means for determining, said adaptive controller means translating said error signal into an actuating signal for application to said administering means in accordance with said values for said drug/subject system model defined by said control signal to optimally minimize said error signal.

4,533,347

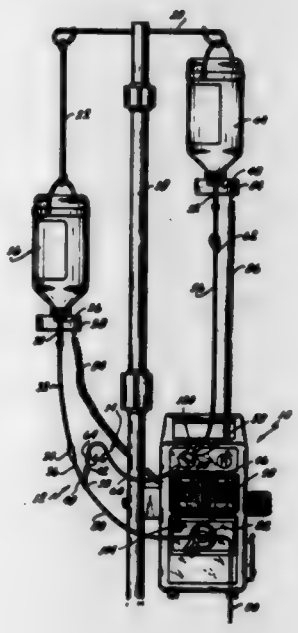
CONTROLLER FOR A DUAL DRUG DELIVERY SYSTEM

Clinton L. Deckert, Poway, Calif., assignor to Warner-Lambert Company, Morris Plains, N.J.

Filed Dec. 19, 1983, Ser. No. 562,958

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—81 **6 Claims**



1. An apparatus for the administration of intravenous fluids to a patient comprising:

a first fluid container;

a primary administration set in fluid communication with said first fluid container;

a second fluid container;

a second administration set having a pinchable section and connected in fluid communication with said second fluid container;

a common tube for transferring fluid to the patient;

means for connecting said primary and said secondary administration sets in fluid communication with said common tube;

means for sequencing fluid flow through said secondary and said primary administration sets, said sequencing means comprising a check valve in the fluid lines of said primary administration set to prevent fluid flow in said primary administration set when the hydrostatic pressure in said secondary set exceeds the hydrostatic pressure in said primary set;

means for sensing actual flow rates through said secondary and said primary administration sets;

a controller having means operatively associated with said pinchable section to selectively prevent fluid flow through said secondary administration set, said controller further comprising means to preselect flow rates for said primary and secondary adminsitration sets, said controller operatively associated with said sensing means in said primary and secondary administration sets and having means for operatively engaging with said common tube to maintain the sensed actual flow rate at the respective preselected flow rate.

4,533,348
IN-LINE DRUG DISPENSER FOR USE IN INTRAVENOUS THERAPY

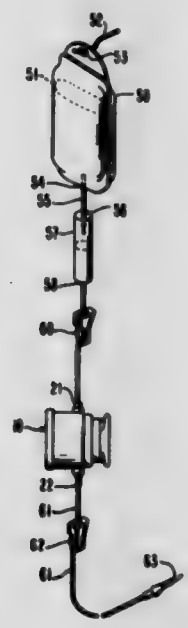
Allan M. Wolfe, South Laguna; James M. Davenport, Tustin; Felix Theeuwes, Los Altos, and Su I. Yum, Sunnyvale, all of Calif., assignors to ALZA Corporation, Palo Alto, Calif.

Continuation of Ser. No. 518,490, Jul. 29, 1983, Pat. No. 4,474,574, which is a continuation of Ser. No. 338,206, Jan. 11, 1982, abandoned. This application Sep. 12, 1984, Ser. No. 649,778

The portion of the term of this patent subsequent to Oct. 2, 2001, has been disclaimed.

Int. Cl.[3] A61M *5/14*

U.S. Cl. 604—85 1 Claim



1. An intravenous system for delivering a drug formulation, wherein the intravenous system comprises:

(a) a reservoir of an intravenously acceptable fluid;

(b) a formulation dispenser in fluid communication with the reservoir, the formulation dispenser comprising:

(1) a housing surrounding an internal lumen, the housing having openings at its opposite ends;

(2) piston means disposed in one opening of the housing;

(3) a beneficial drug in the housing present in an effective amount for producing a therapeutic effect, said drug a member selected from the group consisting of solid, crystalline, granule, power, tablet, dried and lyophilized pharmaceutically acceptable forms that produce an intravenously administrable drug formulation when contacted by fluid that enters the dispenser;

(4) a fluid permeable membrane in the housing positioned between the drug and the piston;

(5) a closure disposed at the other opening of the housing facing the drug;

(6) inlet means in the housing for letting fluid enter the housing and contact the beneficial drug; and,

(7) outlet means in the housing for letting intravenously administrable drug formulation leave the housing.

4,533,349
SKIN MOUNTED DRAINAGE CATHETER RETENTION DISC

Jeffrey E. Bark, Tulsa, Okla., assignor to Medical Engineering Corporation, Racine, Wis.

Filed Nov. 8, 1982, Ser. No. 439,739

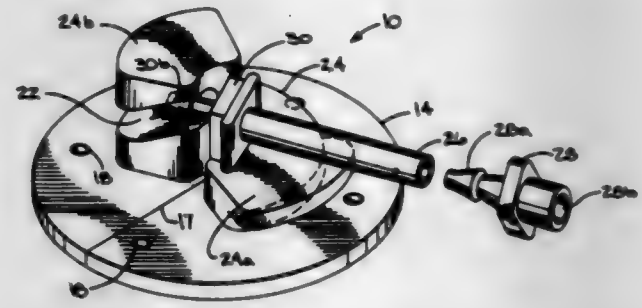
Int. Cl.[3] A61M *25/02*

U.S. Cl. 604—174 5 Claims

1. An improved skin mounted retention disc for retaining a drainage catheter indwelling comprising:

a substrate having a bore disposed therethrough dimensioned to receive a drainage catheter so that the catheter can be inserted through the disc and into the skin;

guide means integrated to said disc for engaging the drainage catheter to retain the drainage catheter to said disc; and



safety release connecting means for connecting the drainage catheter to a drainage bag and for breaking the connection between the drainage catheter and the drainage bag once said disc is displaced from the drainage bag, thereby avoiding separation of said skin mounted retention disc from the patient's skin.

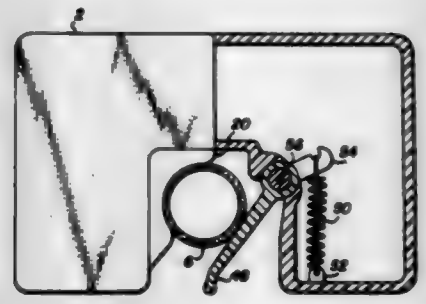
4,533,350
PARENTERAL SOLUTION DELIVERY CONTROL SYSTEM

Hal C. Danby, Palo Alto, and Carl Ritson, San Jose, both of Calif., assignors to Anatros Corporation, San Jose, Calif.

Filed May 10, 1983, Ser. No. 493,188

Int. Cl.[3] A61M *5/16*

U.S. Cl. 604—253 5 Claims



1. A parenteral solution delivery control system comprising a housing having a vertical support surface means in a recess defining a drip chamber zone, a bar means pivotally connected to the housing, the bar means being spring biased and positioned to swing toward the support surface means about an axis parallel to the axis of a drip chamber positioned against the vertical support surface means to contact the external surface of such a drip chamber, and when no drip chamber is in the recess, to swing into the drip chamber zone, said bar means including a deflector means for blocking a light path between a light source and a light detector through said drip chamber zone when the bar swings into the drip chamber zone.

4,533,351
FOAM RUBBER INSOLES CONTAINING OTTACIDE-P

Richard J. Washkuhn, Penfield, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Apr. 26, 1982, Ser. No. 371,969

Int. Cl.[3] A43B *13/38*

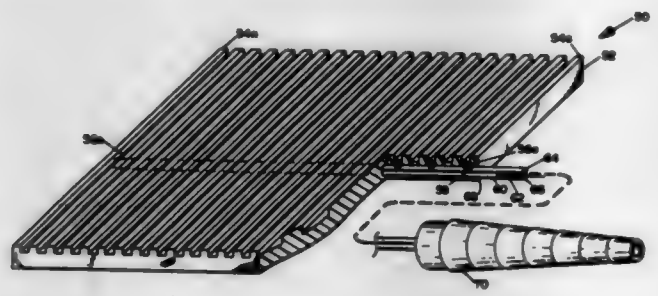
U.S. Cl. 604—293 11 Claims

1. A foam rubber insole comprising from about 0.5% to about 5% by weight of tris(para-chloro-metaxylenol)borate, from about 0% to about 10% by weight of a deodorizing agent, and from about 85% to about 99.5% by weight of a cured latex.

4,533,352
MICROSURGICAL FLEXIBLE SUCTION MAT

Allen L. Van Beek, Minneapolis, and Alfred L. Iversen, Minnetonka, both of Minn., assignors to PMT Inc., Hopkins, Minn.

Filed Mar. 7, 1983, Ser. No. 472,757
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—317 11 Claims

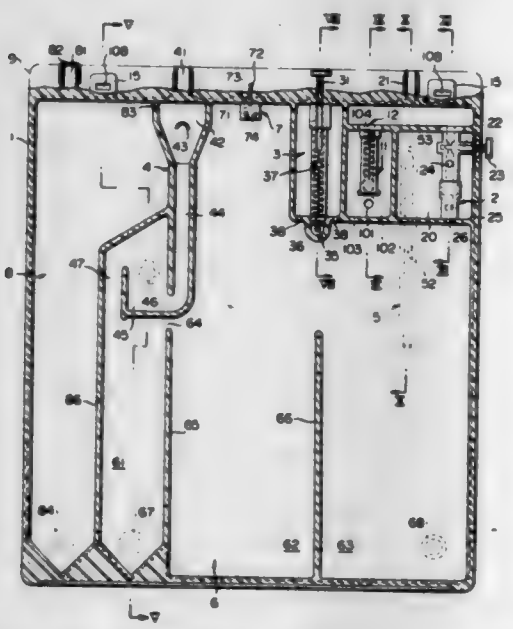


1. A microsurgical suction mat comprising:
a. pliable member means of a predetermined geometrical size;
b. plurality of suction port means positioned in a predetermined geometrical configuration through said pliable member means for providing for passage of fluid through said pliable member means;
c. geometrical member means provided for supporting exposed internal body organs such as arteries, nerves or the like extending upwardly from said pliable member means and about said suction port means;
d. hose means including a plurality of holes corresponding to and aligned with said suction port means of said pliable member means providing for suction of fluid from said pliable member to a point distant from said pliable member means and secured to a bottom of said pliable member means.

4,533,353
DRY TYPE DISCHARGE LIQUID EXTRACTION DEVICE FOR THE THORACIC CHAMBER

Sueshiro Akiyama, 4-41-6, Nishi-Tsutsujigaoka-Chofu, Tokyo, Japan (182), assignor to Alex E. Genson; Brian S. Genson, both of Hewlett Harbor, N.Y.; Sueshiro Akiyama and Yoshihiro Akiyama, both of Tokyo, Japan

Filed Jul. 19, 1982, Ser. No. 399,904
Claims priority, application Japan, Apr. 8, 1982, 57-57216
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—321 12 Claims

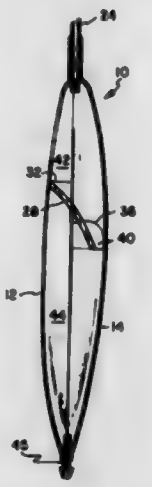


1. A dry tape discharge liquid extraction apparatus for a thoracic procedure comprising:
a container having a main body opened at the front side including,
a suction pressure adjusting chamber formed at the upper portion thereof and provided with a nozzle for connection to a suction source,
a liquid seal tube provided with a liquid seal chamber and a nozzle for connection to a human body cavity tube, and
a main storage chamber in communication with a liquid seal chamber of said liquid seal tube, and
a front plate secured on the front opened side of the main body,
the container being provided with,
a suction pressure adjusting valve means in communication with said suction pressure adjusting chamber and said main storage chamber,
a high negative pressure adjusting valve means for adjusting excess pressure in the human body cavity,
a valve means for releasing positive and negative pressure in said container, and
a suction pressure stabilizing valve in communication with said suction pressure adjusting chamber and outside air.

4,533,354
MEDICAL DRAINAGE BAG AND NON-RETURN VALVE ASSEMBLY

Ole R. Jensen, Rivervale, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Sep. 30, 1982, Ser. No. 432,072
Int. Cl.[3] A61M *1/00*
U.S. Cl. 604—323 25 Claims

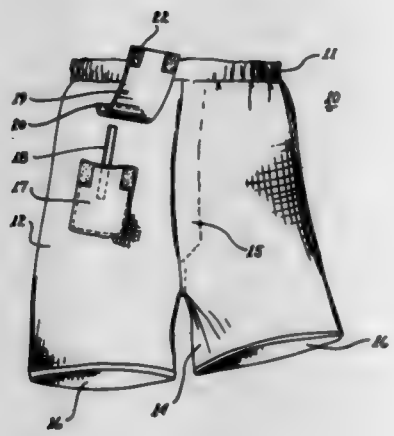


1. A non-return valve assembly for a medical drainage bag adapted to collect body fluids which includes a front face, a back face, a left side, a right side, a bottom and a top, which top has an inlet provided therein, said non-return valve comprising at least one baffle positioned intermediate the top and bottom of the bag and extending across the bag from its left side to its right side, each baffle being formed by a single, unitary piece of flexible material having an upper portion continuously attached to one of the faces only along a seam positioned below the inlet provided in the top of the bag and extending from the left side of the bag to the right side of the bag and a lower portion attached directly to the other face at spaced intervals between the left side of the bag and the right side of the bag to thereby form at least one opening positioned adjacent to the other face of the bag so as to permit liquid to flow readily from the top of the bag to the bottom of the bag while inhibiting liquid from flowing from the bottom of the bag to the top of the bag.

4,533,355
LOOSE-FITTING OSTOMY GARMENT

Marjorie A. Fair, 7707 W. Villa Theresa Dr., Peoria, Ariz. 85345

Filed May 3, 1984, Ser. No. 606,532
Int. Cl.[3] A61F 5/40; A41B 9/02
U.S. Cl. 604—345 7 Claims



1. A loose-fitting garment for individuals having a surgical stoma and an ostomy appliance fitted thereover for the collection of waste material, said garment comprising:

(a) encircling means for engaging the torso of the individual above the anatomical region containing the stoma and providing support for said garment;

(b) shield means extending downwardly from the encircling means for loosely covering the lower torso including said stoma region;

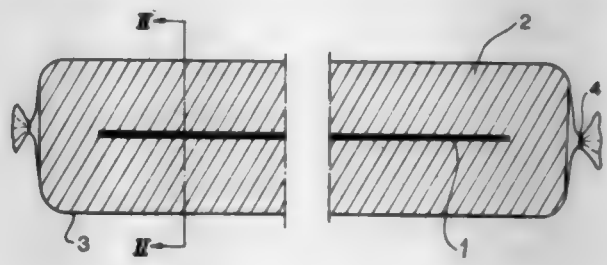
(c) at least one receiving means provided on the exterior of said shield means and positioned below said stoma region, said receiving means being dimensioned to removably receive the lower portion of an ostomy appliance therein; and

(d) an enlarged passageway formed in said shield means adjacent said receiving means and through which an upper portion of the ostomy appliance extends.

4,533,356
SURGICAL DEVICE

Stig Bengmark, Lund; Albert Broomé, Helsingborg, both of Sweden, and Christian H. Overland, Hundested, Denmark, assignors to Uno Plast A/S, Hundested, Denmark

PCT No. PCT/DK79/00058, § 371 Date Aug. 12, 1980, § 102(e) Date Aug. 12, 1980, PCT Pub. No. WO80/01239, PCT Pub. Date Jun. 26, 1980
PCT Filed Dec. 12, 1979, Ser. No. 201,062
Claims priority, application Denmark, Dec. 12, 1978, 5581/78
Int. Cl.[3] A61F 13/00
U.S. Cl. 604—358 10 Claims



1. A surgical device for holding internal body parts in place during surgical operations in body cavities and which, once bent into a desired shape, will retain the desired shape, the surgical device comprising

a rod-shaped member, said rod-shaped member being composed of a soft, liquid-absorbing material,

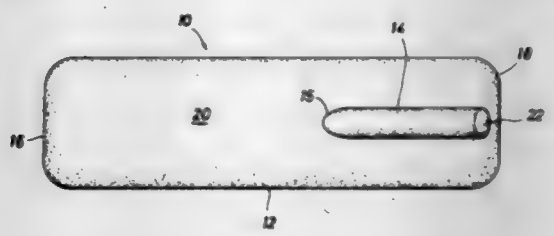
a non-elastically deformable, flexible member embedded in said rod-shaped member, and

an overwrap means surrounding said rod-shaped member.

4,533,357
SANITARY NAPKIN CONSTRUCTION

Frances E. Hall, Highway 90E, Box 19, Del Rio, Tex. 78840

Filed Apr. 21, 1983, Ser. No. 487,184
Int. Cl.[3] A61F 13/16
U.S. Cl. 609—401 5 Claims



1. A sanitary napkin comprising a generally elongate pad portion comprising an absorbent material for body fluid exudate, said pad portion having an anterior end and a posterior end and an absorbing surface side for generally overlaying the labia majora of the wearer, and a flexible tab portion projecting from said absorbing surface side, said tab portion being disposed closer to said posterior end of said pad portion, said tab portion having a length and a shape sufficient to be comfortably disposed between at least the lower portion of the buttocks of the wearer, said tab portion being covered by the anterior portion of said pad portion when said tab portion is disposed between said buttocks, said tab portion being comprised of an absorbent material to absorb body fluid exudate.

4,533,358

PROCESS FOR PRODUCING A SHAPED PRODUCT OF COLLAGEN BY SYNERESIS

Yoshimasa Yoden; Tsuneo Okuda, both of Osaka; Eiji Fuchigami, and Toshihiro Kuwabara, both of Nara, all of Japan, assignors to Nitta Gelatin Co., Ltd., Osaka, Japan

Filed Jul. 20, 1984, Ser. No. 632,855
Claims priority, application Japan, Sep. 29, 1983, 58-182437
Int. Cl.[3] C14C *5/00, 11/00*
U.S. Cl. 8—94.2 8 Claims

1. In a process for producing a shaped product of collagen by a wet or electrochemical method from a pasty composition comprising a collagenous substance or a mixture thereof with another high molecular substance, the improvement which comprises treating said composition with a crosslinking agent when said composition is shaped, freezing a shaped product and thawing it.

4,533,359

PROCESS FOR MODIFYING ANIMAL FIBERS

Takashi Kondo, Kyoto; Chikaaki Sakai, and Tadashi Karakawa, both of Haguri, all of Japan, assignors to Kurashiki Boseki Kabushiki Kaisha, Japan

Filed Nov. 5, 1982, Ser. No. 440,251
Claims priority, application Japan, Feb. 12, 1982, 57-21460
Int. Cl.[3] D06M *3/08, 3/10*
U.S. Cl. 8—128 R 17 Claims

1. A process for descaling animal fiber which comprises surface-oxidizing the animal fiber with an oxidizing agent and subsequently treating said fiber with a proteolytic enzyme in a saturated or nearly saturated aqueous inorganic-salt solution.

4,533,360

METHOD OF OBTAINING MAGNESIUM SULPHATE FROM MIXTURES OF SALTS

Giorgio Cozza, and Luigi Piccolo, both of Milan, Italy, assignors to Ing. Luigi Conti Vecchi S.p.A., Assemini, Italy

Filed Nov. 22, 1983, Ser. No. 554,492
Claims priority, application Italy, Nov. 25, 1982, 24431 A/82
Int. Cl.[3] B01D *9/02*
U.S. Cl. 23—298 7 Claims

1. Method of recovering magnesium sulphate with a purity of from 85% to 96% by weight, expressed as magnesium sulphate heptahydrate, from a starting mixture of magnesium sulphate heptahydrate and sodium chloride, comprising drying the starting mixture of magnesium sulphate heptahydrate and sodium chloride at a temperature of from 40° C. to 150° C. until the free water content of the dried mixture is less than 2% by weight; grinding said dried mixture until from 15% to 40% by weight thereof has a grain size of less than 0.044 mm.; and then separating the fine fraction.

4,533,361

MIDDLE DISTILLATE CONTAINING STORAGE STABILITY ADDITIVE

Rodney L. Sung, Fishkill, N.Y., and Thomas J. Karol, Norwalk, Conn., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 9, 1984, Ser. No. 658,933
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—73 27 Claims

1. A liquid middle distillate fuel composition comprising a major portion of a liquid middle distillate hydrocarbon fuel and a minor effective portion of additive prepared by

reacting (i) a primary or secondary polyamine, (ii) an aldehyde, and (iii) a phenol containing an active hydrogen thereby forming a phenol-aldehyde-amine condensate;

reacting said phenol-aldehyde-amine condensate with (iv) a succinic acid anhydride bearing a polyolefin-derived substituent containing residual unsaturation thereby forming product phenol-aldehyde-amine Mannich condensate polyamine succinimide; and

acylating said phenol-aldehyde-amine Mannich condensate polyamine succinimide with acylating agent thereby forming acylated phenol-aldehyde-amine Mannich condensate polyamine.

16. A product prepared by the process which comprises

reacting (i) a primary or secondary polyamine, (ii) an aldehyde, and (iii) a phenol containing an active hydrogen thereby forming a phenol-aldehyde-amine condensate;

reacting said phenol-aldehyde-amine condensate with (iv) a succinic acid anhydride bearing a polyolefin-derived substituent containing residual unsaturation thereby forming product phenol-aldehyde-amine Mannich condensate polyamine succinimide; and

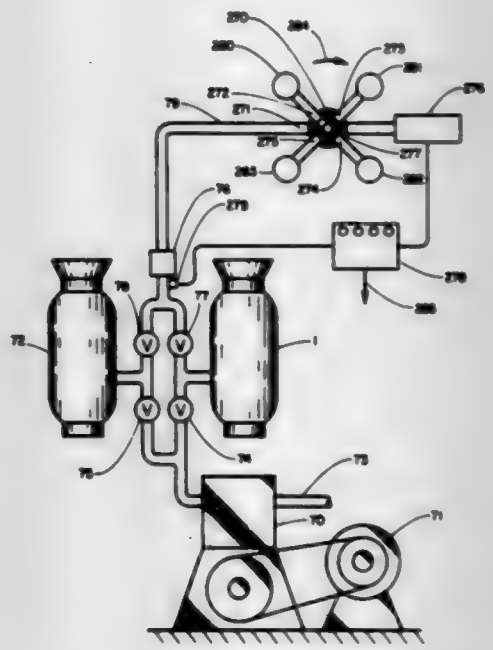
acylating said phenol-aldehyde-amine Mannich condensate polyamine succinimide with acylating agent thereby forming acylated phenol-aldehyde-amine Mannich condensate polyamine.

4,533,362

CYCLIC CHAR GASIFIER WITH PRODUCT GAS DIVIDER

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115-0514

Filed Jul. 5, 1984, Ser. No. 628,150
Int. Cl.[3] C10J *3/04, 3/22, 3/30, 3/82*
U.S. Cl. 48—61 11 Claims



1. A cyclic char gasifier plant comprising:

at least one compressor means for compressing gases from a lower pressure to a higher pressure and each such compressor comprising at least one stage and each such stage comprising a supply end and a delivery end;

means for driving each of said compressors;

at least one separate expander means for expanding gas from a higher pressure to a lower pressure and each such expander comprising at least one stage and each such stage comprising an inlet end and a discharge end;

at least two separate containers for containing char fuel;

at least two product gas collector pipes;

at least one reactant gas supply source;

each such compressor whose number of stages exceeds one further comprising fixed open gas flow connections from the delivery end of each compressor stage, except one, to the supply end of one other stage of said compressor, whereby said stages of said compressor are connected in series so that the pressure of a particular gas mass, at delivery from each stage, increases as said gas mass is compressed through said series connected stages, from the supply end to the delivery end of each stage, with the first stage in said series through which a gas mass first flows being both the lowest pressure stage and also that one stage whose supply end does not have a fixed open gas flow connection from the delivery end of any other stage

or said compressor, and with the last stage in said series through which a gas mass last flows being both the highest pressure stage and also that one stage whose delivery end does not have a fixed open gas flow connection to the supply end of any other stage of said compressor;

fixed open gas flow connections from the supply end of the lowest pressure stage of each of said compressors to at least one reactant gas supply source;

each such expander whose number of stages exceeds one further comprising fixed open gas flow connections from the discharge end of each expander stage, except one, to the inlet end of one other stage of said expander, whereby said stages of said expander are connected in series so that the pressure of a particular gas mass at discharge from each stage, decreases as said gas mass is expanded through said series connected stages, from the inlet end to the discharge end of each stage, with the first stage in said series through which a gas mass first flows being both the highest pressure stage and also that one stage whose inlet end does not have a fixed open gas flow connection from the discharge end of any other stage of said expander, and with the last stage in said series through which a gas mass last flows being both the lowest pressure stage and also that one stage whose discharge end does not have a fixed open gas flow connection to the inlet end of any other stage of said expander;

changeable gas flow connections, which are openable and closeable, from each of said containers to each delivery end of each stage of each of said compressors and to each inlet end of each stage of each of said expanders;

each cyclic char gasifier plant comprising a number of said containers, with changeable gas flow connections to said compressors and to said expanders, at least equal to the sum of the number of compressor stages of all compressors and the number of expander stages of all expanders;

drive means for opening and closing said changeable gas flow connections so that, each container is opened for a time period to each delivery end of each stage of each of said compressors, in a sub-sequence of time periods of open gas flow connections to compressors, said sub-sequence proceeding in time order of increasing compressor stage delivery pressure, and is opened for a time period to each inlet end of each stage of said expanders, in a sub-sequence of time periods of open gas flow connections to expanders, said sub-sequence proceeding in time order of decreasing expander stage inlet pressure, said sub-sequence of connections to said compressor being followed by said sub-sequence of connections to said expanders, and these together comprise one sequence of time periods of open gas flow connections, each of said containers is opened to only one stage during any one time period of said sequence of time periods, said sequence of time periods of open gas flow connections to said compressors and to said expanders is repeated for each of said containers by said means for opening and closing;

at least one exhaust divider valve comprising, an inlet port, at least two discharge ports and means for connecting said inlet port to said discharge ports one port at a time;

fixed open gas flow connecting means for connecting at least one expander lowest pressure stage discharge end to one exhaust divider valve inlet port so that each exhaust divider valve inlet port is connected to but one expander lowest pressure stage discharge end;

fixed open gas flow connecting means for connecting each of said exhaust divider valve discharge ports separately to one of said product gas collector pipes, and for connecting each separate expander lowest pressure stage discharge, which is not connected to an exhaust divider valve inlet port, separately to one of said product gas collector pipes, so that each product gas collector pipe not connected directly to a separate expander lowest pressure stage discharge is connected to one discharge port of one exhaust divider valve, and so that the total number of product gas collector pipes equals the total number of separate expanders plus the total number of discharge ports on all exhaust divider valves minus the total number of exhaust divider valves;

drive means for driving each of said exhaust divider valve connecting means through its exhaust divider sequence of connectings between said inlets and said discharge ports so that, only one and always one discharge port of each exhaust divider valve is connected at any one time, each discharge port is connected at least once during each exhaust divider sequence of connectings, and said exhaust divider sequence of connectings is continuously repeated whenever said plant is running;

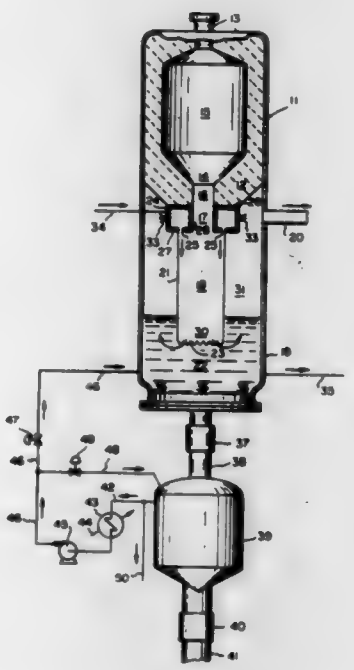
control means for controlling said drive means for opening and closing said changeable gas flow connections and said drive means for driving said exhaust divider valves so that, said repeated sequences of time periods of open gas flow connections are a continuous series of time periods for any one containing means, and so that the delivery end of each stage of each compressor has an open gas flow connection to at least one containing means, and the inlet end of each stage of each expander has an open gas flow connection to at least one containing means, during all time periods, and so that each exhaust divider sequence of any one exhaust divider valve starts concurrently with the start and ends concurrently with the end of each single exhaust divider sequence of all other exhaust divider valves, and so that each said time period starts concurrently with the starting of one of said exhaust divider sequences of connectings and ends concurrently with the ending of said same one exhaust divider sequence of connectings, whenever said plant is operating.

4,533,363

PRODUCTION OF SYNTHESIS GAS

Frederick C. Jahnke, Rye, and William B. Crouch, Chappaqua, both of N.Y., assignors to Texaco Development Corporation, White Plains, N.Y.

Filed Jan. 20, 1984, Ser. No. 572,288
Int. Cl.³ C10J *3/46*
U.S. Cl. 48—197 R **6 Claims**



1. A process for the production of synthesis gas from an ash-containing carbonaceous fuel which comprises

gasifying said fuel in finely divided form in a gasification zone at superatmospheric pressure to produce a product synthesis gas containing particles of ash and unconverted fuel;

passing said particles of ash and unconverted fuel into water contained in a settling zone and in a lock hopper having a narrow valved connecting passageway therebetween, said ash and unconverted fuel during settling tending to collect in

the lower portion of the settling zone and to block the passageway and thereby prevent the passage of said particles of ash and uncoverted fuel from the lower portion of said settling zone into said passageway and thence into said lock hopper;

intermittently opening the valve in said connecting passageway thereby permitting the particles to pass through said valved passageway during a valve-open period; and intermittently during said valve-open period, applying force in addition to gravity for positively passing water through said valve from said settling zone into said lock hopper at a pressure higher than that in the lock hopper in order to increase the flow of water leaving the lower portion of said settling zone, passing through said valved passageway, and entering said lock hopper, thereby increasing the velocity and quantity of water passing through said valved passageway whereby positive flow of said particles is effected through said passageway during the valve-open period in which said valve in said valved passageway is open.

4,533,364

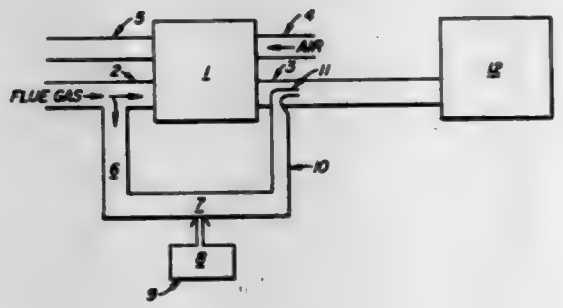
METHOD FOR FLUE GAS CONDITIONING WITH THE DECOMPOSITION PRODUCTS OF AMMONIUM SULFATE OR AMMONIUM BISULFATE

Ralph F. Altman, Chattanooga, Tenn.; John P. Gooch, Birmingham, Ala.; Edward B. Dismukes, Birmingham, Ala.; Roy E. Bickelhaupt, Birmingham, Ala., and Robert S. Dahlin, Birmingham, Ala., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Filed Feb. 1, 1983, Ser. No. 462,754

Int. Cl.³ B03C *1/00*

U.S. Cl. 55—5 **8 Claims**



1. A method for conditioning flue gas containing suspended fly ash, comprising the steps of:

a. diverting a slipstream of flue gas from a main flue gas stream at a point upstream from an air preheater located directly upstream of an electrostatic precipitator where the temperature of said main flue gas stream is in the range of about 700° F. to 1000° F., said diverted stream thereby having a temperature in the range of from about 700° F. to 1000° F.;

b. introducing an aqueous solution of an ammonium salt selected from the group consisting of ammonium sulfate and ammonium bisulfate into said diverted flue gas slipstream thereby effecting thermal decomposition of said ammonium salt into its gaseous thermal decomposition products which include sulfur trioxide and ammonia; and

c. returning said diverted flue gas slipstream to said main flue gas stream at a point between said air preheater and said electrostatic precipitator thereby distributing said gaseous thermal decomposition products into said main flue gas stream flowing between said air preheater and said electrostatic precipitator.

4,533,365

PROCESS FOR THE SEPARATION AND RECYCLING OF NO_x GAS CONSTITUENTS THROUGH ADSORPTION AND DESORPTION ON A MOLECULAR SIEVE

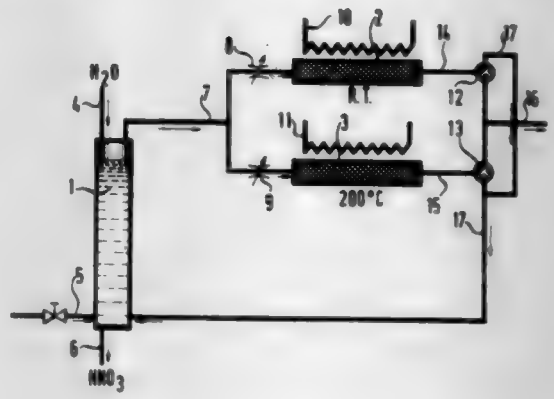
Helmut Ringel, Niederzier-Hambach, Fed. Rep. of Germany, assignor to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 512,032

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226840

Int. Cl.³ B01D *53/04*

U.S. Cl. 55—28 **4 Claims**



1. In a process for the separation and recycling of NO_x gas constituents through adsorption and desorption on a molecular sieve wherein, in alternating process steps, NO_x-containing waste gas initially flows through the molecular sieve until saturation of the molecular sieve with NO_x, and thereafter the NO_x is desorbed through the introduction of gas; the improvement comprising: heating the molecular sieve for regeneration to a temperature for desorbing the adsorbed NO_x; scavenging the molecular sieve with a portion of the NO_x-containing waste gas to produce a scavenging gas; and recycling the scavenging gas flow after passing through the molecular sieve wherein said waste gas comprises an untreated feed gas.

4,533,366

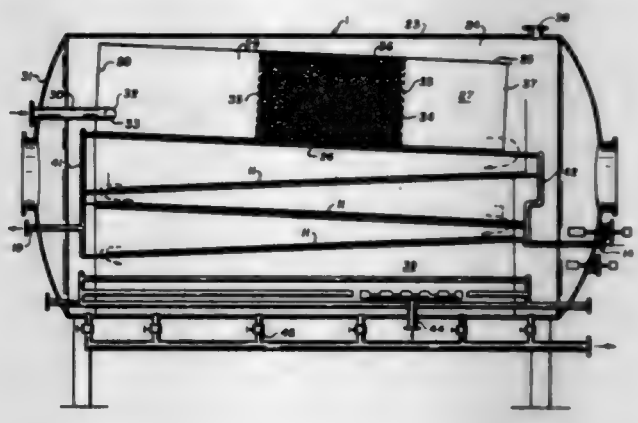
EVAPORATION DEHYDRATOR

Linden Bland, Calgary, Canada, assignor to Murphy Oil Company Limited, Calgary, Canada

Filed Mar. 27, 1984, Ser. No. 593,987

Int. Cl.³ B01D *19/00*

U.S. Cl. 55—42 **7 Claims**



1. Apparatus for treating a pre-heated production well stream containing heavy oil, gas, solids, water and water vapor, comprising:

a vessel forming an internal chamber and having inlet means at its upper end for admitting the incoming stream, first outlet means for removing produced vapour, and second outlet means at its lower end for removing produced liquid, said vessel being adapted to operate at substantially atmospheric pressure;

a generally tubular member mounted in the chamber adjacent its upper end and forming an inclined, elongate passageway substantially closed in at its first end and along at least part of its length, said member having an outlet at its second end;

said inlet means communicating with the first end of the passageway;

means, extending transversely across the passageway at a point between its ends, for disintegrating foam present in the stream; and

a plurality of internally heated, stacked, angularly inclined trays forming a zigzag flowpath along which the stream may flow in a downward direction, said trays being positioned in the vessel chamber so as to receive the stream issuing from the tubular member outlet and deliver it to a sump zone in the base of the vessel chamber;

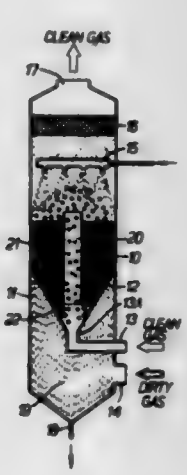
whereby part of the water vapour in the incoming stream may break out in the passageway, the foamy stream may be contained by the tubular member, at least some of the foam present in the incoming stream may be disintegrated by the transverse means, additional water remaining in the stream may be gradually vapourized and break out from the stream as it moves along the heated trays, and the stream may be collected for removal.

4,533,367

GAS SCRUBBING METHOD USING GAS LIQUID CONTACT IN A PARTICULATE BED

Dzemal Hadzismajlovi , 18 Kondina St., Belgrade, Yugoslavia

Filed Jul. 8, 1982, Ser. No. 396,297
Claims priority, application Australia, Jul. 10, 1981, PE9693
Int. Cl.[3] B01D *47/14*
U.S. Cl. 55—91 **6 Claims**



1. A method of cleaning a dirty gas comprising the steps of:

(a) passing the dirty gas upwards through a bed of particulate material without fluidizing the bed,

(b) passing a wash liquid downwardly through the bed,

(c) entraining a portion of such bed particles in an upward-moving stream of clean gas, and depositing the entrained particles on the top of said bed.

4,533,368

APPARATUS FOR REMOVING RESPIRABLE AEROSOLS FROM AIR

Robert W. L. Snaddon, Burnt Hills, and Peter W. Dietz, Delanson, both of N.Y., assignors to Black & Decker, Inc., Newark, Del.

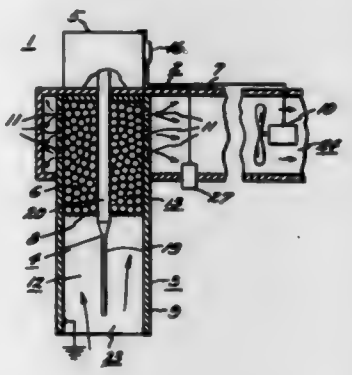
Filed Sep. 30, 1982, Ser. No. 429,764
Int. Cl.[3] B03C *3/12, 3/68, 3/82*
U.S. Cl. 55—104 **27 Claims**

1. An apparatus for removing respirable aerosols from a gas comprising:

(a) a housing having a housing gas outlet;

(b) a chamber coupled to said housing, said chamber having a chamber gas inlet and a chamber gas outlet and including retaining means disposed within said chamber dividing said chamber into gas-communicating charging and bed regions, wherein said charging region is situated between said retaining means and said chamber gas inlet and said bed region is situated between said retaining means and said chamber gas outlet, said bed region including dielectric material through which gas from said charging region is passed;

(c) electrical means coupled to said housing for forming a



divergent corona discharge producing electric field within said charging region and for forming a substantially uniform electrical field within said bed region, said chamber as a unit being removable from and attachable to said housing and said electrical means as a unit; and

(d) electrical connecting means for coupling said electrical means to a high voltage power supply, whereby said aerosols are charged in the charging region and deposited on the surface of said material in the bed region.

4,533,369

GAS-PERMSELECTIVE COMPOSITE MEMBRANES AND PROCESS FOR THE PRODUCTION THEREOF

Koichi Okita, Osaka, Japan, assignor to Sumitomo Electric Industries, Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 382,981, May 28, 1982, abandoned. This application Feb. 3, 1984, Ser. No. 576,647
Int. Cl.[3] B01D *53/22*
U.S. Cl. 55—158 **12 Claims**

1. A gas-permselective composite membrane comprising:

a heat-resistant porous polymeric membrane; and

a thin layer of cross-linked structure provided on one side of said membrane, said thin layer being prepared by plasma polymerizing, at an atmosphere of 1.0 Torr or less under glow discharge of from 20 to 80 W, a compound selected from the group consisting of 4-methyl-1-pentene, 4-methyl-2-pentene, 2,4,4-trimethyl-1-pentene, 4,4-dimethyl-1-pentene, tert-butylamine, and their fluorine-containing derivatives, or from the group consisting of vinyl trimethylsilane, hexamethyldisilazane, dimethylaminotrimethylsilane, and trimethylsilylimidazole.

8. A process for producing a gas-permselective membrane, comprising the steps of:

providing a heat-resistant porous polymeric membrane as a support;

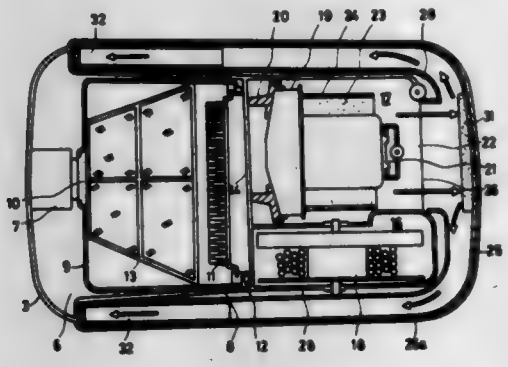
feeding a compound selected from the group consisting of 4-methyl-1-pentene, 4-methyl-2-pentene, 2,4,4-trimethyl-1-pentene, 4,4-dimethyl-1-pentene, tert-butylamine, and their flourine-containing derivatives, or from the group consisting of vinyl trimethylsilane, hexamethyldisilazane, dimethylaminotrimethylsilane, and trimethylsilylimidazole, said compound being fed into an atmosphere of 1.0 Torr or less under glow discharge of from 20 to 80 W in order to polymerize the compound and form a thin membrane; and

depositing the thin membrane on the heat-resistant porous polymeric membrane.

4,533,370
ELECTRIC CLEANER WITH MINIMUM NOISE

Katsuji Ikezaki, Sakai, and Kiyoshi Ishii, Nishinomiya, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Mar. 24, 1983, Ser. No. 478,328
Claims priority, application Japan, Mar. 30, 1982, 57-53553; Apr. 8, 1982, 57-59436; Apr. 8, 1982, 57-59437; Apr. 8, 1982, 57-59438
Int. Cl.[3] B01D *46/00*
U.S. Cl. 55—276 5 Claims



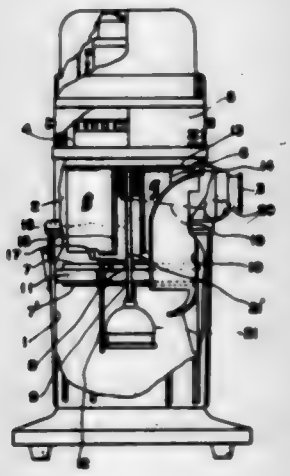
1. A cleaner comprising:
a housing;
an air blower within said housing for drawing air and accompanying particles into said housing, and filter means for removing particles from said air; and
exhaust means for receiving air from said blower and for exhausting said air from said cleaner with a minimum of noise;
said exhaust means comprising an inlet portion adjacent one end of said housing for receiving said air from said blower, a plurality of outlet portions adjacent an opposite end of said housing for exhausting said air received by said inlet portion, and a plurality of air rectifying duct portions extending generally around external surfaces of said housing for at least substantially the length of said housing from said inlet portion at said one end to said respective outlet portions at said opposite end, each air rectifying duct portion receiving a portion of said air received by said inlet portion of said exhaust means; and
groove means formed on the external surface of the cleaner housing for receiving and supporting said air rectifying duct portions.

4,533,371
VACUUM CLEANER

Katsutoshi Nakamura, Nara, Japan, assignor to Kabushiki Kaisha SUIDEN, Osakashi, Japan

Filed Nov. 4, 1983, Ser. No. 548,831
Claims priority, application Japan, Apr. 25, 1982, 57-60876[U]; Apr. 25, 1982, 57-60877[U]
Int. Cl.[3] B01D *46/04*
U.S. Cl. 55—299 10 Claims

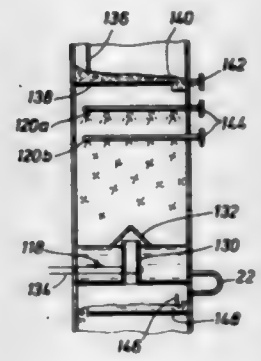
1. A vacuum cleaner comprising:
chamber means,
vacuum source means communicating with said chamber means,
air inlet means,
rotatable shaft means axially supported within said chamber means,
filter means comprising at least one filter element radially arranged around said rotatable shaft means,
vibrating means for vibrating said filter means comprising at least one radially extending vane means fixed to said axially supported rotatable shaft, said at least one radially extending vane means being of sufficient length to physically contact said at least one filter element upon rotation of said rotatable shaft, and
driving means for rotating said vibrating means.



4,533,372
METHOD AND APPARATUS FOR SEPARATING CARBON DIOXIDE AND OTHER ACID GASES FROM METHANE BY THE USE OF DISTILLATION AND A CONTROLLED FREEZING ZONE

Jaime A. Valencia, Sugar Land, and Robert D. Denton, Houston, both of Tex., assignors to Exxon Production Research Co., Houston, Tex.

Filed Dec. 23, 1983, Ser. No. 565,089
Int. Cl.[3] F25J *3/02*
U.S. Cl. 62—12 76 Claims



1. A method for the separation of a feedstream containing methane and carbon dioxide comprising the steps of:
maintaining a first distillation zone engineered to produce an enriched carbon dioxide liquid bottoms stream and a freezing zone vapor feedstream and operated at a temperature and pressure at which substantially no carbon dioxide solids are formed within said distillation zone,
maintaining a freezing zone engineered to contact said freezing zone vapor feedstream with at least one freezing zone liquid feedstream containing methane at a temperature and pressure whereby both solids-containing carbon dioxide and a methane-enriched vapor stream are formed in said freezing zone,
introducing said feedstream into said first distillation zone,
producing said enriched carbon dioxide and said freezing zone vapor feedstream,
introducing said freezing zone vapor feedstream into said freezing zone,
contacting in said freezing zone said freezing zone vapor feedstream with at least one said freezing zone liquid feedstream,
forming in said freezing zone said solids containing carbon dioxide and said methane-enriched vapor stream,

melting said solids containing carbon dioxide and introducing a liquid stream containing said melted solids into said first distillation zone,

condensing at least a portion of the methane-enriched vapor stream and forming said at least one freezing zone liquid feedstream with at least a portion of said condensed vapor stream, and

recovering at least a portion of the remainder of the methane-enriched vapor stream as a methane-enriched product stream.

51. Means suitable for separating a feedstream containing methane and carbon dioxide comprising:

a first lower distillation section having an upper end and a lower end and containing vapor-liquid contact means, outlet means in the lower end of the section suitable for allowing liquids to exit said section, means for allowing reboiled liquid to enter the lower end, means for allowing liquids to enter the upper end of the section from a freezing section, and means for allowing vapor to exit the first lower distillation section into the freezing section while maintaining a liquid level within a lower end of said freezing section, and

a freezing section engineered to contact vapor from first lower distillation section with liquid to produce both solids containing carbon dioxide and methane-enriched vapor, said freezing section having an upper end and a lower end and containing spray means suitable for introducing a liquid into said section in a spray, and means for allowing said methane-enriched vapor to exit the upper end of the freezing section.

4,533,373

SEPARATION OF CO_2 AND H_2S FROM HYDROGEN CONTAINING GAS

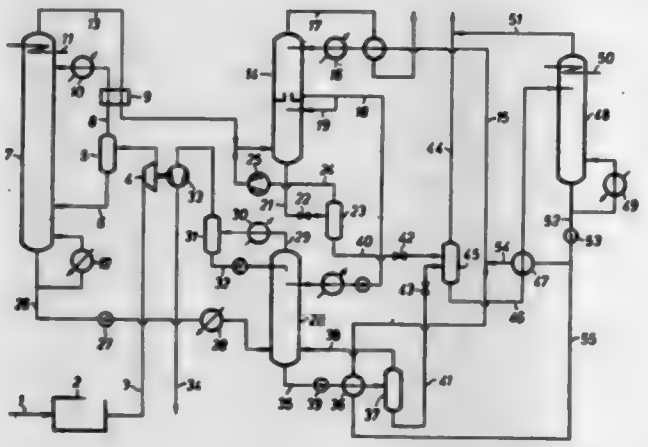
Peter Butz, Munich; Gerhard Ranke, Poecking, and Tran A. Tvan, Neuried, all of Fed. Rep. of Germany, assignors to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,697

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247773

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—17 **23 Claims**



1. In a process for the removal of acidic components comprising CO_2 and H_2S, from CO_2-rich, hydrocarbon-containing raw gas wherein the raw gas is scrubbed under pressure with a physical scrubbing medium selective for H_2S and COS as compared to CO_2 and hydrocarbons, and the resultant loaded scrubbing medium is regenerated and reused, the improvement comprising subjecting dry raw gas to rectification to form a hydrocarbon-rich fraction containing acidic components, as rectification overhead product, and a fraction consisting essentially of acidic components, as rectification bottoms product; scrubbing said rectification overhead product in a first scrubbing column to absorb the acidic components in the physical scrubbing medium to form a first scrubbing column bottoms product; vaporizing the rectification bottoms product; withdrawing partially loaded scrubbing medium from said first scrubbing column and scrubbing the vaporized rectification bottoms product in a second scrubbing column with said partially loaded scrubbing medium to selectively absorb the sulfur-containing compounds to form a loaded scrubbing medium; and discharging resultant scrubbed gas from the second scrubbing column as CO_2 overhead product under pressure and essentially free of sulfur compounds.

4,533,374

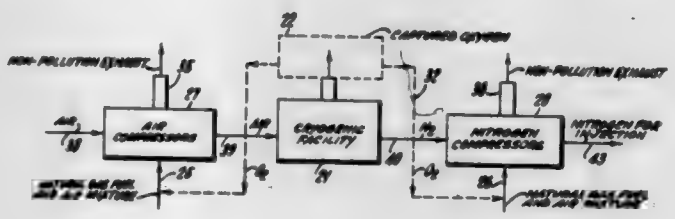
METHOD FOR REDUCING AIR POLLUTION

James W. Haag, Marrero, La., assignor to Texaco Inc., White Plains, N.Y.

Filed Oct. 11, 1983, Ser. No. 540,478

Int. Cl.³ F25J *3/04*

U.S. Cl. 62—18 **6 Claims**



1. In a cryogenic facility located in a remote oil field and producing a large quantity of nitrogen for use in enhanced oil recovery and the like, said facility producing oxygen as a by-product, said facility employing a plurality of internal combustion engines at least one each for driving air and nitrogen compressors, said engines employing natural gas readily available in said remote oil field with air mixture for fuel whereby unacceptable levels of NO_x pollutants are generated by the exhausts from said engines, a method for reducing said air pollution by said engine exhausts at said facility, comprising:

capturing said by-product oxygen, and

feeding said captured oxygen into said fuel to reduce the NO_x compound content of the exhaust from said interal combustion engines.

4,533,375

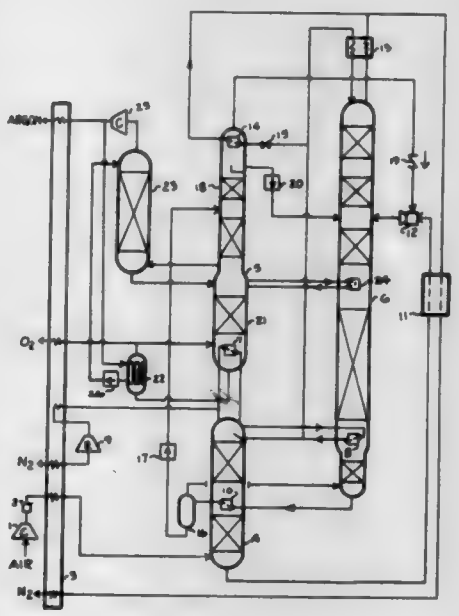
CRYOGENIC AIR SEPARATION WITH COLD ARGON RECYCLE

Donald C. Erickson, 1704 S. Harbor La., Annapolis, Md. 21401

Filed Aug. 12, 1983, Ser. No. 522,516

Int. Cl.³ F25J *3/02*

U.S. Cl. 62—22 **20 Claims**



1. In a process for separating air by cryogenic distillation comprising stripping argon from a liquid oxygen stream in an argon stripper and reducing the oxygen content of a gaseous

argon stream in an argon rectifier, the improvement comprising increasing the reboil rate through the argon stripper and rectifier using a compressor internal to the cold box by:

(a) compressing gaseous argon from the argon rectifier;

(b) condensing at least part of the compressed argon by latent heat exchange with boiling oxygen from the argon stripper;

(c) reboiling the argon stripper with at least part of the evaporated oxygen from step (b);

(d) refluxing the argon rectifier with at least part of the condensed argon from step (b).

9. In a cryogenic air separation apparatus for producing medium to high purity oxygen comprising a low pressure distillation column comprising at least an argon stripper and an argon rectifier, the improvement comprising means designed, sized, and arranged for increasing the reboil rate through the stripper and rectifier while minimizing the energy requirements, including:

(a) an argon compressor which is internal to the cold box;

(b) a vapor conduit from the rectifier to the compressor;

(c) a means for vaporizing argon stripper bottom liquid by latent heat exchange with a condensing gas;

(d) a vapor conduit from the compressor to the heat exchange means;

(e) a liquid conduit to transport condensed argon from the heat exchange means to the argon rectifier reflux inlet.

4,533,376

NOZZLE DRAWING PROCESS AND DRAWING NOZZLE FOR THE SEPARATION OF MELTS

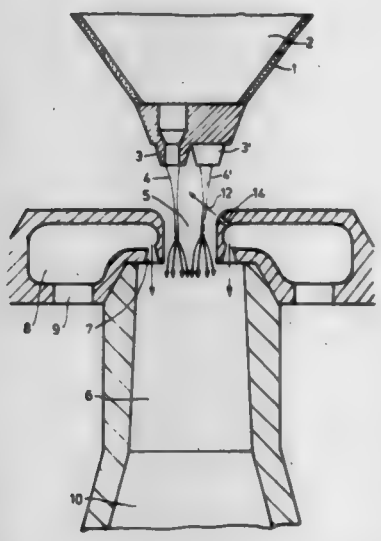
Edgar Muschelknautz, Leverkusen; Norbert Rink, Rommerskirchen, and George Chalupka, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 1, 1984, Ser. No. 576,045

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1983, 3305810

Int. Cl.³ C03B *37/06*

U.S. Cl. 65—5 **7 Claims**



1. In a process for the directing at least one gas propulsion jet from an opening in the inlet of the drawing nozzle in a range from perpendicular to the nozzle axis to laterally with a substantial component countercurrent to the melt stream entering the nozzle to increase the pressure gradient at the inlet.

4,533,377

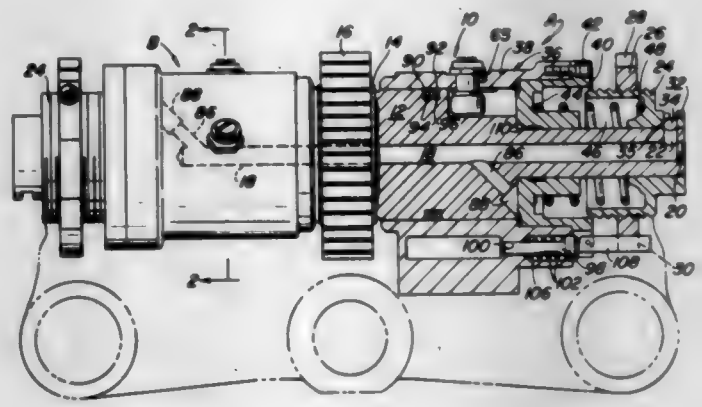
NECK RING MECHANISM FOR I.S. GLASS FORMING MACHINE

Harold C. Libert, Union City, Ind., assignor to Maul Technology Corporation, Millville, N.J.

Continuation-in-part of Ser. No. 572,478, Jan. 20, 1984, abandoned. This application May 3, 1984, Ser. No. 606,545

Int. Cl.³ C03B *9/44*

U.S. Cl. 65—232 **16 Claims**



1. A neck ring mechanism for use in an I.S. glass forming machine comprising:

a rock member adapted to be supported horizontally,

a pair of spaced cylinders reciprocable on said rock member for movement in opposite directions,

gear means coupled to said member for oscillating said member and cylinders about the longitudinal axis of said member,

longitudinal grooves on the periphery of said member,

a follower in each groove, each follower being supported by one of said cylinders,

means for adjusting at least one of said followers so that the follower contacts a side wall of an associated groove, and

said followers and grooves being arranged such that at least one pair of radially adjacent followers contact radially adjacent groove side walls of a cylinder so as to lock the cylinder on said rock member whereby backlash between said cylinder and rock member is eliminated.

4,533,378

MODIFIED ZIRCONIA INDUCTION FURNACE

Un C. Paek, West Windsor Township, Mercer County, and Charles M. Schroeder, Jr., North Hanover Township, Burlington County, both of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 28, 1982, Ser. No. 383,066

The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.

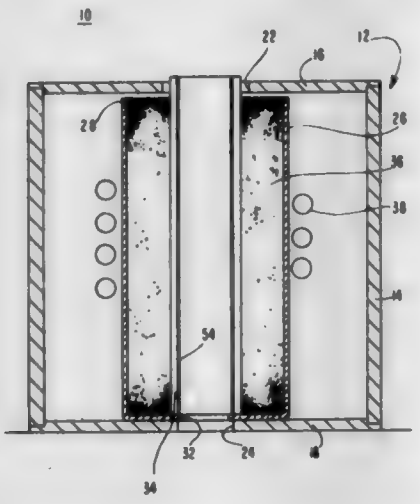
Int. Cl.³ C03B *37/01*

U.S. Cl. 65—3.12 **1 Claim**

1. A method of preventing particles from migrating from the surface of a tubular zirconium dioxide susceptor onto a light-guide fiber being drawn from a preform axially located within said susceptor, comprising the steps of:

vapor depositing a thin porous layer of silica soot on the inside surface of the zirconium dioxide susceptor; and

activating a high frequency induction coil, surrounding the susceptor, to heat said susceptor to consolidate the soot layer



to form a thin fused silica layer on the inside surface of the susceptor to prevent particles from migrating therefrom.

4,533,379

HERBICIDAL UREA COMPOUNDS

Robert van Helden; Frank Baardman, and Johannes L. M. Syrier, all of Amsterdam, Netherlands, assignors to Shell Oil Company, Houston, Tex.

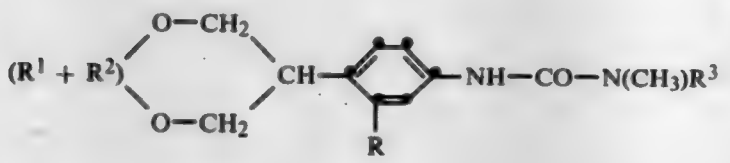
Filed Jun. 14, 1983, Ser. No. 504,349

Claims priority, application United Kingdom, Jun. 25, 1982, 8218455; Jul. 12, 1982, 8220141

Int. Cl.³ A01N *43/00*; C07D *319/00*

U.S. Cl. 71—88 **9 Claims**

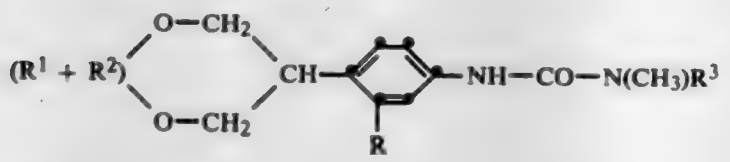
1. A compound of general formula Ia:



(Ia)

wherein R represents a chlorine atom or a methyl group; R^3 represents CH_3 and R^1 and R^2 together represent a cyclohexylidene group.

4. A compound of the formula



wherein R represents a halogen atom or a methyl group; R^3 represents H, CH_3 or OCH_3 and R^1 and R^2 together represent a cyclopentylidene group.

6. A herbicidal composition, which comprises a herbicidally effective amount of a compound according to claim 1 together with at least one carrier.

7. A composition according to claim 6, which comprises at least two carriers, at least one of which is a surface-active agent.

4,533,380

HERBICIDAL HETEROCYCLIC ESTERS OF 2-NITRO-5-(O-CHLORO-P-TRIFLUOROMETHYL-PHENOXY)-BENZOIC ACID AS COMPOSITIONS AND HERBICIDAL METHOD

Dieter Dürr, Bottmingen; Otto Rohr, Therwil, and Beat Böhner, Binningen, all of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

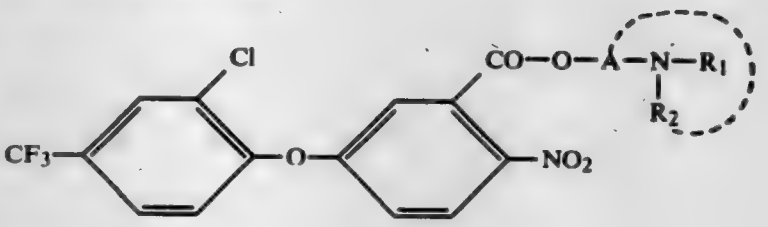
Division of Ser. No. 417,744, Sep. 13, 1982, Pat. No. 4,495,350, which is a division of Ser. No. 107,983, Dec. 28, 1979, Pat. No. 4,455,437. This application Nov. 1, 1984, Ser. No. 667,507

Claims priority, application Switzerland, Jan. 9, 1979, 168/79

Int. Cl.³ A01N *43/36, 43/40, 43/84*

U.S. Cl. 71—88 **11 Claims**

1. A herbicidal composition comprising (1) a heterocyclic ester of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid of the formula



wherein

A is a branched-chain or straight-chain C_2–C_4alkylene group,

R_1 and R_2 taken together with the nitrogen atom to which they are attached or R_1 and a carbon atom of A taken together with the nitrogen atom to which R_1 is attached for a 3- to 7-membered heterocyclic which optionally includes in its ring an oxygen atom, a sulfur atom or the group —NR_3— in which R_3 is hydrogen, C_1–C_4alkyl, phenyl or benzyl, and

R_2 when not forming part of the heterocyclic ring is hydrogen or C_1–C_4alkyl, and acid addition or quaternary ammonium salts thereof, and (2) an inert carrier.

4,533,381

NAPHTHYRIDINYLOXY(OR THIO)PHENOXY PROPANOIC ACIDS, DERIVATIVES THEREOF AND METHODS OF HERBICIDAL USE

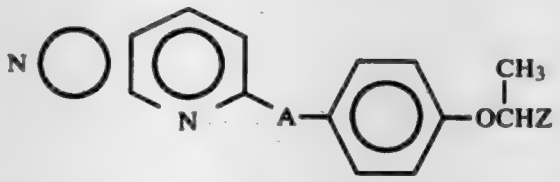
James A. Turner, Pittsburg, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 395,415, Jul. 6, 1982, Pat. No. 4,472,193. This application Sep. 17, 1984, Ser. No. 651,556

Int. Cl.³ C07D *487/04*; A01N *43/40*

U.S. Cl. 71—94 **17 Claims**

1. A compound of the formula



(II)

wherein



represents a fused six-membered nitrogen-containing aromatic ring which forms a 1,5-, 1,6-, 1,7- or 1,8-naphthyridinyl moiety with the adjoining pyridine ring, said naphthyridinyl moiety optionally being substituted at the 6-position of the naphthyridinyl moiety with a chloro, iodo, CF_3, bromo, or fluoro atom with the proviso that said

substitution occurs only when the 6-position of said naphthyridinyl moiety is occupied by a carbon atom;

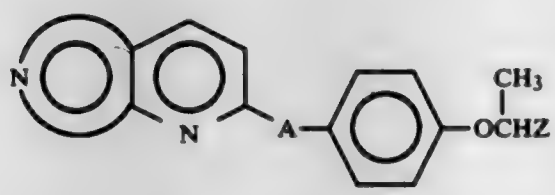
A represents O or S;

Z represents —CONR′$_2$ or —CSNH$_2$; and

R′ represents H or C$_1$–C$_4$ alkyl.

14. A method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount of an active compound of the formula

(II)



wherein



represents a fused six-membered nitrogen-containing aromatic ring which forms a 1,5-, 1,6-, 1,7- or 1,8-naphthyridinyl moiety with the adjoining pyridine ring, said naphthyridinyl moiety optionally being substituted at the 6-position of the naphthyridinyl moiety with a chloro, iodo, CF$_3$, bromo, or fluoro atom with the proviso that said substitution occurs only when the 6-position of said naphthyridinyl moiety is occupied by a carbon atom;

A represents O or S;

Z represents —CONR′$_2$ or —CSNH$_2$; and

R′ represents H or C$_1$–C$_4$ alkyl.

4,533,382

DEVICE AND METHOD FOR MAKING AND COLLECTING FINE METALLIC POWDER

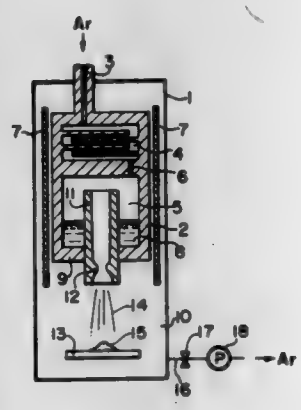
Hirohisa Miura; Hiroshi Sato; Toshio Natsume, and Hidenori Katagiri, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1984, Ser. No. 608,112

Claims priority, application Japan, May 10, 1983, 58-81536

Int. Cl.^{3} B22F *9/00*

U.S. Cl. 75—0.5 C **15 Claims**



8. A method for making fine powder of a metal, comprising the steps of:

producing vapor of said metal;

mixing a flow of inert gas with said vapor of said metal to produce mixture gas;

rapidly cooling said mixture gas by adiabatically expanding it by passing it through a nozzle;

and collecting metal powder from a flow out from said nozzle.

4,533,383

DEVICE AND METHOD FOR MAKING AND COLLECTING FINE ALLOY POWDER

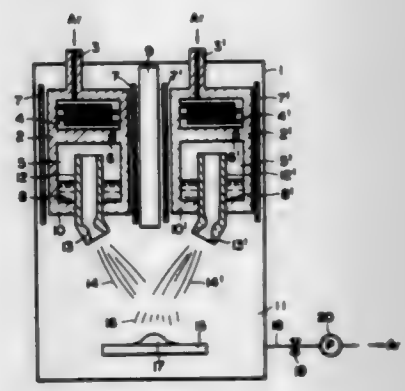
Hirohisa Miura; Hiroshi Sato; Toshio Natsume, and Hidenori Katagiri, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1983, Ser. No. 608,168

Claims priority, application Japan, May 10, 1984, 58-081538

Int. Cl.^{3} B22F *9/00*

U.S. Cl. 75—0.5 C **14 Claims**



8. A method for making fine powder of an alloy of a first metal and a second metal, comprising the steps of:

producing vapor of said first metal;

mixing a flow of inert gas with said vapor of said first metal to produce a first mixture gas;

rapidly cooling said first mixture gas by adiabatically expanding it by passing it through a first nozzle;

producing vapor of said second metal;

mixing a flow of inert gas with said vapor of said second metal to produce a second mixture gas;

rapidly cooling said second mixture gas by adiabatically expanding it by passing it through a second nozzle;

colliding together output flows from said first nozzle and said second nozzle to produce a combined flow;

and collecting alloy powder from said combined flow.

4,533,384

PROCESS FOR PREPARING BINDER-FREE HOT-BRIQUETS

Heinrich Rellermeyer, Duisburg, and Werner Kaas, Dinslaken, both of Fed. Rep. of Germany, assignors to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte, Duisburg, Fed. Rep. of Germany

Filed Jun. 16, 1983, Ser. No. 504,772

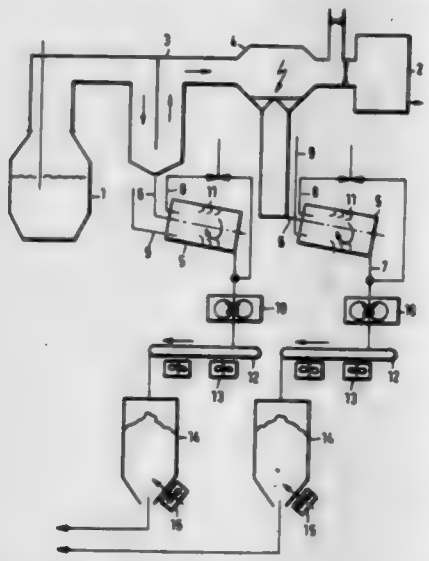
Claims priority, application Fed. Rep. of Germany, Jun. 22, 1982, 3223203

Int. Cl.^{3} C21B *13/00*

U.S. Cl. 75—0.5 BA **9 Claims**

1. A process for preparing binder-free hot-briquets for smelting purposes from ferrous pyrophorous, finely divided solids comprising before the briquetting stage, blowing an oxidising gas at a temperature of more than 200° C. through the finely divided dry solids containing more than 4% by weight of

metallic iron, at such a gas flow rate that some of the metallic iron is oxidised and thereby raising the temperature of the



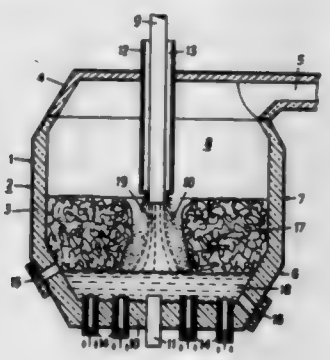
finely divided solids to 450° to 650° C., and hot-briquetting the solids immediately thereafter.

4,533,385

METHOD FOR PRODUCING METALS, SUCH AS MOLTEN PIG IRON, STEEL PRE-MATERIAL AND FERROALLOYS

Walter Lugscheider, Linz; Paul Müllner; Wilhelm Schiffer, both of Traun, and Alois Leutgöb, Steyr, all of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 5, 1983, Ser. No. 558,034
Claims priority, application Austria, Dec. 7, 1982, 4445/82
Int. Cl.³ C22B *4/00*
U.S. Cl. 75—10 R **3 Claims**



1. A method for producing metals including molten pig iron, steel pre-material and ferroalloys from metal-oxide-containing raw material in a metallurgical vessel having at least one plasma jet extending between a plasma burner in the top of said vessel and a counter electrode in the bottom of said vessel, which method comprises the steps of:

charging raw material in fine powder form through the top of said vessel in a direction parallel to and peripherally surrounding said jet,

blowing oxygen-containing gases and carbon into said vessel from the bottom of said vessel and through the melt formed therein, and

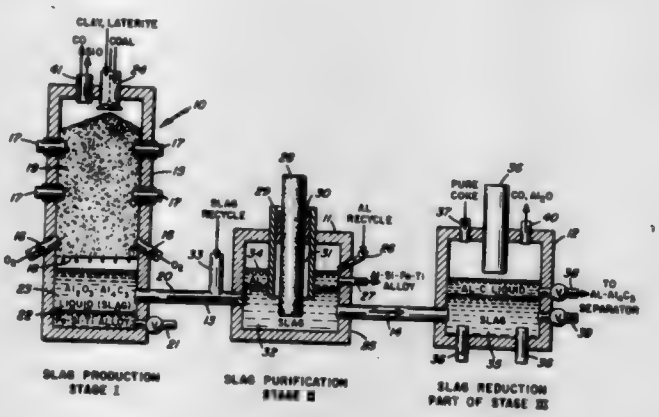
forming foamed slag within said vessel to surround said plasma jet and said peripherally charged raw materials, said foamed slag extending over the total height of said jet.

4,533,386

PROCESS FOR PRODUCING ALUMINUM

Robert M. Kibby, Lauderdale County, Ala., assignor to Process Development Associates, Inc., Florence, Ala.

Filed Mar. 27, 1984, Ser. No. 593,921
Int. Cl.³ C22B *21/02*
U.S. Cl. 75—10 R **17 Claims**



1. In a carbothermic process for producing aluminum metal including the step of reacting carbon bearing materials with molten slag comprising alumina and aluminum carbide, a method for producing said slag, the method comprising the following steps:

A. in a first reaction zone, heating a mixture containing sources of alumina, silica, iron oxide, titanium oxide and carbon to produce a first non-metallic melt, a reaction zone off-gas mixture containing silicon monoxide and carbon monoxide and a first molten metallic alloy containing a part of the iron, silicon and titanium derivable by reduction of said heated mixture with carbon;

B. in a second reaction zone, reacting the first non-metallic melt produced in step A with aluminum to reduce oxides of iron, silicon and titanium in said first non-metallic melt to their metallic states, thereby forming a second molten alloy containing aluminum, iron, silicon, and titanium and thereby converting said first non-metallic melt to a purified second non-metallic melt; and

C. recovering the purified second non-metallic melt from step B to provide said molten slag comprising alumina and aluminum carbide.

4,533,387

CHEMICAL PROCESS FOR PRODUCING ALKALI AND ALKALINE EARTH METALS

Gerhard Holland, Bernusstr. 7, D-6000 Frankfurt am Main 90, and Rudolf Nowak, Frankfurt am Main, both of Fed. Rep. of Germany, assignors to Gerhard Holland, Frankfurt am Main, Fed. Rep. of Germany

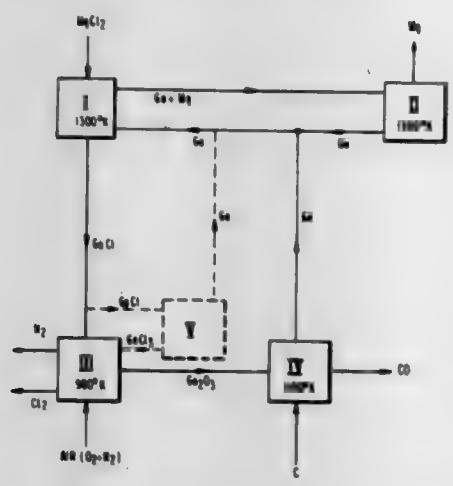
Filed Sep. 12, 1983, Ser. No. 531,402
Int. Cl.³ C22B *26/00*
U.S. Cl. 75—66 **7 Claims**

1. Process for producing alkali and alkaline earth metals as well as mixtures thereof by reducing their halides with reducing metals, comprising:

(a) reacting as least one halide with gallium, indium, thallium or mixtures thereof as reducing metals in a reduction chamber at a temperature below the boiling point of the reducing metal and at a vapor pressure in the reduction chamber which is smaller or at most equal to the reaction pressure, while elemental metal and the monohalide of the reducing metal are formed, and the amount of reducing metal being so chosen that it is sufficient for reducing the halide and dissolving at least part of the amount of metal formed;

(b) separating the vapor formed in the reduction from the metal-reducing metal melt and removing the vapor from the reduction chamber; and

(c) distilling off the metal from the metal-reducing metal melt in a fractionation chamber, removing the metal from



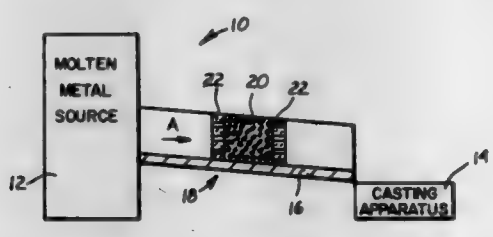
the process, and condensing the metal to provide liquid or solid metal.

4,533,388

TECHNIQUE FOR REMOVING IRON-RICH COMPONENTS FROM A COPPER MELT

Derek E. Tyler, Cheshire; Harvey P. Cheskis, North Haven, and Paul D. Tungatt, Middletown, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 11, 1984, Ser. No. 599,138
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—76 **15 Claims**



1. A process for reducing the number of iron containing defects in a solid copper or copper base alloy comprising:

providing a copper or copper base alloy melt including iron containing components which result in defects in the solid alloy formed from said melt; and

substantially reducing the number of said defects in said solid alloy by providing contact between said melt and a silicon carbide containing material so that the silicon carbide captures defect forming iron containing components in said melt.

4,533,389

BORON CONTAINING RAPID SOLIDIFICATION ALLOY AND METHOD OF MAKING THE SAME

Deepak Kapoor, Saddle Brook; Chung-Chu Wan, Rockaway, and Rong Y. Wang, Pine Brook, all of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

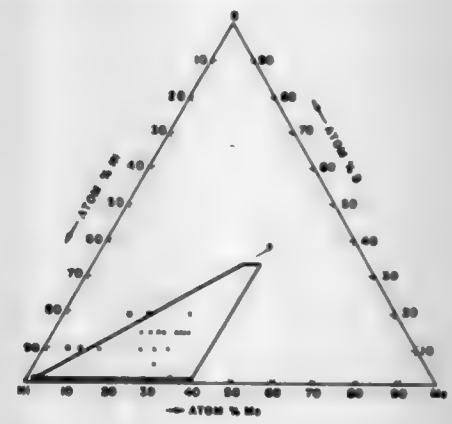
Filed Dec. 29, 1980, Ser. No. 220,618
The portion of the term of this patent subsequent to Jun. 18, 2002, has been disclaimed.
Int. Cl.³ F16H *29/10*
U.S. Cl. 75—123 B **5 Claims**

1. A single-phase, boride-free, homogeneous microcrystalline boron-containing alloy consisting of the formula:

$M_iT_jB_k$ where M is a metal selected from the group Ni, Fe, Co or a mixture thereof;

T is a refractory metal selected from the group Mo, W, or a mixture thereof;

B is the element boron; and i, j and k are the atomic percent of M, T and B and are between 45 and 82, 12 and 35, and



1 and 20 respectively with the proviso that $i+j+k=100\%$ and that $j>k$.

4,533,390

ULTRA HIGH CARBON STEEL ALLOY AND PROCESSING THEREOF

Oleg D. Sherby, Palo Alto, and Toshimasa Oyama, Stanford, both of Calif., assignors to Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 30, 1983, Ser. No. 537,793
Int. Cl.³ C21D *7/14*
U.S. Cl. 75—126 Q **19 Claims**



1. An ultra high carbon steel, consisting essentially of carbon in an amount of from about 0.8 weight percent up to the maximum solubility limit of carbon in austenite, silicon in an amount of from about 3 up to about 7 weight percent, an effective amount of a stabilizing element acting to stabilize iron carbides against graphitization in the presence of silicon, balance iron totalling 100 weight percent.

4,533,391

WORK-HARDENABLE SUBSTANTIALLY AUSTENITIC STAINLESS STEEL AND METHOD

Paul R. Borneman, Sarver, and James B. Hill, Natrona Heights, both of Pa., assignors to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Nov. 7, 1983, Ser. No. 549,700
Int. Cl.³ C22C *38/38*
U.S. Cl. 75—128 A **19 Claims**

1. A work-hardenable substantially austenitic stainless steel consisting essentially of, in weight percent, up to 0.08 max. carbon, up to 0.25 max. nitrogen, 12–15 chromium, 6.5 to 8.5 manganese, about 2 to less than 3.5 nickel, the sum of maganese and nickel being at least 9, and the balance iron and impurities, said steel being characterized by less than 15% ferromagnetic phases of ferrite and/or martensite in the cast and hot-processed conditions and increased strength resulting from martensite formation upon cold working the alloy an equivalent of up to 25% thickness reduction to final product without annealing.

4,533,392

HIGH STRENGTH SINTERED ALLOY

Friedrich J. Esper, Leonberg, and Robert Zeller, Stuttgart, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 16, 1978, Ser. No. 878,480

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1977, 2708916

Int. Cl.[3] B22F *1/00*; C22C *38/02*

U.S. Cl. 75—230 2 Claims

1. A high strength ductile sintered iron alloy composition consisting essentially of sintered-together mixed powders or iron, iron-silicon alloy and iron-phosphorus alloy, with iron powder in predominant proportion therein and the mixture such that the silicon content of the sintered composition is about 1.5% by weight and the phosphorus content of the sintered composition is about 0.45%, with the balance being essentially iron, and the composition having a yield point above 400 N/mm^2 and an impact strength of more than 40 J/cm^2.

4,533,393

AQUEOUS CURABLE MOLDING COMPOSITIONS BASED ON INORGANIC INGREDIENTS AND PROCESS FOR THE PRODUCTION OF MOLDED PARTS

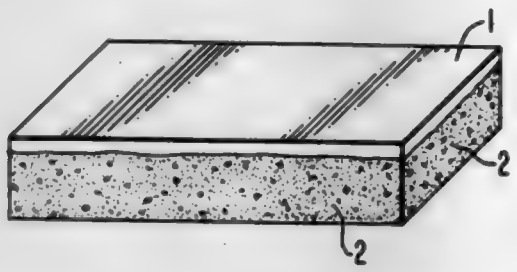
Karl H. Neuschaeffer, Leichlingen; Paul Spielau, Troisdorf-Eschmar; Günter Zoche, Bonn, and Hans-Werner Engels, Troisdorf-Sieglar, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Troisdorf, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,222

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246604; Dec. 16, 1982, 3246602; Dec. 16, 1982, 3246619

Int. Cl.[3] C09D *5/16*

U.S. Cl. 106—18.12 16 Claims



1. An aqueous, hardenable molding composition consisting essentially of inorganic components and water in a flowable or press-moldable distribution, said inorganic components comprising stone-forming components consisting of:

dissolved SiO_2;

1.3–10 parts by weight of a water-free oxide mixture containing amorphous SiO_2 and aluminum oxide per part of dissolved SiO_2;

0.7–2.5 parts by weight of K_2O or 0.55–1.5 parts by weight of Na_2O per part by weight of dissolved SiO_2 or equivalent amounts of the sodium oxide being used for equivalent amounts of the potassium oxide; wherein K_2O or Na_2O, respectively, is derived from at least one alkali hydroxide selected from the group consisting of sodium hydroxide and potassium hydroxide, an aqueous solution thereof, or an aqueous solution of at least one alkali silicate selected from the group consisting of sodium silicate and potassium silicate, and the dissolved SiO_2 is derived from an aqueous solution of at least one alkali silicate selected from the group consisting of sodium silicate and potassium silicate; said composition containing sufficient amounts of water up to attainment of flowability or press-moldability, respectively, and optionally amounts of inert fillers up to the limit of flowability.

4,533,394

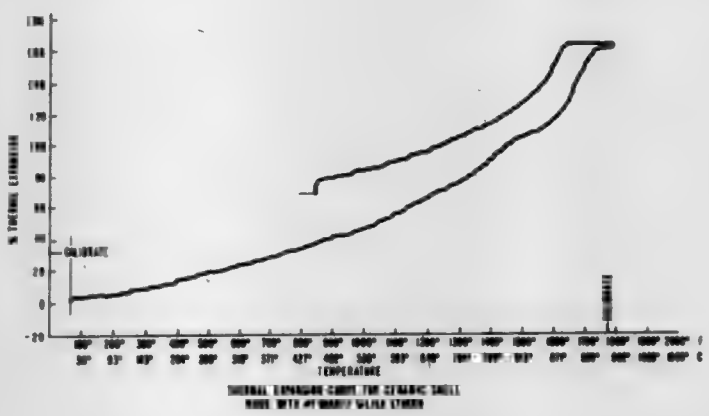
PROCESS FOR MANUFACTURING SHELL MOLDS

Claude H. Watts, 32261 Cedar Rd., Mayfield Heights, Ohio 44124

Division of Ser. No. 431,338, Sep. 30, 1982,. This application May 14, 1984, Ser. No. 591,121

Int. Cl.[3] B28B *7/36*

U.S. Cl. 106—38.2 3 Claims



1. In the process of producing a shell mold about a disposable pattern, said process comprising coating said pattern with alternating layers of a liquid refractory slurry and particles of a stucco material, drying, removing the pattern and firing the mold; the improvement comprising at least one of said layers containing particles of an artificial stucco material produced by drying and crumbling particles comprising a mixture of refractory powder and an organic binder which is volatile at a firing temperature of 1600° F. and is present in amounts sufficient to bind said powder particles.

4,533,395

METHOD OF MAKING A LEACH RESISTANT FIXATION PRODUCT OF HARMFUL WATER-CONTAINING WASTE AND CEMENT

Peter Vejmelka; Wolfgang Kluger, both of Leopoldshafen; Rainer Köster, Karlsruhe-Groetzingen, and Wolfgang Hauser, Stutensee-Fr., all of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Karlsruhe, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,658

Claims priority, application European Pat. Off., Sep. 13, 1983, 83109027.9

Int. Cl.[3] G21F *9/16*

U.S. Cl. 106—89 9 Claims

4. A method of producing solid fixation products of harmful water-containing waste materials and cement (fixation matrix) wherein the water-containing waste materials and the cement are mixed and, while being mixed, are subjected to evaporation at a temperature of 100° C. to 180° C. until sufficient water is evaporated so as to provide in the final fixation product a content of 20 to 50% by weight of waste material on the basis of the dry weight of the waste material in the fixation product and the mixture is then filled into forms for hardening.

4,533,396

METHOD FOR THE THERMAL TREATMENT OF MINERAL RAW MATERIALS

Horst Herchenbach, Hennef, and Hubert Ramesohl, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 548,840

Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 3248175

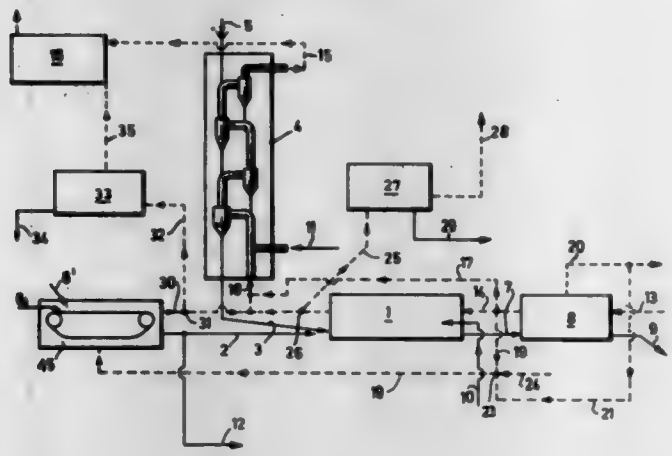
Int. Cl.[3] C04B *7/36*

U.S. Cl. 106—100 6 Claims

1. A method for the thermal treatment of mineral raw materials for the manufacture of cement clinker which comprises:

providing separate first and second preheating systems, charging said first preheating system with a mixture of raw materials and fuel,

supplying sufficient heat to said first preheating system to produce calcined meal and exhaust gases,



passing exhaust gases from said first preheating system into said second preheating system for at least partially preheating and calcining the raw materials therein,

passing the calcined meal from both the first and second preheating systems into a burning system to form cement clinker, and

cooling the cement clinker in a cooling stage.

4,533,397

USE OF POLYMER ALLOYS BASED ON CELLULOSE ESTERS IN CONTACT OPHTHALMICS, AND CONTACT LENSES PRODUCED FROM THE POLYMER ALLOYS

Frank Wingler, Leverkusen; Helmut Waniczek, Cologne, and Otto-Christian Geyer, Wetzlar, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 598,178

Claims priority, application Fed. Rep. of Germany, Apr. 19, 1983, 3314188

Int. Cl.³ C08L *1/08, 1/14*

U.S. Cl. 106—181 **9 Claims**

1. Contact lenses prepared from a polymer alloy essentially free from plasticizers and which comprises

(A) 97–70% by weight of one or more cellulose esters of one or more aliphatic carboxylic acids, and

(B) 3–30% by weight of an aliphatic polymeric compound having ester moieties, carbonate moieties or both ester and carbonate moieties in the polymer chain and having an average molecular weight of 2,000 to 300,000, with less than 2% by weight of compounds having a molecular weight below 500.

4,533,398

EXTRACTION OF SUCROSE

Richard W. Neuzil, Downers Grove, and Richard L. Fergin, Mt. Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

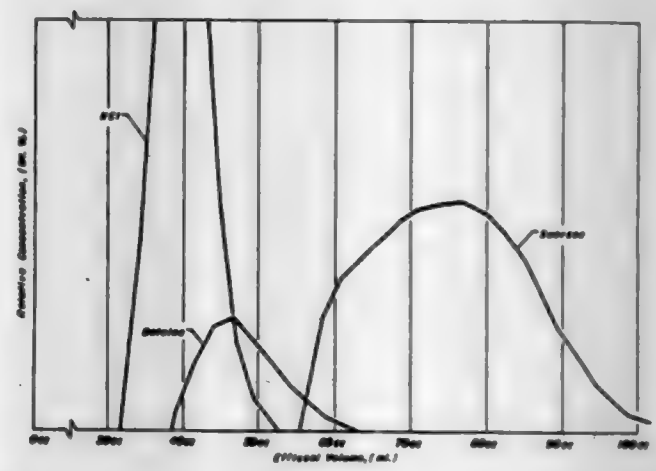
Division of Ser. No. 308,013, Oct. 2, 1981, Pat. No. 4,426,232, which is a continuation-in-part of Ser. No. 246,349, Mar. 23, 1981, abandoned. This application Oct. 24, 1983, Ser. No. 544,903

Int. Cl.³ C13D *3/12*

U.S. Cl. 127—55 **1 Claim**

1. A cyclical process for separating sucrose from an aqueous solution of sucrose and at least one of the compounds comprising betaine and a mineral salt, each cycle of which process comprises:

(a) contacting said mixture at adsorption conditions with a solid adsorbent exhibiting selectivity for said sucrose thereby selectively adsorbing said sucrose on said adsorbent;



(b) recovering said sucrose from said adsorbent by desorption with a desorbent comprising alcohol; and thereafter

(c) flushing said alcohol from said adsorbent with water.

4,533,399

CONTACT LENS CLEANING METHOD

Arlene J. Mencke, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Apr. 12, 1983, Ser. No. 484,163

Int. Cl.³ B08B *11/00, 11/02*

U.S. Cl. 134—6 **15 Claims**

1. A method of cleaning a contact lens comprising the steps:

a. providing a moistened non-woven, thermoplastic, polymeric, fibrous web having an average fiber diameter up to 50 microns,

b. contacting and rubbing said lens with said fibrous web for a period of time sufficient to loosen proteinaceous and particulate matter from said contact lens, and

c. removing said lens from contact with said fibrous web, said lens after cleaning being physiologically acceptable to the eye.

4,533,400

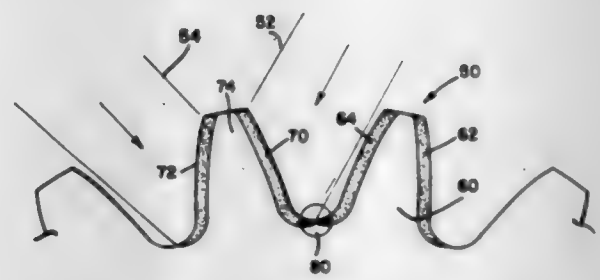
METHOD AND APPARATUS FOR LASER HARDENING OF STEEL

Gary F. Benedict, Chandler, Ariz., assignor to The Garrett Corporation, Los Angeles, Calif.

Filed Jun. 29, 1983, Ser. No. 509,530

Int. Cl.³ B23K *27/00*

U.S. Cl. 148—4 **31 Claims**



1. A method of simultaneously hardening both sides of a gear tooth or other projection from a workpiece, comprising:

supplying a high power laser light beam;

periodically interposing at a high repetition rate a mechanical obstruction to substantially interrupt said high power laser light beam, said periodic interruption allowing the uninterrupted portion of said laser light beam to pass in a first optical path;

providing a reflective surface on said mechanical obstruc-

tion to direct the interrupted portion of said high power laser light beam in a second optical path, said interposing step being performed so as to cause the intensities of light in said first and second optical paths to be substantially identical;

directing light from said first optical path onto one side of said gear tooth or other projection from said workpiece at a first end of said gear tooth or other projection from said workpiece;

focusing said light from said first optical path directed onto said one side of said gear tooth or other projection from said workpiece into a first coherent beam of a desired intensity and cross-sectional geographic configuration;

directing light from said second optical path onto the other side of said gear tooth or other projection from said workpiece at said first end of said gear tooth or other projection from said workpiece;

focusing said light from said second optical path directed onto said other side of said gear tooth or other projection from said workpiece into a second coherent beam of a desired intensity and cross-sectional geographic configuration; and

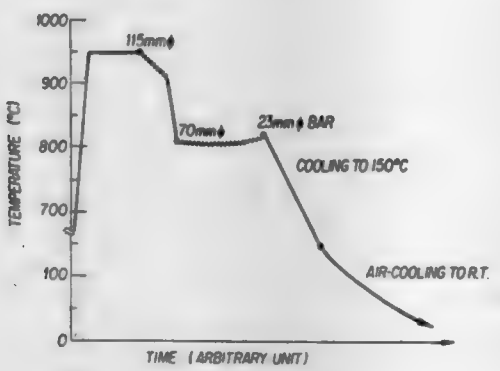
traversing said one side of said gear tooth or other projection from said workpiece from said one end to the other end with said first coherent beam while simultaneously traversing said other side of said gear tooth or other projection from said workpiece from said one end to said other end with said second coherent beam.

4,533,401

PROCESS FOR PRODUCING STEEL WIRE OR RODS OF HIGH DUCTILITY AND STRENGTH

Toshio Yutori, Takasago, and Rikuo Ogawa, Kobe, both of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Continuation-in-part of Ser. No. 343,220, Aug. 4, 1983, abandoned. This application Aug. 4, 1983, Ser. No. 520,343
Claims priority, application Japan, Jan. 27, 1981, 56-11031
Int. Cl.³ C21D *8/06*
U.S. Cl. 148—12 B **2 Claims**



1. A process for preparing a steel wire or rod having a tensile strength of greater than 140 kg/mm^2 and a total elongation of about 10.6% or greater, said method consisting of:

(a) hot rolling a steel consisting essentially of 0.2–0.4%, by weight, of C, and 0.5–2.5%, by weight, of Mn, with the balance iron and inevitable impurities, while controlling the rolling conditions so that intermediate and final rolling temperatures are below 1000° C., and the total reduction ratio at temperatures below 930° C. is greater than 30%; thereby producing a steel consisting of hardened austenite having fine and uniform grains, and

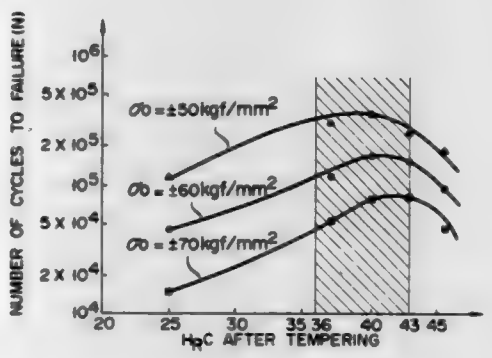
(b) continuously cooling said steel immediately after rolling to room temperature at an average cooling rate of 20°–250° C./sec., thereby forming a final phase in said steel of high ductility consisting essentially of martensite and a small amount of retained austenite.

4,533,402

METHOD OF MANUFACTURING A HOLLOW STABILIZER

Akira Ohno; Hiroshi Koyama, both of Yokohama; Kanji Inoue, Kamakura, and Hiroaki Ozawa, Yokohama, all of Japan, assignors to NHK Spring Co., Ltd., Yokohama, Japan

Filed Feb. 16, 1984, Ser. No. 580,858
Int. Cl.³ C21D *9/08*
U.S. Cl. 148—12.4 **15 Claims**



1. A method of manufacturing a hollow stabilizer which comprises the step of:

bending a steel tubing containing 0.2–0.35 weight % of carbon and a minute amount of boron into a prescribed form;

heating said bent steel tubing;

rapidly water quenching said heated bent steel tubing to harden said bent steel tubing; and

tempering said water-quenched and hardened bent steel tubing to a hardness H_RC ranging between 36 and 43.

4,533,403

PACK COMPOSITION FOR BOROCARBURIZING FERROUS SUBSTRATES

William L. Aves, Jr., and Gary A. Aves, both of Arlington, Tex., assignors to Dresser Industries, Inc., Dallas, Tex.

Division of Ser. No. 547,302, Oct. 31, 1983, Pat. No. 4,449,006. This application Sep. 17, 1984, Ser. No. 651,386
Int. Cl.³ C21D *1/06*
U.S. Cl. 148—19 **6 Claims**

1. A pack composition for treating a ferrous metal to initially diffuse carbon into the surface thereof and subsequently diffuse boron therein, consisting essentially of:

(a) between about 3% and 20% by weight of boron material;

(b) between about 70% and 90% by weight of carburizing compound, said carburizing compound consisting essentially of:

(i) between about 10% and 30% by weight barium carbonate;

(ii) between about 5% and 20% by weight calcium carbonate; and

(iii) between about 50% and 85% by weight of a material selected from the group consisting essentially of hardwood charcoal and coke;

(c) between about 2% and 10% by weight of an alkali earth fluoride.

4,533,404

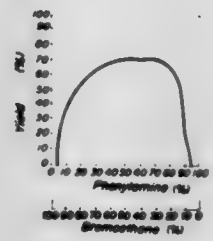
SOLDERING FLUXES

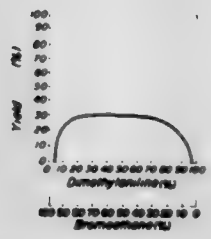
Masayuki Hasegawa, Hachioji, Japan, assignor to Nihon Almit Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1984, Ser. No. 614,737
Claims priority, application Japan, Jun. 1, 1983, 58-95745
Int. Cl.³ B23K *35/362*
U.S. Cl. 148—23 **6 Claims**

1. A soldering flux substantially comprising a chemical reaction product prepared by reacting at least one member selected

from the group consisting of bromoethane, 1,2-dibromoethane, and acetylene tetrabromide with at least one member selected





from the group consisting of phenylamine, methylphenylamine, dimethylaniline, and diethylaniline.

4,533,405

TUBULAR HIGH STRENGTH LOW ALLOY STEEL FOR OIL AND GAS WELLS

David L. Sponseller, Ann Arbor, Mich., and John A. Straatmann, Poland, Ohio, assignors to AMAX Inc., Greenwich, Conn.

Division of Ser. No. 433,326, Oct. 7, 1982, Pat. No. 4,453,986. This application Mar. 26, 1984, Ser. No. 593,659

Int. Cl.³ C22C *38/12*

U.S. Cl. 148—36 **4 Claims**

1. As an article of manufacture, a normalized high strength low-alloy steel tubular product of the N-80 type suitable for use as an oil well tubular member, said product being formed of a composition consisting essentially of:

about 0.25 to 0.4% C, about 0.2 to 0.4% Mo, about 0.002 to 0.03% N, about 0.75 to 1.5% Mn, about 0.1 to 0.4% Si, and the balance essentially iron, said steel product being normalized by heating to an austenitizing temperature of about 1600° F. to 1950° F. for a time sufficient to convert the microstructure to austenite and then air cooling to produce a product having N-80 type properties with a tensile strength substantially in excess of 100 ksi minimum for N-80 and characterized by a microstructure of predominantly acicular ferrite and some bainite.

4,533,406

MINIMUM ACTIVATION MARTENSITIC ALLOYS FOR SURFACE DISPOSAL AFTER EXPOSURE TO NEUTRON FLUX

Thomas Lechtenberg, San Diego, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jul. 26, 1983, Ser. No. 517,364

Int. Cl.³ C22C *38/22, 38/24, 38/28*

U.S. Cl. 148—37 **5 Claims**

1. A steel alloy for long term exposure to a high neutron flux, said steel having a martensitic microstructure and containing between about 8.0 and 12.0 weight percent chromium, between about 0.1 and about 0.25 weight percent carbon, between about 2.2 and about 2.0 weight percent tungsten, and between about 0.2 and about 0.4 weight percent vanadium, and said steel having a controlled amount of Ni, Mo, Cu, N, Co, Nb, Al, and Mn such that

$$5.14 \times 10^{-3}\chi_{Ni} + 1.43 \times 10^{-2}\chi_{Mo} +$$

-continued

$$2.45 \times 10^{-2}\chi_{Cu} + 1.8 \times 10^{-3}\chi_{N} + 1.2 \times 10^{-5}\chi_{Co} + 10\chi_{Nb} + 8.44 \times 10^{-3}\chi_{Al} + 1.6 \times 10^{-5}\chi_{Mn} < 1.$$

4,533,407

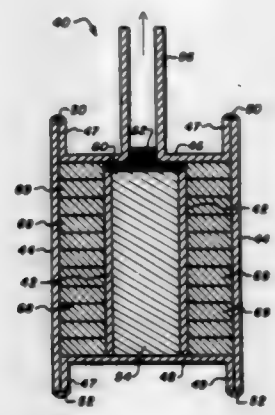
RADIAL ORIENTATION RARE EARTH-COBALT MAGNET RINGS

Dilip K. Das, Bedford; Kaplesh Kumar, Wellesley, and Ernest C. Wettstein, Acton, all of Mass., assignors to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Mar. 30, 1981, Ser. No. 248,798

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—102 **25 Claims**



1. A method for forming radially oriented magnets comprising the steps of:

compressing a fine grain powder of magnet material in an annular cavity in the presence of a radially aligning magnetic field to form a compacted continuous ring the particles of which are aligned in a radial orientation;

stacking a plurality of rings formed by said compressing step axially in a sealed cannister formed of a compatible deformable at the temperature used for densification of said compacted rings;

subjecting the cannister to temperatures in the range of 900° to 1150° C. and gas pressures sufficiently high to compact the rings into a single cylindrical magnet having a density of at least 99% of the theoretical maximum; and

cooling the cannister containing the magnet.

4,533,408

PREPARATION OF HARD MAGNETIC ALLOYS OF A TRANSITION METAL AND LANTHANIDE

Norman C. Koon, Woodridge, Va.

Division of Ser. No. 314,325, Oct. 23, 1981, Pat. No. 4,402,770. This application Sep. 6, 1983, Ser. No. 529,788

Int. Cl.³ H01F *1/02*

U.S. Cl. 148—103 **20 Claims**

1. A method for preparing a hard magnetic polycrystalline alloy which comprise the steps of preparing an alloy represented by the formula:

$$(M_wX_xB_{1-w-x})_{1-y}(Y_vR'L_{1-v-z})_y$$

wherein v is from 0 to 0.8, w is from about 0.7 to about 0.98; x is from 0 to about 0.15; y is from about 0.05 to about 0.25; z is from 0 to about 0.95; M is selected from the class consisting of iron, cobalt, an iron-cobalt alloy, an iron-manganese alloy having at least 50 atomic percent iron, an iron-cobalt-manganese alloy having at least 50 atomic percent iron and cobalt, X is an auxillary glass former selected from the class consisting of phosphorous, silicon, aluminum, arsenic, genmanium, indinum, antimony, bismuth, tin, and mixtures thereof, R' is a heavier-weight lanthanide, and L is a lighter weight lanthanide, said alloy having a polycrystalline, multiphase, single-

domain microstructure wherein the average crystal-grain size does not exceed 400 A;

creating an amorphous microstructure in said alloy;

heating said alloy at a temperature from about 850 to 1200 K. in a magnetic field of at least one kOe until a polycrystalline microstructure is obtained.

4,533,409

METHOD AND APPARATUS FOR REDUCING CORE LOSSES OF GRAIN-ORIENTED SILICON STEEL

James G. Benford, Pittsburgh, Pa., assignor to Allegheny Ludlum Steel Corporation, Pittsburgh, Pa.

Filed Dec. 19, 1984, Ser. No. 683,839

Int. Cl.³ H01F *1/04*

U.S. Cl. 148—111 **11 Claims**



1. A method for improving the core loss of grain-oriented silicon steel, which has been cold rolled to final gauge, said method comprising scribing said steel after said cold rolling in a direction generally transverse to the rolling direction; said scribing being effected by passing said steel after said cold rolling through a roll pass defined by an anvil roll and a scribing roll having a roll surface with a plurality of projections thereon and said anvil roll being constructed from a material that is relatively more elastic than the material from which said scribing roll is constructed.

4,533,410

PROCESS OF VAPOR PHASE EPITAXY OF COMPOUND SEMICONDUCTORS

Mototsugu Ogura, Nara; Yuzaburoh Ban, Osaka, and Nobuyasu Hase, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Oct. 17, 1983, Ser. No. 542,770

Claims priority, application Japan, Oct. 19, 1982, 57-183945

Int. Cl.³ H01L *21/205, 21/365*

U.S. Cl. 148—175 **22 Claims**

1. A metal-organic chemical vapor deposition process for forming a compound semiconductor, comprising the steps of:

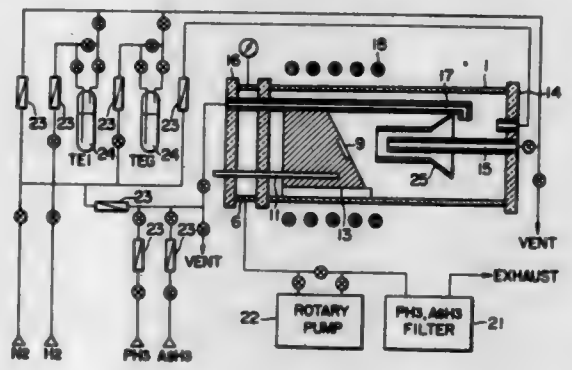
disposing a substrate in a deposition chamber;

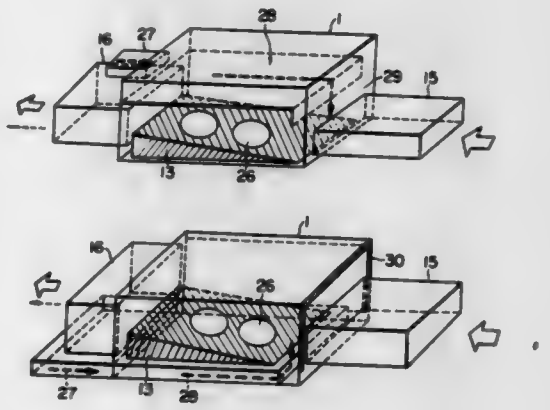
introducing a first reactant gas comprising a metal organic compound into said chamber, so that said gas flows from an upstream region toward a downstream region within the chamber;

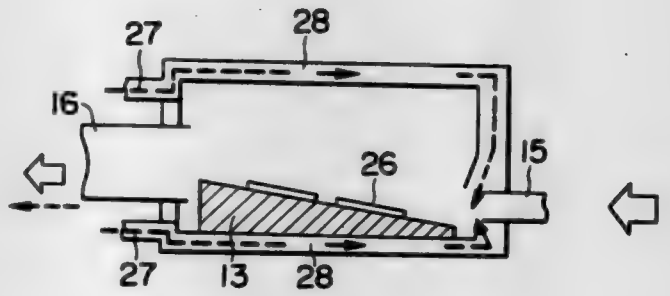
providing a heated guide tube having a wall extending between said regions in said chamber;

feeding a thermally decomposable second reactant gas through said guide tube from said downstream region to said upstream region, while heating at least a portion of the wall of the guide tube to a temperature sufficient to at least partially pre-decompose said second reactant gas and reduce deposition of at least one decomposition product of said second reactant gas on the inner surface of said guide tube;

mixing said first and second reactant gases in said upstream region; and







supplying the resulting mixture of said gases to a surface of said substrate, so that a layer comprising said compound semiconductor is formed on said surface.

4,533,411

METHOD OF PROCESSING NICKEL-TITANIUM-BASE SHAPE-MEMORY ALLOYS AND STRUCTURE

Keith N. Melton, Cupertino, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Nov. 15, 1983, Ser. No. 553,005

Int. Cl.³ C22F *1/10, 1/18*

U.S. Cl. 148—402 **11 Claims**

1. A method of processing nickel-titanium-base shape-memory alloys to substantially suppress the two-way effect which comprises:

providing a nickel-titanium-based shape-memory alloy in the austenitic state in a specified shape;

cold working said alloy in the martensitic state from 15% to 40% to provide a microstructure containing a high concentration of substantially random dislocations;

annealing said alloy without restraint at 300° C. to 500° C. for at least 20 minutes to rearrange the dislocations into an ordered network of dislocations comprising essentially dislocation-free cells surrounded by walls of higher dislocation density;

providing said alloy in a desired shape while maintaining the dislocation-free cells obtained in the annealing step; and

deforming the alloy in the martensitic state; whereby when

the alloy is recovered by heating the alloy to the austenitic state and subsequently cooled to the martensitic state, the alloy substantially retains said desired shape.

9. A coupling member produced by the process of processing nickel-titanium-base shape-memory alloys to substantially suppress the two-way effect which comprises:

providing a nickel-titanium-base shape-memory alloy in the austenitic state in a specified shape;

cold working said alloy in the martensitic state from 15% to 40% to provide a microstructure containing a high concentration of substantially random dislocations;

annealing said alloy without restrain at 300° C. to 500° C. for at least 20 minutes to rearrange the dislocations into an ordered network of dislocations comprising essentially dislocation-free cells surrounded by walls of higher dislocation density and to provide said alloy in a desired shape; and

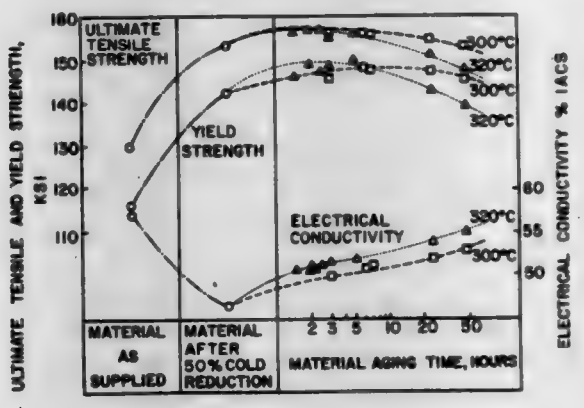
deforming the alloy in the martensitic state; whereby when the alloy is recovered by heating the alloy to the austenitic state and subsequently cooled to the martensitic state, the alloy will revert to the martensitic state without exhibiting the two-way effect.

4,533,412

THERMAL-MECHANICAL TREATMENT FOR COPPER ALLOYS

Abraham I. Rotem, San Diego, Calif., assignor to FDX Patents Holding Company, N.V., La Jolla, Calif.

Filed Sep. 30, 1982, Ser. No. 428,624
Int. Cl.³ C22F 1/08; C22C 9/06
U.S. Cl. 148—411 **25 Claims**



1. A method of enhancing the strength and hardness properties of a starting copper alloy having a copper matrix structure containing at least one element in solution capable of being precipitated, said starting material having been cold worked and subjected to a precipitation hardening heat treatment for on the order of about 2 to 72 hours at a temperature in the range of about 300°–500° C. comprising the steps of additional cold working followed by an additional precipitation hardening heat treatment to produce a material having a tensile strength of at least 150 ksi and a tensile ductility of at least 5%, said copper alloy consists essentially of the composition by weight of

beryllium: 0.2–0.6
cobalt: 0.3 maximum
nickel: 1.4–2.2
nickel, beryllium & copper: 99.5 minimum
iron: 0.1 maximum.

23. A precipitation hardenable copper alloy having a tensile strength of at least 150 ksi and a tensile ductility of at least 5% produced by a method comprising the steps of:

(a) providing a copper alloy which consists essentially of the composition by weight of:
beryllium: 0.2–0.6
cobalt: 0.3 maximum
nickel: 1.4–2.2
nickel, beryllium & copper: 99.5 minimum
iron: 0.1 maximum

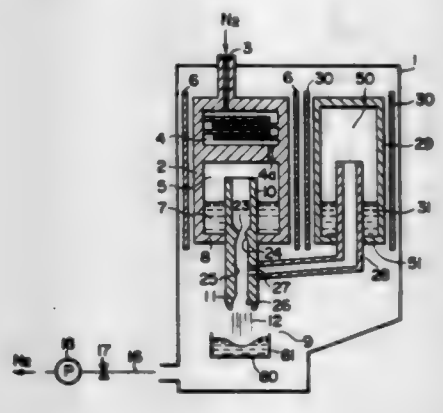
(b) solutionizing the alloy;
(c) quenching the solutionized alloy;
(d) cold working the quenched alloy;
(e) precipitation hardening the cold worked alloy for on the order of about 2–72 hours at a temperature in the range of about 300°–500° C.;
(f) additionally cold working the precipitation hardened alloy; and
(g) additionally precipitation hardening the additionally cold worked alloy.

4,533,413

REINFORCED MATERIAL INCORPORATING FINE COMPOSITE POWDER AND METHOD AND APPARATUS FOR MAKING THE SAME

Hirohisa Miura; Hiroshi Sato; Toshio Natsume, and Hidenori Katagiri, all of Aichi, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed May 8, 1984, Ser. No. 608,113
Claims priority, application Japan, May 10, 1983, 58-081535
Int. Cl.³ C22C 23/02
U.S. Cl. 148—420 **16 Claims**



1. A composite material, comprising a matrix of a first metal and reinforcing first particles with average particle diameter less than or equal to about ten microns dispersed in said matrix of said first metal, said reinforcing first particles each having a composite structure which comprises a plurality of fine second particles of a ceramic and a matrix of a second metal.

4,533,414

CORROSION-RESISTANCE NICKEL ALLOY

Aziz I. Asphahani, Kokomo, Ind., assignor to Cabot Corporation, Kokomo, Ind.

Filed Jul. 10, 1980, Ser. No. 168,237
Int. Cl.³ C22C 19/05
U.S. Cl. 148—427 **1 Claim**

1. The wrought product form of an alloy consisting essentially of, in weight percent, about 22 chromium, about 13 molybdenum, about 3 tungsten, less than 0.5 columbium, less than 0.5 tantalum, less than 0.1 carbon, less than 0.2 silicon, less than 0.5 manganese, about 3 iron, less than 0.7 aluminum plus titanium, less than 0.5 vanadium and the balance nickel plus impurities wherein the ratio of molybdenum to tungsten is within the range 3:1 to 5:1, wherein the ratio of iron to tungsten is within the range 1:1 to 3:1, and wherein said ratios provide said alloy with an optimum combination of corrosion resistant properties in a variety of corrosive media and hot and cold working properties to permit production of thin sheet, tubing and other commercial forms.

4,533,415
HIGH ENERGY PROPELLANT

Frederick B. Wagner, III, R.D. #2, Margarete Dr., Box 679, Elmer, N.J. 08318, and Anthony J. Izbicki, Reading, Pa., assignors to Frederick B. Wagner, III, Elmer, N.J.

Filed Sep. 23, 1977, Ser. No. 836,887
Int. Cl.[3] C06B *35/00*
U.S. Cl. 149—35 20 Claims

1. A high energy propellant comprising a normally pulverulent secondary high explosive held together as a cohesive mass by means of a bridging agent which is a clathrate having a plurality of hydrogen-active sites.

4,533,416
PELLETIZABLE PROPELLANT

Donald R. Poole, Woodinville, Wash., assignor to Rockcor, Inc., Redmond, Wash.

Continuation of Ser. No. 91,965, Nov. 7, 1979, abandoned. This application Aug. 7, 1981, Ser. No. 291,148
Int. Cl.[3] C06B *35/00*
U.S. Cl. 149—35 18 Claims

1. A gas generating composition formable into pellets of enhanced strength made by the process comprising the steps of:

forming a hydrated metal oxide gel by reacting a base with a metal salt, said metal being selected from the group consisting of aluminum, magnesium, chromium, manganese, iron, cobalt, copper, nickel, cerium and of the remaining transition series elements which form a gelatinous hydrated metal oxide when the salts thereof are reacted with a base;

mixing said hydrated metal oxide gel with a metal oxide oxidant chosen from the group consisting of the oxides of aluminum, magnesium, chromium, manganese, iron, cobalt, copper, nickel, cerium and of the remaining transition series elements which form a gelatinous hydrated metal oxide when the salts thereof are reacted with a base;

dehydrating the hydrated metal oxide in the presence said metal oxides oxidant; and

adding a metal azide chosen from the alkali and alkaline earth azides.

10. A method of making a gas generating composition formable into pellets of enhanced strength comprising the steps of:

forming a hydrated metal oxide gel by reacting a base with a metal salt, said metal being selected from the group consisting of aluminum, magnesium, chromium, manganese, iron, cobalt, copper, nickel, cerium and of the remaining transition series elements which form a gelatinous hydrated metal oxide when the salts thereof are reacted with a base;

mixing said gel with a particulate metal oxide oxidant chosen from the group consisting of the oxides of aluminum, magnesium, chromium, manganese, iron, cobalt, copper, nickel, cerium and of the remaining transition series elements which form a gelatinous hydrated metal oxide when the salts thereof are reacted with a base;

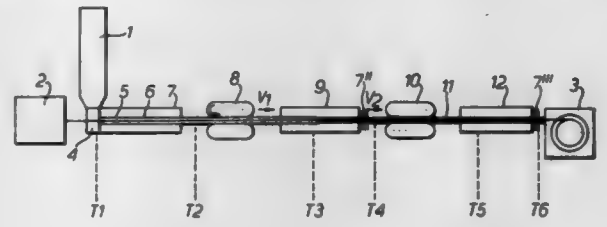
dehydrating the hydrated metal oxide in the presence of said particulate metal oxide oxidant: and

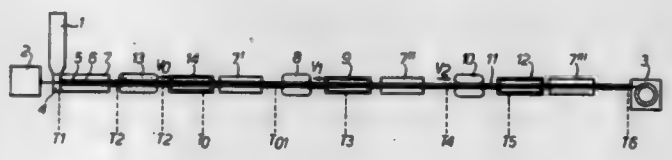
adding a metal azide chosen from the alkali and alkaline earth azides.

4,533,417
MANUFACTURE OF ORIENTED INSULATED WIRES AND CABLES

Robert T. Puckowski; Dennis Cooper, both of London, and Patrick J. Duffy, Marlow, all of England, assignors to BICC Public Limited Company, London, England

Filed Jul. 12, 1984, Ser. No. 630,109
Claims priority, application United Kingdom, Jul. 19, 1983, 8319510
Int. Cl.[3] H01B *13/14*
U.S. Cl. 156—51 5 Claims





1. In a method of continuously manufacturing an electric wire or cable comprising advancing a core comprising at least one conductor in the direction of its length; extruding around the core an oversize tube of a selected crystallisable polymeric material; cooling the extruded tube to form a first zone downstream of the extruder in which the temperature of the tube is low enough for it to be gripped and in that zone gripping the tube to advance it at a first controlled speed; reheating the tube to form a second zone downstream of the first zone in which the temperature of the tube is above the glass transition temperature but below the melting temperature range of the polymer; stretching the tube in the second zone by advancing it at a second controlled speed which is from one and a half to ten times the first controlled speed; and collapsing the tube onto the core in or downstream of the second zone the improvement which comprises holding the extruded tube at a place upstream of the place in the first zone where it is gripped in a temperature range above the glass transition temperature but below the crystalline melting point for a time to produce crystallinity in the material of the tube before it is stretched.

4,533,418
POLYURETHANE HEAT FORM AND BONDING OF CABLE JACKETS

James Appling, Canoga Park, Calif., assignor to Allied Corporation, Morristown, N.J.

Filed Sep. 21, 1984, Ser. No. 652,932
Int. Cl.[3] H01B *13/06*
U.S. Cl. 156—52 6 Claims

1. In the manufacture of electrical cables including internal conductors, insulating material protecting said conductors, a protective polyurethane jacket and metallic connector members terminating said cables wherein said connector members must be sealed to said protective polyurethane jacket in such manner as to resist the penetration of an external fluid under high pressure, a method of bonding said jacket to itself and to said connector members comprising the steps of:

(1) splitting the jacket longitudinally from the end of the cable into two roughly equal halves and peeling the split ends back;

(2) attaching said metallic connector member to the remaining portion of said cable;

(3) cleaning the metal surface of said connector member to remove all residual grease or oil;
(4) priming the external metal surface of said connector member with a thermoplastic adhesive which will adhere to metal and to polyurethane;
(5) repositioning the split halves of said jacket around said cable and over the surface of said connector member and placing the end of said cable including the length of said split halves and said metallic connector in a mold wherein said mold is in close contact with said jacket;

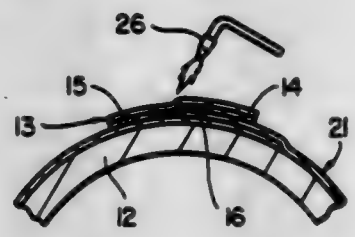


(6) applying heat and pressure in said mold in a quantity and for a time sufficient to cause said polyurethane jacket material to flow sufficiently to bond said halves together and to bond said jacket to said metallic connector member; and
(7) allowing said mold to cool to a temperature substantially below that required to bond said polyurethane jacket material, and removing said cable from said mold.

4,533,419
PATCH CLOSURE SYSTEM

George Pieslak, Menlo Park, and Barnie A. Wallace, Jr., Palo Alto, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 317,092, Nov. 2, 1981, Pat. No. 4,424,246. This application Sep. 15, 1984, Ser. No. 533,164
Int. Cl.[3] B29C *27/00;* B32B *3/26;* C09J *7/02*
U.S. Cl. 156—85 **4 Claims**

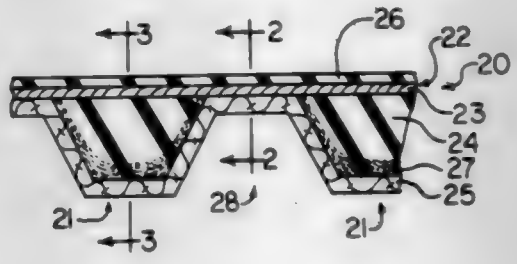


1. A method of covering a substrate with a heat recoverable sheet material comprising the steps of:
a. overlappingly wrapping said sheet material about said substrate:
b. disposing a patch over a line defined by the uppermost of the overlapping end, said patch comprising:
(i) a layer of cross-linked polymer and means for retaining the line before, during and after heat recovery of said sheet material;
(ii) the retaining means including means centrally located on the patch for retaining the line before and during heat recovery consisting of a pressure sensitive adhesive with reinforcing means for preventing movement of the pressure sensitive with respect to the polymer during heat recovery;
(iii) the retaining means further including means for retaining the line after heat recovery occupying the remainder of the surface of the patch consisting of heat-activatable adhesive.

4,533,420
TOOTHED BELT

Robert E. Wetzel, Springfield, Mo., assignor to Dayco Corporation, Dayton, Ohio

Division of Ser. No. 378,978, May 17, 1982, Pat. No. 4,415,397, which is a division of Ser. No. 217,261, Dec. 16, 1980, Pat. No. 4,343,666, which is a continuation of Ser. No. 110,032, Jan. 7, 1980, abandoned, which is a division of Ser. No. 957,280, Nov. 2, 1978, Pat. No. 4,235,119. This application Jun. 27, 1983, Ser. No. 508,209
The portion of the term of this patent subsequent to Nov. 25, 1997, has been disclaimed.
Int. Cl.[3] F16G *1/28*
U.S. Cl. 156—138 **10 Claims**

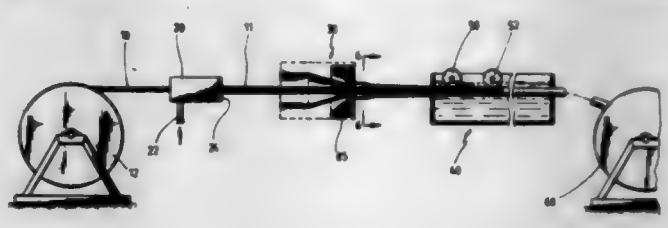


1. In a method of making a belt construction having opposed sides and comprising a tensile means intermediate said opposed sides, a plurality of teeth defining one of said opposed sides of said belt construction and being mainly formed of a first polymeric material that has reinforcing fibers therein, each tooth having opposed sides that are disposed in spaced relation to adjacent sides of adjacent teeth, and a backing member defining the other of said opposed sides of said belt construction, said backing member being mainly formed from a second polymeric material that is initially separate from said material of said teeth and is substantially free of fibers therein, said material of said backing member having a surface that joins with a surface of each tooth whereby said joining surfaces define an interface line therebetween, the improvement comprising the step of forming said interface line for each tooth to extend from a point that is intermediate the opposed sides of said tensile means and is spaced inwardly from one of said opposed sides of the respective tooth into the medial portion of said respective tooth and then back to a point that is intermediate the opposed sides of said tensile means and is spaced inwardly from the other of said opposed sides of said respective tooth whereby part of said material of said backing member defines part of the medial portion of each tooth.

4,533,421
METHOD FOR MAKING A LAP SEAM EXTRUDED TENDON

David Pattridge, Shreveport, La., assignor to Pattridge Post Tension, Inc., Shreveport, La.

Filed Apr. 25, 1984, Ser. No. 603,760
Int. Cl.[3] B29C *19/00*
U.S. Cl. 156—244.12 **7 Claims**



1. A method of making a tendon suitable for post tensioning concrete and for use in other applications, comprising the steps of:
coating a multiple-wire strand with a corrosion inhibitor;

moving the coated strand through a crosshead of an extruder;

extruding a heated, curled, discontinuous strip of plastic material from the crosshead and generally coaxially around the moving, coated strand such that the plastic material generally encircles the coated strand, with at least a portion of the ends of the extruded strip overlapping, and at least a portion of the overlapping end sections being in the upper portion of the curled strip as viewed in cross section;

pulling the curled plastic strip by the moving coated strand to form a jacket around the coated strand for the tendon; and

applying pressure to the overlapping sections of the plastic strip and using the heat of the plastic material from the extrusion step to facilitate the formation of a seal therebetween.

4,533,422

THIXOTROPIC CYANOACRYLATE COMPOSITIONS

Alan E. Litke, Naugatuck, Conn., assignor to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 528,275, Aug. 31, 1983, Pat. No. 4,477,607. This application Aug. 13, 1984, Ser. No. 639,976

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.[3] **C08K** *9/02, 5/54;* **C09J** *5/00, 5/02*

U.S. Cl. 156—307.3 **13 Claims**

1. In a composition comprising an α-cyanoacrylate ester monomer and a thixotropic agent, the improvement comprising that said thixotropic agent is a fumed silica having a surface treated with a polydimethylsiloxane and is present in an amount of between about 0.5 and 12%.

4,533,423

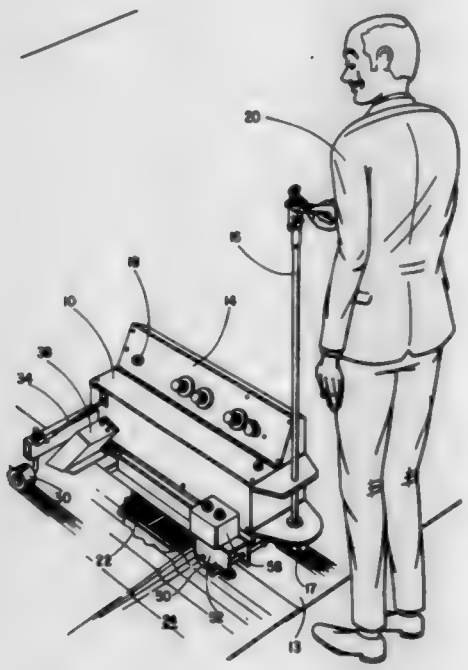
PORTABLE SEAM WELDING MACHINE FOR THERMOPLASTIC SHEETS

A. Neil Johnson, Gahanna, and Philip A. Taylor, Columbus, both of Ohio, assignors to G.R. Systems, Inc., Columbus, Ohio

Filed May 29, 1984, Ser. No. 614,637

Int. Cl.[3] **B32B** *31/26*

U.S. Cl. 156—359 **12 Claims**



1. An improved portable seam welding machine for joining sheets of thermoplastic resins, said machine being of the type having wheels, a drive motor connected through a drive train to at least one of said wheels, heating means and feed means for feeding the opposed, overlapping edges of said sheets through the machine, wherein the improvement comprises the combination of:

(a) a start/stop switch means for alternately starting and stopping the machine;

(b) heating means connected to said start/stop switch for alternately being actuated and deactuated; and

(c) motor speed control means connected to said switch means and said motor for alternately gradually accelerating said motor to full speed and gradually decelerating said motor to a stop in response to actuation of said start/-stop switch and in accordance with a selected algorithm.

4,533,424

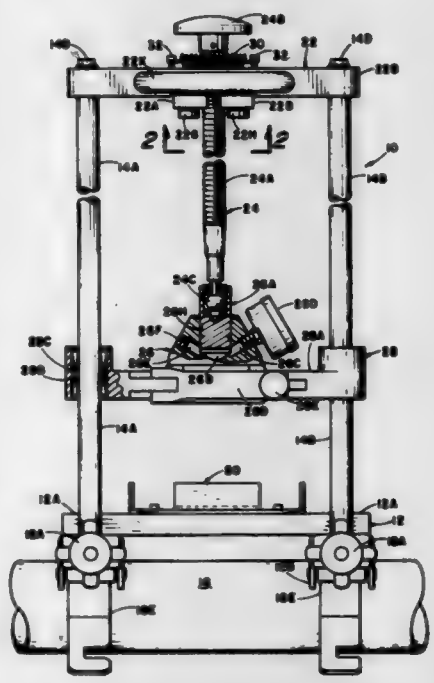
PIPE FUSION APPARATUS WITH LOAD CELL FOR ATTACHING SIDE WALL FITTINGS

Arthur H. McElroy, Tulsa, Okla., assignor to McElroy Manufacturing, Inc., Tulsa, Okla.

Filed Jan. 13, 1984, Ser. No. 570,389

Int. Cl.[3] **B29C** *17/00, 27/00;* **B29D** *31/00;* **B29F** *5/00*

U.S. Cl. 156—378 **6 Claims**



1. In apparatus having means for heating and joining plastic sidewall fittings to a plastic pipe main; the improvement comprising:

(a) a base plate with means to rigidly clamp said base plate to a pipe main;

(b) at least two parallel spaced support rods attached to said base plate at a selected angle; the axis of said support rods intersecting the axis of said pipe main;

(c) movable clamp means by said fitting guided to slide along said support rods; the axis of movement of said movable clamp means intersecting the axis of said pipe main;

(d) said support rods at their free ends attached to and guided by a support plate; said support plate at a selected distance from said base plate, and supporting an engageable thread means;

(e) threaded drive screw means passing perpendicularly through said support plate and said engageable thread means; the axis of said drive screw intersecting the axis of said pipe main; means to rotate said drive screw;

(f) load cell means attached at a first part to said movable clamp means; and means to attach one end of said drive screw means to a second part on said load cell; and

(g) means associated with said load cell to indicate at any selected time, the force exerted by said drive screw on said load cell.

4,533,425

APPARATUS FOR SECURING A VALVE TO A WRAPPER SLEEVE

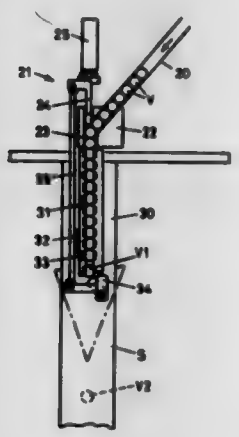
Peter Wehle, Neuhausen am Rheinfall, Switzerland, assignor to SIG Schweizerische Industrie-Gesellschaft, Neuhausen am Rheinfall, Switzerland

Filed Jun. 17, 1983, Ser. No. 505,398

Claims priority, application Switzerland, Jun. 18, 1982, 3781/82

Int. Cl.[3] B29D *23/10*; B65H *1/16*

U.S. Cl. 156—466 4 Claims



1. An apparatus for consecutively applying relief valves to a wrapper sheet fed to the apparatus, comprising

(a) a chute defining a substantially vertically oriented inner track for receiving the valves in a series;

(b) channel means for supplying the valves to said chute and introducing the valves into said track;

(c) retaining means for alternatingly holding back and releasing a momentarily lowermost valve in said track; said retaining means comprising a resilient cam engaging the momentarily lowermost valve in said track;

(d) valve advancing means for intermittently causing the momentarily lowermost valve to clear said retaining means; said valve advancing means including a ram aligned with said track and a drive means connected to said ram for alternatingly advancing and withdrawing said ram; said ram being arranged for abutting a momentarily uppermost valve in said track for advancing the valve series in said track upon advance of said ram;

(e) welding means situated below said retaining means adjacent said chute externally thereof for cyclically bonding a valve to the wrapper sheet;

(f) positioning means situated underneath said retaining means for aligning the valve released by said retaining means with said welding means; said positioning means including a pivotal pawl having an operative position for abutting a valve passing beyond said retaining means and an inoperative position clear of a travelling path of the valves determined by said track;

(g) connecting means operatively coupling said pawl to said drive means for moving said pawl into said operative position when said drive means advances said ram and for moving said pawl into said inoperative position when said drive means withdraws said ram;

(h) web guiding means for passing the wrapper sheet between said positioning means and said welding means; and

(i) cutting means situated above said welding means for cyclically providing an opening in the wrapper sheet at the intended location of the valves to be bonded thereto by said welding means.

4,533,426

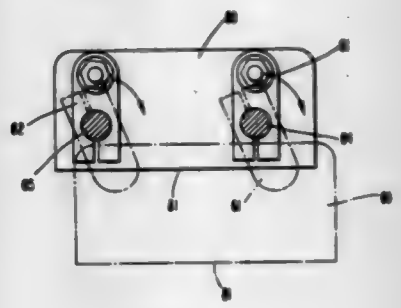
LABELING MACHINE

Frank V. N. Hoagland, Palm Harbor, Fla., and Agostino J. Aquino, Patterson, N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Filed Oct. 20, 1982, Ser. No. 435,611

Int. Cl.[3] B29C *17/00*; B32B *3/04*; B31F *5/00*; B65H *29/00*

U.S. Cl. 156—492 10 Claims



1. A labeling machine for applying labels to fin sealed ends of packages, comprising in combination: a conveyor moving along a line serially past first and second label folding stations, a flat surface extending parallel to said conveyor at said first folding station, and conveyor being adapted to carry a plurality of packages with their fin sealed ends lying flat on said surface, a means for placing a first portion of a label on a first side of the fin sealed end of each package as it moves toward said first label folding station, a second portion of said label extending past the edge of the fin seal, a first means for holding said labels in place on said fin sealed ends, a first label folding device at said first station including a first moving plate plow member having a generally straight label-contacting edge for engaging the label and thereby folding the free end of the label at right angles to the fin sealed end, said first label folding device having two shafts respectively fixedly connected to two arms, each arm having a portion rotatably connected to said first plow member, a means for rotatably driving at least one of said two shafts of said first label folding device, such that rotation of said at least one of said two shafts causes motion of said first plow member in a cyclical motion with said label-contacting edge of said first plow member being continuously generally parallel to a plane containing said label and moving only in a plane generally perpendicular to said first portion of said label; a second means for folding disposed between said first and second folding stations holding the folded second portion of said label at generally right angles to said fin sealed end, and a second label folding device including a second moving plate plow member having a generally straight label-contacting edge at said second folding station for engaging and thereby folding said second portion of label against a second side of said fin sealed end;

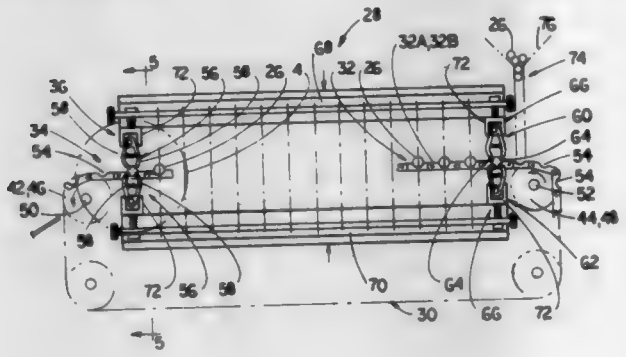
said second label folding device having two shafts respectively fixedly connected to two arms, each arm having a portion rotatably connected to said second plow member, a means for rotatably driving at least one of said two shafts of said second plow member in a cyclical motion with said label-contacting edge of said second plow member being continuously generally parallel to a plane containing said first portion of said label and moving only in a plane generally parallel to said first portion of said label;

whereby a compound fold is made in each label about fin sealed ends of packages.

4,533,427
DEVICE FOR MAKING GROOVES IN CIGARETTE FILTERS

Steven P. Reed, Felton, and Erik I. Naslund, Los Gatos, both of Calif., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 18, 1984, Ser. No. 631,961
Int. Cl.[3] A24D 3/04
U.S. Cl. 156—500 10 Claims



1. An apparatus for forming grooves in filter rods comprising:

endless conveyor means having a generally horizontal top flight for intermittently moving filter rods through the apparatus;

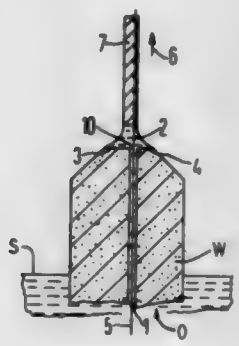
means associated with the endless conveyor means for holding the filter rods at predetermined spaced apart intervals on the horizontal top flight of the endless conveyor means; and,

groove forming means disposed at the top flight of the endless conveyor means for forming grooves in the filter rods in the holding means, the groove forming means including at least one pair of articulated grooving fingers located generally below the horizontal top flight and at least one pair of articulated grooving fingers located generally above the horizontal top flight.

4,533,428
METHOD AND DEVICE FOR ASYMMETRICALLY COATING A TAPE-SHAPED CARRIER BODY WITH SILICON FOR FURTHER PROCESSING INTO SOLAR CELLS

Josef Grabmaier, Berg; Richard Falckenberg, Unterhaching, and Helmut Fölle, Munich, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,732
Claims priority, application Fed. Rep. of Germany, Aug. 23, 1982, 3231267
Int. Cl.[3] H01L 21/208
U.S. Cl. 156—608 1 Claim



1. A method for asymmetrically coating a tape-shaped carrier body with crystallized silicon, for further processing into solar cells, said method comprising

moving a tape-shaped carrier body along a generally vertical carrier path leading out of a melt vat containing a silicon melt, with the carrier body moving generally vertically as it moves above a melt surface in the vat,

causing molten silicon from the melt to be applied to the carrier body at a crystallization region of the generally vertical carrier path so that the molten silicon crystallizes on the carrier body, and

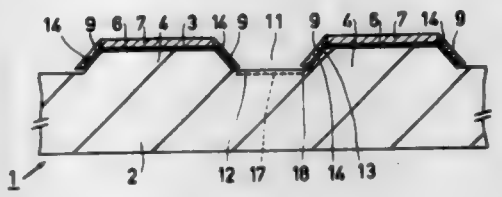
physically constraining the molten silicon by means of solid material at each side of the generally vertical carrier path in the vicinity of the crystallization region to cause the molten silicon to be asymmetrically distributed on the respective sides of the carrier path in the vicinity of the crystallization region such that the silicon is coated predominantly on one side of the carrier body, wherein the molten silicon is caused to rise from the silicon melt to a crystallization region above the melt surface along the generally vertical carrier path as a result of capillary forces,

with the physically constraining step being effected by surfaces of solid material which are located at the crystallization region so as to receive molten silicon as a result of the capillary forces, and which are wetted by the molten silicon, the surfaces of the solid material at the respective sides of the carrier path having different dimensions in the direction at right angles to the carrier path to provide corresponding different extents of the molten silicon at the respective sides of the carrier body in the vicinity of the crystallization region.

4,533,429
METHOD OF MANUFACTURING A SEMICONDUCTOR DEVICE

Wilhelmus J. M. J. Josquin, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 23, 1983, Ser. No. 535,124
Claims priority, application Netherlands, Oct. 8, 1982, 8203903
Int. Cl.[3] H01L 21/306; B44C 1/22; C03C 15/00, 25/06
U.S. Cl. 156—643 9 Claims

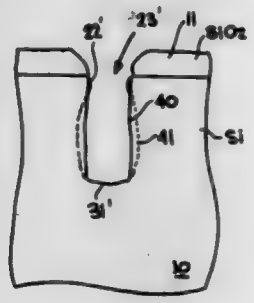


1. A method of manufacturing a semiconductor device comprising mutually dielectrically insulated semiconductor regions, in which the starting material is a semiconductor body having a major surface covered by an etching mask which exposes parts of the major surface, and said parts are subjected to an anisotropic etching treatment to form a depression by removal of material, the bottom and side walls of said depression being coated with an oxide layer and a layer of oxidation-resistant material disposed thereon, which layers are then removed from the bottom of the depression, after which the device is subjected to a selective oxidation treatment so that the depression is filled with oxide, characterized in that, before said selective oxidation treatment begins, a part of the oxide layer on the side walls of the depression under an edge of the layer of oxidation-resistant material near the bottom of the depression is removed by under-etching.

4,533,430
PROCESS FOR FORMING SLOTS HAVING NEAR VERTICAL SIDEWALLS AT THEIR UPPER EXTREMITIES

Robert W. Bower, Los Gatos, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Jan. 4, 1984, Ser. No. 567,971
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—643 13 Claims



1. A process for fabricating slots in a wafer of semiconductor material wherein the slots have nearly vertical sidewalls near the mouth of the slot, comprising the steps of:

applying an etch-resistant mask material to the surface of said wafer of semiconductor material;

patterning said mask material to expose regions in said substrate in which slots are to be formed;

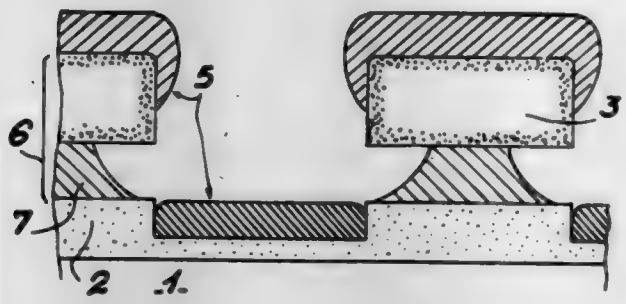
etching said exposed regions in said substrate to form said slots; and

forming an etch resistant coating on the walls of said slots while they are being formed whereby said etch resistant coating protects said sidewalls near the mouth of the slot from unwanted etching so they retain a nearly vertical shape.

4,533,431
PROCESS FOR PRODUCING CONDUCTORS FOR INTEGRATED CIRCUITS USING PLANAR TECHNOLOGY

Bruno Dargent, Grenoble, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Jan. 13, 1984, Ser. No. 570,506
Claims priority, application France, Jan. 13, 1983, 83 00436
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C23F *1/02*
U.S. Cl. 156—643 6 Claims

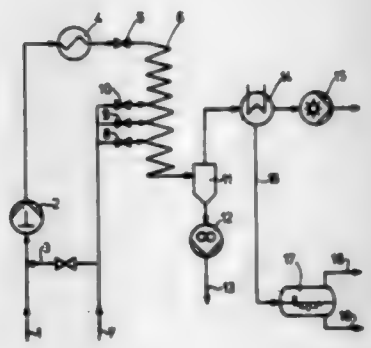


1. A process for producing conductors for integrated circuits using planar technology, wherein a coating of an insulating material is deposited on a substrate, a masking sheet is deposited on the insulating material coating, windows corresponding to the conductors to be obtained are cut from this masking sheet down to the insulating material coating, the insulating material coating is etched facing the windows, a conductive material is deposited on the masking sheet and in the etched parts of the insulating material coating facing the windows, the masking sheet and the conductive material covering the same are removed, the improvement wherein the masking sheet is deposited as a metallic coating covering the insulating material and a resin coating covering the metallic coating and the windows are cut from the masking sheet by first cutting the resin coating along the windows and then undercutting the metallic coating along the windows so that the edges of the metallic coating on the peripheries of the windows are set back from the corresponding edges of the resin coating thereby avoiding conductive material bridging between the masking sheet and the etched parts of the insulating material facing the windows that could inhibit removal from the substrate of the masking sheet and the conductive material covering the same.

4,533,432
CONTINUOUS PROCESS FOR THE CONCENTRATION OF W/O-EMULSIONS BY EVAPORATION

Gerd Goldmann; Georg Spott, and Christian Fröhlich, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 507,148
Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224994
Int. Cl.³ B01D *1/02*
U.S. Cl. 159—47.1 4 Claims



1. A continuous process for the concentration by evaporation of W/O-emulsions of the type accumulating in the emulsion polymerization of ethylenically-unsaturated, water-soluble monomers, comprising precluding polymer precipitation on the heat exchange surfaces of a helical multiphase flow tube with at least two phase streams by converting a W/O-emulsion having a water content of more than 25% by weight and a polymer content of from 28 to 40% by weight in vacuo at temperatures of from 80° to 140° C. into a non-aqueous polymer dispersion in oil having a residual water content adhering to the polymer of less than 14% by weight (based on polymer) and a polymer content of from 45 to 65% by weight.

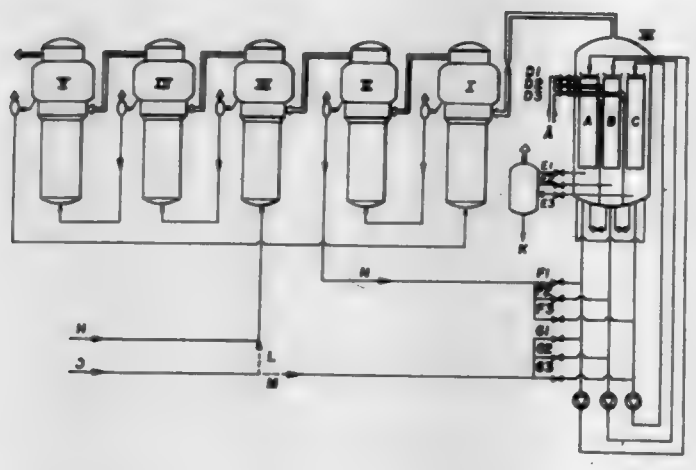
4,533,433
METHOD OF COVERING THE CHEMICAL LOSSES IN PULP PRODUCTION

Karl B. Pettersson, Gävle, Sweden, assignor to A. Ahlstrom Osakeyhtio, Noormarkku, Finland

PCT No. PCT/SE83/00280, § 371 Date Mar. 8, 1984, § 102(e) Date Mar. 8, 1984, PCT Pub. No. WO84/00390, PCT Pub. Date Feb. 2, 1984
PCT Filed Jul. 11, 1983, Ser. No. 598,307
Claims priority, application Sweden, Jul. 12, 1982, 8204266
Int. Cl.³ D21C *11/10*
U.S. Cl. 159—47.3 3 Claims

1. In the process of evaporation of a waste liquor from a pulping process to recover useful chemicals wherein the dilute waste liquor is evaporated in a plurality of evaporation stages to obtain thick waste liquor, and concentrated in a thickener, the thickener comprising at least two zones, a solution of a residual product from other processes is added to the waste liquor, said residual product being a member selected from the group consisting of (1) spent acid from a chlorine dioxide production plant and (2) spent acid from a tall oil plant, wherein during operation, at least one zone of said thickener is washed with thick waste liquor from a preceding evaporation

stage, the improvement which comprises introducing said residual product to a zone of said thickener which is not being



washed with thick waste liquor from a preceding evaporation stage.

4,533,434

PROCESS FOR SIZING PAPER AND PROCESS FOR MAKING PLASTERBOARD BASE PAPER SIZED THEREBY

Shigehiko Yoshioka; Hideto Yamada; Kimihiko Goto; Yoshio Adachi, and Kazuo Miyahana, all of hyogo, Japan, assignors to Seiko Kagaku Kogyo Co., Ltd., Japan

Filed Sep. 7, 1982, Ser. No. 415,585

Claims priority, application Japan, Sep. 11, 1981, 56-143318; Sep. 11, 1981, 56-143320

Int. Cl.³ D21H *1/02*

U.S. Cl. 162—124 **14 Claims**

1. A process for sizing paper comprising:

(o) forming an aqueous solution of ampholytic acrylamide polymer having both a cationic group and an anionic group,

(i) feeding into a mixer continuously and at a constant metered rate (a) said aqueous solution of an ampholytic acrylamide polymer defining a dispersing agent and having about 2–80 mol.% cationic and about 3–20 mol.% anionic groups, (b) a liquid substituted succinic anhydride; and

(ii) adding said aqueous dispersion into a papermaking pulp slurry continuously and at a constant metered rate immediately after said dispersion is prepared in said mixer.

14. A process for making plasterboard base paper sheets of multilayered structure comprising sheeting together at least one sized wet web and at least one unsized wet web said unsized wet web being formed from an unsized papermaking material and said sized wet web being formed from a sized papermaking material, wherein said sized papermaking material is prepared by;

(o) forming an aqueous solution of ampholytic acrylamide polymer having both a cationic group and an anionic group,

(i) feeding into a mixer continuously and at a constant metered rate (a) said aqueous solution of an ampholytic acrylamide polymer having about 2–80 mol.% cationic and about 3–20 mol.% anionic groups to form a dispersing agent, (b) a liquid substituted succinic anhydride and an oil-in-water type surfactant and,

(ii) adding said aqueous dispersion into a papermaking pulp slurry continuously and at a constant metered rate immediately after said dispersion is prepared in said mixer.

4,533,435

ANTIMICROBIAL PAPER

Henry S. Intili, Lewisville, N.C., assignor to Microban Products Company, Winston-Salem, N.C.

Filed Jun. 7, 1984, Ser. No. 618,084

Int. Cl.³ D21D *3/00*; D21H *5/22*

U.S. Cl. 162—161 **6 Claims**

1. An antimicrobial paper for packaging surgical supplies and other goods to be maintained in a sterile condition, said paper comprising:

(a) a slurry of paper forming fibers prepared according to a wetlaid process;

(b) a polymeric binding agent incorporated in said slurry, said binding agent being selected from the group containing acrylics, polyvinyl acetates, vinyl acetate-ethylenes, polyvinyl chlorides, and styrene-butadine latexes;

(c) an antimicrobial additive incorporated in said binding agent, said antimicrobial additive being non-crosslinked with said binding agent and forming reservoirs which reside in colloidal suspension within the amorphous zones of said binding agent and from which said antimicrobial additive migrates to the surface of said paper until the reservoir is exhausted;

(d) fillers selected from the group including aluminum silicates, titanium dioxide, calcium carbonates, zinc oxides, zinc sulfides, hydrated aluminum talc, calcium sulfate, and barium sulfate;

(e) said slurry, binding agents, additives and fillers being subjected to a paper-making process which renders a finished product having the characteristics of substantial density, air impermeability, and smoothness.

4. An antimicrobial paper for packaging surgical supplies and other goods to be maintained in a sterile condition, said paper comprising the combination of:

(a) paper forming fibers;

(b) a polymeric binding agent selected from the group containing acrylics, polyvinyl acetates, vinyl acetate-ethylenes, polyvinyl chlorides, and styrene-butadine latexes;

(c) said binding agent including an antimicrobial additive incorporated therein, said antimicrobial additive being non-crosslinked with said binding agent and forming reservoirs which reside in colloidal suspension within the amorphous zones of said binding agent and from which said antimicrobial additive migrates to the surface of said paper until the reservoir is exhausted;

(d) fillers selected from the group including aluminum silicates, titanium dioxide, calcium carbonates, zinc oxides, zinc sulfides, hydrated aluminum talc, calcium sulfate, and barium sulfate;

(e) said combination having the characteristics of substantial density, air impermeability, and smoothness.

4,533,436

APPARATUS FOR BLOW LINE ADDITION OF THERMOSETTABLE BINDER IN FIBERBOARD MANUFACTURE INCLUDING A COOLING NOZZLE

William E. Betzner, St. Petersburg, and Richard K. Holtman, Largo, both of Fla., assignors to The Celotex Corporation, Tampa, Fla.

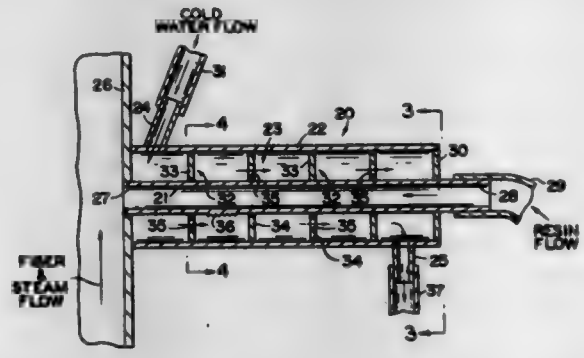
Division of Ser. No. 371,895, Apr. 26, 1983, Pat. No. 4,402,896. This application Aug. 15, 1983, Ser. No. 523,229

Int. Cl.³ D04H *3/16*; D21C *1/14*

U.S. Cl. 162—261 **6 Claims**

1. In an apparatus for refining cellulosic material including a pressurized refiner wherein said cellulosic material is subjected to the action of steam under pressure and refined to hot and wet fibers, and a blow line communicating with said refiner for discharge therefrom of said fibers, the improvement comprising an inner tube having resin inlet and outlet ends, said resin inlet end being connected to a resin feed line and said resin outlet end being connected to said blow line, and a housing disposed about said inner tube to define an enclosed jacketed area about said inner tube, said housing having at least one

cooling fluid inlet means adjacent the one end of said housing located to the exterior of said resin outlet end of said inner tube, said at least one cooling fluid inlet means being connected to a cooling fluid feed line, and at least one cooling fluid outlet



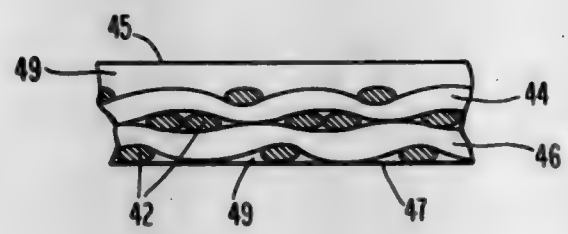
means adjacent the other end of said housing located to the exterior of said resin inlet end of said inner tube, said at least one cooling fluid outlet means being connected to a cooling fluid discharge line.

4,533,437

PAPERMAKING MACHINE

John F. Curran, West Chester, and Thomas N. Kershaw, Wallingford, both of Pa., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Nov. 16, 1982, Ser. No. 442,059
Int. Cl.[3] D21F *3/00*
U.S. Cl. 162—281 30 Claims



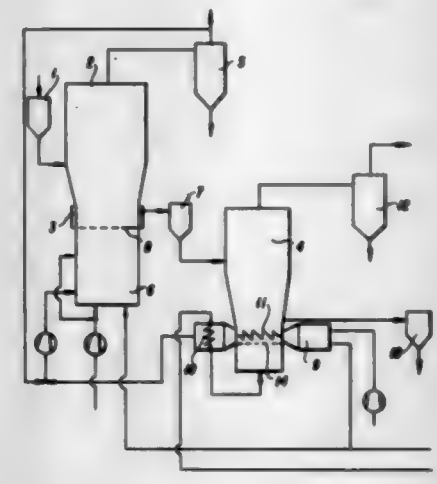
1. In a papermaking machine of the type wherein a web of lingnocellulosic fibers is formed, and wherein the formed web is transferred to a dewatering and imprinting felt, said felt and web then passing through a nip formed by a pressure roll and a drying cylinder so as to deposit the web on the drying cylinder, said web having a dryness level between 7 percent and 35 percent as it enters said nip, wherein the felt in the papermaking machine is characterized by having imprinting yarn strands forming knuckles adjacent to the web contacting surface of the felt, the imprinting yarn strands having a spacing of about 6 to about 25 per 0.0254 meters but not significantly exceeding the average fiber length, the felt having a felt facing material greater than about 153 grams per square meter, and the felt having a ratio of felt facing material in grams per square meter to the diameter in meters of the imprinting yarn strands of from about 60,000 to about 600,000 whereby the web is differentially pressed onto the dryer surface.

4,533,438

METHOD OF PYROLYZING BROWN COAL

Wolfgang Michel, Magdeburg; Heinz Paul, Möser; Andreas Rummel, Dessau; Gero Seher, Wernigerode; Manfred Ossowski, Magdeburg, and Irmtrud Heberlein, Möser, all of German Democratic Rep., assignors to VEB Schwermaschinenbau "Karl Liebknecht" Magdeburg, Magdeburg, German Democratic Rep.

Filed Dec. 16, 1983, Ser. No. 562,504
Claims priority, application German Democratic Rep., Mar. 23, 1983, 249079
Int. Cl.[3] C10B *49/10*
U.S. Cl. 201—31 15 Claims



1. A two stage method for the rapid pyrolysis of brown coal, said brown coal being rich in ash and saliferous, so as to simultaneously produce high grade coke, a rich pyrolysis exit gas stream of low dust content, and a pyrolysis tar stream of low dust content, which comprises

(a) providing a feed stream of solid particulate mined brown coal, said brown coal being rich in ash and saliferous;

(b) fluidizing and drying said brown coal feed stream in a first fluidized bed stage, by passing said brown coal feed stream into said first fluidized bed and above a first foraminous initial flow bottom support disposed below said first fluidized bed, said first fluidized bed and said first support being within a first container comprising a dryer means;

(c) burning a flammable gas stream with an air stream within a mixing chamber within said first container dryer means and below said first support, and concomitantly passing a recycle drying vapor gas stream and a combustion exhaust gas stream into said mixing chamber, so that hot mixed gas rises from said mixing chamber and through said first support, and fluidizes and heats said brown coal feed stream within said first fluidized bed, whereby said brown coal feed stream is dried in said first fluidized bed and within said first container dryer means by direct heating, with a limited degree of oxidation of the brown coal taking place in said first fluidized bed;

(d) withdrawing a drying vapor gas mixture stream from said first container dryer means, and from above said first fluidized bed, said drying vapor gas mixture stream containing a first quantity of entrained solid particulate material in the form of fine grains and dust;

(e) separating said first quantity of entrained solid particulate material from said drying vapor gas mixture stream;

(f) dividing the drying vapor gas stream derived from step (e) into two portions, a first portion being said recycle drying vapor gas stream of step (c), and a second portion being a discharged-off gas;

(g) withdrawing a dried coal stream from said first container dryer means, and from said first fluidized bed;

(h) carbonizing the withdrawn dried coal stream of (g) by rapid pyrolysis, and in a second fluidized bed stage, by passing said dried coal stream into said second fluidized bed and above a second foraminous initial flow bottom support disposed below said second fluidized bed, said

second fluidized bed and said second support being within a second container comprising a pyrolysis reactor;

(i) providing a hot gas stream containing hydrocarbon and alien to carbonization, and comprising a fluidizing medium, said hot hydrocarbon-containing gas stream being at a temperature corresponding to the pyrolysis conditions in said second container pyrolysis reactor of (h);

(j) passing said hot hydrocarbon-containing gas stream of (i) into said second container pyrolysis reactor below said second support, whereby said hot hydrocarbon-containing gas stream rises through said second support, and fluidizes and carbonizes said dried coal stream in said second fluidized bed, acting as a fluidizing medium and by rapid pyrolysis of said dried coal stream, said second fluidized bed being concomitantly heated by indirect heat exchange with a hot heat exchange fluid stream, the heat exchange fluid stream thereafter being passed into the said mixing chamber as combustion exhaust gas stream of step (c);

(k) withdrawing a pyrolysis exit gas stream from said second container pyrolysis reactor, and from above said second fluidized bed, said pyrolysis exit gas stream containing a second quantity of entrained solid particulate material in the form of fine grains and dust;

(l) separating said second quantity of entrained solid particulate material from said pyrolysis exit gas stream;

(m) cooling the cleaned pyrolysis exit gas stream derived from step (l), so as to condense and separate a product pyrolysis tar stream of low dust content from a product rich pyrolysis exit gas stream of low dust content; and

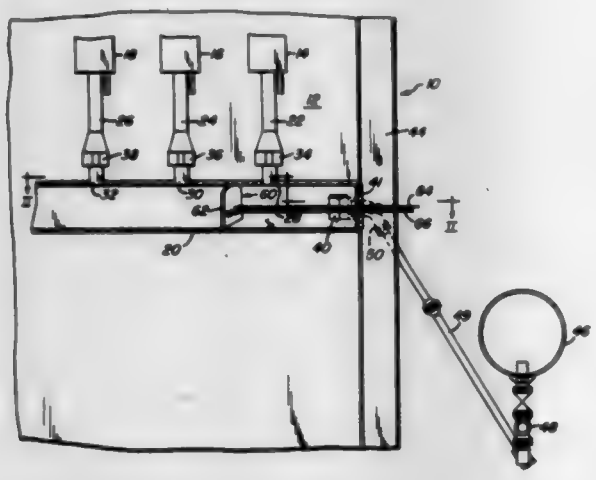
(n) withdrawing a product coke stream from said second container pyrolysis reactor, and from said second fluidized bed.

4,533,439

APPARATUS AND METHOD OF USING A FUEL GAS REGULATOR FOR A COKE OVEN BATTERY

Douglas M. Dickerson, Pleasant Grove, and Robert W. Fikes, Cottondale Township, Tuscaloosa County, both of Ala., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed May 27, 1983, Ser. No. 499,071
Int. Cl.³ C10B *21/10*
U.S. Cl. 201—41 **8 Claims**



1. A method for regulating the flow of fuel gas within the fuel gas supply duct for a coke oven heating wall having a plurality of vertical heating flues in communication with said fuel gas supply duct, said fuel gas supply duct having a passage therethrough of a predetermined cross-sectional shape, which duct is provided with an opening in the end thereof, from a position remote from said duct, which comprises:

a. inserting into said fuel gas supply duct a plate formed of heat-resistant sheet material, the shape of said plate being substantially that of the cross-sectional shape of said plate having at least two elongated control rods connected thereto, said control rods each extending from said remote position through said opening and having one of their ends pivotally attached to said plate at spaced points thereon;

b. adjusting the longitudinal position of said plate within said fuel gas supply duct by manual manipulation of said control rods so as to direct the flow of said fuel gas to a desired area of said ducts; and,

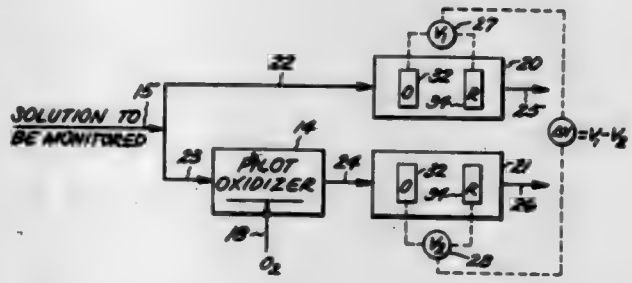
c. adjusting the positional attitude of said plate relative to the wall of said duct by manual manipulation of the relative displacement of said control rods within said control duct so as to rotate said plate about the axis of rotation formed between the ends of said control rods attached to said plate so as to regulate the amount of fuel gas passing said plate within said duct.

4,533,440

METHOD FOR CONTINUOUS MEASUREMENT OF THE SULFITE/SULFATE RATIO

Bang M. Kim, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Aug. 4, 1983, Ser. No. 520,389
Int. Cl.³ G01N *27/52*
U.S. Cl. 204—1 T **11 Claims**



1. A method to monitor the ratio of sulfite ion species concentration to sulfate ion species concentration and the rate of change thereof in a solution containing said species, said method comprising the steps of:

supplying at least a portion of said solution containing said sulfite and said sulfate ion species to a vessel in which there is disposed a redox electrode and a reference electrode so that both said electrodes are in contact with said solution;

determining the electrical potential difference, V_1, between said electrodes;

simultaneously with said supplying step, oxidizing a portion of said supply solution and supplying said oxidized solution to a second vessel in which there is disposed a second redox electrode and a second reference electrode so that both of said second electrodes are in contact with said oxidized solution;

determining the electrical potential difference, V_2, between said second electrodes; and

determining the difference between V_1 and V_2.

4,533,441

PRACTICAL AMORPHOUS IRON ELECTROFORM AND METHOD FOR ACHIEVING SAME

Rodger L. Gamblin, Dayton, Ohio, assignor to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 30, 1984, Ser. No. 595,449
Int. Cl.³ C25D *1/00, 3/56*
U.S. Cl. 204—3 **12 Claims**

1. A method of fabricating amorphous iron-phosphorus electroforms, comprising electroforming on a conductive substrate in a bath containing:

at least one compound from which iron can be electrolytically deposited,

at least one compound from which phosphorus can be electrolytically deposited, selected from the group consisting of hypophosphorous acid and alkali metal hypophosphite

salts in an amount sufficient to render said iron amorphous, and

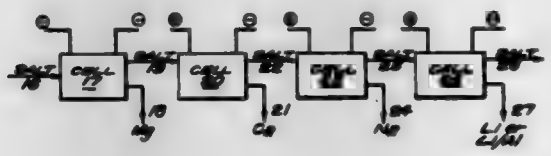
at least one complexing agent selected from the group consisting of glycine, β-alanine, DL-alanine and succinic acid.

4,533,442

LITHIUM METAL/ALLOY RECOVERY FROM MULTI-COMPONENT MOLTEN SALT

Ramaswami Neelameggham, Salt Lake City, Utah, and John C. Priscu, Las Vegas, Nev., assignors to AMAX Inc., Greenwich, Conn.

Filed Jul. 31, 1984, Ser. No. 636,439
Int. Cl.[3] C25C *3/02, 3/04, 3/36*
U.S. Cl. 204—68 5 Claims



1. An electrolytic process for the recovery of lithium values from a multi-component molten salt composition containing $MgCl_2$, $CaCl_2$, NaCl, KCl and LiCl which comprises,

establishing an electrolyte bath of said composition in a cell having an anode and a cathode,

passing an electric current through said electrolyte in said cell at a current density and voltage selective to the production of magnesium,

separating the magnesium in said cell from the salt composition remaining in said cell,

electrolyzing the remaining salt composition at a current density and voltage selective to produce a product of sodium/calcium at the cathode thereof,

separating said sodium/calcium product from the remaining salt composition in said cell containing $CaCl_2$, KCl and LiCl,

electrolyzing said remaining salt composition at a current density and voltage selective to the further removal of calcium and thereby leave a salt composition of KCl-LiCl which is thereafter subjected to the further treatment thereof by electrolysis to recover lithium.

4,533,443

PRODUCTION OF HYDROGEN PEROXIDE

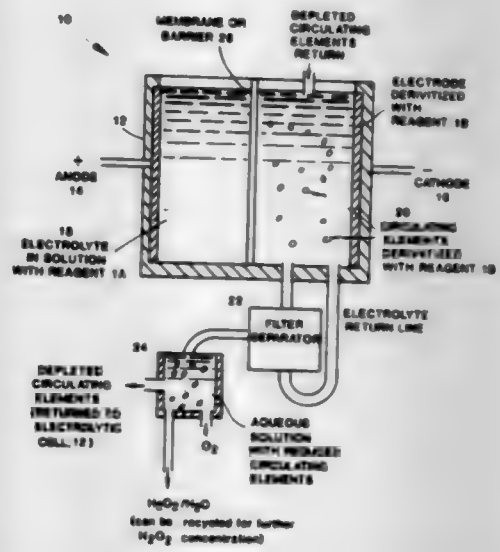
Mark S. Wrighton, Winchester, Mass.; Robert M. Buchanan, Louisville, Ky., and Gary S. Calabrese, Reading, Mass., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 19, 1983, Ser. No. 543,574
Int. Cl.[3] C25B *1/30*
U.S. Cl. 204—84 8 Claims

1. A method for producing hydrogen peroxide employing an electrolytic cell comprising a chamber filled with an electrolyte solution, an anode, a cathode, and means for generating a current between the anode and cathode, the method comprising

(a) reducing at least one element, the element situated in the electrolyte solution and carrying a surface-derivatized quinone catalyst, by generating a current between the anode and cathode in said electrolytic cell;

(b) separating the element from the electrolyte solution; and



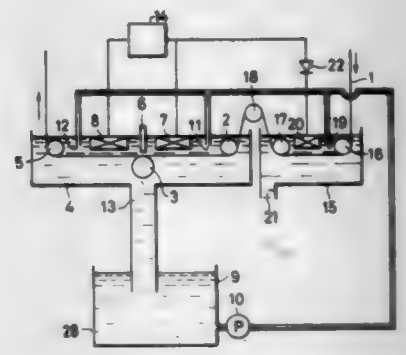
(c) transferring the element to an oxygenated aqueous environment to cause the reduction of oxygen to hydrogen peroxide.

4,533,444

METHOD OF ELECTROLYTIC TREATMENT ON THE SURFACE OF METAL WEB

Kazutaka Oda; Hisao Ohba; Teruo Miyashita; Akira Morita, and Masahiro Takahashi, all of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd. and Nippon Light Metal Company Ltd., both of, Japan

Filed May 17, 1984, Ser. No. 611,288
Claims priority, application Japan, May 19, 1983, 58-86619
Int. Cl.[3] C25F *3/02, 3/04, 7/00*
U.S. Cl. 204—129.43 7 Claims



1. A method of electrolytic treatment on the surface of metal web employing graphite electrodes and in which an A.C. having asymmetric positive and negative half cycles is applied between ones of said electrodes to continuously apply an electrolytic treatment to a metal web through an electrolytic solution, the improvement wherein a portion of the current of the one of said half cycles having the larger average value over a complete cycle of said A.C. current is applied to an auxiliary anode electrode provided in addition to said graphite electrodes so that a current density for anode reaction on surfaces of said graphite electrodes is smaller than a current density for a cathode reaction on surfaces of said graphite electrodes.

4,533,445

U.V. CURABLE COMPOSITION

Alfred P. Orio, Derry, N.H., assignor to Shipley Company Inc., Newton, Mass.

Filed Jul. 6, 1983, Ser. No. 511,224

Int. Cl.³ C08J *3/28*; C08G *2/02*; C08L *33/08, 33/10*

U.S. Cl. 204—159.19 **32 Claims**

1. A U.V. curable coating composition comprising an acrylated or methacrylated oligomer in a concentration of from 30 to 70 weight percent of the composition, a photoinitiator in a concentration of from 1 to 12 weight percent of the composition and a monomer that is a mixture of an acrylate or methacrylate of an alkoxylated polyol having an average functionality of 2 or greater and a monofunctional ethylenically unsaturated compound having a single terminal ethylenic group, each in a concentration of from 5 to 35 percent of the composition.

4,533,446

RADIATION-ACTIVATABLE ANAEROBIC ADHESIVE COMPOSITION

Paul Conway; David P. Melody; John Woods; J. Eisirt Casey; Bernard J. Bolger, and Francis R. Martin, all of Dublin, Ireland, assignors to Loctite (Ireland) Ltd., Dublin, Ireland

Filed Jul. 20, 1983, Ser. No. 515,540

Int. Cl.³ C08F *2/50*; B05D *3/06*

U.S. Cl. 204—159.24 **23 Claims**

1. A radiation activatable anaerobic adhesive composition comprised of

(a) an anaerobically curable acrylate ester monomer,

(b) a compound which decomposes upon exposure to ultraviolet or visible light radiation to release a strong acid, said compound having the formula $[A]_d^+[MX_e]^{-(e-f)}$ where A is a cation selected from the group consisting of iodonium and sulfonium cations, M is a metal or metalloid, X is a halogen radical, d=e-f, f=the valence of M and is an integer equal to 2 to 7, inclusive, e is greater than f and is an integer having a value up to 8,

(c) a peroxy free radical initiator capable of initiating the polymerization of the monomer in the substantial absence of oxygen, and

(d) an activator of anaerobic polymerization which in the presence of a strong acid reacts with the peroxide initiator to produce free radicals to catalyze the anaerobic polymerization of the monomer, said activator selected from ferrocenyl compounds having the formula $R^1C_5H_4—FeC_5H_4R^2$ where R^1 and R^2 are selected from —H, —COOH, —$CO.CH_3$, $CO.\phi$, n-alkyl and vinyl.

4,533,447

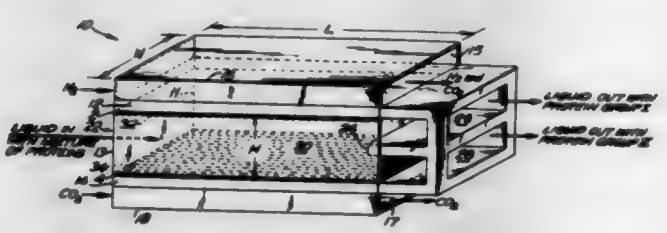
APPARATUS FOR AND METHOD OF ISOELECTRIC FOCUSSING

Jerry H. Meldon, 4 Greenway Ct., Apt. 3, Brookline, Mass. 02146

Filed Jun. 13, 1983, Ser. No. 503,916

Int. Cl.³ B01D *17/06*; G01N *27/26, 27/28*

U.S. Cl. 204—181.4 **29 Claims**



20. A method of separating a feed stream comprising a mixture of proteins of different isoelectric points into one or more concentrated feed streams composed of proteins of defined isoelectric fractions, which method comprises:

(a) flowing an aqueous feed stream along a narrow channel flow path established between a first carbon dioxide-permeable membrane and a second carbon-dioxide-permeable membrane, each of said membranes having an inner surface facing said flow path and an outer surface facing a gas;

(b) flowing a carbon-dioxide-containing gas stream adjacent the outer surface of the first membrane;

(c) flowing an inert sweep gas adjacent the outer surface of the second membrane;

(d) diffusing and passing the carbon-dioxide-containing gas through the first carbon-dioxide-permeable membrane in a direction generally transversely to the narrow channel flow path of the feed stream and through the second carbon-dioxide-permeable membrane, to establish a concentration gradient in the dissolved carbon-dioxide gas stream across the narrow channel flow path of the feed stream, and to provide a pH gradient across the narrow channel flow path;

(e) withdrawing a mixture of the carbon-dioxide-containing-gas stream and the inert sweep gas stream from a location adjacent the second membrane; and

(f) recovering, after a period of time, concentrated feed streams composed of proteins of defined isoelectric fractions, by physically separating portions of the feed stream after the period of time.

4,533,448

AMINE-FREE AND SURFACTANT-FREE ELECTRODEPOSITION OF POLYESTERS, POLYAMIC ACIDS, POLYIMIDES, AND POLYAMIDE-IMIDES

Luciano C. Scala, Murrysville; William M. Alvino, Penn Hills, and Timothy J. Fuller, Pittsburgh, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 19, 1982, Ser. No. 350,499

Int. Cl.³ C08K *5/07*

U.S. Cl. 204—181.7 **7 Claims**

1. A method of electrodepositing polyamic acids on a workpiece comprising

(A) preparing an emulsion which comprises

(1) a soluble un-ionized polymer containing a linking group selected from the group consisting of amic acid, amide, imide, and mixtures thereof;

(2) a non-electrolyzable organic solvent for said polymer which forms the discontinuous phase of said emulsion; and

(3) a non-electrolyzable organic non-solvent for said polymer which forms the continuous phase of said emulsion, where the weight ratio of said solvent to said non-solvent is about 0.1 to about 0.5, and said polymer is about 0.4 to about 5% by weight of the weight of said solvent;

(B) placing said workpiece into said emulsion about one-half to about two inches away from a cathode;

(C) passing direct current between said cathode and said workpiece, with said workpiece as the anode, until a coating of the desired thickness has been deposited onto said workpiece;

(D) removing said workpiece from said composition;

(E) drying said coating; and

(F) curing said coating.

4,533,449

RAPID SURFACE FIGURING BY SELECTIVE DEPOSITION

Harold Levenstein, Danbury, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Apr. 16, 1984, Ser. No. 600,760

Int. Cl.³ C23C *15/00*

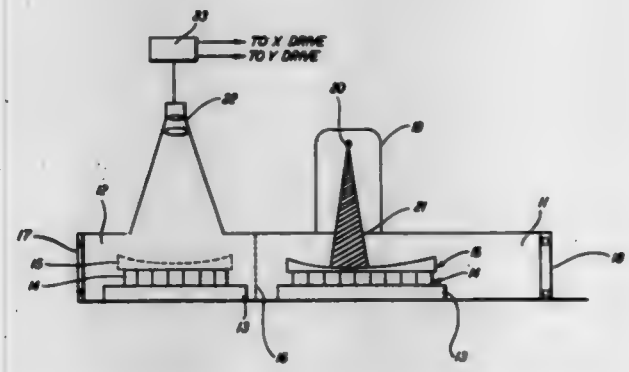
U.S. Cl. 204—192 R **4 Claims**

1. An apparatus for figuring an optical surface, comprising:

a platform for supporting an optical element whose surface is to be figured,

a material deposition source comprising a circular magnetron disposed adjacent said platform and adapted to be moved relative thereto,

a vacuum chamber enclosing said source and platform,
means for moving said platform relative to said source to vary the amount of material deposited onto said surface in accordance with a predetermined surface figure,
interferometer means for measuring the figure of said surface,



computer means connected to said interferometer means and storing a model of the desired surface figure,
said computer means comparing the measured and stored surface to provide signals for moving said platform relative to said source to vary the amount of material deposited on said surface in accordance with the stored model.

4,533,450

CONTROL OF THE HYDROGEN BONDING IN REACTIVELY SPUTTERED AMORPHOUS SILICON

Theodore D. Moustakas, Berkeley Heights, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 514,195, Jul. 15, 1983, abandoned, which is a continuation of Ser. No. 213,034, Dec. 4, 1980, abandoned, which is a continuation-in-part of Ser. No. 108,469, Dec. 31, 1979, abandoned. This application Sep. 6, 1984, Ser. No. 648,012

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 S **9 Claims**

1. A method for controlling the silicon to hydrogen bonding in sputtered amorphous silicon comprising reactively sputtering a layer of amorphous silicon in a partial pressure of hydrogen and argon while concurrently applying a predetermined positive DC voltage bias to the sputtered film to produce controlled monohydride and polyhydride bond density in sputtered amorphous silicon films, wherein a positive DC voltage bias is applied to the film to decrease the polyhydride bond density of said film.

4,533,451

ELECTROLYZED WATER PRODUCING APPARATUS

Eiji Kumazawa, Tokyo, Japan, assignor to Kabushiki Kaisha Kogai Boshi Sogo Kenkyusho, Tokyo, Japan

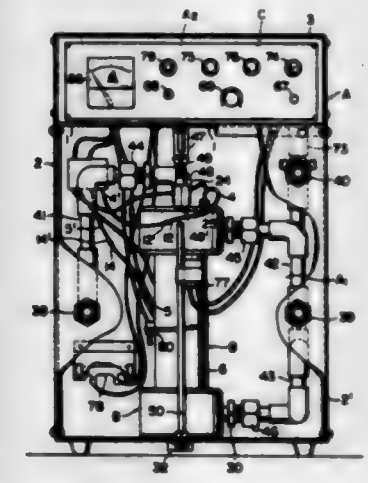
Filed May 30, 1984, Ser. No. 615,437

Claims priority, application Japan, Jun. 9, 1983, 58-103666

Int. Cl.³ C25B *15/02, 9/00, 11/04*

U.S. Cl. 204—229 **2 Claims**

1. An electrolyzed water producing apparatus comprising a casing; at least one electrolytic cell arranged in said casing comprising a cylindrical cathode and a cylindrical anode arranged concentrically to each other, a partition arranged between said cathode and said anode, and upper and lower caps respectively secured to upper and lower open ends of said cathode and said anode; and an electric control device, arranged in said casing comprising an automatic-manual operation changing circuit for changing said apparatus between automatic and manual operating modes, an electric current adjusting circuit for adjusting electrolytic current dependent upon variation in water quality, and a slow start circuit for delaying the supply of electrolytic current to said at least one electrolytic cell until after water has been supplied to said at least one electrolytic cell when commencing the electrolyzing operation of said apparatus in the automatic operating mode thereof.



4,533,452

ELECTROLYSIS TANK, FOR THE PRODUCTION OF ALUMINUM, HAVING A FLOATING CONDUCTIVE SCREEN

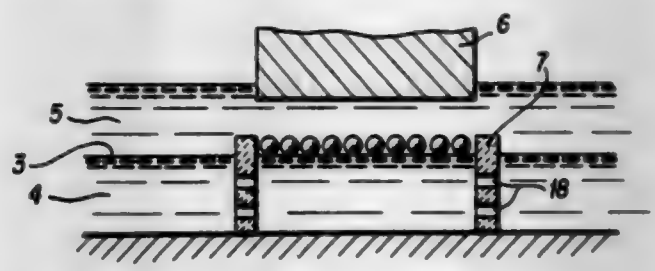
Michel Leroy, and Maurice Keinborg, both of Saint Jean de Maurienne, France, assignors to Aluminium Pechiney, Paris, France

Filed Jun. 30, 1983, Ser. No. 509,585

Claims priority, application France, Jun. 30, 1982, 82 11873

Int. Cl.³ C25C *3/08*; C25B *11/03, 11/04*

U.S. Cl. 204—243 R **2 Claims**

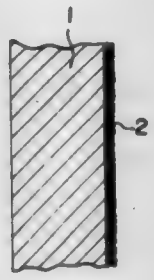


1. An electrolysis tank for producing aluminum by electrolysis of alumina dissolved in a bath of molten cryolyte between at least one superior carbonaceous anode and a pool of molten aluminum covering an inferior carbonaceous cathodic substrate, said tank comprising, at the interface of the pool of molten aluminum and the bath of molten cryolyte:
a floating screen conductive to electric current wherein said screen comprises a single layer of regularly shaped conductive elements wherein said screen is limited to the space below said anode and wherein said conductive elements comprise porous TiB_2 having an average density between 2.2 and 2.25 and wherein said screen further comprises an external layer of TiB_2 having a thickness of at least 20 micrometers in order to make the surface of said screen superficially fluid tight.

4,533,453
ION EXCHANGE MEMBRANE ELECTROLYTIC CELL

Yoshio Oda; Takeshi Morimoto, and Kohji Suzuki, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Continuation-in-part of Ser. No. 205,567, Nov. 10, 1980,. This application Mar. 5, 1982, Ser. No. 355,313
Claims priority, application Japan, Mar. 24, 1981, 56-41789
Int. Cl.[3] C25B *9/00, 11/06, 13/08*
U.S. Cl. 204—252 13 Claims



1. In an ion exchange membrane electrolytic cell which comprises an anode, a cathode, an anode compartment and a cathode compartment partitioned by an ion exchange membrane, the improvement comprising:

the surface of said ion exchange membrane on the cathode side of said cell having bonded thereto a gas and liquid permeable porous layer composed of non-oxide ceramic particles, said particle layer not functioning as an electrode of said cell.

4,533,454
ELECTROLYTIC CELL COMPRISING STAINLESS STEEL ANODE, BASIC AQUEOUS ELECTROLYTE AND A CATHODE AT WHICH TETRACHLORO-2-PICOLINATE IONS CAN BE SELECTIVELY REDUCED IN HIGH YIELD TO 3,6-DICHLOROPICOLINATE IONS

Demetrios Kyriacou, Salonica, Greece, and Donald N. Brattesani, Oakland, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 28, 1981, Ser. No. 305,822
Int. Cl.[3] C25B *11/00, 3/00*
U.S. Cl. 204—272 4 Claims

1. An electrolytic cell comprising

(a) a stainless steel anode, and

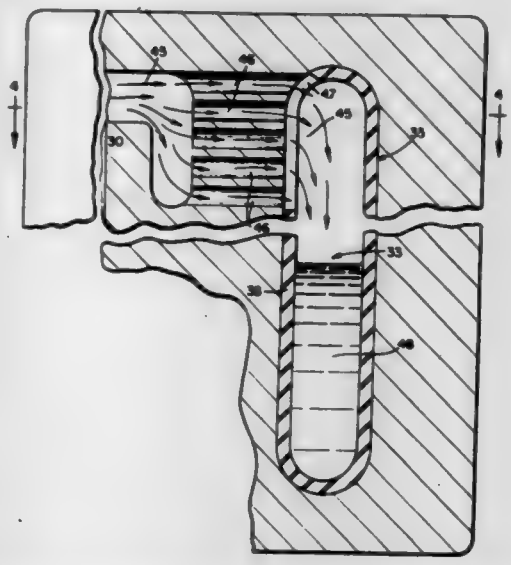
(b) a silver cathode having a surface layer of silver microcrystals formed by electrolytic reduction of colloidal, hydrous silver oxide particles in the presence of an aqueous base and being capable of effecting the selective reduction of tetrachloro-2-picolinate anions to 3,6-dichloro-2-picolinate anions in a yield of at least 90% when said cathode is employed in conjunction with a graphite anode in an electrolytic cell containing a basic, aqueous electrolyte in which said tetrachloropicolinate is dissolved.

2. The cell of claim 1 in which said anode and cathode are of a cylindrical configuration and one is disposed concentrically within the other.

4,533,455
BIPOLAR SEPARATOR PLATE FOR ELECTROCHEMICAL CELLS

Edward N. Balko, Wilmington, Mass., and Lawrence C. Moulthrop, Stratham, N.H., assignors to Oronzio de Nora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 516,165, Jul. 20, 1983, abandoned, which is a continuation of Ser. No. 365,205, Apr. 5, 1982, abandoned, which is a division of Ser. No. 195,920, Oct. 14, 1980, Pat. No. 4,371,433. This application Oct. 31, 1984, Ser. No. 667,053
Int. Cl.[3] C25B *9/04, 13/00*
U.S. Cl. 204—279 1 Claim



1. Bipolar separator plate of substantially rectangular shape for vertical filter press diaphragm-type electrolysis cells having a plurality of projections extending from a recessed surface on the central portion of both sides of the plate, said projections defining a plurality of fluid distributing channels and conducting electric current to electrodes in contact with the peaks of said projections, outlet manifold means in the form of holes normal to the plane of the plate in both non-recessed perimetral vertically extending portions of the plate, one of said manifold means communicating with the recessed central portion on one side of the plate and the other manifold means communicating with the recessed central portion on the opposite side of the plate through at least one conduit in the non-recessed vertical portions of the plate, the said conduits communicating with the upper portions of said manifold means which extend vertically down the height of the plate to hold the level of a pool of discharging liquid below the level of said conduits, the surfaces of said conduits and of said manifold means being of electrically non-conductive material.

4,533,456
OXYGEN SENSOR FOR RAPID BLOOD GAS ANALYSIS

Jiri Kratochvil, Sandy, and Jiri Janata, Salt Lake City, both of Utah, assignors to Critikon, Tampa, Fla.

Filed Apr. 5, 1984, Ser. No. 597,001
Int. Cl.[3] G01N *27/46*
U.S. Cl. 204—415 3 Claims

1. In a system for analysis of partial pressures of gases in blood, an oxygen sensor comprising:

(a) an oxygen permeable membrane to which blood samples are periodically exposed for a predetermined time period;

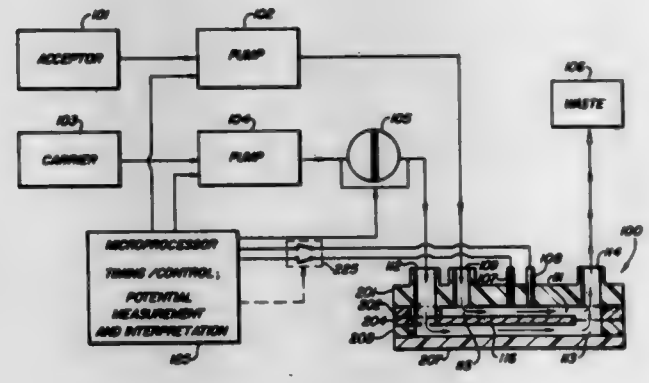
(b) an electroylte acceptor for oxygen which passes through said membrane;

(c) an anode electrode and a cathode electrode, which both are immersed in said electroyte; and the improvement which comprises

(d) means for substantially replacing the electrolyte in said sensor prior to each presentation of respective samples to the other side of said membrane;

(e) control means automatically operating a switch means for establishing an open circuit condition between said

electrodes during replacement of said electrolyte and during and for a first predetermined time after presentation of each of said samples, and for polarizing said elec-



trodes at a predetermined voltage for a second predetermined time; and

(f) means for measuring current between said electodes at the end of said second predetermined time.

4,533,457

ION SELECTIVE ELECTRODE DEVICE AND ION ANALYZING APPARATUS

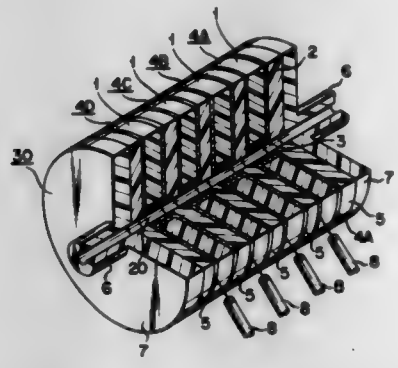
Fumio Watanabe, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 17, 1983, Ser. No. 524,074

Claims priority, application Japan, Aug. 28, 1982, 57-149774

Int. Cl.³ G01N *27/46*

U.S. Cl. 204—411 **2 Claims**



2. An apparatus for measuring the ion concentration of a solution, comprising:

reference electrode means for producing a first electrical potential, said reference electrode means including:

means for thermally insulating said solution, said thermal insulating means including means for defining a first aperture;

first ion sensitive layer means, disposed on the periphery of said first aperture, for producing said first electrical potential; and

first electrical conducting means, disposed on said thermal insulating means in contact with said first layer means, for conducting said first electrical potential;

at least one ion selective electrode means for producing a second electrical potential, said ion selective electrode means including:

means for thermally insulating said solution, said thermal insulating means including means for defining a second aperture;

second ion sensitive layer means, disposed on the periphery of said second aperture, for producing said second electrical potential; and

second electrical conducting means, disposed on said thermal insulating means in contact with said second layer means, for conducting said second electrical potential;

means for attaching said reference electrode means and said ion selective electrode means together in a stack such that said first and second apertures are in registry;

means, coupled to said first and second apertures, for inducing a flow of said solution through said first and second apertures; and

means, connected to receive said first and second electrical potentials conducted by said first and second electrical conducting means, for converting the difference between said first and second electrical potentials to indicia of ion concentration, wherein:

said thermal insulating means of said ion selective electrode means comprises a disk having first and second opposing flat surfaces, said second aperture being defined in the substantial center of and axially through said disk; and

said second electrical conducting means comprises:

a first annular portion disposed on the first surface of said disk surrounding said second aperture;

a second annular portion disposed on the second surface of said disk surrounding said second aperture;

a third annular portion, disposed within said second aperture on the inner peripheral surface of said disk defining said second aperture, said third portion electrically connecting said first and second annular portions, and second ion sensitive layer means disposed on said third annular portion; and

terminal means, disposed on said first surface of said disk, for electrically connecting said first annular portion of said converting means.

4,533,458

REDOX CATALYST PLUS PROMOTER FOR OXIDATION OF HYDROCARBONS

Donald D. Carlos, Louisville, Ky., assignor to Ashland Oil, Inc., Ashland, Ky.

Continuation-in-part of Ser. No. 262,859, May 12, 1981, abandoned. This application Oct. 6, 1983, Ser. No. 539,433

Int. Cl.³ C07C *53/00, 27/10*

U.S. Cl. 208—3 **2 Claims**

1. A process for oxidizing a liquid mixture of saturated hydrocarbons having an average number of carbon atoms per molecule of 25 to 50 and containing at least one of an oxidizing inhibitor and redox metal catalyst poison to an acid number of up to at least about 45 to 50 comprising blowing air at a rate of 3.5 to 4.0 liters per minute per liter of hydrocarbons through a liquid mass of said hydrocarbons containing at least one of an oxidation inhibitor and redox metal catalyst poison in the presence of 0.03 to 0.04 percent by weight of manganese provided by manganese carboxylate, based on weight of said liquid hydrocarbons; and

an oxidation promoting amount of calcium provided by water-lime slurry, the weight ratio of manganese to calcium being about 1:1 to 1:2;

the temperature of reaction being 160° C. to 165° C., the pressure being 150 to 250 psig and the reaction being carried out for about 2 hours or less, thereby providing an oxidized hydrocarbon mixture having an acid number of at least about 45 to 50.

4,533,459

EXTRACTION PROCESS

Mario Dente, Milan, Italy; Guiliano Porcari, Edmonton, Canada, and Lee F. Robinson, London, England, assignors to RTR Riotinto Til Holding S.A., Zug, Switzerland

Continuation of Ser. No. 299,306, Sep. 4, 1981, abandoned. This application Aug. 20, 1984, Ser. No. 642,383

Claims priority, application Italy, Sep. 17, 1980, 68438 A/80

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **12 Claims**

1. A process for extracting bitumen oils from a raw material consisting essentially of oil sands and lumps of disintegrable material such as clay, the process including the steps of

(a) conditioning the raw material in a conditioner by intro-

ducing a stream of hot water with a water to raw material ratio of at least 1:1 by weight and by gently mixing the water and raw material without sufficient force to cause substantial disintegration of clay present in the raw material while promoting the release of bitumuen oils from the solids of said raw materials and forming within the conditioner of separate solids and liquid phases;

(b) moving said solids along said conditioner without maintaining them in suspension and discharging said solids phase from said conditioner separately from said liquid phase;

(c) separating said liquid phase into an oil-rich component and a middlings component containing essentially water and fines and with only minor proportions of oil and solids;

(d) removing at least a part of the fines from said middlings component by flocculation separation of said middlings component and contrifuging of the produced thickened solids, and thereby producing a fines discharge of relatively low liquid content and a liquid discharge;

(e) immediately recycling said liquid discharge while hot as at least a part of the hot water supplied for said conditioning; and

(f) delivering said oil-rich component for further treatment.

4,533,460

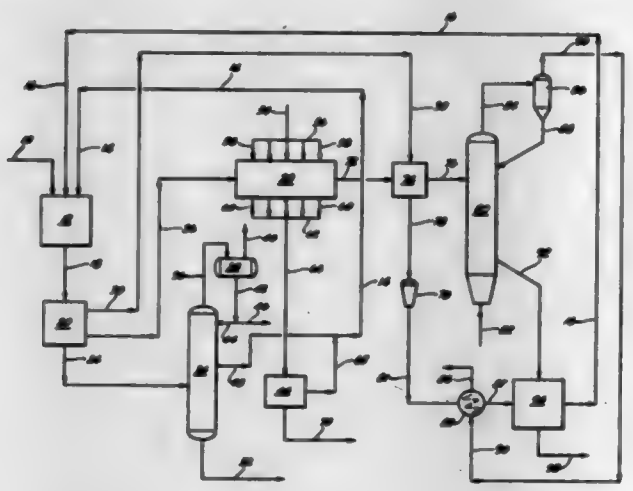
OIL SHALE EXTRACTION PROCESS

Phillman N. Ho, Yorba Linda, Calif., assignor to Union Oil Company of California, Los Angeles, Calif.

Filed Sep. 14, 1984, Ser. No. 651,045

Int. Cl.³ C10G *1/04*

U.S. Cl. 208—11 LE **26 Claims**



1. A process for recovering hydrocarbon liquids from solids containing organic material which comprises:

(a) passing a liquid organic solvent and a hot, nonoxidizing gas downwardly through an extraction zone in contact with said solids at an elevated pressure sufficient to maintain said solvent in the liquid phase and at a temperature below about 900° F. but sufficiently high such that hydrocarbons are extracted from said solids into said organic solvent;

(b) withdrawing said liquid organic solvent and said extracted hydrocarbons from the bottom of said extraction zone; and

(c) recovering said extracted hydrocarbons from said liquid organic solvent as said hydrocarbon liquids.

4,533,461

PROCESS FOR PRODUCING MESOPHASE PITCH

Takayuki Izumi; Tsutomu Naito, both of Saitama, and Seiko Igarashi, Sakado, all of Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1981, Ser. No. 281,407

Claims priority, application Japan, Jul. 21, 1980, 55-99646

Int. Cl.³ C10C *3/00*

U.S. Cl. 208—44 **9 Claims**

1. A process for producing a mesophase pitch having a mesophase content of above 90% and a softening point of below 320° C. comprising the steps of:

(1) heat-treating a pitch forming material at elevated temperatures above about 380° C. for a time sufficient to provide a mixture of mesophase and non-mesophase pitch containing about 20% to about 80% by weight of mesophase and a softening point of no greater than 250° C.;

(2) aging and settling said mesophase portion of said mixture of mesophase and non-mesophase pitch obtained in step (1) by maintaining the mixture in a substantially quiescent condition and at a temperature below the temperature in the heat-treating step and above about 350° C. for a time sufficient for the mesophase portion of the mixture to coalesce and accumulate into a substantially lower homogeneous mesophase pitch layer containing at least 90% mesophase and an upper layer comprising the non-mesophase portion of said mixture; and

(3) separating said lower mesophase layer from said upper non-mesophase layer whereby a mesophase pitch which has a mesophase content of above 90% and a softening point below 320° C. is obtained.

4,533,462

PROCESS FOR THE TREATMENT OF HIGHLY VISCOUS HEAVY OILS AT THE OIL FIELD TO EFFECT DESALTING AND TRANSPORTABILITY THEREOF

Alain Billon, Orlienas; Jean-Pierre Peries, Mornant, and Alain Quignard, Rillieux-La-Pape, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Jan. 6, 1984, Ser. No. 568,761

Claims priority, application France, Jan. 7, 1983, 83 00304

Int. Cl.³ C10C *33/00*; C10G *45/00, 67/00*

U.S. Cl. 208—88 **11 Claims**

1. A process for the treatment, at the production field, of a highly viscous crude oil, containing salt and water, in order to convert it to an oil of lower viscosity and lower salt and water contents, said process comprising the steps of:

(a) diluting the crude oil with a hydrocarbon cut of low viscosity obtained in step (d), in such a proportion that the dynamic viscosity of the resultant mixture is 0.2–0.8 mPa.s at 150° C and its density is 0.68–0.82 g/ml at 150° C;

(b) subjecting the resultant diluted oil from step (a) to at least partial desalting and at least partial dehydration;

(c) subjecting the desalted and dehydrated oil diluted with said hydrocarbon cut of low viscosity from step (b) to hydrovisbreaking, in the presence of hydrogen, at a temperature of 420–490° C, a pressure of 40–200 bar, a total residence time from 10 seconds to 15 minutes in a reaction furnace and soaking chamber, and a ratio of the normalized volume of hydrogen to the volume of the desalted and dehydrated oil of 200–3,000; and converting 10 to 30% of the 380° C^+ fraction of the hydrovisbreaking charge to a 380° C^- fraction; and

(d) distilling the effluent from step (c), and separating a hydrocarbon cut having a kinematic viscosity below 400 cSt. at 37.8° C, at least 50% by weight of which normally distills between 100° and 380° C, feeding at least a portion thereof back to step (a), and combining the remaining liquid distillation effluents to form a synthetic crude oil of reduced viscosity and low salt and water contents.

4,533,463

CONTINUOUS COKING OF RESIDUAL OIL AND PRODUCTION OF GASEOUS FUEL AND SMOKELESS SOLID FUELS FROM COAL

Tsoung Y. Yan, Philadelphia, Pa., and Darrell D. Whitehurst, Titusville, N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 11, 1983, Ser. No. 512,505
Int. Cl.[3] C10G *9/28, 9/32*
U.S. Cl. 208—127 8 Claims

1. A method of simultaneously processing residual oil and coal to produce liquid and solid smokeless fuel comprising:

burning devolatized coal or char in a combustion zone maintained at a temperature between 1400°–2000° F. in the bottom of a reactor maintained at a pressure in the range of 0–50 psig;

fluidizing char and coal with gas rising from said combustion zone;

injecting residual oil into heat exchange relationship with the top of the fluidized bed of char and coal;

recovering overhead effluent to produce said liquid fuel;

removing char from said fluidized bed to produce solid fuel; and

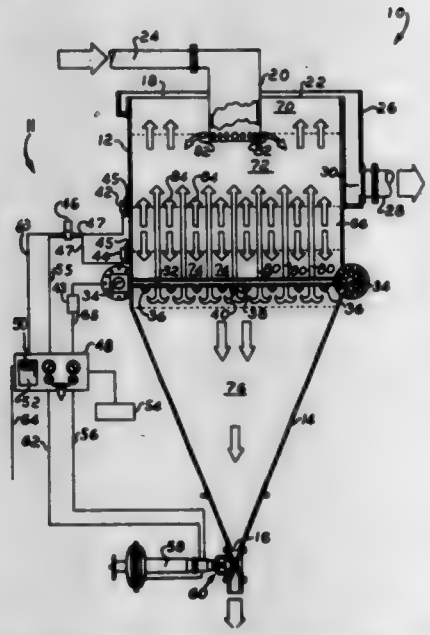
controlling the air fed to said combustion zone to an amount which generates the requisite heat for coking said residual oil, but limited to an amount required for partial gasification of 10–40% of said coal, substantial desulfurization of said coal, and production of said solid fuel.

4,533,464

TEETER BED ZONE DENSITY CONTROL DEVICE AND METHOD

Michael J. Smith, Granby, and Allen L. Soucie, Ellington, both of Conn., assignors to Linatex Corporation of America, Stafford Springs, Conn.

Filed May 25, 1983, Ser. No. 498,150
Int. Cl.[3] B03B *5/66, 11/00*
U.S. Cl. 209—158 6 Claims



1. A method of controlling the density of a teeter bed zone of a hindered-settling fluid classifier having an overflow zone wherein said teeter bed zone has upper and lower boundaries comprising the steps of:

selecting a desired value of average density of the teeter bed zone,

measuring the average particle density from the upper boundary of the teeter bed zone to the top of the overflow zone and from the lower boundary of the teeter bed zone to the top of the overflow zone,

comparing said measured average particle densities to obtain a differential therebetween, and

regulating the underflow discharge in proportion to the deviation of the differential of said measured average particle densities and said selected value to adjust the average density of the teeter bed zone to approximately said selected value.

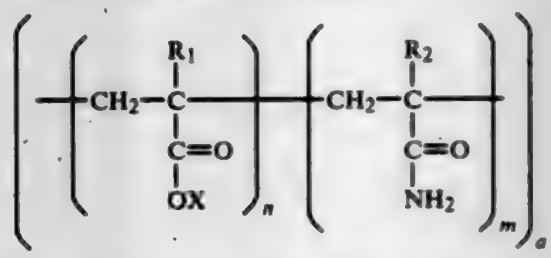
4,533,465

LOW MOLECULAR WEIGHT COPOLYMERS AS DEPRESSANTS IN SYLVINITE ORE FLOTATION

Richard M. Goodman, Norwalk, and Sim K. Lim, Stamford, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 372,259, Apr. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 246,521, Mar. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 95,812, Nov. 19, 1979, Pat. No. 4,289,613. This application Jul. 16, 1984, Ser. No. 631,009
The portion of the term of this patent subsequent to Sep. 15, 1998, has been disclaimed.
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—167 8 Claims

1. A process for enhancing recovery of sylvite in a sylvinite ore flotation system including an amine collector, said process comprising adding to the flotation system, as a selective depressant, an effective amount of a copolymer or water soluble salts thereof of the general structure:



wherein R_1 and R_2 are individually hydrogen or a methyl radical, X is a hydrogen, alkali metal or ammonium ion, n and m are whole numbers such that the degree of hydrolysis is within the range from about 5% to 66% and n, m and a have numerical value such that the total molecular weight of copolymer is within the range from about 500 to 85,000.

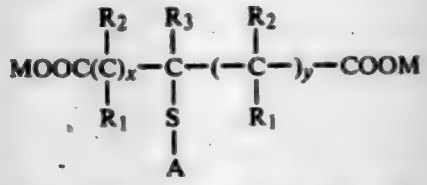
4,533,466

POLYCARBOXYLIC ACID DERIVATIVES AND USES

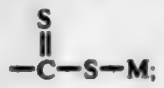
Clarence R. Bresson; Benjamin R. Robles, and Robert M. Parlman, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 480,206, Mar. 30, 1983, Pat. No. 4,492,480. This application Oct. 31, 1984, Ser. No. 666,865
Int. Cl.[3] B03D *1/14*
U.S. Cl. 209—167 11 Claims

1. A process for depressing sulfides of at least one of copper, iron and lead in a minerals containing mixture in a flotation operation, said process comprising carrying out a flotation with a depressant composition present, said depressant composition comprising a mercapto polycarboxylic acid or derivative represented by the formula:



where R_1 and R_2 are selected from the group consisting of hydrogen and an alkyl group having 1 to 3 carbon atoms and R_3 is selected from the group consisting of hydrogen, alkyl group having 1–3 carbon atoms and COOM,M is selected from the group consisting of hydrogen, ammonium, Li, Na, K, Rb and Cs, A is selected from the group consisting of M and



and where x and y are 0 or any integer from 1 through 7.

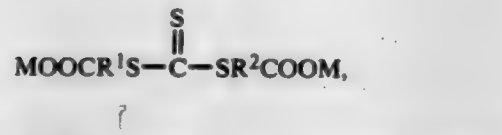
4,533,467
ORE FLOTATION AND FLOTATION AGENTS FOR USE THEREIN

Kenneth B. Kimble; Clarence R. Bresson, and Harold W. Mark, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed May 10, 1984, Ser. No. 608,827
Int. Cl.[3] B03D *1/02*; C07C *153/00*; C22B *3/00*
U.S. Cl. 209—167 22 Claims

15. A process for recovering minerals comprising:

(a) mixing crushed ore containing minerals, water and a composition having the formula



$$MOOCR^1S-\overset{\overset{S}{\|}}{C}-SR^2COOM,$$

wherein M is selected from the group consisting of ammonium and alkali metals, R^1 is selected from the group consisting of alkylene radicals each radical having no more than 6 carbon atoms, R^2 is selected from the group consisting of alkylene radicals each radical having no more than 6 carbon atoms, and R^1 and R^2 can be the same or different, to establish a pulp;

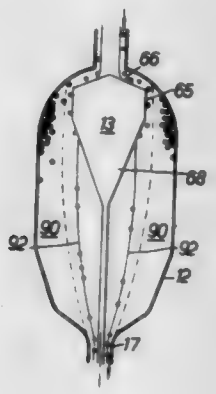
(b) aerating said thus established pulp to produce a froth containing said minerals; and

(c) recovering said minerals from said thus produced froth.

4,533,468
CENTRIFUGAL SEPARATION METHOD AND APPARATUS

Paul M. D. Ensor, Maida Vale, and Neville C. Bassett, Kensington, both of Australia, assignors to The Broken Hill Proprietary Company Limited, Melbourne, Australia

Filed Dec. 6, 1983, Ser. No. 558,463
Claims priority, application Australia, Dec. 6, 1982, PF7137
Int. Cl.[3] B04B *1/14*
U.S. Cl. 209—172 36 Claims



1. A method of separating lighter and heavier particles in a solids mixture, comprising:

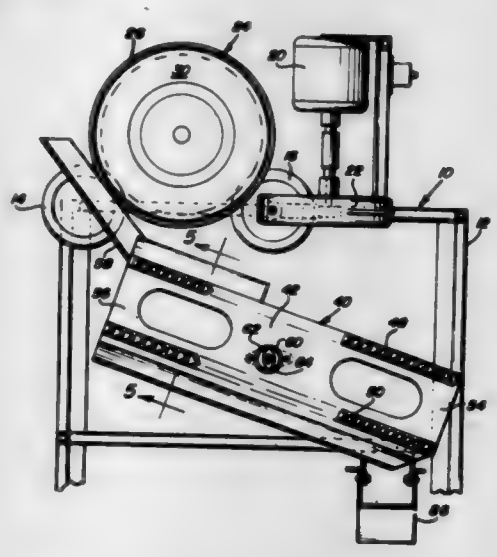
entraining the mixture in a liquid of a specific gravity intermediate the specific gravities of the lighter and heavier particles;

feeding the liquid with entrained mixture through a first opening into one end of a vessel and revolving the liquid therein by rotating the vessel, the vessel being designed so that the liquid attains a dynamic equilibrium at which an annular, centrifugally induced, substantially static, revolving volume of the liquid of stable internal surface is confined by the vessel about the axis of revolution while further liquid flows on within said stable internal surface, whereby the heavier particles are centrifugally directed into said annular volume of the liquid while the lighter particles remain entrained in on-flowing liquid within said internal surface which flows out a second opening in the other end of the vessel; and discontinuing feeding the mixture to the vessel, slowing and stopping the rotating vessel to release said annular volume of the liquid, which then, with the heavier particles entrained, swirls towards and flows through one of said openings.

4,533,469
GRASS SEED FROM STEM REMOVER

Victor A. Beisel, Rte. 1, Box 26, Fargo, Okla. 73840

Filed Jan. 6, 1984, Ser. No. 569,248
Int. Cl.[3] B07B *1/28*
U.S. Cl. 209—243 5 Claims



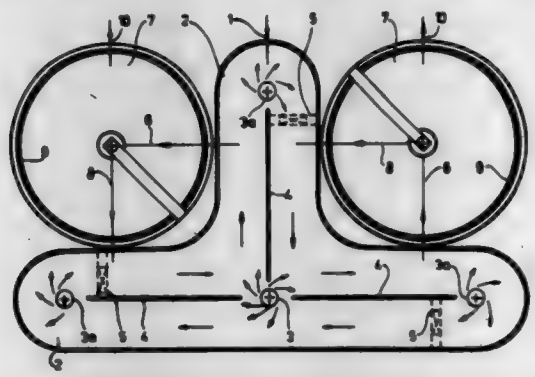
1. An apparatus for removing grass seeds from grass stalks and stems, said apparatus including an elongated, inclined sieve frame, said sieve frame including a plurality of sets of individual elongated transversely extending and transversely corrugated sheet metal sections with the sections of each set arranged in laterally spaced parallel relation in an inclined plane extending lengthwise of said sieve frame, each of said sections being substantially transversely straight throughout its transverse extent and corresponding portions of the corrugations of adjacent sections being disposed in parallel planes oppositely inclined relative to the inclination of the first-mentioned plane, means operative to vibrate said sieve frame, said sieve frame including at least three laterally spaced edge upstanding plates extending longitudinally thereof, each set of corresponding sections being disposed between one pair of adjacent plates and secured at their opposite ends to the corresponding plates, a plurality of elongated upwardly opening inclined troughs extending longitudinally along said sieve frame beneath the latter with each trough including opposite longitudinal marginal portions mounted from the lower marginal portions of a corresponding pair of adjacent plates and each set of corrugated sections registered with and disposed above a corresponding trough, the opposite sides of the upper and lower ends of said sieve frame each being supported from the lower ends of a plurality of elongated flexible elastic members, a support frame, the upper ends of said elastic members being anchored relative to adjacent portions of said support frame, the upper ends of said elastic members supporting at least one end of said sieve frame and said support frame including means operative to vertically adjust the elevation at which the upper ends of the last mentioned elastic members are anchored relative to said support frame, said elastic members supporting said sieve frame from said support frame for omni-directional vibration of said sieve frame in a vertical plane extending longitudinally of said sieve frame, said means operative to vibrate said sieve frame including an eccentrically weighted shaft space centrally intermediate the opposite ends of said sieve frame and journalled from at least two said plates for rotation about a horizontal axis extending transversely of said frame, and motor means drivingly coupled to said shaft for rotating the latter.

4,533,470
APPARATUS FOR TREATING LIQUIDS

Imre Gyulavári, Debrecen, Hungary, assignor to Novex Találmányfejlesztö és Értékesitö Külkereskedelmi Rt., Budapest, Hungary

PCT No. PCT/HU81/00027, § 371 Date Mar. 1, 1982, § 102(e) Date Mar. 1, 1982, PCT Pub. No. WO82/00134, PCT Pub. Date Jan. 21, 1982
PCT Filed Jun. 30, 1981, Ser. No. 355,542
Claims priority, application Hungary, Jul. 3, 1980, 1653/80
Int. Cl.³ C02F *3/20, 3/16, 3/18*
U.S. Cl. 210—96.1 21 Claims

1. Apparatus for the treatment of liquid household and industrial sewages containing contaminants to effect biological purification, aeration and sedimentation comprising a shaped liquid receiving basin having therein an aerating wheel which consists of cross flow aerating channels extending radially from said wheels; said channels separated by at least one partition wall being perpendicular to to each other and forming a path returning into itself forming parallel closed aerating channels and a duct for receiving said liquid sewage and at least one propeller or rotor with axle for moving said sewage through said aerating channels, said propeller or rotor being downstream in the direction of flow in each channel behind the aerating wheel, said aerating channels having therein at least one aerator with axle and at least one fixed air blower for



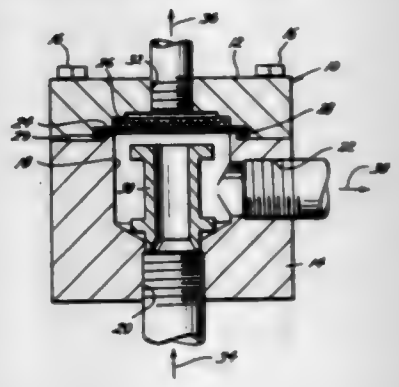
aerating said liquid sewage; wherein under said aerating channels are vertical aerating shafts, the depth of which is between 1 and 35 meters forming a common space and which with said aerating channels and vertical aerating shafts comprise air-injecting grids in the bottom area of said shafts for injecting air into said sewage through ducts; and wherein there are secondary sedimenters with oblique lamallae which when viewed from the top are circular, said lamallae being connected directly to said secondary sedimenters by ducts through which the aerated sewage flows in transverse flow from said aerating channels and from which the treated sewage is discharged through outflow means.

4,533,471
SELF-CLEANING LIQUID FILTER AND SYSTEM

Henry R. Collins, Jr., P.O. Box 382, Livingston, Tex. 77351

Continuation of Ser. No. 325,928, Nov. 30, 1981, abandoned.
This application Sep. 12, 1983, Ser. No. 523,876
Int. Cl.³ B01D *29/38*
U.S. Cl. 210—138 6 Claims

1. A self-cleaning liquid filter combination, comprising;
(a) a housing having a first section connected in fluid sealed relationship with a second section;
(b) said first section defining a cylindrical chamber and a fluid inlet disposed at a first end of said cylindrical chamber in axial alignment with said chamber;
(c) said first section defining a fluid bypass outlet disposed outwardly through the wall of said cylindrical chamber;
(d) said second section defining a fluid outlet disposed in axial alignment with said cylindrical chamber and said inlet;
(e) said first section and said second section cooperatively defining a fluid sealed mount for a flat filter element disposed across the second end of said cylindrical chamber;
(f) a hollow tubular extension member axially mounted within said cylindrical chamber and extending from said first end of said cylindrical chamber to close proximity with the surface of said filter element to define an annular flow clearance between said filter member and said filter surface;
(g) said extension member defining an annular chamber within said cylindrical chamber; and

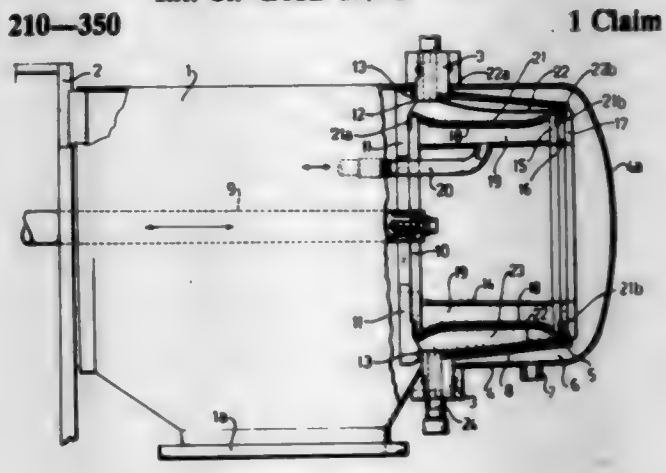


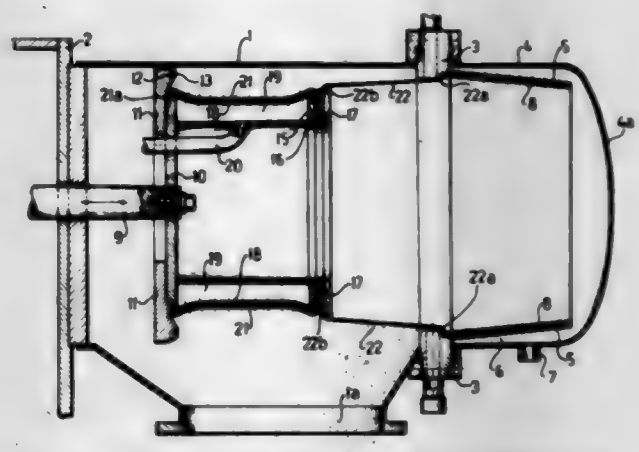
(h) said combination defining flow communication through said inlet, said extension member, said filter element and said outlet and supplemental flow communication through said inlet, said extensiom member, said annular clearance across said filter surface, said annular chamber and said bypass outlet.

4,533,472
PRESSURE FILTER WITH A TUBULAR, FLEXIBLE FILTER ELEMENT WHICH CAN BE TURNED INSIDE OUT

Vittorio Verri, and Renato Christiani, both of Milan, Italy, assignors to Comber S.p.A. Costruzioni Meccaniche Bergamasche, Italy

Filed Nov. 29, 1983, Ser. No. 556,192
Int. Cl.³ B01D *29/42*
U.S. Cl. 210—350 1 Claim





1. Pressure filter, particularly for filtering turbid liquids and like suspensions, comprising in combination:
a first frusto-conical, perforated basket having a smaller open end and a larger open end; a second perforated basket;

means supporting the second basket coaxially within the first basket and for guiding the second basket for axial movement from a position of insertion within the first basket to a position spaced therefrom;

a tubular, frusto-conical fabric having a smaller open end and a larger open end, said fabric positioned coaxially between the baskets and fixed at its larger end to the larger end of the first basket and at its smaller end to the second basket;

a tubular membrane, mounted coaxially on the second basket, said tubular membrane being resiliently radially deformable and defining an annular chamber between itself and the tubular fabric when the second basket is in its inserted position within the first basket;

an inner sleeve positioned within the second basket forming a closed inner annular chamber with the tubular membrane;

at least one duct for supplying a turbid liquid to the annular chamber;

at least one duct for discharging the filtered liquid from the side of said fabric opposite said annular chamber; and

at least one duct for the supply of a pressurised fluid into said closed inner annular chamber.

4,533,473

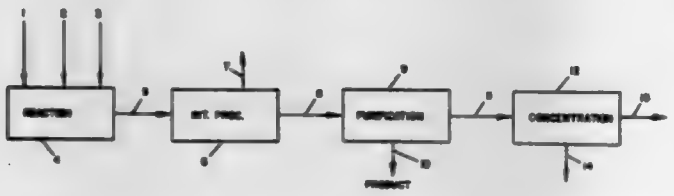
PROCESS FOR TREATING LIQUID CHLORINATED HYDROCARBON WASTES CONTAINING IRON

William M. Burks, Jr., Yorktown Heights, N.Y.; Elliott P. Doane, Monroe, Conn.; Ramsey G. Campbell, Berkeley, and Emilio S. Velez, Richmond, both of Calif., assignors to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 378,368, May 14, 1982, abandoned. This application Feb. 2, 1984, Ser. No. 576,243

Int. Cl.³ C02F *1/64*

U.S. Cl. 210—754 **21 Claims**



14. In a process for the production of vinyl chloride from ethylene and chlorine, in which the ethylene is reacted with oxygen and/or air and hydrogen chloride in an oxychlorination section to produce 1,2-dichloroethane, ethylene is reacted with chlorine in a chlorination section to produce additional 1,2-dichloroethane, the 1,2-dichloroethane produced by oxychlorination and chlorination is purified and converted to vinyl chloride by dehydrochlorination, and in which one or more liquid waste streams containing chlorinated hydrocarbons boiling higher than 1,2-dichloroethane and also containing ferric chloride and/or other metallic substances are produced, the improvement comprising removing a substantial portion of the ferric chloride and/or other metallic substances from one or more of said waste streams by contacting said waste streams with dilute aqueous hydrochloric acid which contains from about 0.1 to about 10 percent by weight of hydrogen chloride, in a volume ratio of dilute acid to organic material contained in said waste stream of between about 1:1 and about 3:1 and separating the resulting aqueous and organic phases.

4,533,474

METHOD FOR SEPARATING IMMISCIBLE FLUIDS OF DIFFERENT SPECIFIC GRAVITIES

Marcel Arnaudeau, Paris, France, assignor to Institut Francais du Petrole, Rueil-Malmaison, France

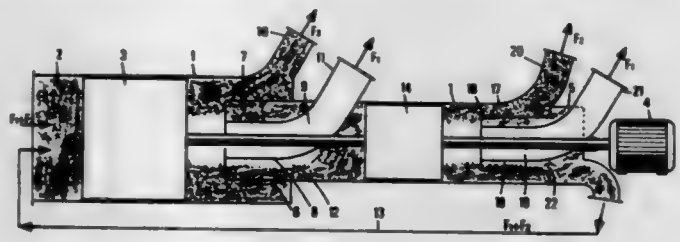
Continuation of Ser. No. 429,576, Sep. 30, 1982, Pat. No. 4,478,712. This application Oct. 22, 1984, Ser. No. 663,514

Claims priority, application France, Sep. 30, 1981, 81 18580

Int. Cl.³ B01D *45/14*

U.S. Cl. 210—787 **6 Claims**

1. A method of use of a device for separating components of a mixture of at least two immiscible fluids of different specific gravities, the device having inlet means connected to a tubular body having at least one coaxial partition internally for withdrawing the mixture at a first end of the tubular body and respective extraction means connected to the tubular body toward the second end thereof for discharging the mixture, one of the at least two immiscible fluids and another of the at least two immiscible fluids, first means for imparting to the mixture, when flowing through the body, a motion having a rotational component about the axis of the tubular body, at least second means adapted for imparting to the fluid passing therethrough a rotational component about the axis of the tubular body and located downstream from the end of one of the partitions inside the tubular body, and feedback means for feeding back the stream, issuing from the second end, to the inlet means, the



method comprising: withdrawing a diphasic fluid comprising liquid hydrocarbons and gaseous hydrocarbons from a submerged oil well; adding and mixing sufficient water to said diphasic fluid to form a second diphasic fluid capable of being pressurized by a pump; pressurizing the second diphasic fluid with a pump; separating the added water from the pressurized second diphasic fluid by passing it though said device for separating a mixture of immiscible fluids; and conveying the thus-pressurized diphasic fluid of liquid and gaseous hydrocarbons through a pipeline.

4,533,475

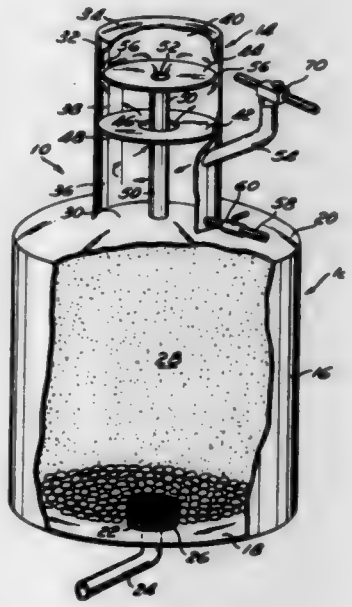
METHOD AND APPARATUS FOR FLUID FILTRATION INCLUDING PARTICLE PRECIPITATION

Richard J. Chiarito, Corona, Calif., assignor to U.M.E., Incorporated, Calif.

Filed Dec. 1, 1983, Ser. No. 556,884

Int. Cl.³ B01D *21/26*

U.S. Cl. 210—788 **18 Claims**



1. A method comprising:

providing a vertically positioned cylindrical tank having a central axis, said cylindrical tank being separated into upper, middle and lower sub-chambers by two baffles, each baffle having an annular opening;

introducing fluid to be filtered into the lowest of said sub-chambers of said vertically positioned cylindrical tank;

circulating said fluid within said tank, below said upper sub-chamber, in a direction generally concentric with the interior surface of said cylindrical tank;

maintaining said fluid below said uppermost sub-chamber for at least one complete rotation about the central axis of the tank permitting undesirable particles to precipitate to the bottom of the tank;

passing fluid through the annular openings in the baffles; and

removing relatively cleaner fluid from said uppermost sub-chamber by way of a conduit.

4,533,476

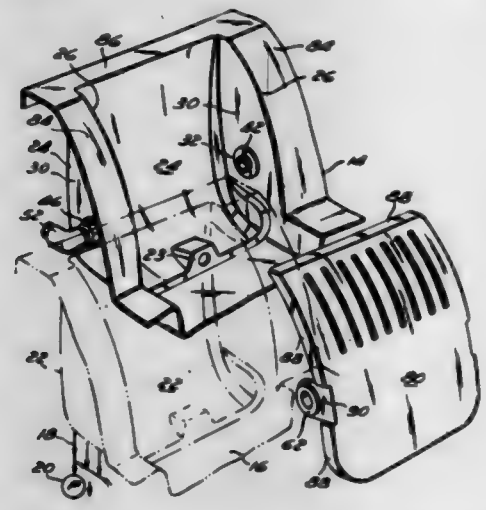
SPA FILTER INSTALLATION METHOD AND MEANS

Jonathan Watkins, San Marcos, Calif., assignor to Watkins Manufacturing Co., Carlsbad, Calif.

Filed May 25, 1984, Ser. No. 614,127

Int. Cl.³ E04H *3/20*; C02F *1/00*

U.S. Cl. 210—805 **12 Claims**



1. The method of installing an elongated recirculation water filter in a spa having a plastic water reservoir with an open top forming a bathing area, comprising:

(a) molding said plastic water reservoir in a female mold and by using vacuum drawing of the plastic of the spa into said mold,

(b) forming a filter location directly within said water reservoir by forming an upwardly, inwardly open filter-receiving reservoir recess with sidewalls spaced at least as wide as said filter is long and with a mouth opening inwardly through which said filter passes in installation at least as wide as said filter is long, said recess being formed by expanding the sidwall of said reservoir in the area of said reservoir recess by forming a matching upwardly, inwardly open female mold recess with a draft permitting removal of said reservoir including said reservoir recess,

(c) providing said reservoir recess with a spa water outlet in each of opposed sidewalls of said reservoir recess, said spa water outlets being generally horizontally aligned, and connecting said outlets in a T-manner to pump means connected to a return water line to said reservoir,

(d) positioning said filter in said reservoir recess by insertion in a direction lateral of said filter through said mouth and connecting said filter to said spa water outlets by applying a compressive force to paired opposite outlet end of said filter and then permitting said filter to expand into engagement and connection with said spa water outlets, and

(e) providing said filter with a pervious central section between said paired opposite outlet ends whereby a fitered recirculating water stream can be drawn directly from said reservior through said pervious section and through said spa water outlets.

7. An installation of a recirculation water filter in a spa having a plastic water reservoir with an open top forming a bathing area, comprising:

(a) a filter station molded directly within said water reservoir by an upwardly, inwardly open filter receiving reservoir recess expanding the reservoir sidewalls in the area of said reservoir recess, said reservoir and reservoir recess being configured with drafts permitting mold release,

(b) said reservoir recess having opposed sidewals spaced apart at least as wide as said filter and having an inwardly open mouth through which said filter must pass in installation at least as wide as said filter, and a wall fitting disposed in each opposed sidewall of said recess, at least one of said fittings including a water outlet, pump means and means connecting said water outlet to said pump means, and a return water line from said pump means to said reservoir,

(c) said filter being positioned in said reservoir recess and having paired end fittings interengaging in two sets with said wall fittings and in fluid communication with said water outlet, said filter having spring mounting means whereby engagement and disengagement of said end fittings can be accomplished by applying manual force to the spring mounted means until engagement or disengagement of fittings and by then permitting spring recovery, and

(d) said filter having a pervious section whereby a filtered water stream can be drawn directly from said reservoir through said pervious section and through said water outlet.

4,533,477

ORGANOPOLYSILOXANES HAVING SIC-BONDED OXYALKYLENE UNITS AND A METHOD FOR PREPARING THE SAME

Gerhard Preiner; Karl Huhn; Johann Müller; Heinrich Marwitz, and Kurt Ullrich, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 28, 1983, Ser. No. 536,476

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1982, 3247825

Int. Cl.³ B05D *3/02*

U.S. Cl. 252—8.9 **18 Claims**

3. A method for preparing organopolysiloxanes having SiC-bonded oxyalkylene units and Si-bonded hydroxyl groups, in which an average of at least 15 mol percent of the siloxane units have only one SiC-bonded monovalent organic radical and the silicon valences other than the one satisfied by the SiC-bonded monovalent organic radical are satisfied by groups selected from the class consisting of siloxane oxygen atoms and oxygen atoms of hydroxyl groups, which comprises reacting a triorganosiloxy end-blocked copolymer of a diorgano(poly)-siloxane which contains SiC-bonded oxyalkylene units and at least 15 mol percent of siloxane units in which each siloxane unit has one SiC-bonded monovalent organic radical and one group selected from the class consisting of an Si-bonded hydrogen atom, an Si-bonded hydroxyl group and an SiOC-bonded alkoxy group having from 1 to 4 carbon atoms with water in the presence of an acid or base.

4,533,478

3-SULFOXY-1,2-PROPYLENE GLYCOLS-1-ESTERS OF TRICYCLO (4.2.2.0^{2,5}) DEC-9-ENE-3,4,7,8-TETRACARBOXYLIC ACID

Ellis K. Fields, River Forest, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 485,670, Apr. 18, 1983, Pat. No. 4,506,093. This application Oct. 11, 1984, Ser. No. 659,845

Int. Cl.³ E21B *43/22*

U.S. Cl. 252—8.55 D **1 Claim**

1. A method of injecting a micellar slug into a subterranean formation comprising the steps of:

(1) contacting said formation with an aqueous fluid composition comprising water, a surfactant, a hydrocarbon, an electrolyte and a cosurfactant comprising 3-sulfoxy-1,2-propylene glycols-1-esters of tricyclo (4.2.2.0^{2,5}) dec-9-ene-3,4,7,8-tetracarboxylic acid of molecular weight of from about 400 to about 1200,

(2) applying sufficient pressure to said composition to cause said micellar slug to move through said formation,

(3) maintaining sufficient pressure while injecting said composition into said formation.

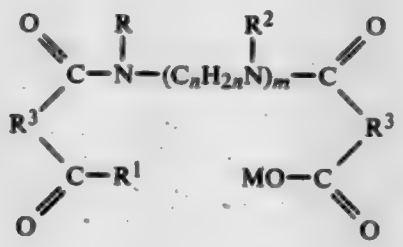
4,533,479

CORROSION INHIBITORS FOR AQUEOUS LIQUIDS FOR THE WORKING OF METALS, AND A PROCESS FOR THEIR PREPARATION

Francesco Cargnino, Venaria; Giuseppe Natoli, Torino, both of Italy, and Horst Lorke, Liederbach, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,800
Claims priority, application Italy, Oct. 25, 1982, 23903 A/82
Int. Cl.³ C10M *3/30*
U.S. Cl. 252—34 **5 Claims**

1. A compound of the formula



wherein

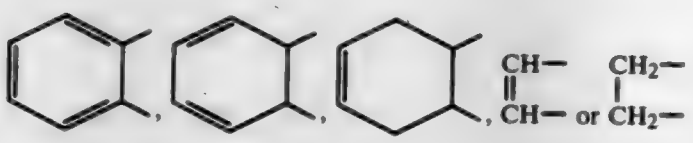
R denotes hydrogen or hydroxymethyl,

R^1 denotes a mono-(C_2-C_5)-alkylamino group, a di-(C_2-C_5)-alkylamino group, a mono-(C_2-C_5)-hydroxyalkylamino group or a di-(C_2-C_5)-hydroxyalkylamino group or

R^1 together with R denotes a direct bond, the nitrogen atom shown as bearing the R substituent being in that case bonded directly to the carbonyl carbon atom bearing the R^1 substituent,

R^2 denotes hydrogen or hydroxymethyl,

R^3 denotes a group of the formula



n denotes 2 or 3,

m denotes a number between 1 and 4 and

M denotes mono-, di- or tri-ethanolammonium or isopropanolammonium.

5. An aqueous lubricant composition comprising therein between about 0.5% and 5.0% weight of a compound of claim 1.

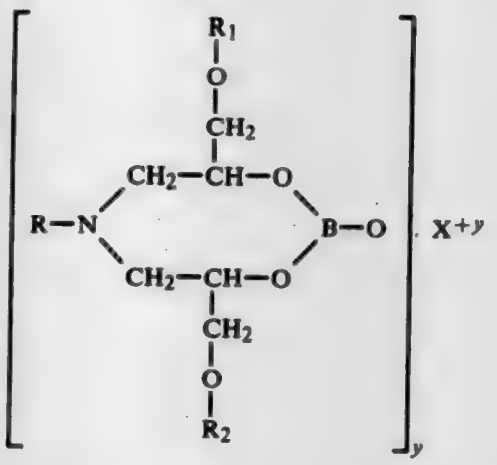
4,533,480

BIS(HYDROCARBYLOXY METHYLATED) BORON-CONTAINING, HETEROCYCLIC COMPOUNDS AND LUBRICATING COMPOSITIONS CONTAINING THE SAME

Richard A. Holstedt, Whittier, and Peter J. Jessup, Santa Ana, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Mar. 18, 1983, Ser. No. 476,513
Int. Cl.³ C10M *1/20, 1/32, 1/54*
U.S. Cl. 252—46.4 **34 Claims**

1. A compound having the formula:



where R is hydrogen or an organic radical having from 1 to about 30 carbon atoms, R_1 and R_2 are the same or different organic radicals having from 1 to about 50 carbon atoms, y is an integer between 1 and 4 and X is hydrogen or a metal selected from a transition metal having an atomic number of 21 through 30 or a Group IVA metal.

4,533,481

POLYCARBOXYLIC ACID/BORIC ACID/AMINE SALTS AND AQUEOUS SYSTEMS CONTAINING SAME

Richard W. Jahnke, Mentor-on-the-Lake, Ohio, assignor to The Lubrizol Corporation, Wickliffe, Ohio

Filed Apr. 20, 1983, Ser. No. 486,638
Int. Cl.³ C10M *3/48*
U.S. Cl. 252—49.6 **19 Claims**

1. Amine boron carboxylic salts useful as metal corrosion inhibitors for use in aqueous systems derived from

(A) at least one polycarboxylic acid (I) corresponding to the formula

$$R(COOH)_{2-3} \quad \text{(I)}$$

wherein R is an alkylene, alkenylene, alkynylene or hydroxyl alkylene group of about 4 to about 25 carbon atoms,

(B) at least one monoamine (II) corresponding to the formula

$$(R')_3N \quad \text{(II)}$$

wherein each R′ is independently hydrogen, a $C_{1\text{-}20}$ hydrocarbyl or a $C_{2\text{-}20}$ hydroxyl hydrocarbyl group, and

(C) a boron compound comprising at least one of boric acid, boron trioxide, boron halides and esters of boric acid; wherein said amine boron carboxylic salts are formed by neutralizing said carboxylic acid (I) and said boron acid with said amine (II) at an elevated temperature which does not exceed 100° C.

4,533,482

HYDROGENATED DIOLEFIN-LOWER ALKYL ACRYLATE OR METHACRYLATE VISCOSITY INDEX IMPROVING COPOLYMERS FOR LUBRICATING OILS

Joseph M. Bollinger, North Wales, Pa., assignor to Rohm and Haas Company, Philadelphia, Pa.

Filed Dec. 30, 1982, Ser. No. 454,749
Int. Cl.³ C10M *1/28*
U.S. Cl. 252—56 R **15 Claims**

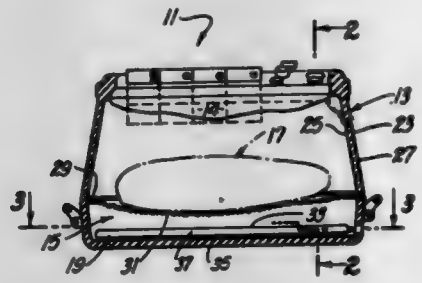
1. A lubricating oil containing a viscosity index improving amount of a substantially hydrogenated, random copolymer comprising the polymerized product of a conjugated diolefin having six carbon atoms or less per molecule, and a lower alkyl acrylate or lower alkyl methacrylate where the alkyl group contains eight carbon atoms or less per molecule.

4,533,483

HEAT SOURCE PROVIDING A SUBSTANTIALLY CONSTANT TEMPERATURE

Susan S. Watson, and William K. R. Watson, both of San Diego, Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.

Filed Jul. 2, 1973, Ser. No. 375,332
Int. Cl.³ C09K 3/18
U.S. Cl. 252—70 20 Claims



1. In combination for forming a eutectic composition having a first melting temperature and having properties of remaining in a fluid state at temperatures below the first melting temperature and of being triggered into a crystalline state at the first melting temperature in an exothermic reaction:

a first chemical having a second melting temperature higher than the first melting temperature of the eutectic composition and having properties including a fluid form at temperatures above the second melting temperature, the first chemical being supercoolable to maintain the fluid form even at temperatures below the second melting temperatures and of being triggered into the crystalline state at the second melting temperature in an exothermic reaction;

a second chemical having a third melting temperature higher than the first melting temperature of the eutectic composition and having properties including a fluid form at temperatures above the third melting temperature, the second chemical being supercoolable to maintain the fluid form even at temperatures below the third melting temperature and of being triggered into the crystalline state at the second melting temperature in an exothermic reaction; and

the first melting temperature being dependent upon the proportions by weight of the first and second chemicals in the eutectic composition.

4,533,484

PIGMENTS FOR TOILETRIES

Wilhelm E. Walles, Freeland; William H. Keskey, and Richard G. Young, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Oct. 6, 1983, Ser. No. 539,496
Int. Cl.³ C08J 3/20; C09B 69/10; C09F 26/06; C11D 9/20
U.S. Cl. 252—117 20 Claims

1. A method for preparing a substantially insoluble organic pigment wherein a water-soluble organic dye is contacted with a polymer comprising X-alkyl-2-oxazolidinone moieties in an aqueous medium under conditions such that the dye can become chemically bound to the polymer, and under conditions in which the polymer is at least partially soluble, and precipitating the resulting pigment to yield pigment particles having the insolubility characteristics of the polymer and the color characteristics of the dye under conditions at which the pigment is used.

14. A bar of soap containing a pigment which pigment is a substantially insoluble organic pigment, and wherein said pigment is prepared by contacting a water-soluble dye with a polymer comprising X-alkyl-2-oxazolidinone moieties to yield pigment particles having the insolubility characteristics of the polymer and the color characteristics of the dye.

4,533,485

ANIONIC SURFACTANT ADDITION PRODUCTS OF MALEIC OR FUMARIC ACID AND A POLY(OXYALKYLATED) ALCOHOL

James M. O'Connor, Clinton; Michael Scardera, Hamden, and Frank R. Grosser, Bethany, all of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Jun. 20, 1983, Ser. No. 505,663
Int. Cl.³ C11D 7/06; C07C 59/305, 59/58, 69/60
U.S. Cl. 252—156 9 Claims

1. A surfactant composition made by the process comprising:

a. forming a carboxylic acid group-containing additional product by reacting presence of a peroxy-type free-radical initiator an ethylenically unsaturated dicarboxylic acid selected from the group consisting of maleic acid, fumaric acid, and mixtures thereof, with at least one poly(oxyalkylated) alcohol having the formula:

$$R-O-(CH_2-\underset{R_1}{CH}-O)_x-(CH_2-\underset{R_2}{CH}-O)_y-(CH_2-\underset{R_3}{CH}-O)_z-H$$

wherein R is a hydrocarbon-containing radical having an average of from about 6 to about 18 carbon atoms; R_1, R_2, and R_3 are individually selected from hydrogen and methyl with the proviso that R_2 is different than R_1 and R_3; x is an integer having a value from 1 to about 25; y is an integer having a value from about 1 to about 25; and z is an integer from about 0 to about 25; in the said weight ratio of said poly(oxyalkylated) alcohol to said dicarboxylic acid being from about 95:5 to about 40:60; and

b. neutralizing said addition product with a sufficient amount of a neutralizing agent to convert at least a major portion of said carboxylic acid groups to salt groups.

9. An aqueous solution comprising water and at least about 10% by weight of an alkali metal hydroxide and an effective surface active amount of the surfactant of claim 1.

4,533,486

SULFATED ADDITION PRODUCTS OF SELECTED UNSATURATED DICARBOXYLIC ACIDS AND POLY(OXYALKYLATED) ALCOHOLS AS ANIONIC SURFACTANTS

Michael Scardera, Hamden, and John G. Bayusik, Wallingford, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Filed Sep. 24, 1984, Ser. No. 653,176
Int. Cl.³ C11D 1/06, 1/08, 1/29, 3/04
U.S. Cl. 252—156 18 Claims

1. A surfactant composition made by the process comprising:

a. forming a carboxylic acid group-containing addition product by reacting, in the presence of a peroxy-type free-radical initiator, an ethylenically unsaturated dicarboxylic acid selected from the group consisting of maleic acid and fumaric acid and mixtures thereof, with at least one poly-(oxyalkylated) alcohol having the formula:

$$R-O-(CH_2-\underset{R_1}{CH}-O)_x-(CH_2-\underset{R_2}{CH}-O)_y-(CH_2-\underset{R_3}{CH}-O)_z-H$$

wherein R is a hydrocarbon-containing radical having an average of from about 6 to about 18 carbon atoms; R_1, R_2, and R_3 are individually selected from hydrogen and methyl with the proviso that R_2 is different than R_1 and R_3; x is an integer having a value from 1 to about 25; y is an integer having a value from about 1 to about 25; and z is an integer from about 0 to about 25; in the said weight ratio of said poly(oxyalkylated) from about 95:5 to about 40:60; and

b. sulfating said addition product with a sufficient amount of

a sulfating agent to convert at least a major portion of said terminal hydroxyl groups to sulfonate groups.

17. An aqueous solution comprising water and at least about 10% by weight of an alkali metal hyroxide and an effective surface active amount of the surfactant of claim 1.

4,533,487

PROCESS FOR PRODUCING BLENDED D-LIMONENE AND USES OF THE BLENDED PRODUCT

Clarence L. Jones, Houma, La., assignor to Pitre-Jones, Houma, La.

Continuation-in-part of Ser. No. 523,049, Aug. 15, 1983, abandoned. This application Sep. 27, 1984, Ser. No. 654,902

Int. Cl.³ C11D *1/83, 3/18, 3/43, 11/00*

U.S. Cl. 252—170 **7 Claims**

1. A process for producing a d-Limonene cleaning agent, which comprises the following steps:

a. providing d-Limonene compound;

b. blending said compound with a 2:1 to 3:1 ratio of a liquid detergent selected from anionic and ionic surfactants and mixtures thereof;

c. agitating said blended mixture;

d. adding a mixture of bicarbonate of soda and slaked lime solution in a range of 2:1 to 3:1 by volume during the agitation of said mixture;

e. mixing said agitated mixture with pressurized water at a ratio of 3:1 of water to d-Limonene mixture;

f. allowing said hydrated mixture to separate into a top emulsified layer and a bottom clear liquid layer; and

g. decanting said clear liquid layer for use as said cleaning agent.

4,533,488

PYRIMIDINE DERIVATIVES

Masahiro Fukui; Kisei Kitano; Masami Tanaka, and Yasuyuki Goto, all of Yokohamashi, Japan, assignors to Chisso Corporation, Osaka, Japan

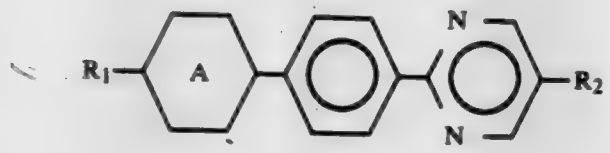
Filed Aug. 24, 1983, Ser. No. 525,881

Claims priority, application Japan, Aug. 26, 1982, 57-148283

Int. Cl.³ C09K *3/34;* **G02F** *1/13;* **C07D** *239/26, 239/24*

U.S. Cl. 252—299.61 **12 Claims**

1. A compound having the general formula



wherein R_1 and R_2 each represent an alkyl group or an alkyloxy group having 1 to 10 carbon atoms and



represents a cyclohexane ring or benzene ring.

4,533,489

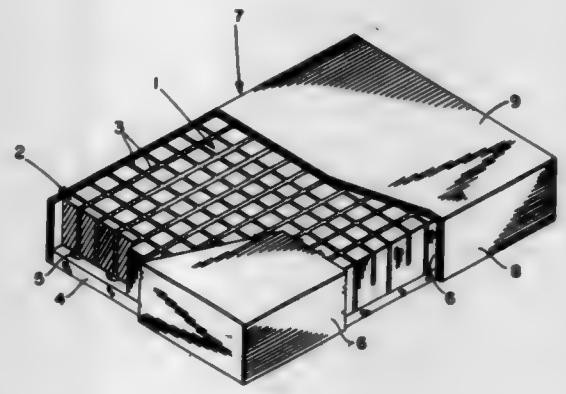
FORMABLE LIGHT REFLECTIVE COMPOSITIONS

Bradley K. Utts, Oakwood Village, and Oley D. Wimer, Hudson, both of Ohio, assignors to Harshaw/Filtrol Partnership, Cleveland, Ohio

Filed Dec. 7, 1983, Ser. No. 559,150

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—301.17 **25 Claims**



1. A light-reflective, self-leveling flowable and curable composition comprising a silicone resin containing a mixture of aluminum oxide particles wherein the particles comprise a mixture of

(a) particles having an average particle size of about 3 microns, and

(b) particles having an average particle size of about 0.03 microns, said mixture of particles being present in an amount sufficient to provide the desired light-reflectance/transmittance characteristics to the cured composition.

4,533,490

PROCESS FOR PRODUCING WATER GLASS FOAMS FROM AEROSOL CONTAINERS

Hermann Kluth; Bernhard Röderhoff, both of Dusseldorf; Wolfgang Friedemann, Neuss; Jürgen Wegner, and Wolfgang Dierichs, both of Dusseldorf, all of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Jul. 19, 1983, Ser. No. 515,040

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244523

Int. Cl.³ B01J *13/00;* **C04B** *43/00;* **C09K** *3/30*

U.S. Cl. 252—305 **19 Claims**

1. A process for producing in situ foams based on alkali metal silicates characterized in that (A) an aqueous alkali metal silicate solution containing from 0.1% to 2.56% by weight, based on the amount of said alkali metal silicate solution of an emulsifier which is stable to alkalis and which, when mixed with said alkali metal silicate solution, does not produce any increase in viscosity or any precipitations in said alkali metal silicate solution, said emulsifier being selected from the group consisting of adducts of fatty alcohols with ethylene oxide and monoesters of sulfosuccinic acid with tallow fatty acid monoethanolamide, on the one hand and (B) a hardener solution on the other hand are accomodated in separate pressurized containers A and B, prior to use the hardener solution in container B is added to and mixed with the silicate solution in container A in the presence of a propellent gas liquid under high pressure between 0° and 50° C., and on actuation of the discharge valve of container A, an alkali metal silicate foam is discharged.

4,533,491

ORGANOLEPTIC USE OF METHYL SUBSTITUTED PINYL OXOPENTENES

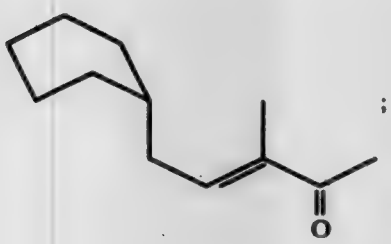
Braja D. Mookherjee, Holmdel; Robert W. Trenkle, Bricktown; Robin K. Wolff, Point Pleasant; Richard M. Boden, Ocean, and Takao Yoshida, West Long Branch, all of N.J., assignors to International Flavors & Fragrances, Inc., New York, N.Y.

Division of Ser. No. 396,485, Jul. 8, 1982, Pat. No. 4,424,378, which is a continuation-in-part of Ser. No. 362,237, Mar. 26, 1982, Pat. No. 4,428,387. This application May 20, 1983, Ser. No. 496,679

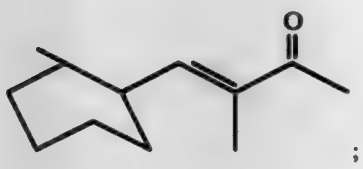
Int. Cl.[3] A61K *7/46*

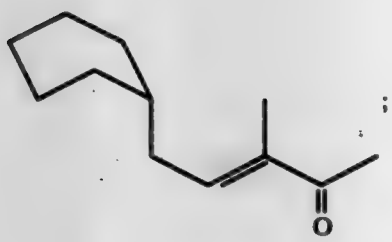
U.S. Cl. 252—522 R 1 Claim

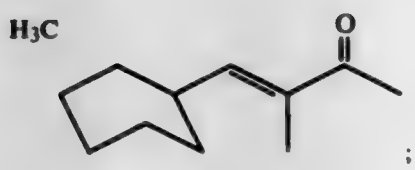
1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions and colognes comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one bicyclic oxo compound having a structure selected from the group consisting of compounds having the structures:

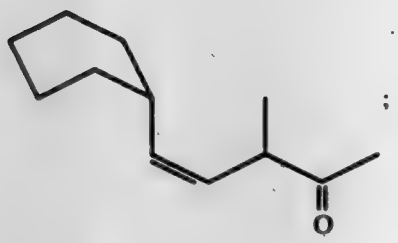




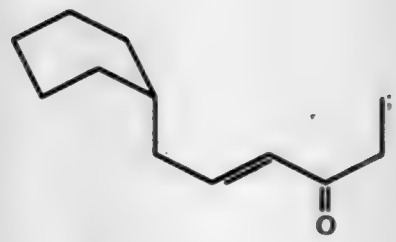


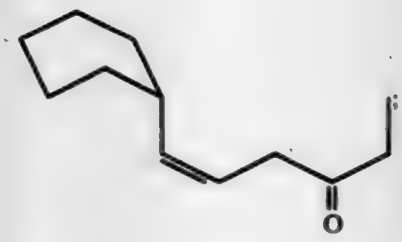




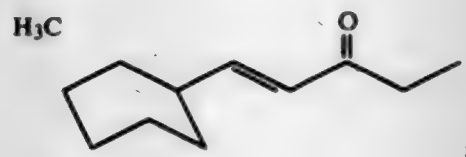


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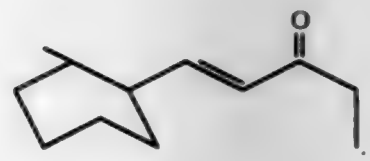








and



4,533,492

ACETYL DIMETHYLBUTYLCYCLOHEXENE AND ORGANOLEPTIC USES THEREOF

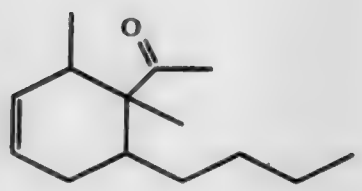
Richard J. Tokarzewski, Atlantic Highlands, and William L. Schreiber, Jackson, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 482,824, Apr. 7, 1983, Pat. No. 4,449,009. This application Feb. 9, 1984, Ser. No. 578,626

Int. Cl.[3] C11B *9/00*

U.S. Cl. 252—522 R 7 Claims

1. A process for augmenting or enhancing the aroma or taste of a consumable material selected from the group consisting of perfume compositions, colognes, perfumed articles, smoking tobacco compositions and smoking tobacco articles comprising the step of adding to said consumable material an aroma or taste augmenting or enhancing quantity of the compound defined according to the structure:



4,533,493

THEOPHYLLINE IMMUNOGENS, ANTIBODIES, LABELED CONJUGATES, AND RELATED DERIVATIVES

Jeffrey L. Benovic, Durham, N.C.; Robert T. Buckler, Edwardsburg, Mich.; John F. Burd, and Thomas M. Li, both of Elkhart, Ind., assignors to Miles Laboratories, Inc., Elkhart, Ind.

Filed Aug. 27, 1981, Ser. No. 296,817
Int. Cl.[3] C07G *7/00, 7/02*
U.S. Cl. 260—112 B 15 Claims

1. A theophylline immunogen comprising theophylline covalently linked at its 9-position to an immunogenic carrier material.

4,533,494

PROCESS FOR PURIFYING SECRETIN

Mikio Uchiyama, Urawa; Takashi Sato, Tokyo; Hiroshi Yoshino, Abiko; Yutaka Tsuchiya, Tokyo; Masayuki Konishi, Ichinomiya; Masahiko Tsujii, Kagamihara; Yoshihiko Hisatake, Kohnan, and Atsushi Koiwa, Gifu, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 465,691
Claims priority, application Japan, Feb. 15, 1982, 57-21311
Int. Cl.[3] C07C *103/52*
U.S. Cl. 260—112.5 R 10 Claims

1. A process for purifying crude secretin selected from the group consisting of synthetic crude secretin and natural crude secretin, which comprises subjecting the crude secretin to reversed-phase, high-performance, liquid chromatography using, as an eluant, a solvent mixture of (1) an aqueous solution of a substance selected from the group consisting of hydrochloric acid, trifluoroacetic acid, phosphoric acid, perchloric acid, sodium phosphate and sodium perchlorate, and (2) a polar organic solvent which is miscible with water and is selected from the group consisting of acetonitrile, methyl alcohol, ethyl alcohol, isopropyl alcohol and tetrahydrofuran, and using, as a stationary phase, column packing of silica gel particles having alkyl or cyanopropyl groups chemically bonded thereto, and thereby obtaining a purified secretin having a biological activity of higher than 5000 cu/sq; (as acetate) and higher than 6000 cu/mg (on dry, free basis).

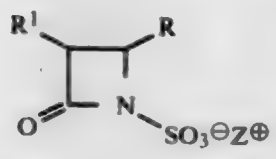
4,533,495

METHOD OF PRODUCING 2-AZETIDINONE-1-SULFONIC ACID COMPOUNDS

Kouichi Yoshioka, Kyoto, and Michihiko Ochiai, Suita, both of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

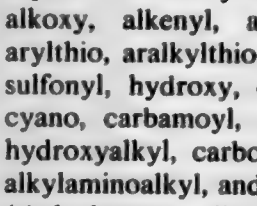
PCT No. PCT/JP82/00044, § 371 Date Dec. 30, 1982, § 102(e) Date Dec. 30, 1982
PCT Filed Feb. 19, 1982, Ser. No. 456,075
Int. Cl.[3] C07D *205/08, 403/12, 403/06, 401/12*
U.S. Cl. 260—239 A 4 Claims

1. A method of producing a compound of the formula:



wherein R is

(1) a group of the formula:



wherein n is an integer of 0 to 3; R^2 and R^3 which may be the same or different, stand for hydrogen, alkyl, cycloalkyl*, aralkyl*, aryl*, heterocyclic* group, alkoxycarbonyl or acyl, or R^2 and R^3 taken together stand for oxo; and R^4 is hydrogen, alkyl, cycloalkyl*, aryl*, a heterocyclic* group, halogen, cyano, hydroxy, alkoxy, aryl*-oxy, aralkyl*-oxy, acyloxy, carbamoyloxy, hydroxysulfonyloxy, alkylsulfonyloxy, aryl*-sulfonyloxy, sulfoxy, nitro, amino, azido, carboxy, alkoxycarbonyl, alkoxycarbonylalkyloxy, aminocarbonyl, alkylthiocarbonyl, acyl, mercapto, alkylthio, aminoalkylthio, acylaminoalkylthio, aralkyl*-thio, aryl*-thio, or heterocyclic*-thio [or quaternary ammonium*],

(2) unsubstituted or substituted alkenyl or alkynyl, the substituent being cycloalkyl*, cycloalkenyl*, aryl*, a heterocyclic* group, alkoxycarbonyl, acyl, oxo, halogen, cyano, hydroxy, alkoxy, aryl*-oxy, acyloxy, carbamoyloxy, hydroxysulfonyloxy, alkylsulfonyloxy, aryl*-sulfonyloxy, nitro, amino, carboxy, aminocarbonyl, alkylthiocarbonyl, mercapto, alkylthio, aminoalkylthio, acylaminoalkylthio, aralkyl*-thio, aryl*-thio, or heterocyclic*-thio [or quaternary ammonium*], or

(3) unsubstituted or substituted cycloalkyl, cycloalkenyl, aryl or a heterocyclic group, the substituent being alkyl, alkoxy, alkenyl, aryl, aralkyl, mercapto, alkylthio, arylthio, aralkylthio, alkylsulfonyl, arylsulfonyl, aralkylsulfonyl, hydroxy, oxo, thioxo, halogen, nitro, amino, cyano, carbamoyl, carboxy, acyl, acyloxy, acylamino, hydroxyalkyl, carboxyalkyl, haloalkyl or mono- or dialkylaminoalkyl, and in the above groups (1) to (3),

(a) the heterocyclic group is 2- or 3-pyrrolyl, 2- or 3-furyl, 2- or 3-thienyl, 2- or 3-pyrrolidinyl, 2-, 3- or 4-pyridyl, N-oxido-2-, 3- or 4-pyridyl, 2-, 2-, 3- or 4-piperidinyl, 2, 3- or 4-pyranyl, 2-, 3- or 4-thiopyranyl, pyrazinyl, 2-, 4- or 5-thiazolyl, 2-, 4- or 5-oxazolyl, 3-, 4- or 5-isothiazolyl, 3-, 4- or 5-isoxazolyl, 2-, 4- or 5-imidazolyl, 3-, 4- or 5-pyrazolyl, 3- or 4-pyridazinyl, N-oxido-3- or 4-pyridazinyl, 2-, 4- or 5-pyrimidinyl, N-oxido-2-, 4- or 5-pyrimidinyl, piperazinyl, 4- or 5-(1,2,3-thiadiazolyl), 3- or 5-(1,2,4-thiadiazolyl), 1,3,4-thiadiazolyl, 1,2,5-thiadiazolyl, 4- or 5-(1,2,3-oxadiazolyl), 3- or 5-(1,2,4-oxadiazolyl), 1,3,4-oxadiazolyl, 1,2,5-oxadiazolyl, 1,2,3- or 1,2,4-triazolyl, 1H- or 2H-tetrazolyl, pyrido [2,3-d]pyrimidyl, benzopyranyl, 1,8-, 1,5-, 1,6-, 1,7-2,7- or 2,6-naphtyhridyl, quinolyl or thieno [2,3-b]pyridyl,

(b) the acyl group and the acyl moiety of the acyloxy, acylaminoalkylthio or acylamino is C_{1-6} alkylcarbonyl, benzoyl, 4-hydroxybenzoyl, 4-methoxybenzoyl, phenylacetyl, 4-hydroxyphenylacetyl, 4-methoxyphenylacetyl, 2-thienylcarbonyl, 2-furylcarbonyl, 2-, 4- or 5-thiazolylacetyl, 2- or 3-thienylacetyl, 2- or 3-furylacetyl or 2-amino-4- or 5-thiazolylacetyl, and

(c) the cycloalkyl, aralkyl, aryl, heterocyclic and cycloalkenyl group with subscript asterish "*" may be substituted with the substituent as defined above in (3),

R^1 is

(1)′ an amino,

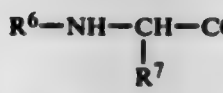
(2)′ an acylated amino group wherein the acyl moiety is

(i) a group of the formula:

R^5—CO—

wherein R^5 is alkyl other than C_{1-5} alkyl—CH_2— or a heterocyclic* group,

(ii) a group of the formula:

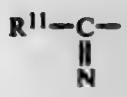


wherein R^6 is hydrogen, an amino acid residue, an amino-protective group or a group R^8—$(CH_2)_{n1}$—CO— where R^8 is a heterocyclic* group and n_1 is an integer of 0 to 2, and R^7 is an alkyl, phenyl*, heterocyclic*-carbonylamino or a heterocyclic group,

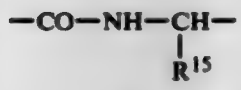
(iii) a group of the formula:

R^9—R^{10}—CO—

wherein R^9 is a group

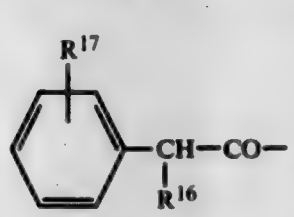


where R^{11} is alkyl*, a heterocyclic* group or phenyl* and R^{12} is hydrogen, an alkyl, alkenyl or a group —R^{13}—R^{14} where R^{13} is an alkylene or alkenylene and R^{14} is phenyl*, carboxyl or an ester thereof, or mono- or dialkylamino, and R^{10} is a direct bond or a group



where R^{15} is an alkyl, phenyl* or thiazolyl*,

(iv) a group of the formula:



wherein R^{16} is hydroxy, hydroxysulfonyloxy, carboxy, ureido*, sulfamoyl*, sulfo, phenoxycarbonyl* or formyloxy and R^{17} is hydrogen, an alkyl, an alkoxy, halogen, nitro or hydroxy, or

(v) a group of the formula:

R^{18}—R^{19}—CH_2—CO—

wherein R^{18} is cyano, phenyl*, phenoxy*, an alkyl*, alkenyl* or a heterocyclic* group and R^{19} is a direct bond or —S—, and in the above groups (i) to (v),

(a)′ the heterocyclic group is as defined above in the group R,

(b)′ the amino acid residue is glycyl, alanyl, valyl, leucyl, isoleucyl, seryl, theonyl, cysteinyl, cystyl, methionyl, α- or β-aspartyl, α- or τ-glutamyl, lysyl, arginyl, phenylalanyl, phenylglycyl, tyrosyl, histidyl or tryptophanyl,

(c)′ the amino-protective group in R is phthaloyl, p-nitrobenzoyl, p-tert-butylbenzoyl, p-tert-butylbenzenesulfonyl, benzenesulfonyl, toluenesulfonyl, formyl, acetyl, propionyl, monochloroacetyl, dichloroacetyl, trichloroacetyl, methanesulfonyl, ethanesulfonyl, trifluoroacetyl, maleyl succinyl, methoxycarbonyl, ethoxycarbonyl, t-butoxycarbonyl, isopropoxycarbonyl, 2-cyanoethoxycarbonyl, β, β, β, -trichloroethoxycarbonyl, β-trimethylsilylethoxycarbonyl, β-methylsulfonylethoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, p-methoxybenzyloxycarbonyl, di-phenylmethyloxycarbonyl, methoxymethyloxycarbonyl, acetylmethyloxycarbonyl, isobornyloxycarbonyl, phenyloxycarbonyl, trityl, 2-nitrophenylthio, benzylidene, 4-nitrobenzylidene, trialkylsilyl, benzyl or p-nitrobenzyl,

(d)′ the alkyl group with a superscript asterisk "*" may be substituted with halogen, hydroxy, cyano or trifluoromethyl,

(e)′ the ester of carboxyl in R^{14} is an alkyl ester having 1 to 6 carbon atoms,

(f)′ the ureido with a superscript asterisk "*" may be substituted sulfo in the form of salt with sodium or potassium; carbamoyl; sulfamoyl; amidino; or an alkyl having 1 to 3 carbon atoms,

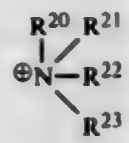
(g)′ the sulfamoyl with a superscript asterisk "*" may be substituted with an alkyl having 1 to 3 carbon atoms or amidino,

(h)′ the alkenyl with a superscript asterisk "*" may be substituted with carboxy or cyano, and

(i)′ the heterocyclic, phenyl, thiazolyl, phenoxycarbonyl and phenoxy with a superscript asterisk "*" may be substituted with the substituent as defined above in (3)

(3)′ amino protected with phthaloyl, p-nitrobenzoyl, p-tert-butylbenzoyl, p-tert-butylbenzenesulfonyl, benzenesulfonyl, toluenesulfonyl, formyl, monochloroacetyl, dichloroacetyl, trichloroacetyl, methanesulfonyl, ethanesulfonyl, trifluoro-acetyl, maleyl, succinyl, methoxycarbonyl, ethoxycarbonyl, t-butoxycarbonyl, isopropoxycarbonyl, 2-cyanoethoxycarbonyl, β, β, β-tri-chloroethoxycarbonyl, β-trimethylsilylethoxycarbonyl, β-methylsulfonylethoxycarbonyl, benzyloxycarbonyl, p-nitrobenzyloxycarbonyl, p-methoxybenzyloxycarbonyl, diphenylmethyloxycarbonyl, methoxymethyloxycarbonyl, acetylmethyloxycarbonyl, isobornyloxycarbonyl, pnenyloxy-carbonyl, trityl, 2-nitrophenylthio, benzylidene, 4-nitrobenzylidene, trialkylsilyl, benzyl or p-nitrobenzyl, or

(4)′ an azide group, and in the above (1)–(3) and (2) ′, the amino, carboxyl and hydroxyl group may be protected; the alkyl is C_{1-6} alkyl; the cycloalkyl is C_{3-8} cycloalkyl; the alkenyl is C_{2-6} alkenyl; the alkynyl is C_{2-6} alkynyl; the cycloalkenyl is C_{3-8} cycloalkenyl; the aryl is phenyl, α-naphthyl, β-naphthyl, biphenyl or anthryl; the alkoxy is C_{1-6} alkoxy; the aralkyl is benzyl, phenethyl, phenylpropyl or naphthylmethyl; the alkylene is C_{1-3} alkylene; and the alkenylene is C_{2-4} alkenylene, and $Z^{\oplus}$ is a group of the formula:



wherein R^{20}, R^{21}, R^{22} and R^{23} each is an alkyl*, cycloalkyl*, alkenyl*, cycloalkenyl or aryl as defined above in the groups R and R^1 and the total number of carbon atoms of R^{20}–R^{23} is 10 to 30, characterized by reacting a compound of the formula:

$$R—CH{=}N—SO_3^{\ominus}Z^{61}$$

wherein the symbols have the same meanings as respectively defined above, with (1) an acid halide, (2) an acid anhydride, (3) an amide with pyrazole, imidazole, 4-substituted imidazole, dimethylpyrazole or benzotriazole, (4) an ester from the group of methyl ester, ethyl ester, methoxymethyl ester, propargyl ester, 4-nitrophenyl ester, 2,4-dinitrophenylester, trichlorophenyl ester, pentachlorophenyl ester, mesylphenyl ester and esters with 1-hydroxy-1H-2-pyridone, N-hydroxy-succinamide or N-hydroxyphthalimide or (5) a thioester with 2-pyridylthiol or 2-bensothiazolylthiol of a carboxylic acid of the formula:

$$R^1—CH_2COOH$$

wherein R^1 has the same meaning as defined above, in the presence of a base.

4,533,496

METHOD OF ISOLATING MONOCLONAL ANTIBODIES FROM HYBRIDOMA CULTURES

Charles Lewis, Jr., Hazelwood; Jitka V. Olander, University City, and William R. Tolbert, Manchester, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed May 8, 1984, Ser. No. 608,283

Int. Cl.[3] **C07G** *7/00, 7/028*

U.S. Cl. 260—112 R **15 Claims**

1. A method of isolating monoclonal antibodies from spent culture medium of the in vitro growth of hybridoma cells comprising treating said spent cell culture medium or a concentrate thereof by adsorption with a water-insoluble, cross-linked polyelectrolyte copolymer of olefinically unsaturated monomer having from 2 to about 4 carbon atoms and α,β-unsaturated polycarboxylic acid or anhydride having from 4 to about 6 carbon atoms containing pendant diloweralkylaminoloweralkylimide functional groups.

4,533,497

N-ETHYLIDENE AZETIDINONES

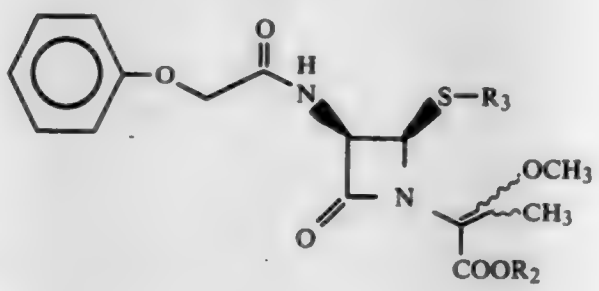
Douglas O. Spry, Mooresville, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Dec. 27, 1982, Ser. No. 453,563

Int. Cl.[3] **C07D** *205/08, 401/06, 403/12, 403/06*

U.S. Cl. 260—239 A **6 Claims**

1. A compound of the formula

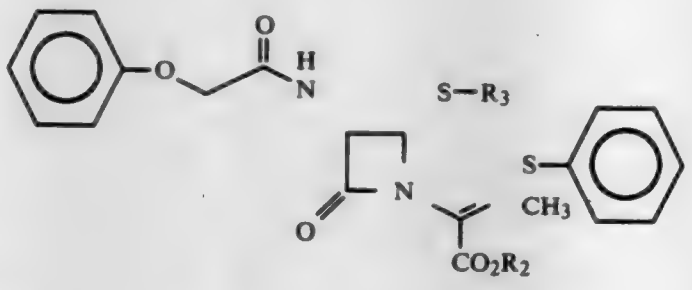


wherein:

R_2 is hydrogen, methyl, benzyl, 4-methoxybenzyl, diphenylmethyl, or t-butyl; and

R_3 is C_1 to C_4 alkyl or phenyl.

4. A compound of the formula



wherein:

R_2 is hydrogen, methyl, benzyl, 4-methoxybenzyl, diphenylmethyl, or t-butyl; and

R_3 is C_1 to C_4 alkyl or phenyl.

4,533,498

COMPOUNDS

Francis E. Blaney, London; Michael S. Hadley, Sawbrideworth; Francis D. King, Newport, and Eric A. Watts, Harlow, all of England, assignors to Beecham Group p.l.c., Brentford, England

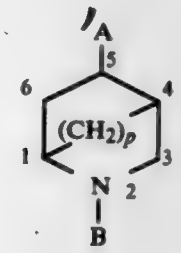
Filed Jan. 26, 1984, Ser. No. 574,089

Claims priority, application United Kingdom, Jan. 29, 1983, 8302483

Int. Cl.[3] **A61K** *31/54*

U.S. Cl. 260—243.3 **11 Claims**

1. A compound of formula (I), or a pharmaceutically acceptable salt, quaternary derivative or N-oxide thereof, or a pharmaceutically acceptable solvate of any of the foregoing:



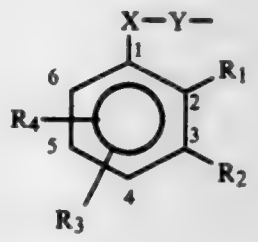
(I)

wherein

p is 1 to 3;

B is C_{1-7} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl-C_{1-2} alkyl, or a group $(CH_2)_tR_{11}$ where t is 1 or 2 and R_{11} is thienyl or furyl optionally substituted by one or two substituents selected from C_{1-6} alkyl, C_{1-6} alkoxy, trifluoromethyl or halogen, or is phenyl optionally substituted by one or two substituents selected from C_{1-4} alkoxy, trifluoromethyl, halogen, nitro, carboxy, esterified carboxy, and C_{1-4} alkyl optionally substituted by hydroxy, C_{1-4} alkoxy, carboxy, esterified carboxy or in vivo hydrolysable acyloxy; and

(i) A is a group of formula (II):



(II)

in which either

(a) one of X and Y is CO and the other is NH; and

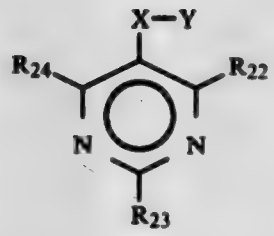
R_1 is selected from halogen, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, and amino optionally substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl C_{1-4} alkyl, phenyl and phenyl C_{1-4} alkyl groups or optionally N,N-disubstituted by C_{4-5} polymethylene; or X is CO and Y is NR_6 where R_1 and R_6 together are C_{1-2} alkylene; and

either R_2, R_3 and R_4 are each independently selected from the class of hydrogen, halogen, CF_3, C_{1-6} alkyl, C_{1-6} alkoxy, C_{1-6} alkylthio, C_{1-7} acyl, C_{1-7} carboxylic acylamino, C_{1-6} alkylsulphonylamino, N-(C_{1-6}alkyl-sulphonyl)-N-C_{1-4} alkylamino, C_{1-6} alkylsulphonyl, C_{1-6} alkylsulphinyl, hydroxy, nitro, or amino, aminocarbonyl, aminosulphonyl, aminosulphonylamino or N-(aminosulphonyl)-N-C_{1-4} alkylamino optionally N-substituted by one or two groups selected from C_{1-6} alkyl, C_{3-8} cycloalkyl, C_{3-8} cycloalkyl C_{1-4} alkyl, phenyl and phenyl C_{1-4} alkyl or optionally N,N-disubstituted by C_{4-5} polymethylene; or one of R_2, R_3 and R_4 is selected from the foregoing class and the remaining two of R_2, R_3 and R_4 when on adjacent atoms are together C_{1-2} alkylenedioxy; or

(b) one of X and Y is CO and the other is NH; R_1 and R_2 together are C_{1-2} alkylenedioxy or C_{1-2} oxyalkylenethio, or C_{2-3} alkyleneoxy in which the oxygen atom is attached to the ring at the 2-position; as depicted in formula (II); and

R_3 and R_4 are each independently selected from the class of values recited hereinbefore for R_2, R_3 and R_4 in paragraph (i) (a) hereinbefore or when on adjacent atoms are together C_{1-2} alkylenedioxy; or

(ii) A is a group of formula (III):



(III)

in which

one of X and Y is CO and the other is NH; and

R_{22}, R_{23} and R_{24} are each independently selected from the class of values of the variables R_2, R_3 and R_4 as defined hereinbefore in paragraph (i) (a) in relation to formula (II), except C_{1-2} alkylenedioxy.

4,533,499

PROCESS FOR THE PRODUCTION OF TRIARYL METHANE COMPOUNDS

Malcolm C. Clark, Cheadle; John B. Henshall, Manchester, and Derrick A. Hart, Rochdale, all of England, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

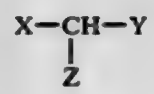
Continuation of Ser. No. 232,081, Feb. 6, 1981, abandoned. This application Apr. 6, 1984, Ser. No. 597,213

Claims priority, application United Kingdom, Feb. 14, 1980, 8005014; Oct. 10, 1980, 8032773

Int. Cl.[3] C07D *405/2, 307/83;* C09B *11/10*

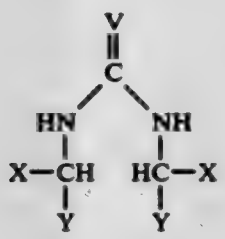
U.S. Cl. 260—391 11 Claims

1. A process for the production of a leuco compound of the formula



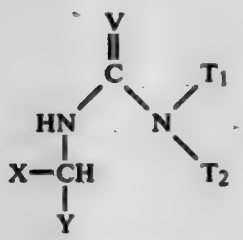
(1)

which comprises the steps of preparing either an intermediate of the formula



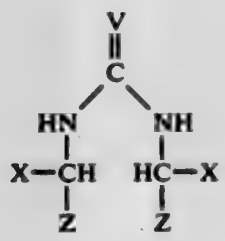
(2a)

or



(2b)

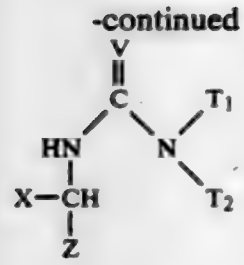
or a mixture of the compounds (2a) and (2b), or an intermediate of the formula



(2c)

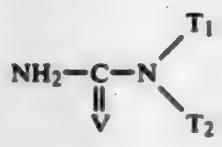
or

-continued

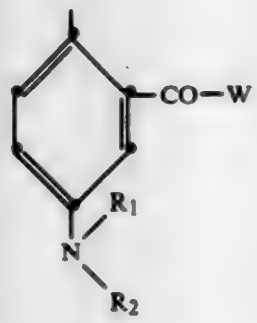


(2d)

or a mixture of compounds (2c) and (2d) by reacting under strong, non-oxidizing acidic conditions an urea derivative of the formula

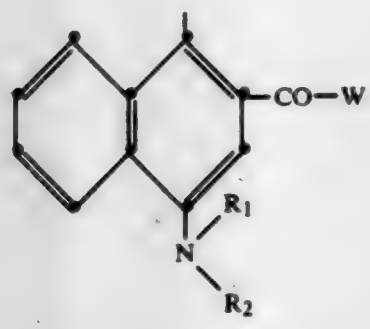


with one or two moles of an aldehyde X—CHO, Y—CHO or Z—CHO plus an equimolar amount of a compound X—H, Y—H or Z—H having an activated hydrogen atom, isolating said intermediate or mixture of intermediates, and then reacting said intermediate or mixture of intermediates with a compound of the formula Z—H or Y—H having an activated hydrogen atom under strong non-oxidizing acidic conditions, wherein Z represents an aryl radical of the formula



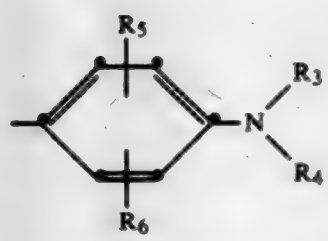
(4a)

or



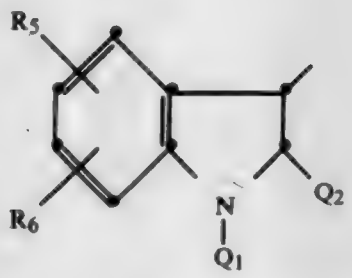
(4b)

and X and Y are the same or different and each represents an amino substituted phenyl radical of the formula



(5a)

or an indolyl radical of the formula



(5b)

wherein R_1, R_2, R_3, R_4 independently represent hydrogen, C_1–C_4-alkyl, C_2–C_4-alkoxyalkyl, C_2–C_4-cyanoalkyl, cyclohexyl, benzyl or phenyl, or each pair of substituents (R_1 and R_2) and (R_3 and R_4) together with the nitrogen atom to which said pair is attached represents pyrrolidino, piperidino or morpholino and R_5 and R_6 independently are hydrogen, halogen, methyl, methoxy or ethoxy, Q_1 represents hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl or benzyl, Q_2 represents hydrogen, C_1–C_{12}-alkyl or phenyl, W represents hydroxy, alkoxy, phenyloxy or amino, V represents oxygen, sulphur or imino and T_1 and T_2 independently represent hydrogen, C_1–C_{12}-alkyl, C_2–C_{12}-alkenyl, phenyl or benzyl, or T_1 and T_2 together with the nitrogen atom which links them represent pyrrolidino, piperidino, pipecolino, morpholino, thiomorpholino or piperazino.

4,533,500

PROCESS FOR MANUFACTURING N-ACYLIMINODIACETIC ACIDS

Yves Chauvin, Le Pecq; Dominique Commereuc, Meudon; André Hirschauer, Montesson; Dominique Reffet, Rueil-Malmaison, and Robert Stern, Paris, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison and Societe Nationale Elf-Aquitaine (Production), Paris La Defense, both of, France

Filed Mar. 17, 1983, Ser. No. 476,295

Claims priority, application France, Mar. 17, 1982, 82 04669

Int. Cl.³ C09F *5/00, 7/00;* C11C *3/00*

U.S. Cl. 260—404 **8 Claims**

1. A process for manufacturing a N-acyliminodiacetic acid by reacting formaldehyde or at least one formaldehyde generator with at least one amide unsubstituted on the nitrogen atom or with at least one generator of an amide unsubstituted on the nitrogen atom and with carbon monoxide, in the presence of a carbonylation catalyst, characterized in that the reaction is performed with a ratio of at least 2:1 of the aldehyde groups or generators thereof to the amide groups or generators thereof.

4,533,501

REFINING

Achintya K. Sen Gupta, Schenefeld, Fed. Rep. of Germany, assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 20, 1983, Ser. No. 486,647

Claims priority, application United Kingdom, Apr. 21, 1982, 8211563

Int. Cl.³ C09F *5/10;* C11B *3/00*

U.S. Cl. 260—428 **21 Claims**

1. Improved process for refining lipids by ultrafiltration wherein a liquid organic phase comprising a lipid is separated into permeate and retentate fractions containing separated components of the lipid by contact under sufficient superatmospheric pressure with a semi-permeable ultrafiltration membrane and recovering refined lipid from at least one of said fractions, and wherein the retentate fraction contains a solute impermeable to the memberane for improving separation of the said fractions and the improvement comprising adding an additive selected from the group consisting of shea gum, surfactant, soap and mixtures thereof to the lipid.

4,533,502

PLATINUM (II) COMPOUNDS AND THEIR PREPARATION

Fernande D. Rochon, and Pi-Chang Kong, both of C.P. 8888, Succ. A, Montréal, Canada (H3C 3P8)

Filed Feb. 22, 1983, Ser. No. 468,619

Int. Cl.³ C07F *15/00*

U.S. Cl. 546—8 **10 Claims**

1. A method for the preparation of an oligomer having the emperical formula $[PtLI_2]_x$ where x is a lower integer, 2 or higher and each L is the same and is ammine, a primary or secondary mono amine or a pyridine-type amine, coordinated to the Pt through the amine nitrogen, or dimethylformamide coordinated through the oxygen atom to the platinum which method comprises reacting a compound corresponding to the formula

$$cis\text{-}[PtL_2I_2]$$

where L is as defined above in the presence of a molar excess of a platinum non-reactive aqueous acid in admixture with a water miscible inert solvent for said $[PtL_2I_2]$, thereby forming said oligomer.

4,533,503

ALUMINUM BIS(ALKYLSILOXIDE)ACETOACETONATE

Jeffrey H. Wengrovius, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 520,974, Aug. 8, 1983, Pat. No. 4,489,199. This application Jun. 15, 1984, Ser. No. 621,304

Int. Cl.³ C07F *5/06*

U.S. Cl. 556—173 **4 Claims**

1. An aluminum bis(alkylsiloxide)acetoacetonate selected from the class consisting of aluminum bis(trimethylsiloxide) ethylacetoacetonate, aluminum bis(dimethoxymethylsiloxide) ethylacetoacetonate and aluminum bis(dimethoxymethylsiloxide) acetylacetonate

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4,533,504

PROCESS FOR THE PREPARATION OF DIARYL CARBONATES

Donald A. Bolon, Scotia; Thomas B. Gorczyca, Schenectady, and John E. Hallgren, Scotia, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 8, 1982, Ser. No. 338,189

The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.

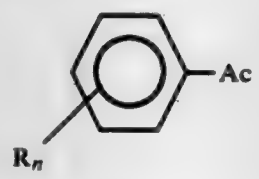
Int. Cl.³ C07C *68/04, 68/06*

U.S. Cl. 260—463 **7 Claims**

1. A process for producing diaryl and substituted diaryl carbonates utilizing phenol and substituted phenols, carbon monoxide and oxygen as raw materials, said process comprising the steps of:

A. reacting an alkanol, carbon monoxide and oxygen to produce a dialkyl carbonate of the formula R'_2CO_3 and water, and removing said water;

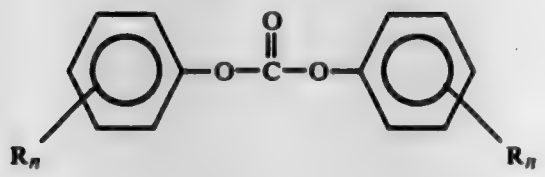
B. reacting said dialkyl carbonate of step A with a phenyl ester of the formula



in the presence of a catalyst having the formula

$$X_2SnY_2$$

to produce a diaryl carbonate of the formula



and an alkyl ester of the formula

$R'—Ac$,

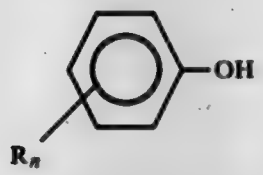
said reaction being carried out at a temperature of 150°-250° C. and a pressure of 100-300 psig;

C. heating said alkyl ester from step B to form a ketene of the formula

$R''_2C=C=O$

and the alkanol of step A;

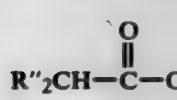
D. forming the phenyl ester of step B by reacting the corresponding phenol of the formula



with the ketene of step C; and

E. recycling the phenyl ester formed in step D to step B and the alkanol formed in step C to step A;

wherein R is independently selected from the class consisting of alkyl, alkoxy, aryl, and aryloxy groups, R′ is an alkyl group from the alkanol, each R″ is hydrogen or alkyl, Ac is an acyloxy radical of the formula



X is a C_{1-8} alkyl substituent, either each Y is independently selected from the class consisting of OX, acyloxy and halogen or both Y's are taken together to define oxygen, and n is a whole number from 0 to 3.

4,533,505

PROCESS FOR THE PREPARATION OF STYRENE DERIVATIVES AND/OR STILBENE DERIVATIVES

Alwyn Spencer, Basel, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Mar. 19, 1982, Ser. No. 360,017

Claims priority, application Switzerland, Mar. 31, 1981, 2179/81

Int. Cl.³ C07C *121/50, 1/20, 1/00*

U.S. Cl. 260—465 R **16 Claims**

1. A process for the preparation of compounds of the formula Ia or Ib

$$Z—CH=CH—Z_1 \quad \text{(Ia)}$$

or

$$CH_2=CH—Z_2—CH=CH_2, \quad \text{(Ib)}$$

in which Z represents unsubstituted or substituted phenyl or naphthyl, Z_1 represents hydrogen or has the same meaning as Z and Z_2 represents unsubstituted or substituted phenylene, naphthylene or p-biphenylene or an unsubstituted or substituted stilbene radical, which comprises reacting ethylene, under a pressure of 0.1 to 20 bar, in the presence of a base and with the addition of palladium metal or palladium compounds which form phosphorus-free labile palladium(O) compounds under the reaction conditions, as a catalyst, with a compound of the formula II or III

$$Z—COX(II) \text{ or } XOC—Z_2COX(III)$$

in which Z and Z_2 have the meanings indicated under formula Ia and Ib, respectively, and X represents chlorine, bromine or iodine.

4,533,506

RESOLUTION OF AMINO ACIDS

Meir Lahav; Lia Addadi, and Isabela Weissbuch, all of Rehovot, Israel, assignors to Yeda Research and Development Company Ltd., Rehovot, Israel

Continuation of Ser. No. 268,804, Jun. 1, 1981, Pat. No. 4,390,722. This application Jan. 3, 1983, Ser. No. 455,333

Claims priority, application Israel, Jun. 8, 1980, 60254

Int. Cl.³ C07B *19/00*

U.S. Cl. 260—501.12 **8 Claims**

1. A process for the resolution of a mixture of D- and L-forms of p-hydroxyphenylglycine p-toluene sulfonate, whereby the ratio of one desired enantiomorph to the other undesired enantiomorph of said p-hydroxyphenylglycine p-toluene sulfonate is increased in the crystalline compound obtained, as compared to the ratio in the starting material, which process comprises:

forming a supersaturated solution of said mixture;

adding, as a crystallization inhibitor, a small amount of another predetermined amino acid having a molecular structure which resembles that of one of the enantiomorphs of said racemic mixture, said crystallization inhibitor being a D-amino acid to inhibit the growing of D-amino acid when the L-amino acid is desired, or an L-amino acid when the D-amino acid is desired; and

crystallizing a portion of the p-hydroxyphenylglycine p-toluene sulfonate from said supersaturated solution.

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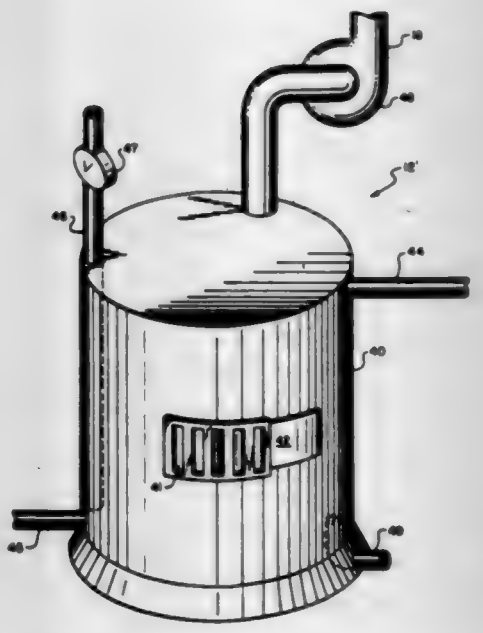
FIBER MOISTURE CONTROL IN THE FORMATION OF DRY-LAID WEBS

Thomas Tao, Neenah, Wis., assignor to James River-Dixie/-Northern, Inc., Conn.

Division of Ser. No. 274,804, Jun. 18, 1981,. This application Aug. 5, 1983, Ser. No. 520,591

Int. Cl.³ B01F *3/04*

U.S. Cl. 261—153 **2 Claims**



1. An apparatus for supplying a stream of unsaturated, moisture-laden air to a defiberizer for use in a process for air-laying fibers to form a web, said apparatus comprising:

a jacketed tank including means for supplying cooling water to the jacket of the tank;

means for supplying ambient air to the interior of said water-jacketed tank;

steam supply means for supplying a controlled amount of saturated steam to the interior of said water-jacketed tank;

means for transporting moisture-laden air from said water-jacketed tank to the defiberizer, the amount of moisture being regulated by both the steam supply means and the cooling water supply means; and

condensate discharge means for removal of condensate from the interior of said tank.

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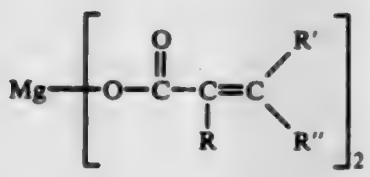
METAL OXIDE FIBERS FROM ACRYLATE SALTS

Rex R. Stevens, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Aug. 22, 1983, Ser. No. 525,383
Int. Cl.³ C04B *35/64*
U.S. Cl. 264—22 **9 Claims**

1. A process for the preparation of magnesium oxide fibers, which comprises:

(a) preparing a composition comprising a solution of a polymerization initiator, a water-soluble organic polymer and a magnesium acrylate of the formula:



wherein R, R′ and R″ are independently lower alkyl, inertly substituted lower alkyl, or H, the proportion by weight of the magnesium acrylate being greater than the proportion by weight of the organic polymer;

(b) preparing a green fiber from the composition of (a) and polymerizing the acrylate moieties of the green fiber; and

(c) treating the green fiber under conditions such that the organic matter is removed from the fiber and a magnesium oxide fiber is produced.

4,533,509

LOW COEFFICIENT OF FRICTION FILM STRUCTURE AND METHOD OF FORMING THE SAME

Lawrence J. Gust, Victor; Eileen F. O'Sullivan, Rochester, and Ronald C. Wood, Jr., Fairport, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,425
Int. Cl.³ B29D *7/24*
U.S. Cl. 264—171 **11 Claims**

1. A method of preparing a thermoplastic film structure free of organic coefficient of friction reducing agents comprising:

(a) preparing a skin resin of a finely divided, uniformly dispersed inorganic material in an optically clear thermoplastic resin, either in one step or by first preparing a concentrate of said inorganic material in said resin and diluting the concentrate with additional thermoplastic resin so that the proportion of inorganic material in the skin resin is sufficient to impart antiblock characteristics and decrease the inherent film to film coefficient of friction of an oriented film of said thermoplastic resin to about 0.4 or less;

(b) forming either simultaneously or sequentially a composite of a comparatively thin surface layer of the composition of (a) on at least one surface of a comparatively thick base layer of optically clear thermoplastic free of inorganic antiblock agents, and

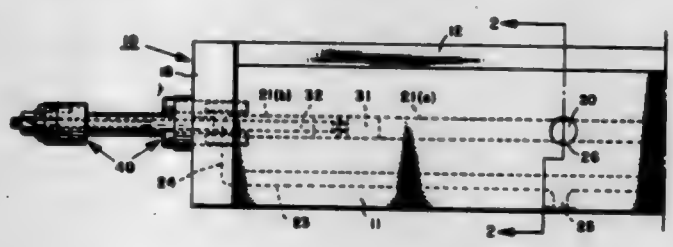
(c) orienting the composite so that the thickness of said surface layer and the proportion of said inorganic material in said surface layer is such that the % haze of the oriented composite is about 3 or less.

4,533,510

METHOD AND APPARATUS FOR CONTINUOUSLY CO-EXTRUDING A SHEET

Frank R. Nissel, 8 Carey Dr., Ambler, Pa. 19002

Filed Sep. 19, 1983, Ser. No. 533,433
Int. Cl.³ B29F *3/04*
U.S. Cl. 264—171 **11 Claims**



1. A manifold sheet extrusion die for continuously producing a sheet composed of a plurality of materials coextruded in at least three segments, one such segment being a body segment and two other segments being edge segments, along the width of the sheet, comprising:

a. a lateral distribution manifold positioned immediately upstream of an extrusion slit, the manifold and the slit extending along substantially the full width of the die;

b. dividing means for dividing the manifold into at least three sections along the length of the manifold and for precisely controlling the width of a sheet segment, one such section being a body section and two other sections being edge sections, the dividing means being substantially infinitely adjustable along the length of the manifold;

c. first feeding means for feeding a first material in a flowable state to an edge section; and

d. second feeding means for feeding a second material in a flowable state to the body section.

8. A method for continuously producing a sheet composed of a plurality of materials coextruded in at least three segments, one such segment being a body segment and two other segments being edge segments, along the width of the sheet, comprising:

a. dividing a lateral distribution manifold positioned immediately upstream of an extrusion slit, the manifold and the slit extending along substantially the full width of the die, into at least three sections, one such section being a body section and two other sections being edge sections, along the length of the manifold;

b. feeding a first material in a flowable state to the body section;

c. feeding a second material in a flowable state to the edge section; and

d. precisely controlling the widths of the manifold sections with substantially infinitely adjustable flow dividing means positioned within the manifold in order to precisely control the widths of the extruded sheet segments.

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PRODUCTION OF SYNTHETIC FIBERS

Hermann Mark, Brooklyn, N.Y., assignor to Isovolta Osterreichische Isolierstoffwerke, Wiener Neudorf, Austria

Filed Dec. 14, 1979, Ser. No. 103,585
Claims priority, application Austria, Dec. 20, 1978, 91151/78
Int. Cl.³ D01D *5/06*
U.S. Cl. 264—184 **4 Claims**

1. A process for the spinning of synthetic fibers comprising dissolving at least one polycondensation product of at least one polyfunctional phenol component with the phenolic groups attached to a central carbon atom so they are hindered in their free rotation and at least one polyfunctional carboxylic acid having an inherent viscosity η inh greater than 0.5 dl/g in a

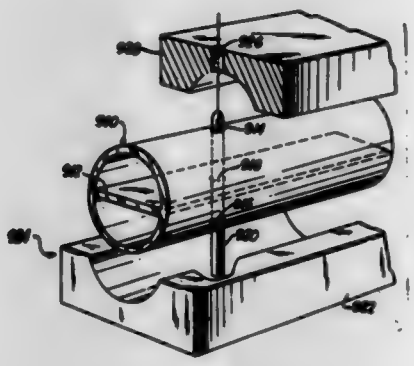
solvent with a boiling point less than 100° C. to form a spinning solution, forcing the spinning solution through spinning nozzles into a liquid precipitant for fiber formation at a temperature at least 8° C. less than the solvent boiling point to withdraw the majority of the solvent from the fibers, stretching the resulting fibers to 2 to 6 times their length and removing the residual solvent.

4,533,512

METHOD AND APPARATUS FOR BENDING MULTIPLE CHANNEL TUBING

Murray Altman, Fort Lee, and Gerald J. Bellasalma, West Caldwell, both of N.J., assignors to Thermasol, Ltd., Leonia, N.J.

Division of Ser. No. 5,377, Jan. 22, 1979, Pat. No. 4,240,166. This application Oct. 6, 1980, Ser. No. 194,356
Int. Cl.³ B29C *17/02*
U.S. Cl. 264—339 **19 Claims**



1. A method of manufacturing a liquid distribution network for a whirlpool system from a continuous piece of thermoplastic, multiple channel tubing, which includes at least a pair of channels separated by a partition, comprising the steps of providing a plurality of holes through said tubing, including said partition, at predetermined locations along the length of said tubing, said predetermined locations corresponding to sites where whirlpool jets will be attached to said tubing; softening said tubing to an extent such that said tubing is bendable; inserting a peg through each of said holes in said tubing; clamping said tubing in the vicinity of each of said holes therein; and bending said softened tubing into a desired configuration which substantially matches the outer contour of a water receptacle.

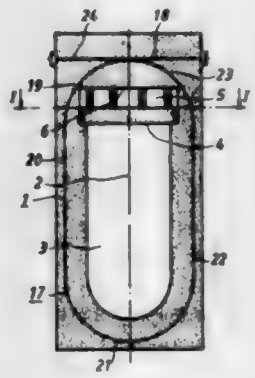
19. Apparatus useful in bending softened multiple channel tubing having a predetermined cross-sectional shape and a partition of a predetermined shape which separates the tubing into a multiplicity of channels, comprising maintaining means for maintaining the cross-sectional shape of a section of the softened tubing and for maintaining the shape of the partition and its proper orientation with respect to the rest of the tubing, said maintaining means including a first saddle clamp member positioned on one side of the tubing and a second saddle clamp member positioned on an opposite side of the tubing, said first and second saddle clamp members having surfaces with a contour which substantially matches at least a portion of the cross-sectional shape of the tubing, and a peg attached to and extending from said first saddle clamp member to said second saddle clamp member through one hole provided in said second saddle clamp member and another hole provided in the tubing, including its partition, whereby said peg cooperates with said first and second saddle clamp members to maintain the shape of the partition and its proper orientation with respect to the rest of the tubing.

4,533,513

ENCLOSING MEANS FOR HOUSING A NUCLEAR REACTOR CORE

Hans Norman, Västerås, Sweden, assignor to AB Asea-Atom, Västerås, Sweden

Filed Dec. 20, 1983, Ser. No. 563,428
Claims priority, application Sweden, Mar. 15, 1983, 8301400
Int. Cl.³ G21C *13/06*; F16J *13/00*
U.S. Cl. 376—260 **5 Claims**



1. In a water cooled nuclear reactor having a core and an enclosing means housing said core, said enclosing means comprising an elongated concrete body and a pressure chamber within said concrete body, said pressure chamber being substantially defined by a solid of revolution about a vertical, longitudinal axis of rotation, said pressure chamber having an opening directed to the axial direction and a cover arranged at said opening so as to give a pressure-tight sealing of said pressure chamber, said pressure chamber constituting only part of a larger cavity within said concrete body, said cavity in addition to said pressure chamber comprising a space located above said opening and connected with the outside of said concrete body by means of at least one transversal tunnel provided in said concrete body, said enclosing means being further characterized in that said space is defined in an upwards direction by means of a transversely extending limiting surface belonging to an integral portion of said concrete body, in that most of said limiting surface is disposed vertically above said cover, in that a gap extends vertically between said limiting surface and said cover, in that a plurality of compressive-force transmitting elements are arranged so as to bridge said gap, in that said cover is arranged relative to said space and dimensioned so as to be removable from said opening for maintenance of equipment associated with said core, and in that said at least one tunnel is dimensioned to permit transport of said cover through said tunnel upon removal of said cover from said opening.

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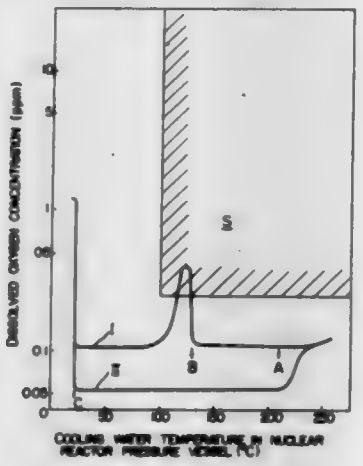
NUCLEAR REACTOR DEGASSING METHOD AND DEGASSING SYSTEM

Michiyoshi Yamamoto; Katsumi Ohsumi; Shinji Mitani; Yoshie Takashima, and Hiroo Igarashi, all of Hitachi, Japan, assignors to Hitachi, Ltd. and Hitachi Engineering Co., Ltd., both of Tokyo, Japan

Filed Oct. 15, 1981, Ser. No. 311,886
Claims priority, application Japan, Oct. 17, 1980, 55-144329
Int. Cl.³ G21C *19/32*
U.S. Cl. 376—308 **16 Claims**

1. A system for degassing a nuclear reactor comprising a nuclear reactor vessel containing a coolant with a concentration of gas therein, the coolant being in a hot temperature state during operation of the nuclear reactor, means for recirculating the coolant in the reactor vessel, means for extracting at least part of the coolant in the recirculating means, means for spraying the extracted coolant during shutdown when the coolant temperature is in at least a range between 130° C. and 100° C. into a space of the nuclear reactor vessel for separating

the gas from the coolant, and means for extracting the gas in the space of the nuclear reactor vessel so as to degasify the



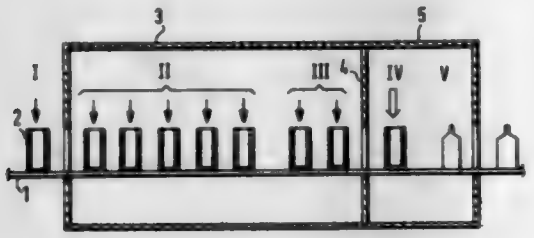
nuclear reactor vessel for preventing stress corrosion cracking of the nuclear reactor vessel and associated equipment.

4,533,515

METHOD EMPLOYING STEAM TO STERILIZE PACKAGING MATERIAL

Karl-Theo Witter; Peter Friedrich, both of Linnich, and Ulrich Ströle, Titz, all of Fed. Rep. of Germany, assignors to Papier- und Kunststoff-Werke Linnich GmbH, Dusseldorf, Fed. Rep. of Germany

Continuation of Ser. No. 322,121, Nov. 17, 1981, abandoned.
This application Mar. 22, 1984, Ser. No. 592,727
Claims priority, application Fed. Rep. of Germany, Nov. 22, 1980, 3044061
Int. Cl.³ E04B *2/00*
U.S. Cl. 422—26 **4 Claims**



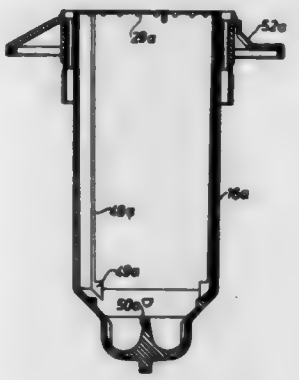
1. In the steam sterilization of packaging material, such as blanks intended for containers of acid liquids, the improvement which comprises employing a packaging material with a surface germ-count of less than approximately 1 germ/dm^2, forming the packaging material with a surface germ-count of less than approximately 1 germ/dm^2 into open containers, preheating the surfaces of the containers to 60° to 80° C. with air at 100° to 200° C., placing the containers into a sterile space after preheating, completing sterilization in the sterile space by treating the containers solely with steam at atmospheric pressure for 3 to 10 seconds including blowing the steam into the container in a sequence of five cycles of one to two seconds each in volumes of at least ten times that of the container and forming by condensation a thin film of water on the inner surface of the container that is as continuous as possible and that has a temperature of 90° to 100° C., drying the sterilized containers in the sterile space with sterile hot air at 150°–200° C. and filling the completely sterilized containers in a separate space and sealing the filled containers.

4,533,516

APPARATUS FOR THE TRANSFER OF ONE OR MORE SUBSTANCES BETWEEN A GAS AND A LIQUID

Bo A. Johnsson, Landskrona; Ingvar E. Losell; Sune H. Palmqvist, and Kaj O. Stenberg, all of Staffanstorp, all of Sweden, assignors to Gambro Cardio AB, Sweden

Filed Jul. 6, 1982, Ser. No. 395,283
Claims priority, application Sweden, Jul. 7, 1981, 8104219
Int. Cl.³ A61M *1/03*
U.S. Cl. 422—46 **14 Claims**



1. Apparatus for the transfer of one or more substances between a gas and a liquid, said apparatus comprising:

a heat exchange chamber, said heat exchange chamber defining a flow path from a first end thereof to a second end at which liquid is conducted therefrom, heat exchange means supported in said heat exchange chamber for conducting a heat exchange fluid in heat exchange relationship with said liquid as said liquid flows through said heat exchange chamber;

gas introduction means for introducing a gas in the form of bubbles into said liquid as said liquid is conducted along said flow path to thereby effect transfer of substances between said gas and said liquid, said gas introduction means being located upstream of said second end of said heat exchange chamber;

a cover having an inner surface disposed adjacent said second end of said heat exchange chamber, said second end of said heat exchange chamber being defined by a peripheral edge portion of a wall, and recesses in said peripheral edge portion of said wall cooperating with said inner surface of said cover to provide a plurality of throttling ports for conducting liquid from said heat exchange chamber, said recesses being arranged about the periphery of said heat exchange chamber; and

removal means alons said flow path downstream of second end of said heat exchange chamber for removing excess gas from said liquid together with any substances transferred from said liquid to said gas.

4,533,517

CONTROL OF A POLYMERIZATION REACTION

James A. Hofferber, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 1, 1982, Ser. No. 394,089
Int. Cl.³ B01J *8/08, 31/08*
U.S. Cl. 422—62 **4 Claims**

1. Apparatus comprising:

a polymerization reactor;

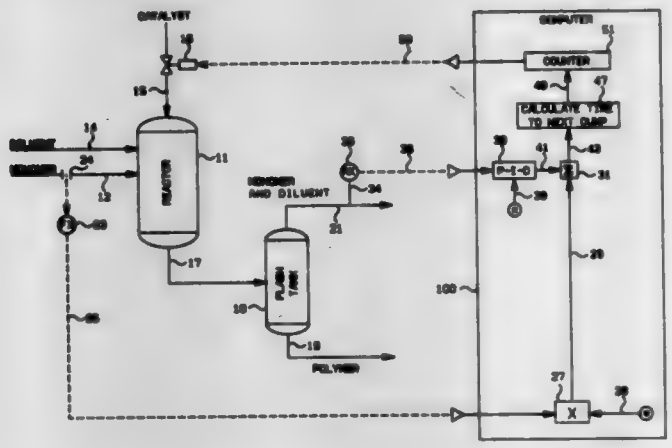
means for providing monomer to said polymerization reactor;

a catalyst feeder valve for periodically introducing catalyst into said polymerization reactor;

means for removing the reaction effluent containing polymer and unreacted monomer from said polymerization reactor;

means for establishing a first signal representative of the time which should elapse until the next actuation of said catalyst feeder valve in order to maintain a desired concentra-

tion of unreacted monomer in the reaction effluent withdrawn from said polymerization reactor, wherein actuation of said catalyst feeder valve introduces a predetermined volume of catalyst into said polymerization reactor



and wherein said first signal is established in part in response to the actual unreacted monomer concentration; and

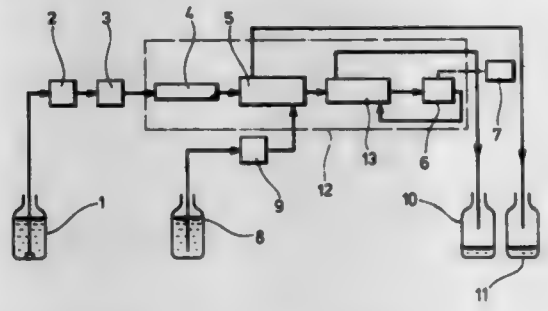
means for actuating said catalyst feeder valve when the time represented by said first signal has elapsed.

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APPARATUS FOR ANALYSIS OF ANIONS

Yuzuru Hanaoka; Takeshi Murayama; Setsuo Muramoto, and Tamizo Matsuura, all of Tokyo, Japan, assignors to Kokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Jun. 7, 1982, Ser. No. 385,570
Claims priority, application Japan, Feb. 5, 1982, 57-17121
Int. Cl.[3] G01N *31/04, 31/08;* B01D *13/00*
U.S. Cl. 422—70 **2 Claims**



1. In an apparatus for analysis of an anion comprising sample injection means for collecting a prescribed amount of a sample solution containing an anion;

a separation column connected to said sample injection means, packed with an anion exchange resin and adapted to separate said anion contained in said sample solution, said sample solution being introduced into said separation column along with an eluant solution by said sample injection means;

a source of scavenger solution of a prescribed solvent;

decationizer means connected to said separation column and to said source of scavenger solution and comprising a first compartment, a second compartment, and a wall therebetween, means connecting said first compartment to said separation column for receiving and passing an effluent solution from said separation column through said first compartment, means connecting said second compartment to said source of scavenger solution for receiving and passing said scavenger solution from said source of scavenger solution through said second compartment, said wall of said decationizer means being of a cation exchange composition and serving as a medium for exchange between a cation in said effluent solution and a cation in said scavenger solution; and

detector means for measuring the conductivity of said effluent solution; the improvement comprising

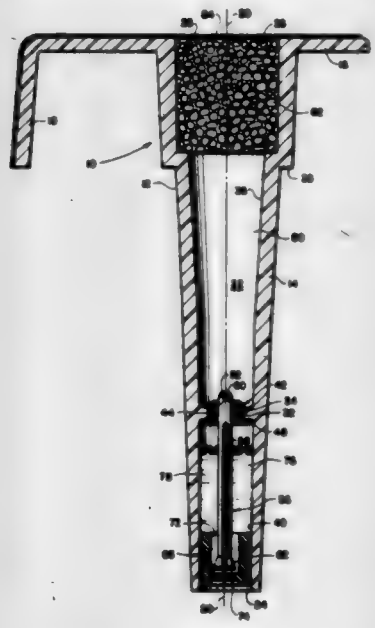
water dip effect removing means disposed between and connected to said detector means and said decationizer means and comprising a third compartment, a fourth compartment, and a wall therebetween, means connecting said third compartment to said first compartment of said decationizer means for receiving and passing said effluent solution from said first compartment through said third compartment, means connecting said detector means to said third compartment of said water dip effect removing means for receiving and passing said effluent solution from said third compartment through said detector means, means connecting said fourth compartment to said detector means for receiving and passing said effluent solution from said detector means through said fourth compartment of said water dip effect removing means, and said wall of said water dip effect removing means comprising a member pervious to carbon dioxide gas or to carbonic acid and impervious to anions, whereby said water dip effect removing means substantially removes the impact of the water dip effect of water on conductivity of said effluent solution as measured by said detector means.

4,533,519

GAS FLOW COAGULATION TEST CARTRIDGE HAVING MOVABLE MEMBER ESTABLISHING COMMUNICATION BETWEEN REAGENT AND REACTION CHAMBERS

Robert F. Baugh, Aurora; Walter J. Braun, Englewood, and Daniel Cooper, Parker, all of Colo., assignors to HemoTec, Inc., Englewood, Colo.

Filed Jul. 20, 1983, Ser. No. 515,914
Int. Cl.[3] G01N *33/16*
U.S. Cl. 422—73 **22 Claims**



1. In a cartridge in which to conduct a coagulation-related test on fluid, having a reaction chamber into which the fluid is inserted for the test and also having a reagent chamber containing reagent to be mixed with the fluid in the reaction chamber at the time of the test by transferring the reagent from the reagent chamber to the reaction chamber at the commencement of the test, an improved means for sealing the reagent in the reagent chamber prior to the test and for opening the reagent chamber and reaction chamber for communication of the reagent therebetween at the commencement of the test, comprising in combination:

separating means for separating the reagent and reaction chambers and for defining a communication opening therethrough between the chambers, and

an elongated pin member longitudinally movably retained

within the communication opening, and having a first portion initially positioned within the communication opening and of an operative configuration for sealing the communication opening when positioned therein, and also having a second portion longitudinally displaced along the pin member from the first portion and of an operative configuration for opening the communication opening to fluid communication therethrough upon longitudinal movement of said pin member positioning the first portion out of the communication opening at the commencement of the test.

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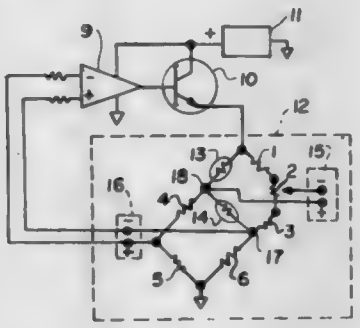
CIRCUIT FOR CONSTANT TEMPERATURE OPERATION OF A CATALYTIC COMBUSTIBLE GAS DETECTOR

Clayton J. Bossart, Monroeville, and Thomas C. Fatur, Delmont, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Jul. 2, 1984, Ser. No. 627,302

Int. Cl.³ G01N *27/16*

U.S. Cl. 422—96 **7 Claims**



1. A catalytic gas detector circuit comprising:

first and second bridge circuits, each having input and output terminals wherein an input terminal and an output terminal of said first bridge circuit are common with an output terminal and an input terminal of said second bridge circuit, respectively;

a resistive gas detector element connected between the common terminals of said first and second bridge circuit;

at least three separate impedances which are not common to both bridge circuits contained in each of said first and second bridge circuits, wherein one of said separate impedances in said first bridge circuit is a resistive compensating element which is located in series with said resistive gas detector;

means for deriving a signal indicative of gas concentration from across the output terminals of said first bridge circuit;

a source of potential for powering said bridge circuits;

a control element for varying the flow of current from said source of potential to said bridge circuits;

and means coupled to the output terminals of said second bridge circuit for controlling said control element to maintain the effective resistance of said resistive gas detector element essentially constant.

4,533,521

MIXING NOZZLE FOR TWO REACTANT COMPONENTS

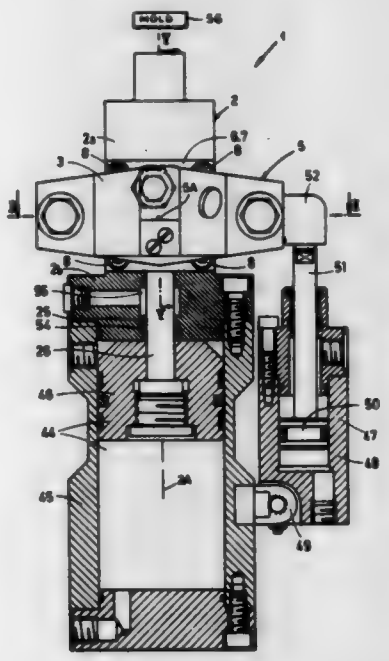
Norbert Feist, Hilchenbach, Fed. Rep. of Germany, assignor to Battenfeld Maschinenfabrik GmbH, Meinerzhagen, Fed. Rep. of Germany

Filed Jun. 29, 1984, Ser. No. 626,054

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1983, 3323366

Int. Cl.³ F04B *23/00*

U.S. Cl. 422—133 **12 Claims**



1. A mixing and extruding nozzle for two reactant components, the nozzle comprising:

a housing formed with

a mixing chamber,

a pair of parallel and oppositely directed faces flanking and turned away from the chamber,

respective injection passages having inner ends opening into the chamber and outer ends opening at the respective faces, and

respective outwardly open grooves in the faces offset from the passages;

a rocker pivotal relative to the housing about an axis perpendicular to and traversing the two faces and offset from the passages and grooves, the rocker having two like halves each formed with

a face confronting the respective housing face and

a feed passage opening at the respective rocker face offset from the axis, the rocker being pivotal about the axis relative to the housing between

a feed position with the feed passages aligned with the respective injection passages and opening therethrough into the chamber and

a return position with the feed passages out of alignment with the respective injection passages and communicating through the respective grooves with the respective return passages;

respective supply means for feeding the respective components separately under pressure to the respective feed passages and for withdrawing the respective components from the respective return passages;

respective seal rings engaged between the rocker halves and the housing; and

means for relatively pivoting the rocker and housing between the positions, whereby in the feed position the components pass from the respective feed passages through the respective injection passages into the chamber and in the return position the components flow from the feed passages through the respective grooves into the respective return passages.

4,533,522
APPARATUS FOR THE DESULFURIZATION OF FLUE GASES

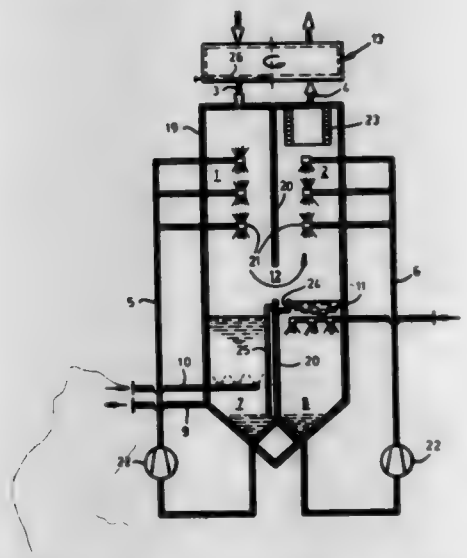
Jürgen Leimkühler, Essen, Fed. Rep. of Germany, assignor to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserrückkühlanlagen GmbH & Co. Kommanditgesellschaft, Essen, Fed. Rep. of Germany

Filed Oct. 6, 1983, Ser. No. 539,614

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236905

Int. Cl.³ B01J *10/00*

U.S. Cl. 422—170 **5 Claims**



1. An apparatus for desulfurizing a flue gas from fossil fuel combustion, comprising:

means forming an acid scrubbing column having a sump and a basic scrubbing column in side by side relation with a flue gas inlet to said acid scrubbing column and a flue gas outlet from said basic scrubbing column disposed in side by side relationship in a common plane above said columns;

means for treating flue gas in said acid scrubbing column with an acidic scrubbing liquid, for permitting flue gas to pass from said acid scrubbing column to said basic scrubbing column, and for treating flue gas in said basic scrubbing column with a scrubbing liquid at a pH higher than the pH of said acid scrubbing liquid, one of said scrubbing liquids at least containing a calcium compound whereby calcium sulfate dihydrate is formed;

means connected with said sump of said acid-scrubbing column for admitting an oxygen-containing gas thereto and for removing calcium sulfate dihydrate therefrom;

a regenerative heat exchanger having a rotating heat storage mass disposed at said plane above said columns and positioned so that said mass is heated by incoming flue gas admitted to said acid column and heats flue gas discharged from said basic column upon rotation of said mass from alignment with said inlet into alignment with said outlet; and

means in said heat exchanger for rinsing deposits from said mass with said acid scrubbing liquid above said acidic scrubbing column.

4,533,523
CORONA TREATER FOR PLASTIC FILM

Andreas Ahlbrandt, 17 Uhlandstrasse, Lauterbach, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,264

Int. Cl.³ B01J *19/08*; B29C *25/00*

U.S. Cl. 422—186.05 **11 Claims**

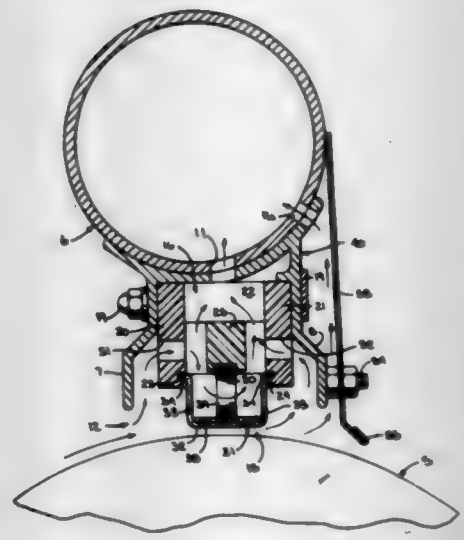
1. A corona treater which comprises:

a first conductive electrode for supporting a material to be treated in a treatment zone;

a frame;

a conductive electrode bar which is supported by the frame and which extends along the length of the first conductive electrode and is spaced therefrom;

a track supported by the frame and formed from an electrically insulating material, the track extending along the length of the conductive electrode bar and being positioned adjacent thereto; and



an electrode element slidably mounted to the track and having a brush contact which engages and makes electrical connection with the conductive electrode bar;

wherein the electrode element is positioned along the track over the material to be treated to provide an active discharge surface at a desired location.

4,533,524
POLYVINYL CHLORIDE PLASTISOLS

Christian Burba, Ascheberg-Herbern; Ulrich Goeke, Luenen, and Norbert Esper, Bergkamen, all of Fed. Rep. of Germany, assignors to Schering AG., Berlin and Bergkamen, Fed. Rep. of Germany

Filed Dec. 30, 1982, Ser. No. 454,889

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201265

The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.

Int. Cl.³ C08L *77/00, 63/00, 61/00*

U.S. Cl. 427—372.2 **9 Claims**

1. A platisol comprising a polymer of vinyl chloride, a plasticizer therefor, a filler, and from 0.5 to 5 pervent, by weight of said plastisol, of an adhesion promoter which is the condensation production formed between (A) a polyaminoamide which is, in turn, the reaction product of a polymerized fatty acid and an excess, based on carboxyl groups, of a polyalkylene polyamine, and (B) from 3 to 20 percent, by weight of the fatty acid present in said polyaminoamide, of a carboxylic acid or ester of the formula

$$R^1—(COOR^2)_n,$$

wherein R^1 is an optionally substituted saturated or unsaturated aliphatic, araliphatic, or aromatic hydrocarbon having 2 to 18 carbon atoms, R^2 is hydrogen or alkyl having from 1 to 8 carbon atoms, and n is 1 or 2.

4,533,525

METHOD FOR INHIBITING CORROSION OF METAL

Hiroshi Minamide, Sagamihara; Takashi Shintani, Yokohama, and Hiroshi Murayama, Tokyo, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Division of Ser. No. 242,546, Mar. 11, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,695

Claims priority, application Japan, Mar. 12, 1980, 55-030289

Int. Cl.[3] B32B *9/00*

U.S. Cl. 428—469 2 Claims

1. A method of inhibiting the corrosion of a metallic body which comprises coating the metallic body with a composition comprising a vitrified pigment which consists essentially of 15–80% by weight of P_2O_5 and 20–80% by weight of MgO in terms of oxides of phosphorous and magnesium respectively in a suitable vehicle, said pigment having the specific surface area of at least 0.1 m^2/g and produced by mixing a phosphorus containing material with a magnesium-containing material, heating the mixture to molten form, and quickly quenching the molten mixture by projection or spraying the mixture into a jetting current of water.

4,533,526

PROCESS FOR RECOVERING POLYMETAL COMPOUNDS DISCHARGED FROM A SUBMARINE HYDROTHERMAL SOURCE AND DEVICES FOR CARRYING OUT THE SAME

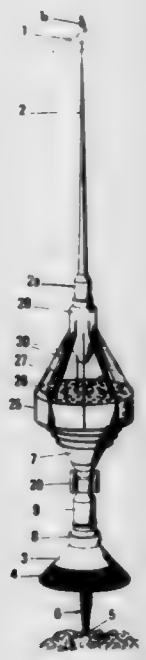
Jacques Delacour, Paris; Emile Levallois, Courbevoie; Patrick Antier, Niort, and Francois-Xavier Saint Martin, Epinal, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 21, 1982, Ser. No. 451,674

Claims priority, application France, Dec. 21, 1981, 81 24049

Int. Cl.[3] C01B *17/20*

U.S. Cl. 423—1 10 Claims



1. A process for recovering polymetal compounds comprising metal sulfides discharged from a submarine hydrothermal source, comprising withdrawing hydrothermal fluid in the immediate vicinity of the mouth of said hydrothermal source, thereby avoiding substantial interaction with surrounding sea water to maintain the initial concentration of polymetal compounds, concentrating polymetal compounds, at a location underwater in the so-withdrawn fluid, and raising to the surface of the water a fluid enriched with polymetal compounds.

4,533,527

TUNGSTEN RECOVERY FROM CARBIDES

George Farrell, Northwich; Diana M. Anderson, Runcorn, and Michael E. Walton, Stockport, all of England, assignors to Interox Chemicals Limited, London, England

Filed Aug. 17, 1983, Ser. No. 523,956

Claims priority, application United Kingdom, Sep. 4, 1982, 8225261

Int. Cl.[3] C01G *41/00*

U.S. Cl. 423—53 8 Claims

1. In a process for the recovery of tungsten from tungsten carbide in which tungsten carbide is contacted with excess hydrogen peroxide in aqueous solution to solubilize tungsten values the improvement in which the tungsten carbide is in powder form and the contact is effected in the presence of a catalytic amount of hydrochloric acid selected in the range of from 0.05 moles to 4 moles, of hydrochloric acid per mole of tungsten at a temperature maintained in the range of 55° to 85° C.

4,533,528

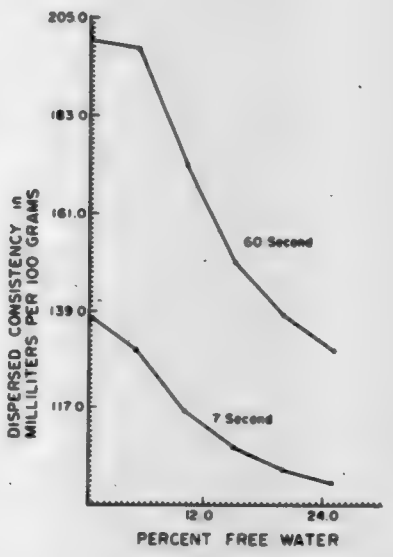
PROCESS FOR CONTINUOUSLY CALCINING GYPSUM TO LOW DISPERSED CONSISTENCY STUCCO

Michael F. Zaskalicky, Lutherville, Md., assignor to United States Gypsum Company, Chicago, Ill.

Filed Jul. 15, 1983, Ser. No. 514,175

Int. Cl.[3] C04B *11/00*

U.S. Cl. 423—171 9 Claims



1. The process for continuously calcining gypsum to beta hemihydrate which consists essentially of initially charging a continuous atmospheric pressure kettle calciner with gypsum; heating the gypsum in the kettle to the required calcining and fluidizing temperature to cause the gypsum to calcine to beta hemihydrate; and

when the gypsum in the kettle has calcined to beta hemihydrate and been withdrawn from the kettle, adding a substantially continuous stream of wet gypsum to the upper strata of the mass in the kettle and withdrawing a substantially continuous stream of beta hemihydrate having a lower dispersed consistency than the initials discharge of hemihydrate,

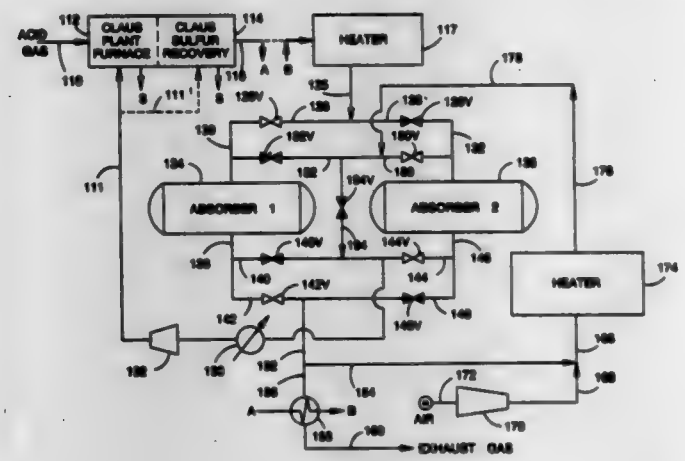
the wet gypsum containing from about 5 to about 40% by weight of associated free water.

4,533,529

SULFUR RECOVERY PROCESS

Min-Hsiun Lee, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Oct. 21, 1983, Ser. No. 544,335
Int. Cl.³ B01D *53/36*
U.S. Cl. 423—230 **32 Claims**



1. Process for the recovery of sulfur from a Claus plant effluent stream comprising:

(a) introducing a Claus plant effluent stream containing hydrogen sulfide, and sulfur dioxide and water into an absorber zone comprising a zinc oxide sorbent, sufficient reducing equivalents being present in the thus introduced stream for converting substantially all sulfur compounds present to hydrogen sulfide;

(b) reacting hydrogen sulfide and sulfur dioxide in the presence of said reducing equivalents and of the zinc oxide sorbent in the absorber zone at a temperature effective for removing hydrogen sulfide and sulfur dioxide from the Claus plant effluent stream and removing hydrogen sulfide and sulfur dioxide from the Claus plant effluent stream in the presence of the zinc oxide sorbent and producing a laden sorbent and an absorber zone effluent stream of reduced sulfur compound content; and

(c) regenerating the laden sorbent by passing an oxygen containing gas in contact therewith and producing a regenerated sorbent and a regeneration effluent stream containing at least one of elemental sulfur and sulfur dioxide.

4,533,530

PROCESS FOR THE SEPARATION OF VOLATILE CHLORINE COMPOUNDS FROM THE EXHAUST GASES RESULTING FROM THE CHLORINATION OF TITANIUM-CONTAINING RAW MATERIALS

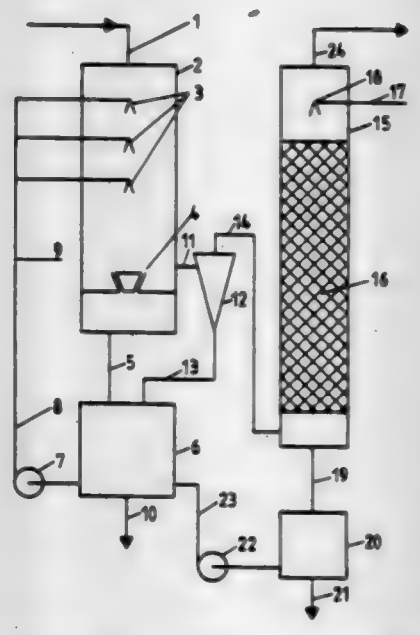
Achim Hartmann, Pulheim, Fed. Rep. of Germany, assignor to Kronos Titan, GmbH, Fed. Rep. of Germany

Filed Aug. 9, 1984, Ser. No. 639,215
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1983, 3328675
Int. Cl.³ B01D *53/34*; C01C *17/03*
U.S. Cl. 423—240 **18 Claims**

1. A process for the separation of volatile chlorine compounds from the exhaust gases resulting from the chlorination of titanium-containing raw materials comprising:

(a) contacting the exhaust gases in a first absorption stage with an aqueous solution of titanium oxide chloride having a concentration, calculated as titanium dioxide, in the range of from 100 to 170 g TiO_2/1; and

(b) subsequently contacting the exhaust gases in a second absorption stage with water in a volume adequate to absorb



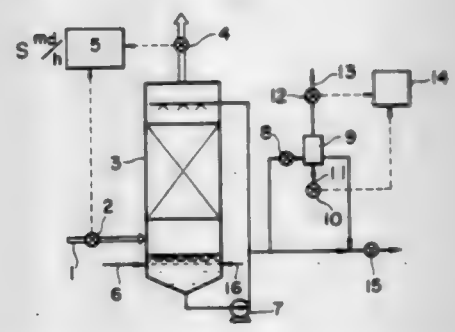
hydrogen chloride and convert it into hydrochloric acid having a concentration of 27 to 32% by weight HCl.

4,533,531

EXHAUST FUME DESULFURIZATION PROCESS

Naoharu Shinoda; Atsushi Tatani; Naohiko Ukawa, and Susumu Okino, all of Hiroshima, Japan, assignors to Mitsubishi Jokogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,137
Int. Cl.³ B01D *53/34*
U.S. Cl. 423—242 **12 Claims**



1. An exhaust fume desulfurization process which comprises the steps of:

contacting an off-gas containing SO_2 with a slurry containing calcium and manganese compounds;

introducing a gas containing oxygen into said slurry;

detecting the amount of the absorption of oxygen by said slurry;

regulating the amount of manganese present in the slurry based upon the amount of oxygen absorbed by said slurry whereby the desulfurization rate is correspondingly adjusted; and

recovering the desulfurized gas product.

4,533,532

CARBOXYLIC ACID ACTIVATED DRY CALCIUM ABSORBENT METHOD FOR REMOVING SULFUR DIOXIDE FROM A FLUE GAS

Georg R. U. Gebhard, Reichshof; Klaus R. G. Hein, Bergheim-Ahe, and Wolfgang Glaser, Frechen, all of Fed. Rep. of Germany, assignors to Rheinisch-Westfallisches Elektrizitatswerk Aktiengesellschaft, Essen, Fed. Rep. of Germany

Division of Ser. No. 526,907, Aug. 26, 1983,. This application Jul. 2, 1984, Ser. No. 626,652

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1982, 3232081

Int. Cl.[3] B01D *53/34*

U.S. Cl. 423—244 5 Claims

1. A method of removing sulfur dioxide and other noxious and toxic components from the flue gas of a power plant boiler which comprises the steps of:

(a) forming an absorbent by intimately mixing at least one alkaline-earth compound capable of absorbing sulfur dioxide with 0.1 to 10 mol % of an additive consisting of at least one absorbent-reactivity promoting carboxylic acid or an alkali metal, alkaline-earth metal or ammonium salt thereof;

(b) forming the flue gas by combustion of a fuel in a power plant boiler;

(c) contacting the flue gas after its formation in said boiler at an elevated temperature with absorbent formed in step (a) in a dry state and added to said flue gas independently of said combustion; and

(d) dry separating the absorbent after it has contacted the flue gas in step (c) from the remainder of the flue gas.

4,533,533

CONTROLLED DEALUMINATION OF ZEOLITES

John Dewing, Chester; Philip J. Hogan, and Allan Stewart, both of Cheshire, all of England, assignors to Imperial Chemical Industries, PLC, Great Britain

Filed May 23, 1983, Ser. No. 497,227

Claims priority, application United Kingdom, May 27, 1982, 8215531

Int. Cl.[3] C01B *33/26;* B01J *29/06*

U.S. Cl. 423—328 12 Claims

1. A process for the controlled removal of aluminium from a crystalline aluminosilicate zeolite which comprises:

(a) subjecting the zeolite to a treatment whereby the pore system of the zeolite is filled substantially completely with a foreign material;

(b) selectively removing a portion of said foreign material from an outer zone of the zeolite crystal structure;

(c) contacting the zeolite from step (b) with a dealuminating agent to which the said foreign material is substantially inert under the process conditions for a sufficient time and under suitable process conditions as to remove at least some of the aluminium from the zeolite; and

(d) subjecting the thus partially de-aluminated zeolite to further treatment whereby to remove substantially the remainder of said foreign material.

4,533,534

THERMOSETTING COATING COMPOSITION USEFUL AS PRIMER AND CHIP RESISTANT PRIMER II

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 510,799, Jul. 5, 1983,. This application Dec. 22, 1983, Ser. No. 564,144

Int. Cl.[3] C08L *63/02, 67/04*

U.S. Cl. 523—436 24 Claims

1. A novel, organic solvent based, thermosetting coating composition comprising:

I. Epoxy-polyester graft copolymer having a number average molecular weight (Mn) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor having a number average molecular weight (Mn) of between about 1,000 and about 4,000 and being formed by reacting diepoxide, which has been chain extended with dicarboxylic acid, with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 20 and about 90 weight percent said lactone monomers; and

II. Blocked polyisocyanate crosslinking agent comprising at least one isocyanate group which has been blocked by reaction with an active hydrogen bearing blocking agent, said blocked polyisocyanate crosslinking agent being included in an amount such that upon de-blocking of the blocked isocyanate groups thereof at the cure temperature of the composition, said crosslinking agent will provide between about 0.5 and about 1.6 reactive isocyanate groups per reactive group on said epoxy-polyester graft copolymer.

4,533,535

STARTING PITCHES FOR CARBON FIBERS

Seiichi Uemura, Tokyo; Shunichi Yamamoto; Takao Hirose, both of Kamakura; Hiroaki Takashima, Kawasaki, and Osamu Katoh, Yokohama, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1984, Ser. No. 579,206

Claims priority, application Japan, Feb. 14, 1983, 58-21622

Int. Cl.[3] D01F *9/12;* C10C *3/02*

U.S. Cl. 423—447.4 1 Claim

1. In the process of preparation of carbon fibers wherein a precursor pitch is melt spun, infusibilized, carbonized or graphitized, the improvement which comprises:

(a) in a first step, mixing 100 parts by volume of a heavy oil fraction (1) boiling at a temperature of 200°–550° C. obtained at the time of fluidized catalytic cracking of petroleum with 10–200 parts of volume of a recycled oil (2) boiling in the range of 250°–550° C., said recycled oil (2) being obtained by distilling under reduced pressure a fraction distilled in the following step (c) of producing said precursor pitch by heat treating said starting pitch obtained in step (b),

(b) in a second step, heating said mixture of the fraction (1) and recycled oil (2) at a temperature of from 370° C. to 480° C. under a pressure of from 2 to 50 $Kg/cm^2.G$ to obtain said starting pitch,

(c) in a third step, heating the thus obtained starting pitch at a temperature of 340°–450° C. under atmospheric or reduced pressure to obtain said precursor pitch.

4,533,536

PROCESS FOR THE MANUFACTURE OF POTASSIUM SULPHATE BY TREATING SOLUTIONS CONTAINING MAGNESIUM CHLORIDE AND POTASSIUM CHLORIDE

Michel Bichara, Mulhouse; Emile Wendling, Morshwiller le Bas, and Michel Bodu, Mulhouse, all of France, assignors to Mines de Potasse d'Alsace S.A., Mulhouse, France

Filed Mar. 11, 1983, Ser. No. 474,362

Claims priority, application France, Mar. 11, 1982, 82 04078

Int. Cl.[3] C01D *5/06;* C01B *17/96;* C01F *5/34*

U.S. Cl. 423—551 6 Claims

1. In a process for the production of schoenite from an equilibrium mother liquor obtained from a process of treating carnallite to precipitate synthetic sylvinite, said equilibrium mother liquor consisting essentially of saturation quantities of potassium chloride and sodium chloride, a substantial-satura-

tion quantity of magnesium chloride, and magnesium sulphate, wherein the schoenite is precipitated from said equilibrium mother liquor, the improvement which comprises in a first step adding sodium sulphate to said equilibrium mother liquor to form a precipitate containing mainly sodium chloride; separating said precipitate of sodium chloride from the resultant mother liquor; and in a second step adding potassium chloride to said resultant mother liquor to form a precipitate containing mainly schoenite.

4,533,537

PROCESS OF PRODUCING SULFURIC ACID

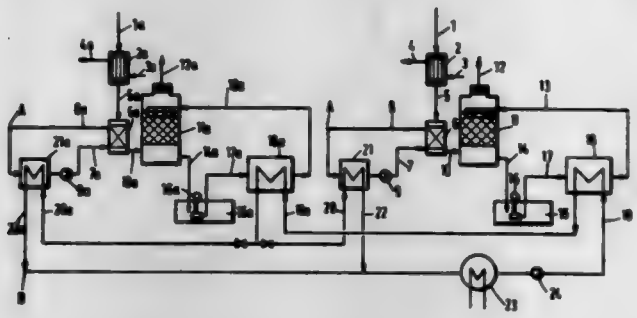
Heinz Dittmar, Friedberg; Manfred Beckmann, New Isenburg; Karl-Heinz Dörr, Mainz; Ulrich Rothe, Frankfurt am Main, and Ulrich Sander, Friedrichsdorf, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Aug. 3, 1983, Ser. No. 519,958

Claims priority, application Fed. Rep. of Germany, Aug. 12, 1982, 3230003; Sep. 1, 1982, 3232446

Int. Cl.³ C01B *17/82, 17/74*

U.S. Cl. 423—522 **20 Claims**



1. A process for producing sulfuric acid from SO_2-containing gases comprising catalytically reacting SO_2 to SO_3, cooling the SO_3-containing gases in multi-stages and thereafter absorbing SO_3 in concentrated sulfuric acid which is circulated through an absorber to which said SO_3-containing gases are fed, comprising the following steps:

(a) initially cooling the SO_3-containing gases before entering the absorber by an indirect heat exchange,

(b) subsequently cooling the gases of step (a) to a temperature slightly above the dew point temperature of the SO_3-containing gases by an indirect heat exchange with a first cooling fluid (A), which is conducted in a closed cycle,

(c) cooling the sulfuric acid circulating through said absorber by an indirect heat exchange with a second liquid cooling fluid (B), which is conducted in a second closed cycle,

(d) further heating the second liquid cooling fluid (B) which has been heated in step (c) by an indirect heat exchange with the heated first cooling fluid (A) of step (b); and

(e) cooling the resultant hot second cooling fluid (B) of step (d) by an indirect heat exchange with a consumer.

4,533,538

METHOD OF PRODUCING COLLOIDAL ANTIMONY OXIDE

Toshiyuki Kobashi, and Hideo Naka, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Jun. 12, 1984, Ser. No. 620,046

Claims priority, application Japan, Jun. 16, 1983, 58-108940; Dec. 21, 1983, 58-242906

Int. Cl.³ C01B *29/00*

U.S. Cl. 423—617 **6 Claims**

1. A method of producing colloidal antimony oxide by making hydrogen peroxide react with antimony trioxide to form a colloidal sol of antimony oxide, characterized by adding to the reaction system 1.5–30 mol percent of an inorganic alkaline substance based on antimony trioxide.

4,533,539

PROCESS AND ARRANGEMENT FOR THE INCREMENTAL ENRICHMENT OF DEUTERIUM AND/OR TRITIUM IN A MATERIAL SUITABLE FOR THE ISOTOPE EXCHANGE OF DEUTERIUM AND/OR TRITIUM WITH HYDROGEN

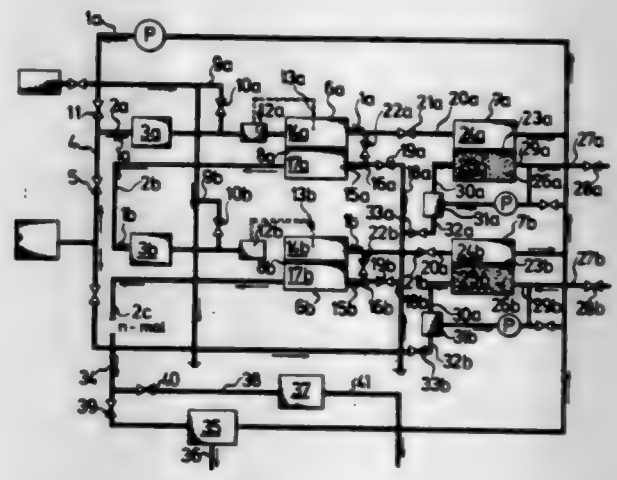
Nicolaos Iniotakis, Jülich, and Claus-Benedict von der Decken, Aachen, both of Fed. Rep. of Germany, assignors to Kernforschungsanlage Jülich GmbH, Jülich, Fed. Rep. of Germany

Filed Jun. 11, 1982, Ser. No. 387,479

Claims priority, application Fed. Rep. of Germany, Jun. 16, 1981, 3123860

Int. Cl.³ C01B *5/00*

U.S. Cl. 423—648 A **15 Claims**



1. A process for the incremental enrichment of deuterium and/or tritium in a material adapted for the isotope exchange of deuterium and tritium with hydrogen, comprising introducing and reducing water containing deuterium and/or tritium in a carrier gas flow while setting a hydrogen (H_2) partial pressure of maximum 100 mbar in the carrier gas flow; thereafter conveying the carrier gas flow along the primary side of an exchange wall adapted for the permeation of hydrogen; conveying a further carrier gas flow along the secondary side of said exchange wall, said further carrier gas flow containing the material adapted for the isotope exchange in the gas phase thereof; said process being conducted under such conditions as to induce said isotope exchange as a result of permeation through said exchange wall and to enrich the carrier gas on the secondary side with deuterium and/or tritium, and conducting off reaction products from the carrier gas on the secondary side formed subsequent to the isotope exchange of deuterium and/or tritium with hydrogen.

4,533,540

NITROGLYCERIN-CONTAINING POLYMERIC MATRIX FOR SUSTAINED RELEASE ON TOPICAL APPLICATION

Izhak Blank, Haifa, Israel, assignor to Forest Laboratories, Inc., New York, N.Y.

Division of Ser. No. 524,369, Aug. 18, 1983, Pat. No. 4,482,534, which is a continuation-in-part of Ser. No. 325,833, Nov. 30, 1981,. This application Aug. 30, 1984, Ser. No. 646,001

Claims priority, application Israel, Dec. 16, 1980, 61721

Int. Cl.³ A61F *13/00*; A61L *15/03*; A61K *31/79, 31/21*

U.S. Cl. 424—28 **12 Claims**

1. A composition for the sustained transdermal administration of nitroglycerin, comprising a film or solution containing a mixture of nitroglycerin and an uncrosslinked water-insoluble vinylpyrrolidone copolymer containing at least 10% by weight vinylpyrrolidone, wherein the nitroglycerin concentration is within the range of about 1% to about 6% of the total weight of the composition.

4,533,541

TIN-117M-LABELED STANNIC (SN^{4+}) CHELATES

Suresh C. Srivastava, Setauket; George E. Meinken, Middle Island, and Powell Richards, Bayport, all of N.Y., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 25, 1983, Ser. No. 526,251

Int. Cl.[3] A61K *43/00, 49/00;* **C07F** *7/22*

U.S. Cl. 424—1.1 **5 Claims**

1. A radiopharmaceutical composition consisting of Tin-117m-labeled Stannic (Sn^{4+})-chelate in which the chelate component is a chelant selected from the group consistency of methylene diphosphonate (MDP), pyrophosphate (PYP), ethylidenehydroxydisodium phosphonate (EHDP) and diethylinetriaminopentaacetic acid (DTPA).

4,533,542

PHARMACEUTICAL COMPOSITIONS FOR STORAGE IN PLASTIC CONTAINERS AND PROCESS THEREFOR

Harry C. Buddenbaum, Indianapolis, and Robert L. Robison, Greenwood, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 22, 1983, Ser. No. 525,347

Int. Cl.[3] A61K *9/14, 45/08*

U.S. Cl. 424—31 **23 Claims**

1. A pharmaceutical composition in a plastic container in which haze tends to form upon re-constitution, said composition cconstitution essentially of cefazolin in powder form coated with a surfactant.

4,533,543

SOFT HOMOGENEOUS ANTACID TABLET

William M. Morris, Rancho Palos Verdes, Calif.; Frank Witzel, Saratoga Springs, N.Y.; Wayne J. Puglia, Bayville, N.Y.; Donald A. M. Mackay, Pleasantville, N.Y.; K. Warren Clark, Brewster, N.Y., and Kanit J. Patanasinth, Jamesburg, N.Y., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 341,967, Jan. 22, 1982, abandoned, which is a continuation of Ser. No. 175,179, Aug. 4, 1980, abandoned. This application Nov. 14, 1983, Ser. No. 551,383

Int. Cl.[3] A61K *9/42, 33/06, 33/08, 33/10*

U.S. Cl. 424—38 **14 Claims**

1. In the art of forming antacid tablets by first coating particles of antacid with a coating composition and then tableting the coated particles the improvement which comprises:

employing antacid particles having a primary particle size of less than about 100 millimicrons and a melted coating composition comprising fatty material or oil, surfactant and flavorant, selected from the group consisting of chocolate, mint-chocolate, butter, vanilla, butter fat and mint flavors, said fatty material or oil being present in said coating composition in an amount of from about 25 to about 45% by weight, and

essentially increasing the bulk density of said antacid particles during the coating thereof with said coating composition by the step of intensively mixing said antacid particles by mulling or milling so as to provide for the removal of air between said antacid particles and for the homogeneous coating of said antacid particles with said coating composition.

4,533,544

METHOD OF FORMING STABLE DENTAL GEL OF STANNOUS FLUORIDE

Dennis E. Groat; Richard W. Sell, both of Dallas; Richard J. Kalish, Carrollton, and Horace E. Melton, Irving, all of Tex., assignors to Scherer Laboratories, Inc., Dallas, Tex.

Filed Mar. 26, 1984, Ser. No. 593,525

Int. Cl.[3] A61K *7/18, 33/16*

U.S. Cl. 424—52 **6 Claims**

1. A method of producing a commercial-scale size batch of a stable gel consisting essentially of from about 0.38% to about 0.42% of stannous fluoride, from about 0.25% to about 0.45% hydroxyethylcelluose and the remainder anhydrous glycerin, wherein the concentration of stannous fluoride in said gel is stable during storage against deterioration to levels below that enabling the use of said gel as a topical treating agent for the prevention of dental caries, comprising the steps:

(a) dissolving the stannous fluoride present in said gel in from about 7.1% to about 7.2% of the anhydrous glycerin present in said gel at a temperature in the range of from about 150° C. to about 180° C. to form a first stannous fluoride;

(b) admixing said first stannous fluoride solution with from about 23% to about 28% of the anhydrous glycerin present in said gel at ambient temperature to form a second stannous fluoride solution;

(c) dissolving the hydroxyethylcellulose present in said gel in from about 33% to about 38% of the anhydrous glycerin present in said gel at a temperature in the range of from about 130° C. to about ½° C.;

(d) intimately admixing said hydroxyethylcelluose solution with said second stannous fluoride solution; and

(e) intimately admixing said solution with the remainder of the anhydrous glycerin present in said gel.

4,533,545

COSMETIC COMPOSITIONS CONTAINING POLYETHYLENE GLYCOL DERIVATIVES

Henri Sebag, Paris, France, assignor to L'Oreal, Paris, France

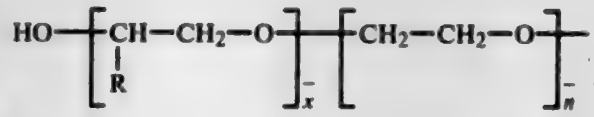
Division of Ser. No. 309,811, Oct. 8, 1981, Pat. No. 4,398,045. This application Apr. 20, 1983, Ser. No. 486,838

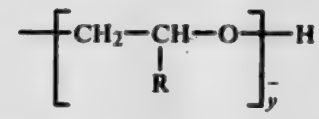
Claims priority, application France, Oct. 10, 1980, 80 21776

Int. Cl.[3] A61K *7/06, 31/74, 47/00;* **C11D** *17/00*

U.S. Cl. 424—70 **10 Claims**

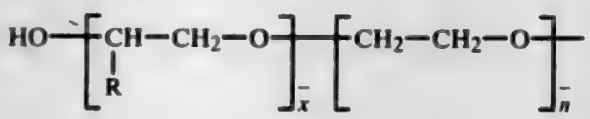
1. A cosmetic composition for application to the hair or skin comprising in a carrier 0.2 to 10 percent by weight, based on the total weight of said composition, of a product having the formula

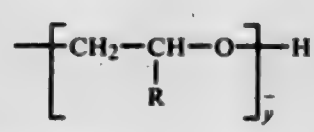




wherein each R represents, independently, alkyl having 8–18 carbon atoms, alkoxymethyl wherein the alkoxy moiety has 8–20 carbon atoms or alkenyloxy methyl wherein the alkenyl moiety has 8–20 carbon atoms, or a mixture thereof, $\bar{n}$ represents an average number from 20 to 500 and $\bar{x}$ and $\bar{y}$ independently represent an average number from 0 to 8 such that the sum $(\bar{x}+\bar{y})$ is from 1 to 8.

9. A thickened liquid soap for cleaning the hair or skin comprising in a carrier, 0.2 to 10 percent by weight, based on the total weight of said thickened liquid, of a product having the formula





wherein each R represents, independently, alkyl having 8–18 carbon atoms, alkoxymethyl wherein the alkoxy moiety has 8–20

carbon atoms or alkenyloxy methyl wherein the alkenyl moiety has 8–20 carbon atoms, or a mixture thereof, $\bar{n}$ represents an average number from 20 to 500 and $\bar{x}$ and $\bar{y}$ independently represent an average number from 0 to 8 such that the sum $(\bar{x}+\bar{y})$ is from 1 to 8, and an effective amount of at least one of a non-ionic, anionic, cationic, amphoteric or zwitterionic surface active agent.

4,533,546

ANTIINFLAMMATORY ANALGESIC GELLED OINTMENTS

Ikuo Kishi, Ichikawa, and Hideo Yoshida, Tokyo, both of Japan, assignors to Lederle (Japan), Ltd., Tokyo, Japan

Filed May 31, 1984, Ser. No. 615,531
Claims priority, application Japan, Jun. 1, 1983, 58-95794
Int. Cl.³ A61K *31/19, 31/78*
U.S. Cl. 424—81 **7 Claims**

1. An antiinflammatory analgesic gelled ointment consisting essentially of

(a) 0.5 to 8% by weight of 4-biphenylylacetic acid,

(b) 0.5 to 5% by weight of a carboxyvinyl polymer, having a molecular weight in the range of 1,000,000 to 3,000,000,

(c) 0.5 to 15% by weight of a water-soluble organic amine selected from mono-, di- and tri-lower alkanol amines,

(d) 5 to 50% by weight of a lower alkanol selected from the group consisting of methanol, ethanol, propanol, isopropanol, butanol, tert-butanol and amyl alcohol, and

(e) water in an amount sufficient to make up the balance of the ointment,

the amount of the organic amine being such that the ointment has a pH in the range of from 7.0 to 9.0.

4,533,547

ANTIVIRAL ANTIBIOTIC SUBSTANCE AM-2722 AND PROCESS FOR PRODUCTION THEREOF

Satoshi Ōmura; Akira Nakagawa; Hiroshi Hashimoto, all of Tokyo; Yasuhiko Kojima, Kanagawa; Yuzuru Iwai, Chiba; Ruiko Ōiwa, Kanagawa, and Atsushi Hirano, Miyazaki, all of Japan, assignors to The Kitasato Institute, Japan

Filed May 11, 1981, Ser. No. 262,242
Claims priority, application Japan, May 10, 1980, 55-61936
Int. Cl.³ H61K *35/74;* C12P *1/06*
U.S. Cl. 424—122 **5 Claims**

1. An antiviral antibiotic AM-2722 represented by the molecular formula $C_{19}H_{26}NO_3Cl$, and having the following physicochemical properties:

(1) specific rotary power $[\alpha]_D^{20}-0.5$ (C=1, chloroform);

(2) the UV spectrum shown in FIG. 1; and

(3) the IR spectrum shown in FIG. 2.

4,533,548

ACIDIC POLYSACCHARIDE CH-1 ISOLATED FROM *CHLORELLA PYRENOIDOSA* AND THE USE THEREOF

Iwao Umezawa, Tokyo, and Kanki Komiyama, Kanagawa, both of Japan, assignors to Kitasato Institute, Tokyo, Japan

Filed Nov. 15, 1982, Ser. No. 441,630
Claims priority, application Japan, Dec. 2, 1981, 56-192899
Int. Cl.³ A01N *31/00;* A61K *31/70;* C12R *1/89;* C12P *19/04*
U.S. Cl. 514—54 **7 Claims**

1. An acidic polysaccharide having the following properties:

(a) consisting of carbon, hydrogen, oxygen and nitrogen with an approximate elementary analysis of O: 54.05%; C: 38.49%; H: 6.07%; and N: 1.39%;

(b) a sedimentation coefficient of $S_{20,w}=6.15$ S when determined by ultracentrifugation;

(c) impermeability to cellophane membrane,

(d) a melting point characterized by coloration at about 240° C. with carbonization at higher temperatures;

(e) a specific rotation of $[\alpha]_D^{29}=-9.52$ (c=1, H_2O);

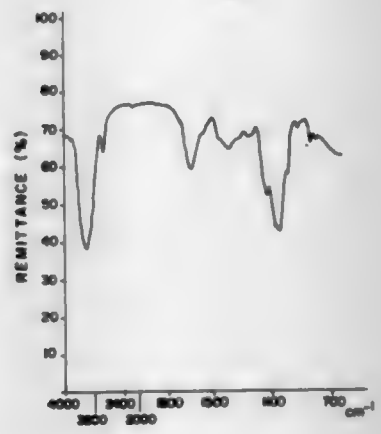
(f) solubility in water, and insolubility in methanol;

(g) a positive color reaction with anthrone, Molisch, and carbazole-H_2SO_4 and a negative color reaction with Folin-Lowry and ninhydrin;

(h) no detectable protein as measured by Folin-Lowry color reaction test;

(i) a monosaccharide analysis consisting of rhamnose, galactose, arabinose, glucose and glucuronic acid when detected by paper chromatography and gas chromatography after hydrolysis of said polysaccharide in 7% H_2SO_4 under refluxing for two hours;

(j) a UV spectrum with end absorption in 0.125% aqueous solution;



(k) an IR spectrum (KBr tablet) with absorption bands at 3420, 2930, 1640, 1380, 1125, 1065, 1040, 990, 915, 835 and 880 cm^{-1};

(l) an electrophoretic pattern on acetate membrane as shown in FIG. 2, electrophoresced to 0.8 cm for (+) with 0.1M pyridine-acetic acid at pH 5.0, 200 V (4 mA) for 20 minutes;

(m) an ultra-centrifuge pattern as shown in FIG. 3;

(n) being obtained as a white powdery precipitate; and

(o) having a sugar content of 53% when calculated as glucose.

4,533,549

ANTITHROMBOTIC AGENT

Sigmund E. Lasker, Rivercross, Roosevelt Island, New York, N.Y. 10044

Continuation of Ser. No. 455,517, Jan. 4, 1983, abandoned, which is a continuation of Ser. No. 223,010, Jan. 6, 1981, abandoned. This application Feb. 17, 1984, Ser. No. 580,761
Int. Cl.³ A61K *31/725;* C08B *37/10*
U.S. Cl. 514—56 **9 Claims**

1. An antithrombotic agent derived from heparin having an anticoagulant activity of less than 20 USP XVIII units and insignificant platelet aggregating activity, and an anti-activated coagulation factor Xa activity of from about 150 to about 190 units/mg, said agent being a pharmacologically acceptable salt of a mucopolysaccharide soluble in water, insoluble in acetone and ethanol, containing glucosamine, glucuronic acid and iduronic acid, having a weight average molecular weight of from about 2,500 to about 4,000 daltons, giving a positive metachromatic test for sulfated polysaccharides.

7. A dosage form of the antithrombotic agent of claim 1 comprising from about 100 to about 500 mg. of said agent in a pharmaceutically acceptable carrier.

4,533,550
HETEROCYCLIC DERIVATIVES OF (4-ARYLOXYMETHYL-1,3-DIOXOLAN-2-YL)METHYL-1H-IMIDAZOLES AND 1H-1,2,4-TRIAZOLES

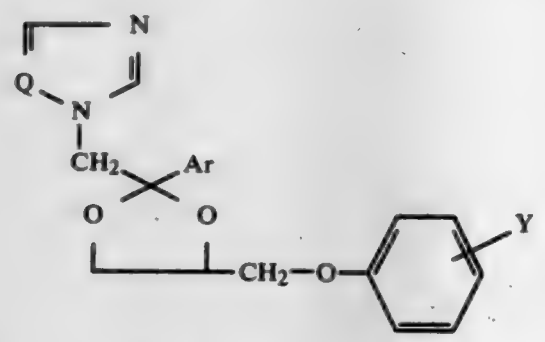
Jan Heeres, Vosselaar, and Joseph H. Mostmans, Antwerp, both of Belgium, assignors to Janssen Pharmaceutica, N.V., Beerse, Belgium

Division of Ser. No. 134,384, Mar. 27, 1980, Pat. No. 4,313,953, which is a division of Ser. No. 20,287, Mar. 14, 1979, Pat. No. 4,218,458, which is a continuation-in-part of Ser. No. 918,257, Jun. 23, 1978, abandoned. This application Aug. 27, 1981, Ser. No. 558,331

Int. Cl.³ C07D *239/24;* A61K *31/505*

U.S. Cl. 514—256 **4 Claims**

1. A chemical compound selectd from the group consisting of an azole derivative having the formula:



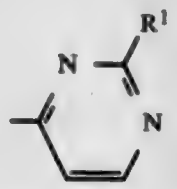
and the pharmaceutically acceptable acid addition salts and stereochemically isomeric forms thereof, wherein:

Q is a member selected from the group consisting of CH and N;

Ar is a member selected from the group consisting of thienyl, halothienyl, phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of haol, lower alkyl and lower alkyloxy; and

the radical Y is

a pyrimidin-4-yl radical of the formula



(a)

wherein R^1 is a member selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, lower alkynyl, lower alkyloxy, lower alkenyloxy, lower alkynyloxy, lower alkyloxy-lower alkyloxy, aryllower alkyloxy, lower alkylthio, aryllower alkylthio, hydroxy, mercapto, amino, mono- and di-lower alkylamino, cycloalkylamino, lower alkylcarbonlylamino, arylcarbonylamino, arylamino, aryl lower alkylamino and aryl;

wherein said aryl as used in the foregoing definitions is selected from the group consisting of phenyl and substituted phenyl, said substituted phenyl having from 1 to 3 substituents each independently selected from the group consisting of halo, lower alkyl, lower alkyloxy and trifluoromethyl.

4,533,551
METHOD OF TREATING ARTHRITIS WITH ETODOLAC

René Martel, Candiac, Canada, assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 17, 1984, Ser. No. 581,448

Int. Cl.³ A61K *31/40*

U.S. Cl. 514—411 **3 Claims**

1. A method for producing reversal of the articular pathology associated with arthritis in mammals, which comprises: administering to the arthritic mammal an effective amount of etodolac.

4,533,552
STABILIZATION OF AZULENE DERIVATIVES

Masanobu Kawamata; Koichi Ushimaru, both of Kyoto; Hiroyuki Goshi, Shiga, and Hideichi Miyasako, Moriyama, all of Japan, assignors to Nippon Shinyaku Co., Ltd., Japan

Filed May 11, 1983, Ser. No. 473,452

Claims priority, application Japan, Mar. 9, 1982, 57-37411

Int. Cl.³ C07C *143/24;* A61K *31/185*

U.S. Cl. 424—78 **13 Claims**

1. A composition containing sodium 1,4-dimethylisopropylazulene-3-sulfonate and a stabilizing amount of a suitable polymer.

4,533,553
POLYCYCLIC ETHER ANTIBIOTIC

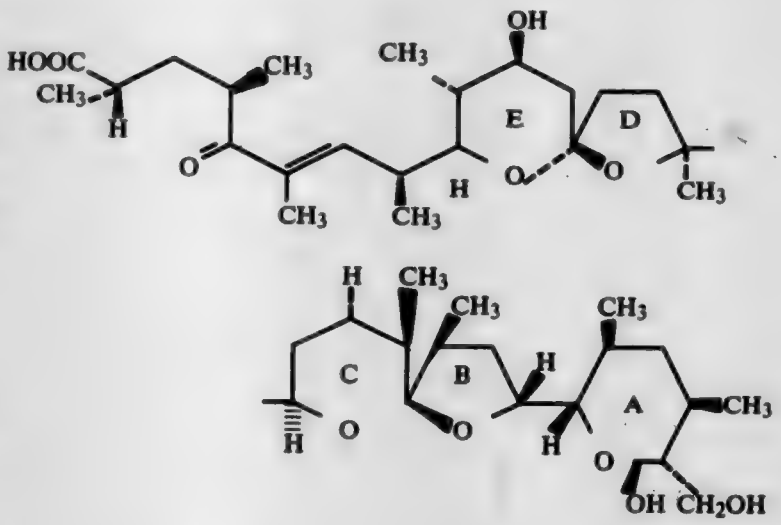
Walter D. Celmer, New London; Walter P. Cullen, East Lyme, both of Conn.; Riichiro Shibakawa, Handa, and Junsuke Tone, Chita, both of Japan, assignors to Pfizer Inc., New York, N.Y.

Division of Ser. No. 401,234, Jul. 23, 1982, Pat. No. 4,431,801, which is a division of Ser. No. 285,264, Jul. 20, 1981, Pat. No. 4,361,649. This application Nov. 9, 1983, Ser. No. 549,912

Int. Cl.³ A61K *31/00, 31/35;* C07D *309/10, 309/22*

U.S. Cl. 514—460 **3 Claims**

1. In a carbohydrate-containing nutrient feed composition for cattle or swine, the improvement comprises said feed containing the antibiotic of the formula:



in an amount effective to improve feed utilization and promote growth of said cattle or swine.

4,533,554
QUINONE DERIVATIVES AND USE

Shinji Terao, Toyonaka; Mitsuru Shiraishi, and Kaneyoshi Kato, both of Suita, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

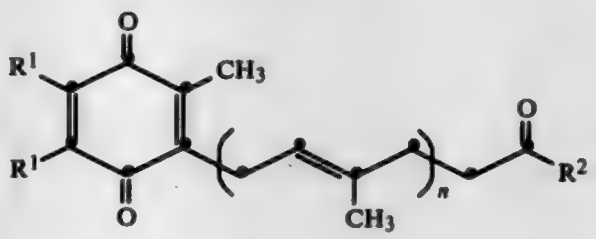
Division of Ser. No. 182,401, Aug. 26, 1980, Pat. No. 4,388,312. This application Mar. 2, 1983, Ser. No. 471,457

Claims priority, application Japan, May 18, 1979, 54-61915; Sep. 12, 1979, 54-117771

Int. Cl.³ A61K *31/185;* C07C *50/02*

U.S. Cl. 514—464 **12 Claims**

1. A compound of the formula



wherein

n is an integer of 1 to 10,

R^1 is methyl or methoxy, or two of R^1 combine to represent —CH=CH—CH=CH—, and

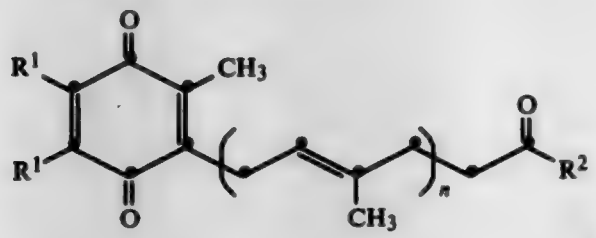
R^2 is (1) amino or (2) a mono- or di-substituted amino group selected from the class consisting of mono- or di-C_{1-6} alkylamino, C_{3-6} cycloalkylamino, C_{3-6} cycloalkyl-C_{1-3} alkylamino, phenyl-C_{1-3} alkylamino, C_{1-4} alkoxyamino and anilino

said mono- or di-substituted amino groups being unsubstituted or substituted by C_{1-4} alkyl, hydroxyl, C_{1-4} alkoxy, C_{1-4} alkylthio, carboxyl, one of mono- to decaprenyl, benzyl, 3,4,5-trimethoxybenzyl or 3,4-methylenedioxybenzyl,

or its hydroquinone form,

or a pharmaceutically acceptable salt thereof.

12. A method for the treatment of allergosis in a mammal which comprises administering to said mammal an effective amount of a compound of the formula:



wherein

n is an integer of 1 to 10,

R^1 is methyl or methoxy, or two of R^1 combine to represent —CH=CH—CH=CH—, and

R^2 is (1) amino or (2) a mono- or di-substituted amino group selected from the class consisting of mono- or di-C_{1-6} alkylamino, C_{3-6} cycloalkylamino, C_{3-6} cycloalkyl-C_{1-3} alkylamino, phenyl C_{1-3} alkylamino, C_{1-4} alkoxyamino and anilino

said mono- or di-substituted amino groups being unsubstituted or substituted by C_{1-4} alkyl, hydroxyl, C_{1-4} alkoxy, C_{1-4} alkylthio, carboxyl, one of mono- to decaprenyl, benzyl, 3,4,5-trimethoxybenzyl or 3,4-methylenedioxybenzyl,

or its hydroquinone form,

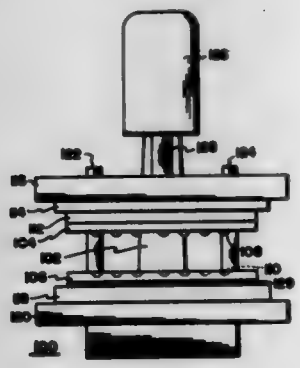
or a pharmaceutically acceptable salt thereof.

4,533,555

APPARATUS FOR THERMOFORMING DOME-SHAPED ACTUATING ELEMENTS FOR MEMBRANE SWITCHES

George E. Harris, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed May 9, 1984, Ser. No. 608,591
Int. Cl.[3] B29C *17/00*
U.S. Cl. 425—384 15 Claims



1. An apparatus for thermoforming a plurality of depressible protrusions in a substantially thin and flat plastic sheet; said thermoforming apparatus comprising:

(A) a pair of male and female die plates, respectively, having a plurality of matching projections and cavities;

(B) a selectively-operated means for closing and opening said die plates;

(C) means for heating one of said die plates to a desired temperature;

(D) means for cooling the other of said die plates to a preset temperature; and

(E) a selectively-actuated holding means for securing a heated, thermoformed plastic sheet to said cooled die plate;

wherein a plastic sheet is clamped under pressure between said die plates for a certain length of time to cause thermoforming of said protrusions in said plastic sheet, and said die plates are separated with said plastic sheet held against said cooled die plate to allow said plastic sheet to cool off.

4,533,556

KOLA FLAVORED CHEWING GUM AND PREPARATION THEREOF

Dominic J. Piccolo, Brooklyn, N.Y., and Deborah J. Feinerman, Asbury Park, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Jun. 14, 1983, Ser. No. 504,205
Int. Cl.[3] A23G *3/30*; A23L *1/221*
U.S. Cl. 426—3 12 Claims

1. A kola flavored chewing gum composition having improved perceptable kola flavor wherein the improvement comprises the addition of the combination of an artificial oil-soluble kola flavor in the amounts of about 0.05% to about 5.0% and natural kola extract in the amounts of 0.05% to about 2.0%, percents being by weight of the total composition.

4,533,557

FEED ADDITIVES FOR RUMINANTS

Hiromi Maruyama; Seiji Sasaoka; Mitsuo Kiuchi, and Hironori Kanehara, all of Chiba, Japan, assignors to Nippon Soda Co. Ltd., Tokyo, Japan

Filed Apr. 4, 1983, Ser. No. 481,853
Claims priority, application Japan, Apr. 2, 1982, 57-54978; Oct. 7, 1982, 57-176803
Int. Cl.[3] A23K *1/00*
U.S. Cl. 426—61 1 Claim

1. A granular feed additive for ruminants consisting of edible material of at least one biologically active ingredient, a protective material and chitosan, wherein, the biologically active ingredient is a material selected from the group consisting of amino acids, amino acid derivatives, hydroxy homologues of amino acids, proteins, vitamins, enzymes, and mixtures thereof; the protective material is a material selected from the group consisting of straight or branched saturated or unsaturated aliphatic mono-carboxylic acids having from 14 to 22 carbon atoms; wherein the quantity of chitosan is in the range of 1 to 25 parts by weight of the protective material, the quantity of the biologically active ingredient is not more than 60 parts by weight of the total weight; the particle size of the biologically active ingredient is about 110 Tyler mesh pass to about 170 Tyler mesh pass, the particle size of the chitosan is about 65 Tyler mesh pass, said feed additive being soluble in a buffer solution having a pH of about 2 consisting of about 50 parts of 0.2N KCl and about 10 parts of 0.2N HCl mixed in about 140 parts of water, said buffer solution corresponding to the digestive juice in the abomasum of said ruminant.

4,533,558

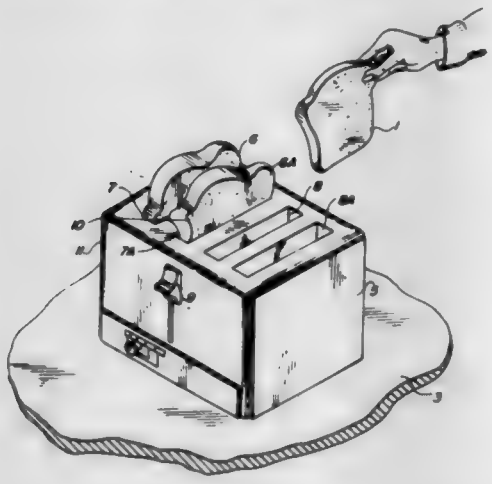
TOASTING PROCESS USING A TOAST GUARD

David W. Ogle, 5 Sunset La., Bushnell, Ill. 61422

Division of Ser. No. 593,611, Mar. 26, 1984, abandoned. This application Dec. 24, 1984, Ser. No. 685,206
Int. Cl.[3] A23B *4/04*
U.S. Cl. 426—466 1 Claim

1. A process to enable slices of bread to be toasted evenly on each side in a multi-slotted toaster when only some of the slots of the multi-slotted toaster are used, comprised of inserting the slices of bread in some of the slots of the toaster, inserting a ceramic piece molded in the shape of a slice of bread which is

fired and glazed so as to be heat absorbing and slightly smaller in size and thickness than a slice of bread in a vacant slot of the



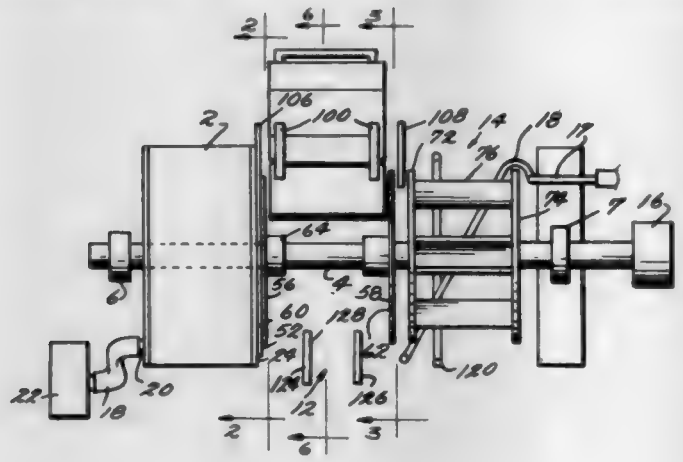
toaster adjacent a slot in which a slice of bread is inserted and then activating the toasting mechanism of the toaster.

4,533,559

PROCESS FOR PRODUCING AN ASSEMBLER FOR A FLEXIBLE FOODSTUFF

Lorne A. Rowell, Victoria, Canada, assignor to McCormick & Company, Incorporated, Hunt Valley, Md.

Filed Apr. 27, 1983, Ser. No. 488,984
Int. Cl.³ A21D *6/00*; A23P *1/00*
U.S. Cl. 426—499 **6 Claims**



1. A method for preparing a food-cooking assembly which assembly includes an inner perforated cylinder, a flexible sheet of foodstuff wrapped around the outside of the inner cylinder and an outer cylinder surrounding the wrapped sheet of foodstuff, said method comprising: mounting the inner perforated cylinder in a carrier; applying a vacuum to the inside of the inner cylinder; moving the carrier along a predetermined path such that the inner cylinder moves transversely with respect to its axis into engagement with a surface of the flexible sheet of foodstuff whereby the vacuum holds the sheet of foodstuff to the outside of the inner cylinder and continuing to move the carrier along said path so that the inner cylinder and the sheet of foodstuff move past guide means which effects wrapping of the sheet around the inner cylinder; and effecting relative telescoping movement between the inner and outer cylinders so that the outer cylinder engages and surrounds the wrapped sheet.

4,533,560

NON-DAIRY PARFAIT TYPE DESSERT MIX

Peter Procunier, 68 MacPherson, Ontario, Canada (M5R 1W8)

Filed Aug. 3, 1983, Ser. No. 519,910
Int. Cl.³ A23L *1/187*
U.S. Cl. 426—578 **7 Claims**

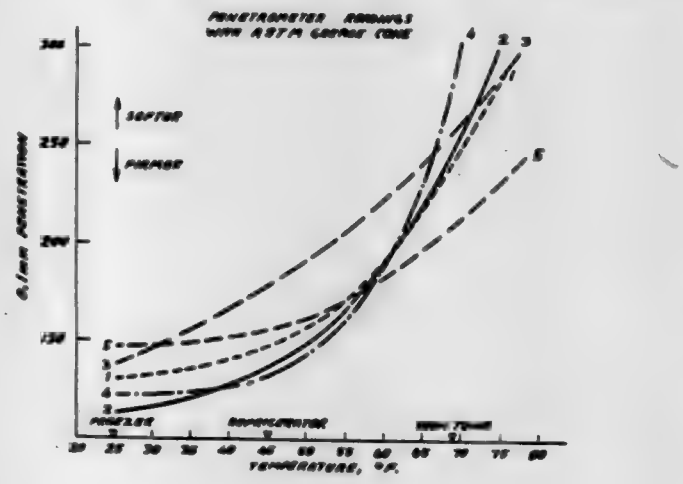
1. A dry food mix for use in preparing a nondairy parfait product comprising flavoring of from 0.7%–11% and a base containing sugar 65%–81%, starch 7.5%–11%, emulsifiers 2%–6%, anti-caking agents 0.08%–0.2%, salt 0.4%–1.2% and an anti-mycotic agent 0.08%–0.3%; said mix when added to water and oil in substantially equal weights and mixed forms a non-dairy parfait product.

4,533,561

LOW-FAT SPREAD AND PROCESS

John Ward, Mississauga, Canada, assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Sep. 30, 1982, Ser. No. 431,873
Int. Cl.³ A23D *3/00, 3/02*
U.S. Cl. 426—603 **21 Claims**



1. A low-fat spread comprising: from about 50% to about 70% of a highly-dispersed aqueous phase; and from about 30% to about 50% of a continuous fat phase comprising a blend of from about 70% to about 95% by weight of a liquid vegetable oil and from about 5% to about 30% of a hardstock, the blend comprising from 10 to 30% of the fatty acids as C10, C12, C14 and C16 fatty acids, these fatty acids being predominantly in the trisaturated glyceride form, and the solid fat is present predominantly in the beta-prime crystal form.

4,533,562

METHOD OF PREPARING COATED SOLID PREPARATIONS

Yoshihiko Ikegami; Kozo Kurihara; Izuo Ichikawa, and Hisanori Nakane, all of Tokyo, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Continuation of Ser. No. 366,063, Apr. 6, 1982, abandoned. This application Apr. 19, 1984, Ser. No. 601,736
Claims priority, application Japan, Apr. 13, 1981, 56-55232
Int. Cl.³ A61R *9/32*; C08L *1/32*
U.S. Cl. 427—3 **22 Claims**

1. A method of coating a solid pharmaceutical preparation consisting essentially of first coating said solid pharmaceutical preparation with a liquid plasticizer and then coating with a powdered film-forming polymer, said liquid plasticizer swelling or dissolving said polymer whereby said powdered polymer particles are plasticized and form a substantially uniform coating on said solid pharmaceutical preparation.

4,533,563

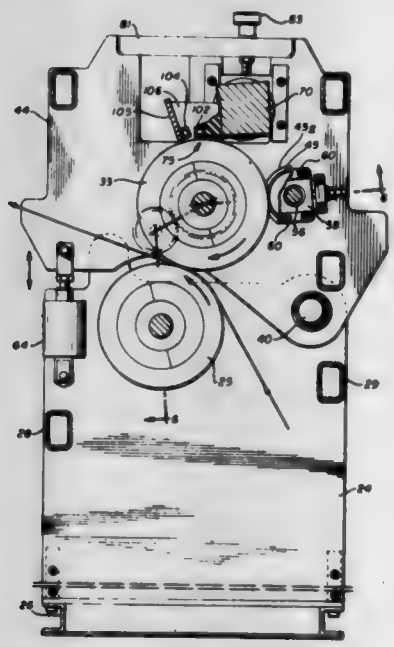
COATING METHOD

Harold P. Dahlgren, 4008 Buena Vista, Dallas, Tex. 75205; John W. Gardiner, 2116 Oak Meadows, Bedford, Tex. 76021, and James E. Taylor, 4129 Drowsy La., Dallas, Tex. 75233

Division of Ser. No. 323,099, Nov. 19, 1981, Pat. No. 4,444,147, which is a continuation-in-part of Ser. No. 282,294, Jul. 13, 1981, abandoned. This application Feb. 9, 1984, Ser. No. 578,659
Int. Cl.³ B05D *1/28*
U.S. Cl. 427—387 **12 Claims**

1. A method of forming a thin continuous glaze on a web

substrate comprising the steps of: positioning a transfer roll having a smooth resilient surface and a metering member having a flat metering surface and a metering edge in pressure indented relation to form a metering wedge; depositing a mixture of liquid silicone reactive polymer and a cross-linker on the smooth resilient roll surface; rotating the resilient roll to move a portion of the mixture of liquid silicone reactive polymer and cross-linker through the metering wedge to form a metered film of liquid and to transfer the film of liquid directly to a web substrate; moving a web substrate in engagement with



the resilient transfer roll surface and at substantially the same surface speed as the resilient roll surface; urging a backup roll into engagement with the web such that the resilient surface on the transfer roll is deformed by the web to apply a continuous glaze of the mixture of liquid silicone reactive polymer and cross-linker to the surface of the web substrate; and controlling the indentation of the metering edge into the resilient roll surface to control the thickness of the glaze of liquid applied by the transfer roll to the web to a range between one-tenth and one pound per 3,000 square feet.

4,533,564

METHOD OF MANUFACTURING AN ELECTROPHOTOGRAPHIC PHOTORECEPTOR

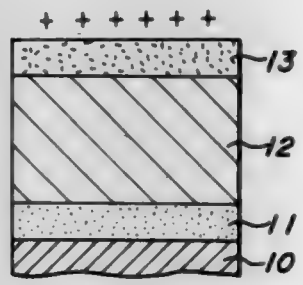
Hiroaki Kakinuma; Mamoru Yoshida, and Satoshi Nishikawa, all of Tokyo, Japan, assignors to Oki Electric Industry Co., Ltd., Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,139

Claims priority, application Japan, Sep. 7, 1983, 58-163174; Sep. 28, 1983, 58-179886

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—39 **7 Claims**



1. In a method of manufacturing an electrophotographic photoreceptor which is utilized in positive charging system having an electrically conductive substrate, a first layer provided on the substrate for preventing injection of electrons into the photoreceptor from the substrate, a second layer of amorphous silicon provided on the first layer for determining charging characteristic of the photoreceptor and a third layer provided on the second layer for preventing injection of holes into the photoreceptor from the surface thereof and for effecting passivation of the surface, the improvement comprising the second layer being subjected to doping of boron, which is effected by introducing a mixed gas of boron and silicon with a ratio of 0.2–2 ppm into a growth chamber.

4,533,565

METHOD FOR SURFACE TREATMENT OF FERROMAGNETIC FINE POWDER AND FORMING A MAGNETIC RECORDING DEVICE

Tsutomu Okita, Shizuoka, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Continuation of Ser. No. 449,813, Dec. 14, 1982, abandoned. This application May 24, 1984, Ser. No. 613,759

Claims priority, application Japan, Dec. 14, 1981, 56/201310

Int. Cl.³ H01F *10/02*

U.S. Cl. 427—44 **7 Claims**

1. A method for producing a magnetic recording medium which comprises the steps of (1) preparing ferromagnetic fine powder by the process comprising:

(A) subjecting a composition to dispersion processing, wherein the composition comprises:

(i) a ferromagnetic powder;

(ii) a polar compound selected from the group consisting of acrylic acid, crotonic acid and bis(β-acryloyloxyethyl)phosphate; and

(iii) an organic solvent capable of dissolving the polar compound; and

(B) evaporating the organic solvent from the resulting composition, (2) dispersing said ferromagnetic fine powder of (1) in a binder comprising a compound polymerizable by irradiation with electron beams and has (meth)acryloyl groups at both ends of the molecule, (3) forming, on a support, a magnetic layer from the resulting composition and (4) irradiating the magnetic layer with electron beams.

4,533,566

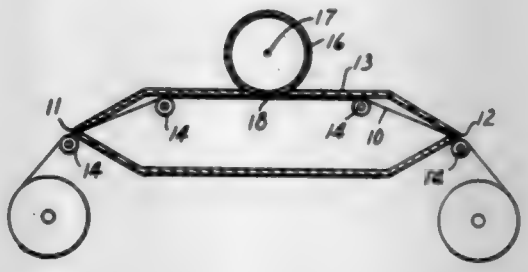
ELECTRON-BEAM ADHESION-PROMOTING TREATMENT OF POLYESTER FILM BASE FOR SILICONE RELEASE LINERS

Jack L. Evans, St. Paul; Karen J. Campbell, White Bear Township, Ramsey County; Curtis L. Kreil, Woodbury, and LuAnn Sidney, White Bear Township, Ramsey County, all of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 5, 1984, Ser. No. 628,153

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **13 Claims**



1. In the manufacture of a release liner comprising a flexible polyester film base and a thin silicone coating, a method for promoting the adhesion to the polyester film base of the silicone coating, which method comprises the steps of (1) continuously passing uncoated polyester film base through an inert atmosphere containing less than 500 ppm oxygen while (2) exposing the film base to irradiation of an electron beam to subject the film base to an absorbed dosage of at least 2 Mrad, and (3) applying a thin silicone coating to a face of the film base

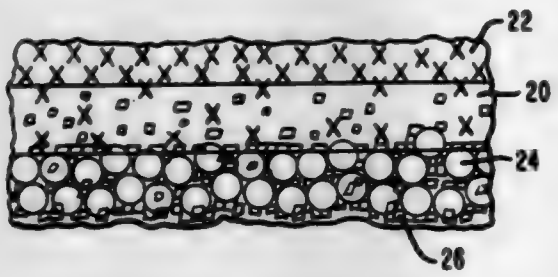
to which adhesion of the coating has been enhanced by virtue of steps (1) and (2).

4,533,567

CARBONLESS PAPER COATING FORMULATION

Nicola Marinelli, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed May 24, 1983, Ser. No. 497,773
Int. Cl.³ B41M 5/22
U.S. Cl. 427—150 5 Claims



1. A method of making pressuresensitive record media with a substrate having front and back surfaces, comprising the steps of

providing a color-forming coating material in encapsulated form for the back surface,

mixing an aqueous emulsion of wax with the back surface coating material, the aqueous emulsion containing a wax selected from the group having a polyethylene base,

coating the substrate on the back surface with the mixture of encapsulated material and wax emulsion in a manner wherein the wax emulsion substantially envelops the encapsulated material, and

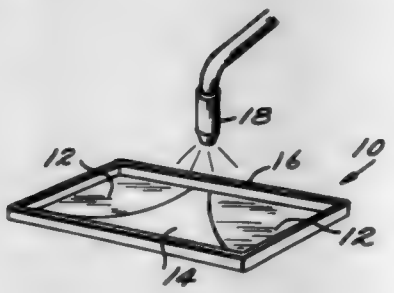
coating the substrate on the front surface with a material having color-developing phenolic resin as an ingredient thereof whereby the phenolic resin reacts with the color-forming coating material to form an image upon rupture of the encapsulated material.

4,533,568

METHOD OF PREPARING A PATTERNED MOLD SURFACE

John L. McClinton, Hanover, and Alexander H. Russell, Owings Mills, both of Md., assignors to The Burns & Russell Company, Baltimore, Md.

Filed Aug. 24, 1983, Ser. No. 526,143
Int. Cl.³ B29C 1/04
U.S. Cl. 427—135 10 Claims



1. A method of preparing the surface of a mold for forming a pattern on a molded article comprising the steps of:

applying masking material to the mold surface to cover a selected surface area thereof,

directing a surface altering media against said mold surface to alter the surface texture of the uncovered area of the mold surface, said uncovered area corresponding to said pattern to form a coated mold surface having areas of altered surface texture corresponding to said pattern,

removing the masking material from the mold surface,

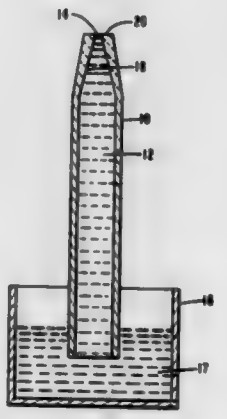
and, then, coating the mold surface with a metal including the previously masked as well as the unmasked areas.

4,533,569

PROCESS PREVENTING AIR BUBBLE LOCK IN INK JET NOZZLES

Richard G. Bangs, Ithaca, N.Y., assignor to NCR Corporation, Dayton, Ohio

Filed Dec. 8, 1983, Ser. No. 559,510
Int. Cl.³ B05D 3/10, 5/00, 7/22
U.S. Cl. 427—154 8 Claims



1. A process for decreasing or eliminating air bubble lock in an ink passage through a glass ink jet nozzle usable in an ink jet printer device, said process comprising the following steps:

(a) cleaning the interior area of said ink passage through said glass ink jet nozzle with a hydrofluoric acid solution so as to remove impurities and contaminants from said surface area;

(b) rinsing said ink passage to remove said hydrofluoric acid solution from said surface area before visible etching of said surface area occurs; and

(c) introducing and continuously maintaining a blocking agent in said ink passage prior to the use of said nozzle in an ink jet printer device to prevent atmospheric air from contaminating the surface area of said ink passage, wherein said blocking agent is miscible and chemically compatible with ink to be conducted through said ink passage during the use of said ink jet nozzle in ink jet printing.

4,533,570

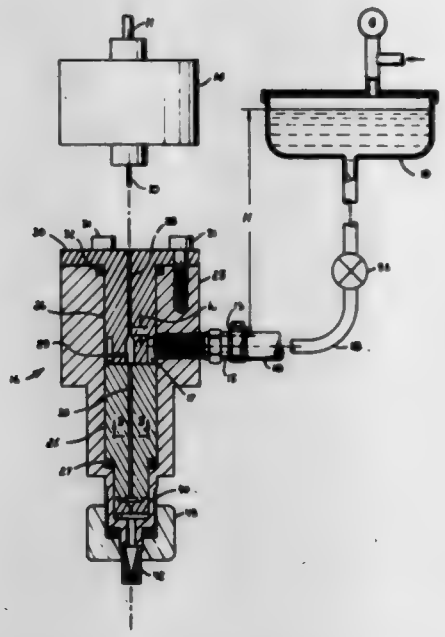
METHOD AND APPARATUS FOR COATING OPTICAL WAVEGUIDE FIBERS

Rama Iyengar, Lilburn, Ga., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Continuation of Ser. No. 369,874, Apr. 19, 1982, abandoned, which is a continuation-in-part of Ser. No. 265,713, May 20, 1981, abandoned. This application Jun. 9, 1983, Ser. No. 502,882
Int. Cl.³ G02B 1/10, 5/14
U.S. Cl. 427—163 2 Claims

1. A method of coating an optical fiber being drawn from a heated, rod-shaped glassy preform comprising the steps of passing the optical fiber downwardly through an applicator containing a viscous liquid coating material, the applicator having a channel extending therethrough from a channel entry end to a coating sizing die channel exit end, the channel being in fluid communication with viscous liquid coating material being supplied by a reservoir, passing the optical fiber downwardly through a restricted open end of a relatively long narrowly confined passage from the entry end of the channel passage to a relatively short and large passage at an intermediate portion of the channel, the narrowly confined passage having a relatively small amount of clearance between the wall thereof and the surface of the fiber passing therethrough, the short and large passage being relatively short compared to the narrowly confined passage and having a cross-sectional area substantially larger than that of the narrowly confined passage and that of the fiber, feeding the viscous liquid coating material under pressure from the reservoir of the viscous liquid coating material at a relatively high pressure into the relatively short

and large passage in the applicator through a passageway including at least one aperture in the channel and into the relatively long narrowly confined passage while passing the fiber through the applicator channel at a velocity relative to the viscosity of the coating material and a relatively narrow spacing between the fiber and the wall of the narrowly confined passage such as to create relatively higher shear forces in the liquid coating material contained therein sufficient to cause an action on the fiber which prevents the coating material under its fluid pressure from exiting the applicator through the relatively long narrowly confined passage whereby due to the relatively high fluid pressure of the coating material created by the relatively high shear forces creates a bubble barrier therein and air bubbles tend to be inhibited from being drawn from ambient atmosphere into the liquid coating material, since only a relatively small surface area of the viscous liquid coating



material between the fiber and wall of the narrowly confined passage is exposed to ambient atmosphere bubbles are inhibited from being formed in the viscous liquid coating material and descending in the liquid coating material in the relatively long narrow confined passage in the channel, and causing the fiber to move through a lower relatively long and narrowly confined cylindrical passage having a diameter slightly larger than that of the narrowly confined passage at the entrance end of the channel and on to the sizing die at the exit end of the applicator to create additional relatively high shear forces in the coating material and cause a still higher pressure in the coating material which tends to inhibit any bubbles of air which may tend to be entrained by the fiber from passing on through the applicator on the liquid coated fibers, with centering of the elongated material in the sizing die also being improved as result of a relatively extremely high pressure in the coating material as a result of the relatively high shear forces.

4,533,571

METHOD AND APPARATUS FOR UNIFORMLY COATING A SUBSTRATE WITH A POWDER

Carl Kramer, and Hans-Werner Kuster, both of Aachen, Fed. Rep. of Germany, assignors to Saint Gobain Vitrage, Courbevoie, France

Filed Mar. 12, 1984, Ser. No. 588,330

Claims priority, application France, Mar. 14, 1983, 83 04125

Int. Cl.³ B05D *1/12*

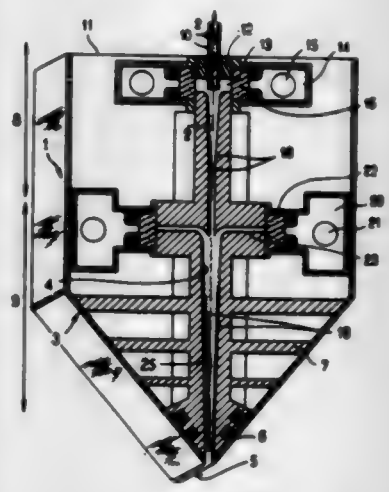
U.S. Cl. 427—180 **16 Claims**

1. A method for regularly distributing a powder on a substrate comprising the steps of:

introducing the powder into an elongated nozzle through a multiplicity of separate feeds that enter the nozzle at points removed from the substrate to be coated,

mixing the powder in an enclosure in said nozzle with gases that are blown into said enclosure uniformly over the entire length of said enclosure,

channeling the powder suspended in the gas between the opposite walls of a slit leading from the enclosure to form a thin sheet of powder whose length extends over the entire width of the substrate,



surrounding the sheet of powder with additional gas streams having the same velocity as the powder sheet and extending over the entire length of the sheet on each side and aimed approximately in the direction of the substrate, and

accelerating the powder sheet in the direction of the substrate.

4,533,572

PROCESS FOR PRODUCING VARNISH-BONDED CARBON-COATED METAL GRANULES

Ramaswami Neelameggham; Hedayat Abedi, both of Salt Lake City, Utah; John C. Priscu, Las Vegas, Nev., and Michael H. Legge, Tooele, Utah, assignors to AMAX Inc., Greenwich, Conn.

Filed Mar. 20, 1984, Ser. No. 591,658

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—216 **15 Claims**

1. A process for producing a substantially non-hygroscopic protectively-coated deoxidizing and desulfurizing agent in the form of metal granules for use in the treatment of molten iron and steel which comprises:

providing a free flowing charge of metal granules selected from the group consisting of Mg, Al and alloys thereof with a polymerizable oil coating around substantially each of said granules,

heating said charge of oil-coated granules to a polymerizing temperature below the melting point of said metal granules under substantially non-oxidizing conditions while mechanically mixing said granules to form a varnish coating on said granules, and

then raising the temperature of said varnish-coated granules to a decomposition temperature below the melting point of the metal granules to effect at least a partial conversion of said varnish to carbon and thereby produce a carbon coating strongly bonded to said granules by means of said varnish,

whereby said carbon-coated granules are protected against corrosion and the formation of hydrous oxides and also are characterized in that the pyrophoricity thereof is substantially inhibited when added to a molten iron or steel bath.

4,533,573

ANTI-SCALING OR MARKING COMPOSITION FOR APPLICATION TO METAL PRODUCTS AND METHOD OF MAKING AND USING THE COMPOSITION

Bruno M. Perfetti, Jeannette Borough, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Division of Ser. No. 445,790, Dec. 1, 1982,. This application Jan. 11, 1984, Ser. No. 569,822

Int. Cl.³ B05D *5/00*

U.S. Cl. 427—287 **4 Claims**

1. A method of producing legible markings on metal products, said method comprising:

(a) applying a composition to the surface of metal products which are at a temperature within the range of 1800° to 2500° F. in a manner to produce a legible marking thereon, said composition consisting essentially of

(i) solids of from about 30 to about 50 parts by weight of an opacifying pigment selected from the group consisting of titanium dioxide, zirconium silicate, chromium oxides and mixtures thereof, from about 43 to 58 parts by weight of water soluble alkali metal silicate binder, at least 50 percent of the alkali metal silicate in said binder being sodium silicate, the ratio of silicate to alkali metal oxide in said alkali metal silicate being within the range of 2.60 to 3.25, and a cross-linking binder selected from the group consisting of borax, boric oxide, sodium metaborate, barium metaborate, and mixtures thereof in sufficient amounts to provide from about 1.5 to about 5.0 parts by weight of B_2O_3, the ratio of total pigment to total binder solids being within the range of 0.50 to 1.0;

(ii) said solids being suspended in that amount of water to give said composition a viscosity within the range of 800 to 5000 centipoise, and

(b) baking said markings substantially by air cooling said metal products from said temperature to produce an adherent mark which will not flake off.

4,533,574

POLYIMIDE COATING COMPOSITIONS OF ESTERIFIED ANHYDRIDE AND AROMATIC AMINE MIXTURE

Michael Fryd, Haddonfield, and Burt T. Merriman, Jr., Willingboro, both of N.J., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Sep. 14, 1984, Ser. No. 650,759

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—385.5 **8 Claims**

1. A method of applying a polyimide coating have both solvent resistance and high planarity comprising the sequential steps:

(a) forming a solution in aprotic solvent of an aromatic dianhydride which has been at least 20% diesterified with a volatile alcohol;

(b) dissolving in the solution of step (a) a substantially equimolar amount of a mixture of aromatic amines comprising 90–99 mole % diamine and 10–1 mole % salt of tri- or tetra-amine and volatile organic acid;

(c) applying the solution of step (b) to a substrate and heating it to a temperature of 200°–300° C. to effect de-esterification of the dianhydride with the formation of volatile alcohol therefrom, formation of polyamic acid by polycondensation with the aromatic amines and vaporization of volatile alcohol and solvent from the reaction solution;

(d) heating the polyamic acid to 300°–500° C. to effect decomposition of the tri- or tetra-amine salt with the formation of volatile organic acid, substantially complete alcohol, organic acid and solvent removal, dehydration of the polyamic acid, formation of the corresponding polyimide, crosslinking and reflow of the polyimide, the polyimide having a T_g of 250°–330° C. and containing repeating polymer units having at least 2 flexible linkages or 1 flexible linkage derived from the dianhydride, provided the amine groups of the diamine are in the meta position relative to each other.

4,533,575

LATENTLY-CURABLE ORGANOSILICONE RELEASE COATING COMPOSITION

Kurt C. Melancon, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Division of Ser. No. 535,040, Sep. 23, 1983, Pat. No. 4,504,645. This application Dec. 18, 1984, Ser. No. 683,212

Int. Cl.³ B05D *3/02*

U.S. Cl. 427—387 **8 Claims**

1. A process comprising the steps:

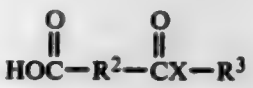
(a) providing a latently-curable organosilicone composition by mixing at ambient temperatures

(1) an ethylenically-unsaturated polysiloxane,

(2) a polyhydrosiloxane,

(3) an effective amount of a metal-containing hydrosilation catalyst to facilitate the addition cure reaction of components (1) and (2), and

(4) an amount of a hydrosilation inhibitor 1,4-dicarboxylic acid compound sufficient to inhibit premature gelation of the mixture of components (1), (2), and (3) at low, ambient or room temperature but insufficient in amount to prevent hydrosilation of the mixture at an elevated temperature, said hydrosilation inhibitor having the structural formula



III

wherein

R^2 is ethynylene or cis-ethenylene;

R^3 is a saturated or unsaturated organic group having 1 to 12 carbon atoms which is unsubstituted or substituted by 1 to 23 halogen atoms, and has up to 25 hydrogen atoms; and

X is —O— or



in which R^4 is the same as defined for R^3, and R^3 and R^4 together with the N can form a saturated azacyclic ring,

(b) coating a substrate with said admixture, and

(c) elevating the temperature of the resulting coated admixture when cure of said admixture is to be effected.

4,533,576

COMPOSITE MATERIAL FOR PACKAGING CONTAINERS

Toshifumi Tanahashi, Yokohama, and Senji Itoh, Ayase, both of Japan, assignors to Toyo Seikan Kaisha Limited, Tokyo, Japan

Filed Aug. 3, 1983, Ser. No. 519,812

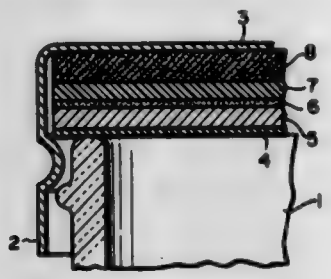
Claims priority, application Japan, Aug. 6, 1982, 57-136348

Int. Cl.³ B32B *27/36*

U.S. Cl. 428—35 **12 Claims**

1. A composite material for packaging containers, said composite material consisting of a metallic foil and a thermoplastic resin selected from the group consisting of polyolefinic resins, polyester resins, polyamide resins, polycarbonate resins and mixtures thereof, said thermoplastic resin layer having a thickness of 1 to 20 microns and a surface roughness of not more than 4.0 μm Rmax L0.80 mm, said thermoplastic resin having a carbonyl concentration of 1 to 600 milliequivalents/100 g of resin for the polyolefinic resins, 1,000 to 1,300 mil-

liequivalents/100 g of resin for the polyester resins, 500 to 1,200 milliequivalents/100 g of resin for the polyamide resins



and 600 to 800 milliequivalents/100 g of resin for the polycarbonate resins.

4,533,577

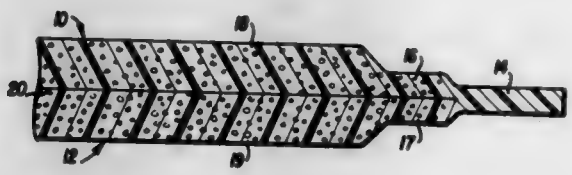
CONTAINER HAVING HEAT SEALED JUNCTURE REGION

Marjory A. Mier, Somerset, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 453,243, Dec. 27, 1982,. This application Dec. 21, 1983, Ser. No. 563,739

Int. Cl.³ B32B *3/02, 3/26, 5/14*

U.S. Cl. 428—35 **10 Claims**



1. A container comprising a first layer of a foam polymer sheet material;

a second layer of a polymer sheet material which is heat-sealed to said first layer;

said first layer having a flexible and foldable area of crushed and compressed cellular structure free of fusion caused by crushing and compressing directly adjacent the heat-sealed portion, said flexible and foldable area of crushed and compressed cellular structure having a width which is at least as great as the thickness of uncompressed foam in said first layer, said flexible and foldable crushed and compressed cellular structure being adjacent at least one of the two major surfaces of said first layer.

4,533,578

SANDWICH FOAM COEXTRUSION FOR HIGH PERFORMANCE POLYOLEFIN TRASH BAGS

Dana M. Boyd, Rushville; Edward A. Colombo, Fairport, and William H. Lashway, Rochester, all of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 30, 1983, Ser. No. 527,933

Int. Cl.³ B32B *1/02, 1/08, 27/06, 27/32*

U.S. Cl. 428—35 **9 Claims**

1. A three-ply plastic bag structure comprising a U-folded layflat joined at two ends thereof by at least one heat seal at each end, the heat seals defining an opening of the bag, said U-folded layflat comprising an upper member and a lower member, the upper member being positioned substantially parallel to and above the lower member, the upper member being joined to the lower member by a U-fold of said U-folded layflat and by the heat seals positioned substantially perpendicularly to the U-fold, the upper and the lower members comprising:

(i) outermost and innermost skin layers substantially composed of one or more high performance polyolefin resins, said skin layers being of equal or different thickness, said skin layers each having a thickness between about 0.25 and about 0.50 mils; and

(ii) a middle foamed thermoplastic layer having a density of at least 25% less than the density of the corresponding unfoamed version of said layer, the thickness of said foamed layer being between about 0.25 and about 1.5 mils.

4,533,579

VIBRATION-RESISTANT, HEAT-INSULATING CASTING AND METHOD OF MAKING

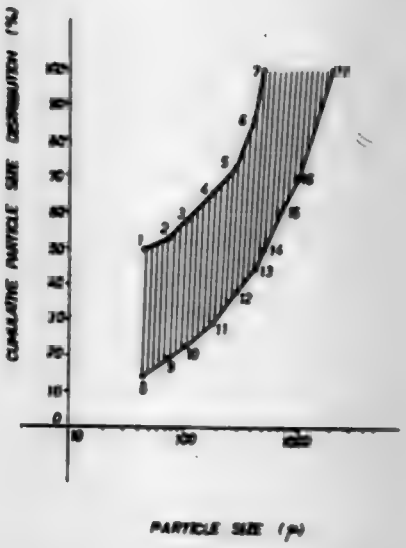
Kametaro Hashimoto; Kenji Ushitani; Fumiyoshi Noda; Masahiko Sugiyama, and Mikio Murachi, all of Toyota, Japan, assignors to Toyoda Jidosha Kogyo Kabushiki Kaisha, Toyoda, Japan

Continuation of Ser. No. 317,340, Nov. 2, 1981, abandoned, which is a continuation of Ser. No. 161,404, Jun. 20, 1980, abandoned, which is a continuation of Ser. No. 924,348, Jul. 13, 1978, abandoned, which is a continuation of Ser. No. 715,977, Aug. 19, 1976, abandoned, which is a division of Ser. No. 559,882, Mar. 19, 1975, abandoned. This application Sep. 24, 1982, Ser. No. 423,172

Claims priority, application Japan, Mar. 23, 1974, 49-32880

Int. Cl.³ B22D *19/00*

U.S. Cl. 428—36 **14 Claims**



1. A vibration-resistant heat-insulating casting consisting essentially of (a) a ceramic part manufactured by molding particles of ceramic material having a cumulative particle size distribution within the shaded area indicated in FIG. 4 of the drawings as filed, and firing the molded ceramic, and (b) a metal cast around said ceramic part, said ceramic material being selected from the group consisting of alumina, cordierite, zirconia and glass ceramic and said casting metal being selected from aluminum alloy and cast iron.

4,533,580

COMPOSITE INSULATION MATERIAL

Malcolm Otty, Westering, Mill Hay Rd., Caldy, Merseyside, England

Continuation of Ser. No. 392,618, Jun. 28, 1982, abandoned. This application Apr. 19, 1984, Ser. No. 601,126

Claims priority, application United Kingdom, Jul. 1, 1981, 8120234

Int. Cl.³ B32B *3/06*

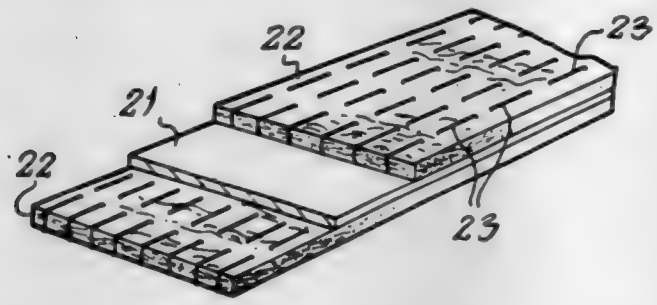
U.S. Cl. 428—36 **9 Claims**

1. A composite insulation material for the slot-fitting coils of large rotating electric plants comprising:

a micaceous layer; and

outer layers of a textile material capable of being compressed

and of absorbing resin, said composite insulation material being preformed in the form of a channel section having



an elongated concavity shaped for application to the slot fitting portion of a coil.

4,533,581

HIGHLY HEAT-RESISTANT DISC ROLL

Hiroshi Asaumi, 1-17-30, Iwase, City of Kamakura, Kanagawa Prefecture; Shigeo Take, 1530-99, Terao, City of Ayase, Kanagawa Prefecture; Masazumi Akase, 303-1-2, Katsura-cho, Tozuka-ku, City of Yokohama, Kanagawa Prefecture, and Isao Terada, 1-5-21, Tsurumi, Tsurumi-ku, City of Yokohama, Kanagawa, Japan

Filed Mar. 7, 1983, Ser. No. 473,105

Claims priority, application Japan, Mar. 9, 1982, 57-35893

Int. Cl.³ B32B *5/16*; B21B *27/00*

U.S. Cl. 428—64 **1 Claim**

1. A highly heat-resistant disc roll comprising laminated discs, each disc comprising 20 to 90% by weight, based on the total solids, of mica particles, 1 to 35% by weight, based on the total solids, of a binder, 5 to 40% by weight, based on the total solids, of an inorganic filler and 1 to 30% by weight, based on the total solids, of a reinforcing fiber, at least 60% by weight of said mica particles having a particle size of 10 to 1,000 μm, said mica particles being phlogophite formed by cleavage of mica crystals into scales.

4,533,582

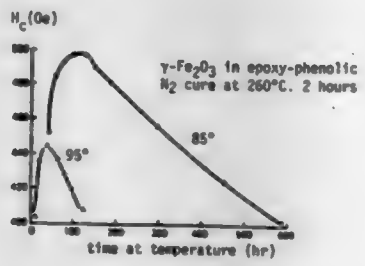
STABILIZED MAGNETIC RECORDING MATERIALS AND PROCESS FOR TAILORING AND STABILIZING OF MAGNETIC RECORDING MATERIALS

Vincent M. DePalma, Pleasant Valley, N.Y., and Albert W. Ward, Santa Cruz, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Continuation-in-part of Ser. No. 380,658, May 21, 1982, abandoned, which is a continuation-in-part of Ser. No. 219,620, Dec. 24, 1980, abandoned. This application Jul. 19, 1983, Ser. No. 515,327

Int. Cl.³ H01F *10/02*

U.S. Cl. 428—64 **14 Claims**



1. A method of imparting a storage stable preselected magnetic coercivity value to a film of a magnetic coating composition on a substrate and including a heat curable binder system having magnetic particles therein, comprising the steps of:

curing said coating composition in an anaerobic atmosphere by heating said film at a temperature and for a period of time effective to cure the binder system and raise the magnetic coercivity of said coating composition to a first, storage unstable value lower than said preselected value but substantially higher than the value achievable when said coating composition is cured in air;

annealing said cured composition by heating said cured coating composition at a temperature substantially lower than said curing temperature, but higher than standard room temperature, for a period of time effective to further increase the coercivity of said coating composition to the selected value; and

cooling said coating composition thereby rendering its magnetic coercivity storage stable at said pre-selected value.

4,533,583

THERMAL INSULATING MAT

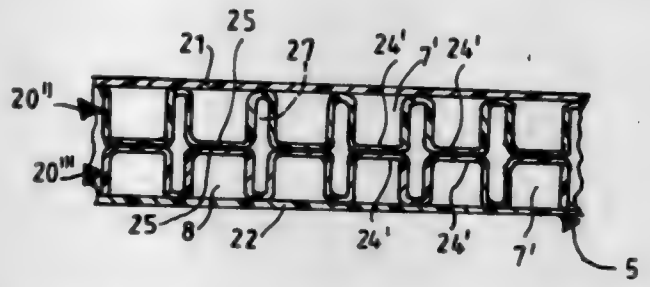
Michael G. May, Bel Air, CH 1180 Rolle, Switzerland

Continuation of Ser. No. 380,854, May 21, 1982, abandoned. This application Mar. 19, 1984, Ser. No. 591,236

Claims priority, application Fed. Rep. of Germany, May 22, 1981, 3120411

Int. Cl.³ B32B *3/04*

U.S. Cl. 428—69 **10 Claims**



1. A thermal insulating mat comprising a plurality of sealed chambers filled with a filler gas having a heat conductivity lower than air, said sealed chambers being formed by spaced flexible film with at least two layers of separate chambers formed by separate continuous flexible films disposed one over the other with said separate continuous films having portions thereof that extend parallel with said spaced film and adjacent portions that extend perpendicular to said spaced film with said parallel portions secured in a gas-tight manner to at least one of said spaced film thereby forming a plurality of separate chambers between said spaced parallel film.

4,533,584

MULTI-CHANNEL BODY

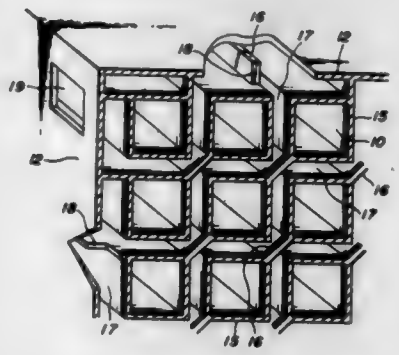
Yukihisa Takeuchi, and Tadashi Fujita, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Apr. 2, 1984, Ser. No. 596,103

Claims priority, application Japan, Apr. 5, 1983, 58-58752

Int. Cl.³ B32B *3/12*

U.S. Cl. 428—116 **7 Claims**



1. A multi-channel body comprising:

an outer wall;

a plurality of parallelly situated independent channels located inside of said outer wall, each of said independent channels being defined by partition walls having an inner

surface and an outer surface and each parallelly situated independent channel does not share any portion of any partition wall with any other parallelly situated independent channel, whereby a first fluid passes through said parallelly situated independent channels in contact with inner surfaces of said partition walls;

a plurality of connecting walls for connecting said parallelly situated independent channels and at least one connecting wall communicates with one partition wall of each independent channel, whereby a plurality of continuous passages are formed throughout said multi-channel body around said plurality of parallelly situated independent channels, said continuous passages being defined by outer surfaces of said partition walls, said connecting walls and said outer wall of the multi-channel body, thereby permitting a second fluid to pass through said plurality of continuous passages in contact with outer surfaces of said partition walls;

at least one inlet in said outer wall of the multi-channel body communicating with said continuous passages to permit said second fluid to enter said continuous passages; and

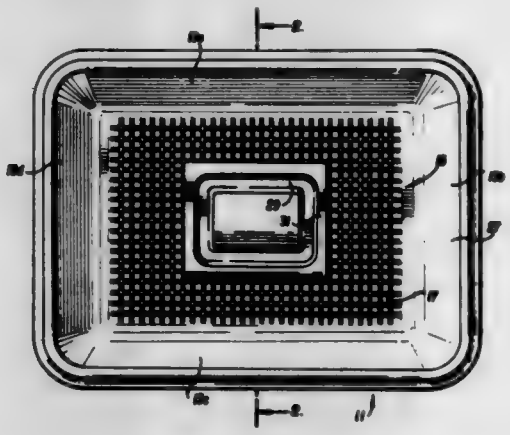
at least one outlet in said outer wall of the multi-channel body communicating with said continuous passages to permit said second fluid to exit said continuous passages.

4,533,585

LIQUID HOLDING PACKAGING TRAY

M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, N.Y.

Filed May 25, 1984, Ser. No. 614,089
Int. Cl.³ B32B *3/12*; B65D *1/34*
U.S. Cl. 428—116 **18 Claims**



1. A molded packaging tray comprising:

a generally rectangular bottom, and side walls extending upwardly from the periphery of said bottom, said side walls being of substantially the same height and integrally connected around the periphery of said bottom, said side walls and bottom being of an integrally molded construction, said bottom containing a plurality of liquid retaining cells having a size and configuration which enables said cells to retain liquids therein by capillary action, said bottom further containing at least one upstanding area having a height of a level which is greater than the level of the upper edges of said cells, said upstanding area assisting in maintaining a comestible above said upper edges of said cells.

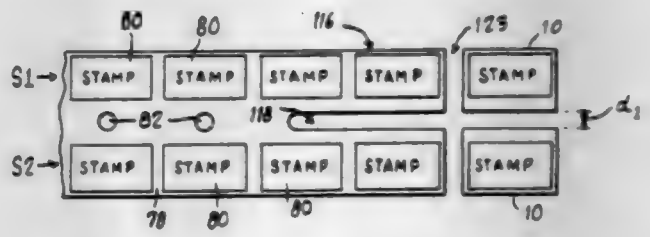
4,533,586

WEB OF ADHESIVE LABELS

Richard L. Roule, Westport; Peter J. Sorbo, Stamford, both of Conn., and John J. Kimball, Huntington Station, N.Y., assignors to American Bank Note Company, New York, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,374
Int. Cl.³ B32B *3/24*
U.S. Cl. 428—137 **3 Claims**

1. For use in applying adhesive labels to end surfaces of each of a group of identically shaped and dimensioned articles of rectangular solid configuration arranged contiguously, with said end surfaces facing upwardly and coplanar, in a predetermined plurality of parallel horizontal rows each including a predetermined plurality of the articles aligned with the articles in each adjacent row, a unitary elongated web of flexible sheet material, constituting a supply of the labels, having one surface bearing an adhesive material and an opposite surface bearing a multiplicity of label imprints arranged in said predetermined



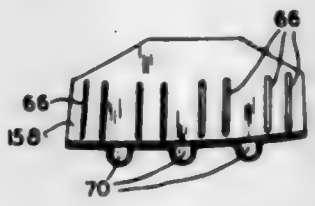
plurality of rows, the imprints in adjacent rows being aligned with each other, said rows of imprints extending lengthwise of the web and being spaced apart transversely of the web, the spacing between adjacent rows of imprints on the web being equal to a predetermined desired spacing between applied labels in adjacent rows of said articles in a group, said web further having an array of holes disposed at regular intervals along its length between adjacent rows of said imprints and in register with successive imprints in said last-mentioned rows.

4,533,587

CONNECTION INSULATORS

Eldon E. Moodie, and Richard D. Burns, both of Holland, Mich., assignors to General Electric Company, Fort Wayne, Ind.

Division of Ser. No. 268,529, May 29, 1981, Pat. No. 4,356,051, which is a division of Ser. No. 871,681, Jan. 23, 1978, abandoned.
This application Jul. 29, 1982, Ser. No. 403,271
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—166 **3 Claims**



1. An improved connection insulator having a base portion and a retaining portion with a plurality of webs secured together for establishing a plurality of insulating compartments, wherein the improvement comprises: a base portion formed of polyethylene terephthalate; a retaining portion formed by a laminated material comprising at least one layer of polyethylene terephthalate and at least one layer of a polyamide insulating paper material; and fused portions established between the polyethylene terephthalate material of the base portions and the at least one layer of polyethylene terephthalate of the laminated material of the retaining portion for securing together the base portion and the retaining portion, and thereby establishing insulating compartments.

4,533,588

GROOVED PLASTIC BOARD AND METHOD OF MAKING SAME

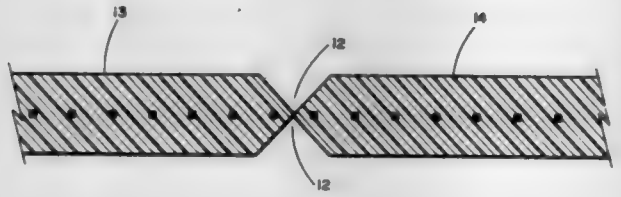
Howard R. Kraft, St. Paul, Minn., assignor to T. O. Plastics, Inc., Minneapolis, Minn.

Filed Sep. 4, 1984, Ser. No. 646,800
Int. Cl.³ B32B *3/30, 31/16*
U.S. Cl. 428—167 **14 Claims**

1. A product of the nature described, comprising:

a sheet of molded plastic material of substantial thickness having top and bottom surfaces with a thin sheet of mesh

embedded in said sheet between said top and bottom surfaces with the plastic material fused together through and substantially filling the mesh openings for tenaciously



holding together the mesh and plastic material; and elongated cutline extending from at least one surface through the sheet to the mesh forming the sheet into hingedly attached separate sections.

4,533,589

COMPOSITE MATERIALS

John H. Sewell, Aldershot, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jul. 24, 1984, Ser. No. 633,880

Claims priority, application United Kingdom, Aug. 25, 1983, 8322919

Int. Cl.³ B32B *23/10, 31/12*

U.S. Cl. 428—174 **7 Claims**

4. A fibre reinforced composite material comprising at least one layer of woven or unidirectional carbon or aramid fibres impregnated with resin and bonded to at least one layer of wood veneer coated with and at least partially impregnated with resin.

4,533,590

CARRIER MATERIALS COATED WITH AMINO RESIN DISPERSIONS, AND THEIR FURTHER PROCESSING INTO LAMINATES

Peter Dörries, Frankfurt am Main, and Helmut Wahl, Düsseldorf, both of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main and Theodor Hymmen KG, Bielefeld, both of, Fed. Rep. of Germany

Division of Ser. No. 473,969, Mar. 10, 1983,. This application May 30, 1984, Ser. No. 615,374

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208728

Int. Cl.³ B32B *3/00, 7/00, 29/00*

U.S. Cl. 428—211 **4 Claims**

1. A carrier web coated with amino resin wherein at least one surface is resinated with a spreadable amino resin dispersion containing 70–90% by weight of a solid, modified melamine-formaldehyde resin having a melamine-formaldehyde ratio of from 1:1.5 to 1:2.2 and a water-dilutability within the range from 1:0.8 to 1:1.5 and 30–10% by weight of a liquid dispersant.

4,533,591

PROCESS FOR PRODUCING A DEVICE FOR REFLECTING ELECTROMAGNETIC ENERGY AND PRODUCT PRODUCED THEREBY

Paul O. Sorko-Ram, 1111 N. Centerville, Sturgis, Mich. 49091

Division of Ser. No. 440,912, Nov. 12, 1982,. This application Nov. 21, 1983, Ser. No. 553,497

Int. Cl.³ B32B *5/02*

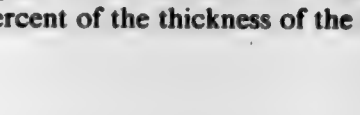
U.S. Cl. 428—213 **4 Claims**

1. An electromagnetic energy reflector, comprising:

a first and second layer of thermoplastic resin material substantially transparent to said electromagnetic energy;

a sheet of electrically conductive material having a thickness substantially less than the thickness of either of said first or second thermoplastic resin layers positioned between said first and second layers; and

a quantity of electrically conductive particles embedded in at least one of said first and second layers, said particles being disposed in an electrically conductive relationship to said sheet and having a size and distribution density



effective to cooperate with said sheet to establish electrical continuity within said reflector and effectively reflect said electromagnetic energy.

4,533,592

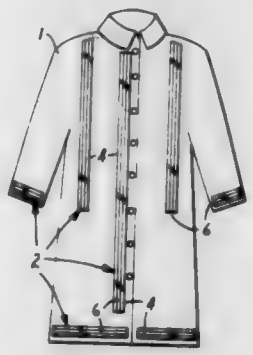
THERMALLY STABLE FLAME RETARDANT REFLECTIVE AND RETROREFLECTIVE TRIM

Wallace K. Bingham, North St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Aug. 2, 1984, Ser. No. 636,981

Int. Cl.³ G09F *13/16*

U.S. Cl. 428—213 **7 Claims**



1. A material suitable for incorporation into fabrics which will be exposed to high temperatures comprising a fire resistant fabric having a weight of at least 85 grams per square meter and characterized by:

(A) a fluorescent coating on the fabric;

(B) a flexible, drapable, stretchable, retroreflective sheeting covering a portion of the material and comprising a layer of transparent lens elements in optical connection with a reflecting means;

(C) the combined thicknesses of the fluorescent coating and any flammable part of the retroreflective sheeting being about 5 to 60 percent of the thickness of the fire resistant fabric.

4,533,593

ANTIREFLECTION COATING FOR POTASSIUM CHLORIDE

Takeo Miyata; Takuhiro Ono, and Takashi Iwabuchi, all of Kanagawa, Japan, assignors to Agency of Industrial Science and Technology, Tokyo, Japan

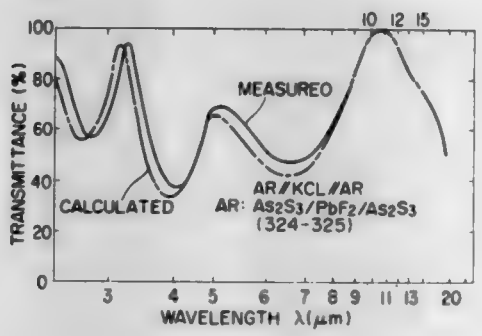
Filed Sep. 16, 1983, Ser. No. 533,273

Int. Cl.³ B32B *7/00, 15/04;* G02B *5/26*

U.S. Cl. 428—215 **2 Claims**

1. An antireflection coating for a potassium chloride substrate, said coating comprising a first arsenic trisulfide (As_2S_3)

layer, a lead fluoride (PbF_2) layer and a second arsenic trisulfide (As_2S_3) layer which are formed on at least one major



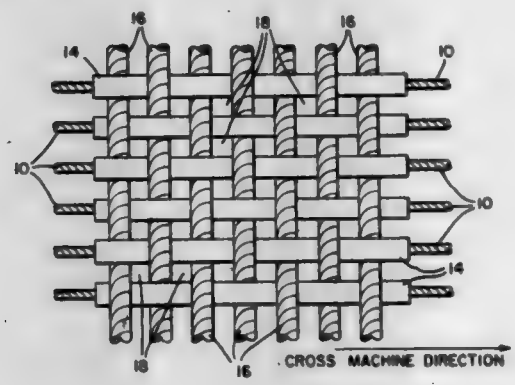
surface of the potassium chloride (KCl) substrate in the order named.

4,533,594

BATT-ON-MESH FELT EMPLOYING POLYURETHANE-COATED MULTIFILAMENTS IN THE CROSS-MACHINE DIRECTION

Robert D. Buchanan, Frankfurt, Ky., assignor to Porritts & Spencer, Wilson, N.C.

Filed Dec. 16, 1983, Ser. No. 562,074
Int. Cl.³ B32B 5/02
U.S. Cl. 428—236 **13 Claims**



1. A papermakers' felt of the batt-on-mesh type wherein each strand of yarn woven in the cross-mchine direction of the mesh layer of said papermakers' felt comprises a yarn coated with a solid layer of polyurethane in such a manner that said yarn is hard, non-resilient and resistant to abrasion.

4,533,595

ABRASION-RESISTANT RESINOUS ARTICLES

Daniel R. Olson, and Timothy W. O'Donnell, both of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Jan. 11, 1984, Ser. No. 569,876
Int. Cl.³ B32B 27/30
U.S. Cl. 428—336 **13 Claims**

1. A solid article of manufacture comprising (A) a resin base; (B) an abrasion-resistant surface coating on said resin base; and (C) a primer coating between said resin base and said surface coating, said primer coating comprising an addition copolymer of a monomer mixture comprising (C-1) a major proportion of at least one acrylic monomer and (C-2) a minor proportion of at least one ethylenically unsaturated monomer having the formula

$$CH_2=\underset{\displaystyle R^1}{\overset{|}{C}}-Z-X^1, \qquad (I)$$

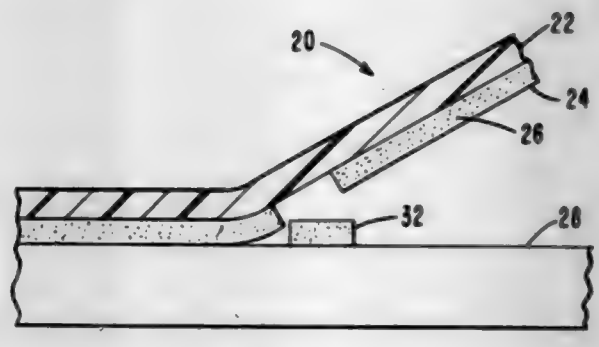
wherein R^1 is hydrogen or methyl, Z is a substantially inert linking group, and X^1 is an ultraviolet degradation-inhibiting moiety.

4,533,596

THERMAL MAGNETIC TRANSFER RIBBON

Thomas P. Besselman, Dayton, Ohio, assignor to NCR Corporation, Dayton, Ohio

Filed Jun. 28, 1983, Ser. No. 508,630
Int. Cl.³ B41M 5/26
U.S. Cl. 428—341 **16 Claims**



1. A thermal magnetic ribbon for use in non-impact printing comprising a substrate and a transfer layer which is a mixture containing about 3% to 10% hydocarbon resin as a binder material, about 1.5% to 5% hydrocarbon oil, about 15% to 50% wax, about 12% to 50% magnetic pigment in a ratio of about 4:1 with the hydrocarbon resin, about 1% wetting agent, all by dry weight, and about 30% to 60% solvent by wet weight for solubilizing the mixture.

4,533,597

ADHESIVE FOR COMPOSITE YARN PRODUCT

Michaelene Dwulet, Lyndhurst, N.J., assignor to Multi-Tex Products Corp., Kearny, N.J.

Division of Ser. No. 362,717, Mar. 29, 1982, abandoned. This application Nov. 1, 1983, Ser. No. 547,696
Int. Cl.³ D02G 3/00
U.S. Cl. 428—375 **17 Claims**

1. A composite yarn product comprising strands of a composite resinous laminate, said laminate having at least 3 film layers thereof, and consisting essentially of:

A. a central substrate comprising a colored cellulosic material having two opposed surfaces;

B. an outer thermoplastic film adhered to each of said opposed surfaces;

C. an adhesive composition adhering said substrate to the adjacent surfaces of said outer films, said adhesive composition applied to the adjacent surfaces of said outer films prior to the placement of said adjacent surfaces against the respective surfaces of said colored substrate, said adhesive composition consisting essentially of;

i. a first component, said first component comprising a resin material selected from copolymers of acrylonitrile and butadiene, and copolymers of butadiene and styrene, in an amount by weight of said adhesive composition of up to about 10%, and at least one organic solvent present in an amount by weight, based on said composition of about 10%; and

ii. a second component comprising a vinylchloride-vinylacetate copolymer, present in an amount by weight of from about 5% to about 10%, an epoxy resin present in an amount of about 5% by weight, and a solvent system for said second component present in an amount up to about 75% by weight of said adhesive composition;

iii. said first and said second components initially prepared individually, and said second component is dispersed in said first component; and

D. wherein the completed yarn product possesses an aggregate thickness of no greater than 2 mil.

4,533,598

EXTENDED POLYURETHANES

William J. Downey, Linden, and Melvin Brauer, East Brunswick, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Filed Nov. 18, 1983, Ser. No. 553,196
Int. Cl.[3] C08K 5/01; C08L 75/04; H01B 3/30
U.S. Cl. 428—380 44 Claims

43. An insulated electrical device comprising a plurality of insulated wire conductors and a cured re-enterable cyclic olefin extended polyurethane gel composition comprising from about 8 to 49 parts by weight of a liquid reaction product of an organic polyisocyanate with a polyol having an equivalent weight of between about 230 and 6,000 in the presence of between about 92 and 51 parts by weight of a first extender comprising a liquid cyclic olefin which is compatible with the resulting polyurethane.

44. An insulated electrical device comprising a plurality of insulated wire conductors and a cured re-enterable cyclic olefin extended polyurethane gel composition consisting essentially of a liquid reaction product of an organic polyisocyanate with a polyol having an equivalent weight of between about 230 and 6,000 in the presence of a first extender comprising a liquid cyclic olefin which is compatible with the resulting polyurethane.

4,533,599

MICROCAPSULE AND PROCESS FOR THEIR PRODUCTION

Fumio Okumura, and Akira Kawai, both of Takasago, Japan, assignors to Mitsubishi Paper Mills, Ltd., Tokyo, Japan

Filed Mar. 23, 1984, Ser. No. 592,845
Claims priority, application Japan, Mar. 25, 1983, 58-51091
Int. Cl.[3] B01J 13/02; B32B 27/42
U.S. Cl. 428—402.21 8 Claims

1. A process for producing microcapsules containing a hydrophobic material as a core material, the process comprising the steps of dispersing or emulsifying a hydrophobic material in the form of discontinuous microparticles in an acidic aqueous solution containing a partially esterified product of a styrene-maleic anhydride copolymer, the partially esterified product of a styrene-maleic anhydride copolymer being used in a quantity of 2 to 20 parts by weight relative to 100 parts by weight of the hydrophobic material, adding a melamine-formaledhyde precondensate to the dispersion or emulsion obtained, and subjecting the resuting mixture to reaction in an acidic phase with heating to form a shell film on each microparticle.

8. Microcapsules produced by the process defined in claim 1.

4,533,600

SEALANT SHEET MATERIAL

Raymond T. Coughlan, Darien, and Suzette M. Bojarski, Tinley Park, both of Ill., assignors to Daubert Coated Products Inc., Chicago, Ill.

Filed Apr. 26, 1984, Ser. No. 604,044
Int. Cl.[3] B32B 27/38; C09J 7/02
U.S. Cl. 428—414 10 Claims



1. A low cost sheet material adapted for use as a substrate on which to cast sealants or adhesives, comprising: a supporting base layer formed of a highly calendered, smooth grade kraft paper; a continuous coating of a resin composition on each of the main surface areas of the kraft paper base layer, said resin composition consisting essentially of a nitrile rubber modified polyvinyl chloride; and a continuous film of a silicone release agent on the surface of at least one of said coatings of the resin composition.

4,533,601

POLYVINYLBUTYRAL FILMS WHICH CONTAIN PLASTICIZER AND HAVE A REDUCED ADHESIVE POWER ON GLASS

Hans D. Hermann, Bad Soden am Taunus; Klaus Fabian, Kriftel, and Joachim Ebigt, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jan. 31, 1984, Ser. No. 575,712
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303156
Int. Cl.[3] C08L 29/14, 29/04; C08K 3/22, 5/17
U.S. Cl. 428—437 14 Claims

1. A method of reducing adhesion to glass of a thermoplastic polyvinylbutyral molding composition, which contains plasticizer and in which the polyvinylbutyral component contains 21–28% by weight of vinyl alcohol units (based on the polyvinylbutyral), by mixing constituents of the molding composition with an anti-adhesive agent combination of

(a) potassium hydroxide, potassium formate or potassium acetate in an amount corresponding to an alkali titer of between 10 and 200 (based on the polyvinylbutyral) and

(b) 0.005 to 0.5% by weight (based on the polyvinylbutyral) of a compound having a betaine structure.

4,533,602

MODIFIED POLYOLEFIN COMPOSITION USEFUL FOR BONDING MATERIALS

Yoichi Nakamura, Urawa; Shumei Watarai, and Shohta Matsuo, both of Tokyo, all of Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

Filed Mar. 19, 1984, Ser. No. 590,848
Claims priority, application Japan, Mar. 29, 1983, 58-51582
Int. Cl.[3] C08K 3/26; B32B 9/04
U.S. Cl. 428—447 14 Claims

1. A modified polyolefin composition having excellent bonding properties comprising:

(A) 10% to 80% by weight of a modified polyolefin resin prepared by modifying a non-modified polyolefin resin consisting essentially of at least one member selected from the group consisting of (a) crystalline polypropylene homopolymers, (b) crystalline random and block propylene copolymers containing not more than 30% by weight of at least one member selected from the group consisting of ethylene, and α-olefins having 4 to 10 carbon atoms, (c) polyethylene homopolymers having a density of at least 0.93 g/cm^3, (d) random and block ethylene copolymers containing not more than 15% by weight of an α-olefin, and (e) mixtures of the polymers of (a), (b), (c) and (d) with not more than 50% by weight of the mixture of at least one polyethylene homopolymer having a density of at least 0.93 g/cm^3, with a modifying agent in an amount of from 0.01 to 5 parts by weight per 100 parts by weight of said non-modified polyolefin resin, said modifying agent consisting essentially of at least one unsaturated silane compound having a polar radical, in the presence of a modifying assistant consisting essentially of at least one organic peroxide compound at an elevated temperature;

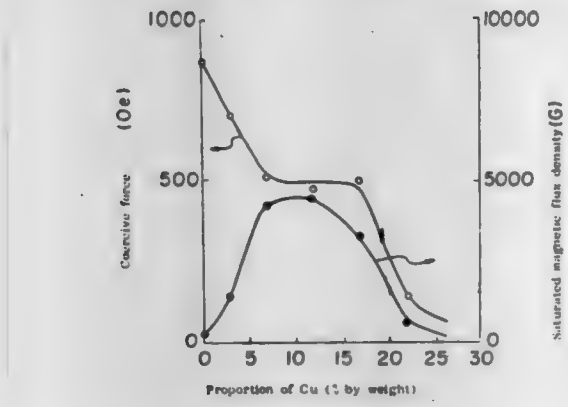
(B) 5% to 50% by weight of a finely pulverized inorganic material consisting essentially of at least one member selected from the group consisting of heavy calcium carbonate and light calcium carbonate each in the form of particles having an average size of from 0.05 to 10 microns; and

(C) 10% to 80% by weight of the non-modified polyolefin resin.

4,533,603
MAGNETIC RECORDING MEDIUM

Kazumasa Fukuda, and Yoshimi Kitahara, both of Tokyo, Japan, assignors to TDK Electronics Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1982, Ser. No. 419,474
Claims priority, application Japan, Nov. 16, 1981, 56-182252
Int. Cl.[3] G11B *5/64*
U.S. Cl. 428—458 3 Claims



1. A magnetic recording medium comprising a substrate of a polymer selected from the group consisting of polyester, polyimide and polyamide, and a thin magnetic metal layer formed on said substrate by a sputtering method, said magnetic metal layer consisting essentially an alloy of maganese and aluminum containing of 5–20% by weight of copper, the weight ratio of Mn:Al being within the range from 65:35 to 75:25, the thin magnetic metal layer having a thickness of from 0.1 to 1.0 μm, a minimum coercive force of 300 Oe, and a minimum saturated magnetic flux density of 1500 G, the sputtering being conducted at a low substrate temperature enabling use of said polymer substrate.

4,533,604
PRESSURE-SENSITIVE AND CONDUCTIVE RUBBER

Kazuhiro Honda, and Hiroshi Kuramochi, both of Komur Ina, Japan, assignors to Kokoku Rubber Industrial Company Limited, Japan

Filed Jun. 10, 1983, Ser. No. 503,039
Claims priority, application Japan, Jul. 9, 1982, 57-118639
Int. Cl.[3] H01B *1/06;* B32B *27/32*
U.S. Cl. 428—521 3 Claims

1. In a pressure-sensitive conductive rubber material including filler particles selected from the group consisting of carbon black particles and metallic particles; an improved pressure-sensitive conductive rubber made of butadiene rubber and an organic liquid selected from the group consisting of naphthenic oil, liquid butadiene rubber and toluene, said organic liquid being compatible with said pressure-sensitive conductive rubber and impregnated into said pressure-sensitive conductive rubber.

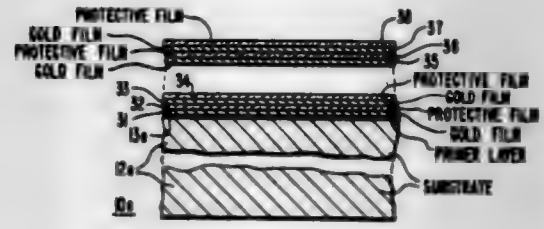
2. The improved pressure-sensitive conductive as defined in claim 1 wherein said organic liquid substance is toluene and forms a flexible layer on a surface thereof.

4,533,605
ARTICLE SUCH AS JEWELRY OR A WRISTWATCH COMPONENT HAVING COMPOSITE MULTI-FILM PROTECTIVE COATING

Richard A. Hoffman, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 612,492, May 21, 1984, abandoned, which is a division of Ser. No. 264,322, May 18, 1981, which is a continuation-in-part of Ser. No. 185,655, Sep. 9, 1980, abandoned. This application Dec. 3, 1984, Ser. No. 677,886
Int. Cl.[3] C23C *15/00*
U.S. Cl. 428—635 15 Claims

1. An article that is composed of a base metal at least a portion whereof is covered by a composite coating comprising essentially a series of overlapped alternately-arranged thin films of (a) a metal that is different from the base metal and (b) a selected non-metallic material which is substantially transparent and of sufficient hardness to constitute an abrasion-resistant film,



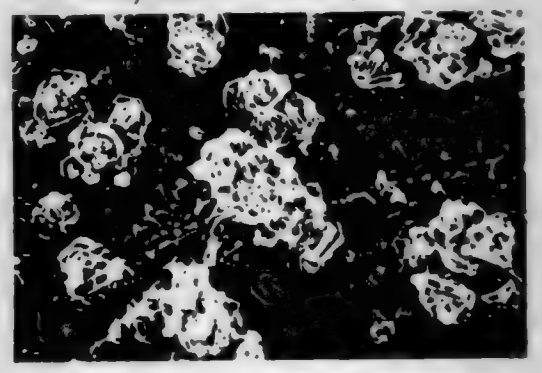
the first film in the series comprising a film of said metal that is bonded to the base metal, and the last film in the series comprising an abrasion-resistant substantially transparent film of said non-metallic material which thus constitutes the outer surface of the coated portion of the article.

4,533,606
ELECTRODEPOSITION COMPOSITION, PROCESS FOR PROVIDING A Zn/Si/P COATING ON METAL SUBSTRATES AND ARTICLES SO COATED

Yu-Ling Teng, Bayside, N.Y.; Charles McCoy, Pearland; Francis DeFalco, Houston, both of Tex., and Richard Mayernick, North Merrick, N.Y., assignors to Kollmorgan Technologies Corp., Dallas, Tex.

Filed Aug. 16, 1984, Ser. No. 641,557
Int. Cl.[3] B32B *15/04;* C25D *3/56*
U.S. Cl. 428—658 19 Claims

SCANNING ELECTRON MICROSCOPE PHOTOGRAPHS OF ZINC/SILICONE PHOSPHOROUS COATINGS



1. A method to provide a solution suitable for electrodepositing a coating comprising at least about 70% by weight of zinc, at least about 0.1% by weight of silicon, and at least about 0.5% by weight of phosphorus on a metallic substrate, the method comprising:

(a) contacting metallic zinc and silicon with phosphoric acid and an alkali metal hydroxide until between 0.4 and 1.3 moles of alkali metal hydroxiue per mole of phosphoric acid has been added;

(b) allowing the reaction to proceed until gas evolution ceases;

(c) removing residual metallic zinc and silicon from the solution; and

(d) adjusting the pH to 2.5 or greater.

11. A method of electrodepositing a coating comprising at least about 70% by weight of zinc, at least about 0.1% by weight of silicon, and at least about 0.5% by weight of phosphorus on a metallic substrate, the method comprising:

(a) providing an aqueous solution for electrodeposition prepared according to claims 1, 5, 2, 6, 3, 4, 7, 10, 8, or 9;

(b) cleaning the metallic substrate sufficiently to achieve an adherent electrodeposit on the substrate;

(c) immersing the cleaned substrate in the electroplating solution; and

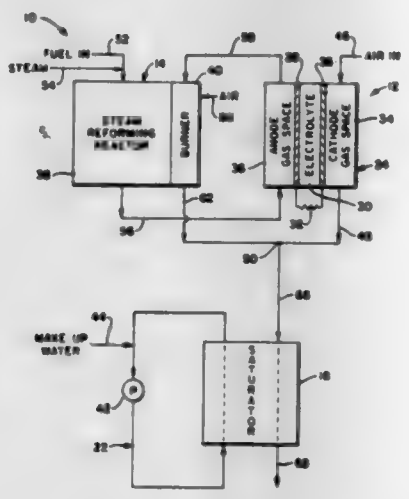
(d) electrodepositing the coating with the substrate as a cathode at a current density of at least 0.5 A/dm^2.

4,533,607

PROCESS FOR REMOVING ELECTROLYTE VAPOR FROM FUEL CELL EXHAUST GAS

Richard A. Sederquist, Newington, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 6, 1984, Ser. No. 678,611
Int. Cl.[3] H01M 8/04
U.S. Cl. 429—13 6 Claims



1. In a process for operating a fuel cell comprising an electrolyte disposed between a pair of electrodes, wherein an oxidant gas is passed through the cell on the nonelectrolyte facing side of one electrode and a fuel gas is passed through the cell on the nonelectrolyte facing side of the other electrode, and wherein electrolyte evaporates into one or both of the reactant gas streams as they pass through the cell, the process of removing electrolyte vapor from the gas streams containing such vapor comprising:

continuously recirculating a mass of liquid water in a loop, including passing said mass of water through a saturator; and

passing the hot exhaust gas stream to be treated through the saturator in direct contact with the liquid water passing through the saturator, the circulating water absorbing heat from the gas stream and evaporating as a result of such heat absorption, thereby cooling the gas stream to a temperature below the dew point of the electrolyte to be removed from the gas stream, wherein the electrolyte condenses and dissolves into the circulating liquid, wherein the evaporated water is carried out with the gas stream, and wherein all of the acid dissolved into the circulating liquid remains in the liquid as it circulates, increasing the concentration of acid on a continuing basis.

4,533,608

ELECTROLYTIC PHOTODISSOCIATION OF CHEMICAL COMPOUNDS BY IRON OXIDE PHOTOCHEMICAL DIODES

Gabor A. Somorjai, and Christofer H. Leygraf, both of Berkeley, Calif., assignors to The Regents of The University of California, Berkeley, Calif.

Division of Ser. No. 416,351, Sep. 9, 1982, Pat. No. 4,460,443. This application May 24, 1984, Ser. No. 614,282
Int. Cl.[3] H01M 6/36; C25B 1/00
U.S. Cl. 429—111 7 Claims

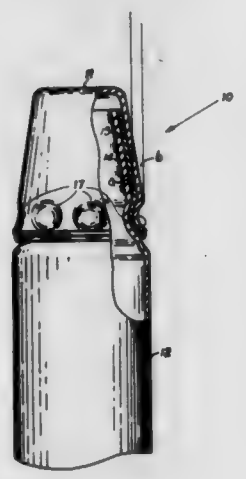
6. A method for generating an electrical potential and current utilizing visible light as the sole energy source comprising irradiating a p/n photochemical diode with visible light, said diode consisting of a silicon doped iron oxide semi-conductor electrode in insulated low resistance electrical contact with a magnesium doped iron oxide semi-conductor electrode.

4,533,609

SEAL FOR ELECTROCHEMICAL CELL

Arabinda N. Dey, Needham, and Noble E. Hamilton, Middleton, both of Mass., assignors to Duracell Inc., Bethel, Conn.

Filed Oct. 21, 1982, Ser. No. 435,844
Int. Cl.[3] H01M 2/08, 2/12
U.S. Cl. 429—172 20 Claims



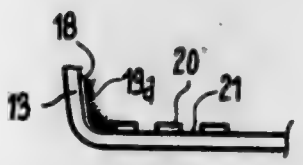
1. An electrochemical cell comprising a metal cell container having an anode, cathode and electrolyte disposed therein with said metal cell container having an open end with the walls adjacent said open end being tapered, characterized in that said cell is sealed with a metal cell top having a complementary substantially cofitting taper being seated with an interference fit on said tapered container wall with said container being an electrical terminal for one of said anode or cathode and said cell top being the electrical terminal for the other of said anode and cathode and wherein an insulating sealant film of minimal thickness is compressively held between said tapered container wall and said cofitting tapered cell top by said interference fit and wherein said container walls adjacent said open end are tapered inwardly and said metal cell top is cofittingly tapered outwardly to be seated with said interference fit over and around said tapered container walls.

4,533,610

METHOD OF MANUFACTURE OF A COLOR TELEVISION TUBE HAVING LOW SCREEN REFLECTANCE FOR AMBIENT LIGHT

Attilio Di Passio, Sora, and Antimo Pezzulo, Miravalle, both of Italy, assignors to Videocolor, Montrouge, France

Filed Jun. 21, 1984, Ser. No. 622,824
Claims priority, application France, Jun. 24, 1983, 83 10498
Int. Cl.[3] G03C 5/00
U.S. Cl. 430—25 5 Claims



1. A method of depositing an antireflection layer of black graphite between the phosphor strips on the internal surface of the faceplate and on the faceplate flange of a color television tube, the steps comprising:

applying deionized water to an internal surface of the flange;

applying a photosensitive substance on the internal surfaces of the faceplate and flange;

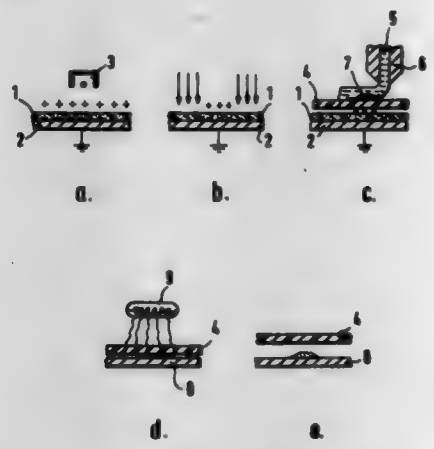
exposing the substance on the faceplate to ultraviolet radiation to harden the substance at intended locations for phosphors, wherein the prior application of deionized water to the flange ensures the formation of a uniform film of hardened material on the flange by scattered ultraviolet radiation during ultraviolet exposure;

removing the non-hardened portions of the substance;
coating the internal surfaces of the faceplate and flange with graphite;
applying an oxidizing solution to the internal surface of the faceplate to destroy the hardened strips by chemical reaction; and
removing the destroyed strips and their graphite coating.

4,533,611
PROCESS FOR PREPARING A PLANOGRAPHIC PRINTING PLATE

Detlef Winkelmann, Wiesbaden, and Peter Padberg, Taunusstein, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 26, 1983, Ser. No. 488,697
Claims priority, application Fed. Rep. of Germany, Apr. 29, 1982, 3215940
Int. Cl.[3] G03G *13/16, 13/28*
U.S. Cl. 430—49 22 Claims



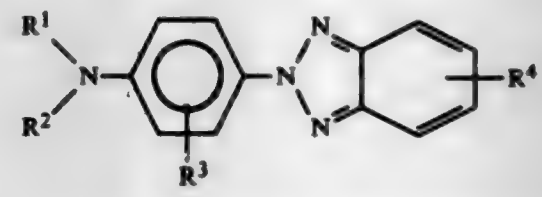
1. A process for preparing a planographic printing plate by electrophotographic or electrographic means, comprising the steps of:
on a photoconductive or highly insulating layer which provides a first surface and a second surface, producing a charge image on said first surface;
applying a dielectric film as an intermediate support to said first surface of said photoconductive or insulating layer, whereby said charge image is covered by said intermediate support;
developing a toner image on the free surface of said intermediate support, said toner image corresponding to said charge image, by applying a liquid developer to said free surface of said intermediate support, said developer comprising an electrophoretically active liquid developer comprising thermoplastic, dispersed particles which (a) have a melting range from about 90° C. to 130° C. and (b) are comprised of at least one thermoplastic selected from the group consisting of a polyamide, polyethylene, a copolymer of styrene, and a copolymer of acrylate or methacrylate;
separating said intermediate support from said photoconductive or insulating layer;
transferring and fixing said toner image to the planographic printing plate by (i) applying said intermediate support to a planographic printing plate, such that said toner image is immediately adjacent to said planographic printing plate, (ii) applying heat such that said toner image is softened for melt transfer, and (ii) transferring said toner image by melt transfer to said planographic printing plate; and
separating said intermediate support from said planographic printing plate.

4,533,612
ELECTROPHOTOGRAPHIC RECORDING MATERIALS CONTAINING SPECIAL CHARGE CARRIER-TRANSPORTING COMPOUNDS

Heinz Eilingsfeld; Karl-Heinz Etzbach, both of Frankenthal; Gerhard Hoffmann, Otterstadt, and Peter Neumann, Wiesloch, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

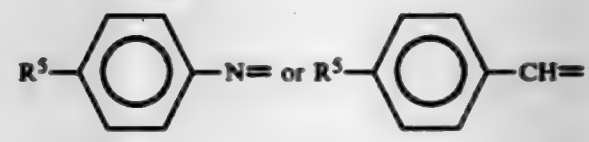
Continuation of Ser. No. 489,186, Apr. 27, 1983, abandoned. This application Nov. 27, 1984, Ser. No. 675,264
Int. Cl.[3] G03G *5/06, 5/14*
U.S. Cl. 430—59 14 Claims

1. An electrophotographic recording material comprising an electrically conductive base, charge carrier-producing compounds and charge carrier-transporting compounds, which contains an effective amount, as charge carrier-transporting compounds, of one or more compounds of the formula (I)



(I)

where R^1 and R^2 are identical or different and are each hydrogen, alkyl, allyl, benzyl or unsubstituted or substituted phenyl, or R^1 and R^2 together are



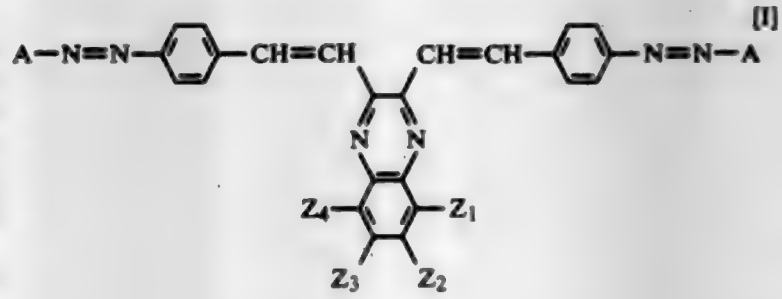
where R^5 is NR^1R^2, R^3 is hydrogen, alkyl, alkoxy or halogen and R^4 is hydrogen, alkyl, alkoxy, vinyl, allyl, dialkylamino, nitro, cyano or acryloyl.

4,533,613
DISAZO COMPOUNDS AND PHOTOCONDUCTIVE COMPOSITION AS WELL AS ELECTROPHOTOGRAPHIC LIGHT SENSITIVE ELEMENT CONTAINING THE SAME

Kouichi Kawamura; Seiji Horie; Naonori Makino, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

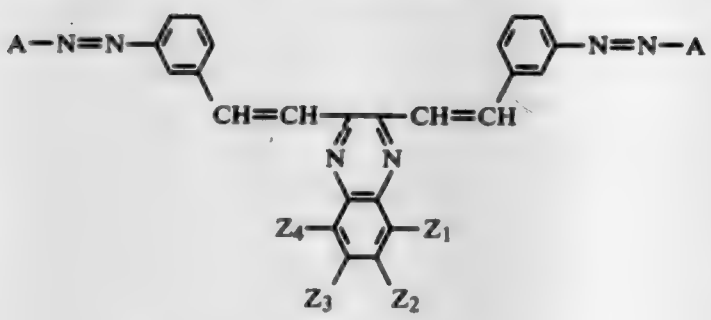
Filed Sep. 8, 1983, Ser. No. 530,313
Claims priority, application Japan, Sep. 8, 1982, 57-156403
Int. Cl.[3] G03G *5/06*
U.S. Cl. 430—78 10 Claims

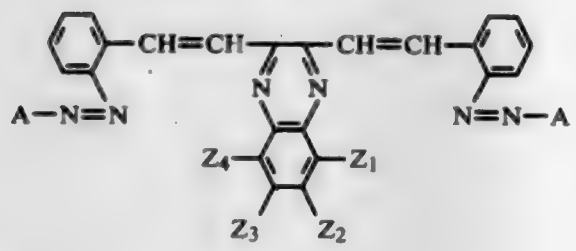
1. A photoconductive composition comprising a disazo compound represented by general formula (I), (II) or (III)



[I]

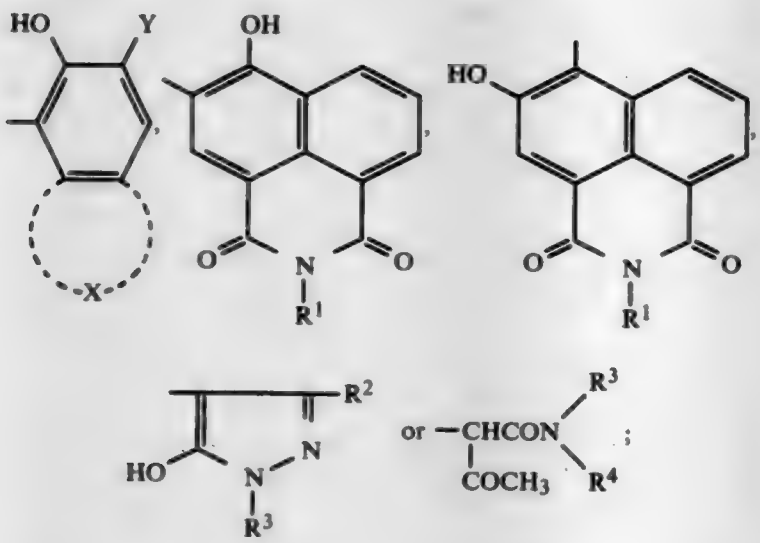
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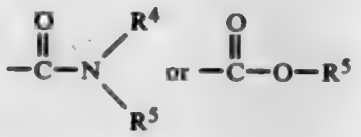
wherein:

A represents:



wherein X represents an atomic group necesssary to complete an aromatic ring or a heterocyclic ring (said ring may be substituted or unsubstituted), by condensing with the benzene ring in the above formula to which a hydroxy group and Y are attached;

Y represents:



R^1 represents a hydrogen atom, an alkyl group, a phenyl group or a substituted group thereof;

R^2 represents a hydrogen atom, a lower alkyl group, a carbamoyl group, a carboxyl group, an alkoxycarbonyl group, an aryloxycarbonyl group, or a substituted or unsubstituted amino group;

R^3 and R^5 each represents an alkyl group, an aromatic ring group, a heterocyclic aromatic ring group or a substituted group thereof;

R^4 represents a hydrogen atom, an alkyl group, a phenyl group or a substituted group thereof;

Z_1, Z_2, Z_3 and Z_4, which may be the same or different represents a hydrogen atom, a halogen atom, an alkyl group, a nitro group, an alkoxy group, an alkoxycarbonyl group or an aryloxycarbonyl group.

4,533,614

HEAT-FIXABLE DRY SYSTEM TONER

[II] Hiroshi Fukumoto, Kawasaki; Sukejiro Inoue, Yokohama; Masumi Sasakawa, Tokyo, and Shinji Doi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 31, 1983, Ser. No. 499,548

Claims priority, application Japan, Jun. 1, 1982, 57-93568; Jul. 6, 1982, 57-118235; Jul. 7, 1982, 57-119065

Int. Cl.[3] G03G *9/08, 13/12*

U.S. Cl. 430—99 32 Claims

1. A heat-fixable dry system toner powder comprising a colorast and in a binder resin a non-linearly modified low melting polyester having an acid value of 10 to 60 obtained [III] from components containing (A) an alkyl-substituted dicarboxylic acid and/or an alkyl-substituted diol, (B) a trivalent or more polycarboxylic acid and/or a trivalent or more polyol, (C) an aromatic dicarboxylic acid, and (D) an etherated diphenol.

4,533,615

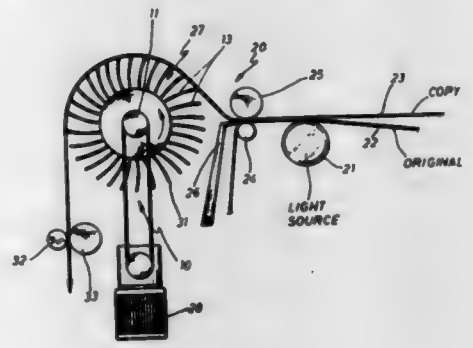
ABRASION DEVELOPMENT

Jonathan S. Arney, and Richard F. Wright, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Contin[illegible]-in-part of Ser. No. 554,813, Nov. 23, 1983, abandoned, wh[illegible] is a division of Ser. No. 397,681, Jul. 13, 1982, Pat. No. 4,448,51[illegible] This application Oct. 29, 1984, Ser. No. 665,895

Int. Cl.[3] G03C *1/68, 5/24*

U.S. Cl. 430—138 7 Claims



1. A method for developing a latent image in an imaging sheet having a photosensitive layer and a layer of a color developer, said photosensitive layer including microcapsules containing a photosensitive composition and a chromgenic material in the internal phase, comprising uniformly abrading said photosensitive layer such that said microcapsules rupture and image-wise release said internal phase.

4,533,616

DEVELOPER FOR ELECTROPHOTOGRAPHY OF TONER AND MICROENCAPSULATED ADDITIVE

Ichiro Ohsaki, Kawasaki; Tetsuo Hasegawa, Tokyo, and Koushi Suematsu, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 25, 1983, Ser. No. 497,831

Claims priority, application Japan, Jun. 1, 1982, 57-93569; Jun. 18, 1982, 57-105137

Int. Cl.[3] G03G *9/16*

U.S. Cl. 430—110 13 Claims

1. A developer for electrophotography which comprises a toner and a microencapsulated additive capable of gradual release into said developer during electrophotographic development by destruction of the microcapsule wall, said additive enhancing development of an electrostatic image and comprising a flowability improver, a charge control agent, an electroconductivizing agent, an abrasive or a lubricant.

4,533,617

HEAT FIXING DEVELOPER OF CAPSULE STRUCTURE

Sukejiro Inoue, Yokohama; Hiroshi Fukumoto, Kawasaki; Masumi Sasakawa, Kamagaya, and Shinji Doi, Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 23, 1983, Ser. No. 497,181

Claims priority, application Japan, May 26, 1982, 57-89273; May 26, 1982, 57-89274; May 26, 1982, 57-89275; May 26, 1982, 57-89256

Int. Cl.³ G03G *9/08*

U.S. Cl. 430—111 18 Claims

1. A heat fixing developer of a capsule structure having the surface of a core particle, containing a binder resin having a crosslinked structure and a glass transition temperature of 60° C. or lower and a softening point of 50° to 130° C. and a colorant, coated with a vinyl type polymer having a glass transition temperature of 55° C. or higher, a softening point of 100° to 150° C., a Mw of 150,000 or more, and a Mw/Mn of 5 or more.

4,533,618

METHOD FOR TRANSFERRING TONER IMAGE

Hitoshi Nishihama, Hirakata; Katsuhiko Gotoda, Osaka; Minoru Motomura, Nara; Tadanobu Nakajima, Sakurai, and Tatsuo Aizawa, Osaka, all of Japan, assignors to Mita Industrial Company, Ltd., Osaka, Japan

Continuation of Ser. No. 922,750, Jul. 7, 1978, abandoned, which is a continuation-in-part of Ser. No. 656,195, Feb. 6, 1976, abandoned, which is a continuation-in-part of Ser. No. 599,953, Jul. 29, 1975, Pat. No. 4,081,571. This application Mar. 31, 1980, Ser. No. 136,164

Claims priority, application Japan, Aug. 1, 1974, 49-88381; Jan. 29, 1976, 51-7917

Int. Cl.³ G03G *13/16*

U.S. Cl. 430—126 10 Claims

1. A method for transferring a toner image on the surface of an image-bearing member comprising the steps of developing with a conductive or semiconductive toner material a latent electrostatic image on the surface of the image-bearing member to form a conductive or semiconductive toner image, bringing the surface of a receptor member into contact with the toner image on the surface of the image-bearing member and simultaneously applying a corona discharge to the back surface of the receptor member; wherein the angle formed between the lines of electric force of the corona discharge and a line perpendicular to the receptor member does not exceed about 30 degrees, whereby scattering of the conductive or semi-conductive toner material is prevented and a high quality transfer image having a sharp contour is provided on the surface of the receptor member.

4,533,619

ACID STABILIZERS FOR DIAZONIUM COMPOUND CONDENSATION PRODUCTS

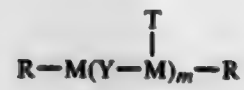
John E. Walls, Hampton; Major Dhillon, Hillsborough, and Trisha Bentley, Somerville, all of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 359,461, Mar. 18, 1982, abandoned. This application Sep. 12, 1983, Ser. No. 531,807

Int. Cl.³ G03C *1/60, 1/54;* G03F *7/08*

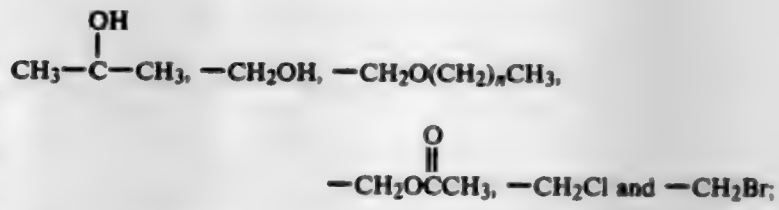
U.S. Cl. 430—157 11 Claims

1. A composition comprising a light sensitive diazonium compound condensation product in admixture with an acid selected from the group consisting of benzoic acid, m-nitro benzoic acid, p(p-anilino phenylazo)benzene sulfonic acid, 4,4′-dinitro-2,2′-stilbene disulfonic acid, itaconic acid and mixtures thereof, said acid being present in an amount sufficient to substantially improve the heat stability of said diazonium compound condensation product, wherein said diazonium compound condensation product is a condensation product of oligomers having the structure:



wherein:

R is selected from the group consisting of



n is an integer from 0 to 3;

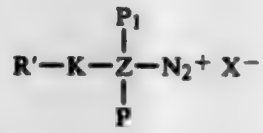
M is an aromatic radical of one or more compounds selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl amines, diaryl sulfones, diaryl ketones and diaryl diketones;

m is 1 to about 9;

Y is selected from the group consisting of —CH_2— and —CH_2OCH_2—; and,

T is the same as R when Y is —CH_2— and is hydrogen when Y is —CH_2OCH_2—;

condensed with diazonium salts having the structure:

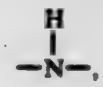


wherein:

Z is the benzene ring;

R′ is selected from the group consisting of phenyl and C-1 to C-4 alkyl substituted phenyl;

K is selected from the group consisting of



—S—, —O—, and —CH_2—, or is absent;

P and P_1 may be the same or different and are selected from the group consisting of C1 to C4 alkyl, methoxy, ethoxy, butoxy, and H; and,

X is an anion.

2. A light sensitive reproduction material comprising a support and a reproduction layer thereon comprising the composition of claim 1.

4,533,620

LIGHT SENSITIVE CO-CONDENSATES

John E. Walls, Hampton, and Thomas A. Dunder, High Bridge, both of N.J., assignors to American Hoechst Corporation, Somerville, N.J.

Continuation-in-part of Ser. No. 359,350, Mar. 18, 1982, abandoned. This application Aug. 2, 1983, Ser. No. 519,443

Int. Cl.³ G03C *1/54;* G03F *7/08;* C07C *113/04*

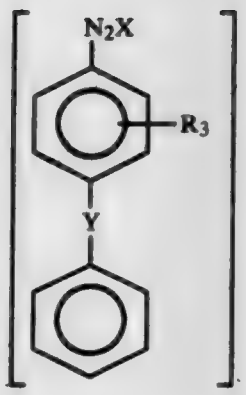
U.S. Cl. 430—157 27 Claims

1. A photosensitive polycondensation co- or multi-polymer having one or more recurring units of the structure:

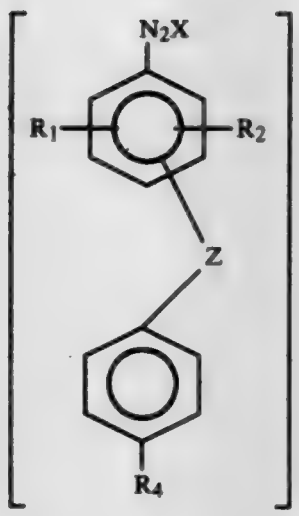


randomly or uniformly distributed along the copolymer chain, wherein

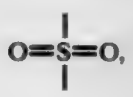
A is



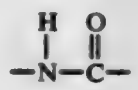
and
B is



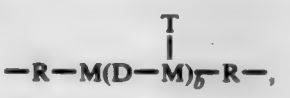
n ranges from 1 to 8;
m ranges from 1 to 8;
R_1 and R_2 are identical or different C_1–C_2 alkyl groups, C_1–C_4 alkoxy groups, halogen atoms or dimethylamino groups;
R_3 is selected from the group consisting of —H, —CH_3, —Cl, —OCH_3 or —OCH_2CH_3;
R_4 is selected from the group consisting of —H, —CH_3 or —Cl;
R_5 is a divalent linking group selected from the group consisting of —CH_2— or >$CHCH_3$;
X is an anion of the diazonium salt;
Y is selected from the group consisting of >NH, or



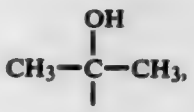
Z is selected from the group consisting of —S—; —O— or



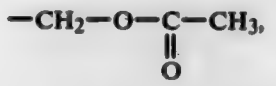
said photosensitive polycondensation product further characterized that the repeating B units are linked by an R_5 group when m is 2 or greater and the repeating A units are linked by an R_6 group when n is 2 or greater;
wherein R_6 is a divalent linking group selected from the group consisting of —CH_2—, >$CHCH_3$; or



and
R is selected from the group consisting of —CH_2— and >$C(CH_3)_2$;
wherein:
b is zero or an integer from 1 to about 9;
D is a divalent linking group selected from the group consisting of —CH_2— or —CH_2—O—CH_2—,
T is selected from the group consisting of



—CH_2OH, —$CH_2O(CH_2)_fCH_3$,



—CH_2Cl, —CH_2Br—H, or an R linking group, and is further characterized as being H— when D is —CH_2—O—CH_2—;
f is zero or an integer from 1 to 3; and
M is an aromatic radical selected from the group consisting of aromatic hydrocarbons, diaryl ethers, diaryl sulfides, diaryl disulfides, diaryl sulfones, diaryl amines, diaryl ketones and diaryl diketones; and
n and m are present at a ratio of 1:8–8:1.

4,533,621

PHOTOGRAPHIC ELEMENT WITH IMADAZOLE DYE MORDANT

Satoru Ikeuchi; Yoshihiro Inaba; Hiroshi Shimazaki, and Tatsuhiko Kobayashi, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

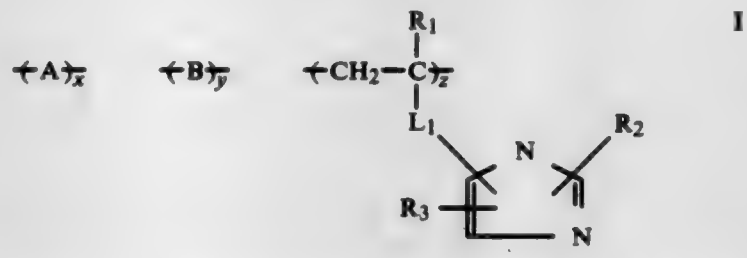
Filed Jul. 9, 1984, Ser. No. 628,837

Claims priority, application Japan, Jul. 19, 1983, 58-132400; Jul. 26, 1983, 58-137293

Int. Cl.³ G03C *1/40, 5/54, 1/84*

U.S. Cl. 430—213 **26 Claims**

1. A photographic element used in a color diffusion transfer process comprising an image receiving layer containing a polymer having monomer units represented by Formula I



I

wherein A is a copolymerizable monomer unit having at least two ethylenically unsaturated groups; B is a copolymerizable α,β ethylenically unsaturated monomer unit; R_1 is hydrogen or methyl; R_2 and R_3 are independently hydrogen, alkyl, or aryl; L_1 is a divalent combining group and $0.5 \leqq x \leqq 6.0$, $0 \leqq y \leqq 79.5$, and $20 \leqq z \leqq 99.5$, wherein the values of x, y, and z are expressed as copolymerization mole percentages.

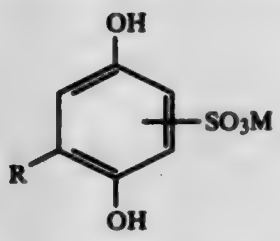
4,533,622

PHOTOGRAPHIC ELEMENT FOR COLOR DIFFUSION TRANSFER PROCESS CONTAINING HYDROQUINONE SULFONATES

Osamu Takahashi, and Mitsugu Tanaka, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 9, 1984, Ser. No. 598,099
Claims priority, application Japan, Apr. 7, 1983, 58-61287
Int. Cl.[3] G03C *1/40, 51/54*
U.S. Cl. 430—218 13 Claims

1. A photographic element for a color diffusion transfer process comprising a support having thereon at least one silver halide emulsion layer and associated therewith a non-diffusible redox compound capable of releasing a diffusible dye or a precursor thereof as the result of treatment with an alkaline processing solution in the presence of a silver halide developing agent after exposure to light, an image-receiving element, and a processing element comprising a viscous alkaline processing solution, said alkaline processing solution containing a compound represented by the following general formula (I):



(I)

wherein R represents an alkyl group, an alkoxy group, an aromatic group or an alkylthio group, and each of these groups has 12 or less carbon atoms; and M represents a cation.

4,533,623

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS FOR PLATE MAKING AND METHOD OF REDUCTION TREATMENT FOR THEM

Yukihide Urata; Shigenori Moriuchi; Taku Nakamura, and Masashi Ogawa, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Division of Ser. No. 415,297, Sep. 7, 1982, abandoned. This application Sep. 7, 1984, Ser. No. 648,105
Claims priority, application Japan, Sep. 7, 1981, 56-140669
Int. Cl.[3] G03F *7/02, 7/00;* G03C *1/76, 1/30*
U.S. Cl. 430—309 17 Claims

1. A method of reduction treatment for a silver halide light-sensitive material for plate making, comprising the steps of:

providing a silver halide photographic light-sensitive material for plate making comprising a support base having thereon a sensitive silver halide emulsion layer and at least one insensitive upper layer having a melting time longer than the melting time of the sensitive silver halide emulsion layer, said at least one insensitive upper layer having been hardened by a polymeric hardener;

exposing the silver halide photographic light-sensitive material;

developing the exposed material in order to form silver images; and

carrying out reduction treatment of the developed silver images.

4,533,624

METHOD OF FORMING A LOW TEMPERATURE MULTILAYER PHOTORESIST LIFT-OFF PATTERN

John E. Sheppard, Cornwells Heights, Pa., assignor to Sperry Corporation, New York, N.Y.

Filed May 23, 1983, Ser. No. 497,364
Int. Cl.[3] G03C *5/00, 5/16*
U.S. Cl. 430—312 4 Claims

1. A method of forming a low temperature multilayer photoresist lift-off pattern below 70° C. comprising:

providing a substrate,

applying a positive photoresist bottom layer on said substrate,

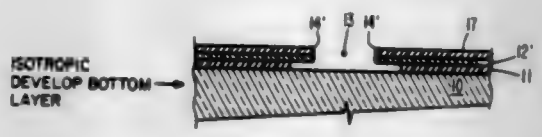
soft baking below 70° C. said positive photoresist bottom layer,

exposing said positive photoresist bottom layer,

applying a negative photoresist intermediate layer on said bottom layer,

providing a positive photoresist top layer on said intermediate layer,

masking, exposing and developing said top layer to provide an accurate aperture in said top layer.



plasma etching an extended accurate aperture through said intermediate layer and partially etching into said bottom layer to expose said bottom layer in said extended aperture,

isotropically developing said exposed bottom layer of said positive photoresist for a predetermined amount of time to provide a laterally extending deep undercut lift-off pattern under said intermediate layer, and

rinsing and drying said substrate and said three layers to provide a deep accurate three layer lift-off pattern for precise deposition of metal through said extended accurate aperture.

4,533,625

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIALS

Seiji Ichijima, and Takeshi Hirose, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 26, 1984, Ser. No. 593,209
Claims priority, application Japan, Mar. 25, 1983, 58-50001
Int. Cl.[3] G03C *7/26, 7/32*
U.S. Cl. 430—552 10 Claims

1. A color photographic light-sensitive material which contains a photographic coupler having a naphthalene nucleus in the bonding position other than the coupling position, wherein the naphthalene nucleus contains at least one hydroxyl group and at least one sulfonyl group as a substituent or contains at least one hydroxyl group and at least one sulfinyl group as a substituent.

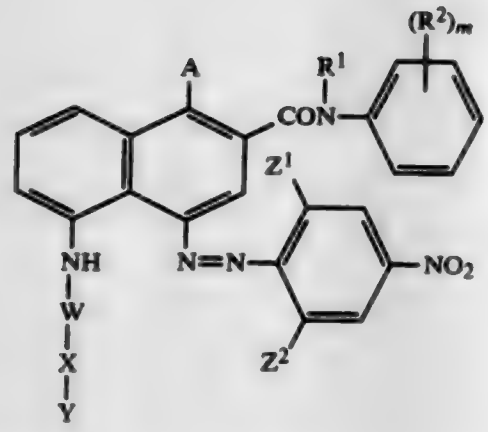
4,533,626

PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL WITH 4-(PARANITROPHENYLAZO)NAPHTHOL DYES

Shigetoshi Ono; Toru Harada; Hirohisa Suzuki; Mitsugu Tanaka, and Shigeru Nakamura, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 27, 1984, Ser. No. 635,085
Claims priority, application Japan, Jul. 27, 1983, 58-137226
Int. Cl.[3] G03C *1/40, 5/54*
U.S. Cl. 430—562 22 Claims

1. A silver halide photographic light-sensitive material containing a compound represented by formula (I)

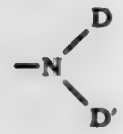


(I)

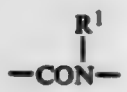
wherein

R^1 is an alkyl group or a substituted alkyl group;

R^2 is $—NHSO_2R^{2'}$ [wherein $R^{2'}$ is a substituted or unsubstituted alkyl group, an aryl group, a heterocyclic ring, or



(wherein D and D' may be the same or different and are each a hydrogen atom or an alkyl group)], or $—SO_2N-H—R^{2''}$ (wherein $R^{2''}$ is a hydrogen atom, a substituted or unsubstituted alkyl group, or a substituted or unsubstituted aryl group), and may be positioned at any of the ortho-, meta-, and para-positions relative to the



group;

m is an integer of 1 or 2;

W is $—SO_2—$ or —CO—;

X is a divalent connecting group represented by the formula $—R^3—L_n—R^{3'}{}_p—$ (wherein R^3 and $R^{3'}$ may be the same or different, and are each a substituted or unsubstituted alkylene group, a substituted or unsubstituted arylene group, or a substituted or unsubstituted aralkylene group; L is a divalent group selected from an oxy group, a carbonyl group, a carboxyamido group, a carbamoyl group, a sulfonamido group, a sulfamoyl group, a sulfinyl group, and a sulfonyl group; and n and p are each 0 or an integer of 1);

Y is a redox center capable of releasing a diffusible dye on undergoing a self-cleavage as a result of a redox reaction;

Z^1 is a halogen atom, a cyano group, a nitro group, a trifluoromethyl group, an alkyl group, an alkoxy group, a carboxyl group, a carboxylic acid ester group represented by the formula $—COOR^4$ (wherein R^4 is a substituted or unsubstituted alkyl group, or a substituted or unsubstituted phenyl group), a fluorosulfonyl group, a substituted or unsubstituted phenoxysulfonyl group, a group represented by the formula $—SO_2NR^5R^6$ (wherein R^5 is a hydrogen atom, a substituted or unsubstituted alkyl group; R^6 is a hydrogen atom, a substituted or unsubstituted alkyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted aryl group; and R^5 and R^6 may be combined together directly or through an oxygen atom to form a ring), a group represented by the formula $—CONR^5R^6$ (wherein R^5 and R^6 are the same as defined above), a substituted or unsubstituted alkylsulfonyl group, a substituted or unsubstituted aralkyl group, or a substituted or unsubstituted phenylsulfonyl group;

Z^2 is a hydrogen atom, a halogen atom, a nitro group, a cyano group, or a trifluoromethyl group; and

A is a hydroxyl group or a group forming a hydroxyl group upon decomposition.

4,533,627

PROCESS FOR THE PREPARATION OF A SILVER HALIDE EMULSION

Andrew W. Yates, Knutsford; Brian D. Harradine, Macclesfield, and Michael A. Wraith, Stretford, all of England, assignors to Ciba-Geigy AG, Basel, Switzerland

Filed Jul. 18, 1983, Ser. No. 515,311

Claims priority, application United Kingdom, Jul. 23, 1982, 8221359

Int. Cl.³ G03C *1/02*

U.S. Cl. 430—567 **6 Claims**

1. A process for the preparation of a silver halide emulsion, which comprises (1) preparing a seed emulsion containing a substantially monodispersed population of silver halide crystals in a reaction vessel, (2) growing said seed emulsion by increasing the addition of silver and halide salts at such a rate as to maintain the substantial monodispersity of the silver halide crystals (3) transferring a predetermined volume of the medium containing said monodispersed silver halide crystals to a holding vessel, where no physical ripening occurs, (4) carrying out a further growth on the silver halide crystals remaining in the reaction vessel, which comprises effecting increased growth of said crystals under the same conditions as defined in step (2) to produce a population of monodispersed silver halide crystals on increased size, (5) combining the populations of monodispersed silver halide crystals of different means size, and then (6) carrying out the steps required to produce a fully sensitized and concentrated silver halide emulsion.

4,533,628

COLONY HYBRIDIZATION METHOD

Renata Maas, Hastings, N.Y., assignor to New York University, New York, N.Y.

Filed Aug. 3, 1983, Ser. No. 519,842

Int. Cl.³ C12Q *1/68*; C12P *19/34*; C12N *1/20, 1/06*

U.S. Cl. 435—6 **9 Claims**

1. A colony hybridization method for detecting a specific DNA sequence comprising the following steps for performing the specified acts:

growing bacterial colonies on agar and replicating them onto filter paper,

steaming said colonies in the presence of alkali on said paper in order to lyse said colonies on said paper and release their DNA,

fixing said DNA to said paper in situ,

hybridizing DNA containing said specific sequence to a labelled DNA containing said specific sequence, and

detecting said hybridized DNA containing said specific sequence.

4,533,629

SIMULTANEOUS CALIBRATION HETEROGENEOUS IMMUNOASSAY

David J. Litman, Mountain View, and Edwin F. Ullman, Atherton, both of Calif., assignors to Syva Company, Palo Alto, Calif.

Continuation-in-part of Ser. No. 255,022, Apr. 17, 1981, Pat. No. 4,391,904, which is a continuation of Ser. No. 106,620, Dec. 26, 1979, Pat. No. 4,299,916. This application May 4, 1982, Ser. No. 374,849

Int. Cl.³ G01N *33/54*

U.S. Cl. 435—7 **4 Claims**

1. In a method for determining the presence in a sample of an analyte, which analyte is a member of a specific binding pair ("mip") consisting of ligand and receptor ("antiligand"),

said method employing a signal producing system having at least two enzymes, including one enzyme bound to a mip ("enzyme-bound-mip"), and a solute dye precursor which is catalytically transformed to an insoluble dye by one of

said enzymes bound to a mip-containing measurement first surface, said insoluble dye producing a change in a detectable signal at said first surface in proportion to the amount of analyte, where said mip at said first surface provides for binding of enzyme-bound-mip through mip complex formation to said first surface, and contacting of said first surface with said sample and said enzyme-bound-mip results in binding of said enzyme-bound-mip to said first surface in proportion to the amount of analyte in said sample,

the improvement which comprises:

during said contacting, having adjacent to said first surface, a calibration second surface to which anti-enzyme receptor is bound in a pre-determined amount and to which enzyme of said enzyme-bound-mip becomes bound through mip complex formation in an amount which provides substantially predetermined ratios to the amount of enzyme-bound-mip bound to said first surface, whereby the ratio of the change in signal at said second surface to the change in signal at said first surface is related to the amount of analyte in said sample.

4,533,630

TOXINS AND ANTIBODIES OF *C. DIFFICILE*

Tracy D. Wilkins, 305 Neil St., Blacksburg, Va. 24060, and David M. Lyerly, 37 Radford Village, Radford, Va. 24141

Filed Sep. 13, 1982, Ser. No. 417,379

Int. Cl.³ G01N *33/54*; C12Q *1/42*; C07G *7/00*

U.S. Cl. 435—7 **38 Claims**

1. In an assay process for toxin A of *C. difficile* wherein an analyte containing toxin A is contacted with an antibody, the improvement comprising:

contacting said analyte with monospecific antibody for toxin A of *C. difficile* to bind only toxin A to said mono-specific antibody.

4,533,631

FERMENTATION PROCESS FOR PREPARATION OF ANTIBIOTIC BU-2517

Hiroshi Kawaguchi, Tokyo; Masataka Konishi, Yokohama; Koko Sugawara, Wako, and Koji Tomita, Kawasaki, all of Japan, assignors to Bristol-Myers Company, New York, N.Y.

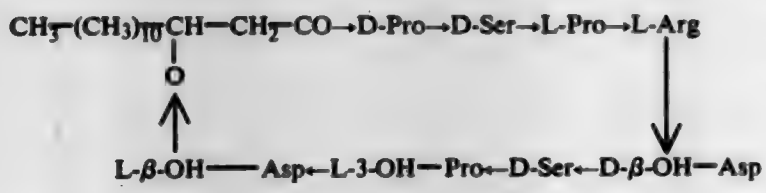
Division of Ser. No. 339,355, Jan. 15, 1982, Pat. No. 4,409,210. This application Mar. 25, 1983, Ser. No. 478,751

Int. Cl.³ C12P *21/02*; C12N *1/20*

U.S. Cl. 435—70 **4 Claims**

1. A process for producing the peptide antibiotic Bu-2517 which comprises cultivating Empedobacter sp. ATCC 31962 or a Bu-2517-producing mutant thereof under submerged aerobic conditions in an aqueous nutrient medium containing assimilable sources of carbon and nitrogen until a substantial amount of Bu-2517 is produced by said organism in said culture medium and then recovering the Bu-2517 antibiotic from the culture medium.

4. A biologically pure culture of the microorganism Empedobacter sp. strain G393-B445 (ATCC 31962), said culture being capable of producing the antibiotic Bu-2517 of the formula



wherein Pro represents proline, Ser represents serine, Arg represents arginine, β-OH-Asp represents threo-β-hydroxyaspartic acid and 3-OH-Pro represents trans-3-hydroxyproline in a recoverable quantity upon cultivation in an aqueous nutrient medium.

4,533,632

PRODUCTION OF A CEPHALOSPORIN BY FERMENTATION

Alan Smith, Ulverston, and Peter J. Bailey, Sparkbridge, both of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 171,929, Jul. 18, 1980, abandoned. This application Aug. 6, 1982, Ser. No. 406,039

Claims priority, application United Kingdom, Jul. 19, 1979, 7925283

Int. Cl.³ C12P *35/00, 35/06*

U.S. Cl. 435—47 **9 Claims**

1. A process for the preparation of desacetyl cephalosporin C which comprises fermenting a cephalosporin C-producing microorganism in the presence of an amount of an acetylesterase enzyme effective to convert substantially all the cephalosporin C produced into desacetyl cephalosporin C before non-enzymic degradation of the cephalosporin C occurs.

4,533,633

PROCESS AND APPARATUS FOR ISOMERIZING GLUCOSE TO FRUCTOSE

Günter Weidenbach, Hanover; Dirk Bonse, Arpke/Lehrte, and Boris Meyer, Hanover, all of Fed. Rep. of Germany, assignors to Kali-Chemie Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Sep. 23, 1982, Ser. No. 422,296

Claims priority, application Fed. Rep. of Germany, Dec. 9, 1981, 3148603

Int. Cl.³ C12P *19/24*; C12N *11/14*; C12M *1/40*

U.S. Cl. 435—94 **25 Claims**

1. A process for the preparation of a solution containing a glucose and fructose, comprising the steps of:

(a) contacting a glucose-containing solution with porous particles consisting essentially of SiO_2 or aluminum silicate; and

(b) thereafter, converting glucose contained in said solution to fructose by contacting the glucose-containing solution with a catalyst having glucose isomerase activity, said catalyst consisting essentially of glucose isomerase attached to a carrier comprising porous particles consisting essentially of SiO_2, wherein the weight ratio of catalyst in said contacting step (b): particles in said contacting step (a) is between about 3:1 and 1:3.

21. Apparatus for carrying out a process for the preparation of a solution containing glucose and fructose from a starting solution containing glucose, comprising a reactor vessel containing a catalyst consisting essentially of glucose isomerase attached to a carrier comprising porous particles consisting essentially of SiO_2, and a pre-column connected to the inlet of said reactor vessel and containing porous particles consisting essentially of SiO_2 or aluminum silicate the weight ratio of catalyst in the reactor vessel:particles in the pre-column being between about 3:1 and 1:3.

4,533,634

TISSUE CULTURE MEDIUM

Reynaldo L. Maldonado, and Kenneth A. Rosanoff, both of Seguin, Tex., assignors to AMF Inc., White Plains, N.Y.

Filed Jan. 26, 1983, Ser. No. 461,016

Int. Cl.³ C12N *5/00, 5/02*; A61K *35/14*; A23J *1/06*

U.S. Cl. 435—240 **9 Claims**

1. A process for producing a growth factor containing serum having a γ-globulin content of between about 0.1–1.0 g/dl, and of 50–100 mg/dl of cholesterol comprising the steps of:

(a) adding ammonium sulfate to natural bovine serum to 15–30% saturation to give a first solids fraction and a first supernatant;

(b) separating said first solids fraction from said first supernatant;

(c) adding ammonium sulfate to said first supernatant to 35–45% saturation to give a second solids fraction and a second supernatant;

(d) separating said second solids fraction from said second supernatant;
(e) combining said first solids fraction and said second supernatant; and
(f) desalinating said first solids fraction and said second supernatant, either before or after said combining.

4,533,635

PROCESS FOR STIMULATING THE GROWTH OF EPIDERMAL CELLS

Isabelle Guédon born Saglier; Denis Barritault, both of Paris; Yves Courtois, Gif sur Yvette; Cristina Arruti, and Michel Prunieras, both of Paris, all of France, assignors to Institut National de la Sante et de la Recherche Medicale, Paris, France

PCT No. PCT/FR80/00118, § 371 Date Feb. 18, 1981, § 102(e) Date Feb. 18, 1981, PCT Pub. No. WO81/00260, PCT Pub. Date Feb. 5, 1981
PCT Filed Jul. 10, 1980, Ser. No. 237,153
Claims priority, application France, Jul. 13, 1979, 79 18282
Int. Cl.³ C12N *5/00*
U.S. Cl. 435—240 **14 Claims**

1. A process for stimulating the growth of epiderm cells, which comprises contacting the epiderm cells with an aqueous saline extract of ocular tissue (RE).

4,533,636

MEDIUM FOR PLANT PROTOPLAST CULTURE

Ning-Sun Yang, Verona, Wis., assignor to Agracetus Madison Corporation, Middleton, Wis.

Filed Aug. 25, 1983, Ser. No. 526,496
Int. Cl.³ A01B *79/00*; A01C *1/00*; C12N *5/00, 5/02*
U.S. Cl. 435—240 **10 Claims**

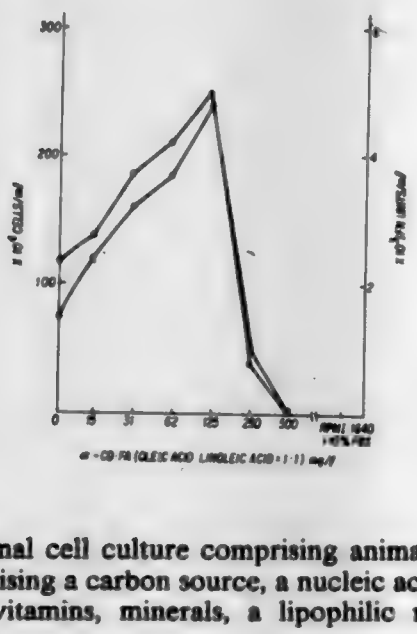
1. In a medium for the in vitro isolation and maintenance of plant protoplast cultures including buffer salts, plant nutrients, sugar and plant hormones in aqueous solution wherein the improvement comprises an addition to the medium of a growth promoting amount of mammalian blood serum which has been heat treated to render said serum essentially free of potentially phytotoxic biological substances therefrom.

4,533,637

CULTURE MEDIUM

Isao Yamane, No. 6-6-20, Minami, Yagiyama, Sendai-shi, Miyagi-ken; Mikio Kan, Sendai, and Yoshiki Minamoto, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo and Isao Yamane, Sendai, both of, Japan

Filed May 18, 1982, Ser. No. 379,369
Claims priority, application Japan, May 28, 1981, 56-81600
Int. Cl.³ C12N *5/00*; C12R *1/91*
U.S. Cl. 435—240 **19 Claims**



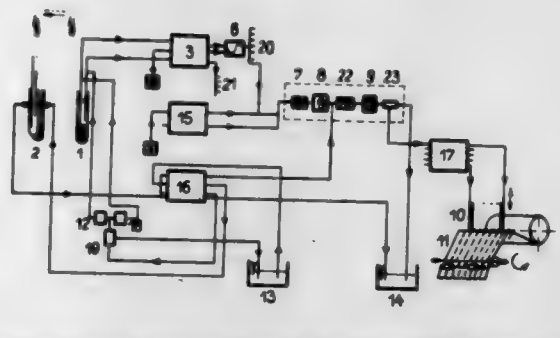
1. In an animal cell culture comprising animal cells and a medium comprising a carbon source, a nucleic acid precursor, amino acids, vitamins, minerals, a lipophilic nutrient, and serum or serum albumin in amounts sufficient to allow the growth of said animal cell culture, an improvement which comprises replacing all serum and serum albumin with α-, β- or γ-cyclodextrin or a mixture of said cyclodextrins.

4,533,638

BLOOD TYPING APPARATUS

István Murányi; Lászlóné Baláza; József Molnár; Ferencné Burda; Mária Metzler, and Lajos Szerdahelyi, all of Budapest, Hungary, assignors to Labor Müszeripari Müvek, Esztergom, Hungary

Continuation-in-part of Ser. No. 353,654, Mar. 1, 1982, abandoned, which is a continuation of Ser. No. 208,993, Nov. 17, 1980, abandoned, which is a continuation of Ser. No. 85,218, Oct. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 941,326, Sep. 11, 1978, abandoned, which is a continuation of Ser. No. 748,053, Dec. 6, 1976, abandoned. This application Apr. 28, 1983, Ser. No. 489,660
Claims priority, application Hungary, Dec. 30, 1975, LA 881
Int. Cl.³ C12M *1/40*
U.S. Cl. 435—288 **4 Claims**



1. In a device for simultaneous multiple blood typing comprising a blood sample container for holding a blood sample containing sample blood cells and sample plasma, a plurality of sample blood cell testing arrangements and a plurality of sample plasma testing arrangements; each member of said plurality of sample blood cell testing arrangements comprising:
(a) an enzyme storage container;
(b) an enzyme mixer for mixing sample blood cells with enzyme;
(c) means for delivering sample blood cells from said blood sample container to said enzyme mixer;
(d) means for delivering enzyme from said enzyme container to said enzyme mixer;
(e) a first reactor;
(f) means for delivering the mixture of enzyme and sample blood cells from said enzyme mixer to said first reactor;
(g) reagent plasma storage means;
(h) means for delivering said reagent plasma to said first reactor; and
(i) means for delivering the reaction product from said first reactor onto a moving web of filter paper; each member of said plurality of sample plasma testing arrangements comprising:
(j) a second reactor;
(k) means for delivering sample plasma from said blood sample container to said second reactor;
(l) a reagent container containing test blood cells;
(m) means for delivering said test blood cells to said second reactor;
(n) means for mixing said test blood cells with said sample plasma; and
(o) means for delivering the reaction product formed by the interaction of said sample plasma and test blood cells onto a moving web of filter paper;
the improvement comprising said enzyme mixer having a flatened tubular member twisted about its longitudinal axis so that the tubular member has varying cross section; said first and second reactors each comprising a unitary tubular reactor-sedimentor consisting of a tubular first mixing portion bent in

a helix around its horizontal axis and a tubular first sedimentor portion which is unitary with the first mixing portion and bent in a helix around its vertical axis; a tubular saline mixing portion for mixing the enzyme and blood cells of the sample with saline wash solution to prevent false agglutination; the saline mixing portion being unitary with the first sedimentor portion and bent in a helix around its vertical axis, and a tubular second sedimentor portion unitary with the saline mixing portion and bent in a helix about its vertical axis; said device further including means for removing agglutinate from the second sedimentor portion of the tubular reactor-sedimentor which agglutinate indicates of a positive test result; means for maintaining rate of flow in the device substantially contant; volume adjustment means communicating with the means for removing the agglutinate, the volume adjustment means adjusting flow volume so that agglutinate is removed and deposited onto a moving filter paper simultaneously and in a single line from the terminal ends of said plurality of sample blood cell testing arrangements and said plurality of said sample plasma testing arrangements.

4,533,639

TEST METHOD FOR PHOSPHATE COATINGS

Ryuji Kojima, and Akiko Yazaki, both of Tokyo, Japan, assignors to Parker Chemical Company, Madison Heights, Mich.

Filed Jun. 20, 1984, Ser. No. 622,431
Claims priority, application Japan, Jun. 21, 1983, 58-110254
Int. Cl.³ G01N *1/00, 33/20*
U.S. Cl. 436—2 **4 Claims**

1. A method for determining the coating weight and composition of a zinc phosphate coating on a ferrous metal surface, comprising:

(a) stripping the coating for a known period from a known area of the surface using a solution comprising sodium hydroxide and triethanolamine;

(b) colorimetrically determining the iron content of the stripping solution;

(c) colorimetrically determining the phosphate content of the stripping solution;

(d) determining the weight ratio of hopeite/phosphophillite; and

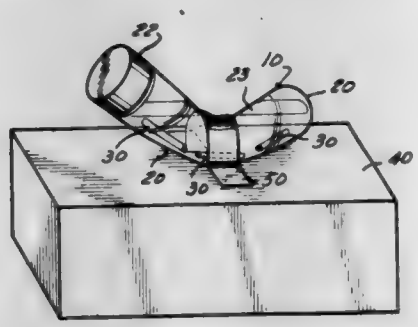
(e) determining the coating weight.

4,533,640

ACCUMULATED THERMAL EXPOSURE RESPONDER AND METHOD OF USE

Jules A. Shafer, 1038 Baldwin, Ann Arbor, Mich. 48104

Filed Feb. 21, 1984, Ser. No. 581,981
Int. Cl.³ G01N *21/78, 21/82*
U.S. Cl. 436—2 **13 Claims**



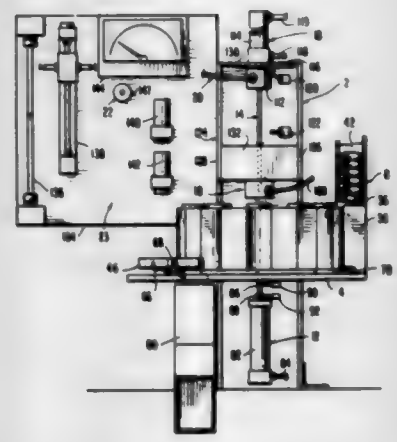
1. A device for monitoring accumulated thermal exposure and for affixing to perishable goods having a given shelf-life and for signaling the expiration of the given self-life by producing a visible indicator reaction after a predetermined accumulated thermal exposure corresponding to the given shelf-life comprising a sealed container and reagents in said container, wherein the reagents in said container are viewable and include (1) a reactant yielding reagent that is capable of producing an amine reactant during thermal exposure and (2) an indicator yielding reagent that, during thermal exposure, is capable of reacting with the amine to produce a visible indicator reaction after a predetermined accumulated thermal exposure.

4,533,641

AUTOMATIC CHEMICAL ANALYSIS METHODS

John K. Holt, Ft. Pierce, Fla., assignor to Harbor Branch Foundation, Inc., Ft. Pierce, Fla.

Division of Ser. No. 400,442, Jul. 21, 1982, Pat. No. 4,454,095.
This application Apr. 16, 1984, Ser. No. 600,908
Int. Cl.³ G01N *21/00, 35/04*
U.S. Cl. 436—43 **3 Claims**



1. In a method for automatically analyzing liquid samples contained in fracturable ampoules for determination of content of specific gas in the liquid sample including positioning fracturable sample containing ampoules in a closed chamber, breaking the fracturable sample containing ampoules inside the closed chamber, and transporting at least a component of the samples to a means for analyzing a specific gas contained in the samples, the improvement which comprises the steps of:

a. encasing each ampoule in a separate tubular sleeve,

b. forming a fluid-tight seal between the outside of each encased ampoule and the inside of each sleeve,

c. inserting a sleeve encased ampoule in a closed chamber having a test gas inlet and a test gas outlet,

d. forming a fluid-tight seal between said chamber and the inserted encased ampoule,

e. fracturing the ampoule within said chamber while maintaining said seal between said chamber and said encased ampoule, and

f. passing test gas into said opened ampoule via said gas inlet and removing gas from said chamber via said gas outlet.

4,533,642

METAL ANALYSIS FOR ACID-SOLUBLE ELEMENTS

John H. Kelly, Burlington, Canada, assignor to Stelco Inc., Hamilton, Canada

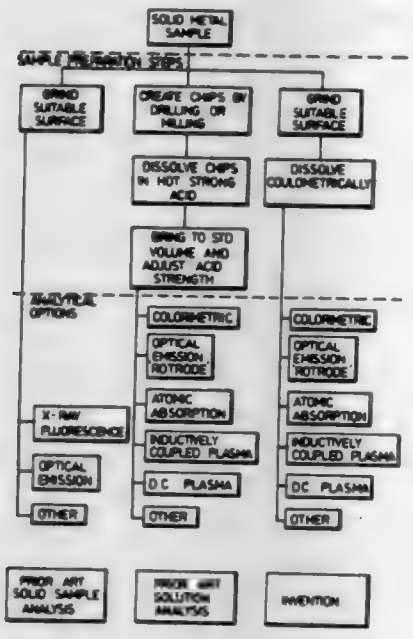
Filed Apr. 26, 1982, Ser. No. 372,079
Claims priority, application Canada, Apr. 2, 1982, 400398
Int. Cl.³ G01N *33/20*
U.S. Cl. 436—78 **15 Claims**

1. A method for rapidly determining the concentration of a variable concentration acid-soluble material in a sample of an acid-soluble metal, which comprises:

coulometrically dissolving a predetermined amount of said acid-soluble metal from said sample to form a solution containing said predetermined amount of acid-solubilized metal and also containing a variable amount of said variable concentration acid-soluble material proportional to the amount thereof in said sample,

said coulometric dissolving being effected rapidly in an electrolytic cell containing a dilute aqueous solubilizing agent having a concentration insufficient to effect dissolution of the sample in the absence of electrolytic assistance by circulating the acidic solubilizing agent through an electrolysis zone between the sample acting as the amode

electrode and the cell cathode to flush gaseous products of electrolysis from said electrolysis zone while maintaining high current density in the electrolysis zone during said coulometric dissolving, and



analytically determining the amount of said variable concentration acid-soluble material in said solution in relation to said predetermined amount of metal to provide a value proportional to the concentration of said variable concentration acid-soluble material in said sample.

4,533,643

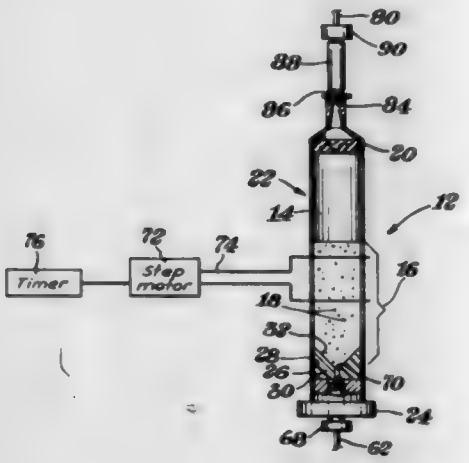
METHOD FOR THE BATCH PREPARATION OF SAMPLE ALIQUOTS BY SOLVENT EXTRACTION AND SEPARATION OF SOLUBLES FROM NONSOLUBLE PARTICULATE

David R. Bell, Vernal, Utah, and Theodore E. Miller, Jr., Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 423,343, Sep. 24, 1982, abandoned, which is a continuation of Ser. No. 220,551, Dec. 29, 1980, abandoned. This application Jul. 9, 1984, Ser. No. 629,025

Int. Cl.[3] G01N *1/10*

U.S. Cl. 436—178 3 Claims



1. Method for the batch preparation of sample aliquots by solvent extraction and separation of soluble species from sample comprising nonsoluble particulate, which comprises:

(a) adding a batch quantity of said sample to a receptacle having a sample receiving space which communicates with a fluid-permeable filter, the filter being disposed remotely from the sample;

(b) adding a batch quantity of liquid solvent to the sample receiving space;

(c) injecting a stream of pressurized gas into the sample receiving space to slurry the solvent with the sample;

(d) inverting the sample receptacle to transfer the slurry into filtering contact with the filter;

(e) filtering the liquid phase of the slurry through the filter, and

(f) collecting a metered amount of the filtered liquid phase to prepare a sample aliquot containing dissolved species extracted from the sample.

4,533,644

MORTAR

Cecil M. Jones, Worcester, Mass., assignor to Norton Company, Worcester, Mass.

Filed Jan. 30, 1984, Ser. No. 575,108

Int. Cl.[3] C04B *35/18, 35/48, 19/04*

U.S. Cl. 501—17 7 Claims

1. A raw batch adapted to be mixed with water to form a mortar adapted to be dried and then fired in situ particularly for use with silicon carbide containing elements including silicon carbide shapes bonded with oxides, silicon nitride or silicon oxynitride comprising a mixture of from 70% to 90% by weight of a calcined refractory mullite grain containing 70% alumina, from 2% to 7% by weight of a ball clay, from 2% to 10% by weight of a finely ground chemically active alumina, from 1% to 4% by weight of a purified bentonite, from 0.5% to 1.5% by weight of sodium silicate, and from 5% to 15% by weight of a glass frit.

7. A raw batch adapted to be mixed with water to form a mortar adapted to be dried and then fired in situ particularly for use with silicon carbide containing elements including silicon carbide shapes bonded with oxides, silicon nitride or silicon oxynitride comprising a mixture of from 70% to 90% by weight of a calcined refractory zircon grain, from 2% to 7% by weight of a ball clay, from 2% to 10% by weight of a finely ground chemically active alumina, from 1% to 4% by weight of a purified bentonite, from 0.5 to 1.5% by weight of sodium silicate, and from 5% to 15% by weight of a glass frit.

4,533,645

HIGH THERMAL CONDUCTIVITY ALUMINUM NITRIDE CERAMIC BODY

Irvin C. Huseby, Schenectady, and Carl F. Bobik, Burnt Hills, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 519,158, Aug. 1, 1983, Pat. No. 4,478,785. This application Jul. 11, 1984, Ser. No. 629,666

The portion of the term of this patent subsequent to Oct. 23, 2001, has been disclaimed.

Int. Cl.[3] C04B *35/58*

U.S. Cl. 501—96 16 Claims

1. A polycrystalline aluminum nitride body having a density greater than 85% of the theoretical density for aluminum nitride and a thermal conductivity greater than 0.5 W/cm·K at 22° C., said body consisting essentially of aluminum nitride phase, said body containing oxygen in an amount ranging from greater than about 0.35% by weight up to about 1.1% by weight of said body as determined by neutron activation analysis, said body containing carbon in an amount ranging from a detectable amount to less than about 0.2% by weight of said body, said body being produced by the process which consists essentially of providing at least a substantially uniform particulate mixture comprised of aluminum nitride having a predetermined oxygen content greater than about 0.8% by weight of said particulate aluminum nitride and a carbonaceous additive selected from the group consisting of free carbon, carbonaceous organic material and mixtures thereof, said aluminum nitride having a specific surface area greater than about 4.7 m^2/g, said carbonaceous organic material pyrolyzing at a temperature ranging from about 50° C. to 1000° C. to free carbon and gaseous product of decomposition which vaporizes away, said free carbon having a specific surface area greater

than about 40 m^2/g, deoxidizing said particulate mixture by heating said mixture in a nonoxidizing atmosphere selected from the group consisting of argon, nitrogen and mixtures thereof to a temperature ranging from about 1350° C. to about 1750° C. pyrolyzing any organic material therein to produce free carbon and reacting the free carbon therein with the oxygen content of said aluminum nitride producing deoxidized powder and gaseous product which vaporizes away, said free carbon being in an amount which produces a deoxidized powder having an oxygen content ranging from greater than about 0.35% by weight to about 1.1% by weight of said deoxidized powder and which is at least about 20% by weight lower than said predetermined oxygen content, shaping the deoxidized powder into a compact and sintering the compact at ambient pressure in a nonoxidizing atmosphere selected from the group consisting of argon, nitrogen and mixtures thereof at a temperature ranging from about 1900° C. to about 2200° C. producing said sintered body, said compact retaining its oxygen content in an amount greater than about 0.35% by weight of said compact during said sintering, said oxygen content being determinable by neutron activation analysis.

4,533,646

NITRIDE BONDED OXIDE REFRACTORIES

Ke-Chin Wang, Pittsburgh, and Howard M. Winkelbauer, Mifflin, both of Pa., assignors to Dresser Industries, Inc., Dallas, Tex.

Continuation of Ser. No. 384,709, Jun. 3, 1982, abandoned. This application May 24, 1984, Ser. No. 613,941

Int. Cl.³ C04B *35/58, 35/18, 35/10*

U.S. Cl. 501—97 **2 Claims**

1. A nitride bonded refractory shape formed by an in situ reaction in a nitriding atmosphere consisting essentially of a size graded batch comprising 55 to 63 percent, by weight, −3 to +65 mesh Tyler coarse refractory aggregate, selected from the group consisting of calcined and fused aggregates of alumina, alumino-silicate, and magnesium aluminate spinel, and 37 to 45 percent, by weight, of a −65 mesh Tyler, fine portion consisting essentially of 3 to 20 percent, by weight, silicon metal, 0.75 to 20 percent, by weight, alumina, and the balance consisting of fines of the refractory aggregate, the weight ratio of said −65 mesh Tyler alumina to said −65 mesh Tyler silicon, equaling at least 1:4.

4,533,647

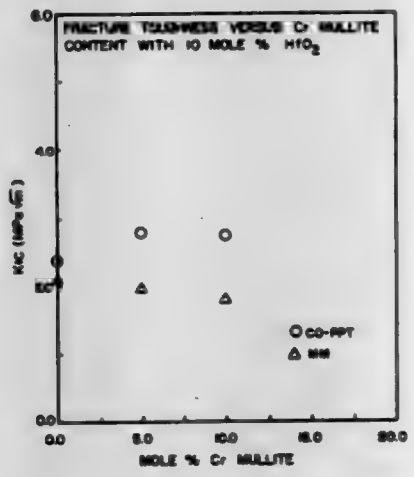
CERAMIC COMPOSITIONS

Tseng-Ying Tien, Ann Arbor, Mich., assignor to The Board of Regents acting for and on behalf of the University of Michigan, Ann Arbor, Mich.

Filed Oct. 27, 1983, Ser. No. 546,119

Int. Cl.³ C04B *35/10, 35/12, 35/48*

U.S. Cl. 501—105 **18 Claims**



1. A ceramic composition comprising:

(a) a matrix phase selected from the group consisting of solid solutions characterized by the formula $Al_2O_3.xCr_2O_3$ and the formula $3Al_2O_3.2SiO_2+x[3Cr_2O_3.2SiO_2]$ where x is the relative mole fraction of Cr_2O_3 or $3Cr_2O_3.2SiO_2$; and

(b) a dispersed phase characterized by the formula ZrO_2. $.yHfO_2$ where y is the relative mole fraction of HfO_2.

4,533,648

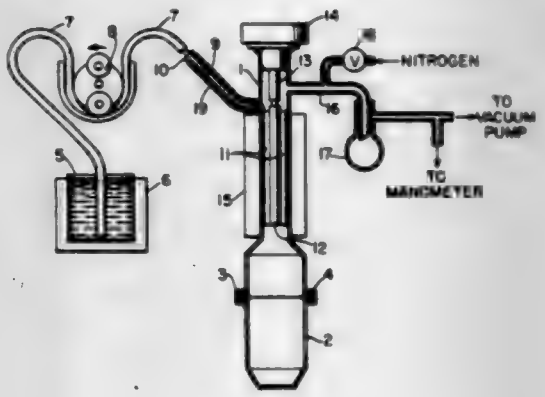
REGENERATION OF COPPER CHROMITE HYDROGENATION CATALYST

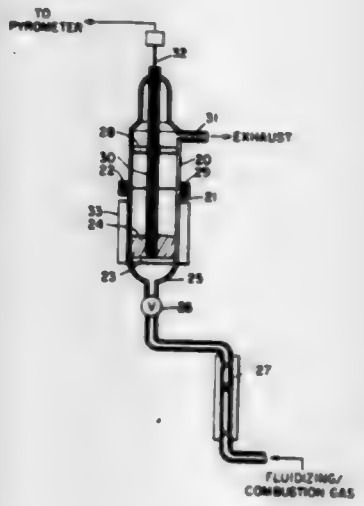
Patrick J. Corrigan, Fairfield; Richard M. King, and Scott A. VanDiest, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 23, 1984, Ser. No. 602,887

Int. Cl.³ B01J *23/94, 23/92;* C07C *34/20, 29/136*

U.S. Cl. 502—38 **14 Claims**





1. A process for regenerating spent copper chromite catalyst which has been used in the hydrogenation of carboxylic acids containing from about 6 to abut 30 carbon atoms or carboxylic acid esters containing from about 7 to about 31 carbon atoms to produce alcohols, the said spent catalyst comprising at least about 50% by weight organic residue from said hydrogenation process, the said regeneration process comprising the steps of:

(1) subjecting the spent catalyst to a vacuum of from about 1 mm to about 20 mm Hg at a temperature of from about 65° C. to about 320° C. for a time period of less than about one minute to reduce the organic residue content of the spent catalyst to less than about 20% by weight, thereby converting said spent catalyst to a free flowing granular form, and

(2) heating the vacuum-treated catalyst from Step (1) in an atmosphere comprising molecular oxygen while maintaining the temperature at about 260° C. to about 370° C., whereby any remaining organic residue is burned off and the catalyst is reoxidized.

2. The process of claim 1 wherein the temperature and vacuum pressure in Step (1) are selected such that the time period needed to reduce the organic residue content of the spent catalyst to less than about 25% is less than 30 seconds.

3. The process of claim 2, wherein during transfer of the catalyst from Step (1) to Step (2), the catalyst is kept out of

contact with air by blanketing the catalyst with an inert gas or by maintaining a vacuum over the catalyst.

4,533,649

METHOD OF PREPARING CRYSTALLINE ALUMINOSILICATES

William J. Ball, Capel; Sami A. I. Barri, London, and Dennis Young, Staines, all of England, assignors to The British Petroleum Company p.l.c., London, England

Filed Sep. 1, 1983, Ser. No. 528,528

Claims priority, application United Kingdom, Sep. 7, 1982, 8225524

Int. Cl.³ C01B *33/28*; B01J *29/28*

U.S. Cl. 502—71 **8 Claims**

1. A process for producing crystalline aluminosilicates having in the hydrogen form an X-ray diffraction pattern substantially as set forth in Table 1 of this specification and the following composition in terms of the mole ratios of the oxides:

$$0.9\pm0.2M_{2/n}O:Al_2O_3:xSiO_2:yH_2O:zNH_3$$

wherein M is at least one cation having a valence n, x is at least 10, y/x is from 0 to 5 and z/x is 0–5,

said process comprising mixing a source silica, a source of alumina, a source of alkali metal (s), water and ammonia,

wherein the silica to alumina mole ratio in the initial mixture is from 45 to 150:1,.

wherein the free alkali metal (s) hydroxide to water mole ratio is from 2×10^{-3}:1 to 8×10^{-3}:1,

wherein the free alkalii metal (s) hydroxide to silica mole ratio is 0.01:1 to 1:1,

wherein the water to silica mole ratio is from 5:1 to 50:1, and

wherein the ammonia to silica mole ratio is from 0.5:1 to 4:1,

until a homogeneous gel is formed and crystallising the gel at a temperature above 70° C. for a period of at least 2 hours.

4,533,650

PROCESS FOR MANUFACTURING A CATALYST CONTAINING IRON, CHROMIUM AND POTASSIUM OXIDES AND AT LEAST ONE RARE EARTH METAL OXIDE, FOR USE IN DEHYDROGENATION REACTIONS

Philippe Courty, Houilles; Michel Roussel, Antony; Serge Leporq, Mantes la Ville; Jean-Francois Le Page, Rueil Malmaison, and Philippe Varin, Massy, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 14, 1983, Ser. No. 561,374

Claims priority, application France, Dec. 14, 1982, 82 21085; Dec. 14, 1982, 82 21086

Int. Cl.³ B01J *21/16, 23/10*

U.S. Cl. 502—84 **20 Claims**

1. A process for manufacturing a catalyst containing iron, chromium and potassium, as oxides, in the ratios by weight:

$$\frac{Fe_2O_3}{K_2O} \text{ from I/I to I0/I}$$

$$\frac{CrO_3}{K_2O} \text{ from 0.05/I to 0.4/I}$$

$$\frac{Fe_2O_3}{CrO_3} \text{ from I5/I to 40/I,}$$

and at least one rare earth metal, in a proportion, calculated as oxide, from 1 to 15% by weight with respect to the weight of said catalyst, said process being characterized in that it comprises:

a first step of manufacturing a product by reacting at least one rare earth (RE) metal compound with at least one compound of at least one metal (M) selected from iron, chromium, cobalt, aluminium and vanadium, said reaction being followed with heating at high temperature; and

a second step of forming a mixture comprising water, at least one iron compound, at least one chromium compound, at least one potassium compound and the product obtained at the end of the first step, the various metal compounds being used in proportions corresponding to the indicated oxide proportions by weight, malaxing said mixture to form a paste which is then dried and thermally activating the catalyst by heating at high temperature.

2. A process according to claim 1, characterized in that, in the catalyst, the ratios by weight between iron, chromium and potassium, calculated as oxides, are:

$$\frac{Fe_2O_3}{K_2O} \text{ from 2/I to 7/I}$$

$$\frac{CrO_3}{K_2O} \text{ from 0.1/I to 0.3/I; and}$$

$$\frac{Fe_2O_3}{CrO_3} \text{ from 25/I to 35/I,}$$

and the proportion of rare earth metal, calculated as oxide, is from 3 to 10% by weight.

10. A process according to one of claims 1 or 2, characterized in that, during the second step, a clayish material is used in a proportion from 3.5 to 30% by weight with respect to the totality of the mixture components, calculated as oxides, the potassium compound being used in excess with respect to the amount liable to combine with said clayish material to form a double aluminium and potassium silicate, the excess of said potassium compound being, in proportion to iron and chromium, calculated as oxides, in the following ratios by weight:

$$\frac{Fe_2O_3}{K_2O \text{ excess}} \text{: from 3/I to I0/I; and}$$

$$\frac{CrO_3}{K_2O \text{ excess}} \text{: from 0.I/I to 0.4/I}$$

4,533,651

CATALYSTS FOR OLEFIN OLIGOMERIZATION AND ISOMERIZATION

Anthony F. Masters, Diamond Creek, and Kingsley J. Cavell, Balwyn, both of Australia, assignors to Commonwealth Scientific and Industrial Research Organization, Australia

PCT No. PCT/AU83/00013, § 371 Date Oct. 17, 1983, § 102(e) Date Oct. 17, 1983, PCT Pub. No. WO83/02907, PCT Pub. Date Sep. 1, 1983

PCT Filed Feb. 2, 1983, Ser. No. 548,887

Claims priority, application Australia, Feb. 17, 1982, PF2750; Jun. 25, 1982, PF4596

Int. Cl.³ B01J *31/14, 31/22*

U.S. Cl. 502—117 **11 Claims**

1. In a catalyst system for the oligomerization and/or isomerization of olefins which comprises a nickel (II) complex and co-catalyst, the improvement wherein the nickel (II) complex is a square planar species with a trivalent Group V donor ligand, a halogen or pseudo-halogen ligand and a dithio-β-diketone ligand which may be substituted with one or more non-deleterious groups.

9. The catalyst system of claim 1 or claim 3, characterized in that the cocatalyst is an aluminium alkyl chloride.

4,533,652

AZO POLYMERIZATION INITIATOR COMPOSITION

Motoaki Tanaka, Urawa; Takanori Toyama, Kawagoe; Hitoshi Oba, Saitama, and Osamu Yamaguchi, Sayama, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Apr. 9, 1984, Ser. No. 597,893
Claims priority, application Japan, Jul. 7, 1983, 58-123861
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[3] C08F *2/18, 4/04, 2/20, 14.06*
U.S. Cl. 502—167 11 Claims

1. An azo polymerization initiator composition comprising an azo polymerization initiator compound, a dispersing agent in an amount of 0.001 to 30% by weight based on the weight of the azo polymerization initiator compound, and a surface active agent in an amount of 0.5% to 30% by weight based on the weight of the azo polymerization initiator compound, wherein said dispersing agent is selected from the group consisting of a synthetic high polymer, a cellulose derivative, an animal protein, a vegetable mucilage, a material derived from seaweeds, starch or fabricated starch, and said surface active agent is selected from the group consisting of cationic, anionic, and non-ionic surface active agents, said composition having a water content of 0to 50% by weight.

8. An azo polymerization initiator composition obtained by kneading an azo polymerization initiator compound, a dispersing agent in an amount of 0.001 to 30% by weight based on the weight of the azo polymerization initiator compound, and a surface active agent in an amount of 0.5 to 30% by weight based on the weight of the azo polymerization initiator compound at a temperature of 20° C. or lower, while adjusting the water content of the composition to 0 to 50% by weight, wherein said dispersing agent is selected from the group consisting of a synthetic high polymer, a cellulose derivative, an animal protein, a vegetable mucilage, a material derived from seaweeds, starch or fabricated starch, and said surface active agent is selected from the group consisting of cationic, anionic, and non-ionic surface active agents.

9. A process for producing an azo polymerziation initiator composition which comprises kneading an azo polymerization initiator compound, a dispersing agent in an amount of 0.001 to 30% by weight based on the weight of the azo polymerization initiator compound, and a surface active agent in an amount of 0.5 to 30% by weight based on the weight of the azo polymerization initiator compound at a temperature of 20° C. or lower, while adjusting the water content of the composition to 0 to 50% by weight, wherein said dispersing agent is selected from the group consisting of a synthetic high polymer, a cellulose derivative, an animal protein, a vegetable mucilage, a material derived from seaweeds, starch or fabricated starch, and said surface active agent is selected from the group consisting of cationic, anionic, and non-ionic surface active agents.

4,533,653

PREPARATION OF AN IMPROVED CATALYST FOR THE MANUFACTURE OF NAPHTHOQUINONE

Nobuyuki Ishibe; Renard L. Thomas, both of Lake Jackson, and Emmett L. Tasset, Clute, all of Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Dec. 20, 1982, Ser. No. 451,123
Int. Cl.[3] B01J *21/08, 23/20*
U.S. Cl. 502—242 6 Claims

1. In the process of making an oxidation catalyst containing vanadium, tin and potassium with a silicate binder the improvement which comprises employing an organic porosity control agent consisting of naphthalene, anthracene or a mixture thereof during the catalyst preparation to produce a catalyst having a mean pore diameter of from about 5 to about 15 microns and wherein at least 90% of the pores have diameters of less than about 10 microns.

2. A process of making a catalyst for the vapor phase oxidation of naphthalene or anthracene to produce naphthoquinone and anthraquinone, respectively, which comprises (1) combining ammonium vanadate, potassium sulfate, ammonium sulfate, tin oxide, silicic acid and an organic porosity control agent consisting of naphthalene, anthracene or a mixture thereof, (2) thoroughly grinding and mixing these components, (3) compressing said mixture into tablets and (4) calcining said tablets at a temperature of from about 400° to about 600° C., whereby a catalyst is produced having a mean pore diameter of from about 5 to about 15 microns and wherein at least 90% of the pores have diameters of less than about 10 microns.

4,533,654

UROTENSIN PEPTIDES

Karl P. Lederis; Keith L. MacCannell, both of Calgary, Canada, and Tomoyuki Ichikawa, Tokyo, Japan, assignors to The Salk Institute For Biological Studies, San Diego, Calif.

PCT No. PCT/US82/01349, § 371 Date Apr. 3, 1984, § 102(e) Date Apr. 6, 1984, PCT Pub. No. WO84/01378, PCT Pub. Date Apr. 12, 1984
PCT Filed Sep. 29, 1982, Ser. No. 600,554
Int. Cl.[3] A61K *37/00;* C07C *103/52*
U.S. Cl. 514—12 9 Claims

1. A synthetic polypeptide having the formula: H-Asn-Asp-Asp-Pro-Pro-Ile-Ser-Ile-Asp-Leu-Thr-Phe-His-Leu-Leu-Arg-Asn-Met-Ile-Glu-Met-Ala-Arg-Asn-Glu-Asn-Gln-Arg-Glu-Gln-Ala-Gly-Leu-Asn-Arg-Lys-Tyr-Leu-Asp-Glu-Val-NH_2 or a biologically active peptide fragment thereof containing at least the residues in positions 4 through 28; or a nontoxic addition salt of either.

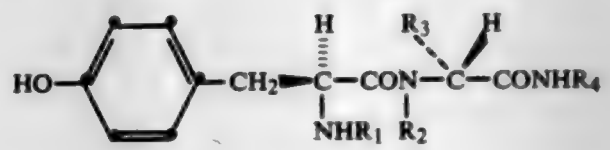
4,533,655

ANALGESIC DIPEPTIDE AMIDES AND METHOD OF USE AND COMPOSITIONS THEREOF

Barry A. Morgan, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 286,672, Jul. 24, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,138
Int. Cl.[3] A61K *37/00;* C07C *103/52*
U.S. Cl. 514—18 18 Claims

1. 2-(L-N^2-R_1N-R_2-tyrosylamino)-2-R_3N-R_4-acetamide having the structural formula



wherein

R_1 is hydrogen or methyl; and

R_2 is hydrogen or methyl; provided that at least one of R_1 and R_2 is other than hydrogen;

R_3 is alkyl of one to five carbon atoms; and

R_4 is $(CH_2)_nY$, wherein n is an integer from 2 through 10 and Y is phenyl or phenyl substituted by fluoro;

or a pharmaceutically acceptable acid addition salt thereof.

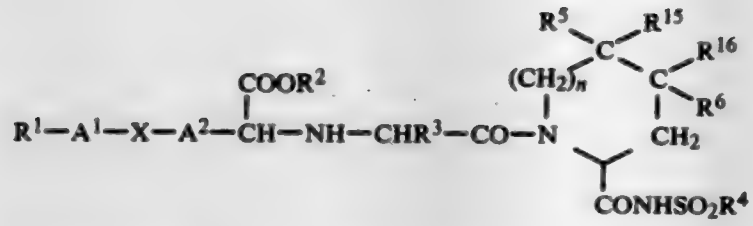
4,533,656

AMIDE DERIVATIVES

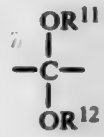
Edward R. H. Walker, Wilmslow, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

Filed Jul. 13, 1983, Ser. No. 513,290
Claims priority, application United Kingdom, Jul. 19, 1982, 8220879
Int. Cl.[3] A61K *37/00;* A01N *57/00, 43/42, 43/36;* C07D *215/00, 401/00, 211/06*
U.S. Cl. 514—19 7 Claims

1. An amide derivative of the formula:



wherein either R^1 is aryl or heterocyclic and A^1 is a direct link, or R^1 is aryl or heterocyclic, or hydrogen or amino and A_1 is alkylene of 1 to 5 carbon atoms; wherein X is —CO— or has the formula



wherein R^{11} and R^{12}, which may be the same or different, each is alkyl of up to 5 carbon atoms, or R^{11} and R^{12} are joined to form alkylene of 2 to 5 carbon atoms; wherein A^2 is alkylene of 2 to 4 carbon atoms; wherein R^2 is hydrogen, aryl or alkyl of up to 5 carbon atoms which is unsubstituted or which bears an aryl substituent; wherein R^3 is hydrogen or alkyl of up to 5 carbon atoms which is unsubstituted or which bears a halogeno, hydroxy, amino, guanidino, carboxy, carbamoyl or mercapto substituent, or an alkoxy, alkylamino, dialkylamino, cyclic amino or alkylthio substituent wherein each alkyl is of up to 5 carbon atoms and wherein cyclic amino has up to 6 carbon atoms, or an alkanoylamino or alkoxycarbonyl substituent each of up to 6 carbon atoms or an arylalkoxycarbonyl substituent of up to 10 carbon atoms, or an aryl or heterocyclyl substituent; wherein R^4 is alkyl of up to 5 carbon atoms which is unsubstituted or which bears an aryl substituent, or R^4 is phenyl or alkylphenyl; wherein n is 0 or 1; and wherein either R^5, R^6, R^{15} and R^{16} are all hydrogen, or R^5 and R^6 are both hydrogen and R^{15} and R^{16} together form tetramethylene [—$(CH_2)_4$—]; or R^5 and R^6 together form a second bond between the two carbon atoms to which they are attached and R^{15} and R^{16} together form buta-1,3-dien-1,4-diyl such that together with the CR^5–CR^6 group they form a fused benzo-ring; or a salt thereof where appropriate.

4,533,657

ANALGESIC DIPEPTIDE AMIDES AND METHOD OF USE AND COMPOSITION THEREOF

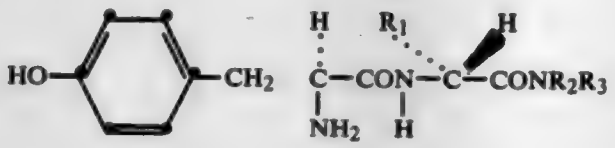
Barry A. Morgan, Albany, N.Y., assignor to Sterling Drug Inc., New York, N.Y.

Continuation-in-part of Ser. No. 286,672, Jul. 24, 1981, abandoned. This application Sep. 24, 1982, Ser. No. 423,139

Int. Cl.³ A61K *37/00*; C07C *103/52*

U.S. Cl. 514—19 **14 Claims**

1. 2-(L-tyrosylamino)-2-R_1-N-R_2-N-R_3-acetamide having the structural formula



wherein

R_1 is alkyl of one to five carbon atoms;

R_2 is $CHQ(CH_2)_nY$ wherein n is an integer from 1 through 9, Q is hydrogen or methyl, and Y is phenyl or phenyl substituted by fluoro, chloro, methyl, methoxy or trifluoromethyl; and

R_3 is selected from the group consisting of $CHQ(CH_2)_nY$ as defined for R_2 and $(CH_2)_mX$ wherein m is an integer from 1 through 4 and X is amino, methylamino, dimethylamino, dimethyloxoamino, acetamido, N-methylacetamido, methylthio, methylsulfinyl, methylsulfonyl, hydroxy, carboxy, carbamoyl, methylcarbamoyl or dimethylcarbamoyl;

or a pharmaceutically acceptable acid addition salt thereof.

4,533,658

INSECTICIDAL 3-ALKYL-5-(ALKOXY- OR ALKYLTHIO-PHOSPHYNYL OR PHOSPHINOTHIOYL-THIOMETHYL)-1,2,4-OXADIAZOLES

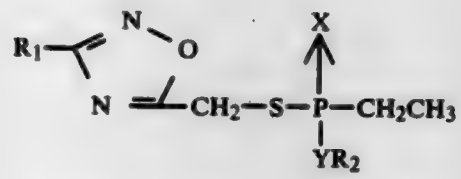
William F. King, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 322,995, Nov. 19, 1981, abandoned. This application Apr. 19, 1984, Ser. No. 601,889

Int. Cl.³ A01N *57/24*; C07F *9/65*

U.S. Cl. 514—92 **15 Claims**

1. A compound of the formula:



(I)

wherein X is sulfur or oxygen, Y is sulfur or oxygen, R_1 is methyl, ethyl, isopropyl or cyclopropyl, R_2 is ethyl or isopropyl provided that when R_1 is methyl or ethyl, then R_2 is not ethyl.

2. A compound according to claim 1 wherein Y is sulfur.

7. A method of controlling corn root worms which comprises applying to the soil habitat of the corn root worms an insecticidally effective amount of a compound of claim 2.

4,533,659

MICROBICIDAL 2-(1H-1,2,4-TRIAZOLYLMETHYL-1'-YL)-2-SILOXY-2-PHENYL-ACETATES

Wolfgang Eckhardt, Lörrach, Fed. Rep. of Germany, and Walter Kunz, Oberwil, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

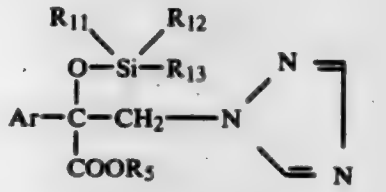
Filed May 31, 1983, Ser. No. 499,725

Claims priority, application Switzerland, Sep. 6, 1982, 3558/82

Int. Cl.³ A61K *31/555*; C07D *207/30*

U.S. Cl. 514—184 **8 Claims**

1. A compound of the formula



wherein

Ar is phenyl substituted in the ortho- and/or para-position by nitro, fluorine, chlorine, bromine, methyl, methoxy or trifluoromethyl,

R_5 is C_1–C_4 alkyl, phenyl, benzyl, or phenyl or benzyl substituted by nitro, chlorine, bromine, fluorine or methyl, and

each of R_{11}, R_{12} and R_{13} is C_1–C_4 or phenyl, each optionally substituted by halogen,

or an acid addition salt or metal complex thereof.

8. A method of controlling phytopathogenic microorganisms or of protecting cultivated plants from attack by such microorganisms, which comprises applying to said plants or to the locus thereof a microbicidally effective amount of a compound as claimed in claim 1.

4,533,660

ANTIBACTERIAL O-SULFATED β-LACTAM HYDROXAMIC ACIDS

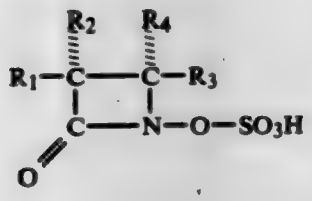
Eric M. Gordon, Pennington, and Miguel A. Ondetti, Princeton, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 202,830, Oct. 31, 1980, Pat. No. 4,337,197. This application Nov. 12, 1981, Ser. No. 320,407

Int. Cl.[3] C07D *205/08;* A61K *31/395, 403/12, 401/12*

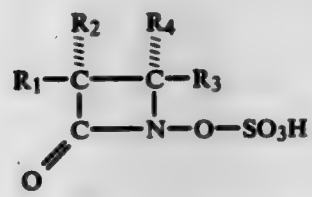
U.S. Cl. 514—210 25 Claims

1. A pharmaceutically acceptable salt, including inner salt, of a β-lactam having the formula



wherein R_1 is an acyl group derived from a carboxylic acid; R_2 is hydrogen or alkoxy of 1 to 4 carbon atoms; and R_3 and R_4 are the same or different and each is hydrogen or alkyl of 1 to 10 carbon atoms.

6. A method of treating bacterial infections in mammals which comprises administering to a mammal in need thereof an effective amount of a pharmaceutically acceptable salt, including inner salt, of a β-lactam having the formula



wherein R_1 is an acyl group derived from a carboxylic acid; R_2 is hydrogen or alkoxy of 1 to 4 carbon atoms; and R_3 and R_4 are the same or different and each is hydrogen or alkyl of 1 to 10 carbon atoms.

4,533,661

CERTAIN 3-PHOSPHINYL-AMINO-2-OXO-1H-AZEPINE-1-ACETIC ACID DERIVATIVES HAVING ANTI-HYPERTENSIVE ACTIVITY

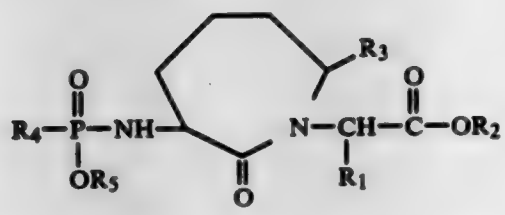
Donald S. Karanewsky, East Windsor, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 28, 1983, Ser. No. 479,429

Int. Cl.[3] C07F *9/65, 9/58*

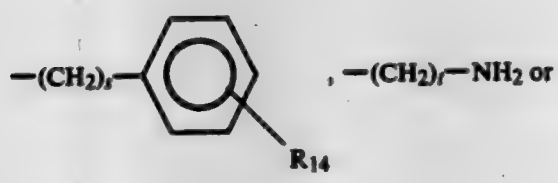
U.S. Cl. 514—212 6 Claims

1. A compound of the formula

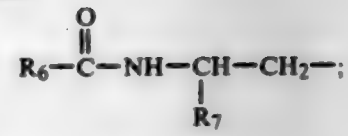


or pharmaceutically acceptable salt thereof wherein:

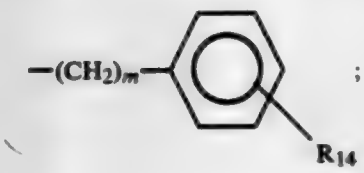
R_4 is alkyl of 1 to 10 carbons,



-continued



R_6 and R_7 are independently selected from the group consisting of lower alkyl of 1 to 4 carbons and



s is zero or an integer from 1 to 7;

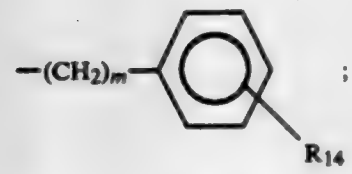
t is an integer from 1 to 8;

m is zero, one, two or three;

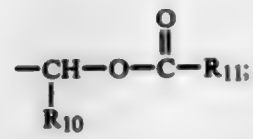
R_{14} is hydrogen, methyl, methoxy, methylthio, chloro, bromo, fluoro, or hydroxy;

R_1 is hydrogen, lower alkyl of 1 to 4 carbons, or $—(CH_2)_4—NH_2$;

R_3 is hydrogen, lower alkyl of 1 to 4 carbons or



R_5 and R_2 are independently selected from the group consisting of hydrogen, lower alkyl of 1 to 4 carbons, alkali metal salt ion, and



R_{10} is hydrogen, straight or branched chain lower alkyl of 1 to 4 carbons, or cyclohexyl; and

R_{11} is straight or branched chain lower alkyl of 1 to 4 carbons, cyclohexyl or phenyl.

4,533,662

2-ACYLAMINOMETHYL-1,4-BENZODIAZEPINE COMPOUNDS AND ANALGESIC USE

Horst Zeugner, Hanover, Fed. Rep. of Germany; Dietmar Roemer, Allschwil, Switzerland; Hans Liepmann, Hanover, and Wolfgang Milkowski, Burgdorf, both of Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

Filed Dec. 14, 1981, Ser. No. 330,324

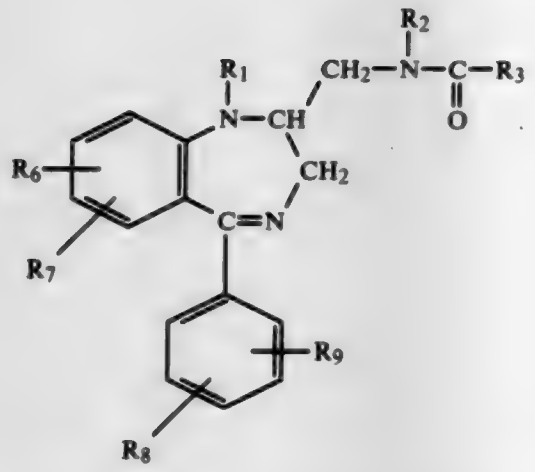
Claims priority, application Fed. Rep. of Germany, Dec. 20, 1980, 3048264

The portion of the term of this patent subsequent to Apr. 20, 1999, has been disclaimed.

Int. Cl.[3] A61K *31/55;* C07D *243/16, 405/10*

U.S. Cl. 514—221 28 Claims

1. A 2-phenyl acyl amino methyl-1H-2,3-dihydro-1,4-benzo diazepine compound of the following Formula I

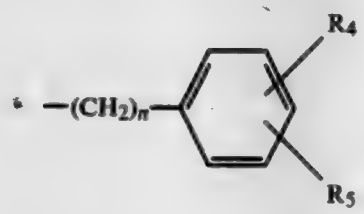


in which

R_1 indicates a substituent selected from the group consisting of hydrogen, lower alkyl, lower alkenyl, and cyclopropyl methyl;

R_2 indicates a substituent selected from the group consisting of hydrogen, lower alkyl, and lower alkenyl;

R_3 indicates the group of the following Formula



in which

R_4 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino, and lower alkanoyloxy; and

R_5 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, and lower alkanoyloxy; with the proviso that one of R_4 and R_5 indicates a substituent selected from the group consisting of halogen, lower alkyl, nitro and trifluoromethyl;

n indicates a numeral selected from the group consisting of the numerals 0, 1, and 2;

R_6 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino, and lower alkanoyloxy; and

R_7 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, and lower alkanoyloxy; or

R_6 and R_7, when attached to adjacent carbon atoms, together indicate a substituent selected from the group consisting of methylene di-oxy and ethylene di-oxy;

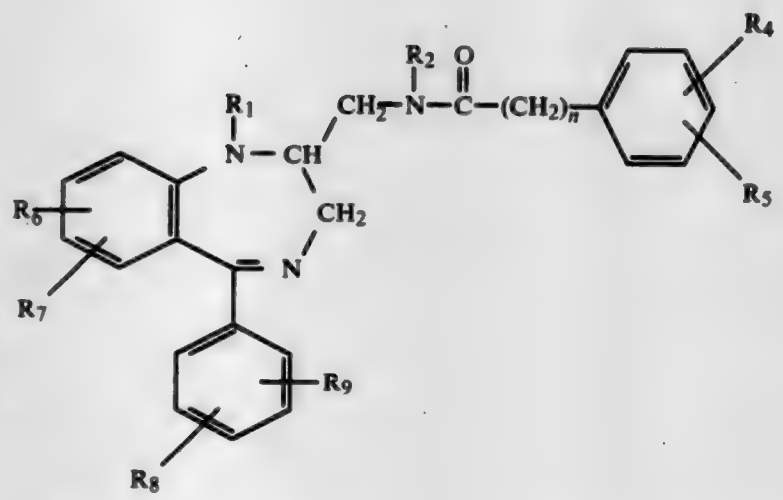
R_8 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino, and lower alkanoyloxy; and

R_9 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, and lower alkanoyloxy; or

R_8 and R_9, when attached to adjacent carbon atoms, together indicate a substituent selected from the group consisting of methylene di-oxy and ethylene di-oxy;

and the optically active isomers of said compounds and their acid addition salts.

27. In a method of alleviating pain in a mammal, the step of administering to said mammal an effective pain alleviating dose of a 2-phenylacylaminomethyl-1H-2,3-dihydro-1,4-benzodiazepine compound corresponding to the formula:



wherein:

R_1 indicates a substituent selected from the group consisting of hydrogen, lower alkyl, lower alkenyl and cyclopropyl methyl;

R_2 indicates a substituent selected from the group consisting of hydrogen, lower alkyl and lower alkenyl;

R_4 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino and lower alkanoyloxy;

R_5 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl and lower alkanoyloxy; or

R_4 and R_5 are attached to adjacent carbon atoms and together indicate a substituent selected from the group consisting of methylene dioxy and ethylene dioxy;

R_6 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino and lower alkanoyloxy;

R_7 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl and lower alkanoyloxy; or

R_6 and R_7 are attached to adjacent carbon atoms and together indicate a substituent selected from the group consisting of methylene dioxy and ethylene dioxy;

R_8 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, lower alkylthio, nitro, trifluoromethyl, cyano, amino, lower mono-alkyl amino, lower di-alkyl amino, lower mono-alkanoyl amino, lower N-alkyl-N-alkanoyl amino and lower alkanoyloxy;

R_9 indicates a substituent selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl and lower alkanoyloxy; or

R_8 and R_9 are attached to adjacent carbon atoms and together indicate a substituent selected from the group consisting of methylene dioxy and ethylene dioxy; and

n indicates a numeral selected from the group consisting of 0, 1 and 2;

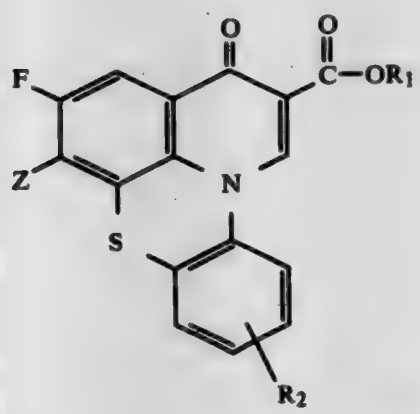
and the optically active isomers of said compounds and their acid addition salts.

4,533,663
QUINO-BENZOTHIAZINE ANTIBACTERIAL COMPOUNDS

Daniel T. Chu, Vernon Hills, Ill., assignor to Abbott Laboratories, North Chicago, Ill.

Filed Apr. 26, 1984, Ser. No. 604,338
Int. Cl.[3] C07D *279/14, 513/14;* A61K *31/54*
U.S. Cl. 514—223 17 Claims

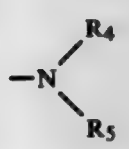
1. A compound having the formula



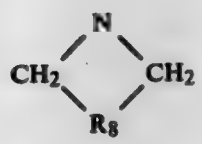
wherein R_1 is hydrogen or a carboxy protecting group; R_2 is one or more groups selected from the group consisting of hydrogen, halogen, nitro, carboxyl, methylenedioxy, cyano, C_1 to C_6 alkyl halo-substituted C_1 to C_6 alkyl, hydroxy-substituted C_1 to C_6 alkyl, a group having the formula:

$$—Y—R_3$$

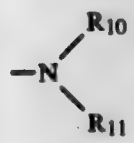
wherein —Y— is —O— or —S— and R_3 is hydrogen or C_1 to C_6 alkyl, and an amine group having the formula:



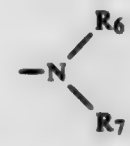
wherein R_4 and R_5 are independently hydrogen or C_1 to C_6 alkyl; and Z is selected from the group consisting of an aliphatic heterocyclic ring having the structure



wherein R_8 is methylene, dimethylene or a group of the formula $—CH_2—CH_2—R_9—CH_2$ or $—CH_2—R_9—CH_2—$ wherein R_9 is selected from the group consisting of —S—, —O— and —N—; substituted derivatives thereof having one or more substitutents selected from the group consisting of C_1 to C_6 alkyl, C_1 to C_6 hydroxyalkyl, hydroxy, alkanoyl containing 1 to 6 carbon atoms, alkanoylamido containing 1 to 6 carbon atoms and an amine of the formula



wherein R_{10} and R_{11} are each independently selected from the group consisting of hydrogen, C_1 to C_6 alkyl, halo-substituted C_1 to C_6 alkyl and hydroxy-substituted C_1 to C_6 alkyl; and an amino group of the formula



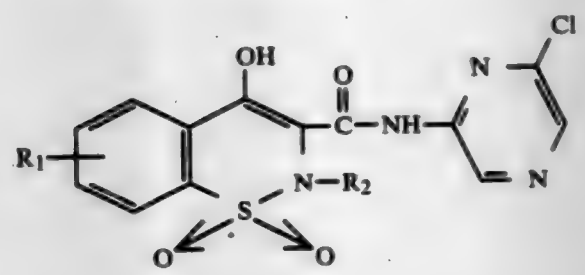
wherein R_6 is hydrogen or C_1 to C_{10} alkyl, halo-substituted C_1 to C_{10} alkyl or hydroxy-substituted C_1 to C_{10} alkyl; and R_7 is selected from the group consisting of C_1 to C_{10} alkyl, halo-substituted C_1 to C_{10}alkyl, hydroxy-substituted C_1 to C_{10} alkyl, an amine group, a mono-(C_1 to C_6)alkylamino group and a di-(C_1 to C_6)alkylamino group, and pharmaceutically acceptable salts thereof.

4,533,664
ANTITHROMBOTIC N-(6-CHLORO-PYRAZIN-2-YL)-4-HYDROXY-2H-1,2-BENZOTHIAZINE-3-CARBOXAMIDE-1,1-DIOXIDE DERIVATIVES, COMPOSITION, AND METHOD OF USE

Günter Trummlitz, Warthausen; Wolfhard Engel, Biberach; Ernst Seeger, Biberach, and Walter Haarmann, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränkter Haftung, Biberach/Riss, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,592
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237473
Int. Cl.[3] A61K *31/38;* C07D *417/02*
U.S. Cl. 514—225 5 Claims

1. A compound of the formula



wherein

R_1 is hydrogen, methyl, methoxy, fluorine or chlorine; and

R_2 is hydrogen, methyl, ethyl or n-propyl;

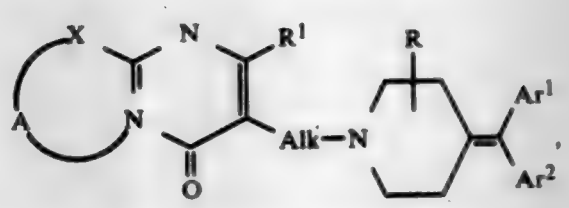
or a non-toxic, pharmacologically acceptable salt thereof formed with an inorganic or organic base.

4,533,665
[[BIS(ARYL)METHYLENE]-1-PIPERIDINYL]ALKYL-PYRIMIDINONES

Ludo E. J. Kennis, Turnhout; Jan Vandenberk, Beerse, and Josephus C. Mertens, Oud-Turnhout, all of Belgium, assignors to Janssen Pharmaceutica, Beerse, Belgium

Division of Ser. No. 517,612, Jul. 27, 1983, Pat. No. 4,485,107, which is a continuation-in-part of Ser. No. 438,079, Nov. 1, 1982, abandoned. This application Sep. 27, 1984, Ser. No. 655,136
Int. Cl.[3] C07D *513/04;* A61K *31/505*
U.S. Cl. 514—258 9 Claims

1. A chemical compound having the formula



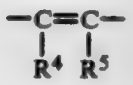
(I)

the possible stereochemically isomeric forms and the pharmaceutically acceptable acid-addition salts thereof,

wherein:

R is hydrogen, hydroxy or lower alkyloxy;

R^1 is a member selected from the group consisting of hydrogen and lower alkyl;
Alk is a lower alkanediyl radical;
X is a member selected from the group consisting of —S—;
A is a bivalent radical having the formula $—CH_2—CH_2—$, $—CH_2—CH_2—CH_2—$ or



wherein R^4 and R^5 are each independently selected from the group consisting of hydrogen, halo, amino and lower alkyl; and
Ar^1 and A^2 are each independently selected from the group consisting of pyridinyl, thienyl and phenyl, being optionally substituted with halo, hydroxy, lower alkyloxy, lower alkyl and trifluoromethyl.

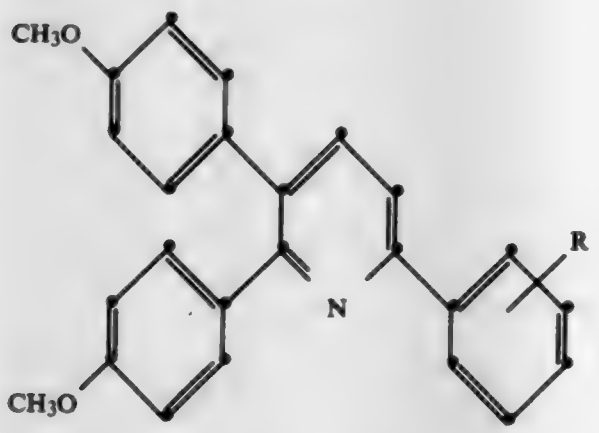
4,533,666

6-PHENYL-2,3-BIS-(4-METHOXYPHENYL)-PYRIDINE DERIVATIVES HAVING ANTI-INFLAMMATORY ACTIVITY

Ken Matsumoto, and John S. Ward, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Jun. 22, 1983, Ser. No. 506,933
Int. Cl.³ C07D *213/30*; A61K *31/44*
U.S. Cl. 514—277 **21 Claims**

1. A compound of the formula



I

and pharmaceutically acceptable salts thereof, wherein R is hydrogen, trifluoromethyl, fluoro, chloro, bromo, or iodo.

7. A method of treating inflammation which comprises administering to a mammal in need of such treatment an effective amount of a compound of claim 1.

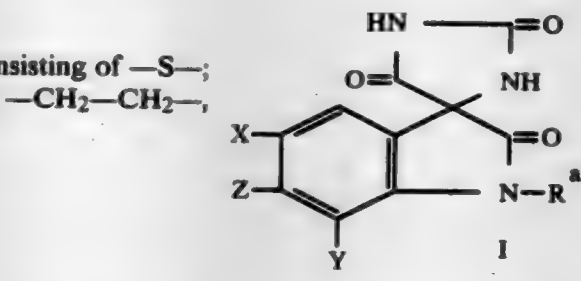
4,533,667

IMIDAZOLIDINEDIONE DERIVATIVES

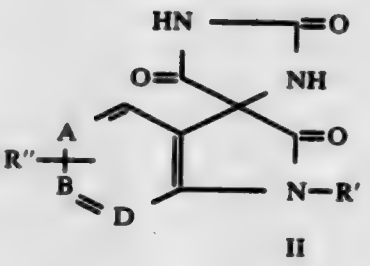
Alan J. Hutchison, Verona, N.J., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 497,962, May 25, 1983, Pat. No. 4,464,380. This application Apr. 16, 1984, Ser. No. 600,759
Int. Cl.³ A61K *31/41*; C07D *471/20, 487/10*
U.S. Cl. 514—278 **19 Claims**

1. A compound selected from the group consisting of spirohydantoin derivatives of the formulae:



I



II

and the pharmaceutically acceptable salts thereof, wherein
X and Y are each hydrogen, fluorine, chlorine, bromine, nitro or amino;
Z is hydrogen or amino, with the proviso that at least one of X, Y and Z is amino and with the further proviso that said Z is always other than amino when at least one of X and Y is other than hydrogen;
R is hydrogen;
=A—B=D— of formula II represents =N—CH=CH—, =CH—CH=N— or =CH—N=CH—;
R′ is a member selected from the group consisting of hydrogen, alkyl having from one to four carbon atoms, aryl and aralkyl having up to three carbon atoms in the alkyl moiety wherein each of said aryl moieties is chosen from the group consisting of pyridyl, thienyl, phenyl and mono and di-substituted phenyl, with each ring substituent being chosen from the group consisting of fluorine, chlorine, bromine, alkyl and alkoxy each having up to four carbon atoms and trifluoromethyl; and
R″ is hydrogen, hydroxy, fluorine, chlorine, alkyl or alkoxy each having up to four carbon atoms or trifluoromethyl.

19. A method for treating a diabetic host to prevent or alleviate chronic complications arising in said host, which comprises administering to said diabetic host an effective amount of a compound as claimed in claim 1.

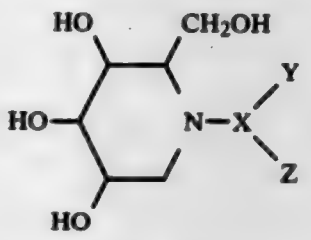
4,533,668

ANTIHYPERGLYCEMIC MORANOLINE DERIVATIVES

Shingo Matsumura, Kyoto; Hiroshi Enomoto, Nagaokakyo; Yoshiaki Aoyagi, Kyoto; Yoshiaki Yoshikuni, Kyoto; Kohei Kura, Ohmihachiman; Masahiro Yagi, Kusatsu, and Ichiro Shirahase, Kyoto, all of Japan, assignors to Nippon Shinyaku Co. Ltd., Japan

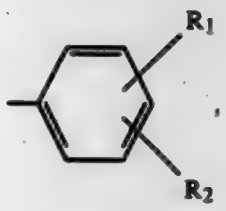
Filed Apr. 27, 1979, Ser. No. 33,839
Claims priority, application Japan, May 3, 1978, 53-53603; Jul. 6, 1978, 53-82606; Sep. 29, 1978, 53-120661; Jan. 20, 1979, 54-5714
Int. Cl.³ A61K *31/445*; C07D *211/46*
U.S. Cl. 514—321 **41 Claims**

1. An N-substituted moranoline of the formula

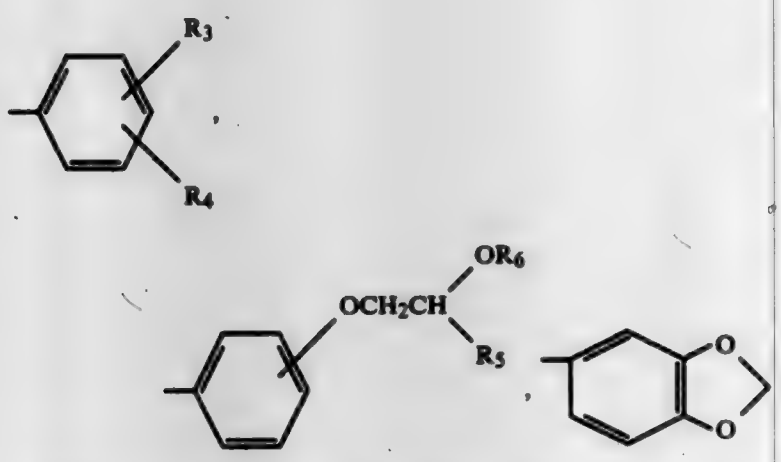


(I)

wherein X is divalent alkyl or alkenyl of 3 to 6 carbon atoms, Y is hydrogen, methyl or



and Z is



or thienyl, wherein R_1, R_2, R_3 and R_4 are independently hydrogen, halogen, lower alkyl, lower alkoxy, hydroxyl, trihalomethyl, phenoxy, diloweralkylamino, cyano, carboxyl, carbamoyl or carboloweralkoxy, R_5 is hydrogen or hydroxymethyl and R_6 is hydrogen, methyl, ethyl or methoxyethyl, or a pharmaceutically acceptable nontoxic acid addition salt thereof.

40. A method for the prophylaxis or treatment of hyperglycemic symptoms, which comprises administering to a human or animal in need thereof an amount of a compound of claim 1 effective to inhibit the increase of blood sugar.

4,533,669

ANTI-DEPRESSANT IMIDAZOLES

Motosuke Yamanaka, Abiko; Isao Saito, Chofu; Kiyomi Yamatsu, Kamakura, and Takako Fujimoto, Yokohama, all of Japan, assignors to Eisai Co., Ltd., Tokyo, Japan

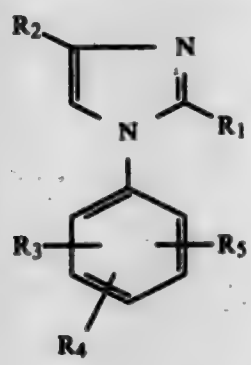
Division of Ser. No. 252,674, Apr. 9, 1981, Pat. No. 4,402,966, which is a division of Ser. No. 93,469, Nov. 13, 1979, Pat. No. 4,301,169. This application Feb. 25, 1983, Ser. No. 469,548

Claims priority, application Japan, Nov. 14, 1978, 53-139325; Nov. 21, 1978, 53-142813

Int. Cl.³ A61K *31/415;* C07D *233/61, 233/56*

U.S. Cl. 514—396 **19 Claims**

16. A method of treating depression and depressive states, which comprises administering to a subject a therapeutically effective amount of a pharmaceutical composition which comprises an imidazole compound of the formula:



wherein R_1 represents a lower alkyl group, R_2 represents a hydrogen atom or a lower alkyl group, and R_3, R_4 and R_5 may be the same or different and independently represent a hydrogen atom, a lower alkyl group, a trifluoromethyl group, an amino group, a mono- or di-lower alkylamino group, or a halogen atom, with the proviso that at least one of R_3, R_4 and R_5 is a trifluoromethyl group, an amino group, a mono- or di-lower alkylamino group, or a halogen atom; or a pharmaceutically acceptable acid addition salt thereof, in combination with a pharmaceutical carrier.

4,533,670

ANTI-CONVULSANT FLUORENYLALKYLIMIDAZOLE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE

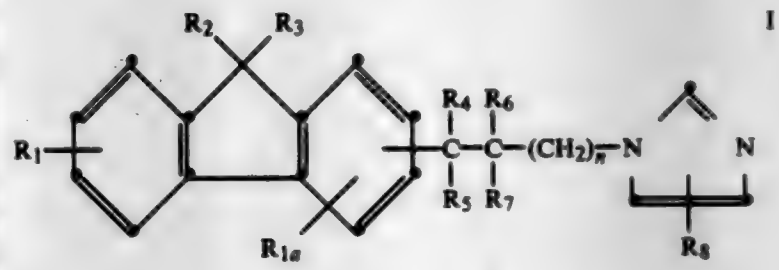
David W. Robertson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Sep. 21, 1983, Ser. No. 534,469

Int. Cl.³ A01N *43/50;* A61K *31/415;* C07D *233/60*

U.S. Cl. 514—399 **20 Claims**

1. A compound of the Formula



I

or a pharmaceutically acceptable salt thereof, wherein:

each of R_1 and R_{1a} is independently hydrogen, methyl, or halo;

each of R_2 and R_3 is independently hydrogen or methyl;

one of R_4 and R_5 is hydrogen or C_1–C_3 alkyl and the other of R_4 and R_5 is —G—R, or when taken together R_4 and R_5 are —G—CH_2—CR_aR_b—$(CH_2)_p$—G—, where G is —O— or —S—, R is hydrogen, C_1–C_3 alkyl, or R_9—CO—, R_9 is phenyl, C_1–C_3 alkyl, or C_3–C_7 cycloalkyl, each of R_a and R_b is independently hydrogen or methyl, and p is 0 or 1;

each of R_6 and R_7 is independently hydrogen, methyl, or ethyl;

n is 0–2; and

R_8 is hydrogen, methyl, or ethyl.

4,533,671

5-(2,3-DIHYDRO-1H-PYRROLIZIN-5-OYL)-2-ALKANOIC OR CARBOXYLIC ACIDS AND ANALOGS AS ANTI-INFLAMMATORY AND ANALGESIC AGENTS

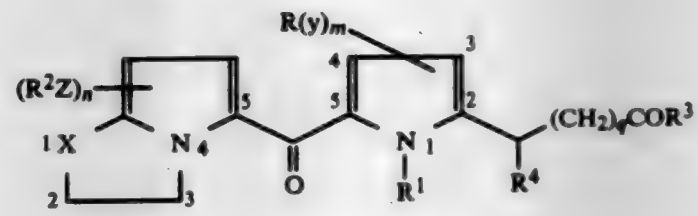
Tesfaye Biftu; Bruce E. Witzel, and Peter L. Barker, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 8, 1982, Ser. No. 433,603

Int. Cl.³ C07D *207/26;* A61K *31/40*

U.S. Cl. 514—413 **7 Claims**

1. A compound of formula



or a pharmaceutically acceptable salt thereof wherein:

R is

(a) H or C_{1-6} alkyl;

(b) C_{2-4} alkenyl;

(c) haloC_{1-6} alkyl; or

(d) phenyl-C_{1-3} alkyl;

m is 0 or 1;

R^1 is H or C_{1-6} alkyl;

R^2Z is R^2 Z can be at any available positions and R^2 is R

q is 0;

n is 0 or 1;

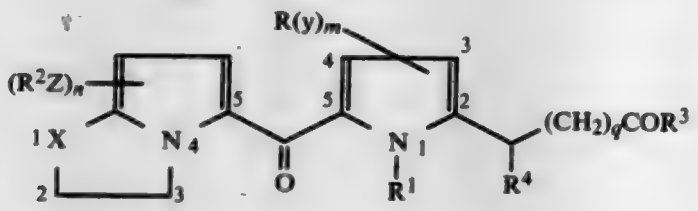
R^3 is hydroxy, C_{1-6} alkoxy or C_{1-6} (alkanoylaminoalkoxy);

X is —CHR^5—;

Y is —O—, —S—, CH_2— or H with the proviso that when Y is H, R is absent;

Z is —S—, —CH_2— or halo with the proviso that when Z is halo, R^2 is absent;
R^4 is hydrogen or C_{1-6}alkyl; and
R^5 is methyl or hydrogen.

6. A method of treating inflammatory conditions which comprises the administration to a mammalian species in need of such treatment an effective amount of a compound of formula



(I)

or a pharmaceutically acceptable salt thereof
wherein:
R is
(a) H or C_{1-6} alkyl;
(b) C_{2-4} alkenyl;
(c) haloC_{1-6} alkyl; or
(d) phenyl-C_{1-3} alkyl;
m is 0 or 1;
R^1 is H or C_{1-6} alkyl;
R^2Z is R^2Z can be at any available positions and R^2 is R
q is 0;
n is 0 or 1;
R^3 is hydroxy,C_{1-6} alkoxy or C_{1-6} (alkanoylaminoalkoxy);
X is —CHR^5—;
Y is —O—, —S—, CH_2— or H with the proviso that when Y is H, R is absent;
Z is —S—, —CH_2— or halo with the proviso that when Z is halo, R^2 is absent;
R^4 is hydrogen or C_{1-6}alkyl; and
R^5 is methyl or hydrogen.

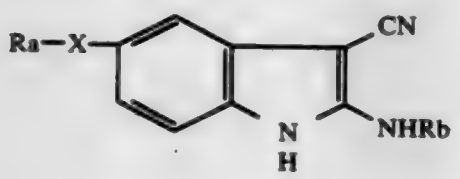
4,533,672

AMINO, CYANO PHENYLTHIO OR PHENOXYL INDOLE DERIVATIVES

Murdoch A. Eakin; Anthony J. Hayter, and Barrington J. A. Furr, all of Macclesfield, England, assignors to Imperial Chemical Industries plc, London, England

Filed Oct. 24, 1983, Ser. No. 545,010
Claims priority, application United Kingdom, Oct. 28, 1982, 8230765
Int. Cl.³ C07D *209/42*
U.S. Cl. 514—415 **6 Claims**

1. An indole of the formula I:



I

in which X is an oxygen or sulphur atom, Ra is a phenyl radical which is optionally substituted by one or two groups selected from halogen atoms and 1–6C alkyl, 1–6C alkoxy and trifluoromethyl radicals and Rb is a hydrogen atom or a 2–6C alkoxycarbonyl radical.

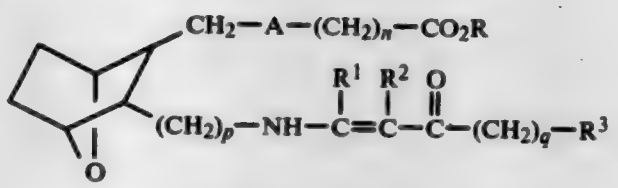
4,533,673

7-OXABICYCLOHEPTANE SUBSTITUTED ENAMINONE PROSTAGLANDIN ANALOGS AND THEIR USE IN TREATMENT OF THROMBOLYTIC DISEASE

Masami Nakane, Hopewell, N.J., assignor to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jan. 26, 1984, Ser. No. 573,909
Int. Cl.³ C07D *307/935*; A61K *31/557*
U.S. Cl. 514—469 **15 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof;
wherein A is CH=CH or $(CH_2)_2$;
n is 1 to 8; R is H, lower alkyl or alkali metal; p is 1 to 5; q is 0 to 5; R^1 and R^2 may be the same or different and are selected from the group consisting of hydrogen, lower alkyl and aralkyl, and R^3 is lower alkyl, aryl, aralkyl or cycloalkyl; wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;
the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with lower alkyl, halogen or lower alkoxy;
the term cycloalkyl by itself of as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and
$(CH_2)_n$, $(CH_2)_p$ and $(CH_2)_q$ may be unsubstituted or include one or more alkyl substituents.

10. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,533,674

PROCESS FOR PREPARING A SUGAR AND STARCH FREE SPRAY-DRIED VITAMIN C POWDER CONTAINING 90 PERCENT ASCORBIC ACID

Douglass N. Schmidt, Grosse Ile; Jeffrey L. Finnan, Southgate, and Rudolph E. Lisa, Grosse Ile, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Oct. 24, 1983, Ser. No. 544,608
Int. Cl.³ A61K *31/365*
U.S. Cl. 514—474 **3 Claims**

1. A process for preparing a free flowing, sugar free vitamin C powder which is color stable at use conditions, is compressible into tablets, comprising spray drying, in the absence of a lubricant, an aqueous slurry of ascorbic acid and binder in the presence of a silicon dioxide absorbent in amounts such that the resulting powder comprises at least 90 percent by weight of ascorbic acid, from 0 to 9 percent by weight of binder, from 0.5 to 2.0 percent by weight of absorbent.

4,533,675

CARBAMATES OF COLCHICINE FOR TREATMENT OF GOUT

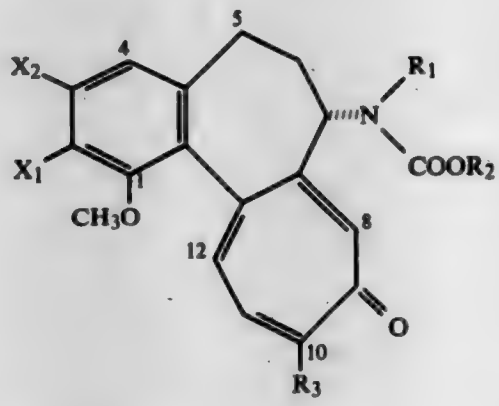
Arnold Brossi, and Peter Kerekes, both of Bethesda, Md., assignors to The United States of America as represented by the Department of Health and Human Services, Washington, D.C.

Filed Apr. 17, 1984, Ser. No. 601,314

Int. Cl.[3] C07C *125/065, 125/067;* A61K *31/24*

U.S. Cl. 514—480 5 Claims

1. A compound of the colchicine and thiocolchicine series according to the following formula



where either X_1 or X_2 is a hydroxy group and the other a lower alkoxy group and R_1 can be H or an alkyl, R_2 an alkyl, alkenyl or aryl which may be substituted and R_3 is OCH_3; alkyl and alkoxy=C_1-C_6; aryl=monoaryl.

5. The method of treating gouty arthritis in mice which comprises injecting intraperitoneally per diem up to 20 mg/kg of a compound of the formula of claim 1.

4,533,676

2,5-DIHALOGENOBENZOYL-(THIO)UREA INSECTICIDES

Wilhelm Sirrenberg, Sprockhoevel; Erich Klauke, Odenthal, and Ingeborg Hammann, Muelheim, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

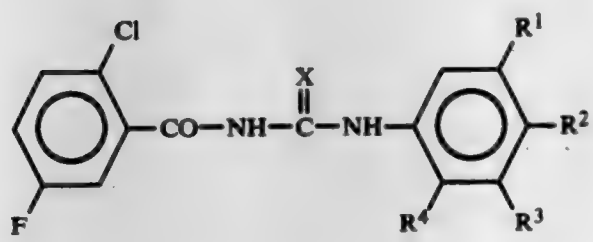
Filed Apr. 22, 1983, Ser. No. 487,799

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217620

Int. Cl.[3] A01N *9/12, 9/20;* C07C *127/22*

U.S. Cl. 514—535 12 Claims

1. A 2,5-dihalogenobenzoyl-(thio)urea of the formula



in which

X represents sulphur or oxygen,

R^1 represents hydrogen, halogen, or optionally substituted radicals from the series comprising alkyl, alkoxy and alkylthio,

R^2 represents hydrogen, halogen, cyano, nitro or optionally substituted radicals from the series comprising alkyl, alkylthio, alkylsulphonyl, alkoxy, aryloxy, alkylcarbonyl, alkoxycarbonyl, alkoxycarbonylalkyl and alkoxycarbonylalkylthio,

R^1 and R^2 together represent an optionally substituted alkylenedioxy radical or represent $—CF_2—O—CF_2—O—$,

R^3 represents hydrogen, halogen, or an optionally substituted alkyl, alkoxy or aryloxy radical, and

R^4 represents hydrogen, halogen, or optionally substituted radicals from the series comprising alkyl, alkylthio and alkoxy.

11. A method of combating insects which comprises applying to such insects an insecticidally effective amount of a compound according to claim 1.

4,533,677

HYPOGLYCEMIC N-(2-SUBSTITUTED-3-DIALKYLAMINO-2-PROPENYLIDENE)-N-ALKYLALKANAMINIUM SALTS

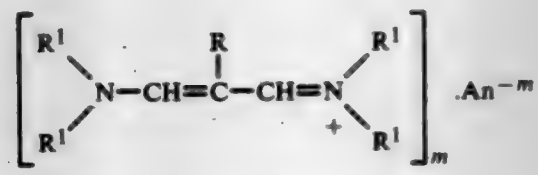
Eugene R. Wagner, Carmel; Charlotte L. Barney, and Donald P. Matthews, both of Indianapolis, all of Ind., assignors to Merrell Dow Pharmaceuticals Inc., Cincinnati, Ohio

Filed May 16, 1983, Ser. No. 494,741

Int. Cl.[3] A61K *31/13*

U.S. Cl. 514—638 9 Claims

1. A method for lowering elevated blood glucose levels in a patient in need thereof which comprises internal administration of a hypoglycemically effective dose of a compound of the formula



wherein R represents a group of formula $R^3X—$; R^1 is methyl or ethyl; R^3 is selected from the group consisting of straight or branched chain alkyl having from 1 to 12 carbon atoms, straight or branched chain alkenyl having from 2 to 12 carbon atoms, cycloalkyl having from 3 to 8 carbon atoms, cycloalkylalkyl having from 4 to 10 carbon atoms, benzyl, or phenyl, optionally substituted by from 1 to 3 substituents selected from the group consisting of lower alkyl, lower alkoxy, halogen, hydroxy, benzyloxy, di(lower alkyl)amino, nitro, phenyl or benzyl or by a single 2,3- or 3,4-methylenedioxy moiety; X is an oxygen atom, or a divalent sulfur atom, An is a pharmaceutically acceptable anion, and m is an integer corresponding to the valence of the anion.

4,533,678

BASIC COMPOUND, ITS POLYMER, A PROCESS FOR THE PREPARATION THEREOF AND ITS USE AS ION EXCHANGE RESIN

Kunihiko Takeda, Yokohama, Japan, assignor to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

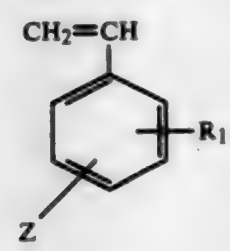
Filed Mar. 13, 1984, Ser. No. 589,210

Claims priority, application Japan, Mar. 23, 1983, 58-47112; Mar. 23, 1983, 58-47113; Mar. 23, 1983, 58-48477; Mar. 23, 1983, 58-48478; Mar. 29, 1983, 58-53316

Int. Cl.[3] C07D *235/04, 487/00;* C08F *8/32;* B01J *39/20*

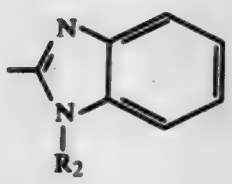
U.S. Cl. 521—389 37 Claims

1. A basic compound of Formula (1):

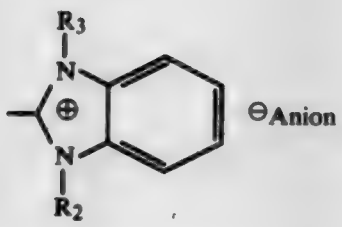


(1)

wherein R_1 is a hydrogen atom or a straight chain or branched hydrocarbon group having 1 to 4 carbon atoms, and Z is a group of Formula (2) or Formula (3):



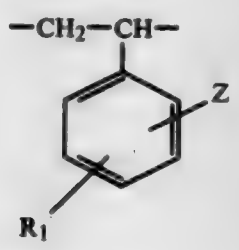
(2)



(3)

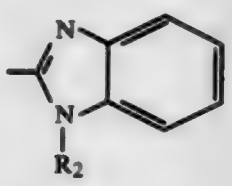
wherein R_2 and R_3 each independently is a hydrogen atom, a straight chain or branched hydrocarbon group having 1 to 10 carbon atoms or a carboxyalkyl group having 2 to 10 carbon atoms.

12. A cross-linked copolymer comprising about 98 to about 10 mol % of recurring units of Formula (4):

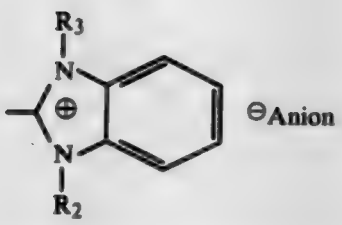


(4)

wherein R_1 is a hydrogen atom or a straight chain or branched hydrocarbon group having 1 to 4 carbon atoms, and Z is a group of Formula (2) or Formula (3):

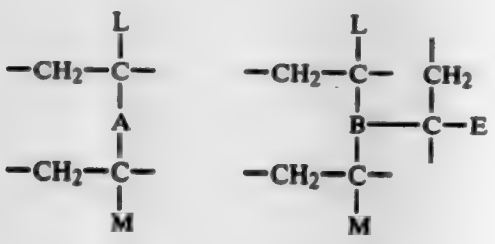


(2)



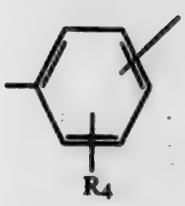
(3)

wherein R_2 and R_3 each independently is a hydrogen atom, a straight chain or branched hydrocarbon group having 1 to 10 carbon atoms or a carboxyalkyl group having 2 to 10 carbon atoms, about 2 to about 50 mol % of recurring units of Formula (5) plus Formula (6):

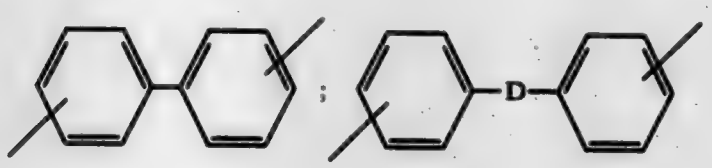


(5) (6)

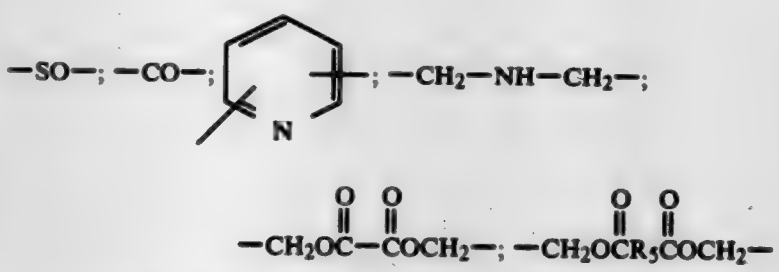
wherein L, M and E each independently is a hydrogen atom or a methyl group; A is



wherein R_4 is a hydrogen atom or a C_1–C_5 hydrocarbon residue;



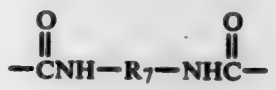
wherein D is —O—, —S—, —NH— or a divalent C_1–C_5 hydrocarbon residue;



wherein R_5 is a divalent C_1–C_8 hydrocarbon residue;



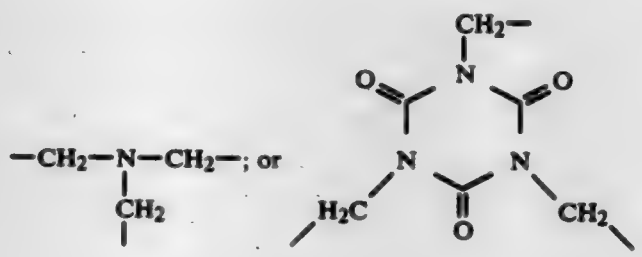
wherein R_6 is a divalent C_1–C_5 hydrocarbon residue; or



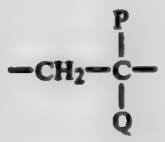
wherein R_7 is a divalent C_1–C_3 hydrocarbon residue; and B is



wherein R_8 is a hydrogen atom or a C_1–C_5 hydrocarbon residue;



and 0 to about 88 mol % of recurring units of Formula (7):



(7)

wherein P and Q each independently is a hydrogen atom, a halogen atom, a cyano group, an aryl group, a halogenophenyl group, a phenyl group substituted with one or more substituents selected from C_1–C_5 straight chain or branched alkyl and haloalkyl groups, —$COOR_9$ in which R_9 is a hydrogen atom or R_{10}, R_{10} is a C_1–C_{10} hydrocarbon residue, —COR_9, —$OCOR_{10}$, —$CONHR_9$, an imidazolyl group, a pyridyl group and a carbazolyl group,

based on the total moles of recurring units of Formula (4), Formula (5), Formula (6) and Formula (7).

4,533,679

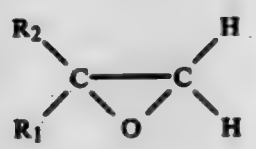
REINFORCED POLYESTER COMPOSITION HAVING AN IMPROVED STRENGTH

Herbert L. Rawlings, New Martinsville, W. Va., assignor to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Jun. 28, 1982, Ser. No. 392,846
Int. Cl.³ C08L *67/02*
U.S. Cl. 523—204 **1 Claim**

1. A process for the preparation of a glass fiber reinforced thermoplastic polyethylene terephthalate composition comprising

(i) applying a polyepoxy compound having more than two terminal epoxy functionalities per molecule to said glass fibers, said polyepoxy conforming to the general formula



wherein R_1 denotes a hydrogen atom or an alkyl radical and R_2 is a polyvalent radical containing more than one additional terminal epoxide functionality and then

(ii) incorporating the glass fibers of (i) in a thermoplastic polyethylene terephthalate resin,

said polyepoxy being applied in sufficient amount to cause a reinforcing effect of said composition.

4,533,680

THERMOPLASTIC RESIN COMPOSITION FOR MOLDING

Takuzo Kasuga, Tokyo, and Katsuhiko Takahashi, Fuji, both of Japan, assignors to Polyplastic Company, Ltd., Osaka, Japan

Filed Apr. 10, 1984, Ser. No. 598,651
Claims priority, application Japan, Apr. 13, 1983, 58-64800
Int. Cl.³ C08K *3/40, 3/34, 3/04*
U.S. Cl. 523—220 **16 Claims**

1. A thermoplastic resin composition having reduced deformation degree and improved impact resistance when molded which comprises a crystalline thermoplastic resin and

(a) a reinforcing fiber having a staple length not greater than about 1μ and a ratio of length to diameter in the range of from about 5 to about 1000, said fiber being present in a concentration in the range of from about 1 to about 60 weight percent;

(b) a flaky filler having an average diameter in the range of from about 100 to about 1000μ, an average thickness in the range of from about 0.1 to about 10μ and a diameter/-thickness ratio in the range of from about 4 to 400, said filler being present in a concentration in the range of from about 1 to about 50 weight percent; and

(c) a polycarbonate in a concentration in the range of from about 1 to about 50 weight percent,

all based on the total quantity of the resin composition.

4,533,681

CROSSLINKED FLOW CONTROL ADDITIVES FOR HIGH SOLIDS PAINTS I

Joseph C. Cassatta, Taylor, and Mohinder S. Chattha, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Feb. 23, 1983, Ser. No. 468,912
Int. Cl.³ C08F *2/001;* C08L *61/32*
U.S. Cl. 523—400 **14 Claims**

1. A stable dispersion containing crosslinked polymer particles characterized in that they are formed by reactions comprising addition polymerization of:

(a) between about 0.5 and about 20 weight percent each of a first and second monomer selected from (i) first and second ethylenically unsaturated monomers each bearing functionality capable of crosslinking reaction with the other or (ii) first and second monomers, wherein said first monomer bears ethylenic unsaturation and functionality capable of crosslinking reaction with other functionality present on said second monomer, said second monomer bearing at least two functional groups of said other functionality and bearing no ethylenic unsaturation; and

(b) between about 99 and about 60 weight percent of at least one other monoethylenically unsaturated monomer,

in the presence of (I) an organic liquid which is a solvent for the polymerizable monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer, wherein the reaction is carried out at elevated temperatures such that the dispersion polymer is formed and is then crosslinked, said dispersion stabilizer comprising, on the average, more than one long hydrocarbon chain and at least one vinyl unsaturation and being the reaction product of:

(A) an adduct bearing pendant hydroxyl groups and being the reaction product of:

(a) a long chain hydrocarbon molecule bearing a carboxyl group and no other reactive group; and

(b) polyepoxide resin having (i) at least two epoxide groups and (ii) a number average molecular weight ($\overline{M}_n$) of between about 140 and 3000,

reacted in amounts so as to provide greater than about 1.0 mole of said long chain hydrocarbon molecules bearing a carboxyl group for each mole of said polyepooxide resin;

(B) saturated difunctional monomers containing the same or different first and second functional group, said first functional group being capable of reaction with said hydroxyl group of said adduct; and

(C) monomers bearing ethylenic unsaturation and bearing a functional group capable of reaction with said second functional group of said saturated difunctional monomers;

wherein monomer pairs comprising said difunctional monomers (B) and said monomers (C) are selected from the group consisting of:

(i) C_4–C_{14} diisocyanates and C_5–C_{12} esters of acrylic or methacrylic acid bearing monohydroxyl functionality;

(ii) cyclic anhydride and glycidyl esters of acrylic or methacrylic acid; and

(iii) phosphorus anhydrides and glycidyl esters of acrylic or methacrylic acid.

wherein in said stabilizer formation said difunctional monomer is employed in amounts so as to provide at least about 1.0 mole of said saturated difunctional monomers for each mole of said polyepoxide resin, and wherein said difunctional momomers (B) and said monomers (C) are employed in a molar ratio of about 1:1.

4,533,682

IMIDAZOLIDINE-BLOCKED AMINE POLYMERS

Anthony J. Tortorello, Elmhurst; Nestor P. Hansen, Mt. Prospect, and Kathryn M. Jarocki, Chicago, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 29, 1983, Ser. No. 489,782
Int. Cl.[3] C08L *63/00*
U.S. Cl. 523—414 17 Claims

1. A protonated adduct reaction product which is an adduct of:

(1) an imidazolidine which is the reaction product of an unhindered ketone or aldehyde with a diprimary amine which is a mono- or poly-alkylene polyamine; with

(2) an organic polyepoxide having a 1,2-epoxy equivalency of at least about 1.2; said imidizolidine being used in an amount sufficient to react with at least 10% of the 1,2-oxirane groups in said polyepoxide; and said adduct being reacted with

(3) an acid to protonate at least 50% of the amine groups which are present.

4,533,683

RUST PREVENTIVE CATIONIC ELECTROCOATING

Ryoichi Murakami, Nara; Yoshiyuki Uyeda, Nishinomiya; Kanji Nishijima, Ibaraki, and Tetsuo Yanagihara, Neyagawa, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Apr. 27, 1983, Ser. No. 489,082
Claims priority, application Japan, Apr. 28, 1982, 57-72257
Int. Cl.[3] C08K *3/10*
U.S. Cl. 523—414 2 Claims

1. A rust preventive cationic electrocoating composition which comprises an electrocoating resin having a reactive group admixed with a paste comprising a chromate pigment in a water-insoluble or hardly soluble organic binder having a reactive group, said paste having a water content of not more than 2% and CrO_3 content such as to make the concentration of CrO_3 in the electrocoating composition 200 to 5000 ppm;

the reactive group in the electrocoating resin being cross-linkable with the reactive group in the organic binder;

the reactive group in the organic binder being a blocked isocyanate group, and the reactive group in the electrocoating resin being a hydroxyl group, a primary amino group or a secondary amino group; or

the reactive group in the organic binder being a hydroxyl group, a primary amino group or a secondary amino group and the reactive group in the electrocoating resin being a blocked isocyanate group.

4,533,684

THERMOSETTING COATING COMPOSITION USEFUL AS CHIP RESISTANT PRIMER II

Panagiotis I. Kordomenos, Mt. Clemens; Andrew H. Dervan, Fraser, and Dennis J. Grebur, Berkley, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Division of Ser. No. 510,796, Jul. 5, 1983,. This application Dec. 22, 1983, Ser. No. 564,143
Int. Cl.[3] C08L *63/02, 67/04*
U.S. Cl. 523—436 27 Claims

1. A novel, organic solvent based, thermosetting coating composition comprising:

I. Epoxy-polyester graft copolymer having a number average molecular weight ($\overline{M}n$) of between about 2,000 and about 20,000, said copolymer being prepared by polymerization of lactone monomers in the presence of hydroxy functional epoxy ester resin precursor which has a number average molecular weight ($\overline{M}n$) of between about 1,000 and about 4,000 and which has been prepared by reacting chain extended diepoxide with hydroxy functional secondary amine in chain terminating reaction in approximately 1 to 1 equivalent ratio, and chain extended diepoxide being prepared by reacting diepoxide substantially simultaneously with diphenol and dicarboxylic acid in amounts sufficient to give a weight per epoxide (WPE) of between about 500 and about 2,500, and wherein said polymerization of said lactone monomers is carried out at a temperature between about 130° C. and about 200° C. and the polymerization reaction mixture comprises between about 10 and about 80 weight percent said hydroxy functional epoxy ester resin precursor and between about 20 and about 90 weight percent said lactone monomers; and

II. Blocked polyisocyanate crosslinking agent comprising at least one isocyanate group which has been blocked by reaction with an active hydrogen bearing blocking agent, said blocked polyisocyanate crosslinking agent being included in an amount such that upon de-blocking of the blocked isocyanate groups thereof at the cure temperature of the composition, said crosslinking agent will provide between about 0.5 and about 1.6 reactive isocyanate groups per reactive group on said epoxy-polyester graft copolymer.

4,533,685

POLYMER-METAL BLEND

Donald E. Hudgin, 33 Berkshire Dr., Princeton Junction, N.J. 08550, and Mohammad A. Semsarzadeh, 32-10 Quail Ridge, Plainsboro, N.J. 08536

Filed Jul. 26, 1983, Ser. No. 517,442
Int. Cl.[3] C08K *3/08*
U.S. Cl. 523—457 32 Claims

1. Electrically conducting metallized organic polymer blend prepared by melting the metal with the polymer, the metal having a melting point within the softening to molten range of the polymer.

4,533,686

CURABLE EPOXY RESIN COMPOSITIONS

Kevin Hirschbuehler, and Samuel E. Susman, both of Bel Air, Md., assignors to American Cyanamid Co., Stamford, Conn.

Filed Aug. 1, 1983, Ser. No. 518,875
Int. Cl.[3] C08K *3/04*
U.S. Cl. 523—468 6 Claims

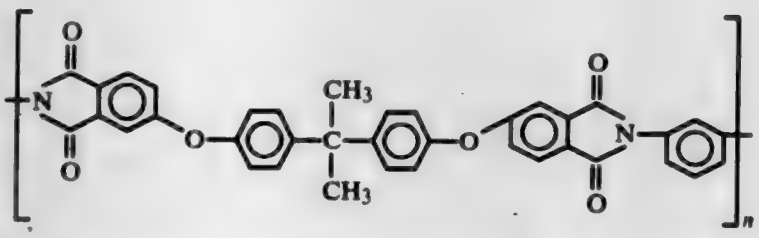
1. A fiber resin matrix composition comprised of:

(a) reinforcing filaments, and

(b) a heat curable epoxy resin composition formed from the following materials, in parts by weight:

(i) N,N,N′,N′-tetraglycidyl-4,4′-diaminodiphenyl methane, 114–126 parts;

(ii) a polyetherpolyimide resin of the formula:



wherein n is an integer sufficient to provide a molecular weight of from 25,000 to 50,000, 14.25–15.75 parts;

(iii) 1,3-propylene-bis-(p-aminobenzoate 45.6–50.4 parts; and

(iv) boron trifluoride-organic amine complex, 0.475–0.525 parts.

4,533,687

FLAME-RETARDANT RUBBER COMPOSITION

Kunio Itoh; Toshimichi Oshima, and Tsutomu Nakamura, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,504
Claims priority, application Japan, Jan. 31, 1983, 58-14458
Int. Cl.³ C08K *3/02, 3/22*
U.S. Cl. 524—80 3 Claims

1. A flame-retardant polyolefin-based rubber composition which comprises:

(a) 100 parts by weight of a synthetic rubber of polyolefin type;

(b) 1 to 50 parts by weight of an organopolysiloxane resin formed from monofunctional siloxane units represented by the formula $R_3SiO_{0.5}$, in which R is a hydrogen atom, a substituted or unsubstituted monovalent hydrocarbon group, and tetrafunctional siloxane units of the formula SiO_2 in a molar ratio in the range from 0.6/1.0 to 2.0/1.0;

(c) from 1 to 20 parts by weight of red phosphorus; and

(d) from 5 to 200 parts by weight of aluminum hydroxide or magnesium hydroxide.

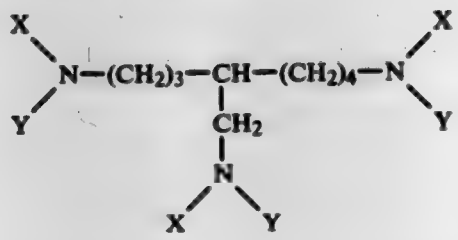
4,533,688

TRIS(PIPERIDYLAMINOTRIAZYLAMINO) COMPOUNDS, THEIR PREPARATION AND THEIR USE AS POLYMER STABILIZERS

Toshimasa Toda, and Tomoyuki Kurumada, both of Hiromachi, Japan, assignors to Sankyo Company Limited, Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 562,707
Claims priority, application Japan, Dec. 28, 1982, 57-231356
Int. Cl.³ C08K *5/34*
U.S. Cl. 524—100 28 Claims

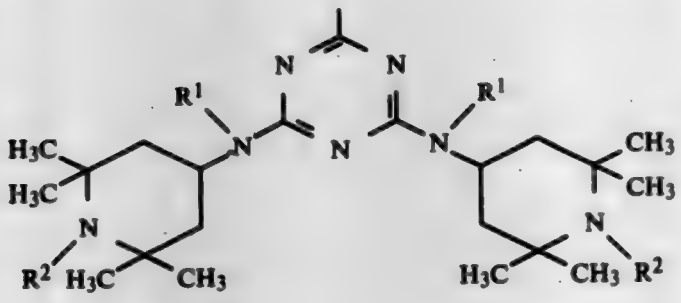
1. Compounds of formula (I):



(I)

[in which:

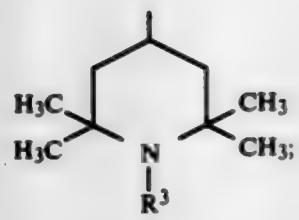
the groups represented by X are the same and have the formula (II):



(II)

(in which:

R^1 represents hydrogen, a C_1-C_{18} alkyl group, a C_2-C_{22} alkoxyalkyl group, a C_1-C_{18} acyl group, an aralkyl group optionally having at least one C_1-C_4 alkyl or halogen substituent or a group of formula (III):

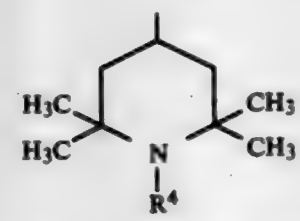


(III)

and

R^2 and R^3 are the same or different and each represents hydrogen, a C_1-C_{18} alkyl group, a C_1-C_{18} acyl group or an aralkyl group optionally having at least one C_1-C_4 alkyl or halogen substituent); and

Y represents hydrogen, a C_1-C_{18} alkyl group, a C_1-C_{18} acyl group, an aralkyl group optionally having at least one C_1-C_4 alkyl or halogen substituent or a group of formula (IV):



(IV)

in which R^4 has any of the meanings defined for R^2];

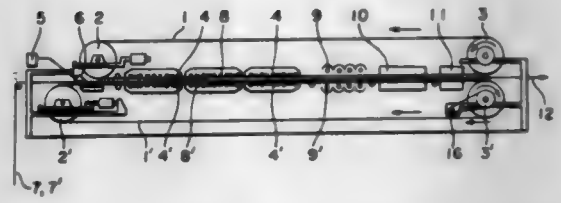
and acid addition salts thereof.

4,533,689

FLAME RESISTANT ACRYLIC RESIN COMPOSITION AND PROCESS FOR ITS PRODUCTION

Suehiro Tayama, and Norihisa Kusakawa, both of Toyama, Japan, assignors to Mitsubishi Rayon Company, Limited, Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,763
Claims priority, application Japan, Sep. 1, 1982, 57-152349; Sep. 2, 1982, 57-153316
Int. Cl.³ C08K *5/50, 5/51;* C08F *222/04*
U.S. Cl. 524—130 13 Claims



1. A flame resistant acrylic resin composition comprising a polymer composed of from 40 to 88% by weight of methyl methacrylate, from 1 to 15% by weight of α-methyl styrene, from 5 to 15% by weight of styrene, from 5 to 15% by weight of maleic anhydride and from 1 to 15% by weight of methacrylic acid, and a flame retardant.

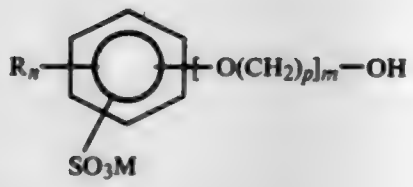
4,533,690

FLAME RETARDANT POLYCARBONATE COMPOSITIONS

Niles R. Rosenquist, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Apr. 26, 1984, Ser. No. 603,920
Int. Cl.³ C08K *5/42*
U.S. Cl. 524—161 19 Claims

1. A composition comprising an admixture of an aromatic polycarbonate and a flame retardant effective amount of a compound of the formula



wherein
M is an alkali or alkaline earth metal;
R is alkyl, halo, nitro trihalomethyl or cyano;
m is an integer of one two or three;
n is an integer of zero, one, two, three or four; and
p is an integer of two, three, four, five or six.

4,533,691

CHLORINE DIOXIDE ANTIMICROBIAL AGENT FOR LATEX

Hamdy Khalil, and Orest N. Chick, both of Sarnia, Canada, assignors to Polysar Limited, Sarnia, Canada

Filed Dec. 12, 1983, Ser. No. 560,226
Int. Cl.[3] C08K *3/16*
U.S. Cl. 524—401 **17 Claims**

1. A latex having improved resistance to the growth of bacteria comprising from about 35 to 75 parts by weight of one or more polymers selected from the group:
homopolymers of C_{4-6} conjugated diolefins, chloroprene polymers, vinyl pyridine polymers, homopolymers of vinylidene monoaromatic monomers, copolymers of ethylene and propylene, copolymers of acrylonitrile and butadiene; or
copolymers of butadiene and styrene, copolymers of butadiene and styrene containing one or more monomers selected from the group alpha,beta ethylenically unsaturated carboxylic acids, amide derivatives of alpha,beta ethylenically unsaturated acids which are unsubstituted or substituted at the nitrogen atom by a C_{1-8} alkyl or a C_{1-4} alkanol radical, or a C_{1-8} alkyl ester of an alpha,beta ethylenically unsaturated carboxylic acid; and
per 100 parts by weight to polymer solids in said latex a sufficient amount of an agent selected from the group:
chlorine dioxide gas, aqueous solutions of chlorine dioxide, a mixture of an alkali metal chlorate and a mineral acid, a mixture of an alkali metal chlorate and an organic acid, or an organic anhydride, a mixture of an alkali metal chlorate and an organic peroxide or hydrogen peroxide, a mixture of an alkali metal chlorate and a reducing agent, a mixture of an alkali metal chlorite and mineral acid, a mixture of an alkali metal chlorite and an organic acid or an organic anhydride, a mixture of an alkali metal chlorite and an organic peroxide or hydrogen peroxide, a mixture of an alkali metal chlorite and a reducing agent or a mixture of an alkali metal chlorite and chlorine,
to provide from about 0.005 to about 0.2 parts by weight of chlorine dioxide per 100 parts by weight of polymer solids.

4,533,692

LIQUID CRYSTALLINE POLYMER COMPOSITIONS, PROCESS, AND PRODUCTS

James F. Wolfe, Redwood City, Calif.; Paul D. Sybert, and Joanne R. Sybert, both of Cohoes, N.Y., assignors to SRI International, Menlo Park, Calif.

PCT No. PCT/US82/01285, § 371 Date Sep. 17, 1982, § 102(e) Date Sep. 17, 1982, PCT Pub. No. WO84/01160, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 17, 1982, Ser. No. 433,831
Int. Cl.[3] C08K *3/32*
U.S. Cl. 524—417 **121 Claims**

1. A novel polymer composition of workable viscosity which is useful as a dope in the production of fibers and films comprising a liquid crystalline polymer solution of polyphosphoric acids containing at least one high molecular weight extended chain polymer having one or more mesogenic group or groups, said extended chain polymer(s) having a molecular weight of at least 10,000 as determined by intrinsic viscosity and being present in sufficient concentration so as to produce a liquid crystalline polymer phase in said solution, with the proviso that when the polymer is poly([benzo-(1,2-d:4,5-d')bisthiazole-2,6-diyl]-1,4-phenylene) that said poly([benzo-(1,2-d:4,5-d')-bisthiazole-2,6-diyl]-1,4-phenylene) polymer concentration be greater than 10 percent by weight based on the total weight of said composition and that the molecular weight of said poly([benzo-(1,2-d:4,5-d') bisthiazole-2,6-diyl]-1,4-phenylene) correspond to an intrinsic viscosity of at least about 12 dL/g as determined in methanesulfonic acid at 30° C.

4,533,693

LIQUID CRYSTALLINE POLYMER COMPOSITIONS, PROCESS, AND PRODUCTS

James F. Wolfe, Redwood City, Calif.; Paul D. Sybert, and Joanne R. Sybert, both of Cohoes, N.Y., assignors to SRI International, Menlo Park, Calif.

PCT No. PCT/US83/01437, § 371 Date Sep. 15, 1983, § 102(e) Date Sep. 15, 1983, PCT Pub. No. WO84/01162, PCT Pub. Date Mar. 29, 1984
Continuation-in-part of Ser. No. 433,831, filed as PCT 82/01285 Sep. 17, 1982, published as WO84/01160 Mar. 29, 1984, § 102(e) date Sep. 17, 1982, abandoned. This PCT application Sep. 15, 1983, Ser. No. 616,469
Int. Cl.[3] C08K *3/32*
U.S. Cl. 524—417 **346 Claims**

120. A process for preparing a liquid crystalline extended chain polymer composition of workable viscosity which is useful in the production of fibers and films comprising the following steps:
(a) mixing at least one of a selected first homo- or heterobifunctional monomer with or without oxidation protecting atoms or groups with a preliminary solvent of phosphoric acid having a relatively low phosphorus pentoxide content,
(b) heating and optionally placing the resulting mixture under reduced pressure to remove any volatilized protecting atoms or groups present and provide a first mixture of the first monomer(s) in the preliminary solvent,
(c) adding at least one of a selected second monomer in the resulting mixture of step (b) when said selected first monomer is a homo-bifunctional monomer so as to provide a first mixture of the first and second monomers in the preliminary solvent,
(d) then increasing the phosphorus pentoxide content of the mixture resulting from step (b) or (c) to provide a first or a first and second monomer reaction medium of greater phosphorus pentoxide content suitable for polymerization and for achieving a degree of polymerization greater than about 40,
(e) causing polymerization of the first or the first and second monomer(s) at a temperature sufficient to effect reaction at a rate to form a first homo-oligomeric product or a first co-oligomeric product having a preselected intrinsic viscosity, or
(f) causing polymerization of the first or the first and second monomer(s) at a temperature sufficient to effect reaction at a rate to form a first homo-polymeric product or a first copolymeric product,
(g) mixing a selected amount of the first homo-oligomeric product with a selected amount of at least one of a selected second homo-oligomeric product so as to form a first poly-oligomeric product, said second homo-oligomeric product being formed by like steps (a) and (b) followed by:
(1g) adding at least one of a selected second monomer in the resulting mixture of step (b) when said selected first monomer is a homo-bifunctional monomer so as to provide a mixture of a first and second monomer in the preliminary solvent,
(2g) then increasing the phosphorus pentoxide content of

the mixture resulting from step (b) or (1g) to provide a first or a first and second monomer reaction medium of greater phosphorus pentoxide content suitable for polymerization,

(3g) causing polymerization of the first or first and second monomer(s) at a temperature sufficient to effect reaction at a rate to form said second homo-oligomeric product having a preselected intrinsic viscosity,

with the overall proviso that at least one of the selected monomer(s) of step (a) or (1g) which forms the second homo-oligomeric product be different from at least one of the selected monomer(s) of step (a) or (c) which forms the first homo-oligomeric product, or

(h) mixing a selected amount of the first homo-oligomeric product with a selected amount of a second mixture of at least one of a selected first monomer or a first and second monomer in the preliminary solvent so as to form a monomer-oligomer mixture, and then increasing the phosphorus pentoxide content of said monomer-oligomer mixture to provide a monomer-oligomer reaction medium of greater phosphorus pentoxide content suitable for polymerization, said first monomer of said second mixture being formed by like steps (a) and (b) and said first and second monomer of said second mixture being formed by like steps (a), (b) and (c), with the overall proviso that at least one of the selected monomer of step (a) or (c) which forms the first or first and second monomer(s) of said second mixture, be different from at least one of the selected monomer(s) of step (a) or (c) which forms the first homo-oligomeric product,

(i) causing polymerization of the poly-oligomeric product resulting from step (g) or the monomer-oligomer resulting from step (h) at a temperature sufficient to effect reaction at a rate to form a first block-oligomeric product having a preselected intrinsic viscosity or a first blockpolymeric product.

4,533,694

FORMULATION FOR ELECTRODEPOSITION OF MICA

Richard K. Elton, Altamont, and William R. Schultz, Jr., Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 555,044, Nov. 25, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,776

Int. Cl.³ C09D *5/40*; C25D *13/00*; C08K *3/10*; C08L *67/02*

U.S. Cl. 524—449 **9 Claims**

1. An electrodeposition composition consisting essentially in weight percent of 5 to 35% of particulated mica, 0.2 to 2% of a water soluble anionic resin binder as calculated in resin solids, 0.001 to 0.20% of electrolyte, and the remainder a polar solvent.

4,533,695

NON-AQUEOUS DISPERSIONS BASED ON CAPPED STABILIZERS AND REACTANTS COMPRISING POLYFUNCTIONAL MONOMERS II

Ares N. Theodore, Farmington Hills, and Mohinder S. Chattha, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Jan. 5, 1983, Ser. No. 455,696

The portion of the term of this patent subsequent to Jul. 9, 2002, has been disclaimed.

Int. Cl.³ C08K *5/01*; C08L *51/08*

U.S. Cl. 524—504 **14 Claims**

1. A stable dispersion containing crosslinked polymer particles characterized in that said particles are formed by reactions comprising addition polymerization of:

(a) between about 0.5 and about 20 weight percent each of first and second monomers wherein said first monomer bears ethylenic unsaturation and functionality capable of crosslinking reaction with other functionality present on said second monomer, said second monomer bearing at least two functional groups of said other functionality and bearing no ethylenic unsaturation; and

(b) between about 99 and about 60 weight percent of at least one other monoethylenically unsaturated monomer;

in the presence of (I) an organic liquid which is a solvent for the polymerizable monomers, but a non-solvent for the resultant polymer, and (II) polymeric dispersion stabilizer, wherein the reaction is carried out at elevated temperatures such that the dispersion polymer first forms and then is crosslinked, and wherein said stabilizer comprises the reaction product of:

(A) acrylic polymer-adduct having hydroxyl functionality and being the reaction product of:

(a) long chain hydrocarbon molecules having only one reactive group; and

(b) acrylic polymer (i) having a number average molecular weight of between about 1000 and about 10,000 and (ii) containing pendant functionality capable of reacting with said reactive group of said hydrocarbon molecule;

wherein said hydroxyl functionality on said acrylic polymer-adduct is either initially present on said acrylic polymer, generated in situ, or both initially present and generated in situ and wherein said hydrocarbon molecule and said acrylic polymer are reacted in amounts so as to provide at least 1.0 moles of said hydrocarbon molecules per each mole of said acrylic polymer; and

(B) ethylenically unsaturated monoisocyanates; wherein said adduct (A) and said monoisocyanates (B) are reacted in amounts so as to provide between about 0.1 and about 1.0 reactive isocyanates per each hydroxyl functionality present on said acrylic polymer-adduct (A).

14. Crosslinked polymer particles obtained by removal of said solvent from said dispersion formed in claim 1.

4,533,696

POLYMER POWDER COMPOSITIONS, PARTICULARLY POLYETHYLENE POWDER COMPOSITIONS AND OBJECTS TO BE MADE AND MADE THEREOF

Jan Schrijver, Roosteren, and Arnold Vossebeld, Beek, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Filed Feb. 18, 1983, Ser. No. 467,921

Claims priority, application Netherlands, Feb. 20, 1982, 8200688; Apr. 24, 1982, 8201711

Int. Cl.³ C08K *5/00*; C08J *3/20*; C08L *23/04*

U.S. Cl. 524—528 **8 Claims**

1. An improved polymer composition for rotational molding having about 1 wt.-% to about 99 wt.-% of a polyolefin polymer powder component A and about 99 wt.-% to about 1 wt.-% of polyolefin powder component B, component A having an average particle size of at least about 0.050 mm up to at most about 0.250 mm and component B having an average particle size of at most 1 mm, the improvement consisting essentially in that the average particle size of said component A is at least about 0.050 mm smaller than the average particle size of component B, component B containing at most 0.01 wt.-% stabilizer and component A containing at least 0.025 wt.-% stabilizer, said composition during rotational molding forming a stabilized outer layer and a non-stabilized inner layer.

4,533,697

PROCESS FOR PREPARING POLYVINYL BUTYRAL

Robert Degeilh, Le Port-Marly, France, assignor to Saint-Gobain Vitrage, Courbevoie, France

Filed Feb. 18, 1983, Ser. No. 467,647

Claims priority, application France, Feb. 23, 1982, 82 02918

Int. Cl.³ C08G *18/56*

U.S. Cl. 525—61 **10 Claims**

1. A process for preparing polyvinyl butyral by reaction of polyvinyl alcohol in aqueous solution and butyraldehyde in the presence of an acid catalyst and an emulsifying agent, which

comprises forming an initial reaction medium of a mixture of water and a portion of polyvinyl alcohol to be reacted in an amount sufficient to allow stirring, maintaining the initial reaction medium containing between about 2.5 and 7.5% by weight of polyvinyl alcohol, maintaining the initial reaction medium initially at a temperature between about 5° and 20° C., simultaneously but separately introducing a stream of a polyvinyl alcohol aqueous solution in an amount sufficient to provide the remaining amount of polyvinyl alcohol to be used in the reaction and a stream of butyraldehyde, and maintaining the reaction at a temperature below about 40° C. during the simultaneous but separate introduction of the polyvinyl alcohol and the butyraldehyde.

4,533,698

THERMOPLASTIC RESIN COMPOSITION

Tetsuro Maeda; Akihiro Okamoto; Yoshimitsu Shimizu, and Takashi Nomoto, all of Ichihara, Japan, assignors to Denki Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,444

Claims priority, application Japan, Apr. 13, 1982, 57-61394

Int. Cl.³ C08L *39/04, 51/00*

U.S. Cl. 525—73 **10 Claims**

1. A thermoplastic resin composition, which consists essentially of:

(A) 100 parts by weight of a rubber-containing styrene type resin; and

(B) 1 to 45 parts by weight of a polymeric substance selected from the group consisting of a homopolymer of an acrylic acid ester, copolymers of an acrylic acid ester, and a mixture of these polymers, said component (B) having a solubility parameter of from 8.4 to 9.8 $(cal/c.c.)^{\frac{1}{2}}$, a glass transition temperature of 20° C. or below, a gel content of 70% by weight or below, and relative viscosity in methylethyl ketone of 20 or below.

4,533,699

COPOLYMERIZED UNSATURATED PEROXYCARBONATE SIZING AGENT FOR TREATMENT OF GLASS FIBERS AND METHOD FOR TREATMENT OF GLASS FIBERS WITH SAID SIZING AGENT

Takeshi Komai, Aichi; Kazuo Matsuyama, Gamagori, and Takuya Saigo, Aichi, all of Japan, assignors to Nippon Oil & Fats Co., Ltd., Tokyo, Japan

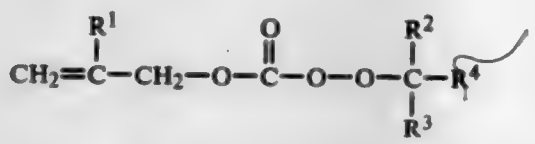
Filed May 30, 1984, Ser. No. 615,211

Claims priority, application Japan, May 30, 1983, 58-93981

Int. Cl.³ C08F *230/08*; B05D *3/02*

U.S. Cl. 525—277 **17 Claims**

1. A sizing agent for the treatment of glass fibers, comprising as principal components (1) a copolymer obtained as a film-forming agent, by copolymerizing an unsaturated peroxycarbonate represented by the general formula:



wherein R^1 denotes one member selected from the class consisting of a hydrogen atom and alkyl groups of 1 to 4 carbon atoms, R^2 and R^3 independently denote one member selected from the class consisting of alkyl groups of 1 to 4 carbon atoms, and R^4 denotes one member selected from the class consisting of alkyl groups of 1 to 12 carbon atoms and cycloalkyl groups of 3 to 12 carbon atoms, and another unsaturated monomer containing 70 to 100% by weight of vinyl acetate and, (2) a coupling agent selected from the group consisting of organic silicon compounds and organic chromium compounds.

4,533,700

HYDROCARBON RESIN AND MODIFIED HYDROCARBON RESIN PRODUCT THEREOF

Kinya Mizui; Masami Takeda, both of Otake, and Tadao Iwata, Chiba, all of Japan, assignors to Mitsui Petrochemical Industries Ltd., Tokyo, Japan

Division of Ser. No. 413,899, Sep. 1, 1982,. This application Jan. 19, 1984, Ser. No. 551,370

Claims priority, application Japan, Sep. 7, 1981, 56-140738

Int. Cl.³ C08L *23/26, 25/08, 47/00*

U.S. Cl. 525—285 **20 Claims**

1. A hydrocarbon resin modified by addition reacting an ethylenically unsaturated carboxylic acid or its derivative, or hydrogen, to a copolymer of (A) at least one unsaturated hydrocarbon selected from the group consisting of (i) unsaturated chain hydrocarbons and (ii) cyclic hydrocarbons having a vinylidene group, and (B) at least one compound selected from the group consisting of 9,10-dihydrodicyclopentadiene and its derivatives, the amount of the polymerization unit of component (A) in the copolymer being 20 mol% to 98 mol% and that of component (B) in the copolymer being 80 mol% to 2 mol%.

4,533,701

ADHESIVE COATING MATERIAL

Koshi Kusumoto, Kamakura; Toshio Kawaguchi, Fujisawa, and Takayuki Ogata, Yokohama, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Aug. 16, 1983, Ser. No. 523,567

Claims priority, application Japan, Aug. 16, 1982, 57-141010

Int. Cl.³ C08F *8/42*

U.S. Cl. 525—370 **14 Claims**

1. An adhesive coating material for a hard tissue, which comprises (1) a polymer having an acid value of 30 to 700 and repeating units of the polymer including a hydrophobic group and repeating units of the polymer including two carboxyl (—COOH) groups bonded to the polymer, said carboxyl groups being bonded to adjacent carbon atoms, and (2) an organic titanate compound.

4,533,702

AROMATIC POLYESTER CARBONATES HAVING A HIGH NOTCHED IMPACT STRENGTH AND A PROCESS FOR THE PRODUCTION THEREOF

Dieter Freitag; Ludwig Bottenbruch, and Manfred Schmidt, all of Krèfeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 504,292, Jun. 15, 1983, abandoned. This application Jun. 22, 1984, Ser. No. 623,823

Claims priority, application Fed. Rep. of Germany, Jun. 26, 1982, 3223980

Int. Cl.³ C08L *67/02, 69/00*; C08G *63/64*

U.S. Cl. 525—439 **6 Claims**

1. A process for the production of aromatic polyester carbonates having a molar ratio of ester groups to carbonate groups of from 20:1 to 1:20, characterised in that a solvent-containing mixture which contains (a) aromatic polyester and (b) aromatic polycarbonate in the required ratio, and from 5 to 80%, by weight, of organic solvent based on solvent-containing mixture is melt-extruded at a temperature of from 200 to 440° C. for a residence time of from 20 to 200 sec., while removing the solvent, and maintaining the liquid condition, until the reaction product only has one glass transition temperature.

4,533,703

FLEXIBLE BASECOAT/TWO COMPONENT CLEARCOAT COATING COMPOSITION

Panagiotis I. Kordomenos, Mt. Clemens; Kenneth R. Kurple, Anchorville, and Delores J. Alexander, Southfield, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Continuation-in-part of Ser. No. 555,463, Oct. 13, 1983, abandoned. This application May 29, 1984, Ser. No. 615,700

Int. Cl.³ C08L *75/06*

U.S. Cl. 525—440 **20 Claims**

1. A flexible basecoat/clearcoat coating composition, useful as automotive finish coats on metal and plastic substrates, which is characterized in that:

I the clearcoat coating composition comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxy number of between about 30 and about 200, and (iii) containing between about 1 and about 10 urethane groups per molecule, and being made from reactants comprising:

(1) urethane modified diol made by reacting:

(a) diol, and

(b) diisocyanate,

wherein said diol and said diisocyanate are reacted in a molar ratio of from about 4:1 to about 4:3;

(2) polyol comprising at least about 5 weight percent triol; and

(3) acid component selected from dicarboxylic acids and anhydrides thereof;

(B) polyisocyanate crosslinking agent; and

II the basecoat composition comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxyl number of between about 50 and about 250, and (iii) containing between about 1 and about 7 urethane groups per molecule, and being made from reactants comprising:

(1) hydroxy functional polyester prepared from a mixture of (a) polyhydroxy materials comprising diols and triols with (b) acid component selected from dicarboxylic acids and anhydrides thereof; and

(2) diisocyanate;

wherein in forming the hydroxy functional polyester, the proportion of reactants (a) and (b) are selected so that the OH/COOH ratio is from 6:2 to 6:5; and wherein in forming the modified polyester the proportion of hydroxy functional polyester (1) and the diisocyanate (2) are selected so as to provide from 4:1 to 10:1 hydroxyl/isocyanate groups; and

(B) amine-aldehyde crosslinking agent; and

(C) pigment; and

wherein either or both of said basecoat composition and said clearcoat composition individually comprises 0–60 weight percent, based on the total weight of (A) and (B) of the composition, of a linear polyurethane having a number average molecular weight of between about 15,000 and about 40,000.

4,533,704

FLEXIBLE BASECOAT/CLEARCOAT COATING COMPOSITIONS

Delores J. Alexander, Southfield; Kenneth R. Kurple, Anchorville, and Panagiotis I. Kordomenos, Mt. Clemens, all of Mich., assignors to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/01599, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO85/01695, PCT Pub. Date Apr. 25, 1985

PCT Filed Oct. 13, 1983, Ser. No. 592,124

Int. Cl.³ C08L *75/06*

U.S. Cl. 525—440 **15 Claims**

1. A flexible basecoat/clearcoat coating composition, useful as automotive finish coats on metal and plastic substrates, which is characterized in that:

I. The clearcoat composition comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxyl number of between about 30 and about 200, and (iii) containing between about 1 and about 10 urethane groups per molecule, and being made from reactants comprising:

(1) urethane modified diol made by reacting:

(a) diol; and

(b) diisocyanate,

wherein said diol and said diisocyanate are reacted in a molar ratio of from about 4:1 to about 4:3;

(2) polyol comprising at least about 5 weight percent triol; and

(3) acid component selected from dicarboxylic acids and anhydrides thereof;

(B) amine-aldehyde crosslinking agent; and

II. the basecoat composition comprises:

(A) hydroxy-containing urethane modified polyester (i) having a number average molecular weight ($\overline{M}_n$) of between about 1000 and about 10,000, (ii) having a hydroxyl number of between about 50 and about 250, and (iii) containing between about 1 and about 7 urethane groups per molecule, and being made from reactants comprising:

(1) hydroxy functional polyester prepared from a mixture of (a) polyhydroxy materials comprising diols and triols and (b) acid component selected from dicarboxylic acids and anhydrides thereof; and

(2) diisocyanate;

wherein in forming the hydroxy functional polyester, the proportion of reactants (a) and (b) are selected so that the OH/COOH ratio is from 6:2 to 6:5; and wherein in forming the modified polyester the proportion of hydroxy functional polyester (1) and the diisocyanate (2) are selected so as to provide from 4:1 to 10:1 hydroxyl/isocyanate groups; and

(B) amine-aldehyde crosslinking agent; and

(C) pigment; and

wherein either or both of said basecoat composition and said clearcoat composition individually comprises 0–60 weight percent, based on the total weight of (A) and (B) of each said composition, of a linear polyurethane having a number average molecular weight of between about 15,000 and about 40,000.

4,533,705

PROCESS FOR PRODUCING α-OLEFIN POLYMERS

Akihiro Sato, Chibaken; Kazutsune Kikuta, Ichiharashi; Toshihiro Uwai, Ichiharashi; Kenji Matsuda, Ichiharashi, and Nobutaka Hattori, Chibashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Continuation of Ser. No. 261,642, May 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 225,436, Jan. 1, 1981, abandoned. This application Jul. 21, 1983, Ser. No. 515,975

Claims priority, application Japan, Jan. 17, 1980, 55-4009

The portion of the term of this patent subsequent to Jan. 5, 1999, has been disclaimed.

Int. Cl.³ C08F *4/64, 10/06*

U.S. Cl. 526—114 **5 Claims**

1. A process for producing ethylene and/or propylene polymers which comprises polymerizing ethylene and/or propylene at 20° to 200° C. under 0 to 50 Kg/cm^2G, for 5 minutes to 10 hours, in the presence of a preactivated catalyst obtained by:

(a) obtaining a solid product by reacting together at a temperature of −50° C. to 200° C. and for 10 minutes to 10 hours:

(1) 100 g of a reduction solid,

(2) 79 to 126 g of an electron donor, and

(3) 181 to 300 g of an electron acceptor,

said reduction solid being prepared by reducing $TiCl_4$ with an organoaluminum compound having a formula $Al.R_nR'_{n'}X_{3-(n+n')}$, wherein R, R' are hydrocarbon radical with from 1 to 10 carbon atoms or alkoxy radical with

from 1 to 2 carbon atoms, X is a halogen, and n, n′ are optional numbers contained in the formula $0.0<n+n'\leqq 3$

said electron donor being an organic substance having one or more atoms selected from O, N, S or P,

said electron acceptor being a halide of an element of Groups III–VII of the Periodic Table,

(b) combining 1 g of said solid product with

(1) 6.0 to 14 g of said organoaluminum compound, and

(2) 0.3 to 240 g of an alpha-olefin having 2–8 carbon atoms, and

at a temperature of 0° C. to 100° C. for 1 minute to 20 hours so as to thereby polymerize 0.005 to 500 g of said alpha-olefin per 1 g of said solid product

(c) and adding 1 g of said solid product with 100 to 6,000 mg of the reaction product of trialkylaluminum having a formula AlR_3 (wherein R is hydrocarbon radical with from 1 to 10 carbon atoms) with said electron donor.

4,533,706

CATALYST AND PROCESS USING SAME FOR PRODUCING OLEFIN POLYMER

Akinobu Shiga; Toshio Sasaki, and Junpei Kojima, all of Ichihara, Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 13, 1983, Ser. No. 561,324

Claims priority, application Japan, Dec. 16, 1982, 57-221659; Dec. 16, 1982, 57-221660

Int. Cl.³ C08F *4/44, 110/02*

U.S. Cl. 526—119 **18 Claims**

1. A catalyst system for the polymerization of olefins which comprises:

(A) a hydrocarbyloxy group-containing solid catalyst component, said component being prepared by (i) reducing a titanium compound represented by the general formula

$$Ti(OR^1)_nX_{4-n}$$

wherein, R^1 represents a hydrocarbon radical having 1–20 carbon atoms, X represents a halogen atom, and n represents a number satisfying $0.3\leqq n\leqq 4$, with an organoaluminum compound represented by the general formula

$$AlR^2_mY_{3-m}$$

wherein, R^2 represents a hydrocarbon radical having 1–20 carbon atoms, Y represents a halogen atom, and m represents a number satisfying $1\leqq m\leqq 3$, in the absence of ether and (ii) treating the resulting, hydrocarbon solvent-insoluble, hydrocarbyloxy group-containing solid product in a slurry state with an ether compound and titanium tetrachloride at a temperature of 30° to 120° C., and

(B) an organoaluminum compound.

4,533,707

SUPPORTED TRANSITION METAL COMPOSITION

Ian D. McKenzie, Welwyn Garden City, England, assignor to Imperial Chemical Industries, PLC, England

Division of Ser. No. 405,984, Aug. 6, 1982, Pat. No. 4,465,782. This application Jun. 18, 1984, Ser. No. 621,462

Claims priority, application United Kingdom, Aug. 7, 1981, 8124150

Int. Cl.³ C08F *4/44*

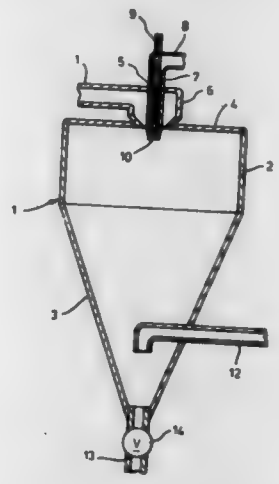
U.S. Cl. 526—125 **9 Claims**

1. A process for the production of a polymer or copolymer of an unsaturated monomer wherein at least one ethylenically unsaturated hydrocarbon monomer is contacted, under polymerisation conditions, with a polymerisation catalyst which is the product obtained by mixing together

(1) A transition metal composition; and

(2) an organic compound of aluminium or of a metal of Group IIA of the Periodic Table or a complex of an organic compound of a metal of Group IA or Group IIA of the Periodic Table together with an organic aluminium compound,

wherein the transition metal composition which is component, (1) of the polymerisation catalyst is the product obtained by a process in which a solid support material which is a metal



halide is suspended in a liquid medium which is a liquid hydrocarbon or a liquid halohydrocarbon, the suspension is spray-dried, the spray-dried support material is collected and the collected spray-dried support material is contacted with at least one compound of a transition metal of Group IVA, VA, or VIA of the Periodic Table.

4,533,708

POLYAMPHOLYTE POLYMER

Christine A. Costello, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Continuation-in-part of Ser. No. 331,102, Dec. 15, 1981, abandoned. This application May 17, 1982, Ser. No. 378,921

Int. Cl.³ C08F *220/06, 220/56, 226/04*

U.S. Cl. 526—295 **3 Claims**

1. A polyampholyte polymer, having an intrinsic viscosity of 0.05 to 4.5 dl/g in 1.0 M NaCl, prepared from 32.5 to 90 percent acrylic acid and/or methacrylic acid, 1.5 to 65 percent, by weight, of acrylamide and 0.5 to 25 percent, by weight, of dimethyldiallyl ammonium chloride and/or diethyldiallyl ammonium chloride.

4,533,709

USE OF FUMARIC ACID POLYMERS AS ANTISCALANTS

Stanley W. Walinsky, Mystic, Conn., assignor to Pfizer Inc., New York, N.Y.

Continuation of Ser. No. 441,189, Nov. 12, 1982, Pat. No. 4,486,581, which is a division of Ser. No. 295,209, Aug. 24, 1981, abandoned, which is a continuation of Ser. No. 108,068, Dec. 28, 1979, abandoned. This application Sep. 28, 1984, Ser. No. 655,408

Int. Cl.³ C08F *222/16*

U.S. Cl. 526—318 **8 Claims**

1. An intermediate polymer consisting of from about 50 to 100 mole percent monoalkyl fumarate, from 0 to about 50 mole percent of at least one hydrophilic monomer selected from acrylamide, methacrylamide, acrylic acid, methacrylic acid or maleic anhydride and from 0 to about 15 mole percent of at least one ethylenically unsaturated, hydrophobic monomer, the average molecular weight of the polymer being from about 500 to about 15,000 and the alkyl group of the monoalkyl fumarate being 1 to 8 carbons in length.

4,533,710

1,2-ALKANEDIOL DIACRYLATE MONOMERS AND POLYMERS THEREOF USEFUL AS CAPACITOR DIELECTRICS

Daniel R. Olson, Schnectady, and Timothy W. O'Donnell, Albany, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Dec. 19, 1983, Ser. No. 562,893
Int. Cl.³ C07C *69/54;* C08F *20/20, 120/20;* H01B *3/42*
U.S. Cl. 526—323.2 4 Claims

1. 1,2-Hexadecanediol diacrylate.

4,533,711

POLYBUTADIENE RUBBER COMPOSITIONS HAVING IMPROVED GREEN STRENGTH

Yasumasa Takeuchi, Yokohama; Mitsuhiko Sakakibara; Nobuo Tagata, both of Yokkaichi; Masaki Ogawa, Sayama; Yasushi Hirata, Higashimurayama, and Shigeru Tomihira, Kodaira, all of Japan, assignors to Bridgestone Tire Company Limited and Japan Synthetic Rubber Co., Ltd., Japan

Filed Sep. 7, 1983, Ser. No. 530,169
Claims priority, application Japan, Sep. 7, 1982, 57-154585
Int. Cl.³ C08F *36/06*
U.S. Cl. 526—340.4 2 Claims

1. A polybutadiene rubber composition having an improved green strength, which comprises a polybutadiene having a content of cis-1,4 bond of at least 70%, an average chain length of 1,4-bond of 110～450, a molecular weight distribution represented by a ratio of weight-average molecular weight ($\overline{M}w$) to number-averge molecular weight ($\overline{M}n$) of not less than 5.0 and containing at least 1% by weight of a component having a molecular weight of not less than 25,000,000 as polystyrene measured by gel permeation chromatograph.

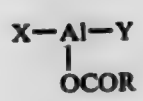
4,533,712

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT ORGANOALUMINUM POLYMERS

Isoji Taniguchi, Kyoto; Yoshiharu Kimura, Ohmihachiman, and Toshiaki Ichimura, Toyonaka, all of Japan, assignors to Idemitsu Kosan Company Limited, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,075
Claims priority, application Japan, Mar. 30, 1983, 58-56266; May 7, 1983, 58-79837
Int. Cl.³ C08G *67/00, 63/66, 63/68*
U.S. Cl. 528—9 10 Claims

1. A process for producing a high molecular weight organoaluminum polymer by reacting an organoaluminum compound with water, the improvement comprising using as reactants an organoaluminum compound represented by the general formula:



(wherein X and Y may be the same or different and are each a hydrogen atom, an alkyl group, or an alkoxyl group, and R is at least one organic radical) and an organic acid in an amount of from 0.2 to 10 moles per mole of the organoaluminum compound.

4,533,713

FLUOROALIPHATICSULFONAMIDES CONTAINING OXIRANE GROUPS AND/OR N-β-HYDROXYALKYLENE GROUPS

Richard D. Howells, P.O. Box 33427, St. Paul, Minn. 55133, assignor to Minnesto Mining and Manufacturing Company, St. Paul, Minn.

Filed May 6, 1983, Ser. No. 492,452
Int. Cl.³ C08G *59/30, 59/28*
U.S. Cl. 528—26 17 Claims

1. A compound containing
(A) a fluoroaliphaticsulfonamido moiety, and
(B) a moiety containing
(1) at least two oxirane groups,
(2) at least two non-terminal N-β-hydroxyalkylene groups, or
(3) at least one oxirane group and at least one non-terminal N-β-hydroxyalkylene group.

15. A composition which comprises
(a) the compound of claim 1, and
(b) a curing agent.

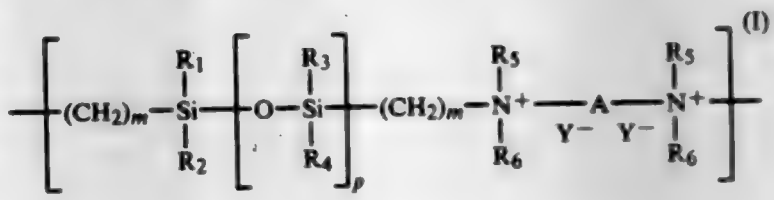
4,533,714

POLYQUATERNARY POLYSILOXANE POLYMERS

Henri Sebag, and Alexandre Zysman, both of Paris, France, assignors to L'Oreal, Paris, France

Filed Nov. 7, 1983, Ser. No. 550,418
Claims priority, application Luxembourg, Nov. 10, 1982, 84463
Int. Cl.³ C08G *77/04*
U.S. Cl. 528—27 13 Claims

1. A polyquaternary polysiloxane polymer which comprises recurring units of the general formula:



(I)

in which:

A denotes a divalent α,ω-bis-(alkyl)-polysiloxane group or a linear or branched, saturated or unsaturated hydrocarbon chain containing up to 6 consecutive carbon atoms, optionally substituted by one or more hydroxyl groups and optionally one or more chain oxygen atoms and/or aromatic rings;

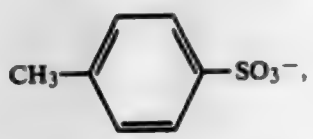
R_1, R_2, R_3 and R_4, which are identical or different, denote a C_1–C_6 alkyl radical or a phenyl radical;

R_5 denotes a methyl, ethyl or hydroxyethyl radical;

R_6 denotes a C_1–C_{18} alkyl radical or two adjacent radicals R_6 together with the nitrogen atom to which they are attached and the radical A therebetween form a divalent piperazino group;

or two adjacent radicals R_5 together with the two radicals R_6 attached to the same nitrogen atoms, the said nitrogen atoms and the radical A therebetween form a triethylenediamino radical, or R_5 and R_6 together denote a heterocycle with the nitrogen atom to which they are attached;

Y^- denotes an anion which is $Cl\ominus$, $Br\ominus$, $CH_3SO_3\ominus$ or



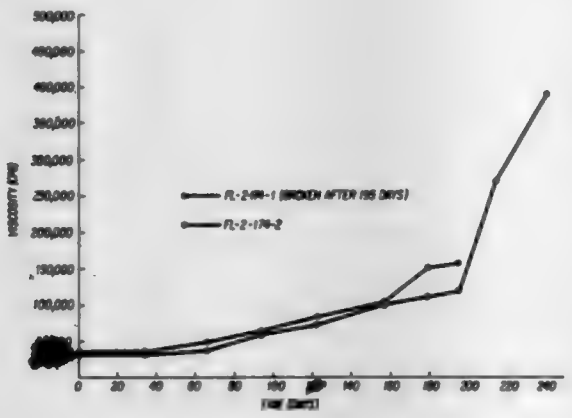
m denotes an integer from 1 to 6; and
p denotes a number from 1 to 50.

4,533,715

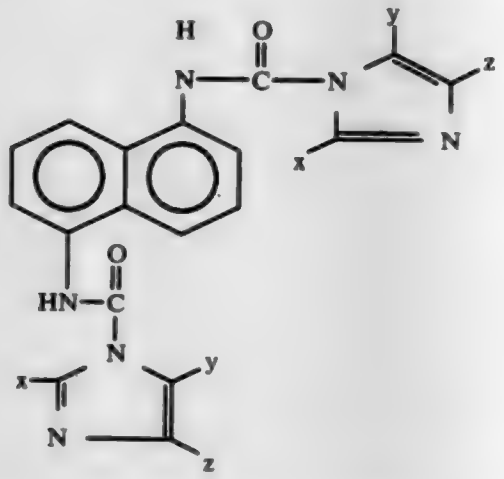
SINGLE PACKAGE EPOXY RESIN SYSTEM

Frank W. C. Lee, Dublin, and Kenneth S. Baron, San Ramon, both of Calif., assignors to Hexcel Corporation, San Francisco, Calif.

Filed Sep. 7, 1983, Ser. No. 530,106
Int. Cl.[3] C08G *18/81, 18/28*
U.S. Cl. 528—45 12 Claims



1. A curing agent for epoxy resins having the formula



wherein x, y, and z may be the same or different, and each may be hydrogen, a lower alkyl or aryl of C_{1-12}, halo or nitro.

4,533,716

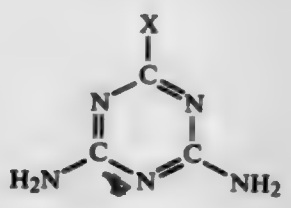
COATING RESIN COMPOSITION

Noboru Okoshi, Chiba, and Takenori Ikeda, Ichihara, both of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed Aug. 3, 1984, Ser. No. 637,539
Claims priority, application Japan, Aug. 5, 1983, 58-142491
Int. Cl.[3] C08G *18/38*
U.S. Cl. 528—73 5 Claims

1. A coating resin composition consisting essentially of

(A) a triazine-type resin obtained by co-condensing a triazine-type amino compound represented by the general formula



wherein X is hydrogen, methyl, ethyl, propyl, phenyl or amino,

formaldehyde and a polyol and as required, a monohydric alcohol, and

(B) a polyisocyanate,

the solids weight ratio of (A) to (B) being from 5:95 to 95:5.

4,533,717

MODIFIED POLYURETHANE LIQUID POLYMER COMPOSITIONS

James M. O'Connor, Clinton; Donald L. Lickel, Cheshire; Michael L. Rosin, Madison, all of Conn., and Richard J. Donze, Stow, all of Ohio, assignors to Olin Corporation, Cheshire, Conn. and Morgan Construction Company, Worcester, Mass.

Continuation-in-part of Ser. No. 419,684, Sep. 20, 1982, abandoned, which is a division of Ser. No. 203,212, Nov. 3, 1980, abandoned. This application Jan. 16, 1984, Ser. No. 571,216
Int. Cl.[3] C08G *18/48;* B21C *1/14*
U.S. Cl. 528—78 10 Claims

1. A process for preparing a polyurethane polymer product comprising mixing a urethane oligomer and a heat activated free radical generating catalyst, and then heating said mixture at a temperature adequate to activate said catalyst and cure said mixture, said urethane oligomer having a final free NCO content from 0% to about 20% and containing terminal reactive unsaturation and being prepared by reacting

(a) an isocyanate-terminated prepolymer having a final free NCO content ranging from about 0.5% to about 30% which is the product of reacting

(1) an organic polyisocyanate with

(2) a polyol having

(i) an average equivalent weight of about 75 to about 500,

(ii) an average functionality of at least about 3, with

(b) an isocyanate reactive group-containing unsaturated monomer selected from the group consisting of

(1) hydroxyalkyl acrylates,

(2) hydroxyalkyl methacrylates and

(3) hydroxyalkyl acrylamides.

4,533,718

OIL AND HIGH TEMPERATURE RESISTANT INSULATING VARNISH MADE FROM MODIFIED METHOXY-FUNCTIONAL DIPHENYL OXIDE

Louis A. Cargnel, Unity Township, Westmoreland County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 10, 1984, Ser. No. 629,391
Int. Cl.[3] C08G *77/04*
U.S. Cl. 528—86 11 Claims

1. A heat curable, storage stable, high temperature resistant, resinous, liquid insulating varnish comprising a heat reacted admixture comprising:

(A) methoxy functional diphenyl oxide resinous material; and

(B) metal halide catalyst, present in the range of from about 0.01 wt.% to about 0.2 wt.% based on the weight of (A), in combination with silicon dioxide stabilizer having a particle size of up to about 10 microns, present in the range of from about 2 wt.% to about 10 wt.% based on the weight of (A), where the silicon dioxide interacts with the metal halide to hinder the catalytic activity of the metal halide during room temperature storage after varnish formation.

4,533,719

EPOXY RESINS WITH INCREASED FLEXIBILITY

Harold G. Waddill, Austin, Tex., assignor to Texaco, Inc., White Plains, N.Y.

Filed Mar. 22, 1984, Ser. No. 592,143
Int. Cl.[3] C08G *59/54;* C07G *103/50*
U.S. Cl. 528—111 13 Claims

1. An epoxy resin composition having superior flexibility and being the cured reaction product of a curable admixture which comprises a vicinal polyepoxide and a curing amount of a monoamide prepared by the condensation of fatty monocarboxylic acids and polyoxyalkylene polyamides with an amine functionality of 3 or more.

4,533,720

POLYARYLATE FORMATION BY ESTER INTERCHANGE REACTION USING γ- GAMMA LACTONES AS DILUENT

Michael C. Yu, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 13, 1983, Ser. No. 531,788
Int. Cl.³ C08G 63/28
U.S. Cl. 528—125 37 Claims

1. The process of preparing a polyarylate by the process conducted in steps comprising:

(a) heating together under reaction conditions reagents comprising at least one bisphenol, at least one aromatic dicarboxylic acid, and at least one organic acid anhydride, together with at least one γ-lactone as diluent, up to a moderately elevated first temperature with an inert gas purge over a first time interval;

(b) maintaining substantially said first temperature for a second time interval;

(c) gradually elevating the temperature to a higher second temperature over a third time interval while maintaining a flow of inert gas;

thereby forming a prepolymer, and

(d) reducing the pressure gradually to vacuum conditions while maintaining said second temperature for a fourth time interval; and

(e) substantially maintaining the higher second temperature while maintaining said vacuum conditions for a fifth time interval;

thereby forming said polyarylate.

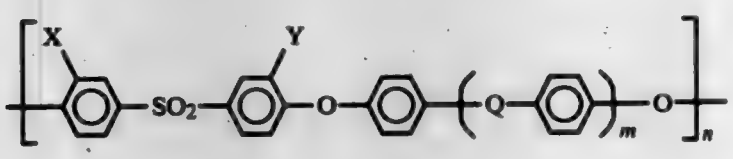
4,533,721

CHLORINE CONTAINING POLYETHER SULFONE POLYMERS AND PREPARATION THEREOF

Shigeru Kurosawa, Oita, and Takashi Ueshima, Sagamihara, both of Japan, assignors to Showa Denko Kabushiki Kaisha, Tokyo, Japan

PCT No. PCT/JP81/00406, § 371 Date Aug. 23, 1983, § 102(e) Date Aug. 23, 1983
PCT Filed Dec. 23, 1981, Ser. No. 531,890
Int. Cl.³ C08G 81/06
U.S. Cl. 528—174 8 Claims

1. A substantially linear, chlorine-containing polyether-sulfone polymer consisting essentially of repeating units represented by the following general formula (I):



(I)

wherein X and Y stand for a hydrogen atom or a chlorine atom, with the proviso that at least one of X and Y is a chlorine atom, Q stands for a direct bond, —O—, —S— or a divalent aliphatic or alicyclic hydrocarbon group in which the carbon number is an integer of from 1 to 6, m is 0 or 1, and n is an integer of from 10 to 1000.

4,533,722

INTERFACIAL POLYCONDENSATION POLYCARBONATE PROCESS WITH QUATERNARY PHOSPHONIUM AMINO HALIDE CATALYST

John R. Campbell, Clifton Park, N.Y., and James W. Thackeray, Somerville, Mass., assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,525
Int. Cl.³ C08G 63/62
U.S. Cl. 528—199 5 Claims

1. In an interfacial polycondensation process for preparing a film forming polycarbonate comprising introducing a carbonyl halide reactant into a mixture while it is agitated comprising an organic phase of aromatic dihydroxy compound, inert organic solvent, a chain-stopper, and quaternary phosphonium polycondensation catalyst and an aqueous solution of an alkali metal hydroxide having a pH of at least 10, the improvement which comprises utilizing as the quaternary phosphonium polycondensation catalyst, a quaternary phosphonium amino halide, whereby a substantial reduction in carbonyl halide usage is achieved and the quaternary phosphonium amino halide polycondensation catalyst can be recycled.

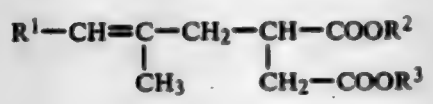
4,533,723

SEMI-ESTERS OF POLYISOBUTYLENESUCCINIC ACID, THEIR SYNTHESIS AND PREPARATIONS CONTAINING THESE COMPOUNDS WHICH CAN BE TRANSFORMED BY RADIATION INTO AN ADHESIVE

Christian Weitemeyer, Essen, Fed. Rep. of Germany, assignor to TH. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 28, 1984, Ser. No. 625,712
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323913
Int. Cl.³ C08G 63/52
U.S. Cl. 528—303 4 Claims

1. Semi-esters of polyisobutylenesuccinic acid having the formula



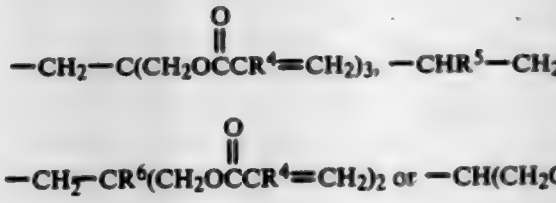
I

in which

R^1 is a polyisobutylene radical with a molecular weight of 100 to 20,000,

R^2 and

R^3 are different from one another and one of these two radicals is a hydrogen radical and the other one a group, selected from the group consisting of



in which

R^4 and R^5 are a hydrogen or methyl radical, and

R^6 is a methyl or ethyl radical.

4,533,724

LIQUID CRYSTALLINE POLY (2,6-BENZOTHIAZOLE) COMPOSITIONS, PROCESS, AND PRODUCTS

James F. Wolfe, Redwood City, Calif.; Paul D. Sybert, Joanne R. Sybert, both of Cohoes, N.Y., and Blake Wilson, Belmont, Calif., assignors to SRI International, Menlo Park, Calif.

PCT No. PCT/US82/01286, § 371 Date Sep. 17, 1982, § 102(e) Date Sep. 17, 1982, PCT Pub. No. WO84/01161, PCT Pub. Date Mar. 29, 1984
PCT Filed Sep. 17, 1982, Ser. No. 451,741
Int. Cl.³ C08G 69/08, 73/10, 75/00, 79/02
U.S. Cl. 528—313 19 Claims

6. A process according to claim 5 wherein said phosphorus pentoxide content of said monomer reaction medium of step (c) is of an amount suitable for polymerization to provide a homopolymeric product of said polymerization reaction having a phosphorus pentoxide content between about 82% and about 86% by weight.

4,533,725

SYNTHESIS OF HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ARYLHALO PHOSPHORUS COMPOUND CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Delanese Corporation, New York, N.Y.

Filed Jan. 28, 1983, Ser. No. 461,887
Int. Cl.³ C08G *73/18*
U.S. Cl. 528—336 **14 Claims**

1. A two stage polymerization process for the production of high molecular weight polybenzimidazole from a mixture of (1) at least one aromatic tetraamine containing two groups of amine substituents, said amine substituents in each group being in an ortho position relative to each other, and (2) at least one dicarboxylate ester, which comprises heating the mixture above the melting temperature thereof in a first stage melt polymerization zone in contact with a halophosphorus polymerization catalyst selected from arylhalophosphines or arylhalophosphites to provide a foamed prepolymer; and heating the prepolymer in a second stage solid state polymerization zone at a temperature above about 250° C. to produce high molecular weight polybenzimidazole product.

4,533,726

POLYMERIC HYDROPHILE FROM CARBOXY TERMINATED LIQUID POLYMER, DIAMINE AND PHOSPHAZENE

Ronald E. Myers, Strongsville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jul. 10, 1984, Ser. No. 629,376
Int. Cl.³ C08G *69/26*
U.S. Cl. 528—336 **10 Claims**

1. A composition of matter comprising the reaction product of a carboxyl terminated reactive liquid polymer, a phosphazene, and a diamine, in the presence of a scavenger for elimination products, the reactive liquid polymer being of the form HOOCBCOOH wherein B is a backbone including at least one polymerized vinylidene monomer selected from a group consisting of (a) monoolefins having between 2 and 14 carbon atoms; (b) dienes having between 4 and 10 carbon atoms; (c) vinyl and allyl esters; (d) vinyl and allyl ethers; and (e) acrylates of the form CH_2=CH—COOR', R' being one of hydrogen, an alkyl radical of not more than 18 carbon atoms, an alkoxyalkyl, alkylthioalkyl, or cyanoalkyl radical having not more than 12 carbon atoms, the phosphazene having between 3 and 20 phosphorous atoms and including at least one carboxyl activating reactive substituent, the diamine being selected from among saturated or unsaturated, straight chained, cyclic, or acylic primary or secondary diamines having between about 3 and about 12 carbon atoms, the scavenger being selected from the group consisting of carbonates, bi carbonates and a tertiary amine having attached radicals selected from among saturated or unsaturated branched, straight chained, cyclic or acyl radicals having not more than about 6 carbon atoms.

4,533,727

PROCESS FOR PRODUCING A CURABLE RESIN FROM CYANATE ESTER COMPOUND AND UNSATURATED 1,2-EPOXY COMPOUND

Morio Gaku, Saitama; Hidenori Kimbara, Tokyo; Satoshi Ayano, and Susumu Yoshimura, both of Kanagawa, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Apr. 3, 1984, Ser. No. 596,086
Claims priority, application Japan, Apr. 6, 1983, 58-60291; Apr. 21, 1983, 58-70574; Apr. 21, 1983, 58-70575; Apr. 21, 1983, 58-70576
Int. Cl.³ C08G *83/00*
U.S. Cl. 528—361 **8 Claims**

1. A process for producing a curable resin which comprises reacting (a) at least one cyanate ester compound selected from the group consisting of polyfunctional cyanate esters having 2 or more cyanate groups per one molecule, prepolymers of the cyanate esters or mixtures thereof with (b) at least one compound having at least one 1,2-epoxy group and at least one radical-polymerizable unsaturated double bond, the ratio of the cyanate group of (a) to the 1,2-epoxy group of (b) being in the range of about 1:0.25 to about 1:2, in contact with (c) a radical polymerization inhibitor at a temperature of about 140° C.

4,533,728

PROCESS FOR THE PRODUCTION OF HIGH MOLECULAR WEIGHT POLYESTER CARBONATES

Helmut Waniczek, Cologne; Walter Uerdingen, and Karola Brudermanns, both of Leverkusen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 619,487
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1983, 3322667
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—370 **6 Claims**

1. A process for the production of non-aromatic polyester carbonate which has an intrinsic viscosity of from 0.9 to 2.5 dl/g, measured in a solution of tetrahydrofuran at 25° C., from (a) polyesterdiol produced from a dicarboxylic acid and a diol having a number average molecular weight $\overline{M}_n$ of from 800 to 3,500, (b) polyetherdiol having a number average molecular weight $\overline{M}_n$ of from 250 to 3,500 and (c) diarylcarbonate, characterized in that in a first stage

(a) from 30 to 100%, by weight, based on the sum of a+b, of polyesterdiol,

(b) from 70 to 0%, by weight, based on the sum of a+b, of polyetherdiol and

(c) from 0.95 to 1.2 moles of diarylcarbonate per mol of (a+b) are heated in contact with

(d) from 50 to 500 ppm, based on the sum of a+b+c, of a transesterification catalyst

at 100° to 200° C. under a pressure of less than 140 mbars while the resulting hydroxyl compounds are removed, until the reaction product has an intrinsic viscosity of from 0.6 to 1.1 dl/g; from 0.1 to 10%, by weight, based on the sum of a+b+c, of phenol (e) is added; and component (e) is removed in a second stage at from 100° to 200° C. and under a pressure of from 3 to 260 mbars, and the temperature and pressure are maintained within these limits until the intrinsic viscosity of the reaction product increases by at least 0.1 dl/g and reaches a value of at least 0.9 dl/g.

4,533,729

PROCESS FOR THE PREPARATION OF POLYCARBONATE POLYOLS

Gordon C. Newland, Kingsport, Tenn., and William R. Darnell, Weber City, Va., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,396
Int. Cl.³ C08G *63/62*
U.S. Cl. 528—371 **20 Claims**

1. A process for preparing amorphous polycarbonate polyols comprising the steps of:

(A) reacting (i) phosgene, (ii) a branched-chain polyhydric alcohol having about 4 to 12 carbon atoms, and (iii) about 3 to 40 mole percent, based upon the total amount of polyhydric alcohol, of a straight chain polyhydric alcohol having about 5 to 20 carbon atoms in the presence of a solvent and in the absence of a catalyst at a temperature of about 60° to 100° C., and

(B) contacting the amorphous polycarbonate product in the reaction mixture with a catalytic amount of a tertiary amine at reflux temperature for a period of time of at least about 30 minutes.

4,533,730

1-OXADETHIACEPHAM COMPOUNDS

Mitsuru Yoshioka; Uyeo Shoichiro, both of Toyonaka; Yoshio Hamashima, Kyoto; Ikuo Kikkawa, Takarazuka; Teruji Tsuji, Takatsuki, and Wataru Nagata, Nishinomiya, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

Division of Ser. No. 374,862, May 4, 1982, Pat. No. 4,443,598, which is a continuation-in-part of Ser. No. 322,662, Nov. 18, 1981, Pat. No. 4,366,316, which is a continuation of Ser. No. 72,600, Sep. 5, 1979, abandoned, which is a continuation of Ser. No. 877,811, Feb. 14, 1978, abandoned. This application Oct. 19, 1983, Ser. No. 543,940

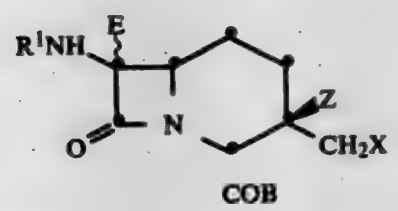
Claims priority, application Japan, Feb. 15, 1977, 52-15813; Jun. 6, 1977, 52-67025; Oct. 1, 1980, 55-138092

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.[3] C07D *498/04*

U.S. Cl. 544—92 6 Claims

1. A compound of the formula



COB

wherein

R^1 is

(1) C_1 to C_{10} alkanoyl,

(2) C_1 to C_7 haloalkanoyl,

(3) azidoacetyl, cyanoacetyl, trifluoromethylthioacetyl, cyanomethylthioacetyl, or (4-pyridon-1-yl)acetyl;

(4) acyl group of the following formula

Ar—CO—

wherein Ar is an aryl selected from furyl, thienyl, pyrrolyl, oxazolyl, isoxazolyl, oxadiazolyl, oxatriazolyl, thiazolyl, isothiazolyl, thiadiazolyl, thiatriazolyl, pyrazolyl, imidazolyl, triazolyl, tetrazolyl, phenyl, pyridyl, pyrimidyl, pyrazinyl, pyridazinyl, triazinyl, dihydrophenyl, tetrahydrophenyl, tetrahydropyrimidyl, naphthyl, benzothiazolyl, indolyl, quinolyl, isoquinolyl, benzopyrimidyl, cinnolinyl, pyridopyrimidyl, or indanyl ring group;

(5) group of the following formula:

Ar—CQQ′—CO—

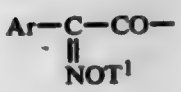
wherein Ar is as defined above and Q and Q′ each is hydrogen or methyl;

(6) acyl group of the following formula:

Ar—G—CQQ′—CO—

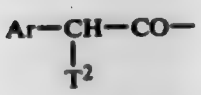
wherein Ar, Q and Q′ each is as defined above and G is oxygen, sulfur, or imino;

(7) acyl group of the following formula



wherein Ar is as defined above and T^1 is hydrogen or C_1 to C_6 alkyl;

(8) acyl group of the following formula:



wherein Ar is as defined above and T^2 is one of (i) hydroxy or C_1 to C_{10} acyloxy, (ii) carboxy or protected carboxy, (iii) sulfo or C_1 to C_5 alkoxysulfonyl, or a group of the formula:

in which W^1 and W^2 each is hydrogen or a C_1 to C_{15} aminosubstituent;

(9) 5-aminoadipoyl, 5-aminoadipoyl protected at the amino or 5-aminoadipoyl protected at the carboxy;

(10) acyl group of the following formula:

L—O—CO—

wherein L is an easily removable and unsubstituted or substitured C_1 to C_{10} hydrocarbyl group; or

(11) C_1 to C_{20} optionally substituted hydrocarbyl, C_3 to C_{10} organic silyl, or C_1 to C_{10} sulfenyl,

COB is carboxy or protected carboxy, the carboxy protecting group B in said COB being C_1 to C_{10} alkoxy, C_1 to C_6 haloalkoxy, C_3 to C_{10} acylalkoxy, C_3 to C_{10} alkoxyalkoxy, C_2 to C_{10} aminoalkoxy, aryloxy, aralkoxy, C_1 to C_{10} alkylsilyloxy, C_1 to C_{10} alkylstannyloxy, C_1 to C_{10} acyloxy, inorganic acyloxy, metal oxy of a group I, II or III metal in the periodical table, C_1 to C_{15} hydrocarbylammoniooxy, C_1 to C_{10} hydrocarbylthio or mercapto, C_1 to C_5 alkylamino, di-C_1 to C_5 alkylamino, hydrazinyl or azido;

E is β-hydrogen or α-methoxy;

X is hydrogen, halogen, hydroxy, C_1 to C_4 alkanoyloxy, substituted C_1 to C_4 alkanoyloxy, aroyloxy, carbonic acyloxy, C_1 to C_6 alkoxy, aralkoxy of the formula Ar—CH_2O— or aryloxy of the formula Ar—O— in which Ar is as defined above, mercapto, C_1 to C_5 alkanoylthio, aroylthio, C_1 to C_6-alkylthio, aralkylthio, arylthio of the formula Ar—S— in which Ar is as defined above, amino, azido, hydrazinyl, acetylamino, methylamino, pyridinium, picolinium, 4-carboxypyridinium, carbamoylpyridinium, hydroxymethylpyridinium, carboxymethylpyridinium, or chloropyridinium, and

Z is a group of the formula

$RS(O)_n$— or $RSe(O)_n$—

in which R is C_1 to C_3 alkyl or monocyclic aryl and n is 0, 1 or 2.

4,533,731

AMINOINDAZOLE DERIVATIVES

Tadayuki Ibuki; Taisuke Sugihara; Hiromu Kawakubo, and Takanori Sone, all of Nobeoka, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Japan

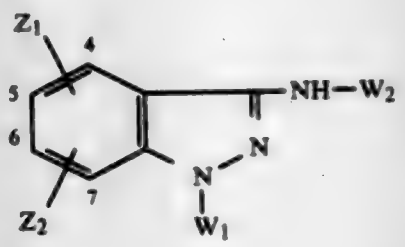
Filed Mar. 16, 1983, Ser. No. 475,945

Claims priority, application Japan, Mar. 17, 1982, 57-40686; Mar. 17, 1982, 57-40687; Mar. 17, 1982, 57-40688; Mar. 17, 1982, 57-40689; Mar. 17, 1982, 57-40690; Mar. 17, 1982, 57-40691; Mar. 17, 1982, 57-40692

Int. Cl.[3] C07D *231/56, 413/06*

U.S. Cl. 544—140 8 Claims

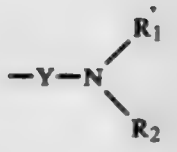
1. A compound of the formula (I):



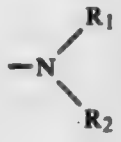
(I)

wherein

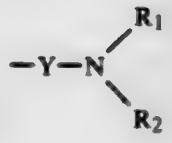
W_1 is a



group wherein Y is a n-C_{1-6} alkylene group or a n-C_{1-6} alkylene group having a C_{1-6} alkyl group substituent; and R_1 and R_2 each independently is a hydrogen atom or a C_{1-6} alkyl group, and the



group in the



group may form a saturated heterocyclic ring selected from the group consisting of morpholino, pyrrolidino, piperidino, homopiperidino and piperazino groups, and the saturated heterocyclic ring except the morpholino group may have at least one C_{1-4} alkyl group, hydroxyl group or halogen atom as a substituent;

W_2 is a hydrogen atom;

Z_1 is a hydroxyl group;

Z_2 is a hydrogen atom; and the physiologically acceptable acid addition salt thereof.

4,533,732

3-PROPIONYLSALICYLIC ACID DERIVATIVES AND PROCESS FOR THE PREPARATION OF THE SAME

Hiroshige Inoue, Osaka; Kenichi Fukushima, Arita, and Ikuzo Nishiguchi, Hirakata, all of Japan, assignors to Yamamoto Chemical Industrial Company, Limited, Wakayama and Osaka Municipal Government, Osaka, both of, Japan

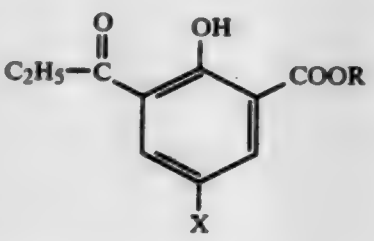
Filed Sep. 30, 1983, Ser. No. 538,016

Claims priority, application Japan, Sep. 30, 1982, 57-171304

Int. Cl.³ C07D *295/14*; C07C *65/10, 69/88*

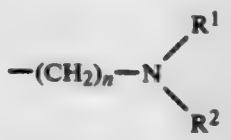
U.S. Cl. 544—172 **11 Claims**

1. A derivative of 3-propionylsalicylic acid represented by the formula (1)

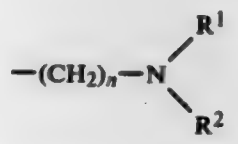


(1)

wherein R represents a hydrogen atom, a lower alkyl group or a group



(wherein R^1 and R^2 represent a lower alkyl group or R^1 and R^2, when taken together with the nitrogen atom to which they are attached, may form a heterocyclic ring with or without an intervening hetero atom, and n is an integer of 1 to 4), and X represents a hydrogen atom or a halogen atom, R being the group



when X is a hydrogen atom.

4,533,733

PROCESS FOR OBTAINING CYANURIC CHLORIDE IN SOLID OR LIQUID FORM

Heinz-Rüdiger Vollbrecht, Stein, Fed. Rep. of Germany, assignor to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jul. 31, 1984, Ser. No. 636,334

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336994

Int. Cl.³ C07D *251/28*

U.S. Cl. 544—190 **10 Claims**

1. Process for recovering cyanuric chloride from cyanuric chloride containing vapor, comprising the steps of diluting the cyanuric chloride containing vapor, with a hot air stream having a temperature of from 60° to 140° C., and

introducing the diluted vapor into the lower part of a separation chamber cooled to a temperature of from 20° to 50° C. to precipitate the cyanuric chloride from the vapor.

4,533,734

INOTROPIC AGENTS

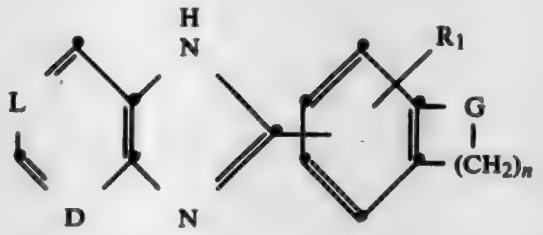
David W. Robertson, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 10, 1983, Ser. No. 550,332

Int. Cl.³ A61K *31/44*

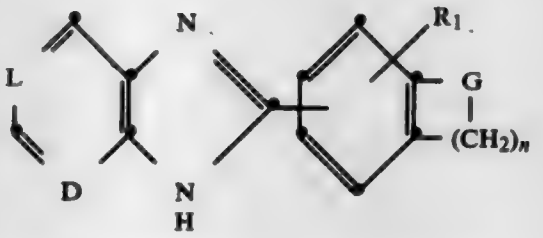
U.S. Cl. 514—303 **20 Claims**

1. Compounds of the formulas



I

and



Ia

and their pharmaceutically acceptable salts, wherein:

R_1 is hydrogen, C_1-C_4 alkyl, C_1-C_4 alkoxy, allyloxy, propargyloxy, benzyloxy, (C_1-C_4 alkyl)thio, (C_1-C_4 alkyl)sulfinyl, (C_1-C_4 alkyl)sulfonyl, hydroxy, halo, cyano, nitro, amino, mono- or di-(C_1-C_4 alkyl)amino, trifluoromethyl or Z-Q-substituted C_1-C_4 alkoxy, wherein Q is oxygen, sulfur, sulfinyl, sulfonyl, or a bond, and Z is C_1-C_4 alkyl, phenyl or phenyl substituted with halo, C_1-C_4 alkyl, C_1-C_4 alkoxy, hydroxy, nitro, amino, (C_1-C_4 alkyl)thio, (C_1-C_4 alkyl)sulfinyl, or (C_1-C_4 alkyl)sulfonyl;

Each of L and D is independently N or CH with the proviso that L and D may not both be CH at the same time;

G is $—CH_2—$, $—NR_2—$, —O—, or $—S(O)_r—$, where R_2 is C_1-C_3 alkyl, and r is 0, 1, or 2; and n is 2 or 3.

4,533,735
PROCESS FOR PREPARING ANTIBACTERIAL COMPOUNDS

Thomas J. Walter, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 300,046, Sep. 8, 1981, Pat. No. 4,405,792. This application May 19, 1983, Ser. No. 495,977
Int. Cl.[3] C07D *215/16*
U.S. Cl. 546—156 9 Claims

1. The process wherein:

(a) a 4-(4-halophenyl)pyridine is nitrated to a 4-(4-halo-3-nitrophenyl)pyridine,

(b) the 4-(4-halo-3-nitrophenyl)pyridine is reduced to a 4-(3-aminophenyl)pyridine,

(c) the 4-(3-aminophenyl)pyridine is reacted with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridyl-)anilinomethylenemalonate,

(d) the dialkyl 3-(4-pyridyl)anilinomethylenemalonate is cyclized to an alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate,

(e) the alkyl 1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate is N-alkylated to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, and

(f) the alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate is hydrolyzed to a 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid.

4. The process wherein:

(a) a 4-(4-halophenyl)pyridine is nitrated to a 4-(4-halo-3-nitrophenyl)pyridine,

(b) the 4-(4-halo-3-nitrophenyl)pyridine is reduced to a 4-(3-aminophenyl)pyridine,

(c) the 4-(3-aminophenyl)pyridine is converted to a 3-(4-pyridyl)-N-alkylaniline,

(d) the 3-(4-pyridyl)-N-alkylaniline is reacted with a dialkyl ethoxymethylenemalonate to form a dialkyl 3-(4-pyridyl)-N-alkylanilinomethylenemalonate,

(e) the dialkyl 3-(4-pyridyl)-N-alkylanilinomethylenemalonate is cyclized to an alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate, and

(f) the alkyl 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylate is hydrolyzed to a 1-alkyl-1,4-dihydro-4-oxo-7-(4-pyridyl)-3-quinolinecarboxylic acid.

4,533,736
PROCESS FOR THE PREVENTION OR REDUCTION OF DISCOLORATION OF SODIUM PYRITHIONE

Samuel I. Trotz, Orange, and Douglas A. Farmer, Jr., Madison, both of Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 352,813, Feb. 26, 1982, Pat. No. 4,482,715. This application Jul. 2, 1984, Ser. No. 626,951
Int. Cl.[3] A61K *31/44*; C07D *213/89*
U.S. Cl. 546—290 6 Claims

1. A process for preventing or reducing discoloration of aqueous sodium pyrithione solutions comprising

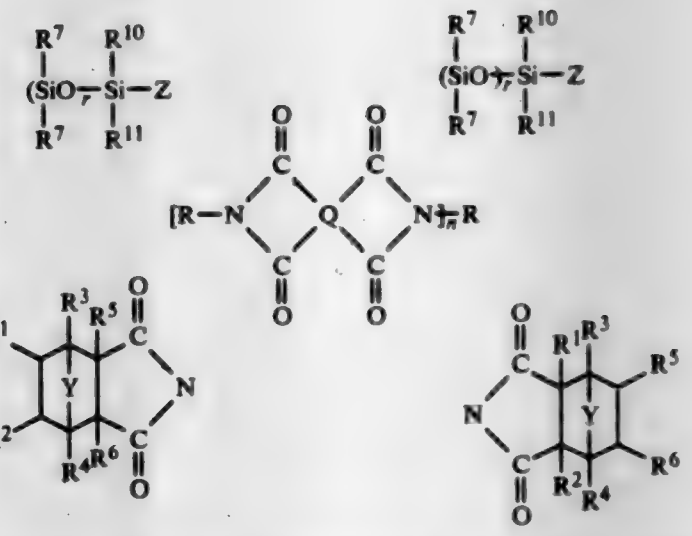
treating a sodium pyrithione solution with an effective amount of a selected reducing agent to prevent or reduce the discoloration, said reducing agent selected from the class consisting of alkali metal sulfites, alkali metal bisulfites, hydrazine, and mixtures thereof.

4,533,737
SILICON FUNCTIONALIZED NORBORNANE CARBOXYIMIDE AND METHODS FOR MAKING

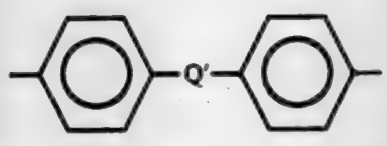
Hong-Son Ryang, Camarillo, Calif., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 2, 1984, Ser. No. 596,187
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.[3] C07F *7/10*
U.S. Cl. 548—110 8 Claims

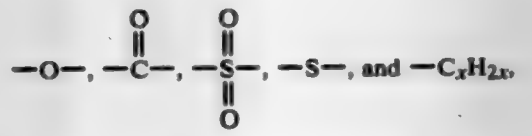
1. Silicon functionalized norbornane carboxyimides of the formula,



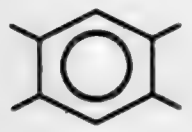
where R is a divalent radical selected from the class consisting of (a) aromatic hydrocarbon radicals having from 6–20 carbon atoms and halogenated aromatic hydrocarbon radicals having from 6–20 carbon atoms, (b) alkylene radicals having from 2–20 carbon atoms and cycloalkylene radicals having from 2–20 carbon atoms, (c) $C_{(2-8)}$ alkylene terminated polydiorganosiloxane, and (d) radicals included by the general formula,



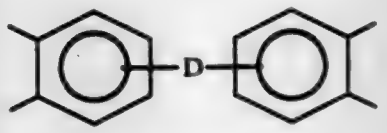
Q′ is a member selected from the class consisting of



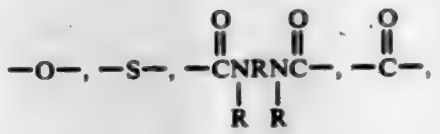
x is a whole number from 1 to 5 inclusive, Q is a tetravalent radical selected from



and

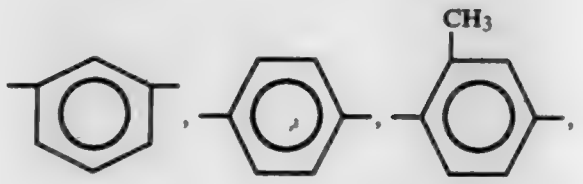


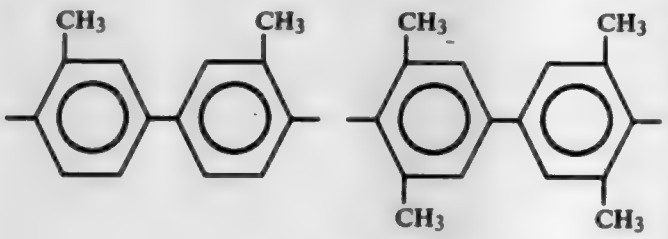
where D is a member selected from

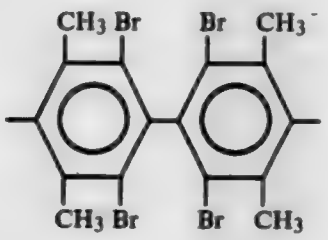


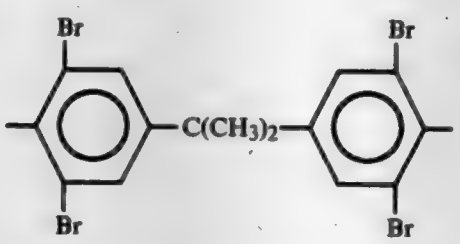


and R[8] is a divalent radical selected from

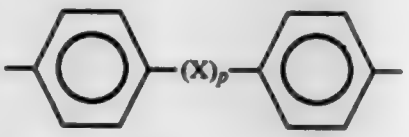








and divalent organic radicals of the general formula,



X is a member selected from the class consisting of divalent radicals of the formula,



y is an integer from 1 to 5, R^1–R^6 are selected from hydrogen and $C_{(1-8)}$ alkyl radicals, R^7 is the same or different $C_{(1-13)}$ monovalent hydrocarbon radical and substituted $C_{(1-13)}$ monovalent hydrocarbon radical, Y is a divalent radical selected from —O— and —$C(R^1)_2$—, Z is selected from $C_{(1-8)}$ alkoxy, acyloxy, halogen and amine, n is an integer equal to 0–200 inclusive, and p is equal to 0 or 1, and R^{10}–R^{11} are selected from Z or R^7.

4,533,738

NEW CEPHEM COMPOUNDS AND PROCESSES FOR PREPARATION THEREOF

Takao Takaya, Kawanishi; Yoshikazu Inoue, Amagasaki; Masayoshi Murata, Mino, and Hisashi Takasugi, Kohamanishi, all of Japan, assignors to Fujisawa Pharmaceutical Co., Ltd., Osaka, Japan

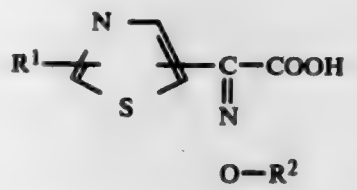
Division of Ser. No. 296,860, Aug. 27, 1981, Pat. No. 4,416,879. This application Aug. 16, 1983, Ser. No. 523,594

Claims priority, application United Kingdom, Sep. 8, 1980, 8028933

Int. Cl.³ C07D *417/12*

U.S. Cl. 548—194 **6 Claims**

1. A compound of the formula



wherein R^1 is amino or a protected amino group; and

R^2 is a saturated 4 to 8-membered heteromonocyclic group containing one sulfur atom selected from the group consisting of thietanyl, thiolanyl, thianyl, thiepanyl and thiocanyl, and a salt thereof.

4,533,739

2-[(AMINOPHENYL AND AMIDOPHENYL)AMINO]-1-AZACYCLOALKANES HAVING ANTIDIARRHEAL ACTIVITY

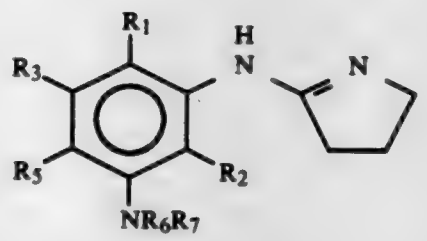
Barnett S. Pitzele, Skokie; Stella S. T. Yu, Morton Grove; Robert W. Hamilton, Wilmette, and Alan E. Moormann, Skokie, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Oct. 12, 1982, Ser. No. 433,922

Int. Cl.³ C07D *207/18*

U.S. Cl. 548—559 **4 Claims**

1. A compound of the formula:



wherein R_1, R_2, R_3, and R_5, each being the same or different, are:

(a) hydrogen;

(b) alkyl of 1 to 6 carbon atoms, inclusive; or

(c) halogen;

with the proviso that R_1 and R_2 are not hydrogen at the same time;

wherein R_6 and R_7, each being the same or different, are:

(a) hydrogen;

(b) alkyl of 1 to 6 carbon atoms, inclusive;

(c) alkoxycarbonyl of 2 to 7 carbon atoms, inclusive;

(d) aryloxycarbonyl of 6 to 12 carbon atoms, inclusive;

(e) alkylcarbonyl of 2 to 7 carbon atoms, inclusive;

(f) arylcarbonyl of 6 to 12 carbon atoms, inclusive;

(g) hydroxyalkoxycarbonyl of 3 to 7 carbon atoms, inclusive;

(h) haloalkylcarbonyl of 2 to 7 carbon atoms, inclusive; or the pharmaceutically acceptable salts; the compound being either hydrated or unhydrated

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4,533,740

β-LACTONE PROCESS

P. K. Wong, Katy, and Mark K. Dickson, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed May 14, 1984, Ser. No. 609,604

Int. Cl.³ C07D *305/14, 305/12*

U.S. Cl. 549—328 **2 Claims**

1. A process for converting an olefin selected from the group consisting of norbornene and isobutylene to the corresponding beta-lactone which comprises:

(a) reacting the olefin with bis(organonitrile)chloro-nitropalladium (II) in an organic aprotic solvent to form a metallocycle and

(b) reacting the metallocycle with carbon monoxide in an organic aprotic solvent to produce the beta-lactone.

4,533,741

4,5-DICHLORO-2,2,4,5,-TETRAFLUORO-1,3-DIOXOLANE

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Dupont De Nemours and Company, Wilmington, Del.

Division of Ser. No. 421,824, Sep. 23, 1982, Pat. No. 4,485,250. This application Oct. 9, 1984, Ser. No. 658,666

Int. Cl.³ C07D *13/04*

U.S. Cl. 549—455 **1 Claim**

1. 4,5-Dichloro-2,2,4,5-tetrafluoro-1,3-dioxolane.

4,533,742

PREPARATION OF 2-HYDROXYTETRAHYDROFURAN BY HYDROFORMYLATION OF ALLYL ALCOHOL USING KETONE SOLVENTS

Jiang-Jen Lin, Round Rock, and John F. Knifton, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Feb. 2, 1984, Ser. No. 576,509

Int. Cl.³ C07D *307/20*

U.S. Cl. 549—475 **11 Claims**

1. A process for preparing 2-hydroxytetrahydrofuran which comprises hydroformylating allyl alcohol by reaction with carbon monoxide and hydrogen in the presence of a rhodium carbonyl catalyst and a ketone solvent.

4,533,743

FURFURAL PROCESS

David J. Medeiros, Concord, and Mark B. Burnett, Moraga, both of Calif., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 16, 1983, Ser. No. 562,123

Int. Cl.³ C07D *307/50*

U.S. Cl. 549—489 **13 Claims**

1. A process for the production of furfural from pentosans comprising feeding an aqueous pentose solution containing 1 to 10 weight percent of pentoses into a plug flow reactor, feeding sufficient mineral acid into said plug flow reactor to make the acid normality of the water fed to the reactor to be between 0.05 and 0.2, operating said reactor in a manner such that the temperature of said reactor is between 220° C. and 300° C. and the residence times of said pentose is between 0.5 and 100 seconds and in a manner such that the concentration of pentose decreases progressively through the reactor and all fluid elements of said aqueous solution passing through said reactor have essentially the same residence times, and flowing an aqueous solution containing furfural from said plug flow reactor.

4,533,744

HYDROSILYLATION METHOD, CATALYST AND METHOD FOR MAKING

Robert E. Williams, Jr., Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Division of Ser. No. 527,538, Aug. 29, 1983, Pat. No. 4,503,160. This application Nov. 13, 1984, Ser. No. 670,250

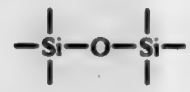
Int. Cl.³ C07F *7/08, 7/18*

U.S. Cl. 556—479 **6 Claims**

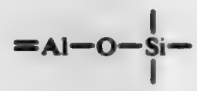
1. A hydrosilylation method which comprises effecting contact between a silicon hydride and an aliphatically unsaturated organic material in the presence of an effective amount of a platinum catalyst comprising a hydroxylated oxide of silicon or aluminum having a surface area of about 100 to 800 square meters per gram and 0.05% to 5% by weight of chemically combined platinum atoms, which hydroxylated oxide of silicon or aluminum is derivatized with a plurality of



groups attached to the surface hydroxylated oxide of silicon or aluminum by



linkages, or



linkages, respectively, and the platinum atoms are chemically combined to the surface of the hydroxylated oxide of silicon or aluminum through the derivatized groups by Pt—S linkages.

4,533,745

AMINO KETONES AND THEIR PREPARATION

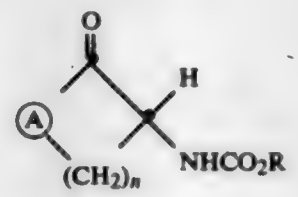
David E. McClure, Lansdale, Pa., assignor to Merck & Co., inc., Rahway, N.J.

Filed Dec. 8, 1980, Ser. No. 213,980

Int. Cl.³ C07C *105/06*

U.S. Cl. 560—28 **2 Claims**

1. A compound having the formula



wherein A is phenyl or substituted phenyl group, n is 1-3 and R is C_1-C_6 alkyl.

4,533,746

2-METHOXY-4-(2-METHYLPROPENYL) PHENYL ESTER OF ISOBUTYRIC ACID, FLAVOR USE THEREOF AND PROCESS FOR PREPARING SAME

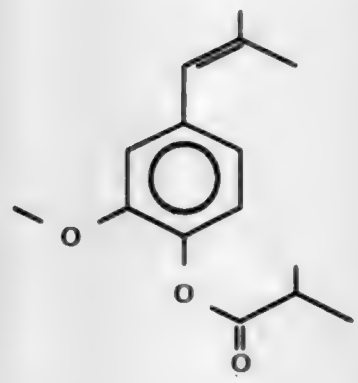
Richard A. Wilson, Westfield; Michael J. Zampino, North Bergen; David R. Bowen, Red Bank, and Domenick Luccarelli, Jr., Neptune, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 505,411, May 16, 1983, Pat. No. 4,473,588. This application Jun. 22, 1984, Ser. No. 623,460

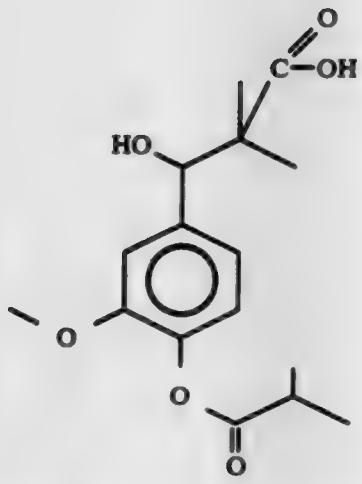
Int. Cl.³ C07C *67/08, 69/035*

U.S. Cl. 560—144 **2 Claims**

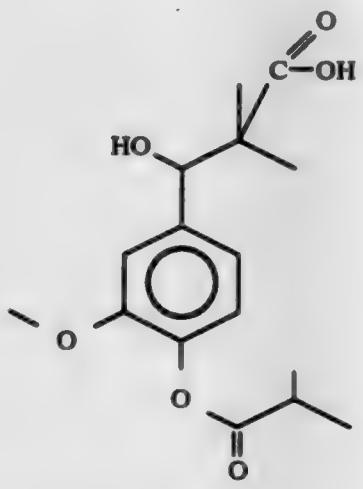
1. The process for preparing the compound having the structure:



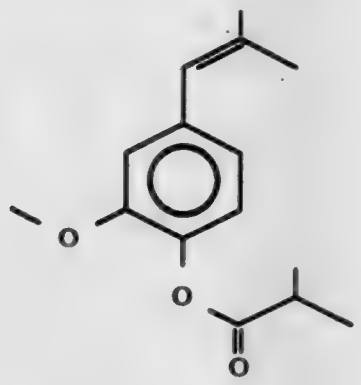
comprising the step of reacting isobutyric anhydride with vanillin thereby yielding a compound having the structure:



and then decarboxylating the compound having the structure:



to yield the compound having the structure:



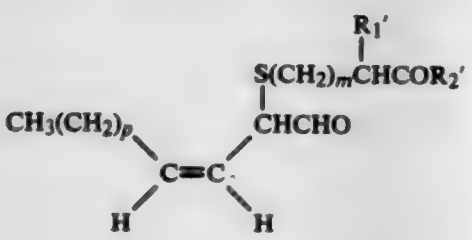
4,533,747

LEUKOTRIENE ANTAGONISTS INTERMEDIATES

John G. Gleason, Delran; Ralph F. Hall, Robbinsville, both of N.J., and Thomas W. Ku, Dresher, Pa., assignors to Smith-Kline Beckman Corporation, Philadelphia, Pa.

Filed Mar. 7, 1983, Ser. No. 472,772
Int. Cl.[3] C07C *149/20, 149/23;* A61K *31/16, 31/185*
U.S. Cl. 560—152 3 Claims

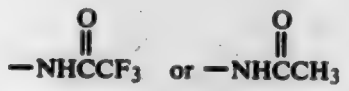
1. A compound represented by the structural formula (I)



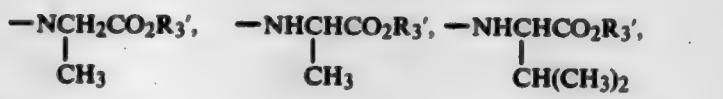
(I)

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wherein m is 0, 1 or 2; p is 9, 10, 11, 12 or 13; R_1' is hydrogen,



and R_2' is amino, $-NHCH_2CO_2R_3'$,



$-NHCH_2CONH_2$ or $-OR_3'$ wherein R_3' is an alkyl radical containing one to six carbon atoms with the proviso that when m is 0, R_1' is hydrogen.

4,533,748

PROCESS FOR THE OPTICAL RESOLUTION OF THE DL-α-HYDROXY-3-(4-METHOXYPHENYL)-3-(2-AMINO-PHENYLTHIO)PROPIONIC ACID

Elso Manghisi, and Giuseppe Cascio, both of Monza, Italy, assignors to Istituto Luso Farmaco D'Italia s.p.a., Milan, Italy

Filed Oct. 7, 1983, Ser. No. 539,840
Claims priority, application Italy, Oct. 15, 1982, 23769 A/82
Int. Cl.[3] C07D *281/02;* C07C *149/20*
U.S. Cl. 562—401 4 Claims

1. A process for the preparation of the d- or l-isomer of the α-2-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)propionic acid having formula I, through optical resolution of the dl racemic compound, characterized in that the dl-α racemic compound is satisfied with L-lysine, the two optically active salts are separated by fractional crystallization and the corresponding optically active acids are obtained by treatment with diluted organic or inorganic acids.

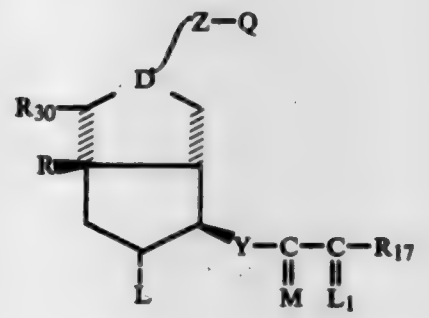
4,533,749

9-SUBSTITUTED CARBACYCLIN ANALOGS

Paul A. Aristoff, Portage, and John C. Sih, Kalamazoo, both of Mich., assignors to The Upjohn Company, Kalamazoo, Mich.

Filed Feb. 16, 1982, Ser. No. 349,122
Int. Cl.[3] C07C *177/00, 57/26*
U.S. Cl. 562—501 9 Claims

1. A compound of the formula



wherein R is C_1-C_4 alkyl; R_{30} is hydrogen or R_{30} and R taken together form a methylene moiety;

wherein D is cis>C=C(R_3)—, trans>C=C(R_3)— or >$CHCH_2$, wherein R_3 is hydrogen or fluoro; wherein Z is:

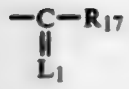
(1) $—CH_2—(CH_2)_f—C(R_4)_2—$ wherein each R_4 is the same and is hydrogen or fluoro, and f is zero, one, 2 or 3;

(2) trans—CH_2—CH=CH—; or

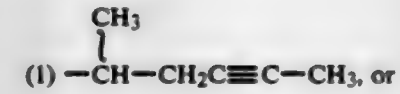
(3) —(PH)—$(CH_2)_g$— wherein Ph is 1,2—, 1,3—, or 1,4-phenylene and g is zero, one, 2 or 3; with the proviso that when Z is —(Ph)—$(CH_2)_g$—, R_3 is hydrogen;

wherein Q is

(1) —$COOR_5$, wherein R_5 is
(a) hydrogen,
(b) (C_1–C_{12})alkyl,
(c) (C_3–C_{10})cycloalkyl,
(d) (C_7–C_{12})aralkyl,
(e) phenyl optionally substituted with one, 2 or 3 chloro or (C_1–C_4)alkyl,
(f) phenyl substituted in the para-position with —NH-COR_6, —COR_7, —$OC(O)R_8$ or —CH=N—NH-$CONH_2$, wherein R_6 is methyl, phenyl, acetamidophenyl, benzamidophenyl or —NH_2; R_7 is methyl, phenyl, —NH_2, or methoxy; and R_8 is phenyl or acetamidophenyl;
(g) phthalidyl,
(h) 3-(5,5-dimethyl-1,3,2-dioxaphosphorinan-2-yl)-2-oxopropan-1-yl P-oxide,
(i) 3-(5,5-di(hydroxymethyl)-1,3,2-dioxaphosphorinan-2-yl)-2-oxopropan-1-yl P-oxide, or
(j) a pharmacologically acceptable cation;
(2) —CH_2OH;
(3) —COL_2, wherein L_2 is
(a) an amino group of the formula —NR_9R_{10} wherein R_9 is hydrogen or (C_1—C_{12})alkyl and R_{10} is
(i)hydrogen
(ii) (C_1–C_{12})alkyl
(iii) (C_3–C_{10})cycloalkyl,
(iv) (C_7–C_{12})aralkyl
(v) phenyl optionally substituted with one, 2 or 3 chloro, (C_1–C_3)alkyl, hydroxy, carboxy, (C_2–C_5)alkoxycarbonyl, or nitro,
(vi) (C_2–C_5)carboxyalkyl,
(vii) (C_2–C_5)carbamoylalkyl,
(viii) (C_2–C_5)cyanoalkyl,
(ix) (C_3–C_6)acetylalkyl,
(x) (C_7–C_{12})benzoalkyl, optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, hydroxy, (C_1–C_3)alkoxy, carboxy, (C_2–C_5)-alkoxycarbonyl, or nitro,
(ix) pyridyl, optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, or (C_1–C_3)alkoxy,
(xii) (C_6–C_9)pyridylalkyl optionally substituted by one, 2, or 3 chloro, (C_1–C_3)alkyl, hydroxy, or (C_1–C_3)alkyl,
(xiii) (C_1–C_4)hydroxyalkyl,
(xiv) (C_1–C_4)dihydroxyalkyl,
(xv) (C_1–C_4)trihydroxyalkyl;
(b) cycloamine selected from the group consisting of pyrolidino, piperidino, morpholino, piperazino, hexamethyleneimino, pyrroline, or 3,4-didehydropiperidinyl optionally substituted by one or 2 (C_1–C_{12})alkyl;
(c) carbonylamino of the formula —$NR_{11}COR_{10}$, wherein R_{11} is hydrogen or (C_1–C_4)alkyl and R_{10} is other than hydrogen, but otherwise defined as above;
(d) sulfonylamino of the formula —$NR_{11}SO_2R_{10}$, wherein R_{11} and R_{10} are defined in (c);
(4) —$CH_2NL_3L_4$, wherein L_3 and L_4 are hydrogen or (C_1–C_4)alkyl, being the same or different, or the pharmacologically acceptable acid addition salts thereof when Q is —$CH_2NL_3L_4$; or
(5) —CN;
wherein L is H,H; α—OR_{12},β—H; αH,β—OR_{12}; α—CH_2OR_{12},β—H; α—H,β—CH_2OR_{12} wherein R_{12} is hydrogen or a hydroxyl protective group;
wherein Y is trans —CH=CH—, cis—CH=CH—, —CH_2CH_2—, or —C≡C—;
wherein M is α—OR_{12},β—R_{14}; or α—R_{14}, β—OR_{12}, wherein R_{12} is as defined above, and R_{14} is hydrogen or methyl;
wherein L_1 is α—R_{15},β—R_{16}; α—R_{16},β—R_{15}; or a mixture thereof wherein R_{15} and R_{16} are hydrogen, methyl, or fluoro being the same or different with the proviso that one of R_{15} and R_{16} is fluoro only when the other of R_{15} and R_{16} is hydrogen or fluoro; wherein



taken together is



(1) —$CH(CH_3)CH_2C{\equiv}CCH_3$, or

(2) —$C{\equiv}C—C_qH_{2q}CH_3$ where q is an integer of from 2 to 6, and individual optical isomers thereof.

4,533,750

PROCESS FOR ISOLATING METHACRYLIC ACID BY EXTRACTION

Hiroshi Matsumura; Masato Otani, and Fumiki Murakami, all of Otake, Japan, assignors to Mitsubishi Rayon Co. Ltd., Tokyo, Japan

Filed Jul. 17, 1980, Ser. No. 169,808
Claims priority, application Japan, Jul. 19, 1979, 54-91991
Int. Cl.³ C07C *51/48, 57/05, 57/055*
U.S. Cl. 562—600 **4 Claims**

1. A process for isolating methacrylic acid by solvent extraction from an aqueous methacrylic acid solution obtained from a gas phase catalytic oxidation reaction, which comprises:
contacting and mixing the said aqueous methacrylic acid solution with an extraction solvent precipitating and removing polymeric material from said mixture, decanting said mixture from which polymeric material has been removed, to form an organic phase and an aqueous solution, extracting methacrylic acid from said latter aqueous solution with an extraction solvent in an extraction column, removing a solvent phase from said extraction column, and recovering the methacrylic acid from said solvent.

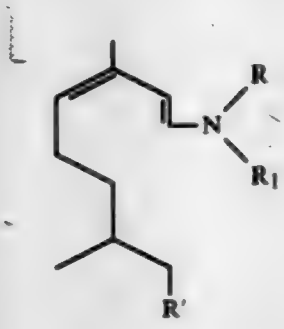
4,533,751

PREPARATION OF 1,3-DIENAMINES FROM MYRCENE AND SUBSTITUTED MYRCENE

Leon Cherney; Charles R. Gorman, both of Orange Park; Sean G. Traynor, and Carlos G. Cardenas, both of Jacksonville, all of Fla., assignors to SCM Corporation, New York, N.Y.

Filed Oct. 9, 1981, Ser. No. 310,051
Int. Cl.³ C07C *85/18*
U.S. Cl. 564—408 **14 Claims**

1. A process for preparing a 1,3-dienamine having the general formula:



wherein —R and —R_1 are independently selected from methyl, ethyl, n-propyl, isopropyl, n-butyl, sec.-butyl, tert.-butyl, amyl, and —R—R_1—, and R′ is selected from hydrogen and C_1–C_{10} alkyl and alkenyl groups, by reacting in the liquid phase a polyene hydrocarbon having the general formula:



wherein R′ is as defined above with a secondary amine selected from dialkyl amines or alkylene cyclic secondary amines wherein the alkyl or alkylene group contains from 1 to 5 carbon atoms, at a temperature in the range of from −20° C. to 150° C. and in the presence of a catalytic amount of the corresponding alkali metal amide ion of said secondary amine for a period of time between about 20 minutes and about 50 hours effective to produce said dienamine, the mole ratio of said secondary amine to said polyene being greater than 1:1 and up to about 10:1, and recovering the dienamine from the reaction mass.

4,533,752

PROCESS FOR REDUCING AROMATIC COMPOUNDS IN ETHYLENEDIAMINE WITH CALCIUM

Robert A. Benkeser, West Lafayette, Ind.; James A. Laugal, Lostant, Ill., and Angela Rappa, Baltimore, Md., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 23, 1984, Ser. No. 643,442
Int. Cl.³ C07C *5/10*
U.S. Cl. 564—428 **18 Claims**

1. A method for reducing an organic compound having at least one benzene ring and obtaining therefrom a cyclic olefin having the same structure as such organic compound except for degree of unsaturation, which comprises contacting such organic compound with a reaction mixture comprising ethylenediamine and calcium metal at a temperature between about −10° C. and about 100° C., for a period of time sufficient to effect the said reduction, the proportion of calcium metal to such organic compound being at least about 10% in excess of the stoiohiometric quantity necessary for complete reduction of such benzene ring, the said reaction medium also including, when the excess of calcium is less than 100%, an inert abrasive particulate substance, whereby a cyclic olefin is obtained having at least one double bond and having a second double bond when the benzene ring bears a substituent hindering the said reduction.

4,533,753

(HYDROCARBYLTHIO)PHENOLS AND THEIR PREPARATION

Bonnie G. McKinnie, and Paul F. Ranken, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Continuation-in-part of Ser. No. 430,553, Sep. 30, 1982, now Re. 31,771. This application Apr. 12, 1983, Ser. No. 484,338
The portion of the term of this patent subsequent to Apr. 13, 1999, has been disclaimed.
Int. Cl.³ C07C *148/00, 149/36*
U.S. Cl. 568—47 **24 Claims**

1. A process for the preparation of substituted phenols which comprises reacting a phenol having at least two positions available for substitution on a phenolic ring with an excess of a hydrocarbyl disulfide in the presence of an aluminum phenoxide catalyst so that (hydrocarbylthio)phenol is prepared containing at least two hydrocarbylthio groups on a phenolic ring, the molar ratio of said catalyst relative to said disulfide being between about 0.002 and 0.3.

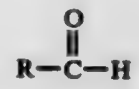
4,533,754

PREPARATION OF ALDEHYDES FROM ARYL ACID HALIDES AND ORGANOZINC COMPOUNDS WITH COMPLEX PALLADIUM CATALYSTS

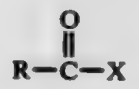
Roger A. Grey, West Chester, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Jul. 23, 1984, Ser. No. 633,546
Int. Cl.³ C07C *45/00*
U.S. Cl. 568—437 **18 Claims**

1. A process for the preparation of an aldehyde of the formula



wherein R is a substituted or unsubstituted aryl group containing one or more benzenoid rings which may be fused or joined by single valency bonds, said substituents being selected from halides, alkyl, aryl, nitro, cyano, amido, keto or alkoxy groups, which comprises reacting in a solvent at a temperature of from about −78° C. to 200° C., an organic acid halide of the formula



wherein R is as hereinabove described, and X is a halide, with an organozinc compound of the formula $(R')_2Zn$ or $R'ZnX$ wherein R′ is a straight or branched chain alkyl group containing from 2 to 20 carbon atoms and X is a halide, in the presence of a palladium metal complex catalyst selected from $(Ph_3P)_2PdCH_2Ph(Cl)$, $(Ph_3As)_4Pd$ or $(Ph_3P)_4Pd$.

4,533,755

PROCESS FOR THE HYDROFORMYLATION OF OLEFINS

Boy Cornils, Dinslaken; Josef Hibbel, Oberhausen; Gunther Kessen, Oberhausen; Werner Konkol, Oberhausen; Bernhard Lieder, Bottrop; Ernst Wiebus, Oberhausen; Heinz Kalbfell, Schermbeck, and Hanswilhelm Bach, Duisburg, all of Fed. Rep. of Germany, assignors to Ruhrchemie Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,788
Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245883
Int. Cl.³ C07C *45/50, 27/20*
U.S. Cl. 568—454 **9 Claims**

1. A method for the hydroformylation of an olefin having 2 to 5 carbon atoms comprising

(a) subjecting said olefin to a low pressure hydroformylation reaction with synthesis gas in the presence of a water-soluble phosphine-rhodium catalyst to yield a first product and a waste gas, said waste gas containing an unreacted portion of said olefin,

(b) recovering and compressing said waste gas, and

(c) subjecting the compressed waste gas to a high pressure hydroformylation reaction in the presence of a cobalt catalyst.

4,533,756

PROCESS FOR SYNTHESIS OF ACRYLIC ACID PRECURSORS VIA HYDROFORMYLATION OF VINYL ETHER

Jiang-Jen Lin, Round Rock, and Walter H. Brader, Jr., Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Nov. 7, 1983, Ser. No. 548,909
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **12 Claims**

1. A process for preparing acrylic acid precursors which comprises the steps of contacting a vinyl ether selected from

the group consisting of n-butyl vinyl ether, vinyl phenyl ether, ethyl vinyl ether, vinyl ether, vinyl methyl ether, and vinyl sec-butyl, ether, carbon monoxide and hydrogen with a catalyst system comprising a rhodium-carbonyl compound and a phosphine ligand selected from the group consisting of

triphenylphosphine, tri-n-butylphosphine and

1,1'-bis(diphenylphosphine)ferrocene, heating resultant reaction mixture under a pressure of 100 psi to 1000 psi at a temperature of 50° C. to about 150° C. and isolating said precursors of the group including 2- and 3-ethoxypropanal.

4,533,757

CONTINUOUS HYDROFORMYLATION OF OLEFINICALLY UNSATURATED COMPOUNDS

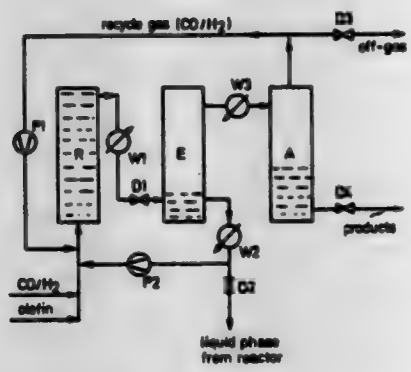
Rudolf Kummer, Frankenthal; Wolfgang Richter, Ludwigshafen; Kurt Schwirten, Frankenthal, and Peter Stops, Altrip, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 570,988

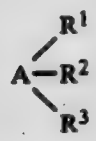
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301591

Int. Cl.³ C07C *45/50*

U.S. Cl. 568—454 **12 Claims**



1. In a process for the manufacture of aldehydes and alcohols by continuous hydroformylation of an olefinically unsaturated compound having up to 12 carbon atoms with carbon monoxide and hydrogen, said process being carried out in a hydroformylation reactor under a pressure from 2 to 30 bar and at a temperature from 80° to 130° C. in the presence of a rhodium complex catalyst which contains, as ligands, sparingly volatile compounds of the formula



I

where A is phosphorus, arsenic, antimony or bismuth and R^1, R^2 and R^3 are each organic radicals and by subsequent separation of said aldehydes and alcohols from the hydroformylation reaction mixture, the improvement which comprises:

introducing the hydroformylation mixture as a crude reaction product consisting of both its liquid and gaseous components from the reactor into a devolatilization column;

devolatilizing said mixture in said column for a short time at a temperature which is higher and/or at a pressure which is lower than that prevailing in the hydroformylation reactor, and at the same time separating said reaction mixture in said column into a gas phase and a liquid phase;

cooling the gas phase from said column and conducting it to a separator to recover (a) a liquid product containing the produced aldehydes and alcohols and (b) a recycle gas; and

recycling part of the gas from said separator to said reactor after removing a waste gas therefrom, and also recycling at least part of the liquid phase from the devolatilization column to said reactor.

4,533,758

ALKYLATION OF PHENOLS TO ALKYL ARYL ETHERS USING PHOSPHATE CATALYSTS

James E. Wells, Ardmore, Pa., and Victoria Eskinazi, Cleveland Heights, Ohio, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Continuation-in-part of Ser. No. 440,133, Nov. 8, 1982, Pat. No. 4,450,306, and a continuation-in-part of Ser. No. 381,232, May 24, 1982,. This application Jan. 19, 1984, Ser. No. 572,098

Int. Cl.³ C07C *41/09*

U.S. Cl. 658—630 **17 Claims**

1. In a method for the alkylation of phenols by alcohols to yield alkyl aryl ethers, the improvement which comprises: carrying out the reaction at a temperature between 250° C.–350° C. in the presence of a catalyst selected from the group consisting of the pyrophosphate, monohydrogen phosphate and dihydrogen phosphate of strontium, copper, magnesium, calcium, barium, zinc, lanthanum, aluminum, cobalt, nickel, cerium and neodymium and mixtures thereof.

4,533,759

PROCESS FOR THE PRODUCTION OF FRAGRANCE QUALITY ETHYLENE GLYCOL MONOARYL ETHERS

Eugene G. Harris, West Chester, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 367,128, Apr. 9, 1982, abandoned. This application Jul. 6, 1984, Ser. No. 628,557

Int. Cl.³ C07C *41/34, 41/03*

U.S. Cl. 568—648 **9 Claims**

1. An improved process for the preparation of ethylene glycol monoaryl ethers which comprises combining 0.01 to 1.0 wt. percent alkali metal hydroxide and 0.01 to 1 weight percent alkali metal borohydride with a phenolic compound of the formula



where R' and R'' are hydrogen or an alkyl, alkenyl or alkoxyl group having from 1 to 8 carbon atoms, said phenol maintained at a temperature above its melting point, reacting with essentially one molar equivalent ethylene oxide at a temperature from 100° C. to 150° C. and pressure from atmospheric up to 1000 psi, neutralizing to a pH of 6.5–7.5 with an aliphatic di- or higher polycarboxylic acid or hydroxyaliphatic carboxylic acid and removing any insoluble salts.

4,533,760

PROCESS FOR REDUCING ORGANIC COMPOUNDS WITH CALCIUM, AMINE, AND ALCOHOL

Robert A. Benkeser, West Lafayette, Ind.; James A. Laugal, Lostant, Ill., and Angela Rappa, Baltimore, Md., assignors to Purdue Research Foundation, West Lafayette, Ind.

Filed Aug. 23, 1984, Ser. No. 643,649

Int. Cl.³ C07C *5/10*

U.S. Cl. 568—667 **17 Claims**

1. A method for reducing an organic compound having at least one benzene ring and obtaining therefrom a cyclic olefin having the same structure as such organic compound except for degree of unsaturation, which comprises contacting such organic compound with a reaction mixture comprising calcium metal, ethylenediamine, and a low molecular weight aliphatic alcohol at a temperature of about −10° C. to about 30° C., for a period of time sufficient to effect the said reduction, the proportion of calcium metal to such organic compound being

at least about 10% in excess of the stoichiometric quantity necessary for complete reduction of such benzene ring, whereby a cyclic polyolefin is obtained having at least two double bonds.

4,533,761

METHOD FOR PREPARING BUTENE DIETHERS

Marvin L. Peterson, Woodstown, N.J., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 519,212, Aug. 2, 1983, abandoned, which is a continuation of Ser. No. 359,044, Mar. 17, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,317

Int. Cl.³ C07C *41/06*

U.S. Cl. 568—673 **2 Claims**

1. In a process for preparing a butene diether represented by the structure

$$RO-CH_2-CH=CH-CH_2-OR$$

or

$$RO-CH_2-\underset{\displaystyle H}{\overset{\displaystyle OR}{\underset{|}{\overset{|}{C}}}}-CH=CH_2$$

where R is a linear or branched alkyl radical of 1–4 carbon atoms, from 1,3-butadiene and a linear or branched alkanol of 1–4 carbon atoms, the use of a catalyst system consisting of an alkali metal iodide and copper compounds, which are copper halides or copper salts of organic acids and which will provide copper ions having an average oxidation state of 1–2.

4,533,762

PREPARATION OF CHLOROTRIFLUOROETHYLENE TELOMERS WITH BISFLUOROXYDIFLUOROMETHANE

Donald H. Campbell, Niagara-on-the-Lake, Canada; Michael J. Fifolt, and Mohan S. Saran, both of Grand Island, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 24, 1983, Ser. No. 545,018

Int. Cl.³ C07C *179/00, 43/00*

U.S. Cl. 568—677 **8 Claims**

1. A process for producing telomers consisting essentially of reacting chlorotrifluoroethylene with bisfluoroxydifluoromethane.

4,533,763

HYDROXY AROMATIC COMPOUNDS FROM ALKALI METAL HYDROXIDE AND MONONUCLEAR AROMATIC COMPOUND

Barton Milligan, Coplay, and George B. DeLaMater, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 14, 1983, Ser. No. 561,615

Int. Cl.³ C07C *39/02*

U.S. Cl. 568—716 **7 Claims**

1. In a process for forming a mono hydroxy mononuclear aromatic compound by reacting a mononuclear aromatic compound with a hydroxyl providing agent under conditions effective for forming a hydroxy mononuclear aromatic compound, the improvement which comprises:

forming an intermediate reaction product of a benzene, toluene or xylene by effecting reaction between said benzene, toluene or xylene and an alkali metal hydroxide, said reaction carried out at a temperature from 200°–300° C. in the presence of a metallic hydrogenation catalyst, said catalyst being present in an amount effective for catalyzing the reaction between the alkali metal hydroxide and benzene, toluene or xylene; and

adding an aqueous mineral acid to the intermediate reaction product in sufficient amount to liberate the hydroxy mononuclear aromatic compound.

4,533,764

PURIFICATION OF BISPHENOLS BY REMOVING RESIDUAL SOLVENT

Feng-Chih Chang; Susan A. Wernli, and David E. Busby, all of Lake Jackson, Tex., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 29, 1984, Ser. No. 594,963

Int. Cl.³ C07C *37/84*

U.S. Cl. 568—724 **7 Claims**

1. A process for purifying a bisphenol to remove small amounts of organic solvent remaining from a crystallization which comprises (a) adding bisphenol crystals containing said solvent to water maintained at a temperature which will produce a water-bisphenol molten phase, (b) maintaining that temperature for a period of time sufficient to permit the organic solvent to transfer to said water, (c) flash distilling substantially all of said solvent away from said water, (d) cooling said molten bisphenol-water phase to precipitate the crystalline bisphenol, and (e) separating said crystalline bisphenol from said water and (f) drying said crystalline bisphenol.

4,533,765

POLYHYDROXY AROMATIC COMPOUNDS FROM ALKALI METAL HYDROXIDE AND MONONUCLEAR AROMATIC COMPOUNDS

Barton Milligan, Coplay, and George B. DeLaMater, Macungie, both of Pa., assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Dec. 7, 1983, Ser. No. 559,078

Int. Cl.³ C07C *37/00, 39/10*

U.S. Cl. 568—763 **6 Claims**

1. In a process for forming a polyhydroxy aromatic compound by reacting a hydroxymononuclear aromatic compound with a hydroxyl providing agent under conditions effective for forming said polyhydroxy mononuclear aromatic compound, the improvement which comprises:

utilizing rescorcinol or phenol as said hydroxy mononuclear aromatic compound;

forming a salt of a polyhydroxy aromatic compound by effecting reaction between said phenol or rescorcinol and an alkali metal hydroxide at a temperature from 300° to 400° C., said reaction carried out in the presence of a nickel or cobalt metallic hydrogenation catalyst, said catalyst being present in an amount effect catalyzing the reaction between the alkali metal hydroxide the phenol or rescorcinol;

adding a protonating agent to the salt of the polyhydroxy aromatic compound in sufficient amount to libera the polyhydroxy aromatic compound.

4,533,766

PROCESS FOR THE PRODUCTION OF DIHYDROXYBENZENES

Karlheinz Drauz, Freigericht, and Axel Kleemann, Hanau, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Mar. 8, 1984, Ser. No. 587,654

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1983, 3308769

Int. Cl.³ C07C *37/00*

U.S. Cl. 568—771 **30 Claims**

1. A process for the production of a substituted dihydroxybenzene, a hydroxy alkoxy benzene, a substituted hydroxy alkoxy benzene, a dihydroxy anthracene, a dihydroxy naphthalene, a dihydroxy alkyl naphthalene, a hydroxynaphthyl ether, a hydroxyphenanthryl ether, a hydroxyanthracenyl ether or a dihydroxy phenanthrene by nuclear hydroxylation of phenol with hydrogen peroxide in a substantially water-free organic solvent in the presence of a catalyst comprising reacting an

alkyl phenol, an aryl phenol, a halophenol, an alkoxyphenol, an alkoxy benzene, an alkyl phenol alkyl ether, a naphthol, a hydroxy anthracene, a hydroxy 1 to 4 carbon alkyl naphthalene, a hydroxy phenylnaphthalene, a hydroxy methoxynaphthalene, a cyclohexyl phenol, or a hydroxy phenanthrene with hydrogen peroxide in a solution in substantially water-free organic solvent which solvent forms an azeotrope with water, the boiling point of the azetrope being below the boiling point of hydrogen peroxide, based on normal pressure, said reaction being carried out in the presence of sulfur dioxide as a catalyst.

4,533,767

CATALYTIC HYDRODEALKYLATION OF ALKYLATED PHENOLS

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 3, 1984, Ser. No. 606,438
Int. Cl.³ C07C *37/50, 37/48*
U.S. Cl. 568—805 **25 Claims**

1. A method of removing one or more alkyl radicals that are ortho or para positioned with respect to the hydroxyl radical of alkylated phenols with substantially no dehydroxylation comprising reacting an alkylated phenol with steam in the presence of a catalyst comprising magnesium oxide and an oxidizing atmosphere at a temperature in the range of about 400° to 675° C., said alkylated phenols having at least one alkyl radical either ortho-positioned or para-positioned to the hydroxyl radical, the alkyl radicals of said alkylated phenols having from 1 to 6 carbon atoms.

4,533,768

ZINC OXIDE CATALYZED DEALKYLATION OF ALKYLATED PHENOLS

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 3, 1984, Ser. No. 606,504
Int. Cl.³ C07C *37/50*
U.S. Cl. 568—805 **20 Claims**

1. A method of removing one or more alkyl groups containing 1–6 carbon atoms from the aromatic nucleus of alkylated phenols that are ortho-positioned or para-positioned with respect to the hydroxy group with substantially no dehydroxylation comprising reacting an alkylated phenol with steam in the presence of a catalyst comprising zinc oxide and an oxidizing atmosphere at a temperature in the range of about 400° to 675° C., said alkylated phenols having at least one alkyl radical of from 1 to 6 carbon atoms either ortho-positioned or para-positioned to the hydroxyl radical.

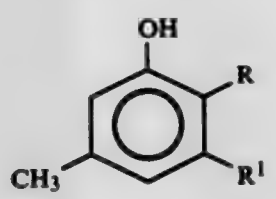
4,533,769

METHOD OF MAKING METHYLATED PHENOL FROM METHYLATED CYCLOHEXENEONE

John J. Talley, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed May 24, 1984, Ser. No. 613,545
Int. Cl.³ C07C *37/07, 37/00*
U.S. Cl. 568—806 **3 Claims**

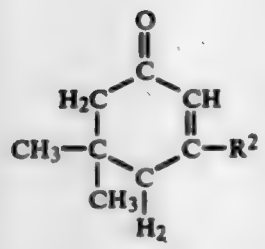
1. A method for making a methylated phenol having the formula,



(1)

which comprises

(1) pyrolyzing at a temperature in the range of from 300° C. to 700° C., a polymethylated cyclohexene-1-one having the formula



(2)

in the presence of an effective amount of a demethanation catalyst consisting essentially of the calcination residue of a mixture of magnesium carbonate and/or magnesium hydroxide and a manganese compound

(2) recovering the methylated phenol from the mixture of (1),

where R is a member selected from hydrogen or methyl, R^1 is a member selected from hydroxy, —OR^3 and methyl, R^2 is selected from methyl and —OR^3 and R^3 is a $C_{(1-6)}$ alkyl radical.

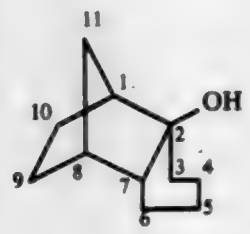
4,533,770

2-EXO-HYDROXY-ENDO-TRICYCLO[6.2.1.0^{2,7}]UNDECANE

Naotake Takaishi, Utsunomiya; Hitoshi Takahashi, Ichikaimachi, and Yoshiaki Inamoto, Utsunomiya, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 3, 1984, Ser. No. 627,553
Claims priority, application Japan, Jul. 15, 1983, 58-129233
Int. Cl.³ C07C *35/22*
U.S. Cl. 568—817 **1 Claim**

1. 2-Exo-hydroxy-endo-tricyclo[6.2.1.0^{2,7}]undecane represented by the following formula (I):



(I)

4,533,771

PROCESS FOR THE PREPARATION OF TRIFLUOROETHANOL

Georges Cordier, Francheville, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Apr. 5, 1984, Ser. No. 596,938
Claims priority, application France, Apr. 21, 1983, 83 06530
Int. Cl.³ C07C *29/136, 31/38*
U.S. Cl. 568—842 **18 Claims**

1. A process for the preparation of trifluoroethanol by the hydrogenation of trifluoroacetic acid in the liquid phase, which comprises the steps of:

reacting hydrogen with trifluoroacetic acid in the liquid phase in a reactor in the presence of a catalyst based on a metal selected from the group consisting of ruthenium, rhodium, iridium and platinum, under a total pressure of between 5 and 50 bar, the ratio of the volume of the liquid phase used in the reactor to the total volume of the reactor being more than about ½; and

maintaining an absolute partial pressure of hydrogen of more than 1 bar during the reaction.

4,533,772

PROCESS FOR DIRECTLY HYDROXYLATING OLEFINS USING AN OSMIUM-HALIDE CATALYST AND OXYGEN OXIDANT

Robert C. Michaelson, Waldwick, and Richard G. Austin, Ridgewood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 310,217, Oct. 9, 1981, abandoned. This application Aug. 29, 1983, Ser. No. 527,352

Int. Cl.³ C07C *29/03, 35/06, 35/14, 35/20*

U.S. Cl. 568—860 45 Claims

1. A process for hydroxylating at least one olefinic compound having at least one ethylenic unsaturation which comprises reacting said olefinic compound in admixture with water, a molecular oxygen containing oxidant, and an unsupported catalyst composition comprising (i) at least one catalyst (a) being capable of catalyzing said hydroxylation reaction, and (b) being initially added to said admixture as at least one osmium-halide; and (ii) a copper containing co-catalyst; said reaction being conducted in a manner and under conditions sufficient to convert at least one of said ethylenic unsaturation to its corresponding diol.

4,533,773

PROCESS FOR HYDROXYLATING OLEFINS IN THE PRESENCE OF AN OSMIUM OXIDE CATALYST AND CARBOXYLATE SALT CO-CATALYST

Robert C. Michaelson, Waldwick, and Richard G. Austin, Ridgewood, both of N.J., assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 394,414, Jul. 1, 1982, abandoned. This application Mar. 22, 1984, Ser. No. 592,284

Int. Cl.³ C07C *29/04, 31/18, 31/22, 31/42*

U.S. Cl. 568—860 10 Claims

1. A process for hydroxylating olefins which comprises reacting at least one olefinic compound having at least one ethylenic unsaturation and which is not a carboxylic acid or salt thereof, with at least one organic hydroperoxide and water in the presence of a catalyst composition under conditions and in a manner sufficient to convert at least one of said ethylenic unsaturation to its corresponding vicinal diol, said catalyst composition comprising:

(a) at least one unsupported osmium oxide capable of catalyzing said hydroxylation reaction; and

(b) as a co-catalyst at least one organic carboxylate salt having a cation and an anion, said cation being selected from the group consisting of tetrahydrocarbyl phosphonium and cations of Fe, Co, Ni, Cu, and Mn; said co-catalyst being capable of increasing at least one of the rate and selectivity of the hydroxylation reaction to product diol relative to the rate and selectivity in the absence of said co-catalyst.

4,533,774

PROCESS FOR THE PRODUCTION OF ETHYLENE GLYCOL

Colin G. Griggs, Ashford, England, assignor to The British Petroleum Company p.l.c., London, England

Filed Nov. 23, 1983, Ser. No. 554,846

Claims priority, application United Kingdom, Nov. 27, 1982, 8233896

Int. Cl.³ C07C *31/20, 29/00*

U.S. Cl. 568—866 9 Claims

1. In a process for the production of ethylene glycol by reacting at elevated temperature methanol, formaldehyde, and an organic peroxide having the formula R—O—O—R^1 wherein R and R^1 are independently either alkyl or aralkyl groups containing from 3 to 12 carbon atoms,

the improvement which comprises adding the formaldehyde in the form of a polymeric source thereof, and

wherein the amount of water present is less than 0.5% by weight, based on the total weight of reactants.

2. A process according to claim 1 wherein the polymeric source of formaldehyde is trioxane.

3. A process according to claim 1 wherein the polymeric source of formaldehyde is paraformaldehyde.

4,533,775

PROCESS FOR THE UPGRADING OF LOWER ALCOHOLS TO HIGHER MOLECULAR WEIGHT ALCOHOLS

Joseph R. Fox, Solon; Frederick A. Pesa, Aurora, and Benedict S. Curatolo, Maple Heights, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

Filed Apr. 25, 1983, Ser. No. 488,286

Int. Cl.³ C07C *29/34*

U.S. Cl. 568—905 9 Claims

1. A process for the upgrading of methanol to substantially isobutanol and other higher molecular weight alcohol products comprising contacting methanol in the vapor phase with a reaction promoter composition at a reaction temperature of about 25° C. to about 600° C., wherein said promoter composition is selected from:

(a) A metal acetylide represented by the formula

$$Ma_2C_2 \quad \text{(I)}$$

wherein Ma is selected from Li, Na, K, Rb, Cs, Cu, Ag, Au and mixtures thereof; or

$$MeC_2 \quad \text{(II)}$$

wherein Me is selected from La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu, Ac, Th, Pa, U, and mixtures thereof;

(b) A hydride of a metal selected from Mg, Ca, La, Ce, Pr, Nd, Sm, Eu, Gd, Tb, Dy, Ho, Er, Tm, Yb, Lu and mixtures thereof; and

(c) A mixture of reaction promoter compositions of groups (a) and (b).

4,533,776

PREPARATION OF FLUORINATED NITROALKANES

Bernd Baasner; Hermann Hagemann, both of Leverkusen, and Erich Klauke, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

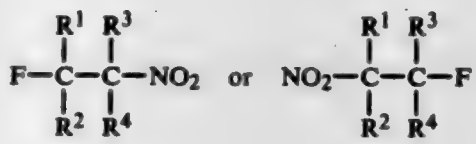
Filed Feb. 1, 1984, Ser. No. 575,649

Claims priority, application Fed. Rep. of Germany, Feb. 16, 1983, 3305201

Int. Cl.³ C07C *79/12*

U.S. Cl. 568—946 19 Claims

1. In the preparation of an α-fluorinated nitroalkane of the formula



(Ia) (Ib)

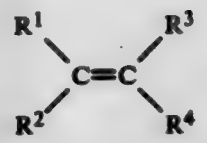
in which

R^1, R^2, R^3 and R^4 are identical or different and individually represent hydrogen, fluorine, chlorine, bromine, alkyl, halogenoalkyl or cycloalkyl, or

R^1 and R^3 have the meaning indicated and

R^2 and R^4 together represent an alkylene group having 3–6 carbon atoms,

by conjugated nitrofluorination of the corresponding olefin of the formula



the improvement which comprises carrying out the reaction in the presence of an agent which binds water.

4,533,777

PROCESS FOR THE PREPARATION OF AROMATIC TRIFLUOROMETHYL COMPOUNDS

Albrecht Marhold, Leverkusen, and Erich Klauke, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

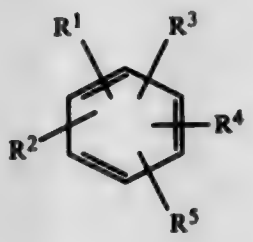
Filed Aug. 13, 1979, Ser. No. 65,776

Claims priority, application Fed. Rep. of Germany, Aug. 28, 1978, 2837499

Int. Cl.³ C07C *17/32*

U.S. Cl. 570—144 6 Claims

1. A method for adding a trifluoromethyl group to the ring of a benzene ring compound which comprises contacting an aromatic compound of the formula



wherein

R^1 denotes hydrogen, alkyl, phenyl, phenyloxy or phenylthio,

R^2, R^3 and R^4, are identical or different and denote hydrogen, halogen, or methyl and

R^5 is hydrogen or alkyl

and 2 adjacent radicals of the group R^1 through R^5 being able to jointly form a 3- to 5-membered alkylene radical with carbon tetrachloride and hydrogen fluoride at a temperature in the range of 50° to 140° C., the reaction mixture consisting essentially of said aromatic compound, said carbon tetrachloride, and said hydrogen fluoride.

4,533,778

TRACTION FLUID LUBRICANTS DERIVED FROM MINERAL OIL

Harry E. Henderson, Sarnia, and Clinton R. Smith, Camlachie, both of Canada, assignors to Imperial Oil Limited, Toronto, Canada

Continuation-in-part of Ser. No. 226,628, Jan. 21, 1981, abandoned. This application Dec. 27, 1982, Ser. No. 453,730

Int. Cl.³ C10M *1/04*

U.S. Cl. 585—13 14 Claims

1. In the method of operating a traction drive the improvement comprising using as the traction fluid a fluid having a lubricant basestock comprising a selected mineral oil composition which contains a saturate fraction having at least about 35% by volume of multiring components of at least three rings and an aromatic fraction which comprises at least about 15% by weight of said composition and wherein the weight ratio of aromatic fraction to saturate fraction is at least about 0.2:1, said aromatic fraction containing at least about 40% by volume of multiring components having two or more rings at least one of which is an aromatic ring, said traction fluid having a viscosity of at least about 40 cSt at 30° C. and a Traction Index of at least about 0.65.

4,533,779

SUPPORTED PALLADIUM-GOLD CATALYST, ITS MANUFACTURE AND USE IN REACTIONS FOR THE SELECTIVE HYDROGENATION OF DIOLEFINIC AND/OR ACETYLENIC HYDROCARBONS

Jean-Paul Boitiaux, Paris, and Jean Cosyns, Maule, both of France, assignors to Ste Francaise des Produits pour Catalyse chez Institut Francais du Petrole, Rueil-Malmaison, France

Division of Ser. No. 475,651, Mar. 15, 1983, Pat. No. 4,490,481. This application Nov. 20, 1984, Ser. No. 672,754

Claims priority, application France, Mar. 15, 1982, 82 04477

Int. Cl.³ C07C *7/163, 5/03, 5/05*

U.S. Cl. 585—259 20 Claims

1. In a process comprising selectively hydrogenating diolefinic hydrocarbons in contact with a catalyst, the improvement wherein the catalyst is produced by a process consisting essentially of the sequential steps of: admixing a palladium compound with an inorganic carrier, roasting in the presence of an oxygen-containing gas, treating with a reducing agent, admixing a halogenated gold compound with the resultant composition, treating with a reducing agent, washing with an aqueous solution of a compound having a basic reaction so as to lower the halogen content of the catalyst below 10 ppm by weight, and roasting in the presence of an oxygen-containing gas, the palladium and gold compounds being used in amounts such that the resultant catalyst contains 0.03 to 1% palladium and 0.003 to 0.3% gold by weight.

4,533,780

NATURAL GAS CONVERSION

Gennaro J. Maffia, Wallingford, Pa., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Apr. 16, 1984, Ser. No. 601,139

Int. Cl.³ C07C *1/00*

U.S. Cl. 585—330 2 Claims

1. A method for converting lower alkanes to higher hydrocarbon products which comprises:

(a) separating a mixture comprising lower alkanes to form a first fraction enriched in methane relative to said mixture and at least one second fraction enriched in C_2+ alkanes relative to said mixture;

(b) dehydrogenating said second fraction to form a dehydrogenation effluent comprising C_2+ olefins;

(c) contacting said first fraction with a solid to form a redox effluent comprising C_2+ olefins, said solid comprising at least one reducible oxide of at least one metal which oxides when contacted with methane at temperatures selected within the range of about 500° to 1000° C. are reduced and produce higher hydrocarbon products and water; and

(d) oligomerizing the C_2+ olefins in said dehydrogenation effluent and in said redox effluent to form higher hydrocarbon products.

4,533,781

PROCESS FOR PREPARING 4-METHYL-1-PENTENE

Mitsuo Matsuno, Kawasaki; Michio Kudoh, and Hiroshuke Imai, both of Yokohama, all of Japan, assignors to Nippon Oil Company, Ltd., Japan

Filed Oct. 26, 1984, Ser. No. 665,307

Claims priority, application Japan, Oct. 29, 1983, 58-203508; Dec. 13, 1983, 58-233654; Apr. 11, 1984, 59-70915

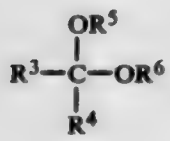
Int. Cl.³ C07C *3/02*

U.S. Cl. 585—516 14 Claims

1. A process for preparing 4-methyl-1-pentene by the dimerization reaction of propylene in the presence of a catalyst being prepared by bringing a catalyst precursor in contact with at least one oxygen-containing compound selected from the group consisting of oxygen, alcohols containing 1 - 5 carbon atoms, ethers represented by the following formula (2):

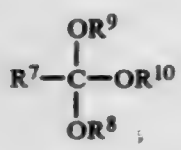
$$R^1OR^2 \quad (2)$$

wherein R^1 and R^2 mean individually a hydrocarbon residual group containing 1–5 carbon atoms, acetals represented by the following formula (3):



(3)

wherein R^3, R^4 and R^5 denote individually a hydrogen atom or a hydrocarbon residual group containing 1–5 carbon atoms and R^6 mean a hydrocarbon residual group containing 1–5 carbon atoms, orthocarboxylates represented by the following formula (4):



(4)

wherein R^7 is a hydrogen atom or a hydrocarbon residual group containing 1–5 carbon atoms, and R^8, and R^9 and R^{10} mean individually a hydrocarbon residual group containing 1–5 carbon atoms, and esters represented by the following formula (5):

$$R^{11}COOR^{12} \quad (5)$$

wherein R^{11} means a hydrogen atom or a chain or cyclic, aliphatic hydrocarbon residual group containing 1–15 carbon atoms or an aryl or aralkyl group containing 6–20 carbon atoms, and R^{12} means a hydrocarbon residual group containing 1–5 carbon atoms; wherein the catalyst precursor consists of at least one element or compound selected from the group consisting of sodium, potassium, sodium amide and potassium amide supported on a carrier consisting principally of a compound represented by the following formula (1)

$$K_2O.xAl_2O_3 \quad (1)$$

wherein x has a value in the range of $0.5 \leqq x \leqq 11$, wherein the catalyst precursor is optionally hydrogenated prior to the use thereof.

4,533,782

METHOD AND CATALYST FOR POLYMERIZING A CATIONIC POLYMERIZABLE MONOMER

Aspet V. Merijanian, Middlebury, Conn., assignor to Uniroyal, Inc., Middlebury, Conn.

Filed Sep. 8, 1983, Ser. No. 530,334
Int. Cl.³ C07C 2/02
U.S. Cl. 585—520 **8 Claims**

1. A process for polymerizing cationically polymerizable monomers comprising:

(A) providing a solution containing an activated catalyst comprising

(a) an aluminum compound having the formula $R_nAlX_{3-n'}$ wherein n is an integer from 0 to 3; R is C_1–C_{12} alkyl, C_7–C_8 aralkyl, C_7–C_{18} alkaryl or C_6–C_{10} aryl; and X is Cl, Br or I; and

(b) (1) a compound having the formula R'X, which is reactive with (a), wherein X is Cl, Br or I and R' is C_1–C_{24} alkyl, C_3–C_{20} alkenyl, C_5–C_9 bridged or non-bridged cycloalkyl or cycloalkenyl, C_7–C_9 aralkyl or (2) a hydrocarbon polymer carrying at least one X substituent wherein X is Cl, Br or I; and

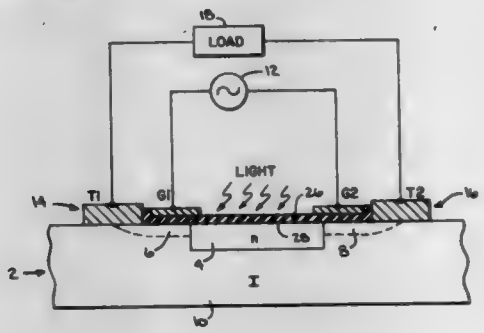
(c) a solvent selected from the group consisting of toluene, xylene or C_1–C_{12} hydrocarbon having F, Cl or Br substituents, said solvent being essentially inert to the mixture of (a) and (b), said solvent being present in an amount sufficient to solubilize the activated catalyst; and

(B) contacting cationically polymerizable monomers with the solution of activated catalyst of (A).

4,533,783
AC SOLAR CELL WITH ALTERNATELY GENERATED PN JUNCTIONS

James A. Benjamin, Waukesha, Wis.; Robert W. Lade, Fort Myers, Fla., and Herman P. Schutten, Milwaukee, Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jun. 8, 1984, Ser. No. 618,440
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—249 10 Claims



1. An AC solar cell comprising:

a central region of given conductivity type semiconductor material between first and second regions of intrinsic or invertable semiconductor material;

first and second gate electrodes for respective said first and second intrinsic or invertable regions, and AC gate driver means for applying alternating polarity gate potential to said first and second gate electrodes, such that during the first half cycle said first intrinsic or invertable region is converted to one conductivity type and said second intrinsic or invertable region is converted to the opposite conductivity type, and such that during the second half cycle said first intrinsic or invertable region is converted to said opposite conductivity type and said second intrinsic or invertable region is converted to said one conductivity type;

first and second terminal connection means for respective said first and second intrinsic or invertable regions, such that during the first half cycle hole-electron pairs generated by light radiation diffuse across the pn junction between said central region and one of said converted intrinsic or invertable regions to set up a potential gradient which drives current in one direction between said first and second terminal connection means, and such that during the second half cycle hole-electron pairs generated by light radiation diffuse across the pn junction between said central region and the other of said converted intrinsic or invertable regions to set up a potential gradient which drives current in the opposite direction between said first and second terminal connection means, to generate alternating current between said first and second terminal connection means.

4,533,784
SHEET MATERIAL FOR AND A CABLE HAVING AN EXTENSIBLE ELECTRICAL SHIELD

Murray Olyphant, Jr., Lake Elmo, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Jul. 29, 1983, Ser. No. 518,433
Int. Cl.[3] H01B *11/06*
U.S. Cl. 174—36 13 Claims

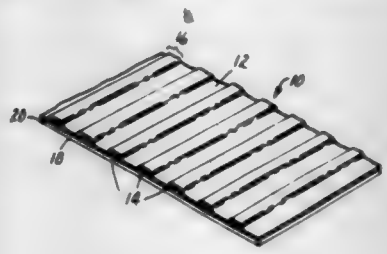
1. An electrical cable, comprising:

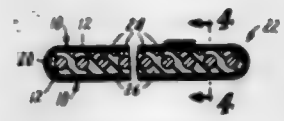
at least one conductor;

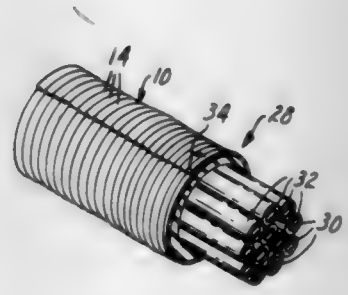
insulation encasing said at least one conductor;

a sheet material comprising a continuous metallic foil having a plurality of flattened transverse folds forming a plurality of transverse overlaps having a nonlinear yield behavior; and

securing means coupling said sheet material to said insulation;





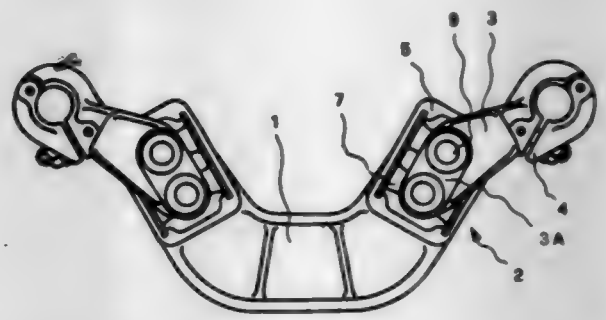


whereby a shielded cable is provided having exceptional flexibility.

4,533,785
SPACER-DAMPER FOR A BUNDLED CONDUCTOR FOR AN ELECTRIC LINE

Innocente Riganti, Solbiate Arno, Italy, assignor to Innocente Riganti Officine Meccaniche S.p.A., Solbiate Arno, Italy

Filed Sep. 19, 1983, Ser. No. 533,536
Claims priority, application Italy, Sep. 17, 1982, 23315 A/82
Int. Cl.[3] H02G *7/14, 7/12*
U.S. Cl. 174—42 33 Claims

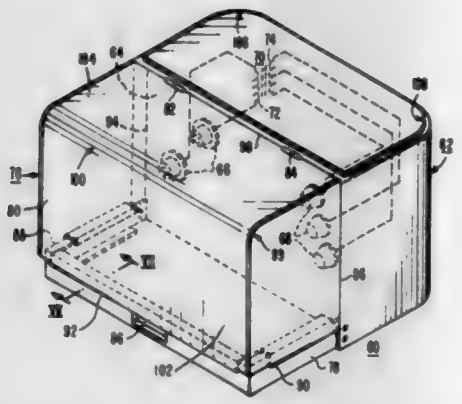


1. A device for spacing apart and damping bundled subconductors of an electrical conductor, said device comprising a support; a plurality of arms; clamping means on each of said arms for clamping a subconductor; and a joint for each of said arms connecting the respective arm with said support, at least one of said joints including a frame on said support, a core disposed within said frame and connected with the respective arm, and at least two pairs of elastic elements between said core and said frame.

4,533,786
PADMOUNTED TRANSFORMER ENCLOSURE

Virgil L. Borgmeyer, Meta; Dudley L. Galloway, Jefferson City; Gary N. Sonnenberg, Jefferson City; Jan S. Gruczka, Jefferson City, and Timothy C. Owen, Jefferson City, all of Mo., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jun. 8, 1984, Ser. No. 618,845
Int. Cl.[3] H05K *5/04*
U.S. Cl. 174—50 8 Claims

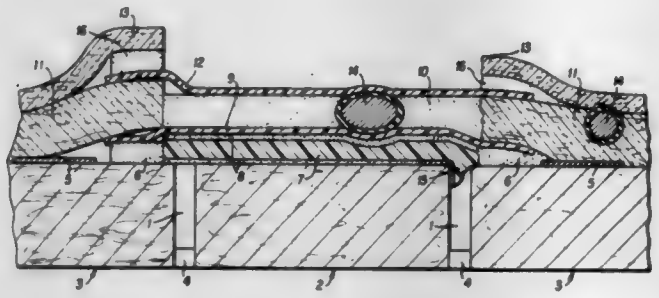


1. A padmounted transformer enclosure, comprising:
a tank having electrical terminals on a predetermined wall,
and a terminal cover pivotally attached to said tank to enclose said predetermined wall,
said tank and terminal cover, when closed, cooperatively defining a composite structure having a front portion formed by said terminal cover, a rear portion formed by said tank, and cooperatively formed side portions,
said front portion having a horizontally oriented upper edge, and said back portion having first and second substantially vertically oriented edges, all of which are radiused to eliminate sharp points at the upper corners of said composite structure.

4,533,787
PRINTED CIRCUIT ASSEMBLY

Fredy Anderegg, Lohn; Josef Furrer, Luterbach, and Heinz Däppen, Flumenthal, all of Switzerland, assignors to Autophon AG., Soleure, Switzerland

Filed Nov. 12, 1982, Ser. No. 440,999
Claims priority, application Switzerland, Nov. 26, 1981, 7559/81
Int. Cl.[3] H05K *1/03*
U.S. Cl. 174—68.5 2 Claims

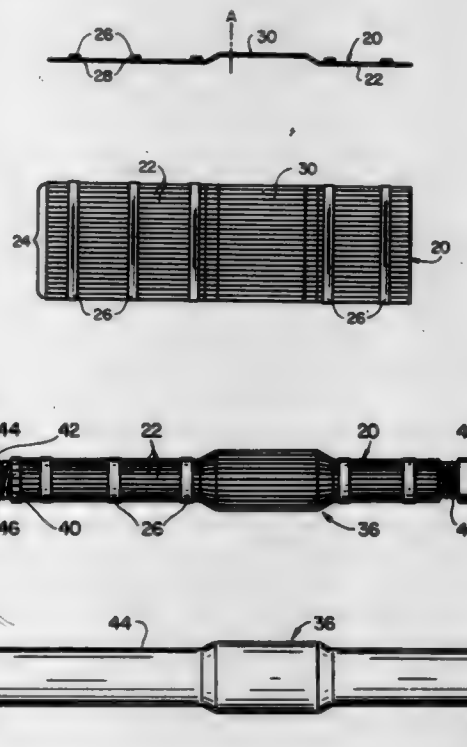


1. In a circuit board assembly comprising a plurality of rigid parts and at least one flexible part connecting each two said rigid parts, said flexible part comprising an upper and a lower non adhesive flexible film, the board further comprising wires, at least a part of these wires running uniterruptedly from one of said rigid parts over said flexible part to an adjacent one of said rigid parts, said wires in all parts being embedded in a layer of thermally activatable adhesive, said adhesive is, in the flexible parts, disposed between the non adhesive films, and, in the rigid parts, disposed on a rigid base plate and, including the wires, covered by a cover layer, the improvement that the non adhesive films extending solely between said two rigid parts and being secured thereto at the edges thereof and that two kinds of adhesive layers are disposed, the layer on said rigid parts containing a glass-fiber fabric and the adhesive in said flexible part is fiber-free.

4,533,788
ASSEMBLY AND METHOD FOR CABLE JOINT PROTECTION

Rudolf Pokojny, San Jose, and Peter L. Larsson, Mountain View, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed May 3, 1982, Ser. No. 374,558
Int. Cl.[3] H02G *15/18*
U.S. Cl. 174—88 C 8 Claims



1. A wraparound liner which can surround longitudinally a cable splice of non-uniform cross-sectional size, which comprises:
(a) a plurality of side-by-side elongate elements which have a substantially rectangular crosssection and a non-linear configuration corresponding substantially to the profile of the cable splice; and
(b) means which holds the element together and which allows the separation between them to vary at a change in cross-sectional size of the cable splice as the liner is installed around the cable splice.

4,533,789
HIGH VOLTAGE ELECTRIC POWER CABLE WITH THERMAL EXPANSION ACCOMMODATION

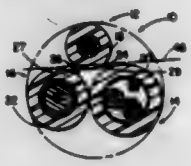
Carlos Katz, Edison, N.J., assignor to Cable Technology Laboratories, Inc., New Brunswick, N.J.

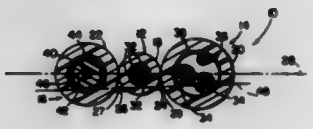
Continuation of Ser. No. 465,802, Feb. 11, 1983, abandoned.
This application Sep. 6, 1984, Ser. No. 647,878
Int. Cl.[3] H01B *7/18*
U.S. Cl. 174—102 R 18 Claims

1. A high voltage electric power cable adapted to withstand wide swings in temperature in which a thick layer of polymeric insulation material surrounds an electrically conductive core structure, an insulation shield comprising an electrically conductive member having a smaller coefficient of thermal expansion than said polymeric insulation material surrounds said layer of insulation material, and compressible means are interposed between said conductive member and said polymeric layer, characterized in that said compressible means comprises a structurally resiliently compressible and substantially shape recoverable element for adapting to any change in the radial dimension of the space between said conductive member and said layer of insulation material throughout the entire circum-

ference of the cable while maintaining engagement with the radially inner surface of said conductive member, and said compressible element is constructed from material having electrical conductivity of at least 1 micromho per centimeter.

8. A high voltage electric power cable adapted to withstand wide swings in temperature in which a thick layer of polymeric insulation material surrounds an electrically conductive core structure, an insulation shield comprising an electrically conductive member having a smaller coefficient of thermal expansion than said polymeric insulation material surrounds said layer of insulation material, and compressible means are interposed between said conductive member and said polymeric layer, characterized in that said compressible means comprises a structurally resiliently compressible and substantially shape recoverable element for adapting to any change in the radial dimension of the space between said conductive member and said layer of insulation material throughout the entire cicumference of the cable while maintaining engagement with the radially inner surface of said conductive member, and said compressible element is constructed from dielectric material having a dielectric constant of at least 4.





15. A high voltage electric power cable adapted to withstand wide swings in temperature in which a thick layer of polymeric insulation material surrounds an electrically conductive core structure, an insulation shield comprising an electrically conductive member having a smaller coefficient of thermal expansion than said polymeric insulation material surrounds said layer of insulation material, and compressible means are interposed between said conductive member and said polymeric layer, characterized in that said compressible means comprises a structurally resiliently compressible and substantially shape recoverable element for adapting to any change in the radial dimension of the space between said conductive member and said layer of insulation material throughout the entire circumference of the cable while maintaining engagement with the radially inner surface of said conductive member, and said compressible element consists essentially of an assembly of two structural components, one component being constructed from material having electrical conductivity of at least 1 micromho per centimeter, and the other component being constructed from dielectric material having a dielectric constant of at least 4.

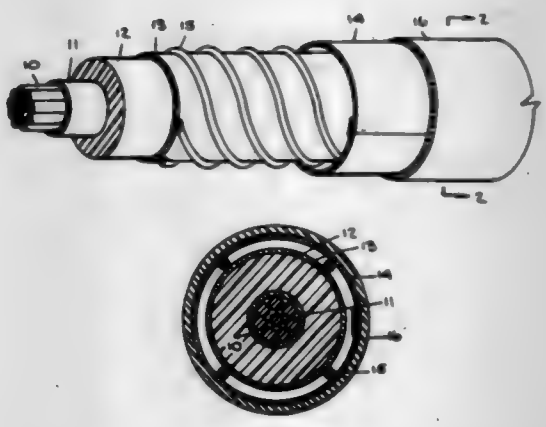
4,533,790

ELECTRICAL CONDUCTOR ASSEMBLY

James J. Johnston, Old Saybrook, and Gregory L. Glynn, Mansfield Center, both of Conn., assignors to Akzona Incorporated, Ashville, N.C.

Continuation-in-part of Ser. No. 466,833, Feb. 16, 1983, abandoned. This application Mar. 13, 1984, Ser. No. 589,169
Int. Cl.[3] H01B *7/00*
U.S. Cl. 174—115 17 Claims

1. An electrical cable comprising a plurality of groups of axially elongated flexible electrical conductors including first, second and third groups, each of said groups including at least one electrical conductor, and a unitary flexible axially elongated jacket of dielectric material separating and insulating said conductors of each of said groups from said conductors of the other of said groups, said jacket having distinct axially elongated tubular portions including a first tubular portion containing said conductors of said first group, a second tubular portion containing said conductors of said second group and a third tubular portion containing said conductors of said third group, a plurality of integral axially elongated web portions hingedly connecting said tubular portions for movement relative to each other between a first position and a second position and including first and second web portions integrally connected to said first tubular portion at points of connection angularly spaced generally about the central axis of said first tubular portion, said first web hingedly connecting said second tubular portion to said first tubular portion, said second web hingedly connecting said third tubular portion to said first



tubular portion, said conductors of said second and third groups being disposed to one side of a plane passing through said points of connection and said conductors of said first group being disposed to the opposite side of said plane when said tubular portions are in said first position, said conductors of said first group, said second group and said third group being disposed to the same side of said plane when said tubular portions are in said second position, said first and second web portions cooperating with said tubular portions to maintain said tubular portions in generally side-by-side relation to each other with said first tubular portion disposed between said second tubular portion and said third tubular portion and with said second tubular and said third tubular portion in adjacent contacting engagement with said first tubular portion when said tubular portions are in said second portion.

4,533,791

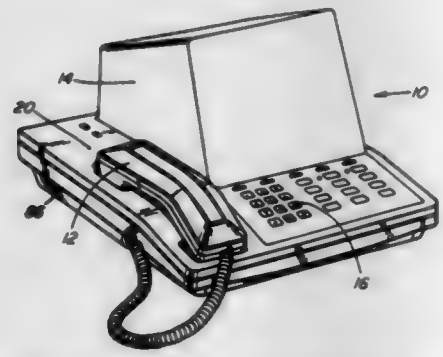
INPUT/OUTPUT DEVICE ARRANGEMENTS FOR TERMINALS

Clifford D. Read, Almonte; William D. Sawyer, Kanata, and Donald T. Chadwick, Nepean, all of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Feb. 5, 1982, Ser. No. 346,219
Int. Cl.[3] H04M *11/00*
U.S. Cl. 179—2 R 7 Claims

1. A self-contained, table top electronic telecommunications terminal comprising a bottom moulding having an upstanding sidewall and a top moulding having a depending sidewall, said sidewalls of said bottom and top mouldings mating so that said mouldings form a cabinet for electronic circuitry, the forepart of said top moulding sloping downwardly toward the front of said cabinet, a control keypad on said sloping forepart of said top moulding for controlling the functions of the terminal, a visual display on said top moulding rearward of said control keypad, a telephone handset, cord means connecting said handset to said terminal, means for supporting said telephone handset on said top moulding adjacent said control keypad and said visual display, the sidewall of said bottom moulding defining a recess at the front of said cabinet, an alphanumeric key-

pad slidable into and out of said recess between a concealed first position in which said alphanumeric keypad is received in said cabinet underneath said control keypad and an exposed second position in which said alphanumeric keypad is accessible for use by an operator, the front of said alphanumeric keypad having a contour complementary to the contour of the



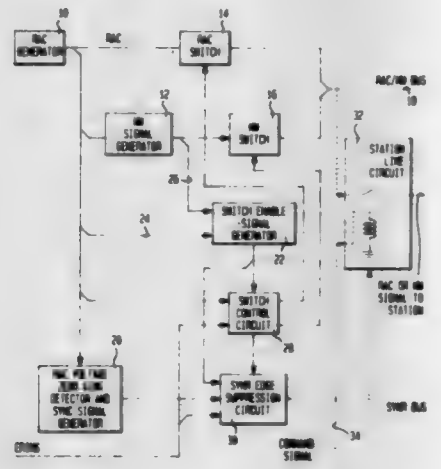
front of said cabinet and lying substantially flush with the front of said cabinet when said alphanumeric keypad is in said concealed first position, means for supporting electronic circuitry within said cabinet, and a flexible electrical connector for electrically connecting said alphanumeric keypad to electronic circuitry within said cabinet.

4,533,792

CIRCUIT FOR SWITCHING BETWEEN RING SIGNAL AND MESSAGE WAITING SIGNAL WITHOUT BELL TAP

Ronald Binks; Anthony S. Rehak, both of Deerfield Beach, and Howard Sinberg, Coral Springs, all of Fla., assignors to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Mar. 30, 1984, Ser. No. 595,155
Int. Cl.[3] H04M *3/42*
U.S. Cl. 179—84 C **6 Claims**



1. A circuit for switching between a ring signal and a message waiting signal without bell tap in a telephone system, comprising:

(a) means for generating a composite RAC/MW signal which comprises an A-C signal and a D-C signal alternately spaced in time, the generating means comprising an RAC signal generator, an MW signal generator, and switching means for combining the RAC and MW signals into a composite RAC/MW signal;

(b) a switch enable-signal generator comprising a comparator for comparing the instantaneous value of the RAC signal with the value of the MW signal, the switch enable generator providing a signal for changing the composite signal from an A-C signal to a D-C signal only when the instantaneous value of the RAC signal equals the value of the MW signal and the slope is negative;

(c) means for producing either a RAC or MW signal to a particular subscriber station of a telephone system in response to an external command synchronous signal;

(d) a RAC voltage zero crossing detector and synchronous signal generator for detecting when the RAC signal crosses zero point, and controlling when the appropriate RAC or MW signal is provided to a subscriber station in the telephone system; and

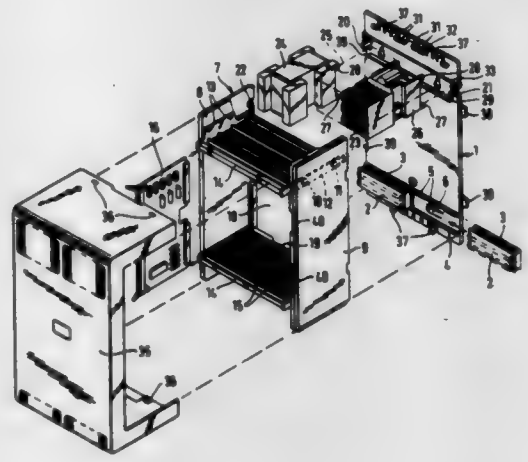
(e) a synchronous edge suppression circuit for supressing the first ring synchronous pulse from the ring synchronous signal when the means for providing either an RAC or MW signal to a particular subscriber station signals that an MW signal should be provided during the time interval between the A-C signal crossing the D-C signal with a negative slope and before the subsequent positive going ring synchronous signal.

4,533,793

WALL EXCHANGE

Fritz Geppert, Ober-Moerlen, Fed. Rep. of Germany, assignor to Telefonbau und Normalzeit GmbH, Frankfurt, Fed. Rep. of Germany

Filed Oct. 26, 1982, Ser. No. 436,779
Int. Cl.[3] H04M *1/00*
U.S. Cl. 179—99 R **6 Claims**



1. In a wall exchange for telephone systems, particularly key systems, in which a baseplate (1) is fixed to a wall and in the lower portion of said baseplate are connecting strips (3) with multiple contact strips pointing upwards, and having a component holder (7) which has on its backside a wiring card (18) which in its lower end has multiple-plug connectors (19) whereby the component holder is mounted with the multiple-plug connector inserted into the multiple contact strips in a slanted forward direction and, by swinging toward the wall, is attached to the baseplate and further having power supply modules (24, 25, 26) and a housing cover (35), the improvement comprising: each of said power supply modules, component holder, cover and baseplate being made of plastic and including means on said baseplate and on said modules, component holder and cover for making snap-in locking engagement between each of said modules, component holder and cover and said baseplate.

4,533,794

ELECTRODE FOR ELECTROSTATIC TRANSDUCER

Harold N. Beveridge, 1544 Knoll Circle Dr., Santa Barbara, Calif. 93103

Filed May 23, 1983, Ser. No. 497,297
Int. Cl.[3] H04R *19/00*
U.S. Cl. 179—111 R **23 Claims**

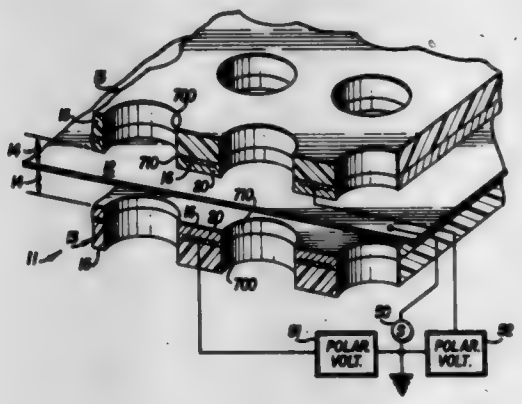
1. An electrode for use in an electrostatic transducer, comprising:

planar nonconductive means having a plurality of first holes;

a conductive layer on a first side of said planar member, said conductive layer having a plurality of second holes; and

a dielectric layer having a volume resistivity of not more

than 10^{13} ohm cm on said first side of said planar member to sandwich said conductive layer between said planar



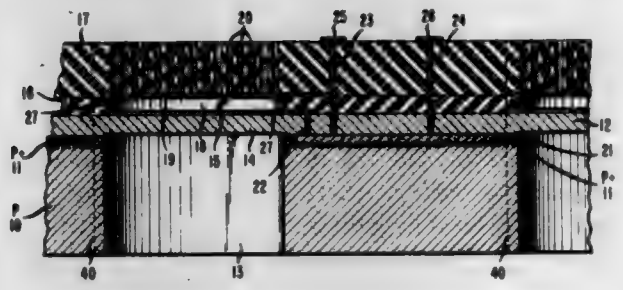
member and said dielectric layer, said dielectric layer having a plurality of third holes.

4,533,795

INTEGRATED ELECTROACOUSTIC TRANSDUCER

John C. Baumhauer, Jr.; Harold J. Hershey, both of Indianapolis, Ind., and Tommy L. Poteat, Bridgewater, N.J., assignors to American Telephone and Telegraph, New York, N.Y. and AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 7, 1983, Ser. No. 511,640
Int. Cl.³ H04R *7/18*
U.S. Cl. 179—111 E **26 Claims**



1. An electroacoustic transducer formed within a semiconductor substrate comprising

an essentially nontensioned diaphragm comprising a semiconductor material having a mechanical bending moment stiffness such that it vibrates in response to an input signal at audio and/or ultrasonic frequencies; and

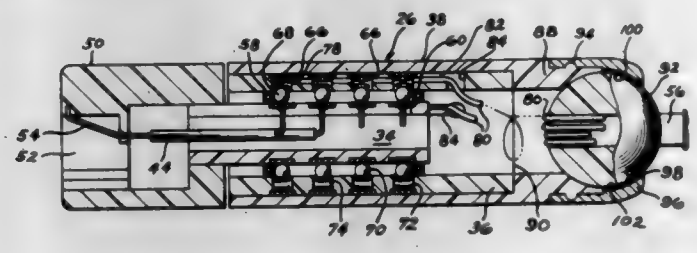
a pair of electrodes placed with respect to said diaphragm so that the electric field between the electrodes varies in relationship with the vibrating diaphragm to permit conversion between electrical and acoustic signals.

4,533,796

ROTATABLE ELECTRICAL CONNECTOR FOR TELEPHONE CORD

Anthony R. Engelmore, 14001 Harbour Pl., Prospect, Ky. 40059

Filed Jan. 30, 1984, Ser. No. 575,102
Int. Cl.³ H01R *35/00*
U.S. Cl. 179—186 **13 Claims**



1. A low friction rotatable electrical connector for use with telephone cords, said connector comprising:

a. an insulated pair of rotatably interconnected elongated members, there being a hollow inner cylindrical member telescoped within a hollow outer cylindrical member;

b. and a pair of widely spaced, low friction bearing means located on the inner cylindrical member adjacent the opposite ends thereof for supporting the outer cylindrical member therefrom for turning movement about a longitudinal central axis of the connector;

c. the outer end of one rotatable member having a female electrical socket member, while the outer end of the other rotatable member has a male electrical plug member, each of said male and female members being adapted to make electrical connection with a separate set of electrical conductors;

d. a plurality of continuous conductive rings mounted on the exterior of the inner cylindrical member and spaced along the length thereof, and a set of flexible insulated conductors located within the inner cylindrical member and joining each separate conductive ring to the one of the said male and female members that is on the outer end of the inner member;

e. a plurality of split conductive rings mounted on the exterior of the outer cylindrical member to be generally aligned and concentric with the said continuous rings of the inner member, the wall of the outer member being provided with at least one aperture in alignment with each of the plurality of split rings, each aperture being provided with a spring-biased contact member that is in constant electrical contact with one of the said continuous rings of the inner member;

f. the exterior of the outer member having a plurality of longitudinally extending slots, each slot receiving one of a set of flexible insulated conductors, where each conductor is connected at one end to one of the split rings and connected at its other end to the other of said male and female members that is on the outer end of the outer member;

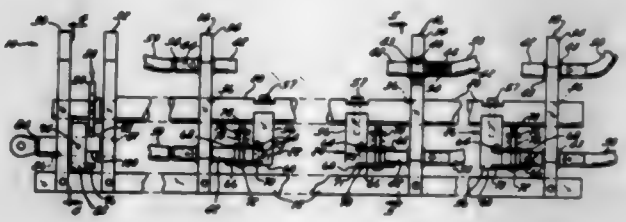
g. and an insulated sleeve fitted over the outer member and held thereon.

4,533,797

LOW VOLTAGE ROTARY TAP CHANGER

Neil J. Kranich, II, West Allis, and Wallace E. Boivin, Jr., Waukesha, both of Wis., assignors to ASEA Electric, Inc., Waukesha, Wis.

Filed Jun. 7, 1984, Ser. No. 618,264
Int. Cl.³ H01H *21/62*
U.S. Cl. 200—11 TC **11 Claims**



4. A five position, three deck rotary tap changing switch comprising

a base fabricated from flat insulating sheet,

a number of contact decks mounted on said base in a parallel spaced relation,

each deck including a bore and a number of fixed cable rod contacts mounted at equally spaced distances from each other and at equal radial distances from said bore,

a shaft fabricated from standard insulating rod, extending through the bore in each of said decks,

arcuate contact means corresponding to each of said decks and mounted on said shaft for engaging two of said cable contacts on each of said decks,

Geneva gear drive means operatively connected to said shaft for rotating said arcuate contact means in a step by step manner to selectively connect said contact means to said cable contacts,

said Geneva drive means includes

a gear mounted on said shaft and having a number of radially extending slots and a drive plate mounted for rotary motion on said base,

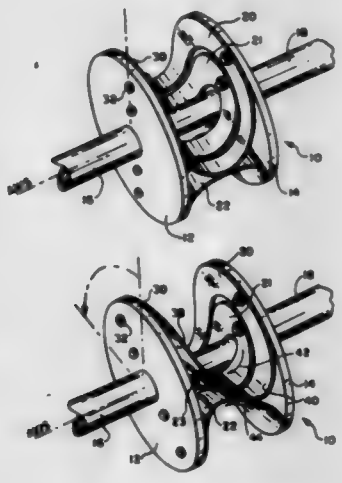
a drive pin mounted on said plate and being positioned to rotate into and out of one of said slots in each revolution of said plate to advance the shaft a predetermined angular distance.

4,533,798

CURRENT TRANSFER SHUNT ARRANGEMENT

Joseph W. Yatchum, McMurray, and David F. Giegel, Pittsburgh, both of Pa., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Jun. 4, 1984, Ser. No. 616,845
Int. Cl.[3] H01H *19/00, 1/12*
U.S. Cl. 200—11 R 20 Claims



1. A current transfer shunt, comprising:

(a) a shaft defining an axis of rotation;

(b) base means for rotatably mounting said shaft;

(c) a first support plate carried by said shaft at generally right angles to said axis of said shaft;

(d) a second support plate fixedly carried by said base means and disposed generally parallel to and axially separated from said first support plate; and

(e) at least one generally oval, flat, flexible electrical conductor which when flattened defines two generally parallel and opposite sides and two semi-circular complementary sides disposed between and connected to said two parallel sides, said one conductor being suspended between and connected to said first and second support plates generally at the center of each semi-circular side with the plane of said semi-circular sides disposed generally parallel to and spaced apart from each other and at right angles to said axis of said shaft,

whereby upon rotation of said shaft one end of each semi-circular side is pulled away from one of said first and second support plates and the opposite end is urged against the same support plate.

2. The shunt set forth in claim 1, further including a second generally oval, flat, flexible conductor which when flattened defines two parallel and opposite sides and two semi-circular complimentary sides disposed between and connected to said parallel sides, said second conductor being disposed opposite to said one conductor and being suspended between and connected to said first and second support plates such that the parallel sides of said second conductor are bowed towards and in contact with the parallel sides of said one conductor,

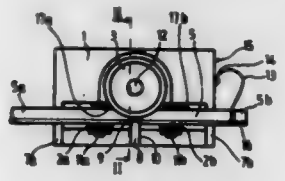
whereby upon rotation of said shaft the parallel sides of said one conductor roll relative to the parallel sides of said second conductor.

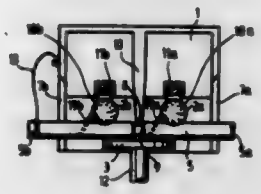
4,533,799

ELECTRIC SAFETY SWITCH WITH REMOVABLE CONDUCTING ROD

Manuel A. Vincent De Araujo, 73390 Chamoux-sur-Gelon, France

Filed Apr. 6, 1984, Ser. No. 597,411
Claims priority, application France, Apr. 8, 1983, 83 06394
Int. Cl.[3] H01H *35/14*
U.S. Cl. 200—52 R 9 Claims





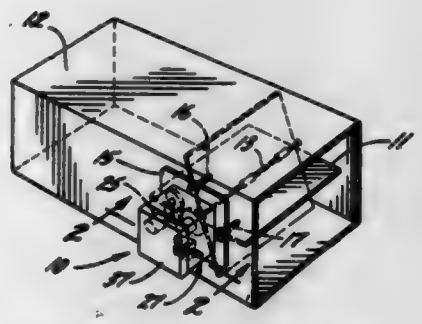
1. In an electric switch comprising an insulating case supporting two electric terminals and a removable conducting rod intended to come into abutment against the terminals so as to establish an electric contact and comprising an extension forming an operating member, the rod being normally held in a stable abutment position, pushed by a retaining piece urged by a spring and operable by means of a resetting lever, against the electric terminals and against a case portion forming a fixed guide, the rod being able to escape from the retaining piece after a reversible resilient travel, under the action of a force applied to its extension and thus open the electric contact, auxiliary electric conductors are further provided in which the auxiliary electric conductors are connected to the conducting terminals and remain in contact with the rod during its reversible resilient travel so as to maintain the electric contact until the rod escapes the retaining piece.

4,533,800

REVERSIBLE ROTARY ACTUATOR

Gerald R. Parsons, Poplar Grove, Ill., assignor to Barber-Colman Company, Rockford, Ill.

Filed Dec. 9, 1983, Ser. No. 559,716
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—61.39 10 Claims



1. A reversible rotary actuator comprising a mounting base adapted to be anchored in a fixed position, a sub-base supported on said mounting base to turn relative to said mounting base about a predetermined axis, an output shaft journaled by said mounting base to rotate relative to said mounting base and said sub-base, a reversible electric motor carried by said sub-base and selectively operable to drive said output shaft either clockwise or counterclockwise, first and second normally

closed switch means which are operable when opened to prevent energization of said motor in clockwise and counterclockwise directions, respectively, and stop means fixed to said mounting base for opening said first switch means in response to turning of said sub-base in one direction about said axis and for opening said second switch means in response to turning of said sub-base in the opposite direction about said axis, each of said switch means comprising one switch contact fixed to said sub-base and further comprising an additional switch contact having one portion fixed to said sub-base and having a cantilevered portion adapted to flex between open and closed positions relative to said one portion.

4,533,801

INERTIA SWITCH DEVICE

Peter R. Jackman, Basingstoke, and Alan D. Thomas, Reading, both of England, assignors to First Inertia Switch Limited, England

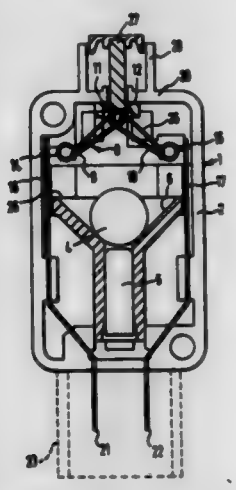
PCT No. PCT/GB82/00347, § 371 Date Jul. 26, 1983, § 102(e) Date Jul. 26, 1983, PCT Pub. No. WO83/02196, PCT Pub. Date Jun. 23, 1983

PCT Filed Dec. 8, 1982, Ser. No. 522,154

Claims priority, application United Kingdom, Dec. 15, 1981, 8137716

Int. Cl.³ H01H *35/14*

U.S. Cl. 200—61.45 R **11 Claims**



1. An inertia switch device comprising:

an inertia mass (4) which is movable from a rest position when the device is subjected to an applied acceleration exceeding a threshold value;

spaced electrical contact means (16 and 17, and 31 and 32);

a hinge-like assembly (8) which is mounted independently of the inertia mass (4) and in which two parts (9 and 10) are connected for movement between two over-centre positions on opposite sides of a centre position in which the two parts (9 and 10) are aligned with a common plane, in response to movement of the inertia mass (4) when subjected to said applied acceleration; and

movable electrical contact means (14 and 15) on at least part of the hinge-like assembly (8) and arranged to engage the spaced electrical contact means (16 and 17, and 31 and 32) when the hinge-like assembly (8) is in one of the over-centre positions;

characterized in that:

the spaced electrical contact means (16 and 17, and 31 and 32) comprise two first contacts (16 and 17);

the movable electrical contact means comprise two electrically connected movable contacts (14 and 15);

the hinge-like assembly (8) is mounted independently of the spaced electrical contact means (16 and 17, and 31 and 32) so that the movable contacts (14 and 15) are respectively movable into and out of contact with the two first contacts (16 and 17) so as to bridge the first two contacts (16 and 17); and

resilient biasing means (26 or 41) are operable, on said movement of the inertia mass (4), to move the hinge-like assembly (8) from said one of the overcentre positions, in which the movable electrical contacts (14 and 15) engage the first electrical contacts (16 and 17, and 31 and 32), to the other of the over-centre positions, and are operable to releasably hold the hinge-like assembly (8) in said other of the over-centre positions.

4,533,802

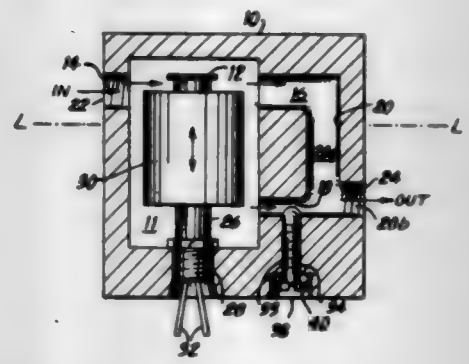
LIQUID FLOW SWITCH AND METHOD OF USING SAME

Peter S. Spalding, Martville, N.Y., assignor to Alcan Aluminun Corporation, Cleveland, Ohio

Filed Jun. 12, 1984, Ser. No. 619,851

Int. Cl.³ H01H *35/38*

U.S. Cl. 200—81.9 R **8 Claims**



1. A liquid flow switch comprising

(a) structure defining a chamber for liquid and having an inlet for introducing a flow of liquid to an upper level of the chamber, an outlet for discharging a flow of liquid from an upper level of the chamber, and an orifice of restricted cross-section for bleeding liquid from the chamber at a level below the inlet and outlet, such that when the flow rate of liquid through the inlet exceeds the bleed rate of liquid through the orifice the liquid level in the chamber rises to and remains at least at the level of said outlet, and when said bleed rate exceeds said inlet flow rate the liquid level in the chamber falls; and

(b) switch means, responsive to change of liquid level in the chamber, for producing a signal when the liquid level passes in at least one direction through a predetermined level in the chamber intermediate the level of said outlet and the level of said orifice.

4,533,803

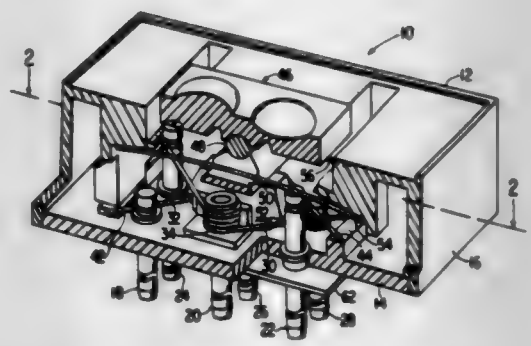
SWITCH CONSTRUCTION

Wilbert E. Beller, Park Ridge; George D. Georgacakis, Skokie, and George Obermann, Niles, all of Ill., assignors to The Singer Company, Stamford, Conn.

Filed Oct. 17, 1983, Ser. No. 542,865

Int. Cl.³ H01H *21/24*

U.S. Cl. 200—153 K **9 Claims**



1. A construction for a switch comprising:

a housing;

a plurality of electrically conductive terminal posts extending into said housing;

an electrically conductive torsion spring element having a central helical portion and first and second ends extending therefrom, said central helical portion being mounted on a first one of said posts and said first and second ends being biased toward contact with a second and a third of said posts, respectively;

an actuator mounted for pivoting movement is said housing, said actuator being arranged so that

(a) when said actuator is in a neutral position said first spring end contacts said second post and said second spring end is held from contacting said third post;

(b) when said actuator is pivoted to one side of said neutral position said first spring end is held from contacting said second post and said second spring end contacts said third post; and

(c) when said actuator is pivoted to the other side of said neutral position said first spring end contacts said second post and said second spring end is held from contacting said third post;

means for biasing said actuator to said neutral position; and means for providing electrical connections to said posts.

4,533,804

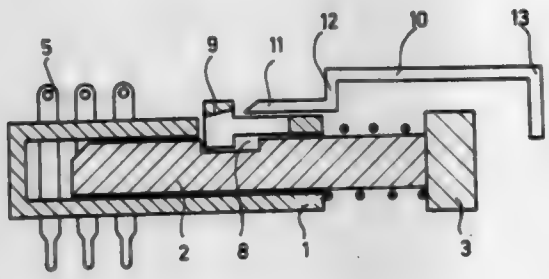
PUSH BUTTON SLIDE SWITCH

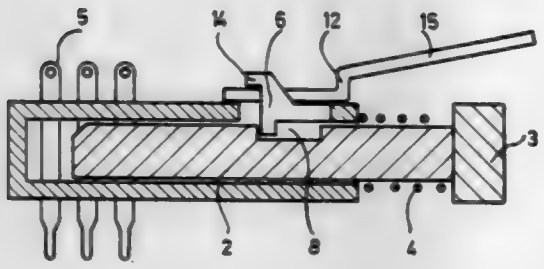
Peter K. G. Kramer, Berlin, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

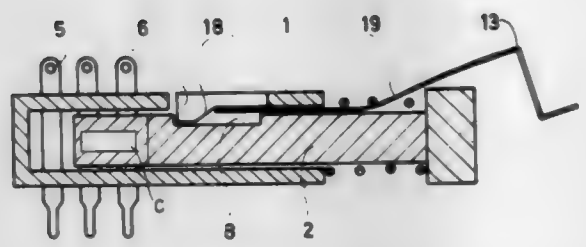
Continuation of Ser. No. 946,358, Sep. 27, 1978, abandoned. This application Mar. 27, 1981, Ser. No. 248,321

Int. Cl.[3] H01H *13/52, 3/12*

U.S. Cl. 200—159 R 5 Claims







1. A push button slide switch in which fixed contacts are arranged in an elongated housing of insulated material, and in which a slider carrying movable contacts is longitudinally movably mounted, and in which a tongue-like movable retaining member is molded thereto in a cutout of the housing wall, with the retaining member engaging said slider in a generally rectangular cutout therein; wherein said fixed contacts are arranged in two transversely spaced and longitudinally extending rows along said housing with said fixed contacts extending through said housing in a direction substantially perpendicular to the longitudinal direction and projecting away from at least one side of said housing, wherein the transverse width of said retaining member is less than the transverse spacing between said rows of fixed contacts and said retaining member is provided with a longitudinally inwardly facing positive stop surface for limiting the outward translation of said slider by rigidly engaging a longitudinally outwardly facing wall portion of said generally rectangular cutout, wherein substantially all of the stop force components when said stop surface engages said wall portion are transmitted solely in the longitudinal direction thereby to retain said retaining member in said generally rectangular cutout, and wherein by the direct application of an external force to said retaining member in a direction substantially perpendicular to said longitudinal direction said retaining member is deflectable away from said rectangular cutout so that said positive stop surface can be deflected away from engagement with said wall portion to permit removal of said slider from said housing, and wherein the retaining member is provided with a tool engaging surface which is spaced-apart from the surface portion of said slider within said rectangular cutout and which generally faces said slider, said retaining member being arranged so that it can be lifted and deflected upwardly by means of a flat tool which is insertable with respect to said switch adjacent the wall of the housing carrying the retaining member for engaging said tool engaging surface.

4,533,805

MANUAL OPERATING DEVICE FOR A SLIDE TYPE ELECTRICAL DEVICE

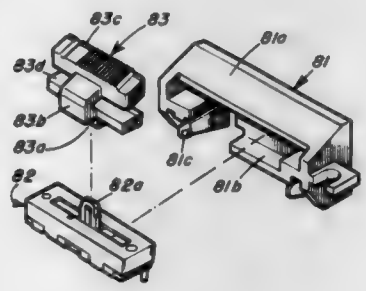
Yoshio Fujinami, Hachioji; Katumi Itoyama, Hino, and Hiroshi Ochiai, Fuchu, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

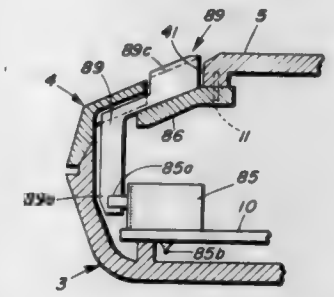
Filed Nov. 2, 1983, Ser. No. 548,151

Claims priority, application Japan, Jun. 28, 1983, 58-98784[U]; Jun. 29, 1983, 58-100480[U]

Int. Cl.[3] H01H *9/04, 15/24*

U.S. Cl. 200—304 11 Claims





1. A manual operating device for a slide type electrical device in an electrical apparatus, said electrical apparatus including a housing having a hole, and said slide type electrical device having an actuating slide, said manual operating device comprising:

a cover plate securely attached to the inside of said housing and positioned adjacent to said hole, said cover plate having an area larger than said hole and said housing

having a cut-away portion along said hole to form a slide slot between said cover plate and said housing; and

a manual operating slide having an operating plate and a connecting arm extending through said slide slot to connect said operating plate to said actuating slide of said slide type electrical device.

4,533,806

METHOD OF MANUFACTURING BIMETALLIC TUBES

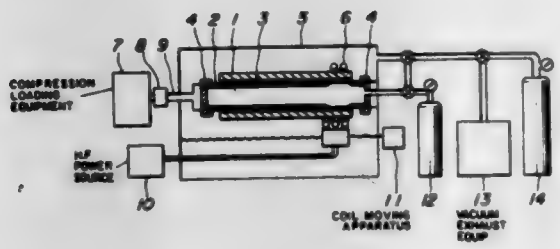
Tatsuo Kawasaki; Isao Takada, both of Chiba, and Hiroshi Ohtsubo, Ichikawa, all of Japan, assignors to Kawasaki Steel Corporation, Kobe, Japan

Filed Jun. 1, 1982, Ser. No. 383,733

Claims priority, application Japan, Jun. 11, 1981, 56-88797; Dec. 25, 1981, 56-209046

Int. Cl.³ H05B *5/00, 6/00*

U.S. Cl. 219—8.5 **6 Claims**



1. In a method of manufacturing bimetallic tubes by inserting an inner tube into an outer tube, filling a solder material in a space defined between the inside of said outer tube and the outside of said inner tube, and zone-heating the resulting tube assembly by applying heat from a heating unit to each part of the tube assembly, while pressurizing the inside of said inner tube with a gas, so as to effect brazing of said inner tube to said outer tube, the improvement which comprises placing a flux with said solder material in the space between the inside of said outer tube and the outside of said inner tube, while the zone-heating and pressurizing of said tube assembly takes place moving the heating unit over the whole length of said tube assembly so as to expand both the tubes and cause the flux to successively melt and move out of the space between the tubes, effecting brazing of said inner tube to said outer tube.

4,533,807

COOKING UTENSIL FOR INDUCTION COOKING APPARATUS

Ataru Minamida, Higashi-Murayama, Japan, assignor to Asahi Kogyo Kabushiki Kaisha, Tokyo, Japan

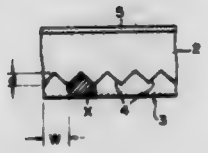
Continuation of Ser. No. 402,849, Jul. 29, 1982, abandoned. This application Mar. 5, 1985, Ser. No. 708,102

Claims priority, application Japan, Apr. 27, 1982, 57-69569

Int. Cl.³ H05B *6/12*

U.S. Cl. 219—10.49 R **2 Claims**





1. A cooking utensil for use with induction heating cooking apparatus, comprising:

an aluminum or aluminum alloy utensil body, and a magnetic substance layer provided at at least the outer surface of said utensil body at the bottom thereof;

the interface between said magnetic substance layer and said utensil body, being comprised of a plurality of concave and convex faces defined by a series of successive adjacent V-shaped internesting portions at the respective adjoining surfaces of said magnetic substance layer and said utensil body;

said utensil body having a flat inwardly directed cooking surface which is coated with a flourine-containing resin; and

the said magnetic substance layer being comprised of iron sprayed to the said outer surface of said bottom of said utensil body.

4,533,808

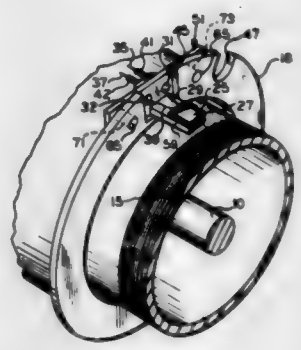
AN INDUCTION YARN HEATER DEVICE

John E. Newman, Spartanburg County, S.C., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 28, 1983, Ser. No. 566,464

Int. Cl.³ H05B *6/14*

U.S. Cl. 219—10.49 A **9 Claims**



1. An apparatus consisting essentially of

a base having a rotatable shaft,

a rotatable roll having a front end and a back end and an inner surface, wherein said heater is attached to said base and positioned between said rotatable shaft and said inner surface of said rotatable roll,

a plate having an interior face and an exterior face wherein said plate is attached to said base adjacent to the back end of said heater and extends radially outward with respect to said rotatable shaft, and wherein said interior face of said plate is positioned adjacent to the back end of said rotatable roll,

a temperature sensing means, and

a support means attached to said base and supporting said temperature sensing means in close proximity to said inner surface of said rotatable roll and said outer surface of said heater; wherein said support means comprises:

a first piece having a face side and a back side,

a second piece having a face side and a back side; wherein said first and second pieces are joined together in perpendicular orientation to one another such that said face side of said first piece and said face side of said second piece face the interior of the right angle defined by the joinder of said first and second pieces; wherein said second piece has a depression on the face said which extends from the end opposite the end where said first and said second pieces and joined, and extends toward the end where said first and said second pieces are joined; and wherein said face side of said first piece is brought into contact with said exterior face of said plate and attached to said exterior face in a manner to premit removal of said support means; and, wherein said temperature sensing means can be removed from said close proximity to said inner surface of said rotatable roll, without disassembling said rotatable roll from said rotatable shaft.

4,533,809

MICROWAVE OVENS AND METHODS OF COOKING FOOD

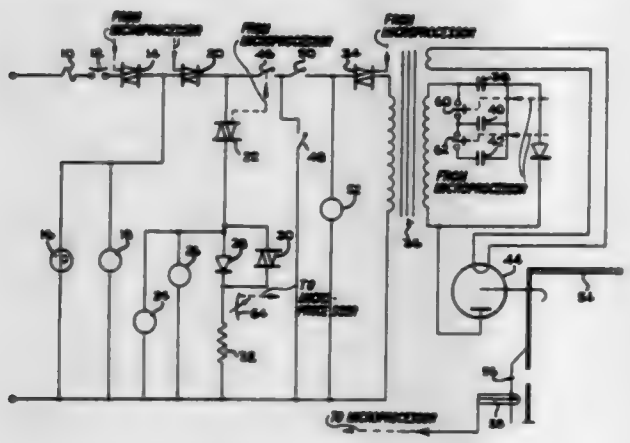
Kenneth I. Eke, Sanderstead, England, assignor to Microwave Ovens Limited, Surrey, England

Filed Mar. 12, 1984, Ser. No. 588,336

Claims priority, application United Kingdom, Mar. 15, 1983, 8307123

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 M **8 Claims**



1. A method of cooking food in a microwave oven having an oven cavity and a door for closing the cavity, comprising starting with the cavity of the oven in a cold condition, placing a food item into the cavity and closing the door, commencing a cooking process by applying to the food item continuous microwave power and simultaneously continuous thermal power by blowing a forced flow of hot air through the cavity, timing the cooking process from the commencement thereof, monitoring the temperature within the cavity or a function of said temperature, and ceasing the cooking process by ceasing the microwave power and the thermal power if the cavity temperature, or the function thereof, reaches a predetermined level within a predetermined time, continuing the cooking process with an increased level of microwave power and a decreased level of thermal power if the predetermined temperature is not reached within the predetermined time and ceasing the production of the microwave power at the increased level and the thermal power at the decreased level if the cavity temperature drops below a predetermined sub-level, lower than the predetermined level, after a further preset delay.

4,533,810

START CIRCUIT FOR MICROWAVE OVEN

Larry R. Harmon, Louisville; John C. Reiche, Middletown; Howard R. Bowles, and Norman H. Chiu, both of Louisville, all of Ky., assignors to General Electric Company, Louisville, Ky.

Filed Aug. 20, 1984, Ser. No. 642,567

Int. Cl.³ H05B *6/68*

U.S. Cl. 219—10.55 B **4 Claims**

1. A start circuit arrangement for a microwave oven of the type having a cooking cavity with an access door, and enabling the user to select a plurality of operating modes including a time delay mode in which start of a cooking cycle is delayed by an amount of time selected by the user, said circuit comprising:

an electronic controller operative to control cyclical operation of the oven; said controller including timer means for controlling the duration of cooking cycles and delay times in accordance with user selections;

microwave generating means adapted for selective energization by an external power supply;

a power control relay operative in a first operating condition to enable energization of said microwave generating means by said external power supply and in a second operating condition to prevent energization of said microwave generating means;

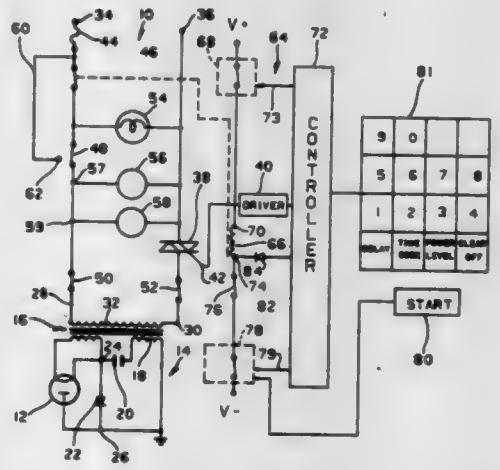
a user actuable momentary start switch;

a bistable electronic start latch means operative in its first state to enable said first operating condition for said relay and operative in its second state to establish said second operating condition for said relay; said latch means including a first input coupled to said start switch and a second input coupled to said electronic controller; said latch means being operative to assume its first state in response to user actuation of said start switch and to assume its second state in response to a reset signal from said electronic controller;

a door switch operative to assume a first state when the access door is closed and a second state when the access door is open;

means for providing a door signal to said controller, said signal having a first state and a second state and said means being operative to switch said signal to its first state when the door is closed and said latch is in its first state, and to its second state otherwise;

electronic arm switch means having a first state and a second state and operative in its first state to enable said first



operating condition for said relay and operative in its second state to establish said second operating condition for said relay, said arm switch means assuming its first state in response to an arm signal from said electronic controller; said controller being operative to generate said arm signal upon expiration of the user selected time delay to initiate a cooking cycle and to remove said signal upon expiration of the user selected cooking cycle time to terminate the cooking cycle;

said arm switch means, said latch means and said door switch means being operatively coupled in circuit with said relay such that said first operating condition for said relay is only established when each of said arm switch, said door switch, and said latch means is in its first state;

whereby the selected time delay period is initiated by user actuation of said momentary start switch and energization of microwave energy source is enabled by said arm signal from said controller at the expiration of the time delay period to initiate the subsequent cooking cycle.

4,533,811

METHOD FOR AUTOMATIC PROCESS CONTROL IN SPARK EROSIVE MACHINING

Ernst Bühler, Losone, Switzerland, assignor to AG fur industrielle Elektronik AGIE Losone b. Locarno, Losone, Switzerland

PCT No. PCT/CH82/00002, § 371 Date Sep. 2, 1982, § 102(e) Date Sep. 2, 1982, PCT Pub. No. WO82/02353, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 12, 1982, Ser. No. 420,230

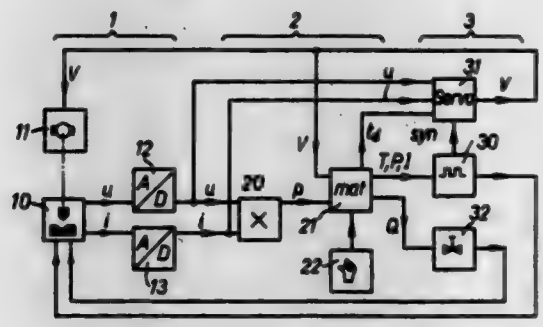
Claims priority, application Switzerland, Jan. 13, 1981, 190/81

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 M **14 Claims**

1. Method for automatic process control of a spark erosion

machine having a spark gap defined by a tool surface and a work piece surface under varying process conditions in the spark gap caused by changes of the area of the work piece surface to be machined and wherein the power at the spark gap during the erosion process is adjustable in response to a change in at least one process parameter, said method comprising the steps of adjusting a relative feed rate between said tool and work piece surfaces in response to a servo-control system so



that erosion takes place with a predetermined average ignition delay; providing a value of the electrical power at the spark gap; calculating a predetermined linear combination of the logarithm of the feed rate and the logarithm of the power to form a value for the actual machining intensity; providing a value for a desired machining intensity; comparing the values of actual and desired maching intensity; and controlling at least one process parameter to bring the actual machining intensity into conformity with the desired machining intensity.

4,533,812

METHOD AND DEVICE FOR FINE PROFILING TOOLS COATED WITH SUPER-HARD MATERIALS

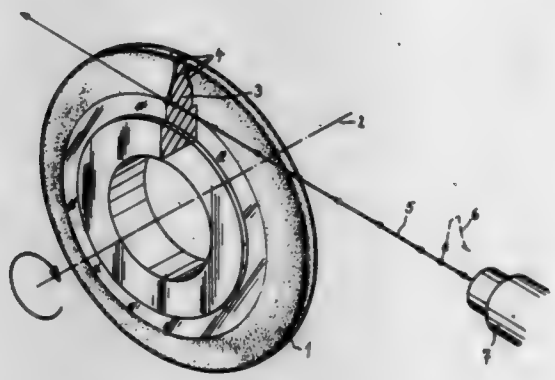
Manfred Lorenz, Coburg, Fed. Rep. of Germany, assignor to Kapp & Co. Werkzeugmaschinenfabrik, Coburg, Fed. Rep. of Germany

Filed Jan. 26, 1983, Ser. No. 461,157

Claims priority, application Fed. Rep. of Germany, Jan. 28, 1982, 3202697

Int. Cl.³ B23K *26/00*

U.S. Cl. 219—121 LH **9 Claims**



1. A method of precision profiling a tool which is coated with a super-hard material and has a prescribed outer contour, including a cutting surface, with some of the tips of the crystals of said coating projecting beyond said prescribed outer contour prior to said precision profiling; said method including the steps of:

rotating said tool;

generating a focused high energy beam;

orienting said beam tangential to said tool; and

moving said beam in a controlled path which corresponds to said prescribed outer contour of said tool to thereby profile said tool in the region of said cutting surface thereof by vaporizing said crystal tips which project beyond said prescribed outer contour.

4,533,813

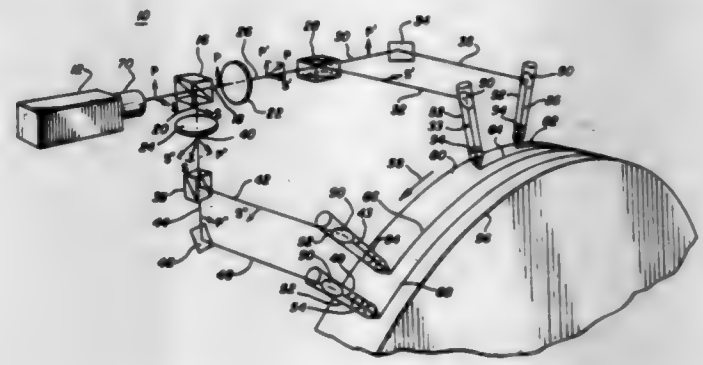
OPTICAL SELECTIVE DEMETALLIZATION APPARATUS

Charles C. Rayburn, Lynchburg, Va.; Howard R. Padgitt, Park Ridge, and Henry J. Flair, Franklin Park, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 6, 1983, Ser. No. 529,304

Int. Cl.³ B23K *26/00*

U.S. Cl. 219—121 LH **8 Claims**



1. An apparatus for applying optical energy to selectively remove a plurality of lanes of metal film carried upon a substrate; said apparatus comprising optical generation means for generating a primary beam in a primary beam path; beam expander means in said beam path for diffusing said primary beam to produce an expanded beam in an expanded beam path substantially coaxial with said primary beam path; partitioning means for dividing said expanded beam into a plurality of derivative beams; reflective means for redirecting each of said plurality of derivative beams to form a plurality of working beams which impact the substrate; transport means for transporting the substrate in a direction transverse of said plurality of working beams; and focusing means for focusing each of said plurality of working beams upon the substrate, said focusing means comprising a plurality of lens means configured to focus each of said plurality of working beams upon the substrate in a substantially elliptical pattern, the major axis of said substantially elliptical pattern being substantially aligned with said direction of transport of the substrate.

4,533,814

LASER PIPE WELDER/CUTTER

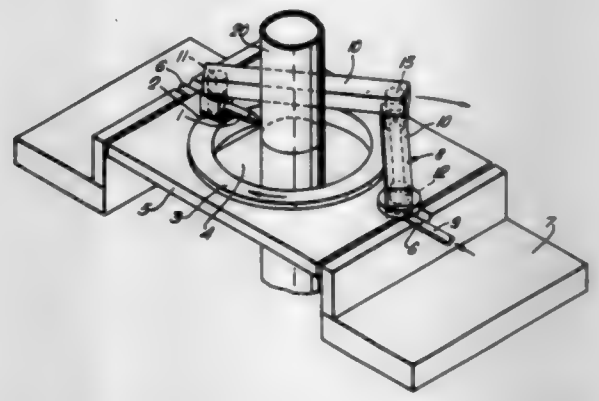
Brooke A. Ward, Goring on Thames, England, assignor to United Kingdom Atomic Energy Authority, London, England

Filed Jan. 31, 1983, Ser. No. 462,475

Claims priority, application United Kingdom, Feb. 12, 1982, 8204249

Int. Cl.³ B23K *27/00*

U.S. Cl. 219—121 LD **3 Claims**



1. A laser processing apparatus comprising, a focusing head which is mounted on a carriage which is adapted to follow a closed path around a position at which a stationary workpiece to be processed by a laser beam may be placed whilst maintaining the laser beam at normal incidence to the workpiece and

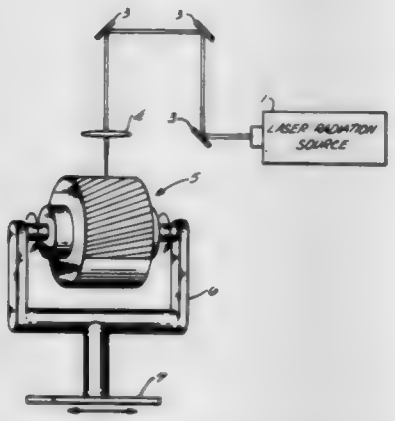
bringing it to a focus at the surface of the workpiece, a flexible laser beam guide connecting the focusing head to a stationary laser beam guide, the flexible laser beam guide including at least three optical elbow joints each having an angular movement of more than two hundred and seventy degrees and means for reflecting the laser beam from one optical elbow joint to another and thence to the focusing head, a first of the optical elbow joints being associated with the focusing head, a second of the optical elbow joints being associated with the fixed laser beam guide and the third optical elbow joint being intermediate the first and second optical elbow joints and separated from them by distances such that the focusing head can traverse more than a full circuit around the workpiece without the flexible beam guide coming into contact with the workpiece.

4,533,815

PROCESS FOR TREATING A BEARING SURFACE TO MODIFY MICROASPERITIES

Gunes M. Ecer, Irvine, Calif., assignor to Smith International, Inc., Newport Beach, Calif.

Filed Aug. 1, 1983, Ser. No. 518,921
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LF **13 Claims**



1. A process for treating a bearing surface for elastohydrodynamic lubrication, the bearing surface having microasperities for retaining lubricant, which comprises:

generating a high density energy beam; and

producing relative motion between the beam and the bearing surface to define a succession of points at each of which the beam impinges upon the bearing surface for an interaction time during which localized heating occurs and then rapid cooling begins to cause partial melting followed by rapid solidification that, in the direction normal to the bearing surface extends to a depth less than the microasperity height and that, owing to said relative mmotion, extends throughout an area of the bearing surface to define a microdimpled surface having rounded microasperities with residual compressive stress for retaining lubricant and enhancing resistance to wear and fatigue.

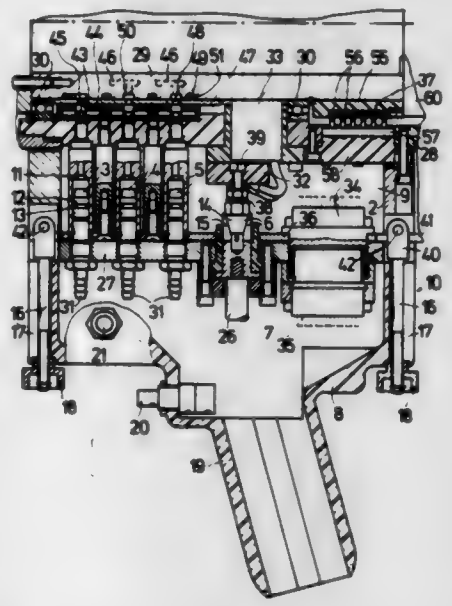
4,533,816

ELECTRIC WELDING GUN WITH A ROTARY TORCH HEAD

Holger Reeh, Adalbert-Stifter-Str. 1, Germering, and Josef Geiss, Otto-Hahn-Str. 1, Haar, both of Fed. Rep. of Germany

PCT No. PCT/DE81/00131, § 371 Date Apr. 26, 1982, § 102(e) Date Apr. 26, 1982, PCT Pub. No. WO82/00787, PCT Pub. Date Mar. 18, 1982
PCT Filed Aug. 28, 1981, Ser. No. 375,288
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1980, 3032696
Int. Cl.³ B23K *9/28, 9/02*
U.S. Cl. 219—137.31 **17 Claims**

1. An electric welding gun comprising: a rotary driving shaft in an outer casing provided with a supporting casing for handling the welding gun; a plurality of supply lines jointly introduced into the supporting casing, said plurality of supply lines comprising liquid and gas lines including a cooling water feed line, a cooling water return line and an inert gas feed line; means for conducting the output of each supply line into a respective axially sealed ring chamber in the outer casing for supplying line ducts formed in the rotary driving shaft, said plurality of supply lines further comprising a welding current line connected to a current transfer means for transferring welding current to the shaft made of electrically conductive material and electrical control lines, each of said supply lines having a line coupling within said supporting casing wherein



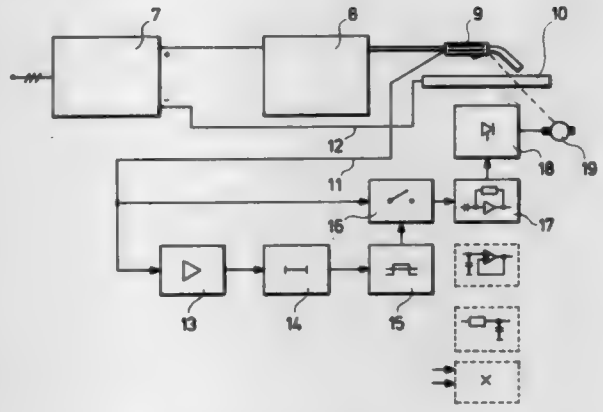
each of said line couplings is a plug connection and said supporting casing is subdivided into a plug box and a socket box adapted to be assembled to form the supporting casing and to be locked together in the assembled arrangement by a locking mechanism, said plug connections extending parallel to each other and each of said plug connections comprising two coupling parts, one fixed to said plug box and the other fixed to said socket box, whereby the said plug box and socket box cooperate to form a multi-point connector in such a way that said two coupling parts of each of said plug connections are commonly assembled by said assembling of the plug box and the socket box.

4,533,817

METHOD FOR MEASURING THE FREE WIRE LENGTH IN MIG/MAG WELDING

Tapani Mäkimaa, Lahti, Finland, assignor to Kemppi Oy, Lahti, Finland

Filed Dec. 1, 1983, Ser. No. 556,909
Claims priority, application Finland, Dec. 29, 1982, 824500
Int. Cl.³ B23K *9/12*
U.S. Cl. 219—137.71 **7 Claims**



1. A method for automatically controlling the free wire

length extending from the gun of welding apparatus during a welding process, such as hot-arc, short-arc and MIG/MAG welding, said method comprising

detecting a first time instant when the voltage over the arc achieves a minimum, said minimum indicating the beginning of a bead short-circuit situation;

measuring the voltage at at least one selected time point in the interval between said first time instant and a second time instant when the voltage over the arc, subsequent to said minimum, achieves a maximum, said maximum indicating the end of the bead short-circuit situation;

producing an electrical quantity affected by said measured voltage, said electrical quantity being representative of said free wire length; and

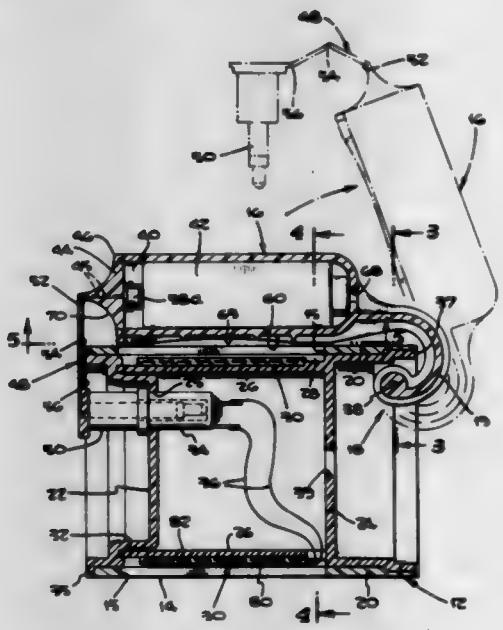
controlling the gun to maintain said free wire length substantially constant in response to said electrical quantity.

4,533,818

ELECTRIC HAIR CURLER WITH SELF-CONTAINED BATTERY POWER SUPPLY

Sara Green, 340 S. Kenmore, #205, Los Angeles, Calif. 90020

Filed Feb. 16, 1983, Ser. No. 466,842
Int. Cl.[3] A45D *2/36;* H05B *3/02*
U.S. Cl. 219—222 11 Claims



1. A self powered heated hair curling roller comprising, in combination:

a roller body;

a hair retaining clamp pivotably attached at one end to said roller body and pivotable between an open position in which the free end of the clamp is spaced from said roller body to allow hair to be wound on said roller body and a closed position wherein said free end is nearest said roller body to clamp the hair wound on the roller body;

electrical heater means associated with said roller body for heating said roller body;

a battery compartment defined within one of said roller body or said clamp;

cooperative separable connector means on said clamp and roller body for operatively electrically interconnecting a battery in said battery compartment and said heater means; and

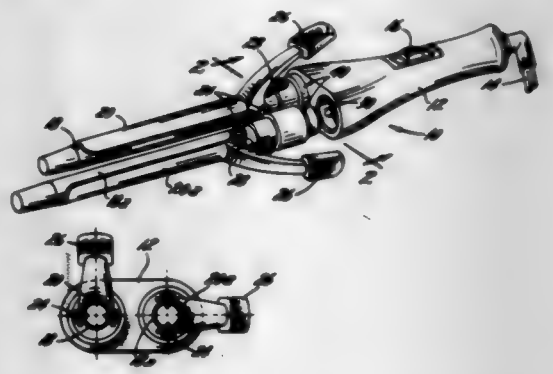
said connector means also operating as a mechanical fastener for securing said free end of said clamp to said roller body in said closed position such that the electrical connection is interrupted upon release of said clamp.

4,533,819

DUAL MANDREL ELECTRIC CURLING IRON WITH SEPARATE ANGULARLY ADJUSTABLE HAIR CLAMPS

Mary M. Valiulis, 735 Napoleon, Rockford, Ill. 61103

Filed Jul. 2, 1984, Ser. No. 627,078
Int. Cl.[3] A45D *1/02;* H05B *3/02*
U.S. Cl. 219—225 6 Claims



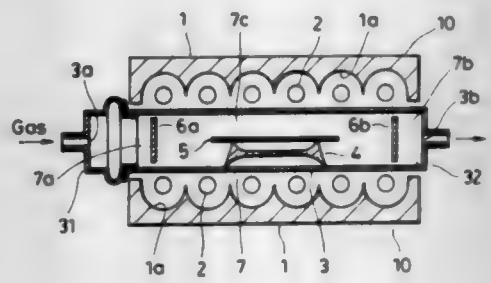
1. A device for curling hair, said device comprising an elongated handle, a pair of elongated winding mandrels extending from one end of said handle in spaced side-by-side relation, means for heating said mandrels, a separate, independently operable hair clamp movably connected to and extending alongside each of said mandrels, and means connecting said mandrels to said one end of said handle with the clamp of one of the mandrels at a different angular orientation relative to the longitudinal axis of said handle than the clamp of the other mandrel.

4,533,820

RADIANT HEATING APPARATUS

Hiroshi Shimizu, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 29, 1983, Ser. No. 480,015
Claims priority, application Japan, Jun. 25, 1982, 57-108533
Int. Cl.[3] C23C *13/08;* F27D *11/02;* F27B *5/16*
U.S. Cl. 219—411 1 Claim



1. A radiant heating apparatus comprising:

a container having a wall, said container being adapted to position an item to be heated therein, at least one part of said container being transparent;

a heat-radiating lamp irradiating light onto said item through the transparent part of said container;

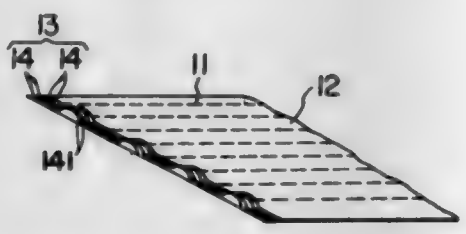
a gas inlet and gas outlet formed through the wall of said container; and

means for maintaining uniformly dispersed gas flow across said container where the item is positioned, said uniform gas flow maintaining means including a gas flow dispersion barrier made of material transparent to said irradiated light, whereby the barrier does not become heated, and disposed within said container so as to substantially confront said gas inlet, said gas flow dispersion barrier defining a plurality of gas through-holes.

4,533,821
HEATING SHEET

Ryoda Sato, 8-25 Obamacho 1-chome, Amagasaki-shi, Hyogo-ken, Japan (661)

Filed Sep. 15, 1983, Ser. No. 532,407
Claims priority, application Japan, Dec. 11, 1982, 57-216283
Int. Cl.[3] H05B *3/34*
U.S. Cl. 219—545 12 Claims

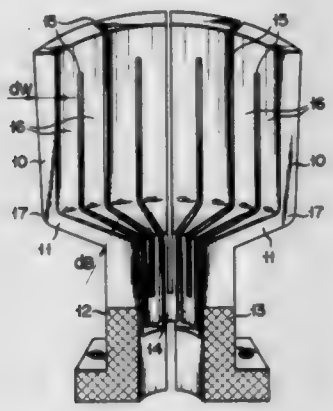


1. A heating sheet, comprising: a nonconductive fiber sheet; a plurality of heating wires fixed on at least one surface of said nonconductive fiber sheet and extending in a longitudinal direction so that said plurality of heating wires do not cross each other; and at least two common power source terminals each having a plurality of conductors fixed on at least said one surface of said nonconductive fiber sheet and extending in a transverse direction, each of said common power source terminals being connected to a corresponding or intermediate portion of a plurality of said heating wires such that each of said plurality of conductors crosses and is electrically connected to a corresponding plurality of heating wires, each of said common power source terminals having arcuate portions extending above or below said non-conductive fiber sheet at predetermined intervals; and means for connecting said common power source terminals to a low-voltage power source.

4,533,822
HEATING RESISTOR OF SINGLE CRYSTAL MANUFACTURING APPARATUS

Takashi Fujii; Jisaburo Ushizawa, and Masayuki Watanabe, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 22, 1984, Ser. No. 592,363
Claims priority, application Japan, Mar. 25, 1983, 58-48746
Int. Cl.[3] H05B *3/10*
U.S. Cl. 219—553 6 Claims

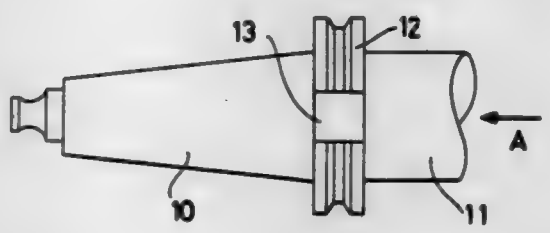


1. A heating resistor of a single crystal manufacturing apparatus which has a structure such that a cylindrical side wall portion for coaxially surrounding a melting pot, a bottom portion for supporting said side wall portion, and a cylindrical portion which supports said bottom portion and which is connected to power supply electrodes are integrally formed, and a plurality of slits are formed extending along said side wall portion and said bottom portion such that said heating resistor is formed to constitute a heating conductor which is connected from one of said power supply electrodes to the other of said power supply electrodes in a zigzag manner, wherein said bottom portion has a maximum thickness which is not greater than that of said side wall portion, and said bottom portion has a minimum inner diameter which falls within a range of 20 to 80% of an inner diameter of a lowermost portion of said side wall portion.

4,533,823
CODING SYSTEMS FOR ELEMENTS OF MACHINE TOOLS, PARTICULARLY OF THE NUMERICALLY CONTROLLED TYPE

Corni Vittorio, Modena, Italy, assignor to Comau S.p.A., Grugliasco, Italy

Filed Jan. 11, 1983, Ser. No. 457,277
Claims priority, application Italy, May 12, 1982, 67624 A/82
Int. Cl.[3] G06F *15/20*
U.S. Cl. 235—375 6 Claims

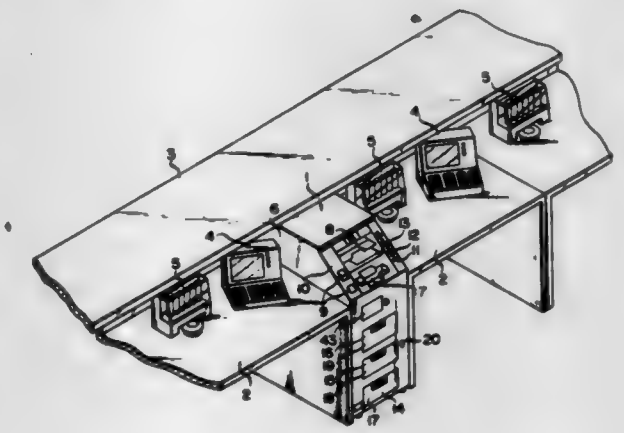


1. A storage system for elements of machine tools, particularly of the numerically controlled type, comprising means (15) for storing a plurality of different said elements, a different "bar" code (14) carried by each different element, a reading head (17) for reading the different codes, and a code detection sensor (18) adapted to be juxtaposed successively with the various different elements to sense the code on the elements and to transmit to the reading head signals representative of the identity of the said element with which said sensor is juxtaposed.

4,533,824
AUTOMATIC DEPOSITING/DISPENSING APPARATUS

Yoshihiro Watanabe, Fujisawa, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 9, 1983, Ser. No. 502,728
Claims priority, application Japan, Jun. 16, 1982, 57-103334
Int. Cl.[3] G06F *15/30*
U.S. Cl. 235—379 7 Claims



1. An automatic depositing/dispensing apparatus which stores deposited notes together with previously stored notes and appropriates the deposited notes for dispensation, comprising:

a housing having a note inlet and a note outlet;

a plurality of note storage means in the housing each storing deposited notes of a denomination;

first conveyor means for transferring notes inserted in the note inlet to the individual note storage means; and

second conveyor means for transferring to the note outlet notes taken out of the individual note storage means,

each said note storage means including

a note storage chamber into which notes are collected in one direction,

collection/takeout means disposed at one end portion of the note storage chamber, whereby the deposited notes from the first conveyor means are led and collected into the note storage chamber, and the notes collected in the note storage chamber are taken out and delivered to the second conveyor means,

partitioning means capable of selectively assuming a first posture to engage both side edges of the notes stored in the note storage chamber or a second posture removed from the side edges, and movable between a first position inside the note storage chamber and a second position adjacent to the collection/takeout means, so that a temporary storage space is defined between the collection/takeout means and the partitioning means in the first posture and in the first position, and

drive means holding the partitioning means in the first posture and in the first position at the time of deposition to keep the deposited notes in the temporary storage space, and shifting the partitioning means to the second posture and the second position and then to the first posture and the first position in taking out the deposited notes kept in the temporary storage space, and shifting at dispensation the partitioning means to the second posture and the second position.

4,533,825

BAR CODE RECOGNITION APPARATUS

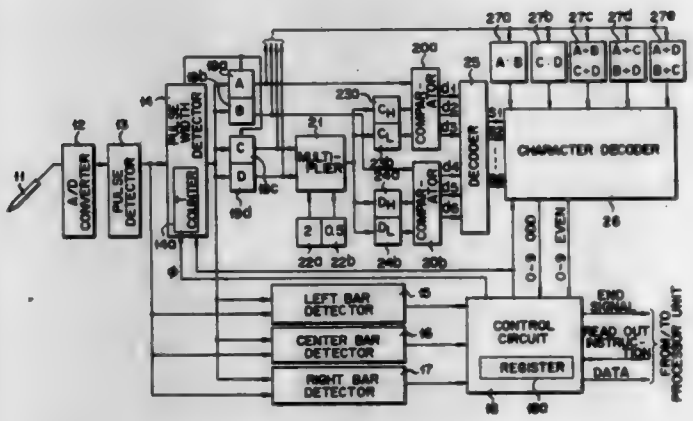
Shigeru Yamada, Tokyo, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Filed Jun. 15, 1983, Ser. No. 504,483

Claims priority, application Japan, Jun. 23, 1982, 57-108137

Int. Cl.³ G06K *7/10*

U.S. Cl. 235—463 **6 Claims**



1. A bar code recognition apparatus, comprising:

means for reading a width value of each of four bars of two kinds presented alternately on a medium, to represent one character;

memory means connected to said reading means for storing said width values of said four bars for each character read by said reading means;

calculation means for calculating and producing two width values respectively smaller and greater than that of one of the two bars of a first kind, and two width values respectively smaller and greater than that of one of the two bars of a second kind;

first comparison means, connected to said memory means and said calculation means, for comparing said smaller and greater width values of the bar of the first kind with the width value of the other bar of the first kind and for generating, according to the result of the comparison, a first, a second, or a third width value amplitude comparison signal for the first kind of bars, said first width value amplitude comparison signal being generated when said width value signal for a read individual bar is a width value signal indicative of a still greater width than said greater width provided by said calculation means, said second width value amplitude comparison signal being generated when said width value signal for a read individual bar is a width value signal indicative of a still smaller width than said smaller width provided by said calculation means, said third width value amplitude comparison signal being generated when said width value signal for a read individual bar is a width value signal indicative of a width intermediate between said greater and said smaller widths provided by said calculation means;

second comparison means, connected to said memory means and said calculation means, for comparing the smaller and greater width values of the bar of the second kind with the width value of the other bar of the second kind, and for generating, according to the result of the comparison, the first, the second, or the third width value amplitude comparison signals for the second kind of bars;

decoding means connected to said first and said second comparison means for combining said width value amplitude comparison signals produced from said first comparison means with said width value amplitude comparison signals produced from said second comparison means to produce nine combination signals of said width value amplitude comparison signals;

ratio calculation means connected to said memory ans for calculating a ratio value from the width values of said read individual bars read out from said memory means; and

means, connected to said decoding means and said ratio calculation means, for determining a corresponding character on a basis of one of said combination signals of said width value amplitude comparison signals derived from said decoding means and said ratio value of various width values calculated by said ratio calculation means.

4,533,826

OPTO-ELECTRONIC FOCUSING-ERROR DETECTION DEVICE

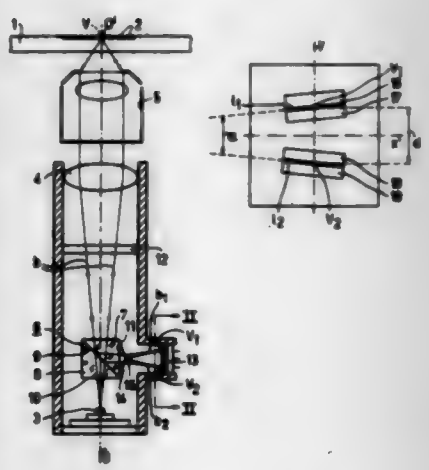
Antonius A. M. van Alem, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 26, 1982, Ser. No. 411,734

Claims priority, application Netherlands, May 19, 1982, 8202058

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201 **6 Claims**



1. A focusing error detection device for detecting deviation between a radiation-reflecting surface and a plane of focusing of an objective system arranged to converge a beam of radiation to a spot on said reflecting surface, said device comprising a beam splitter disposed in the path of radiation reflected by said surface, said beam splitter being arranged so as to form a pair of subbeams from the reflected radiation incident thereon, a detection system disposed in the path of said subbeams, said detection system comprising a plurality of radiation sensitive detectors each having an output for supplying an electrical

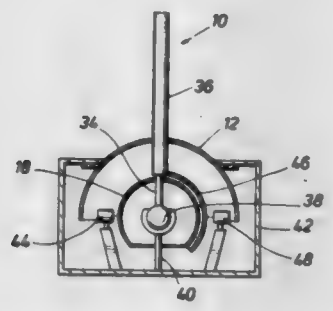
signal, said detectors being separated from each other by a first and second elongated strip, said first elongated strip being associated with one of said subbeams and being inclined at an acute angle with respect to said second strip which is associated with the other subbeam of said pair of subbeams, and an electronic circuit coupled to said outputs of said detectors for deriving a focusing error signal indicative of the deviation between said radiation-reflecting surface and said plane of focusing from said electrical signals supplied by said detectors.

4,533,827

OPTICAL JOYSTICK

Jeffrey L. Fincher, Spring, Tex., assignor to Texas A&M University, College Station, Tex.

Filed Oct. 6, 1982, Ser. No. 433,006
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—211 K **19 Claims**



1. An optical joystick converting the variable physical position of a command control to electrical output, comprising:

a command control adapted for tilting from its neutral position with respect to a pivot location in at least a first direction and a second direction displaced 90° from said first direction,

a first at least partial sphere connected to said command control such that the center of said first partial sphere coincides with the pivot location and the surface of said first partial sphere moves about the pivot location as said command control is moved, the surface of said first partial sphere varying in property to exhibit a varying optical change in said first direction of tilt and in said second direction of tilt,

first optical response means positioned with respect to the surface of said first partial sphere for responding to said varying optical change in the surface of said first partial sphere in said first direction of tilt and producing a first electrical output, and

second optical response means positioned with respect to the surface of said first partial sphere for responding to said varying optical change in the surface of said first partial sphere in said second direction of tilt and producing a second electrical output.

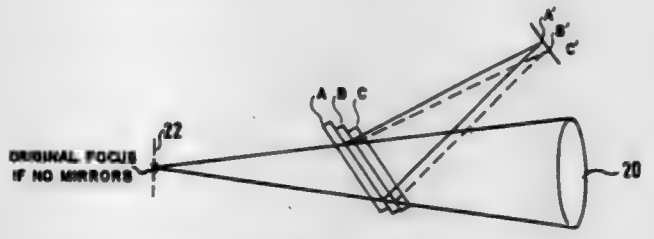
4,533,828

ARRANGEMENT FOR INCREASING THE DYNAMIC RANGE OF OPTICAL INSPECTION DEVICES TO ACCOMMODATE VARYING SURFACE REFLECTIVITY CHARACTERISTICS

Paul DiMatteo, Huntington, and Joel Hecker, Port Jefferson Station, both of N.Y., assignors to Robotic Vision Systems, Inc., Hauppauge, N.Y.

Filed Dec. 3, 1982, Ser. No. 446,712
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—216 **8 Claims**

1. An arrangement for extending the dynamic range of sensor arrays comprising: image sensor means containing at least two sensing sites; means for imaging radiant energy from an object upon said image sensor means; and mirror means with partially reflecting surface means in the path of said radiant



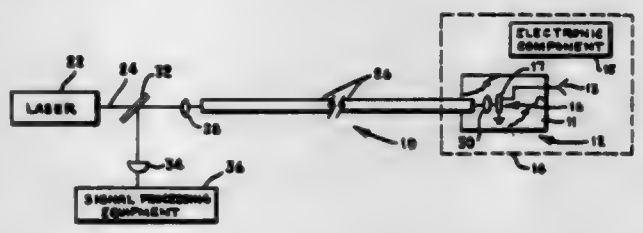
energy for generating a set of spatially displaced energy-related images of said object.

4,533,829

OPTICAL ELECTROMAGNETIC RADIATION DETECTOR

William J. Miceli, Concord, and Jacques E. Ludman, Westford, both of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 7, 1983, Ser. No. 511,592
Int. Cl.³ G02B *5/14*
U.S. Cl. 250—227 **10 Claims**



1. An optical electromagnetic radiation detector comprising:

an electro-optic Fabry-Perot interferometer positioned at a first location, said interferometer being made up of an electro-optic material having a pair of opposed surfaces and a pair of transparent electrodes secured to said electro-optic material;

means electrically connected to said electrodes for receiving nearby electromagnetic radiation and causing a voltage to be developed across said electro-optic material, said voltage altering the effective length of said electro-optic material thereby changing the resonant condition of said electro-optic Fabry-Perot interferometer;

means positioned at a second location for providing a monochromatic beam of light;

means having one end thereof optically aligned with said monochromatic beam of light for transmitting said beam of light out the other end thereof to said Fabry-Perot interferometer, said surfaces of said Fabry-Perot interferometer reflecting said beam of light back into said other end of said transmitting means;

means adjacent said one end of said transmitting means for receiving said reflected beam of light and directing said reflected beam of light in a predetermined direction away from said light providing means; and

means optically aligned with said light receiving and directing means for receiving said reflected beam of light therefrom and detecting any variations in the intensity in said reflected beam of light;

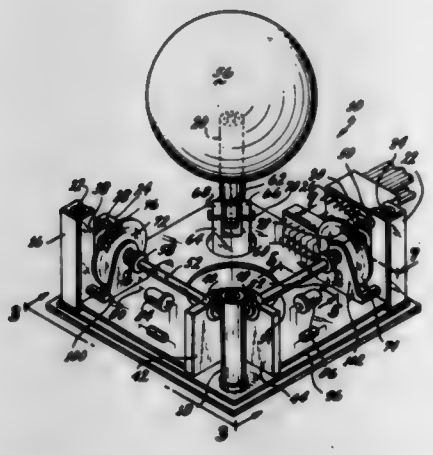
whereby said variations in said intensity of said reflected beam of light is directly related to the strength of said electromagnetic radiation received by said electromagnetic radiation receiving means.

4,533,830

OPTICAL ENCODER WITH A SHUTTER CLUTCHED FOR DIRECTIONAL MOVEMENT

Richard R. Beauprey, Garden Grove, Calif., assignor to Disc Instruments, Inc., Costa Mesa, Calif.

Filed Dec. 16, 1982, Ser. No. 450,563
Int. Cl.[3] G01D *5/38*
U.S. Cl. 250—231 SE 22 Claims



1. The improvement in an optical disc encoder of the type having a disc, with apertures therein, which interrupts a light source in a pulsed manner as the disc turns in order to provide for pulsed light reception by light sensors to indicate the radial movement of the disc, wherein the improvement comprises:

at least two light sensors on one side of the disc having an optical path in relationship to the light source that is interrupted by said disc; and,

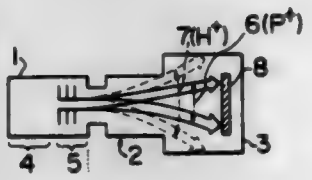
shutter means clutched for directional movement with respect to said disc that close off one light sensor when the disc moves in one direction and closes off a second light sensor when the disc moves in the other direction in order to accommodate the output on either light sensor corresponding to the direction of rotational movement of said disc.

4,533,831

NON-MASS-ANALYZED ION IMPLANTATION

Haruo Itoh, Hino; Katsumi Tokiguchi, Machida; Terunori Warabisako; Tadashi Saitoh, both of Tokyo, and Takashi Tokuyama, Higashikurume, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 21, 1983, Ser. No. 477,375
Claims priority, application Japan, Mar. 24, 1982, 57-45617
Int. Cl.[3] G01N *23/00*
U.S. Cl. 250—492.2 19 Claims



1. A non-mass-analyzed ion implantation process using ions generated from a compound without selecting a single ion species, comprising the steps of:

generating ions, which include at least two species of ions of the same polarity, from a compound source material;

accelerating said ions;

scanning said accelerated ions electromagnetically and repetitively in a direction transverse to an acceleration direction; and

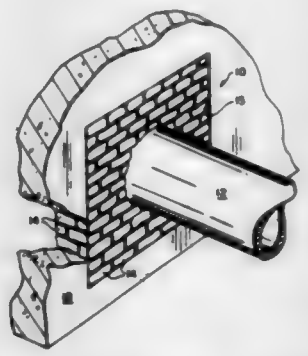
implanting beams of said scanned ions, including said at least two species of ions, into a target, with said at least two species of ions being implanted with different distribution profiles of implanted ion doses.

4,533,832

RADIATION ATTENUATION MODULES AND SYSTEM AND METHOD OF MAKING THE MODULES

Earl B. Jacobson, 510 S. Shore Dr., Crystal Lake, Ill. 60014

Filed Dec. 29, 1983, Ser. No. 566,694
The portion of the term of this patent subsequent to Feb. 21, 2001, has been disclaimed.
Int. Cl.[3] G21C *11/00*; G21F *3/02*
U.S. Cl. 250—519.1 30 Claims



1. A radiation attenuation system, comprising:

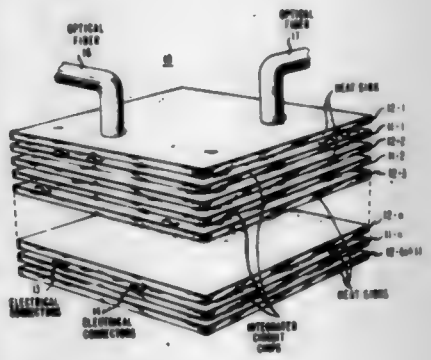
a plurality of radiation attenuation module means, each having a substantially dimensionally stable preformed body shaped to stack against and on top of adjacent module means around a radiation emitting object, each said substantially dimensionally stable body having sufficient flexiblity to be molded against one or more irregular surfaces of said radiation emitting object, when said module means are stacked into an assembly around at least a portion of said radiation emitting object for substantially eliminating radiation exposure from said radiation emitting object.

4,533,833

OPTICALLY COUPLED INTEGRATED CIRCUIT ARRAY

John A. Copeland, Fair Haven, and Stewart E. Miller, Locust, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 19, 1982, Ser. No. 409,401
Int. Cl.[3] G02B *27/00*
U.S. Cl. 250—551 5 Claims



1. An integrated circuit array comprising:

a plurality of integrated circuit chips, the plurality comprising a first chip and a second chip, each chip having a pair of broad, planar surfaces;

said chips being stacked with their broad, planar surfaces substantially parallel to each other;

and means for coupling between said chips, the means comprising a multiplicity of radiation sources and radiation detectors distributed among said chips, at least a first radiation source and a first radiation detector located on the first chip, and at least a second radiation source and a second radiation detector located on the second chip, such that the first radiation source can couple radiation to at

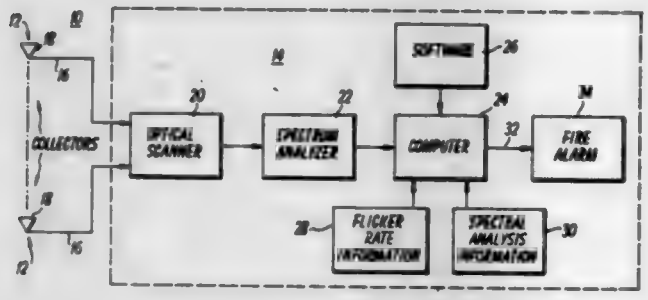
least the second radiation detector, and the second radiation source can couple energy to at least the first detector.

4,533,834

OPTICAL FIRE DETECTION SYSTEM RESPONSIVE TO SPECTRAL CONTENT AND FLICKER FREQUENCY

Ray G. McCormack, St. Joseph, Ill., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Dec. 2, 1982, Ser. No. 446,143
Int. Cl.³ H05R *33/00*
U.S. Cl. 250—554 **9 Claims**



1. A fire detection system comprising

(a) at least one ambient light collecting station;

(b) means for providing at least one known fire spectral component signature signal;

(c) means for providing at least one fire flicker rate signature signal;

(d) means for generating a spectral component signal from said collected ambient light;

(e) means for generating a flicker rate signal from said collected ambient light;

(f) means for providing a first fire detection signal by comparing said spectral component signal with at least one spectral component signature signal;

(g) means for providing a second fire detection signal by comparing said flicker rate signal with said at least one fire flicker rate signature signal; and

(h) means responsive to said first and second fire detection signals for providing an alarm signal.

4,533,835

CONTROL APPARATUS FOR HYDRAULICALLY DRIVEN GENERATOR

Sterling Beckwith, 1824 Doris Dr., Menlo Park, Calif. 94025

Filed Mar. 15, 1984, Ser. No. 589,974
Int. Cl.³ F03B *15/02*
U.S. Cl. 290—43 **15 Claims**

1. Control apparatus for an electrical generator for supplying electrical power to a power system and driven by a turbine rotor in a fluid delivery duct provided with a shiftable throttle valve therein comprising:

a fluid actuated operator having means for coupling the operator with the throttle valve to open and close the same as a function of water pressure applied to or removed from the operator;

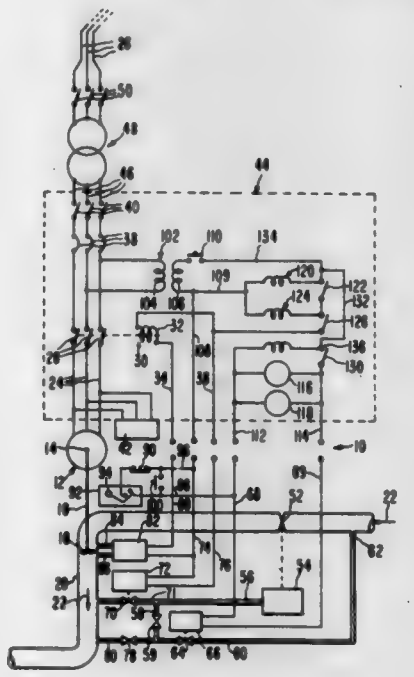
a first fluid line for coupling the duct to the operator to supply fluid thereto from the duct for actuating the operator to cause opening of the throttle valve;

first electrically actuated valve means for opening the first fluid line to permit fluid to flow therethrough to the operator to open the valve;

a second fluid line coupled with the operator for draining the fluid therefrom when the same has been actuated;

second electrically actuated valve means for opening the second fluid line to drain the fluid from the operator, whereby the throttle valve will then be caused to close; and

means coupled with the first valve means and the second valve means for actuating and deactuating the same as a function of the voltage of the power system to which the generator is supplying power.

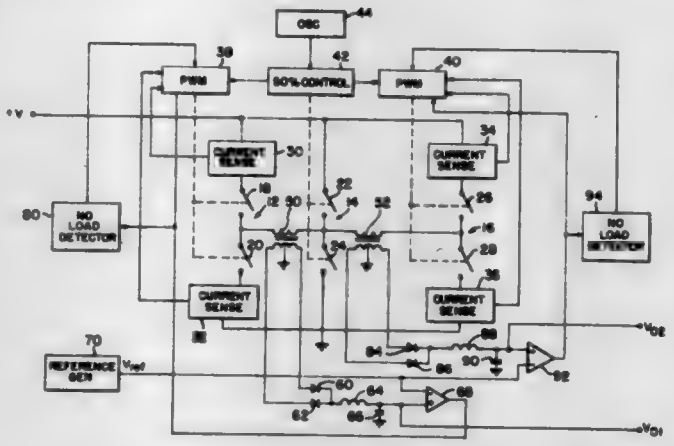


4,533,836

MULTIPLE VOLTAGE SWITCHING POWER SUPPLY HAVING OUTPUT VOLTAGE LIMITING

Ralph F. Carpenter, King County, and David R. Gordon, Snohomish County, both of Wash., assignors to Pacific Electro Dynamics, Inc., Redmond, Wash.

Filed Jan. 12, 1983, Ser. No. 457,408
Int. Cl.³ H02P *13/22*
U.S. Cl. 307—11 **13 Claims**



1. A multi-output-voltage switching power supply comprising:

a pair of fifty percent duty cycle switches connected in series with each other across a pair of incoming power lines, each of said switches having an internal shunting capacitance;

first control means for alternately closing said fifty percent duty cycle switches, with each of said switches being closed for substantially the same time as the other;

a plurality of pairs of first and second pulse-width modulated switches connected in series with each other across said incoming power lines, respectively, each of said switches having an internal shunting capacitance;

respective power supply circuits connected from the junction between each pair of interconnected pulse-width modulated switches to the junction between said fifty percent duty cycle switches, each of said power supply circuits generating a DC output voltage that is a function

of the closure times of its respective pulse-width modulated switches; and

respective pulse-width modulated control means operating in synchronism with said first control means for closing said second pulse-width modulated switch in each pair for a portion of the time that said first fifty percent duty cycle switch is closed, and for closing said first pulse-width modulated switch for a portion of the time that said second fifty percent duty cycle switch is closed, the closure time of said pulse-width modulated switches being adjusted to maintain the DC output voltage at a predetermined value, whereby N DC output voltages can be generated from N+1 pairs of series-connected switches;

comparator means for generating a no-load indicating signal in response to said output voltage exceeding a predetermined value; and

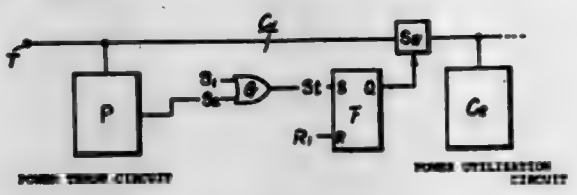
gating means energized by said no-load indicating signal for altering the operation of said pulse-width modulated control means so that said pulse-width modulated switches operate in synchronism with said fifty percent duty cycle switches so that the voltage at the junction between the respective pairs of pulse-width modulated switches is always equal to the voltage at the junction between the fifty percent duty cycle switches, whereby the voltage applied to the power supply circuit connected therebetween is always zero.

4,533,837

KEYBOARD-EQUIPPED APPARATUS SUCH AS AN ELECTRONIC CALCULATOR WITH BATTERY THROW MEANS FOR ENABLING A POWER SUPPLY CIRCUIT

Shinichi Tanaka, Nara, and Takitsugu Mineyama, Uda, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 438,331, Nov. 1, 1982, abandoned, which is a continuation of Ser. No. 891,640, Mar. 30, 1978, abandoned. This application May 29, 1984, Ser. No. 614,702
Claims priority, application Japan, Mar. 31, 1977, 52-37078
Int. Cl.³ H01H *3/00*; H03K *17/22*
U.S. Cl. 307—116 **3 Claims**



1. A power supply controller for an apparatus including an input keyboard comprising:

a power supply;

switch means for selectively electrically interconnecting said power supply to said apparatus upon receipt of a control signal;

power throw means for detecting an interconnection of said power supply to said switch means and producing a power supply enable output for a time period after said interconnection;

power supply control means being operatively interconnected to said power throw means and said input keyboard for selectively controlling said switch means, said power supply control means generating said control signal upon generation of said power supply enable output and upon actuation of a key of said input keyboard for a predetermined time duration, said power supply control means including,

flip-flop means, responsive to the application of a set signal thereto, for storing said set signal and applying it to said switch means as said control signal, said control signal being applied to said switch means only until the application of a reset signal to said flip-flop means, and

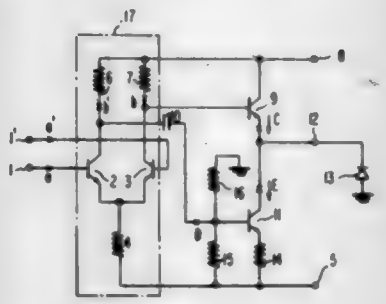
OR gate means connected to said flip-flop means for receiving input signals from said input keyboard and said power supply enable output and producing a set signal for application to said flip-flop means in response to either a said input signal or said power supply enable output.

4,533,838

DIODE DRIVER CIRCUIT HAVING STORED CHARGE CONTROL MEANS

Toshio Fujita, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Dec. 3, 1982, Ser. No. 446,307
Claims priority, application Japan, Dec. 18, 1981, 56-205950
Int. Cl.³ H03K *17/00*
U.S. Cl. 307—270 **6 Claims**



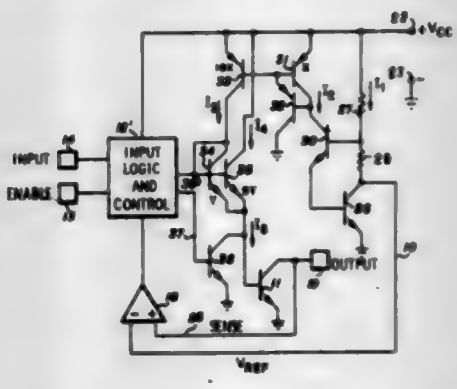
1. A diode driver circuit comprising: switching means responsive to an input signal, a diode means for modulation or switching, said diode means having a forward bias state and a reverse bias state, a low impedance circuit means connected to said switching means and said diode means for feeding a reverse voltage to said diode means in response to a first output of said switching means to switch said diode means from said forward bias state to said reverse bias state, and a constant current circuit means connected to said diode means for supplying a current in the forward direction to said diode means, said constant current circuit means including means responsive to a second output of said switching means for supplying an excess current for only a period of time in which said diode means is switched from said reverse bias state to said forward bias state.

4,533,839

CURRENT LIMITING CIRCUIT FOR HIGH CURRENT PERIPHERAL DRIVERS

Ramanatha V. Balakrishnan, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jan. 10, 1983, Ser. No. 456,934
Int. Cl.³ H03K *17/60, 3/26*
U.S. Cl. 307—270 **10 Claims**



1. In a peripheral driver circuit which includes at least one current sink transistor having an uncommitted collector that can sink a substantial current in response to a logic operated base current and wherein said logic further responds to the voltage present on said uncommitted collector whereby said current sink transistor is turned off when said voltage exceeds a predetermined reference potential so that when said current sink transistor is driven from a current source that exceeds its

saturation capability it is protected, the improvement comprising:

a reference transistor;

means for passing a reference current through said reference transistor; and

means, responsive to said reference current, for developing a controlled base current drive for said current sink transistor whereby its saturation current is limited to a safe design value.

4,533,840

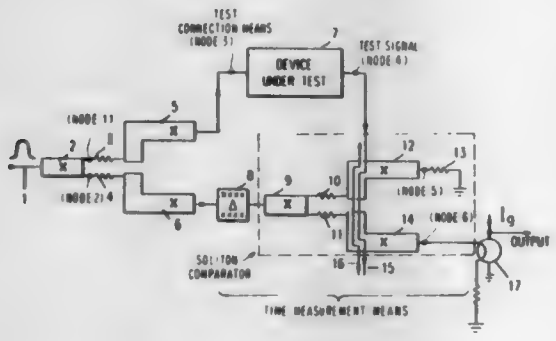
SOLITON SAMPLER

Tushar R. Gheewala, Yorktown Heights, and Steven B. Kaplan, LaGrangeville, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Sep. 13, 1982, Ser. No. 417,818

Int. Cl.³ H03K *17/92, 3/38*

U.S. Cl. 307—306 **3 Claims**



1. A sampling circuit, for a device-under-test, characterized by:

(a) a soliton generator **2** to provide first and second soliton generator output nodes (Node **1**, Node **2**);

(b) connection means (Node **3**) for connecting a device-under-test **7** to the first output node (Node **1**) of said soliton generator **2** to provide a test signal at a test signal node (Node **4**);

(c) time measurement means including a programmable delay line **8** and soliton comparator **9–14** connected to the second output node (Node **2**) of said soliton generator **2**, said soliton comparator having first and second soliton comparator output nodes (Node **5**, Node **6**);

(d) termination means **13** connected to the first output node (Node **5**) of said time measurement means **8–14**;

(e) detection means connected to the second output node of said time measurement means;

(f) test control means **15** connected to said test signal node (Node **4**) and connected across said soliton comparator **9–14**; and

(g) sampling control means **16** connected in control mode across said soliton comparator **9–14**.

4,533,841

MOS LOGIC CIRCUIT RESPONSIVE TO AN IRREVERSIBLE CONTROL VOLTAGE FOR PERMANENTLY VARYING ITS SIGNAL TRANSFER CHARACTERISTIC

Satoshi Konishi, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Sep. 3, 1982, Ser. No. 414,832

Claims priority, application Japan, Sep. 3, 1981, 56-138835; Sep. 16, 1981, 56-145810

Int. Cl.³ H03K *19/094, 19/173, 19/20*

U.S. Cl. 307—468 **19 Claims**

1. A MOS logic circuit comprising:

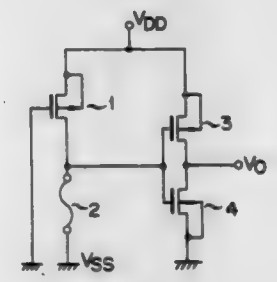
MOS logic circuit means coupled between a pair of power supply terminals (V_{DD}, V_{SS}), which circuit means performs a particular logic function and includes:

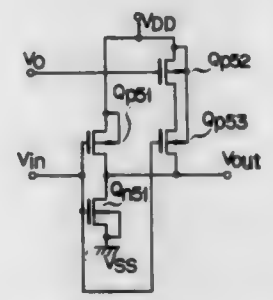
at least first and second MOS field effect transistors, at least one gate electrode of which is connected to a first signal input terminal, said first and second transistors having source-drain current paths mutually connected together to form a node;

a signal output terminal;

means for coupling said node to said signal output terminal (Vout);

signal generator means which includes a fuse for generating an irreversible control voltage (Vo); and





control circuit means which includes at least a third MOS field effect transistor, a gate electrode of which is connected to receive said irreversible control voltage (Vo) derived from said generator means and a source-drain current path of which is coupled between one of said power supply terminals (V_{DD}, V_{SS}) and said node, whereby signal transfer characteristics between input-/output signals of said MOS logic circuit means are changed under the control of said control circuit means with the logic function thereof remaining unchanged.

4,533,842

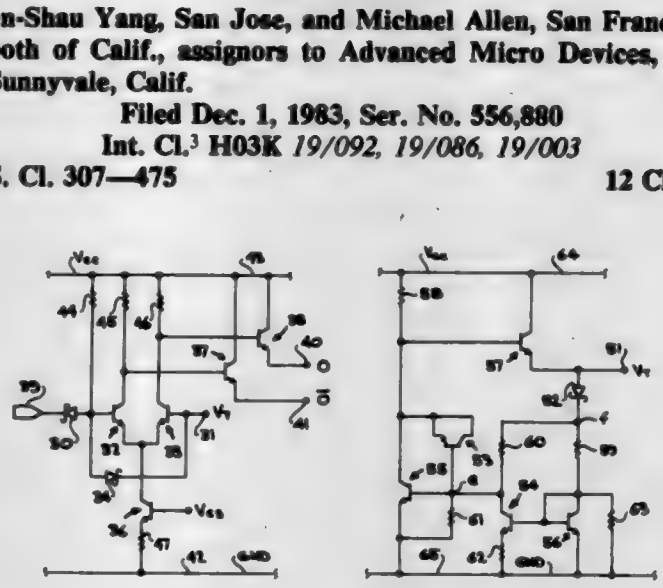
TEMPERATURE COMPENSATED TTL TO ECL TRANSLATOR

Tsen-Shau Yang, San Jose, and Michael Allen, San Francisco, both of Calif., assignors to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Dec. 1, 1983, Ser. No. 556,880

Int. Cl.³ H03K *19/092, 19/086, 19/003*

U.S. Cl. 307—475 **12 Claims**



1. In a level shift circuit for translating a voltage level representing a digital state in one logic family to a voltage level representing a digital state in another logic family and including an emitter-coupled differential transistor pair having their respective collectors connected through resistors to a supply

line, having their emitters coupled together and to a current source, and further including input blocking means having temperature dependence connected from an input node to the base of one transistor of the differential transistor pair, and including a means for generating a threshold voltage, V_T, that is connected to the base of the other transistor of the differential transistor pair, the improvement comprising:

said means for generating a threshold voltage, V_T, comprising a bandgap reference voltage generator and said bandgap reference voltage generator includes

means for generating a temperature independent voltage at a first node, and

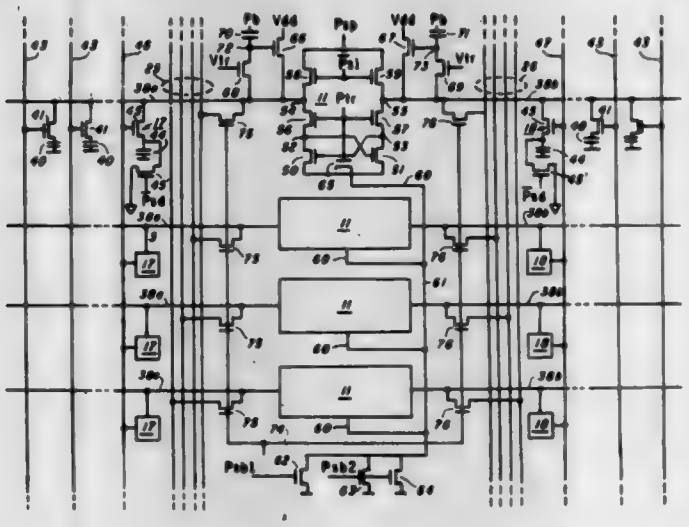
a temperature dependent circuit element that tracks the temperature dependence of said input blocking means, connected between said first node and a second node, said second node supplying said threshold voltage, V_T.

4,533,843

HIGH PERFORMANCE DYNAMIC SENSE AMPLIFIER WITH VOLTAGE BOOST FOR ROW ADDRESS LINES

Joseph C. McAlexander, III, Sugarland; Lionel S. White, Jr., and G. R. Mohan Rao, both of Houston, all of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 199,773, Oct. 20, 1980, , which is a division of Ser. No. 944,822, Sep. 22, 1978, Pat. No. 4,239,993.
This application Oct. 15, 1984, Ser. No. 660,771
Int. Cl.[3] H03K *5/24;* G11C *7/06, 8/00*
U.S. Cl. 307—530 7 Claims



1. A sense amplifier for a semiconductor memory device; said device having a plurality of sense amplifiers and an array of rows and columns of memory cells at a face of a semiconductor body with each column having two column line halves and each one of said sense amplifiers connected to pairs of sense nodes at ends of each pair of column line halves; comprising:

a pair of cross-coupled driver transistors for each sense amplifier, at least one grounding transistor, each of the transistors having a current path and a control electrode, and a pair of pull-up means for each sense amplifier, each of the pull-up means having a current path,

means connecting the current path of each one of the driver transistors separately between one of the sense nodes and a grounding node and connecting the current path of the grounding transistor between the grounding nodes of a plurality of sense amplifiers and reference potential,

the current paths of the pull-up means being connected separately between the sense nodes and a supply voltage level,

means for precharging the sense nodes to a selected voltage level prior to an avtive operating cycle,

means for addressing a row line for a selected row of the memory cells in the array at a given time in the beginning of said operating cycle by applying to said selected row line a voltage of about said supply voltage level,

means for applying a clock voltage to turn on said at least one grounding transistor at a first time subsequent to the said given time in the beginning of an active operating cycle,

means to activate one of said pull-up means to boost the voltage on the sense node to which said one of the pull-up means is connected to said supply voltage level, at a time in the active operating cycle following the first time,

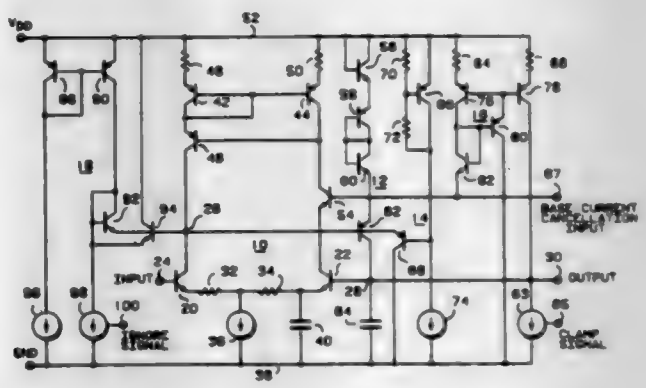
said selected row line of the memory cells being raised to a voltage higher than said supply voltage level at a time during said active cycle after said first time.

4,533,844

PEAK STORAGE AMPLIFIER

Ira Miller, and Robert B. Davies, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Continuation of Ser. No. 352,904, Feb. 26, 1982, abandoned.
This application Jan. 24, 1985, Ser. No. 694,895
Int. Cl.[3] H03K *5/20;* H03F *3/45*
U.S. Cl. 307—530 10 Claims



1. A peak storage amplifier for storing a peak amplitude of an input waveform, comprising:

output means for providing an output at an output terminal, comprising:

a first PNP transistor having an emitter coupled to a first voltage conductor and a collector coupled to said output terminal;

a first switching device having a control electrode coupled to receive said input waveform, a first current carrying electrode coupled to a node, and a second current carrying electrode coupled to a base of said first PNP transistor, said node coupled to a second voltage conductor;

a second switching device having a control electrode coupled to to said collector of said first PNP transistor, and a first current carrying electrode coupled to said node;

a first mirror network coupled between said first voltage conductor and both said second current carrying electrode of said first switching device and a second current carrying electrode of said second switching device; and

preventing means coupled between said first current carrying electrode of said second switching device and said second voltage conductor for preventing said first mirror network from turning off;

storing means coupled between said collector of said first PNP transistor and said second voltage conductor for storing said output at the amplitude of said peak; and

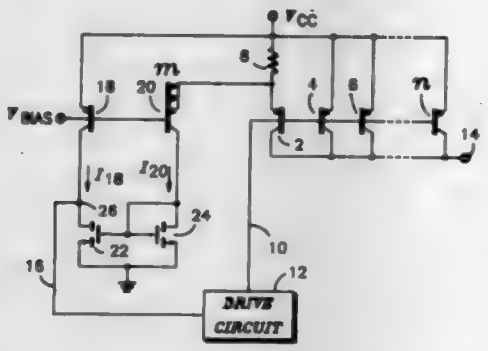
enabling means coupled to said storing means and coupled to receive an enabling signal for enabling said storage means.

4,533,845

CURRENT LIMIT TECHNIQUE FOR MULTIPLE-EMITTER VERTICAL POWER TRANSISTOR

Byron G. Bynum, and David L. Cave, both of Tempe, Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Feb. 22, 1984, Ser. No. 582,360
Int. Cl.³ H03K *5/08, 17/08*
U.S. Cl. 307—540 **7 Claims**



1. Current limiting circuitry for a power transistor which includes a base, at least one collector and a plurality of emitters, comprising:

first impedance means having a first terminal coupled to only a fraction of the number of said plurality of emitters and a second terminal coupled to a first source of supply voltage, said first impedance means having a value which is substantially different from any impedance in the remainder of said plurality of emitters;

first means for turning said power transistor on and drawing a first current through said first impedance means which is related to the total current being conducted by said power transistor in a prescribed manner; and

second means for monitoring the voltage across said first impedance means for limiting said first means when the voltage across said first impedance means reaches a certain level, said second means comprising a first transistor having base, emitter and collector terminals, said emitter being coupled to said second terminal of said first impedance means; a second transistor having base and collector terminals and the plurality of emitter terminals, each of said emitter terminals being coupled to said first terminal of said first impedance means, said first and second transistors having a base for coupling to a bias voltage which turns said first and second transistors and resulting in the generation of first and second currents respectively; and current mirror means coupled between a second source of supply voltage and said first and second transistors for generating a trigger when the voltage across said first impedance means reaches a certain level, said trigger being applied to said first means so as to limit current from said power transistor.

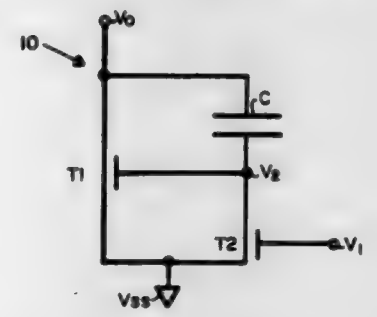
4,533,846

INTEGRATED CIRCUIT HIGH VOLTAGE CLAMPING SYSTEMS

Richard T. Simko, Los Altos, Calif., assignor to Xicor, Inc., Milpitas, Calif.

Continuation-in-part of Ser. No. 230,683, Feb. 2, 1981, , and a continuation-in-part of Ser. No. 6,026, Jan. 24, 1979, Pat. No. 4,314,265, and a continuation-in-part of Ser. No. 6,030, Jan. 24, 1979, Pat. No. 4,274,012. This application May 27, 1982, Ser. No. 382,713
Int. Cl.³ H03K *5/08*
U.S. Cl. 307—550 **17 Claims**

1. An integrated circuit for clamping a high voltage source having a limited current output, so that said source does not exceed a predetermined potential, comprising: high potential input means for making electrical connection with a high voltage power source desired to be clamped; grounding means for making electrical connection with a reference potential current sink; a control potential node; means responsive to the potential of said high potential input means exceeding a predetermined potential for developing a clamping control potential at said control potential node as a function of the difference between the potential of said high potential input means and said predetermined potential; and clamping current control



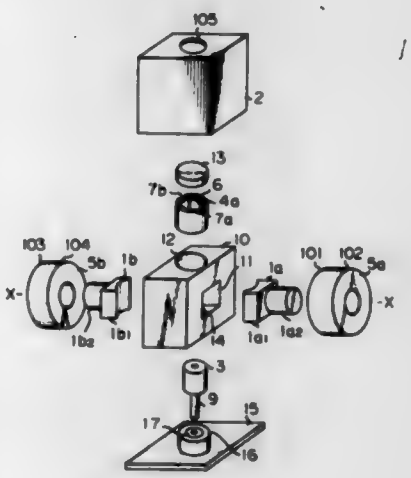
means responsive to said clamping control potential at said control potential node for regulating the flow of current between the high potential input means and the grounding means such that said current is conducted only when the potential of said high potential input means exceeds a predetermined value.

4,533,847

ROTARY DRIVE APPARATUS WITH PERMANENT MAGNETS ON THE ROTOR AND STATOR

Takaharu Idogaki; Ikuo Hayashi, both of Okazaki; Hisasi Kawai, Toyohashi; Kyo Hattori, Susono, and Kazuhiro Sakurai, Gotenba, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Jun. 1, 1984, Ser. No. 616,187
Claims priority, application Japan, Jun. 2, 1983, 58-97008
Int. Cl.³ H02K *1/00*
U.S. Cl. 310—181 **20 Claims**



1. A rotary drive apparatus comprising:

a frame having at least three holes;

yoke means having a center portion and two side bar portions on opposite sides of the center portion, the center portion having a hole;

coil means mounted on the side bar portions of the yoke means;

collar means having a bore and being tightly mounted on the surface of the hole of the yoke means;

magnetic parameter changing means being mounted on the surface of the bore of the collar means; and

rotor means having magnetic poles in the radial direction and being inserted into the bore of the collar means with a predetermined clearance;

wherein a first hole of the frame is parallel to a first direction of the apparatus and has a cross-section for tightly receiving the center portion of the yoke means;

second and third holes of the frame are in a second direction

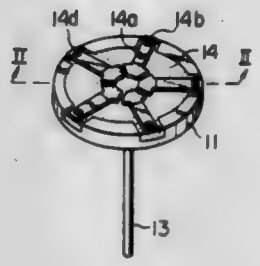
perpendicularly intersecting the first direction and being concentric with each other oppositely the first hole;
the center portion of the yoke means being fit into the first hole;
the position of the collar means is adjusted through the second hole, during the adjustment, and
the third hole passes a shaft connected to one end of the rotor means.

4,533,848

ROTOR OF CORELESS MOTOR

Yoshimitsu Nakamura, Settsu, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

Continuation of Ser. No. 908,373, May 22, 1978,. This application Dec. 27, 1979, Ser. No. 107,644
Claims priority, application Japan, May 27, 1977, 52-69093
Int. Cl.³ H02K *13/04*
U.S. Cl. 310—237 **2 Claims**



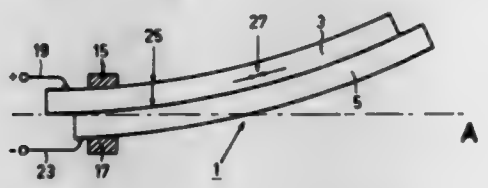
1. A rotor of a coreless motor comprising an electrically insulative substrate of disk shape, a metal foil layer of disk shape having a planar surface portion on each side, one of said planar surface portions being mounted on a planar surface portion of said substrate, rotary metallic shaft means including an elongate shaft, said shaft means including a planar surface portion at one end mounted to the other planar surface portion of said foil layer at the center of said foil layer such that said shaft extends in perpendicular relation to the substrate, the area of said planar surface of said foil mounted to said substrate being larger than the cross-sectional area of said shaft, a cylindrically wound coil secured at an axial end to the periphery of the substrate in coaxial relation to said rotary shaft, and a plurality of commutator segments each formed of a metal foil and being disposed on a surface of said substrate opposite said planar surface portion of said substrate and being electrically connected to exposed conductors at said axial end of said cylindrical coil.

4,533,849

CERAMIC BISTABLE DEFLECTION ELEMENT

Axel Schnell, Aachen, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,754
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240884
Int. Cl.³ H01L *41/08*
U.S. Cl. 310—330 **4 Claims**



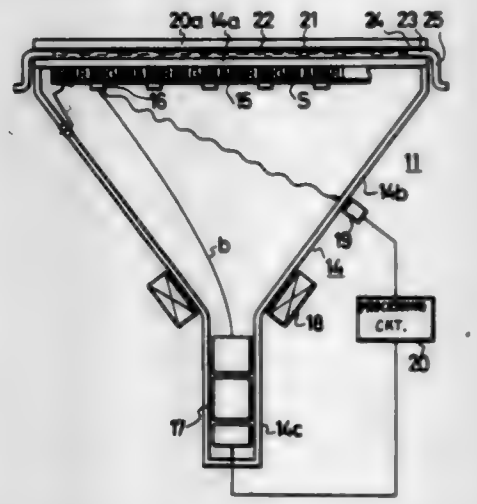
1. A bistable deflection assembly, comprising:
two plates each having an inner principal surface provided with an inner electrode and each also having an outer principal surface provided with an extreme electrode, the plates being arranged such that the inner electrodes are adjacent and electrically contact one another and such that the inner electrodes are electrically accessible, the plates being rigidly interconnected and being formed of a ferroelectric, easily polarizable ceramic material having a low coercive field strength, one plate being polarized by applying a direct voltage at the inner and extreme electrodes of only the one plate after the one plate is rigidly interconnected to the other plate, the other plate being non-polarized, so that the assembly is deflected to a first stable position, and
two electrical connections provided, respectively, on the two extreme electrodes so that the plates are in a series electrical arrangement, whereby the assembly can be deflected to a second stable position by another direct voltage applied to the electrical connections, the another direct voltage having a polarity opposite that of the direct voltage used for polarizing the one plate, the application of the another direct voltage depolarizing the one plate while polarizing the other plate.

4,533,850

COLOR PROJECTOR APPARATUS OF SINGLE CATHODE RAY TUBE TYPE

Akio Ohkoshi, Tokyo; Takashi Toyama, Kokubunji, and Toshiro Watanabe, Zushi, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,133
Claims priority, application Japan, Mar. 19, 1982, 57-45200
Int. Cl.³ H01J *7/26, 29/10*
U.S. Cl. 313—36 **3 Claims**



1. A high brightness cathode ray tube comprising:
(a) a single, color cathode ray tube of index-type having a first transparent panel with phosphor elements of three primary colors and an indexing element formed on the inner surface thereof;
(b) a second transparent panel located in front of said first transparent panel of said cathode ray tube;
(c) a metal frame-shape spacer for supporting said second transparent panel; and
(d) a transparent liquid coolant filled into the space between said first and second transparent panels.

4,533,851

HIGH-PRESSURE ELECTRIC DISCHARGE LAMP WITH INTERFITTING SOCKET AND SUPPORT

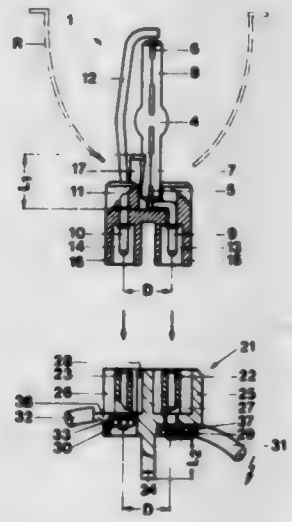
Werner Block, Taufkirchen, and Wolfgang Greiler, Unterhaching, both of Fed. Rep. of Germany, assignors to Patent-Treuhand Gesellschaft, Munich, Fed. Rep. of Germany

Filed Sep. 15, 1983, Ser. No. 532,584
Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236462
Int. Cl.³ H01J *5/48, 5/50*
U.S. Cl. 313—51 **14 Claims**

1. High-pressure electric discharge lamp (1) comprising an

elongated discharge vessel (4) having a longitudinal axis and a base (11) for holding and electrically connecting said discharge vessel and a socket (21) in combination therewith into which said base fits for mechanical support and electrical connections, said lamp further comprising two electrodes (2,3) respectively disposed towards opposite ends of said discharge vessel (4) on said axis, electrical connection leads (5,6) being provided for supplying an electrical connection through the wall of said vessel (4) for said respective electrodes, fused seals (7,8) surrounding said connection leads being provided in said vessel wall, said combination further having the improvement which comprises:

two contact elements (9,10) embedded in said base, one (9) of which is disposed for making contact with one (5) of said connection leads at one end of said vessel fitting into said base, and the other (10) of which is provided with an electrically conducting extension (12) for making contact to the other (6) of said connection leads which is the more remote from said base, said base being made of material



capable of providing insulation at high voltage and having collars (15,16) of said material at least partially surrounding said contact elements at their extremities away from said vessel at a spacing from said respective contact element extremities, and

third and fourth contact elements (22,23) set in said socket (21) for mechanically gripping engagement with said two contact elements (9,10) of said base and having means for supply voltage connection at their ends away from said base, said support being made of material capable of providing insulation at high voltage and having a partition web of said material separating said third and fourth contact elements at a spacing therefrom and projecting beyond the ends thereof having supply voltage connection means, as well as contributing to defining cavities (27,28) further formed by collar walls (25,26) of said material extending at least partially around the supply voltage connection ends of said third and fourth contact elements (22,23) at a spacing therefrom.

4,533,852

METHOD OF MANUFACTURING A THERMIONIC CATHODE AND THERMIONIC CATHODE MANUFACTURED BY MEANS OF SAID METHOD

Berthold Frank; Georg Gärtner, both of Aachen, and Hans Lydtin, Stolberg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 6, 1982, Ser. No. 447,079

Claims priority, application Fed. Rep. of Germany, Dec. 8, 1981, 3148441

Int. Cl.³ H01J *1/28, 1/13*

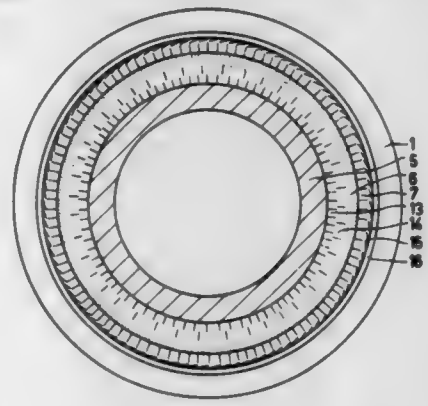
U.S. Cl. 313—346 DC **30 Claims**

1. A method of manufacturing a thermionic cathode having a polycrystalline coating layer of a high-melting metal which is deposited on underlying layers, characterized in that

(a) the following layer structure is provided on a substrate, formed in accordance with a desired cathode geometry, by gaseous phase transport, preferably accompanied by reducing reactions during or after deposition of the layers;

(α) A supporting layer of high-melting metal as a base material including at least one dopant for the mechanical structural stabilization thereof

(β) a layer or a series of layers which during operation of the cathode act as a dispensing and supply region for formation of an emitter monolayer, consisting of a high-melting metal as a base material and a store of electron-emissive material, and



(γ) a polycrystalline coating layer particularly a preferred oriented polycrystalline coating layer of a high melting metal as a base material and at least one dopant for the stabilization of the crystal texture and structure thereof, the preferred orientation being adjusted by the choice of the deposition parameters in such manner, that the work function from the emitter monolayer which during operation of the cathode is maintained on said coating layer, is minimum,

(b) the substrate is removed, and

(c) the supporting layer is provided with connections for its heating.

4,533,853

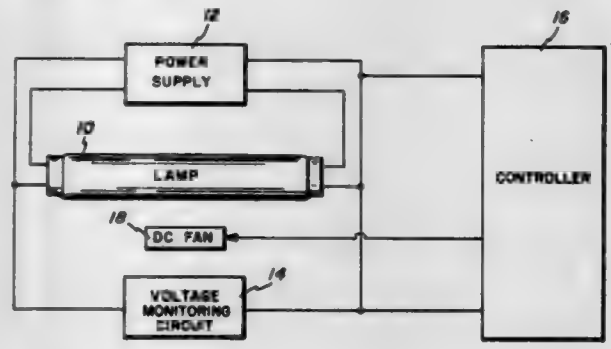
MECHANISM AND METHOD FOR CONTROLLING THE TEMPERATURE AND OUTPUT OF A FLUORESCENT LAMP

Thomas J. Hammond, Penfield; William L. Lama, Webster; Karl A. Northrup, and Stephen C. Corona, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1983, Ser. No. 478,745

Int. Cl.³ H01J *7/24, 13/32, 19/74, 61/52*

U.S. Cl. 315—117 **4 Claims**



1. A monitoring and control mechanism for optimizing the light output of a fluorescent lamp containing an excess of mercury at a cold spot therein, said mechanism comprising:

a power supply for applying operating power to said lamp, said power supply adapted to maintain a constant operating current through said lamp resulting in a lamp arc voltage which is a function of the lamp mercury pressure,

a monitoring means for detecting a decrease from a maximum lamp are voltage associated with an optimum cold

spot temperature, and generating a signal indicative thereof,

a temperature control device placed in proximity to said cold spot, said device, when operational, serving to provide a constant intensity output to low the temperature of the cold spot and, when non-operational, effectively permitting the cold spot temperature to rise, and

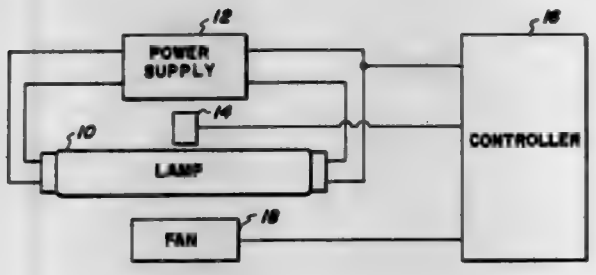
a controller circuit adapted to change the operational state of said temperature control device in response to the output signals from said monitoring means.

4,533,854

MECHANISM AND METHOD FOR CONTROLLING THE TEMPERATURE AND OUTPUT OF A FLUORESCENT LAMP

Karl A. Northrup, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 25, 1983, Ser. No. 478,746
Int. Cl.[3] H01J *7/24, 13/32, 19/74, 61/52*
U.S. Cl. 315—117 4 Claims



1. A monitoring and control mechanism for optimizing and controlling the light output of a fluorescent lamp containing an excess of mercury at a cold spot therein, said mechanism comprising:

a power supply for applying a constant operating current to said lamp,

a monitoring means for detecting a drop in a light output of said lamp and for generating a signal indicative thereof,

a temperature control device placed in proximity to said cold spot, said device, when operational, serving to provide a constant intensity output to lower the temperature of the cold spot and, when non-operational, effectively permitting the cold spot temperature to rise,

a controller circuit adapted to change the operational state of said temperature control device in response to the output signals from said monitoring means.

4,533,855

SWITCHED CAPACITOR S-CORRECTION CIRCUIT

Donald H. Willis, and David W. Luz, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Dec. 16, 1983, Ser. No. 562,246
Int. Cl.[3] H01J *29/70, 29/76*
U.S. Cl. 315—370 9 Claims

1. A line deflection circuit comprising:

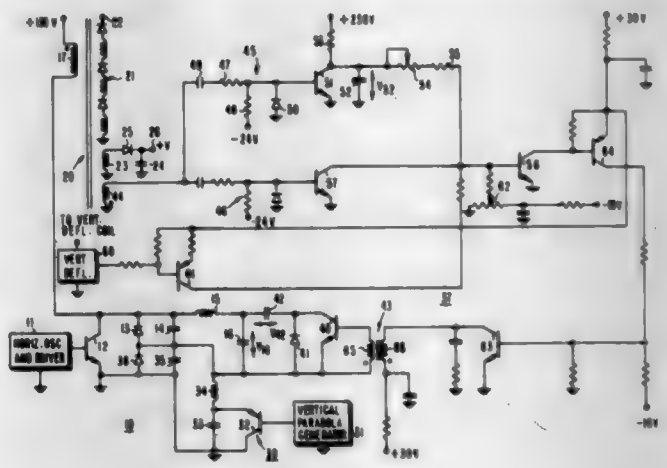
a line deflection winding:

means for providing a deflection current in said line deflection winding defining deflection intervals having trace and retrace intervals;

a first capacitor coupled to said deflection winding for providing linearity distortion correction to said deflection current;

a second capacitor; and

means for selectively coupling said second capacitor to said deflection winding during portions of each of said deflection intervals for supplying additional amounts of linearity



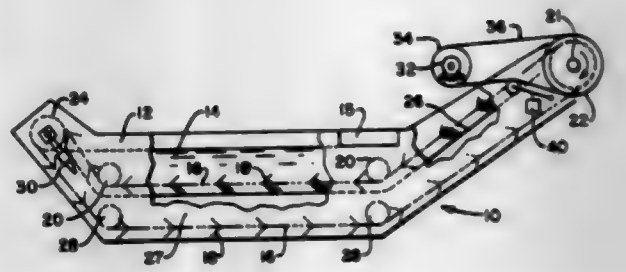
distortion correction to said deflection current during each of said portions of said deflection intervals.

4,533,856

SUBMERGED SCRAPER CONVEYOR AUTOMATIC SPEED CONTROL

Dennis M. Malone, West Granby, Conn., assignor to Combustion Engineering, Inc., Windsor, Conn.

Filed Apr. 18, 1983, Ser. No. 485,919
Int. Cl.[3] F23H *11/24*
U.S. Cl. 318—6 10 Claims



1. In a submerged scraper conveyor having a drag chain for removing material from a water impounded hopper, the drag chain having a plurality of flights mounted thereon, apparatus for controlling the speed of the submerged scraper conveyor, comprising:

a. a variable speed drive means;

b. a first sprocket operatively connected to the variable speed drive means;

c. a headshaft for driving the drag chain;

d. a second sprocket operatively connected to the headshaft;

e. an endless chain passing around the first and second sprockets;

f. a transducer for measuring the tension in the endless chain and for generating a signal proportional to the tension;

g. control means for receiving the signal generated by the transducer and for generating a desired drag chain speed signal therefrom; and

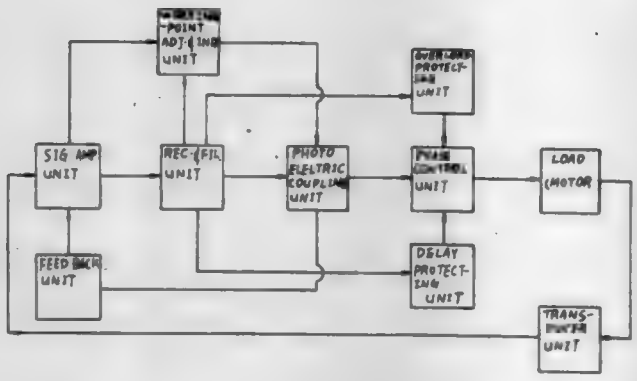
h. means for applying the desired drag chain speed signal generated by the control means to the variable speed drive means to vary the speed of the variable speed drive means as a function of the tension in the endless chain.

4,533,857

ELECTRICAL ENERGY SAVING DEVICE FOR MOTORS

Ten-Ho Chang, and Shin-Yih Wang, both of 18, Alley 9, Lane 75, Chia-Shu North Rd., Chang-Hua City, Taiwan

Filed Aug. 31, 1982, Ser. No. 413,394
Int. Cl.[3] H02P *5/16, 5/40*
U.S. Cl. 318—345 A 22 Claims



1. An electrical energy saving device for motors, which comprises:

(a) principal means comprising,

(i) transducer means connected between the input power source and the motor for providing a signal indicative of the electric power being utilized by the motor; and

(ii) triggering device means connected between the input power source and the motor for providing the electric power to the motor in response to receipt of a triggering signal;

(b) control means, connected to the input power source, said transducer means and said triggering device means, for providing said triggering signal to said triggering device means so that the optimal amount of the electric power is provided to the motor, where said triggering signal is generated in accordance with the signal of said transducer means which is reduced when the motor is operating in the normal range by a negative feedback signal indicative of the electric power supplied by the power source, wherein said control means further comprises:

(c) a power supply means;

(d) a signal amplifying means associated with said transducer means of said principal means;

(e) feedback means electrically connected to said signal amplifying means and said power supply means for providing negative feedback signals to said signal amplifying means;

(f) rectifying and filtering means coupled with said signal amplifying means and said feedback unit means;

(g) photoelectric coupling means electrically connected to said rectifying and filtering means with respect to said signal amplifying means;

(h) working-point adjusting and indicating means electrically connected to said photoelectric coupling means and said rectifying and filtering means;

(i) overload protecting means coupled with said working-point adjusting and indicating means and said photoelectric coupling means; and

(j) delay protecting means coupled with said overload protecting means and said photoelectric coupling means.

4,533,858

TEMPERATURE COMPENSATION APPARATUS FOR GEAR SHAPERS

Erich Tlaker, Springfield, Vt., assignor to Fellows Corporation, N. Springfield, Vt.

Filed Sep. 16, 1983, Ser. No. 533,846
Int. Cl.[3] G05D *23/275*
U.S. Cl. 318—634 5 Claims

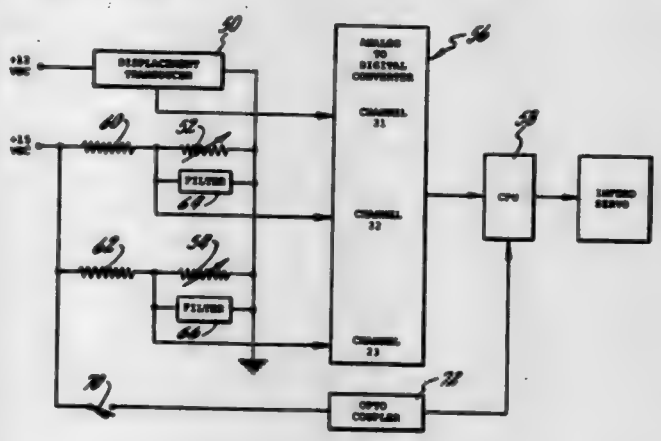
1. An apparatus for compensating for thermal expansion or contraction of a machine component along an axis, said component movable along said axis relative to another component by a motor, comprising:

means for establishing a reference temperature;

means for determining an average temperature of said machine component;

comparator means for determining if said average temperature is within predetermined limits;

means responsive to said comparator means for stopping the operation of said machine if said average temperature is not within said limits;



means responsive to said comparator means if said average temperature is within said limits for comparing said average temperature to said reference temperature and for producing a correction signal corresponding to the dimensional effect on the difference between said average temperature and said reference temperature; on said machine component; and

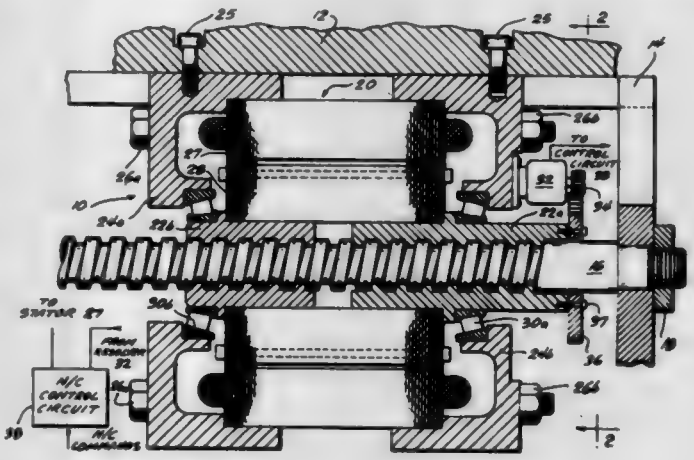
means for applying said correction signal to said motor.

4,533,859

MOTORIZED BALL NUT

Richard Johnstone, Brookfield, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Mar. 15, 1982, Ser. No. 358,346
Int. Cl.[3] G05B *1/06*
U.S. Cl. 318—661 3 Claims



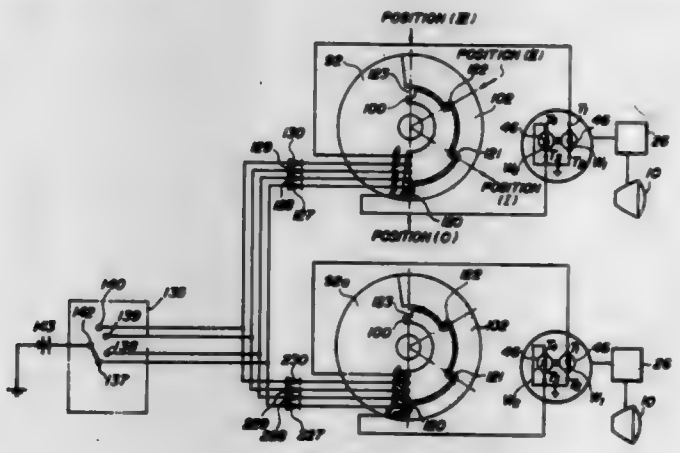
1. In a machine tool having a movable member mounted on a support for movement in a predetermined path of travel relative to said support; a control circuit connected to regulate the operation of the machine tool; and a drive mechanism connected to drive said movable member in its path of travel and comprising: a screw rigidly mounted on said support and fixed against rotation; a nut in threaded engagement with said screw; a motor frame rigidly secured to said movable member; an annular stator mounted to said frame; means electrically connecting said stator to the numerical control circuit to be energized thereby; a rotor disposed within the central opening of said stator to be rotated thereby and having an axial bore for receiving said nut; means securing said nut to said rotor for rotation in unison therewith; a transducer supported by said frame and connected to rotate with said nut, and means connecting said transducer to the numerical control circuit to provide feedback information for use by the numerical control circuit in controlling the rotation of the rotor.

4,533,860

APPARATUS FOR ADJUSTING THE INCLINATION OF AUTOMOBILE HEADLAMP

Kunihiro Saito, Shiraokamachi, Japan, assignor to Ichikoh Industries Limited, Tokyo, Japan

Filed Oct. 12, 1984, Ser. No. 660,100
Claims priority, application Japan, Oct. 14, 1983, 58-190903; Apr. 24, 1984, 59-81141
Int. Cl.³ B60Q *1/06*
U.S. Cl. 318—673 9 Claims



1. An apparatus for adjusting the inclination of automobile headlamp having a linearly movable member mechanically coupled to the headlamp assembly and a reduction gear group mechanically coupled to the member and driven by a motor comprising:

a power source having a negative terminal and a positive terminal,

a DC electric motor having a first winding and a second winding wound on a stator or a rotor, the ends of the first and second windings being respectively connected to input terminals and output terminals formed on motor body, the output terminals being connected to the negative terminal of the power source and constructed to rotate the rotor in opposite directions when either input terminal of the first and second windings is electrically connected to the positive terminal of the power source,

angular position switch member having a pair of conductor units respectively connected to the input terminals and spaced from each other and a plurality of contacts relatively movable and relative at 1:1 to a plurality of predetermined angular positions of the light bulb, said relative movement being carried out in response to the variation in the angular position of the light bulb, insulating portions formed corresponding to the angular positions of the light bulb on a trace formed by the plurality of contacts during the relative movement between a pair of conductor units, the other contact making contact with either one of the conductor units when one of the contacts makes contact with the corresponding insulating portion,

operation switch members each having stationary contact group having a plurality of switch positions connected to the plurality of contacts of said angular position switch member and movable contacts contacted selectively with one of the stationary contacts and connected to the positive terminal of the power source;

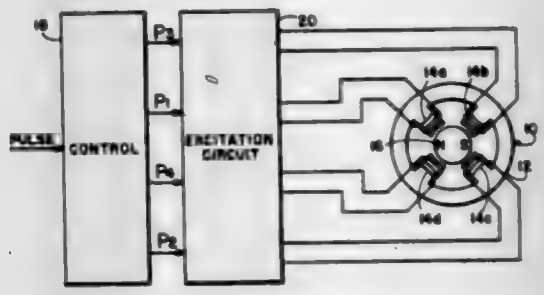
said operation switch member being switched from one switch position to other switch position, thereby electrically connecting the stationary contact corresponding to the other switch position to either of the conductor units of the angular position switch member, with the result that either of the first and second winding of the motor is energized to rotate the motor in the corresponding direction, thereby stopping the motor when the contact corresponding to the other switch position of the plurality of contacts of the angular position switch member makes contact with the corresponding insulating portion.

4,533,861

STEPPING MOTOR DRIVE CIRCUIT

Jerrold J. Rogers, and Joseph S. Trumps, both of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 13, 1983, Ser. No. 541,762
Int. Cl.³ H02K *29/04*
U.S. Cl. 318—696 4 Claims



1. A stepping motor drive circuit for a stepping motor having an even number of uniformly space drive coils to cause rotation of the rotor of the motor, the energization of said coils being controlled by a plurality of uniformly interleaved pulses wherein the number of drive coils is an integer number multiple of the number of pulses and each Pulse corresponds to a particular grouping of coils, the coils that are 180° apart from each other are paired for energization, the circuit disposed to be coupled to a first, a second and a third voltage potential source, said first voltage potential being greater than said second voltage Potential, and said third voltage potential being between and equidistant said first and second voltage potentials, said circuit for energizing each pair of coils comprising:

first terminal (anodes of 22 and 30) for coupling to the source of said first voltage potential (+V);

second terminal means (cathodes of 28 and 36) for coupling to the source of said second voltage potential (−V);

third terminal means for coupling with the coil pair, with a first node disposed for coupling one end of each coil to the third voltage potential, and a second (A) and a third (B) node each for connecting with one of the other ends of each coil of the coil pair;

fourth terminal means for coupling to the source of said third voltage potential (gnd);

a first and a second diode (22, 30), each having an anode and a cathode, with the anode of each connected to the first terminal means:

a third and a fourth diode (28, 36), each having an anode and a cathode, with the cathode of each connected to the second terminal means;

first switching means (24) for controlling the current flow from the cathode of the first diode (22) to the second node (A) in response to the one of said uniformly interleaved control pulses corresponding to the coil to be coupled to the second node wherein the two control pulses are 180° out of phase with each other;

second switching means (32) for controlling the current flow from the cathode of said second diode (30) to the third node (B) under the control of the other of said uniformly interleaved control pulse corresponding to the coil to be coupled to the third node (B);

third switchng means (26) for controlling the current flow from the second node (A) to the anode of the third diode (28) under the control of the other of said uniformly interleaved control pulses;

fourth switching means (34) for controlling the current flow from the third node (B) to the anode of the fourth diode (36) under the control of said one of the uniformly interleaved control pulses;

a first and a second capacitor (46, 50) each connected between the fourth terminal means and the cathode of said first and second diodes (22, 30), respectively;

a third and a fourth capacitor (48, 52) each connected between the fourth terminal means and the anode of said third and fourth diodes (28, 36), respectively;

a fifth diode (38), having an anode and a cathode, connected across the first switching means (24) with its cathode connected to the cathode of the first diode (22);

a sixth diode (42), having an anode and a cathode, connected across the second switching means (32) with its cathode connected to the cathode of the second diode (30);

a seventh diode (40), having an anode and a cathode, connected across the third switching means (26) having its anode connected to the anode of the third diode (28); and

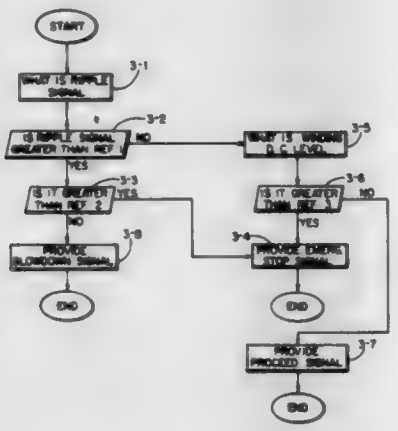
an eighth diode (44), having an anode and a cathode, connected across the fourth switching means (34) with its anode connected to the anode of the fourth diode (36).

4,533,862

POLYPHASE MOTOR DRIVE IMBALANCE DETECTION

Jalal T. Salihi, Manchester, Conn., assignor to Otis Elevator Company, Farmington, Conn.

Continuation of Ser. No. 434,012, Oct. 12, 1982, abandoned.
This application Dec. 4, 1984, Ser. No. 678,361
Int. Cl.[3] H02P 5/40
U.S. Cl. 318—798 2 Claims



1. Apparatus comprising:

a polyph .. motor for propelling an object;

a motor control and power supply for controlling and powering the motor;

characterized in that the motor control comprises:

means for operating the motor at a first speed;

hall detector means comprising individual hall detectors associated with each motor winding for providing an output signal associated with each motor winding that manifests current magnitude and direction in the winding;

means for summing output signals from the hall detectors and providing a first signal which manifests the magnitude of the ripple associated with the difference between the current flow in and out of the motor;

means responsive to the first signal and a reference level signal for providing a second signal indicating that a ripple magnitude exceeding a predetermined magnitude associated with the reference signal;

means responsive to said second signal for providing a third signal if the second signal is still provided following a predetermined time delay interval independent of the frequency of the motor current;

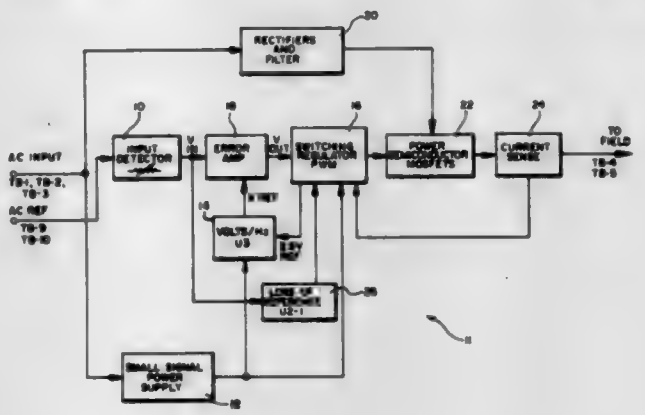
means responsive to said third signal for causing the motor to operate at a speed less than said first speed until the object is at a preestablished location and then stopping the motor.

4,533,863

VOLTAGE REGULATOR

Dennis A. Luhn, Richfield, and Mark H. Schultz, Mounds View, both of Minn., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Oct. 26, 1983, Ser. No. 545,754
Int. Cl.[3] H02P 9/30
U.S. Cl. 322—28 28 Claims



1. A voltage regulator for an A.C. generator having a field winding, comprising:

(a) input terminals for connection to a generator load;

(b) output terminals for connection to the generator field winding;

(c) voltage controlled field-winding excitation control means, connected across said input terminals, for supplying direct current to said output terminals;

(d) drive means for driving said voltage controlled field-winding excitation control means;

(e) frequency sensing means for generating a voltage proportional to the frequency across said input terminals when said frequency is below a preselected break-point frequency and and for generating a constant voltage when said frequency is above said break-point frequency; and

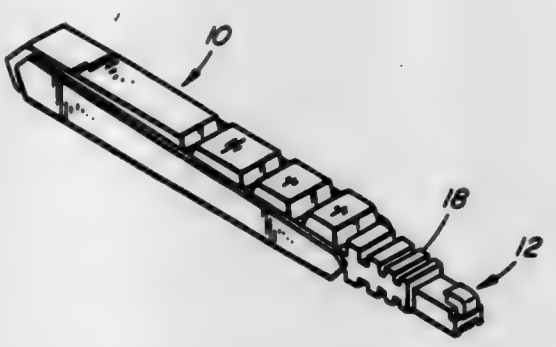
(f) asynchronous switching regulator means, connected to said frequency sensing means and said input terminals, for producing a train of output voltage control signals adapted to operate said drive means in response to the frequency and voltage out of said generator, said break-point frequency being sufficiently high that said regulator is essentially insensitive to relatively small changes in engine speed when said generator is operating under load.

4,533,864

TEST INSTRUMENT WITH FLEXIBLY CONNECTED HEAD

Hollis B. Austin, Manchester, N.H., assignor to Northern Telecom Limited, Montreal, Canada

Filed Apr. 21, 1983, Ser. No. 487,058
Int. Cl.[3] G01R 31/02
U.S. Cl. 324—51 11 Claims



1. A test instument comprising an elongated barrel portion containing test and indicating circuitry, a rigid connector portion mateable with a corresponding connector portion terminating a circuit to be tested, and a relatively short, flexible

neck portion joining the rigid connector portion to the barrel portion, the neck portion having leads mounting thereto interconnecting the rigid connector portion and the test and indicating circuitry within the barrel portion.

4,533,865

CIRCUIT ARRANGEMENT FOR IDENTIFYING AND STORING POWER LINE FAULTS

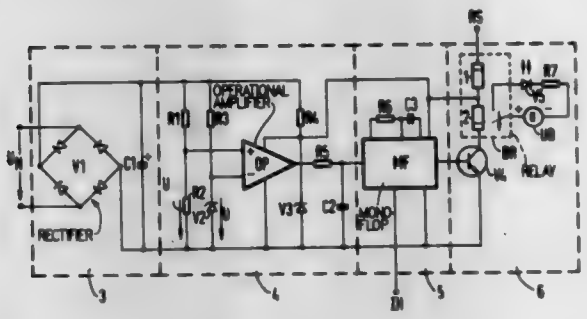
Manfred Schlenk, Augsburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 9, 1983, Ser. No. 465,117

Claims priority, application Fed. Rep. of Germany, Mar. 16, 1982, 3209562

Int. Cl.³ G08B *21/00*; G01R *31/02*

U.S. Cl. 324—51 **2 Claims**



1. A circuit arrangement for detecting and storing power line faults, comprising:

a rectifier for connection to a power line and rectifying the power line voltage;

a comparison circuit connected to a reference voltage and to said rectifier for comparing the rectified voltage to the reference voltage and producing a predetermined voltage when the rectified voltage falls below the reference voltage;

a memory connected to said comparison circuit and responsive to the predetermined voltage to assume a predetermined storage state and including an inhibit input for receiving an inhibit signal during a start-up mode for disconnecting the arrangement between start-up so that an error display occurs; and

display means connected to said memory and operable in response to said predetermined storage state.

4,533,866

CIRCUIT FOR AUTOMATICALLY SETTING A PREDETERMINED FREQUENCY COMPONENT OF THE SWEEP OSCILLATOR OF A SPECTRUM ANALYZER TO A PRESCRIBED POINT OF THE FREQUENCY COORDINATES OF A DISPLAY DEVICE

Kurt Zirwick, Greifenberg, Fed. Rep. of Germany, assignor to Rohde & Schwarz GmbH & Co. KG, Fed. Rep. of Germany

Filed May 31, 1983, Ser. No. 499,485

Claims priority, application Fed. Rep. of Germany, May 29, 1982, 3220462

Int. Cl.³ G01R *23/16*

U.S. Cl. 324—77 B **6 Claims**

1. A circuit for setting a predetermined frequency component of a voltage-controlled oscillator to a prescribed coordinate of a display of a spectrum analyzer comprising:

a frequency generator including an output and an input;

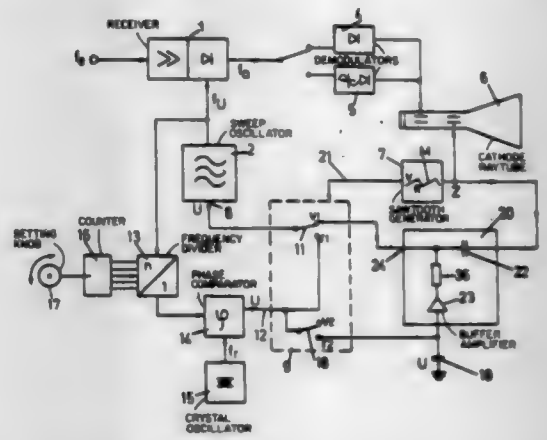
a phase control loop connected between said output and said input and including a phase comparator operable to compare the phase of the generated frequency with that of a reference and produce a tuning voltage;

a voltage-controlled oscillator connectible into said phase control loop and including an output connected to said input of said frequency generator, and a control input for receiving a control voltage;

a storage element for storing tuning voltage;

a network connected to said storage element for receiving said tuning voltage, said network including a control input for receiving a control signal and responsive thereto to emit a sweep voltage; and

switching means connected to said network, to said phase comparator, to said storage element and to said control



input of said oscillator, said switching means operable to a first condition to connect said phase comparator to said control input of said oscillator and to said storage element to cause said oscillator to operate at a frequency defined by said tuning voltage and operable to a second condition to connect said control input of said oscillator to said network to supply said sweep voltage of said network to said oscillator.

4,533,867

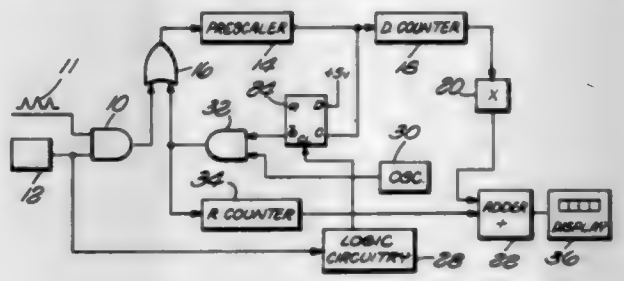
METHOD AND APPARATUS FOR MEASURING HIGH FREQUENCY SIGNALS

Edward J. Witczak, Santa Clara, Calif., assignor to EIP Microwave, Incorporated, San Jose, Calif.

Filed Aug. 23, 1982, Ser. No. 410,798

Int. Cl.³ G01R *23/02*

U.S. Cl. 324—78 R **17 Claims**



1. A method for measuring the frequency of a signal comprising the steps of:

(a) applying said signal to a prescaler to produce an output signal;

(b) counting the frequency of said output signal;

(c) storing the frequency of said output signal; then

(d) applying a sufficient number of clocking pulses to said prescaler to complete the counting cycle of said prescaler;

(e) counting the number of said clocking pulses;

(f) storing said count; then

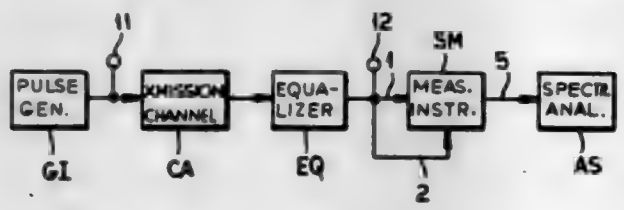
(g) combining the frequency of said output signal with said count to derive an accurate measure of the frequency of said signal.

4,533,868

ELECTRONIC INSTRUMENT FOR MEASURING THE OVERALL PHASE AND AMPLITUDE DISTORTION OF A TRANSMISSION CHANNEL

Bruno Fabbri, Turin, and Alfredo Fausone, Ivrea, both of Italy, assignors to SIP - Societa Italiana per L'Esercizio Telefonico p.A., Turin, Italy

Filed Sep. 24, 1982, Ser. No. 423,147
Claims priority, application Italy, Nov. 18, 1981, 68493 A/81
Int. Cl.³ G01R *23/16*
U.S. Cl. 324—83 R 11 Claims



11. A method of measuring phase and amplitude distortions incurred by signals over a channel of a communication system, comprising the steps of:

(a) transmitting a series of recurrent test pulses from one end of said channel to the other end thereof;

(b) receiving distorted pulses from said other end;

(c) extracting the recurrence frequency of said test pulses from said distorted pulses;

(d) regenerating replicas of said test pulses from the recurrence frequency extracted at said other end;

(e) comparing each of said replicas with the corresponding distorted pulse to determine phase and amplitude differences between them; and

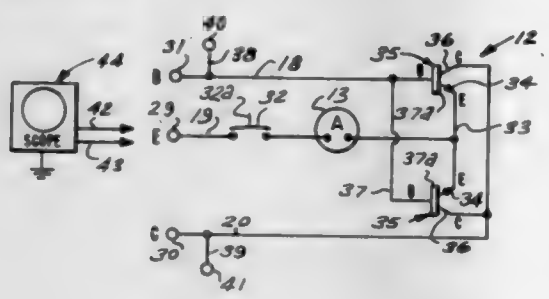
(f) displaying the detected differences over a range of frequencies.

4,533,869

FIELD TEST INSTRUMENT FOR HORIZONTAL OUTPUT CIRCUITS

Martin C. Pecorino, 2398 Coral Way, Largo, Fla. 33341

Filed Jun. 13, 1983, Ser. No. 503,593
Int. Cl.³ G01R *31/28;* H04N *7/02*
U.S. Cl. 324—158 R 1 Claim



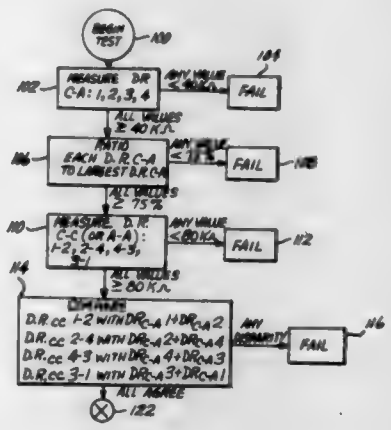
1. A field test instrument for horizontal output circuits, comprising, a housing, a cable having its proximal end secured to said housing, an adapter having a base plate secured to the distal end of said cable, a transistor circuit secured in said housing, an ammeter secured in said circuit, a circuit breaker secured in said circuit, said ammeter being electrically connected in series to said circuit breaker, said ammeter being electrically connected to the emitters of a pair of transistors in said circuit, the bases of said pair of transistors being electrically connected to each other, the base of one of said pair of transistors being electrically connected to a first terminal secured to the base plate of said adapter, the collectors of said pair of transistors being electrically connected to a second terminal secured to a first prong of said adapter, and a second prong of said adapter being electrically connected to a third terminal, which third terminal is electrically connected to said circuit breaker, whereby said adapter, when plugged into a horizontal output circuit socket of a television set, closes said output circuit with said ammeter and said pair of transistors, to give a reading of current upon the face of said ammeter, which reading will indicate if a replacement transistor should be inserted into said output circuit socket.

4,533,870

METHOD FOR TESTING MULTI-SECTION PHOTO-SENSITIVE DETECTORS

David E. Baukol, Pacific, and John W. Dorsey-Palmateer, Tacoma, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Nov. 29, 1982, Ser. No. 444,904
Int. Cl.³ G01R *31/26*
U.S. Cl. 324—158 D 2 Claims



1. A method for testing multi-section photo-sensitive detectors comprising the steps of:

(a) measuring the cathode-anode dark resistance of each section and rejecting the detector in response to any section measuring less than a predetermined value;

(b) evaluating the ratio of the cathode-anode dark resistance of each section to the cathode-anode dark resistance of that section having the highest cathode-anode dark resistance, and rejecting the detector in response to any such ratio being less than a predetermined value;

(c) measuring the cathode-cathode or anode-anode dark resistance of each adjacent pair of sections and rejecting the detector in response to any such resistance being less than a predetermined value;

(d) comparing the cathode-cathode or anode-anode dark resistance of each adjacent section pair with the sum of the cathode-anode dark resistances for each section in said pair and rejecting the detector in response to a predetermined disparity therebetween; and

(e) evaluating the ratio of the cathode-cathode or anode-anode dark resistance of each adjacent section pair with the cathode-cathode or anode-anode dark resistance of that section pair having the highest cathode-cathode or anode-anode dark resistance and rejecting the detector in response to any such ratio being less than a predetermined value.

4,533,871

RANGE-ENABLE INFORMATION SYSTEM FOR PLURAL MOBILE OBJECTS

Peter C. Boetzkes, North Vancouver, Canada, assignor to DSL Dynamic Sciences Limited, St. Laurent, Canada

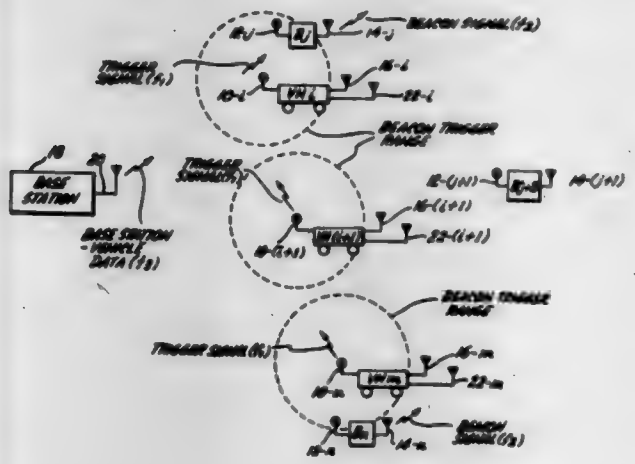
Filed Aug. 10, 1981, Ser. No. 291,409
Int. Cl.³ G01B *7/14;* G01S *13/76*
U.S. Cl. 324—207 25 Claims

1. An information system for communicating information from a location to a mobile object, said system comprising:

a beacon triggering and detecting apparatus mounted on the object, said beacon triggering and detecting apparatus including: means for transmitting a substantially-omnidirectional trigger signal at a first RF frequency, said trigger signal as transmitted having a substantially constant ampli-

tude and said first RF frequency being chosen so that the amplitude of said trigger signal decays, from said substantially constant amplitude, substantially as the cube of radial distance from the object at all points within a predetermined beacon trigger range surrounding the object;

a beacon mounted at the location, said beacon including: a continuously-enabled means that is operative to receive said trigger signal and to detect said trigger signal only when the object is at a distance from the location within said beacon trigger range and the amplitude of said trigger



signal as received equals or exceeds a predetermined threshold value; and, means that is enabled in response to detection of said trigger signal to transmit a beacon signal at a second RF frequency substantially greater than said first RF frequency, said beacon signal containing information desired to be communicated from the location to the object;

and wherein said beacon triggering and detecting apparatus further includes: means receiving and detecting said beacon signal and extracting the information contained therein.

4,533,872

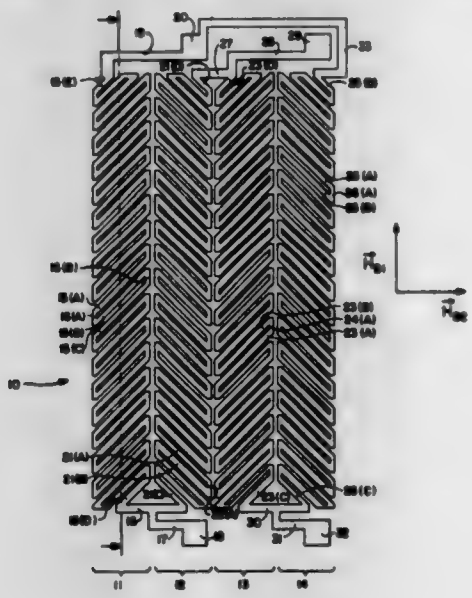
MAGNETIC FIELD SENSOR ELEMENT CAPABLE OF MEASURING MAGNETIC FIELD COMPONENTS IN TWO DIRECTIONS

Warren T. Boord, Brooklyn Park, and Richard B. Fryer, Minnetonka, both of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 14, 1982, Ser. No. 388,066

Int. Cl.³ G01R *33/06*; G01C *17/00*; H01L *43/08*

U.S. Cl. 324—252 **25 Claims**



1. A sensor useful in determining orientation with respect to an external magnetic field comprising:

magnetic field sensing means having an output terminating region, said magnetic field sensing means being arranged to provide an output signal at said magnetic field sensing means output terminating region, said output signal being representative of external magnetic field components in a first direction when a first bias magnetic field is applied to said magnetic field sensing means in a second direction, and said output signal being representative of external magnetic field components in a third direction when a second magnetic bias field is applied to said magnetic field sensing means in a fourth direction;

magnetic field biasing means adapted to provide said first and second magnetic bias fields to said magnetic field sensing means.

4,533,873

R.F. PHASE SHIFT CONTROL SYSTEM

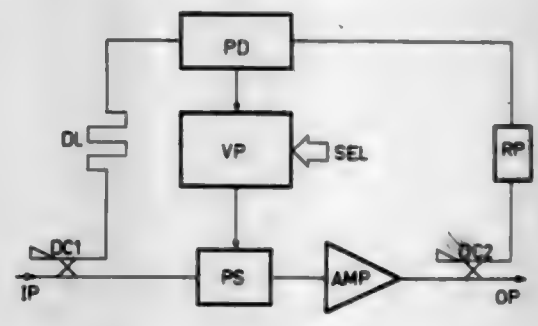
Robert N. Alcock, Dorking, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 2, 1982, Ser. No. 446,139

Claims priority, application United Kingdom, Dec. 4, 1981, 8136614

Int. Cl.³ H03H *11/20*

U.S. Cl. 328—155 **6 Claims**



1. A controlled-phase R.F. system comprising an input port, an output port, an R.F. amplifier for amplifying an R.F. signal supplied to the input port so as to provide a net gain greater than unity at the output port relative to the input port, a phase-shifter for introducing a controllable phase shift between the input port and the output port, and phase-control means including means for generating within the system a plurality of signals corresponding respectively to selected operational reference relative phases, means for selecting individually said operational reference relative phases, means for detecting a difference between the phase at the output port relative to the phase at the input port and relative to a selected operational reference relative phase, and for controlling the phase-shifter so as to tend to minimize said difference relative to said selected one of said operational reference relative phases, said selected operational reference relative phases being selectable from a plurality of substantially different discrete values, whereby to provide a selectable substantially constant phase shift from the input port to the output port, a predetermined phase shift being selectable so as to produce at the output port any one of said plurality of different relative phases spaced approximately at desired intervals, the operational reference relative phases being nominally respectively equal to said different relative phases, in operation, the phase-control means controls the phase-shifter with a control signal derived by addition of two quantities, a first of said quantities being a control quantity for causing the phase-shifter to introduce a predetermined phase shift between the input port and the output port and the second quantity being an error function representative of said difference and, for small values thereof, being a monotonically varying function, said phase control means further includes means for generating a plurality of error functions, respectively representative of the difference between the relative phase at the output port and each of said substantially different discrete values for the operational reference relative phase, and further includes means for selecting one of the error functions for controlling the phase-shifter.

4,533,874
DIGITAL FSK DEMODULATOR USING NON-RECURSIVE TRANSVERSAL FILTER

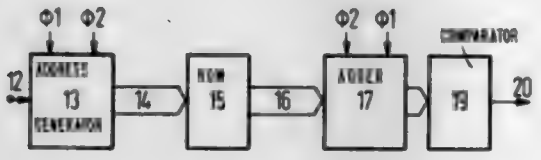
Reinhard Fischer, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed May 18, 1982, Ser. No. 379,479

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121444

Int. Cl.³ H03D *3/00*; H03K *9/06*; G06F *7/544*

U.S. Cl. 329—50 **5 Claims**



1. Method for demodulating FSK signals having a transmission speed range, in which zero crossings of the FSK signals are detected and processed further in an FSK demodulator including an address generator having an input side and a memory having a memory input side connected to the address generator, which comprises delivering the FSK signals to said input side of the address generator, controlling the address generator with a given system clock frequency, supplying necessary address sequences from the address generator to the memory for the process of reading out pulse responses from the memory, thereby reading out time-sequential values of a pulse response stored in the memory having a given duration which emulate the output of a digital non recursive transversal filter having a lowpass transfer characteristic in response to an input pulse to the filter of a given duration; the address generator supplying said necessary address sequences for sequentially supplying a respective address of said address sequences for each respective zero crossing to said memory input side, which generates sequentially any value for the given duration which is necessary for reading out the pulse responses from the memory and which further generates an address for a rest value after the completion of the read out process said FSK demodulator further including an adder for summing up pulse responses read out from the memory during a given system clock period.

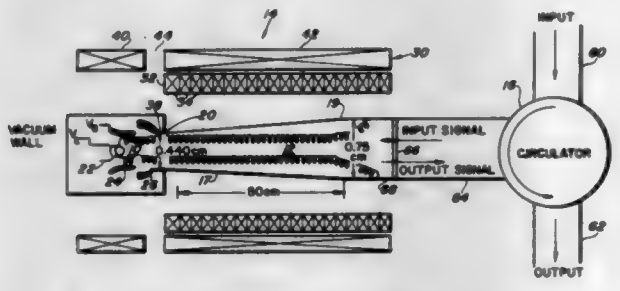
4,533,875
WIDE-BAND GYROTRON TRAVELING-WAVE AMPLIFIER

Yue-Ying Lau, 10612 Edgewood Ave., Silver Spring, Md. 20906; Kwo R. Chu, 4916 Andrea Ave., Annandale, Va. 22003; Victor L. Granatstein, 12816 Bluet Lane, Silver Spring, Md. 20906, and Larry R. Barnett, 8221 Erika Dr., Manassas, Va. 22111

Filed Jun. 16, 1982, Ser. No. 389,133

Int. Cl.³ H01S *1/00*; H01J *23/08*

U.S. Cl. 330—4 **5 Claims**



1. A wide-band gyrotron traveling wave amplifier comprising:

a tapered waveguide wherein the cross-section thereof gradually increases from a small first end thereof to a larger second end for propagating electromagnetic energy therein;

means for generating a beam of relativistic electrons with helical electron motion, and applying this beam to said small first end of said tapered waveguide to propagate in the axial direction therein;

means for generating a tapered magnetic field B within said waveguide in a direction approximately parallel to the axis of said waveguide with a profile closely in accordance with the following equation:

$$\frac{B}{B_o} = \frac{\gamma_{zo}\beta_{\perp o}^2\lambda_{wo}^2}{2\lambda_w^2}\left[1+\left(1+\frac{4\lambda_w^2}{\gamma^2\gamma_{zo}^2\beta_{\perp o}^4\lambda_{wo}^2}\right)^{\frac{1}{2}}\right]$$

where

B_o is the axial magnetic field at the small first end,

$\gamma=(1-V_\perp^2/C^2-V_z^2/C^2)^{-\frac{1}{2}}$

$\gamma_{zo}=(1-V_{\perp o}^2/C^2-V_{zo}^2/C^2)^{-\frac{1}{2}}$

$\beta_{\perp o}$ is the electron velocity perpendicular to the magnetic field at the small first end of the waveguide divided by c,

λ_w is the cutoff wavelength of said tapered waveguide,

λ_{wo} is the cutoff wavelength of said tapered waveguide at the small first end thereof,

$V_\perp$ is the electron velocity perpendicular to the waveguide axis,

$V_{\perp o}$ is the electron velocity perpendicular to the waveguide axis at the small first end of said waveguide;

V_z is the electron velocity parallel to the waveguide axis,

V_{zo} is the electron velocity parallel to the waveguide axis at the small first end of said waveguide; and

means for launching an input electromagnetic wave at said larger second end of said waveguide to propagate toward said small first end such that the frequencies in the input wave will be reflected at various points along the constriction of said tapered waveguide so that they copropagate with said electron beam and are amplified thereby.

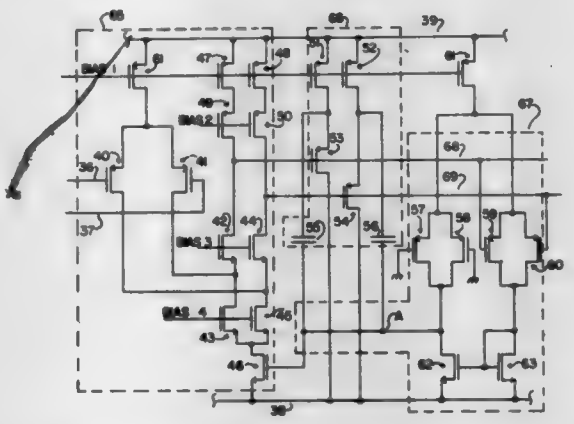
4,533,876
DIFFERENTIAL OPERATIONAL AMPLIFIER WITH COMMON MODE FEEDBACK

Yusuf Haque, San Jose, Calif., and Erwin Ofner, Graz, Austria, assignors to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 18, 1983, Ser. No. 543,194

Int. Cl.³ H03F *3/16, 3/45*

U.S. Cl. 330—253 **11 Claims**



1. A differential operational amplifier having automatic means for controlling common mode output voltage levels, comprising:

a differential operational amplifier for receiving two input signals and amplifying the difference, said operational amplifier having two input lines for receiving said two input signals and having two output lines for presenting the amplified difference between said two input signals;

a feedback circuit connected to said two output lines of said differential operational amplifier, said feedback circuit including means for generating a reference voltage representative of the desired common mode feedback voltage, and further including means for comparing the instantaneous common mode voltage on said output lines with said reference voltage, the difference between said desired common mode voltage and said instantaneous common mode voltage constituting an error signal, said error signal being communicated on a feedback line to the differential operational amplifier to adjust the instantaneous common mode voltage towards the desired common mode voltage; and

frequency compensation means in electrical communication with said feedback circuit and said differential operational amplifier to allow said error signal to possess negative feedback stability.

4,533,877

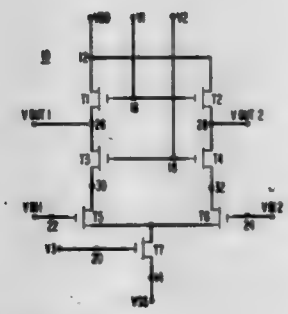
TELECOMMUNICATION OPERATIONAL AMPLIFIER

Chowdhury F. Rahim, Bridgewater, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1983, Ser. No. 566,822

Int. Cl.³ H03F *3/45*

U.S. Cl. 330—253 **1 Claim**



1. An amplifier comprising:

first and second load devices each having first and second terminals;

third and fourth cascode switching devices each having a control terminal and first and second terminals;

fifth and sixth differential switching devices each having a control terminal and first and second terminals;

a current source coupled by a first terminal to the second terminals of the fifth and sixth differential switching devices;

the control terminals of the differential pair of switching devices being coupled to first and second amplifier input terminals, respectively;

the second terminals of the first and second load devices being coupled to the first terminals of the third and fourth cascode switching devices, respectively, and being adapted to be coupled to first and second amplifier output terminals, respectively;

the second terminals of the third and fourth cascode switching devices being coupled to the first terminals of the fifth and sixth differential switching devices, respectively;

each of the first, second, third, fourth, fifth, and sixth devices comprising a separate field effect transistor having a gate terminal corresponding to the control terminal, and having first and second terminals corresponding to the first and second terminals of the devices;

the first and second transistors being n-channel or p-channel transistors and the third, fourth, fifth, and sixth transistors being of the opposite channel type of the first and second transistors;

the first terminals of the first and second transistors being coupled together and being adapted to be connected to a first power supply;

the gate terminals of the first and second transistors being coupled together and being adapted to be connected to a first reference potential;

the gate terminals of the third and fourth transistors being coupled together and being adapted to be connected to a second reference potential;

the current source comprising a seventh field effect transistor of opposite channel type as the first and second transistors, and having a gate terminal and first and second terminals;

the first terminal of the seventh transistor being coupled to the second terminals of the fifth and sixth transistors;

the second terminal of the seventh transistor being connectable to a second power supply;

the gate terminal of the seventh transistor being connectable to a third reference potential;

the first, second, and third reference potentials being generated by first, second, and third reference sources which each comprise field effect transistors;

and wherein each of the first, second, and third reference sources comprises n-channel and p-channel transistors and the amplifier and all three reference sources are fabricated in a single semiconductor chip and each of the three reference sources and the amplifier are connectable to the same first and second power supplies.

4,533,878

AMPLIFIER COMPRISING ECL LOGIC GATE BIASED BY ANOTHER ECL LOGIC GATE

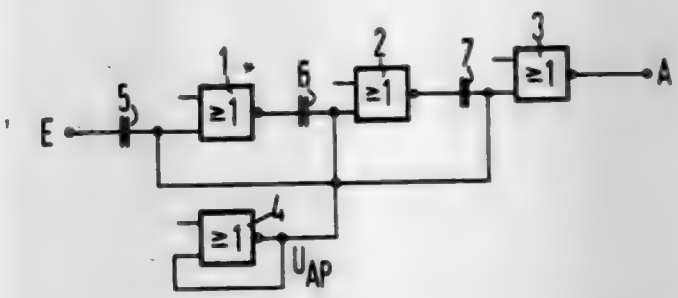
Hans Rehm, Munich, and Horst Breitenfeld, Gauting, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Mar. 23, 1983, Ser. No. 478,150

Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212188

Int. Cl.³ H03F *3/195, 3/45*

U.S. Cl. 330—261 **6 Claims**



1. A circuit for amplifying electrical signals in a device for transmitting frequency-modulated emitter coupled logic (ECL) signals via coaxial lines, said circuit comprising:

at least one amplifier stage formed by an ECL logic element, said amplifier stage having an input directly connected to a bias voltage source and capacitively connected to a signal voltage source; and

a further ECL logic element functioning as said bias voltage source, said further ECL logic element having an output and an input directly connected together, said ECL logic element forming said amplifier stage and said ECL logic element functioning as said bias voltage source being identical logic elements and components of a single ECL module.

4,533,879

INTEGRATED CIRCUIT KIT WITH A PHASE-LOCKED LOOP FOR COLOR TELEVISION RECEIVERS

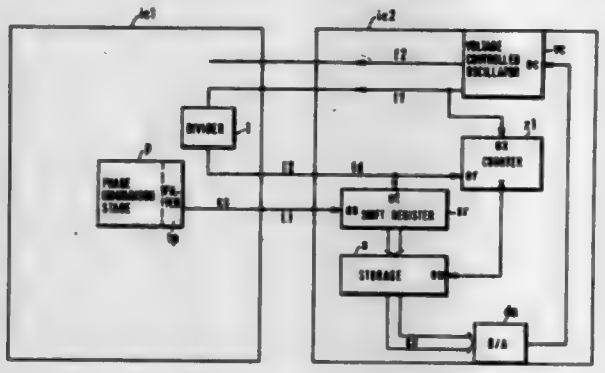
Wolfgang Sauer, Freiburg; Friedrich Schmidtpott, Gundelfingen; Hermanus Schat, Freiburg, and Laurin C. Freyberger, Bahlingen, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed Sep. 27, 1983, Ser. No. 536,287

Claims priority, application 10221982, Oct. 22, 1982, 82109740.9

Int. Cl.³ H03L 7/00

U.S. Cl. 331—1 A 7 Claims



1. An IC kit for a color-television receiver with digital signal processing comprising first and second integrated circuits which jointly contain a clock oscillator realized in the form of a phase-locked loop for producing two-phase clock signals;

said first integrated circuit containing a phase-comparison stage said second integrated circuit containing a voltage-controlled oscillator of the phase-locked loop, control signals for said phase-locked loop being applied via a maximum of two connecting lines between said first and said second integrated circuits, characterized in that:

said phase-comparison stage comprises a digital low-pass filter at its output;

said control signals are digital signals applied to said second integrated circuit by said first integrated circuit via a first one of said connecting lines; and

said second integrated circuit comprising a first counter for counting a first one of said clock signals, and having a reset input connected to a second one of said connecting lines for receiving data clock signals during said control signals,

a shift register having parallel outputs and having a clock input to said second one connecting line, and having a serial input connected to the said first connecting line;

a storage device having parallel inputs connected to said parallel outputs of said shift register and having an enable input connected to a single counter-reading output of said first counter said single counter-reading output being selected in accordance with the relationship $X/F \geqq 1/Fd$ where X is the numerical value corresponding to said output, F indicates the frequency of said clock signals, and Fd indicates the frequency of said data clock signals; and

a digital-to-analog converter having inputs connected to the outputs of said storage device, and having an output connected to the control input of the oscillator.

4,533,880

TUNING CIRCUIT WITH FREQUENCY SYNTHESIZER USING D/A CONVERTER

Martinus F. A. M. Geurts, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 23, 1982, Ser. No. 410,784

Claims priority, application Netherlands, Sep. 25, 1981, 8104415

Int. Cl.³ H03L 7/06

U.S. Cl. 331—1 A 2 Claims

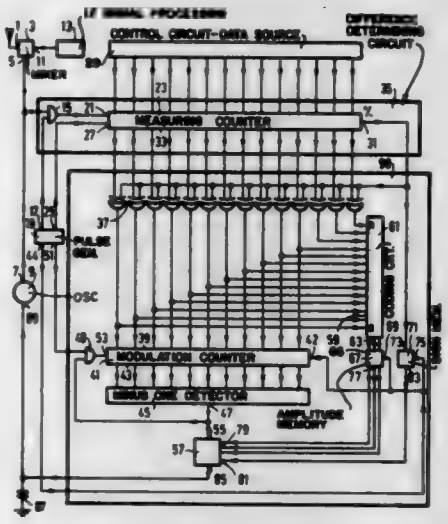
1. A frequency synthesis tuning circuit comprising:

an oscillator having a frequency control input;

a source of data specifying a tuning frequency;

a digital frequency determining means for receiving said data specifying a tuning frequency and a signal from said oscillator, and producing a multiple bit digital frequency error signal having bits of most and least significance, proportional to the frequency difference between said oscillator output signal and the frequency specified by said data; and,

modulator circuit means for generating a periodic pulse signal representing said frequency difference for controlling said oscillator, said modulating circuit means including:



means for modulating the average pulse duration of said periodic pulse signal by the most significant bits of said error signal when said frequency difference is greater than a minimum frequency difference;

means for amplitude modulating said modulated periodic pulse signal with the least significant bits of the digital error signal when said frequency difference is less than a maximum frequency difference; and

means for amplitude and pulse duration modulating said periodic pulse signal with the most and least significant bits of said digital frequency error signal when said frequency difference is between said maximum and minimum frequency differences.

4,533,881

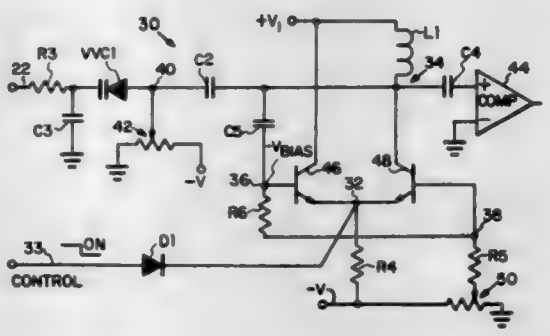
RAPID STARTING VARIABLE FREQUENCY OSCILLATOR WITH MINIMUM STARTUP PERTURBATIONS

Michael R. Monett, Santa Clara, Calif., assignor to Memory Technology, Inc., Santa Clara, Calif.

Filed Sep. 3, 1982, Ser. No. 414,749

Int. Cl.³ H03L 7/00; H03B 5/08

U.S. Cl. 331—36 C 5 Claims



1. An oscillator circuit capable of minimizing frequency perturbations during starting up of said oscillator circuit, said oscillator circuit comprising:

a resonant tank circuit having a central node, said resonant tank circuit comprising at least one voltage variable capacitor and an inductor, said inductor having a first terminal and a second terminal, said first terminal being DC

coupled to a fixed voltage source and coupled to said voltage variable capacitor, and said second terminal being DC coupled to said central node and coupled to said voltage variable capacitor;

means for providing positive feedback to said resonant tank circuit, said positive feedback providing means including first and second switching means, said first switching means comprising a first transistor, and said second switching means comprising a second transistor, said first transistor and said second transistor forming a differential pair having a common emitter node, said second transistor having a collector node coupled to said central node, said first transistor having a first base electrode and said second transistor having a second base electrode; and

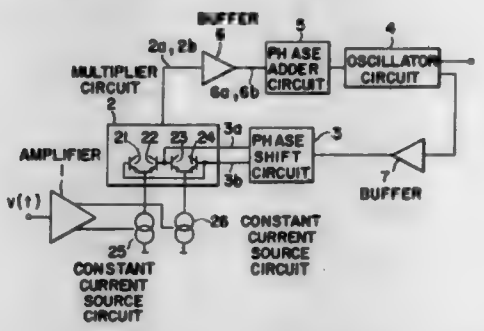
bias circuit means, said bias circuit means being coupled to said second base electrode to maintain a current bias and to said first base electrode to maintain a current bias, said bias circuit means including charge storage means coupled between said first base electrode and said central node to allow voltage at said second electrode to track voltage changes at said central node such that said bias circuit means maintains a controlled DC bias level at said central node at least during starting up of said oscillator circuit, thereby maintaining constant voltage bias of said voltage variable capacitor.

4,533,882

FREQUENCY MODULATOR WHEREIN MODULATION TAKES PLACE IN A FEEDBACK LOOP OF AN OSCILLATOR

Seitaro Shinbara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 13, 1984, Ser. No. 579,458
Claims priority, application Japan, Feb. 16, 1983, 58-24323
Int. Cl.[3] H03C 3/02
U.S. Cl. 332—16 T 5 Claims



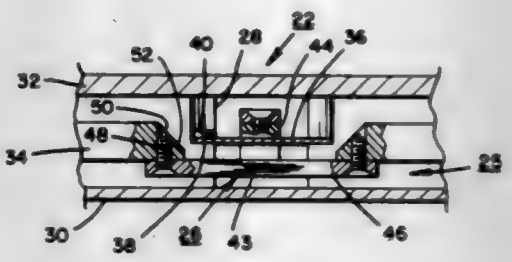
1. A frequency modulator comprising an oscillator circuit including an amplification element, a phase shift circuit for phase-shifting an oscillation output of said oscillator circuit by the amount of 90 degrees, a multiplier circuit including an amplification element and multiplying an output of said phase shift circuit by a modulating signal, and a phase adder circuit for varying an oscillation frequency of said oscillator circuit by adding the output of said multiplier circuit, wherein the amplification element of said phase adder circuit and the amplification of said oscillator circuit are connected in parallel with respect to a power source, and said multiplier circuit comprises an amplification element connected to receive the output of said phase shift circuit, and a constant current source circuit connected in series with said amplification element of said multiplier circuit and varying the magnitude of a current passing through said amplification element of said multiplier circuit in accordance with said modulating signal.

4,533,883

COAXIAL TRANSMISSION LINE CROSSING

Thomas Hudspeth, Malibu, and Harmon H. Keeling, Lake Isabella, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 23, 1983, Ser. No. 468,827
Int. Cl.[3] H01P 3/06
U.S. Cl. 333—1 9 Claims



1. A crossover for a microwave circuit comprising:

(a) a plate of electrically conductive material having channels therein for communication of microwave energy, the path of a first of said channels crossing the path of a second of said channels;

(b) a first and a second inner conducting means disposed respectively within said first and said second channels and electrically insulated from the walls of said channels;

(c) an electrically conductive septum disposed at the crossing of said paths;

(d) means within said first conducting means for depressing said first conducting means below said septum; and

(e) means within said second conducting means for elevating said second conducting means above said septum to provide isolation in the conduction of microwave energy through said crossover along said first and said second conducting means.

4,533,884

COAXIAL LINE TO WAVEGUIDE ADAPTER

Thomas Hudspeth, Malibu, and Harmon H. Keeling, Lake Isabella, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Feb. 23, 1983, Ser. No. 468,825
Int. Cl.[3] H01P 5/103
U.S. Cl. 333—26 6 Claims

1. An adapter of a coaxial transmission line to a waveguide comprising:

(a) a microwave circuit disposed within a plate of electrically conductive material, said circuit including coaxial transmission lines formed of rectangular channels cut into said plate and rod-shaped inner conductors of rectangular cross-section;

(b) a cover of electrically conductive material set on said plate and closing off said channels to complete the outer conductor of said coaxial transmission lines;

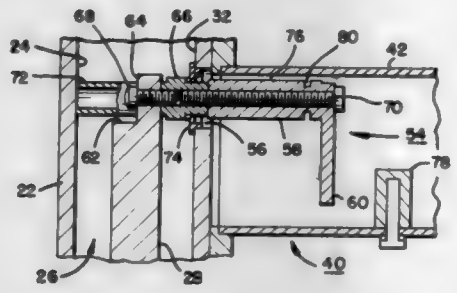
(c) an aperture in the outer conductor adjacent to one of said transmission lines;

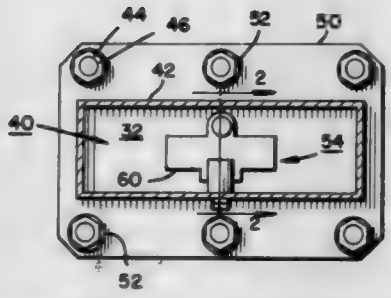
(d) a waveguide located at said aperture and secured to the outer conductor of said one transmission line;

(e) a mode launcher extending from the inner conductor of said one transmission line through said aperture and into said waveguide to couple said inner conductor via said aperture to said waveguide; and

(f) said mode launcher comprising a stem passing adjacent an inner wall of said waveguide but spaced apart therefrom for transporting a transverse electromagnetic wave, and wherein said mode launcher includes a dipole element of

planar shape disposed within said waveguide and normal to the propagation axis of said waveguide, said dipole





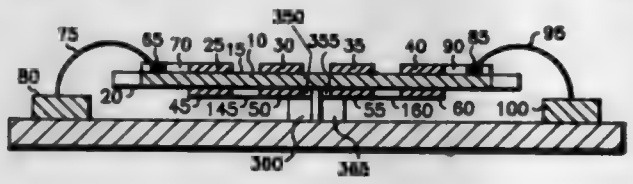
element being supported at an edge thereof by a terminus of said stem.

4,533,885

APPARATUS FOR SUPPRESSION OF SPURIOUS ATTENUATION POLES IN CRYSTAL FILTERS

Robert J. Higgins, Jr., Sunrise, Fla., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 27, 1983, Ser. No. 488,874
Int. Cl.³ H03H *9/56, 9/58, 9/05*
U.S. Cl. 333—191 **11 Claims**



1. A piezoelectric filter, comprising:

a piezoelectric substrate including upper and lower opposed major surfaces;

a plurality of N electrically cascaded resonators disposed on said piezoelectric substrate where N is an integer greater than two, each of said resonators including a lower electrode disposed on said lower major surface and each resonator in said cascade along with its corresponding electrodes being assigned a consecutive ordinal integer such that adjacent resonators and their associated adjacent lower electrodes are assigned numbers differing by one; and

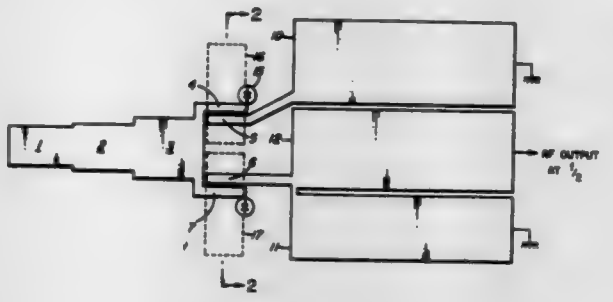
a plurality of at least INT (N+1)/2 mounting pedestals each electrically coupled to certain of said lower electrodes so that a maximum of two adjacent lower electrodes are coupled to any of said pedestals, at least one pair of two adjacent lower electrodes are connected to one of said pedestals.

4,533,886

SELF-BIASING BROADBAND FREQUENCY DIVIDER

William D. Cornish, Nepean, and Lawrence B. Hewitt, Calgary, both of Canada, assignors to Minister of National Defence, Canada

Filed Dec. 23, 1982, Ser. No. 452,505
Claims priority, application Canada, May 14, 1982, 403007
Int. Cl.³ H01P *1/20*
U.S. Cl. 333—218 **4 Claims**



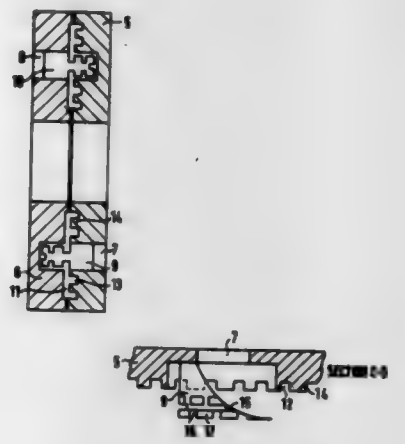
1. In a microstrip transmission line frequency divider having a circuit resonant at a sub-harmonic frequency with a pair of input lines coupled to a pair of output lines, each input line terminating in a varactor diode connected between it and the ground plane, the improvement comprising the ground plane defining a pair of slots located at the resonant circuit, each slot being separated from the other and generally located underneath one input line and its associated output line, adjacent a varactor and extending laterally outwardly, whereby the varactors are biased into forward conduction.

4,533,887

ROTARY WAVEGUIDE COUPLING HAVING ARCUATE SHAPED DEFLECTING ELEMENTS WITH 2-D BLOCKING STRUCTURES

Günter Mörz, Ludwigsburg, and Werner Speldrich, Backnang, both of Fed. Rep. of Germany, assignors to ANT Nachrichtentechnik GmbH, Backnang, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,203
Claims priority, application Fed. Rep. of Germany, Mar. 18, 1982, 3209906
Int. Cl.³ H01P *1/06*
U.S. Cl. 333—256 **19 Claims**



1. A rotary waveguide coupling comprising:

an annular waveguide divided along a separating plane to form first and second annular waveguide sections connected together so as to be mutually rotatable, said first annular waveguide section having a waveguide input port and said second annular waveguide section having a waveguide output port; and

first and second deflecting means each fixedly disposed in a respective one of said first and second annular waveguide sections at a respective one of said input and output ports for imparting a defined direction of propagation to waves fed to said annular waveguide at said input port and for

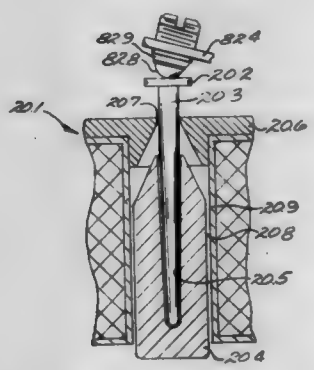
guiding waves out of said annular waveguide at said output port with a defined direction of propagation, each said deflecting means including a deflecting element comprising a molded part which is bent in the form of a hook to define an arcuate surface extending from the waveguide section in which that deflecting element is fixedly disposed into the other waveguide section without contacting the walls of said other waveguide section, each said molded part having a surface, separate from said arcuate surface, extending into said other waveguide section and being provided with a plurality of orthogonal grooves which define a plurality of projections between said grooves, said grooves and projections constituting a two-dimensionally oriented wave blocking structure.

4,533,888

MAGNETIC CIRCUIT CONTROL APPARATUS

Aimé J. Grenier, North Attleboro, and Lyle E. McBride, Norton, both of Mass., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation of Ser. No. 395,167, Jul. 6, 1982, abandoned. This application Aug. 7, 1984, Ser. No. 638,443
Int. Cl.³ H01H *50/66*
U.S. Cl. 335—131 9 Claims



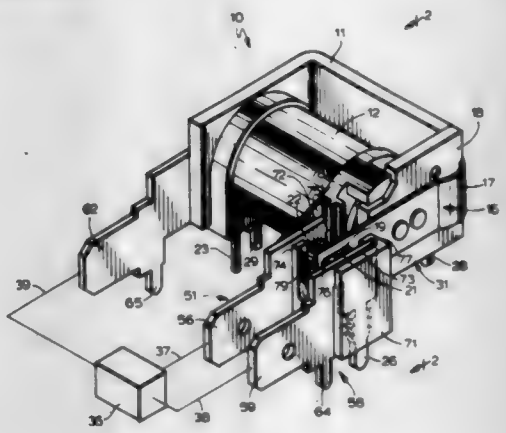
1. Magnetic circuit control apparatus comprising first and second load contact assembly means, the first load contact assembly means being movable relative to the second load contact assembly means between a contacts engaged and contacts disengaged position, solenoid means having an output stroke to move one of the first and second contact assembly means comprising a winding configured as an annulus, side wall means defining a core receiving bore located within the annulus, the bore having a longitudinal axis, a core of magnetically responsive material movable along the longitudinal axis within the annulus between first and second positions, the core having an upper and a lower end and having a bore extending along essentially the whole length of the longitudinal axis and being open at its upper end and closed at its lower end, the bore in the core having a generally frusto-conical configuration with the bore being larger at its open end than adjacent the closed end, a detached elongated output element loosely received in the bore and projecting therefrom, the output element operatively coupled to the first load contact assembly to move it relative to the second load contact assembly, and pole piece means having a bore extending therethrough, the elongated element projecting through the bore in the pole piece means, the diameter of the bore in the pole piece being selected to allow rocking movement of the elongated element within the bore of the core but to limit lateral movement of the core to prevent the upper end portion of the core from striking the side wall as it moves between the first and second positions.

4,533,889

RELAYS AND METHOD FOR MOUNTING RELAYS ON PRINTED CIRCUIT BOARDS

Michael W. Knight, Fort Branch, Ind., assignor to AMF Incorporated, White Plains, N.Y.

Filed Dec. 14, 1983, Ser. No. 560,903
Int. Cl.³ H01H *47/04*
U.S. Cl. 335—199 23 Claims



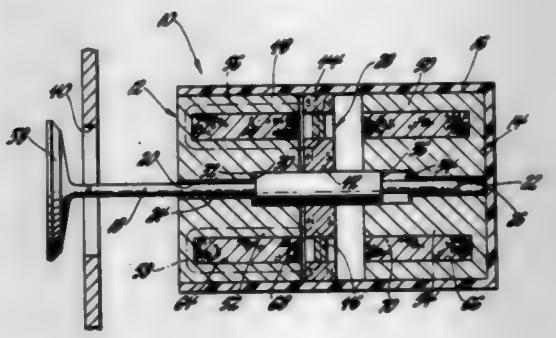
22. A relay adapted to be mounted to a printed circuit board, said relay including a plurality of contacts (19, 21, 22) adapted to be electrically connected to a load, characterized in that said relay further includes a first terminal means (56, 59, 62, 82, 92) for electrically connecting said contacts (19, 21, 22) to a load (36) external of and bypassing any conducting paths on said printed circuit board (30), and second terminal means (26, 27, 28, 29) for mounting said relay to said printed circuit board (30) and for electrically connecting said contacts (19, 21, 22) to conducting paths on said printed circuit board (30).

4,533,890

PERMANENT MAGNET BISTABLE SOLENOID ACTUATOR

Balkrishna R. Patel, Troy, Mich., assignor to General Motors Corporation, Detroit, Mich.

Filed Dec. 24, 1984, Ser. No. 685,547
Int. Cl.³ H01F *7/00*
U.S. Cl. 335—234 2 Claims



1. A bistable electromagnetic actuator comprising in combination:

first and second ferromagnetic core elements disposed in spaced relation within a housing member, the first and second core elements having axially opposed inner and outer extensions defined in each core element by a central axial opening and an axial annular recess in which is received an electrical coil;

an armature assembly including a nonmagnetic actuator shaft disposed within the central opening of each core and supported thereby for axial movement therein, and inner and outer axially magnetized annular permanent magnets of opposite polarity radially spaced by a ferromagnetic ring so as to be axially aligned with the inner and outer extensions of the first and second core elements, the mag-

nets and ring being secured to the actuator shaft for axial movement therewith so that the magnets are effective when in close proximity to the first core element to hold the actuator shaft in a first axial position and when in close proximity to the second core element to hold the actuator shaft in a second axial position; and so that,

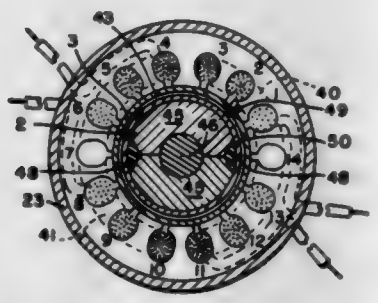
the electrical coils are momentarily energizable with electrical current to produce a repulsive magnetic force between the permanent magnets and the core element in close proximity thereto, and an attractive magnetic force between the permanent magnets and the opposing core element.

4,533,891

LIMITED ANGLE TORQUE MOTOR

Robert D. Vanderlaan, and John W. Meulendyk, both of Kalamazoo, Mich., assignors to Pneumo Corporation, Boston, Mass.

Filed Apr. 7, 1983, Ser. No. 482,769
Int. Cl.³ H01F *7/08*
U.S. Cl. 335—272 **10 Claims**



1. A limited angle torque motor comprising a rotor assembly, a rotor casing surrounding said rotor assembly, and a stator assembly extending over one end of said rotor casing, said rotor casing being closed at said one end and open at its other end to permit operating fluid to enter said rotor casing through said other end, and connecting means for removably connecting said stator assembly to said rotor casing thereby permitting replacement of said stator assembly without distrubing said rotor assembly, said rotor casing having an external shoulder adjacent said other end engageable by a holddown member which is used to attach said rotor casing to a support structure, and said connecting means comprising a sleeve member for connecting said stator assembly to said holddown member.

4,533,892

SPLIT STRUCTURE TYPE TRANSFORMER

Hideki Masuhara; Kunio Katada, and Uichi Kudo, all of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 21, 1983, Ser. No. 506,515
Claims priority, application Japan, Jun. 23, 1982, 57-106681; Aug. 25, 1982, 57-147189
Int. Cl.³ H01F *21/12*
U.S. Cl. 336—147 **9 Claims**

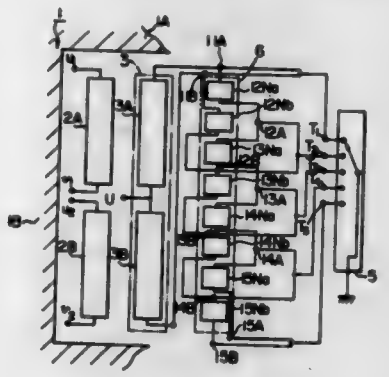
1. A split structure type transformer comprising:

a core having a leg;

two split secondary windings wound about the leg of the core to be juxtaposed along an axial direction of the leg, and connectable to independent loads;

a primary winding including two primary winding parts each being wound about each of said two secondary windings corresponding thereto and concentrically therewith to be juxtaposed along the axial direction of said leg said two primary winding parts being connected in parallel to each other;

a single tap winding wound about both the primary winding parts of said primary winding and secondary windings concentrically therewith and including a plurality of tap winding parts connected in series with each other and a plurality of tap terminals, only one end of said single tap winding is connected to a common terminal of the parallel connected primary winding parts so that a sum of currents



flowing through said two primary winding parts is applied to said one end of said single tap winding; and

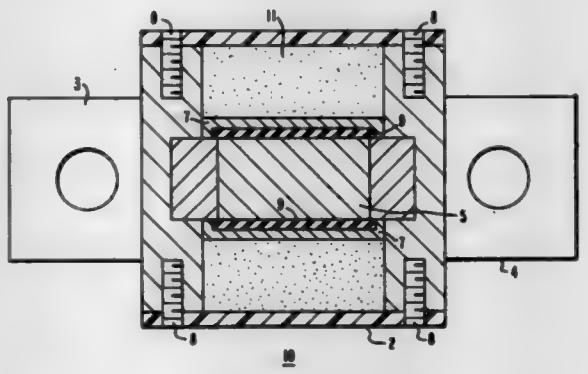
a single tap selector connected to the tap terminals of said single tap winding to select one of the tap terminals.

4,533,893

MONOLITHIC FUSE FOR ROTATING EQUIPMENT

Donald D. Blewitt, Penn Hills, and Tapan K. Gupta, Monroeville, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 13, 1984, Ser. No. 570,489
Int. Cl.³ H01H *85/00*
U.S. Cl. 337—5 **6 Claims**



1. A fuse, comprising:

(a) an insulating fuse housing;

(b) electrically conductive terminal means disposed at both ends of said fuse housing for sealing the ends thereof;

(c) a non-linear resistor means is electrically connected to and extends continuously between the electrically conductive terminal means within said insulating fuse housing for limiting and shaping the arc voltage developed during current interruption; and

(d) a fuse element electrically connected between the electrically conductive terminal means and metallurgically deposited on the non-linear resistor means within the insulating fuse housing.

4,533,894

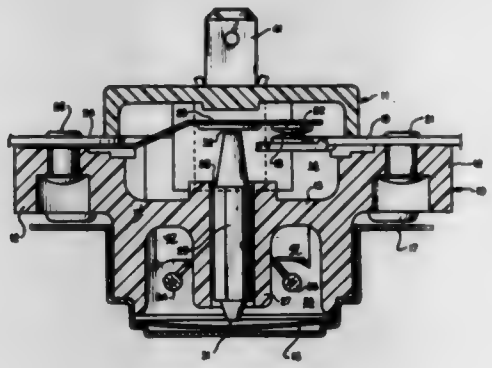
ADJUSTABLE BIMETAL SNAP DISC THERMOSTAT WITH HEATERS

Ralph L. Bishop; William N. Rich, and Walter C. Kowalski, all of Mansfield, Ohio, assignors to Therm-O-Disc, Incorporated, Mansfield, Ohio

Filed Jun. 18, 1984, Ser. No. 621,665
Int. Cl.³ H01H *61/02, 37/52*
U.S. Cl. 337—107 **13 Claims**

1. A bimetal snap disc thermostat comprising a body assembly, a switch in said body assembly, a bimetal snap disc mounted on said body assembly, an operator operating said switch in response to snap movement of said bimetal disc, said

disc and body assembly cooperating to define a heater chamber adjacent to said disc, a plurality of separate generally cylindrical resistance heaters symmetrically positioned in said heater chamber adjacent to said bimetal disc, and a pair of heater



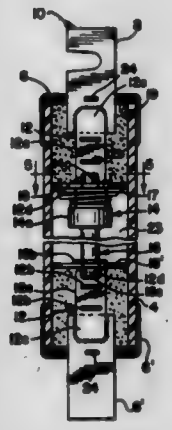
terminals mounted on said body assembly having inner ends in said heater chamber, said heaters providing leads extending from the ends thereof connected to said heater terminals, said heater terminals through said leads operating to position said heaters within said annular chamber.

4,533,895

TIME DELAY FUSE

Joseph W. Kowalik, Skokie, and David J. Krueger, Arlington Heights, both of Ill., assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Jun. 22, 1984, Ser. No. 623,824
Int. Cl.³ H01H *71/20*
U.S. Cl. 337—165 **28 Claims**



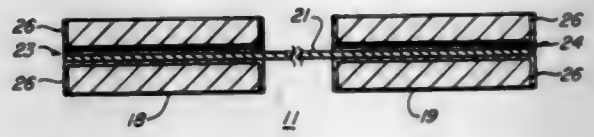
1. In a time delay fuse having an insulating housing with conductive terminals at the opposite axial ends thereof, and a subassembly including axially disposed first current-heatable means connected to one of said terminals and current-carrying means electrically coupled in series between said first current-heatable means and the other terminal to complete a circuit between said terminals, said first current-carrying means including a member axially movable above a given temperature and coupled to said first current-heatable means through a heat meltable connection, spring means for urging said axially movable member in an axial decoupling direction away from said first current-heatable means to separate and decouple the current-carrying means from said first current-heatable means so that upon the melting of said heat meltable connection said current-carrying means is separated and decoupled from said first current-heatable means, said heat meltable connection being in heat coupled relation to said first current-heatable means so that a prolonged modest overload of current flow through said first current-heatable means over a given time period will at least soften said heat meltable connection; the improvement wherein said spring means includes an axially compressed spring having one axial end which bears against a first axially facing shoulder on said axially movable member to urge said axially movable member in said decoupling direction, and spring holding means for holding said spring means in an axially compressed state, said holding means including a spring holding member initially axially movable relative to said first current-heatable means so as to allow placement of said holding member at a given relative axial position where said holding member bears against and compresses said spring means, and lockable into said given axial position when rotated relative to said subassembly in a transverse plane where it is held by spring force in position against a second shoulder in said housing.

4,533,896

FUSE FOR THICK FILM DEVICE

Yakov Belopolsky, Nepean, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Nov. 28, 1983, Ser. No. 555,339
Int. Cl.³ H01H *85/16*
U.S. Cl. 337—232 **9 Claims**



1. A fuse, for mounting on an electrically insulative substrate to protect a thick film device mounted on said substrate and connected electrically in series with said fuse, said fuse characterized by:

two electrically conductive terminal block means, for electrical connection to electrodes carried by said substrate, said two block means in close proximity to one anther, in axial alignment, but in a spaced apart relationship; and

an electrically conductive fusible link means protruding into respective mating holes in each of said two terminal block means and electrically connected thereto so as to complete an electric circuit between said two block means whereby said mating holes are larger than necessary to accept said fusible link, so as to allow molten material from the fusible link to move into said mating holes due to capillary action when said fusible link melts due to excessive heat.

4,533,897

MINIATURE THERMAL SWITCH AND METHOD OF MAKING THE SAME

Harry W. Olson, Woodridge, and Phillip A. Olson, Hoffman Estates, both of Ill. (legal representative of said Harry W. Olson, deceased), assignors to Littelfuse, Inc., Des Plaines, Ill.

Filed Apr. 28, 1983, Ser. No. 489,342
Int. Cl.³ H01H *37/76*
U.S. Cl. 337—408 **17 Claims**

1. A thermally actuated electrical switch for permanently breaking an electrical connection responsively to a rise in the ambient temperature therearound above a given threshold temperature, said switch comprising:

an insulating housing having an interior compartment defined by the walls thereof:

first and second electrically conducting elongated contact members having outer ends thereof emerging from said housing, said conducting members having their interior ends disposed within the interior of said housing, the interior end of said first contact member being mechanically deflected towards and against the interior end of said second contact member to complete a circuit through said switch;

spring means disposed within said housing and on one side of the interior ends of said contact members and pressingly urging said first contact member against said second contact member in a given direction; and

a solid meltable arresting member disposed within said hous-

ing on the other side of the interior ends of said contact members for arrestingly supporting one of said contact members against the force of said spring means acting in said given direction to maintain electrical contact between the contact members, said meltable arresting member having its melting point at said given threshold temperature, so that said arresting member melts at said threshold temperature to release said one of said contact members to separate from the other contact member under the force of said spring means in said given direction, and wherein said interior end of said second contact member is rigidly supported by and urged by said spring means against a sloping interior portion of said housing, so as to be pushed by said spring means along and beyond said first contact member when said arresting member melts.

4,533,898

SYMMETRICAL TEMPERATURE SENSOR

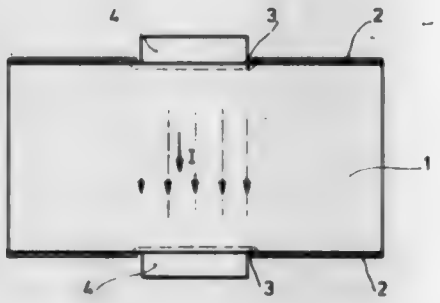
Heinz Sauermann, Halstenbek, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 5, 1983, Ser. No. 558,412

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1982, 3245178

Int. Cl.³ G01K *7/22*; H01C *7/08*; H01L *37/00*

U.S. Cl. 338—25 **3 Claims**



1. A symmetrical temperature sensor, which comprises:

a semiconductor body of one conductivity type comprising neutron-transmuted n-type silicon;

two highly-doped zones of said conductivity type and formed opposite each other on opposite surfaces of said semiconductor body, the thickness of said zones being substantially less than that of said semiconductor body, a temperature-dependent resistor being formed in said body between said two zones; and

connection contacts connected to said two highly-doped zones.

4,533,899

JOYSTICK CONTROLLER WITH IMPROVED MOTION CONTROL WITH PLATE HAVING BEVELLED FLAT EDGES THAT CORRESPOND TO PLANES OF MANEUVERABILITY

Karl Isaksson, Eslöv, Sweden, assignor to Akermans Verkstad AB, Eslov, Sweden

Filed Dec. 15, 1983, Ser. No. 561,914

Claims priority, application Sweden, Dec. 23, 1982, 8207373

Int. Cl.³ H01C *10/16*; G05G *9/10*

U.S. Cl. 338—128 **10 Claims**

1. A control lever arrangement comprising in combination

a housing,

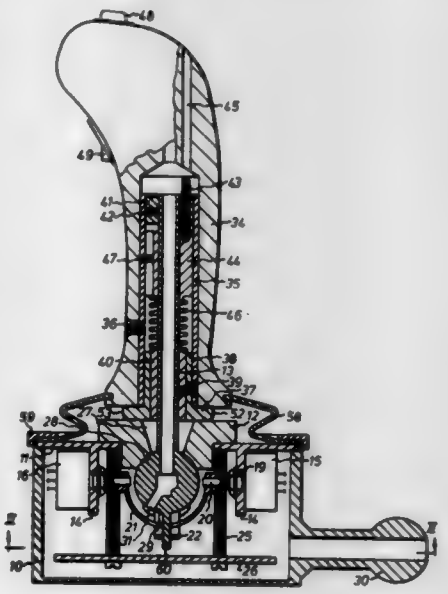
control means within said housing,

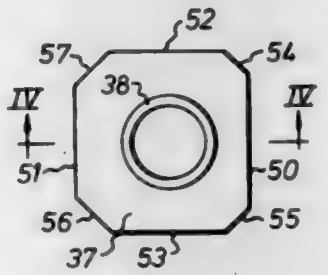
a lever non-rotatably mounted in said housing and projecting therefrom, said lever being manually movable in every direction from its initial position for actuating the control means within said housing, but being especially and distinctly movable in at least two planes forming an angle to one another and representing the operation of a specific function for which interference from adjacent functions is undesirable,

a plate non-rotatably but displaceably mounted on said lever,

means forming a planar portion on said housing about the lever fulcrum therein,

a spring provided between said plate and a fixed abutment on said lever for holding said plate in planar engagement with said planar portion, said plate having at least two flat





edges forming the same angle with one another as the said distinct plane of lever movement and extending at right angles each to one of said planes, said plate being tiltable about said flat edges and substantially non-slidable along said planar portion against the action of said spring when said lever is moved for actuation of a desired control means.

4,533,900

SERVICE-INTERVAL DISPLAY FOR MOTOR VEHICLES

Heinz Muhlberger, Eching; Erwin Starmuhler, Munich; Walter Weishaupt, Munich; Peter Flohr, Munich, and Fritz Bourauel, Munich, all of Fed. Rep. of Germany, assignors to Bayerische Motoren Werke Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 8, 1982, Ser. No. 346,764

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1981, 3104196

Int. Cl.³ B60Q *1/00*

U.S. Cl. 340—52 R **12 Claims**

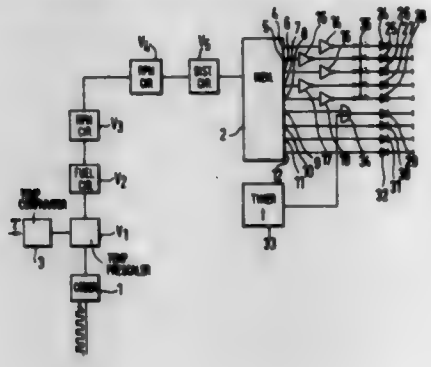
2. Apparatus for displaying a service-interval for a motor vehicle having an engine comprising:

measuring means for measuring actual distance travelled by the motor vehicle,

display means for generating a service signal indicative of a fixed service interval,

distance-modifying means interposed between the display means and the measuring means, said distance-modifying means being responsive to both a first component related to the actual distance travelled by the vehicle and a sec-

ond component being a function of a parameter of engine load for controlling the occurrence of said service signal



to assert earlier said service signal when said engine experiences increased periods of higher loads.

4,533,901

ANTICATCHING DEVICE FOR AUTOMATIC DOORS OR WINDOWS

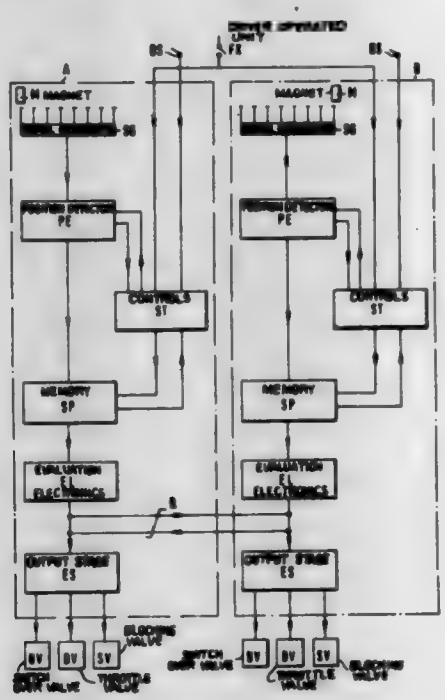
Franz Lederle, Weicha, Fed. Rep. of Germany, assignor to Gebr. Bode & Co., Kassel, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 361,166

Claims priority, application Fed. Rep. of Germany, Mar. 25, 1981, 3111711

Int. Cl.³ H02P *1/04*

U.S. Cl. 340—52 R **10 Claims**



1. In an anticatching control device for automatic doors or windows of vehicles and the like, having an electric signal generator coupled with a movable member of a door or window mechanism to produce an electrical position signal every time the member reaches a predetermined position and circuit means receptive of the position signals for measuring the time interval between two consecutive signals and comparing same with given time intervals to produce a control signal when there is an unfavorable comparison to effect the stopping or reversing of the motion of the member, the improvement wherein the signal generator produces at least two position signals during the movement of the members between predetermined positions corresponding to selected segments thereof in the closing direction and in the opening direction and wherein the circuit means comprises means for storing previous measured time intervals for each segment for the closing direction and for the opening direction and means for comparing a current measured time interval to a previous measured time interval for that same segment and for the same direction to produce said control signal.

4,533,902

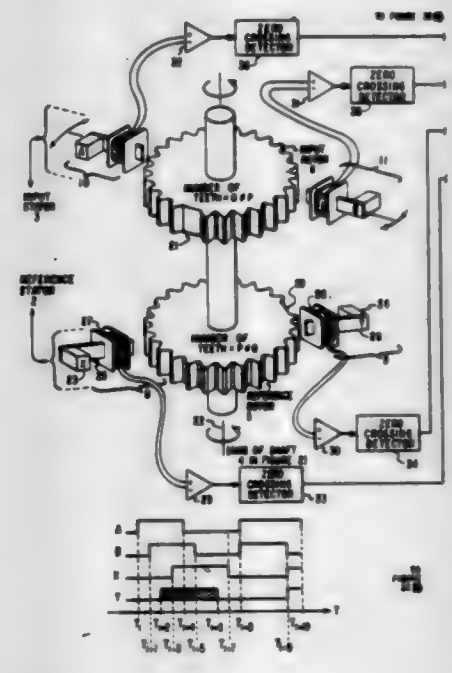
PRECISION ANGLE TRANSDUCER USING NONPRECISION ROTORS

Alan J. Baker, 10329 33rd Ave. SE., Everett, Wash. 98204, and Robert W. Leiby, 2024 W. Stuart, Fort Collins, Colo. 80526

Filed Mar. 25, 1983, Ser. No. 478,759

Int. Cl.³ H03K *13/02*; G08C *9/00*

U.S. Cl. 340—347 P **16 Claims**



1. A transducer comprising:

first and second rotors journalled for simultaneous and identical rotation about an axis, respectively having P-many and Q-many poles along respective first and second peripheries, P unequal to Q, and having respective first and second once-per-revolution index marks;

means coupled to the first and second rotors for rotating them about the axis;

first sensor means disposed adjacent the first periphery for producing a first sensor signal of P-many cycles per revolution in response to the passage of poles along the first periphery;

second sensor means disposed adjacent the second periphery for producing a second sensor signal of Q-many cycles per revolution in response to the passage of poles along the second periphery and journalled for orbital revolution about the axis and along the second periphery;

first and second zero crossing detectors respectively coupled to the first and second sensor signals for producing first and second digital signals;

transition detection means coupled to the first and second digital signals for detecting that at least one of those signals has changed;

clock means for providing digital time information;

means coupled to the first digital signal for distinguishing the first once-per-revolution index mark;

means coupled to the second digital signal for distinguishing the second once-per-revolution index mark;

first digital processing means coupled to the first and second digital signals, to the transition detection means, to the clock means and to those means for distinguishing the first and second once-per-revolution index marks, for determining the time of one revolution R of the rotors, the sum of the P-many times ΣT_P from a zero point to selected transitions in P-many consecutive cycles of the first digital signal, the sum of the Q-many times ΣT_Q from the zero point to selected transitions in Q-many consecutive cycles of the second digital signal, the number, according to the

modulus P, of intervening whole cycles $P_\#$ occurring in the first digital signal from a preceding first once-per-revolution index mark to the first of the P-many consecutive cycles, and for determining the number, according to the modulus Q, of intervening whole cycles $Q_\#$ occurring in the second digital signal from a preceding second once-per-revolution index mark to the first of the Q-many consecutive cycles; and

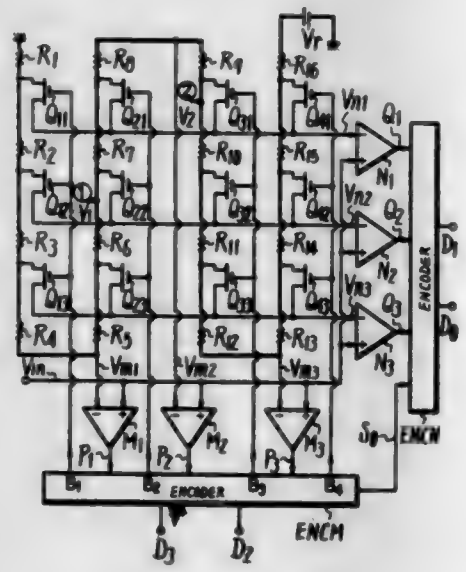
second digital processing means coupled to R, ΣT_P, ΣT_Q, $P_\#$ and $Q_\#$ for finding the phase θ between the first and second sensor signals.

4,533,903

ANALOG-TO-DIGITAL CONVERTER

Takaaki Yamada, Zama, and Takeo Sekino, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,499
Claims priority, application Japan, Jul. 10, 1981, 56-107656
Int. Cl.[3] H03K *13/175*
U.S. Cl. 340—347 AD 15 Claims



1. An analog-to-digital converter for converting an analog input voltage signal to a digital output voltage signal of m upper bits and n lower bits comprising:

a plurality of resistor means connected in a series circuit to a voltage source for establishing respective reference voltages;

upper bit comparators for generating outputs indicative of said m upper bits and having first inputs each receiving said analog input voltage and second inputs each connected to said series circuit at respective intervals defining groups of said resistor means therebetween, each of said groups including a plurality of resistor means;

upper bit encoder means receiving said outputs from said upper bit comparators for generating said m upper bits of said output signal and a switch control signal;

lower bit comparators for generating outputs indicative of said n lower bits and having first inputs each receiving said analog input voltage and second inputs;

switch means associated with each of said groups of said resistor means and being responsive to said switch control signal for selectively connecting each of said second inputs of said lower bit comparators to a respective resistor means in said associated group of resistor means; and

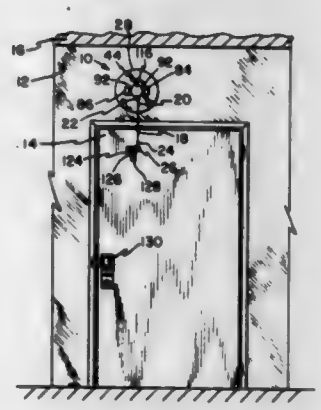
lower bit encoder means receiving said outputs from said lower bit comparators for generating said n lower bits of said digital output signal.

4,533,904

COMBINATION SMOKE AND BURGLAR ALARM

LeRoy F. Steinman, Jr., 516 Harbor Walk Dr., Fort Wayne, Ind. 46819

Filed Feb. 27, 1984, Ser. No. 584,117
Int. Cl.[3] G08B *19/00, 13/08*
U.S. Cl. 340—521 19 Claims



10. A combination smoke and burglar alarm including a smoke alarm means having a housing, an audible alarm, means in said housing for sounding said audible alarm in response to detecting smoke, a test system having a spring-biased tester switch actuable externally of said housing by a user, and means controlled by said tester switch for sounding said audible alarm when said tester switch is actuated against its spring bias; said smoke and burglar alarm comprising:

a tester-switch actuator mounted externally on said housing;

means for biasing said tester-switch actuator into engagement with said tester switch to actuate said switch against its spring bias to sound said audible alarm;

selectively releasable means for holding said tester-switch actuator out of engagement with the tester switch against said means for biasing; and

trip means connected to said means for holding and adapted to be activated by opening a door or window for releasing said tester-switch actuator into engagement with said tester switch when the door or window is opened.

4,533,905

INDICATING MEANS FOR A DOOR OPERATOR DEVICE

Simon Leivenzon, and Steven Leivenzon, both of Caulfield, Australia, assignors to Firmagroup Australia Pty. Ltd., Cheltenham, Australia

PCT No. PCT/AU82/00077, § 371 Date Dec. 15, 1982, § 102(e) Date Dec. 15, 1982, PCT Pub. No. WO82/04094, PCT Pub. Date Nov. 25, 1982
PCT Filed May 14, 1982, Ser. No. 456,078
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—524 14 Claims

1. In an operator for a door,

(a) drive means for moving a door to which said operator is attachable from open to closed position and from closed position to open position;

(b) initiating means for initiating said drive means to effect such movements of said door;

(c) circuit means operatively interconnected between said drive means and said initiating means to permit such movement of said door and switching off of said drive means when a fully opened or fully closed positions is reached;

(d) at least said drive means, said initiating means and said circuit means being locatable, in the vicinity of said door;

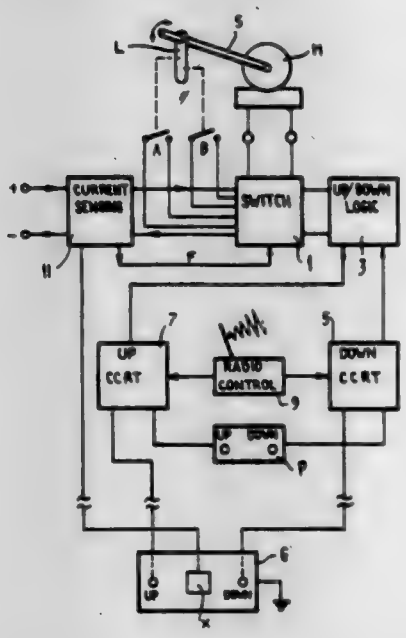
(e) second initiating means and door position indicator means locatable remote from said operator and remote from the vicinity of said door;

(f) said door position indicator means comprising an indicator for indicating the door fully closed position;

(g) said second initiating means initiating drive of said drive

means to effect at least a movement of said door to fully closed position;

(h) said indicator having two operative states, including a first state in which, when it is activated, it can give a fail



safe indication, and a second state in which, when it is not activated, it cannot give such indication;

(i) said door position indicator means comprising door movement indication means provided to give an indication that said door is moving between either position

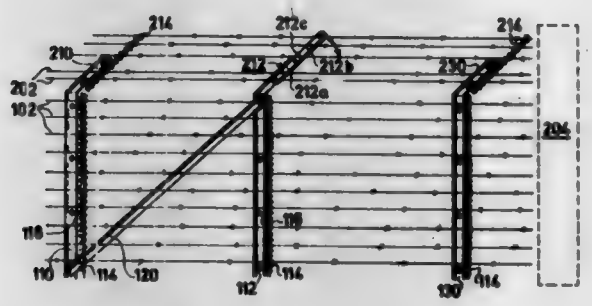
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4,533,906

FENCE PARTICULARLY USEFUL FOR DETECTING INTRUSION ATTEMPTS

Yoel Amir, Moshav Omer, Israel, assignor to Beta Engineering & Development Ltd., Beer-Sheva, Israel

Filed Sep. 15, 1982, Ser. No. 418,583
Claims priority, application Italy, Nov. 2, 1981, 64190
Int. Cl.³ G08B *13/12*
U.S. Cl. 340—541 10 Claims



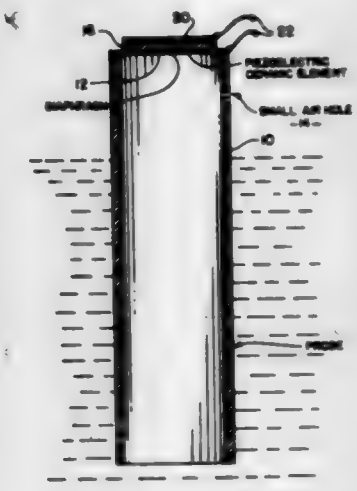
1. A wire fence including a plurality of trip-wires tensioned between ground-anchoring means at their opposite ends and connected to detector means actuated upon the disturbance of the trip-wires, characterized in that said ground-anchoring means comprises a pair of anchoring posts anchorable in the ground in spaced parallel relationship, and a diagonal post secured to said anchoring posts so as to extend at an incline therebetween with respect to the ground, said trip-wires being secured to said diagonal post and being longitudinally freely movable with respect to said anchoring posts, thereby increasing the difficulty of one attempting to climb over the fence by depriving him of a substantially horizontal foot-engaging surface and a good hand-gripping support, the weight of one attempting to climb the fence producing a large displacement of the trip-wires secured to the diagonal post thereby better assuring that the trip-wires will actuate the detector.

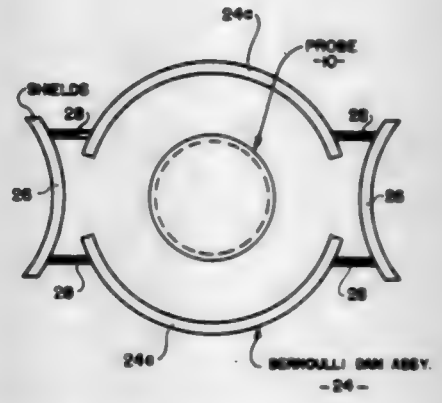
4,533,907

SWIMMING POOL ALARM

John B. Thatcher, 4410 Hedge Court, Rohnert Park, Calif. 94928

Filed May 9, 1983, Ser. No. 492,577
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—565 5 Claims





1. A swimming pool alarm assembly including: a hollow elongated tubular probe adapted to be set in an upright position in the water of a swimming pool with its lower end extending below the surface of the water in the pool; a diaphragm mounted across the top of the probe to close the top; the tubular probe having an open bottom so that water rises in the probe to trap a quantity of air in the upper end thereof; a pressure responsive electrical transducer mounted on said diaphragm for generating voltages in response to stresses exerted on the transducer by movement of the diaphragm; an electrically activated alarm unit; electronic circuitry connected to said transducer and to said alarm unit to activate said alarm in response to voltages generated by said transducer; and a dam assembly surrounding said probe to shield said probe from surface waves of the water in the pool, and from waves of less than a predetermined threshold, said dam assembly comprising a pair of elongated arcuate-shaped members spaced apart, and positioned in coaxial relationship with said tubular probe, and a pair of elongated arcuate-shaped shields mounted on said first-named arcuate-shaped members respectively to bridge the space between said first-named arcuate-shaped members in spaced relationship therewith.

4,533,908

WARNING MEANS FOR A SAFETY VALVE OF A HYDRAULIC POWER UNIT AND A HYDRAULIC POWER UNIT HAVING THE SAME

Masaki Fujikawa, Fujinomiya, Japan, assignor to Yasui Sangyo Co., Ltd., Fujinomiya, Japan

Filed Dec. 9, 1981, Ser. No. 329,021
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—626 2 Claims

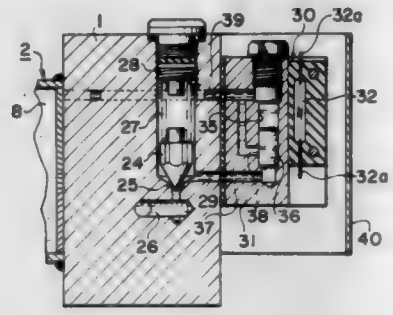
1. A warning means for a safety valve of a hydraulic power

unit, wherein said power unit is provided with a chamber having a safety valve in communication with a fluid relief path in further communication with an oil tank, said warning means comprising:

a valve body made of a nonmagnetic material and provided with a fluid conducting cylinder in communication with said relief path:

a magnet moveably positioned within said cylinder; and

a magnetically operated electric reed switch disposed adja-



cent to said cylinder and connected to a caution buzzer and a caution lamp, wherein the magnet is normally positioned away from the magnetically operated electric reed switch and is directly moved to a position adjacent the magnetically operated electric reed switch by an oil passed from said chamber through the safety valve and relief path and into said cylinder when the safety valve is opened by an overload in said chamber, thereby switching on the magnetically operated electric reed switch and operating the caution buzzer and caution light.

4,533,909

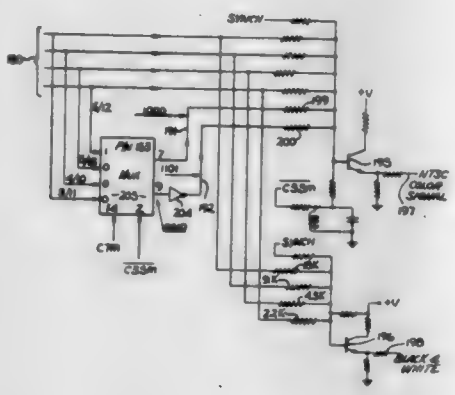
COMPUTER WITH COLOR DISPLAY

Wendell B. Sander, San Jose, Calif., assignor to Apple Computer, Inc., Cupertino, Calif.

Continuation of Ser. No. 394,801, Jul. 2, 1982, abandoned, which is a division of Ser. No. 150,630, May 16, 1980, Pat. No. 4,383,296. This application Dec. 12, 1983, Ser. No. 560,529

Int. Cl.³ G09F *9/30*

U.S. Cl. 340—703 **11 Claims**



1. In a digitally controlled, raster scanned, video display for use with a microcomputer, or the like, which display provides color images in response to chroma signals having predetermined phase relationships to a reference signal of frequency (f), a circuit for providing a digitally controlled chroma signal comprising:

digital word generation means for generating predetermined digital signals;

serializing means coupled to said generation means for repeating said word in a serial form at a predetermined frequency so as to provide frequency components at said frequency f;

converting means, coupled to said serializing means for converting outputs from said serializing means to an AC signal;

whereby a video chroma signal is generated.

4,533,910

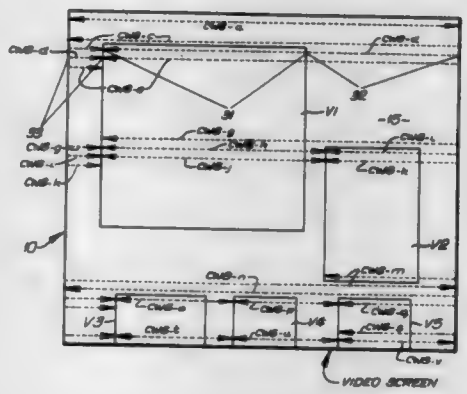
GRAPHICS DISPLAY SYSTEM WITH VIEWPORTS OF ARBITRARY LOCATION AND CONTENT

Josef Sukonick, Cupertino, and Bjorn M. Fjallstam, Sunnyvale, both of Calif., assignors to Cadtrak Corporation, Sunnyvale, Calif.

Filed Nov. 2, 1982, Ser. No. 438,476

Int. Cl.³ G09G *1/00*

U.S. Cl. 340—721 **22 Claims**



1. A graphics display system of the type in which pixel data stored in a pixel memory is accessed and displayed on a video screen, said system facilitating the arbitary screen location and pixel content of one or more viewports, comprising:

control memory means for storing a control table comprising a set of control word sequences each consisting of one or more control words, each sequence specifying the portion of said stored pixel data which is to be displayed in a corresponding segment of a viewport associated with that sequence, and specifying other display parameters for said associated viewport,

first controller means for accessing from said pixel memory the pixel data portion specified by each control word sequence, and

second controller means for displaying said accessed pixel data portion in accordance with said display parameters specified by the associated control word sequence,

said first and second controller means operating repetitively in accordance with consecutive control word sequences to produce a complete screen display in which the viewport arrangement and content are defined by said sequences.

4,533,911

VIDEO DISPLAY SYSTEM FOR DISPLAYING SYMBOL-FRAGMENTS IN DIFFERENT ORIENTATIONS

Aryeh Finegold, Santa Clara, Calif., assignor to Daisy Systems Corporation, Mountain View, Calif.

Filed Feb. 24, 1982, Ser. No. 351,647

Int. Cl.³ G09G *1/16*

U.S. Cl. 340—727 **11 Claims**

1. In a raster scanned display, a system for providing symbols comprising:

memory means for storing a plurality of symbol-fragments, each of said symbol-fragments being represented in said memory means by a character block consisting of a predetermined number of lines and each of said lines including a predetermined number of bits;

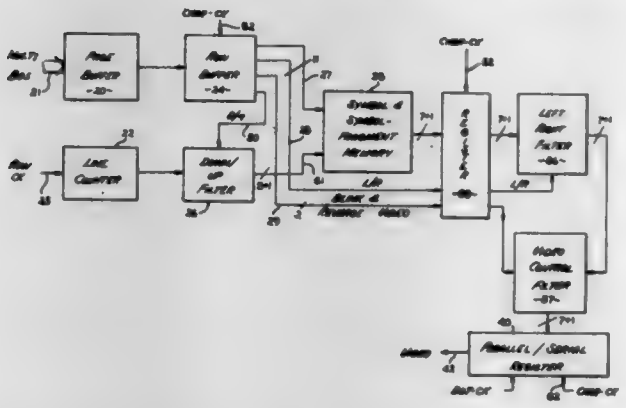
a page buffer for storing data representative of said symbol-fragments required for an entire frame of said display;

a row buffer coupled between said page buffer and memory means;

first circuit means coupled to the input of said memory means for selectively providing said lines for said symbol-fragments in a first order or in a reversed order and;

second circuit means coupled to the output of said memory means for selectively providing said bits for said lines in a

first order or in a reversed order after said lines are inputted to said memory means by said first circuit means;



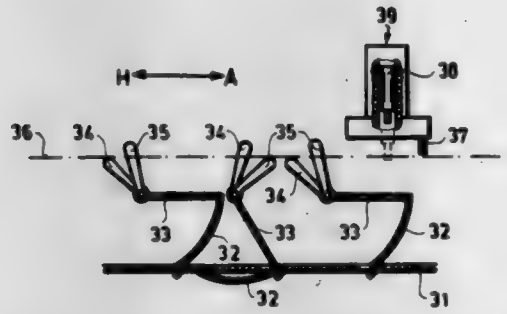
whereby said symbol-fragments may be used to form symbols for said display with different orientations.

4,533,912

EQUIPMENT FOR DISPLAYING ALPHANUMERICAL AND/OR PICTORIAL INFORMATION, PREFERABLY FOR USE ON A VEHICLE

József Gál; András Gyárfás; László Katkó ; Gábor Rácz; Ágoston Sarlós, and Gyula Vozári, all of Budapest, Hungary, assignors to Budapesti Muszaki Egyetem and Ikarus Karosszeria es Jarmugyar, both of Budapest, Hungary

Filed Feb. 28, 1983, Ser. No. 470,176
Int. Cl.³ G09G 3/34
U.S. Cl. 340—783 **1 Claim**



1. An equipment for selectively displaying alphanumerical and/or pictorial information, preferably for use on vehicles, comprising:

a matrix-type display board including passive, two-state dots arranged in at least one column, the display board comprising a plate having a ground-color painted surface (11) wherein at least one aperture (12) is formed adjacent and parallel to each dot in said column of dots,

a plurality of tiltable masks (41, 51) arranged behind said apertures (12),

a plurality of tilting means, each for tilting a respective one of said masks through an associated one of said apertures (12) for covering in a tilted state one dot of the surface (11) of said plate, and for uncovering in a home state said one dot, the color of at least a portion of an outer surface of said masks being different from the said ground-color, each said tilting means comprising two levers (44, 45, 54, 55) mounted at different heights and angle positions and attached to the respective mask (41, 51), said first lever (44, 54), when in the tilted state of the mask (41, 51), extending beyond an actuating plane (36), and the second lever (45, 55), when in the home position of the mask (41, 51), extending beyond the said actuating plane (36) so that said levers (44, 45, 54, 55) at said states of the mask (41, 51), respectively, extend into the path of an actuating carriage (65) arranged behind said plate, said actuating carriage (65) being coupled with a drive, said path running along the plate parallel to said column, said actuating carriage (65) carrying actuating devices (39), one for each of said dots in said column, said actuating devices (39) being arranged along a line lying perpendicular to said column, each actuating device (39) including a fixed first pin (37) and a second actuating pin (38) having a rest and an actuated position, and,

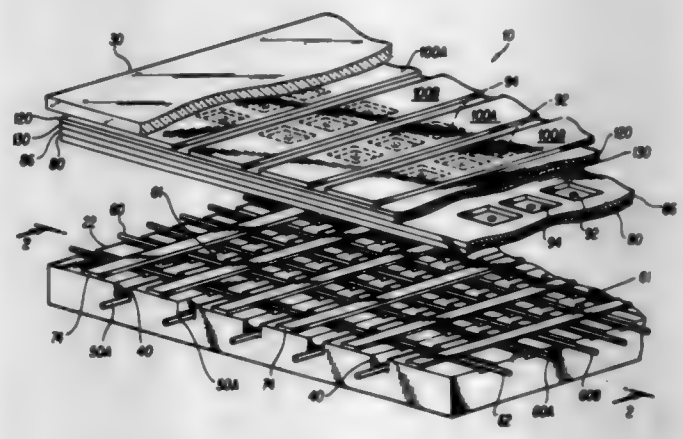
means coupling an electromechanical switch to said second actuating pins for selecting said actuated position to selectively operate said display.

4,533,913

GAS-FILLED DOT MATRIX DISPLAY PANEL AND OPERATING SYSTEM

Okan K. Tezucar, Scotch Plains, N.J., and David A. Parisi, Staten Island, N.Y., assignors to Burroughs Corporation, Detroit, Mich.

Filed Apr. 6, 1983, Ser. No. 482,590
Int. Cl.³ G09G 3/28
U.S. Cl. 340—805 **10 Claims**



1. A display panel and system comprising

a matrix of first gas-filled cells arrayed in rows and columns,

an anode electrode and a cathode electrode associated with said first cells,

each of said cathode electrodes including a series of operating cathode portions, each portion being associated with one of said first cells,

circuit means coupled to said anode and cathode electrodes for turning on said first cells column by column in a scanning cycle, the turn-on of said cells generating cathode glow,

said circuit means also being operable to turn off each anode selectively to turn off the first cells associated therewith,

a matrix of display cells arrayed in rows and columns,

in each column of first cells and display cells there are two display cells associated with each first cell and each cathode portion,

a sustainer electrode disposed along each row of display cells,

a sustainer signal coupled to each sustainer electrode with the sustainer signals applied to adjacent sustainer electrodes including positive and negative pulses in series, with one sustainer signal being 180° out of phase with the other, and

an electronic system for generating said sustainer signals, said system comprising first circuit means for simultaneously generating positive and negative pulses at the respective sustainer electrodes, second means for returning said sustainer signals and electrodes to a reference level after the termination of said positive and negative pulses, third means for generating negative and positive pulses at the respective sustainer electrodes, and control means for operating said first, second and third means in repetitive sequences, with the second means being operated after the first means is operated and after the third means is operated to produce two simultaneous sustainer signals, one of which includes a positive pulse, a reference level, a negative pulse, and a reference level, and the other

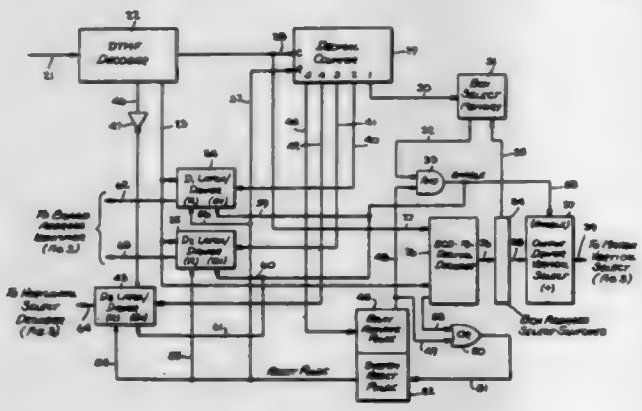
signal includes a negative pulse, a reference level, a positive pulse, and a reference level.

4,533,914

REMOTELY CONTROLLED CROSSCONNECTION SYSTEM

Thomas B. Norling, Piscataway; Joseph H. Polkowski, Lakewood; Jeffrey A. Poulsen, Fords, and Daniel E. Robinson, Metuchen, all of N.J., assignors to GK Technologies, Incorporated, Greenwich, Conn.

Filed Nov. 8, 1982, Ser. No. 440,247
Int. Cl.³ H04Q *3/26*; H04M *3/00*
U.S. Cl. 340—825.79 **15 Claims**



1. A remotely controlled crossconnection system for remotely selecting and switching the connections of the individual signal circuit pairs of a plural pair feeder cable each to a selected pair of a corresponding group of local circuit pairs, each group of local circuit pairs having only one pair in use at a time and connected through said crossconnection system to said feeder cable, said system comprising in combination, for installation in a crossconnection box at the field termination of a feeder cable, a switching matrix having a plurality of selectable switching means each with a feeder cable pair connection point and means for selectably connecting said connection point to a plurality of selectable local pair connection points arranged for connection to the pairs of a corresponding one of said groups of local circuit pairs, a decoder device, means coupled between said decoder device and one axis of said matrix for storing information corresponding to one digit of a plural digit encoded signal upon receipt of said one digit in a predetermined digit sequence, means for applying a control to another axis of said matrix upon receipt of a signal corresponding to a subsequent digit of said plural digit encoded signal, said last mentioned means including means for simultaneously using said stored information to apply a corresponding control to said one axis, the application of said controls to said axes serving to select and operate one of said switching means, means for coupling an input of said decoder device to a spare one of said feeder cable signal circuit pairs, and a power supply for supplying operating power to said decoder device and said matrix control means, said power supply having a power input terminal, and means for connecting said power input terminal to said spare one of said feeder cable signal circuit pairs in a phantom circuit for receiving energizing power over said feeder cable.

4,533,915

RADAR TERRAIN SIGNAL SUPPRESSOR

George A. Lacchi, Granada Hills, and Jalal Alisobhani, Northridge, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed Feb. 16, 1982, Ser. No. 349,121
Int. Cl.³ G01S *13/95, 7/28*
U.S. Cl. 343—5 W **6 Claims**

1. In a pulsed weather radar system including a pulse transmitter and a receiver wherein radar echo pulses are detected to provide video signals, the improvement comprising:

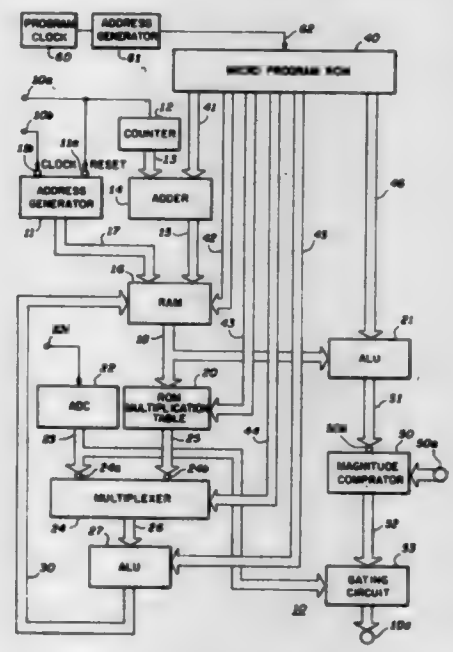
input means for providing digital signals representative of video signals derived by detecting radar echoes received in response to pulses transmitted from said pulse transmitter, said video signals containing weather induced video signal components at weather induced signal frequencies and terrain clutter video signal components;

microinstruction generator;

memory means coupled to said microinstruction generator having an address port and an output port for the storage and retrieval of digital words in locations indicated by signals coupled to said address port, said storage occurring in response to write signals received from said microinstruction generator and said retrieval occurring in response to read signals received from said microinstruction generator;

multiplying means having an output port, and input port coupled to said memory means output port, and further having an instruction port coupled to said microinstruction generator, for the multiplication of signals applied to said multiplication means input port by the constants C and D as selected by said microinstruction generator, and coupling said multiplied signal to said output port thereof;

multiplexing means having first and second input ports, an output port, and an instruction terminal, said first input port being coupled to said signal input means, said second input port being coupled to said multiplication means, and said instruction terminal being coupled to said microinstruction generator, for switchably coupling signals received from said first input port and said second input port to said mulitplexer output port responsive to signals received from said microinstruction generator;



first arithmetic logic unit means having an input port coupled to said multiplexer means output port, an output port coupled to said memory means addressing port, and an instruction port coupled to said microinstruction generator, for adding, subtracting and transferring signals applied to said input port in accordance with instruction signals received at said instruction port and for providing added, subtracted and transferred signals at said output port;

second arithmetic logic unit means having an instruction port coupled to said microinstruction generator means, an input port coupled to said memory means output port, and an output port, for adding, subtracting and transferring signals applied to said second arithmetic logic unit means input port in accordance with instruction signals received at said instruction port for stopping digital signals representative of said terrain clutter video signal components and providing digital signals representative of said weather induced video signal components at said output port;

comparator means coupled to said output port of said second

arithmetic logic unit for comparing said digital signals representative of said weather induced video signal components with a digital threshold signal to provide relative level representative signals; and

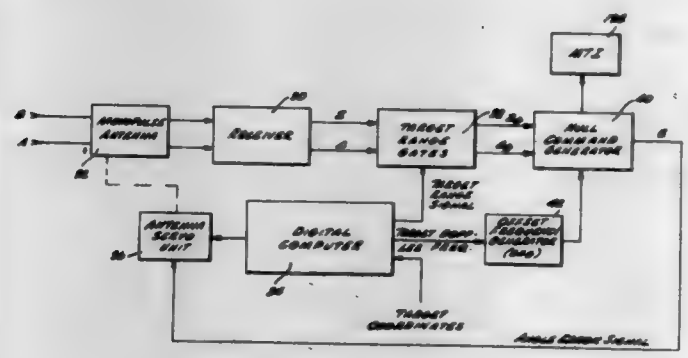
gate means coupled to said comparator means to receive said relative level representative signals and to said input means to receive said digital signals representative of said video signals for coupling said representative digital signals to an output terminal when said relative level representative signal indicates that said digital signals representative of said weather induced video signal components exceed said digital threshold signal, thereby coupling said video signals representative digital signals from said input means to said output terminal.

4,533,916

MONOPULSED RADAR SYSTEM FOR TRACKING GROUND TARGETS

Frederick C. Williams, Topanga, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Aug. 30, 1968, Ser. No. 756,691
Int. Cl.³ G01S *13/68*
U.S. Cl. 343—7.4 **15 Claims**



1. A monopulse radar receiving system comprising:

receiving means including an antenna, and a receiver for providing sum and difference signals respectively having the characteristic sum pattern maximum and difference pattern null amplitudes on a common azimuth and representing energy reflected from a stationary target area under radar surveillance;

means for providing a target doppler frequency signal representing the azimuth of said target area; and

error signal generating means responsive to said sum, difference and target doppler frequency signals for producing error signals representative of the direction and magnitude of the positional difference between the difference pattern null azimuth and the target area azimuth, said error signal generating means including means for compensating for antenna pointing errors produced by signals reflected from moving objects in the target area.

4,533,917

MULTIPLE FREQUENCY SIDE LOBE INTERFERENCE REJECTOR

John C. Reed, 439 Nevin St., Lancaster, Pa. 17603

Filed Mar. 26, 1984, Ser. No. 593,151
Int. Cl.³ G01S *3/16, 3/28*
U.S. Cl. 343—379 **12 Claims**

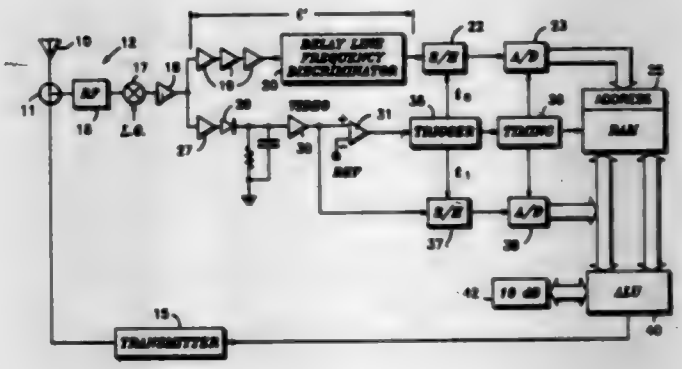
1. A multiple frequency side-lobe interference rejector comprising:

a receiver for receiving transmitted signals within a predetermined band of frequencies and providing output signals representative thereof;

first means coupled to said receiver for receiving the output signals therefrom and providing signals representative of the frequency thereof;

second means coupled to said receiver for receiving the output signals therefrom and providing signals representative of the amplitude thereof;

memory means having a plurality of storage areas, one for each of a plurality of bins of frequencies in the band, and a storage area selection input; and



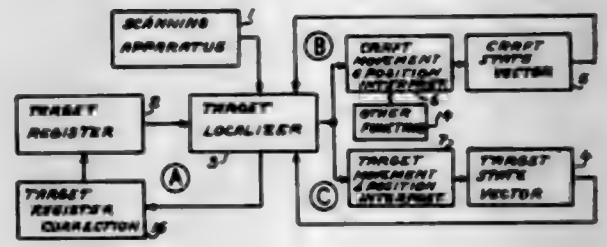
means connecting the signals provided by said first means to the storage area selection input of said memory means and connecting the signals provided by said second means to said memory means for storage in the selected area.

4,533,918

PILOT ASSISTANCE DEVICE

Alain D. Virnot, 21 Rue des Canettes, 75006 Paris, France

Continuation-in-part of Ser. No. 127,060, Mar. 4, 1980, abandoned. This application Jan. 8, 1982, Ser. No. 338,456
Claims priority, application France, Mar. 8, 1979, 79 05989
Int. Cl.³ G01S *1/68*; G01F *15/50*
U.S. Cl. 343—451 **18 Claims**



1. A device, for pinpointing the position of a mobile locus within an area in relation to the location of at least one known sendentary locus, in response to signals generated by a radar apparatus associated with said mobile locus and surveying said area, when said radar apparatus is targeted on a topological feature characterizing said sendentary locus, comprising:

means for storing in machine-readable form a first set of data relative to the location characteristics of the sendentary locus;

means for holding a second set of data having variable factors relative to the state vector of the mobile locus;

means for defining the expected relative location of the targeted locus as a function of said first and second sets of data;

means for acquiring a view of said expected relative location, said means for acquiring including means for calculating the radar scanning time limits of an observation window outlining a scanning zone centered on said expected location, said observation window being narrowly circumscribed about the targeted locus; for selectively accepting reflecting signals from the radar apparatus corresponding to topological features within said scanning zone, said means being adjusted to eliminate reflecting signals from objects other than the targeted locus; for generating from said reflecting signals an array of marks and for placing said marks in said array in a topological arrangement representing the respective origins of said reflecting signals within said scanning zone;

means for enhancing said arrangement by eliminating spurious marks from said array;

means for estimating the difference between the expected relative location of the targeted locus and the location corresponding to the position of the marks in said array, said means for estimating including means for determining the mean deviation between the center of said zone and the locations of origin of the reflective signals indicated by the marks remaining in the array, and means for computing correction coefficients based upon the observation partials corresponding to the rate of change of the variable factors of said second set of data, said observation partials being computed as a functions of the deviation indicated by each of said remaining marks from the center of said scanning zone; and

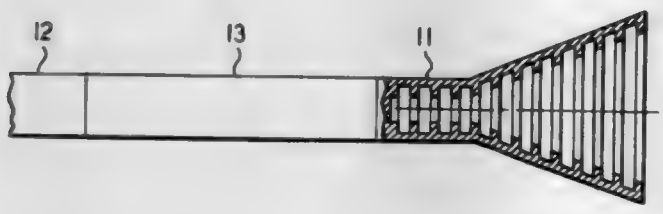
means for continuously and repetitively updating said second set of data as a function of said mean deviation and of said correction coefficients.

4,533,919

CORRUGATED ANTENNA FEED ARRANGEMENT

Corrado Dragone, Little Silver, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Oct. 14, 1983, Ser. No. 542,137
Int. Cl.[3] H01Q *13/02*
U.S. Cl. 343—786 5 Claims



1. An antenna feed arrangement comprising:

a smooth-walled waveguide section disposed at an entrance to the antenna feed arrangement;

a corrugated waveguide section disposed at an output of the antenna feed arrangement, the corrugated waveguide section comprising corrugations of a uniform predetermined depth and gap therebetween to provide a minimum reflection at a first frequency of interest; and

a quarter-wave transformer section disposed between the smooth-walled waveguide section and the corrugated waveguide section, the transformer section comprising a plurality of N corrugated waveguide subsections, where $N \geqq 2$, including corrugation depths which correspond to the corrugation depths of the corrugated waveguide section, each of the N corrugated waveguide subsections of the transformer section including gaps between corrugations which are the same for each section but which differ in size by predetermined amounts in adjacent subsections in a direction way from the smooth-walled waveguide section for generating a maximally flat response at a second frequency of interest which is separated from said first frequency of interest.

4,533,920

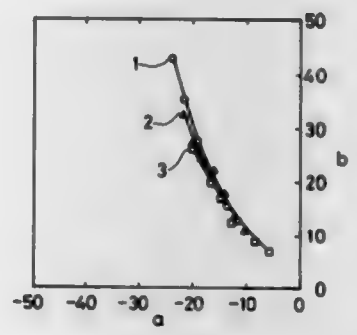
INK-JET RECORDING METHOD

Eiichi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 29, 1984, Ser. No. 614,771
Int. Cl.[3] G01D *15/18*; C09D *11/00*
U.S. Cl. 346—1.1 5 Claims

1. A method for ink jet recording which comprises using inks of one or more colors and a plurality of inks different in dye concentration being used for each color, characterized in that the pH of the inks for each color satisfies the following relation,

$$0.85 \leqq \text{pH min/pH max}$$



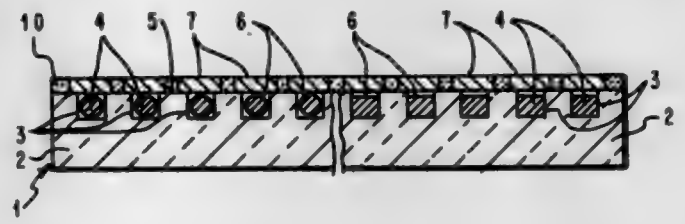
where pH min is the minimum value of pH of the inks for each color and pH max is the maximum value of pH of the inks for said color.

4,533,921

ELECTROEROSION PRINTHEAD WITH TUNGSTEN ELECTRODES, AND A METHOD FOR MAKING SAME

Willie Goff, Jr., Austin, and James M. Rakes, Leander, both of Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,703
Int. Cl.[3] G01D *9/00, 15/16*
U.S. Cl. 346—1.1 10 Claims



1. An electroerosion printhead having at least one row of equally spaced tungsten wire electrodes fixed in a carrying substrate

characterized in that

a. each of said electrodes (4) in a contact area (8) spaced from the print tip (9) has its periphery completely covered with a copper layer (6),

b. each of said covering layers is electrically isolated from the layers of adjacent electrodes, and

c. each of said covering layers lies in a common surface (5) with other covering layers and forms a connector surface that extends essentially parallel to the longitudinal axis of said electrode.

4,533,922

LINEARLY PARALLEL MULTIPEN RECORDER

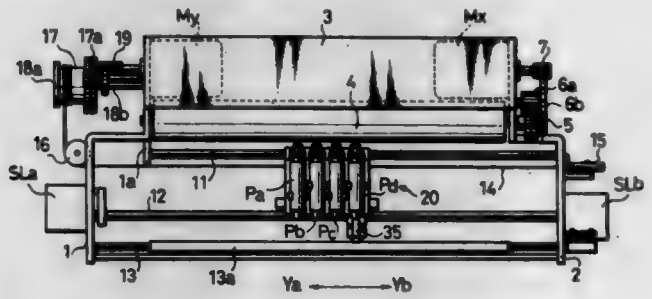
Hideto Tanaka, Tamayama, Japan, assignor to Alps Electric Co., Ltd., Japan

Filed Apr. 27, 1984, Ser. No. 605,161
Claims priority, application Japan, Apr. 27, 1983, 58-74757; Apr. 27, 1983, 58-74758
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—1.1 14 Claims

10. A method of setting the initial position of a pen recorder having: two bases adapted to be movable in directions along a platen, one of said bases being pulled by a pulse motor; a plurality of pens mounted on one of said bases; a hammer mounted on the other base for pressing any one of said pens toward said platen; and a lock mechanism for connecting said bases while changing the relative position between said bases, said method comprising the steps of:

starting said pulse motor under the state where said bases are

connected through said lock mechanism, to move one of said bases to its dead point;
making said pulse motor step out after said dead point is reached;
canceling the locking to separate said bases from each other;



moving the other base to its dead point; and
making said pulse motor step out again after said the other base reaches its dead point, thereby to set the initial positions of both said bases.

4,533,923

INK-JET RECORDING METHOD

Eiichi Suzuki, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 21, 1984, Ser. No. 612,701
Claims priority, application Japan, May 24, 1983, 58-89932
Int. Cl.³ G01D *15/18*; C09D *11/02*
U.S. Cl. 346—1.1 **3 Claims**

1. An ink-jet recording method in which inks of one or more colors and for each color a plurality of inks of different dye concentrations are employed, characterized in that maximum value (Vmax) of the viscosities of the inks of each color and the minimum value (Vmin) thereof satisfy the relation

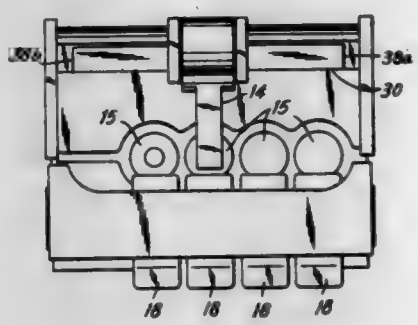
$$0.8 \leqq Vmin/Vmax.$$

4,533,924

MECHANISM FOR SELECTING PEN IN AN X-Y PLOTTER

Shunetsu Ta'kahashi, Shiojiri, Japan, assignor to Epson Corporation, Tokyo, Japan

Filed Sep. 7, 1983, Ser. No. 530,139
Claims priority, application Japan, Sep. 9, 1982, 57-156934
Int. Cl.³ G01D *9/28, 15/16*
U.S. Cl. 346—49 **8 Claims**



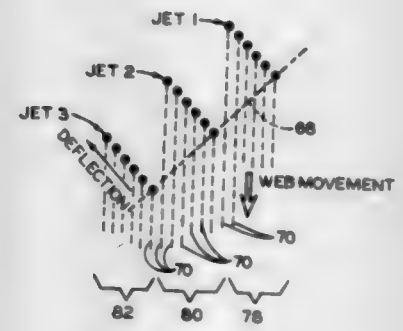
1. A pen selection mechanism for selecting a desired pen in an X-Y plotter which plots on a paper comprising first and second opposed side frames, a shaft supported intermediate said first and second side frames which extends essentially perpendicular thereto, a carriage supported on said shaft and guided thereby, said carriage including a plurality of recording pens arranged in a line along the axial direction of said shaft, said carriage moving essentially perpendicular to said paper, a hammer axially movable along said shaft in response to movement of said carriage, and changing means for moving said hammer in a direction opposite to movement of said carriage during and in response to a single movement of said carriage towards one of said first and second side frames for positioning said hammer with respect to a selected one of said plurality of recording pens so that said hammer can select said selected recording pen upon said single movement of said carriage to plot on said paper.

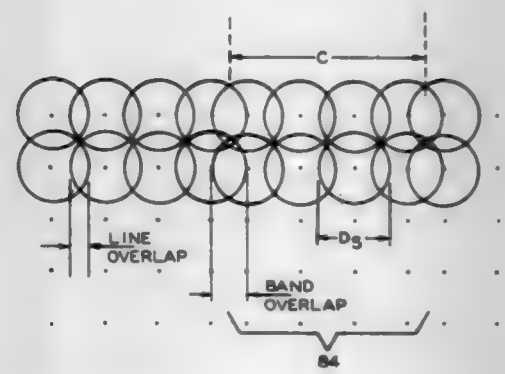
4,533,925

INK JET PRINTER WITH NON-UNIFORM RECTANGULAR PATTERN OF PRINT POSITIONS

Sherman H. Tsao, Plano, and Kenneth T. Zeiler, Richardson, both of Tex., assignors to The Mead Corporation, Dayton, Ohio

Filed Jun. 22, 1984, Ser. No. 623,693
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **10 Claims**





1. An ink jet printer for printing a print image on a moving print medium by selectively depositing ink drops at a plurality of print positions arranged in a rectangular grid on the medium such that a plurality of print lines are formed on said medium, comprising:
means for generating a plurality of jet drop streams directed toward the print medium, said streams arranged in a jet row which is skewed with respect to the direction of movement of the moving print medium,
means for selectively deflecting drops from each jet drop stream perpendicular to said jet row to a plurality of print positions in an associated band of print positions, thereby printing along a band of print lines, with drops deposited along adjacent print lines by adjacent jets overlapping more than drops deposited along adjacent print lines by the same jet, said rectangular grid arranged such that:

$$S_H/S_V = K(n \pm 1/M)(S_V/C), \text{ and } S_V \neq S_H,$$

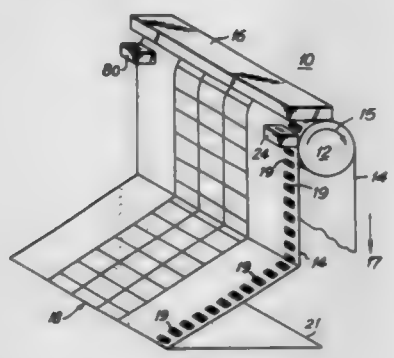
where
S_H = horizontal displacement between adjacent print positions in a band;
S_V = vertical displacement between adjacent print positions in a print line;
M = number of print positions serviced by each jet drop stream;
n = number of rows of print positions between print positions successively serviced by each jet, plus 1;
K = vertical displacement between adjacent jet drop streams divided by S_V; and
C = horizontal displacement between adjacent jet drop streams.

4,533,926

STRIP CHART RECORDER AND MEDIUM STATUS

Tibor L. Foldvari, Cheshire; Donald R. Boucher, Meriden, both of Conn., and Eugene L. Flanagan, III, Manhasset, N.Y., assignors to American Home Products Corporation (Del.), New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,538
Int. Cl.³ G01D *15/24*; B65H *25/24*; G03B *27/52*
U.S. Cl. 346—136 6 Claims



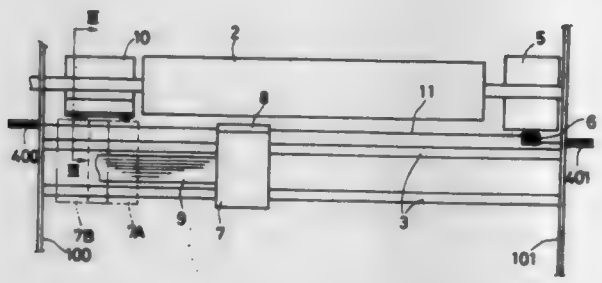
1. A strip chart recorder comprising:
a device for recording data on strip chart paper, said paper having indicia which represent the proximity of an end of the strip chart paper;
advancing means for advancing the strip chart paper past the recording device;
detecting means for detecting the indicia; and
alert means operable for alerting a user of the recorder as to the proximity of the end of the paper upon detection by the detecting means of a predetermined number of said indicia wherein the alert means is operative to signal the proximity of the end of the paper only when the predetermined number of indicia are detected by the detecting means within a time period required for the advancement of the paper a predetermined distance; and wherein the detecting means comprises first counting means for producing a count signal representative of the number of said indicia detected; generating means for generating a periodic signal having a frequency proportional to the speed of advancement of the paper through the recorder; and second counting means for producing a predetermined count signal indicative of the repetition of said periodic signal a predetermined number of times; the first counting means being operative to reset upon the production of the predetermined count signal.

4,533,927

CAPPING MECHANISM FOR PREVENTING NOZZLE BLOCKING IN AN INK JET SYSTEM PRINTER

Fusao Iwagami, Nara, and Hisashi Yoshimura, Soraku, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed May 5, 1983, Ser. No. 491,666
Claims priority, application Japan, May 6, 1982, 57-76143; May 6, 1982, 57-76144
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 3 Claims



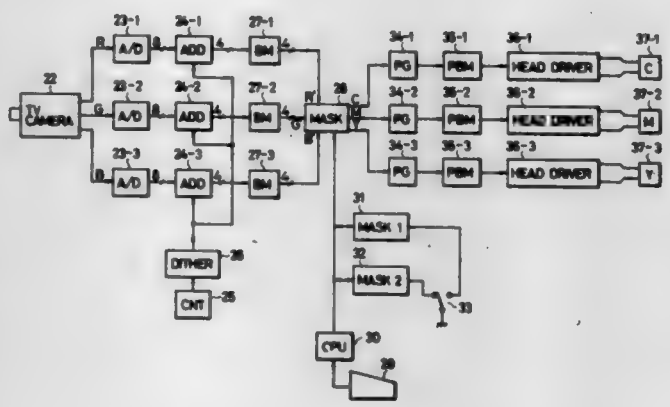
1. A nozzle capping mechanism in an ink jet system printer containing a printer head mounted on a carriage for covering nozzle slits in said printer head when said carriage is located in a stand-by position when said printer is placed in a non-operating condition comprising:
a cap member for capping said printer head, and
a slidable plate means for supporting said cap member, said slidable plate being rotatably mounted on a stationary table via a link means, said slidable plate including a cap set projection and a cap reset projection which projects into a passage of said carriage and are separated from each other by a distance longer than a width of said carriage; said slidable plate being disposed along said passage of said carriage, said slidable plate and cap set projection forming, in combination, a cap drive means for shifting said cap member into said stand-by position of said carriage and said slidable plate, cap set projection and link means forming, in combination, a cap shifting means which pushes said cap member toward said printer head when said carriage is placed in said stand-by position.

4,533,928

COLOR IMAGE PROCESSING APPARATUS

Susumu Sugiura, Yamato, and Yasuo Kohzato, Yokohama, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 20, 1983, Ser. No. 486,900
Claims priority, application Japan, Apr. 30, 1982, 57-71372; May 6, 1982, 57-74560
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 11 Claims



1. Color image forming apparatus for forming a color image on a recording member, comprising:
dot forming means for forming colored dots in at least three colors during reciprocating relative movement of said dot forming means and the recording member in more than one direction;
color signal processing means for converting input signals representing at least three colors into recording signals for forming the dots;
timing control means for changing the recording sequence of said dot forming means depending on the direction of the relative movement of said dot forming means and the recording member; and
control means for causing said color signal processing means to provide different processing depending on the direction of the relative movement of said dot forming means and the recording member.

4,533,929

HEAT-SENSITIVE RECORDING SHEET

Kensuke Ikeda, and Sukenori Nakamura, both of Shizuoka, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 21, 1983, Ser. No. 554,147
Claims priority, application Japan, Nov. 22, 1982, 57-205270
Int. Cl.³ B41M *5/18*
U.S. Cl. 346—209 14 Claims

1. A heat-sensitive recording sheet, comprising:
a support base having thereon;

a colorless or light-colored electron donating dye;
an electron-accepting compound which reacts with the dye to form a color; and
di-2-ethylhexyl sulfosuccinate as a surface active agent.

4,533,930
RECORDING MATERIALS

Shunshuke Shioi, Daito; Yasuo Takekawa, Neyagawa, and Makoto Miyake, Ashiya, all of Japan, assignors to Kanzaki Paper Manufacturing Company, Ltd., Tokyo, Japan

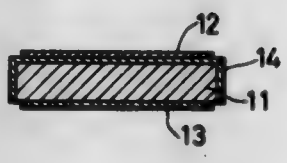
Filed Aug. 23, 1982, Ser. No. 410,811
Claims priority, application Japan, Aug. 31, 1981, 56-137291
Int. Cl.[3] B41M *5/18, 5/22*
U.S. Cl. 346—211 4 Claims

1. In recording materials which comprise
a support
a metal compound, and
a ligand compound,
at least one of said compounds being provided on said support, said metal compound and said ligand compound being physically separated from one another and capable of forming a colored complex by chemical reaction between the metal compound and the ligand compound upon admixture thereof, the improvement wherein said metal compound comprises an organic phosphorous-iron compound having a bond of PO^- and/or PS^- with Fe^{+++} in the molecule and said ligand compound is capable of reacting with the organic phosphorous-iron compound to form a complex.

4,533,931
REDUCTION REOXIDATION TYPE SEMICONDUCTOR CERAMIC CONDENSER

Harufumi Mandai, Osaka; Kiyoshi Iwai, and Yasuyuki Naito, both of Kyoto, all of Japan, assignors to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed Feb. 6, 1984, Ser. No. 577,020
Claims priority, application Japan, Feb. 7, 1983, 58-19459
Int. Cl.[3] H01L *29/12;* H01G *9/00*
U.S. Cl. 357—10 10 Claims

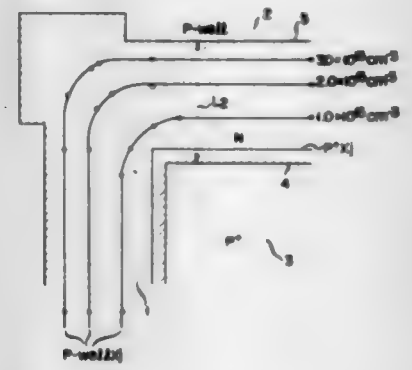


1. A reduction reoxidation type ceramic semiconductor condenser comprising:
a semiconductor ceramic portion, a layer of a first material on a surface of said ceramic portion forming an ohmic electrode thereon, a dielectric layer on another surface of said ceramic portion, said dielectric layer being formed by reoxidation of said ceramic, a layer of a second material on a surface of said dielectric layer, said second material forming a non-ohmic electrode thereon, said ohmic layer being comprised of electrode forming material capable of forming said ohmic electrode during reoxidation of said ceramic portion while preventing significant oxidation of said ceramic portion in contact with said electrode forming material.

4,533,932
SEMICONDUCTOR DEVICE WITH ENLARGED CORNERS TO PROVIDE ENHANCED PUNCH THROUGH PROTECTION

Takeo Kondo, Kawasaki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 131,425, Mar. 18, 1980, abandoned.
This application Dec. 20, 1982, Ser. No. 451,412
Claims priority, application Japan, Mar. 22, 1979, 54-32254; Nov. 10, 1979, 54-145733; Nov. 10, 1979, 54-145738
Int. Cl.[3] H01L *29/90*
U.S. Cl. 357—13 3 Claims

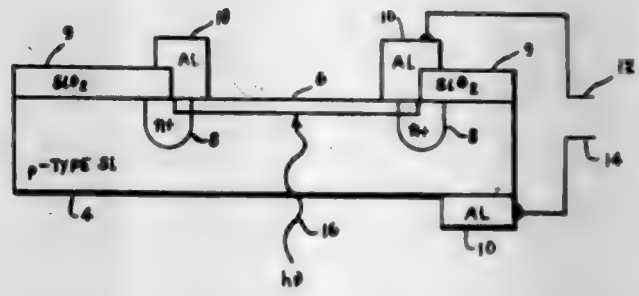


1. A semiconductor device comprising:
a substrate of a first conductivity type;
a first semiconductor area formed in said semiconductor substrate and having a second conductivity type opposite to said first conductivity type, said first area including a first corner; and
a second semiconductor area of said first conductivity type formed in said first area, said second area having a second corner aligned with said first corner and formed such that the distance between said substrate and said second area, measured laterally with respect to the surface of said substrate, is at a maximum at said first and second corners in order to prevent a punch-through at said first and second corners.

4,533,933
SCHOTTKY BARRIER INFRARED DETECTOR AND PROCESS

Paul W. Pellegrini, Bedford; Charlotte E. Ludington, Sherborn; Aleksandar Golubovic, Brookline, and Melanie M. Weeks, Fitchburg, all of Mass., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 7, 1982, Ser. No. 447,599
Int. Cl.[3] H01L *29/48*
U.S. Cl. 357—15 5 Claims



1. A Schottky barrier infrared photovoltaic detector wherein the operation of said detector in the infrared portion of the electromagnetic spectrum is by internal photoemission of holes over an electrical barrier, said detector comprising:
a silicon substrate having a first and an opposed second surface;

a layer of iridium silicide formed on said first surface of said substrate; and

first and second contact means for making ohmic contact with said layer of iridium silicide and with said silicon substrate respectively;

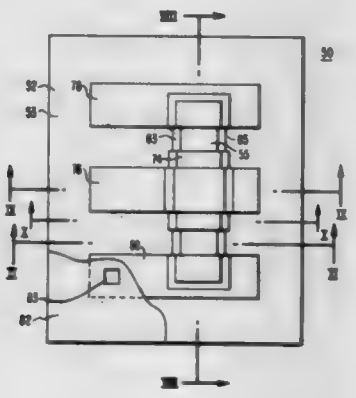
said silicon substrate comprising a wafer of p-type silicon material having an impurity concentration level not exceeding $10^{16}/cm^3$.

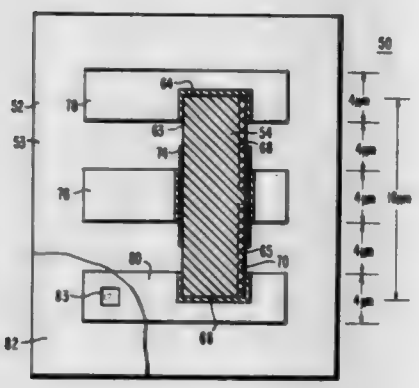
4,533,934

DEVICE STRUCTURES FOR HIGH DENSITY INTEGRATED CIRCUITS

Philip C. Smith, Columbia, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 2, 1980, Ser. No. 192,961
Int. Cl.³ H01L *27/12, 29/78;* G11C *11/40*
U.S. Cl. 357—23.7 **48 Claims**





1. A semiconductor device comprising:

an insulating substrate,

a semiconductor layer having an upper and lower surface positioned on said insulating substrate and having a predetermined thickness,

first and second spaced-apart edges formed by sidewall surfaces extending between said upper and lower surface of said semiconductor layer,

said semiconductor layer doped with impurities to exhibit a first type material,

said first and second edges doped with impurities of a second type introduced through said sidewall surfaces to a predetermined depth from said respective edge to form first and second regions of a second type,

a layer of insulation positioned over said upper surface of said semiconductor layer extending between said first and second regions,

a layer of conductive material positioned over said insulation layer and extending between said first and second regions,

first means for making ohmic contact to said first region including aluminum deposited on said first region and extending over onto said upper surface of said semiconductor layer, and

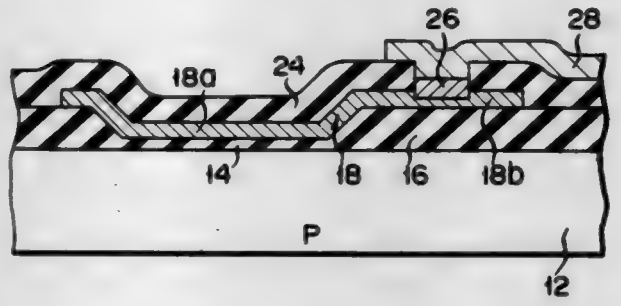
second means for making ohmic contact to said second region.

4,533,935

SEMICONDUCTOR DEVICE AND A METHOD FOR MANUFACTURING THE SAME

Toru Mochizuki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Aug. 4, 1981, Ser. No. 289,995
Claims priority, application Japan, Sep. 4, 1980, 55-122651
Int. Cl.³ H01L *27/02, 29/34, 23/48*
U.S. Cl. 357—51 **2 Claims**



1. A semiconductor device which comprises:

a first conductive layer formed of refractory metal silicide overlying a semiconductor substrate;

an insulation layer formed on the first conductive layer;

a second conductive layer formed on the insulation layer; and

a resistor formed of an oxide or nitride of the refractory metal silicide which connects together the first and second conductive layers, that portion of said resistor which exerts resistance being formed in an opening selectively formed in the insulation layer.

4,533,936

SYSTEM FOR ENCODING AND DECODING VIDEO SIGNALS

Jerome J. Tiemann, Schenectady, and William E. Engeler, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Mar. 28, 1983, Ser. No. 479,584
Int. Cl.³ H04N *9/32*
U.S. Cl. 358—12 **18 Claims**

1. A system for multiplexing a first video signal and a second video signal into a compound video signal having a bandwidth substantially less than the sum of the bandwidths of the first and second video signals comprising.

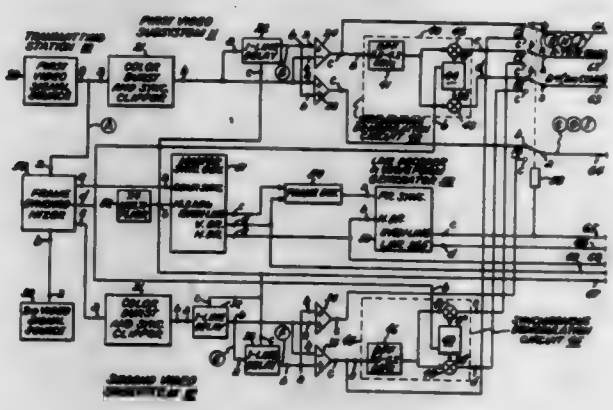
means for providing said first video signal, said first video signal including a plurality of successive lines of signal, each line having a duration of a first predetermined time, said plurality of lines consisting of a first set of alternate lines and a second set of alternate lines,

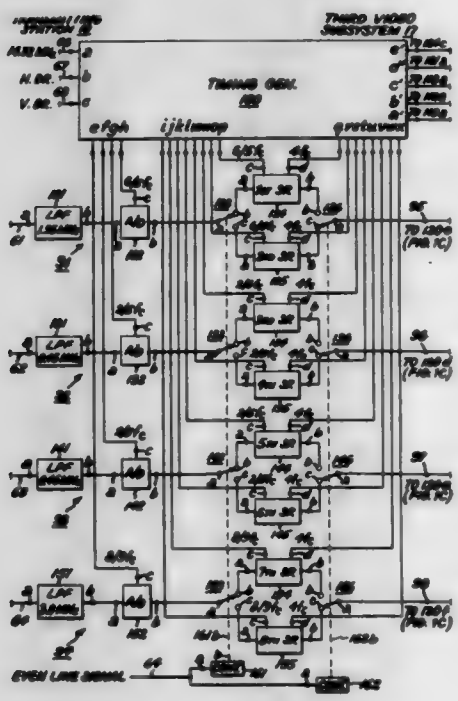
each line of said first video signal including a first luminance component having frequencies extending over a band of frequencies from zero frequency to a first predetermined frequency, a first color component consisting of sidebands of a subcarrier of one phase modulated in amplitude by a first color signal, and a second color component consisting of side bands of said subcarrier of another phase modulated in amplitude by a second color signal, said other phase being in quadrature to said one phase, said subcarrier having a frequency which is situated near the upper end of said band of frequencies of said first luminance component and which is an odd multiple of one-half of the reciprocal of said first predetermined time,

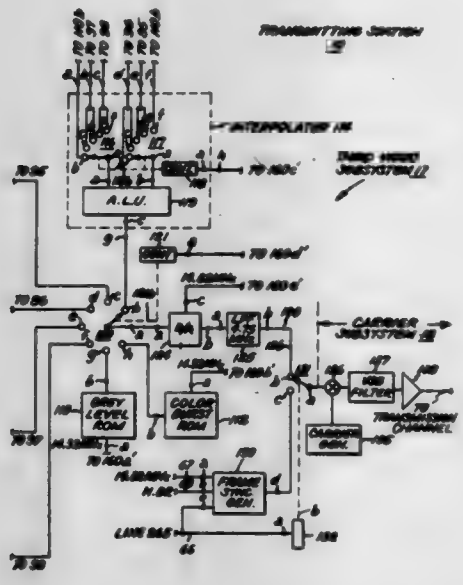
means for forming a plurality of lines of a first combined luminance signal, said plurality of lines of said first combined luminance signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, the amplitude of each line of said first set of alternate lines of said first combined luminance signal being a first linear combination of the amplitudes of lines of said first set of alternate lines of said first luminance signal and the amplitudes of lines of said second set of alternate lines of said first lumi-

nance signal, the amplitude of each line of said second set of alternate lines of said first combined luminance signal being zero,

means for forming a plurality of lines of a second combined luminance signal, said plurality of lines of said second combined luminance signal consisting of lines of a first set







of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, the amplitude of each line of said first set of alternate lines of said second combined luminance signal being a second linear combination of the amplitudes of lines of said first set of alternate lines of said first luminance signal and the amplitudes of lines of said second set of alternate lines of said first luminance signal, said second linear combination of said first luminance signal being independent of said first linear combination of said first luminance signal, the amplitude of each line of said second set of alternate lines of said second combined luminance signal being zero,

means for limiting the bandwidth of said first combined luminance signal to a first predetermined bandwidth,

means for limiting the bandwidth of said second combined luminance signal to a second predetermined bandwidth, said second predetermined bandwidth being substantially less than said first predetermined bandwidth,

means for compressing the duration of each of the lines of said first combined luminance signal to a duration of a second predetermined time less than said first predetermined time to increase the bandwidth thereof to a third predetermined bandwidth, said third predetermined bandwidth being greater than said first predetermined bandwidth,

means for compressing the duration of each of the lines of said second combined luminance signal to a duration of a third predetermined time to increase the bandwidth thereof to said third predetermined bandwidth,

means for providing a second video signal, said second video signal including a plurality of successive lines of signal each line having a duration of said first predetermined time, said plurality of lines consisting of a first set of alternate lines and a second set of alternate lines,

each line of said second video signal including a second luminance component having frequencies extending over a band of frequencies from zero frequency to said first predetermined frequency, a third color component consisting of sidebands of a subcarrier of one phase modulated in amplitude by a third color signal, and a fourth color component consisting of sidebands of said subcarrier of another phase modulated in amplitude by a fourth color signal, said other phase being in quadrature to said one phase, said subcarrier having a frequency which is situated near the upper end of said band of frequencies of said second luminance component and which is an odd multiple of one-half of the reciprocal of said first predetermined time,

means for forming a plurality of lines of a third combined luminance signal, said plurality of lines of said third combined luminance signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, the amplitude of each line of said first set of alternate lines of said third combined luminance signal being a third linear combination of the amplitudes of lines of said first set of alternate lines of said second luminance signal and the amplitudes of lines of said second set of alternate lines of said second luminance signal, the amplitude of each line of said second set of alternate lines of said third combined luminance signal being zero,

means for forming a plurality of lines of a fourth combined luminance signal, said plurality of lines of said fourth combined luminance signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, the amplitude of each line of said first set of alternate lines of said fourth combined luminance signal being a fourth linear combination of the amplitudes of lines of said first set of alternate lines of said second luminance signal and the ampliutdes of lines of said second set of alternate lines of said second luminance signal, said fourth linear combination of said second luminance signal being independent of said third linear combination of said second luminance signal, the amplitude of each line of said second set of alternate lines of said fourth combined luminance signal being zero,

means for limiting the bandwidth of said third combined luminance signal to said first predetermined bandwidth,

means for limiting the bandwidth of said fourth combined luminance signal to said second predetermined bandwidth,

means for compressing the duration of each of the lines of said third combined luminance signal to a duration of said second predetermined time to increase the bandwidth thereof to said third predetermined bandwidth,

means for compressing the duration of each of the lines of said fourth combined luminance signal to a duration of said third predetermined time to increase the bandwidth thereof to said third predetermined bandwidth,

means for forming a plurality of lines of a first compound video signal, said plurality of lines of said first compound video signal consisting of a first set of alternate lines and a second set of alternate lines, each line of said first set of alternate lines of said first compound video signal being formed by time multiplexing a respective compressed line of said first combined luminance signal and a respective compressed line of said second combined luminance signal, the amplitude of each line of said second set of alternate lines of said first compound video signal being zero,

means for forming a plurality of lines of a seocnd compound video signal, said plurality of lines of said second compound video signal consisting of lines of a first set of alternate lines and a second set of alternate lines, each line of said first set of alternate lines of said second compound video signal being formed by time multiplexing a respective compressed line of said third combined luminance signal and a respective compressed line of said fourth combined luminance signal, the amplitude of each line of said second set of alternate lines of said second compound video signal being zero,

means for interleaving the lines of said first set of alternate lines of said first compound video signal and said first set of lines of said second compound video signal to provide a third compound video signal.

4,533,937

KEY SIGNAL GENERATING APPARATUS FOR DIGITAL CHROMAKEY SYSTEM

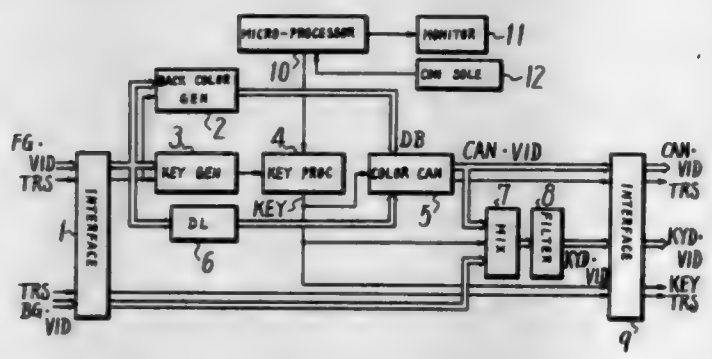
Kaichi Yamamoto, Zama, and Jun Yonemitsu, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 9, 1982, Ser. No. 416,329

Claims priority, application Japan, Sep. 12, 1981, 56-144535

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—22 **14 Claims**



1. A chromakey system for mixing a first video signal with a second video signal in accordance with a key signal; said system comprising:

means for determining the difference between a reference hue data sample and a hue data sample of said first video signal in U-V chroma signal coordinates; and

means for generating said key signal having a magnitude which is determined according to a predetermined quadratic curve relationship based upon said difference.

4,533,938

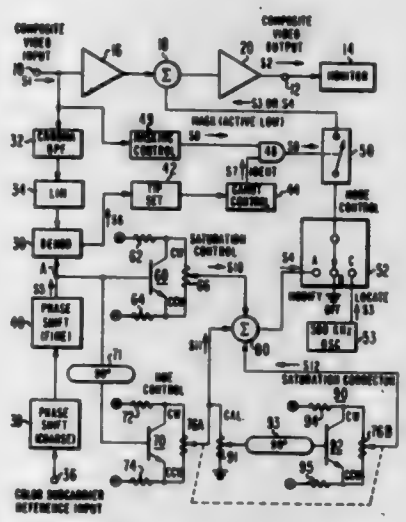
COLOR MODIFIER FOR COMPOSITE VIDEO SIGNALS

Robert N. Hurst, Cherry Hill, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 20, 1982, Ser. No. 451,432

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—27 **15 Claims**



1. Apparatus for modifying the chrominance component of a composite video input signal, comprising:

first means for providing a color phase reference signal having a given phase angle with respect to the burst component of said video input signal;

second means for providing a color identification signal when the phase angle of said chrominance component lies within a predetermined range of values of said given phase angle;

third means comprising a first amplitude and polarity control network responsive to said color phase reference signal for providing a color saturation modifying signal and a second amplitude and polarity control network responsive to said color phase reference signal for providing a hue modifying signal, each modifying signal being of independently controllable amplitude and independently controllable polarity; and

fourth means for coupling said composite video input signal to an output terminal and for adding said color saturation modifying signal and said hue modifying signal to the coupled signal when said color identification signal is present to provide a modified composite video output signal at said output terminal in which the saturation and the hue of selected colors represented by the chrominance component of said modified composite video output signal may be independently controlled by said first and second networks, respectively.

4,533,939

INTEGRABLE HUE CONTROL CIRCUIT HAVING A D.C. SETTING ELEMENT

Adriaan Cense, and Evert H. Schutte, both of Nijmegen, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 5, 1984, Ser. No. 585,968

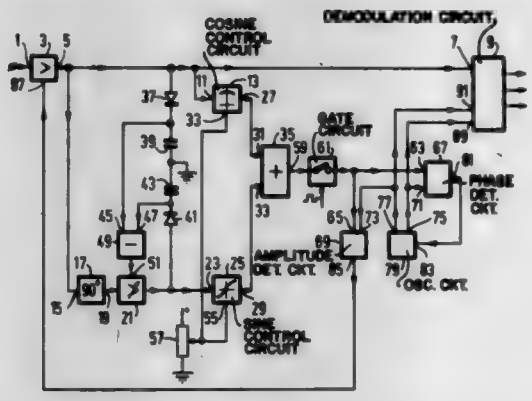
Claims priority, application Netherlands, Mar. 22, 1983, 8301014

Int. Cl.³ H04N *9/535*

U.S. Cl. 358—28 **3 Claims**

1. A hue control circuit comprising a setting element for substantially, without influencing the amplitude, shifting the phase of a color synchronizing signal and a color television chrominance signal to be demodulated with respect to each other, characterized in that an input of the hue control circuit is coupled to an adder circuit via a first control circuit and via a circuit which shifts the phase substantially through 90° and a second control circuit, the first and second control circuits being adjustable by means of a d.c. voltage which can be

varied by the setting element, the first control circuit having a substantially cosinusoidal influence and the second control circuit a substantially sinusoidal influence on the amplitude of



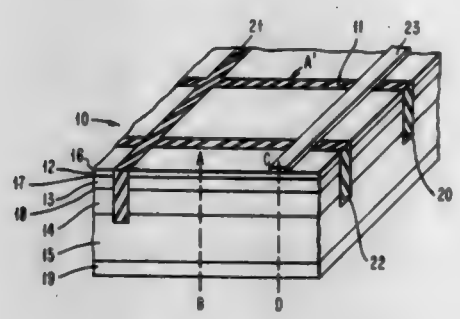
the signal conveyed through it as a function of the deviation of the d.c. voltage from that produced by the setting element in a normal position of this setting element.

4,533,940

HIGH SPATIAL RESOLUTION ENERGY DISCRIMINATOR

Barbara A. Chappell; Terry I. Chappell, both of RFD Adele Court, Amawalk, N.Y. 10501, and Jerry M. Woodall, 336 Cherry St., Bedford Hills, N.Y. 10507

Filed Jun. 13, 1983, Ser. No. 503,945
Int. Cl.³ H04N *9/04*
U.S. Cl. 358—44 **12 Claims**



1. An energy discriminator of the type wherein a beam of energy is received through a receiving surface of a multi-parallel layer, monocrystalline semiconductor body, each layer thereof being responsive to a particular energy component of said beam by forming hole electron pair carriers therein, the improvement comprising means for producing in said monocrystalline semiconductor body an electron retaining potential well associated with each layer of said body, said means having an asymmetric barrier to electron flow, and readout means transferring the charge from said retained electrons into an output signal.

4,533,941

METHOD AND APPARATUS FOR HALF-TONE REPRODUCTION OF A VARYING TONE ORIGINAL IMAGE

John F. Keane, Bellbrook; John C. Butler, and Timothy H. Archer, both of Centerville, all of Ohio, assignors to Coulter Systems Corporation, Bedford, Mass.

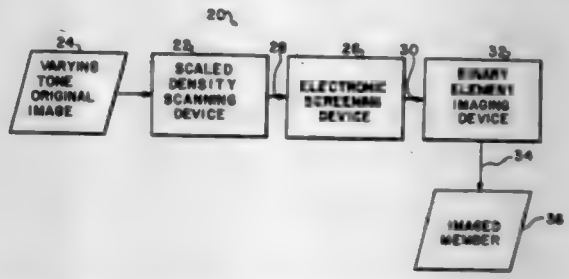
Filed Jan. 14, 1983, Ser. No. 458,167
Int. Cl.³ H04N *1/46*
U.S. Cl. 358—75 **33 Claims**

1. A method of producing a half-tone reproduction of a varying tone original image, comprising:

A. providing scaled density information data representing the varying tone of the original image with each datum representing the scaled density of the tone in a scanned incremental area of the original image and including simultaneously presenting said data from a plurality of rows;

B. digitally comparing each presented sealed density information datum from each scan row with a plurality of screen matrix information data that include desired half-tone screen frequency and angle information to produce therefrom a plurality of binary element information data that include both scaled density information and screen frequency and angle information;

C. imaging a member to form thereon sequential binary elements along finite lines on said member in accordance with said binary element information data, said element forming the half-tone reproduction of the varying tone of



the original image at the desired screen frequency and angle, there being one binary element formed in response to each binary element information datum; and

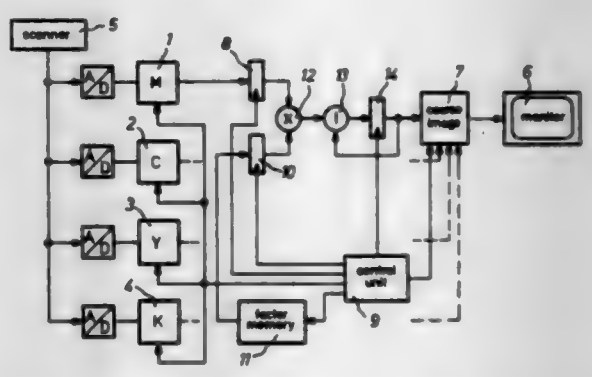
D. the step of digitally comparing including addressing said screen matrix information data, there being a plurality of address bits that are incremented by a certain value for each binary element formed along the lines on the member and said certain value including a round-off error, said addressing including using a group of the most significant address bits to address each screen matrix information datum and providing a sufficient number of address bits to avoid said round-off error affecting said group of most significant address bits until beyond the end of said image lines.

4,533,942

METHOD AND APPARATUS FOR REPRODUCING AN IMAGE WHICH HAS A COARSER RESOLUTION THAN UTILIZED IN SCANNING OF THE IMAGE

Winrich Gall, Klausdorf, and Peter Weselmann, Hamburg, both of Fed. Rep. of Germany, assignors to Dr. -Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 493,817
Claims priority, application European Pat. Off., May 28, 1982, 82-104691.9
Int. Cl.³ H04N *1/46, 5/14, 1/40*; G03F *3/10*
U.S. Cl. 358—78 **8 Claims**



1. The method for reproducing images with a coarser resolution than the image, which is scanned, whereby the original image is opto-electronically scanned point-wise and line-wise with a predetermined resolution to obtain digital image signals, wherein a field which contains as many fine image points as are included in a coarse image point is extracted from the digital image signals, wherein the individual image signals of the fine image points of said field are weighted with a weighting func-

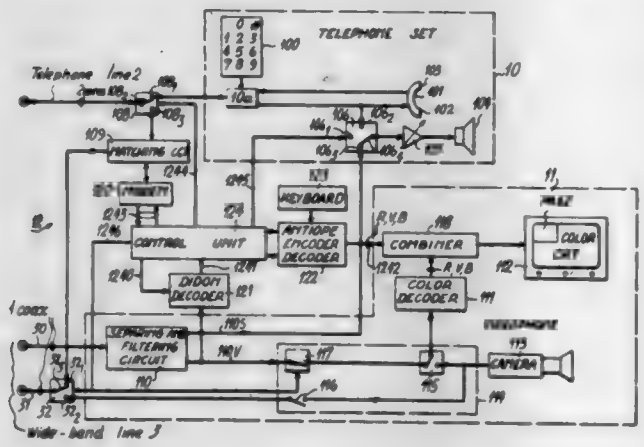
tion and wherein the weighted image signals are combined to obtain the image signal for a coarse image point, the weighting and combination of the image signals comprising, serially weighting the fine image points point by point, storing the first weighted image signal, reading out the first weighted image signal, adding and storing the second weighted image signal to the previously read out first weighted image signal, reading out the sum of the first and second weighted signals, adding and storing the sum of the first and second weighted signals with the next weighted signal and repeating this reading out and adding process until the last weighted image signal of the field is processed and weighting the final sum of the weighted fine image points according to the number of the fine image points of the field.

4,533,943

VIDEOCOMMUNICATION NETWORK BETWEEN VIDEOPHONE TERMINALS AND A PICTURE BANK

Alain Poirier, 82, rue de la République, Meudon, France (92190)

Filed Jul. 6, 1983, Ser. No. 511,385
Claims priority, application France, Jul. 30, 1982, 82 13419
Int. Cl.³ H04M *11/08;* H04N *7/14*
U.S. Cl. 358—85 **15 Claims**



1. A videocommunication network comprising plural (N) videophone terminals and a picture bank,

videophone terminal K comprising: first switching means, audiofrequency means for transmitting and receiving audiofrequency signals of a telephone communication, said audiofrequency means being connected through said first switching means to a bidirectional telephone channel videofrequency means connected to a wide-band transmitting channel for transmitting videofrequency signals and connected to a wide-band receiving channel for receiving videofrequency signals, and data means for transmitting and receiving first data signals through said first switching means and said telephone channel while a videocommunication is established between terminal k and said picture bank, where k is selectively each of 1 . . . N;

said picture bank comprising: second and third switching means, data means for transmitting and receiving said first data signals from said terminals, said data means being connected through said second switching means to several bidirectional telephone channels serving said picture bank, and means for transmitting vision representing signals to said terminals, said vision representing signal transmitting means being connected through said third switching means to several wide-band channels serving said picture bank, several multiplexing means connected to be responsive to signals from said second and third switching means and to supply signals to said several wide-band transmitting channels for sequentially transmitting a second data signal peculiar to releasing said telephone channels carrying said first data signals as derived from said second switching means and third data signals multiplexed with a vision signal as derived from said third switching means, the transmission of the multiplexing means occurring after said videocommunication between one of said videophone terminals and said picture bank has been established, said picture bank data means being connected through said second switching means to one of said several wide-band channels for receiving third data signals from said terminal after said telephone channels have been released;

videophone terminal k further comprising: means connected to said wide-band receiving channel of terminal k for detecting said second and third data signals transmitted from said picture bank multiplexing means and for delivering the detected second and third data signals to said terminal data receiving means, fourth switching means for selectively connecting said terminal wide-band transmitting channel to said videofrequency transmitting means for a videophone communication with another videophone terminal and to said terminal data transmitting means in response to said second data signal being detected,

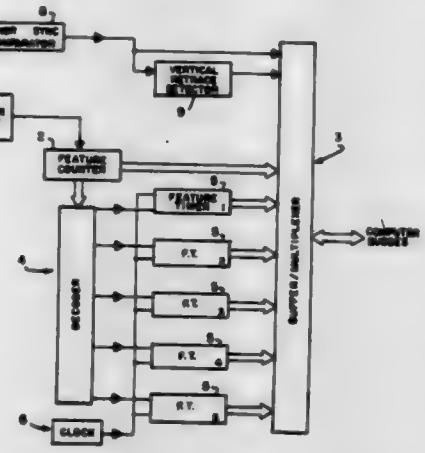
said first switching means of said videophone terminal being selectively connected to said audiofrequency transmitting and receiving means and to said terminal telephone channel in response to said second data signal being detected.

4,533,944

VIDEO MEASUREMENT SYSTEM FOR MICROCOMPUTER

John E. Eby, Ipswich, and Charles M. Kingston, Georgetown, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Nov. 2, 1983, Ser. No. 548,112
Int. Cl.³ H04N *7/02, 9/62*
U.S. Cl. 358—107 **2 Claims**



1. A video measurement system for coupling between a source of video signal and a computer buss and for quantizing information contained in a video signal and conditioning that information for a memory device such as might be comprised by a microcomputer, said system comprising:

a transition detector having an input for coupling to said source of video signal, said transition detector providing at its output a signal indicative of Black-to-White and White-to-Black transitions in the peak brightness level of the video signal,

a feature counter having an input coupled to the output of the transition detector and an output for coupling to the computer buss, said feature counter providing at an other output a signal representative of the number of Black-to-White and White-to-Black transitions in the video signal,

a decoder having an input coupled to an output said other of the feature counter and at least N individual outputs,

N individual feature timers, each having an ENABLE input coupled to a decoder output and an output for coupling to the computer buss, and

a clock having an output coupled to a CLOCK input of each of the feature timers, whereby the decoder operates in response to said output of the feature counter to selec-

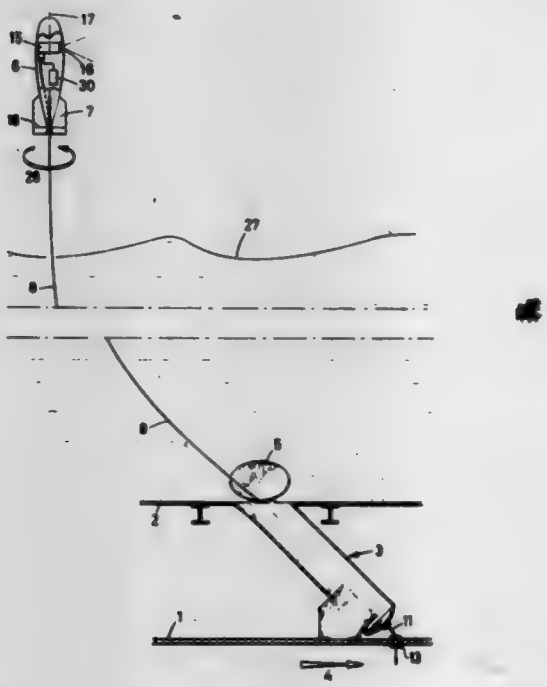
tively enable individual ones of the feature timers as determined by the transitions in the video signal so that the feature timers provide outputs representative of the duration between transitions in the video signal.

4,533,945

PROCESS AND ARRANGEMENT FOR AERIAL OBSERVATION AND/OR COMMUNICATION FOR A SUBMERGED SUBMARINE

Georges R. P. L. Lauvray, Versailles, and Michel J. P. Darche, Ville d'Avray, both of France, assignors to Societe ECA, France

Filed Dec. 17, 1982, Ser. No. 450,673
Claims priority, application France, Dec. 22, 1981, 81 23958
Int. Cl.[3] H04N *7/18*
U.S. Cl. 358—109 14 Claims



1. A process of aerial observation and/or communication for a submerged submarine, utilizing a floating body equipped with observation and/or communication means and connected to the submarine by a retaining cable, which in addition is used for the transmission of the observation and/or communication signals between the floating body and the submarine, which process consists in releasing the floating body, which is initially held on board the submarine and consists of an apparatus of high buoyancy and low drag, in such a manner as to cause it to rise rapidly to the surface, pass through the surface and spring out of the water, bringing its observation and/or communication means into operation at least during the aerial phase of its trajectory, imparting to the body during its upward movement, a rotary motion about a vertical axis which continues after it is out of the water, the observation and/or communication means being arranged so that they aim in a direction at right angles to the axis, and then bringing it back on board the submarine by hauling back the connecting cable.

4,533,946

DIAGNOSTIC X-RAY APPARATUS

Hiroshi Yasuhara; Hitoshi Fujita, and Kiyoshi Okazaki, all of Ootawara, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 1, 1983, Ser. No. 463,003
Claims priority, application Japan, Mar. 9, 1982, 57-35848
Int. Cl.[3] H06N *7/18*
U.S. Cl. 358—111 2 Claims

2. A diagnostic X-ray apparatus for producing visible difference images from pulsed X-ray images obtained from pulsed X-radiation, comprising:

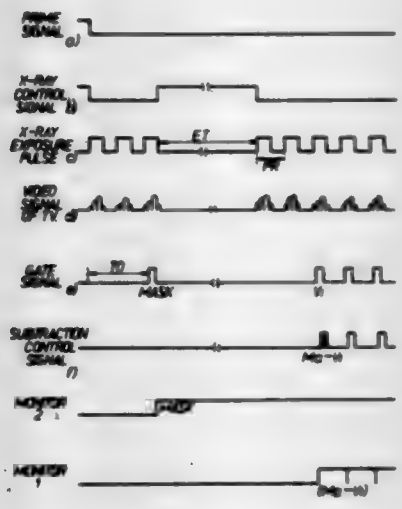
an X-ray generating source for emitting pulsed X-radiation to produce a pulsed X-ray image;

television means including a television camera for converting said X-ray image into a series of video signals;

synchronizing generating means for generating vertical framing signals at a vertical frame rate of said television camera;

exposure control means responsive to said vertical framing signals for generating X-ray exposure control signals to control the exposure time of the X-radiation emitted from said X-ray generating source;

sequence control means including an analog-to-digital convertor for causing selected analog video signals corresponding to a later complete television image and which are at a sufficiently high level after a new pulsed X-ray exposure to be converted into corresponding digital video



signals by means of the analog-to-digital convertor by ignoring the successive television images preceding said selected television image;

a digital memory system including at least two digital memory means for storing and integrating said digital video signals in a predetermined sequence;

subtracting means for producing digital difference video signals by performing a subtraction between digital video signals recently stored in said digital memory system and preceding digital video signals previously stored in said digital memory system;

a digital-to-analog convertor for converting said digital difference video signals into analog difference video signals; and,

a television display means for producing visible difference images corresponding to said analog difference signals.

4,533,947

ADAPTABLE AREA FOR IMAGE STORAGE

Kendall A. Smith, Chagrin Falls, Ohio, assignor to Technicare Corporation, Solon, Ohio

Filed Nov. 14, 1983, Ser. No. 550,835
Int. Cl.[3] A61B *6/02*
U.S. Cl. 358—111 6 Claims

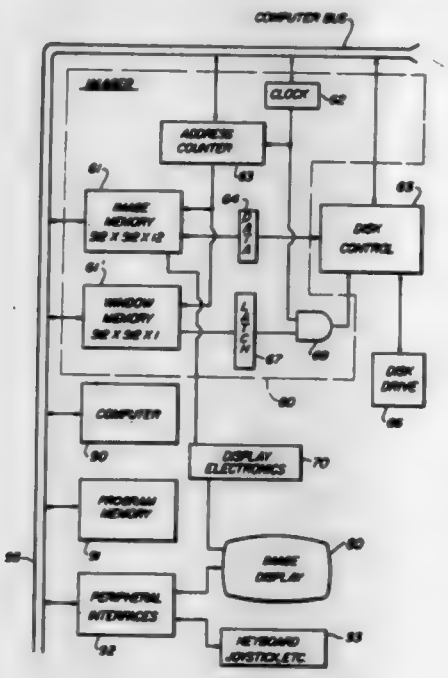
1. In a radiographic imaging apparatus of the type having a computer controlled image memory for storing a large matrix image whose contents are transferrable to a storage medium, a system for reducing data transfer between said memory and said storage medium without degrading image quality comprising:

(a) a window memory means of preselected matrix size;

(b) means for generating in said window memory means an array of control bits, each corresponding to at least one matrix element in the image memory wherein each of said bits designates either acceptance or deletion of the corresponding matrix element in the image memory; and

(c) means connected to both the image memory and said win-

dow memory for transferring to the storage medium only data from the image memory which are stored in matrix



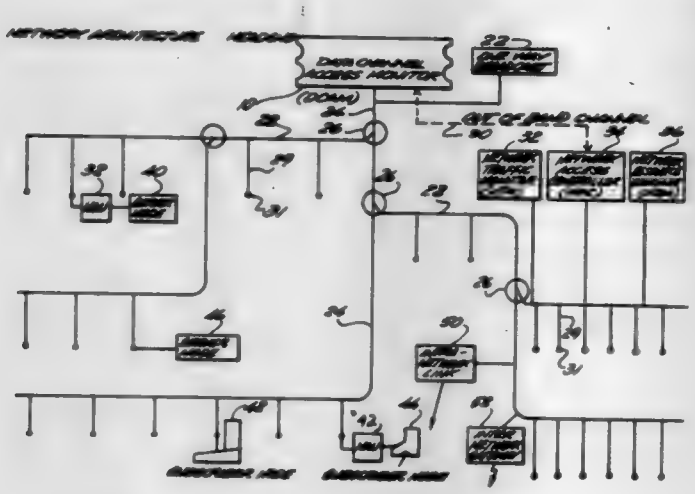
elements having an acceptance bit in the corresponding matrix elements in the window memory means.

4,533,948

CATV COMMUNICATION SYSTEM

Robert P. McNamara; Gregory B. Ennis, both of San Jose; Richard J. Feiertag, Sunnyvale, and Robert K. Bauer, Fremont, all of Calif., assignors to General Instrument Corporation, New York, N.Y.

Filed Apr. 30, 1982, Ser. No. 373,765
Int. Cl.[3] H04N *7/16*
U.S. Cl. 358—122 11 Claims



1. A CATV headend apparatus comprising:

means for receiving a message from a source node, said received message including a frame verifier code;

means coupled to said receiving means and rebroadcasting said received message in essentially real time from said CATV headend apparatus;

means responsive to said receiving means for examining said frame verifier code and for providing an output signal which indicates whether or not said source node is authorized to utilize CATV communication resources; and

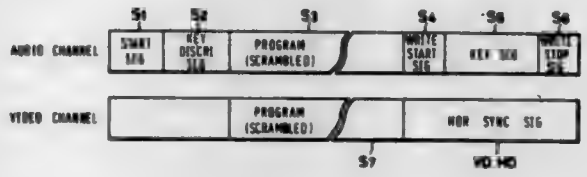
means responsive to said output signal from said examining means for preventing said rebroadcasting means from rebroadcasting said received message if said output signal indicates that said received message including said frame verifier code is received from a source node that is not authorized to utilize CATV communication resources.

4,533,949

SUBSCRIPTION TELEVISION SYSTEM

Yasushi Fujimura, Musashino; Takashi Okada, Yokohama, and Kazuo Yamagiwa, Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,836
Claims priority, application Japan, Sep. 10, 1981, 56-142836; Sep. 10, 1981, 56-142837
Int. Cl.[3] H04N *7/16*; H04K *1/04*
U.S. Cl. 358—122 19 Claims



1. A subscription television system requiring time-shifted viewing comprising,

means for scrambling at least one of a video signal and an audio signal for a specific television program in accordance with a predetermined scrambling mode to produce a scrambled program signal,

means for generating a control signal in response to said predetermined scrambling mode, said control signal including a key signal for unscrambling said scrambled program signal,

means for combining said control signal with said scrambled program signal such that said key signal is appended to one of said video and audio signals at the end of said scrambled program signal; and

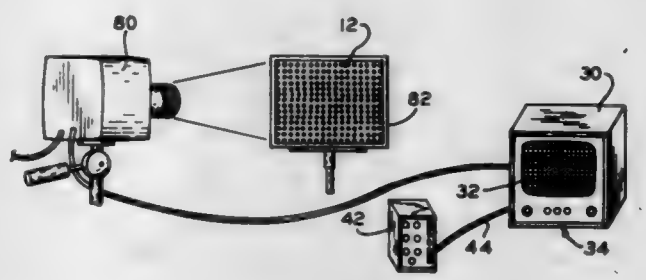
means for transmitting said scrambled program signal and said key signal such that said key signal is transmitted after all of said scrambled program signal has been transmitted.

4,533,950

METHOD OF TESTING THE LINEARITY OF A RASTER SCAN

John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed Mar. 23, 1983, Ser. No. 478,157
Int. Cl.[3] H04N *7/02*
U.S. Cl. 358—139 25 Claims



1. A method of testing the raster scan geometry of a television display apparatus having a screen comprising:

providing to the television display apparatus an electrical signal corresponding to a selected scan rate and generated by means of an electronic test pattern generator which produces on the raster scan of the television display apparatus a plurality of the reference images arranged in a plurality of orthogonal horizontal rows and vertical columns and adjusting the spacing of the horizontal rows by selecting a particular scan rate from the plurality of available scan rates for the electrical signal provided to the television display apparatus,

providing a plurality of linearity test chart transparencies matched to a plurality of respective scan rates, each said transparency comprising a plurality of horizontal rows and vertical columns of substantially identical graphic

elements on a background, each element comprising at least two concentric annuli surrounding a circular center space,

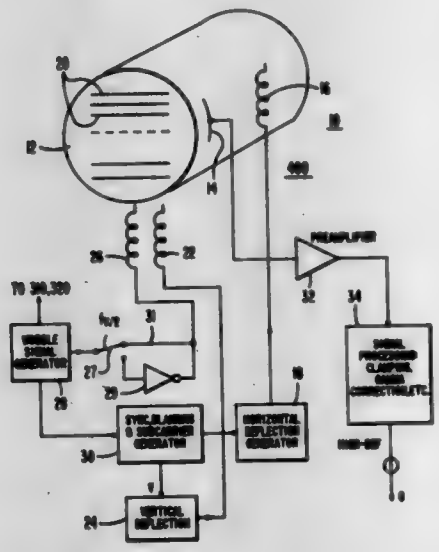
selecting from the plurality of transparencies a transparency matching the scan rate of the signal provided to the television display apparatus and projecting an image of the transparency on the screen of the television display apparatus such that as many of the reference images as possible are located at the centers of the respective graphic elements, whereby the linearity of the scan geometry can be determined by noting the number of reference images which lie within the respective graphic elements and the positions of said reference images which lie within the graphic elements relative to the respective concentric annuli and center spaces.

4,533,951

SYSTEM FOR GENERATING AND DISPLAYING A COMPATIBLE HIGH DEFINITION TELEVISION SIGNAL BY PROGRESSIVE SCANNING

Kerns H. Powers, Princeton, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Sep. 27, 1982, Ser. No. 424,232
Int. Cl.³ H04N 7/04
U.S. Cl. 358—141 17 Claims



1. In a high-definition television system compatible with a television receiver having capability of operating in response to a limited-bandwidth signal, said system being used to display an image in a linear manner or in a wobble manner wherein said image is scanned in a wobble fashion, the system comprising:

scanning means for scanning an image at a first predetermined rate in a first direction and at a second predetermined rate in a second direction orthogonal to said first direction;

selecting means for selecting non-adjacent time successive picture elements scanned in said first direction, said picture elements being selected from non-adjacent positions in said second direction, said selecting means in combination with said scanning means effecting a wobble scanning of said image such that said image is sub-scanned in said second direcion at a third rate, which is an integer multiple of one-half of said first predetermined rate, greater than said first rate, thereby producing a high resolution scan in said first and second directions, whereby when said integer is chosen to be a first predetermined integer, unscanned regions of a given field of said image observed on a display scanned in said wobble manner are not overlaid by scanned regions of a field which is successive in time to said given field thereby creating visible patterns which tend to be objectionable, wherein said integer is chosen to be a second predetermined integer, said second predetermined integer affecting said image observed in a display scanned in said wobble manner such that said image lacks full resolution; and

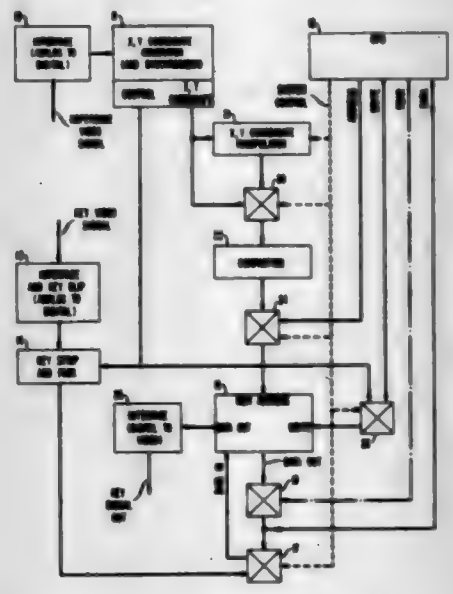
inverter means for switching said selecting means at one-half of said second predetermined rate such that said selecting means selects alternate non-adjacent, time successive picture elements scanned in said first direction to effect full resolution of said display.

4,533,952

DIGITAL VIDEO SPECIAL EFFECTS SYSTEM

James W. Norman, III, Gainesville, Fla., assignor to Digital Services Corporation, Gainsville, Fla.

Filed Oct. 22, 1982, Ser. No. 436,066
Int. Cl.³ H04N 5/14, 9/535
U.S. Cl. 358—160 17 Claims



1. In a video processing system of the type wherein video information is stored in a memory having a plurality of storage locations for storing respective predetermined portions of a video signal, each storage location having an associated memory address in the form of a memory address coordinate pair, a memory address coordinate manipulator arrangement comprising:

function register means for receiving function data corresponding to a selected mathematical function representative of a desired displacement of a selected one of the predetermined portions of the video signal with respect to the associated storage location in the memory;

input means for receiving the memory address coordinate pair corresponding to said selected one of the portions of the video signal which is desired to be displaced;

arithmetic means for combining said function data and said memory address coordinate pair corresponding to said selected one of the portions of the video signal in accordance with a predetermined sequence of arithmetic steps for producing a solution to a generalized displacement equation; and

offset register means for receiving offset data corresponding to a desired fixed displacement of said selected one of the predetermined portions of the video signal.

4,533,953

SIGNAL ANALYZING CIRCUIT FOR A PERIODICALLY OCCURRING SIGNAL

Frederik J. Van Roessel, Upper Saddle River, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 13, 1982, Ser. No. 449,075
Claims priority, application Netherlands, Dec. 23, 1981, 8105800
Int. Cl.³ H04N 5/14, 5/34, 5/21
U.S. Cl. 358—160 7 Claims

1. A circuit for analyzing a number of distinct portions of a

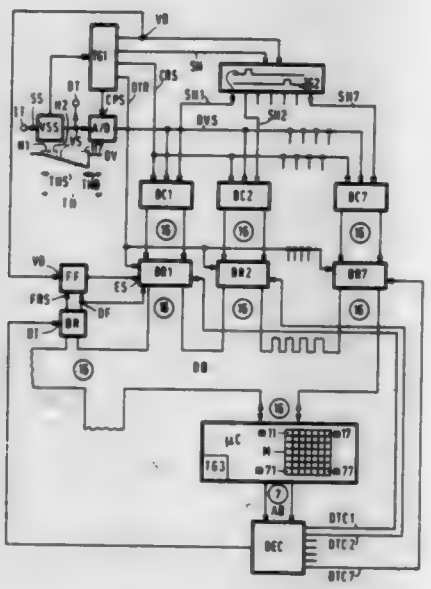
signal during a consecutive number of signal periods comprising:

a signal source for generating said signal;

an analog to digital converter connected to receive said signal for producing a pulse train having a frequency proportional to said signal magnitude;

a plurality of counters equal in number to said number of distinct portions, said counters operative sequentially and periodically for counting pulses of said pulse train during said distinct portions of each signal period contained in the consecutive signal periods, said counters having parallel outputs for supplying the counting signal;

a plurality of buffer registers connected to said counter outputs;



a time signal generator controlled by said signal source to produce clock signals in synchronism with said signal, said clock signals controlling the counting of said counters, and controlling said buffer registers for transferring the contents of said counters to said buffer registers at the end of the last of said signal periods, and for resetting said counters; and

store means having a number of separate storage locations which are a multiple of said number of distinct portions for storing the count result obtained for each portion of each of said periods, whereby information corresponding to the signal voltages occurring in one of said distinct portions of each of said signal periods is made available.

4,533,954

SOLID STATE IMAGE PICKUP APPARATUS

Mitsuo Soneda, Zama, and Toshikazu Maekawa, Atsugi, both of Japan, assignors to Sony Corporation, Tokyo, Japan

PCT No. PCT/JP83/00031, § 371 Date Oct. 4, 1983, § 102(e) Date Oct. 4, 1983, PCT Pub. No. WO83/02868, PCT Pub. Date Aug. 18, 1983

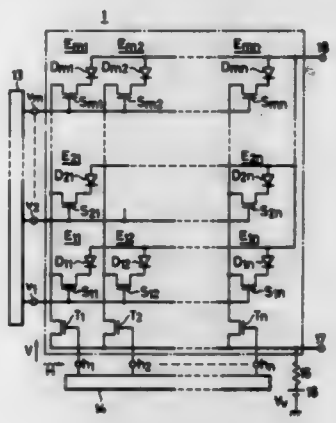
PCT Filed Feb. 5, 1983, Ser. No. 551,990

Claims priority, application Japan, Feb. 5, 1982, 57-17245

Int. Cl.³ H04N *5/79*

U.S. Cl. 358—212 1 Claim

1. A solid state image pickup apparatus comprising an image pickup surface composed of a plurality of image pickup picture units each of which contains a switching device and a photoelectric converter arranged in a matrix of horizontal rows and vertical columns, a shutter which is periodically opened and closed to simultaneously supply light to all of said photoelectric converters, a vertical switch control with a plurality of outputs each respectively connected to sequentially turn on the switching elements of common horizontal rows after said shutter has been opened and closed, a plurality of horizontal switch means respectively connected to said columns of switching devices, a horizontal switch control connected to



said plurality of horizontal switch means to sequentially switch them on after said shutter has opened and closed to remove the image charges and said vertical and horizontal switch controls supplying signals to render all of said switching devices of said image pickup picture units and said plurality of horizontal switch means conductive during the period after said image charges have been shifted out until said shutter is openend and renders them non-conductive when said shutter is open.

4,533,955

Patent Not Issued For This Number

4,533,956

APPARATUS FOR CONVERTING FACSIMILE CODED DATA TO VIDEO DATA

Mickiel P. Fedde, Eagan, Minn., assignor to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Sep. 17, 1982, Ser. No. 420,564

Int. Cl.³ H04N *1/00*

U.S. Cl. 358—260 4 Claims

1. An apparatus for converting facsimile coded data to video data, comprising:

a programmed digital computer for receiving said facsimile coded data, buffering said facsimile coded data and converting said facsimile coded data to a fixed length intermediate code; and

a video convertor responsive to said programmed digital

computer for converting said fixed length intermediate code to video data;

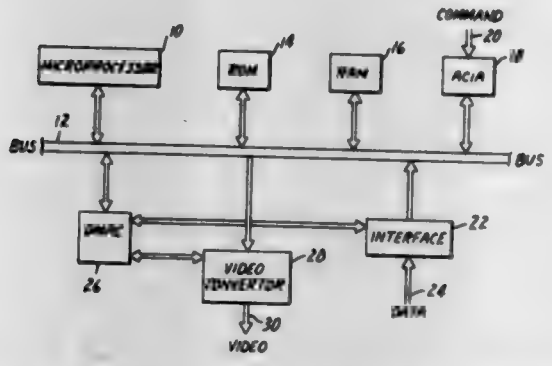
wherein said programmed digital computer comprises:

a microprocessor capable of executing a series of instructions;

a read only memory coupled to said microprocessor containing said series of instructions and being capable of supplying said instructions to said microprocessor;

an interface module for receiving said facsimile coded data;

a randomly accessible memory coupled to said interface module and to said microprocessor for holding and buffer-



ing said facsimile coded data and for holding a table lookup for converting said facsimile coded data to said intermediate code;

a direct memory access controller coupled to said microprocessor, coupled to said randomly accessible memory, coupled to said interface module and coupled to said video convertor, said direct memory access controller for transferring facsimile coded data from said interface module to said randomly accessible memory and for transferring said intermediate code from said randomly accessible memory to said video convertor, said transferring being under control of said microprocessor.

4,533,957

METHOD OF PROCESSING PICTURE SIGNAL TO INCREASE AVERAGE RUN LENGTH AND APPARATUS THEREFOR

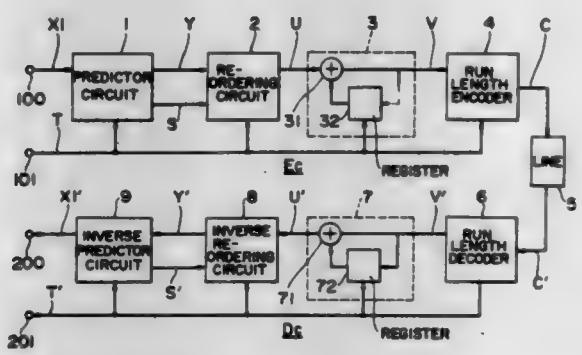
Kazumoto Iinuma, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,588

Claims priority, application Japan, Aug. 26, 1982, 57-148425

Int. Cl.³ H04N *1/40, 7/12*

U.S. Cl. 358—261 **12 Claims**



1. A method of processing a picture signal comprising the steps of:

generating a prediction error signal for each of a plurality of picture elements to be encoded, said prediction error signal being based on a plurality of previously encoded picture element data and indicating correct and incorrect predictions;

assigning one of first and second probability states to each of said prediction error signals;

classifying the prediction error signals into two groups according to the probability state assigned thereto;

storing said two groups in a memory area in a manner that said prediction error signals assigned said first probability state are stored in ascending chronological order and said prediction error signals assigned said second probability state are stored in descending chronological order;

reordering the prediction error signals by

(a) listing in ascending chronological order the classified prediction error signals until an incorrectly predicted error signal is detected, and

(b) subsequently listing in ascending order said classified prediction error signals in descending chronological order until a subsequent incorrectly predicted error signal is detected, and

(c) repeating steps (a) and (b) until all of the prediction error signals are listed; and

run length coding said prediction error signals based on the incorrectly predicted error signals in the list.

4,533,958

METHOD OF TRANSMITTING SERIAL DATA BETWEEN FACSIMILE EQUIPMENT AND INTERFACE PERFORMING THE SAME

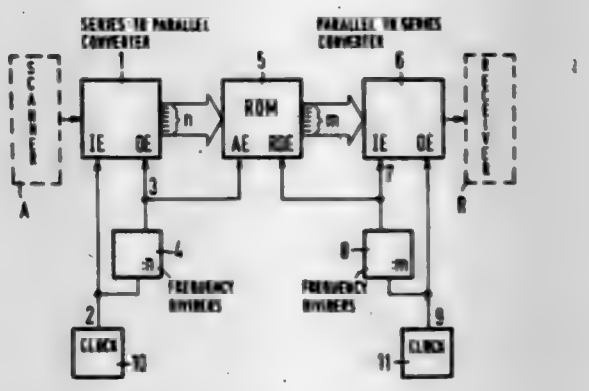
Werner Herget, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 23, 1983, Ser. No. 506,967

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229777

Int. Cl.³ H04N *1/40, 1/04*

U.S. Cl. 358—280 **11 Claims**



2. An interface ciruit arrangement for transforming binary encoded data being exchanged in form of a serial data stream between a transmitting and a receiving facsimile transceiver both having different horizontal resolutions, and circuit arrangement comprising:

means for receiving the serial data stream generated by the transmitting facsimile transceiver while scanning an original document and for separating subsequent portions of the data stream each representing a scanning line into a respective sequence of first data words each composed of n bits;

means for evaluating the bit pattern of each first data word by determining the number and type of subsequent bit changes thereof;

means for deriving therefrom a coincident sequence of second data words each composed of m bits by reproducing substantially said bit pattern of each corresponding first data word while arbitrarily padding of an insignificant bit if the resolution of the receiving facsimile transceiver is higher and consequently n is lower than m and by arbitrarily dropping of an insignificant bit, respectively if the resolution of the transmitting transceiver is higher and consequently n is higher that m, whereby n:m corresponds to the ratio of the different horizontal resolutions; and

means for forming a serial stream of transformed data from

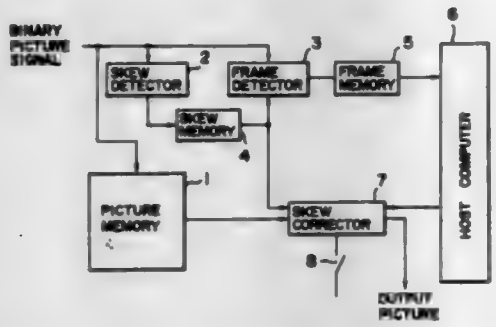
the sequence of said second data words and transmitting the same to the receiving facsimile transceiver.

4,533,959

PICTURE PROCESSING APPARATUS

Akira Sakurai, Kawasaki, Japan, assignor to Ricoh Company, Ltd., Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,718
Claims priority, application Japan, Nov. 19, 1981, 56-186052
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280
4 Claims



1. A picture processing apparatus comprising;

a picture memory for storing a quantized picture of an original, which original includes skew detection marks;

a skew detector for detecting the skew of the quantized picture by the skew detection marks on the original;

a frame detector for detecting the frame in which the picture on the original is enclosed;

a picture-processing area designation apparatus for designating the portion of the picture to be processed and edited in accordance with the frame detection information obtained from said frame detector;

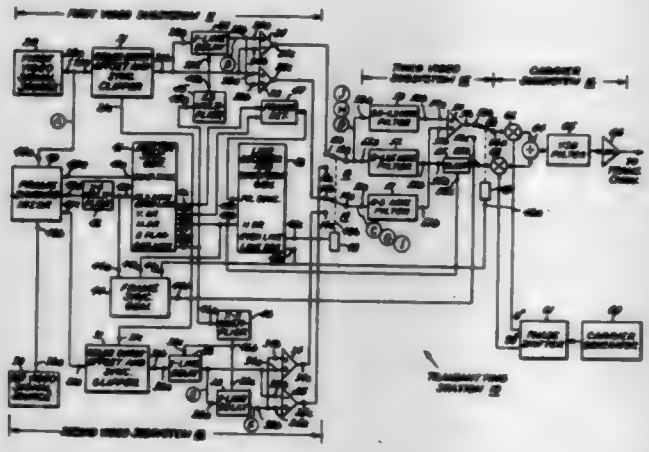
and a skew corrector for reproducing the quantized picture within the area designated by said picture-processing area designation apparatus, with correction of skew, if any, from said picture memory.

4,533,960

SYSTEM FOR ENCODING AND DECODING VIDEO SIGNALS

Jerome J. Tiemann; Scott E. Cutler, and Kenneth B. Welles, II, all of Schenectady, N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation-in-part of Ser. No. 416,427, Sep. 9, 1982, abandoned. This application Oct. 21, 1982, Ser. No. 435,792
Int. Cl.³ H04N *5/782, 9/32*
U.S. Cl. 358—310
19 Claims



1. In combination:

means for providing a first luminance signal comprising a plurality of successive lines having a line scanning frequency of a first predetermined value, said plurality of lines consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of a first predetermined time, said first luminance signal having frequencies extending over a band of frequencies from zero frequency to a first predetermined frequency,

means for forming a plurality of lines of a first composite signal, said plurality of lines of said first composite signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, each line of said first set of alternate lines of said first composite signal being a first linear combination of a respective line of said first set of alternate lines of said first luminance signal delayed by said first predetermined time and a respective successive line of said second set of alternate lines of said first luminance signal, each line of said second set of alternate lines of said first composite signal being zero,

means for forming a plurality of lines of a second composite signal, said plurality of lines of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, each line of said first set of alternate lines of said second composite signal being a second linear combination of a respective line of said first set of alternate lines of said first luminance signal delayed by said first predetermined time and a respective successive line of said second set of said first luminance signal, said second linear combination of said first luminance signal being independent of said first linear combination of said first luminance signal, each line of said second set of alternate lines of said second composite signal being zero,

means for providing a second luminance signal comprising a plurality of successive lines having a line scanning frequency of said first predetermined value, said plurality of lines consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, said second luminance signal having frequencies extending over a band of frequencies from zero frequency to a first predetermined frequency,

means for forming a plurality of lines of a third composite signal, said plurality of lines of said third composite signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, each line of said first set of alternate lines of said third composite signal being a third linear combination of a respective line of said first set of alternate lines of said second luminance signal delayed by said first predetermined time and a respective successive line of said second set of alternate lines of said second luminance signal, each line of said second set of said third composite signal being zero,

means for forming a plurality of lines of a fourth composite signal, said plurality of lines of said fourth composite signal consisting of a first set of alternate lines and a second set of alternate lines, each line having a duration of said first predetermined time, each line of said first set of alternate lines of said fourth composite signal being a fourth linear combination of a respective line of said first set of alternate lines of said second luminance signal delayed by said first predetermined time and a respective successive line of said second set of alternate lines of said second luminance signal, said fourth linear combination of said second luminance signal being independent of said third linear combination of said third luminance signal, each line of said second set of said fourth composite signal being zero,

means for interleaving the lines of said first set of alternate lines of said first composite signal and said first set of alternate lines of said third composite signal to provide a fifth composite signal,

means for interleaving the lines of said first set of alternate lines of said second composite signal and said first set of alternate lines of said fourth composite signal to provide a sixth composite signal,

means for filtering said fifth composite signal to provide a seventh composite signal having frequencies less than a second predetermined frequency, said second predeter-

mined frequency being less than said first predetermined frequency,

means for filtering said sixth composite signal to provide an eighth composite signal having frequencies less than a third predetermined frequency, said third predetermined frequency being substantially less than said second predetermined frequency,

means for transmitting each of the lines of said seventh composite signal to a transmission channel,

means for transmitting each of the lines of said eighth composite signal to said transmission channel.

4,533,961

MAGNETIC RECORDING APPARATUS WITH LEVEL ADJUSTING MEANS FOR MIXED LUMINANCE, CHROMINANCE, AUDIO AND PILOT SIGNALS

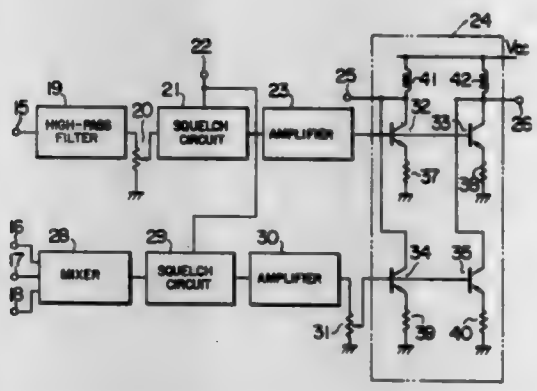
Akira Shibata; Isao Wada, and Atsushi Yoshioka, all of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 1, 1983, Ser. No. 481,252

Claims priority, application Japan, Apr. 2, 1982, 57-53819; Jul. 7, 1982, 57-116790

Int. Cl.³ H04N *9/491, 9/493*

U.S. Cl. 358—315 3 Claims



1. A magnetic recording apparatus for recording on a video track of a magnetic tape a composite signal produced by frequency multiplexing a frequency-modulated luminance signal component, a chrominance signal component, a frequency-modulated audio signal component and a pilot signal component, said apparatus comprising:

first mixing means for receiving and mixing at least two of said signal components forming said composite signal and producing a mixed signal;

first signal level adjusting means for receiving said mixed signal and adjusting the signal level thereof;

second signal level adjusting means for receiving the remainder of the signal components of said composite signal and adjusting the signal level thereof;

second mixing means for receiving and mixing an output signal from said first signal level adjusting means and an output signal from said second signal level adjusting means and thereby producing said composite signal; and

video head means for receiving said composite signal from said second mixing means and recording the same on the video track of said magnetic tape.

4,533,962

VEHICLE PERFORMANCE DETECTION AND RECORDING APPARATUS

Ronald R. Decker, 5548 S. Telluride St., Aurora, Colo. 80015, and William T. Shannon, 1812 Canyon Blvd., Boulder, Colo. 80301

Filed Aug. 5, 1982, Ser. No. 405,591

Int. Cl.³ G11B *5/00*

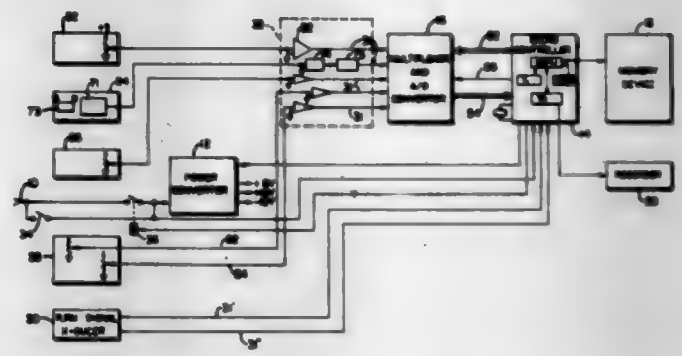
U.S. Cl. 360—5 15 Claims

1. In a self-contained vehicle performance recorder system wherein a plurality of transducer means are operative to produce a succession of signals as a function of time representative of vehicle performance parameters including speed, braking rate, steering rate and acceleration of the vehicle under operating conditions, the improvement comprising:

control circuit means including conditioning means for converting said succession of signals into a series of data blocks, each block containing a signal representative of each parameter measured;

programmer means for generating a succession of record numbers and for addressing said control circuit means to order out each said series of data blocks received from said transducer means and correlating said record numbers therewith;

means for temporarily storing each said record number in correlated relation with each said series of data blocks in succession ordered out of said control circuit means; and



recorder means for writing each said series of data blocks stored onto a record medium over a predetermined time period, said programmer means including means to generate a write command signal to activate said recorder means for writing each said series of data blocks at spaced time intervals within said time period, means to generate a reference timing signal for recording on said recording medium in correlated relation to each said record number and each said series of data blocks recorded, and means for erasing said series of record numbers and corresponding data blocks recorded over said predetermined time period, and said recorder means operative to write each next succession of record numbers and corresponding data blocks received from said transducer means over a next predetermined time period corresponding to said first predetermined time period.

4,533,963

VIDEO TAPE RECORDER FOR RE-RECORDING AUDIO SIGNALS

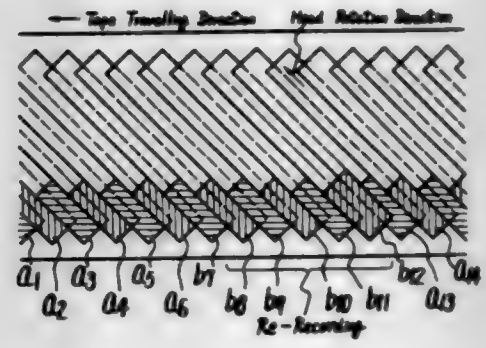
Kenji Nakano, Ebina; Takao Takahashi, Sagamihara; Hisayoshi Moriwaki, Isehara, and Keiichiro Shimada, Fujisawa, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,390

Claims priority, application Japan, Jan. 25, 1982, 57-9850

Int. Cl.³ G11B *27/02, 5/49*

U.S. Cl. 360—19.1 9 Claims



1. A magnetic recording and/or reproducing apparatus having at least a pair of rotary magnetic transducing heads for producing information tracks on a magnetic recording me-

dium, each of said information tracks comprising a video signal track portion and an audio signal track portion, said transducing heads having respective azimuth angles which are different from each other and a width of said transducing heads being larger than that of said information tracks, comprising:

means for re-recording an audio signal in substantial positional correlation with a recorded audio signal track portion,

means for generating a non-audio identification signal for identifying re-recorded audio track portions,

means for recording said identification signal in said audio track portion of an information track on said magnetic recording medium in lieu of said audio signal,

means for detecting said identification signal, and

means for compensating a reproduced audio signal in response to said identification signal.

4,533,964

MULTI-TRACK DIGITAL RECORDING AND PLAYBACK SYSTEM

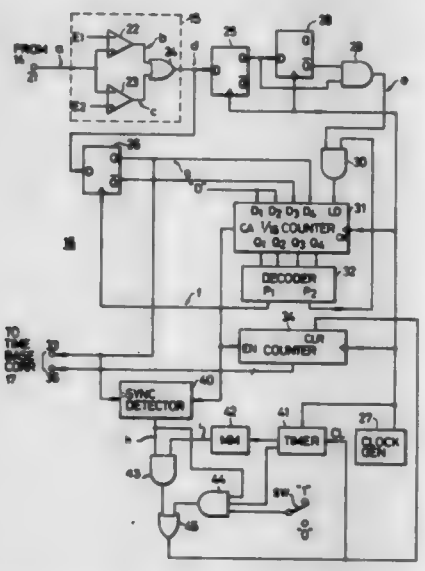
Isao Owaki, Tokyo; Susumu Saito, Sagamihara, and Masami Yamazaki, Zama, all of Japan, assignors to Victor Company of Japan, Limited, Japan

Filed Sep. 30, 1982, Ser. No. 432,384

Claims priority, application Japan, Oct. 15, 1981, 56-164500

Int. Cl.³ G11B *15/02, 5/43, 5/09*

U.S. Cl. 360—22 11 Claims



1. A digital recording and playback system comprising:

means for converting an analog signal to a digital signal comprising a data word and a synchronization word;

means for distributing said digital signal to a plurality of circuit paths;

means for transforming the digital signal in each of said circuit paths into a non-return-to-zero inverted (NRZI) signal;

delay means for delaying said digital signal by a period of one binary digit for producing a delayed digital signal,

said transforming means comprising adder means for combining said digital signal with said delayed digital signal;

means for inverting said delayed digital signal for applicaation to said adder means for combination with said digital signal;

a plurality of stationary parallel electromagnetic transducers respectively associated with said circuit paths and spaced apart at least by the width of a track for recording the distributed NRZI signals along a plurality of spaced apart longitudinally extending first tracks of a magnetic tape when the tape is driven toward one end thereof and along a plurality of spaced apart longitudinally extending second tracks interleaved with said first tracks when the tape is driven toward the other end thereof, each of said transducers having a differential characteristic with which the recorded signal is detected as a waveform having three distinguishable levels when the system operates in a playback mode;

means coupled to said transducers for converting said waveform to a binary signal to recover the original digital signal;

means for detecting said synchronization word from the recovered digital signal to generate a timing signal indicative of the position of each binary digit of the data word with respect to the detected synchronization word;

means responsive to said timing signal for aligning the timing of each binary digit derived from each transducer with binary digits derived from the other transducers;

means for arranging said time-aligned data words into a series of successive data words; and

means for converting said series of data words to an analog signal.

4,533,965

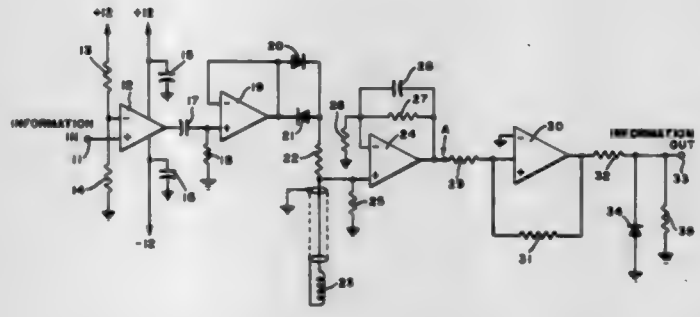
MAGNETIC READ/WRITE CIRCUIT

Gary Steinbaugh, Villa Hills, Ky., assignor to General Signal Corporation, Stamford, Conn.

Filed Apr. 18, 1984, Ser. No. 601,417

Int. Cl.³ G11B *15/02*

U.S. Cl. 360—62 9 Claims



1. An automatic read to write or write to read switching electronic recording and playback circuit for recording and playing back digital information, said circuit comprises:

(a) a high press filter for preventing the passage of low frequency signals; the input of said filter is coupled to said information;

(b) a first amplifier that reproduces its input signal, the positive input of said amplifier is coupled to the output of said high pass filter;

(c) a first diode whose anode is coupled to the output of said first amplifier;

(d) a second diode whose cathode is coupled to the anode of said first diode and to the output of said first amplifier and whose anode is coupled to the cathode of said first diode so that said first amplifier and said first and second diodes will act like an automatic switch;

(e) means for recording or reading information on a magnetic material, said means writes information when said means receives signals from said second diode and said means is completely disconnected from said second diode when it is not receiving signals;

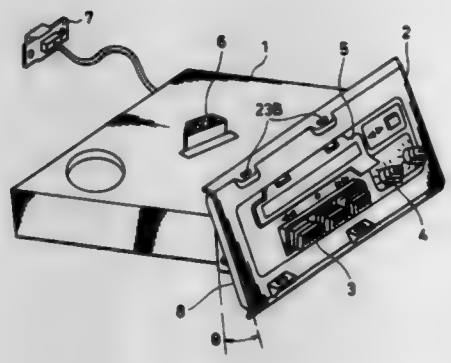
(f) a second amplifier whose input is coupled to said means for recording or reading information on a magnetic material, and whose output is coupled to the negative input of said second amplifier; and

(g) a third amplifier whose positive input is coupled to the output of said second amplifier; said third amplifier shapes its input signals into a series of square waves.

4,533,966
TAPE PLAYER FOR VEHICLES

Masato Kume, Tokyo, Japan, assignor to Clarion Co., Ltd., Tokyo, Japan

Filed Sep. 17, 1982, Ser. No. 419,437
Claims priority, application Japan, Sep. 21, 1981, 56-140290[U]
Int. Cl.³ G11B *15/32, 5/40*
U.S. Cl. 360—96.5 9 Claims



1. A weatherproof housing for a cassette tape player comprising:

a casing for acceptingly receiving a tape player therein and having one open side;

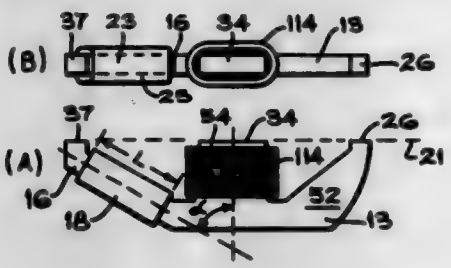
movable cover means for sealingly covering said open side of said casing and operable between a first or covering position sealing the interior of said housing and a second or exposing position exposing at least the cassette insertion aperture of tape player placed in said housing to permit insertion of a cassette into said player; and

a pair of biased latching means for holding said cover means in either said covering or exposing positions, each said latching means including a first and a second elongated link pivotally joined together at first ends thereof and respectively pivotally joined to said cover means and an interior portion of said housing at second ends thereof, each said latching means including spring biasing means coupled to said second link for urging said second link in either extreme position thereof to hold said cover in either said aperture covering or said aperture exposing position.

4,533,967
MULTIPLE LEG MULTICHANNEL MAGNETIC TRANSDUCER STRUCTURE AND METHOD OF MANUFACTURING

Ralph A. Conly, Sunnyvale, and Stanley M. Latimer, San Jose, both of Calif., assignors to Ampex Corporation, Redwood City, Calif.

Filed Oct. 22, 1982, Ser. No. 436,084
Int. Cl.³ G11B *5/20*
U.S. Cl. 360—123 22 Claims



1. A multichannel magnetic transducer assembly having at least two closely spaced parallel transducing channels, each channel having a magnetic core with poles defining a transducing gap and a multiple leg back core contiguous with the poles, each leg providing a separate flux path, comprising in combination:

(a) each channel having two separate corresponding core portions made of a generally flexible magnetic material, each core portion comprising a magnetic pole, at least one intermediate leg portion, and a rear leg portion, said respective leg portions being contiguous with the pole, said magnetic pole and leg portions having smoothly lapped end faces defining a transducing gap plane;

(b) said rear leg portion of each core portion extending at an acute angle with respect to said intermediate leg portion and converging towards said transducing gap plane;

(c) respective transducing coils provided on at least one intermediate and one rear leg portion of said corresponding core portions of each channel; and

(d) said corresponding core portions of each channel being assembled with said end faces of said corresponding intermediate and rear leg portions abutting and with said magnetic poles defining a transducing gap therebetween.

4,533,968
CERAMIC GUIDES FOR TAPE-LIKE MATERIALS AND PROCESS FOR THE PRODUCTION THEREOF

Tuneo Yoshida; Kengo Oishi, and Motohiko Yagi, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

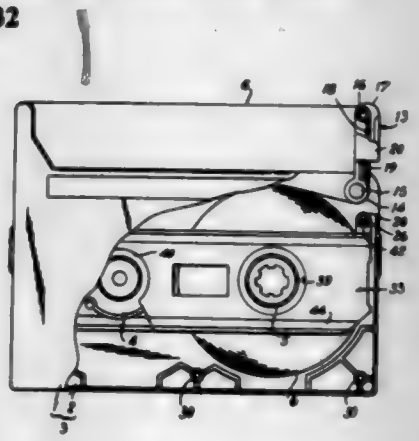
Filed Sep. 29, 1982, Ser. No. 428,510
Claims priority, application Japan, Sep. 29, 1981, 56-152939
Int. Cl.³ G11B *15/60*
U.S. Cl. 360—130.21 3 Claims

1. A ceramic guide for tape-like materials, comprising a sintered molding of (A) 98 to 93 parts by weight of barium titanate, (B) 2 to 7 parts by weight of an inorganic silicate binder, and (C) 0.2 to 2 parts by weight, per 100 parts by weight of (A) and (B), of lanthanum oxide.

4,533,969
TAPE CASSETTE ANTI-STATIC MEMBER

Takao Miyashita, and Toshio Sato, both of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Feb. 4, 1983, Ser. No. 463,807
Claims priority, application Japan, Feb. 5, 1982, 57-15088[U]
Int. Cl.³ G11B *23/02, 23/04*
U.S. Cl. 360—132 6 Claims



1. A tape cassette comprising a housing having a locating hole for cooperating with a grounded conductive locating pin in an apparatus that accepts the cassette to correctly position said cassette in said apparatus; a pair of tape reels rotatably mounting two coils of tape in substantially co-planar, side-by-side relation in said housing with a substantial portion of the tape edge exposed; and anti-static means including a strip of conductive sheet material spanning substantially the entire diameters of both coils of tape and being curved in transverse cross-section for flexure of said strip between the tape coils and the inside surface of said housing, said strip having two portions folded into mutually facing relation to embrace said tape coils and bear against opposite edges of said tape therein, each said portion of the strip including slide means for slidably engaging the edges of the tape coils, and grounding means including a tab on said strip extending into said locating hole for contacting the conductive locating pin when the cassette is installed in the apparatus and thereby connecting said strip to

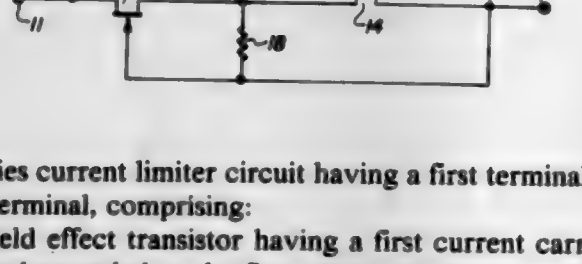
ground outside said housing, said tab being integral with one of said portions and being constituted by a bent portion of said strip extending transversely therefrom.

4,533,970

SERIES CURRENT LIMITER

Leland T. Brown, Phoenix, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 27, 1983, Ser. No. 507,654
Int. Cl.³ H02H *3/08, 3/087*
U.S. Cl. 361—58 **7 Claims**



1. A series current limiter circuit having a first terminal and a second terminal, comprising:

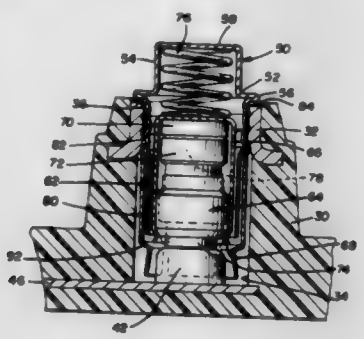
a first field effect transistor having a first current carrying electrode coupled to the first terminal and a second current carrying electrode coupled to a node, and a control electrode coupled to the second terminal; a second field effect transistor having a first current carrying electrode coupled to the node and a second current carrying electrode coupled to the second terminal; a first resistor coupled between the node and the control electrode of the first field effect transistor; a second resistor coupled between the node and a control electrode of the second field effect transistor; a third resistor coupled between the first terminal and the control electrode of the second field effect transistor; and means for clamping a voltage coupled between the second terminal and the control electrode of the second field effect transistor.

4,533,971

SHORTING CAGE FOR PROTECTOR WELLS

Thomas J. Smith, Bay Shore, N.Y., assignor to TII Industries, Inc., Copiague, N.Y.

Filed May 16, 1983, Ser. No. 495,102
The portion of the term of this patent subsequent to Sep. 28, 1999, has been disclaimed.
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—119 **12 Claims**



1. An overvoltage surge arrester apparatus for protecting communication lines and equipment connected thereto from voltage surges comprising:

(a) a housing of insulating material having at least one well-type aperture disposed therein, said well-type aperture being provided with a first electrode adapted to be connected to earth ground and disposed at the closed end thereof having an upwardly extending portion and a second electrode disposed about the periphery of the open end of said well-type aperture, said second electrode being adapted to be connected to one of said communication lines;

(b) a hollow, electrically conductive shorting cage adapted to be received into said well-type aperture, said shorting cage being in continuous intimate electrical contact with said second electrode and having at least one inwardly extending finger portion adapted to be in electrically conductive contact with said upwardly extending portion of said first electrode; and

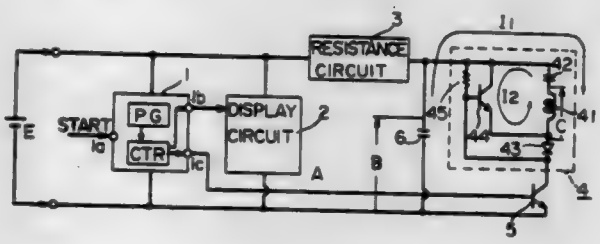
(c) a protector cartridge including an electrically conductive shell adapted to be received into said hollow shorting cage and be in electrically conductive contact at the upper portion thereof providing electrically conductive contact with a protective device disposed within said shell, one terminal of said protective device extending downwardly beyond said shell and being adapted to be in electrical contact with said upwardly extending portion of said first electrode when in position in said shorting cage, said protective device urging said protector cartridge shell to displace the inwardly extending finger portion of said shorting cage causing it to be out of electrically conductive contact with said upwardly extending portion of said first electrode when in position in said well-type aperture.

4,533,972

ELECTRONIC SWITCHING DEVICE HAVING REDUCED POWER CONSUMPTION

Takeo Ohashi, Suita, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Jan. 11, 1983, Ser. No. 457,188
Claims priority, application Japan, Jan. 13, 1982, 57-4172
Int. Cl.³ H01H *47/32*
U.S. Cl. 361—156 **9 Claims**



1. An electronic switching device including a self-latching electromagnetic switch for switching a load connected to the switch, which comprises

a self-latching relay circuit including an exciting coil,

first switching means connected in series with said relay circuit for controlling an electric current applied to the same,

current regulating means interposed between a power source and said relay circuit,

a first capacitor connected across said relay circuit and said first switching means which are connected in series so as to be charged by said power source to a steady state value through said current regulating means within a predetermined time period,

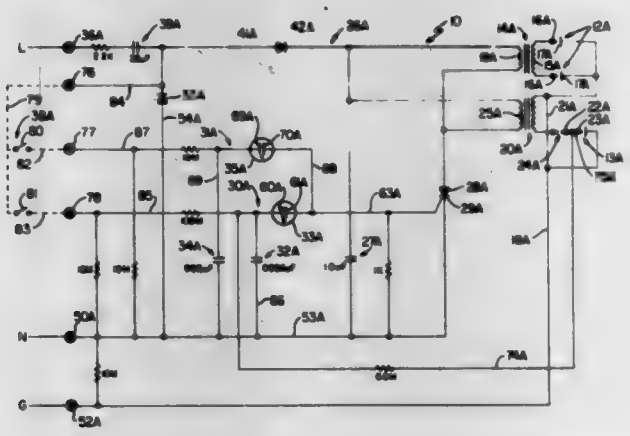
a signal generating means for generating an output signal which is applied to said first switching means as a controlling signal thereto, said controlling signal causing said first switching means to initiate a discharge of said first capacitor to produce a current in said exciting coil in a first direction, and,

means for causing a discharge of current from said first capacitor to produce a current in said exciting coil in a second direction opposite to the first.

4,533,973
ELECTRICAL CIRCUIT FOR A COOKING APPARATUS AND METHOD OF MAKING THE SAME

Steven A. Kimmel, Greensburg, Pa., assignor to Robertshaw Controls Company, Richmond, Va.

Filed Feb. 24, 1984, Ser. No. 583,334
Int. Cl.[3] F23Q *3/00*
U.S. Cl. 361—253 10 Claims

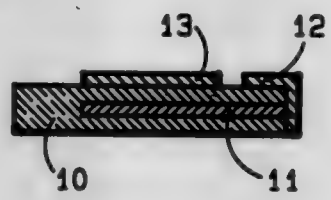


1. In an electrical circuit means for a cooking apparatus, said circuit means being adapted to cause sparking at first igniter means for top burner means of said apparatus by causing current flow through the primary of a first transformer and to cause sparking at second igniter means for oven burner means to said apparatus by causing current flow through the primary of a second transformer, said circuit means having a main circuit branch having opposed ends and being adapted to be interconnected to an electrical power source at said opposed ends thereof so as to charge a main capacitor that causes said current flow through said primaries when a gate of an SCR of said main branch is activated, said circuit means having two activating circuit branches each being adapted to activate said gate, each activating branch having a neon bulb and a capacitor which causes its respective neon bulb to fire and activate said gate when its respective capacitor is charged to a value that reaches the breakover voltage of its respective neon bulb, one of said activating branches causing spark quenching when a flame appears at said second igniter means, the improvement comprising a switching means in said circuit means that is interconnected to said main circuit branch intermediate said opposed ends thereof and is adapted to selectively electrically interconnect each activating branch to said main branch and thereby activate the interconnected activating branch so as to cause sparking at said igniter means.

4,533,974
LOW-FIRING HIGH Q MONOLITHIC CERAMIC CAPACITOR

Galeb H. Maher, North Adams, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 9, 1984, Ser. No. 597,907
Int. Cl.[3] H01G *4/12*
U.S. Cl. 361—320 8 Claims



1. A monolithic ceramic capacitor having a Q of at least 5000 at 1 MHz comprising a dense mature ceramic body and at least one sheet electrode buried in said body, said at least one electrode extending to one body face, said body having been co-fired with said buried electrode; said body being comprised of from 92–98 weight percent of a high firing ceramic composition and from 8–2 weight percent of a low firing borate flux, said high firing ceramic composition consisting essentially of 90 to 95 weight percent of a magnesium zinc titanate and 10 to 5 weight percent calcium titanate.

4,533,975
RADIATION HARDENABLE COATING AND ELECTRONIC COMPONENTS COATED THEREWITH

Jacob C. Bill, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

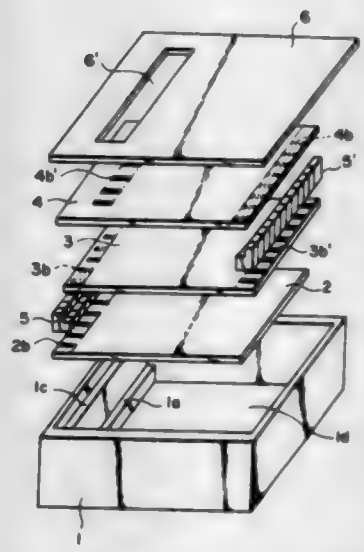
Filed Dec. 27, 1983, Ser. No. 565,685
Int. Cl.[3] H01G *4/08, 4/18;* C08F *2/46;* B05D *1/00*
U.S. Cl. 361—323 7 Claims

1. An ultraviolet radiation curable liquid coating composition particularly adapted for providing a low temperature degradable electronic component with a protective coating, said composition comprising a liquid mixture of an acrylated epoxy oligomer, an acrylated urethane oligomer, a hydroxyalkyl methacrylate monomer, an aliphatic bicyclic monofunctional monomer, a calcined cobalt alumina pigment and at least one U.V. free radical initiator and one thermal free radical initiator.

4,533,976
ELECTRONIC UNIT

Kaname Suwa, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 13, 1982, Ser. No. 449,503
Claims priority, application Japan, Dec. 24, 1981, 56-208036
Int. Cl.[3] H05K *1/14*
U.S. Cl. 361—395 12 Claims



1. An electronic package containing circuit boards, said package comprising:

a plurality of printed circuit boards each having connecting patterns;

a casing having an opening for inserting said printed circuit boards;

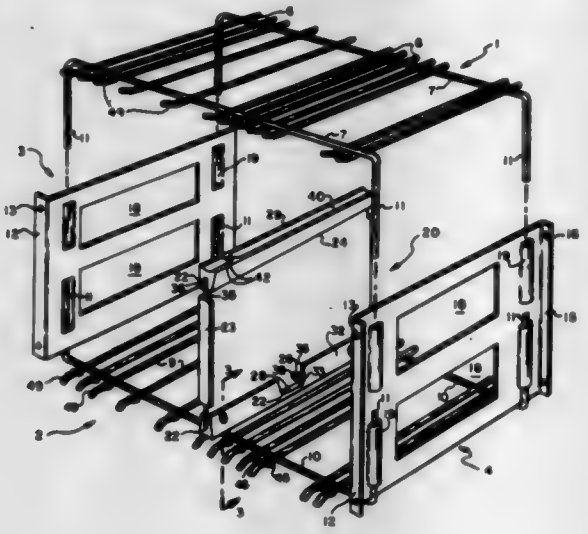
conductive and elastic connecting means each disposed at the position corresponding to said connecting patterns between respective ones of said printed circuit boards and electrically connecting said printed circuit boards; and

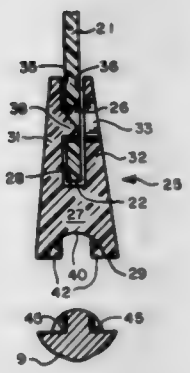
a cover for closing said opening of said casing to press said printed circuit boards in said casing to secure said printed circuit boards to said casing and electrically connect said printed circuit boards, and having a window portion at a position facing said connecting patterns for connection to an external piece of equipment.

4,533,977
PRINTED WIRING BOARD ASSEMBLY EMPLOYING TRACK ENGAGING RUNNERS

James V. Koppensteiner, Chicago, and John E. Kaczkos, Elk Grove Village, both of Ill., assignors to GTE Communication Systems Corporation, Northlake, Ill.

Filed May 17, 1984, Ser. No. 611,236
Int. Cl.[3] H05K *1/18*
U.S. Cl. 361—415 10 Claims





1. A printed wiring board assembly including a printed wiring board and at least one guide runner attached thereto, said printed wiring board assembly adapted to be mounted in a printed wiring board file including a plurality of printed wiring board guide tracks and said guide runner comprising:

an elongated body of rigid construction including at least a first and a second lengthwise surface, said surfaces parallel to each other;

a pair of elongated walls extending from said body for the length of said body and perpendicular to said first surface, said walls spaced apart a predetermined distance forming there between a printed wiring board receiving channel;

a groove formed in said body second surface and extending the length of said body, said groove adapted to engage a respective guide track of said file; and

means for retaining said body to said board.

4,533,978
CIRCUIT BOARD STIFFENING

Leo Walter, Palos Verdes Estates, Calif., assignor to Bucklee-Mears Company, St. Paul, Minn.

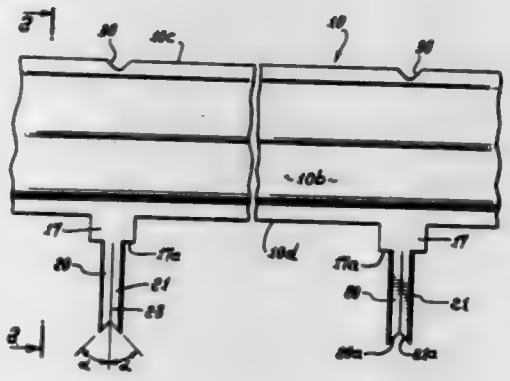
Filed Jun. 6, 1983, Ser. No. 499,209
Int. Cl.[3] H05K *1/18*
U.S. Cl. 361—419 7 Claims

1. In a circuit board stiffener, the combination comprising

(a) an elongated stiffening member adapted to extend over the board surface and spaced therefrom,

(b) projections integral with said member and having surfaces adapted to engage one side of the board, and

(c) bendable retainer means carried by said member to retain said member to one side of the board, said retainer means comprising pairs of arms, the arms of each pair extending in closely spaced, parallel, side-by-side relation so as to project from a position within an opening through the board and beyond the opposite side of the board to a position to be quickly spread apart and bent away from one another to engage said opposite side of the board or solder thereon and to pull the contact surfaces against said



one side of the board to firmly hold said member in position,

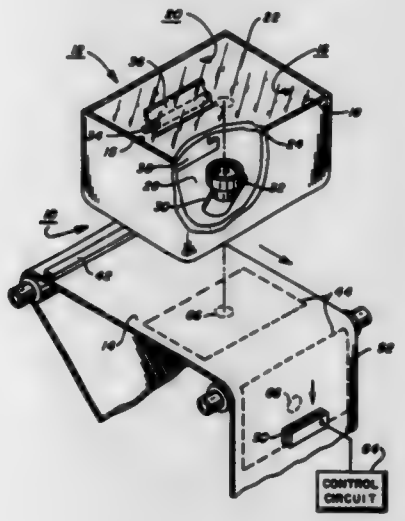
(d) said arms having terminals which are angled to receive and be spreadable by a spreading tool, and

(e) there being a split between said arms, the split extending from said terminals into proximity to one of said projection surfaces.

4,533,979
FULL-FRAME FLASH ILLUMINATION SYSTEM

James D. Rees, Pittsford; Robert W. Gundlach, Victor, and Jerome E. May, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed May 8, 1984, Ser. No. 608,300
Int. Cl.[3] G09F *13/04*
U.S. Cl. 362—97 5 Claims



1. A flash illumination and optical imaging system for reproducing documents on an object plane onto a photoreceptor belt member comprising, in combination,

a transparent object plane for supporting original documents to be reproduced,

an document illumination housing positioned adjacent said object plane,

a first illumination means positioned interior of said housing and adapted to be periodically pulsed to provide a generally uniform level of illumination at said object plane,

a projection lens mounted in the bottom surface of said housing opposite said object plane, said lens adapted to project an image of said document onto said photosensitive belt member, said projected image containing a superimposed image of the projection lens as reflected from said object plane, and

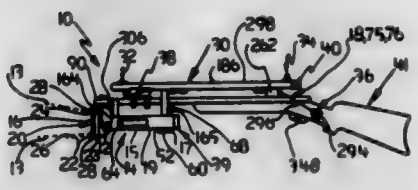
a second illumination means adapted to irradiate an area of said belt conforming to the area of said negative lens image.

4,533,980

LUMINOUS GUN SIGHTING SYSTEM

Lawrence S. Hayes, 263 Gates St., Andover, Ohio 44003

Filed Jun. 21, 1982, Ser. No. 390,691
Int. Cl.[3] F41G *1/34*
U.S. Cl. 362—110 18 Claims



1. An apparatus for use on a rifle or shotgun for hunting prey at night in the absence of natural light, comprising:

(a) a source of light mounted to said rifle, said source emitting a beam of light having a diverse path such that said light beam is dispersed over a region in front of said firearm;

(b) a filter pivotally mounted to said light source and movable into and out of said beam path, said filter being operative to filter said light beam when in said beam path so that light in a spectrum substantially invisible to the prey being hunted is emitted over said region;

(c) actuation means for abruptly moving said filter out of said beam path to allow broad spectrum illumination of said region in front of said firearm, when desired;

(d) front and rear illuminated gun sights comprising a front gun sight defining front sighting structure illuminated from within by an integral light source and a rear gun sight defining rear sighting structure illuminated from within by an integral light source;

(e) means for adjusting the illumination intensity of at least one of said front and rear gun sights.

4,533,981

LIGHT CORNICE

John R. Radek, Hinsdale, Ill., assignor to Ready Metal Manufacturing Company, Chicago, Ill.

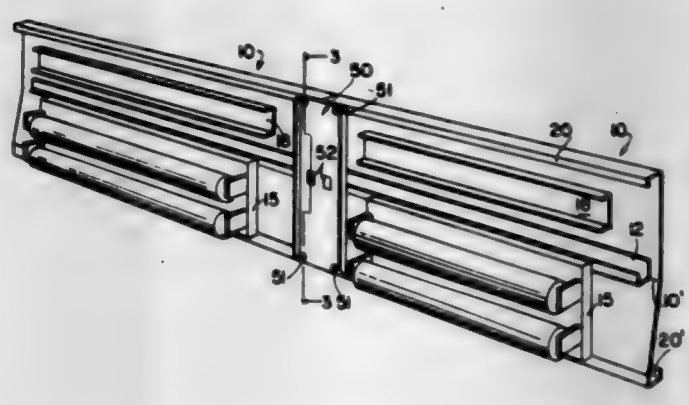
Filed Aug. 16, 1982, Ser. No. 408,609
Int. Cl.[3] F21S *1/02*
U.S. Cl. 362—151 2 Claims

1. An interior vertically extensible knockdown cornice construction for illuminating a retail store wall or the like, comprising

(a) a horizontally extending panel of rigid sheet material disposed in a substantially vertical plane forwardly of said wall having front and rear faces, with a lighting fixture mounted on the rear face,

(b) said panel having a horizontal integral channel member of substantially rectangular cross-section extending rearwardly from the plane of the vertical panel at the top thereof and terminating in a downwardly extending flange spaced from the rear face of said panel and a second integral parallel channel member of substantially rectangular cross-section at the bottom of the panel extending forwardly from the front face thereof and terminating in an upwardly extending flange spaced from said panel,

(c) a depending second panel suspended from said first panel, substantially similar to the latter, having the rearwardly extending rectangular channel member at the top thereof nested closely within the forwardly extending rectangular channel at the bottom of said first panel for interengagement therewith and forming a substantially rigid joint therebetween, and



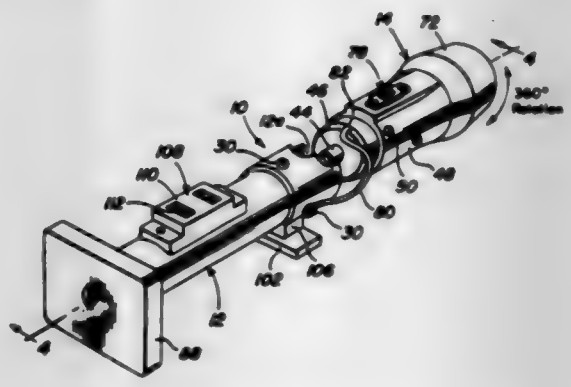
(d) pointed threaded screw fasteners adapted to penetrate the readily accessible rear face of the first-mentioned panel and channel member along the bottom edge thereof for driving the pointed ends thereof into engagement with the downwardly extending flange of the channel nested therein, to clamp the second panel securely to said first panel.

4,533,982

FLASHLIGHT WITH SWIVELLING HEAD

John J. Kozar, 11 St. - 5th Ave., New Kensington, Pa. 15068

Filed Oct. 22, 1984, Ser. No. 663,174
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—183 18 Claims



1. A portable flashlight comprising a battery casing, a flashlight head with a light bulb, lens and reflector assembly, and an electrically conducting ball-and-socket assembly forming a swivel connection between the battery casing and the head and also providing electrical connection between the battery casing and the head as part of an electrical circuit for connecting a battery in the casing with the light bulb.

4,533,983

LIGHTING FIXTURES WITH BEAM SUPPORT AND OPPOSITE END CONTACT MEANS

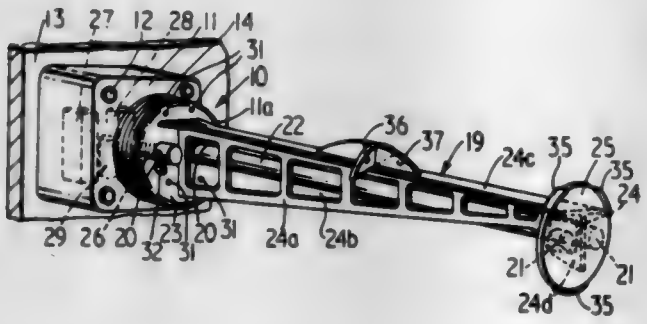
Bjorn Hafstad, Flåten, N-5200, Norway

Filed Sep. 20, 1982, Ser. No. 419,914
Claims priority, application Norway, Sep. 21, 1981, 813193
Int. Cl.[3] F21V *15/00*
U.S. Cl. 362—223 11 Claims

1. A lighting fixture comprising

a base member adapted to be secured to a permanent support;

a holder for supporting a lamp device, said holder including a rigid self-supporting support beam fastened at one end to said base member and projecting outwardly from said base member;



a transparent elongate casing having an open end secured to said base member and surrounding said holder, said casing being supported on an outer end of said beam spaced from said base member; and

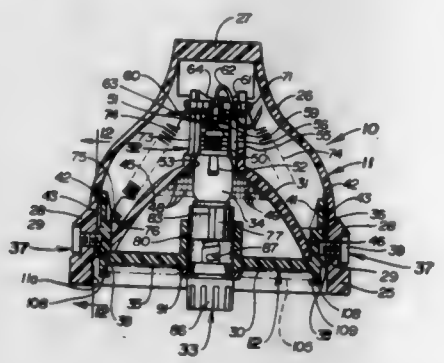
contact means at opposite ends of said holder for a lamp device.

4,533,984

VARIABLE-WIDTH-BEAM LIGHT APPARATUS

James W. Gatton, P.O. Box 27/ St. Rte. 97 E., Bellville, Ohio 44813

Filed Sep. 7, 1982, Ser. No. 414,973
Int. Cl.[3] F21V *21/14;* F21L *15/20;* F21S *5/00*
U.S. Cl. 362—232 17 Claims



1. A variable-width-beam light apparatus comprising

(A) a support housing adapted to be mounted on a support structure, said housing having an interior cavity and an aperture formed in a wall of the housing, and

(B) a light-emitting lamp and reflector assembly mounted in said housing cavity to emit a beam of light through said housing aperture, said assembly including

(1) mounting means mechanically interengageable with said housing for securing of said assembly in said housing,

(2) an electrically energized lamp,

(3) an optical reflector having a reflecting surface configured to reflect light emitted from said lamp in a relatively forward direction along a longitudinal axis of said reflector that extends through a focal point of the reflecting surface as a beam of light having a width determined by the position of said lamp with respect to the focal point when disposed on the longitudinal axis of the reflector,

(4) a lens supported on said optical reflector in relatively forward relationship to the focal point of said reflector along the longitudinal axis of the reflector for transmission of the reflected light therethrough,

(5) lamp positioning means for positioning of said lamp at a selected position along the longitudinal axis of said reflector including

(a) lamp supporting means mounted on said reflector having a lamp carrier supported for reciprocating displacement along a path disposed in parallel relationship to the longitudinal axis of said reflector and biasing means mechanically coupled with said lamp carrier to bias said carrier toward said lens, said lamp carrier adapted to receive and support said lamp on said longitudinal axis for reciprocating movement along said axis, and

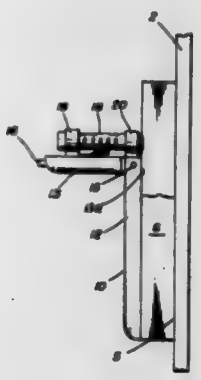
(b) lamp displacing means mounted on said lens and cooperatively engageable with said lamp carried by said lamp carrier, said lamp displacing means including a guideway mounted on said lens in fixed relationship thereto, a lamp displacing element that contactingly engages with said lamp that is carried by said lamp carrier, carried by said guideway in cooperative engagement therewith for axial reciprocation relative thereto along the longitudinal axis of said reflector and restrained against rotation about the longitudinal axis and an actuator carried by said lens and mechanically coupled with said lamp displacing element and selectively operable to effect axial reciprocation of said lamp displacing element to effect reciprocation of said lamp, said lamp displacing means selectively operable to effect and control displacement of said lamp along the longitudinal axis of said reflector to a selected position.

4,533,985

ILLUMINATING DEVICE WITH MERCURY SWITCH AND ADJUSTABLE ABUTMENT TAB

Joseph J. Jasinski, Box 439, R. R. 11, Cumming, Ga. 30130

Filed Jul. 26, 1984, Ser. No. 634,611
Int. Cl.[3] F21V *19/02*
U.S. Cl. 362—276 4 Claims



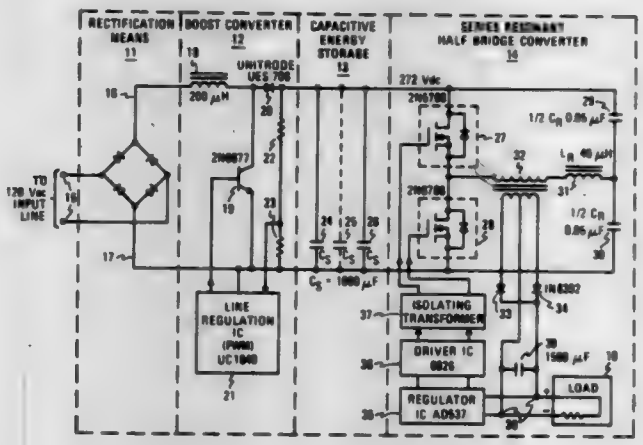
1. An illuminating device comprising a housing, said housing comprising a back panel, side walls joined respectively to the side edges of said back panel and upstanding therefrom, and a front panel joined to the edges of at least some of said side walls remote from said back panel, an energy source disposed in said bearing, a light disposed in said housing, conductor means adapted to provide a circuit between said energy source and said light, a mercury switch operably interconnected with said conductor means, said front panel comprising a pair of shoulders, said illumination platform comprising an abutment tab disposed along the lower portion thereof, said illumination platform being pivotally connected to said front panel between said shoulders and the adjacent portions of said abutment tab, said illumination platform being adapted to swing outwardly of said housing through an arc of approximately 90°, said abutment tab of said illumination platform being disposed in a complementary relationship with corresponding portions of said front panel when said illumination platform and said front panel are in alignment, said front panel comprising an abutment edge disposed along the upper edge thereof between said shoulders, and a portion of the outer surface of said illumination platform being disposed in abutment with a portion of said

abutment edge when said illumination platform is swung fully outwardly.

4,533,986
COMPACT ELECTRICAL POWER SUPPLY FOR SIGNAL PROCESSING APPLICATIONS

Dwight V. Jones, Baldwinsville, N.Y., assignor to General Electric Company, Syracuse, N.Y.

Filed Oct. 31, 1983, Ser. No. 547,376
Int. Cl.[3] H02M *3/335*
U.S. Cl. 363—17 9 Claims



1. In a power supply, the combination comprising:

A. a dc source having a common and non-common output terminal;

B. a voltage regulated, series resonant half bridge converter having a pair of dc input terminal coupled respectively to said common and said non-common output terminal, and a pair of output terminals for connection to supply energy at a regulated voltage thereto, said half bridge converter comprising:

(1) a first and a second solid state switch, each having a pair of principal electrodes and a control electrode, said first and second solid state switches being serially connected via the principal electrodes thereof between said terminals of said source,

(2) an output transformer having a primary winding and a secondary winding, alternating conduction of said first and second solid state switches connecting one end of said primary winding alternatively to said common and said last recited non-common source terminal to produce an ac input to said primary winding and inducing an ac output in said secondary winding,

(3) means coupled between said secondary winding and said output terminals for rectifying said transformer ac output and producing a dc output voltage at said converter output terminals,

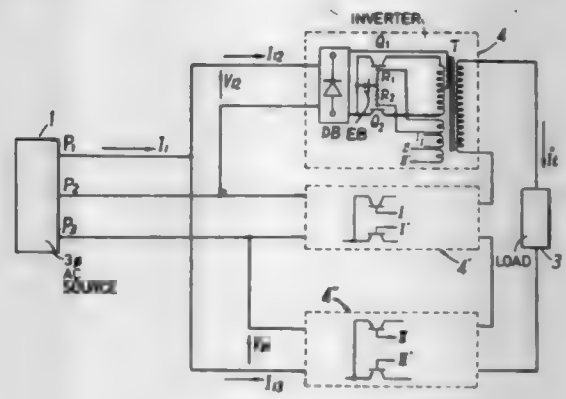
(4) series resonant circuitry including an inductive element and one capacitive element connecting in shunt and at least one capacitive element connected in series with said primary winding, and

(5) regulating means responsive to said rectified dc output voltage, coupled to the control electrodes of said first and second solid state switches for causing alternate conduction thereof, controlled to achieve output voltage regulation by adjustment of the switching rates of said first and second switches in relation to the resonance frequency of said resonant circuitry.

4,533,987
POWER SUPPLY SYSTEM

Yoshiaki Tomofuji, Osaka, and Takayoshi Maeda, Hirakata, both of Japan, assignors to Matsushita Electric Works, Ltd., Kadoma, Japan

Filed Nov. 9, 1982, Ser. No. 440,425
Claims priority, application Japan, Nov. 11, 1981, 56-180679
Int. Cl.[3] H02M *5/453*
U.S. Cl. 363—36 2 Claims



1. A power supply system comprising:

a source providing three phase AC power at a predetermined frequency, said source having output lines respectively corresponding to each of the phases of said AC power;

a plurality of rectifiers connected to respective pairs of said output lines;

a plurality of inverters each connected to an output of a respective one of said rectifiers and comprising an oscillation circuit, each said inverter providing by means of said oscillation circuit an oscillating output signal at a predetermined higher frequency than said predetermined frequency, the output signals of all of said inverters being at the same predetermined higher frequency;

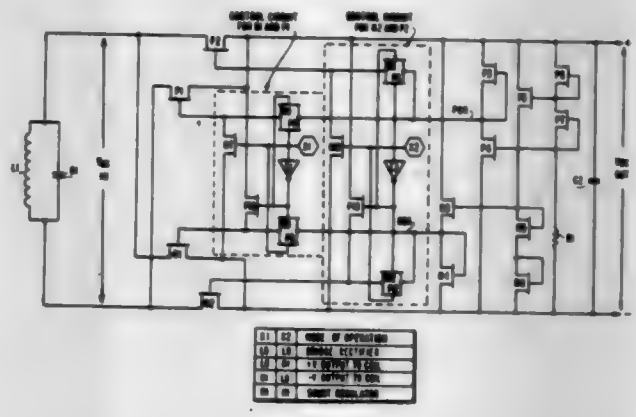
a control means for operating the oscillation circuits of said inverters, said control means synchronizing the oscillation period of the oscillation circuits of the inverters such that the output signals of said inverters have the same zero cross point timing;

means connected to the outputs of said inverters for superposing in series and phase the outputs of said inverters to produce a high frequency power source.

4,533,988
ON-CHIP CMOS BRIDGE CIRCUIT

Christopher N. Daly, Bilgola Plateau, and David K. Money, Pennant Hills, both of Australia, assignors to Telectronics Pty. Ltd., Lane Cove, Australia

Filed Apr. 9, 1981, Ser. No. 252,313
Int. Cl.[3] H02M *7/797*
U.S. Cl. 363—127 42 Claims



1. A bridge circuit comprising energy storage means; energy receiver means; two pairs of complementary field-effect tran-

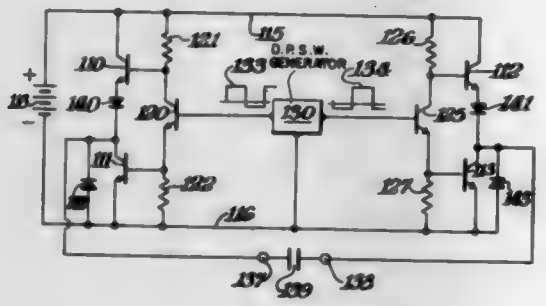
sistors arranged in a bridge configuration between said energy receiver means and said energy storage means; and means for biasing the gates of all of said field-effect transistors such that when the voltage across said energy receiver means is less than the voltage across said energy storage means each of said transistors conducts a low quiescent current in one direction, and when the voltage across said energy receiver means is greater than the voltage across said energy storage means the transistors in one of said two pairs conduct higher currents in the other direction, the pair which thus conduct higher currents depending upon the relative polarity of the voltage across said energy receiver means.

4,533,989

TRANSFORMERLESS POWER INVERTER WITH ONLY ONE TYPE TRANSISTORS

John R. Hebert, Jr., Clarksburg, Mass., assignor to Sprague Electric Company, North Adams, Mass.

Filed Mar. 10, 1980, Ser. No. 129,048
Int. Cl.³ H02M 7/537
U.S. Cl. 363—132 **1 Claim**



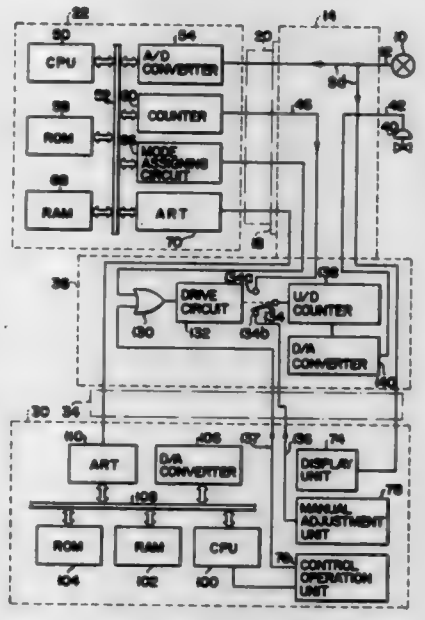
1. A transformerless inverter comprising: (a) four NPN power transistors connected to form a bridge circuit having four circuit nodes; (b) one DC power buss being connected to a first of said nodes; (c) another DC power buss being connected to a second of said nodes that is opposite said first node, a first and second of said bridge-connected transistors being series connected respectively emitter to collector at the fourth of said nodes that is opposite said third node, the collectors of said first and third bridge-connected transistors being connected to said first node; (d) two commutating circuits each comprising an NPN commutating transistor, a collector resistor connected between the collector of said commutating transistor and said first node, and an emitter resistor being connected between the emitter of said commutating transistor and said second node, the collector and emitter of one of said commutating transistors being connected to the bases of said first and second bridge-connected transistors, respectively, the collector and emitter of the other of said commutating transistors being connected to the bases of said third and fourth bridge-connected transistors, respectively; (e) a square wave generating means for producing two periodic square wave signals at the bases of said two commutating transistors, respectively, which signals are 180° out of phase with each other and which signals periodically turn on and turn off said commutating transistors; (f) a first pair of diodes each being connected anode to cathode in parallel respectively with one of said second and fourth bridge-connected transistors emitter to collector; (g) each of a second pair of diodes having an anode connected to an emitter of one of said first and third bridge-connected transistors, said second pair diodes forming the connection between said first and third transistors and said third and fourth nodes, respectively; (h) a pair of load terminals that are connected to said third and fourth nodes, respectively; and (i) a capacitive load connected across said load terminals so that there is impressed upon said capacitive load a square wave voltage having equal amplitude positive and negative excursions.

4,533,990

COMPUTER PROCESS CONTROL SYSTEM

Keisuke Takada, and Hiroo Okuhara, both of Tokyo, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 8, 1982, Ser. No. 415,799
Claims priority, application Japan, Oct. 18, 1981, 56-166262
Int. Cl.³ G06F 15/46
U.S. Cl. 364—160 **14 Claims**



1. A process control system for performing process control connected to at least one detecting section for detecting a process variable and generating a corresponding detection signal and to at least one actuator section for changing the process status, said process control system comprising:

at least one microcomputer controlling means, housed in a first case member, for comparing the process variable with a preset target value in response to the detection signal and for subjecting a difference between the process variable and the preset target value, if any, to predetermined operations to produce a first electrical signal for minimizing the difference in a first operation mode;

man-machine interface means, disposed in a second case member and connected to a connector through a first cable extending from said second case member to outside said second case member, for displaying the process variable and the preset target value in response to the detection signal and for allowing an operator to manually adjust a second electrical signal for minimizing the difference in a second operation mode, said second electrical signal being transmitted through said first cable to outside said process control system;

output means, housed in a third case member which has a first surface with a receptacle detachably engaging with said connector of said man-machine interface means and a second surface, for receiving the first and second electrical signals and for selecting and holding one of the first and second electrical signals as an operation signal in accordance with one of the first and second operation modes, said second surface having a signal terminal which is exposed and which electrically transmits the operation signal to outside said process control system; and

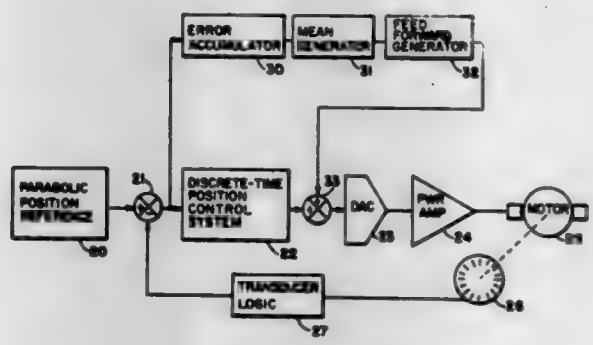
signal relaying means, having a connection panel to which at least said detecting section, said actuator section and said signal terminal of said output means are detachably connected, for transmitting the detection signal to said microcomputer controlling means and said man-machine interface means and for transmitting the operation signal from said output means to said actuator section connected to said connection panel, said signal relaying means, when another controlling means is provided for another control loop, performing its signal transmission operation also for said another controlling means.

4,533,591

ADAPTIVE FEEDFORWARD SERVO SYSTEM

Steven P. Georgis, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Dec. 29, 1982, Ser. No. 454,226
Int. Cl.³ G06F 15/46
U.S. Cl. 364—164 11 Claims



1. A method of controlling a desired parameter, such as angular position or angular velocity, of a movable body such as a motor shaft, during a mode of acceleration or deceleration comprising the steps of:

(a) generating, for the selected mode of operation, a first signal for controlling the movement of said movable body during said selected mode of operation;

(b) applying said first signal to drive means coupled to said movable body to accomplish said selected mode of operation;

(c) generating a plurality of reference values representing the desired value of a selected parameter associated with said movable body, such as angular position or velocity, at predetermined time periods during said selected mode of operation;

(d) measuring, at each of said predetermined time periods during said selected mode of operation, the actual value of said parameter associated with said movable body;

(e) comparing said actual parameter value to said desired parameter value at each of said predetermined time periods and generating a digital parameter error signal representing the difference between said two values at each of said predetermined times;

(f) dividing said digital parameter error signal by a first fixed number having a value of at least two whereby the sensitivity of a least significant bit within said digital parameter error signal to noise is reduced;

(g) summing the divided digital parameter error signals generated in step (f) over a prescribed number of said predetermined time periods to form an error sum signal;

(h) dividing the error sum signal of step (g) by a second number to generate an adaptive error signal, the product of said first and second numbers being greater than the prescribed number of time periods over which said error signals are summed in step (g);

(i) applying said adaptive error signal generated in step (h) to said first signal generated in step (a) to correct for the average parameter error, as determined in steps (e)–(h), during said selected mode of operation; and

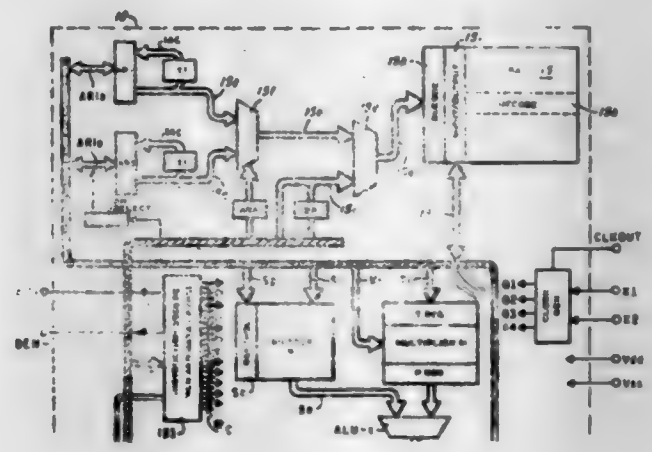
(j) repeating steps (c)–(i) as needed throughout said selected mode of operation so as to regularly update said first signal with the latest average parameter error information associated with said selected mode of operation.

4,533,992

MICROCOMPUTER HAVING SHIFTER IN ALU INPUT

Surendar S. Magar, and Edward R. Caudel, both of Houston, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 22, 1982, Ser. No. 350,959
Int. Cl.³ G06F 7/38
U.S. Cl. 364—200 5 Claims



1. A microcomputer device constructed in a single integrated circuit comprising:

(a) an arithmetic/logic unit having at least one data input of 2N bits and a data output of 2N bits, where N is an integer,

(b) data bus means of N bits in width,

(c) shifter means connecting the data bus means to said one data input of the arithmetic/logic unit; the shifter means having an N-bit input coupled to said data bus means and a 2N-bit output coupled to said one data input of the arithmetic/logic unit;

the shifter means selectively shifting a data word received at said N-bit input from zero bits up to N−1 bits and applying the shifted data word to said one data input of the arithmetic/logic unit,

said shifter means extending the most significant bit of the data word to fill all bits between said most significant bit of the shifted data word and the most significant of said 2N bits of said one data input of the arithmetic/logic unit.

4,533,993

MULTIPLE PROCESSING CELL DIGITAL DATA PROCESSOR

John V. McCanny, and John G. McWhirter, both of Malvern, England, assignors to National Research Development Corp., London, England

Filed Aug. 10, 1982, Ser. No. 406,916
Claims priority, application United Kingdom, Aug. 18, 1981, 8125222
Int. Cl.³ G06F 7/00
U.S. Cl. 364—200 15 Claims

1. A processing system including at least one digital data processor for carrying out a given calculation said at least one digital data processor including:

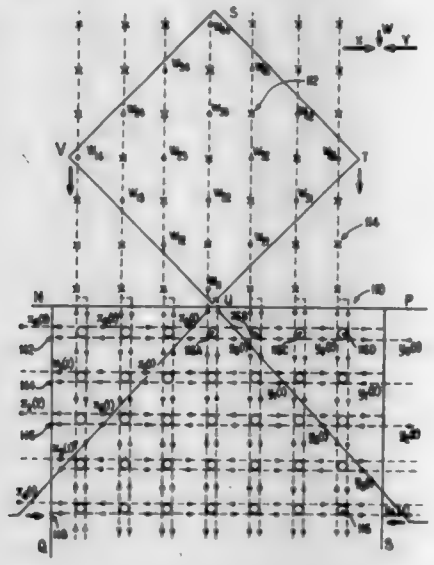
(1) a two-dimensional array of bit-level processing cells each arranged to perform a twos complement multiplication operation upon input bits to produce output bits, at least some of the cells being arranged such that one of the input bits to be multiplied is complemented or uncomplemented according to the value of an input control bit;

(2) a plurality of storing means associated with each processing cell, each storing means being arranged exclusively for receipt and subsequent output of successive bits from a respective cell output in response solely to clock signal activation and delaying successive bits appropriately to cascade array logic operations;

(3) cell interconnection lines arranged in a scheme appropri-

ate for the multiplication and providing cell output bit routes from respective storing means to neighboring cells, the said scheme providing successive predetermined inter-cell paths both for bits input to the array and for cascading array logic operations;

(4) digital data input means responsive to clock signal activation to provide the array with a predetermined flow of input bits appropriate for the multiplication;



(5) clocking means for sole control of calculation execution, the clocking means being arranged to generate clock signals timed to activate the digital data input means and storing means repetitively as appropriate to cascade array logic operations; and

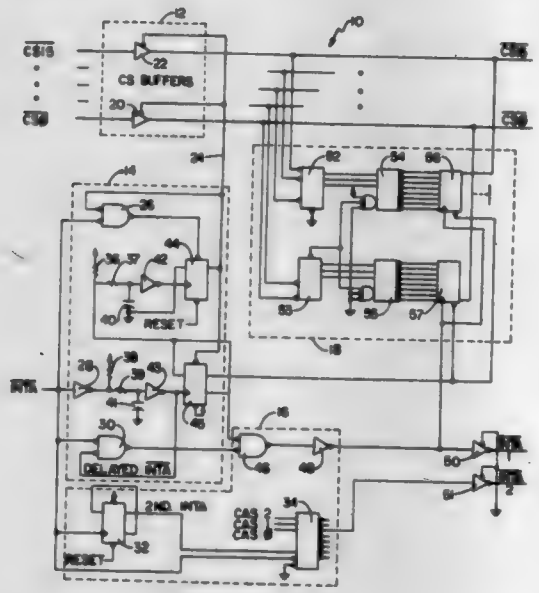
(6) output lines for receiving respective calculation result bits, the output lines being connected to respective processing cell outputs each appropriate to provide output bits resulting from arithmetic logic operations cascaded through the array.

4,533,994

PRIORITY CIRCUIT FOR A MULTIPLEXER TERMINAL

Roy L. Harrill, and James T. Odom, both of Huntsville, Ala., assignors to Avco Corporation, Huntsville, Ala.

Filed Sep. 9, 1983, Ser. No. 530,707
Int. Cl.[3] G06F *9/46*
U.S. Cl. 364—200 5 Claims



1. Priority selecting apparatus for a data multiplexer terminal having in combination a multiplicity of input/output devices each including a logic card connected by a signal line to the multiplexer terminal, a central processor unit capable of generating dual pulse interrupt acknowledge commands at the end of each service cycle, a main memory for storage of data and system busses for connecting all units into an operating whole, wherein the interrupt request and grant signals are time multiplexed across the bussed address signal lines, said priority selecting apparatus comprising:

a card select buffer section, one such buffer serially inserted in each of said signal lines, each buffer being a two state device, in one state enabling passage of data bytes from the input to the output, in its second state blocking transfer of data bytes from the input to the output;

a priority decoder for selecting during each interrupt the binary value of the input/output line having the highest priority of all devices requesting service, said priority decoder being encircuited at the output end of said card select buffers;

signal generator means responsive to the dual pulse interrupt acknowledge command from the central processor unit, said generator producing output signals which maintain all buffers in a disabled state for the duration of the entire interrupt command, then after disabling the buffers activating the priority decoder signalling said decoder to determine which input/output line is to be serviced during the next data cycle, said generator further producing during the second part of said dual pulse interrupt command time interval, an enabling latch signal for the logic card associated with the highest priority line determination, said signal generator returning to a neutral status at the end of said dual pulse interrupt acknowledge command, thereby re-enabling said card select buffers; and

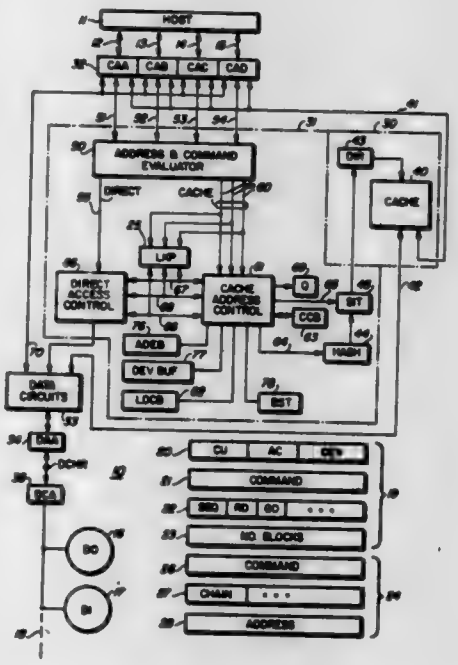
circuit means within each logic card for signifying to the central processor unit the memory location where pertinent data is to be found for servicing the input/output line determined to have highest priority.

4,533,995

METHOD AND SYSTEM FOR HANDLING SEQUENTIAL DATA IN A HIERARCHICAL STORE

John H. Christian; Michael H. Hartung; Arthur H. Nolta; David G. Reed; Richard E. Rieck, and John S. William, all of Pima County, Ariz., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 3, 1981, Ser. No. 289,632
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—200 14 Claims



1. A storage system having connection means connected to a host processor and having a high-speed data cache and a slow-speed backing store connected to said connection means, transferring means connected to said connection means and to said cache and backing store for transferring data between said

cache and backing store, said cache and backing store each having a plurality of addressable data storage registers;

the improvement comprising:

first means coupled to said connection means for receiving from said connection means and storing an intent signal identifying an address of said data storage registers in the backing store for identifying predetermined sequential ones of said data blocks and limit means in the first means for indicating the numerical extent of such data blocks up to a predetermined maximum number of such data blocks to be transferred between said backing store and said cache in a single data transfer operation;

read means in said transferring means and connected to said connection means and to said cache for transferring data, as a peripheral data storage operation, to said connection means from said cache and for storing backing store addresses indicating which of said sequential blocks of signals identified by said stored intent signal were sent to the connection means; and

second means connected to said connection means for receiving read peripheral commands supplied by said host processor, connected to said transfer means and connected to said first means for being responsive to said stored intent signal and a read peripheral command received from said connection means for any one of said identified predetermined sequential data blocks to activate said transfer means to transfer, as a peripheral data storage operation, from said backing store to said cache, all of the said sequential data blocks identified by said received intent signal beginning with said any one of said identified sequential data blocks plus successive ones of said identified data blocks up to said predetermined maximum number of the data blocks and only including those data blocks stored in said backing store indicated by said received intent signal.

4,533,996

PERIPHERAL SYSTEMS ACCOMMODATION OF GUEST OPERATING SYSTEMS

Michael H. Hartung, Pima County, Ariz., and Kenneth P. Nolan, Boulder County, Colo., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 23, 1982, Ser. No. 351,558

Int. Cl.³ G06F *4/00*

U.S. Cl. 364—200 **2 Claims**

1. A peripheral data handling system attachable to a host processor supporting a host operating system and a plurality of guest operating systems (guests), means in said host processor for sending peripheral commands including data storage location addresses to said peripheral data handling system for performing peripheral operations in accordance with said commands wherein said commands supplied by said guests including guest peripheral commands having virtual addresses, and wherein said commands supplied by the said host operating system includes host peripheral commands having real addresses;

the improvement including in combination:

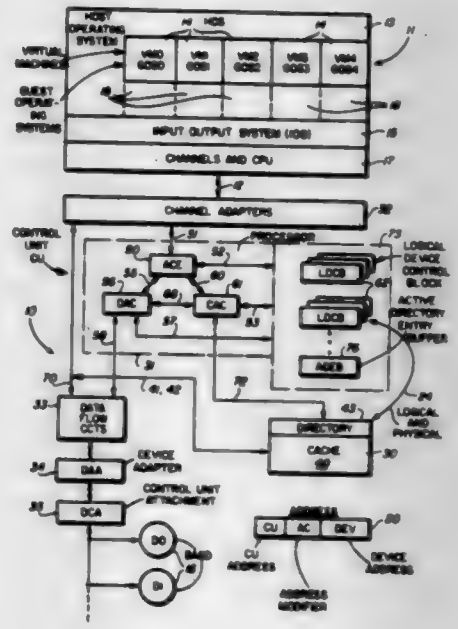
attachment means for being coupled to said host processor for receiving said peripheral commands;

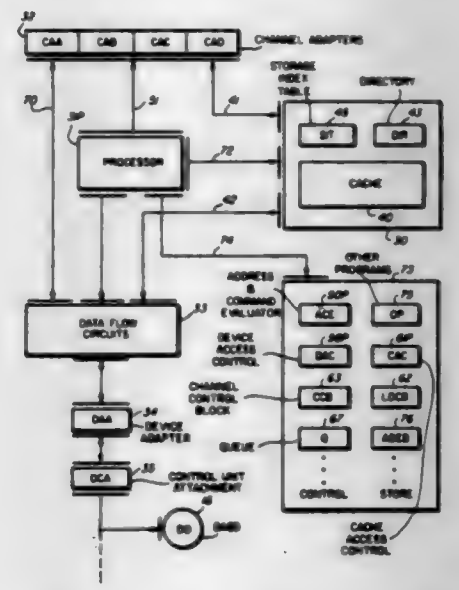
control means in said peripheral data handling system connected to said attachment means for receiving from said host processor a signal indicating that a given chain of commands is sourced from a said guest or said host operating system;

first means connected to said control means and to said attachment means for being responsive to said received ones of said peripheral commands indicated by said signal as being received from said host operating system to translate said received host peripheral commands and execute same in the peripheral data handling system in accordance with the respective command indicators of said peripheral command; and

second means connected to said control means and to said attachment means for being responsive to said received ones of said peripheral commands indicated by said signal as being received from a one of said guests to translate said received guest peripheral commands and execute same in said peripheral data handling system in accordance with the respective command indicators in said received ones of said guest peripheral commands and with said signal such that the extent of command execution is adjusted by said peripheral system by first modifying the respective command indicators by said signal and then executing the respective guest peripheral command to accommodate characteristics of said guest within said host processor;

a buffer connected to said attachment means, said control means, said first means, and said second means for storing data and having a plurality of addressable data storage locations and means for addressing said storage locations;





a plurality of peripheral devices attached to said buffer for transferring data therewith and having a plurality of addressable data storage locations wherein each said received guest peripheral command includes a predetermined data storage address location of a one of said plurality of peripheral devices;

said second means being responsive to a said received guest peripheral command from a guest for accessing said storage locations in said buffer and said peripheral devices by modifying the virtual address signals received with said guest peripheral command from a virtual address to a real address by using the respective said predetermined data storage address for the one peripheral device; and

said first means having addressing means responsive to said real address received with said host peripheral commands

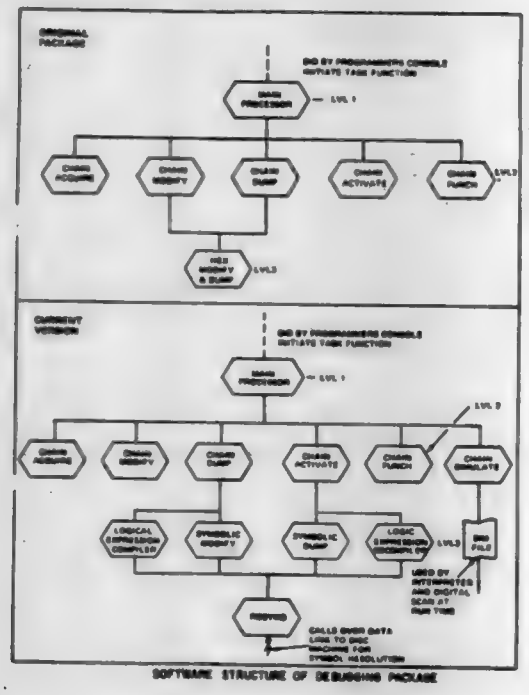
for addressing said storage locations and said peripheral devices in accordance with said received real addresses.

4,533,997

COMPUTER MONITORED OR CONTROLLED SYSTEM WHICH MAY BE MODIFIED AND DE-BUGGED ON-LINE BY ONE NOT SKILLED IN COMPUTER PROGRAMMING

Donald F. Furgerson, Murrysville, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 283,653, Aug. 25, 1972, abandoned. This application Jan. 17, 1980, Ser. No. 112,972
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—200 **7 Claims**



SOFTWARE STRUCTURE OF DEBUGGING PACKAGE

1. A system for controlling the operation of devices in an industrial process, said system including:

a process control digital computer system having a memory;

means for applying input signals from said devices to said computer system;

a plurality of algorithm-defining data sets within the memory of said computer system which specify how the states of some input signals are to be adjusted at least in accordance with the state of other input signals;

means for receiving from said memory and for operating display means to display any of said data sets to a human operator on demand, said receiving and operating means including means for translating said data sets into a terminology with which the human operator is familiar prior to display;

means controlled by a human operator for operating on a displayed data set including means for deleting portions of data sets and means for making additions to data sets so as to generate an edited data set for display and so as to establish or modify the operating configuration of the process devices when such data set is re-entered into said memory;

means for coupling edited and unedited displayed data sets to said memory, said coupling means including means for re-translating said data sets into a machine-executable language prior to storage; and

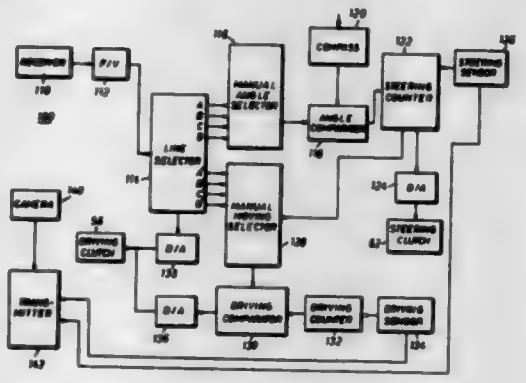
means for generating output signals to operate said devices as a function of the input signals and the data sets as established in said memory and edited from time to time.

4,533,998

CONTROL APPARATUS FOR OMNIDIRECTIONAL, POLAR COORDINATED PLATFORM FOR LAWNMOWER AND THE LIKE

Reza Falamak, P.O. Box 770188, Houston, Tex. 77215

Continuation of Ser. No. 353,250, Mar. 1, 1982, Pat. No. 4,463,821. This application Jul. 6, 1984, Ser. No. 628,337
Int. Cl.³ G06F *15/50*; B62D *1/28*
U.S. Cl. 364—424 **20 Claims**



11. A drivable, steerable platform having control apparatus, said platform comprising:

a frame member, said member being generally disposed in a frame member plane;

at least three wheel assemblies, each of said wheel assemblies including:

first support structure rotatably connected to said frame member such that said support structure rotates about an axis substantially perpendicular to said frame member plane, said first support structure being endlessly rotatable through an angle of 360°;

a wheel member rotably mounted on said first support structure such that said wheel member rotates in a wheel rotation plane about an axis substantially parallel to said frame member plane;

first drive structure to drive said wheel member about its axis of rotation in said wheel rotation plane; and

first steering structure to rotate said first support structure about its axis of rotation, whereby said wheel member is endlessly steerable through an angle of 360°;

a first endless device drivingly connected to each of said first drive structures to rotate each of said wheel members substantially in synchronism;

a second endless device drivingly connected to each of said first steering structures to rotate each of said first support structures substantially in synchronism; and

drive means for selectively driving said first and second endless devices, said means including:

a driving device;

first coupling structure to selectively couple and uncouple said driving device and said first endless device; and

second coupling structure to selectively couple and uncouple said driving device and said second endless device;

wherein the wheel rotation planes of said at least three wheel members are disposed substantially parallel to each other; and

said control apparatus comprising:

line selector means having at least one steering command line and at least one driving command

line for selectively activating at least one of said command lines;

manual angle selector means coupled to said at least one steering command line for outputting a steering angle signal;

compass means for producing a compass signal;

angle comparator means coupled to said manual angle selector means and to said compass means for receiving said

steering angle signal and said compass signal, and for selectively outputting a steering signal;

steering counter means coupled to said angle comparator means for receiving said steering signal, for outputting a steering counter signal, and for outputting a coordination signal;

first means coupled to said steering counter means for receiving said steering counter signal and for outputting an output steering signal;

steering sensor means for sensing the orientation of at least one of said wheel assemblies for

outputting a wheel orientation signal representative of said orientation, and for coupling said wheel orientation signal to said steering counter means;

manual moving selector means coupled to said at least one driving command line and to said steering counter means for receiving said coordination signal and for outputting a drive signal;

driving sensor means for sensing the distance traveled by at least one of said wheel members and for outputting a distance signal;

driving counter means coupled to said driving sensor means for receiving said distance signal and for outputting a distance traveled signal representative of the distance traveled by at least one of said wheel members;

driving comparator means coupled to said manual moving selector means and to said driving counter means for selectively receiving said drive signal, for receiving said distance traveled signal, and for outputting a driving comparator signal; and

second means coupled to said driving comparator means for receiving said driving comparator signal and for outputting an output driving signal.

4,533,999

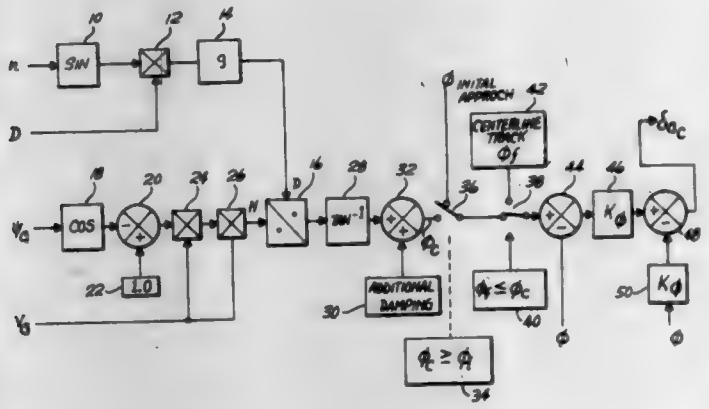
AIRCRAFT ROLL STEERING COMMAND SYSTEM

Antonius A. Lambregts, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Aug. 19, 1981, Ser. No. 294,274

Int. Cl.³ G05D *1/12*

U.S. Cl. 364—429 **10 Claims**



1. Apparatus for providing a roll steering signal ϕ_c to an aircraft on approach to the runway of a landing site wherein said landing site provides a Microwave Landing System (MLS) guidance signal, the apparatus comprising:

means for providing a signal V_G representative of the groundspeed of the aircraft;

means for providing a signal ψ_G representative of the groundtrack angle of the aircraft with respect to the centerline of the runway;

means for providing a signal g representative of the acceleration due to gravity;

means for providing a signal D representative of the range of the aircraft from the source of the MLS guidance signal;

means for providing a signal η representative of the azimuth angle of the aircraft from the source of the MLS guidance signal; and

processing means for predeterminedly processing said V_G, ψ_G, D and η signals to produce said roll steering command signal ϕ_c, said signal ϕ_c being provided to said aircraft for continuously controlling said aircraft to a constant radius turn for following a circular capture path toward the runway centerline.

4,534,000

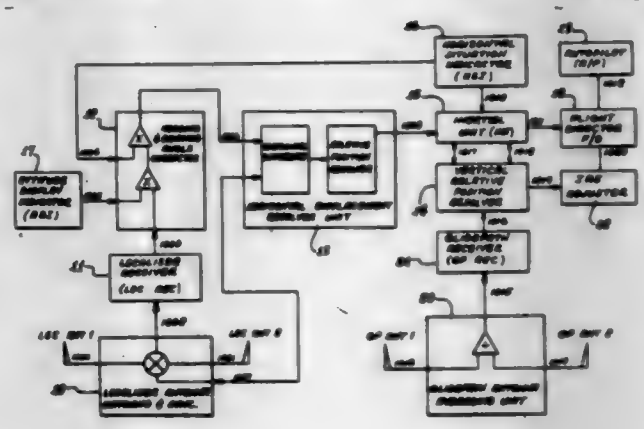
INERTIAL FLIGHT DIRECTOR SYSTEM

John H. Bliss, 2740 Graysby Ave., San Pedro, Calif. 90732

Continuation-in-part of Ser. No. 297,370, Aug. 28, 1981, abandoned, which is a continuation-in-part of Ser. No. 137,307, Apr. 4, 1980, abandoned, which is a continuation of Ser. No. 937,730, Aug. 29, 1978, abandoned, which is a continuation-in-part of Ser. No. 751,801, Dec. 17, 1976, Pat. No. 4,133,503, which is a continuation-in-part of Ser. No. 669,273, Mar. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 608,408, Aug. 29, 1975, Pat. No. 4,021,010. This application Feb. 15, 1984, Ser. No. 580,441

Int. Cl.³ G05D *1/12*; G06G *7/70*; B64C *13/18*

U.S. Cl. 364—428 **15 Claims**



1. In apparatus useful in controlling an aircraft flight path on the final approach to landing, there being a localizer beam transmitted rearwardly toward the aircraft from the landing area, and there being an inertially responsive unit on the aircraft, the combination comprising

(a) dual antennas carried on the aircraft and spaced apart laterally to receive said beam, and

(b) means responsive to the beam signals received by the two antennas to coact with said inertially responsive unit to produce an output for controlling banking of the aircraft so as to minimize deviation of the aircraft inertial flight path from a vertically and rearwardly extending plane at the center of said localizer beam.

4,534,001

NUMERICAL CONTROL SYSTEM

Ryoichiro Nozawa, Shibuya, and Nobuyuki Kiya, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP82/00079, § 371 Date Nov. 15, 1982, § 102(e) Date Nov. 15, 1982, PCT Pub. No. WO82/03282, PCT Pub. Date Sep. 30, 1982

PCT Filed Mar. 23, 1982, Ser. No. 444,574

Claims priority, application Japan, Mar. 23, 1981, 56-042195; Mar. 23, 1981, 56-042196

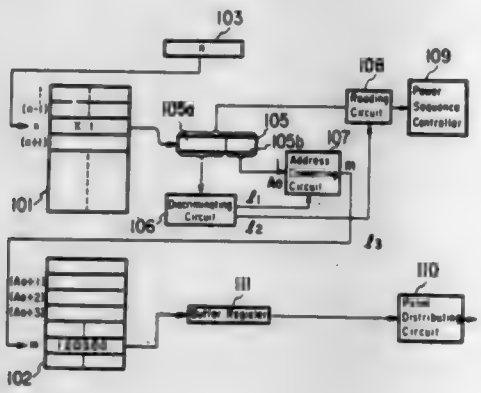
Int. Cl.³ G06F *15/46*; G05B *19/18*

U.S. Cl. 364—474 **7 Claims**

1. A numerical control system, comprising:

memory and controller means for storing a machining program, and including a memory from which machining commands which comprise the machining program are successively read out, and a controller for performing predetermined numerical control processing, where at least the machining commands concerning movements comprise alphabetic letters indicating moving directions and data numbers corresponding to memory locations for storing movement data equivalent to target positions or

movement values, and where said memory is sectioned into, at least, a command area for storing the machining commands, and a data area for storing the various movement data; and



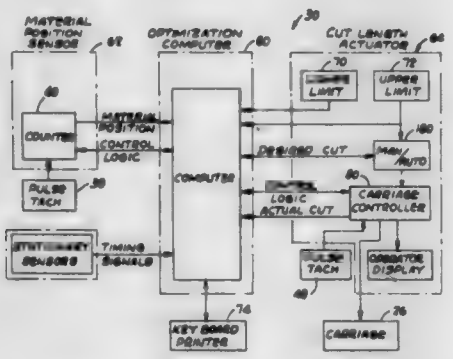
means for, when a predetermined machining command has been read out of the command area, reading out the movement data of the memory location corresponding to the data number of this machining command.

4,534,002

METHOD AND APPARATUS TO OPTIMIZE CUT LENGTHS OF MATERIAL

Robert G. Urban, Euclid, Ohio, assignor to Republic Steel Corporation, Cleveland, Ohio

Filed Jan. 19, 1983, Ser. No. 459,181
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—475 **37 Claims**



11. A material cutting method comprising the steps of:

(a) propelling the material relative to and past a cutting apparatus;

(b) actuating the cutting apparatus to cut a first series of sections of said material in accordance with a first cutting schedule, wherein each of said first series of sections has a length between a first maximum and a first minimum value;

(c) determining the length of a remainder portion of said material yet to be propelled past the cutting apparatus;

(d) determining whether there exists a second cutting schedule for adjusting the cut lengths of at least two sections of said remainder which, if executed, will result in said remainder being entirely cut into sections all of which have a length between said first maximum value and said first minimum value, and

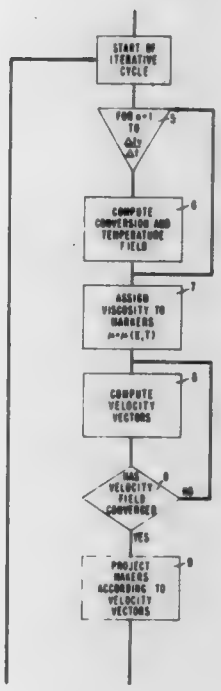
(e) in the event that step (d) determines that such a second cutting schedule exists, cutting said remainder in accordance with said second cutting schedule.

4,534,003

OPTIMIZED REACTION INJECTION MOLDING

Louis T. Manzione, Summit, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Aug. 24, 1981, Ser. No. 295,721
Int. Cl.³ G06F *15/46*; B29G *3/00*
U.S. Cl. 364—476 **9 Claims**



1. A method of making an article by steps comprising flowing at least one fluid into a cavity, and reacting said fluid so as to produce an at least partially polymerized material in said cavity, wherein said fluid comprises a thermosetting fluid, and the parameters of said reacting are chosen so that said fluid in said cavity does not exceed desired limits on at least one of the factors of (1) chemical conversion or (2) temperature, whereby said at least one of the factors is determined by steps comprising simulating said flowing of said fluid by steps comprising dividing said cavity into a plurality of cells, assigning a marker to each cell for carrying information comprising the temperature, chemical conversion, viscosity, and velocity of the fluid in the cell, performing computations to determine said information, moving the marker a distance determined by the computed velocity, and iterating said computations for said fluid during the simulating of said flowing until said cavity is filled with said fluid, and thereafter continuing to compute at least one of said factors, utilizing as an initial condition therefor the final value of said factor computed for the simulating of said flowing.

4,534,004

APPARATUS AND METHOD FOR DETERMINING SIGNAL PARAMETERS OF PERIODIC SQUARE WAVE SIGNALS

Norbert Vollmayr, Traunwalchen, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

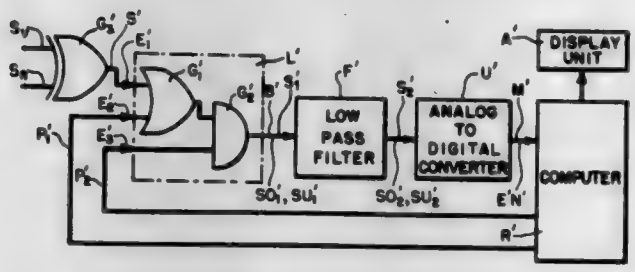
Filed May 20, 1982, Ser. No. 380,272
Claims priority, application Fed. Rep. of Germany, Jun. 6, 1981, 3122702
Int. Cl.³ G01R *29/02*
U.S. Cl. 364—486 **13 Claims**

1. An apparatus for determining at least a signal parameter of at least one square wave signal having an upper voltage level and a lower voltage level, said apparatus comprising:

means, responsive to the at least one square wave signal, for generating a time integral, arithmetic mean, analog signal, the value of which corresponds to the signal parameter, said means for generating the analog signal having an upper limit frequency less than the frequency of the square wave signal;

means, responsive to the analog signal, for generating a first digital signal which corresponds to the analog signal;

a digital computer;



means for supplying the first digital signal to the computer; and

means, included in the computer, for determining the signal parameter in response to the first digital signal.

4,534,005

CHAIN SAW

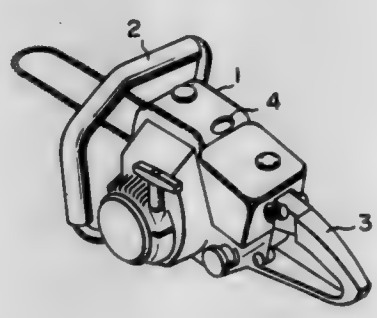
Akira Nagashima, Kawasaki, and Tadashige Kondo, Tokyo, both of Japan, assignors to Kioritz Corporation, Tokyo, Japan

Filed May 10, 1982, Ser. No. 376,819

Claims priority, application Japan, May 14, 1981, 56-71427

Int. Cl.³ F01M *1/18*

U.S. Cl. 364—505 **3 Claims**



1. A chain saw provided with an electromagnetic pump for feeding lubricant to saw chain, comprising an engine speed sensor for sensing the rpm of an engine and a microcomputer for controlling the operation of the electromagnetic pump, wherein;

said microcomputer having stored therein a plurality of stepped lubricant feeding patterns covering the number of actuations of the electomagnetic pump, the actuation frequency and the period of time of each actuation so as to control automatically the feeding of lubricant to the saw chain from the electromagnetic pump in response to the engine speed sensor to effect lubricant feeding in conformity with the sawing condition.

4,534,006

OPERATING ARM UNIT CONTROLLED BY A COMPUTER SYSTEM

Giorgio Minucciani, Moncalieri, and Domenico Sola, Turin, both of Italy, assignors to D.E.A. Digital Electronic Automation S.p.A., Turin, Italy

Filed Dec. 14, 1981, Ser. No. 330,650

Claims priority, application Italy, May 15, 1981, 67647 A/81

Int. Cl.³ G05B *13/00*

U.S. Cl. 364—513 **19 Claims**

1. A computer controlled robotic arm unit comprising:

a fixed body,

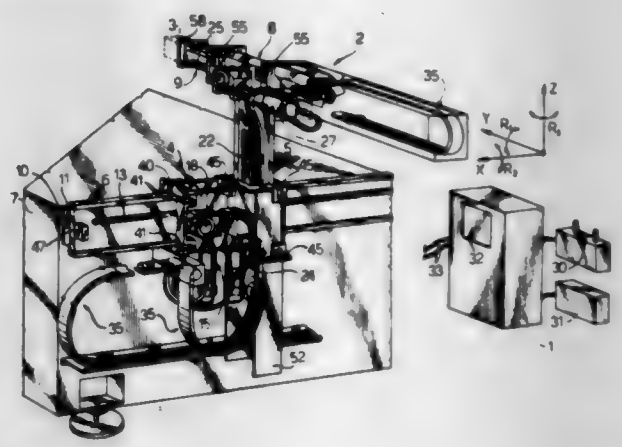
a carriage,

first axis moving means for linearly moving said carriage to said fixed body along a first and substantially horizontal orthogonal cartesian axis,

an elongated column,

second axis moving means for vertically moving said column to said carriage along a second and substantially vertical cartesian axis,

an arm carried by said column, said arm having a work performing member at one end,



third axis moving means for linearly moving said arm along a third and substantially horizontal orthogonal cartesian axis, said third axis being perpendicular to said first axis

wherein said second axis moving means comprises an electric motor, and comprising means for maintaining a substantially constant load on said electric motor.

4,534,007

DISPLACEMENT DETECTING SYSTEM IN A MULTI-AXIS MEASURING SYSTEM, ESPECIALLY FOR USE WITH A GEAR WHEEL GRINDING OR INSPECTING MACHINE

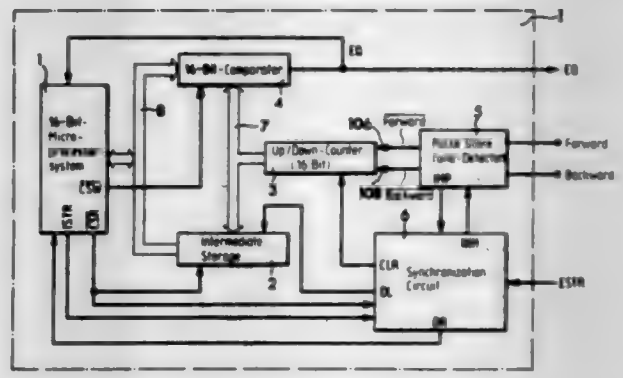
Hans-Ulrich Rhyner, Dübendorf, Switzerland, assignor to Maag Gear-Wheel & Machine Co., Ltd., Zurich, Switzerland

Filed Mar. 7, 1983, Ser. No. 473,091

Claims priority, application Switzerland, Mar. 15, 1982, 1605/82

Int. Cl.³ G06F *15/46*; G05B *19/28*

U.S. Cl. 364—560 **3 Claims**



1. A displacement detecting system in a multi-axis measuring system containing measuring carriages respectively displaceable along a leading axis and at least one other axis in order to generate measuring pulses, especially for use with a gear wheel grinding or inspecting machine, comprising:

a primary computer containing stored therein predetermined restarting points located on the leading axis;

a number of channels corresponding in number to the number of said axes, each channel having a channel input;

each of said channels containing a displacement detector comprising:

a counter for counting a counted value corresponding to the displacement of an associated one of the measuring carriages;

said counter defining an overflow value and having an output;

a comparator having a predetermined bit capacity and an output for supplying a measurement initiating signal in

order to detect a displacement position of at least one of said measuring carriages displaced along said at least one other axis when one of said restarting points is passed by the measuring carriage displaceable along the leading axis;

the output of said comparator being connected to the channel input of the channel associated with the measuring carriage displaceable along said at least one other axis;

a buffer store in which there is stored the counted value present in the counter at the moment when there occurs said measurement initiating signal;

a counter bus connecting said output of said counter to said comparator and to said buffer store;

a microprocessor system including control outputs;

said microprocessor system being connected to said comparator and to said buffer store;

a synchronizer circuit connected to said control outputs of said microprocessor system and provided with a plurality of synchronizer control outputs; and

said plurality of synchronizer control outputs including three synchronizer control outputs respectively connected to said counter, to said buffer store, and to said microprocessor system, in order to block said counter each time prior to reaching said overflow value of the same, to transfer the contents of said buffer store containing the contents of said counter to said microprocessor system, to reset and to reactivate said counter until said counted value of said counter prior to reaching one of said restarting points does not amount to said overflow value of the counter and until said comparator, which has received from the microprocessor system the count remaining up to said restarting point and lying within said bit capacity of said comparator, delivers said measurement initiating signal when said remaining count conforms with a latest count counted by said counter.

4,534,008

PROGRAMMABLE LOGIC ARRAY

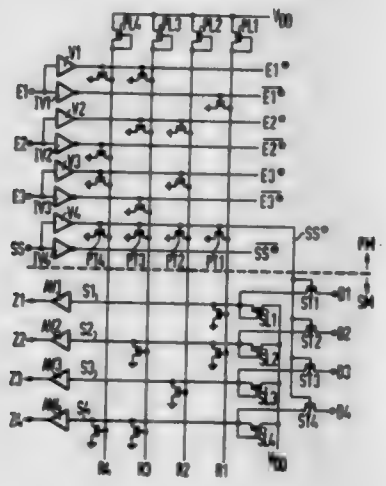
Peter Fuchs, Munich; Klaus Mueller-Glaser, Neuried; Dieter Schuett, Munich, and Wolfgang Wach, Oberschleissheim, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,311

Claims priority, application Fed. Rep. of Germany, Apr. 27, 1982, 3215671

Int. Cl.[3] H03K *19/08*

U.S. Cl. 364—716 7 Claims



1. In a programmable logic array of the type in which a product matrix includes product lines and control lines connected to input terminals, in which true and inverted control signals on the control lines link the control lines to the product lines in accordance with a predetermined first programming rule defined by a plurality of first semiconductor components connected at selected crosspoints of the product and control lines, in which the plurality of first semiconductor components selectively places a high or low binary signal on or does not influence the product lines in response to the control signals, and in which a sum matrix includes sum lines forming crosspoints with the product lines and a plurality of second semiconductor components at selected crosspoints in accordance with a predetermined second programming rule, and in which the second plurality of semiconductor components are controlled by the product signals on the product lines to selectively place high or low binary signals on or to not at all influence the sum lines, the improvement therein comprising:

first and second additional control lines for carrying respective additional first and second control signals;

a plurality of third semiconductor components connected between said first additional control line and at least some of the product lines and operated by said first additional control signals for linkage with these product lines; and

a plurality of transfer elements connected to said second additional control line and connected between further input terminals and the sum lines and operable in response to the second additional control signals to connect the sum lines and the additional input terminals.

4,534,009

PIPELINED FFT PROCESSOR

Kevin J. McGee, Newport, R.I., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 10, 1982, Ser. No. 376,468

Int. Cl.[3] G06F *15/34*

U.S. Cl. 364—726 9 Claims



6. A system of calculating the Fast Fourier Transform of data comprising:

a plurality of serially connected subsystems with each subsystem including a subsystem first and second input terminal, a switch having first and second input terminals and first and second output terminals with said switch first input terminal connected directly to said subsystem first input terminal, a first delay having an input and output terminal with said first delay input terminal connected directly to said subsystem second input terminal and said first delay output terminal connected directly to said switch second input terminal, a second delay having an input and output terminal with said second delay input terminal connected directly to said switch first output terminal, and an arithmetic element having a first and second input terminal and a first and second output terminal with said arithmetic element first input terminal connected directly to said second delay output terminal and said arithmetic second input terminal connected directly to said switch second output terminal; and

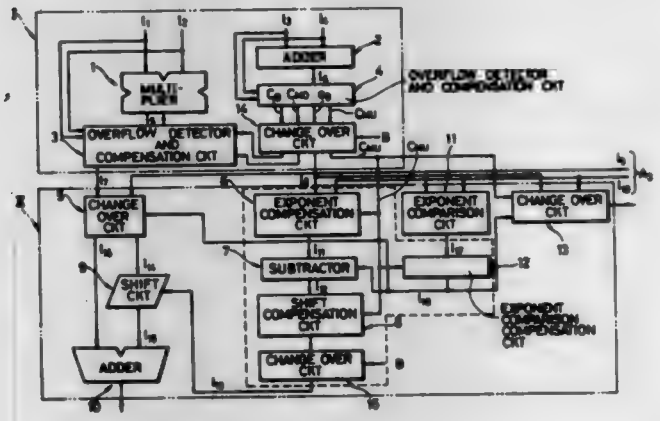
the first serially connected subsystem and the last serially connected subsystem have the same number of locations in their respective first and second delays.

4,534,010

FLOATING POINT TYPE MULTIPLIER CIRCUIT WITH COMPENSATION FOR OVER-FLOW AND UNDER-FLOW IN MULTIPLICATION OF NUMBERS IN TWO'S COMPLIMENT REPRESENTATION

Masahito Kobayashi, Yokohama; Narimichi Maeda, Tachikawa; Yoshimune Hagiwara, Kodaira; Takashi Akazawa, Kodaira, and Shizuo Sugiyama, Kodaira, all of Japan, assignors to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Oct. 21, 1981, Ser. No. 313,507
Claims priority, application Japan, Oct. 31, 1980, 55-152053
Int. Cl.[3] G06F *7/52*
U.S. Cl. 364—748 4 Claims



1. An arithmetic circuit for compensation of overflow and underflow in the processing of numbers in two's complement representation comprising first circuit means having a multiplier for multiplying the mantissas of first and second floating point numbers in two's compliment representation and an adder for adding the exponents of said first and second floating point numbers; and second circuit means for adding the outputs of said multiplier and said adder to a third floating point number in two's complement representation; wherein said first circuit means includes first detector means connected to said adder for detecting over- and under-flow conditions of the output of said adder, first compensation means connected to said adder for compensating the output of said adder for a detected over-flow condition prior to application of said output of said second circuit means, second detector means connected to said multiplier means for detecting over-flow of the output of the multiplier resulting from multiplication of said mantissas and second compensation means connected to said multiplier for compensating said over-flow of the output of said multiplier prior to application of said output to said second circuit means; and wherein said second circuit means includes third compensating means responsive to the output of said first detector means for compensating the output of said adder in said first circuit means for a detected underflow condition as part of the adding operation of said second circuit means.

4,534,011

PERIPHERAL ATTACHMENT INTERFACE FOR I/O CONTROLLER HAVING CYCLE STEAL AND OFF-LINE MODES

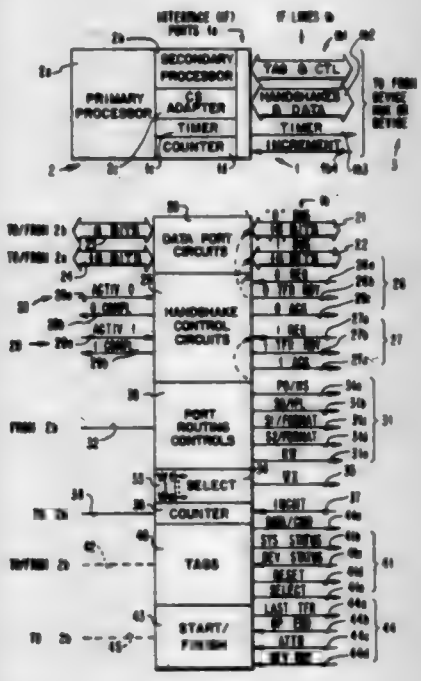
Lawrence P. Andrews; Chester A. Heath; Justin E. Mead; Richard G. VanDuren, and Gary A. Janes, all of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Feb. 2, 1982, Ser. No. 345,129
Int. Cl.[3] G06F *15/16*
U.S. Cl. 364—900 7 Claims

1. An interface for connecting a plurality of different types of devices to a data processor comprising:

data port means connected to said processor and devices, and providing a plurality of signal routing paths between said processor and devices, for transferring data signals to and from said processor in a plurality of different bit-parallel formats and from and to said devices in a plurality of different bit-parallel formats;

handshaking port means connected to said processor and devices for exchanging handshaking control signals with said processor and devices in a plurality of different handshaking formats associated with different said bit-parallel formats, said handshaking means directing transfersd of said handshaking control signals in varying formats between said processor and devices for controlling transfers of data in respectively associated varying bit-parallel formats;



a timer port controlled by command signals from said processor for transferring differing timing reference signals to said devices in conformance with differing data transfer characteristics of said devices;

a source of plural different timing signals;

means for selectively connecting any one of the timing signal produced by said source to said timer port; and

means coupled to said handshaking port means and said timer port for selectively connecting said timer port to said handshaking port means, whereby timing signals transferred to said timer port are applied selectively as handshaking control signals.

4,534,012

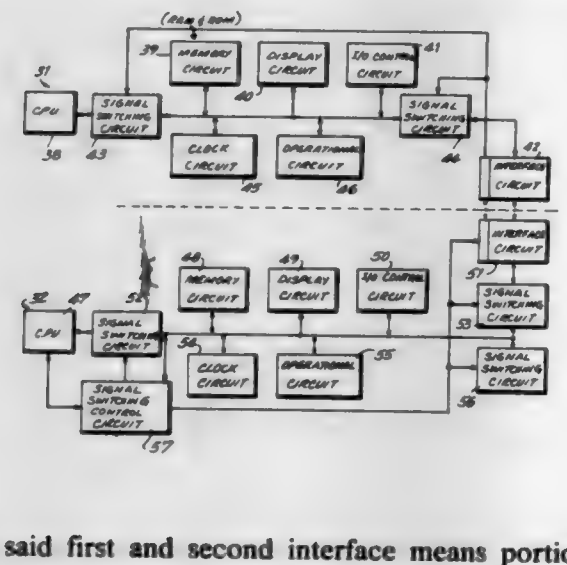
PORTABLE PROGRAMMABLE INFORMATION DEVICE AND EXTERNAL PROGRAMMING STATION

Yukio Yokozawa, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation of Ser. No. 283,260, Jul. 14, 1981, abandoned. This application Dec. 5, 1983, Ser. No. 558,559
Claims priority, application Japan, Jul. 16, 1980, 55-97247; Jul. 31, 1980, 55-105305; Aug. 20, 1980, 55-114169; Mar. 2, 1981, 56-29557
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—900 14 Claims

1. A small-sized portable information system comprising a small-sized portable programmable information device including a first central processing unit, first memory means coupled to said first central processing unit for storing programs and data, first display means coupled to said first central processing unit, first input means coupled to said first central processing unit for the actuation thereof and a first power supply coupled to said first central processing unit, first memory means, first display means and first input means for powering same; a first external station including a second central processing unit, second memory means coupled to said second central processing unit for storing programs and data, second display means coupled to said second central processing unit, second input means coupled to said second central processing unit for the

control thereof and a second power supply coupled to said second central processing unit, second memory means, second display means and second input means for powering same; said first external station being adapted to receive a source program, said first external station including compiler means for compiling said source program, said source program being compiled by said compiler means and converted into an object program; an interface means including a first interface means portion mounted on said portable information device and a second interface means portion mounted on said first external



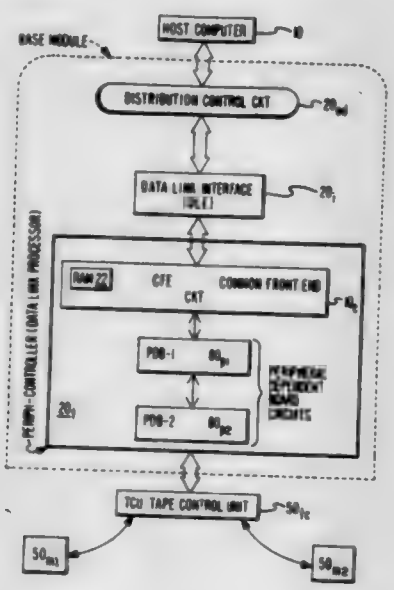
station, said first and second interface means portion being adapted, when coupled, to permit the transfer of said object program from said first external station to said first memory means of said portable information device to program said portable information device to perform said object program, and to permit the transfer of a plurality of data including alphanumeric characters from said first external station to said first memory means of said portable information device, said portable information device being a wristwatch which includes timekeeping circuitry means for keeping actual constant time.

4,534,013

AUTOMATIC WRITE SYSTEM FOR PERIPHERAL-CONTROLLER

Jayesh V. Sheth, El Toro, Calif., assignor to Burroughs Corporation, Detroit, Mich.

Filed Jun. 30, 1983, Ser. No. 509,796
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—900 6 Claims



1. In a network wherein data words are transferred between a main host computer and a magnetic tape peripheral unit via a peripheral-controller, wherein said peripheral-controller is initiated by commands from said host computer to execute data word transfer operations and said peripheral-controller includes a common control circuit unit for sequencing micro-code instructions and a peripheral dependent circuit unit for managing said tape peripheral unit, said peripheral dependent circuit unit having its own internal basic clock unit, an automatic write-logic system for transfer of data words from said host computer to a tape peripheral unit without requiring continuous instructions from said common control circuit unit, said automatic write-logic system comprising:

(a) buffer memory means in said peripheral-controller for temporarily storing blocks of data words being transferred, said buffer memory means having channels of connection to said tape peripheral unit and said host computer;

(b) automatic selection and control means, activated by said common control circuit unit, for enabling an automatic write-logic unit;

(c) a tape control unit connecting a plurality of magnetic tape peripheral units to said peripheral dependent circuit unit and wherein said tape control unit provides synchronizing signals to said peripheral dependent circuit for the transfer of data words out of said buffer memory means;

(d) said automatic write-logic unit functioning, when enabled by said automatic selection and control means, to operate latch register means which provide a data transfer channel from said buffer memory means to said tape control unit, said automatic write-logic unit including:

(d1) latch register means for receiving data words from said buffer memory means for transfer to said tape control unit;

(d2) latching logic means functioning to control said latch register means, said latching logic means receiving input signals from a flag logic circuit means;

(d3) flag logic circuit means connected to receive synchronization and control signals from a synchronization logic means and functioning to provide synchronizing control signals to said latching logic means;

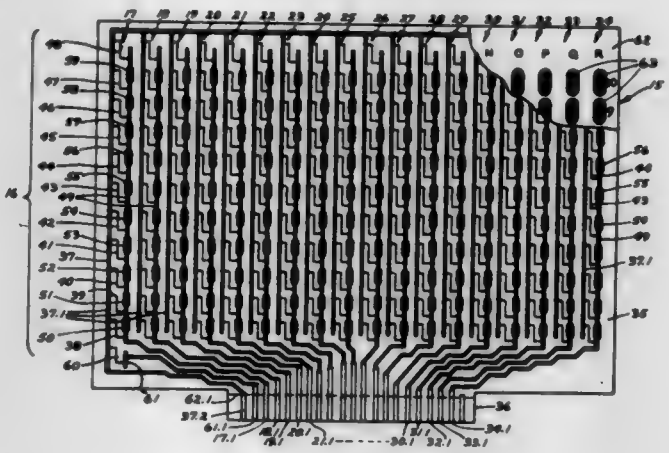
(e) said synchronization logic means receiving clock signals from said tape control unit and providing synchronizing signals to said flag logic circuit means.

4,534,014

MECHANICALLY PROGRAMMABLE READ ONLY MEMORY

Oliver C. Ames, Rte. 2, Box 52A, Clear Lake, Wis. 54005

Filed Jun. 20, 1983, Ser. No. 505,951
Int. Cl.[3] G11C *17/00*
U.S. Cl. 365—100 19 Claims



1. A mechanically programmable read only memory for use with reading circuitry and comprising,

an insulating substrate having a face and an edge portion,

circuit interrupter means including a removable support area on the substrate,

a plurality of resistors on the substrate adjacent the circuit interrupter, each of the resistors having first and second connection ends,

a conductor bus on the substrate and having a connector portion, the bus having connection with the first ends of said resistors, and

a printed conductor on the substrate and traversing said support area, the printed conductor having spaced portions on opposite sides of the support area and respectively connected with the second ends of a pair of the resistors, the printed conductor having a connection portion adjacent one of the resistors, and the printed conductor being opened and disconnected with removal of said support area for disconnecting one of said resistors.

4,534,015

INFORMATION HOLDING DEVICE

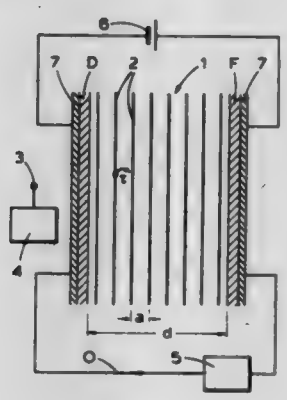
Edward G. Wilson, London, England, assignor to QMC Industrial Research Limited, London, England

Filed Sep. 20, 1982, Ser. No. 420,000

Claims priority, application United Kingdom, Oct. 5, 1981, 8130024

Int. Cl.³ G11C *13/08*

U.S. Cl. 365—106 **18 Claims**



1. A memory for carrying information comprising a multilayer Langmuir-Blodgett film in which each layer is capable of carrying a charge; means for introducing charges into one side of the film in a time sequence which corresponds to the information to be carried, means for applying a voltage between the faces of the film to cause the charge carried by any layer to be transferred to the adjacent layer, and means for reading out the sequence of charges carried by the film.

4,534,016

BEAM ADDRESSED MEMORY SYSTEM

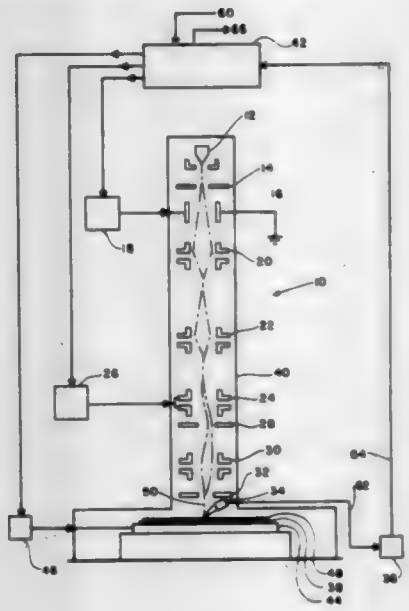
Conilee G. Kirkpatrick, Thousand Oaks, Calif.; Michael S. Adler, and George E. Possin, both of Schenectady, N.Y., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 8, 1983, Ser. No. 512,070

Int. Cl.³ G11C *11/42*

U.S. Cl. 365—128 **8 Claims**

1. A beam addressed memory system for digital memory recording and reading which comprises electron beam generating and focusing means, electron detecting means, a data storage medium, means for positioning said storage medium, a vacuum chamber, and electronic control and interface circuit means, wherein said data storage medium consists essentially



of a crosslinkable polymeric film having an implanted surface layer of heavy metal ions.

4,534,017

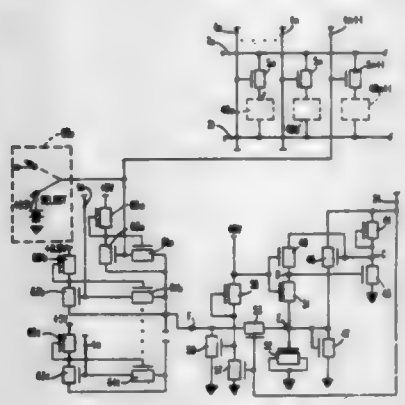
FET MEMORY WITH DRIFT REVERSAL

David R. Thomas, Lexington, Ky., and Paul C. Tien, Redondo Beach, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 29, 1981, Ser. No. 316,160

Int. Cl.³ G11C *11/24*

U.S. Cl. 365—149 **5 Claims**



1. A memory having capacitive sites to be selectively charged to store bits of data,

a plurlity of first field effect transistors, each connected as a switch and having a first terminal and a second terminal with connection between said terminals controlled by a gate, said first terminal of each of said first transistors being connected to different ones of said sites,

means connecting said gates of said first transistors to a first source of potential, said first source of potential being above ground in an amount substantially equal to the threshold of said first transistors, said threshold being a substantial potential between said gate and said first terminal which just renders each said first transistor conductive between said first terminal and said second terminal,

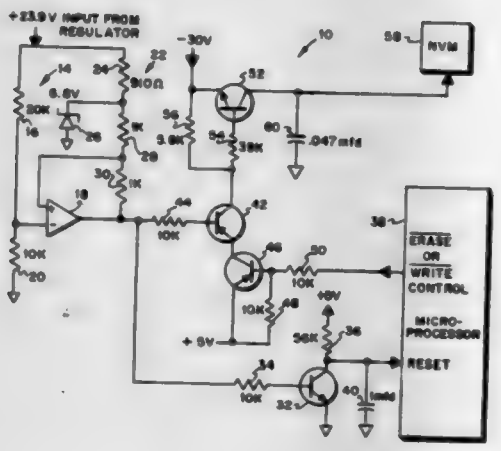
means connecting said second terminal of said first transistors to a second source of potential, said second source of potential being above ground in an amount substantially above said threshold, and

means to selectively connect a third source of potential to the gates of said first transistors, said third source of potential being substantially above said threshold to effect reading of the charge status of one of said capacitive sites.

4,534,018
NON-VOLATILE MEMORY PROTECTION CIRCUIT WITH MICROPROCESSOR INTERACTION

Alton B. Eckert, Norwalk, Conn., and Easwaran C. N. Nambudiri, Hicksville, N.Y., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Apr. 29, 1983, Ser. No. 489,971
Int. Cl.[3] G11C *11/40*; G06F *1/00*
U.S. Cl. 365—228 15 Claims



4. Apparatus for controlling the erasure and writing of data in non-volatile memory of a microprocessor controlled electronic postage meter, comprising:

comparator means with an output terminal for providing output voltages in response to an input voltage signal;

reset signal means electrically coupling the output terminal of said comparator means to the microprocessor which inhibits the generation of erase and write signals in the absence of a predetermined control output voltage at the output of said comparator means;

erase and write control means electrically coupled between a control terminal of the microprocessor and the output terminal of said comparator means;

non-volatile memory switching means electrically coupled to said erase and write control means for supplying an enabling voltage to the non-volatile memory when said non-volatile memory switching means is activated in response to the presence of a control signal from the control terminal of the microprocessor and the presence of the predetermined control output voltage at the output of said comparator means;

said comparator means providing the predetermined control output voltage at its output terminal at a first specified voltage level during a power up cycle and removing the predetermined control output voltage from its output terminal at a second specified voltage level during a power down cycle, the first specified voltage level being greater than the second specified voltage level.

4,534,019
COMMON-DEPTH-POINT METHOD FOR DETERMINING AND DISPLAYING THE SHEAR-VELOCITY REFLECTIVITIES OF A GEOLOGIC FORMATION

Ralphe Wiggins; George S. Kenny, and Carroll D. McClure, all of Dallas, Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1981, Ser. No. 335,437
Int. Cl.[3] G01V *1/00*
U.S. Cl. 367—75 6 Claims

1. A method for determining and displaying at least shear-velocity reflectivities of geologic formations using a compressional common-depth-point seismic data gathering technique, comprising:

(a) collecting a common-depth-point gather of amplitudes for a plurality of angles of incidence (theta) of less than 30°, said angles of incidence (theta) being the angles between the wave normals and the interface normals;

(b) estimating the values of $\sin^2$ (theta) for each of said angles of incidence;

(c) fitting a linear function to the amplitudes vs. $\sin^2$ (theta) for a plurality of points of reflection within said gather;

(d) determining the coefficients of said linear function;



(e) estimating at least the values of shear-velocity reflectivity of said points of reflection by summing said coefficients; and

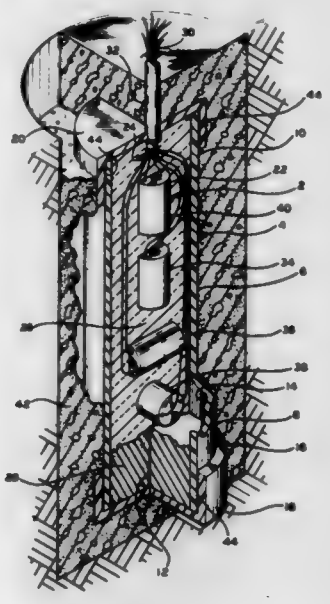
(f) displaying said values in a display configured to generally correspond to a section of said geologic formation,

whereby the nature of shear-velocity reflectivity of said geologic formation is represented by said display.

4,534,020
APPARATUS AND METHOD FOR DETECTING SEISMIC WAVES

John T. O'Brien, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 19, 1981, Ser. No. 313,037
Int. Cl.[3] G01V *1/16*
U.S. Cl. 367—188 5 Claims



1. An apparatus useful in down hole detection of seismic waves comprising:

(a) a thermoplastic, tubular member having a first end, a second end, and a longitudinal axis;

(b) a first closure means positioned at the first end of the thermoplastic, tubular member, isolating the inside of the tubular member from the outside;

(c) first geophone having a principal axis of sensitivity positioned so that its principal axis of sensitivity is generally parallel to the longitudinal axis of the tubular member;

(d) a second closure means positioned at the second end of the thermoplastic, tubular member and isolating the inside of the tubular member from the outside;

(e) a first pair of wire leads extending from the first geophone and through the second closure means;

(f) a second geophone having a principal axis of sensitivity

positioned with its principal axis of sensitivity at about a right angle with the principal axis of sensitivity of the first geophone;

(g) a second pair of wire leads extending from the second geophone and through the second closure means;

(h) a third geophone having a principal axis of sensitivity positioned with its principal axis of sensitivity at about a right angle with the principal axis of sensitivity of the first geophone and the principal axis of sensitivity of the second geophone;

(i) a third pair of wire leads extending from the third geophone and through the second closure means;

(j) a mass of polymeric material surrounding each of the first, second and third geophones, the geophones being embedded in said polymeric material and

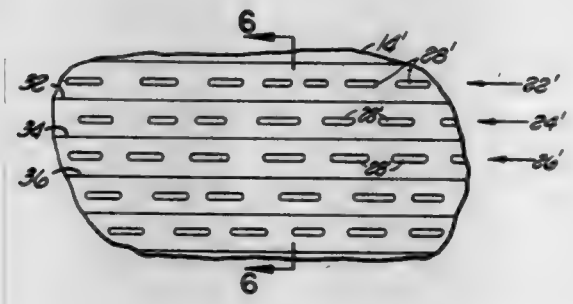
(k) a mass of a second material positioned in a lower portion of the thermoplastic, tubular member, said second material having a density greater than that of the anticipated borehole fluids.

4,534,021

ANGULARLY MULTIPLEXED OPTICAL RECORDING MEDIUM

William V. Smith, Irvine, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Dec. 10, 1981, Ser. No. 329,374
Int. Cl.³ G11B *7/00*
U.S. Cl. 369—47 **5 Claims**



1. Apparatus for reading an optically readable recording medium having a first and a second set of elongate recording surfaces inclined at different angles with respect to one another and having a first and a second set of optically readable information tracks thereon, respectively, comprising:

scanning means for scanning a projected spot of light along said first and along said second set of tracks;

a first pair of photodetectors arranged so as to detect the light from said spot which emanates from said first set of tracks, the first one of said first pair of photodetectors being positioned so as to detect a first portion of said emanative light, and the second one of said first pair being positioned so as to detect a second portion of said emanative light which is spatially distinct from said first portion;

a second pair of photodetectors arranged so as to detect the light from said spot which emanates from said second set of tracks, the first one of said second pair of photodetectors being positioned so as to detect a first portion of said emanative light from said second set of tracks, and the second one of said second pair being positioned so as to detect a second portion of said emanative light from said second set of tracks which is spatially distinct from said first portion of light from said second set of tracks;

first adjustment means for combining in controllably variable relative amounts the signals from said first and said second ones of said first pair of photodetectors; and

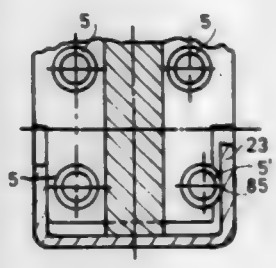
second adjustment means for combining in controllably variable relative amounts the signals from said first and said second ones of said second pair of photodetectors, whereby additive and substractive signal contribution from adjacent tracks can be controllably combined so as to null their effect.

4,534,022

PHONOGRAPH PICK-UP WITH IMPROVED SHIELD GROUNDING

Michael Leipnitz, Am Eichenquast 37, 1000 Berlin 47, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 517,112
Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228299
Int. Cl.³ G11B *3/02*; H04R *11/12*
U.S. Cl. 369—170 **4 Claims**



1. A phonograph pick-up head comprising

a carrying member,

a pick-up cartridge secured to the carrying member, and comprising a mount and an electromagnetic system having coils and pole pieces fitted to said mount, a screening shell surrounding said coils and pole pieces, and connector pins fixed to said mount and electrically connected to the coils, and

means for electrically connecting said screenig shell to one connector pin,

wherein said shell is a tubular shell having an inner surface,

said connector pins are arranged in an asymmetrical pattern, said one pin being disposed at a location offset outwardly such that said one pin is in direct metallic contact with a portion of said inner surface of said shell, and

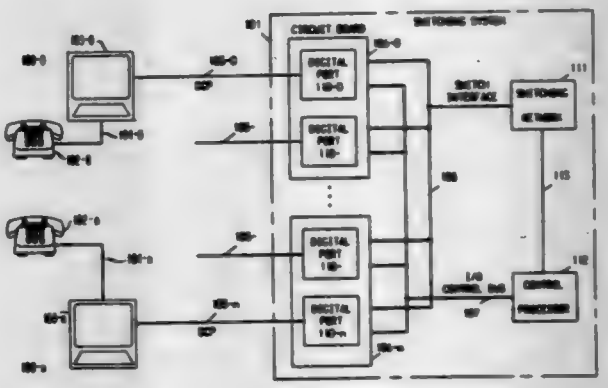
said means consists of said direct metallic contact with said shell.

4,534,023

PLURAL COMMUNICATION CHANNEL PROTOCOL SUPPORT SYSTEMS

Stephen R. Peck, Boulder, and John B. Sharp, Denver, both of Colo., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Oct. 7, 1983, Ser. No. 539,813
Int. Cl.³ H04Q *11/04*
U.S. Cl. 370—58 **27 Claims**



1. In a stored program controlled communication system having a processor, a plurality of ports connected by lines to associated stations and a switch for controllably interconnecting said ports, said system further comprising:

means in each port for receiving from an associated station time multiplexed information in the form of cyclically reoccurring frames wherein each frame has a plurality of

fields including an information (I) field and a signalling (S) message field,

means in each port for applying the I field information of each received frame to said switch for extension to another port,

means in each port for assembling the received S field bits of successive frames into groups to form signalling messages,

a receive register in each port,

means in each port for entering each signalling message formed within said port into said receive register of said port,

means in each port responsive to the presence of a signalling message in said receive register of said port for generating a port data ready signal,

said processor being operative for cyclically scanning said ports for the presence of a data ready signal,

said processor being further operative in response to the presence of a data ready signal in a scanned port for applying a read signal to said scanned port, and

means in a scanned port responsive to the receipt of a read signal from said processor for applying a signalling message currently in said receive register of said port to said processor.

4,534,024

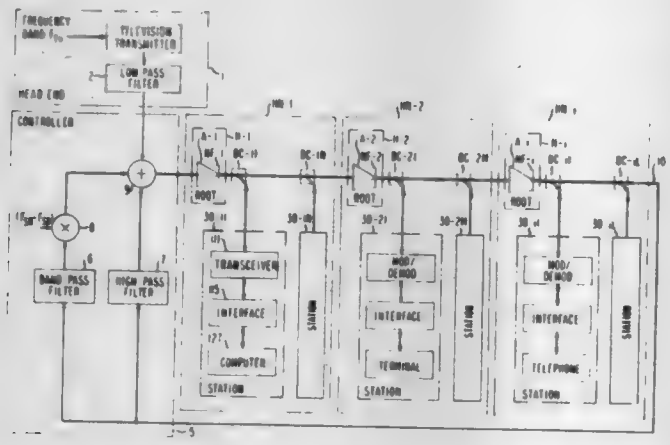
SYSTEM AND METHOD FOR CONTROLLING A MULTIPLE ACCESS DATA COMMUNICATIONS SYSTEM INCLUDING BOTH DATA PACKETS AND VOICE PACKETS BEING COMMUNICATED OVER A CABLE TELEVISION SYSTEM

Nicholas F. Maxemchuk, Mountainside, and Arun N. Netravali, Westfield, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 2, 1982, Ser. No. 446,192

Int. Cl.[3] **H04J** *3/02, 3/00, 6/00;* **H04Q** *11/04*

U.S. Cl. 370—85 **20 Claims**



1. A communication system, said system including a communications path having a headend and at least one branch, a plurality of stations along said communication path which stations are grouped into home networks, at least two of said stations being adapted to be coupled to said communication path, and CHARACTERIZED IN THAT

said communication path including a plurality of first and second type signaling channels and at least one channel assigned to each home network;

said at least two stations including a source station and a destination station;

said source station being adapted to transmit a signaling packet on a first type communication path signaling channel to the headend of said communication path and therefrom to said home networks on a second type signaling channel, said signaling packet for signaling said destination station that said source station has at least one information packet for said destination station;

said destination station being adapted to determine the home network of said source station in response to said signaling packet;

at said destination station, means for determining the home network of said source station; and

means for coupling a destination station receiver to the channel assigned to said source station home network.

4,534,025

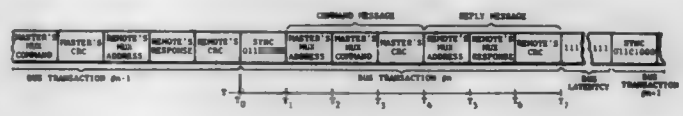
VEHICLE MULTIPLEX SYSTEM HAVING PROTOCOL/FORMAT FOR SECURE COMMUNICATION TRANSACTIONS

William M. Floyd, Livonia, Mich., assignor to United Technologies Automotive, Inc., Dearborn, Mich.

Filed Feb. 24, 1983, Ser. No. 469,591

Int. Cl.[3] **H04J** *3/02, 3/00, 6/00*

U.S. Cl. 370—85 **14 Claims**

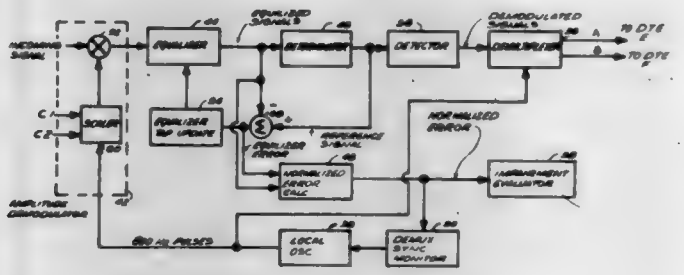


1. A time-division multiplex system for use in an automotive vehicle electrical system subject to an environment of electrical noise, said system including a master controller, one or more remote slave controllers, and serial bus means connecting said master controller with said remote controllers, each said remote controller being capable of receiving and revealing input signals from and/or being capable of providing output signals to one or more respective input and/or output devices, each said remote controller having a particular different address and being responsive to a command for providing a commanded output signal to a respective said one or more output device and/or receiving and revealing an input signal from a respective said one or more input device, said serial bus means including a data bus, said master controller and said respective remote controllers being interactively controlled by a serial data protocol/format on said data bus, said protocol/format comprising successive transactions between said master controller and respective said remote controllers, each said transaction comprising bidirectional, multibyte messages, said master controller including means for providing a multibyte command message and transmitting said message serially to said remote controller means via said data bus, said command message including a particular address byte and a command byte, each said remote controller being responsive to its respective particular address byte and to a said command byte received thereat in said command message for providing a respective said commanded output signal and/or respective said commanded input signal, said addressed remote controller including means for replying to receipt of its particular address byte by providing a multibyte reply message and for transmitting said message serially via said data bus to said master controller, said reply message including the particular address byte of the respective said remote controller means and a response byte indicative of a response to said command received by said remote controller, said master controller including means responsive to receipt of said reply message for verifying that said address byte therefrom conforms with said address byte previously transmitted from said master controller in said transaction and that said response byte therefrom is indicative of the anticipated response to said command byte previously transmitted from said master controller in said transaction and, absent said verification or anticipated response, for at least once repeating said transmission of said command message from said master controller.

4,534,026
NORMALIZED ERROR COMPENSATOR FOR MODEMS USING RADIAL AMPLITUDE MODULATION FOR MULTIPLEXING

Kenneth Martinez, Pinellas Park, and William L. Betts, Madeira Beach, both of Fla., assignors to Paradyne Corporation, Largo, Fla.

Filed Dec. 6, 1983, Ser. No. 558,610
Int. Cl.³ H04J 3/06
U.S. Cl. 370—100 **3 Claims**



1. A receiver for receiving a series of multiplexed data signals having radial amplitudes selected between a first and second value, every second signal having the same amplitude for demultiplex synchronization comprising:

means for demodulating said multiplexed data signals to produce demodulated signals including means for determining an ideal point for each received signal as mapped in a complex plane;

means for generating an error signal corresponding to said received data signals including means for determining the algebraic difference between said ideal point and the corresponding received signal;

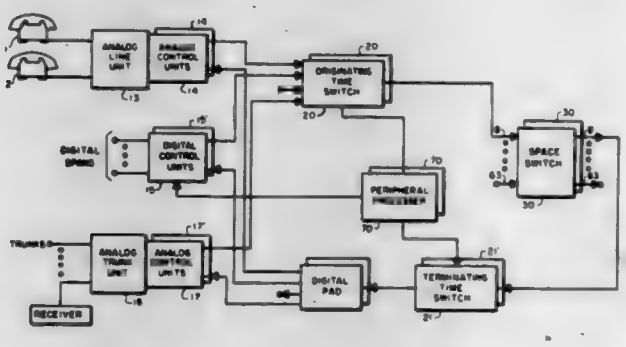
means for generating a synchronizing signal in accordance with said error signal; and

means for demultiplexing said demodulated signals in accordance with said synchronizing signal.

4,534,027
DUPLEX DIGITAL SPAN CONVERSION CIRCUIT ARRANGEMENT

Thomas J. Perry, Phoenix, Ariz., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Jun. 22, 1983, Ser. No. 506,490
Int. Cl.³ G06F 11/20
U.S. Cl. 371—8 **14 Claims**



1. In a telecommunications switching system, a conversion circuit arrangement connected between a plurality of digital spans and a switching network of said switching system for converting received data from said digital spans, said conversion circuit arrangement comprising:

said conversion circuit arrangement including first and second conversion circuit copies, said first and second copies operated to convert digital span data to data compatible with said switching network;

each digital span of said plurality being connected to a first and second copy of one particular conversion circuit;

CPU means connected to each of said first and second copies of said conversion circuit, said CPU means operated to selectively enable said first copy of said conversion circuit to receive data from said connected digital span or said CPU means alternatively operated to selectively enable said second copy of said conversion circuit to receive data from said connected digital span;

said CPU means operated to initially select said first or said second copy of said conversion circuit for receiving data as an active copy and said CPU means further operated to instantaneously select a standby copy of said conversion circuit for detection of a fault of said active copy of said conversion circuit preventing switching network service interruption;

transformer means including first and second copies, said first and second copies of said transformer means connected in parallel to a particular digital span;

said first copy of said transformer means being connected to said first copy of said conversion circuit;

said second copy of said transformer means being connected to said second copy of said conversion circuit;

said first and second copies of said conversion circuit respectively connected to first and second copies of said switching network;

impedance control means connected to said CPU means and operated in response to a first signal of said CPU means to select a first impedance value of said conversion circuit copy for a first value of said first signal or alternatively to select a second impedance value of said circuit for a second value of said first signal;

voltage detection means connected to a corresponding copy of said transformer means and to said impedance control means, said voltage detection means being operated in response to said digital span data to produce a second signal representing a peak amplitude of said digital span data;

voltage divider means connected to said voltage detection means and operated in response to said second signal to produce a third signal representing approximately one-half the amplitude of said second signal; and

comparator means connected to said corresponding copy of said transformer means and to said voltage divider means, said comparator means being operated in response to said digital span data and to said third signal to produce an output signal for said digital span data having an amplitude in excess of said amplitude of said third signal, said output signal being said data compatible with said switching network.

4,534,028
RANDOM TESTING USING SCAN PATH TECHNIQUE

Erwin Trischler, North Brunswick, N.J., assignor to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Dec. 1, 1983, Ser. No. 556,812
Int. Cl.³ G01R 31/28
U.S. Cl. 371—25 **5 Claims**

1. A method of testing a complex digital circuit designed as a serial access scan path and comprising:

(a) a plurality of primary inputs;

(b) a plurality of primary outputs;

(c) a plurality of flip-flops, some of which are selectively connectable into a scan path shift register;

(d) a scan path input connected to one end of said shift register; and

(e) a scan path output connected to the opposite end of said shift register,

said method comprising the steps of:

(1) forming said scan path shift register in said circuit;

(2) clearing said scan path shift register;

(3) applying a first digital test pattern to said primary inputs;

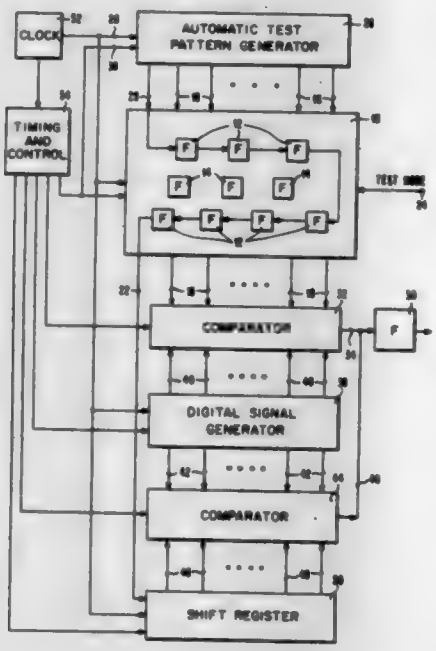
(4) shifting the first digit of a second digital test pattern into said scan path shift register via said scan path input;

(5) comparing the digits appearing at said primary outputs

with those of a first digital number indicative of the proper operation of said circuit;

(6) shifting the next digit of said second digital test pattern into said scan path shift register via said scan path input;

(7) comparing the digits appearing at said primary outputs with those of another digital number indicative of the proper operation of said circuit;



(8) repeating steps (6) and (7) for each successive digit of said second test pattern until all of the stages of said scan path shift register have been filled by digits of said second digital test pattern; and

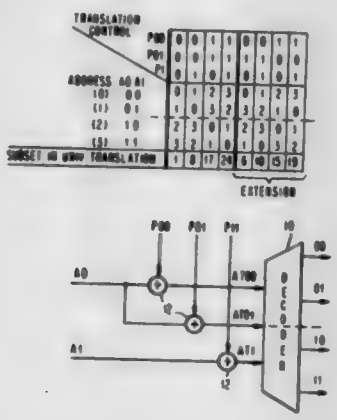
(9) producing a signal indicative of faulty circuit operation if the digits appearing at said primary outputs are not equal to those of the digital numbers to which they are compared.

4,534,029

FAULT ALIGNMENT CONTROL SYSTEM AND CIRCUITS

Shanker Singh, Fishkill, N.Y., and Vijendra P. Singh, San Jose, Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,594
Int. Cl.³ G11C *11/40*; G06F *11/04*
U.S. Cl. 371—10 **5 Claims**



1. In a memory system made up of logical data words each with its bit positions accessed by the same logical address bits through permuting means which converts the logical address to actual address bits of a data bit on the basis of permutation bits that are selected to distribute faulty data bits among the logical data words and thereby eliminate error conditions in the logical data words that are uncorrectable by the error correcting code protecting the memory system, a permuted decoder means comprising:

permutation bit means for supplying n+m permutation bits to be used to permute n of said logical address bits where n and m are positive integers;

permutation means for receiving said n address bits and the n+m permutation bits from said permutation bit means, and for providing n+m actual address bits; and

partial decoder means including gate means responsive to the true and complements of the n+m actual address bits for decoding the n+m actual address bits from said permutation means into one of no more than 2^n possible locations.

4,534,030

SELF-CLOCKED SIGNATURE ANALYZER

Ricardo Paez, and Jorge R. Rodriguez, both of Boca Raton, Fla., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 20, 1982, Ser. No. 451,506
Int. Cl.³ G06F *3/04*
U.S. Cl. 371—25 **4 Claims**

1. In signature analysis testing, the method of deriving start, stop and clock signals from the output data stream of the device under test comprising the steps of:

generating a flag signal in the output data stream of the device under test, said flag signal indicating the approach of test output data;

detecting said flag signal;

generating a stream of data clock pulse signals independent of said device under test at a rate equal to or approximately equal to the output data stream bit cell time period;

deriving a start test signal from said flag signal;

using said start test signal and said data clock pulse signals to enable the clocking of said test output data stream into a signature analysis code generator;

counting the number of bit cell time periods to be measured beginning with said start test pulse;

generating a stop pulse when said number of bit cell time periods to be measured have been counted; and

using said stop pulse to disable said clocking of said test output data stream into said signature analysis code generator;

whereby a signal status (signature) is generated by said code generator to indicate the operation of the device under test over the measured period.

4,534,031

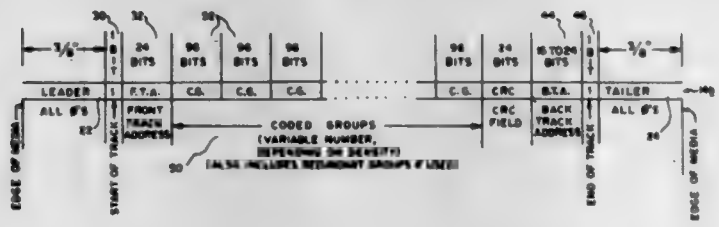
CODED DATA ON A RECORD CARRIER AND METHOD FOR ENCODING SAME

Alan A. Jewer, Ft. Atkinson, Wis., assignor to News Log International, Janesville, Wis.

Continuation-in-part of Ser. No. 404,507, Aug. 2, 1982, , which is a continuation-in-part of Ser. No. 384,582, Jun. 2, 1982,. This application Nov. 29, 1982, Ser. No. 445,241
Int. Cl.³ G06F *11/10*; G11B *27/00*
U.S. Cl. 371—38 **73 Claims**

1. A method for encoding digital data which is recorded in arcuate tracks without timing or synchronization data on a planar substrate to form a data record carrier with a plurality of arcuate tracks thereon, each track being spaced from an

adjacent track by a predetermined distance along a common centerline of the tracks, each track having the same radius throughout the arcuate path of said track such that each track extends in an arcuate manner across the data record carrier and is arranged in a nested manner relative to adjacent tracks along said common centerline, each track having a plurality of data cells therein and each track having a front track address section, a back track address section and groups of encoded data bits referred to as coded groups therebetween, each cell having



the same cell length in the direction of each track for each bit of data stored in each cell and having the same cell width in a direction tranverse to the direction of each track, each cell for one form of logic (0 or 1) being a non-transition cell and each cell for the other form of logic (1 or 0) being a transition cell, said method of encoding providing error correction and including the steps of: providing in each coded group a plurality of coded words, each word comprising a byte of data bits and a field of parity bits for error correction.

4,534,032

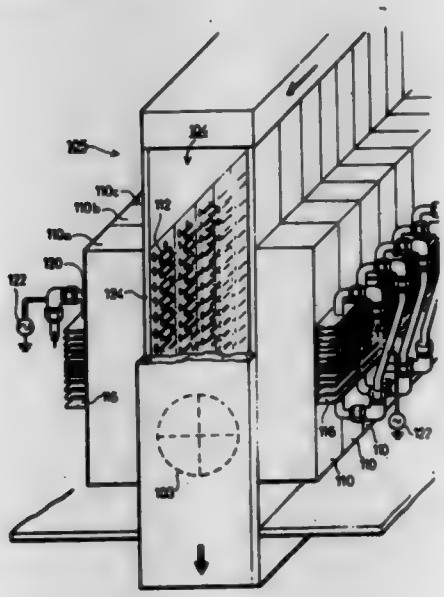
APPARATUS FOR ESTABLISHING AND MAINTAINING A STABLE ELECTRICAL DISCHARGE ACROSS A STREAM OF GAS, AND A HIGH-POWER LASER INCLUDING SUCH APPARATUS

Ethan D. Hoag, Boston, Mass., assignor to Metalworking Lasers International Ltd., Neve Sharett, Ill.X

Filed Sep. 30, 1982, Ser. No. 431,254

Int. Cl.³ H01S *3/04*

U.S. Cl. 372—34 **33 Claims**



1. Apparatus for establishing and maintaining a stable electrical discharge across a stream of gas flowing through a gas flow channel, characterized in that at least a portion of the wall of said gas flow channel is occupied by a plurality of structural elements each including at least one electrode having means for connecting said electrode to an external source of electrical power, and a cooling element in thermal communication with said electrode, said electrode and cooling element being embedded within a block of insulating material extending along the respective portion of the wall of said gas flow channel.

4,534,033

THREE TERMINAL SEMICONDUCTOR LASER

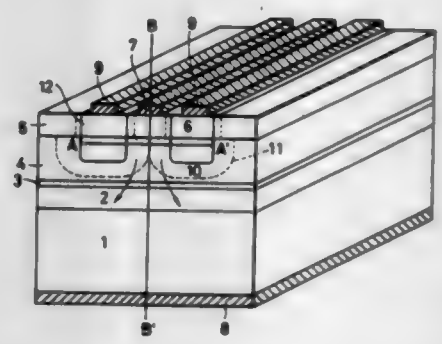
Jun-ichi Nishizawa; Tadahiro Ohmi, and Masakazu Morishita, all of Miyagi, Japan, assignors to Handotai Kenkyu Shinkokai, Japan

Filed Aug. 24, 1982, Ser. No. 411,080

Claims priority, application Japan, Aug. 25, 1981, 56-133106; Jun. 26, 1982, 57-110264

Int. Cl.³ H01S *3/19*

U.S. Cl. 372—50 **23 Claims**



1. A three terminal heterojunction semiconductor laser formed in a semiconductor body having first and second opposing principal surfaces comprising a highly doped anode region of a first conductivity type disposed in said body adjacent to said second principal surface;

an active region where laser oscillation takes place adjacent said anode region;

a highly doped cathode region of a second conductivity type opposite to said first conductivity type disposed in said body adjacent to said first principal surface;

a channel region of said second conductivity type made of a high-resistivity region and formed between said active region and said cathode region;

a highly doped gate region of said first conductivity type surrounding at least a part of said channel region;

at least a part of said anode region and channel region having a wider band gap and a lower refractive index then those of said active region in which light and carriers are confined;

electrodes formed on at least said anode, cathode and gate regions; and

an optical resonator for the laser oscillation wherein a potential barrier at zero gate bias voltage is formed in said channel region by designing the predetermined carrier concentration and dimension of said channel region and the injected carriers into said active region are controlled by said potential barrier controlled according to a gate voltage.

4,534,034

DISCHARGE-PUMPED LASER

Kristian Hohla, and Ernst Albers, both of Göttingen, Fed. Rep. of Germany, assignors to Lambda Physik GmbH, Göttingen, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,221

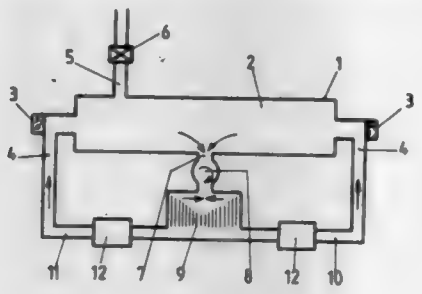
Claims priority, application Fed. Rep. of Germany, Apr. 7, 1982, 3212928

Int. Cl.³ H01S *3/22*

U.S. Cl. 372—59 **3 Claims**

1. In a discharge-pumped laser, an arrangement comprising: discharge tube containing a mixture of gases; said discharge tube having gas inlets and windows for closing off ends of said tube, said gas inlets being located in vicinity of said windows; said discharge tube having a gas outlet; a circulating means and purification means, said discharge tube being connected by lines and by said circulating means to said purification means; said purification means comprising an electrostatic filter; said gas circulating means including a quiescence zone wherein a mixture of gases conveyed back to said gas inlets becomes

quiescent, said purification means removing dust particles from said gases and said quiescence zone regenerating said gases for



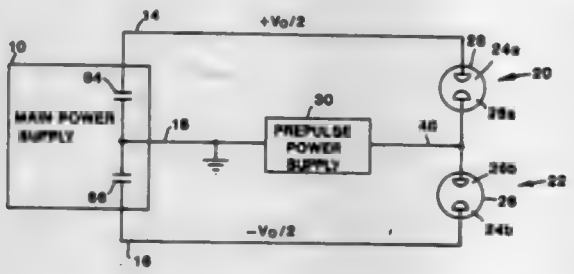
increasing gas lifetime of the laser, composition of said mixture of gases remaining unchanged by said purification means.

4,534,035

TANDEM ELECTRIC DISCHARGES FOR EXCITING LASERS

William H. Long, Torrance, Calif., assignor to Northrop Corporation, Hawthorne, Calif.

Filed Aug. 9, 1983, Ser. No. 521,713
Int. Cl.³ H01S *3/097*
U.S. Cl. 372—85 **4 Claims**



1. Apparatus for producing an electrical discharge within each of two glow discharge devices, comprising:

two glow discharge devices, each discharge device having two opposing electrodes within an envelope filled with gas such that applying a voltage to the electrodes in excess of a characteristic firing voltage causes a glow discharge in the gas that persists as long as the applied voltage exceeds a characteristic sustaining voltage which is less than the firing voltage, the two discharge devices being electrically connected in series to form a series circuit, and the electrical connection point between the two discharge devices being termed a node;

a main power supply, electrically connected across said series circuit, for producing a voltage greater than or equal to the sum of the respective sustaining voltages of the two discharge devices, so that the main power supply voltage sustains the glow discharge in both discharge devices after the prepulse power supply initiates the glow discharge; and

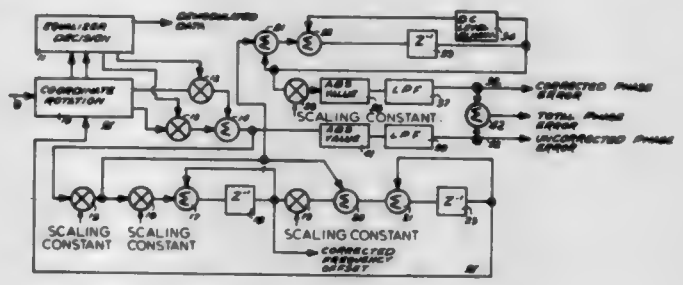
a prepulse power supply, electrically connected to said node, for applying respective voltages across each of the two discharge devices greater than the respective firing voltages of the discharge devices, the voltages applied to each discharge device being sustained long enough to initiate a glow discharge in that device, and the voltages being applied to the two devices within a short enough time interval of each other so that the glow discharge in one device begins while the glow discharge in the other device is continuing.

4,534,036

PHASE TRACKING LOOP IMPAIRMENT MONITOR FOR MODEMS

William L. Betts, Maderia Beach, and Kenneth Martinez, Pinellas Park, both of Fla., assignors to Paradyne Corporation, Fla.

Filed Dec. 8, 1982, Ser. No. 447,989
Int. Cl.³ H03L *7/08*
U.S. Cl. 375—10 **4 Claims**



1. In a modem utilizing a phase tracking loop provided to correct phase error by generating an instantaneous phase error signal, a monitor system comprising:

a first circuit for deriving a corrected phase error signal comprising an integrator which integrates said instantaneous error signal, a first absolute value generator means and a low pass filter means; and

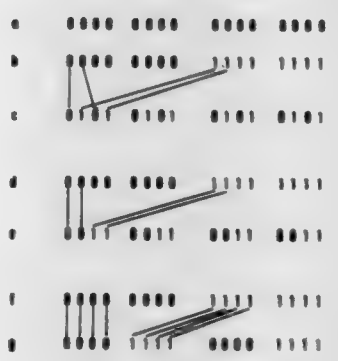
a second circuit for deriving an uncorrected phase error signal by averaging said instantaneous phase error signal.

4,534,037

METHOD AND APPARATUS FOR SCRAMBLED PULSE-CODE MODULATION TRANSMISSION OR RECORDING

Jürgen Heitmann, Alsbach-Hähnlein, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 14, 1982, Ser. No. 417,882
Claims priority, application Fed. Rep. of Germany, Sep. 24, 1981, 3138023
Int. Cl.³ H04K *1/06*; H04N *7/16*
U.S. Cl. 375—25 **4 Claims**



1. Method of processing video signals, for transmission or recording and reproduction in a single transmission or recording and reproduction channel, which signals have previously been encoded into a sequence of data words each of a first predetermined number (n) of pulse-code modulation (PCM) signal bits, which words sequentially correspond to periodic samples of said video signal obtained at successive instants definable by a sequence of clock pulses which also thereby define a sequence of intersample intervals, comprising the steps of:

providing first and second timing signal sequences for respectively defining the beginning of first and second sets of alternate intersample intervals of said sequence of intersample intervals;

inverting alternate words of said sequence in response to one of said timing signal sequences;

interchanging a second predetermined number (m), less than

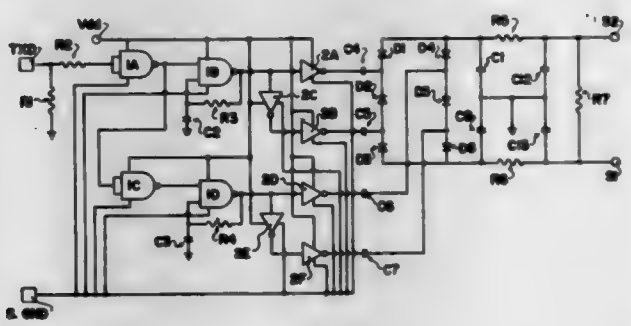
said first predetermined number (n) and greater than one, of bits of each successive pair of words of said data word sequence in response to one of said timing signal sequences and thereby forming a pair of modified words from each said successive pair of words of said data word sequence, and

transmitting a first one of each of said pair of modified words in response to said first timing signal sequence and transmitting a second one of each said pair of modified words in response to said second timing signal sequence immediately following the transmission of the first modified word of the same pair of modified words and thereby producing a continuous stream of modified words obtained at the same rate as said periodic samples to which said data words correspond, said first and said second modified words of each pair being consistently distinguished from each other in all pairs according to which modified word contains the uninverted bits which were not interchanged in the bit-interchange step.

4,534,038
COUPLING AN ELECTRICAL SIGNAL TO TRANSMISSION LINES

David E. Dodds, and Ludo A. Bertsch, both of Saskatoon, Canada, assignors to Develcon Electronics Ltd., Saskatoon, Canada

Filed Feb. 16, 1983, Ser. No. 467,013
Claims priority, application United Kingdom, Feb. 26, 1982, 8205660
Int. Cl.³ H04L *25/12*
U.S. Cl. 375—36 27 Claims



1. A coupling device for conditioning an input electrical signal for transmission on a transmission line, said coupling device comprising:

an input port for receiving said input electrical signal;

an output port for connection with said transmission line, said output port including first and second terminal means;

capacitance means connected with said terminal means;

charge pump means for charging said capacitance means said charge pump means including:

a first diode means; a second diode means having first and second leads;

and first and second isolating capacitor means each including an input side lead and a line side lead, said line side of said first isolating capacitor means being connected with said first lead of said second diode means and said line side lead of said second isolating capacitor means being connected with said second lead of said second diode means;

said first diode means being connected in series with said first lead of said second diode means, said first and second diode means being connected in series between said first and second terminal means so as to permit passage of current in a first direction between said first and second terminal means;

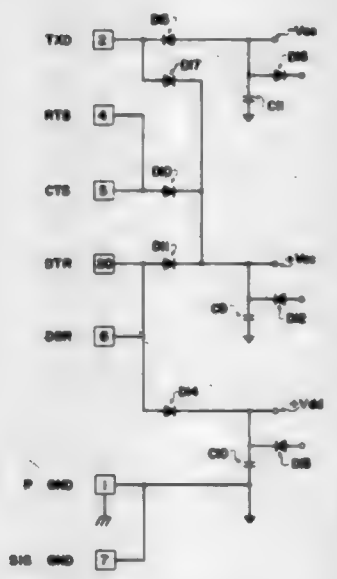
voltage driving means for alternately applying positive and negative voltage difference between said input side lead of said first isolating capacitor means and said input side lead of said second isolating capacitor means;

and a voltage controlling means for controlling said voltage driving means in response to said input electrode signal.

4,534,039
DATASET POWERED BY CONTROL AND DATA SIGNALS FROM DATA TERMINAL

David E. Dodds, and Ludo A. Bertsch, both of Saskatoon, Canada, assignors to Develcon Electronics Ltd., Saskatoon, Canada

Filed Feb. 16, 1983, Ser. No. 467,014
Claims priority, application United Kingdom, Feb. 26, 1982, 8205660
Int. Cl.³ H04B *3/44*
U.S. Cl. 375—36 8 Claims

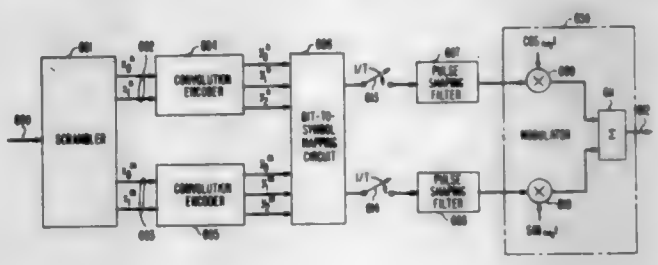


1. In data communication apparatus of the type comprising a data terminal apparatus for developing electrical data signals and a dataset apparatus for modifying and controlling the data signals prior to transmission along transmission lines, said data terminal apparatus including means for developing said electrical data signals and means for developing control signals and separate terminal connectors at which said data signals and control signals are presented, said dataset apparatus including separate terminal connectors for receiving said separate data signals and control signals and power supply means connected to a plurality of said terminal connectors for receiving said data signals and control signals and capacitor storage means for storing positive and negative voltages extracted solely from said control and data signals so as to provide power supply voltage for said dataset apparatus.

4,534,040
METHOD AND APPARATUS FOR CODING A BINARY SIGNAL

Hemant K. Thapar, Marlboro, N.J., assignor to AT&T Information Systems, Holmdel, N.J.

Filed Jan. 4, 1983, Ser. No. 455,502
Int. Cl.³ H04L *3/00*
U.S. Cl. 375—39 8 Claims



1. Apparatus for encoding a sequence of input bits for transmission via a quadrature amplitude modulated carrier signal, comprising:

means responsive to first and second subsets of selected bits in each group of N consecutive ones of said input bits for forming first and second expanded versions of the bits in

each of said first and second subsets, respectively, each of said expanded versions having at least one more bit than the subset from which it is formed, and

means individually responsive to said first and second expanded versions for modulating in-phase and quadrature components of said carrier signal to generate an individual one of a predetermined constellation of signal points,

wherein said forming means includes means for combining at least one bit in said first subset with at least one bit in the first subset of a preceding one of saidn N-bit groups and means for combining at least one bit in said second subset with at least one bit in the second subset of a preceding one of said N-bit groups, said combining and modulating means being arranged such that less than all possible sequences of said signal points is generated.

4,534,041

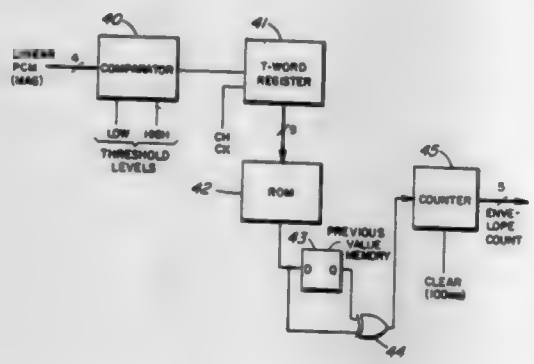
DIGITAL CIRCUIT FOR DETERMINING THE ENVELOPE FREQUENCY OF PCM ENCODED CALL PROGRESS TONES IN A TELEPHONE SYSTEM

Ernst A. Münter, Kanata, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Division of Ser. No. 359,896, Mar. 19, 1982, Pat. No. 4,439,639. This application Aug. 31, 1983, Ser. No. 528,170

Int. Cl.³ G06F *15/36*

U.S. Cl. 375—94 **4 Claims**



1. A digital envelope detector circuit for determining the envelope frequency of a PCM encoded call progress tone in a telephone system comprising, circuit means for converting the PCM signal to a linear PCM signal having a sign bit and a magnitude portion and for normalizing the PCM signal to a predetermined level, a comparator circuit responsive to the magnitude portion of the linear PCM signal and to upper and lower threshold reference signals for providing a chopped signal, a threshold filter responsive to the output signal of the comparator circuit for generating a bilevel signal having a frequency corresponding tc the envelope frequency of the linear PCM signal, and a counter circuit responsive to the bilevel signal and to timing signals for counting in a predetermined period of time the transitions between low and high levels of the bilevel signal, the count signal from the counter corresponding to said envelope frequency.

4,534,042

METHOD OF AND APPARATUS FOR THE CONTINUOUS MONITORING AND ANALYSIS OF THE OPERATION OF SPINNING UNITS IN AN OPEN-END SPINNING MACHINE

Zdenek Marsícek; Jaroslav Janeba; Antonín Pácha; Ales Pastrnák; Jaroslav Dykast, and Roman Prazák, all of Ústí n/Orl., Czechoslovakia, assignors to Vyzkumny Ustav Bavlnarsky, Usti nad Orlici, Czechoslovakia

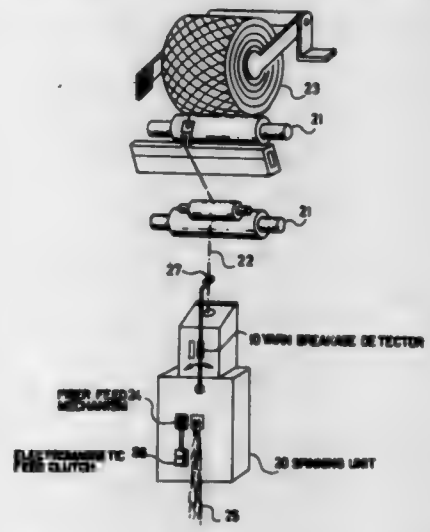
Filed Aug. 6, 1982, Ser. No. 405,927

Claims priority, application Czechoslovakia, Oct. 24, 1981, 7776-81

Int. Cl.³ H03K *21/34*

U.S. Cl. 377—16 **8 Claims**

1. A method for a continuous monitoring and analysis of the operation of spinning units in multiple unit open-end spinning machine, each unit being equipped with a fiber feeding mechanism, comprising switching on and off an electric circuit which governs the supplying of fibers into the individual spinning units, monitoring an active or inactive operation state of the said individual spinning units by a continuous sampling with



scanning checking signals that cause a predetermined short-time breaking of the said electric circuit which governs their fiber feeding mechanism, and counting thus obtained different information checking signals for a subsequent analysis of the number of active and inactive spinning units for the machine.

4,534,043

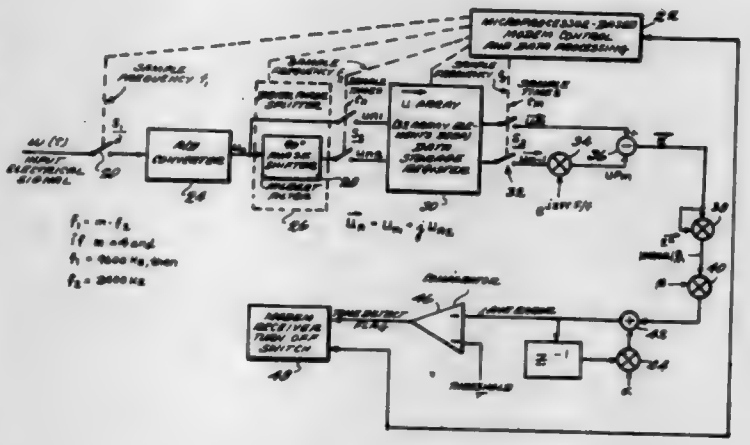
TEST TONE DETECTOR APPARATUS AND METHOD MODEM USING SAME

Vedavalli G. Krishnan, Miami Lakes, Fla., assignor to Racal Data Communications, Inc., Miami, Fla.

Filed Jun. 27, 1983, Ser. No. 508,103

Int. Cl.³ G06F *15/31*; H04M *1/50*

U.S. Cl. 375—104 **8 Claims**



7. A method of detecting a pure tone signal, said method comprising:

generating pairs of successive output electrical signals U_{n1}, U_{n2} which represent the phase quadrature components of an incoming signal at successive sampling time intervals t_n;

generating predicted digital signals based on said sample signals U_{n1}, U_{n2} and having values which are expected to occur at future sample times if the incoming signal is a single frequency sinusoid; and

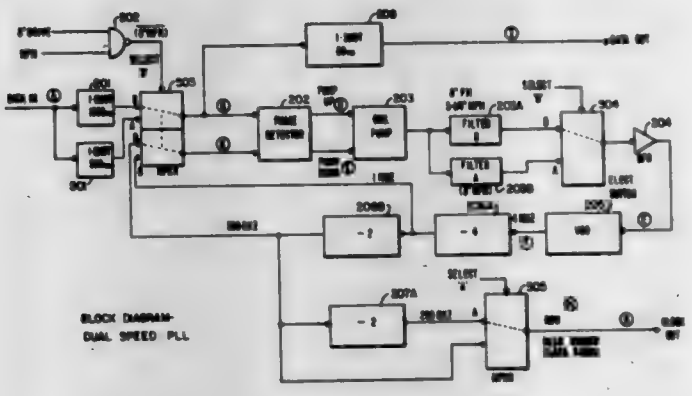
comparing the respectively corresponding actual and predicted digital signals to generate a tone detection output based on the difference between said actual and predicted signals.

4,534,044

DISKETTE READ DATA RECOVERY SYSTEM

Michael J. Funke, Westford, Mass.; Douglas A. Topliffe, Nashua, N.H., and Donald J. Rathbun, Andover, Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

Filed May 2, 1983, Ser. No. 490,613
Int. Cl.[3] H03L *7/06*; G11B *5/09*
U.S. Cl. 375—120 8 Claims



1. A read data recovery system for generating a clock which is locked to an incoming data stream comprising:

(a) a clock means including an oscillator and frequency divider for generating clock signals in synchronism to incoming data signals;

(b) second means coupled to said clock means for comparing the phase of the clock signals with the phase of the incoming data signals, and including third means for providing a first signal when the phase of the incoming data signal leads the phase of the incoming data signal and further including fourth means for providing a second signal when the phase of incoming data signal lags the phase of the clock signal;

(c) fifth means coupled to said second means and responsive to said third and fourth means for either increasing or decreasing the frequency of the clock signals; and

(d) sixth means for selecting and applying to the second means a first frequency divided ouput from the oscillator when the system receives data signals having a first frequency and a second frequency divided output from the oscillator when the system receives data signals having a second frequency.

4,534,045

DEVICE FOR RECORDING HOST ELECTRONIC INSTRUMENT OPERATING ON-TIME

Warren Collier, Beaverton, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

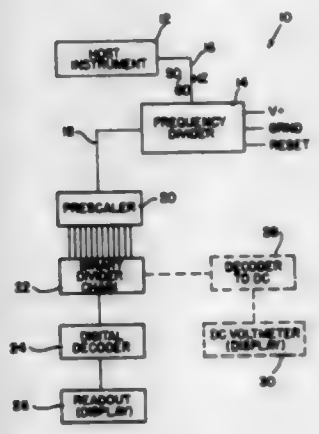
Filed Nov. 28, 1983, Ser. No. 555,745
Int. Cl.[3] G07C *3/04*
U.S. Cl. 377—16 5 Claims

1. Device for host electronic instrument operating time recording, comprising:

a frequency divider circuit means for counting line voltage transitions during power-on time of said host instrument and for generating binary number signals,

a prescaler circuit means for receiving said binary number signals and dividing said binary number signals by a predetermined numerical value to establish a reduced time resolution for the power-on time of said host instrument,

binary divider chain circuit means which receives the prescaled output signal from said prescaler and generates a digital number output, and



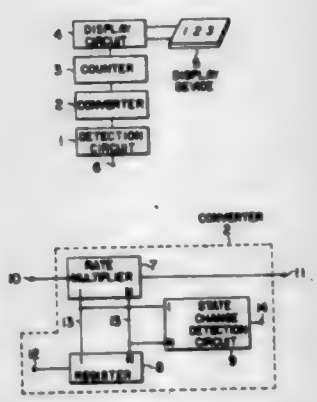
display means for receiving said digital number output for visual readout of the power-on time of said host instrument.

4,534,046

FLOW QUANTITY MEASURING APPARATUS

Yuji Mihara, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 24, 1982, Ser. No. 423,291
Claims priority, application Japan, Oct. 26, 1981, 56-171090
Int. Cl.[3] G01P *5/00*
U.S. Cl. 377—21 4 Claims



1. A flow quantity measuring apparatus comprising:

a detection circuit which produces a pulse signal corresponding to a flow speed of fluid to be measured;

a converter which converts said pulse signal into an electric signal corresponding to a flow quantity of said fluid; and

a counter for counting the number of said electric signals,

said converter including a rate multiplier which receives said pulse signal and multiplies it by a stored predetermined present value to produce a rate multiplied output signal, a register for storing said preset value, and a state change detection circuit for detecting a change of a state of said register and providing an output signal indicative of said change of state.

4,534,047

MASK RING ASSEMBLY FOR X-RAY LITHOGRAPHY

Warren Deschenaux, Shelton; Gregory Hughes, Norwalk; Justin Kreuzer, Trumbull, and Carlo La Fiandra, New Canaan, all of Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

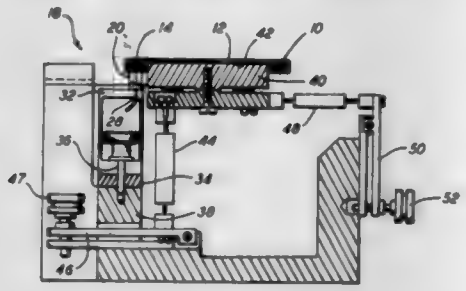
Filed Jan. 6, 1984, Ser. No. 568,776
Int. Cl.[3] G03B *11/00*; G02B *7/00*; G03F *5/00*
U.S. Cl. 378—35 11 Claims

1. In combination:

a mask ring, a mask membrane having a mask pattern thereon mounted on said mask ring;

an alignment cartridge;

a plurality of kinematic mounts for removably mounting said mask ring on said alignment cartridge;



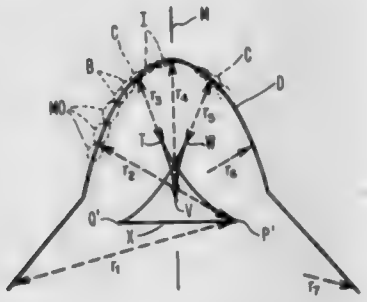
each of said kinematic mounts including a funnel-like shaped seat member and a mating ball-like shaped member, one of said members being mounted on said mask ring and the other of said members being mounted on said alignment cartridge.

4,534,048

METHODS OF INCREASING ANTERIOR LAYER THICKNESS OF CONTINUOUS DENTAL IMAGES OBTAINED THROUGH ROTATIONAL PANORAMIC RADIOGRAPHY

Ulf E. S. Welander, Umea, Sweden; William D. McDavid, and Charles R. Morris, both of San Antonio, Tex., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Jan. 3, 1983, Ser. No. 455,095
Int. Cl.[3] G01N *21/00, 23/00;* G03B *41/16*
U.S. Cl. 378—39 11 Claims



1. In a rotational panoramic radiographic method for widening the layer of a dental arch at an anterior region thereof of a patient seated in a moving chair orbited by a tubehead-camera assembly to produce moving effective centers of rotation of X-ray beams projected from said tubehead, and means to move film within said camera at a non-linear speed, the improvement comprising the step of

causing said effective centers of rotation of beams projecting said anterior region to be displaced more interiorly of said dental arch than effective centers of rotation of beams projecting canine regions.

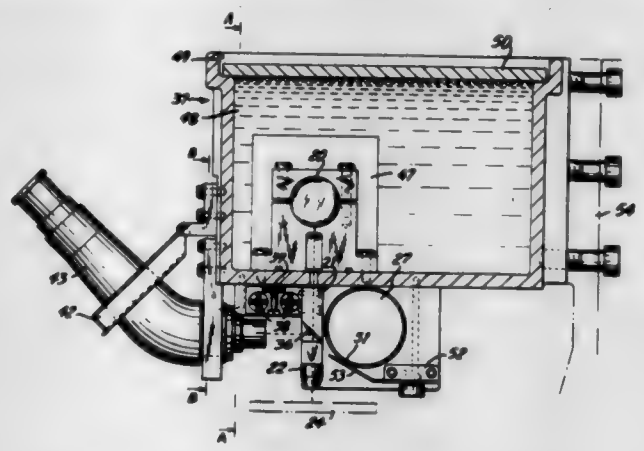
4,534,049

FLUORESCENT X-RAY FILM THICKNESS GAUGE

Toshiyuki Koga, Gotenba, Japan, assignor to Kabushiki Kaisha Daini Seikosha, Tokyo, Japan

Continuation of Ser. No. 258,518, Apr. 28, 1981, Pat. No. 4,406,015. This application Aug. 10, 1983, Ser. No. 522,041
Claims priority, application Japan, Sep. 22, 1980, 55-135058
Int. Cl.[3] G01N *23/20;* G21K *1/00*
U.S. Cl. 378—050 14 Claims

1. In a fluorescent X-ray film thickness gauge having an X-ray tube for irradiating X-rays along an X-ray axis to a sample having a film whose thickness is to be measured, and a detector for detecting fluorescent X-rays emitted from the sample: viewing means for enabling an observer to view along the X-ray axis the spot on the sample at which the X-ray beam is to be directed, the viewing means including a mirror positionable along the X-ray axis at a predetermined position to enable viewing of the spot on the sample, the mirror being displaceable into and out of the predetermined position; and



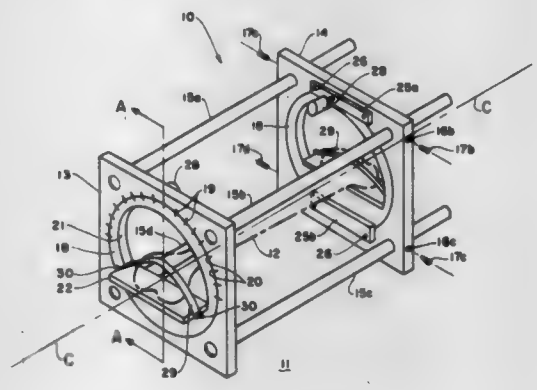
collimating means for collimating the X-rays into an X-ray beam and directing the X-ray beam along the X-ray axis to the said spot on the sample.

4,534,050

X-RAY GONIOMETER

Howard W. Smith, Lawrence, Kans., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Dec. 9, 1982, Ser. No. 448,162
Int. Cl.[3] A61G *13/00;* A61B *17/00*
U.S. Cl. 378—81 7 Claims



1. A goniometer device for supporting a specimen on an X-ray apparatus during X-ray filming, which comprises:

a. first and second upright endplates;

b. a plurality of connecting rods and means for connecting said rods at respective ends thereof to said endplates for holding said endplates in a spaced parallel relationship on said X-ray apparatus;

c. a first support, rotatably mounted to said first endplate, said first support and first endplate defining a first opening therethrough, for receiving and supporting a first end of said specimen, and a second support, rotatably mounted to said second endplate, said second support and second endplate defining a second opening therethrough, for receiving and supporting a second end of said specimen, said supports being rotatable about a common axis substantially perpendicular to said endplates; and

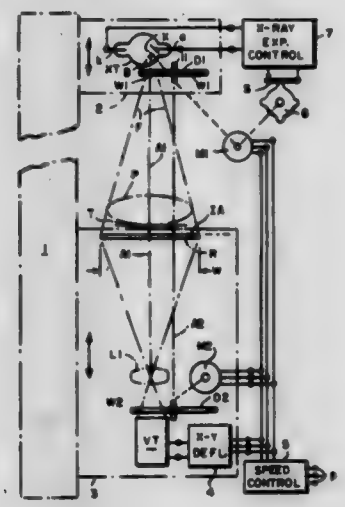
d. a set of reference marks on each said endplate and said rotatable support for gaping the angular position of said supports about said axis relative to said endplates.

4,534,051

MASKED SCANNING X-RAY APPARATUS

John K. Grady, 300 Foster St., Littleton, Mass. 01460, and Richard E. Rice, Arlington, Mass., assignors to John K. Grady, Harvard, Mass.

Filed Dec. 27, 1982, Ser. No. 453,749
Int. Cl.[3] H04N *7/18*
U.S. Cl. 378—099 24 Claims



1. An X-ray system for radiological examination of a subject comprising:

an X-ray beam source of finite size radiating through the position of a radiological subject to an imaging area;

an X-ray receptor at the imaging area emitting secondary radiation on receipt of X-rays;

moving X-ray mask means between the source and receptor including an X-ray window transmitting a shaped X-ray beam of width scanning across and through the subject position to the receptor to produce a secondary radiation image at the imaging area;

electro-optical means viewing the imaging area for utilization of the secondary image; and

moving light mask means between the receptor and electro-optical viewing means including a light window transmitting the secondary image;

wherein the X-ray and light mask means include means for adjusting the width of the mask windows, thereby to minimize the fraction of scattered radiation reaching the X-ray receptor while operating the X-ray tube within its power capacity and to adjust the intensity of the light image transmitted to the electro-optical light viewing means.

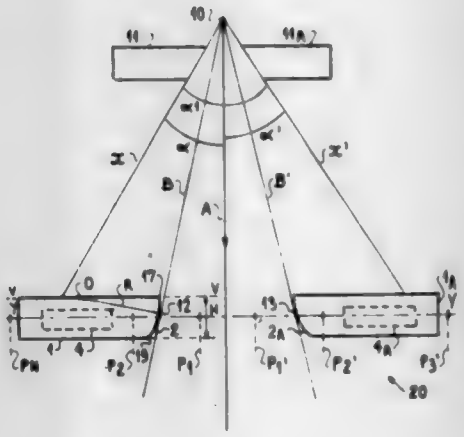
4,534,052

BLOCK FOR PARTIALLY LIMITING A RADIATION BEAM, AND A COLLIMATOR COMPRISING SUCH BLOCKS

Jacques Milcamps, Buc, France, assignor to C.G.R. - Mev, Buc, France

Filed Apr. 4, 1983, Ser. No. 481,784
Claims priority, application France, Apr. 2, 1982, 82 05785
Int. Cl.[3] G21K *1/04*
U.S. Cl. 378—152 9 Claims

1. A block for partially limiting a radiation beam emitted by a radiation source in a given reference direction, for limiting a first part of the beam corresponding to a maximum half angle of opening, said block being formed by a limiting block having moving means for allowing said limiting block to move in a parallel direction to a first axis transverse to said reference direction, said limiting block comprising a cylindrical active surface which defines limits for the beam, said limits being a function of the position which said cylindrical active surface occupies along said first axis, said moving means allowing movement of said limiting block such that the orientation of the active surface is not modified and said limits are tangential



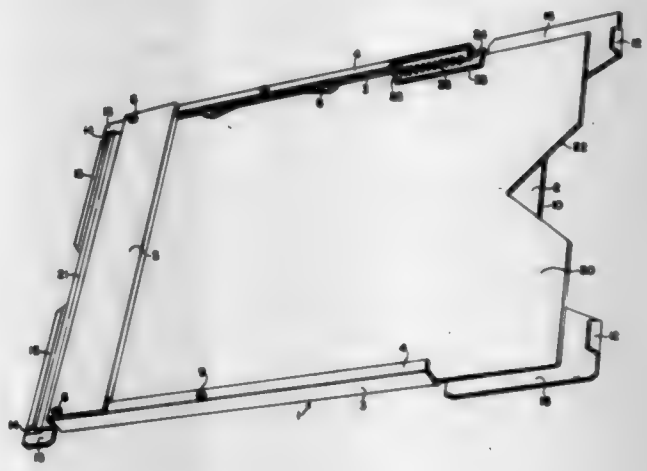
to the cylindrical active surface for all positions of said limiting block.

4,534,053

APPARATUS FOR EXCHANGING AN INTENSIFYING SCREEN AND A NEGATIVE IN A FILM PACKET

Vaito K. Eloranta, Needham; Joel M. Peisach, Malden, and Donald E. Rogers, Jr., Billerica, all of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Apr. 19, 1982, Ser. No. 369,806
Int. Cl.[3] G03B *17/26, 41/18*
U.S. Cl. 378—167 3 Claims



1. Apparatus for manipulating a film packet comprising an opaque envelope, a photosensitive sheet slidably received in said envelope and attached to a nonphotosensitive leader extending out through an open end of the envelope, and a flap secured to said leader and adapted to cover the open end of the envelope and form a light tight seal around the photosensitive sheet, said apparatus comprising a base plate of opaque material having major dimensions exceeding those of the envelope, a platen of opaque material, means slidably mounting said platen on said base plate for movement between first and second positions, means mounted on said base plate for resiliently biasing said platen into engagement with said base plate, means forming a lip on a leading edge of said base plate adapted to engage the flap on the film packet when the envelope is inserted between said platen and said base plate to limit movement of the photosensitive sheet between said platen and said base plate, and means forming a stop at a trailing edge of said base plate opposite said leading edge for limiting movement of the envelope inserted between said platen and said base plate to a position in which the open end of the envelope is clear of the flap but still overlies the nonphotosensitive trailer without exposing the photosensitive sheet within the envelope,

whereby an intensifying screen may be inserted into the envelope.

4,534,054

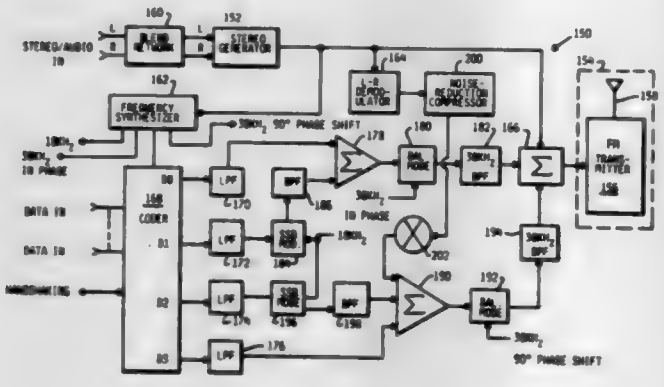
SIGNALING SYSTEM FOR FM TRANSMISSION SYSTEMS

Douglas A. Maisel, 2412 6th St., Berkeley, Calif. 94710

Continuation-in-part of Ser. No. 211,307, Nov. 28, 1980, Pat. No. 4,388,493. This application Jun. 14, 1983, Ser. No. 504,267

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—4 **11 Claims**



1. In a stereo transmission system for generating and transmitting an FM multiplex signal derived from left and right audio frequency stereo channels, said multiplex signal including a sum channel containing the summed left and right stereo channel signals and a difference channel containing the difference between said left and right stereo channel signals, said difference channel being modulated on a first subcarrier, a signaling system comprising:

means for developing at least one quadrature subcarrier in said FM multiplex signal and for modulating said quadrature subcarrier with at least one selected signal to develop information carrying sidebands of said quadrature subcarrier;

means for substantially minimizing degradation of each of said sum channel and said difference channel by said sidebands.

4,534,055

CODE CONVERSION SYSTEM

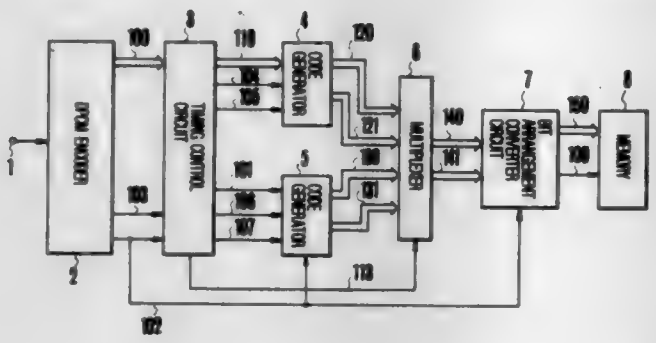
Kazumoto Iinuma, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 288,013, Jul. 29, 1981, abandoned. This application Nov. 14, 1983, Ser. No. 550,946

Claims priority, application Japan, Aug. 4, 1980, 55-106926; Aug. 4, 1980, 55-106927; Aug. 4, 1980, 55-106928; Aug. 4, 1980, 55-106929; Aug. 4, 1980, 55-106930

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—34 **6 Claims**



1. In a code conversion system comprising an encoder, said encoder comprising an input terminal for receiving a multilevel time series signal having at least three signal levels subject to a variation of occurrence frequency of signal levels, means for detecting the highest occurrence frequency signal ("HOFS") level of said multi-level time series signal and generating a first code representative of the run-lengths of said HOFS level; means for generating a second code representative of the signal levels of said multi-level time series signal where the first code and second code, each include at least one first and second transition code respectively, wherein occurrences of the first transition code indicate transitions from the first code to the second code and occurences of the second transition code indicate transitions from the second code to the first code, and means for combining said codes from said first and second code generation means on the time series so as to produce a coded signal containing said first and second codes in combination.

4,534,056

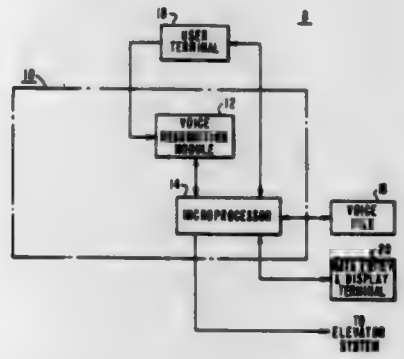
VOICE-RECOGNITION ELEVATOR SECURITY SYSTEM

Michal M. Feilchenfeld, Pittsburgh; Roger G. Byford, Washington Township, Armstrong County, both of Pa., and Wing C. Quan, Waldwick, N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 26, 1982, Ser. No. 411,792

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—42 **21 Claims**



1. A voice-controlled elevator security system, including at least one elevator car mounted in a building having a plurality of floors, including a lobby floor, wherein authorized users are each pre-enabled to gain access to a predetermined floor, or floors, of the building from the lobby floor and each authorized user has provided template utterances, said voice-controlled elevator security system comprising:

first memory means for storing template utterances of authorized users, with said template utterances being represented by a plurality of binary bits;

second memory means for storing preselected landings to which each authorized user is permitted access;

digitizing means for digitizing a prospective user's spoken utterance, with the user's digitized spoken utterance being represented by a plurality of binary bits;

recognition means for comparing the prospective user's digitized spoken utterance with at least certain of the template utterances, and for selecting a template utterance having the largest number of binary bits in agreement with the binary bits of the digitized spoken utterance;

threshold means for establishing a threshold limit;

comparator means for comparing the number of binary bits in agreement with said threshold limit and for producing an enable signal when the number of binary bits in agreement exceeds said threshold limit;

said enable signal indicating that the prospective user is the authorized user associated with the selected template;

and call selecting means responsive to said enable signal for enabling a recognized authorized user to gain access to an elevator car at the lobby floor;

said call selecting means further being responsive to said enable signal for enabling the recognized authorized user to direct the accessed elevator car only to an associated pre-enabled floor;

said call selecting means including landing selecting means

in the at least one elevator car and up-call selecting means at the lobby floor, wherein activation of the voice controlled elevator security system disables the landing selecting means in the at least one elevator car, except the landing selecting means for the lobby floor, and disables the up-call selecting means on the lobby floor, and wherein identification of the user as an authorized user automatically activates the up-call selecting means on the lobby floor and enables the landing selecting means in the at least one elevator car for those floors to which the authorized user has been pre-enabled to gain access.

4,534,057

FREQUENCY RESPONSE DISPLAY FOR USE WITH A GRAPHIC EQUALIZER

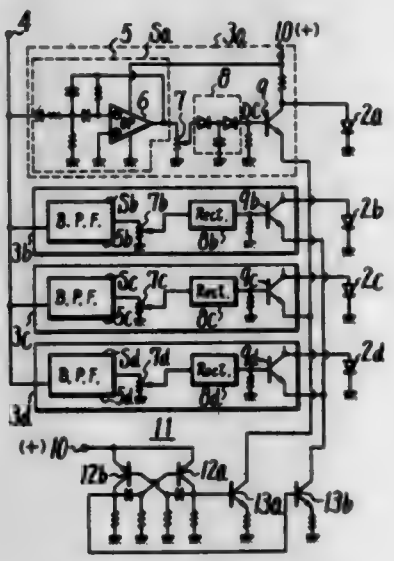
Toshihiko Miyata, Yokohama, and Takashi Shibata, Kamakura, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,613

Claims priority, application Japan, Dec. 24, 1981, 56-196372[U]

Int. Cl.³ G01R *23/17*

U.S. Cl. 381—58 **7 Claims**



1. A frequency response display for use with a graphic equalizer comprising: an input terminal supplied with an audio signal to be displayed; two groups of control circuits, in which each control circuit consists of a band pass filter means with a center frequency and connected to the input terminal, a rectifier for receiving and rectifying the output signal from the band pass filter means, and a drive circuit means connected to the rectifier for driving a display device when the output signal of the rectifier exceeds a predetermined value; the center frequencies of said band pass filters being different from each other, and furthermore each center frequency of said band pass filters in one group of control circuits being between adjacent two center frequencies of the band pass filters in the other group of control circuits; and switching means connected to the drive circuit means in each of said control circuits for alternately operating the drive circuit means in one group of control circuits and the drive circuit means in the other group of control circuits.

4,534,058

ELECTRONIC STETHOSCOPE WITH AUTOMATIC POWER SHUT-OFF

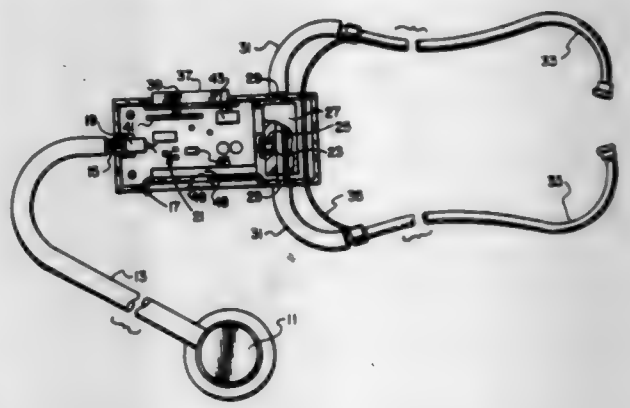
Larry H. Hower, New York, N.Y., assignor to The Hart Group, Dallas, Tex.

Filed Mar. 29, 1983, Ser. No. 480,062

Int. Cl.³ H04R *1/46*

U.S. Cl. 381—67 **10 Claims**

1. In an electronic stethoscope comprising a pickup head; a microphone; a tubular accoustic connection between the pickup head and microphone; an amplifier circuit receiving an input from the microphone; a speaker coupled to the output of the amplifier circuit; a binaural headpiece; and tubular accoustic coupling means coupling the output of the speaker to the binaural headpiece, the improvement comprising: a switch by



means of which a momentary on operation can be achieved; and a timer responsive to said switch to couple power to said amplifier circuit, said timer adapted to shut off power after a predetermined period of time.

4,534,059

METHOD FOR CORRECTING GRADATION OF OUTPUT DATA, FOR USE IN A PICTURE DIGITAL PROCESSING SYSTEM

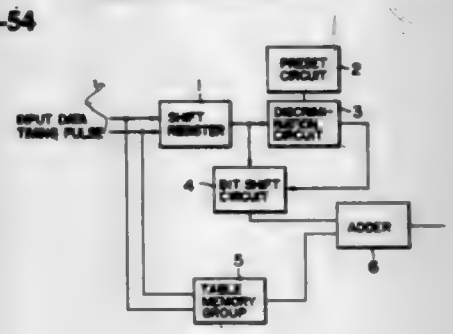
Mitsuhiko Yamada, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 30, 1982, Ser. No. 429,296

Claims priority, application Japan, Oct. 13, 1981, 56-162016

Int. Cl.³ G06K *9/36*

U.S. Cl. 382—54 **9 Claims**



1. A method for correcting gradation of output digital data for reproducing a picture image, for use in a picture digital processing system wherein input digital picture data represented by digital bits is processed and corrected by using at least one lookup table memory having input-output characteristics, the improvement comprising the step of adding as correction data a variable number of lower bits to the data output from said lookup table memory after said input data has been input to and corresponding data has been output from said lookup table memory, the quantity of lower bits being varied depending on both the input data itself and the relationship of said input data to said input-output characteristics of said at least one lookup table memory, said lower bits being the least significant bits in said digital data.

4,534,060

METHOD AND APPARATUS FOR REMOVING NOISE AT THE ENDS OF A STROKE

Jean R. Ward, Arlington, Mass., assignor to Pencept, Inc., Waltham, Mass.

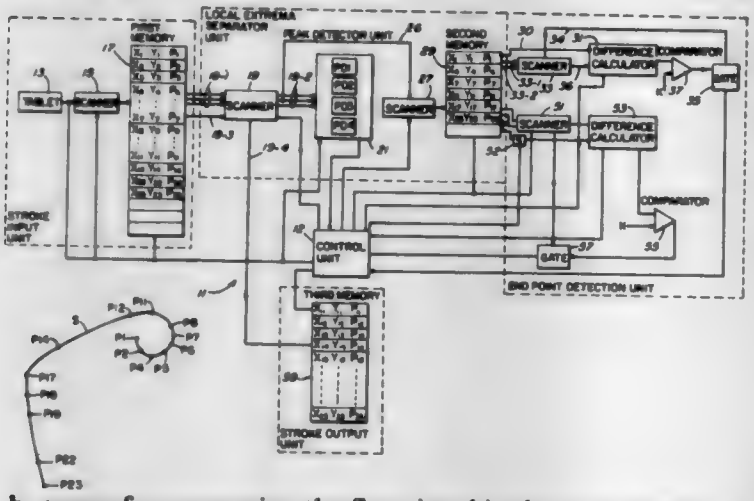
Filed Aug. 9, 1983, Ser. No. 521,729

Int. Cl.³ G08C *25/00*

U.S. Cl. 382—54 **9 Claims**

7. Apparatus for use in processing a first series of digital signals emitted by a digitizing tablet representing the positions of a stylus during a stroke on the tablet to minimize noise at an end of the stroke comprising:

a. means for comparing the signals representing each position with the signals representing positions adjacent thereto to form a second series of signals comprising only these signals from said first series representing positions having an ordinate value more extreme that the corresponding ordinate value of the signals representing positions adjacent thereto.



b. means for comparing the first signal in the second series of signals at that end of the stroke with each suceeding signal in said second series to determine a furthest signal from said first signal that is within a predetermined threshold, and

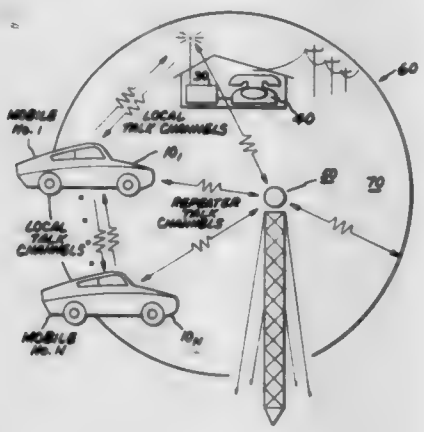
c. means for forming a third series of signals from said first series but starting with said furthest signal from said first signal that is within said predetermined threshold.

4,534,061

DETERMINISTIC MULTI-ACCESS METHOD FOR A DECENTRALIZED MOBILE RADIO SYSTEM

Mehmet E. Ulug, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,197
Int. Cl.[3] H04B *7/14, 7/00*
U.S. Cl. 455—17 **12 Claims**



12. In a decentralized radio system including a plurality of stations wherein a plurality of data channels are provided for communication between said stations, a method for establishing a communication link between a calling station and a called station comprising the steps of:

providing a plurality of control channels for performing a handshake routine between said calling station and said called station before establishing communication over one of said plurality of data channels;

monitoring at each station a predetermined one of said control channels;

monitoring at said calling station the particular control channel being monitored by said called station until this channel is determined to be idle for a first predetermined time interval;

transmitting a control packet from said calling station to said called station on said particular channel after said particular channel has been determined to be idle for said first time interval; and

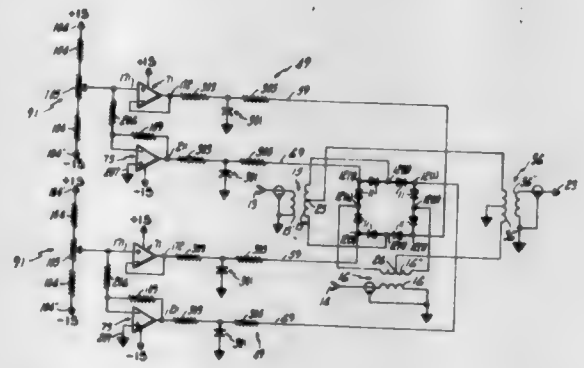
monitoring said particular control channel at said calling station after transmitting said control packet to determine if a response packet is received from said called station and, if so, establishing communication between said calling station and said called station over one of said plurality of data channels.

4,534,062

ADJUSTABLE DOUBLE BALANCED MIXER

Samuel Levinson, Norwalk, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jan. 30, 1984, Ser. No. 575,380
Int. Cl.[3] H03C *1/58;* **H04B** *1/26*
U.S. Cl. 455—330 **8 Claims**



1. An adjustable double balanced mixer circuit including input and output frequency terminals for mixing a pair of frequencies to generate an output frequency signal, said mixer circuit comprising:

ring diode means for developing a mixed signal freuqency, including an even number of diode means for directing the flow of electric current, each of said diode means including an input and output terminal and connected at its output terminal to the input terminal of one other of said diode means;

first and second DC injection means for applying selected DC current levels of opposite polarity to symmetrical opposite ones of said input terminals, the injection of DC currents being conducted at input terminals which are symmetrically disposed about said ring diode means, to compensate for dissimilarities among said diode means, each of said DC injection means including first and second amplifier means for developing respective first and second DC injection currents;

first and second RF injection means for respectively applying first and second signal frequencies to input terminals of said ring diode means, symmetrically interleaved with the input terminals subject to DC current injection.

4,534,063

PAGING RECEIVER AND SUPPORTING RECEPTACLE THEREFOR

Donald K. Krumin, Ft. Lauderdale, Fla., and Orville W. Larson, Carmell, Calif., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Dec. 22, 1982, Ser. No. 452,249
Int. Cl.[3] H04B *1/08;* **A45F** *5/02;* **A45C** *11/00*
U.S. Cl. 455—344 **12 Claims**

1. A receptacle and a paging receiver with an information display, comprising in combination:

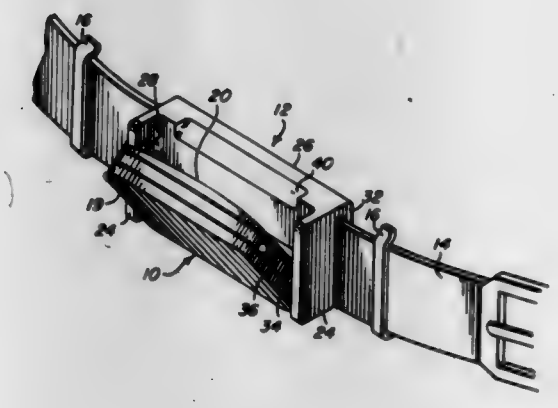
means for securing said receptacle to a user's article of clothing;

said receptacle having sidewalls substantially perpendicular to a plane that is substantially tangential to said article of clothing at the securing point of said receptacle to said article of clothing;

breakaway hinging means for removably connecting said paging receiver to said receptacle and for permitting rotation of said paging receiver away from said tangent

plane, said hinging means being located in part on said paging receiver and in part on said sidewalls; and

breakaway attaching means for removably connecting said paging receiver to said receptacle and for preventing said rotation, said attaching means being located in part on said paging receiver and in part on said sidewalls;



whereby breaking away said attaching means permits rotation of the paging receiver so that the user can observe the information displayed, and breaking away both said hinging means and said attaching means detaches the paging receiver from the receptacle.

4,534,064

FAULT LOCATION ARRANGEMENT FOR DIGITAL OPTICAL TRANSMISSION SYSTEM

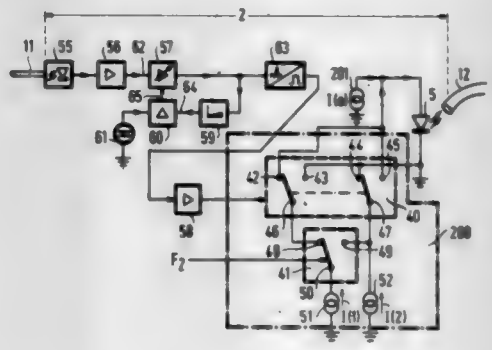
Alberto M. Giacometti, and George W. Newsome, both of Hilversum, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,324

Claims priority, application Netherlands, Jan. 4, 1982, 8200002

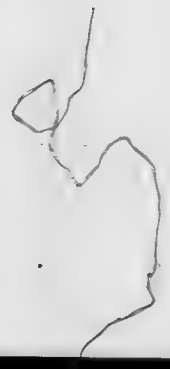
Int. Cl.³ H04B 9/00

U.S. Cl. 455—601 **5 Claims**



1. In a digital optical transmission system having two terminal stations connected by a series of repeaters in one or both transmission directions, each repeater having an electro-optical converter connected to an ongoing optical transmission path, a fault location system for transmitting by amplitude modulation a fault location signal comprising:

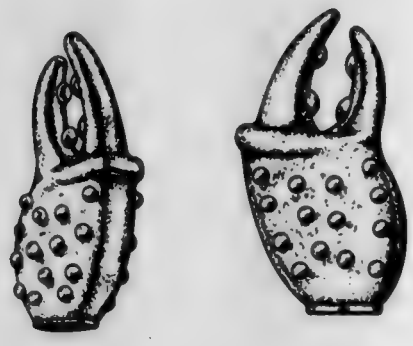
an amplitude modulator at each repeater for generating two amplitude levels in response to said fault location signal for both of the two logic levels carried by the digital optical transmission system, whereby a four-level signal is transmitted over said transmission system which maintains power dissipation of said electro-optical converter substantially constant, avoiding wavelength modulation of the light signal carried by said transmission system.



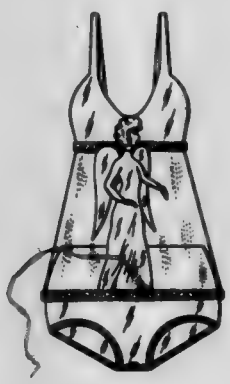
DESIGNS

AUGUST 6, 1985

279,935
MOLDED FISH MEAT PRODUCT
Yoshito Sugino, Nanao, Japan, assignor to Sugiyo Co., Ltd., Ishikawa, Japan
Filed Mar. 11, 1983, Ser. No. 474,510
Claims priority, application Japan, Sep. 27, 1982, 57-44111
Term of patent 14 years
U.S. Cl. D1—111



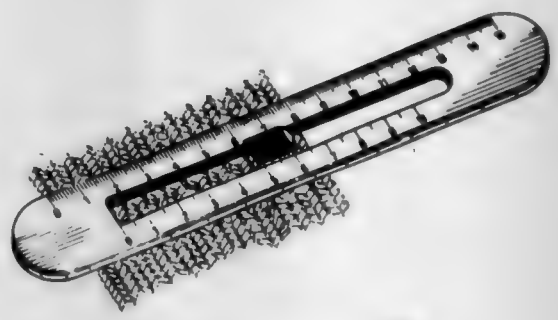
279,936
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,647
Term of patent 14 years
U.S. Cl. D2—41



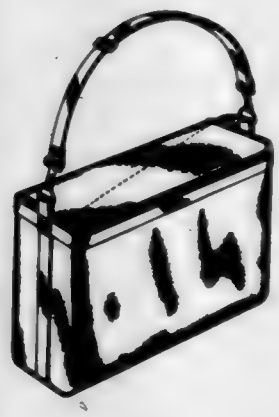
279,937
T-SHIRT
Michael Cohen, 34 Myrtle St. #3, Boston, Mass. 02114
Filed Mar. 28, 1983, Ser. No. 479,840
Term of patent 14 years
U.S. Cl. D2—208

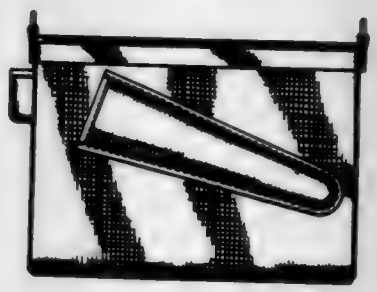


279,938
GAUGE FOR USE WITH SEWING AND KNITTING
Hidekazu Okada, Ashiya, Japan, assignor to Clover Mfg. Co., Ltd., Osaka, Japan
Filed Dec. 20, 1983, Ser. No. 563,530
Claims priority, application Japan, Jun. 30, 1983, 58-28622
Term of patent 14 years
U.S. Cl. D3—18



279,939
COMBINED MAILBAG AND HOLDER FOR AN UMBRELLA AND DOG REPELLENT CANNISTER
Jack G. Richardson, and Dorothy L. Richardson, both of 5842 Candlewood St., Lakewood, Calif. 90713
Filed Apr. 28, 1983, Ser. No. 489,532
Term of patent 14 years
U.S. Cl. D3—42

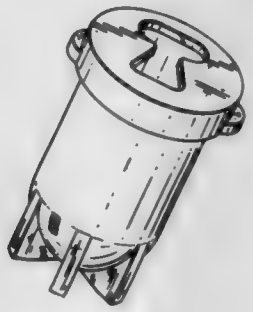




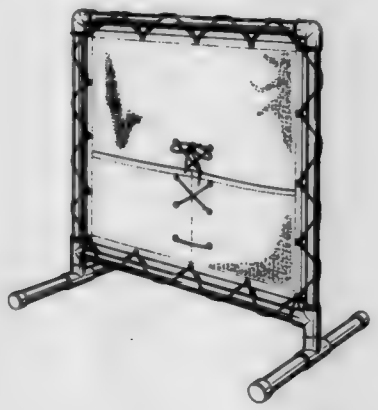
279,940
LUGGAGE ARTICLE FRONT PANEL
Edward M. Stolarz, Yorktown Heights, N.Y., assignor to Presto Lock, Inc., Garfield, N.J.
Division of Ser. No. 240,877, Mar. 5, 1981, abandoned. This application Jan. 19, 1984, Ser. No. 571,833
Term of patent 14 years
U.S. Cl. D3—76



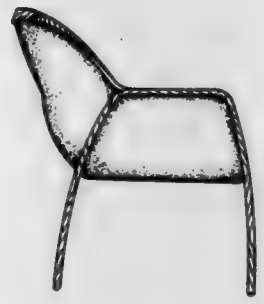
279,941
PROTECTOR FOR TOOTHBRUSH HEAD
Richard T. Anglin, Jr., 698 E. Valleybrook Rd., Blue Springs, Mo. 64015
Filed Aug. 18, 1980, Ser. No. 179,117
Term of patent 14 years
U.S. Cl. D4—199



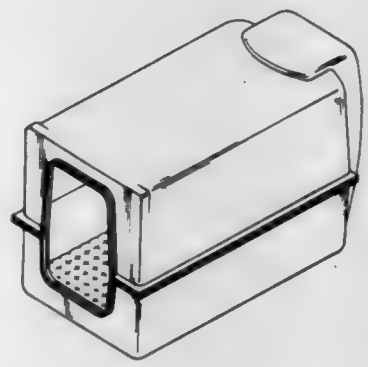
279,942
ROOM DIVIDER
Julian Vasquez, and Samantha R. Anderson, both of Waco, Tex., assignors to Heart of Texas Region Mental Health Mental Retardation Center, Waco, Tex.
Filed Jan. 19, 1983, Ser. No. 459,261
Term of patent 14 years
U.S. Cl. D6—332



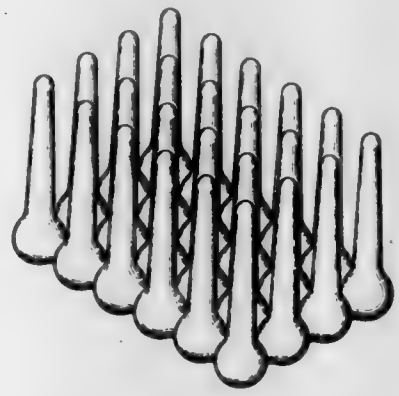
279,943
CHAIR
Richard K. Ogg, Westminster, Md., assignor to Stow & Davis Furniture Company, Grand Rapids, Mich.
Filed Mar. 9, 1983, Ser. No. 473,727
Term of patent 14 years
U.S. Cl. D6—375



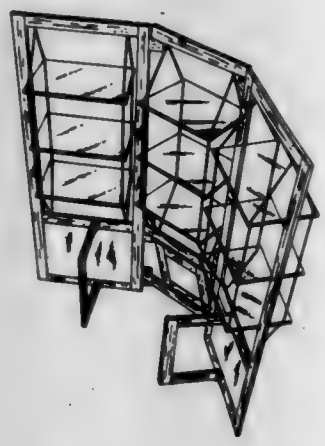
279,944
SLEEPING ENCLOSURE
Charles L. McLaren, 1911 Pear Creek Cir., Houston, Tex. 77084, and Franklin D. Hirsekorn, 105 Rosamond, Houston, Tex. 77076
Filed Aug. 31, 1982, Ser. No. 413,450
Term of patent 14 years
U.S. Cl. D6—382



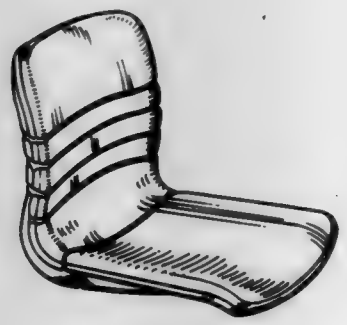
279,945
MAGAZINE RACK
Walter Zeischegg, Blumenscheinweg 10, Ulm, and Bernd Brüssing, Bilharzstr. 3, Ulm-Lehr, both of Fed. Rep. of Germany (D-7900)
Filed Aug. 24, 1982, Ser. No. 411,232
Claims priority, application Fed. Rep. of Germany, Feb. 25, 1982, MR 954; France, Mar. 16, 1982, DM-001299
The portion of the term of this patent subsequent to May 7, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D6—449



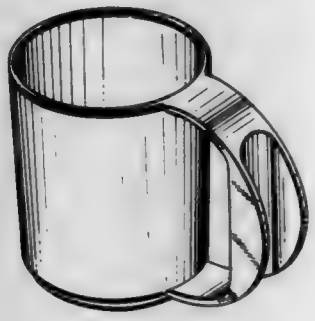
279,946
MERCHANDISE DISPLAY RACK
James O. Willburn, 415 S. 59th St., Tacoma, Wash. 98408
Filed Aug. 25, 1982, Ser. No. 411,289
Term of patent 14 years
U.S. Cl. D6—479



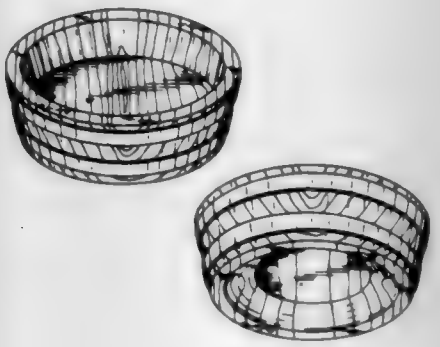
279,947
COMBINED SEAT AND BACKREST UNIT FOR A CHAIR
Luciano Ballarini, Bologna, Italy, assignor to Castelli S.p.A., Bologna, Italy
Filed Apr. 22, 1983, Ser. No. 487,473
Claims priority, application Italy, Oct. 22, 1982, 53841/82[U]
Term of patent 14 years
U.S. Cl. D6—501



279,948
MUG
Johan H. Weernink, RP Ambt-Delden, Netherlands, assignor to Mepal Service B.V., Kwinkweerd, Netherlands
Filed Feb. 15, 1983, Ser. No. 466,572
Term of patent 14 years
U.S. Cl. D7—9

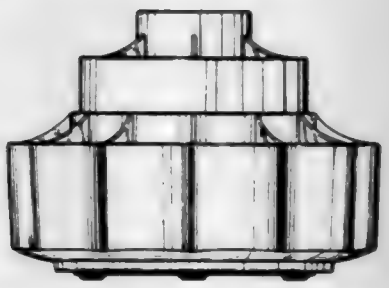


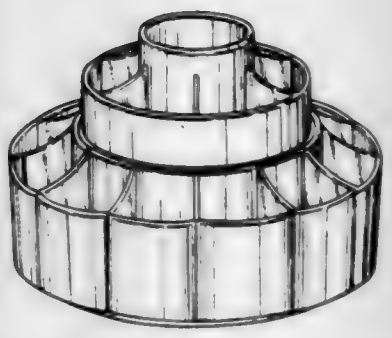
279,949
FOOD BOWL
Steven J. Rossin, 1701 W. Robb Ave., Lima, Ohio 45805
Filed Jun. 10, 1982, Ser. No. 386,775
Term of patent 14 years
U.S. Cl. D7—23



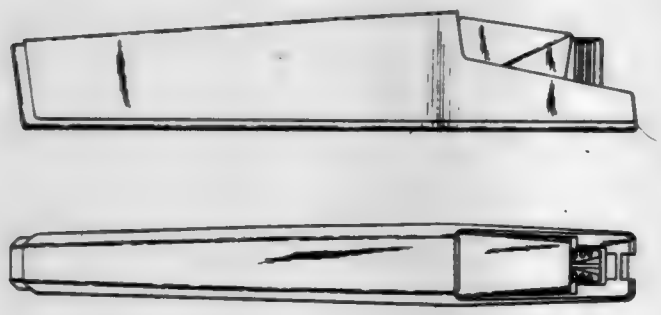


279,950
REVOLVING HOLDER FOR KITCHEN TOOLS OR THE LIKE
Albert Y. Wan, Kowloon, Hong Kong, assignor to Hung Sang Metal Plastic Factory Ltd., Hong Kong, Hong Kong
Filed Apr. 20, 1983, Ser. No. 486,946
Claims priority, application United Kingdom, Dec. 16, 1982, 1010346
Term of patent 14 years
U.S. Cl. D7—73

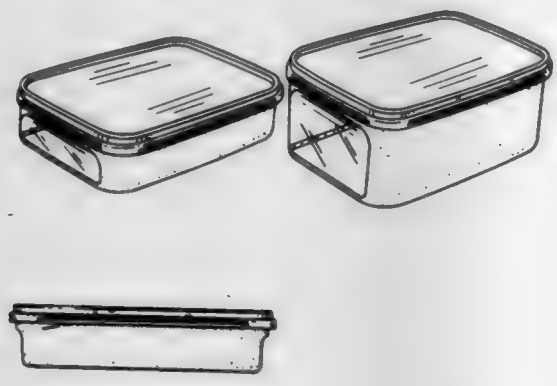




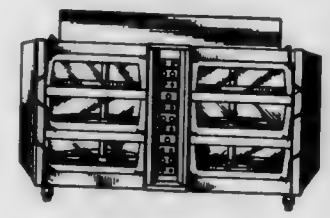
279,951
KNIFE SCABBARD
Frank L. Winyard, Melbourne, Australia, assignor to Wiltshire Consolidated Limited, Australia
Filed Apr. 1, 1983, Ser. No. 481,563
Claims priority, application Australia, Oct. 4, 1982, 1733/82
Term of patent 14 years
U.S. Cl. D7—74



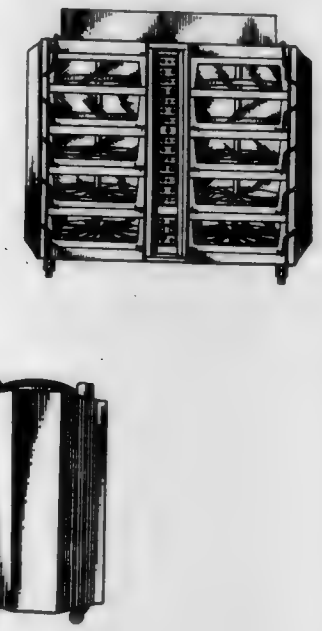
279,952
COVERED FOOD STORAGE CONTAINER OR THE LIKE
Robert H. C. M. Daenen, Hekelgem, Belgium, and Rino Conti, Stoughton, Mass., assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,849
Term of patent 14 years
U.S. Cl. D7—79



279,953
BAKER'S OVEN
Paul E. Willett, Clontarf, Australia, assignor to Baker Perkins Exports Pty. Ltd., Springvale, Australia
Filed Nov. 9, 1983, Ser. No. 549,913
Claims priority, application Australia, May 31, 1983, 3957/83
Term of patent 14 years
U.S. Cl. D7—338



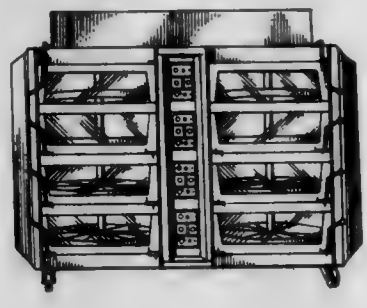
279,954
BAKER'S OVEN
Paul E. Willett, Clontarf, Australia, assignor to Baker Perkins Exports Pty. Ltd., Springvale, Australia
Filed Nov. 9, 1983, Ser. No. 549,914
Claims priority, application Australia, May 31, 1983, 3958/83
Term of patent 14 years
U.S. Cl. D7—338



279,955
BAKER'S OVEN

Paul E. Willett, Clontarf, Australia, assignor to Baker Perkins Export Pty. Ltd., Springvale, Australia

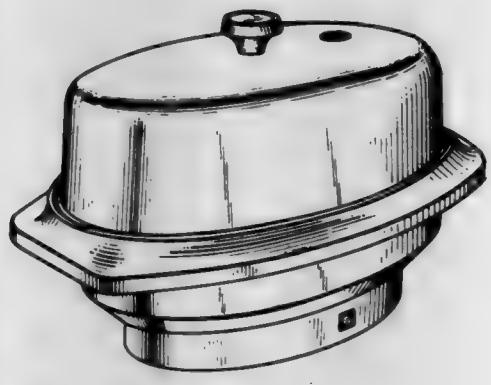
Filed Apr. 19, 1983, Ser. No. 486,431
Claims priority, application Australia, Oct. 26, 1982, 1950/82
Term of patent 14 years
U.S. Cl. D7—348



279,956
FOOD STEAMING POT

Richard T. Eyck, Wichita, Kans.; Robert W. Fee, Ransom Canyon, Tex.; Richard J. Robbins, Derby, and Shau-Min Liu, Wichita, both of Kans., assignors to Rival Manufacturing Company, Kansas City, Mo.

Filed Mar. 21, 1983, Ser. No. 477,007
Term of patent 14 years
U.S. Cl. D7—354



279,957
DRIVER DRILL

Shumi Akazawa, Fuchu, and Kiyoshi Hoshino, Tokyo, both of Japan, assignors to Ryobi Limited, Hiroshima, Japan

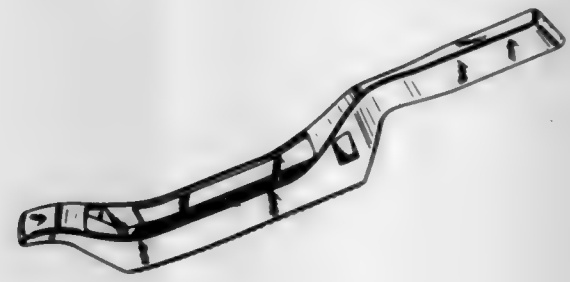
Filed Oct. 31, 1983, Ser. No. 546,988
Claims priority, application Japan, May 7, 1983, 58-19173
Term of patent 14 years
U.S. Cl. D8—61



279,958
PLANING TOOL

Michael H. Groves, Warwick, England, assignor to The Stanley Works Limited, Sheffield, England

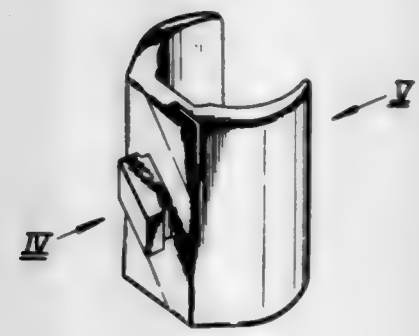
Filed Jul. 8, 1983, Ser. No. 512,408
Claims priority, application United Kingdom, Jan. 14, 1983, 1010824
Term of patent 14 years
U.S. Cl. D8—90



279,959
CLIP

Neil D. Nimmo, Hove; Michael Kenny, and David Willis, both of Kent, all of England, assignors to Nimlok Limited, London, England

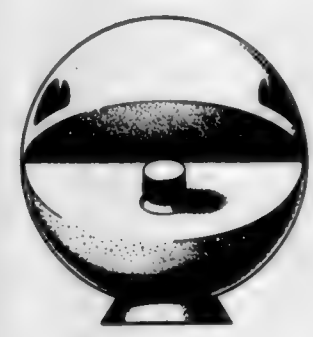
Filed Sep. 2, 1983, Ser. No. 529,702
Claims priority, application United Kingdom, Apr. 6, 1983, 1012349
Term of patent 14 years
U.S. Cl. D8—396



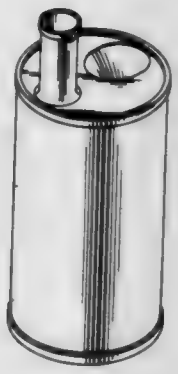
279,960
COMBINED BOTTLE AND CAP

Steve Gavura, Gavura La., Rochester, Pa. 15074

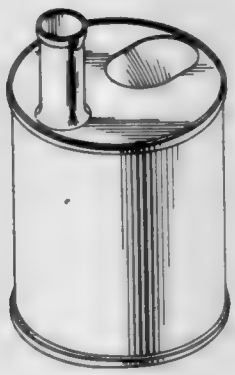
Filed Jan. 17, 1983, Ser. No. 458,481
Term of patent 14 years
U.S. Cl. D9—373



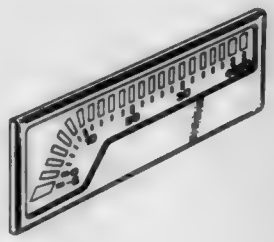
279,961
CONTAINER FOR FLOWABLE PRODUCTS
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed May 12, 1983, Ser. No. 493,833
Term of patent 14 years
U.S. Cl. D9—375



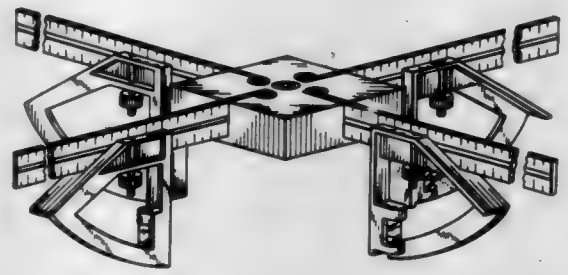
279,962
CONTAINER FOR FLOWABLE PRODUCTS
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Cosden Technology, Inc., Dallas, Tex.
Filed May 12, 1983, Ser. No. 493,834
Term of patent 14 years
U.S. Cl. D9—375



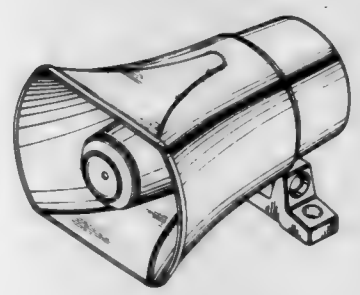
279,963
THERMOMETER FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Jan. 17, 1983, Ser. No. 458,856
Claims priority, application Japan, Sep. 21, 1982, 57-43054
Term of patent 14 years
U.S. Cl. D10—57



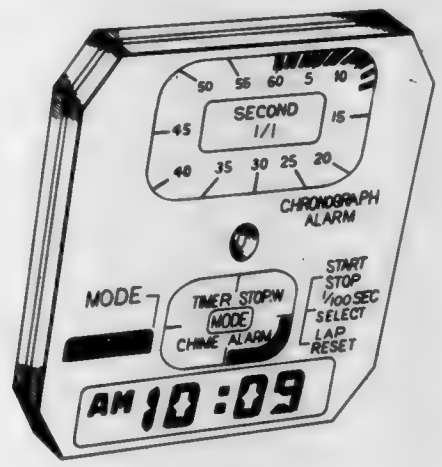
279,964
SQUARING TOOL
Harold R. Weeks, 324 South Findlay, Portage, Ohio 43451
Filed Mar. 21, 1983, Ser. No. 477,346
Term of patent 14 years
U.S. Cl. D10—62



279,965
SIREN
Kazuo Mikami, Matsudo, Japan, assignor to Kobishi Electric Co., Ltd., Japan
Filed Dec. 19, 1983, Ser. No. 562,703
Term of patent 14 years
U.S. Cl. D10—120



279,966
ELECTRO-OPTIC DISPLAY FOR A TIMEPIECE
Hayao Kano, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 29, 1982, Ser. No. 343,968
Claims priority, application Japan, Oct. 31, 1981, 56-48770
Term of patent 14 years
U.S. Cl. D10—125



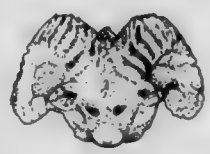
279,967
FIGURINE OF A WATER BUFFALO
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Apr. 30, 1982, Ser. No. 373,670
Term of patent 14 years
U.S. Cl. D11—158



279,968
FIGURINE OF A LEMUR MONKEY
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jan. 17, 1983, Ser. No. 458,295
Term of patent 14 years
U.S. Cl. D11—158



279,969
FIGURINE OF A BIG HORN SHEEP
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jan. 17, 1983, Ser. No. 458,302
Term of patent 14 years
U.S. Cl. D11—158

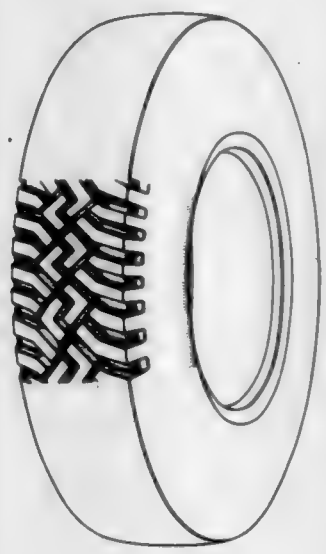




279,970
FIGURINE OF AN OSTRICH
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jun. 17, 1982, Ser. No. 389,542
Term of patent 14 years
U.S. Cl. D11—162



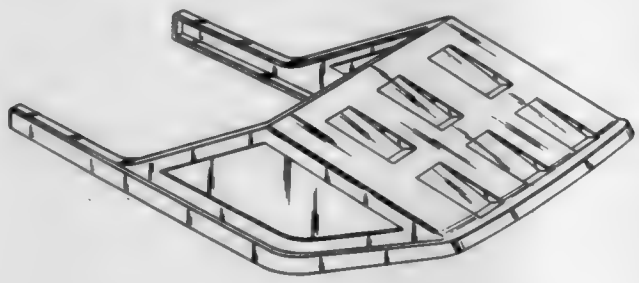
279,971
TIRE
Bill J. Wallet, Marshallville, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio
Filed May 20, 1983, Ser. No. 496,723
Term of patent 14 years
U.S. Cl. D12—147



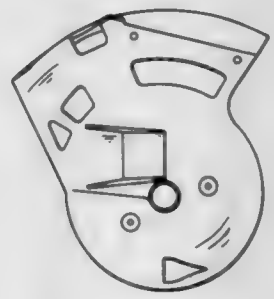
279,972
CAR TOP CARRIER
John R. Marovich, 1564 Welling, Troy, Mich. 48098
Filed Aug. 31, 1983, Ser. No. 528,038
Term of patent 14 years
U.S. Cl. D12—157



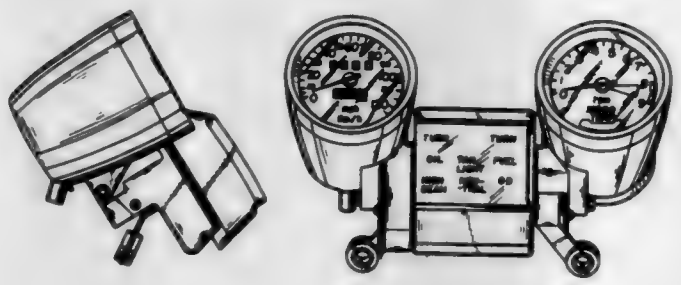
279,973
MOTORCYCLE RACK
Ronald H. Powers, Newport Beach, Calif., assignor to Creative Powers, Inc., Newport Beach, Calif.
Filed Dec. 15, 1981, Ser. No. 330,887
Term of patent 14 years
U.S. Cl. D12—158



279,974
FRONT FENDER FOR MOTORCYCLE
Masamichi Komori, Sayama; Kazuhiko Tsunoda, Kamifukuoka, and Yasuyuki Tsurumi, Fujimi, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Aug. 16, 1982, Ser. No. 408,706
Claims priority, application Japan, Feb. 22, 1982, 57-7265
Term of patent 14 years
U.S. Cl. D12—186



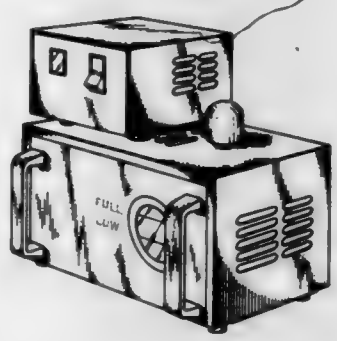
279,975
MOTORCYCLE INSTRUMENT CLUSTER
Nakamura Akira, Tokyo, and Yamada Toshiyuki, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Dec. 16, 1982, Ser. No. 450,451
Claims priority, application Japan, Jun. 22, 1982, 57-28088
Term of patent 14 years
U.S. Cl. D12—192



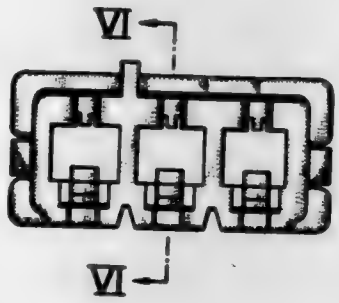
279,976
MOTORCYCLE DISPLAY PANEL AND SUPPORT FOR INSTRUMENT GAUGES
Nakamura Akira, Tokyo, and Yamada Toshiyuki, Saitama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Japan
Filed Dec. 16, 1982, Ser. No. 450,452
Claims priority, application Japan, Jun. 22, 1982, 57-28089
Term of patent 14 years
U.S. Cl. D12—192



279,977
GENERATOR FOR FUEL ADDITIVE
William F. Bonazelli, P.O. Box 208, Hathaway Pines, Calif. 95233
Filed Jul. 12, 1983, Ser. No. 513,196
Term of patent 14 years
U.S. Cl. D13—2



279,978
CONNECTOR HOUSING
Nori Inoue; Yoshio Itou, both of Yokkaichi, and Atsushi Sakatani, Matsuzaka, all of Japan, assignors to Tokai Electric Wire Co., Ltd., Japan
Filed Dec. 27, 1982, Ser. No. 452,890
Claims priority, application Japan, Jun. 29, 1982, 57-29112; Jun. 29, 1982, 57-29113
Term of patent 14 years
U.S. Cl. D13—24



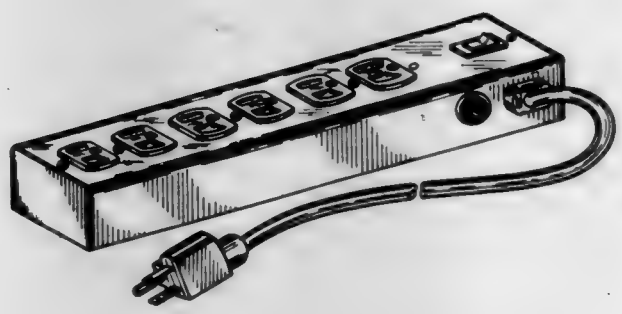
279,979
MULTIPLE OUTLET STRIP

James D. Kovacik, Parma; Thomas J. Blanch, Maple Heights; Paul S. Blanch, Garfield Heights, and James W. Kovacik, Parma, all of Ohio, assignors to Alert Safety Lite Products Co., Bedford Heights, Ohio

Filed Sep. 30, 1982, Ser. No. 431,748

Term of patent 14 years

U.S. Cl. D13—30



279,980
TELEPHONE STAND

Paul E. Tremblay, 20 Dow St., Salem, Mass. 01970

Filed May 18, 1983, Ser. No. 496,624

Term of patent 14 years

U.S. Cl. D14—62



279,981
MOBILE TELEPHONE UNIT

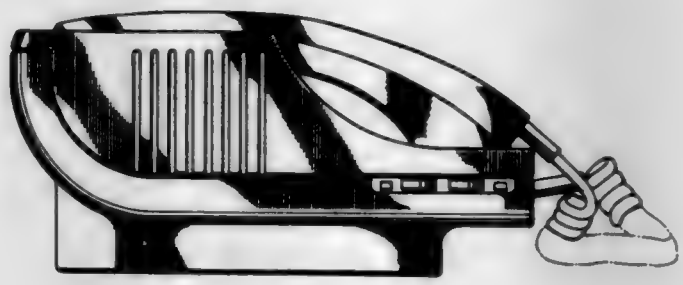
Masakazu Tsukamoto, Funabashi, and Kiyoshi Ishii, Hachioji, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

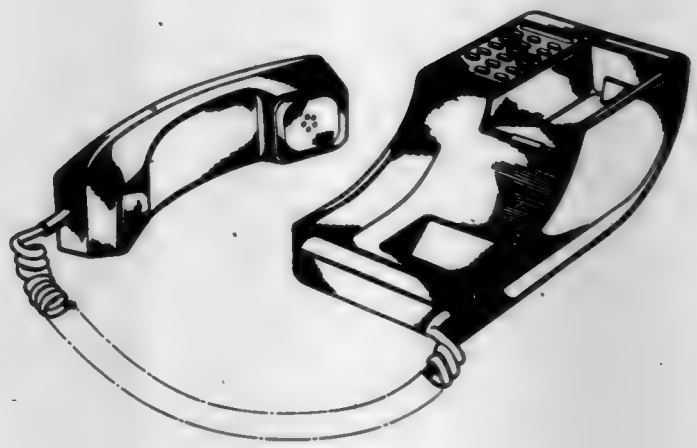
Filed Sep. 28, 1982, Ser. No. 425,690

Claims priority, application Japan, Mar. 31, 1982, 57-13519

Term of patent 14 years

U.S. Cl. D14—53





279,982
TELEPHONE STAND

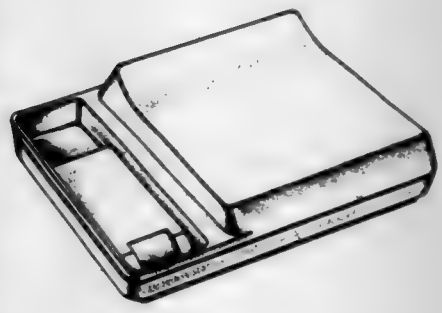
Donald M. Genaro, Haworth, N.J.; Daniel K. Harden, Brooklyn, N.Y., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 20, 1984, Ser. No. 653,371

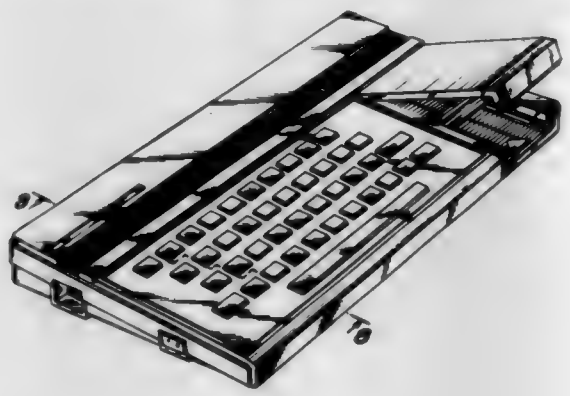
Term of patent 14 years

U.S. Cl. D14—60

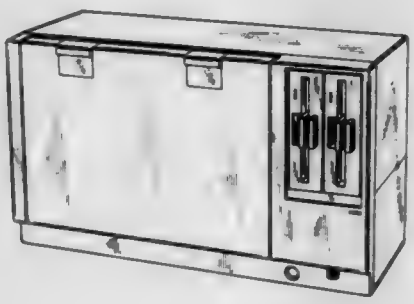




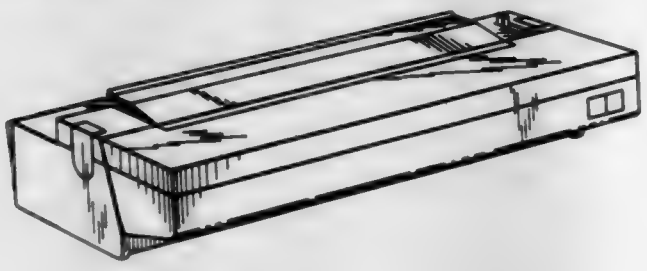
279,983
PERSONAL COLOR COMPUTER
Gary E. Grimes, Watertown, Conn., assignor to Timex Computer Corporation, Waterbury, Conn.
Filed Jun. 2, 1983, Ser. No. 500,609
Term of patent 14 years
U.S. Cl. D14—100



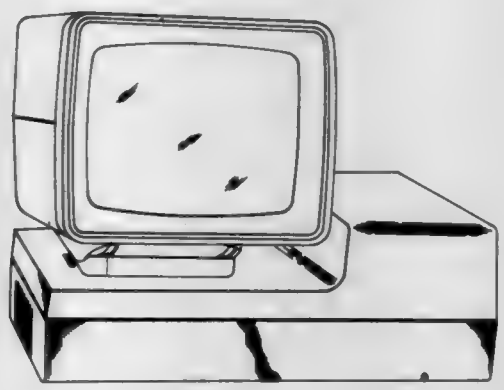
279,984
CENTRAL PROCESSOR UNIT
Mitsuru Ohnuma, 1-40-1, Shimoigusa, Suginami-ku, Tokyo; Kazuyuki Tsuburaya, 757-8, Amema, Akigawa-shi, Tokyo; Masato Tanitsu, 1-40-1, Hyoshi-cho, Kokubunji-shi, Tokyo; Akihito Nakata, 1021, Harajyuku-cho, Totsuko, Yokohama-shi, Kanagawa-ken, and Hidetomo Yoshimura, 7-9-5, Sakurayama, Zushi-shi, Kanagawa-ken, all of Japan
Filed May 4, 1983, Ser. No. 491,589
Claims priority, application Japan, May 7, 1982, 57-19471; May 7, 1982, 57-19472
Term of patent 14 years
U.S. Cl. D14—109



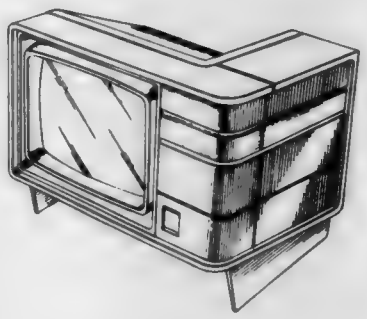
279,985
PRINTER
Richard S. Thom, London, England, assignor to Prutec Limited, London, England
Filed Aug. 3, 1982, Ser. No. 404,927
Claims priority, application United Kingdom, Feb. 10, 1982, 1005032
Term of patent 14 years
U.S. Cl. D14—111



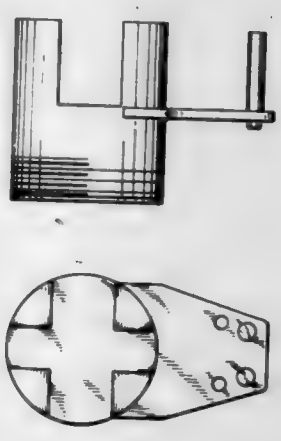
279,986
DISPLAY STATION FOR A DATA PROCESSING SYSTEM
Peter J. Mendel, Rochester, Minn.; Frank Wilkey, Jr. deceased, late of Rochester, Minn., and First National Bank Of Rochester, Executor, Rochester, Minn., assignors to International Business Machines Corporation, Armonk, N.Y.
Filed Feb. 22, 1982, Ser. No. 350,798
Term of patent 14 years
U.S. Cl. D14—113



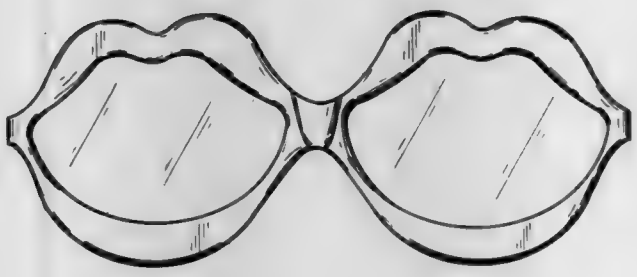
279,987
DISPLAY CABINET FOR CRT
Nuccio Bertone, Turin, Italy, assignor to Northern Technologies Limited, Markham, Canada
Filed May 11, 1983, Ser. No. 493,483
Term of patent 14 years
U.S. Cl. D14—113



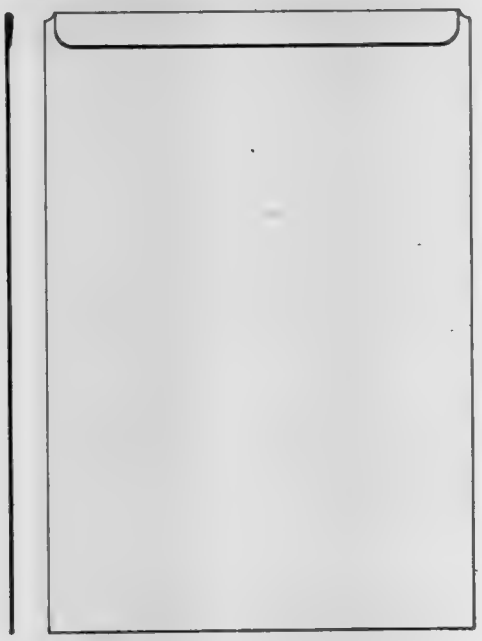
279,988
SELF-ALIGNING DIE HOLDER
Lee W. Richards, Carrollton, Ga., assignor to Southwire Company, Carrollton, Ga.
Filed Sep. 30, 1982, Ser. No. 429,751
Term of patent 14 years
U.S. Cl. D15—140



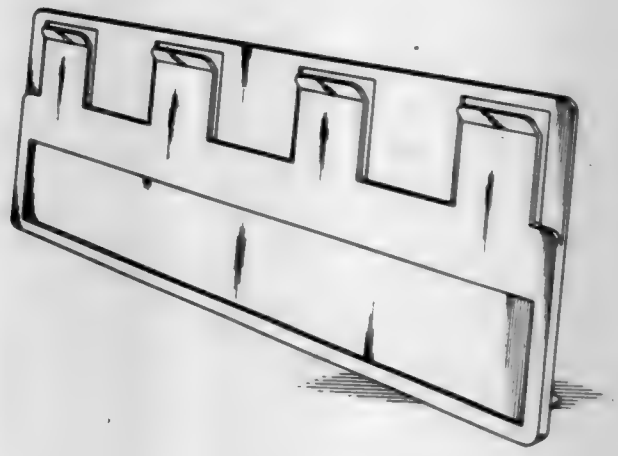
279,989
SUNGLASSES
Paul McNaughton, 1828 Lake Dr., Winston Salem, N.C. 27107
Filed Mar. 14, 1984, Ser. No. 589,574
Term of patent 14 years
U.S. Cl. D16—104



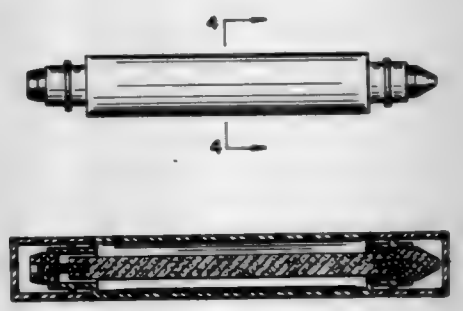
279,990
TRANSPARENT ENVELOPE
Ernst W. Gerber, c/o E. Gerber Products, Inc., P.O. Box E, Center Lovell, Me. 04016
Filed Jul. 6, 1982, Ser. No. 395,811
Term of patent 14 years
U.S. Cl. D19—3



279,991
NOTE HOLDER STAND FOR CALENDARS AND DOCUMENTS
Andrew S. Lehman, 960 Bellmore Ave., North Bellmore, N.Y. 11710
Filed Sep. 29, 1982, Ser. No. 430,261
Term of patent 14 years
U.S. Cl. D19—21



279,992
DUAL TIP MARKING INSTRUMENT
Stephen R. Gribb, 10846 Seavitt Dr., Allen Park, Mich. 48101
Filed Apr. 6, 1983, Ser. No. 482,563
Term of patent 14 years
U.S. Cl. D19—43



279,993
MECHANICAL PENCIL OR SIMILAR ARTICLE
Shigeo Oka, Tokyo, Japan, assignor to Pentel Kabushiki Kaisha, Tokyo, Japan
Filed Jul. 19, 1983, Ser. No. 515,367
Claims priority, application Japan, Feb. 15, 1983, 58-5754
Term of patent 14 years
U.S. Cl. D19—45

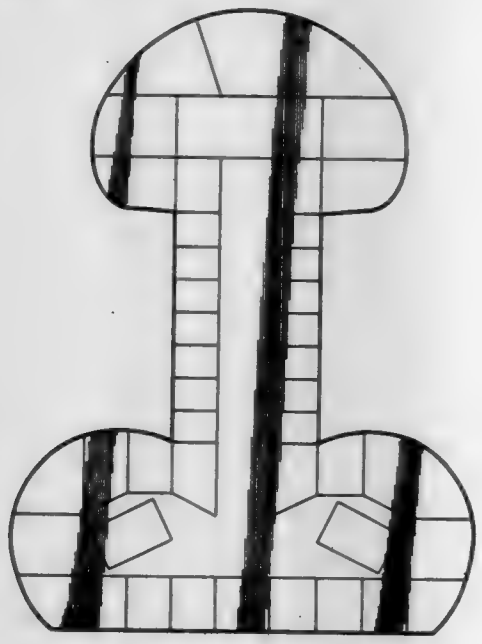


279,994
PAPERWEIGHT
Paul Noll, Manchester, Calif., assignor to Lieba, Inc., Baltimore, Md.
Filed Jan. 26, 1983, Ser. No. 461,236
Term of patent 14 years
U.S. Cl. D19—97

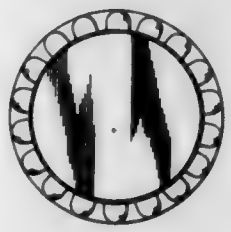


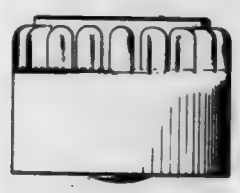


279,995
GAMEBOARD
Robert G. Veihl, Jr., 819 Kelly Ave., Joliet, Ill. 60435; Mart J. Dickinson, and H. Wade Dickinson, both of 8 N. Park Rd., Joliet, Ill. 60433
Filed Sep. 20, 1982, Ser. No. 420,470
Term of patent 14 years
U.S. Cl. D21—33



279,996
PUCK
Michael W. Survance, 12312 Brookgreen Dr., Louisville, Ky. 40243, and John D. Survance, 8103 Four Winds Dr., Louisville, Ky. 40222
Filed Sep. 20, 1982, Ser. No. 420,374
Term of patent 14 years
U.S. Cl. D21—51

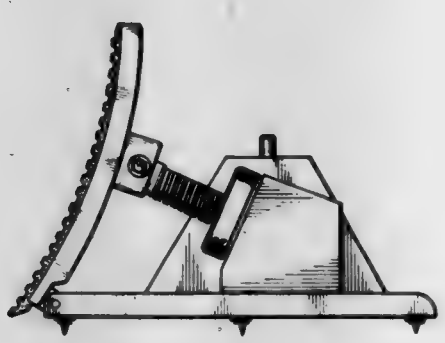




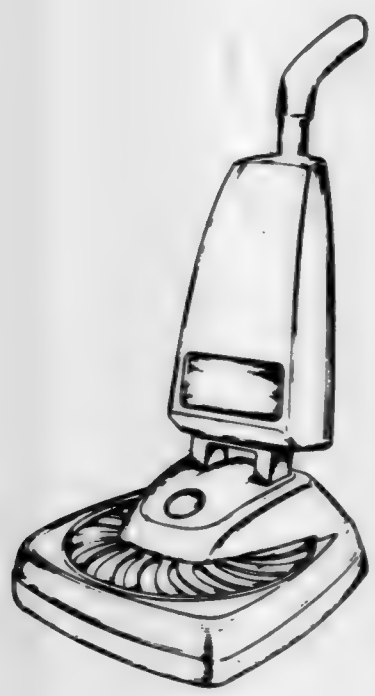
279,997
STILT
James N. Brown, P.O. Box 697, Seminole, Okla. 74868, and Darrell L. Taylor, P.O. Box 925, Orange, Tex. 77630
Filed Mar. 15, 1983, Ser. No. 475,398
Term of patent 14 years
U.S. Cl. D21—72



279,998
FOOT SUPPORT BLOCK FOR RUNNER'S STARTING BLOCK ASSEMBLY
Milton A. Newton, Jr., 4392 Pampas Rd., Woodland Hills, Calif. 91364
Filed Jun. 29, 1983, Ser. No. 510,090
Term of patent 14 years
U.S. Cl. D21—199



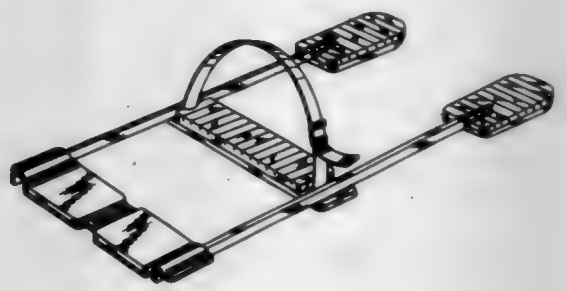
280,000
TOY VACUUM CLEANER
Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.
Filed Jan. 3, 1983, Ser. No. 455,104
Term of patent 14 years
U.S. Cl. D21—122



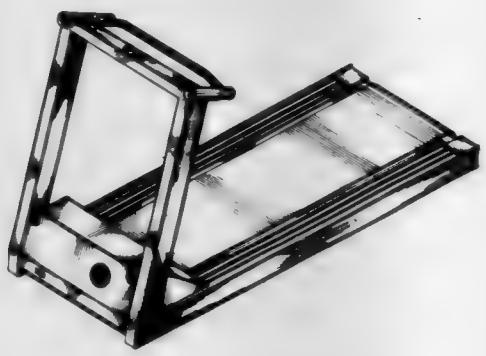
279,999
GOLF CLUB HEAD COVER
James H. Menath, 800 W. Washington, Carson City, Nev. 89701
Filed Mar. 4, 1983, Ser. No. 472,050
Term of patent 14 years
U.S. Cl. D21—221



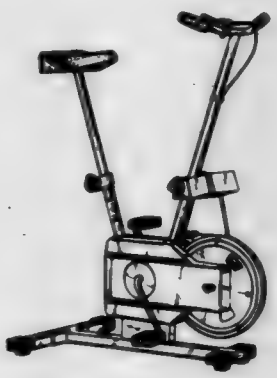
280,001
EXERCISE FRAME
James R. Noble, Mountain Rd., Henderson R.D. 1, Auckland, New Zealand
Filed Sep. 21, 1982, Ser. No. 420,920
Claims priority, application New Zealand, Apr. 30, 1982, 200465
Term of patent 14 years
U.S. Cl. D21—191



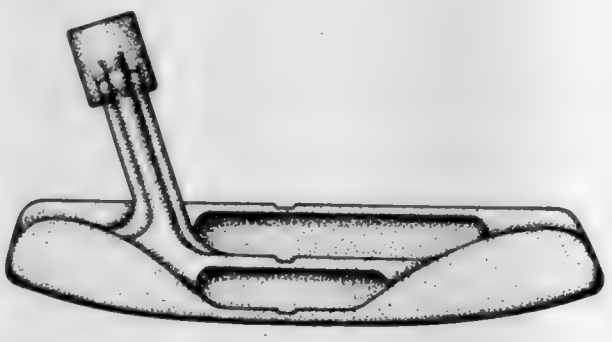
280,002
TREADMILL
David B. Smith, Mercer Island, Wash., assignor to Precor Incorporated, Redmond, Wash.
Filed Apr. 14, 1983, Ser. No. 484,908
Term of patent 14 years
U.S. Cl. D21—192



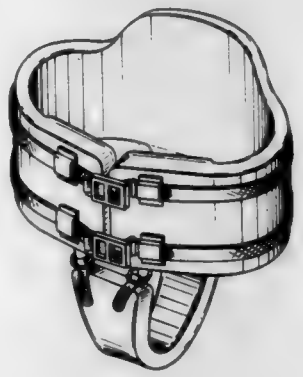
280,003
BICYCLE EXERCISER
Heikki Kiiski, Turku, Finland, assignor to Tunturipyörä Oy, Finland
Filed Sep. 9, 1983, Ser. No. 530,745
Claims priority, application Finland, Mar. 17, 1983, 260/83
Term of patent 14 years
U.S. Cl. D21—194



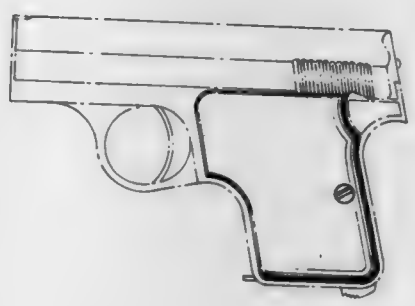
280,004
PUTTER HEAD
John A. Worster, Solana Beach, Calif.; Charles G. Giebel, Phoenix, Ariz., and Herbert W. Lyon, Escondido, Calif., assignors to Acushnet Company, New Bedford, Mass.
Filed Jan. 13, 1983, Ser. No. 457,722
Term of patent 14 years
U.S. Cl. D21—219



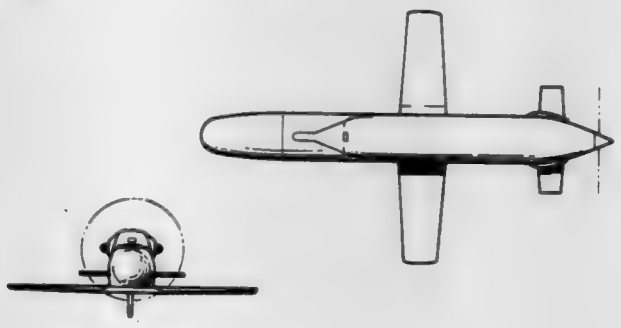
280,005
BUOYANT BELT
Robert S. Jones, 8456 Rodney Dr., Indianapolis, Ind. 46234
Filed Sep. 14, 1983, Ser. No. 531,953
Term of patent 14 years
U.S. Cl. D21—238



280,006
GRIP PLATE FOR A GUN
Raymond J. Dheur, Cheratte, Belgium, assignor to Fabrique Nationale Herstal S.A., Belgium
Filed Feb. 18, 1982, Ser. No. 349,701
Term of patent 14 years
U.S. Cl. D22—7



280,007
UNMANNED AIRCRAFT
Chris Benneche; Richard W. Cronin, both of Newbury Park; Eugene M. Linhart, Thousand Oaks; Richard L. Ranes, Simi Valley, and Darrell K. Welch, Thousand Oaks, all of Calif., assignors to Northrop Corporation, Hawthorne, Calif.
Filed Jan. 10, 1980, Ser. No. 110,825
Term of patent 14 years
U.S. Cl. D22—11

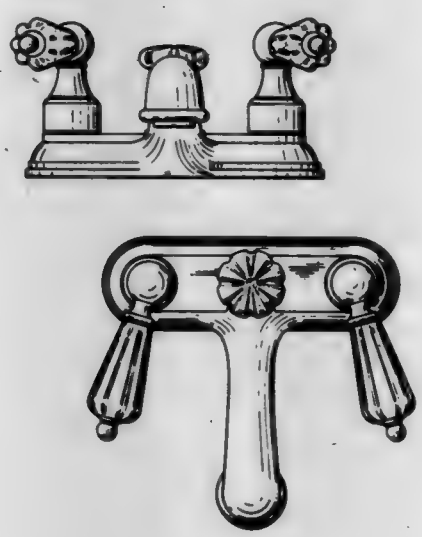


280,008
FAUCET

Charles D. Miller; Bernard O. Daniels, and William C. McKeone, all of Kansas City, Mo., assignors to Broadway Industries, Inc., Kansas City, Mo.

Filed Oct. 3, 1983, Ser. No. 538,212
Term of patent 14 years

U.S. Cl. D23—25



280,009
FAUCET SET

Charles D. Miller; Bernard O. Daniels, and William C. McKeone, all of Kansas City, Mo., assignors to Broadway Industries, Inc., Kansas City, Mo.

Filed Oct. 3, 1983, Ser. No. 538,224
Term of patent 14 years

U.S. Cl. D23—25

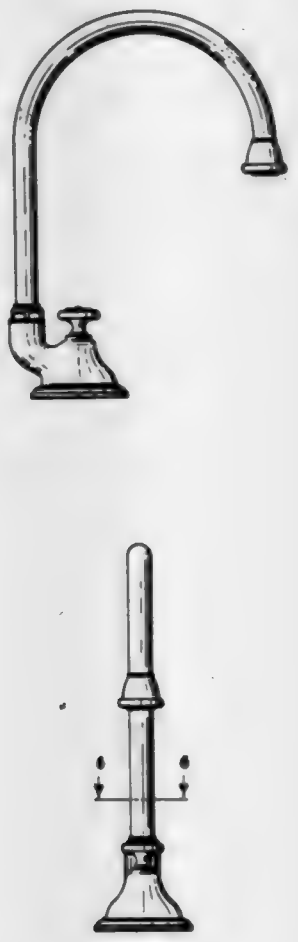


280,010
SPOUT

Charles D. Miller; Bernard O. Daniels, and William C. McKeone, all of Kansas City, Mo., assignors to Broadway Industries, Inc., Kansas City, Mo.

Filed Apr. 2, 1984, Ser. No. 595,648
Term of patent 14 years

U.S. Cl. D23—32

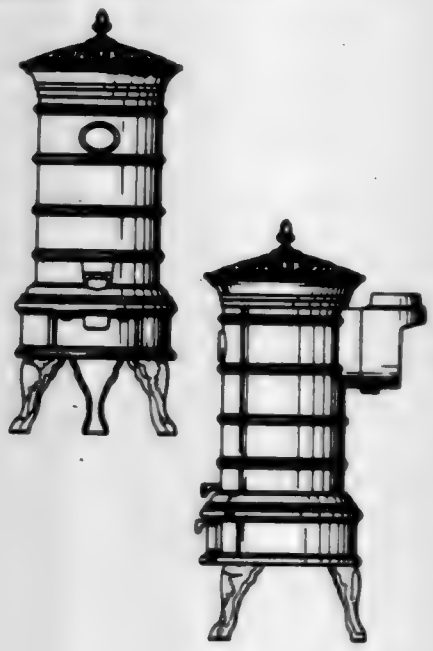


280,011
STOVE

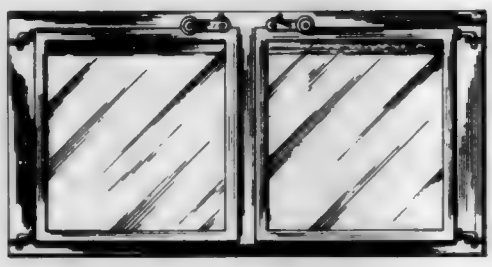
Oreste G. Nosenzo, Asti, Italy, assignor to C. S. di Nosenzo Oreste, Asti, Italy

Filed Dec. 7, 1982, Ser. No. 447,583
Term of patent 14 years

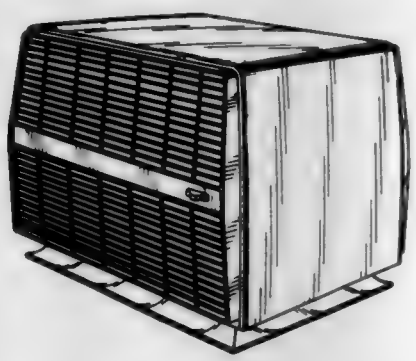
U.S. Cl. D23—97



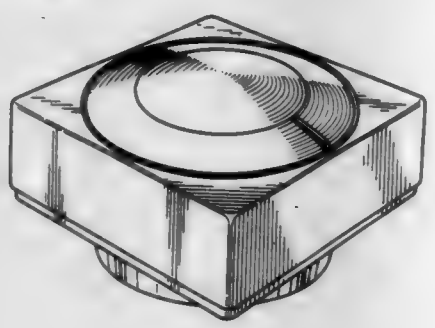
280,012
FIREPLACE DOOR
Donald W. Wilkening, Akeley, assignor to Wilkening Manufacturing Company, Walker, Minn.
Filed May 5, 1983, Ser. No. 491,714
Term of patent 14 years
U.S. Cl. D23—128



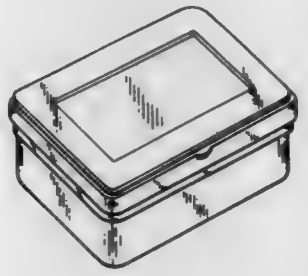
280,013
AIR CLEANER
Alfred W. Madl, Glendale, Wis., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Jul. 8, 1983, Ser. No. 512,211
Term of patent 14 years
U.S. Cl. D23—149



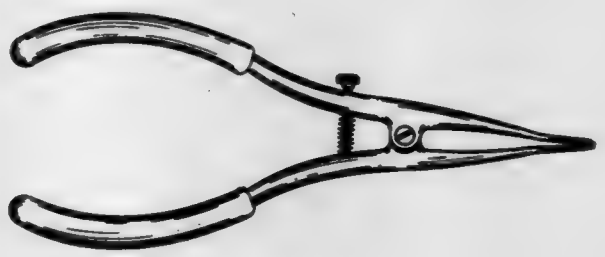
280,014
AIR FRESHENER DISPENSER FOR VEHICLES
Yoshihisa Tanaka, Ichikawa, Japan, assignor to Tanaka Manufacturing Co., Ltd., Tokyo, Japan
Filed Nov. 8, 1983, Ser. No. 550,010
Claims priority, application Japan, Jul. 25, 1983, 58-32634
Term of patent 14 years
U.S. Cl. D23—150



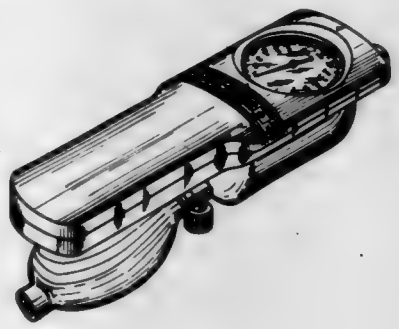
280,015
DENTAL WORK CASE
Armen G. Sarajian, 1624 Ridgeway Dr., Glendale, Calif. 91202
Filed Apr. 5, 1982, Ser. No. 365,627
Term of patent 14 years
U.S. Cl. D24—10



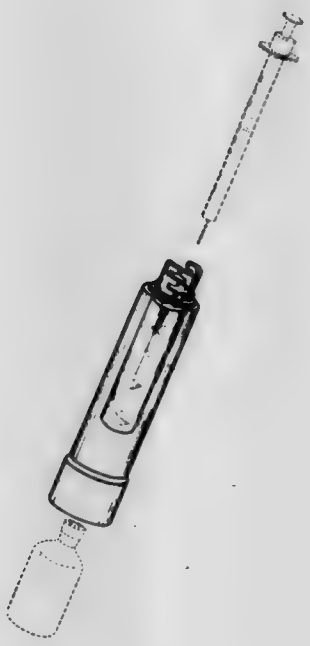
280,016
MODULE PLACING ORTHODONTIC PLIERS
Craven H. Kurz, No. 6 North Star, Apt. 106, Marina del Rey, Calif. 90291
Filed Sep. 20, 1982, Ser. No. 420,398
Term of patent 14 years
U.S. Cl. D24—10



280,017
BLOOD PRESSURE METER
Murray I. C. Camens, Groningen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Sep. 20, 1982, Ser. No. 420,207
Claims priority, application Japan, Mar. 24, 1982, 12.173
Term of patent 14 years
U.S. Cl. D24—17



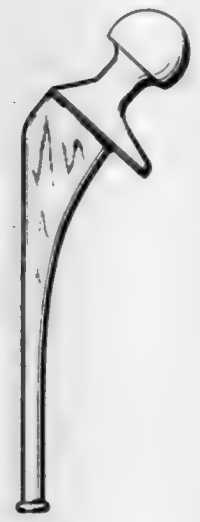
280,018
SYRINGE LOADING GUIDE
Peter K. Scott, Waban, Mass., assignor to Commonwealth Industries, Boston, Mass.
Filed Oct. 25, 1982, Ser. No. 436,564
Term of patent 14 years
U.S. Cl. D24—25



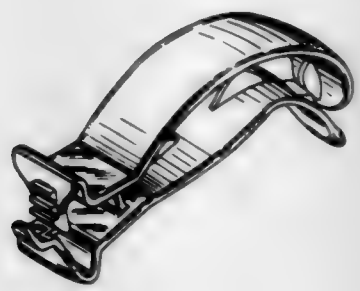
280,019
STAPLE REMOVER
Robert P. Meyer, Creve Coeur Township, St. Louis County, Mo., and Leland W. Annett, Lake Elmo, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Aug. 17, 1983, Ser. No. 524,093
Term of patent 14 years
U.S. Cl. D24—26



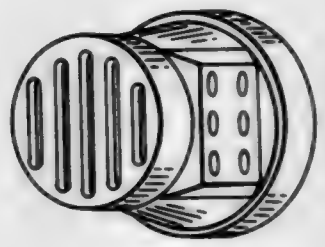
280,020
HIP JOINT PROSTHESIS
Charles A. Homsy, 11526 Raintree Cir., Houston, Tex. 77024
Filed Apr. 19, 1982, Ser. No. 369,732
Term of patent 14 years
U.S. Cl. D24—33



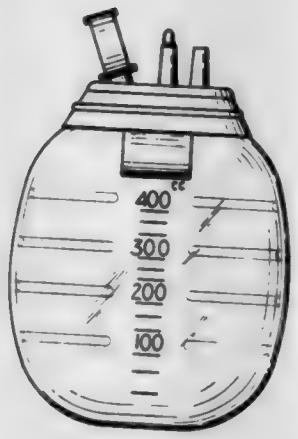
280,021
AIRWAY
Bruce Rind, 104-40 Queens Blvd., Forest Hills, N.Y. 11375
Filed Jun. 7, 1982, Ser. No. 386,164
Term of patent 14 years
U.S. Cl. D24—34



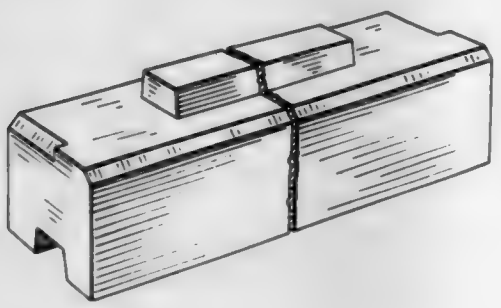
280,022
HEARING AID TRANSDUCER OR THE LIKE
Philip S. Egan, Fairfax; Keld T. Helmuth, Novato; Richard G. Pimentel, San Rafael, all of Calif., and Tom B. Soerensen, Praestoe, Denmark, assignors to Phonic Ear, Inc., Mill Valley, Calif.
Filed Mar. 10, 1983, Ser. No. 474,245
Term of patent 14 years
U.S. Cl. D24—35



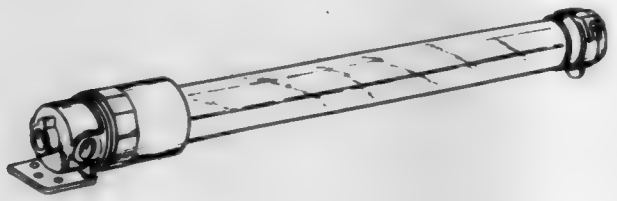
280,023
WOUND DRAINAGE RESERVOIR
Matthew W. Bootman, Goleta; Peter Schillke, Santa Barbara, and Stephen W. Laguette, Santa Barbara, all of Calif., assignors to American Hospital Supply Corporation, Evanston, Ill.
Filed Aug. 19, 1982, Ser. No. 410,181
Term of patent 14 years
U.S. Cl. D24—56



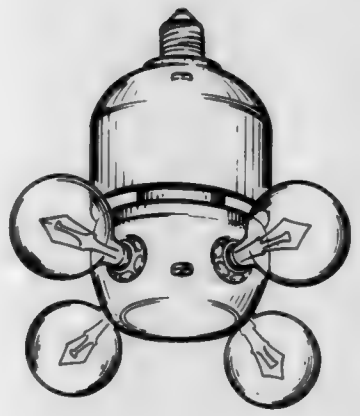
280,024
STRETCHER FOR CRIBBING
Angelo Risi, and Antonio Risi, both of P.O. Box 370, Gormley, Ontario, Canada L0H 1G0
Filed Sep. 8, 1982, Ser. No. 398,291
Claims priority, application Canada, Jun. 24, 1982, 24-06-82-1
Term of patent 14 years
U.S. Cl. D25—80



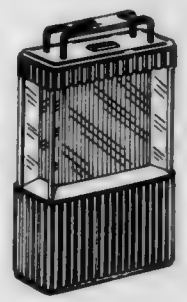
280,025
FLAME-PROOF LIGHT ENCLOSURE
Ivan L. Waters, Yarra Glen, Australia, assignor to Burn-Brite Lights Proprietary Limited, Victoria, Australia
Filed Dec. 17, 1982, Ser. No. 450,762
Claims priority, application Australia, Sep. 1, 1982, 1452/82
Term of patent 14 years
U.S. Cl. D26—24



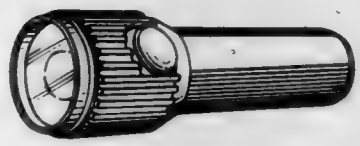
280,026
ROTATING LIGHT
Irol G. Gangbin, 3 Via Barberini, Chula Vista, Calif. 92010
Filed Dec. 15, 1982, Ser. No. 450,146
Term of patent 14 years
U.S. Cl. D26—26



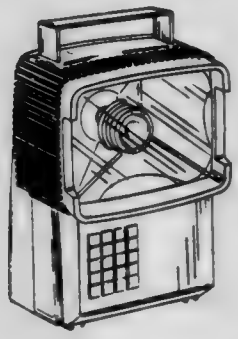
280,027
LANTERN
Tor H. Petterson, Palos Verdes Peninsula, Calif., assignor to Rayovac Corporation, Madison, Wis.
Filed Aug. 4, 1983, Ser. No. 520,323
Term of patent 14 years
U.S. Cl. D26—40



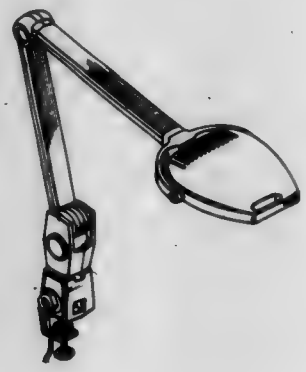
280,028
FLASHLIGHT
Tor H. Petterson, Rancho Palos Verdes, Calif., assignor to Rayovac Corporation, Madison, Wis.
Filed Jun. 24, 1983, Ser. No. 507,515
Term of patent 14 years
U.S. Cl. D26—49



280,029
LANTERN
Tor H. Petterson, Palos Verdes Peninsula, Calif., assignor to Rayovac Corporation, Madison, Wis.
Filed Jul. 25, 1983, Ser. No. 516,724
Term of patent 14 years
U.S. Cl. D26—50



280,030
BALANCED LIGHT FOR DRAFTING TABLES
Charles Matthews, San Clemente, Calif., assignor to Plan Hold Corporation, Irvine, Calif.
Filed Dec. 7, 1982, Ser. No. 447,479
Term of patent 14 years
U.S. Cl. D26—60



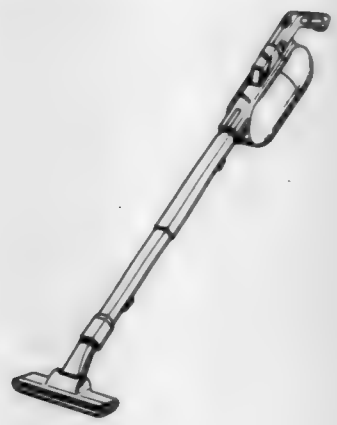
280,031
HAIR CURLER
Edward J. Doyle, Hatboro, Pa., and James M. Rittenhouse, Watchung, N.J., assignors to Conair Corporation, Edison, N.J.
Filed Mar. 28, 1983, Ser. No. 479,264
Term of patent 14 years
U.S. Cl. D28—35



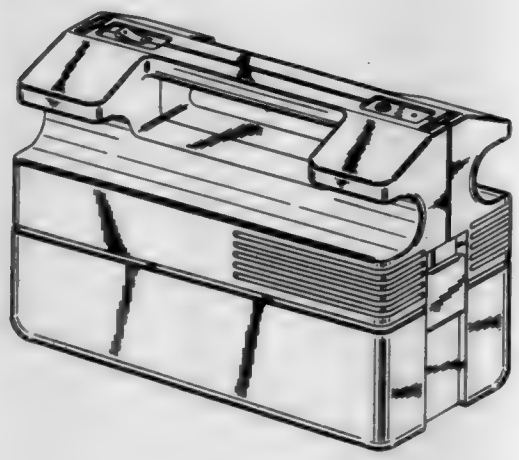
280,032
LIPSTICK CONTAINER
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Aug. 13, 1983, Ser. No. 528,086
Term of patent 14 years
U.S. Cl. D28—89



280,033
VACUUM CLEANER
Isshin Miyamoto; Yasuo Nagamatsu; Toshiya Moriyama, and Masaharu Sakamoto, all of Fukuoka, Japan, assignors to Matzushita Electric Industrial Co., Ltd., Osaka, Japan
Filed Sep. 9, 1983, Ser. No. 530,828
Claims priority, application Japan, Mar. 10, 1983, 58-9911
Term of patent 14 years
U.S. Cl. D32—22



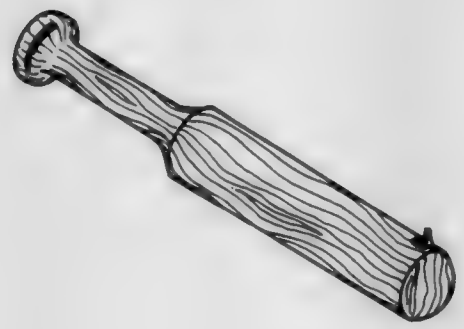
280,034
PORTABLE VACUUM CLEANER
Horst Pudwill, Kowloon, Kong, assignor to Continental Engineering Products Co., Ltd., Kowloon, Hong Kong
Filed Jun. 10, 1983, Ser. No. 503,364
Claims priority, application Fed. Rep. of Germany, Dec. 27, 1982, 1449/82
Term of patent 14 years
U.S. Cl. D32—24



280,035
BASKET
Evonne Mitchell, 5088 Woodcliff, Flint, Mich. 48504
Filed Mar. 17, 1983, Ser. No. 476,122
Term of patent 14 years
U.S. Cl. D32—37



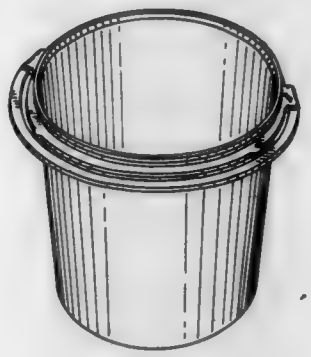
280,036
BOOT CLEANING DEVICE
Gary R. Ulman, Box 55, Thetford Center, Vt. 05075
Filed Sep. 20, 1983, Ser. No. 533,992
Term of patent 14 years
U.S. Cl. D32—47



280,037
FINISH REMOVER
James S. Smith, R.D. #2, Box 228, Ligonier, Pa. 15658
Filed Nov. 22, 1982, Ser. No. 443,379
Term of patent 14 years
U.S. Cl. D32—49



280,038
CONTAINER
George C. Anderson, Mount Prospect, Ill., assignor to Insilco Corporation, Wheeling, Ill.
Filed Oct. 12, 1982, Ser. No. 433,945
The portion of the term of this patent subsequent to Apr. 23, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D32—53



280,039
FOLDABLE GROCERY CART
Jerry L. Strayer, Rte. #8, Box 241, Rangeline Rd. South, Road 300 West, Muncie, Ind. 47302
Filed Jun. 16, 1982, Ser. No. 384,795
Term of patent 14 years
U.S. Cl. D34—24



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Pettersson, Karl B., 4,533,433, Cl. 159-47.300.

A/S Tomra Systems: *See*—
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A-Z International Company: *See*—
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AB Asea-Atom: *See*—
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Abbott Laboratories: *See*—
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Abedi, Hedayat: *See*—
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,533,572, Cl. 427-216.000.

Abo, Keiju; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Kumura, Haruyoshi; and Hirano, Hiroyuki, to Nissan Motor Co., Ltd. Hydraulic control system for continuously variable V-belt transmission. 4,533,340, Cl. 474-28.000.

Achtnig, Klaus-Peter: *See*—
Forberg, Horst; Achtnig, Klaus-Peter; Hegner, Gunter; and Boes, Gerhard, 4,533,196, Cl. 339-97.00P.

Ackerson, Arthur O., III. Method of and apparatus for opening container lids. 4,532,831, Cl. 81-3.430.

Adachi, Yoshio: *See*—
Yoshioka, Shigehiko; Yamada, Hideto; Goto, Kimihiko; Adachi, Yoshio; and Miyahana, Kazuo, 4,533,434, Cl. 162-124.000.

Adamovic, Zeljko H.: *See*—
Stockburger, Hermann; Winderlich, Hans-George; Bauer, Siegfried; and Adamovic, Zeljko H., 4,533,237, Cl. 355-40.000.

Aday, Jorge L.; and Cerwin, Robert J., to Ethicon, Inc. Multistrand suture package with single strand suture dispensing. 4,533,041, Cl. 206-63.300.

Addadi, Lia: *See*—
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, 4,533,506, Cl. 260-501.120.

Addison, Gilbert J., to Coleman Company, Inc., The. Yttrium oxide mantles for fuel-burning lanterns. 4,533,317, Cl. 431-100.000.

Adler, Michael S.: *See*—
Kirkpatrick, Conilee G.; Adler, Michael S.; and Possin, George E., 4,534,016, Cl. 365-128.000.

Adolph Coors Company: *See*—
Grims, Conrad M., 4,533,039, Cl. 198-651.000.

Advanced Micro Devices, Inc.: *See*—
Bower, Robert W., 4,533,430, Cl. 156-643.000.
Yang, Tsen-Shau; and Allen, Michael, 4,533,842, Cl. 307-475.000.

AG fur industrielle Elektronik AGIE Losone b. Locarno: *See*—
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Miyata, Takeo; Ono, Takuhiro; and Iwabuchi, Takashi, 4,533,593, Cl. 428-215.000.

Agius, Frank P.; and Sims, Darrell E. Adjustable drill mount. 4,533,284, Cl. 408-92.000.

Agracetus Madison Corporation: *See*—
Yang, Ning-Sun, 4,533,636, Cl. 435-240.000.

Aharon, Naaman B. Linear concentrating solar collector. 4,532,916, Cl. 126-424.000.

Ahlbrandt, Andreas. Corona treater for plastic film. 4,533,523, Cl. 422-186.050.

Ahrens, Max: *See*—
Schubert, Hermann; Ahrens, Max; and Haissig, Manfred, 4,532,977, Cl. 164-442.000.

Aikman, Leslie N. Miniature tobacco filters. 4,532,942, Cl. 131-198.100.

Air Products and Chemicals, Inc.: *See*—
Milligan, Barton; and DeLaMater, George B., 4,533,763, Cl. 568-716.000.
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Aisen Kogyo, Ltd.: *See*—
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Aisin Seiki Co., Ltd.: *See*—
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Akiyama, Sueshiro, to Genson, Alex E.; Genson, Brian S.; Akiyama, Sueshiro; and Akiyama, Yoshihiro. Dry type discharge liquid extraction device for the thoracic chamber. 4,533,353, Cl. 604-321.000.

Akiyama, Yoshihiro: *See*—
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Hohla, Kristian; and Albers, Ernst, 4,534,034, Cl. 372-59.000.

Albright, Ronald G.; and Albright, William D., to Fork, Inc. Apparatus for random number selection. 4,533,143, Cl. 273-144.00B.

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Alferness, Rodney C., to AT&T Bell Laboratories. Wavelength tunable TE to TM mode converter. 4,533,207, Cl. 350-96.140.

Alfing Kessler Sondermaschinen GmbH: *See*—
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Benford, James G., 4,533,409, Cl. 148-111.000.
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Allen, Gary D., to Stone Manufacturing & Supply Co. Animal hair shear and cutting device. 4,532,707, Cl. 30-200.000.

Allen, Michael: *See*—
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Allied Corporation: *See*—
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Leroy, Michel; and Keinborg, Maurice, 4,533,452, Cl. 204-243.00R.

Alvino, William M.: *See—*
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Neelameggham, Ramaswami; and Priscu, John C., 4,533,442, Cl. 204-68.000.
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American Cyanamid Company: *See—*
Goodman, Richard M.; and Lim, Sim K., 4,533,465, Cl. 209-167.000.
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Martel, Rene , 4,533,551, Cl. 514-411.000.
American Home Products Corporation (Del.): *See—*
Foldvari, Tibor L.; Boucher, Donald R.; and Flanagan, Eugene L., III, 4,533,926, Cl. 346-136.000.
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Auth, David C.; Opie, Eric A.; and Lawrence, Dale M., 4,532,924, Cl. 128-303.170.
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Maldonado, Reynaldo L.; and Rosanoff, Kenneth A., 4,533,634, Cl. 435-240.000.
Amir, Yoel, to Beta Engineering & Development Ltd. Fence particularly useful for detecting intrusion attempts. 4,533,906, Cl. 340-541.000.
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Feldman, Steven; and Cihak, Richard J., 4,533,203, Cl. 339-176.00M.
Wasserlein, Henry G., Jr., 4,533,201, Cl. 339-99.00R.
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Conly, Ralph A.; and Latimer, Stanley M., 4,533,967, Cl. 360-123.000.
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Danby, Hal C.; and Ritson, Carl, 4,533,350, Cl. 604-253.000.
Anderegg, Fredy; Furrer, Josef; and Dappen, Heinz, to Autophon AG. Printed circuit assembly. 4,533,787, Cl. 174-68.500.
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Kaster, Robert L., 4,532,659, Cl. 623-2.000.
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Anthony, Albert J. Oral pack retention system. 4,533,326, Cl. 433-229.000.
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Antonazzi, Frank J.; and Bose, Sudesh, to Allied Corporation. Pressure measuring systems with increased accuracy for a constant resolution. 4,532,809, Cl. 73-701.000.
Antonissen, Peter, to Thurne Engineering Company Limited. Slicing machine having means to determine if sufficient product remains to cut a whole slice. 4,532,840, Cl. 83-71.000.
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Appling, James, to Allied Corporation. Polyurethane heat form and bonding of cable jackets. 4,533,418, Cl. 156-52.000.
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Arcangeli, Henio R. High efficiency ice making machine and fail safe mechanism therefor. 4,532,776, Cl. 62-354.000.
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Arney, Jonathan S.; and Wright, Richard F., to Mead Corporation, The. Abrasion development. 4,533,615, Cl. 430-138.000.
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Takeda, Kunihiko, 4,533,678, Cl. 521-389.000.
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Carlos, Donald D., 4,533,458, Cl. 208-3.000.
Asphahani, Aziz I., to Cabot Corporation. Corrosion-resistance nickel alloy. 4,533,414, Cl. 148-427.000.
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Dragone, Corrado, 4,533,919, Cl. 343-786.000.
Ko, Ping K., 4,532,697, Cl. 29-571.000.
Manzione, Louis T., 4,534,003, Cl. 364-476.000.
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Grey, Roger A., 4,533,754, Cl. 568-437.000.
Junttila, Jack D., 4,533,086, Cl. 241-16.000.
Maffia, Gennaro J., 4,533,780, Cl. 585-330.000.
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Stidham, Mark A., 4,533,276, Cl. 403-165.000.

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Martens, George D.; Smith, Alexander B.; and Healy, Thomas D., 4,532,796, Cl. 73-632.000.

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Aves, William L., Jr.; and Aves, Gary A., 4,533,403, Cl. 148-19.000.

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Gaku, Morio; Kimbara, Hidenori; Ayano, Satoshi; and Yoshimura, Susumu, 4,533,727, Cl. 528-361.000.

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Myers, Ronald E., 4,533,726, Cl. 528-336.000.

Baardman, Frank: *See*—
van Helden, Robert; Baardman, Frank; and Syrier, Johannes L. M., 4,533,379, Cl. 71-88.000.

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Babcock, Jon A.: *See*—
Cory, John M.; Varney, Edward W.; Babcock, Jon A.; and Pupillo, Andrew, 4,533,114, Cl. 251-67.000.

Bach, Hanswilhelm: *See*—
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Ljeder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.

Back, Gunter, to Hoechst Aktiengesellschaft. Positioning device for an exposing and developing apparatus. 4,533,239, Cl. 355-72.000.

Baehrle, Friedrich: *See*—
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Baeslack, Bernd: *See*—
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Roebuck, Malcolm J., 4,532,684, Cl. 29-4.000.

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Smith, Alan; and Bailey, Peter J., 4,533,632, Cl. 435-47.000.

Bailey, Thomas F.; Campbell, John E.; Rives, Allen K.; and Shah, Nehal M., to A-Z International Company. Drilling apparatus and cutter therefor. 4,533,003, Cl. 175-269.000.

Bake, Louis S., Jr. Cushioned container. 4,533,050, Cl. 206-545.000.

Baker, Alan J.; and Leiby, Robert W. Precision angle transducer using nonprecision rotors. 4,533,902, Cl. 340-347.00P.

Baker, Edward H.; and King, George R. Restraining belts. 4,532,681, Cl. 403-28.000.

Baker, Michael E.; and Baker, Thomas M., to Boeing Company, The. High lift system control assembly. 4,533,096, Cl. 244-75.00R.

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Baker, Michael E.; and Baker, Thomas M., 4,533,096, Cl. 244-75.00R.

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Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.

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Feikema, Roger H.; and Bakker, Harry J., 4,532,998, Cl. 172-15.000.

Balakrishnan, Ramanatha V., to National Semiconductor Corporation. Current limiting circuit for high current peripheral drivers. 4,533,839, Cl. 307-270.000.

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Ball, William J.; Barri, Sami A. I.; and Young, Dennis, to British Petroleum Company p.l.c., The. Method of preparing crystalline aluminosilicates. 4,533,649, Cl. 502-71.000.

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Hershfeld, Robert R., 4,532,858, Cl. 99-534.000.

Ban, Thomas E. Storage container for paint applicators. 4,533,044, Cl. 206-362.000.

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Bangs, Richard G., to NCR Corporation. Process preventing air bubble lock in ink jet nozzles. 4,533,569, Cl. 427-154.000.

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Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

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Fermanich, Raymond J., 4,532,951, Cl. 137-84.000.
Parsons, Gerald R., 4,533,800, Cl. 200-61.390.

Bark, Jeffrey E., to Medical Engineering Corporation. Skin mounted drainage catheter retention disc. 4,533,349, Cl. 604-174.000.

Barker, James M., to Otis Engineering Corp. Valved plug for packer. 4,532,989, Cl. 166-188.000.

Barker, Laurence S., to Xerox Corporation. Jammed sheet removal aid in a reproducing machine. 4,533,135, Cl. 271-275.000.

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Lau, Yue-Ying; Chu, Kwo R.; Granatstein, Victor L.; and Barnett, Larry R., 4,533,875, Cl. 330-4.000.

Barney, Charlotte L.: *See*—
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Lee, Frank W. C.; and Baron, Kenneth S., 4,533,715, Cl. 528-45.000.

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Basey, Gene, to Basey, Gene. Variable pitch stair railing assembly. 4,533,121, Cl. 256-67.000.

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Eilingsfeld, Heinz; Etzbach, Karl-Heinz; Hoffmann, Gerhard; and Neumann, Peter, 4,533,612, Cl. 430-59.000.
Kummer, Rudolf; Richter, Wolfgang; Schwirten, Kurt; and Stops, Peter, 4,533,757, Cl. 568-454.000.

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Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,533,674, Cl. 514-474.000.

Bassett, David A. Rotor system for horizontal axis wind turbines. 4,533,297, Cl. 416-132.00B.

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Ensor, Paul M. D.; and Bassett, Neville C., 4,533,468, Cl. 209-172.000.

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Feist, Norbert, 4,533,521, Cl. 422-133.000.

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Batty, John R., Jr., to Cordis Corporation. Implant communication system with frequency shift means. 4,532,932, Cl. 128-631.000.

Bauer, Helmut: *See*—
Krob, Erwin; and Bauer, Helmut, 4,533,155, Cl. 280-628.000.

Bauer, Robert K.: *See*—
McNamara, Robert P.; Ennis, Gregory B.; Feiertag, Richard J.; and Bauer, Robert K., 4,533,948, Cl. 358-122.000.

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Baukol, David E.; and Dorsey-Palmateer, John W., to Boeing Company, The. Method for testing multi-section photo-sensitive detectors. 4,533,870, Cl. 324-158.00D.

Baumann, Rainer, to Honeywell, Inc. Ring laser gyroscope. 4,533,248, Cl. 356-350.000.

Baumhauer, John C., Jr.; Hershey, Harold J.; and Poteat, Tommy L., to American Telephone and Telegraph; and AT&T Bell Laboratories. Integrated electroacoustic transducer. 4,533,795, Cl. 179-111.00E.

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Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,533,776, Cl. 568-946.000.
Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, 4,533,702, Cl. 525-439.000.
Goldmann, Gerd; Spott, Georg; and Frohlich, Christian, 4,533,432, Cl. 159-47.100.
Marhold, Albrecht; and Klauke, Erich, 4,533,777, Cl. 570-144.000.
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, George, 4,533,376, Cl. 65-5.000.
Sirrenberg, Wilhelm; Klauke, Erich; and Hammann, Ingeborg, 4,533,676, Cl. 514-535.000.
Waniczek, Helmut; Uerdingen, Walter; and Brudermanns, Karola, 4,533,728, Cl. 528-370.000.
Wingler, Frank; Waniczek, Helmut; and Geyer, Otto-Christian, 4,533,397, Cl. 106-181.000.

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Bayusik, John G.: *See*—
Scardera, Michael; and Bayusik, John G., 4,533,486, Cl. 252-156.000.

Beal, Walter: *See*—
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Beatovic, George S.: *See*—
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Beauprey, Richard R., to Disc Instruments, Inc. Optical encoder with a shutter clutched for directional movement. 4,533,830, Cl. 250-231.0SE.

Beckmann, Manfred: *See*—
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Blaney, Francis E.; Hadley, Michael S.; King, Francis D.; and Watts, Eric A., 4,533,498, Cl. 260-243.300.

Begley, Benjamin D., to Eaton Corporation. Gerotor motor and improved lubrication flow circuit therefor. 4,533,302, Cl. 418-61.00B.

Beim, Rudolf, to Ford Motor Company. Dual power transmission for tractor vehicles. 4,532,827, Cl. 74-745.000.

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Bell, David R.; and Miller, Theodore E., Jr., to Dow Chemical Company, The. Method for the batch preparation of sample aliquots by solvent extraction and separation of solubles from nonsoluble particulate. 4,533,643, Cl. 436-178.000.

Bell, George M., to Stavis, Hillel. Infinitely adjustable support system. 4,533,104, Cl. 248-245.000.

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Belopolsky, Yakov, to Northern Telecom Limited. Fuse for thick film device. 4,533,896, Cl. 337-232.000.

Benedict, Gary F., to Garrett Corporation, The. Method and apparatus for laser hardening of steel. 4,533,400, Cl. 148-4.000.

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Benjamin, James A.; Lade, Robert W.; and Schutten, Herman P., to Eaton Corporation. AC solar cell with alternately generated pn junctions. 4,533,783, Cl. 136-249.000.

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Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., to Miles Laboratories, Inc. Theophylline immunogens, antibodies, labeled conjugates, and related derivatives. 4,533,493, Cl. 260-112.00B.

Bentley, Trisha: *See*—
Walls, John E.; Dhillon, Major; and Bentley, Trisha, 4,533,619, Cl. 430-157.000.

Berchem, Rutger, to Berchem & Schaberg GmbH. Method of making a piston bottom. 4,532,686, Cl. 29-156.50R.

Berchem & Schaberg GmbH: *See*—
Berchem, Rutger, 4,532,686, Cl. 29-156.50R.

Beringer, Richard D.: *See*—
Evans, Maurice L.; Mola, Clark M.; and Beringer, Richard D., 4,532,665, Cl. 15-21.00D.

Bernard, Georges C., to G.A.M.E.S. Device which can brake and/or stop a load secured to it and which falls, notably an anti-fall safety device. 4,533,026, Cl. 188-184.000.

Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and Le Faou, Daniel, to Ste LOOK. Cross-country skiing assembly. 4,533,154, Cl. 280-615.000.

Bertsch, Ludo A.: *See*—
Dodds, David E.; and Bertsch, Ludo A., 4,534,038, Cl. 375-36.000.
Dodds, David E.; and Bertsch, Ludo A., 4,534,039, Cl. 375-36.000.

Besselman, Thomas P., to NCR Corporation. Thermal magnetic transfer ribbon. 4,533,596, Cl. 428-341.000.

Beta Engineering & Development Ltd.: *See*—
Amir, Yoel, 4,533,906, Cl. 340-541.000.

Betton, Arnold L., to Phantom Systems, Inc. Antitheft ignition system and solenoid apparatus for use therewith. 4,533,016, Cl. 180-287.000.

Betts, William L.; and Martinez, Kenneth, to Paradyne Corporation. Phase tracking loop impairment monitor for modems. 4,534,036, Cl. 375-10.000.

Betts, William L.: *See*—
Martinez, Kenneth; and Betts, William L., 4,534,026, Cl. 370-100.000.

Betz Laboratories, Inc.: *See*—
O'Leary, Richard P., 4,533,123, Cl. 261-61.000.

Betzner, William E.; and Holtman, Richard K., to Celotex Corporation, The. Apparatus for blow line addition of thermosettable binder in fiberboard manufacture including a cooling nozzle. 4,533,436, Cl. 162-261.000.

Beveridge, Harold N. Electrode for electrostatic transducer. 4,533,794, Cl. 179-111.00R.

Beyl, Jean J. A.: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and Le Faou, Daniel, 4,533,154, Cl. 280-615.000.

Bezold, Helmut, to Kraftwerk Union Aktiengesellschaft. Method for deep-drawing sheet metal and an apparatus for carrying out the method. 4,532,793, Cl. 72-342.000.

Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., to Ethicon, Inc. Surgical sutures made from absorbable polymers of substituted benzoic acid. 4,532,928, Cl. 128-335.500.

BICC Public Limited Company: *See*—
Puckowski, Robert T.; Cooper, Dennis; and Duffy, Patrick J., 4,533,417, Cl. 156-51.000.

Bichara, Michel; Wendling, Emile; and Bodu, Michel, to Mines de Potasse d'Alsace S.A. Process for the manufacture of potassium sulphate by treating solutions containing magnesium chloride and potassium chloride. 4,533,536, Cl. 423-551.000.

Bickelhaupt, Roy E.: *See*—
Altman, Ralph F.; Gooch, John P.; Dismukes, Edward B.; Bickelhaupt, Roy E.; and Dahlin, Robert S., 4,533,364, Cl. 55-5.000.

Bier, David A., to PPG Industries, Inc. Method of spacing sheets and moving groups of spaced sheets. 4,533,073, Cl. 225-4.000.

Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., to Merck & Co., Inc. 5-(2,3-Dihydro-1H-pyrrolizin-5-oyl)-2-alkanoic or carboxylic acids and analogs as anti-inflammatory and analgesic agents. 4,533,671, Cl. 514-413.000.

Bill, Jacob C., to North American Philips Corporation. Radiation hardenable coating and electronic components coated therewith. 4,533,975, Cl. 361-323.000.

Billon, Alain; Peries, Jean-Pierre; and Quignard, Alain, to Institut Francais du Petrole. Process for the treatment of highly viscous heavy oils at the oil field to effect desalting and transportability thereof. 4,533,462, Cl. 208-88.000.

Bingham, Wallace K., to Minnesota Mining and Manufacturing Company. Thermally stable flame retardant reflective and retroreflective trim. 4,533,592, Cl. 428-213.000.

Binks, Ronald; Rehak, Anthony S.; and Sinberg, Howard, to Siemens Corporate Research & Support, Inc. Circuit for switching between ring signal and message waiting signal without bell tap. 4,533,792, Cl. 179-84.00C.

Binnewies, Hartmut: *See*—
Muller, Alf; Schobbe, Hermann; Loper, Bernd; and Binnewies, Hartmut, 4,533,184, Cl. 301-63.00R.

Biotechnology Development Corporation: *See*—
Cook, Edward J.; and Lagace, Arthur P., 4,533,254, Cl. 366-176.000.

Birchak, James R., to NL Industries, Inc. Parametric acoustic flow meter. 4,532,812, Cl. 73-861.270.

Birkmair, Hubert: *See*—
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,532,864, Cl. 101-219.000.

Bischofberger, Jurg, to Rieter Machine Works Ltd. Method and apparatus for time-optimizing occurrence of work at individual operating positions of textile machines. 4,532,759, Cl. 57-264.000.

Bishop, Julian J.: *See*—
Prince, Thomas F.; and Bishop, Julian J., 4,533,197, Cl. 339-97.00R.

Bishop, Ralph L.; Rich, William N.; and Kowalski, Walter C., to Therm-O-Disc, Incorporated. Adjustable bimetal snap disc thermostat with heaters. 4,533,894, Cl. 337-107.000.

Bjorklund, Gary C.; and Sincerbox, Glenn T., to International Business Machines Corporation. Frequency multiplexed optical spatial filter based upon photochemical hole burning. 4,533,211, Cl. 350-162.120.

Black & Decker, Inc.: *See*—
Snaddon, Robert W. L.; and Dietz, Peter W., 4,533,368, Cl. 55-104.000.

Blackwood, Harry P., to Burndy Corporation. IDC termination having means to adapt to various conductor sizes. 4,533,191, Cl. 339-31.00R.

Blackwood, Harry P., to Burndy Corporation. IDC termination for coaxial cable having alignment & stabilizing means. 4,533,193, Cl. 339-65.000.

Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., to Dentsply Research & Development Corp. Method and apparatus to produce artificial teeth for dentures. 4,533,325, Cl. 433-171.000.

Blake, Joseph W., III, to Blake, Joseph W., III; and Kaufman, Jack W. Ligator device. 4,532,925, Cl. 128-325.000.

Bland, Gerald F., to Outboard Marine Corporation. Vent and drain assembly for marine propulsion device. 4,533,331, Cl. 440-88.000.

Bland, Linden, to Murphy Oil Company Limited. Evaporation dehydrator. 4,533,366, Cl. 55-42.000.

Blaney, Francis E.; Hadley, Michael S.; King, Francis D.; and Watts, Eric A., to Beecham Group p.l.c. Compounds. 4,533,498, Cl. 260-243.300.

Blank, Izhak, to Forest Laboratories, Inc. Nitroglycerin-containing polymeric matrix for sustained release on topical application. 4,533,540, Cl. 424-28.000.

Blaschek, Otto, to Arnold & Richter Cine Technik GmbH & Co. Betriebs KG. Apparatus for tensioning band or web portions running off and onto two rollers. 4,533,090, Cl. 242-75.000.

Blewitt, Donald D.; and Gupta, Tapan K., to Westinghouse Electric Corp. Monolithic fuse for rotating equipment. 4,533,893, Cl. 337-5.000.

Bliss, John H. Inertial flight director system. 4,534,000, Cl. 364-428.000.

Block, Werner; and Greiler, Wolfgang, to Patent-Treuhand Gesellschaft. High-pressure electric discharge lamp with interfitting socket and support. 4,533,851, Cl. 313-51.000.

Board of Governors for Higher Education, State of Rhode Island, The: *See*—
Krul, William R., 4,532,733, Cl. 47-58.000.

Board of Regents acting for and on behalf of the University of Michigan, The: *See*—
Tien, Tseng-Ying, 4,533,647, Cl. 501-105.000.

Bobik, Carl F.: *See*—
Huseby, Irvin C.; and Bobik, Carl F., 4,533,645, Cl. 501-96.000.

Boden, Richard M.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,533,491, Cl. 252-522.00R.

Bodenseewerk Perkin-Elmer & Co., GmbH: *See*—
Braun, Klaus, 4,533,246, Cl. 356-317.000.

Bodet, Jean A.: *See*—
Chazal, Guy A.; and Bodet, Jean A., 4,533,065, Cl. 220-462.000.

Bodu, Michel: *See*—
Bichara, Michel; Wendling, Emile; and Bodu, Michel, 4,533,536, Cl. 423-551.000.

Boeing Company, The: *See*—
Baker, Michael E.; and Baker, Thomas M., 4,533,096, Cl. 244-75.00R.
Baukol, David E.; and Dorsey-Palmateer, John W., 4,533,870, Cl. 324-158.00D.
Frank, Ed, 4,532,949, Cl. 137-1.000.
Lambregts, Antonius A., 4,533,999, Cl. 364-429.000.

Boes, Gerhard: *See*—
Forberg, Horst; Achtnig, Klaus-Peter; Hegner, Gunter; and Boes, Gerhard, 4,533,196, Cl. 339-97.00P.

Boetzkes, Peter C., to DSL Dynamic Sciences Limited. Range-enable information system for plural mobile objects. 4,533,871, Cl. 324-207.000.

Bohner, Beat: *See*—
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,533,380, Cl. 71-88.000.

Boichut, Philippe; and Jeunet, Guy, to Allied Corporation. Push-pull type connecting device. 4,533,194, Cl. 339-91.00R.

Boitiaux, Jean-Paul; and Oosyns, Jean, to Ste Francaise des Produits pour Catalyse chez Institut Francais du Petrole. Supported palladium-gold catalyst, its manufacture and use in reactions for the selective hydrogenation of diolefinic and/or acetylenic hydrocarbons. 4,533,779, Cl. 585-259.000.

Boivin, Wallace E., Jr.: *See*—
Kranich, Neil J., II; and Boivin, Wallace E., Jr., 4,533,797, Cl. 200-11.0TC.

Bojarski, Suzette M.: *See*—
Coughlan, Raymond T.; and Bojarski, Suzette M., 4,533,600, Cl. 428-414.000.

Bokum, Robert: *See*—
Alexander, Roy; and Bokum, Robert, 4,533,277, Cl. 403-408.100.

Bolens Corporation: *See*—
Merkel, Eugene C., 4,532,756, Cl. 56-202.000.

Bolger, Bernard J.: *See*—
Conway, Paul; Melody, David P.; Woods, John; Casey, J. Eisirt; Bolger, Bernard J.; and Martin, Francis R., 4,533,446, Cl. 204-159.240.

Bollinger, Joseph M., to Rohm and Haas Company. Hydrogenated diolefin-lower alkyl acrylate or methacrylate viscosity index improving copolymers for lubricating oils. 4,533,482, Cl. 252-56.00R.

Bolon, Donald A.; Gorczyca, Thomas B.; and Hallgren, John E., to General Electric Company. Process for the preparation of diaryl carbonates. 4,533,504, Cl. 260-463.000.

Bom, Cornelis J. G.: *See*—
van der Lely, Ary; and Bom, Cornelis J. G., 4,532,999, Cl. 172-68.000.

Bonifay, Regis: *See*—
Rojey, Alexandre; Bonifay, Regis; and Cariou, Jean-Paul, 4,532,773, Cl. 62-101.000.

Bonini, Bruno; Cook, Raymond G.; Holdren, Carl F.; and Johnston, Everett A., to General Electric Company. Thrust reverser attachment. 4,533,098, Cl. 244-110.00B.

Bonse, Dirk: *See*—
Weidenbach, Gunter; Bonse, Dirk; and Meyer, Boris, 4,533,633, Cl. 435-94.000.

Boord, Warren T.; and Fryer, Richard B., to Honeywell Inc. Magnetic field sensor element capable of measuring magnetic field components in two directions. 4,533,872, Cl. 324-252.000.

Booty, Donald J. Electrical power track system. 4,533,190, Cl. 339-21.00R.

Borg-Warner Corporation: *See*—
Lamarche, Paul E., 4,533,032, Cl. 192-107.00M.

Borgmeyer, Virgil L.; Galloway, Dudley L.; Sonnenberg, Gary N.; Gruczka, Jan S.; and Owen, Timothy C., to Westinghouse Electric Corp. Padmounted transformer enclosure. 4,533,786, Cl. 174-50.000.

Borneman, Paul R.; and Hill, James B., to Allegheny Ludlum Steel Corporation. Work-hardenable substantially austenitic stainless steel and method. 4,533,391, Cl. 75-128.00A.

Borsuk, Alvin: *See*—
Mally, Timothy G.; Rattmann, James A.; and Borsuk, Alvin, 4,532,751, Cl. 53-396.000.

Borucki, Gregory J.: *See*—
Cecchi, Marino; Borucki, Gregory J.; and Happ, Lawrence R., 4,533,092, Cl. 242-186.000.

Bosch-Siemens Hausgeraete GmbH: *See*—
Bruchmuller, Hans-George, 4,532,806, Cl. 73-579.000.
Deininger, Anton; Nelzow, Hartmann; and Farber, Karlheinz, 4,533,070, Cl. 222-439.000.

Bose, Sudesh: *See*—
Antonazzi, Frank J.; and Bose, Sudesh, 4,532,809, Cl. 73-701.000.

Bossart, Clayton J.; and Fatur, Thomas C., to Mine Safety Appliances Company. Circuit for constant temperature operation of a catalytic combustible gas detector. 4,533,520, Cl. 422-96.000.

Bottenbruch, Ludwig: *See*—
Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, 4,533,702, Cl. 525-439.000.

Bouchard, Roland D. Portable painting assembly. 4,532,886, Cl. 118-326.000.

Boucher, Donald R.: *See*—
Foldvari, Tibor L.; Boucher, Donald R.; and Flanagan, Eugene L., III, 4,533,926, Cl. 346-136.000.

Bourauel, Fritz: *See*—
Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, 4,533,900, Cl. 340-52.00R.

Bourdillot, Michel; Gauthier, Andre ; Maille , Jacques; and Pitault, Bernard, to Societe Anonyme de Telecommunications. Process for manufacturing a matrix infrared detector with illumination by the front face. 4,532,699, Cl. 29-572.000.

Bourque, Donald L., to Dennison Manufacturing Company. Dispensing of attachments. 4,533,076, Cl. 227-67.000.

Bowditch, Philip N., to Charles Stark Draper Laboratory, Inc., The. Method of generating a pattern of a flat seam garment. 4,532,655, Cl. 2-243.00B.

Bowen, David R.: *See*—
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,533,746, Cl. 560-144.000.

Bower, David S.: *See*—
Foley, Steven L.; and Bower, David S., 4,533,141, Cl. 273-86.00C.

Bower, Robert W., to Advanced Micro Devices, Inc. Process for forming slots having near vertical sidewalls at their upper extremities. 4,533,430, Cl. 156-643.000.

Bowles, Howard R.: *See*—
Harmon, Larry R.; Reiche, John C.; Bowles, Howard R.; and Chiu, Norman H., 4,533,810, Cl. 219-10.55B.

Boyd, Dana M.; Colombo, Edward A.; and Lashway, William H., to Mobil Oil Corporation. Sandwich foam coextrusion for high performance polyolefin trash bags. 4,533,578, Cl. 428-35.000.

Brader, Walter H., Jr.: *See*—
Lin, Jiang-Jen; and Brader, Walter H., Jr., 4,533,756, Cl. 568-454.000.

Bradshaw, Norman F.; and Schrubba, Gerald P., to Haden Schweitzer Corporation. Water curtain apparatus for heat energy recovery from escaping steam. 4,532,983, Cl. 165-47.000.

Brandeau, Edward P., to Thomas & Betts Corporation. Wire termination tool. 4,532,691, Cl. 29-566.400.

Brattesani, Donald N.: *See—*
Kyriacou, Demetrios; and Brattesani, Donald N., 4,533,454, Cl. 204-272.000.

Brauer, Melvin: *See—*
Downey, William J.; and Brauer, Melvin, 4,533,598, Cl. 428-380.000.

Braun, Klaus, to Bodenseewerk Perkin-Elmer & Co., GmbH. Photometer for measuring atomic fluorescence. 4,533,246, Cl. 356-317.000.

Braun, Walter J.: *See—*
Baugh, Robert F.; Braun, Walter J.; and Cooper, Daniel, 4,533,519, Cl. 422-73.000.

Brayman, Semyon; and Bullock, Ronald N. Method of temperature compensating leak rate testing. 4,532,795, Cl. 73-40.000.

Breitenfeld, Horst: *See—*
Rehm, Hans; and Breitenfeld, Horst, 4,533,878, Cl. 330-261.000.

Brennan, Edward J., to PTC Aerospace Inc. Convertible seat. 4,533,175, Cl. 297-232.000.

Bresson, Clarence R.; Robles, Benjamin R.; and Parlman, Robert M., to Phillips Petroleum Company. Polycarboxylic acid derivatives and uses. 4,533,466, Cl. 209-167.000.

Bresson, Clarence R.: *See—*
Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., 4,533,467, Cl. 209-167.000.

Bridgestone Tire Company Limited: *See—*
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.
Tomita, Naotaka; and Watanabe, Toshiyuki, 4,532,807, Cl. 73-602.000.

Briggs, Eugene C.: *See—*
Thomas, David; and Briggs, Eugene C., 4,532,914, Cl. 126-110.00C.

Bristol-Myers Company: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,533,631, Cl. 435-70.000.

British Aerospace Public Limited Company: *See—*
Yates, Ivan R., 4,533,095, Cl. 244-23.00D.

British Nuclear Fuels Limited: *See—*
Mathews, Clive A.; and Gillies, George M., 4,533,319, Cl. 432-3.000.

British Petroleum Company p.l.c., The: *See—*
Ball, William J.; Barri, Sami A. I.; and Young, Dennis, 4,533,649, Cl. 502-71.000.
Griggs, Colin G., 4,533,774, Cl. 568-866.000.

Broken Hill Proprietary Company Limited, The: *See—*
Ensor, Paul M. D.; and Bassett, Neville C., 4,533,468, Cl. 209-172.000.

Brook, Mark V.: *See—*
Wentzell, Timothy H.; and Brook, Mark V., 4,532,808, Cl. 73-640.000.

Broome, Albert: *See—*
Bengmark, Stig; Broome, Albert; and Overland, Christian H., 4,533,356, Cl. 604-358.000.

Brossi, Arnold; and Kerekes, Peter, to United States of America, Health and Human Services. Carbamates of colchicine for treatment of gout. 4,533,675, Cl. 514-480.000.

Brother Kogyo Kabushiki Kaisha: *See—*
Kurachi, Hisao; Ito, Takeo; Iwase, Takayuki; and Shiota, Junji, 4,533,267, Cl. 400-214.000.

Brown, Leland T., to Motorola, Inc. Series current limiter. 4,533,970, Cl. 361-58.000.

Brown & Williamson Tobacco Corporation: *See—*
Reed, Steven P.; and Naslund, Erik I., 4,533,427, Cl. 156-500.000.

Bruce, Thomas W.: *See—*
Mongia, Hukam C.; Coleman, Edwin B.; and Bruce, Thomas W., 4,532,762, Cl. 60-39.230.

Bruchmuller, Hans-George, to Bosch-Siemens Hausgeraete GmbH. Sensor for monitoring the deposition of frozen fog and/or ice on surfaces. 4,532,806, Cl. 73-579.000.

Brudermanns, Karola: *See—*
Waniczek, Helmut; Uerdingen, Walter; and Brudermanns, Karola, 4,533,728, Cl. 528-370.000.

Bruinsma, Hans; Hollander, Frans; Huisman, Rein L.; and Reinen, Adrianus G., to Estel Hoogovens B.V. Process for reducing the width of a flat metal product by rolling. 4,532,789, Cl. 72-202.000.

Brunner, Rudolf, to Heilmeler & Weinlein Fabrik Fuer Oel-Hadraulik GmbH & Co., KG. Control valve device. 4,532,960, Cl. 137-596.130.

Brunswick Corporation: *See—*
Staerzl, Richard E., 4,532,903, Cl. 123-436.000.

Bryant, Jeffrey A.: *See—*
Cushenbery, Terry E.; and Bryant, Jeffrey A., 4,532,837, Cl. 82-4.00C.

Buchanan, Robert D., to Porritts & Spencer. Batt-on-mesh felt employing polyurethane-coated multifilaments in the cross-machine direction. 4,533,594, Cl. 428-236.000.

Buchanan, Robert M.: *See—*
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,533,443, Cl. 204-84.000.

Buchner, Norbert; Eberspacher, Rolf; and Liede, Dieter, to Robert Bosch GmbH. Container lid having an opening device. 4,533,063, Cl. 220-270.000.

Buck, Alfred, to Memminger GmbH. Knitting machine. 4,532,781, Cl. 66-104.000.

Bucklee-Mears Company: *See—*
Walter, Leo, 4,533,978, Cl. 361-419.000.

Buckler, Robert T.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,533,493, Cl. 260-112.00B.

Budapesti Muszaki Egyetem: *See—*
Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.

Buddenbaum, Harry C.; and Robison, Robert L., to Eli Lilly and Company. Pharmaceutical compositions for storage in plastic containers and process therefor. 4,533,542, Cl. 424-31.000.

Buehl, Arnold L., to Slyman Manufacturing Corporation. Radiant burner. 4,533,318, Cl. 431-328.000.

Buglione, Arthur J.; and Coats, James M., to Ford Motor Company. Selective single fire/double fire fuel injection control. 4,532,907, Cl. 123-490.000.

Buhler, Ernst, to AG fur industrielle Elektronik AGIE Losone b. Locarno. Method for automatic process control in spark erosive machining. 4,533,811, Cl. 219-69.00M.

Bullock, Ronald N.: *See—*
Brayman, Semyon; and Bullock, Ronald N., 4,532,795, Cl. 73-40.000.

Bulow, Jeffrey A.: *See—*
Orser, David A.; and Bulow, Jeffrey A., 4,533,216, Cl. 350-361.000.

Bults, Gerard: *See—*
Cahen, David; Malkin, Shmuel; Horwitz, Benjamin; and Bults, Gerard, 4,533,252, Cl. 356-432.000.

Bump, Boyd E.: *See—*
Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., 4,532,815, Cl. 73-864.630.

Burba, Christian; Goeke, Ulrich; and Esper, Norbert, to Schering AG. Polyvinyl chloride plastisols. 4,533,524, Cl. 427-372.200.

Burd, John F.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,533,493, Cl. 260-112.00B.

Burda, Ferencne : *See—*
Muranyi, Istvan; Balazs, Laszlone ; Molnar, Jozsef; Burda, Ferencne ; Metzler, Maria; and Szerdahelyi, Lajos, 4,533,638, Cl. 435-288.000.

Burke, Donald D.; and Cloninger, Jerry L. Automatic high pressure hose uncoupling device. 4,533,161, Cl. 285-1.000.

Burks, William M., Jr.; Doane, Elliott P.; Campbell, Ramsey G.; and Velez, Emilio S., to Stauffer Chemical Company. Process for treating liquid chlorinated hydrocarbon wastes containing iron. 4,533,473, Cl. 210-754.000.

Burlington Industries, Inc.: *See—*
Gamblin, Rodger L., 4,533,441, Cl. 204-3.000.

Burndy Corporation: *See—*
Blackwood, Harry P., 4,533,191, Cl. 339-31.00R.
Blackwood, Harry P., 4,533,193, Cl. 339-65.000.
Feldberg, Leonard, 4,533,199, Cl. 339-99.00R.
Frank, Walter, 4,533,205, Cl. 339-247.000.

Burnett, Mark B.: *See—*
Medeiros, David J.; and Burnett, Mark B., 4,533,743, Cl. 549-489.000.

Burns, Daniel E., to Demco, Inc. Portable field site pre-cooling apparatus. 4,532,774, Cl. 62-239.000.

Burns, James E. Portable decollating machine. 4,533,131, Cl. 270-52.500.

Burns, Richard D.: *See—*
Moodie, Eldon E.; and Burns, Richard D., 4,533,587, Cl. 428-166.000.

Burns & Russell Company, The: *See—*
McClinton, John L.; and Russell, Alexander H., 4,533,568, Cl. 427-135.000.

Burnside, Royal D., III. Portable cooking apparatus. 4,532,912, Cl. 126-30.000.

Burroughs Corporation: *See—*
Sheth, Jayesh V., 4,534,013, Cl. 364-900.000.
Tezucar, Okan K.; and Parisi, David A., 4,533,913, Cl. 340-805.000.

Burrows, Esther J. Walker with a flexible seat. 4,532,948, Cl. 135-67.000.

Busby, David E.: *See—*
Chang, Feng-Chih; Wernli, Susan A.; and Busby, David E., 4,533,764, Cl. 568-724.000.

Butler, John C.: *See—*
Keane, John F.; Butler, John C.; and Archer, Timothy H., 4,533,941, Cl. 358-75.000.

Butz, Peter; Ranke, Gerhard; and Tvan, Tran A., to Linde Aktiengesellschaft. Separation of CO_2 and H_2S from hydrogen containing gas. 4,533,373, Cl. 62-17.000.

Byford, Roger G.: *See—*
Feilchenfeld, Michal M.; Byford, Roger G.; and Quan, Wing C., 4,534,056, Cl. 381-42.000.

Bynum, Byron G.; and Cave, David L., to Motorola, Inc. Current limit technique for multiple-emitter vertical power transistor. 4,533,845, Cl. 307-540.000.

C.G.R. - Mev: *See—*
Milcamps, Jacques, 4,534,052, Cl. 378-152.000.

C.M.L. Costruzioni Meccaniche Liri S.r.l.: *See—*
Caporusso, Alessandro; and Caporusso, Mario, 4,532,787, Cl. 72-158.000.

C. van der Lely N.V.: *See—*
van der Lely, Ary; and Bom, Cornelis J. G., 4,532,999, Cl. 172-68.000.

Cable Technology Laboratories, Inc.: *See—*
Katz, Carlos, 4,533,789, Cl. 174-102.00R.

Cabot Corporation: *See—*
Asphahani, Aziz I., 4,533,414, Cl. 148-427.000.

Cadtrak Corporation: *See—*
Sukonick, Josef; and Fjallstam, Bjorn M., 4,533,910, Cl. 340-721.000.

Cahen, David; Malkin, Shmuel; Horwitz, Benjamin; and Bults, Gerard, to Yeda Research and Development Company Ltd. Device and method and measurement of photosynthetic activity by photoacoustic spectroscopy. 4,533,252, Cl. 356-432.000.

Calabrese, Gary S.: *See—*
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,533,443, Cl. 204-84.000.

Calgon Corporation: *See—*
Costello, Christine A., 4,533,708, Cl. 526-295.000.

Callaghan, Timothy J.; and Kay, Robert M., to Honeywell Inc. Readout apparatus for a ring laser angular rate sensor. 4,533,250, Cl. 356-350.000.

Calvert, Rodney K., to Mead Corporation, The. Heel retaining structure on bottle carrier. 4,533,047, Cl. 206-434.000.

Campau, Daniel N. Metering apparatus for dispensing precise volumes of liquid. 4,532,962, Cl. 137-842.000.

Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., to Occidental Chemical Corporation. Preparation of chlorotrifluoroethylene telomers with bisfluoroxydifluoromethane. 4,533,762, Cl. 568-677.000.

Campbell, John E.: *See—*
Bailey, Thomas F.; Campbell, John E.; Rives, Allen K.; and Shah, Nehal M., 4,533,003, Cl. 175-269.000.

Campbell, John R.; and Thackeray, James W., to General Electric Company. Interfacial polycondensation polycarbonate process with quaternary phosphonium amino halide catalyst. 4,533,722, Cl. 528-199.000.

Campbell, Karen J.: *See—*
Evans, Jack L.; Campbell, Karen J.; Kreil, Curtis L.; and Sidney, LuAnn, 4,533,566, Cl. 427-44.000.

Campbell, Ramsey G.: *See—*
Burks, William M., Jr.; Doane, Elliott P.; Campbell, Ramsey G.; and Velez, Emilio S., 4,533,473, Cl. 210-754.000.

Campillo, Christian: *See—*
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and Le Faou, Daniel, 4,533,154, Cl. 280-615.000.

Canon Kabushiki Kaisha: *See—*
Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, 4,533,232, Cl. 355-3.00R.
Fukumoto, Hiroshi; Inoue, Sukejiro; Sasakawa, Masumi; and Doi, Shinji, 4,533,614, Cl. 430-99.000.
Inoue, Sukejiro; Fukumoto, Hiroshi; Sasakawa, Masumi; and Doi, Shinji, 4,533,617, Cl. 430-111.000.
Ishikawa, Yasuyuki, 4,533,222, Cl. 351-206.000.
Masunaga, Makoto; and Taka, Hideo, 4,533,241, Cl. 356-1.000.
Ohsaki, Ichiro; Hasegawa, Tetsuo; and Suematsu, Koushi, 4,533,616, Cl. 430-110.000.
Shigenobu, Michio, 4,533,231, Cl. 355-3.0FU.
Shimizu, Seiichi, 4,533,212, Cl. 350-318.000.
Sugiura, Susumu; and Kohzato, Yasuo, 4,533,928, Cl. 346-140.00R.
Suwa, Kaname, 4,533,976, Cl. 361-395.000.
Suzuki, Eiichi, 4,533,920, Cl. 346-1.100.
Suzuki, Eiichi, 4,533,923, Cl. 346-1.100.

Caporusso, Alessandro; and Caporusso, Mario, to C.M.L. Costruzioni Meccaniche Liri S.r.l. Portable electromechanically-controlled pipe-bending apparatus. 4,532,787, Cl. 72-158.000.

Caporusso, Mario: *See—*
Caporusso, Alessandro; and Caporusso, Mario, 4,532,787, Cl. 72-158.000.

Cardenas, Carlos G.: *See—*
Cherney, Leon; Gorman, Charles R.; Traynor, Sean G.; and Cardenas, Carlos G., 4,533,751, Cl. 564-408.000.

Cardenas-Franco, Luis; and Veazey-Menendez, Enrique, to Vitro-Tec Fideicomiso. Solenoid actuated valve blocks for glassware forming machines. 4,532,956, Cl. 137-340.000.

Cardiac Pacemakers, Inc.: *See—*
Mills, Perry A., 4,532,931, Cl. 128-419.0PG.

Cargnel, Louis A., to Westinghouse Electric Corp. Oil and high temperature resistant insulating varnish made from modified methoxy functional diphenyl oxide. 4,533,718, Cl. 528-86.000.

Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, to Hoechst Aktiengesellschaft. Corrosion inhibitors for aqueous liquids for the working of metals, and a process for their preparation. 4,533,479, Cl. 252-34.000.

Cariou, Jean-Paul: *See—*
Rojey, Alexandre; Bonifay, Regis; and Cariou, Jean-Paul, 4,532,773, Cl. 62-101.000.

Carl Hurth Maschinen-und Zahnradfabrik GmbH & Co.: *See—*
Gregg, Hans, 4,533,034, Cl. 198-472.000.

Carl, Wolfgang: *See—*
Gucklhorn, Karl; and Carl, Wolfgang, 4,532,693, Cl. 29-568.000.

Carlisle, Floyd L., to Theratronics, Inc. Electrotherapy apparatus. 4,532,938, Cl. 128-801.000.

Carlos, Donald D., to Ashland Oil, Inc. Redox catalyst plus promoter for oxidation of hydrocarbons. 4,533,458, Cl. 208-3.000.

Carpenter, Ralph F.; and Gordon, David R., to Pacific Electro Dynamics, Inc. Multiple voltage switching power supply having output voltage limiting. 4,533,836, Cl. 307-11.000.

Carre, Jean-Jacques; Courbot, Pierre; and Mery, Jean-Claude, to Societe Anonyme D.B.A. Elastic and sliding locking device for disc brake with a floating caliper supported by a single axial pin, and disc brake equipped with such a device. 4,533,023, Cl. 188-73.340.

Carre , Jean-Jacques, to Societe Anonyme D.B.A. Disc brake with a sliding caliper. 4,533,025, Cl. 188-73.440.

Carrier Corporation: *See—*
Clark, William E.; and Carucci, James, 4,533,080, Cl. 236-49.000.

Carucci, James: *See—*
Clark, William E.; and Carucci, James, 4,533,080, Cl. 236-49.000.

Carvalette Services Africa (Proprietary) Limited: *See—*
Davis, Bender A.; and Louw, Hendrik A., 4,533,173, Cl. 296-216.000.

CasChem, Inc.: *See—*
Downey, William J.; and Brauer, Melvin, 4,533,598, Cl. 428-380.000.

Cascio, Giuseppe: *See—*
Manghisi, Elso; and Cascio, Giuseppe, 4,533,748, Cl. 562-401.000.

Caseley, Jane R., to Windleshaw Enterprises Limited. Filter for reducing the toxic effects of cigarette tobacco smoke. 4,532,947, Cl. 131-331.000.

Casey, J. Eisirt: *See—*
Conway, Paul; Melody, David P.; Woods, John; Casey, J. Eisirt; Bolger, Bernard J.; and Martin, Francis R., 4,533,446, Cl. 204-159.240.

Casio Computer Co., Ltd.: *See—*
Yamada, Shigeru, 4,533,825, Cl. 235-463.000.

Cassatta, Joseph C.; and Chattha, Mohinder S., to Ford Motor Company. Crosslinked flow control additives for high solids paints I. 4,533,681, Cl. 523-400.000.

Cassella Aktiengesellschaft: *See—*
Dorries, Peter; and Wahl, Helmut, 4,533,590, Cl. 428-211.000.

Caudel, Edward R.: *See—*
Magar, Surendar S.; and Caudel, Edward R., 4,533,992, Cl. 364-200.000.

Cave, David L.: *See—*
Bynum, Byron G.; and Cave, David L., 4,533,845, Cl. 307-540.000.

Cavell, Kingsley J.: *See—*
Masters, Anthony F.; and Cavell, Kingsley J., 4,533,651, Cl. 502-117.000.

CDP, Ltd.: *See—*
Ecer, Gunes M., 4,533,004, Cl. 175-329.000.

Cecchi, Marino; Borucki, Gregory J.; and Happ, Lawrence R., to Suncom, Incorporated. Video cassette rapid rewinding/fast forwarding device. 4,533,092, Cl. 242-186.000.

Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, to Pfizer Inc. Polycyclic ether antibiotic. 4,533,553, Cl. 514-460.000.

Celotex Corporation, The: *See—*
Betzner, William E.; and Holtman, Richard K., 4,533,436, Cl. 162-261.000.

Cense, Adriaan; and Schutte, Evert H., to U.S. Philips Corporation. Integrable hue control circuit having a d.c. setting element. 4,533,939, Cl. 358-28.000.

Centronics Data Computer Corp.: *See—*
Moss, James R., 4,532,862, Cl. 101-93.320.

Cerwin, Robert J.: *See—*
Aday, Jorge L.; and Cerwin, Robert J., 4,533,041, Cl. 206-63.300.

Chadwick, Donald T.: *See—*
Read, Clifford D.; Sawyer, William D.; and Chadwick, Donald T., 4,533,791, Cl. 179-2.00R.

Chaki, Takao, to Clarion Co., Ltd. Tuning shaft of pushbutton tuner. 4,532,817, Cl. 74-10.330.

Chalupka, George: *See—*
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, George, 4,533,376, Cl. 65-5.000.

Chambers, Edward A.: *See—*
Geis, Norman P.; and Chambers, Edward A., 4,533,094, Cl. 244-3.220.

Champion, Preston L. Animal deterrent device for joggers. 4,533,140, Cl. 273-84.00R.

Chandley, George D., to Hitchiner Manufacturing Co., Inc. Gas permeable metal casting mold having gas collection voids. 4,532,976, Cl. 164-363.000.

Chang, Feng-Chih; Wernli, Susan A.; and Busby, David E., to Dow Chemical Company, The. Purification of bisphenols by removing residual solvent. 4,533,764, Cl. 568-724.000.

Chang, Hong-Tswen: *See—*
Chang, Jen W.; and Chang, Hong-Tswen, 4,532,844, Cl. 83-477.100.

Chang, Jen W.; and Chang, Hong-Tswen. Device for supporting a circular saw of sawing machine. 4,532,844, Cl. 83-477.100.

Chang, Ten-Ho; and Wang, Shin-Yih. Electrical energy saving device for motors. 4,533,857, Cl. 318-345.00A.

Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M. High spatial resolution energy discriminator. 4,533,940, Cl. 358-44.000.

Chappell, Terry I.: *See—*
Chappell, Barbara A.; Chappell, Terry I.; and Woodall, Jerry M., 4,533,940, Cl. 358-44.000.

Charles Stark Draper Laboratory, Inc., The: *See—*
Bowditch, Philip N., 4,532,655, Cl. 2-243.00B.
Das, Dilip K.; Kumar, Kaplesh; and Wettstein, Ernest C., 4,533,407, Cl. 148-102.000.

Charvat, Rudolf M.: *See—*
Prinz, A. F. Rudolf; and Charvat, Rudolf M., 4,532,810, Cl. 73-717.000.

Chattha, Mohinder S.: *See—*
Cassatta, Joseph C.; and Chattha, Mohinder S., 4,533,681, Cl. 523-400.000.

Theodore, Ares N.; and Chattha, Mohinder S., 4,533,695, Cl. 524-504.000.

Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, to Institut Francais du Petrole; and Societe Nationale Elf-Aquitaine (Production). Process for manufacturing N-acyliminodiacetic acids. 4,533,500, Cl. 260-404.000.

Chazal, Guy A.; and Bodet, Jean A., to Societe Parisienne D'Impression et de Cartonnage. Container having one piece peripheral rim, at least two cardboard parts and a synthetic material layer. 4,533,065, Cl. 220-462.000.

Cherney, Leon; Gorman, Charles R.; Traynor, Sean G.; and Cardenas, Carlos G., to SCM Corporation. Preparation of 1,3-dienamines from myrcene and substituted myrcene. 4,533,751, Cl. 564-408.000.

Cheskis, Harvey P.: *See*—
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., 4,533,388, Cl. 75-76.000.

Chevron Research Company: *See*—
King, William F., 4,533,658, Cl. 514-92.000.

Chew, Ju-Nam; and Savins, Joseph G., to Mobil Oil Corporation. Method for comminuting bituminous coal using an aqueous methanol solution. 4,533,084, Cl. 241-1.000.

Chiarito, Richard J., to U.M.E., Incorporated. Method and apparatus for fluid filtration including particle precipitation. 4,533,475, Cl. 210-788.000.

Chicago Bridge & Iron Company: *See*—
Cutler, Donald R., 4,532,985, Cl. 165-118.000.

Chick, Orest N.: *See*—
Khalil, Hamdy; and Chick, Orest N., 4,533,691, Cl. 524-401.000.

Chihara, Takeshi: *See*—
Otani, Toshiaki; Chihara, Takeshi; and Nishikori, Tsutomu, 4,533,027, Cl. 192-8.00C.

Chisso Corporation: *See*—
Fukui, Masahiro; Kitano, Kisei; Tanaka, Masami; and Goto, Yasuyuki, 4,533,488, Cl. 252-299.610.
Sato, Akihiro; Kikuta, Kazutsune; Uwai, Toshihiro; Matsuda, Kenji; and Hattori, Nobutaka, 4,533,705, Cl. 526-114.000.

Chiu, Norman H.: *See*—
Harmon, Larry R.; Reiche, John C.; Bowles, Howard R.; and Chiu, Norman H., 4,533,810, Cl. 219-10.55B.

Choe, Eui W.; and Conciatori, Anthony B., to Delanese Corporation. Synthesis of high molecular weight polybenzimidazole with arylhalo phosphorus compound catalyst. 4,533,725, Cl. 528-336.000.

Christensen, Wendell N. Dual-mode ratchet wrench. 4,532,832, Cl. 81-57.290.

Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., to International Business Machines Corporation. Method and system for handling sequential data in a hierarchical store. 4,533,995, Cl. 364-200.000.

Christiani, Renato: *See*—
Verri, Vittorio; and Christiani, Renato, 4,533,472, Cl. 210-350.000.

Chrysler Corporation: *See*—
Hoenle, Walter A.; Perkins, David J.; and Schenten, James L., 4,533,157, Cl. 280-718.000.
Razzacki, Syed T., 4,532,823, Cl. 74-473.00R.

Chu, Daniel T., to Abbott Laboratories. Quino-benzothiazine antibacterial compounds. 4,533,663, Cl. 514-223.000.

Chu, Kwo R.: *See*—
Lau, Yue-Ying; Chu, Kwo R.; Granatstein, Victor L.; and Barnett, Larry R., 4,533,875, Cl. 330-4.000.

Chugunny, Evgeny G.: *See*—
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.

Chun, Andrew. Pedal powered sailboat. 4,533,330, Cl. 440-30.000.

Ciba-Geigy AG: *See*—
Yates, Andrew W.; Harradine, Brian D.; and Wraith, Michael A., 4,533,627, Cl. 430-567.000.

Ciba-Geigy Corporation: *See*—
Clark, Malcolm C.; Henshall, John B.; and Hart, Derrick A., 4,533,499, Cl. 260-391.000.
Durr, Dieter; Rohr, Otto; and Bohner, Beat, 4,533,380, Cl. 71-88.000.
Eckhardt, Wolfgang; and Kunz, Walter, 4,533,659, Cl. 514-184.000.
Spencer, Alwyn, 4,533,505, Cl. 260-465.00R.
Szczepanski, Henry, 4,532,732, Cl. 47-57.600.

Cihak, Richard J.: *See*—
Feldman, Steven; and Cihak, Richard J., 4,533,203, Cl. 339-176.00M.

Ciraud, Pierre H. Machine for spreading and smoothing surface coverings. 4,532,882, Cl. 118-108.000.

Clarion Co., Ltd.: *See*—
Chaki, Takao, 4,532,817, Cl. 74-10.330.
Kume, Masato, 4,533,966, Cl. 360-96.500.
Tanaka, Yoshio; Nishikawa, Yasuhisa; Hasumi, Ryoichi; and Koizumi, Takashi, 4,532,818, Cl. 74-10.330.

Clark, Albert P.: *See*—
Coder, David W.; Wisler, Benjamin B., Jr.; Clark, Albert P.; and Ratcliffe, Raymond J., 4,532,801, Cl. 73-432.00R.

Clark, Edward C.; and Huxtable, Douglas D., to Rocket Research Company. Chemical heat pump and chemical energy storage system. 4,532,778, Cl. 62-477.000.

Clark, K. Warren: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,533,543, Cl. 424-38.000.

Clark, Malcolm C.; Henshall, John B.; and Hart, Derrick A., to Ciba-Geigy Corporation. Process for the production of triaryl methane compounds. 4,533,499, Cl. 260-391.000.

Clark, Marion A., to Good, Don, a part interest. Automatic variable speed lever action drive. 4,533,152, Cl. 280-251.000.

Clark, William E.; and Carucci, James, to Carrier Corporation. Air terminal—air handler interface. 4,533,080, Cl. 236-49.000.

Clevite S.r.l.: *See*—
Losio, Gastone, 4,533,261, Cl. 384-296.000.

Clifton, Oscar N.: *See*—
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Cloeren, Peter. Multimanifold extrusion die and coextrusion process. 4,533,308, Cl. 425-131.100.

Cloninger, Jerry L.: *See*—
Burke, Donald D.; and Cloninger, Jerry L., 4,533,161, Cl. 285-1.000.

Coal Industry (Patents) Ltd.: *See*—
French, Albert G.; and Eagles, Brian A., 4,533,180, Cl. 299-1.000.

Coates, Roy M.: *See*—
Toma, Petre; Redford, David A.; Livesey, Declan B.; and Coates, Roy M., 4,532,994, Cl. 166-303.000.

Coats, James M.: *See*—
Buglione, Arthur J.; and Coats, James M., 4,532,907, Cl. 123-490.000.

Coder, David W.; Wisler, Benjamin B., Jr.; Clark, Albert P.; and Ratcliffe, Raymond J., to United States of America, Navy. Method and apparatus for determining small magnitude fluid-dynamic drag resistance differentials between different structural configurations of a model. 4,532,801, Cl. 73-432.00R.

Coenen, Hubert; and Kriegel, Ernst, to FRIED. KRUPP Gesellschaft mit beschrankter Haftung. Method for recovering petroleum. 4,532,992, Cl. 166-267.000.

Coffy, Rene L., to Societe Nationale Industrielle Aerospatiale. Process and apparatus for metallic impregnation of a web of conductive fibres. 4,532,889, Cl. 118-718.000.

Coleman, Clarence B., to Fabricated Metals, Inc. Level indicator for liquid container with a follower. 4,532,800, Cl. 73-308.000.

Coleman Company, Inc., The: *See*—
Addison, Gilbert J., 4,533,317, Cl. 431-100.000.

Coleman, Edwin B.: *See*—
Mongia, Hukam C.; Coleman, Edwin B.; and Bruce, Thomas W., 4,532,762, Cl. 60-39.230.

Collier, Warren, to Tektronix, Inc. Device for recording host electronic instrument operating on-time. 4,534,045, Cl. 377-16.000.

Collins, Henry R., Jr. Self-cleaning liquid filter and system. 4,533,471, Cl. 210-138.000.

Colombo, Edward A.: *See*—
Boyd, Dana M.; Colombo, Edward A.; and Lashway, William H., 4,533,578, Cl. 428-35.000.

Comau S.p.A.: *See*—
Vittorio, Corni, 4,533,823, Cl. 235-375.000.

Comber S.p.A. Costruzioni Meccaniche Bergamasche: *See*—
Verri, Vittorio; and Christiani, Renato, 4,533,472, Cl. 210-350.000.

Combustion Engineering, Inc.: *See*—
Anderson, David K., 4,532,872, Cl. 110-255.000.
Deve, Vagn, 4,533,087, Cl. 241-65.000.
Malone, Dennis M., 4,533,856, Cl. 318-6.000.
Wentzell, Timothy H.; and Brook, Mark V., 4,532,808, Cl. 73-640.000.

Commereuc, Dominique: *See*—
Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, 4,533,500, Cl. 260-404.000.

Commissariat a l'Energie Atomique: *See*—
Dargent, Bruno, 4,533,431, Cl. 156-643.000.

Commonwealth of Australia, Dept. of Science & Technology: *See*—
Crosby, Peter A.; Daly, Christopher N.; Money, David K.; Patrick, James F.; Seligman, Peter M.; and Kuzma, Janusz A., 4,532,930, Cl. 128-419.00R.

Commonwealth Scientific and Industrial Research Organization: *See*—
Masters, Anthony F.; and Cavell, Kingsley J., 4,533,651, Cl. 502-117.000.

Comper, Louis F.; and Scheiderich, Robert F., to Goodyear Tire & Rubber Company, The. Surface treated tire curing bladder, treatment composition therefor and method for curing tires. 4,533,305, Cl. 425-43.000.

Conciatori, Anthony B.: *See*—
Choe, Eui W.; and Conciatori, Anthony B., 4,533,725, Cl. 528-336.000.

Congley, James B., Jr. Portable, knockdown field stove. 4,532,910, Cl. 126-9.00B.

Conly, Ralph A.; and Latimer, Stanley M., to Ampex Corporation. Multiple leg multichannel magnetic transducer structure and method of manufacturing. 4,533,967, Cl. 360-123.000.

Consolidated Devices, Inc.: *See*—
Grabovac, Bosko, 4,532,836, Cl. 81-483.000.

Continental White Cap, Inc.: *See*—
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Conway, Paul; Melody, David P.; Woods, John; Casey, J. Eisirt; Bolger, Bernard J.; and Martin, Francis R., to Loctite (Ireland) Ltd. Radiation-activatable anaerobic adhesive composition. 4,533,446, Cl. 204-159.240.

Cook, Edward J.; and Lagace, Arthur P., to Biotechnology Development Corporation. Apparatus for forming emulsions. 4,533,254, Cl. 366-176.000.

Cook, Raymond G.: *See—*
Bonini, Bruno; Cook, Raymond G.; Holdren, Carl F.; and Johnston, Everett A., 4,533,098, Cl. 244-110.00B.

Cooper, Christopher A., to Marley Tile A.G. Roof ridge capping system. 4,532,739, Cl. 52-57.000.

Cooper, Daniel: *See—*
Baugh, Robert F.; Braun, Walter J.; and Cooper, Daniel, 4,533,519, Cl. 422-73.000.

Cooper, Dennis: *See—*
Puckowski, Robert T.; Cooper, Dennis; and Duffy, Patrick J., 4,533,417, Cl. 156-51.000.

Cooper Industries, Inc.: *See—*
Squires, V. Alan, 4,532,955, Cl. 137-15.000.

Copal Company Limited: *See—*
Shimizu, Munetaka, 4,533,270, Cl. 400-636.000.

Copeland, David C. Plumbing apparatus. 4,532,718, Cl. 33-390.000.

Copeland, John A.; and Miller, Stewart E., to AT&T Bell Laboratories. Optically coupled integrated circuit array. 4,533,833, Cl. 250-551.000.

Coppens, Anton; and Poldervaart, Leendert, to Single Buoy Moorings, Inc. Mooring system. 4,533,332, Cl. 441-3.000.

Cordier, Georges, to Rhone-Poulenc Specialites Chimiques. Process for the preparation of trifluoroethanol. 4,533,771, Cl. 568-842.000.

Cordis Corporation: *See—*
Batty, John R., Jr., 4,532,932, Cl. 128-631.000.

Core-Form: *See—*
Kinard, George P., 4,532,745, Cl. 52-251.000.

Corey, John A., to Mechanical Technology Incorporated. Stirling engine with air working fluid. 4,532,765, Cl. 60-517.000.

Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, to Ruhrchemie Aktiengesellschaft. Process for the hydroformylation of olefins. 4,533,755, Cl. 568-454.000.

Cornish, William D.; and Hewitt, Lawrence B., to Minister of National Defence. Self-biasing broadband frequency divider. 4,533,886, Cl. 333-218.000.

Cornwell, Ross E., Jr.; Czech, John F.; and Domoleczny, James D., to Zenith Electronics Corporation. Tiltable display monitor assembly. 4,533,105, Cl. 248-371.000.

Corona, Stephen C.: *See—*
Hammond, Thomas J.; Lama, William L.; Northrup, Karl A.; and Corona, Stephen C., 4,533,853, Cl. 315-117.000.

Corrigan, Patrick J.; King, Richard M.; and VanDiest, Scott A., to Procter & Gamble Company, The. Regeneration of copper chromite hydrogenation catalyst. 4,533,648, Cl. 502-38.000.

Corsover, William L.; Hoffman, Kenneth P.; McCann, William F.; and Wooden, Billy J. Expansion joint system. 4,533,278, Cl. 404-65.000.

Cory, John M.; Varney, Edward W.; Babcock, Jon A.; and Pupillo, Andrew, to Posi-Seal International, Inc. Fail-safe actuator for rotary valves. 4,533,114, Cl. 251-67.000.

Cosgrove, Robert J., Jr.; and Smolen, Victor F., to PharmaControl Corporation. System for automatic feedback-controlled administration of drugs. 4,533,346, Cl. 604-66.000.

Costello, Christine A., to Calgon Corporation. Polyampholyte polymer. 4,533,708, Cl. 526-295.000.

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Craig, David R. Inflatable wader tree. 4,533,072, Cl. 223-67.000.

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Kratochvil, Jiri; and Janata, Jiri, 4,533,456, Cl. 204-415.000.

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Crouch, William B.: *See—*
Jahnke, Frederick C.; and Crouch, William B., 4,533,363, Cl. 48-197.00R.

Cuderm Corporation: *See—*
Miller, David L., 4,532,937, Cl. 128-759.000.

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Day, Eric; and VanDerStuyf, Allen F., 4,532,893, Cl. 123-41.310.

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Fox, Joseph R.; Pesa, Frederick A.; and Curatolo, Benedict S., 4,533,775, Cl. 568-905.000.

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Cornwell, Ross E., Jr.; Czech, John F.; and Domoleczny, James D., 4,533,105, Cl. 248-371.000.

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Minucciani, Giorgio; and Sola, Domenico, 4,534,006, Cl. 364-513.000.

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Flynn, Stephen D., 4,532,923, Cl. 128-205.130.

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Altman, Ralph F.; Gooch, John P.; Dismukes, Edward B.; Bickelhaupt, Roy E.; and Dahlin, Robert S., 4,533,364, Cl. 55-5.000.

Daikoku, Takahiro: *See—*
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Muller, Alf; Schobbe, Hermann; Loper, Bernd; and Binnewies, Hartmut, 4,533,184, Cl. 301-63.00R.
Wulf, Helmut; and Baehrle, Friedrich, 4,532,894, Cl. 123-142.50E.

Dainippon Ink and Chemicals, Inc.: *See—*
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Dainippon Screen Seizo Kabushiki Kaisha: *See—*
Yamada, Mitsuhiko, 4,534,059, Cl. 382-54.000.

Daisy Systems Corporation: *See—*
Finegold, Aryeh, 4,533,911, Cl. 340-727.000.

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Bavoux, Guy; and Dallaserra, Arthur B., 4,532,863, Cl. 101-153.000.

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Pedersen, Poul H. H., 4,532,764, Cl. 60-384.000.
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,533,303, Cl. 418-61.00B.

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Lauvray, Georges R. P. L.; and Darche, Michel J. P., 4,533,945, Cl. 358-109.000.

Dargent, Bruno, to Commissariat a l'Energie Atomique. Process for producing conductors for integrated circuits using planar technology. 4,533,431, Cl. 156-643.000.

Darnell, William R.: *See—*
Newland, Gordon C.; and Darnell, William R., 4,533,729, Cl. 528-371.000.

Das, Dilip K.; Kumar, Kaplesh; and Wettstein, Ernest C., to Charles Stark Draper Laboratory, Inc., The. Radial orientation rare earth-cobalt magnet rings. 4,533,407, Cl. 148-102.000.

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Coughlan, Raymond T.; and Bojarski, Suzette M., 4,533,600, Cl. 428-414.000.

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Wolfe, Allan M.; Davenport, James M.; Theeuwes, Felix; and Yum, Su I., 4,533,348, Cl. 604-85.000.

Davies, James F.; Leigh, Arthur G.; and Rennie, George K., to Lever Brothers Company. Method and device for conditioning fabrics in a tumble-dryer. 4,532,719, Cl. 34-12.000.

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Miller, Ira; and Davies, Robert B., 4,533,844, Cl. 307-530.000.
Davis, Bender A.; and Louw, Hendrik A., to Carvalette Services Africa (Proprietary) Limited. Guide rail for sliding assembly. 4,533,173, Cl. 296-216.000.
Day, Eric; and VanDerStuyf, Allen F., to Cummins Engine Company, Inc. Electronically controlled fuel pump. 4,532,893, Cl. 123-41.310.
Dayco Corporation: *See—*
Howerton, Anderson W., 4,533,040, Cl. 198-847.000.
Miranti, Joseph P., Jr.; Oliver, Larry R.; and Johnson, Clyde O., 4,533,342, Cl. 474-201.000.
Wetzel, Robert E., 4,533,420, Cl. 156-138.000.
de Bentzmann, Bertrand L. Device for producing and removing shaped wire material pieces. 4,532,966, Cl. 140-105.000.
Decker, Ronald R.; and Shannon, William T. Vehicle performance detection and recording apparatus. 4,533,962, Cl. 360-5.000.
Deckert, Clinton L., to Warner-Lambert Company. Controller for a dual drug delivery system. 4,533,347, Cl. 604-81.000.
Deere & Company: *See—*
Willer, David A.; Rosbak, John; and McCombs, Daniel G., 4,533,108, Cl. 248-467.000.
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DeFalco, Ralph. Overhead door construction. 4,532,973, Cl. 160-235.000.
Degeilh, Robert, to Saint-Gobain Vitrage. Process for preparing polyvinyl butyral. 4,533,697, Cl. 525-61.000.
Degussa Aktiengesellschaft: *See—*
Drauz, Karlheinz; and Kleemann, Axel, 4,533,766, Cl. 568-771.000.
Dehoff, Barry D.: *See—*
Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., 4,533,325, Cl. 433-171.000.
Deininger, Anton; Nelzow, Hartmann; and Farber, Karlheinz, to Bosch-Siemens Hausgeraete GmbH. Variable volume metering valve for dispensing beverage concentrates. 4,533,070, Cl. 222-439.000.
Del Mar Avionics: *See—*
Kelen, George J., 4,532,934, Cl. 128-697.000.
Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, to Institut Francais du Petrole. Process for recovering polymetal compounds discharged from a submarine hydrothermal source and devices for carrying out the same. 4,533,526, Cl. 423-1.000.
Delam, Heinz, to Gerb Gesellschaft fur Isolierung MBH & Co KG. Elastic support unit. 4,533,109, Cl. 248-542.000.
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Milligan, Barton; and DeLaMater, George B., 4,533,763, Cl. 568-716.000.
Milligan, Barton; and DeLaMater, George B., 4,533,765, Cl. 568-763.000.
Delanese Corporation: *See—*
Choe, Eui W.; and Conciatori, Anthony B., 4,533,725, Cl. 528-336.000.
Del Bon, Franco: *See—*
Del Bon, Luigi; and Del Bon, Franco, 4,532,690, Cl. 29-451.000.
Del Bon, Luigi; and Del Bon, Franco. Process for producing a valve-and-lid assembly. 4,532,690, Cl. 29-451.000.
Delta Kogyo Co., Ltd.: *See—*
Otani, Toshiaki; Chihara, Takeshi; and Nishikori, Tsutomu, 4,533,027, Cl. 192-8.00C.
Demco, Inc.: *See—*
Burns, Daniel E., 4,532,774, Cl. 62-239.000.
Denki Kagaku Kogyo Kabushiki Kaisha: *See—*
Maeda, Tetsuro; Okamoto, Akihiro; Shimizu, Yoshimitsu; and Nomoto, Takashi, 4,533,698, Cl. 525-73.000.
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Dente, Mario; Porcari, Guiliano; and Robinson, Lee F., to RTR Riotinto Til Holding S.A. Extraction process. 4,533,459, Cl. 208-11.0LE.
Denton, Robert D.: *See—*
Valencia, Jaime A.; and Denton, Robert D., 4,533,372, Cl. 62-12.000.
Dentsply Research & Development Corp.: *See—*
Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., 4,533,325, Cl. 433-171.000.
DePalma, Vincent M.; and Ward, Albert W., to International Business Machines Corporation. Stabilized magnetic recording materials and process for tailoring and stabilizing of magnetic recording materials. 4,533,582, Cl. 428-64.000.
de Polo, Harry R. Eccentrically rotatable chair. 4,533,178, Cl. 297-349.000.
de Rham, Abbott B. Gas tight chimney access door and shield for use therewith and chimney assemblies employing same. 4,532,915, Cl. 126-242.000.
Dervan, Andrew H.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,533,534, Cl. 523-436.000.
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Deschenaux, Warren; Hughes, Gregory; Kreuzer, Justin; and La Fiandra, Carlo, to Perkin-Elmer Corporation, The. Mask ring assembly for X-ray lithography. 4,534,047, Cl. 378-35.000.
Desjardins, Glen R.: *See—*
Desjardins, Wilfred J.; Desjardins, Wayne W.; and Desjardins, Glen R., 4,532,669, Cl. 15-249.000.
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Tortorello, Anthony J.; Hansen, Nestor P.; and Jarocki, Kathryn M., 4,533,682, Cl. 523-414.000.
Deutsch, Ralph, to Kawai Musical Instrument Mfg. Co., Ltd. Generation of mutation pitches in an electronic musical instrument. 4,532,848, Cl. 84-1.190.
Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V.: *See—*
Prinz, A. F. Rudolf; and Charvat, Rudolf M., 4,532,810, Cl. 73-717.000.
Deutsche Perrot-Bremse GmbH: *See—*
Schneider, Wilhelm, 4,533,022, Cl. 188-18.00R.
Deve, Vagn, to Combustion Engineering, Inc. Apparatus with heat exchange means and transfer pipe for treating solid, granular and aggregate materials. 4,533,087, Cl. 241-65.000.
Develcon Electronics Ltd.: *See—*
Dodds, David E.; and Bertsch, Ludo A., 4,534,038, Cl. 375-36.000.
Dodds, David E.; and Bertsch, Ludo A., 4,534,039, Cl. 375-36.000.
Dewberry, James R. Method and apparatus for servicing fluid meters. 4,532,688, Cl. 29-402.080.
Dewing, John; Hogan, Philip J.; and Stewart, Allan, to Imperial Chemical Industries, PLC. Controlled dealumination of zeolites. 4,533,533, Cl. 423-328.000.
Dey, Arabinda N.; and Hamilton, Noble E., to Duracell Inc. Seal for electrochemical cell. 4,533;609, Cl. 429-172.000.
Dhillon, Major: *See—*
Walls, John E.; Dhillon, Major; and Bentley, Trisha, 4,533,619, Cl. 430-157.000.
Diamondback Marine Products, Inc.: *See—*
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Dickerson, Douglas M.; and Fikes, Robert W., to United States Steel Corporation. Apparatus and method of using a fuel gas regulator for a coke oven battery. 4,533,439, Cl. 201-41.000.
Dickson, Mark K.: *See—*
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Dierichs, Wolfgang: *See—*
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Diesel Kiki Co., Ltd.: *See—*
Swain, James C.; and Thomas, David L., 4,533,299, Cl. 417-222.000.
Dietz, Peter W.: *See—*
Snaddon, Robert W. L.; and Dietz, Peter W., 4,533,368, Cl. 55-104.000.
Digital Products Corporation: *See—*
Foley, Steven L.; and Bower, David S., 4,533,141, Cl. 273-86.00C.
Digital Services Corporation: *See—*
Norman, James W., III, 4,533,952, Cl. 358-160.000.
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Lacey, Ralph W., 4,533,281, Cl. 407-36.000.
Dilgren, Richard E.; and Ritter, Paul B., to Shell Oil Company. Selective steam foam soak oil recovery process. 4,532,993, Cl. 166-303.000.
DiMatteo, Paul; and Hecker, Joel, to Robotic Vision Systems, Inc. Arrangement for increasing the dynamic range of optical inspection devices to accommodate varying surface reflectivity characteristics. 4,533,828, Cl. 250-216.000.
Di Passio, Attilio; and Pezzulo, Antimo, to Videocolor. Method of manufacture of a color television tube having low screen reflectance for ambient light. 4,533,610, Cl. 430-25.000.
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Beauprey, Richard R., 4,533,830, Cl. 250-231.0SE.
Discovision Associates: *See—*
Smith, William V., 4,534,021, Cl. 369-47.000.
Dismukes, Edward B.: *See—*
Altman, Ralph F.; Gooch, John P.; Dismukes, Edward B.; Bickelhaupt, Roy E.; and Dahlin, Robert S., 4,533,364, Cl. 55-5.000.
Dittmar, Heinz; Beckmann, Manfred; Dorr, Karl-Heinz; Rothe, Ulrich; and Sander, Ulrich, to Metallgesellschaft Aktiengesellschaft. Process of producing sulfuric acid. 4,533,537, Cl. 423-522.000.
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Dixon, John; and Manning, Peter. Locking toy vehicle. 4,533,336, Cl. 446-465.000.
Doane, Elliott P.: *See—*
Burks, William M., Jr.; Doane, Elliott P.; Campbell, Ramsey G.; and Velez, Emilio S., 4,533,473, Cl. 210-754.000.
Dobbs, John: *See—*
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.
Dr. Ing. h.c.F. Porsche A.G.: *See—*
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Dr. -Ing. Rudolf Hell GmbH: *See—*
Gall, Winrich; and Weselmann, Peter, 4,533,942, Cl. 358-78.000.
Dr. Johannes Heidenhain GmbH: *See—*
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Dr. Karl Thomae Gesellschaft mit beschrankter Haftung: *See*—
Trummlitz, Gunter; Engel, Wolfhard; Seeger, Ernst; and Haarmann, Walter, 4,533,664, Cl. 514-225.000.

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Dodds, David E.; and Bertsch, Ludo A., to Develcon Electronics Ltd. Dataset powered by control and data signals from data terminal. 4,534,039, Cl. 375-36.000.

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Domoleczny, James D.: *See*—
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Donnelly, Edward J.: *See*—
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Dorries, Peter; and Wahl, Helmut, to Cassella Aktiengesellschaft; and Theodor Hymmen KG. Carrier materials coated with amino resin dispersions, and their further processing into laminates. 4,533,590, Cl. 428-211.000.

Dorsey-Palmateer, John W.: *See*—
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Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, 4,533,220, Cl. 350-507.000.

Douglas, Ellwood S.: *See*—
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Chang, Feng-Chih; Wernli, Susan A.; and Busby, David E., 4,533,764, Cl. 568-724.000.
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Turner, James A., 4,533,381, Cl. 71-94.000.
Walles, Wilhelm E.; Keskey, William H.; and Young, Richard G., 4,533,484, Cl. 252-117.000.

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Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

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Downey, William J.; and Brauer, Melvin, to CasChem, Inc. Extended polyurethanes. 4,533,598, Cl. 428-380.000.

Downs, Edgar S. Strap-type wrench for removing rotatable closures or similar members. 4,532,833, Cl. 81-64.000.

Dragone, Corrado, to AT&T Bell Laboratories. Corrugated antenna feed arrangement. 4,533,919, Cl. 343-786.000.

Drauz, Karlheinz; and Kleemann, Axel, to Degussa Aktiengesellschaft. Process for the production of dihydroxybenzenes. 4,533,766, Cl. 568-771.000.

Dresser Industries, Inc.: *See*—
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Onal, Hasan F., 4,533,294, Cl. 415-119.000.
Wang, Ke-Chin; and Winkelbauer, Howard M., 4,533,646, Cl. 501-97.000.

Drew, Dennis M. Signal shape controller. 4,532,849, Cl. 84-1.220.

Drexore Resources Inc.: *See*—
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Drive Line Service, Inc.: *See*—
Wilson, Louis D.; and Jones, Patrick M., 4,532,804, Cl. 73-478.000.

Drobish, James L., to Procter & Gamble Company, The. Pump-type dispenser. 4,533,069, Cl. 222-209.000.

DSL Dynamic Sciences Limited: *See*—
Boetzkes, Peter C., 4,533,871, Cl. 324-207.000.

Duchesneau, Jerome G., to United Technologies Corporation. Pitch control system for variable pitch propeller. 4,533,295, Cl. 416-27.000.

Duchesneau, Jerome G.; and Schwartz, Robert A., to United Technologies Corporation. Pitch control system for variable pitch propeller. 4,533,296, Cl. 416-46.000.

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Dunder, Thomas A.: *See*—
Walls, John E.; and Dunder, Thomas A., 4,533,620, Cl. 430-157.000.

Dunlop Limited: *See*—
Moore, Alan F., 4,533,274, Cl. 403-31.000.

Duparchy, Jacques. Process of formation of an image of the eye free from reflections for its recording by picture taking and/or its observation and apparatus for putting into action of the process. 4,533,223, Cl. 351-206.000.

Du Pont de Nemours, E. I., and Company: *See*—
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Peterson, Marvin L., 4,533,761, Cl. 568-673.000.
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Durr, Dieter; Rohr, Otto; and Bohner, Beat, to Ciba-Geigy Corporation. Herbicidal heterocyclic esters of 2-nitro-5-(o-chloro-p-trifluoromethylphenoxy)-benzoic acid as compositions and herbicidal method. 4,533,380, Cl. 71-88.000.

Dwulet, Michaelene, to Multi-Tex Products Corp. Adhesive for composite yarn product. 4,533,597, Cl. 428-375.000.

Dyer, Richard J.; and Tarpley, Robert S., to Diamondback Marine Products, Inc. Boat anchor. 4,532,880, Cl. 114-298.000.

Dykast, Jaroslav: *See*—
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Dynamit Nobel Aktiengesellschaft: *See*—
Neuschaeffer, Karl H.; Spielau, Paul; Zoche, Gunter; and Engels, Hans-Werner, 4,533,393, Cl. 106-18.120.

E. R. Squibb & Sons, Inc.: *See*—
Gordon, Eric M.; and Ondetti, Miguel A., 4,533,660, Cl. 514-210.000.
Jensen, Ole R., 4,533,354, Cl. 604-323.000.
Karanewsky, Donald S., 4,533,661, Cl. 514-212.000.
Nakane, Masami, 4,533,673, Cl. 514-469.000.

Eagle Machinery Company: *See*—
Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., 4,533,007, Cl. 177-50.000.

Eagles, Brian A.: *See*—
French, Albert G.; and Eagles, Brian A., 4,533,180, Cl. 299-1.000.

Eakin, Murdoch A.; Hayter, Anthony J.; and Furr, Barrington J. A., to Imperial Chemical Industries plc. Amino, cyano phenylthio or phenoxyl indole derivatives. 4,533,672, Cl. 514-415.000.

Eastman Kodak Company: *See*—
Lu, Wei C., 4,533,229, Cl. 355-3.0DD.
Newland, Gordon C.; and Darnell, William R., 4,533,729, Cl. 528-371.000.

Easton, Thomas C., to Tektronix, Inc. Method for simultaneously cutting a plurality of circuit boards. 4,532,839, Cl. 83-29.000.

Eaton Corporation: *See*—
Begley, Benjamin D., 4,533,302, Cl. 418-61.00B.
Benjamin, James A.; Lade, Robert W.; and Schutten, Herman P., 4,533,783, Cl. 136-249.000.

Eberspacher, Rolf: *See*—
Buchner, Norbert; Eberspacher, Rolf; and Liede, Dieter, 4,533,063, Cl. 220-270.000.

Ebigt, Joachim: *See*—
Hermann, Hans D.; Fabian, Klaus; and Ebigt, Joachim, 4,533,601, Cl. 428-437.000.

Eby, John E.; and Kingston, Charles M., to GTE Products Corporation. Video measurement system for microcomputer. 4,533,944, Cl. 358-107.000.

Ecer, Gunes M., to CDP, Ltd. Self sharpening drag bit for sub-surface formation drilling. 4,533,004, Cl. 175-329.000.

Ecer, Gunes M., to Smith International, Inc. Process for treating a bearing surface to modify microasperities. 4,533,815, Cl. 219-121.0LF.

Eckert, Alton B.; and Nambudiri, Easwaran C. N., to Pitney Bowes Inc. Non-volatile memory protection circuit with microprocessor interaction. 4,534,018, Cl. 365-228.000.

Eckhardt, Wolfgang; and Kunz, Walter, to Ciba-Geigy Corporation. Microbicidal 2-(1H-1,2,4-triazolylmethyl-1'-yl)-2-siloxy-2-phenylacetates. 4,533,659, Cl. 514-184.000.

Edelman, Robert D. Latching system. 4,533,165, Cl. 292-68.000.

Eguchi, Yasukata; and Inamori, Mikio, to Janome Sewing Machine Co. Ltd. Hem stitching presser foot for a zigzag sewing machine. 4,532,874, Cl. 112-235.000.

Eilingsfeld, Heinz; Etzbach, Karl-Heinz; Hoffmann, Gerhard; and Neumann, Peter, to BASF Aktiengesellschaft. Electrophotographic recording materials containing special charge carrier-transporting compounds. 4,533,612, Cl. 430-59.000.

EIP Microwave, Incorporated: *See*—
Witczak, Edward J., 4,533,867, Cl. 324-78.00R.

Eisai Co., Ltd.: *See*—
Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, 4,532,881, Cl. 118-20.000.
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.

Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,533,669, Cl. 514-396.000.

Eke, Kenneth I., to Microwave Ovens Limited. Microwave ovens and methods of cooking food. 4,533,809, Cl. 219-10.55M.

Electric Power Research Institute, Inc.: *See—*
Altman, Ralph F.; Gooch, John P.; Dismukes, Edward B.; Bickelhaupt, Roy E.; and Dahlin, Robert S., 4,533,364, Cl. 55-5.000.

Eli Lilly and Company: *See—*
Buddenbaum, Harry C.; and Robison, Robert L., 4,533,542, Cl. 424-31.000.
Matsumoto, Ken; and Ward, John S., 4,533,666, Cl. 514-277.000.
Robertson, David W., 4,533,670, Cl. 514-399.000.
Robertson, David W., 4,533,734, Cl. 514-303.000.
Spry, Douglas O., 4,533,497, Cl. 260-239.00A.

Elka, Shmuel: *See—*
Satran, Amir; and Elka, Shmuel, 4,533,283, Cl. 407-111.000.

Elliott, Thomas; and Knecht, Todd, to Elliott, Thomas. Surface removal silo unloaders. 4,533,280, Cl. 406-57.000.

Eloranta, Vaito K.; Peisach, Joel M.; and Rogers, Donald E., Jr., to Polaroid Corporation. Apparatus for exchanging an intensifying screen and a negative in a film packet. 4,534,053, Cl. 378-167.000.

Elton, Richard K.; and Schultz, William R., Jr., to General Electric Company. Formulation for electrodeposition of mica. 4,533,694, Cl. 524-449.000.

Emerson Electric Co.: *See—*
Stackhouse, James L., Jr., 4,532,841, Cl. 83-102.100.

Emigh, Stuart G.: *See—*
White, Maurice A.; Riggle, Peter; and Emigh, Stuart G., 4,532,766, Cl. 60-517.000.

Enamel Products & Plating Co: *See—*
Anderson, William J., 4,532,672, Cl. 16-86.00A.

Endo, Toshio, to Nissan Motor Company, Limited. Resilient structure for securing carpeting of different thicknesses. 4,532,671, Cl. 16-7.000.

Engebretson, Marvin: *See—*
Hallock, Donald W.; Hartmann, Thomas M.; and Engebretson, Marvin, 4,533,075, Cl. 227-55.000.

Engel, Kurt: *See—*
Hargassner, Reinhard; Nugent, Thomas J.; Scheinecker, Alois; and Engel, Kurt, 4,532,981, Cl. 164-483.000.

Engel, Wolfhard: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Seeger, Ernst; and Haarmann, Walter, 4,533,664, Cl. 514-225.000.

Engeler, William E.: *See—*
Tiemann, Jerome J.; and Engeler, William E., 4,533,936, Cl. 358-12.000.

Engelmore, Anthony R. Rotatable electrical connector for telephone cord. 4,533,796, Cl. 179-186.000.

Engels, Hans-Werner: *See—*
Neuschaeffer, Karl H.; Spielau, Paul; Zoche, Gunter; and Engels, Hans-Werner, 4,533,393, Cl. 106-18.120.

Engwall, Mats A.; and Mulvany, Richard B., to International Business Machines Corporation. Cylindrical type squeeze bearing systems with bearing and driving elements attached in areas of maximum deflection. 4,533,186, Cl. 308-5.00R.

Ennis, Gregory B.: *See—*
McNamara, Robert P.; Ennis, Gregory B.; Feiertag, Richard J.; and Bauer, Robert K., 4,533,948, Cl. 358-122.000.

Enomoto, Hiroshi: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Kura, Kohei; Yagi, Masahiro; and Shirahase, Ichiro, 4,533,668, Cl. 514-321.000.

Ensor, Paul M. D.; and Bassett, Neville C., to Broken Hill Proprietary Company Limited, The. Centrifugal separation method and apparatus. 4,533,468, Cl. 209-172.000.

Eppendorf-Geratebau Netheler & Hinz GmbH: *See—*
Gronholz, Claus; and Schmidt-Rabenau, Hartmut, 4,533,255, Cl. 366-108.000.

Epson Corporation: *See—*
Takahashi, Shunetsu, 4,533,924, Cl. 346-49.000.

Epworth, Richard E., to International Standard Electric Corporation. Optical transmission system. 4,533,247, Cl. 356-345.000.

Erickson, Donald C. Cryogenic air separation with cold argon recycle. 4,533,375, Cl. 62-22.000.

Eskinazi, Victoria: *See—*
Wells, James E.; and Eskinazi, Victoria, 4,533,758, Cl. 658-630.000.

Esper, Friedrich J.; and Zeller, Robert, to Robert Bosch GmbH. High strength sintered alloy. 4,533,392, Cl. 75-230.000.

Esper, Norbert: *See—*
Burba, Christian; Goeke, Ulrich; and Esper, Norbert, 4,533,524, Cl. 427-372.200.

Estel Hoogovens B.V.: *See—*
Bruinsma, Hans; Hollander, Frans; Huisman, Rein L.; and Reinen, Adrianus G., 4,532,789, Cl. 72-202.000.

Ethicon, Inc.: *See—*
Aday, Jorge L.; and Cerwin, Robert J., 4,533,041, Cl. 206-63.300.
Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,532,928, Cl. 128-335.500.
Mattei, Frank V.; and Regula, Donald W., 4,532,929, Cl. 128-335.500.
Miksza, Anthony, Jr., 4,532,927, Cl. 128-334.00C.
O'Holla, Robert H., 4,532,926, Cl. 128-334.00C.

Ethyl Corporation: *See—*
McKinnie, Bonnie G.; and Ranken, Paul F., 4,533,753, Cl. 568-47.000.
Walter, Thomas J., 4,533,735, Cl. 546-156.000.

Etzbach, Karl-Heinz: *See—*
Eilingsfeld, Heinz; Etzbach, Karl-Heinz; Hoffmann, Gerhard; and Neumann, Peter, 4,533,612, Cl. 430-59.000.

Europaisches Laboratorium fur Molekularbiologie (EMBL): *See—*
Ansorge, Wilheln, 4,533,307, Cl. 425-90.000.

Evans, David L. Lifting and transporting devices. 4,533,009, Cl. 177-139.000.

Evans, Jack L.; Campbell, Karen J.; Kreil, Curtis L.; and Sidney, LuAnn, to Minnesota Mining and Manufacturing Company. Electron-beam adhesion-promoting treatment of polyester film base for silicone release liners. 4,533,566, Cl. 427-44.000.

Evans, Maurice L.; Mola, Clark M.; and Beringer, Richard D. Wheel rim buffing device. 4,532,665, Cl. 15-21.00D.

Everede Tool Company: *See—*
Jorgensen, Charles A., 4,533,285, Cl. 408-191.000.

Ex-Cell-O Corporation: *See—*
Hagemeyer, Kenneth L.; and Pearson, Vernon W., 4,533,287, Cl. 409-234.000.

Exxon Production Research Co.: *See—*
Ortloff, John E., 4,532,879, Cl. 114-230.000.
Valencia, Jaime A.; and Denton, Robert D., 4,533,372, Cl. 62-12.000.

Exxon Research & Engineering Co.: *See—*
Michaelson, Robert C.; and Austin, Richard G., 4,533,772, Cl. 568-860.000.
Michaelson, Robert C.; and Austin, Richard G., 4,533,773, Cl. 568-860.000.
Moustakas, Theodore D., 4,533,450, Cl. 204-192.00S.

Fabbri, Bruno; and Fausone, Alfredo, to SIP - Societa Italiana per L'Esercizio Telefonico p.A. Electronic instrument for measuring the overall phase and amplitude distortion of a transmission channel 4,533,868, Cl. 324-83.00R.

Fabian, Klaus: *See—*
Hermann, Hans D.; Fabian, Klaus; and Ebigt, Joachim, 4,533,601, Cl. 428-437.000.

Fabricated Metals, Inc.: *See—*
Coleman, Clarence B., 4,532,800, Cl. 73-308.000.

Fair, Marjorie A. Loose-fitting ostomy garment. 4,533,355, Cl. 604-345.000.

Falamak, Reza. Control apparatus for omnidirectional, polar coordinated platform for lawnmower and the like. 4,533,998, Cl. 364-424.000.

Falckenberg, Richard: *See—*
Grabmaier, Josef; Falckenberg, Richard; and Foll, Helmut, 4,533,428, Cl. 156-608.000.

Fang, Frank F.; Grossman, Bertrand M.; and Hwang, Wei, to International Business Machines Corporation. Method of making ultrashort FET using oblique angle metal deposition and ion implantation. 4,532,698, Cl. 29-571.000.

Fanuc Ltd.: *See—*
Kishi, Hajimu; Seki, Masaki; and Kawasumi, Masashi, 4,533,286, Cl. 409-80.000.
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,534,001, Cl. 364-474.000.

Farber, Karlheinz: *See—*
Deininger, Anton; Nelzow, Hartmann; and Farber, Karlheinz, 4,533,070, Cl. 222-439.000.

Farmer, Douglas A., Jr.: *See—*
Trotz, Samuel I.; and Farmer, Douglas A., Jr., 4,533,736, Cl. 546-290.000.

Farrell, George; Anderson, Diana M.; and Walton, Michael E., to Interox Chemicals Limited. Tungsten recovery from carbides. 4,533,527, Cl. 423-53.000.

Fatur, Thomas C.: *See—*
Bossart, Clayton J.; and Fatur, Thomas C., 4,533,520, Cl. 422-96.000.

Fausone, Alfredo: *See—*
Fabbri, Bruno; and Fausone, Alfredo, 4,533,868, Cl. 324-83.00R.

FDX Patents Holding Company, N.V.: *See—*
Rotem, Abraham I., 4,533,412, Cl. 148-411.000.

Fedde, Mickiel P., to Minnesota Mining and Manufacturing Co. Apparatus for converting facsimile coded data to video data. 4,533,956, Cl. 358-260.000.

Feichtinger, Kurt, to Dr. Johannes Heidenhain GmbH. Multicoordinate sensing head. 4,532,713, Cl. 33-559.000.

Feiertag, Richard J.: *See—*
McNamara, Robert P.; Ennis, Gregory B.; Feiertag, Richard J.; and Bauer, Robert K., 4,533,948, Cl. 358-122.000.

Feikema, Roger H.; and Bakker, Harry J. Lawn edger device. 4,532,998, Cl. 172-15.000.

Feilchenfeld, Michal M.; Byford, Roger G.; and Quan, Wing C., to Westinghouse Electric Corp. Voice-recognition elevator security system. 4,534,056, Cl. 381-42.000.

Feinerman, Deborah J.: *See—*
Piccolo, Dominic J.; and Feinerman, Deborah J., 4,533,556, Cl. 426-3.000.

Feist, Norbert, to Battenfeld Maschinenfabrik GmbH. Mixing nozzle for two reactant components. 4,533,521, Cl. 422-133.000.

Feldberg, Leonard, to Burndy Corporation. IDC termination for coaxial cable. 4,533,199, Cl. 339-99.00R.

Feldman, Steven; and Cihak, Richard J., to AMP Incorporated. Connector for printed circuit boards. 4,533,203, Cl. 339-176.00M.

Fellows Corporation: *See—*
Tlaker, Erich, 4,533,858, Cl. 318-634.000.

Ferag AG: *See—*
Meier, Jacques, 4,532,750, Cl. 53-118.000.

Fergin, Richard L.: *See*—
Neuzil, Richard W.; and Fergin, Richard L., 4,533,398, Cl. 127-55.000.
Fermanich, Raymond J., to Barber-Colman Company. Transducer utilizing electrical and pneumatic signals. 4,532,951, Cl. 137-84.000.
Ferrell, David R. Grounding wire clamping device. 4,533,102, Cl. 248-74.100.
Fertility & Genetics Associates: *See*—
Louw, John A., 4,533,345, Cl. 604-43.000.
Field, Richard E., to National Research Development Corporation. Endoprosthetic bone joint devices. 4,532,660, Cl. 623-18.000.
Fields, Ellis K., to Standard Oil Company (Indiana). 3-Sulfoxy-1,2-propylene glycols-1-esters of tricyclo $(4.2.2.0^{2,5})$ dec-9-ene-3,4,7,8-tetracarboxylic acid. 4,533,478, Cl. 252-8.55D.
Fifolt, Michael J.: *See*—
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,533,762, Cl. 568-677.000.
Fikes, Robert W.: *See*—
Dickerson, Douglas M.; and Fikes, Robert W., 4,533,439, Cl. 201-41.000.
Fillman, Russell E., to Woodford Manufacturing Company. Wall hydrant. 4,532,954, Cl. 137-302.000.
FILMOSTO-PROJEKTION Johannes Jost GmbH & Co.: *See*—
Klose, Odo; and Jost, Jochen, 4,532,727, Cl. 40-152.000.
Fincher, Jeffrey L., to Texas A&M University. Optical joystick. 4,533,827, Cl. 250-211.00K.
Finegold, Aryeh, to Daisy Systems Corporation. Video display system for displaying symbol-fragments in different orientations. 4,533,911, Cl. 340-727.000.
Finnan, Jeffrey L.: *See*—
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,533,674, Cl. 514-474.000.
Finnemore, Douglas K.: *See*—
Verhoeven, John D.; Gibson, Edwin D.; Finnemore, Douglas K.; Ostenson, Jerome E.; Schmidt, Frederick A.; and Owen, Charles V., 4,532,703, Cl. 29-599.000.
Finney, Roy P., to Medical Engineering Corporation. Penile implant. 4,532,920, Cl. 128-79.000.
Firestone Tire & Rubber Company, The: *See*—
Beneze, Heinz W.; and Tomaszewski, Walter, 4,532,744, Cl. 52-222.000.
Firey, Joseph C. Cyclic char gasifier with product gas divider. 4,533,362, Cl. 48-61.000.
Firmagroup Australia Pty. Ltd.: *See*—
Leivenzon, Simon; and Leivenzon, Steven, 4,533,905, Cl. 340-524.000.
First Inertia Switch Limited: *See*—
Jackman, Peter R.; and Thomas, Alan D., 4,533,801, Cl. 200-61.45R.
Fischer, Reinhard, to Siemens Aktiengesellschaft. Digital FSK demodulator using non-recursive transversal filter. 4,533,874, Cl. 329-50.000.
Fisher Controls International, Inc.: *See*—
Walton, Herbert H.; and Kehoe, Steven D., 4,532,961, Cl. 137-625.310.
Fjallstam, Bjorn M.: *See*—
Sukonick, Josef; and Fjallstam, Bjorn M., 4,533,910, Cl. 340-721.000.
Flair, Henry J.: *See*—
Rayburn, Charles C.; Padgitt, Howard R.; and Flair, Henry J., 4,533,813, Cl. 219-121.0LH.
Flanagan, Eugene L., III: *See*—
Foldvari, Tibor L.; Boucher, Donald R.; and Flanagan, Eugene L., III, 4,533,926, Cl. 346-136.000.
Fleishman, Gregg. Portable furniture. 4,533,174, Cl. 297-16.000.
Fleming, Ray D. Bottle holder. 4,533,051, Cl. 206-563.000.
Flesher, Robert W. Pipette system. 4,532,805, Cl. 73-863.320.
Fletcher, Gerald M.; Jacobs, Robert M.; and Pietrowski, Kenneth W., to Xerox Corporation. Pin charging device for use in xerography. 4,533,230, Cl. 355-3.0CH.
Flohr, Peter: *See*—
Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, 4,533,900, Cl. 340-52.00R.
Floyd, William M., to United Technologies Automotive, Inc. Vehicle multiplex system having protocol/format for secure communication transactions. 4,534,025, Cl. 370-85.000.
Flynn, Stephen D., to D-Two Systems International Inc. Air bag. 4,532,923, Cl. 128-205.130.
Focqueur, Herve , to Valeo. Valve device for a hydraulic circuit. 4,532,768, Cl. 60-585.000.
Foggini, Giovanni, to Lear S.n.c. Swivel connector for securing motor-vehicle sun visors. 4,533,275, Cl. 403-165.000.
Foldvari, Tibor L.; Boucher, Donald R.; and Flanagan, Eugene L., III, to American Home Products Corporation (Del.). Strip chart recorder and medium status. 4,533,926, Cl. 346-136.000.
Foley, Steven L.; and Bower, David S., to Digital Products Corporation. Gaming apparatus with color sensitive detector. 4,533,141, Cl. 273-86.00C.
Foll, Helmut: *See*—
Grabmaier, Josef; Falckenberg, Richard; and Foll, Helmut, 4,533,428, Cl. 156-608.000.
Fonvielle, Frank P.: *See*—
Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., 4,533,325, Cl. 433-171.000.
Forberg, Horst; Achtnig, Klaus-Peter; Hegner, Gunter; and Boes, Gerhard, to KRONE GmbH. Device for making a solderless, non-screwed and unstripped single or multiple contact at a terminal element. 4,533,196, Cl. 339-97.00P.
Ford Motor Company: *See*—
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,533,704, Cl. 525-440.000.
Beim, Rudolf, 4,532,827, Cl. 74-745.000.
Buglione, Arthur J.; and Coats, James M., 4,532,907, Cl. 123-490.000.
Cassatta, Joseph C.; and Chattha, Mohinder S., 4,533,681, Cl. 523-400.000.
Forsting, Bernd; Zander, Joachim; and Gustav, Jeske, 4,533,081, Cl. 237-12.30B.
Janssen, Lutz J.; and Wulfing, Friedl W., 4,533,168, Cl. 296-1.00S.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,533,534, Cl. 523-436.000.
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Rauthmann, Axel; and Pietsch, Harry, 4,533,169, Cl. 296-37.200.
Salazar, Sumorfin, 4,532,675, Cl. 16-335.000.
Theodore, Ares N.; and Chattha, Mohinder S., 4,533,695, Cl. 524-504.000.
Forest Laboratories, Inc.: *See*—
Blank, Izhak, 4,533,540, Cl. 424-28.000.
Forgac, John M.: *See*—
Hoekstra, George R.; and Forgac, John M., 4,532,991, Cl. 166-261.000.
Fork, Inc.: *See*—
Albright, Ronald G.; and Albright, William D., 4,533,143, Cl. 273-144.00B.
Formers of Houston, Inc.: *See*—
Hokanson, Ronald A., 4,532,754, Cl. 53-451.000.
Forster, Harry: *See*—
Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.
Forsterling, Robert B., to General Motors Corporation. Life extension of catalyst predip baths. 4,532,887, Cl. 118-429.000.
Forsting, Bernd; Zander, Joachim; and Gustav, Jeske, to Ford Motor Company. Heating and ventilation system for vehicles. 4,533,081, Cl. 237-12.30B.
Fortune, William S. Vacuum booster and filter. 4,532,670, Cl. 15-314.000.
Foster, Kenneth W. S., to Renold Plc, A British Company of Renold House. Selectively operative multi-displacement pump or motor. 4,532,854, Cl. 91-472.000.
Foster, Leslie W. Pump. 4,533,301, Cl. 417-437.000.
Foster-Miller Associates, Inc.: *See*—
Guzdar, Adi R., 4,533,289, Cl. 414-217.000.
Fox, Joseph R.; Pesa, Frederick A.; and Curatolo, Benedict S., to Standard Oil Company, The. Process for the upgrading of lower alcohols to higher molecular weight alcohols. 4,533,775, Cl. 568-905.000.
Framatome & Cie: *See*—
Guigon, Jean-Paul, 4,533,128, Cl. 269-58.000.
Francart, Armand, Jr. Compact high torque rotary valve operator for simultaneous actuation of multiple rotary valves. 4,533,113, Cl. 251-63.400.
Frank, Berthold; Gartner, Georg; and Lydtin, Hans, to U.S. Philips Corporation. Method of manufacturing a thermionic cathode and thermionic cathode manufactured by means of said method. 4,533,852, Cl. 313-346.0DC.
Frank, Ed, to Boeing Company, The. Energy absorber for high energy fluid jet. 4,532,949, Cl. 137-1.000.
Frank, Walter, to Burndy Corporation. Collapsible wedge for electrical connector. 4,533,205, Cl. 339-247.000.
Franz Muller GmbH & Co.: *See*—
Vroomen, Albert, 4,532,683, Cl. 26-10.00C.
Frederick, John C., to Pirelli Cable Corporation. Apparatus for maintaining level of liquid-gas interface in a vulcanizing tube. 4,533,306, Cl. 425-71.000.
Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, to Bayer Aktiengesellschaft. Aromatic polyester carbonates having a high notched impact strength and a process for the production thereof. 4,533,702, Cl. 525-439.000.
French, Albert G.; and Eagles, Brian A., to Coal Industry (Patents) Ltd. Fluid supply system for rotary cutter heads for mining equipment and to mining machines comprising rotary cutter heads having fluid supply systems. 4,533,180, Cl. 299-1.000.
French, Kenneth; Kocher, Robert C.; Piorkow, Alfred; Shaner, Kenneth; and Smith, J. Thomas, to GTE Products Corporation. Apparatus and process for automatically measuring aperture size of apertured material. 4,533,251, Cl. 356-384.000.
Freyberger, Laurin C.: *See*—
Sauer, Wolfgang; Schmidtpott, Friedrich; Schat, Hermanus; and Freyberger, Laurin C., 4,533,879, Cl. 331-1.00A.
Fricker, Siegfried. Anchoring track with removable filler body. 4,532,740, Cl. 52-98.000.
FRIED. KRUPP Gesellschaft mit beschrankter Haftung: *See*—
Coenen, Hubert; and Kriegel, Ernst, 4,532,992, Cl. 166-267.000.
Friedemann, Wolfgang: *See*—
Kluth, Hermann; Roderhoff, Bernhard; Friedemann, Wolfgang; Wegner, Jurgen; and Dierichs, Wolfgang, 4,533,490, Cl. 252-305.000.

Friedrich, Peter: *See*—
Witter, Karl-Theo; Friedrich, Peter; and Strole, Ulrich, 4,533,515, Cl. 422-26.000.

Frohlich, Christian: *See*—
Goldmann, Gerd; Spott, Georg; and Frohlich, Christian, 4,533,432, Cl. 159-47.100.

Fruchey, Melvin C.; and Kubicki, Michael J., to Owens-Illinois, Inc. Dual carton. 4,533,052, Cl. 206-602.000.

Fryd, Michael; and Merriman, Burt T., Jr., to Du Pont de Nemours, E. I., and Company. Polyimide coating compositions of esterified anhydride and aromatic amine mixture. 4,533,574, Cl. 427-385.500.

Fryer, Richard B.: *See*—
Boord, Warren T.; and Fryer, Richard B., 4,533,872, Cl. 324-252.000.

Fuchigami, Eiji: *See*—
Yoden, Yoshimasa; Okuda, Tsuneo; Fuchigami, Eiji; and Kuwabara, Toshihiro, 4,533,358, Cl. 8-94.200.

Fuchs, Peter; Mueller-Glaser, Klaus; Schuett, Dieter; and Wach, Wolfgang, to Siemens Aktiengesellschaft. Programmable logic array. 4,534,008, Cl. 364-716.000.

Fuji Photo Film Co., Ltd.: *See*—
Ichijima, Seiji; and Hirose, Takeshi, 4,533,625, Cl. 430-552.000.
Ikeda, Kensuke; and Nakamura, Sukenori, 4,533,929, Cl. 346-209.000.
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,533,613, Cl. 430-78.000.
Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,533,444, Cl. 204-129.430.
Okita, Tsutomu, 4,533,565, Cl. 427-44.000.
Ono, Shigetoshi; Harada, Toru; Suzuki, Hirohisa; Tanaka, Mitsugu; and Nakamura, Shigeru, 4,533,626, Cl. 430-562.000.
Shiga, Koji, 4,533,225, Cl. 354-322.000.
Takahashi, Osamu; and Tanaka, Mitsugu, 4,533,622, Cl. 430-218.000.
Urata, Yukihide; Moriuchi, Shigenori; Nakamura, Taku; and Ogawa, Masashi, 4,533,623, Cl. 430-309.000.
Yoshida, Tuneo; Oishi, Kengo; and Yagi, Motohiko, 4,533,968, Cl. 360-130.210.

Fuji Xerox Co., Ltd.: *See*—
Miyazaki, Seikichi, 4,533,238, Cl. 355-68.000.
Watai, Yuji; Yasui, Hirokazu; Hirayama, Yoshiyuki; and Matsuura, Akira, 4,533,234, Cl. 355-14.00D.
Yoshino, Masaki, 4,532,865, Cl. 101-426.000.

Fujii, Takashi; Ushizawa, Jisaburo; and Watanabe, Masayuki, to Tokyo Shibaura Denki Kabushiki Kaisha. Heating resistor of single crystal manufacturing apparatus. 4,533,822, Cl. 219-553.000.

Fujikawa, Masaki, to Yasui Sangyo Co., Ltd. Warning means for a safety valve of a hydraulic power unit and a hydraulic power unit having the same. 4,533,908, Cl. 340-626.000.

Fujimoto, Takako: *See*—
Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,533,669, Cl. 514-396.000.

Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, to Canon Kabushiki Kaisha. Electrophotographic process. 4,533,232, Cl. 355-3.00R.

Fujimura, Yasushi; Okada, Takashi; and Yamagiwa, Kazuo, to Sony Corporation. Subscription television system. 4,533,949, Cl. 358-122.000.

Fujinami, Yoshio; Itoyama, Katumi; and Ochiai, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Manual operating device for a slide type electrical device. 4,533,805, Cl. 200-304.000.

Fujisawa Pharmaceutical Co., Ltd.: *See*—
Obata, Saburo; and Ito, Kazuo, 4,533,273, Cl. 401-190.000.
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,533,738, Cl. 548-194.000.

Fujita, Hitoshi: *See*—
Yasuhara, Hiroshi; Fujita, Hitoshi; and Okazaki, Kiyoshi, 4,533,946, Cl. 358-111.000.

Fujita, Tadashi: *See*—
Takeuchi, Yukihisa; and Fujita, Tadashi, 4,533,584, Cl. 428-116.000.

Fujita, Toshio, to Nippon Electric Co., Ltd. Diode driver circuit having stored charge control means. 4,533,838, Cl. 307-270.000.

Fukuda, Hiroshi: *See*—
Takaoka, Hiroshi; Furukawa, Toshiki; and Fukuda, Hiroshi, 4,532,761, Cl. 60-39.130.

Fukuda, Kazumasa; and Kitahara, Yoshimi, to TDK Electronics Co., Ltd. Magnetic recording medium. 4,533,603, Cl. 428-458.000.

Fukui, Masahiro; Kitano, Kisei; Tanaka, Masami; and Goto, Yasuyuki, to Chisso Corporation. Pyrimidine derivatives. 4,533,488, Cl. 252-299.610.

Fukumoto, Hiroshi; Inoue, Sukejiro; Sasakawa, Masumi; and Doi, Shinji, to Canon Kabushiki Kaisha. Heat-fixable dry system toner. 4,533,614, Cl. 430-99.000.

Fukumoto, Hiroshi: *See*—
Inoue, Sukejiro; Fukumoto, Hiroshi; Sasakawa, Masumi; and Doi, Shinji, 4,533,617, Cl. 430-111.000.

Fukumura, Seisuke: *See*—
Amano, Itaru; and Fukumura, Seisuke, 4,533,304, Cl. 425-32.000.

Fukushima, Kenichi: *See*—
Inoue, Hiroshige; Fukushima, Kenichi; and Nishiguchi, Ikuzo, 4,533,732, Cl. 544-172.000.

Fuller, Timothy J.: *See*—
Scala, Luciano C.; Alvino, William M.; and Fuller, Timothy J., 4,533,448, Cl. 204-181.700.

Fundemantum B.V.: *See*—
van den Elzen, Lambertus W. A.; van der Wouden, Adriaan; and Meijer, Auke, 4,533,279, Cl. 405-239.000.

Funke, Michael J.; Topliffe, Douglas A.; and Rathbun, Donald J., to Honeywell Information Systems Inc. Diskette read data recovery system. 4,534,044, Cl. 375-120.000.

Funke, Rolf: *See*—
Gleichaut, Winfried; Gunther, Oswin; Hoffmann, Dietrich; and Funke, Rolf, 4,532,868, Cl. 102-527.000.

Furgerson, Donald F., to Westinghouse Electric Corp. Computer monitored or controlled system which may be modified and debugged on-line by one not skilled in computer programming. 4,533,997, Cl. 364-200.000.

Furr, Barrington J. A.: *See*—
Eakin, Murdoch A.; Hayter, Anthony J.; and Furr, Barrington J. A., 4,533,672, Cl. 514-415.000.

Furrer, Josef: *See*—
Anderegg, Fredy; Furrer, Josef; and Dappen, Heinz, 4,533,787, Cl. 174-68.500.

Furukawa, Toshiki: *See*—
Takaoka, Hiroshi; Furukawa, Toshiki; and Fukuda, Hiroshi, 4,532,761, Cl. 60-39.130.

G.A.M.E.S.: *See*—
Bernard, Georges C., 4,533,026, Cl. 188-184.000.

G. D. Searle & Co.: *See*—
Pitzele, Barnett S.; Yu, Stella S. T.; Hamilton, Robert W.; and Moormann, Alan E., 4,533,739, Cl. 548-559.000.

G.R. Systems, Inc.: *See*—
Johnson, A. Neil; and Taylor, Philip A., 4,533,423, Cl. 156-359.000.

Gabriel, Albert L. Clutch actuating system. 4,533,030, Cl. 192-0.052.

Gaku, Morio; Kimbara, Hidenori; Ayano, Satoshi; and Yoshimura, Susumu, to Mitsubishi Gas Chemical Company, Inc. Process for producing a curable resin from cyanate ester compound and unsaturated 1,2-epoxy compound. 4,533,727, Cl. 528-361.000.

Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, to Budapesti Muszaki Egyetem; and Ikarus Karosszeria es Jarmugyar. Equipment for displaying alphanumerical and/or pictorial information, preferably for use on a vehicle. 4,533,912, Cl. 340-783.000.

Gall, Winrich; and Weselmann, Peter, to Dr. -Ing. Rudolf Hell GmbH. Method and apparatus for reproducing an image which has a coarser resolution than utilized in scanning of the image. 4,533,942, Cl. 358-78.000.

Galloway, Dudley L.: *See*—
Borgmeyer, Virgil L.; Galloway, Dudley L.; Sonnenberg, Gary N.; Gruczka, Jan S.; and Owen, Timothy C., 4,533,786, Cl. 174-50.000.

Galster, Hans-Peter, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Mechanism for the lateral alignment of sheets in a printing machine. 4,533,134, Cl. 271-240.000.

Gamblin, Rodger L., to Burlington Industries, Inc. Practical amorphous iron electroform and method for achieving same. 4,533,441, Cl. 204-3.000.

Gambro Cardio AB: *See*—
Johnsson, Bo A.; Losell, Ingvar E.; and Palmqvist, Sune H., 4,533,516, Cl. 422-46.000.

Gant, Lawrence A., to United States of America, Army. Military wheel-tire assembly. 4,533,183, Cl. 301-37.0TC.

GAO Gesellschaft fur Automation und Organisation mbH: *See*—
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,533,244, Cl. 356-71.000.

Garcia, Philippe; and Seigneurin, Michel, to Micro-Mega. Dental instrument light. 4,533,322, Cl. 433-29.000.

Gardiner, John W.: *See*—
Dahlgren, Harold P.; Gardiner, John W.; and Taylor, James E., 4,533,563, Cl. 427-387.000.

Gardner, William J.: *See*—
Tobey, William H.; Thomas, Donald A.; and Gardner, William J., 4,532,674, Cl. 16-295.000.

Garrett Corporation, The: *See*—
Benedict, Gary F., 4,533,400, Cl. 148-4.000.
Mongia, Hukam C.; Coleman, Edwin B.; and Bruce, Thomas W., 4,532,762, Cl. 60-39.230.

Garsin, Paul A., to Xerox Corporation. Charge particle removal device. 4,533,236, Cl. 355-15.000.

Gartner, Georg: *See*—
Frank, Berthold; Gartner, Georg; and Lydtin, Hans, 4,533,852, Cl. 313-346.0DC.

Gartner, Karl, to Yoshida Kogyo K. K. Corner joint means for use in wall structure of buildings. 4,532,746, Cl. 52-276.000.

Gatton, James W. Variable-width-beam light apparatus. 4,533,984, Cl. 362-232.000.

Gatz, Ronald: *See*—
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Gauthier, Alfred J. Discharge control attachment for a combine harvester. 4,532,941, Cl. 130-27.00R.

Gauthier, Andre : *See*—
Bourdillot, Michel; Gauthier, Andre ; Maille , Jacques; and Pitault, Bernard, 4,532,699, Cl. 29-572.000.

Gazzarrini, Vinicio, to Solis S.r.l. Process and a machine for the automatic transfer of pantyhose from a machine which produces a pan-

tyhose with seams to a gusset-sewing machine. 4,532,875, Cl. 112-262.200.

Gebhard, Georg R. U.; Hein, Klaus R. G.; and Glaser, Wolfgang, to Rheinisch-Westfallisches Elektrizitatswerk Aktiengesellschaft. Carboxylic acid activated dry calcium absorbent method for removing sulfur dioxide from a flue gas. 4,533,532, Cl. 423-244.000.

Gebr. Bode & Co.: *See—*
Lederle, Franz, 4,533,901, Cl. 340-52.00R.

Gebruder Sulzer Aktiengesellschaft: *See—*
Lerch, Hansueli, 4,532,964, Cl. 139-435.000.

Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., to United States of America, Army. Detonation products catcher. 4,532,815, Cl. 73-864.630.

Geis, Norman P.; and Chambers, Edward A., to Raytheon Company. Mortar system with improved round. 4,533,094, Cl. 244-3.220.

Geiss, Josef: *See—*
Reeh, Holger; and Geiss, Josef, 4,533,816, Cl. 219-137.310.

Gelardi, Paul J.; and MacLeod, Robert B., Jr., to Shape Inc. Tape cassette dust door spring assembly and method for assembling same. 4,533,093, Cl. 242-197.000.

General Dynamics Pomona Division: *See—*
Scoccia, Adelmo A.; and Schellin, Donald B., deceased, 4,533,189, Cl. 339-17.0CF.

General Electric Company: *See—*
Bolon, Donald A.; Gorczyca, Thomas B.; and Hallgren, John E., 4,533,504, Cl. 260-463.000.
Bonini, Bruno; Cook, Raymond G.; Holdren, Carl F.; and Johnston, Everett A., 4,533,098, Cl. 244-110.00B.
Campbell, John R.; and Thackeray, James W., 4,533,722, Cl. 528-199.000.
Elton, Richard K.; and Schultz, William R., Jr., 4,533,694, Cl. 524-449.000.
Harmon, Larry R.; Reiche, John C.; Bowles, Howard R.; and Chiu, Norman H., 4,533,810, Cl. 219-10.55B.
Herberling, Paul V., 4,533,314, Cl. 431-4.000.
Huseby, Irvin C.; and Bobik, Carl F., 4,533,645, Cl. 501-96.000.
Jones, Dwight V., 4,533,986, Cl. 363-17.000.
Kellie, Truman F.; Landry, J. David; and Lai, Ching C., 4,532,723, Cl. 356-73.000.
Kim, Bang M., 4,533,440, Cl. 204-1.00T.
Moodie, Eldon E.; and Burns, Richard D., 4,533,587, Cl. 428-166.000.
Olson, Daniel R.; and O'Donnell, Timothy W., 4,533,595, Cl. 428-336.000.
Olson, Daniel R.; and O'Donnell, Timothy W., 4,533,710, Cl. 526-323.200.
Orser, David A.; and Bulow, Jeffrey A., 4,533,216, Cl. 350-361.000.
Pedersen, James R., 4,533,262, Cl. 384-420.000.
Pisano, Alan D., 4,532,763, Cl. 60-39.281.
Rosenquist, Niles R., 4,533,690, Cl. 524-161.000.
Ryang, Hong-Son, 4,533,737, Cl. 548-110.000.
Sippel, David F., 4,532,738, Cl. 51-319.000.
Stokes, Vijay K., 4,533,166, Cl. 293-120.000.
Talley, John J., 4,533,767, Cl. 568-805.000.
Talley, John J., 4,533,768, Cl. 568-805.000.
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Tiemann, Jerome J.; and Engeler, William E., 4,533,936, Cl. 358-12.000.
Tiemann, Jerome J.; Cutler, Scott E.; and Welles, Kenneth B., II, 4,533,960, Cl. 358-310.000.
Ulug, Mehmet E., 4,534,061, Cl. 455-17.000.
Wengrovius, Jeffrey H., 4,533,503, Cl. 556-173.000.
Williams, Robert E., Jr., 4,533,744, Cl. 556-479.000.

General Instrument Corporation: *See—*
McNamara, Robert P.; Ennis, Gregory B.; Feiertag, Richard J.; and Bauer, Robert K., 4,533,948, Cl. 358-122.000.

General Motors Corporation: *See—*
Forsterling, Robert B., 4,532,887, Cl. 118-429.000.
Patel, Balkrishna R., 4,533,890, Cl. 335-234.000.

General Signal Corporation: *See—*
Steinbaugh, Gary, 4,533,965, Cl. 360-62.000.

Genson, Alex E.: *See—*
Akiyama, Sueshiro, 4,533,353, Cl. 604-321.000.

Genson, Brian S.: *See—*
Akiyama, Sueshiro, 4,533,353, Cl. 604-321.000.

Georgacakis, George D.: *See—*
Beller, Wilbert E.; Georgacakis, George D.; and Obermann, George, 4,533,803, Cl. 200-153.00K.

Georgiev, Ivan N.: *See—*
Mitkov, Atanas L.; Georgiev, Ivan N.; Radulov, Peter T.; Hung, Le K.; and Atanassov, Atanas K., 4,532,940, Cl. 130-6.000.

Georgis, Steven P., to Storage Technology Corporation. Adaptive feedforward servo system. 4,533,991, Cl. 364-164.000.

Geppert, Fritz, to Telefonbau und Normalzeit GmbH. Wall exchange. 4,533,793, Cl. 179-99.00R.

Gerb Gesellschaft fur Isolierung MBH & Co KG: *See—*
Delam, Heinz, 4,533,109, Cl. 248-542.000.

Gerben, Ralph D.; and Walters, Harry J., to M. S. Willett, Inc. Motion multiplier apparatus. 4,532,820, Cl. 74-56.000.

Gerkey, Kenneth S.: *See—*
Leumann, Hans E.; Gerkey, Kenneth S.; and Wylie, Mark E., 4,532,709, Cl. 33-140.000.

Gertsch, Ulrich, to TMC Corporation. Toe mechanism for a safety ski binding. 4,533,156, Cl. 280-629.000.

Geurts, Martinus F. A. M., to U.S. Philips Corporation. Tuning circuit with frequency synthesizer using d/a converter. 4,533,880, Cl. 331-1.00A.

Geyer, Otto-Christian: *See—*
Wingler, Frank; Waniczek, Helmut; and Geyer, Otto-Christian, 4,533,397, Cl. 106-181.000.

Gheewala, Tushar R.; and Kaplan, Steven B., to International Business Machines Corporation. Soliton sampler. 4,533,840, Cl. 307-306.000.

Ghoshtagore, Rathindra N.: *See—*
Gigante, Joseph R.; and Ghoshtagore, Rathindra N., 4,532,702, Cl. 29-578.000.

Giacometti, Alberto M.; and Newsome, George W., to U.S. Philips Corporation. Fault location arrangement for digital optical transmission system. 4,534,064, Cl. 455-601.000.

Gibson, Edwin D.: *See—*
Verhoeven, John D.; Gibson, Edwin D.; Finnemore, Douglas K.; Ostenson, Jerome E.; Schmidt, Frederick A.; and Owen, Charles V., 4,532,703, Cl. 29-599.000.

Giegel, David F.: *See—*
Yatchum, Joseph W.; and Giegel, David F., 4,533,798, Cl. 200-11.00R.

Gigante, Joseph R.; and Ghoshtagore, Rathindra N., to Westinghouse Electric Corp. Method of forming conductive interconnection between vertically spaced levels in VLSI devices. 4,532,702, Cl. 29-578.000.

Gillies, George M.: *See—*
Mathews, Clive A.; and Gillies, George M., 4,533,319, Cl. 432-3.000.

Girguis, Sobhy L. Constant velocity joint. 4,533,339, Cl. 464-146.000.

Gisselberg, Paul D., III. Can crusher. 4,532,861, Cl. 100-233.000.

GK Technologies, Incorporated: *See—*
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,533,914, Cl. 340-825.790.

Glaser, Wolfgang: *See—*
Gebhard, Georg R. U.; Hein, Klaus R. G.; and Glaser, Wolfgang, 4,533,532, Cl. 423-244.000.

Glatthaar, Manfred: *See—*
Vollmer, Erwin H.; and Glatthaar, Manfred, 4,532,830, Cl. 76-45.000.

Glaxo Group Limited: *See—*
Smith, Alan; and Bailey, Peter J., 4,533,632, Cl. 435-47.000.

Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., to SmithKline Beckman Corporation. Leukotriene antagonists intermediates. 4,533,747, Cl. 560-152.000.

Gleichaut, Winfried; Gunther, Oswin; Hoffmann, Dietrich; and Funke, Rolf, to Mauser-Werke Oberndorf GmbH; and Karl Schmidt GmbH. Rotating band for projectiles. 4,532,868, Cl. 102-527.000.

Glynn, Gregory L.: *See—*
Johnston, James J.; and Glynn, Gregory L., 4,533,790, Cl. 174-115.000.

Godenschweg, Martin: *See—*
Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.

Godett, Ted M.: *See—*
Meijer, Roelf J.; Ziph, Benjamine; and Godett, Ted M., 4,532,855, Cl. 92-71.000.

Godlewski, Edward S. Shaft and gear adjuster. 4,532,822, Cl. 74-397.000.

Goeke, Ulrich: *See—*
Burba, Christian; Goeke, Ulrich; and Esper, Norbert, 4,533,524, Cl. 427-372.200.

Goff, Willie, Jr.; and Rakes, James M., to International Business Machines Corporation. Electroerosion printhead with tungsten electrodes, and a method for making same. 4,533,921, Cl. 346-1.100.

Goldin, Abraham; and Rodau, Andrew G. Non-slip handle with coding means. 4,533,139, Cl. 273-73.00J.

Goldmann, Gerd; Spott, Georg; and Frohlich, Christian, to Bayer Aktiengesellschaft. Continuous process for the concentration of W/O-emulsions by evaporation. 4,533,432, Cl. 159-47.100.

Golubovic, Aleksandar: *See—*
Pellegrini, Paul W.; Ludington, Charlotte E.; Golubovic, Aleksandar; and Weeks, Melanie M., 4,533,933, Cl. 357-15.000.

Golyakhovsky, Vladimir. Devices and method for correct application of plaster dressings to treat fractures and dislocations. 4,532,922, Cl. 128-91.00R.

Gondrella, Frederick H., Sr.: *See—*
Cousin, Charles M.; and Gondrella, Frederick H., Sr., 4,533,111, Cl. 249-2.000.

Gooch, John P.: *See—*
Altman, Ralph F.; Gooch, John P.; Dismukes, Edward B.; Bickelhaupt, Roy E.; and Dahlin, Robert S., 4,533,364, Cl. 55-5.000.

Good, Don: *See—*
Clark, Marion A., 4,533,152, Cl. 280-251.000.

Goodman, Richard M.; and Lim, Sim K., to American Cyanamid Company. Low molecular weight copolymers as depressants in sylvinite ore flotation. 4,533,465, Cl. 209-167.000.

Goodyear Tire & Rubber Company, The: *See—*
Comper, Louis F.; and Scheiderich, Robert F., 4,533,305, Cl. 425-43.000.

Gorczyca, Thomas B.: *See—*
Bolon, Donald A.; Gorczyca, Thomas B.; and Hallgren, John E., 4,533,504, Cl. 260-463.000.

Gordon, David R.: *See—*
Carpenter, Ralph F.; and Gordon, David R., 4,533,836, Cl. 307-11.000.

Gordon, Eric M.; and Ondetti, Miguel A., to E. R. Squibb & Sons, Inc. Antibacterial O-sulfated β-lactam hydroxamic acids. 4,533,660, Cl. 514-210.000.

Gordon, James R. Conveyor belt scraper. 4,533,036, Cl. 198-499.000.

Gordon, James S., to MKF Energy Conservation Company. Textile dryer heat recovery system. 4,532,721, Cl. 34-34.000.

Gorman, Charles R.: *See—*
Cherney, Leon; Gorman, Charles R.; Traynor, Sean G.; and Cardenas, Carlos G., 4,533,751, Cl. 564-408.000.

Gorton, Thomas S., Jr.: *See—*
Wenstrom, Richard T.; and Gorton, Thomas S., Jr., 4,532,677, Cl. 17-74.000.

Goshi, Hiroyuki: *See—*
Kawamata, Masanobu; Ushimaru, Koichi; Goshi, Hiroyuki; and Miyasako, Hideichi, 4,533,552, Cl. 424-78.000.

Goss, Willis C.: *See—*
McLauchlan, John M.; AuYeung, John; Tubbs, Eldred F.; Goss, Willis C.; and Psaltis, Demetri, 4,533,242, Cl. 356-5.000.

Goto, Kimihiko: *See—*
Yoshioka, Shigehiko; Yamada, Hideto; Goto, Kimihiko; Adachi, Yoshio; and Miyahana, Kazuo, 4,533,434, Cl. 162-124.000.

Goto, Yasuyuki: *See—*
Fukui, Masahiro; Kitano, Kisei; Tanaka, Masami; and Goto, Yasuyuki, 4,533,488, Cl. 252-299.610.

Gotoda, Katsuhiko: *See—*
Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Tadanobu; and Aizawa, Tatsuo, 4,533,618, Cl. 430-126.000.

Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft: *See—*
Leimkuhler, Jurgen, 4,533,522, Cl. 422-170.000.

Gould Inc.: *See—*
Stowe, David W., 4,533,208, Cl. 350-96.160.

Grabmaier, Josef; Falckenberg, Richard; and Foll, Helmut, to Siemens Aktiengesellschaft. Method and device for asymmetrically coating a tape-shaped carrier body with silicon for further processing into solar cells. 4,533,428, Cl. 156-608.000.

Grabovac, Bosko, to Consolidated Devices, Inc. Adjustable fulcrum for torque wrenches. 4,532,836, Cl. 81-483.000.

Grady, John K.; and Rice, Richard E., to Grady, John K. Masked scanning X-ray apparatus. 4,534,051, Cl. 378-099.000.

Graf, Lothar, to Ing. Erich Pfeiffer GmbH & Co. KG, Firma. Metering pump, as well as process and apparatus for filling a container equipped with a metering pump. 4,532,967, Cl. 141-3.000.

Granatstein, Victor L.: *See—*
Lau, Yue-Ying; Chu, Kwo R.; Granatstein, Victor L.; and Barnett, Larry R., 4,533,875, Cl. 330-4.000.

Grauberger, Hermann: *See—*
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,532,864, Cl. 101-219.000.

Grebur, Dennis J.: *See—*
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,533,534, Cl. 523-436.000.
Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., 4,533,684, Cl. 523-436.000.

Green, Jerome J., to Raytheon Company. Dielectric waveguide phase shifter. 4,532,704, Cl. 29-600.000.

Green, Sara. Electric hair curler with self-contained battery power supply. 4,533,818, Cl. 219-222.000.

Gregg, Hans, to Carl Hurth Maschinen-und Zahnradfabrik GmbH & Co. Method and apparatus for automatically supplying and removing pallets of a pallet magazine to and from the working space of a machine tool. 4,533,034, Cl. 198-472.000.

Greiler, Wolfgang: *See—*
Block, Werner; and Greiler, Wolfgang, 4,533,851, Cl. 313-51.000.

Grenier, Aime J.; and McBride, Lyle E., to Texas Instruments Incorporated. Magnetic circuit control apparatus. 4,533,888, Cl. 335-131.000.

Grey, Roger A., to Atlantic Richfield Company. Preparation of aldehydes from aryl acid halides and organozinc compounds with complex palladium catalysts. 4,533,754, Cl. 568-437.000.

Griggs, Colin G., to British Petroleum Company p.l.c., The. Process for the production of ethylene glycol. 4,533,774, Cl. 568-866.000.

Grims, Conrad M., to Adolph Coors Company. Deflectable pin assembly. 4,533,039, Cl. 198-651.000.

Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., to Scherer Laboratories, Inc. Method of forming stable dental gel of stannous fluoride. 4,533,544, Cl. 424-52.000.

Gronholz, Claus; and Schmidt-Rabenau, Hartmut, to Eppendorf Geratebau Netheler & Hinz GmbH. Process for mixing liquid samples to be analyzed, as well as apparatus for performing this process. 4,533,255, Cl. 366-108.000.

Grosser, Frank R.: *See—*
O'Connor, James M.; Scardera, Michael; and Grosser, Frank R., 4,533,485, Cl. 252-156.000.

Grossman, Bertrand M.: *See—*
Fang, Frank F.; Grossman, Bertrand M.; and Hwang, Wei, 4,532,698, Cl. 29-571.000.

Gruczka, Jan S.: *See—*
Borgmeyer, Virgil L.; Galloway, Dudley L.; Sonnenberg, Gary N.; Gruczka, Jan S.; and Owen, Timothy C., 4,533,786, Cl. 174-50.000.

Gruner & Jahr Ag & Co.: *See—*
Wangermann, Jochen, 4,533,132, Cl. 270-53.000.

GTE Automatic Electric Incorporated: *See—*
Perry, Thomas J., 4,534,027, Cl. 371-8.000.

GTE Communication Systems Corporation: *See—*
Koppensteiner, James V.; and Kaczkos, John E., 4,533,977, Cl. 361-415.000.

GTE Products Corporation: *See—*
Eby, John E.; and Kingston, Charles M., 4,533,944, Cl. 358-107.000.
French, Kenneth; Kocher, Robert C.; Piorkow, Alfred; Shaner, Kenneth; and Smith, J. Thomas, 4,533,251, Cl. 356-384.000.

Gucklhorn, Karl; and Carl, Wolfgang, to Alfing Kessler Sondermaschinen GmbH. Tool exchanging apparatus for a machine tool having a plurality of processing spindles. 4,532,693, Cl. 29-568.000.

Guedon born Saglier, Isabelle; Barritault, Denis; Courtois, Yves; Arruti, Cristina; and Prunieras, Michel, to Institut National de la Sante et de la Recherche Medicale. Process for stimulating the growth of epidermal cells. 4,533,635, Cl. 435-240.000.

Guigon, Jean-Paul, to Framatome & Cie. Device for supporting and rotating a part of large dimensions. 4,533,128, Cl. 269-58.000.

Gundlach, Robert W.: *See—*
Rees, James D.; Gundlach, Robert W.; and May, Jerome E., 4,533,979, Cl. 362-97.000.

Gunnewig, Hubert, to Westfalia Separator AG. Self-emptying centrifuge drum. 4,533,344, Cl. 494-36.000.

Gunther, Oswin: *See—*
Gleichaut, Winfried; Gunther, Oswin; Hoffmann, Dietrich; and Funke, Rolf, 4,532,868, Cl. 102-527.000.

Gupta, Tapan K.: *See—*
Blewitt, Donald D.; and Gupta, Tapan K., 4,533,893, Cl. 337-5.000.

Gust, Lawrence J.; O'Sullivan, Eileen F.; and Wood, Ronald C., Jr., to Mobil Oil Corporation. Low coefficient of friction film structure and method of forming the same. 4,533,509, Cl. 264-171.000.

Gustav, Jeske: *See—*
Forsting, Bernd; Zander, Joachim; and Gustav, Jeske, 4,533,081, Cl. 237-12.30B.

Guzdar, Adi R., to Foster-Miller Associates, Inc. Sealing and liquid displacement systems for a linear pocket feeder. 4,533,289, Cl. 414-217.000.

Guzowski, Christopher B.: *See—*
Sigismonde, Michael, 4,532,654, Cl. 2-69.500.

Gyarfas, Andras: *See—*
Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.

Gyulavari, Imre, to Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt. Apparatus for treating liquids. 4,533,470, Cl. 210-96.100.

Haag, James W., to Texaco Inc. Method for reducing air pollution. 4,533,374, Cl. 62-18.000.

Haarmann, Walter: *See—*
Trummlitz, Gunter; Engel, Wolfhard; Seeger, Ernst; and Haarmann, Walter, 4,533,664, Cl. 514-225.000.

Hackauf, Klaus-Dieter, to Hans H. Meyer GmbH Maschinenbau. Forklift attachment with four laterally displaceable prongs. 4,533,290, Cl. 414-667.000.

Haden Schweitzer Corporation: *See—*
Bradshaw, Norman F.; and Schrubba, Gerald P., 4,532,983, Cl. 165-47.000.

Hadley, Michael S.: *See—*
Blaney, Francis E.; Hadley, Michael S.; King, Francis D.; and Watts, Eric A., 4,533,498, Cl. 260-243.300.

Hadzismajlovic, Dzemal. Gas scrubbing method using gas liquid contact in a particulate bed. 4,533,367, Cl. 55-91.000.

Hafstad, Bjorn. Lighting fixtures with beam support and opposite end contact means. 4,533,983, Cl. 362-223.000.

Hagemann, Hermann: *See—*
Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,533,776, Cl. 568-946.000.

Hagemeyer, Kenneth L.; and Pearson, Vernon W., to Ex-Cell-O Corporation. Cutter head with locking pressure indicator. 4,533,287, Cl. 409-234.000.

Hager, Thomas A. Transmission for racing cars. 4,532,821, Cl. 74-370.000.

Hagiwara, Yoshimune: *See—*
Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, 4,534,010, Cl. 364-748.000.

Haissig, Manfred: *See—*
Schubert, Hermann; Ahrens, Max; and Haissig, Manfred, 4,532,977, Cl. 164-442.000.

Hakuraku, Yoshinori; Ogata, Hisanao; Daikoku, Takahiro; and Suzuki, Noboru, to Hitachi, Ltd. Magnetic refrigerator. 4,532,770, Cl. 62-3.000.

Hall, Frances E. Sanitary napkin construction. 4,533,357, Cl. 609-401.000.

Hall, Ralph F.: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,533,747, Cl. 560-152.000.

Hallgren, John E.: *See—*
Bolon, Donald A.; Gorczyca, Thomas B.; and Hallgren, John E., 4,533,504, Cl. 260-463.000.

Hallock, Donald W.; Hartmann, Thomas M.; and Engebretson, Marvin, to National Rivet & Manufacturing Company. Fastener setting tools. 4,533,075, Cl. 227-55.000.

Halpern, Alan A. Femoral head remodeling and prosthetic means therefor. 4,532,661, Cl. 623-23.000.

Hamada, Tooru, to Kabushiki Kaisha Daikin Seisakusho. Damper disc. 4,533,338, Cl. 464-64.000.

Hamada, Yoneichi: *See*—
Miyawaki, Yoshiharu; Hirose, Takeshi; Hamada, Yoneichi; Mizuoka, Seishi; and Tsuru, Masahiro, 4,532,980, Cl. 164-475.000.

Hamashima, Yoshio: *See*—
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,533,730, Cl. 544-92.000.

Hamilton, Noble E.: *See*—
Dey, Arabinda N.; and Hamilton, Noble E., 4,533,609, Cl. 429-172.000.

Hamilton, Robert: *See*—
Andrew, Wesley A.; Shields, Curtis E.; Hindlin, Harry O.; and Hamilton, Robert, 4,533,333, Cl. 441-38.000.

Hamilton, Robert W.: *See*—
Pitzele, Barnett S.; Yu, Stella S. T.; Hamilton, Robert W.; and Moormann, Alan E., 4,533,739, Cl. 548-559.000.

Hammann, Ingeborg: *See*—
Sirrenberg, Wilhelm; Klauke, Erich; and Hammann, Ingeborg, 4,533,676, Cl. 514-535.000.

Hammond, Thomas J.; Lama, William L.; Northrup, Karl A.; and Corona, Stephen C., to Xerox Corporation. Mechanism and method for controlling the temperature and output of a fluorescent lamp. 4,533,853, Cl. 315-117.000.

Hams, Kenneth A., to Bell & Howell Company. Method and apparatus for preventing insertion errors. 4,533,133, Cl. 271-9.000.

Hanaoka, Yuzuru; Murayama, Takeshi; Muramoto, Setsuo; and Matsuura, Tamizo, to Kokogawa Hokushin Electric Corporation. Apparatus for analysis of anions. 4,533,518, Cl. 422-70.000.

Hance, Richard O.; and Hansen, Gerald M. Rapid fire attachment for semi-automatic firearms. 4,532,852, Cl. 89-136.000.

Handotal Kenkyu Shinkokai: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Morishita, Masakazu, 4,534,033, Cl. 372-50.000.

Haney, Keith M., to Walker-Neer Manufacturing Co., Inc. Storage rack for drilling tubulars. 4,533,055, Cl. 211-70.400.

Hans H. Meyer GmbH Maschinenbau: *See*—
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Hansen, Gerald M.: *See*—
Hance, Richard O.; and Hansen, Gerald M., 4,532,852, Cl. 89-136.000.

Hansen, Nestor P.: *See*—
Tortorello, Anthony J.; Hansen, Nestor P.; and Jarocki, Kathryn M., 4,533,682, Cl. 523-414.000.

Happ, Lawrence R.: *See*—
Cecchi, Marino; Borucki, Gregory J.; and Happ, Lawrence R., 4,533,092, Cl. 242-186.000.

Haque, Yusuf; and Ofner, Erwin, to American Microsystems, Inc. Differential operational amplifier with common mode feedback. 4,533,876, Cl. 330-253.000.

Harada, Kenichi: *See*—
Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, 4,533,220, Cl. 350-507.000.

Harada, Toru: *See*—
Ono, Shigetoshi; Harada, Toru; Suzuki, Hirohisa; Tanaka, Mitsugu; and Nakamura, Shigeru, 4,533,626, Cl. 430-562.000.

Haramura, Shigenori: *See*—
Watanabe, Tetsumi; Haramura, Shigenori; and Momose, Yutaka, 4,532,767, Cl. 60-525.000.

Harbor Branch Foundation, Inc.: *See*—
Holt, John K., 4,533,641, Cl. 436-43.000.

Harder, David. Truck having a front axle oscillatable relative to a rear axle. 4,533,010, Cl. 180-41.000.

Harder, John O.; McCandless, Doyle W.; and Peterson, Michael W., to John Harder & Co. Machine for removing electric traction motors from wheel spindles. 4,532,689, Cl. 29-426.500.

Hardy, Carl D. Curved-body maneuverable snow board. 4,533,150, Cl. 280-12.00H.

Harford, Eugene W.: *See*—
Kapolas; William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Hargassner, Reinhard; Nugent, Thomas J.; Scheinecker, Alois; and Engel, Kurt, to Voest Alpine International Co. Continuous casting plant. 4,532,981, Cl. 164-483.000.

Harley-Davidson Motor Co., Inc.: *See*—
Mezger, Hans, 4,532,897, Cl. 123-196.00R.

Harmon, Larry R.; Reiche, John C.; Bowles, Howard R.; and Chiu, Norman H., to General Electric Company. Start circuit for microwave oven. 4,533,810, Cl. 219-10.55B.

Harradine, Brian D.: *See*—
Yates, Andrew W.; Harradine, Brian D.; and Wraith, Michael A., 4,533,627, Cl. 430-567.000.

Harrill, Roy L.; and Odom, James T., to Avco Corporation. Priority circuit for a multiplexer terminal. 4,533,994, Cl. 364-200.000.

Harris, Eugene G., to National Distillers and Chemical Corporation. Process for the production of fragrance quality ethylene glycol monoaryl ethers. 4,533,759, Cl. 568-648.000.

Harris, George E., to RCA Corporation. Apparatus for thermoforming dome-shaped actuating elements for membrane switches. 4,533,555, Cl. 425-384.000.

Harshaw/Filtrol Partnership: *See*—
Utts, Bradley K.; and Wimer, Oley D., 4,533,489, Cl. 252-301.170.

Harshbarger, John H., to Visual Information Institute, Inc. Method of testing the linearity of a raster scan. 4,533,950, Cl. 358-139.000.

Hart, Derrick A.: *See*—
Clark, Malcolm C.; Henshall, John B.; and Hart, Derrick A., 4,533,499, Cl. 260-391.000.

Hart Group, The: *See*—
Hower, Larry H., 4,534,058, Cl. 381-67.000.

Hartman, Clyde H. Two-piece drill chuck wrench. 4,532,834, Cl. 81-16.000.

Hartmann, Achim, to Kronos Titan, GmbH. Process for the separation of volatile chlorine compounds from the exhaust gases resulting from the chlorination of titanium-containing raw materials. 4,533,530, Cl. 423-240.000.

Hartmann, Thomas M.: *See*—
Hallock, Donald W.; Hartmann, Thomas M.; and Engebretson, Marvin, 4,533,075, Cl. 227-55.000.

Hartshorn, Kevin; and McGahan, Wallace A., to Ingersoll-Rand Company. Valving element for a plate-type valve. 4,532,959, Cl. 137-516.130.

Hartung, Michael H.; and Nolan, Kenneth P., to International Business Machines Corporation. Peripheral systems accommodation of guest operating systems. 4,533,996, Cl. 364-200.000.

Hartung, Michael H.: *See*—
Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., 4,533,995, Cl. 364-200.000.

Hase, Nobuyasu: *See*—
Ogura, Mototsugu; Ban, Yuzaburoh; and Hase, Nobuyasu, 4,533,410, Cl. 148-175.000.

Hasegawa, Masayuki, to Nihon Almit Kabushiki Kaisha. Soldering fluxes. 4,533,404, Cl. 148-23.000.

Hasegawa, Ryusuke, to Allied Corporation. Iron-boron solid solution alloys having high saturation magnetization and low magnetostriction. 4,532,979, Cl. 164-463.000.

Hasegawa, Tetsuo: *See*—
Ohsaki, Ichiro; Hasegawa, Tetsuo; and Suematsu, Koushi, 4,533,616, Cl. 430-110.000.

Hashido, Kenkichi: *See*—
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Hashimoto, Hiroshi: *See*—
Omura, Satoshi; Nakagawa, Akira; Hashimoto, Hiroshi; Kojima, Yasuhiko; Iwai, Yuzuru; Oiwa, Ruiko; and Hirano, Atsushi, 4,533,547, Cl. 424-122.000.

Hashimoto, Kametaro; Ushitani, Kenji; Noda, Fumiyoshi; Sugiyama, Masahiko; and Murachi, Mikio, to Toyoda Jidosha Kogyo Kabushiki Kaisha. Vibration-resistant, heat-insulating casting and method of making. 4,533,579, Cl. 428-36.000.

Hashimoto, Seiichi, to Kabushiki Kaisha Taiyo Hatsujyo Seisakusho. Double clip for office use. 4,532,680, Cl. 24-67.00R.

Hasumi, Ryoichi: *See*—
Tanaka, Yoshio; Nishikawa, Yasuhisa; Hasumi, Ryoichi; and Koizumi, Takashi, 4,532,818, Cl. 74-10.330.

Hattori, Kyo: *See*—
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Hattori, Nobutaka: *See*—
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Hattori, Shigeru: *See*—
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Haugwitz, Werner, to SKF Kugellagerfabriken GmbH. Housing for roller bearings with lubricating means. 4,533,264, Cl. 384-472.000.

Hauser, Wolfgang: *See*—
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Hawkins, Joel W. Wheeled stand. 4,533,127, Cl. 269-17.000.

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Hayakawa, Kizo; Mori, Nobuyuki; Watanabe, Yoshio; and Nakashima, Kazumi, to Kabushiki Kaisha Toyota Chuo Kenkyusho; and Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Fuel injection type internal combustion engine. 4,532,898, Cl. 123-276.000.

Hayashi, Ikuo: *See*—
Idogaki, Takaharu; Hayashi, Ikuo; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,533,847, Cl. 310-181.000.

Hayes, Lawrence S. Luminous gun sighting system. 4,533,980, Cl. 362-110.000.

Hayman, Gary D. Safe apparatus. 4,532,870, Cl. 109-58.000.

Hayssen Manufacturing Company: *See*—
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Hayter, Anthony J.: *See*—
Eakin, Murdoch A.; Hayter, Anthony J.; and Furr, Barrington J. A., 4,533,672, Cl. 514-415.000.

Health Care Concepts, Inc.: *See*—
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HealthScan Inc.: *See*—
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Healy, Thomas D.: *See*—
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Heath, Chester A.: *See—*
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Heberlein, Irmtrud: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; and Heberlein, Irmtrud, 4,533,438, Cl. 201-31.000.

Hebert, John R., Jr., to Sprague Electric Company. Transformerless power inverter with only one type transistors. 4,533,989, Cl. 363-132.000.

Hecker, Joel: *See—*
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Heeres, Jan; and Mostmans, Joseph H., to Janssen Pharmaceutica, N.V. Heterocyclic derivatives of (4-aryloxymethyl-1,3-dioxolan-2-yl)methyl-1H-imidazoles and 1H-1,2,4-triazoles. 4,533,550, Cl. 514-256.000.

Hegner, Gunter: *See—*
Forberg, Horst; Achtnig, Klaus-Peter; Hegner, Gunter; and Boes, Gerhard, 4,533,196, Cl. 339-97.00P.

Heidemeyer, Paulus; and Zantopp, Werner, to Volkswagenwerk Aktiengesellschaft. Hybrid drive for a vehicle, in particular an automobile. 4,533,011, Cl. 180-65.200.

Heilmeler & Weinlein Fabrik Fuer Oel-Hadraulik GmbH & Co., KG: *See—*
Brunner, Rudolf, 4,532,960, Cl. 137-596.130.

Hein, Klaus R. G.: *See—*
Gebhard, Georg R. U.; Hein, Klaus R. G.; and Glaser, Wolfgang, 4,533,532, Cl. 423-244.000.

Heitmann, Jurgen, to Robert Bosch GmbH. Method and apparatus for scrambled pulse-code modulation transmission or recording. 4,534,037, Cl. 375-25.000.

Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Printing machine web turning bar adjustment mechanism. 4,532,864, Cl. 101-219.000.

Helmes, Ludger: *See—*
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HemoTec, Inc.: *See—*
Baugh, Robert F.; Braun, Walter J.; and Cooper, Daniel, 4,533,519, Cl. 422-73.000.

Henderson, Harry E.; and Smith, Clinton R., to Imperial Oil Limited. Traction fluid lubricants derived from mineral oil. 4,533,778, Cl. 585-13.000.

Hendriks, Rudolf, to Thomassen International. Method of improving the part-load behavior of a turbo machine, and a compressor or pump adapted for use of such method. 4,533,293, Cl. 415-117.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Kluth, Hermann; Roderhoff, Bernhard; Friedemann, Wolfgang; Wegner, Jurgen; and Dierichs, Wolfgang, 4,533,490, Cl. 252-305.000.

Henshall, John B.: *See—*
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Herberling, Paul V., to General Electric Company. Method for reducing nitric oxide emissions from a gaseous fuel combustor. 4,533,314, Cl. 431-4.000.

Herbst, Walter B., to American Hospital Supply Corporation. Food tray and lid with sealed panels and method of forming same. 4,533,061, Cl. 220-4.00B.

Herchenbach, Horst; and Ramesohl, Hubert, to Klockner-Humboldt-Deutz AG. Method for the thermal treatment of mineral raw materials. 4,533,396, Cl. 106-100.000.

Herget, Werner, to Siemens Aktiengesellschaft. Method of transmitting serial data between facsimile equipment and interface performing the same. 4,533,958, Cl. 358-280.000.

Hermann, Hans D.; Fabian, Klaus; and Ebigt, Joachim, to Hoechst Aktiengesellschaft. Polyvinylbutyral films which contain plasticizer and have a reduced adhesive power on glass. 4,533,601, Cl. 428-437.000.

Hershey, Harold J.: *See—*
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Hershfeld, Robert R., to Baltimore Spice Company, The. Apparatus for shower applying liquid smoke. 4,532,858, Cl. 99-534.000.

Herve Et Fils, S.A.: *See—*
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Hewitt, Lawrence B.: *See—*
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Hewlett-Packard Company: *See—*
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Hexcel Corporation: *See—*
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Hibbel, Josef: *See—*
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.

Hibino, Yoshitaka; and Ozaki, Syunzaburo, to Honda Giken Kogyo Kabushiki Kaisha. Deceleration control apparatus for a multi-cylinder internal combustion engine. 4,532,900, Cl. 123-327.000.

Hickman, Alvin E., to Beal, Walter. Sucker rod scraper method and device. 4,532,988, Cl. 166-176.000.

Higgins, Robert J., Jr., to Motorola, Inc. Apparatus for suppression of spurious attenuation poles in crystal filters. 4,533,885, Cl. 333-191.000.

Hightower, James H. Motorized golf cart. 4,533,013, Cl. 180-210.000.

Hill, James B.: *See—*
Borneman, Paul R.; and Hill, James B., 4,533,391, Cl. 75-128.00A.

Hill, Kevin E., to Milsco Manufacturing Company. Resiliently suspended, tiltable and tethered vehicle operator's seat having fore and aft adjustment. 4,533,110, Cl. 248-573.000.

Hilti Aktiengesellschaft: *See—*
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Hirai, Tetsuo: *See—*
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Hirano, Hiroyuki: *See—*
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Hirata, Yasushi: *See—*
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Hirschauer, Andre : *See—*
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Hirschbuehler, Kevin; and Susman, Samuel E., to American Cyanamid Co. Curable epoxy resin compositions. 4,533,686, Cl. 523-468.000.

Hisajima, Masahiko: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, 4,533,233, Cl. 355-8.000.

Hisatake, Yoshihiko: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.

Hitachi Denshi Kabushiki Kaisha: *See—*
Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, 4,534,010, Cl. 364-748.000.

Hitachi Engineering Co., Ltd.: *See—*
Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, 4,533,514, Cl. 376-308.000.

Hitachi, Ltd.: *See—*
Hakuraku, Yoshinori; Ogata, Hisanao; Daikoku, Takahiro; and Suzuki, Noboru, 4,532,770, Cl. 62-3.000.
Itoh, Haruo; Tokiguchi, Katsumi; Warabisako, Terunori; Saitoh, Tadashi; and Tokuyama, Takashi, 4,533,831, Cl. 250-492.200.
Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, 4,534,010, Cl. 364-748.000.
Masuhara, Hideki; Katada, Kunio; and Kudo, Uichi, 4,533,892, Cl. 336-147.000.
Osawa, Tadao; Nakagawa, Toru; Okumura, Masamitsu; Kohno, Takashige; and Sakuma, Tokihiko, 4,532,904, Cl. 123-439.000.
Shibata, Akira; Wada, Isao; and Yoshioka, Atsushi, 4,533,961, Cl. 358-315.000.
Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, 4,533,514, Cl. 376-308.000.

Hitachi Zosen Corporation: *See—*
Shiraishi, Minoru; Numata, Yoshimi; Tano, Hiroshi; and Onaka, Tatsumi, 4,532,878, Cl. 114-222.000.

Hitchiner Manufacturing Co., Inc.: *See—*
Chandley, George D., 4,532,976, Cl. 164-363.000.

Ho, Phillman N., to Union Oil Company of California. Oil shale extraction process. 4,533,460, Cl. 208-11.0LE.

Hoag, Ethan D., to Metalworking Lasers International Ltd. Apparatus for establishing and maintaining a stable electrical discharge across a stream of gas, and a high-power laser including such apparatus. 4,534,032, Cl. 372-34.000.

Hoagland, Frank V. N.; and Aquino, Agostino J., to Nabisco Brands, Inc. Labeling machine. 4,533,426, Cl. 156-492.000.

Hoechst Aktiengesellschaft: *See—*
Back, Gunter, 4,533,239, Cl. 355-72.000.
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,533,479, Cl. 252-34.000.
Hermann, Hans D.; Fabian, Klaus; and Ebigt, Joachim, 4,533,601, Cl. 428-437.000.
Winkelmann, Detlef; and Padberg, Peter, 4,533,611, Cl. 430-49.000.

Hoekstra, George R.; and Forgac, John M., to Standard Oil Company (Indiana). Pulsed retorting with continuous shale oil upgrading. 4,532,991, Cl. 166-261.000.

Hoenle, Walter A.; Perkins, David J.; and Schenten, James L., to Chrysler Corporation. Rear offset axle suspension system for vehicle. 4,533,157, Cl. 280-718.000.

Hofferber, James A., to Phillips Petroleum Company. Control of a polymerization reaction. 4,533,517, Cl. 422-62.000.

Hoffman, Kenneth P.: *See—*
Corsover, William L.; Hoffman, Kenneth P.; McCann, William F.; and Wooden, Billy J., 4,533,278, Cl. 404-65.000.

Hoffman, Richard A., to Westinghouse Electric Corp. Article such as jewelry or a wristwatch component having composite multi-film protective coating. 4,533,605, Cl. 428-635.000.

Hoffmann, Dietrich: *See—*
Gleichaut, Winfried; Gunther, Oswin; Hoffmann, Dietrich; and Funke, Rolf, 4;532,868, Cl. 102-527.000.

Hoffmann, Gerhard: *See—*
Eilingsfeld, Heinz; Etzbach, Karl-Heinz; Hoffmann, Gerhard; and Neumann, Peter, 4,533,612, Cl. 430-59.000.

Hofmann, Rudolf. Air cooler with condensate trap. 4,532,775, Cl. 62-272.000.

Hogan, Philip J.: *See—*
Dewing, John; Hogan, Philip J.; and Stewart, Allan, 4,533,533, Cl. 423-328.000.

Hohla, Kristian; and Albers, Ernst, to Lambda Physik GmbH. Discharge-pumped laser. 4,534,034, Cl. 372-59.000.

Hokanson, D. Eugene. Focusing mechanism for an ultrasound device. 4,532,933, Cl. 128-660.000.

Hokanson, Ronald A., to Formers of Houston, Inc. Tube former apparatus. 4,532,754, Cl. 53-451.000.

Holden, M. James, to Mobil Oil Corporation. Liquid holding packaging tray. 4,533,585, Cl. 428-116.000.

Holdren, Carl F.: *See—*
Bonini, Bruno; Cook, Raymond G.; Holdren, Carl F.; and Johnston, Everett A., 4,533,098, Cl. 244-110.00B.

Holdridge, Robert B.: *See—*
Taff, Douglas C.; and Holdridge, Robert B., 4,532,917, Cl. 126-430.000.

Holland, Gerhard; and Nowak, Rudolf, to Holland, Gerhard. Chemical process for producing alkali and alkaline earth metals. 4,533,387, Cl. 75-66.000.

Hollander, Frans: *See—*
Bruinsma, Hans; Hollander, Frans; Huisman, Rein L.; and Reinen, Adrianus G., 4,532,789, Cl. 72-202.000.

Holmes, Robert G.; and Shearer, Scott A., to Ohio Agricultural Research & Development Center. Seed planter, planter assembly and method of picking up and discharging single seeds. 4,533,066, Cl. 221-211.000.

Holstedt, Richard A.; and Jessup, Peter J., to Union Oil Company of California. Bis(hydrocarbyloxy methylated) boron-containing, heterocyclic compounds and lubricating compositions containing the same. 4,533,480, Cl. 252-46.400.

Holt, John K., to Harbor Branch Foundation, Inc. Automatic chemical analysis methods. 4,533,641, Cl. 436-43.000.

Holtman, Richard K.: *See—*
Betzner, William E.; and Holtman, Richard K., 4,533,436, Cl. 162-261.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Hibino, Yoshitaka; and Ozaki, Syunzaburo, 4,532,900, Cl. 123-327.000.
Itoh, Kazuhiro; Sugisaki, Mutsuo; and Tanaka, Hiroshi, 4,532,685, Cl. 29-156.40R.
Tsunoda, Kazuhiko; and Hattori, Shigeru, 4,533,153, Cl. 280-277.000.

Honda, Kazuhiro; and Kuramochi, Hiroshi, to Kokoku Rubber Industrial Company Limited. Pressure-sensitive and conductive rubber. 4,533,604, Cl. 428-521.000.

Honda, Tsuguo: *See—*
Kuroki, Hironori; Honda, Tsuguo; and Mitsui, Toshihisa, 4,532,978, Cl. 164-448.000.

Honeywell, Inc.: *See—*
Baumann, Rainer, 4,533,248, Cl. 356-350.000.
Boord, Warren T.; and Fryer, Richard B., 4,533,872, Cl. 324-252.000.
Callaghan, Timothy J.; and Kay, Robert M., 4,533,250, Cl. 356-350.000.
Johnson, Robert G., 4,533,167, Cl. 294-86.400.
Kolbas, Robert M., 4,532,694, Cl. 29-569.00L.
Nelson, Lorne W., 4,533,315, Cl. 431-20.000.
Webber, George E., 4,533,249, Cl. 356-350.000.

Honeywell Information Systems Inc.: *See—*
Funke, Michael J.; Topliffe, Douglas A.; and Rathbun, Donald J., 4,534,044, Cl. 375-120.000.

Hongo, Toshio, to Maru Kikai Kogyo Co., Ltd. Apparatus for adjusting to tool length of panel forming machine. 4,532,792, Cl. 72-319.000.

Hoppel, Rainer, to Robert Bosch GmbH. Fuel supply system. 4,532,906, Cl. 123-470.000.

Horie, Seiji: *See—*
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,533,613, Cl. 430-78.000.

Horn, Edward R., to Aladdin Engineering. Retaining ring assembly machine. 4,532,706, Cl. 29-809.000.

Horwitz, Benjamin: *See—*
Cahen, David; Malkin, Shmuel; Horwitz, Benjamin; and Bulta, Gerard, 4,533,252, Cl. 356-432.000.

Hoshino, Ryoichi: *See—*
Momose, Yutaka; Yamaguchi, Kazuaki; Okamoto, Masayoshi; Hoshino, Ryoichi; and Tanaka, Hiroki, 4,532,771, Cl. 62-6.000.

Hoshino, Takahiro, to Toyo Bussan Kabushiki Kaisha. Cold-proof water-proof garment. 4,533,335, Cl. 441-102.000.

Howa Kogyo Kabushiki Kaisha: *See—*
Miyachi, Chihiro, 4,532,692, Cl. 29-568.000.

Howells, Richard D. Fluoroaliphaticsulfonamides containing oxirane groups and/or N-β-hydroxyalkylene groups. 4,533,713, Cl. 528-26.000.

Hower, Larry H., to Hart Group, The. Electronic stethoscope with automatic power shut-off. 4,534,058, Cl. 381-67.000.

Howerton, Anderson W., to Dayco Corporation. Belt construction and method of making the same. 4,533,040, Cl. 198-847.000.

Hudgin, Donald E.; and Semsarzadeh, Mohammad A. Polymer-metal blend. 4,533,685, Cl. 523-457.000.

Hudson Engineering Company: *See—*
Napolitano, Pellegrino E., 4,532,958, Cl. 137-454.200.

Hudspeth, Thomas; and Keeling, Harmon H., to Hughes Aircraft Company. Coaxial transmission line crossing. 4,533,883, Cl. 333-1.000.

Hudspeth, Thomas; and Keeling, Harmon H., to Hughes Aircraft Company. Coaxial line to waveguide adapter. 4,533,884, Cl. 333-26.000.

Huffman, Ronald E., to KV33 Corporation. Mounting for dental model articulators. 4,533,323, Cl. 433-60.000.

Hughes Aircraft Company: *See—*
Hudspeth, Thomas; and Keeling, Harmon H., 4,533,883, Cl. 333-1.000.
Hudspeth, Thomas; and Keeling, Harmon H., 4,533,884, Cl. 333-26.000.
Williams, Frederick C., 4,533,916, Cl. 343-7.400.

Hughes, Gregory: *See—*
Deschenaux, Warren; Hughes, Gregory; Kreuzer, Justin; and La Fiandra, Carlo, 4,534,047, Cl. 378-35.000.

Huhn, Karl: *See—*
Preiner, Gerhard; Huhn, Karl; Muller, Johann; Marwitz, Heinrich; and Ullrich, Kurt, 4,533,477, Cl. 252-8.900.

Huisman, Rein L.: *See—*
Bruinsma, Hans; Hollander, Frans; Huisman, Rein L.; and Reinen, Adrianus G., 4,532,789, Cl. 72-202.000.

Hung, Le K.: *See—*
Mitkov, Atanas L.; Georgiev, Ivan N.; Radulov, Peter T.; Hung, Le K.; and Atanassov, Atanas K., 4,532,940, Cl. 130-6.000.

Hurst, Robert N., to RCA Corporation. Color modifier for composite video signals. 4,533,938, Cl. 358-27.000.

Huseby, Irvin C.; and Bobik, Carl F., to General Electric Company. High thermal conductivity aluminum nitride ceramic body. 4,533,645, Cl. 501-96.000.

Hutchison, Alan J., to Pfizer Inc. Imidazolidinedione derivatives. 4,533,667, Cl. 514-278.000.

Huxtable, Douglas D.: *See—*
Clark, Edward C.; and Huxtable, Douglas D., 4,532,778, Cl. 62-477.000.

Hwang, Wei: *See—*
Fang, Frank F.; Grossman, Bertrand M.; and Hwang, Wei, 4,532,698, Cl. 29-571.000.

Hyodo, Motoi: *See—*
Okazaki, Hiroshi; and Hyodo, Motoi, 4,533,107, Cl. 248-430.000.

Hyytinen, Timo, to Valmet Oy. Butt plate construction of a firearm and in particular that of a shotgun. 4,532,730, Cl. 42-73.000.

Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, to Asahi Kasei Kogyo Kabushiki Kaisha. Aminoindazole derivatives. 4,533,731, Cl. 544-140.000.

Ichijima, Seiji; and Hirose, Takeshi, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive materials. 4,533,625, Cl. 430-552.000.

Ichikawa, Izuo: *See—*
Ikegami, Yoshihiko; Kurihara, Kozo; Ichikawa, Izuo; and Nakane, Hisanori, 4,533,562, Cl. 427-3.000.

Ichikawa, Tomoyuki: *See—*
Lederis, Karl P.; MacCannell, Keith L.; and Ichikawa, Tomoyuki, 4,533,654, Cl. 514-12.000.

Ichikoh Industries Limited: *See—*
Saito, Kunihiro, 4,533,860, Cl. 313-673.000.

Ichimura, Toshiaki: *See—*
Taniguchi, Isoji; Kimura, Yoshiharu; and Ichimura, Toshiaki, 4,533,712, Cl. 528-9.000.

Ideal Industries, Inc.: *See—*
Scott, William J., 4,532,679, Cl. 24-16.0PB.

Idemitsu Kosan Company Limited: *See—*
Taniguchi, Isoji; Kimura, Yoshiharu; and Ichimura, Toshiaki, 4,533,712, Cl. 528-9.000.

Idogaki, Takaharu; Hayashi, Ikuo; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, to Nippon Soken, Inc. Rotary drive apparatus with permanent magnets on the rotor and stator. 4,533,847, Cl. 310-181.000.

Igarashi, Hiroo: *See*—
Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, 4,533,514, Cl. 376-308.000.
Igarashi, Seiko: *See*—
Izumi, Takayuki; Naito, Tsutomu; and Igarashi, Seiko, 4,533,461, Cl. 208-44.000.
Iinuma, Kazumoto, to NEC Corporation. Method of processing picture signal to increase average run length and apparatus therefor. 4,533,957, Cl. 358-261.000.
Iinuma, Kazumoto, to Nippon Electric Co., Ltd. Code conversion system. 4,534,055, Cl. 381-34.000.
Ikarus Karosszeria es Jarmugyar: *See*—
Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.
Ikeda, Kensuke; and Nakamura, Sukenori, to Fuji Photo Film Co., Ltd. Heat-sensitive recording sheet. 4,533,929, Cl. 346-209.000.
Ikeda, Takenori: *See*—
Okoshi, Noboru; and Ikeda, Takenori, 4,533,716, Cl. 528-73.000.
Ikegami, Yoshihiko; Kurihara, Kozo; Ichikawa, Izuo; and Nakane, Hisanori, to Sankyo Company, Limited. Method of preparing coated solid preparations. 4,533,562, Cl. 427-3.000.
Ikeuchi, Satoru; Inaba, Yoshihiro; Shimazaki, Hiroshi; and Kobayashi, Tatsuhiko, to Konishiroku Photo Industry Co., Ltd. Photographic element with imadazole dye mordant. 4,533,621, Cl. 430-213.000.
Ikezaki, Katsuji; and Ishii, Kiyoshi, to Sharp Kabushiki Kaisha. Electric cleaner with minimum noise. 4,533,370, Cl. 55-276.000.
Illinois Tool W orks Inc.: *See*—
Rayburn, Charles C.; Padgitt, Howard R.; and Flair, Henry J., 4,533,813, Cl. 219-121.0LH.
Sygnator, Henry A., 4,532,663, Cl. 10-10.00R.
Imai, Hiroshuke: *See*—
Matsuno, Mitsuo; Kudoh, Michio; and Imai, Hiroshuke, 4,533,781, Cl. 585-516.000.
IMI Kynoch Limited: *See*—
Atherton, John R.; Sindall, John H.; and Heathcock, Osmond R., 4,532,997, Cl. 169-56.000.
Imperial Chemical Industries, PLC: *See*—
Dewing, John; Hogan, Philip J.; and Stewart, Allan, 4,533,533, Cl. 423-328.000.
Eakin, Murdoch A.; Hayter, Anthony J.; and Furr, Barrington J. A., 4,533,672, Cl. 514-415.000.
McKenzie, Ian D., 4,533,707, Cl. 526-125.000.
Walker, Edward R. H., 4,533,656, Cl. 514-19.000.
Imperial Oil Limited: *See*—
Henderson, Harry E.; and Smith, Clinton R., 4,533,778, Cl. 585-13.000.
Imran, Mir: *See*—
Kinney, Philip C.; Imran, Mir; and Donnelly, Edward J., 4,532,710, Cl. 33-141.00E.
Ina, Tatsuo. Device in universal head for tilting camera to the left and right. 4,533,103, Cl. 248-179.000.
Ina, Toshikazu: *See*—
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.
Inaba, Yoshihiro: *See*—
Ikeuchi, Satoru; Inaba, Yoshihiro; Shimazaki, Hiroshi; and Kobayashi, Tatsuhiko, 4,533,621, Cl. 430-213.000.
Inagaki, Masanari: *See*—
Nagata, Osamu; Inagaki, Masanari; and Yamada, Hajime, 4,532,877, Cl. 114-144.00E.
Inamori, Mikio: *See*—
Eguchi, Yasukata; and Inamori, Mikio, 4,532,874, Cl. 112-235.000.
Inamoto, Yoshiaki: *See*—
Takaishi, Naotake; Takahashi, Hitoshi; and Inamoto, Yoshiaki, 4,533,770, Cl. 568-817.000.
Incom, Inc.: *See*—
Jeskey, Richard V., 4,533,210, Cl. 350-96.300.
Ing. Erich Pfeiffer GmbH & Co. KG, Firma: *See*—
Graf, Lothar, 4,532,967, Cl. 141-3.000.
Ing. Luigi Conti Vecchi S.p.A.: *See*—
Cozza, Giorgio; and Piccolo, Luigi, 4,533,360, Cl. 23-298.000.
Ingersoll-Rand Company: *See*—
Hartshorn, Kevin; and McGahan, Wallace A., 4,532,959, Cl. 137-516.130.
Iniotakis, Nicolaos; and von der Decken, Claus-Benedict, to Kernforschungsanlage Julich GmbH. Process and arrangement for the incremental enrichment of deuterium and/or tritium in a material suitable for the isotope exchange of deuterium and/or tritium with hydrogen. 4,533,539, Cl. 423-648.00A.
Innocente Riganti Officine Meccaniche S.p.A.: *See*—
Riganti, Innocente, 4,533,785, Cl. 174-42.000.
Inoue, Hiroshige; Fukushima, Kenichi; and Nishiguchi, Ikuzo, to Yamamoto Chemical Industrial Company, Limited; and Osaka Municipal Government. 3-Propionylsalicylic acid derivatives and process for the preparation of the same. 4,533,732, Cl. 544-172.000.
Inoue, Kanji: *See*—
Ohno, Akira; Koyama, Hiroshi; Inoue, Kanji; and Ozawa, Hiroaki, 4,533,402, Cl. 148-12.400.
Inoue, Sukejiro; Fukumoto, Hiroshi; Sasakawa, Masumi; and Doi, Shinji, to Canon Kabushiki Kaisha. Heat fixing developer of capsule structure. 4,533,617, Cl. 430-111.000.
Inoue, Sukejiro: *See*—
Fukumoto, Hiroshi; Inoue, Sukejiro; Sasakawa, Masumi; and Doi, Shinji, 4,533,614, Cl. 430-99.000.
Inoue, Yoshikazu: *See*—
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,533,738, Cl. 548-194.000.
Institut Francais du Petrole: *See*—
Arnaudeau, Marcel, 4,533,474, Cl. 210-787.000.
Billon, Alain; Peries, Jean-Pierre; and Quignard, Alain, 4,533,462, Cl. 208-88.000.
Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, 4,533,500, Cl. 260-404.000.
Courty, Philippe; Roussel, Michel; Leporq, Serge; Le Page, Jean-Francois; and Varin, Philippe, 4,533,650, Cl. 502-84.000.
Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,533,526, Cl. 423-1.000.
Rojey, Alexandre; Bonifay, Regis; and Cariou, Jean-Paul, 4,532,773, Cl. 62-101.000.
Institut National de la Sante et de la Recherche Medicale: *See*—
Guedon born Saglier, Isabelle; Barritault, Denis; Courtois, Yves; Arruti, Cristina; and Prunieras, Michel, 4,533,635, Cl. 435-240.000.
Institut Problem Litiya Akademii Nauk Ukrainskoi SSR: *See*—
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.
International Business Machines Corporation: *See*—
Andrews, Lawrence P.; Heath, Chester A.; Mead, Justin E.; Van-Duren, Richard G.; and Janes, Gary A., 4,534,011, Cl. 364-900.000.
Bjorklund, Gary C.; and Sincerbox, Glenn T., 4,533,211, Cl. 350-162.120.
Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., 4,533,995, Cl. 364-200.000.
DePalma, Vincent M.; and Ward, Albert W., 4,533,582, Cl. 428-64.000.
Engwall, Mats A.; and Mulvany, Richard B., 4,533,186, Cl. 308-5.00R.
Fang, Frank F.; Grossman, Bertrand M.; and Hwang, Wei, 4,532,698, Cl. 29-571.000.
Gheewala, Tushar R.; and Kaplan, Steven B., 4,533,840, Cl. 307-306.000.
Goff, Willie, Jr.; and Rakes, James M., 4,533,921, Cl. 346-1.100.
Hartung, Michael H.; and Nolan, Kenneth P., 4,533,996, Cl. 364-200.000.
Kinney, Wayne I.; Lasky, Jerome B.; and Nesbit, Larry A., 4,532,700, Cl. 29-576.00W.
Paez, Ricardo; and Rodriguez, Jorge R., 4,534,030, Cl. 371-25.000.
Singh, Shanker; and Singh, Vijendra P., 4,534,029, Cl. 371-10.000.
Thomas, David R.; and Tien, Paul C., 4,534,017, Cl. 365-149.000.
Yeack-Scranton, Celia E.; and Vogel, Siegfried F., 4,532,802, Cl. 73-432.00R.
International Flavors & Fragrances, Inc.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,533,491, Cl. 252-522.00R.
Tokarzewski, Richard J.; and Schreiber, William L., 4,533,492, Cl. 252-522.00R.
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,533,746, Cl. 560-144.000.
International Standard Electric Corporation: *See*—
Epworth, Richard E., 4,533,247, Cl. 356-345.000.
International Telephone & Telegraph Corp.: *See*—
Anhalt, John W., 4,533,198, Cl. 339-99.00R.
Interox Chemicals Limited: *See*—
Farrell, George; Anderson, Diana M.; and Walton, Michael E., 4,533,527, Cl. 423-53.000.
Intili, Henry S., to Microban Products Company. Antimicrobial paper. 4,533,435, Cl. 162-161.000.
Irie, Yoichiro: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, 4,533,233, Cl. 355-8.000.
Isaksson, Karl, to Akermans Verkstad AB. Joystick controller with improved motion control with plate having bevelled flat edges that correspond to planes of maneuverability. 4,533,899, Cl. 338-128.000.
Iscar Ltd.: *See*—
Satran, Amir; and Elka, Shmuel, 4,533,283, Cl. 407-111.000.
Ishibe, Nobuyuki; Thomas, Renard L.; and Tasset, Emmett L., to Dow Chemical Company, The. Preparation of an improved catalyst for the manufacture of naphthoquinone. 4,533,653, Cl. 502-242.000.
Ishidoshiro, Hiroshi: *See*—
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,533,147, Cl. 277-26.000.
Ishii, Kiyoshi: *See*—
Ikezaki, Katsuji; and Ishii, Kiyoshi, 4,533,370, Cl. 55-276.000.
Ishikawa, Yasuyuki, to Canon Kabushiki Kaisha. Eye examining instrument. 4,533,222, Cl. 351-206.000.
Isovolta Osterreichische Isolierstoffwerke: *See*—
Mark, Hermann, 4,533,511, Cl. 264-184.000.
Istituto Luso Farmaco D'Italia s.p.a.: *See*—
Manghisi, Elso; and Cascio, Giuseppe, 4,533,748, Cl. 562-401.000.
Itek Corporation: *See*—
Aldrich, Ralph E., 4,533,219, Cl. 350-487.000.
Ito, Hiroshi: *See*—
Mizuno, Hiroshi; and Ito, Hiroshi, 4,532,902, Cl. 123-417.000.

Ito, Kazuo: *See*—
Obata, Saburo; and Ito, Kazuo, 4,533,273, Cl. 401-190.000.

Ito, Takeo: *See*—
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Kramer, Peter K. G., 4,533,804, Cl. 200-159.00R.
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Tao, Thomas, 4,533,507, Cl. 261-153.000.

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Eguchi, Yasukata; and Inamori, Mikio, 4,532,874, Cl. 112-235.000.

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Kongoh, Takeshi; and Tanaka, Haruhiko, 4,532,876, Cl. 112-454.000.

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Heeres, Jan; and Mostmans, Joseph H., 4,533,550, Cl. 514-256.000.

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Kobashi, Toshiyuki; and Naka, Hideo, 4,533,538, Cl. 423-617.000.

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Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.

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Jasch, Gunter: *See*—
Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.

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Holstedt, Richard A.; and Jessup, Peter J., 4,533,480, Cl. 252-46.400.

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Bonini, Bruno; Cook, Raymond G.; Holdren, Carl F.; and Johnston, Everett A., 4,533,098, Cl. 244-110.00B.

Johnston, James J.; and Glynn, Gregory L., to Akzona Incorporated. Electrical conductor assembly. 4,533,790, Cl. 174-115.000.

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Jokel, Isidore. Window intrusion barrier. 4,532,734, Cl. 49-55.000.

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Jorgensen, Charles A., to Everede Tool Company. Cutting attachment for boring tool. 4,533,285, Cl. 408-191.000.
Josquin, Wilhelmus J. M. J., to U.S. Philips Corporation. Method of manufacturing a semiconductor device. 4,533,429, Cl. 156-643.000.
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Juarez, Manuel; and Preston, Neil, to Juarez, Manuel. Electronic game. 4,533,144, Cl. 273-311.000.
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Kabushiki Kaisha SUIDEN: *See—*
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Kabushiki Kaisha Suwa Seikosha: *See—*
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Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,533,662, Cl. 514-221.000.
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Kaplan, Steven B.: *See—*
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Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., to Continental White Cap, Inc. Vacuum-tamper indicating button for smaller diameter caps and the like. 4,533,059, Cl. 215-230.000.
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Karanewsky, Donald S., to E. R. Squibb & Sons, Inc. Certain 3-phosphinyl-amino-2-oxo-1H-azepine-1-acetic acid derivatives having anti-hypertensive activity. 4,533,661, Cl. 514-212.000.
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Kaster, Robert L., to Angicor Limited. Prosthetic heart valve with plano-convex disk occluder. 4,532,659, Cl. 623-2.000.
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Katz, Carlos, to Cable Technology Laboratories, Inc. High voltage electric power cable with thermal expansion accommodation. 4,533,789, Cl. 174-102.00R.
Kaufman, Harry J. Well casing float shoe or collar. 4,532,995, Cl. 166-327.000.
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Kay, Robert M.: *See*—
Callaghan, Timothy J.; and Kay, Robert M., 4,533,250, Cl. 356-350.000.

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Nunlist, Erwin J., 4,532,885, Cl. 118-308.000.

Kenney, Richard E. H. Ticket holders for shelving. 4,532,726, Cl. 40-16.400.

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Keritsis, Gus D., to Philip Morris Incorporated. Process for increasing and maintaining the filling power of tobacco. 4,532,945, Cl. 131-291.000.

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Iniotakis, Nicolaos; and von der Decken, Claus-Benedict, 4,533,539, Cl. 423-648.00A.
Ringel, Helmut, 4,533,365, Cl. 55-28.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Vejmelka, Peter; Kluger, Wolfgang; Koster, Rainer; and Hauser, Wolfgang, 4,533,395, Cl. 106-89.000.

Kerr, James F., to Material Control, Inc. Telescoping conveyor belt cleaner. 4,533,037, Cl. 198-499.000.

Kershaw, Thomas N.: *See*—
Curran, John F.; and Kershaw, Thomas N., 4,533,437, Cl. 162-281.000.

Keskey, William H.: *See*—
Walles, Wilhelm E.; Keskey, William H.; and Young, Richard G., 4,533,484, Cl. 252-117.000.

Kessen, Gunther: *See*—
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.

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Kibby, Robert M., to Process Development Associates, Inc. Process for producing aluminum. 4,533,386, Cl. 75-10.00R.

Kidd, Patrick D.; Sterrett, Terry L.; and Andreiko, Craig A., to Sybron Corporation. Braided elastomer orthodontic tensioning device. 4,533,321, Cl. 433-18.000.

Kikkawa, Ikuo: *See*—
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,533,730, Cl. 544-92.000.

Kikuchi, Juro: *See*—
Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, 4,533,220, Cl. 350-507.000.

Kikuta, Kazutsune: *See*—
Sato, Akihiro; Kikuta, Kazutsune; Uwai, Toshihiro; Matsuda, Kenji; and Hattori, Nobutaka, 4,533,705, Cl. 526-114.000.

Killich, Hans-Jurgen: *See*—
Leibrock, Kurt; and Killich, Hans-Jurgen, 4,533,002, Cl. 173-53.000.

Kim, Bang M., to General Electric Company. Method for continuous measurement of the sulfite/sulfate ratio. 4,533,440, Cl. 204-1.00T.

Kim, Sam K. Pivot mechanism for multiple axes opening window or closure. 4,532,673, Cl. 16-233.000.

Kimball, John J.: *See*—
Roule, Richard L.; Sorbo, Peter J.; and Kimball, John J., 4,533,586, Cl. 428-137.000.

Kimbara, Hidenori: *See*—
Gaku, Morio; Kimbara, Hidenori; Ayano, Satoshi; and Yoshimura, Susumu, 4,533,727, Cl. 528-361.000.

Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., to Phillips Petroleum Company. Ore flotation and flotation agents for use therein. 4,533,467, Cl. 209-167.000.

Kimmel, Steven A., to Robertshaw Controls Company. Electrical circuit for a cooking apparatus and method of making the same. 4,533,973, Cl. 361-253.000.

Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, to Mita Industrial Co., Ltd. Electrostatic copying apparatus. 4,533,233, Cl. 355-8.000.

Kimura, Yoshiharu: *See*—
Taniguchi, Isoji; Kimura, Yoshiharu; and Ichimura, Toshiaki, 4,533,712, Cl. 528-9.000.

Kinard, George P., to Core-Form. Channel and foam block wall construction. 4,532,745, Cl. 52-251.000.

King, Francis D.: *See*—
Blaney, Francis E.; Hadley, Michael S.; King, Francis D.; and Watts, Eric A., 4,533,498, Cl. 260-243.300.

King, Frank C., Jr., to Philip Morris Incorporated. Method and apparatus for tipping tobacco leaves packed in bales. 4,532,946, Cl. 131-327.000.

King, George R.: *See*—
Baker, Edward H.; and King, George R., 4,532,681, Cl. 403-28.000.

King, Richard M.: *See*—
Corrigan, Patrick J.; King, Richard M.; and VanDiest, Scott A., 4,533,648, Cl. 502-38.000.

King-Seeley Thermos Co.: *See*—
Spinner, Joseph R., 4,533,310, Cl. 425-376.00R.

King, William F., to Chevron Research Company. Insecticidal 3-alkyl-5-(alkoxy- or alkylthio-phosphynyl or phosphinothioyl-thiomethyl)-1,2,4-oxadiazoles. 4,533,658, Cl. 514-92.000.

Kingston, Charles M.: *See*—
Eby, John E.; and Kingston, Charles M., 4,533,944, Cl. 358-107.000.

Kington, Alan D.: *See*—
Mills, David; Lindahl, Anthony T.; and Kington, Alan D., 4,532,974, Cl. 164-132.000.

Kinney, Philip C.; Imran, Mir; and Donnelly, Edward J., to Phyronics, Inc. Distance measuring device for golf carts and the like. 4,532,710, Cl. 33-141.00E.

Kinney, Wayne I.; Lasky, Jerome B.; and Nesbit, Larry A., to International Business Machines Corporation. Method of manufacturing semiconductor structures having an oxidized porous silicon isolation layer. 4,532,700, Cl. 29-576.00W.

Kioritz Corporation: *See*—
Nagashima, Akira; and Kondo, Tadashige, 4,534,005, Cl. 364-505.000.

Kirkman, Michael, to Augat Inc. Dual beam connector. 4,533,187, Cl. 339-17.0CF.

Kirkpatrick, Conilee G.; Adler, Michael S.; and Possin, George E., to United States of America, Air Force. Beam addressed memory system. 4,534,016, Cl. 365-128.000.

Kishi, Hajimu; Seki, Masaki; and Kawasumi, Masashi, to Fanuc Ltd. Tool compensation method. 4,533,286, Cl. 409-80.000.

Kishi, Ikuo; and Yoshida, Hideo, to Lederle (Japan), Ltd. Antiinflammatory analgesic gelled ointments. 4,533,546, Cl. 424-81.000.

Kitahara, Yoshimi: *See*—
Fukuda, Kazumasa; and Kitahara, Yoshimi, 4,533,603, Cl. 428-458.000.

Kitano, Kisei: *See*—
Fukui, Masahiro; Kitano, Kisei; Tanaka, Masami; and Goto, Yasuyuki, 4,533,488, Cl. 252-299.610.

Kitano, Masuo; and Yoshino, Masahito, to Kabushiki Kaisha Suwa Siekosha. Analog electric timepiece. 4,533,257, Cl. 368-202.000.

Kitasato Institute, The: *See*—
Omura, Satoshi; Nakagawa, Akira; Hashimoto, Hiroshi; Kojima, Yasuhiko; Iwai, Yuzuru; Oiwa, Ruiko; and Hirano, Atsushi, 4,533,547, Cl. 424-122.000.
Umezawa, Iwao; and Komiyama, Kanki, 4,533,548, Cl. 514-54.000.

Kiuchi, Mitsuo: *See*—
Maruyama, Hiromi; Sasaoka, Seiji; Kiuchi, Mitsuo; and Kanehara, Hironori, 4,533,557, Cl. 426-61.000.

Kiya, Nobuyuki: *See*—
Nozawa, Ryoichiro; and Kiya, Nobuyuki, 4,534,001, Cl. 364-474.000.

Klauke, Erich: *See*—
Baasner, Bernd; Hagemann, Hermann; and Klauke, Erich, 4,533,776, Cl. 568-946.000.
Marhold, Albrecht; and Klauke, Erich, 4,533,777, Cl. 570-144.000.
Sirrenberg, Wilhelm; Klauke, Erich; and Hammann, Ingeborg, 4,533,676, Cl. 514-535.000.

Kleemann, Axel: *See*—
Drauz, Karlheinz; and Kleemann, Axel, 4,533,766, Cl. 568-771.000.

Klein, Werner; and Leo, Heinz, to Messer Griesheim GmbH. Welding and/or cutting torch. 4,533,078, Cl. 228-45.000.

Klittich, Klaus. Feeding bottle with tubular housing for clamping flexible container. 4,533,057, Cl. 215-11.00E.

Klockner-Humboldt-Deutz AG: *See—*
Herchenbach, Horst; and Ramesohl, Hubert, 4,533,396, Cl. 106-100.000.

Klose, Odo; and Jost, Jochen, to FILMOSTO-PROJEKTION Johannes Jost GmbH & Co. Frame, especially a quick-change frame for photographs. 4,532,727, Cl. 40-152.000.

Kluger, Wolfgang: *See—*
Vejmelka, Peter; Kluger, Wolfgang; Koster, Rainer; and Hauser, Wolfgang, 4,533,395, Cl. 106-89.000.

Kluth, Hermann; Roderhoff, Bernhard; Friedemann, Wolfgang; Wegner, Jurgen; and Dierichs, Wolfgang, to Henkel Kommanditgesellschaft auf Aktien. Process for producing water glass foams from aerosol containers. 4,533,490, Cl. 252-305.000.

Knecht, Todd: *See—*
Elliott, Thomas; and Knecht, Todd, 4,533,280, Cl. 406-57.000.

Knickerbocker, Robert H., to Siemon Company, The. Pre-wired modular connecting blocks. 4,533,195, Cl. 339-97.00P.

Knifton, John F.: *See—*
Lin, Jiang-Jen; and Knifton, John F., 4,533,742, Cl. 549-475.000.

Knight, John C.: *See—*
Tilson, Alan L.; Quay, Earl R.; and Knight, John C., 4,532,780, Cl. 66-9.00B.

Knight, Michael W., to AMF Incorporated. Relays and method for mounting relays on printed circuit boards. 4,533,889, Cl. 335-199.000.

Knight, Reed H.; and Longmore, Val L. Portable multiple spool wire dispenser. 4,533,091, Cl. 242-129.600.

Knoll International, Inc.: *See—*
Latone, Thomas L., 4,533,177, Cl. 297-301.000.

Knorr-Bremse GmbH: *See—*
Krause, Friedrich, 4,533,185, Cl. 303-3.000.

Knudel, Gunter, to Volkswagenwerk Aktiengesellschaft. Window pane mounting for vehicles. 4,532,741, Cl. 52-99.000.

Ko, Ping K., to AT&T Bell Laboratories. Silicon gigabit metal-oxide-semiconductor device processing. 4,532,697, Cl. 29-571.000.

Kobashi, Toshiyuki; and Naka, Hideo, to Japan Exlan Company Limited. Method of producing colloidal antimony oxide. 4,533,538, Cl. 423-617.000.

Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Floating point type multiplier circuit with compensation for over-flow and under-flow in multiplication of numbers in two's compliment representation. 4,534,010, Cl. 364-748.000.

Kobayashi, Tatsuhiko: *See—*
Ikeuchi, Satoru; Inaba, Yoshihiro; Shimazaki, Hiroshi; and Kobayashi, Tatsuhiko, 4,533,621, Cl. 430-213.000.

Kobayashi, Yuko: *See—*
Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, 4,533,220, Cl. 350-507.000.

Kobiella, Robert J., to Signode Corporation. Article strapping method and apparatus, chain assembly for such apparatus and for other apparatus, and method for making such chain assembly. 4,533,343, Cl. 474-207.000.

Kocher, Robert C.: *See—*
French, Kenneth; Kocher, Robert C.; Piorkow, Alfred; Shaner, Kenneth; and Smith, J. Thomas, 4,533,251, Cl. 356-384.000.

Koehring Company: *See—*
Thomas, David; and Briggs, Eugene C., 4,532,914, Cl. 126-110.00C.

Koetje, John R. Expandable connector and method of using same to form curved structural framework. 4,532,747, Cl. 52-586.000.

Koga, Toshiyuki, to Kabushiki Kaisha Daini Seikosha. Fluorescent X-ray film thickness gauge. 4,534,049, Cl. 378-050.000.

Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Measurement of variations in internal combustion engine output. 4,532,798, Cl. 73-116.000.

Kohno, Takashige: *See—*
Osawa, Tadao; Nakagawa, Toru; Okumura, Masamitsu; Kohno, Takashige; and Sakuma, Tokihiko, 4,532,904, Cl. 123-439.000.

Kohzato, Yasuo: *See—*
Sugiura, Susumu; and Kohzato, Yasuo, 4,533,928, Cl. 346-140.00R.

Koiwa, Atsushi: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.

Koizumi, Takashi: *See—*
Tanaka, Yoshio; Nishikawa, Yasuhisa; Hasumi, Ryoichi; and Koizumi, Takashi, 4,532,818, Cl. 74-10.330.

Kojima, Hisao. Sound arresting device. 4,533,015, Cl. 181-280.000.

Kojima, Junpei: *See—*
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,533,706, Cl. 526-119.000.

Kojima, Ryuji; and Yazaki, Akiko, to Parker Chemical Company. Test method for phosphate coatings. 4,533,639, Cl. 436-2.000.

Kojima, Yasuhiko: *See—*
Omura, Satoshi; Nakagawa, Akira; Hashimoto, Hiroshi; Kojima, Yasuhiko; Iwai, Yuzuru; Oiwa, Ruiko; and Hirano, Atsushi, 4,533,547, Cl. 424-122.000.

Kokogawa Hokushin Electric Corporation: *See—*
Hanaoka, Yuzuru; Murayama, Takeshi; Muramoto, Setsuo; and Matsuura, Tamizo, 4,533,518, Cl. 422-70.000.

Kokoku Rubber Industrial Company Limited: *See—*
Honda, Kazuhiro; and Kuramochi, Hiroshi, 4,533,604, Cl. 428-521.000.

Kolbas, Robert M., to Honeywell Inc. Method of fabricating emitter/detector-in-a-well for the integration of electronic and optoelectronic components. 4,532,694, Cl. 29-569.00L.

Kollmorgan Technologies Corp.: *See—*
Teng, Yu-Ling; McCoy, Charles; DeFalco, Francis; and Mayernick, Richard, 4,533,606, Cl. 428-658.000.

Komai, Takeshi; Matsuyama, Kazuo; and Saigo, Takuya, to Nippon Oil & Fats Co., Ltd. Copolymerized unsaturated peroxycarbonate sizing agent for treatment of glass fibers and method for treatment of glass fibers with said sizing agent. 4,533,699, Cl. 525-277.000.

Komesker, Heinrich; and Helmes, Ludger, to Vorwerk & Co. Interholding GmbH. Floor cleaning device having a replaceable brush assembly. 4,532,667, Cl. 15-49.00C.

Komiyama, Kanki: *See—*
Umezawa, Iwao; and Komiyama, Kanki, 4,533,548, Cl. 514-54.000.

Komoda, Norio, to Toyota Jidosha Kabushiki Kaisha. Intake device of an internal combustion engine. 4,533,012, Cl. 180-68.300.

Konan Camera Research Institute: *See—*
Okano, Takeshi, 4,533,253, Cl. 356-443.000.

Kondo, Hirokazu; and Takino, Shigekatsu, to Tsubakimoto Chain Company. Pallet conveying system. 4,532,869, Cl. 104-166.000.

Kondo, Tadashige: *See—*
Nagashima, Akira; and Kondo, Tadashige, 4,534,005, Cl. 364-505.000.

Kondo, Takashi; Sakai, Chikaaki; and Karakawa, Tadashi, to Kurashiki Boseki Kabushiki Kaisha. Process for modifying animal fibers. 4,533,359, Cl. 8-128.00R.

Kondo, Takeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device with enlarged corners to provide enhanced punch through protection. 4,533,932, Cl. 357-13.000.

Kong, Pi-Chang: *See—*
Rochon, Fernande D.; and Kong, Pi-Chang, 4,533,502, Cl. 546-8.000.

Kongoh, Takeshi; and Tanaka, Haruhiko, to Janome Sewing Machine Industry Co., Ltd. Electronic sewing machine. 4,532,876, Cl. 112-454.000.

Konishi, Masataka: *See—*
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,533,631, Cl. 435-70.000.

Konishi, Masayuki: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.

Konishi, Satoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. MOS logic circuit responsive to an irreversible control voltage for permanently varying its signal transfer characteristic. 4,533,841, Cl. 307-468.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Ikeuchi, Satoru; Inaba, Yoshihiro; Shimazaki, Hiroshi; and Kobayashi, Tatsuhiko, 4,533,621, Cl. 430-213.000.

Konkol, Werner: *See—*
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.

Koon, Norman C. Preparation of hard magnetic alloys of a transition metal and lanthanide. 4,533,408, Cl. 148-103.000.

Koppensteiner, James V.; and Kaczkos, John E., to GTE Communication Systems Corporation. Printed wiring board assembly employing track engaging runners. 4,533,977, Cl. 361-415.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as primer and chip resistant primer II. 4,533,534, Cl. 523-436.000.

Kordomenos, Panagiotis I.; Dervan, Andrew H.; and Grebur, Dennis J., to Ford Motor Company. Thermosetting coating composition useful as chip resistant primer II. 4,533,684, Cl. 523-436.000.

Kordomenos, Panagiotis I.; Kurple, Kenneth R.; and Alexander, Delores J., to Ford Motor Company. Flexible basecoat/two component clearcoat coating composition. 4,533,703, Cl. 525-440.000.

Kordomenos, Panagiotis I.: *See—*
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,533,704, Cl. 525-440.000.

Koster, Rainer: *See—*
Vejmelka, Peter; Kluger, Wolfgang; Koster, Rainer; and Hauser, Wolfgang, 4,533,395, Cl. 106-89.000.

Kource, Robert D.: *See—*
Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., 4,532,815, Cl. 73-864.630.

Kovacs, Lloyd, to Hayssen Manufacturing Company. Method of and apparatus for forming, filling and sealing packages. 4,532,753, Cl. 53-451.000.

Kowalczyk, Ronald: *See—*
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Kowalik, Joseph W.; and Krueger, David J., to Littelfuse, Inc. Time delay fuse. 4,533,895, Cl. 337-165.000.

Kowalski, Walter C.: *See—*
Bishop, Ralph L.; Rich, William N.; and Kowalski, Walter C., 4,533,894, Cl. 337-107.000.

Koyama, Hiroshi: *See—*
Ohno, Akira; Koyama, Hiroshi; Inoue, Kanji; and Ozawa, Hiroaki, 4,533,402, Cl. 148-12.400.

Kozar, John J. Flashlight with swivelling head. 4,533,982, Cl. 362-183.000.

Kraft, Howard R., to T. O. Plastics, Inc. Grooved plastic board and method of making same. 4,533,588, Cl. 428-167.000.

Kraftwerk Union Aktiengesellschaft: *See*—
Bezold, Helmut, 4,532,793, Cl. 72-342.000.

Kramer, Carl; and Kuster, Hans-Werner, to Saint Gobain Vitrage. Method and apparatus for uniformly coating a substrate with a powder. 4,533,571, Cl. 427-180.000.

Kramer, Charles D.: *See*—
Rivers, John; Kramer, Charles D.; and Cox, Robert L., 4,532,873, Cl. 110-347.000.

Kramer, Peter K. G., to ITT Industries, Inc. Push button slide switch. 4,533,804, Cl. 200-159.00R.

Kranich, Neil J., II; and Boivin, Wallace E., Jr., to ASEA Electric, Inc. Low voltage rotary tap changer. 4,533,797, Cl. 200-11.0TC.

Kratochvil, Jiri; and Janata, Jiri, to Critikon. Oxygen sensor for rapid blood gas analysis. 4,533,456, Cl. 204-415.000.

Kratzenberg, Wolfgang; and Baeslack, Bernd, to Wegmann & Co. GmbH. Apparatus for the supervision of a combat vehicle, especially an armored vehicle. 4,533,327, Cl. 434-20.000.

Krause, Friedrich, to Knorr-Bremse GmbH. Control system for electropneumatic compressed air brakes for rail vehicles. 4,533,185, Cl. 303-3.000.

Krautkramer, Gunter, to Jacob Berg KG. Container closure for supplying air to or removing air from a container. 4,533,062, Cl. 220-258.000.

Kreil, Curtis L.: *See*—
Evans, Jack L.; Campbell, Karen J.; Kreil, Curtis L.; and Sidney, LuAnn, 4,533,566, Cl. 427-44.000.

Kreuzer, Justin: *See*—
Deschenaux, Warren; Hughes, Gregory; Kreuzer, Justin; and La Fiandra, Carlo, 4,534,047, Cl. 378-35.000.

Kriegel, Ernst: *See*—
Coenen, Hubert; and Kriegel, Ernst, 4,532,992, Cl. 166-267.000.

Krikorian, George. Shelf and bracket therefor. 4,533,056, Cl. 211-153.000.

Krishnan, Vedavalli G., to Racal Data Communications, Inc. Test tone detector apparatus and method modem using same. 4,534,043, Cl. 375-104.000.

Krob, Erwin; and Bauer, Helmut, to TMC Corporation. Safety ski binding. 4,533,155, Cl. 280-628.000.

KRONE GmbH: *See*—
Forberg, Horst; Achtnig, Klaus-Peter; Hegner, Gunter; and Boes, Gerhard, 4,533,196, Cl. 339-97.00P.

Kronos Titan, GmbH: *See*—
Hartmann, Achim, 4,533,530, Cl. 423-240.000.

Krueger, David J.: *See*—
Kowalik, Joseph W.; and Krueger, David J., 4,533,895, Cl. 337-165.000.

Krul, William R., to Board of Governors for Higher Education, State of Rhode Island, The; and Providence Plantations. In vitro propagation of grape. 4,532,733, Cl. 47-58.000.

Krumin, Donald K.; and Larson, Orville W., to Motorola, Inc. Paging receiver and supporting receptacle therefor. 4,534,063, Cl. 455-344.000.

Ku, Thomas W.: *See*—
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,533,747, Cl. 560-152.000.

Kubicki, Michael J.: *See*—
Fruchey, Melvin C.; and Kubicki, Michael J., 4,533,052, Cl. 206-602.000.

Kudo, Uichi: *See*—
Masuhara, Hideki; Katada, Kunio; and Kudo, Uichi, 4,533,892, Cl. 336-147.000.

Kudoh, Michio: *See*—
Matsuno, Mitsuo; Kudoh, Michio; and Imai, Hiroshuke, 4,533,781, Cl. 585-516.000.

Kueny, Don F., to Outboard Marine Corporation. Primer follow-through system. 4,532,895, Cl. 123-187.50R.

Kuhnert, Volker; and Niedrig, Franklin, to Strapex AG. Wound body or package. 4,533,046, Cl. 206-389.000.

Kumar, Kaplesh: *See*—
Das, Dilip K.; Kumar, Kaplesh; and Wettstein, Ernest C., 4,533,407, Cl. 148-102.000.

Kumazawa, Eiji, to Kabushiki Kaisha Kogai Boshi Sogo Kenkyusho. Electrolyzed water producing apparatus. 4,533,451, Cl. 204-229.000.

Kume, Masato, to Clarion Co., Ltd. Tape player for vehicles. 4,533,966, Cl. 360-96.500.

Kummer, Rudolf; Richter, Wolfgang; Schwirten, Kurt; and Stops, Peter, to BASF Aktiengesellschaft. Continuous hydroformylation of olefinically unsaturated compounds. 4,533,757, Cl. 568-454.000.

Kumura, Haruyoshi: *See*—
Abo, Keiju; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Kumura, Haruyoshi; and Hirano, Hiroyuki, 4,533,340, Cl. 474-28.000.

Kunack, Wilfried: *See*—
Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.

Kunig, Helmut, to S.A. Des Ateliers, Houget Duesberg Bosson. Needle bar drawing device. 4,532,678, Cl. 19-129.00R.

Kunz, Walter: *See*—
Eckhardt, Wolfgang; and Kunz, Walter, 4,533,659, Cl. 514-184.000.

Kura, Kohei: *See*—
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Kura, Kohei; Yagi, Masahiro; and Shirahase, Ichiro, 4,533,668, Cl. 514-321.000.

Kurachi, Hisao; Ito, Takeo; Iwase, Takayuki; and Shiota, Junji, to Brother Kogyo Kabushiki Kaisha. Ribbon driving mechanism for typewriter. 4,533,267, Cl. 400-214.000.

Kuramochi, Hiroshi: *See*—
Honda, Kazuhiro; and Kuramochi, Hiroshi, 4,533,604, Cl. 428-521.000.

Kurashiki Boseki Kabushiki Kaisha: *See*—
Kondo, Takashi; Sakai, Chikaaki; and Karakawa, Tadashi, 4,533,359, Cl. 8-128.00R.

Kuribayashi, Masaki: *See*—
Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, 4,533,232, Cl. 355-3.00R.

Kurihara, Kozo: *See*—
Ikegami, Yoshihiko; Kurihara, Kozo; Ichikawa, Izuo; and Nakane, Hisanori, 4,533,562, Cl. 427-3.000.

Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, to Olympus Optical Co., Ltd. Indicating device for indicating data within the visual field of microscope. 4,533,220, Cl. 350-507.000.

Kuroki, Hironori; Honda, Tsuguo; and Mitsui, Toshihisa, to Kuroki Kogyosho Co., Ltd. Roll for transferring hot metal pieces. 4,532,978, Cl. 164-448.000.

Kuroki Kogyosho Co., Ltd.: *See*—
Kuroki, Hironori; Honda, Tsuguo; and Mitsui, Toshihisa, 4,532,978, Cl. 164-448.000.

Kurosawa, Shigeru; and Ueshima, Takashi, to Showa Denko Kabushiki Kaisha. Chlorine containing polyether sulfone polymers and preparation thereof. 4,533,721, Cl. 528-174.000.

Kurple, Kenneth R.: *See*—
Alexander, Delores J.; Kurple, Kenneth R.; and Kordomenos, Panagiotis I., 4,533,704, Cl. 525-440.000.
Kordomenos, Panagiotis I.; Kurple, Kenneth R.; and Alexander, Delores J., 4,533,703, Cl. 525-440.000.

Kurumada, Tomoyuki: *See*—
Toda, Toshimasa; and Kurumada, Tomoyuki, 4,533,688, Cl. 524-100.000.

Kusakawa, Norihisa: *See*—
Tayama, Suehiro; and Kusakawa, Norihisa, 4,533,689, Cl. 524-130.000.

Kushinsky, Ivan V.: *See*—
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.

Kuster, Hans-Werner: *See*—
Kramer, Carl; and Kuster, Hans-Werner, 4,533,571, Cl. 427-180.000.

Kusumoto, Koshi; Kawaguchi, Toshio; and Ogata, Takayuki, to Tokuyama Soda Kabushiki Kaisha. Adhesive coating material. 4,533,701, Cl. 525-370.000.

Kuwabara, Toshihiro: *See*—
Yoden, Yoshimasa; Okuda, Tsuneo; Fuchigami, Eiji; and Kuwabara, Toshihiro, 4,533,358, Cl. 8-94.200.

Kuzara, James H., to Ralston Purina Company. Animal feeding and monitoring system. 4,532,892, Cl. 119-51.00R.

Kuzma, Janusz A.: *See*—
Crosby, Peter A.; Daly, Christopher N.; Money, David K.; Patrick, James F.; Seligman, Peter M.; and Kuzma, Janusz A., 4,532,930, Cl. 128-419.00R.

KV33 Corporation: *See*—
Huffman, Ronald E., 4,533,323, Cl. 433-60.000.

Kwaan, Hau C. Fluid withdrawal and instillation device. 4,532,969, Cl. 141-27.000.

Kyriacou, Demetrios; and Brattesani, Donald N., to Dow Chemical Company, The. Electrolytic cell comprising stainless steel anode, basic aqueous electrolyte and a cathode at which tetrachloro-2-picolinate ions can be selectively reduced in high yield to 3,6-dichloropicolinate ions. 4,533,454, Cl. 204-272.000.

Kyster, Erik: *See*—
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,533,303, Cl. 418-61.00B.

L. Schuler GmbH: *See*—
Weber, Heinz, 4,533,029, Cl. 192-18.00A.

La Gard, Inc.: *See*—
Uyeda, Tim M., 4,532,785, Cl. 70-333.00R.

Labor Muszeripari Muvek: *See*—
Muranyi, Istvan; Balazs, Laszlone ; Molnar, Jozsef; Burda, Ferencne ; Metzler, Maria; and Szerdahelyi, Lajos, 4,533,638, Cl. 435-288.000.

Lacey, Ralph W., to Dijet Industrial Co., Ltd. Cutter blade retention. 4,533,281, Cl. 407-36.000.

Lade, Robert W.: *See*—
Benjamin, James A.; Lade, Robert W.; and Schutten, Herman P., 4,533,783, Cl. 136-249.000.

Ladouceur, Harold A.: *See*—
Steward, John H.; and Ladouceur, Harold A., 4,532,664, Cl. 10-162.00A.

Laeis-Werke AG: *See*—
von Karchowski, Wilhelm, 4,533,311, Cl. 425-405.00H.

La Fiandra, Carlo: *See*—
Deschenaux, Warren; Hughes, Gregory; Kreuzer, Justin; and La Fiandra, Carlo, 4,534,047, Cl. 378-35.000.

Lagace, Arthur P.: *See*—
Cook, Edward J.; and Lagace, Arthur P., 4,533,254, Cl. 366-176.000.
Lagofun, Guy J., to L'Etat Francais. Combustible safety primer of selective percussion for case-less ammunition or ammunition with combustible case. 4,532,866, Cl. 102-204.000.
LaGuardia, Francesco. Kinematic mechanism. 4,532,828, Cl. 74-793.000.
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, to Yeda Research and Development Company Ltd. Resolution of amino acids. 4,533,506, Cl. 260-501.120.
Lai, Ching C.: *See*—
Kellie, Truman F.; Landry, J. David; and Lai, Ching C., 4,532,723, Cl. 356-73.000.
Lake, W. H. Russell, to Trail-R-Van Inc. Lift-roof trailer. 4,533,171, Cl. 296-173.000.
Lalin, Hill S. Fluid sampler and gas flow control system and method. 4,532,814, Cl. 73-863.030.
Lama, William L.: *See*—
Hammond, Thomas J.; Lama, William L.; Northrup, Karl A.; and Corona, Stephen C., 4,533,853, Cl. 315-117.000.
Lamarche, Paul E., to Borg-Warner Corporation. Friction engaging drives with ceramic materials. 4,533,032, Cl. 192-107.00M.
Lambda Physik GmbH: *See*—
Hohla, Kristian; and Albers, Ernst, 4,534,034, Cl. 372-59.000.
Lambregts, Antonius A., to Boeing Company, The. Aircraft roll steering command system. 4,533,999, Cl. 364-429.000.
Lamy, Jean-Michel; and Jacquet, Joel, to Regie Nationale des Usines Renault. Automobile automatic transmission control device. 4,532,824, Cl. 74-475.000.
Landry, J. David: *See*—
Kellie, Truman F.; Landry, J. David; and Lai, Ching C., 4,532,723, Cl. 356-73.000.
Lang, Gunther; and Wajaroff, Theodor, to Wella AG. Process for the permanent deformation of hair. 4,532,950, Cl. 132-7.000.
Larson, Orville W.: *See*—
Krumin, Donald K.; and Larson, Orville W., 4,534,063, Cl. 455-344.000.
Larsson, Peter L.: *See*—
Pokojny, Rudolf; and Larsson, Peter L., 4,533,788, Cl. 174-88.00C.
Lashway, William H.: *See*—
Boyd, Dana M.; Colombo, Edward A.; and Lashway, William H., 4,533,578, Cl. 428-35.000.
Lasker, Sigmund E. Antithrombotic agent. 4,533,549, Cl. 514-56.000.
Lasky, Jerome B.: *See*—
Kinney, Wayne I.; Lasky, Jerome B.; and Nesbit, Larry A., 4,532,700, Cl. 29-576.00W.
Latimer, Stanley M.: *See*—
Conly, Ralph A.; and Latimer, Stanley M., 4,533,967, Cl. 360-123.000.
Latone, Thomas L., to Knoll International, Inc. Reclining chair. 4,533,177, Cl. 297-301.000.
Lau, Yue-Ying; Chu, Kwo R.; Granatstein, Victor L.; and Barnett, Larry R. Wide-band gyrotron traveling-wave amplifier. 4,533,875, Cl. 330-4.000.
Laugal, James A.: *See*—
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,752, Cl. 564-428.000.
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,760, Cl. 568-667.000.
Lauvray, Georges R. P. L.; and Darche, Michel J. P., to Societe ECA. Process and arrangement for aerial observation and/or communication for a submerged submarine. 4,533,945, Cl. 358-109.000.
Lawrence, Dale M.: *See*—
Auth, David C.; Opie, Eric A.; and Lawrence, Dale M., 4,532,924, Cl. 128-303.170.
Lear S.n.c.: *See*—
Foggini, Giovanni, 4,533,275, Cl. 403-165.000.
Lechtenberg, Thomas, to United States of America, Energy. Minimum activation martensitic alloys for surface disposal after exposure to neutron flux. 4,533,406, Cl. 148-37.000.
Lederis, Karl P.; MacCannell, Keith L.; and Ichikawa, Tomoyuki, to Salk Institute For Biological Studies, The. Urotensin peptides. 4,533,654, Cl. 514-12.000.
Lederle, Franz, to Gebr. Bode & Co. Anticatching device for automatic doors or windows. 4,533,901, Cl. 340-52.00R.
Lederle (Japan), Ltd.: *See*—
Kishi, Ikuo; and Yoshida, Hideo, 4,533,546, Cl. 424-81.000.
Leding, Kenneth J., to Leding Loader, Inc. Maxi-ball lubricator and dispenser for muzzle loading firearms. 4,533,019, Cl. 184-14.000.
Leding Loader, Inc.: *See*—
Leding, Kenneth J., 4,533,019, Cl. 184-14.000.
Lee, Frank W. C.; and Baron, Kenneth S., to Hexcel Corporation. Single package epoxy resin system. 4,533,715, Cl. 528-45.000.
Lee, Min-Hsiun, to Standard Oil Company. Sulfur recovery process. 4,533,529, Cl. 423-230.000.
Le Faou, Daniel: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and Le Faou, Daniel, 4,533,154, Cl. 280-615.000.
Legge, Michael H.: *See*—
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,533,572, Cl. 427-216.000.
Leibrock, Kurt; and Killich, Hans-Jurgen, to Saarbergwerke Aktiengesellschaft. Device for gripping and raising tamping tools or for holding raised tamping tools in a tamping machine which is especially used for the packing of coking coal. 4,533,002, Cl. 173-53.000.
Leiby, Robert W.: *See*—
Baker, Alan J.; and Leiby, Robert W., 4,533,902, Cl. 340-347.00P.
Leigh, Arthur G.: *See*—
Davies, James F.; Leigh, Arthur G.; and Rennie, George K., 4,532,719, Cl. 34-12.000.
Leimkuhler, Jurgen, to Gottfried Bischoff Bau kompl. Gasreinigungs- und Wasserruckkuhlanlagen GmbH & Co. Kommanditgesellschaft. Apparatus for the desulfurization of flue gases. 4,533,522, Cl. 422-170.000.
Leipnitz, Michael. Phonograph pick-up with improved shield grounding. 4,534,022, Cl. 369-170.000.
Leivenzon, Simon; and Leivenzon, Steven, to Firmagroup Australia Pty. Ltd. Indicating means for a door operator device. 4,533,905, Cl. 340-524.000.
Leivenzon, Steven: *See*—
Leivenzon, Simon; and Leivenzon, Steven, 4,533,905, Cl. 340-524.000.
Leland Stanford Junior University, Board of Trustees of the: *See*—
Sherby, Oleg D.; and Oyama, Toshimasa, 4,533,390, Cl. 75-126.00Q.
Leo, Heinz: *See*—
Klein, Werner; and Leo, Heinz, 4,533,078, Cl. 228-45.000.
Leonard, George E., to Kartridg Pak Co., The. Rotary filling apparatus and method. 4,532,968, Cl. 141-5.000.
Le Page, Jean-Francois: *See*—
Courty, Philippe; Roussel, Michel; Leporq, Serge; Le Page, Jean-Francois; and Varin, Philippe, 4,533,650, Cl. 502-84.000.
Leporq, Serge: *See*—
Courty, Philippe; Roussel, Michel; Leporq, Serge; Le Page, Jean-Francois; and Varin, Philippe, 4,533,650, Cl. 502-84.000.
Lerch, Hansueli, to Gebruder Sulzer Aktiengesellschaft. Method of operating an air nozzle weaving machine. 4,532,964, Cl. 139-435.000.
Leroy, Michel; and Keinborg, Maurice, to Aluminium Pechiney. Electrolysis tank, for the production of aluminum, having a floating conductive screen. 4,533,452, Cl. 204-243.00R.
L'Etat Francais: *See*—
Lagofun, Guy J., 4,532,866, Cl. 102-204.000.
Leumann, Hans E.; Gerkey, Kenneth S.; and Wylie, Mark E., to Westinghouse Electric Corp. High precision electronic digital measurement system wound on constant-torque-controlled drum. 4,532,709, Cl. 33-140.000.
Leutgob, Alois: *See*—
Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,533,385, Cl. 75-10.00R.
Levallois, Emile: *See*—
Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,533,526, Cl. 423-1.000.
LeVeen, Eric G.; and LeVeen, Robert F. Automatic urine flow meter. 4,532,936, Cl. 128-762.000.
LeVeen, Robert F.: *See*—
LeVeen, Eric G.; and LeVeen, Robert F., 4,532,936, Cl. 128-762.000.
Levenstein, Harold, to Perkin-Elmer Corporation, The. Rapid surface figuring by selective deposition. 4,533,449, Cl. 204-192.00R.
Lever Brothers Company: *See*—
Davies, James F.; Leigh, Arthur G.; and Rennie, George K., 4,532,719, Cl. 34-12.000.
Sen Gupta, Achintya K., 4,533,501, Cl. 260-428.000.
Levinson, Samuel, to United Technologies Corporation. Adjustable double balanced mixer. 4,534,062, Cl. 455-330.000.
Lewis, Charles, Jr.; Olander, Jitka V.; and Tolbert, William R., to Monsanto Company. Method of isolating monoclonal antibodies from hybridoma cultures. 4,533,496, Cl. 260-112.00R.
Leygraf, Christofer H.: *See*—
Somorjai, Gabor A.; and Leygraf, Christofer H., 4,533,608, Cl. 429-111.000.
Lhuillier, Francois: *See*—
Bastion, Patrick; Lhuillier, Francois; and Mutschler, Ulrich, 4,532,963, Cl. 139-59.000.
Li, Thomas M.: *See*—
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,533,493, Cl. 260-112.00B.
Libert, Harold C., to Maul Technology Corporation. Neck ring mechanism for I.S. glass forming machine. 4,533,377, Cl. 65-232.000.
Lickei, Donald L.: *See*—
O'Connor, James M.; Lickei, Donald L.; Rosin, Michael L.; and Donze, Richard J., 4,533,717, Cl. 528-78.000.
Liebman, Bradley B. Liquid absorbing playing piece. 4,533,145, Cl. 273-378.000.
Liede, Dieter: *See*—
Buchner, Norbert; Eberspacher, Rolf; and Liede, Dieter, 4,533,063, Cl. 220-270.000.
Lieder, Bernhard: *See*—
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.
Liepmann, Hans: *See*—
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,533,662, Cl. 514-221.000.
Liet, Cornelis H., to Multinorm B.V. Device for forming a compressed produce bale. 4,532,758, Cl. 56-341.000.
Lim, Sim K.: *See*—
Goodman, Richard M.; and Lim, Sim K., 4,533,465, Cl. 209-167.000.

Lin, Jiang-Jen; and Knifton, John F., to Texaco Inc. Preparation of 2-hydroxytetrahydrofuran by hydroformylation of allyl alcohol using ketone solvents. 4,533,742, Cl. 549-475.000.

Lin, Jiang-Jen; and Brader, Walter H., Jr., to Texaco Inc. Process for synthesis of acrylic acid precursors via hydroformylation of vinyl ether. 4,533,756, Cl. 568-454.000.

Linatex Corporation of America: *See—*
Smith, Michael J.; and Soucie, Allen L., 4,533,464, Cl. 209-158.000.

Lincke, Paul, to Sulzer Brothers Limited. Weft yarn picking channel. 4,532,965, Cl. 139-435.000.

Lindahl, Anthony T.: *See—*
Mills, David; Lindahl, Anthony T.; and Kington, Alan D., 4,532,974, Cl. 164-132.000.

Lindahl, LeMoyne. Sealing ring assembly for use in pulp refining equipment. 4,533,148, Cl. 277-53.000.

Linde Aktiengesellschaft: *See—*
Butz, Peter; Ranke, Gerhard; and Tvan, Tran A., 4,533,373, Cl. 62-17.000.

Lindlar, Wilhelm; and Wermeister, Gunter, to Santrade Limited. Milling cutter. 4,533,282, Cl. 407-38.000.

Lisa, Rudolph E.: *See—*
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., 4,533,674, Cl. 514-474.000.

Lissau, Frederic, to Sloan Valve Company. Gladhand with dirt protection plug. 4,533,115, Cl. 251-142.000.

Litchfield, Peter A. Safety device and harness for use in same. 4,533,017, Cl. 182-3.000.

Litke, Alan E., to Loctite Corporation. Thixotropic cyanoacrylate compositions. 4,533,422, Cl. 156-307.300.

Litman, David J.; and Ullman, Edwin F., to Syva Company. Simultaneous calibration heterogeneous immunoassay. 4,533,629, Cl. 435-7.000.

Littelfuse, Inc.: *See—*
Kowalik, Joseph W.; and Krueger, David J., 4,533,895, Cl. 337-165.000.
Olson, Harry W.; and Olson, Phillip A., 4,533,897, Cl. 337-408.000.

Liverance, Howard G.; and Wood, Jack E. Winch assembly. 4,533,119, Cl. 254-344.000.

Livesey, Declan B.: *See—*
Toma, Petre; Redford, David A.; Livesey, Declan B.; and Coates, Roy M., 4,532,994, Cl. 166-303.000.

LKB-Produkter AB: *See—*
Soderkvist, Anton, 4,532,838, Cl. 83-13.000.

Lockwood, George S.; and Phillips, John H., to Monterey Abalone Farms. Process for controlling the microbial environment in abalone mariculture. 4,532,883, Cl. 119-4.000.

Loctite Corporation: *See—*
Litke, Alan E., 4,533,422, Cl. 156-307.300.

Loctite (Ireland) Ltd.: *See—*
Conway, Paul; Melody, David P.; Woods, John; Casey, J. Eisirt; Bolger, Bernard J.; and Martin, Francis R., 4,533,446, Cl. 204-159.240.

Logic Controls Corp.: *See—*
Norwood, William L., 4,532,952, Cl. 137-240.000.

Long, William H., to Northrop Corporation. Tandem electric discharges for exciting lasers. 4,534,035, Cl. 372-85.000.

Longmore, Val L.: *See—*
Knight, Reed H.; and Longmore, Val L., 4,533,091, Cl. 242-129.600.

Loper, Bernd: *See—*
Muller, Alf; Schobbe, Hermann; Loper, Bernd; and Binnewies, Hartmut, 4,533,184, Cl. 301-63.00R.

L'Oreal: *See—*
Sebag, Henri, 4,533,545, Cl. 424-70.000.
Sebag, Henri; and Zysman, Alexandre, 4,533,714, Cl. 528-27.000.

Lorenz, Manfred, to Kapp & Co. Werkzeugmaschinenfabrik. Method and device for fine profiling tools coated with super-hard materials. 4,533,812, Cl. 219-121.0LH.

Lorenzo Barroso, Angel. Equipment for knotting automatically the openings of flexible containers. 4,533,164, Cl. 289-2.000.

Lorke, Horst: *See—*
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,533,479, Cl. 252-34.000.

Lorts, Anthony. Internal combustion engine fuel-injection system. 4,532,899, Cl. 123-292.000.

Losell, Ingvar E.: *See—*
Johnsson, Bo A.; Losell, Ingvar E.; and Palmqvist, Sune H., 4,533,516, Cl. 422-46.000.

Losio, Gastone, to Clevite S.r.l. Flanged half-bearing for motor applications. 4,533,261, Cl. 384-296.000.

Louw, Hendrik A.: *See—*
Davis, Bender A.; and Louw, Hendrik A., 4,533,173, Cl. 296-216.000.

Louw, John A., to Fertility & Genetics Associates. Uterine catheter. 4,533,345, Cl. 604-43.000.

Love, Franklin S., III, to Milliken Research Corporation. Inspection lighting system. 4,533,245, Cl. 356-238.000.

Lu, Wei C., to Eastman Kodak Company. Magnetic brush developer apparatus. 4,533,229, Cl. 355-3.0DD.

Lubrizol Corporation, The: *See—*
Jahnke, Richard W., 4,533,481, Cl. 252-49.600.

Lucas Industries: *See—*
Rath, Heinrich B., 4,533,024, Cl. 188-79.50B.

Luccarelli, Domenick, Jr.: *See—*
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,533,746, Cl. 560-144.000.

Lucchi, George A.; and Alisobhani, Jalal, to Sperry Corporation. Radar terrain signal suppressor. 4,533,915, Cl. 343-5.00W.

Ludington, Charlotte E.: *See—*
Pellegrini, Paul W.; Ludington, Charlotte E.; Golubovic, Aleksandar; and Weeks, Melanie M., 4,533,933, Cl. 357-15.000.

Ludman, Jacques E.: *See—*
Miceli, William J.; and Ludman, Jacques E., 4,533,829, Cl. 250-227.000.

Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, to Voest-Alpine Aktiengesellschaft. Method for producing metals, such as molten pig iron, steel pre-material and ferroalloys. 4,533,385, Cl. 75-10.00R.

Luhn, Dennis A.; and Schultz, Mark H., to McGraw-Edison Company. Voltage regulator. 4,533,863, Cl. 322-28.000.

Luz, David W.: *See—*
Willis, Donald H.; and Luz, David W., 4,533,855, Cl. 315-370.000.

Lydtin, Hans: *See—*
Frank, Berthold; Gartner, Georg; and Lydtin, Hans, 4,533,852, Cl. 313-346.0DC.

Lyerly, David M.: *See—*
Wilkins, Tracy D.; and Lyerly, David M., 4,533,630, Cl. 435-7.000.

Lyston, Edgar L., to American Pulverizer Company. Frozen coal cracker. 4,533,088, Cl. 241-186.300.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Galster, Hans-Peter, 4,533,134, Cl. 271-240.000.
Heller, Albert; Birkmair, Hubert; and Grauberger, Hermann, 4,532,864, Cl. 101-219.000.

M. S. Willett, Inc.: *See—*
Gerben, Ralph D.; and Walters, Harry J., 4,532,820, Cl. 74-56.000.

Maag Gear-Wheel & Machine Co., Ltd.: *See—*
Rhyner, Hans-Ulrich, 4,534,007, Cl. 364-560.000.
Sterki, Armin, 4,532,715, Cl. 33-179.50R.

Maas, Renata, to New York University. Colony hybridization method. 4,533,628, Cl. 435-6.000.

MacCannell, Keith L.: *See—*
Lederis, Karl P.; MacCannell, Keith L.; and Ichikawa, Tomoyuki, 4,533,654, Cl. 514-12.000.

Mackay, Donald A. M.: *See—*
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,533,543, Cl. 424-38.000.

MacLeod, Robert B., Jr.: *See—*
Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,533,093, Cl. 242-197.000.

MADAG Maschinen- und Apparatebau Dietikon AG: *See—*
Rosenberg, Stephan, 4,533,163, Cl. 289-1.500.

Maeda, Narimichi: *See—*
Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, 4,534,010, Cl. 364-748.000.

Maeda, Takayoshi: *See—*
Tomofuji, Yoshiaki; and Maeda, Takayoshi, 4,533,987, Cl. 363-36.000.

Maeda, Tetsuro; Okamoto, Akihiro; Shimizu, Yoshimitsu; and Nomoto, Takashi, to Denki Kagaku Kogyo Kabushiki Kaisha. Thermoplastic resin composition. 4,533,698, Cl. 525-73.000.

Maehara, Naoyoshi; Hashido, Kenkichi; and Hirata, Hiroshi, to Matsushita Electric Industrial Company, Limited. Piezoelectric oscillated nozzle. 4,533,082, Cl. 239-102.000.

Maekawa, Toshikazu: *See—*
Soneda, Mitsuo; and Maekawa, Toshikazu, 4,533,954, Cl. 358-212.000.

Maffia, Gennaro J., to Atlantic Richfield Company. Natural gas conversion. 4,533,780, Cl. 585-330.000.

Magar, Surendar S.; and Caudel, Edward R., to Texas Instruments Incorporated. Microcomputer having shifter in ALU input. 4,533,992, Cl. 364-200.000.

Magnetic Separation Systems, Inc.: *See—*
Kenny, Garry R.; Sommer, Edward J., Jr.; and Roos, Charles E., 4,533,053, Cl. 209-636.000.
Sommer, Edward J., Jr.; Kenny, Garry R.; and Roos, Charles E., 4,533,054, Cl. 209-687.000.

Maher, Galeb H., to Sprague Electric Company. Low-firing high Q monolithic ceramic capacitor. 4,533,974, Cl. 361-320.000.

Maille , Jacques: *See—*
Bourdillot, Michel; Gauthier, Andre ; Maille , Jacques; and Pitault, Bernard, 4,532,699, Cl. 29-572.000.

Mailliet, Pierre; Andonov, Radomir; Stomp, Hubert; and Monai, Jean, to Paul Wurth S.A. Apparatus for guiding and changing immersion lances. 4,533,125, Cl. 266-226.000.

Maisel, Douglas A. Signaling system for FM transmission systems. 4,534,054, Cl. 381-4.000.

Maitland, Robert L. Combination carrier, chair, and lounge/table. 4,533,151, Cl. 280-47.250.

Makimaa, Tapani, to Kemppi Oy. Method for measuring the free wire length in MIG/MAG welding. 4,533,817, Cl. 219-137.710.

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Maldonado, Reynaldo L.; and Rosanoff, Kenneth A., to AMF Inc. Tissue culture medium. 4,533,634, Cl. 435-240.000.

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Mally, Timothy G.; Rattmann, James A.; and Borsuk, Alvin, to Oscar Mayer Foods Corp. Automatic sheet product line. 4,532,751, Cl. 53-396.000.

Malmquist, Jerome A.; and Reidt, Dean K., to Minnesota Mining and Manufacturing Company. Electrical connector locator plate. 4,533,129, Cl. 269-207.000.

Malone, Dennis M., to Combustion Engineering, Inc. Submerged scraper conveyor automatic speed control. 4,533,856, Cl. 318-6.000.

Malone, Harold H. General journal form. 4,533,160, Cl. 282-23.00R.

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Manghisi, Elso; and Cascio, Giuseppe, to Istituto Luso Farmaco D'Italia s.p.a. Process for the optical resolution of the dl-α-hydroxy-3-(4-methoxyphenyl)-3-(2-aminophenylthio)propionic acid. 4,533,748, Cl. 562-401.000.

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Dixon, John; and Manning, Peter, 4,533,336, Cl. 446-465.000.

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Richard, Jacques R., 4,533,038, Cl. 198-646.000.

Manzione, Louis T., to AT&T Bell Laboratories. Optimized reaction injection molding. 4,534,003, Cl. 364-476.000.

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Trias, John A.; and Marez, John, 4,533,215, Cl. 350-347.00E.

Marhold, Albrecht; and Klauke, Erich, to Bayer Aktiengesellschaft. Process for the preparation of aromatic trifluoromethyl compounds. 4,533,777, Cl. 570-144.000.

Marinelli, Nicola, to NCR Corporation. Carbonless paper coating formulation. 4,533,567, Cl. 427-150.000.

Mark, Harold W.: *See—*
Kimble, Kenneth B.; Bresson, Clarence R.; and Mark, Harold W., 4,533,467, Cl. 209-167.000.

Mark, Hermann, to Isovolta Osterreichische Isolierstoffwerke. Production of synthetic fibers. 4,533,511, Cl. 264-184.000.

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Nichols, James; and Markus, Franklyn M., 4,533,179, Cl. 297-440.000.

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Bannister, Brian C., 4,533,122, Cl. 256-69.000.

Marley Tile A.G.: *See—*
Cooper, Christopher A., 4,532,739, Cl. 52-57.000.

Marsicek, Zdenek; Janeba, Jaroslav; Pacha, Antonin; Pastrnak, Ales; Dykast, Jaroslav; and Prazak, Roman, to Vyzkumny Ustav Bavlnarsky. Method of and apparatus for the continuous monitoring and analysis of the operation of spinning units in an open-end spinning machine. 4,534,042, Cl. 377-16.000.

Martel, Rene , to American Home Products Corporation. Method of treating arthritis with etodolac. 4,533,551, Cl. 514-411.000.

Martens, George D.; Smith, Alexander B.; and Healy, Thomas D., to Automation Industries, Inc. Dual transducer connection by a single cable. 4,532,796, Cl. 73-632.000.

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Conway, Paul; Melody, David P.; Woods, John; Casey, J. Eisirt; Bolger, Bernard J.; and Martin, Francis R., 4,533,446, Cl. 204-159.240.

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Tobey, William H.; Thomas, Donald A.; and Gardner, William J., 4,532,674, Cl. 16-295.000.
Tutle, Edward G., 4,532,757, Cl. 56-328.00R.

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Betts, William L.; and Martinez, Kenneth, 4,534,036, Cl. 375-10.000.

Maru Kikai Kogyo Co., Ltd.: *See—*
Hongo, Toshio, 4,532,792, Cl. 72-319.000.

Maruyama, Hiromi; Sasaoka, Seiji; Kiuchi, Mitsuo; and Kanehara, Hironori, to Nippon Soda Co. Ltd. Feed additives for ruminants. 4,533,557, Cl. 426-61.000.

Marwitz, Heinrich: *See—*
Preiner, Gerhard; Huhn, Karl; Muller, Johann; Marwitz, Heinrich; and Ullrich, Kurt, 4,533,477, Cl. 252-8.900.

Massachusetts Institute of Technology: *See—*
Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., 4,533,443, Cl. 204-84.000.

Masters, Anthony F.; and Cavell, Kingsley J., to Commonwealth Scientific and Industrial Research Organization. Catalysts for olefin oligomerization and isomerization. 4,533,651, Cl. 502-117.000.

Masuhara, Hideki; Katada, Kunio; and Kudo, Uichi, to Hitachi, Ltd. Split structure type transformer. 4,533,892, Cl. 336-147.000.

Masunaga, Makoto; and Taka, Hideo, to Canon Kabushiki Kaisha. Distance measuring device and automatic focusing system using same. 4,533,241, Cl. 356-1.000.

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Kerr, James F., 4,533,037, Cl. 198-499.000.
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Mathews, Clive A.; and Gillies, George M., to British Nuclear Fuels Limited. Method of and apparatus for monitoring a rotary kiln assembly. 4,533,319, Cl. 432-3.000.

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Sato, Akihiro; Kikuta, Kazutsune; Uwai, Toshihiro; Matsuda, Kenji; and Hattori, Nobutaka, 4,533,705, Cl. 526-114.000.

Matsui, Hiroshi: *See—*
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Matsumoto, Ken; and Ward, John S., to Eli Lilly and Company. 6-Phenyl-2,3-bis-(4-methoxyphenyl)-pyridine derivatives having anti-inflammatory activity. 4,533,666, Cl. 514-277.000.

Matsumura, Hiroshi; Otani, Masato; and Murakami, Fumiki, to Mitsubishi Rayon Co. Ltd. Process for isolating methacrylic acid by extraction. 4,533,750, Cl. 562-600.000.

Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Kura, Kohei; Yagi, Masahiro; and Shirahase, Ichiro, to Nippon Shinyaku Co. Ltd. Antihyperglycemic moranoline derivatives. 4,533,668, Cl. 514-321.000.

Matsuno, Mitsuo; Kudoh, Michio; and Imai, Hiroshuke, to Nippon Oil Company, Ltd. Process for preparing 4-methyl-1-pentene. 4,533,781, Cl. 585-516.000.

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Nakamura, Yoichi; Watarai, Shumei; and Matsuo, Shohta, 4,533,602, Cl. 428-447.000.

Matsushita Electric Industrial Company, Limited: *See—*
Maehara, Naoyoshi; Hashido, Kenkichi; and Hirata, Hiroshi, 4,533,082, Cl. 239-102.000.
Ogura, Mototsugu; Ban, Yuzaburoh; and Hase, Nobuyasu, 4,533,410, Cl. 148-175.000.

Matsushita Electric Works, Ltd.: *See—*
Nakamura, Yoshimitsu, 4,533,848, Cl. 310-237.000.
Tomofuji, Yoshiaki; and Maeda, Takayoshi, 4,533,987, Cl. 363-36.000.

Matsuura, Akira: *See—*
Watai, Yuji; Yasui, Hirokazu; Hirayama, Yoshiyuki; and Matsuura, Akira, 4,533,234, Cl. 355-14.00D.

Matsuura, Tamizo: *See—*
Hanaoka, Yuzuru; Murayama, Takeshi; Muramoto, Setsuo; and Matsuura, Tamizo, 4,533,518, Cl. 422-70.000.

Matsuyama, Kazuo: *See—*
Komai, Takeshi; Matsuyama, Kazuo; and Saigo, Takuya, 4,533,699, Cl. 525-277.000.

Mattei, Frank V.; and Regula, Donald W., to Ethicon, Inc. Dry coating of surgical filaments. 4,532,929, Cl. 128-335.500.

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Wagner, Eugene R.; Barney, Charlotte L.; and Matthews, Donald P., 4,533,677, Cl. 514-638.000.

Mauderer, Ernst. Stamping and bending machine for manufacturing shaped parts. 4,532,794, Cl. 72-442.000.

Maul Technology Corporation: *See—*
Libert, Harold C., 4,533,377, Cl. 65-232.000.

Maurice, Thomas A. Double lock lock box. 4,532,783, Cl. 70-63.000.

Mauser-Werke Oberndorf GmbH: *See—*
Gleichaut, Winfried; Gunther, Oswin; Hoffmann, Dietrich; and Funke, Rolf, 4,532,868, Cl. 102-527.000.

Maxemchuk, Nicholas F.; and Netravali, Arun N., to AT&T Bell Laboratories. System and method for controlling a multiple access data communications system including both data packets and voice packets being communicated over a cable television system. 4,534,024, Cl. 370-85.000.

May, Jerome E.: *See—*
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May, Michael G. Thermal insulating mat. 4,533,583, Cl. 428-69.000.

Mayer, Wildman Industries, Inc.: *See—*
Tilson, Alan L.; Quay, Earl R.; and Knight, John C., 4,532,780, Cl. 66-9.00B.

Mayernick, Richard: *See—*
Teng, Yu-Ling; McCoy, Charles; DeFalco, Francis; and Mayernick, Richard, 4,533,606, Cl. 428-658.000.

Mazda Motor Corporation: *See—*
Otani, Toshiaki; Chihara, Takeshi; and Nishikori, Tsutomu, 4,533,027, Cl. 192-8.00C.
Yokooku, Katsuhiko; Kaneko, Tadashi; and Nakazumi, Tadataka, 4,532,905, Cl. 123-443.000.

McAlexander, Joseph C., III; White, Lionel S., Jr.; and Mohan Rao, G. R., to Texas Instruments Incorporated. High performance dynamic sense amplifier with voltage boost for row address lines. 4,533,843, Cl. 307-530.000.

McBride, Lyle E.: *See—*
Grenier, Aime J.; and McBride, Lyle E., 4,533,888, Cl. 335-131.000.

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Harder, John O.; McCandless, Doyle W.; and Peterson, Michael W., 4,532,689, Cl. 29-426.500.

McCann, William F.: *See—*
Corsover, William L.; Hoffman, Kenneth P.; McCann, William F.; and Wooden, Billy J., 4,533,278, Cl. 404-65.000.

McCanny, John V.; and McWhirter, John G., to National Research Development Corp. Multiple processing cell digital data processor. 4,533,993, Cl. 364-200.000.

McClinton, John L.; and Russell, Alexander H., to Burns & Russell Company, The. Method of preparing a patterned mold surface. 4,533,568, Cl. 427-135.000.

McClure, Carroll D.: *See—*
Wiggins, Ralphe; Kenny, George S.; and McClure, Carroll D., 4,534,019, Cl. 367-75.000.

McClure, David E., to Merck & Co., inc. Amino ketones and their preparation. 4,533,745, Cl. 560-28.000.

McCombs, Daniel G.: *See—*
Willer, David A.; Rosbak, John; and McCombs, Daniel G., 4,533,108, Cl. 248-467.000.

McCormack, Ray G., to United States of America, Army. Optical fire detection system responsive to spectral content and flicker frequency. 4,533,834, Cl. 250-554.000.

McCormick & Company, Incorporated: *See—*
Rowell, Lorne A., 4,533,559, Cl. 426-499.000.
McCoy, Charles: *See—*
Teng, Yu-Ling; McCoy, Charles; DeFalco, Francis; and Mayernick, Richard, 4,533,606, Cl. 428-658.000.
McDaniel, Francina E. Permanent wave or hair curling rod and associated hair curl display device. 4,533,328, Cl. 434-94.000.
McDavid, William D.: *See—*
Welander, Ulf E. S.; McDavid, William D.; and Morris, Charles R., 4,534,048, Cl. 378-39.000.
McDougall, Douglas J.: *See—*
Miller, Alexander; Sweetman, James E.; and McDougall, Douglas J., 4,532,743, Cl. 52-207.000.
McElroy, Arthur H., to McElroy Manufacturing, Inc. Pipe fusion apparatus with load cell for attaching side wall fittings. 4,533,424, Cl. 156-378.000.
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McElroy, Arthur H., 4,533,424, Cl. 156-378.000.
McFarlane, Arthur M. G. Tiltable edger saw mechanism. 4,532,842, Cl. 83-404.100.
McGahan, Wallace A.: *See—*
Hartshorn, Kevin; and McGahan, Wallace A., 4,532,959, Cl. 137-516.130.
McGee, Kevin J., to United States of America, Navy. Pipelined FFT processor. 4,534,009, Cl. 364-726.000.
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Luhn, Dennis A.; and Schultz, Mark H., 4,533,863, Cl. 322-28.000.
Yatchum, Joseph W.; and Giegel, David F., 4,533,798, Cl. 200-11.00R.
McGuffie, Michael J., to Torrington Company, The. Radial bearing and bi-directional thrust bearing arrangement. 4,533,263, Cl. 384-454.000.
McKenzie, Ian D., to Imperial Chemical Industries, PLC. Supported transition metal composition. 4,533,707, Cl. 526-125.000.
McKinnie, Bonnie G.; and Ranken, Paul F., to Ethyl Corporation. (Hydrocarbylthio)phenols and their preparation. 4,533,753, Cl. 568-47.000.
McLauchlan, John M.; AuYeung, John; Tubbs, Eldred F.; Goss, Willis C.; and Psaltis, Demetri, to United States of America, National Aeronautics and Space Administration. Ranging system which compares an object-reflected component of a light beam to a reference component of the light beam. 4,533,242, Cl. 356-5.000.
McLaughlin, James L.; Custer, Donald J.; and Donze, Richard J., to Morgan Construction Company. Arrangement and operation thereof for threading a rotatable assembly. 4,532,791, Cl. 72-275.000.
McNamara, Robert P.; Ennis, Gregory B.; Feiertag, Richard J.; and Bauer, Robert K., to General Instrument Corporation. CATV Communication system. 4,533,948, Cl. 358-122.000.
McWhirter, John G.: *See—*
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Mead Corporation, The: *See—*
Arney, Jonathan S.; and Wright, Richard F., 4,533,615, Cl. 430-138.000.
Calvert, Rodney K., 4,533,047, Cl. 206-434.000.
Tsao, Sherman H.; and Zeiler, Kenneth T., 4,533,925, Cl. 346-75.000.
Mead, Justin E.: *See—*
Andrews, Lawrence P.; Heath, Chester A.; Mead, Justin E.; VanDuren, Richard G.; and Janes, Gary A., 4,534,011, Cl. 364-900.000.
MecanARBED-Dommeldange S.a.r.l.: *See—*
Mercatoris, Robert, 4,533,124, Cl. 266-225.000.
Mechanical Technology Incorporated: *See—*
Corey, John A., 4,532,765, Cl. 60-517.000.
Medeiros, David J.; and Burnett, Mark B., to Atlantic Richfield Company. Furfural process. 4,533,743, Cl. 549-489.000.
Medical Engineering Corporation: *See—*
Bark, Jeffrey E., 4,533,349, Cl. 604-174.000.
Finney, Roy P., 4,532,920, Cl. 128-79.000.
Medlin, Lewis B. Mounting bracket for electrical outlet boxes. 4,533,060, Cl. 220-3.900.
Meier, Jacques, to Ferag AG. Winding body for winding-up continuously arriving flat structures, especially printed products in an imbricated product formation. 4,532,750, Cl. 53-118.000.
Meierhoefer, Eugene J., to Health Care Concepts, Inc. Sterile solution delivery and venting devices. 4,533,068, Cl. 222-189.000.
Meijer, Auke: *See—*
van den Elzen, Lambertus W. A.; van der Wouden, Adriaan; and Meijer, Auke, 4,533,279, Cl. 405-239.000.
Meijer, Roelf J.; Ziph, Benjamine; and Godett, Ted M., to Stirling Thermal Motors, Inc. Two-part drive shaft for thermal engine. 4,532,855, Cl. 92-71.000.
Meinken, George E.: *See—*
Srivastava, Suresh C.; Meinken, George E.; and Richards, Powell, 4,533,541, Cl. 424-1.100.
Meissner, Konrad E., to Atlas Pacific Engineering Company. High speed vacuum syruper. 4,532,971, Cl. 141-142.000.
Melancon, Kurt C., to Minnesota Mining and Manufacturing Company. Latently-curable organosilicone release coating composition. 4,533,575, Cl. 427-387.000.
Meldon, Jerry H. Apparatus for and method of isoelectric focussing. 4,533,447, Cl. 204-181.400.
Melody, David P.: *See—*
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Melton, Horace E.: *See—*
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Melton, Keith N., to Raychem Corporation. Method of processing nickel-titanium-base shape-memory alloys and structure. 4,533,411, Cl. 148-402.000.
Memminger GmbH: *See—*
Buck, Alfred, 4,532,781, Cl. 66-104.000.
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Monett, Michael R., 4,533,881, Cl. 331-36.00C.
Mencke, Arlene J., to Minnesota Mining and Manufacturing Company. Contact lens cleaning method. 4,533,399, Cl. 134-6.000.
Mensing, Harold F. Rotary lawn mower blade. 4,532,708, Cl. 30-347.000.
Mercatoris, Robert, to MecanARBED-Dommeldange S.a.r.l. Device for delivering gaseous and solid materials to a metal pool during a refining process. 4,533,124, Cl. 266-225.000.
Merck & Co., Inc.: *See—*
Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., 4,533,671, Cl. 514-413.000.
McClure, David E., 4,533,745, Cl. 560-28.000.
Merijanian, Aspet V., to Uniroyal, Inc. Method and catalyst for polymerizing a cationic polymerizable monomer. 4,533,782, Cl. 585-520.000.
Merkel, Eugene C., to Bolens Corporation. Grass catching receptacle for both dumping and bagging. 4,532,756, Cl. 56-202.000.
Merrell Dow Pharmaceuticals Inc.: *See—*
Wagner, Eugene R.; Barney, Charlotte L.; and Matthews, Donald P., 4,533,677, Cl. 514-638.000.
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Mertens, Josephus C.: *See—*
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von der Bey, Thomas; Jankowski, Detlef; Schmidt, Hartmut; Thoma, Klemens; and Volker, Wolfgang, 4,532,779, Cl. 62-514.00R.
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Meyer, Boris: *See—*
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Mezger, Hans, to Harley-Davidson Motor Co., Inc. Internal combustion engine for vehicles in particular, for motorcycles. 4,532,897, Cl. 123-196.00R.
Miceli, William J.; and Ludman, Jacques E., to United States of America, Air Force. Optical electromagnetic radiation detector. 4,533,829, Cl. 250-227.000.
Michaelson, Robert C.; and Austin, Richard G., to Exxon Research & Engineering Co. Process for directly hydroxylating olefins using an osmium-halide catalyst and oxygen oxidant. 4,533,772, Cl. 568-860.000.
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Microwave Ovens Limited: *See—*
Eke, Kenneth I., 4,533,809, Cl. 219-10.55M.
Midori Anzen Industry Co., Ltd.: *See—*
Okoshi, Koichi; and Uematsu, Ryuichi, 4,532,724, Cl. 36-7.10R.
Mier, Marjory A., to Mobil Oil Corporation. Container having heat sealed juncture region. 4,533,577, Cl. 428-35.000.
Mihara, Yuji, to Tokyo Shibaura Denki Kabushiki Kaisha. Flow quantity measuring apparatus. 4,534,046, Cl. 377-21.000.
Miksza, Anthony, Jr., to Ethicon, Inc. Two-piece tissue fastener with non-reentry bent leg staple and retaining receiver. 4,532,927, Cl. 128-334.00C.

Milcamps, Jacques, to C.G.R. - Mev. Block for partially limiting a radiation beam, and a collimator comprising such blocks. 4,534,052, Cl. 378-152.000.

Miles Laboratories, Inc.: *See—*
Benovic, Jeffrey L.; Buckler, Robert T.; Burd, John F.; and Li, Thomas M., 4,533,493, Cl. 260-112.00B.

Milkowski, Wolfgang: *See—*
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Miller, David L., to Cuderm Corporation. Sebum collection and monitoring means and method. 4,532,937, Cl. 128-759.000.

Miller, Ira; and Davies, Robert B., to Motorola, Inc. Peak storage amplifier. 4,533,844, Cl. 307-530.000.

Miller, Mark C., to Perkin-Elmer Corporation, The. Sample vessel. 4,532,816, Cl. 73-864.910.

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Smith, David B.; Miller, Randolph F.; and Moore, John M., 4,533,136, Cl. 272-73.000.

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Copeland, John A.; and Miller, Stewart E., 4,533,833, Cl. 250-551.000.

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Miller, Theodore E., Jr.: *See—*
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Milligan, Barton; and DeLaMater, George B., to Air Products and Chemicals, Inc. Hydroxy aromatic compounds from alkali metal hydroxide and mononuclear aromatic compound. 4,533,763, Cl. 568-716.000.

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Milliken Research Corporation: *See—*
Johnson, Harold L., 4,532,760, Cl. 57-283.000.
Love, Franklin S., III, 4,533,245, Cl. 356-238.000.

Mills, David; Lindahl, Anthony T.; and Kington, Alan D., to Rolls-Royce Limited. Component casting. 4,532,974, Cl. 164-132.000.

Mills, Perry A., to Cardiac Pacemakers, Inc. Pacemaker with adaptive sensing means for use with unipolar or bipolar leads. 4,532,931, Cl. 128-419.0PG.

Milovidov, Boris A. Method of determining the content of combustibles in the end products of fuel combustion and apparatus realizing said method. 4,533,258, Cl. 374-36.000.

Milsco Manufacturing Company: *See—*
Hill, Kevin E., 4,533,110, Cl. 248-573.000.

Mims, Donald S.; and Widmyer, Richard H., to Texaco Inc. Bitumen production and substrate stimulation with flow diverter means. 4,532,986, Cl. 166-50.000.

Minamida, Ataru, to Asahi Kogyo Kabushiki Kaisha. Cooking utensil for induction cooking apparatus. 4,533,807, Cl. 219-10.49R.

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Minamide, Hiroshi; Shintani, Takashi; and Murayama, Hiroshi, to Toyo Soda Manufacturing Co., Ltd. Method for inhibiting corrosion of metal. 4,533,525, Cl. 428-469.000.

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Yamane, Isao; Kan, Mikio; and Minamoto, Yoshiki, 4,533,637, Cl. 435-240.000.

Mine Safety Appliances Company: *See—*
Bossart, Clayton J.; and Fatur, Thomas C., 4,533,520, Cl. 422-96.000.

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Bichara, Michel; Wendling, Emile; and Bodu, Michel, 4,533,536, Cl. 423-551.000.

Mineyama, Takitsugu: *See—*
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Miniet, Jay J., to Motorola, Inc. Header and housing assembly for electronic circuit modules. 4,533,188, Cl. 339-17.0CF.

Minister of National Defence: *See—*
Cornish, William D.; and Hewitt, Lawrence B., 4,533,886, Cl. 333-218.000.

Minnesota Mining and Manufacturing Company: *See—*
Bingham, Wallace K., 4,533,592, Cl. 428-213.000.
Evans, Jack L.; Campbell, Karen J.; Kreil, Curtis L.; and Sidney, LuAnn, 4,533,566, Cl. 427-44.000.
Fedde, Mickiel P., 4,533,956, Cl. 358-260.000.
Kelley, Lewis J., 4,533,192, Cl. 339-45.00M.
Malmquist, Jerome A.; and Reidt, Dean K., 4,533,129, Cl. 269-207.000.
Melancon, Kurt C., 4,533,575, Cl. 427-387.000.
Mencke, Arlene J., 4,533,399, Cl. 134-6.000.
Moynagh, Eugene E., Jr.; and Jansky, Donald J., 4,533,204, Cl. 339-221.00R.
Olyphant, Murray, Jr., 4,533,784, Cl. 174-36.000.

Minucciani, Giorgio; and Sola, Domenico, to D.E.A. Digital Electronic Automation S.p.A. Operating arm unit controlled by a computer system. 4,534,006, Cl. 364-513.000.

Miranti, Joseph P., Jr.; Oliver, Larry R.; and Johnson, Clyde O., to Dayco Corporation. Belt construction for a continuously variable transmission, transverse belt element therefor and methods of making the same. 4,533,342, Cl. 474-201.000.

Mita Industrial Co., Ltd.: *See—*
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, 4,533,233, Cl. 355-8.000.
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Mitchell, Robert R., to United States of America, Army. Dual field-of-view optical target detector. 4,532,867, Cl. 102-213.000.

Mitkov, Atanas L.; Georgiev, Ivan N.; Radulov, Peter T.; Hung, Le K.; and Atanassov, Atanas K., to V T U "Angel Kanchev". Corn sheller. 4,532,940, Cl. 130-6.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Miura, Koryo, 4,532,742, Cl. 52-108.000.
Sugihara, Masahiro; Morishita, Etsuo; Hirai, Tetsuo; and Sekiya, Shin, 4,533,292, Cl. 415-2.00R.

Mitsubishi Gas Chemical Company, Inc.: *See—*
Gaku, Morio; Kimbara, Hidenori; Ayano, Satoshi; and Yoshimura, Susumu, 4,533,727, Cl. 528-361.000.
Nakamura, Hiromi, 4,532,982, Cl. 165-1.000.

Mitsubishi Jokogyo Kabushiki Kaisha: *See—*
Shinoda, Naoharu; Tatani, Atsushi; Ukawa, Naohiko; and Okino, Susumu, 4,533,531, Cl. 423-242.000.

Mitsubishi Paper Mills, Ltd.: *See—*
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Mitsubishi Rayon Co. Ltd.: *See—*
Matsumura, Hiroshi; Otani, Masato; and Murakami, Fumiki, 4,533,750, Cl. 562-600.000.
Tayama, Suehiro; and Kusakawa, Norihisa, 4,533,689, Cl. 524-130.000.

Mitsui Petrochemical Industries Ltd.: *See—*
Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, 4,533,700, Cl. 525-285.000.

Mitsui, Toshihisa: *See—*
Kuroki, Hironori; Honda, Tsuguo; and Mitsui, Toshihisa, 4,532,978, Cl. 164-448.000.

Mitutoyo Mfg. Co., Ltd.: *See—*
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Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, to Toyota Jidosha Kabushiki Kaisha. Device and method for making and collecting fine metallic powder. 4,533,382, Cl. 75-0.50C.

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Miyachi, Chihiro, to Howa Kogyo Kabushiki Kaisha. Chuck jaw changer for a machine tool. 4,532,692, Cl. 29-568.000.

Miyahana, Kazuo: *See—*
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Miyake, Makoto: *See—*
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Miyake, Yasuo: *See—*
Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, 4,532,881, Cl. 118-20.000.

Miyama, Hidetoshi, to Amada Company, Limited. Punch press. 4,532,843, Cl. 83-409.000.

Miyasako, Hideichi: *See—*
Kawamata, Masanobu; Ushimaru, Koichi; Goshi, Hiroyuki; and Miyasako, Hideichi, 4,533,552, Cl. 424-78.000.

Miyashita, Takao; and Sato, Toshio, to Sony Corporation. Tape cassette anti-static member. 4,533,969, Cl. 360-132.000.

Miyashita, Teruo: *See—*
Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,533,444, Cl. 204-129.430.

Miyata, Takeo; Ono, Takuhiro; and Iwabuchi, Takashi, to Agency of Industrial Science and Technology. Antireflection coating for potassium chloride. 4,533,593, Cl. 428-215.000.

Miyata, Toshihiko; and Shibata, Takashi, to Sony Corporation. Frequency response display for use with a graphic equalizer. 4,534,057, Cl. 381-58.000.

Miyawaki, Yoshiharu; Hirose, Takeshi; Hamada, Yoneichi; Mizuoka, Seishi; and Tsuru, Masahiro. Method and apparatus for removing fine cold shut cracks on horizontally and continuously cast steel strand using ejection of a plurality of metal shots. 4,532,980, Cl. 164-475.000.

Miyazaki, Seikichi, to Fuji Xerox Co., Ltd. Exposure detecting device for copying machine. 4,533,238, Cl. 355-68.000.

Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, to Mitsui Petrochemical Industries Ltd. Hydrocarbon resin and modified hydrocarbon resin product thereof. 4,533,700, Cl. 525-285.000.

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Mizuoka, Seishi: *See—*
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Chew, Ju-Nam; and Savins, Joseph G., 4,533,084, Cl. 241-1.000.
Gust, Lawrence J.; O'Sullivan, Eileen F.; and Wood, Ronald C., Jr., 4,533,509, Cl. 264-171.000.
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Mier, Marjory A., 4,533,577, Cl. 428-35.000.
Wiggins, Ralphe; Kenny, George S.; and McClure, Carroll D., 4,534,019, Cl. 367-75.000.
Yan, Tsoung Y.; and Whitehurst, Darrell D., 4,533,463, Cl. 208-127.000.
Mochizuki, Toru, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor device and a method for manufacturing the same. 4,533,935, Cl. 357-51.000.
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Momose, Yutaka; Yamaguchi, Kazuaki; Okamoto, Masayoshi; Hoshino, Ryoichi; and Tanaka, Hiroki, to Showa Aluminum Corporation; and Aisin Seiki Co., Ltd. Cooler made of aluminum for stirling engines. 4,532,771, Cl. 62-6.000.
Momose, Yutaka: *See—*
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Monett, Michael R., to Memory Technology, Inc. Rapid starting variable frequency oscillator with minimum startup perturbations. 4,533,881, Cl. 331-36.00C.
Money, David K.: *See—*
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Daly, Christopher N.; and Money, David K., 4,533,988, Cl. 363-127.000.
Monfort, Michael R.: *See—*
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Mongia, Hukam C.; Coleman, Edwin B.; and Bruce, Thomas W., to Garrett Corporation, The. Gas turbine engine variable geometry combustor apparatus. 4,532,762, Cl. 60-39.230.
Monolithic Memories, Inc.: *See—*
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Monsanto Company: *See—*
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Moodie, Eldon E.; and Burns, Richard D., to General Electric Company. Connection insulators. 4,533,587, Cl. 428-166.000.
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, to International Flavors & Fragrances, Inc. Organoleptic use of methyl substituted pinyl oxopentenes. 4,533,491, Cl. 252-522.00R.
Moore, Alan F., to Dunlop Limited. Flexible joint means. 4,533,274, Cl. 403-31.000.
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Moormann, Alan E.: *See—*
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Morgan, Barry A., to Sterling Drug Inc. Analgesic dipeptide amides and method of use and composition thereof. 4,533,657, Cl. 514-19.000.
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Moriuchi, Shigenori: *See—*
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Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., to Nabisco Brands, Inc. Soft homogeneous antacid tablet. 4,533,543, Cl. 424-38.000.
Morz, Gunter; and Speldrich, Werner, to ANT Nachrichtentechnik GmbH. Rotary waveguide coupling having arcuate shaped deflecting elements with 2-D blocking structures. 4,533,887, Cl. 333-256.000.
Mosher, Oren A.; Mosher, Oren G.; and Douglas, Ellwood S., to Eagle Machinery Company. Combination weighing system with span adjustment device. 4,533,007, Cl. 177-50.000.
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Krumin, Donald K.; and Larson, Orville W., 4,534,063, Cl. 455-344.000.
Miller, Ira; and Davies, Robert B., 4,533,844, Cl. 307-530.000.
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Segerson, Eugene E.; and Thomas, Floyd L., 4,533,209, Cl. 350-96.200.
Moulthrop, Lawrence C.: *See—*
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Moustakas, Theodore D., to Exxon Research and Engineering Co. Control of the hydrogen bonding in reactively sputtered amorphous silicon. 4,533,450, Cl. 204-192.00S.
Moynagh, Eugene E., Jr.; and Jansky, Donald J., to Minnesota Mining and Manufacturing Company. Resilient circuit board contact. 4,533,204, Cl. 339-221.00R.
Mueller, Dale E.; and Snider, Joel M., to Whirlpool Corporation. Three piece snubber for automatic washer. 4,533,126, Cl. 267-141.000.
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Muller, Alf; Schobbe, Hermann; Loper, Bernd; and Binnewies, Hartmut, to Daimler-Benz Aktiengesellschaft. Disc wheel with ventillation passages. 4,533,184, Cl. 301-63.00R.
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Multifastener Corporation: *See*—
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Murase, Daihachiro. Combustion means for solid fuel of low ash content. 4,532,913, Cl. 126-58.000.
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Muschelknautz, Edgar; Rink, Norbert; and Chalupka, George, to Bayer Aktiengesellschaft. Nozzle drawing process and drawing nozzle for the separation of melts. 4,533,376, Cl. 65-5.000.
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Myers, Ronald E., to B. F. Goodrich Company, The. Polymeric hydrophile from carboxy terminated liquid polymer, diamine and phosphazene. 4,533,726, Cl. 528-336.000.
Nabisco Brands, Inc.: *See*—
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Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,533,543, Cl. 424-38.000.
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Nagano, Masashi, to Shimano Industrial Company Limited. Control device for a two stage derailleur. 4,532,825, Cl. 74-532.000.
Nagano, Tamio, to Kabushiki Kaisha Daikin Seisakusho. Clutch disk having alternatingly connected subplates between friction washers. 4,533,031, Cl. 192-106.200.
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Nagata, Osamu; Inagaki, Masanari; and Yamada, Hajime, to Kawasaki Jukogyo Kabushiki Kaisha. Maneuvering system of watercraft and the like. 4,532,877, Cl. 114-144.00E.
Nagata, Wataru: *See*—
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Nakahara, Kichio; Matsui, Hiroshi; and Yoshiyama, Harumichi, to NGK Spark Plug Co., Ltd. Two-cycle engine. 4,532,896, Cl. 123-193.00H.
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Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Tadanobu; and Aizawa, Tatsuo, 4,533,618, Cl. 430-126.000.
Nakamura, Hiromi, to Mitsubishi Gas Chemical Company, Inc. Heat exchanging system for a heat engine. 4,532,982, Cl. 165-1.000.
Nakamura, Katsutoshi, to Kabushiki Kaisha SUIDEN. Vacuum cleaner. 4,533,371, Cl. 55-299.000.
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Nakamura, Sukenori: *See*—
Ikeda, Kensuke; and Nakamura, Sukenori, 4,533,929, Cl. 346-209.000.
Nakamura, Taku: *See*—
Urata, Yukihide; Moriuchi, Shigenori; Nakamura, Taku; and Ogawa, Masashi, 4,533,623, Cl. 430-309.000.
Nakamura, Tsutomu: *See*—
Itoh, Kunio; Oshima, Toshimichi; and Nakamura, Tsutomu, 4,533,687, Cl. 524-80.000.
Nakamura, Yoichi; Watarai, Shumei; and Matsuo, Shohta, to Ube Industries, Ltd. Modified polyolefin composition useful for bonding materials. 4,533,602, Cl. 428-447.000.
Nakamura, Yoshimitsu, to Matsushita Electric Works, Ltd. Rotor of coreless motor. 4,533,848, Cl. 310-237.000.
Nakane, Hisanori: *See*—
Ikegami, Yoshihiko; Kurihara, Kozo; Ichikawa, Izuo; and Nakane, Hisanori, 4,533,562, Cl. 427-3.000.
Nakane, Masami, to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted enaminone prostaglandin analogs and their use in treatment of thrombolytic disease. 4,533,673, Cl. 514-469.000.
Nakanishi Dental Mfg., Co., Ltd.: *See*—
Nakanishi, Takasuke, 4,533,324, Cl. 433-132.000.
Nakanishi, Takasuke, to Nakanishi Dental Mfg., Co., Ltd. Air driven dental handpiece. 4,533,324, Cl. 433-132.000.
Nakano, Kenji; Takahashi, Takao; Moriwaki, Hisayoshi; and Shimada, Keiichiro, to Sony Corporation. Video tape recorder for re-recording audio signals. 4,533,963, Cl. 360-19.100.
Nakashima, Kazumi: *See*—
Hayakawa, Kizo; Mori, Nobuyuki; Watanabe, Yoshio; and Nakashima, Kazumi, 4,532,898, Cl. 123-276.000.
Nakazato, Kunio; and Ozawa, Kazuya, to Sony Corporation. Zoom lens operating mechanisms. 4,533,218, Cl. 350-430.000.
Nakazumi, Tadataka: *See*—
Yokooku, Katsuhiko; Kaneko, Tadashi; and Nakazumi, Tadataka, 4,532,905, Cl. 123-443.000.
Nambudiri, Easwaran C. N.: *See*—
Eckert, Alton B.; and Nambudiri, Easwaran C. N., 4,534,018, Cl. 365-228.000.
Napolitano, Pellegrino E., to Hudson Engineering Company. Check valve having replaceable valve assembly. 4,532,958, Cl. 137-454.200.
Naslund, Erik I.: *See*—
Reed, Steven P.; and Naslund, Erik I., 4,533,427, Cl. 156-500.000.
National Distillers and Chemical Corporation: *See*—
Harris, Eugene G., 4,533,759, Cl. 568-648.000.
National Research Development Corporation: *See*—
Field, Richard E., 4,532,660, Cl. 623-18.000.
McCanny, John V.; and McWhirter, John G., 4,533,993, Cl. 364-200.000.
National Rivet & Manufacturing Company: *See*—
Hallock, Donald W.; Hartmann, Thomas M.; and Engebretson, Marvin, 4,533,075, Cl. 227-55.000.
National Semiconductor Corporation: *See*—
Balakrishnan, Ramanatha V., 4,533,839, Cl. 307-270.000.
Natoli, Giuseppe: *See*—
Cargnino, Francesco; Natoli, Giuseppe; and Lorke, Horst, 4,533,479, Cl. 252-34.000.
Natsume, Toshio: *See*—
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,382, Cl. 75-0.50C.
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NCR Corporation: *See*—
Bangs, Richard G., 4,533,569, Cl. 427-154.000.
Besselman, Thomas P., 4,533,596, Cl. 428-341.000.
Marinelli, Nicola, 4,533,567, Cl. 427-150.000.
NEC Corporation: *See*—
Iinuma, Kazumoto, 4,533,957, Cl. 358-261.000.

Nederlandse Centrale Organisatie Voor Toegepast: *See—*
Van Gasselt, Max L. G.; and Rappoldt, Louis M., 4,532,871, Cl. 110-216.000.

Neelameggham, Ramaswami; and Priscu, John C., to AMAX Inc. Lithium metal/alloy recovery from multi-component molten salt. 4,533,442, Cl. 204-68.000.

Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., to AMAX Inc. Process for producing varnish-bonded carbon-coated metal granules. 4,533,572, Cl. 427-216.000.

Nelson, Lorne W., to Honeywell Inc. Integrated control system for induced draft combustion. 4,533,315, Cl. 431-20.000.

Nelzow, Hartmann: *See—*
Deininger, Anton; Nelzow, Hartmann; and Farber, Karlheinz, 4,533,070, Cl. 222-439.000.

Nesbit, Larry A.: *See—*
Kinney, Wayne I.; Lasky, Jerome B.; and Nesbit, Larry A., 4,532,700, Cl. 29-576.00W.

Netravali, Arun N.: *See—*
Maxemchuk, Nicholas F.; and Netravali, Arun N., 4,534,024, Cl. 370-85.000.

Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, to Bakish Materials Corp. Electron-beam coating of very broad strips. 4,532,888, Cl. 118-718.000.

Neumann, Peter: *See—*
Eilingsfeld, Heinz; Etzbach, Karl-Heinz; Hoffmann, Gerhard; and Neumann, Peter, 4,533,612, Cl. 430-59.000.

Neuschaeffer, Karl H.; Spielau, Paul; Zoche, Gunter; and Engels, Hans-Werner, to Dynamit Nobel Aktiengesellschaft. Aqueous curable molding compositions based on inorganic ingredients and process for the production of molded parts. 4,533,393, Cl. 106-18.120.

Neuzil, Richard W.; and Fergin, Richard L., to UOP Inc. Extraction of sucrose. 4,533,398, Cl. 127-55.000.

New York University: *See—*
Maas, Renata, 4,533,628, Cl. 435-6.000.

Newland, Gordon C.; and Darnell, William R., to Eastman Kodak Company. Process for the preparation of polycarbonate polyols. 4,533,729, Cl. 528-371.000.

Newman, John E., to Phillips Petroleum Company. An induction yarn heater device. 4,533,808, Cl. 219-10.49A.

News Log International: *See—*
Jewer, Alan A., 4,534,031, Cl. 371-38.000.

Newsome, George W.: *See—*
Giacometti, Alberto M.; and Newsome, George W., 4,534,064, Cl. 455-601.000.

Newsome, Reginald W.: *See—*
Nichols, Walter A.; and Newsome, Reginald W., 4,532,943, Cl. 131-336.000.

NGK Insulators, Ltd.: *See—*
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NGK Spark Plug Co., Ltd.: *See—*
Nakahara, Kichio; Matsui, Hiroshi; and Yoshiyama, Harumichi, 4,532,896, Cl. 123-193.00H.

NHK Spring Co., Ltd.: *See—*
Ohno, Akira; Koyama, Hiroshi; Inoue, Kanji; and Ozawa, Hiroaki, 4,533,402, Cl. 148-12.400.

Nicholls, Douglas C., to Morris Rod Weeder Co. Ltd. Spring-loaded ground engaging tool. 4,532,790, Cl. 172-266.000.

Nichols, James; and Markus, Franklyn M., to Markus, Franklyn M. Portable seating assembly. 4,533,179, Cl. 297-440.000.

Nichols, Walter A.; and Newsome, Reginald W., to Philip Morris Incorporated. Adjustable filter cigarette. 4,532,943, Cl. 131-336.000.

Nieder, John J.: *See—*
Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., 4,532,815, Cl. 73-864.630.

Niedrig, Franklin: *See—*
Kuhnert, Volker; and Niedrig, Franklin, 4,533,046, Cl. 206-389.000.

Nihon Almit Kabushiki Kaisha: *See—*
Hasegawa, Masayuki, 4,533,404, Cl. 148-23.000.

Nihon Seikan Kabushiki Kaisha: *See—*
Kawamata, Kiyoshi; and Kawamata, Seizi, 4,533,064, Cl. 220-273.000.

Nippon Electric Co., Ltd.: *See—*
Fujita, Toshio, 4,533,838, Cl. 307-270.000.
Iinuma, Kazumoto, 4,534,055, Cl. 381-34.000.
Saito, Shojiro; and Azumaya, Noriyoshi, 4,533,266, Cl. 400-208.000.

Nippon Light Metal Company Ltd.: *See—*
Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,533,444, Cl. 204-129.430.

Nippon Oil Company, Ltd.: *See—*
Matsuno, Mitsuo; Kudoh, Michio; and Imai, Hiroshuke, 4,533,781, Cl. 585-516.000.
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Katoh, Osamu, 4,533,535, Cl. 423-447.400.

Nippon Oil & Fats Co., Ltd.: *See—*
Komai, Takeshi; Matsuyama, Kazuo; and Saigo, Takuya, 4,533,699, Cl. 525-277.000.

Nippon Paint Co., Ltd.: *See—*
Murakami, Ryoichi; Uyeda, Yoshiyuki; Nishijima, Kanji; and Yanagihara, Tetsuo, 4,533,683, Cl. 523-414.000.

Nippon Pet Food Company, Ltd.: *See—*
Ohki, Tomio; and Yoshioka, Toshio, 4,532,890, Cl. 119-1.000.

Nippon Seiko Kabushiki Kaisha: *See—*
Ueda, Takeo, 4,533,158, Cl. 280-804.000.

Nippon Shinyaku Co., Ltd.: *See—*
Kawamata, Masanobu; Ushimaru, Koichi; Goshi, Hiroyuki; and Miyasako, Hideichi, 4,533,552, Cl. 424-78.000.
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Kura, Kohei; Yagi, Masahiro; and Shirahase, Ichiro, 4,533,668, Cl. 514-321.000.

Nippon Soda Co. Ltd.: *See—*
Maruyama, Hiromi; Sasaoka, Seiji; Kiuchi, Mitsuo; and Kanehara, Hironori, 4,533,557, Cl. 426-61.000.

Nippon Soken, Inc.: *See—*
Idogaki, Takaharu; Hayashi, Ikuo; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,533,847, Cl. 310-181.000.
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.

Nishida, Kenji, to Kabushiki Kaisha Komatsu Seisakusho. Turnover device. 4,533,291, Cl. 414-728.000.

Nishiguchi, Ikuzo: *See—*
Inoue, Hiroshige; Fukushima, Kenichi; and Nishiguchi, Ikuzo, 4,533,732, Cl. 544-172.000.

Nishihama, Hitoshi; Gotoda, Katsuhiko; Motomura, Minoru; Nakajima, Tadanobu; and Aizawa, Tatsuo, to Mita Industrial Company, Ltd. Method for transferring toner image. 4,533,618, Cl. 430-126.000.

Nishijima, Kanji: *See—*
Murakami, Ryoichi; Uyeda, Yoshiyuki; Nishijima, Kanji; and Yanagihara, Tetsuo, 4,533,683, Cl. 523-414.000.

Nishikawa, Masaji, to Olympus Optical Company Ltd. Optical image projector for projecting an erect positive image of unity magnification and for minimizing degradation in resolution. 4,533,228, Cl. 355-1.000.

Nishikawa, Satoshi: *See—*
Kakinuma, Hiroaki; Yoshida, Mamoru; and Nishikawa, Satoshi, 4,533,564, Cl. 427-39.000.

Nishikawa, Yasuhisa: *See—*
Tanaka, Yoshio; Nishikawa, Yasuhisa; Hasumi, Ryoichi; and Koizumi, Takashi, 4,532,818, Cl. 74-10.330.

Nishikori, Tsutomu: *See—*
Otani, Toshiaki; Chihara, Takeshi; and Nishikori, Tsutomu, 4,533,027, Cl. 192-8.00C.

Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Morishita, Masakazu, to Handotal Kenkyu Shinkokai. Three terminal semiconductor laser. 4,534,033, Cl. 372-50.000.

Nissan Motor Co., Ltd.: *See—*
Abo, Keiju; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Kumura, Haruyoshi; and Hirano, Hiroyuki, 4,533,340, Cl. 474-28.000.
Endo, Toshio, 4,532,671, Cl. 16-7.000.
Sugano, Kazuhiko, 4,532,829, Cl. 74-869.000.
Yokota, Akira, 4,533,341, Cl. 474-109.000.

Nissel, Frank R. Method and apparatus for continuously co-extruding a sheet. 4,533,510, Cl. 264-171.000.

Nitta Gelatin Co., Ltd.: *See—*
Yoden, Yoshimasa; Okuda, Tsuneo; Fuchigami, Eiji; and Kuwabara, Toshihiro, 4,533,358, Cl. 8-94.200.

NL Industries, Inc.: *See—*
Birchak, James R., 4,532,812, Cl. 73-861.270.

Noda, Fumiyoshi: *See—*
Hashimoto, Kametaro; Ushitani, Kenji; Noda, Fumiyoshi; Sugiyama, Masahiko; and Murachi, Mikio, 4,533,579, Cl. 428-36.000.

Nolan, Kenneth P.: *See—*
Hartung, Michael H.; and Nolan, Kenneth P., 4,533,996, Cl. 364-200.000.

Nolta, Arthur H.: *See—*
Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., 4,533,995, Cl. 364-200.000.

Nomoto, Takashi: *See—*
Maeda, Tetsuro; Okamoto, Akihiro; Shimizu, Yoshimitsu; and Nomoto, Takashi, 4,533,698, Cl. 525-73.000.

Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel L., to GK Technologies, Incorporated. Remotely controlled crossconnection system. 4,533,914, Cl. 340-825.790.

Norman, Hans, to AB Asea-Atom. Enclosing means for housing a nuclear reactor core. 4,533,513, Cl. 376-260.000.

Norman, James W., III, to Digital Services Corporation. Digital video special effects system. 4,533,952, Cl. 358-160.000.

North American Philips Corporation: *See—*
Bill, Jacob C., 4,533,975, Cl. 361-323.000.

Northern Telecom Limited: *See—*
Austin, Hollis B., 4,533,864, Cl. 324-51.000.
Belopolsky, Yakov, 4,533,896, Cl. 337-232.000.
Munter, Ernst A., 4,534,041, Cl. 375-94.000.
Read, Clifford D.; Sawyer, William D.; and Chadwick, Donald T., 4,533,791, Cl. 179-2.00R.

Northrop Corporation: *See—*
Long, William H., 4,534,035, Cl. 372-85.000.

Northrup, Karl A., to Xerox Corporation. Mechanism and method for controlling the temperature and output of a fluorescent lamp. 4,533,854, Cl. 315-117.000.

Northrup, Karl A.: *See—*
Hammond, Thomas J.; Lama, William L.; Northrup, Karl A.; and Corona, Stephen C., 4,533,853, Cl. 315-117.000.

Norton Company: *See—*
Jones, Cecil M., 4,533,644, Cl. 501-17.000.

Norwood, William L., to Logic Controls Corp. Controller for well installations. 4,532,952, Cl. 137-240.000.

Novex Talalmanyfejleszto es Ertekesito Kulkereskedelmi Rt.: *See*—
Gyulavari, Imre, 4,533,470, Cl. 210-96.100.

Nowak, Rudolf: *See*—
Holland, Gerhard; and Nowak, Rudolf, 4,533,387, Cl. 75-66.000.

Nozawa, Ryoichiro; and Kiya, Nobuyuki, to Fanuc Ltd. Numerical control system. 4,534,001, Cl. 364-474.000.

Nugent, Thomas J.: *See*—
Hargassner, Reinhard; Nugent, Thomas J.; Scheinecker, Alois; and Engel, Kurt, 4,532,981, Cl. 164-483.000.

Numata, Yoshimi: *See*—
Shiraishi, Minoru; Numata, Yoshimi; Tano, Hiroshi; and Onaka, Tatsumi, 4,532,878, Cl. 114-222.000.

Nunlist, Erwin J., to Kennecott Corporation. Apparatus for applying internal coatings in hot vessels. 4,532,885, Cl. 118-308.000.

Oba, Hitoshi: *See*—
Tanaka, Motoaki; Toyama, Takanori; Oba, Hitoshi; and Yamaguchi, Osamu, 4,533,652, Cl. 502-167.000.

Obata, Saburo; and Ito, Kazuo, to Fujisawa Pharmaceutical Co., Ltd.; and Toyo Seikan Kaisha, Ltd. Applicator for aerosol-type containers. 4,533,273, Cl. 401-190.000.

Obayashi, Hideki: *See*—
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.

Obermann, George: *See*—
Beller, Wilbert E.; Georgacakis, George D.; and Obermann, George, 4,533,803, Cl. 200-153.00K.

O'Brien, John T., to Phillips Petroleum Company. Apparatus and method for detecting seismic waves. 4,534,020, Cl. 367-188.000.

Occidental Chemical Corporation: *See*—
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,533,762, Cl. 568-677.000.

Occidental Oil Shale, Inc.: *See*—
Ricketts, Thomas E., 4,533,181, Cl. 299-2.000.

Ochiai, Hiroshi: *See*—
Fujinami, Yoshio; Itoyama, Katumi; and Ochiai, Hiroshi, 4,533,805, Cl. 200-304.000.

Ochiai, Michihiko: *See*—
Yoshioka, Kouichi; and Ochiai, Michihiko, 4,533,495, Cl. 260-239.00A.

O'Connor, James M.; Scardera, Michael; and Grosser, Frank R., to Olin Corporation. Anionic surfactant addition products of maleic or fumaric acid and a poly(oxyalkylated) alcohol. 4,533,485, Cl. 252-156.000.

O'Connor, James M.; Lickei, Donald L.; Rosin, Michael L.; and Donze, Richard J., to Olin Corporation; and Morgan Construction Company. Modified polyurethane liquid polymer compositions. 4,533,717, Cl. 528-78.000.

Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, to Fuji Photo Film Co., Ltd.; and Nippon Light Metal Company Ltd. Method of electrolytic treatment on the surface of metal web. 4,533,444, Cl. 204-129.430.

Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, to Asahi Glass Company Ltd. Ion exchange membrane electrolytic cell. 4,533,453, Cl. 204-252.000.

Odom, James T.: *See*—
Harrill, Roy L.; and Odom, James T., 4,533,994, Cl. 364-200.000.

Odone, Giovanni, to Robert Bosch GmbH. Still or motion picture camera. 4,533,226, Cl. 354-403.000.

O'Donnell, Timothy W.: *See*—
Olson, Daniel R.; and O'Donnell, Timothy W., 4,533,595, Cl. 428-336.000.
Olson, Daniel R.; and O'Donnell, Timothy W., 4,533,710, Cl. 526-323.200.

Ofner, Erwin: *See*—
Haque, Yusuf; and Ofner, Erwin, 4,533,876, Cl. 330-253.000.

Ogata, Hisanao: *See*—
Hakuraku, Yoshinori; Ogata, Hisanao; Daikoku, Takahiro; and Suzuki, Noboru, 4,532,770, Cl. 62-3.000.

Ogata, Takayuki: *See*—
Kusumoto, Koshi; Kawaguchi, Toshio; and Ogata, Takayuki, 4,533,701, Cl. 525-370.000.

Ogawa, Masaki: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.

Ogawa, Masashi: *See*—
Urata, Yukihide; Moriuchi, Shigenori; Nakamura, Taku; and Ogawa, Masashi, 4,533,623, Cl. 430-309.000.

Ogawa, Rikuo: *See*—
Yutori, Toshio; and Ogawa, Rikuo, 4,533,401, Cl. 148-12.00B.

Ogle, David W. Toasting process using a toast guard. 4,533,558, Cl. 426-466.000.

Ogura, Mototsugu; Ban, Yuzaburoh; and Hase, Nobuyasu, to Matsushita Electric Industrial Co., Ltd. Process of vapor phase epitaxy of compound semiconductors. 4,533,410, Cl. 148-175.000.

Ohashi, Takeo, to Omron Tateisi Electronics Co. Electronic switching device having reduced power consumption. 4,533,972, Cl. 361-156.000.

Ohba, Hisao: *See*—
Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,533,444, Cl. 204-129.430.

Ohio Agricultural Research & Development Center: *See*—
Holmes, Robert G.; and Shearer, Scott A., 4,533,066, Cl. 221-211.000.

Ohki, Tomio; and Yoshioka, Toshio, to Nippon Pet Food Company, Ltd. Pet litter. 4,532,890, Cl. 119-1.000.

Ohkoshi, Akio; Toyama, Takashi; and Watanabe, Toshiro, to Sony Corporation. Color projector apparatus of single cathode ray tube type. 4,533,850, Cl. 313-36.000.

Ohmi, Tadahiro: *See*—
Nishizawa, Jun-ichi; Ohmi, Tadahiro; and Morishita, Masakazu, 4,534,033, Cl. 372-50.000.

Ohno, Akira; Koyama, Hiroshi; Inoue, Kanji; and Ozawa, Hiroaki, to NHK Spring Co., Ltd. Method of manufacturing a hollow stabilizer. 4,533,402, Cl. 148-12.400.

O'Holla, Robert H., to Ethicon, Inc. Two-piece tissue fastener with ratchet leg staple and sealable latching receiver. 4,532,926, Cl. 128-334.00C.

Ohsaki, Ichiro; Hasegawa, Tetsuo; and Suematsu, Koushi, to Canon Kabushiki Kaisha. Developer for electrophotography of toner and microencapsulated additive. 4,533,616, Cl. 430-110.000.

Ohsumi, Katsumi: *See*—
Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, 4,533,514, Cl. 376-308.000.

Ohtsubo, Hiroshi: *See*—
Kawasaki, Tatsuo; Takada, Isao; and Ohtsubo, Hiroshi, 4,533,806, Cl. 219-8.500.

Ohwaki, Takayuki: *See*—
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Oishi, Kengo: *See*—
Yoshida, Tuneo; Oishi, Kengo; and Yagi, Motohiko, 4,533,968, Cl. 360-130.210.

Oiwa, Ruiko: *See*—
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Okada, Takashi: *See*—
Fujimura, Yasushi; Okada, Takashi; and Yamagiwa, Kazuo, 4,533,949, Cl. 358-122.000.

Okamoto, Akihiro: *See*—
Maeda, Tetsuro; Okamoto, Akihiro; Shimizu, Yoshimitsu; and Nomoto, Takashi, 4,533,698, Cl. 525-73.000.

Okamoto, Masayoshi: *See*—
Momose, Yutaka; Yamaguchi, Kazuaki; Okamoto, Masayoshi; Hoshino, Ryoichi; and Tanaka, Hiroki, 4,532,771, Cl. 62-6.000.

Okano, Takeshi, to Konan Camera Research Institute. Device for measuring density of photographic transparency. 4,533,253, Cl. 356-443.000.

Okazaki, Hiroshi; and Hyodo, Motoi, to Aisin Seiki Kabushiki Kaisha. Seat track apparatus for vehicle seat. 4,533,107, Cl. 248-430.000.

Okazaki, Kiyoshi: *See*—
Yasuhara, Hiroshi; Fujita, Hitoshi; and Okazaki, Kiyoshi, 4,533,946, Cl. 358-111.000.

Oki Electric Industry Co., Ltd.: *See*—
Kakinuma, Hiroaki; Yoshida, Mamoru; and Nishikawa, Satoshi, 4,533,564, Cl. 427-39.000.

Okino, Susumu: *See*—
Shinoda, Naoharu; Tatani, Atsushi; Ukawa, Naohiko; and Okino, Susumu, 4,533,531, Cl. 423-242.000.

Okita, Koichi, to Sumitomo Electric Industries, Ltd. Gas-permselective composite membranes and process for the production thereof. 4,533,369, Cl. 55-158.000.

Okita, Tsutomu, to Fuji Photo Film Co., Ltd. Method for surface treatment of ferromagnetic fine powder and forming a magnetic recording device. 4,533,565, Cl. 427-44.000.

Okoshi, Koichi; and Uematsu, Ryuichi, to Midori Anzen Industry Co., Ltd. Antistatic footwear. 4,532,724, Cl. 36-7.10R.

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Cory, John M.; Varney, Edward W.; Babcock, Jon A.; and Pupillo, Andrew, 4,533,114, Cl. 251-67.000.

Possin, George E.: *See*—
Kirkpatrick, Conilee G.; Adler, Michael S.; and Possin, George E., 4,534,016, Cl. 365-128.000.

Posso, Patrick, to Posso S.A. Portable viewer for photographic slides. 4,532,728, Cl. 40-367.000.

Posso S.A.: *See*—
Posso, Patrick, 4,532,728, Cl. 40-367.000.

Poteat, Tommy L.: *See*—
Baumhauer, John C., Jr.; Hershey, Harold J.; and Poteat, Tommy L., 4,533,795, Cl. 179-111.00E.

Pou, Frederick M.; and Straub, Richard L., to Monarch Marking Systems, Inc. Web feed with incremental advance control for a printer. 4,533,269, Cl. 400-582.000.

Poulsen, Jeffrey A.: *See*—
Norling, Thomas B.; Polkowski, Joseph H.; Poulsen, Jeffrey A.; and Robinson, Daniel E., 4,533,914, Cl. 340-825.790.

Powers, Kerns H., to RCA Corporation. System for generating and displaying a compatible high definition television signal by progressive scanning. 4,533,951, Cl. 358-141.000.

PPG Industries, Inc.: *See*—
Bier, David A., 4,533,073, Cl. 225-4.000.

Prazak, Roman: *See*—
Marsicek, Zdenek; Janeba, Jaroslav; Pacha, Antonin; Pastrnak, Ales; Dykast, Jaroslav; and Prazak, Roman, 4,534,042, Cl. 377-16.000.

Precor Incorporated: *See*—
Smith, David B.; Miller, Randolph F.; and Moore, John M., 4,533,136, Cl. 272-73.000.

Preiner, Gerhard; Huhn, Karl; Muller, Johann; Marwitz, Heinrich; and Ullrich, Kurt, to Wacker-Chemie GmbH. Organopolysiloxanes having SiC-bonded oxyalkylene units and a method for preparing the same. 4,533,477, Cl. 252-8.900.

Preston, Neil: *See*—
Juarez, Manuel; and Preston, Neil, 4,533,144, Cl. 273-311.000.

Prince, Thomas F.; and Bishop, Julian J. Junction block for shielded communications network line. 4,533,197, Cl. 339-97.00R.

Prinz, A. F. Rudolf; and Charvat, Rudolf M., to Deutsche Forschungs- und Versuchsanstalt fur Luft- und Raumfahrt e.V. Device for the pick-up of measured values. 4,532,810, Cl. 73-717.000.

Priscu, John C.: *See*—
Neelameggham, Ramaswami; and Priscu, John C., 4,533,442, Cl. 204-68.000.
Neelameggham, Ramaswami; Abedi, Hedayat; Priscu, John C.; and Legge, Michael H., 4,533,572, Cl. 427-216.000.

Process Development Associates, Inc.: *See*—
Kibby, Robert M., 4,533,386, Cl. 75-10.00R.

Procter & Gamble Company, The: *See*—
Corrigan, Patrick J.; King, Richard M.; and VanDiest, Scott A., 4,533,648, Cl. 502-38.000.
Drobish, James L., 4,533,069, Cl. 222-209.000.

Procunier, Peter. Non-dairy parfait type dessert mix. 4,533,560, Cl. 426-578.000.

Providence Plantations: *See*—
Krul, William R., 4,532,733, Cl. 47-58.000.

Prunieras, Michel: *See*—
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Psaltis, Demetri: *See*—
McLauchlan, John M.; AuYeung, John; Tubbs, Eldred F.; Goss, Willis C.; and Psaltis, Demetri, 4,533,242, Cl. 356-5.000.

PSI Associates, Inc.: *See*—
Jones, Corey N.; and Hawkins, Patricia A., 4,533,329, Cl. 434-219.000.

PTC Aerospace Inc.: *See*—
Brennan, Edward J., 4,533,175, Cl. 297-232.000.

Puckowski, Robert T.; Cooper, Dennis; and Duffy, Patrick J., to BICC Public Limited Company. Manufacture of oriented insulated wires and cables. 4,533,417, Cl. 156-51.000.

Puglia, Wayne J.: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,533,543, Cl. 424-38.000.

Pupillo, Andrew: *See*—
Cory, John M.; Varney, Edward W.; Babcock, Jon A.; and Pupillo, Andrew, 4,533,114, Cl. 251-67.000.

Purdue Research Foundation: *See*—
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,752, Cl. 564-428.000.
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,760, Cl. 568-667.000.

QMC Industrial Research Limited: *See*—
Wilson, Edward G., 4,534,015, Cl. 365-106.000.

Quan, Wing C.: *See*—
Feilchenfeld, Michal M.; Byford, Roger G.; and Quan, Wing C., 4,534,056, Cl. 381-42.000.

Quay, Earl R.: *See*—
Tilson, Alan L.; Quay, Earl R.; and Knight, John C., 4,532,780, Cl. 66-9.00B.

Quignard, Alain: *See*—
Billon, Alain; Peries, Jean-Pierre; and Quignard, Alain, 4,533,462, Cl. 208-88.000.

R.E.O.S.C. (Recherches et Etudes d'Optique et de Sciences Connexes): *See*—
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Racal Data Communications, Inc.: *See*—
Krishnan, Vedavalli G., 4,534,043, Cl. 375-104.000.

Racz, Gabor: *See*—
Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.

Radek, John R., to Ready Metal Manufacturing Company. Light cornice. 4,533,981, Cl. 362-151.000.

Radulov, Peter T.: *See*—
Mitkov, Atanas L.; Georgiev, Ivan N.; Radulov, Peter T.; Hung, Le K.; and Atanassov, Atanas K., 4,532,940, Cl. 130-6.000.

Rahim, Chowdhury F., to AT&T Bell Laboratories. Telecommunication operational amplifier. 4,533,877, Cl. 330-253.000.

Rakes, James M.: *See*—
Goff, Willie, Jr.; and Rakes, James M., 4,533,921, Cl. 346-1.100.

Ralston Purina Company: *See*—
Kuzara, James H., 4,532,892, Cl. 119-51.00R.

Ramesohl, Hubert: *See*—
Herchenbach, Horst; and Ramesohl, Hubert, 4,533,396, Cl. 106-100.000.

Ranke, Gerhard: *See*—
Butz, Peter; Ranke, Gerhard; and Tvan, Tran A., 4,533,373, Cl. 62-17.000.

Ranken, Paul F.: *See*—
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Rappa, Angela: *See*—
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,752, Cl. 564-428.000.
Benkeser, Robert A.; Laugal, James A.; and Rappa, Angela, 4,533,760, Cl. 568-667.000.

Rappoldt, Louis M.: *See*—
Van Gasselt, Max L. G.; and Rappoldt, Louis M., 4,532,871, Cl. 110-216.000.

Ratcliffe, Raymond J.: *See*—
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Rath, Heinrich B., to Lucas Industries. Automatic adjusting device for a brake. 4,533,024, Cl. 188-79.50B.

Rathbun, Donald J.: *See*—
Funke, Michael J.; Topliffe, Douglas A.; and Rathbun, Donald J., 4,534,044, Cl. 375-120.000.

Rattmann, James A.: *See*—
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Rauthmann, Axel; and Pietsch, Harry, to Ford Motor Company. Spare wheel arrangement in motor cars. 4,533,169, Cl. 296-37.200.

Rawlings, Herbert L., to Mobay Chemical Corporation. Reinforced polyester composition having an improved strength. 4,533,679, Cl. 523-204.000.
Rayburn, Charles C.; Padgitt, Howard R.; and Flair, Henry J., to Illinois Tool Works Inc. Optical selective demetallization apparatus. 4,533,813, Cl. 219-121.0LH.
Raychem Corporation: *See*—
Melton, Keith N., 4,533,411, Cl. 148-402.000.
Pieslak, George; and Wallace, Barnie A., Jr., 4,533,419, Cl. 156-85.000.
Pokojny, Rudolf; and Larsson, Peter L., 4,533,788, Cl. 174-88.00C.
Raytheon Company: *See*—
Geis, Norman P.; and Chambers, Edward A., 4,533,094, Cl. 244-3.220.
Green, Jerome J., 4,532,704, Cl. 29-600.000.
Razzacki, Syed T., to Chrysler Corporation. Concentric shift rail mechanism. 4,532,823, Cl. 74-473.00R.
RCA Corporation: *See*—
Harris, George E., 4,533,555, Cl. 425-384.000.
Hurst, Robert N., 4,533,938, Cl. 358-27.000.
Moss, Herbert I., 4,532,737, Cl. 51-283.00R.
Powers, Kerns H., 4,533,951, Cl. 358-141.000.
Willis, Donald H.; and Luz, David W., 4,533,855, Cl. 315-370.000.
Read, Clifford D.; Sawyer, William D.; and Chadwick, Donald T., to Northern Telecom Limited. Input/output device arrangements for terminals. 4,533,791, Cl. 179-2.00R.
Read, Wayne L.: *See*—
Westerlund, Robert E.; and Read, Wayne L., 4,533,300, Cl. 417-339.000.
Ready Metal Manufacturing Company: *See*—
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Shinneman, Harold C., Jr.; Rebish, Edward J.; and Shinneman, Harold C., Sr., 4,532,736, Cl. 51-218.00A.
Redford, David A.: *See*—
Toma, Petre; Redford, David A.; Livesey, Declan B.; and Coates, Roy M., 4,532,994, Cl. 166-303.000.
Reed, David G.: *See*—
Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., 4,533,995, Cl. 364-200.000.
Reed, John C. Multiple frequency side lobe interference rejector. 4,533,917, Cl. 343-379.000.
Reed, Lehman T. Geothermal expansion spool piston. 4,532,987, Cl. 166-75.100.
Reed, Steven P.; and Naslund, Erik I., to Brown & Williamson Tobacco Corporation. Device for making grooves in cigarette filters. 4,533,427, Cl. 156-500.000.
Reeh, Holger; and Geiss, Josef. Electric welding gun with a rotary torch head. 4,533,816, Cl. 219-137.310.
Rees, James D.; Gundlach, Robert W.; and May, Jerome E., to Xerox Corporation. Full-frame flash illumination system. 4,533,979, Cl. 362-97.000.
Reffet, Dominique: *See*—
Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, 4,533,500, Cl. 260-404.000.
Regie Nationale des Usines Renault: *See*—
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Regula, Donald W.: *See*—
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Rehak, Anthony S.: *See*—
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Rehm, Hans; and Breitenfeld, Horst, to Siemens Aktiengesellschaft. Amplifier comprising ECL logic gate biased by another ECL logic gate. 4,533,878, Cl. 330-261.000.
Reiche, John C.: *See*—
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Reidt, Dean K.: *See*—
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Reinelt, Karlheinz; and Witt, Wolfram, to Rheinmetall GmbH. Liquid-propellant system. 4,532,851, Cl. 89-7.000.
Reinen, Adrianus G.: *See*—
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Reiter, Robert C., to Material Control, Inc. Conveyor belt cleaner. 4,533,035, Cl. 198-499.000.
Rellermeyer, Heinrich; and Kaas, Werner, to Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte. Process for preparing binder-free hot-briquets. 4,533,384, Cl. 75-0.5BA.
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Renold Plc, A British Company of Renold House: *See*—
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Republic Steel Corporation: *See*—
Urban, Robert G., 4,534,002, Cl. 364-475.000.
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Rheinisch-Westfallisches Elektrizitatswerk Aktiengesellschaft: *See*—
Gebhard, Georg R. U.; Hein, Klaus R. G.; and Glaser, Wolfgang, 4,533,532, Cl. 423-244.000.
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Rhone-Poulenc Specialites Chimiques: *See*—
Cordier, Georges, 4,533,771, Cl. 568-842.000.
Rhyner, Hans-Ulrich, to Maag Gear-Wheel & Machine Co., Ltd. Displacement detecting system in a multi-axis measuring system, especially for use with a gear wheel grinding or inspecting machine. 4,534,007, Cl. 364-560.000.
Riaboff, Peter. Baseball glove. 4,532,653, Cl. 2-19.000.
Rice, Richard E.: *See*—
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Rich, William N.: *See*—
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Richard, Jacques R., to Manufacture de Machines du Haut-Rhin. Conveyor for objects treated while continuously in motion. 4,533,038, Cl. 198-646.000.
Richards, Powell: *See*—
Srivastava, Suresh C.; Meinken, George E.; and Richards, Powell, 4,533,541, Cl. 424-1.100.
Richards, Walter L., to Methane Drainage Ventures. Process for production of oil and gas through horizontal drainholes from underground workings. 4,533,182, Cl. 299-2.000.
Richter, Wolfgang: *See*—
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Ricketts, Thomas E., to Occidental Oil Shale, Inc. Method for forming uniform flow rubble bed. 4,533,181, Cl. 299-2.000.
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Sakurai, Akira, 4,533,959, Cl. 358-280.000.
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Rieck, Richard E.: *See*—
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Rieter Machine Works Ltd.: *See*—
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Riganti, Innocente, to Innocente Riganti Officine Meccaniche S.p.A. Spacer-damper for a bundled conductor for an electric line. 4,533,785, Cl. 174-42.000.
Riggle, Peter: *See*—
White, Maurice A.; Riggle, Peter; and Emigh, Stuart G., 4,532,766, Cl. 60-517.000.
Rinehart, Nerl D., to Alpha Gauge & Instrument Company. Kinetic fluid sampler. 4,532,813, Cl. 73-863.020.
Ringel, Helmut, to Kernforschungsanlage Julich Gesellschaft mit beschrankter Haftung. Process for the separation and recycling of NO_x gas constituents through adsorption and desorption on a molecular sieve. 4,533,365, Cl. 55-28.000.
Rink, Norbert: *See*—
Muschelknautz, Edgar; Rink, Norbert; and Chalupka, George, 4,533,376, Cl. 65-5.000.
RIS Irrigation Systems Pty. Ltd.: *See*—
Tucker, Alfred D., 4,533,083, Cl. 239-542.000.
Ritson, Carl: *See*—
Danby, Hal C.; and Ritson, Carl, 4,533,350, Cl. 604-253.000.
Ritter, Paul B.: *See*—
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Rivers, John; Kramer, Charles D.; and Cox, Robert L., to Weyerhaeuser Company. Suspension firing of hog fuel, other biomass or peat. 4,532,873, Cl. 110-347.000.
Rives, Allen K.: *See*—
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Rivkin, Bernard W.; and Monfort, Michael R., to P.P.M.D. Drive fastener. 4,533,288, Cl. 411-176.000.
Robert Bosch GmbH: *See*—
Buchner, Norbert; Eberspacher, Rolf; and Liede, Dieter, 4,533,063, Cl. 220-270.000.
Esper, Friedrich J.; and Zeller, Robert, 4,533,392, Cl. 75-230.000.
Heitmann, Jurgen, 4,534,037, Cl. 375-25.000.
Hoppel, Rainer, 4,532,906, Cl. 123-470.000.
Odone, Giovanni, 4,533,226, Cl. 354-403.000.
Steinbrenner, Ulrich, 4,532,908, Cl. 123-493.000.
Robertshaw Controls Company: *See*—
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Robertson, David W., to Eli Lilly and Company. Anti-convulsant fluorenylalkylimidazole derivatives, compositions, and method of use. 4,533,670, Cl. 514-399.000.
Robertson, David W., to Eli Lilly and Company. Inotropic agents. 4,533,734, Cl. 514-303.000.
Robinson, Daniel E.: *See*—
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Robinson, Lee F.: *See*—
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Robison, Robert L.: *See*—
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Robles, Benjamin R.: *See*—
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Robotic Vision Systems, Inc.: *See*—
DiMatteo, Paul; and Hecker, Joel, 4,533,828, Cl. 250-216.000.

Rochon, Fernande D.; and Kong, Pi-Chang. Platinum (II) compounds and their preparation. 4,533,502, Cl. 546-8.000.
Rockcor, Inc.: *See—*
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Rocket Research Company: *See—*
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Kluth, Hermann; Roderhoff, Bernhard; Friedemann, Wolfgang; Wegner, Jurgen; and Dierichs, Wolfgang, 4,533,490, Cl. 252-305.000.
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Rodgers, Vernon C.: *See—*
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Roebuck, Malcolm J., to Bagde-A-Minit Ltd. Button assembler. 4,532,684, Cl. 29-4.000.
Roemer, Dietmar: *See—*
Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, 4,533,662, Cl. 514-221.000.
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Rohde & Schwarz GmbH & Co. KG: *See—*
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Rohm and Haas Company: *See—*
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Rojey, Alexandre; Bonifay, Regis; and Cariou, Jean-Paul, to Institut Francais du Petrole. Process for producing cold and/or heat by means of an absorption cycle comprising at least two absorption steps. 4,532,773, Cl. 62-101.000.
Rolls-Royce Limited: *See—*
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Roos, Charles E.: *See—*
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Rosenberg, Stephan, to MADAG Maschinen- und Apparatebau Dietikon AG. Method and apparatus for making knotted rugs. 4,533,163, Cl. 289-1.500.
Rosenquist, Niles R., to General Electric Company. Flame retardant polycarbonate compositions. 4,533,690, Cl. 524-161.000.
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Rotem, Abraham I., to FDX Patents Holding Company, N.V. Thermal-mechanical treatment for copper alloys. 4,533,412, Cl. 148-411.000.
Rothe, Ulrich: *See—*
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Roule, Richard L.; Sorbo, Peter J.; and Kimball, John J., to American Bank Note Company. Web of adhesive labels. 4,533,586, Cl. 428-137.000.
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Dente, Mario; Porcari, Guiliano; and Robinson, Lee F., 4,533,459, Cl. 208-11.0LE.
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Ruhrchemie Aktiengesellschaft: *See—*
Cornils, Boy; Hibbel, Josef; Kessen, Gunther; Konkol, Werner; Lieder, Bernhard; Wiebus, Ernst; Kalbfell, Heinz; and Bach, Hanswilhelm, 4,533,755, Cl. 568-454.000.
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Russell, Alexander H.: *See—*
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Ryang, Hong-Son, to General Electric Company. Silicon functionalized norbornane carboxyimide and methods for making. 4,533,737, Cl. 548-110.000.
Rysewyk, Ambrose L., to AT&T Technologies, Inc. Apparatus for tapping and draining batteries. 4,532,953, Cl. 137-255.000.
Saarbergwerke Aktiengesellschaft: *See—*
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Sabco Limited: *See—*
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Delacour, Jacques; Levallois, Emile; Antier, Patrick; and Saint Martin, Francois-Xavier, 4,533,526, Cl. 423-1.000.
Saito, Isao: *See—*
Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, 4,533,669, Cl. 514-396.000.
Saito, Kunihiro, to Ichikoh Industries Limited. Apparatus for adjusting the inclination of automobile headlamp. 4,533,860, Cl. 318-673.000.
Saito, Shojiro; and Azumaya, Noriyoshi, to Nippon Electric Co., Ltd. Inked ribbon cartridge for an impact serial printer. 4,533,266, Cl. 400-208.000.
Saito, Susumu: *See—*
Owaki, Isao; Saito, Susumu; and Yamazaki, Masami, 4,533,964, Cl. 360-22.000.
Saitoh, Tadashi: *See—*
Itoh, Haruo; Tokiguchi, Katsumi; Warabisako, Terunori; Saitoh, Tadashi; and Tokuyama, Takashi, 4,533,831, Cl. 250-492.200.
Sakai, Chikaaki: *See—*
Kondo, Takashi; Sakai, Chikaaki; and Karakawa, Tadashi, 4,533,359, Cl. 8-128.00R.
Sakai, Kenji, to Pilot Ink Company. Writing instrument with movable closure. 4,533,272, Cl. 401-107.000.
Sakakibara, Mitsuhiko: *See—*
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.
Sakashita, Shigeru; Nakagawa, Takeshi; Ohwaki, Takayuki; and Miyake, Yasuo, to Eisai Co., Ltd. Process for sealing body and cap of gelatin hard capsule and apparatus therefor. 4,532,881, Cl. 118-20.000.
Sakuma, Tokihiko: *See—*
Osawa, Tadao; Nakagawa, Toru; Okumura, Masamitsu; Kohno, Takashige; and Sakuma, Tokihiko, 4,532,904, Cl. 123-439.000.
Sakurai, Akira, to Ricoh Company, Ltd. Picture processing apparatus. 4,533,959, Cl. 358-280.000.
Sakurai, Kazuhiro: *See—*
Idogaki, Takaharu; Hayashi, Ikuo; Kawai, Hisasi; Hattori, Kyo; and Sakurai, Kazuhiro, 4,533,847, Cl. 310-181.000.
Salazar, Sumorfin, to Ford Motor Company. Door hinge with integral check. 4,532,675, Cl. 16-335.000.
Salihi, Jalal T., to Otis Elevator Company. Polyphase motor drive imbalance detection. 4,533,862, Cl. 318-798.000.
Salk Institute For Biological Studies, The: *See—*
Lederis, Karl P.; MacCannell, Keith L.; and Ichikawa, Tomoyuki, 4,533,654, Cl. 514-12.000.
Sama, Nicholas. Modified waterbed. 4,532,662, Cl. 5-450.000.
Samchenko, Garold P.: *See—*
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.
Samcoe Holding Corporation: *See—*
Sellers, John R., 4,532,782, Cl. 68-13.00R.
Samek, Norbert E., to Transamerica Delaval Inc. Light gate assemblies, elements and manufacturing methods. 4,533,217, Cl. 350-392.000.
Sander, Ulrich: *See—*
Dittmar, Heinz; Beckmann, Manfred; Dorr, Karl-Heinz; Rothe, Ulrich; and Sander, Ulrich, 4,533,537, Cl. 423-522.000.
Sander, Wendell B., to Apple Computer, Inc. Computer with color display. 4,533,909, Cl. 340-703.000.
Sanders, Larry W.: *See—*
Penz, Perry A.; Petcavich, Robert J.; Stearns, William P.; and Sanders, Larry W., 4,533,214, Cl. 350-334.000.
Sanders, Leonardus C. M.: *See—*
van Gastel, Josephus M. M.; van Nunen, Hendrikus T.; and Sanders, Leonardus C. M., 4,532,884, Cl. 118-243.000.
Sanders, Roy C., Jr. Position indicator for high speed printers. 4,533,268, Cl. 400-322.000.
Sando Iron Works Co., Ltd.: *See—*
Sando, Yoshikazu; and Ishidoshiro, Hiroshi, 4,533,147, Cl. 277-26.000.

Sando, Yoshikazu; and Ishidoshiro, Hiroshi, to Sando Iron Works Co., Ltd. Automatic pressure control apparatus for an end-face seal plate in seal mechanism of high pressure steamer. 4,533,147, Cl. 277-26.000.
Sankyo Company, Limited: *See*—
Ikegami, Yoshihiko; Kurihara, Kozo; Ichikawa, Izuo; and Nakane, Hisanori, 4,533,562, Cl. 427-3.000.
Toda, Toshimasa; and Kurumada, Tomoyuki, 4,533,688, Cl. 524-100.000.
Sansevero, Nick. Writing instrument with plural implements cam actuated. 4,533,271, Cl. 401-29.000.
Sansevero, Vincent J., Jr.; and Skrabal, Walter F., to United Technologies Corporation. Fluid medium storage and expulsion apparatus. 4,533,067, Cl. 222-135.000.
Santos, Theodore J., Jr.; and Pearlman, Gordon E., to Western Steel Cutting, Inc. Curb stake with integral support. 4,533,112, Cl. 249-3.000.
Santrade Limited: *See*—
Lindlar, Wilhelm; and Wermeister, Gunter, 4,533,282, Cl. 407-38.000.
Saran, Mohan S.: *See*—
Campbell, Donald H.; Fifolt, Michael J.; and Saran, Mohan S., 4,533,762, Cl. 568-677.000.
Sarlos, Agoston: *See*—
Gal, Jozsef; Gyarfas, Andras; Katko , Laszlo ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.
Sartor, Bruno; and Rode, Klaus, to Uranit GmbH. Apparatus for making crisscross-wound layers to form wound bodies. 4,533,089, Cl. 242-7.210.
Sasakawa, Masumi: *See*—
Fukumoto, Hiroshi; Inoue, Sukejiro; Sasakawa, Masumi; and Doi, Shinji, 4,533,614, Cl. 430-99.000.
Inoue, Sukejiro; Fukumoto, Hiroshi; Sasakawa, Masumi; and Doi, Shinji, 4,533,617, Cl. 430-111.000.
Sasaki, Toshio: *See*—
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,533,706, Cl. 526-119.000.
Sasaoka, Seiji: *See*—
Maruyama, Hiromi; Sasaoka, Seiji; Kiuchi, Mitsuo; and Kanehara, Hironori, 4,533,557, Cl. 426-61.000.
Sato, Akihiro; Kikuta, Kazutsune; Uwai, Toshihiro; Matsuda, Kenji; and Hattori, Nobutaka, to Chisso Corporation. Process for producing α-olefin polymers. 4,533,705, Cl. 526-114.000.
Sato, Hideo: *See*—
Kawamura, Kouichi; Horie, Seiji; Makino, Naonori; and Sato, Hideo, 4,533,613, Cl. 430-78.000.
Sato, Hiroshi: *See*—
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,382, Cl. 75-0.50C.
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,383, Cl. 75-0.50C.
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,413, Cl. 148-420.000.
Sato, Ryoda. Heating sheet. 4,533,821, Cl. 219-545.000.
Sato, Takashi: *See*—
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.
Sato, Toshio: *See*—
Miyashita, Takao; and Sato, Toshio, 4,533,969, Cl. 360-132.000.
Satran, Amir; and Elka, Shmuel, to Iscar Ltd. Tool holder assembly. 4,533,283, Cl. 407-111.000.
Sauer, Wolfgang; Schmidtpott, Friedrich; Schat, Hermanus; and Freyberger, Laurin C., to ITT Industries, Inc. Integrated circuit kit with a phase-locked loop for color television receivers. 4,533,879, Cl. 331-1.00A.
Sauermann, Heinz, to U.S. Philips Corporation. Symmetrical temperature sensor. 4,533,898, Cl. 338-25.000.
Savins, Joseph G.: *See*—
Chew, Ju-Nam; and Savins, Joseph G., 4,533,084, Cl. 241-1.000.
Sawyer, William D.: *See*—
Read, Clifford D.; Sawyer, William D.; and Chadwick, Donald T., 4,533,791, Cl. 179-2.00R.
Sax, Stephen H. Fabric conditioning device. 4,532,722, Cl. 34-60.000.
Scala, Luciano C.; Alvino, William M.; and Fuller, Timothy J., to Westinghouse Electric Corp. Amine-free and surfactant-free electrodeposition of polyesters, polyamic acids, polyimides, and polyamide-imides. 4,533,448, Cl. 204-181.700.
Scardera, Michael; and Bayusik, John G., to Olin Corporation. Sulfated addition products of selected unsaturated dicarboxylic acids and poly(oxyalkylated) alcohols as anionic surfactants. 4,533,486, Cl. 252-156.000.
Scardera, Michael: *See*—
O'Connor, James M.; Scardera, Michael; and Grosser, Frank R., 4,533,485, Cl. 252-156.000.
Schaar, John. Arrow and components thereof. 4,533,146, Cl. 273-422.000.
Schaible, Walter, to Dr. Ing. h.c.F. Porsche A.G. Method for manufacturing a vehicle wheel. 4,532,786, Cl. 72-68.000.
Schat, Hermanus: *See*—
Sauer, Wolfgang; Schmidtpott, Friedrich; Schat, Hermanus; and Freyberger, Laurin C., 4,533,879, Cl. 331-1.00A.
Scheiderich, Robert F.: *See*—
Comper, Louis F.; and Scheiderich, Robert F., 4,533,305, Cl. 425-43.000.
Scheinecker, Alois: *See*—
Hargassner, Reinhard; Nugent, Thomas J.; Scheinecker, Alois; and Engel, Kurt, 4,532,981, Cl. 164-483.000.
Schellin, Donald B., deceased: *See*—
Scoccia, Adelmo A.; and Schellin, Donald B., deceased, 4,533,189, Cl. 339-17.0CF.
Schemelin, Michael P.; Kaminski, Tony L.; and Shupert, Paul T., to Simplicity Manufacturing, Inc. Clipping collector for riding mower. 4,532,755, Cl. 56-16.600.
Schenten, James L.: *See*—
Hoenle, Walter A.; Perkins, David J.; and Schenten, James L., 4,533,157, Cl. 280-718.000.
Scherer Laboratories, Inc.: *See*—
Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., 4,533,544, Cl. 424-52.000.
Schering AG.: *See*—
Burba, Christian; Goeke, Ulrich; and Esper, Norbert, 4,533,524, Cl. 427-372.200.
Schiffer, Wilhelm: *See*—
Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,533,385, Cl. 75-10.00R.
Schlenk, Manfred, to Siemens Aktiengesellschaft. Circuit arrangement for identifying and storing power line faults. 4,533,865, Cl. 324-51.000.
Schmalz, Gerhardt, to Wezel GmbH & Co KG. Arrangement for manufacturing curved wall portions of heat insulating walls. 4,532,846, Cl. 83-796.000.
Schmidt, Douglass N.; Finnan, Jeffrey L.; and Lisa, Rudolph E., to BASF Wyandotte Corporation. Process for preparing a sugar and starch free spray-dried vitamin C powder containing 90 percent ascorbic acid. 4,533,674, Cl. 514-474.000.
Schmidt, Frederick A.: *See*—
Verhoeven, John D.; Gibson, Edwin D.; Finnemore, Douglas K.; Ostenson, Jerome E.; Schmidt, Frederick A.; and Owen, Charles V., 4,532,703, Cl. 29-599.000.
Schmidt, Hartmut: *See*—
von der Bey, Thomas; Jankowski, Detlef; Schmidt, Hartmut; Thoma, Klemens; and Volker, Wolfgang, 4,532,779, Cl. 62-514.00R.
Schmidt, Manfred: *See*—
Freitag, Dieter; Bottenbruch, Ludwig; and Schmidt, Manfred, 4,533,702, Cl. 525-439.000.
Schmidt-Rabenau, Hartmut: *See*—
Gronholz, Claus; and Schmidt-Rabenau, Hartmut, 4,533,255, Cl. 366-108.000.
Schmidtpott, Friedrich: *See*—
Sauer, Wolfgang; Schmidtpott, Friedrich; Schat, Hermanus; and Freyberger, Laurin C., 4,533,879, Cl. 331-1.00A.
Schneider, Wilhelm, to Deutsche Perrot-Bremse GmbH. Hydraulically operable brake, in particular, a servo brake. 4,533,022, Cl. 188-18.00R.
Schnell, Axel, to U.S. Philips Corporation. Ceramic bistable deflection element. 4,533,849, Cl. 310-330.000.
Schobbe, Hermann: *See*—
Muller, Alf; Schobbe, Hermann; Loper, Bernd; and Binnewies, Hartmut, 4,533,184, Cl. 301-63.00R.
Schoeps, Knut C., to Atlas Copco Aktiebolag. Hydraulic torque impulse tool. 4,533,337, Cl. 464-25.000.
Schreiber, William L.: *See*—
Tokarzewski, Richard J.; and Schreiber, William L., 4,533,492, Cl. 252-522.00R.
Schrijver, Jan; and Vossebeld, Arnold, to Stamicarbon B.V. Polymer powder compositions, particularly polyethylene powder compositions and objects to be made and made thereof. 4,533,696, Cl. 524-528.000.
Schroeder, Charles M., Jr.: *See*—
Paek, Un C.; and Schroeder, Charles M., Jr., 4,533,378, Cl. 65-3.120.
Schrubba, Gerald P.: *See*—
Bradshaw, Norman F.; and Schrubba, Gerald P., 4,532,983, Cl. 165-47.000.
Schubert, Hermann; Ahrens, Max; and Haissig, Manfred, to Voest-Alpine Aktiengesellschaft. Continuous casting installation. 4,532,977, Cl. 164-442.000.
Schuermeyer, Fritz L., to United States of America, Air Force. Method of making self-aligned IGFET. 4,532,695, Cl. 29-571.000.
Schuett, Dieter: *See*—
Fuchs, Peter; Mueller-Glaser, Klaus; Schuett, Dieter; and Wach, Wolfgang, 4,534,008, Cl. 364-716.000.
Schultz, Mark H.: *See*—
Luhn, Dennis A.; and Schultz, Mark H., 4,533,863, Cl. 322-28.000.
Schultz, William R., Jr.: *See*—
Elton, Richard K.; and Schultz, William R., Jr., 4,533,694, Cl. 524-449.000.
Schutte, Evert H.: *See*—
Cense, Adriaan; and Schutte, Evert H., 4,533,939, Cl. 358-28.000.
Schutten, Herman P.: *See*—
Benjamin, James A.; Lade, Robert W.; and Schutten, Herman P., 4,533,783, Cl. 136-249.000.
Schwang, Per-Eric. Lifting device. 4,533,117, Cl. 254-94.000.
Schwartz, Robert A.: *See*—
Duchesneau, Jerome G.; and Schwartz, Robert A., 4,533,296, Cl. 416-46.000.
Schwenk, Gerhard: *See*—
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,533,244, Cl. 356-71.000.

Schwirten, Kurt: *See*—
Kummer, Rudolf; Richter, Wolfgang; Schwirten, Kurt; and Stops, Peter, 4,533,757, Cl. 568-454.000.
Schwitters, Brian M., to Parker-Hannifin Corporation. Bi-directional filter wrench. 4,532,835, Cl. 81-128.000.
SCM Corporation: *See*—
Cherney, Leon; Gorman, Charles R.; Traynor, Sean G.; and Cardenas, Carlos G., 4,533,751, Cl. 564-408.000.
Scoccia, Adelmo A.; and Schellin, Donald B., deceased (by Downes, Gene, administrator), to General Dynamics Pomona Division. Zero insertion force connector. 4,533,189, Cl. 339-17.0CF.
Scott Paper Company: *See*—
Curran, John F.; and Kershaw, Thomas N., 4,533,437, Cl. 162-281.000.
Scott, William J., to Ideal Industries, Inc. Cable tie. 4,532,679, Cl. 24-16.0PB.
Sebag, Henri, to L'Oreal. Cosmetic compositions containing polyethylene glycol derivatives. 4,533,545, Cl. 424-70.000.
Sebag, Henri; and Zysman, Alexandre, to L'Oreal. Polyquaternary polysiloxane polymers. 4,533,714, Cl. 528-27.000.
Sederquist, Richard A., to United Technologies Corporation. Process for removing electrolyte vapor from fuel cell exhaust gas. 4,533,607, Cl. 429-13.000.
Seeger, Ernst: *See*—
Trummlitz, Gunter; Engel, Wolfhard; Seeger, Ernst; and Haarmann, Walter, 4,533,664, Cl. 514-225.000.
Segerson, Eugene E.; and Thomas, Floyd L., to Motorola, Inc. Connectorless fiber optic package. 4,533,209, Cl. 350-96.200.
Seher, Gero: *See*—
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; and Heberlein, Irmtrud, 4,533,438, Cl. 201-31.000.
Seidel, John C. Wind propulsion apparatus. 4,533,159, Cl. 280-810.000.
Seigneurin, Michel: *See*—
Garcia, Philippe; and Seigneurin, Michel, 4,533,322, Cl. 433-29.000.
Seiko Kagaku Kogyo Co., Ltd.: *See*—
Yoshioka, Shigehiko; Yamada, Hideto; Goto, Kimihiko; Adachi, Yoshio; and Miyahana, Kazuo, 4,533,434, Cl. 162-124.000.
Seki, Masaki: *See*—
Kishi, Hajimu; Seki, Masaki; and Kawasumi, Masashi, 4,533,286, Cl. 409-80.000.
Sekino, Takeo: *See*—
Yamada, Takaaki; and Sekino, Takeo, 4,533,903, Cl. 340-347.0AD.
Sekiya, Shin: *See*—
Sugihara, Masahiro; Morishita, Etsuo; Hirai, Tetsuo; and Sekiya, Shin, 4,533,292, Cl. 415-2.00R.
Selby, Donald R.: *See*—
Dahlgren, Harold P.; Taylor, James E.; Peters, Dwight W.; and Selby, Donald R., 4,532,735, Cl. 51-56.00R.
Seligman, Peter M.: *See*—
Crosby, Peter A.; Daly, Christopher N.; Money, David K.; Patrick, James F.; Seligman, Peter M.; and Kuzma, Janusz A., 4,532,930, Cl. 128-419.00R.
Sell, Richard W.: *See*—
Groat, Dennis E.; Sell, Richard W.; Kalish, Richard J.; and Melton, Horace E., 4,533,544, Cl. 424-52.000.
Sellers, John R., to Samcoe Holding Corporation. Apparatus for pad batch dyeing of tubular knitted cotton fabrics. 4,532,782, Cl. 68-13.00R.
Semsarzadeh, Mohammad A.: *See*—
Hudgin, Donald E.; and Semsarzadeh, Mohammad A., 4,533,685, Cl. 523-457.000.
Sen Gupta, Achintya K., to Lever Brothers Company. Refining. 4,533,501, Cl. 260-428.000.
Sewell, John H., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Composite materials. 4,533,589, Cl. 428-174.000.
Shafer, Jules A. Accumulated thermal exposure responder and method of use. 4,533,640, Cl. 436-2.000.
Shah, Nehal M.: *See*—
Bailey, Thomas F.; Campbell, John E.; Rives, Allen K.; and Shah, Nehal M., 4,533,003, Cl. 175-269.000.
Shalaby, Shalaby W.: *See*—
Bezwada, Rao S.; Shalaby, Shalaby W.; and Jamiolkowski, Dennis D., 4,532,928, Cl. 128-335.500.
Shaner, Kenneth: *See*—
French, Kenneth; Kocher, Robert C.; Piorkow, Alfred; Shaner, Kenneth; and Smith, J. Thomas, 4,533,251, Cl. 356-384.000.
Shannon, William T.: *See*—
Decker, Ronald R.; and Shannon, William T., 4,533,962, Cl. 360-5.000.
Shape Inc.: *See*—
Gelardi, Paul J.; and MacLeod, Robert B., Jr., 4,533,093, Cl. 242-197.000.
Sharp, John B.: *See*—
Peck, Stephen R.; and Sharp, John B., 4,534,023, Cl. 370-58.000.
Sharp Kabushiki Kaisha: *See*—
Ikezaki, Katsuji; and Ishii, Kiyoshi, 4,533,370, Cl. 55-276.000.
Iwagami, Fusao; and Yoshimura, Hisashi, 4,533,927, Cl. 346-140.00R.
Takino, Kenichi; Yamasaki, Eiji; and Murakami, Kenji, 4,533,316, Cl. 431-32.000.
Tanaka, Shinichi; and Mineyama, Takitsugu, 4,533,837, Cl. 307-116.000.
Washizuka, Isamu; and Takeda, Yoshio, 4,533,213, Cl. 350-332.000.
Shearer, Scott A.: *See*—
Holmes, Robert G.; and Shearer, Scott A., 4,533,066, Cl. 221-211.000.
Shell Oil Company: *See*—
Dilgren, Richard E.; and Ritter, Paul B., 4,532,993, Cl. 166-303.000.
van Helden, Robert; Baardman, Frank; and Syrier, Johannes L. M., 4,533,379, Cl. 71-88.000.
Wong, P. K.; and Dickson, Mark K., 4,533,740, Cl. 549-328.000.
Sheppard, John E., to Sperry Corporation. Method of forming a low temperature multilayer photoresist lift-off pattern. 4,533,624, Cl. 430-312.000.
Sherby, Oleg D.; and Oyama, Toshimasa, to Leland Stanford Junior University, Board of Trustees of the. Ultra high carbon steel alloy and processing thereof. 4,533,390, Cl. 75-126.00Q.
Sheth, Jayesh V., to Burroughs Corporation. Automatic write system for peripheral-controller. 4,534,013, Cl. 364-900.000.
Shibakawa, Riichiro: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,533,553, Cl. 514-460.000.
Shibata, Akira; Wada, Isao; and Yoshioka, Atsushi, to Hitachi, Ltd. Magnetic recording apparatus with level adjusting means for mixed luminance, chrominance, audio and pilot signals. 4,533,961, Cl. 358-315.000.
Shibata, Kiyoshi: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, 4,533,233, Cl. 355-8.000.
Shibata, Takashi: *See*—
Miyata, Toshihiko; and Shibata, Takashi, 4,534,057, Cl. 381-58.000.
Shields, Curtis E.: *See*—
Andrew, Wesley A.; Shields, Curtis E.; Hindlin, Harry O.; and Hamilton, Robert, 4,533,333, Cl. 441-38.000.
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, to Sumitomo Chemical Company, Limited. Catalyst and process using same for producing olefin polymer. 4,533,706, Cl. 526-119.000.
Shiga, Koji, to Fuji Photo Film Co., Ltd. Sensitive material processing apparatus. 4,533,225, Cl. 354-322.000.
Shigematsu, Takashi: *See*—
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.
Shigenobu, Michio, to Canon Kabushiki Kaisha. Fixing device. 4,533,231, Cl. 355-3.0FU.
Shimada, Keiichiro: *See*—
Nakano, Kenji; Takahashi, Takao; Moriwaki, Hisayoshi; and Shimada, Keiichiro, 4,533,963, Cl. 360-19.100.
Shimano Industrial Company Limited: *See*—
Nagano, Masashi, 4,532,825, Cl. 74-532.000.
Shimazaki, Hiroshi: *See*—
Ikeuchi, Satoru; Inaba, Yoshihiro; Shimazaki, Hiroshi; and Kobayashi, Tatsuhiko, 4,533,621, Cl. 430-213.000.
Shimizu, Hiroshi, to Ushio Denki Kabushiki Kaisha. Radiant heating apparatus. 4,533,820, Cl. 219-411.000.
Shimizu, Munetaka, to Copal Company Limited. Printing paper feed releasing device for printers. 4,533,270, Cl. 400-636.000.
Shimizu, Seiichi, to Canon Kabushiki Kaisha. Accessory holding device for optical instrument. 4,533,212, Cl. 350-318.000.
Shimizu, Yoshimitsu: *See*—
Maeda, Tetsuro; Okamoto, Akihiro; Shimizu, Yoshimitsu; and Nomoto, Takashi, 4,533,698, Cl. 525-73.000.
Shin-Etsu Chemical Co., Ltd.: *See*—
Itoh, Kunio; Oshima, Toshimichi; and Nakamura, Tsutomu, 4,533,687, Cl. 524-80.000.
Shinbara, Seitaro, to Tokyo Shibaura Denki Kabushiki Kaisha. Frequency modulator wherein modulation takes place in a feedback loop of an oscillator. 4,533,882, Cl. 332-16.00T.
Shinneman, Harold C., Jr.; Rebish, Edward J.; and Shinneman, Harold C., Sr. Sharpening device. 4,532,736, Cl. 51-218.00A.
Shinneman, Harold C., Sr.: *See*—
Shinneman, Harold C., Jr.; Rebish, Edward J.; and Shinneman, Harold C., Sr., 4,532,736, Cl. 51-218.00A.
Shinoda, Naoharu; Tatani, Atsushi; Ukawa, Naohiko; and Okino, Susumu, to Mitsubishi Jokogyo Kabushiki Kaisha. Exhaust fume desulfurization process. 4,533,531, Cl. 423-242.000.
Shinozaki, Satoshi: *See*—
Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,532,701, Cl. 29-576.00W.
Shintani, Takashi: *See*—
Minamide, Hiroshi; Shintani, Takashi; and Murayama, Hiroshi, 4,533,525, Cl. 428-469.000.
Shioi, Shunshuke; Takekawa, Yasuo; and Miyake, Makoto, to Kanzaki Paper Manufacturing Company, Ltd. Recording materials. 4,533,930, Cl. 346-211.000.
Shionogi & Co., Ltd.: *See*—
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,533,730, Cl. 544-92.000.
Shiota, Junji: *See*—
Kurachi, Hisao; Ito, Takeo; Iwase, Takayuki; and Shiota, Junji, 4,533,267, Cl. 400-214.000.
Shipley Company Inc.: *See*—
Orio, Alfred P., 4,533,445, Cl. 204-159.190.

Shirahase, Ichiro: *See—*
Matsumura, Shingo; Enomoto, Hiroshi; Aoyagi, Yoshiaki; Yoshikuni, Yoshiaki; Kura, Kohei; Yagi, Masahiro; and Shirahase, Ichiro, 4,533,668, Cl. 514-321.000.

Shirai, Tamenori, to Mitutoyo Mfg. Co., Ltd. Micrometer head. 4,532,711, Cl. 33-164.00R.

Shiraishi, Minoru; Numata, Yoshimi; Tano, Hiroshi; and Onaka, Tatsumi, to Hitachi Zosen Corporation. Apparatus for abrasive cleaning. 4,532,878, Cl. 114-222.000.

Shiraishi, Mitsuru: *See—*
Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, 4,533,554, Cl. 514-464.000.

Shoichiro, Uyeo: *See—*
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,533,730, Cl. 544-92.000.

Shoketsu Kinzoku Kogyo Kabushiki Kaisha: *See—*
Yamazaki, Masamichi, 4,533,020, Cl. 184-55.200.

Shonetsugaku Kenkyusho Co., Ltd.: *See—*
Uchida, Shiichiro, 4,532,720, Cl. 34-27.000.

Showa Aluminum Corporation: *See—*
Momose, Yutaka; Yamaguchi, Kazuaki; Okamoto, Masayoshi; Hoshino, Ryoichi; and Tanaka, Hiroki, 4,532,771, Cl. 62-6.000.

Showa Denko Kabushiki Kaisha: *See—*
Kurosawa, Shigeru; and Ueshima, Takashi, 4,533,721, Cl. 528-174.000.

Shue, Roger C.: *See—*
Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., 4,533,325, Cl. 433-171.000.

Shumate, Daniel L.: *See—*
Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., 4,532,815, Cl. 73-864.630.

Shumikhin, Vladimir S.: *See—*
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.

Shupert, Paul T.: *See—*
Schemelin, Michael P.; Kaminski, Tony L.; and Shupert, Paul T., 4,532,755, Cl. 56-16.600.

Sidney, LuAnn: *See—*
Evans, Jack L.; Campbell, Karen J.; Kreil, Curtis L.; and Sidney, LuAnn, 4,533,566, Cl. 427-44.000.

Siemens Aktiengesellschaft: *See—*
Fischer, Reinhard, 4,533,874, Cl. 329-50.000.
Fuchs, Peter; Mueller-Glaser, Klaus; Schuett, Dieter; and Wach, Wolfgang, 4,534,008, Cl. 364-716.000.
Grabmaier, Josef; Falckenberg, Richard; and Foll, Helmut, 4,533,428, Cl. 156-608.000.
Herget, Werner, 4,533,958, Cl. 358-280.000.
Rehm, Hans; and Breitenfeld, Horst, 4,533,878, Cl. 330-261.000.
Schlenk, Manfred, 4,533,865, Cl. 324-51.000.
Stocki, Klaus, 4,533,106, Cl. 248-421.000.

Siemens Corporate Research & Support, Inc.: *See—*
Binks, Ronald; Rehak, Anthony S.; and Sinberg, Howard, 4,533,792, Cl. 179-84.00C.
Trischler, Erwin, 4,534,028, Cl. 371-25.000.

Siemon Company, The: *See—*
Knickerbocker, Robert H., 4,533,195, Cl. 339-97.00P.
Pohl, Karl-Heinz, 4,533,202, Cl. 339-176.0MP.

SIG Schweizerische Industrie-Gesellschaft: *See—*
Wehle, Peter, 4,533,425, Cl. 156-466.000.

Sigismonde, Michael, to Guzowski, Christopher B., a part interest. Blizzardkoat. 4,532,654, Cl. 2-69.500.

Signode Corporation: *See—*
Kobiella, Robert J., 4,533,343, Cl. 474-207.000.

Sih, John C.: *See—*
Aristoff, Paul A.; and Sih, John C., 4,533,749, Cl. 562-501.000.

Simko, Richard T., to Xicor, Inc. Integrated circuit high voltage clamping systems. 4,533,846, Cl. 307-550.000.

Simmons, Lacy W. Poultry oil sac removal method and apparatus. 4,532,676, Cl. 17-45.000.

Simplicity Manufacturing, Inc.: *See—*
Schemelin, Michael P.; Kaminski, Tony L.; and Shupert, Paul T., 4,532,755, Cl. 56-16.600.

Sims, Darrell E.: *See—*
Agius, Frank P.; and Sims, Darrell E., 4,533,284, Cl. 408-92.000.

Simson, Dionizy, to Sulzer Brothers Limited. Apparatus for collecting waste from a textile machine. 4,532,860, Cl. 100-90.000.

Sinberg, Howard: *See—*
Binks, Ronald; Rehak, Anthony S.; and Sinberg, Howard, 4,533,792, Cl. 179-84.00C.

Sincerbox, Glenn T.: *See—*
Bjorklund, Gary C.; and Sincerbox, Glenn T., 4,533,211, Cl. 350-162.120.

Sindall, John H.: *See—*
Atherton, John R.; Sindall, John H.; and Heathcock, Osmond R., 4,532,997, Cl. 169-56.000.

Singer Company, The: *See—*
Beller, Wilbert E.; Georgacakis, George D.; and Obermann, George, 4,533,803, Cl. 200-153.00K.

Singh, Shanker; and Singh, Vijendra P., to International Business Machines Corporation. Fault alignment control system and circuits. 4,534,029, Cl. 371-10.000.

Singh, Vijendra P.: *See—*
Singh, Shanker; and Singh, Vijendra P., 4,534,029, Cl. 371-10.000.

Single Buoy Moorings, Inc.: *See—*
Coppens, Anton; and Poldervaart, Leendert, 4,533,332, Cl. 441-3.000.

Sinsko, George V. Purse organizer. 4,532,972, Cl. 150-100.000.

SIP - Societa Italiana per L'Esercizio Telefonico p.A.: *See—*
Fabbri, Bruno; and Fausone, Alfredo, 4,533,868, Cl. 324-83.00R.

Sippel, David F., to General Electric Company. Method of removing a coating. 4,532,738, Cl. 51-319.000.

Sirrenberg, Wilhelm; Klauke, Erich; and Hammann, Ingeborg, to Bayer Aktiengesellschaft. 2,5-Dihalogenobenzoyl-(thio)urea insecticides. 4,533,676, Cl. 514-535.000.

SKF Kugellagerfabriken GmbH: *See—*
Haugwitz, Werner, 4,533,264, Cl. 384-472.000.

SKF (U.K.) Limited: *See—*
Woodbridge, Keith W., 4,533,265, Cl. 384-477.000.

Skrabal, Walter F.: *See—*
Sansevero, Vincent J., Jr.; and Skrabal, Walter F., 4,533,067, Cl. 222-135.000.

SKW Trostberg Aktiengesellschaft: *See—*
Vollbrecht, Heinz-Rudiger, 4,533,733, Cl. 544-190.000.

Slade Gorton & Co., Inc.: *See—*
Wenstrom, Richard T.; and Gorton, Thomas S., Jr., 4,532,677, Cl. 17-74.000.

Slidex Corporation: *See—*
Ozeki, Jiro, 4,533,048, Cl. 206-455.000.
Ozeki, Jiro, 4,533,049, Cl. 206-455.000.

Sloan Valve Company: *See—*
Lissau, Frederic, 4,533,115, Cl. 251-142.000.

Slonicki, Alex. Foot scrubber with soap dispenser for user who cannot reach his feet. 4,532,668, Cl. 15-104.920.

Slyman Manufacturing Corporation: *See—*
Buehl, Arnold L., 4,533,318, Cl. 431-328.000.

Small, Hamish: *See—*
Miller, Theodore E., Jr.; and Small, Hamish, 4,532,811, Cl. 73-861.050.

Smith, Alan; and Bailey, Peter J., to Glaxo Group Limited. Production of a cephalosporin by fermentation. 4,533,632, Cl. 435-47.000.

Smith, Alexander B.: *See—*
Martens, George D.; Smith, Alexander B.; and Healy, Thomas D., 4,532,796, Cl. 73-632.000.

Smith, Charles W., Jr., to Autoclave Engineers, Inc. Rapid cool autoclave furnace. 4,532,984, Cl. 165-61.000.

Smith, Clinton R.: *See—*
Henderson, Harry E.; and Smith, Clinton R., 4,533,778, Cl. 585-13.000.

Smith, David B.; Miller, Randolph F.; and Moore, John M., to Precor Incorporated. Pedal-operated, stationary exercise device. 4,533,136, Cl. 272-73.000.

Smith, Howard W., to United States of America, Air Force. X-ray goniometer. 4,534,050, Cl. 378-81.000.

Smith International, Inc.: *See—*
Ecer, Gunes M., 4,533,815, Cl. 219-121.0LF.

Smith, J. Thomas: *See—*
French, Kenneth; Kocher, Robert C.; Piorkow, Alfred; Shaner, Kenneth; and Smith, J. Thomas, 4,533,251, Cl. 356-384.000.

Smith, Kendall A., to Technicare Corporation. Adaptable area for image storage. 4,533,947, Cl. 358-111.000.

Smith, Michael J.; and Soucie, Allen L., to Linatex Corporation of America. Teeter bed zone density control device and method. 4,533,464, Cl. 209-158.000.

Smith, Philip C., to Westinghouse Electric Corp. Device structures for high density integrated circuits. 4,533,934, Cl. 357-23.700.

Smith, Richard A.: *See—*
Blair, John J.; Fonvielle, Frank P.; Smith, Richard A.; Dehoff, Barry D.; and Shue, Roger C., 4,533,325, Cl. 433-171.000.

Smith, Thomas J., to TII Industries, Inc. Shorting cage for protector wells. 4,533,971, Cl. 361-119.000.

Smith, William V., to Discovision Associates. Angularly multiplexed optical recording medium. 4,534,021, Cl. 369-47.000.

SmithKline Beckman Corporation: *See—*
Gleason, John G.; Hall, Ralph F.; and Ku, Thomas W., 4,533,747, Cl. 560-152.000.

Smolen, Victor F.: *See—*
Cosgrove, Robert J., Jr.; and Smolen, Victor F., 4,533,346, Cl. 604-66.000.

Smyth, Donald N., to Sabco Limited. Brush with detergent feed. 4,532,666, Cl. 15-22.00R.

Snaddon, Robert W. L.; and Dietz, Peter W., to Black & Decker, Inc. Apparatus for removing respirable aerosols from air. 4,533,368, Cl. 55-104.000.

Snider, Joel M.: *See—*
Mueller, Dale E.; and Snider, Joel M., 4,533,126, Cl. 267-141.000.

Societe Anonyme D.B.A.: *See—*
Carre, Jean-Jacques; Courbot, Pierre; and Mery, Jean-Claude, 4,533,023, Cl. 188-73.340.
Carre , Jean-Jacques, 4,533,025, Cl. 188-73.440.

Societe Anonyme de Telecommunications: *See—*
Bourdillot, Michel; Gauthier, Andre ; Maille , Jacques; and Pitault, Bernard, 4,532,699, Cl. 29-572.000.

S.A. Des Ateliers, Houget Duesberg Bosson: *See—*
Kunig, Helmut, 4,532,678, Cl. 19-129.00R.

Societe ECA: *See—*
Lauvray, Georges R. P. L.; and Darche, Michel J. P., 4,533,945, Cl. 358-109.000.

Societe Nationale Elf-Aquitaine (Production): *See*—
Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, 4,533,500, Cl. 260-404.000.
Societe Nationale Industrielle Aerospatiale: *See*—
Coffy, Rene L., 4,532,889, Cl. 118-718.000.
Societe Nationale Industrielle et Aerospatiale: *See*—
Paseri, Jacques, 4,533,100, Cl. 244-158.00R.
Societe Parisienne D'Impression et de Cartonnage: *See*—
Chazal, Guy A.; and Bodet, Jean A., 4,533,065, Cl. 220-462.000.
Societe Staubli-Verdol: *See*—
Bastion, Patrick; Lhuillier, Francois; and Mutschler, Ulrich, 4,532,963, Cl. 139-59.000.
Soderkvist, Anton, to LKB-Produkter AB. Method in a microtome for creating the possibility that the slit between the knife edge and the specimen can be made extremely narrow. 4,532,838, Cl. 83-13.000.
Sola, Domenico: *See*—
Minucciani, Giorgio; and Sola, Domenico, 4,534,006, Cl. 364-513.000.
Solis S.r.l.: *See*—
Gazzarrini, Vinicio, 4,532,875, Cl. 112-262.200.
Sollich, Helmut. Tunnel for refrigerating, heating, or drying products of the foodstuffs and especially the confectionery industry. 4,532,857, Cl. 99-483.000.
Solordal, Steinar, to A/S Tomra Systems. Method for identification of metal boxes or cans and an apparatus for carrying out said method. 4,532,859, Cl. 100-35.000.
Sommer, Edward J., Jr.; Kenny, Garry R.; and Roos, Charles E., to Magnetic Separation Systems, Inc. Rotary fuel homogenizer and use thereof. 4,533,054, Cl. 209-687.000.
Sommer, Edward J., Jr.: *See*—
Kenny, Garry R.; Sommer, Edward J., Jr.; and Roos, Charles E., 4,533,053, Cl. 209-636.000.
Somorjai, Gabor A.; and Leygraf, Christofer H., to University of California, The Regents of The. Electrolytic photodissociation of chemical compounds by iron oxide photochemical diodes. 4,533,608, Cl. 429-111.000.
Sone, Takanori: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,533,731, Cl. 544-140.000.
Soneda, Mitsuo; and Maekawa, Toshikazu, to Sony Corporation. Solid state image pickup apparatus. 4,533,954, Cl. 358-212.000.
Sonne, Leonard J., to HealthScan Inc. Pulmonary training method. 4,533,137, Cl. 272-99.000.
Sonnenberg, Gary N.: *See*—
Borgmeyer, Virgil L.; Galloway, Dudley L.; Sonnenberg, Gary N.; Gruczka, Jan S.; and Owen, Timothy C., 4,533,786, Cl. 174-50.000.
Sonobe, Akihiro: *See*—
Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, 4,533,232, Cl. 355-3.00R.
Sony Corporation: *See*—
Fujimura, Yasushi; Okada, Takashi; and Yamagiwa, Kazuo, 4,533,949, Cl. 358-122.000.
Miyashita, Takao; and Sato, Toshio, 4,533,969, Cl. 360-132.000.
Miyata, Toshihiko; and Shibata, Takashi, 4,534,057, Cl. 381-58.000.
Nakano, Kenji; Takahashi, Takao; Moriwaki, Hisayoshi; and Shimada, Keiichiro, 4,533,963, Cl. 360-19.100.
Nakazato, Kunio; and Ozawa, Kazuya, 4,533,218, Cl. 350-430.000.
Ohkoshi, Akio; Toyama, Takashi; and Watanabe, Toshiro, 4,533,850, Cl. 313-36.000.
Soneda, Mitsuo; and Maekawa, Toshikazu, 4,533,954, Cl. 358-212.000.
Yamada, Takaaki; and Sekino, Takeo, 4,533,903, Cl. 340-347.0AD.
Yamamoto, Kaichi; and Yonemitsu, Jun, 4,533,937, Cl. 358-22.000.
Sorbo, Peter J.: *See*—
Roule, Richard L.; Sorbo, Peter J.; and Kimball, John J., 4,533,586, Cl. 428-137.000.
Sorko-Ram, Paul O. Process for producing a device for reflecting electromagnetic energy and product produced thereby. 4,533,591, Cl. 428-213.000.
Souchi, Toshiyuki; and Todaka, Isoo, to Toyoda Gosei Co., Ltd. Device for attaching a hose joint. 4,532,687, Cl. 29-235.000.
Soucie, Allen L.: *See*—
Smith, Michael J.; and Soucie, Allen L., 4,533,464, Cl. 209-158.000.
Spalding, Peter S., to Alcan Aluminun Corporation. Liquid flow switch and method of using same. 4,533,802, Cl. 200-81.90R.
Spector, George: *See*—
Trejo, Jesse; and Spector, George, 4,532,725, Cl. 37-243.000.
Speldrich, Werner: *See*—
Morz, Gunter; and Speldrich, Werner, 4,533,887, Cl. 333-256.000.
Spencer, Alwyn, to Ciba-Geigy Corporation. Process for the preparation of styrene derivatives and/or stilbene derivatives. 4,533,505, Cl. 260-465.00R.
Sperry Corporation: *See*—
Lucchi, George A.; and Alisobhani, Jalal, 4,533,915, Cl. 343-5.00W.
Sheppard, John E., 4,533,624, Cl. 430-312.000.
Spielau, Paul: *See*—
Neuschaeffer, Karl H.; Spielau, Paul; Zoche, Gunter; and Engels, Hans-Werner, 4,533,393, Cl. 106-18.120.
Spinner, Joseph R., to King-Seeley Thermos Co. Ice making apparatus. 4,533,310, Cl. 425-376.00R.
Spinning, Richard R. Adjustable radial curve. 4,532,714, Cl. 33-177.000.
Sponseller, David L.; and Straatmann, John A., to AMAX Inc. Tubular high strength low alloy steel for oil and gas wells. 4,533,405, Cl. 148-36.000.
Spott, Georg: *See*—
Goldmann, Gerd; Spott, Georg; and Frohlich, Christian, 4,533,432, Cl. 159-47.100.
Sprague Electric Company: *See*—
Hebert, John R., Jr., 4,533,989, Cl. 363-132.000.
Maher, Galeb H., 4,533,974, Cl. 361-320.000.
Sprinter System AB: *See*—
Persson, Karl R., 4,533,079, Cl. 229-31.00R.
Spry, Douglas O., to Eli Lilly and Company. N-ethylidene azetidinones. 4,533,497, Cl. 260-239.00A.
Squire, Edward N., to Du Pont de Nemours, E. I., and Company. 4,5-Dichloro-2,2,4,5,-tetrafluoro-1,3-dioxolane. 4,533,741, Cl. 549-455.000.
Squires, V. Alan, to Cooper Industries, Inc. Wedge lock valve retainer. 4,532,955, Cl. 137-15.000.
SRI International: *See*—
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,692, Cl. 524-417.000.
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,693, Cl. 524-417.000.
Wolfe, James F.; Sybert, Paul D.; and Wilson, Blake, 4,533,724, Cl. 528-313.000.
Srivastava, Suresh C.; Meinken, George E.; and Richards, Powell, to United States of America, Energy. Tin-117m-labeled stannic (Sn^{4+}) chelates. 4,533,541, Cl. 424-1.100.
Stackhouse, James L., Jr., to Emerson Electric Co. Saw blade guard. 4,532,841, Cl. 83-102.100.
Staerzl, Richard E., to Brunswick Corporation. Binary and proportional control for a feedback carburetor. 4,532,903, Cl. 123-436.000.
Stamicarbon B.V.: *See*—
Schrijver, Jan; and Vossebeld, Arnold, 4,533,696, Cl. 524-528.000.
Standard Oil Company, The: *See*—
Fox, Joseph R.; Pesa, Frederick A.; and Curatolo, Benedict S., 4,533,775, Cl. 568-905.000.
Lee, Min-Hsiun, 4,533,529, Cl. 423-230.000.
Standard Oil Company (Indiana): *See*—
Fields, Ellis K., 4,533,478, Cl. 252-8.55D.
Hoekstra, George R.; and Forgac, John M., 4,532,991, Cl. 166-261.000.
Stangroom, James E., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Fluid-powered actuators. 4,532,853, Cl. 91-165.000.
Starmuhler, Erwin: *See*—
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Stauffer Chemical Company: *See*—
Burks, William M., Jr.; Doane, Elliott P.; Campbell, Ramsey G.; and Velez, Emilio S., 4,533,473, Cl. 210-754.000.
Stavis, Hillel: *See*—
Bell, George M., 4,533,104, Cl. 248-245.000.
Ste Francaise des Produits pour Catalyse chez Institut Francais du Petrole: *See*—
Boitiaux, Jean-Paul; and Oosyns, Jean, 4,533,779, Cl. 585-259.000.
Ste LOOK: *See*—
Bernard, Jean; Beyl, Jean J. A.; Campillo, Christian; and Le Faou, Daniel, 4,533,154, Cl. 280-615.000.
Stearns, William P.: *See*—
Penz, Perry A.; Petcavich, Robert J.; Stearns, William P.; and Sanders, Larry W., 4,533,214, Cl. 350-334.000.
Stein, Patrick G. Toothbrush holder and preserver. 4,533,045, Cl. 206-362.300.
Steinbaugh, Gary, to General Signal Corporation. Magnetic read/write circuit. 4,533,965, Cl. 360-62.000.
Steinbrenner, Ulrich, to Robert Bosch GmbH. Control device for metering fuel in a supercharged internal combustion engine. 4,532,908, Cl. 123-493.000.
Steiner, Rudolph, to Parlec, Inc. Tool presetting device with tapered air spindle mount. 4,532,716, Cl. 33-201.000.
Steinman, LeRoy F., Jr. Combination smoke and burglar alarm. 4,533,904, Cl. 340-521.000.
Stelco Inc.: *See*—
Kelly, John H., 4,533,642, Cl. 436-78.000.
Stenzel, Gerhard: *See*—
Kaule, Wittich; Schwenk, Gerhard; and Stenzel, Gerhard, 4,533,244, Cl. 356-71.000.
Sterki, Armin, to Maag Gear-Wheel & Machine Company, Ltd. Inspection machine and method for measuring the circular pitch spacing of teeth on a measurement circle of a gear. 4,532,715, Cl. 33-179.50R.
Sterling Drug Inc.: *See*—
Morgan, Barry A., 4,533,655, Cl. 514-18.000.
Morgan, Barry A., 4,533,657, Cl. 514-19.000.
Stern, Robert: *See*—
Chauvin, Yves; Commereuc, Dominique; Hirschauer, Andre ; Reffet, Dominique; and Stern, Robert, 4,533,500, Cl. 260-404.000.
Sterrett, Terry L.: *See*—
Kidd, Patrick D.; Sterrett, Terry L.; and Andreiko, Craig A., 4,533,321, Cl. 433-18.000.
Stevens, Rex R., to Dow Chemical Company, The. Metal oxide fibers from acrylate salts. 4,533,508, Cl. 264-22.000.
Steward, John H.; and Ladouceur, Harold A., to Multifastener Corporation. Fastener orienting, tapping and collection system. 4,532,664, Cl. 10-162.00A.
Stewart, Allan: *See*—
Dewing, John; Hogan, Philip J.; and Stewart, Allan, 4,533,533, Cl. 423-328.000.

Stewart, Keith. Kite. 4,533,099, Cl. 244-153.00R.
Stidham, Mark A., to Atwood Vacuum Machine Company. Swivel. 4,533,276, Cl. 403-165.000.
Stirling Thermal Motors, Inc.: *See*—
Meijer, Roelf J.; Ziph, Benjamine; and Godett, Ted M., 4,532,855, Cl. 92-71.000.
Stockburger, Hermann; Winderlich, Hans-George; Bauer, Siegfried; and Adamovic, Zeljko H. Method and device for registering the use of copying machines. 4,533,237, Cl. 355-40.000.
Stockl, Klaus, to Siemens Aktiengesellschaft. Lifting device for a dentist chair. 4,533,106, Cl. 248-421.000.
Stokes, Vijay K., to General Electric Company. Double beam motor vehicle bumpers. 4,533,166, Cl. 293-120.000.
Stomp, Hubert: *See*—
Mailliet, Pierre; Andonov, Radomir; Stomp, Hubert; and Monai, Jean, 4,533,125, Cl. 266-226.000.
Stone Manufacturing & Supply Co.: *See*—
Allen, Gary D., 4,532,707, Cl. 30-200.000.
Stops, Peter: *See*—
Kummer, Rudolf; Richter, Wolfgang; Schwirten, Kurt; and Stops, Peter, 4,533,757, Cl. 568-454.000.
Storage Technology Corporation: *See*—
Georgis, Steven P., 4,533,991, Cl. 364-164.000.
Stowe, David W., to Gould Inc. Evanescent-wave star coupler on a substrate. 4,533,208, Cl. 350-96.160.
Straatmann, John A.: *See*—
Sponseller, David L.; and Straatmann, John A., 4,533,405, Cl. 148-36.000.
Strapex AG: *See*—
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Strata Bit Corporation: *See*—
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Straub, Richard L.: *See*—
Pou, Frederick M.; and Straub, Richard L., 4,533,269, Cl. 400-582.000.
Strole, Ulrich: *See*—
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Sturdy, Harry D., to Sturdy Truck Equipment, Inc. Engine governor with fast reference positioning and slow opening and closing movement of throttle limiter. 4,532,901, Cl. 123-333.000.
Sturdy Truck Equipment, Inc.: *See*—
Sturdy, Harry D., 4,532,901, Cl. 123-333.000.
Suematsu, Koushi: *See*—
Ohsaki, Ichiro; Hasegawa, Tetsuo; and Suematsu, Koushi, 4,533,616, Cl. 430-110.000.
Sugano, Kazuhiko, to Nissan Motor Company, Ltd. Hydraulic control system for automatic transmission. 4,532,829, Cl. 74-869.000.
Sugawara, Koko: *See*—
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,533,631, Cl. 435-70.000.
Sugihara, Masahiro; Morishita, Etsuo; Hirai, Tetsuo; and Sekiya, Shin, to Mitsubishi Denki Kabushiki Kaisha. Turbine rotatable in one direction in a reciprocating flow. 4,533,292, Cl. 415-2.00R.
Sugihara, Taisuke: *See*—
Ibuki, Tadayuki; Sugihara, Taisuke; Kawakubo, Hiromu; and Sone, Takanori, 4,533,731, Cl. 544-140.000.
Sugisaki, Mutsuo: *See*—
Itoh, Kazuhiro; Sugisaki, Mutsuo; and Tanaka, Hiroshi, 4,532,685, Cl. 29-156.40R.
Sugiura, Susumu; and Kohzato, Yasuo, to Canon Kabushiki Kaisha. Color image processing apparatus. 4,533,928, Cl. 346-140.00R.
Sugiyama, Masahiko: *See*—
Hashimoto, Kametaro; Ushitani, Kenji; Noda, Fumiyoshi; Sugiyama, Masahiko; and Murachi, Mikio, 4,533,579, Cl. 428-36.000.
Sugiyama, Shizuo: *See*—
Kobayashi, Masahito; Maeda, Narimichi; Hagiwara, Yoshimune; Akazawa, Takashi; and Sugiyama, Shizuo, 4,534,010, Cl. 364-748.000.
Sukonick, Josef; and Fjallstam, Bjorn M., to Cadtrak Corporation. Graphics display system with viewports of arbitrary location and content. 4,533,910, Cl. 340-721.000.
Sulzer Brothers Limited: *See*—
Lincke, Paul, 4,532,965, Cl. 139-435.000.
Simson, Dionizy, 4,532,860, Cl. 100-90.000.
Sumitomo Chemical Company, Limited: *See*—
Shiga, Akinobu; Sasaki, Toshio; and Kojima, Junpei, 4,533,706, Cl. 526-119.000.
Sumitomo Electric Industries, Ltd.: *See*—
Okita, Koichi, 4,533,369, Cl. 55-158.000.
Suncom, Incorporated: *See*—
Cecchi, Marino; Borucki, Gregory J.; and Happ, Lawrence R., 4,533,092, Cl. 242-186.000.
Sundstrand Corporation: *See*—
Aldrich, Allyn M., 4,533,097, Cl. 244-78.000.
Sung, Rodney L.; and Karol, Thomas J., to Texaco Inc. Middle distillate containing storage stability additive. 4,533,361, Cl. 44-73.000.
Susman, Samuel E.: *See*—
Hirschbuehler, Kevin; and Susman, Samuel E., 4,533,686, Cl. 523-468.000.
Suter, Walter. Apparatus for folding a running web with folding roller and adjustable parallelling bar. 4,533,130, Cl. 270-41.000.
Suwa, Kaname, to Canon Kabushiki Kaisha. Electronic unit. 4,533,976, Cl. 361-395.000.
Suzuki, Eiichi, to Canon Kabushiki Kaisha. Ink-jet recording method. 4,533,920, Cl. 346-1.100.
Suzuki, Eiichi, to Canon Kabushiki Kaisha. Ink-jet recording method. 4,533,923, Cl. 346-1.100.
Suzuki, Hirohisa: *See*—
Ono, Shigetoshi; Harada, Toru; Suzuki, Hirohisa; Tanaka, Mitsugu; and Nakamura, Shigeru, 4,533,626, Cl. 430-562.000.
Suzuki, Kohji: *See*—
Oda, Yoshio; Morimoto, Takeshi; and Suzuki, Kohji, 4,533,453, Cl. 204-252.000.
Suzuki, Noboru: *See*—
Hakuraku, Yoshinori; Ogata, Hisanao; Daikoku, Takahiro; and Suzuki, Noboru, 4,532,770, Cl. 62-3.000.
Suzuki, Tokuo. Pocket structure in a sock or the like. 4,532,656, Cl. 2-247.000.
Swain, James C.; and Thomas, David L., to Diesel Kiki Co., Ltd. Variable capacity wobble plate compressor with prompt capacity control. 4,533,299, Cl. 417-222.000.
Swain, Thomas L., to Monolithic Memories, Inc. Integrated circuit package magazine and receptacle. 4,533,043, Cl. 206-328.000.
Sweetman, James E.: *See*—
Miller, Alexander; Sweetman, James E.; and McDougall, Douglas J., 4,532,743, Cl. 52-207.000.
Sybert, Joanne R.: *See*—
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,692, Cl. 524-417.000.
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,693, Cl. 524-417.000.
Sybert, Paul D.: *See*—
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,692, Cl. 524-417.000.
Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., 4,533,693, Cl. 524-417.000.
Wolfe, James F.; Sybert, Paul D.; and Wilson, Blake, 4,533,724, Cl. 528-313.000.
Sybron Corporation: *See*—
Kidd, Patrick D.; Sterrett, Terry L.; and Andreiko, Craig A., 4,533,321, Cl. 433-18.000.
Sygnator, Henry A., to Illinois Tool Works Inc. Method of manufacturing a drill screw. 4,532,663, Cl. 10-10.00R.
Syrier, Johannes L. M.: *See*—
van Helden, Robert; Baardman, Frank; and Syrier, Johannes L. M., 4,533,379, Cl. 71-88.000.
Syva Company: *See*—
Litman, David J.; and Ullman, Edwin F., 4,533,629, Cl. 435-7.000.
Szczepanski, Henry, to Ciba-Geigy Corporation. Oxime derivatives for protecting plant crops. 4,532,732, Cl. 47-57.600.
Szerdahelyi, Lajos: *See*—
Muranyi, Istvan; Balazs, Laszlone ; Molnar, Jozsef; Burda, Ferencne ; Metzler, Maria; and Szerdahelyi, Lajos, 4,533,638, Cl. 435-288.000.
T. O. Plastics, Inc.: *See*—
Kraft, Howard R., 4,533,588, Cl. 428-167.000.
Taff, Douglas C.; and Holdridge, Robert B. Modular passive solar energy heating unit employing phase change heat storage material which is clearly transparent when in its high-stored-energy liquid state. 4,532,917, Cl. 126-430.000.
Tagata, Nobuo: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.
Taig, Alistair G., to Allied Corporation. Mechanical brake control device. 4,533,028, Cl. 192-13.00A.
Taka, Hideo: *See*—
Masunaga, Makoto; and Taka, Hideo, 4,533,241, Cl. 356-1.000.
Takada, Isao: *See*—
Kawasaki, Tatsuo; Takada, Isao; and Ohtsubo, Hiroshi, 4,533,806, Cl. 219-8.500.
Takada, Keisuke; and Okuhara, Hiroo, to Tokyo Shibaura Denki Kabushiki Kaisha. Computer process control system. 4,533,990, Cl. 364-160.000.
Takahashi, Akira, to Ricoh Company, Ltd. Distance measuring circuit. 4,533,227, Cl. 354-403.000.
Takahashi, Hitoshi: *See*—
Takaishi, Naotake; Takahashi, Hitoshi; and Inamoto, Yoshiaki, 4,533,770, Cl. 568-817.000.
Takahashi, Katsuhiko: *See*—
Kasuga, Takuzo; and Takahashi, Katsuhiko, 4,533,680, Cl. 523-220.000.
Takahashi, Masahiro: *See*—
Oda, Kazutaka; Ohba, Hisao; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,533,444, Cl. 204-129.430.
Takahashi, Osamu; and Tanaka, Mitsugu, to Fuji Photo Film Co., Ltd. Photographic element for color diffusion transfer process containing hydroquinone sulfonates. 4,533,622, Cl. 430-218.000.
Takahashi, Shunetsu, to Epson Corporation. Mechanism for selecting pen in an X-Y plotter. 4,533,924, Cl. 346-49.000.
Takahashi, Takao: *See*—
Nakano, Kenji; Takahashi, Takao; Moriwaki, Hisayoshi; and Shimada, Keiichiro, 4,533,963, Cl. 360-19.100.
Takaishi, Naotake; Takahashi, Hitoshi; and Inamoto, Yoshiaki, to Kao Corporation. 2-Exo-hydroxy-endo-tricyclo[6.2.1.$0^{2,7}$]undecane. 4,533,770, Cl. 568-817.000.
Takaoka, Hiroshi; Furukawa, Toshiki; and Fukuda, Hiroshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Load control system and method of combined cycle turbine plants. 4,532,761, Cl. 60-39.130.

Takase, Hiroshi: *See*—
Kurita, Hiroyuki; Kobayashi, Yuko; Dosaka, Shinichi; Kikuchi, Juro; Takase, Hiroshi; and Harada, Kenichi, 4,533,220, Cl. 350-507.000.

Takashima, Hiroaki: *See*—
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Katoh, Osamu, 4,533,535, Cl. 423-447.400.

Takashima, Yoshie: *See*—
Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, 4,533,514, Cl. 376-308.000.

Takasugi, Hisashi: *See*—
Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, 4,533,738, Cl. 548-194.000.

Takaya, Takao; Inoue, Yoshikazu; Murata, Masayoshi; and Takasugi, Hisashi, to Fujisawa Pharmaceutical Co., Ltd. New cephem compounds and processes for preparation thereof. 4,533,738, Cl. 548-194.000.

Take, Shigeo: *See*—
Asaumi, Hiroshi; Take, Shigeo; Akase, Masazumi; and Terada, Isao, 4,533,581, Cl. 428-64.000.

Takebayashi, Norie: *See*—
Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, 4,533,232, Cl. 355-3.00R.

Takeda Chemical Industries, Ltd.: *See*—
Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, 4,533,554, Cl. 514-464.000.
Yoshioka, Kouichi; and Ochiai, Michihiko, 4,533,495, Cl. 260-239.00A.

Takeda, Kunihiko, to Asahi Kasei Kogyo Kabushiki Kaisha. Basic compound, its polymer, a process for the preparation thereof and its use as ion exchange resin. 4,533,678, Cl. 521-389.000.

Takeda, Masami: *See*—
Mizui, Kinya; Takeda, Masami; and Iwata, Tadao, 4,533,700, Cl. 525-285.000.

Takeda, Yoshio: *See*—
Washizuka, Isamu; and Takeda, Yoshio, 4,533,213, Cl. 350-332.000.

Takekawa, Yasuo: *See*—
Shioi, Shunshuke; Takekawa, Yasuo; and Miyake, Makoto, 4,533,930, Cl. 346-211.000.

Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, to Bridgestone Tire Company Limited; and Japan Synthetic Rubber Co., Ltd. Polybutadiene rubber compositions having improved green strength. 4,533,711, Cl. 526-340.400.

Takeuchi, Yukihisa; and Fujita, Tadashi, to NGK Insulators, Ltd. Multi-channel body. 4,533,584, Cl. 428-116.000.

Takino, Kenichi; Yamasaki, Eiji; and Murakami, Kenji, to Sharp Kabushiki Kaisha. Vaporizing type fuel combustion apparatus with tar removal device. 4,533,316, Cl. 431-32.000.

Takino, Shigekatsu: *See*—
Kondo, Hirokazu; and Takino, Shigekatsu, 4,532,869, Cl. 104-166.000.

Talley, John J., to General Electric Company. Catalytic hydrodealkylation of alkylated phenols. 4,533,767, Cl. 568-805.000.

Talley, John J., to General Electric Company. Zinc oxide catalyzed dealkylation of alkylated phenols. 4,533,768, Cl. 568-805.000.

Talley, John J., to General Electric Company. Method of making methylated phenol from methylated cyclohexeneone. 4,533,769, Cl. 568-806.000.

Tanahashi, Toshifumi; and Itoh, Senji, to Toyo Seikan Kaisha Limited. Composite material for packaging containers. 4,533,576, Cl. 428-35.000.

Tanaka, Haruhiko: *See*—
Kongoh, Takeshi; and Tanaka, Haruhiko, 4,532,876, Cl. 112-454.000.

Tanaka, Hideto, to Alps Electric Co., Ltd. Linearly parallel multipen recorder. 4,533,922, Cl. 346-1.100.

Tanaka, Hiroki: *See*—
Momose, Yutaka; Yamaguchi, Kazuaki; Okamoto, Masayoshi; Hoshino, Ryoichi; and Tanaka, Hiroki, 4,532,771, Cl. 62-6.000.

Tanaka, Hiroshi: *See*—
Itoh, Kazuhiro; Sugisaki, Mutsuo; and Tanaka, Hiroshi, 4,532,685, Cl. 29-156.40R.

Tanaka, Masami: *See*—
Fukui, Masahiro; Kitano, Kisei; Tanaka, Masami; and Goto, Yasuyuki, 4,533,488, Cl. 252-299.610.

Tanaka, Mitsugu: *See*—
Ono, Shigetoshi; Harada, Toru; Suzuki, Hirohisa; Tanaka, Mitsugu; and Nakamura, Shigeru, 4,533,626, Cl. 430-562.000.
Takahashi, Osamu; and Tanaka, Mitsugu, 4,533,622, Cl. 430-218.000.

Tanaka, Motoaki; Toyama, Takanori; Oba, Hitoshi; and Yamaguchi, Osamu, to Wako Pure Chemical Industries, Ltd. Azo polymerization initiator composition. 4,533,652, Cl. 502-167.000.

Tanaka, Shinichi; and Mineyama, Takitsugu, to Sharp Kabushiki Kaisha. Keyboard-equipped apparatus such as an electronic calculator with battery throw means for enabling a power supply circuit. 4,533,837, Cl. 307-116.000.

Tanaka, Takashi: *See*—
Fujimura, Naoto; Sonobe, Akihiro; Yoshihara, Toshiyuki; Takebayashi, Norie; Tanaka, Takashi; and Kuribayashi, Masaki, 4,533,232, Cl. 355-3.00R.

Tanaka, Yoshikazu: *See*—
Abo, Keiju; Yamamuro, Sigeaki; Tanaka, Yoshikazu; Kumura, Haruyoshi; and Hirano, Hiroyuki, 4,533,340, Cl. 474-28.000.

Tanaka, Yoshio; Nishikawa, Yasuhisa; Hasumi, Ryoichi; and Koizumi, Takashi, to Clarion Co., Ltd. Clutch interlocking mechanism. 4,532,818, Cl. 74-10.330.

Taniguchi, Isoji; Kimura, Yoshiharu; and Ichimura, Toshiaki, to Idemitsu Kosan Company Limited. Process for the production of high molecular weight organoaluminum polymers. 4,533,712, Cl. 528-9.000.

Tano, Hiroshi: *See*—
Shiraishi, Minoru; Numata, Yoshimi; Tano, Hiroshi; and Onaka, Tatsumi, 4,532,878, Cl. 114-222.000.

Tao, Thomas, to James River-Dixie/Northern, Inc. Fiber moisture control in the formation of dry-laid webs. 4,533,507, Cl. 261-153.000.

Tarpley, Robert S.: *See*—
Dyer, Richard J.; and Tarpley, Robert S., 4,532,880, Cl. 114-298.000.

Tasset, Emmett L.: *See*—
Ishibe, Nobuyuki; Thomas, Renard L.; and Tasset, Emmett L., 4,533,653, Cl. 502-242.000.

Tatani, Atsushi: *See*—
Shinoda, Naoharu; Tatani, Atsushi; Ukawa, Naohiko; and Okino, Susumu, 4,533,531, Cl. 423-242.000.

Tayama, Suehiro; and Kusakawa, Norihisa, to Mitsubishi Rayon Company, Limited. Flame resistant acrylic resin composition and process for its production. 4,533,689, Cl. 524-130.000.

Tayco Developments, Inc.: *See*—
Taylor, Douglas P., 4,532,856, Cl. 92-168.000.

Taylor, Douglas P., to Tayco Developments, Inc. End cap for fluid cylinder. 4,532,856, Cl. 92-168.000.

Taylor, James E.: *See*—
Dahlgren, Harold P.; Taylor, James E.; Peters, Dwight W.; and Selby, Donald R., 4,532,735, Cl. 51-56.00R.
Dahlgren, Harold P.; Gardiner, John W.; and Taylor, James E., 4,533,563, Cl. 427-387.000.

Taylor, Monroe F., to W. R. Grace & Co., Cryovac Div. Product indexing device. 4,532,752, Cl. 53-451.000.

Taylor, Philip A.: *See*—
Johnson, A. Neil; and Taylor, Philip A., 4,533,423, Cl. 156-359.000.

TDK Electronics Co., Ltd.: *See*—
Fukuda, Kazumasa; and Kitahara, Yoshimi, 4,533,603, Cl. 428-458.000.

Technicare Corporation: *See*—
Smith, Kendall A., 4,533,947, Cl. 358-111.000.

Tektronix, Inc.: *See*—
Collier, Warren, 4,534,045, Cl. 377-16.000.
Easton, Thomas C., 4,532,839, Cl. 83-29.000.
Rogers, Jerrold J.; and Trumps, Joseph S., 4,533,861, Cl. 318-696.000.

Telectronics Pty. Ltd.: *See*—
Daly, Christopher N.; and Money, David K., 4,533,988, Cl. 363-127.000.

Telefonbau und Normalzeit GmbH: *See*—
Geppert, Fritz, 4,533,793, Cl. 179-99.00R.

Teng, Yu-Ling; McCoy, Charles; DeFalco, Francis; and Mayernick, Richard, to Kollmorgan Technologies Corp. Electrodeposition composition, process for providing a Zn/Si/P coating on metal substrates and articles so coated. 4,533,606, Cl. 428-658.000.

Terada, Isao: *See*—
Asaumi, Hiroshi; Take, Shigeo; Akase, Masazumi; and Terada, Isao, 4,533,581, Cl. 428-64.000.

Terao, Shinji; Shiraishi, Mitsuru; and Kato, Kaneyoshi, to Takeda Chemical Industries, Ltd. Quinone derivatives and use. 4,533,554, Cl. 514-464.000.

Texaco Canada Resources Ltd.: *See*—
Toma, Petre; Redford, David A.; Livesey, Declan B.; and Coates, Roy M., 4,532,994, Cl. 166-303.000.

Texaco Development Corporation: *See*—
Jahnke, Frederick C.; and Crouch, William B., 4,533,363, Cl. 48-197.00R.

Texaco Inc.: *See*—
Haag, James W., 4,533,374, Cl. 62-18.000.
Lin, Jiang-Jen; and Knifton, John F., 4,533,742, Cl. 549-475.000.
Lin, Jiang-Jen; and Brader, Walter H., Jr., 4,533,756, Cl. 568-454.000.
Mims, Donald S.; and Widmyer, Richard H., 4,532,986, Cl. 166-50.000.
Rundell, Herbert A., 4,533,162, Cl. 285-27.000.
Sung, Rodney L.; and Karol, Thomas J., 4,533,361, Cl. 44-73.000.
Waddill, Harold G., 4,533,719, Cl. 528-111.000.

Texas A&M University: *See*—
Fincher, Jeffrey L., 4,533,827, Cl. 250-211.00K.

Texas Instruments Incorporated: *See*—
Grenier, Aime J.; and McBride, Lyle E., 4,533,888, Cl. 335-131.000.
Magar, Surendar S.; and Caudel, Edward R., 4,533,992, Cl. 364-200.000.
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Mohan Rao, G. R., 4,533,843, Cl. 307-530.000.
Penz, Perry A.; Petcavich, Robert J.; Stearns, William P.; and Sanders, Larry W., 4,533,214, Cl. 350-334.000.

Tezucar, Okan K.; and Parisi, David A., to Burroughs Corporation. Gas-filled dot matrix display panel and operating system. 4,533,913, Cl. 340-805.000.

TH. Goldschmidt AG: *See*—
Weitemeyer, Christian, 4,533,723, Cl. 528-303.000.

Thackeray, James W.: *See*—
Campbell, John R.; and Thackeray, James W., 4,533,722, Cl. 528-199.000.

Thapar, Hemant K., to AT&T Information Systems. Method and apparatus for coding a binary signal. 4,534,040, Cl. 375-39.000.
Thatcher, John B. Swimming pool alarm. 4,533,907, Cl. 340-565.000.
Theeuwes, Felix: *See*—
Wolfe, Allan M.; Davenport, James M.; Theeuwes, Felix; and Yum, Su I., 4,533,348, Cl. 604-85.000.
Theodor Hymmen KG: *See*—
Dorries, Peter; and Wahl, Helmut, 4,533,590, Cl. 428-211.000.
Theodore, Ares N.; and Chattha, Mohinder S., to Ford Motor Company. Non-aqueous dispersions based on capped stabilizers and reactants comprising polyfunctional monomers II. 4,533,695, Cl. 524-504.000.
Theratronics, Inc.: *See*—
Carlisle, Floyd L., 4,532,938, Cl. 128-801.000.
Therm-O-Disc, Incorporated: *See*—
Bishop, Ralph L.; Rich, William N.; and Kowalski, Walter C., 4,533,894, Cl. 337-107.000.
Thermasol, Ltd.: *See*—
Altman, Murray; and Bellasalma, Gerald J., 4,533,512, Cl. 264-339.000.
Thoma, Klemens: *See*—
von der Bey, Thomas; Jankowski, Detlef; Schmidt, Hartmut; Thoma, Klemens; and Volker, Wolfgang, 4,532,779, Cl. 62-514.00R.
Thomas, Alan D.: *See*—
Jackman, Peter R.; and Thomas, Alan D., 4,533,801, Cl. 200-61.45R.
Thomas & Betts Corporation: *See*—
Brandeau, Edward P., 4,532,691, Cl. 29-566.400.
Wilson, Albert H., 4,533,200, Cl. 339-99.00R.
Thomas, David; and Briggs, Eugene C., to Koehring Company. Portable LP space heater. 4,532,914, Cl. 126-110.00C.
Thomas, David L.: *See*—
Swain, James C.; and Thomas, David L., 4,533,299, Cl. 417-222.000.
Thomas, David R.; and Tien, Paul C., to International Business Machines Corporation. FET Memory with drift reversal. 4,534,017, Cl. 365-149.000.
Thomas, Donald A.: *See*—
Tobey, William H.; Thomas, Donald A.; and Gardner, William J., 4,532,674, Cl. 16-295.000.
Thomas, Floyd L.: *See*—
Segerson, Eugene E.; and Thomas, Floyd L., 4,533,209, Cl. 350-96.200.
Thomas, Harvel W.: *See*—
Thomas, Philip D.; and Thomas, Harvel W., 4,533,118, Cl. 254-202.000.
Thomas, Philip D.; and Thomas, Harvel W. Stripper assembly for removing carpet. 4,533,118, Cl. 254-202.000.
Thomas, Renard L.: *See*—
Ishibe, Nobuyuki; Thomas, Renard L.; and Tasset, Emmett L., 4,533,653, Cl. 502-242.000.
Thomassen International: *See*—
Hendriks, Rudolf, 4,533,293, Cl. 415-117.000.
Thompson, Tommy L., to University of Arizona Foundation. Two stage cooling system. 4,532,777, Cl. 62-434.000.
Thomsen, Svend E.: *See*—
Petersen, Hans C.; Kyster, Erik; and Thomsen, Svend E., 4,533,303, Cl. 418-61.00B.
Thrasher, David L.: *See*—
Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., 4,532,970, Cl. 141-98.000.
Thum, Oskar: *See*—
von Torklus, Detlef; Thum, Oskar; and Wilharm, Friedrich, 4,532,921, Cl. 128-80.00C.
Thurne Engineering Company Limited: *See*—
Antonissen, Peter, 4,532,840, Cl. 83-71.000.
Thyssen Aktiengesellschaft vorm. August Thyssen-Hutte: *See*—
Rellermeyer, Heinrich; and Kaas, Werner, 4,533,384, Cl. 75-0.5BA.
Tiemann, Jerome J.; and Engeler, William E., to General Electric Company. System for encoding and decoding video signals. 4,533,936, Cl. 358-12.000.
Tiemann, Jerome J.; Cutler, Scott E.; and Welles, Kenneth B., II, to General Electric Company. System for encoding and decoding video signals. 4,533,960, Cl. 358-310.000.
Tien, Paul C.: *See*—
Thomas, David R.; and Tien, Paul C., 4,534,017, Cl. 365-149.000.
Tien, Tseng-Ying, to Board of Regents acting for and on behalf of the University of Michigan, The. Ceramic compositions. 4,533,647, Cl. 501-105.000.
TII Industries, Inc.: *See*—
Smith, Thomas J., 4,533,971, Cl. 361-119.000.
Tilson, Alan L.; Quay, Earl R.; and Knight, John C., to Mayer, Wildman Industries, Inc. Pneumatic fiber recovery and redistribution system for sliver high pile fabric knitting machines. 4,532,780, Cl. 66-9.00B.
Tlaker, Erich, to Fellows Corporation. Temperature compensation apparatus for gear shapers. 4,533,858, Cl. 318-634.000.
TMC Corporation: *See*—
Gertsch, Ulrich, 4,533,156, Cl. 280-629.000.
Krob, Erwin; and Bauer, Helmut, 4,533,155, Cl. 280-628.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Izumi, Takayuki; Naito, Tsutomu; and Igarashi, Seiko, 4,533,461, Cl. 208-44.000.
Tobey, William H.; Thomas, Donald A.; and Gardner, William J., to Martin Marietta Corporation. Hinge assembly with over-center latch. 4,532,674, Cl. 16-295.000.
Toda, Toshimasa; and Kurumada, Tomoyuki, to Sankyo Company Limited. Tris(piperidylaminotriazylamino) compounds, their preparation and their use as polymer stabilizers. 4,533,688, Cl. 524-100.000.
Todaka, Isoo: *See*—
Souchi, Toshiyuki; and Todaka, Isoo, 4,532,687, Cl. 29-235.000.
Tokarzewski, Richard J.; and Schreiber, William L., to International Flavors & Fragrances Inc. Acetyl dimethylbutylcyclohexene and organoleptic uses thereof. 4,533,492, Cl. 252-522.00R.
Tokiguchi, Katsumi: *See*—
Itoh, Haruo; Tokiguchi, Katsumi; Warabisako, Terunori; Saitoh, Tadashi; and Tokuyama, Takashi, 4,533,831, Cl. 250-492.200.
Tokoro, Setsuo: *See*—
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.
Tokuyama Soda Kabushiki Kaisha: *See*—
Kusumoto, Koshi; Kawaguchi, Toshio; and Ogata, Takayuki, 4,533,701, Cl. 525-370.000.
Tokuyama, Takashi: *See*—
Itoh, Haruo; Tokiguchi, Katsumi; Warabisako, Terunori; Saitoh, Tadashi; and Tokuyama, Takashi, 4,533,831, Cl. 250-492.200.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Fujii, Takashi; Ushizawa, Jisaburo; and Watanabe, Masayuki, 4,533,822, Cl. 219-553.000.
Fujinami, Yoshio; Itoyama, Katumi; and Ochiai, Hiroshi, 4,533,805, Cl. 200-304.000.
Iwai, Hiroshi, 4,532,696, Cl. 29-571.000.
Kameyama, Shuichi; Shinozaki, Satoshi; and Iwai, Hiroshi, 4,532,701, Cl. 29-576.00W.
Kondo, Takeo, 4,533,932, Cl. 357-13.000.
Konishi, Satoshi, 4,533,841, Cl. 307-468.000.
Mihara, Yuji, 4,534,046, Cl. 377-21.000.
Mochizuki, Toru, 4,533,935, Cl. 357-51.000.
Shinbara, Seitaro, 4,533,882, Cl. 332-16.00T.
Takada, Keisuke; and Okuhara, Hiroo, 4,533,990, Cl. 364-160.000.
Takaoka, Hiroshi; Furukawa, Toshiki; and Fukuda, Hiroshi, 4,532,761, Cl. 60-39.130.
Uchida, Kohachi, 4,533,235, Cl. 355-15.000.
Wakahara, Yasushi, 4,533,259, Cl. 374-166.000.
Watanabe, Fumio, 4,533,457, Cl. 204-411.000.
Watanabe, Yoshihiro, 4,533,824, Cl. 235-379.000.
Yasuhara, Hiroshi; Fujita, Hitoshi; and Okazaki, Kiyoshi, 4,533,946, Cl. 358-111.000.
Tolbert, William R.: *See*—
Lewis, Charles, Jr.; Olander, Jitka V.; and Tolbert, William R., 4,533,496, Cl. 260-112.00R.
Toma, Petre; Redford, David A.; Livesey, Declan B.; and Coates, Roy M., to Texaco Canada Resources Ltd. Well with sand control and stimulant deflector. 4,532,994, Cl. 166-303.000.
Tomaszewski, Walter: *See*—
Beneze, Heinz W.; and Tomaszewski, Walter, 4,532,744, Cl. 52-222.000.
Tomihira, Shigeru: *See*—
Takeuchi, Yasumasa; Sakakibara, Mitsuhiko; Tagata, Nobuo; Ogawa, Masaki; Hirata, Yasushi; and Tomihira, Shigeru, 4,533,711, Cl. 526-340.400.
Tomita, Koji: *See*—
Kawaguchi, Hiroshi; Konishi, Masataka; Sugawara, Koko; and Tomita, Koji, 4,533,631, Cl. 435-70.000.
Tomita, Naotaka; and Watanabe, Toshiyuki, to Bridgestone Tire Company Limited. Method and apparatus for detecting sound source. 4,532,807, Cl. 73-602.000.
Tomofuji, Yoshiaki; and Maeda, Takayoshi, to Matsushita Electric Works, Ltd. Power supply system. 4,533,987, Cl. 363-36.000.
Tone, Junsuke: *See*—
Celmer, Walter D.; Cullen, Walter P.; Shibakawa, Riichiro; and Tone, Junsuke, 4,533,553, Cl. 514-460.000.
Topliffe, Douglas A.: *See*—
Funke, Michael J.; Topliffe, Douglas A.; and Rathbun, Donald J., 4,534,044, Cl. 375-120.000.
Torrington Company, The: *See*—
McGuffie, Michael J., 4,533,263, Cl. 384-454.000.
Tortorello, Anthony J.; Hansen, Nestor P.; and Jarocki, Kathryn M., to DeSoto, Inc. Imidazolidine-blocked amine polymers. 4,533,682, Cl. 523-414.000.
Toyama, Takanori: *See*—
Tanaka, Motoaki; Toyama, Takanori; Oba, Hitoshi; and Yamaguchi, Osamu, 4,533,652, Cl. 502-167.000.
Toyama, Takashi: *See*—
Ohkoshi, Akio; Toyama, Takashi; and Watanabe, Toshiro, 4,533,850, Cl. 313-36.000.
Toyo Bussan Kabushiki Kaisha: *See*—
Hoshino, Takahiro, 4,533,335, Cl. 441-102.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Obata, Saburo; and Ito, Kazuo, 4,533,273, Cl. 401-190.000.
Tanahashi, Toshifumi; and Itoh, Senji, 4,533,576, Cl. 428-35.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Minamide, Hiroshi; Shintani, Takashi; and Murayama, Hiroshi, 4,533,525, Cl. 428-469.000.
Toyoda Gosei Co., Ltd.: *See*—
Souchi, Toshiyuki; and Todaka, Isoo, 4,532,687, Cl. 29-235.000.

Toyoda Jidosha Kogyo Kabushiki Kaisha: *See—*
Hashimoto, Kametaro; Ushitani, Kenji; Noda, Fumiyoshi; Sugiyama, Masahiko; and Murachi, Mikio, 4,533,579, Cl. 428-36.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Kohama, Tokio; Obayashi, Hideki; Kawai, Hisasi; Ina, Toshikazu; Shigematsu, Takashi; and Tokoro, Setsuo, 4,532,798, Cl. 73-116.000.
Komoda, Norio, 4,533,012, Cl. 180-68.300.
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,382, Cl. 75-0.50C.
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,383, Cl. 75-0.50C.
Miura, Hirohisa; Sato, Hiroshi; Natsume, Toshio; and Katagiri, Hidenori, 4,533,413, Cl. 148-420.000.
Mizuno, Hiroshi; and Ito, Hiroshi, 4,532,902, Cl. 123-417.000.
Trachtman, Joseph N. Methods and apparatus for accommodation training. 4,533,221, Cl. 351-203.000.
Trail-R-Van Inc.: *See—*
Lake, W. H. Russell, 4,533,171, Cl. 296-173.000.
Transamerica Delaval Inc.: *See—*
Samek, Norbert E., 4,533,217, Cl. 350-392.000.
Traynor, Sean G.: *See—*
Cherney, Leon; Gorman, Charles R.; Traynor, Sean G.; and Cardenas, Carlos G., 4,533,751, Cl. 564-408.000.
Trejo, Jesse; and Spector, George. Combined snow plow, grass cutter & tiller with adjustable chair. 4,532,725, Cl. 37-243.000.
Trenkle, Robert W.: *See—*
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,533,491, Cl. 252-522.00R.
Trias, John A.; and Marez, John, to United States of America, Navy. Real-time ultra-high resolution image projection display using laser-addressed liquid crystal light valve. 4,533,215, Cl. 350-347.00E.
Trischler, Erwin, to Siemens Corporate Research & Support, Inc. Random testing using scan path technique. 4,534,028, Cl. 371-25.000.
Trotz, Samuel I.; and Farmer, Douglas A., Jr., to Olin Corporation. Process for the prevention or reduction of discoloration of sodium pyrithione. 4,533,736, Cl. 546-290.000.
Trujillo, Thomas M.: *See—*
Wilson, Christopher W.; Trujillo, Thomas M.; and Zallen, Dennis M., 4,532,996, Cl. 169-23.000.
Trummlitz, Gunter; Engel, Wolfhard; Seeger, Ernst; and Haarmann, Walter, to Dr. Karl Thomae Gesellschaft mit beschrankter Haftung. Antithrombotic N-(6-chloro-pyrazin-2-yl)-4-Hydroxy-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide derivatives, composition, and method of use. 4,533,664, Cl. 514-225.000.
Trumps, Joseph S.: *See—*
Rogers, Jerrold J.; and Trumps, Joseph S., 4,533,861, Cl. 318-696.000.
Tsao, Sherman H.; and Zeiler, Kenneth T., to Mead Corporation, The. Ink jet printer with non-uniform rectangular pattern of print positions. 4,533,925, Cl. 346-75.000.
Tsubakimoto Chain Company: *See—*
Kondo, Hirokazu; and Takino, Shigekatsu, 4,532,869, Cl. 104-166.000.
Tsuchiya, Yutaka: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.
Tsuji, Teruji: *See—*
Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, 4,533,730, Cl. 544-92.000.
Tsujii, Masahiko: *See—*
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, 4,533,494, Cl. 260-112.50R.
Tsunoda, Kazuhiko; and Hattori, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Front brake system for motorcycles. 4,533,153, Cl. 280-277.000.
Tsuru, Masahiro: *See—*
Miyawaki, Yoshiharu; Hirose, Takeshi; Hamada, Yoneichi; Mizuoka, Seishi; and Tsuru, Masahiro, 4,532,980, Cl. 164-475.000.
Tubbs, Eldred F.: *See—*
McLauchlan, John M.; AuYeung, John; Tubbs, Eldred F.; Goss, Willis C.; and Psaltis, Demetri, 4,533,242, Cl. 356-5.000.
Tucker, Alfred D., to RIS Irrigation Systems Pty. Ltd. Drip feed device for irrigation purposes. 4,533,083, Cl. 239-542.000.
Tulen, Jack A.; and Tulen, James L. Multiple fixture for replacing worn hoe bits. 4,533,001, Cl. 172-438.000.
Tulen, James L.: *See—*
Tulen, Jack A.; and Tulen, James L., 4,533,001, Cl. 172-438.000.
Tullis, Barclay J.; Parikh, Mihir; Thrasher, David L.; and Johnston, Mark E., to Hewlett-Packard Company. Particle-free dockable interface for integrated circuit processing. 4,532,970, Cl. 141-98.000.
Tungatt, Paul D.: *See—*
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., 4,533,388, Cl. 75-76.000.
Turner, James A., to Dow Chemical Company, The. Naphthyridinyloxy(or thio)phenoxy propanoic acids, derivatives thereof and methods of herbicidal use. 4,533,381, Cl. 71-94.000.
Tutle, Edward G., to Martin Marietta Corporation. Robotic fruit harvester. 4,532,757, Cl. 56-328.00R.
Tvan, Tran A.: *See—*
Butz, Peter; Ranke, Gerhard; and Tvan, Tran A., 4,533,373, Cl. 62-17.000.
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., to Olin Corporation. Technique for removing iron-rich components from a copper melt. 4,533,388, Cl. 75-76.000.
Tyson, Sammie J. Ladder support. 4,533,018, Cl. 182-121.000.
U.M.E., Incorporated: *See—*
Chiarito, Richard J., 4,533,475, Cl. 210-788.000.
Ube Industries, Ltd.: *See—*
Nakamura, Yoichi; Watarai, Shumei; and Matsuo, Shohta, 4,533,602, Cl. 428-447.000.
Uchida, Kohachi, to Tokyo Shibaura Denki Kabushiki Kaisha. Cleaning device for use in an image forming apparatus. 4,533,235, Cl. 355-15.000.
Uchida, Shiichiro, to Shonetsugaku Kenkyusho Co., Ltd. Drying process and its apparatus utilizing a refrigeration cycle. 4,532,720, Cl. 34-27.000.
Uchiyama, Mikio; Sato, Takashi; Yoshino, Hiroshi; Tsuchiya, Yutaka; Konishi, Masayuki; Tsujii, Masahiko; Hisatake, Yoshihiko; and Koiwa, Atsushi, to Eisai Co., Ltd. Process for purifying secretin. 4,533,494, Cl. 260-112.50R.
Ueda, Takeo, to Nippon Seiko Kabushiki Kaisha. Seat belt latch device. 4,533,158, Cl. 280-804.000.
Uematsu, Ryuichi: *See—*
Okoshi, Koichi; and Uematsu, Ryuichi, 4,532,724, Cl. 36-7.10R.
Uemura, Seiichi; Yamamoto, Shunichi; Hirose, Takao; Takashima, Hiroaki; and Katoh, Osamu, to Nippon Oil Co., Ltd. Starting pitches for carbon fibers. 4,533,535, Cl. 423-447.400.
Uerdingen, Walter: *See—*
Waniczek, Helmut; Uerdingen, Walter; and Brudermanns, Karola, 4,533,728, Cl. 528-370.000.
Ueshima, Takashi: *See—*
Kurosawa, Shigeru; and Ueshima, Takashi, 4,533,721, Cl. 528-174.000.
Uhlig, Albert P., to Owens-Illinois, Inc. One-piece thermoplastic child-resistent dispensing closure. 4,533,058, Cl. 215-216.000.
Uhlig, Albert R., to Owens-Illinois, Inc. Dispensing closure valve. 4,533,071, Cl. 222-498.000.
Ukawa, Naohiko: *See—*
Shinoda, Naoharu; Tatani, Atsushi; Ukawa, Naohiko; and Okino, Susumu, 4,533,531, Cl. 423-242.000.
Ullman, Edwin F.: *See—*
Litman, David J.; and Ullman, Edwin F., 4,533,629, Cl. 435-7.000.
Ullrich, Kurt: *See—*
Preiner, Gerhard; Huhn, Karl; Muller, Johann; Marwitz, Heinrich; and Ullrich, Kurt, 4,533,477, Cl. 252-8.900.
Ulug, Mehmet E., to General Electric Company. Deterministic multi-access method for a decentralized mobile radio system. 4,534,061, Cl. 455-17.000.
Umezawa, Iwao; and Komiyama, Kanki, to Kitasato Institute. Acidic polysaccharide CH-1 isolated from *Chlorella pyrenoidosa* and the use thereof. 4,533,548, Cl. 514-54.000.
Unganz, Peter: *See—*
Neumann, Manfred; Morgner, Henry; Forster, Harry; Jasch, Gunter; Kunack, Wilfried; Godenschweg, Martin; and Unganz, Peter, 4,532,888, Cl. 118-718.000.
Union Carbide Corporation: *See—*
Zupancic, Ronald L.; and Urry, Lewis F., 4,532,705, Cl. 29-623.200.
Union Oil Company of California: *See—*
Ho, Phillman N., 4,533,460, Cl. 208-11.0LE.
Holstedt, Richard A.; and Jessup, Peter J., 4,533,480, Cl. 252-46.400.
Uniroyal, Inc.: *See—*
Merijanian, Aspet V., 4,533,782, Cl. 585-520.000.
United Kingdom Atomic Energy Authority: *See—*
Ward, Brooke A., 4,533,814, Cl. 219-121.0LD.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the: *See—*
Atherton, John R.; Sindall, John H.; and Heathcock, Osmond R., 4,532,997, Cl. 169-56.000.
Sewell, John H., 4,533,589, Cl. 428-174.000.
Stangroom, James E., 4,532,853, Cl. 91-165.000.
United States Gypsum Company: *See—*
Zaskalicky, Michael F., 4,533,528, Cl. 423-171.000.
United States of America
Air Force: *See—*
Kirkpatrick, Conilee G.; Adler, Michael S.; and Possin, George E., 4,534,016, Cl. 365-128.000.
Miceli, William J.; and Ludman, Jacques E., 4,533,829, Cl. 250-227.000.
Pellegrini, Paul W.; Ludington, Charlotte E.; Golubovic, Aleksandar; and Weeks, Melanie M., 4,533,933, Cl. 357-15.000.
Schuermeyer, Fritz L., 4,532,695, Cl. 29-571.000.
Smith, Howard W., 4,534,050, Cl. 378-81.000.
Army: *See—*
Gant, Lawrence A., 4,533,183, Cl. 301-37.0TC.
Gee, Gary W.; Shumate, Daniel L.; Nieder, John J.; Bump, Boyd E.; and Kource, Robert D., 4,532,815, Cl. 73-864.630.
McCormack, Ray G., 4,533,834, Cl. 250-554.000.
Mitchell, Robert R., 4,532,867, Cl. 102-213.000.
Energy: *See—*
Lechtenberg, Thomas, 4,533,406, Cl. 148-37.000.

Srivastava, Suresh C.; Meinken, George E.; and Richards, Powell, 4,533,541, Cl. 424-1.100.
Verhoeven, John D.; Gibson, Edwin D.; Finnemore, Douglas K.; Ostenson, Jerome E.; Schmidt, Frederick A.; and Owen, Charles V., 4,532,703, Cl. 29-599.000.

Health and Human Services: *See—*
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National Aeronautics and Space Administration: *See—*
McLauchlan, John M.; AuYeung, John; Tubbs, Eldred F.; Goss, Willis C.; and Psaltis, Demetri, 4,533,242, Cl. 356-5.000.
Yang, Lien C., 4,532,797, Cl. 73-75.000.

National Aeronautics & Space Administration: *See—*
Patterson, James C., Jr., 4,533,101, Cl. 244-199.000.

Navy: *See—*
Andrew, Wesley A.; Shields, Curtis E.; Hindlin, Harry O.; and Hamilton, Robert, 4,533,333, Cl. 441-38.000.
Coder, David W.; Wisler, Benjamin B., Jr.; Clark, Albert P.; and Ratcliffe, Raymond J., 4,532,801, Cl. 73-432.00R.
McGee, Kevin J., 4,534,009, Cl. 364-726.000.
Trias, John A.; and Marez, John, 4,533,215, Cl. 350-347.00E.

U.S. Philips Corporation: *See—*
Alcock, Robert N., 4,533,873, Cl. 328-155.000.
Cense, Adriaan; and Schutte, Evert H., 4,533,939, Cl. 358-28.000.
Frank, Berthold; Gartner, Georg; and Lydtin, Hans, 4,533,852, Cl. 313-346.0DC.
Geurts, Martinus F. A. M., 4,533,880, Cl. 331-1.00A.
Giacometti, Alberto M.; and Newsome, George W., 4,534,064, Cl. 455-601.000.
Josquin, Wilhelmus J. M. J., 4,533,429, Cl. 156-643.000.
Sauermann, Heinz, 4,533,898, Cl. 338-25.000.
Schnell, Axel, 4,533,849, Cl. 310-330.000.
van Alem, Antonius A. M., 4,533,826, Cl. 250-201.000.
van Gastel, Josephus M. M.; van Nunen, Hendrikus T.; and Sanders, Leonardus C. M., 4,532,884, Cl. 118-243.000.
Van Roessel, Frederik J., 4,533,953, Cl. 358-160.000.

United States Pipe and Foundry Company: *See—*
Battle, Billy J.; and Jones, Lawrence S., 4,532,957, Cl. 137-375.000.

United States Steel Corporation: *See—*
Dickerson, Douglas M.; and Fikes, Robert W., 4,533,439, Cl. 201-41.000.
Ives, Kenneth D., 4,532,975, Cl. 164-150.000.
Perfetti, Bruno M., 4,533,573, Cl. 427-287.000.

United Technologies Automotive, Inc.: *See—*
Floyd, William M., 4,534,025, Cl. 370-85.000.

United Technologies Corporation: *See—*
Duchesneau, Jerome G., 4,533,295, Cl. 416-27.000.
Duchesneau, Jerome G.; and Schwartz, Robert A., 4,533,296, Cl. 416-46.000.
Levinson, Samuel, 4,534,062, Cl. 455-330.000.
Sansevero, Vincent J., Jr.; and Skrabal, Walter F., 4,533,067, Cl. 222-135.000.
Sederquist, Richard A., 4,533,607, Cl. 429-13.000.

University of Arizona Foundation: *See—*
Thompson, Tommy L., 4,532,777, Cl. 62-434.000.

University of California, The Regents of The: *See—*
Somorjai, Gabor A.; and Leygraf, Christofer H., 4,533,608, Cl. 429-111.000.

University of New Mexico, The: *See—*
Wilson, Christopher W.; Trujillo, Thomas M.; and Zallen, Dennis M., 4,532,996, Cl. 169-23.000.

Uno Plast A/S: *See—*
Bengmark, Stig; Broome, Albert; and Overland, Christian H., 4,533,356, Cl. 604-358.000.

UOP Inc.: *See—*
Neuzil, Richard W.; and Fergin, Richard L., 4,533,398, Cl. 127-55.000.

Upjohn Company, The: *See—*
Aristoff, Paul A.; and Sih, John C., 4,533,749, Cl. 562-501.000.

Uranit GmbH: *See—*
Sartor, Bruno; and Rode, Klaus, 4,533,089, Cl. 242-7.210.

Urata, Yukihide; Moriuchi, Shigenori; Nakamura, Taku; and Ogawa, Masashi, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive materials for plate making and method of reduction treatment for them. 4,533,623, Cl. 430-309.000.

Urban, Robert G., to Republic Steel Corporation. Method and apparatus to optimize cut lengths of material. 4,534,002, Cl. 364-475.000.

Urry, Lewis F.: *See—*
Zupancic, Ronald L.; and Urry, Lewis F., 4,532,705, Cl. 29-623.200.

Ushimaru, Koichi: *See—*
Kawamata, Masanobu; Ushimaru, Koichi; Goshi, Hiroyuki; and Miyasako, Hideichi, 4,533,552, Cl. 424-78.000.

Ushio Denki Kabushiki Kaisha: *See—*
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Ushitani, Kenji: *See—*
Hashimoto, Kametaro; Ushitani, Kenji; Noda, Fumiyoshi; Sugiyama, Masahiko; and Murachi, Mikio, 4,533,579, Cl. 428-36.000.

Ushizawa, Jisaburo: *See—*
Fujii, Takashi; Ushizawa, Jisaburo; and Watanabe, Masayuki, 4,533,822, Cl. 219-553.000.

Utts, Bradley K.; and Wimer, Oley D., to Harshaw/Filtrol Partnership. Formable light reflective compositions. 4,533,489, Cl. 252-301.170.

Uwai, Toshihiro: *See—*
Sato, Akihiro; Kikuta, Kazutsune; Uwai, Toshihiro; Matsuda, Kenji; and Hattori, Nobutaka, 4,533,705, Cl. 526-114.000.

Uyeda, Tim M., to La Gard, Inc. Combination lock. 4,532,785, Cl. 70-333.00R.

Uyeda, Yoshiyuki: *See—*
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V T U "Angel Kanchev": *See—*
Mitkov, Atanas L.; Georgiev, Ivan N.; Radulov, Peter T.; Hung, Le K.; and Atanassov, Atanas K., 4,532,940, Cl. 130-6.000.

Valencia, Jaime A.; and Denton, Robert D., to Exxon Production Research Co. Method and apparatus for separating carbon dioxide and other acid gases from methane by the use of distillation and a controlled freezing zone. 4,533,372, Cl. 62-12.000.

Valeo: *See—*
Andrieux, Raymond, 4,533,260, Cl. 384-206.000.
Focqueur, Herve , 4,532,768, Cl. 60-585.000.

Valiulis, Mary M. Dual mandrel electric curling iron with separate angularly adjustable hair clamps. 4,533,819, Cl. 219-225.000.

Valmet Oy: *See—*
Hyytinen, Timo, 4,532,730, Cl. 42-73.000.

van Alem, Antonius A. M., to U.S. Philips Corporation. Opto-electronic focusing-error detection device. 4,533,826, Cl. 250-201.000.

Van Beek, Allen L.; and Iversen, Alfred L., to PMT Inc. Microsurgical flexible suction mat. 4,533,352, Cl. 604-317.000.

Vandenberk, Jan: *See—*
Kennis, Ludo E. J.; Vandenberk, Jan; and Mertens, Josephus C., 4,533,665, Cl. 514-258.000.

van den Elzen, Lambertus W. A.; van der Wouden, Adriaan; and Meijer, Auke, to Fundemantum B.V. Method for making a foundation pile. 4,533,279, Cl. 405-239.000.

Vanderlaan, Robert D.; and Meulendyk, John W., to Pneumo Corporation. Limited angle torque motor. 4,533,891, Cl. 335-272.000.

van der Lely, Ary; and Bom, Cornelis J. G., to C. van der Lely N.V. Soil cultivating machine. 4,532,999, Cl. 172-68.000.

van der Lely, Cornelis. Soil cultivating implements. 4,533,000, Cl. 172-68.000.

VanDerStuyf, Allen F.: *See—*
Day, Eric; and VanDerStuyf, Allen F., 4,532,893, Cl. 123-41.310.

van der Wouden, Adriaan: *See—*
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VanDiest, Scott A.: *See—*
Corrigan, Patrick J.; King, Richard M.; and VanDiest, Scott A., 4,533,648, Cl. 502-38.000.

VanDuren, Richard G.: *See—*
Andrews, Lawrence P.; Heath, Chester A.; Mead, Justin E.; VanDuren, Richard G.; and Janes, Gary A., 4,534,011, Cl. 364-900.000.

Van Gasselt, Max L. G.; and Rappoldt, Louis M., to Nederlandse Centrale Organisatie Voor Toegepast. Fluidized bed combustion apparatus. 4,532,871, Cl. 110-216.000.

van Gastel, Josephus M. M.; van Nunen, Hendrikus T.; and Sanders, Leonardus C. M., to U.S. Philips Corporation. Device for applying a fixing medium to components such as chip-type components. 4,532,884, Cl. 118-243.000.

van Helden, Robert; Baardman, Frank; and Syrier, Johannes L. M., to Shell Oil Company. Herbicidal urea compounds. 4,533,379, Cl. 71-88.000.

van Nunen, Hendrikus T.: *See—*
van Gastel, Josephus M. M.; van Nunen, Hendrikus T.; and Sanders, Leonardus C. M., 4,532,884, Cl. 118-243.000.

Van Roessel, Frederik J., to U.S. Philips Corporation. Signal analyzing circuit for a periodically occurring signal. 4,533,953. Cl. 358-160.000.

van Thiel, Ronald R., to Xerox Corporation. Anti-backlash forms feed mechanism. 4,533,074, Cl. 226-74.000.

van Wegen, Wilhelmus F. S. M., to Metaverpa B.V. Mechanism for rotating an object over a determined angle about a vertical axis. 4,533,033, Cl. 198-413.000.

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Varney, Edward W.: *See—*
Cory, John M.; Varney, Edward W.; Babcock, Jon A.; and Pupillo, Andrew, 4,533,114, Cl. 251-67.000.

Vater, George R.; and Allori, Aldo, to J. I. Case Company. Split seal ring with interlocking cut. 4,533,149, Cl. 277-221.000.

Veazey-Menendez, Enrique: *See—*
Cardenas-Franco, Luis; and Veazey-Menendez, Enrique, 4,532,956, Cl. 137-340.000.

VEB Schwermaschinenbau "Karl Liebknecht" Magdeburg: *See—*
Michel, Wolfgang; Paul, Heinz; Rummel, Andreas; Seher, Gero; Ossowski, Manfred; and Heberlein, Irmtrud, 4,533,438, Cl. 201-31.000.

Vejmelka, Peter; Kluger, Wolfgang; Koster, Rainer; and Hauser, Wolfgang, to Kernforschungszentrum Karlsruhe GmbH. Method of making a leach resistant fixation product of harmful water-containing waste and cement. 4,533,395, Cl. 106-89.000.

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Burks, William M., Jr.; Doane, Elliott P.; Campbell, Ramsey G.; and Velez, Emilio S., 4,533,473, Cl. 210-754.000.

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W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Verhoeven, John D.; Gibson, Edwin D.; Finnemore, Douglas K.; Ostenson, Jerome E.; Schmidt, Frederick A.; and Owen, Charles V., to United States of America, Energy. Method of preparing composite superconducting wire. 4,532,703, Cl. 29-599.000.

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Vestermark, Lyle A. Energy storing flywheel assembly. 4,532,769, Cl. 60-698.000.

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Owaki, Isao; Saito, Susumu; and Yamazaki, Masami, 4,533,964, Cl. 360-22.000.

Videocolor: *See*—
Di Passio, Attilio; and Pezzulo, Antimo, 4,533,610, Cl. 430-25.000.

Vincent De Araujo, Manuel A. Electric safety switch with removable conducting rod. 4,533,799, Cl. 200-52.00R.

Virnot, Alain D. Pilot assistance device. 4,533,918, Cl. 343-451.000.

Vistain, James E. Proximity measuring device for golfers. 4,532,712, Cl. 33-180.000.

Visual Information Institute, Inc.: *See*—
Harshbarger, John H., 4,533,950, Cl. 358-139.000.

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Cardenas-Franco, Luis; and Veazey-Menendez, Enrique, 4,532,956, Cl. 137-340.000.

Vittorio, Corni, to Comau S.p.A. Coding systems for elements of machine tools, particularly of the numerically controlled type. 4,533,823, Cl. 235-375.000.

Voest-Alpine Aktiengesellschaft: *See*—
Lugscheider, Walter; Mullner, Paul; Schiffer, Wilhelm; and Leutgob, Alois, 4,533,385, Cl. 75-10.00R.
Schubert, Hermann; Ahrens, Max; and Haissig, Manfred, 4,532,977, Cl. 164-442.000.

Voest Alpine International Co.: *See*—
Hargassner, Reinhard; Nugent, Thomas J.; Scheinecker, Alois; and Engel, Kurt, 4,532,981, Cl. 164-483.000.

Vogel, Siegfried F.: *See*—
Yeack-Scranton, Celia E.; and Vogel, Siegfried F., 4,532,802, Cl. 73-432.00R.

Volker, Wolfgang: *See*—
von der Bey, Thomas; Jankowski, Detlef; Schmidt, Hartmut; Thoma, Klemens; and Volker, Wolfgang, 4,532,779, Cl. 62-514.00R.

Volkswagenwerk Aktiengesellschaft: *See*—
Heidemeyer, Paulus; and Zantopp, Werner, 4,533,011, Cl. 180-65.200.
Knudel, Gunter, 4,532,741, Cl. 52-99.000.

Vollbrecht, Heinz-Rudiger, to SKW Trostberg Aktiengesellschaft. Process for obtaining cyanuric chloride in solid or liquid form. 4,533,733, Cl. 544-190.000.

Vollmayr, Norbert, to Johannes Heidenhain GmbH. Apparatus and method for determining signal parameters of periodic square wave signals. 4,534,004, Cl. 364-486.000.

Vollmer, Erwin H.; and Glatthaar, Manfred. Sawtooth grinding machine. 4,532,830, Cl. 76-45.000.

von der Bey, Thomas; Jankowski, Detlef; Schmidt, Hartmut; Thoma, Klemens; and Volker, Wolfgang, to Messer Griesheim GmbH. Device for generating a dry, cold air flow for treatment of rheumatic diseases. 4,532,779, Cl. 62-514.00R.

von der Decken, Claus-Benedict: *See*—
Iniotakis, Nicolaos; and von der Decken, Claus-Benedict, 4,533,539, Cl. 423-648.00A.

Von Holdt, John W. Simplified collapsible mold core. 4,533,312, Cl. 425-438.000.

von Karchowski, Wilhelm, to Laeis-Werke AG. Apparatus for producing deep, conical or cylindrical ceramic hollow bodies from a powdered or granular pressed mass by isostatic compression. 4,533,311, Cl. 425-405.00H.

Von Muller, Francis. Firearm magazine lock. 4,532,729, Cl. 42-1.0LP.

von Torklus, Detlef; Thum, Oskar; and Wilharm, Friedrich. Knee joint bandage. 4,532,921, Cl. 128-80.00C.

Vorwerk & Co. Interholding GmbH: *See*—
Komesker, Heinrich; and Helmes, Ludger, 4,532,667, Cl. 15-49.00C.

Vossebeld, Arnold: *See*—
Schrijver, Jan; and Vossebeld, Arnold, 4,533,696, Cl. 524-528.000.

Vozari, Gyula: *See*—
Gal, Jozsef; Gyarfas, Andras; Katko , Laszło ; Racz, Gabor; Sarlos, Agoston; and Vozari, Gyula, 4,533,912, Cl. 340-783.000.

Vroomen, Albert, to Franz Muller GmbH & Co. Device for cutting seams free in a corduroy cutting machine and method for operating the same. 4,532,683, Cl. 26-10.00C.

Vyzkumny Ustav Bavlnarsky: *See*—
Marsicek, Zdenek; Janeba, Jaroslav; Pacha, Antonin; Pastrnak, Ales; Dykast, Jaroslav; and Prazak, Roman, 4,534,042, Cl. 377-16.000.

W. R. Grace & Co., Cryovac Div.: *See*—
Taylor, Monroe F., 4,532,752, Cl. 53-451.000.

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Fuchs, Peter; Mueller-Glaser, Klaus; Schuett, Dieter; and Wach, Wolfgang, 4,534,008, Cl. 364-716.000.

Wacker-Chemie GmbH: *See*—
Preiner, Gerhard; Huhn, Karl; Muller, Johann; Marwitz, Heinrich; and Ullrich, Kurt, 4,533,477, Cl. 252-8.900.

Wada, Isao: *See*—
Shibata, Akira; Wada, Isao; and Yoshioka, Atsushi, 4,533,961, Cl. 358-315.000.

Waddill, Harold G., to Texaco, Inc. Epoxy resins with increased flexibility. 4,533,719, Cl. 528-111.000.

Wagner, Eugene R.; Barney, Charlotte L.; and Matthews, Donald P., to Merrell Dow Pharmaceuticals Inc. Hypoglycemic N-(2-substituted-3-Dialkylamino-2-propenylidene)-N-alkylalkanaminium salts. 4,533,677, Cl. 514-638.000.

Wagner, Frederick B., III; and Izbicki, Anthony J., to Wagner, Frederick B., III. High energy propellant. 4,533,415, Cl. 149-35.000.

Wahl, Helmut: *See*—
Dorries, Peter; and Wahl, Helmut, 4,533,590, Cl. 428-211.000.

Wajaroff, Theodor: *See*—
Lang, Gunther; and Wajaroff, Theodor, 4,532,950, Cl. 132-7.000.

Wakahara, Yasushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting the local temperature variations of an object and the sites of the temperature variations. 4,533,259, Cl. 374-166.000.

Wako Pure Chemical Industries, Ltd.: *See*—
Tanaka, Motoaki; Toyama, Takanori; Oba, Hitoshi; and Yamaguchi, Osamu, 4,533,652, Cl. 502-167.000.

Walinsky, Stanley W., to Pfizer Inc. Use of fumaric acid polymers as antiscalants. 4,533,709, Cl. 526-318.000.

Walker, Edward R. H., to Imperial Chemical Industries PLC. Amide derivatives. 4,533,656, Cl. 514-19.000.

Walker-Neer Manufacturing Co., Inc.: *See*—
Haney, Keith M., 4,533,055, Cl. 211-70.400.

Wallace, Barnie A., Jr.: *See*—
Pieslak, George; and Wallace, Barnie A., Jr., 4,533,419, Cl. 156-85.000.

Walles, Wilhelm E.; Keskey, William H.; and Young, Richard G., to Dow Chemical Company, The. Pigments for toiletries. 4,533,484, Cl. 252-117.000.

Walls, John E.; Dhillon, Major; and Bentley, Trisha, to American Hoechst Corporation. Acid stabilizers for diazonium compound condensation products. 4,533,619, Cl. 430-157.000.

Walls, John E.; and Dunder, Thomas A., to American Hoechst Corporation. Light sensitive co-condensates. 4,533,620, Cl. 430-157.000.

Walter, Leo, to Bucklee-Mears Company. Circuit-board stiffening. 4,533,978, Cl. 361-419.000.

Walter, Thomas J., to Ethyl Corporation. Process for preparing antibacterial compounds. 4,533,735, Cl. 546-156.000.

Walters, Harry J.: *See*—
Gerben, Ralph D.; and Walters, Harry J., 4,532,820, Cl. 74-56.000.

Walton, Herbert H.; and Kehoe, Steven D., to Fisher Controls International, Inc. Bidirectional disc throttling valve. 4,532,961, Cl. 137-625.310.

Walton, Michael E.: *See*—
Farrell, George; Anderson, Diana M.; and Walton, Michael E., 4,533,527, Cl. 423-53.000.

Wan, Chung-Chu: *See*—
Kapoor, Deepak; Wan, Chung-Chu; and Wang, Rong Y., 4,533,389, Cl. 75-123.00B.

Wang, Ke-Chin; and Winkelbauer, Howard M., to Dresser Industries, Inc. Nitride bonded oxide refractories. 4,533,646, Cl. 501-97.000.

Wang, Ko P. Bronchoscopic needle assembly. 4,532,935, Cl. 128-753.000.

Wang, Rong Y.: *See*—
Kapoor, Deepak; Wan, Chung-Chu; and Wang, Rong Y., 4,533,389, Cl. 75-123.00B.

Wang, Shin-Yih: *See*—
Chang, Ten-Ho; and Wang, Shin-Yih, 4,533,857, Cl. 318-345.00A.

Wangermann, Jochen, to Gruner & Jahr Ag & Co. Collating machine. 4,533,132, Cl. 270-53.000.

Waniczek, Helmut; Uerdingen, Walter; and Brudermanns, Karola, to Bayer Aktiengesellschaft. Process for the production of high molecular weight polyester carbonates. 4,533,728, Cl. 528-370.000.

Waniczek, Helmut: *See*—
Wingler, Frank; Waniczek, Helmut; and Geyer, Otto-Christian, 4,533,397, Cl. 106-181.000.

Warabisako, Terunori: *See*—
Itoh, Haruo; Tokiguchi, Katsumi; Warabisako, Terunori; Saitoh, Tadashi; and Tokuyama, Takashi, 4,533,831, Cl. 250-492.200.

Ward, Albert W.: *See*—
DePalma, Vincent M.; and Ward, Albert W., 4,533,582, Cl. 428-64.000.

Ward, Brooke A., to United Kingdom Atomic Energy Authority. Laser pipe welder/cutter. 4,533,814, Cl. 219-121.0LD.

Ward, Jean R., to Pencept, Inc. Method and apparatus for removing noise at the ends of a stroke. 4,534,060, Cl. 382-54.000.

Ward, John, to Nabisco Brands, Inc. Low-fat spread and process. 4,533,561, Cl. 426-603.000.

Ward, John S.: *See*—
Matsumoto, Ken; and Ward, John S., 4,533,666, Cl. 514-277.000.

Warner-Lambert Company: *See*—
Deckert, Clinton L., 4,533,347, Cl. 604-81.000.
Piccolo, Dominic J.; and Feinerman, Deborah J., 4,533,556, Cl. 426-3.000.

Warner, Ronald E.: *See*—
Partington, Albert J.; and Warner, Ronald E., 4,533,298, Cl. 416-191.000.

Washizuka, Isamu; and Takeda, Yoshio, to Sharp Kabushiki Kaisha. Liquid crystal display. 4,533,213, Cl. 350-332.000.

Washkuhn, Richard J., to Pennwalt Corporation. Foam rubber insoles containing Ottacide-P. 4,533,351, Cl. 604-293.000.

Wasserlein, Henry G., Jr., to AMP Incorporated. Bridge tap. 4,533,201, Cl. 339-99.00R.

Watai, Yuji; Yasui, Hirokazu; Hirayama, Yoshiyuki; and Matsuura, Akira, to Fuji Xerox Co., Ltd. Automatic density control method for a photocopying machine. 4,533,234, Cl. 355-14.00D.

Watanabe, Fumio, to Tokyo Shibaura Denki Kabushiki Kaisha. Ion selective electrode device and ion analyzing apparatus. 4,533,457, Cl. 204-411.000.

Watanabe, Masayuki: *See*—
Fujii, Takashi; Ushizawa, Jisaburo; and Watanabe, Masayuki, 4,533,822, Cl. 219-553.000.

Watanabe, Tetsumi; Haramura, Shigenori; and Momose, Yutaka, to Aisin Seiki Kabushiki Kaisha. Engine compressor having a stirling cycle engine. 4,532,767, Cl. 60-525.000.

Watanabe, Toshiro: *See*—
Ohkoshi, Akio; Toyama, Takashi; and Watanabe, Toshiro, 4,533,850, Cl. 313-36.000.

Watanabe, Toshiyuki: *See*—
Tomita, Naotaka; and Watanabe, Toshiyuki, 4,532,807, Cl. 73-602.000.

Watanabe, Yoshihiro, to Tokyo Shibaura Denki Kabushiki Kaisha. Automatic depositing/dispensing apparatus. 4,533,824, Cl. 235-379.000.

Watanabe, Yoshio: *See*—
Hayakawa, Kizo; Mori, Nobuyuki; Watanabe, Yoshio; and Nakashima, Kazumi, 4,532,898, Cl. 123-276.000.

Watarai, Shumei: *See*—
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Watashi, Masahiro: *See*—
Kimura, Hiroshi; Hisajima, Masahiko; Shibata, Kiyoshi; Irie, Yoichiro; Morimoto, Kiyoshi; Nagashima, Takashi; Yoshikawa, Yasuhiko; Yamamoto, Kiyonori; Watashi, Masahiro; Yoshinaga, Shinsuke; and Yamamoto, Toshihiko, 4,533,233, Cl. 355-8.000.

Watkins, Jonathan, to Watkins Manufacturing Co. Spa filter installation method and means. 4,533,476, Cl. 210-805.000.

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Watkins, Jonathan, 4,533,476, Cl. 210-805.000.

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Watson, Ira L.; and Watson, Craig V., 4,532,717, Cl. 33-265.000.

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Watson, Susan S.; and Watson, William K. R., to American Hospital Supply Corporation. Heat source providing a substantially constant temperature. 4,533,483, Cl. 252-70.000.

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Watson, Susan S.; and Watson, William K. R., 4,533,483, Cl. 252-70.000.

Watts, Claude H. Process for manufacturing shell molds. 4,533,394, Cl. 106-38.200.

Watts, Eric A.: *See*—
Blaney, Francis E.; Hadley, Michael S.; King, Francis D.; and Watts, Eric A., 4,533,498, Cl. 260-243.300.

Webber, George E., to Honeywell Inc. Passive ring resonator angular rate sensor. 4,533,249, Cl. 356-350.000.

Weber, Heinz, to L. Schuler GmbH. Clutch and brake device for presses, punches, and the like. 4,533,029, Cl. 192-18.00A.

Weeks, Melanie M.: *See*—
Pellegrini, Paul W.; Ludington, Charlotte E.; Golubovic, Aleksandar; and Weeks, Melanie M., 4,533,933, Cl. 357-15.000.

Wegmann & Co. GmbH: *See*—
Kratzenberg, Wolfgang; and Baeslack, Bernd, 4,533,327, Cl. 434-20.000.

Wegner, Jurgen: *See*—
Kluth, Hermann; Roderhoff, Bernhard; Friedemann, Wolfgang; Wegner, Jurgen; and Dierichs, Wolfgang, 4,533,490, Cl. 252-305.000.

Wehle, Peter, to SIG Schweizerische Industrie-Gesellschaft. Apparatus for securing a valve to a wrapper sleeve. 4,533,425, Cl. 156-466.000.

Weidenbach, Gunter; Bonse, Dirk; and Meyer, Boris, to Kali-Chemie Aktiengesellschaft. Process and apparatus for isomerizing glucose to fructose. 4,533,633, Cl. 435-94.000.

Weishaupt, Walter: *See*—
Muhlberger, Heinz; Starmuhler, Erwin; Weishaupt, Walter; Flohr, Peter; and Bourauel, Fritz, 4,533,900, Cl. 340-52.00R.

Weissbuch, Isabela: *See*—
Lahav, Meir; Addadi, Lia; and Weissbuch, Isabela, 4,533,506, Cl. 260-501.120.

Weitemeyer, Christian, to TH. Goldschmidt AG. Semi-esters of polyisobutylenesuccinic acid, their synthesis and preparations containing these compounds which can be transformed by radiation into an adhesive. 4,533,723, Cl. 528-303.000.

Welander, Ulf E. S.; McDavid, William D.; and Morris, Charles R., to Pennwalt Corporation. Methods of increasing anterior layer thickness of continuous dental images obtained through rotational panoramic radiography. 4,534,048, Cl. 378-39.000.

Welch Allyn Inc.: *See*—
Wheeler, Robert C., 4,532,918, Cl. 128-6.000.

Wella AG: *See*—
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Welles, Kenneth B., II: *See*—
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Wells, James E.; and Eskinazi, Victoria, to Air Products and Chemicals, Inc. Alkylation of phenols to alkyl aryl ethers using phosphate catalysts. 4,533,758, Cl. 658-630.000.

Wendling, Emile: *See*—
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Wengrovius, Jeffrey H., to General Electric Company. Aluminum bis(alkylsiloxide)acetoacetonate. 4,533,503, Cl. 556-173.000.

Wenstrom, Richard T.; and Gorton, Thomas S., Jr., to Slade Gorton & Co., Inc. Apparatus for opening and eviscerating scallops. 4,532,677, Cl. 17-74.000.

Wentzell, Timothy H.; and Brook, Mark V., to Combustion Engineering, Inc. Corner region ultrasonic inspection device. 4,532,808, Cl. 73-640.000.

Wermeister, Gunter: *See*—
Lindlar, Wilhelm; and Wermeister, Gunter, 4,533,282, Cl. 407-38.000.

Wernli, Susan A.: *See*—
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Weselmann, Peter: *See*—
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Westerlund, Robert E.; and Read, Wayne L., to Westerlund, Robert E. High pressure pumping apparatus for semi-fluid material. 4,533,300, Cl. 417-339.000.

Western Steel Cutting, Inc.: *See*—
Santos, Theodore J., Jr.; and Pearlman, Gordon E., 4,533,112, Cl. 249-3.000.

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Gunnewig, Hubert, 4,533,344, Cl. 494-36.000.

Westinghouse Electric Corp.: *See*—
Blewitt, Donald D.; and Gupta, Tapan K., 4,533,893, Cl. 337-5.000.
Borgmeyer, Virgil L.; Galloway, Dudley L.; Sonnenberg, Gary N.; Gruczka, Jan S.; and Owen, Timothy C., 4,533,786, Cl. 174-50.000.
Cargnel, Louis A., 4,533,718, Cl. 528-86.000.
Feilchenfeld, Michal M.; Byford, Roger G.; and Quan, Wing C., 4,534,056, Cl. 381-42.000.
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Wettstein, Ernest C.: *See*—
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Wetzel, Robert E., to Dayco Corporation. Toothed belt. 4,533,420, Cl. 156-138.000.

Weyerhaeuser Company: *See*—
Rivers, John; Kramer, Charles D.; and Cox, Robert L., 4,532,873, Cl. 110-347.000.

Wezel GmbH & Co KG: *See*—
Schmalz, Gerhardt, 4,532,846, Cl. 83-796.000.

Wheeler, Robert. Fishing line height adjuster and friction slider. 4,532,731, Cl. 43-43.130.

Wheeler, Robert C., to Welch Allyn Inc. Endoscope signal level control. 4,532,918, Cl. 128-6.000.

Whirlpool Corporation: *See*—
Mueller, Dale E.; and Snider, Joel M., 4,533,126, Cl. 267-141.000.

White, James B. Brake valve safety device. 4,532,826, Cl. 74-553.000.

White, Lionel S., Jr.: *See*—
McAlexander, Joseph C., III; White, Lionel S., Jr.; and Mohan Rao, G. R., 4,533,843, Cl. 307-530.000.

White, Maurice A.; Riggle, Peter; and Emigh, Stuart G. Stirling engine or heat pump having an improved seal. 4,532,766, Cl. 60-517.000.

Whitehurst, Darrell D.: *See*—
Yan, Tsoung Y.; and Whitehurst, Darrell D., 4,533,463, Cl. 208-127.000.

Wico Corporation: *See*—
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Widmyer, Richard H.: *See*—
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Wiebus, Ernst: *See*—
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Wiggins, Ralphe; Kenny, George S.; and McClure, Carroll D., to Mobil Oil Corporation. Common-depth-point method for determining and displaying the shear-velocity reflectivities of a geologic formation. 4,534,019, Cl. 367-75.000.

Wilczenski, Chester: *See*—
Kapolas, William J.; Vercillo, Peter A.; Dowling, Daniel; Beatovic, George S.; Clifton, Oscar N.; Gatz, Ronald; Harford, Eugene W.; Wilczenski, Chester; Dobbs, John; Kowalczyk, Ronald; Owen, Derek G.; and Banich, John N., 4,533,059, Cl. 215-230.000.

Wilharm, Friedrich: *See*—
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Wilkins, Tracy D.; and Lyerly, David M. Toxins and antibodies of *C. difficile*. 4,533,630, Cl. 435-7.000.

Wilkis, Anthony J., to Rockwell International Corp. Flexible printed circuit connector. 4,533,206, Cl. 339-258.00R.

Willer, David A.; Rosbak, John; and McCombs, Daniel G., to Deere & Company. Drafting table attachment. 4,533,108, Cl. 248-467.000.

William, John S.: *See*—
Christian, John H.; Hartung, Michael H.; Nolta, Arthur H.; Reed, David G.; Rieck, Richard E.; and William, John S., 4,533,995, Cl. 364-200.000.

Williams, Frederick C., to Hughes Aircraft Company. Monopulsed radar system for tracking ground targets. 4,533,916, Cl. 343-7.400.

Williams, Robert E., Jr., to General Electric Company. Hydrosilylation method, catalyst and method for making. 4,533,744, Cl. 556-479.000.

Willis, Donald H.; and Luz, David W., to RCA Corporation. Switched capacitor S-correction circuit. 4,533,855, Cl. 315-370.000.

Wilson, Albert H., to Thomas & Betts Corporation. Stackable electrical connector. 4,533,200, Cl. 339-99.00R.

Wilson, Blake: *See*—
Wolfe, James F.; Sybert, Paul D.; and Wilson, Blake, 4,533,724, Cl. 528-313.000.

Wilson, Christopher W.; Trujillo, Thomas M.; and Zallen, Dennis M., to University of New Mexico, The. Automatic fire extinguisher with acoustic alarm. 4,532,996, Cl. 169-23.000.

Wilson, Edward G., to QMC Industrial Research Limited. Information holding device. 4,534,015, Cl. 365-106.000.

Wilson, Louis D.; and Jones, Patrick M., to Drive Line Service, Inc. Device for retaining a tool in either a stationary or movable position. 4,532,804, Cl. 73-478.000.

Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., to International Flavors & Fragrances Inc. 2-Methoxy-4-(2-methylpropenyl) phenyl ester of isobutyric acid, flavor use thereof and process for preparing same. 4,533,746, Cl. 560-144.000.

Wimer, Oley D.: *See*—
Utts, Bradley K.; and Wimer, Oley D., 4,533,489, Cl. 252-301.170.

Winderlich, Hans-George: *See*—
Stockburger, Hermann; Winderlich, Hans-George; Bauer, Siegfried; and Adamovic, Zeljko H., 4,533,237, Cl. 355-40.000.

Windleshaw Enterprises Limited: *See*—
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Wingler, Frank; Waniczek, Helmut; and Geyer, Otto-Christian, to Bayer Aktiengesellschaft. Use of polymer alloys based on cellulose esters in contact ophthalmics, and contact lenses produced from the polymer alloys. 4,533,397, Cl. 106-181.000.

Winkelbauer, Howard M.: *See*—
Wang, Ke-Chin; and Winkelbauer, Howard M., 4,533,646, Cl. 501-97.000.

Winkelmann, Detlef; and Padberg, Peter, to Hoechst Aktiengesellschaft. Process for preparing a planographic printing plate. 4,533,611, Cl. 430-49.000.

Wisler, Benjamin B., Jr.: *See*—
Coder, David W.; Wisler, Benjamin B., Jr.; Clark, Albert P.; and Ratcliffe, Raymond J., 4,532,801, Cl. 73-432.00R.

Witczak, Edward J., to EIP Microwave, Incorporated. Method and apparatus for measuring high frequency signals. 4,533,867, Cl. 324-78.00R.

Witt, Wolfram: *See*—
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Witter, Karl-Theo; Friedrich, Peter; and Strole, Ulrich, to Papier-und Kunststoff-Werke Linnich GmbH. Method employing steam to sterilize packaging material. 4,533,515, Cl. 422-26.000.

Witzel, Bruce E.: *See*—
Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., 4,533,671, Cl. 514-413.000.

Witzel, Frank: *See*—
Morris, William M.; Witzel, Frank; Puglia, Wayne J.; Mackay, Donald A. M.; Clark, K. Warren; and Patanasinth, Kanit J., 4,533,543, Cl. 424-38.000.

Wolfe, Allan M.; Davenport, James M.; Theeuwes, Felix; and Yum, Su I., to ALZA Corporation. In-line drug dispenser for use in intravenous therapy. 4,533,348, Cl. 604-85.000.

Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., to SRI International. Liquid crystalline polymer compositions, process, and products. 4,533,692, Cl. 524-417.000.

Wolfe, James F.; Sybert, Paul D.; and Sybert, Joanne R., to SRI International. Liquid crystalline polymer compositions, process, and products. 4,533,693, Cl. 524-417.000.

Wolfe, James F.; Sybert, Paul D.; and Wilson, Blake, to SRI International. Liquid crystalline poly (2,6-benzothiazole) compositions, process, and products. 4,533,724, Cl. 528-313.000.

Wolff, Robin K.: *See*—
Mookherjee, Braja D.; Trenkle, Robert W.; Wolff, Robin K.; Boden, Richard M.; and Yoshida, Takao, 4,533,491, Cl. 252-522.00R.

Wong, P. K.; and Dickson, Mark K., to Shell Oil Company. β-Lactone process. 4,533,740, Cl. 549-328.000.

Wood, Jack E.: *See*—
Liverance, Howard G.; and Wood, Jack E., 4,533,119, Cl. 254-344.000.

Wood, Ronald C., Jr.: *See*—
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Woodbridge, Keith W., to SKF (U.K.) Limited. Rolling bearing assemblies fitted with seals. 4,533,265, Cl. 384-477.000.

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Corsover, William L.; Hoffman, Kenneth P.; McCann, William F.; and Wooden, Billy J., 4,533,278, Cl. 404-65.000.

Woodford Manufacturing Company: *See*—
Fillman, Russell E., 4,532,954, Cl. 137-302.000.

Woods, Dale G.: *See*—
Woods, Jay A.; Woods, Verle W.; and Woods, Dale G., 4,533,085, Cl. 241-1.000.

Woods, Jay A.; Woods, Verle W.; and Woods, Dale G. Method for production of a suspension of Ziram. 4,533,085, Cl. 241-1.000.

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Woolley, Richard P., to Ball Corporation. Non-spinning dynamic balancing machine and method. 4,532,803, Cl. 73-471.000.

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Wright, Richard F.: *See*—
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Wright, Robert L.: *See*—
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Wrighton, Mark S.; Buchanan, Robert M.; and Calabrese, Gary S., to Massachusetts Institute of Technology. Production of hydrogen peroxide. 4,533,443, Cl. 204-84.000.

Wulf, Helmut; and Baehrle, Friedrich, to Daimler-Benz Aktiengesellschaft. Heating arrangement for electrically driven vehicles. 4,532,894, Cl. 123-142.50E.

Wulfing, Friedl W.: *See*—
Janssen, Lutz J.; and Wulfing, Friedl W., 4,533,168, Cl. 296-1.00S.

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Yamada, Mitsuhiko, to Dainippon Screen Seizo Kabushiki Kaisha. Method for correcting gradation of output data, for use in a picture digital processing system. 4,534,059, Cl. 382-54.000.

Yamada, Shigeru, to Casio Computer Co., Ltd. Bar code recognition apparatus. 4,533,825, Cl. 235-463.000.

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Yamamoto, Michiyoshi; Ohsumi, Katsumi; Mitani, Shinji; Takashima, Yoshie; and Igarashi, Hiroo, to Hitachi, Ltd.; and Hitachi Engineering Co., Ltd. Nuclear reactor degassing method and degassing system. 4,533,514, Cl. 376-308.000.

Yamamoto, Shunichi: *See*—
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Yamanaka, Motosuke; Saito, Isao; Yamatsu, Kiyomi; and Fujimoto, Takako, to Eisai Co., Ltd. Anti-depressant imidazoles. 4,533,669, Cl. 514-396.000.

Yamane, Isao; Kan, Mikio; and Minamoto, Yoshiki, to Ajinomoto Co., Inc.; and Yamane, Isao. Culture medium. 4,533,637, Cl. 435-240.000.

Yamasaki, Eiji: *See*—
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Yamazaki, Masamichi, to Shoketsu Kinzoku Kogyo Kabushiki Kaisha. Three-unit assembly for pneumatic circuit. 4,533,020, Cl. 184-55.200.

Yan, Tsoung Y.; and Whitehurst, Darrell D., to Mobil Oil Corporation. Continuous coking of residual oil and production of gaseous fuel and smokeless solid fuels from coal. 4,533,463, Cl. 208-127.000.

Yanagihara, Tetsuo: *See*—
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Yang, Lien C., to United States of America, National Aeronautics and Space Administration. Instrumentation for sensing moisture content of material using a transient thermal pulse. 4,532,797, Cl. 73-75.000.

Yang, Ning-Sun, to Agracetus Madison Corporation. Medium for plant protoplast culture. 4,533,636, Cl. 435-240.000.

Yang, Tsen-Shau; and Allen, Michael, to Advanced Micro Devices, Inc. Temperature compensated TTL to ECL translator. 4,533,842, Cl. 307-475.000.

Yasuhara, Hiroshi; Fujita, Hitoshi; and Okazaki, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Diagnostic X-ray apparatus. 4,533,946, Cl. 358-111.000.

Yasui, Hirokazu: *See*—
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Yatchum, Joseph W.; and Giegel, David F., to McGraw-Edison Company. Curr... transfer shunt arrangement. 4,533,798, Cl. 200-11.00R.

Yates, Andrew W.; Harradine, Brian D.; and Wraith, Michael A., to Ciba-Geigy AG. Process for the preparation of a silver halide emulsion. 4,533,627, Cl. 430-567.000.

Yates, Ivan R., to British Aerospace Public Limited Company. Duct means for aircraft. 4,533,095, Cl. 244-23.00D.

Yazaki, Akiko: *See*—
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Yeack-Scranton, Celia E.; and Vogel, Siegfried F., to International Business Machines Corporation. Apparatus for analyzing the interface between a recording disk and a read-write head. 4,532,802, Cl. 73-432.00R.

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Yeh, Ching C. Combination lock. 4,532,784, Cl. 70-312.000.

Yoden, Yoshimasa; Okuda, Tsuneo; Fuchigami, Eiji; and Kuwabara, Toshihiro, to Nitta Gelatin Co., Ltd. Process for producing a shaped product of collagen by syneresis. 4,533,358, Cl. 8-94.200.

Yokooku, Katsuhiko; Kaneko, Tadashi; and Nakazumi, Tadataka, to Mazda Motor Corporation. Fuel injection control system for controlling the fuel distribution to the cylinders of a multi-cylinder internal combustion engine. 4,532,905, Cl. 123-443.000.

Yokota, Akira, to Nissan Motor Company, Ltd. Belt type power transmitting system. 4,533,341, Cl. 474-109.000.

Yokozawa, Yukio, to Kabushiki Kaisha Suwa Seikosha. Portable programmable information device and external programming station. 4,534,012, Cl. 364-900.000.

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Yamamoto, Kaichi; and Yonemitsu, Jun, 4,533,937, Cl. 358-22.000.

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Yoshida, Tuneo; Oishi, Kengo; and Yagi, Motohiko, to Fuji Photo Film Co., Ltd. Ceramic guides for tape-like materials and process for the production thereof. 4,533,968, Cl. 360-130.210.

Yoshihara, Toshiyuki: *See*—
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Yoshioka, Atsushi: *See*—
Shibata, Akira; Wada, Isao; and Yoshioka, Atsushi, 4,533,961, Cl. 358-315.000.

Yoshioka, Kouichi; and Ochiai, Michihiko, to Takeda Chemical Industries, Ltd. Method of producing 2-azetidinone-1-sulfonic acid compounds. 4,533,495, Cl. 260-239.00A.

Yoshioka, Mitsuru; Shoichiro, Uyeo; Hamashima, Yoshio; Kikkawa, Ikuo; Tsuji, Teruji; and Nagata, Wataru, to Shionogi & Co., Ltd.. 1-Oxadethiacepham compounds. 4,533,730, Cl. 544-92.000.

Yoshioka, Shigehiko; Yamada, Hideto; Goto, Kimihiko; Adachi, Yoshio; and Miyahana, Kazuo, to Seiko Kagaku Kogyo Co., Ltd. Process for sizing paper and process for making plasterboard base paper sized thereby. 4,533,434, Cl. 162-124.000.

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Youngblood, Paul E. Control accessory for an acoustical guitar. 4,532,847, Cl. 84-1.160.

Yu, Michael C., to Phillips Petroleum Company. Polyarylate formation by ester interchange reaction using γ- gamma lactones as diluent. 4,533,720, Cl. 528-125.000.

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Pitzele, Barnett S.; Yu, Stella S. T.; Hamilton, Robert W.; and Moormann, Alan E., 4,533,739, Cl. 548-559.000.

Yukl, Tex. Noncontacting, hyperthermia method and apparatus for destroying living tissue in vivo. 4,532,939, Cl. 128-804.000.

Yum, Su I.: *See*—
Wolfe, Allan M.; Davenport, James M.; Theeuwes, Felix; and Yum, Su I., 4,533,348, Cl. 604-85.000.

Yutori, Toshio; and Ogawa, Rikuo, to Kabushiki Kaisha Kobe Seiko Sho. Process for producing steel wire or rods of high ductility and strength. 4,533,401, Cl. 148-12.00B.

Zago, Gianni, to Patents Engineering S.r.l. Protective helmet for the head with locking means. 4,532,658, Cl. 2-421.000.

Zallen, Dennis M.: *See*—
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Zampino, Michael J.: *See*—
Wilson, Richard A.; Zampino, Michael J.; Bowen, David R.; and Luccarelli, Domenick, Jr., 4,533,746, Cl. 560-144.000.

Zander, Joachim: *See*—
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Zaskalicky, Michael F., to United States Gypsum Company. Process for continuously calcining gypsum to low dispersed consistency stucco. 4,533,528, Cl. 423-171.000.

Zeiler, Kenneth T.: *See*—
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Zeller, Robert: *See*—
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Zemlyavichus, Pranas V.: *See*—
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Zeugner, Horst; Roemer, Dietmar; Liepmann, Hans; and Milkowski, Wolfgang, to Kali-Chemie Pharma GmbH. 2-Acylaminomethyl-1,4-benzodiazepine compounds and analgesic use. 4,533,662, Cl. 514-221.000.
Zhelnis, Mechislav V.: *See*—
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., 4,533,243, Cl. 356-44.000.
Zhukov, Leonid F.; Chugunny, Evgeny G.; Samchenko, Garold P.; Shumikhin, Vladimir S.; Zhelnis, Mechislav V.; Kushinsky, Ivan V.; and Zemlyavichus, Pranas V., to Institut Problem Litiya Akademii Nauk Ukrainskoi SSR. Light guide for transmitting thermal radiation from melt to pyrometer and method of measuring temperature of molten metal in metallurgical vessel with the aid of said light guide. 4,533,243, Cl. 356-44.000.
Ziomek, Joseph F. Tow line handle. 4,533,334, Cl. 441-69.000.
Ziph, Benjamine: *See*—
Meijer, Roelf J.; Ziph, Benjamine; and Godett, Ted M., 4,532,855, Cl. 92-71.000.
Zirwick, Kurt, to Rohde & Schwarz GmbH & Co. KG. Circuit for automatically setting a predetermined frequency component of the sweep oscillator of a spectrum analyzer to a prescribed point of the frequency coordinates of a display device. 4,533,866, Cl. 324-77.00B.
Zoche, Gunter: *See*—
Neuschaeffer, Karl H.; Spielau, Paul; Zoche, Gunter; and Engels, Hans-Werner, 4,533,393, Cl. 106-18.120.
Zupancic, Ronald L.; and Urry, Lewis F., to Union Carbide Corporation. Method of making an electrochemical cell having a resealable vent closure. 4,532,705, Cl. 29-623.200.
Zysman, Alexandre: *See*—
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Gardiner, Kenneth W.: *See—*
Schaefer, Louis F.; and Gardiner, Kenneth W., Re. 31,964, Cl. 355-10.000.

Kelman, Charles D. Intraocular lenses. Re. 31,963, Cl. 623-6.000.

Kerfoot, Frank W., Jr., to Syntex (U.S.A.) Inc. Compliantly mountable turbine cartridge assembly for gas-driven dental handpiece. Re. 31,965, Cl. 433-132.000.

Peerless Manufacturing Company: *See—*
Sillers, Donald A., Jr., Re. 31,966, Cl. 210-238.000.

Savin Corporation: *See—*
Schaefer, Louis F.; and Gardiner, Kenneth W., Re. 31,964, Cl. 355-10.000.

Schaefer, Louis F.; and Gardiner, Kenneth W., to Savin Corporation. Automatic development electrode bias control system. Re. 31,964, Cl. 355-10.000.

Sillers, Donald A., Jr., to Peerless Manufacturing Company. Multiple filter vessel. Re. 31,966, Cl. 210-238.000.

Syntex (U.S.A.) Inc.: *See—*
Kerfoot, Frank W., Jr., Re. 31,965, Cl. 433-132.000.

LIST OF DESIGN PATENTEES

Acushnet Company: *See—*
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Akazawa, Shumi; and Hoshino, Kiyoshi, to Ryobi Limited. Driver drill. 279,957, 8-6-85, Cl. D8-61.000.

Akira, Nakamura; and Toshiyuki, Yamada, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle instrument cluster. 279,975, 8-6-85, Cl. D12-192.000.

Akira, Nakamura; and Toshiyuki, Yamada, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle display panel and support for instrument gauges. 279,976, 8-6-85, Cl. D12-192.000.

Alert Safety Lite Products Co.: *See—*
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

American Hospital Supply Corporation: *See—*
Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., 280,023, Cl. D24-56.000.

Anderson, George C., to Insilco Corporation. Container. 280,038, 8-6-85, Cl. D32-53.000.

Anderson, Samantha R.: *See—*
Vasquez, Julian; and Anderson, Samantha R., 279,942, Cl. D6-332.000.

Anglin, Richard T., Jr. Protector for toothbrush head. 279,941, 8-6-85, Cl. D4-199.000.

Annett, Leland W.: *See—*
Meyer, Robert P.; and Annett, Leland W., 280,019, Cl. D24-26.000.

AT&T Technologies, Inc.: *See—*
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Baker Perkins Export Pty. Ltd.: *See—*
Willett, Paul E., 279,955, Cl. D7-348.000.

Baker Perkins Exports Pty. Ltd.: *See—*
Willett, Paul E., 279,953, Cl. D7-338.000.
Willett, Paul E., 279,954, Cl. D7-338.000.

Ballarini, Luciano, to Castelli S.p.A. Combined seat and backrest unit for a chair. 279,947, 8-6-85, Cl. D6-501.000.

Benneche, Chris; Cronin, Richard W.; Linhart, Eugene M.; Ranes, Richard L.; and Welch, Darrell K., to Northrop Corporation. Unmanned aircraft. 280,007, 8-6-85, Cl. D22-11.000.

Bertone, Nuccio, to Northern Technologies Limited. Display cabinet for CRT. 279,987, 8-6-85, Cl. D14-113.000.

Blanch, Paul S.: *See—*
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

Blanch, Thomas J.: *See—*
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

Bonazelli, William F. Generator for fuel additive. 279,977, 8-6-85, Cl. D13-2.000.

Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., to American Hospital Supply Corporation. Wound drainage reservoir. 280,023, 8-6-85, Cl. D24-56.000.

Briggery Myles, Jacquelyn A. Swimwear. 279,936, 8-6-85, Cl. D2-41.000.

Broadway Industries, Inc.: *See—*
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,008, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,009, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,010, Cl. D23-32.000.

Brown, James N.; and Taylor, Darrell L. Stilt. 279,997, 8-6-85, Cl. D21-72.000.

Brussing, Bernd: *See—*
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Burn-Brite Lights Proprietary Limited: *See—*
Waters, Ivan L., 280,025, Cl. D26-24.000.

C. S. di Nosenzo Oreste: *See—*
Nosenzo, Oreste G., 280,011, Cl. D23-97.000.

Camens, Murray I. C., to U.S. Philips Corporation. Blood pressure meter. 280,017, 8-6-85, Cl. D24-17.000.

Carbajales Santa-Eulalia, Javier B.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,967, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,968, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,969, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,970, Cl. D11-162.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a water buffalo. 279,967, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a lemur monkey. 279,968, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a big horn sheep. 279,969, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of an ostrich. 279,970, 8-6-85, Cl. D11-162.000.

Castelli S.p.A.: *See—*
Ballarini, Luciano, 279,947, Cl. D6-501.000.

Citizen Watch Co., Ltd.: *See—*
Kano, Hayao, 279,966, Cl. D10-125.000.

Clover Mfg. Co., Ltd.: *See—*
Okada, Hidekazu, 279,938, Cl. D3-18.000.

Cohen, Michael. T-shirt. 279,937, 8-6-85, Cl. D2-208.000.

Commonwealth Industries: *See—*
Scott, Peter K., 280,018, Cl. D24-25.000.

Conair Corporation: *See—*
Doyle, Edward J.; and Rittenhouse, James M., 280,031, Cl. D28-35.000.

Conti, Rino: *See—*
Daenen, Robert H. C. M.; and Conti, Rino, 279,952, Cl. D7-79.000.

Continental Engineering Products Co., Ltd.: *See—*
Pudwill, Horst, 280,034, Cl. D32-24.000.

Cosden Technology, Inc.: *See—*
Fortuna, Vincent E., 279,961, Cl. D9-375.000.
Fortuna, Vincent E., 279,962, Cl. D9-375.000.

Creative Powers, Inc.: *See—*
Powers, Ronald H., 279,973, Cl. D12-158.000.

Cronin, Richard W.: *See—*
Benneche, Chris; Cronin, Richard W.; Linhart, Eugene M.; Ranes, Richard L.; and Welch, Darrell K., 280,007, Cl. D22-11.000.

Daenen, Robert H. C. M.; and Conti, Rino, to Dart Industries Inc. Covered food storage container or the like. 279,952, 8-6-85, Cl. D7-79.000.

Daniels, Bernard O.: *See—*
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,008, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,009, Cl. D23-25.000.
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Dart Industries Inc.: *See—*
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Dheur, Raymond J., to Fabrique Nationale Herstal S.A. Grip plate for a gun. 280,006, 8-6-85, Cl. D22-7.000.
Dickinson, H. Wade: *See—*
Veihl, Robert G., Jr.; Dickinson, Mart J.; and Dickinson, H. Wade, 279,995, Cl. D21-33.000.
Dickinson, Mart J.: *See—*
Veihl, Robert G., Jr.; Dickinson, Mart J.; and Dickinson, H. Wade, 279,995, Cl. D21-33.000.
Doyle, Edward J.; and Rittenhouse, James M., to Conair Corporation. Hair curler. 280,031, 8-6-85, Cl. D28-35.000.
Egan, Philip S.; Helmuth, Keld T.; Pimentel, Richard G.; and Soerensen, Tom B., to Phonic Ear, Inc. Hearing aid transducer or the like. 280,022, 8-6-85, Cl. D24-35.000.
Eyck, Richard T.; Fee, Robert W.; Robbins, Richard J.; and Liu, Shau-Min, to Rival Manufacturing Company. Food steaming pot. 279,956, 8-6-85, Cl. D7-354.000.
Fabrique Nationale Herstal S.A.: *See—*
Dheur, Raymond J., 280,006, Cl. D22-7.000.
Fee, Robert W.: *See—*
Eyck, Richard T.; Fee, Robert W.; Robbins, Richard J.; and Liu, Shau-Min, 279,956, Cl. D7-354.000.
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First National Bank Of Rochester, Executor: *See—*
Mendel, Peter J.; Wilkey, Frank, Jr. deceased; and First National Bank Of Rochester, Executor, 279,986, Cl. D14-113.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Container for flowable products. 279,961, 8-6-85, Cl. D9-375.000.
Fortuna, Vincent E., to Cosden Technology, Inc. Container for flowable products. 279,962, 8-6-85, Cl. D9-375.000.
Gangbin, Irol G. Rotating light. 280,026, 8-6-85, Cl. D26-26.000.
Gavura, Steve. Combined bottle and cap. 279,960, 8-6-85, Cl. D9-373.000.
Genaro, Donald M.; Harden, Daniel K.; and McGarvey, John N., to AT&T Technologies, Inc. Telephone stand. 279,982, 8-6-85, Cl. D14-60.000.
Gerber, Ernst W. Transparent envelope. 279,990, 8-6-85, Cl. D19-3.000.
Giebel, Charles G.: *See—*
Worster, John A.; Giebel, Charles G.; and Lyon, Herbert W., 280,004, Cl. D21-219.000.
Gribb, Stephen R. Dual tip marking instrument. 279,992, 8-6-85, Cl. D19-43.000.
Grimes, Gary E., to Timex Computer Corporation. Personal color computer. 279,983, 8-6-85, Cl. D14-100.000.
Groves, Michael H., to Stanley Works Limited, The. Planing tool. 279,958, 8-6-85, Cl. D8-90.000.
Handi-Pac, Inc.: *See—*
Klawitter, Ronald R., 280,000, Cl. D21-122.000.
Harden, Daniel K.: *See—*
Genaro, Donald M.; Harden, Daniel K.; and McGarvey, John N., 279,982, Cl. D14-60.000.
Heart of Texas Region Mental Health Mental Retardation Center: *See—*
Vasquez, Julian; and Anderson, Samantha R., 279,942, Cl. D6-332.000.
Helmuth, Keld T.: *See—*
Egan, Philip S.; Helmuth, Keld T.; Pimentel, Richard G.; and Soerensen, Tom B., 280,022, Cl. D24-35.000.
Hirsekorn, Franklin D.: *See—*
McLaren, Charles L.; and Hirsekorn, Franklin D., 279,944, Cl. D6-382.000.
Holloway, Thomas F., to Risdon Corporation. Lipstick container. 280,032, 8-6-85, Cl. D28-89.000.
Homsy, Charles A. Hip joint prosthesis. 280,020, 8-6-85, Cl. D24-33.000.
Honda Giken Kogyo Kabushiki Kaisha: *See—*
Akira, Nakamura; and Toshiyuki, Yamada, 279,975, Cl. D12-192.000.
Akira, Nakamura; and Toshiyuki, Yamada, 279,976, Cl. D12-192.000.
Komori, Masamichi; Tsunoda, Kazuhiko; and Tsurumi, Yasuyuki, 279,974, Cl. D12-186.000.
Hoshino, Kiyoshi: *See—*
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Hung Sang Metal Plastic Factory Ltd.: *See—*
Wan, Albert Y., 279,950, Cl. D7-73.000.
Inoue, Nori; Itou, Yoshio; and Sakatani, Atsushi, to Tokai Electric Wire Co., Ltd. Connector housing. 279,978, 8-6-85, Cl. D13-24.000.
Insilco Corporation: *See—*
Anderson, George C., 280,038, Cl. D32-53.000.
International Business Machines Corporation: *See—*
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Ishii, Kiyoshi: *See—*
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Itou, Yoshio: *See—*
Inoue, Nori; Itou, Yoshio; and Sakatani, Atsushi, 279,978, Cl. D13-24.000.
Iwatsu Electric Co., Ltd.: *See—*
Tsukamoto, Masakazu; and Ishii, Kiyoshi, 279,981, Cl. D14-53.000.
John J. Madison Company, Inc.: *See—*
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,967, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,968, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,969, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,970, Cl. D11-162.000.
Jones, Robert S. Buoyant belt. 280,005, 8-6-85, Cl. D21-238.000.
Kanp, Hayao, to Citizen Watch Co., Ltd. Electro-optic display for a timepiece. 279,966, 8-6-85, Cl. D10-125.000.
Kenny, Michael: *See—*
Nimmo, Neil D.; Kenny, Michael; and Willis, David, 279,959, Cl. D8-396.000.
Kiiski, Heikki, to Tunturipyora Oy. Bicycle exerciser. 280,003, 8-6-85, Cl. D21-194.000.
Klawitter, Ronald R., to Handi-Pac, Inc. Toy vacuum cleaner. 280,000, 8-6-85, Cl. D21-122.000.
Kobishi Electric Co., Ltd.: *See—*
Mikami, Kazuo, 279,965, Cl. D10-120.000.
Komori, Masamichi; Tsunoda, Kazuhiko; and Tsurumi, Yasuyuki, to Honda Giken Kogyo Kabushiki Kaisha. Front fender for motorcycle. 279,974, 8-6-85, Cl. D12-186.000.
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., to Alert Safety Lite Products Co. Multiple outlet strip. 279,979, 8-6-85, Cl. D13-30.000.
Kovacik, James W.: *See—*
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.
Kurz, Craven H. Module placing orthodontic pliers. 280,016, 8-6-85, Cl. D24-10.000.
Laguette, Stephen W.: *See—*
Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., 280,023, Cl. D24-56.000.
Lehman, Andrew S. Note holder stand for calendars and documents. 279,991, 8-6-85, Cl. D19-21.000.
Lieba, Inc.: *See—*
Noll, Paul, 279,994, Cl. D19-97.000.
Linhart, Eugene M.: *See—*
Benneche, Chris; Cronin, Richard W.; Linhart, Eugene M.; Ranes, Richard L.; and Welch, Darrell K., 280,007, Cl. D22-11.000.
Liu, Shau-Min: *See—*
Eyck, Richard T.; Fee, Robert W.; Robbins, Richard J.; and Liu, Shau-Min, 279,956, Cl. D7-354.000.
Lyon, Herbert W.: *See—*
Worster, John A.; Giebel, Charles G.; and Lyon, Herbert W., 280,004, Cl. D21-219.000.
Madl, Alfred W., to Sunbeam Corporation. Air cleaner. 280,013, 8-6-85, Cl. D23-149.000.
Marovich, John R. Car top carrier. 279,972, 8-6-85, Cl. D12-157.000.
Matsushita Electric Industrial Co., Ltd.: *See—*
Miyamoto, Isshin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 280,033, Cl. D32-22.000.
Matthews, Charles, to Plan Hold Corporation. Balanced light for drafting tables. 280,030, 8-6-85, Cl. D26-60.000.
McGarvey, John N.: *See—*
Genaro, Donald M.; Harden, Daniel K.; and McGarvey, John N., 279,982, Cl. D14-60.000.
McKeone, William C.: *See—*
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,008, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,009, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,010, Cl. D23-32.000.
McLaren, Charles L.; and Hirsekorn, Franklin D. Sleeping enclosure. 279,944, 8-6-85, Cl. D6-382.000.
McNaughton, Paul. Sunglasses. 279,989, 8-6-85, Cl. D16-104.000.
Menath, James H. Golf club head cover. 279,999, 8-6-85, Cl. D21-221.000.
Mendel, Peter J.; Wilkey, Frank, Jr. deceased; and First National Bank Of Rochester, Executor, to International Business Machines Corporation. Display station for a data processing system. 279,986, 8-6-85, Cl. D14-113.000.
Mepal Service B.V.: *See—*
Weernink, Johan H., 279,948, Cl. D7-9.000.
Meyer, Robert P.; and Annett, Leland W., to Minnesota Mining and Manufacturing Company. Staple remover. 280,019, 8-6-85, Cl. D24-26.000.
Mikami, Kazuo, to Kobishi Electric Co., Ltd. Siren. 279,965, 8-6-85, Cl. D10-120.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., to Broadway Industries, Inc. Faucet. 280,008, 8-6-85, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., to Broadway Industries, Inc. Faucet set. 280,009, 8-6-85, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., to Broadway Industries, Inc. Spout. 280,010, 8-6-85, Cl. D23-32.000.
Minnesota Mining and Manufacturing Company: *See—*
Meyer, Robert P.; and Annett, Leland W., 280,019, Cl. D24-26.000.
Mitchell, Evonne. Basket. 280,035, 8-6-85, Cl. D32-37.000.
Miyamoto, Isshin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, to Matsushita Electric Industrial Co., Ltd. Vacuum cleaner. 280,033, 8-6-85, Cl. D32-22.000.
Moriyama, Toshiya: *See—*
Miyamoto, Isshin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 280,033, Cl. D32-22.000.
Nagamatsu, Yasuo: *See—*
Miyamoto, Isshin; Nagamatsu, Yasuo; Moriyama, Toshiya; and Sakamoto, Masaharu, 280,033, Cl. D32-22.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 6TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Gardiner, Kenneth W.: *See*—
Schaefer, Louis F.; and Gardiner, Kenneth W., Re. 31,964, Cl. 355-10.000.

Kelman, Charles D. Intraocular lenses. Re. 31,963, Cl. 623-6.000.

Kerfoot, Frank W., Jr., to Syntex (U.S.A.) Inc. Compliantly mountable turbine cartridge assembly for gas-driven dental handpiece. Re. 31,965, Cl. 433-132.000.

Peerless Manufacturing Company: *See*—
Sillers, Donald A., Jr., Re. 31,966, Cl. 210-238.000.

Savin Corporation: *See*—
Schaefer, Louis F.; and Gardiner, Kenneth W., Re. 31,964, Cl. 355-10.000.

Schaefer, Louis F.; and Gardiner, Kenneth W., to Savin Corporation. Automatic development electrode bias control system. Re. 31,964, Cl. 355-10.000.

Sillers, Donald A., Jr., to Peerless Manufacturing Company. Multiple filter vessel. Re. 31,966, Cl. 210-238.000.

Syntex (U.S.A.) Inc.: *See*—
Kerfoot, Frank W., Jr., Re. 31,965, Cl. 433-132.000.

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Acushnet Company: *See*—
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Akazawa, Shumi; and Hoshino, Kiyoshi, to Ryobi Limited. Driver drill. 279,957, 8-6-85, Cl. D8-61.000.

Akira, Nakamura; and Toshiyuki, Yamada, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle instrument cluster. 279,975, 8-6-85, Cl. D12-192.000.

Akira, Nakamura; and Toshiyuki, Yamada, to Honda Giken Kogyo Kabushiki Kaisha. Motorcycle display panel and support for instrument gauges. 279,976, 8-6-85, Cl. D12-192.000.

Alert Safety Lite Products Co.: *See*—
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

American Hospital Supply Corporation: *See*—
Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., 280,023, Cl. D24-56.000.

Anderson, George C., to Insilco Corporation. Container. 280,038, 8-6-85, Cl. D32-53.000.

Anderson, Samantha R.: *See*—
Vasquez, Julian; and Anderson, Samantha R., 279,942, Cl. D6-332.000.

Anglin, Richard T., Jr. Protector for toothbrush head. 279,941, 8-6-85, Cl. D4-199.000.

Annett, Leland W.: *See*—
Meyer, Robert P.; and Annett, Leland W., 280,019, Cl. D24-26.000.

AT&T Technologies, Inc.: *See*—
Genaro, Donald M.; Harden, Daniel K.; and McGarvey, John N., 279,982, Cl. D14-60.000.

Baker Perkins Export Pty. Ltd.: *See*—
Willett, Paul E., 279,955, Cl. D7-348.000.

Baker Perkins Exports Pty. Ltd.: *See*—
Willett, Paul E., 279,953, Cl. D7-338.000.
Willett, Paul E., 279,954, Cl. D7-338.000.

Ballarini, Luciano, to Castelli S.p.A. Combined seat and backrest unit for a chair. 279,947, 8-6-85, Cl. D6-501.000.

Benneche, Chris; Cronin, Richard W.; Linhart, Eugene M.; Ranes, Richard L.; and Welch, Darrell K., to Northrop Corporation. Unmanned aircraft. 280,007, 8-6-85, Cl. D22-11.000.

Bertone, Nuccio, to Northern Technologies Limited. Display cabinet for CRT. 279,987, 8-6-85, Cl. D14-113.000.

Blanch, Paul S.: *See*—
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

Blanch, Thomas J.: *See*—
Kovacik, James D.; Blanch, Thomas J.; Blanch, Paul S.; and Kovacik, James W., 279,979, Cl. D13-30.000.

Bonazelli, William F. Generator for fuel additive. 279,977, 8-6-85, Cl. D13-2.000.

Bootman, Matthew W.; Schillke, Peter; and Laguette, Stephen W., to American Hospital Supply Corporation. Wound drainage reservoir. 280,023, 8-6-85, Cl. D24-56.000.

Briggery Myles, Jacquelyn A. Swimwear. 279,936, 8-6-85, Cl. D2-41.000.

Broadway Industries, Inc.: *See*—
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,008, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,009, Cl. D23-25.000.
Miller, Charles D.; Daniels, Bernard O.; and McKeone, William C., 280,010, Cl. D23-32.000.

Brown, James N.; and Taylor, Darrell L. Stilt. 279,997, 8-6-85, Cl. D21-72.000.

Brussing, Bernd: *See*—
Zeischegg, Walter; and Brussing, Bernd, 279,945, Cl. D6-449.000.

Burn-Brite Lights Proprietary Limited: *See*—
Waters, Ivan L., 280,025, Cl. D26-24.000.

C. S. di Nosenzo Oreste: *See*—
Nosenzo, Oreste G., 280,011, Cl. D23-97.000.

Camens, Murray I. C., to U.S. Philips Corporation. Blood pressure meter. 280,017, 8-6-85, Cl. D24-17.000.

Carbajales Santa-Eulalia, Javier B.: *See*—
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,967, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,968, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,969, Cl. D11-158.000.
Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 279,970, Cl. D11-162.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a water buffalo. 279,967, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a lemur monkey. 279,968, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a big horn sheep. 279,969, 8-6-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of an ostrich. 279,970, 8-6-85, Cl. D11-162.000.

Castelli S.p.A.: *See*—
Ballarini, Luciano, 279,947, Cl. D6-501.000.

Citizen Watch Co., Ltd.: *See*—
Kano, Hayao, 279,966, Cl. D10-125.000.

Clover Mfg. Co., Ltd.: *See*—
Okada, Hidekazu, 279,938, Cl. D3-18.000.

Cohen, Michael. T-shirt. 279,937, 8-6-85, Cl. D2-208.000.

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Fortuna, Vincent E., to Cosden Technology, Inc. Container for flowable products. 279,962, 8-6-85, Cl. D9-375.000.

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Willett, Paul E., to Baker Perkins Exports Pty. Ltd. Baker's oven. 279,954, 8-6-85, Cl. D7-338.000.

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Winyard, Frank L., 279,951, Cl. D7-74.000.

Winyard, Frank L., to Wiltshire Consolidated Limited. Knife scabbard. 279,951, 8-6-85, Cl. D7-74.000.

Worster, John A.; Giebel, Charles G.; and Lyon, Herbert W., to Acushnet Company. Putter head. 280,004, 8-6-85, Cl. D21-219.000.

Yoshimura, Hidetomo: *See*—
Ohnuma, Mitsuru; Tsuburaya, Kazuyuki; Tanitsu, Masato; Nakata, Akihito; and Yoshimura, Hidetomo, 279,984, Cl. D14-109.000.

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B. V. Handelskwekerij/M. C. van Staaveren: *See*—
van Andel, Jacob, 5,529, Cl. 70.000.

Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Londesty. 5,528, 8-6-85, Cl. 70.000.

Barberet, Nicole; and Ducloux, Yves, to Laboratoire de Physiologie Vegetale de la Londe. Carnation named Londaxie. 5,530, 8-6-85, Cl. 71.000.

Ducloux, Yves: *See*—
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Barberet, Nicole; and Ducloux, Yves, 5,530, Cl. 71.000.

Fischer, Arnold, to Pan American Plant Company. African violet plant named Sleeping Beauty. 5,527, 8-6-85, Cl. 69.000.

Laboratoire de Physiologie Vegetale de la Londe: *See*—
Barberet, Nicole; and Ducloux, Yves, 5,528, Cl. 70.000.
Barberet, Nicole; and Ducloux, Yves, 5,530, Cl. 71.000.

Pan American Plant Company: *See*—
Fischer, Arnold, 5,527, Cl. 69.000.
Shoesmith, Leonard, deceased, 5,531, Cl. 77.000.

Shoesmith, Leonard, deceased (by Shoesmith, May V., executrix), to Pan American Plant Company. Chrysanthemum plant named Powerhouse. 5,531, 8-6-85, Cl. 77.000.

Shoesmith, May V., executrix: *See*—
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van Andel, Jacob, to B. V. Handelskwekerij/M. C. van Staaveren. Carnation named Stanarthur. 5,529, 8-6-85, Cl. 70.000.

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NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

19	4,532,653
69.5	4,532,654
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249	4,532,669
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335	4,532,675

CLASS 17

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74	4,532,677

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CLASS 23

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CLASS 24

16 PB	4,532,679
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616	4,532,682

CLASS 26

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CLASS 29

4	4,532,684
156.4 R	4,532,685
156.5 R	4,532,686
235	4,532,687
402.08	4,532,688
426.5	4,532,689
451	4,532,690
566.4	4,532,691
568	4,532,692
	4,532,693
569 L	4,532,694
571	4,532,695
	4,532,696
	4,532,697
	4,532,698
572	4,532,699
576 W	4,532,700
	4,532,701
578	4,532,702
599	4,532,703
600	4,532,704
623.2	4,532,705
809	4,532,706

CLASS 30

200	4,532,707
347	4,532,708

CLASS 33

140	4,532,709
141 E	4,532,710
164 R	4,532,711
177	4,532,714
179.5 R	4,532,715
180	4,532,712
201	4,532,716
265	4,532,717
390	4,532,718
559	4,532,713

CLASS 34

12	4,532,719
27	4,532,720
34	4,532,721
60	4,532,722

CLASS 36

7.1 R	4,532,724

CLASS 37

243	4,532,725

CLASS 40

16.4	4,532,726
152	4,532,727
367	4,532,728

CLASS 42

1 LP	4,532,729
73	4,532,730

CLASS 43

43.13	4,532,731

CLASS 44

73	4,533,361

CLASS 47

57.6	4,532,732
58	4,532,733

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61	4,533,362
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CLASS 49

55	4,532,734

CLASS 51

56 R	4,532,735
218 A	4,532,736
283 R	4,532,737
319	4,532,738

CLASS 52

57	4,532,739
98	4,532,740
99	4,532,741
108	4,532,742
207	4,532,743
222	4,532,744
251	4,532,745
276	4,532,746
586	4,532,747
605	4,532,748
668	4,532,749

CLASS 53

118	4,532,750
396	4,532,751
451	4,532,752
	4,532,753
	4,532,754

CLASS 55

5	4,533,364
28	4,533,365
42	4,533,366
91	4,533,367
104	4,533,368
158	4,533,369
276	4,533,370
299	4,533,371

CLASS 56

16.6	4,532,755
202	4,532,756
328 R	4,532,757
341	4,532,758

CLASS 57

264	4,532,759
283	4,532,760

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39.13	4,532,761
39.23	4,532,762
39.281	4,532,763
384	4,532,764
517	4,532,765
	4,532,766
525	4,532,767
585	4,532,768
698	4,532,769

CLASS 62

3	4,532,770
6	4,532,771
12	4,533,372
17	4,533,373
18	4,533,374
22	4,533,375
74	4,532,772
101	4,532,773
239	4,532,774
272	4,532,775
354	4,532,776
434	4,532,777
477	4,532,778
514 R	4,532,779

CLASS 65

3.12	4,533,378
5	4,533,376
232	4,533,377

CLASS 66

9 B	4,532,780
104	4,532,781

CLASS 68

13 R	4,532,782

CLASS 70

63	4,532,783
312	4,532,784
333 R	4,532,785

CLASS 71

88	4,533,379
	4,533,380
94	4,533,381

CLASS 72

68	4,532,786
158	4,532,787
186	4,532,788
202	4,532,789
275	4,532,791
319	4,532,792
342	4,532,793
442	4,532,794

CLASS 73

40	4,532,795
75	4,532,797
116	4,532,798
295	4,532,799
308	4,532,800
432 R	4,532,801
	4,532,802
471	4,532,803
478	4,532,804
579	4,532,806
602	4,532,807
632	4,532,796
640	4,532,808
701	4,532,809
717	4,532,810
861.05	4,532,811
861.27	4,532,812
863.02	4,532,813
863.03	4,532,814
863.32	4,532,805
864.63	4,532,815
864.91	4,532,816

CLASS 74

10.33	4,532,817
	4,532,818
44	4,532,819
56	4,532,820
370	4,532,821
397	4,532,822
473 R	4,532,823
475	4,532,824
532	4,532,825
553	4,532,826
745	4,532,827
793	4,532,828
869	4,532,829

CLASS 75

0.5 BA	4,533,384
0.5 C	4,533,382
	4,533,383
10 R	4,533,385
	4,533,386
66	4,533,387
76	4,533,388
123 B	4,533,389
126 Q	4,533,390
128 A	4,533,391
230	4,533,392

CLASS 76

45	4,532,830

CLASS 81

3.43	4,532,831
16	4,532,834
57.29	4,532,832
64	4,532,833
128	4,532,835
483	4,532,836

CLASS 82

4 C	4,532,837

CLASS 83

13	4,532,838
29	4,532,839
71	4,532,840
102.1	4,532,841
404.1	4,532,842
409	4,532,843
477.1	4,532,844
552	4,532,845
796	4,532,846

CLASS 84

1.16	4,532,847
1.19	4,532,848
1.22	4,532,849
173	4,532,850

CLASS 89

7	4,532,851
136	4,532,852

CLASS 91

165	4,532,853
472	4,532,854

CLASS 92

71	4,532,855
168	4,532,856

CLASS 99

483	4,532,857
534	4,532,858

CLASS 100

35	4,532,859
90	4,532,860
233	4,532,861

CLASS 101

93.32	4,532,862
153	4,532,863
219	4,532,864
426	4,532,865

CLASS 102

204	4,532,866
213	4,532,867
527	4,532,868

CLASS 104

166	4,532,869

CLASS 106

18.12	4,533,393
38.2	4,533,394
89	4,533,395
100	4,533,396
181	4,533,397

CLASS 109

58	4,532,870

CLASS 110

216	4,532,871
255	4,532,872
347	4,532,873

CLASS 112

235	4,532,874
262.2	4,532,875
454	4,532,876

CLASS 114

144 E	4,532,877
222	4,532,878
230	4,532,879
298	4,532,880

CLASS 118

20	4,532,881
108	4,532,882
243	4,532,884
308	4,532,885
326	4,532,886
429	4,532,887
718	4,532,888
	4,532,889

CLASS 119

1	4,532,890
4	4,532,883
51 FS	4,532,891
51 R	4,532,892

CLASS 123

41.31	4,532,893
142.5 E	4,532,894
187.5 R	4,532,895
193 H	4,532,896
196 R	4,532,897
276	4,532,898
292	4,532,899
327	4,532,900
333	4,532,901
417	4,532,902
436	4,532,903
439	4,532,904
443	4,532,905
470	4,532,906
490	4,532,907
493	4,532,908
590	4,532,909

CLASS 126

9 B	4,532,910
27	4,532,911
30	4,532,912
58	4,532,913
110 C	4,532,914
242	4,532,915
424	4,532,916
430	4,532,917

CLASS 127

55	4,533,398

CLASS 128

6	4,532,918
54	4,532,919
79	4,532,920
80 C	4,532,921
91 R	4,532,922
205.13	4,532,923
303.17	4,532,924
325	4,532,925
334 C	4,532,926
	4,532,927
335.5	4,532,928
	4,532,929
419 PG	4,532,931
419 R	4,532,930
631	4,532,932
660	4,532,933
697	4,532,934
753	4,532,935
759	4,532,937
762	4,532,936
801	4,532,938
804	4,532,939

CLASS 130

6	4,532,940
27 R	4,532,941

CLASS 131

198.1	4,532,942
277	4,532,944
291	4,532,945
327	4,532,946
331	4,532,947
336	4,532,943

CLASS 132

7	4,532,950

CLASS 134

6	4,533,399

CLASS 135

67	4,532,948

CLASS 136

249	4,533,783

CLASS 137

1	4,532,949
15	4,532,955
84	4,532,951
240	4,532,952
255	4,532,953
302	4,532,954
340	4,532,956
375	4,532,957
454.2	4,532,958
516.13	4,532,959
596.13	4,532,960
625.31	4,532,961
842	4,532,962

CLASS 139

59	4,532,963
435	4,532,964
	4,532,965

CLASS 140

105	4,532,966

CLASS 141

3	4,532,967
5	4,532,968
27	4,532,969
98	4,532,970
142	4,532,971

CLASS 148

4	4,533,400
12 B	4,533,401
12.4	4,533,402
19	4,533,403
23	4,533,404
36	4,533,405
37	4,533,406
102	4,533,407
103	4,533,408
111	4,533,409
175	4,533,410
402	4,533,411
411	4,533,412
420	4,533,413
427	4,533,414

CLASS 149

35	4,533,415
	4,533,416

CLASS 150

100	4,532,972

CLASS 156

51	4,533,417
52	4,533,418
85	4,533,419
138	4,533,420
244.12	4,533,421
307.3	4,533,422
359	4,533,423
378	4,533,424
466	4,533,425
492	4,533,426
500	4,533,427
608	4,533,428
643	4,533,429
	4,533,430
	4,533,431

CLASS 159

47.1	4,533,432
47.3	4,533,433

CLASS 160

235	4,532,973

CLASS 162

124	4,533,434
161	4,533,435
261	4,533,436
281	4,533,437

CLASS 164

132	4,532,974
150	4,532,975
363	4,532,976
442	4,532,977
448	4,532,978

463 4,532,979
475 4,532,980
483 4,532,981

CLASS 165

1 4,532,982
47 4,532,983
61 4,532,984
118 4,532,985

CLASS 166

50 4,532,986
75.1 4,532,987
176 4,532,988
188 4,532,989
248 4,532,990
261 4,532,991
267 4,532,992
303 4,532,993
4,532,994
327 4,532,995

CLASS 169

23 4,532,996
56 4,532,997

CLASS 172

15 4,532,998
68 4,532,999
4,533,000
266 4,532,790
438 4,533,001

CLASS 173

53 4,533,002

CLASS 174

36 4,533,784
42 4,533,785
50 4,533,786
68.5 4,533,787
88 C 4,533,788
102 R 4,533,789
115 4,533,790

CLASS 175

269 4,533,003
329 4,533,004
393 4,533,005

CLASS 177

25 4,533,006
50 4,533,007
132 4,533,008
139 4,533,009

CLASS 179

2 R 4,533,791
84 C 4,533,792
99 R 4,533,793
111 E 4,533,795
111 R 4,533,794
186 4,533,796

CLASS 180

41 4,533,010
65.2 4,533,011
68.3 4,533,012
210 4,533,013
287 4,533,016

CLASS 181

280 4,533,015

CLASS 182

3 4,533,017
121 4,533,018

CLASS 184

14 4,533,019
55.2 4,533,020

CLASS 187

29 R 4,533,021

CLASS 188

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73.34 4,533,023
73.44 4,533,025
79.5 B 4,533,024
184 4,533,026

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0.052 4,533,030
8 C 4,533,027
13 A 4,533,028
18 A 4,533,029
106.2 4,533,031
107 M 4,533,032

CLASS 198

413 4,533,033
472 4,533,034
499 4,533,035
4,533,036
4,533,037
646 4,533,038
651 4,533,039
847 4,533,040

CLASS 200

11 R 4,533,798
11 TC 4,533,797
52 R 4,533,799
61.39 4,533,800
61.45 R 4,533,801
81.9 R 4,533,802
153 K 4,533,803
159 R 4,533,804
304 4,533,805

CLASS 201

31 4,533,438
41 4,533,439

CLASS 204

1 T 4,533,440
3 4,533,441
68 4,533,442
84 4,533,443
129.43 4,533,444
159.19 4,533,445
159.24 4,533,446
181.4 4,533,447
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272 4,533,454
279 4,533,455
411 4,533,457
415 4,533,456

CLASS 206

63.3 4,533,041
223 4,533,042
328 4,533,043
362 4,533,044
362.3 4,533,045
389 4,533,046
434 4,533,047
455 4,533,048
4,533,049
545 4,533,050
563 4,533,051
602 4,533,052

CLASS 208

3 4,533,458
11 LE 4,533,459
4,533,460
44 4,533,461
88 4,533,462
127 4,533,463

CLASS 209

158 4,533,464
167 4,533,465
4,533,466
4,533,467
172 4,533,468
243 4,533,469
636 4,533,053
687 4,533,054

CLASS 210

96.1 4,533,470
138 4,533,471
238 Re.31,966
350 4,533,472
754 4,533,473
787 4,533,474
788 4,533,475
805 4,533,476

CLASS 211

70.4 4,533,055
153 4,533,056

CLASS 215

11 E 4,533,057
216 4,533,058
230 4,533,059

CLASS 219

8.5 4,533,806
10.49 A 4,533,808
10.49 R 4,533,807
10.55 B 4,533,810
10.55 M 4,533,809
69 M 4,533,811
121 LD 4,533,814
121 LF 4,533,815
121 LH 4,533,812
4,533,813
137.31 4,533,816
137.71 4,533,817
222 4,533,818
225 4,533,819
411 4,533,820
545 4,533,821
553 4,533,822

CLASS 220

3.9 4,533,060
4 B 4,533,061
258 4,533,062
270 4,533,063
273 4,533,064
462 4,533,065

CLASS 221

211 4,533,066

CLASS 222

135 4,533,067
189 4,533,068
209 4,533,069
439 4,533,070
498 4,533,071

CLASS 223

67 4,533,072

CLASS 225

4 4,533,073

CLASS 226

74 4,533,074

CLASS 227

55 4,533,075
67 4,533,076
156 4,533,077

CLASS 228

45 4,533,078

CLASS 229

31 R 4,533,079

CLASS 235

375 4,533,823
379 4,533,824
463 4,533,825

CLASS 236

49 4,533,080

CLASS 237

12.3 B 4,533,081

CLASS 239

102 4,533,082
542 4,533,083

CLASS 241

1 4,533,084
4,533,085
16 4,533,086
65 4,533,087
186.3 4,533,088

CLASS 242

7.21 4,533,089
75 4,533,090
129.6 4,533,091
186 4,533,092
197 4,533,093

CLASS 244

3.22 4,533,094
23 D 4,533,095
75 R 4,533,096
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110 B 4,533,098
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199 4,533,101

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179 4,533,103
245 4,533,104
371 4,533,105
421 4,533,106
430 4,533,107
467 4,533,108
542 4,533,109
573 4,533,110

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3 4,533,112

CLASS 250

201 4,533,826
211 K 4,533,827
216 4,533,828
227 4,533,829
231 SE 4,533,830
492.2 4,533,831
519.1 4,533,832
551 4,533,833
554 4,533,834

CLASS 251

63.4 4,533,113
67 4,533,114
142 4,533,115

CLASS 252

8.55 D 4,533,478
8.9 4,533,477
34 4,533,479
46.4 4,533,480
49.6 4,533,481
56 R 4,533,482
70 4,533,483
117 4,533,484
156 4,533,485
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301.17 4,533,489
305 4,533,490
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69 4,533,122

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404 4,533,500
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CLASS 261

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153 4,533,507

CLASS 264

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171 4,533,509
4,533,510
184 4,533,511
339 4,533,512

CLASS 266

225 4,533,124
226 4,533,125

CLASS 267

141 4,533,126

CLASS 269

17 4,533,127
58 4,533,128
207 4,533,129

CLASS 270

41 4,533,130
52.5 4,533,131
53 4,533,132

CLASS 271

9 4,533,133
240 4,533,134
275 4,533,135

CLASS 272

73 4,533,136
99 4,533,137

CLASS 273

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311 4,533,144
378 4,533,145
422 4,533,146

CLASS 277

26 4,533,147
53 4,533,148
221 4,533,149

CLASS 280

12 H 4,533,150
47.25 4,533,151
251 4,533,152
277 4,533,153
615 4,533,154
628 4,533,155
629 4,533,156
718 4,533,157
804 4,533,158
810 4,533,159

CLASS 282

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CLASS 285

1 4,533,161
27 4,533,162

CLASS 289

1.5 4,533,163
2 4,533,164

CLASS 290

43 4,533,835

CLASS 292

68 4,533,165

CLASS 293

120 4,533,166

CLASS 294

86.4 4,533,167

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216 4,533,173

CLASS 297

16 4,533,174
232 4,533,175
238 4,533,176
301 4,533,177
349 4,533,178
440 4,533,179

CLASS 299

1 4,533,180
2 4,533,181
4,533,182

CLASS 301

37 TC 4,533,183
63 R 4,533,184

CLASS 303

3 4,533,185

CLASS 307

11 4,533,836
116 4,533,837
270 4,533,838
4,533,839
306 4,533,840
468 4,533,841
475 4,533,842
530 4,533,843
4,533,844
540 4,533,845
550 4,533,846

CLASS 308

5 R 4,533,186

CLASS 310

181 4,533,847
237 4,533,848
330 4,533,849

CLASS 313

36 4,533,850
51 4,533,851
346 DC 4,533,852

CLASS 315

117 4,533,853
4,533,854
370 4,533,855

CLASS 318

6 4,533,856
345 A 4,533,857
634 4,533,858
661 4,533,859
673 4,533,860
696 4,533,861
798 4,533,862

CLASS 322

28 4,533,863

CLASS 324

51 4,533,864
4,533,865
77 B 4,533,866
78 R 4,533,867
83 R 4,533,868
158 D 4,533,870
158 R 4,533,869
207 4,533,871
252 4,533,872

CLASS 328

155 4,533,873

CLASS 329

50 4,533,874

CLASS 330

4 4,533,875
253 4,533,876
4,533,877
261 4,533,878

CLASS 331

1 A 4,533,879
4,533,880
36 C 4,533,881

CLASS 332

16 T 4,533,882

CLASS 333

1 4,533,883
26 4,533,884
191 4,533,885
218 4,533,886
256 4,533,887

CLASS 335

131 4,533,888
199 4,533,889
234 4,533,890
272 4,533,891

CLASS 336

147 4,533,892

CLASS 337

5 4,533,893
107 4,533,894
165 4,533,895
232 4,533,896
408 4,533,897

CLASS 338

25 4,533,898
128 4,533,899

CLASS 339

17 CF 4,533,187
4,533,188
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4,533,201
176 M 4,533,203
176 MP 4,533,202
221 R 4,533,204
247 4,533,205
258 R 4,533,206

CLASS 340

52 R 4,533,900
4,533,901
347 AD 4,533,903
347 P 4,533,902
521 4,533,904
524 4,533,905
541 4,533,906
565 4,533,907
626 4,533,908
703 4,533,909
721 4,533,910
727 4,533,911
783 4,533,912
805 4,533,913
825.79 4,533,914

CLASS 343

5 W 4,533,915
7.4 4,533,916
379 4,533,917
451 4,533,918
786 4,533,919

CLASS 346

1.1 4,533,920
4,533,921
4,533,922
4,533,923
49 4,533,924
75 4,533,925
136 4,533,926
140 R 4,533,927
4,533,928
209 4,533,929
211 4,533,930

CLASS 350

96.14 4,533,207
96.16 4,533,208
96.20 4,533,209
96.30 4,533,210
162.12 4,533,211
318 4,533,212
332 4,533,213

334 4,533,214
347 E 4,533,215
361 4,533,216
392 4,533,217
430 4,533,218
487 4,533,219
507 4,533,220

CLASS 351

203 4,533,221
206 4,533,222
4,533,223

CLASS 354

77 4,533,224
322 4,533,225
403 4,533,226
4,533,227

CLASS 355

1 4,533,228
3 CH 4,533,230
3 DD 4,533,229
3 FU 4,533,231
3 R 4,533,232
II 4,533,233
10 Re.31,964
14 D 4,533,234
15 4,533,235
4,533,236
40 4,533,237
68 4,533,238
72 4,533,239
125 4,533,240

CLASS 356

1 4,533,241
5 4,533,242
44 4,533,243
71 4,533,244
73 4,532,723
238 4,533,245
317 4,533,246
345 4,533,247
350 4,533,248
4,533,249
4,533,250
384 4,533,251
432 4,533,252
443 4,533,253

CLASS 357

10 4,533,931
13 4,533,932
15 4,533,933
23.7 4,533,934
51 4,533,935

CLASS 358

12 4,533,936
22 4,533,937
27 4,533,938
28 4,533,939
44 4,533,940
75 4,533,941
78 4,533,942
85 4,533,943
107 4,533,944
109 4,533,945
111 4,533,946
4,533,947
122 4,533,948
4,533,949
139 4,533,950
141 4,533,951
160 4,533,952
4,533,953
212 4,533,954
260 4,533,956
261 4,533,957
280 4,533,958
4,533,959
310 4,533,960
315 4,533,961

CLASS 360

5 4,533,962
19.1 4,533,963
22 4,533,964
62 4,533,965
96.5 4,533,966
123 4,533,967
130.21 4,533,968
132 4,533,969

CLASS 361

38 4,533,970
119 4,533,971
156 4,533,972
253 4,533,973
320 4,533,974
323 4,533,975
395 4,533,976
415 4,533,977
419 4,533,978

CLASS 362

97 4,533,979
110 4,533,980
151 4,533,981
183 4,533,982
223 4,533,983
232 4,533,984
276 4,533,985

CLASS 363

4,533,986
17 4,533,987
36 4,533,988
127 4,533,989
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CLASS 364

160 4,533,990
164 4,533,991
200 4,533,992
4,533,993
4,533,994
4,533,995
4,533,996
4,533,997
424 4,533,998
428 4,534,000
429 4,533,999
474 4,534,001
475 4,534,002
476 4,534,003
486 4,534,004
505 4,534,005
513 4,534,006
560 4,534,007
716 4,534,008
726 4,534,009
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900 4,534,011
4,534,012
4,534,013

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100 4,534,014
106 4,534,015
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228 4,534,018

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108 4,533,255
176 4,533,254

CLASS 367

75 4,534,019
188 4,534,020

CLASS 368

111 4,533,256
202 4,533,257

CLASS 369

47 4,534,021
170 4,534,022

CLASS 370

58 4,534,023
85 4,534,024
4,534,025
100 4,534,026

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8 4,534,027
10 4,534,029
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34 4,534,032
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10 4,534,036
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120 4,534,044

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4,534,060

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206 4,533,260
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420 4,533,262
454 4,533,263
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477 4,533,265

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208 4,533,266
214 4,533,267
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29 4,533,271
107 4,533,272
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28 4,532,681
31 4,533,274
165 4,533,275
4,533,276
408.1 4,533,277

CLASS 404

65 4,533,278

CLASS 405

239 4,533,279

CLASS 406

57 4,533,280

CLASS 407

36 4,533,281
38 4,533,282
111 4,533,283

CLASS 408

92 4,533,284
191 4,533,285

CLASS 409

80 4,533,286
234 4,533,287

CLASS 411

176 4,533,288

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217 4,533,289
667 4,533,290
728 4,533,291

CLASS 415

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117 4,533,293
119 4,533,294

CLASS 416

27 4,533,295
46 4,533,296
132 B 4,533,297
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CLASS 417

222 4,533,299
339 4,533,300
437 4,533,301

CLASS 418

61 B 4,533,302
4,533,303

CLASS 422

26 4,533,515
46 4,533,516
62 4,533,517
70 4,533,518
73 4,533,519
96 4,533,520
133 4,533,521
170 4,533,522
186.05 4,533,523

CLASS 423

1 4,533,526
53 4,533,527
171 4,533,528
230 4,533,529
240 4,533,530
242 4,533,531
244 4,533,532
328 4,533,533
447.4 4,533,535
522 4,533,537
551 4,533,536
617 4,533,538
648 A 4,533,539

CLASS 424

1.1 4,533,541
28 4,533,540
31 4,533,542
38 4,533,543
52 4,533,544
70 4,533,545
78 4,533,552
81 4,533,546
122 4,533,547

CLASS 425

32 4,533,304
43 4,533,305
71 4,533,306
90 4,533,307
131.1 4,533,308
326.1 4,533,309
376 R 4,533,310
384 4,533,555
405 H 4,533,311
438 4,533,312
451.2 4,533,313

CLASS 426

3 4,533,556
61 4,533,557
466 4,533,558
499 4,533,559
578 4,533,560
603 4,533,561

CLASS 427

3 4,533,562
39 4,533,564
44 4,533,565
4,533,566
135 4,533,568
150 4,533,567
154 4,533,569
163 4,533,570
180 4,533,571
216 4,533,572
287 4,533,573
372.2 4,533,524
385.5 4,533,574
387 4,533,563
4,533,575

CLASS 428

35 4,533,576
4,533,577
4,533,578
36 4,533,579
4,533,580
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4,533,582
69 4,533,583
116 4,533,584
4,533,585
137 4,533,586
166 4,533,587
167 4,533,588
174 4,533,589
211 4,533,590
213 4,533,591
4,533,592
215 4,533,593
236 4,533,594
336 4,533,595
341 4,533,596
375 4,533,597
380 4,533,598
402.21 4,533,599
414 4,533,600
437 4,533,601
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458 4,533,603
469 4,533,525
521 4,533,604
635 4,533,605
658 4,533,606

CLASS 429

13 4,533,607
111 4,533,608
172 4,533,609

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59 4,533,612
78 4,533,613
99 4,533,614
110 4,533,616
111 4,533,617
126 4,533,618
138 4,533,615
157 4,533,619
4,533,620
213 4,533,621
218 4,533,622
309 4,533,623
312 4,533,624
552 4,533,625
562 4,533,626
567 4,533,627

CLASS 431

4 4,533,314
20 4,533,315
32 4,533,316
100 4,533,317
328 4,533,318

CLASS 432

3 4,533,319

CLASS 433

9 4,533,320
18 4,533,321
29 4,533,322
60 4,533,323
132 Re.31,965
4,533,324
171 4,533,325
229 4,533,326

CLASS 434

20 4,533,327
94 4,533,328
219 4,533,329

CLASS 435

6 4,533,628
7 4,533,629
4,533,630
47 4,533,632
70 4,533,631
94 4,533,633
240 4,533,634
4,533,635
4,533,636
4,533,637
288 4,533,638

CLASS 436

2 4,533,639
4,533,640
43 4,533,641
78 4,533,642
178 4,533,643

CLASS 440

30 4,533,330
88 4,533,331

CLASS 441

3 4,533,332
38 4,533,333
69 4,533,334
102 4,533,335

CLASS 446

465 4,533,336

CLASS 455

17 4,534,061
330 4,534,062
344 4,534,063
601 4,534,064

CLASS 464

25 4,533,337
64 4,533,338
146 4,533,339

CLASS 474

28 4,533,340
109 4,533,341
201 4,533,342
207 4,533,343

CLASS 494

36 4,533,344

CLASS 501

17 4,533,644
96 4,533,645
97 4,533,646
105 4,533,647

CLASS 502

38 4,533,648
71 4,533,649
84 4,533,650
117 4,533,651
167 4,533,652
242 4,533,653

CLASS 514

12 4,533,654
18 4,533,655
19 4,533,656
4,533,657
54 4,533,548
56 4,533,549
92 4,533,658
184 4,533,659
210 4,533,660
212 4,533,661
221 4,533,662
223 4,533,663
225 4,533,664
256 4,533,550
258 4,533,665
277 4,533,666
278 4,533,667
303 4,533,734
321 4,533,668
396 4,533,669
399 4,533,670
411 4,533,551
413 4,533,671
415 4,533,672
460 4,533,553
464 4,533,554
469 4,533,673
474 4,533,674
480 4,533,675
535 4,533,676
638 4,533,677

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389 4,533,678

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204 4,533,679
220 4,533,680
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468 4,533,686

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100 4,533,688
130 4,533,689
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417 4,533,692
4,533,693
449 4,533,694
504 4,533,695
528 4,533,696

CLASS 525

61 4,533,697
73 4,533,698
277 4,533,699
285 4,533,700
370 4,533,701
439 4,533,702
440 4,533,703
4,533,704

CLASS 526

114 4,533,705
119 4,533,706
125 4,533,707
295 4,533,708
318 4,533,709
323.2 4,533,710
340.4 4,533,711

CLASS 528

9 4,533,712
26 4,533,713
27 4,533,714
45 4,533,715
73 4,533,716
78 4,533,717
86 4,533,718
111 4,533,719
125 4,533,720
174 4,533,721
199 4,533,722
303 4,533,723
313 4,533,724
336 4,533,725
4,533,726
361 4,533,727
370 4,533,728
371 4,533,729

CLASS 544

92 4,533,730
140 4,533,731
172 4,533,732
190 4,533,733

CLASS 546

8 4,533,502
156 4,533,735
290 4,533,736

CLASS 548

110 4,533,737

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194	4,533,738	144	4,533,746	454	4,533,755	817	4,533,770	516	4,533,781	345	4,533,355
559	4,533,739	152	4,533,747		4,533,756	842	4,533,771	520	4,533,782	358	4,533,356
	CLASS 549		**CLASS 562**		4,533,757	860	4,533,772		**CLASS 604**		**CLASS 609**
328	4,533,740	401	4,533,748	648	4,533,759		4,533,773	43	4,533,345	401	4,533,357
455	4,533,741	501	4,533,749	667	4,533,760	866	4,533,774	66	4,533,346		**CLASS 623**
475	4,533,742	600	4,533,750	673	4,533,761	905	4,533,775	81	4,533,347	2	4,532,659
489	4,533,743		**CLASS 564**	677	4,533,762	946	4,533,776	85	4,533,348	RE	Re.31,963
	CLASS 556	408	4,533,751	716	4,533,763		**CLASS 570**	174	4,533,349	18	4,532,660
173	4,533,503	428	4,533,752	724	4,533,764	144	4,533,777	253	4,533,350	23	4,532,661
479	4,533,744		**CLASS 568**	763	4,533,765		**CLASS 585**	293	4,533,351		**CLASS 658**
	CLASS 560	47	4,533,753	771	4,533,766	13	4,533,778	317	4,533,352	630	4,533,758
28	4,533,745	437	4,533,754	805	4,533,767	259	4,533,779	321	4,533,353		
					4,533,768	330	4,533,780	323	4,533,354		
				806	4,533,769						

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D2—	41	279,936			279,954		157	279,972	D19—	3	279,990		11	280,007
	208	279,937		348	279,955		158	279,973		21	279,991	D23—	25	280,008
D3—	18	279,938		354	279,956		186	279,974		43	279,992			280,009
	42	279,939	D8—	61	279,957		192	279,975		45	279,993		32	280,010
	76	279,940		90	279,958			279,976		97	279,994		97	280,011
D4—	199	279,941		396	279,959	D13—	2	279,977	D21—	33	279,995		128	280,012
D6—	332	279,942	D9—	373	279,960		24	279,978		51	279,996		149	280,013
	375	279,943		375	279,961		30	279,979		72	279,997		150	280,014
	382	279,944			279,962	D14—	53	279,981		122	280,000	D24—	10	280,015
	449	279,945	D10—	57	279,963		60	279,982		191	280,001			280,016
	479	279,946		62	279,964		62	279,980		192	280,002		17	280,017
	501	279,947		120	279,965		100	279,983		194	280,003		25	280,018
D7—	9	279,948		125	279,966		109	279,984		199	279,998		26	280,019
	23	279,949	D11—	158	279,967		111	279,985		219	280,004		33	280,020
	73	279,950			279,968		113	279,986		221	279,999		34	280,021
	74	279,951			279,969			279,987		238	280,005		35	280,022
	79	279,952		162	279,970	D15—	140	279,988						

												56	280,023
D25—	80	280,024											
D26—	24	280,025											
	26	280,026											
	40	280,027											
	49	280,028											
	50	280,029											
	60	280,030											
D28—	35	280,031											
	89	280,032											
D32—	22	280,033											
	24	280,034											
	37	280,035											
	47	280,036											
	49	280,037											
	53	280,038											
D34—	24	280,039											

CLASSIFICATION OF PLANTS

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(First number in listing denotes location according to above key. Refer to patent number in body of the Official Gazette to obtain details as to inventor name, location, etc.)

PATENTS

01	:	4,532,815		4,533,152		4,533,876		4,533,465		4,533,570	4,532,893
		4,532,867		4,533,174		4,533,881		4,533,485		4,533,985	4,532,975
		4,532,957		4,533,182		4,533,883		4,533,486	17 :	4,532,663	4,533,028
		4,533,346		4,533,186		4,533,884		4,533,553		4,532,668	4,533,256
		4,533,386		4,533,189		4,533,907		4,533,586		4,532,673	4,533,377
		4,533,439		4,533,198		4,533,909		4,533,607		4,532,679	4,533,414
		4,533,994		4,533,200		4,533,910		4,533,709		4,532,712	4,533,497
04	:	4,532,736		4,533,211		4,533,911		4,533,717		4,532,822	4,533,542
		4,532,762		4,533,215		4,533,915		4,533,736		4,532,895	4,533,555
		4,532,777		4,533,217		4,533,916		4,533,782		4,532,951	4,533,666
		4,532,911		4,533,240		4,533,948		4,533,790		4,532,953	4,533,670
		4,533,019		4,533,242		4,533,967		4,533,856		4,532,969	4,533,677
		4,533,146		4,533,288		4,533,978		4,533,862		4,532,973	4,533,690
		4,533,209		4,533,306		4,534,000		4,533,926		4,532,985	4,533,734
		4,533,323		4,533,321		4,534,013		4,534,018		4,532,991	4,533,752
		4,533,355		4,533,345		4,534,016		4,534,047		4,533,036	4,533,760
		4,533,400		4,533,347		4,534,021		4,534,062		4,533,059	4,533,795
		4,533,844		4,533,348		4,534,035	12 :	4,532,662		4,533,061	4,533,855
		4,533,845		4,533,350		4,534,054		4,532,714		4,533,086	4,533,889
		4,533,970		4,533,381	08 :	4,532,674		4,532,731		4,533,092	4,533,904
		4,533,995		4,533,390		4,532,717		4,532,734		4,533,097	19 : 4,532,703
		4,533,996		4,533,406		4,532,745		4,532,743		4,533,105	4,532,961
		4,534,027		4,533,411		4,532,803		4,532,757		4,533,115	4,532,968
06	:	Re.31,964		4,533,412		4,532,954		4,532,831		4,533,142	4,533,138
		4,532,653		4,533,418		4,533,039		4,532,852		4,533,149	20 : 4,532,834
		4,532,670		4,533,419		4,533,181		4,532,870		4,533,172	4,532,837
		4,532,722		4,533,427		4,533,294		4,532,920		4,533,190	4,533,008
		4,532,769		4,533,430		4,533,519		4,532,932		4,533,206	4,533,160
		4,532,774		4,533,460		4,533,962		4,532,998		4,533,208	4,533,317
		4,532,776		4,533,475		4,533,991		4,533,018		4,533,276	4,534,050
		4,532,783		4,533,476		4,534,023		4,533,118		4,533,277	21 : 4,532,914
		4,532,785		4,533,480	09 :	4,532,796		4,533,131		4,533,285	4,532,972
		4,532,797		4,533,483		4,532,799		4,533,141		4,533,287	4,533,458
		4,532,800		4,533,543		4,532,808		4,533,188		4,533,312	4,533,594
		4,532,804		4,533,608		4,532,925		4,533,201		4,533,343	4,533,796
		4,532,813		4,533,629		4,532,938		4,533,203		4,533,398	4,533,810
		4,532,836		4,533,658		4,533,067		4,533,426		4,533,478	4,533,965
		4,532,848		4,533,692		4,533,114		4,533,436		4,533,558	4,534,017
		4,532,883		4,533,693		4,533,139		4,533,641		4,533,600	22 : 4,533,111
		4,532,886		4,533,715		4,533,151		4,533,751		4,533,663	4,533,374
		4,532,891		4,533,724		4,533,175		4,533,792		4,533,682	4,533,421
		4,532,909		4,533,737		4,533,179		4,533,869		4,533,739	4,533,487
		4,532,942		4,533,743		4,533,191		4,533,885		4,533,800	4,533,735
		4,532,970		4,533,788		4,533,193		4,533,952		4,533,803	4,533,753
		4,532,971		4,533,794		4,533,195		4,534,011		4,533,819	23 : 4,532,669
		4,532,987		4,533,815		4,533,205		4,534,026		4,533,832	4,532,910
		4,533,004		4,533,818		4,533,263		4,534,030		4,533,834	4,533,093
		4,533,007		4,533,830		4,533,295		4,534,036		4,533,895	24 : 4,532,702
		4,533,016		4,533,835		4,533,296		4,534,043		4,533,897	4,532,801
		4,533,030		4,533,839		4,533,388		4,534,063		4,533,977	4,532,805
		4,533,074		4,533,842		4,533,422	13 :	4,532,676		4,533,981	4,532,820
		4,533,112		4,533,846		4,533,449		4,532,688	18 :	4,532,809	4,532,935
		4,533,121		4,533,867		4,533,464		4,533,047		4,532,887	4,533,013

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194	4,533,738	144	4,533,746	454	4,533,755	817	4,533,770	516	4,533,781	345	4,533,355
359	4,533,739	152	4,533,747		4,533,756	842	4,533,771	520	4,533,782	358	4,533,356
	CLASS 549		**CLASS 562**		4,533,757	860	4,533,772		**CLASS 604**		**CLASS 609**
328	4,533,740	401	4,533,748	648	4,533,759		4,533,773	43	4,533,345	401	4,533,357
455	4,533,741	501	4,533,749	667	4,533,760	866	4,533,774	66	4,533,346		
475	4,533,742	600	4,533,750	673	4,533,761	905	4,533,775	81	4,533,347		**CLASS 623**
489	4,533,743		**CLASS 564**	677	4,533,762	946	4,533,776	85	4,533,348	2	4,532,659
	CLASS 556	408	4,533,751	716	4,533,763		**CLASS 570**	174	4,533,349	6	Re.31,963
173	4,533,503	428	4,533,752	724	4,533,764	144	4,533,777	253	4,533,350	18	4,532,660
479	4,533,744		**CLASS 568**	763	4,533,765		**CLASS 585**	293	4,533,351	23	4,532,661
	CLASS 560	47	4,533,753	771	4,533,766	13	4,533,778	317	4,533,352		**CLASS 658**
28	4,533,745	437	4,533,754	805	4,533,767	259	4,533,779	321	4,533,353	630	4,533,758
				806	4,533,768	330	4,533,780	323	4,533,354		
					4,533,769						

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D2—	41	279,936			279,954		157	279,972	D19—	3	279,990		11	280,007	D25—	80	280,024
	208	279,937		348	279,955		158	279,973		21	279,991	D23—	25	280,008	D26—	24	280,025
D3—	18	279,938		354	279,956		186	279,974		43	279,992			280,009		26	280,026
	42	279,939	D8—	61	279,957		192	279,975		45	279,993		32	280,010		40	280,027
	76	279,940		90	279,958			279,976		97	279,994		97	280,011		49	280,028
D4—	199	279,941		396	279,959	D13—	2	279,977	D21—	33	279,995		128	280,012		50	280,029
D6—	332	279,942	D9—	373	279,960		24	279,978		51	279,996		149	280,013		60	280,030
	375	279,943		375	279,961		30	279,979		72	279,997		150	280,014	D28—	35	280,031
	382	279,944			279,962	D14—	53	279,981		122	280,000	D24—	10	280,015		89	280,032
	449	279,945	D10—	57	279,963		60	279,982		191	280,001			280,016	D32—	22	280,033
	479	279,946		62	279,964		62	279,980		192	280,002		17	280,017		24	280,034
	501	279,947		120	279,965		100	279,983		194	280,003		25	280,018		37	280,035
D7—	9	279,948		125	279,966		109	279,984		199	279,998		26	280,019		47	280,036
	23	279,949	D11—	158	279,967		111	279,985		219	280,004		33	280,020		49	280,037
	73	279,950			279,968		113	279,986		221	279,999		34	280,021		53	280,038
	74	279,951			279,969			279,987		238	280,005		35	280,022	D34—	24	280,039
	79	279,952		162	279,970	D15—	140	279,988									

CLASSIFICATION OF PLANTS

P.—	69	5,527		70	5,528		5,529		71	5,530		77	5,531		

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423—	167	T105,701	548—	252	T105,702						

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DESIGN PATENTS

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DEFENSIVE PUBLICATIONS APPLICATIONS

[Notice of Dec. 16, 1969, 869 O.G. 6877]

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August 13, 1985

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OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 13, 1985 Volume 1057 Number 2

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

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PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

May 7, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Patent Cooperation Treaty (PCT) Update

Change in international search fee charged by the European Patent Office, effective Aug. 10, 1985 and guidance regarding requirements submitted under 35 U.S.C. 371.

The International Bureau of the World Intellectual Property Organization has informed the U.S. Patent and Trademark Office that due to a change in the exchange rate between the U.S. Dollar and the German Deutschmark, the dollar amount of the international search fee charged by the European Patent Office for performing a search on PCT applications filed in the United States Receiving Office will increase to $680.00, effective Aug. 10, 1985.

On May 8, 1985, 35 U.S.C. 371 (c) was changed to remove the requirement that a verification statement attesting to the true and accurate nature of the translation be submitted when entering the U.S. Patent and Trademark Office as a Designated Office. Although the verification statement is no longer required at the time of entering the national phase, the translation must still be a true and accurate translation of the international application as filed. Any changes to the claims, for example, deletions of multiple dependencies or cancellations of claims to reduce the national fee, must be submitted in the form of a preliminary amendment separate from the translation of the application as filed.

Translations of amendments to the claims made under PCT Article 19 also must be submitted as a separate paper. Applicants are reminded that both the Article 19 amendments and the translation of those amendments into English must be filed by 20 months from any claimed priority date to avoid cancellation of the amendments to the claims made by the Article 19 amendment. If applicant wishes such cancelled amendments under Article 19 to be considered by the examiner, they may be introduced in the form of an amendment under 37 CFR 1.115.

July 22, 1985.

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 10, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,343,044 through 4,344,188
Reissue Patents	based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) $ 50.00
By other than a small entity $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,445,290, Re. S.N. 749,638, Filed June 28, 1985, Cl. 037/066, APPLIANCE FOR DREDGING THE BOTTOM OF A BODY OF WATER, Jacques Oules, Owner of Record: *Hydroconsult, S.A., Paris, France,* Attorney or Agent: Samuel Scrivener, Jr., et al., Ex. Gp.: 337

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,456,677, Reexam. No. 90/000,813, Requested: July 3, 1985, Cl. 137/246.11, SELF-LUBRICATING CARTRIDGE FOR USE IN WATER FAUCETS AND THE LIKE, Paul A. Mongerson, Owner of Record: *Stanadyne, Inc., Windsor, Conn.,* Attorney or Agent: Daniel C. McEachran, Ex. Gp.: 340, Requester: Owner

3,962,164, Reexam. No. 90/000,817, Requested: July 8, 1985, Cl. 524/373, SELF-EXTINGUISHING ACRYLONITRILE-BUTADIENE-STYRENE MOULDING COMPOSITION, Hans E. Praetzel, et al., Owner of Record: *Chemische Fabrik Kalk GmbH, Koeln, W. Germany,* Attorney or Agent: None Ex. Gp.: 150, Requester: R. V. Jambor, Chicago, Ill.

4,157,643, Reexam. No. 90/000,819, Requested: July 12, 1985, Cl. 56/341, BALER LOADING APPARATUS, Allan A. White, Owner of Record: *Hesston Corp., Hesston, Kans.,* Attorney or Agent: Schmidt, Johnson, et al., Ex. Gp.: 330, Requester: Sperry New Holland, New Holland, Pa.

4,334,903, Reexam. No. 90/000,811, Requested: July 2, 1985, Cl. 65/3.12, OPTICAL FIBER FABRICATION, John B. MacChesney, et al., Owner of Record: *Inventor,* Attorney or Agent: W. L. Keefauver, Ex. Gp.: 130, Requester: ITT Corp., Secaucus, N.J.

4,356,142, Reexam. No. 90/000,809, Requested: July 2, 1985, Cl. 264/537, INJECTION BLOW MOULDING PET PRODUCTS, Louis Germanio, Owner of Record: *Wheaton, Industries, Millville, N.J.,* Attorney or Agent: Ratner & Prestia, Ex. Gp.: 130, Requester: Owner

COMMISSIONER ORDERED REEXAMINATIONS

Notice under 37 CFR 1.11(c). The orders for reexamination listed below are open to inspection by the general public in the indicated Examining Group. Copies of the Orders and other related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.21(b)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed. 37 CFR 1.248(a)(5) and 1.525(b).

4,421,119, Reexam. No. 90/000,815, Ordered July 22, 1985, Cl. 128/660, APPARATUS FOR ESTABLISHING IN VIVO BONE STRENGTH, George W. Pratt, Owner of Record: *Massachusetts Institute of Technology, Cambridge, Mass.,* Attorney or Agent: Arthur Smith, Jr., Ex. Gp.: 330, Requester: The Commissioner of Patents, Washington, D.C.

Erratum

"All reference to Patent No. 4,533,014 to Ronnie P. Goff of Va. for 'AUXILIARY FUEL TANK FOR A MOTORCYCLE' appearing in the Official Gazette of Aug. 6, 1985, should be deleted since no patent was granted."

Erratum

The following registration number, listed in the "Trademark Registrations Issued" section of the Trademark Official Gazette of July 14, 1981, was ordered cancelled and restored to pendency as Trademark Serial Number 73/223,632 as being inadvertently issued by an order dated June 27, 1985, signed by the Assistant Commissioner for Trademarks:

1,161,075	TM 279	July 14, 1981

Consequently, the certificate of registration bearing the above-identified registration number will be cancelled on July 27, 1985 as inadvertently issued. The registration number accordingly has been vacated.

July 10, 1985.

PATRICIA M. DAVIS,
Administrator for Trademark Operations.

Patents Available for Licensing or Sale

4,159,103. SLEEVE ACTUATED VALVE. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314, 703-836-6400.

4,464,141. SHAFT COUPLING. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314, 703-836-6400.

4,477,912. CORRELATION DATA COMMUNICATIONS SYSTEMS. *James A. Oliff, Esq., Parkhurst & Oliff,* 277 S. Washington St., Suite 212, Alexandria, Va. 22314, 703-836-6400.

3,862, 876. PROTECTIVE EDGE WEIGHTED COVER CLOTH. *L. Graves,* 5927 S. Grant, Littleton, Colo. 80121.

4,323,118. APPARATUS FOR CONTROLLING AND PREVENTING OIL BLOWOUTS. Conrad Bergmann, 1365 Lincoln Ave., San Jose, Calif. 92125.

4,504,702. ADDITIONAL LINE COUPLING CIRCUIT TO AN INTERCOM TELEPHONE SET.

Sherman Levy, Suite 739 Investment Bldg., 1511 K St., N.W., Washington, D.C. 20005.

3,886,809. POSITIVE DRIVE CONTINUOUS GEAR-MESH SHIFT TRANSMISSION SYSTEM WITH PERFECT TIMING. *Laszlo J. Kiss,* 7044 Paige, Warren, Mich. 48091.

3,659,479. POSITIVE DRIVE CONTINUOUS GEAR-MESH SHIFT TRANSMISSION SYSTEM WITH PERFECT TIMING. *Laszlo J. Kiss,* 7044 Paige, Warren, Mich. 48091.

3,468,177. POSITIVE DRIVE CONTINUOUS GEAR-MESH SHIFT TRANSMISSION SYSTEM WITH PERFECT TIMING. *Laszlo J. Kiss,* 7044 Paige, Warren, Mich. 48091.

4,126,214. POSITIVE DRIVE CONTINUOUS GEAR-MESH SHIFT TRANSMISSION SYSTEM WITH PERFECT TIMING. *Laszlo J. Kiss,* 7044 Paige, Warren, Mich. 48091.

4,506,387. PROGRAMMING ON DEMAND CABLE SYSTEM AND METHOD. *Howard F. Walter,* P. O. Box 11617, Fort Wayne, Ind. 46859.

3,680,330. COOLING VESSEL FOR BEVERAGES. *Joseph Francis Canosa,* 5701 Blvd. E., Apt. 3A, West New York, N.J. 07093.

4,477,414. EVAPORATIVE CONTAINER. *Browdy and Neimark,* 419 Seventh St., N.W., Washington, D.C. 20004, 202-628-5197.

4,516,478. CYLINDER DRIVEN RECIPROCATOR. *Dale L. Connelly,* 5439 Thomas Dr., N.E., Albuquerque, N. Mex. 87111.

General Electric Company is prepared to grant non-exclusive licenses under the following patents upon reasonable terms to domestic manufacturers.

Applications for license may be addressed to Patent Counsel Gas Turbine Division, General Electric Co., 1 River Rd., Bldg. 500, Room 218, Schenectady, N.Y. 12345.

4,466,253. FLOW CONTROL AT FLASH TANK OF OPEN CYCLE VAPOR COMPRESSION HEAT PUMPS.

Applications for license should be addressed to: Patent Counsel-SSD, General Electric Co., P. O. Box 9555, Philadelphia, Pa. 19101.

4,427,984. PHASE-VARIABLE SPIRAL ANTENNA AND STEERABLE ARRAYS THEREOF.

4,473,737. REVERSE LASER DRILLING.

4,475,111. PORTABLE COLLAPSING ANTENNA.

4,499,655. METHOD FOR MAKING ALIGNMENT-ENHANCING FEED-THROUGH CONDUCTORS FOR STACKABLE SILICON-ON-SAPPHIRE.

Applications for license may be addressed to Patent Counsel, Steam Turbine-Generator Legal Operation, General Electrical Co., 1 River Rd., Schenectady, N.Y. 12345.

4,297,072. MANWAY HANDLING APPARATUS.

4,330,726. AIR-GAP WINDING STATOR CONSTRUCTION FOR DYNAMOELECTRIC MACHINE.

4,465,947. FAN DIFFUSER AND COLLECTOR COMBINATION FOR COOLING SYSTEMS IN DYNAMOELECTRIC MACHINES.

4,476,683. ENERGY EFFICIENT MULTI-STAGE WATER GAS SHIFT REACTION.

4,477,227. KEYING FOR SHRUNK-ON TURBINE WHEELS.

Applications for license may be addressed to: Division Patent Counsel, Mobile Comunications Business Division, General Electric Co., Mountain View Rd., Lynchburg, Va. 24502.

4,506,939. ARRANGEMENT FOR CONNECTING PRINTED CIRCUIT BOARDS.

Applications for license may be addressed to: Patent Counsel, Battery Business Department, General Electric Co., P. O. Box 114, Gainesville, Fla. 32602.

4,131,722. NON-FOULING RESEALABLE VENT.

4,169,918. ARRANGEMENT FOR LIMITING PRESSURE DEVELOPED IN A CLOSED CONTAINER.

4,173,733. BATTERY CHARGER WITH LIQUID CRYSTAL CHARGE CURRENT INDICATOR.

4,186,246. HERMETICALLY SEALED ELECTROCHEMICAL STORAGE CELL.

4,204,161. APPARATUS FOR RAPIDLY TESTING ELECTROCHEMICAL CELLS.

4,207,812. APPARATUS FOR DIE STAMPING CONTAINER CAN ENDS.

4,209,727. APPARATUS FOR CHARGING CAMERA CELLS THROUGH FLASH BULB PACKAGE RECEPTABLE.

4,209,882. LIGHT CELL AUTO SLEEVER.

4,217,400. RECHARGEABLE ELECTROCHEMICAL CELL PACK HAVING OVER-CURRENT PROTECTION.

4,237,409. MULTIPLE-BATTERY CHARGER.

4,245,016. ELECTRODE COATING COMPOSED OF COPOLYMERS DERIVED FROM DIACETONE ACRYLAMIDE.

4,247,603. PLUG-IN RECHARGEABLE BATTERY & SOCKET THERFORE.

4,262,414. HERMETICALLY SEALED ELECTROCHEMICAL STORAGE CELL.

4,271,241. RESEALABLE VENT VALVE FOR CONTAINERS SUCH AS BATTERIES.

4,281,047. ZINC ELECTRODE MADE FROM A MODIFIED ZINC OXIDE FOR USE IN CHARGEABLE ELECTROCHEMICAL CELLS.

4,291,106. BATTERY LINKAGE SYSTEM.

4,292,852. METHOD & APPARATUS FOR PHYSICALLY TESTING THE INTEGRITY OF CONNECTION BETWEEN AN ELECTRODE ASSEMBLY & A TERMINAL CONDUCTOR OF AN ELECTROCHEMICAL CELL.

4,296,546. APPARATUS FOR ASSEMBLING ELECTROCHEMICAL CELL.

4,297,630. TIMED FAST CHARGER.

4,307,158. PRESSURE RELIEF APPARATUS FOR SEALED CONTAINER SUCH AS GALVANIC CELLS.

4,310,421. REUSE OF WASTE WATER IN BATTERY MANUFACTURE.

4,424,476. CONTROLLED FAST CHARGER.

4,434,060. REMOVAL OF HEAVY METALS CONTENT.

4,444,954. ELECTROCHEMICAL CELL HAVING INTERNAL SHORT INHIBITOR.

4,451,297. METHOD FOR REMOVING INORGANIC PARTICULATE SOLIDS FROM BATTERY STRIP.

4,452,869. BATTERY WITH IMPROVED TERMINAL STRUCTURE.

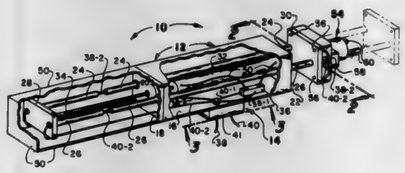
4,468,440. AIR HEATING AND COOLING SYSTEM FOR AIRCRAFT BATTERIES.

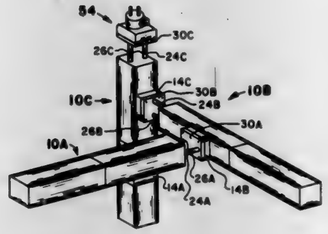
4,490,667. SYSTEM AND CIRCUIT FOR CHARGING A RECHARGEABLE BATTERY.

ERRATA

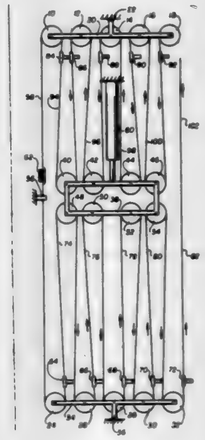
In the Official Gazette, Vol. 1054, No. 2, May 14, 1985, the figures in Pat. Nos. 4,516,476 and 4,516,478 were interchanged. The correct figures are as follows:

4,516,476





4,516,478



PATENT NOTICES

Certificates of Correction for the Week of Aug. 13, 1985

B1. 4,270,911	4,481,798	4,501,113	4,509,127
PP. 5,399	4,482,231	4,501,165	4,509,619
D. 276,917	4,482,329	4,501,276	4,509,980
D. 278,120	4,482,648	4,501,562	4,510,177
D. 278,342	4,483,246	4,501,825	4,510,322
4,029,821	4,484,221	4,502,676	4,511,009
4,273,333	4,484,430	4,502,738	4,511,010
4,363,091	4,485,478	4,502,873	4,511,193
4,365,197	4,485,652	4,503,007	4,511,526
4,368,400	4,485,721	4,503,360	4,511,985
4,370,866	4,486,095	4,503,735	4,512,211
4,371,348	4,488,223	4,503,914	4,512,563
4,376,193	4,488,436	4,504,042	4,512,904
4,386,201	4,488,668	4,504,775	4,513,058
4,390,499	4,489,065	4,504,966	4,513,107
4,408,994	4,489,382	4,505,016	4,513,165
4,409,200	4,489,487	4,505,054	4,513,245
4,416,637	4,489,735	4,505,167	4,513,254
4,424,446	4,490,199	4,505,220	4,513,449
4,431,376	4,490,809	4,505,282	4,514,195
4,439,564	4,491,752	4,505,334	4,514,367
4,442,191	4,491,894	4,505,449	4,514,386
4,445,033	4,492,046	4,505,664	4,514,392
4,445,215	4,492,236	4,505,690	4,514,486
4,448,957	4,493,083	4,505,725	4,514,545
4,450,803	4,493,090	4,506,166	4,515,017
4,452,447	4,493,412	4,506,266	4,515,112
4,455,495	4,494,161	4,506,827	4,515,299
4,461,945	4,494,822	4,507,106	4,515,581
4,463,371	4,495,309	4,507,141	4,515,918
4,465,119	4,495,376	4,507,231	4,516,537
4,468,464	4,495,591	4,507,382	4,516,779
4,474,586	4,495,766	4,507,779	4,516,974
4,474,933	4,497,112	4,508,185	4,518,556
4,475,976	4,497,816	4,508,205	4,518,557
4,476,081	4,497,925	4,508,229	4,519,584
4,476,486	4,497,953	4,508,278	4,520,033
4,477,343	4,498,146	4,508,604	4,520,847
4,477,413	4,498,514	4,508,660	4,521,216
4,477,629	4,499,901	4,508,850	4,521,293
4,477,684	4,500,500	4,508,968	
4,478,003	4,500,640	4,509,076	
4,480,992	4,500,899	4,509,077	

Disclaimers

D. 275,537.—*Merlin A. Brunner,* New London; *Harvey J. Draheim,* Weyauwega; and *Michael J. Schaffer,* New London, all of Wis. CRIB FOOTBOARD. Patent dated Sept. 18, 1984. Disclaimer filed June 19, 1985, by the assignee, *Simmons Universal Corp.*

The term of this patent subsequent to May 15, 1998 has been disclaimed.

3,347,691.—*James M. Lyles,* Fairport, N.Y. XEROGRAPHIC DEVELOPMENT. Patent dated Oct. 17, 1967. Disclaimer filed Mar. 8, 1984, by the assignee, *Xerox Corp.*

Herby enters this disclaimer to claims 1 through 8 and 13 of said patent.

3,696,807.—*Roman Szpur,* Dayton, Ohio. MEDICAL ELECTRODE WITH RELATIVELY RIGID ELECTROLYTE CUP. Patent dated Oct. 10, 1972. Disclaimer filed Aug. 25, 1983, by the assignee, *NDM Corp.*

Hereby enters this disclaimer to claims 15 and 17 of said patent.

3,746,923.—*Joel S. Spira,* Allentown and *Joseph Licata,* Schenecksville, both of Pa. DIMMER SWITCH WITH LINEARLY MOVABLE CONTROL. Patent dated July 17, 1973. Disclaimer filed Dec. 31, 1984, by the assignee, *Lutron Electronics Co., Inc.*

Hereby enters this disclaimer to claims 1, 10, 11 and 12 of said patent.

4,041,234.—*Fred J. Maske,* St. Paul Minn. DISPERSIBLE GLYOXAL-XANTHAN GUM COMPLEXES. Patent dated Aug. 9, 1977. Disclaimer filed Feb. 25, 1985, by the assignee, *Henkel Corp.*

The term of this patent subsequent to Dec. 14, 1993 has been disclaimed.

4,380,394.—*David W. Stowe,* Buffalo Grove, Ill. FIBER OPTIC INTERFEROMETER. Patent dated Apr. 19, 1983. Disclaimer filed May 17, 1985, by the assignee, *Gould, Inc.*

Hereby enters this disclaimer to claim 2 of said patent.

4,392,882.—*Hans-Jochem Riebel,* Wuppertal; *Ludwig Eue,* Leverkusen; *Wilfried Faust,* Odenthal, all of Fed. Rep. of Germany. Patent dated July 12, 1983. Disclaimer filed Aug. 22, 1984, by the assignee, *Bayer Aktiengesellschaft.*

Hereby enter this disclaimer to all claims of said patent.

4,474,317.—*Roy W. Lessard,* Apple Valley, Calif. PANTS RACK. Patent dated Oct. 2, 1984. Disclaimer filed May 10, 1985, by the inventor.

The term of this patent subsequent to July 2, 2000 has been disclaimed.

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

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	Sacramento: California State Library	(916) 322-4572
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	Miami-Dade Public Library	(305) 375-2665
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	Columbus: Ohio State University Libraries	(614) 422-6286
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	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
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	Milwaukee Public Library	(414) 278-3247

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*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 6, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	6-20-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	5-24-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-11-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	7-16-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-11-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-14-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-07-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-14-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	10-27-83

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents ..... Numbers 3,390,405 to 3,395,405, inclusive

Plant Patents ..... Numbers 2,817 to 2,824 inclusive

REISSUES

AUGUST 13, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,967

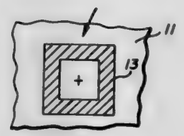
GANG BONDING INTERCONNECT TAPE FOR SEMICONDUCTIVE DEVICES AND METHOD OF MAKING SAME

Carmen D. Burns, San Jose, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Original No. 4,063,993, dated Dec. 20, 1977, Ser. No. 593,474, Jul. 7, 1975. Application for reissue May 7, 1979, Ser. No. 37,181

Int. Cl.³ H05K *1/00, 3/06*

U.S. Cl. 430—314 **16 Claims**



1. In a method for fabrication of a gang bonding interconnect tape for interconnecting a first pattern of leads and a second pattern of leads, such interconnect tape having a series of metallic interconnectlead patterns thereon, individual ones of said lead patterns including a plurality of ribbon-shaped metallic leads extending outwardly from an inner central portion of said pattern to an outer region of said pattern and including an individual electrically insulative support structure interconnecting a plurality of said ribbon-shaped metallic leads in a region of said pattern intermediate said outer region thereof and said inner central region thereof, the steps of:

depositing a series of said individual electrically insulative support structures onto said metallic tape, there being at least one of said individual electrically insulative support structures for individual ones of said interconnect lead patterns to be formed in said metallic tape.

12. A method of producing a metal-plastic composite lead frame device for integrated circuit packaging, said lead frame device having a plurality of cantilever metal leads held in fixed alignment near their free ends by a member of plastics material, comprising the steps of:

perforating a continuous web of metallic foil with a plurality of accurately spaced registration apertures along at least one marginal edge thereof;

depositing on a first side of said foil a pattern of thin, electrically insulating plastic meterial accurately aligned with respect to said apertures, said pattern having lesser overall dimensions than said web;

coating the opposite side of said foil with a photoresist material;

imaging a lead frame pattern on said photoresist at accurately aligned positions with respect to said apertures;

developing said imaged lead frame pattern; and

passing said strip through an etching bath whereby said strip will be etched away leaving only a lead frame with the leads supported by said plastics material.

Re. 31,968

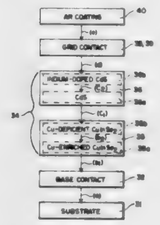
METHODS FOR FORMING THIN-FILM HETEROJUNCTION SOLAR CELLS FROM I-III-VI_2 CHALCOPYRITE COMPOUNDS, AND SOLAR CELLS PRODUCED THEREBY

Reid A. Mickelsen, Bellevue, and Wen S. Chen, Seattle, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Original No. 4,335,266, dated Jun. 15, 1982, Ser. No. 221,761, Dec. 31, 1980. Application for reissue Jun. 14, 1984, Ser. No. 620,637

Int. Cl.³ H01L *31/06, 31/18*

U.S. Cl. 136—260 **147 Claims**



136. A thin-film A-B type heterojunction photovoltaic device wherein "A" and "B" are selected from the group of semiconductor materials consisting of:

A	AND	B
(1) a p-type ternary material	and	an n-type material; or,
(2) an n-type ternary material	and	a p-type material; or,
(3) an n-type material	and	a p-type ternary material; or,
(4) a p-type material	and	an n-type ternary material;

comprising a first semiconductor layer [having been formed with a first region of A-type material and a second superimposed region of transient B-type material with said first and second regions initially defining a transient A-B-type homojunction, and a second semiconductor layer deposited on said first layer and formed of a second B-type material whereupon interdiffusion of the constituent elements defining: (i) said A-type material; (ii) said transient B-type material; and (iii), said second B-type material; causes the transient B-type material to evolve into A-type material so as to form a thin-film] *formed of A-type material and a second superimposed semiconductor layer formed of B-type material deposited on said first layer; one of said first and second semiconductor layers having been formed with a first region of ternary material comprising a selected one of a p-type ternary material or an n-type ternary material, and a second transient region of ternary material of the opposite conductivity type as that selected in said first region, said second transient region of ternary material being adjacent the other of said first and second semiconductor layers, with said first and second regions of said one of said first and second semiconductor layers initially defining a transient homojunction comprising one of a p-n-type or an n-p-type homojunction; whereupon interdiffusion of the constituent elements defining: (i) said first region of ternary material in said one of said first and second semiconductor layers respectively formed of A-type and B-type materials; (ii) said second transient region of ternary material in said one of said first and second semiconductor layers; and (iii), the other of said first and second semiconductor layers; causes the*

second transient region of ternary material to evolve into a ternary material having the same p-type of n-type characteristic as said first region of ternary material so as to form a thin-film A-B-type heterojunction permitting a photovoltaic response characteristic of an energy transducer capable of exhibiting a conversion efficiency approximating on the order of 10%.

Re. 31,969

LASER CONTROL CIRCUIT

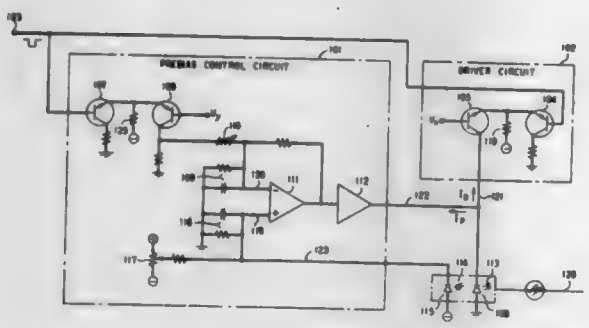
Darrell D. Sell, Los Gatos, Calif., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Original No. 4,009,385, dated Feb. 22, 1977, Ser. No. 668,824, Mar. 22, 1976. Application for reissue Jun. 4, 1982, Ser. No. 385,024

Int. Cl.[3] H01S *3/10*; H04B *9/00*

U.S. Cl. 372—38

12 Claims



4. A control circuit for an injection laser comprising:

means for conducting a driving current through the laser in response to [the] *an* electrical modulating signal,

amplifier means having input and output terminals,

means for deriving a first voltage input to the amplifier from [an] *the* electrical modulating signal,

means for deriving a second voltage input to the amplifier from the laser optical output, and

means for conducting a current through the laser and the amplifier in response to the difference between the first and second voltage inputs to the amplifier.

Re. 31,970

HIGH EFFICIENCY BALLAST SYSTEM FOR GASEOUS DISCHARGE LAMPS

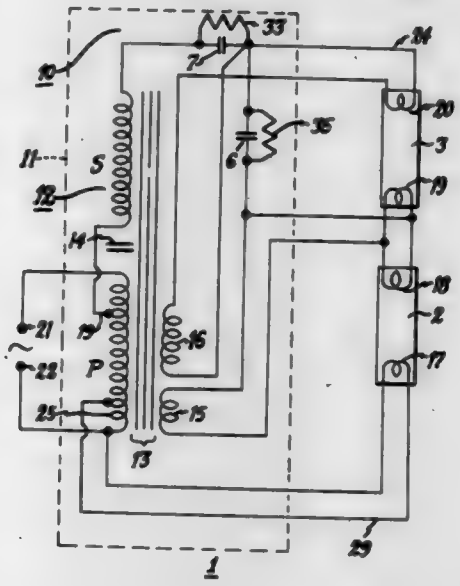
David H. Riesland, Dickson, Tenn.; Edward E. Hammer, Mayfield Village, and Eugene Lemmers, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Original No. 4,185,233, dated Jan. 22, 1980, Ser. No. 891,889, Mar. 30, 1978. Application for reissue Nov. 8, 1982, Ser. No. 440,107

Int. Cl.[3] H05B *41/16, 41/232*

U.S. Cl. 315—276

12 Claims



13. Ballast apparatus for starting and operating low pressure gaseous discharge lamps comprising, in combination, input terminal means for connection to an alternating current supply to provide input power to the ballast apparatus, high leakage reactance autotransformer means having primary winding means and secondary winding means, said primary winding means being connected at opposite ends to said input terminal means, operating secondary circuit means including at least a portion of said secondary winding means and means for serially connecting low pressure gaseous discharge lamp means to at least said portion of said secondary winding means and at least a portion of said primary winding means, capacitor means serially connected in said operating secondary circuit means for providing a leading current therein, said operating secondary circuit means connected to a tap on said primary winding means for supplying from said primary winding means a predetermined voltage to said secondary circuit means; said tap being so located on said primary winding means to reduce the voltage of said secondary circuit means by an amount in the range of 10–15% of the sum of the primary and the secondary winding means voltages for reducing the ratio of said power input to the lamp light output, the portions of said primary winding means on opposite sides of said tap having the same polarity, said secondary winding means having a single polarity at any point in time.

PLANT PATENTS

GRANTED AUGUST 13, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,532

BEGONIA PLANT NAMED HILDA

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Nov. 1, 1983, Ser. No. 547,671
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of begonia plant named Hilda, as described and illustrated, and particularly characterized by its deep red flower color; occasional pistillated flowers: ease of propagation; compact, upright growth habit, and by its floriferousness.

5,533

KLANCHOE PLANT NAMED CITATION

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Nov. 23, 1983, Ser. No. 554,708
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinct cultivar of kalanchoe plant named Citation, as illustrated and described, and characterized by its pink flower color with salmon overtones and white throat, uniform flowering, excellent self-branching, excellent keeping qualities, adaptability to various pot sizes, and by its complimentingthe genetically related cultivars Sensation, Dignity and Royalty.

5,534

AFRICAN VIOLET PLANT NAMED SUGAR PLUM

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Oct. 7, 1983, Ser. No. 539,803
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Sugar Plum, as described and illustrated, and particularly characterized by its floriferous, continuous blooming flower habit; two-toned lavender flower color, with the top two petals being darker than the lower three, with each flower being edged in white, and its compact rosette bouquet on erect peduncles above dark green foliage.

5,535

AFRICAN VIOLET PLANT NAMED CINDARELLA

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Oct. 7, 1983, Ser. No. 539,804
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Cindarella, as described and illustrated, and particularly characterized by its bright pink flower color; compact rosette habit, with the flowers carried on erect peduncles; floriferous habit, and its medium green and slightly ruffled foliage.

5,536

AFRICAN VIOLET PLANT NAMED KATHRYN

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Oct. 7, 1983, Ser. No. 539,805
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet plant named Kathryn, as described and illustrated, and particularly characterized by its large, dark blue single flowers having slightly ruffled petal margins; compact rosette habit, with the flowers being carried on erect peduncles; floriferous and intermittent year round flower habit, and by its medium green foliage.

PATENTS

GRANTED AUG. 13, 1985

ERRATA

For CLASS	See PATENT NO.
623–006	4,534,069
007–152	4,534,108
403–396	4,534,448
514–575	4,534,911
514–021	4,534,971
514–162	4,534,973
514–161	4,534,974
514–730	4,534,975
514–169	4,534,976
514–196	4,534,977
514–429	4,534,978
514–529	4,534,979
514–570	4,534,980
514–785	4,534,981
426–036	4,534,982
426–293	4,534,983
423–412	4,534,984
546–044	4,535,157
549–455	4,535,175
514–568	4,535,183

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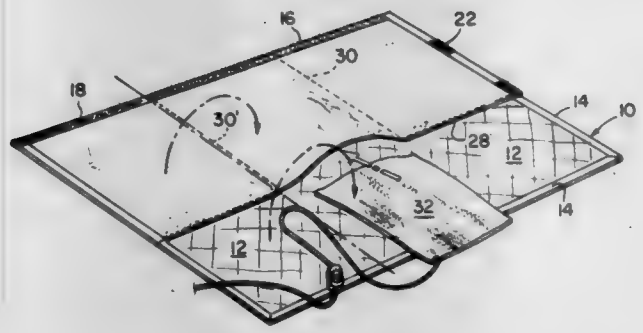
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PATENTS

GRANTED AUGUST 13, 1985

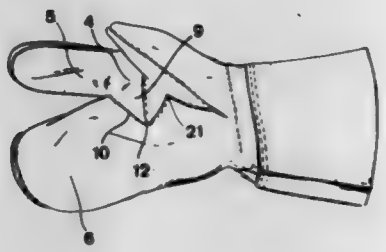
GENERAL AND MECHANICAL

4,534,065
BLANKET GARMENT WRAP
Gloria N. Comfort, 315 Laurel Dr., LaFayette, Ga. 30728
Filed Jan. 30, 1984, Ser. No. 575,272
Int. Cl.[3] A41D *3/00*
U.S. Cl. 2—69.5 **5 Claims**



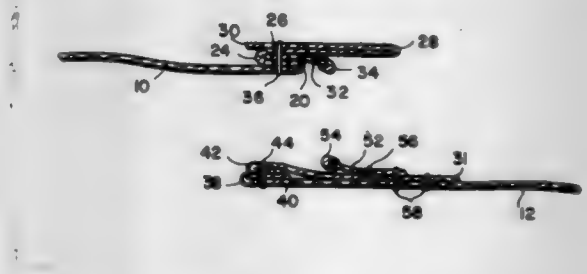
1. A blanket for wrapping into a closed tube about a person's legs or body, said blanket having:
on a first side of the blanket, a single continuous strip of a first type of VELCRO material extending along approximately ⅞ of the length of one edge and a single continuous strip of a second type of VELCRO, for mating with said first type material, extending along the remaining length of said one edge;
on the opposite side of said blanket, a single continuous strip of said second type of VELCRO material extending along said remaining length of said one edge;
first fastening means extending along a second edge on said first side of said blanket, approximately perpendicular to said one edge; and
second fastening means, for mating with said first fastening means, located on said opposite side of said blanket, extending along a line approximately perpendicular to said first edge and located at a sufficient distance from the blanket edges parallel thereto to allow the blanket to be folded into three panels of substantially equal size with mating of said third and fourth fastening means.

4,534,066
GLOVE
Erik Hansson, Box 137, S-811 23 Sandviken, Sweden
Filed Oct. 2, 1984, Ser. No. 657,358
Claims priority, application Sweden, Oct. 7, 1983, 8305526
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—163 **6 Claims**



1. A glove, the palm portion of which comprises a first finger section intended for the index and a second finger section intended for the middle finger and preferable also for the ring- and little fingers, which index section is formed of a material piece which before the assemblage of the glove was separate from the rest of the palm portion and has portions formed in one piece therewith and projecting upwardly along the sides of the index, the second finger section having portions formed in one piece therewith and projecting upwardly along the side of the middle finger exposed to the index, the material piece forming the index section hanging together in one piece with a material section, which on the palm side projects so as to cover at least that portion, which is closest to the base phalanx of the index, of the region where the thickened bone sections at the joint between the base phalanx bone of the index and the corresponding bone of the metacarpus are intended to be located, the second finger section having portions formed in one piece therewith, which project beyond the place intended for the metacarpus on the palm side of the glove and which at this place are fixed to said material section included in the index section, by a joint extending from a first point at the root of the interspace between the index section and the second finger section to a second point located mainly in the middle region of the metacarpus so that the joint between said first and second points extends, with respect to the longitudinal direction of the hand, obliquely inwards towards the middle region of the metacarpus.

4,534,067
FLY CONSTRUCTION AND METHOD OF FORMING IT
Donald Richardson, Atkinson, N.H., assignor to The Reece Corporation, Waltham, Mass.
Filed May 5, 1983, Ser. No. 491,872
Int. Cl.[3] A41D *1/06*
U.S. Cl. 2—234 **35 Claims**



1. In a fly construction for trousers or the like,
left and right front panels forming the trousers or the like having a fly flap portion integral therewith,
opposite tapes of a slide fastener stringer being secured to the respective fly flap portions,
said left fly flap having a folded edge forming an exposed free edge of the completed fly structure,
said folded edge having integral reinforcing means therein, and
said left and right front panels being joined together at their crotch portions.

12. A method of forming a fly structure for trousers or the like, comprising,
cutting left and right front panels from a supply of material with left and right fly flap forming portions extending from the crotch portion to the waist band edge integral with the front panels,
forming an S-shaped tuck in the material along a predetermined line at the junction of the right fly flap portion and the right front panel to form a slit type pocket with the pocket being open in a direction away from said right front panel,
inserting the tape portion of a slide fastener stringer in said pocket with the slide fastener elements being disposed in the direction away from said right front panel,
folding the right fly flap portion back upon itself along a line spaced from said right front panel and beyond said slide fastener elements,
applying a row of stitches through the S-shaped tuck, the tape portion of the slide fastener stringer and the turned back portion of the right fly flap portion,
doubling back the left fly flap portion on the reverse face of

the left front panel along a predetermined line at the junction of the left front panel and the left fly flap portion,
applying a row of stitches to secure the doubled back fold in place,
placing the tape portion of a slide fastener stringer on said left fly flap portion with the slide fastener elements being disposed in the direction toward the doubled back fold,
applying a row of stitches through the tape portion of the slide fastener stringer and the left fly flap portion, and
joining the left and right fly sections together at the crotch sections by applying stitching thereto.

4,534,068

SHOCK ATTENUATION SYSTEM

Hal D. Mitchell; Richard W. Glover; Donald R. Walker, all of Rolla, Mo., and Isadore Rosenberg, Downey, Calif., assignors to Figgie International Inc., Willoughby, Ohio

Continuation-in-part of Ser. No. 436,654, Oct. 26, 1982. This application Jan. 9, 1984, Ser. No. 569,246
Claims priority, application United States, Oct. 24, 1983, PCT/US83/01645
Int. Cl.³ A42B *3/02*
U.S. Cl. 2—414 **11 Claims**



1. Protective headgear comprising an outer shell of substantially rigid material adapted to be worn on the head, a plurality of shock-attenuating modules on the inside of the shell, and an inner liner of flexible resilient relatively slow-recovery cushioning material, portions of said inner liner being spaced from the shell to form pockets, said modules being disposed in said pockets between the shell and the liner thereby to locate the modules in fixed predetermined positions with respect to the inside of the shell, each module comprising a multiplicity of spaced-apart generally squat tubular columns of resilient synthetic resin material disposed with their axes generally at right angles to the shell, each column being constituted by an integrally formed one-piece tubular member having a slenderness ratio of less than 3.0, said slenderness ratio being the ratio of column length to column diameter, said columns being so dimensioned and configured that, when subjected to an axial impact force of predetermined magnitude, the walls of the columns are adapted resiliently to deform for attenuating the shock resulting from said impact force, said columns then being adapted resiliently to return substantially to their undeformed shape.

4,534,069

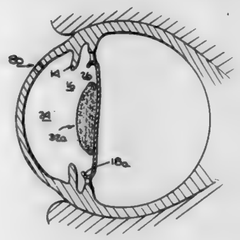
INTRAOCULAR LENS AND METHOD OF POSITIONING THE SAME IN AN EYE

Charles D. Kelman, North Shore Towers–269 Grand Central Pkwy. Floral Park, N.Y. 11005

Filed Jan. 27, 1984, Ser. No. 574,676
Int. Cl.³ A61F *1/16, 1/24*
U.S. Cl. 623—6 **11 Claims**

1. An intraocular lens comprising:
a lens body;
resilient position-fixation means for positioning said lens body within an eye, said position-fixation means having a first portion integrally connected with and extending from said lens body and having a second portion extending from said first portion, and said position fixation means being deformable between an expanded condition in which said second portion is remote from said lens body and a contracted condition in which said second portion is adjacent to said lens body; and
a layer of material which is soluble in the eye, connecting said lens body to said second portion of said position-fixation means in said contracted condition thereof, thereby maintaining said position-fixation means in said contracted condition during insertion thereof into the eye.

7. A method of positioning an intraocular lens in an eye, the lens comprising a lens body and resilient position-fixation means for positioning said lens body within an eye, said position-fixation means having a first portion extending from said lens body and having a second portion extending from said first portion, and said position-fixation means being deformable between an expanded condition in which said second portion is



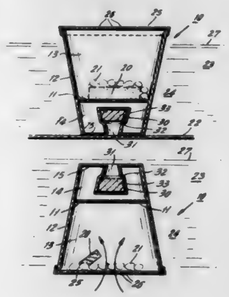
remote from said lens body and a contracted condition in which said second portion is adjacent to said lens body, comprising:
deforming said position-fixation means into said contracted condition thereof;
applying to said lens with deformed position-fixation means a layer of material which is soluble in the eye;
connecting said lens body to said adjacent second portion of said position-fixation means with said material to maintain said position-fixation means in said contracted condition thereof;
inserting said lens into the posterior chamber of the eye; and
allowing said material to dissolve in the eye for seating said lens in the eye.

4,534,070

AUTOMATIC TOILET BOWL CLEANER AND DEPLETION SIGNAL

Michael C. Hauptmann, Pearl River, N.Y., and Charles G. Russomanno, Irvington, N.J., assignors to Block Drug Company, Inc., Jersey City, N.J.

Filed Aug. 6, 1984, Ser. No. 637,747
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **7 Claims**



1. A toilet bowl water treatment device comprising a container having a bottom wall, a top wall and an intermediate

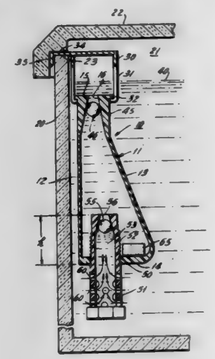
wall defining an upper chamber and a lower chamber; means for supporting material for treatment of the water on the intermediate wall; the lower chamber being closed to provide an inner chamber; the upper chamber in which said treatment material is carried being accessible to external water; an additional chamber at the bottom of the container; said additional chamber being open to the bottom of the container and containing a water coloring material supported therein; the opening from the additional chamber to the bottom wall of the chamber being substantially closed when the container is placed on a flat surface.

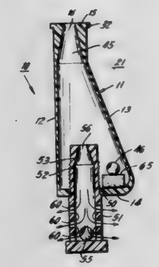
4,534,071

AUTOMATIC DISPENSER FOR DISINFECTANT AND BOWL CLEANING FLUID

Charles Russomanno, Irvington, N.J., assignor to Block Drug Company, Inc., Jersey City, N.J.

Filed Aug. 6, 1984, Ser. No. 637,748
Int. Cl.³ E03D *9/02*
U.S. Cl. 4—228 **5 Claims**





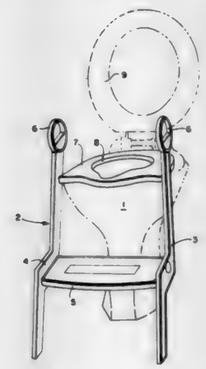
1. A dispensing device for dispensing a liquid containing a cleaning and/or disinfecting material into the tank of a flush toilet wherein the dispensing device may be stationarily hung in the tank and the dispensing device comprises:
a container having a bottom wall and a top opening;
an interior floating ball valve for closing the top opening;
an opening in the bottom wall having a drainpipe inserted therein, the drainpipe having an opening at the top thereof inside the container and at least one opening in said drainpipe below the bottom of the container; and
a floating ball valve responsive to the level of water within the drainpipe to close the opening at the top of the drainpipe;
said dispensing device being adapted to be supported in the container at a level wherein the top opening is below the top level of the water in the tank when the water in the tank is at rest;
said ball valves being displaced away from said openings and permitting water to flow therethrough when the water level in the tank drops thereby permitting water from the said container to flow out through the lower drainpipe opening into said tank; said ball valves being adapted to close said respective openings when the water level in the tank rises.

4,534,072

W.C. SEAT FOR CHILDREN

Mordechai Lipski, New Industrial Area, Accadia Hwy., Herzliya, Israel

Filed Jun. 4, 1984, Ser. No. 616,688
Claims priority, application Israel, Jul. 8, 1983, 69189
Int. Cl.³ A47K *13/00*
U.S. Cl. 4—237 **4 Claims**



1. A structure for use as a seat on W.C. bowls, comprising:
two legs having an upper portion, a lower portion and a substantially horizontal portion, said substantially horizontal portion located between said upper portion and said lower portion, a seat located between said legs at a height slightly above the height of a standard W.C bowl, said seat having an aperture small enough to prevent an infant from slipping therethrough while permitting body waste of the infant to pass therethrough while the infant is sitting thereon, said seat extending horizontally away from the said legs for positioning over a conventional W.C. bowl, a step extending horizontally in opposite direction to that of the seat at a lower level relative to the seat, said step located between said substantially horizontal portions of said legs and onto which an infant can step and from the upright position on the step can comfortably sit down on the seat.

4,534,073

TOILET SEAT LIFTER

Gene Smith, 411 East 4th St., La Fallotte, Tenn. 37766

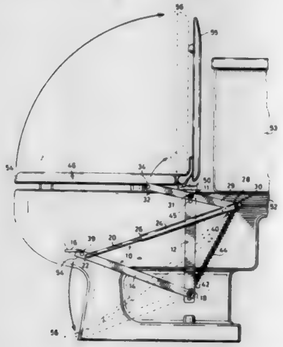
Filed Jul. 21, 1983, Ser. No. 516,206
Int. Cl.³ A47K *13/10*
U.S. Cl. 4—251 **6 Claims**

1. A toilet seat lifting apparatus for use on toilets at a preselected height above the floor and secured on the toilet bowl juxtapositioned to the toilet seat forward of the water reservoir and comprising:
a mounting bracket carried by said toilet bowl whereupon said toilet seat lifting apparatus is attached at some preselected height above the floor, said, mounting bracket further characterized as a single bar bracket, said bar bracket having first and second opposite end portions, said first end portion projecting horizontally and attached firmly to said commode bowl,
said second end portion directed vertically and carrying a

leverage system mounted on said mounting bracket, said leverage system including a foot pedal operable by a user at said preselected height above the floor to perform a lifting and lowering motion on said toilet seat, said leverage system further including a first lever bar carrying said foot pedal and having a first end and a second end, said first end carrying said foot pedal, said second end pivotally connected to said second end portion of said single bar bracket, at least some of said end portions containing preselected circular openings,

an adjustable connecting rod having a first rod member, said first rod member having a first end and a second end, each of said first rod member ends having a preselected plurality of circular openings, said first end of said first rod member joining pivotally with said first end of said bar lever juxtapositioned forward of said foot pedal,

said adjustable connecting rod having a second rod member of greater preselected diameter than said first rod member, said second rod member having a first end and a second end, each of said second rod member ends having a preselected plurality of circular openings,



a second lever bar having a first end portion connected pivotally with said second end of said second rod member of said adjustable connecting rod, said second lever bar having an intermediate pivotal connection to said single bar bracket, said second lever bar having a second end portion carrying a rigidly joined substantially perpendicular lifting rod,

said lifting rod having a first end and a second end, said first end rigidly joined substantially perpendicular to said second end of said second lever bar and contacting the undersurface of said toilet seat along a portion of the length of said lifting rod,

a tension spring having a first end and a second end, said first end attached to the pivotal connection of said second end of said first lever bar with said second end portion of said single bar bracket, said second end of said spring attached to the pivotal connection of said first end of said second lever bar with said second end of said second rod member of said connecting rod.

4,534,074

BATHTUB CUSHION LIFT STABILIZATION

Harry H. Herman, Jr., Bethesda, Md., assignor to International Healthcare Products, Inc., Washington, DC

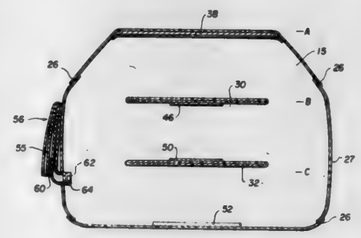
Continuation-in-part of Ser. No. 483,301, Mar. 1, 1983, which is a continuation-in-part of Ser. No. 54,794, Jul. 10, 1979, Pat. No. 4,254,517. This application Feb. 21, 1984, Ser. No. 581,843

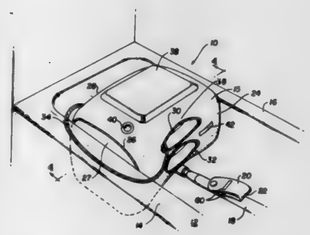
Int. Cl.³ A47K *3/12*

U.S. Cl. 4—564 **20 Claims**

1. An apparatus for enabling a person with impaired mobility to enter and leave a bathtub comprising:

a water-inflatable cushion lift assembly shell having a shape such that when fully inflated said shell wedges between opposed bathtub sidewalls, said shell, when fully inflated, having a bottom portion engaging the bottom of the bathtub and inwardly tapering upper side portions extending to the top of said shell and defining a platform at about the level of the top of said sidewalls of the bathtub, the volume defined by said tapered portion of said inflated shell being lesser than the volume within the remainder of said shell defined by a height equivalent to the height of said tapered portion, whereby a person with impaired mobility





seated upon said platform may lower and raise himself into and out of the bathtub by releasing and adding water from and to the shell, respectively, and whereby the period of time required to transit a vertical distance between the top of the sidewalls of the bathtub and below the top of said sidewalls, said distance being the height of said tapered portion of the shell, is briefer than the time to transit an additional comparable vertical distance below the top of said sidewalls by virtue of the reduced volume of said tapered top of said shell.

4,534,075

STRETCHER HAVING BACKREST AND SAFETY HARNESS

Alois Schnitzler, Bonn, Fed. Rep. of Germany, assignor to Christian Miesen Fahrzeug-Und Karosseriewerk GmbH, Bonn, Fed. Rep. of Germany

PCT No. PCT/DE81/00103, § 371 Date Mar. 11, 1982, § 102(e) Date Mar. 11, 1982, PCT Pub. No. WO82/00247, PCT Pub. Date Feb. 4, 1982

PCT Filed Jun. 30, 1981, Ser. No. 361,906

Claims priority, application Fed. Rep. of Germany, Jul. 11, 1980, 3026406; Nov. 6, 1980, 3041932; Jun. 22, 1981, 3124416

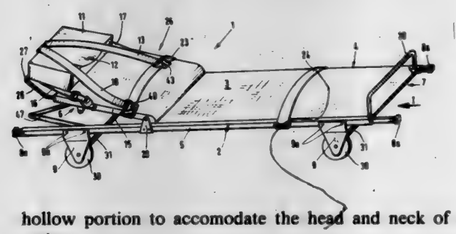
Int. Cl.³ A61G *1/00*

U.S. Cl. 5—82 R **34 Claims**

1. A stretcher having an adjustable belt for use as a safety belt for keeping a patient in position comprising:

a back cushion, said safety belt attached to said backup cushion for a patient's body and means mounting said backup cushion to said stretcher such that a patient resting against it is kept in a position relative to said stretcher, even when subjected to a sudden motion in the lengthwise direction, toward the head of the patient said backup cushion comprising a backup face means, engageable with

the top portion of the shoulders of a patient, for restraining movement of said shoulders past said cushion, and a



hollow portion to accomodate the head and neck of a patient.

4,534,076

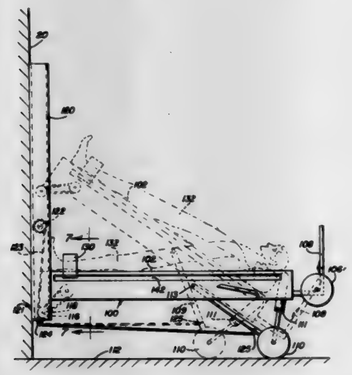
RECLINING RADIOGRAPHIC WALL TABLE

Fred H. Barge, 322 Cameron Ave., LaCrosse, Wis. 54601

Filed May 5, 1982, Ser. No. 375,531

Int. Cl.³ A47C *19/06*

U.S. Cl. 5—147 **5 Claims**



1. A reclining radiographic table including an upright elongated guide structure for support with its lower end adjacent a horizontal support surface, an elongated generally horizontal bed table, support wheel means mounted from one end of said bed table for vertical adjustment relative to said one end between upper and lower positions retracted upwardly toward and projected downwardly from said bed table one end, guide means mounting the other end of said bed table from said guide structure for guided movement therealong, first force means operably connected between said guide structure and said other table end for adjustable positioning of said other table end along said guide structure, said wheel means being provided for rolling support from and movement along said horizontal support surface away from said guide structure upon downward shifting of said other end of said bed table along said guide structure from an upper position with said bed table disposed upright toward a lower position with said bed table generally horizontally disposed, biasing means yieldingly biasing said wheel means toward said upwardly retracted position, and elevation adjustment means operatively connected to said wheel means for adjustably positioning said wheel means, against the biasing action of said biasing means, between said retracted and projected positions, whereby the elevational height of said bed table relative to said support structure, when said bed table is inclined and said bed table is horizontally disposed, may be adjusted.

4,534,077

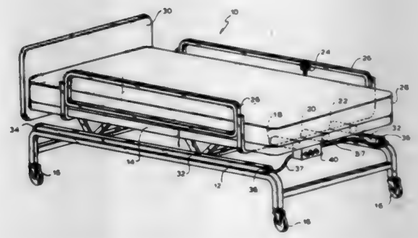
HOSPITAL BED HAVING SAFETY MECHANISM

Kelly D. Martin, Lawndale, N.C., assignor to Simmons Universal Corporation, New York, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,722

Int. Cl.³ A61G *7/06, 7/00*

U.S. Cl. 5—424 **9 Claims**



1. In a hospital bed including a stationary frame, a movable frame for supporting a mattress and patient, and a motor for effecting vertical movement of said movable frame with respect to said stationary frame, the improvement comprising an elongate detection device mounted to one of said frames for detecting the presence of a person or object between said frames, said elongate detection device being an air-tight flexible tube which is compressible against said one of said frames, and means responsive to said detection device for preventing said motor from moving said movable frame closer to said stationary frame.

4,534,078

BODY SUPPORTING MATTRESS

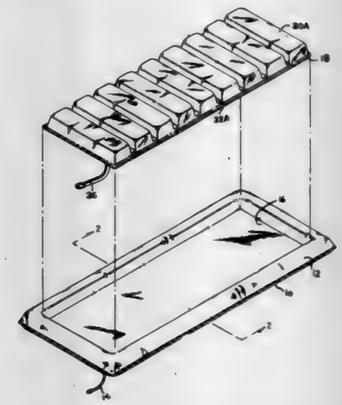
Eric A. Viesturs, and Gundar E. Viesturs, both of Southbury, Conn., assignors to Connecticut Artcraft Corp., Naugatuck, Conn.

Filed Oct. 18, 1983, Ser. No. 543,143

The portion of the term of this patent subsequent to Dec. 27, 2000, has been disclaimed.

Int. Cl.³ A47C *27/08*; A61G *7/04*

U.S. Cl. 5—452 **3 Claims**



1. A body supporting mattress which, when used by bedridden patients, minimizes formation of decubitis ulcers, said mattress comprising:

a first plastic unit which is flat and horizontal and is adapted to be placed upon a bed, said first unit being provided with

a peripherally disposed horizontal endless hollow air filled inflatable tube, said tube defining a raised peripheral border surrounding and enclosing an inner flat horizontal central area of the first unit, said tube being hard when filled with air and having a first vertical height above said central area; and

at least one second plastic unit which is removably disposed on top of said central area, said second unit having an upper section having oppositely disposed inner and outer surfaces, the outer surface being disposed above the inner surface and permanently defining a plurality of closely spaced raised regions which are interconnected by channels disposed below the top surfaces of the regions, the inner surface permanently defining a like plurality of deep recesses, each deep recess constituting the inside of a corresponding region, the deep recesses being interconnected by shallow recesses, each shallow recess constituting the inside of a corresponding channel, said second unit having a lower section which is essentially flat and horizontal and is sealed to the inner surface of the first section in such manner that the deep and shallow recesses communicate with each other but do not communicate with said tube, said deep and shallow recesses being filled with water, said raised regions having a second vertical height above said central area, the second height being lower than said first height, the water filled regions and channels being softer than said air filled tube.

4,534,079

TRANSPORTABLE FOLDING BRIDGE

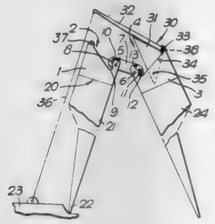
Maurice K. Tucker, Bournemouth, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Jun. 10, 1983, Ser. No. 503,254

Claims priority, application United Kingdom, Jun. 17, 1982, 8217584

Int. Cl.³ E05D *7/04*

U.S. Cl. 14—14 **7 Claims**



1. A folding bridge adapted for unfolding in a substantially vertical plane from a support member, including a first and a second bridge girder co-engaged in end-to-end configuration by a hinge and disposed on the prior to unfolding, the hinge including:

a first and a second hinge block attached to said first and second bridge girders respectively, each having an end face with parallel first and second edges, the two end faces being mutually confrontable when the hinge is fully opened, the first and second edges thereupon being disposed as lower and upper edges respectively;

an attachment comprising a lever having two ends, one being pivotally attachable to the second hinge block adjacent the second edge so as to be rotatable about a pivot axis parallel with the second edge, the other being tied to the support member via a linkage, and a fulcrum arm rigidly attachable to the second hinge block having a bearing surface extending radially outwards from the pivot axis so as to be engagable with the lever;

a swinging link having a first and a second end respectively pivotally attached to the first and second hinge blocks so as to be rotatable about an axis adjacent and parallel to the first edge, each end having stop means engagable with the hinge blocks at two angularly displaced locations so as to limit relative rotation between the link and the hinge block and thereby define a fully closed condition and a fully opened condition for the hinge block relative to the link; and

gravity urged restraining means selectively operative during launch upon the stop means for ensuring sequential opening of the two hinge blocks.

4,534,080

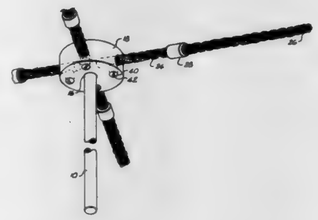
CHIMNEY CLEANING TOOL

Robert S. Young, Rte. 1, Box 827, Pelzer, S.C. 29669, and Wilton Leopard, Rte. 8, Box 196, Piedmont, S.C. 29673

Filed Jan. 30, 1984, Ser. No. 574,848

Int. Cl.³ F23J *3/02*; A46B *13/02*

U.S. Cl. 15—23 **4 Claims**



1. A chimney cleaning tool, a power driven motor attached to said chimney cleaning tool rotating said tool, said chimney cleaning tool comprising:

an elongated shaft, one end of said shaft being connected to said power driven motor;

an attachment device carried adjacent the other end of said elongated shaft;

elongated multistrand twisted cables having inner ends thereof being connected to said attachment device and outer ends being radially spaced from said attachment;

said outer ends of said twisted cables being circumferentially spaced from each other;

restricting members carried on said multistrand twisted cable intermediate said outer and inner ends; and

said outer ends of said multistrand twisted cables being free to untwist inwardly to the position of said restricting members to form a plurality of brush-like heads capable of cleaning chimneys and the like.

4,534,081

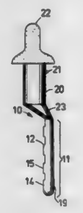
TOOTH CLEANING BRISTLE AND HOLDER

Richard G. Spademan, Box 6410, Incline Village, Nev. 89450

Continuation-in-part of Ser. No. 509,000, Jun. 29, 1983, abandoned. This application Feb. 24, 1984, Ser. No. 583,200

Int. Cl.³ A46B *9/04*

U.S. Cl. 15—167 R **24 Claims**



15. A tooth cleansing bristle comprising a stem rotatably

movably engageable with a tooth bristle holder about an axis of rotation and an elongated cleansing head having abrasive cleansing means distributed over at least a part of the length thereof, said cleansing means being offset from and directed toward the axis of rotation of said stem in said holder.

4,534,082

DRAINAGE UNIT FOR AIRCRAFT SANITATION SYSTEMS

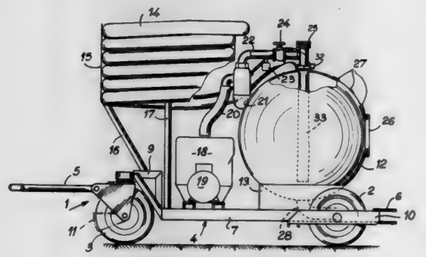
Jean-Claude Piquin, St. Herblain, France, assignor to Defontaine S.A., France

Filed Sep. 28, 1982, Ser. No. 425,680

Claims priority, application France, Mar. 16, 1982, 82 04419

Int. Cl.³ A47L *7/00*

U.S. Cl. 15—315 **16 Claims**



1. Draining apparatus for an aircraft sanitation system, comprising:

a mobile wheeled truck having mounted thereon a reservoir for collecting waste material and water, and vacuum-producing means connected to the reservoir for creating a vacuum therein; and

selective take-off means including a siphon, the take-off means being connectable at one end to the reservoir and connectable at the other end to the aircraft sanitation system, so that when connected, the waste material and water are emptied into the reservoir mainly by siphon action, said take-off means having a rigid nozzle attached to the end thereof connectable to the aircraft sanitation system, and further comprising an elastic bellows concentrically mounted on the nozzle, the end of the bellows nearest the free end of the nozzle being slidably mounted on the nozzle and having means for scraping the surface of the nozzle coupled thereto, the end of the bellows farthest from the free end of the nozzle being fixedly attached to said nozzle.

4,534,083

CONTROL VALVE ASSEMBLY

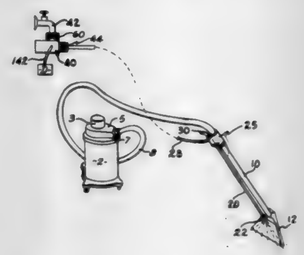
Herbert Hampson, Grafton, Ohio, assignor to Hampson Enterprises, Inc., Elyria, Ohio

Filed Feb. 7, 1983, Ser. No. 464,360

Int. Cl.³ A47L *11/34*

U.S. Cl. 15—321 **2 Claims**

1. For use with a source of water under pressure and a wet-dry vacuum cleaner having a wand for directing a mixture of water and liquid detergent to a fabric to be cleaned and a tank connected to a source of vacuum and said wand for removing said water, liquid detergent and dirt carried therein out of said fabric; and a first conduit means for providing said mixture to said wand, a source of liquid detergent, a control valve connecting to said sources of water and liquid detergent and said first conduit means comprising a valve body having first and second valve chambers formed therein in longitudinal extension with respect to each other, means connecting said first valve chamber to the source of water under pressure, second conduit means connecting said second valve chamber to the source of liquid detergent, first pilot valve means disposed in said first valve chamber, second slave valve means disposed in said second valve chamber and interconnected to said first valve means, said first conduit means being connectable to said second valve chamber and said source of water upon actuation of said second valve means to open position, said first and second valve means being in a normally closed position effective to disconnect the second valve chamber from said first conduit means, normally closed third valve



means interconnected between the control valve and said first conduit means being operable to an open position effective to connect said first conduit means to atmosphere, and said first and second valve means being automatically responsive to the actuation of said third valve means to its open position to move said first and second valve means to open valve position effective to cause a mixing of water and detergent in said second chamber and dispensing of said mixture outwardly through said first conduit means to the wand.

4,534,084

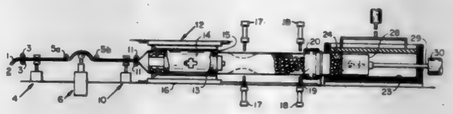
MEAT STUFFING APPARATUS

Thomas R. Stanley, Downers Grove, Ill., assignor to Teepak, Inc., Oak Brook, Ill.

Filed Jan. 14, 1983, Ser. No. 458,113

Int. Cl.³ A22C *11/06*

U.S. Cl. 17—39 **22 Claims**



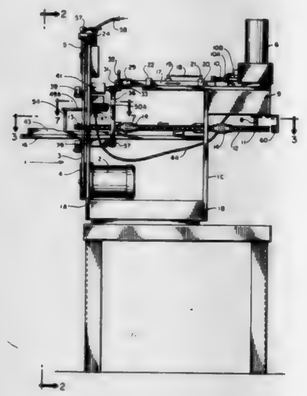
1. An arrangement for the automatic production of stuffed meats from a continuous band tubular casing comprising:

a meat extruder, having a filling nozzle means;

a carrier means for selectively carrying at least a portion of a continuous band tubular casing from a casing uptake and adjustment means to said filling nozzle means and comprising means for engaging the forward open end of said tubular casing with said filling nozzle means; and

a continuous band tubular casing uptake, lock and adjustment means comprising at least two casing lock means for intermittently engaging and preventing through movement of said casing, a casing uptake and adjustment means for intermittently drawing measured amounts of casing from a casing supply means and intermittently tensioning casing which has been fed to said carrier means, said casing uptake and adjustment means disposed between said lock means comprising an intermittently displaceable casing guide means and, control means for sequentially, intermittently engaging said casing lock means and displaceable casing guide means in casing uptake and tensioning function.

4,534,085
FISH FILLETING SYSTEM
Thomas M. Stewart, Rte. 1, Box 283, Denham Springs, La. 70726
Filed Apr. 21, 1983, Ser. No. 486,998
Int. Cl.[3] A22C *25/16*
U.S. Cl. 17—46 16 Claims



1. A fish filleting machine, comprising: cutting means for cutting the fish fillets from the central bone section of the fish, said cuttoing means comprising a pair of opposed, moveable band saw blades spaced apart a distance comparable to the thickness of the central bone section of the fish, the cutting edges of said blades being canted toward each other and the incoming fish during the cutting process, the leading cutting edge of said blades being canted inwardly toward the centerline with respect to their own adjacent backside, trailing edges, the amount of cant being of the order of a few degrees;

at least one opposed pair of rotatable guide wheels mounted adjacent to said saw blades but removed from the area where the fish contact said blades during the cutting process, said band saw blades being mounted for travel in contact with said opposed pair of rotatable guide wheels, the axes of rotation of said guide wheels being directed at least generally parallel to the direction of relative travel between the fish and the blades during the cutting process and located out board of said blades, the blade contacting surfaces of said guide wheels being canted forwardly at least during the cutting process an amount of the order of a few degrees causing said blades to be canted inwardly an amount of the order of a few degrees: and

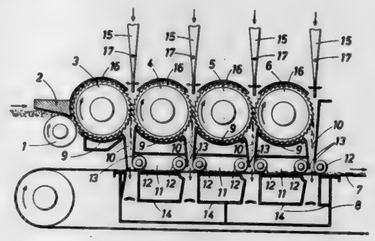
conveyor means associated with said cutting means for positioning and moving the fish and said cutting means relative to one another in cutting engagement during the cutting process.

12. The method of filleting fish on an automated basis with the use of a pair of opposed band saw blades spaced apart a distance comparable to the thickness of the central bone section of the fish, including the following steps:

(a) canting the cutting edges of the blades inwardly toward each other and the incoming, forwardly fed fish during the cutting process so that the leading cutting edges of said blades are canted inwardly toward the operative centerline of the machine with respect to their own adjacent backside, trailing edges in an amount of the order of a few degrees; and

(b) causing the cutting edge to move along the central bone section to closely cut the fillets away from the central bone section of the fish as the fish and the cutting edges of the blades are moved relative to each other in cutting engagement the full length of the fish body.

4,534,086
APPARATUS FOR MAKING FIBROUS WEBS
Ernst Fehrer, Auf der Gugl 28, A-4020 Linz, Austria
Filed Apr. 26, 1984, Ser. No. 604,302
Claims priority, application Austria, May 5, 1983, 1649/83; Nov. 8, 1983, 3919/83; Jan. 16, 1984, 107/84; Jan. 26, 1984, 253/84
Int. Cl.[3] D01G *15/26*
U.S. Cl. 19—99 12 Claims



1. An apparatus for making a fibrous web, which comprises

(a) a feeder for feeding fibers in the form of a fibrous web,

(b) a plurality of successively arranged tooth-carrying carding drums rotatable about parallel axes in the same sense at a surface velocity sufficient to cause carded fibers to be thrown off each one of said drums by centrifugal force, a first one of said drums being arranged to receive the fibrous web from the feeder,

(c) air-permeable means movable in a direction transverse to the drum axes and having a fiber-collecting surface facing the carding drums,

(1) the carding drums being so closely spaced apart in said direction that each succeeding carding drum cooperates with a preceding one of the drums like a working roller,

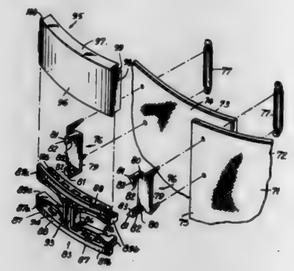
(d) discharge ducts in the spaces between the successive carding drums arranged to receive the fibers thrown off respective ones of the drums and to deliver respective streams of said fibers to the fiber-collecting surface at successive locations spaced in said direction whereby the fibers are collected as a fibrous web on the fiber-collecting surface,

(e) means for supplying a stream of air into each one of the discharge ducts to move the streams of fibers to the fiber-collecting surface, and

(f) suction means for sucking the air through the air-permeable means to retain the fibers of the fibrous web on the collecting surface.

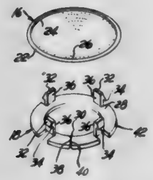
4,534,087
ADJUSTABLE BUCKLE
Wah Lau, 41-31 149th Pl., Flushing, N.Y. 11355
Filed Dec. 1, 1983, Ser. No. 557,059
Int. Cl.[3] A44B *11/00*
U.S. Cl. 24—163 K 20 Claims

1. An adjustable buckle comprising a first member comprising means to attach said member to the front face of a first material flap, and having engagement means disposed on said front face oppositely disposed from said attachment means, and a second member comprising means to attach said second member to the front face of a second material flap and having engagement means disposed on said second front face and oppositely disposed from said second attachment means, and a cover being formed with tab means to removably engage the first member engagement means and means to removably engage the second member engagement means in two positions



so that the cover bridges the flaps to secure the flaps in an overlying manner in the two positions.

4,534,088
HOLE PLUG
James Ricke, 38 W. 594 Hilltop Dr., St. Charles, Ill. 60174
Filed Aug. 29, 1983, Ser. No. 526,955
Int. Cl.[3] B65D *39/00*
U.S. Cl. 24—295 8 Claims



1. A plug for obturating an opening in a panel and the like, said plug comprising a head portion of a diameter sufficient to overlap the opening and a separate shank portion, said head portion having an integral flange portion formed with a bent over edge forming an internal retaining groove, and said shank portion being formed as a flat annular member of an outer diameter substantially equal to the diameter of said groove in said head portion, said annular member having a single transverse slit defining abutting ends and a peripheral edge adapted to be disposed in said groove after assembly by compressibly reducing the outer diameter of said annular member by overlapping said ends and allowing said member to peripherally expand with said edge engaged in said groove and said ends disposed in abutting engagement, wherein said annular member has a plurality of projecting fingers elastically deformable for introduction of said shank portion into the opening, said fingers having a peripheral abutment portion engageable with a surface of said plate at the edge of the opening for preventing removal of said plug from over the opening.

4,534,089
FASTENING DEVICE FOR FLEXIBLE SHEETS
Thomas C. Swan, P.O. Box 389, Dawsonville, Ga. 30534
Filed Apr. 8, 1983, Ser. No. 483,166
Int. Cl.[3] B42F *1/00*
U.S. Cl. 24—559 7 Claims

1. A fastener for clamping a portion of a flexible sheet, comprising:

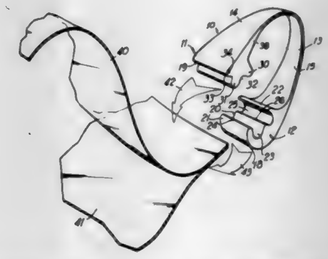
(a) a pair of resilient heads for receiving therebetween said portion of said sheet;

(b) one of said heads having along one side thereof a lug with spaced front and rear locking lobes extending transversely of said one of said heads, said lobes extending toward the other of said heads and diverging from each other in the direction in which they extend, said lobes having convex surfaces;

(c) the other of said heads having front and rear flanges extending transversely of said head, said flanges having spaced opposed concave inner surfaces conforming generally to the outer portions of the convex surfaces of said locking lobes;

(d) said other of said heads defining, between said flanges, an inwardly opening recess for receiving between said flanges said portion of said sheet and said locking lobes, with said front flange extending partially around a portion of said front lobe and said rear flange extending partially around a portion of said rear lobe;

(e) one of said heads having a transverse valley between said front and rear lobes and the other of said heads has a central lobe within said recess, said central lobe being between and spaced from said flanges and protuding to a



lesser extent than the extent of the flanges into said valley of one of said heads, when said lobes are received in said recess;

(f) said front flange extending sufficiently around the front portion of said front lobe, and said front lobe extending into said recess sufficiently that when said portion of said sheet and both of said lobes are fully within said recess, tension applied forwardly on said sheet will not readily force said lug out of said recess; and

(g) said front lobe being confined by said front flange to a greater extent than the rear lobe is confined by said rear flange so that said heads can be urged apart by urging the rear portion of said one of said heads away from the rear portion of the other of said heads as the front portion of one of said heads pivots about the front portion of the other of said heads for releasing said lug from said recess, and said lug cannot be readily removed from the other of said heads by without first removing the said rear lobe from said recess.

4,534,090
RELEASABLE CLASP
Max Skobel, 10 Lynwood Rd., Edison, N.J. 08817
Continuation-in-part of Ser. No. 303,790, Sep. 21, 1981, Pat. No. 4,408,375. This application Jun. 2, 1983, Ser. No. 500,374
The portion of the term of this patent subsequent to Oct. 11, 2000, has been disclaimed.
Int. Cl.[3] A47G *29/10*
U.S. Cl. 24—625 14 Claims

1. A releasable connector comprising:

a female receiving member having opposing longitudinal side walls and opposing longitudinal edges providing an elongated internal passageway extending from one end thereof, and a pair of diametrically opposing retaining slots spacedly positioned along said passageway, said retaining slots being openings extending through said opposing longitudinal edges of said receiving member, said passageway including a mouth at said one end;

a substantially flat elongated male insert member having a

pair of elongated forwardly directed spaced apart, springy arms insertable into said passageway upon compression of said arms together into an abutting position;

each of said arms including an outwardly extending enlarged hand portion at a leading end of each arm for releasably locking into a respective one of said retaining slots when said arms spread apart with each hand portion extending through an associated one of said openings to securely retain said insert member in said receiving member in a locked position;

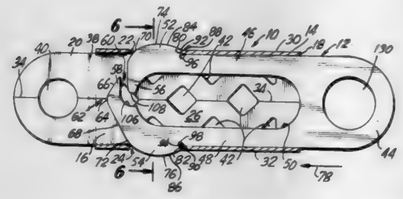
each of said hand portions including cam means for:

(1) engaging said mouth of said passageway to direct said arms together into said abutting position to facilitate entry of said insert member into said passageway,

(2) riding along inner edge walls of said passageway to facilitate passage of said insert member through said passageway, and

(3) engaging an edge of a respective retaining slot to facilitate entry of said hand portions into said retaining slots and to also facilitate exit of said hand portions from said retaining slots;

an inwardly directed edge on each hand portion rearward of a respective one of said cam means on each hand portion, each inwardly directed edge being disposed at an acute



angle rearwardly inclined with respect to longitudinal axis of said insert member to provide a hook-like portion on each hand portion for locking onto said edge of said respective retaining slot;

said hand portions including finger means to prevent walls of said mouth of said passageway from engaging between said hand portions, said finger means including a free end of each hand portion being provided with an inwardly extending finger directed towards the other hand portion, one said finger being spaced forward of and in an overlapping relationship to the other said finger to allow said hand portions to be compressed towards each other and to provide a leading insertion portion for entry into said passageway to thereby facilitate insertion of both arms into said passageway;

abutment means on said hand portions to limit compression of said hand portions together to define said abutting position of said arms, said abutment means including a seat portion provided on a rearward edge of said one finger for abuttingly receiving said other finger thereon; and

said hand portions having a combined transverse width in said abutting position substantially equal to a transverse width of said passageway to provide alignment between said arms and said passageway during insertion of said arms through said passageway.

4,534,091

BATTERY GRID AND METHOD OF MAKING SAME

Richard H. Kline, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Division of Ser. No. 344,130, Jan. 20, 1982, abandoned, which is a continuation of Ser. No. 179,806, Aug. 20, 1980, abandoned.

This application Aug. 8, 1983, Ser. No. 521,157

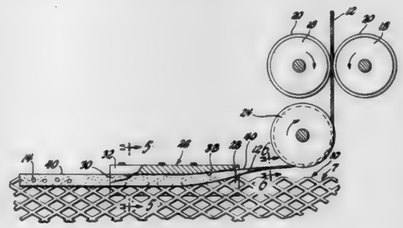
Int. Cl.³ H01M *4/82*

U.S. Cl. 29—2 **3 Claims**

1. A process of making a substantially continuous length of Pb-acid storage battery grid-making stock comprising the steps of:

advancing a narrow lead strip longitudinally between two rows of progressive dies and cutters which converge in incremental steps toward the longitudinal center of the strip passing between them;

expanding the strip along the lateral edges thereof by periodically shearing a plurality of interconnected wire-like segments from each of said edges into a network of said segments defining a plurality of interstices for containing



the battery's active materials said network having a longitudinal distal edge remote from said center;

flattening the thusly expanded strip;

feeding a thin flexible thermoplatic ribbon longitudinally toward said stock so as to converge upon said distal edge;

folding said ribbon lengthwise about said distal edge such as to provide portions of said ribbon on each side of said network at said distal edge; and

spot welding said portions together through said interstices along said distal edge.

4,534,092

APPARATUS FOR JOINING LENGTHS OF METAL STRIP

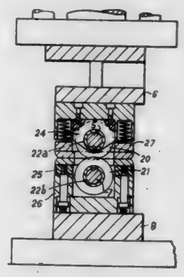
John A. Tracy, Kingston, Canada, assignor to Alcan International Limited, Montreal, Canada

Filed Jul. 9, 1981, Ser. No. 281,910

Claims priority, application United Kingdom, Jul. 16, 1980, 8023234

Int. Cl.³ B23P *11/00*; B21D *39/03*

U.S. Cl. 29—21.1 **2 Claims**



1. Apparatus for forming a joint between the ends of successive lengths of metal strip which travels through a processing apparatus comprising a pair of parallel cutter bars arranged on opposite sides of the path of the metal strip and rotatably mounted on supports, provided with means for moving said cutter bars towards and away from each other for application of shearing and forming forces, each cutter bar carrying a plurality of laterally spaced cutter elements non-rotatably mounted thereon, the space between adjacent cutter elements on each cutter bar being substantially equal to the thickness or width of the cutter elements on the other cutter bar, the cutter

elements on each cutter bar being arranged to mesh with the cutter elements on the other cutter bar, each cutter element having at least a particular periphery, each cutter at selected positions on at least one cutter bar having at least one part-circular cutter section at its periphery and at least one concave peripheral recess of curvature corresponding to the curvature of said cutter section, each cutter bar being provided with means for holding it against rotation in relation to its support in a plurality of operative positions during movement of said cutter bars towards and away from each other.

4,534,093

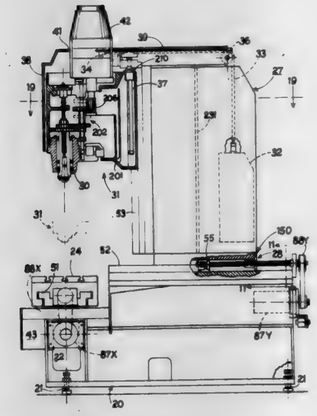
BEO-TYPE MACHINING SYSTEM

William R. Jahnke, Fairfield; Bruce H. Rockel, Shelton; Barry J. Brown, Stratford; Floyd E. Hawley, Devon; Andrew J. Pennella, Woodmont; John C. Sugrue, Stratford, and William R. Wiggins, Trumbull, all of Conn., assignors to Textron Inc., Bridgeport, Conn.

Filed Sep. 7, 1982, Ser. No. 415,658

Int. Cl.³ B23Q *1/02*

U.S. Cl. 29—26 A **7 Claims**



1. A machine tool for performing a plurality of precisely controlled machining operations on a workpiece, said machine tool comprising:

(A) a support member adapted for securely mounted holding interconnection of three independent way members to three surface areas thereof, the support member being further defined as comprising:

(1) a support base for secure retained holding interconnection of two of the three way members,

(2) a cooperating head support portion adapted for receipt and mounted interconnection with the third way member, and

(3) a way member holding pivot pin secured therein along each of the way member receiving surface portions thereof, with a section of each pin extending above the way member receiving surface portion;

(B) three independent, elongated way members, each defining one of the three cooperating axes employed in precisely controlling each machining operation, each of the way members

(1) comprising a single, unitary structure securable to one of the way member receiving surface portions of the support member,

(2) having a pair of spaced, cooperating flanges, each defined by two parallel guiding surfaces,

(3) said guiding surfaces of each flange being machined flat to define a first pair of parallel planes, each of said first pair of planes being formed by the opposed, spaced, guiding surfaces of opposite flanges,

(4) with means forming a third pair of flat guiding surfaces being positioned in cooperating spaced relationship defining a second pair of planes, and

(5) each elongated way member incorporating preliminary alignment means and final anchoring means cooperatively connecting the way member to the support member in precise alignment, the preliminary alignment means being a pin-receiving hole formed therein along the central axis thereof and having an axis substantially perpendicular to the first pair of parallel planes, with said pin-receiving hole being positioned for telescopic receipt of the pivot pin extending from the support member for engagement therewith, mounting each of the way members for angular pivoting movement through a limited arc about the axis defined by said pivot pin;

(C) a powered machine tool driver mounted for movement along two of said three independent way members; and

(D) a workpiece supporting table slidably mounted to the third way member for movement therealong; thereby providing an economical system for securely mounting the way members to the support member in precise alignment while also assuring that each way member is angularly adjustable to be preliminarily positioned precisely perpendicular to the other two way members, and may then be anchored in this aligned position, whereby a machine tool is achieved wherein the way members thereof are machinable with precision prior to installation, and machining adjustments thereto during installation are eliminated.

4,534,094

METHOD OF MAKING AN INK ROLLER ASSEMBLY WITH CAPILLARY INK SUPPLY

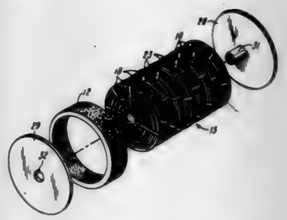
John R. Kessler, 2060 D Sidneywood Dr., West Carrollton, Ohio 45449

Division of Ser. No. 322,463, Nov. 18, 1981, Pat. No. 4,399,751.

This application Aug. 4, 1983, Ser. No. 520,425

Int. Cl.³ B41F *1/46*

U.S. Cl. 29—148.4 D **7 Claims**



1. A method of producing an improved ink roller assembly adapted to provide a uniform application of ink over an extended period of use, comprising the steps of forming a plurality of generally circular thin discs each having a series of radially spaced and generally circumferentially extending capillary ink retaining chambers, arranging the discs in a stack to form a generally cylindrical ink retaining unit, inserting the ink retaining unit into a flexible sleeve of porous ink retaining material, forming on each of the discs a plurality of peripherally spaced and outwardly extending capillary passages connecting the corresponding chambers for directing a flow of ink from the chambers outwardly into the sleeve, and confining the ink retaining unit between a set of axially spaced flange members.

4,534,095

CAGE FOR ROLLING BEARINGS

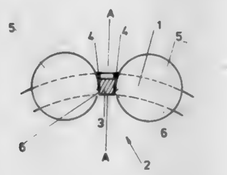
Armin Olschewski, Schweinfurt, and Bernhard Bauer, Hassfurt, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

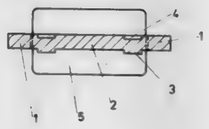
Filed Nov. 9, 1983, Ser. No. 550,300

Claims priority, application Fed. Rep. of Germany, Sep. 11, 1982, 8231303[U]

Int. Cl.³ B21H *1/12*

U.S. Cl. 29—148.4 C **1 Claim**





1. A method for holding rolling elements in a bearing cage of sheet metal in which cage pockets embracing the rolling elements are separated by webs, said method comprising stamping the outer surface of said webs at their centerlines to deform the material thereof to extend into said cage pockets at said outer surface and to deform the material thereof to form projections extending vertically from the inner surface of said webs, whereby the deformed material inhibits the rolling elements from falling out of the respective cage pockets.

4,534,096

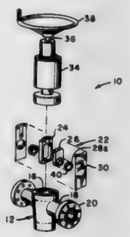
VALVE SEAT WITH TRAPPED O-RING

Frank Garcia, Jr., Spring, and David L. Brown, Houston, both of Tex., assignors to Vetco Offshore, Inc., Ventura, Calif.

Division of Ser. No. 444,565, Nov. 26, 1982, Pat. No. 4,492,392. This application Oct. 17, 1984, Ser. No. 661,634

Int. Cl.³ B23Q *5/00*; B23C *3/05*

U.S. Cl. 29—157.1 R **9 Claims**



1. A method of producing a groove in a valve seat part, said seat part having a hollow and generally cylindrical configuration about a seat axis, and having at one end a generally saddle-shaped eccentric surface adapted to conform to the contour of the inner surface of a cylindrical valve main bore when the seat is transversely oriented to the valve bore axis, said method comprising the steps of:

mounting the seat part in a four-axis horizontal milling machine system such that the valve seat part is affixed to a table adapted to rotate about a vertical axis B, said part being oriented in the table fixture such that the cylindrical axis of the part is perpendicular to and intersects with the B axis, and the perpendicular distance from the B axis to every point on the eccentric surfaace of the part is equal to the part radius R_P;

mounting an end mill tool on the machine such that the tool motion can be specified by a coordinate system having a horizontal (X) axis, a vertical (Y) axis, and a longitudinal (Z) axis, wherein the Z axis coincides with the axis of the seat part, the Y axis is parallel to the B axis, and the X,Y,Z axes are mutually perpendicular;

positioning the tool along the X axis until the tool contacts the valve seat eccentric surface at the desired groove radius R_G;

rotating the part about the B axis until the tool is perpendicularly oriented relative to the eccentric surface;

setting the tool motion along the Z axis for a constant depth of mill cut;

establishing a geometrical relationship between the desired radius R_G of the groove and the radius R_P of the saddle-shaped curvature, for controlling the tool movement along the Y axis and part rotation about the B axis, as the tool remains at a fixed X axis locaation and constant Z axis groove milling depth; and

operating the machine system such that a generally rectangular groove of constant width and depth is milled into the eccentric surface of the part, the groove sidewalls being substantially perpendicular to and the groove base being parallel with the eccentric surface.

4,534,097

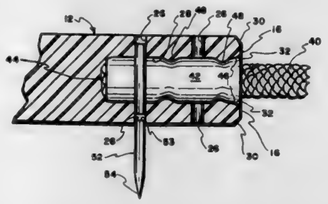
METHOD OF MAKING A POLICE RESTRAINT DEVICE

James R. Mason, Box 2321, Idaho Falls, Id. 83401

Division of Ser. No. 360,110, Mar. 19, 1982, Pat. No. 4,426,079. This application Oct. 13, 1983, Ser. No. 541,637

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432.2 **3 Claims**



1. A method of making a restraint device for use in law enforcement comprising the steps:

providing two elongated handles capable of being held in the hand of the user;

causing a cavity to be fabricated in and exposed at one end of each handle;

providing a flexible cord of predetermined length comprising yieldable securely interrelated elongated segments;

anchoring the exterior of each end of the cord in a rigid hollow sleeve-like member;

placing the two sleeve-like members, with cord end anchored therein, respectively snugly in the handle cavities;

inseparably securing both the sleeve-like member and the cord end within its associated handle cavity in each handle by placing pin means transversely through said cord segments at each cord end, through opposite locations in the sleeve-like members, and through opposite locations in each handle.

4,534,098

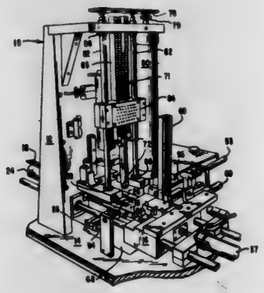
APPARATUS FOR APPLYING ASSEMBLED CONNECTOR TERMINALS AND THE LIKE TO A PLURALITY OF LEADS

Vincent B. Brown, Prospect Heights, and Donald G. Schreiner, Wheeling, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Division of Ser. No. 63,849, Aug. 6, 1979, Pat. No. 4,253,222. This application Sep. 19, 1980, Ser. No. 189,293

Int. Cl.³ B23P *19/02*; H01R *43/00*

U.S. Cl. 29—564.8 **1 Claim**



1. An apparatus for applying terminals to a plurality of leads including a clamping means for gripping and advancing said leads from a supply source toward a first terminal; means for bringing said terminal and said leads into electrically conductive engagement; and means for severing said leads into segments of predetermined length, the improvement comprising: lead lengthening probe means, said probe means being proportioned to transversely engage at least one of said leads at a position between its end and move it to a position transveresly of said direction of advancement, to lengthen the extent of said lead which is advanced beyond said severing means, said probe means includes a plurality of longitudinally separate segments which are longtudinally adjustable with respect to each other, said segments being retained together by a retainer member which is slidably mounted and adapted for motion in the longitudinal direction of said segments, said segments define a serrated surface facing said retainer member, said retainer member in turn defining an array of set screw members whereby said screw members of the guide member interract with the serrations to retain the vertical segments in the desired position, said retainer member provides a pair of longitudinally spaced set screw members for each vertical segment, the set screw members begin positioned so that when one set screw is positioned between a pair of serrations, the other set screw is positioned adjacent a peak of a serration.

4,534,099

METHOD OF MAKING MULTILAYER PHOTOELECTRODES AND PHOTOVOLTAIC CELLS

Arthur T. Howe, Naperville, Ill., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Division of Ser. No. 434,603, Oct. 15, 1982,. This application Sep. 18, 1984, Ser. No. 651,838

Int. Cl.³ H01L *31/18*

U.S. Cl. 29—572 **12 Claims**

1. A process for the preparation of a multilayer structure which is suitable for use as either a photovoltaic cell or a photoelectrode in a photoelectrochemical cell which comprises:

(a) forming a layer of insulator material on an n-type semiconductor, wherein said insulator material is negatively charged as a consequence of the presence of aliovalent dopant ions and has a thickness which is effective to permit electron tunneling through it;

(b) forming a layer of conducting material on said layer of insulator material; and

(c) annealing the resulting structure.

4,534,100

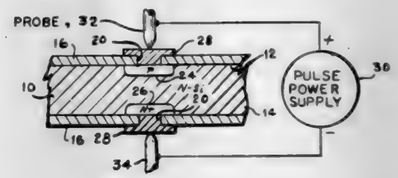
ELECTRICAL METHOD OF MAKING CONDUCTIVE PATHS IN SILICON

Clyde H. Lane, Rome, N.Y., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 28, 1982, Ser. No. 393,169

Int. Cl.³ H01L *21/326*

U.S. Cl. 29—586 **1 Claim**



1. A method of making electrical conductive paths between opposite surfaces of a semiconductor substrate having a dopant therethrough comprising the steps of:

forming oxide layers on said opposite surfaces of said substrate;

forming a plurality of contact openings in said oxide layers by photolithography;

diffusing dopants into said substrate through said contact openings, a p-type dopant diffused into a first surface of said substrate, and an n-type dopant diffused into a second surface of said substrate, a concentration of a diffusing dopant exceeding said dopant of said substrate being of the same type;

removing diffusing dopants from said oxide layers and said substrate surfaces;

depositing selectively metal into said contact openings to form metal contacts;

connecting electrically a plurality of seid metal contacts with strips of conductive material;

applying a current source across selected metal contacts;

causing breakdown current channels between said selected metal contacts with said current source whereby said metal of said metal contacts flows in said channels; and

removing said oxide layers, said strips, and said metal contacts.

4,534,101

METHOD OF INSTALLING SELF-LOCKING NUT AND BOLT ASSEMBLY

José Rosán, Jr., Newport Beach, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Filed Jan. 27, 1982, Ser. No. 343,376

Int. Cl.³ B23P *11/00*

U.S. Cl. 29—432 **1 Claim**

1. A method of securing at least two elements together with a fastener so as to resist separation by vibration and shock which comprises the steps of:

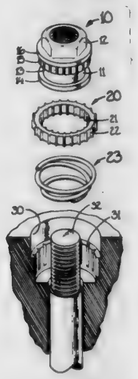
drilling a bore in one element to accommodate a fastener assembly at least flush with the outer surface of the outermost element, said fastener assembly comprising a threaded shaft and a driven portion having a transverse dimension greater than that of said threaded shaft, said driven portion including a longitudinal cylinder, a first retaining ring at one end of said cylinder, a second retaining ring at the opposite end of said cylinder, a serrated portion adjacent said second retaining ring, a locking ring having inside and outside serration and longitudinally

slidable along said driven portion from said first retaining ring to said second retaining ring, and a conical spring with the larger diameter adjacent said lock ring and the smaller diameter adjacent said first retaining ring;

serrating an area generally between one-quarter to one-half way up said bore;

screwing said fastener assembly into said bore;

engaging said driven portion with a tool means for suppressing said lock ring onto said spring which goes into compression, and engaging the lock ring into the serrated area of the bore;



torquing said driven portion to its lower limit; and

retracting an outer sleeve of said tool means and tightening said driven portion until said conical spring pushes said lock ring into a locking engagement with said serrated portion of said driven portion and the serrated area of said bore.

4,534,102

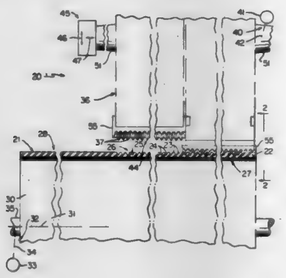
METHOD OF MAKING POLYMERIC BELT CUTTING APPARATUS

G. Brian Hetz, 1733 E. Holiday, Springfield, Mo. 65807

Division of Ser. No. 267,189, May 26, 1981, Pat. No. 4,496,269. This application Oct. 24, 1983, Ser. No. 544,929

Int. Cl.³ B29H *7/22*

U.S. Cl. 29—558 **5 Claims**



1. In a method of making an apparatus for cutting a non-contoured and cured polymeric belt sleeve to define an endless power transmission belt construction having a plurality of alternating annular belt projections and grooves; each of said grooves having a pair of symmetrical radially diverging side walls; said method comprising the steps of; providing a mandrel for supporting said belt sleeve for rotation about a longitudinal axis; providing means for rotating said mandrel and belt sleeve about said longitudinal axis; constructing a rotatable cutting instrument having axially spaced cutting projections for cutting said annular grooves with each of said cutting projections having integral cutting means for cutting an associated pair of said symmetrical side walls of an associated groove; providing means for rotating said cutting instrument; and providing means for moving said cutting instrument toward and away from said sleeve with said moving means being adapted to urge said cutting instrument during rotation thereof against the rotating belt sleeve to define said belt construction; the improvement in which said step of constructing said cutting instrument comprises, forming a first support body having a first central axis, defining a plurality of rake-like cutting bars each having an elongate axis and each having integral spaced parallel teeth which define said cutting projections and are disposed perpendicular to their elongate axis, each of said teeth having integral knife-like cutting edges defining opposite sides thereof, supporting each bar on said first support body with supporting means and with its elongate axis parallel to said central axis and with each bar on a common cylindrical arrangement with the other bars, said supporting step resulting in the supporting of each bar with each tooth thereof circumferentially aligned with corresponding teeth of the remaining bars, each tooth cooperating with said corresponding teeth to define said integral cutting means for cutting an associated pair of side walls of an associated groove, forming a second support body having a plurality of cutting bars each being identical to said one cutting bar and having a second central axis, each of said identical cutting bars of said second plurality being supported on said second support body on a common circumference and with the cutting means of each pair thereof in circumferentially aligned relation, providing a central support shaft, fixing said support bodies concentrically around and in side-by-side relation on said shaft with their central axes coaxially aligned on a common axis, angularly arranging said first-named plurality of rake-like cutting bars about said first support body with the same angular displacement therebetween, angularly arranging said second plurality of rake-like cutting bars also about said second support body with said same angular displacement therebetween, and disposing said first and second support bodies so that said second-named cutting bars are angularly displaced with respect to said first-named cutting bars.

4,534,103

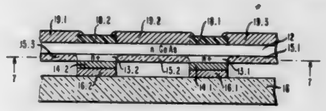
METHOD OF MAKING SELF-ALIGNED METAL GATE FIELD EFFECT TRANSISTORS

Alfred Y. Cho, Summit; Bernard Glance, Colts Neck, both of N.J.; Daniel Lubzens, Haifa, Israel, and Martin V. Schneider, Holmdel, N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 119,313, Feb. 7, 1980, abandoned. This application Jun. 25, 1982, Ser. No. 392,286

Int. Cl.³ H01L *21/302*

U.S. Cl. 29—571 **5 Claims**



1. In a process for making a semiconductor device, the steps of:

(a) forming an opaque electrode on a first portion of a first major surface of a transparent semiconductor layer;

(b) oxidizing the semiconductor layer to a limited depth at a second, complementary portion of the major surface of the semiconductor layer;

(c) bonding said electrode onto a thin metal pad located on a major surface of a transparent insulating body; and

(d) directing optical radiation, through both the insulating body and the oxidized portions of the semiconductor layer, to a positive photoresist layer located on a second opposed major surface of said semiconductor layer.

4,534,104

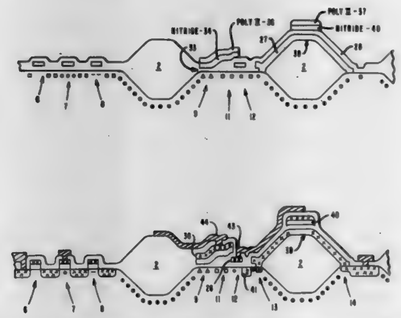
MIXED DIELECTRIC PROCESS AND NONVOLATILE MEMORY DEVICE FABRICATED THEREBY

Vinod K. Dham, Fremont, Calif.; Edward H. Honnigford, Dayton; John K. Stewart, Jr., West Carrollton; Robert F. Pfeifer, and Murray L. Trudel, both of Centerville, all of Ohio, assignors to NCR Corporation, Dayton, Ohio

Filed Feb. 26, 1982, Ser. No. 352,734

Int. Cl.³ H01L *21/22, 21/26*

U.S. Cl. 29—571 **7 Claims**



1. A process for fabricating volatile and nonvolatile field effect devices on a common semiconductor substrate, comprising the steps of:

separating a silicon substrate into distinct active regions;

doping selected areas in said active regions to adjust the respective threshold voltages;

forming a patterned first layer of semiconductor material on the substrate;

forming a first isolation dielectric layer;

patterning said first isolation dielectric layer to position a memory element;

forming a memory dielectric at the position of the memory element;

forming a second dielectric layer;

forming a second layer of semiconductor material;

patterning said second layer of semiconductor material and said second dielectric layer;

removing selected areas of said first isolation dielectric; and

doping selected areas of said substrate and semiconductor material layers.

4,534,105

METHOD FOR GROUNDING A PELLET SUPPORT PAD IN AN INTEGRATED CIRCUIT DEVICE

Raymond K. Reusch, Basking Ridge, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 10, 1983, Ser. No. 521,897

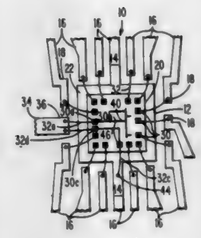
Int. Cl.³ H01L *23/50, 23/12*

U.S. Cl. 29—589 **12 Claims**

1. In a method of grounding a mounting pad in an integrated circuit device to a ground finger which is electrically isolated from and adjacent said mounting pad, said device including: (1) an integrated circuit chip having a plurality of electrical components and two bond pads formed thereon, said integrated circuit chip being supported by said mounting pad and (2) a structural member attached to said mounting pad so that electrical continuity exists therebetween and arranged to support the weight of said mounting pad and said chip, said structural member being electrically isolated from said ground finger, the steps comprising:

(a) forming a metalized layer on said chip electrically connecting said two bond pads;

(b) attaching one end of a first connector wire to one of said two bond pads, and the other end of said first connector wire to said structural member; and



(c) attaching one end of a second connector wire to the other of said two bond pads, and the other end of said second connector wire to said ground finger; wherein each of said attaching effects ohmic connections.

4,534,106

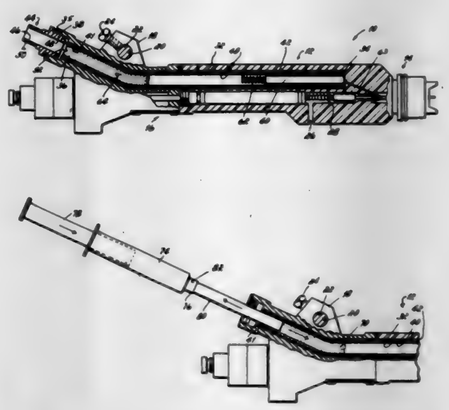
METHOD FOR REPLACING DIELECTRIC MATERIAL AT THE HIGH-VALUE RESISTOR OF AN ELECTROSTATIC SPRAY GUN TO PREVENT CORONA DISCHARGE

Richard M. Simashkevich, Lorain, and William J. Sharp, Wakeman, both of Ohio, assignors to Nordson Corporation, Amherst, Ohio

Filed Oct. 5, 1983, Ser. No. 539,086

Int. Cl.³ H01C *17/02*

U.S. Cl. 29—613 **8 Claims**



1. A method of replacing spent dielectric material at the resistor of an electrostatic spray gun to prevent corona discharge comprising the steps of:

inserting an insulating tube within a bore formed in said spray gun, said insulating tube having a smaller outside diameter than the inside diameter of said bore forming a gap therebetween;

positioning a resistor within said insulating tube, said resistor being encapsulated with a first slug of dielectric material;

dispensing a new slug of said dielectric material within said insulating tube;

inserting a high voltage cable into said insulating tube so as to force said new slug of dielectric material ahead of said cable, said new slug of dielectric material encapsulating

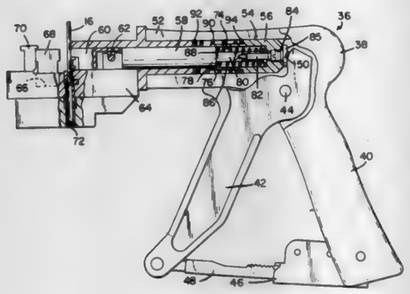
said resistor and forcing at least a portion of said first slug of dielectric material into said gap between said insulating tube and said bore.

4,534,107

WIRE INSERTION AND TERMINAL CRIMPING TOOL

Werner Maack, Seeheim, Fed. Rep. of Germany, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Mar. 9, 1984, Ser. No. 587,753
Int. Cl.³ H01R *43/00*
U.S. Cl. 29—751 **7 Claims**



1. An inserting and crimping apparatus for inserting a wire into the wire-receiving slot of an electrical terminal and simultaneously crimping the U-shaped insulation support portion of the terminal onto the wire, the wire having a diameter which lies within a predetermined range, the force required to crimp the insulation support portion being substantially equal to F for all wires having a diameter within the predetermined range, the apparatus being of the type comprising a work holder for holding the terminal in a predetermined position, a ram which is reciprocable along a rectilinear path towards and away from a terminal in the work holder, a wire positioner on the path for holding the wire with its axis in alignment with the wire-receiving slot in the terminal and in alignment with the insulation support portion, an inserter on the ram for moving the wire onto the wire-receiving slot, a crimping die on the ram which crimps the insulation support portion onto the wire during movement of the ram towards the terminal, and an actuator for moving the ram along the rectilinear path and applying the force F required to crimp the insulation support portion of the terminal onto the wire, the apparatus being characterized in that:

the ram is a composite member comprising a tool holder portion and a force transmitting portion which is in alignment with the tool holding portion, the crimping die and the inserter being on the tool holder portion, the actuator being in engagement with the force transmitting portion and being effective to move the actuator portion along the rectilinear path,

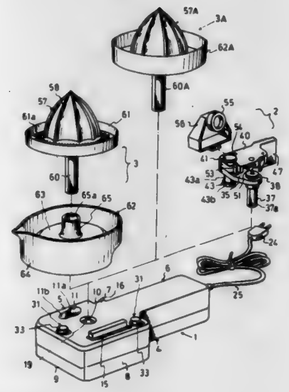
a force transmitting compressible coupling is provided between the tool holder portion and the force-transmitting portion, the coupling being compressible upon application thereto of the force F required to crimp the insulation support portion onto the wire and being substantially incompressible under a force which is less than F whereby during insertion of a wire into the wire-receiving slot of the terminal and crimping of the insulation support portion of the terminal onto the wire, the resilient coupling will be compressed to an extent which will depend on the diameter of the wire, the extent of compression being greater for a larger diameter wire than for a smaller diameter wire.

4,534,108

ELECTRIC CAN OPENER WITH JUICE SQUEEZING ATTACHMENT

Osamu Yamamoto, Nagoya, and Senichiro Norizuki, Aichi, both of Japan, assignors to Kabushikikaisha Aichidenkikosakusho, Japan

Filed Sep. 2, 1983, Ser. No. 528,914
Claims priority, application Japan, Sep. 6, 1982, 57-154898
Int. Cl.³ B25F *3/00*; B67B *7/38*; A47J *19/02*
U.S. Cl. 7—152 **4 Claims**



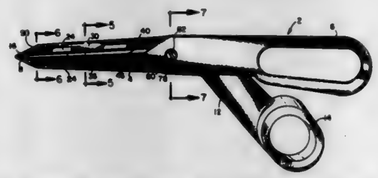
1. An electric can opener including
(i) a can opener body, and
(ii) a can opening attachment
said can opener body including
(a) a housing having a work surface on one surface thereof,
(b) a drive shaft mounted in such a way that the drive shaft is rotatable with respect to said housing, and is partly exposed to the work surface, wherein the work surface is bored with a mounting hole, said mounting hole including a large diameter hole portion and a small diameter hole portion formed laterally of and continuous to said large diameter hole portion, said small diameter hole portion being positioned, with respect to the large diameter hole portion, on the side where said drive shaft is rotated,
(c) a motor provided within said housing and associated with said drive shaft,
(d) a vertically holding portion for positioning said housing so that said drive shaft assumes a horizontal condition, said vertically holding portion being provided in a part of the housing, and
said can opening attachment including
(e) a base plate, a horizontal rotating shaft rotatably mounted on said base plate, a mounting shaft is projected from a surface of the base plate opposed to said work surface, and the distance from said horizontal rotating shaft to the mounting shaft is made equal to the distance from the drive shaft in said can opener body to said mounting hole, said mounting shaft including a small diameter portion on the base plate side and a large diameter portion on the forward end side thereof, said small diameter portion being reduced in diameter as compared with that of the small diameter hole portion so that the small diameter portion may be moved laterally towards the small diameter hole portion after the former has been passed through said large diameter hole portion, said large diameter portion being reduced in diameter as compared with that of said large diameter hole portion but increased in diameter as compared with that of said small diameter hole portion so that when said small diameter portion is moved laterally from the large diameter hole portion towards the small diameter hole portion, said large diameter portion is moved towards a deep portion of the small diameter hole portion to prevent the mounting shaft from being slipped out of the mounting hole,
(f) a can feed gear mounted on said rotating shaft, said can feed gear being adapted to place an ear of a can thereon, and
(g) a cutter slidably mounted on said base plate, said cutter being adapted to cut into a can lid of the can whose ear is placed on said can feed gear.

4,534,109

SCISSORS

Thomas J. Bush, Canton Center, Conn.; Charles L. Dellinger, Statesville, and Gerald P. Fregeolle, Hickory, both of N.C., assignors to Hunt Manufacturing Co., Philadelphia, Pa.

Filed Sep. 19, 1983, Ser. No. 533,460
Int. Cl.³ B26B *13/00, 13/12, 13/06*
U.S. Cl. 30—260 **5 Claims**



1. In a scissors having first and second arms with each arm having a finger receiving portion at one end, the improvement comprising:

a removable metal blade having an outer edge and an inner cutting edge for each arm,

the outer edge of each blade having a pair of openings, each opening having a forwardly extending nose portion and a sloping rear portion,

a flange on each arm abutting the outer edge of the blade of each arm,

a pair of inward projections on each flange, each having a forwardly extending nose portion and a sloping rear portion, engaging the openings in the outer edge of the blade of each arm,

a finger extending inwardly from the forward end of each flange and overlying a portion of the blade of each arm, and

pivot means passing through the arms and blades for securing the arms and blades together.

4,534,110

TRIPLE-EDGE SAFETY RAZOR AND BLADE

Henry P. Glass, Northfield, Ill., assignor to David Mall, Chicago, Ill.

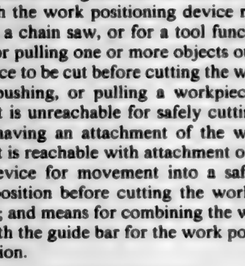
Filed Dec. 28, 1982, Ser. No. 453,838
Int. Cl.³ B26B *21/20*
U.S. Cl. 30—346.57 **5 Claims**

1. A blade assembly for use in a triple-edge safety razor comprising:

three individual blades; and

a flexible central web interconnecting said blades in triangular relationship, said central web providing a flexible connection between said blades;

said triangular blade assembly defining an elongated aperture having an open end at a location adjacent to one apex of said triangular blade assembly and between the ends of a pair of the individual blades and extending substantially through the flexible central interconnecting web to a closed end at substantially the center of said triangular blade assembly to define an open ended notch adapted to permit sliding insertion and removal of the triangular



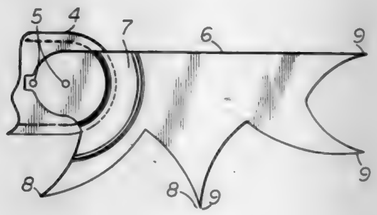
blade assembly from a triple-edge safety razor without disassembly thereof.

4,534,111

COMBINED CHAIN SAW AND POSITIONING TOOL

Thomas Eistrat, 1020 S. Almansor St., Alhambra, Calif. 91801

Continuation-in-part of Ser. No. 182,377, Aug. 29, 1980, abandoned. This application Dec. 24, 1981, Ser. No. 334,414
Int. Cl.³ B23D *59/00*
U.S. Cl. 30—371 **4 Claims**



1. A portable bar type chain saw combined with a work positioning device, comprising:

a motor; for driving

a chain; on a

guide bar having an end attachable to the motor and a front end; and a work positioning device connected to the guide bar generally near the front end thereof and projecting generally forwardly therefrom, the work positioning device having at least one hook thereon at a position beyond the front end of the guide bar so that the chain saw combined with the work positioning device may be used for cutting as a chain saw, or for a tool function of moving, pushing, or pulling one or more objects out of the way of a workpiece to be cut before cutting the workpiece; or for moving, pushing, or pulling a workpiece, such as firewood that is unreachable for safely cutting with a chain saw not having an attachment of the work positioning device but is reachable with attachment of the work positioning device for movement into a safer and unoverreached position before cutting the workpiece with the chain saw; and means for combining the work positioning device with the guide bar for the work positioning device tool function.

4,534,112

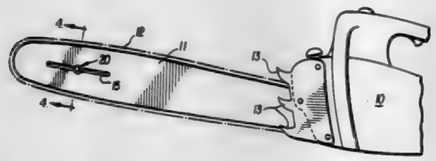
ANTI-KERF BIND DEVICE

David L. Bass, 3201 Martin Johnson, Chesapeake, Va. 23323

Filed Mar. 18, 1983, Ser. No. 476,793
Int. Cl.³ B27B *17/00, 21/00*
U.S. Cl. 30—383 **6 Claims**

2. A woodcutting implement having cutting teeth on at least one edge of a metal bar, a slot formed in said bar, and a wheel

assembly/comprising a pair of opposing, spaced wheels secured to their respective end portions of a stub shaft which has



been mounted in said slot, the inner surface of each wheel being in slidable contact with the adjacent, respective bar surface.

4,534,113

LENGTH MEASURING APPARATUS

Siegbert Holstein, Stein a.d. Traun, Fed. Rep. of Germany, assignor to Johannes Heidenhain GmbH, Traunreut, Fed. Rep. of Germany

Filed Jan. 18, 1984, Ser. No. 572,167

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302151

Int. Cl.³ G01B *11/04*

U.S. Cl. 33—125 R **12 Claims**



1. In a length measuring apparatus of the type comprising a carrier body which defines a longitudinal groove extending between the ends of the carrier body, a measuring band which defines two ends and is disposed in the groove, and a scanning unit guided for movement along the measuring band to scan the measuring band and thereby measure the relative position of the scanning unit with respect to the measuring band, said scanning unit occupying a scanning volume as it moves along the measuring band, the improvement comprising:

means for fastening one end of the measuring band to one end of the carrier body; and

means for fastening the other end of the measuring band to the other end of the carrier body;

at least one of the fastening means shaped and positioned to remain entirely outside of the scanning volume and thereby to allow the scanning unit to move past said at least one of the fastening means, past the associated end of the carrier body, without disassembly of said at least one of the fastening means.

4,534,114

COUPLING ALIGNMENT SYSTEM

Joseph T. Woyton, Mauldin, and George G. Grant, Greer, both of S.C., assignors to Reliance Electric Company, Greenville, S.C.

Filed Apr. 9, 1984, Ser. No. 598,082

Int. Cl.³ G01B *3/30*

U.S. Cl. 33—181 R **18 Claims**

1. A coupling alignment system for use in aligning rotatable shaft members connected by a shaft coupling, comprising, in combination:

a. first and second coupling hubs for mounting on the opposed ends of the shaft members, each having an attachment site,

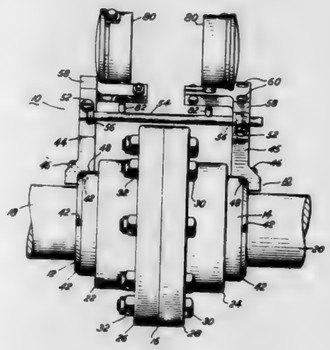
b. a first bracket member for mounting on said first hub,

c. a second bracket member for mounting on said second hub,

d. a fastening means for securing said bracket members to said hubs at the respective attachment site,

e. an extension means projecting from each of said bracket members to the opposed bracket member for contact therewith,

f. a first measurement device mounted on one of said bracket members for indicating the degree of deflection of said extension means relative to the opposed bracket member,



g. a second measurement device mounted on the other of said bracket members in opposed relation to said first mentioned measurement device, and

h. a pivotally mounted swivel block mounted on each of said bracket members for slidably receiving the respective extension means.

4,534,115

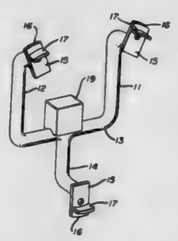
VEHICLE WHEEL LOCATION DEVICE

Dan Kashubara, 8803 N. Palmyra Rd., Canfield, Ohio 44406

Filed Dec. 30, 1982, Ser. No. 454,845

Int. Cl.³ G01B *5/255, 11/275*

U.S. Cl. 33—203.18 **5 Claims**



1. A device for locating tire and rim assemblies on vehicle wheels on a right angular plane to the axis of a vehicle's axle comprising a vertically disposed mounting structure having at least three outwardly extending body members, vertically disposed mounting plates secured to the free ends of said body members, the outermost ends of said mounting plates being curved and beveled, arcuate brackets on said mounting plates inwardly of the outermost ends thereof for engagement over said wheel, a light beam generating source secured centrally of said mounting structure arranged to projeet said light beam axially of said wheel, target means for indicating the position of said light beam thereon so that proper alignment of the tire and rim assembly relative to the axle can be made, said target means imcluding a vertical target and movable indicator on said target.

4,534,116

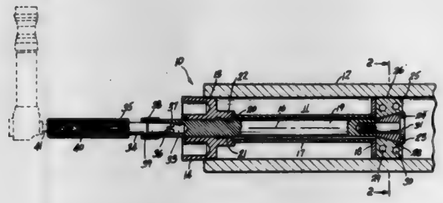
ADAPTER FOR BORESIGHT TELESCOPE

James E. Davis, Lake Park, Fla., assignor to Lenzar Optics Corporation, Riviera Beach, Fla.

Filed Aug. 26, 1983, Ser. No. 526,704

Int. Cl.³ F41G *1/54*

U.S. Cl. 33—234 **4 Claims**



1. A bore sighting instrument comprising a muzzle end adapter having a frustro-conical outer periphery adapted to be inserted into the muzzle end of a barrel, said adapter having a central bore receiving a central shaft therethrough, said central shaft being threadably coupled to said adapter, a sleeve affixed to said adapter and coaxially disposed about said central shaft and adapted to be inserted into a barrel, a radially expandable member, said expandable member comprising a plurality of rigid finger members equiangularly disposed about the axis of said central shaft and secured together by an elastomeric material, said fingers having parallel outer edges adapted to engage the inner periphery of a barrel, said fingers having inner edges equally inclined to the axis of said central shaft, an expander member having a frustro-conical periphery engaging the inner edges of said fingers, said expander member being coaxially attached to said central shaft, a radially extending plate member affixed to the end of said sleeve and providing a surface in engagement with vertical edges of said fingers, whereby when said central shaft is rotated in one direction on said threaded connection with said muzzle end adapter, said expander member forces said fingers radially outwardly into engagement with the inner periphery of said barrel.

4,534,117

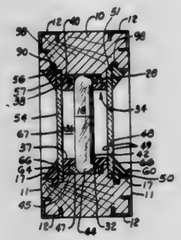
SPIRIT LEVEL

LeRoy H. Haefner, Edmond, and Stephen M. Rhodes, Mustang, both of Okla., assignors to Macklanburg-Duncan Company, Oklahoma City, Okla.

Filed Apr. 15, 1983, Ser. No. 485,239

Int. Cl.³ G01C *9/28*; E06B *3/00*

U.S. Cl. 33—379 **12 Claims**



2. An elastomeric annular gasket for sealing and holding a transparent plate across an opening into which said plate is countersunk to close the opening, while facilitating viewing through the opening, said gasket comprising:

an annular body of elastomeric material having a central opening therethrough, and further including:

a first substantially monoplanar side adapted to contact said plate;

a second side at the radially outer side of said annular body and intersecting said first side at substantially a right angle and having an edge spaced from its line of intersection with said first side;

a third, radially inner side facing the central opening through the body and intersecting the plane of said first side at an acute angle;

an annular sealing lip at the radially inner edge of said first side at its nearest approach to said third side, and lying predominantly on the opposite side of the plane of said first side from the remainder of the annular body, and adapted to be resiliently, sealingly deflected into the plane of said first side when said first side is placed in contact with said plate; and

a second annular sealing lip at said edge of said second side at its nearest approach to said third side, and adapted to be resiliently, sealingly deflected into alignment with said second side when said second side is placed in contact with the surface forming the opening.

6. An elastomeric annular gasket for sealing and holding a transparent plate across an opening into which said plate is countersunk to close the opening, while facilitating viewing through the opening, said gasket comprising:

an annular body of elastomeric material having a central opening therethrough, and further including:

a first substantially monoplanar side adapted to contact said plate;

a second side at the radially outer side of said annular body and intersecting said first side at substantially a right angle and having an edge spaced from its line of intersection with said first side;

a third, radially inner side facing the central opening through the body and intersecting the plane of said first side at an acute angle, and further extending at an acute angle to said second side;

an annular sealing lip at the radially inner edge of said first side at its nearest approach to said third side, and lying predominantly on the opposite side of the plane of said first side from the remainder of the annular body, and adapted to be resiliently, sealingly deflected into the plane of said first side when said first side is placed in contact with said plate; and

a second annular sealing lip at said edge of said second side at its nearest approach to said third side, and adapted to be resiliently, sealingly deflected into alignment with said second side when said second side is placed in contact with the surface forming the opening; and

an annular flange around said annular body of elastomeric material and projecting radially outwardly from said second side for engaging the gasket in an annular groove to thereby retain the gasket in sealing contact with said plate.

4,534,118

SOLAR-ASSISTED MOBILE FOOD DEHYDRATOR

Marcello M. Cabus, Hotchkiss; Billy D. Howard, Delta; James W. Colt, and Edward S. Tuft, both of Hotchkiss, all of Colo., assignors to Sun-Flo International, Inc., Hotchkiss, Colo.

Filed Aug. 30, 1982, Ser. No. 412,932

Int. Cl.³ F26B *21/08*

U.S. Cl. 34—34 **34 Claims**

1. A food dehydration machine comprising:

an intake chamber to receive an inlet gas stream;

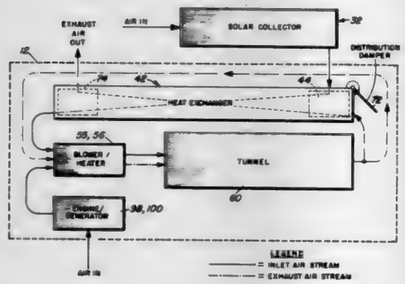
heating means connected to said intake chamber for heating the inlet gas stream, said heating means comprising heat exchanger means for preheating the inlet gas stream using the energy from an exhaust gas stream, and a heater to heat the inlet gas stream;

blower means for accelerating the inlet gas stream;

drying tunnel means connected to said intake chamber for containing food to be dehydrated and for receiving the

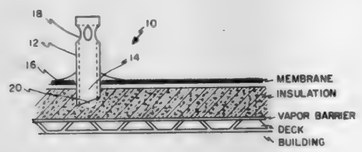
heated inlet gas stream and allowing the inlet gas stream to contact the food, the gas stream after contacting the food becoming the exhaust gas stream; and

recirculation means connected to said drying tunnel means and said heat exchanger means for dividing the exhaust gas stream into two separate parts, a variable portion and



a remainder, and for returning the variable portion to mix with the inlet gas stream to be reheated and re-accelerated and directing the remainder to said heat exchanger means, said recirculation means including means for adjusting the relative sizes of the variable portion and the remainder in accordance with a parameter of the gas stream.

4,534,119
APPARATUS AND METHOD FOR DRYING INSULATION
Leon R. Glicksman, Lynnfield, Mass., assignor to Massachusetts Institute of Technology, Cambridge, Mass.
Filed Jun. 22, 1983, Ser. No. 506,574
Int. Cl.[3] F26B *13/26*
U.S. Cl. 34—95 **17 Claims**



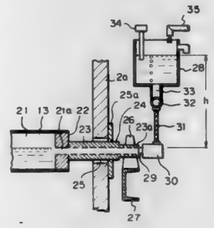
1. An apparatus for drying insulation after installation comprising:

(a) a penetrating means for creating a passageway between the space occupied by the insulation and an exterior environment where unwanted moisture can be carried away by evaporation; and

(b) wicking means within the passageway for transporting moisture by capillary action from the insulation to the external environment; and

wherein the penetrating means is a hollow device adapted to receive the wicking means within itself and having at least one opening through which the wicking means may contact the insulation and further having at least one other opening through which moisture may evaporate from the wicking means to the external environment.

4,534,120
DRYER FOR A CONTINUOUS TEXTILE FABRIC
Narukazu Okazaki, Wakayama, Japan, assignor to Wakayama Iron Works, Ltd., Wakayama, Japan
Filed Nov. 2, 1983, Ser. No. 547,872
Int. Cl.[3] F26B *13/18*
U.S. Cl. 34—119 **14 Claims**



1. A dryer for a continuous textile fabric, comprising:

a housing for defining a drying chamber for a continuous textile fabric, having an entrance and an exit for said fabric;

means for introducing said fabric into said drying chamber through said entrance;

means for delivering said fabric from said drying chamber through said exit;

a plurality of guide rolls for said fabric, arranged in said drying chamber in such a manner that a zigzag path for moving said fabric through the guide rolls is formed; and

a plurality of heat-radiating plates, arranged in said drying chamber between the sequent guide rolls and facing the moving path of said fabric, each guide roll having a hollow formed thereinside and connected through a conduit to a water tank, said water tank being located outside of said housing at a level above the level of said guide rolls, the water tank being open to the atmosphere outside of said housing, and said hollows, conduit and water tank providing means for preventing said guide rolls from overheating due to said heat-radiating plates.

4,534,121
INSOLE WITH CONCENTRIC CIRCULAR HEEL STRUCTURE
James C. Autry, Dallas, Tex., assignor to Autry Industries, Inc., Dallas, Tex.
Filed Jan. 16, 1984, Ser. No. 570,967
Int. Cl.[3] A43B *21/26*
U.S. Cl. 36—35 R **3 Claims**

1. An insole for disposal between the sole in a shoe, comprising:

a layer of cushioning material for absorbing the shock between the foot and the shoe and having a first surface for being disposed adjacent the sole of the foot and a second surface opposite said first surface for being disposed adjacent the sole of the shoe and generally having a profile around the perimeter thereof similar to that of the foot, said cushioning layer having a heel portion for disposal adjacent the heel of the foot, a mid portion for disposal adjacent the arch of the foot, and a toe portion for disposal adjacent the toes of the foot;

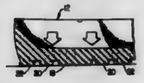
a cylindrical shaped disc formed on the second surface of said cushioning layer adjacent the center of said heel portion for providing cushioning to the central portion of the heel to the foot;

a plurality of annular ridges formed on said second surface in the heel portion adjacent said cylindrical-shaped disc, the radial centers of said annular ridges coinciding with the center of said heel portion and said cylindrical shaped disc; and

a plurality of arcuate ridges formed on said second surface in said mid portion, and arcuate ridges forming a plurality of arcs of concentric circles with the progressing radii centered in the middle of said heel portion;

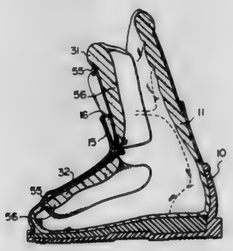
said cylindrical disc, said annular ridges, and said arcuate ridges having essentially equal heights from the second

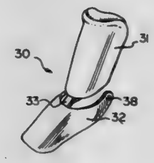




surface of said cushioning layer and having a space between adjacent sides thereof at least equal to the width thereof such that compression of said ridges and said cylindrical disc does not result in contact between the sides thereof.

4,534,122
FIT AND SUPPORT SYSTEM FOR SPORTS FOOTWEAR
David M. MacPhail, Whistler Mountain, Canada, assignor to Macpod Enterprises Ltd., Squamish, Canada
Filed Dec. 1, 1983, Ser. No. 556,939
Claims priority, application Canada, Dec. 1, 1982, 416815
Int. Cl.[3] A43B *7/14*
U.S. Cl. 36—88 **26 Claims**

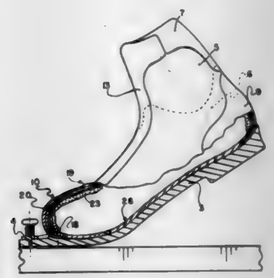




21. A support for sports footwear comprising a body of material shaped and dimensioned to fit within the footwear and to bear evenly against the dorsal surface of the foot, including the medial and lateral aspects thereof, forwardly and clear of the ankle joint so as not to restrict dorsiflexion of the foot at the ankle joint within the normal range while covering a majority of the mid-foot bones, and to occupy substantially all free space between said dorsal surface and an adjacent inner surface of the footwear, the material being sufficiently firm and unyielding to transmit pressure constantly during use from said adjacent inner surface of the footwear to the wearer's foot in order to substantially reduce articulation of said mid-foot bones and to substantially eliminate upward movement of said bones relative to the footwear.

4,534,123
CROSS-COUNTRY OR TOURING SKI BOOT AND METHOD OF MANUFACTURE
Georges P. J. Salomon, Annecy, and Jean-Paul Vinay, Roybon, both of France, assignors to Salomon S.A., Annecy, France
Filed Feb. 2, 1982, Ser. No. 344,943
Claims priority, application France, Feb. 6, 1981, 81 02728
Int. Cl.[3] A43B *13/14, 5/04, 5/16*
U.S. Cl. 36—99 **36 Claims**





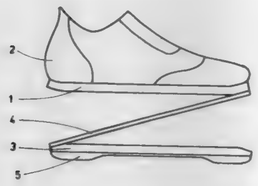
1. A boot for housing a leg and a foot of a wearer having a malleoli, wherein said boot comprises a first upper having a vamp and a second upper having a quarter, said first upper being adapted to encase the foot only below the malleoli of the wearer, said second upper encasing said first upper and extending upwardly to secure the base of the leg, said first and second uppers being secured to a sole of said boot, wherein said quarter of said second upper is stitched to said vamp of said first upper.

4,534,124
SPRING-ACTION RUNNING AND JUMPING SHOE
Joachim Schnell, Amselweg 7, D-6348 Herborn 4, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 531,612
Claims priority, application European Pat. Off., Sep. 14, 1982, 82108456.3
Int. Cl.[3] A43B *13/18, 5/06*
U.S. Cl. 36—114 **10 Claims**

1. A spring-action athletic shoe comprising a shoe to be worn on the foot; an upper sole attached beneath the shoe; a lower sole spaced separate from and beneath the upper sole; the upper sole and the lower sole both having a front and rear end generally at the front and rear ends of the shoe; and both

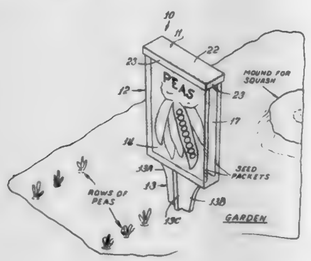
ends of said lower sole are adapted for being pressed upon the ground as the shoe is used;

a leaf spring for elastically connecting the upper and lower soles; the leaf spring being generally of the width of the



shoe; the leaf spring having one end attached to one of the front and rear of the upper sole and having an opposite other end which is attached to the other of the front and rear of the lower sole.

4,534,125
GARDEN ROW MARKER
David J. Buck, P.O. Box 177, Enterprise, Miss. 39330
Filed Jul. 9, 1984, Ser. No. 629,055
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—10 C **10 Claims**



1. A garden row marker for retaining informational materials concerning vegetation planted in a garden, said marker comprising a transpicuous hollow body integrally formed with a depending stake means, the hollow body having an interior display chamber for retaining informational materials to be visible to the gardener, said display chamber being defined by a plurality of continuous planar sidewalls therearound and integrally formed at lower edges thereof with a bottom wall defining the bottom of the display chamber, said sidewalls having a continuous top edge circumscribing an upward opening of said display chamber, the sidewalls including a peripheral lip extending outwardly generally around the top edge thereof, and a removable solid cap having means for resiliently-engaging said hollow body portion at said sidewall peripheral lip, whereby said display chamber is sealable to enable informational materials to be safely stored therein for use in a garden.

4,534,126
CHECK-OUT COUNTER DIVIDER
Harry Gilman, 8 Rose Ave., Marblehead, Mass. 01945
Filed Mar. 19, 1984, Ser. No. 590,803
Int. Cl.³ G09F *3/18*
U.S. Cl. 40—19 **8 Claims**

1. A check-out counter divider comprising:

an elongated hollow body defining an elongated opening and having a plurality of planar faces; said faces being at least partially transparent to visible light;

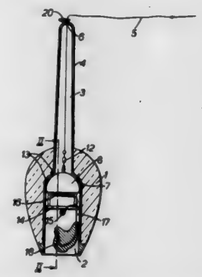
advertising material positioned within said opening and visible through said faces;

removable closures on each end of said body to facilitate insertion and removal of said advertising material from within said opening, said closures being made of a skid-resistant material to prevent rolling or displacement of said divider; and



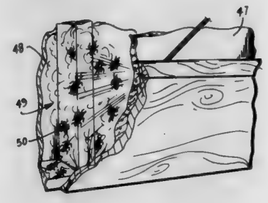
a shiftable weight disposed within said opening to prevent rolling or displacement of said divider.

4,534,127
DEVICE FOR A CASTING FLOAT
Sverre L. Thorvaldsen, Struervein 11 B, 1700 Sarpsborg, Norway
Continuation-in-part of Ser. No. 237,158, filed as PCT NO 80/00024 Jul. 11, 1980, published as WO 81/00186, Feb. 5, 1981, § 102(e) date Feb. 17, 1981, abandoned. This application Jan. 13, 1984, Ser. No. 570,582
Claims priority, application Norway, Jul. 24, 1979, 792436
Int. Cl.³ A01K *93/00, 97/04*
U.S. Cl. 43—41.2 **11 Claims**



1. A casting float device having a float body with a passageway through which a fishing line may run and a chamber which is open to a lower surface of the float boat and which is continuous with the passageway, the chamber being dimensioned so that it houses a sinker and a fishing tackle, in which the sinker and fishing tackle leave the chamber when the casting float has arrived at the water surface, and in which a stop is attached to the line above the float to prevent more than a predetermined length of the line from passing through the passageway, the sinker having a first portion in the shape of a spool and a second portion attached to the end of the line, the sinker having external dimentions which match the chamber so that the sinker is placeable inside the chamber before the cast is made, and a snell connecting the sinker to the fishing tackle, the sinker being configured so that the snell is windable on to the sinker and so that the snell remains so wound during casting, the first portion of the sinker being hollow, and the second portion of the sinker being filled with a dense material.

4,534,128
METHOD FOR PEST CONTROL USING ANESTHETIC AND INSECTICIDE
Grady W. Query, 1725 Mint Hill Rd., Matthews, N.C. 28105; O. Grady Query, 14 N. Adgers Wharf, Charleston, S.C. 29401, and H. Fred Kessler, 1722 E. 8th St., Charlotte, N.C. 28204
Filed Feb. 1, 1983, Ser. No. 451,810
Int. Cl.³ A01M *7/00*
U.S. Cl. 43—132.1 **2 Claims**



1. A method of treating insects or pests, comprising:

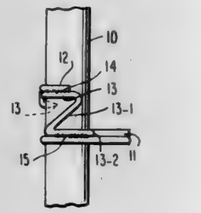
a. combining an insecticide and an anesthetic into a mixture as follows:

Pyrethrins I and II	.5 to .7%
Piperonyl Butoxide (Technical)	5%
Petroleum Oil, Refined	14%
Methylene Chloride	15%
Dimethyl Ether	65.3 to 65.5%
	100%

where the percentages indicated are by weight; and

b. injecting said mixture into a nest or dwelling place of said insects or pests whereby said anesthetic immobilizes said insects or pests while said insecticide acts to kill said insects or pests.

4,534,129
PLANT SUPPORT
William C. Stuckey, 1503 Virginia St. E., Charleston, W. Va. 25311
Filed Oct. 31, 1983, Ser. No. 547,534
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—47 **6 Claims**



1. A wire plant support for use with a post in the ground comprising, in combination,

a plant support wire loop having a pair of terminal ends,

at least a first one of said terminal ends of said wire loop being formed as a projection for entering said post, means for permanently securing a second terminal end of said wire to said first one of said terminal ends near said projection to prevent movement relative to each other,

a pair of reaction bearing cross pieces near each end of said wire and integral therewith, each of said reaction bearing cross pieces being below the level of the point of entry of said post by said projection, said pair of reaction bearing cross pieces being secured together to prevent movement relative to each other,

integral link members maintaining the spaced relation between said reaction bearing members and the point of entry of said post by said projection,

said means securing said second terminal end of said wire to said first one of said terminal ends with the spacing between the tip of said projection and said pair of reaction bearing cross pieces being sufficient to permit the tip of said end and said reaction bearing members to be slid over said post to a desired position with said wire loop at an angle to the horizontal and then pivoted about said reaction bearing cross pieces to cause entry of said projection into said post with said wire loop in a substantially horizontal position.

4,534,130
FLOWER TOTE
William S. Rogers, 3393 Sewell Mill Rd., Marietta, Ga. 30062
Filed Sep. 29, 1982, Ser. No. 428,058
Int. Cl.³ A01G *9/02*
U.S. Cl. 47—66 **10 Claims**



1. A basket for carrying and displaying, comprising:

(a) a plurality of intermeshed wires forming a bottom and sides of said basket;

(b) at least two spring clips disposed on opposing sides of said basket, each of said spring clips comprising a downwardly opening spring member;

(c) at least two handles, each having a first end adapted to be resiliently engaged by and freely removable from a respective one of said spring clips in a first and a second stable position, and a second end, said second end serving as a tote handle when disposed above said basket in said first stable position and as a stand to support said bastet when in said second stable position, each of said handles being rotatable, when engaged in its respective spring clip, between said first and second positions;

(d) means for restraining said handles when in said second stable position for preventing said handles from rotating towards said first stable position; and

(e) wherein said handles are generally in the form of a trapezoid and further comprise a stabilizing bar; said bar being connected between said first and second ends when said handles are in said first position and being interconnected between said handles when said handles are in said second position, whereby said handles are prevented from spreading apart in said second position.

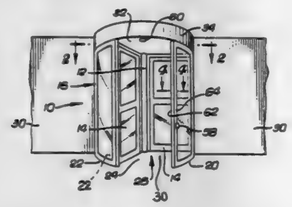
4,534,131
REVOLVING DOOR SECURITY SYSTEM
Michael D. Blackston, Brooklyn Park, and Gary Reinecke, Moundsview, both of Minn., assignors to Heise Manufacturing, Minneapolis, Minn.
Filed Oct. 31, 1983, Ser. No. 546,827
Int. Cl.³ E05D *15/02*
U.S. Cl. 49—42 **12 Claims**

1. In a powered reversible revolving door system having curved sidewalls and a door defined by a plurality of wings extending radially from a central axis, the wings defining a plurality of sectors, a method of preventing the unauthorized passage of an intruder through the system in one direction into a secured area without trapping an authorized passenger pres-

ent in the system attempting to pass through the system in the other direction, including the steps of:

detecting the presence of the intruder entering a door sector to pass through the door in an unauthorized direction,

stopping the rotation of the door before the intruder has free passage into the secured area,



means automatically and alternately rotating the door in a reverse direction to force the intruder backwards and then rotating the door in a forward direction, said rotations being sufficient to allow the escape of the authorized passenger out of the system while simultaneously preventing passage of the intruder through the door, and

continuing alternate rotation until the intruder is no longer detected in the system.

4,534,132

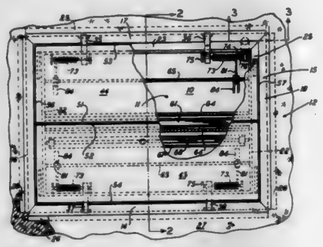
SPRING ASSISTED DOORS FOR SIDEWALK, PIT AND FLOOR OPENINGS

Russell D. Smith, Hacienda Heights, Calif., assignor to Red Plastic Co., Inc., Cudahy, Calif.

Filed Aug. 19, 1983, Ser. No. 524,547

Int. Cl.³ E05F *1/10*

U.S. Cl. 49—386 **9 Claims**



1. In a horizontal door assembly in which doors swing open upwardly urged by adjustable springs to give access to a vertical shaft the combination comprising a shaft head, said shaft head having a surrounding support collar, a frame secured in the support collar, a pair of doors extending horizontally across said frame in closed position, hinges having horizontal pivot pins securing an edge of each door to said frame, a fixed spindle mounted to said frame adjacent an outer edge of each door parallel to the pivot pins of said hinges, a winding bushing rotatable on said spindle, means on said bushing for receiving an adjusting bar, a helical spring supported on said spindle and secured to said winding bushing for rotation thereby to adjust the torque load of said helical spring, a spring limb extending from an end of said helical spring remote from said winding bushing, a spring limb end bearing against each door so as to exert a lift force thereon, and means for securing each winding bushing with respect to a fixed spindle.

4,534,133

MACHINE FOR SUPERFINISHING ANNULAR WORKPIECES

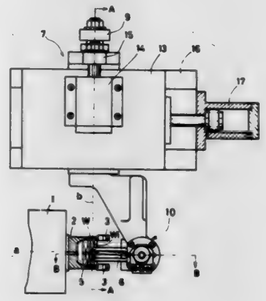
Teruo Matsuda, and Kizo Kawaguchi, both of Osaka, Japan, assignors to Osaka Seiki Kabushiki Kaisha, Ikeda, Japan

Filed Dec. 12, 1983, Ser. No. 560,404

Claims priority, application Japan, Dec. 22, 1982, 57-233000

Int. Cl.³ B24B *9/00*

U.S. Cl. 51—58 **6 Claims**



1. A machine for superfinishing the inner race surface of an annular workpiece rotating in a plane about a center spindle axis, said machine comprising:

a holder arm for holding two honing stones of different grain size in juxtaposed positions within the plane of rotation of the workpiece adjacent the inner race surface of the workpiece;

first means for reciprocally arcuately moving said holder arm in a first direction generally perpendicular to the plane of rotation of the workpiece;

second means for moving said holder arm in a second direction generally perpendicular to said spindle axis toward and away from the inner race surface;

a lever mounted on said holder arm selectively engagable with either of said two honing stones for pressing the selected honing stone in said second direction toward and against the inner race surface;

means for selectively positioning said lever adjacent said selected stone; and

means for adjusting the relative positions of said holder arm and the workpiece in the direction of juxtaposition of the two honing stones a distance equal to the pitch of the two honing stones such that one or the other of the two honing stones is alternately positioned for being pressed against the inner race surface by said lever, whereby said inner race surface is smoothed by the one or the other of the two honing stones by reciprocally moving said holder arm by said first means.

4,534,134

ICE SKATE SHARPENING MACHINE

Joseph A. Consay, and Douglas R. Meier, both of Calgary, Canada, assignors to Universal Skate Sharpeners Ltd., Calgary, Canada

Filed Jul. 7, 1983, Ser. No. 511,622

Claims priority, application Canada, Jun. 10, 1983, 430117

Int. Cl.³ B24B *9/04*

U.S. Cl. 51—96 **13 Claims**

1. In a machine for sharpening the bottom edge of the blade of an ice skate, said edge having a convex profile in side view, comprising

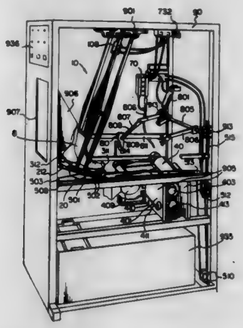
(a) a thin grinding wheel having a periphery with a convex transverse cross-section corresponding to a desired concave transverse cross-section of said blade edge,

(b) means for rotating said wheel about its axis,

(c) means for clamping said blade, and

(d) traversing means for effecting relative movement between the clamping means and the wheel in the longitudinal direction of the blade with the central longitudinal plane of the blade coplanar with the central plane of the wheel and with the wheel biassed against the blade edge to remove a cut therefrom;

the improvement wherein



(e) said traversing means includes position sensitive means for determining the location of the point of contact between the wheel and the blade edge and for regulating said relative movement to take place at a greater speed when said point is in the vicinity of at least one end of said edge than when said point is in the vicinity of a longitudinally central portion of such edge.

4,534,135

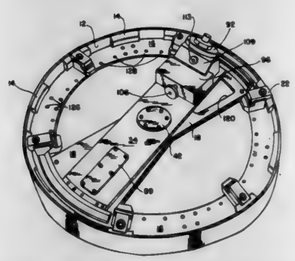
GRINDING MACHINE FOR WATERTIGHT HATCH LUGS

John F. Wilger, Honolulu; Gregory S. Nakano, Pearl City; Stephen Orillo, Jr., Mililani, and John R. Cazinha, Kaneohe, all of Hi., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Feb. 9, 1984, Ser. No. 578,722

Int. Cl.³ B24B *19/00*

U.S. Cl. 51—241 S **7 Claims**



1. A machine for insitu grinding tapered lugs on a hatch comprising:

a base;

means attached to alternate lugs for mounting the base across the hatch opening;

an elongated plate mounted at its center to the base for pivotal movement thereon;

the pivotal plate having opposite ends, each end of the pivotal plate being extendable between a pair of alternate lugs, one of the lugs between one of said pair of lugs being the lug to be ground;

means mounted on the base for oscillating the pivotal plate back and forth between the lugs of each pair of alternate lugs;

means for grinding;

means mounting the grinding means at one end of the pivotal plate for selectively engaging the grinder with or backing the grinder away from the lug to be ground;

whereby upon oscillating the pivotal plate and engaging the grinding means with the lug to be ground said lug can be ground.

4,534,136

INFORMATION SIGNAL REGENERATING STYLUS AND MANUFACTURING METHOD THEREOF

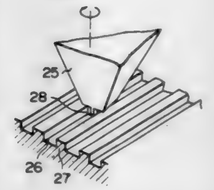
Tetsuo Yoshikane, Katano; Akira Kagata, Neyagawa, and Hiromi Hiura, Katano, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation of Ser. No. 333,897, Dec. 31, 1981, abandoned. This application Jul. 10, 1984, Ser. No. 628,976

Claims priority, application Japan, Dec. 29, 1980, 55-188664; Oct. 27, 1981, 56-172311

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—283 R **4 Claims**



1. A regenerating stylus manufacturing method comprising the steps of: (a) rotating a grinder having a channel of a predetermined width with a flat bottom, (b) providing an electrode having a width larger than that of said channel on a side of a conical stylus base having a tip, said base consisting of nonconductive material, (c) pressing the tip of said conical stylus into said channel, (d) turning the stylus within given angles about a longitudinal axis of the tip of said stylus, and (e) contacting the side wall of said channel with the side of said stylus to reduce the width of said electrode to a width substantially smaller than that of said channel, and to form a projection on the tip of said conical stylus on which projection said electrode having a substantially smaller width than that of said channel is positioned, and to form a sliding face on said tip, said sliding face having a width greater than the width of said electrode formed on the projection of the tip.

4,534,137

METHOD FOR PATTERN GENERATION AND SURFACING OF OPTICAL ELEMENTS

George M. J. Sarofeen, 12501 Brook La., Chester, Va. 23831, and Jeffrey T. Perkins, 1300 Old Long Trail, Richmond, Va. 23235

Continuation-in-part of Ser. No. 404,124, Aug. 2, 1982, abandoned. This application Jan. 3, 1983, Ser. No. 455,201

Int. Cl.³ B24B *1/00*

U.S. Cl. 51—284 R **27 Claims**

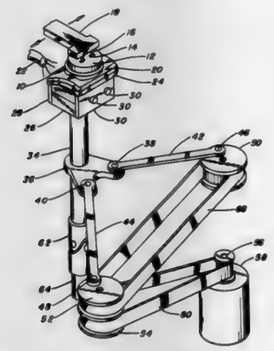
1. A method for surfacing an optical member, comprising the steps of:

(a) securing said optical member;

(b) diposing a surfacing tool in engagement with said optical member; and

(c) while maintaining such engagement between said optical

member and said surfacing tool, displacing said surfacing tool progressively in a first circular pattern, in a first



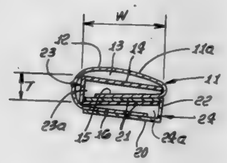
rectilinear pattern along an optical axis of said optical member and in a second circular pattern.

4,534,138

NAIL FILE HAVING FLEXIBLE ABRASIVE SHEET

William E. Pangburn, 2707 Bay Shore, Ventura, Calif. 93003

Filed Dec. 19, 1983, Ser. No. 563,151
Int. Cl.³ B24D *15/00*
U.S. Cl. 51—392 **5 Claims**



1. In a nail file, the combination comprising
(a) an elongated holder having an elongated handle,
(b) a resiliently flexible sheet having an abrasive surface,
(c) and structure on the holder retaining the sheet to the handle so that sheet loosely wraps at least partly about the holder with a gap between the sheet and the holder, whereby the sheet wrap when pressed against a fingernail assumes the contour of the fingernail, the sheet wrap being elongated in the direction of the handle,
(d) the holder comprising two longitudinally elongated plastic strips having channel shaped cross sections which are intermeshed, opposed ends of the sheet penetrating into the channels defined by said strips for retention therein, such that one of said opposed ends of the sheet is retained by one of said channels and the other of said opposed ends is retainer in the other of said channels,
(e) said sheet also wrapping over the outwardly facing surface of one of the channels, the outwardly facing surface of the other channel remaining exposed to the exterior.

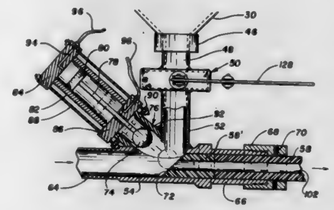
4,534,139

SANDBLASTER

Yvon Desjardins, 897 Lamontagne St., Beellefeuille, Canada (J0R 1A0)

Filed Jan. 23, 1984, Ser. No. 572,869
Int. Cl.³ B24D *11/00*
U.S. Cl. 51—438 **2 Claims**

1. A sandblasting apparatus comprising an upright container for containing abrasive grit under pressure and having a discharge opening at its bottom, a manually-operable grit flow-regulating valve communicating with said discharge opening, an air and sand mixing chamber including a compressed air inlet nipple, a grit inlet nipple, an outlet nipple and a fourth nipple forming a unitary unit and adapted to be mounted under said upright container with said grit inlet nipple disposed upright and communicating with said grit flow-regulating valve, said air inlet nipple and outlet nipple axially aligned and making a substantially right angle with said grit inlet nipple, said fourth nipple making an acute angle with said air inlet nipple, all of said nipples intersecting and defining a cavity at their intersection, said air inlet nipple provided with means for connection to a supply of air under pressure, a sandblasting hose, of elastomeric material, having one end portion inserted into and detachably secured to said outlet nipple and carrying a nozzle at its other end portion, said hose having a bore, the inner end of said hose exposed within said cavity, a double-acting pressurized air-operated cylinder and piston unit removably mounted on, and carried by, the outer end of said fourth nipple, a piston rod fixed to the piston of said unit and axially extending through said fourth nipple, a ball fixed to the outer end of said piston rod and of larger diameter than that of said bore, said ball movable by said cylinder and piston unit between a retracted position confined within said fourth nipple and shielded from grit flowing through said grit inlet nipple, and an advanced position abutting said hose inner end and sealing said bore, and remote control means operable at said nozzle for operating said cylinder and piston unit.

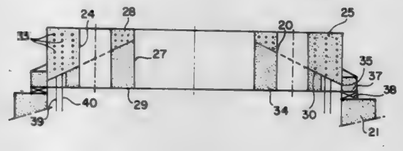


4,534,140

ANNULAR SLAB FOR CLOSING THE VESSEL OF A FAST NEUTRON NUCLEAR REACTOR

Claude Malaval, Antony, France, assignor to Novatome, Le Plessis Robinson, France

Filed Mar. 7, 1983, Ser. No. 472,814
Claims priority, application France, Apr. 8, 1982, 82 06125
Int. Cl.³ E04H *7/20*
U.S. Cl. 52—21 **6 Claims**



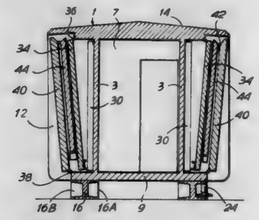
1. In a nuclear reactor comprising a concrete structure including a cylindrical vessel well (21) with a vertical axis having an upper part on which a slab (20) having a periphery rests horizontally, said slab consisting of a composite structure of steel and concrete, and a vessel (40) suspended from a lower part of said slab, said slab closing said vessel and comprising an annular envelope consisting of two coaxial cylindrical sleeves (25, 27) and two annular face plates (28, 29) joined together directly and by means of a stiffening assembly, said envelope being filled with concrete except for cylindrical spaces (24) with axes parallel to the axis of said sleeves (25, 27) and passing right through said slab (20) for the passage of reactor components immersed in said vessel (40), which slab comprises, inside said envelope, as the stiffening element, the improvement consisting of at least one frusto-conical sleeve (30) coaxial with said sleeves (25, 27) limiting said slab (20), welded to said envelope along its small base in the region of said upper part of said envelope, and along its large base in the region of said lower part of said envelope, having openings for the passage of said components and dividing the interior volume of said envelope into two superposed parts.

4,534,141

TRANSPORTABLE PRE-FABRICATED BUILDING STRUCTURE

Giovanna Maria Fagnoni, V. Pian dei Giullari 86, Firenze, Italy

Filed Jun. 13, 1983, Ser. No. 503,501
Claims priority, application Italy, Jun. 18, 1982, 9442 A/82
Int. Cl.³ E04B *1/343*
U.S. Cl. 52—68 **17 Claims**



1. In a building structure a framework including:
elongate members,
support and runner base beams,
a flooring member,
a roofing member, and
end wall members, all of these members and beams being rigidly interconnected to define a useful space,
further flooring panel members pivoted to the framework at axes extending parallel to the beams and elongate members,
further roofing panel members pivoted to the framework at axes extending parallel to the beams and elongate members,
further wall members one being pivoted to each further flooring panel member and pivotal, when the corresponding further flooring member is in situ, to a vertical orientation, and
further, panel, wall members pivoted to the end wall members about respective vertical axes and movable into configurations wherein corresponding further flooring panel members, further roofing panel members and further wall members together define a further useful space when pivoted to orientations extending outwardly from the framework, and pivotally mounted support legs which are movable from a retracted, storage configuration to an extended configuration when the structure is in situ wherein the legs serve to support the members defining said further useful space, said support and runner beams of the framework have a double T-section defining lateral recesses adapted to accommodate the support legs.

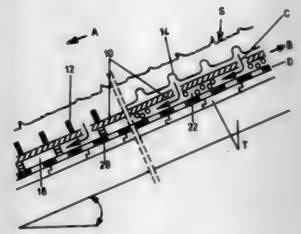
4,534,142

ROOF COVERING

Jens Drefahl, Amselweg 18a, 6458 Rodenbach 2, Fed. Rep. of Germany

Filed Jun. 23, 1981, Ser. No. 276,512
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1980, 3024672
Int. Cl.³ E04B *7/02*
U.S. Cl. 52—90 **13 Claims**

1. Roof covering for greening an inclined cold or warm roof having a supporting construction resting on walls and a water-impermeable roof skin, said roof covering comprising: a plant carrying layer applied on top of the roof; a non-rotting holding structure which is independent of the subjacent roof structure and of the roof skin, said holding structure being placed on the inclined roof loosely and largely free of tension and friction of the roof and being secured only at a roof beam against sliding; holding projections distributed over an upper surface of said holding structure and frictionally and thrust-absorbingly engaging in the plant-carrying layer to be applied to the upper side; said holding structure conducting thrust and connecting said plant-carrying layer with the roof beam; a filter layer beneath said holding projections; a drainage underneath said filter layer; said drainage being part of said holding structure; said drainage having distributed spacers in contact with said filter layer.

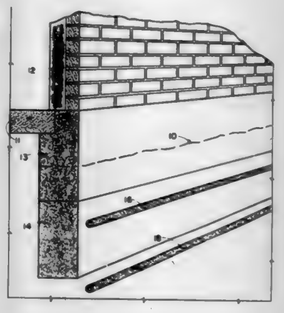


4,534,143

SYSTEM FOR CONTROLLING THE MOISTURE IN THE SUBSURFACE SOIL SURROUNDING A BUILDING

Fredrick J. Goines, Tulsa, and David A. Reifsteck, Muskogee, both of Okla., assignors to Midwest Irrigation and Foundation, Inc., Tulsa, Okla.

Filed Oct. 24, 1983, Ser. No. 544,717
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.5 **5 Claims**



1. Apparatus for controling the moisture in the ground surrounding a building which comprises a first circumferential conduit extending around the building approximately ten inches below the ground level and from six to twenty-four inches away from the foundation of the building, the major portion of said first circumferential conduit being composed of porous flexible hose capable of permitting seepage of water from the inside of the hose to the outside thereof through the pores of the hose when water under pressure is fed into the interior of the hose, a supply conduit having an inlet end and an outlet end, the inlet end of the supply conduit being connected to a water main, an on-off valve having an inlet and an outlet, the inlet to the on-off valve being connected to the outlet of the supply conduit, a pair of check valves connected in series to

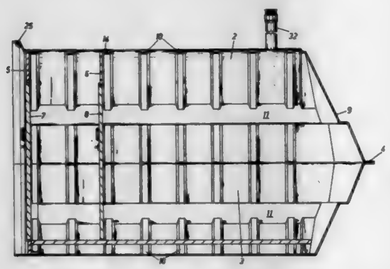
the outlet of the on-off valve, a pressure regulating valve connected to the downstream side of the series-connected check valves for reducing the pressure from the water main to about 1 to 5 psi, a terminal conduit connected to the pressure regulator valve for conducting water under 1 to 5 psi to the circumferential conduit, the terminal conduit connecting to the circumferential conduit through a tee connection, a metering valve located in the circumferential conduit on each side of the tee and adjacent the tee for controlling the flow of water into each side of the circumferential conduit leading away from the tee whereby said circumferential conduit presents a controlled water seepage zone at a level of about ten inches below the ground, a second water seepage zone disposed below said first zone and formed in part at least from porous flexible hose of the type described herein, said second zone being in fluid communication with said first zone.

4,534,144

UNDERGROUND BOMB SHELTER/STORAGE CELLER UNIT

Bert Gustafsson, Rönnvägen 8, S-370 34 Holmsjö, and Hans-Erik Sträng, Lövängsvägen 9, S-370 20 Lyckeby, both of Sweden

Filed Nov. 12, 1982, Ser. No. 441,076
Int. Cl.³ E02D *27/00*
U.S. Cl. 52—169.6 **4 Claims**



1. A bomb shelter to accommodate a small group of people, comprising

an essentially cylindrical body of fiberglass-reinforced plastics having a generally smooth outer surface, said cylindrical body consisting of separate upper and lower sections,

peripheral reinforcing stiffening members extending circumferentially around the wall of said shelter body and projecting into the interior thereof,

lengthwise stiffening members formed in said bomb shelter body, the cross-over points between said peripheral stiffening members and said lengthwise stiffening members arranged to ensure that the smaller ones of said stiffening members extend uninterrupted through indentations formed in the larger ones of said stiffening members, whereby both said smaller and said larger stiffening members will be continuous,

sealed joints interconnecting said sections to form said cylindrical body,

an external end wall at the forward end of said bomb shelter and supportingly engaged with the outerforward surface of one of said stiffening members and an inner end wall spaced a predetermined distance from said external end wall and supportingly engaged with the outer forward surface of another of said reinforcing members whereby said stiffening members support said walls against external blasts, and

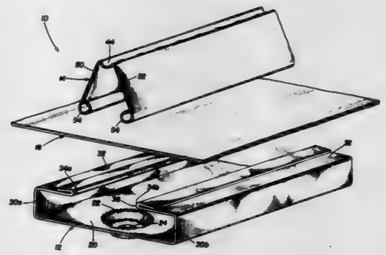
one door in each of said end walls, said doors arranged to be opened outwards.

4,534,145

ATTACHMENT DEVICE FOR SECURING FLEXIBLE SHEETS

James H. C. Yang, Cleveland; Walter Tomaszewski, Canton, and Heinz W. Benezé , Akron, all of Ohio, assignors to The Firestone Tire & Rubber Company, Akron, Ohio

Filed Jul. 25, 1983, Ser. No. 516,618
Int. Cl.³ E04B *1/00*
U.S. Cl. 52—222 **22 Claims**



1. An attachment device for mechanically securing at least one flexible elastomeric sheet to the upper surface of a roof, said attachment device comprising:

(a) a substantially rigid channel member having a generally rectangular cross-section and a continuous, central longitudinal slot opening into said channel member, a bottom wall, an upper wall, and generally opposed sidewalls, said channel member having a width which is defined by said opposed sidewalls; and

(b) an insert member comprising means for maintaining said at least one flexible elastomeric sheet within said channel member, said insert member being formed from a ductile and rigid material and having an integral central longitudinal portion of reduced rigidity and two adjacent wing portions located on opposed edges of said central longitudinal portions, said central longitudinal portion defining said two adjacent wing portions and comprising means for facilitating the plastic deformation of said insert member from a first position to a second position, said insert member having a generally inverted V-configuration in said first position with said central longitudinal portion being located at the apex of said inverted V, and occupying said second position after undergoing a plastic deformation during insertion of said insert member together with said at least one flexible sheet into said channel member, said insert member being either substantially flat or slightly concave in said second position and comprising means for frictionally and non-bindingly maintaining said at least one elastomeric sheet against one wall of said channel member, thereby permitting lateral and vertical shifting of said insert member, and said at least one flexible sheet within said channel member, said insert member having a width when in said second position which is less than said channel member width.

4,534,146

PARTITION STRUCTURE

William Preston, 7668 Lemon Ave., Lemon Grove, Calif. 92075

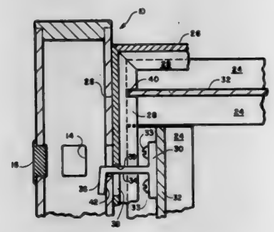
Filed Jun. 13, 1983, Ser. No. 503,605
Int. Cl.³ E04H *1/00*
U.S. Cl. 52—239 **11 Claims**

1. An improved partition structure comprising:

at least two panel members having vertical and horizontal end surfaces;

vertical and horizontal framing members for enclosing the vertical and horizontal end surfaces of said panel members, said framing members being I shaped in cross-section forming inner and outer channels on each side of a central portion and said vertical framing members having opposite ends and having at least one outwardly extending lock member intermediate its ends, said lock member having a body perpendicular to its attached frame member and a downwardly extending distal end surface;

facing members having an outer facing surface and inwardly extending vertical edges for insertion into and covering said outer channel of said vertical framing members, the vertically positioned facing members have a locking slot in each inwardly extending vertical edge which mate with the central portion of the adjacent horizontal framing member, said outer facing surface having at least one opening having an upper surface for receiving one of said



locking members, said upper surface of said opening and the locking member being closely adjacent whereby the slot engagement and close adjacency between said opening and locking member substantially prevent relative vertical movement between the facing members and vertical framing members; and

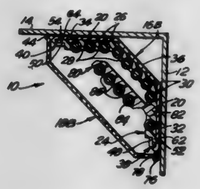
at least three vertical tubular post members for supporting the framed panels in a vertical position, said post members each having at least one locking member engaging opening whereby at least one locking member when inserted into a vertical post opening and moved downwardly relative to said vertical post member removably secure said post member to said panel.

4,534,147

DUCT MOLDING AND CABLE MOUNTING CLIPS

Frank A. Cristell, Lakewood, N.J., assignor to Robert H. Donahue, Westfield, N.J.

Filed Dec. 9, 1982, Ser. No. 448,246
Int. Cl.³ H02G *3/04*; E04F *19/04*
U.S. Cl. 52—287 **15 Claims**



1. A duct assembly for retaining a plurality of cables, said assembly comprising:

a unitary elongated base including two angularly related panels for respectively fixedly mounting against two angularly related planar surfaces;

an elongated movable cover connected to and extending between said two angularly panels so as to define an elongated tubular enclosure therebetween when said movable cover is connected to said two angularly related panels;

at least one cable retaining clip having a pair of ends, said ends being disposed within said enclosure and removably mounted to said base, said at least one clip including a plurality of pairs of bendable resilient cable retaining means, each of said pair of bendable resilient retaining means including a pair of spring fingers, each of said pair of spring fingers having bias means returning said pair of spring fingers to an initial position following said mounting of the cables therebetween, said each pair of spring fingers defining a recess thereinbetween; and

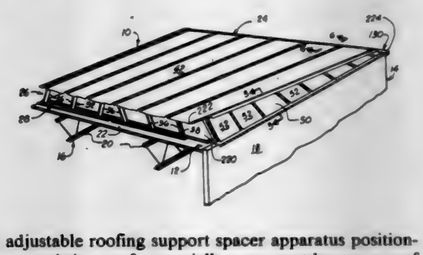
at least one expansion module having a plurality of recesses for removably retaining cables, said expansion module including a mounting hub removably mounted in said recess of said cable retaining clip.

4,534,148

ADJUSTABLE ROOFING SUPPORT SPACER APPARATUS AND ERECTION METHOD

Harold G. Simpson, Oklahoma City, and Leo E. Neyer, Edmond, both of Okla., assignors to Encon Products, Inc., Oklahoma City, Okla.

Continuation-in-part of Ser. No. 487,614, Apr. 22, 1983,. This application Jun. 10, 1983, Ser. No. 503,299
Int. Cl.³ E04B *1/32*
U.S. Cl. 52—640 **6 Claims**



1. An adjustable roofing support spacer apparatus positionable on a preexisting roof to partially support at least one roof panel member, comprising:

a first beam;

a second beam supported by the preexisting roof;

connector means for connecting the second beam to the preexisting roof; and

adjustable web means for interconnecting the first and second beams and for supporting the first beams so that it is disposed above the second beam in a selected plane independent of the slope of the preexisting roof, the adjustable web means comprising a plurality of spacer webs and attaching means for attaching the spacer webs to the first and second beams and determining the relative disposition of the first and second beams at the site of the preexisting roof so that the first beam is supported at selected heights along the length thereof above the preexisting roof.

4. A method for reroofing a preexisting roof of a structure with a new roof slope independent of the slope of the preexisting roof structure, the structure having a plurality of walls, each wall having an upper end portion, the method comprising the steps of:

securing an eave connector assembly to the upper end portion of one of the walls of the structure;

securing an adjustable roofing support spacer to the preexisting roof such that the adjustable roofing support spacer is disposed at a location on the preexisting roof substantially corresponding to the ridge of the new roof structure and substantially parallel to the eave connector assembly, the adjustable roofing support spacer further characterized as having a first beam, a second beam and an adjustable web assembly disposed between and interconnecting the first beam and the second beam;

connecting the second beam to the preexisting roof;

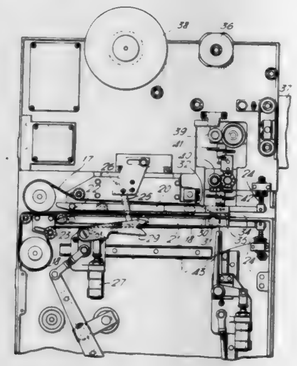
adjusting the adjustable web assembly of the adjustable roofing support spacer so that the first beam thereof is substantially horizontally disposed a selected distance above the second beam and independent of the slope of the plane of the preexisting roof;

positioning at least one panel member across the first beam

of the adjustable roofing support spacer and the eave connector assembly such that the panel member is supported thereby; and

connecting the panel member to the first beam of the adjustable roofing support spacer and the eave connector assembly to provide the new roof structure having a roof plane substantially independent of the roof plane of the preexisting roof.

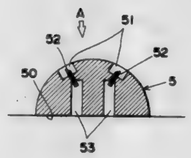
4,534,149
MACHINE FOR CLOSING FILLED BAGS
Trevor B. Hoyland, Norfolk, England, assignor to Thurne Engineering Co. Ltd., Norwich, England
Filed May 29, 1984, Ser. No. 614,938
Claims priority, application United Kingdom, May 27, 1983, 8314764
Int. Cl.³ B65B *7/08*
U.S. Cl. 53—76 **14 Claims**



1. A bag tying machine comprising a guide, said guide receiving an open end part of a filled bag as it is moved through the machine to be tied, a follow-up member, said follow-up member being movable adjacent said guide following said open end part of a bag to gather it together, tape supply means for supplying a length of pressure sensitive adhesive tape and holding it across a path of said gathered together end of the bag, and a pair of pivoted arms, located on opposite sides of said path of said gathered together end of said bags through said machine whereby said gathered together neck of said bag passes between said pair of arms, said pair of pivoted arms including a first and a second pair of jaws, said first pair of jaws being located upstream from said length of pressure sensitive adhesive tape and said gathered together end of said bag being initially compressed against them, said second pair of jaws being located immediately downstream from said adhesive tape, and supporting said adhesive tape as said gathered together neck of said bag is urged into contact with said adhesive tape, said second pair of jaws clamping said adhesive tape around said gathered together neck of said bag to tie it together as said follow-up member urges said gathered together neck between them.

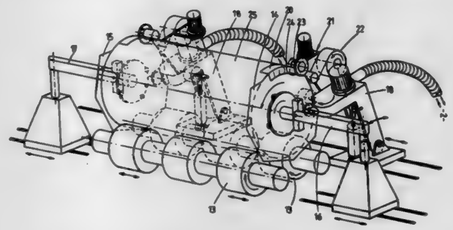
4,534,150
TOOL FOR USE WITH REFILLING EMPTY AMPULES WITH DENTAL IMPRESSION MATERIALS
Kazunori Shirota, Tokyo, Japan, assignor to Shirota Denki Rozai Kabushiki Kaisha, Tokyo, Japan
Filed Jan. 7, 1983, Ser. No. 456,374
Int. Cl.³ B65B *67/00*
U.S. Cl. 53—390 **4 Claims**

1. A tool for use in refilling dental impression materials into a tubular ampule which has a lower end thereof hermetically sealed by a diaphragm made from elastic materials, said tool comprising a heavy base block having a flat bottom, an upper surface of the block being provided with at least one hole, the diameter and depth of which are such that said hole can stably support therein said lower end of a tubular ampule, and a



hollow needle located in said hole with its upper end projecting into the hole coaxially thereof and positioned to have said upper end pierce the elastic diaphragm of said ampule when said lower end thereof is mounted in the hole in said block, a lower end of said needle opening to the air.

4,534,151
METHOD AND APPARATUS FOR PACKAGING PAPER ROLLS
Hans Schneck, and Esko Tiitinen, both of Varkaus, Finland, assignors to A. Ahlstrom Osakeyhtio, Noormarkku, Finland
PCT No. PCT/FI82/00048, § 371 Date Jul. 13, 1983, § 102(e) Date Jul. 13, 1983, PCT Pub. No. WO83/01765, PCT Pub. Date May 26, 1983
PCT Filed Oct. 25, 1982, Ser. No. 514,802
Claims priority, application Finland, Nov. 16, 1981, 813607
Int. Cl.³ B65B *11/04, 51/06, 61/00*
U.S. Cl. 53—415 **6 Claims**



1. A method for packaging a paper roll or the like in which a wrapping material is wrapped around the roll and headers are secured to the ends of the roll, which consists of the steps of

(a) wrapping a wrapper sheet (1) of width greater than the axial length of the roll (2) around the roll,

(b) securing the wrapper sheet to the roll,

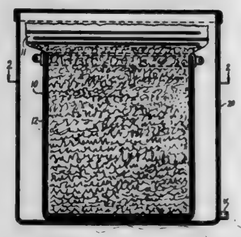
(c) removing the portions (5,6) of the wrapper sheet which extend over the ends of the roll, whereby the width of the wrapper sheet is reduced to the size of the length of the roll,

(d) placing header sheets (14,15) of size greater than the end surface of the roll against the ends of the roll,

(e) removing at least the edge portion of the header sheets extendng over the end surface and reducing the header sheets to obtain headers of the size of the roll diameter or smaller, while the roll is rotated,

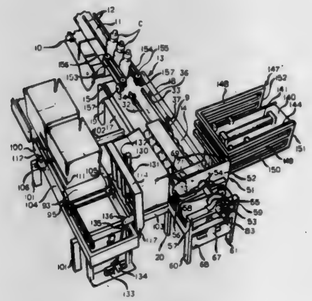
(f) securing the headers to the wrapper so that a tight joint is formed.

4,534,152
SELF SEALING VACUUMED PACKAGE
Walter I. Akkala, 381 Sycamore Sq., Lady Lake, Fla. 32659
Filed Mar. 29, 1983, Ser. No. 479,895
Int. Cl.³ B65B *31/00*
U.S. Cl. 53—434 **2 Claims**



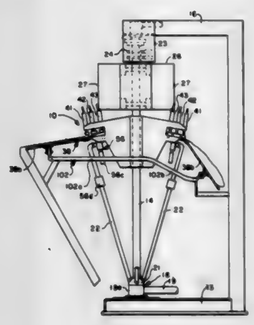
1. A method for vacuum packaging heat sensitive powdered products and perishable cheese products and knitting the cheese curds using a vacuum, comprising; placing a cheese product in a thermoplastic bag impervious to the ingress of atmospheric air and forming a tortuous vent passage in the open end of the bag above the product; placing the filled bag in a supportive container having a two section cover through which the tortuous vent portion protrudes to prevent the bag from expanding and bursting when subjected to a vacuum; placing the supportive container in a vacuum chamber and subjecting it to a vacuum to remove air within the bag through the formed tortuous vent passage; opening the vacuum chamber collapsing the tortuous vent passage and creating a temporary seal and collapsing the bag around the product causing it to compact the product, removing the vacuumized filled bags from the supportive container and vacuum chamber; and permanently sealing the tortuous vent passage diagonally transversing at least one or more of the passage sections of the tortuous vent passage.

4,534,153
METHOD AND APPARATUS FOR PACKING PLASTIC BOTTLES
Casimir W. Nowicki, Sylvania, Ohio, Owens Illinois Inc. Toledo, Ohio
Filed Jul. 11, 1983, Ser. No. 512,309
Int. Cl.³ B65B *5/06, 35/44*
U.S. Cl. 53—448 **18 Claims**



18. The method of packing a plurality of containers in a carton wherein the containers are moved in single file into the case packer entrance, comprising moving the single file containers in an upright attitude and in a predetermined order into a plurality of adjacent lanes of a receiver, filling the lanes with containers, gripping each of the containers in the receiver, rotating said receiver and the gripped containers through an angle of 90° about a horizontal axis which is parallel to the lanes of the receiver, supporting an open carton on a stand adjacent said receiver, grasping said empty carton and pivoting said grasped carton through 90° to place the open end of the carton in facing relationship with respect to said rotated containers, moving the containers, as a unit, directly from the receiver into the carton and returning the filled carton to its upright position, whereby the full complement of containers in the receiver are transferred to the interior of the carton.

4,534,154
METHOD AND MACHINE FOR FILLING BAGS WITH LIQUID
Rene J. Gaubert, 4219 Oakmore Rd., Oakland, Calif. 94602
Filed May 10, 1983, Ser. No. 493,429
Int. Cl.³ B65B *3/04*
U.S. Cl. 53—458 **19 Claims**



1. A method for filling pouches or bags with liquid, the bags being made of flexible film material with one unsealed end portion, one side wall of the bag adjacent said unsealed end portion having a filling opening, comprising the steps of positioning a bag on supporting means with the filling opening facing downwardly, separating the side walls of said unsealed end portion, inserting a presser member having an opening, into the open end of the bag, forming registration between the filling opening the opening in the pressure member and means for introducing liquid into the bag, causing the presser member to press the peripheral area of said one wall in an area surrounding the filling opening to form a seal between said one wall and liquid introducing means closing the unsealed end portion about the pressure member, introducing a measured amount of liquid through the filling opening and into the bag to fill the same, and then sealing the filling opening and the unsealed end portion.

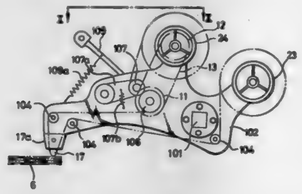
4,534,155
SOLID MATERIAL PACKING METHOD AND MACHINE
Yuji Sawa; Toshio Itoh, and Kuniomi Adachi, all of Fukushima, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan
Filed Apr. 27, 1982, Ser. No. 372,351
Claims priority, application Japan, Apr. 28, 1981, 56-63371; May 20, 1981, 56-71908[U]; May 26, 1981, 56-75190[U]
Int. Cl.³ B65B *43/30, 43/16*
U.S. Cl. 53—459 **25 Claims**

1. A packing method of the type comprising the steps of transporting one of a plurality of bags from a storage location to a packing location and inserting a material into said bag, the improvement characterized in that said transporting step comprises:

pressing against said one bag with a member having at least one exposed adhesive surface thereon;

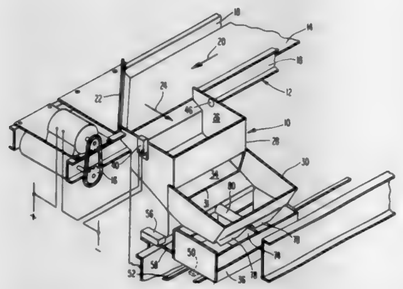
pivotably moving said member from a first position in which it presses against said one bag at said storage location to a

second position in which it holds and supports said one bag; and laterally translating said member in a horizontal plane to a third position arranged at the end of a packing



slide, whereat said one bag is opened to receive said material, said one bag remaining adhered to said member until said material is inserted into said bag.

4,534,156
BOX FILLING APPARATUS
Gary T. Smith, Exeter, Calif., assignor to Pennwalt Corporation, Philadelphia, Pa.
PCT No. PCT/US82/00773, § 371 Date Feb. 6, 1984, § 102(e) Date Feb. 6, 1984, PCT Pub. No. WO83/04401, PCT Pub. Date Dec. 22, 1983
PCT Filed Jun. 7, 1982, Ser. No. 577,009
Int. Cl.³ B65B *5/10*
U.S. Cl. 53—503 **12 Claims**

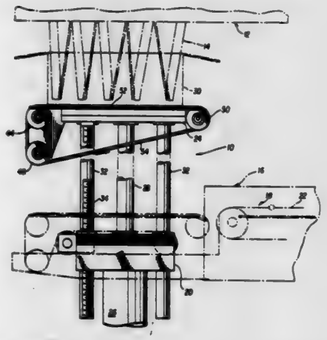


1. In apparatus for filling a box with articles from a movable conveyor, first means for driving said conveyor, a bin positioned adjacent said conveyor and having an opening for receiving said articles, diverter means for directing said articles from said conveyor through said opening into said bin, said bin having an outlet for said articles, a chute operatively associated with said bin and movable between a first position closing said outlet and a second position opening said outlet and delivering said articles to said box, second means for moving said chute between said first and second positions, and third means operatively associated with said first and second means and responsive to the filling of said bin with articles for controlling said first and second means to regulate the feeding of said articles to said bin and the discharge of articles from said bin.

4,534,157
CASE LIFT OUTFEED APPARATUS
Robert W. McGill, Munroe Falls, and Chris E. Robinson, Akron, both of Ohio, assignors to Figgie International Inc., Willoughby, Ohio
Filed Jun. 29, 1982, Ser. No. 393,463
Int. Cl.³ B65B *43/52, 5/06, 21/16*
U.S. Cl. 53—531 **11 Claims**

1. In a case lift apparatus including, a frame, a receiving platform and a powered lift cylinder operatively connected to said platform to raise and lower the same, the improvement comprising:

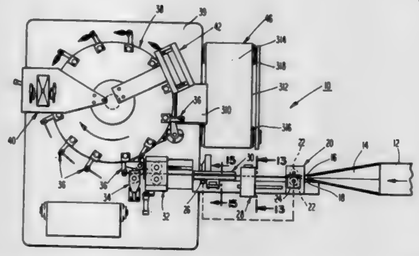
a pair of endless extensible belts operatively journalled on said platform in spaced parallel relation, said belts having a horizontal course position slightly above the upper



surface of said platform for support of cases on said platform, said belts also having a lower course positioned below and spaced from said platform; and

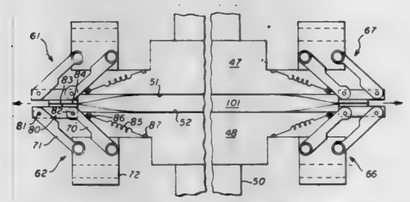
a driving roll means journalled on said frame below said platform and adapted to engage and drive said belts when said platform is at or approaching its lower position.

4,534,158
PACKAGING MACHINE
Robert B. McClosky, Hasbrook Heights, N.J., assignor to Wrapade Machine Company, Inc., Clifton, N.J.
Filed May 31, 1983, Ser. No. 499,793
Int. Cl.³ B65B *43/30*
U.S. Cl. 53—562 **20 Claims**



1. A packaging machine for forming pouches from a continuous web having confronting sections adapted to provide opposed walls of the formed pouches, said machine including cutting means for cutting discrete pouches from the continuous web; characterized in that positively driven feed means are provided for directing the continuous web material through the cutting means, said cutting means and feed means being adjustable in the machine-direction of travel of the web for setting the desired width of the pouches to be formed, drive means associated with the feed means and including elements movable with said feed means for automatically varying the speed of the feed means when the feed means is moved to thereby feed the desired length of continuous web through the cutting means between operating strokes of said cutting means to thereby control the width of the pouches severed from said web.

4,534,159
APPARATUS FOR FORMING, FILLING AND SEALING BAGS WITH FLUID CONTENTS
Robert C. Kelly, Houston, Tex., assignor to General Packaging Equipment Company, Houston, Tex.
Filed Nov. 12, 1982, Ser. No. 441,088
Int. Cl.³ B65B *9/08*
U.S. Cl. 53—552 **8 Claims**



1. Improved apparatus for forming, filling and sealing bags from a continuous supply of bagging material including a pair of sealing jaws transversely movable toward each other to engage said bagging material to form a transverse seal providing the top closure for a filled bag and a bottom closure for a succeeding bag, said improvement comprising stretch means attached to said sealing jaws, at opposite ends thereof, and engageable with opposign edges of said bagging material to provide opposing forces in directions perpendicular to the movement of said sealing jaws to flatten said bag and remove any wrinkles therefrom prior to said sealing by said sealing jaws, said stretch means comprising first and second pairs of stretch assemblies at each end of said pair of sealing jaws having engagement means thereon engageable with said bagging material, as said pair of sealing jaws move toward each other, so that a first edge of said bagging material is gripped between the engagement means of said first pair of stretch assemblies and a second and opposite edge of said bagging material is gripped between the engagement means of said second pair of stretch assemblies, said engagement means of said first and second pairs of stretch assemblies being forced outwardly in opposite directions perpendicular to said movement of said jaws to provide said opposing forces to said bagging material, each of said stretch assemblies comprising a pair of parallel finger members the first ends of which are pivotally attached to mounting means stationarily fixed relative to one of said pair of sealing jaws and the second ends of which are pivotally attached to said engagement means so as to allow each of said engagement means to move outwardly upon said gripping of said bagging materials between the engagement means of respective pairs of stretch assemblies.

4,534,160
METHOD AND APPARATUS FOR SPLICING YARNS
Rainer Lorenz, Nettetal-Breyll, Fed. Rep. of Germany, assignor to Palitex Project-Company GmbH, Krefeld, Fed. Rep. of Germany
Filed Nov. 17, 1983, Ser. No. 552,742
Claims priority, application Fed. Rep. of Germany, Nov. 24, 1982, 3243410
Int. Cl.³ B65H *69/06;* D01H *15/00;* D02G *3/22*
U.S. Cl. 57—22 **16 Claims**



1. A method of making a splice between ends of multi-ply yarns, comprising the steps of

(a) holding the mutually separated ply ends at the ends of the multi-ply yarns;

(b) shortening at least one ply end by a predetermined length at the end of each multi-ply yarn within a predetermined length of an end portion of the multi-ply yarn which has been freed from the multi-ply yarn twist, such that different lengths of shortening are associated with all the ply ends of the end of each multi-ply yarn;

(c) introducing a twist of predetermined degree and direction into each of the mutually separated ply ends, the direction of twist corresponding to the direction of twist of the original twist of the multi-ply yarn;

(d) bringing the two twisted ends of the multi-ply yarn together parallel to the longitudinal direction of the multi-ply yarn until each ply end of the end portion of one multi-ply yarn overlaps at least one ply end of the end portion of the other multi-ply yarn, the lengths of shortening of the ply ends being chosen such that the regions of overlap of the mutually associated ply ends are disposed in the longitudinal direction of the ply yarn without these regions of overlap themselves overlapping one another;

(e) at least temporarily holding a respective ply end of the end portion of one multi-ply yarn on an associated ply end of the end portion of the other multi-ply yarn in the region of overlap;

(f) commonly twisting the mutually associated ply ends with a predetermined degree of twist for the purpose of holding them together, the direction of each twist being opposite to the direction of twist of the original twist of the multi-ply yarn;

(g) commonly freeing the ply ends held against one another with respect to twisting, and introducing a twist in the same direction into the end portions of the multi-ply yarns;

(h) subsequently introducing the multi-ply yarn twist in the original direction of the multi-ply yarn twist; whereby

(i) the mutually associated ply ends are held against one another by these ply ends being twisted about one another and by such twist being maintained at least up to the termination of method step (h).

14. Apparatus for making a splice between ends of multi-ply yarns comprising two units which are relatively movable towards one another for receiving a respective one of the ends of two multi-ply yarns over a predetermined portion of the lengths thereof, each of the two units comprising:

(a) one or more first rotatable clamping devices for commonly or separately holding the outermost ply ends of the end of the multi-ply yarn and for introducing a multi-ply yarn twist or a ply twist;

(b) a second clamping device for holding the multi-ply yarn at a predetermined distance from the outermost end thereof;

(c) a third clamping device for holding the multi-ply yarn at a predetermined point between the first and the second clamping devices;

(d) fourth rotatable clamping devices disposed between the respective first clamping device and the third clamping device, the fourth clamping devices for the end of one multi-ply yarn being combinable with the first clamping devices disposed at the associated ply end of the end of the other multi-ply yarn;

(e) cutting means into which the ply ends can be introduced and which has a cutting tool for each ply end; and

(f) means for bringing together mutually associated ply ends of the ends of the two multi-ply yarns in overlapping fashion.

4,534,161

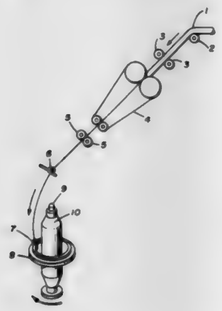
RING SPINNING PROCESSES FOR CONVERTING SLIVER TO CARPET YARN

Don E. Fisher, Pensacola, and Arnold E. Wilkie, Pensacola Beach, both of Fla., assignors to Monsanto Company, St. Louis, Mo.

Continuation of Ser. No. 460,213, Jan. 24, 1983, abandoned. This application Aug. 31, 1984, Ser. No. 645,988

Int. Cl.³ D01H 7/60

U.S. Cl. 57—125 **6 Claims**



1. In a process for continuously converting sliver to carpet yarn on a spinning frame wherein the sliver is drafted and twisted to form a yarn that is delivered by means of delivery rolls to a traveler around which the yarn makes a partial wrap before being wound onto a bobbin mounted on a spindle rotating at its maximum practical mechanical speed, the improvement comprising in combination (1) using a traveler having a weight ranging from 3.0 to 18.0 grains (0.2 to 1.2 grams) and a yarn contact section characterized in that the yarn contact edge thereof has a radius of curvature of less than 20 mils (0.5 mm), and (2) operating said delivery rolls at a delivery speed which is higher than possible when using a traveler having a yarn contact edge with a radius of curvature greater than 20 mils (0.5 mm).

4,534,162

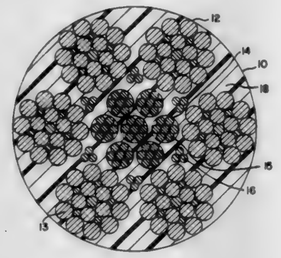
PLASTIC ENCAPSULATED WIRE ROPE

Peter P. Riggs, Isle of Man, Isle of Man; Harry L. Data, and Robert B. Hoganson, Jr., both of Kenosha, Wis., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Aug. 8, 1983, Ser. No. 521,068

Int. Cl.³ D07B 1/16, 7/12

U.S. Cl. 57—217 **20 Claims**



1. A wire rope comprising:
a central core including a plurality of wire strands,
a plurality of outer strands surrounding said core,
a plurality of spacer strands located in the interstices between said core and said outer strands, said spacer strands leaving passageways to permit flow of a coating material therethrough,
and a coating extending from substantially the outer diameter of the outer strands down to and into the central core.

4,534,163

ROPE OR CABLE AND METHOD OF MAKING SAME

Peter E. Schuerch, Windham, N.H., assignor to New England Ropes, Inc., New Bedford, Mass.

Filed Sep. 19, 1983, Ser. No. 533,154

Int. Cl.³ D07B 1/04, 7/14

U.S. Cl. 57—233 **28 Claims**



1. A method of making rope or cable comprising the steps of:
(a) aligning a multiplicity of filaments in substantially parallel relation to each other and to the rope axis;
(b) compacting said filaments under tension to form a core; and
(c) spirally wrapping said core with one or more tapes so as to completely cover said core while at the same time maintaining said core filaments substantially parallel to the rope axis.

17. A rope or cable comprising:
(a) a core having a multiplicity of compacted tensioned filaments aligned in substantially parallel relation to each other and to the rope axis, said filaments being independent of each other; and
(b) a jacket around said core comprising one or more tapes helically wound around said core so as to completely cover same.

4,534,164

TEXTURED YARN AND METHOD AND APPARATUS FOR PRODUCING THE SAME

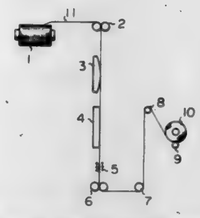
Kuroda Toshimasa, Takatsuki; Kimura Akio, Ashiya; Horiuchi Takumi; Sasaki Koki, both of Matsuyama, and Ikuta Terukuni, Takatsuki, all of Japan, assignors to Teijin Limited, Osaka, Japan

Filed Mar. 10, 1983, Ser. No. 473,950

Claims priority, application Japan, Mar. 16, 1982, 57-40304; Mar. 17, 1982, 57-40705; Mar. 18, 1982, 57-41737

Int. Cl.³ D02G 1/02; D01H 13/28

U.S. Cl. 57—290 **12 Claims**



1. A method for producing a textured yarn suitable for weaving a fabric having an improved width shrinkage, in which a partially oriented yarn of polyester filament is textured by false-twisting simultaneously with drawing by a draw-texturing machine which comprises a main heater, an additional heater and a false twister arranged in series between a feed roller and a delivery roller, said additional heater being maintained at a temperature lower than the temperature of the main heater and said false-twister being of a friction type having a yarn driving function, said method being characterized in that, said yarn is delivered through a yarn path from said main heater to said false twister through said additional heater, so that said yarn has a yarn temperature above 80° C. at the moment of introduction into said false twister.

4,534,165

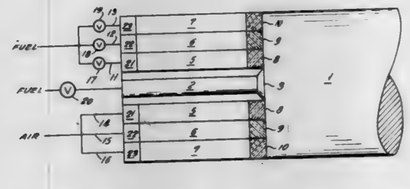
CATALYTIC COMBUSTION SYSTEM

L. Berkley Davis, Jr., Schenectady; Milton B. Hilt, Sloansville, and Colin Wilkes, Scotia, all of N.Y., assignors to General Electric Co., Schenectady, N.Y.

Continuation of Ser. No. 479,918, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 181,966, Aug. 28, 1980, abandoned. This application Oct. 7, 1983, Ser. No. 540,036

Int. Cl.³ F02C 3/16

U.S. Cl. 60—39.02 **3 Claims**



1. A method for operating a combustor of a gas turbine, said combustor being of the type having a catalytic combustion zone including a plurality of independent catalytically supported combustion sections, a single pilot zone downstream of said catalytic combustion zone, means for feeding a fuel to said single pilot zone, means for independently introducing fuel and air into said plurality of independent catalytically supported combustion sections and all of an effluent of said plurality of independent catalytically supported combustion sections entering said single pilot zone, comprising:
initially accelerating said gas turbine to a predetermined load condition using hot gases generated only in said single pilot zone by feeding said fuel to said single pilot zone and air into at least one of said plurality of independent catalytically supported combustion sections, said air passing downstream of said at least one of said plurality of independent catalytically supported combustion sections to be useable as combustion air with said fuel in said single pilot zone; and
further accelerating said gas turbine to a greater load condition by staging fuel to individual ones of said plurality of independent catalytically supported combustion sections to produce additional hot gases which pass downstream of said plurality of catalytically supported combustion sections, an excess air in said additional hot gases being effective to support combustion of said fuel fed to said single pilot zone and combustion in said single pilot zone being effective to clean up unburned portions of fuel entering said single pilot zone with said hot gases from said plurality of catalytically supported combustion sections; and
at least partially preheating a catalyst in said catalytically supported combustion sections toward an operating temperature during the step of initially accelerating said gas turbine.

4,534,166

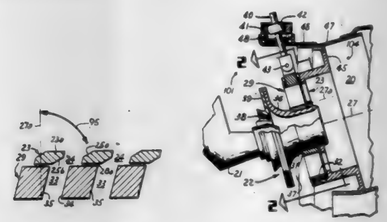
FLOW MODIFYING DEVICE

James S. Kelm, Milford; Edward C. Vickers, Cincinnati; Jesse J. Williams, Cincinnati, and Jack R. Taylor, Cincinnati, all of Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 192,677, Oct. 1, 1980, abandoned. This application Jun. 3, 1983, Ser. No. 500,651

Int. Cl.³ F02C 9/00

U.S. Cl. 60—39.23 **4 Claims**



1. In a register plate throttle which surrounds a fuel injection nozzle, the improvement comprising:
(a) means for providing a first, relatively low, swirl angle at a relatively high airflow regime;
(b) means for providing a second, relatively high swirl angle at a relatively low airflow regime; and
(c) means for terminating airflow in a third airflow regime.

4. A method of operating a gas turbine engine comprising the following steps:
(a) using a register plate swirler which surrounds at least one fuel nozzle in at least one combustor, providing a relatively high airflow therethrough at a relatively low swirl angle for
(i) providing a fuel-air mixture for combustion in the combustor having a fuel-air ratio which is less than stoichiometric and
(ii) providing a relatively reduced residence time of the fuel-air mixture in the combustor;
(b) using the register plate swirler, providing a relatively low airflow therethrough at a relatively high swirl angle for
(i) providing a fuel air mixture for combustion in the combustor having a fuel-air ratio which is greater than stoichiometric for less-than-peak NOx production,
(ii) providing a relatively increased residence time of the fuel-air mixture in the combustor; and
(c) using the register plate swirler, terminating airflow therethrough for providing a rich mixture to the combustor.

4,534,167

INLET COWL ATTACHMENT FOR JET ENGINE

Wan T. Chee, Bellevue, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01816, § 371 Date Dec. 27, 1982, § 102(e) Date Dec. 27, 1982, PCT Pub. No. WO84/02507, PCT Pub. Date Jul. 5, 1984

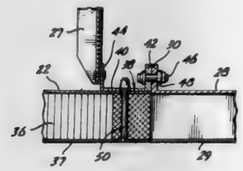
PCT Filed Dec. 27, 1982, Ser. No. 485,575

Int. Cl.³ F02C 7/20

U.S. Cl. 60—226.1 **7 Claims**

1. In a gas turbine engine surrounded by a cowl, said cowl having an inlet portion of generally annular shape and including an interior skin and also having an engine containment portion, a system for removably attaching said inlet portion to said engine containment portion includes:
an inlet-mounting flange extending from said engine containment portion;
an inlet-mounting ring of substantially U-shaped cross section having a web and first and second legs extending

orthogonally from said web, said first leg abutting said engine-mounting flange and being removably affixed thereto, said web overlying and being removably affixed to a first surface of the interior skin of said inlet portion so



as to hold said inlet portion and engine containment portion in immediate adjacency; and

sound-absorbing means affixed to a second surface of said interior skin in an area immediately adjacent said engine containment portion.

4,534,168

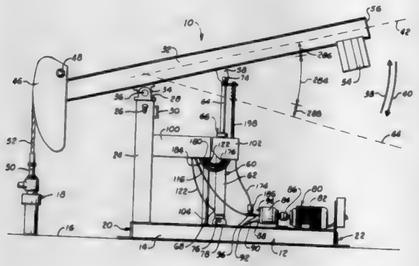
PUMP JACK

Newby O. Brantly, 210 W. Highview, Frederick, Okla. 73542

Filed Jun. 30, 1983, Ser. No. 509,294

Int. Cl.³ F04B *47/04*; F15B *13/042*

U.S. Cl. 60—369 **8 Claims**



1. A pump jack, comprising:

a pump jack base;

a walking beam pivotally mounted on the pump jack base for oscillation in a vertical arc between first and second end positions of the walking beam;

pumping means including a fluid reservoir for providing a source of pressurized hydraulic fluid at a substantially constant flow rate, the pressurized hydraulic fluid being supplied at a pressure port of the pumping means;

a first hydraulic actuating cylinder connected between the walking beam and the pump jack base for pivoting the walking beam in a first direction toward the first end position of the walking beam in response to pressurized hydraulic fluid received at a first fluid port of the first hydraulic actuating cylinder and for pivoting the walking beam in a second direction toward the second end position of the walking beam in response to pressurized hydraulic fluid received at a second fluid port of the first hydraulic actuating cylinder;

a first hydraulic valve having an input port fluidly connected to the pressure port of the pumping means, an exhaust port connected to the fluid reservoir, a first output port fluidly connected to the first fluid port of the first hydraulic actuating cylinder, and a second output port fluidly connected to the second fluid port of the first hydraulic actuating cylinder, the first hydraulic valve having an operating member movable to a first position to internally fluidly connect the input port of the first hydraulic valve to the first output port thereof and movable to a second position to internally fluidly connect the input port of the first hydraulic valve to the second output port thereof, wherein the first hydraulic valve is characterized as being of the type wherein the operating member thereof is disposable in a neutral position between said first and second positions of said operating member of the first hydraulic valve to block fluid flow through the first hydraulic valve and wherein the first hydraulic valve is further characterized as being of the type having means providing fluid proportioning characteristics at such times that the operating member of the first hydraulic valve is positioned between the neutral position and an end position thereof for transmitting pressurized hydraulic fluid from the input port of the first hydraulic valve to an output port thereof in proportion to the displacement of the operating member thereof from the neutral position of the operating member;

a second hydraulic actuating cylinder having a piston rod mechanically coupled to the operating member of the first hydraulic valve for moving the first hydraulic valve operating member to the first position thereof in response to pressurized hydraulic fluid received at a first fluid port of the second hydraulic actuating cylinder and for moving the first hydraulic valve operating member to the second position thereof in response to pressurized hydraulic fluid received at a second fluid port of the second hydraulic actuating cylinder;

a second hydraulic valve having an input port fluidly connected to the pressure port of the pumping means, a first output port fluidly connected to the first fluid port of the second hydraulic actuating cylinder, and a second output port fluidly connected to the second fluid port of the second hydraulic actuating cylinder, the second hydraulic valve having an operating member movable to a first position to internally connect the second hydraulic valve input port to the second hydraulic valve first output port and movable to a second position to internally connect the second hydraulic valve input port to the second hydraulic valve second output port; and

second hydraulic valve control means mechanically coupling the operating member of the second hydraulic valve to the walking beam for moving the second hydraulic valve operating member to the second position thereof during pivotation of the walking beam toward the first end position thereof and for moving the second hydraulic valve operating member to the first position thereof during pivotation of the walking beam toward the second end position thereof, the second hydraulic valve control means comprising:

a mounting plate disposed below a portion of the walking beam;

a sleeve mounted on the mounting plate for axial movement along a substantially vertical axis between upper and lower sleeve positions, said sleeve having an upper end facing the walking beam and a lower end facing away from the walking beam;

a control rod mechanically coupled to the walking beam and passing through the sleeve for substantially vertical reciprocation through said sleeve in coordination with the oscillation of the walking beam;

first sleeve engagement means mounted on the control rod above said sleeve for engaging the upper end of the sleeve and forcing the sleeve downwardly during one half cycle of the reciprocation of the control rod through the sleeve; and

second sleeve engagement means mounted on the control rod below said sleeve for engaging the lower end of the sleeve and forcing the sleeve upwardly during the other half cycle of the reciprocation of the control rod through the sleeve;

wherein the second hydraulic valve is mounted on the mounting plate and positioned thereon relative to said sleeve for movement of the operating member of the second hydraulic valve between said first and second positions thereof along a line parallel to the axis of the sleeve; and wherein said sleeve is connected to the operating member of the second hydraulic valve for shifting the second hydraulic valve operating member between said first and second positions thereof.

4,534,169

POWER TRANSMISSION SYSTEM

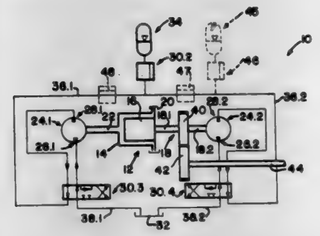
Michael S. Hunt, Edenvale, South Africa, assignor to South African Inventions Development Corp., Transvaal, South Africa

Filed Jun. 4, 1982, Ser. No. 385,190

Claims priority, application South Africa, Jun. 11, 1981, 81/3941; Apr. 1, 1982, 82/2259

Int. Cl.³ B60K *9/00*; F01B *21/00*

U.S. Cl. 60—414 **10 Claims**



1. A power transmission system comprising an electric motor for connection to an electric power supply, the motor comprising two relatively rotatable motor portions provided with a clutch whereby they are lockable relative to each other, each of which motor portions is rotatable relative to an anchorage or mounting for the motor, coaxially with the axis of rotation between the two motor portions, one of the motor portions being provided with a power output for the system, and the other being drivingly connected to at least one hydrostatic machine capable of acting as a pump or as a motor, and in liquid flow communication with at least one hydrostatic accumulator and a liquid source, the hydrostatic machine having a three-way valve in circuit therewith whereby the connections of the hydrostatic machine to the liquid source and accumulator can be reversed, and whereby it can be short-circuited and isolated simultaneously from said accumulator and source.

4,534,170

BRAKE-PRESSURE GENERATOR SYSTEM

Guy Meynier, Aulnay sur Bois, France, assignor to Societe Anonyme D. B. A., Paris, France

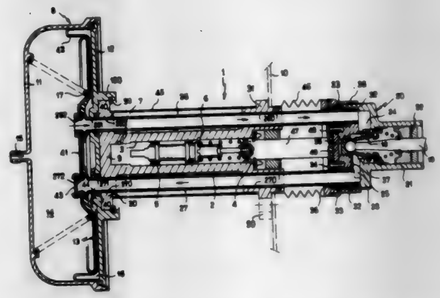
Filed Dec. 12, 1983, Ser. No. 560,684

Claims priority, application France, Dec. 23, 1982, 82 21685

Int. Cl.³ B60T *13/00*

U.S. Cl. 60—547.1 **8 Claims**

1. A brake-pressure generator system, comprising a master cylinder including a master cylinder body containing at least one piston for at least one brake circuit, a power-assistance servo-motor associated with the master cylinder and supported on a first axial end of the master cylinder and which incorporates a housing divided internally into two chambers by a movable wall structure forming a piston, and distribution valve means for controlling the servo-motor and actuable by a controlled push member, the distribution valve means comprising a valve body connected to said movable wall structure, wherein said valve means is arranged on an axial end of the master cylinder opposite said first axial end and said valve body is axially displacable and connected to said movable wall structure by at least one pair of rigid elongated conduits which respecitvely make the valve means communicate with each of



the two chambers of the servo-motor, and each conduit having one end fastened to said movable wall structure.

4,534,171

HYDRAULIC DUAL-CIRCUIT TANDEM MAIN BRAKE CYLINDER

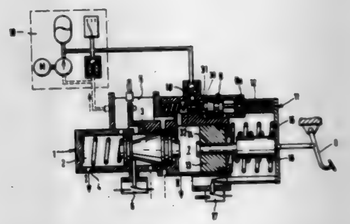
Heinz Leiber, Oberriexingen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 548,735

Claims priority, application Fed. Rep. of Germany, Jan. 14, 1983, 3301042

Int. Cl.³ B60T *13/14*

U.S. Cl. 60—551 **12 Claims**



1. A hydraulic dual-circuit brake system including first and second main brake cylinders in tandem, comprising at least one brake piston for a closed brake circuit, a brake fluid control valve which is actuatable via a brake pedal-actuated body part in combination with a travel simulator spring which acts upon said body part and said control valve, said control valve controls a control pressure fluid flow from a control pressure source into a pressure chamber which is adjoined by a control face of at least one brake piston, and an auxiliary piston adjoining the pressure chamber, said auxiliary piston including a tappet which passes through and is displaceably supported in the auxiliary piston and which is actuated by movement of said pedal and said body part, a progressive spring fastened between one side of the auxiliary piston and said brake pedal-actuated body part remote from the pressure chamber and coaxial with the tappet passing through said auxiliary piston, characterized in that said progressive spring is directed against said auxiliary piston and has a highly progressive spring characteristic and as a result effects a highly progressive pedal characteristic.

4,534,172

MASTER CYLINDER ASSEMBLY FOR A VEHICLE HYDRAULIC BRAKING SYSTEM

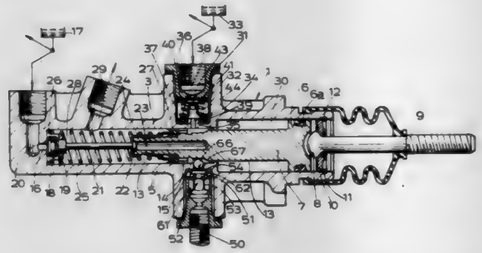
Anthony G. Price, Birmingham, and Graham J. Gornall, West Midlands, both of England, assignors to Lucas Industries public limited company, Birmingham, England

Filed Oct. 24, 1983, Ser. No. 544,955

Claims priority, application United Kingdom, Nov. 2, 1982, 8231340

Int. Cl.³ B60T *11/20, 15/38, 15/46*

U.S. Cl. 60—578 6 Claims



1. A master cylinder assembly for a vehicle hydraulic braking system comprising first and second separate master cylinders for applying respective brakes, a transfer passage connecting said master cylinders and through which fluid can be transferred between said master cylinders when both said master cylinders are operated simultaneously in order to compensate for differential wear of friction linings of said brakes, and transfer valve means for cutting-off communication between said master cylinders when one of said master cylinders is operated on its own, wherein each said master cylinder comprises a housing having a bore of stepped outline, a pedal-operated piston of complementary stepped outline working in said bore, said piston having an inner end of smaller area carrying a first seal and an outer end of greater area carrying a second seal, means defining a pressure space in said bore in advance of said inner end of said piston, means defining a quick-fill chamber in said bore between said inner and outer ends of said piston, a reservoir for fluid, a normally-open recuperation valve providing communication between said reservoir for fluid and said pressure space at least when the piston is in a retracted position, and a pressure-limiting valve assembly between said quick-fill chamber and said reservoir or a second reservoir, said pressure-limiting valve assembly being closed, at least when said piston is in the retracted position, a one-way valve incorporated in said pressure-limiting valve assembly and movable between an open position to provide communication between said respective reservoir and said quick-fill chamber through said pressure-limiting valve assembly when the piston is in the retracted position, and a closed position in response to movement of said piston in a brake-applying direction to isolate the said respective reservoir from said quick-fill chamber, with said first seal preventing fluid communication from said pressure space to said quick-fill chamber when said piston is moved in said brake-applying direction, said pressure limiting valve assembly being adapted to open at a threshold value pressure when said piston is moved in said brake-applying direction and following closure of said recuperation valve and the transfer of fluid from said quick-fill chamber to said pressure space to take up the braking clearances, with further movement of said piston in the same direction pressurizing fluid in said pressure space to apply said brake, and wherein the said two quick-fill chambers are connected through said transfer passage so that fluid can be transferred between said two quick-fill chambers when said master cylinders are operated simultaneously at least until said threshold value is attained.

4,534,173

MEANS FOR SUPPLYING A SECONDARY AIR IN AN INTERNAL COMBUSTION ENGINE WHICH IS PROVIDED WITH A TURBO CHARGER

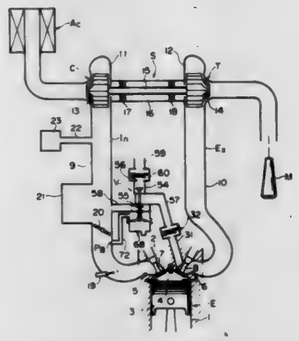
Hiroaki Tsukamoto, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Japan

Filed Oct. 19, 1982, Ser. No. 435,182

Claims priority, application Japan, Oct. 19, 1981, 56-166920; Nov. 2, 1981, 56-176073; Feb. 15, 1982, 57-22451

Int. Cl.³ F02B *37/00*

U.S. Cl. 60—606 4 Claims



1. An internal combustion engine comprising: a turbocharger having a compressor for compressing sucked-in air flowing through an intake system in communication with a combustion chamber; means for controlling secondary air for purifying the exhaust gas, comprising a secondary air supply passage having one end in communication with an exhaust system, said exhaust system in communication with said combustion chamber, said secondary air supply passage having a first passage opened at an intake passage portion between said turbocharger and a throttle valve, and a second passage in communication with the atmosphere, said secondary air supply passage having the other end in communication with the atmosphere and the intake passage portion through a switch means adapted to selectively switch between said first and second passages.

4,534,174

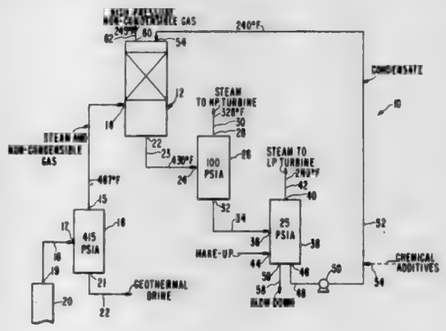
GEOTHERMAL REBOILER APPARATUS AND METHOD

Leon Awerbuch, San Francisco, and Victor C. Van der Mast, Lafayette, both of Calif., assignors to Bechtel International Corporation, San Francisco, Calif.

Filed Nov. 25, 1983, Ser. No. 555,308

Int. Cl.³ F03G *7/00*

U.S. Cl. 60—641.5 28 Claims



1. Apparatus for handling geothermal brine capable of being flashed to form a vapor fraction containing steam and a non-condensible gas comprising: a direct contact reboiler; means coupled with the reboiler for directing the vapor fraction of flashed geothermal brine into the reboiler; means coupled with the reboiler for directing a condensate into the reboiler and into counter current flow relationship with the vapor fraction, whereby the condensate is heated by the vapor fraction and the steam is condensed and separated from the non-condensible gas; and means for coupling the reboiler to a work producing apparatus to permit the heated condensate from the reboiler to be directed toward said work producing apparatus for actuating the latter.

4,534,175

METHOD AND APPARATUS FOR THE ABSORPTION OF A GAS IN A LIQUID AND THEIR USE IN ENERGY CONVERSION CYCLES

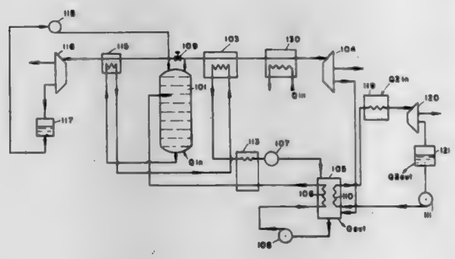
Abraham Kogan, Haifa, and Uri Moore, Ramat-Hasharon, both of Israel, assignors to Gason Energy Engineering Ltd., Tel-Aviv, Israel

Filed Mar. 7, 1983, Ser. No. 473,133

Claims priority, application Israel, Mar. 11, 1982, 65223; Dec. 1, 1982, 67389

Int. Cl.³ F01K *25/06*

U.S. Cl. 60—649 23 Claims



1. A method of effecting gradual absorption of a first fluid (herinafter "the gas") having a relatively low boiling point in a second fluid (hereinafter "the solvent") having a considerably higher boiling point than the gas, under conditions as close as possible to thermodynamically reversible conditions, with maximal recovery of the released heat of absorption, so as to obtain a high enthalpy solution or mixture of solution and gas at relatively high temperature and pressure; comprising the steps of:

(a) passing a flow of the gas through a plurality of discrete stages from a first terminal stage to a second terminal stage and, in counter-current thereto, passing a flow of the solvent or a weak solution of the gas in the solvent through said stages from said second terminal stage to said first terminal stage, so as to establish in each of said stages an intimate contact between the gas and the solvent or said weak solution;

(b) withdrawing a strong solution of the gas in the solvent from said first terminal stage and recirculating it through some or all of the stages counter-currently to the flow of the weak solution and co-currently with the flow of said gas via a continuous conduit comprising heat exchange tubes disposed in said stages;

(c) dispersing the solvent or the weak solution of the gas in the solvent entering each stage by liquid spraying means suitably disposed with respect to said heat exchange tubes so as to form a film-like layer of said solvent or said weak solution on the outer surface of said heat exchange tubes, thereby to extract heat from some or all of said stages by indirect heat exchange through the walls of said tubes between said recirculated strong solution flowing therein and the liquid in said film-like layer;

(d) extracting additional amounts of heat from some or all of said stages by indirect heat exchange between the fluids in those stages and a coolant fluid or fluids, the temperature of said coolant fluid or fluids being thus raised; and

(e) withdrawing said recirculated strong solution from said second terminal stage as a high-enthalpy solution or mixture of solution and gas.

4,534,176

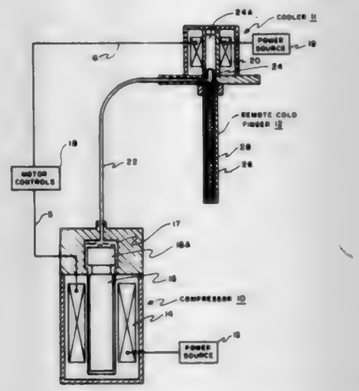
LINEAR RESONANCE CRYOGENIC COOLER

Stuart B. Horn; Richard A. Wright, both of Fairfax, and Howard L. Dunmire, Stafford, all of Va., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 23, 1984, Ser. No. 593,948

Int. Cl.³ F25B *9/00*

U.S. Cl. 62—6 4 Claims

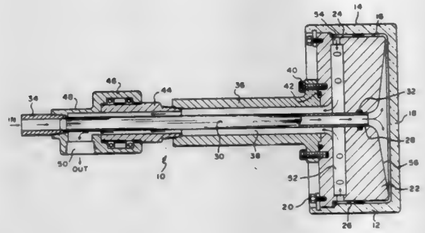


1. A linear resonance cryogenic cooler means for producing optimized cooler expander waveforms in a closed cycle system cooler having reciprocating displacer-expander cooling, said means comprising:

a linear motor drive means comprised of a compressor linear drive motor and a cooler linear drive motor for driving a compressor near its resonance frequency for producing alternating pressure waves in a light cooling gas enclosed within said closed cycle system cooler and for simultaneously driving the displacer of a regenerator-displacer in a cold finger of said cooler in reciprocal motion wherein the reciprocal motion of said displacer is phase delayed from said alternating pressure waves by about 90° through repetitive cycles in which both compressor alternating pressure waves and the displacer reciprocal motion waves have essentially the same wave shape wherein said compressor linear drive motor has a compressor piston attached thereto in which the piston head is in direct contact with said gas and said cooler linear drive motor has a shaft attached thereto which is hard connected to said displacer; and

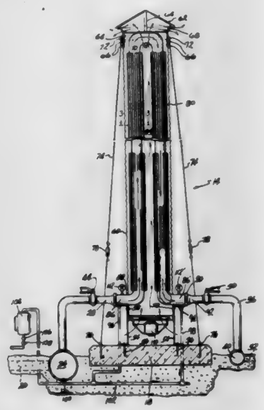
a waveform generator control means for selectively controlling said linear motor drive means to provide optimum wave shapes for optimum cooling wherein said compressor linear drive motor and said cooler linear drive motor respectively produce said alternating pressure waves and displacer reciprocal motion waves which have four relatively equal portions during about 90° of each repetitive cycle which is defined as a top dead center, a linear acceleration, a bottom dead center, and a linear acceleration back to the top dead center wherein said waveform generator control means varies the time of said four relatively equal portions and to control the acceleration rate to provide optimum cooling.

4,534,177
ULTRAHIGH VELOCITY WATER-COOLED COPPER SPINNER
Patrick J. Wooding, Moorestown, N.J., assignor to Wooding, Indian Mills, N.J.
Division of Ser. No. 311,043, Oct. 13, 1981, Pat. No. 4,468,931.
This application Feb. 24, 1984, Ser. No. 582,400
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—64 **3 Claims**



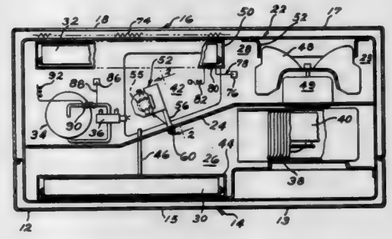
1. A method for effectively cooling a spinner having a substantially cylindrically shaped outer surface upon which molten material impinges and a substantially cylindrically shaped inner surface lying behind said outer surface and in thermal contact therewith comprising the step of directing liquid coolant across said inner surface at an ultrahigh velocity of at least 10 feet per second to sweep away steam generated upon said inner surface.

4,534,178
METHOD AND APPARATUS FOR REMOVING CONDENSATE AND OIL PARTICLES FROM A STREAM OF COMPRESSED AIR USED IN THE PRODUCTION OF SNOW
Joseph C. Tropeano; Joseph T. Tropeano, and Thomas F. Tropeano, all of 12 Revere St., Lexington, Mass. 02173
Division of Ser. No. 457,259, Jan. 12, 1983, Pat. No. 4,467,614.
This application Apr. 11, 1984, Ser. No. 599,058
Int. Cl.³ B01D *9/04*; **F28C** *1/00*
U.S. Cl. 62—124 **1 Claim**



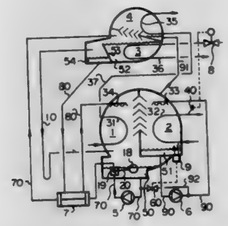
1. In an installation for making snow wherein a stream of compressed air and a stream of pressurized water are fed from a compressor station and a pumping station via separate lines to the nozzles of snow-making equipment where said compressed air and pressurized water are mixed to produce a stream of snow particles, a method for removing condensate and oil particles from said stream of compressed air comprising:
providing a stream of compressed air having oil particles and a condensate therein;
cooling said stream of compressed air so as to crystallize said condensate and allow said oil particles to adhere thereto;
throttling said stream of compressed air so as to form a holding zone;
heating said crystallized condensate and said oil particles in said holding zone so as to liquefy said crystallized condensate; and
separating out said liquid and oil particles from said stream of compressed air.

4,534,179
AIR CONDITIONING APPARATUS
George E. Stocking, and Walter J. Pohl, both of Louisville, Ky., assignors to General Electric Company, Louisville, Ky.
Filed Oct. 4, 1984, Ser. No. 657,612
Int. Cl.³ F25D *21/02*
U.S. Cl. 62—128 **2 Claims**



1. A self-contained refrigeration heat pump air conditioning unit operable in a heating and cooling cycle for conditioning the air of an enclosure comprising:
a chassis including a base member and a barrier dividing said chassis into an indoor compartment and an outdoor compartment;
indoor and outdoor heat exchangers mounted respectively in said indoor and outdoor compartments;
an indoor air moving means for recirculating enclosure air through said indoor compartment;
an outdoor air moving means for circulating air through said outdoor compartment;
a compressor mounted in said outdoor compartment;
means for selectively connecting said compressor to said heat exchangers whereby said outdoor heat exchanger functions as an evaporator during operation of the unit on the heating cycle and said indoor heat exchanger functions as an evaporator during the cooling cycle;
a condensate collection sump in said outdoor compartment formed in said base member;
means for directing condensate formed on said indoor and outdoor heat exchangers into said sump;
condensate disposal means arranged in said outdoor compartment including a housing, passageway means connected to said housing at one end and having an outlet at the other end positioned in an opening in said barrier so as to communicate with the indoor compartment, condensate lifting means arranged on said housing operable in the heating cycle for lifting condensate from said sump and directing it through said passageway in said indoor compartment into the path of air being circulated by said indoor fan where it is vaporized and directed through the relatively warm indoor heat exchanger functioning as a condenser in said heating cycle; and
control means rendering said condensate lifting means operable in said heating cycle including circuit means producing a signal when condensate present in said sump is not being transferred through said passageway to said indoor compartment.

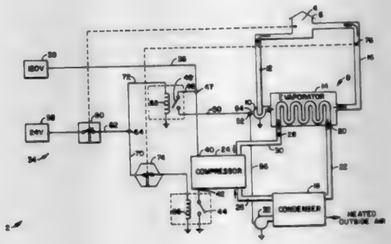
4,534,180
ABSORPTION REFRIGERATION SYSTEM WITH SOLUTION FLOW CONTROL
Takashi Yasuda; Naoyuki Inoue, and Syouji Tanaka, all of Kanagawa, Japan, assignors to Ebara Corporation, Tokyo, Japan
Filed Dec. 23, 1983, Ser. No. 565,195
Claims priority, application Japan, Dec. 27, 1982, 57-226656
Int. Cl.³ F25B *15/00*
U.S. Cl. 62—141 **21 Claims**



1. An absorption refrigeration system including a refrigerant evaporator, an absorber associated with said evaporator, a generator, a condenser associated with said generator, weak solution passage means for passing a weak solution to said generator from said absorber, strong solution passage means for passing a strong solution to said absorber from said generator, refrigerant passage means for circulating refrigerant through said evaporator, refrigerant return passage means for passing refrigerant from said condenser back to said evaporator, heating medium passage means for passing heating medium to said generator, heating control means for controlling said heating medium, a solution heat exchanger disposed in said strong solution passage means for preheating said weak solution passing therethrough, and solution flow control means for controlling the flow of said weak solution passing through said weak solution passage means, wherein said solution flow control means comprises sensing means for sensing the level of solution in said absorber indicative of the concentration of the solution in substantially inverse proportional relationship, and valve means disposed in said weak solution passage means through which said weak solution passes and responsive to said sensing means for varying the flow of said weak solution in such a manner that the flow of said weak solution decreases as the level of the solution in the absorber increases, which indicates a decreased concentration of the solution.

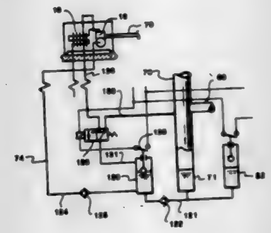
4,534,181
COOLING SYSTEM
Claude D. Brown, Grass Valley, Calif., assignor to BBC Industries, Inc., Grass Valley, Calif.
Filed Jan. 31, 1984, Ser. No. 575,961
Int. Cl.³ F25D *17/00*
U.S. Cl. 62—180 **3 Claims**

1. A system for cooling an enclosed region comprising:
a vapor compression refrigeration loop including:
a compressor, and expansion valve, an evaporator and a condenser fluidly coupled in a closed loop;
a cool fluid propelling means, having an inlet and an outlet, for propelling a fluid along a cool fluid path past said evaporator to cool the fluid; and
a cool fluid supply conduit connecting an exit end of the cool fluid path to the region;
first and second higher voltage lines electrically connecting a higher voltage source to said cool fluid propelling means and to said compressor respectively;
first and second normally open relay switches connected along said first and second higher voltage lines;
a thermostat adapted to respond to the temperature in the region and assume a cold demand state according to the temperature in the region, said thermostat including an input terminal connected to a lower voltage source and an output terminal connected in parallel along first and second lower voltage lines to first and second relay actuators, said first and second relay actuators operably connected to said first and second relay switches;
a first relay switch actuator connected to said thermostat along the first lower voltage line, for closing said first relay switch so to actuate said cool fluid propelling means when said thermostat is in the cold demand state;
second relay switch actuator connected to said thermostat along the second lower voltage line, for closing said second relay switch so to activate said compressor when said thermostat is in the cold demand state;



a temperature sensor arranged and adapted to sense the temperature of the fluid passing through said cool fluid supply conduit; and
duct switch means, operably coupled to the temperature sensor, for interrupting a portion of said lower voltage line, to deenergize said second relay switch actuator thereby disconnecting said compressor from the higher voltage source, when the temperature sensed by said temperature sensor is below a first temperature and to reconnect the interrupted portion of said second lower voltage line when the temperature sensed by said temperature sensor is above a second temperature, whereby said compressor is cycled on and off while said thermostat is in said cold demand state.

4,534,182
OIL COLLECTION/RECIRCULATION FOR VAPOR-COMPRESSION REFRIGERATION SYSTEM
Samuel G. Toub, 14114 Dallas Pkwy./Suite 470, Dallas, Tex. 75240; James L. Gilliland, Jr., and Homer W. Holder, both of 3614 Security, Garland, Tex. 75042
Filed May 7, 1982, Ser. No. 375,721
Int. Cl.³ F25B *31/00*
U.S. Cl. 62—193 **12 Claims**



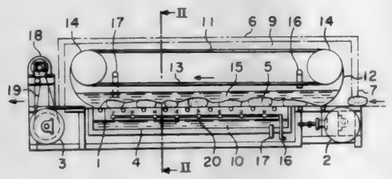
1. A vapor-compression air conditioning system for a multistory building comprising:
(a) a plurality of evaporator units vertically separated from each other;
(b) condensor means;

(c) oil lubricated compressor means disposed at a vertical elevation above said plurality of evaporator units;
(d) conduit means interconnecting said plurality of evaporator units, condenser means and compressor means for separating lubricant oil from vapor refrigerant, said conduit means comprising:
(1) a straight-line and generally vertical vapor refrigerant return conduit for conducting only said vapor refrigerant from said plurality of evaporator units to said compressor means, said vapor refrigerant return conduit having no trap means therein;
(2) reservoir means disposed at a vertical elevation below said vapor refrigerant return conduit; and
(3) an oil return line for conducting said lubricant oil from said reservoir means to said compressor means; and
(f) a fluid switch interconnecting said reservoir means at a position above the level of oil therein with a high pressure output of said compressor means and with said vapor refrigerant return conduit for switching communication of said reservoir means between said high pressure output of said compressor means and said vapor refrigerant return conduit.

4,534,183
CONTINUOUS FREEZING APPARATUS

Masahide Hashimoto; Yoshitaka Kurisu; Shigeo Zuiki, and Yoshio Sasaki, all of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 25, 1984, Ser. No. 654,026
Claims priority, application Japan, Sep. 27, 1983, 58-181689; Sep. 27, 1983, 58-181690; Sep. 27, 1983, 58-181691; Apr. 4, 1984, 59-50390[U]
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—374 **7 Claims**

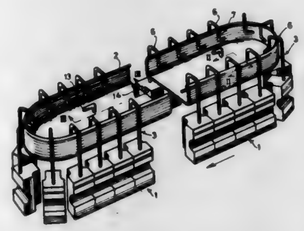


1. A continuous freezing apparatus comprising:
a belt conveyor for carrying products to be frozen along a path;
a flexible sheet conveyor arranged above and parallel to said belt conveyor, said flexible sheet conveyor being formed of a continuous flexible sheet having upper and lower paths and a constant width, and means for filling said flexible sheet with cold brine, whereby a portion of said flexible sheet contacts said products;
means for moving said flexible sheet conveyor and said belt conveyor; and
means for guiding said flexible sheet conveyor, said means for guiding having a first position wherein a width of said flexible sheet conveyor substantially equals said width of said flexible sheet, said means for guiding having a second position wherein said width of said flexible sheet conveyor is less than said width of said flexible sheet, said second position being along a portion of said lower run where said flexible sheet contacts said products to slacken said flexible sheet, whereby brine can fill said slackened flexible sheet.

4,534,184
DEVICE FOR COOLING MOLDS

Arnoldus W. J. Leloux, Dedemsvaart, Netherlands, assignor to Wavin B.V., Zwolle, Netherlands

Division of Ser. No. 386,279, Jun. 8, 1982, Pat. No. 4,439,990. This application Apr. 2, 1984, Ser. No. 596,031
Claims priority, application Netherlands, Jun. 11, 1981, 8102823
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—376 **7 Claims**

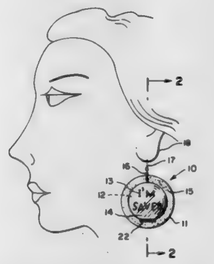


1. A device for cooling plastic molds having vertical intake and discharge fluid tubes in communication with a coolant cavity in each mold, the molds being arranged for horizontal travel in a closed loop, the device comprising a static coolant reservoir positioned above the molds, and the fluid intake tube of each mold being shaped as a siphon tube and being positioned such that the entrance end thereof passes over the edge of the static reservoir and in communication with the coolant in said static reservoir, a static coolant collector positioned below the molds and in communication with the mold fluid discharge tubes, so that by siphon action coolant from the static coolant reservoir passes through the intake tubes, the molds and through the discharge tubes and is discharged in said static coolant collector.

4,534,185
EAR FRAME

James B. Berry, and George Spector, both c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, New York, N.Y. 10007

Filed Jun. 10, 1983, Ser. No. 503,282
Int. Cl.³ A44C *7/00, 15/00*
U.S. Cl. 63—1 R **1 Claim**

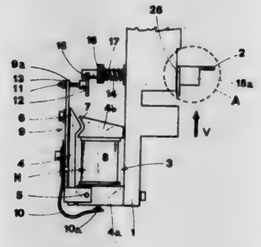


1. An ear pendant assembly comprising a plate, a flexible pad secured to the rear of said plate, said pad having means for storing various display cards, a moveable window closure mounted to the front of said plate forming a display cavity for one of said cards, said storing means including a rear opening in said pad smaller than each card providing access to a storage spacer larger than each card, said opening having a flexible flange of material manually distortable for allowing passage of said cards and able to recover its shape to retain said cards in said space, said assembly being in further combination with a chain adapted to be secured to a person's ear.

4,534,186
ELECTROMECHANICAL DEVICE FOR SELECTING THE METAL STRAPS THAT CARRY INTO OPERATION THE NEEDLES OF AN AUTOMATIC STRAIGHT BAR KNITTING MACHINE

Benito Stoppazzini, Sala Bolognese, Italy, assignor to E.M.M. s.r.l. Emiliana Macchine Maglierie, Bologna, Italy

Filed Mar. 19, 1984, Ser. No. 590,737
Int. Cl.³ D04B *7/00, 15/66*
U.S. Cl. 66—75.2 **3 Claims**



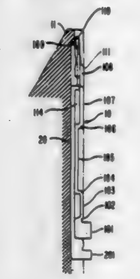
1. Electromechanical device for selecting the metal straps that carry into operation the needles of an automatic straight bar knitting machine, each of the said metal straps being provided with at least two butts, one of which positioned in the lower part and the other centrally, the latter being destined, when intercepted by selection means, to cause the metal strap concerned to undergo a movement with the consequential positioning of the lower butt in the path of a fixed cam provided in the carriage of the machine, the interception of which against the said lower butt causes a further movement, in the same direction as before, of the said metal strap and the carrying into operation of the relevant needle; the said device being characterized by the fact that it comprises: an electromagnet locked to a plate provided in the said carriage, the armature of which is pivotally connected to the magnetic core; first elastic means exerting on the said armature an effect in contrast with the magnetic force applied at length thereon; a blade locked to the said armature and projecting there from; a cylindrical element locked perpendicularly to the part of the said blade that protrudes from the armature, and provided at the bottom end with a plate; a rod that passes freely across a hole drilled in the said plate, provided on one side of the latter with means for selecting a corresponding metal strap, as well as with a transverse locator member that defines when abutting with the said plate, the non-operative position of the said selection means, and on the opposite side of the plate with respect to the said selection means, with a transverse slit destined to accept one part of the edge of the said plate; and second elastic means that act on the said rod in contrast with the action exerted on the latter by the said plate in consequence of the excitation of the coil of the electromagnet.

4,534,187
SLIDING LATCH NEEDLES

Masatoshi Sawazaki, and Shozo Yorisue, both of Kobe, Japan, assignors to Precision Fukuhara Works, Ltd., Kobe, Japan

Filed Sep. 10, 1984, Ser. No. 648,931
Claims priority, application Japan, Oct. 6, 1983, 58-187529
Int. Cl.³ D04B *35/04*
U.S. Cl. 66—120 **6 Claims**

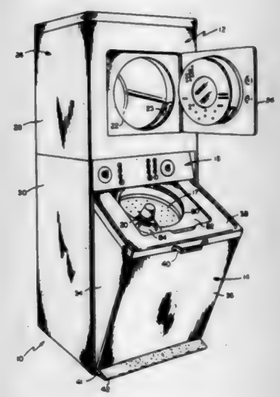
1. A sliding latch needle assembly comprising cooperative hook and latch sections, the hook section having an elongated shank member with a hook at one end thereof and an operating butt extending from its other end, and the latch section also having an elongated shank member with a latch at one end thereof and an operating butt extending from its other end, the butts extending in like direction from the shank members corresponding thereto with the hook butts disposed between the latch butts and the latch.



4,534,188
TILT WASHER WITH AUTOMATIC LID

Robert M. Fey, Rocky Face, Ga., assignor to Speed Queen Company, Ripon, Wis.

Filed May 31, 1984, Ser. No. 615,859
Int. Cl.³ D06F *29/02*
U.S. Cl. 68—3 R **15 Claims**

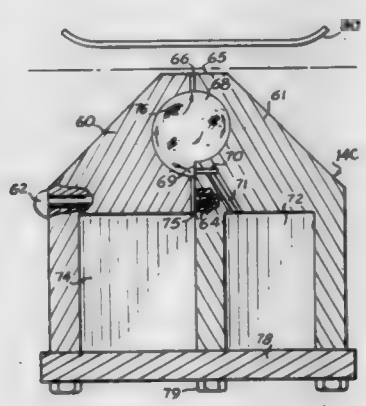


1. In combination:
a clothes washer having a cabinet top with an access opening, a cabinet front, and cabinet sides;
a base pivotally supporting said washer wherein said washer can be tilted from an upright position used for washing to a forward tilted position used for loading and unloading clothes through said opening;
a lid seated in slidable engagement on said cabinet top in said upright washing position to cover said opening; and
means connected to said lid for limiting forward movement of said lid wherein, when said washer is tilted forward causing said cabinet top to move forward, said cabinet top slides underneath said lid thereby using the movement of said washer to automatically remove said lid from said opening.

4,534,189
APPARATUS FOR APPLYING CHEMICALS TO TEXTILES

Albert F. Clifford, Rte. 4, Box 1015, LaFayette, Ga. 30728

Filed Jan. 5, 1984, Ser. No. 568,571
Int. Cl.[3] D06B 5/08
U.S. Cl. 68—5 D
4 Claims

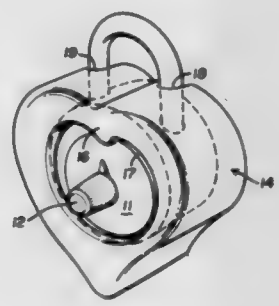


1. An applicator for applying a liquid chemical to textile goods, wherein said textile goods move across said applicator while said applicator discharges said liquid chemical, said applicator including a body, a nozzle face at one end of said body for receiving textile goods thereagainst, a mixing chamber defined within said body, a slot defined in said body for connecting said mixing chamber to said nozzle face, and means for supplying a metered quantity of said liquid chemical and a quantity of gas under pressure to said mixing chamber, said body further defining a first cavity and a second cavity therein, said second cavity constituting said means for supplying a metered quantity of said liquid chemical, said first cavity constituting said means for supplying a quantity of gas under pressure, first passage means for connecting said first cavity with said mixing chamber and second passage means for connecting said second cavity with said mixing chamber, said body including a first part and a second part, said mixing chamber being generally cylindrical and including a first portion of said mixing chamber defined in said first part and having a first radius, a second portion of said mixing chamber defined in said second part and having a second radius, said second radius being larger than said first radius for defining a step in said mixing chamber, said first cavity being in said first part and said second cavity being in said second part, said first passage means opening into said mixing chamber on said step so that said gas under pressure is directed generally tangentially of said mixing chamber.

4,534,190
PADLOCK COVER

Judith A. Stanich, 1500 S. Ocean Dr., Apt. #1103, Pompano Beach, Fla. 33072

Filed Nov. 25, 1983, Ser. No. 554,903
Int. Cl.[3] E05B 67/33
U.S. Cl. 70—54
6 Claims



1. For attachment to a padlock having a generally cylindrical body and an inverted U-shaped shackle having opposite legs extending up from said body, a cover of deformable and resilient material having:

an annular side wall having opposite ends and having a generally cylindrical inside surface between said ends which is substantially complementary to said body of the padlock to snugly engage the latter;

said cover being open at one end of said annular side wall;

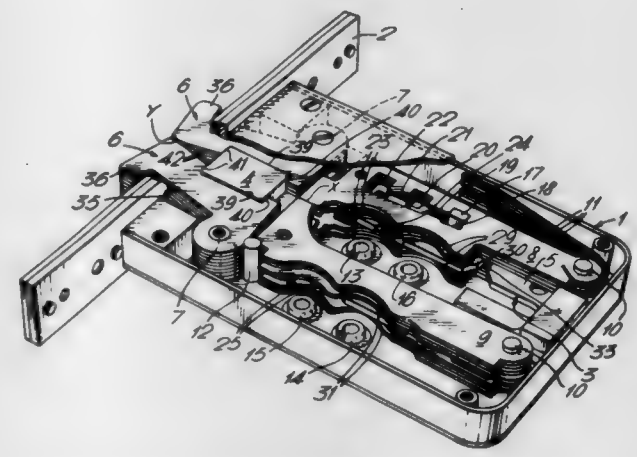
said side wall of the cover having a pair of circumferentially spaced parallel slots therein which are open at said one end of the cover and extend longitudinally of the side wall for slidably receiving the opposite legs of the shackle of the padlock when the body of the padlock is inserted from said one end inside said annular side wall of the cover;

and said cover having an opening at the opposite end of said annular side wall which is smaller than the body of the padlock and radially inwardly extending lip means at said last-mentioned opening for engagement with a corresponding end face of the padlock body.

4,534,191
SECURITY LOCK FOR SLIDING DOORS

John Rogers, Staffordshire, and Malcolm J. White, Staffordshire, both of England, Chuck & Son's Lock and Safe Co., London, England

Filed Jun. 7, 1983, Ser. No. 501,939
Claims priority, application United Kingdom, Jun. 9, 1982, 8216726
Int. Cl.[3] E05B 63/14
U.S. Cl. 70—116
8 Claims



1. A lock comprising: a casing having two opposite faces corresponding to opposite directions of approach to the lock when fitted to a closure; a pair of hook bolts pivoted within said casing and having hook portions extending out of said casing arranged to be pivoted in mutually opposite senses between unlocking and locking position; a reciprocable slide within said casing arranged to be moved between first and second positions in response to corresponding turning movement of a correct key; the slide being arranged to be thrust against respective first portions of the bolts during movement from its first to its second said position thereby to pivot the bolts from their unlocking to their locking positions, a portion of the slide lying between the bolts when the slide is in its second said position thereby to prevent pivotal movement of the bolts from their locking to their unlocking positions, and the slide being arranged to engage respective second portions of the bolts during movement from its second to its first said position thereby to pivot the bolts from their locking to their unlocking positions; and a key-recognition mechanism comprising a plurality of movable detainers arranged to be set in predetermined relative positions when engaged by a correct key, the detainers serving to block the aforesaid movement of the slide except when they are set in their said predetermined relative positions, said detainers being provided as two sets of pivoted levers within said casing, a first set of said levers being provided with pockets and gates for cooperation with an abut-

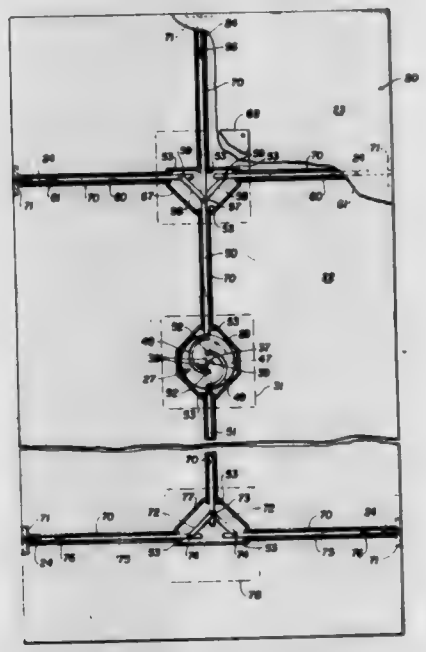
ment on the slide so as normally to block the aforesaid movement of the slide, and the second set of said levers being linked to the first set such that pivotal movement of the second set is transmitted into pivotal movement of the first set; the first set of levers being engageable by a correct key when inserted through one of said faces of the casing to pivot those levers into predetermined relative positions in which they permit the movement of the slide; and the second set of levers being engageable by the same correct key when inserted through the opposite face of the casing to pivot those levers such as to pivot the first set of levers into the same predetermined relative positions.

4,534,192

SECURITY DOOR

Harry F. Harshbarger, Robertsdale; John L. Kurz, McConnellsburg, and Patrick J. Young, Defiance, all of Pa., assignors to JGR Enterprises, Inc., Fort Littleton, Pa.

Filed Jan. 19, 1983, Ser. No. 459,236
Int. Cl.³ E05B *63/14*
U.S. Cl. 70—118 **14 Claims**



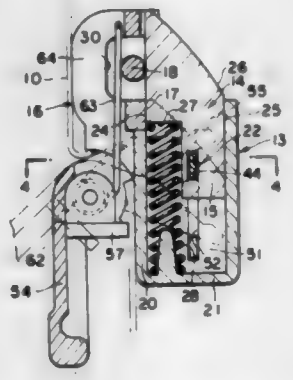
1. In a security door having a plurality of locking bolts adapted to be extended beyond edges of the door into keeper openings of a door frame and to be retracted to non-locking positions, a drive linkage for the bolt on the door operable to extend and retract all of the bolts in unison, and an operating assembly for the drive linkage, said assembly comprising a support plate fixed to the door and having an annular portion, a rotational spindle assembly bodily supported on the annular portion for rotation around the annular portion, a camming element secured to the spindle assembly to turn therewith and having connections with parts of said linkage to operate the same during rotation of the camming element to operate said bolts, a rotational handle fixed to the spindle assembly adjacent to one side of the door and operable to rotate the spindle assembly in opposite directions sufficiently to move said bolts to and from their extended locking and retracted positions, a key operator fixed on the other side of the door and having a turnable cylinder and projecting tab substantially coaxial with the spindle assembly, a rotational element journaled on the spindle assembly coaxially and being drivingly coupled to said tab, and means forming a rotational lost motion connection between said rotational element coupled with the tab and said spindle assembly including a cross-slot in said rotational element, and a radial drive element carried by the spindle assembly extending into the cross-slot, whereby the cylinder and tab when turned by a key through 360° in either direction can cause lost motion rotation of said rotational element for 180° prior to imparting 180° rotation to the spindle assembly and camming element to operate said bolts.

4,534,193

LOCK MECHANISM FOR THE GLOVEBOX DOOR OF AN AUTOMOBILE

Yukihito Takemura, and Tomohide Niimi, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 22, 1982, Ser. No. 452,135
Int. Cl.³ B60R *25/02*
U.S. Cl. 70—218 **5 Claims**



1. A lock mechanism for use in the glovebox door of an automobile, comprising:

a pull-handle having a pawl;

a lock-bar biased in a locked position through a single spring and adapted to slide within a guide of a frame structure or main body mounted on the glovebox door with pivoting motion of said pull-handle

cylinder type safety lock means including a rotor having a crank at one end thereof and a casing provided in said main body, said rotor being rotatably mounted within said casing, said guide and said lock bar having elongated through apertures extending in a first direction, and passing through in a second direction, respectively; and

a locking plate disposed crosswise to and held in a biased position by said lock bar and having one end portion thereof engaged with said crank and having the other end portion extending through each of said through apertures and outwardly on the side opposite to that where said cylinder type safety lock means is located, said other end portion of said locking plate being engaged by said pawl of said pull-handle when said cylinder type safety lock means are in the unlocked position, and being released from engagement with said pawl of said pull-handle when said cylinder type safety lock means are in the locked position.

4,534,194

ELECTRONIC LOCK SYSTEM

Kemal Aydin, Little Falls, N.J., assignor to Kadex, Incorporated, New York, N.Y.

Division of Ser. No. 244,316, Mar. 16, 1981, which is a division of Ser. No. 75,957, Sep. 17, 1979, which is a division of Ser. No. 849,163, Nov. 17, 1979, Pat. No. 4,117,657, which is a continuation of Ser. No. 677,105, Apr. 16, 1976, abandoned. This application Oct. 21, 1983, Ser. No. 544,288
Int. Cl.³ E05B *49/02*
U.S. Cl. 70—278 **5 Claims**

1. A locking system for a door comprising,

a lock having a bolt and an operating mechanism therefor adapted to be mounted in said door,

a key having code stored thereon including a key code,

a key reader in said door and including sensing means adapted to receive said key and read said code,

control means in said door coupled between said sensing means and said operating mechanism and adapted to enable or disable said operating mechanism,

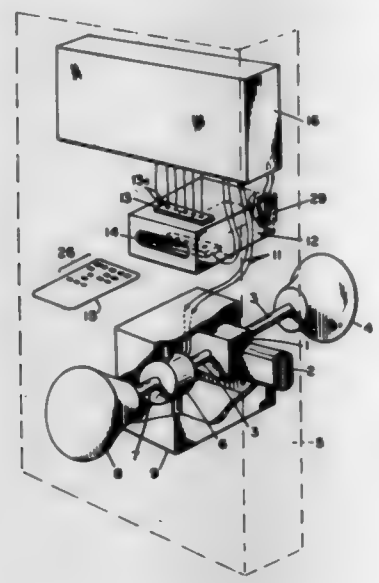
said control means including a code register, a microprocessor, a read-only memory, and a read/write memory,

said microprocessor including a data bus and an address bus

with said read-only memory being coupled with said data bus and said address bus and storing a control program for said microprocessor,

said code register being coupled with said sensing means and with said data bus and being adapted to store the key code read by the sensing means from said key,

said read/write memory being coupled with said address bus



and said data bus and having a first code stored therein at a predetermined memory location,

said microprocessor being operative under program control in response to the insertion of a key into said reader to compare said first code stored at said memory location with the key code stored in said code register and to enable said operating mechanism if said key code and said first code are the same.

4,534,195

MECHANICAL LOCK HAVING A VARIABLE KEY

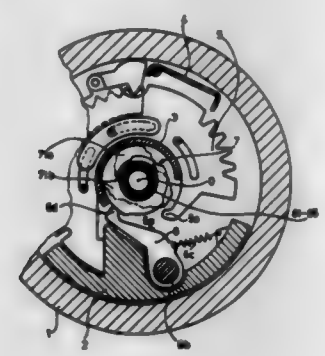
Kurt Ehrat, Steinmaur, Switzerland, assignor to GRETAG Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 8, 1983, Ser. No. 464,940

Claims priority, application Switzerland, Feb. 19, 1982, 1048/82

Int. Cl.³ E05B *37/00*

U.S. Cl. 70—316 **13 Claims**



1. A mechanical lock comprising a key having variable key information elements to be scanned during rotation of the key around the axis of the lock, each of the key information elements being in the form of a cam plate coaxially located relative to the axis of the lock, said cam plate discretely adjustable to individual angular positions, said cam plates each having a surface portion and a plurality of stepped portions of different radii for determining the multiple variation of key information per information element in the individual angular positions.

4,534,196

METHOD FOR MANUFACTURING A MOLD

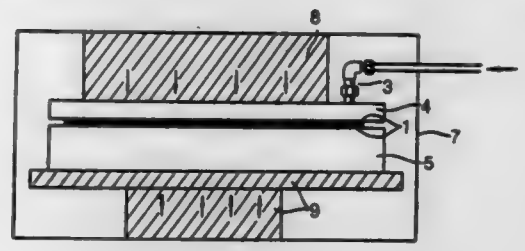
Shinichiro Kiyoto, and Chikara Fujiwara, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 521,315

Claims priority, application Japan, Oct. 7, 1982, 57-175319

Int. Cl.³ B21D *22/10*

U.S. Cl. 72—61 **2 Claims**



1. A method for manufacturing hollow mold to be used when titanium alloy powder is filled in the mold and the powder is hot pressed under static water pressure, characterized in that two sheets of titanium plates are overlapped, their edges are welded together to seal the plates together with a gas supplying pipe being welded to one part of the peripheral edges of said plate assembly, the plate assembly is placed between two molds of the desired configuration and pressure applied, heat is applied to the titanium plate assembly to the shaping temperature and gas supplied through the pipe to exert pressure between the plates, thus casing the titanium plates to expand in conformity to the shape of the mold by super-plastic shaping to form a titanium alloy mold.

4,534,197

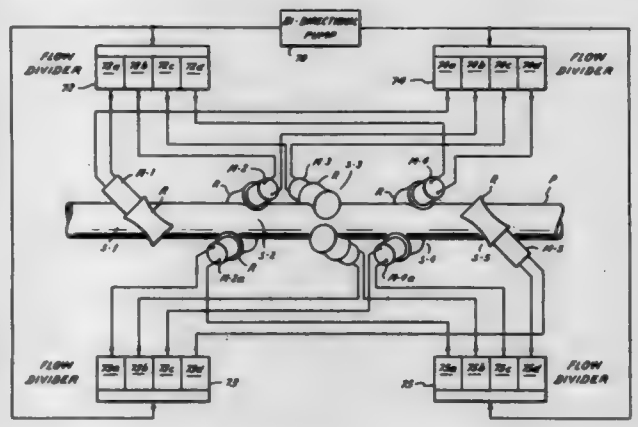
METHOD AND APPARATUS FOR STRAIGHTENING PIPE

Brown J. Woolley, P.O. Box 1249, Kilgore, Tex. 75662

Continuation of Ser. No. 360,940, Mar. 23, 1982, abandoned, which is a continuation of Ser. No. 79,548, Sep. 27, 1979, abandoned. This application May 29, 1984, Ser. No. 615,038

Int. Cl.³ B21D *3/04*

U.S. Cl. 72—98 **13 Claims**



13. An apparatus for straightening an elongated element of a circular cross section in a continuous operation as the element is moving through the apparatus in a horizontal direction, said apparatus comprising:

a main frame structure,

at least a pair of horizontally spaced inner roll stands within the frame structure on one side of the element, each inner roll stand having a roll for contacting the element as the element moves through the apparatus in a horizontal direction,

means mounting each inner roll stand on said one side of the element for independent individual movement in a hori-

zontal direction parallel to the longitudinal axis of the element,

a central roll stand within the frame structure located on the opposed side of the element and positioned longitudinally along the element between the pair of inner roll stands on said one side of the element, said central roll stand having a roll for engaging the element,

a pair of outer roll stands within the frame structure on the opposed side of the element and on opposite sides of the center roll stand and horizontally outwardly of said inner roll stands, each outer roll stand having a roll for engaging the element to be straightened,

means mounting each outer roll stand for independent movement in a horizontal direction parallel to the longitudinal axis of said element,

means mounting the roll stands on one of said sides of the element for individual vertical movement whereby the rolls thereof may engage the element to exert a pressure tranversely on the element,

independent actuating means operatively connected to the mounting means for each of the roll stands to move an associated roll stand in its respective direction of movement independently of the other roll stands,

the operation of the actuating means for each inner roll stand moving such inner roll stand in a horizontal direction relative to the central roll stand to change the effective lever arm formed between the associated rolls of such inner roll stand and said central roll stand to control the bending force being applied to the element by said associated rolls,

the operation of the actuating means for each outer roll stand moving such outer roll stand in a horizontal direction relative to the nearest inner roll stand to change the effective lever arm formed between the associated rolls of such outer roll stand and said nearest inner roll stand to control the bending force being applied to the element by such associated rolls,

means rotating at least some of the rolls of the roll stands whereby said rolls impart movement to the element to move the element through the apparatus, and

individual control means operatively connected to each roll stand forming part of the associated actuating means for each such roll stand to control actuation of the associated roll of each such stand, said control means and associated actuating means for each roll stand being operable independently of such means for other roll stands while an element is being straightened and moving through the apparatus in a horizontal direction whereby the operation of the apparatus is continuous while movements of selected roll stands with respect to each other and relative to the element being straightened are occurring.

4,534,198

COOLING HOT-ROLLED STEEL STRIP

Oskar Noé; Andreas Noé, both of Mühlheim, and Rolf Noé, Berlin-Charlottenburg, all of Fed. Rep. of Germany, assignors to BWG Bergwerk - und Walzwerk-Maschinenbau GmbH, Duisburg, Fed. Rep. of Germany

Filed Sep. 14, 1983, Ser. No. 532,267

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1982, 3234162

Int. Cl.³ B21B *45/02*

U.S. Cl. 72—201 **7 Claims**

1. In combination with a hot-rolling line having a succession of roll stands through which passes a strip workpiece in a horizontal transport direction, a strip-cooling apparatus comprising:

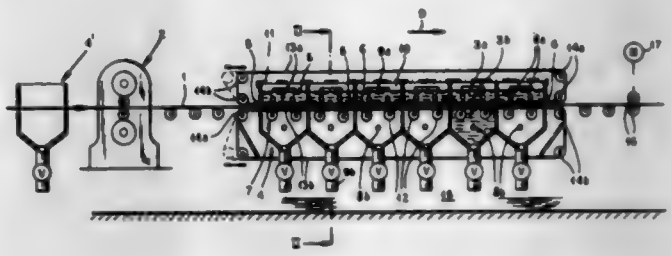
at least one vessel downstream of the roll stands in the direction and aligned in the direction therewith, the vessel being formed with an upstream inlet and a downstream outlet;

a bath of a liquid coolant filling the vessel to a level above the inlet and outlet;

a lower endless belt having an upper stretch extending through the vessel immediately below and engaging the lower surface of said workpiece and supporting same;

an upper endless belt having a lower stretch extending through the vessel immediately above and engagable with the upper surface of the workpiece, said upper and lower endless belts being positioned below the level of the coolant;

means for advancing one of the stretches of at least one of



the belts in the transport direction at the same speed as the workpiece;

means for drawing the workpiece from the roll stands into the inlet, through the vessel between the belt stretches, and out of the outlet thereof, whereby the workpiece is wholly immersed in and cooled by the liquid coolant within the vessel; and

pump means for feeding fresh coolant into the vessel and for withdrawing hot coolant therefrom.

4,534,199

METHOD AND APPARATUS FOR PRODUCED STEPPED TUBES

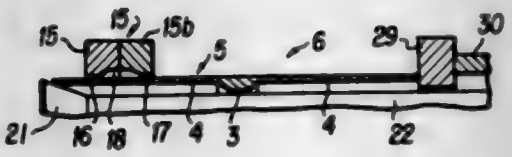
Kazuhide Takaishi; Toshiki Kadonaga; Masamitsu Tamura; Shigeharu Nakamura; Mitsuru Mizoguchi, all of Shimonoseki; Yoshinobu Hirota, Yamaguchi, and Yukinobu Yamazaki, Shimonoseki, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Sep. 14, 1983, Ser. No. 532,070

Claims priority, application Japan, Sep. 16, 1982, 57-163021

Int. Cl.³ B21C *37/20, 37/15, 1/24*

U.S. Cl. 72—276 **6 Claims**



1. A method of producing a tube with a circumferential stepped wall portion from a mother tube with a stepped wall portion on the inner periphery thereof utilizing a die cavity; a split die separable into first and second halves in a longitudinal direction; a plug member extending into said die cavity and a carriage; wherein said method comprises:

preparing a straight mother tube so as to have a stepped wall portion of a smaller inside diameter on the inner periphery thereof at a predetermined position in the longitudinal direction of said tube between first and second opposite straight portions of a larger inside diameter;

inserting said mother tube in a clearance between said split die separable into said first and second halves in a longitudinal direction at a median point of said die cavity and having a first and second bearing portions at opposite ends thereof, respectively, and said plug member extending through said die cavity;

gripping a mouth portion of said mother tube by said carriage while positioning said plug member at said first die bearing portion on a side of said carriage;

moving said carraige in a longitudinal direction of said mother tube until said stepped wall portion on the inner periphery of said mother tube aligns with said die cavity,

thereby expanding and stretching said first straight portion;

moving said plug member up to said second die bearing portion to expand and stretch the inner stepped wall portion into and along said die cavity, thereby forming a reversed stepped wall portion on the outer periphery of said mother tube;

releasing said first and second halves of said split die to permit the first die half located on a side of said carraige to move in a longitudinal direction of said tube; and

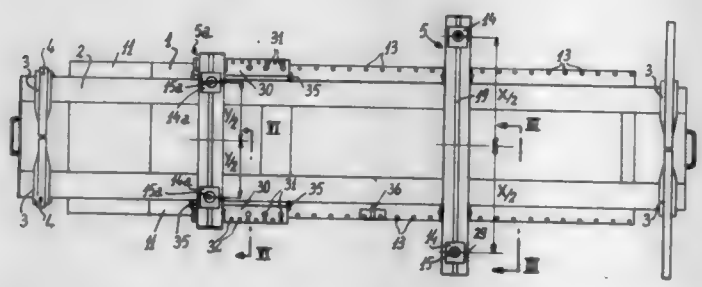
moving said carriage again in said longitudinal direction to expand and stretch the second straight portion of said tube, thereby forming a tube with a circumferential stepped wall portion.

4,534,200

APPARATUS FOR MOUNTING AN AUTOMOBILE BODY ON A CHECKING FRAME

Germain Celette, Vienne, France, assignor to Celette S.A., Vienne, France

Filed Apr. 6, 1984, Ser. No. 597,537
Claims priority, application France, Apr. 6, 1983, 83 05578
Int. Cl.³ B21D *1/12*
U.S. Cl. 72—305 **15 Claims**



1. Apparatus for mounting a damaged vehicle body on a checking frame having longitudinal members provided with internally-threaded modular holes, wherein said apparatus comprises in combination:

a first cross-member carried by two vertical end-plates rigidly fixed to two mounting-plates which can be fixed in the holes of the longitudinal members of the checking frame;

two sole-plates to be fixed on said longitudinal members in the longitudinal direction;

a second cross-member also carried by vertical end-plates rigidly fixed to two mounting-plates which can be fixed in adjustable positions on the sole-plates, said sole-plates being provided in the direction of their length with holes having a smaller modular spacing than the holes of the longitudinal members of the checking frame;

four vehicle body supports slidably mounted on said cross-members and capable of receiving detachable positioning elements which are specific to each type of vehicle body;

an arrangement such that the two cross-members are raised to a sufficient height to permit positioning of the horizontal frame of a measuring device beneath said cross-members so that said measuring device can thus rest on the longitudinal members of the checking frame.

4,534,201

UNDERCUT PUNCH TO CONTROL IRONING

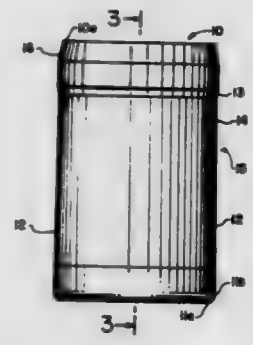
John LaRosa, Carpentersville, Ill., and David C. Panipinto, Ontario, N.Y., assignors to American Can Company, Greenwich, Conn.

Filed Dec. 29, 1982, Ser. No. 454,420
Int. Cl.³ B21D *22/21*
U.S. Cl. 72—348 **11 Claims**

7. A drawing and ironing punch having a hollow inside and circular cross-section with an outside wall adapted to selectively iron as the stroke of said punch forces a thin sheet of material through an ironing die and simultaneously during a part of the punch stroke into contact with an axially aligned bottom profiling tool comprising:

a first diameter of punch cross-section sufficient to produce ironing of said material between said die and said punch during initial punch stroke;

a second diameter of said punch cross-section located axially along in the direction opposite of the initial punch forming stroke and being of an amount such that ironing does not occur,



a transition ramp between said first and second diameters being axially located to first remove the ironing load during initial application of bottom profiling, and

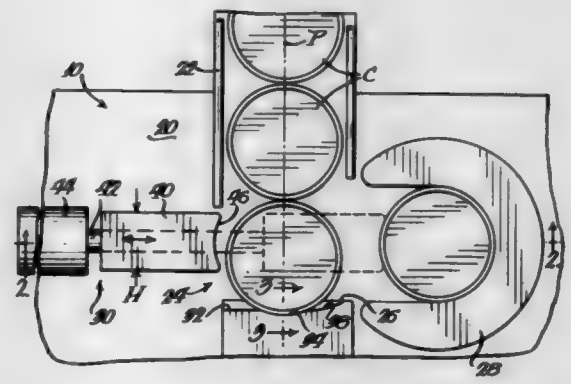
a third diameter of punch cross-section substantially the same as said first diameter and located further axially along in the direction opposite punch stroke for resuming ironing of said side wall near the end of the application of bottom profiling.

4,534,202

CUP FEEDING MECHANISM

Walter W. Snyder, Joshua, Tex., assignor to National Can Corporation, Chicago, Ill.

Continuation of Ser. No. 180,325, Aug. 22, 1980, abandoned.
This application Aug. 25, 1983, Ser. No. 518,917
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 **10 Claims**

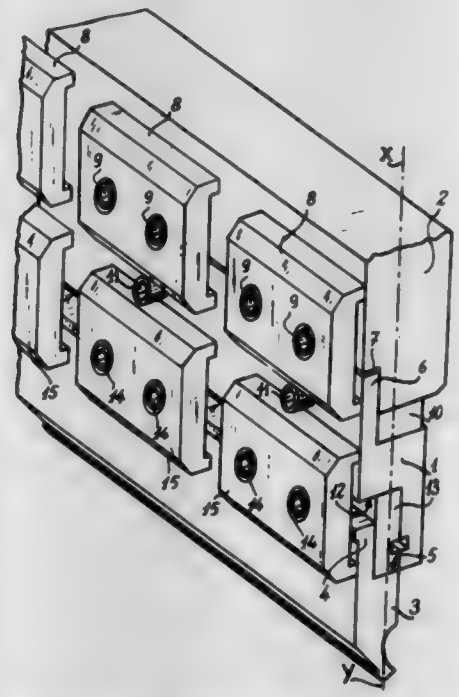


1. A cup feeding machine for feeding cups to a drawing and ironing apparatus including a fixed frame having a reciprocal punch and a yoke having an arcuate opening having a diameter substantially equal to the diameter of the cup, said mechanism comprising a cup feeding means for supplying cups along a path to a stabilizing position, said stabilizing position being defined by a fixed planar surface having a cup receiving recess therein, said recess defining a stabilized position for said cups at the end of said path and having an inclined ramp portion merging with said fixed planar surface for guiding said cups to said yoke, and transfer means adapted to engage said cups while in said stabilizing position and move said cups from said stabilizing position along said inclined ramp portion into a final cup position in said yoke prior to drawing and ironing.

4,534,203
ADAPTER DEVICE FOR MOUNTING PUNCHES ON A BENDING PRESS

Pierre Cros, Vaucresson, France, assignor to Promecam Sisson-Lehmann, Saint Denis, France

Filed Jan. 24, 1984, Ser. No. 573,501
Claims priority, application France, Feb. 15, 1983, 83 02386
Int. Cl.³ B21D *37/04*
U.S. Cl. 72—481 4 Claims



1. An adapter for mounting punches having attachment heels on the top die-shoe of a bending press, wherein said adapter is constituted by the following combination:

a body in the form of bar means which can be attached to the top die-shoe of the corresponding press and the bottom portion of which is provided on one of its vertical faces with a recess of greater depth in a horizontal direction than an attachment heel of a punch, irrespective to the type of said heel;

a bearing spacer having the same height as the recess of the adapter body and capable of being placed against either vertical side of the heel of the punch to be fixed in position in the recess;

said spacer and the heel of the corresponding punch being fixed in position in the recess by cramps which are held by screws against the adapter body and are located on the same side in a horizontal direction as the opening of the recess provided in said body;

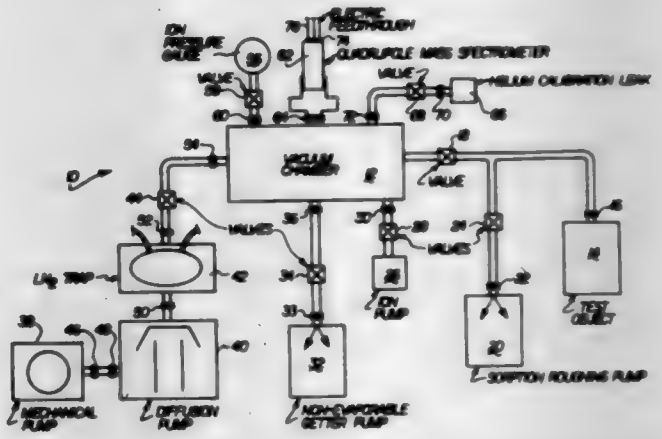
said screws passing through said spacer, and said spacer being slidable on the screws in a direction lengthwise of the screws until the screws are tightened to fix the spacer in position.

4,534,204
CALIBRATION METHOD FOR ULTRA SENSITIVE NOBLE GAS LEAK DETECTOR

Lyle E. Bergquist, Lakewood, Colo., assignor to Martin Marietta Corporation, Bethesda, Md.

Division of Ser. No. 499,825, Jun. 1, 1983, Pat. No. 4,492,110. This application Jul. 30, 1984, Ser. No. 635,633
Int. Cl.³ G01M *3/00;* B01D *59/44*
U.S. Cl. 73—1 G 2 Claims

1. In a process of calibrating an ultrasensitive noble gas leak detector having a vacuum chamber and a gas detector, the improvement comprising providing as a calibrating source an americium 241 alpha source, accumulating helium molecules from the americium source in an enclosed volume for a specified period of time, permitting said helium molecules to enter

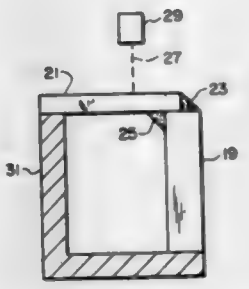


said vacuum chamber, and obtaining a gas detection measurement to calibrate the detector for the sensitivity of the system.

4,534,205
METHOD OF SHOCK TESTING ALUMINUM ALLOY WELDED JOINTS

René J. Van Caneghem, Elkton, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jun. 15, 1984, Ser. No. 620,789
Int. Cl.³ G01N *3/30*
U.S. Cl. 73—12 5 Claims



1. A method of shock testing the welded joints of aluminum alloy armor plate wherein the components of said welded joints may be of diverse thickness and different alloys, comprising the steps of; determining with a standard plate proofing projectile at 0 degrees obliquity the critical velocity of each of said diverse thicknesses of said armor plates of each of said different alloys, said critical velocity being defined as that velocity below which either no cracks or cracks less than 12 inches long can be expected and above which longer cracks or catastrophic failure can be expected, then testing said welded joints by separately impacting each of the said components joined by said joint in the vicinity of said joint with the said standard plate proofing projectile at 0 degree obliquity at a striking velocity less than said critical velocity.

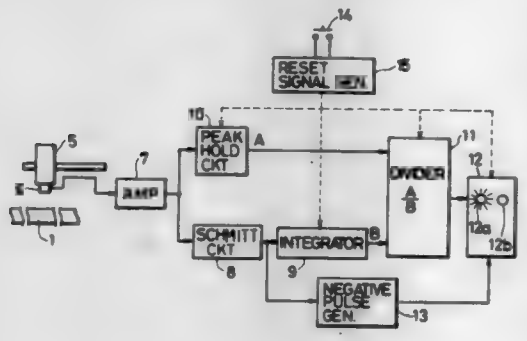
4,534,206
STRIKE DIAGNOSIS APPARATUS

Mataichiro Kiso; Akemi Futakawa, and Tokio Fukunaga, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

PCT No. PCT/JP82/00133, § 371 Date Dec. 7, 1982, § 102(e) Date Dec. 7, 1982, PCT Pub. No. WO82/03686, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 20, 1982, Ser. No. 451,201
Claims priority, application Japan, Apr. 20, 1981, 56-60743; Feb. 13, 1982, 57-23102
Int. Cl.³ G01N *3/30*
U.S. Cl. 73—12 12 Claims

1. A strike diagnosis apparatus comprising means for detecting a striking force produced by a strike applied to an object to

be striked and for generating a strike signal representing said striking force, and means for judging the good or bad condition of said object on the basis of the strike signal, wherein said judging means is composed of a peak value holding circuit for



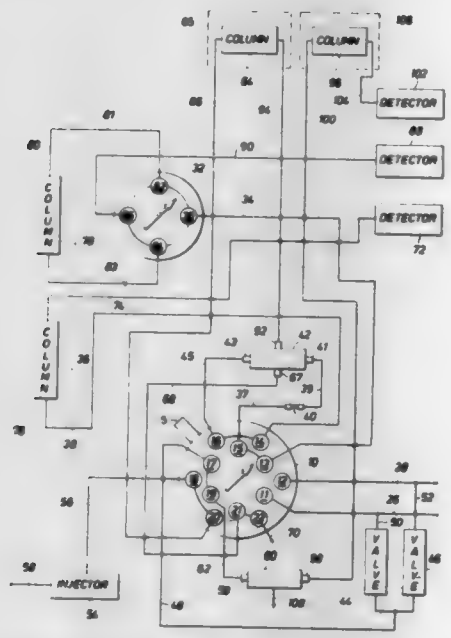
holding a peak value of said strike signal, signal width detecting means for detecting a signal width of said strike signal in the axis of time, and a divider for obtaining the ratio of said peak value and said signal width.

4,534,207

REFORMER PROCESS ANALYZER

Julius J. Szakasits, and Robert E. Robinson, both of Houston, Tex., assignors to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 499,122, May 31, 1983, abandoned. This application Jan. 15, 1985, Ser. No. 691,727
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **30 Claims**



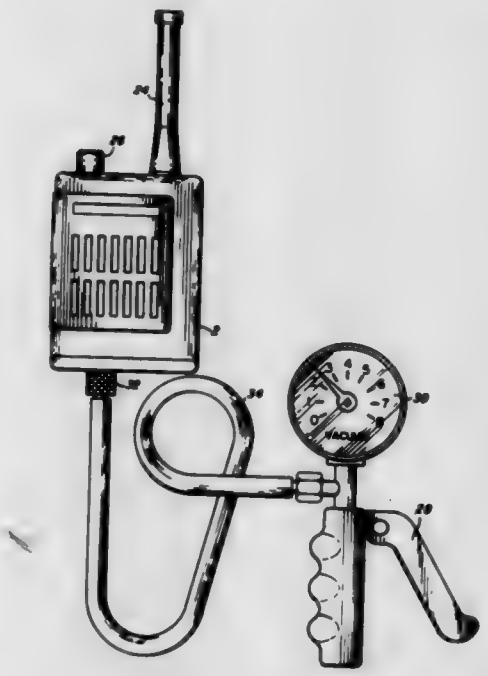
1. A method for analyzing a hydrocarbon sample for paraffins, naphthenes and aromatics, comprising:
separating said aromatics of said sample from said paraffins and naphthenes of said sample;
separating and detecting said paraffins and naphthenes by carbon number;
separating and detecting individual saturated components of said sample; and
separating and detecting individual components of said aromatics.

4,534,208

METHOD AND APPARATUS FOR TESTING A SEALED CONTAINER

Bruce J. Macin, Lauderhill, and Mark S. Bresin, Coral Springs, both of Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 9, 1983, Ser. No. 550,265
Int. Cl.³ G01M *3/26*
U.S. Cl. 73—49.3 **9 Claims**



1. A method of non-destructively testing the integrity of an entire sealed container having a test port including a fixed sealed membrane which is pervious to gas and impervious to liquid, comprising the steps of:
non-destructively creating a pressure differential between the gas on the container side of said fixed membrane and the gas on the other side of said fixed membrane;
monitoring the rate of pressure equalization to determine the integrity of said fixed membrane;
allowing said pressure differential to equalize through said fixed membrane;
monitoring said equalized pressure to detect whether or not said equalized pressure changes.

4,534,209

ATMOSPHERIC CONSISTOMETER

Howard E. Sanders, 49 S. 85th East Ave., Tulsa, Okla. 74112

Filed Sep. 15, 1983, Ser. No. 532,363
Int. Cl.³ G01N *11/14*
U.S. Cl. 73—59 **3 Claims**

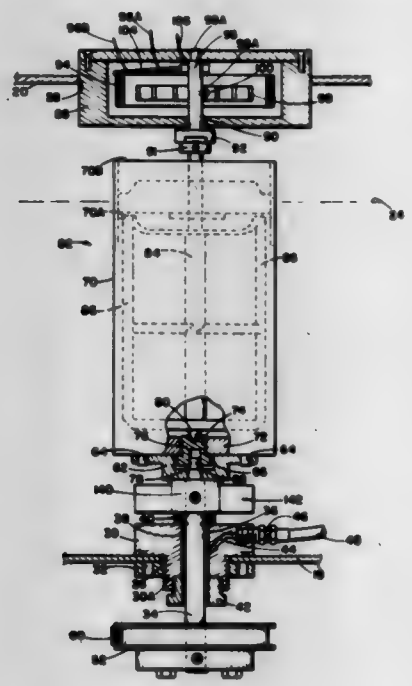
1. An apparatus for measuring the consistency of cement slurries comprising:
a liquid containing vessel having a bottom, a top and sidewalls, the bottom and top having openings therein;
a vertical shaft extending sealably through said container bottom opening;
a flange affixed to the upper end of said shaft within said vessel and a sheave affixed to the lower end of said shaft exteriorly of said vessel;
a motor mounted exteriorly of said vessel having a shaft extending therefrom, a sheave on the motor shaft and a belt between the sheaves whereby the motor rotates said flange;
a slurry cup positionable within said container through said top opening therein, the slurry cup having a cylindrical sidewall, a bottom and an open top and including a pivot bearing recess in the cup interior bottom in alignment with the cup cylindrical axis;
means engageable between the exterior of said cup bottom and said flange for removeably coupling the two whereby the cup is rotated coaxially with said shaft;
a paddle removeably insertable within said cup, the paddle

having an elongated vertical central paddle shaft portion and having a vertical blade portion in proximity to the cup interior cylindrical wall and having, on the lower end thereof, a downwardly extending conical bearing receivable in said cup pivot bearing recess, the paddle shaft and conical bearing being coaxial with said cup cylindrical axis;

a potentiometer cup removeably supported within said opening in said vessel top and having an opening in the bottom thereof receiving said paddle shaft;

a coiled spring received in said potentiometer cup in a plane perpendicular to said paddle shaft longitudinal axis, the spring being coiled about said paddle shaft and having one end affixed to said potentiometer cup and the other end affixed to said paddle shaft;

a circular potentiometer element received in said potentiometer coaxial with and in a plane perpendicular to said



paddle axis, the diameter of the potentiometer element being greater than said spring and less than said cup and having two electrical lead connections;

an electrically conductive wiper arm extending from said paddle shaft and slideably engaging said potentiometer element, the wiper arm having an electrical lead connection;

electrical heating means within said vessel, the vessel having liquid therein, the level of the liquid being below the top of said cup; and

voltmeter means electrically connected with said potentiometer and wiper arm leads and a voltage source for indicating the position of said wiper arm which is responsive to the rotation of said paddle against the resilient restriction of said spring as said cup is rotated when said cup has a cement slurry therein, the rotational displacement of said paddle axis being indicative of the consistency of the cement slurry in said cup.

4,534,210

APPARATUS AND METHOD FOR MEASURING THE VISCOSITY OF A LIQUID

Timothy J. Reeves, 5 Rosdin Lodge, Prince's Ave., Windsor, Randburg, Transvaal, South Africa

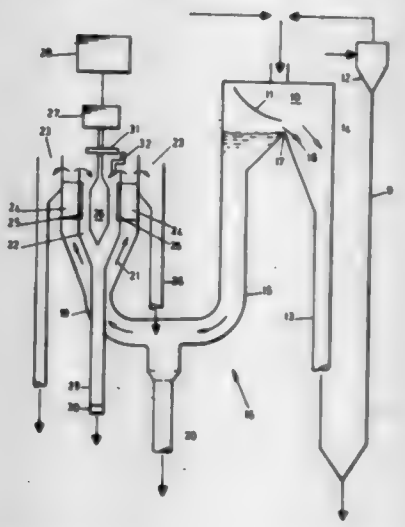
Filed Oct. 11, 1983, Ser. No. 540,813

Claims priority, application South Africa, Oct. 11, 1982, 82/7413

Int. Cl.³ G01N *11/14*

U.S. Cl. 73—59 **15 Claims**

1. An apparatus for the continuous measurement of the vicosity of a liquid flowing in a circuit, the apparatus, including means for continuously drawing off part of the flow of the liquid in the circuit, means for establishing a substantially constant static head in the liquid drawn off, means for allowing at least some of this liquid to flow at a constant flow rate under gravity past a rotor arranged to be rotated by a motor so that the liquid exerts a drag on the rotor in accordance with its viscosity and means for measuring an operating characteristic of the motor to give an indication of the viscosity of the liquid, and wherein the means for establishing a constant static head in



the liquid drawn off includes a static head chamber provided with an overflow weir at a predetermined height above the rotor, the weir being situated at the head of a downwardly extending limb of a U-shaped chamber, the other limb of which extends upwardly to a level lower than that of the weir, so that liquid flowing under gravity through the chamber can overflow at the top of the other limb.

4,534,211

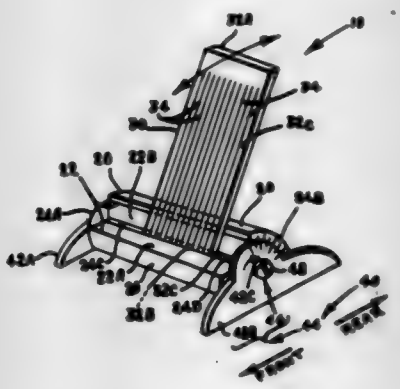
TESTING APPARATUS FOR QUANTITATIVELY MEASURING CREEPABILITY OF LIQUIDS

Orlando G. Molina, 15631 Astor St., Westminster, Calif. 92683

Filed Sep. 2, 1983, Ser. No. 529,179

Int. Cl.³ G01N *13/02*

U.S. Cl. 73—64.4 **26 Claims**



1. A testing apparatus for quantitatively measuring the creepability property of a liquid, comprising:

a. a base member having a longitudinal indentation therein essentially in the shape of a "V" with a depression at the vertex of said "V";

b. a test panel member made of liquid impervious material and having a top end, a bottom end, and a face therebetween, wherein this member has a plurality of adjacent straight grooves in said face positioned in parallel-spaced relationship to each other and running from said bottom end towards said top end with markings therealong indicating the length of said grooves from said bottom end, and wherein this member is disposed face-front and with said bottom end thereof positioned in said depression of said base member, whereby said test panel member is

disposed in an essentially vertical positional relationship with reference to said base member; and

c. means, operably associated with said base member, for selectively rotating said base member and thereby inclining said test panel member rearwardly;

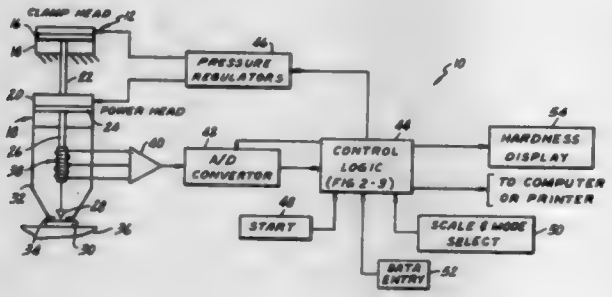
whereby when a liquid is placed in said base member indentation, said liquid creeps up said grooves in said test panel member, and thereby said creepability property of said liquid can be determined from said length markings, along said grooves, reached by said liquid.

4,534,212

FULLY AUTOMATIC PENETRATION HARDNESS TESTER

Thomas C. Targosz, Oak Park, Mich., assignor to K. J. Law Engineers, Inc., Farmington Hills, Mich.

Filed Jun. 30, 1983, Ser. No. 509,318
Int. Cl.³ G01N *3/44*
U.S. Cl. 73—83 **17 Claims**



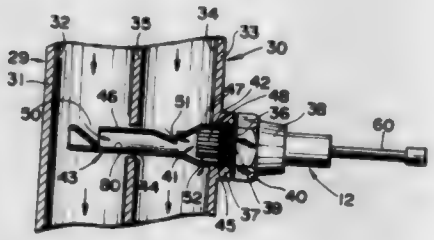
1. An automatic penetration hardness tester comprising a penetrator adapted to engage test specimens, means for applying a plurality of loads in a predetermined sequence to a test specimen through said penetrator so as to cause varying penetration depth of said penetrator into the test specimen, means responsive to motion of said penetrator with respect to the test specimen for automatically initiating application of the next load in said sequence when motion of said penetrator following application of the preceding load in said sequence has terminated, and means responsive to depth of penetration under said plurality of loads for indicating specimen hardness.

4,534,213

EXHAUST MONITORING SENSOR FOR A CLOSED-LOOP AIR-TO-FUEL RATIO CONTROL SYSTEM OF A MULTIPLEX EXHAUST MANIFOLD ENGINE

Tatsumi Mirikidani, Yokohama, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Dec. 6, 1982, Ser. No. 447,252
Claims priority, application Japan, Jan. 12, 1982, 57-2486
Int. Cl.³ G01N *27/46, 25/02*
U.S. Cl. 73—118 **11 Claims**



11. An exhaust monitoring system for an engine having an exhaust system including first and second exhaust gas passages for passing exhaust gases from said engine, a wall portion of said first exhaust gas passage coinciding with a wall portion of said second exhaust passage to form a partition wall separating said first and second exhaust passages, said partition wall having a hole extending threrethrough, the exhaust monitoring system comprising:

an at least partially threaded hole extending through a wall portion of said second exhaust passage and having an annular shoulder adjacent thereto;

an attaching body secured to said wall portion and having a threaded periphery engagable with said at least partially threaded hole;

an exhaust gas sampling tube extending between said first and second exhaust gas passages generally perpendicular to axes of said first and and exhaust passages through said hole and said at least partially threaded hole, said tube having a first inlet opening disposed in said first exhaust gas passage to sample exhaust gas flowing therein, a second inlet opening disposed in said second exhaust gas passage and formed through a wall of said tube on the upstream side of said tube with respect to exhaust gas flow through said second passage to sample exhaust gas flowing therein, and an outlet opening disposed in said second exhaust gas passage and formed through the downstream wall of the tube for venting said sampled exhaust gases into said second exhaust passage, the sampling tube defining a first path of exhaust gas flow from the first inlet opening to the outlet opening and a second path of exhaust gas flow from the second inlet opening to the outlet opening, the first and second paths having a common portion terminating at the outlet opening, said tube further having a flanged open end adapted to be sandwiched between said shoulder and said attaching body; and

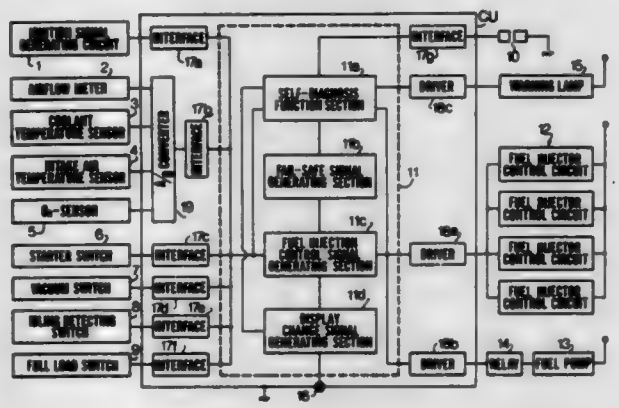
an exhaust gas sensor section extending from said attaching body to the tube beyond said third outlet opening in an axial direction with respect to said tube at a location within the common portion of the first and second paths, wherein said first opening comprises an open end of said tube which opens into said first passage, said end being essentially flush with the partition wall.

4,534,214

SYSTEM FOR DIAGNOSING AN INTERNAL COMBUSTION ENGINE

Toshio Takahashi, Mitakashi, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 26, 1983, Ser. No. 535,507
Claims priority, application Japan, Oct. 1, 1982, 57-173623
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—118 **2 Claims**



1. In a system for diagnosing an internal combustion engine having a coolant temperature sensor, the improvement comprising

a coolant temperature diagnosing circuit responsive to output voltage of said coolant temperature sensor for producing an output when said output voltage exceeds a predetermined range;

means for generating an output voltage dependent on engine speed;

a fail-safe signal generating circuit responsive to said output voltage of said means for producing one of fail-safe signals in dependency on said output voltage of said means; and

switch means responsive to said output of said coolant temperature diagnosing circuit for allowing said fail-safe signal to pass.

4,534,215

TAPE TENSION MEASURING DEVICE

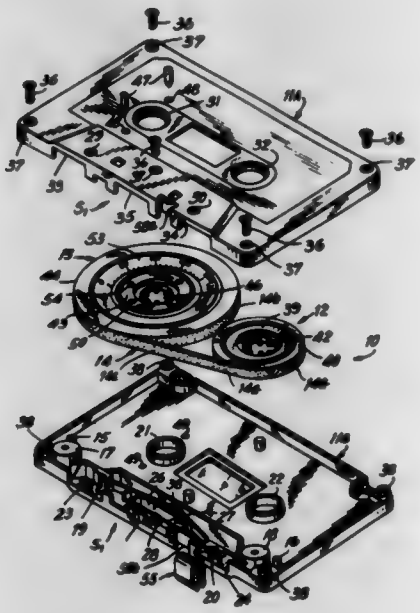
Yuzo Yamano, Kanagawa, and Hikaru Oozeki, Tokyo, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Apr. 27, 1978, Ser. No. 900,609

Claims priority, application Japan, Apr. 28, 1977, 52-55266[U]; Apr. 28, 1977, 52-55267[U]

Int. Cl.[2] G01L *5/06, 3/18*

U.S. Cl. 73—862.44 22 Claims



1. A tape-tension measuring device interchangeable with a tape cassette in a cassette-type magnetic tape recording and/or reproducing apparatus which has selectively rotated supply and take-up reel shafts adapted to extend through respective apertures of a cassette housing for engagement with tape supply and take-up reels within the latter, and a tape drive capstan and pinch roller and additional operating members adapted to extend through respective openings of the cassette housing for engagement with a tape in the latter at spaced apart locations along one side of the cassette housing during recording and reproducing operations of the apparatus: said tape-tension measuring device comprising a casing substantially equivalent to the cassette housing to be interchanged therewith and having openings at locations along one side of the casing in correspondence to said openings of the cassette housing; first and second reel assemblies in said casing, means in said first reel assembly for rotatably coupling the latter with the take-up reel shaft, said second reel assembly including an inner ring portion fixed relative to said casing and having a hub for receiving the supply reel shaft, an outer ring portion rotatable relative to said inner ring portion and spring means yieldably resisting turning of said outer ring portion relative to said inner ring portion; a test tape having portions wound on said first reel assembly and said outer ring portion of the second reel assembly and an intermediate tape run therebetween for causing said outer ring portion to turn relative to said inner ring portion through an angle dependent on the tension in said tape run; means for indicating tape tension as a function of said angle of relative turning; and guide means guiding said tape run along a path which extends along only a portion of said one side of the casing at which the openings for the tape drive capstan and pinch roller are located, so that the additional operating members of the recording and/or reproducing apparatus remain free of said test tape in the casing to avoid influencing the tension in said tape run.

4,534,216

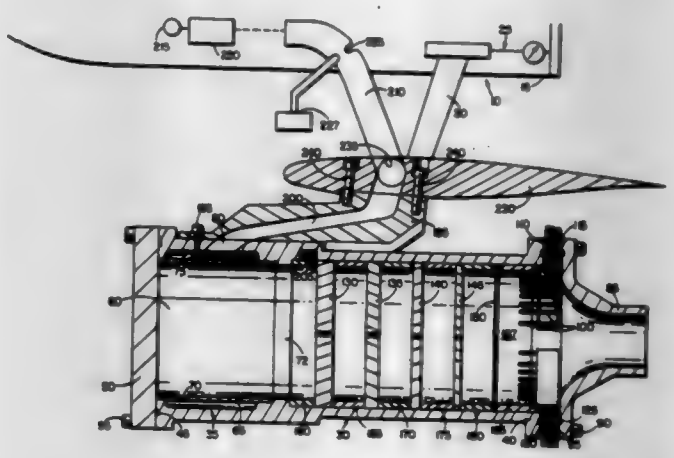
METHOD AND APPARATUS FOR DETERMINING THE ACCURACY OF WIND TUNNEL TEST DATA

Anthony Fasano, Glastonbury; John H. Roberts, Bolton, and David L. Motycka, Glastonbury, all of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed May 31, 1983, Ser. No. 499,700

Int. Cl.[3] G01M *9/00;* G01L *5/13*

U.S. Cl. 73—147 12 Claims



1. A reference model for the wind tunnel testing of a combustorless gas turbine engine simulator, said reference model being characterized by:

a housing having upstream and downstream end portions, said housing being adapted for the accommodation therethrough of a flow of pressurized air;

means disposed interiorly of said housing for maintaining the pressure and flow rate of said airflow at levels corresponding to those associated with the operation of said combustorless gas turbine engine simulator in the aerodynamic testing thereof; and

an exhaust nozzle of standard geometry disposed at the downstream end portion of said housing;

whereby the accuracy of performance measurements associated with said aerodynamic testing of said combustorless gas turbine engine model is determinable by a comparison of the performance of said reference model determined analytically, with the performance of said reference model determined empirically from the characteristics of said airflow through said reference model and the geometry of said exhaust nozzle.

4,534,217

MEASURING THE DRAFT OF A VESSEL

Frans Caus, Zeebrugee, Belgium, assignor to Tate & Lyle Public Limited Company, England

Filed Jan. 5, 1984, Ser. No. 568,402

Claims priority, application United Kingdom, Jan. 7, 1983, 8300332

Int. Cl.[3] G01C *21/00*

U.S. Cl. 73—178 R 11 Claims

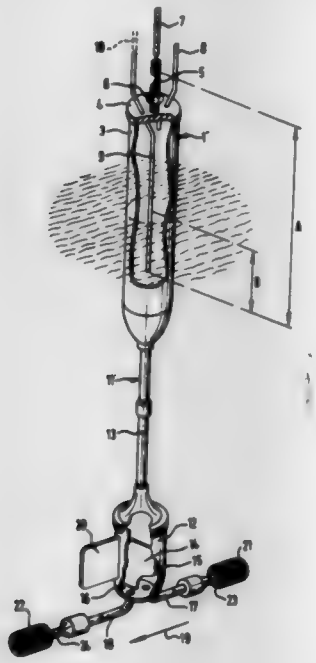
1. Apparatus for measuring the draft of a vessel, comprising:

a closed damping chamber for being placed in the water in which the vessel is floating and for containing water having a free water surface inside the damping chamber, the free water surface having a level corresponding, in still conditions, to the level of the water in which the vessel is floating;

a gas duct for connecting to a manometer and having an exit opening below water level in communication with the damping chamber whereby gas can be passed through the gas duct to issue from the gas duct exit opening and the pressure of the gas in the gas duct is representative of the water pressure at the duct exit opening;

a vent for venting gas from the upper part of the damping chamber; and

a water duct for providing a connection between the damping chamber and the water in which the damping chamber is placed, the water duct having an effective cross-sectional area which is much less than the horizontal cross-sectional area of the damping chamber, the water duct being for admitting water to the damping chamber so that



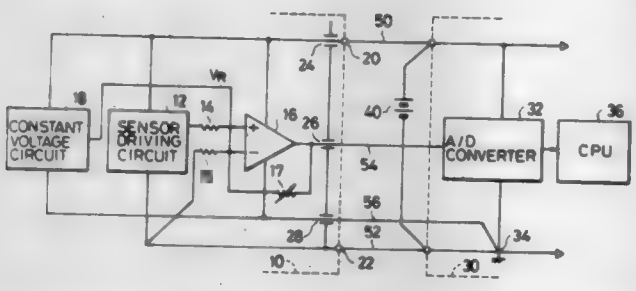
the level of the free water surface is above the gas duct exit opening, wherein said water duct includes an admission chamber having a water inlet and a water outlet for opening into said surrounding water, the effective cross-sectional areas of said water inlet and of said water outlet to said admission chamber being equal and much smaller than the flow cross-section in said admission chamber.

4,534,218

THERMAL FLOW METER

Sadayasu Ueno, Katsuta, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 523,858
Claims priority, application Japan, Aug. 23, 1982, 57-144738
Int. Cl.³ G01F *1/68*
U.S. Cl. 73—204 **5 Claims**



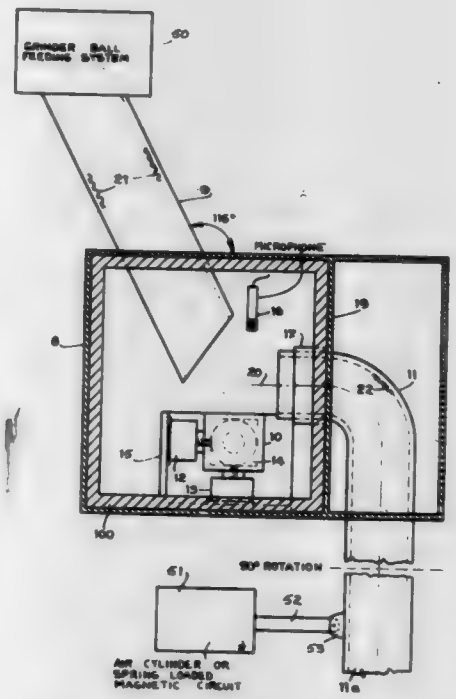
1. A thermal flow meter comprising: sensor means including a thermosensitive element and an amplifier for amplifying a current flowing through said thermosensitive element; signal processing means including an A/D converter for converting the signal form said amplifier to a digital signal, and a digital calculation means; a power source; a signal line for applying a current from said power source to said thermosensitive element and said amplifier; a return line for returning the current from said thermosensitive element to said power source; and a ground potential line for said amplifier; said ground potential line being separate from said return line and being grounded within said signal processing means.

4,534,219

ACOUSTIC DETECTION OF CRACKS IN METAL PIECES

Francois Nadeau, 822 Yvonne Duckett St., St-Bruno, Quebec, Canada (J3V 4P6); Jean F. Bussiere, 155 Ave. Lakeview, St-Bruno, Quebec, Canada (J3V 2L6), and Ghislain Vaudreuil, 437 Brion, Boucherville, Quebec, Canada J4B 6B2

Filed Nov. 17, 1983, Ser. No. 552,973
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—587 **24 Claims**



1. A device for detecting a crack in a metal piece comprising:

anvil means;

means for producing an impact between the metal piece and the anvil means, said impact generating an acoustic wave formed of a plurality of components, one of said components being produced by vibrations of said metal piece and having a frequency indicating a cracked or uncracked state of the metal piece;

means for sensing and measuring the energy of said one component of said generated acoustic wave within a predetermined time gate and within a predetermined frequency bandwidth; and

means for determining if said metal piece is cracked or uncracked in accordance with said measured energy;

said anvil means being designed so that its vibrations generated by the impact produce no acoustic wave component at a frequency located within said predetermined frequency bandwidth in order to prevent influence on said energy measurement of any component of said generated acoustic wave produced by the anvil means.

4,534,220

APPARATUS FOR MEASURING THE CHARACTERISTICS OF AN ULTRASONIC WAVE MEDIUM

John R. Kleeper, 3238 Twenty Third Ave. W., Seattle, Wash. 98199; John M. Reid, 722 Upper Gulph Rd., Strafford, Pa. 19087; Hirohide Miwa, 6-7-10, Miyazaki, Miyamae-ku, Kawasaki-shi, Kanagawa 213, Japan; Takaki Shimura, 29-44, Tsurukawa 4-chome, Machida-shi, Tokyo 194-01, Japan, and Keiichi Murakami, 17-305-2-8-6, Teraodai, Tama-ku, Kawasaki-shi, Kanagawa 214, Japan

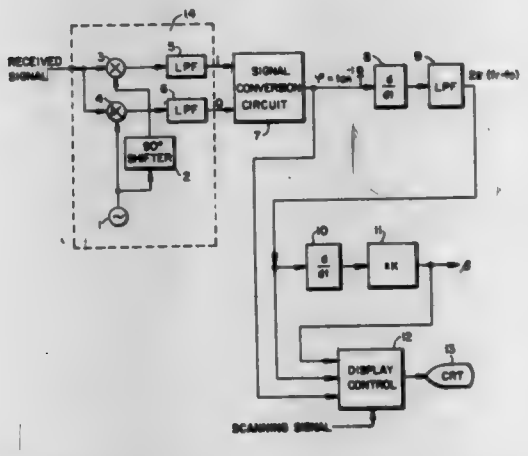
Filed Jan. 27, 1984, Ser. No. 574,690
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—599 **17 Claims**

1. An apparatus for measuring ultrasonic wave attenuation and phase by sending an ultrasonic wave pulse toward an object to be measured, and receiving, as a received signal,

waves reflected from different depths within the object to be measured, comprising:

means for supplying a reference signal;

means, operatively connected to said reference signal supplying means and operatively connected to receive the received signal, for determining a phase difference between the received signal and the reference signal;



first differentiating means, operatively connected to said phase difference determining means, for differentiating the phase difference with respect to time to generate a frequency shift amount signal; and

second differentiating means, operatively connected to said first differentiating means, for differentiating the frequency shift amount signal with respect to time to generate an attenuation slope coefficient.

4,534,221

ULTRASONIC DIAGNOSTIC IMAGING SYSTEMS FOR VARYING DEPTHS OF FIELD

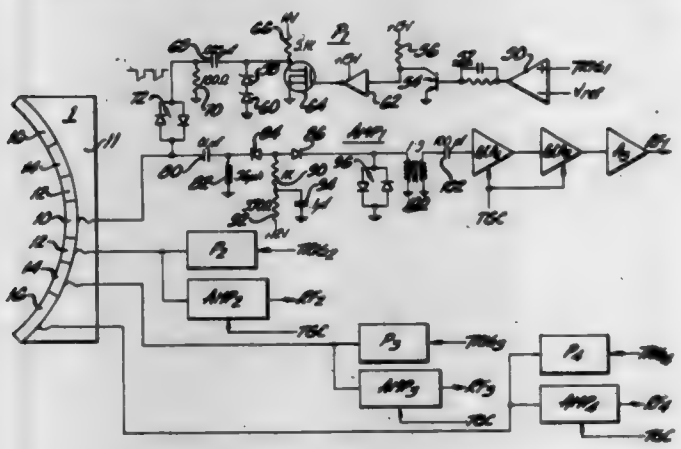
Michael J. Fife, Denver; Paul T. Diaz, Englewood, and Dennis R. Dietz, Littleton, all of Colo., assignors to Technicare Corporation, Solon, Ohio

Filed Dec. 20, 1982, Ser. No. 451,313

Claims priority, application United Kingdom, Sep. 27, 1982, 8227532

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—626 **13 Claims**



9. In an ultrasonic diagnostic imaging system, including a multi-element transducer for transmitting ultrasonic energy into tissue to be imaged and for receiving echoes from said tissue; apparatus comprising:

a plurality of transducer pulsers, each having an output coupled to a respective element of said transducer for exciting said elements, and having respective inputs;

means for selecting a given depth of focus within said tissue to be imaged from a range of focal depths by controlling the time sequence of pulsing of the respective elements; and

means, responsive to said selecting means, for activating said pulsers to produce broad band ultrasonic energy transmission by said transducer elements when one depth of focus is selected, and to produce narrow band ultrasonic energy transmission by said transducer elements when a different depth of focus is selected.

4,534,222

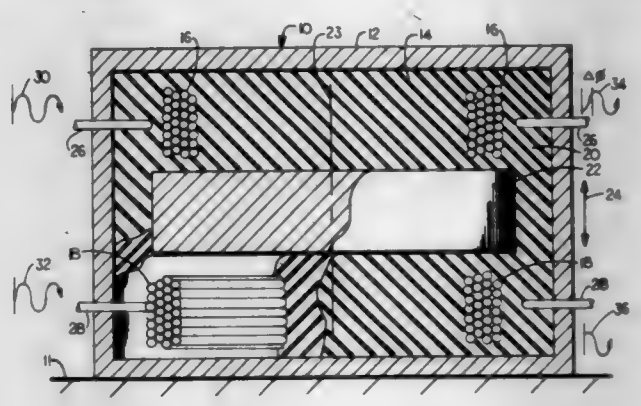
FIBER-OPTIC SEISMIC SENSOR

George W. Finch, Malibu, and Eric Udd, Huntington Beach, both of Calif., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Aug. 8, 1983, Ser. No. 521,001

Int. Cl.³ G01H *1/00*; G01V *1/16*

U.S. Cl. 73—653 **17 Claims**



1. A vibration sensor including:

a first optical fiber having:

an input end;

an output end; and

a coil portion therebetween of a first predetermined optical path length when said sensor is not subject to vibration to be sensed;

a second optical fiber having:

an input end;

an output end; and

a coil portion therebetween of a second predetermined optical path length when said sensor is not subject to vibration to be sensed;

a closed body adapted to be coupled to the vibration to be sensed to vibrate said body, said coil portions of said first and second optical fibers being positioned within said body; and

means to vary said optical path length of at least said first optical fiber coil portion with the vibration of said body including:

a mass having:

a first side; and

a second opposite side, said first and second sides being orientated generally at right angles to the vibration to be sensed; and

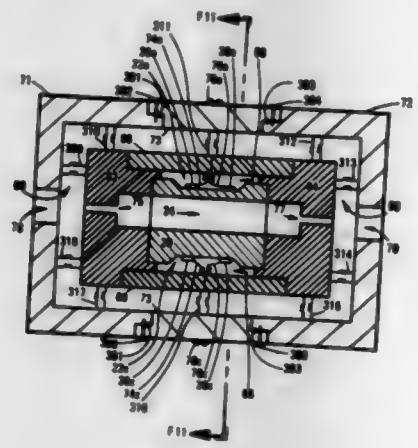
elastic means to fill said body and encapsulate said coil portions of said first and second optical fibers and said mass within said body, said mass being positioned between said coil portion of said first optical fiber and said coil portion of said second optical fiber, whereby movement of said mass within said body caused by vibration of said body causes said elastic means to exert differential pressures between said coil portions of said first and second optical fibers.

4,534,223

SURFACE ACOUSTIC WAVE SENSORS

Bikash K. Sinha, West Redding, and Michel Gouilloud, Norwalk, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 427,240, Sep. 29, 1982,. This application Aug. 1, 1984, Ser. No. 636,872
Int. Cl.[3] G01L *11/00*
U.S. Cl. 73—703 38 Claims



1. A surface acoustic wave signal frequency apparatus comprising a crystalline diaphragm section having a cylindrical or spherical outer surface and a cylindrical or spherical inner surface, wherein:

one of said outer and inner surfaces is adapted for subjection to an applied pressure;

the other of said outer and inner surfaces includes a first area thereof adapted for the fabrication of a surface acoustic wave device, said first area having a selected orientation having, for a selected propagation direction, a high sensitivity to pressure effects, a low sensitivity to temperature effects, and a first turnover temperature; and

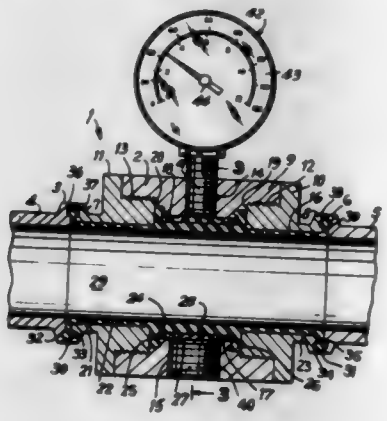
said other surface further includes a second area thereof adapted for the fabrication of a surface acoustic wave device, said second area having a selected orientation having, for a selected propagation direction, a high sensitivity to pressure effects, a low sensitivity to temperature effects, and a second turnover temperature different than said first turnover temperature.

4,534,224

ISOLATION FLUID PRESSURE DETECTOR

Spiros G. Raftis, Pittsburgh, Pa., assignor to Red Valve Company, Inc., Carnegie, Pa.

Filed May 17, 1984, Ser. No. 611,333
Int. Cl.[3] G01L *7/08*
U.S. Cl. 73—730 7 Claims



1. An arrangement for detecting the pressure of a fluid, comprising:

(A) a housing having a central part and two end parts separate from said central part and connected thereto in a disassembleable manner, said parts having

(i) an internal surface which bounds an elongated bore centered on a longitudinal axis,

(ii) a recess extending substantially radially with respect to said longitudinal axis outwardly beyond said bore over only a part of the elongation of the latter and extending circumferentially around the entire periphery of said bore, and

(iii) a port communicating with said recess and leading to the exterior of said housing;

(B) a sleeve-shaped element extending over the entire length of said bore and having

(i) two end portions at opposite axial end regions of said bore,

(ii) a flexible intermediate portion between said end portions, and

(iii) two outwardly-extending arm portions at axially opposite sides of said flexible portion between said end portions,

said sleeve-shaped element

(iv) bounding an internal passage for the fluid and impervious thereto, and

(v) so received in said bore that said arm portions are located at opposite axial sides of, and said intermediate portion spans, said recess,

(a) said arm portions being confined between, and sealingly contacting, said central part and a respective one of said end parts,

(b) said arm portions having axially-extending lips extending toward each other and into retaining recesses in said central part so as to seal said recess from said passage;

(C) a pressure gauge having a closing portion that sealingly closes said port, and a pressure-detecting mechanism that is in communication through said closing portion with said recess; and

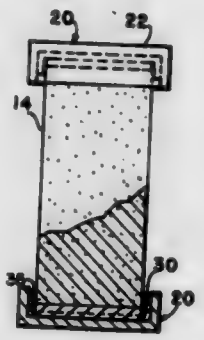
(D) a quantity of pressure-transmitting fluid filling said recess and said pressure gauge to transmit to said pressure-detecting mechanism the pressure of the fluid present in said passage as applied to said pressure-transmitted fluid through said flexible intermediate portion of said sleeve-shaped element with attendant flexing thereof.

4,534,225

METHOD AND APPARATUS FOR SUPPORTING CYLINDRICAL CONCRETE SAMPLES FOR TESTING

Bobbie D. Peacock; John N. Mushovic, and Roger D. Geyer, all of Peachtree City, Ga., assignors to M. A. Industries, Inc., Peachtree City, Ga.

Filed Aug. 1, 1983, Ser. No. 519,068
Int. Cl.[3] G01N *3/02*
U.S. Cl. 73—860 17 Claims



1. In a flexible elastomeric pad for insertion in respective cavities of each of the opposed caps which are fitted at opposite ends of a concrete test sample, comprising:

a pad bottom surrounded by a peripheral side wall extending upwardly therefrom defining an open cavity in said pad for receiving one end of the concrete sample therein, the top of the pad bottom which receives the concrete flat end thereagainst being recessed and below the upper edge of the outer side wall whereby the side wall extends around

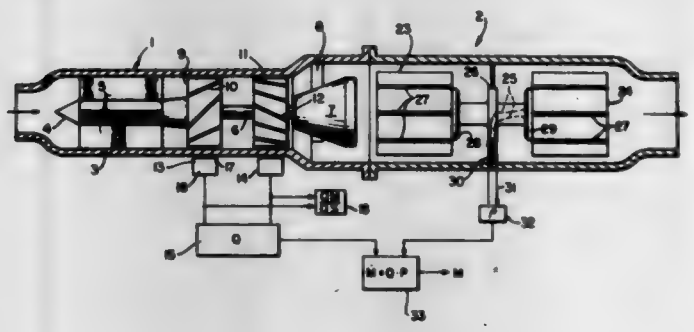
the end of the concrete sample, said overall width and dimension of said pad being such that the pad is tightly fitted into the cavity of the cap so that the outside of the side wall is in contact with the inside of the cap, a recessed top on the bottom of said pad whereby the top of the bottom is below the side wall, said bottom being spaced from said side wall defining a depression between said side wall and said bottom, the pad bottom and end of the cylinder being about the same size but the inside of the cap being larger than the pad bottom.

4,534,226

COUNTER ROTATING, MULTI TURBINE FLOW MEASURING SYSTEM

Leonard Rose, Granville, Vt., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 1, 1983, Ser. No. 547,816
Int. Cl.³ G01F *1/12, 1/90*
U.S. Cl. 73—861.84 **6 Claims**



1. A volumetric flow measuring device comprising:
(a) housing means providing a flow path for a fluid,
(b) two axially displaced turbine means mounted in said housing and rotating at different but fixedly related speeds proportional to the velocity of the fluid, said turbines rotating in opposite directions whereby any non-axial flow components of said stream has opposite effects on the speed of rotation of said counter-rotating turbines, each of said turbines having a plurality of helical vanes with the helical twist of the vanes on the two turbines being of an opposite sense to cause them to rotate in opposite directions under the impact of said fluid, the helix angle with respect to the flow axis of the vanes of one turbine differing from the helix angle of the vanes on the other turbine whereby the rotational speed of one turbine is different from the rotational speed of the other turbine for any given flow rate,
(c) means associated with each of said turbines to produce an electrical signal proportional to the rotational speed of the individual turbines,
(d) means to combine said electrical signals to compensate for effects due to non-axial flow components and produce a signal proportional to the volumetric flow rate.

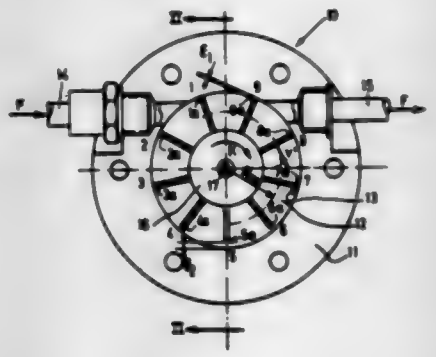
4,534,227

DEVICE FOR MEASURING THE FLOW OF A FLUID

Roland Petit, Dreux, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Nov. 18, 1983, Ser. No. 553,353
Claims priority, application France, Nov. 26, 1982, 82 19839
Int. Cl.³ G01F *1/06, 11/02*
U.S. Cl. 73—861.87 **7 Claims**

1. A device for measuring the flow of a fluid comprising a sealed housing, a rotor having radial vanes equally spaced apart mounted in said housing to rotate freely about an axis of rotation, a fluid supply nozzle and a fluid discharge nozzle for the housing, said nozzles being in alignment with each other and disposed tangentially of the rotor so that a stream of fluid issuing from said supply nozzle encounters said vanes in a direction perpendicular to said axis of rotation, said housing defining two lateral chambers on opposite sides of said rotor, said rotor having two lateral flanges on opposite sides of said vanes and connected to said vanes, said vanes and said flanges being radially internally connected to a central member of the rotor, said vanes, said flanges, said central member and said housing defining, apart from a clearance between said flanges



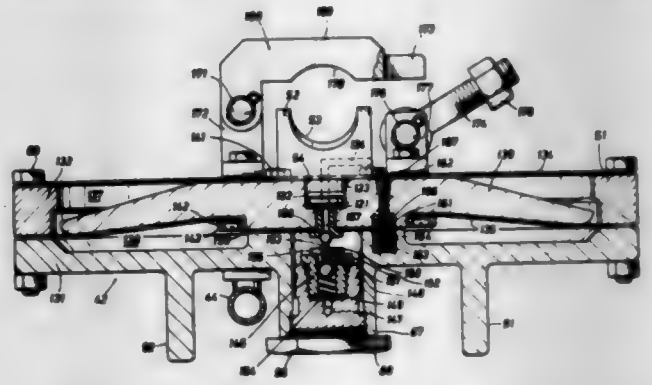
and said housing for permitting rotation of said rotor, a series of compartments which communicate through said clearance with said two lateral chambers, each said compartment being bounded laterally by said flanges and a pair of adjacent vanes and being bounded radially outwardly of said rotor by said housing, said supply nozzle and said discharge nozzle opening at all times into different said compartments.

4,534,228

WIRELINE TENSION GAGE

Edward W. Burbank, Jr., 9604 Briar Forest, Houston, Tex. 77063

Filed Jan. 31, 1983, Ser. No. 462,608
Int. Cl.³ G01L *5/08*
U.S. Cl. 73—862.45 **22 Claims**



1. A tension gage for mounting on a wireline between its load and anchor ends comprising:
(a) an elongated body;
(b) a post for transmitting forces mounted in said body and at one end carrying a saddle to support the wireline;
(c) a transmitter acted upon by said post for producing a signal responsive to wireline forces acting on said post and means for calibrating said signal;
(d) roller assemblies mounted at opposite sides of said post on said body and aligned with the wireline resting in said saddle;
(e) each of said roller assemblies comprising an upstanding bridge secured at one end to said body and on a shaft rotatably mounting a sheave for engaging the wireline;
(f) each said shaft journaled to said bridge by an eccentric pivot whereby in a first position said sheave thereon is lifted from the wireline and in a second position said sheave engages the wireline to displace same a certain lateral distance; and
(g) locking means for holding each said eccentric pivot in the second position whereby said gage is secured to the wireline for measurement of the tension conditions upon the wireline.

4,534,229
METHOD AND APPARATUS FOR PREPARING A MEAT SAMPLE FOR DETERMINATION OF COMPOSITION OF SAME

David B. Funk, Auburn, and James B. Kallmeyer, Glenarm, both of Ill., assignors to Dickey-john Corporation, Auburn, Ill.

Continuation-in-part of Ser. No. 375,552, May 6, 1982, Pat. No. 4,496,907. This application Mar. 24, 1983, Ser. No. 478,254
Int. Cl.[3] G01N *1/28, 1/08, 25/00, 33/12*
U.S. Cl. 73—863 22 Claims

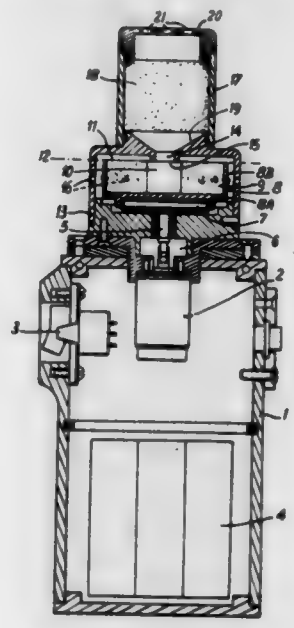
1. A method for preparing an analyzable meat sample for compositional analysis comprising: (1) obtaining a predetermined quantity of ground meat, said meat having a predetermined particle size; (2) forming said meat into a layer having a predetermined thickness; (3) isolating a first portion of said layer from the remainder; (4) urging said first portion into an elongate hollow member having an axis, an open end, and a resistive end movable along said axis relative to said open end; (5) urging said first portion and said resistive end together so as to produce a substantially air void-free isolate out of said first portion; (6) isolating a subsequent portion of said layer from the remainder and urging said subsequent portion into said hollow member and against said isolate already in said hollow member thereby adding to said isolate already in said hollow member and causing said resistive end and said isolate engaging said resistive end to move axially through said member for filling said member; (7) repeating step (6) until said member is predeterminedly filled with said meat thereby producing said analyzable meat sample.

4,534,230
INDIVIDUAL PORTABLE DUST COLLECTOR

Paul Courbon, Apremont, France, assignor to Charbonnages de France, Paris, France

Filed Aug. 1, 1983, Ser. No. 519,244
Claims priority, application France, Aug. 3, 1982, 82 13541
Int. Cl.[3] G01N *1/24*
U.S. Cl. 73—863.23 10 Claims

1. A portable dust collector comprising a rotatable cup having a bottom and a side wall extending from said bottom, a ring of filter foam accommodated in said cup said ring having a central channel, a cover surrounding said cup, said cover having a central air inlet and a lateral air outlet, and a cowl supported on said cover, said cowl having an air passage which caps the central air inlet of the cover, wherein the cowl is filled with at least one prefiltration block and has a duct arranged after said block in the direction of air flow and connected to said central air inlet of the cover, said inlet ending at an outlet orifice which has a smaller diameter than that of the central channel of the filter foam ring, the inlet being coaxial with said channel, and wherein the thickness of the foam ring is equal to the height of the side wall of the cup, the foam ring having a

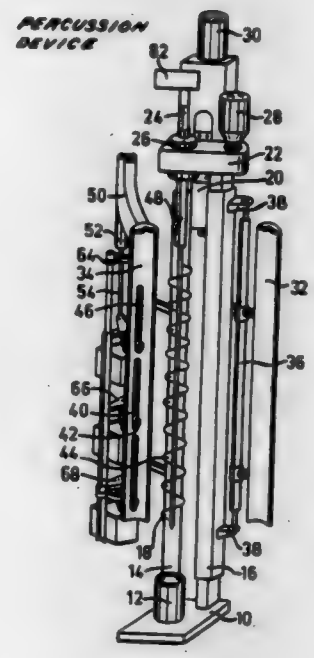


substantially exposed lateral surface which is located in a transverse plane and faces said air inlet.

4,534,231
METHOD AND DEVICE FOR TAKING SOIL SAMPLES

Mats Jonsson, and Per-Olof Edén, both of PL 1425, Bergeforsen, Sweden (860 33)

Filed Jun. 21, 1983, Ser. No. 506,372
Int. Cl.[3] G01N *1/06;* E21B *49/02*
U.S. Cl. 73—864.43 12 Claims

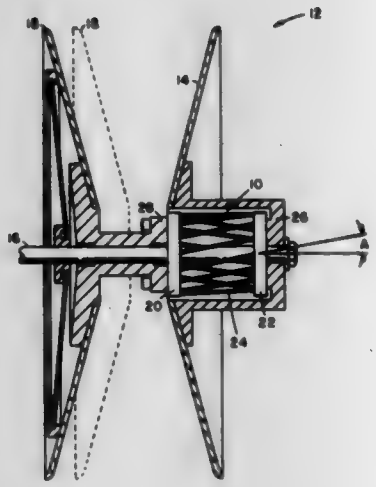


1. A process of taking soil samples which are to be analyzed wherein a core sample is extracted from the ground and the soil sample removed from the core sample, the process comprising taking a core sample using an auger-type drill by drilling to a predetermined depth, stopping rotation of the drill, removing the drill and core sample from the ground, enclosing the core sample with a casing to maintain the core sample in the same form and position as found in the ground, the casing including openings corresponding to different layers in the core sample, removing a soil sample through the openings in the casing.

4,534,232
ALTERNATING ROTARY TO RECIPROCATING ACTUATOR

Richard F. Stieg, Boulder, Colo., assignor to The Gates Rubber Company, Denver, Colo.

Filed Feb. 6, 1984, Ser. No. 577,435
Int. Cl.[3] F16H *27/02*
U.S. Cl. 74—89.2 3 Claims



1. An alternating rotary to reciprocating type actuator comprising:

two disc type members, each having a rounded type rim that defines a circumferential portion interconnecting an inside sidewall portion and an outside sidewall portion, each circumferential portion having a plurality of circumferentially spaced convex grooves that individually extend into an interconnected inside sidewall at projected angles that are substantially equal and helically oriented, said grooves also individually extending into an interconnected outside sidewall portion where each groove is oriented in a predetermined chordal alignmemt with another of such grooves, the two disc members coaxially spaced from each other with at least one disc member free to rotate and axially move toward the other disc member, the disc members arranged with their inside sidewall portions facing each other with the helically oriented grooves of one disc generally in individual lineal alignment with similar individual grooves of the other disc; and

a cord interlaced in zig-zag fashion between said discs in said grooves such that the cord forms a plurality of substantially similarly arranged links between the two disc members.

4,534,233
WIRE-DRIVING DEVICE FOR WINDOW REGULATOR

Osamu Hamaguchi, Nishinomiya, Japan, assignor to Nippon Cable System Inc., Takarazuka, Japan

Filed Nov. 9, 1983, Ser. No. 550,149
Claims priority, application Japan, Apr. 18, 1983, 58-68117
Int. Cl.[3] F16H *27/02*
U.S. Cl. 74—89.2 4 Claims

1. A wire-driving device for a window regulator comprising:

(a) a housing;

(b) a worm wheel mounted for rotational movement within said housing;

(c) a worm meshing with said worm wheel;

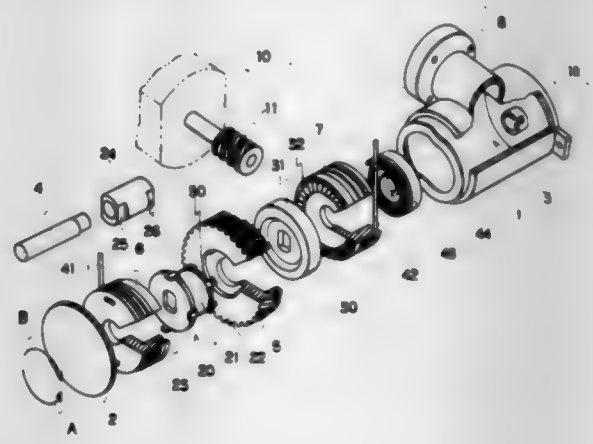
(d) an electric motor for driving said worm, having rotational axis arranged on a center plane of said worm wheel; said center plane being perpendicular to the rotational axis of said worm wheel;

(e) a first pulley arranged concentrically at one side surface of said worm wheel;

(f) a second pulley arranged concentrically at another side surface of said worm wheel;

(g) a first means for transmitting torque from said worm wheel to said first pulley comprising a cylindrical shock absorber having an axial center hall, one end portion connected to said worm wheel and the other end portion connected to said first pulley;

(h) a second means for transmitting torque from said worm wheel to said second pulley comprising said shock absorber in common and a shaft inserted into said axial



center hall of said shock absorber; said shaft having end portions connected to said one end portion of said shock absorber and to said second pulley respectively;

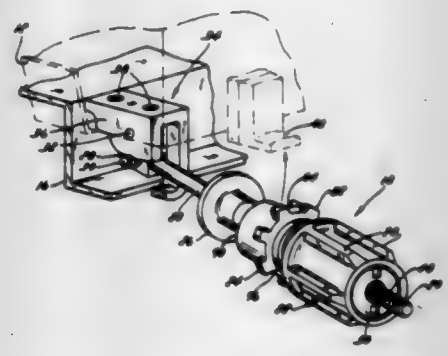
(i) a first wire having one end fastened to said first pulley and wound around said first pulley; and

(j) a second wire having one end fastened to said second pulley and wound around said second pulley in the opposite direction with respect to said first wire.

4,534,234
FASTENER OF THE HOLD-DOWN TYPE

Frank J. Cosenza, San Pedro, Calif., assignor to Rexnord Inc., Brookfield, Wis.

Continuation of Ser. No. 287,613, Jul. 28, 1981, abandoned. This application Jan. 11, 1984, Ser. No. 569,932
Int. Cl.[3] F16H *27/02*
U.S. Cl. 74—89.15 8 Claims



1. An extractor hold down apparatus for use in selectively displacing and securing a unit mounted on a frame structure under a predetermined load, said apparatus including:

a first shaft, at least a portion of which is threaded and having one end thereof adapted to receive a pivot pin;

a second shaft mounted on said first shaft for axial movement along said threaded portion thereof;

drive means including a sleeve mounted on and coupled to said second shaft and a slip clutch means operative in a slip mode when the level of torque between said sleeve and said second shaft exceeds a predetermined amount; and

a keeper member rotatably mounted on said second shaft adjacent said drive means and coupled thereto for axial movement therewith;

said sleeve including a portion, adjacent said keeper member, having an inside radius greater than an outside radius of said keeper member adjacent thereto;

said keeper member being an annular cylindrical element

and having a plurality of spaced slots adapted to receive a hook member extending from a unit and securing said keeper member when rotated, said element having a frustocylindrical end forming a circular ramp, said ramp having an axially short part and an axially long part in which said plurality of spaced slots are positioned, one of said circumferentially spaced slots being cut deep into said axially short part of said ramp and another of said plurality of circumferentially spaced slots being cut shallow in said axially long part of said ramp;

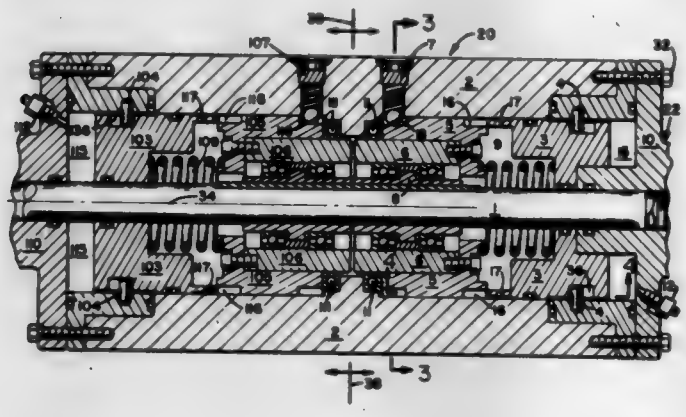
said drive means further including yieldable means for permitting relative movement between said sleeve and said keeper member, said sleeve and said keeper member having a gap of predetermined maximum width therebetween when the apparatus is not providing a load to the unit.

4,534,235

ROTARY STEPPER ACTUATOR

John P. Mitcham, Woodlands, and Michael A. Karr, Jr., Houston, both of Tex., assignors to Gray Tool Company, Houston, Tex.

Filed Nov. 1, 1983, Ser. No. 547,809
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—128 **24 Claims**





6. An actuator for imparting unidirectional stepwise rotary motion to an elongated member about a central axis, comprising:

a housing, surrounding a portion of the elongated member and secured against rotary motion;

an outer race, disposed within the housing and rotatably supported therewithin;

an overrunning clutch, said clutch engageable between the outer race and the elongated member upon attempted relative rotation therebetween in the clockwise direction, and slippable between the outer race and the elongated member upon relative rotation therebetween in the counterclockwise direction;

a drive member, axially reciprocable from and to a rest position and coaxial with the elongated member;

means, operable only upon displacement of the drive member from the rest position, for engaging the drive member and the outer race for establishing a predetermined relative rotational orientation between the drive member and the outer race during the engagement thereof;

means for reciprocating the drive member from and to the rest position; and

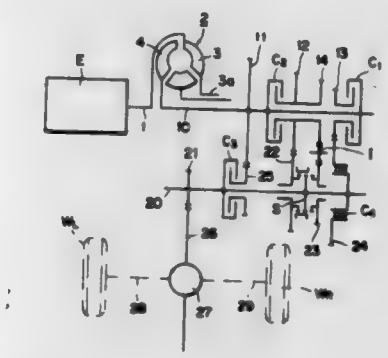
means, operable upon engagement of the drive member and the outer race, for imparting a clockwise rotary motion to the outer race upon displacement of the drive member from the rest position, and a counterclockwise rotary motion to the outer race upon return of the drive member to the rest position.

4,534,236

VIBRATION AND NOISE REDUCTION MEANS FOR A TRANSMISSION VEHICLE

Masao Nishikawa, Tokyo; Takashi Aoki; Yoichi Sato, both of Wako, and Hiroshi Yoshizawa, Kamifukuoka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,604
Int. Cl.³ F16H *3/08*; F16D *21/02*
U.S. Cl. 74—364 **4 Claims**



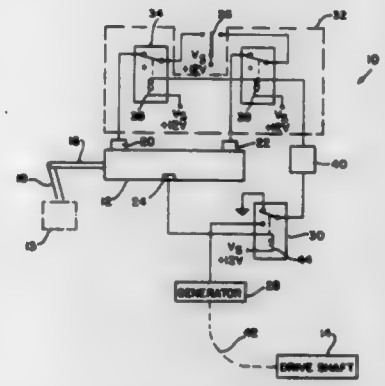
1. A transmission for a vehicle including an engine and at least one drive wheel, comprising: a first shaft driven by the engine; a second shaft for driving the drive wheel; a plurality of gear trains interposed between said first and second shafts; said gear trains being selectable for transmitting power of the engine; at least one gear member arranged in one of said gear trains and fitted on either of said shafts; a rotatable member relatively rotatable with respect to said gear member and slideably fitted on said either shaft; and resilient means for resiliently forcing said rotatable member to be brought into frictionwise slideable contact with said gear member while said one gear train is left unselected.

4,534,237

SHIFT CONTROLLER

Paul J. Carosino, 11245 E. Marginal Way South, Seattle, Wash. 98168

Filed Oct. 5, 1983, Ser. No. 539,329
Int. Cl.³ G05G *9/12*
U.S. Cl. 74—476 **20 Claims**



7. An apparatus for controlling operation of a shifter used

for shifting a transmission or the like connected to a rotatable shaft between at least one forward gear, neutral and at least one reverse gear, said shifter moving between a first position corresponding to said forward gear, and a second position corresponding to said reverse gear, movement between said first and second positions passing through a neutral position corresponding to said neutral, said shifter having a first actuator for movement of said shifter toward said first position and a second actuator for movement of said shifter toward said second position, comprising:

a manually operable shift control for selectively actuating said first or second actuators to move said shifter between said first, neutral and second positions;

a rotation sensor for sensing rotation of said shaft and generating a rotation-indicating singal;

a position sensor for sensing the position of said shifter, said position sensor inhibiting said rotation-indicating signal when said shifter is in said first or second positions, and transmitting said rotation-indicating signal when said shifter is in said neutral position; and

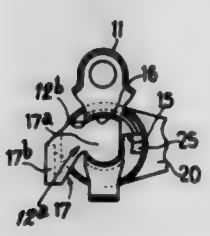
a disabler for preventing actuation of said first or second actuators by operation of said manually operable shift control, said disabler being responsive to said rotation indicating signal to prevent actuation of said shifter upon said rotation-indicating signal indicating rotation of said shaft, whereby the apparatus will permit gear changes among said forward gears or said reverse gears, but will prevent gear changes between said forward and reverse gears unless said shaft stops revolving with said shifter moved into said neutral position in preparation for changing between said forward and reverse gears.

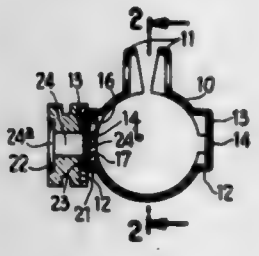
4,534,238

LEVER AND COLLAR UNIT IN PARTICULAR FOR A CYCLE

Maurice E. L. Coué, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

Filed Dec. 23, 1982, Ser. No. 452,710
Claims priority, application France, Dec. 30, 1981, 81 24503
Int. Cl.³ F16C *1/10*; G05G *11/00*
U.S. Cl. 74—489 16 Claims





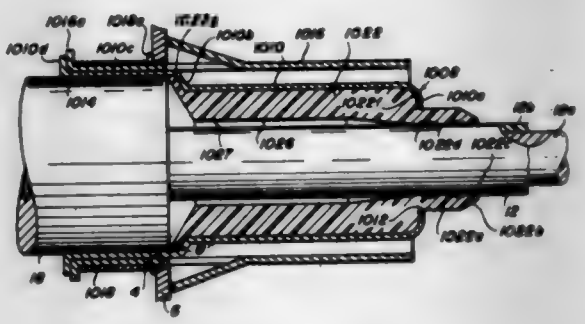
1. A collar and lever unit comprising a collar which has an axis and comprises, in one integral piece with the collar, at least one hollow portion which projects from the collar and has an axis extending substantially radially from said axis of the collar and defines, on an outer side of the projecting portion, a bearing surface for the lever, said bearing surface extending transversely of said axis of the projecting portion, said projecting portion further defining, on an inner side of the projecting portion, a cavity, an abutment member disposed in said cavity and forming an abutment for a sheath of a cable for combining with the unit, said projecting portion further defining a lateral opening having an abutment edge and through which opening said abutment member extends while being positioned against said abutment edge, and a journal carried by said projecting portion and extending from said outer side of said projecting portion, said lever being mounted on said journal to be rotatable about an axis of rotation.

4,534,239

BRAKE CABLE FITTING INCLUDING SCRAPER MEANS

Robert L. Heimann, Rte. 2, Huntsville, Mo. 65259

Continuation of Ser. No. 243,463, Mar. 13, 1981, abandoned, which is a continuation-in-part of Ser. No. 73,076, Sep. 6, 1979, Pat. No. 4,304,149. This application Jun. 14, 1984, Ser. No. 619,709
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—501 R 3 Claims



1. A cable assembly, comprising

(a) a tubular outer cable sleeve (18);

(b) an inner cable member (12) adapted for longitudinal displacement within said sleeve, said inner cable member including a stranded metal core portion (12*a*), and a protective outer synthetic plastic layer (12*b*) surrounding said core portion;

(c) a fitting body (1008, 1108, 1206) containing at one end thereof a longitudinal bore defining at the other end of the fitting a first end wall containing a through opening (1012, 1110, 1208), said fitting body also containing at said one end a longitudinal counterbore (1014, 1108*c*, 1214) defining a second end wall, said counterbore having a diameter corresponding generally with the outer diameter of said cable sleeve; and

(d) a tubular resilient seal member (1022, 1112, 1212) arranged concentrically within said bore in abutting engagement with said first end wall, said seal member containing a longitudinal through bore (1026, 1126, 1226) the diameter of which is greater than that of said inner cable member, thereby to define an annular lubrication chamber (1027, 1127, 1227) extending generally the length of said fitting body, said seal member including at one end an annular projecting portion (1022*a*, 1112*a*, 1212*a*) that extends through said wall opening, said outer sleeve member being mounted in said fitting counterbore with said inner cable member extending longitudinally through said seal member projecting portion;

(e) said seal member including at the free extremity of said projecting portion radially inwardly directed annular first sealing means (1022*d*, 1112*c*, 1212*d*) in concentric sealing engagement with said protective outer layer of said cable member, said projecting portion having at its free end a cylindrical inner peripheral surface of a diameter corresponding with the diameter of said inner cable member, said cylindrical inner surface terminating in a sharp scraper edge (1022*c*, 1114, 1214), thereby to scrape impurities from the inner cable member upon longitudinal displacement thereof relative to said sleeve;

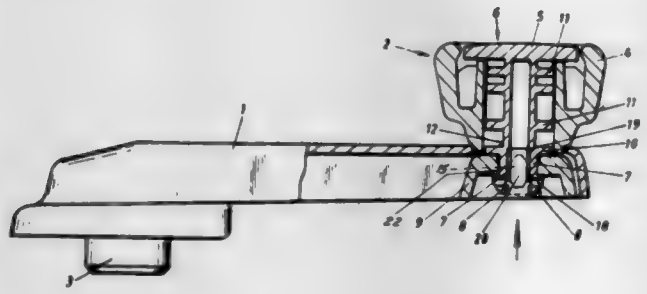
(f) said seal member further including at its other end an outwardly extending annular flange portion (1022*g*, 1112*d*, 1212*c*) defining second sealing means compressed between the end of said sleeve and said second end wall, said first and second sealing means being operable to close the ends of said lubrication chamber.

4,534,240

ACTUATING KNOB, PARTICULARLY FOR WINDOW CRANKS OF AUTOMOTIVE VEHICLES

Günter Dietz, and Friedhelm Flagmeyer, both of Wuppertal, Fed. Rep. of Germany, assignors to Gebr. Happich GmbH, Fed. Rep. of Germany

Continuation of Ser. No. 196,932, Oct. 14, 1980, abandoned.
This application May 11, 1983, Ser. No. 493,631
Claims priority, application Fed. Rep. of Germany, Dec. 22, 1979, 2952057
Int. Cl.[3] G05G *1/02*; B25G *3/00*
U.S. Cl. 74—545 12 Claims



1. In an automotive vehicle having a window crank, said window crank having a breakaway actuating knob, said knob comprising:

an outer knob part for serving as a grip; an inner knob part surrounded by the outer knob part; the inner knob part serving as a pivot pin and the outer knob part having a recess therein in which the pivot pin is received;

the pivot pin being insertable into an opening of said window crank; the pivot pin including detent pins and the detent pins including outward projections thereon for clip mounting of the pivot pin on a connection part defined in the opening of the window crank on which the actuating knob is used;

a blocking member being installed between the detent pins for holding the detent pins apart and for urging the outward projections to the connecting part for preventing separation of the outward projections from the connecting part

the pivot pin having a breakaway section defined along the pivot pin by a stepped borehole within said pivot pin; said outward projections including a flange extending outwardly from said pivot pin at the location of said step in said borehole; said connecting part comprising a support in said opening of said crank having a surface receiving and positioning said flange; any bending movement on said pivot pin being transmitted to the said meetng surfaces of said flanges and said support and thereby being concentrated at said step in said borehole to cause any break which occurs to occur at the location of said step in said borehole.

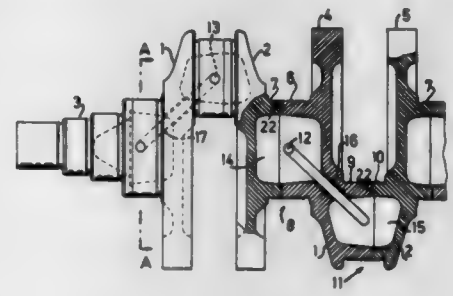
4,534,241

CRANKSHAFT FOR COMBUSTION ENGINES

Arne Remmerfelt, and Sten Larsson, both of Skövde, Sweden, assignors to AB Volvo, Goteborg, Sweden

PCT No. PCT/SE82/00323, § 371 Date Jun. 2, 1983, § 102(e) Date Jun. 2, 1983, PCT Pub. No. WO83/01283, PCT Pub. Date Apr. 14, 1983
PCT Filed Oct. 7, 1982, Ser. No. 503,193
Claims priority, application Sweden, Oct. 8, 1981, 8105965
Int. Cl.[3] F16C *3/10, 3/14*
U.S. Cl. 74—597 5 Claims

1. A crankshaft for combustion engines, comprising a plurality of components joined together so as to form together main bearing journals, crank bearing journals and counterweights, each component having a portion of a main bearing journal and a portion of a crank bearing journal, the main bearing journal portions of two adjacent components being secured together to form a complete main bearing journal and the crank bearing journal portions of two adjacent components being joined together to form a complete crank bearing journal, said joined-together journal portions defining between them closed cavities in both the main bearing journal and the crank bearing journal, one said portion of each pair of joined-



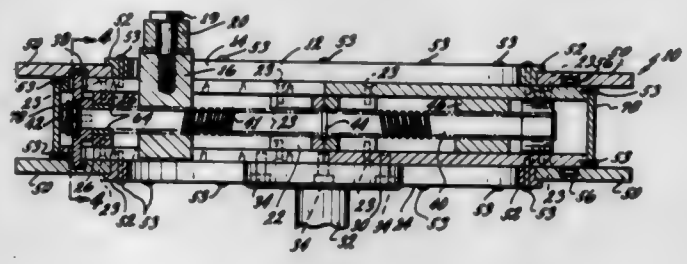
together journal portions being longer than the other, and an oil duct passing through said cavities but sealed from communication with said cavities and having open ends that open through the bearing surfaces of the longer ones of said journal portions.

4,534,242

VARIABLE POWER TRANSMISSION FOR CONVERTING RECIPROCATING MOTION TO ROTARY MOTION

David M. Brockelbank, 8954 Kennedy St., Riverside, Calif. 92509

Continuation of Ser. No. 237,741, Feb. 24, 1981, abandoned.
This application Feb. 27, 1984, Ser. No. 584,168
Int. Cl.[3] F16C *3/28*; F16H *21/20*
U.S. Cl. 74—600 12 Claims



1. A variable power transmission for converting reciprocating motion to rotary motion comprising:

a rotatable wheel comprising first and second spaced apart interconnected disk members with openings therethrough forming linear bearings thereby;

a crank member rotatably connected at one end to a crank pin for providing a rotatable force to said wheel;

a shaft attached to the center of said wheel said shaft being driven by said wheel;

means for selectively positioning said crank pin to any selected position along the radius of said wheel, said means for selectively positioning said crank pin along the radius of said wheel to any selected positioning comprises first and second first engaging means carried by first and second ring members each ring member positioned around the outer periphery of one of said desk members, each ring member being loosely connected to its associated disk, a threaded jack shaft rotatably attached to and positioned between said disk members, second engaging means carried by an outer end of said shaft and rotatable relative thereto for engaging both of said first engaging means, a crank slide block with said crank pin located on its outer end with its central portion threadedly engaging said jack shaft, said crank slide block extending through the openings in said first and second disk members and is guided and supported by said linear bearings, counter balance means carried in threaded engagement on said jack shaft and located opposite said crank slide block and braking means independently associated with each of said first

engaging means for selectively stopping the rotation of a selected one of said pair of first engaging means;

clutch means selectively adjustable through a range of different load limits positioned in series between the interconnection of said second engaging means and jack shaft to provide relative rotation between said jack shaft and second engaging means when an adjusted load limit between said second engaging means and said jack shaft is exceeded; and

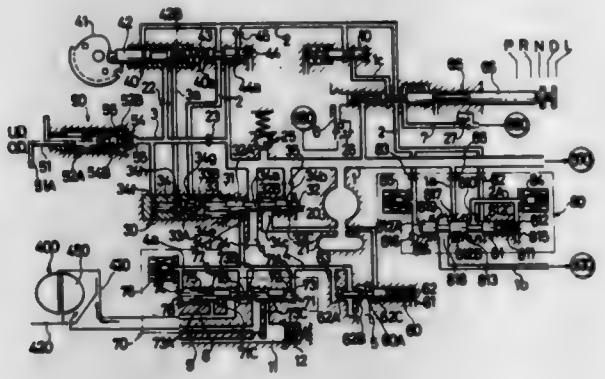
adjustment means for selectively adjusting the load limit between said shaft end and said second engaging means through a range of different loads.

4,534,243

HYDRAULIC CONTROL SYSTEM FOR A V-BELT TRANSMISSION

Shoji Yokoyama, Anjo, and Shiro Sakakibara, Toyokawa, both of Japan, assignors to Aisin Warner Kabushiki Kaisha, Japan

Filed Apr. 26, 1983, Ser. No. 488,842
Int. Cl.³ B60K *41/14*; F16H *55/52*
U.S. Cl. 74—868 **3 Claims**



1. An automatic transmission for a vehicle having an internal combustion engine with a throttle opening, comprising:

a continusouly-variable speed transmision mechanism including an input shaft, an output shaft, an input variable-pitch pulley having a fixed pulley flange fixed concentrically to said input shaft and a movable pulley flange mounted concentrically with and axially slidably on said input shaft, an output variable-pitch pulley having a fixed pulley flange fixed concentrically to said output shaft and a movable pulley flange mounted concentrically with and axially slidably on said output shaft, and endless belt interconnecting said input and said output variable-pitch pulleys and hydraulic servomotors provided for said input and said output variable-pitch pulleys respectively for pressing the corresponding movable pulley flanges toward the corresponding fixed pulley flanges; and

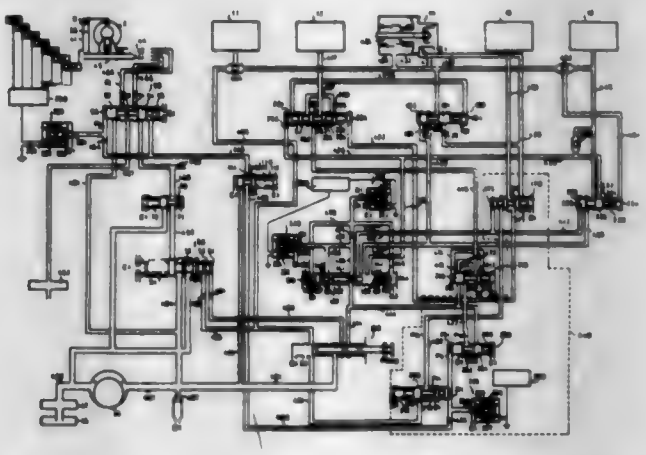
a hydraulic control circuit including a pressure generating source, regulator valve means to control the fluid pressure of said pressure generating source and adapted to generate a line pressure corresponding to pressure signals fed thereto, throttle pressure valve means to control said line pressure and adapted to generate a pressure corresponding to the throttle opening of the internal-combustion engine which has a predetermined value, when the throttle opening is zero, and to feed the pressure to said regulator valve means as a throttle pressure signal, ratio detecting valve means formed in said output shaft to control said line pressure and adapted to generate a pressure corresponding to an axial displacement of said movable pulley flange of said output variable-pitch pulley mounted on one of said shafts and to feed the pressure to said regulator valve means as a reduction ratio pressure signal, means to supply pressurized fluid at the line pressure to the hydraulic servomotor provided for said output variable-pitch pulley, reduction ratio control valve means provided with an axially slidable spool and two pressure chambers formed therein at both axial ends of the spool and adapted to selectively control the supply of said line pressure to the hydraulic servomotor of said input variable-pitch pulley through the movement of said spool and having fluid passages connecting said two pressure chambers of said reduction ratio control valve means, respectively, to the output side of said throttle pressure valve means and two solenoid valves for individually regulating the respective pressures in said pressure chambers.

4,534,244

AUTOMATIC TRANSMISSION GEAR SYSTEM FOR VEHICLES

Takeo Hiramatsu, Kyoto, Japan, assignor to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 22, 1982, Ser. No. 421,319
Claims priority, application Japan, Oct. 30, 1981, 56-174080
Int. Cl.³ B60K *41/06*
U.S. Cl. 74—869 **3 Claims**



1. An automatic transmission gear system for vehicles comprising a plurality of advance gears, a oneway clutch for achieving a gear shift at a lower speed and a friction engagement device provided in parallel with said oneway clutch and operated by oil pressure, a manual valve connected to a source of oil pressure, which is a characterized in that it is provided with detecting means which detect at least one parameter indicating the operating or driving conditions of the vehicle, and an oil pressure control device which is fluidly interposed between the manual valve and the friction engagement device and which supplies said friction engagement device with a high pressure oil when the engine brake is necessary at said gear shift at the lower speed and with a low pressure oil at which said friction engagement device is substantially released when the engine brake is not necessary in correspondence with the signals transmitted from said detecting means, said oil pressure control device including first and second valve means fluidly coupled together and to the manual valve, said first and second valve means cooperating so that when one valve means is controlling oil pressure, the other valve means is inoperative, each valve means also being an oil pressure pulse accumulator when it is not controlling oil pressure, and a solenoid valve means connected to said detecting means and to said first and second valve means for detecting different driving conditions to control operation of said first and second valve means, and a speed shifting valve connected to said first and second valve means and to said friction engagement device to supply oil to that friction engagement device from said first and second valve means.

4,534,245

TIGHT-GRIP WRENCH

William F. Rossmann, 2431 Highwood Dr., McHenry, Ill. 60050

Filed Nov. 21, 1983, Ser. No. 553,408
Int. Cl.³ B25B *13/28*
U.S. Cl. 81—90.1 **9 Claims**

1. A tight-grip wrench combining desirable features of an open-end wrench, a closed end wrench, a box end wrench, a

flare nut wrench, and a ratchet wrench; said tight-grip wrench including a handle, a large jaw operatively secured to said handle, and a small jaw operatively secured to said large jaw and operable by action of said handle; wherein:

a. said handle includes a tip end and a grip end oppositely disposed from said tip end;

(1) said grip end serving as a gripping place for the user of a wrench; and

(2) said tip end having a tip operatively cooperating with said small jaw, said tip including;

(a) a tip base situated between an arced shoulder, and a straight shoulder;

(b) said tip base, said arced shoulder, and said straight shoulder being substantially colinear;

(c) said tip protruding from said tip base;

(d) said tip including a flat side;

(e) said flat side being substantially perpendicular to said tip base, and between said straight shoulder and said tip base;

(f) a flat top for said tip being substantially parallel to and oppositely disposed from said tip base;

(g) said flat top being shorter than said tip base;

(h) an arced side of said tip oppositely disposed from said flat side and connecting said flat top to the juncture of said arced shoulder and said tip base; and



(i) a holding means adjacent said tip end for holding said handle in said wrench;

b. said large jaw has a solid section and slotted section;

(1) said slotted section receiving said handle and said small jaw in an operative relationship; and

(2) said slotted section including means for securing said handle to said large jaw and means for securing said small jaw to said large jaw;

c. said small jaw has:

(1) a nut gripper;

(2) a small jaw aperture within said nut gripper;

(3) a nobbed nut contact on said nut gripper;

(4) a flat nut contact adjacent said nobbed nut contact;

(5) a small jaw base oppositely from said nut gripper on said small jaw;

(6) a base notch within said small jaw base;

(7) said tip of said handle being received in said base notch; and

(8) said base notch having pair of substantially parallel sides;

whereby said arced side and said flat side cooperate with said base notch to move said wrench as desired between an open position and a closed position.

4,534,246

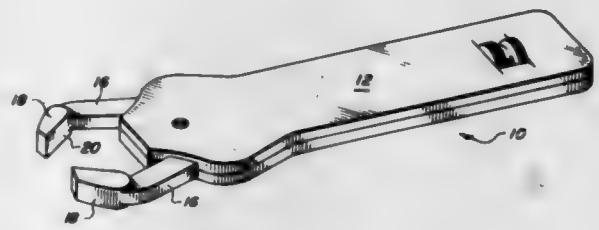
ADJUSTABLE WRENCH

Chris McNulty, 96 Wellington Dr., Farmington, Conn. 06032

Filed Dec. 2, 1982, Ser. No. 446,277

Int. Cl.[3] B25B *13/28*

U.S. Cl. 81—111 10 Claims



1. A wrench for six-sided fasterners comprising:

a handle having a fixed flat anvil surface centered on one end of said handle, said fixed flat anvil surface being in an abutting relationship with an entire one side of the fastener when said fastener is gripped,

a pair of arms mounted in said handle for sliding movement along associated linear paths between a gripping position and a release position, said arms projecting from said handle from opposite sides of said fixed flat anvil surface and said linear paths each forming an acute angle of substantially 16°6′ with the centerline of the wrench,

a pair of opposed gripping heads, one formed on the end of each of said arms with each of said gripping heads having a gripping surface, said gripping heads arranged so that each of said gripping surfaces is in an abutting relationship with the entire one of the sides of the six-sided fastener when said arms are in said gripping positions, said gripping surfaces and said fixed flat anvil surface being arranged to apply substantially equiangular gripping force to three alternate sides of said six-sided fastener,

means for moving said arms along said linear paths between said gripping and releasing positions.

4,534,247

METHOD AND APPARATUS FOR CONTROLLING THE FEEDING OF A BANDSAW BLADE IN BANDSAW MACHINES

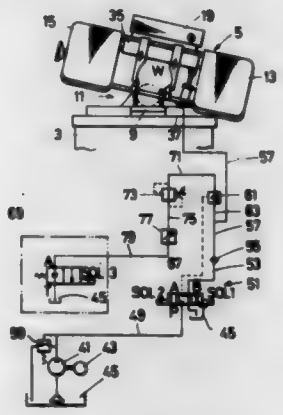
Masayuki Taguchi, Hadano, Japan, assignor to Amada Company, Limited, Japan

Filed Jun. 7, 1983, Ser. No. 501,888

Claims priority, application Japan, Jun. 7, 1982, 57-96322

Int. Cl.[3] B26D *1/46*

U.S. Cl. 83—13 8 Claims



1. A method for controlling bandsaw machines having an endless bandsaw blade, comprising:

applying a feeding force to a workpiece for feeding the workpiece into an endless bandsaw blade for making a cutting; and

using a timer to periodically interrupt the application of the feeding force of the workpiece into the endless blade.

4,534,248

METHOD AND AN APPARATUS FOR THE REMOVAL OF WASTE MATERIAL IN ROTARY PUNCHING

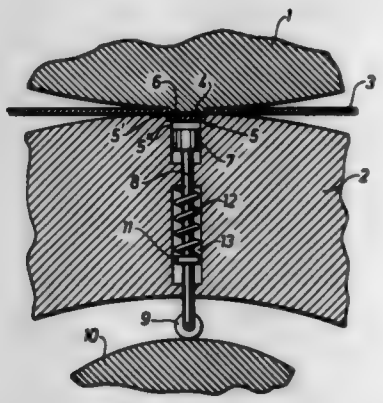
Thorbjörn Andersson, Södra Sandby, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed Nov. 30, 1983, Ser. No. 556,567

Claims priority, application Sweden, Dec. 1, 1982, 8206853

Int. Cl.³ B26F *1/08*

U.S. Cl. 83—24 **12 Claims**



1. A method for the removal of waste material in punching units with cooperating rolls comprising the steps of: providing a number of holes in one of the rolls for receiving punched out waste material, locating a piston in each hole moveable between an inner retracted position, an intermediate position, and an outer extended position, providing an airtight relationship between each piston and walls of each associated hole, creating a vacuum in a hole at the same time waste material is received by retracting the piston, and ejecting the waste material by extending the piston when the roll has been rotated so as to place the hole having the waste material at an ejecting station.

4,534,249

STROKE CONTROL FOR PRESS

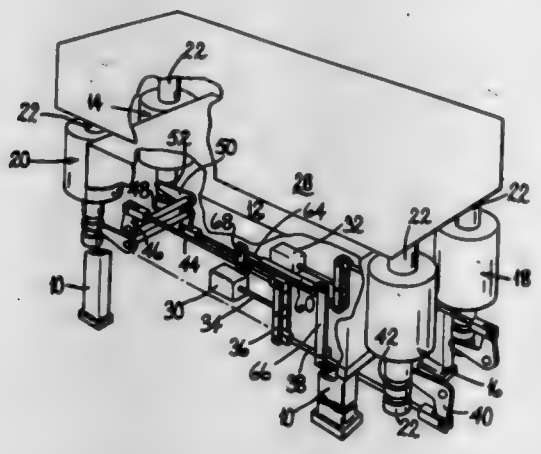
Richard J. Smith, Bristol, England, assignor to USM Corporation, Farmington, Conn.

Filed Jun. 3, 1982, Ser. No. 384,546

Claims priority, application United Kingdom, Jun. 6, 1981, 8117390

Int. Cl.³ B26D *5/00*

U.S. Cl. 83—74 **6 Claims**



1. A cutting press comprising:

a. two platens one of which is supported by a plurality of columns for movement towards and away from the other to effect cutting and return strokes of the press,

b. drive means connected to the columns for effecting such movement of the movable platen, and

c. stroke control means for limiting the movement of the movable platen towards the other platen, said stroke control means comprising a limit switch actuation of which is effective to reverse the operation of the drive means, whereby the cutting stroke is terminated and a return stroke is initiated,

d. said stroke control means comprising a control circuit having,

e. signalling means by which a signal is generated the magnitude of which at any time during a cutting stroke is dependent upon the sum of the distance moved by two portions of the movable platen, which portions are symmetrically located with respect to the columns.

f. comparator means by which the magnitude of the signal is compared with a preselected value,

g. switch actuating means by which, when the magnitude of said signal equals the preselected value, the limit switch is actuated, and

h. said stroke control means comprises a further limit switch actuation of which is effective to terminate the return stroke of the press, together with further comparator means by which the magnitude of the signal generated by the signalling means is compared with a further preselected value, and further switch actuating means by which said further limit switch is actuated, when the magnitude of said signal equals the preselected value.

4,534,250

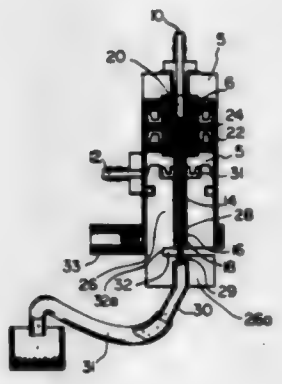
MINIATURE PNEUMATIC PUNCH

Jose M. Garrocho, 7572 Rockhill Rd., Mississauga, Ontario, Canada

Continuation-in-part of Ser. No. 250,260, Apr. 2, 1981, Pat. No. 4,418,596. This application Jul. 19, 1983, Ser. No. 515,178

Int. Cl.³ B26F *1/14*

U.S. Cl. 83—98 **15 Claims**



1. A miniature pneumatic punch for cooperation with a photograph printing mechanism in which a strip of photographic print paper on which negatives are sequentially exposed within an exposure area onto consecutive segments as the paper is fed in a linear direction through the pneumatic punch so that a hole may be precisely punched in the paper to mark each segment during the exposure stage of the printing process, said pneumatic punch comprising:

(a) a cylinder body having located in the upper extent thereof a chamber wherein is seated a piston to be pneumatically driven between upper and lower limits within said chamber and having located within the lower extent thereof below said chamber body means for supporting and guiding a strip of photographic print paper linearly through said pneumatic punch;

(b) passage means positioned centrally within said body means for slidably receiving an elongated guide centrally secured at one end to said piston, the free end of said guide terminating in a punch;

(c) said body means including die means located adjacent to but outside the exposure area in axial alignment with said passage means and said guide for flushly receiving the punch when the piston is driven to said lower limit;

(d) said body means further including notch means disposed

in said body means between said passage means and said die means for receiving and guiding the edge of a strip of photographic print paper linearly through said pneumatic punch, and said die means including edge means generally aligned with one boundary of the exposure area and located transverse to the direction of travel of the paper such that the exposure area is clear and unobstructed by any portion of said pneumatic punch, thereby maximizing the exposure area; and

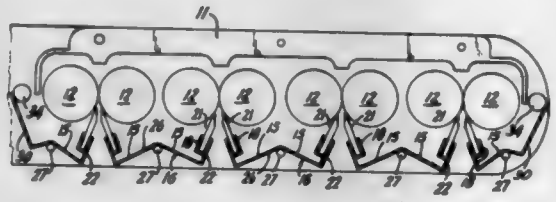
(e) pneumatic driving means including a pair of air inlet ports located in said chamber and separated by said piston against fluid communication within said chamber for driving said piston between said upper limit and said lower limit.

4,534,251

STRIPPING ASSEMBLY FOR NOODLE CUTTING MACHINERY

Michael S. Wilson, 34 Overhill Rd., Melville, N.Y. 11747

Filed Sep. 29, 1982, Ser. No. 426,738
Int. Cl.³ B26D *7/18*
U.S. Cl. 83—111 **5 Claims**



1. An improved construction for alimentary paste noodle cutting machines comprising

a pair of side frame members disposed in parallel spaced relation,

at least a first and second pair of counter rotating roller cutters mounted therebetween for severing introduced alimentary paste sheet material into discrete noodle strips,

each pair of counter rotating roller cutters having a plurality of complementally intermeshing lands and grooves on the facing surfaces thereof whose axial dimensions are determinative of the width of severed noodle product emanating from the base portion of the grooves therein,

a stripper comb holder of elastically deformable material having a generally W-shaped cross section and of a transverse extent to substantially span the distance between said side frame members,

said generally W-shaped comb holder having a pair of downwardly directed and angularly diverging inboard arm members transversely joined to form an upwardly directed transversely disposed intermediate apex and pair of upwardly directed diverging outboard arm members each joined to a dependent end of one of said inboard arm members and terminating in first and second exposed marginal edges disposed in substantially parallel spaced relation with said transversely disposed intermediate apex,

stripper comb mounting means associated with the first and second exposed marginal edges of said outboard arm members of said comb holder,

stripper combs each having a base portion removably engageable with said mounting means and a plurality of terminally tapered stripping teeth complementally sized to be contained within the grooves on said roller cutters extending outwardly therefrom, and

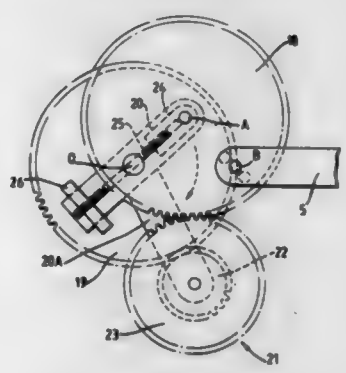
means extending inwardly from said side frame members intermediate said first pair and said second pair of roller cutters for supporting said intermediate apex of said comb holder to spring bias the ends of said teeth of stripper combs counted in said mounting means in tangential compressive relation with the surface of said grooves in one of said roller cutters forming the first pair thereof and in the adjacent roller cutter of the second pair thereof.

4,534,252

LEDGER FOR CUT-OFF DEVICES IN CIGARETTE MACHINES

Timothy C. Harrington, Aylesbury, and John K. Horsley, High Wycombe, both of England, assignors to Molins PLC, London, England

Filed Nov. 5, 1982, Ser. No. 439,610
Claims priority, application United Kingdom, Nov. 5, 1981, 8133404
Int. Cl.³ B26D *1/56*
U.S. Cl. 83—310 **7 Claims**



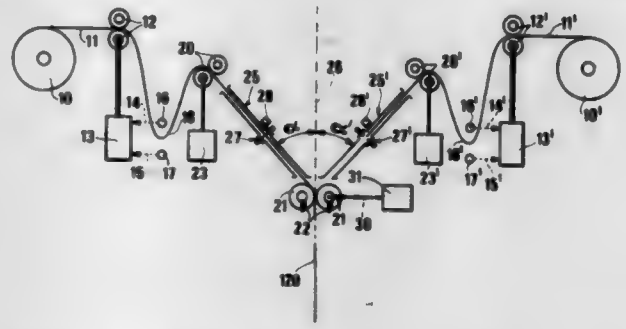
1. A ledger mechanism for a rod cutting apparatus, comprising a ledger; a coupling rod on which the ledger is fixedly mounted; and a pair of spaced gear arrangements each having a gear ratio of 2:1 to generate a pair of points, one point on each gear arrangement, which reciprocate in sycnhronism along straight parallel paths, wherein the coupling rod is pivotally coupled at one end to one of said pair of points on one gear arrangement, and at its opposite end to the other of said pair of points on the other gear arrangement so that the ledger reciprocates linearly, each gear arrangement comprising a planetary gear which orbits around an axis of a fixed gear and meshes with said fixed gear through an idler gear, first adjustment means for adjusting a first distance between the axes of said fixed and planetary gears, and second adjustment means for adjusting a second distance between the axis of said planetary gear and said point on said gear arrangement.

4,534,253

FEEDING AND CUTTING DEVICE FOR A CONTINUOUS WEB

Enzo Seragnoli, Bologna, Italy, assignor to G. D. Societa' per Azioni, Bologna, Italy

Filed May 24, 1982, Ser. No. 381,046
Claims priority, application Italy, Jun. 3, 1981, 3453 A/81
Int. Cl.³ B25D *1/56*; B23D *25/02*
U.S. Cl. 83—336 **14 Claims**



1. A device for feeding and cutting a continuous web (11, 11') into cut pieces (120), having automatic reel change for a reel from which the web is unwound, including a cyclic cutting device (21) located at the confluence of two tracks (25) along which two continuous webs (11, 11') unwound from corresponding reels (10, 10') are fed, and control means (74, 74') generating a signal when an associated reel becomes empty; there being provided feed means (12, 20) for feeding said webs from the said reels (10) along each of the said tracks to the said cutting device (21), and the said feed means includ-

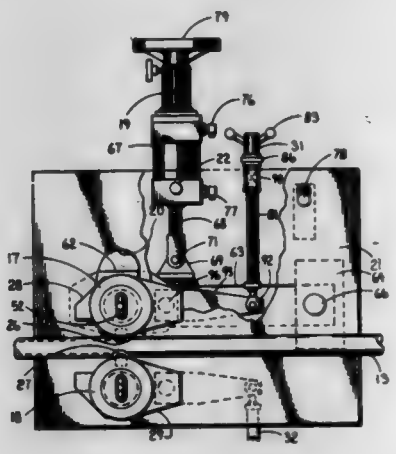
ing, for each track, a pair of feed rollers (20) for feeding the associated web (11) to the said cutting device (21); the said device including a pulse generating unit (33, 34) for generating pulses which are phase related to the said cutting device (21) and a frequency of which is a function of a cutting frequency of the said device (21), and means (23) constituted by stepping motors controlled by the said pulse generating unit (33) for directly driving the said pair of rollers (20) in one direction for feeding said web and in a reverse direction for retracting said web; the said feed means (12, 20) comprising as well as the said pair of feed rollers (20) actuated by a first control circuit (23, 72), at least one pair of unwinding rollers (12) actuated by a second control circuit (13) to unwind the said web from a reel (10) towards the said feed rollers (20), the said second control circuit including means (16, 17) operable to maintain a substantially zero tension on the said web (11) at the said feed rollers (20) during the whole of the unwinding of the reel (10), the said stepping motor (23) being fed at each operating cycle by means of a control circuit (67, 47, 72) with a number of pulses (38) determining the passage of a cut piece of predetermined length between the said feed rollers (20), and including means (66) for selectively changing the predetermined length of the said cut piece, the said means varying the number of pulses (38) sent to the said stepping motor (23), the device further including reel change means (80, 88, 94, 86) actuated by the said means (74, 74') for detecting when a first web has been used up and, in a first operating cycle, simultaneously with the production of a piece cut from the said first web (11), controlling the arrival and stopping of the end of a second, replacement web (11') at the said cyclic cutting means (21), and in following operating cycles controlling the supply of only the said replacement web (11') to the said cyclic cutting means (21) to obtain pieces cut only from the said second web (11'), and including means (27, 27') for positioning the end of the said replacement web (11') at a predetermined distance from the said cyclic cutting means (21) during the unwinding of the first web (11), the said reel change means controlling the advancing movement of the said replacement web (11') in the operating cycle following that in which the said means (74) for detecting the end of the web being unwound are activated, and controlling a retraction of the end of the web (11) which is running out from the said cutting means (21) during the first operating cycle producing a piece (120) cut from the said second replacement web (11').

4,534,254

CABLE STRIPPING APPARATUS

Mieczlyslaw Budzich, Lexington, and Forest G. Fitz, Jr., West Columbia, both of S.C., assignors to AT&T Nassau Metals Corporation, Gaston, S.C.

Filed Aug. 29, 1983, Ser. No. 527,548
Int. Cl.[3] H02G *1/12*; H01B *15/00*
U.S. Cl. 83—425.2 **12 Claims**



1. Apparatus for stripping the outer layers from cable comprising drive means including:

first and second drive wheels for pulling the cable through the cutting region of the apparatus;

first stationary cutting means located within a slot in said first drive wheel and extending beyond the periphery thereof toward said second drive wheel;

second stationary cutting means located within a slot in said second drive wheel and extending beyond the periphery thereof toward said first drive wheel;

said drive wheels and said cutting means defining the cutting region of said apparatus;

means associated with said first cutting means for adjusting the distance said cutting means extends beyond the periphery of said first drive wheel;

means associated with said second cutting means for adjusting the distance said cutting means extends beyond the periphery of said second drive wheel;

said first and second cutting means being located along an imaginary line joining the rotational axes of said first and second drive wheels;

means associated with said first drive wheel for permitting said wheel to be moved up and down in response to diametric variations in cable diameter;

means connected to said last mentioned means for controlling the rate of up and down movement of said first wheel and said first cutting means as cable passes through the cutting region;

a first motor connected to said first drive wheel; and

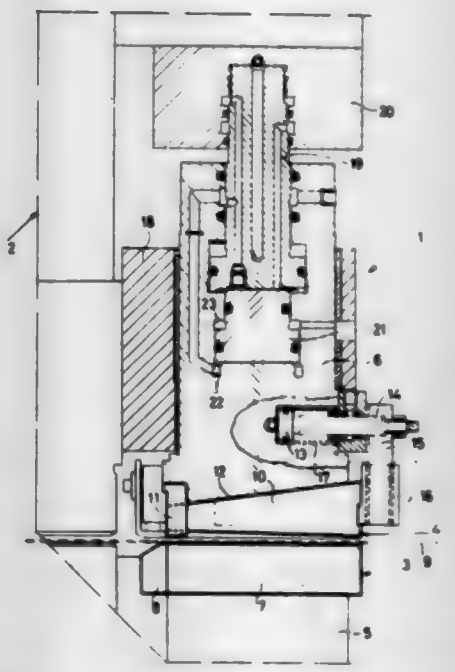
a second motor connected to said second drive wheel, both of said motors being characterized by high torque and low revolutions per minute, said first motor being moveable with said first drive wheel.

4,534,255

SHEARING MACHINE FOR METAL SHEET HAVING BLADES AT RIGHT ANGLES CONSISTING OF MUTUALLY MOVABLE SEGMENTS

Guido Salvagnini, Sarego, Italy, assignor to Salvagnini Transferica S.p.A., Sarego, Italy

Filed May 24, 1983, Ser. No. 497,713
Claims priority, application Italy, Jun. 9, 1982, 21778 A/82
Int. Cl.[3] B26D *5/12*
U.S. Cl. 83—530 **15 Claims**



1. A shearing machine for sheet metal comprising upper and lower cooperating blades positioned for shearing action therebetween, each blade having two perpendicular segments, the lower blade being carried by a stationary support and the two upper blade segments being carried by a single vertically reciprocating support, wherein each segment of the upper blade is movably connected to said single reciprocating support so as to be selectively independently displaceable with respect to the

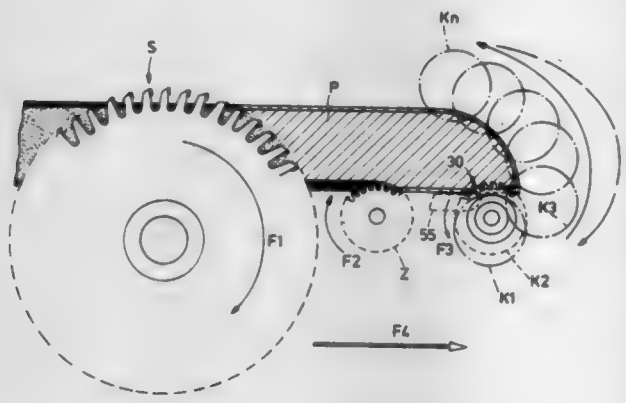
other segment and to said reciprocating support in order to vary the vertical distance of the selected segment from the lower blade and selectively to remove said selected segment from the shearing action.

4,534,256

DEVICE FOR MAKING A GROOVE IN THE EDGE OF A PANEL

Gino Benuzzi, 5, Via Angelo Custode, Bologna, Italy

Filed Oct. 18, 1982, Ser. No. 434,812
Claims priority, application Italy, Oct. 20, 1981, 3554 A/81
Int. Cl.³ B27B *5/00*
U.S. Cl. 83—863 **9 Claims**



1. In a sawing machine for cutting panels (P) and the like, of the type in which said panels (P) are supported on a horizontal table (A) and a main circular saw (S) mounted on a movable carriage (C) effects the cutting in a vertical plane and moves across said table (A) along a horizontal cutting line, and having a grooving device for making at least one groove or incision in the edge of said panels (P) at the line of exit of said circular saw (S) out of said panels (P), the improvement wherein said grooving device comprises at least one rotary grooving tool (30) mounted on the same carriage (C) as said main circular saw (S) for movement therewith, and being guided by feeler means (31', 32") along a path corresponding to the contour of an edge of a said panel being cut, and wherein said rotary grooving tool (30) is mounted on a movable side (12) of an articulated parallelogram structure (1, 13, 11, 12-9, 10, 14, 15) mounted on said carriage (C) by means of another side (1) rigidly secured thereto, means (17) being provided for moving said articulated parallelogram structure between a rest position in which said grooving tool (30) is inactive, and a working position in which said grooving tool (30) engages said panels (P).

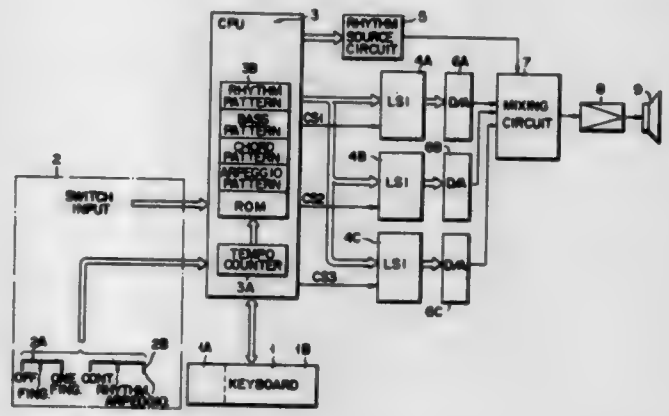
4,534,257

ELECTRONIC MUSICAL INSTRUMENT

Tsuyoshi Mitarai, Yokohama, Japan, assignor to Casio Computer Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 432,998, Oct. 6, 1982, abandoned. This application Aug. 27, 1984, Ser. No. 644,666
Claims priority, application Japan, Oct. 9, 1981, 56-161411
Int. Cl.³ G10H *1/38, 1/40, 7/00*
U.S. Cl. 84—1.03 **11 Claims**

1. An electronic musical instrument comprising:
a keyboard having a plurality of keys, said keys including keys for performing at least one of a melody and an accompaniment;
at least one musical tone signal generating means having a plurality of tone signal generating channels, said tone signal generating channels being switchable on a time division basis, each tone signal generating channel producing a musical tone signal, said musical tone signal generating means including means for generating one or more of the musical tone signals simultaneously;
manual switch means for selecting a performance mode using the musical tone signals generated by said musical tone signal generating means;
said manual switch means including means for selecting at least one of chord, bass and arpeggio as an accompaniment; and
channel control means for allotting tones corresponding to at least one of melody and accompaniment determined by key operations on said keyboard to different ones of said



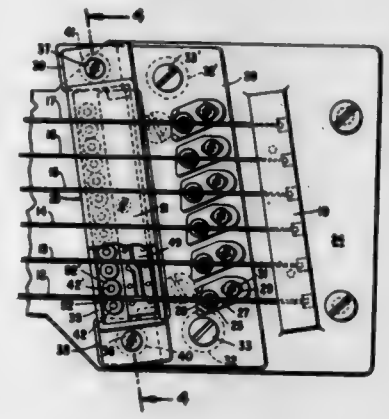
tone signal generating channels depending on a performance mode selected by said manual switch means, said channel control means allotting tones of the melody to at least one of said tone generating channels in one performance mode selected by said manual switch means, and allotting tones of the accompaniment to said at least one of said tone generating channels in another performance mode selected by said manual switch means.

4,534,258

TRANSDUCING ASSEMBLY RESPONSIVE TO STRING MOVEMENT IN INTERSECTING PLANES

Norman J. Anderson, 2 Schmitt La., Flanders, N.J. 07036

Filed Oct. 3, 1983, Ser. No. 538,526
Int. Cl.³ G10H *3/18*
U.S. Cl. 84—1.15 **18 Claims**



1. A transducing assembly for a musical instrument having magnetically permeable strings held under tension between a pair of supports, comprising:
a first reluctance type transducer positioned on one side of said string, and responsive to the component of movement of the string in a first plane for producing a first electrical signal,
a second reluctance type transducer positioned on the other side and displaced longitudinally along said string from said first transducer, and responsive to the component of movement of the string in the second plane at a predetermined angle to said first plane for producing a second electrical signal,
a pair of audio channels, and
an independent output circuit connected to each of said

transducers for supplying each of said signals to a respective channel.

4,534,259

CHIN REST FOR A VIOLIN OR THE LIKE

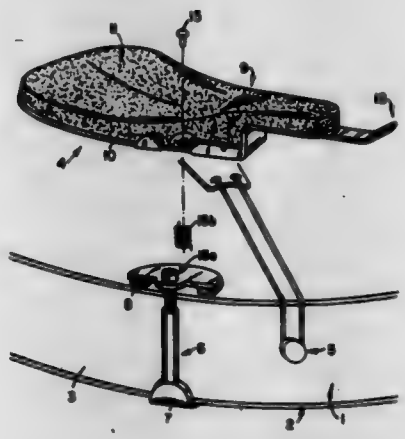
Wilhelm Wolf, Zandweg 78, NL-DeMeern (UTR), Netherlands

Filed Jan. 28, 1983, Ser. No. 461,756

Claims priority, application Fed. Rep. of Germany, Feb. 15, 1982, 3205292; Sep. 4, 1982, 3232996

Int. Cl.³ G10D *3/18*

U.S. Cl. 84—279 **3 Claims**



1. A chin rest for a violin or the like comprising:
a chin rest attached to a chin rest base plate;
at least one support beacket adapted to grip the body of said violin;
pivot means pivotally connecting said base plate to said support bracket; and
a return spring biassing said base plate to a start position.

4,534,260

STRING MUSICAL INSTRUMENT

Leo L. Burrell, 6005 Tuscarawas Rd. Beaver, Pa. 15009

Filed Jun. 4, 1984, Ser. No. 617,515

Int. Cl.³ G10D *3/00*

U.S. Cl. 84—293 **10 Claims**



1. A string musical instrument comprising a body and fretboard having substantially aligned longitudinal center-lines, a string supporting assembly, including a bridge on one end of said instrument and a nut and head on the other end thereof, said bridge and nut being rotated, one relative to the other, about the longitudinal axis of said assembly, said fretboard being twisted progressively throughout its length to correspond to said rotation, and a plurality of strings mounted on said assembly and disposed at progressively varying angles to the top surface of said body throughout said longitudinal axis, whereby chording finger positions are made comfortable.

4,534,261

VENT KEY MODIFICATION FOR FLUTE

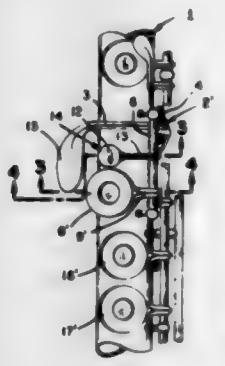
Raymond Fabrizio, 780 Dry Creek Rd., Monterey, Calif. 93940

Filed Mar. 30, 1983, Ser. No. 480,388

Int. Cl.³ G10D *7/02*

U.S. Cl. 84—384 **4 Claims**

1. An improvement in a modern Boehm system flute having a closed G# which is opened by a G# lever and includes a duplicate G# key and extra hole comprising:
a. deleting said duplicate G# key and extra hole;
b. a vent means having an open area substantially smaller than said extra hole opening;
c. vent cover means for selectively closing said open area;
d. said vent means is longitudinally located between said deleted extra hole and the A hole of said flute;
e. a G key selectively covering said A hole;



f. connection means permitting the controlled conjoint opening and closing of said G key and said vent cover means; and
g. relocating said G# lever toward the open end of said flute to provide space for said vent means and elongating the length of said lever to permit standard fingering.

4,534,262

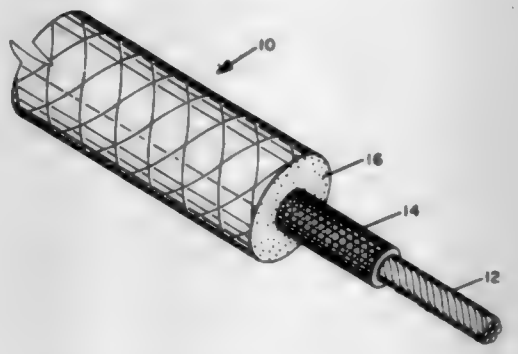
SAFETY MOORING LINE

Richard C. Swenson, Carriere, Miss., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,522

Int. Cl.³ D04C *1/12*

U.S. Cl. 87—6 **4 Claims**

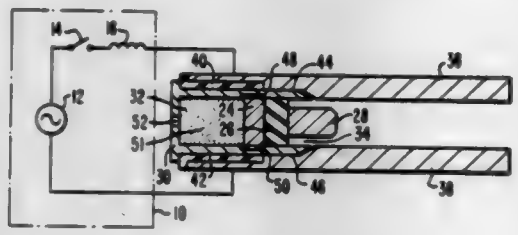


1. A safety mooring line for reducing snapback hazard, said mooring line comprising:
a highly stretchable safety line formed of a high stretch material;
an armor layer formed of a heat resistant, low stretch and high strength synthetic fiber material, braided over said safety line with a high braid angle so as to be able to stretch and elongate with stretch of said safety line; and
an outer strength member formed of a high strength, low stretch synthetic fiber braided over said armor layer and safety line so as to have a relatively low stretch characteristic and to be the load-bearing component of said mooring line;
said armor layer and said safety line being relatively unstretched whenever said strength member is under load and being readily stretched in the event of parting of said strength member so as to delay parting of said safety line and armor layer which guide recoil of the parted ends of said strength member telescopingly therealong, said armor layer being operative to protect said safety line from being broken as a result of heat and laceration by said parted ends as they recoil therealong, thereby preventing total snapback of said mooring line.

4,534,263
ELECTROMAGNETIC LAUNCHER WITH HIGH REPETITION RATE SWITCH

Carl J. Heyne, Hampton Township, Allegheny County, and Daniel W. Deis, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jul. 19, 1982, Ser. No. 399,510
Int. Cl.[3] F41F *1/02;* H02K *41/02;* H01H *85/18*
U.S. Cl. 89—8 23 Claims



1. A switch for conducting current between two conductive rails and for commutating said current into a conductive armature between said rails, said switch comprising:

a conductive cartridge shaped to make sliding electrical contact with said rails, said cartridge having a pressure chamber and an aperture for receiving a projectile;

means for increasing pressure within said pressure chamber to accelerate said projectile toward a muzzle end of said rails and to accelerate said cartridge in the opposite direction; and

means for conducting current between said rails and for propelling said projectile along said rails.

10. An electromagnetic projectile launcher comprising:

a pair of generally parallel conductive rails, said rails forming a bore having a breech end and a muzzle end;

a source of current, connected to said rails;

a conductive switch cartridge in sliding electrical contact with said rails at the breech end, said cartridge; having a pressure chamber and an aperture for receiving a projectile;

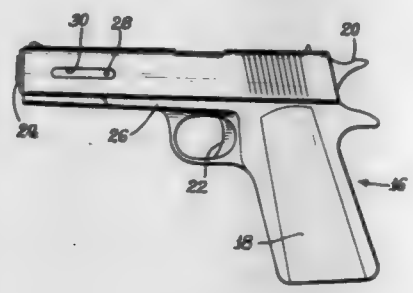
means for increasing pressure within said pressure chamber to accelerate said projectile along said cartridge and to remove said cartridge from electrical contact with said rails; and

means for conducting current between said rails after said cartridge is removed from electrical contact with said rails.

4,534,264
RECOIL REDUCER

Sherwin S. Tarnoff, 3309 N. Mannheim Rd., Franklin Park, Ill. 60131, and Mikio Sano, 3319 Manheim Rd., Franklin Park, Ill. 60062

Filed Apr. 6, 1983, Ser. No. 482,588
Int. Cl.[3] F41C *21/18*
U.S. Cl. 89—14.3 2 Claims



1. A firearm, of automatic piston type, utilizing a cartridge having a propellant and a projectile, and mechanism for firing the cartridge, and including a barrel having a uniform diameter bore through which the projectile is propelled by the gases of explosion of the propellant, and further, having a shroud slidable on the barrel with a normal position closely adjacent the muzzle and retractable rearwardly therefrom, wherein,

the barrel is provided with ports adjacent the muzzle thereof capable of releasing explosion gases from the barrel in mutual counteracting effect, independently of the emergence of the gases from the muzzle,

the shroud has ports aligned with the ports in the barrel,

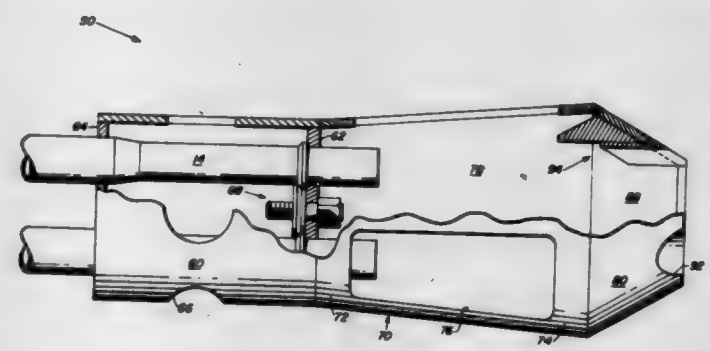
the ports in the barrel are positioned at the sides of the barrel, diametrically opposite each other, at the uniform diameter portion of the bare and adjacent to the muzzle of the barrel, and

the ports in the shroud are in the form of slots elongated longitudinally of the barrel whereby to provide registration with the side ports throughout the retracting movement of the shroud.

4,534,265
SABOT DIVERTER

Jack Bates, Ridgecrest, and Arthur E. Clayson, Inyokern, both of Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Sep. 29, 1983, Ser. No. 537,212
Int. Cl.[3] F41F *17/12*
U.S. Cl. 89—14.6 6 Claims



1. A fragment diverter for attachment to the muzzle end of a platform carried gun system having at least one firing gun barrel, for altering, in a directionally controlled manner, the trajectory of selected sabot fragments discarded from fired discarding sabot type projectiles, which comprises:

a mounting section, said mounting section configured for rigid attachment to said muzzle end of said gun system;

an extender cage, said extender cage attached to said mounting section and defining an expansion chamber through which all components of said discarding sabot projectiles, including said discarded sabot fragments, travel unimpeded;

a deflector section, said deflector section being a hollow, open ended frustrum defining a fragment control chamber, said deflector section having a base portion, a neck portion and a wall, said base portion of said deflector section attached to said extender cage and one face of said deflector section wall forming a fragment deflecting surface, said deflector section wall defining a cutout opening into said neck portion of said deflector section, said cutout aligned with said gun barrel from which said discarding sabot type projectiles are fired, said deflecting surface being for the purpose of intercepting and altering the trajectory of a selected portion of said separated sabot fragments, said selected portion of separated fragments being those fragments having trajectories which if unaltered would result in direct fragment impact with said firing platform; and

a cutter-dam, said cutter-dam mounted in said deflector section to split directly impacting fragments for further interaction with said deflecting surface and to prevent said sabot fragments having trajectories altered by said deflecting surface from entering the line of fire of said firing gun barrel of said gun system.

4,534,266

COMPOSITE ARMOUR PLATING

Roger Huet, Grenoble, France, assignor to Aluminum Company of America, Pittsburgh, Pa.

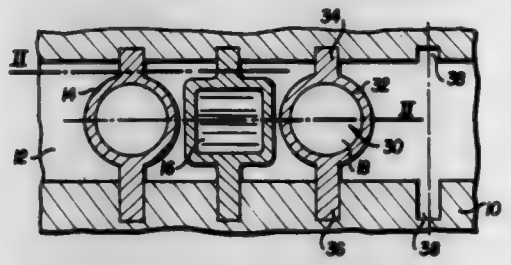
PCT No. PCT/FR79/00020, § 371 Date Nov. 8, 1979, § 102(e) Date Oct. 17, 1979, PCT Pub. No. WO79/00725, PCT Pub. Date Oct. 4, 1979

PCT Filed Mar. 6, 1979, Ser. No. 187,843

Claims priority, application France, Mar. 8, 1978, 78 07538

Int. Cl.[3] F41H *5/04;* B22D *19/02*

U.S. Cl. 89—36.02 4 Claims



1. A composite cast metal armour plating comprising:
a metal panel, and
a plurality of individual ceramic inserts embedded in said panel and regularly arranged in a predetermined, ballistically efficient network, wherein each of said ceramic inserts includes a surrounding metal shell which is provided with at least one protrusion which is linkable with the shell of an adjacent ceramic insert to maintain said inserts in said predetermined network during casting.

4,534,267

SELF-PROPELLED ARMORED VEHICLE

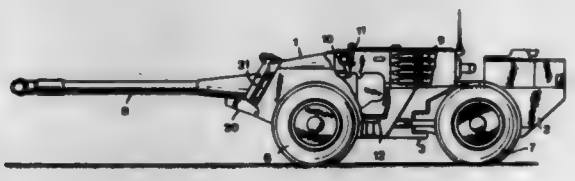
Roger Fagel, Avenue Forestiere, 102, Marcinelle, Belgium

Filed Jun. 28, 1977, Ser. No. 811,899

Claims priority, application Belgium, Jun. 29, 1976, 0168413

Int. Cl.[2] F41H *7/02*

U.S. Cl. 89—40.03 3 Claims



1. A self propelled articulated armored vehicle comprising:
a forward casemate,
an after caisson,
said forward casemate and said after caisson being joined, one with the other, around a vertical pivot axis,
said forward casemate being supported by at least one train of driving wheels,
said after caisson being supported by at least one train of driving wheels,
said forward casemate having means for accommodating at least one weapon, ammunition, equipment to maneuver the vehicle and to sight the weapon, and the crew,
said after caisson having means for accommodating the vehicle's power package for energizing said driving wheels,
said driving wheels being mounted on a variable-height suspension,
means acting symmetrically for linking said forward casemate to said after caisson to determine the relative horizontal angular position of said forward casemate with respect to said after caisson,
and means for varying the variable height suspension of said driving wheels supporting said forward casemate and said after caisson to determine the relative height of said forward casemate and said after caisson with respect to the ground.

4,534,268

HYDRAULIC FLUID CIRCUIT OF HYDRAULIC SHOVEL

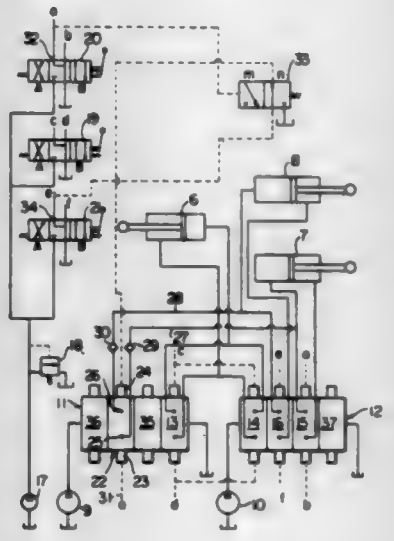
Takashi Yagyu, Ibaraki; Takeshi Yamaguchi, Tsuchiura; Sotaro Tanaka, and Yasuo Sakaki, both of Ibaraki, all of Japan, assignors to Hitachi Construction Machinery Co., Ltd., Tokyo, Japan

Filed Jul. 9, 1982, Ser. No. 396,878

Claims priority, application Japan, Jul. 10, 1981, 56-101830[U]

Int. Cl.[3] F15B *11/16*

U.S. Cl. 91—6 3 Claims



1. A hydraulic fluid circuit for a hydraulic shovel, the hydraulic fluid circuit comprising:
a first hydraulic pump,
a second hydraulic pump,
a first directional control valve group connected to said first hydraulic pump including a first directional control valve connected to a first hydraulic cylinder, and a second directional control valve connected to a second hydraulic cylinder,
a second directional control valve group connected to said second hydraulic pump including a third directional control valve having a first working port connected to one cylinder chamber of said first hydraulic cylinder and a second working port connected to one cylinder chamber of said second hydraulic cylinder, and
a first pilot line means for introducing a first pilot pressure to said first directional control valve so as to switch said first directional control valve to a position in which hydraulic fluid from said first hydraulic pump is supplied to said one cylinder chamber of said first hydraulic cylinder and for introducing the first pilot pressure to a first pilot port for switching said third directional control valve to a first position in which hydraulic fluid from said second hydraulic pump is supplied to said first working port,
a second pilot line means for introducing a second pilot pressure to said second directional control valve so as to switch said second directional control valve to a position in which hydraulic fluid from said first hydraulic pump is supplied to said one cylinder chamber of said second hydraulic cylinder and for introducing the second pilot pressure to a second pilot port for switching said third directional control valve to a second position in which working fluid from said second hydraulic pump is supplied to said second working port, and
a change-over valve means mounted in a line of said second pilot line means, said first pilot line means including a pilot line actuating said change-over valve means such that, when said first pilot pressure is not generated, said

change-over valve means introduces said second pilot pressure to the second pilot port of said third directional control valve by communicating said line of said second pilot line means with said third directional control valve, and, when said first pilot pressure is generated, said pilot line means is operable to actuate said change-over valve means to a position blocking said line of said second pilot line means and communicating said second pilot port to a tank.

4,534,269

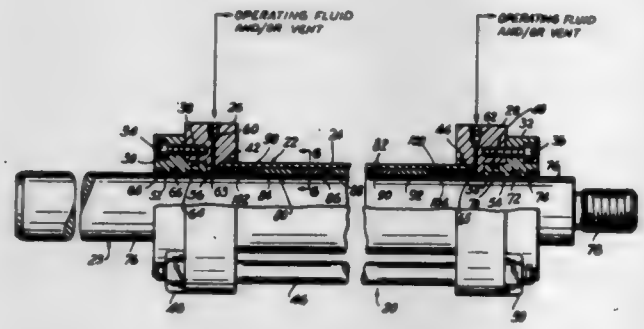
LOCKING, BEARING AND ACTUATING APPARATUS

Joseph E. Scerbo, and Roy B. Johnson, both of York, Pa., assignors to York Industries, Inc., York, Pa.

Filed Nov. 16, 1981, Ser. No. 333,249

Int. Cl.³ F15B *15/26*

U.S. Cl. 91—41 **25 Claims**



1. In locking and bearing apparatus which include a generally tubular outer element, a generally cylindrical inner element disposed at least in part within said outer element and dimensiond relative thereto to provide an operating space therebetween, and means restricting said operating space against the loss of pressurized fluid therefrom, the improvements comprising, an intermediate element disposed in said operating space and including fluid passages formed therein in communication with said operating space for fluid distribution through said operating space, said intermediate element being dimensioned relative to said operating space to form interference fits with said outer and inner elements to lock the same together and prevent relative movement therebetween, said outer element being expandable within the elastic limit thereof by fluid pressure in said operating space to release said interference fits, and means to introduce pressurized fluid into said operating space whereby, the introduction to said operating space of fluid pressurized to a level effective to expand said outer element within the elastic limit thereof to an extent sufficient to release said interference fits will be operable to release the lock between said outer and inner elements and enable relative movement therebetween, and whereby the subsequent depressurization of said fluid below said level will be operable to reinstitute said interference fits and re-lock said outer and inner elements against relative movement.

4,534,270

VACUUM BOOSTER ASSEMBLY

Michiharu Nishii, Toyota, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Nov. 16, 1983, Ser. No. 552,467

Claims priority, application Japan, Dec. 1, 1982, 57-182925[U]; Dec. 2, 1982, 57-182919[U]

Int. Cl.³ F01B *19/00;* F16J *3/02*

U.S. Cl. 91—376 R **5 Claims**

1. A vacuum booster assembly, comprising:

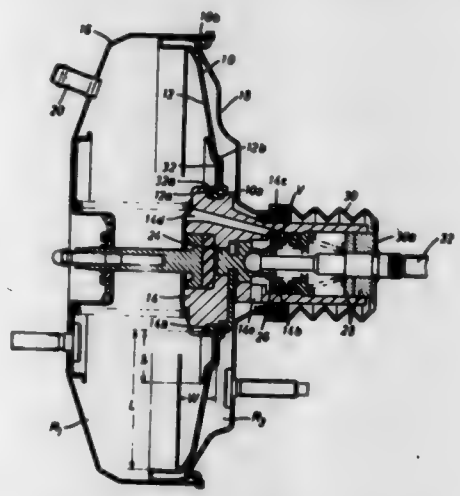
a housing,

a piston body axially movable in said housing,

a diaphragm member having an inner peripheral bead coupled over said piston body and an outer peripheral bead secured to the inner wall of said housing, said diaphragm member being arranged to subdivide the interior of said housing into a negative pressure chamber and a variable pressure chamber,

valve means cooperable with said piston body for selectively communicating said variable pressure chamber with said negative pressure chamber or the atmospheric air,

an annular support plate attached to one face of said diaphragm member in said negative pressure chamber and having an inner cylindrical portion coupled with the inner peripheral bead of said diaphragm member to fasten the



same to said piston body in an air-tight manner, wherein said annular support plate is made of thin sheet metal and formed at its radially inward circumference with an annularly pressed portion, and an annular reinforcement plate of thick sheet metal integrally secured to the annularly pressed portion of said support plate and located in said negative pressure chamber, said reinforcement plate being extended radially outwardly in a predetermined radius over the annularly pressed portion to prevent flexure of the outer peripheral portion of said support plate.

4,534,271

DUAL MACHINE AGGREGATES WITH A CONNECTION FOR A CONSUMER OF MECHANICAL ENERGY

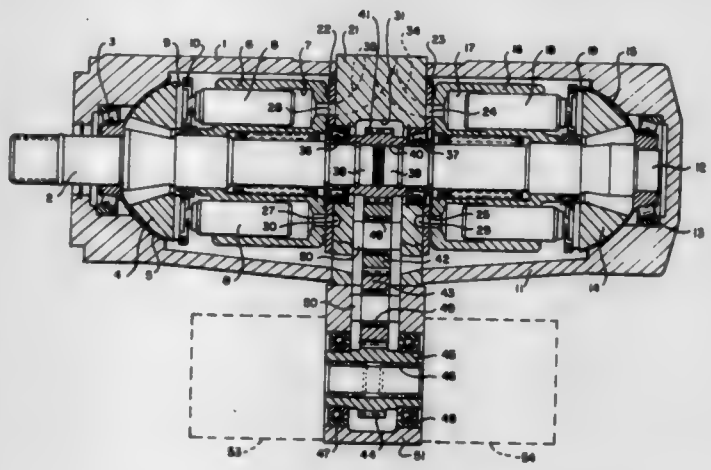
Franz Forster, Muhlbach, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Filed Jun. 29, 1983, Ser. No. 508,793

Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225464

Int. Cl.³ F01B *13/04;* F04B *23/04*

U.S. Cl. 91—472 **14 Claims**



1. In a two-machine aggregate with two hydrostatic piston machines arranged coaxially to each other with a common intermediate control bottom between them, having a common shaft, a free shaft connection for connecting another consumer of mechanical energy spaced from said common shaft, the improvement comprising a torque transfer unit connected with the said common shaft between the two machines and extend-

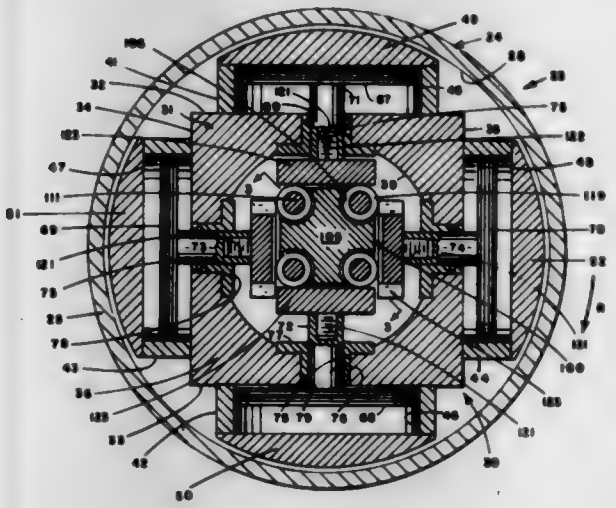
ing through the common intermediate control bottom, the free shaft connection being located on an auxiliary shaft parallel to said common shaft of the two machines and said torque transfer unit being connected with this auxiliary shaft.

4,534,272

LOW INERTIA AND LOW FRICTION ROTATING CYLINDER ENGINE

Everett F. Irwin, Dunedin, Fla., assignor to Dynacycle Corporation, Dunedin, Fla.

Filed Nov. 30, 1984, Ser. No. 676,880
Int. Cl.³ F01B *13/06*; F16H *25/08*
U.S. Cl. 91—493 **8 Claims**



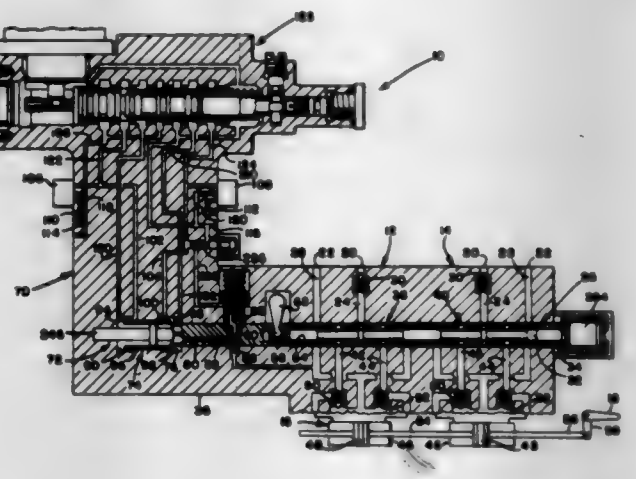
1. An engine comprising,
a housing having a central axis,
a cylinder block rotatably mounted in said housing for rotation coaxially with said housing axis,
said cylinder block having an axially extending opening therein,
an output shaft having an inner end disposed in said axially extending opening and an outer end extending axially from said housing,
said output shaft having an axis of rotation disposed eccentrically with respect to the axis of rotation of said cylinder block,
at least a first and a second pair of diametrically opposed generally radially extending piston-receiving cylinders disposed in said cylinder block with said first pair being circumferentially and equidistantly spaced from said second pair,
a piston slideably and sealingly mounted in each of said piston cylinders,
abutment means carried by the radially inner ends of said pistons,
a pair of piston joining members in the form of a pair of bridle rings secured to the abutment means of each pair of diametrically opposed pistons for insuring that the pistons disposed in each pair of cylinders reciprocate in unison,
a square cam means carried by said output shaft and rotatable unitarily therewith and disposed at a location intermediate said pistons,
axially extending roller means carried by said cam means and engaged by the abutment means on the inner end of said pistons,
said roller means being partially disposed below the surface of said cam means so as to only partially extend therefrom and including axially extending maintaining means mounting said roller means for rotation and preventing other movement of said roller means,
and there being four of said roller means mounted for rotation in semicircular grooves in corner portions of said square cam,
whereby a compact and low inertia structure is obtained,
and spaced first intake and exhaust ports positioned to be alternately confluent with the outer ends of said pistons for alternately charging and exhausting the area outwardly of said piston and imposing a load upon said cam means for causing rotation of said output shaft and said cylinder block.

4,534,273

CONTROL ACTUATION SYSTEM INCLUDING STAGED DIRECT DRIVE VALVE WITH FAULT CONTROL

Robert D. Vanderlaan, Kalamazoo, Mich., assignor to Pneumo Corporation, Boston, Mass.

Continuation of Ser. No. 463,631, Feb. 3, 1983, abandoned. This application Dec. 10, 1984, Ser. No. 680,231
Int. Cl.³ F15B *11/00*
U.S. Cl. 91—510 **28 Claims**

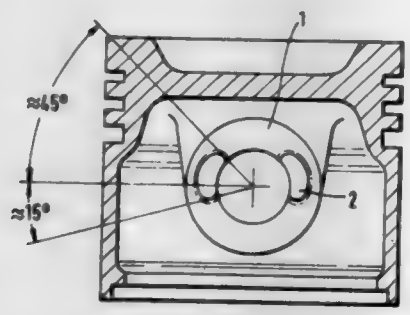


1. A control actuation system useful in a dual hydraulic servo actuator control system for operating a relatively long stroke, control valve element therein, comprising an actuator, a tandem piston axially movable in said actuator and drivingly connectable to the control valve element, staged valve means operatively connected to said actuator for effecting axial movement of said piston in opposite directions, and control input means including force motor means for linearly driving said staged valve means through a relatively short stroke in relation to the stroke of said piston to effect position control of said piston, said piston including two serially connected piston sections each having axially opposed pressure surfaces, and said staged valve means including a valve plunger having two serially connected valving sections respectively for controlling the differential application of fluid pressure from respective sources thereof on said opposed pressure surfaces of respective said piston sections to cause axial movement of said piston in opposite directions in response to relatively short, directly driven linear movement of said valve plunger in opposite directions, a fault control valve member axially movable in said staged valve means, and means responsive to fluid pressure from either source thereof being supplied to said staged valve means for moving said fault control valve member from a disabling position blocking the differential application of fluid pressure to said piston by said valve plunger to an enabling position permitting such application and release of fluid pressure.

4,534,274
PISTON ASSEMBLY FOR INTERNAL COMBUSTION ENGINES

Emil Ripberger, Remseck, and Gotthard Stuska, Fellbach, both of Fed. Rep. of Germany, assignors to Mahle GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 22, 1983, Ser. No. 477,681
Claims priority, application Fed. Rep. of Germany, Mar. 29, 1982, 3211472
Int. Cl.³ F16J 1/02, 1/16
U.S. Cl. 92—187
2 Claims



1. A piston assembly for internal combustion engines, comprising

(a) a piston having a crown and skirt, said piston having a longitudinal axis;

(b) a pair of gudgeon pin bosses within said skirt, each of said bosses having a bore therethrough, each of said bores disposed on a common axis, said bores coaxially receivable of a gudgeon pin having an axis, said bosses being spaced apart from one another, each of said bosses having a gudgeon pin boss surface disposed about said bore and facing the other boss;

(c) a connecting rod having a little end, said little end receivable between said pair of gudgeon pin bosses, said little end having a bore therethrough receivable of said gudgeon pin, said little end having a pair of annular planar surfaces, each annular planar surface facing toward and spaced apart from a respective gudgeon pin boss surface;

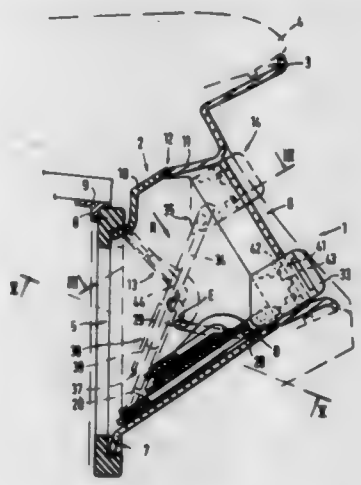
(d) abutment means on said gudgeon pin boss surfaces, adjacent said annular planar surfaces, for sliding engagement against said annular planar surfaces, said abutment means comprising a pair of raised planar sliding surfaces on each of said gudgeon pin boss surfaces protruding in the direction of said common axis of the bores, said pair of raised planar surfaces being disposed one on each side of a central vertical plane containing said longitudinal axis and said common axis, said pair of raised planar surfaces each intersecting a horizontal plane containing said common axis, each of said pair of raised planar surfaces extending over an angular dimension, about said common axis, of about 45° above said horizontal plane and about 15° below said horizontal plane.

4,534,275
AIR DISCHARGE INSTALLATION FOR THE AIR FEED INTO THE INTERIOR SPACE OF A VEHICLE

Peter Hofmann, Weissach, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche AG, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 556,121
Claims priority, application Fed. Rep. of Germany, Dec. 3, 1982, 3244729
Int. Cl.³ B60H 1/24
U.S. Cl. 98—2
18 Claims

1. An air discharge installation for controlling air supplied into an interior space of a vehicle, comprising an air-regulating element connected with an actuating means arranged in a housing means within the area of an air inlet opening, the air-regulating element including a plurality of valve sections pivotally connected with each other, said plurality of valve sections being operable to be moved from a folded-together open position in which the plurality of valve sections are disposed substantially one above the other, by way of intermediate positions into an unfolded closing position, a first valve section of said plurality of valve sections being rotatably supported at one end at the housing means and a second valve section of said plurality of valve sections being connected with

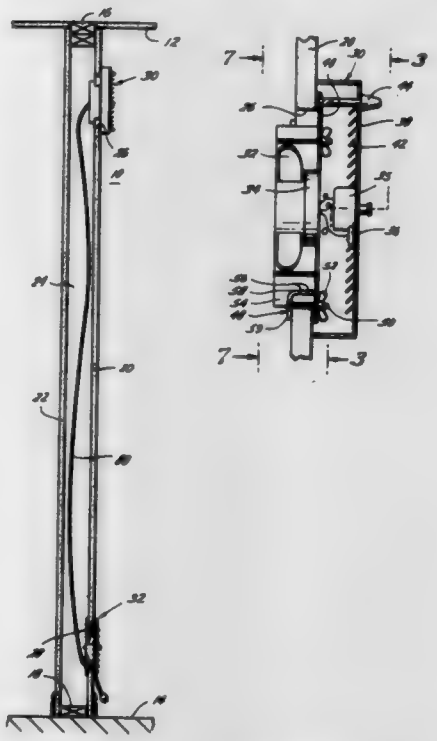


a free end of the first valve section by way of a pivot bearing means, the second valve section including a lever means having a pin which extends at a distance to the pivot bearing means and cooperates with a fixed guide track means, and the actuating means operatively engaging the first valve section.

4,534,276
ROOM HEAT CIRCULATION SYSTEM

Arlie E. Allison, P.O. Box 7445, Beaumont, Tex. 77706

Filed Oct. 26, 1984, Ser. No. 665,313
Int. Cl.³ F24F 7/06
U.S. Cl. 98—34.5
4 Claims



1. A room heat circulation system for circulating warm air from the top of a room to the bottom of the room using a wall of the room as a duct comprising,

a fan and upper grill connected to a housing and said housing adapted to be inserted in an upper opening in said wall, said grill having upwardly directed louvers for drawing in warm air by the fan from the top of the room,

said housing having a plurality of slots directed radially outwardly towards the edge of said upper opening when the housing is inserted therein,

a plurality of L-shaped clips positioned on the back of the housing, each clip having a threaded bolt extending through one of the slots whereby the clips may be retracted in the slot for inserting the housing into the upper

opening and may then be extended to engage the edge of the upper opening,

a nut for attachment to the each threaded bolt for securing the housing in the upper opening,

a bottom grill adapted to be inserted in a lower opening in the wall, said grill having downwardly directed louvers for exhausting warm air from the wall duct to the bottom of the room,

a retainer bar positioned on the back of the bottom grill and pivotably connected thereby by a rotatable knob on the front of the grill whereby the bar may be rotated out of the way for inserting the bottom grill into the bottom opening and then rotated into engagement with the edge of the bottom opening for securing the bottom grill in the lower opening,

clip guides on each side of each L-shaped clip for maintaining the clip in position for engaging the edge of the upper opening, and

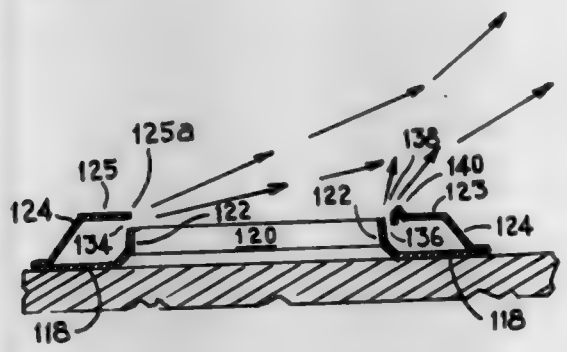
said clip guides are positioned on the back of the housing and extend radially outwardly for centering the housing in the upper opening.

4,534,277

GEOMETRIC AIR PROJECTION AND CONTAINMENT

Richard H. Gillmor, 7140 Greenforest Dr., Portage, Mich. 49081, assignor to Richard H. Gillmor, Portage and Benjamin W. Wise, Richland, both of, Mich.

Filed Aug. 18, 1983, Ser. No. 524,441
Int. Cl.³ F24F *9/00*
U.S. Cl. 98—36 **9 Claims**



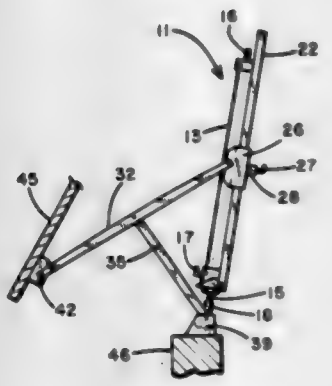
1. A process for producing a geometric air projection and containment space tented over an area open to ambient atmosphere, which comprises directing a plurality of substantially contiguous sheets of air outwardly from around said area into said ambient atmosphere and toward a common apex in an axis which projects obliquely from the center of said open area, said contiguous sheets intersecting at said common apex to form a tent-shaped containment space comprised within a pointed geometric figure, the apex of which is the confluence of said sheets, the walls of said containment space consisting of said sheets of air sufficiently intact to prevent or minimize passage of gaseous material into said containment space except through said open area, any air or other gaseous material aspirated into said containment space commingling with the air in said containment space and being vented through said confluence along with the air sheeted through said confluence, and said sheets converging at an angle such that flow is induced into said containment space sufficient to prevent back-flow through said open area, in which said apex is sufficiently to one side that substantially none of said contiguous sheets, or the confluence thereof, impinges on a person in front of said open area.

4,534,278

LIVESTOCK CONFINEMENT BUILDING WALL-VENT CONTROLLER

Rodney L. Spilde, 6300 W. Richmond Rd., Aberdeen, S. Dak. 57401

Filed Jun. 9, 1983, Ser. No. 502,691
Int. Cl.³ F24F *7/00*
U.S. Cl. 98—37 **3 Claims**



3. A wall-vent closer comprising:

(a) a pneumatic assembly having a means for extending a piston upon connection of the pneumatic assembly to a source of compressed air and a means for retraction of the same piston upon connection of the pneumatic assembly to another source of compressed air;

(b) a frame having a cylinder mount member and a slotted member, the cylinder mount member having an aperture through which the piston of the pneumatic assembly extends, the cylinder being fixedly mounted to the cylinder mount member, and the slotted member being affixed to the cylinder mount member and extending parallel with the cylinder, the slotted member having a plurality of spaced slots along its longitudinal center line;

(c) a sill mount pivotally mounted on the free end of the piston so that upon attachment of the sill mount to a sill the frame and pneumatic assembly travels away from or towards the sill mount when a first and second source of compressed air are alternatively connected to the pneumatic assembly;

(d) an arm having one end pivotally mounted on an adjustable slide, the slide being slidably mounted on the slotted frame member;

(e) a latching means to arrest the slidable movement of the adjustable slide along the slotted frame member at a slot along the longitudinal centerline of the slotted frame member;

(f) a wall-vent mount pivotally mounted on the other end of the arm; and

(g) a fulcrum extending between the sill mount and a point between the ends of the arm, both ends of the fulcrum being pivotally mounted; so that when a first source of compressed air is connected to the pneumatic assembly, a wall-vent which is connected to the wall-vent mount will open and when a second source of compressed air is connected to the pneumatic assembly the wall-vent will close within a predetermined range of travel as determined by the point at which the adjustable slide is latched into the slotted frame member.

4,534,279

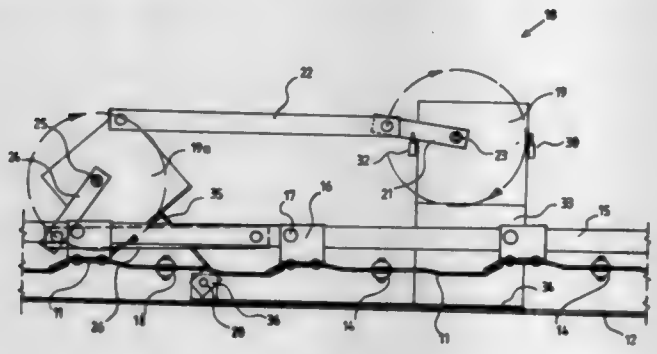
AIR DIRECTING APPARATUS

Raymond S. Cardiff, 40 Carnaby St., Macgregor, 4109 Queensland, Australia

Filed Oct. 24, 1983, Ser. No. 544,899
Claims priority, application Australia, Oct. 22, 1982, PF6476
Int. Cl.³ F24F *13/16*
U.S. Cl. 98—40.18 **5 Claims**

1. An outlet assembly for an air supply means including air deflector means comprising a louvre assembly having a plural-

ity of louvre blades positionable to deflect air from the air supply means; selectively operable closure means for moving



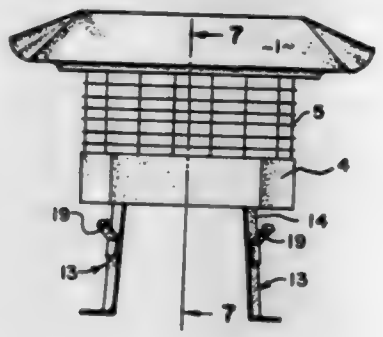
the blades between a closed and an open air deflecting position; and, drive means operable to oscillate the blades about the open position.

4,534,280

CHIMNEY CAP

Durward A. Hisey, St. Louis, Mo., assignor to Hy-C Company, Inc., St. Louis, Mo.

Division of Ser. No. 357,733, Mar. 12, 1982, Pat. No. 4,436,021.
This application Oct. 25, 1983, Ser. No. 545,229
Int. Cl.³ F23J *13/08*
U.S. Cl. 98—67 **3 Claims**



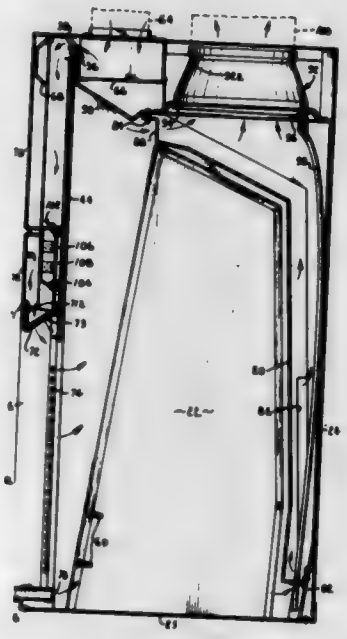
1. In a chimney cap for use in providing coverage for the upper end of the formed chimney flue and thereby preventing the entrance of any extraneous elements therein, comprising, a cover means provided upwardly of the cap and preventing the entrance of rain or elements downwardly into the chimney flue, a band means arranged downwardly of the cap and designed for proximity fitting upon the said chimney flue, said cover means and band means being spaced apart a distance heightwise to allow sufficient draft to develop and remove smoke and fumes from the chimney flue, a foraminous means arranged connecting with both said cover means and band means and disposed spanning the space between the said means and arranged substantially in alignment with the said band means, and retention means operatively associated with the said band means for assuring its securement with the chimney flue upon which it seats, said retention means including a series of appendages securing with the band means and projecting downwardly therefrom for extending into and biasing against the interior of the chimney flue for securement of the cap therewith, said band means being formed having a series of sides, adjacent sides of the band means being intervened by substantially flattened corners, there being an appendage connecting at each corner of the band means, each appendage being formed of resilient material, and each appendage including a leg that connects with the band means, being arranged contiguously with the interior of the band means, at each corner thereof, and extends inwardly and then downwardly to its lowest extent, each said appendage end arranged for biasing against the interior of the chimney flue for securing said cap firmly in place, with the inwardly extending portion of the leg of each appendage functioning as a shoulder means for contacting with the upper edge of the chimney flue to limit the extent of insertion of the chimney flue with the band means during installation of the said chimney cap.

4,534,281

LABORATORY FUME HOOD

James D. Parks, Johnson County, Kans.; Charles A. Moss, Jackson County, Mo., and Kermit W. Dyer, Johnson County, Kans., assignors to Labconco Corporation, Kansas City, Mo.

Filed Sep. 26, 1983, Ser. No. 535,639
Int. Cl.³ F23J *11/00*
U.S. Cl. 98—115.3 **16 Claims**



14. A fume hood comprising:

cabinet structure presenting an enclosed work area and an access opening to said area, said cabinet structure having a hood liner at the top of the work area;

vertical sash means for closing said access opening and movable between a lowered position wherein the opening is closed and a raised open position,

said sash means being substantially transparent to permit the passage of light;

fixture means for mounting a light source, said fixture means being mounted on said cabinet structure at a location spaced below the hood liner on the side of said sash means that is opposite said area;

cover means mounted on said structure in spaced relationship to said sash means and said fixture means,

said cover means being removable to provide access to said fixture means from the inside thereof when said sash means is in the lowered position.

4,534,282

PROCESS AND APPARATUS FOR TREATING FOOD PRODUCTS

René A. Marinoza, 8220 - 8th Ave., St. Francois, Quebec, Canada (H7A 1H1)

Filed May 4, 1982, Ser. No. 374,906
Int. Cl.³ A23C *3/00*
U.S. Cl. 99—451 **6 Claims**



1. An apparatus for sterilizing flowable food products, comprising an elongated cell including a radiation-emitting elongated member, end cell bodies supporting the ends of said

member, a first quartz tube spacedly surrounding said member, said first quartz tube being transparent to said radiation, a second tube spacedly surrounding said first tube and defining a circulation space with said first tube, said second tube being opaque and reflective to said radiation, said first and second tubes being supported by said end cell bodies in fluid-tight engagement therewith, said end cells bodies each defining a first chamber in communication with said space and having a port for a flowable food product circulating through said space and a second chamber isolated from said circulation space, openable from the outside of said cell and providing an access into said first quartz tube to extract said radiation-emitting elongated member without disturbing the flow of food products through said cell.

4,534,283

METHOD AND APPARATUS FOR MANUFACTURING BEAN CURD

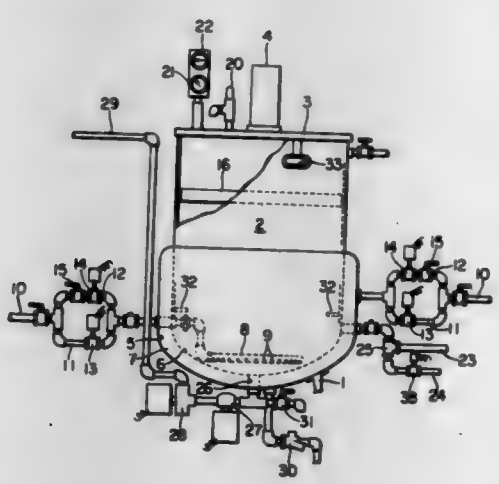
Masamichi Nakamuta, 320, Arii, Shonai-machi, Kaho County, Fukuoka Prefectur, Japan

Filed May 2, 1983, Ser. No. 490,800

Claims priority, application Japan, May 6, 1982, 57-77364; May 7, 1982, 57-67104[U]

Int. Cl.³ A23J *1/00*

U.S. Cl. 99—468 **11 Claims**



1. An apparatus for heating a bean curd slurry in preparing tofu, comprising a vessel to contain therein said bean curd slurry to be heated, an outer wall substantially sealingly surrounding said vessel with a space being left therebetween to form a heating chamber, a first steam supply means mounted within said vessel for direct introduction of steam into said slurry, a second steam supply means connected to said heating chamber for indirectly heating said slurry, steam control means providing for two stage heating of said slurry under boiling conditions in the first stage and reduced heat steaming in the second stage, said control means including (i) a first heat supply regulating means adapted to regulate the amount of steam to be fed to said first steam supply means, and (ii) a second heat supply regulating means adapted to regulate the amount of steam to be fed to said second steam supply means, and a supply means for said slurry to feed the same into said vessel for said two stage heating.

4,534,284

HIGH SPEED EGG BREAKING APPARATUS

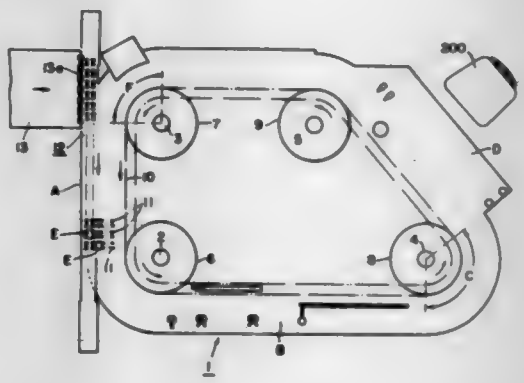
Gen Fujimura; Koichi Sotoma, both of Tokyo; Hiroshi Kunikyo; Masahito Hata, both of Yokohama, and Hidesuke Inoue, Tokyo, all of Japan, assignors to Kewpie Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 486,487, Apr. 19, 1983, abandoned. This application May 11, 1983, Ser. No. 493,576

Claims priority, application Japan, Apr. 21, 1982, 57-65251; May 11, 1982, 57-78747; Jun. 12, 1982, 57-100981; Jun. 20, 1982, 57-110047; Aug. 18, 1982, 57-124087

Int. Cl.³ A23J *1/09*; A47J *43/14*

U.S. Cl. 99—498 **18 Claims**



1. A high-speed egg-breaking apparatus comprising:

(a) an infeed conveyor for transporting a multiplicity of shell eggs in transverse rows;

(b) a transfer conveyor for receiving the shell eggs from the infeed conveyor, the transfer conveyor being arranged at a right angle with the infeed conveyor, whereby the successive transverse rows of shell eggs on the infeed conveyor can be rearranged into a longitudinal row on the transfer conveyor;

(c) a breaker conveyor traveling endlessly along a predetermined path including a linear portion extending along the transfer conveyor, the transfer conveyor being linearly arranged along the forward end of the infeed conveyor and the linear portion of the breaker conveyor, the transfer conveyor and the linear portion of the breaker conveyor being moved in the same direction and at the same speed;

(d) a plurality of egg breaker assemblies carried at longitudinal spacings by the breaker conveyor for receiving the shell eggs from the transfer conveyor while traveling along the same and for breaking the received shell eggs; and

(e) a plurality of recovery cup assemblies also carried by the breaker conveyor and underlying the respective egg breaker assemblies for receiving the white and yolk from the broken shell eggs.

4,534,285

ACTUATOR MECHANISM FOR CONTINUOUS ROLL BALING MACHINE

Kenneth R. Underhill, Strasburg, Pa., assignor to Sperry Corporation, New Holland, Pa.

Filed Nov. 29, 1983, Ser. No. 556,222

Int. Cl.³ B30B *5/06*

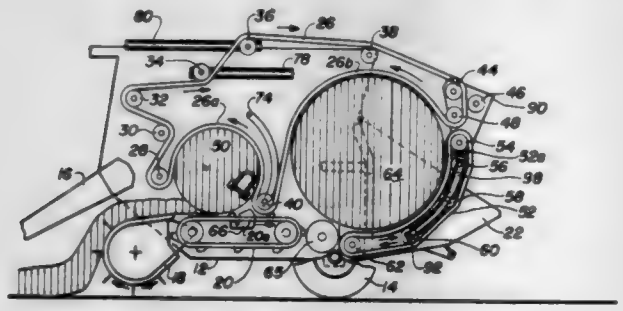
U.S. Cl. 100—88 **3 Claims**

1. In a roll baling machine having lower bale forming means, a first upper bale forming means cooperating with said lower bale forming means to define a first bale forming chamber, a second upper bale forming means cooperating with said first upper bale forming means to define a second bale forming chamber;

arm means movable into a lower position for moving said first upper bale forming means into a first position where material is prevented from entering said second bale forming chamber, said arm means movable into an upper posi-

tion for moving said first upper bale forming means into a second position where a roll bale may be transferred from said first to said second bale forming chamber, and said arm movable into an intermediate position for moving said first upper bale forming means into a third position where material is allowed to enter said second bale forming chamber while a roll bale is maintained in said second bale forming chamber by said first upper bale forming means;

said arm means carrying guide members engaging said first upper bale forming means, said arm means being positioned in said lower, upper and intermediate positions



when said first upper bale forming means is in said first, second and third positions, respectively,

ramp means movable between an operative position extending upwardly above said lower bale forming means and an inoperative position;

the improvement comprising actuator means interconnecting said arm means and said ramp means causing movement of said ramp means to the operative position when said arm means moves to said lower position, and said actuator means also causing movement of said ramp means to the inoperative position when said arm means moves to said upper and intermediate positions.

4,534,286

HAM MOLD CLOSING APPARATUS

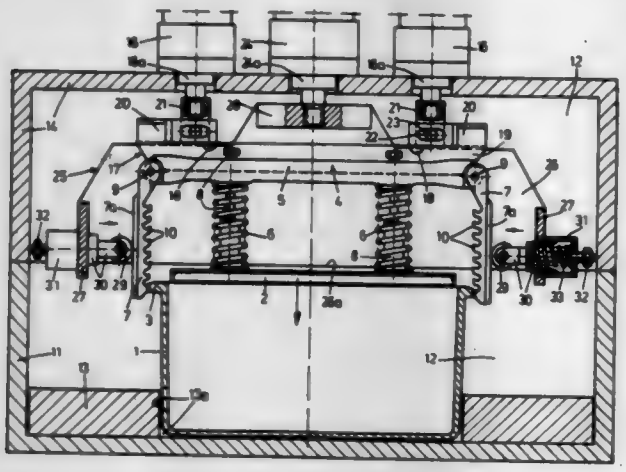
Jürgen Franzke, Bad Essen, Fed. Rep. of Germany, assignor to Roscherwerke GmbH, Osnabruck, Fed. Rep. of Germany

Filed Dec. 23, 1983, Ser. No. 564,994

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 8332147[U]

Int. Cl.³ B30B *1/34*

U.S. Cl. 100—219 **9 Claims**



1. In a ham mold closing apparatus having a vacuumizable chamber in which at least one two-part mold consisting of a container having a retaining rim and a cover that fits loosely into it is positioned and means for moving the cover, in relation to the container to compress a ham that has been placed in the mold including a compression bridge having a strut, compression springs, and securing arms coactive with the rim and at least one compression-medium cylinder connected to the compression bridge and that is positioned on one wall of the chamber one into the other, the improvement wherein the moving means further comprises two compression-medium cylinders, a compression beam connected thereto to be raised and lowered by the two pressure-medium cylinders and having two points of compression positioned at a distance along the compression-bridge strut and operating in conjunction with the compression bridge to move the cover in relation to the container.

4,534,287

DOT MATRIX PRINT HEAD

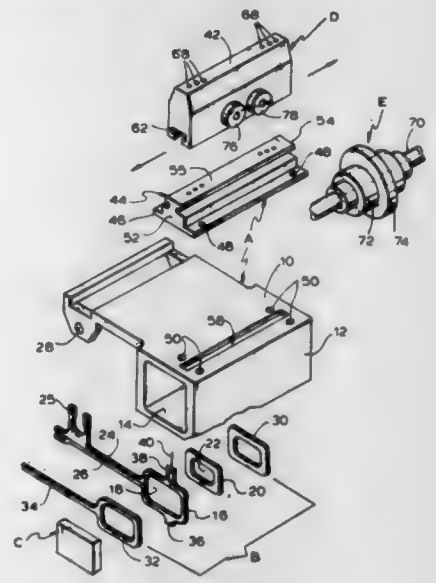
Robert A. Meloni, Baltimore, Md., assignor to General Instrument Corp., Clifton, N.J.

Continuation of Ser. No. 485,749, Apr. 18, 1983, abandoned.

This application Jan. 10, 1985, Ser. No. 690,416

Int. Cl.³ B41J *3/12*

U.S. Cl. 101—93.05 **1 Claim**



1. A head for printing a dot on a paper comprising a support, a print wire having an impact end, an actuator operably connected to said support, active on said print wire, and effective, when actuated, to move said impact end of said print wire towards the paper, means adapted to engage said print wire beyond said actuator and towards said paper, for positioning same relative to the paper, and means for moving said positioning means relative to said support, said positioning means comprising a solid body portion having first and second surfaces and a generally cylindrical passageway extending therebetween, and a hollow portion extending between said body portion and said support for movably mounting said body portion on said support with said second surface spaced therefrom, said passageway having an internal diameter greater than the diameter of said print wire to permit lateral movement of said print wire relative to said second surface as said positioning means is moved relative to said support, said passageway terminating proximate said first surface of said body portion in an impact end receiving opening with a diameter slightly greater than the diameter of said print wire so as to prevent substantial relative lateral movement between said impact end and said first surface of said body portion.

4,534,288

METHOD AND APPARATUS FOR REGISTERING OVERLAPPING PRINTED IMAGES

Yakov Z. Brovman, Mystic, Conn., assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed May 6, 1982, Ser. No. 375,374

Int. Cl.³ B41F *5/06, 5/16*

U.S. Cl. 101—211 **16 Claims**

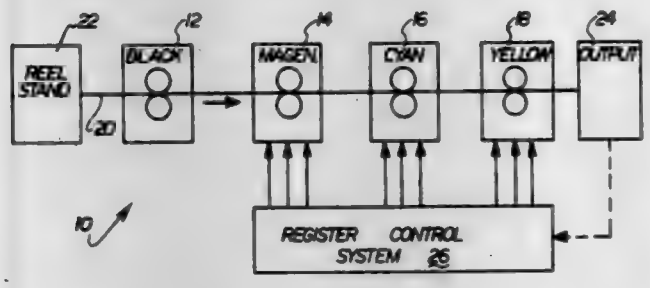
1. A method of indicating misregister between two overlapped images, comprising the steps of:

forming a first plurality of spaced lines of equal width in a first indicia area occupying a known position relative to one of said two overlapped images, said lines being transversely spaced apart by an amount which is small relative

to the lengths of said lines and is substantially the same as the width of said lines and being substantially straight and disposed substantially parallel to one another,

forming a second plurality of spaced lines in a second indicia area occupying a known position relative to the other of said overlapped images, said second plurality of lines being spaced apart by an amount which is small relative to the lengths of said lines and being substantially straight and oriented substantially parallel to one another and to said first plurality of lines such that when said first and second areas overlap one another the extent to which said lines of said first and second areas overlap one another changes with displacement between said two indicia areas in a direction transverse to said lines, said known position relative to the other of said overlapped images being selected so that when said overlapping images are in register said first and second indicia areas overlap,

wherein said step of forming said second plurality of lines comprises the step of forming said lines to have substantially the same width and spacing as said first plurality of straight lines and in a location relative to said other of said overlapped images such that when said overlapped images are in register said second plurality of lines is displaced relative to said first plurality of lines by a fraction of the thickness of said lines, whereby misregister of said overlapped images in a first direction causes said first and second plurality of lines to overlap to a greater extent and misregister in an opposite direction causes said first and second plurality of lines to overlap to a lesser extent,



illuminating the area of overlap of said first and second indicia areas,

detecting light returned from at least a significant portion of said first area of overlap and providing a first signal in accordance therewith, said signal having a value indicative of the amount of light returned from the entire said portion and thus representing the extent of overlap of said lines of said first and second indicia areas, and

utilizing said signal value as a measure of misregister of said overlapping images.

4,534,289

COOLING ROLLER WITH DIFFERENT PRESELECTED COOLING ZONES

Klaus Dürrnagel, Eppelheim; Willi Jeschke, Heidelberg, and Hans-Georg Jahn, Wiesenbach, all of Fed. Rep. of Germany, assignors to Heidelberger Druckmaschinen AG, Heidelberg, Fed. Rep. of Germany

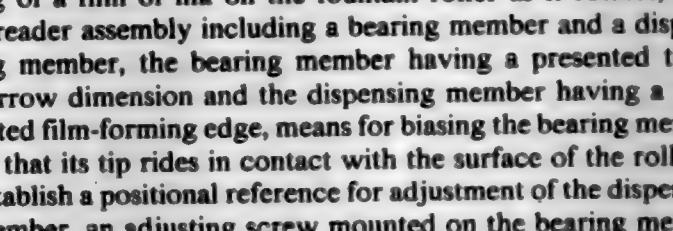
Filed Nov. 14, 1983, Ser. No. 551,099

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242066

Int. Cl.³ B21B *27/06*; B41F *31/26*; F28D *11/02*

U.S. Cl. 101—348 **8 Claims**

1. Printing-Press roller traversed by a temperature-regulating medium and having jacket-like partitions in the interior thereof surrounded by an outer circumferential wall, comprising means located at one axial end of the outer circumferential wall for introducing the temperature regulating medium into the interior of the roller, means for conducting the temperature-regulating medium in a circuitous path through the interior of the roller, means located at the other axial end of the outer circumferential wall for discharging the temperature-regulating medium from the interior of the roller; and at least one heat-insulating element disposed in a middle region of the circumferential roller wall, said element forming an impedi-



ment to a transfer of heat on the surface of the circumferential roller wall in longitudinal direction thereof.

4,534,290

INK FILM DISPENSING SYSTEM FOR A PRINTING PRESS

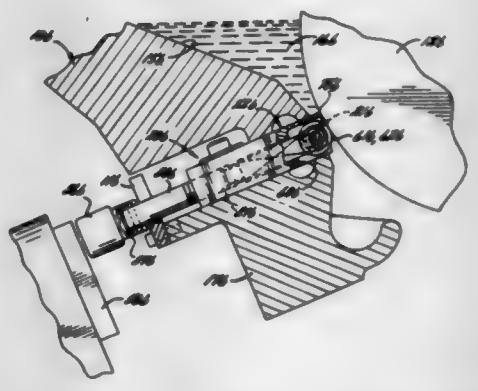
Peter Schroder; Fred Kunkel, and Peter Hummel, all of Offenbach am Main, Fed. Rep. of Germany, assignors to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,590

Claims priority, application Fed. Rep. of Germany, Mar. 26, 1983, 3311113

Int. Cl.³ B41F *31/04, 31/06*; B41L *27/06*

U.S. Cl. 101—365 **14 Claims**



1. In an ink dispensing system for a printing press, the combination comprising a frame, a slowly rotated fountain roller, an ink trough on the frame extending the length of the fountain roller for containing a body of ink, a trough base member extending parallel to the trough and defining with the trough a working space of constant thickness, a plurality of radially oriented ink spreader assemblies arranged closely side-by-side in the working space individually slidable and together forming a substantially continuous metering edge for zonal metering of a film of ink on the fountain roller as it rotates, each spreader assembly including a bearing member and a dispensing member, the bearing member having a presented tip of narrow dimension and the dispensing member having a presented film-forming edge, means for biasing the bearing member so that its tip rides in contact with the surface of the roller to establish a positional reference for adjustment of the dispensing member, an adjusting screw mounted on the bearing member and engaging the dispensing member, means for turning the adjusting screw so that the dispensing member is retracted a small running distance rearwardly of the tip of the bearing member thereby to determine the zonal thickness of the ink film formed on the surface of the roller by the dispensing member, the film-forming edge of the dispensing member being sharply abrupt and being faced toward the body of ink so that the ink film is formed by a clean-cut shearing action free of any tendency toward wedging of the ink between the dispensing member and the roller thereby to minimize reaction force of the ink against the dispensing member especially in a radial direction, the biasing means including means reacting against the press frame for applying bias at a level of magnitude which does not substantially exceed that required to overcome sliding

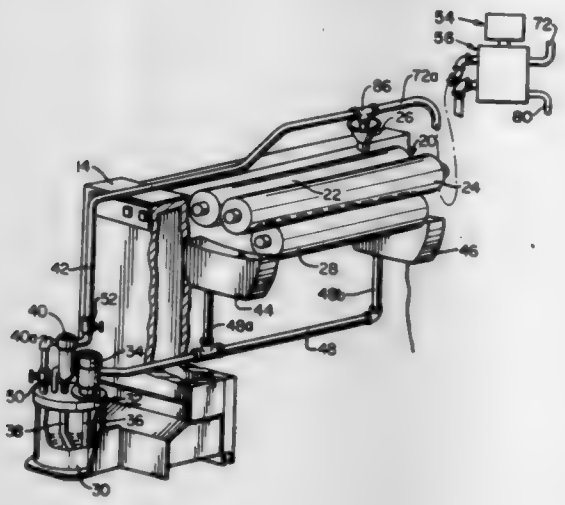
friction of the assembly thereby to minimize the force of the bearing member against the surface of the roller while maintaining (a) the tip of the bearing member constantly seated on the roller surface and (b) the dispensing member at the predetermined running distance from the roller surface.

4,534,291

METHOD AND APPARATUS FOR CLEANING PRINTING PRESSES

James J. Sabota, 15849 Sylvia Dr., Brook Park, Ohio 44142, and William G. Bradshaw, 7340 Martingale, Chesterland, Ohio 44026

Filed Dec. 13, 1979, Ser. No. 103,194
Int. Cl.³ B41F *31/06*; B41L *27/08*
U.S. Cl. 101—426 **28 Claims**



1. A method of washing ink from elements of a printing press having an ink pump adapted to be at least partially submerged in a reservoir of ink and to deliver ink through conduit supply means to a press fountain operable to distribute ink during printing operation, collector pan means for receiving excess ink delivered to the fountain, and conduit return means connected to the collector pan means for removing excess ink therefrom during printing operation comprising a washing operation including;

(a) providing a source of wash liquid under pressure;

(b) disconnecting the ink pump from the reservoir of ink,

(c) flowing a first stream of the wash liquid into the press fountain while operating the printing press to distribute the wash liquid and to collect the wash liquid in the collector pan means for removal through the conduit return means while effecting washing of the elements of the press by contact with the wash liquid;

(d) flowing a second stream of the wash liquid through the conduit supply means to the ink pump and through the ink pump in a countercurrent ink flow direction while operating the ink pump to wash internal surfaces of the conduit supply means and the pump, and

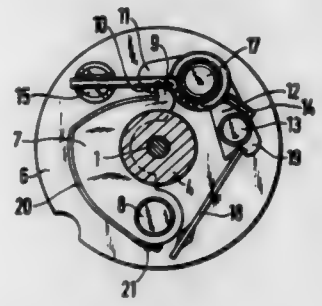
(e) flowing a third stream of the wash liquid to shower head means for spraying the wash liquid onto the external surfaces of the pump which are normally submerged in ink during printing operation and washing the external surfaces by contact with the wash liquid.

4,534,292

SELF-DESTRUCT DEVICE FOR SPIN-STABILIZED PROJECTILE DETONATORS

Adolf Weber, Neunkirchen; Hans Strauss, Reichenschwand, and Hans Pauly, Schwaig, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Dec. 19, 1983, Ser. No. 562,851
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 8236369[U]
Int. Cl.³ F42C *1/04*
U.S. Cl. 102—241 **4 Claims**



1. In a self-destruct device for a detonator of a spin-stabilized projectile, including an annular disc-shaped plate positioned perpendicular to the longitudinal projectile axis; a spring-loaded percussion sleeve axially slideably mounted on a firing pin of said detonator; a locking lever pivotably supported on said plate and having an initial position engaging the percussion sleeve; a tripping lever pivotably supported on said plate, having first and second arms, and having an initial position where the first arm engages the locking lever to hold the locking lever in its initial position; a flyweight supported on the second arm of the tripping lever; a primary spring urging the second arm of the tripping lever radially inward; and a safety support fastened on the plate and having an initial position engaging the second arm of the tripping lever to limit radially inward movement of said second arm and hold the tripping lever in its initial position; wherein upon rotation of said plate resulting from a firing of the projectile, centrifugal forces cause the flyweight and the second arm of the tripping lever to pivot radially outward against the force of the primary spring and away from the safety support, and the safety support moves radially outward; and then upon a decrease in the rotational speed of the disc, the primary spring forces the second arm of the tripping lever radially inward and the first arm thereof radially outward, away from the locking lever, the locking lever moves away from its initial position, and the percussion sleeve strikes the firing pin; the improvement comprising:

an auxiliary spring supported on the disc and having a free end located adjacent and radially inward of the first arm of the tripping lever, the free end of the auxilary spring moving radially outward and engaging the first arm of the tripping lever to inhibit the second arm of the tripping lever from moving away from the safety support upon impacts on the side of the disc that tend to cause the flyweight to move radially outward.

4,534,293

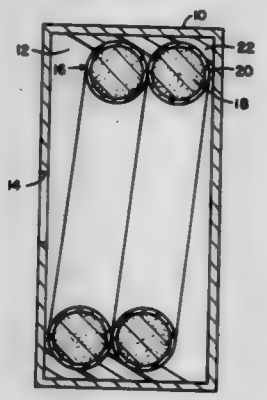
COILED CURVILINEAR SOLID PROPELLANT GRAIN

Ben F. Wilson, Huntsville, Ala., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 1, 1984, Ser. No. 667,315
Int. Cl.³ C06D *5/06*
U.S. Cl. 102—289 **7 Claims**

1. A curvilinear solid propellant gas generator comprising a gas generator housing having a chamber defined therein, said gas generator housing and said chamber having a length which is less than the width thereof, a curvilinear solid propellant grain that includes an end burning solid propellant that is encompassed by a liner inhibitor and being mounted as a coiled

curvilinear structure in a fixed position in said gas generator housing to provide said gas generator housing that has a length



that is less than the width thereof to provide a compact gas generator arrangement with a long burning end grain type propellant.

4,534,294

FIN-STABILIZED PROJECTILE WITH PROPELLANT CAGE

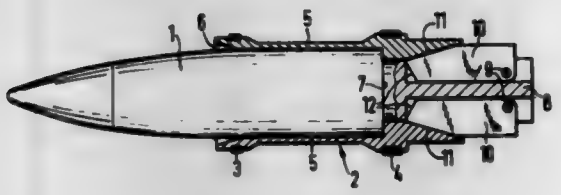
Klaus von Laar, Lauf/Pegnitz; Werner Heberlein, Nuremberg, and Josef Burda, Straubing, all of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,213

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309533

Int. Cl.³ F42B *13/16*

U.S. Cl. 102—520 **3 Claims**



1. In a fin-stabilized projectile including a propellant cage encompassing the body of said projectile, said propellant cage consisting of a plurality of segments; means for retaining said segments together; and an annular recess at the leading end of said cage extending along the outer diameter of the propellant cage adapted to initiate the spreading apart of segments subsequent to said projectile exiting from a weapon barrel, and a guide mechanism including pivotable fins on said projectile; the improvement comprising

guide mechanism support means fastened at the trailing end of the projectile body, pivot elements for restraining in a retracted position the fins of said guide mechanism at the trailing end of said support means for the guide mechanism, said propellant cage extending over at least a part of said fins, the fins in the retracted condition thereof having leading edges sloped inwardly and outwardly at an acute angle relative to the longitudinal axis of the projectile, said propellant cage segments each having at their rear ends an internal surface sloping outwardly and rearwardly relative to the leading edges of said fins, and said fins in the region covered by the propellant cage include outer edges extending outwardly and rearwardly relative to the leading edges of the fins and being contiguous with the internal surfaces of the propellant cage segments so as to reach their greatest expanse towards the end of the guide mechanism.

4,534,295

TRACK TAMPING, LEVELING AND LINING OPERATING UNIT

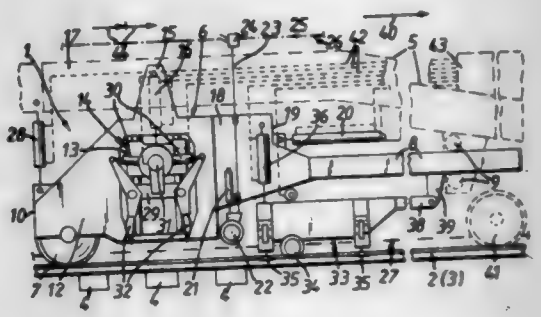
Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H., Vienna, Austria

Filed May 26, 1983, Ser. No. 498,260

Claims priority, application Austria, Sep. 9, 1982, 3387/82

Int. Cl.³ E01B *27/17*

U.S. Cl. 104—7 B **16 Claims**



1. An operating unit for tamping, leveling and lining a track consisting of two rails fastened to successive ties resting on ballast, for installation in a mobile track working machine comprising a machine frame supported on two undercarriages spaced in the direction of the track for mobility on the track in an operating direction, the operating unit being comprised of a ballast tamping assembly comprising a tamping tool carrier, a drive for vertically adjusting the tamping tool carrier, pairs of vibratory and reciprocatory tamping tools mounted on the tamping tool carrier for immersion in successive cribs, with a respective one of the ties positioned between the tools of the pairs, and drives for vibrating and reciprocating the tamping tools; a track leveling and lining assembly adjacent the tamping assembly and comprising track-engaging track lifting and lining tools, drives for moving the tools respectively in a vertical and transverse direction for leveling and lining the track; and a separate carrier frame common to, and supporting, the assemblies, a set of flanged wheels constituting a sole support and guide element for a rear end of the carrier frame on the track, the carrier frame rear end being remote from one of the undercarriages immediately preceding the set of flanged wheels in the operating direction, and the carrier frame having an elongated front end, in the operating direction, and a universal joint linking the front end of the carrier frame to, and supporting it on, the track working machine frame; and a leveling and lining reference system associated with the operating unit.

4,534,296

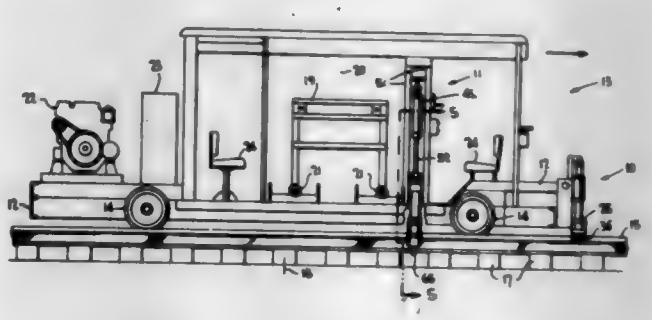
RAIL GAUGER

John L. Stubbs, Charlotte, and Carl B. Loflin, Denver, both of N.C., assignors to Southern Railway Company, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 490,025

Int. Cl.³ E01B *33/00, 33/02*

U.S. Cl. 104—8 **4 Claims**



1. A track gauger on the frame of a vehicle adapted for movement along the rails of a track, the gauger comprising a vertically movable gauger frame disposed crosswise of said

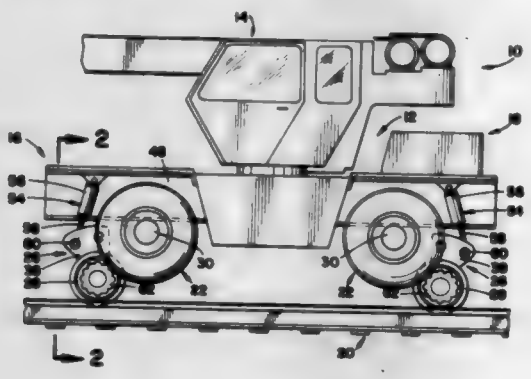
vehicle frame, a pair of gauger bars fixedly mounted on said gauger frame and having outer edges spaced apart in crosswise direction of a fixed distance for establishing a predetermined rail gauge distance, means for lowering said frame for extending said gauge bars between the rails, a pair of gauge levers mounted for movement on said gauger frame about pivot axes spaced respectively outwardly of said bars, means for pivoting said levers into engagement with the rails for gauging the rails at said predetermined distance upon engagement between the rails and said outer edges of said gauge bar, a track pre-gauger having a frame lying in said crosswise direction and being mounted on a front end of said vehicle frame relative to a forward direction of travel along the rails, inner bearing elements mounted on said pre-gauger frame and extending between the rails, said inner bearing elements having bearing surfaces spaced apart a fixed distance for establishing said predetermined rail gauge distance, outer bearing elements mounted on said pre-gauger frame outwardly of said inner elements and being inwardly shiftable relative thereto, means for shifting said outer elements into engagement with the rails for gauging the rails at said predetermined distance upon engagement between the rails and said bearing surfaces of said inner elements, a spike driving device mounted on said vehicle frame rearwardly of said track gauger frame, limit switch means on said gauger frame for actuating said shifting means, said limit switch means being operated by one of said rail gauge levers upon the pivoting of said levers into engagement with the rails, whereby engagement of the rails by said gauge bars and levers, and by said bearing elements, provide spaced rail holding points during a spike driving operation.

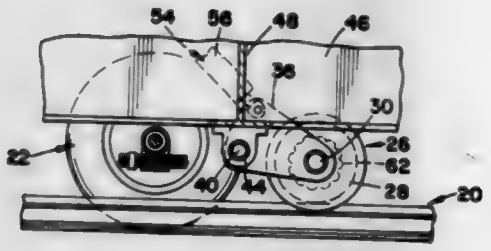
4,534,297

WHEEL POSITION CONTROL FOR RAILWAY MAINTENANCE VEHICLE

Theodore C. Johnson, Sr., 14917 Hillbrook Cir., Novelty, Ohio 44072

Filed Dec. 2, 1982, Ser. No. 446,369
Int. Cl.³ B61D *15/00*; B61F *13/00*
U.S. Cl. 105—215 C **14 Claims**





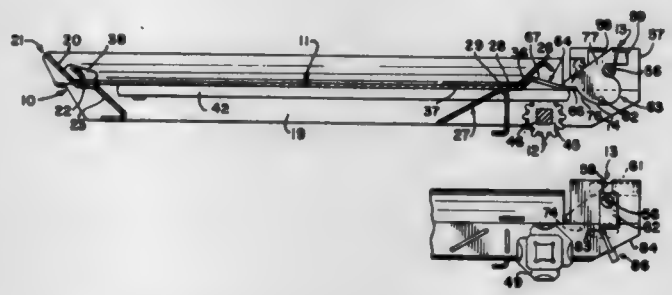
1. In a railway maintenance vehicle of the character adapted to be moved along a pair of underlying railway rails and including vehicle frame means, drivable tire means mounted on said frame means for moving said vehicle relative to ground, flanged rail engaging wheel means laterally between said tire means and supported on said frame means for displacement between first and second positions relative to said frame means, said wheel means in said first position engaging said pair of rails and supporting said vehicle for said tire means to be spaced above ground and supported in suspension from said frame means, whereby the entire weight of said vehicle is supported on said rails by said wheel means, said wheel means in said second position being elevated from said pair of rails for said tire means to engage ground laterally outwardly of each rail of said pair, whereby the entire weight of said vehicle is supported by said tire means, and means to displace said wheel means between said first and second positions, the improvement comprising: means to displace said wheel means to a third position in which said vehicle is supported for maintenance operation, said third position being between said first and second positions and providing for said tire means to engage ground laterally outwardly of each rail of said pair of rails to provide primary lateral support for said maintenance vehicle laterally outwardly of each of said rails and in which third position said wheel means engage said pair of rails to provide a stabilizing force for said maintenance vehicle laterally inwardly of said tire means.

4,534,298

LOCK AND SEAL FOR HOPPER OUTLET

Mark P. Scott, Boiling Springs, Pa., assignor to Keystone Industries, Inc., Rolling Meadows, Ill.

Filed Feb. 16, 1983, Ser. No. 467,155
Int. Cl.³ B61D *7/20, 7/22*
U.S. Cl. 105—282 R **4 Claims**



1. A discharge outlet and lock for a hopper car, comprising a side frame adapted to be secured to the car, a door plate slidably supported on said side frame for movement between an open position and a closed position, a lock comprising a rod rotatably supported on said side frame adjacent to and above the path of movement of said plate, at least one latch secured to said rod and rotatable with said rod between an engaged position, a disengaged position and a tripped position, said latch including a first portion which when in said engaged position engages the door plate and holds the door plate in the closed position, said latch further including a second portion which when in said disengaged position extends in the path of movement of the door plate, said second portion being located to be struck by said door plate upon movement of said door plate toward the open position and to be thereby moved to said tripped position, said latch when in said tripped position resting on said door plate and being in position for subsequent automatic movement to said engaged position upon return of said door plate to its closed position, said latch being mounted on said rod closely adjacent said side frame, a first seal hole formed in said latch, a second seal hole formed in said side frame, and said first and second seal holes being generally aligned when said latch is in said engaged position, said side frame having outer edges and said second seal hole being spaced from the nearest portion of said outer edge, said seal holes being adapted to receive a seal band, said seal holes being located relative to said nearest portion of said outer edge such that said first seal hole of said latch moves away from said nearest portion of said outer edge and tensions the seal band when said latch is initially moved from said engaged position toward said disengaged position, and said spacing being related to the length of the seal band to result in removal of slack from the band when the seal is connected around said nearest portion of said outer edge.

4,534,299

WET ASH REMOVAL EQUIPMENT

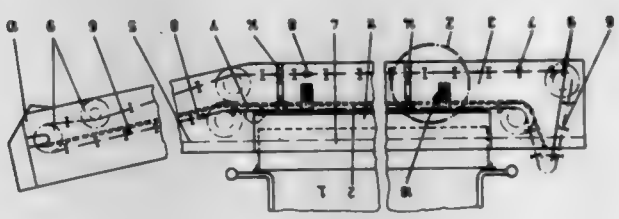
Horst Buchmüller, Hünxe, and Bernhard Michelbrink, Wesel-Bislich, both of Fed. Rep. of Germany, assignors to Deutsche Babcock Werke Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

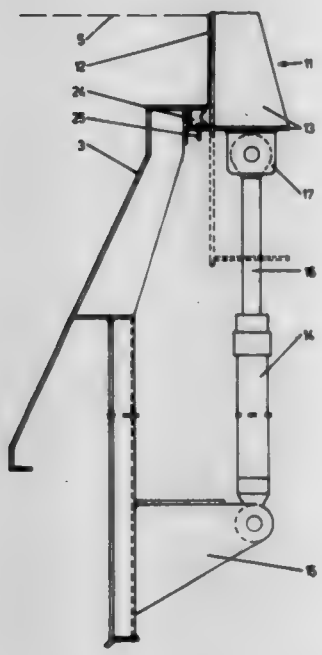
Filed Feb. 1, 1985, Ser. No. 697,337

Claims priority, application Fed. Rep. of Germany, Mar. 7, 1984, 3408279

Int. Cl.³ F23J *1/00*

U.S. Cl. 110—165 R **3 Claims**





1. Wet ash removal equipment a steam boiler with an ash funnel; a movable trough filled with quenching water and located beneath said ash funnel of said steam boiler; ash conveyor means operating within the trough; an immersion member attached to said ash funnel so that it can project down below the surface level of the water in said trough; one side wall of said trough having a removable plate forming a sealed joint, said plate having a length which is greater than the length of said immersion member, said plate having a height measured from an upper rim of said trough which is greater than maximum depth of immersion of said immersion member; a height-adjustable rod linkage supporting said plate, movement of said plate being guided by a side of said trough.

4,534,300

COMBUSTION CHAMBER FOR COMBUSTION DISPOSAL OF WASTE MINERAL BEARING STREAMS

Robert D. Reed, and John M. Cegielski, Jr., both of Tulsa, Okla., assignors to John Zink Company, Tulsa, Okla.

Filed Nov. 10, 1980, Ser. No. 205,713

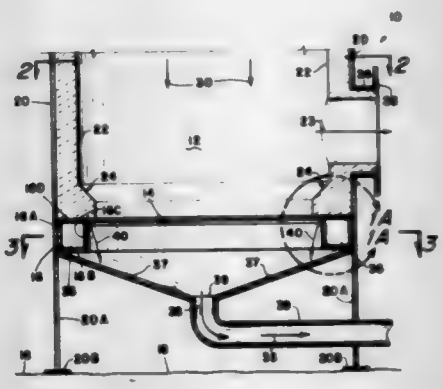
Int. Cl.³ F23J *1/06*

U.S. Cl. 110—171 **4 Claims**

1. In a combustion chamber for the combustion disposal of waste mineral-bearing liquid streams, in which a vertically-disposed cylindrical refractory-lined combustion chamber is provided with down-flow of fuel, air, flame, micronized waste liquid and products of combustion, the improvements in means for removing the products of combustion and for collecting and removing solid waste and solidified mineral compounds, comprising:

(a) an exit opening adjacent the bottom of the combustion chamber for said removal of said products of combustion;

(b) an inverted conical, or funnel-shaped floor plate positioned below the combustion chamber, with drain means for disposal of said solid waste and compounds;



(c) a circular, annular or peripheral channel between the top of the floor plate and the bottom of the combustion chamber, means to flow water tangentially into said channel, and a circumferential gap between the bottom of said combustion chamber and an inner wall of said channel, so that said water flows in a circular motion through said gap and onto the sloping floor plate, carrying solidified and particulate waste down said drain means.

4,534,301

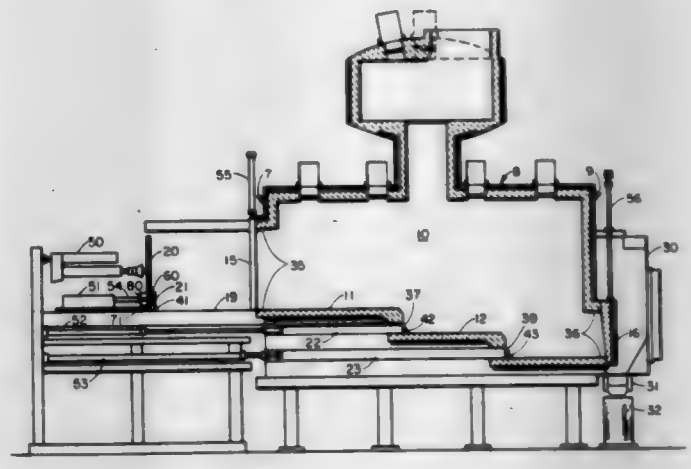
INCINERATOR ASH REMOVAL SYSTEMS

George Sakash; Robert K. Grier, Jr.; Hansjoerg Stern; Abdul G. Dada, all of Wilmington, and Daniel W. McKeel, Rocky Point, all of N.C., assignors to General Electric Company, San Jose, Calif.

Filed Jun. 8, 1984, Ser. No. 618,690

Int. Cl.³ F23G *3/00*

U.S. Cl. 110—255 **11 Claims**



1. An incinerator wherein combustible material is reduced to ash, comprising:

an incinerating chamber of substantially uniform width having first and second substantially opposite chamber ends;

means for loading said combustible material into said chamber at said first chamber end;

means for receiving said ash from said chamber at said second chamber end;

at least one plow positioned inside said chamber adapted to travel at least a portion of the distance between said opposite chamber ends in sliding contact with the chamber floor, said plow including a plow face substantially spanning said chamber width; and

a brush comprising metallic bristles hingedly suspended on

said plow face so as to normally make contact with said floor, said brush being substantially coextensive with said plow face in the direction of said chamber width, said brush being adapted to sweep floor debris ahead of said plow face during forward plow travel toward said second chamber end and to prevent said debris from being carried back during reverse plow travel;

whereby said ash in said chamber is moved substantially only toward said ash receiving means.

4,534,302

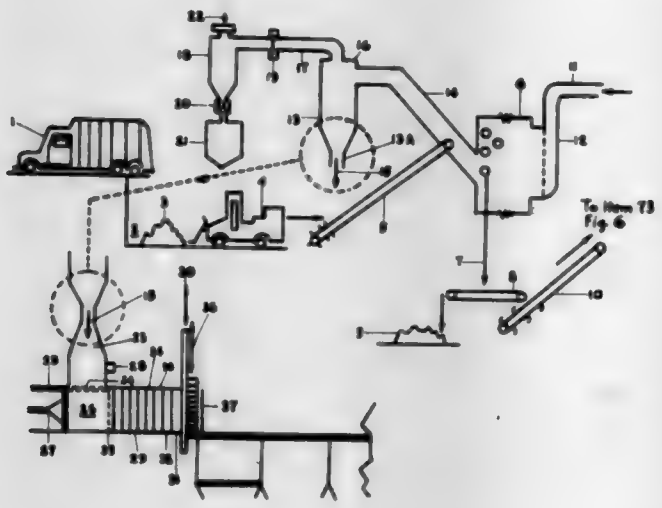
APPARATUS FOR BURNING BALES OF TRASH

Charles A. Pazar, 98 E. Saddle River Rd., Saddle River, N.J. 07458

Continuation-in-part of Ser. No. 264,515, May 18, 1981, abandoned, Ser. No. 415,957, Sep. 8, 1982, abandoned, and Ser. No. 415,786, Sep. 8, 1982, abandoned. This application Feb. 9, 1984, Ser. No. 578,649

Int. Cl.³ F23G *5/10*

U.S. Cl. 110—346 **28 Claims**



9. The method of destroying wastes that can be destroyed only at temperatures so high that refractory sidewalls of a furnace would be injured by such temperatures, comprising:

providing a furnace with refractory sidewalls,

compacting trash under a compacting pressure of at least ten pounds per square inch into bales of at least ten cubic feet each,

inserting said bales into said furnace,

burning the bales, and

adding liquid water above the burning bales and adjacent at least some of said sidewalls to keep the temperature of said sidewalls sufficiently low so that said refractory sidewalls will not be injured by the heat from the burning bales,

the temperature in the central combustion area rising to a temperature of at least 1400° F. and so high that it will destroy wastes that can be destroyed only at temperatures so high that refractory sidewalls of the furnace would be injured by such temperatures, and

adding to said central combustion area wastes that can be destroyed only at temperatures which are so high as to injure said refractory sidewalls.

13. A method of burning trash in a furnace comprising:

feeding air into the trash to blow the light trash away from the heavy trash; and thereby sort the trash into light trash and heavy trash,

compacting, with a pressure of at least ten pounds per square inch, the light trash, resulting from said sorting step, into bales, with each bale having a size of at least ten cubic feet,

feeding said bales, one after another, into the furnace and burning the bales in the furnace, and

feeding the heavy trash, resulting from said sorting step, onto the top of at least one of said burning bales.

4,534,303

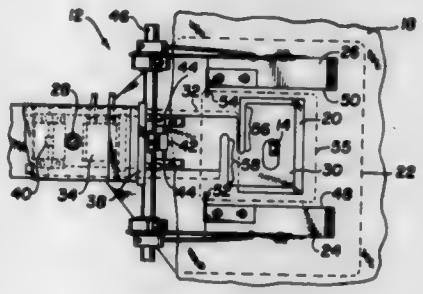
APPARATUS FOR SEWING 360 DEGREE PATTERN

Joseph W. A. Off, Irving, and Vivian Ferguson, Dallas, both of Tex., assignors to Train-A-Mation, Inc., Irving, Tex.

Filed Sep. 30, 1983, Ser. No. 537,482

Int. Cl.³ D05B *3/00, 27/00*

U.S. Cl. 112—114 **10 Claims**



1. A sewing machine attachment for sewing a label to a workpiece, comprising in combination:

a sliding cloth plate for supporting the workpiece;

means for clamping the workpiece to the cloth plate;

a backup clamp for positioning below the workpiece and the label;

a template for positioning above the workpiece and the label opposite the backup clamp, said template having a predetermined contour and including a first peripheral surface and a second peripheral surface;

means for releasably clamping the workpiece and the label between the backup clamp and the template; and

means for moving the template between a first position and a second position when the clamping means has released the workpiece and the label wherein at least part of the contour of the first peripheral surface in the first position substantially aligns with at least part of the contour of the second peripheral surface in the second position.

4,534,304

STITCH CORRECTION METHOD AND APPARATUS FOR A SEWING MACHINE

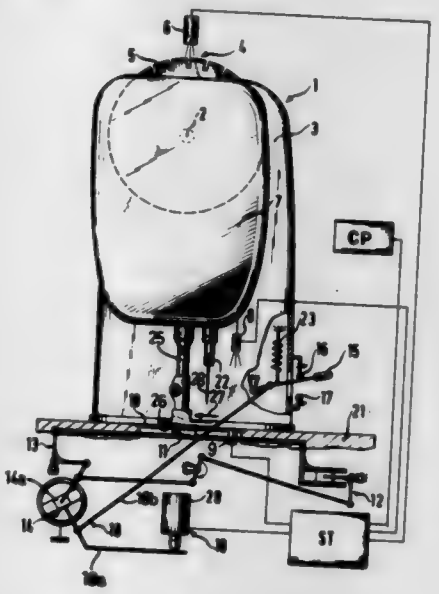
Kurt Reinke, Bielefeld, Fed. Rep. of Germany, assignor to Durkoppwerke GmbH, Bielefeld, Fed. Rep. of Germany

Filed Oct. 6, 1983, Ser. No. 539,676

Claims priority, application Fed. Rep. of Germany, Oct. 6, 1982, 3236932

Int. Cl.³ D05B *19/00, 27/22*

U.S. Cl. 112—262.1 **11 Claims**



1. A method of terminating a stitch row in a workpiece at a predetermined location short of a reference point thereon, which comprises the steps of:

(a) in a stepwise manner displacing said workpiece past a

stitching location at which a sewing machine needle penetrates said workpiece in transport steps synchronized with the displacement of said needle and each resulting in the formation of a stitch of an original length of said row;

(b) subdividing each of said transport steps into a multiplicity of segments and generating for each of said segments a train of countable pulses;

(c) detecting the passage of said reference point past a location at a predetermined distance from said needle and initiating a count of said pulses upon such detection;

(d) counting the pulses from the start of each stitch to a point in the transport step during which count initiation is commenced in step (c) to provide a count representing the segment of the latter transport step at which the count was initiated;

(e) continuing to sew a fixed number of stitches from the time of said detection in said row; and

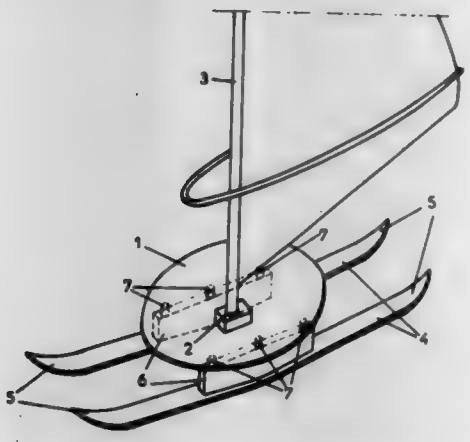
(f) controlling the stitch length of said fixed number of stitches so that said fixed number of stitches constitutes a stitch combination of stitches which may be of the original length reduced by a fixed amount so that based upon the counts, the stitch combination is selected which has a total length ensuring a last penetration of said needle into said workpiece for said row at said predetermined location on said workpiece, a series of such stitch combinations being stored in an electronic memory and the selected stitch combination being recalled from said memory based upon said counts.

4,534,305

SAIL SKI DEVICE

Francois Lecomte, "La Grande Chalande", 88530 Le Tholy, France

Filed Feb. 22, 1983, Ser. No. 468,634
Claims priority, application France, Aug. 11, 1982, 82 14142
Int. Cl.[3] A63C *15/00*
U.S. Cl. 441—73 2 Claims



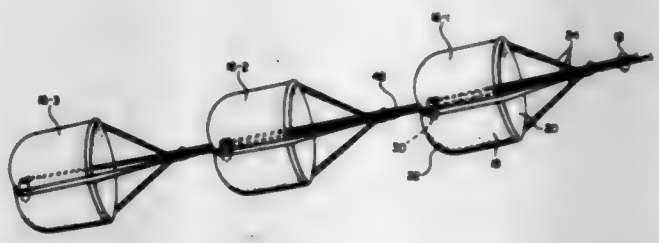
1. Sail ski device, essentially constituted by a platform (1) for mounting a mast (3) and for supporting the user and having an anti-skid coating, and secured to a pair of skis (4), characterized in that the skis (4) have a longitudinal section incurved from the center toward the ends, which are each provided with a nose (5), and in that the central portion of each ski (4) is provided with a vertical rigid mounting member (6) on which are mounted elastic blocks (7) secured to the platform (1), in which for use on ice, the skis (4) are provided with metallic runners (8) extending beneath their central portion, and secured by means of clamps (9) or the like, their lateral bearing being ensured by means of stirrups (10) secured to the runners (8) and bearing on the sides of the skis (4).

4,534,306

SEA ANCHOR

Peter T. Rutten, Plainfield, Ill., and James E. Kalinowski, Minneapolis, Minn., assignors to Blue Harbor, Inc., Minneapolis, Minn.

Filed Jun. 13, 1983, Ser. No. 503,905
Int. Cl.[3] B63B *21/48*
U.S. Cl. 114—311 2 Claims



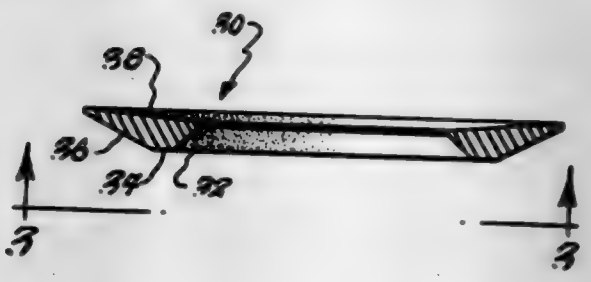
1. A tandem array of sea anchors each made of cloth or the like and comprising a generally umbrella shaped body open at one end and having a relatively small opening at the apex thereof, a plurality of elongated tow members secured to the periphery of the open end in arcuately spaced fashion, a common tow cable adapted to be secured to a boat and secured to the elongated tow members of all of said plurality of sea anchors and extending freely through the apex opening of each sea anchor save the last, common control cable means adapted to be manipulated from a boat and secured to each of said sea anchors adjacent the respective apex opening, said tow cable means extending through the apex opening of each sea anchor save the last for partially inverting said sea anchors to vary the drag of said tandem array of sea anchors, said control cable means comprising a single cable for simultaneously partially inverting all of said sea anchors, the elongated tow members of each sea anchor being joined together at a junction forwardly of the respective sea anchor for securement to said tow cable, and guide means at each junction for said control cable means, and means on said control cable means engagable with said guide means to limit inverting of said sea anchors short of complete inversion.

4,534,307

ADAPTER FOR INSTALLATION OF MARINE INSTRUMENTS

Ronald R. Overs, 96 Fox Hunt La., E. Amherst, N.Y. 14051

Filed Oct. 7, 1983, Ser. No. 540,042
Int. Cl.[3] G01C *21/00*
U.S. Cl. 114—343 2 Claims



1. An adapter for converting flush mount installation of marine instruments and the like to surface mount installation, said adapter comprising:

an adapter member (30) consisting of a sealing washer fabricated of a resilient material and of generally dish-shaped construction including a central frustoconical opening (32);

a first annular, generally smooth end surface (38) inclined inwardly from an outer edge to an inner edge contiguous with said opening (32) for forming a generally smooth concave profile;

a second annular, generally smooth end surface (34) dis-

posed opposite from said first end surface (38) and being substantially flat from an outer edge to an inner edge;

an annular generally smooth inclined connecting surface (36) having an inner edge joined with the outer edge of said second annular end surface (34), and an outer edge joined with the outer edge of said first annular end surface (38);

said first annular end surface (38) and said annular connecting surface (36) converging outwardly of said adapter member (30) for forming a gradually tapered portion which decreases at a generally constant rate and has its apex at the outermost periphery of said adapter member (30).

4,534,308

APPARATUS FOR APPLYING TREATING MEDIA ONTO WEBS

Alfred Kretschmer, Ludwigshafen, Fed. Rep. of Germany, assignor to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

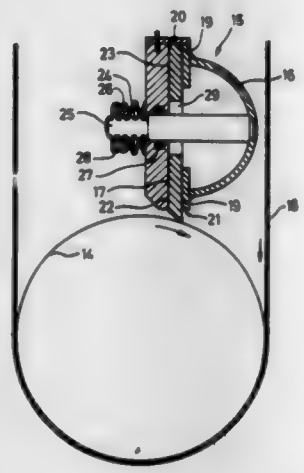
Filed Nov. 1, 1982, Ser. No. 438,276

Claims priority, application Fed. Rep. of Germany, Nov. 25, 1981, 3146618

Int. Cl.³ B05C *1/12*

U.S. Cl. 118—260

6 Claims



1. Apparatus for the self-regulating application of an aqueous treating medium having a wide range of viscosities, onto a running web, said apparatus comprising a hollow body which contains said medium therein, extends over the width of the web and has, on the side from which the application is effected, a restrictor gap which extends over the same width, and has a strip of permeable material inserted therein throughout the length, taken in the direction of application, of the gap,

wherein, in association with said hollow body, there are provided spring means for spring-loaded said hollow body at all times in the direction of the medium-containing interior of said body, and means for mounting said hollow body, including the components thereof which define said gap and have said strip of permeable material inserted therein, to be movable, for a corresponding adjustment of the gap, at right angles to the length of the gap, and, under the force of the spring means compress said strip of material, so that said gap and hence the amount of the throughput are automatically adjusted by the medium pressure acting against the spring means, thereby to automatically compensate for changes in medium pressure in accordance with temperature and hence viscosity variations.

4,534,309

PAPER COATING APPARATUS

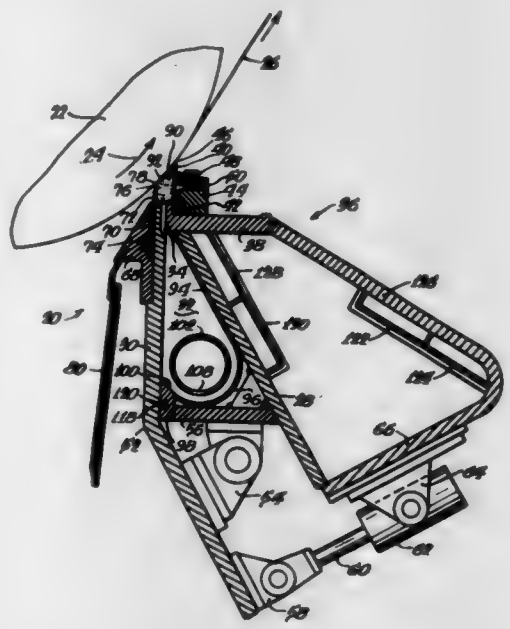
Wayne A. Damrau; William C. Vreeland, both of Wisconsin Rapids, Wis.; Richard Bernert, Giengen, and Albert Wöhrle, Heidenheim, both of Fed. Rep. of Germany, assignors to Consolidated Papers, Inc., Wisconsin Rapids, Wis. and J. M. Voith GmbH, Heidenheim, Fed. Rep. of Germany

Filed Nov. 17, 1983, Ser. No. 552,758

Int. Cl.³ B05C *5/02*

U.S. Cl. 118—410

12 Claims



1. An improved applicator for applying coating liquid to a moving web of paper, wherein said applicator is of a type comprising an elongate body having front and rear relatively movable walls, a base wall between said front and rear walls and end walls at opposite ends thereof mounted on said rear wall, said front, rear, base and end walls defining a chamber therebetween and ends of said front and rear walls, generally opposite from said base wall, being spaced apart and defining an elongate opening from said chamber positionable adjacent to and transversely across the web; and means for introducing coating liquid under pressure into said chamber for being directed through said opening and onto the web, the improvement being characterized in that said front wall is movable relative to and away from all of said rear, base and end walls to open said chamber, and a seal means is between said front wall and each of said end and base walls for sealing said front wall thereto when the same are moved together to close said chamber.

4,534,310

APPARATUS AND METHOD FOR PROCESSING WIRE STRAND CABLE FOR USE IN PRESTRESSED CONCRETE STRUCTURES

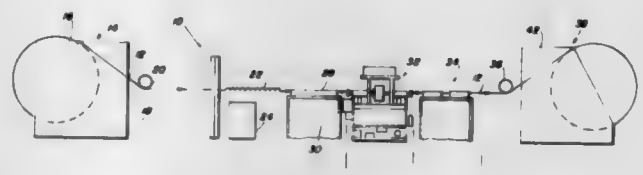
Nathaniel R. Quick, 13181 Tudor Dr., Carmel, Ind. 46032

Division of Ser. No. 242,939, Mar. 12, 1981, Pat. No. 4,439,282. This application Jul. 11, 1983, Ser. No. 512,680

Int. Cl.³ B05B *5/02*

U.S. Cl. 118—620

3 Claims



1. An improved apparatus for producing a steel wire strand cable having a substantially pure rust coating on all surfaces thereof comprising, in combination:

(a) a pay-off reel means and a take-up reel means for a wire

strand cable which is passed continuously from said pay-off reel along a prescribed path through a series of in-line devices to said take-up reel at a predetermined speed;

(b) an induction heating means located in-line with and between said pay-off and take-up means for applying heat thereto as said cable passes therethrough, whereby said cable is elevated to a predetermined temperature in passing;

(c) pre-quenching means in-line with said heating means for receiving said heated cable and for rapidly quenching said cable to a preselected lower temperature with a liquid as said cable passes through said pre-quenching means along said prescribed path;

(d) an ultrasonic cleaning means in-line with said pre-quenching means for continuous ultrasonic surface and deep crevice cleaning of said cable by means of high frequency cavitation action induced in a liquid coupling medium generated by a magneto-restriction component of said ultrasonic cleaning means through which the cable passes, said liquid being maintained at a preselected temperature and pressure; and

(e) a post-quenching means in-line with said ultrasonic cleaning means for further lowering the temperature of said cable as it exits from said post-quenching means to air along said prescribed path to said take-up reel, whereby said cable commences immediately upon leaving said post-quenching means to have said rust formed on the entire surfaces of said cable as it travels in air toward said take-up reel which rotates at a continuous preselected rate during operation of said improved apparatus.

4,534,311

APPARATUS FOR ELECTROSTATIC SPRAY-ENAMELING

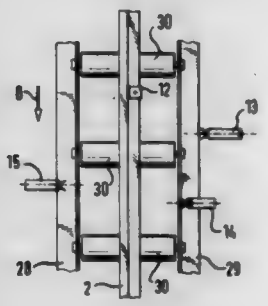
Karl-Heinz Reinlein, Dettelbach, and Bruno Stäblein, Würzburg, both of Fed. Rep. of Germany, assignors to Fulguvit GmbH & Co. K.G., Wunstort, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,927

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246574

Int. Cl.³ B05D *1/04*

U.S. Cl. 118—630 **17 Claims**



3. An apparatus for electrostatically spray enameling plastic parts comprising:

a spray booth,

means for electrostatically spraying enameling mounted in said booth,

at least a first roller conveyor located in front of said spray booth and adapted to feed said plastic parts to said spray booth,

at least a second roller conveyor located behind said spray booth and adapted to remove said plastic parts from said spray booth,

said first and second roller conveyors having a plurality of driven rollers,

said first and second roller conveyors having a plurality of electrically conductive rollers connected to ground,

said first roller conveyor having at least one roller having means for applying a conducting liquid thereto; and

said second roller conveyor having at least one roller having means for applying a conducting liquid thereto.

4,534,312

VACUUM EVAPORATION APPARATUS

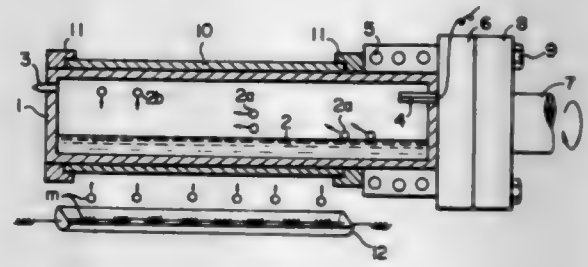
Ryohei Shinya; Shin'ichi Miura, both of Tokyo, and Rikio Aozuka, Kanagawa, all of Japan, assignors to Ricoh Company, Ltd., Japan

Filed Aug. 30, 1983, Ser. No. 527,662

Claims priority, application Japan, Aug. 30, 1982, 57-129802[U]; Dec. 9, 1982, 57-216040; Dec. 10, 1982, 57-216659; Feb. 16, 1983, 58-24326; Feb. 16, 1983, 58-24327; Feb. 16, 1983, 58-20107[U]; Feb. 17, 1983, 58-23739; Apr. 25, 1983, 58-72576; May 20, 1983, 58-88957

Int. Cl.³ C23C *13/08*

U.S. Cl. 118—666 **24 Claims**



1. A vacuum evaporation apparatus for depositing an evaporant on a substrate in a vacuum chamber, comprising:

(a) a substrate support for mounting thereon the substrate, said substrate support comprising a sealed container filled therein with a heat medium with any incondensable gas removed therefrom;

(b) heating means for supplying heat to said heat medium in said substrate support to vaporize said heat medium;

(c) wetting means including means on inner walls of said substrate support for wetting the walls and condensing the vaporized heat medium continuously thereon to effect thermal transfer of heat to said inner walls and uniformly heat said substrate support as said evaporant is deposited on said substrate; and

(d) cooling means for cooling the substrate through said substrate support after the evaporant has been deposited on the substrate.

4,534,313

MARKING APPARATUS

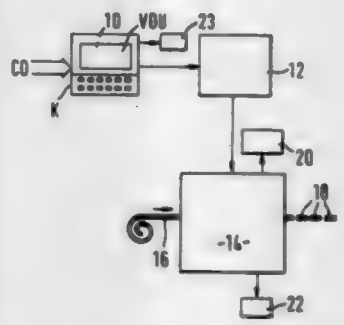
Robin Louvel, Cornwall, England, assignor to Bowthorpe-Hellermann Limited, West Sussex, England

Filed Sep. 2, 1983, Ser. No. 529,128

Claims priority, application United Kingdom, Sep. 2, 1982, 8225055

Int. Cl.³ B05C *1/02*

U.S. Cl. 118—696 **13 Claims**



1. An apparatus for producing marker sleeves from a tubular member, said marker sleeves having a selected length and a selected indicia thereon, said apparatus comprising

a backing member over which said tubular member passes as it moves in its longitudinal direction so as to temporarily become at least partially flattened as it moves thereover,

a cutting means for at least partially cutting said tubular member into segments of a selected length, said segments providing said marker sleeves,

a first transport means for supporting said tubular member between said backing member and said cutting means and being capable of moving said tubular member in its longitudinal direction from said backing means towards said cutting means,

a marking means for applying a selected indicia on said tubular member as it moves over said backing member, said marking means being capable of applying a continuous mark on said tubular member in at least a direction transverse to its longitudinal direction, and

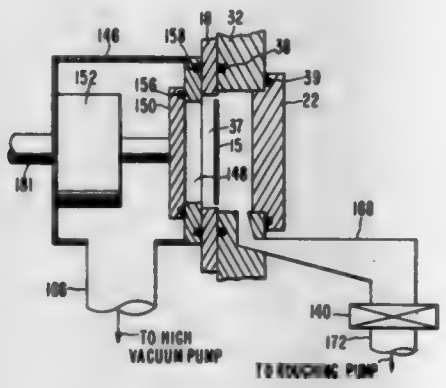
a means for receiving orders specifying the selected indicia to be applied on the tubular member and for supplying corresponding control signals to said marking means.

4,534,314

LOAD LOCK PUMPING MECHANISM

James W. Ackley, Los Altos, Calif., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 10, 1984, Ser. No. 609,052
Int. Cl.[3] C23C *13/08*
U.S. Cl. 118—733 **14 Claims**



1. A pumping mechanism for a vacuum chamber comprising:

a load lock having a front closure means through which a workpiece is inserted into said chamber and a rear closure means;

said rear closure means having wall means forming a movable mini-chamber which forms a connection with an external pumping means, said mini-chamber including sealing means with said load lock and a ram whereby to close said rear closure means; and

valve means including a sealing plate with sealing means inside said mini-chamber whereby to seal said load lock from said pumping means, said valve means including an actuator for moving said sealing plate.

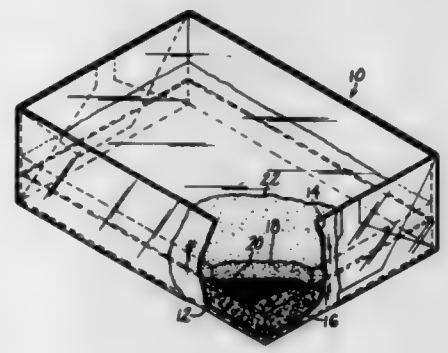
4,534,315

ANIMAL LITTER CONTAINER

William J. Sweeney, Westfield, N.J., assignor to Engelhard Corporation, Iselin, N.J.

Filed Aug. 29, 1983, Ser. No. 527,123
Int. Cl.[3] A01K *29/00, 1/035*
U.S. Cl. 119—1 **8 Claims**

1. An animal litter container comprising (a) a receptacle containing a lower layer of moisture-absorbent solid material covered by a liquid-permeable upper layer of moisture-impervious particulate material, the upper layer being coextensive with and contiguous to the lower layer, and (b) a foraminous liquid-permeable barrier means disposed coextensively with the upper layer and lower layer and positioned between the lower layer and the top of the upper layer, said barrier means comprising an odor abatement means comprised of a liquid and vapor-impermeable material which is perforated and thereby



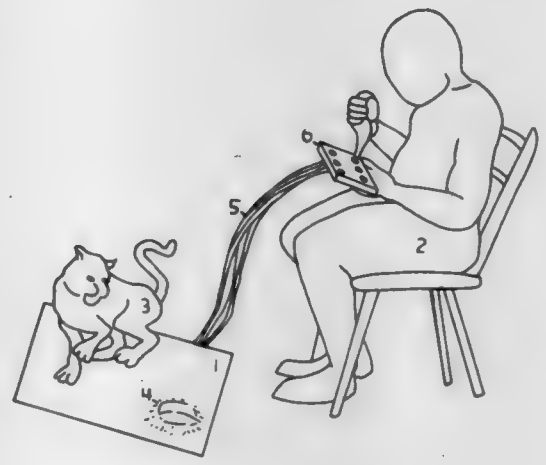
rendered liquid-permeable, and is effective to reduce the emanation of odors from the lower layer.

4,534,316

CAT TOY

David B. Bowlsby, 533 W. State St., Ithaca, N.Y. 14850

Filed May 17, 1984, Ser. No. 611,203
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—29 **10 Claims**



1. A toy for cats, comprising:

a. blanket means of dimensions whereby an animal may walk on the same, comprising:

1. flexible base means made of durable material;

2. flexible cover means adhered to substantially all of one surface of the base means;

b. a plurality of riser means, spaced apart and located between the base and cover means, for selectively separating the base and cover means at a plurality of points over the area of the blanket means, whereby the blanket means may be made to bulge at said points by the introduction of air into the riser means;

c. a plurality of conduit means in air-flow communication with each of the plurality of riser means, whereby introduction of air into one of the conduit means will inflate the riser means in communication therewith;

d. remote control means for selectively inflating one or more risers, comprising air induction means in air-flow communication with one or more of the conduit means.

4,534,317
PROCEDURES FOR MONITORING FISH FOOD CONSUMPTION

Myles A. Walsh, Falmouth, Mass., assignor to Cape Cod Research, Buzzards Bay, Mass.

Filed Aug. 30, 1984, Ser. No. 645,788
Int. Cl.[3] A01K *61/00*
U.S. Cl. 119—51 R 14 Claims

1. A method for determining the proper amount of food for consumption by a culture of fish and/or crustaceans comprising the steps of:

a. spiking food with non-toxic fluorescent dyes;

b. administering a pre-determined amount of said spiked food to said culture;

c. allowing sufficient time for said spiked food to be eaten;

d. exposing water from said culture to light near or at the maximum absorption wavelength of said dye(s);

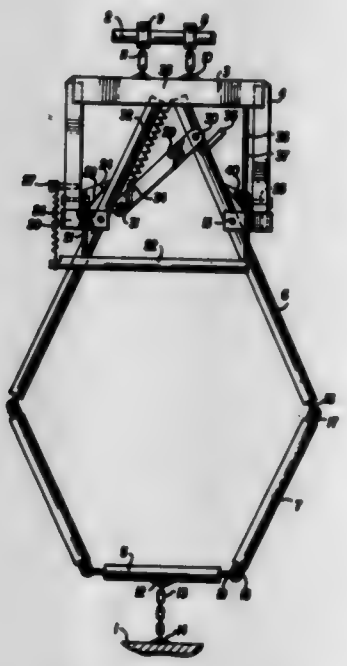
e. measuring the intensity of the fluorescence of said culture water at or near the maximum emission wavelength(s) of said fluorescent dye(s); and,

f. adjusting the amount of food administered to said culture, according to said measurement(s).

4,534,318
DEVICE FOR TYING-UP AN ANIMAL

Noël VandeVelde, Rte. de Mettet 201, B - 6838 Pavillons/-Florennes, Belgium

Filed Jun. 23, 1983, Ser. No. 507,138
Claims priority, application Belgium, Jun. 25, 1982, 2/59752
Int. Cl.[3] A01K *1/06*
U.S. Cl. 119—147 R 7 Claims



1. A device for tying up an animal comprising:

a suspension element comprised of

a base to be hung from a fixed structure and

two arms having upper ends fixed to said base and lower ends,

said base and said arms defining a plane,

a bottom piece to be connected to the fixed structure,

first pins supported by said arms adjacent to said lower ends, at right angle to said plane,

two legs forming together with the bottom piece one yoke, each of said legs being comprised of

a top part,

a lower part,

a first hinge connecting the top part to the lower part, and

a second hinge connecting the lower part to the bottom piece,

each of said top parts hinging about one of said first pins and having a portion projecting above the first pin and a portion projecting under the first pin, said first hinges and said second hinges allowing a movement of said lower parts as well in said plane as outside said plane,

second pins supported by said arms parallel to said plane,

a control member comprised of

a base, and

two arms,

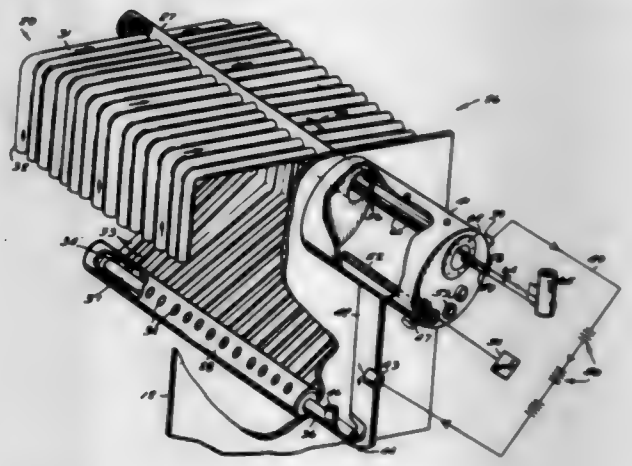
said arms of said control member having ends fixed to said base of said control member and ends hinging about said second pins, the control member thus hinging about said second pins with respect to said suspension element between a first position in which the base of the control member is lower than said second pins and a second position in which the base of the control member is higher than said second pins, said control member acting on said portions of said top parts projecting above said first pins and retaining in its first position said portions projecting above said first pins in a converging position and retaining in its second position said portions projecting above said first pins in a parallel position, and

a spring having two ends, one of said ends being connected to the control member and the other of said ends being connected to the suspension element, said spring passing through a dead position when the control member moves from its first position to its second position and pulling on one side of the dead position the control member to the first position and pulling on the other side of the dead position the control member to the second position.

4,534,319
WOOD BURNING STOVE HEAT EXCHANGER

Joseph T. Manno, Box 24, Star Rte., Kane, Pa. 16735

Filed Mar. 13, 1984, Ser. No. 589,214
Int. Cl.[3] F22B *5/00*
U.S. Cl. 122—15 20 Claims



1. A wood or coal burning stove comprising:

a plurality of walls defining a fire chamber, with a flue disposed in one of said walls;

a door in one of said walls providing access to said fire chamber; and

means for circulating liquid through said fire chamber to heat the liquid when a fire is burning in said fire chamber, said means including: a first manifold; a second manifold; means for supporting said first and second manifolds so that they are generally horizontally extending, and vertically spaced from each other, said first manifold above said second manifold; a plurality of fuel supporting pipes physically and fluidly interconnecting said first and second manifolds; a liquid inlet means to said second manifold; a liquid outlet means from said first manifold; and pressure relief means for relieving pressure in said liquid circulating means if it becomes too great;

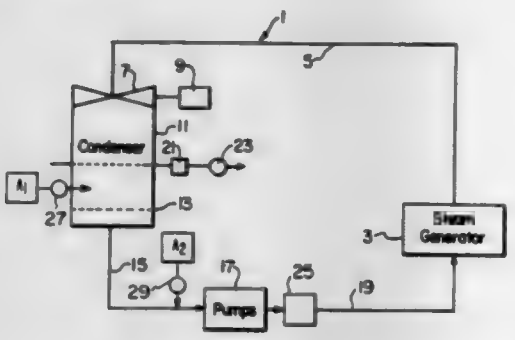
said inlet means comprising an inlet pipe, said inlet pipe extending generally horizontally and generally concentrically within said second manifold, said inlet pipe entering one end of said manifold and extending all the way to a point adjacent the opposite end of said second manifold at which point it discharges liquid into said manifold.

4,534,320

METHOD FOR DETERMINING THE AMOUNT OF DISSOLVED OXYGEN FROM ABOVE AND BELOW WATER LEVEL AIR LEAKAGE IN A STEAM POWER PLANT

Alexander D. MacArthur, Export, and Harry J. Everett, West Mifflin, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1984, Ser. No. 585,063
Int. Cl.[3] F22D *7/00*
U.S. Cl. 122—406 R 7 Claims



1. A method for determining the amount of dissolved oxygen in the aqueous medium of a steam plant containing a condensor system including a condensor and recirculating pumps, the condensor having a hotwell, resulting from air leakage into the condensor above the water level in said hotwell and from air leakage below the water level in said hotwell and up to the suction side of the recirculating pumps, comprising:

injecting a first known volumetric flow rate of air into the condensor system above the water level in the condensor hotwell;

measuring the amount of dissolved oxygen in the water resulting from the injection of said first known flow rate of air;

injecting a second known volumetric flow rate of air into the condensor system, at a location below the water level in the condensor hotwell and up to the suction side of the recirculating pumps;

measuring the amount of dissolved oxygen in the water resulting from the injection of said second known flow rate of air;

measuring the actual amount of dissolved oxygen in the water from the condensor system resulting from leakage of air into said condensor system, without any intentional injection of air;

measuring the actual total volumetric flow rate of air leakage into the system without any intentional injection of air; and

determining from said four measurements and said two injection rates the amount of said dissolved oxygen in the water resulting from leakage into the system above the water level in the condensor and that amount resulting from leakage into the system below the water level in the condensor.

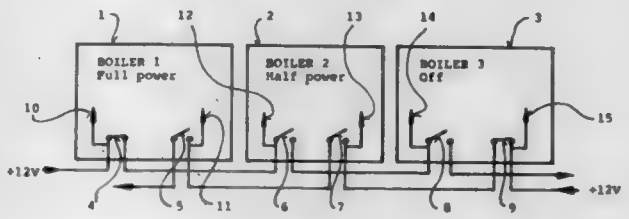
4,534,321

APPARATUS FOR CONTROLLING A NUMBER OF BOILERS

Sten A. Rydborn, Klöxhultsvägen 21, S-343 00 Älmhult, Sweden

Filed Nov. 5, 1982, Ser. No. 439,489
Claims priority, application Sweden, Feb. 22, 1982, 82010745
Int. Cl.[3] F22D *37/42*
U.S. Cl. 122—448 B 11 Claims

1. An apparatus for controlling a number of boilers which each are provided with their control equipment and are, in terms of water engineering, interconnected in series in such a manner that return water from the circulation system enters the first boiler in the series and continues through the other boilers and is thereafter redischarged into the circulation system, characterized in that the control equipment is provided with a first switch means associated with a boiler for providing a signal which enables the control equipment of a following boiler in the series-connection to increase the output of the



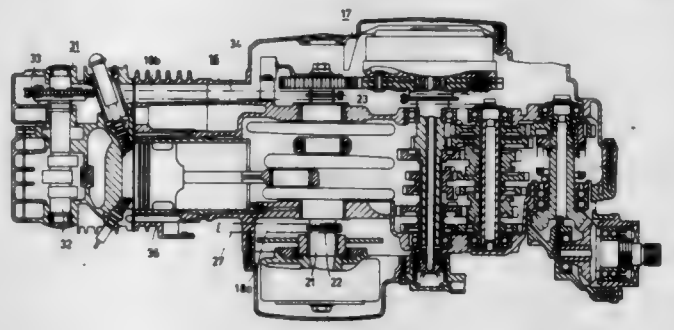
following boilers, and second switch means associated with a boiler for providing a signal which enables the control equipment of a preceding boiler in the series-coupling to reduce its output.

4,534,322

ARRANGEMENT FOR INSERTION OF SPARK PLUGS IN CYLINDER HEAD

Minoru Matsuda, Chofu, and Toshiro Mitsuishi, Higashimurayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1983, Ser. No. 537,225
Claims priority, application Japan, Sep. 29, 1982, 57-170702; Nov. 12, 1982, 57-198464
Int. Cl.[3] F02P *15/05*
U.S. Cl. 123—55 R 4 Claims



1. Arrangement for inserting a spark plug in an engine cylinder head comprising a combustion chamber having a wall, a cam chain chamber having a wall and an endless cam chain within said chamber, said arrangement comprising

(a) a first opening in said wall of said cam chain chamber for inserting said spark plug with its outer end extending through said cam chain chamber;

(b) screw threaded second opening having a smaller diameter than said first opening, in said wall of said combustion chamber;

(c) a separate sleeve surrounding said spark plug inserted through said first opening, said sleeve being screw threaded at its inner end encircled by said cam chain;

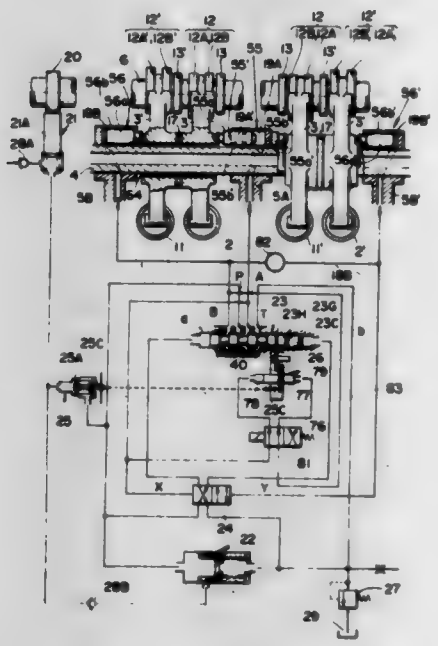
(d) means for screwing and unscrewing said sleeve into engagement with said second opening; and

(e) means for sealing the ends of said sleeve against leakage of oil.

4,534,323
VALVE OPERATION CHANGING SYSTEM OF INTERNAL COMBUSTION ENGINE

Manabu Kato, Tokyo, and Shunichi Aoyama, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama City, Japan

Filed Nov. 17, 1983, Ser. No. 552,832
Claims priority, application Japan, Dec. 23, 1982, 57-231202; Mar. 28, 1983, 58-50390
Int. Cl.[3] F01L *1/34*
U.S. Cl. 123—90.16 34 Claims



1. A valve operation changing system of an internal combustion engine, comprising:

first and second cams formed on a camshaft and different in cam profile from each other;

a rocker arm mounted on a rocker shaft and swingable around the rocker shaft to operate an engine valve upon engagement with said cams, said rocker arm being axially movable to engage with said first cam when said rocker arm is in a first position and to engage with said second cam when said rocker arm is in a second position; and

means for selectively moving said rocker arm into one of said first and second positions in accordance with an engine operating condition, said moving means including:

means defining first and second hydraulic pressure chambers which are fluidly connectable with an oil pressure source to be supplied with pressurized oil, said first hydraulic pressure chamber causing said rocker arm to move into the first position when fluidly connected with the oil pressure source, said second hydraulic pressure chamber causing said rocker arm to move into the second position when fluidly connected with the oil pressure source;

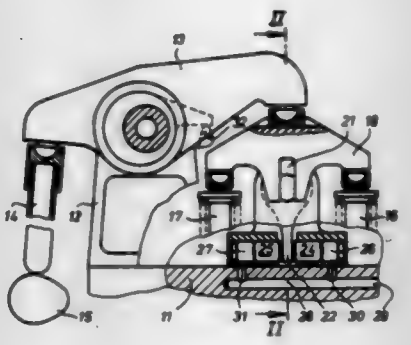
a flow direction changing valve through which said first and second hydraulic pressure chambers are communicable with the oil pressure source, said flow direction changing valve selectively taking one of a first state to fluidly connect said first hydraulic pressure chamber with the oil pressure source and a second state to fluidly connect said second hydraulic pressure chamber with the oil pressure source; and

valve means fluidly interposed between said flow direction changing valve and said second hydraulic pressure chamber, said valve means being openable to fluidly connect said flow direction changing valve with said second hydraulic pressure chamber in accordance with the rotational position of said cams.

4,534,324
VALVE CONTROL FOR A RECIPROCATING PISTON INTERNAL COMBUSTION ENGINE

Herbert Deutschmann, and Hans Dinger, both of Friedrichshafen, Fed. Rep. of Germany, assignors to MTU-Motoren- und Turbinen-Union Friedrichshafen GmbH, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,452
Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313225
Int. Cl.[3] F01L *1/26*
U.S. Cl. 123—90.22 6 Claims



6. A valve control for a reciprocating piston internal combustion engine in which at least two valves per cylinder head are actuated in unison by a traverse means displaced by a rocker arm means, and in which the traverse means is pivotally constructed, characterized in that

a bolt means operable to guide the traverse means rectilinearly is rotatably arranged at the cylinder head transversely to the connecting line of the valves,

in that the bolt means is rotatable by the traverse means by way of a rectilinear guide means,

in that the bolt means cooperates with a self-adjusting torque support means,

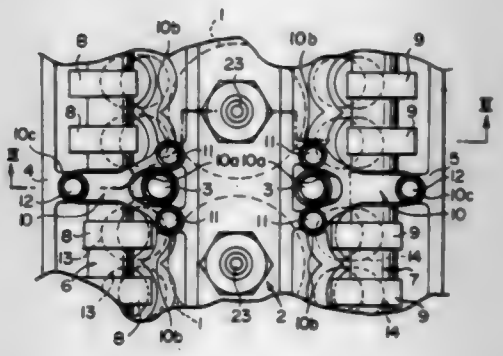
in that a means for eliminating clearance in the valve control is operatively interconnected between a cam shaft initiating the valve actuation and the traverse means and in that

a lever means non-rotatably connected with the bolt means and two oil pressure actuated pistons engaging mutually oppositely at the lever means form the torque support means.

4,534,325
CAM SHAFT HOLDING SYSTEM FOR INTERNAL COMBUSTION ENGINE

Fusatoshi Tanaka, Hiroshima, Japan, assignor to Mazda Motor Corporation, Japan

Filed Jul. 23, 1984, Ser. No. 633,441
Claims priority, application Japan, Jul. 27, 1983, 58-117681[U]
Int. Cl.[3] F01L *1/02*
U.S. Cl. 123—90.27 5 Claims



1. A cam shaft holding system for an internal combustion engine in which a plurality of valves consisting of at least one

intake valve and at least one exhaust valve are positioned for each cylinder of the multicylinder engine and driven by cams secured to two cam shafts, wherein the improvement comprises:

(i) securing a cylinder head to a cylinder block by cylinder head mounting bolts positioned between adjacent cylinders,

(ii) extending said cam shafts adjacent to said cylinder head mounting bolts at positions outside said cylinder head mounting bolts and in the direction of the row of said cylinders,

(iii) positioning cam shaft holding members between said adjacent cylinders for rotatably supporting said cam shafts on said cylinder head,

(iv) each of said cam shaft holding members extending in the direction perpendicularly intersecting the axial direction of each cam shaft and having bolting portions at its end portions,

(v) at least the end portion on the cylinder head mounting bolt side of each of said cam shaft holding members for rotatably supporting said cam shafts for driving a plurality of said valves for each cylinder being provided with a single bolting portion on either side of each cylinder head mounting bolt in the axial direction of each cam shaft.

4,534,326

STOP/START ENGINE CONTROL FOR A ROAD VEHICLE

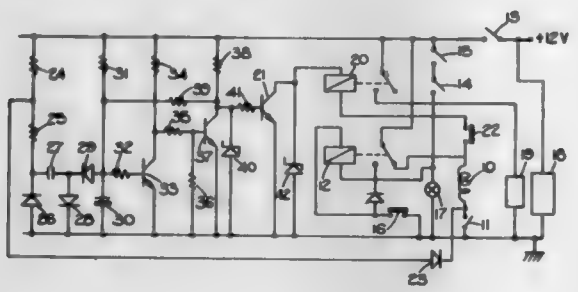
Roy P. Bowcott, Solihull, England, assignor to Lucas Industries, England

Filed May 7, 1984, Ser. No. 607,470

Claims priority, application United Kingdom, May 7, 1983, 8312651

Int. Cl.³ F02N *17/00*

U.S. Cl. 123—179 B **8 Claims**



1. A stop/start engine control for a road vehicle comprising means for stopping the engine, means for re-starting the engine and engine running sensitive means for inhibiting said re-starting means when the engine is running, characterised by latch means which is set when said engine stopping means is actuated and inhibits operation of the re-starting means as long as it remains set, accelerator pedal sensitive means for resetting the latch means when the accelerator pedal is moved out of its rest position whilst the latch means is in its set position, and clutch pedal sensitive means for operating said restarting means when the latch means is in its reset condition.

4,534,327

EXTERNALLY IGNITED INTERNAL COMBUSTION ENGINE

Reinhard Latsch, Vaihingen, and Hans Schlembach, Mühlacker, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 871,577, Jan. 23, 1978, Pat. No. 4,218,992, which is a division of Ser. No. 688,051, May 19, 1976, abandoned. This application Apr. 22, 1980, Ser. No. 142,804

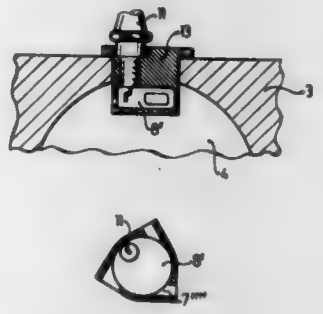
Claims priority, application Fed. Rep. of Germany, May 22, 1975, 2522577; Feb. 13, 1976, 2605738; Apr. 10, 1976, 2615813

Int. Cl.³ F02B *19/08*

U.S. Cl. 123—263 **4 Claims**

1. In an internal combustion engine which includes a housing, means in said housing defining at least one main combustion chamber, a drive piston associated with each main combustion chamber and defining a limiting surface of the main combustion chamber, the improvement comprising:

an ignition chamber including a cylindrical inner wall acting alone as a counter electrode associated with the main combustion chamber, and at least one connecting channel leading from the main combustion chamber to the ignition chamber, said at least one connecting channel passing through said cylindrical wall in a straight line and extending at a tangent with said cylindrical inner wall of said ignition chamber; a removable insert that extends into said main combustion chamber of said engine in which said ignition chamber is contained, said insert being removably placed in said engine housing and being capable of accepting external ignition means and including said channel for communication between said ignition chamber and said main combustion chamber in which the direction of gaseous flow through said channel is substantially radial with respect to the central axis of said insert, a spark ignition device mounted in said removable insert and including an ignition electrode eccentrically located relative to said counter-electrode so that said spark ignition device forms a spark gap which lies adjacent a closest portion of said counter-electrode of said ignition chamber and in a boundary layer formed by a combustible mixture flowing within said ignition chamber, so that the ignition spark penetrates the boundary layer adjacent said cylindrical ignition chamber wall, wherein the entire combustible mixture is delivered to the main combustion chamber, and a portion of said mixture is forced back through said at least one connecting channel to the ignition chamber by said drive piston during its compression stroke, thereby forming said boundary layer.



4,534,328

EMERGENCY CONTROL APPARATUS FOR A DIESEL ENGINE

Werner Fischer, Ditzingen; Ulrich Flaig, Markgröningen, and Johannes Locher, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 30, 1982, Ser. No. 403,903

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1981, 3130094

Int. Cl.³ F02M *59/20;* F02D *31/00*

U.S. Cl. 123—359 **8 Claims**

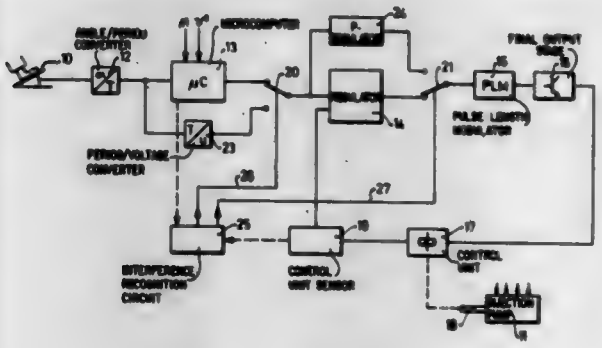
1. In a fuel metering system of a diesel engine having a fuel pump and a fuel-quantity setting member, a series circuit including: a drive pedal position sensor, a signal processing unit connected to the drive pedal position sensor, a regulating device connected to the signal processing unit and a control unit connected to the regulating device and the fuel quanity setting member, the improvement comprising,

a first emergency circuit for said signal processing unit and a second emergency circuit for said regulating device,

means for recognizing a malfunction in at least one of the signal processing unit and the regulating device and

means for switching either said first or said second emer-

gency circuit into the series circuit in response to the recognition means, whereby the malfunctioning of the



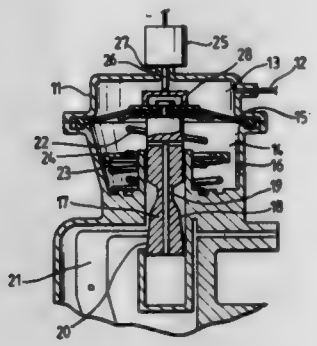
signal processing unit or the regulating device can be bypassed separately in said series circuit.

4,534,329

SUPPLY SYSTEM FOR SUPER CHARGED DIESEL ENGINES

Giorgio Filtri, Moncalieri, Italy, assignor to Fiat Auto S.p.A., Italy

Filed Oct. 31, 1983, Ser. No. 547,556
Claims priority, application Italy, Nov. 11, 1982, 68322 A/82
Int. Cl.³ F02D *7/00*
U.S. Cl. 123—383 **2 Claims**



1. A fuel supply system for a supercharged diesel engine, comprising, in combination:

(a) a turbo compressor (14) operated by exhaust gas from the engine,

(b) an induction manifold (9) connected between said turbo compressor and the engine,

(c) an injection pump (10) connected to the engine,

(d) a fuel delivery regulator (11) connected to said pump and to said manifold and with said regulator being responsive to pressure in said manifold,

(e) control means (25) for said regulator and with said control means being actuatable to significantly increase the delivery of fuel to the engine by said pump,

(f) an accelerator pedal (31) movable through an open range of positions between upper and lower limits,

(g) a controller (30) connected to said control means (25) and responsive to passing of said accelerator pedal (31) downwardly past a predetermined position in said open range of positions to thereby actuate said control means (25),

(h) said predetermined position of said accelerator pedal (31) being closely adjacent said lower limit,

(i) and a three-way two-position electrically operated time delay valve (32) disposed in the connection between said induction manifold (9) and said fuel delivery regulator (11),

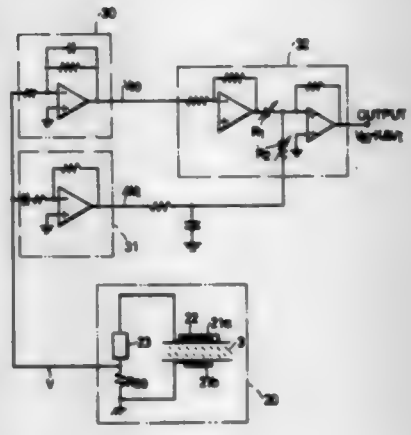
(j) said valve (32) providing means actuatable to temporarily interrupt the said connection between said manifold and said regulator and to simultaneously connect said regulator (11) to atmosphere.

4,534,330

AIR/FUEL RATIO DETECTOR

Minoru Osuga, and Yoshishige Oyama, both of Katsuta, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,666
Claims priority, application Japan, Feb. 4, 1983, 58-16037
Int. Cl.³ F02B *3/00, 75/10*; F02M *7/00, 23/04*
U.S. Cl. 123—440 **6 Claims**



1. An air/fuel ratio detector comprising:

a sensor using a current source for generating an output signal corresponding to an air/fuel ratio;

means for detecting a changing current component within the output signal from said sensor on the basis of the change of the air/fuel ratio with respect to time; and

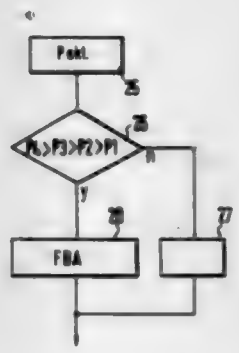
means for compensating said output signal from said sensor by causing a correction of said output signal by subtracting a high frequency signal component within the detected current in said sensor output from a low frequency of said detected current component.

4,534,331

CONTROL DEVICE FOR A FUEL METERING SYSTEM OF AN INTERNAL COMBUSTION ENGINE

David van Belzen, Hemmingen; Günter Hönig, Ditzingen; Gerhard Lotterbach; Jan-Faas van Woudenberg, both of Markgröningen, and Udo Zucker, Güglingen, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 411,225, Aug. 25, 1982, abandoned.
This application Jul. 6, 1984, Ser. No. 627,486
Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216983
Int. Cl.³ F02B *3/00*
U.S. Cl. 123—492 **16 Claims**

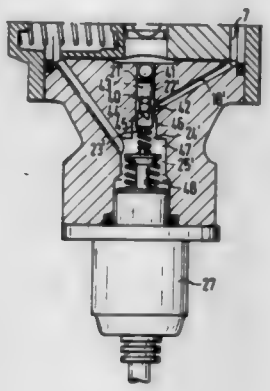


1. A control device for a fuel metering system of an internal combustion engine comrising means for sequentially determining load values, n, made successively in time, and a computer for the generation of fuel metering signals dependent on operational parameters, further including means for interrogating at least four successive load values occuring in sequence as to their tendency wherein a sequential rising tendency of said at least four successive load values corresponding to an acceleration triggers an acceleration enrichment.

4,534,332
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES WITH AN ADJUSTMENT OF THE INSTANT OF INJECTION

Franz Eheim, and Helmut Laufer, both of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 415,944
Claims priority, application Fed. Rep. of Germany, Feb. 3, 1982, 3203583
Int. Cl.³ F02M 59/20
U.S. Cl. 123—502 6 Claims



1. A fuel injection pump for internal combustion engines provided with means for adjusting injection timing, said means comprising an adjusting piston disposed in a cylinder, a first end face of said adjusting piston defining with said cylinder a work chamber, said work chamber being pressurized by a fluid communicated from a pressure source, said pressurized fluid serving as a restoring force to said adjusting piston, said pressure source further being connected to a first pressure control device, and said pressure control device serving to vary the pressure applied to said fluid in accordance with at least one engine operating parameter, characterized in that a throttle cross section is disposed between said work chamber and said pressure source with constant communication therebetween, and said work chamber is provided with a relief line having a discharge cross section variable in accordance with at least one further other engine operating parameter, said discharge cross section being controlled by a control piston displaceable in response to the pressure in said work chamber counter to a spring, said spring being further retained on a support point displaced by an adjusting drive means in accordance with said at least one further other engine operating parameter, said control piston being disposed in a cylinder and including a first end serving to define a pressure chamber and a second end face acted upon by a spring, said pressure chamber being arranged to communicate via a bore with said relief line upstream of said discharge cross section, said control piston further including a control edge for controlling said discharge cross section and being provided with an annular groove and a recess connected therewith, said recess having a cross section and a longitudinal extent, said cross section varying over said longitudinal extent, and said recess cooperating with a control edge of said cylinder to form said discharge cross section.

4,534,333
INTERNAL COMBUSTION ENGINE WITH AIR-FUEL MIXTURE HEATING

Gordon C. Slattery, Omro, Wis., assignor to Brunswick Corporation, Skokie, Ill.

Continuation of Ser. No. 452,913, Dec. 27, 1982, abandoned.
This application Nov. 5, 1984, Ser. No. 668,185
Int. Cl.³ F02M 31/00
U.S. Cl. 123—545 2 Claims

1. In an internal combustion engine, the combination comprising:

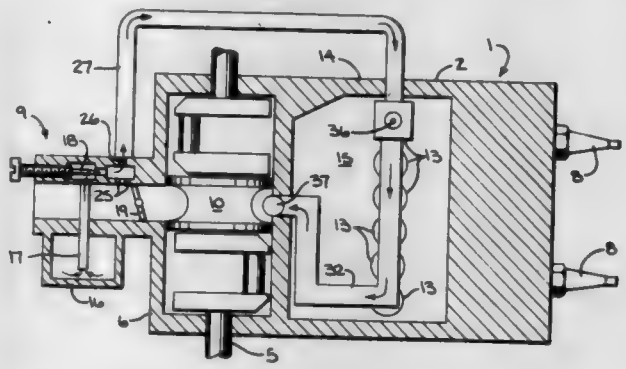
(a) a cylinder block having a cylinder and reciprocable piston disposed therein, said cylinder having a wall with an intake port and an exhaust port therein,

(b) an exhaust chest disposed in said cylinder block for receipt and transfer of exhaust gases from said exhaust port,

(c) a cover for said exhaust chest and with said cover disposed in facing relationship with said exhaust port,

(d) a carburetor connected to supply a primary air-fuel mixture to said intake port of said cylinder, said carburetor having a primary fuel passage and a throttle valve adjustable between closed and open positions,

(e) and means connected between said carburetor and said intake port of said cylinder for supplying a supplemental heated air-fuel mixture to said cylinder at idle and low engine speeds,



(f) said supplemental air-fuel mixture supplying means including passage means disposed in facing relationship with said exhaust port of said cylinder wall for conducting said supplemental mixture therethrough so that exhaust emanating from said exhaust port into said exhaust chest heats said supplemental mixture,

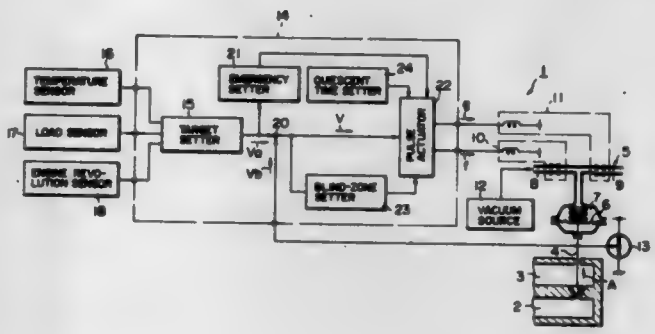
(g) said passage means is disposed in said cover having one end connected to said carburetor and its other end connected to said intake port of said cylinder, and

(h) the connection of said passage means to said carburetor includes a secondary fuel passage in said carburetor, means connecting said secondary fuel passage to said passage means in said cover, and external air inlet means disposed in said connecting means to provide said supplemental air-fuel mixture, said external air inlet means includes a restrictive air metering orifice of smaller cross section than said connecting means.

4,534,334
EXHAUST-GAS RECIRCULATION SYSTEM FOR INTERNAL COMBUSTION ENGINE

Nobuaki Murakami, and Shogo Oomori, both of Kyoto, Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 580,084
Claims priority, application Japan, Feb. 18, 1983, 58-26021
Int. Cl.³ F02M 25/06
U.S. Cl. 123—571 5 Claims



1. An exhaust-gas recirculation system for an internal combustion engine comprising: an exhaust-gas recirculation pas-

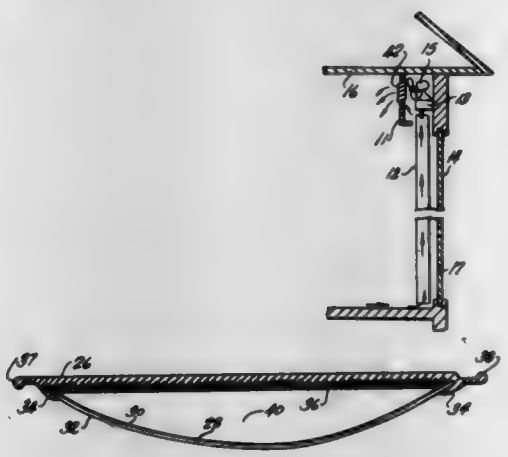
sage through which a portion of the exhaust gas from the internal combusion engine is sent back to an intake system, an exhaust-gas recirculation control valve disposed in said passage, valve actuating means for actuating said control valve in such a manner to continuously control the opening thereof, a valve opening sensor for generating an actual valve opening signal corresponding to the actual opening of said control valve, detecting means for detecting certain operating conditions of the internal combustion engine, and a main control device for supplying an output signal to said valve actuating means, said main control device having means for setting a desired opening amount of said control valve based on a signal sent from said detecting means, comparing means for detecting a difference between the desired opening amount and the actual valve opening detected by said valve opening sensor, sensing means for sensing, judging and setting a sudden change in the desired opening amount, means for setting a given length of quiescent time, and pulse actuating means for supplying actuating signals to said valve actuating means and operative to withhold the supply of the next actuating signal during the quiescent time preset by said quiescent time setting means after said pulse actuating means supplies an actuating signal the length of which corresponds to the difference detected by said comparing means and operative when the desired opening amount changes suddenly and in response to a signal from said sensing means to supply immediately a new actuating signal the length of which corresponds to a new difference.

4,534,335

SOLAR HEAT COLLECTOR AND REFLECTOR

Frederick H. Rice, P.O. Box 643, La Quinta, Calif. 92253

Filed Aug. 1, 1983, Ser. No. 519,019
Int. Cl.³ F24J 3/02
U.S. Cl. 126—429 **5 Claims**



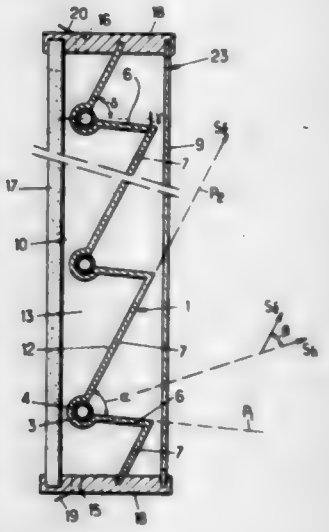
1. A solar heat collector and reflector system adapted to be disposed across an open window area in a room, said system comprising a series of fins all mounted for rotational movement through an arc of 180 degrees about parallel axes each fin being formed of a pair of first and second panels, one of which panels is a plastic glazing having an inner radiation diffusing, sawtooth surface which diffuses light passing therethrough, and the other of which panels has an outer reflective surface and an inner radiation absorbing surface facing said inner sawtooth surface of said plastic glazing, whereby said sawtooth surface obscures the view of said inner radiation absorbing surface while permitting light to reach said radiation absorbing surface, and said first of said panels in each pair is equipped with slotted lip means adapted to receive a lengthwise edge of said second panel to hold said second panel in a resiliently deformed condition flexed outwardly away from said first panel to define a chimney flue between said panels in each pair, and said lengthwise edge is held in said slotted lip means by spring pressure of said second panel, and the lengthwise edges of said first panel are both beaded and are adapted for mutual engagement to interlock with the beaded edges of the first panel of fins adjacent thereto to seal off any open space between adjacent fins, thereby providing a continuous curtain across said open window area when said fins are rotated to their extreme positions of rotation, means defining a heat reservoir located above said fins for collecting the accumulated heat from each fin, a fan located in said heat reservoir and powered by a photovoltaic panel which is located in a slave fin to disperse the concentrated heated air from said reservoir into the room, and means for collectively rotating said fins about their axes to vary the angular orientation of said fins toward the sun thereby regulating the solar heated hot air flow into the room from said heat reservoir.

4,534,336

SOLAR COLLECTORS

Serje Ladriere, Avenue du Cap Roux, Eze-sur-Mer, France

PCT No. PCT/FR83/00215, § 371 Date Jun. 22, 1984, § 102(e) Date Jun. 22, 1984, PCT Pub. No. WO84/01815, PCT Pub. Date May 10, 1984
PCT Filed Oct. 25, 1983, Ser. No. 626,853
Claims priority, application France, Oct. 25, 1982, 82 17805
Int. Cl.³ F24J 3/02
U.S. Cl. 126—431 **7 Claims**



1. A solar collector adapted to heat a heat-carrying fluid comprising:

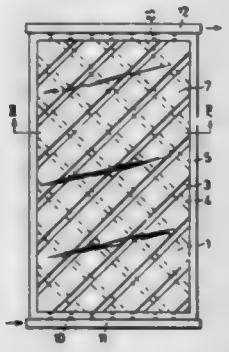
a heat absorbing wall formed by: (a) a plurality of panels which are integrally made of a heat conducting material with adjacent panels sloping with respect to each other in a saw-tooth configuration so as to form alternating acute and obtuse dihedrons with respect to incident solar radiation, said two adjacent panels defining an acute dihedron forming therebetween an angle at least equal to the angle between the winter solstice and the summer solstice at the place where the collector is designed to be installed and being operatively situated in planes directed respectively toward the respective solstices; and (b) an integrally formed gutter in the region of the apex of each acute dihedron, each said gutter opening toward the inside of the dihedron; and

a plurality of heat conducting ducts formed of a heat conducting material in which the heat-carrying fluid flows, each said duct having a shape adapted to be closely received in a respective said gutter in heat conducting contact therewith.

4,534,337
SOLAR-ENERGY COLLECTOR

Gösta Jansson, Badvägen 7-9, S-139 00 Värmdö, Sweden

PCT No. PCT/SE83/00134, § 371 Date Nov. 3, 1983, § 102(e) Date Nov. 3, 1983, PCT Pub. No. WO83/03660, PCT Pub. Date Oct. 27, 1983
PCT Filed Apr. 13, 1983, Ser. No. 557,291
Claims priority, application Sweden, Apr. 14, 1982, 8202322
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—445
3 Claims

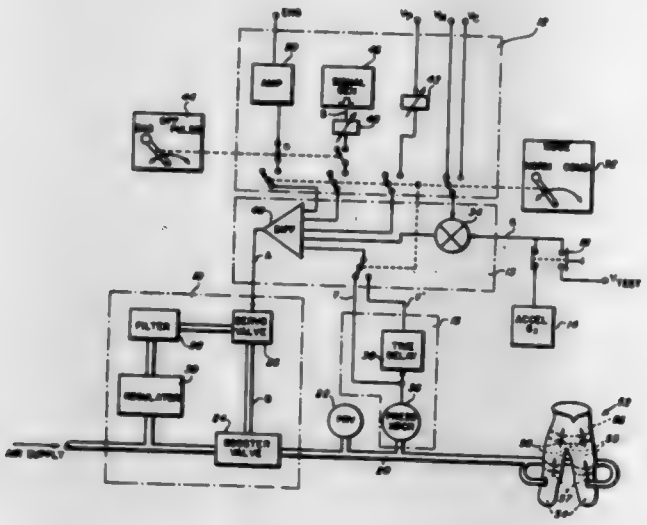


1. A solar-energy collector having an absorber unit which comprises two plates (1, 2) of rigid material having the requisite resistance to corrosion and heat, said plates being sealingly connected together around their peripheries to form an intermediate, wide, elongate cavity of low height for a medium to be heated, and which is provided at two mutually opposite ends with inlet and outlet openings (10) for said medium, wherein the two plates are wave-formed (3, 4) over at least substantially the whole of their surfaces in mutually crossing directions, and the waves of the respective plates are oriented at equal but opposite angles in relation to the main direction of flow (H) of the medium; and in that the plates abut each other at those locations where the waves cross each other, the plates being joined together at at least a part of said locations, by welding, adhesive bonding or the like, and wherein the two plates are joined around their peripheries with a common ring-like frame (5) having abutment surfaces adapted to the wave-form of the plates, said frame also being provided with abutment surfaces for receiving front and rear cover plates (7, 9) for the collector.

4,534,338
SERVO OPERATED ANTI-G SUIT PRESSURIZATION SYSTEM

Richard J. Crosbie, Langhorne, and Paul R. Edwards, Chalfont, both of Pa., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 24, 1984, Ser. No. 613,497
Int. Cl.[3] A61F *5/37*
U.S. Cl. 128—1 A
11 Claims



1. In an aircraft, a system for rapidly pressurizing and controlling pressurization of an aircrewman's anti-G suit, of the type, having a plurality of inflatable air bladders, comprising:

an accelerometer for providing a signal representative of G-forces incident along the vertical axis of the aircraft;

means for switching between two system operating modes, the first operating mode providing a first set of input signals, and the second operating mode providing a second set of input signals different from the first set;

multiple input control means responsive to the G-force signal and the first or second set of input signals for providing a control signal;

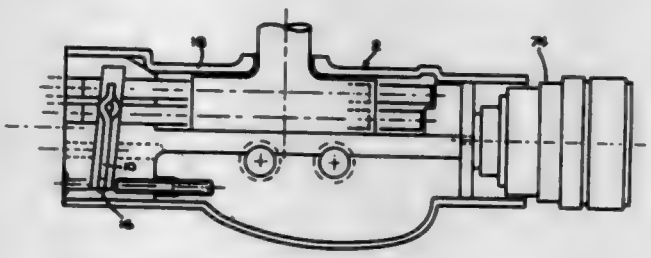
a control valve responsive to the control signal and formed to be connected for controlling the volume of air supplied to the anti-G suit; and

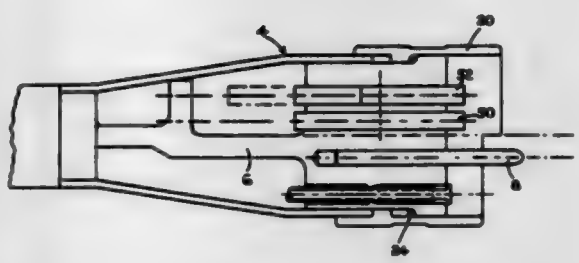
means responsive to the air pressure supplied to the anti-G suit and formed to be connected at the outlet of said control valve, for providing a feedback signal connectable through said switching means to said control means.

4,534,339
ENDOSCOPE

Ian P. Collins, Welwyn, and Douglas P. Fernie, Thriplow, both of England, assignors to Warner-Lambert Technologies, Inc., Dallas, Tex.

Filed Oct. 17, 1983, Ser. No. 542,611
Int. Cl.[3] A61B *1/00*
U.S. Cl. 128—6
29 Claims





1. An endoscope having a handle, a shaft with a flexible length terminating in a distal end, a proximal end of the shaft having a coupling face for detachable connection to a coupling face of the handle and the distal end of the shaft being arranged to receive an optical image of a subject to be viewed, flexure control means operable on the handle for effecting controlled flexing of the shaft, first coupling means for mechanically coupling the shaft and handle, the first coupling means being capable of being released to allow the shaft and handle to be separated, second coupling means for transmitting illuminating light from the handle to the shaft, third coupling means for transmitting an optical image from the shaft to the handle, and fourth coupling means for transmitting from the handle to the shaft movement providing for the controlled flexing of the shaft.

4,534,340
COMBINATION HANDLE

Ronald R. Kerr, deceased, late of Fort Collins, Colo. (by Blanche S. Kerr, executrix); David W. Smith, and John M. Trenary, both of Fort Collins, Colo., assignors to Teledyne Industries, Inc., Fort Collins, Colo.

Filed Aug. 1, 1983, Ser. No. 519,145
Int. Cl.[3] A46B *13/06*
U.S. Cl. 128—66 2 Claims



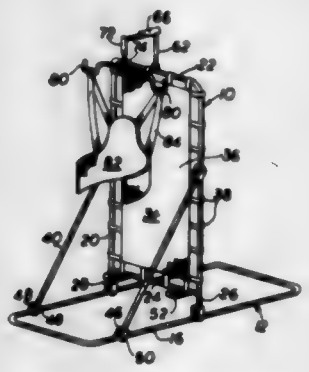
1. Oral hygiene apparatus comprising: a source of a succession of liquid pulses;
an elongated, hollowed handle of a size and shape to be grasped by the human hand;
means for delivering said pulses into the interior of said handle;
a nozzle for delivering said pulses against the teeth and gums of the user;
means for mounting said nozzle to said handle for receiving said pulses;
a toothbrush for scrubbing said teeth and massaging said gums;
means for mounting said toothbrush to said handle;
means included within said handle for moving said toothbrush relative to said handle in response to said pulses;
a valve disposed within said handle and actuatable automatically upon mounting of said nozzle to said handle for conveying said pulses only into said nozzle, said valve being actuated by the inner end of said nozzle upon its insertion into said handle;
and said valve being located within said handle in a position to be biased into its closed position by said pulses when so moving said toothbrush.

4,534,341
GRAVITY LUMBAR REDUCTION MAINTENANCE APPARATUS

Gordon B. Bart, Sturgis; Carol L. Hiemstra, Spring Arbor, and James H. Tyo, Jackson, all of Mich., assignors to Camp International, Inc., Jackson, Mich.

Filed Jun. 6, 1983, Ser. No. 501,508
Int. Cl.[3] A61H *1/02*
U.S. Cl. 128—75 6 Claims

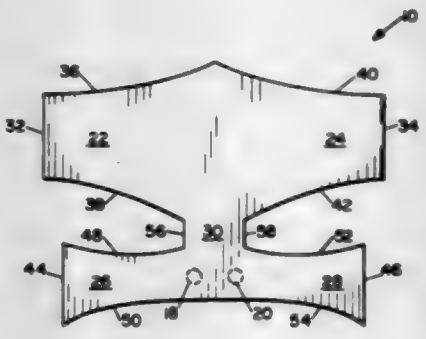
1. Gravity lumbar reduction maintenance apparatus capable of being oriented to the vertical in a plurality of positions compsiring, in combination, a tubular base formed in a planar rectangular configuration having parallel sides and parallel ends, a tubular body frame formed in a planar rectangular configuration having parallel sides and parallel first and second ends, said body frame first end defined by an upper tubular cross piece and said body frame second end defined by a lower tubular cross piece, said body frame parallel sides each extending beyond said second end cross piece terminating in a free end, a yoke mounted upon each free end having spaced legs having aligned holes therein for receiving a pin, a plurality of first spaced connection means defined in said base sides, second connection means defined on said frame sides, a body supporting web affixed to said frame extending between said sides thereof, and at least a pair of primary links each having ends having connection means defined thereon associated with said base and said frame connection means to maintain a preselected angular relationship between said base and frame, the connection means on one end of a link cooperating with said first connection means on said base and the connection means on the other end of a link cooperating with said second connection means on said frame, said yokes being selectively connectable to said second connection means.



4,534,342
NOSE BANDAGE

Charles Paxa, 1200 Lyan Ave., Wayzata, Minn. 55391

Filed Mar. 28, 1984, Ser. No. 594,208
Int. Cl.[3] A61F *5/04*
U.S. Cl. 128—163 5 Claims

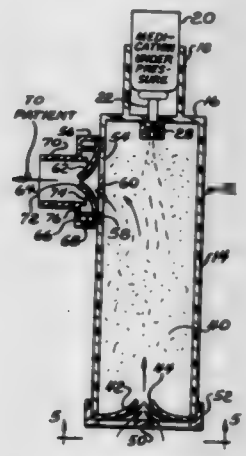


1. Nose bandage formed of a flexible material comprising:
a. opposing infra orbital portion means of a predetermined trapezoidal like geometrical shape;
b. opposing side arm means of trapezoidal like shape, the side arm means being smaller in geometrical size than said opposing infra orbital portion means;
c. connecting bridge of a geometrical rectangular like shape between said opposing infra orbital portion means and said opposing side arm means in a mid portion thereof;
d. at least two perforated nasal passage holes located in a substantially mid center portion of said side arm means; and,
e. adhesive means with protective backing secured to one side of continuous material of said orbital portion means, said side arm means, said connecting bridge means, and said nose bandage means whereby said adhesive means secures said nose bandage about a nose of an individual thereby providing a one piece nose bandage for unilateral or bilateral nasal occlusions.

4,534,343
METERED DOSE INHALER

Christopher Nowacki, Arlington Heights, and Alfred G. Brisson, Schaumburg, both of Ill., assignors to Trutek Research, Inc., Arlington Heights, Ill.

Filed Jan. 27, 1984, Ser. No. 574,340
Int. Cl.[3] A61M *15/00*
U.S. Cl. 128—200.23 9 Claims

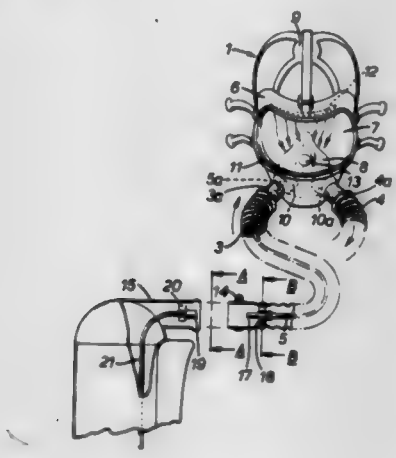


1. A metered dose inhaler for administering asthmatic medication comprising an upright cylindrical air chamber adapted to be held in the hand, said air chamber having an upper end and a lower end, means adjacent said upper end for supporting a pressurized cartridge of asthmatic medication, means for establishing fluid communication from said cartridge into said air chamber adjacent the upper end thereof for spraying a measured dose of medication into said air chamber, a one way valve adjacent the lower end of said air chamber for admitting air but retaining medication, a mouthpipe disposed laterally of said air chamber adjacent the upper end thereof for receipt in a patient's mouth, said air chamber opening into said mouthpipe, and one way valve means between said air chamber and said mouthpipe to pass misted medication from said air chamber through said mouthpipe and into said patient upon patient inhalation and to preclude entrance of air through said mouthpipe into said air chamber upon patient exhalation, said one way valve means having bypass means for venting exhaled air to atmosphere.

4,534,344
BREATHING APPARATUS AND FACEMASKS THEREFOR

Trevor Constance-Hughes, Abergavenny, Wales, assignor to Siebe Gorman & Company Limited, United Kingdom

Filed Feb. 8, 1984, Ser. No. 578,079
Claims priority, application United Kingdom, Feb. 16, 1983, 8304261
Int. Cl.[3] A62B *7/00*
U.S. Cl. 128—201.15 9 Claims

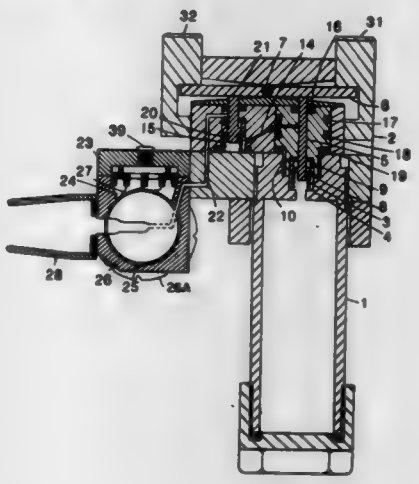


1. A facemask for breathing apparatus, comprising: an outer mask arranged in use to define with the face of a wearer a volume over the eyes of the wearer that is sealed from the external atmosphere; an inner mask arranged in use to define with the face of the wearer a volume over the mouth and/or nose of the wearer that is sealed both from the interior of the outer mask and from the external atmosphere; first inlet and outlet means to permit a gas to enter the inner mask from the exterior of the facemask and leave the inner mask to the exterior of the facemask; second inlet means to permit a gas to enter the outer mask from the exterior; connectors for gas pipes or tubes provided at the exterior of the facemask, at least one of the connectors being in communication with the first inlet and outlet means and another of the connectors being in communication with the second inlet means; and a one-way valve to permit a gas to flow from the interior of the outer mask to the interior of the inner mask.

4,534,345
DOSAGE INHALATOR

Kjell I. L. Wetterlin, S Sandby, Sweden, assignor to Aktiebolaget Draco, Sodertalje, Sweden

Filed Jun. 30, 1982, Ser. No. 393,720
Claims priority, application Sweden, Jul. 8, 1981, 8104240
The portion of the term of this patent subsequent to Jun. 25, 2002, has been disclaimed.
Int. Cl.[3] A61M *15/00*
U.S. Cl. 128—203.15 14 Claims



1. An inhaler for administering to a patient a pharmacologically active solid in a dry micronized powder having a particle size of less than 5 micrometers suspended in a propellant comprising:

a gas conduit through which a dose of said solid suspended in said propellant is supplied to said patient, a storage chamber for said solid, a perforated membrane having a plurality of preselected portions each adapted to hold and dispense a reproducible unit dose less than 50 mg of said solid, and a propellant supply unit for supplying a pharmacologically acceptable propellant to the inhaler,

said conduit, membrane and propellant supply unit being operably connected to each other so that propellant released from the propellant supply unit passes through one of said preselected portions of said perforated membrane that is positioned across said gas conduit, releases said solid carried thereby, and carries said solid as a suspended solid through said gas conduit to the patient,

wherein said perforated membrane is adapted to be displaceable through a plurality of positions in each of which another preselected portion thereof holding a reproducible dose of said solid is moved into a dispensing position relative to said gas conduit and propellant supply unit, and another portion thereof is moved into said storage chamber, and

wherein said chamber includes means operably disposed relative to the position of said perforated membrane in said storage chamber for introducing said reproducible

amount of said active solid into the perforations of said membrane,

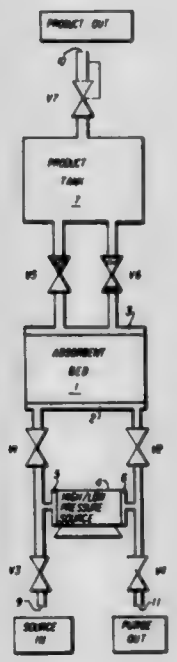
whereby reproducible doses of the solid can be transferred from said storage chamber by said membrane, positioned across said gas conduit by said membrane, and removed therefrom by propellant discharged from said propellant supply unit.

4,534,346

PRESSURE SWING CYCLE FOR THE SEPARATION OF OXYGEN FROM AIR

John Schlaechter, Grandview, Ohio, assignor to Guild Associates, Inc., Worthington, Ohio

Filed Mar. 15, 1983, Ser. No. 475,543
Int. Cl.[3] A61M *16/00*
U.S. Cl. 128—205.12 5 Claims



4. A method for the essentially continuous therapeutic delivery of a source of purified oxygen to a patient consistent with an anticipated physiological need of an individual patient consisting of:

(A) derriving an enriched supply of oxygen from a serially interconnected

(1) a source inlet communicating with ambient air;

(2) a purge outlet communicating with ambient air;

(3) a compressor having an inlet and an outlet for providing a pressure difference with respect to an ambient pressure level;

(4) a two ended bed containing a purgeable adsorbent having a selective affinity for gas other than oxygen; and

(5) a product vessel having an outlet and pressure regulating means in said outlet for the delivery of purified oxygen; the serial interconnection between said source inlet, purge outlet compressor, bed and vessel comprisng gas flow path means connected between: (a) the vessel and one bed end, (b) the other bed end and the compressor inlet and outlet (c) the compressor inlet and the source inlet and (d) the compressor outlet and the purge outlet;

(B) valve means in said gas flow path means comprising separately operable interconnecting valves being operated in a repeating cycle in which:

(1) in a first cycle stage the valves are operated to provide ambient air from the source inlet through the inlet of the compressor to introduce said air to one end of the bed at an elevated pressure, whereby gas other than oxygen is absorbed by the absorbent, and to deliver an oxygen enriched gas from the other end of the bed to the vessel; and

(2) in the second cycle stage the valves are operated to flow oxygen enriched gas from the vessel to the other end of the bed whereby the absorbent in the bed is purged of absorbed gas by a suction gas flow from the vessel in a reverse direction through the bed and from the one end of the bed to the inlet of the compressor and through the outlet of the compressor to said purge outlet;

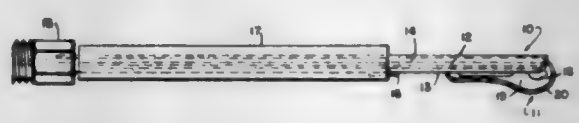
(C) continuously administering said enriched supply of oxygen to the patient.

4,534,347

MICROWAVE COAGULATING SCALPEL

Leonard S. Taylor, Silver Spring, Md., assignor to Research Corporation, New York, N.Y.

Filed Apr. 8, 1983, Ser. No. 483,219
Int. Cl.[3] A61B *17/36*
U.S. Cl. 128—303.1 40 Claims



1. A surgical instrument for simultaneously cutting and coagulating tissue, said instrument comprising:

(a) means for generating microwave energy having a frequency selected from the range of 100 MH_z to 13,000 MH_z;

(b) a scalpel blade having a cutting edge for severing tissue, said blade also having a microwave radiator means therein for emitting microwave radiations in the proximity of said cutting edge;

(c) means for manipulating said scalpel blade which includes an insulating means to enable a surgeon to manipulate the cutting edge and obtain tactile feedback therefrom;

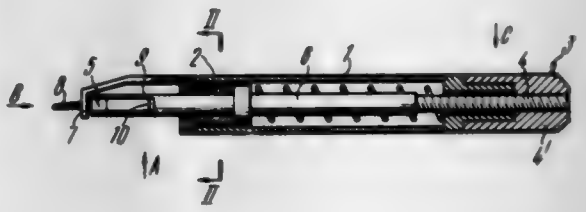
(d) insulated conductor means for transmitting said microwave energy to said microwave radiator means.

4,534,348

INSTRUMENT FOR MAKING CORNEAL INCISIONS

Svyatoslav N. Fedorov; Evgeny I. Degtev; Vladimir N. Golubev; Sergei V. Khromov; Igor A. Yatsenko; Alexandr A. Karavaev, and Vladimir M. Yakushev, all of Moscow, U.S.S.R., assignors to Moskovsky Nauchno-Issledovatelsky Institut Mirrokhirurgii Glaza, Moscow, U.S.S.R.

Continuation-in-part of Ser. No. 375,272, Apr. 21, 1982,. This application Jan. 10, 1983, Ser. No. 456,985
Claims priority, application U.S.S.R., Jan. 12, 1982, 3383704
Int. Cl.[3] A61B *17/32*; B26B *1/08*
U.S. Cl. 128—305 5 Claims



1. An instrument for making corneal incisions, said instrument comprising:

a casing;

a holding means slidingly mounted within said casing for reciprocative motion relative to said casing;

a drive means for moving said holding means along the longitudinal axis of said casing;

a locking means positioned at one end of said holding means to releasably lock a cutting blade;

a spring means positioned at the other end of said holding means for biasing said holding means;

a forked stop means defined by said casing to limit the movement of said locking means and to slide along a corneal surface, said forked stop means including two tongs and defining an opening between said two tongs to permit egress of said cutting blade;

said locking means including a rectangular-shaped groove having a base defined by said holding means, said base of said rectangular-shaped groove being positioned parallel to a plane passing equidistantly between said two tongs of said forked stopping means;

a spring-loaded lever clip mounted in said rectangular-shaped groove for biasing against the cutting blade; and

a space defined between said spring-loaded lever clip and said base of said rectangular-shaped groove for receiving said cutting blade.

4,534,349

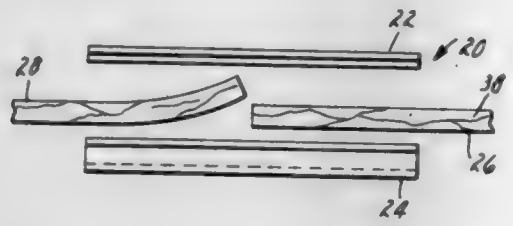
ABSORBABLE SUTURELESS NERVE REPAIR DEVICE

Thomas H. Barrows, Cottage Grove, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 436,242, Feb. 2, 1983, abandoned. This application Jan. 12, 1984, Ser. No. 569,557

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—334 R **11 Claims**



1. A medical device for use in the sutureless repair of a nerve comprising a longitudinally-openable, porous, rough-surfaced tube of at least one body-absorbable polymer, said tube having a porosity in the range of 25 to 95 percent by volume, a coefficient of static friction, μ_s, in the range of 0.40 to 0.90, and being capable of enclosing, holding in approximation, and protecting the ends of a severed or lacerated nerve.

4,534,350

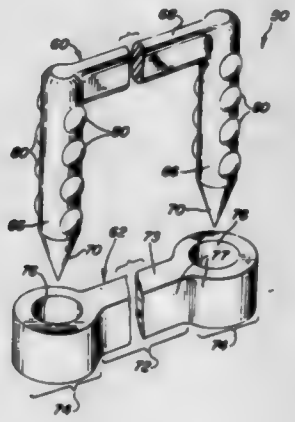
TWO-PIECE TISSUE FASTENER WITH COMPRESSIBLE LEG STAPLE AND RETAINING RECEIVER

Donald M. Golden, Cherry Hill, N.J., and William P. McVay, Clearwater, Fla., assignors to Ethicon, Inc., Somerville, N.J.

Filed Jun. 20, 1983, Ser. No. 506,082

Int. Cl.³ A61B *17/04*

U.S. Cl. 128—334 C **2 Claims**



1. A fastener adapted to hold together two portions of mammalian tissue, such as are defined by a wound or incision, to facilitate healing of the wound or incision, said fastener comprising:

a generally U-shaped fastening member, said fastening member comprising a pair of generally conical distal ends adapted to penetrate said tissue portions and a link normal to, extending between, and connecting said legs; said link being adapted to lie substantially against one of said tissue portions; each said leg being generally cylindrical and having on its exterior along at least a portion of its length two rows of resilient convex members, each convex member defining an increased cross section region presenting a three dimensionally curved engaging surface separated from adjacent members by cylindrical cross section regions of said leg, each row of convex members on a leg being oriented about 180 degrees from the other row on that leg and each convex member in one row on the leg being in longitudinal registry along the leg with a convex member in the other row on that leg; and

a receiver having a first leg receiving member for receiving one of said fastening member legs after said legs have been inserted through said tissue portions and having a second leg receiving member for receiving the other of said fastening member legs after said legs have been inserted through said tissue portions; said receiver having a first side adapted to be disposed against the other of said tissue portions; said receiver having a second side facing generally away from said first side; said receiver having an exterior peripheral surface extending between said first and second sides; each said receiving member defining a bore extending from said receiver first side to said receiver second side; each said bore having a substantially uniform diameter, said diameter being greater than the cylindrical cross section regions of the leg to be inserted therein but smaller than the corresponding increased cross section regions of the leg to be inserted therein whereby, when the leg is inserted into said receiving member, said convex members deform to accommodate the insertion and provide an interference friction fit to retain the fastening member and receiver in a selected relative position.

4,534,351

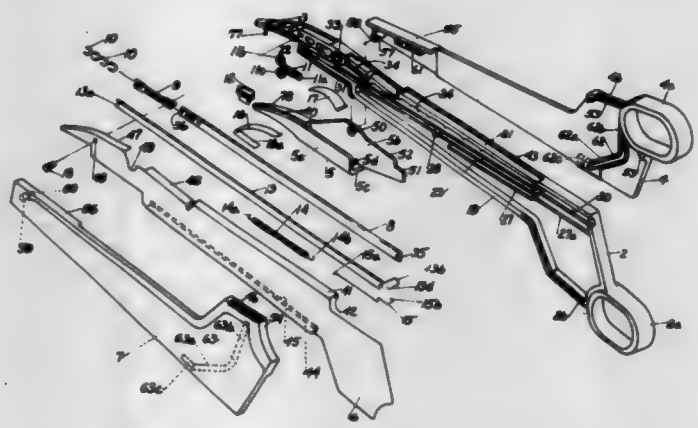
LIGATOR

Robert G. Rothfuss, Bellevue, Ky.; David K. Kuhl, Cincinnati, Ohio; Federico Bilotti, Madeira, Ohio; Hugh Melling, West Chester, Ohio, and Earl J. Mills, Cincinnati, Ohio, assignors to Senmed, Inc., Cincinnati, Ohio

Filed Oct. 20, 1982, Ser. No. 435,380

Int. Cl.³ A61B *17/04*; B31B *1/00*

U.S. Cl. 128—334 R **30 Claims**



1. An instrument for applying ligating clips to blood vessels, said instrument comprising a first handle terminating at its forward end in a first jaw, a second handle and a second jaw both pivotally mounted on said first handle near said forward end thereof, said first and second handles being manually shiftable between open and closed positions, said first jaw being shiftable by said first handle and said second jaw being shiftable by said second handle between open and closed clip-clamping positions, an elongated magazine within said first handle and extending longitudinally therein, a row of clips located within said magazine together with means constantly urging said row of clips toward said forward end of said maga-

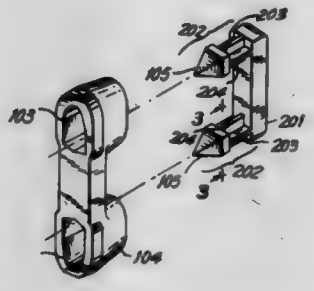
zine, a pusher being mounted within said first handle parallel to and adjacent to said magazine in a pusher track which extends to the forward ends of said first and second jaws, said pusher being shiftable by said first and second handles between a retracted position removed from said jaws when said handles are in their closed positions and an extended clip-locating position between said jaws when said handles are in their open positions, a ramp in said first handle at the forward end of said magazine and leading to said pusher track, said ramp being covered by said pusher when in its extended position and exposed by said pusher when in its retracted position to enable the forwardmost clip of said row to be transferred from said magazine to said pusher track under the influence of said urging means.

4,534,352

SURGICAL FASTENER MEMBER HAVING INCREASED RATE OF ABSORPTION

Herbert W. Korthoff, Wilton, Conn., assignor to United States Surgical Corporation, Norwalk, Conn.

Filed Oct. 4, 1983, Ser. No. 538,982
Int. Cl.³ A61B *17/08*
U.S. Cl. 128—334 C **5 Claims**



4. A surgical fastener member of a resinous material, comprising:

a base and substantially parallel prongs extending substantially perpendicularly from the base in substantially the same direction, each of the prongs having a shank which is joined at its proximal end to the base and a barb at the distal end of the shank for penetrating tissue, the shank having (1) a longitudinal core along substantially its entire length whose cross-sectional area is from about 15% to about 50% of the total radial cross-sectional area of the shank and (2) four fins projecting outward from the core at right angles to each other and extending substantially longitudinally along substantially the entire length of the shank.

4,534,353

ACCESSORY FOR COUNTERACTING THE CONSEQUENCES OF VESICAL INCONTINENCE WITH MALES

Eric J. A. de Leur, Sydwende 9, Drachten, and Berend Heijenga, Schaapstreek 42, Sleen, both of Netherlands

Filed Mar. 24, 1983, Ser. No. 478,448
Claims priority, application Netherlands, Mar. 17, 1983, 8201258
Int. Cl.³ A61B *19/00*
U.S. Cl. 128—346 **11 Claims**

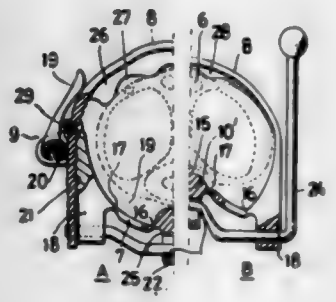
1. A pressure element for use in an applicance for counteracting the consequences of vesical incontinence in males, said pressure element applied in use to the underside of the penis and held thereto by a tensioning band that extends circumferentially around the penis, said pressure element comprising:

a first rigid member located to the right of the urethra;

a second rigid member located to the left of the urethra;

a pressing body located between said first rigid member and said second rigid member and including a convex pressing surface that faces the urethra for applying a radially inward force to the underside of the penis for compressing the urethra;

connecting means interconnecting said pressing body with said first rigid member and with said second rigid member and including surfaces of concave shape that face and cradle the corporae cavernosa, whereby the pressing



surface is maintained in alignment with and overlying the urethra; and,

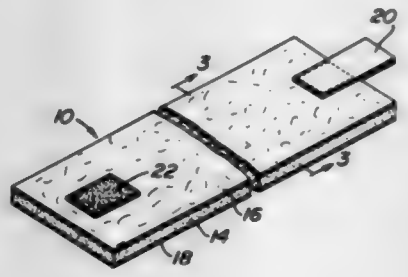
actuating means mounted to said first rigid member and mounted to said second rigid member and operatively engaging said pressing body for forcing said pressing body against the urethra under control of the user.

4,534,354

BANDAGE

Francis J. Bonner, Jr., and Francis J. Bonner, III, both of Radnor, Pa., assignors to Universal Medical Products, Inc., Radnor, Pa.

Filed Sep. 29, 1982, Ser. No. 426,406
Int. Cl.³ A61F *7/00*
U.S. Cl. 128—402 **28 Claims**



1. A method for the prevention of arcing in a spark erosion process, in which a pulse-shaped voltage is applied between an electrode and an electrically conducting workpiece, which voltage has a first, predetermined amplitude during a variable ignition retarding period determined by the process parameters, and on the termination of said ignition retarding period a discharge takes place between the electrode and the workpiece, resulting in the flow of a pulse-shaped current and in the voltage dropping to a second amplitude determined by the process, characterized by determining during each pulse interval whether a short circuit between the electrode and workpiece has occurred and, upon the detection of such a short circuit, permitting the next successive voltage pulse to be generated without being suppressed or terminated irrespective of the duration of the ignition retarding period exhibited by said pulse, sensing the ignition retarding period and terminating the voltage in response to the absence of a short circuit if the retarding period is less than a predetermined value; and characterized further in that on the termination of the ignition retarding period a first current of relatively low amplitude will flow for a first, relatively short period of time and that a second current of an amplitude a selected amount greater than that of said first current will be added to said first current in response to the ignition retarding period being found to exceed said predetermined duration.

4,534,355
ELECTROCHEMICAL SENSOR EMPLOYING A GAS-PERMEABLE HYDROPHILIC POLYURETHANE MEMBRANE

William D. Potter, Hertfordshire, England, assignor to Smith and Nephew Associated Companies Inc., England

PCT No. PCT/GB81/00223, § 371 Date Mar. 26, 1982, § 102(e) Date Mar. 26, 1982, PCT Pub. No. WO82/01306, PCT Pub. Date Apr. 29, 1982

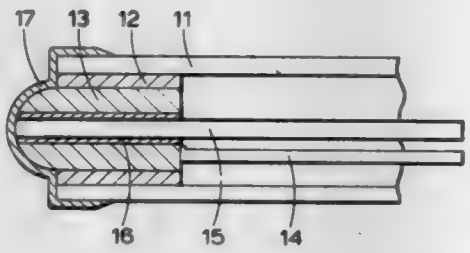
PCT Filed Oct. 13, 1981, Ser. No. 364,864

Claims priority, application United Kingdom, Oct. 15, 1980, 8033313

Int. Cl.[3] A61B *5/00*

U.S. Cl. 128—635

10 Claims



1. In an electrochemical sensor for use in determining blood gas which employs a membrane of material permeable to the blood gas to be determined, the improvement which comprises employing as the membrane a membrane which consists essentially of a hydrophilic linear polyether polyurethane.

4,534,356
SOLID STATE TRANSCUTANEOUS BLOOD GAS SENSORS

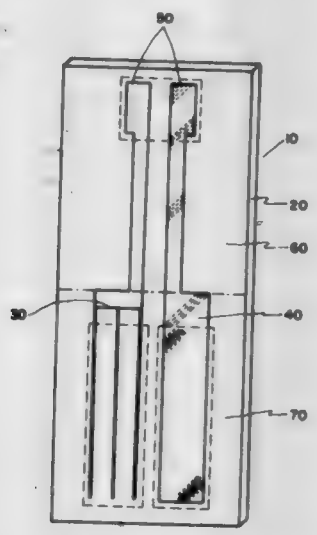
Nicholas Papadakis, Mentor, Ohio, assignor to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Jul. 30, 1982, Ser. No. 403,808

Int. Cl.[3] A61B *5/00*

U.S. Cl. 128—635

15 Claims



1. A solid state transcutaneous oxygen sensor comprising:
(a) an electrically insulating substrate;
(b) a first electrode comprising a noble metal on said substrate of (a);
(c) a second electrode comprising a silver/silver halide reference electrode on said substrate of (a);
(d) an insulating dielectric layer on said components (a), (b) and (c) characterized in that at least a portion of component (b) and component (c) remains exposed; and
(e) an oxygen permeable polymeric membrane containing a bound liquid electrolyte over at least said exposed portion of said first and said second electrodes;
(f) a polymeric oxygen permeable, liquid impermeable, biocompatible membrane coating over said oxygen permeable polymeric membrane containing a bound liquid electrolyte; further characterized in that said exposed portions of said first and second electrodes have well-defined surface areas.

4,534,357
MULTIPLE DEMODULATION FREQUENCY DOPPLER

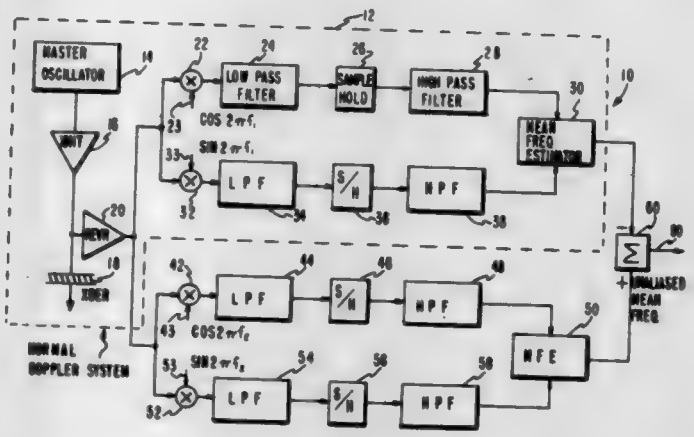
Jeffry E. Powers, Bainbridge Island, Wash., assignor to Advanced Technology Laboratories, Inc., Bellevue, Wash.

Filed Apr. 19, 1984, Ser. No. 601,815

Int. Cl.[3] A61B *10/00*

U.S. Cl. 128—663

3 Claims



1. A multiple demodulation frequency Doppler detector for measuring the velocity of blood flowing in a patient's circulatory system comprising:
(a) a first Doppler system including a master oscillator operating at a master oscillator frequency, a transmitter, a transducer, and a receiver, and means for generating a first sine wave and a first cosine wave having a first frequency which is said master oscillator frequency divided by a first integer;
(b) a second Doppler system using said master oscillator, said transmitter, said transducer, and said receiver, and means for generating a second sine wave and a second cosine wave having a second frequency, different from said first frequency, said second frequency being said master oscillator frequency divided by a second integer different from said first integer;
(c) said first Doppler system further includes means for detecting the mean Doppler frequency of said first Doppler system using said first sine wave and said first cosine wave;
(d) said second Doppler system further includes means for detecting the mean Doppler frequency of said second Doppler system using said second sine wave and said second cosing wave; and
(e) means for detecting the difference between said mean Doppler frequency of said first and second Doppler signals, whereby said difference will be the unaliased mean Doppler frequency.

4,534,358
NUCLEAR MAGNETIC RESONANCE IMAGING APPARATUS

Ian R. Young, Sunbury-on-Thames, England, assignor to Picker International Limited, Wembley, England

Filed Mar. 21, 1984, Ser. No. 591,697

Claims priority, application United Kingdom, Mar. 30, 1983, 8308778

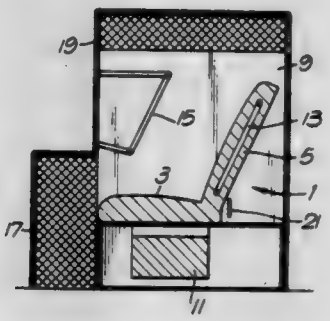
Int. Cl.[3] A61B *5/05*

U.S. Cl. 128—653

6 Claims

1. A nuclear magnetic resonance imaging apparatus comprising: patient support means adapted to support a patient in a sitting posture; a magnet assembly means including two pole pieces, one on each side of the support means so as to apply a magnetic field directed substantially horizontally and perpendicularly to the forward looking direction of a patient seated in the support means, said pole pieces being connected by a yoke

so disposed as not to impede access to the support means from said direction; a first radio frequency coil means for application of radio frequency signals to a patient in said support means comprising one coil means positioned adjacent a back support part of said support means, and another coil means adapted for movement between a corresponding position in front of a



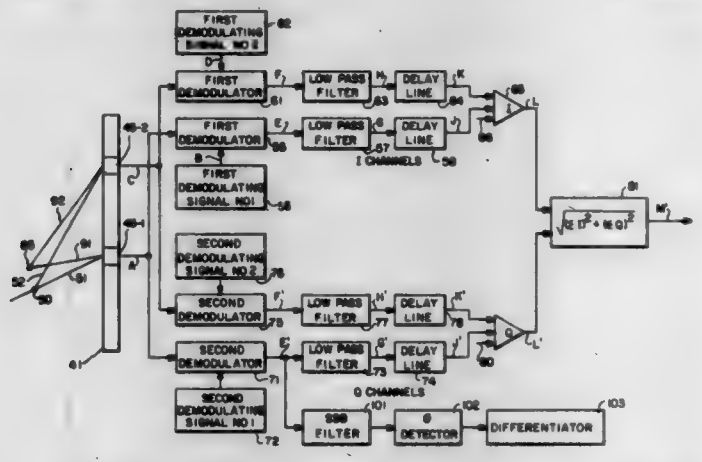
patient in the support means and a position removed therefrom to allow access to the support means from said direction; and a second radio frequency coil means for detection of radio frequency NMR signals produced in a patient in the support means and adapted for mounting adjacent the part of a patient to be imaged.

4,534,359

METHOD AND MEANS FOR DETERMINING FREQUENCY SELECTIVE TISSUE ATTENUATION IN A BASEBAND ULTRASONIC IMAGING SYSTEM

Stockton M. Miller-Jones, Cameron Park, Calif., and Stephen W. Flax, Waukesha, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Dec. 2, 1982, Ser. No. 446,347
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **2 Claims**



1. In a baseband medical ultrasonic imaging system in which transducer means receives reflected ultrasonic waves and generates input electrical signals and demodulator means mixes said input electrical signals with a demodulator signal to obtain a high resolution focused image signal, a method of determining frequency shift of said input electrical signals over a period of time comprising the steps of

filtering the output signals of said demodulator means to obtain a sideband signal of said mixed input signals and demodulator signal,

detecting phase change of said sideband signal, and

differentiating said detected phase change over said period of time.

4,534,360

DETECTION OF LUNG CANCER USING BREATH LUMINESCENCE

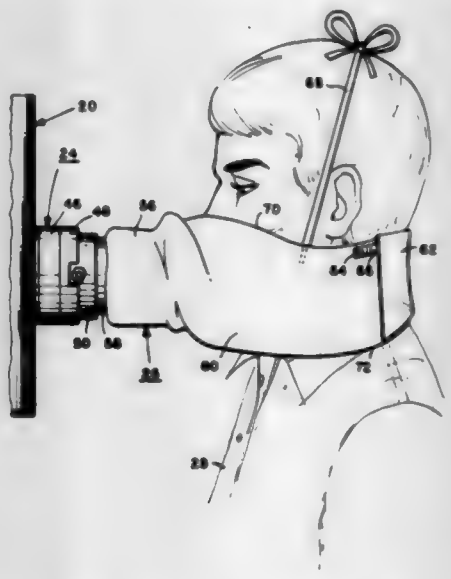
Martin D. Williams, 4317 Accomack Dr., Louisville, Ky. 40222

Filed May 27, 1983, Ser. No. 498,762
Int. Cl.³ G01N *33/10*
U.S. Cl. 128—665 **7 Claims**

1. A method of screening for lung cancer in a human patient comprising the steps of:

measuring the quantity of light spontaneously emitted by the patient's breath; and

comparing the quantity of light so measured with a preestablished standard for persons of the same age as the patient



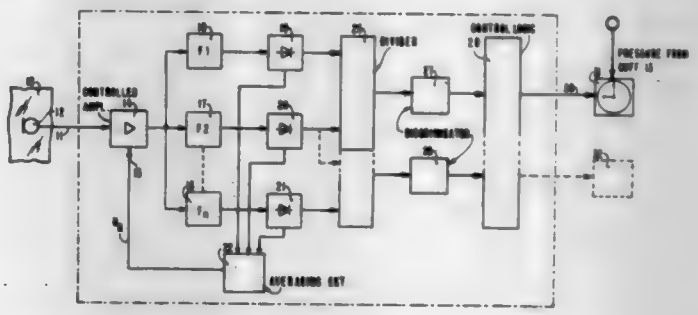
who are free of lung cancer, whereby if the quantity of light emitted by the patient's breath is substantially below the preestablished standard, the patient is considered a candidate for further diagnostic testing.

4,534,361

METHOD AND APPARATUS FOR MEASURING BLOOD PRESSURE BY INSTANTANEOUS COMPARISON OF MULTIPLE FREQUENCY-RANGE COMPONENTS OF KOROTKOFF NOISE

Klaus Berger; Karl-Heinz Affeldt, and Lutz Böttcher, all of Berlin, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Oct. 29, 1982, Ser. No. 437,689
Claims priority, application Fed. Rep. of Germany, Nov. 2, 1981, 3143372
Int. Cl.³ A61B *5/02*
U.S. Cl. 128—680 **13 Claims**



7. Blood pressure measuring apparatus comprising

a pressure cuff (13);

a Korotkoff noise pick-up microphone (12);

controlled amplifier means (14) connected to and controlled by the microphone (12);

a plurality of frequency band-pass filters (16, 17, 18), each passing a predetermined band of frequencies (F1, F2 . . . Fn) within the Korotkoff noise spectrum;

quotient-forming means (25, 26) comparing the output amplitude from each two band-pass filters;

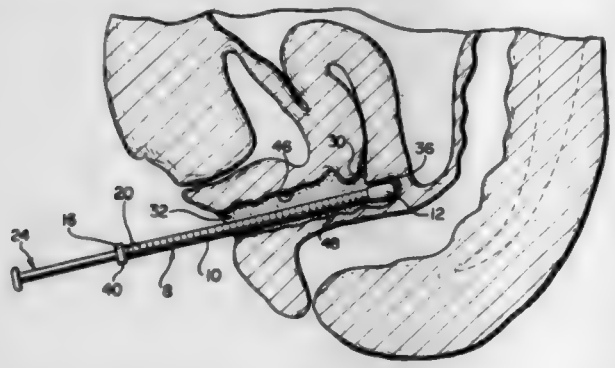
discriminator means (27, 28) connected to the quotient-forming means (25, 26) and determining if the quotients of the amplitude of the output of the band-pass filters connected to the quotient-forming means have a predetermined relationship;

and a control logic (29) connected to and controlled by said discriminator means and providing an output in dependence on which one of the discriminator means, connected to which one of the pairs of band-pass filters, provides an output representative of said predetermined relationship.

4,534,362
METHOD AND APPARATUS FOR DETECTION OF FERTILITY

Gebhard F. B. A. Schumacher, Homewood, and Stephen J. Usala, Chicago, both of Ill., assignors to University Patents, Inc., Westport, Conn.

Filed May 7, 1982, Ser. No. 375,883
Int. Cl.[3] A61B *10/00*
U.S. Cl. 128—738 41 Claims

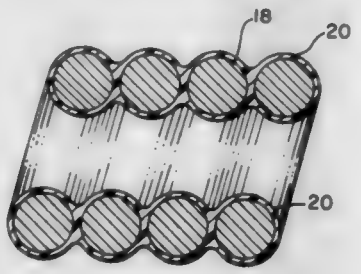


1. A method of detecting the fertile and infertile phases in the human menstrual cycle comprising:
daily collecting of cervico-vaginal fluid from the vagina over a period of days; and
determining the cyclic pattern of volumetric changes in said fluid over said period of days to indicate the phases in the cycle.

4,534,363
COATING FOR ANGIOGRAPHIC GUIDEWIRE

Philip Gold, Pompano Beach, Fla., assignor to Cordis Corporation, Miami, Fla.

Continuation of Ser. No. 372,900, Apr. 29, 1982, abandoned.
This application Apr. 26, 1984, Ser. No. 604,399
Int. Cl.[3] A61B *5/02*
U.S. Cl. 128—772 6 Claims



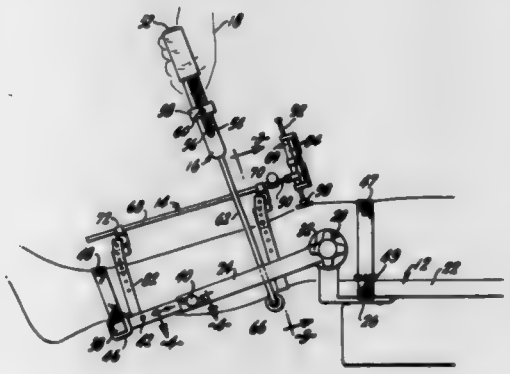
1. An angiographic guide wire adapted to guide a catheter into the body of a patient; said guide wire comprising: an elongate wire which has a circular cross-section and which is wound into a coil spring of consecutive adjacent coils; a proximal tip fixed ot one end of said coiled wire; a distal tip fixed to the other end of said coiled wire; a core wire fixed to and between the tips; and a thin continuous coating of low friction, slippery material completely encasing and interconnecting said coiled wire and the individual coils thereof, and extending between adjacent coils, said coating consisting essentially of an organosiloxane copolymer.

4,534,364
SAGITTAL KNEE TEST APPARATUS

Larry W. Lamoreux, 5470 Manila Ave., Oakland, Calif. 94618

Filed Sep. 19, 1983, Ser. No. 533,365
Int. Cl.[3] A61B *6/00*
U.S. Cl. 128—774 16 Claims

1. Sagittal knee test apparatus comprising:
a. a leg support mechanism for supporting a patient's leg in a select angular position;
b. a hand held, manual force applicator adapted for selectively applying on anterior or posterior displacement force against the upper portion of the patient's tibia; and
c. a mechanical measuring device having a support structure with means for fastening said support structure to the anterior aspect of the patient's tibia, and a displacement instrument mounted to said support structure over the patient's patella, said displacement instrument including:
1. a contact member adapted to contact the patient's patella,

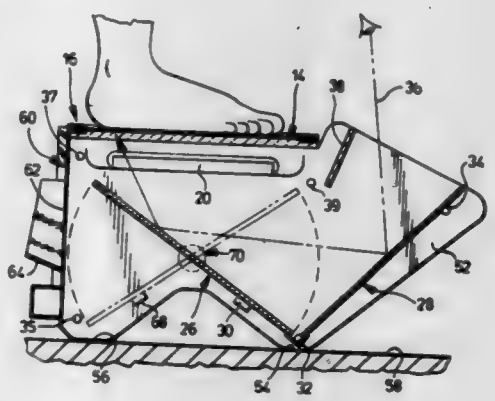


2. a coupling means for displaceably coupling said contact member to said support structure with said contact member being maintained in contact with the patella, and,
3. indicator means for indicating relative displacements between said coupling means and said contact member corresponding to relative displacements between said tibia and said patella upon application of anterior and posterior forces to the tibia by said force applicator.

4,534,365
APPARATUS FOR EVALUATING FOOT CONDITION

Angelo A. Bonetta, Niagara Falls, Canada, and Bruno R. Galiotto, Verona, Italy, assignors to Canadian Ursus Rubber Limited, Niagara Falls, Canada

Filed Apr. 5, 1984, Ser. No. 597,043
Int. Cl.[3] A61B *5/10*
U.S. Cl. 128—779 14 Claims



1. Apparatus for evaluating a person's foot condition in terms of blood circulation in and/or anatomical shape of their feet comprising a transparent planar foot support mounted on a stand, said foot support having an upper surface, means for illuminating the underside of said transparent foot support, said foot support and stand receiving and supporting a device on which a barefooted person is adapted to stand indicating visually the condition of the feet of a person adapted to be standing on said device, a mirror system mounted beneath said foot support to enable unobstructed viewing of the underside of said transparent foot support by a person standing adjacent said stand, means for mounting a camera on said stand, said mirror system having a mirror rotatably mounted on said stand for rotation about an axis parallel with the plane of said foot

support, a first stop means to angle said rotatable mirror in a first position for viewing and second stop means to angle said rotatable mirror in a second position when isolated from said first stop means relative to a camera when present in said camera mounting means to enable photographing the visual indication of a person's foot condition.

4,534,366

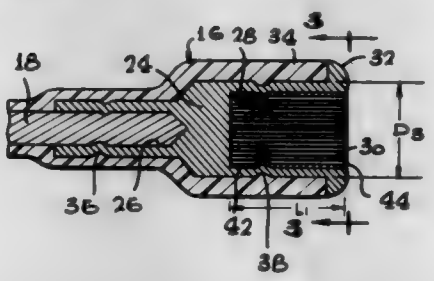
CARBON FIBER PACING ELECTRODE

Thomas M. Soukup, 38233 Hendon Dr., Palmdale, Calif. 93550

Filed Aug. 3, 1983, Ser. No. 519,957

Int. Cl.³ A61N *1/04*

U.S. Cl. 128—786 **20 Claims**



1. In a tissue stimulation lead of the type having an electrode tip electrically connected to a distal end of an elongated electrical conductor encased in a nonconductive encasing material which is generally inert to body fluids, an improved electrode tip comprising:

a body formed of an electrically-conductive material;

a plurality of electrically-conductive fibers, each having a length less than said body, aligned so that the longitudinal axis of each fiber is substantially coplanar with the longitudinal axis of the other fibers, said fibers being sufficiently compressed to form a fiber compress in which said fibers form at least 85 percent of the volume of said fiber compress;

first means for electrically connecting and attaching said body to the distal end of elongated electrical conductor; and

second means for electrically connecting and attaching said fiber compress to said body, an end of said fiber compress comprising an exposed portion of the improved electrode tip, said exposed portion providing a surface area of the electrode tip that enhances sensing electrical signals within the tissue into which the electrode tip is inserted, said exposed portion also providing a porous structure to enhance passive fixation of the tissue to the electrode tip.

4,534,367

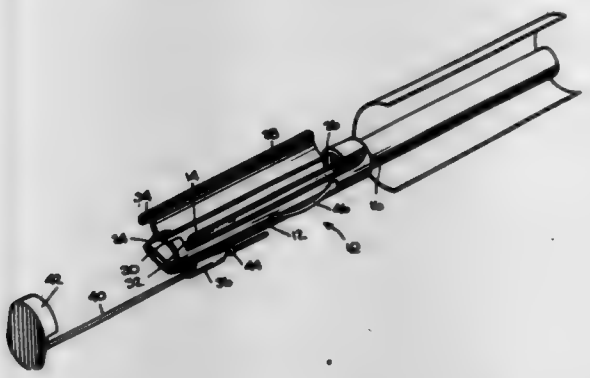
ROLL-YOUR-OWN CIGARETTE MAKER

Reginald W. Newsome, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed May 19, 1983, Ser. No. 496,353

Int. Cl.³ A24C *5/00*; A24F *47/00*

U.S. Cl. 131—75 **19 Claims**



1. A pocket-sized roll-your-own cigarette maker comprising a body portion having two open ends and having a surface which has a third opening substantially larger than said open ends, first and second flaps hinged to said body portion for closing said third opening, a longitudinal flange disposed at one of said open ends for receiving a cigarette tube to be filled with tobacco, and a mandrel slidably received in the other of said open ends, said mandrel being slidable to an extended position to expose its surface for use to wrap a cigarette paper into a tube and being slidable from said extended position along the full length of said body portion to move the entire contents of said body portion through said one open end and into a paper tube received on said longitudinal flange; said longitudinal flange and said mandrel having equal outer diameters.

4,534,368

CIGARETTE MANUFACTURE

Francis A. Labbe, Paris, France, assignor to Mlins PLC, London, England

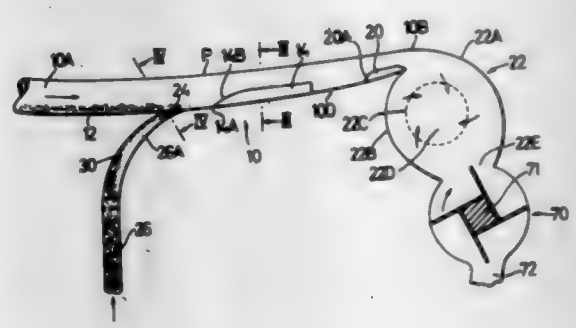
PCT NO PCT/GB 82/00115, § 371 Date Dec. 15, 1982, § 102(e) Date Dec. 15, 1982, PCT Pub. No. WO 82/03535, PCT Pub. Date Oct. 28, 1982

This PCT application filed Dec. 15, 1982, Ser. No. 453,900

Claims priority, application United Kingdom, Apr. 16, 1981, 8112090

Int. Cl.³ A24C *1/02, 5/39*

U.S. Cl. 131—110 **12 Claims**



1. Apparatus for feeding tobacco pneumatically into a cigarette making machine comprising a duct defined on one side by a wall which increases in width along the length of the duct from an inlet end to an outlet end, is concave in longitudinal section so that centrifugal force on the tobacco will urge the tobacco against that wall of the duct, and carries means in the form of a splitter member for splitting the tobacco stream flowing along the said wall into two separate streams passing along opposite sides of the splitter member, and to spread apart the two streams.

4,534,369

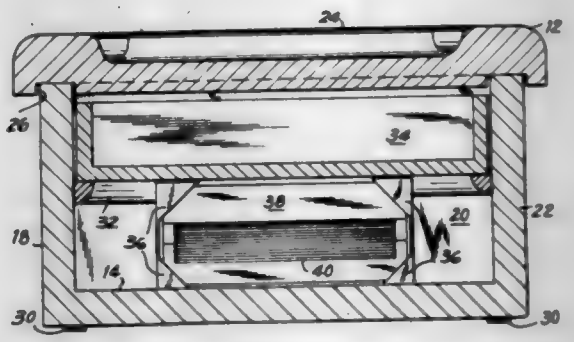
SMOKERS EQUIPMENT

Garry W. Jenkins, Cleveland, Ohio

Continuation-in-part of Ser. No. 517,804, Jul. 27, 1983, abandoned. This application Aug. 16, 1984, Ser. No. 641,212

Int. Cl.³ A24F *17/00, 19/02*

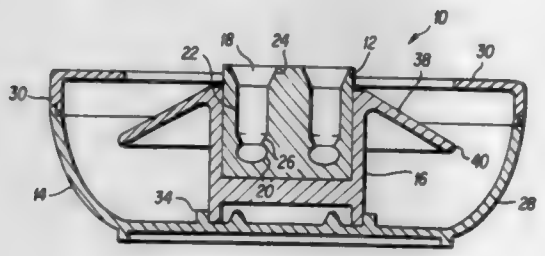
U.S. Cl. 131—235.1 **4 Claims**



1. Smoker's equipment comprising a base formed from an open top box-like receptacle, a cover adapted to enclose the open top of said base, said cover and base forming a tobacco humidor, said cover further having a dished upper surface to

serve as an ash tray, said base member comprising a bottom wall and side walls extending upwardly therefrom, an article supporting tray, a ledge member located within and secured to said base so as to support said article supporting tray within said base and separate said base into a first upper compartment containing said article supporting tray and a second lower compartment located beneath said article supporting tray, said ledge member has first and second ends and extends almost completely around the internal perimeter of the side walls, thereby defining a single gap between said ends at one of said side walls, said ledge member being substantially and uniformly spaced from the bottom wall, a cigarette paper package support means upwardly extending from the bottom wall into the gap between the ends of said ledge member, said support means comprising a plurality of tabs at the periphery thereof defining a cigarette paper package retaining means, said tabs formed and arranged so as to engage and hold the corners of a package of cigarette papers, thereby supporting said package of cigarette papers within said base while permitting the dispensing of individual cigarette papers.

4,534,370
CIGARETTE EXTINGUISHER AND ASH DISPOSAL DEVICE
Robert M. Saxby, 1818 Cleveland St., Hollywood, Fla. 33020
Filed Sep. 30, 1983, Ser. No. 537,447
Int. Cl.[3] A24F *19/02, 19/14*
U.S. Cl. 131—237 4 Claims



1. A combination cigarette extinguisher and ash disposal device including:
a cigarette extinguishing portion,
a flanged portion having means for mounting said cigarette extinguishing portion therein,
an ash receiving portion having means for mounting said flanged portion,
a cigarette resting and protective lid portion mounted directly on said ash receiving portion spaced from said cigarette extinguishing portion and said flanged portion,
wherein said cigarette extinguishing portion, said flanged portion, said ash receiving portion and said cigarette resting and protecting lid portion are each single piece construction and are removably connected to each other.

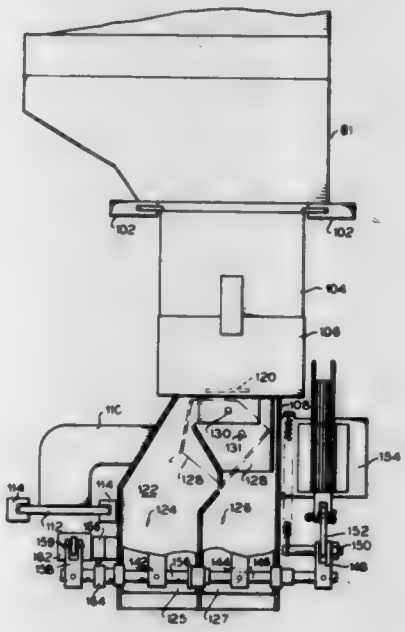
4,534,371
SMOKING PRODUCT
Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Aug. 22, 1983, Ser. No. 525,020
Int. Cl.[3] A24B *3/00, 15/18;* A24D *1/18*
U.S. Cl. 131—359 19 Claims

1. A smoking product comprising a combustible smoking material coated with a quantity of finely divided vermiculite having a tobacco-like brown color, said finely divided vermiculite having been previously subjected to heat treatment at temperatures of at least 500° C. for a period of time sufficient to develop a brown color in said vermiculite and said quantity of finely divided vermiculite being sufficient to impart a tobacco-like brown color to said smoking material.

4,534,372
SMOKING PRODUCT
Jackie L. White, Pfafftown, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.
Filed Aug. 22, 1983, Ser. No. 525,056
Int. Cl.[3] A24B *15/18, 15/22;* A24D *1/18*
U.S. Cl. 131—359 16 Claims

1. A smoking product comprising a combustible smoking material coated with a quantity of finely divided, toasted cereal grain having a tobacco-like brown color, said quantity being sufficient to impart a tobacco-like brown color to said smoking material.

4,534,373
DISPENSING MACHINE WITH REMOVABLE DISPENSING UNIT
John Glinka, Mt. Prospect, and Leonard A. Fish, Chicago, both of Ill., assignors to Casino Technology, Schiller Park, Ill.
Filed Sep. 30, 1982, Ser. No. 428,562
Int. Cl.[3] G07D *1/02*
U.S. Cl. 133—5 R 9 Claims



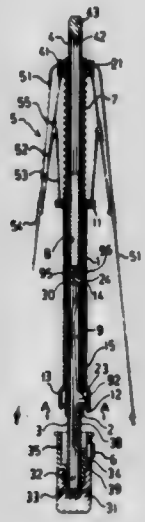
1. A dispensing machine having a bill acceptor for accepting units of currency presented to a currency receiving slot, comprising in combination; a supply hopper for storing a quantity of circular items to be delivered to a delivery tray in response to currency being presented to said slot, housing means for surrounding said bill acceptor and said hopper, said hopper being mounted in fixed position relative to said housing means, a dispensing unit located below said hopper in adjustable position relative to said hopper, said dispensing unit being adapted to dispense tokens into said delivery tray from said hopper in response to a unit of currency being presented to said slot, means for selectively closing the path for tokens between said hopper and said dispensing unit, whereby said dispensing unit may be removed from said housing means without removing tokens from said hopper, and an intermediate hopper disposed between said supply hopper and said dispensing unit, said intermediate hopper having surfaces for supporting a quantity of tokens between said supply hopper and said dispensing unit, and means for selectively lowering one of said supporting surfaces, whereby at least one of said supported tokens in lowered, clearing a space above said supported tokens and below said supply hopper.

4,534,374

FULLY AUTOMATIC SINGLE PUSH BUTTON TYPE UMBRELLA

San-Tong Day, 1 Chung Yang North Rd., Ching Shui, Taiwan Hsien, Taiwan

Filed Feb. 7, 1984, Ser. No. 577,826
Int. Cl.[3] A45B *25/16*
U.S. Cl. 135—22 4 Claims



1. A fully automatic single push button type umbrella comprising:

an outer tubular shaft provided with a lower ring fixed to an upper end and pawl engaging openings at a lower end and said upper end thereof;

an intermediate tubular shaft slidably disposed within said outer tubular shaft and provided with an intermediate ring fixed to an upper end pawl engaging openings at a lower end intermediate the ends thereof;

a lower inner shaft slidably inserted in a lower end portion of said intermediate tubular shaft and provided with a grip mounted to a lower end thereof;

an upper inner shaft slidably inserted in the upper end of said intermediate tubular shaft and provided with an upper ring fixed to an upper end thereof;

a plurality of ribs including dome ribs, stretcher ribs and supporting ribs pivotably interconnected to said rings to form an umbrella frame;

first spring means for closing the umbrella provided on said intermediate tubular shaft between said intermediate and lower rings and a second spring means for opening said umbrella provided within said intermediate tubular shaft between said upper and lower inner shafts;

said lower inner shaft provided with an axially elongated slot at the lower end thereof with said slot having an enlarged lower portion and further provided with an upper opening at an upper end;

said lower inner shaft being further provided with a first and second spring pawl means for locking said intermediate tubular shaft and said outer tubular shaft;

said first spring pawl means having an upper end fixedly attached to the upper end wall of said lower inner shaft, a lower end being free from attachment and provided with a projection protrusible through the lower end of said elongated slot, and an intermediate portion provided with a locking head protrusible through an upper portion of said elongated slot;

a push button member engageable with said projection;

wherein, when the umbrella is in the closed position, said locking head of the first spring pawl means is engaged in the opening of the lower end of said intermediate tubular shaft and the pawl engaging means on the lower end of said outer tubular shaft;

said second spring pawl means is engaged in the upper opening of the intermediate tubular shaft and the upper opening of the outer tubular shaft;

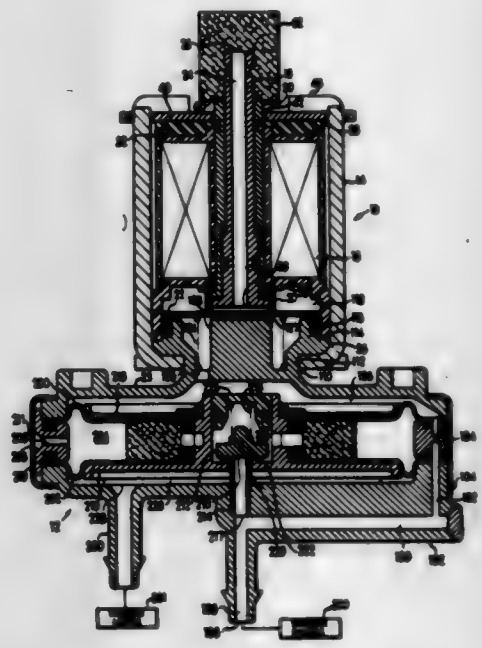
and wherein, when the umbrella is in the open position, said locking head is engaged only in the lower opening of said intermediate tubular shaft and the second spring pawl means is engaged in the upper opening of said intermediate tubular shaft and the lower opening of said outer tubular shaft.

4,534,375

PROPORTIONAL SOLENOID VALVE

Clarence D. Fox, Decatur, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Continuation of Ser. No. 349,488, Feb. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 311,820, Oct. 16, 1981, abandoned. This application Aug. 29, 1984, Ser. No. 645,191
Int. Cl.[3] F16K *31/06*; F15C *3/00*
U.S. Cl. 137—82 22 Claims



1. An electromagnetic valve assembly comprising an outer member of a magnetic material, having a top and a bottom;

a top member of a magnetic material, affixed near the top of the outer member;

a center member of magnetic material extending through said top member and positioned generally within the outer member, which center member has a bore with an inlet port for receiving fluid, and an exit port;

a non-magnetic seat positioned about the exit port and extending beyond the center member,

a base member, attached to the bottom of the outer member to define a chamber adjacent the non-magnetic seat;

a magnetic closure member, positioned within the chamber, which closure member is a flat disc armature and, with the outer member, the top member and the center member, completes a flux path including an air gap defined between the magnetic closure member and said exit port end of the center member;

a reference member of cylindrical shape positioned about the center member; and

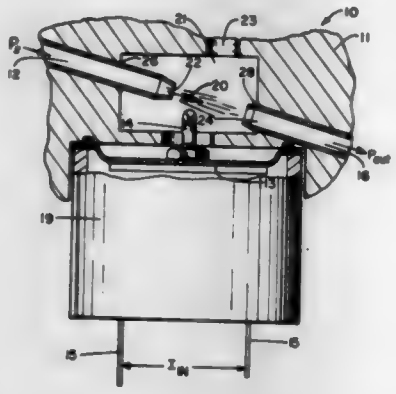
means for establishing the flow of electromagnetic flux through said flux path, which means includes an electrical winding, and a bobbin substantially encircling said reference member and substantially enclosing the electrical winding, the relative positions of the center member and the closure member being adjustable to place the exit port of the center member nearer to or farther from the closure member and thus regulate the air gap distance, so that for a given level of flux in the flux path, the closure member will be urged against the non-magnetic seat as a function of the air gap distance and pressure differential between said chamber and said bore.

4,534,376

ELECTRIC SIGNAL TO PRESSURE SIGNAL TRANSDUCER

Gregory C. Brown, Chaska, Minn., assignor to Rosemount, Inc., Eden Prairie, Minn.

Filed Sep. 1, 1983, Ser. No. 528,727
Int. Cl.[3] G05D *16/00*
U.S. Cl. 137—83 21 Claims



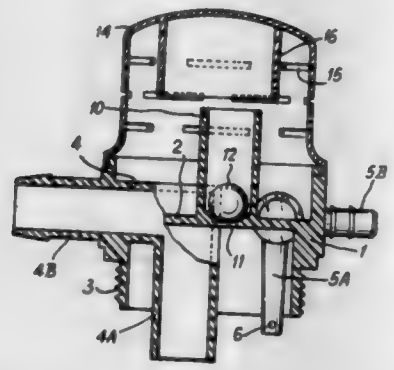
1. An electric signal to pneumatic signal transducer having an electric input signal and a gas supply comprising:
nozzle means connected to the gas supply for expelling a gas stream,
receiver means spaced from the nozzle means positioned for recovering at least a portion of the expelled gas stream, the recovered portion constituting a pneumatic output signal; and
deflector means, the position of which relative to the gas stream is controlled by the electric input signal for aerodynamically deflecting the gas stream expelled from the nozzle means to thereby affect the magnitude of the potion of the gas stream recovered by the receiver means and for providing an aerodynamic force to urge the deflector means further into the gas stream.

4,534,377

DEVICE FOR DECANTING A LIQUID FROM A RECIPIENT

Guy Ducros, St. Germain-les-Corbeil, France, assignor to Technique et Esthetique pour l'Industrie et la Distribution, Brunoy. France

Filed Oct. 18, 1983, Ser. No. 543,162
Claims priority, application France, Nov. 5, 1982, 82 18603
Int. Cl.[3] B65D *47/00;* B67D *5/34*
U.S. Cl. 137—212 6 Claims



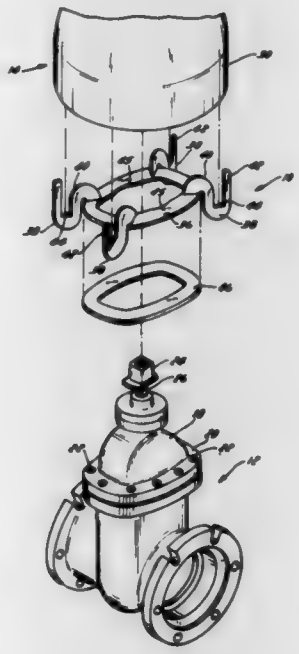
1. A decanting device including a body provided with a skirt for assembly on a receptacle, comprising:
a partition including an inner transverse wall,
a first elbow-shaped conduit for decanting liquid from the receptacle and a second elbow-shaped conduit for injecting gas into the receptacle, said first conduit and said second conduit traversing said inner transverse wall,
a cap connected to said body and having an inner extension,
a safety valve associated with said inner transverse wall comprising a tubular member extending away from the side of said transverse wall opposite said skirt towards said inner extension of said cap.

4,534,378

GATE VALVE ADAPTOR

Michael S. Gagas, Milwaukee, and Stanley J. Gagas, Oak Creek, both of Wis., assignors to Adaptor, Inc., Milwaukee, Wis.

Filed May 16, 1983, Ser. No. 495,148
Int. Cl.[3] F16L *5/00*
U.S. Cl. 137—367 5 Claims



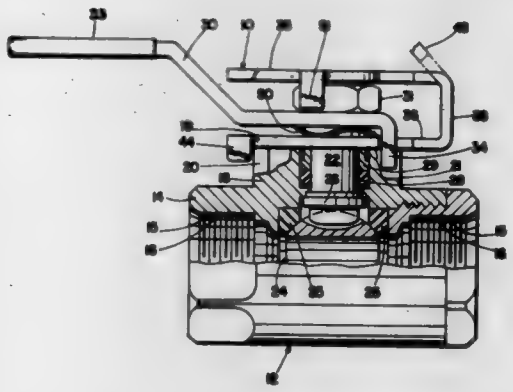
1. A gate valve-key box adaptor comprising a
flat rectangular ring having a configuration corresponding to the configuration of the bonnet flange of a gate valve, said ring being adapted to be placed on the flange, and a plurality of S-shaped arms extending radially outwardly from said ring and mounted on the corners of the ring, a key box including a botton edge for engaging a portion of each one of said S-shaped arms for supporting said key box on said gate valve bonnet flange.

4,534,379

LOCKING FRAME FOR VALVES

Donald G. Burge, Plainwell, Mich., assignor to Parker-Hannifin Corporation, Cleveland, Ohio

Filed Apr. 5, 1984, Ser. No. 596,977
Int. Cl.[3] F16K *35/00*
U.S. Cl. 137—385 3 Claims



1. A fluid valve with a handle locking device, comprising:
a body having a bore therein for flow of fluid,
an upstanding boss on said body,
a shaft journaled in said boss, said shaft being operatively

coupled to a valve disposed in said body for controlling the flow of fluid through said bore,

a handle keyed on said shaft for rotating said shaft between valve open and valve closed positions, said handle being elongated having a depending tang at one end and a grasping portion at the other end,

a nut securing said handle to said shaft,

a spring disposed around said shaft urging said handle against said nut,

a first stop flange on said body for limiting rotatable movement of said shaft at a valve open position,

a second stop flange on said body for limiting rotatable movement of said shaft at a valve closed position,

said tang on said handle being disposed between said flanges and rotatable with said handle into engagement with said stop flanges, and

a U-shaped frame fixed to said body and extending to a single location adjacent said handle and between the valve open and valve closed positions of said handle, said frame comprising substantially parallel upper and lower plates and having an interconnecting bend portion, said nut positioned between said upper and lower plates, said lower plate having an aperture receiving said shaft and being supported on said body boss between said boss and said spring, first and second depending tabs on said lower plate adapted to engage respectively said first and second stop flanges to prevent rotation of said frame, each said upper and lower plate having a hole therein at said single location, said holes being in alignment and adapted for receipt of a device at said single location for selectively preventing rotation of said handle from the valve open and valve closed positions.

4,534,380

GAS REGULATOR VALVE

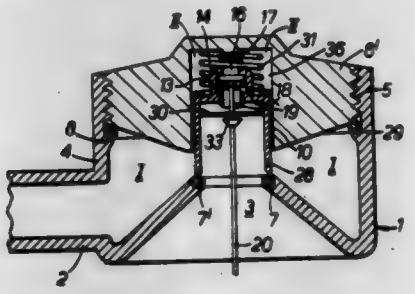
Nils T. Ottestad, Langerekkja 73, 5260 Indre Arna, Norway

Filed Feb. 18, 1983, Ser. No. 467,844

Claims priority, application Norway, Mar. 16, 1982, 820848

Int. Cl.³ F16K *31/12*

U.S. Cl. 137—490 **5 Claims**



1. A balanced gas regulator valve comprising a housing (1) having an inlet (2) and an outlet (3), partition means (6';9) dividing said housing (1) in a first (I) and a second (II) chamber, said inlet and outlet communicating with said first chamber,

a main valve comprising said outlet defining an annular valve seat (7), valve guide means (32,36) mounted in said housing with respect to said valve seat and a cylindrical valve body (28;34) displaceably mounted relative to a guide means (36;32) in said housing (1) to move toward and away from said valve seat and having a sealing end edge at one end thereof cooperating with said valve seat (7),

a pressure equalizing passage (10) between the two chambers (I, II),

means for relaying the pressure in said second chamber to said cylindrical valve body to urge said valve body against said valve seat,

a channel (19) extending between said second chamber (II) and said outlet (3),

a control valve (13, 16) located in said channel (19) for opening and closing the channel to relieve pressure in said second chamber, and

operating means (20) extending through said outlet (3) and being operatively connected to said control valve (13, 16) to effect opening and closing thereof,

said cylindrical valve body (28;34) having a constant diameter which is substantially equal to the diameter of said annular valve seat (7), and

said operating means (20) being arranged to be mechanically connected to and to move said cylindrical valve body away from said main valve seat (7) only after having opened said control valve (13, 16).

4,534,381

ELECTROMAGNETIC VALVE

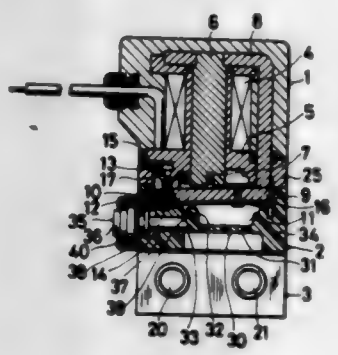
Kazuhiro Hozumi, and Shigeo Tamaki, both of Asahi, Japan, assignors to Kuroda Seiko Company Limited, Kanagawa, Japan

Filed Dec. 16, 1983, Ser. No. 562,417

Claims priority, application Japan, Dec. 30, 1982, 57-197987[U]; Dec. 30, 1982, 57-197988[U]

Int. Cl.³ F16K *31/06, 11/02*

U.S. Cl. 137—625.65 **8 Claims**



1. An electromagnetic valve comprising:

an electromagnetic unit having a magnetic core, a coil bobbin arranged around the core, an electromagnetic coil would around the coil bobbin, a stationary yoke having one end connected to one end of the core, a first valve seat formed in a flange of the coil bobbin and a first fluid passage communicated with the first valve seat, said stationary yoke and flange of said coil bobbin being aligned in a flat plane with saaid core; and

a valve unit including a movable yoke arranged within a valve chamber and having one end rotatably coupled with the other end of the stationary yoke, a valve stopper provided in the other end of the movable yoke at a position opposed of the first valve seat, a second valve seat provided opposite to the valve stopper, a second fluid passage communicated with the second valve seat, a third fluid passage comunicated with the valve chamber and a resilient member for urging the valve stopper against the second valve seat to communicate the first fluid passage with the valve member, when the electromagnetic coil is de-energized; whereby when the electromagnetic coil is energized, the movable yoke is attracted to the core and the valve stopper is urged against the first valve seat to communicate the second fluid passage with the valve chamber.

4,534,382

THREE-WAY SOLENOID VALVE

Christian Tanguy, Frepillon, France, assignor to Societe Anonyme D.B.A., Paris, France

Filed Mar. 12, 1984, Ser. No. 588,175

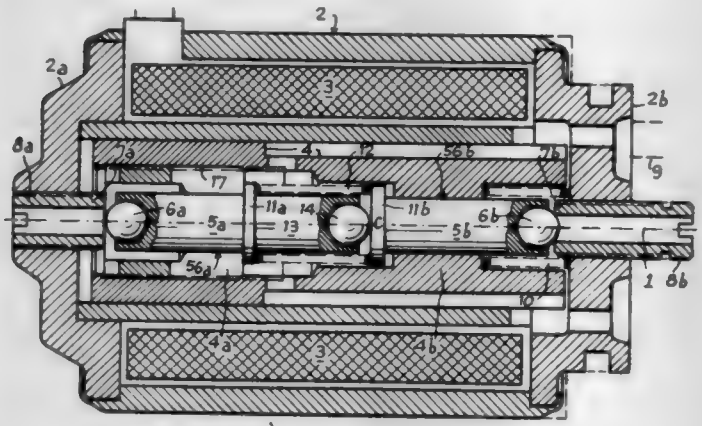
Claims priority, application France, Mar. 21, 1983, 83 04581

Int. Cl.³ F15B *13/044*

U.S. Cl. 137—627.5 **11 Claims**

1. A three-way solenoid valve with three positions, having a

general construction with symmetry of revolution about an axis and incorporating a magnetic armature which is movable in translation along the axis under the action of an electromagnetic coil and a return spring, the armature being hollow and incorporating internally two valve members each having an inner end and situated on the axis, the two valve members movable relative to one another and relative to the armature, separated from one another by a spring and provided with



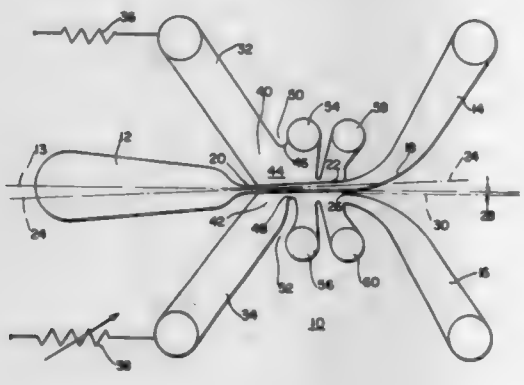
flanges through which the two valve members can be displaced by the magnetic armature with respect to respective facing fixed seats which the two valve members are capable of closing, characterized in that the magnetic armature operates each valve member so as to apply one valve member against the respective seat by means of the flange of the other valve member and a spacer positioned between the inner ends of the valve members, the spacer moving to bearing engagement against the inner end of one of the valve members.

4,534,383

FLUIDIC SET POINT PRESSURE SENSOR

R. Michael Phillippi, Highland, and Thadeusz M. Drzewiecki, Silver Spring, both of Md., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Oct. 31, 1983, Ser. No. 547,166
Int. Cl.³ F15C *1/08*
U.S. Cl. 137—840 **10 Claims**



1. A fluidic set point pressure sensor for converting the absolute pressure of a pressurized fluid to a differential pressure indicating the pressure of the pressurized fluid relative to a predetermined set point pressure, comprising:

input means, connected to receive said pressurized fluid, for directing a jet of fluid along a first centerline at a velocity determined by said absolute pressure;

output means, disposed downstream from said input means, including first and second outlets separated by a splitter which is disposed asymmetrical to said first centerline such that at least a greater portion of said jet directed along said first centerline is received at the first outlet; and

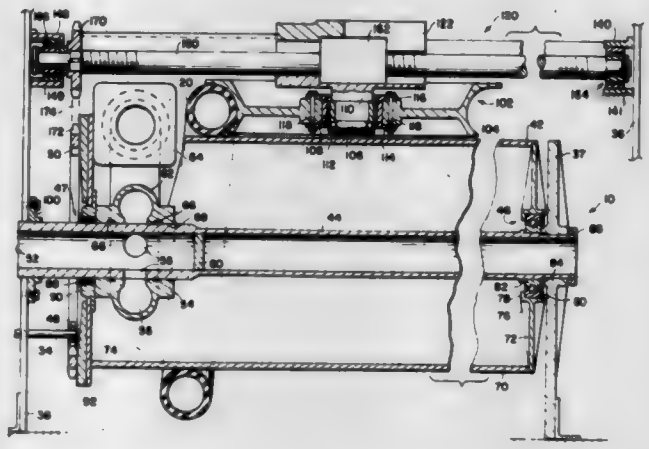
control means for deflecting said jet towards said second outlet in accordance with said jet velocity such that as the jet velocity increases from zero, the deflection of the jet increases to a maximum value, then decreases, so that the differential pressure generated by the jet between the first and second outlets increases to a maximum positive value at which the pressure at the second outlet is greater than the pressure at the first outlet, then decreases to a negative value at which the pressure at the first outlet is greater than the pressure at the second outlet, the differential pressure being equal to zero when said absolute pressure is equal to said predetermined set point pressure, the differential pressure becoming positive whenever said absolute pressure falls below said set point pressure and becoming negative whenever said absolute pressure rises above said set point pressure.

4,534,384

REEL SYSTEM FOR AXIALLY EXTENDING HOSE

Frank C. Graham, Sykesville, and James T. Parker, II, Woodbine, both of Md., assignors to Flight Refueling, Inc., Columbia, Md.

Filed Dec. 15, 1982, Ser. No. 449,863
Int. Cl.³ B64D *37/00*
U.S. Cl. 137—899.2 **1 Claim**



1. A system for in-flight refueling of aircraft, comprising:

an elongated refueling pod;

means for connecting said pod to an aircraft;

a supply hose having an inlet end and an outlet end;

a drum mounted for rotation in said pod about a central axis such that said drum axis extends along the longitudinal direction of said pod, said drum having a substantially smooth surface for receiving said supply hose, said inlet end being connected to said drum;

means for rotating said drum for wrapping said supply hose around said outer surface, said rotating means being positioned at an axial end of said drum and contained within said pod;

feed means connected for operation in synchronism with said rotating means for feeding said supply hose axially of said drum toward or away from said drum in accordance with the direction of rotation of said drum, and causing only a single wrap of said supply hose to be positioned on said drum, said feed means including a sheave having an axis of rotation perpendicular to the axis of said drum, said hose being wrapped around a portion of said sheave such that said sheave changes the direction of said hose from transverse of said drum to axially of said drum;

means for supporting said sheave and moving said sheave axis axially of said drum in response to rotation of said drum, said supporting and moving means comprising a carriage having bearing means rotatably mounting said sheave such that said sheave axis is perpendicular to said drum axis; screw threads formed in said carriage; a threaded shaft extending axially of said drum and received in said screw threads for moving carriage and said sheave axially of said drum, means for rotating said threaded shaft in synchronism with said drum; and, a pair of support members positioned on opposite sides of said threaded shaft, said support members slideably engaging said car-

riage and extending axially of said drum for inhibiting twisting of said carriage as it moves along said drum; and

a hose guide member mounted to support said hose in substantially the same plane as said sheave as said hose comes off said sheave.

4,534,385

LEVELING DEVICE FOR WEAVING MECHANISMS INCORPORATING CAMS OF THE NEGATIVE TYPE

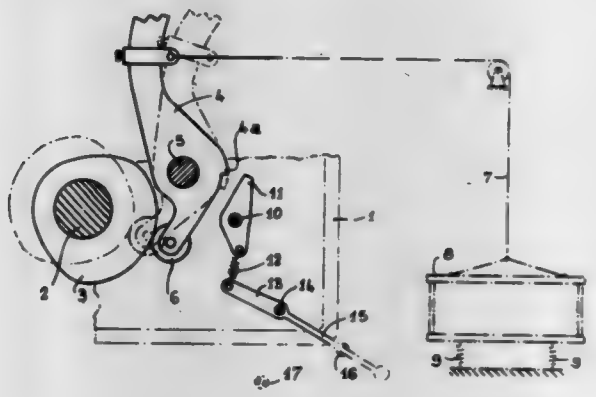
Jean-Paul Froment, La Creuse Sud - Doussard, FR 74210 Faverges, and Louis P. Houlon, Duingt, FR-74410 Saint Jorioz, both of France

Filed Sep. 23, 1983, Ser. No. 535,091

Claims priority, application France, Oct. 20, 1982, 82 17843

Int. Cl.³ D03C *5/00, 1/00, 13/00*

U.S. Cl. 139—79 **2 Claims**



1. In a weaving loom of the negative cam type having multiple oscillating levers each connected to a heddle frame, and the weaving loom having multiple cams each operative to displace an oscillating lever to raise an associated heddle frame which is yieldably returned toward lowered position, a leveling device comprising:

a stop on each oscillating lever;

a pawl pivotally supported opposite each lever stop, each pawl being pivotable between an unlocked position out of contact with its associated lever and a locked position in which it engages the lever and locks the stop when the lever is displaced by a cam;

a control member selectively operable between first and second control positions; and

separate yieldable means for each pawl, each yieldable means being connected between its pawl and the control member, said yieldable means all being operative when the control member is in its first position to urge their associated pawls into their unlocked positions and being operative when said control member is in its second position to urge the associated pawls against their oscillating levers, whereby as the levers are displaced by the cams to raise the heddles the pawls will engage the stops of the engaged levers and lock the levers to hold the heddle frames in their raised positions.

4,534,386

TENSIONING BEAM ASSEMBLY FOR A WEAVING MACHINE

Erwin Pfarrwaller, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Sep. 13, 1983, Ser. No. 531,703

Claims priority, application European Pat. Off., Oct. 26, 1982, 82810448.9

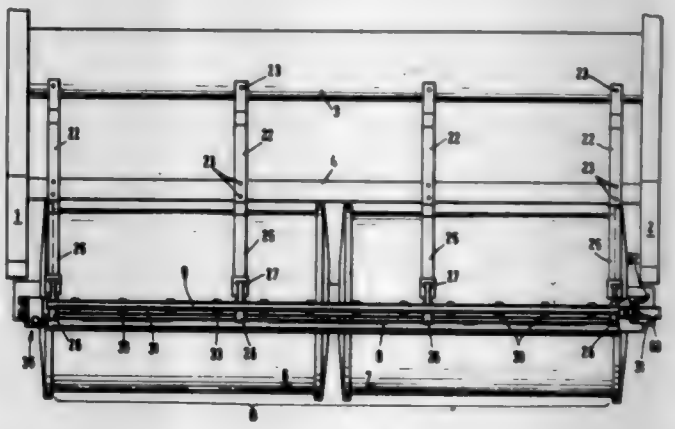
Int. Cl.³ D03D *49/22*

U.S. Cl. 139—114 **12 Claims**

1. In a weaving machine having a frame of predetermined weaving width, the combination of

a rotatable support beam mounted across said weaving width of said frame on a longitudinal axis;

a spring biased tensioning element mounted on said beam for pivoting said axis under the bais of warp threads within said weaving width; and



means rotatably supporting said beam intermediately of said weaving width of said frame.

4,534,387

METHOD AND APPARATUS FOR INSERTING DIFFERENT WEFT THREADS HAVING DIFFERENT PROPERTIES INTO THE WARP SHED OF A JET WEAVING MACHINE

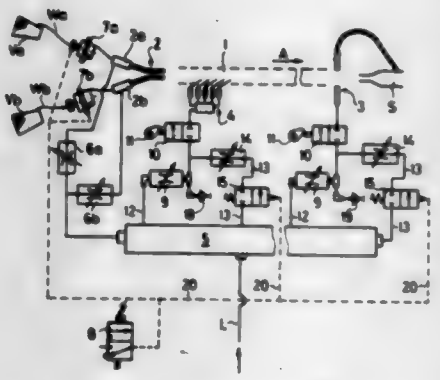
Cornelius A. J. H. van Hest, Helmond, Netherlands, assignor to Ruti-te Strake B.V., Netherlands

Filed Aug. 17, 1982, Ser. No. 408,808

Claims priority, application Netherlands, Jan. 18, 1982, 8200169

Int. Cl.³ D03D *47/30*

U.S. Cl. 139—435 **13 Claims**



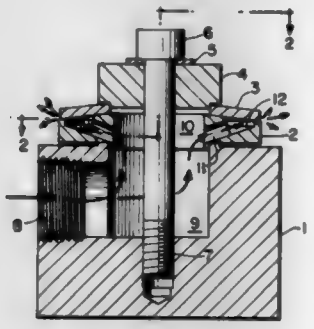
1. A method of inserting different weft threads having different yarn properties into a warp shed of an air jet weaving machine according to a predetermined insertion sequence, comprising the steps of feeding different weft threads from corresponding spools to a first jet arrangement supplied with a flowing fluid, inserting the weft threads into the warp shed through said first jet arrangement and a second jet arrangement downstream of the first jet arrangement in the weft insertion direction, supplying said second jet arrangement with a flowing fluid, operating the second jet arrangement concurrently with the first jet arrangement, changing the fluid supply pressure for at least a portion of the second jet arrangement independently of the fluid supply pressure of the first jet arrangement for different types of weft thread synchronously with the insertion sequence for the different weft thread.

4,534,388

DISPERSION SYSTEM AND METHOD

David B. Pall, Roslyn Estates; Peter J. Degen, Huntington, and John Mischenko, III, Amityville, all of N.Y., assignors to Pall Corporation, Glen Cove, N.Y.

Filed Jun. 7, 1983, Ser. No. 501,889
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—1 36 Claims



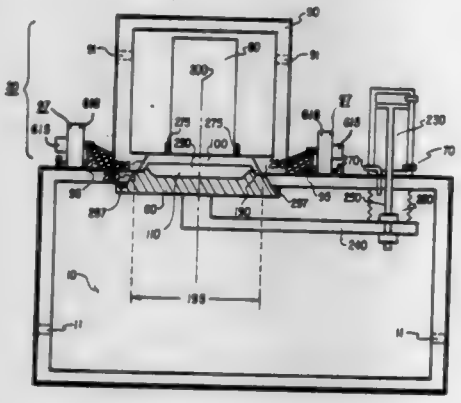
15. A method for dispersing aggregates in an aggregate-containing fluid medium employing a self-cleaning system for dispersing aggregrates ina fluid medium which system includes first and second members operatively associated to form an internal chamber and having an inlet to said chamber for admitting said fluid, and with at least one of said members resiliently biased toward the other, said method comprising the steps: (a) introducing said fluid medium into said chamber through said inlet under a pressure in the range of from about 50 to about 1,000 psid, the pressurized fluid deforming said at least one of said members to provide an elongated orifice between said first and second members for egress of fluid medium from said system, said elongated orifice under said pressure haivng a minimum length of about 3 inches, a transverse dimension or width in the range of from about 1 to about 1,500 micrometers and a ratio of its length to its transverse dimension or width of about 100:1 or greater and (b) passing said fluid medium through said elongated orifice, thereby dispersing said aggregate in said fluid medium.

4,534,389

INTERLOCKING DOOR LATCH FOR DOCKABLE INTERFACE FOR INTEGRATED CIRCUIT PROCESSING

Barclay J. Tullis, Palo Alto, Calif., assignor to Hewlett-Packard Company, Palo Alto, Calif.

Filed Mar. 29, 1984, Ser. No. 594,498
Int. Cl.[3] B65B *1/00*
U.S. Cl. 141—98 8 Claims



1. An interface between first and second containers comprising:

alignment means for orienting the first container in a fixed position relative to the second container;

a first door for independently sealing the first container;

a second door for independently sealing the second container;

said first and second doors each having a mating outer surface of substantially equal exterior dimensions, so that substantially all contamination which has accumulated on the exterior surface of the doors when the containers are separated will be trapped between said doors when the containers are positioned together with said alignment means;

elevator means coupled to said doors for transporting said doors while coupled together at their mating outer surfaces into said containers as a single unit; and

interlock means coupled to the first and second doors for inhibiting the opening of the first door except when the first and second containers are mated in the alignment means, said interlock means having

port latch means coupled to the first container for maintaining the first door in a closed position when the port latch means is in a closed position and for permitting the first door to open when the port latch means is in an opened position,

door pull means coupled to the first container for transporting the port latch means from the opened position to the closed position of the port latch means, said door pull means being adapted so as not to independently transport the port latch means from the closed position to the opened position of the port latch means, and

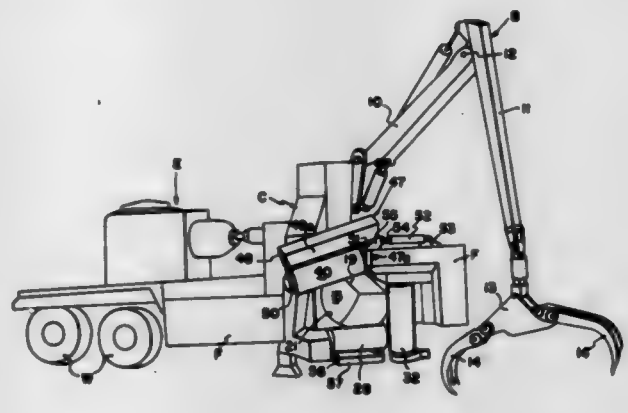
latch foot means coupled to the second container for engaging the port latch means and door pull means so that together the door pull means and the latch foot means can transport the port latch means from the closed position to the opened position of the port latch means.

4,534,390

PORTABLE CHIPPER WITH RELATIVELY LOW POWER HIGH TORQUE TREE FEED MECHANISM FOR FEEDING THE TREE OR OTHER PRODUCT TO BE CHIPPED AT A CONTROLLED FEED ANGLE

Norval K. Morey, Winn, and Ivor Bateman, Mt. Pleasant, both of Mich., assignors to Morbark Industries, Inc., Winn, Mich.

Filed Nov. 9, 1983, Ser. No. 549,801
Int. Cl.[3] B27L *11/00*
U.S. Cl. 144—373 18 Claims



1. In a feeding and chipping assembly for longitudinally feeding whole trees with attached limbs and branches butt-first, and like chippable material to be reduced to chips, and including: a longitudinally extending portable chipper frame; a chipper disc thereon; a disc housing for the disc fixed on the frame and having a forwardly facing wall surface with an opening therein to admit the material to the disc; generally radially extending knife means mounted on the front face of said chipper disc; means for rotating said disc at chipping speeds; a chute surface leading rearwardly to the opening in said disc housing; an anvil mounting plate, cooperable with said knife means, at one side of said opening; a generally vertically disposed, fixed axis, side feed roll disposed a spaced distance forwardly of the anvil and defining with the anvil one side of a pathway of feed; a swing side feed roll defining the opposite side of said pathway; a bottom feed roll disposed crosswisely to said pathway defining the lower boundary of the pathway; said swing side feed roll being swingable generally about a generally horizontal axis extending generally

parallel to said pathway; each of said side feed rolls being rotatable about axes which are disposed in substantially the same transverse plane; and means supported by the frame for driving said feed rolls at coordinated speeds of rotation in a direction to feed material into the opening and on to be chipped by said knife means.

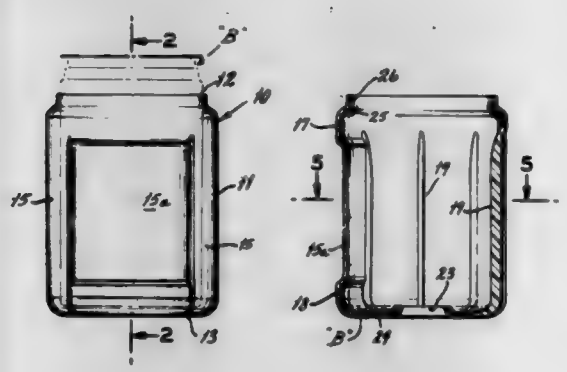
17. Apparatus for longitudinally feeding whole trees with attached limbs and branches butt-first, and reducing the tree to chips, including: a frame, a chipper disc journaled thereon; a disc housing on the frame with a forwardly facing wall surface, the wall surface having an opening therein to admit the trees to the disc, the disc having generally radially extending knife means mounted on its front face; a chute surface converging rearwardly to the opening in said disc housing; an anvil mounting plate, cooperable with the knife means to chip, fixed at and bordering one side of said opening; a generally vertically disposed, fixed axis, side feed roll disposed spaced distance forwardly of the anvil and defining with the anvil one side of a pathway of feed which extends at an acute angle to the opening and disc; a movable side feed roll defining the opposite side of the pathway; a generally horizontal axis bottom feed roll disposed crosswisely to the pathway having an upper surface defining the lower boundary of the pathway; the movable side feed roll being movable in a transverse plane; said forwardly facing wall surface around said opening having marginal top and bottom edges connected by opposite side edges, the bottom edge being at a level generally at the elevation of the upper surface of the bottom feed roll; said chute surface having a bottom wall extending to bridge the space between the bottom feed roll and said bottom edge and extending generally upwardly from substantially below the level of the upper surface of said bottom feed roll to the bottom edge of said opening, the chute surface also having a transversely outwardly and upwardly, extending curved side wall extending generally from the bottom wall to said anvil mounting plate, and converging in a rearward direction to said opening from behind said fixed axis side feed roll; means for driving the disc at a tree chipping speed; and means for driving the feed rolls at coordinated speeds of rotation in a direction to feed the tree into the opening and on to be chipped by said knife means while said fixed axis side roll and bottom roll essentially block off said bottom and side walls of said chute surface such as to substantially avoid frictional sliding contact of the tree butt with the chute surface.

4,534,391

BEVERAGE INSULATOR WITH ADVERTISING PANEL

Joseph J. Ventimiglia, St. Louis, and Lawrence R. Diener, Fenton, both of Mo., assignors to Sinclair & Rush, Inc., St. Louis, Mo.

Filed Dec. 12, 1983, Ser. No. 560,733
Int. Cl.³ B65D *23/08*; G09F *3/00*
U.S. Cl. 150—52 R **1 Claim**



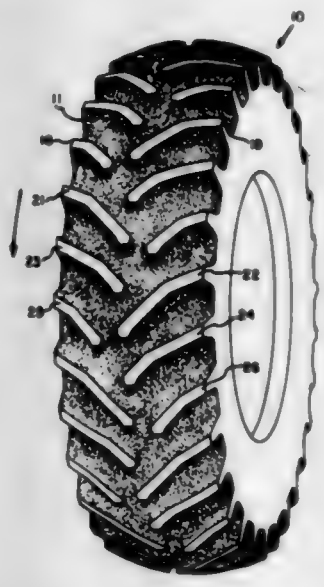
1. A hand held beverage receptacle insulator formed from a unitary polymeric material comprising a cylindrical side wall defined by longitudinal panels, several of which are contiguous, of equal width and have the same outside diameter, and the last of which is wider than the others and is recessed to accommodate imprinting and the like, parallel shoulders of the same plane as the side wall circumference protecting the top and bottom edges of the said last panel, the panels being formed by longitudinal grooves, and the inside of the side wall having inwardly extending ribs aligned with the grooves and extending toward the centerline of the holder to strengthen the side wall and engage the beverage receptacle, the inner edges of the ribs defining a cylindrical opening of approximately the same size as the top opening, a bottom wall formed with a central opening surrounded by a raised internal lip, and a reduced top opening sized to snuggly accommodate a beverage receptacle.

4,534,392

TRACTOR TIRE

Mark L. Bonko, Hartville, and Loran C. Lopp, Jr., Wadsworth, both of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed May 16, 1984, Ser. No. 610,914
Int. Cl.³ B60C *11/00*
U.S. Cl. 152—209 B **11 Claims**



1. A pneumatic tire for tractors and like vehicles wherein said tire has a mid-circumferential centerplane and a tread portion with first and second lateral edges, said tread portion comprising:

(a) two sets of primary lugs, each lug of said first set of primary lugs having first and second portions, said first portion beginning at the first lateral edge of the tread and extending to an axially inner end located between 40 and 60 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane of the tire at an angle of between 59 and 69 degrees with respect to said mid-circumferential centerplane, said second portion extending from the axially inner end of said first portion to an axially inner end located between 96 and 112 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane at an angle of between 38 and 50 degrees with respect to said mid-circumferential centerplane;

(i) each lug of a second set of primary lugs being similar to the lugs of said first set of primary lugs but opposite in hand, having a beginning at the second lateral edge of the tread and being offset circumferentially of said tire with respect to the next adjacent pair of primary lugs in said first set of primary lugs so that the leading edge of each said primary lug is spaced a distance of between 40 and 60 percent of the tread width from the lagging edge of a lug of said other set of primary lugs as measured on said mid-circumferential centerplane;

(b) two sets of secondary lugs, each lug of a first set of secondary lugs having first and second portions, said first portion beginning at said first lateral edge of the tread and extending to an axially inner end located between 62 and

82 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane at an angle of between 59 and 69 degrees with respect to said mid-circumferential centerplane, said second portion extending from the axially inner end of said first portion to an axially inner end located between 96 and 112 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane at an angle of between 38 and 50 degrees with respect to said mid-circumferential centerplane, and only one of said secondary lugs being disposed between each pair of next adjacent primary lugs of the first set of primary lugs;

(i) each lug of a second set of secondary lugs being similar to the lugs of said first set of secondary lugs but opposite in hand and having a beginning at the second lateral edge of the tread, only one of said secondary lugs being disposed between each pair of next adjacent primary lugs of the second set of primary lugs; and

(c) two sets of tertiary lugs, each lug of a first set of tertiary lugs having first and second portions, said first portion beginning at said first lateral edge of the tread and extending to an axially inner end located between 24 and 44 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane at an angle of between 59 and 69 degrees with respect to said mid-circumferential centerplane, said second portion extending from the axially inner end of said first portion to an axially inner end located between 63 and 83 percent of the axial distance from said first lateral edge of the tread to said mid-circumferential centerplane at an angle of between 38 and 50 degrees with respect to said mid-circumferential centerplane, only one of said tertiary lugs being disposed between each pair of next adjacent primary lugs of the first set of primary lugs;

(i) each lug of a second set of tertiary lugs being similar to the lugs of said first set of tertiary lugs but opposite in hand and having a beginning at the second lateral edge of the tread, only one of said tertiary lugs being disposed between each pair of next adjacent primary lugs of the second set of primary lugs.

4,534,393

PNEUMATIC TIRE

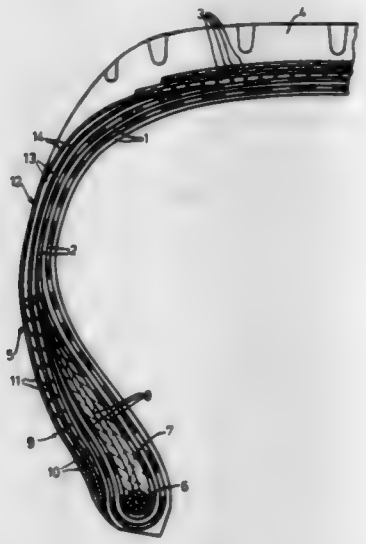
Jakob Ippen, Leverkusen, and Friedel Stüttgen, Pulheim, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 404,436, Aug. 2, 1982, abandoned. This application Jun. 7, 1984, Ser. No. 617,963

Claims priority, application Fed. Rep. of Germany, Aug. 8, 1981, 3131515

Int. Cl.[3] **B60C** *13/00, 15/06*

U.S. Cl. 152—524 **3 Claims**



1. In a pneumatic tire having a continuous carcass folded around cores in the beads of the tire and extending into the side walls of the tire, two at least double encircling layers on the exterior of the carcass in each side wall of the tire, and each at least double encircling layer consisting of at least two laminated rubber and/or reinforcing plies, the improvement according to which each rubber and/or reinforcing ply of one at least double encircling layer abuts in the tire side walls one of the plies of the other at least double encircling layer, and each abutment being staggered with respect to an adjacent abutment whereby the plies of the two at least double encircling layers are laterally interlaced with one another in the side walls of the tire.

4,534,394

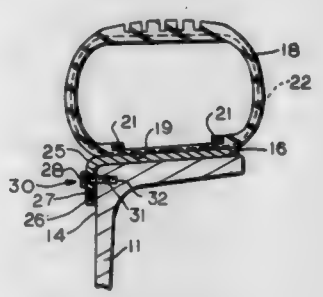
WHEEL ASSEMBLY HAVING SELF-CONTAINED TIRE MOUNTING CAPABILITY

Charles E. Grawey, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 13, 1983, Ser. No. 494,200

Int. Cl.[3] **B60B** *21/10, 21/12;* **B60C** *7/24*

U.S. Cl. 152—396 **4 Claims**



1. A wheel assembly (**10**) comprising:

a wheel rim (**11**) having a tire receiving surface (**12**) and a plurality of axially extending slots (**13**) recessed into the tire receiving surface (**12**), said tire receiving surface being defined solely by a single frusto-conical surface;

a closed torus tire (**18**) mounted on the wheel rim (**11**) and having an inner rim surface (**19**) defined solely by a single frusto-conical surface, said inner rim surface being mated with the tire receiving surface (**12**) of the wheel rim (**11**);

a plurality of retainers (**25**) extending into the slots (**13**) and adapted to provide a driving connection between the tire (**18**) and wheel rim (**11**); and

means (**30**) for driving each of the retainers (**25**) into the slots (**13**) for establishing said driving connection between the tire and rim.

4,534,395

FOLDING DOOR

William F. Carroll, Pasadena, Calif., assignor to Section Pty. Ltd., Dandenong, Australia

Filed Sep. 30, 1982, Ser. No. 429,634

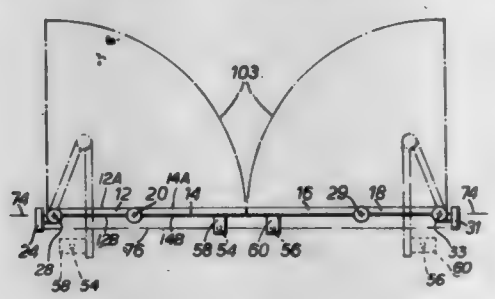
Claims priority, application Australia, Oct. 1, 1981, PF1024

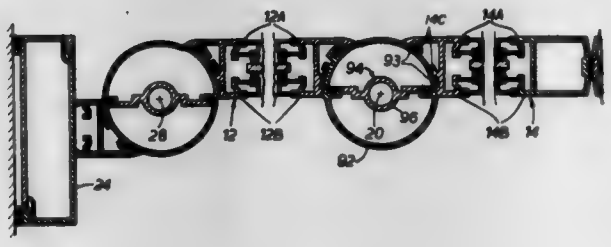
Int. Cl.[3] **E06B** *3/48;* **E05D** *15/26*

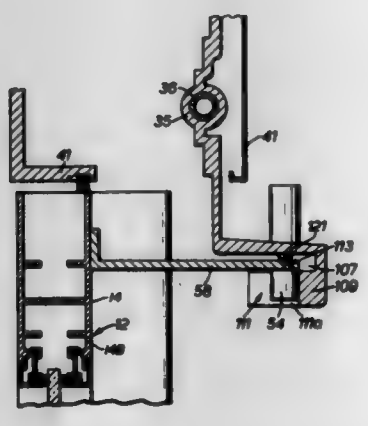
U.S. Cl. 160—199 **7 Claims**

1. A folding door having a first panel with first hinge means at a first edge adapted for pivotally connecting the panel to an upright surface adjacent a door opening, for pivoting of the panel about an upright axis adjacent the surface, and a second panel pivotably connected at a second edge thereof by second hinge means at an edge of the first panel opposite the first edge thereof, and movement means adapted to move the first and second panels from a closed position at which the two panels are substantially in a common plane to an open position at which the first panel is pivoted away from a location adopted in the closed position and the second panel is folded back upon the first panel, the movement means comprising a movable member mounted for movement generally parallel to the common plane of the panels and having coupling means coupling the movable member to the second panel; the coupling means pivotally interconnecting the movable member to the second

panel such that the second panel is pivotal relative to the movable member about a pivot axis which is substantially fixed relative to the movable member and which pivot axis is substantially parallel to the upright axis and moves during opening and closing of the door in a plane parallel to the common







plane, the coupling between the movable member and the second panel being releasable under pressure applied normal to the plane of the second panel to permit pivotal movement of the first and second panels to an open position without folding of the panels occuring.

4,534,396

ROLLER SHADE RETURN MECHANISM

Stig Jung, Knivgatan 12, Malmö , Sweden

PCT No. PCT/SE82/00361, § 371 Date Jul. 21, 1983, § 102(e) Date Jul. 21, 1983, PCT Pub. No. WO83/01809, PCT Pub. Date May 26, 1983

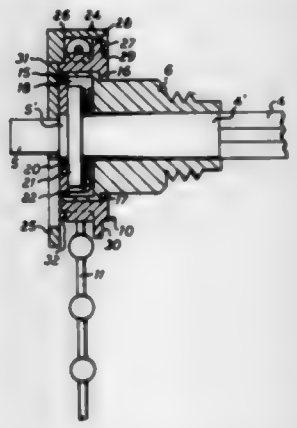
PCT Filed Nov. 2, 1982, Ser. No. 522,361

Claims priority, application Sweden, Nov. 23, 1981, 8106945

Int. Cl.³ E06B *9/208*

U.S. Cl. 160—298 **3 Claims**

1. A roller shade return mechanism comprising a rotary roller shade rod, a drive for rotating the shade roll and a friction brake which comprises a plurality of washers and which acts between rotating and non-rotating members of the shade return machanism for holding the roller shade rod in selected positions of the shade, said roller shade rod having a recess in at least one end thereof and being rotatably mounted in relation to said non-rotary members, said non-rotary member comprising a non rotary spindle (4) mounted in said rod and supporting at one end thereof a non-rotary profiled pin (5) to be received in and supported by a roller shade mounting bracket, said rod being rotatable by a drive which comprises a sprocket (10) mounted on said rotatable member (6), the latter being arranged for connection with the roller shade rod, said sprocket being conformed to cooperate with a chain (11), wherein said rotatable member (6) is in the shape of an end plug adapted to be fixedly mounted in said recess at the end of the rod (1), said end plug having a throughbore to constitute a bearing to be rotatably mounted on said nonrotary spindle (4) at its outer end portion thereof adjacent said pin (5), said through-bore having, at its axially outer end, an enlargement forming a chamber (18), said chamber including, and being defined by, a peripheral wall and an axially inner bottom wall housing said friction brake, wherein said washers of said friction brake comprise a backing washer (21) non-rotatably supported by said non-rotary spin-



dle (4) and at least two convex friction washers (22), each having a central aperture therethrough mounted on said non-rotary spindle in positions between the backing washer and said bottom wall of the chamber, said at least two friction washers mounted with convex sides in frictional abutment, one of said friction washers on the concave side thereof frictionally engaging the backing washer (21) at its peripheral outer edge; and wherein the other friction washer having its peripheral outer edge on the bottom wall of the chamber (18), each of said annular friction washers being serrated from its central aperture and radially outward.

4,534,397

METHOD FOR PRODUCING CHEMIMECHANICAL HIGH YIELD PULP USING AN OXYGEN ALKALI TREATMENT FOLLOWED BY AN OXYGEN MECHANICAL DEFIBRATION

Hans Norrström, Täby, and Kristina Idner, Dandery, both of Sweden, assignors to AGA Aktiebolag, Lidingo, Sweden

Continuation of Ser. No. 294,128, Aug. 19, 1981, abandoned, which is a continuation of Ser. No. 164,863, Jul. 1, 1980, abandoned. This application Apr. 20, 1983, Ser. No. 486,872

Claims priority, application Sweden, Jul. 10, 1979, 7905990

Int. Cl.³ D21C *1/02, 1/16, 3/26*

U.S. Cl. 162—23 **3 Claims**

1. A method for producing chemimechanical pulp at high yield, where yield is defined as the amount of pulp obtained in relation to the input of raw material, in order to achieve strength improvement and increased absorption of liquid in end-product paper, wherein lignocellulosic material, selected from the group consisting of raw materials in the form of logs, chips, and shavings, is treated in alkaline pulping liquor, characterized in that the treatment is performed in the presence of oxygen gas and is performed in such a combination of treatment time, temperature, charge of chemicals, oxygen pressure and consistency of lignocellulosic material, that a pulp yield within the range of 80–95%, is obtained, the method further characterized in that the treatment is performed:

(a) with 1–200 Kg of alkali per ton dry lignocellulosic material,

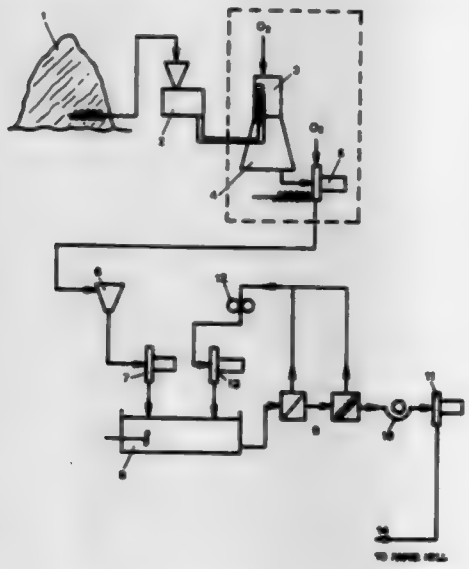
(b) at a treatment temperature between 20° and 200° C.,

(c) at an oxygen gas pressure of 1–10 kg/cm^2,

(d) with a source of alkali selected from the group consisting of NaOH, Na_2CO_3, $Mg(OH)_2$, and $MgCO_3$,

(e) at a treatment time no longer than 60 minutes, the treatment followed by the steps of,

(f) mechanically defibrating the material, and



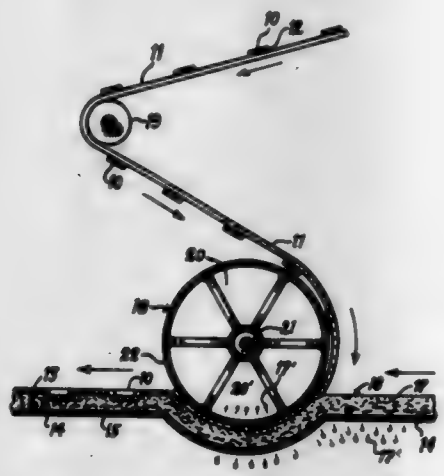
(g) adding O_2 to the material as it is defibrated; steps (a) through (g) thereby minimizing the loss of substances.

4,534,398

SECURITY PAPER

Timothy T. Crane, Windsor, Mass., assignor to Crane & Co., Dalton, Mass.

Filed Apr. 30, 1984, Ser. No. 605,578
Int. Cl.[3] D21D *3/00*; D21H *5/10*
U.S. Cl. 162—103 11 Claims



1. A method of forming a security paper on a paper making machine comprising the steps of:

attaching a water impervious security device to a surface of a non-water dispersible porous carrier paper;

passing said carrier paper and security device between the outer surface of an embedment roll and wet base paper fibers to wet and press said carry paper and security device within said wet base paper fibers while drawing some of said wet base fibers and some of said water up to within said carrier paper to form a composite paper; and

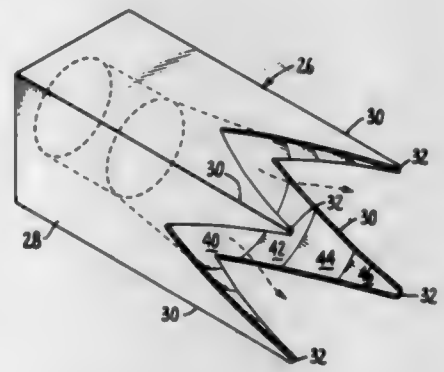
pressing and heating said composite paper to form a composite paper having said security device coextensive with a surface of said composite paper.

4,534,399

PAPER STOCK DIFFUSER SYSTEM

Conrad Steen, Vancouver, Wash., assignor to Crown Zellerbach Corporation, San Francisco, Calif.

Filed Jun. 27, 1984, Ser. No. 625,278
Int. Cl.[3] D21F *1/02*
U.S. Cl. 162—212 10 Claims



1. Apparatus for supplying paper stock to a forming surface of a papermaking machine comprising, in combination:

a stock supply chamber defining an interior;

slice means spaced from said stock supply chamber, said slice means forming a slice opening and a stock flow passageway terminating at said slice opening; and

a plurality of conduits extending between said stock supply chamber and said slice means, said conduits defining spaced stock flow paths providing communication between said stock supply chamber interior and said stock flow passageway and including discharge end sections positioned at said stock flow passageway, said discharge end sections each having a center line and including a plurality of spaced, generally V-shaped projections projecting into said stock flow passageway and positioned about a stock flow path, said projections diverging away from one another and from said center line so that the apices of the projections of each end section are further apart than the bases thereof, and said discharge end sections each defining a plurality of adjoining shear surfaces radially disposed about said center line and extending seriatim along the lengths of said projections to the apices thereof, the shear surfaces of each discharge end section diverging away from the center line thereof at increasing angles in the direction of the projection apices.

9. A method of treating paper stock being delivered from a stock supply source to a stock flow passageway terminating at a slice opening, said method comprising the steps of:

establishing a plurality of separate flow paths having spaced center lines between said stock supply source and said stock flow passageway;

flowing said paper stock in said flow paths;

directing the paper stock from said flow paths into said stock flow passageway;

expanding said flow paths to provide a plurality of adjoining shear surfaces radially disposed about said center lines and diverging away from the center lines at progressively increasing angles;

flowing said paper stock along and in engagement with said adjoining shear surfaces whereby said paper stock in said flow paths diffuses and radiates outwardly away from said center lines in adjoining, consecutive, incremental angular steps; and

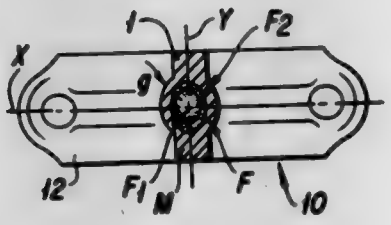
simultaneously with the step of flowing said paper stock along and in engagement with said adjoining shear surfaces, gradually continuously increasing contact between the outer peripheral surface of said flowing paper stock and paper stock already in said stock flow passageway, whereby variable shear conditions are created and said flowing paper stock is defloced and deagglomerated.

4,534,400

METHOD FOR MAKING A REINFORCED ARTICLE FOR AN INTERNAL COMBUSTION ENGINE

Keisuke Ban, Fujimi, and Akimasa Daimaru, Omiya, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,502
Claims priority, application Japan, Sep. 16, 1981, 56-145990
Int. Cl.[3] B22D *19/14*
U.S. Cl. 164—97 9 Claims



1. Method of making a connecting rod for an internal combustion engine, said rod having a first semi-annular end portion, a second annular end portion, and a rod portion therebetween, said second annular portion having a center axis, said rod portion having a longitudinal axis, an X-axis perpendicular to said longitudinal axis and perpendicular to said center center axis, and a Y-axis perpendicular to said longitudinal axis and parallel to said center axis, said method comprising the steps of:

shaping a bundle of inorganic reinforcing uni-directional fibers

such that a second moment of area of the bundle about the Y-axis (I(c) y) taken across a cross-section perpendicular to the longitudinal axis is less than a second moment of area of the bundle about the X-axis (I(c) x),

positioning said bundle in a mold, said mold having cavities to form said semi-annular portion, said annular portion and said rod portion, the cavity to form the rod portion being sized such that the second moment of area of the finished rod about the X-axis (Ix) is greater than the second moment of area of the finished rod about the Y-axis (Iy), said bundle being positioned to bridge from said cavity for said semi-annular portion and to produce a fixed minimum gap between said bundle and the cavity for said rod portion; and

squeeze casting a molten light metal alloy into said mold forming a matrix of said alloy and said bundle.

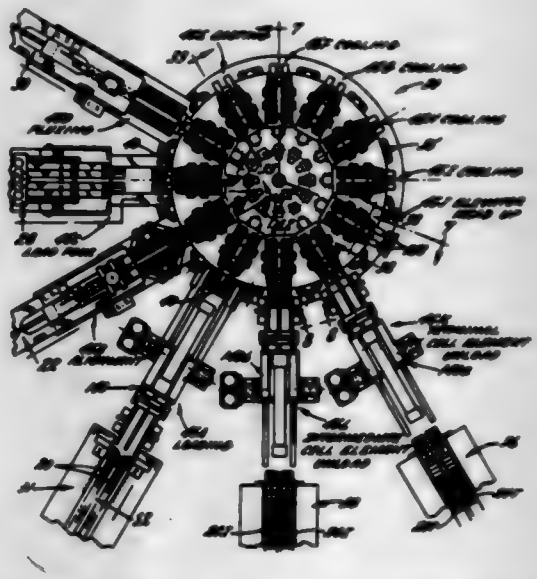
4,534,401

APPARATUS AND METHOD FOR CASTING STRAPS ON BATTERY CELL ELEMENTS

Edward G. Schaumburg, Askov; Cory D. Benson, Bloomington; Alby H. Wolf, Minneapolis, and Michael G. Zais, Richfield, all of Minn., assignors to GNB Batteries Inc., Mendota Heights, Minn.

Filed May 21, 1982, Ser. No. 380,785
Int. Cl.[3] B22D *19/00*
U.S. Cl. 164—102 63 Claims

1. An apparatus for casting straps onto rows of lugs of battery cell elements comprising an indexable table having a plurality of stations at circumferentially spaced locations about the periphery of said table; said table stations each including an element holding head and a mold formed with a lug strap cavity; means mounting each said head on said table at an elevated position above the respective table station mold, said head for each table station having means for releasably engaging an element and being mounted on said table for movement between an elementreceiving position with the lugs of the element held therein disposed above the mold of said table station and a casting position with the lugs of an element held therein disposed in said mold; means for indexing said table to simultaneously and successively move said table stations to a plurality of operating stations located immediately adjacent the periphery of said table including an element loading station where an element is positioned into a table station head upon indexing of table station to said loading station, a molten-metal pouring station having means for dispensing a determined amount of molten metal into a table station mold upon indexing of the respective table station to said pouring station and while an element is held in the head, and an unloading station where



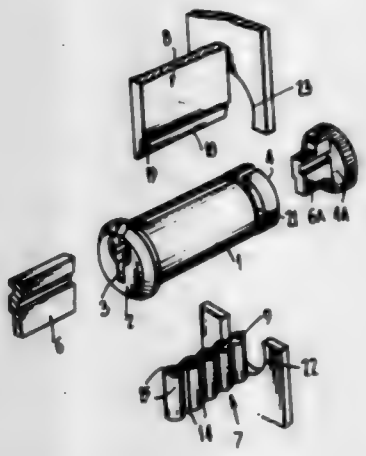
elements with straps cast thereon are removed from said head; means for moving each said head and an element held therein to said casting position following dispensing of molten metal into said mold at said pouring station; and means for returning each said head to said element-receiving position to permit removal from said head of an element with straps cast thereon at said unloading station.

4,534,402

METHOD OF CASTING PIN TUMBLER LOCK BARRELS

John R. Watts, 116 North Rd., Brighton, Vic. 3186, Australia

Filed Mar. 24, 1983, Ser. No. 478,273
Claims priority, application Australia, Mar. 29, 1982, PF3367; Jul. 6, 1982, PF4713
Int. Cl.[3] B22D *13/00, 33/04*
U.S. Cl. 164—302 6 Claims



1. Apparatus for diecasting a barrel for a pin tumbler lock, said apparatus comprising, a die having a generally barrel shaped cavity incorporating at least three retractable cores, a first core retractable axially with respect to the center-line of the barrel and defining the entry hole and guide channel for a key designed to operate a lock having the barrel as a component thereof, said first core in the extended position extending into the barrel no further than the guide channel for a first pin, a second core, and a third core, said second and third cores comprising the only cores which are retractable radially with respect to the center-line of the barrel and positioned substantially diametrically opposite one another and extending into the barrel so as to be placed in close proximity to one another

and to said first core when all three cores are fully extended during casting, said second core comprising a central web and a plurality of pairs of opposed protrusions on either side thereof, each pair of opposed protrusions defining a guide channel for a pin, and said third core in conjunction with said second core defining an axial inwardly projection fin adapted to mate with a channel in the key, one side of said fin being defined by said second core and the other side by said third core.

4,534,403

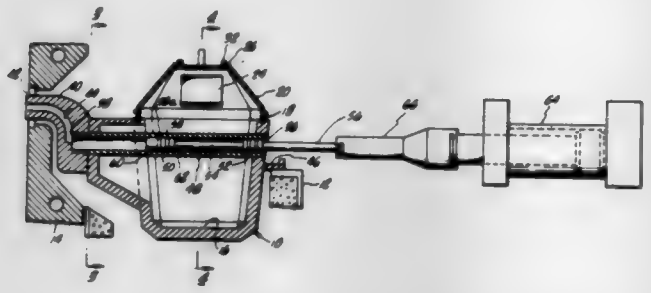
HOT CHAMBER DIE CASTING MACHINE

John I. Harvill, 24201 Orange Ave., Perris, Calif. 92370

Continuation-in-part of Ser. No. 386,340, Jun. 8, 1982, Pat. No. 4,476,912, which is a continuation of Ser. No. 196,319, Oct. 14, 1980, abandoned. This application Apr. 18, 1983, Ser. No. 485,653

Int. Cl.³ B22D *17/02*

U.S. Cl. 164—316 **22 Claims**



1. A hot chamber die casting machine comprising a pot;
a cylinder extending horizontally through said pot and having a first, open end on a first outer side of said pot;
a piston slidably mounted in said cylinder;
means for cooling said first, open end and no other part of said cylinder to a temperature below the melting point of metal die casting material.

4,534,404

MACHINE FOR CONTINUOUSLY CASTING BATTERY GRIDS

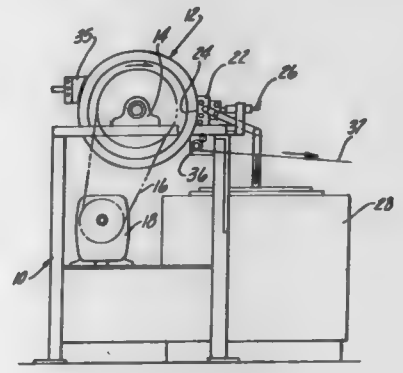
Jack E. McLane; Raymond L. Schenk; Robert R. Rader, and John W. Wirtz, all of Port Huron, Mich., assignors to Wirtz Manufacturing Company, Inc., Port Huron, Mich.

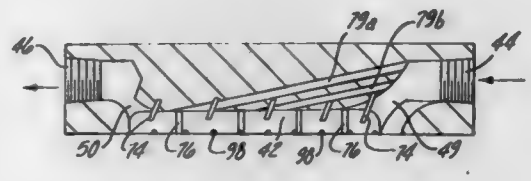
Division of Ser. No. 517,668, Jul. 27, 1982, Pat. No. 4,509,581, which is a division of Ser. No. 380,056, May 20, 1982, Pat. No. 4,415,016. This application Nov. 8, 1984, Ser. No. 669,520

Int. Cl.³ B22D *11/10*

U.S. Cl. 164—429 **3 Claims**

1. In a machine for continuously casting battery grids, the machine including a drum adapted to be rotated in one direction and having on its outer peripheral surface a cavity which defines the pattern of the battery grid, said grid pattern comprising two sets of intersecting grooves, said grooves defining pads therebetween which form the outer peripheral surface of the drum and which define the open spaces between the wires of the cast battery grid, said machine including a shoe having an arcuate surface in mating engagement with said pads around an arcuate segment of the drum, said shoe having an orifice slot therein which is axially co-extensive with said cavity and which is open at the portion of said arcuate surface that is intermediate the circumferentially opposite ends of the shoe, said shoe having an inlet and an outlet communicating with the axially opposite ends of the orifice slot, said machine also including means for directing molten lead at superatmospheric pressure to said inlet in an amount in excess of that required to progressively fill the grid cavity as it rotates past the opening in the orifice slot so that the excess is discharged through said outlet, that improvement which comprises at least one by-pass passageway extending through said shoe directly from the inlet end of the orifice slot to a section thereof intermediate its opposite ends so that a portion of the hot molten lead introduced to the inlet of the shoe is bypassed directly to said intermediate section thereby tending to maintain the temperature of





the lead more uniform throughout the axial extent of the orifice slot.

4,534,405

METHOD AND AN ARRANGEMENT FOR INSPECTING THE SURFACE OF STEEL STOCK HAVING A TEMPERATURE ABOVE THE CURIE POINT

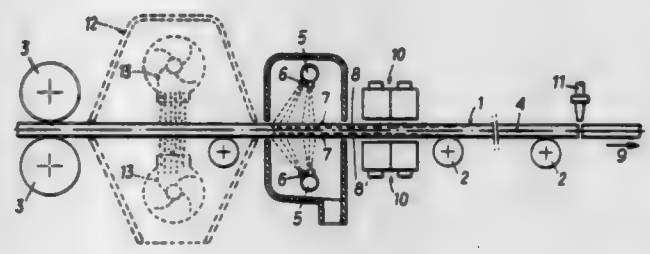
Anton Hulek, Linz, and Wolfgang Polanschütz, Leoben, both of Austria, assignors to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Jan. 26, 1983, Ser. No. 461,268

Claims priority, application Austria, Feb. 11, 1982, 515/82

Int. Cl.³ B22D *2/00*

U.S. Cl. 164—451 **13 Claims**



1. A method for inspecting the surface of continuously cast steel stock having a temperature above the Curie point and including a hot core and a surface layer which method comprises the steps of intensively cooling only a slight depth of said surface layer at said surface to be inspected to a temperaure below the Curie point and above 500° C. with a substantial portion of the core remaining at a temperature above the Curie point,

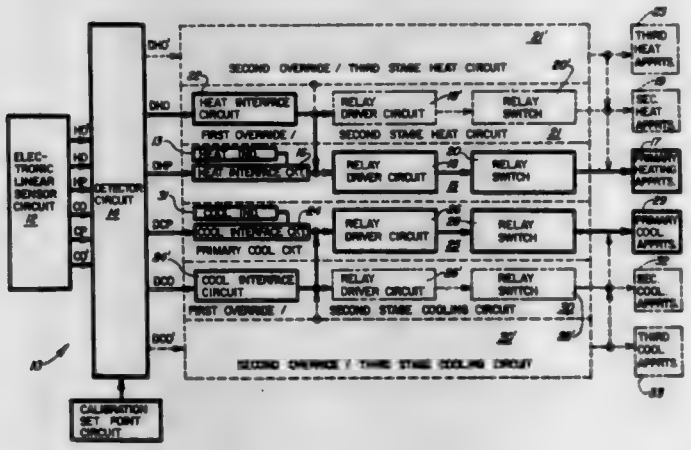
inducing a magnetic field in the cooled surface layer immediately afterwards, and

detecting and recording, by means of pick-ups, disturbances of said magnetic field caused by defects in said steel stock.

4,534,406
THERMOSTAT

Alfred T. Newell, III, and Alfred T. Newell, Jr., both of Birmingham, Ala., assignors to A. T. Newell Co. Inc., Birmingham, Ala.

Continuation-in-part of Ser. No. 584,398, Feb. 28, 1984. This application Jun. 28, 1984, Ser. No. 625,606
Int. Cl.[3] F25B *29/00*; G08B *17/00*
U.S. Cl. 165—12 18 Claims

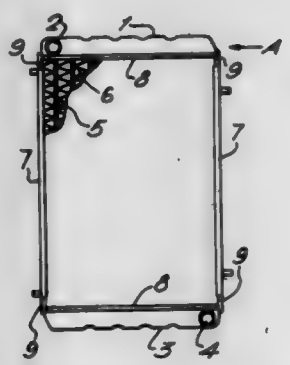


1. An electronic thermostat, comprising
means for sensing temperature;
a reference terminal for connection with a common reference potential, such as ground;
a heat control terminal for connection with a control relay coil of a heating apparatus;
a cool control terminal for connection with a control relay coil of a cooling apparatus;
a switch for preselecting one of said control terminals;
means for applying actuation signals to the preselected one of said control terminals to energize a control relay connected therewith;
means for providing D.C. power to said actuation signal generating means from A.C. power drawn through the other nonselected and non-actuated control terminal at a level insufficient to energize a relay control coil of a temperature altering apparatus connected therewith.

4,534,407
HEAT EXCHANGERS

Graham G. Lardner, Llanelli, Wales, assignor to Unipart Group, Limited, Cowley, England

Filed Aug. 30, 1983, Ser. No. 527,810
Claims priority, application United Kingdom, Sep. 3, 1982, 8225112; Apr. 14, 1983, 8310087
Int. Cl.[3] F28F *7/00*
U.S. Cl. 165—81 3 Claims

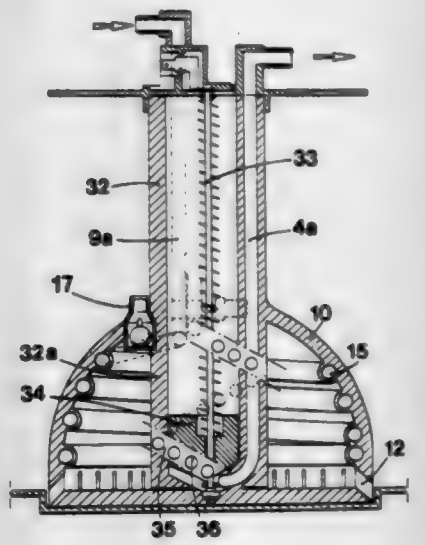


1. A heat exchanger, said heat exchanger comprising a pair of header tanks formed from a plastic material and having axially rigid arms molded integrally therewith; a matrix including a plurality of tubes extending between the header tanks and airways located between the tubes, and clamping members which are substantially box-shaped in cross-section disposed parallel to the tubes on each side of the matrix; said axially rigid arms extending into the clamping members and having a telescoped sliding fit thereon whereby each clamping member is in contact with the matrix but each of the arms can slide relative to its associated clamping member in a direction parallel to the tubes.

4,534,408
INDUCTION DEVICE FITTED INSIDE A TANK FOR DRAWING IN FLUIDS SUCH AS LIQUID FUELS

Bernard Thibonnet, 1, Allée de la Vigie, Carry le Rouet, France (13620), assignor to Bernard Thibonnet, Carry le Rouet, France; Philippe H. Staib, Bangkok, Thailand and Jean-Michel Babet, Paris, France

Filed Jan. 18, 1983, Ser. No. 458,746
Claims priority, application France, Jan. 25, 1982, 82 01114
Int. Cl.[3] F28F *9/00*
U.S. Cl. 165—108 10 Claims



1. Fluid induction device for use with liquid fuel, fitted inside a tank for drawing in liquid fuels in particular, wherein said device comprises an enclosure (10) provided at its base with first communicating means and at its upper part with second means of communicating with the tank, said enclosure (10) containing, on the one head, an induction pipe (13) of a pump and on the other hand, a conduit (15) adapted to receive heated fluid ensuring the heating of the enclosure, characterized in that the enclosure (10) is resting on a dish member (11) at the bottom of the tank, in that the first communicating means is formed by vertical directional slots (12) situated at the base of said enclosure, in that the second means of communicating with the tank extends downwardly into the interior of said enclosure, said second means including a floating member (20) shiftable between sealing and unsealing positions of said second means in the filled and unfilled conditions respectively of said enclosure, and in that the induction pipe (13) comprises an end portion (13a) which is bent towards the top part of the enclosure and comprises a series of orifices 14 distributed throughout its length.

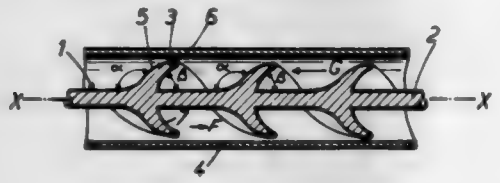
4,534,409
TUBULAR HEAT EXCHANGER AND HELICAL AGITATORS FOR USE WITH SUCH EXCHANGERS

Patrick Cadars, Montigny-le-Bretonneux, France, assignor to Societe Anonyme Francaise Du Ferodo, Paris, France

Filed May 20, 1980, Ser. No. 151,565
Claims priority, application France, May 25, 1979, 79 13362
Int. Cl.[3] F28F *1/40, 13/12*
U.S. Cl. 165—109 T 1 Claim

1. A heat exchanger comprising:
(a) at least one tube through which a fluid may flow and an agitator comprising at least two continuous helical threads located in the tube,

(b) the section through the agitator in any plane passing through the longitudinal axis of the helical continuous threads having a central portion and teeth of the same shape and dimensions spaced along the longitudinal axis,
(c) each of these teeth shown in section being asymmetrical with respect to a line perpendicular to the longitudinal axis of the helical continuous threads,



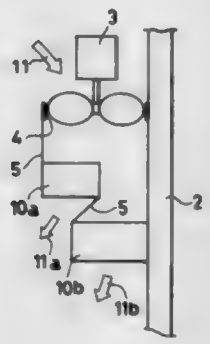
(d) each of said teeth having two sides respectively forming with said central portion an obtuse angle α and an acute angle β different from $180°-\alpha$,
(e) the agitator being arranged in the tube such that fluid flowing in one direction through the tube strikes against the sides of said asymmetrical teeth which form the acute angle β with said central portion.

4,534,410

AIR COOLING TYPE HEAT EXCHANGER FOR A REFRIGERATING APPARATUS ACCOMMODATED IN A CONTAINER

Shin Watabe, and Hideto Shibata, both of Nagoya, Japan, assignors to Mitsubishi Jukogyo Kabushiki and Churyo Engineering Co., Ltd., both of, Japan

Filed May 27, 1983, Ser. No. 498,698
Claims priority, application Japan, Jul. 12, 1982, 57-104333[U]
Int. Cl.³ F24B *1/06*; F28F *13/12*
U.S. Cl. 165—126 **5 Claims**



1. A refrigerating apparatus comprising:
a container defining a space and including at least one wall;
a fan for blowing cooling air in an air flow direction in the container space; and
an air cooling type heat exchanger disposed in the container space downstream of said fan in the air flow direction, said heat exchanger comprising a plurality of segments which are arranged in stepped relationship, said plurality of segments including at least one upstream segment and at least one downstream segment adjacent to said upstream segment and downstream of said upstream segment with respect to said air flow direction, said upstream segment partly overlapping said downstream segment in a direction transverse to said air flow direction and being spaced from said downstream segment in said air flow direction, including a flow shielding plate connected between said upstream segment and said downstream segment and extending in an inclined position with respect to said air flow direction whereby air blown by said fan in said air flow direction is selectively divided by said flow shielding plate into at least two discrete streams, the first of said streams flows through said upstream segment and the second of said streams flows through said downstream segment.

4,534,411

MICELLAR SLUG FOR OIL RECOVERY

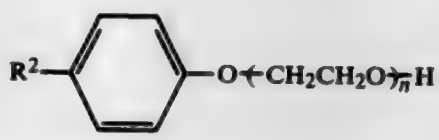
Hiroshi Morita, Chiba; Yasuyuki Kawada, Funabashi; Junichi Yamada, Narashino, and Toshiyuki Ukigai, Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Mar. 15, 1983, Ser. No. 475,602
Claims priority, application Japan, Mar. 16, 1982, 57-040290
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **2 Claims**

1. A micellar slug for use in the recovery of oil, said slug consisting essentially of 4% to 90% by weight of a hydrocarbon, 10% to 92% by weight of an aqueous medium, 3% to 30% by weight of a surfactant, and 0.1% to 20% by weight of a cosurfactant, said surfactant containing, as essential components, (a) at least one alpha-olefin sulfonate having 10 to 30 carbon atoms and (b) at least one ethoxylate selected from the group consisting of polyoxyethylene alkyl ethers having the formula:

$$R^1O\text{-}(CH_2CH_2O)_mH \quad \text{(I)}$$

wherein R^1 is a linear or branched alkyl or alkenyl group having 10 to 18 carbon atoms and m is a number of about 1 to about 10 on the average, and polyoxyethylene alkylphenyl ethers having the formula:



(II)

wherein R^2 is a linear or branched alkyl group having 6 to 15 carbon atoms and n is a number of about 1 to about 15 on the average, in a weight ratio of component (a) to component (b) of 8/2 to 3/7.

4,534,412

CONTINUOUS PERMEABILITY REDUCTION IN SUBTERRANEAN RESERVOIRS

Hoai T. Dovan, Brea, and Richard D. Hutchins, Placentia, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 9, 1983, Ser. No. 559,920
Int. Cl.³ E21B *33/138*
U.S. Cl. 166—295 **48 Claims**

1. A method for reducing the permeability of the higher permeability zones of a subterranean reservoir having heterogenous permeability penetrated by at least one well comprising injecting through a well and into said reservoir a composition of matter comprising in an aqueous liquid (1) a water-soluble or water-dispersible polymer; (2) a crosslinking agent for the polymer capable of reacting with said polymer to produce a gel in an alkaline media; (3) a source of hydroxyl ions in an amount sufficient to retard the reaction of said polymer with said cross-linking agent; and (4) an additive capable of sufficiently reducing the pH of said aqueous liquid at an ambient elevated temperature so as to initiate or accelerate reaction of said polymer and said cross-linking agent.

4,534,413

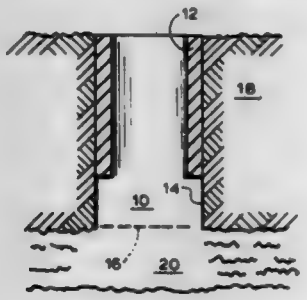
METHOD AND APPARATUS FOR WATER FLOW STIMULATION IN A WELL

Igor Jaworowsky, P.O. Box 157, Branchville, N.J. 07826

Filed Dec. 27, 1983, Ser. No. 565,855
Int. Cl.³ E21B *36/00, 43/26*
U.S. Cl. 166—302 **8 Claims**

1. The method of stimulating the flow of water into a well from water pools trapped in the strata surrounding such well comprising the steps of: placing a cap on the casing of said well and sealing by securing said cap thereto; introducing a liquified gas or non-liquified gas into said well through said cap to

freeze water in said well and in said strata surrounding said well; maintaining said liquified gas or non-liquified gas under pressure in said well to permit the pressurizing of water in said well and in the surrounding strata; and rapidly decreasing the pressure in said well allowing for the rapid freezing of any water in said well and in said surrounding strata not previously



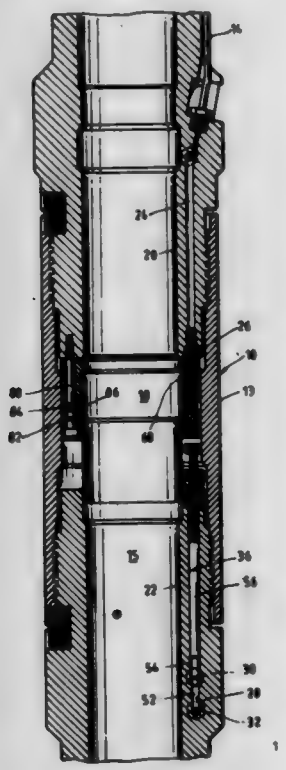
frozen, and removing the pressure on said well walls and said surrounding strata permitting any fractured rock, sand, dirt or other materials in said passages between said water pools and said well to be propelled into said well, under the pressure of said trapped water pools, cleaning said passages and facilitating the flow of water from said water pools into said well.

4,534,414

HYDRAULIC CONTROL FLUID COMMUNICATION NIPPLE

Ronald E. Pringle, Houston, Tex., assignor to Camco, Incorporated, Houston, Tex.

Continuation-in-part of Ser. No. 440,667, Nov. 10, 1982, Pat. No. 4,460,046. This application Dec. 27, 1983, Ser. No. 565,324
Int. Cl.³ E21B *34/10*
U.S. Cl. 166—317 **6 Claims**



1. A hydraulic control fluid communication nipple for switching control fluid from one location to a second location in a well tool comprising,

a body,

a fluid passageway in the body adapted to be connected to the well surface for normally receiving hydraulic control fluid for supplying hydraulic control fluid to a first location,

vertically moving means in the body shutting off communication of fluid to said first location,

said vertically moving means in the body opening communication of said fluid passageway to a second location in the body,

a metal plug aligned with a portion of said fluid passageway and positioned to be engaged by the vertically moving means and moved into said portion and shut off communication of fluid to said first location with a metal seal,

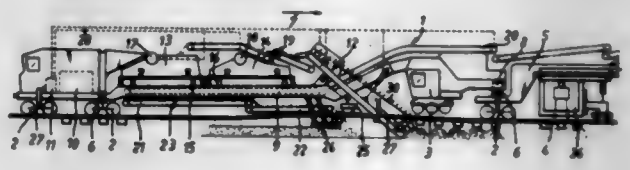
said metal plug has a longitudinal axis extending vertically and is threadedly connected in the passageway forming a metal seal and having a frangible connection.

4,534,415

BALLAST CLEANING MACHINE WITH TWO BALLAST SCREENING INSTALLATIONS

Josef Theurer, Vienna, and Manfred Brunninger, Linz, both of Austria, assignors to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Jun. 21, 1983, Ser. No. 506,297
Claims priority, application Austria, Sep. 20, 1982, 3503/82
Int. Cl.³ E01B *27/00*
U.S. Cl. 171—16 **9 Claims**



1. In a mobile ballast cleaning machine comprising a frame, undercarriages supporting the frame for mobility on a track resting on the ballast, an arrangement toward the forward end of the frame for excavating the ballast and for conveying the excavated ballast, the ballast excavating and conveying arrangement being vertically adjustably mounted on the frame and including a driven endless chain for excavating and conveying the ballast and a polygonal guide for guiding the driven chain, the guide having a transverse section and at least one section leading rearwardly from the transverse section in a longitudinal direction along the frame, a first vibratory and vertically adjustable ballast screening installation mounted on the frame and extending rearwardly from the excavating and conveying arrangement, and having an inlet to receive the conveyed ballast from an output of the ballast excavating and conveying arrangement and to separate the ballast into a cleaning ballast component and a waste component, and conveyor means for redistributing the cleaned ballast component and for removing the waste component; a further ballast screening installation mounted on the frame rearwardly of and adjacent the first ballast screening installation, separate drive means for vibrating and for vertically adjusting the further ballast screening installation, and a remote-controllable conveyor means arranged to receive the ballast from the ballast excavating and conveying arrangement output and to deliver it to the first ballast screening installation and upon selective adjustment of a remote-controllable portion of the remote-controllable conveyor means to also deliver ballast from the ballast excavating and conveying arrangement to an inlet of the further ballast screening installation.

4,534,416

AUTOMATIC LOCK FOR FARM EQUIPMENT TRANSPORT WHEEL

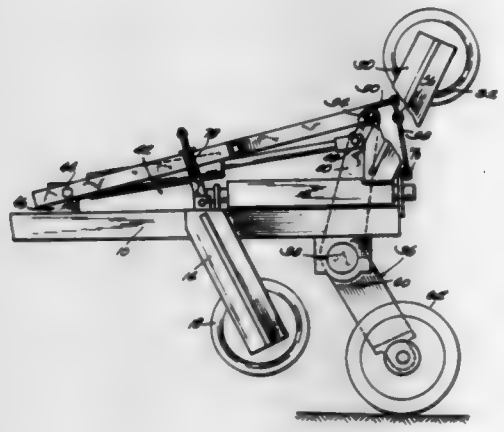
Terry L. Johnson, Brillion, Wis., assignor to Beatrice Foods Co., Chicago, Ill.

Filed Nov. 7, 1983, Ser. No. 548,963
Int. Cl.³ A01B *63/22*
U.S. Cl. 172—311 **14 Claims**

1. In a tractor-drawn farm implement of the type having a main frame, soil working tools mounted on said frame, a wheel assembly pivotally mounted on said frame and including a wheel and an actuating arm, means for actuating said arm to move said wheel between a raised field position in which said tools contact the ground and a transport position in which the wheel engages the ground and said tools are raised from the ground, a wing frame pivoted on said main frame for pivotal movement between a laterally extended position and a folded position in which the wing frame has pivoted inwardly at least 90° from said extended position, soil working tools mounted on

said wing frame, means for actuating said wing frame between its positions, the improvement comprising,

a separate releaseable lock member engageable with said arm,



means responsive to movement of said wing frame to said folded position to move said lock member into a lock position in which it is engageable with said arm.

4,534,417

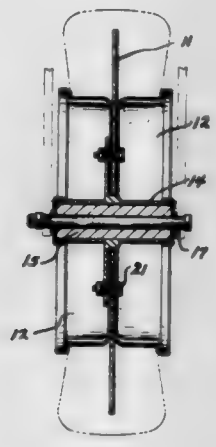
GAUGE WHEEL CONVERSION ARRANGEMENT

Floyd V. Weatherholt, R. 3, Box 34A, Rockport, Ind. 47635

Filed Jul. 17, 1978, Ser. No. 925,214

Int. Cl.³ A01B *23/06, 51/00;* B60B *3/08*

U.S. Cl. 172—536 **1 Claim**



1. A gauge wheel for agricultural cultivating equipment, said gauge wheel comprising a hub, a radially extending mounting projection on said hub, said wheel further comprising a pair of substantially identical mounting plates each including outer axially extending tire supporting flanges terminating in an annular radially extending tire retaining rim between which a tire may be received and retained, and a separable cutting blade adapted to be substituted for said tire and sized to be disposed between said mounting plates and extending radially beyond said outer rims thereof, whereby said mounting plates with said separable cutting blade therebetween may be assembled and secured to said mounting projection on said hub by fastening means extending through said plates and said cutting wheel to selectively convert the gauge wheel into a cutting wheel.

4,534,418

SPRING TEETH

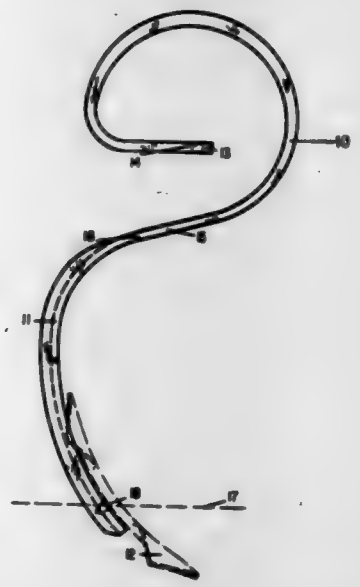
Fritz Hegemann, and Horst Beihammer, both of Werdohl, Fed. Rep. of Germany, assignors to Krupp Brüninghaus GmbH, Werdohl, Fed. Rep. of Germany

Filed Dec. 6, 1982, Ser. No. 447,259

Claims priority, application Fed. Rep. of Germany, Dec. 5, 1981, 3148260

Int. Cl.³ A01B *23/00*

U.S. Cl. 172—708 **10 Claims**



1. A spring tine for an agricultural implement for soil cultivation, comprising: a bent spring blade having an upper end constituting a point of fastening for releasable attachment to the implement and having a lower end; and a carrier for the attachment of a working member for performing soil cultivation which causes a force to act on said tine along a line of action, said carrier being connected to said lower end of said spring blade; wherein said spring blade has a cross section which varies over its length in such a manner that the axial area moment of inertia I of a cross-sectional plane, divided by one-half the blade thickness, is proportional to the linear distance of that cross-sectional plane from the line of action of the force acting on said tine.

4,534,419

METHOD FOR PILE DRIVING AND DRAGGING

Gülertan Vural, Emmelshausen, Fed. Rep. of Germany, assignor to Koehring GmbH, Boppard, Fed. Rep. of Germany

Filed Jul. 20, 1978, Ser. No. 926,228

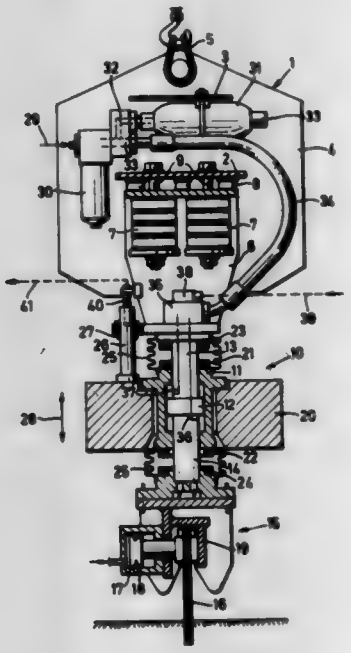
Claims priority, application Fed. Rep. of Germany, Jul. 21, 1977, 2732934

Int. Cl.³ E02D *7/10, 7/18*

U.S. Cl. 173—1 **8 Claims**

1. A method for driving a body into the ground by means of a single hammer which is driven by a double acting piston-cylinder unit supplied with a controlled, periodically changing stream of pressure medium and which generates forces which act on the body in its longitudinal direction, the piston-cylinder unit including two parts movable relative to one another under the influence of the pressure medium, with one of the parts being secured to the hammer and the other of the parts being secured to a reaction mass, comprising: initially causing the pressure stream to have an approximately sinusoidally pulsating form for imparting a vibratory movement to one part and the hammer; relative to the other part; monitoring the relative movement between the two parts; when the speed with which the body is being driven into the ground decreases to below a given minimum value, causing the pressure medium to be controlled to displace the other part and the reaction mass relative to the one part according to a periodic, approximately

unsteady displacement-time function for causing the reaction mass to apply a hammering movement to the hammer; and



during occurrence of such hammering movement, simultaneously determining the hammering energy being generated.

4,534,420

ELECTRIC TOOL WITH TORQUE MONITOR

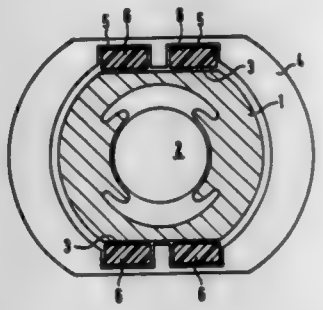
Rainer Goldelius, Idstein, Fed. Rep. of Germany, assignor to Black & Decker Inc., Newark, Del.

Filed Oct. 26, 1982, Ser. No. 436,766

Claims priority, application Fed. Rep. of Germany, Oct. 28, 1981, 3142682

Int. Cl.³ B23Q *17/00*

U.S. Cl. 173—12 **9 Claims**



1. An electric tool having an electric motor, said electric motor comprising:

a housing:

a stator mounted inside said housing;

support means, inside said housing and extending between said housing and said stator, for supporting said stator in said housing and transmitting the reaction torque of said motor to said housing;

a pressure sensor incorporated in said support means;

said pressure sensor comprising a platelet of electrically conductive plastic material, the resistance of the latter changing as a function of the pressure exerted upon it, disposed between two electrodes;

said pressure sensor being subjected to said reaction torque to change the resistance of said conductive plastic material, whereby said change in resistance of said conductive plastic material can be used in controlling said motor;

two such pressure sensors between which a support element is disposed, one of said support element and said pressure sensors being fastened to said stator, and the other connected to by said housing, whereby one of said pressure sensors is subject to the reaction torque of the motor in one direction of drive of the latter and the other of said pressure sensors is subject to the reaction torque of the motor in the opposite direction of drive of the latter; and

said two pressure sensors are contained in a common enclosure, and wherein said support element protrudes outwardly through an opening in said enclosure.

4,534,421

TOOL ASSEMBLY

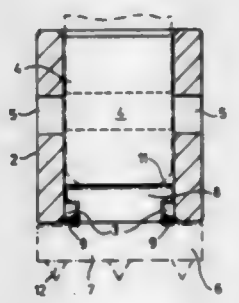
David T. Allan, 9 Broomhill Dr., Glasgow, Scotland

Filed Aug. 5, 1982, Ser. No. 405,937

Claims priority, application United Kingdom, Aug. 28, 1981, 8126367; Dec. 1, 1981, 8136259; Dec. 10, 1981, 8137242

Int. Cl.³ E21C *35/02*

U.S. Cl. 173—130 **13 Claims**



1. A tool assembly comprising:

a piston;

a diametric aperture through said piston;

a sleeve around the piston;

a pair of diametrically opposed apertures in said sleeve corresponding to the aperture in said piston;

a locking pin through said apertures;

a pair of inwardly directed flanges on a lower part of said sleeve; and

a tool holder having a lower portion carrying a plurality of tool bits and a substantially rectangular upper portion formed with a pair of outwardly directed flanges, the arrangement being such that when said locking pin is in said apertures the upper surface of the tool holder abuts an end face of the piston and said flanges on the upper portion of the tool holder are a tight fit between said end face of the piston and opposing faces on the flanges of the sleeve.

4,534,422

FLUID OPERATED HAMMER

Ian G. Rear, 53 Louise St., Nedlands, Western Australia, Australia

Continuation of Ser. No. 277,048, Jun. 24, 1981,. This application Sep. 20, 1983, Ser. No. 533,952

Int. Cl.³ E21B *4/14*

U.S. Cl. 173—134 **20 Claims**



1. In a fluid operated hammer drill comprising a casing defining a bore, means including a drill bit supporting member for closing one end of said bore, a hammer piston having oppositely facing first and second ends reciprocally supported in said bore for movement from a retracted position wherein said second piston end is spaced from said one end and an impact position at said one end wherein said first piston end impacts said drill bit supporting member, and a fluid pressure inlet, the improvement comprising porting means in fluid communication with said fluid pressure inlet and opened and closed

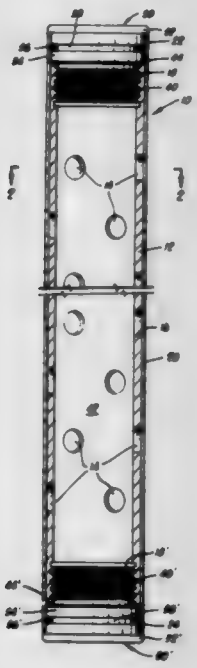
responsive to the relative position of said hammer piston for pressurizing said first end of said hammer piston when said hammer position is contiguous to said one end for driving said hammer piston away from said one end toward its retracted position, for pressurizing the second end of said piston when said piston is at first distance from said one end and contiguous to said retracted position, and for pressurizing said second end of said hammer piston again when said hammer piston is closely adjacent said one end, but spaced from its impact position toward said retracted position and from the point of said first mentioned pressurization of said second end.

4,534,423

PERFORATING GUN CARRIER AND METHOD OF MAKING

John A. Regalbuto, Forth Worth, Tex., assignor to Jet Research Center, Inc., Arlington, Tex.

Filed May 5, 1983, Ser. No. 491,624
Int. Cl.[3] E21B *43/11*
U.S. Cl. 175—4.6 **19 Claims**



1. A perforating gun carrier comprising:
in inner substantially tubular housing having a plurality of gun ports extending through the wall thereof; and
an outer substantially tubular sleeve surrounding said inner housing in substantially circumferential contact therewith and covering said plurality of gun ports, said sleeve being imperforate proximate said housing gun ports.

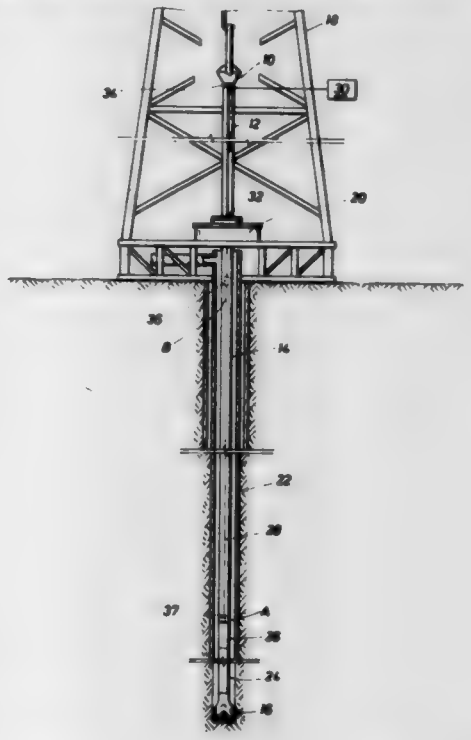
4,534,424

RETRIEVABLE TELEMETRY SYSTEM

Mark S. Ramsey, Spring, Tex., assignor to Exxon Production Research Co., Houston, Tex.

Filed Mar. 29, 1984, Ser. No. 594,605
Int. Cl.[3] E21B *7/00, 47/12*
U.S. Cl. 175—40 **15 Claims**

1. A method of installing and retaining a conductor between a surface terminal and a subsurface location in a drill string used to drill a well, comprising the steps of:
lowering a mating end of the conductor into the drill string by paying out the conductor from its other, control end until the mating end reaches the subsurface location;
anchoring the mating end of the conductor to the drill string at the subsurface location;
tensioning the conductor;
measuring the tension of the conductor;
connecting the control end of the conductor to the surface terminal; and
controlling the tension of the conductor, as a drill pipe section is added to the drill string to advance the depth of the well, by connecting a conductor section between the surface terminal and the control end of the conductor, wherein the length of the conductor section at a tension



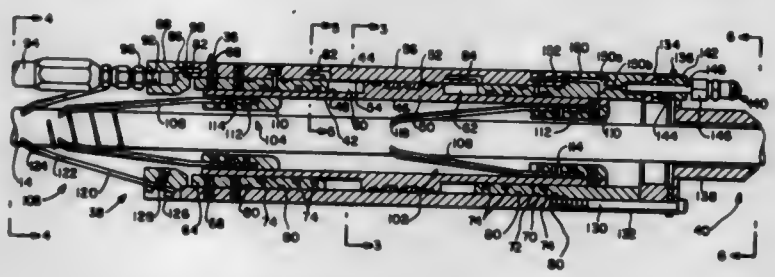
corresponding to the measured tension of the conductor is less than the length of the pipe section to be added to the drill string.

4,534,425

CABLE REAMING APPARATUS AND METHOD

James M. Reichman, Issaquah; Thomas A. O'Hanlon, Tacoma, both of Wash., and Thomas J. Kendrew, Redwood City, Calif., assignors to Electric Power Research Institute, Inc., Palo Alto, Calif.

Division of Ser. No. 196,847, Oct. 14, 1980, Pat. No. 4,385,667.
This application Feb. 25, 1983, Ser. No. 469,920
The portion of the term of this patent subsequent to May 31, 2000, has been disclaimed.
Int. Cl.[3] E21B *4/02*
U.S. Cl. 175—53 **2 Claims**



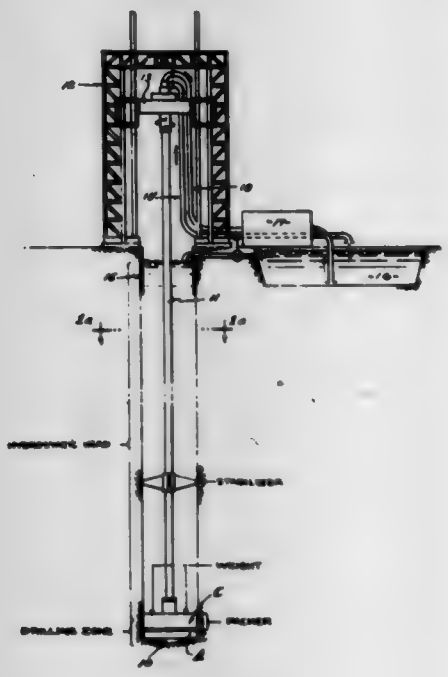
1. An apparatus for following along and around the length of an existing cable, said apparatus comprising: an open ended tubular main body adapated to be positioned concentrically around the cable; means for interconnecting said main body to said cable such that said body is slidably movable along the length of said cable from one end of the latter to its other end, said interconnecting means including a plurality of gripping members fixedly connected with said main body and slidably engagable against said cable for maintaining said main body in its concentric position around said cable as it moves along the latter; and means for slidably moving said main body along said cable; said tubular main body including inner and outer concentric, cylindrical sections axially slidable to a limited extent to and against one another; said gripping members being designed to engage said cable such that said main body is movable in a forward direction; and said moving means acting on said inner and outer body sections to cause the latter to alternately slide relative to one another in incremental steps along said cable.

4,534,426

PACKER WEIGHTED AND PRESSURE DIFFERENTIAL METHOD AND APPARATUS FOR BIG HOLE DRILLING

David W. Hooper, Huntington Beach, Calif., assignor to Unique Oil Tools, Inc., Rolling Hills, Calif.

Filed Aug. 24, 1983, Ser. No. 525,998
Int. Cl.[3] E21B 7/00, 17/00
U.S. Cl. 175—65 70 Claims



1. A packer weighted and pressure differential method of big hole well bore drilling through earth formation having a pore pressure opposed by hydrostatic head pressure, and including;

advancing a large diameter drill bit at the lower end of a dual drill pipe of substantially smaller diameter and isolating the flow of circulating fluid therethrough to and from the drill bit,

sliding a bore engaging packer down the well bore and rotatably over the dual drill pipe following the drill bit, and thereby separating the well bore into a drilling zone surrounding the drill bit and a hydrostatic head of fluid maintained in the well bore annulus above the packer and surrounding the dual drill pipe,

applying the weight of said hydrostatic head to the drill bit through axial thrust bearing means transferring said weight from the sliding packer to and throughout the large diameter drill bit,

and significantly reducing the fluid pressure within the said drilling zone responsive to controlled pressure release of the circulating fluid,

whereby the large diameter drill bit is weighted to bear against a bit-to-bore bottom interface and the drilling zone subjected to an underbalanced condition as compared to the fluid pressure immediate to and above the sliding packer in the well bore annulus surrounding the dual drill pipe.

4,534,427

ABRASIVE CONTAINING FLUID JET DRILLING APPARATUS AND PROCESS

Fun-Den Wang, 108 S. Eldrige Way, Golden, Colo. 80401, and Gene G. Yie, 29244 - 59th Ave. South, Auburn, Wash. 98002

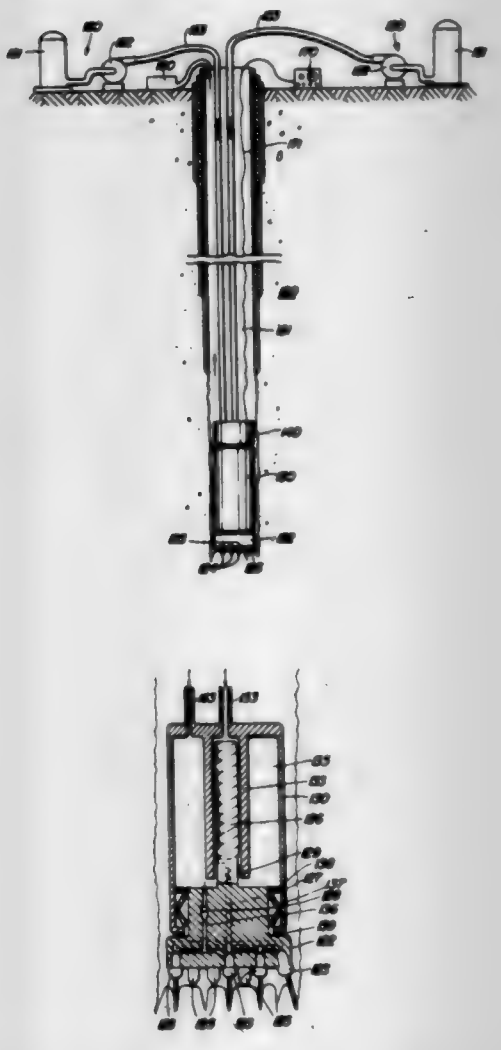
Filed Jul. 25, 1983, Ser. No. 517,000
Int. Cl.[3] E21B 7/18
U.S. Cl. 175—67 20 Claims

1. Apparatus for drilling holes in rock comprising:

a rotary drill bit having multiple abrasive-fluid jet nozzles mounted in the face of said bit having their center of flow at about 20 to about 90 degrees to said face and spaced to cut concentric grooves in said rock upon rotation, and mechanical cutters mounted in said face of said bit and spaced between said fluid jet nozzles to remove remaining material between said grooves upon rotation;

a stationary drill head housing torque generation means and rotary mounting means holding said rotary drill bit beneath and in rotatable relation to said drill head;

high pressure liquid supply means for supplying pressurized



liquid through flexible hoses to liquid orifices in a central portion of each said abrasive-fluid jet nozzles at over 10,000 psi; and

abrasive supply means for supplying through flexible hoses abrasive separate from and downstream from the supply of said liquid and peripheral to the central portion of each said abrasive-fluid jet nozzles.

4,534,428

VIBRATORY FEEDER CONTROL FOR A WEIGHING SYSTEM

Oren A. Mosher, Hayward, and Ellwood S. Douglas, Orinda, both of Calif., assignors to Package Machinery Co., East Longmeadow, Mass.

Filed Aug. 11, 1983, Ser. No. 522,418
Int. Cl.[3] G01G 19/22, 19/32
U.S. Cl. 177—1 16 Claims

11. A method of operating a combination weighing machine having a plurality of weigh scales from which a preferred combination of scales is selected during each machine cycle to form a package of product at an approximate target weight comprising:

monitoring each of the scales in the machine and identifying scales which have become inactive by not dumping product for a plurality of consecutive machine cycles; and

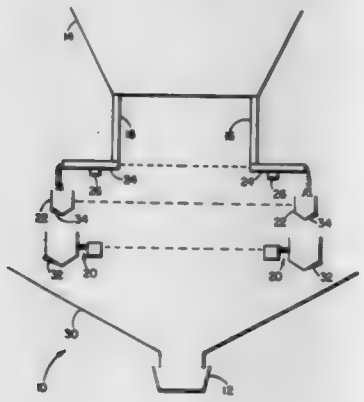
reducing to a small amount the quantity of product fed to scales requiring reloading during subsequent machine cycles until the identified inactive scales are dumped.

14. A method of controlling a plurality of vibratory feeders which dispense quantities of product in different and controlled amounts from a bulk container to a plurality of associated weigh scales in a combination weighing machine to weigh

the quantities being selected in various combinations from the scales in each cycle of machine operation and form a single quantity of product at or closely approximating a given target weight, the different and controlled amounts of product dispensed being regulated by the vibrations of the feeders, comprising for each scale the steps of:

measuring the weight of product dispensed from a feeder to the scale in a given dispensing operation;

comparing the dispensed weight against the desired feed weight of the scale to establish a difference; and



setting the vibrations of the feeder for the scale to regulate the different and controlled amounts of product dispensed in advance of feeding and independently of the other feeders in a subsequent dispensing operation and to minimize the difference between the weight of product dispensed and the desired feed weight whereby statistically varying weights more closely approximating the desired feed weights are fed to each scale.

4,534,429

COMBINATORIAL WEIGHING APPARATUS

Satoshi Konishi, Kusatsu, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

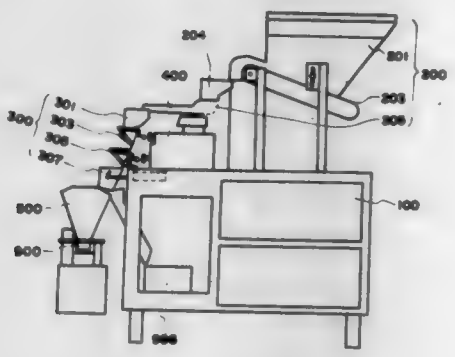
Filed Mar. 18, 1983, Ser. No. 476,719

Claims priority, application Japan, Mar. 20, 1982, 57-045282; Mar. 20, 1982, 57-39628[U]; Mar. 20, 1982, 57-39629[U]; Mar. 20, 1982, 57-39630[U]

Int. Cl.³ G01G *19/22, 19/52, 13/22*

U.S. Cl. 177—25

2 Claims



1. A combinatorial weighing apparatus, comprising

a base;

a plurality of hoppers mounted on said base;

supply means, for supplying articles to the hoppers, including

a supply belt, mounted on the base, the supply belt having an angle of inclination with respect to the base;

a charging hopper, mounted on the base, the charging hopper having an outlet port located above the supply belt;

an angle adjusting mechanism connected to the charging hopper and the supply belt; and

a partitioning plate mounted on the charging hopper; and

weighing means, mounted on the base, for weighing batches of articles in the hoppers, selecting a combination of batches of articles having a total weight closest to a target weight, discharging the selected combination of batches of articles from the hoppers, and collecting the batches of articles discharged from the hoppers.

4,534,430

COMBINATION WEIGHING MACHINES AND METHOD

Henry J. Steel, Malvern, England

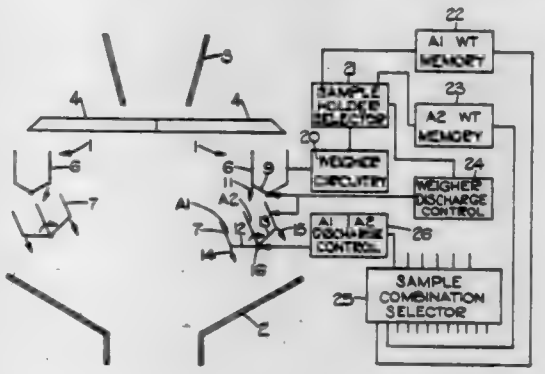
Filed Dec. 19, 1983, Ser. No. 562,514

Claims priority, application United Kingdom, Dec. 17, 1982, 8236007

Int. Cl.³ G01G *13/22, 19/22, 19/52*

U.S. Cl. 177—25

20 Claims



1. A combination weighing machine comprising feeder means for supplying feed material, a plurality of sample holders for holding respective samples of feed material supplied by the feeder means, one or more sample weighers for producing electrical output signals dependent on the weights of the samples supplied to the sample holders, memory means operatively associated with the weigher(s) for storing signals indicative of the weights of the samples in the sample holders as determined by the weigher(s), selection means connected to the memory means for making a selection from amongst the samples in the sample holders in dependence on the weights of the samples as indicated by the memory means and for discharging the selected samples from the sample holders to form a batch of a desired batch weight, and feedback control means for controlling supply of fresh feed material to the empty sample holders in dependence on the weights of the samples remaining in the sample holders as indicated by the memory means so as to supply fresh samples of target weights such as to compensate for overweight or underweight samples remaining in the sample holders.

4,534,431

SUPPORTING FEEDER ASSEMBLY FOR MATERIAL HANDLING MACHINES

Bo Aronsson, Kyrkogatan 36, S-579 00 Högsby, Sweden

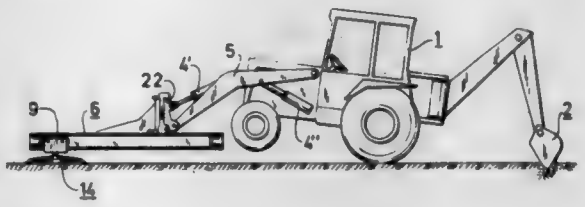
Filed Mar. 28, 1984, Ser. No. 594,132

Claims priority, application Sweden, Apr. 8, 1983, 8301962

Int. Cl.³ B62D *57/02*

U.S. Cl. 180—9

10 Claims



1. A supporting feeder assembly for material handling machines, said assembly being adapted to be detachably secured to said machine, wherein said assembly comprises

(a) one single elongate beam unit,

said unit being disposed substantially centrally in the longitudinal direction of the machine,

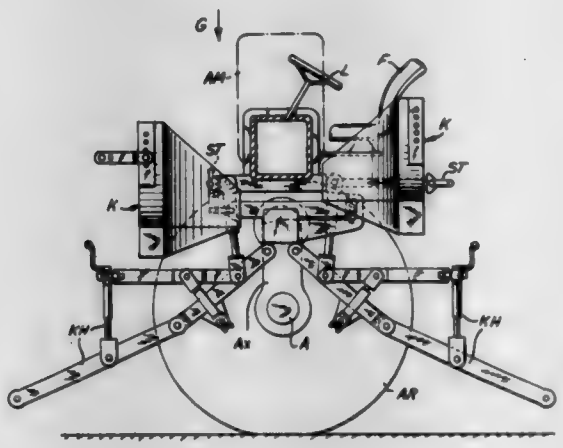
(b) a carraige,
said carriage being supported by said beam unit and being capable of running along the beam unit in the longitudinal direction thereof, and
(c) a carrier assembly,
said carrier assembly being connected to said carriage for engaging a substrate such as the ground.

4,534,432

MOTOR DRIVE UNIT FOR FORMING SELF-DRIVING AGRICULTURAL IMPLEMENTS OF VARIOUS STRUCTURES

Ernst Weichel, Postfach 1180, 7326 Heiningen, Fed. Rep. of Germany

Filed Dec. 18, 1981, Ser. No. 332,209
Claims priority, application Fed. Rep. of Germany, Dec. 24, 1980, 3049055
Int. Cl.³ B62D *49/06*
U.S. Cl. 180—1 T **7 Claims**



1. A motor driven unit for forming differently structured, at least biaxial, self-driving agricultural transport implements and operating machines comprising a uniaxial and controllable motor basic unit having a front end and a rear end and a driving shaft extending transversely of the front end-rear end direction, and at least one special element attachable to one of the front and rear ends of said basic unit and having at least one further shaft, characterized in that the controllable motor basic unit (G) has similar couplings disposed mirror-image like on opposite sides of said driving shaft (A) and that said at least one special element having said at least one further shaft has a free terminal end (D) provided with a matching coupling countermember (K') engageable with one of said couplings, said controllable motor basic unit including a frame, a driving motor, a driver's seat and a steering wheel for said driving shaft.

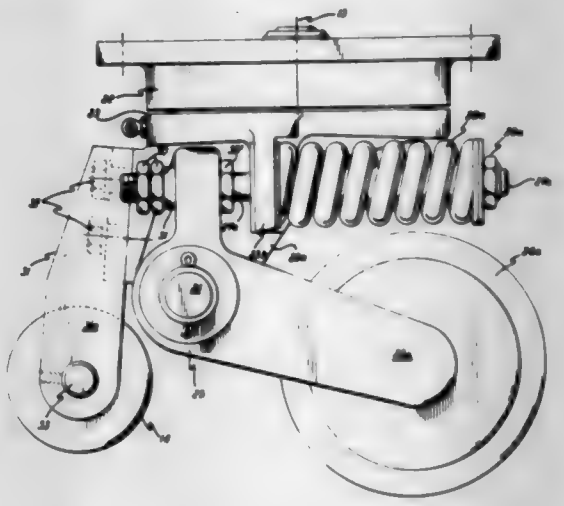
4,534,433

MATERIAL HANDLING VEHICLE

Charles H. Burbank, Geneseo, and Robert J. Lewis, Binghamton, both of N.Y., assignors to The Raymond Corporation, Greene, N.Y.

Filed Sep. 19, 1983, Ser. No. 533,130
Int. Cl.³ B62D *51/04*
U.S. Cl. 180—19.1 **7 Claims**

1. In a lift truck having a pair of front non-steerable load wheels spaced laterally apart at equal distances on opposite sides of a centerline, a steerable rear drive wheel mounted on a first side of said centerline, and a caster wheel assembly mounted to swivel about a castering axis located on the opposite side of said centerline, said caster wheel assembly including resiliently mounted caster wheel means adapted to rotate about an axle axis displaced from said castering axis and normally to resiliently support a portion of the weight of said truck; the improvement which comprises an auxiliary wheel mounted on said caster wheel assembly to swivel with said caster wheel means about said castering axis, and mounted so



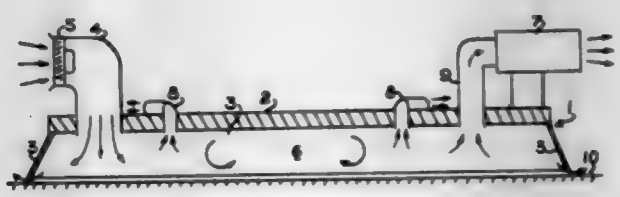
as not to engage the floor unless lateral tilting of the truck exceeds a predetermined amount.

4,534,434

PROPULSION PLANT FOR AIR-CUSHIONED VEHICLES

William B. Stocking, 981 Manzanita St., Chula Vista, Calif. 92011

Filed Jun. 2, 1983, Ser. No. 500,557
Int. Cl.³ B60V *1/15*
U.S. Cl. 180—120 **5 Claims**



1. A power plant for supporting a vehicle over a volume of pressurized air and for propelling said vehicle over a generally flat surface, which comprises:
means for creating said volume of pressurized air under the floor of said vehicle;
an air-fed engine dimensioned and oriented to displace said vehicle along said surface, said engine having an air intake; and
means for feeding a portion of said pressurized air into the air intake of said engine, said portion of pressurized air essentially providing all the air used to feed said engine.

4,534,435

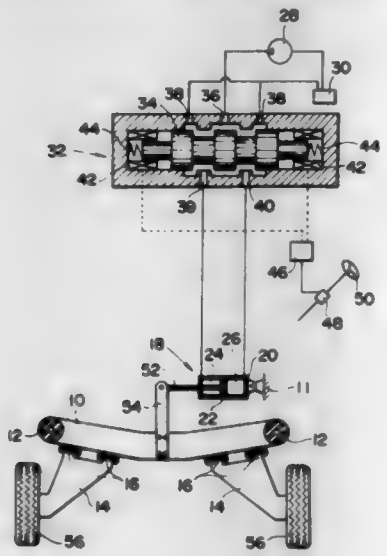
COMPLIANCE STEER CONTROL ARRANGEMENT FOR AUTOMOTIVE VEHICLE SUSPENSION

Yasuji Shibahata; Namio Irie, both of Yokohama; Kazuo Ikawa, Tokorozawa, and Yohsuke Akatzu, Yokohama, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 6, 1983, Ser. No. 501,091
Claims priority, application Japan, Jun. 7, 1982, 57-97366
Int. Cl.³ B62D *5/06, 9/00*
U.S. Cl. 180—140 **6 Claims**

1. In a suspension arrangement for a vehicle having a chassis and a steering wheel,
an elastomeric member;
a first member operatively connected to said chassis through said elastomeric member;
a road wheel operatively connected with said first member; and
an arrangement responsive to said vehicle being steered which is operatively connected to said first member for

applying a bias to said elastomeric member in a manner to change the orientation of said road wheel with respect to



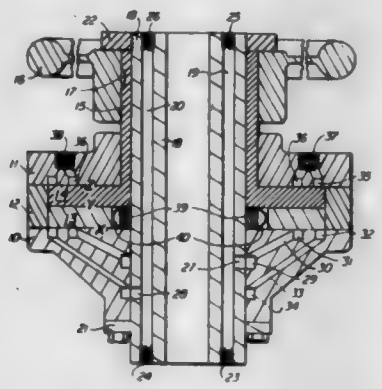
the longitudinal axis of said chassis and steer the road wheel in the same direction as the vehicle is being steered.

4,534,436

CONTROL VALVE APPARATUS AND STEERING SYSTEMS

Clement O. DuFrene, Cottage Grove, Minn., assignor to Gordon Rosenmeier, Little Falls, Minn., a part interest

Filed Aug. 25, 1983, Ser. No. 526,340
Int. Cl.³ B62D *5/08*; F15B *9/10*
U.S. Cl. 180—144 **20 Claims**



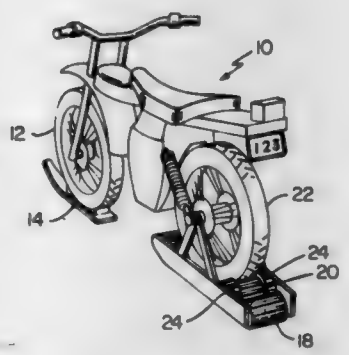
1. A control valve apparatus for fluid systems, comprising a housing having base passage means for source fluid opening at a first valve-facing surface within said housing and action passage means for work-performing fluid opening at a second valve-facing surface within said housing, said first and second valve-facing surfaces being in opposing spaced apart relationship, an adjustable valve assembly within said housing at a location between said first and second valve-facing surfaces, said valve assembly comprising a pair of interfaced valve members individually rotatable about a common axis and normally in a neutral relationship in which no through passages are formed between said base passage means and said action passage means, one said valve member being a driver member and the other a follower member, means for effecting rotation of said driver member independently of said follower member to thereby alter said neutral relationship and form fluid passage means through said valve assembly for fluid passage between said base passage means and said action passage means, and reactive damming means within said valve assembly and including metering passage means therefor distinct from said fluid passage means of said valve assembly, said reactive damming means being fed through said metering passage means by a metered portion of the fluid that passes through said fluid passage means of said valve assembly to thereby effect subsequent followup rotation by said follower member and reform said neutral relationship after termination of said driver member rotation.

4,534,437

SNOW TRACK BELT FOR MOTORCYCLE

Anderson W. Howerton, Christian County, and James A. Lewis, Springfield, both of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Sep. 9, 1983, Ser. No. 530,818
Int. Cl.³ B62M *27/02*
U.S. Cl. 180—185 **20 Claims**



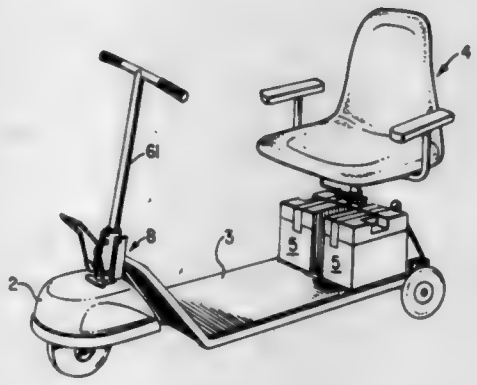
1. In an endless flat-type traction belt for a driving attachment for motorcycles having a main body made of an abrasion resistant, high tear strength elastomeric material and being adapted to be moved in an endless path along a longitudinal axis, said main body comprising a substantially smooth inner surface and a ground engaging outer surface having a plurality of traction increasing portions thereon, the improvement wherein said belt has flexibility sufficient to at least flex over a 2 inch diameter roller, said traction increasing portions comprise deep teeth which have a depth comprising 60–75% of the total belt thickness, said traction increasing portions being adapted for acting as a sprocket engaging means for driving said belt, said deep teeth having a substantially uniform tooth pitch, and said belt having a smooth thin flexible inner surface.

4,534,438

MOTORIZED VEHICLES

Donald J. Mowat, and H. Michael Doman, both of Kitchener, Canada, assignors to Midon Engineered Products, Inc., Kitchener, Canada

Division of Ser. No. 250,140, Apr. 3, 1981, Pat. No. 4,452,327.
This application Apr. 16, 1984, Ser. No. 600,356
Claims priority, application Canada, Nov. 6, 1980, 364194
Int. Cl.³ B60B *35/10*; B60T *1/04*; B62K *5/06*
U.S. Cl. 180—209 **1 Claim**



1. A telescopic axle assembly for use on a vehicle, comprising, when viewed in plan:

a V-shaped axle housing, the arms of said V extending towards the rearmost corners of the vvehicle;

an axle member having a vehicle supporting wheel rotatably affixed to the outer end thereof slidably adjustable within

each of said arms forming said housing, said axle member being adjustable within said arm between a fully retracted and a fully extended position to simultaneously vary the wheel base and the track of said vehicle, wherein each of said axle members includes a plurality of pairs of axially aligned holes formed therein and each arm of said axle housing has axially aligned apertures formed therein, said pairs of holes being alignable with said apertures to receive a retractable pin member therethrough for fixing the position of said axle member within said arm; and

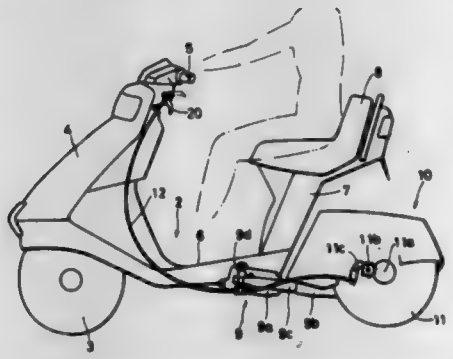
brake means affixed to at least one of said axle members adjacent an inner surface of said vehicle supporting wheel such that said brake means move with adjustments to the position of said axle member to remain adjacent said wheel, said brake means being adapted to permit the rotation of said vehicle supporting wheel and comprising brake mounting means provided adjacent said wheel, a cam member pivotally supported by said mounting means, said cam member being actuatable between a wheel braking and a wheel releasing position and resilient means disposed between said cam member and said wheel such that in the braking position of said cam member, said cam member urges said resilient means into frictional engagement with said wheel.

4,534,439

PARKING LOCK DEVICE FOR MOTOR TRICYCLES

Taiichi Shimazaki, and Masahico Takenaka, both of Saitama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 24, 1982, Ser. No. 411,078
Claims priority, application Japan, Aug. 27, 1981, 56-134498
Int. Cl.³ B62D *61/08*; B62L *3/02*
U.S. Cl. 180—215 **7 Claims**



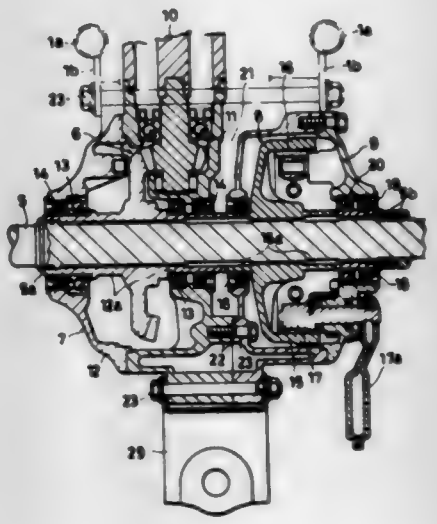
6. A parking lock device for an engine powered, small-sized vehicle, having brake lock means (11*a*, 11*b*, 11*c*) for braking movement of said vehicle (1), and key switch means (36) for starting and stopping an engine powering said vehicle, said parking lock device comprising parking operation lever means for actuating at least said brake lock means when in a parking position, said key switch means includes a lock position mode (c) where a key is allowed to be inserted into or pulled apart from said key switch means, and an engagement member (38) which is operative in said lock position mode to cooperate with said parking operation lever means to hold said operation lever means in the parking position while allowing insertion or withdrawal of said key; wherein said operation lever means including an operation lever (20), a bracket (15,17) fixed to a steering handle of said vehicle, a rotary shaft (19) which is rotatably supported relative to said bracket and one end of which is fixed to said operation lever, a lock plate (21) fixed to the other end of said rotary shaft, and an arm (24) fixed to a middle portion of said rotary shaft, and means (30, 33, 12) for actuating said brake lock means (11*a*, 11*b*, 11*c*), said actuating means being controllable to selectively actuate said brake lock means in response to movement of said arm (24), said engagement member (38) being biased toward said lock plate (21), wherein when said operation lever (20) is rotated in one direction said actuating means (30, 33, 12) is operative to actuate said brake means (11*a*, 11*b*, 11*c*) while at the same time, said lock plate is rotated to thereby move said engagement member (38) from its retracted position to its extended position allowing said key switch means to be positioned in its lock mode, whereby said key may be pulled apart from said key switch means (36).

4,534,440

APPARATUS FOR ATTACHING TRANSMISSION CASING AND BRAKE CASING IN MOTORIZED THREE-WHEELED VEHICLE

Satoshi Sekizaki, Toyama; Eiji Hosoya, Asaka, and Hotoyuki Takasu, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,674
Claims priority, application Japan, Nov. 10, 1982, 57-196086
Int. Cl.³ B62K *5/04*
U.S. Cl. 180—215 **4 Claims**



1. An apparatus for attaching a transmission casing and a brake casing in a motorized three-wheeled vehicle having a rear wheel axle interconnecting between a pair of right and left rear wheels, a transmission casing housing a final stage driving mechanism, a brake casing housing a brake mechanism provided around the axis of the axle, characterized in that the transmission casing and the brake casing are composed of respective sealed casings, the two casings are disposed side by side leaving a space therebetween, and are combined together at circumferentially arranged plural positions with plural fastening bolts said two casings being connected to said vehicle and supporting said axle.

4,534,441

SEAT BELT RETRACTOR

Ken Kamijo, Zushi, and Yasuyuki Uekusa, Yokosuka, both of Japan, assignors to Nissan Motor Co., Ltd., Japan

Filed Mar. 15, 1984, Ser. No. 589,751
Claims priority, application Japan, Apr. 14, 1983, 58-66160
Int. Cl.³ B60R *21/10*
U.S. Cl. 180—268 **5 Claims**

1. A seat belt retractor comprising:

a housing;

a take-up shaft rotatably mounted to said housing;

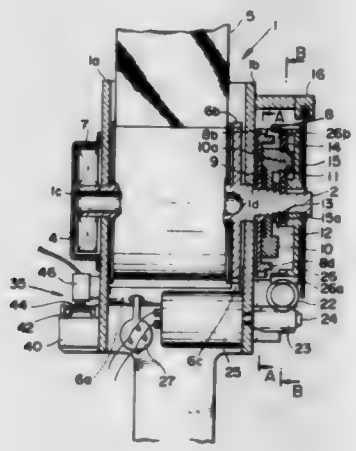
a spring means for biasing said take-up shaft in a belt retracting direction of retracting a seat belt;

a gear mechanism operatively coupled to said take-up shaft;

a tensionless mechanism operatively coupled to said gear mechanism and operable to prevent said take-up shaft from rotating in said belt retracting direction;

a motor actuated slack control mechanism operatively cou-

pled to said gear mechanism and operable to rotate said take-up shaft; and



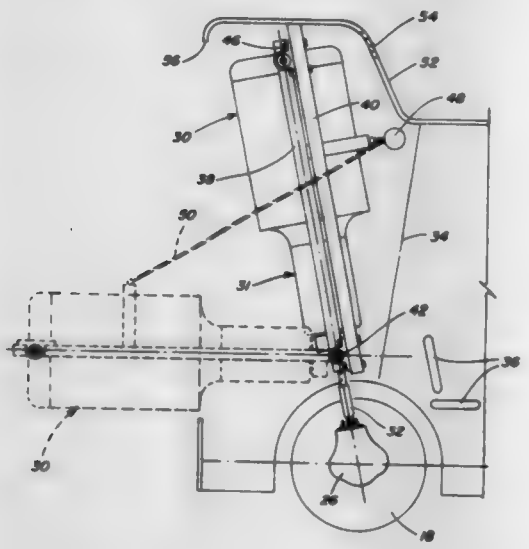
means for controlling operation of said tensionless mechanism and said motor actuated slack control mechanism.

4,534,442

VERTICALLY INSTALLED ENGINE LOW FLOOR BUS

Bela Botar, 10205 Collins Ave., Miami, Fla. 33154

Filed Jun. 14, 1982, Ser. No. 388,119
Int. Cl.³ C04B *43/00*
U.S. Cl. 180—294 **2 Claims**



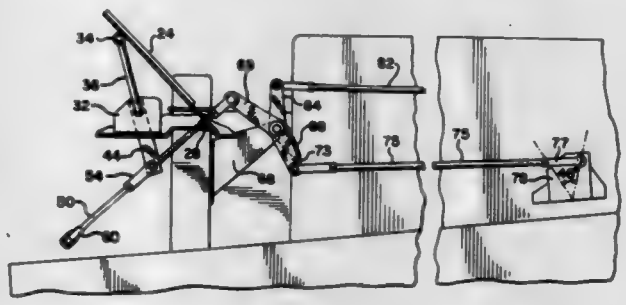
1. A vertically installed engine bus comprising a bus body having front steerable wheels and rear drive wheels interconnected by a drive axle assembly, a floor, and drive motor and transmission means connected to the drive axle assembly, said drive motor and transmission means being disposed vertically above and perpendicular to the drive axle assembly thereby enabling the drive axle assembly and rear wheels to be oriented closer to the rear of the body and increasing the wheelbase without increasing the overall length of the bus, said body having a rear wall providing an insulated partition between the rear of the floor and the compartment receiving the drive motor and transmission means, said floor being disposed in a single plane and extending forwardly from the rear axle assembly and locatable in a horizontal plane below the upper limit of movement of the drive axle assembly whereby the floor may be positioned closer to the ground surface, and a rearmost seat assembly affixed to the body forwardly of the rear wall in a manner eliminating access to the drive motor and transmission means compartment through the rear wall, said drive motor and transmission means being supported from a sub-frame, means pivotally supporting the lower end of the sub-frame from the body to enable the drive motor and transmission means to pivot about an axis transverse to the body to a generally horizontal position extending longitudinally of the body for easy access to all areas of the drive motor and transmission means, said body having air intake means adjacent the upper surface thereof to enable clean cooling air to be circulated downwardly over the drive motor and transmission means for discharge at the lower end to eliminate entrainment of dust and dirt into the cooling air as occurs when the air intake means is at the rear lower portion of the bus, said sub-frame being retained in upwardly extending position by removable fastener means adjacent the upper end thereof, winch means for raising and lowering the sub-frame, drive motor and transmission means about the transverse axis defined by the pivotal support means, said pivotal support means including rubber cushioned stub shafts.

4,534,443

FOLDABLE THROTTLE CONTROL LINKAGE FOR A TILTABLE TRUCK CAB

Stanley A. Hurst, Plainfield, Ill., assignor to International Harvester Company, Chicago, Ill.

Filed Nov. 9, 1983, Ser. No. 550,154
Int. Cl.³ B60K *19/02*
U.S. Cl. 180—328 **10 Claims**



1. A motion transmitting linkage system interconnecting an engine means mounted on a vehicle rigid frame and a cab pivotally carried by said frame, comprising:

first control means disposed in said cab and moveable relatively thereof;

a second control means mounted on said engine means;

a folding rod assembly interconnecting said first control means with said second control means and comprising a plurality of chain-like elements pivotally interlinked and guiding movement of said second means when said assembly is collapsed;

said cab tiltable into its raised position together with said first control means from a lowered engine-enclosing position;

said rod assembly being able to automatically and continually fold away or fold down by a body translation between its collapsed position corresponding to said cab lowered position and a fold-out position correlated to said raised position;

said rod assembly preventing an oscillation of said cab and said engine in unison, while maintaining a positive communication between said first and second control means, in said cab lowered position.

4,534,444

INSULATED BOOM STRUCTURE FOR TELESCOPING AERIAL LIFT

Van Z. Smith, Waco, Tex., assignor to Time Manufacturing Company, Waco, Tex.

Continuation of Ser. No. 526,978, Aug. 29, 1983, abandoned.
This application Aug. 20, 1984, Ser. No. 642,158
Int. Cl.³ B66F *11/04*
U.S. Cl. 182—2 **6 Claims**

1. Improved telescoping boom structure for an aerial lift of the personnel carrying type comprising:

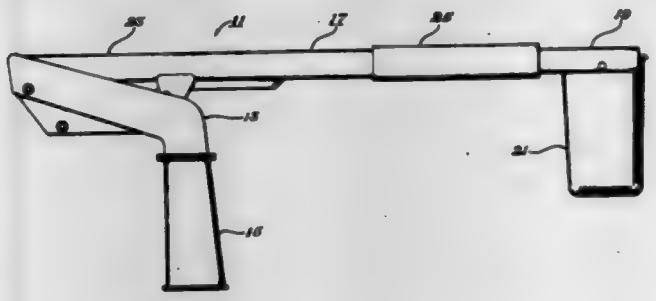
a. a lower boom section,

b. an upper boom section supported by said lower boom section for telescoping movement within said lower boom section, with said upper boom section being made of an

electric insulating material and adapted for mounting a personnel carrier bucket at its outer end portion;

c. means for powering said upper boom for extending and retracting movement;

d. said lower boom section having a main portion made of metal and having an electrically conductive upper extremity and an outer end portion made of electric insulating material,



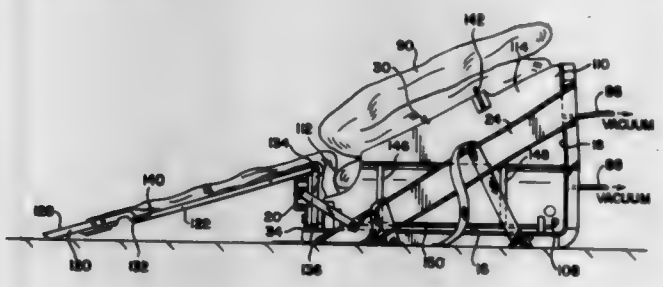
with said outer end portion, when said upper boom section is fully retracted, extending beyond said electrically conductive upper extremity for a distance sufficient to insure that a person occupying the bucket could not reach the metal portion of the lower boom section and that safe leakage current levels will not be exceeded in the presence of high voltage.

4,534,445

AIRCRAFT SLIDE PACKING FIXTURE

John M. Fisher, Cuyahoga Falls, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed May 14, 1984, Ser. No. 609,617
Int. Cl.³ B64D *25/14*
U.S. Cl. 182—48 **5 Claims**



1. A packboard fixture device for assisting in the positioning of a deflated pneumatic slide into a rigid packboard locatable in the packboard fixture device, the device including a cradle having a base plate, a long upstanding end wall and a short upstanding end wall pivotal with respect to the base plate, a separate pressure block mountable over the device on the side opposite the base plate between the end walls and further including strap means for applying pressure to the pressure block for movement toward the base plate to uniformly compress a deflated pneumatic slide into the packboard.

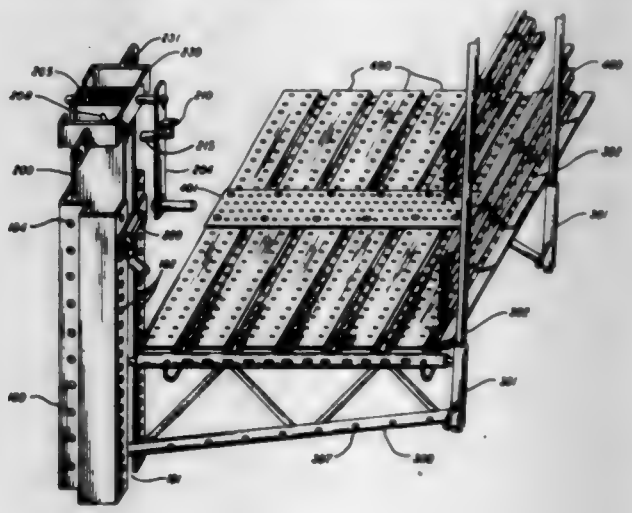
4,534,446

SYSTEM OF MOVABLE FOOTBRIDGES FOR THEIR USE IN THE CONSTRUCTION

Salvador Pujol-Barcons, Antonio Duenez Orozco 170, Cuidad Industrial, Terreon, Coah., Mexico

Filed Dec. 20, 1983, Ser. No. 563,667
Int. Cl.³ E04G *3/14*
U.S. Cl. 182—146 **9 Claims**

1. A walkway system which comprises perforated rails which may be fixed directed or indirectly to a structure wherein said rails comprise a substantially hollow profile with an opening along one side, said perforations in the rail being disposed at regular intervals on either side of said opening and a walkway wherein said walkway comprises a sliding element, the major part of which is disposed within said hollow profile, there being mounted on said profile escalator wheels having projections thereon which are cooperable with the perforations in the rail, said wheels being rotatable by a manually operable handle extending through the opening in the rails.

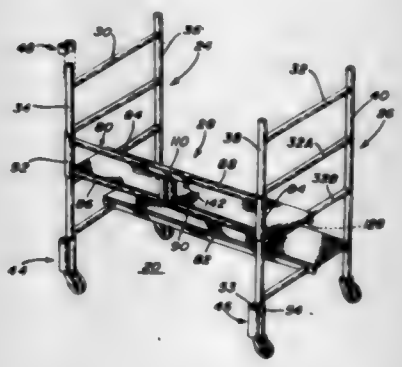


4,534,447

FOLDABLE LADDER SCAFFOLD

Lucien Champigny, 1420 St. Elzéar Blvd., West Chomedey, Canada H7L 3N2

Filed Apr. 3, 1984, Ser. No. 596,501
Int. Cl.³ E04G *1/34, 1/20*
U.S. Cl. 182—152 **3 Claims**

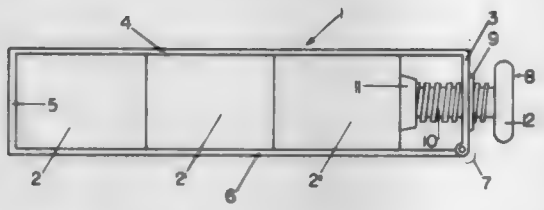


1. A foldable scaffold comprising two end ladders, each including a fore and an aft leg and a number of step rods extending between said fore and aft legs, a truss pivotally connected to said aft ladder legs at an intermediate portion of the latter, said truss being made of two sections and including hinge means interconnecting said sections for pivotal forward movement of said truss sections for a fully-extended truss position in which said sections are in end-to-end alignment to a folded truss position, said forward movement of said truss sections producing relative lateral movement of said end ladders from spaced-apart positions one toward the other to contiguous positions, and hinge means locking means to releasably fixedly imomobilize said truss sections in said fully-extended truss position, each truss section consisting of a rigid rectangular member comprising upper and lower horizontal parts interconnected by a vertical outer sleeve and a vertical inner rod, said sleeve rotatably surrounding said aft leg between two step rods of one said ladder, and said hinge means consisting of a double tube rotatably surrounding the adjacent vertical inner rods of the two rectangular members.

4,534,448
SCAFFOLD CLAMP

Peter C. Trainer, 4 Dogwood La., Easton, Conn. 06612

Filed Feb. 2, 1983, Ser. No. 463,294
Int. Cl.[3] E04G *5/08, 7/28*
U.S. Cl. 403—396 6 Claims

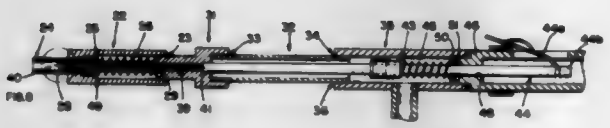


1. A scaffold clamp for securing a plurality of planks in side-by-side relationship comprising a rectangular enclosure means dimensioned to circumscribe said planks, said enclosure means comprising first and second rigid bars in parallel relationship, one pair of adjacent ends of said bars being joined through an essentially perpendicular butt member relatively shorter in length than said bars, the opposite end of said first bar being angled inwardly to form an essentially perpendicular working plate terminating in a locking means for attachment with the adjacent end of said second bar, said enclosure means bearing a press screw extending longitudinally through said plate for exerting pressure against the edges of planks enclosed by said clamp.

4,534,449
PERFORATING, SEAL-GREASING APPARATUS AND METHOD

Eldon E. Larson, Kitsap County, Wash., assignor to Eltech Innovations Inc., Bremerton, Wash.

Filed Sep. 14, 1983, Ser. No. 532,016
Int. Cl.[3] F16N *21/04, 5/02;* G01R *31/22;* A61M *5/32*
U.S. Cl. 184—105.2 9 Claims



9. A method of perforating and lubricating sealed joints made of a material that is self-sealing if perforated by a small hole, comprising:

piercing said seal with a needle to create a small self-closing hole;

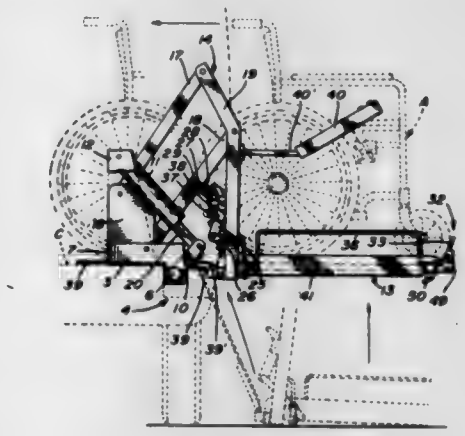
withdrawing said needle and inserting grease under pressure through said hole into said seal; and

releasing said pressure to stop the flow of grease and allowing said self-sealing material to seal said hole.

4,534,450
INVALID LIFT

Pierre Savaria, 199 St. Joseph St., Oka, Canada J0N 1E0

Filed Apr. 30, 1984, Ser. No. 605,222
Int. Cl.[3] B66B *9/20*
U.S. Cl. 187—9 R 7 Claims



1. A lift assembly for use in association with a vehicle having a door opening and a floor, said assembly comprising an anchoring plate means fixedly secured to said floor inwardly of said door opening and a platform rotatable relative to said anchoring plate means between an upstanding stored position inside the vehicle and an outside intermediate position level and parallel with the vehicle floor at said door opening, and movable from that position to a lower position at ground level and inversely, said platform including a platform frame, and two independent platform sections pivotally secured to said platform frame respectively, said platform sections being rotatable between a position where they lie in the same plane to form a flat surface and a transverse opened position to allow a non-invalid person to use the vehicle door when said platform is in stored position, a pair of armatures, swingable in parallel paths normal to and at each side of said platform, connected to the latter and pivotally connected to said anchoring plate means, said armatures each consisting of a deformable parallelogram system including upper and lower superposed parallel members and a substantially vertical member which is pivotally connected at its upper end to said parallel members and to said platform at its lower end and which extends at a lower level than said superposed members when said platform is at said lower position, bi-directional motor means carried by said anchoring plate means and connected to said armatures to swing the latter and a pair of articulated members rotating said platform between said intermediate position and said upstanding stored position when said armatures are moving toward the interior of the vehicle, said articulated members each comprising an upper link and a lower link secured together in rotative relationship, said upper link being pivotally secured to said vertical member of said armatures and pivoting when abutting with the lower parallel member of said armature, the rotation of said upper link displacing the lower link which is pivotally connected to said platform frame.

4,534,451
INCLINED ELEVATOR WITH SINGLE RAIL

Karl Peter, Vorarlberg, Austria, assignor to ROMEX Aktiengesellschaft, Bendern, Liechtenstein

Filed May 24, 1983, Ser. No. 497,762
Claims priority, application Austria, May 26, 1982, 2066/82
Int. Cl.[3] B66B *9/06*
U.S. Cl. 187—12 5 Claims

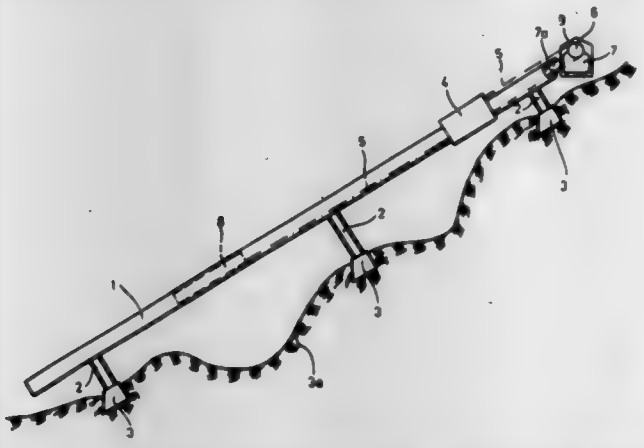
2. An elevator comprising:

a single rail inclined between a low location and a high location and formed as a closed polygonal profile tube having a diagonal disposed vertically and a pair of downwardly and outwardly inclined surfaces joined at an apex of said rail;

a vehicle displaceable on said rail between said locations above said surfaces;

a chain affixed to said vehicle, passing around a sprocket at said upper location and extending downwardly into the through said tube;

a counterweight on a lower end of said chain in said tube,



said counterweight having a bevel on a lower end thereof; and

a body of liquid in at least a lower portion of said tube whereby said bevel upon said counterweight encountering said body of liquid causes the counterweight to be pressed against walls of said tube to brake descent of said counterweight.

4,534,452

HYDRAULIC ELEVATOR

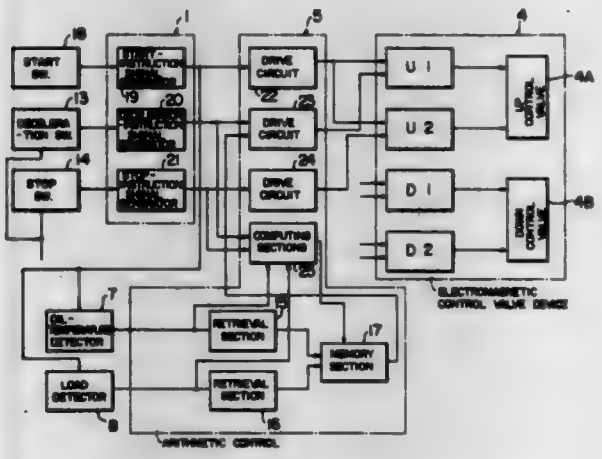
Tsuyoshi Ogasawara; Ken Ichiryu, both of Ibaraki; Ichiro Nakamura, and Yasuo Kido, both of Katsuta, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 7, 1984, Ser. No. 607,651

Claims priority, application Japan, May 6, 1983, 58-78261

Int. Cl.³ B66B *1/04*

U.S. Cl. 187—29 A **4 Claims**



1. In a hydraulic elevator system in which a cage is moved by hydraulic means including a cylinder and a plunger, a control apparatus comprising:

instruction means for producing a cage deceleration instruction in response to the cage reaching a predetermined deceleration position in advance of a stop position where the cage is to be stopped;

memory means for storing a plurality of values of deceleration delay time as a function of the termperature of the oil used for driving the hydraulic means and the load of the elevator;

data retrieval means connected to said memory means for retrieving one of said plurality of values corresponding to detected values of the oil temperature and elevator load; and

drive means responsive to said deceleration instruction for causing said cage to begin to decelerate after expiration of a delay time corresponding to the value retrieved by said data retrieval means following the producing of said deceleration instruction by said instruction means.

4,534,453

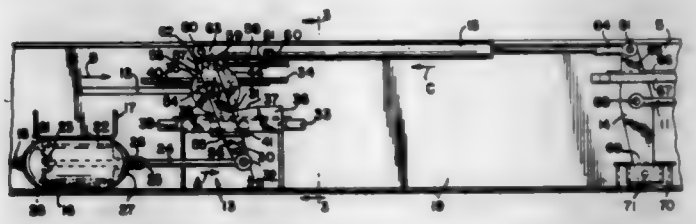
BRAKE LEVER ASSEMBLY FOR RAILWAY CAR

Donald B. Yates, Homewood, Ill., assignor to Pullman Standard, Inc., Chicago, Ill.

Filed Oct. 17, 1983, Ser. No. 542,721

Int. Cl.³ B61H *13/20, 13/38*

U.S. Cl. 188—52 **13 Claims**



1. In a railway car having a longitudinally extending draft structure and a brake system, said brake system having a first brake rod for connection to a first brake means at a first wheel truck and a second brake rod for connection to a second brake means at a second wheel truck and a braking linear force imposer having a nonextended, nonbraking position and an extended braking position, an improved brake lever assembly comprising:

a brake lever mounted in a substantially vertically extending position, said brake lever having a first end portion pivotally connected to said linear force imposer, a second end portion pivotally connected to one of said first and said second brake rods and an intermediate portion pivotally connected to said other of said first and said second brake rods;

guide means for enabling said brake lever to move substantially parallel to said draft structure;

brake lever support means pivotally engaged with a portion of said brake lever intermediate said first and said second end portions of said brake lever; and

biasing means for urging said brake lever support means in a direction for urging said first and said second brake means out of braking contact with said respective first and second wheel trucks and for urging said linear force imposer to said nonextended, nonbraking position for eliminating brake drag of said brake means on said wheel trucks.

4,534,454

COMBINATION CLUTCH-BRAKE

Edward D. Brooks, Fridley, Minn., assignor to Horton Manufacturing Co., Inc., Minneapolis, Minn.

Filed Nov. 30, 1981, Ser. No. 325,857

Int. Cl.³ B60K *41/24*

U.S. Cl. 192—18 A **18 Claims**

1. A combination clutch-brake comprising, in combination:

(a) a housing,

(b) an output shaft,

(c) means rotatably mounting said output shaft in said housing,

(d) a first firstion disc including a first radially extending, flat ring portion connected to a spaced second radially extending, flat ring portion in a parallel relation by spaced webs and having a first friction lining on the face of the first flat ring portion and

(e) a first hub connected thereto,

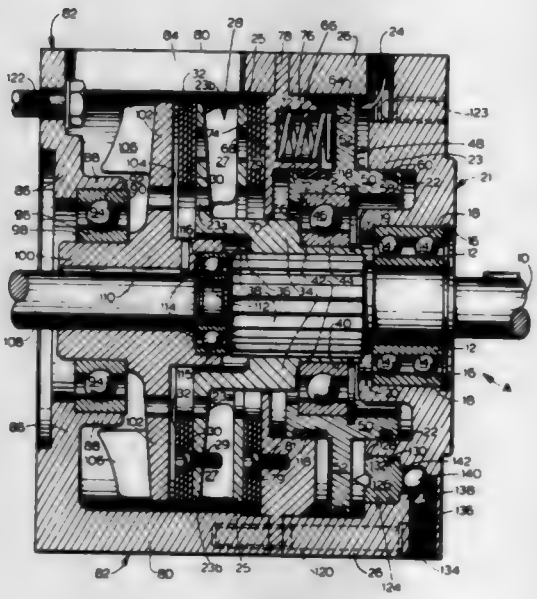
(f) means mounting said hub slideable on said output shaft and rotatable therewith,

(g) a single annular piston,

(h) means forming an annular cylinder in said housing in conjunction with said piston,

(i) means slideably mounting said piston in said cylinder,

(j) means mounting said piston on said first hub for axial movement therewith and for rotation of said hub and output shaft relative to said piston,
(k) resilient means comprising a pluraity of coil springs,
(l) said means slideably mounting said piston including means for mounting said resilient mens comprising a spring housing fixed in said housing adjacent said piston having a plurality of axially extending recesses for receiving said coil springs for normally urging said piston and said first hub in one axial direction to space said first friction lining on said first friction disc from
(m) a driven friction disc mounted on
(n) a second hub rotatable within said housing and to engage.
(o) said second flat ring portion of said first friction disc with a radially extending second friction lining mounted on said means mounting said resilient means opposite to the axially extending spring recesses to thereby brake said shaft,
(p) means for connecting an input shaft to said second hub of said driven friction disc for the driving thereof, and
(q) means for introducing fluid pressure into said cylinder and upon said piston for movement of said first friction



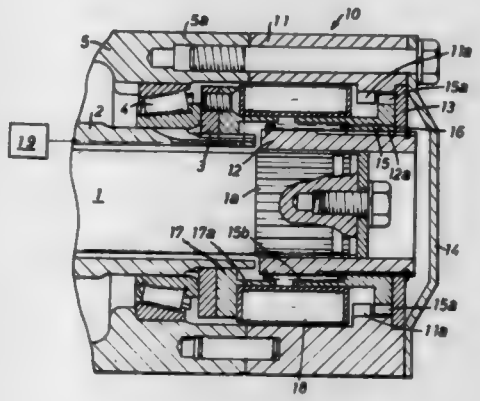
disc from said second lining on said means mounting said resilient means against the action of said resilient means and into engagement with said driven friction disc to thereby clutch in and rotate said output shaft; wherein the piston comprises, in combination: an axially disposed annular flange portion having a first end and a second end; an annular portion having a first end and a second, free end, with the first end of the annular portion being connected to the annular flange portion with the annular portion extending radially outward from the annular flange portion between its first and second ends; and wherein the means slideably mounting said piston includes a radially extending body portion formed in the housing having a right angular annular flange and a right angular projection, with the free end of the annular portion of the piston abutting with and for reciprocal movement on the right angular annular flange of the body portion and the axially disposed annular flange of the piston being slideable adjacent its first end on the right angular projection of the second member; and wherein the annular flange portion of the piston is slideable adjacent its second end on the spring housing.

4,534,455

WHEEL HUB CLUTCH ASSEMBLY

Motoi Fujikawa, Anjo, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Aug. 19, 1983, Ser. No. 524,668
Claims priority, application Japan, Aug. 26, 1982, 57-148317
Int. Cl.³ F16D *27/09*
U.S. Cl. 192—40 **4 Claims**



1. An electrically operated wheel hub clutch assembly for automotive vehicles having a driveable axle rotatable in a stationary axle tube, a wheel hub of magnetic material rotatable on said axle tube, and an electric control circuit to produce an electric control signal therefrom when said axle is subjected to rotation under power, the wheel hub clutch assembly comprising:

a cylindrical body of magnetic material integrally formed therein with a first clutch element and to be fastened to the outer end of said wheel hub;

an inner sleeve member of non-magnetic material fixedly mounted on the outer end of said axle and located within said cylindrical body;

a cylindrical clutch member of magnetic material integrally formed with a second clutch element to be engaged with the first clutch element of said body and axially slidably mounted on said inner sleeve member for rotation therewith;

resilient means for biasing said clutch member toward an unlocked position in which the second clutch element is disengaged from the first clutch element;

an annular core fixedly mounted on the outer end portion of said axle tube and having a cylindrical portion opposed to the inner end portion of said clutch member; and

a magnetic coil fixedly coupled over the cylindrical portion of said core and being responsive to the electric control signal from said electric control circuit to produce an axial attraction force between said clutch member and said core so as to move said clutch member toward a lock position in which the second clutch element of said clutch member is engaged with the first clutch element of said body.

4,534,456

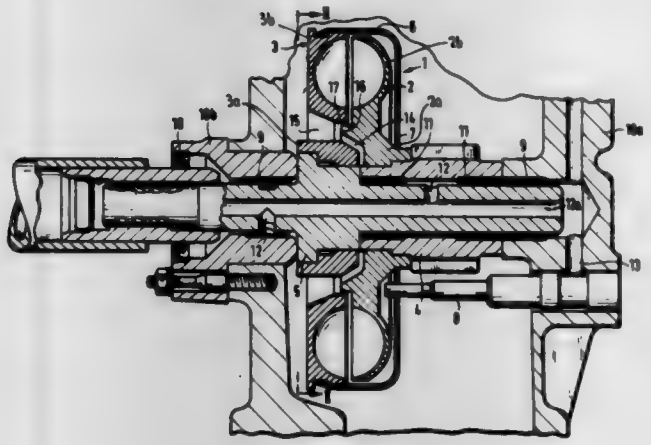
HYDRODYNAMIC POWER TRANSMISSION UNIT

Paul J. Slezak, Pierrefonds, Canada, assignor to KHD Canada, Inc., Montreal, Canada

Filed Aug. 30, 1982, Ser. No. 413,153
Claims priority, application Fed. Rep. of Germany, Apr. 3, 1982, 3212505
Int. Cl.³ F16D *33/16, 33/20*
U.S. Cl. 192—58 A **9 Claims**

1. A hydrodynamic power transmission unit which comprises a housing; a hollow drive shaft which is mounted in the housing for rotation; a driven shaft which extends into the housing and is mounted on mounting bearings so as to be rotatable with respect thereto, said driven shaft extending through and being concentric with said drive shaft so as to provide an annular space therebetween; a number of cylindrical bearings positioned in said annular space between said drive shaft and said driven shaft; an impeller disc which is

connected to said drive shaft to extend radially outwardly therefrom, said impeller disc including a base portion and a head portion, said head portion of said impeller disc having a cup-shaped cross section and blades therein; and a turbine disc which is connected to said driven shaft to extend radially outwardly therefrom, said turbine disc including a base portion and a head portion, said head portion of said turbine disc having a cup-shaped cross section and blades therein; the head portion of said impeller disc facing the head portion of said turbine disc so that, with a drive fluid therebetween, rotation of the impeller disc by said drive shaft will cause rotation of



said turbine disc and thus said driven shaft; the base portion of said turbine disc defining an annular recess which faces the base portion of said impeller disc, the base portion of said impeller disc including an annular rib which extends into the annular recess in the base portion of said turbine disc, and the facing sides of the base portions of said turbine and impeller discs being shaped to provide at least one flow passage which extends from said annular space to said annular recess at a point radially inwardly of said annular rib, each flow passage functioning to remove pressurized lubricating oil, which has lubricated said cylindrical bearings and said mounting bearings, from said annular space without mixing with said drive fluid.

4,534,457

MULTI-DISC CLUTCH OR BRAKE WITH A RESILIENT CLAMPING MEANS INSERTABLE BETWEEN A LAMELLA AND THE ASSOCIATED LAMELLA CARRIER

Georg Eltze, Stuttgart; Klaus Lüttge, Fellbach; Jürgen Pickard, Wernau; Hans Rübmann, and Helmut Sandner, both of Neuhausen, all of Fed. Rep. of Germany, assignors to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

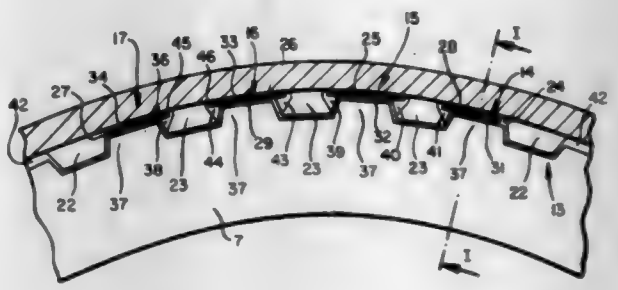
Filed Jan. 17, 1984, Ser. No. 571,430

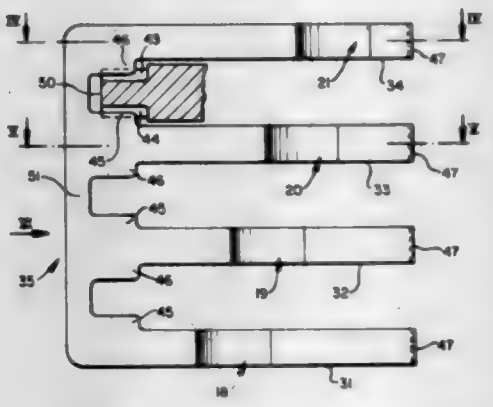
Claims priority, application Fed. Rep. of Germany, Jan. 26, 1983, 3302430

Int. Cl.³ F16D *13/52, 3/12*

U.S. Cl. 192—70.2 **20 Claims**

1. A multi-disc clutch or brake, comprising several lamellae in the form of annular discs operable to be essentially non-rotatably fixed, relative to a lamella carrier which is fixed in terms of rotation in relation to one of two clutch or brake parts, by means of a releasable positive connection, and in which each disc is radially supported on the lamella carrier exclusively at an individual point by means of its own resilient clamping means having an engagement surface, the clamping means being retained on the lamella carrier, at least one annular gap being provided which is located, in the peripheral directions of the axis of rotation, between two engaging teeth of the positive connection and is open in the two directions of the axis of rotation, said gap being limited radially in one direction by a cylindrical shell portion of a lamella and in the other direction by a cylindrical shell portion of the lamella carrier, the engagement surface of the clamping means, which is operable as support, being located in the annular gap and cooperates with the shell portion of the lamella, and a comb-shaped holder means having several legs, two clamping means for two lamellae succeeding one another in the directions of the axis of rotation being arranged on different legs of the holder means,





and each leg of the holder means being operable to be inserted into a separate annular gap.

4,534,458

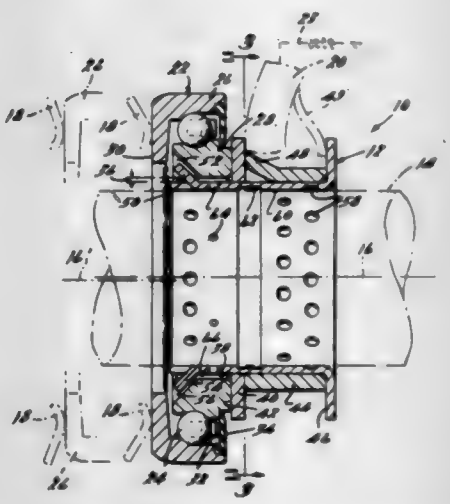
SELF-ALIGNING CLUTCH RELEASE BEARING ASSEMBLY

Eli M. Ladin, Ann Arbor, Mich., assignor to Federal-Mogul Corporation, Southfield, Mich.

Filed Jan. 25, 1982, Ser. No. 342,255

Int. Cl.³ F16D *23/14*

U.S. Cl. 192—98 **3 Claims**



1. An improved self-aligning clutch release bearing assembly for a friction clutch in a vehicle power train having clutch release lever means rotatable about an input shaft axis of said clutch, a guide member disposed generally coaxially around a transmission shaft axis of said power train, and having an actuating means, said assembly comprising:

a tubular bearing carrier slidably mounted on said guide member for reciprocable, translational movement therealong in response to actuation of said actuating means, at least a portion of said bearing carrier being disposed radially between said guide member and said actuating means;

a bearing including a plurality of anti-friction elements interposed between radially spaced inner and outer race mem-

bers, one of said race members being adapted for rotation and having an annular radially extending bearing surface for engaging said clutch release lever means;

said bearing being disposed substantially coaxially around said bearing carrier between said clutch release lever means and said actuating means and formed to provide a predetermined radial clearance between said bearing and an axially extending surface of said bearing carrier for permitting said bearing to shift radially with respect to said bearing carrier, so that said bearing may coaxially align itself with said clutch input axis under a dynamic force exerted on said bearing by said clutch release lever means, said actuating means being continuously biased to urge said bearing axially toward said clutch release lever means and to hold said bearing surface in constant engagement with said clutch release lever means; and

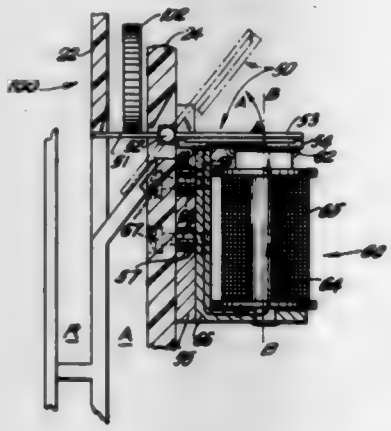
anti-rotation means, including at least two circumferentially spaced generally radially outwardly extending projections provided on said bearing carrier and at least two generally radially outwardly extending notches in said other race member for receiving said bearing carrier projections, said notches and said projections being dimensioned relative to each other to provide sufficient clearance therebetween to allow relatively free self-aligning radial movement of said bearing with respect to said clutch input shaft axis, said other race member notches and said bearing carrier projections extending generally radially outwardly to cooperate in a circumferentially interfering relationship with one another in order to substantially prevent the rotation of said other race member with respect to said bearing carrier, said notches and said projections also extending generally radially outwardly to cooperate in an axially interfering relationship with one another in order to substantially restrict relative axial movement thereof and to substantially retain said bearing in an assembled relationship with said bearing carrier.

4,534,459

LOW POWER COIN ROUTING GATE APPARATUS

George A. Plesko, Graterford, Pa., assignor to Mars Incorporated, McLean, Va.

Filed Mar. 1, 1984, Ser. No. 585,252
Int. Cl.[3] G07F 9/04
U.S. Cl. 194—1 D 9 Claims



1. A coin routing gate for selectively routing coins including a lightest and a heaviest acceptable coin in a coin handling mechanism comprising

a gate member pivotally mounted in the proximity of a coin track along which coins roll edgewise, the gate member having first and second portions and a medial axis about which the gate member pivots between a first position wherein the first portion forms a part of the coin track and a second position wherein the coin track is interrupted, the second portion serving in the absence of a downward force on the first portion of the gate member exceeding a predetermined force to counterbalance the gate into the first position, the second portion including a magnetically attractable region,

a low power, selectively energizable, electromagnet having a pole face in close proximity to the magnetically attractable region when the gate is in the first position,

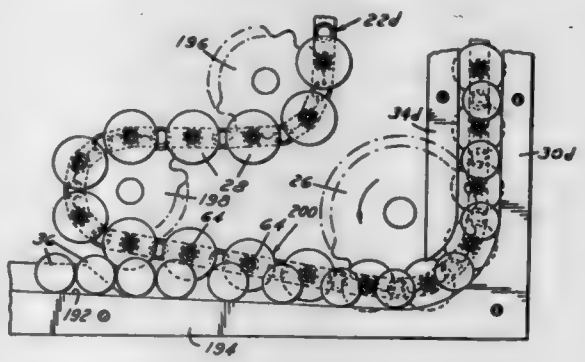
whereby when the electromagnet is not energized and the weight of a coin inserted in the coin handling mechanism produces a downward force on the first portion exceeding the predetermined force, the gate pivots into the second position to thereby prevent the coin from continuing along the coin track, and when the electromagnet is selectively energized, the electromagnet provides magnetic force sufficient to hold the magnetically attractive region to sustain the gate in the first position thereby allowing the coin to roll along the first portion of the gate.

4,534,460

CHAIN-DRIVEN POCKET ELEVATOR

James T. Graham, Rochester, and Gerald E. Johnson, Flint, both of Mich., assignors to Lamb Technicon Corp., Warren, Mich.

Filed Jan. 14, 1983, Ser. No. 457,970
Int. Cl.[3] B65A 47/84
U.S. Cl. 198—482 5 Claims



1. A pocket elevator for workpieces of circular cross section comprising

an endless chain including means for driving said chain in a closed loop at uniform velocity in the direction of its length,

a plurality of spools fixedly mounted on said chain and uniformly spaced from each other lengthwise of said chain with spool axes perpendicular to said loop to define therebetween a plurality of identical pockets for receiving and capturing said workpiece,

each of said spools comprising a pair of discs separated by a spacer, each said pocket being defined by adjacent discs of successive spools and spacers of adjacent spools, separation between said spacers of adjacent spools being greater than the diameter of said workpieces circular cross section but less than twice said diameter,

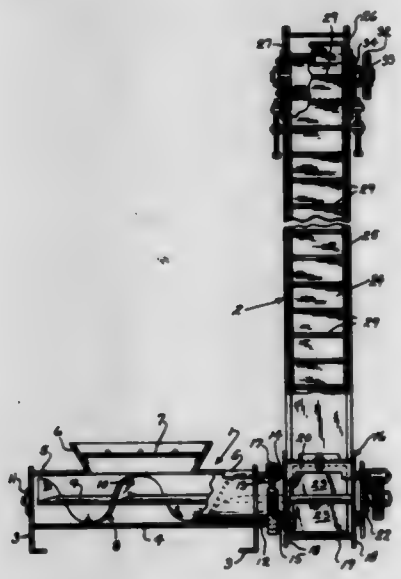
a feed chute including a guide having a fixed continuous downwardly inclined sloping linear guide surface disposed to receive workpieces adjacent its upper end in a line on said surface with the axis of said circular cross section perpendicularly to said line such that said workpieces tend to roll downwardly along said surface by force of gravity, and

a pair of chain sprockets spaced apart lengthwise of said guide surface for directing said chain and pockets downwardly between said sprockets at an acute angle adjacent to and in the direction of slope of said surface such that said pockets successively engage said workpieces against said surface between said sprockets and capture successive ones of workpieces in successive corresponding ones of said pockets.

4,534,461
CONVEYOR CONSTRUCTION FOR CONVEYING MATERIALS TO AN ELEVATED LOCATION

Charles R. Silverthorn, Eureka, and Marcus N. Allhands, Gridley, both of Ill., assignors to A. O. Smith Harvestore Products, Inc., Arlington Heights, Ill.

Filed Aug. 18, 1982, Ser. No. 409,331
Int. Cl.[3] B65G *21/10, 37/00*
U.S. Cl. 198—592 4 Claims

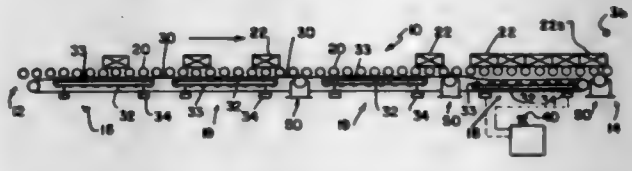


1. A conveyor construction, comprising a supporting structure, a horizontally oriented auger conveyor mounted on said supporting structure and having a feed end and a discharge end, said auger conveyor comprising an auger shaft and a spiral flight connected to said shaft, a second conveyor disposed at an angle to the horizontal and offset laterally from said auger conveyor, said second conveyor comprising a housing, an endless belt mounted for travel within said housing, said housing having an inlet opening disposed at one end and having a discharge outlet disposed at the opposite end, pivotal means for pivotally connecting said second conveyor to the discharge end of said auger conveyor for pivotal movement about the axis of said auger shaft, said pivotal means comprising a first annular fixed element secured to said auger conveyor and a second annular element secured to said housing and disposed to rotate relative to said first element, whereby said second conveyor can be pivoted relative to said auger conveyor from a substantially horizontal position to a vertical position, clamping means for clamping said two elements together to prevent rotation of said second conveyor relative to said auger conveyor, a plurality of cleats disposed in spaced relation on the belt, drive means for driving the belt, and a transfer member operably connected to said auger conveyor and disposed laterally of said inlet opening and disposed to propel said material laterally into said inlet opening, said housing having a longitudinally extending passage, said belt having a conveying run and a return run, said conveying run operating within said passage to elevate said material from the inlet opening to the discharge outlet, said housing of said second conveyor comprising a series of housing sections connected in end-to-end relation, each housing section comprising a pair of spaced side members and a pair of end members connecting the corresponding edges of the side members, a trough member spaced inwardly from one of said end members to define said longitudinally extending passage, the ends of the end members and trough members of each section being offset longitudinally from the corresponding ends of the side members of said section so that the joints between adjacent ends of the end members and trough members are staggered with respect to the joints between adjacent ends of the side members, each end member including a central section extending between the side members, a lip disposed on one end of each central section, said lip being planar with said central section, the lip on the end member of one housing section being disposed in lapping relation with the end of the central section of the end member of the next adjacent housing section, each trough member including a central web disposed parallel to the central sections of said end members and extending between said side members, a second lip disposed on one end of the central web of each trough member, said second lip being planar with said central web, the second lip of the trough member of one housing section being disposed in lapping relation with the central web of the trough member of the next adjacent housing section.

4,534,462
MOTION DETECTOR AND CONTROL SYSTEM FOR AN ACCUMULATING LIVE CONVEYOR

Alan A. Hoover, New Palestine, and Richard D. Harris, Fountaintown, both of Ind., assignors to Pentek Corporation, Indianapolis, Ind.

Continuation of Ser. No. 321,569, Nov. 16, 1981, Pat. No. 4,461,382. This application Apr. 12, 1984, Ser. No. 599,725
The portion of the term of this patent subsequent to Jul. 24, 2001, has been disclaimed.
Int. Cl.[3] B65G *13/071*
U.S. Cl. 198—781 14 Claims



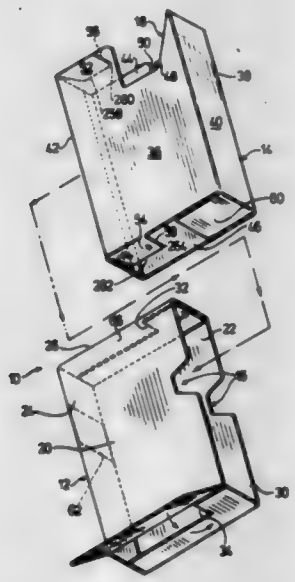
1. A system for controlling the operation of an accumulating live conveyor of the type inluding a plurality of load-carrying rollers supported for rotation about transverse axes, driving means for conveying loads over the load-carrying rollers from an upstream end toward a downstream end of the conveyor, and accumulating means for removing driving engagement of the driving means in selected areas of the conveyor to accumulate loads in such areas, the system comprising position detecting means for detecting a position of a load in a downstream area of the conveyor, first signal means responsive to the position detecting means producing a load position-related signal, means for actuating the accumulating means in response to the load position-related signal to remove driving engagement in the downstream area of the conveyor and stop the load at about the detected position on the load-carrying rollers, second signal means for sensing rotation of the load-carrying rollers beneath the detected position to detect an amount of rectilinear movement of the load on the load-carrying rollers and produce a load motion-related signal, the load motion-related signal including a periodic pulse, a series of periodic pulses corresponding to the rotation of the load-carrying roller and the amount of rectilinear movement of the load, signal processing means for processing the load motion-related signal and for producing a control signal for controlling the operation of the conveyor, the signal processing means including means for counting periodic pulses produced by the second signal means, the counting means including an output terminal initially at a first state, the output terminal being switched to a second state when the counting means has counted a predetermined number of periodic pulses whereby the control signal is produced in response to a predetermined amount of rectilinear movement of the load; and enabling means for enabling the signal processing means in response to the load position-related signal.

4,534,463

CIGARETTE CARTON

Claude Bouchard, St. Leonard, Canada, assignor to Ronalds-Federated Limited, Rolph-Clark-Stone Packaging Division, Mississauga, Canada

Filed Nov. 25, 1983, Ser. No. 554,894
Int. Cl.[3] B65D *5/38*
U.S. Cl. 206—267 6 Claims



1. A container for cigarettes comprising:

a casing member having first and second side walls, an end wall extending between said side walls, an open end opposed to said end wall, an upper wall extending between upper ends of said side walls, and a lower wall opposed to said upper wall and extending between lower ends of said side walls,

a rectangular, tubular drawer member, said drawer member having first and second opposed side walls and first and second opposed end walls extending between said side walls,

an access slot defined between said second end wall and said side walls, adjacent said second end wall,

said casing member being adapted to slidably receive said drawer member through said open end, and said casing end wall adapted to engage said first end wall of said drawer member to limit inward sliding movement of said drawer member into said casing member,

a first shallow recess defined in said upper wall, extending from said casing member end wall and terminating in a first stop edge disposed inwardly of said open end,

a second shallow recess defined in said lower wall, extending from said casing member end wall and terminating in a second stop edge disposed inwardly of said open end,

a first drawer tab spaced from said drawer member second end wall, extending inwardly from an upper end of said draw member, said first drawer tab having a first tab leading edge, said first tab being slidably contained within said first shallow recess,

a second drawer tab spaced from said drawer member second end wall, extending inwardly from a lower end of said drawer member, said second drawer tab having a second tab leading edge, said second tab being slidably contained within said second recess, such that in a closed configuration of the container said first and second leading edges are spaced apart from said first and second stop edges respectively, and said access slot of said drawer member is concealed within said casing,

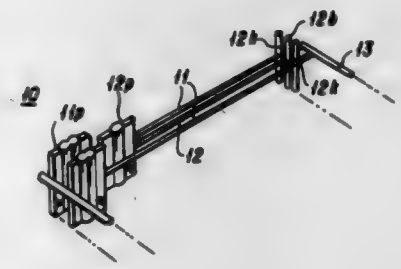
said first and second tabs being slidable within said first and second recesses respectively from said closed configuration to an open configuration in which said first and second leading edges engage said first and second stop edges, respectively, said drawer member projects out of said open end of said casing member and said access slot of said drawer member adjacent said second end wall is revealed.

4,534,464

MANUFACTURE AND USE OF CLOSELY SPACED ATTACHMENTS

Gordon B. Lankton, West Boylston, Mass., assignor to Nypro Inc., Clinton, Mass.

Filed Dec. 8, 1982, Ser. No. 448,030
Int. Cl.[3] A44B *9/00*; B65D *85/24*; G09F *3/12*
U.S. Cl. 206—343 17 Claims



1. An assembly of attachments comprising

a plurality of attachments having parts of a first type with enlarged faces, with each part joined by a elongated connector to a dispensing member;

a plurality of attachments having parts of a second type with enlarged faces, different than said parts of said first type, with each part joined by an elongated connector to a dispensing member; and

means for integrally connecting said attachments to one another by way of their dispensing members;

the attachments of said first type alternating with and immediately following those of said second type with their enlarged faces in different planes.

10. The method of manufacturing an assembly of attachments which comprises the steps of:

(a) molding a first attachment having a dispensing member with a connector extending to a further member at the opposite end of said connector;

(b) molding a second attachment which is shorter than said first attachment and having a further member which is engageable with said further member of said first attachment and being joined to said first attachment; and

(c) stretching said second attachment until its further member engages that of said first attachment.

15. The method of applying attachments to objects which comprises the steps of

(a) inserting a clip of attachments into a dispensing device, the clip including a first and second plurality of interleaved attachments selectively connected to a mounting element;

(b) advancing and dispensing a first said one of said attachments; and

(c) advancing and dispensing a succeeding one of said attachments; said advance of each first and succeeding attachments being made by contact of the advancing mechanism of said dispensing device with only a single position at every other attachment of said clip.

4,534,465

CASSETTE FOR SUPPORTING TEST TUBES OF DIFFERENT DIAMETERS AND/OR LENGTHS

William F. Rothermel, Hollywood; John P. Matthews, Pembroke Pines; James W. Walker, and Wallace H. Coulter, both of Miami Springs, all of Fla., assignors to Coulter Electronics Inc., Hialeah, Fla.

Filed Oct. 13, 1983, Ser. No. 541,602
Int. Cl.[3] B65D *81/30*
U.S. Cl. 206—443 13 Claims

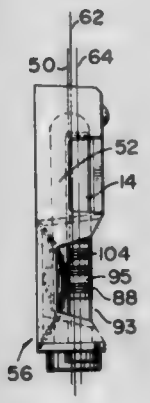
1. A cassette for supporting in a single row a plurality of liquid sample containers having upper side portions and different diameters and/or lengths and transporting the same to a testing station of an analytical device, comprising:

a body having a top and a bottom and a rear portion, said body including:

a base;

a front wall, longitudinally extending across said base, having a plurality of equidistantly spaced openings arranged in a row lengthwise of the cassette and extending from the base to the top of the body, each of said openings having an upper edge;

an intermediate wall, spaced from said rear portion of said body, longitudinally extending across said base, having a plurality of equidistantly spaced openings arranged in a row lengthwise of the cassette and extending from the base to the top of the body, individual ones of said spaced openings of said front and intermediate wall being in opposed, aligned, spaced apart, relationship;



biasing means, connected to said body and lying between said front and intermediate walls, for positioning the upper edges of all said plurality of sample containers which are disposed within said spaced openings of said front and intermediate walls in the same horizontal plane;

a plurality of equidistantly spaced channels arranged in a row lengthwise of the cassette and extending from the base to the top of the body and from said intermediate wall to the end of the rear portion of said body and open ended thereat and arranged to permit entry of a rod member; and

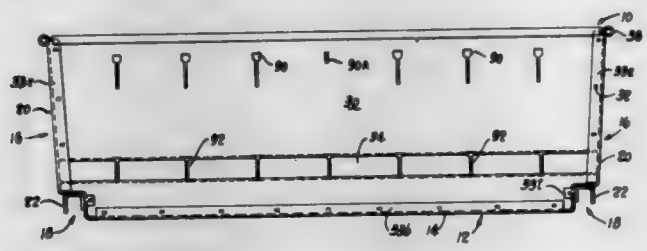
said top portion of said body between said front and intermediate walls defining an unobstructed longitudinal passage extending above the upper side portions of said sample containers.

4,534,466

NESTABLE CONTAINER FOR PARTS STORAGE

Kenneth L. Wood, Santa Maria, Calif., assignor to Republic Steel Corporation, Cleveland, Ohio

Continuation of Ser. No. 381,184, May 24, 1982, abandoned.
This application Aug. 13, 1984, Ser. No. 640,246
Int. Cl.³ B65D *21/02, 25/06, 25/28*
U.S. Cl. 206—518 **12 Claims**



1. A nestable container for use with automatic storage/retrieval systems comprising:

(a) a base element including a bottom wall and two diverging end walls extending upwardly from said bottom wall, said end walls and said bottom wall being one integral element;

(b) said bottom wall including integral bottom flanges extending upwardly and diverging with respect to each other;

(c) a juncture of each end wall with said base element being defined by an inverted L-shaped wall segment, said L-shaped wall segment being substantially the full width of its associated end wall, each inverted L-shaped segment defining a lower recess having depth and longitudinal dimensions substantially less than the depth and longitudinal dimensions of the adjacent side and bottom walls;

(d) each of said end walls also including end flange parts extending normally from the sides thereof and toward the other end wall;

(e) two side walls fixed to each side of said base element and welded along said end flanges and said bottom flanges, said side walls diverging with respect to each other, said bottom wall, end walls and side walls defining a container interior;

(f) each of said side walls including structure defining an upper recessed portion spaced from said bottom wall and extending into the interior of the container, toward the opposed side wall, said structure defining a nesting stop for containers of similar dimensions stacked within said container; and

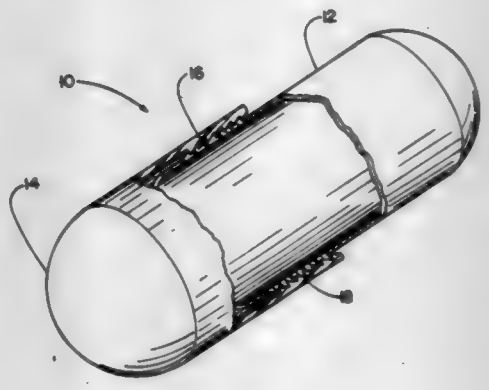
(g) two engagement members, one fixed in each lower recess, each engagement member including unobstructed opened ends adapted to engage a mechanical moving means forming part of the storage/retrieval system for effecting movement in said container in a transverse direction, the engagement members being respectively disposed inwardly of a plane located by an outer surface of the adjacent end wall.

4,534,467

TAMPERPROOF CAPSULE

Daniel L. Rathbun, P.O. Box 503, Hominy, Okla. 74035

Continuation of Ser. No. 469,201, Feb. 24, 1983, abandoned.
This application Nov. 2, 1984, Ser. No. 668,172
Int. Cl.³ A61B *19/02;* B65D *43/10*
U.S. Cl. 206—530 **1 Claim**



1. A self-locking, tamperproof, capsule comprising:

(a) a capsule body having an essentially cylindrical sidewall with one end open and other end closed;

(b) a first saw-toothed engagement means circumferentially positioned on the outer surface of said cylindrical sidewall;

(c) a capsule cap having an essentially cylindrical sidewall with one end open and the other end closed wherein said cylindrical sidewalls of said capsule body and capsule cap are adapted to telescopically engage with each other thus forming said capsule; and

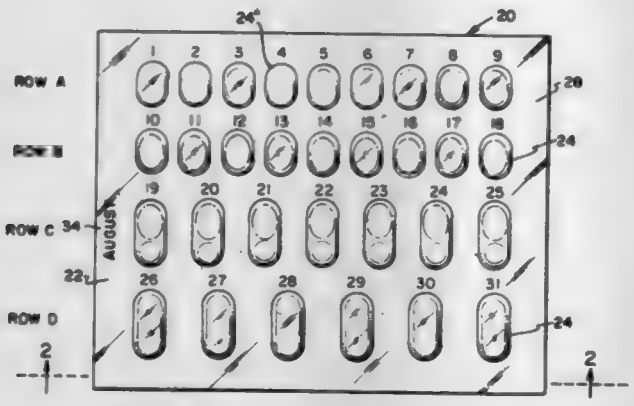
(d) a second saw-toothed engagement means circumferentially positioned on the inner surface of said cylindrical sidewall of said capsule cap wherein said saw-toothed engagement means are adapted to engage with each other when said capsule body and capsule cap are telescopically assembled thus locking said capsule and wherein said first and second saw-toothed engagement means when engaged are self-destructive when forced open.

4,534,468

CALENDAR-ORIENTED PILL DISPENSER

Walter S. Nuckols, 119 Putnam Park Rd., Bethel, Conn. 06801; Walter G. Leonard, 1017 Main St., Melrose, Mass. 02176, and Henry P. Doble, Jr., Sunnyview Dr., Redding, Conn. 06875

Filed Dec. 19, 1983, Ser. No. 563,148
Int. Cl.[3] B65D *85/56, 83/04;* G09F *9/00*
U.S. Cl. 206—534 20 Claims



1. A unitary, non-reusable dispenser for the storage, dispensing, and patient compliance indication of calendar oriented pills comprising:

(A) a plurality of domes corresponding on a one-to-one basis with the days of at least one calendar month, each dimensioned for overlying one or more pills, the domes arranged in at least one row;

(B) a backing sheet with a front and rear surface, the backing sheet formed from a relatively stiff planar material with the domes positioned on the front surface thereof, the backing sheet having a plurality of zones corresponding to those areas overlaid by the domes, said zones being rupturable for release of the pill or pills which can be stored in the enclosure formed by the zone and the corresponding dome;

(C) consecutive integer indicia positioned in proximity to the domes in a one-to-one relationship thereto, so as to visually identify each dome with one and only one calendar date of said calendar month;

(D) consecutive integer indicia positioned in proximity to said rupturable zones in a one-to-one relationship thereto so as to be viewable from the rear surface of the backing sheet and so as to visually identify each zone with one and only one calendar date of said calendar month;

whereby the dispenser stores pills in the plurality of pill-containing enclosures in a manner that provides visual identification of each enclosure from both the front and rear of the dispenser, with one and only one calendar date of said calendar month, so that dispensing of the pills on a daily basis is facilitated and whereby monitoring of user compliance with the calendar oriented regimen is facilitated by identification of the pill-containing enclosures which are not dispensed for any given calendar date.

4,534,469

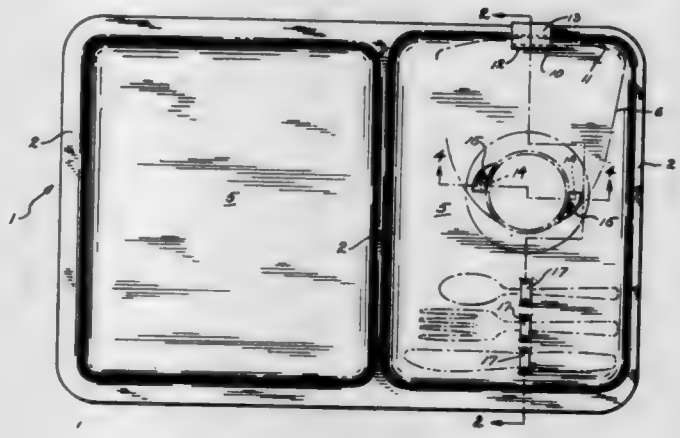
TRAY ASSEMBLY

Thad F. Elsmo, 208 E. Four Mile Rd., Racine, Wis. 53402

Filed Nov. 2, 1983, Ser. No. 547,838
Int. Cl.[3] B65D *3/24*
U.S. Cl. 206—560 12 Claims

1. A tray assembly, comprising a tray member having a substantially planar web portion and a pocket extending downwardly from said web portion defined by a bottom wall spaced from said web portion and side walls interconnecting said bottom wall and web portion, a cup member removably mounted in said pocket and movable between a folded storage position and an upright usage position, said cup member includes a substantially cylindrical body open at its top and closed at its bottom, said body defining an upright longitudinal axis when in said usage position, and means for folding said body to said storage position wherein said body extends normal to said upright axis, and means for releasably holding said cup member in its storage position, said releasable holding means includes a clip member having one end connected to said web portion and its other end projecting inwardly toward said pocket.

10. In combination, a tray member having a substantially planar web portion and a pocket extending downwardly from said web portion defined by a bottom wall spaced from said web portion and side walls interconnecting said bottom wall and web portion, covering means overlying said web portion



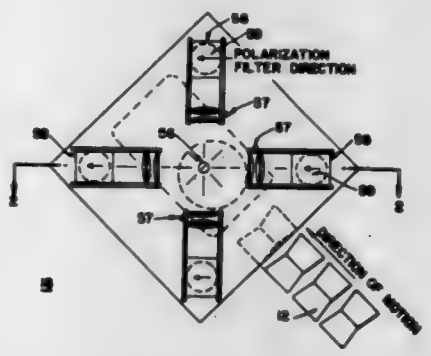
and pocket for sealingly covering said tray member, housing means including a pair of side walls defining a compartment for slidably receiving and supporting said tray member, and cooperating means on said tray member and said housing means for automatically breaking said sealing cover when said tray member is removed from said housing means, said cooperating means includes a rod within said compartment extending across said housing means between said side walls and a clip member having one end connected to said web portion and its other end projecting inwardly toward said pocket.

4,534,470

APPARATUS AND METHOD FOR PROCESSING FRUIT AND THE LIKE

George A. Mills, Three Rivers, Calif. 93271

Filed Sep. 30, 1982, Ser. No. 430,084
Int. Cl.[3] B07C *5/342*
U.S. Cl. 209—585 12 Claims



1. Apparatus for processing items such as fruit and the like, said apparatus having a light signal means for viewing said items and developing a plurality of data signals corresponding to respective portions of the surface of each said item, said plurality of data signals corresponding to substantially the entire surface of each said item, having means for moving successive items into position to be viewed by said light signal means, characterized by:

means for illuminating each said item substantially uniformly over substantially the entire surface thereof being viewed by said light signal means;

difference means for obtaining a plurality of difference signals by subtracting the values of data signals from said

light signal means corresponding to adjacent portions of the surface of each said item and means for sorting said items as a function of said difference signals;

said illuminating means comprising a plurality of light sources directing light at a portion of said item, said light sources being arranged substantially in a plane displaced from said item as it is being viewed; and

said light sources further comprising a single lamp with light emitted therefrom and a plurality of mirror means each receptive to said emitted light for redirecting said emitted light toward said item from a plurality of different directions.

4,534,471

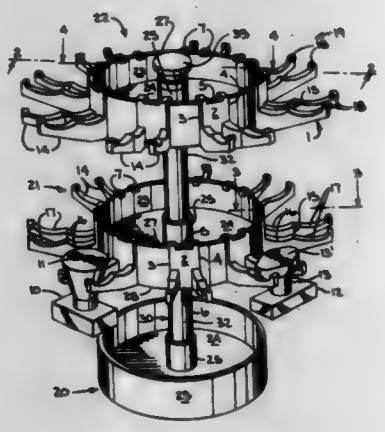
STAMP HOLDING CLIP AND RACK THEREFOR

William L. Zahn, Brookfield, and Fred W. Kufrin, Janesville, both of Wis., assignors to Schwaab Inc., Milwaukee, Wis.

Filed Apr. 27, 1983, Ser. No. 488,678

Int. Cl.³ A47F *5/02*

U.S. Cl. 211—39 **11 Claims**



1. A storage device including a clip for mounting the handle of a rubber stamp or the like, said clip of said storage device comprising:

(a) a base,

(b) a pair of relatively rigid arms extending from said base,

(c) the opposed inner surfaces of said arms diverging outwardly from said base to the outer ends of said arms and being adapted to engagingly support handles of a variety of sizes,

(d) and opposed inwardly facing handle retainer means disposed on the outer ends of said arms,

(e) each of said arms having a plurality of arcuate top edge surfaces for free suspension of stamp handles therefrom.

4,534,472

GUIDE RAIL FOR ELECTRONIC MODULE SUPPORTS

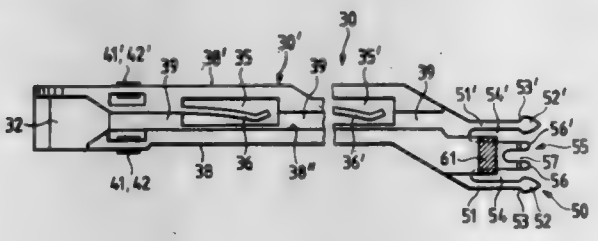
Urs Hänseler, Pfaffhausen; Urs Meier, Bassersdorf, and Franz Muther, Zürich, all of Switzerland, assignors to Contraves AG, Zürich, Switzerland

Filed Sep. 19, 1983, Ser. No. 533,663

Claims priority, application Switzerland, Sep. 30, 1982, 5778/82

Int. Cl.³ H02B *1/02*

U.S. Cl. 211—41 **12 Claims**



1. A guide rail for electronic module supports for latchable attachment to at least one transverse support member of a rack, comprising:

a guide rail body possessing a substantially U-shaped cross-section and having opposite end regions;

a first latching element provided at one end region of said substantially U-shaped guide rail body;

a second latching element provided at the other end region of said substantially U-shaped guide rail body;

each of said first and second latching elements being provided with a respective pair of resiliently formed latching heads which can engage with spaced-apart apertures separated by cross-pieces;

a respective separating element disposed between each said latching head of said pair of latching heads of each of the two latching elements;

each said separating element having a substantially U-configuration opening away from said guide rail body;

said substantially U-configuration including two spaced legs extending substantially parallel to said resiliently formed latching heads; and

each said separating element being structurally proportioned to be selectively inserted into the apertures or on to the cross-pieces arranged between the apertures.

4,534,473

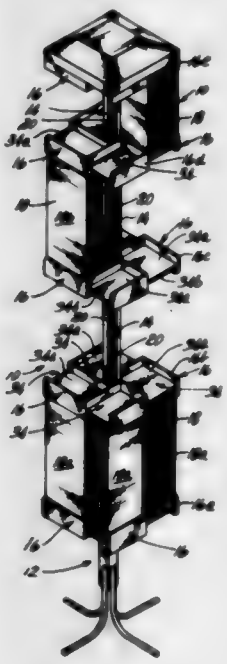
DISPLAY STAND

William L. Post, Chatsworth, Calif., assignor to Pacific Display Corporation, Chatsworth, Calif.

Filed Dec. 28, 1983, Ser. No. 566,318

Int. Cl.³ A47F *5/02*

U.S. Cl. 211—58 **8 Claims**



1. A display rack comprising:

a base;

an elongated shaft rotatably mounted on the base extending away from the base, the elongated shaft having at least one groove in its outer surface extending along the lenght of the shaft;

at least one shelf mounted on the shaft, such a shelf having an opening therethrough; and

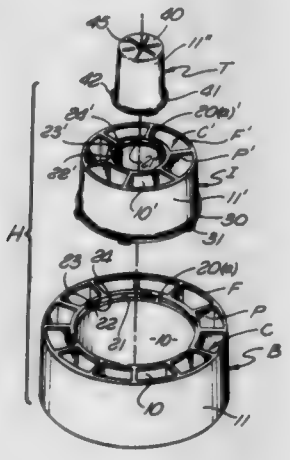
at least one elongated guide on the shelf extending into the opening from the side of the opening, such an elongated guide being along the height of the opening and aligned for sliding engagement in the shaft groove when the shelf is being mounted on the shaft so that when the shelf is in position on the shaft, the shaft is throught the shelf opening and the shelf guide is frictionally engaged in the shaft groove.

4,534,474

COLLAPSIBLE KITCHEN UTENSIL HOLDER

Min-Hing Ng, Kowloon, Hong Kong, assignor to Concord Tool and Machine Company, Hong Kong, Hong Kong

Filed Sep. 30, 1982, Ser. No. 430,279
Int. Cl.³ A47F 5/02, 7/00
U.S. Cl. 211—70 **10 Claims**



1. A multi-sectional utensil holder interchangeable between a stored position and an operative position, comprising:

a base section having concentric, annular, radially spaced inner and outer walls of predetermined diameters, with circumferentially spaced, radially extending partitions therebetween to provide a plurality of storage compartments, said walls having top and bottom edges, the top edges of the inner and outer walls being generally in a co-planer relationship;

an intermediate section having concentric, annular, radially spaced outer and inner walls of predetermined diameters, with circumferentially spaced, radially extending partitions therebetween to provide a plurality of storage compartments, said walls having upper and lower edges, the upper edges of the inner and outer walls being generally in a co-planer relationship;

the vertical dimension of the outer wall of the intermediate section being less than the vertical dimension of the inner wall of the base section, and the diameter of the outer wall of the intermediate section being less than the diameter of the inner wall of the base section, whereby the intermediate section in the inverted position is nested within the confines of the inner wall of the base section for shipping purposes; and

interengageable, releasable coupling means adjacent the lower edge of the outer wall of the intermediate section and adjacent the top edge of the inner wall of the base section, whereby the intermediate section is positioned on and releasably coupled with the base section to provide a two-tier utensil holder.

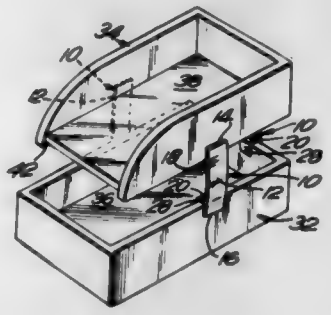
4,534,475

TRAY STACKING

Irving A. Mayo, Douglaston, N.Y., assignor to Artistic Desk Pad & Novelty Co., Inc., Bronx, N.Y.

Filed Mar. 14, 1983, Ser. No. 475,009
Int. Cl.³ A47F 3/14
U.S. Cl. 211—126 **1 Claim**

1. In combination, three members connecting two superposed rectangular trays having vertical walls about at least three sides and a base; each connecting member being integrally molded of a substantially rigid plastic but of a thickness so that it is flexed slightly in assembled state, each connecting member comprising a slightly bowed substantially vertical riser having upper and lower ends and a middle, first and second vertically spaced substantially horizontal elements projecting from the vertical riser near their respective ends and a wall element on each of said horizontal elements, the wall elements projecting away from each other, each wall element defining with the vertical riser a tapered channel of maximum width at the horizontal element, the upper wall element terminating shorter than its riser end and the lower wall element terminating approximately at the same height as its riser end, the upper wall element at its end remote from its horizontal element being provided with a lip projecting inwardly of its



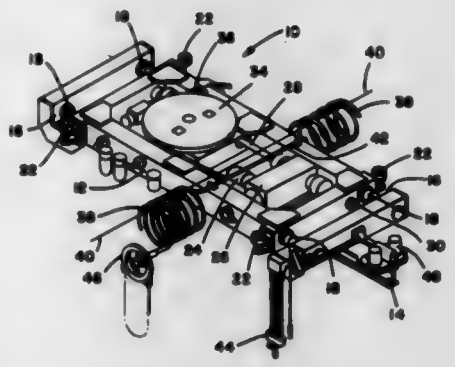
channel; the vertical walls of at least the upper tray projecting downwardly below the base, the downward projection of each vertical tray wall being joined to a vertical wall of the tray therebelow by one of said members, the lip of each member engaging the downward vertical wall projection, the thickness of the vertical tray walls being approximately equal to the maximum width of the channels.

4,534,476

BRIDGE CRANE

William L. Burchfield, Tacoma; Edward L. Carr, and Gordon J. Laskowski, both of Port Orchard, all of Wash., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jul. 5, 1983, Ser. No. 510,703
Int. Cl.³ B66C 23/52, 17/00, 11/02
U.S. Cl. 212—190 **3 Claims**



1. An overhead crane for use in a shipboard environment, which comprises:

(a) a machinery carrying body, overhead rails mounted in said shipboard environment, said body having means for supporting said body for movement on said overhead rails;

(b) traversing means for moving said body along said overhead rails, said traversing means including

(1) a source of pressurized air, an air motor mounted an said body, said air motor including an output shaft, a respective first and second air input means, said air motor being adapted to selectively receive pressurized air from said source at said first input for rotating said output shaft in a first direction, and at said second input for rotating said output shaft in a second direction;

(2) gear means having a gear input shaft coupled to said output shaft of said air motor and having a gear output shaft;

(3) a drive shaft coupled to said gear output shaft of said gear means and extending in said body between said overhead rails;

(4) gear rack means mounted on said overhead rails;

(5) drive pinions mounted on the distal ends of said drive

shaft, said drive pinions being operative to engage said gear rack means on said overhead rail for moving said body therealong;

(6) means for manually rotating said gear input shaft to move said body along said overhead rails;

(c) brake means coupled to said gear input shaft for preventing movement of said crane, said brake means being normally mechanically engaged and pneumatically released when pressurized air is coupled to said air motor for traversing said crane;

(d) a load hoist means, rail means for supporting said hoist means, said rail means being removably attached to said body; and

(e) a pneumatic control circuit for controlling the motion of said crane including

(1) a first interlock valve receiving pressurized air, said first interlock valve being mechanically biased in the open position to allow passage of said pressurized air, said first interlock valve having a pneumatically operated pilot for closing said first interlock valve;

(2) a shutoff valve adapted to receive pressurized air from said first interlock valve, said shutoff valve being manually actuated to allow passage of said pressurized air in the open position or prevent passage of said pressurized air in the closed position;

(3) a manually actuated control valve adapted to received the pressurized air from said shutoff valve, said control valve when in a first position coupling said pressurized air to said first input of said air motor and in a second position coupling said pressurized air to said second input of said air motor; and

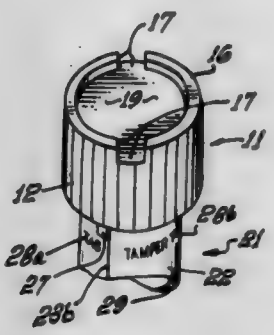
(4) a brake release valve adapted to be actuated by said pressurized air from said control valve to release said brake means when actuated.

4,534,477

ONE-PIECE CHILDPROOF TAMPER-EVIDENT BOTTLE AND CAP

Herman Laub, III, 244 N. San Marino, San Gabriel, Calif. 91775

Filed Feb. 27, 1984, Ser. No. 583,886
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—215 13 Claims



1. In combination for use in containing products, a bottle-and-cap combination that resists being unsealed and opened, from a fully-threaded-on position, but that can be unsealed and opened by application of torque exceeding the level that can generally be exerted by children; said combination comprising:

a bottle that is adapted to contain such products and that has:

a neck,

a generally helical outwardly projecting thread defined in the outer surface of the neck, and

an outward projection from the neck, immediately above or below a particular segment of the helical thread; and

a cap that is adapted to block passage of such products from the bottle, and that has:

a generally cylindrical body,

an end wall closing the upper portion of the cylindrical body,

a generally helical inwardly projecting thread defined in the inner surface of the cylindrical body and adapted to mate with the outwardly projecting thread defined in the outer surface of the neck, to removably secure the cap to the neck, and

a gap in a particular segment of the inwardly projecting thread, at a location that corresponds, when the cap is substantially fully threaded onto the bottle, to the location of the outward projection from the neck of the bottle;

the cap being substantially fixed axially with respect to the bottle by the mating threads when the cap is substantially fully threaded onto the bottle;

wherein the outward projection from the neck of the bottle enters the gap in the inwardly projecting thread, when the cap is substantially fully threaded onto the bottle, and obstructs starting of the removal of the cap from the bottle away from such fully-threaded-on position unless unthreading torque is applied which exceeds a level that can generally be exerted by most children;

the cap substantially blocking passage of products when it is obstructed by the inward projection from the neck; and

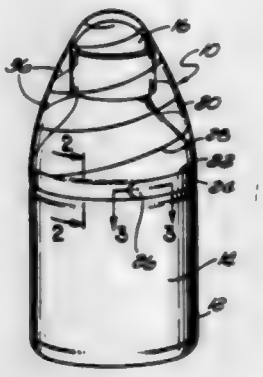
wherein the otuward projection from the neck of the bottle does not effectively resist starting of the removal of the cap from the bottle if unthreading torque is applied which exceeds a level that can generally be exerted by most children but which is readily exerted by most adults.

4,534,478

TAMPER INDICATING COVER

Nina P. Sawicki, 8347 Ranchito Ave., Panorama City, Calif. 91402

Filed Feb. 16, 1983, Ser. No. 467,103
Int. Cl.[3] B65D *41/48, 51/20*
U.S. Cl. 215—230 12 Claims



1. A tamper-indicating cover for a container having a neck and a shoulder at a spaced location below the neck, the container closed by a cap and having an annular indent adjacent the shoulder, the cover comprising:

a tearable shroud portion positioned over the cap in access-preventing relationship thereto and having an annular junction region;

an annular safety band integral with the shroud portion and extending from the annular junction region of the shroud, the band extending into the annular indent of the container for sealing the cover to the container thereby enclosing the cap; and

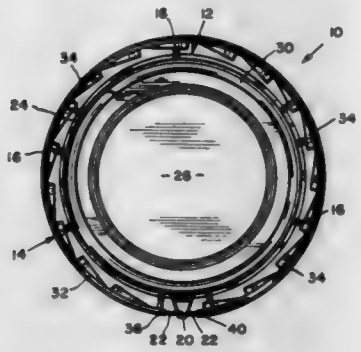
a pull tab extending from the safety band for being pulled to effect tearing of the safety band relative to the shroud to effect removal of the cover from the container and removal of the safety band from the annular indent to expose the indent to observation and give access to the container cap.

4,534,479

TAMPER EVIDENT CONTAINER CLOSURE

Vincent N. Conti, West Hempstead, N.Y., assignor to American Safety Closure Corp., Farmingdale, N.Y.

Filed Aug. 15, 1984, Ser. No. 640,900
Int. Cl.[3] B65D *49/12*
U.S. Cl. 215—252 4 Claims



1. A tamper evident container closure for a container having a threaded mouth portion and a plurality of teeth members adjacent said mouth portion, said container closure comprising:

(a) a threaded cap for engaging the mouth portion of the container;

(b) a split ring including

(i) first and second adjacent spaced ends, and

(ii) a plurality of pawls for interlockably engaging the teeth members of the container to inhibit twisting of the split ring off the mouth portion of the container as the cap is twisted off said mouth portion;

(c) a plurality of frangible members radially extending between the split ring and the cap to connect the split ring breakably thereto;

(d) a pointer connected to the cap and radially extending outward therefrom, generally midway between the spaced ends of the split ring, to engage the ring as the cap is twisted relative thereto; and

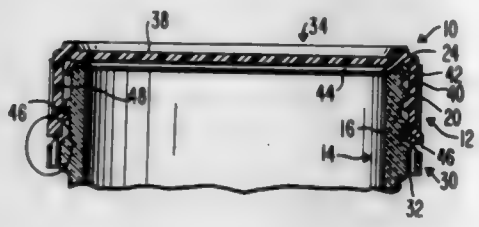
(e) at least one frangible finger circumferentially extending between the pointer and an end of the split ring to connect the pointer breakably thereto.

4,534,480

TAMPER EVIDENT CLOSURE

Paul A. Santostasi; Herbert V. Dutt, both of Sarasota, and Arno F. Pirkau, Bradenton, all of Fla., assignors to Sun Coast Plastics, Inc., Sarasota, Fla.

Filed Jun. 1, 1984, Ser. No. 616,108
Int. Cl.[3] B65D *41/34*
U.S. Cl. 215—252 5 Claims



1. A tamper evident closure for a container having an open mouth which is closed by the closure, said tamper evident closure comprising:

a closure cap having a generally circular top and a generally cylindrical sidewall extending downwardly from said top, said sidewall including interior screw threads which cooperate with exterior screw threads on the container to secure said closure cap to the container;

a tamper evident band secured by a plurality of spaced bridge strips to a bottom surface of said sidewall, said tamper evident band having an outer diameter generally the same as an outer diameter of said sidewall and a thickness equal to or less than a thickness of said sidewall; and

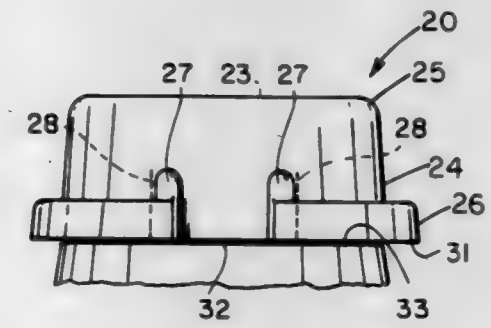
a plurality of spaced ratchet teeth formed on an inner surface of said tamper evident band and being circumferentially aligned with said bridge strips, said ratchet teeth cooperating with ratchet lugs on the container to cause said tamper evident band to become separated from said sidewall of said cap when said cap is removed from the container.

4,534,481

SNAP-ON, TAMPER-EVIDENT CONTAINER CLOSURE

Kenneth L. Summers, Angola, and Gary M. Baughman, Auburn, both of Ind., assignors to Rieke Corporation, Auburn, Ind.

Filed Aug. 2, 1984, Ser. No. 636,910
Int. Cl.[3] B65D *41/48, 41/32*
U.S. Cl. 215—253 12 Claims



1. A flexible, plastic, snap-on closure for use in combination with a container in order to seal closed said container in a tamper-evident manner wherein the neck of the container is configured with a top rim portion defining a container opening, an outwardly opening annular channel disposed below said top rim portion, a generally cylindrical side wall and a shoulder providing a substantially horizontal abutment surface outward of said side wall and wherein said snap-on closure comprising:

a flexible closure body having a top surface and a generally cylindrical surrounding side wall;

an inwardly protruding annular rib;

an annular connecting portion disposed between said annular rib and said top surface and arranged to define an inwardly opening annular channel;

a bail handle attached to said surrounding side wall by means of two, spaced-apart attachment ribs integral with said bail handle, said side wall including a pair of score lines, each score line being disposed adjacent a corresponding attachment rib;

said annular rib being suitably configured to fit within said outwardly opening channel, and said inwardly opening annular channel being suitably configured to snugly receive said top rim whereby the snap-on receipt of the closure by the container creates a sealed and closed condition of the container by means of said snap-on closure; and

said closure having an axial height which is sufficient relative to its diameter and material flexibility in order to prevent removal of said closure without some indication of said tampering being evident on the closure.

4,534,482

STOPPERING DEVICE FOR BOTTLES

Michel Bouché , Les Salomons, 63300 Thiers, France

Filed May 23, 1984, Ser. No. 613,147
Int. Cl.[3] B65D *45/30*
U.S. Cl. 215—272 7 Claims

1. A stoppering device for a bottle whose neck has a protruding lip which surrounds the mouth thereof, the device comprising:

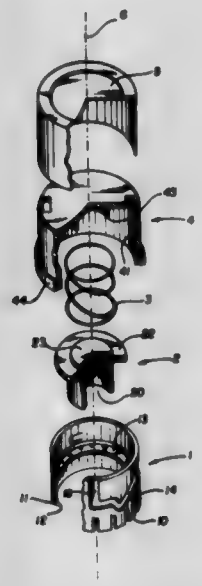
A. a sealing member receivable in the mouth of the bottle;

B. a cylindrical inner part having a lower section slotted to define a multilobe skirt, each lobe of which terminates in

an inner tooth, said inner part being adapted to engage the neck of the bottle and to apply said sealing member onto the mouth thereof;

C. a cylindrical outer part forming a locking member adapted to surround the skirt and the slide along the inner part so as to place the teeth of the skirt below the rim of the bottle and hold the teeth at that position;

D. a pair of ramps recessed in the outer surface of the inner part, each ramp being defined by an upper wall and a lower wall; and



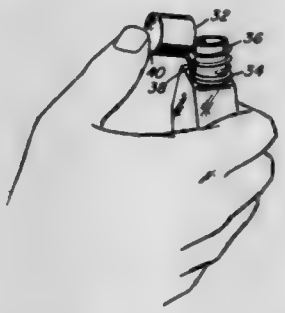
E. a pair of tenons protruding from the outer part, each tenon being adapted to travel in a respective ramp between a locking and an unlocking position, further characterized by the fact that the lower wall of each ramp is extended beyond a first generatrix on the inner part which passes through the lowest point on the upper wall of the ramp by a distance which is sufficient to permit the tenon, upon rising along a second generatrix to reach and occupy a housing located beyond the lowest point of the upper ramp wall.

4,534,483

CULTURE FLASK CLOSURE

Amin I. Kassis, 57 Stockdate Rd., Needham, Mass. 02192, and Choukrie Akili-Mudarris, 533 Pleasant Wind Dr., Aberdeen, Md. 21001

Filed Jan. 5, 1983, Ser. No. 455,805
Int. Cl.³ B65D *55/16*; C12M *1/24*
U.S. Cl. 215—306 **13 Claims**



1. In a cell-culture flask comprising a flask body with a neck comprising a wall that defines an opening to said body and a generally tubular cap including means for covering said neck opening, that improvement comprising:

(a) an orientation strip attached at one end to said flask and at the opposite end to said cap, said strip along a portion of its extent being securely fastened to the tubular said wall of said cap along a substantially straight line,

said strip having sufficient strength to support said cap in a protective position in which the cap overlaps and covers said neck opening and the lower portion of said cap is immediately adjacent the upper portion of said neck, said strip comprising an elongated connecting section between said cap and said flask, said connecting section being substantially in a straight line with said portion of said strip securely fastened to said cap when said cap is in said protective position,

said strip having sufficient flexibility to allow manual displacement of said cap readily from said protective position to a second position in which said cap does not obstruct the introduction of a pipette into said opening,

said strip having a memory to return said cap to said protective position from all operative positions other than said protective position in the absence of any force external to said cap tending to move said cap away from said protective position; and

(b) a tab extending above the top of said cap in a direction generally parallel to the axis of said cap,

whereby said flask may be readily charged while maintaining sterile conditions, by manually displacing said cap from said protective position to said second position facilitated by said tab, inserting a pipette into said opening, discharging the contents of said pipette into said flask, removing said pipette from said flask, and allowing said cap to return to said protective position.

12. A reusable closure device for a container with a threaded neck comprising a wall defining an opening to the interior thereof, said container being used in connection with cell culturing, said device comprising

a generally cylindrical screw-up for threadably sealably closing said neck opening,

a collar which encircles and freely turns about said neck opening, and

an orientation strip attached at one end to said cap and at the opposite end to said collar said strip along a portion of its extent being securely fastened to the cylindrical side wall of said cap along a substantially straight line

said strip having sufficient strength to support said container cap in a first position in which the cap overlaps and covers said neck opening without threadably, sealably closing said opening and the lower portion of said cap is immediately adjacent the

said srip having sufficient flexibility to allow manual displacement of said cap from said first position to a second position in which said cap does not obstruct the introduction of a pipette into said opening, said strip comprising an elongated connecting section between said cap and said flask, said connecting section being substantially in a straight line with said portion of said strip securely fastened to said cap when said cap is in said first position,

said strip having a memory to return said cap to said first position from all operative positions other than said first position in the absence of any force external to said cap tending to move said cap away from said first position,

said container further comprising a tab extending above the top of said cap in a direction generally parallel to the axis of said cap, to facilitate displacement of said cap from said first position,

whereby access to the interior of said container is achieved while maintaining sterile conditions.

4,534,484

WATER COOLER BOTTLE CLOSURE

Francois Deland, 250 Montigny, Mont St-Hilaire, Quebec, Canada J3H 2L9

Filed Sep. 29, 1982, Ser. No. 428,396
Int. Cl.³ B65D *41/28*
U.S. Cl. 215—307 **6 Claims**

1. A water cooler bottle closure comprising:

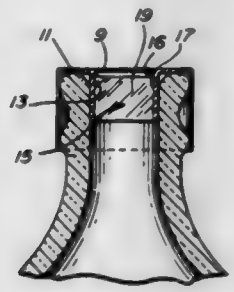
a closure cap adapted to fit over the neck of a water cooler bottle,

said closure cap having an opening formed at the bottom thereof,

a continuous wall projecting around the periphery of said opening to define an inner chamber which is associated

with said closure cap and is adapted to fit inside the neck portion of the water cooler bottle,

said continuous wall being set back with respect to said opening to define a flange,



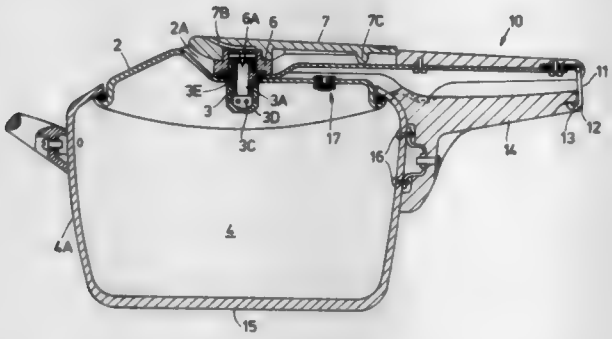
a base including means engageable by said flange to imperviously close one end of said chamber so as to enable the formation of an ice plug in said inner chamber when said inner chamber has been filled with water and said water has been subjected to freezing conditions.

4,534,485

PRESSURE COOKERS HAVING VENT MEANS

Naranammalpuram S. Subramanian, C-21-22 U-Road, Wagle Estate, Thana 400604, State of Maharashtra, India

Filed Sep. 24, 1984, Ser. No. 653,544
Int. Cl.[3] B65D *51/16*
U.S. Cl. 220—203 **7 Claims**



1. In and for a pressure cooker, a pressure regulating valve which is fitted to the lid of the vessel comprising a vent tube and a vent weight which vent weight is seated over the upper end of the vent tube, said vent weight having a downwardly extending pin to slide through a vertical bore in the head of the vent tube, the base of the vent weight from which the pin depends having one or more openings for the escape of steam when the vent weight is lifted, the vent weight being held by a fulcrumed lever which has a passage exposed at one end to the atmosphere and at the other end to the said opening or openings in the vent weight so that when the fulcrumed lever is manually operated it will cause the pin to be lifted to release the vertical bore of the vent tube thereby allowing the steam to escape into the atmosphere or when the pressure of the steam developed in the vessel exceeds a desired limit, the vent weight is lifted to allow the steam to be released through the vertical bore of the vent tube, the opening/openings in the vent weight and the passage in the fulcrumed lever being exposed to the atmosphere.

4,534,486

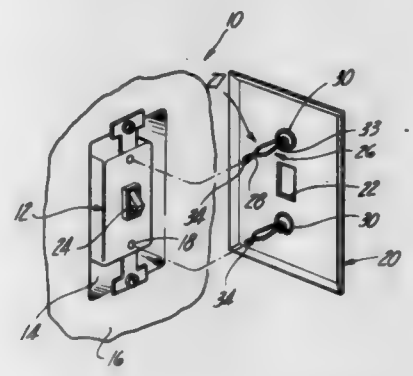
COVER PLATE FASTENING DEVICE

Lawrence E. Eidson, 33586 Breckenridge, Sterling Heights, Mich. 48077

Filed Mar. 29, 1984, Ser. No. 594,839
Int. Cl.[3] N02H *3/14*
U.S. Cl. 220—241 **20 Claims**

1. A snap-on cover for electrical boxes having at least one aperture adapted to threadably engage a threaded fastener, said cover comprising;

a cover plate having a front face and a rear face and at least one elongated prong extending outwardly from the rear face of said cover plate, each said prong having a compressible, radially expanded portion, and means for resil-



iently urging said compressible expanded portion to a radial dimension larger than the diameter of said aperture, and

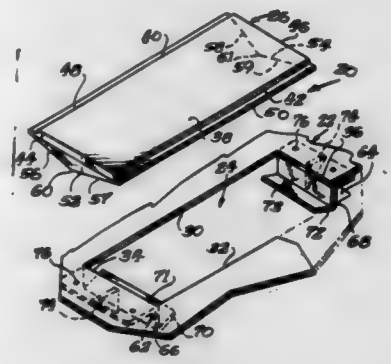
means for securing each said prong to said cover plate so that each said prong is axially aligned with said aperture and so that said compressible, radially expanded portion is insertable within said aperture.

4,534,487

BLIND SECUREMENT OF COVER PLATES AND THE LIKE

George M. Rapata, 216 Woburn La., Schaumburg, Ill. 60194

Filed Oct. 11, 1984, Ser. No. 659,960
Int. Cl.[3] B65D *51/04*
U.S. Cl. 220—305 **13 Claims**



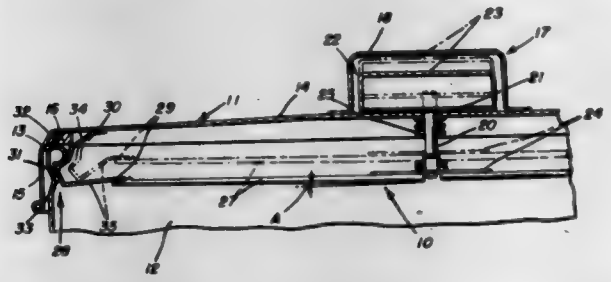
1. An assembly of the type described comprising a workpiece having an opening defined in part by spaced apart opposite marginal portions, a cover plate for said opening, and blind securement means for securing the cover plate within said opening, said cover plate being insertable through said opening for assembly, said securement means including shoulder means at opposite sides of said cover plate respectively engageable beneath said opposite marginal portions when the cover plate is fully assembled, said securement means further comprising first cover plate cam surface means and second workpiece cam surface means disposed for cooperative engagement with each other, means resiliently supporting at least one of said cam surface means for enabling the cover plate and one side shoulder means to be initially inserted through said opening and beneath one of said margins sufficiently to enable the opposite side shoulder means to clear the other of said margins portions without substantially displacing said one cam surface means and for yielding upon depression of the cover plate sufficiently to move said other side shoulder means beneath said other marginal portion and for subsequently resiliently clamping said opposite side shoulder means beneath said opposite marginal portions.

4,534,488

LOCKING DEVICE FOR GARBAGE CAN LID

John A. Boggs, 270 Tampa Dr., Apt. N-2, Nashville, Tenn. 37211, and Robert J. Baltz, 208 Foxwood La., Nashville, Tenn. 37210

Filed Nov. 21, 1984, Ser. No. 673,592
Int. Cl.[3] B65D 45/28
U.S. Cl. 220—323 8 Claims



1. In a container having a substantially cylindrical wall and an open top, and an annular recess adjacent the open top and opening radially inward from the cylindrical wall, and a lid covering the open top having a top wall, a locking device, comprising:

(a) a handle member having a transverse handle bar fixed to the top wall,

(b) a vertical operating rod having an upper end portion and a lower end portion,

(c) an opening in the top wall beneath said handle bar for receiving said operating rod for vertical reciprocable movement,

(d) a latch handle fixed to said upper end portion of said operating rod and spaced below said handle bar when said operating rod is in a lower locking position,

(e) at least one connecting rod rigidly connected to said lower end portion of said operating rod and projecting radially outward toward the container wall,

(f) a latch member having upper and lower ends and a bowed elastic intermediate portion,

(g) said upper end being fixed to the top wall of the lid and spaced inwardly from the container wall, and said lower end being fixed to said connecting rod, so that said bowed intermediate portion projects radially outward in latching engagement with the annular recess of the container wall when said operating rod is in said locking position, said bowed intermediate portion being flexed to a retracted position disengaging the annular recess when said operating rod is in an upper unlocking position.

4,534,489

BIOHAZARD WASTE CONTAINER

James V. Bartlett, 1714 Sherman Ave., Janesville, Wis. 53545

Filed May 11, 1984, Ser. No. 609,464
Int. Cl.[3] B65D 5/08, 5/60
U.S. Cl. 220—404 7 Claims

1. A carton for containment of waste material, said carton being formed from a unitary corrugated paperboard blank, and said carton comprising:

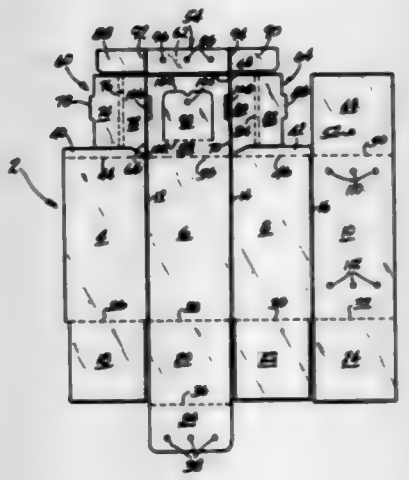
(a) a plurality of side wall panels hingedly connected together to form a tubular body;

(b) a plurality of bottom wall panels foldably connected to bottom edges of said side wall panels and overlappingly disposed to form a multi-ply bottom for said carton;

(c) a top cover assembly foldably connected to a top edge of one of said side wall panels, said top cover assembly including a plurality of side panels operative to overlie upper portions of said side wall panels when said top cover assembly is in a closed position, and said top cover assembly further including a top wall extending between said side panels to close the top of said carton when said top cover assembly is in said closed position;

(d) a swinging door panel formed within said top wall and pivotally connected thereto to allow access therethrough to the interior of said carton;

(e) a display—inner top closure panel pivotally connected to a top edge of a second one of said side wall panels, said display—inner top closure panel being pivotable between a first position overlying an outside surface of said second



side wall panel and a second position underlying said top wall when said top cover assembly is in said closed position; and

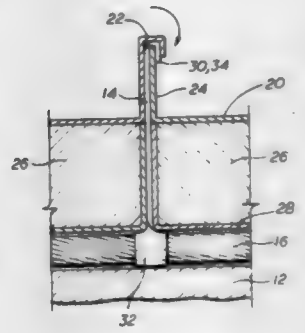
(f) means for securing said swinging door panel to said display—inner top closure panel when the latter is in said second position.

4,534,490

INSULATED PANEL SYSTEM FOR STORAGE TANKS

Mark A. McBride, P.O. Box 1570, La Porte, Tex. 77571

Filed Dec. 3, 1984, Ser. No. 677,596
Int. Cl.[3] B65D 25/16, 90/06
U.S. Cl. 220—435 12 Claims



1. A panel system for a storage tank wall and the like comprising:

a plurality of band means arranged circumferentially on and about the outside surface of the tank wall;

means for securing and tightening each of said band means;

a plurality of panels secured crosswise of and against said plurality of band means, each of said panels comprising first and second upstanding and opposed side flanges;

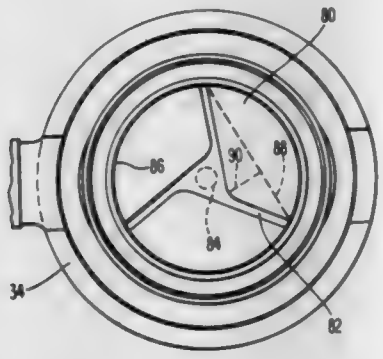
fastener means securing a pair of panels to each band means, each of said fastener means having two ends and a middle section with said middle section interposed around each of said band means with said two ends positioned between said first and said second upstanding and opposed side flanges of adjacent panel sections and folded over the top of said first side flange on one adjacent panel about which the second side flange of an adjacent panel section is rolled over said fastener means and said first side flange.

4,534,491

WET TISSUE DISPENSING PORT

Henry J. Norton, Wilmington, Del., and Kenard E. Urion, Woodbury, N.J., assignors to Scott Paper Company, Philadelphia, Pa.

Filed Jul. 6, 1982, Ser. No. 395,568
Int. Cl.[3] A47K *10/38*
U.S. Cl. 221—63 5 Claims



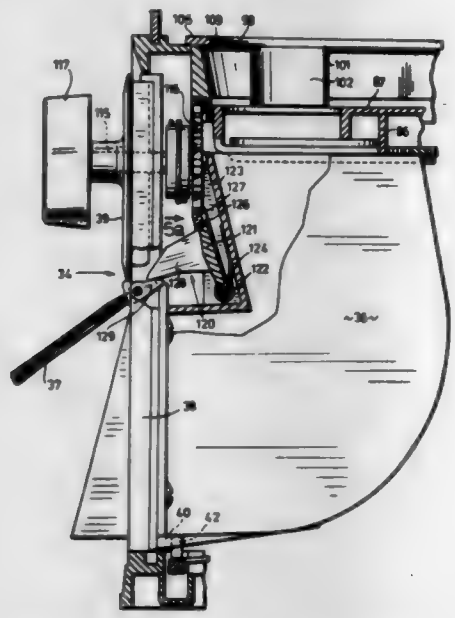
1. An improved dispensing port in a wall of a container for perforated premoistened wipers, the dispensing port consisting of a central opening and three lineal slots tangent to the central opening to form three flexible, obtuse triangular flaps, the obtuse angle of each flap being rounded, the flaps applying tension to a leading wiper being pulled through the slots to cause the leading wiper to be separated from the next wiper at the perforations while leaving a tip of the next wiper projecting through the dispensing port.

4,534,492

COIN OPERATED VENDING MACHINE HAVING A SECURE CASHBOX AND AN ANTITAMPERING SAFETY MECHANISM

Joseph W. Schwarzli, Vandorf Rd., R.R. #4, Stouffville, Ontario, Canada L0H 1L0

Filed Jan. 30, 1984, Ser. No. 576,251
Int. Cl.[3] G07F *11/44*
U.S. Cl. 221—203 29 Claims



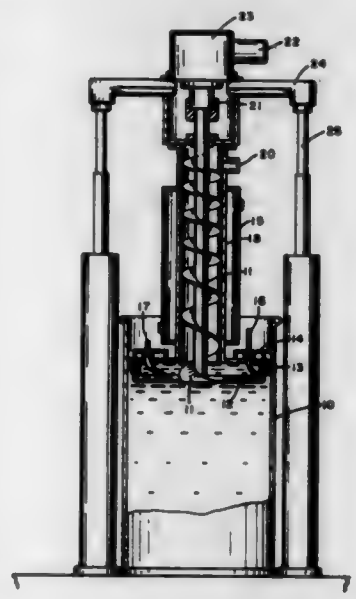
1. A coin operated vending machine comprising:
a housing having upright walls, a base, a top, and a partition between the base and top dividing the housing into an upper product bin and a lower cashbox, the partition defining an aperture therethrough to provide communication between the bin and cashbox and having a spindle protruding upwardly from the central portion thereof;
a dispensing wheel having:
a hub with bearing means at the center thereof for engaging the spindle and supporting the wheel upon rotation thereof about the spindle; a rim with a plurality of gear teeth about the circumference of the bottom edge thereof; and retaining members being provided between the hub and the rim defining a plurality of product openings in the wheel which are uniformly spaced from one another and the centre of the wheel and being registrable with the aperture in the partition upon rotation of the wheel, said wheel retaining members in combination with the surface of the partition forming containers for items of product to be dispensed;
a coin activated gear mechanism positioned in an upright wall of the housing in the vicinity of the partition, said mechanism having a handle attached to one end of a shaft and a transmission gear attached to the other end thereof, said gear engaging the teeth about the rim of the dispensing wheel so that rotation of the gear causes rotation of the wheel;
a product delivery chute positioned within the cashbox, one end of which abuts the partition about the periphery of the aperture therethrough and the other end of which protrudes through an opening in an upright wall of the housing;
a door for the delivery chute, said door activating a safety mechanism which locks the transmission gear upon opening the door;
means for locking the delivery chute in place thereby restricting access to the cashbox; and
means positioned above the dispensing wheel at that portion of the partition defining the aperture therethrough for excluding all loose items of product from the aperture in the partition, thereby insuring that only items in containers are dispensed upon operation of the machine.

4,534,493

APPARATUS FOR DISPENSING HIGH VISCOSITY THERMOPLASTIC MATERIALS

Roger H. Sedran, Wayne, N.J., assignor to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Aug. 3, 1983, Ser. No. 519,875
Int. Cl.[3] B67D *5/52*
U.S. Cl. 222—146.2 6 Claims



1. Apparatus for dispensing a high viscosity thermoplastic material from a container comprising
(a) a movable platen adapted to enter the container through the top thereof, said platen being provided with seal means for peripherally contacting said container and a circular coil heating system defining a passage for steam or hot fluid disposed adjacent the underside of said platen for heating the high viscosity thermoplastic material;
(b) a screw conveyor extending through said platen and operatively secured thereto for movement therewith, said screw conveyor having an inlet disposed below the underside of said platen and an outlet disposed above the top of said platen; wherein said screw conveyor comprises a

hollow cylinder secured to said platen in a generally vertical disposition, a screw extending through the length of said cylinder and being configured and dimensioned to be snugly received by said cylinder, wherein the pitch of the screw flightings is about equal to the screw diameter for the lower half of the screw and about equal to one-half of that pitch for the upper half of the screw, and means for mechanically driving said screw; and

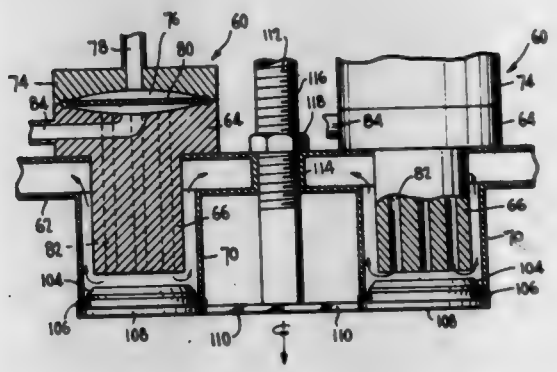
(c) said apparatus further comprising additional heating means for heating at least a portion of said cylinder.

4,534,494

CLEANING SYSTEM FOR FILLER

Jean-Claude H. Hautemont, Gif-sur-Yvette, France, assignor to Societe Anonyme dite: Etude de Realisation de Chaines Automatiques ERCA, Orsay, France

Filed Nov. 15, 1982, Ser. No. 441,976
Int. Cl.³ B67D *1/08*
U.S. Cl. 222—148 **12 Claims**



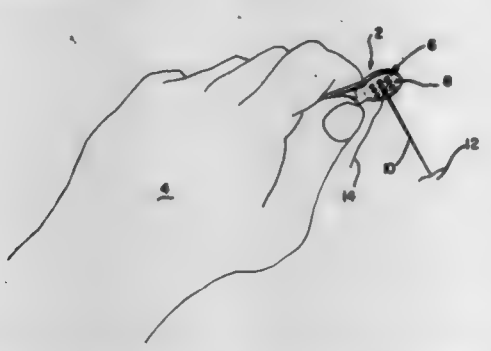
1. A cleaning system for a filler of the type including a product supply line and a dispensing nozzle, said cleaning system comprising a wash solution return, said nozzle extending through said wash solution return, a sleeve surrounding said nozzle and having an open end extending beyond said nozzle, said sleeve being carried by said wash solution return in communication therewith, closure means for selectively closing said sleeve open end to form an enclosure surrounding said nozzle and in communication with said wash solution return, and means for introducing a wash solution into said sleeve through said nozzle, said closure means being in the form of a closure member, and mounting means mounting said closure member for swinging movement into and out of alignment with said sleeve and for movement axially of said sleeve for sealing engagement therewith.

4,534,495

THIMBLE

Jean Adkins, 201 Hope Mills Rd., Fayetteville, N.C. 28304

Filed Mar. 2, 1984, Ser. No. 585,868
Int. Cl.³ D05B *91/04*
U.S. Cl. 223—101 **11 Claims**



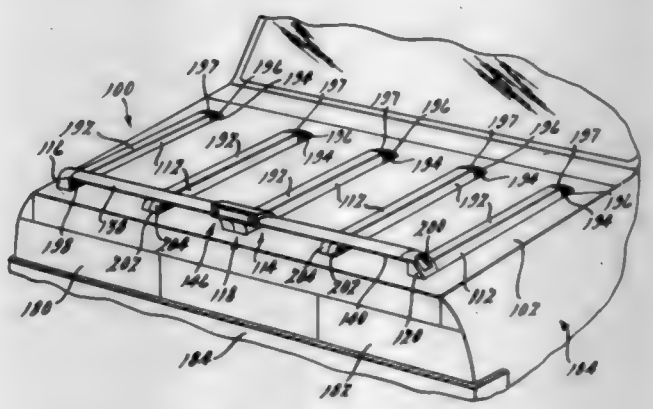
1. A thimble for use in sewing comprising an elongate handle which extends in a direction and is easily held in the hand of a quilter and a head attached to one end of said handle, said head having a broad face extending generally parallel to said direction and having means disposed on a substantial portion of said broad face for easily and securely engaging a needle without slipping such that said needle, when engaged by said face, extends transversely to said direction.

4,534,496

LUGGAGE CARRIER WITH ILLUMINATING MEANS

John A. Bott, 931 Lake Shore Dr., Grosse Pointe Shores, Mich. 48236

Continuation-in-part of Ser. No. 554,683, Nov. 23, 1983, which is a continuation of Ser. No. 485,859, Apr. 18, 1983, Pat. No. 4,440,333, which is a continuation of Ser. No. 242,138, Mar. 9, 1981, which is a continuation of Ser. No. 56,373, Jul. 10, 1979, , which is a division of Ser. No. 924,072, Jul. 7, 1978, Pat. No. 4,182,471, which is a division of Ser. No. 743,602, Nov. 22, 1976, Pat. No. 4,099,658, which is a continuation of Ser. No. 486,415, Jul. 8, 1974, abandoned. This application Jan. 18, 1984, Ser. No. 571,864
Int. Cl.³ B60R *9/00*
U.S. Cl. 224—326 **25 Claims**



1. An article carrier for an automobile including at least two parallel slats fixedly secured on a generally horizontally extending exterior automobile body surface,

said slats extending generally longitudinally of the automobile and each having upper article supporting surface, said upper article supporting surfaces of said slats being located between said body surface and the lower side of articles on said carrier, each of said slats having major and minor transverse dimensions with said major dimensions being parallel to said body surface and said supporting surfaces;

a support pad disposed between each said slat and said body surface;

a pair of article securing members secured to one end of said slats and at least one restraining bar extending laterally between and secured adjacent its opposite ends to said members, and located above said automobile body surface and said slats;

at least one support stanchion disposed on said body surface between said article securing members to further support said at least one restraining bar, a single fastener securing and passing through said stanchion; and

illuminating means disposed within said support stanchion and observable from the rearward end of the vehicle.

4,534,497

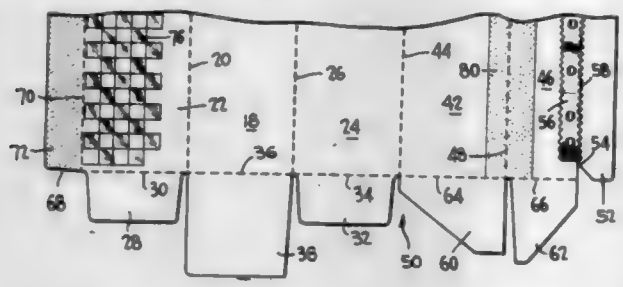
BLANK FOR CARTON FOR HOLDING AND DISPENSING PLASTIC FILM

Douglas L. Neale, Libertyville, Ill., assignor to Federal Paper Board Co., Inc., Montvale, N.J.

Filed Nov. 7, 1983, Ser. No. 549,469
Int. Cl.³ B65D *85/671*
U.S. Cl. 225—25 **17 Claims**

1. In a carton blank for a plastic film, a panel positioned for engagement of an outer face portion thereof by a leading edge of the plastic film, said panel outer face portion having thereon

an adhesive coating to which the plastic film will stick, and a release coating on an opposite face of said panel substantially in



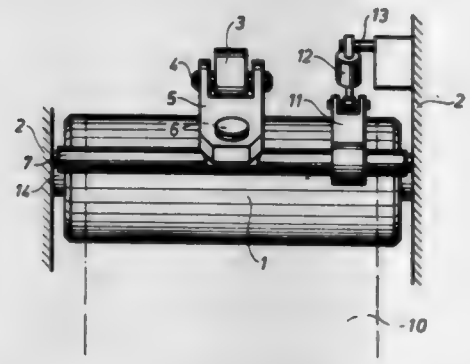
alignment with said adhesive coating whereby newly coated and stacked blanks will not adhere to one another.

4,534,498

GUIDING AND BRAKING UNIT FOR A MATERIAL WEB

Thorsten Nilsson, Landskrona, Sweden, assignor to Tetra Pak International AB, Lund, Sweden

Filed May 3, 1983, Ser. No. 491,041
Claims priority, application Sweden, May 6, 1982, 8202829
Int. Cl.³ B65H *17/22, 23/08*
U.S. Cl. 226—181 **7 Claims**



1. A guide and braking device for guiding a material web including, a guide cylinder, a rotatable roller and a support arm, said support arm providing said roller with movement in two directions, said web guided between said cylinder and said roller, wherein a first direction of movement is a swivel movement in a plane parallel with a center axis through said cylinder, said first direction of movement swivels said arm about a swivelling axis extending at right angles to the center axis of the cylinder, the swivelling axis and the center axis located on either side of an extension of the cylinder radius, said roller contacting said cylinder through said web within an angle of 2° to 60° from a radius of the cylinder extending perpendicularly to said plane, said roller contacting the cylinder through said web 5° to 15° behind the cylinder radius viewed in the direction of rotation of the cylinder.

4,534,499

WIRE DRIVE MECHANISM

Ron Cox, 2208 Victoria St., Windsor, Ontario, Canada, and Elzi Pettovello, 6326 Appoline Dr., Dearborn, Mich. 48126

Filed Jan. 24, 1983, Ser. No. 460,711
Claims priority, application Canada, Jan. 29, 1982, 395204
Int. Cl.³ G03D *3/12*
U.S. Cl. 226—184 **9 Claims**

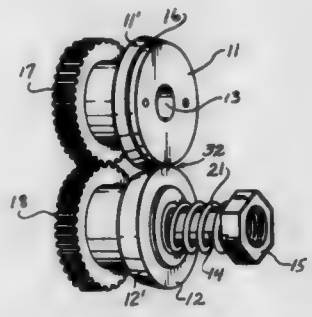
1. A drive mechanism for use in advancing an elongate object to a work station, comprising:

first and second separate, parallel shafts;

first and second frusto-conically shaped drive wheels mounted on said first and second shafts, respectively, each said drive wheel having a base, an apex, and a beveled face extending therebetween, said drive wheels being oppositely mounted on said shafts whereby the bases of said wheels face outwardly from each other and the apexes of said wheels face inwardly toward each other, said wheels being mounted in a face-engaging relationship to define a nip therebetween;

drive means coupled to said first drive wheel shaft to impart a rotational force to said first drive wheel;

idler means mounted on said second drive wheel shaft and coupled to said second drive wheel and cooperating with said drive means to impart to said second drive wheel a rotational force opposite to said rotational force of said first drive wheel;



resilient bias means mounted on and coaxial with said second shaft and engaging said second drive wheel to resiliently bias the face of said second drive wheel toward the face of said first drive wheel to provide a resilient gripping force between said drive wheels at said nip

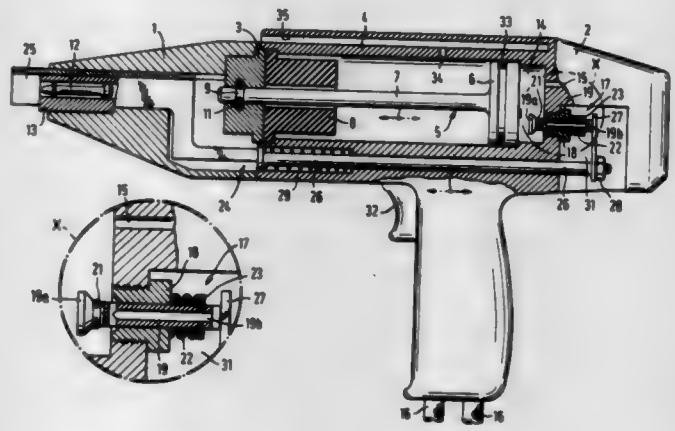
whereby elongate objects of different diameters fed into said nip will be resiliently gripped by and pulled between said first and second drive wheels as said drive wheels are caused to rotate; and means threadedly mounted on said second shaft and engaging said bias means for adjusting said bias means to vary said gripping force at said nip.

4,534,500

SETTING DEVICE WITH A DRIVING PISTON PROPELLED BY HIGH PRESSURE GASES

Peter Jochum, Meiningen, Austria, assignor to Hilti Aktiengesellschaft, Schaan, Liechtenstein

Filed Dec. 14, 1982, Ser. No. 449,821
Claims priority, application Fed. Rep. of Germany, Dec. 28, 1981, 3151658
Int. Cl.³ B27F *7/17*
U.S. Cl. 227—7 **6 Claims**



1. A setting device for inserting fastening members into a receiving material comprises wall means forming an axially extending working cylinder having a first end and a second end and with the axis thereof extending in the direction between the second end and the first end, a driving piston axially displaceably mounted within said working cylinder, said wall means forming an expansion chamber in communication with the second end of said working cylinder and arranged to receive a source of high pressure gases for displacing said driving piston axially through said working cylinder in the direction from the second end toward the first end thereof, and a vent valve opening directly into said expansion chamber and having a open position for connecting said expansion chamber to the

atmosphere and a closed position preventing flow of the gases out of said expansion chamber, wherein the improvement comprises that said setting device has an inactive position where it is incapable of inserting fastening members and an active position for inserting fastening members, in the inactive and active position said expansion chamber forms a volume with said vent valve in the open position corresponding to the inactive position of said setting device connecting said expansion chamber to the atmosphere, operating means located at least in part axially outwardly from the first end of said working cylinder and accessible on the exterior of said setting device and being displaceable in the axial direction of said working chamber toward the second end thereof for placing said vent valve in the closed position whereby said setting device is in the active position, said wall means comprises a front casing portion forming an opening for driving fastening members from said setting device, and a rear casing portion including said working cylinder, said first end of said working cylinder disposed in communication with said front casing portion, and said operating means includes a sensing element located within said wall means and extending outwardly from the opening from said setting device in the direction forming an extension of the axis of said working cylinder, a force accumulator is incorporated in said vent valve for biasing said vent valve into the closed position, a spring mounted in said wall means in operative engagement with said sensing element for biasing said sensing element in the direction outwardly from the opening from said setting device, and said sensing element being in contacting engagement with said vent valve for maintaining said vent valve in the open position with said spring overriding the biasing action of said force accumulator when said setting device is in the inactive position.

4,534,501

DEVICE FOR MARKING THE HEIGHT ABOVE THE FLOOR OF THE EDGES OF ARTICLES OF CLOTHING

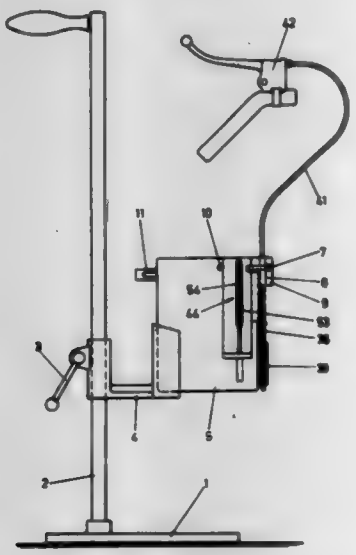
Harald Berns, Wuppertal, Fed. Rep. of Germany, assignor to Johann Knupp GmbH & Co., Solingen, Fed. Rep. of Germany

Filed Mar. 11, 1982, Ser. No. 357,240

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1981, 3111259

Int. Cl.³ A41H *9/02*

U.S. Cl. 227—65 **24 Claims**



1. In a device for marking the height above the floor of the edges of articles of clothing, having a fabric deflector with a deflection slot and a longitudinal channel transverse to the deflection slot, and a fabric pressing lever which is movable into the deflection slot, the fabric pressing lever having an immersion end portion with a recess which is alignable with the longitudinal channel of the fabric deflector, wherein the improvement comprises

a pin magazine shaft extending transversely of said channel and communicating with said channel, and

a pin insertion ram movable in said channel, and

actuating means operatively engageable with said pin insertion ram for automatically actuating movement of said pin insertion ram,

a first movable carriage member supporting said pin insertion ram, said first movable carriage member having a release step,

said actuating means, comprising a force accumulator means for acting on said first movable carriage member and for accumulating force with which to move said pin insertion ram, for charging said force accumulator means upon a swinging-in movement of said fabric pressing lever and for operatively releasing said force accumulator means via said release step in an end phase of the swinging-in movement of said fabric pressing lever so as to move said pin insertion ram.

4,534,502

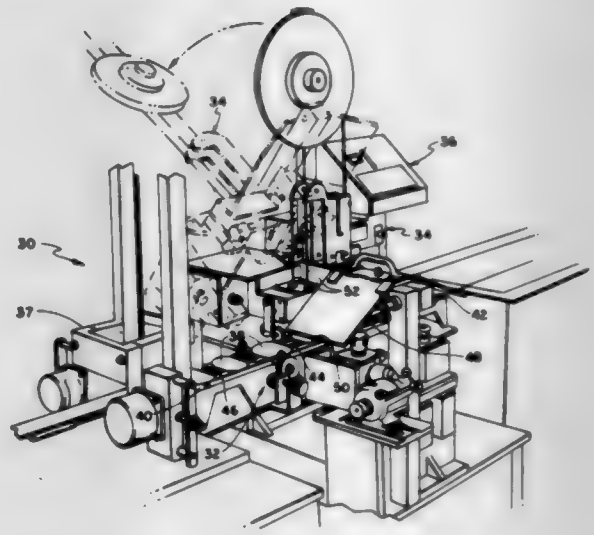
AUTOMATIC SOLDER MACHINE

Walter J. Piurek, Oxnard, Calif., assignor to Atlantic Richfield Company, Los Angeles, Calif.

Filed Feb. 14, 1983, Ser. No. 466,388

Int. Cl.³ H01L *35/34*

U.S. Cl. 228—102 **22 Claims**



1. Apparatus for applying at least one elongated conductor to a plurality of solar cells having first and second oppositely directed surface portions to establish electrical connection between the cells, comprising:

primary means for concurrently conveying the cells toward a preselected location at a first rate of speed and in a first spaced apart condition;

secondary means for conveying the cells from the preselected location at a second reduced rate of speed and in a second more closely spaced condition;

means for feeding at least one elongated conductor between each cell and a succeeding cell as they are conveyed from the preselected location, such that the conductor extends from the first surface portion of said cell to the second surface portion of the succeeding cell; and

means for soldering the conductor to said first and second surface portions at a second loaction downstream of said preselected location.

9. A method of applying at least one elongated conductor to a plurality of solar cells having first and second oppositely directed surface portions to establish electrical connection between the cells, comprising:

conveying the cells concurrently toward a preselected location at a first rate of speed and in a first spaced apart condition;

conveying the cells from the preselected location at a second reduced rate of speed and in a second more closely spaced condition;

feeding at least one elongated conductor between each cell and the succeeding cell as the cells are conveyed from the prese-

lected location, such that the conductor extends from the first surface portion of one cell to the second surface portion of the succeeding cell; and

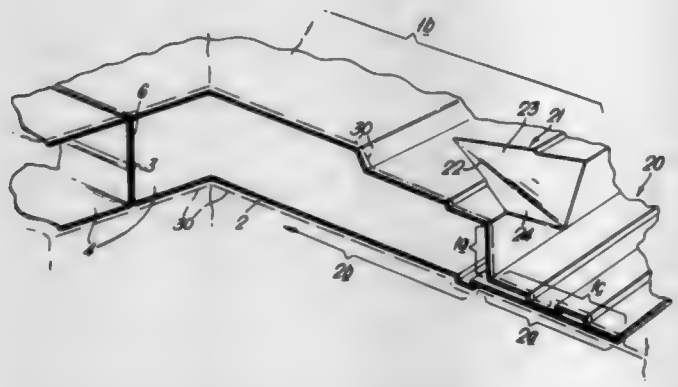
soldering the conductor to said first and second surface portions at a second location downstream of the preselected location.

4,534,503

STIFFENED PANEL

David Stephen; Martin H. Mansbridge, and Alan W. Highnam, all of Bristol, England, assignors to British Aerospace Public Limited Company, London, England

Filed Nov. 9, 1983, Ser. No. 550,213
Claims priority, application United Kingdom, Nov. 9, 1982, 8231913
Int. Cl.[3] B23K *28/02*; B21D *26/02*
U.S. Cl. 228—157 1 Claim



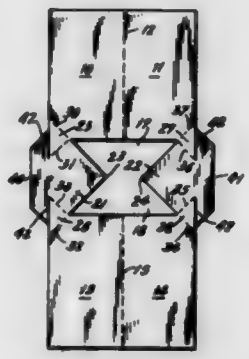
1. A stiffened panel of the type formed by a method including subjecting two metal sheets, both capable of superplastic deformation and diffusion bonding, which are positioned face to face, to a bending and deforming process during which the sheets are joined to one another at a series of spaced substantially continous joint lines across their faces, and during which parts of said sheets between the joint lines are superplastically deformed in a mould to form a series of cavities between the two sheets, portions of said sheets on respective sides of a joint line being moved to form sidewalls of two neighbouring cavities, these sidewalls being urged to lie adjacent one another over substantial parts of their areas, so that they become diffusion bonded one to another to form a common sidewall of neighbouring cavities, and having formed spaced apart regions where the sheets have contacted opposite mould faces is further formed with an outer lip region in which an edge region of one sheet remains generally aligned with that spaced apart region which it forms, whilst an edge region of the other sheet is deformed out of alignment with that spaced apart region which it forms to lie, firstly, generally transverse to the spaced-apart regions and, secondly, to be generally aligned with, and be attached to, said edge region of said one sheet, said generally transverse deformed region being further formed with inset generally V-shaped regions, the sides and the base of each V-shape being formed from the spaced-apart region and the deformed region of said other sheet and sloping toward the spaced-apart region of said one sheet, said base of at least some of said V-shaped regions being coincident with at least some of said common side walls, and said lip region being stiffened by spaced bridging formations extending from that spaced-apart region of said one sheet to an edge region therof, the bridging formation, when viewed from the side, being of generally segmental shape.

4,534,504

UNITARY CELLULAR PARTITION FOR CONTAINERS

Frank W. Locke, Minneapolis, Minn., assignor to Champion International Corporation, Stamford, Conn.

Filed Mar. 23, 1984, Ser. No. 592,891
Int. Cl.[3] B65D *5/48*
U.S. Cl. 229—15 6 Claims



1. A cellular partition structure formed from a planar blank for erection and insertion into a rectilinear container comprising:

first and second partition walls constituting a first pair of partition walls hingedly connected to each other by a fold line constituting a hinged connection and third and fourth partition walls constituting a second pair of partition walls hingedly connected to each other by a fold line constituting a hinged connection, each pair of partition walls having an upper end and a lower end;

a first and a second connecting section constituting a pair of opposite longitudinal connecting sections which are between and join said lower ends of each pair of partition walls with said first connecting section joining said first and third partition walls and said second connecting section joining said second and fourth partition walls;

wherein said partition has an open-ended upper section adapted to receive a fragile device and a lower section to support the partition structure and prevent its rotation in the container, the lower section of the partition being defined by an opening in the blank at the lower end of each pair of connected partition walls and said opposite longitudinal connecting sections, which connecting sections are along each side of said opening, the lower ends of said fold lines of said pairs of partition walls touching said opening;

said pairs of walls being initially spaced from each other in the blank on opposite sides of said opening, each said connecting section including means for folding said pairs of walls toward each other;

each pair of walls, when folded toward the other pair of walls, being bent angularly around the respective fold lines to form a substantial angle with the adjacent partition wall of the pair when the fold lines meet; said fold lines meeting along a single axis along the center of said container to form a four-celled partition.

4,534,505

EXPANDABLE FOOD CONTAINER

James W. Montealegre, St. Paul, Minn., assignor to Container Corporation of America, Chicago, Ill.

Filed Jan. 9, 1984, Ser. No. 569,450
Int. Cl.[3] B65D *5/00*
U.S. Cl. 229—33 1 Claim

1. An expandable package for holding unpopped popcorn in an oven and which is readily openable and expandable for holding said popcorn after it has been popped, said package being pentagonal at the botom and hexagonal at the top and being formed from a unitary blank of foldable sheet material, such as paperboard, and comprising:

(a) an elongated pentagonal bottom wall panel having a plurality of side wall panels foldably joined to side edges

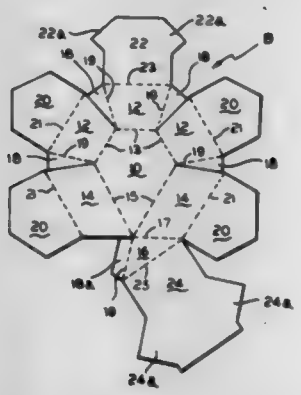
thereof, and to each other, and sloping upwardly and outwardly therefrom to present at the upper edges thereof a hexagonal configuration;

(b) said side wall panels including:

(i) three trapezoid shaped first panels foldably joined to three adjacent side edges of said bottom wall panel;

(ii) two parallelogram shaped second panels foldably joined to the remaining two side edges of said bottom wall panel;

(iii) said first and second panels defining five side wall panels which outline at the bottom thereof the pentagonal shape at the bottom of the package;



(c) one triangular shaped third panel foldably joined to a side edge of one of said second panels and forming a sixth side wall panel located between said second panels with one of the sides of said triangular-shaped third panel located at the top of said package to outline in combination with the top edges of said five side wall panels the hexagonal shape at the top of the package;

(d) six top closure panels foldably joined to upper edges of respective side wall panels and being folded over into overlapped relation to form a hexagonal shaped cover;

(e) certain of said closure panels being detachably secured with respect to each other, so that when popcorn in the package expands said closure flaps can separate from each other to form an open top receptacle.

4,534,506

THERMOPNEUMATIC MECHANISM FOR OPENING AND CLOSING A RADIATOR GRILLE

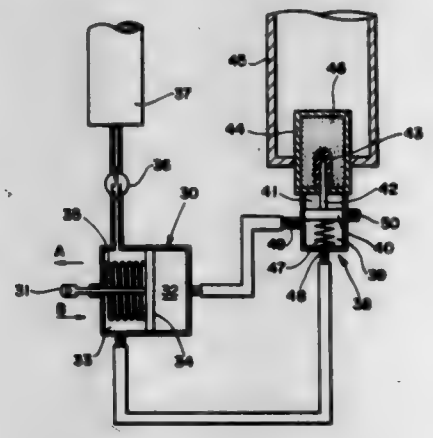
Keiichi Ishida; Junji Okumura, and Fumio Agetsuma, all of Toyota, Japan, assignors to Aisin Seiki Kabushiki Kaisha, Aichi, Japan

Filed Aug. 11, 1982, Ser. No. 407,301

Claims priority, application Japan, Aug. 13, 1981, 56-120343[U]; Aug. 13, 1981, 56-120345[U]; Aug. 13, 1981, 56-127286; Aug. 13, 1981, 56-127287

Int. Cl.³ F01P 7/12

U.S. Cl. 236—35.3 **1 Claim**



1. A radiator grille actuating mechanism for use on an automobile having a body and a vacuum source, and utilizing an engine coolant, comprising:

a radiator grille pivotably mounted on the automobile body;

a link mechanism connected to said radiator grille;

an actuator, including a cylinder having a vacuum chamber, a pressure chamber and a piston slidably positioned in said cylinder between said chambers, said piston having a plunger pivotably connected to said link mechanism for opening and closing said grille by the movement of the piston, said piston being biased toward said pressure chamber for closing said grille and drawn toward said vacuum chamber against said bias for opening said grille, under application of the vacuum from said vacuum source;

means for controlling the reciprocations of said piston in said cylinder in response to changes in temperature of said engine coolant, said controlling means including change-over switch means and a temperature sensor for actuating said switch means, said switch means including means for venting said pressure chamber to atmosphere to open said grille under said bias in a first position of the switch means and means for connecting said pressure chamber to said vacuum chamber for closing said grille in a second position of said switch means, said temperature sensor comprising a wax-type thermostat having a portion extending into said engine coolant and containing a mass of wax having a fixed melting point and a rod extending into said mass of wax for moving said switch means between the first and second positions according to the expansion and contraction of said wax about said melting point.

4,534,507

AIR TEMPERATURE REGULATING APPARATUS FOR VEHICLES

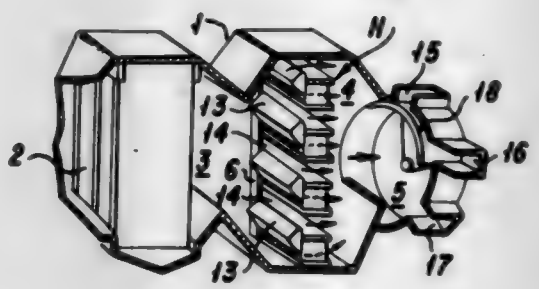
Tamotsu Matsuda, Wako, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 3, 1983, Ser. No. 471,470

Claims priority, application Japan, Mar. 3, 1982, 57-29757[U]; Mar. 18, 1982, 57-38223[U]; Mar. 18, 1982, 57-38224[U]

Int. Cl.³ G05D 23/00

U.S. Cl. 237—12.3 A **4 Claims**



1. An air temperature regulating apparatus for a vehicle including a unit case mounted in a front portion of a body of a vehicle having a fore portion, a rear portion, an air-intake chamber formed in the fore portion, an air-intake window for intaking air to said air-intake chamber, a single mixing chamber formed in the rear portion, a heat exchanger mounted between said air-intake chamber and said mixing chamber, one air exit in said mixing chamber for blowing out low temperature air, and another air exit in said mixing chamber for blowing out high temperature air, said heat exchanger comprising:

a flattened empty pipe having both ends remaining round, the pipe being bent in a zig-zag shape with the flattened portions extending horizontally, plural air-heating passages and unfinned passages being alternately arranged and defined between said flattened portions,

plural heat-radiating fins mounted in said air-heating passages, said exchanger being designed such that the temperature of air which flows past one end air-heating passage

becomes gradually higher than the temperature of air which flows past opposite end air-heating passage and such that the surface area of said heat-radiating fins being mounted on said one end air-heating passage becomes gradually higher than the surface area of said heat-radiating fins being mounted in said opposite end air-heating passage, and

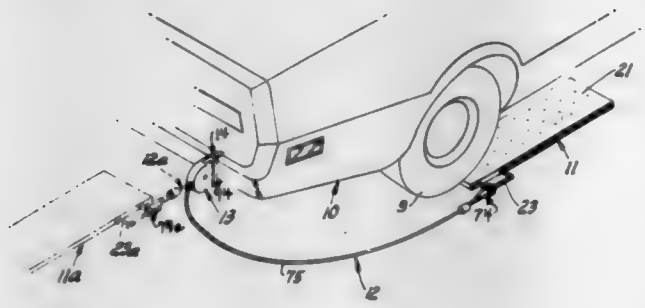
a damper mounted in front of said pipe variably adjustable to change an opening area of said air-heating passages.

4,534,508

ANTI-SKID DEVICE FOR VEHICLES

Lucas Willner, Jr., 14992 Kilbourne, Detroit, Mich. 48213

Filed Aug. 5, 1983, Ser. No. 520,607
Int. Cl.³ E01B *23/00*
U.S. Cl. 238—14 **9 Claims**



1. An anti-skid device for use with a vehicle ground engaging wheel, characterized in that it includes:

(a) an elongated traction pad having an end for wedging under the front end of a ground engaging wheel of a vehicle, and to allow production of traction on said pad upon rotation of said wheel onto the pad during a forward movement of the vehicle;

(b) a retractor means operatively mounted on the vehicle;

(c) said retractor means having a housing and including a cable coiled therein and adapted to have an outer end manually withdrawn therefrom and detachably connected to said pad; and,

(d) said retractor means including means for retracting said cable into the retractor means housing after said vehicle wheel has been moved onto the pad and over the same during a forward movement of the vehicle, the cable retracting means being operative to retract the cable into the retractor means housing and hold the pad in a position adjacent the retractor means.

4,534,509

MULTIPLE COMPARTMENT PLASTIC PACKING

Günter Holzner, Carouge, Switzerland, assignor to Firmenich SA, Switzerland

Continuation-in-part of Ser. No. 432,917, Sep. 28, 1982,. This application Jul. 20, 1983, Ser. No. 515,515
Int. Cl.³ B65D *81/32*
U.S. Cl. 239—34 **4 Claims**



1. A plastic packing for the storage and the delivery of active materials containing multiple compartments to accomodate liquid, solid or gel materials, said compartments being formed by the joinder of two flexible sheets of polymeric plastic materials, which packing is characterized in that it comprises:

at least one sealed storage compartment impervious to the active materials, and

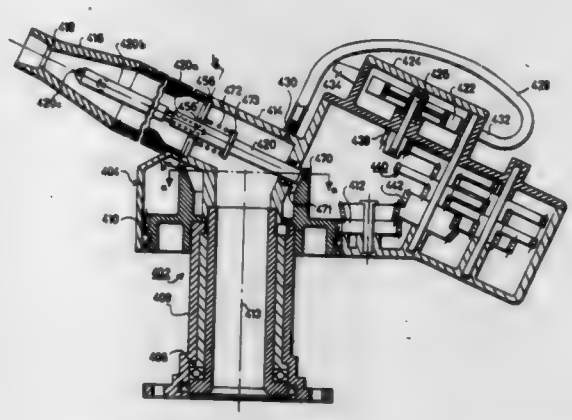
a sealed receiving compartment, said storage compartment being limited at its periphery by seams, at least one of which being constituted by a sheet of rupturable polymer plastic foam material which adheres on both its outer surfaces to leak-tight resilient polymeric plastic sheets, said seam rupturing internally within the foam material without rupture of the outer walls of the storage compartment when an external pressure is applied to one of the compartments to tear open said storage compartment and permit emptying of said active material into said receiving compartment without exposure of said material to the surrounding environment.

4,534,510

AREA PATTERN CONTROLLED SPRINKLER

Isaac Rinkewich, 12 Fishman Maimon St., Tel-Aviv, Israel

Filed Mar. 29, 1984, Ser. No. 594,726
Claims priority, application Israel, Oct. 21, 1983, 70024
Int. Cl.³ B05B *3/04*
U.S. Cl. 239—97 **18 Claims**



1. A water sprinkler comprising a housing having an inlet connectible to a pressurized water supply line; a nozzle carried by said housing and angularly displaceable about a vertical axis; a drive driven by the energy of the water in the pressurized water supply line for angularly displacing said nozzle about said vertical axis; a plunger movable to restrict and enlarge said nozzle; and a cam member effective during the angular displacement of the nozzle about said vertical axis, to control the displacement of said plunger so as to produce a water distribution pattern of predetermined configuration around the sprinkler.

4,534,511

FLOCKING APPARATUS

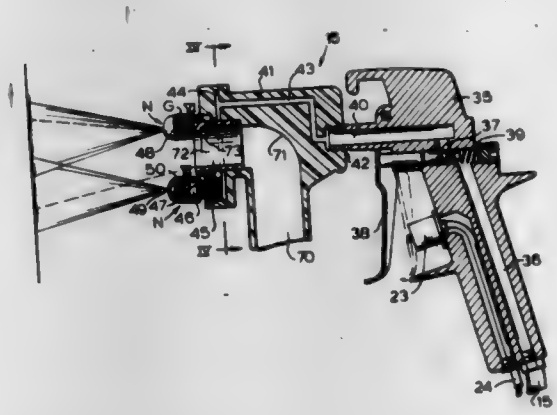
Hack A. Sullivan, Hammond, Ind., assignor to Sullivan Mfg. & Sales Corp., Hammond, Ind.

Filed May 13, 1983, Ser. No. 494,458
Int. Cl.³ B05B *7/14*
U.S. Cl. 239—336 **22 Claims**

1. An improved flocking machine comprising a handgun having a portion for applying a flock spray, a source of pressurized liquid connected to said handgun, and means for positively feeding dry flock to said handgun, the improvement comprises:

said sprayer portion having a linearly directed flock nozzle for the emission of said dry flock, a plurality of adjustable atomizer nozzles circumferentially disposed about said flock nozzle for respectively directing liquid spray streams in patterns which substantially circumferentially engulf said dry flock emitted from said flock nozzle and which intersect with one another at a point outward and

aligned with said flock nozzle, and a lip extending radially into the top of a discharging opening of said flock nozzle



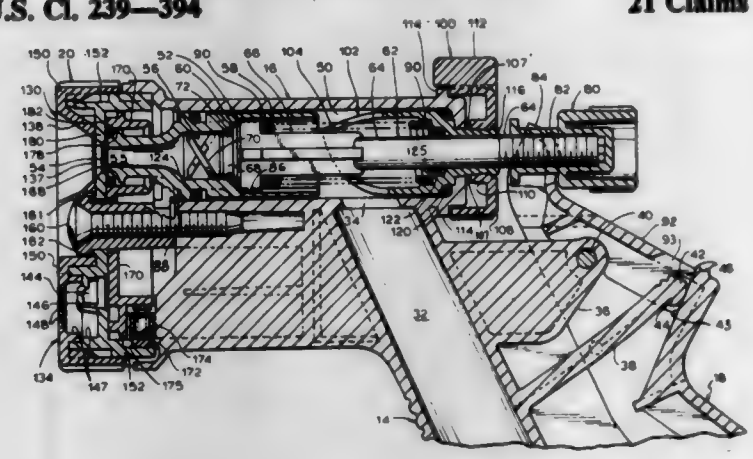
and eccentrically disposed between opposed side edges of said flock nozzle along the top of the discharge opening.

4,534,512

FLUID DISPENSER

Ho Chow, River Edge, and Sidney J. Goodman, Paramus, both of N.J., assignors to Melnor Industries, Inc., Moonachie, N.J.

Filed Mar. 21, 1983, Ser. No. 476,997
Int. Cl.[3] B05B *1/12, 1/16*
U.S. Cl. 239—394 21 Claims



1. A fluid dispenser having capabilities for no flow and first and second spray shapes comprising:

(A) a dispenser body defining a fluid inlet, a fluid outlet, and an internal passage for a fluid stream, said passage being in fluid communication with said inlet and outlet and defining a wide chamber, a narrow chamber and a valve seat, said valve seat being disposed intermediate said wide and narrow chambers and tapering from the diameter of said wide chamber to the diameter of said narrow chamber;

(B) a piston having spray shaping means and valve body means, said piston being movable among no flow and first and second solid spray shape positions,

(1) in said no flow position said valve body means engaging said valve seat to block flow through said passage and said spray shaping means being in said narrow chamber;

(2) in said first spray shape position said valve body means being spaced from said valve seat and said spray shaping means being disposed in said narrow chamber; and

(3) in said second spray shape position said valve body means being spaced from said valve seat and said spray shaping means being disposed in said wide chamber; and

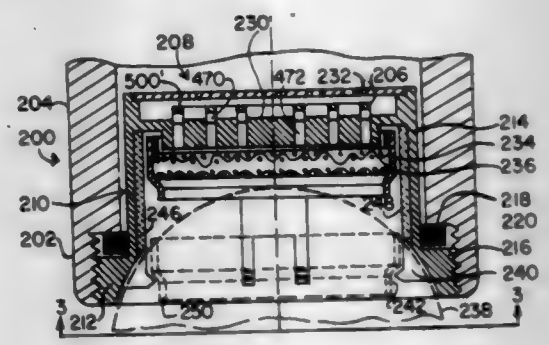
(C) means operatively connected to said piston for moving said piston among said positions.

4,534,513

CONCEALED AERATOR

Elie P. Aghnides, Hotel Pierre, 795 Fifth Ave., New York, N.Y. 10021

Filed Jan. 13, 1983, Ser. No. 457,775
Int. Cl.[3] E03C *1/084*
U.S. Cl. 239—428.5 38 Claims



1. An improved aerator for insertion into a spout through which water flows, the spout having (a) a downstream pipe portion with female threading along the inner surface thereof, the smallest diameter of the female threading being d_1; (b) an upstream pipe portion which (i) has a common longitudinal axis with and is axially adjacent to the downstream pipe portion and (ii) has an inner diameter d_2 which is less than d_1; and (c) an annular surface extending between the inner surface of the upstream pipe portion and the inner surface of the downstream pipe portion, the improved aerator comprising:

a tubular element including (a) a first tubular length having standard male threading therearound which is complementary with the female threading along the inner surface of the downstream pipe portion of the spout, the diameter of the threaded first length being substantially equal to d_1; (b) an unthreaded second tubular length which shares a common longitudinal axis with and is axially adjacent to the first length of the tubular element and has an outer diameter d_3 which is less than d_2; and (c) an annular ledge extending between the outer wall of the second length and the outer wall of the first length;

an annular sealing element;

jet forming means for forming the flow of water into jets, the jet forming means being encircled by the tubular element;

wherein the second length of the tubular element fits within the upstream portion of the spout when the first length of the tubular element is screwed into the downstream portion of the spout;

wherein the annular sealing element comprises a sealing interface between the annular ledge of the tubular element and the annular surface of the spout when the aerator is screwed into the spout; and

wherein the aerator is at least partially concealed when the aerator is screwed into the spout.

4,534,514

CONCEALED AERATOR WHICH SEALS AGAINST A SPOUT WHEN INSERTED THEREIN

Elie P. Aghnides, Hotel Pierre, 795 Fifth Ave., New York, N.Y. 10021

Continuation-in-part of Ser. No. 457,775, Jan. 13, 1983,. This application Sep. 15, 1983, Ser. No. 532,289
Int. Cl.[3] E03C *1/08*
U.S. Cl. 239—428.5 18 Claims

1. An improved tubular aerator for insertion into a spout through which water flows, the spout having (a) a downstream pipe portion with standard female threading along the inner surface thereof, the smallest diameter of the female threading being d_1; (b) an upstream pipe portion which (i) has a common longitudinal axis with and is axially adjacent to the downstream pipe portion and (ii) has an inner diameter d_2 which is less than d_1; and (c) an annular shelf extending between the

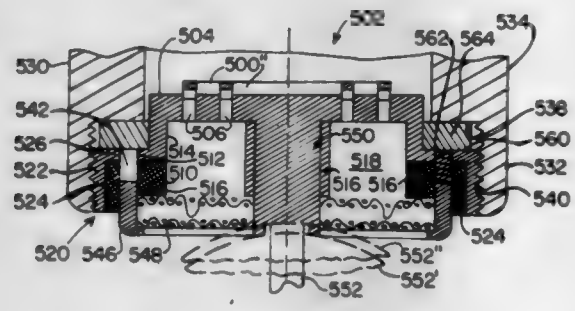
inner surface of the upstream pipe portion and the inner surface of the downstream pipe portion, the improved aerator comprising:

a disk of diameter less than d_2 having at least one aperture therein through which water can flow;

an annular rim extending radially outward from a downstream part of said disk;

a body portion extending downstream from said rim, said body portion having air inlets defined therein and defining a chamber downstream from said disk;

a ring with male threading complementary with the spout threading encircling said rim, said ring being spaced radially outward from said rim;



means for coupling said ring to said rim maintaining an air space therebetween which extends downstreawardly about said body portion around at least an arcuate length thereof, the air space defining a passageway for air into the chamber through the air inlets; and

means for producing a seal against the upstream surface of said rim and the upstream surface of said ring to close off the upstream end of the air space therebetween when the aerator is screwed into the spout;

said seal producing means acting to confine the flow of air and the flow of water into the chamber;

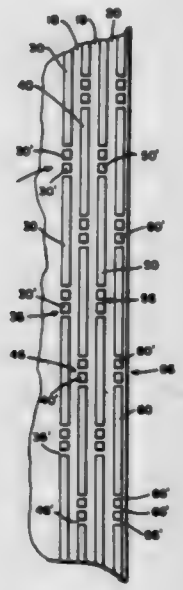
said disk at least partially extending up into the upstream pipe portion when the aerator is screwed into the spout, the aerator thereby being at least partially concealed.

4,534,515

DRIP IRRIGATION SYSTEM EMPLOYING ADJACENTLY ARRANGED FLOW-RESTRICTING PASSAGES

Richard D. Chapin, 368 N. Colorado Ave., Watertown, N.Y. 13601

Filed Apr. 1, 1982, Ser. No. 364,229
Int. Cl.³ A01G *25/02*
U.S. Cl. 239—542 **45 Claims**



1. For use in a fluid-distributing system for plants and the like, an elongated fluid-distributing hose having a longitudinal axis, said hose comprising:

an elongated, water-impervious planar material having longitudinally extending margins, said material folded upon itself to overlap said margins thus defining inner and outer margins, said outer margin defining a first exterior wall and said inner margin defining a second interior wall;

a discrete main supply channel being adapted for communication with a source of pressurized fluid;

first, second and third discrete elongated flow-restricting passages aligned one next to the other in a common plane and disposed about the exterior of the main supply channel between said interior end exterior walls, each passage being essentially parallel to and substantially equidistant from the longitudinal axis of said hose, each passage being continuous and uninterrupted throughout the full longitudinal length of said hose;

a first wall member secured to said interior and exterior walls separating said main supply channel and said first passage;

a second wall member secured to said interior and exterior walls separating said first and second passages;

a third wall member secured to said interior and exterior walls separating said second and third passages;

first fluid-passing stations in said first wall member for passing fluid directly from said discrete main supply channel passage to said first discrete passage;

second fluid-passing stations in said second wall member for passing fluid directly from said first discrete passage to said second discrete passage;

third fluid-passing stations in said third wall for passing fluid directly from said second discrete passage to said third discrete passage; and

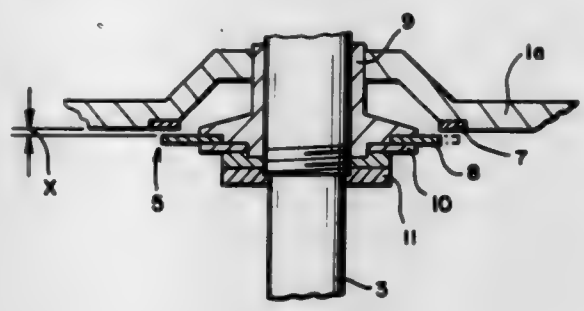
discharge fluid-passing stations from said third passages to the exterior of the hose for passing fluid directly from said third passage to the exterior of the hose.

4,534,516

DYNAMIC SEPARATOR FOR A GRINDING MILL

Iwao Hashizume, 11-1 Shinjyo-cho, Ibaragi-shi, Osaka, Japan

Continuation of Ser. No. 346,593, Feb. 8, 1982, abandoned. This application Jun. 14, 1984, Ser. No. 620,533
Claims priority, application Japan, Mar. 16, 1981, 56-37714[U]
Int. Cl.³ B02C *17/16*
U.S. Cl. 241—171 **2 Claims**



1. A grinding mill comprising a dispersive agitation tank and a dynamic separator, said dynamic separator comprising: a stator extending in a horizontal plane and fixed to a top wall of said agitation tank; and

a rotor extending in a horizontal plane and located vertically below said stator within said agitation tank and facing said stator with a small predetermined gap between a horizontally extending surface of the stator and a horizontally extending surface of the rotor in order to separate a dispension medium from a processed material, said rotor having a vertically extending axis of rotation and an outer periphery, wherein a horizontally extending radial distance from one point on said periphery to said axis of rotation is not equal to a horizontally extending radially distance from at least one other point on said periphery to

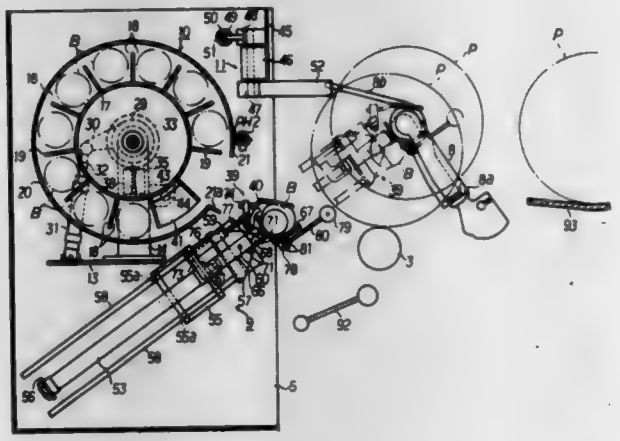
said axis of rotation, so that an overlap of a rim of said rotor relative to a rim of said stator varies constantly.

4,534,517

METHOD OF AUTOMATIC DOFFING IN A SPINNING UNIT

Shigeru Muramatsu, Okazaki; Isao Asai, Toyota, and Takayuki Morita, Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 11, 1983, Ser. No. 540,492
Claims priority, application Japan, Oct. 13, 1982, 57-179480
Int. Cl.³ B65H *54/26, 67/04*
U.S. Cl. 242—35.5 A **11 Claims**



1. A method for automatically and substantially contemporaneously doffing a full-yarn package from, and donning an empty bobbin on the bobbin holder of a yarn spinning unit, comprising the steps of:

releasably grasping said empty bobbin in a bobbin grasping unit mounted on a bobbin loading device while said bobbin loading device is in a first position thereof spaced away from said bobbin holder;

opening said bobbin holder and thereby doffing said full-yarn package onto a support therebelow;

moving said bobbin loading device, carrying said grasped empty bobbin therein, from its said first position to a second position thereof wherein said carried empty bobbin is positioned within said opened bobbin holder;

said full-yarn package while on said support being within the path of movement of said bobbin loading device from its said first position to its said second position;

said bobbin loading device during said movement from its first position to its second position engaging and pushing said full-yarn package from said support onto a package delivery conveyor for conveying of said full-yarn package away from said bobbin holder;

closing said bobbin holder and releasing said empty bobbin from said bobbin grasping unit while said bobbin loading device is in its said second position, and thereby donning said empty bobbin on said bobbin holder;

and then moving said bobbin loading device from its said second position to its said first position.

4,534,518

AUTOMATIC LABEL WINDER

Tadao Kashiwaba, Kitakami, Japan, assignor to Kabushiki Kaisha Sato, Japan

Filed Aug. 21, 1984, Ser. No. 642,830
Claims priority, application Japan, Aug. 24, 1983, 58-153161
Int. Cl.³ B23P *23/00*; B65H *19/20*
U.S. Cl. 242—56 R **23 Claims**

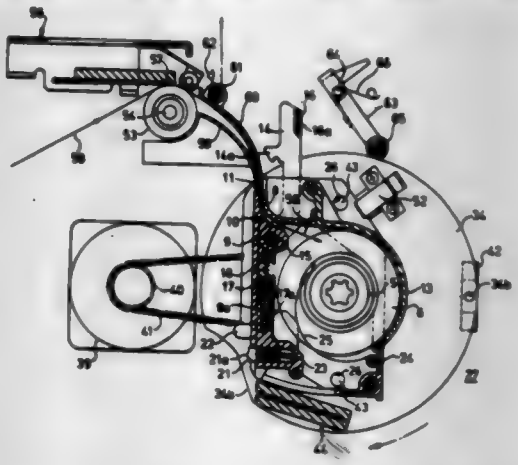
1. An automatic label web winder for automatically winding a label web having printing labels upon the take-up core of a label cassette, said winder comprising:

a rotatable turntable;

means for relasably securing a label cassette to said turntable in such manner that said label cassette rotates with said turntable when it is secured thereto;

means for guiding a label web into said cassette when said cassette is secured to said turntable;

means for rotating a take-up core of said cassette when said



cassette is secured to said turntable and after said label web has been guided into said cassette;

means for rotating said turntable after said label web has been wound about said core; and

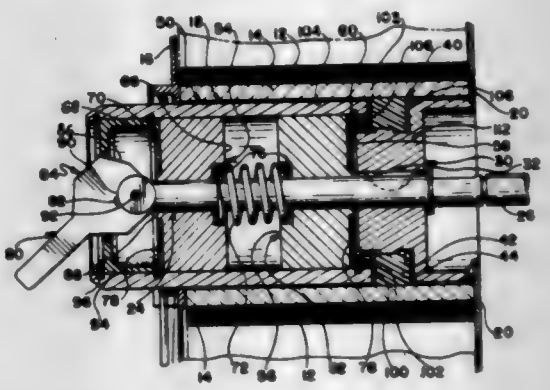
means responsive to said rotation of said turntable for cutting said label web.

4,534,519

PHOTOGRAPHIC PAPER ROLL CORE HOLDING DEVICE

Charles L. Euteneuer, St. Michael, and Robert E. Diesch, Rogers, both of Minn., assignors to Pako Corporation, Minneapolis, Minn.

Filed Feb. 8, 1983, Ser. No. 464,962
Int. Cl.³ B65H *19/02, 75/24*
U.S. Cl. 242—68.3 **10 Claims**



1. A holding device for securing a photographic paper roll core having an inner cylindrical surface concentrically about a rotatable shaft, the holding device comprising:

an annular shoulder portion fixed concentrically about the shaft;

a cylindrical compression sleeve positioned concentrically about the shaft and movable in an axial direction along the shaft;

a resilient clamping ring positioned concentrically about the shaft between the shoulder and the cylindrical compression sleeve;

cam actuated means for selectively urging the cylindrical compression sleeve toward the shoulder so that the resilient clamping ring is deformed from a first radially retracted position between the cylindrical compression sleeve and the shoulder into a second radially extended position in which the resilient clamping ring engages the inner cylindrical surface of the paper roll core to secure the paper roll core for rotation with the shaft;

spring bias means for transmitting the urging force from the cam actuated means to the cylindrical sleeve; and

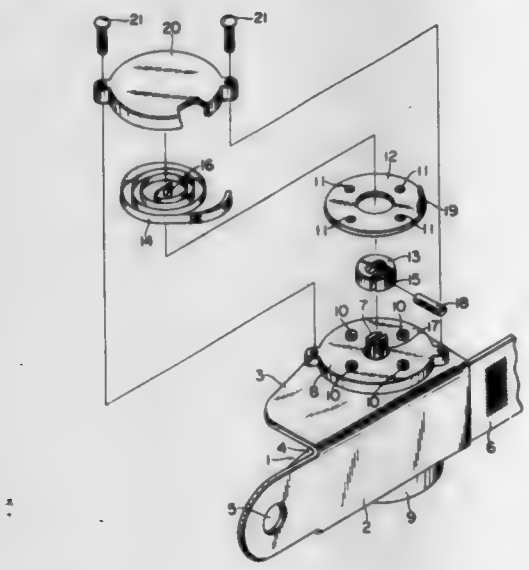
a friction reducing expansion ring between the resilient ring and the cylindrical compression sleeve and a friction reducing expansion ring between the resilient ring and the annular shoulder each of which expansion rings expands radially for uniformly permitting the resilient ring to move radially outwardly from the shaft and concentrically engage the inner cylindrical surface of the paper roll core.

4,534,520

WEBBING TAKE-UP AMOUNT LIMITING DEVICE OF A RETRACTOR

Hideo Yanagihara, Fujisawa, Japan, assignor to NSK-Warner K.K., Tokyo, Japan

Filed Dec. 19, 1983, Ser. No. 563,218
Claims priority, application Japan, Dec. 28, 1982, 57-195905
Int. Cl.[3] A62B *35/00*; B65H *75/48*
U.S. Cl. 242—107 6 Claims



1. In a webbing retractor having a webbing take-up shaft rotatably supported on a base and biasing means for biasing said shaft in the webbing take-up direction to take up said webbing around said shaft, a device for limiting the amount of webbing take-up, said device comprising means for preventing webbing take-up rotation of said shaft, said preventing means including an elongated flexible member connected between said base and said shaft and having means for tensioning said member in opposition to the force of said biasing means as said shaft rotates in the webbing take-up direction and thereby to prevent further rotation of the shaft in the webbing take-up direction when a predetermined amount of the webbing has been taken up.

4,534,521

INERTIA SENSOR IN BELT REELS FOR VEHICLE BELTS

Hans C. Sylvén, Reimers gata 10, S-447 00 VÅrgÅrda, Sweden

Continuation of Ser. No. 574,936, Jan. 27, 1984, abandoned, which is a continuation-in-part of Ser. No. 403,746, filed as PCT SE 81/00355 filed Feb. 7, 1981, published as WO 82/02000 Jun. 24, 1982 § 102(e) date Jul. 29 1982, abandoned. This application Sep. 13, 1984, Ser. No. 650,332
Claims priority, application Sweden, Dec. 8, 1980, 8008590
Int. Cl.[3] B65H *75/48*
U.S. Cl. 242—107.4 A 7 Claims

1. An inertia sensor in a belt reel for a vehicle belt for actuating a latch mechanism whether or not a bias means operatively connected with the sensor is functional, and functioning both as a passive and as an active sensor, comprising, in combination:

(a) a belt reel having a latch mechanism;

(b) a transmission element in the form of a double-arm lever with a first lever arm movable between an at-rest position and an actuating position, for operative interaction with the latch mechanism, to move it into a reel-latching position;

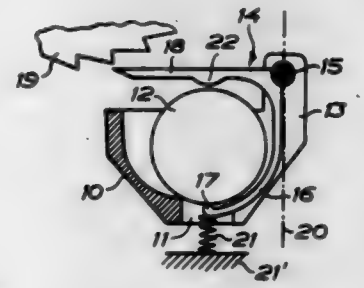
(c) a support for a rolling body;

(d) a rolling body carried on the support, normally in an at-rest position, and movable thereon between at-rest and lever arm-actuating positions;

(e) the double-arm lever being adjustable so that the first lever arm actuates the latch mechanism when the rolling body is in the actuating position;

(f) the lever extending around the rolling body in such a manner that a second lever arm engages and is retained by the lower side of the rolling body whenever the rolling body is in the at-rest position, and the first lever arm is positioned above the rolling body, with a lever arm fulcrum positioned therebetween;

(g) bias means biasing the first lever arm into the latch-actuating position whenever the second lever arm is released by the rolling ball, in moving from the at-rest into the actuating position, and in the at-rest position biasing the first lever arm into a position spaced from and above the rolling body, but still in a position to be engaged by the rolling body, in the event of nonfunctioning of the bias means, whenever the body moves from the at-rest to the actuating position;



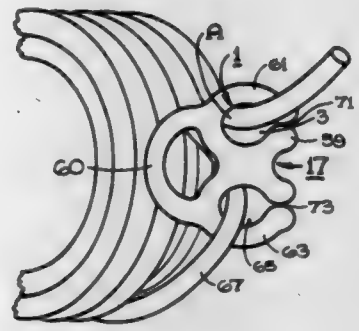
(h) the first lever arm whenever the bias means does not bias the first lever arm into the actuating position being engaged by the rolling body and moved by the rolling body into the latch-actuating position, whenever the body moves from the at-rest to the actuating position; whereby, whether or not the bias means is functional, upon movement of the rolling body from the at-rest into the actuating position the first lever arm is moved into a position in which it actuates the latch mechanism.

4,534,522

SPOOL RETAINING DEVICE

Robert L. Spence, 808 Birch Ave., Escondido, Calif. 92027

Filed Oct. 18, 1984, Ser. No. 662,032
Int. Cl.[3] B65H *55/00, 75/28*
U.S. Cl. 242—172 4 Claims



1. In combination with a spool having strand material wound thereon, a device for retaining the strand material intermediate the ends of the spool during unwinding of the strand material from the spool; said device comprising an element having two spaced apart apertures formed therethrough, each aperture larger than the strand material on said spool; an end of said strand material passing through one of said apertures, around said spool and through the other of said apertures, whereby the strand material extending from the other of said apertures diverges from the strand material extending through said one

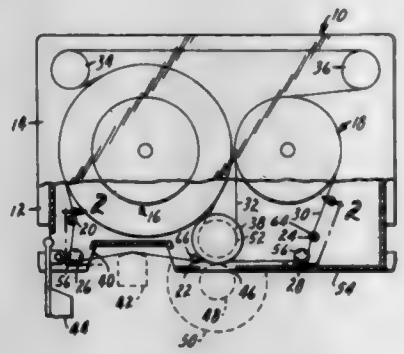
of said apertures during unwinding to maintain said element loosely adjacent the outer windings of said strand material on said spool and to allow said element to slip around said spool during unwinding.

4,534,523

TAPE GUIDANCE FOR BELT DRIVEN CARTRIDGE

Myron Zarr, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jun. 29, 1984, Ser. No. 626,137
Int. Cl.[3] G03B *1/04*; G11B *15/32*
U.S. Cl. 242—192 3 Claims



1. In a tape cartridge of the type including walls defining an enclosure in which a magnetic tape is directed along a tape guidance path parallel to an edge of the cartridge for access by a magnetic transducer, the improvement comprising:

at least three tape guidance surfaces bearing against one or both major surfaces of said tape in a direction perpendicular to the plane of said tape;

each of said tape guidance surfaces including at least one enlarged shoulder extending from said tape guidance surface toward said tape to bear upon an edge of said tape and provide a containment force parallel to the plane of said tape and in a direction transverse to the direction of tape motion;

said shoulders of said tape guidance surfaces being arranged alternately along said tape path so that the shoulders of successive tape guidance surfaces bear against opposite edges of said tape; and

wherein the planes containing said shoulders are spaced a distance equal to or less than the width of said tape to ensure contact between all of said shoulders and said tape edges and positive confinement of said tape in said direction transverse to tape motion.

4,534,524

POSITION AND CONTROL SYSTEM FOR HELICOPTER BLADE ACTUATION

Allyn M. Aldrich, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Oct. 5, 1983, Ser. No. 539,119
Int. Cl.[3] B64C *27/605*
U.S. Cl. 244—17.25 3 Claims

1. A position and control mechanism for use in an aircraft comprising:

a hollow rotor shaft adapted to be journalled on a aircraft fuselage, to be driven by a prime mover, and mount, with provision for pitch adjustment, a plurality of blades;

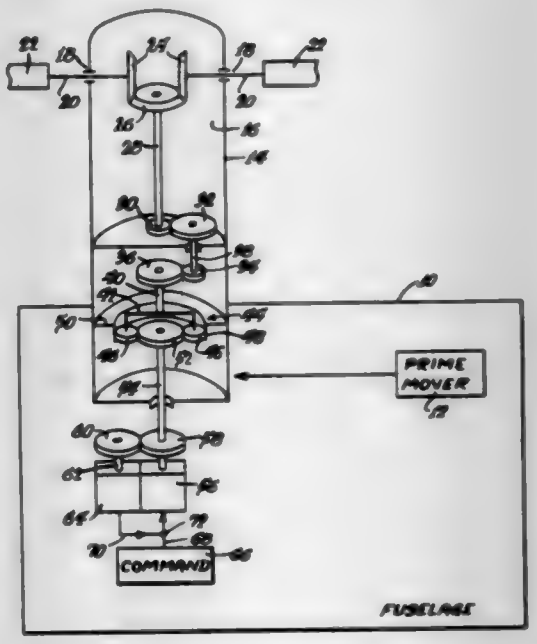
a plurality of bevel gears, one for each of said blades, rotatably mounted in said rotor shaft and adapted to controllably alter the pitch of the associated blade upon rotation relative to said rotor shaft, said bevel gears being connected to said blades and being rotatable with said rotor shaft;

at least one control shaft within said rotor shaft and rotatable relative thereto, said control shaft mounting a drive gear in engagement with at least one of said bevel gears for rotating the same upon rotation of said control shaft relative to said rotor shaft;

a planetary gear assembly including a ring gear, a sun gear, and at least one planet gear and associated carrier;

a speed change gear assembly within said rotor shaft including first, second, third and fourth gears, said second and third gears being affixed to a common shaft rotatable within said rotor shaft and meshed respectively with said first and fourth gears, said gears being dimensioned such that said fourth gear rotates at a greater rate than said first gear;

a drive unit adapted to be mounted on a fuselage in fixed relation thereon relative to said rotor shaft;



said sun gear being connected to said drive unit to be selectively driven thereby;

said ring gear being fixed to said rotor shaft to be driven thereby;

said carrier being connected to said first gear to drive the same;

said fourth gear being connected to said control shaft;

said gear assemblies being constructed and arranged such that when said sun gear is not being driven by said drive unit, said control shaft will rotate in the same direction and the same rate as said rotor shaft and when said sun gear is being driven by said drive unit, said control shaft will rotate relative to said rotor shaft to controllably alter the pitch of at least one of said blades.

4,534,525

EVACUATED BALLOON FOR SOLAR ENERGY COLLECTION

Emmanuel E. Bliamptis, 20 Phinney Rd., Lexington, Mass. 02173

Continuation-in-part of Ser. No. 372,859, Apr. 28, 1982, abandoned, which is a continuation of Ser. No. 171,612, Jul. 23, 1980, abandoned. This application May 10, 1983, Ser. No. 493,386
Int. Cl.[3] B64B *1/58*; B64D *27/24*
U.S. Cl. 244—30 3 Claims

1. An evacuated balloon-like device for solar energy collection and microwave energy transmission, said balloon comprising:

a hollow, substantially cylindrically-shaped structure having hemispherically-shaped end caps, said structure having rigid means and inflatable means within the interior thereof for maintaining said cylindrical shape of said structure, and a plurality of substantially air tight compartments;

said inflatable means for maintaining said substantially cylindrical shape of said structure including a plurality of

spaced apart inflatable strut rings, each of said strut rings having a plurality of inflatable elements, and wherein said inflatable strut rings are capable of being inflated as said structure is evacuated;

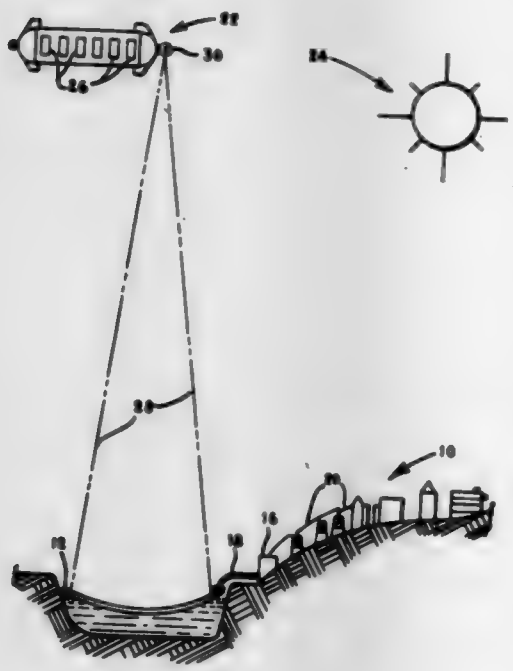
said rigid means including an elongated, hollow, cylindrical longitudinally extending beam;

means within said structure for evacuating air from said interior of said structure and for utilizing said evacuated air for guiding and stabilizing said structure;

means forming a portion of said structure for allowing solar radiation to pass therethrough and enter said interior of said structure, and means formed within another portion of said interior of said structure for reflecting and focusing said solar radiation;

solar panel means within each of said air tight compartments of said structure adjacent said reflecting and focusing means for receiving and collecting said focused solar radiation and converting said solar radiation to electrical energy;

a plurality of exterior control surfaces and means for passing said evacuated air for guiding said structure over said control surfaces in a regulated fashion so as to control the



movement of said structure based upon Bernoulli's principle;

means within said structure for receiving said electrical energy and converting said electrical energy to microwave energy, and means operably associated with said structure for transmitting said microwave energy;

means within said structure for receiving said electrical energy and using said electrical energy to operate said evacuating means so as to maintain said evacuation of said structure at a pressure that positions said structure at an altitude of substantial windlessness of approximately 30 km and whereat untethered structure positioning at a fixed relationship to ground can be maintained within minimum effort; and

means within said structure for distributing a substantial portion of said electrical energy to set electrical energy receiving and converting means and distributing a lesser portion of said electrical energy to said electrical energy receiving and using means;

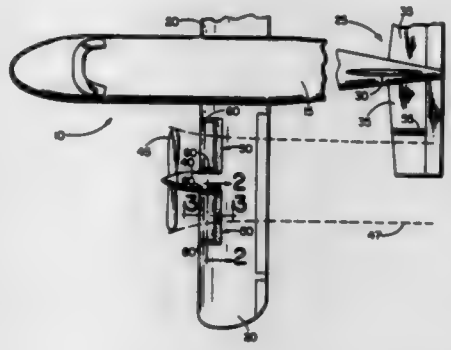
whereby said balloon provides a self-contained apparatus for efficiently converting solar energy to a readily usable form of energy.

4,534,526

CABIN NOISE SUPPRESSION IN PROPELLER DRIVEN AIRCRAFT

Frederick B. Metzger, Simsbury, and Bernard Magliozzi, West Suffield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1982, Ser. No. 453,199
Int. Cl.[3] B64C 1/26, 1/40, 3/00
U.S. Cl. 244—38 7 Claims



1. In an aircraft including a fuselage and a wing and powered by one or more engine driven propellers each establishing a wake downstream thereof, said wake impinging on said aircraft wing, the improvement characterized by:

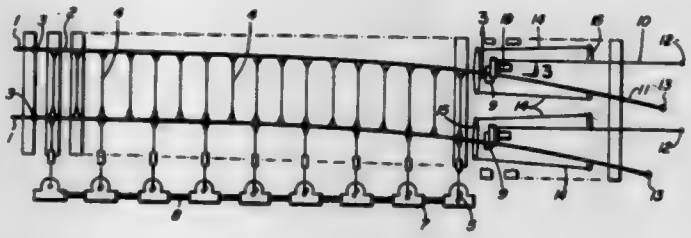
said wing being provided at the outer surface thereof with vibration isolating means disposed between said fuselage and the location of impingement of said propeller wake with said wing, said vibration isolating means including first and second elongate portions extending generally parallel to the boundary of said wake and a third portion connecting said first and second portions and oriented generally perpendicular thereto, thereby isolating said location from said fuselage for minimizing the propagation of vibration from said wake to said fuselage through said wing.

4,534,527

ALL WEATHER SWITCH FOR RAILROADS

Lawrence A. J. van Eyken, Kingston, and Semion Perlin, Willowdale, both of Canada, assignors to Canadian Patents & Development Limited, Ottawa, Canada

Filed Jan. 30, 1984, Ser. No. 575,407
Int. Cl.[3] E01B 7/02
U.S. Cl. 246—445 7 Claims



1. A stub switch construction comprising:

(a) a pair of fixed longitudinally extending parallel, spaced straight through rails;

(b) a pair of fixed longitudinally extending parallel spaced turnout rails;

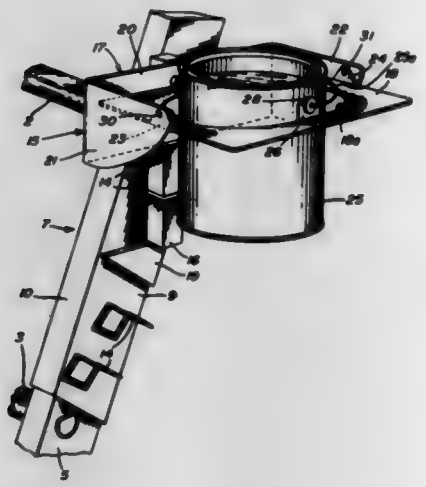
(c) a pair of longitudinally extending parallel spaced switch rails movable at one end thereof between a first position in axial alignment with said longitudinally extending straight through rails and a second position in axial alignment with said longitudinally extending turn out rails; and

(d) a pair of radius arms extending, on opposed sides of each of said switch rails, from a selected attachment point thereon to a selected attachment point on opposed sides of said straight through and turnout rails respectively, to thereby transmit axial rail tension and compression forces through said switch.

4,534,528
PAINT CAN HOLDER

Michel Rousseau, 795, Place Matte, Saint-Tite, Canada G0X 3H0

Filed Jan. 27, 1984, Ser. No. 574,529
Int. Cl.³ E06C 7/14
U.S. Cl. 248—210 2 Claims



1. A device for supporting a cylindrical can on a ladder having a plurality of rungs between side rails, said can being of the type having a handle and a pair of rounded, diametrically-disposed handle-anchoring supports laterally protruding from said can near the top open end thereof, said device comprising a hook member adapted to be installed over a portion of one of said side rails, said hook member comprising an interior flange and an exterior flange adapted to extend respectively on either side of one of said side rails, and a transverse web joining laterally said interior and exterior flanges, a hook-shaped slot formed in said interior flange and adapted to engage one of said rungs, a can-supporting plate, support means carried by, and protruding from, said exterior flange and supporting said plate in a generally horizontal position when said hook member is installed on one of said rails, said can-supporting plate having an elongated aperture, of a length longer than the diameter of said can and of a width to have a close fit with one such can inserted through said aperture, a pair of spaced brackets upstanding from and respectively secured to said plate on each side of and contiguous to said aperture, each bracket having a semi-circular notch at its top edge, said notches being joined by a straight line transverse to the mid-length of said elongated aperture and normal to said exterior flange, said aperture adapted to receive said can to a level where said handle-anchoring supports seat in said notches and said handle rests on said plate, whereby said can may automatically pivot under gravity in said notches about said handle-anchoring supports to stay level despite varying ladder inclinations in a plane transverse to the plane containing said rails.

4,534,529
SHELF BRACKET AND COOPERABLE LOCKING BRACKET RETAINER

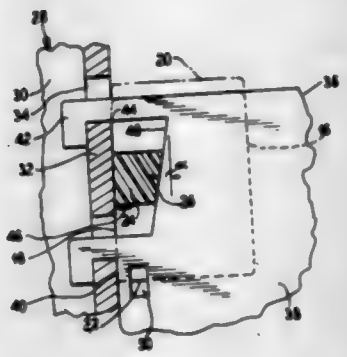
Steven C. Dorner, 5322 Fair Elms Ave., Western Springs, Ill. 60558

Filed Jun. 13, 1983, Ser. No. 503,668
Int. Cl.³ F16L 3/08
U.S. Cl. 248—222.1 5 Claims

1. In combination, a support bracket and a bracket retainer for mounting on a vertical wall structure which includes a member having an inner surface and a plurality of spaced slots therethrough,

said bracket comprising a support member for supporting an article thereon, a proximal end, a distal end, a pair of L-shaped projections extending from said proximal end for hooking through respective ones of slots, each of said projections including an edge facing said distal end, and means defining a recess in said bracket including a locking edge extending at a downwardly convergent angle with respect to said proximal end, and

said bracket retainer comprising at least one first member plate for engaging the wall structure including an end, and

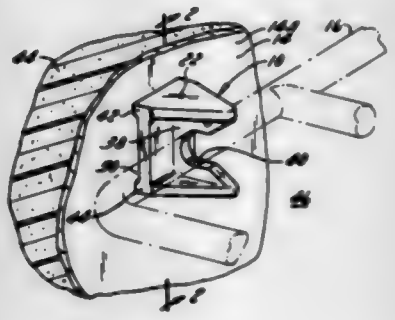


a second member connected to said plate including a locking surface complemental to and for engaging said locking edge, and effective to wedge said edges of said L-shaped projections against the inner surface of the wall structure in response to a tap on said end.

4,534,530
SUPPORT ASSEMBLY AND APPARATUS USING SAME

Arthur J. Danko, Oaklawn, Ill., assignor to Phillips Plastics Corporation, Phillips, Wis.

Filed Mar. 19, 1984, Ser. No. 591,166
Int. Cl.³ A47G 29/02
U.S. Cl. 248—239 7 Claims



1. In combination:

a panel having a hole therethrough and having a front side and an opposite rear side;

and a support assembly for engaging an object to be associated with said front side of said panel and including a grommet member formed of relatively resilient plastic and a support member formed of relatively non-resilient plastic, said grommet member having a bore therein extending inwardly from said front side of said panel and closed at its other end,

and said support member being mounted in said bore and engageable with said object;

said grommet member being releasably mounted by insertion into said hole from said front side of said panel and having portions extending from said hole on the front and rear sides of said panel;

the portion of said grommet member extending on said front side of said panel comprising a resiliently deformable flange disposed on said front side of said panel and engaged therewith to effect a sealed relationship of said grommet member with said edge of said hole;

said grommet member further comprising resilient locking projections disposed on said rear side of said panel and releasably engaged therewith to effect releasable mounting of said grommet member in said hole and to effect resilient deformation of said deformable flange;

said support member including a serrated rigid shank remov-

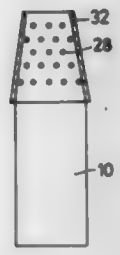
ably inserted into said blind bore in said grommet member and having a support portion extending from said front side of said panel for engagement with said object and including a rigid flange engageable with said front side to transfer a load thereto.

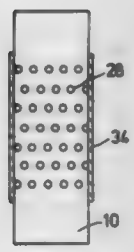
4,534,531

ELONGATED PROP FOR SUPPORTING A LOAD

Allan H. G. Brown, 35 Marilyn St., Klerksdorp, South Africa

Filed Jul. 14, 1981, Ser. No. 283,157
Claims priority, application South Africa, Jul. 22, 1980, 80/4400
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—351 6 Claims





1. An elongated prop for supporting a load applied longitudinally comprising an elongated substantially cylindrical solid support member having at least one region of reduced cross-sectional area formed in it when unconstrained, and substantially cylindrical reinforcement means that is shorter than the prop and that has insignificant load carrying properties in the longitudinal direction and that encircles the support member over at least part of the region of reduced cross-sectional area, there being at least one void in the support member and surrounded by the reinforcement means into which the support member can collapse under load, the arrangement of the reinforcement means on the support member being such that, in use, the load will be applied to the end faces of the support member, the reinforcement means being spaced from both ends of the prop and therefore subject substantially to radial forces only without bearing any substantial part of the vertical load.

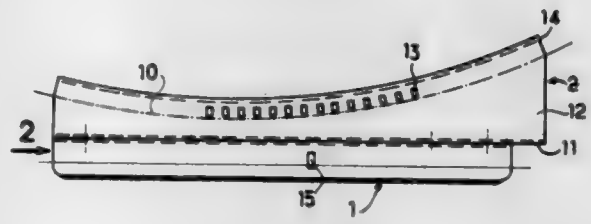
4,534,532

SECTION-MEMBER FOR A SLIDEWAY FOR CORRECTING THE ORIENTATION OF A SEAT, ITS METHOD OF MANUFACTURE AND THE SLIDEWAY COMPRISING SAID SECTION-MEMBER

Roger Parizet, Bonnee, France, assignor to Compagnie Industrielle De Mecanismes en abrege C.I.M., France

Filed Oct. 28, 1981, Ser. No. 315,785
Claims priority, application France, Nov. 5, 1980, 80 23569
Int. Cl.[3] A47G *29/00*
U.S. Cl. 248—371 1 Claim

1. A section-member for correcting the orientation of a seat, and in particular a vehicle seat, having a generally U-shaped cross-sectional configuration, the section-member comprising a generally diabolo-shaped planar blank having opposed lateral regions thereof folded along parallel fold lines to form a web having a constant width and two side walls defining at least one curved upwardly open guideway, said web being planar, at least one of said side walls being provided with a series of openings having a general orientation perpendicular to the



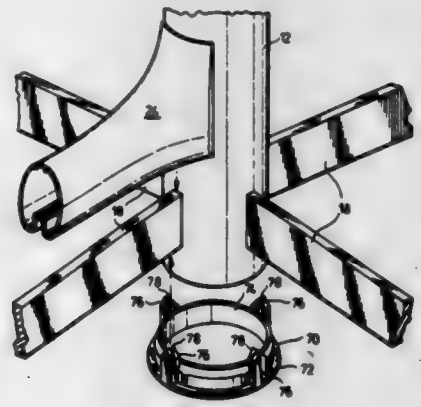
curved axis of the guideway, and said side walls terminating in longitudinally extending inwardly directed right angle flanges.

4,534,533

COVER FOR CHAIR LEG

Frank Doerner, 138 Aberdeen Rd., Kitchener, Ontario, Canada N2M 2Y7

Filed Oct. 17, 1983, Ser. No. 542,401
Claims priority, application Canada, Mar. 15, 1983, 423610
Int. Cl.[3] A47B *95/00*
U.S. Cl. 248—345.1 38 Claims



1. A covering means adapted to cover and be retained on legs of a chair, said covering means comprising a plurality of covers, each cover comprising a cover portion adapted to surround and cover a leg, said cover portion having a top inner surface, a first end portion adapted to cover the free end of the leg, a second end portion adapted to cover the opposite end of the leg, spacing means adapted to space said cover portion from the top surface of said leg, retaining means adapted to releasably retain said cover to said leg, and a retaining ring adapted to retain the second ends of all of the covers in the desired position.

4,534,534

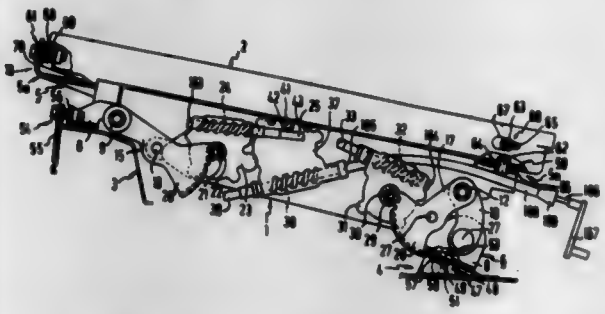
FASTENING ARRANGEMENT FOR A MOTOR VEHICLE SEAT INCLUDING A SEAT ADJUSTING DEVICE

Peter Hess; Volkmar Schülz, both of Coburg, and Hans Rampel, Ahorn, all of Fed. Rep. of Germany, assignors to Metallwerk Max Brose GmbH & Co., Coburg, Fed. Rep. of Germany

Continuation of Ser. No. 140,614, Apr. 15, 1980,. This application Jan. 31, 1983, Ser. No. 462,457
Claims priority, application Fed. Rep. of Germany, Apr. 24, 1979, 2916562
Int. Cl.[3] F16M *13/00*
U.S. Cl. 248—424 45 Claims

1. A seat mounting arrangement for use in a motor vehicle having a travel direction and comprising a motor vehicle floor, a seat adjusting device having a lower frame arranged to be fastened to said motor vehicle floor at the front and rear thereof in the vehicle travel direction, wherein the improvement comprises that said motor vehicle floor includes a front cross member and a rear cross member, said lower frame includes a pair of laterally spaced struts extending between the front and rear thereof, each said strut having a lug at one end

thereof, one of said cross members having a plate secured thereto corresponding to each said lug and forming a wedge-shaped recess, each said lug on said struts arranged to engage



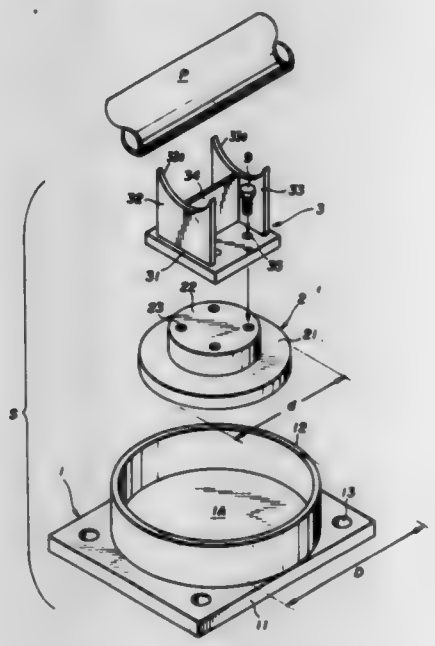
in one of said wedge-shaped recesses, and a threaded connecting member located at the opposite ends of said struts from said lugs for securing said struts to the other said cross member.

4,534,535

DAMPING SUPPORT FOR PIPING SYSTEM

Katsutoshi Maeda, Chigasaki, and Ikuo Shimoda, Fujisawa, both of Japan, assignors to JGC Corporation and Oiles Industry Co., Ltd., both of Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 426,907
Claims priority, application Japan, Oct. 2, 1981, 56-156177
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—636 **19 Claims**



1. A damping support for a piping system, said damping support comprising:

(a) a fixed base having a recess portion defined by a cylindrical enclosure, said recess portion having a planar upper surface;

(b) a movable disc-like member disposed within said recess portion, said movable disc-like member having a planar lower surface which is parallel to the planar upper surface of said recess portion and being sized so that it is movable horizontally in all directions within said recess portion;

(c) first means for attaching said movable disc-like member to a pipe;

(d) second means for spacing the planar lower surface of said movable disc-like member from the planar upper surface of said recess portion by an extremely small gap; and

(e) a viscous material disposed in said recess portion and at least substantially filling the gap between the planar lower surface of said movable disc-like member and planar upper surface of said recess portion,

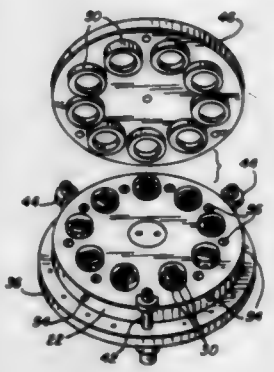
(f) the height of said extremely small gap and the viscosity of said viscous material being such that horizontal movement of the pipe transmitted to said movable disc-like member by said first means is damped by a viscous shearing resistance force generated by said viscous material in said extremely small gap between the planar lower surface of said movable disc-like member and the planar upper surface of said recess portion.

4,534,536

APPARATUS FOR MOUNTING SAMPLES FOR POLISHING

James A. Nelson, Mundelein, and Robert E. Zimmer, Niles, both of Ill., assignors to Buehler Ltd., Lake Bluff, Ill.

Filed Jun. 8, 1984, Ser. No. 618,476
Int. Cl.³ B29C *1/00*; B29D *3/00*
U.S. Cl. 249—83 **12 Claims**



1. Apparatus for preparing specimens for microscopic examination including means for mounting the specimens in a plastic mount and fixturing the mounted specimens for polishing by a polishing machine, the improvement comprising, in combination, a sample holder including plate means having a plurality of openings extending therethrough, a mold base member; and a mold top member including plate means having a plurality of openings therethrough corresponding to the location of said sample holder openings; said base, sample holder and top being adapted for combination in a stacked assembly with said sample holder positioned between said base and top and with the openings in said top and sample holder is alignment to form individual mold cavities.

4,534,537

PILOT OPERATED VALVE ASSEMBLY

Keith E. Zukausky, St. Charles, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Division of Ser. No. 282,970, Jul. 13, 1981, Pat. No. 4,387,878. This application Jun. 14, 1983, Ser. No. 504,258
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ F16K *31/04, 31/40*
U.S. Cl. 251—30.03 **11 Claims**

1. A pilot-operated valve having a relatively simply molded plastic diaphragm insert, the pilot-operated valve comprising:

(a) a valve housing which defines a fluid inlet in fluid communication with an annular inlet cavity, a valve seat generally central in the annular inlet cavity, and a fluid outlet extending through the valve seat;

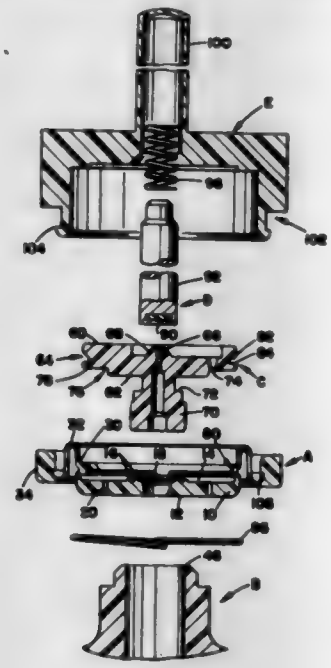
(b) a flexible diaphragm having an annular seating portion disposed in a fluid sealing relationship with the valve housing surrounding the annular inlet cavity, a flexible web portion extending peripherally inward from the annular seating portion for permitting movement of the diaphragm relative to the valve housing, a diaphragm peripheral portion disposed peripherally inward from the web portion for mechanically engaging the diaphragm insert, and a diaphragm central portion disposed radially inward from the diaphragm peripheral portion, the diaphragm central portion (i) having a first side which is disposed for selectively contacting the valve seat to form a sealing relationship therewith, (ii) defining a plurality of filtering apertures therethrough adjacent the diaphragm peripheral

portion in fluid communication with the annular inlet cavity, and (iii) defining a central aperture therethrough in fluid communication with the fluid outlet;

(c) the diaphragm insert having a first side, an oppositely disposed second side which is disposed adjacent the diaphragm central portion, and a peripheral edge disposed peripherally around the diaphragm insert between the first and second sides and in firm frictional contact with said diaphragm peripheral portion, the insert defining:

(i) a pilot outlet aperture centrally therethrough in communication with the diaphragm central aperture and the valve outlet,

(ii) a peripheral recess extending inward from both the insert peripheral edge and the insert second side such that the peripheral recess is moldable by a radially inward projection of a split mold block which is adapted to move generally parallel with the first and second insert sides, the insert peripheral recess being



disposed in alignment and fluid communication with the diaphragm filtering apertures for conveying filtered fluid therefrom,

(iii) a pilot supply aperture extending therethrough between the first side and the peripheral recess such that the peripheral recess is in fluid communication with both the pilot inlet aperture and the diaphragm filter apertures, whereby the peripheral recess provides fluid communication between the filter apertures and the pilot aperture without complex, multipiece molding arrangements;

(d) means operatively connected with the diaphragm annular seating portion for defining a pilot reservoir in fluid communication with the pilot inlet and outlet apertures; and,

(e) pilot valve means operatively connected with the pilot outlet aperture for selectively opening and closing the pilot outlet aperture.

4,534,538

MODULAR AIR SHUT-OFF VALVE

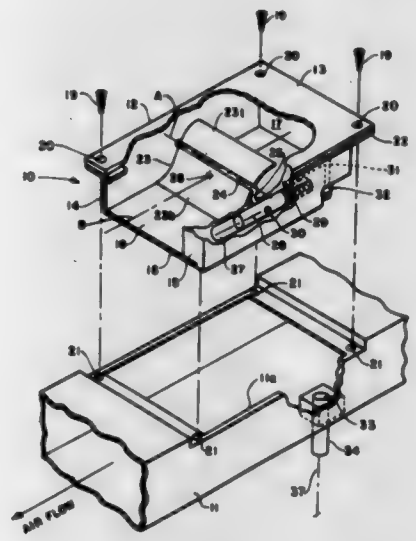
John J. Buckley, Baltimore, and William T. Scott, Ellicott City, both of Md., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jul. 8, 1983, Ser. No. 512,083
Int. Cl.³ F16K *31/143*
U.S. Cl. 251—62 **8 Claims**

1. A modular air shut-off valve configured for insertion into an air conditioning duct, comprising:

a. a housing, including first and second pairs of confronting sidewalls, said housing sized for insertion into said air conditioning duct, said walls defining an inlet and an outlet at respective ends of said housing and a passageway of substantially rectangular cross section for passage of air through said housing;

b. a vane mounted between said first confronting sidewall pair for pivotal movement, about an axis intersecting each said first sidewall pair at corresponding points between a first sidewall of said second sidewall pair and a center line extending between said inlet and outlet and defined along said passageway, between a closed position at which said passageway is substantially blocked and an open position at which said passageway is substantially open, said vane having a first portion mounted generally between said axis



and said first sidewall of said second sidewall pair for rotation toward said inlet in said open position, and a second portion of area larger than said first portion mounted generally between said axis and the second sidewall of said second sidewall pair for rotation toward said outlet in said open position, each of said portions having flexible margins along corresponding edges of said vane for resiliently contacting said second sidewall pair in said closed position; and

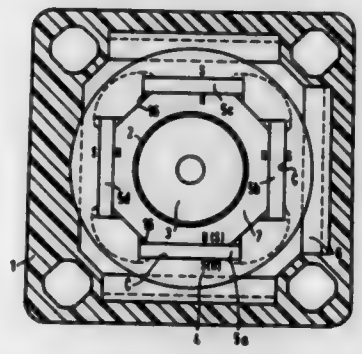
c. pressure actuating means connected to said vane for selectively pivoting said vane between said open and closed positions.

4,534,539

PULSED MAGNETIC VALVE ASSEMBLY

Heinrich Dettmann, Niedernhall, Fed. Rep. of Germany, assignor to Bürkert GmbH, Fed. Rep. of Germany

Filed Aug. 18, 1983, Ser. No. 524,301
Claims priority, application European Pat. Off., Aug. 20, 1982, 82107641.1
Int. Cl.³ F16K *31/08*
U.S. Cl. 251—65 **3 Claims**



1. A pulsed magnetic valve assembly having permanent magnet support means with constant remanence comprising: valve means adapted to be electromagnetically operated and comprising a closure member; electromagnetically means for

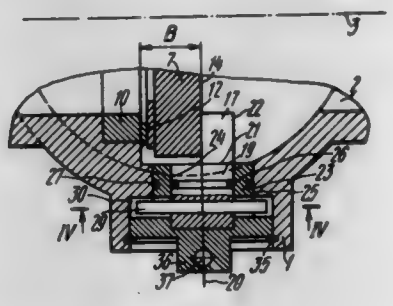
operating said valve means, said electromagnetic means including a movable core member associated with said closure member and a ferromagnetic circuit; permanent magnet means produced from a rare earth/cobalt alloy forming part of said ferromagnetic circuit; a tubular core guide member for guiding said movable core member; and a stopper member for limiting movement of said movable core member in one direction; said ferromagnetic circuit including sheet metal sheets forming an outer part of said ferromagnetic circuit with said movable core member forming an inner part of said ferromagnetic circuit; trip and drop coil means surrounding said guide member and generally enclosed by said sheet metal sheets; said sheet metal sheets having portions extending radially towards said movable core member, said radially extending portions being shaped to define cutouts located in a generally annular configuration around one end of said tubular core guide member, with said permanent magnet means being inserted into siad cutouts in contact with said radially extending portions in a manner to extend around said one end of said tubular core guide member in a generally annular configuration whereby the core member can be secured in a switched position by said permanent magnet means.

4,534,540

GATE VALVE

Boris F. Bragin; Alexandr S. Kolomiets; Jury B. Korotkikh; Felix D. Markuntovich, all of Voroshilovgrad; Evgeny P. Olofinsky, Moscow; Petr V. Gladky, Kiev; Evgeny F. Perepletchikov, Kievskaya oblast, and Boris Y. Ekber, Moscow, all of U.S.S.R., assignors to Voroshilovgradsky Mashinostroitelny Institut, Voroshilovgrad, U.S.S.R.

Filed Jan. 13, 1984, Ser. No. 570,449
Int. Cl.³ F16K *25/00*
U.S. Cl. 251—203 **6 Claims**



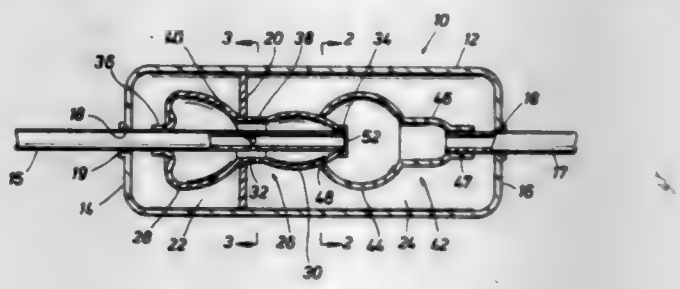
1. A gate valve comprising:
a casing;
a passageway defined in said casing having a centerline;
a valve seat mounted in said casing substantially coaxially with the centerline of said passageway;
a gate mounted in said casing for reciprocating movement into and out of cooperating engagement with said valve seat to close and open said passageway, respectively;
drive means operatively connected to said gate to impart said reciprocating movement to said gate;
at least one tapered face in the surface of said gate on the side thereof opposite that facing said valve seat and tapering in the direction of said reciprocating movement toward the closing position;
at least one stop member mounted in said casing having a flat surface facing and engageable with said at least one tapered surface when said gate is in the closed position;
at least one sleeve member rotatably mounted in a wall of said casing for relative rotation with respect thereto, said sleeve member having an inner surface with a longitudinal centerline extending transversely through the centerline of said passageway and an outer surface having a centerline extending eccentrically with respect to the centerline of the inner surface;
a rod member rotatably mounted in said inner surface for rotation about an axis extending coaxially with said centerline of said inner surface and having an end face facing toward the centerline of said passageway, said stop being rigidly secured to at least a part of said end face;
said flat surface of said stop lying in a plane including the axis of rotation of said rod member;
means to allow limited rotation of said rod member about its axis of rotation;
means to selectively rotate said sleeve member to adjust the distance between said flat surface on said valve seat; and
means to fix the position of said sleeve member against spontaneous rotation thereof.

4,534,541

VALVE INCORPORATING DEFORMABLE VALVE BODY

David P. Summers, Houston, Tex., assignor to Forerank, Inc., Houston, Tex.

Filed Dec. 19, 1983, Ser. No. 563,120
Int. Cl.⁴ F16K *7/02, 7/18*
U.S. Cl. 251—331 **7 Claims**



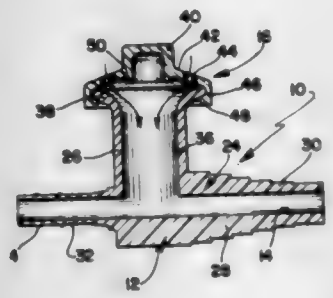
1. A valve apparatus comprising:
(a) a valve housing;
(b) a deformable valve body supported within said valve housing oppositely facing a valve seat for sealing engagement therewith, said valve body including first and second premolded spheroids joined by a connecting collar;
(c) an inlet pipe extending into said valve body, said valve body being mounted about said inlet pipe and having a forward end attached about a leading end of said inlet pipe;
(d) an outlet pipe connected to said valve seat;
(e) a partition wall dividing said valve housing into two chambers, one of said chambers being a fluid chamber, said valve body extending through a hole formed in said partition wall and sealingly engaged by said partition wall about said connecting collar; and
(f) opening means in said valve body for permitting fluid flowing through said inlet pipe to enter said fluid chamber.

4,534,542

SUCTION CONTROL DEVICE FOR ASPIRATOR SYSTEM

Ronald D. Russo, Barrington, R.I., assignor to Superior Plastic Products Corp., Cumberland, R.I.

Filed Dec. 5, 1983, Ser. No. 558,575
Int. Cl.³ A61M *1/00*
U.S. Cl. 251—342 **8 Claims**



1. A suction control device comprising a body having a main portion and an outwardly extending chimney portion, and a

closure cap on said chimney portion, said main portion having a lumen therethrough, said chimney portion having a terminal end and having a passage therethrough which extends from said lumen to said terminal end, said terminal end having an annular closure surface thereon which extends outwardly from around the periphery of said passage, said closure cap being received on said terminal end and comprising an imperforate raised button portion and an annular rim portion which extends outwardly from said button portion, said rim portion having at least one aperture therethrough, said at least one aperture being disposed outwardly which respect to said passage, said cap being normally biased to an open position wherein said passage communicates with the exterior of said device through said at least one aperture, but being resiliently depressable to a closed position by manually depressing said button portion, said rim portion overlying said closure surface and said at least one aperture in said rim portion being obstructed by said closure surface to thereby obstruct said passage when said cap is in said closed position.

4,534,543

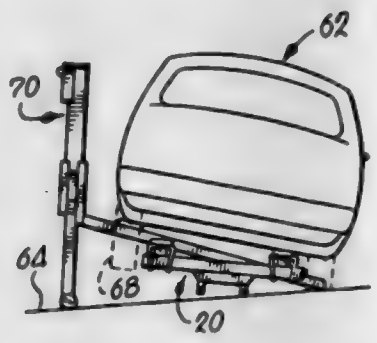
METHOD OF ELEVATING A FOUR WHEEL VEHICLE UTILIZING A TILTABLE SUPPORT STAND

Joseph L. Gray, St. Joseph, Mo., assignor to Gray Manufacturing Company, Inc., St. Joseph, Mo.

Division of Ser. No. 261,612, May 8, 1981, abandoned. This application Jun. 13, 1983, Ser. No. 503,702

Int. Cl.³ B66F *3/00*

U.S. Cl. 254—1 **2 Claims**



1. A method of elevating a four wheel vehicle off a floor, comprising the steps of:

tilting said vehicle with the tires on one side thereof engaging said floor and the tires on the other side of the vehicle elevated;

placing a vehicle support beneath the tilted vehicle, said support having a base presenting a pair of laterally spaced apart floor engaging side margins, a beam oriented with the longitudinal axis transverse to the direction of tilting of the support and being of greater length than the distance between said side margins and rigidly secured to said base with opposed end extremities of the beam extending outwardly beyond respective base margins, and a pair of laterally-spaced-apart vehicle-engaging and supporting regions adjustably carried by the beam, each of said regions being outboard of a corresponding side margin of said base;

tilting said support until the vehicle-engaging region closest said floor-engaging tires contacts the underside of the vehicle, the base margin closest said floor-engaging tires is in engagement with the floor, the remaining base margin is elevated from the floor, and the center of gravity of said vehicle lies in a plane passing between said base side margins; and

causing said vehicle to become righted by reverse tilting of the vehicle and support back to a position where both of said vehicle-engaging regions engage the underside of the vehicle and both of base side margins engage said floor with said vehicle thereby being at least partially supported above the floor solely by said vehicle support.

4,534,544

LIFT

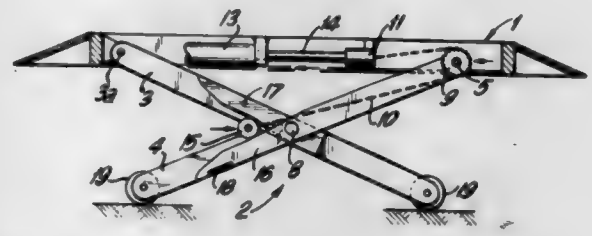
Carsten Heide, Bielefeld, Fed. Rep. of Germany, assignor to American Microsystems, Inc., Santa Clara, Calif.

Filed Oct. 14, 1983, Ser. No. 542,288

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 8229071[U]

Int. Cl.³ B60P *1/48*

U.S. Cl. 254—9 C **4 Claims**



1. A lift comprising: a platform having a top side on which an article to be lifted rests and an underside; and a scissors jack attached below the platform and comprising a shaft disposed at the underside of the platform and having two chain wheels rotationally fixed thereto, means connected to the platform for guiding the shaft for movement along one direction parallel to the underside of the platform, a first pair of parallel scissoring legs having one end of each articulated with the platform, a second pair of parallel scissoring legs havine one end of each attached to the shaft and wherein the first and second pairs of legs are connected at scissoring axes intermediate of each of the first and second pairs of legs, a transverse beam, means fixed to the underside of the platform and connected to the transverse beam for moving the transverse beam parallel to the underside of the platform along said one direction and towards and away from the shaft, a pair of auxiliary rails connected at one end to the shaft and at an intermediate point to the scissoring axes, a cross-head connecting the free ends of the pair of auxiliary rails, a pair of guide rails connected at one end to the scissoring axes, wherein the pairs of auxiliary rails and guide rails have curved portions and form a wedge-shaped gap with an open side that faces away from the scissoring axes, and the pairs of auxiliary rails and guide rails are about half as long from the scissoring axes to their free ends as the free ends of the first and second pairs of scissoring legs to the scissoring axes, an axle disposed parallel with the shaft and having two independently rotating rollers mounted on each end thereof and resting against one auxiliary rail and one guide rail at the curved portions thereof and two chains connected at one end to the axle and which extend around the chain wheels on the shaft and are connected at the other end to the transverse beam.

4,534,545

VEHICLE SUSPENSION UNIT WITH REPLACEMENT AIR SPRING

Wayne V. Fannin, Xenia, and James M. Pees, Dayton, both of Ohio, assignors to General Motors Corporation, Detroit, Mich.

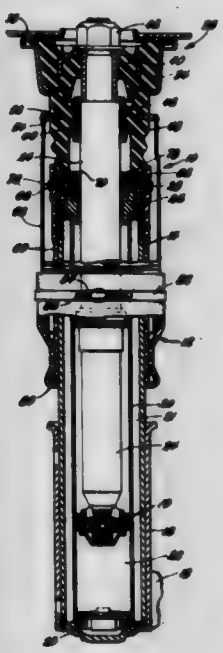
Continuation of Ser. No. 324,490, Nov. 24, 1981, abandoned. This application Apr. 9, 1984, Ser. No. 597,967

Int. Cl.³ F16F *9/04*

U.S. Cl. 267—64.24 **3 Claims**

1. A hydraulic suspension unit for mounting a road wheel assembly to a vehicle and for pneumatically suspending a body of the vehicle to said road wheel assembly comprising an elongated cylindrical support casing having one end connected to said road wheel assembly and extending upwardly therefrom, an outer tubular member surrounding a portion of said casing and forming a dust tube means, shock absorber means operatively mounted in said support casing, said shock absorber means including a motion damping piston operatively mounted in said casing, said piston having a rod extending from said casing and operatively connected to the body of the

vehicle, an upper fitting disposed around an upper portion of said casing, said upper fitting being formed as a cup-like member having a thin wall metallic cylinder of substantially uniform thickness, said metallic cylinder having an inner surface closely fitting and contacting only the upper outer cylindrical surface of said support casing and terminating at an end point adjacent to the upper end of said support casing, detent means extending inwardly from said metallic cylinder, recess means



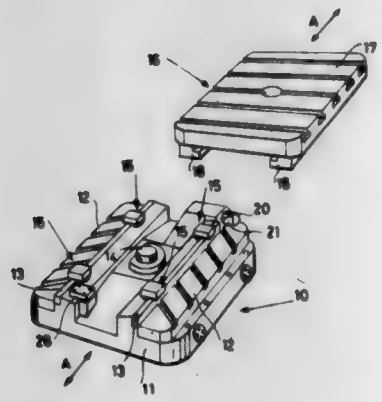
in said outer cylindrical surface for receiving said detent means to lock said fitting onto the upper end of said support casing, a pneumatic spring including an elastomeric sleeve having a lower end connected externally to said outer tubular member and having an upper end connected to said fitting, static fluid seal means operatively disposed below said detent means and between said upper fitting and said casing to pneumatically seal the upper end of said pneumatic spring.

4,534,546

DEVICE FOR LOCATING AND LOCKING A WORK HOLDING PALLET ON A MACHINE TOOL FIXTURE

Alberto Cattani, Modena, Italy, assignor to COMAU S.p.A., Grugliasco, Italy

Filed Nov. 22, 1983, Ser. No. 554,341
Claims priority, application Italy, Jul. 12, 1982, 54037/82[U]
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—58 **4 Claims**



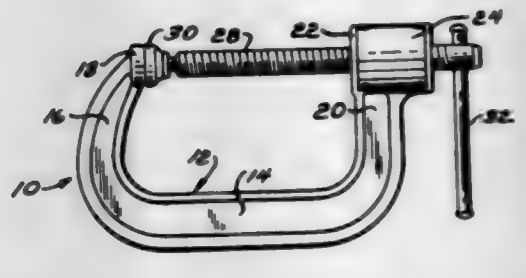
1. A device for locating and locking a work holding pallet on a machine tool fixture, in which the fixture comprises guides for supporting and guiding the sliding movement of the work holding pallet during their engagement, and a mobile central plug for engaging in a cavity in the work holding pallet, characterized in that said sliding movement is rectilinear sliding movement and the fixture is provided with first mobile means for pressing against the work holding pallet in order to move it with rotary motion about said plug in a direction having a component transverse to the direction of said rectilinear sliding movement, and second abutment and stop means for the work holding pallet in order to arrest said rotation.

4,534,547

RAPID ACTING C-CLAMP

Edward A. Cox, Olympia Fields, Ill., assignor to Wilton Corporation, Palatine, Ill.

Filed Apr. 16, 1984, Ser. No. 600,763
Int. Cl.³ B25B *1/02*
U.S. Cl. 269—182 **8 Claims**



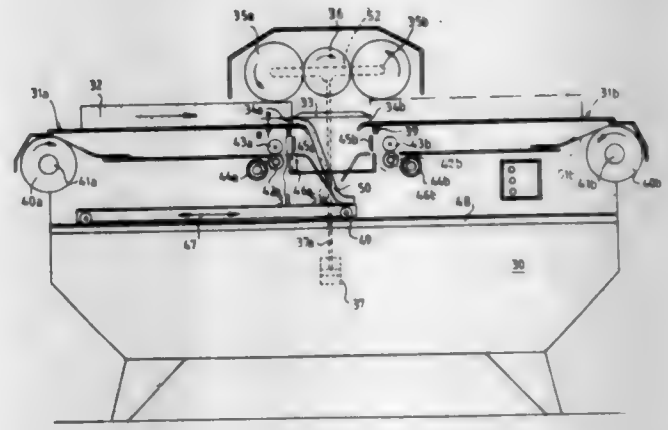
1. A rapid advance screw thread construction comprising a housing having a side wall which is at least in part substantially semi-cylindrical and further having spaced end walls, said housing having an internal arcuate rib in said substantially semi-cylindrical portion, said end walls having aligned cylindrical openings therethrough, a screw threaded spindle passing through said openings and said housing and rotatably and axially movable in said openings, a nut member in said housing having a smooth bore therein through which said spindle passes for free axial movement, said nut member having an offset overlapping partially threaded bore for selective threaded cooperation with the threads on the spindle for threaded movement of said spindle through said nut member, and yieldable means in said nut member pressing transversely on the threads of said spindle for frictionally tending to turn said nut member with said spindle, said nut member being so dimensioned and proportioned relative to said housing rib that it engages one portion or another of said rib depending on the direction of turning of said spindle to cause engagement or disengagement of the partial threads in said nut member with the threads of said spindle for threaded or free axial movement of said spindle through said nut member, said rib being substantially semi-circular and having portions thereof of at least two different radii.

4,534,548

BACON SLICING MACHINE

Fernand Hanau, 15 Blvd. Flandrin, 75016 Paris, France

Filed Nov. 8, 1983, Ser. No. 549,734
Claims priority, application France, Nov. 12, 1982, 82 18983
Int. Cl.³ B65H *39/02*; B65B *35/30*
U.S. Cl. 270—58 **21 Claims**



1. A bacon slicing machine comprising a plate for receiving

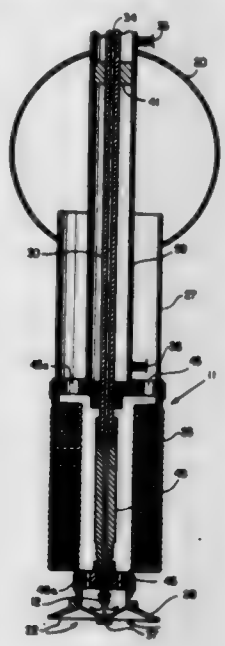
a piece of bacon laid flat, a means for driving said piece of bacon in translation, formed more especially by a cylinder driven in rotation, and situated transversely and above said reception plate, which drive means causes said piece of bacon to advance against a cutting device acting in a plane parallel to said reception plate, situated above and at a distance from said plate corresponding to the thickness of a bacon slice, a plate for receiving bacon slices and a plate for recovering the piece of bacon, said machine further comprising a means for laying on the bacon reception plate a sheet of non adherent material between two successive bacon slices.

4,534,549

AUTOMATIC BATTERY STACKER

William J. Eberle, Irving, Tex., assignor to General Battery Corporation, Reading, Pa.

Filed Jun. 22, 1982, Ser. No. 390,806
Int. Cl.³ B65H *3/08*
U.S. Cl. 271—103 **11 Claims**



1. Apparatus having a central opening and surrounded by a flexible ring and adapted to capture a single member from a plurality of members by drawing a vacuum through said central opening comprising:

(a) detection means suspended across a portion of said central opening and below the flexible ring,

(b) means located within said central opening for generating a positive pressure that impinges upon said detection means while simultaneously drawing said vacuum through the central opening,

(c) whereby when said single member is in proximity to said apparatus, it becomes captured thereby by means of said negative pressure drawn through said central opening, and said positive pressure is terminated by said detection means.

4,534,550

APPARATUS FOR PULLING APART FLAT PRODUCTS, ESPECIALLY PRINTED PRODUCTS ARRIVING IN AN IMBRICATED PRODUCT STREAM

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed Sep. 7, 1982, Ser. No. 415,361
Claims priority, application Switzerland, Sep. 18, 1981, 6048/81
Int. Cl.³ B65H *29/68*
U.S. Cl. 271—183 **9 Claims**

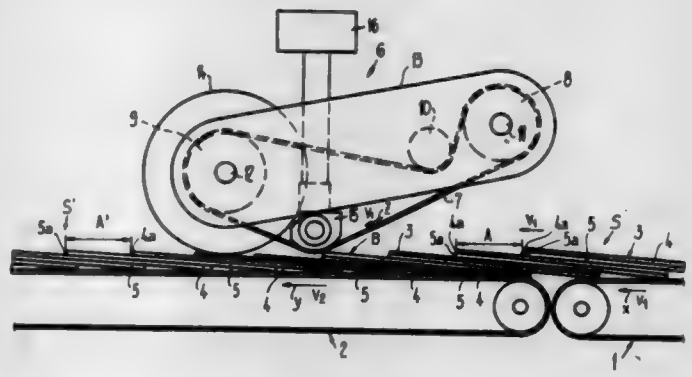
1. An apparatus for pulling apart substantially flat products, especially printed products, arriving in an imbricated product stream, comprising:

an infeed device for the products which move in a predetermined direction of travel;

a conveyor device arranged after said infeed device with respect to the direction of travel of the products;

said conveyor device having a conveying velocity which is greater than the conveying velocity of the infeed device;

a retarding device having an effective region for temporarily acting upon the products moving past said effective region of said retarding device;



said retarding device being arranged at the region of the conveyor device and at that side of the products at which leading edges of the products are freely exposed; and

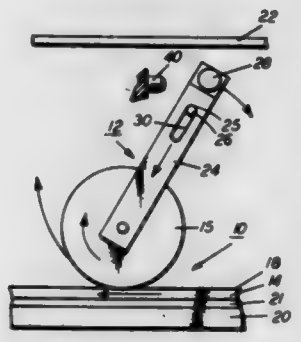
said retarding device retarding the forward movement of the products acted upon by said retarding device for such length of time until a trailing product arrives at said effective region of the retarding device.

4,534,551

DOCUMENT BELT NORMAL FORCE CONTROL

Jack E. Jones, Macedon, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Jun. 1, 1983, Ser. No. 499,935
Int. Cl.³ B65H *5/02*
U.S. Cl. 271—275 **6 Claims**



1. In a document transport apparatus for reversibly feeding document sheets with a reversible direction of motion, document feeding belt means having a document engaging lower belt flight, and having pressure means for applying pressure to an area of the back of said lower belt flight, which pressure is automatically substantially greater for one direction of motion of said belt means than the other, said pressure means being mounted to engage and be moved solely by said lower belt flight, the improvement comprising:

first means comprising a pivotable lever for applying a preset maximum solely gravitational force with said pressure means to said document imaging lower belt flight, said first means being actuated solely by said engagement and movement of said pressure means by movement of said lower belt flight in one direction of motion,

and second means for counteracting said gravitational force of said pressure means automatically in response to the reversal of direction of said lower belt flight of said belt means to apply a greatly reduced pressure to said lower

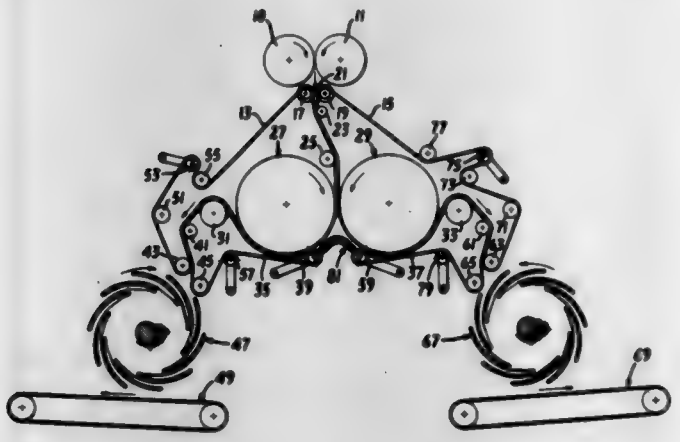
belt flight only in said reversed direction of motion of said lower belt flight.

4,534,552

SHEET DIVERTING SYSTEM

Thomas E. Rahe, York, Pa., assignor to Motter Printing Press Co., York, Pa.

Filed Jul. 20, 1983, Ser. No. 516,050
Int. Cl.[3] B65H *29/60, 29/68*
U.S. Cl. 271—279 3 Claims



1. A sheet handling system for dividing a stream of sheets into at least two streams of sheets comprising

first and second driven sheet separating cylinders mounted for rotation about axes parallel to each other,

first gripping means mounted on the first separating cylinder for engaging the leading edge of a sheet in a gripping zone disposed between the first and second separating cylinders,

second gripping means mounted on the second separating cylinder for engaging the leading edge of another sheet in the gripping zone,

the separating cylinders being driven in phase such that the first and second gripping means are alternately carried through the gripping zone,

a pair of sheet feeding tapes, each guided in a separate closed path and wrapping around in engagement with the outer periphery of one of the cylinders,

means for guiding the tapes in converging paths to receive the sheets seriatim and accelerate them to space them further apart, then guiding the tapes in parallel paths between the cylinders to support the spaced apart sheets between the tapes throughout the lengths of the sheets while carrying them through the gripping zone in timed relation to the gripping means, whereby the leading edge of the sheet is introduced into the respective gripping means and the gripping means engages the leading edge while both the leading edge and gripping means are moving at the same velocity, and then guiding the tapes in diverging paths in engagement with the respective cylinder,

means for guiding the sheets from the first separating cylinder downstream of the gripping zone to a first delivery station, and

means for guiding the sheets from the second separating cylinder downstream of the gripping zone to a second delivery station.

4,534,553

EXERCISE APPARATUS

Steven E. Shirley, P.O. Box 54, Scottsburg, Ind. 47170

Filed Sep. 7, 1982, Ser. No. 415,357
Int. Cl.[3] A63B *23/02, 23/04*
U.S. Cl. 272—73 7 Claims

1. An exercise apparatus for aiding the performance of multiple, simultaneous exercises, said apparatus comprising:

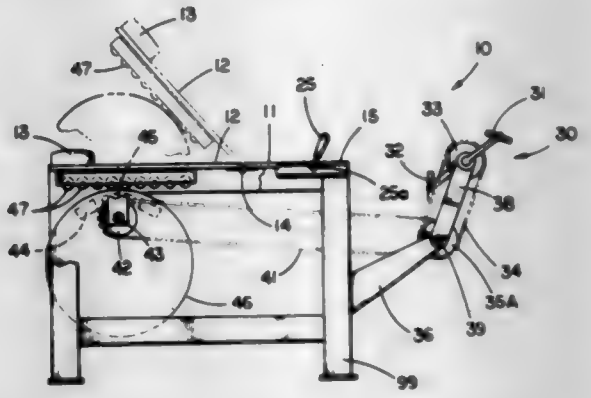
a frame;

seat support means for supporting the buttocks of a person on said frame;

back support means for supporting the back portion of a person on said frame, said back support means being pivotally mounted in relation to said seat support means;

pedal means for pedalling by a person positioned on said seat support means and said back support means;

a drive axle, said drive axle being mounted to said frame below said back support means;



drive means for translating the pedalling action of said pedalling means to rotation of said drive axle;

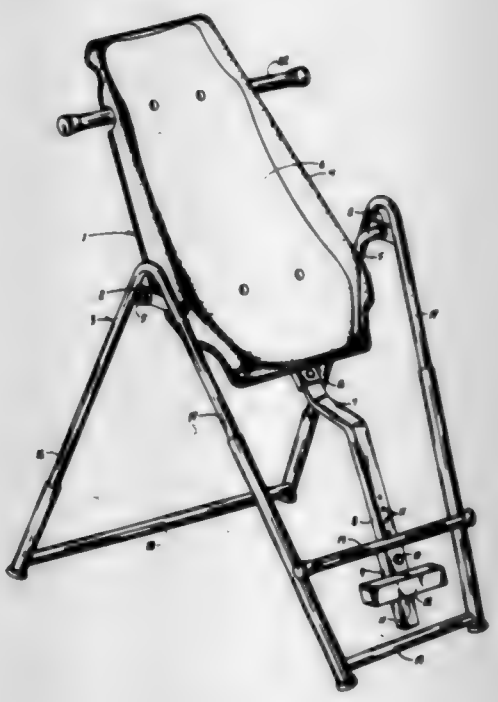
a cam mounted to said drive axle and rotatable therewith, said cam engaging and supporting said back support means, said cam and said back support means being cooperatingly shaped such that rotation of said cam, caused by pedalling of said pedalling means, causes said back support means to cyclically pivot.

4,534,554

FULL BODY WEIGHT TRACTION DEVICE

Jack V. Miller, Sierra Madre, Calif., assignor to Gravity Guidance, Inc., Duarte, Calif.

Continuation of Ser. No. 291,064, Aug. 7, 1981, Pat. No. 4,410,176. This application Oct. 14, 1983, Ser. No. 542,220
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.[3] A63B *17/00*
U.S. Cl. 272—144 2 Claims



1. An exercise device comprising:

(a) a pair of spaced apart pivot bearings;

(b) means for supporting said pivot bearings in a coaxial relationship parallel to and spaced above a floor surface;

(c) a tilt bed disposed between said pivot bearings and pivot-

ally mounted therein at its approximate midpoint, and an extension means extending longitudinally from the lower end thereof;

(d) ankle holding means attached to said extension means for the secure attachment of a user's ankles to said tilt bed;

(e) a pivot stop means wherein said tilt bed supporting the user may be rotated to a stop position with said ankle holding means rotated past the vertical plane through the axis of said pivot bearings;

(f) adjustment means on said tilt bed which allows said ankle holding means to be selectively longitudinally positioned with respect to said pivot bearings so that said ankle holding means can be positioned over a range of locations relative to said vertical plane when said tilt bed is at said stop position, said range being from a fixed distal position wherein said ankle holding means is closest to said vertical plane through the axis of said pivot bearings to a fixed proximal position wherein said ankle holding means is farthest away from said vertical plane through the axis of said pivot bearings.

4,534,555

THERAPEUTIC DEVICE FOR A HUMAN BODY

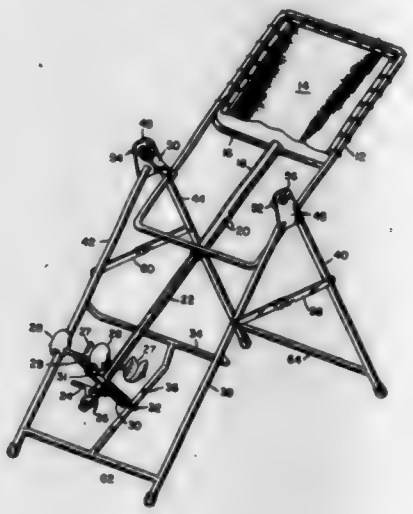
Wayne H. McGowen, 4930 Mill Creek, Dallas, Tex. 75234

Continuation of Ser. No. 349,451, Feb. 17, 1982, Pat. No. 4,438,761, which is a continuation-in-part of Ser. No. 324,133, Nov. 23, 1981, abandoned. This application Nov. 3, 1983, Ser. No. 549,272

The portion of the term of this patent subsequent to Mar. 27, 2001, has been disclaimed.

Int. Cl.[3] A63B *17/00*

U.S. Cl. 272—145 8 Claims



1. A therapeutic apparatus for the human body comprising:

an elongated planar platform adapted to support the upper body in a reclining position, said platform being pivotally mounted on a fulcrum wherein said platform is pivotally displaceable about an axis transversed to the longitudinal axis of said platform;

a lower body support connected to said platform by an elongated frame member, said lower body support including:

a first support means mounted on said lower body support and positioned to extend under each foot;

a second support means fixedly mounted on said lower body support and positioned to surroundingly engage a first portion of each foot;

a first mounting shaft fixedly mounted to said lower body support;

a second mounting shaft slidably disposed in telescoping fashion within said first mounting shaft;

a third support means mounted to said second mounting shaft and adapted to surroundingly engage a second portion of each foot and fixedly restrain each foot while disposed proximate to said second support means and adapted to release each foot while disposed distal to said second support means; and

biasing means for urging said third support means toward said second support means.

4,534,556

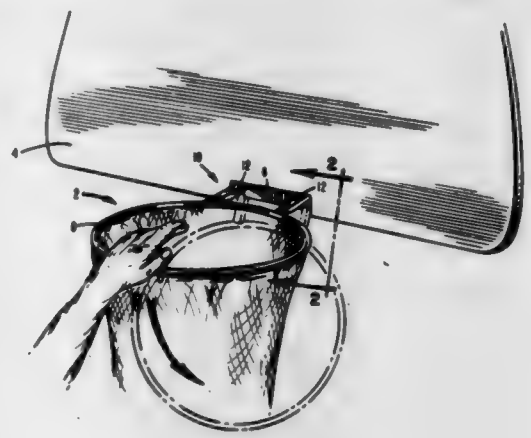
BREAK-AWAY BASKETBALL GOAL

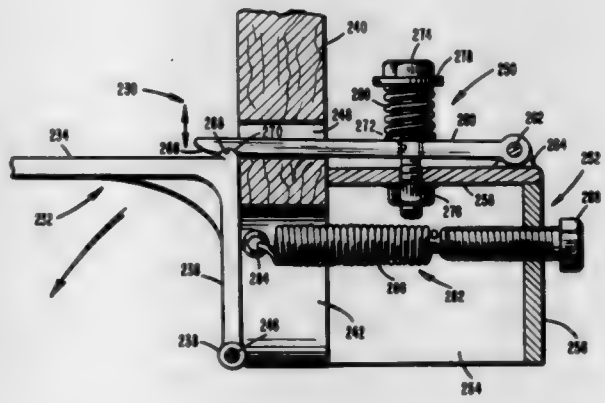
Paul D. Estlund, 4174 S. Kalispell, Aurora, Colo. 80013, and Kenneth F. Estlund, 8983 Inspiration Dr., Parker, Colo. 80134

Filed Jan. 27, 1977, Ser. No. 763,221

Int. Cl.[3] A63B *63/08*

U.S. Cl. 273—1.5 R 5 Claims





4. A backboard and break-away basketball goal assembly, including:

a backboard;

a hoop having supporting arm structure thereon;

means for pivotally connecting said hoop with said backboard, for pivoting movement about a horizontal axis from a normal, horizontal position, to a break-away position;

detent mechanism means carried by said backboard and said hoop and its supporting arm structure for mechanically releasably securing said hoop in said normal, horizontal position, said detent mechanism means being constructed to mechanically disengage when a deflecting force exceeding a predetermined value is applied to said hoop, and to then mechanically re-engage during return of said hoop from said break-away position,

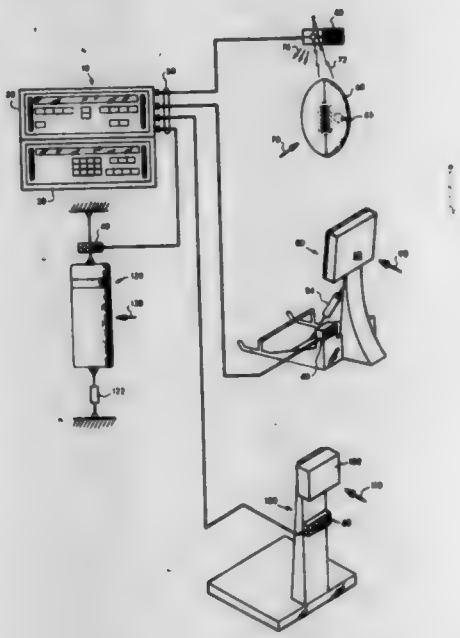
said detent mechanism means including at least one resiliently yieldable portion on one of said backboard and said hoop and its supporting arm structure, arranged to mechanically engage with and hold detent projection means provided on the other of said backboard and said hoop and supporting arm structure, said resiliently yieldable portion being mechanically settable whereby to adjust said assembly to respond to different applied deflecting forces; and

means connected with said backboard and with said hoop and supporting arm structure, effective for returning said hoop to its normal, horizontal position.

4,534,557
REACTION TIME AND APPLIED FORCE FEEDBACK

Stephen L. Bigelow, 189 Ventnor Ave., Aspen, Colo. 81611, and John A. Carlin, 1795 S. St. Paul, Denver, Colo. 80210

Continuation of Ser. No. 246,267, Mar. 23, 1981, abandoned.
This application May 25, 1983, Ser. No. 496,985
Int. Cl.[3] A63B *69/00*
U.S. Cl. 273—55 A 4 Claims



1. A reaction time and applied force feedback training system for a sport activity having at least one sport training device (60), said system further comprising:

an input keyboard (1640) for providing signals in response to manually preset values corresponding to (a) a predetermined reaction time, (b) a predetermined level of applied force, and (c) a predetermined repetition timing sequence,

a stimulus indicator (40) located near but physically separated (401) from each said at least one sport training device (60) for emanating a plurality of ready signals (74), each of said ready signals (74) signaling the user of said system to apply a manual force (210) to said at least one sport training device (60), said stimulus indicator (40) being further capable of emanating a miss signal,

a sensor (45) operatively connected to each said at least one sport training device (60) receptive of forces resulting from said manual force (210) applied by said user, to any location on said sport training device (60), for generating an electrical signal (900), said electrical signal (900) having a magnitude proportional to the magnitude of said manually applied force (210),

a personality channel (430) in communication with both said stimulus indicator (40) and said sensor (45), said personality channel (430) comprising:

(a) means (600) in communication with said sensor (45) for detecting the analog value (910) of the highest magnitude of said electrical signal (900) thereby eliminating extraneous signals of lower magnitude caused by ringing of the applied manual force (210) in said at least one sport training device (60),

(b) means (630) receptive of said analog value (910) from said detecting means (600) for converting said analog value (910) into a binary applied force signal (680) corresponding to said highest magnitude of said electrical signal, and

(c) means (1000) in communication with said stimulus indicator (40) for activating said stimulus indicator (40) to selectively emanate said ready and miss signals,

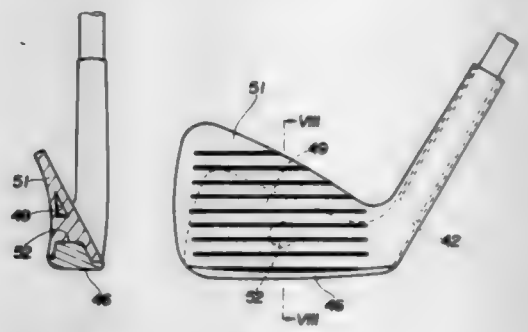
a control unit (20) remote from said stimulus indicator (40) and said sensor (45) and connected to said input keyboard (1640) and to said personality channel (430), said control unit (20) upon initialization of said system being capable of storing a binary existing force signal from said personality circuit (430) corresponding to the existing force on said sensor (45) associated with said at least one sport training device (60), said control unit (20) being receptive of said binary applied force signal from said personality channel (430) and of said binary existing force signal for generating an offset signal corresponding to the true magnitude of said manually applied force (210), said control unit (20) being receptive of said predetermined repetition timing sequence from said input keyboard (1640) for randomly activating said activating means (1000) within said repetition timing sequence in order to emanate said plurality of ready signals, and said control unit (20) being further capable of producing a timing signal corresponding to the actual reaction time between the aforesaid activation of said stimulus indicator (40) and the receipt of said binary applied force signal by said control unit, said control unit (20) being capable of enabling said activating means (1000) in said personality circuit (430) to activate said stimulus indicator (40) in order to emanate said miss signal to said user in the event said manually applied force (210) is less in value than said predetermined level of applied force and in the event said reaction time is less than said predetermined reaction time, and

means (1600) connected to said control unit (20) and receptive of said offset signal and of said timing signal for displaying the true magnitude of said manually applied force and the actual reaction time of said user in applying said manual force to said sport training device after each said ready signal.

4,534,558
GOLF CLUB HEAD

Minoru Yoneyama, Niigata, Japan, assignor to Yonex Kabushiki Kaisha, Niigata, Japan

Filed Aug. 17, 1983, Ser. No. 524,039
Claims priority, application Japan, Dec. 28, 1982, 57-196213[U]; Dec. 28, 1982, 57-196214[U]; Jun. 3, 1983, 58-83929[U]; Jun. 3, 1983, 58-83930[U]; Jun. 7, 1983, 58-85790[U]
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—78 7 Claims



1. A golf club head comprising:

a sole formed of metal material;

a core of metal material formed integrally with said sole, said core extending upwardly from said sole and having a substantially triangular shape in cross section, a lower end of said core having a thickness in a direction of swing of the head smaller than that of said sole to provide front and rear shoulders therebetween;

a hosel for receiving a shaft therein and formed of metal material integrally with said sole and said core, said hosel being connected to said sole and said core at a heel portion of the golf club head; and

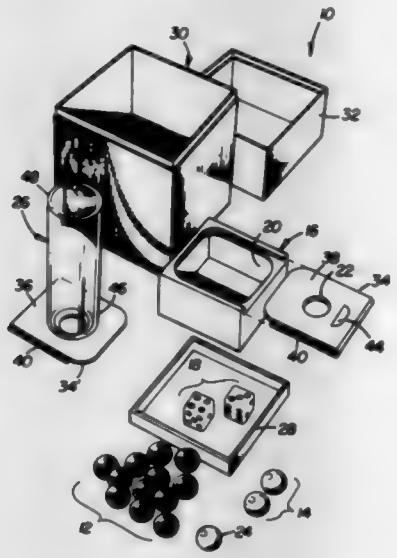
an outer head member formed of carbon fiber reinforced resin material, said outer head member having a substantially inverted V-shaped cross-sectional configuration covering the entirety of said core, lower ends of said outer head member being in close contact with said shoulders with marginal edges of said lower ends being flush with said sole, and said outer head member including an integral tubular extension covering the entirety of said hosel.

4,534,559

GAME PLAYING APPARATUS

Donald Laursen, Jr., Fremont, Calif., assignor to Edmund Arthur Thrum, Fremont, Calif.

Filed Oct. 12, 1982, Ser. No. 433,469
Int. Cl.[3] A63F 7/04
U.S. Cl. 273—113 5 Claims



1. A game comprising:

a plurality of first spherical playing pieces, each of said first spherical playing pieces being visually similar to each other;

a plurality of second shperical playing pieces visually distinct from said first spherical playing pieces, each of said second spherical playing pieces being visually similar to each other;

a third spherical playing piece visually distinct from each of said first spherical playing pieces and each of said second spherical playing pieces;

a container having an interior cavity and an opening communicating with said cavity exteriorily of said container, said cavity being dimensioned for loosely containing all of said first spherical playing pieces, said second spherical playing pieces and said third spherical playing pieces, said opening being dimensioned for allowing said spherical playing pieces to pass sequentially therethrough upon manual manipulation of said container, said opening being elliptical to increase the randomness in the order of said first, second and third spherical playing pieces passing therethrough; and

indicia means for randomly selecting an indicia, said first spherical playing pieces being for removal from container through said opening commensurately with said indicia upon manual manipulation of the container prior to any one of said second playing pieces passing through said opening, said third playing piece when passing through said opening nullifying the effect of at least a subsequent one of said second playing pieces passing through said opening.

4,534,560

SLOT MACHINE

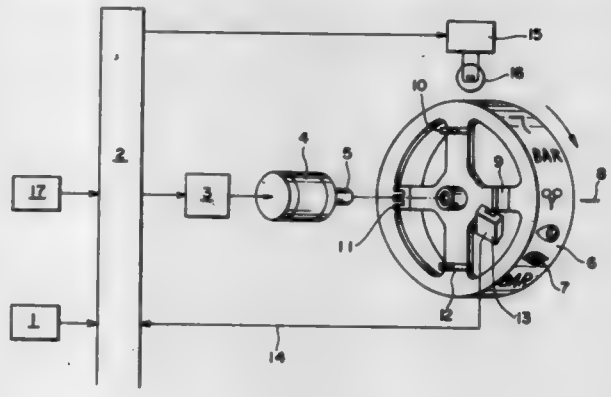
Kazuo Okada, Tokyo, Japan, assignor to Kabushiki Kaisha Universal, Tochigi, Japan

Filed May 20, 1983, Ser. No. 496,578
Claims priority, application Japan, May 21, 1982, 57-85039
Int. Cl.[3] A63F 5/04
U.S. Cl. 273—143 R 6 Claims

1. A slot machine provided with a plurality of pulse motor driven reels each having an annular series of various symbols on the peripheral surface thereof at regular intervals, said slot machine comprising:

a plurality of light shield plates for dividing said peripheral surface of each reel into a plurality of regions each containing a plurality of said symbols, said light shield plates being different in shape from each other and being arranged at concyclic positions and at the front edges of said respective divided regions so as to distinguish the respective divided regions;

photo-detecting means for every reel stationarily provided in a passageway of said light shield plates for producing a series of pulse signals with different wave forms one corresponding to the shape of each said light shield plate passing therethrough;



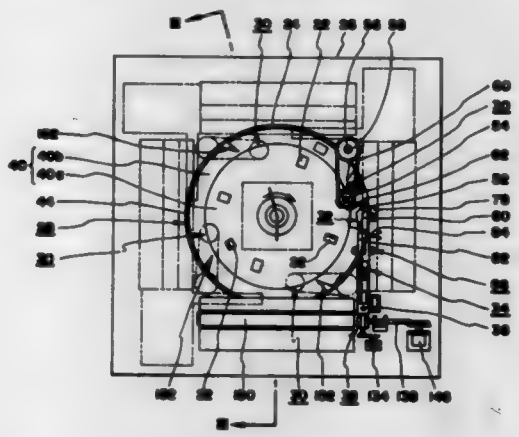
a microcomputer for counting the number of pulse signals which cause each pulse motor to rotate by an angle corresponding to said respective region and for detecting a position of said each reel in rotation according to said counted number of pulse signals and said pulse signals whose wave forms correspond to respective said regions.

4,534,561

TILE ARRANGING APPARATUS FOR AUTOMATIC GAME PLAYING TABLE

Toshinori Okuno, and Hiroshi Nakamura, both of Saitama, Japan, assignors to Dengen Automatic Co. Ltd., Tokyo, Japan

Filed Nov. 18, 1983, Ser. No. 553,394
Claims priority, application Japan, Dec. 10, 1982, 57-215503
Int. Cl.[3] A63F 1/12, 1/14
U.S. Cl. 273—149 R 8 Claims



1. A game tile arranging apparatus for an automatic game playing table, comprising:

a hopper provided in the table;

a mixing member for mixing the tiles, rotatively disposed within said hopper for rotation about a rotational axis;

an orientation controlling member, having an inlet and an outlet, for controlling the orientations of the tiles, said orientation controlling member including means, rotatable in a different direction than said mixing member, for rotatively engaging the tiles in said hopper between said inlet and said outlet;

orientation detecting means, responsive to the orientation of tiles at a first location outside said hopper, for providing a first signal indicative of the orientation of the tiles at said first location;

means, responsive to said first signal, for correcting the

orientations of the tiles whose orientations are detected by said orientation detecting means;

means for receiving and transferring tiles at a second location in said hopper to said first location outside said hopper;

sensor means, responsive to the number of tiles received by said receiving and transferring means, for providing a second signal indicative of said number;

means for directing tiles from said outlet of said orientation controlling member to said second location; and

gating means, having an inlet portion adjacent said outlet of said orientation controlling member and responsive to said second signal, for alternatively directing tiles from said outlet to said second location or gating the tiles at said outlet away from said second location so as not to be received and transferred by said receiving and transferring means.

4,534,562

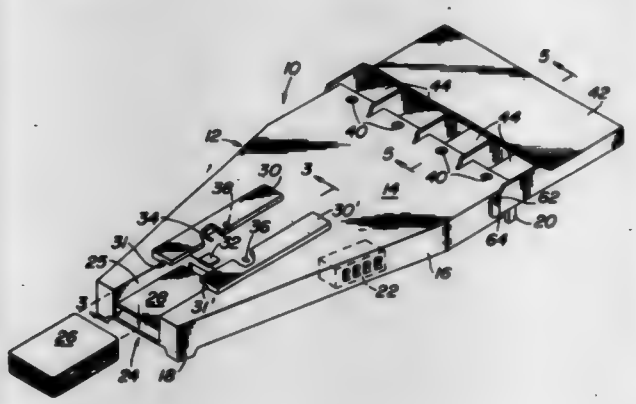
PLAYING CARD CODING SYSTEM AND APPARATUS FOR DEALING CODED CARDS

Richard A. Cuff, Rosemont, and Paul R. Hoffman, Exton, both of Pa., assignors to Tyler Griffin Company, Paoli, Pa.

Filed Jun. 7, 1983, Ser. No. 502,050

Int. Cl.³ A63F *1/14*

U.S. Cl. 273—149 P **6 Claims**



1. Apparatus for dealing coded playing cards in accordance with at least one predetermined hand, comprising:

a housing,

an opening in the housing for introducing at least one coded playing card into the apparatus,

means for electro-optically reading the coded cards one at a time as the coded cards are moved manually past the reading means,

card guide means operatively associated with the reading means for guiding only one card at a time past the reading means,

a pad of high-friction material located approximately in the center of the card guide means for preventing more than one card at a time from entering the card guide means,

means for comparing the code read from each card against the predetermined hand to determine to which player position the card should be dealt, and

indicating means to provide a visual indication of which player position the card should be dealt to.

4,534,563

THREE DIMENSIONAL PUZZLE

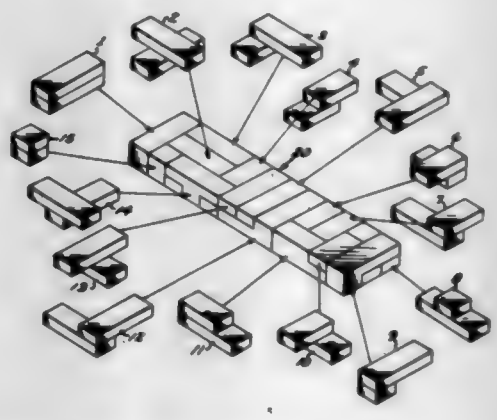
Geoffrey L. Guenther, 26834 Hyte Rd., Rancho Palos Verdes, Calif. 90274

Filed Oct. 6, 1983, Ser. No. 539,481

Int. Cl.³ A63F *9/12*

U.S. Cl. 273—157 R **9 Claims**

6. A three dimensional puzzle game comprising a plurality of component pieces, each of said component pieces being unique from each other, and forming two or more right rectangular prisms when assembled in particular configurations, the number of prisms being formed being dependent on the puzzle unit volume of the puzzle and the prime factors of said volume, each of said component pieces comprising units of preselected length, width and height, each component piece further comprising an integrated structure having two levels of rectangular



cross sectional material arranged in a predetermined manner with respect to each other, each level having a dimension equal to the unit width and unit height and a length equal to said unit width or multiples thereof.

4,534,564

GOLF CLUB HEAD

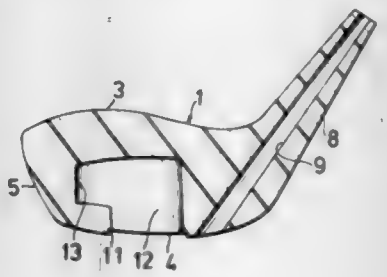
Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Kurume, Japan

Filed Jul. 18, 1983, Ser. No. 515,379

Claims priority, application Japan, Jul. 21, 1982, 57-110398[U]

Int. Cl.³ A63B *53/04*

U.S. Cl. 273—169 **1 Claim**



1. A golf club driver head comprising:

(a) a club head body made of high density plastic, and having a face portion, a top portion, a sole portion having a step for mounting a sole plate, a toe portion, a heel portion, a back portion and a neck;

(b) said club head body having a cavity extending upwardly from an opening located substantially centrally of said sole portion;

(c) a sole plate mounted at said step and covering said opening of said sole portion, said sole plate having a configuration substantially corresponding to that of said sole portion, except for a narrowed portion substantially midway between the region of the face portion and the region of the back portion;

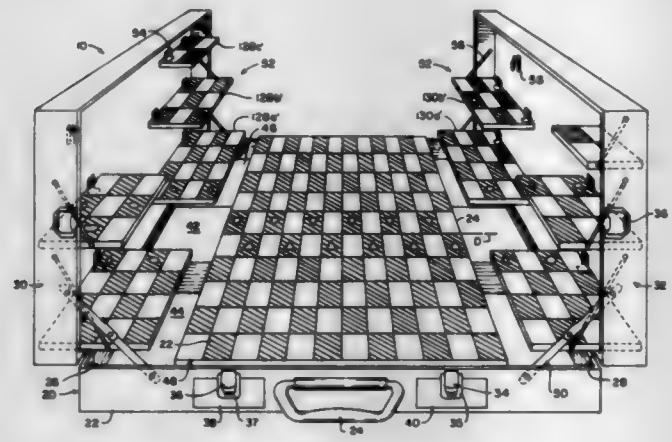
(d) said club head body having a blind bore devoid of any weighting material extending transversely from the inner end of said cavity and forwardly towards said toe portion;

(e) said bore and cavity together with said centrally narrowed sole plate distributing the weight or mass of said head body to the peripheral portion thereof.

4,534,565
MULTI-LEVEL BOARD GAME

Lawrence D. Hube, 7722 Edgewood Rd., Pasadena, Md. 21122

Filed Jun. 28, 1984, Ser. No. 625,675
Int. Cl.[3] A63F *3/02*
U.S. Cl. 273—241 4 Claims

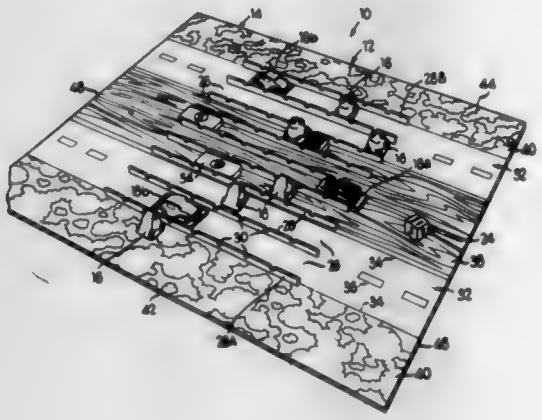


1. In a system of board game with a plurality of planar elements having respective rectangular arrays of playing squares, means for holding the planar elements, token, and chance apparatus, the improvement comprising: first and second opposed kingdoms including a game board having a plurality of entrance squares located on opposite sides of a central part of the game board; to the left of each kingdom a sanctuary including: an intermediate size planar element at a level above the game board and a smaller planar element at a level above the intermediate size planar element; to the right of each kingdom a domain including three planar elements, the first two planar elements thereof being situated similarly to the intermediate size and smaller size planar elements of the sanctuary and the third planar element thereof being smallest and uppermost; the means for holding including a case half, a pair of case quarters, hinge means for holding the case quarters upright in open position on the case half and for permitting the case quarters to close for covering the case half, and means for pivotally supporting each said planar element in position for playing said board game when the case quarters are in open position and for causing each planar element to fold as the case quarters close.

4,534,566
BOARD GAME WITH REVERSIBLE SECONDARY PIECES

Michael J. Ferris; Paul H. Wise, both of Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Continuation of Ser. No. 426,368, Sep. 29, 1982, abandoned. This application Aug. 6, 1984, Ser. No. 638,531
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—248 18 Claims



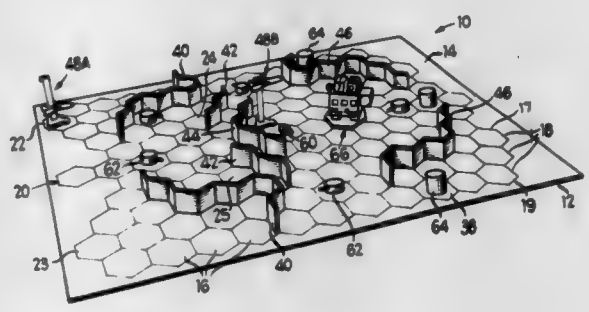
1. A board game for two players comprising:

a game board having a generally planar playing surface with a plurality of playing positions;
said playing positions being arranged in a plurality of generally parallel rows and parallel columns, said rows being arranged generally perpendicularly to said columns;
a separate first set of playing pieces for each player positionable on said playing surface;
a common second set of playing pieces for both players positionable on and moveable over said playing surface within said rows;
said playing pieces of said second set including first and second groups of playing pieces, said first group of playing pieces having two distinct opposing sides, each of said sides providing a generally flat surface on which one of said playing pieces of said first set is positionable;
chance selection means for determining the extent of movement of said playing pieces; and
said rows being defined by a plurality of parallel upstanding members, said members including column indicators spaced uniformly along their lengths.

4,534,567
BOARD GAME WITH CHANCE DEVICE PLAYING PIECE

Michael J. Ferris; Paul H. Wise, both of Chicago, and Jeffrey D. Breslow, Highland Park, all of Ill., assignors to Marvin Glass & Associates, Chicago, Ill.

Filed Feb. 3, 1983, Ser. No. 463,636
Int. Cl.[3] A63F *3/00*
U.S. Cl. 273—255 16 Claims



1. A board game comprising:
a game board having a substantially planar surface;
a plurality of playing spaces on the surface;
first indicia on the board identifying at least one of the spaces as a player start position;
second indicia on the board defining a contiguous number of the spaces as a target zone remote from the start position;
a moveable target piece positionable on spaces within the target zone;
a plurality of available paths extending from space to space between the start position and the target zone;
a moveable player token for each player;
at least one three dimensional wall with a top disposed transverse to the surface across at least some of the available paths;
the token including a base and a marker slidably mounted on the base for movement from a first lower position adjacent the base and below the top of the wall to a second upper position remote from the base and above the top of the wall;
the moveable marker being biased into engagement with the base to retain the marker in the first or second position;
first and second chance means;
the first chance means bearing number indicia;
the second chance means bearing some indicia indicating the target piece;
defensive playing pieces;
third indicia on the board indicating other contiguous numbers of the spaces comprising portions of some of the available paths as danger zones; and
fourth indicia on the board designating one of the spaces of

each of the danger zones for placement of a defensive playing piece.

4,534,568

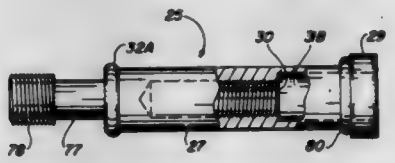
ARCHERY ARROW WITH FREELY ROTATIONAL BROAD BLADE ARROWHEAD TO AVOID WINDPLANING

Richard D. Tone, 1849 W. Third Pl., Mesa, Ariz. 85201

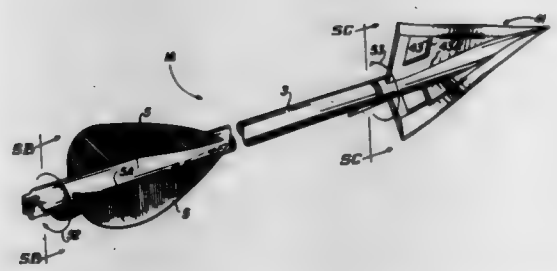
Continuation-in-part of Ser. No. 319,186, Nov. 9, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,587

Int. Cl.³ F41B *5/02*

U.S. Cl. 273—421 **15 Claims**







1. An improved arrowhead connector for rotationally connecting an arrowhead to the leading end of the shaft of an archery arrow, said arrowhead connector comprising in combination:

(a) insert means for rigid connection to said broad blade arrowhead to rotationally support said arrowhead on said leading end of said shaft, said insert means having an outer surface;

(b) insert receiving means rigidly attached to said leading end of said shaft and having a cylindrical hole therein for receiving and rotationally supporting said insert means with sufficiently low friction to allow sufficiently rapid relative rotation between said arrowhead and said shaft to substantially prevent windplaning of said arrow, said insert means having a generally cylindrical inner surface;

(c) a plurality of relatively thin, substantially spaced, circumferential, smooth surfaced, circular ridges disposed on said outer surface for making very low friction sliding contact with said cylindrical inner surface to allow said rapid relative rotation;

(d) retaining means attached to said insert means for effectuating rapid insertion of said insert into said insert receiving means, retaining of said insert means in free rotational relationship with said insert receiving means, and effectuating rapid removal of said insert from said insert receiving means to allow rapid removal and cleaning of said ridges and rapid reinstallation of said insert means in said insert receiving means; and

(e) forward ridges disposed at a forward end portion of said insert means and having a precisely rounded edge and a diameter slightly larger than the diameter of said generally cylindrical hole, wherein said cylindrical hole has an outwardly flared, low friction mouth portion, said rounded edge of said forward ridge precisely, rotationally abutting an outwardly flared surface of said mouth portion.

14. A method of reducing windplanning of an archery arrow, said method comprising the steps of:

(a) rotationally connecting an arrowhead to the shaft of said arrow with a very low friction rotational connection;

(b) applying torque causing said arrowhead to rapidly rotate in a first direction about a longitudinal axis of said shaft in response to force applied to an offset propelling surface attached in fixed relationship to said arrowhead by air through which said propelling surface passes during flight of said arrow; and

(c) applying torque causing said shaft to rapidly rotate about said axis in a second direction opposite to said first direction in response to force applied to said fletching by air through which said fletching passes during flight of said arrow.

4,534,569

STERN TUBE SEAL DEVICE PROVIDING A SEAL ABOUT A ROTATABLE SHAFT

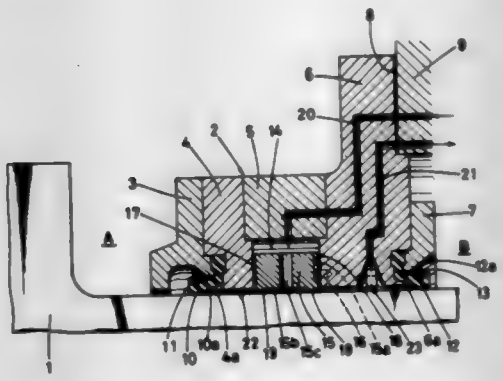
Kenichiro Ishitani; Takashi Unseki, both of Tokyo; Saburo Amiboshi, and Eiichi Kawamura, both of Saitama, all of Japan, assignors to Mitsubishi Jukogyo Kabushiki Kaisha and Eagle Industry Co., Ltd., both of Tokyo, Japan

Filed Mar. 26, 1984, Ser. No. 593,331

Claims priority, application Japan, Sep. 27, 1983, 58-148206; Sep. 27, 1983, 58-148207

Int. Cl.³ F16J *15/32, 15/40, 15/48*

U.S. Cl. 277—27 **6 Claims**



1. A stern tube seal for providing a seal about a rotatable shaft which extends from the stern tube of a ship comprising an annular casing means disposed about the outer periphery of a rotatable shaft, said casing having a recess extending about said shaft, said recess having an outer radial recess surface, a floating ring member disposed in said recess, said floating ring member having an outer radial ring surface and an inner radial ring surface, said outer radial ring surface being spaced from said outer radial recess surface to form an outer clearance space therebetween, said inner radial ring surface being spaced from said shaft to form an inner clearance space therebetween, said ring member having passage means extending between said inner and outer clearance spaces, a first conduit means in said casing means for receiving fluid under pressure from the interior of said ship, said first conduit means communicating with said outer clearance space, a first and second seal means mounted on said casing means on opposite sides of said recess, a second conduit means in said casing means for recovering and returning said fluid to said ship, said second conduit means having an inlet opening in said casing means between said recess and said first seal means, said second seal means having an engaging portion engaging said shaft and a sloping portion extending from said engaging portion, said sloping portion sloping radially outwardly as said recess is approached such that fluid under pressure from said first conduit means communicating with said second seal means via said outer clearance space, said passage means, and said inner clearance space acts on said sloping portion of said second seal means to reduce the pressure with which said engaging portion of said second seal

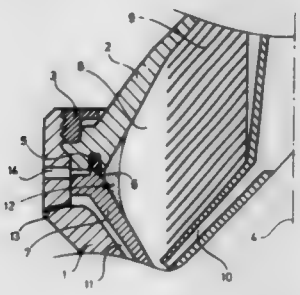
means engages said shaft to thereby reduce the sliding load between said second seal means and said shaft.

4,534,570

SEALING RING FOR A CENTRIFUGAL SEPARATOR

Jan Munde, Gnesta, Sweden, assignor to Alfa-Laval AB, Tumba, Sweden

Filed Mar. 29, 1984, Ser. No. 594,986
Claims priority, application Sweden, Apr. 5, 1983, 8301850
Int. Cl.[3] F16J *15/34*
U.S. Cl. 277—95 4 Claims



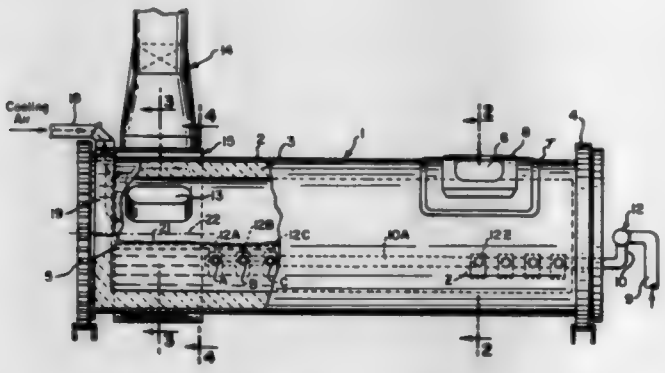
1. A centrifugal separator comprising a rotor mounted for rotation about an axis, the rotor having a first part provided with an annular groove surrounding said axis, the rotor also having a second part provided with an annular projection surrounding said axis and toward which said groove opens through an annular opening of the groove, said projection having opposite the annular groove an annular abutment surface which is of smaller radial dimension and therefore narrower than said annular opening of the groove, said second rotor part being movable axially toward and away from said first rotor part, and a sealing ring of plastically deformable material located in the groove and having an annular sealing surface engageable by said annular abutment surface upon movement of said second rotor part toward said first rotor part, a portion of said ring closest to said abutment surface having annular bevelled edges at opposite sides of said annular sealing surface, whereby the ring has a cross-section which, at said closest portion, tapers toward said projection, said annular abutment surface having a radial dimension which is at least as large as the radial dimension of said annular sealing surface, whereby said annular abutment surface is at least as wide as said annular sealing surface.

4,534,571

CIRCUMFERENTIAL SEALING ASSEMBLY

Allan F. Tittes; Kenneth H. Larson, and Kennith L. Britton, all of Claypool, Ariz., assignors to Inspiration Consolidated Copper Company, Claypool, Ariz.

Filed Mar. 19, 1984, Ser. No. 591,122
Int. Cl.[3] F16J *33/72*
U.S. Cl. 277—128 11 Claims



1. A circumferential sealing assembly for use with a cylindrical body and a hood provided to collect hot gases from an opening in said cylindrical body as said cylindrical body is rotated, the circumferential sealing assembly comprising:

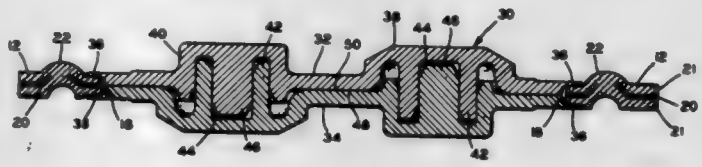
(a) a circumferentially extending housing;
(b) means for connecting the housing to a circumferentially extending area of the hood;
(c) a cable extending along, and at least partly outside, the housing for frictionally contacting a circumferentially extending area of the body; and
(d) tensioning means connected directly between the housing and cable for pulling the cable taught and into a tight pressure fit with the body.

4,534,572

PORT BAFFLE FOR ENGINE GASKET

Jerome G. Belter, Mt. Prospect, Ill., assignor to Dana Corporation, Toledo, Ohio

Filed Dec. 20, 1984, Ser. No. 684,302
Int. Cl.[3] F16J *15/12*
U.S. Cl. 277—235 B 14 Claims



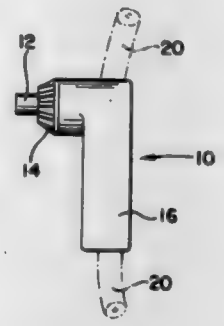
1. A port baffle for closing and sealing an aperture in a gasket, said baffle comprising a pair of plate-like members having adjoining faces disposed for establishing peripheral sealing engagement of opposing sides of said gasket about said aperture, said faces being mechanically coupled together by mating post and socket connector elements.

4,534,573

CHUCK KEY

Robert I. Somers, Raleigh, N.C., assignor to Black & Decker, Inc., Newark, Del.

Filed Jun. 23, 1983, Ser. No. 506,997
Int. Cl.[3] B23B *45/00*
U.S. Cl. 279—1 K 14 Claims

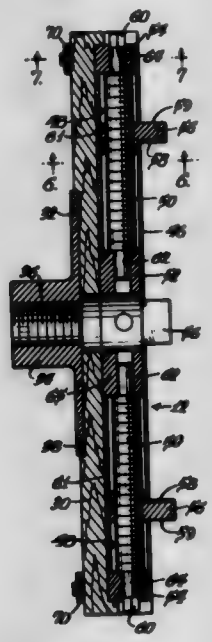


9. A chuck key comprising:
an integrally-formed, one-piece handle having an elongated portion and a post portion, said post portion projecting from one side of said elongated portion perpendicular to the axis thereof, said elongated portion having an axial groove in the other side thereof for receiving the electrical cord of said tool and including means for gripping said cord within said groove; and
means integral with the projecting end of said post portion for engaging a chuck to adjust the jaws thereof.

4,534,574
LIGHTWEIGHT CHUCK FOR WOODTURNING LATHE

Frank Hesh, 1155 W. Ogden, and Edward F. Groh, 850 Hillside Rd., both of, Naperville, Ill. 60540

Filed Sep. 29, 1983, Ser. No. 537,117
Int. Cl.[3] B23B *31/36*
U.S. Cl. 279—112 8 Claims



1. A lightweight chuck for use on a woodturning lathe, comprising

a generally cylindrical chuck body forming a faceplate,

said chuck body being formed of a lightweight rigid structural material,

said body having radial grooves formed therein open from the faceplate and having a central cutout inboardly from the grooves and notched cutouts outboardly from the grooves also open from the faceplate,

an adjustment screw adapted to fit in each of the grooves,

inboard and outboard bearings for rotatably holding one of the adjustment screws in each of the grooves,

said inboard bearings all being fitted in the central cutout from the faceplate side of the chuck body,

said outboard bearings each being fitted in one of the respective outboard notched cutouts from the faceplate side of the chuck body, the notched cutouts defining abutments that serve to radially position the outboard bearings,

an elongated U-shaped channel guide fitted in each of the radial grooves with its open side open to the faceplate,

each U-shaped guide extending at its opposite ends to butt against the inboard and outboard bearings disposed in the groove,

a chuck jaw for each of the grooves and having a threaded bore adapted to be threaded onto the adjustment screw disposed therein,

said chuck jaw being shaped and sized to be fitted in the grooves from the faceplate side of the chuck body and be nonrotatably received in and keyed relative to the U-shaped channel guide and projecting forwardly of the open side thereof and beyond the faceplate, and being operable to slide along and within the channel guide upon rotation of the adjustment screw,

a mounting hub adapted to be secured to the lathe for powered rotation, and

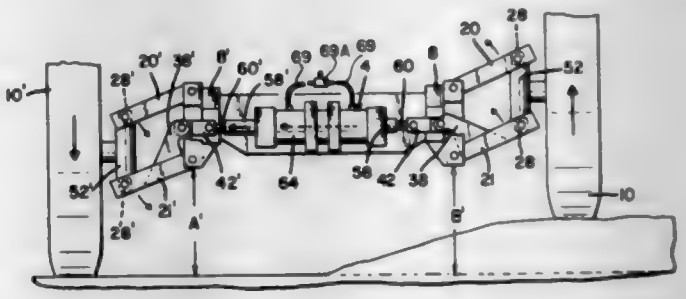
means for securing the chuck body to the hub,

said securing means including locating the hub on the side of the chuck body remotely of the faceplate and bolt means extended from the faceplate side of the chuck body through openings in the chuck body and openings in the inboard bearings and threaded into taps in the mounting hub, operable also then to hold both the inboard bearings and hub relative to the chuck body.

4,534,575
VEHICLE SUSPENSION AND STEERAGE SYSTEM

John L. Grove, Greencaste; John L. Hockensmith, and Allen B. Coffman, both of Chambersburg, all of Pa., assignors to JLG Industries, Inc., McConnellsburg, Pa.

Filed Oct. 18, 1982, Ser. No. 434,733
Int. Cl.[3] B60G *19/06*
U.S. Cl. 280—6.11 3 Claims

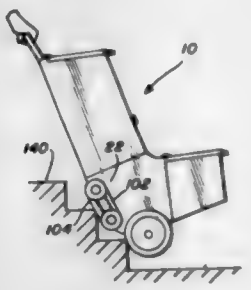


1. A vehicle having a frame, a pair of oppositely disposed, spaced, steerable wheels, a king pin for supporting each said wheel, and a suspension system connecting said frame and said wheels, said suspension system including means for supporting each said king pin with the axis thereof substantially vertical for pivotal movement about substantially horizontal axes adjacent said frame, said supporting means comprising upper and lower parallel suspension arms pivoted at their inner ends adjacent said frame, means for transmitting pivotal movement of one said upper and lower suspension arms to the other said upper and lower suspension arms and for causing said last mentioned arms to pivot a substantially equal amount and in the same rotary direction as said one upper and lower suspension arms, said movement transmitting means comprising a rod and means for connecting the ends of said rod to said suspension arms, means for rotating said wheels on said king pins, and means for selectively permitting or inhibiting pivotal movement of said suspension arms.

4,534,576
APPARATUS FOR TRANSPORTING FIREWOOD

William J. Jones, Jr., P.O. Box 42, Caddo Gap, Ark. 71935

Filed Mar. 1, 1983, Ser. No. 471,133
Int. Cl.[3] B62B *1/10*
U.S. Cl. 280—47.26 3 Claims



1. An apparatus for transporting firewood comprising:

a container including:

first and second planar sides, each side including a vertical side portion and a forwardly extending horizontal side portion joined by a sectoral side portion, the vertical side portion being approximately twice as long as the horizontal side portion;

a planar back portion extending between back edges of the vertical side portions;

a planar front portion extending between front edges of the vertical side portions;

an upper curved surface extending between inner circular edges of the sectoral side portions;

a lower curved surface extending between outer circular edges of the sectoral side portions;

a bottom portion extending between lower edges of the horizontal side portions;

an end portion extending between outer edges of the horizontal side portions;

the upper edges of the vertical side portions, back portion and front portion forming an upper opening; and

th upper edges of the horizontal side portions and end portion and a lower edge of the upper curved surface forming a lower opening;

an upper door pivoted to the upper edge of the back portion sized to cover the upper opening;

a lower door pivoted to the lower edge of the upper curved surface sized to cover the lower opening;

wheels attached to stub axles extending from the lower curved surface;

a grip including:

two arms extending from opposite sides of the upper edge of the back portion; and

a cross member extending between the uppermost ends of the arms.

4,534,577

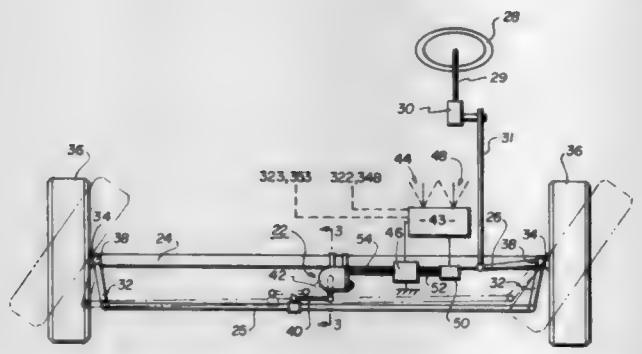
REMOTELY ADJUSTABLE STEERING COMPENSATOR

Durrell U. Howard, 306 Krameria Dr., San Antonio, Tex. 78213

Continuation-in-part of Ser. No. 93,968, Nov. 14, 1979, Pat. No. 4,410,193, and a continuation-in-part of Ser. No. 296,617, Aug. 27, 1981, Pat. No. 4,418,931. This application Jul. 11, 1983, Ser. No. 512,852

Int. Cl.³ B62D *5/06*

U.S. Cl. 280—90 **36 Claims**



1. A steering compensator apparatus for a steering system of a vehicle having at leat one steerable member movable away from a preselected position in response to a steering force, said apparatus comprising:

cam means including a detent member having at least one centering depression and at least one follower member in contact with opposite sides of said centering depression when said steerable member is in said preselected position;

connecting means for moving said follower member and said detent member relative to each other in response to movement of said steerable member away from said preselected position;

compression means for pressing together said follower member and said detent member so that contact pressure between said follower member and said centering depression resists relative movement between said detent member and said follower member and prevents substantial movement of said steerable member away from said preselected position until said steering force exceeds a predetermined value;

adjusting means operable for varying the contact pressure between said follower member and said centering depression so as to vary the amount of steering force required for substantial movement of said steerable member away from said preselected position; and,

control means for remotely operating said adjusting means so as to selectively vary the amount of said contact pressure while said vehicle is in operation.

4,534,578

MUSCLE DRIVEN, SINGLE TRACK BICYCLE

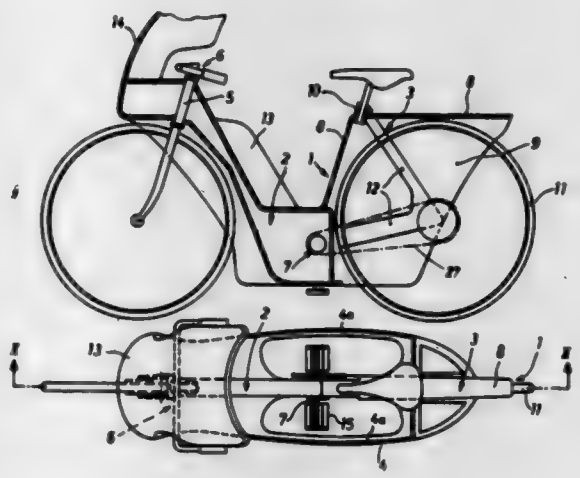
Roland Keller, Hauptstrasse 68, 8592 Uttwil, Switzerland

Filed Nov. 18, 1982, Ser. No. 442,781

Claims priority, application Switzerland, Nov. 18, 1981, 7412/81

Int. Cl.³ B62K *19/16*

U.S. Cl. 280—281 R **9 Claims**



1. A muscle driven, single track bicycle comprising a front and a rear wheel, a driving mechanism located between said front and rear wheels including chain driving means and two foot pedals and a frame structure made of plastic and integrated reinforcing elements, said frame structure including a central supporting structure in the form of a hollow case extending substantially between said front and rear wheels said chain driving means being located near said central supporting structure; said frame structure further including an outer bracing structure having a front portion and a rear portion laterally projecting from said central supporting structure and being connected thereto further having two lateral bracing members each extending between said front portion and said rear portion in a plane outside of the respective foot pedal thereby leaving a lateral distance to said central supporting structure and providing vertical openings for the foot pedals, said front portion of the outer bracing structure forming a fairing; said lateral bracing members being connected to said fairing at at least said front portion of said bicycle to reduce any drag factor and torsion associated with said bicycle.

4,534,579

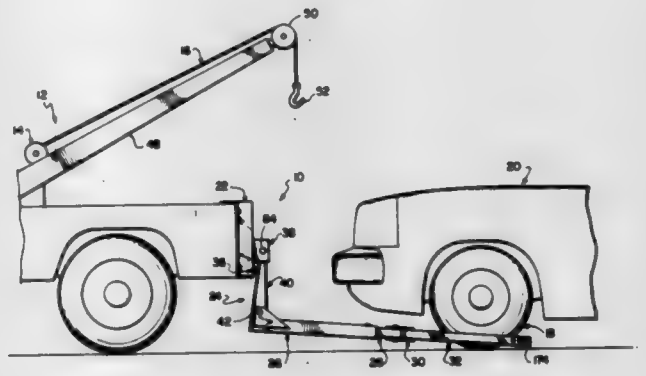
AUTOMOBILE WHEEL LIFT FOR A TOW TRUCK

G. Raymond Shackelford, Sr., Rte. 2, Box 351, Augusta, Ga. 30909

Filed Mar. 29, 1984, Ser. No. 594,796

Int. Cl.³ B60P *3/06*

U.S. Cl. 280—402 **23 Claims**



1. A mechanical wheel lift for engaging and lifting the wheels of a car for use on a tow truck having a winch and a cable thereon, the combination comprising:

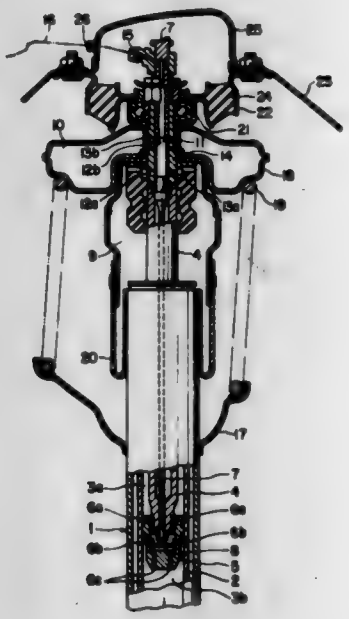
a support rigidly coupled in a substantially vertical position on the rear of the truck;
means defining a cam follower coupled to said support;
a pair of wheel-engaging forks; and
lifting means, coupled to said wheel-engaging forks slidably coupled to said support, and coupled to the cable on the winch, for reciprocating said wheel-engaging forks upwardly and downwardly and for pivoting said wheel-engaging forks towards and away from the rear of the truck upon reeling-in and paying-out of the cable,
said lifting means including a cam surface slidably engaging said cam follower,
said support including a pair of vertical tracks, and
said lifting means including a trolley coupled to said tracks for vertical reciprocating movement,
said cam surface being planar and being pivotally coupled to said trolley about a horizontal axis,
said cam surface extending at an acute angle downwardly and towards said cam follower under the influence of gravity.

4,534,580

SUSPENSION SYSTEM FOR VEHICLES

Kazuyoshi Kobayashi, Oobu, and Shozo Takizawa, Okazaki, both of Japan, assignors to Mitsubishi Jidosha Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 31, 1984, Ser. No. 575,348
Claims priority, application Japan, Feb. 2, 1983, 58-12749[U]
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—712 **8 Claims**



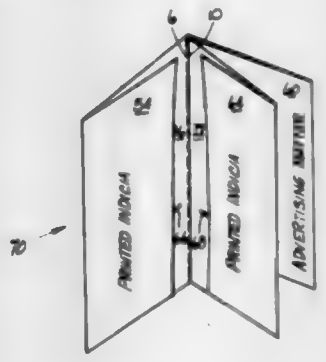
1. In a suspension system for vehicles equipped with a shock absorber comprising a cylinder supporting an axle, a piston fitted in the cylinder to divide the space therein into two chambers and having orifice passages to connect the two chambers, and a piston rod extending upward from the piston and supported by a car body at the upper end thereof, the improvement which comprises:
a main air-spring chamber coaxially disposed around said piston rod and cylinder to support the weight of a car;
an auxiliary air-spring chamber disposed above said main air-spring chamber and coaxially around said piston rod; and
a control rod disposed within said piston rod to extend in the longitudinal direction thereof in such a manner as to be displaceable with respect the piston rod;
that portion of the piston rod which surrounds the control rod having openings communicating with said main and auxiliary air-spring chambers;
the control rod having an air passage through which air is supplied to and discharged from the main and auxiliary air-spring chambers which are connected by the air passage and said openings in the piston rod;
the piston and control rods being adapted to function as a switch valve that selectively connects and disconnects the main and auxiliary air-spring chambers by displacing the control rod with respect to the piston rod; and
a silencing cover enclosing the upper end of the piston rod so that the outward leakage of the noise caused by the air flowing through the air passage in the control rod is reduced.

4,534,581

PRODUCT AND METHOD FOR USING AIRLINE TICKETS

Gordon L. Engh, Mission Viejo, Calif., assignor to Nekoosa Envelopes, Inc., Englewood, Colo.

Filed Dec. 14, 1983, Ser. No. 561,474
Int. Cl.³ B42D *1/00*
U.S. Cl. 281—15 R **10 Claims**



1. A ticket holder comprising:
a common page comprising first and second panels secured together and having a first fold line;
each of said first and second panels having a length and a width with said length being greater than said width;
said first fold line extending in a lengthwise direction;
a first ticket holder comprising third and fourth panels and joined to said first panel along a second fold line;
said third panel having a length and a width, each corresponding to said length and width of said first and second panels;
said fourth panel having a length approximately the same as the length of said third panel and a width less than the width of said third panel;
said third panel being joined to said first panel along said second fold line which fold line extends in a lengthwise direction;
said fourth panel being joined to said third panel along a third fold line extending in a lengthwise direction;
means securing said third and fourth panels along one widthwise edge so as to form a pocket between said third and fourth panels;
a second ticket holder comprising fifth and sixth panels and joined to said second panel along a fourth fold line;
said fifth panel having a length and a width, each corresponding to said length and width of said first and second panels;
said sixth panel having a length approximately the same as the length of said fifth panel and a width less than the width of said fifth panel;
said fifth panel being joined to said second panel along a said fourth fold line which fold line extends in a lengthwise direction;
said sixth panel being joined to said fifth panel along a fifth fold line extending in a lengthwise direction;
means securing said fifth and sixth panels along one widthwise edge so as to form a pocket between said fifth and sixth panels; and
each of said fold lines being independent.

4,534,582

ADHESIVE LABELS

Robin G. Howard, Bury St. Edmunds, England, assignor to Denny Bros. Printing, Suffolk, England

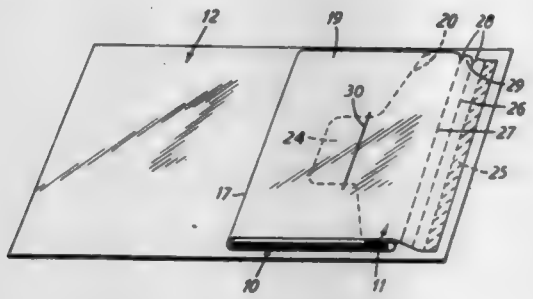
Filed Apr. 28, 1983, Ser. No. 489,359

Claims priority, application United Kingdom, Apr. 28, 1982, 8212349

Int. Cl.[3] G09F *3/00*; B42D *1/00*

U.S. Cl. 283—81

6 Claims



1. An adhesive label comprising a sheet having a central portion which has an adhesive on its rear face and first and second flaps connected along fold lines to mutually opposite edges respectively of the central portion and extending towards each other and into overlapping relation, said flaps enclosing a leaflet or pamphlet anchored to said central portion, said first flap being overlapped by said second flap and having a tongue at its free edge, said second flap extending beyond the tongue and having on the rear face of its free edge portion a line of adhesive for fastening said portion down, said second flap also having a line of weakening adjacent said edge portion whereby the main part of the second flap can be separated from said edge portion to provide access to the leaflet or pamphlet, and said main part having a slit therein for receiving the tongue on the first flap to re-enclose the leaflet or pamphlet.

4,534,583

MUDLINE CASING HANGER ASSEMBLY

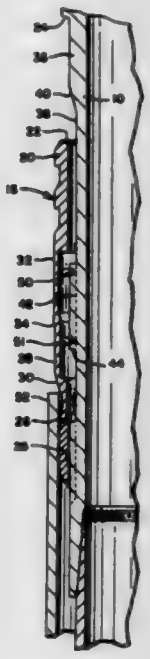
Lionel J. Milberger; Jimmy R. Martin, and Thomas P. Mataway, all of Houston, Tex., assignors to Combustion Engineering, Inc., Windsor, Conn.

Filed Nov. 12, 1982, Ser. No. 441,190

Int. Cl.[3] F16L *35/00*

U.S. Cl. 285—24

23 Claims



1. A casing hanger assembly for supporting a casing string within and from a tubular member comprising:

a vertically oriented cylindrical casing hanger body having,

a downwardly-facing load shoulder around a substantial protion of the periphery, and having a major diameter,

a first reduced diameter portion below said load shoulder,

a second and smaller reduced diameter portion below said first reduced diameter portion,

an intermediate section within said second reduced diameter portion extending radially outwardly and having a downwardly-facing push shoulder,

a latch engaging means secured radially outwardly of said second reduced diameter portion at the lower end thereof;

a diametrically compressible collet surrounding said casing body movable vertically between said load shoulder and said latch engaging means having,

radially outwardly extending support segments at an upper location on said collet for mating and supporting said collet from said tubular member, an upwardly-facing load shoulder above said support segments adapted to engage said downwardly-facing load shoulder,

radially outwardly-extending latches at the lower end of said collet engageable with said latch engaging means in the relaxed extended condition but not in the diametrically compressed condition, whereby said collet is engaged with said latch engaging means until it is compressed, said collet having a first and vertical flat on its outer diameter with a first diameter and having a radially inwardly-tapered portion therebelow, said collet having a second vertical flat on its outside diameter at a greater diameter than that of said first vertical flat and above said first vertical flat with a tapering portion joining said first and second flats,

said collet having a radially inwardly extending upwardly facing shoulder at the lower end engageable with said push shoulder;

the diameter of said first and second flats, said latch, said latch engaging means, said push shoulder and said inwardly-facing shoulder sized such that as said collet enters a casing and is diametrically reduced by squeezing the collet to the casing diameter the reduction of said first flat to the casing diameter produces a smaller diameter of said inwardly-facing shoulder than the diameter of said push shoulder but does not release said latch from said latch engaging means, and reduction of said second flat to the casing diameter fully releases said engaging means;

whereby said latch is disengaged as the taper joining said first and second flats enters the casing and said push shoulder thereby engages said collet to push the collet down the casing to the support elevation.

4,534,584

HYDRAULIC CONNECTING DEVICE

Walter Weirich, Dortmund; Jürgen Melis, Lünen, and Peter Wollenhaupt, Lünen-Horstmar, all of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

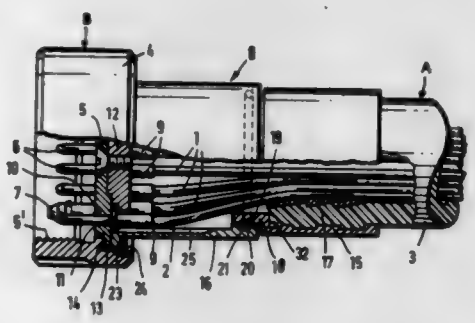
Filed Feb. 7, 1983, Ser. No. 464,258

Claims priority, application Fed. Rep. of Germany, Feb. 6, 1982, 3204102

Int. Cl.[3] F16L *35/00*

U.S. Cl. 285—24

7 Claims



1. A hydraulic arrangement comprising a hydraulic multi-

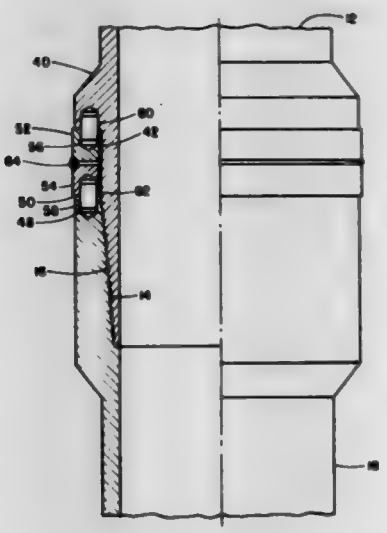
line hose, a hydraulic coupling device, and a hydraulic connecting device interconnecting the multi-line hose and the coupling device, the multi-line hose having a plurality of flexible hydraulic conduits housed within a protective sheath, the coupling device having a plurality of plug pins held within a casing by a retainer, and the connecting device comprising a first sleeve, a second sleeve having an end portion telescopically positioned around an inturned end portion of the first sleeve, and a releasable securing element for detachably connecting said end portions of the sleeves, the other end portion of the first sleeve being connected to the multi-line hose, and the other end portion of the second sleeve being connected to the coupling device, wherein the securing element is such as to permit relative rotation between the two sleeves and such as to resist tensile forces tending to separate the two sleeves, wherein the outer diameters of the first and second sleeves are substantially no greater that the outer diameter of the hose, wherein said end portions of the sleeves have a greater wall-thickness than the remaining portions thereof, and wherein the second sleeve has an axially-extending recess of limited circumferential extent formed in its inner wall extending from the other end portion to adjacent the first sleeve for accommodating a flange of a larger guide plug pin.

4,534,585

PIPE JOINT LOCKING DEVICE

Kenneth C. Saliger, DeSoto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,780
Int. Cl.³ F16L *15/00*
U.S. Cl. 285—92 **4 Claims**



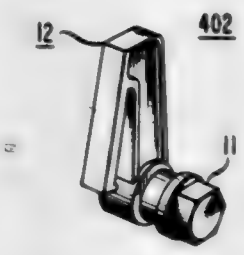
1. In a pipe joint for flowlines or well casings subjected to reversible rotation, said pipe joint including a tubular box and a tubular pin directly interconnected through a cooperating sealing screw thread formed at the adjoining ends of said tubular box and tubular pin, the improvement comprising locking means engaging said tubular box and said tubular pin about the joint intermediate said tubular box and pin; said tubular pin including an enlarged diameter end portion facing towards the connecting end with said tubular box, an annular recess formed at said tubular pin end so as to provide parallel spaced radial lands, one said radial land being the surface on said enlarged diameter end facing towards the connecting end with said tubular box, and the other radial land being the end surface of said tubular box facing said enlarged diameter tubular pin end portion; a pair of spaced annular ring members positioned in said recess so as to encompass said tubular pin and contacting said lands, one said ring members having at least one blind bore in axial alignment with at least one blind bore in said enlarged diameter tubular pin end portion, a dowel pin extending through said bores to fasten said ring member to said tubular pin; the other said ring member having at least one blind bore in axial alignment with at least one blind bore in the end surface of said tubular box, a dowel pin extending through said bores to fasten said other ring member to said tubular box; and means for fixedly interconnecting said rings to facilitate transmission of torque through said pipe joint.

4,534,586

AUTOMATIC LOCKING DEVICE

Arnold R. Smith, Chester, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 29, 1982, Ser. No. 454,158
Int. Cl.³ E05C *3/14*
U.S. Cl. 292—228 **2 Claims**



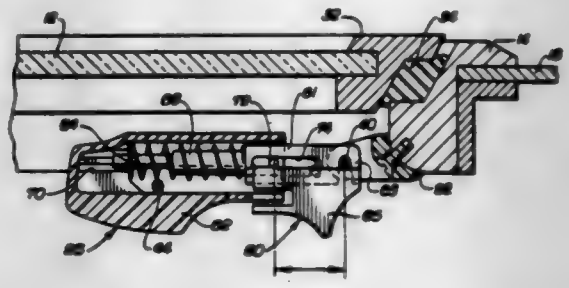
1. An automatic locking device for securing a first member to a second member comprising:
a latch member connected to the first member, the latch member upon attachment of the first member to the second member being inserted into a detent within the second member,
a spring member the spring member extending at an angle thereto, integral to the latch member, the spring member biased by a projecting member within the first member, and
a bolt member detachably connected to the latching member, the bolt member further comprising;
a head member at one end and a shank portion at the other end, the head member being rotatable such that the latch member is outside of the detent, thereby facilitating the detachment of the first member from the second,
the head member further having a slot, the slot having predetermined boundaries for mating to a key within an opening in the first member, the slot boundaries are at an angle to each other approximately equal to said spring member angle, the slot thereby preventing the overstressing of the latch member when rotating the head member and the slot also providing the continuous biasing of the spring member with the projecting member.

4,534,587

LATCH ASSEMBLY

Paul D. Fleming, Glendale, Calif., assignor to W & F Manufacturing, Inc., Glendale, Calif.

Filed Jan. 28, 1983, Ser. No. 462,020
Int. Cl.³ E05C *17/32*
U.S. Cl. 292—263 **35 Claims**



1. A latch assembly for controlling movement between open and closed positions of a vent panel relative to a main frame in a sunroof window or the like, comprising:
a frame bracket for securement with respect to the main frame;
a pair of frame links;
means for pivotally connecting said frame links generally at one end thereof in transversely spaced relation with re-

spect to said frame bracket for generally coaxial pivoting movement;

a panel bracket for securement with respect to the vent panel;

a pair of panel links;

means for pivotally connecting said panel links generally at one end thereof in transversely spaced relation with respect to said panel bracket for generally coaxial pivoting movement;

means for pivotally connecting said frame links and said panel links respectively to each other generally at their respective other ends for generally coaxial pivoting movement;

said pairs of frame and panel links being sized and shaped for articulated over-center pivoting movement between a generally folded closed position with the vent panel lying generally in the plane of the vent frame and a generally end-to-end open position with the vent panel in an open position relative to the main frame;

each of said frame links including at least two longitudinally movable sections and a spring reacting therebetween urging said sections toward a fully extending position such that said frame links are adjustable in length during said articulated pivoting movement to limit the magnitude of forces reacting between said frame and panel brackets during such movement in accordance with the strength of said springs;

a handle member extending between said frame links at a position with said other ends of said panel links disposed between said handle member and said one ends of said frame links, said frame links and handle member cooperating to define passages through which said panel links extend when said frame and panel links are in said open position, and further including first tab means on said panel links interengageable with second tab means on said frame links and handle member for releasably locking said frame and panel links in said open position;

a spring-loaded latch carried by said panel bracket; and

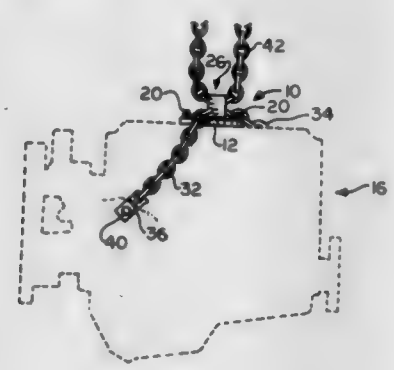
a latch keeper on said frame bracket, said latch and keeper being releasably interengageable when said frame and panel links are in said closed position to lock the vent panel in a closed position generally lying within the plane of the main frame.

4,534,588

ENGINE LIFTING TOOL

John W. Markey, 2713 Sorrell St., Baton Rouge, La. 70805

Filed Apr. 25, 1984, Ser. No. 603,682
Int. Cl.³ B66C *1/16*
U.S. Cl. 294—81.5
17 Claims



1. A lifting tool for lifting an internal combustion engine having an intake manifold connected thereto, said intake manifold having threaded holes or studs therein, comprising:

a. mounting plate means for connecting to the intake manifold of said engine, said mounting plate means having a plurality of holes therein aligned with threaded holes or studs in said intake manifold,

b. a "U"-shaped bracket means connected to said mounting plate means for receipt of lifting means connected to an engine hoist, and

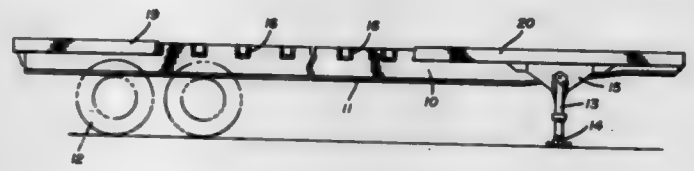
c. safety chain means connected to said "U"-shaped bracket means for connecting to said engine to prevent said engine from falling to the ground if said "U"-shaped bracket should separate from said mounting plate means or if said mounting plate means should separate from said engine while said engine is being hoisted.

4,534,589

UNITIZED TRAILER ASSEMBLY

Howard Booher, P.O. Box 277, Randolph, Ohio 44265

Filed Mar. 22, 1984, Ser. No. 592,078
Int. Cl.³ B62D *21/02*
U.S. Cl. 296—182
6 Claims



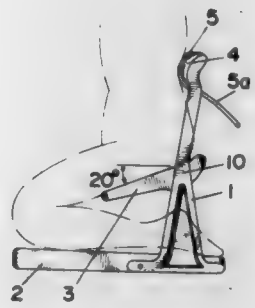
1. A unitized trailer structure consisting of a pair of horizontally spaced longitudinally extending vertically disposed beams having upper and lower portions, horizontally disposed longitudinally extending flanges on the lower portions of said beams, a plurality of cross sectionally U-shaped cross frame members positioned in longitudinally spaced transversely aligned notches in the upper portions of said longitudinally extending beams and welded thereto, and a floor positioned on the upper portions of said beams and said U-shaped cross frame members and welded thereto so as to form the unitized rigid structure.

4,534,590

CHAIR WITH A BACK FOR RECLINING

Yukio Yamamura, Hikone; Jingo Nakayama, Shiga; Atsunobu Ikeda, and Takashi Kawamoto, both of Hikone, all of Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jun. 1, 1983, Ser. No. 499,878
Claims priority, application Japan, Jun. 15, 1982, 57-102721
Int. Cl.³ A47C *7/72*
U.S. Cl. 297—180
12 Claims



1. A chair which may be used either as a squat chair or a conventional chair comprising:

a frame member, said frame member having a cross-bar portion at its upper end and a pair of side bars extending downwardly from respective ends of the cross-bar portion, said cross-bar portion being located so as to abut against the waist region of the back of a person sitting on the chair, thereby supporting the lumbar region of the person's spine;

a seat member, said seat member being pivotally supported at opposite sides thereof on respective side bars of said pair of side bars;

pivotal support means, said support means pivotally supporting the seat member on the frame member so that the seat member is freely forwardly downwardly inclinable, said

support means including means for limiting the angle of downward inclination of the seat member;

a substantially planar base, said base being attached to the side bars of the frame member at the lower ends thereof; and

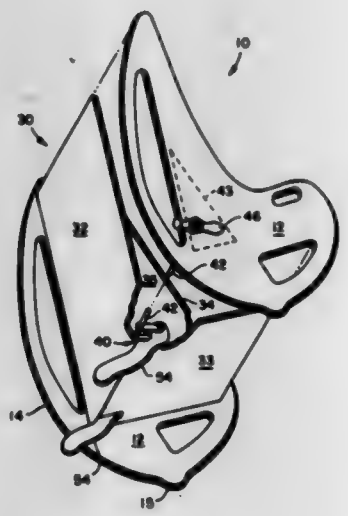
further comprising a lumbar supporting protruding portion at the rear bottom portion of the seat member, said protruding portion being located so as to abut against the waist region of the back of a person sitting on the base when the seat member is in an upright position, thereby supporting the lumbar region of the person's spine.

4,534,591

CONTROLLED ROCKING ACTION FURNITURE

Michael S. Parker, Rte. 185, Sorrento, Me. 04677

Filed Oct. 12, 1982, Ser. No. 433,905
Int. Cl.³ A47C 3/02
U.S. Cl. 297—270 **17 Claims**



1. Rocking action furniture with upright stop mechanism comprising:

curved side pieces for rocking engagement with the ground;

seat frame means spacing and joining the curved side pieces, said seat frame means defining an operating space near the base of the furniture;

axle pivot means extending across the inner operating space and supported at respective ends by said side pieces, and handle means for rotating the axle pivot means;

eccentric mounting arm means extending from the axle pivot means in the inside operating space;

at least one elongate leg stop means pivotally mounted at one end to the end of said eccentric mounting arm means away from the axle pivot means so that both pivoting motion and translating motion are imparted to the elongate leg stop means upon rotation of the axle pivot means;

said seat frame means formed with at least one slot near the base of the seat frame means in alignment with the eccentric mounting arm means and leg stop means, said slot extending between the operating space and the outside of said seat frame means;

said leg stop means constructed and arranged with its free end extending through the slot so that rotation of the axle pivot means and extending cam means causes the leg stop means to pivot and translate for extending and retracting through the slot between a position substantially within the operating space and a position extending outside the seat frame means in contact with the ground when the rocking action furniture is in upright position; and

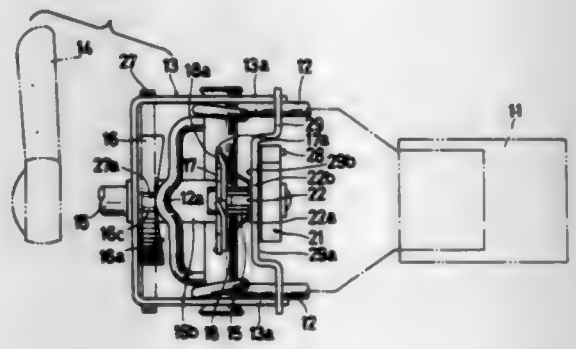
locking means for locking the leg stop means in extended position for stopping the rocking action furniture in said upright position, said locking means comprising a flat locking shelf formed on the upward side of said leg stop means, said locking shelf formed at a substantially complementary angle to a portion of the seat frame means defining an edge of the slot whereby at least a portion of the weight of said furniture is directed through an edge of the slot onto the locking shelf locking the leg stop means in place by the weight of said furniture bearing on the locking shelf and whereby the downward force of said furniture is transmitted to the axle pivot means through the leg stop means and eccentric mounting arm means thereby locking said furniture in upright position with the leg stop means extended.

4,534,592

LUMBAR SUPPORT ADJUSTING APPARATUS

Takemi Hattori, Kariya, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 30, 1983, Ser. No. 480,574
Claims priority, application Japan, Apr. 6, 1982, 57-57050
Int. Cl.³ A47C 3/00
U.S. Cl. 297—284 **6 Claims**



1. An apparatus for adjusting a lumbar support having a lumbar plate held against a seat back, comprising:

(a) a bracket;

(b) a torsion bar having an end connected to said lumbar plate for applying force to said lumbar plate, said lumbar plate also having an opposite end being angularly movable and supported on said bracket, said opposite end having a cam follower projection;

(c) a handle-operated shaft rotably mounted on said bracket;

(d) means for rotating said shaft;

(e) a cam rotably mounted on said shaft and having a shank, a cam face engaging said cam follower projection and a plurality of recessed members on the outer peripheral surface thereof,

(f) a leaf spring having a locking projection for individual engagement with said recessed members on said cam;

(g) a ratchet mounted on said shank and having a plurality of radial teeth;

(h) a release plate mounted on said shaft, said release being axially movable therewith and having a plurality of pawls engageable with said radial teeth for turning said cam in response to rotation of said shaft thereby adjusting the force on said lumbar plate applied by said torsion bar;

(i) a support plate mounted on said bracket, said shaft having one end projecting through said support plate;

(j) a torsion spring having one end secured to said one end of said shaft and the other end connected to said support plate; and

(k) compression means for urging said release plate against said ratchet.

4,534,593

VEHICLE SEAT LUMBAR SUPPORT INSERT AND METHOD OF UTILIZING THE SAME

William K. Ojala, Dearborn Heights, Mich., assignor to Practical Technology Incorporated, Birmingham, Mich.

Filed May 6, 1983, Ser. No. 492,191
Int. Cl.³ A47C 7/46
U.S. Cl. 297—284 **9 Claims**

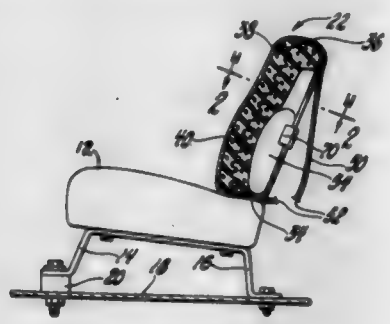
1. A vehicle lumbar support adapted to be inserted into a vehicle seat back structure having a resilient cushion element and a substantially vertically extending frame for supporting

said cushion element, said frame comprising a perimeter formed to receive and retain a cushion, said frame having an open upper section defined by a portion of said perimeter and extending downwardly from upper portions of said perimeter, said support comprising;

a lumbar support member;

said lumbar support member having a front face portion shaped to provide support to the lumbar region of a person seated in front of and bearing against a said cushion element;

said lumbar support member furthur having a second face, a recess formed in said second face of said lumbar support member, said recess having a lower ledge and an upper ledge, both said ledges extending inwardly from said second face of said lumbar support member; and a support bar having a tenon-like section sized to snugly fit into said recess and bear vertically against both said ledges;



said support bar having a portion extending outwardly from said tenon-like section a distance sufficient to extend outwardly from said support member second face when said tenon-like section is snugly fitted into said recess, the latter said support bar portion forming a stop member adapted to extend between parallel portions of a said perimeter of a said frame within a said open section to form a stop limiting movement of said lumbar support member transversely of said parallel portions of a said perimeter when received between said parallel portions of a said perimeter with said support bar received snugly within said recess with said stop member projecting outwardly of said lumbar support member, and when said stop member is centrally positioned laterally of said parallel portions of said perimeter, with said support member positioned between a cushion element supported by a said frame and a latter said frame.

4,534,594

LEG-REST, NOTABLY FOR TRANSPORT VEHICLES AND ESPECIALLY FOR AEROPLANES

Staub Lucien, Paray-Vieille-Poste, France, assignor to The National Company Air France, Paris, France

Continuation of Ser. No. 355,360, Mar. 8, 1982, abandoned. This application Dec. 3, 1984, Ser. No. 677,321

Claims priority, application France, Mar. 16, 1981, 81 05255

Int. Cl.³ A47C *7/52*

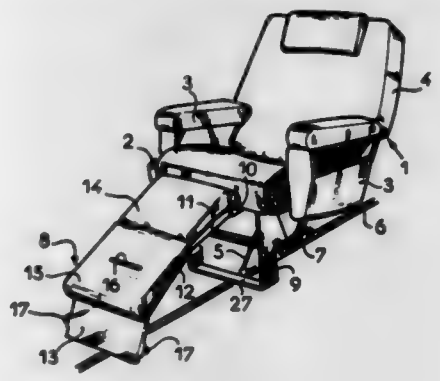
U.S. Cl. 297—438 **14 Claims**

1. Foldable leg-rest assembly removably connectable to a horizontal underseat luggage-restraining cross bar of a vehicular seat of the type employed in airliners and passenger railway cars, without need to modify the seat for installation or removal of the leg rest assembly, comprising

a non-swinging frame to be removably coupled to said cross bar, said non-swinging frame including a pair of substantially vertical side plates joined at their lower ends by a horizontal member, the side plates being parallel and each having an integral downwardly extending finger at a rear side thereof to define a substantially vertical cut out to overfit said cross bar, and including a plate member joining rearward edges of said fingers, leaving open a top side and a front side of said non-swinging frame to receive other portions of said leg-rest assembly in a folded position thereof;

a first flap pivoted on said non-swinging frame;

a holding device linking said first flap and said non-swinging frame and automatically holding said first flap on each



side of an unstable center position, to maintain stably the first flap in its folded position and in an opened-out position; and

three supplementary flaps articulated with each other, one of which is articulated to said first flap, and a last one of which serves as a prop.

4,534,595

VEHICLE SEAT

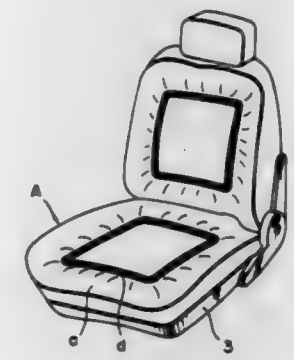
Tadafumi Abe, and Isao Takahashi, both of Tokyo, Japan, assignors to Tachikawa Spring Co., Ltd., Tokyo, Japan

Filed Dec. 28, 1982, Ser. No. 453,939

Claims priority, application Japan, Dec. 29, 1981, 56-214674; Dec. 29, 1981, 56-196505[U]; Dec. 29, 1981, 56-196839[U]; Apr. 30, 1982, 57-73565

Int. Cl.³ A47C *7/02*

U.S. Cl. 297—452 **19 Claims**



1. A vehicle seat comprising: (a) a pad member having an upper surface and at least one depression along said upper surface;

(b) adhesive material positioned on each said at least one depression;

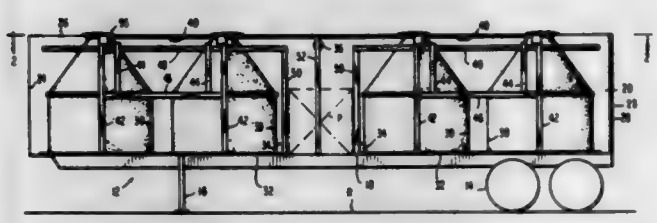
(c) a top member having a substantially flat underside, said top member being attached to said upper pad surface along said depressions by said adhesive material, said top member being pushed into each said at least one depression, wherein said adhesive material is applied only to said pad member depressions; and

(d) at least one decorative crease formed in an upper surface of said top member at each portion of said top member which is pressed into each said at least one depression.

4,534,596
FREIGHT VEHICLE WITH A CONVERTIBLE CARGO SPACE

Timothy C. Bonerb, East Amherst, N.Y., assignor to Vincent C. Bonerb, Boston, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,499
Int. Cl.[3] B60P *1/56*
U.S. Cl. 298—27 16 Claims



1. A freight vehicle having a cargo space convertible from a space suitable for piece goods to a space suitable for bulk granular aterial, the vehicle comprising;

(a) means defining a cargo space having a load-bearing bottom floor, side walls and end walls, and a roof,

(b) door means providing access to the cargo space for loading and unloading piece goods cargo therein,

(c) means defining at least two discharge openings in the bottom floor for emptying bulk, granular material cargo from the cargo space,

(d) at least two inflatable double-walled, generally cup-shaped bags for containing bulk cargo, each bag having an opening in its bottom positioned to register with one of the openings in the floor of the cargo space, each bag having a width dimension when the space between the bag walls is inflated less than the distance between the cargo space side walls so that none of the bags contact the cargo space side walls,

(e) a rigid bag bottom support platform means having openings therethrough in registery with the discharge openings in the bags and in the floor, the platform means positioned beneath the bag bottom, secured to the bag bottom and resting on and transmitting the weight of bulk cargo in the bag to the floor and not to the side walls when the cargo space is used in a bulk material handling mode,

(f) means for raising and lowering the bag bottom support platform means from the floor of the cargo space to a position with the bag support platform adjacent to the roof of the cargo space with the bag collapsed, to thereby convert the cargo space to space suitable for piece goods handling,

(g) mechanical means on the cargo space side walls for maintaining the bag in an erected position when the bag support platform means is on the floor and the cargo space is in the bulk handling mode, and for maintaining each bag spaced from the cargo space side walls during operation of the raising and lowering means,

(h) a fill opening means in the roof of the cargo space,

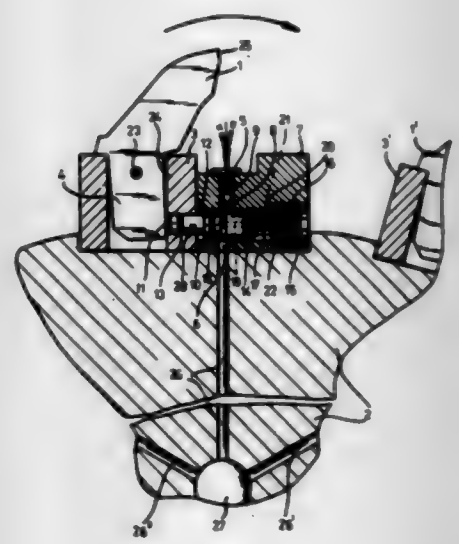
(i) a flexible member means connected to the fill opening means and connected to the top of each bag to provide an enclosure for the area around the fill opening means to the top of each bag,

(j) means for inflating and deflating the space between the walls of each bag, the inflation causing expansion of the inner wall from the top downward to assist in gravity discharge of the granular bulk material after its angle of repose is reached.

4,534,597
MINING TOOL WITH AUTOMATIC SPRINKLER CONTROL

Franz Kemper, Essen, Fed. Rep. of Germany, assignor to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 22, 1983, Ser. No. 534,585
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1982, 3234993
Int. Cl.[3] E21B *10/60*
U.S. Cl. 299—81 4 Claims



1. A mining tool comprising:

a generally cylindrical body rotatable about an axis;

a plurality of cutters peripherally spaced on said body and provided each with a working edge facing in the direction of rotation, each cutter further having a shank mounted on said body with freedom of limited pivotal motion in a plane substantially perpendicular to said axis;

conduit means connected to a supply of water under pressure, said conduit means including a channel terminating at an outlet in the vicinity of each of said cutters;

nozzle means in said outlet for sprinkling water onto a mine face attacked by said working edge;

valve means interposed between said channel and said outlet for significantly reducing the flow of water to said nozzle means in a normal blocking position, said valve means including a piston in contact with and generally perpendicular to said shank; and

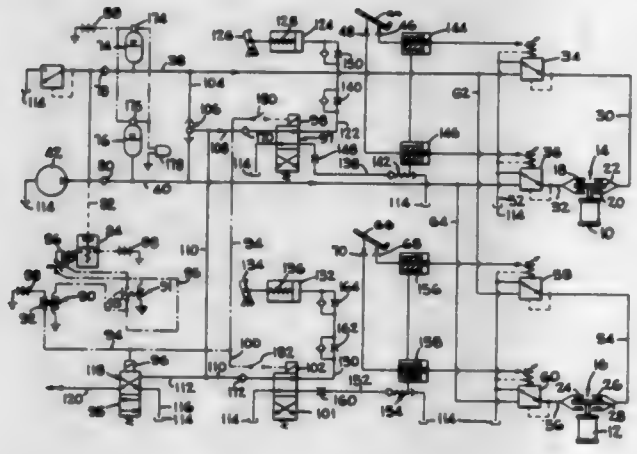
biasing means acting upon said shank to urge said working edge forward in the direction of rotation, said piston being displaceable by said shank from said normal position into an unblocking position upon repression of said working edge against the force of said biasing means by contact with said mine face, said shank being pivotally mounted in a holder provided with a bore generally perpendicular thereto, said channel and said outlet communicating with said bore, said piston being movable in said bore, said biasing means comprising a spring bearing upon said shank through the intermediary of said piston, said bore having an end remote from said shank provided with removable closure means, said spring being inserted in a space between said piston and said closure means, said piston having a passage aligned with said channel and said outlet in said unblocking position but cut off from said outlet in said normal position, said passage having an extension permanently connecting said channel with said space whereby water entering said passage from said channel in said normal position exerts pressure upon said piston supplementing the spring force.

4,534,598

HYDRAULIC DISK BRAKE CIRCUIT FOR CRANE DRAW WORKS

Leon L. Cuhel, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 22, 1983, Ser. No. 487,639
Int. Cl.³ B60T *13/14*
U.S. Cl. 303—10 **7 Claims**



1. In a crane having a hoist drum, a wire rope wound on said drum and capable of raising and lowering a load in response to winding and unwinding said rope, a reservoir and a pump; an improved system for control of the drum comprising:

a fluid supply line connected to the output of said pump;

a disk brake engageable with the drum for frictionally arresting movement of the drum in response to receiving fluid under pressure;

a brake valve for directing fluid pressure from the pump to said brake;

a pawl biased toward engagement with the drum to lock the drum from unwinding rotation;

a pawl cylinder connected to said pawl and responsive to fluid pressure to disengage said pawl from said drum;

an accumulator teed into said supply line;

a check valve in said supply line for isolating said pump when accumulator exceeds pump pressure;

a first solenoid valve when energized directing fluid pressure to said pawl cylinder and when de-energized connecting said pawl cylinder to reservoir and directing fluid pressure to said disk brake;

a pressure-sensing electrical switch; and

electrical circuit means connecting said switch to said solenoid valve to energize the same when the pressure developed by said pump falls below a predetermined value;

whereby said brake arrests rotation of said drum and said pawl engages said drum to prevent lowering of the load in response to pump pressure falling below said predetermined value.

4,534,599

ELECTRO-HYDRAULIC BRAKE CONTROL SYSTEM FOR A TRAIN

Eric C. Wright, Watertown, and Ronald E. Fairman, Adams, both of N.Y., assignors to General Signal Corporation, Stamford, Conn.

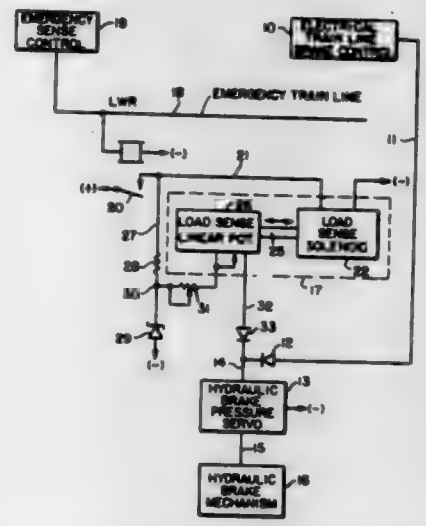
Filed Nov. 26, 1982, Ser. No. 444,548
Int. Cl.³ B60T *8/18*
U.S. Cl. 303—22 R **4 Claims**

1. An electric train line brake control system for governing power operation of brakes of a plurality of vehicles of a train comprising electro-hydraulic brake control means for each vehicle effective to govern braking pressure in inverse proportion to the degree of energization of said brake control means such that braking pressure is increased for an increased load wherein the improved electro-hydraulic brake control means comprises:

(a) load sense signal generating means operable in response to designation of emergency braking to generate a signal continuously variable for governing the electro-hydraulic brake control means in a continuously variable manner in accordance with the load of the vehicle, the load sense signal generating means comprising;

(1) a normally deenergized emergency train line connecting the vehicle of the train for energization to govern the brake control means on each vehicle,

(2) emergency sense control means for energizing the emergency train line upon sensing an emergency brake control designation,



(3) a lever for sensing vehicle load by measuring a degree of deflection of springs of the vehicle as an indication of load,

(4) solenoid means responsive to energization of the emergency train line for activating the lever, and

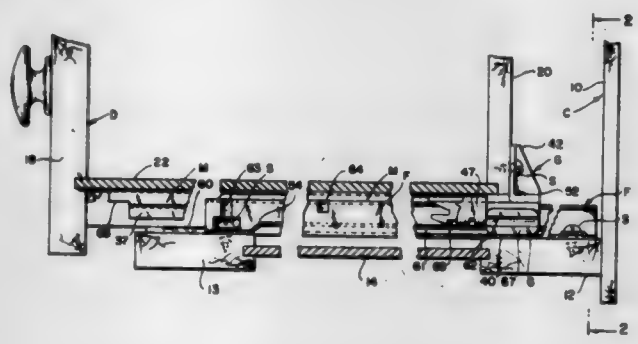
(b) means including a linear potentiometer actuated jointly by the lever and the solenoid means for generating the load sense signal so as to vary inversely as the load of the vehicle for governing the hydraulic brake control means.

4,534,600

DRAWER SLIDE ASSEMBLY

Peter A. Cosme, R.R. 1, Box 119, Lockport, Ill. 60441

Filed Jan. 20, 1984, Ser. No. 572,551
The portion of the term of this patent subsequent to Jun. 21, 2000, has been disclaimed.
Int. Cl.³ F16C *29/02*
U.S. Cl. 308—3.6 **11 Claims**



1. A drawer slide assembly for a cabinet having a cavity and a drawer slidably seated therein, comprising

(a) a first channel member adapted to be affixed to a cavity wall and comprised of a bottom web and lateral walls extending normally therefrom and terminating, to a major extent longitudinally in inwardly extending flanges, said bottom web having a central longitudinally extending elevated ridge along the major length thereof,

(b) a second channel member adapted to be affixed to a drawer for nesting and sliding movement within said first channel member and terminating at its leading rear end in a sleeve-like portion,

(c) a low friction body comprising a vertical member adapted to be affixed to the rear wall of said drawer and a bar member projecting forwardly from said body and insertable within the rear end of said sleeve portion for limited relative movement therein, said body including a base portion having a longitudinally extending recess at the bottom thereof overlying said ridge in said first channel member,

(d) lateral protuberances on the said base portion of said body on the opposite sides of said last-mentioned recess adapted for sliding movement within the spaces in said first channel member on the opposite sides of said ridge and between said web and flanges thereof, and

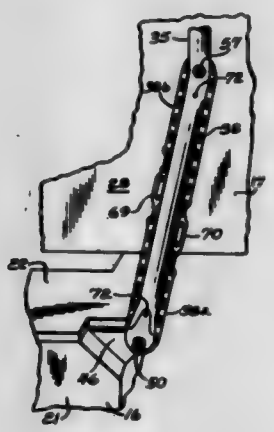
(e) a sloping bridge extending from the rear end of said base portion to said vertical member to facilitate insertion of the rear end of said second channel member into the front end of said first channel member.

4,534,601

LIFT ASSEMBLY FOR MOVABLE CABINET

David J. Zwick, Stoystown, Pa., assignor to The Coleman Company, Inc., Wichita, Kans.

Filed Feb. 16, 1984, Ser. No. 580,654
Int. Cl.³ A47B *49/00*
U.S. Cl. 312—266 **13 Claims**



1. In a vehicle having first and second cabinets, the first cabinet being supported by a floor of the vehicle and the second cabinet being movable between a use position above the first cabinet and a storage position below the use position, the improvement comprising a first wheel non-rotatably mounted on the first cabinet with the axis thereof extending generally horizontally and generally perpendicularly to the direction in which the second cabinet moves, a second wheel non-rotatably mounted on the second cabinet with the axis thereof extending generally horizontally and generally perpendicularly to the direction in which the second cabinet moves, a link rotatably connected to the first and second cabinets adjacent the first and second wheels and extendings therebetween for supporting the second cabinet as it moves between the use position and storage position, and cable means extending around the first and second wheels and engageable with the wheels for maintaining the wheels in a substantially constant angular relationship as the second cabinet moves between the use position and the storage position whereby the second cabinet is maintained in a substantially upright position as it moves.

4,534,602

R.F. MULTI-PIN CONNECTOR

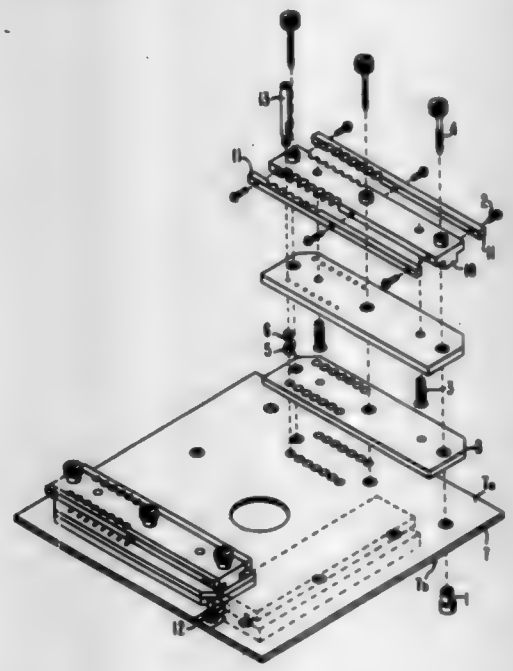
David W. Bley, Mountain View, Calif., assignor to Fairchild Camera & Instrument Corp., Mountain View, Calif.

Filed May 26, 1982, Ser. No. 382,280
Int. Cl.³ H01R *23/68*
U.S. Cl. 339—14 R **12 Claims**

1. A coaxial connector for electrically connecting a plurality of conductive regions via a plurality of controlled impedances comprising:

a compressible conductive frame serving as the outer conductor and having a first plurality of holes formed therethrough, said compressible conductive frame not including a solid metal conductor in close proximity to said plurality of conductive regions;

a tubular insulator located within each of said first plurality of holes; and



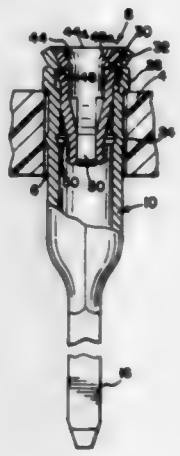
a compressible conductive inner conductor located within each said tubular insulator, said compressible conductive inner conductor not including a solid metal conductor, thereby providing a coaxial connector requiring no insertion or removal force, whereby electrical connection is made by causing said conductive regions to abut said frame and said inner conductors.

4,534,603

ASSEMBLY OF A CONTACT SPRING AND WIRE WRAP TERMINAL

Vincent B. Brown, Prospect Heights, and Lawrence Geib, Elmwood Park, both of Ill., assignors to Methode Electronics, Inc., Chicago, Ill.

Filed May 25, 1983, Ser. No. 498,058
Int. Cl.³ H01R *4/09, 13/15*
U.S. Cl. 339—17 C **11 Claims**



1. A two-piece socket terminal assembly for a circuit board comprising:

a terminal member having an upper hollow body, a peripheral portion for mounting on a circuit board, and a lower terminal end,

a contact spring having a hollow portion to form an upper pin receiving socket, said hollow portion being mounted within the opening of said hollow terminal body,

said spring further including a plurality of resilient contact fingers extending from said hollow portion downward into said hollow body to engage a pin on an electrical component inserted therein, and

said terminal portion and said contact spring being separately fabricated by stamping and forming techniques,

said terminal portion also including a pair of opposed recesses positioned within said hollow body, said hollow portion of said spring having a pair of opposed, outwardly extending tabs, said tabs arranged to be inserted into said recesses for retaining said spring in said terminal and creating a proper orientation therebetween to insure mating with sides and edges of a plug-in electrical device, said pair of opposed recesses being formed by a punched out portion of said hollow body, said punched out portion forming an outer tab to aid in the mounting and support on a circuit board.

4,534,604

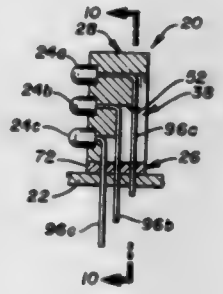
VERTICAL MOUNTING DEVICE FOR ELECTRICAL CIRCUIT BOARD COMPONENTS

Steven G. Peterson, R.R. 2, Box 202C, Waseca, Minn. 56093

Filed Mar. 9, 1984, Ser. No. 588,045

Int. Cl.³ H01R *23/72*

U.S. Cl. 339—17 D **3 Claims**



1. A mounting device for the upright mounting, on a printed circuit board or the like, of electrical components having electrical leads, comprising:

a base portion adapted for operable coupling with said board, including:

a base plate adapted to be affixed to said board, said plate including a plurality of spaced apart base plate apertures for receiving said leads;

a pair of opposed, resilient sidewalls extending upwardly from said base plate, each of said base plate sidewalls including a beveled upper edge and structure defining latch receiving apertures;

an upright portion snapably received by said base portion, said upright portion including:

a front wall;

a rear wall in opposed relationship with said front wall, said rear wall defining a plurality of stepped portions;

structure defining a plurality of upright portion apertures extending between said front wall and said rear wall for receiving said electrical leads, said upright portion apertures being longitudinally spaced apart relative to said upright portion front wall for maintaining said leads in spaced apart relationship,

said upright portion apertures intersecting said rear wall at different ones of said stepped portions whereby the leads extending through said upright portion apertures beyond said rear wall can be bent about said stepped portions into generally parallel relationship with said front wall while maintaining their spaced apart relationship; and

opposed sidewalls, each sidewall having an upper portion and a lower portion recessed relative to said upper portion, said sidewall lower portions each including an outwardly extending snap element having an inclined bottom wall,

said snap element bottom wall and said base plate sidewall beveled upper edge being of generally equal slope for mutual sliding engagement upon insertion of said upright portion into said base portion,

said snap elements being snapably received within said base portion sidewall apertures, and respective ones of said base portion sidewalls and said upright portion sidewall upper portions being generally aligned so as to collectively define opposed, generally planar, mounting device sidewalls, when said upright portion is snapably received within said base portion.

4,534,605

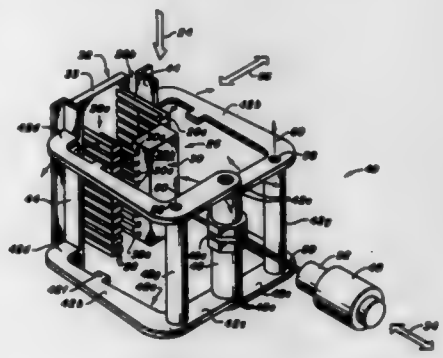
SYMMETRICAL, SINGLE POINT DRIVE FOR CONTACTS OF AN INTEGRATED CIRCUIT TESTER

Nicholas J. Cedrone, Wellesley Hills, and Kenneth R. Lee, Lincoln, both of Mass., assignors to Daymarc Corporation, Waltham, Mass.

Filed May 23, 1983, Ser. No. 497,206

Int. Cl.³ H01R *13/629*

U.S. Cl. 339—75 M **9 Claims**



1. A drive system for flexing the free ends of two parallel, spaced apart rows of contacts in a contact assembly into electrical connection with two generally parallel rows of leads of an integrated circuit that is positioned at a test site between the rows of contacts, said flexing occurring generally along a first lateral direction and said leads each extending generally in a second direction perpendicular to the first direction, comprising,

drive means that produces a linear movement generally along said second direction, generally along an axis of symmetry for said drive system, and away from said integrated circuit,

a pair of push bars that each extend in a third direction perpendicular to said first and second directions and adapted to be positioned on opposite sides of and adjacent to said two parallel rows of contacts, and

a pair of actuator arms each mounted for a rotating movement about a fixed axis and extending generally in said second direction, each of said fixed axes being laterally offset from said axis of symmetry generally in said first direction, each of said arms having a free end that mounts one of said push bars and a driven end, said free and driven ends lying on opposite sides of said fixed axis of rotation, and

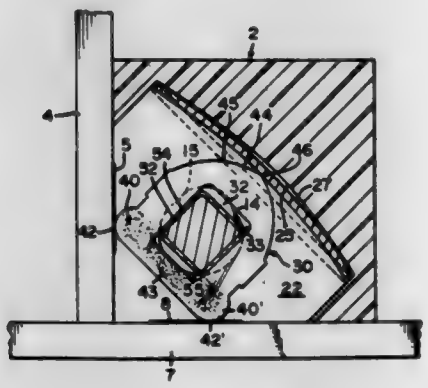
means for operatively coupling said drive means simultaneously to both of said actuator arms at their driven ends so that said linear movement of said drive means is converted into a symmetrical reciprocating movement of said push bars, generally along said first direction, between a retracted position where said contacts are spaced from said leads and a flexed position where said contacts are each in electrical connection with an associated one of said leads, wherein said coupling means comprises an unguided, flexible cord.

4,534,606

CONNECTOR FOR PRINTED CIRCUIT BOARDS

Billy E. Olsson, New Cumberland, Pa., assignor to AMP Incorporated, Harrisburg, Pa.

Continuation-in-part of Ser. No. 519,449, Aug. 2, 1983, abandoned. This application Jun. 29, 1984, Ser. No. 626,351
Int. Cl.[3] H01R *9/09*
U.S. Cl. 339—75 M 9 Claims



1. Connector for interconnecting first and second substantially parallel rows of uniformly spaced surface contacts on respective first and second surfaces at substantially right angles to each other comprises:

an elongate dielectric housing having a first face for mounting against said first surface over said first row of surface contacts and a second face for mounting against said second surface over said second row of surface contacts, said second face being substantially perpendicular to said first face, said housing having a plurality of parallel planar recesses therein, each said recess extending into said first face and said second face and continuously therebetween, said recesses being spaced as said surface contacts and defining parallel planar barriers therebetween, said housing having an axial opening therethrough which intersects said barriers perpendicular thereto,

spring means disposed in each said recess opposite the intersection of said first and second faces,

a keying shaft passing coaxially through said opening, said shaft being profiled to rotate in said opening, said shaft having parallel planar keying surfaces,

a plurality of plate cams disposed in respective recesses, each said cam having an aperture therethrough, said shaft passing through each said aperture, said aperture having parallel keying walls which parallel the central axis of the cam on opposite sides thereof and accommodate said keying surfaces of said shaft, said apertures being sufficiently elongate to permit linear translation of said keying walls parallel to said keying surfaces, each said cam having first and second contact surfaces on the periphery thereof on opposite sides of said central axis at respective first and second faces of said housing and a bearing surface on the periphery thereof intersected by said central axis opposite said first and second contact surfaces, each said plate cam having lobe means on the periphery thereof, said lobe means being situated to bring said spring means to bear against said bearing surface as said keying shaft is rotated in said housing from a disengaged to an engaged position, whereby,

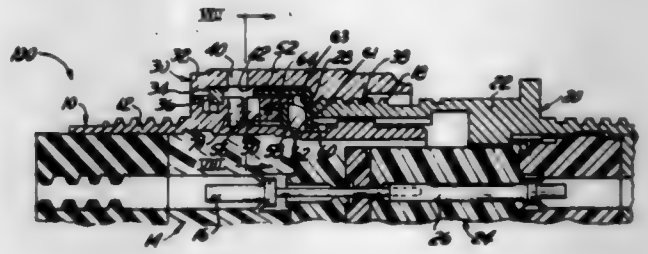
upon rotating said shaft from said disengaged to said engaged position when said first and second faces have said first and second surfaces thereagainst said cams will translate parallel to said keying surfaces and said contact surfaces will be urged against said surface contacts on said surfaces at respective first and second contact points.

4,534,607

CONNECTOR ASSEMBLY AND COUPLING RING

Vladimir Tomsa, Chicago, Ill., assignor to Allied Corporation, Morristown, N.J.

Filed Jun. 4, 1984, Ser. No. 616,873
Int. Cl.[3] H01R *13/623*
U.S. Cl. 339—89 R 11 Claims



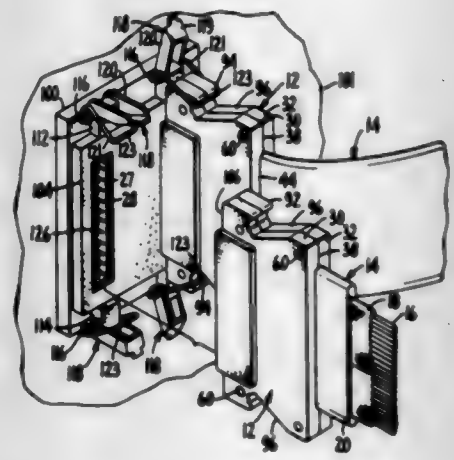
1. A two-part electrical connector including a rotatable coupling member carried by one part for engaging the other part, comprising a detent sleeve carried by one part and coupled to said coupling member, normally inoperative ratchet means engageable between said one part and said detent sleeve for resisting rotation of the coupling member, said ratchet means being adapted to become operable only when the two parts approach a fully mated condition by rotation of the coupling member in a mating direction, and indicating means associated with the ratchet means for indicating that the fully mated condition exists, said detent sleeve including a key having a longitudinal slot, said coupling member includes an opening therethrough and a longitudinal keyway which receives the key, and said indicating means includes an indicator member that is slidably received in said slot for reciprocating from a first non-indicating position and concealed from the opening in the coupling member and to a second indicating position and visible through the opening.

4,534,608

SHIELDED CONNECTOR SHELL FOR FLAT CABLE

Fred J. Scott, Sunnyvale, and Gary W. Walker, Cupertino, both of Calif., assignors to Sperry Corporation, New York, N.Y.

Filed May 21, 1984, Ser. No. 612,224
Int. Cl.[3] H01R *13/631, 13/658*
U.S. Cl. 339—91 R 7 Claims



1. A connector shell for a shielded flat cable termination comprising first and second complemental matable members formed of rigid electrically conductive material, means for joining said members in assembled relation on a parting plane, said members defining a cable end and a connector end opposite from said cable end, said members forming a continuous passage through said connector shell between said ends, said passage adjacent said cable end defining strain relief means, said strain relief means including a plurality of ribs oriented transversely of said passage projecting inward of each said member, respective said ribs being transversely aligned and

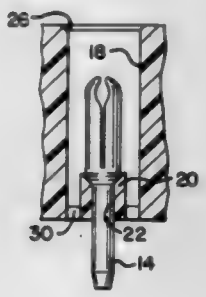
having confronting edge lines confronting each other in spaced apart relation by a distance such as to grip flat shielded cable therebetween, said connector having inward of said strain relief means a region constituting shield contacting means, said shield contacting means including first and second arrays of spaced apart generally conical protuberances extending into said passages from respective said members, the inner extremities of said conical protuberances extending beyond said parting plane and said arrays being offset from one another so that the protuberances in one array reside in the spaces between protuberances in the other array thereby to establish firm electrical continuity between said members and the shield in said cable, said shell also defining adjacent said connector end a cavity in said passage for a flat cable connector, said cavity being substantially symmetrical of said parting plane and being sized to receive a connector therein so that the contacts in the connector are accessible through said connector end.

4,534,609

ELECTRICAL CONNECTOR BLOCK

Johnnie W. White, Streamwood, Ill., assignor to Bally Midway Mfg. Co., Franklin Park, Ill.

Filed Aug. 22, 1983, Ser. No. 524,987
Int. Cl.³ H01R *13/52*
U.S. Cl. 339—117 R **8 Claims**



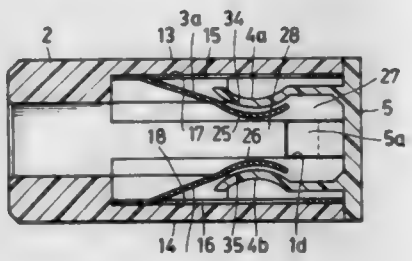
1. A multi-terminal connector block comprising a body member having a plurality of openings or sockets extending from a surface thereof and terminating short of an opposed surface to define a base wall, support means on said base wall in each of said sockets for supporting a terminal pin in each socket, said base wall having openings extending therethrough to provide a liquid flow-through system whereby any liquid utilized as a cleaning agent will drain out and not accumulate in the sockets.

4,534,610

JACK

Yukio Takihara, Kaizuka, Japan, assignor to Hosiden Electronics Co., Ltd., Osaka, Japan

Filed Feb. 15, 1984, Ser. No. 580,301
Claims priority, application Japan, Mar. 4, 1983, 58-32049[U]
Int. Cl.³ H01R *13/187*
U.S. Cl. 339—206 P **5 Claims**



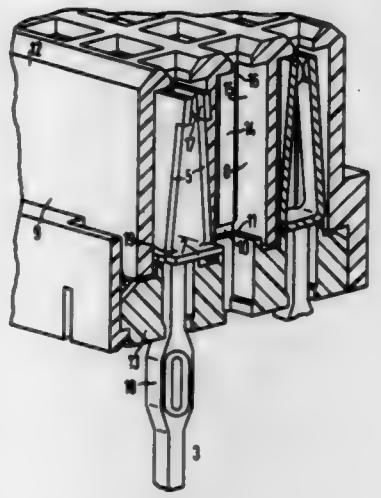
1. A jack comprising:
(a) a box-shaped body made of insulating synthetic resin, said body having a rear open end and a front face which is remote from said open end and which has a bore therein for the insertion and removal of a plug;
(b) a lid plate for closing the rear open end of said body;
(c) an elongated contact member having one end thereof fixedly mounted inside said body near said bore at a location that is spaced from the central axis of said bore, said contact member extending from its said fixed end towards said lid plate and being oriented to extend away from an inner wall surface of said body and toward the central axis of said bore, said contact member having a distal end portion which serves as a movable contact portion that is displaceable away from said central axis of said bore when engaged by a plug inserted into said bore; and
(d) a resilient projection integral with and projecting from said lid plate, said resilient projection having a free end portion which is disposed between said inner wall surface of said body and said movable contact portion of said contact member while leaving a space between said free end portion and said inner wall surface of said body such that, when said movable contact portion is displaced by the insertion of a plug, said movable contact portion pushes said free end portion of said resilient projection into resilient engagement with said inner wall surface of said body.

4,534,611

CONTACT SPRINGS

Artur Wohlfart, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich

Continuation of Ser. No. 388,181, Jun. 14, 1982, abandoned.
This application Aug. 27, 1984, Ser. No. 645,514
Claims priority, application Fed. Rep. of Germany, Jun. 23, 1981, 8118274[U]
Int. Cl.³ H01R *13/428*
U.S. Cl. 339—217 S **4 Claims**



1. A contact spring assembly for mounting in an insertion chamber of a housing having detachable upper and lower parts containing respective upper and lower portions of said insertion chamber, said contact spring assembly comprising a symmetrical contact spring part, having a planar base plate and a pair of like spring legs upstanding from opposed sides of said base plate, and a connection pin welded at its upper end flush to the undersurface of said base plate and extending longitudinally with the upstanding course of said spring legs, said base plate having symmetrical, opposed end flanged surfaces projecting laterally outward from corresponding adjacent edges of said spring legs for being supported in corresponding recesses defined between corresponding surfaces on said upper and lower parts in said housing against longitudinal movement in said chamber such that said contact spring part is contained in said chamber and said connection pin free end projects out of said housing, wherein said upper portion of said insertion chamber has opposed, laterally inward projecting ribs, each rib defining at its lower end an upper edge to the corresponding

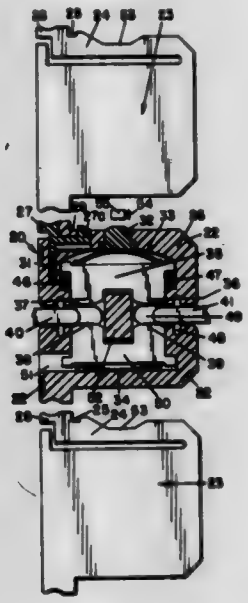
recess and along its opposed sides guide edges for travel projections formed on the free ends of said spring legs, said flanged surfaces being held against upward longitudinal movement by said lower ends of said ribs.

4,534,612

CURRENT CONNECTING DEVICE FOR THE ESTABLISHING OF ELECTRICAL CONNECTION BETWEEN CONDUCTORS

Joergen Loegstrup, Snekkersten, and Preben C. Sparre, Espergaerde, both of Denmark, assignors to A/S Loegstrup-Steel, Snekkersten, Denmark

Filed Aug. 5, 1983, Ser. No. 520,722
Claims priority, application Denmark, Aug. 18, 1982, 3692/82
Int. Cl.³ H01R *13/16*
U.S. Cl. 339—255 P **8 Claims**



1. A current connecting clip line of modular construction, for establishing electrical connection between rail-like conductors comprising, at least one contact clip having at least one electrically conducting coupling piece movably maintained within an insulating housing formed so as to completely enclose the at least one coupling piece, said housing including at least one slot for receiving a rail-like conductor and wherein said at least one coupling piece may contact said conductor when said conductor is received in said slot, a coupling stud having two ends and being located generally within said housing and being in operative contact with said at least one coupling piece at one end, and accessible from outside said housing at its other end, said stud being externally movable to adjust the position of said coupling piece relative said slot, so that biasing of said stud effectively insures proper contacting between said coupling piece and the rail-like members.

4,534,613

RECEPTACLE TERMINAL HAVING LOCKING LANCE

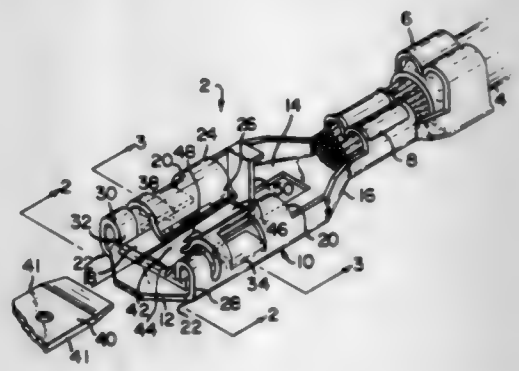
Wilhelm C. J. Esser, Tilburg, Netherlands, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 31, 1983, Ser. No. 547,277
Int. Cl.³ H01R *13/12*
U.S. Cl. 339—258 S **3 Claims**

1. An electrical receptacle terminal which disengageably receives a rectangular tab terminal having parallel side edges, the receptacle terminal having a mating end and an inner end, a flat web portion extending from the mating end to the inner end, the web portion having side edges and having contact springs extending from the side edges, the contact springs extending normally from the side edges and being formed inwardly towards each other and towards one surface of the web, the contact springs having marginal free end portions which are spaced from the one surface of the web by a distance which is less than the thickness of the tab whereby upon movement of the tab terminal into the receptacle, the free edge portions of the springs will press the tab against the web, the electrical receptacle terminal being characterized in that:

a first pair of tab positioning ears are provided at the mating end of the terminal and a second pair of tab positioning ears are provided intermediate the ends of the terminal, the first and second pairs of positioning ears being effective to engage the side edges of an inserted tab and locate the tab centrally on the web,

the first pair of tab positioning ears comprising flanges extending normally from the side edges of the web, the flanges being reversely bent and having end portions



which extend towards the web, the flanges having opposed parallel guiding surfaces which guide the tab onto the web during insertion,

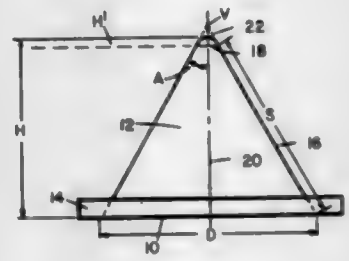
the contact springs extend from the side edges of the web intermediate the ends of the web, the second pair of positioning ears being struck from the contact springs and extending from the side edges of the web inwardly thereof and towards each other, the second pair of positioning ears having opposed guiding edges at their free ends which are co-planar with the guiding surfaces of the first pair of positioning ears.

4,534,614

ASPHERICAL LENS FOR CONCENTRATING DIFFUSE OPTICAL RADIATION

David E. Silverglate, Santa Cruz, Calif., assignor to Plantronics, Inc., Santa Cruz, Calif.

Filed Jul. 1, 1980, Ser. No. 165,070
Int. Cl.³ G02B *13/14*
U.S. Cl. 350—1.4 **4 Claims**



1. A lens for concentrating diffuse light which comprises: a body of light transparent material, said body having -

(a) a planar back surface; and

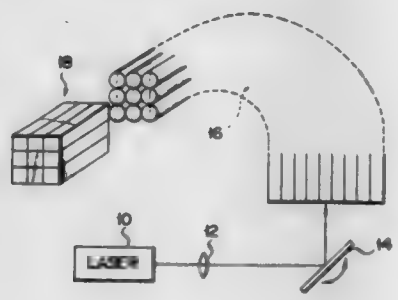
(b) a front surface projecting from the plane of the back surface, for refracting diffuse light impinging thereon toward the planar back surface, said front surface projecting a predetermined height above the planar back surface;

(c) the front surface being configured as a frustum of a right circular cone over an aft portion, and being configured as a spherical sector over a nose portion, said nose portion being of a height that is approximately 10% of the predetermined height of the front surface.

4,534,615
SCANNING TYPE LASER SYSTEM

Kenji Iwasaki, Utsunomiya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Nov. 18, 1983, Ser. No. 553,056
Claims priority, application Japan, Nov. 22, 1982, 57-203595
Int. Cl.[3] G02B *27/08, 27/17*
U.S. Cl. 350—6.1 15 Claims

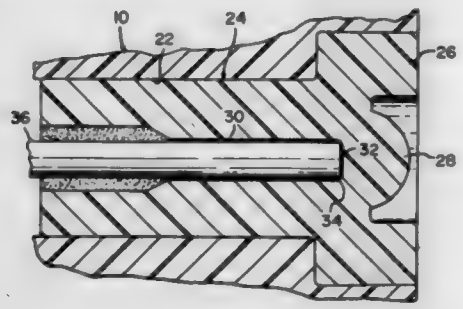


1. A scanning type laser system comprising:
laser oscillating means;
a kaleidoscope bundle formed of a plurality of kaleidoscopes for transmitting a laser beam emitted from said laser oscillating means; and
scanning means for scanning a laser beam emitted from said laser oscillating means to apply the laser beam to the respective kaleidoscopes successively.

4,534,616
FIBER OPTIC CONNECTOR HAVING LENS

Terry P. Bowen, Etters; Bernard G. Caron, both of Harrisburg, Pa.; Ronald F. Cooper, Littleton, Mass., and Douglas W. Glover, Harrisburg, Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed May 24, 1982, Ser. No. 381,480
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.20 25 Claims

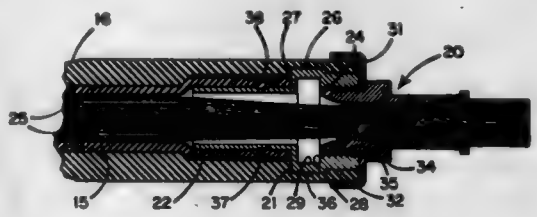


17. A fiber optic connector for terminating a fiber optic transmission means, comprising a ferrule means of resilient plastic material having forward section means and rear section means, said rear section means having profiled bore means extending axially therealong, along which a fiber optic transmission means is to extend, said bore means having a first bore section means larger in diameter than the diameter of said fiber optic transmission means, said forward section means having a stepped bore means extending axially and partially therethrough ending in an inner surface at which the end of said fiber optic transmission means is located when positioned within said stepped bore means, said forward section means including a lens means, with said inner surface of said stepped bore means being located at the focal point of said lens means, and said lens means has an aspherical lens section surrounded by an annular section.

4,534,617
FIBEROPTIC CABLE ASSEMBLIES

Jacobus Kloots, Sturbridge, and John Marengo, Cherry Valley, both of Mass., assignors to Luxtec Corporation, Sturbridge, Mass.

Filed Jun. 23, 1983, Ser. No. 507,062
Int. Cl.[3] G02B *7/26*
U.S. Cl. 350—96.20 3 Claims

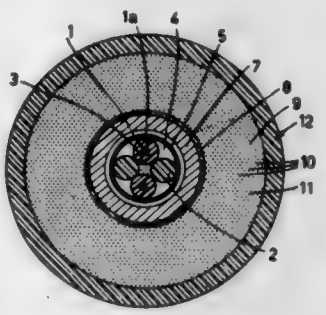


1. In a fiberoptic cable assembly having a length of multiple optical fibers, a flexible sheath enclosing said fibers and a connector at each end, the combination in at least one said connector comprising:
a. a rigid cylindrical coupling element having a sleeve portion enclosing terminations of said multiple optical fibers and being itself enclosed by a termination of said sheath, and an enlarged hollow portion having an enlarged annular ridge portion on its exterior surface adjacent said sleeve portion for securing a strain reliever;
b. a flexible resilient strain-relieving sleeve extending over said termination of said sheath and over said enlarged hollow portion; and,
c. a cup washer secured to said hollow portion with its cupped face extending over said strain-relieving sleeve compressing it against said annular ridge portion, and said connector further comprising an annular recess about said sleeve portion and a constricting element about said sheath opposite said annular recess forcing said sheath into said recess, and still further comprising an inner molded annular recess in said strain-relieving sleeve mating with said enlarged annular ridge so as to lock said strain-relieving sleeve securely to said coupling element under the compressive force of said cup washer.

4,534,618
OPTICAL COMMUNICATION CABLE

Siegfried Brüggendieck, Radevormwald, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Oct. 18, 1982, Ser. No. 435,024
Claims priority, application Fed. Rep. of Germany, Apr. 21, 1982, 3214778
Int. Cl.[3] G02B *5/14*
U.S. Cl. 350—96.23 12 Claims



1. An optical communication cable consisting of a cable core having optical fibers and sheath of synthetic resin surrounding said optical fibers and having glass fiber elements taking up tensile forces, the improvement therein comprising a binder of synthetic resin, said binder forming and holding said glass fiber elements in at least one uniform strand, said fibers being distributed in said resin, said fiber elements constituting at least 10% by volume of said cable sheath and at least 70% by volume of said at least one uniform strand.

4,534,619
REFLECTIVE SAFETY BELT

Richard T. Bedford, Rte. 2, Box 454J2, Tampa, Fla. 33610

Filed Apr. 25, 1984, Ser. No. 603,628
Int. Cl.[3] G02B 5/12
U.S. Cl. 350—98 7 Claims

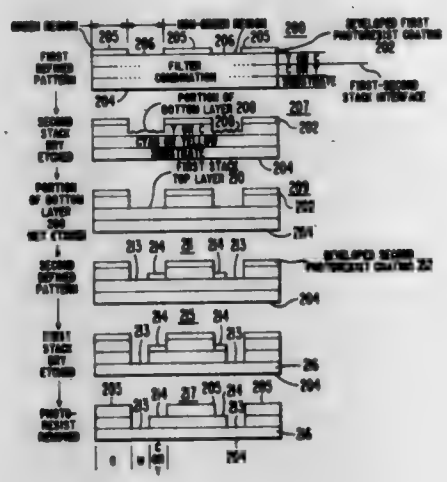


1. A reflective safety belt configured to be worn on a person-/user consisting of a pair of continuous loops intersecting each other on the back of the wearer and overlapping each other on the chest of the wearer such that the continuous intersecting-/overlapping loops cooperatively form a pair of side openings to receive the wearer's arms and an upper opening to receive the wearer's head.

4,534,620
STANDARDIZED MULTI-STACK DIELECTRIC-LAYER FILTER BLANK AND METHOD FOR FABRICATING COLOR-ENCODING FILTER THEREFROM

Michael T. Gale, Wettswil, and Hans W. Lehmann, Hedingen, both of Switzerland, assignors to RCA Corporation, Princeton, N.J.

Filed Jul. 11, 1983, Ser. No. 512,541
Int. Cl.[3] G02B 5/28
U.S. Cl. 350—166 19 Claims



1. A standardized green-manifesting dielectric filter blank having a given surface area for use in fabricating therefrom a color-encoding transmissive filter that exhibits any arbitrary given spatial pattern over said given surface area, which spatial pattern comprises at least one spatial region manifesting green, at least one spatial region manifesting only a preselected certain one of cyan or yellow, and at least one spatial region manifesting white; said blank comprising:

a transparent substrate having a surface of at least said given area;

a first dielectric filter in contact with and substantially entirely covering all of said given surface area of said substrate, said first dielectric filter comprising a first stack of a plurality of dielectric layers having respective specified thicknesses and exhibiting respective indices-of-refraction such that only said preselected certain one of cyan-manifesting light or yellow-manifesting light is transmitted through said first stack, the top layer of said first stack being comprised of a first dielectric material which is inert to a given wet etchant;

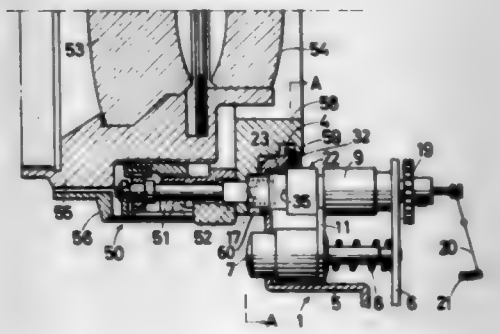
a second dielectric filter in contact with and substantially entirely covering all of said top layer of said first stack, said second dielectric filter comprising a second stack of a plurality of dielectric layers having respective specified thicknesses and exhibiting respective indices-of-refraction such that only the other one of said preselected certain one of cyan-manifesting light and yellow-manifesting light is transmitted through said second stack, the bottom layer of said second stack (1) being in contact with said top layer of said first stack and (2) being composed of a second dielectric material which is etchable by said given wet etchant, and;

wherein all of said layers of both said first and second stacks are etchable by a given dry etching process.

4,534,621
MOUNTING AND DEMOUNTING DEVICE OF OPTICAL UNIT

Yukio Miki, and Takeshi Egawa, both of Osaka, Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed May 19, 1982, Ser. No. 379,719
Claims priority, application Japan, May 21, 1981, 56-77518
The portion of the term of this patent subsequent to May 22, 2001, has been disclaimed.
Int. Cl.[3] G02B 7/02
U.S. Cl. 350—257 5 Claims



1. A mounting and demounting device capable of mounting and demounting an interchangeable optical instrument on and from an optical main instrument by rotation of the former relative to the latter, said device comprising

a first mount member of one of said interchangeable optical instrument and said optical main instrument, said first mount member being formed with a first mount face and a throughhole having an opening on said first mount face;

a second mount member of the other of said interchangeable optical instrument and said optical main instrument, said second mount member being formed with a second mount face to be brought into contact with said first mount face with said interchangeable optical instrument mounted on said optical main instrument and also formed with a positioning recess located on said second mount face;

a positioning member disposed in said throughhole of said first mount member and movable between a projecting position where said positioning member projects largely beyond said first mount face and a retracted position where said positioning member retracts behind or projects a little behind said first mount face, said positioning member being engageable in said positioning recess when moved to the projecting position;

a first urging means for urging said positioning member to the projecting position;

a locking means capable of locking said positioning member in the retracted position against the action of said first urging means, and

a detection means for detecting the state of the mounting and

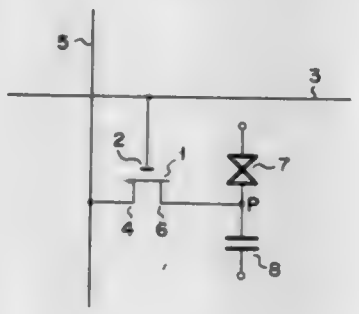
demounting of said interchangeable optical instrument on and from said optical main instrument to automatically release the locking of said positioning member by said locking means immediately prior to completion of the mounting until immediately after start of the demounting.

4,534,622

SOLID-STATE DEVICE HAVING A PLURALITY OF OPTICAL FUNCTIONS

Nozomu Harada; Yasuhisa Oana, both of Yokohama; Keisuke Ogi, Tokyo; Koji Izawa, Yokohama; Akira Taya, Kawasaki, and Masanori Sakamoto, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 3, 1984, Ser. No. 567,558
Claims priority, application Japan, Feb. 28, 1983, 58-32430
Int. Cl.[3] G02F *1/13*
U.S. Cl. 350—334 10 Claims



1. A solid-state optical device with a plurality of cells having a plurality of optical functions, each of said cells comprising:

a transparent substrate;

an anti-reflection film formed on the lower surface of said transparent substrate;

a MOS transistor formed on the upper surface of said transparent substrate and including a source-drain path having one end connected to a data line, a channel region, a gate insulating film and a gate electrode connected to an address line;

a capacitor formed on the upper surface of said transparent substrate and having a first and second electrode, said first electrode being transparent and formed on the upper surface of said transparent substrate, a photoconductive film being formed such that it intervenes between said first and second electrodes, a light signal transmitted through said transparent substrate being transmitted through said first electrode to be incident on said photoconductive film, said second electrode being connected to the other end of the source-drain path of said MOS transistor;

a transparent insulating layer formed on the upper surface of said MOS transistor and capacitor;

a non-transparent conductive layer formed on said transparent insulating layer and connected to the other end of the source-drain path of said MOS transistor;

a display cell formed on said non-transparent conductive layer, said display cell including a display material layer formed on said non-transparent conductive layer and a transparent conductive layer formed on said display material layer, the light transmittance of said display material layer being variable according to a voltage applied between said non-transparent conductive layer and transparent conductive layer; and

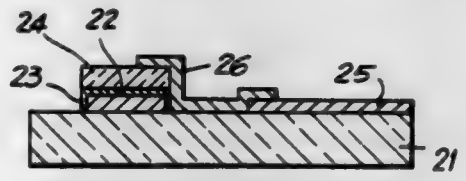
light transmitting means for leading light incident on said display cell to said transparent substrate.

4,534,623

HORIZONTALLY-STACKED METAL-INSULATOR-METAL ELEMENT FOR ELECTRO-OPTICAL DEVICE AND METHOD FOR MANUFACTURE

Ryosuke Araki, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,416
Claims priority, application Japan, Jan. 18, 1983, 58-6502
Int. Cl.[3] G02F *1/13*
U.S. Cl. 350—339 R 16 Claims



1. A metal-insulator-metal device formed on a substrate, comprising:

a substrate;

a first metal film selectively patterned on the substrate and having a top surface and at least two side-edge surfaces;

a first insulating film formed on the top surface and at least a portion of the two side-edge surfaces of the first metal film;

a second insulating thick film formed on the top planar surface of the first insulating thin film; and

a metal conductor formed on a portion of one side-edge surface of the second insulating thick film and on one side-edge of the first insulating thin film and a portion of the substrate for forming a non-linear metal-insulator-metal element between the side-edge surface of the first metal film and the metal conductor and whereby the metal conductor may be electrically coupled to a liquid crystal driving electrode.

15. A process for preparing a metal-insulator-metal device on a substrate, comprising:

providing a transparent substrate;

forming a first metal film on the substrate and selectively patterning the film on the substrate to a pattern and having a top surface and at least two side-edge surfaces;

forming a first insulating film on the top surface and at least a portion of the two side-edge surfaces of the first metal film;

depositing a second insulating thick film on the top planar surface of the first insulating thin film; and

forming a metal conductor on the side-edge surface of the first insulating thin film and second insulating thick film and a portion of the substrate and reducing the overlap portion of the conductor on the planar surface of the second insulating thick film for forming the metal-insulator-metal element between the side-edge surface of the first metal film and the metal conductor.

4,534,624

CONSTRUCTION OF LENS BARREL OPERATED BY ELECTROMAGNETIC INDUCTION

Katuhiko Toda, and Susumu Sugiura, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 7, 1982, Ser. No. 396,030
Claims priority, application Japan, Jul. 14, 1981, 56-109588; Jul. 22, 1981, 56-114856
Int. Cl.[3] G02B *7/02*
U.S. Cl. 350—429 6 Claims

1. A lens barrel operated by electromagnetic induction, comprising:

(a) lens barrel means for attachment to the body of an apparatus;

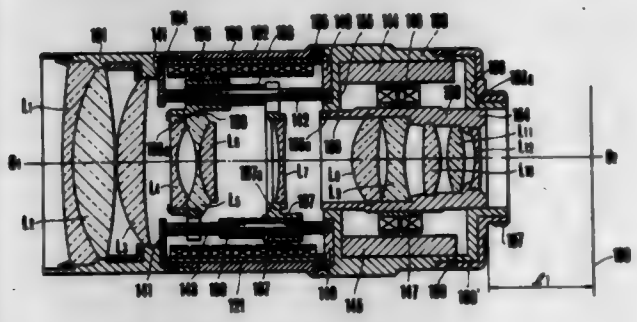
(b) first and second optical element holders arranged to hold an optical variator element which performs a focal length

adjusting action and an optical compensator element, said holders being arranged to be slidable directly or indirectly relative to said lens barrel means and to keep an optical center unvaried during the sliding movement thereof; and

(c) means for moving said first and second optical element holders along the optical axis of said optical elements with said holder kept in a non-rotating state,

said moving means being electromagnetic induction means including a stator element and a movable element and being of the type capable of moving said movable element in a non-rotating state, said moving means being arranged to move each of said holders independently of the other in response to an electrical signal,

said stator having a magnet part including exciting coils and a plurality of poles which are made of a ferromagnetic



material and formed at two pole parts of a permanent magnet, which are arranged on the inner circumference of said lens barrel means along the optical axis, said magnet part being arranged in a row over the whole moving range of said optical variator and compensator elements,

said movable element being formed from a ferromagnetic material on said first and second optical element holders and being provided with several pole teeth arranged in a row along the optical axis and spaced at a pitch differing from that of said poles of the stator, said movable element being arranged to cause the first and second optical element holders to be moved independently of each other by attraction which takes place between said poles of the stator and said pole teeth of the movable element when power supply is effected to said exciting coils.

4,534,625

LENS TUBE FOR A HIGH VARI-FOCAL RATIO ZOOM LENS

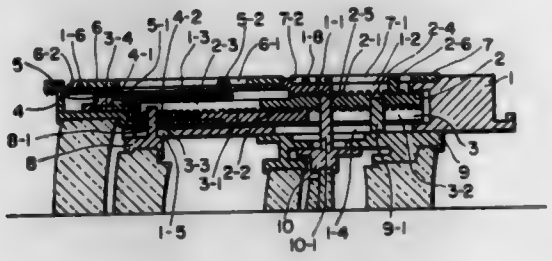
Mitsuo Ohnuki, Sagamihara, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 291,104, Aug. 7, 1981, abandoned. This application Mar. 8, 1984, Ser. No. 586,652

Claims priority, application Japan, Aug. 19, 1980, 55-112952; Aug. 19, 1980, 55-112953; Aug. 19, 1980, 55-112954

Int. Cl.³ G02B *7/10, 15/14*

U.S. Cl. 350—429 **3 Claims**



1. A high vari-focal ratio zoom lens comprising a lens tube, a focusing ring and a zooming ring coaxially supported by said lens tube, a plurality of lens groups positioned within said tube, first control means mounted within said tube interconnecting said focusing ring with two lens groups for moving the same together for the purpose of focusing, and second control means mounted within said tube interconnecting said zooming ring with said two lens groups for moving the same in opposite directions for the purpose of zooming, in which said zoom lens incudes third, fourth and fifth lens groups, and means within said tube interconnecting said zooming ring with said five lens groups for performing at least four independent movements for the purpose of zooming.

4,534,626

LARGE RELATIVE APERTURE TELEPHOTO LENS SYSTEM

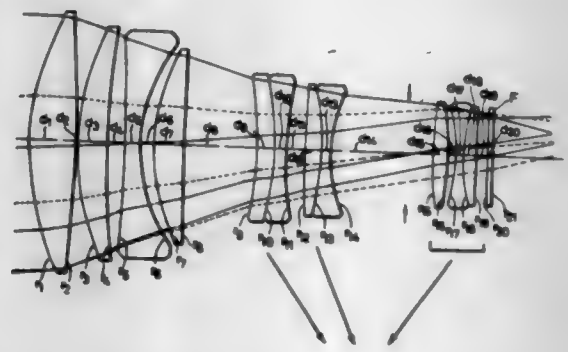
Shin-ichi Mihara, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Aug. 17, 1983, Ser. No. 524,082

Claims priority, application Japan, Aug. 24, 1982, 57-145490

Int. Cl.³ G02B *9/64, 13/02*

U.S. Cl. 350—454 **11 Claims**



1. A large relative aperture ratio telephoto lens system comprising a first converging lens group, a diverging lens group and a second converging lens group, said first converging lens group comprising a first positive lens component, a second positive lens component, a negative lens component and a third positive lens component, said diverging lens group comprising two negative lens components, and said second converging lens group comprising a positive lens component, a negative lens component and a positive lens component; wherein at least one of the second and third lens components constituting said first converging lens group is arranged that Abbe's number is larger than 80 and partial dispersion ratio is larger than 0.53, and said first positive lens component and said negative lens component constituting said first converging lens group satisfying the following conditions (1) and (2):

$$\nu_1 > 80,\ \theta_1 > 0.53 \tag{1}$$

$$\nu_3 < 45,\ \theta_3 < 0.575 \tag{2}$$

wherein the reference symbols ν_1 and θ_1 represent Abbe's number and partial dispersion ratio of the first positive lens component arranged in said first converging lens group, and the reference symbols ν_3 and θ_3 designate Abbe's number and partial despersion ratio of the negative lens component arranged in said first converging lens group.

4,534,627

SUNGLASSES PIVOTALLY MOUNTED ON BROWBAR OF SPECTACLE FRAME

George W. Vosper, 149 Earl St., Kingston, Ontario, Canada K7L 2H3

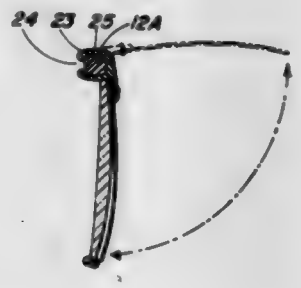
Filed Jul. 26, 1982, Ser. No. 402,049

Int. Cl.³ G02C *7/08*

U.S. Cl. 351—47 **3 Claims**

1. The combination of spectacles having lenses and sunglasses attached to said spectacles, said spectacles having a browbar non-circular in outline cross-sectional shape and said sunglasses being pivotally and detachably connected to said browbar, said sunglasses comprising a pair of light-weight, colored, transparent plates, a bridge plate and means securing

the transparent plates to the bridge plate; said bridge plate having a generally C-shaped clip formed integrally therewith detachably and pivotally mounting the sunglasses on the browbar of the spectacles, said clip having an inner surface corresponding essentially in outline configuration to the cross-sec-



tional shape of the browbar and together cooperating to restrain pivotal movement of the sunglasses at each of two different pivotal positions of the sunglasses, one position being where the sunglass transparent plates overlie the lenses of the spectacles and the other where they project forwardly.

4,534,628

HINGE FOR MOUNTING SPECTACLES

Michel Morel, Morbier, France, assignor to Paget et Morel, Morex, France

Filed Nov. 12, 1982, Ser. No. 440,757
Claims priority, application France, Nov. 20, 1981, 81 21926
Int. Cl.[3] G02C *5/22, 5/14*
U.S. Cl. 351—153
13 Claims



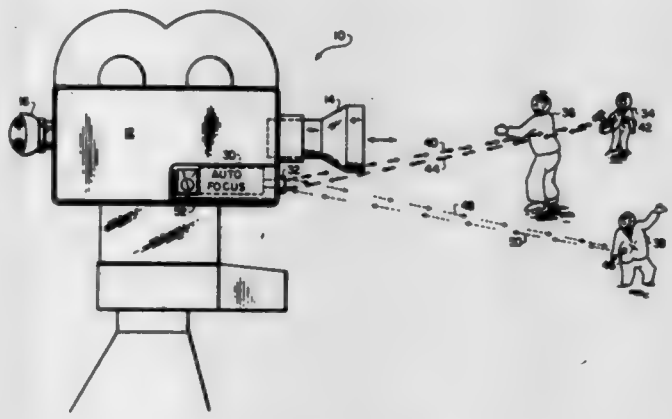
1. In an improved hinge for mounting a side of a spectacle frame which allows said side to open beyond its normal open position and also allows its elastic return into said normal open position, with said hinge having a mounting knuckle attached to that part of said spectacle frame supporting the lenses and a co-operating side knuckle supported by said side; said improvement comprising an elastic return mechanism positioned concentrically in said side comprising an envelope enclosing said side from its end and abutting against an elastic return means positioned inside an external casing which is capable of sliding on said envelope, said external casing further abutting against said mounting knuckle in said normal open position and, when opened beyond said normal open position, said external casing being capable of moving back by sliding on said envelope so as to cause compression of said elastic return means; and thereby retaining substantially the same side thickness as a comparably sized spectacle.

4,534,629

MOTION PICTURE CAMERA AUTOMATIC FOCUSING SYSTEM

Robert W. Bogle, 991 Skylark Dr., La Jolla, Calif. 92037, and Gary Gero, 25191 Rivendell Dr., El Toro, Calif. 92630

Filed Jul. 5, 1983, Ser. No. 510,686
Int. Cl.[3] G03B *3/00*
U.S. Cl. 352—140
20 Claims



1. An automatic camera focusing system for a camera, said system comprising:

an adjustable focus lens system having focusing means for adjusting the focus of said lens;

first radio signal generating means carried by a camera to be focused for generating a first radio signal;

second radio signal generating means carried by a photographic subject and responsive to said first radio signal for generating a second radio signal;

means responsive to the time interval between transmittal of said first signal and receipt of said second signals for generating a focusing signal; and

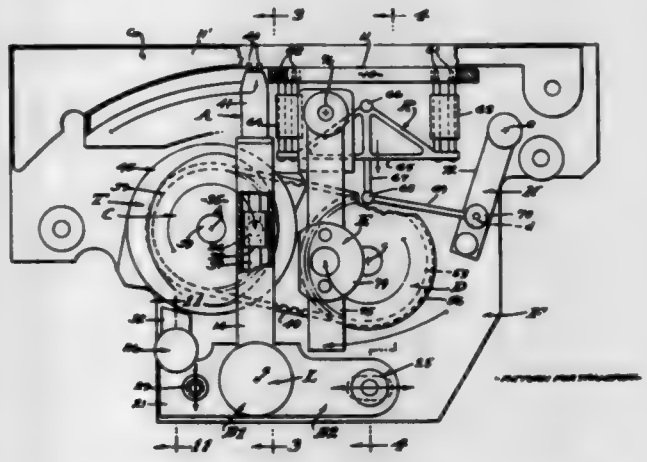
said focusing means responsive to said focusing signal for focusing said camera lens at a distance representative of said focusing signal.

4,534,630

WIDE FILM TRANSPORT AND REGISTER MOVEMENT

Geoffry H. Williamson, Los Angeles, Calif., assignor to Imax Systems Corporation, Toronto, Canada

Filed Jan. 31, 1984, Ser. No. 575,446
Int. Cl.[3] G03B *1/22*
U.S. Cl. 352—194
24 Claims



1. A film transport and register movement for wide format film cameras and projectors, and including:

a base with an upstanding register plate normal thereto and having a planar aperture section and a tangentially continuing arcuate transport section concentric about a first axis spaced rearward therefrom and normal to the base, there being an aperture plate overlying and complementary to the register plate and spaced therefrom forming a

film guideway for film having opposite perforated margins,

a pair of spaced transport arms pivoted on said first axis and each aligned with a perforated margin of the film and carrying at least one retractile claw pin for penetration of the film,

a transmission means between the transport arms and on a second axis parallel to and intermediate the register plate and said first axis and comprising, a crank shaft rotatable on said second axis and having eccentric coaxial crank pins and each engageable with one of the spaced transport arms for oscillatory movement of said pair thereof, a pair of spaced cams and each closely adjacent to one of said pair of transport arms and each shaped to project the at least one claw pin for film penetration and transport during a first oscillatory movement of the transport arms and to permit retraction thereof during a second oscillatory movement thereof,

a drive means on a third axis laterally offset from the second axis and coupled to the transmission means between the transport arms to oscillate the same,

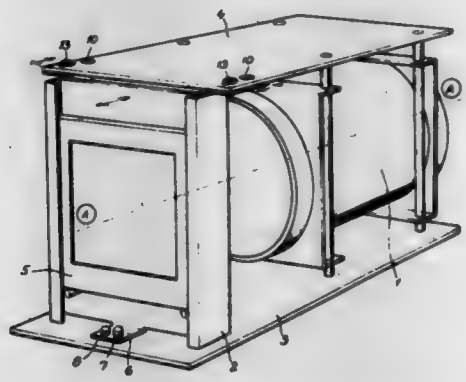
and register means comprising, at least one register pin for penetration of the film, and a cam driven by the drive means and shaped to project the register pin for film penetration and registration during said second oscillatory movement of the transport arm following said preceeding first transport oscillatory movement of the transport arm and transport of the film thereby.

4,534,631

SLIDE GUIDE ADJUSTING DEVICE AT SLIDE PROJECTOR

Kennert E. G. Hillström, Mölnlycke, and Rolf G. Fransson, Angered, both of Sweden, assignors to Victor Hasselblad Aktiebolag, Gothenburg, Sweden

Filed Aug. 5, 1983, Ser. No. 520,539
Claims priority, application Sweden, Aug. 9, 1982, 8204621
Int. Cl.[3] G03B *1/50*
U.S. Cl. 353—95 4 Claims



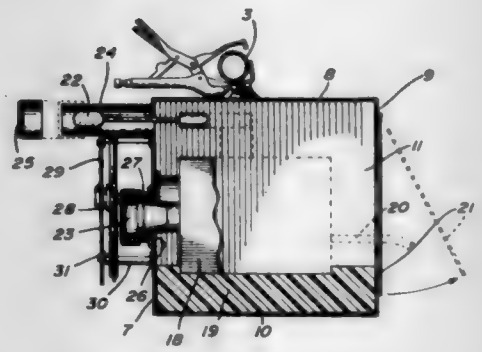
1. A device for use with a slide projector having a slide guide for adjusting the slide guide in a plane perpendicular to the optical axis of the projector, characterized in that said device comprises a first fixing means to connect a limited portion of a first side of the slide guide to a first stationary portion of the projector, a second fixing means located at a portion of a side of the slide guide opposed to said first side to connect the guide to a second stationary portion of the projector, and third fixing means located at another portion of said opposed side of the slide guide to connect the guide to a third stationary portion of the projector, said second and third fixing means being capable of adjusting and fixing the orientation of said slide guide in the direction of the optical axis independently of one another.

4,534,632

CAMERA-PROTECTING APPARATUS INCLUDING A FAN FOR DEFLECTING PARTICLES

André Laviolette, 1013 de la Ronde St., Quebec, Canada (G1J 4B5)

Filed Apr. 10, 1984, Ser. No. 598,576
Int. Cl.[3] G03B *29/00, 17/02*
U.S. Cl. 354—81 8 Claims



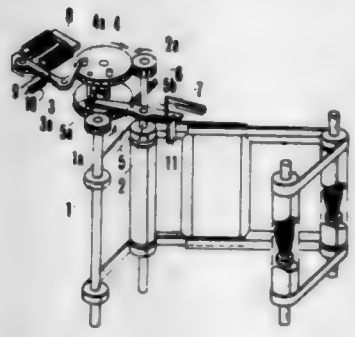
1. A camera-protecting apparatus comprising a box adapted to receive a camera therein and having a front wall, said front wall having an opening through which the objective of the camera may extend, a fan mounted on said front wall for rotation in a plane parallel to and forwardly spaced from said front wall and about an axis which is eccentric to said front wall opening, motor means located in said box for driving said fan in rotation, said fan having a hub completely out of register with said front wall opening and having radial blades movable across said front wall opening, so as to deflect away from the camera objective any dirt or the like particles thrown towards the same.

4,534,633

DELAY MECHANISM FOR SINGLE REFLEX CAMERA

Tsunemasa Ohara, Tokyo; Masayuki Suzuki, and Masayoshi Yamamichi, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1982, Ser. No. 452,126
Claims priority, application Japan, Dec. 25, 1981, 56-214061
Int. Cl.[3] G03B *9/64, 9/32*
U.S. Cl. 354—237 2 Claims



1. A release device for releasing a shutter leading curtain in a single lens reflex camera, comprising:

a holding member for holding the shutter leading curtain,

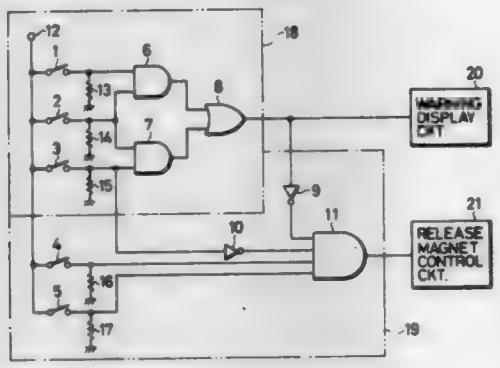
a release member for releasing the holding of the holding member, and

a speed reducing mechanism for reducing the operational speed of said release member, said speed reducing mechanism having an anchor and an escape wheel provided with a notched portion, and imparting a speed reducing effect to said release member through the swinging action of said anchor by said engage wheel when said release member is in an operational range where said release member does not effect the release operation, and imparting no speed reducing effect to said release member by keeping said anchor positioned in the notched portion of the escape wheel when said release member is in an operational range where said release member effects the release operation.

4,534,634
ERRONEOUS RELEASE PREVENTING DEVICE FOR CAMERA

Yasushi Tabata; Kimiaki Ogawa, and Toshimitsu Takahashi, all of Tokyo, Japan, assignors to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,407
Claims priority, application Japan, Jan. 17, 1983, 58-4471[U]
Int. Cl.[3] G03B *17/38*
U.S. Cl. 354—268 4 Claims



1. In an electronic release type camera having an automatic aperture control function, a bulb function and a self-timer function, an erroneous release preventing device comprising:

an automatic aperture controlling switch which is turned on when an automatic aperture control photographing mode is selected;

a bulb photographing switch which is turned on when a bulb photographing mode is selected;

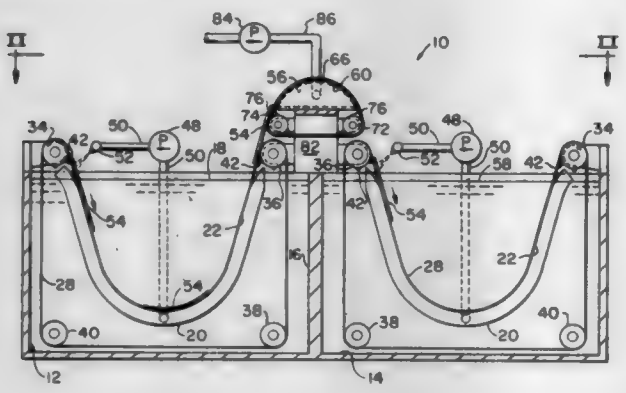
an erroneous operation detecting circuit for detecting a state of at least one of said bulb photographing switch and said automatic aperture controlling switch being turned on simultaneously and said bulb photographing switch and said self-timer switch being turned on simultaneously and providing a warning signal accordingly; and

a magnet control circuit for controlling energization of an electromagnet effecting release of a shutter of said camera, said release magnet control circuit comprising means for inhibiting energization of said electromagnet in response to said warning signal.

4,534,635
METHOD AND APPARATUS FOR CONVEYING A FLEXIBLE, IMPERFORATE MEMBER THROUGH A FLUID

Gary M. Johnston, 2444 Hihiwai 1001, Honolulu, Hi. 96826, and Leonard A. Ciupak, 1133 Makaiwa St., Honolulu, Hi. 96816

Filed Nov. 14, 1983, Ser. No. 551,124
Int. Cl.[3] G03D *3/02, 3/12*
U.S. Cl. 354—322 8 Claims



1. Apparatus for conveying a photographic material through a liquid in photographic processing comprising,

a container having a liquid therein,

a support member having a generally U-shaped configuration positioned in said liquid in said container, said support member having a surface with a pervious portion and said pervious portion of said surface of said support member including a plurality of elongated, longitudinally extending slots,

a flexible carrier member positioned in overlying relation with said support member surface, said flexible carrier member having a pervious portion,

conveying means for conveying said flexible carrier member in said liquid in abutting relation with said surface of said support member with said carrier pervious portion in overlying relation with said support member pervious portion,

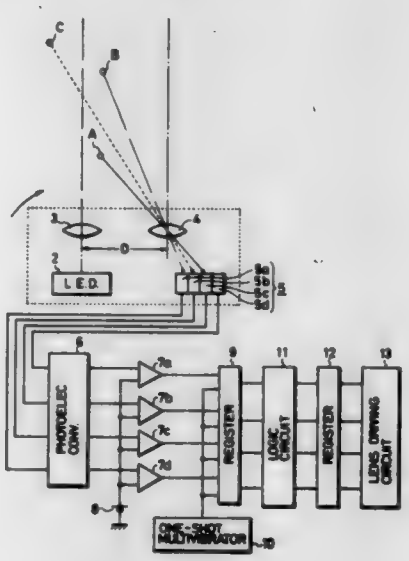
suction means for applying a suction through said pervious portion in said support member surface and through said pervious portion in said flexible carrier member in overlying relation therewith, and

said flexible carrier member arranged to engage a surface of a flexible, impervious photographic material by said suction through said pervious portion of said flexible carrier member, and thereby convey said flexible, impervious photographic material with said flexible carrier member on said surface of said support member.

4,534,636
AUTOMATIC FOCUSING DEVICE FOR CAMERA

Saburo Sugawara, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 18, 1984, Ser. No. 571,774
Claims priority, application Japan, Jan. 18, 1983, 58-5333
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—403 7 Claims



1. An automatic focusing device for a camera, comprising:

a range finder section comprising a light emitting section for applying light to objects to be photographed at predetermined spaced positions within a photographing field and a linear array of light detecting elements for producing output distance signals representing distances of said objects to an image pickup surface;

means for directing light reflected from said objects onto corresponding ones of said light detecting elements;

logic and memory means for detecting and storing among said distance signals only a distance signal corresponding to an object at a shortest distance among said objects; and

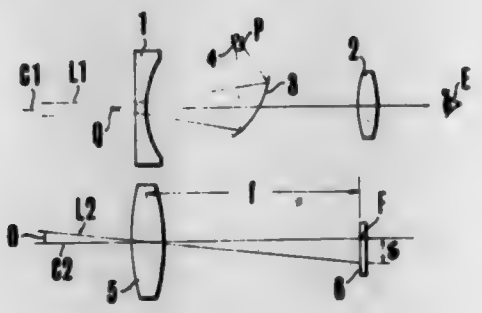
a lens driving section, operating in response to said signal stored in said memory section, for positioning a photographing lens to a focusing position for said object at the shortest distance.

4,534,637

CAMERA WITH ACTIVE OPTICAL RANGE FINDER

Takashi Suzuki; Susumu Matsumura, and Keiji Ohtaka, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 446,954, Dec. 6, 1982, abandoned. This application Oct. 2, 1984, Ser. No. 656,430
Claims priority, application Japan, Dec. 12, 1981, 56-200325
Int. Cl.[3] G03B *3/00*
U.S. Cl. 354—403 12 Claims



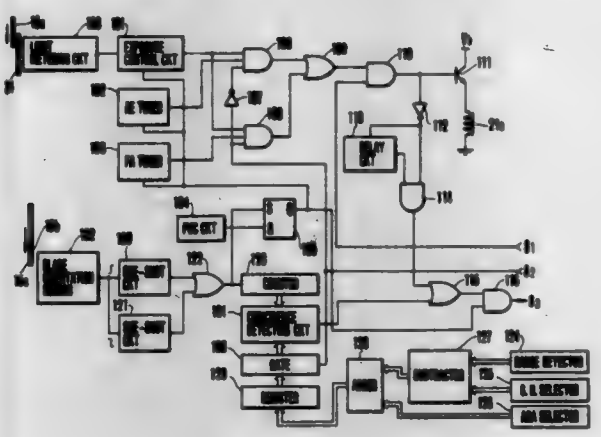
1. A camera comprising:
(a) light emitting means for emitting light;
(b) finder means for observing an image of an object; said finder means having an objective optical system;
(c) optical means for projecting light produced from said light emitting means toward the object through said objective optical system of said finder means, said optical means being formed so that rays of light emerging from said objective optical system are substantially collimated; and
(d) light receiving means for producing a signal for determining the relationship between the object and the camera by detecting the light from the objective system after reflection from the object.

4,534,638

EXPOSURE CONTROL DEVICE FOR CAMERA

Michio Hirohata, and Hideo Ikari, both of Tokyo, Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 414,634, Sep. 3, 1982, abandoned. This application Aug. 1, 1984, Ser. No. 636,789
Claims priority, application Japan, Sep. 12, 1981, 56-144268
Int. Cl.[3] G03B *7/08, 7/93, 9/14*
U.S. Cl. 354—418 4 Claims



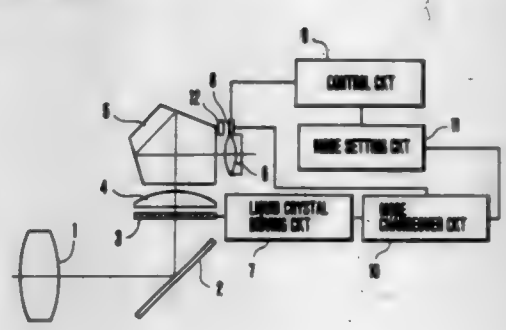
1. An exposure control device for a camera comprising:
blade members forming a photographic main aperture and an auxiliary aperture for measuring light from an object to be photographed, said auxiliary aperture being arranged to be opened and closed with the main aperture, the auxiliary aperture being arranged so that when blade members move to open the auxiliary aperture changes from a pre-open state to a totally closed state, and then opens again in response to opening of the aforesaid main aperture;
a light receiving element for measuring light, from an object to be photographed, through said auxiliary aperture;
exposure control means for counting light metering information from said light receiving element and upon attainment of a count to a prescribed value to initiate a closing operation of said blade members; and
detecting means having a light projection element and a light receiving element and responsive to opening and closing of an optical path between said light projection element and said light receiving element by action of said blade members for detecting the totally closed position of the auxiliary aperture, said detecting means being arranged to cause said exposure control means to start counting when said auxiliary aperture is totally closed from the pre-open state.

4,534,639

CAMERA HAVING AN EXPOSURE MODE CHANGE-OVER DEVICE

Yuichiro Konishi, Tokyo; Tokuichi Tsunekawa, and Hiromi Someya, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1983, Ser. No. 561,641
Claims priority, application Japan, Dec. 21, 1982, 57-224381; Dec. 21, 1982, 57-224382
Int. Cl.[3] G03B *7/099, 17/20*
U.S. Cl. 354—432 5 Claims



1. A single lens reflex camera having an exposure mode change-over device which can select one exposure mode out of a variety of exposure modes, comprising:
a photo-taking lens;
a focus plate on which object light beam from the photo-taking lens is imaged, said focus plate being formed by an electrical optical element divided into a plurality of sections;
a light receiving element to measure the object light beam from a transmitting part of said focus plate;
a plurality of switches corresponding to said various exposure modes; and
a circuit to control density of each section of said electrical optical element depending on the switching action of the plurality of switches, said circuit controlling the density of each section of said electrical optical element so as to select a light measuring mode corresponding to a set exposure mode.

4,534,640

EXPOSURE CONTROL SYSTEM FOR A CAMERA HAVING A DIGITAL COMPUTER

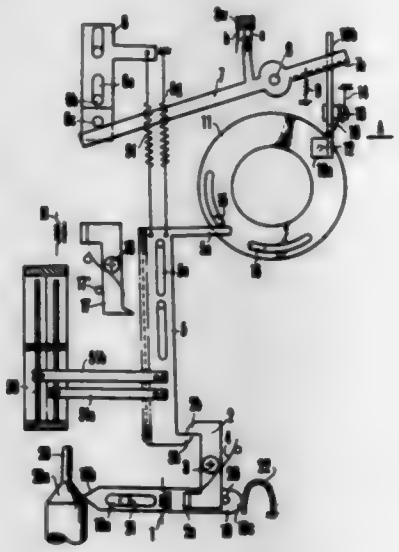
Tadashi Ito; Yasuo Isobe; Fumio Ito, all of Kanagawa, and Soichi Nakamoto, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Japan

Continuation of Ser. No. 608,914, May 10, 1984, abandoned, which is a continuation of Ser. No. 398,807, Jul. 16, 1982, abandoned, which is a continuation of Ser. No. 027,776, Apr. 6, 1979, abandoned, which is a continuation of Ser. No. 882,182, Feb. 28, 1978, abandoned, which is a continuation of Ser. No. 696,440, Jun. 15, 1976, abandoned, which is a continuation of Ser. No. 519,629, Oct. 31, 1974, abandoned. This application Oct. 24, 1984, Ser. No. 664,924

Claims priority, application Japan, Nov. 1, 1973, 48-123010; Dec. 10, 1973, 48-139760; Dec. 25, 1973, 49-1216

Int. Cl.[3] G03B *7/085, 17/00*

U.S. Cl. 354—448 7 Claims



1. An aperture information input device for a camera which compares a computed aperture value signal obtained through exposure computation with a preset aperture signal representing a preset aperture value to be adjusted and which determines the aperture of a photograph taking lens when the difference between the two signals reaches a predetermined value, the aperture information input device comprising:

a diaphragm device provided with a diaphragm and diaphragm aperture preset means;

adjusting means for adjusting the preset aperture value of the diaphragm aperture preset means, the adjusting means being arranged to operate in response to a release action of the camera;

aperture signal generating means for generating a signal corresponding to the degree of adjustment effected by said adjusting means, the aperture signal generating means including:

(a) a magnetic reluctance element;

(b) a magnet measuring in length about one half of the length of said magnetic reluctance element, the magnet being interlocked with said adjusting means to move on the magnetic reluctance element in response to the operation of the adjusting means;

(c) input terminals provided at both ends of said magnetic reluctance element for receiving a voltage input applied thereto; and

(d) output terminals provided in the middle part and one end of said magnetic reluctance element for producing a voltage output as an aperture signal, the voltage output becoming the lowest when said magnet is at an initial position on said magnetic reluctance element and then increasing accordingly as the magnet moves toward an end position on the magnetic reluctance element; and

lock means for stopping the operation of said adjusting means, the lock means being arranged to operate when the difference between the aperture signal produced from said output terminal and the computed aperture value signal obtained through exposure computation reaches the predetermined value after comparison of the two signals.

4,534,641

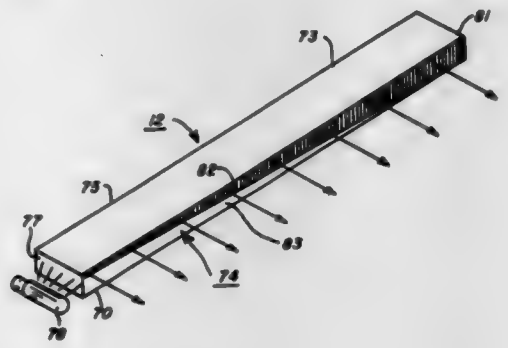
CHARGE ERASE DEVICE FOR COPYING OR REPRODUCTION MACHINES AND PRINTERS

W. Keith Gilliland, Webster; Lawrence M. Hart, Ontario, and Charles Nesta, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Oct. 31, 1983, Ser. No. 547,200

Int. Cl.[3] G03G *15/00*

U.S. Cl. 355—3 R 7 Claims



1. An erasing device for dissipating photoreceptor charges in a xerographic type reproduction machine having a photoreceptor, comprising:

(a) an elongated light transmitting fiber opposite said photoreceptor surface at substantially right angles to the path of movement of said photoreceptor, the axial length of said fiber being at least equal to the width of said photoreceptor surface;

(b) a light source at at least one end of said fiber, said fiber transmitting light from said light source axially along the interior thereof toward the opposite end of said fiber; and

(c) light control means for progressively increasing the light discharge area of the section of said fiber facing said photoreceptor in proportion to the distance along the fiber from said light source to thereby offset the loss of light intensity as said light is being transmitted through the interior of said fiber.

4,534,642

ELECTROPHOTOGRAPHIC COPYING APPARATUS FOR EFFECTING A COPYING OPERATION ON THE BASIS OF A SET COPYING CHARACTERISTIC

Kunihiko Miura, Hiratsuka; Shouji Takano, Kawasaki, and Masashi Kimura, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 21, 1982, Ser. No. 451,798

Claims priority, application Japan, Dec. 25, 1981, 56-215570; Jan. 22, 1982, 57-8708; Jan. 22, 1982, 57-8709; Jan. 28, 1982, 57-12305

Int. Cl.[3] G03G *15/04*

U.S. Cl. 355—14 E 8 Claims

1. An electrophotographic copying apparatus comprising:

photoconductive means;

charging means disposed close to said photoconductive means for electrically charging said photoconductive means;

exposure means for exposing said photoconductive means to form a latent image on said photoconducitve means, said image corresponding to the pattern of a document;

developer means disposed close to said photoconductive means for developing the latent image, thus forming a developed image, using one-component developer;

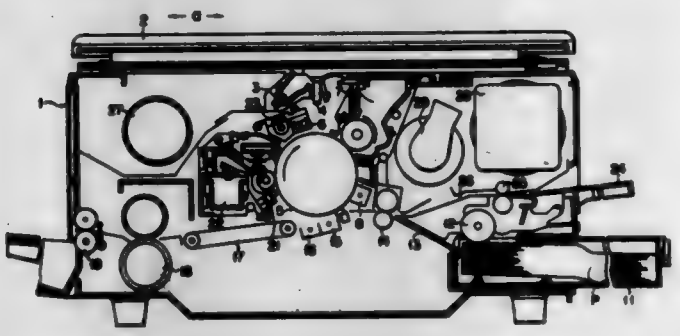
means for applying a bias voltage on said developer means;

transfer means disposed close to said photoconductive

means for transferring the developed image to a paper sheet;

means for selecting whether a document should be copied with contrast or gradation; and

γ characteristic setting means for setting γ characteristic (i.e. document density-copy density characteristic) corresponding to the selection by said selecting means and varying at least one of the bias voltage of said bias applying means and the exposure amount of said exposure means in accordance to the set γ characteristic, thereby achieving a developing process suitable process suitable to the quality of the document being occupied.



4,534,643

IMAGE FORMING APPARATUS

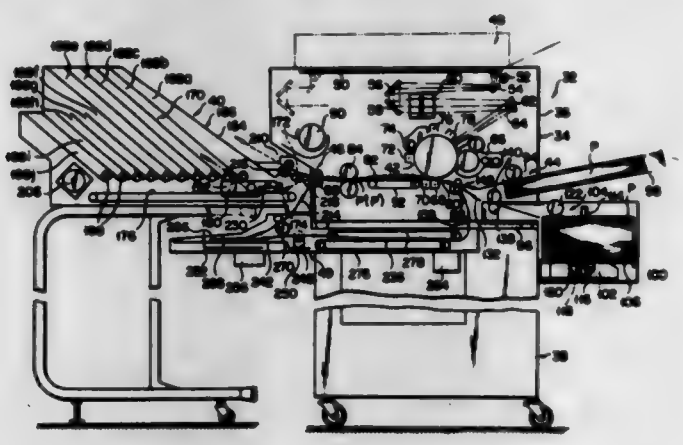
Junji Watanabe, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jan. 14, 1983, Ser. No. 458,026

Claims priority, application Japan, Jan. 29, 1982, 57-12838; Jan. 29, 1982, 57-12849

Int. Cl.³ G03G *15/00*; B65H *29/60*

U.S. Cl. 355—3 SH **21 Claims**



10. An image forming apparatus of the type including means defining a copy path having feed and discharge ends, feed and conveying means for sequentially feeding paper sheets into said copy path at said feed end and for sequentially conveying said paper sheets along said copy path, discharge means for discharging said paper sheets from said copy path at said discharge end, image transfer means disposed between said feed and discharge ends of said copy path for transferring an image of a master document onto one side of at least one of said paper sheets as said one paper sheet is conveyed along said copy path, and sorter means operatively connected to said discharge means for sorting said paper sheets, the improvement wherein said sorter means comprises:

at least one sort storage chamber and a nonsort storage chamber;

means defining (a) a first guide path in communication with said nonsort storage chamber, (b) a second guide path in communication with said sort storage chamber, and (c) a common guide path in communication with said discharge end of said copy path and said first and second guide paths;

conveying direction switching means operatively associated with said common guide path and moveable between (i) a first switching position wherein communication is established between said common and said first guide paths so that a paper sheet discharged by said discharge means is guided into said nonsort storage chamber, and (ii) a second switching position wherein communication is established between said common and said second guide paths so that a paper sheet discharged by said discharge means is guided into said at least one sort storage chamber;

selecting means displaceable between sort and nonsort positions for selectively moving said conveying direction switching means between said first and second switching positions, respectively, said selecting means including cam means defining a cam surface engageable with said conveying direction switching means when said selecting means is displaced into said nonsort position to responsively translate displacement of said selecting means into movement of said conveying direction switching means from said second switching position to said first switching position whereby communication between said common and first guide paths is established; and

displacing means for displacing said selecting means between said sort and nonsort positions to respectively cause disengagement and engagement between said cam surface of said selecting means and said conveying direction switching means.

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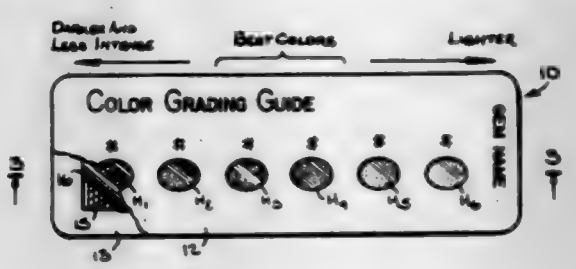
GUIDES FOR COLOR GRADING FACETED GEMSTONES

Casper R. Beesley, 210 Commonwealth Ave., Mt. Vernon, N.Y. 10552

Filed Mar. 22, 1983, Ser. No. 477,749

Int. Cl.³ G01J *3/52*; G01N *21/87*

U.S. Cl. 356—30 **11 Claims**



1. A set of guides for facilitating the color grading of faceted gemstones of different types, each guide being adapted to grade stones of a particular type under standardized conditions of illumination and comprising:

(A) a back panel having a front panel thereover provided with a longitudinal row of port holes;

(B) a reflective strip sandwiched between said panels and having in the zones under said holes an embossed pattern creating multiple reflections; and

(C) a planar optical filter interposed between each hole and its associated zone to interact with the light reflected thereby to simulate the visual impression of a standard grade of said stone of a particular type, the respective filters for the row of holes being such as to provide a range of standard color grades, whereby in making a color judgment, the observer seeks the closest match between the unknown under examination and one of the guide standards.

4,534,645

AUTOMATIC LENS METER

Masao Nohda, Yokosuka, Japan, assignor to Nippon Kogaku K. K., Tokyo, Japan

Filed Jun. 16, 1982, Ser. No. 389,055
Claims priority, application Japan, Jun. 26, 1981, 56-98405
Int. Cl.[3] G01B *9/00*
U.S. Cl. 356—125 3 Claims



1. An automatic lens meter including:

(a) a first positive lens system;

(b) a second positive lens system whose optical axis is coincident with the optical axis of the first positive lens system, the second positive lens system having its forward focal plane coincident with the rearward focal plane of said first positive lens system;

(c) a pin-hole plate disposed in the forward focal plane of said second positive lens system, the optical axis of said first positive lens system and said second positive lens system passing through the pin-hole of said pin-hole plate;

(d) four spot light source means disposed on the side of the forward focal plane of said first positive lens system, said four spot light source means being provided equidistantly on a circumference centered at said optical axis, two of the light source means at opposite sides of the optical axis forming a first pair, the remaining two of the light source means forming a second pair, said four spot light source means being made conjugate with a predetermined position on the side of the rearward focal plane of said second positive lens system by said first and second positive lens systems, a lens to be examined being disposed at said predetermined position;

(e) a third positive lens system provided on the side opposite to said second positive lens system with respect to said predetermined position;

(f) light-receiving means disposed at a fixed position relative to and conjugate with said pin-hole plate with respect to said second and third positive lens systems, said light-receiving means producing a signal corresponding to the position, on a light-receiving surface of said light-receiving means of an optical image corresponding to each of said four spot light source means; and

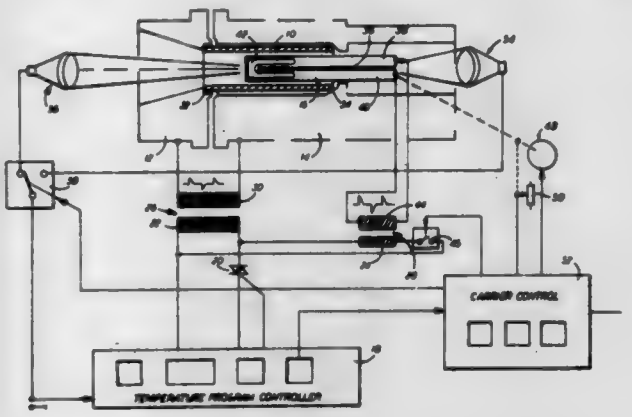
(g) converter means for converting the output signals of said light-receiving means into diopters D_1, D_2 and principal meridians axis degree θ, said converter means having a converting circuit for defining as an X-direction the direction connecting the images of said first pair of the light source means formed on the light-receiving means, and as a Y-direction the direction connecting the images of said second pair of the light source means formed on the light-receiving means, when a spherical lens as the lens to be examined is disposed at said predetermined position, said converting circuit, when an arbitrary lens to be examined is disposed at said predetermined position, producing signals corresponding to distances x_1 and y_2 over which the distance between the images of said first pair of the light source means formed on the light-receiving means and distances x_2, y_1 over which the distance between the images of said second pair of the light source means formed on the light-receiving means are projected in said X-direction and Y-direction, said converter means thereby determining said diopters D_1, D_2 and principal meridians axis degree θ based on said signals corresponding to distances x_1, y_2, y_1 and y_2.

4,534,646

DEVICE FOR ATOMIZING A SAMPLE IN FLAMELESS ATOMIC ABSORPTION SPECTROSCOPY

Rolf G. A. Tamm, Salem, and Toma Tomoff, Uberlingen, both of Fed. Rep. of Germany, assignors to Bodenseewerk Perkin-Elmer & Co., GmbH, Uberlingen, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,989
Claims priority, application Fed. Rep. of Germany, May 8, 1982, 3217417
Int. Cl.[3] G01N *21/74*
U.S. Cl. 356—312 6 Claims



1. Device for atomizing a sample in flameless atomic absorption spectroscopy, said device comprising:

a graphite tube held between a pair of annular electrodes;

a controllable power supply arranged to generate a current through said electrodes and through said graphite tube;

a carriage moveable in a longitudinal direction either into or out of said tube, said carriage being guided by guide means disposed so that a measuring light beam may pass through said tube;

an electrically conducting sample carrier attached to said carriage and disposed below said measuring light beam;

said guide means having busses engaged by sliding contacts of said carriage, which continuously electrically connect to terminals of said electrically conducting sample carrier whereby a heating current may be passed through said sample carrier in any position of said carriage to thereby permit controlling of the temperature of said sample carrier at any position thereof; and

a controller for controlling said power supply to control the temperature of said tube and for controlling the current through said sample carrier to control the temperature of said sample carrier, both temperatures being adjusted in accordance with a predetermined program.

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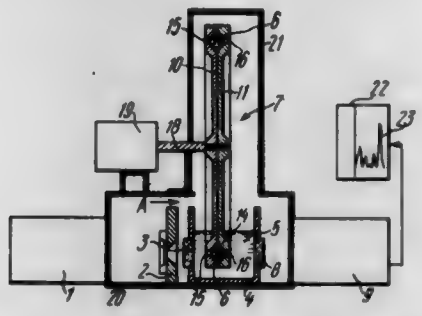
APPARATUS FOR PHOTOMETRICALLY SCANNING GELS

Valery N. Gross, and Vyacheslav D. Stupnik, both of Alma-Ata, U.S.S.R., assignors to Institut Molekulyarnoi Biologii Biokhimii Akademii Nauk Kazakhskoi SSR, Alma-Ata, U.S.S.R.

PCT No. PCT/SU81/00015, § 371 Date Oct. 18, 1982, § 102(e) Date Oct. 18, 1982, PCT Pub. No. WO82/02946, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 23, 1981, Ser. No. 438,868
Int. Cl.[3] C25B *9/00*; G01J *1/04*; G01N *21/03, 27/26*
U.S. Cl. 356—344 5 Claims

1. An apparatus for photometrically scanning gels, comprising a monochromator from which a light beam pases through a stop aperture and a gel placed in a cell, which are installed one after the other along the path of the light beam, the cell being caused to move relative to the light beam by means of an electromechanical drive and the light being received by a photometer, wherein the improvement comprises the cell

comprising two superposed discs each having on at least one side thereof congruent grooves which define at least one compartment for placing gels therein when the discs are superposed on one another.

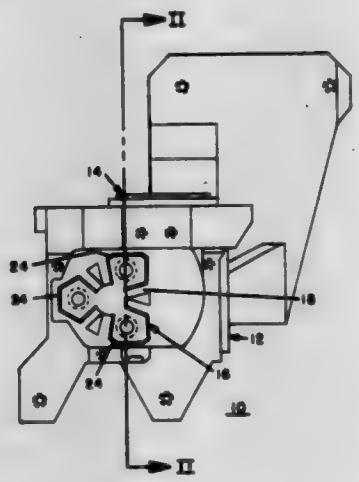


4,534,648

GYRO SENSOR BLOCK SUSPENSION

Arthur D. Cangialosi, Wayne, N.J., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 7, 1983, Ser. No. 549,019
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **2 Claims**



1. A gyro sensor block suspension comprising a sensor block having tnree gyro mounts for orthogonally mounting a triad of gyros, said gyros each having the same internal dither tuned suspension, two of said gyro mounts having a spring suspension machined into said sensor block, said spring suspensions being of different stiffnesses so as to act in series with said internal dither tuned suspension to reduce the gyro dither frequency.

4,534,649

SURFACE PROFILE INTERFEROMETER

Michael J. Downs, 'Karibu', Furza Hill Rd., Headley Down, Hampshire, England

Filed Oct. 22, 1982, Ser. No. 436,336
Claims priority, application United Kingdom, Oct. 30, 1981, 8132745
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—351 **10 Claims**

1. A surface profile interferometer comprises means for providing a collimated beam of radiation having components of equal amplitude in two orthogonal directions of polarisation;

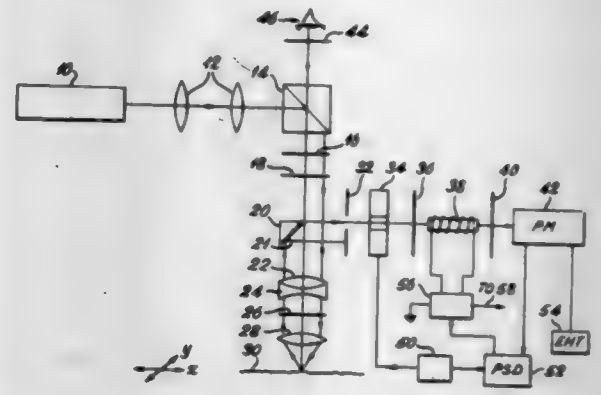
a beam directing device;

a birefringent focusing system for focusing radiation in the two directions of polarisation at different axial positions in space;

beam inversion means between the birefringent focusing system and the position of a test object; and

phase sensitive means for sensing any difference in phase between the polarised radiation components;

the beam directing device being such that it allows passage of at least a part of the collimated beam to the birefringent



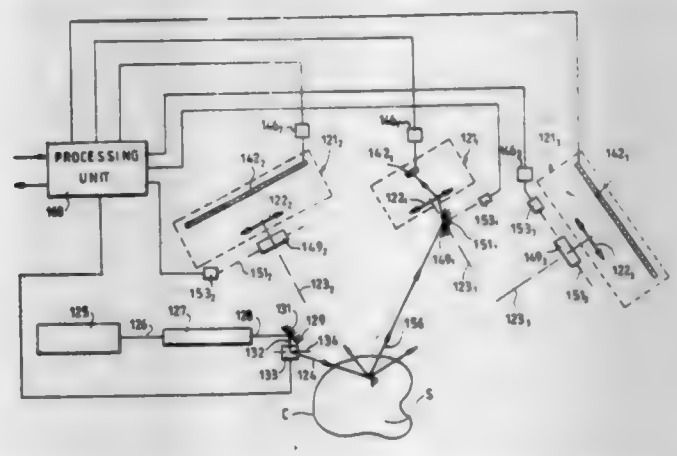
focusing system, receives from the birefringent focusing system radiation which has been reflected by the surface, and directs it to the phase sensing means, but introduces essentially no difference in phase between radiation components in the two orthogonal directions of polarisation.

4,534,650

DEVICE FOR THE DETERMINATION OF THE POSITION OF POINTS ON THE SURFACE OF A BODY

Michel Clerget, La Celle Saint Cloud; Francois Germain, Limours; Jiri Kryze, Pontchartrain, and Robert Poujois, Sinard, all of France, assignors to INRIA Institut National de Recherche en Informatique et en Automatique, Le Chesnay, France

Filed Apr. 27, 1981, Ser. No. 257,630
Int. Cl.³ G06F *15/46*
U.S. Cl. 356—376 **36 Claims**



1. A device for remotely locating and contouring a body in space, comprising:

means remote from said body for illuminating a quasi-pinpoint region moving on the surface of said body;

view-taking means for taking views of said quasi-pinpoint region as it moves on the surface of said body from at least three different stations of said view-taking means to form at least three respective images lying in three different respective image planes, each of said stations comprising at least one row of discrete photosensitive elements, said rows being arranged and connected in said view-taking means to define a three-dimensional reference system, said view-taking means further including means for producing an image of said quasi-pinpoint region on each of said rows of photosensitive elements for each position of the quasi-pinpoint region on said surface of said body;

means responsive to signals from said rows of photosensitive elements corresponding to the same instantaneous position of the quasi-pinpoint region for determining the position in space of said quasi-pinpoint region whereby said body can be located and contoured in space, each of said sta-

tions being provided with a first and a second support each provided with a respective row of discrete photosensitive elements identifiable by their respective positions in the row of the respective support whereby positions of possibly faulty elements on the first and on the second support of each station are not coincident and the elements of the supports of each station receive identical images; and

evaluation means for producing an image position indication in response to electrical signals coming from at least one of the first and second supports of each station whatever the position of the image on the supports of each station.

4,534,651

PHOTOMETRIC BIOCHEMICAL ANALYZER

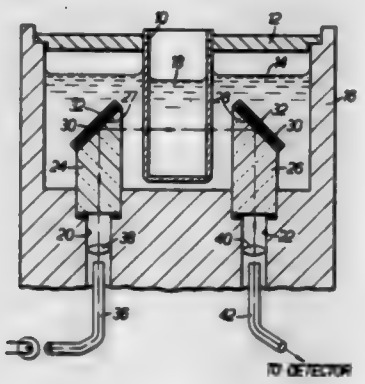
Tomiharu Minikane, Ohtawara, Japan, assignor to Kabushiki Kaisha Toshiba, Japan

Filed Mar. 29, 1984, Ser. No. 594,993

Claims priority, application Japan, Mar. 29, 1983, 58-54674

Int. Cl.³ G01N *21/00*

U.S. Cl. 356—440 **8 Claims**



1. Photometric analyzing apparatus comprising:

temperature controlled bath unit means including at least a pair of light entrance and exit windows at the bottom portion thereof;

light path conversion means positioned adjacent to said respective windows of said bath unit means, said light path conversion means comprising at least a first thin layer of light reflective material applied to a light path conversion surface thereof and a second thin layer of chemically resistant material covering said first layer, said light path conversion means defining a light inspection path;

means for positioning a fluid sample within said bath unit means in said light inspection path; and

means for transmitting a light beam through said light path conversion means to irradiate said fluid sample for photometric analysis.

4,534,652

MULTISHAFTED, CONTINUOUS MIXING AND KNEADING OF PLASTIFIABLE MATERIALS

Kurt Stade, Liestal, Switzerland, assignor to AUTOMATIK Apparate-Maschinenbau H. Hench GmbH, Grossostheim, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,495

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1982, 3206325

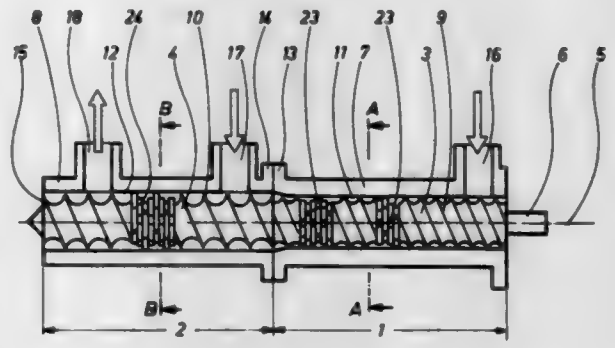
Int. Cl.³ B29B *1/10*

U.S. Cl. 366—85 **20 Claims**

1. A multi-shafted continuously operating mixing and kneading machine for plastifiable compounds with intermeshing axial elements rotating in the same direction at a constant axial worm separation, each of the axial elements being equipped with different zones with different numbers of threads along their directions of advance, with a zone having a smaller number of threads following a zone with a larger number of threads, characterized as follows:

(a) each axial element has successive zones (1,2) with worm elements (3,3'; 4,4') that engage one another so that the worm elements (3,3' or 4,4') of one zone (1 or 2) intermeshingly act upon one another in a self-cleaning fashion;

(b) the zone (2) with the smaller number of threads has a larger interior boring of its housing (8) and larger worm elements (4,4') than the zone (1) with the larger number of threads;



(c) the zone (2) with the smaller number of threads has a free cross-section (20) that is larger than in the preceding zone (1); and

(d) both zones (1,2) have fill openings (16,17) which can be charged independently of one another.

4,534,653

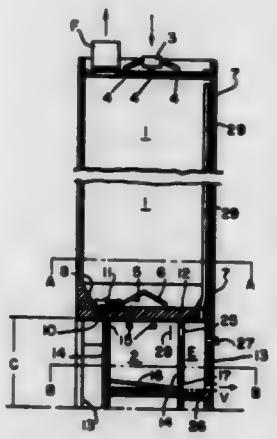
BLENDER FOR POWDERY MATERIAL

Robert Y. Courtay, Bretigny sur Orge, France, assignor to Fuller Company, Bethlehem, Pa.

Filed Feb. 16, 1984, Ser. No. 580,980

Int. Cl.³ B01F *13/02*

U.S. Cl. 366—106 **2 Claims**



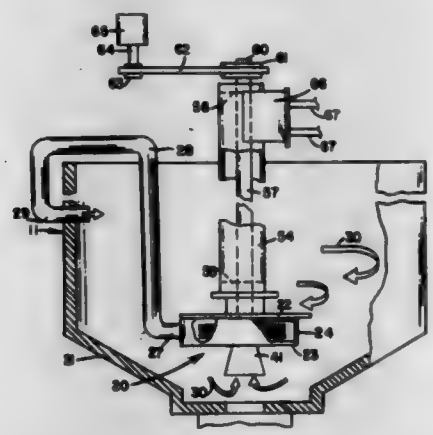
1. An apparatus for the storage and homogenization of powdery materials comprising an upper storage silo superimposed atop a homogenization chamber and separated by a slab; said upper storage silo including a plurality of feed points for raw material; the bottom of said silo being defined by said slab and including a cone having first fluidization elements mounted thereon and a plurality of circumferentially spaced apart generally vertical openings through the slab which define the outlet of the silo; each of said openings through slab being positioned at the center of a plurality of radiating second fluidization elements; said homogenization chamber including a plurality of circumferentially spaced apart openings in the upper part thereof, each flow connected to the outlet of the storage silo; the bottom of said chamber being generally flat and inclined toward a lateral outlet positioned on one side of the homogenization chamber; said bottom of the silo being adapted to fluidize material in the chamber by zones for homogenizing material therein; and an extraction column having an inlet at the bottom thereof flow connected to the lateral outlet of the homogenization chamber and an outlet in the upper portion thereof which serves as an outlet for the apparatus.

4,534,654

HIGH-SPEED FLUID BLENDER

Daniel M. Alt, Baltimore, and Michael J. Sackett, Glen Arm, both of Md., assignors to A. J. Sackett & Sons Co., Baltimore, Md.

Filed Jul. 27, 1983, Ser. No. 517,587
Int. Cl.[3] B01F *5/10*
U.S. Cl. 366—137 19 Claims



1. In a high-speed fluid blender having a mixing tank, wherein the tank is provided with a top portion and is further provided with a truncated frusto-conical bottom portion, and wherein the blender is intended for mixing chemical fertilizers which may include one or more granular ingredients in suspension in water, the improvement which comprises a combined means for mixing and recirculating the contents of the tank, including a pump assembly provided with a generally-cylindrical pump housing having respective side walls joined by an annular wall, one of the side walls having a central inlet opening formed therein substantially coaxially of the housing, first conduit means directing the liquid into the inlet opening of the pump from the frusto-conical bottom portion of the tank, the annular wall of the housing having a tangential discharge opening formed therein, second conduit means connecting the discharge opening with the top portion of the tank, an assembly of a plurality of spaced-apart parallel blades rotatably mounted within the housing and having a substantial radial clearance with respect to the annular wall of the housing, wherein the granular ingredients will not clog the pump assembly and will be mixed properly with the water, at least some of the blades having a central opening formed therein substantially coaxial with and in communication with the inlet opening in the one side wall, means extending through the other side wall of the housing for driving the blade assembly; wherein the pump assembly serves the dual fiunction of mixing and recirculating, whereby the necessity for a separate recirculating pump may be obviated, and means for injecting a liquid fertilizer under pressure to merge with the tangential discharge of the pump, thereby creating a turbulence to substantially relieve the "bumping" action caused by expansion of the pressurized liquid fertilizer upon contact with the liquid in the tank.

4,534,655

PROPORTIONING DEVICE

L. Tony King, and Mark W. Peters, both of Long Beach, Calif., assignors to Komax Systems, Inc., Long Beach, Calif.

Filed Sep. 24, 1984, Ser. No. 653,194
Int. Cl.[3] B01F *5/10, 15/02*
U.S. Cl. 366—137 11 Claims

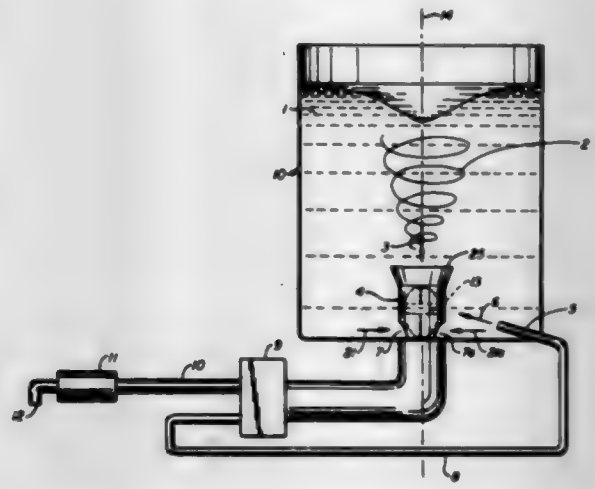
1. A device for maintaining a substantially uniform proportion between two or more liquids comprising:

a substantially cylindrically shaped tank for maintaining said liquids;

a liquid exit tube characterized as being located at the bottom and at approximately the radial center of said cylindrically shaped tank, said liquid exit tube being further characterized as possessing a flared top end and one or more openings at its bottom end;

means located within said liquid exit tube for the substantial elimination of the formation of a vortex at the downstream end of said liquid exit tube;

means for injecting said two or more liquids into said cylindrically shaped tank at a direction between approximately 0° and 45° above horizontal and approximately perpendicular to the radius of the cylindrically shaped tank;



means for circulating said two or more liquids from and back into said cylindrically shaped tank; and

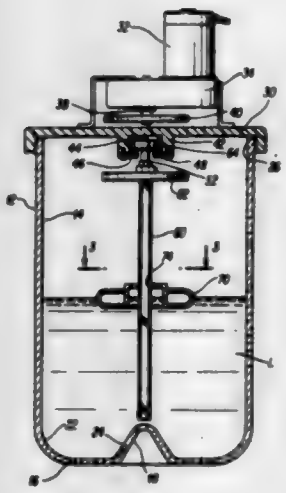
means for withdrawing a sample of the two or more liquids in a proportion substantially identical to the proportion of said liquids in said cylindrically shaped tank.

4,534,656

FLOATING MAGNETIC STIRRER WITH DRIVING GUIDE ROD

Norman A. de Bruyne, Princeton, N.J., assignor to Techne Corporation, Princeton, N.J.

Filed Jun. 7, 1983, Ser. No. 502,618
Int. Cl.[3] B01F *13/08*
U.S. Cl. 366—247 19 Claims



1. A magnetic stirrer apparatus for stirring liquid culture medium comprising:

(a) a flask having an opening in the upper part thereof,

(b) a closure for said opening,

(c) means for generating horizontal rotary motion and vertical circulating motion of liquid culture medium in said flask from the liquid surface substantially to the bottom of the flask and thence upwardly comprising:

(i) a driving guide rod in said flask,

(ii) a floating stirrer in said flask,

(iii) means for coupling said rod and stirrer for relative axial, non-rotational movement,

(iv) means for supporting said driving guide rod for axial rotational movement in said flask, and

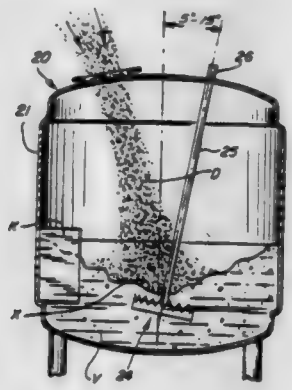
(v) means for axially rotating said driving guide rod,
(d) said apparatus being free of means for generating turbulent flow in said flask.

4,534,657

BLENDING AND EMULSIFYING APPARATUS

Maurice C. Clement, Cottage Grove, Wis., assignor to Crepaco, Inc., Lake Mills, Wis.

Filed Jul. 14, 1983, Ser. No. 513,921
Int. Cl.[3] B01F 5/12
U.S. Cl. 366—265
11 Claims



1. An apparatus for blending and emulsifying a shearable first product with a viscous second product disposed within a tank to a predetermined level, the tank being provided with a first product inlet disposed above the level of the second product, said apparatus comprising a rotatably mounted agitator immersible within the second product, said agitator, when rotating at a predetermined speed, causing the second product to form a vortex into which the first product is deposited through the tank inlet; and drive means connected to said agitator and effecting rotation thereof at said predetermined speed; said agitator including a first disc member having means for connecting to said drive means, said first disc member being proximate the bottom of the tank, a second disc member axially spaced from said first disc member and provided with an enlarged central opening, a plurality of symmetrically arranged, annularly spaced baffles interconnecting said first and second disc members, each baffle being angularly disposed relative to the direction of rotation of said agitator for imparting a pumping and blending action to the first and second products causing portions of same to flow outwardly between the baffles towards the periphery of said disc members, and a plurality of symmetrically arranged shear blades provided on a periphery of at least one disc member, said shear blades being disposed at a greater radial distance from the axis rotation than said baffles and extending into the flow path of the pumped portions of the first and second products and effecting shearing of the first product entrained in the pumped portions.

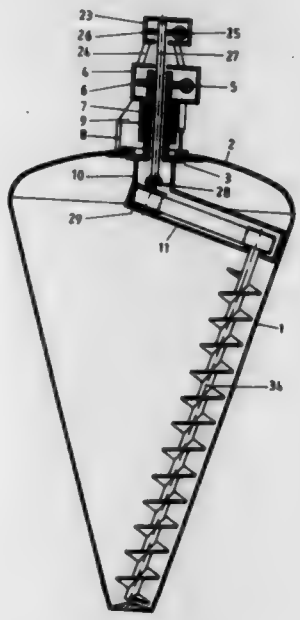
4,534,658

MIXING APPARATUS, HAVING SEALS WHICH MAY BE SATISFACTORILY CLEANED, PARTICULARLY FOR THE PHARMACEUTICAL INDUSTRY

Jan W. De Vries, Zelhem, Netherlands, assignor to Isem B.V., An Doetinchem, Netherlands

Filed May 29, 1984, Ser. No. 615,061
Claims priority, application Netherlands, Jun. 6, 1983, 8302015
Int. Cl.[3] B01F 9/22
U.S. Cl. 366—287
6 Claims

1. In mixing apparatus comprising a conical container closed at its upper end by a cover and a mixing screw located in said container, said screw extending parallel to the conical wall of said end and having drive means for simultaneously rotating said screw about its axis and around the central axis of the container, comprising a central drive shaft extending through said cover, a radial arm connected at its inner end to said central drive shaft, said supporting the mixing screw at its outer end, the improvement wherein said radial arm comprises a closed tubular section terminating at its inner end in a vertical part extending into proximity with the cover and being connected to the central drive shaft, a sealing element removably arranged between said vertical part and the cover at the position of the passage of said vertical part through the cover, the



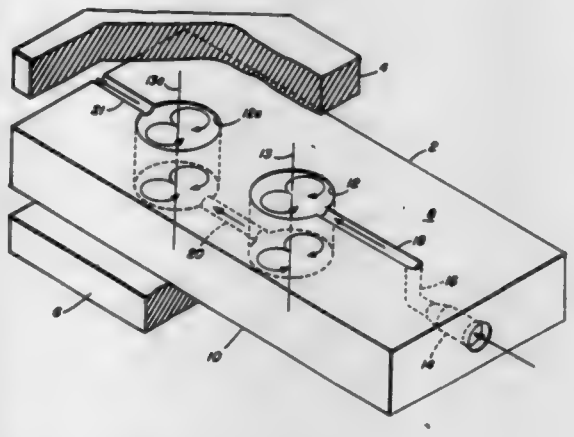
outer end of the tubular section having an opening, and a bearing structure located in said opening for rotatably supporting the upper end of the screw comprising a first bearing sleeve secured in the opening and a second bearing sleeve secured to the end of said screw, including a sealing structure removably arranged between the first bearing sleeve and the second bearing sleeve at the end of the screw.

4,534,659

PASSIVE FLUID MIXING SYSTEM

Theodore A. Dourdeville, Southboro, and Anthony Lymneos, West Upton, both of Mass., assignors to Millipore Corporation, Bedford, Mass.

Filed Jan. 27, 1984, Ser. No. 574,541
Int. Cl.[3] B01F 5/06
U.S. Cl. 366—338
12 Claims



1. A passive fluid mixer comprising:
a cylindrical mixing chamber,
a fluid entrance passageway,
a fluid exit passageway,
the mixing chamber being adapted to receive fluid from the fluid entrance passageway and to produce a net fluid flow through the chamber to the exit passageway,
the entrance passageway and the exit passageway being located at opposite ends of the cylindrical mixing chamber and at right angles to the axis of the chamber,
the axis of the entrance passageway being an extension of a diameter of the cylindrical chamber to direct the flow of

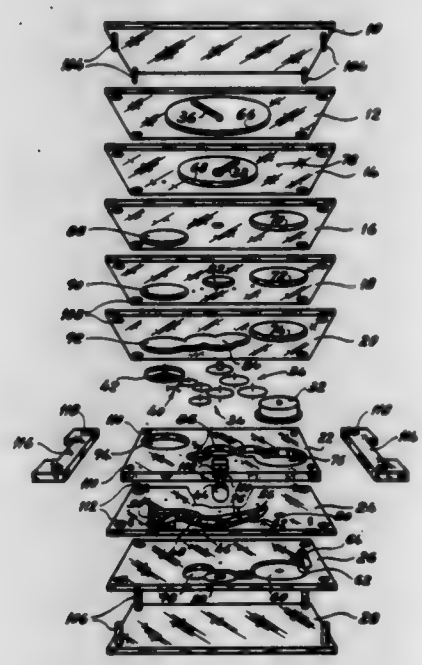
the fluid entering the chamber against the cylindrical wall of the chamber on the opposite side of the axis from that on which the entrance passageway is located whereby the flow is changed by the confines of the chamber such that its momentum superimposes upon the net fluid flow through the chamber a pattern of motion dominated by paired counter-rotating vortices.

4,534,660

PORTABLE DEVICE INCLUDING A VISIBLE MECHANISM

Claude Laesser, La Chaux-de-Fonds, Switzerland, assignor to ETA S.A., Fabriques d'Ebauches, Switzerland

Filed Jul. 5, 1984, Ser. No. 628,056
Claims priority, application Switzerland, Jul. 8, 1983, 3756/83
Int. Cl.³ G04B *19/02, 37/00*
U.S. Cl. 368—220 **6 Claims**



1. A portable device including a mechanism, said device comprising:
- a source of energy;
- a rotary drive member driven by said source;
- a train of gear wheels and pinions driven by said rotary drive member;
- a transparent front plate;
- a back plate; and
- a support structure positioned between said front and back plates, said support structure comprising a plurality of transparent plates which together with said front and back plates form a stack, at least a portion of said plurality of transparent plates comprising cutouts which in cooperation with adjacent plates define enclosures surrounding said source, said rotary drive member and said train of gear wheels and pinions.

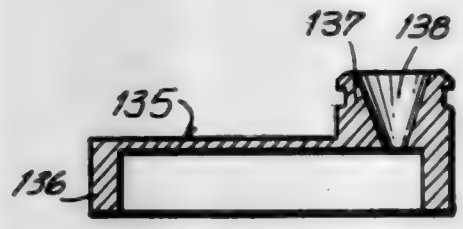
4,534,661

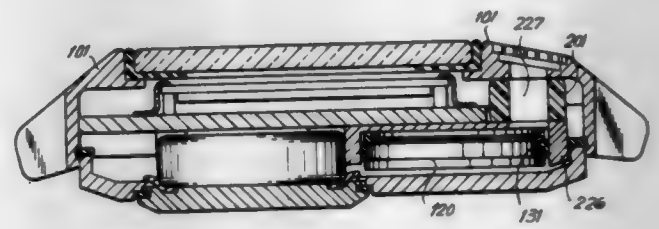
ELECTRIC ALARM WRISTWATCH INCLUDING CYLINDRICAL SOUND TUBE FOR TRANSMITTING SOUND

Hirohisa Kurita, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 178,410, Aug. 15, 1980, which is a continuation of Ser. No. 936,997, Aug. 25, 1978, abandoned.
This application Jun. 11, 1982, Ser. No. 387,561
Claims priority, application Japan, Aug. 25, 1977, 52-102109
Int. Cl.³ G04C *24/16*
U.S. Cl. 368—250 **9 Claims**

1. An electrical alarm wristwatch comprising a watch case having a display surface, side walls and a back side, said display surface formed with a display opening and a buzzer opening therethrough, a battery having a bottom surface, watch circuit means driven by said battery and time display means including an electro-optical display panel driven by said watch circuit disposed within said watch case in registration with said display opening for viewing said display means, alarm buzzer means having a bottom surface and being disposed within said watch case and driven by said battery, said display means overlapping at least a portion of said buzzer means and at least a portion of said buzzer means being in uninterrupted registration with said buzzer opening, a sound case including a substantially cylindrical buzzer chamber having an open bottom surface and a substantially cylindrical sound tube eccentrically disposed on the upper surface thereof, and said substantially





cylindrical buzzer chamber being hermetically engaged with said buzzer means, said substantially cylindrical sound tube disposed in said watch case communicating between said buzzer means and said buzzer opening for providing an uninterrupted route for transmitting the sound from said alarm buzzer means to said buzzer opening on the display side of said watch case, said upper surface of said cylindrical buzzer chamber having a diameter greater than said cylindrical sound tube, said electro-optical display panel overlapping said upper surface and wherein the bottom surface of said buzzer means and the bottom surface of said battery are disposed substantially on the same plane without overlapping each other.

4,534,662

DEVICE FOR DETECTING VAPOR LEAKAGES

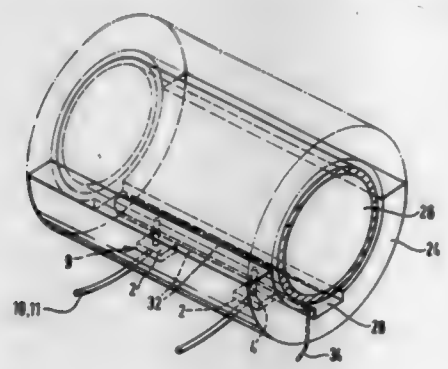
Reinhold Barlian, Dieselstrasse 6, 6990 Bad Mergentheim, Fed. Rep. of Germany

PCT No. PCT/DE81/00114, § 371 Date Apr. 6, 1982, § 102(e) Date Apr. 6, 1982, PCT Pub. No. WO82/00521, PCT Pub. Date Feb. 18, 1982
PCT Filed Jul. 25, 1981, Ser. No. 367,242
Claims priority, application Fed. Rep. of Germany, Aug. 9, 1980, 3030296
Int. Cl.³ G01M *3/00*
U.S. Cl. 374—4 **10 Claims**

1. A device for detecting steam leaking from hollow bodies above ground including pipes for gauge pressure steam, comprising:
- thermal insulation disposed around a said hollow body, there being between said insulation and body a space for measuring purposes,
- temperature change sensor means disposed in said space for providing at least one output signal response to a predetermined change in temperature in said space,
- steam detector means having at least inlet means disposed in said space for providing at least one output signal in the event steam is sensed by the detector means in said space,
- said steam detector means including at least one steam detector having a capacitor-like structure including a porous

insulating material able to take up steam through said inlet means, and

warning means connected to receive said output signals



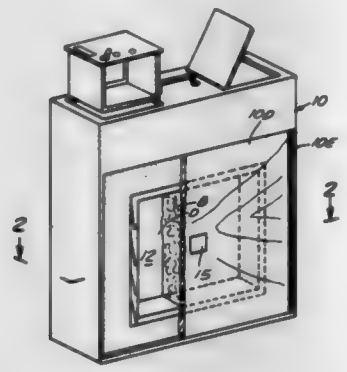
from both the temperature change sensor means and the steam presence detector means for providing an output only upon receiving a said output signal from each simultaneously.

4,534,663

MEANS AND TECHNIQUES FOR TESTING OF HEAT INSULATION MATERIALS

Heinz F. Poppendiek, La Jolla, and Cullen M. Sabin, Solana Beach, both of Calif., assignors to Geoscience Ltd, Solana Beach, Calif.

Filed Oct. 6, 1983, Ser. No. 539,665
Int. Cl.³ G01N *25/18*
U.S. Cl. 374—43 4 Claims



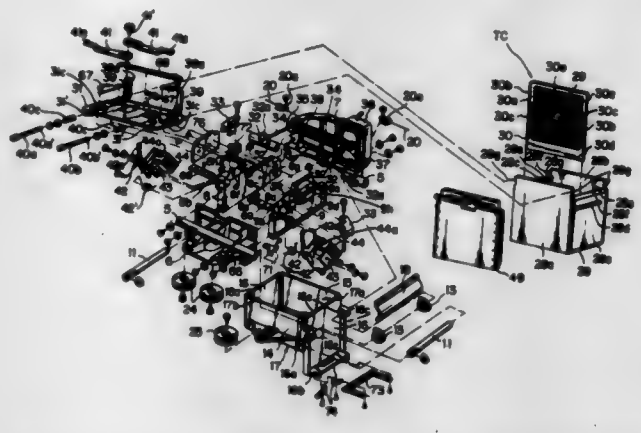
1. Insulation testing apparatus comprising, a single heat source; said heat source being a single elongated electrical heating element; said heat source being metal-clad along its length by a high heat conductivity metal material which is in good heat conducting relationship to said heating element and which is internally heated by said element such that the temperature of said metal material is substantially uniform along its length; metal material which is heated by said elongated electrical element with said two insulating materials each having an inner surface and an outer surface and with said inner surface of each insulating material being in direct contact with said metal material without any air space therebetween; means for measuring the difference in the quantity of heat conducted through said different insulating materials; said measuring means including a first thermopile means and a second thermopile means mounted on wall means in said apparatus and in thermal contact respectively with a corresponding outer surface of said two insulating materials without any air space therebetween such that heat flows solely by conduction and without radiation or convection from the heated metal-clad heat source through each of said two insulating materials to a corresponding one of said thermopile means, said first thermopile means measuring the amount of heat passing through one of said materials; and said second thermopile means measuring the amount of heat flowing through the other one of said insulating materials.

4,534,664

PRINTING MECHANISM HAVING A PLURALITY OF TYPE PLATES

Kazuyoshi Sawada, Kashiwazaki, Japan, assignor to Silver Seiko Ltd., Japan

Filed Apr. 22, 1983, Ser. No. 487,694
Claims priority, application Japan, Apr. 26, 1982, 57-68738
Int. Cl.³ B41J *7/54, 7/50*
U.S. Cl. 400—110 15 Claims



1. A print carrier for a printer of the type wherein said print carrier is mounted for movement along a path in a first horizontal direction in parallel with an axis of a platen, comprising: a first section mounted for movement in the first direction; a plurality of substantially planar type carrying elements each having a plurality of character types arranged in rows and columns thereon; a second section mounted below said platen for movement on said first section in a second horizontal direction perpendicular to the first direction; a third section removably received in said second section and containing said type carrying elements in equally spaced parallel vertical planes which are parallel to said path; first rail elements secured to said first section; second rail elements removably mounted on said first section; said first and second rail elements providing a pair of rail means for supporting and guiding said third section and said type carrying elements for movement in the second direction at a predetermined vertical position; said third section being able to be removed, when supported on said second rail elements, together with said type carrying elements contained therein from said second section by lifting said second rail elements; means for fixing said second rail providing elements to said first section; and lifting means on said first section for lifting one of said type carrying elements which is in a predetermined vertical plane to a selected vertical position for printing.

4,534,665

SERIAL PRINTER

Masahiko Mori; Kenichiro Arai, and Chikao Tezuka, all of Shiojiri, Japan, assignors to Epson Corporation and Kabushiki Kaisha Suwa Seikosha, both of, Japan

Filed Feb. 22, 1983, Ser. No. 468,625
Claims priority, application Japan, Feb. 22, 1982, 57-26979; Feb. 22, 1982, 57-26980
Int. Cl.³ B41J *1/50*
U.S. Cl. 400—145.2 12 Claims

1. A serial printer comprising:

print wheels in the form of annular rings supported on a common holder, said print wheels including a plurality of raised type positioned on and spaced around the outer peripheral surface of each said annular ring, said print wheels including at least a first group of printing types and a second group of printing types, each said printing types having a face;

a rotatable shaft supporting said print wheels on said common holder for corotation of said print wheels;

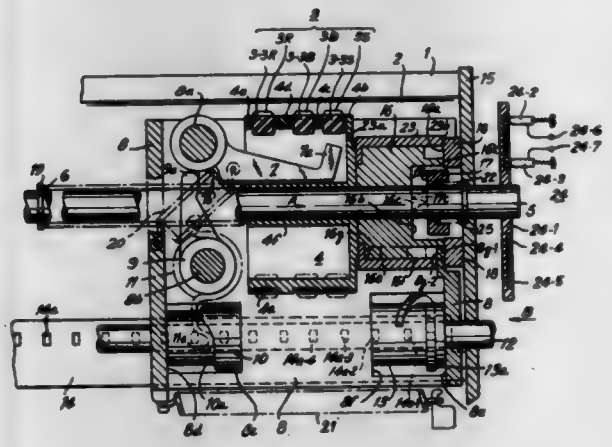
hammer means having a presser for selectively confronting and pressing the types of said print wheels from inside said

annular rings to press the face of a selected type on a sheet of recording paper;

a platen, said recording paper being positioned between said platen and said print wheels;

a carriage having mounted thereon said hammer means for laterally shifting said hammer means therewith successively from one print position to the next, said print wheels being mounted on said carriage; and

switching means for selectively bringing said presser of said hammer means into confronting relationship to a print wheel of said first group of printing types or alternatively in confronting relationship to a print wheel of said second group of printing types, said confronting relationship being determined during a lateral shifting stroke of said carriage between one printing position and the next printing position, wherein said carriage includes an engaging member fixedly attached thereto, said switch means including:



a first cam for translating said print wheels axially on said shaft, said first cam having a first stepped surface for engaging with said engaging member of said carriage during a lateral shifting stroke of said carriage to position said presser in confronting relationship to a print wheel of said first group of print types, and a second stepped surface for alternatively engaging with said member of said carriage during said lateral shifting stroke of said carriage to position said presser in confronting relationship to a print wheel of said second group of print types;

a second cam engageable with said first cam for rotating said first cam, and

means for stopping rotation of said second cam so as to selectively position said engaging member of said carriage into confronting relationship to said first stepped surface or alternatively to said second stepped surface.

4,534,666

TRANSFER MATERIAL FEEDING DEVICE

Junji Watanabe, Yokohama, Japan, assignor to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Jun. 11, 1984, Ser. No. 619,214

Claims priority, application Japan, Jun. 13, 1983, 58-105309

Int. Cl.³ B41J *35/00*

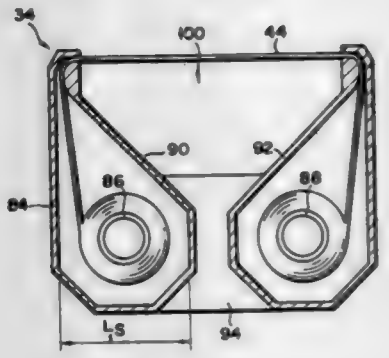
U.S. Cl. 400—207 **6 Claims**

1. A transfer material feeding device capable of being set in a transfer apparatus which transfers a color agent to a sheet in accordance with a latent image to form an image on the sheet, comprising:

a transfer material in the form of a sheet and having two end portions, said transfer material including the color agent;

a pair of roll shafts individually engaging two end portions of the transfer material and wound with the transfer material, whereby the transfer material is fed in one direction; and

a case integrally enclosing the pair of roll shafts and the transfer material and opening on one side thereof so that part of the transfer material located between the two roll shafts is exposed, said case also having a slit in a surface other than said one side, said slit cooperating with a holder in said transfer apparatus so that the transfer material



feeding device is guided through the slit onto the holder to be held thereby when the transfer material feeding device is set in the transfer apparatus.

4,534,667

DRIVE MECHANISMS FOR INKED RIBBON CASSETTES

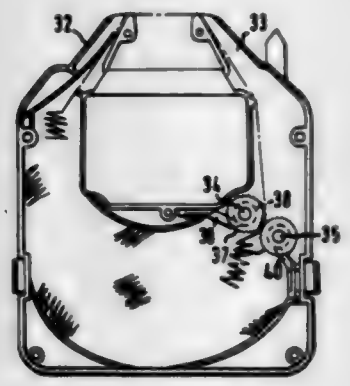
John E. Bury, Eltham, England, assignor to Grafton Limited, London, England

Filed Oct. 11, 1983, Ser. No. 540,730

Claims priority, application United Kingdom, Oct. 13, 1982, 8229194; Jan. 17, 1983, 8301159

Int. Cl.³ B41J *35/28, 33/28*

U.S. Cl. 400—207 **3 Claims**

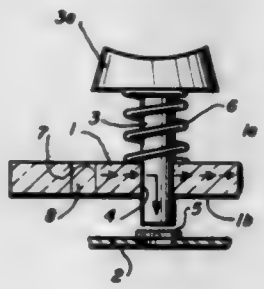


1. A stuffed inked ribbon cassette comprising a cassette body having a continuous loop of inked fabric ribbon thereon that is withdrawn past tensioning means from a stuffing chamber in the body and is returned to said stuffing chamber by a ribbon drive mechanism, said drive mechanism comprising a drive gear and an idler gear which are in gripping engagement with a portion of said ribbon and between which the ribbon passes, the said drive and idler gears each being journalled at fixed centers in the cassette body, and each of said gears having teeth of ratchet form with each of the drive gear teeth having a generally radial front face and an inclined rear face and each of the idler gear teeth having a generally radial rear face and an inclined front face, said ribbon being engaged between said generally radial faces of said drive and idler gears and returned to the stuffing chamber.

4,534,668
PHOTOELECTRIC KEYBOARD

Heinz Hildel, Nuremberg; Wolfgang Schnell, Furth, and Gerald Westphal, Nuremberg, all of Fed. Rep. of Germany, assignors to Triumph-Adler Aktiengesellschaft fur Buro- and Informationstechnik, Nuremberg, Fed. Rep. of Germany

Filed May 24, 1984, Ser. No. 613,270
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323989
Int. Cl.[3] B41J *5/08*
U.S. Cl. 400—477
5 Claims



1. A photoelectric keyboard for typewriters and similar machines comprising

a first light transparent plate having holes extending from the upper to the lower surfaces thereof,

a light source mounted in at least one of said holes in said first transparent plate for internally illuminating said first transparent plate,

keys having light transparent key stems mounted in others of said holes for movement between normal and depressed positions, said key stems remaining in said holes both in said normal and said depressed positions, light in said illuminated first transparent plate continuously illuminating said transparent key stems and radiating from the lower ends of said transparent key stems,

a second plate parallel to and spaced from said first transparent plate comprising a printed circuit board, and

photo elements mounted on said printed circuit board opposite and spaced from the radiating ends of said transparent key stems by a predetermined distance established by the spacing between said first and second plates,

said predetermined distance being such that light radiated from the lower ends of said transparent key stems is sufficient to activate a corresponding photo element only when the radiating ends are moved close to said photoelements in response to movement of a key from normal to depressed position.

4,534,669
CLEANING SYSTEM WITH CARTRIDGE HAVING VALVE MEANS

Samuel C. Heck, and Lee E. Garrison, both of San Antonio, Tex., assignors to Sani-Fresh International, Inc., San Antonio, Tex.

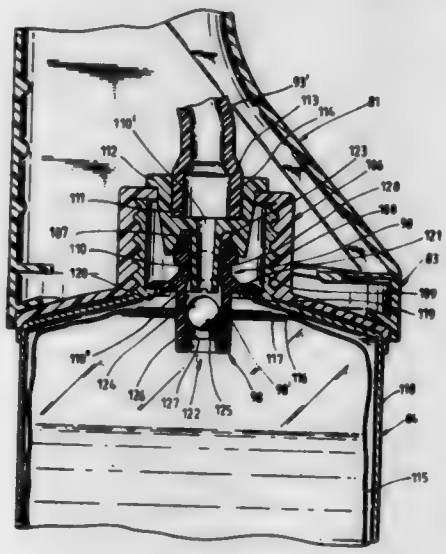
Filed Mar. 24, 1983, Ser. No. 478,516
Int. Cl.[3] A46B *11/00, 11/02*
U.S. Cl. 401—134
14 Claims

1. A cleaning fluid cartridge, adapted for use with a cleaning system having a handle with a piercing member disposed on one end thereof and a surface cleaning means disposed on the other end thereof, comprising:

a flexible bag, adapted to contain a cleaning fluid, and having an opening therein; and

a check valve sealingly disposed within said opening, said valve having: an inlet orifice; an exit orifice; a sealing chamber therebetween; a sealing member moveable within said sealing chamber; a first open operating position which allows said cleaning fluid to pass through said valve; a second sealed operating position to prevent egress of said cleaning fluid through said valve; a third sealed non-operating position which allows said cleaning fluid to be stored within said flexible bag;

said bag and said valve cooperating with said piercing member to move said sealing member from said third sealed

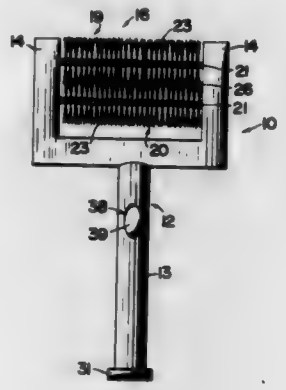


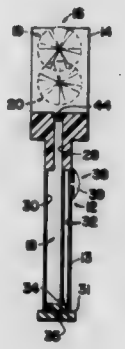
non-operating position into said sealing chamber to be disposed in either said sealed operating position or said open operating position within said sealing chamber when said cleaning system is operatively engaged with said cartridge.

4,534,670
CLEANING DEVICE

Elias Facuseh, 1147 SW. 78 Ct., Miami, Fla. 33144

Continuation of Ser. No. 411,304, Aug. 25, 1982. This application Nov. 16, 1983, Ser. No. 552,111
Int. Cl.[3] A46B *11/04;* A47L *13/22;* B26B *11/00*
U.S. Cl. 401—270
4 Claims





1. A cleaning assembly for a comb or like device, said cleaning assembly comprising:

(a) a housing having cleaning means attached thereto in accessible position for cleaning of a given device, said cleaning means including at least two cleaning elements each rotatably mounted on said housing and positioned in

a substantially stacked, parallel relation to one another, said cleaning element being structured for intermeshing engagement with one another, whereby rotation of one of said cleaning elements causes rotation of the other of said cleaning elements,

(b) a first compartment and a second compartment each integrally formed on the interior of said housing and disposed in adjacent relation to one another, said housing including a common wall extending along the length of both said first and said second compartments and disposed in physically segretating relation thereto,

(c) valve means for regulating passage of fluid into and out of said housing and comprising a first valve assembly and a second valve assembly, said second valve assembly disposed and structured to regulate fluid flow from said first compartment directly onto at least one of said cleaning elements,

(d) said first valve assembly movably mounted in said common wall between a first position establishing fluid flow from said second compartment to said first compartment and a second position establishing fluid flow from an exterior of said housing to said second compartment,

(e) said first compartment having a hollow interior portion structured for storage of cleaning fluid therein and disposed for delivery of the cleaning fluid directly to said cleaning means via said second valve assembly,

(f) said second compartment having a hollow interior structured for containment of air therein and disposed in cooperative, fluid communication with said first valve assembly to provide exclusion of cleaning fluid from said second compartment interior and air passage from said second compartment to said first compartment and subsequently from an exterior of said housing into said second compartment,

(g) activating means disposed and structured to substantially define a portion of the interior of said second compartment and including a flexible wall portion capable of displacement between a first driving position and a second driving position thereby changing the effective volume of said second compartmemt,

(h) said first valve assembly positionable in said first position upon inward placement of said flexible wall portion by depression of said activating means into said first driving position, said first valve assembly positionable in said second position upon expansion of said flexible wall portion defining said second driving position of said activating means,

(i) said first driving position of said activating means defined by air flow from said second compartment to said first compartment via said first valve assembly and concurrent cleaning fluid flow from said first compartment to said cleaning means,

(j) vent means mounted on said housing for supplying air to the interior thereof and being disposed in direct fluid communication of said first valve assembly, said first valve assembly structured and disposed to interconnect said second compartment with said vent means independent of said first compartment when said actuating means assumes said second driving position, and

(k) whereby cleaning fluid is forced directly from said first compartment to said cleaning means and in segregated relation to said second compartment.

4,534,671

HOLDER WITH A STACK OF SHEETS

Rainer Häfner, Herrnstrasse 61 D-6050, Offenbach am Main, Fed. Rep. of Germany

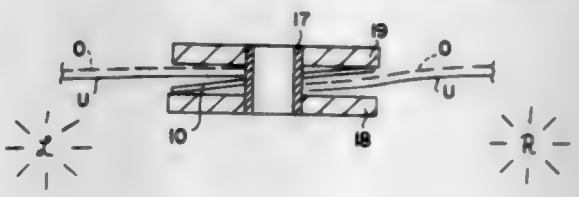
Filed Mar. 7, 1983, Ser. No. 472,755

Claims priority, application Fed. Rep. of Germany, Mar. 8, 1982, 3208314

Int. Cl.³ B42F *13/00, 3/00;* B42D *15/00*

U.S. Cl. 402—80 R **5 Claims**

1. A holder comprising a pin and annular member with a stack of sheets (13), each of said sheets being provided with a circular hole (14), a slot (15) extending from said hole (14) to an edge of said sheet, and a V-shaped cutout (16) communicating with said hole and being diametrically opposed to said slot (15), an annular flexible member (10) passing obliquely upwards through said slot (15) and said cutout (16) in said sheets (13), said annular member (10) arranged so that approximately one half thereof is below said stack of sheets and the other half above it.



4,534,672

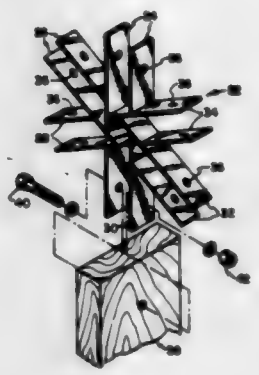
HUB FOR GEODESIC DOME CONSTRUCTION

James E. Christian, III, Rte. 2, Box 274, McKinney, Tex. 75069

Filed Feb. 23, 1984, Ser. No. 582,822

Int. Cl.³ E04B *1/32*

U.S. Cl. 403—172 **7 Claims**



1. A hub for use in the construction of geodesic domes comprising:

a plurality of pairs of elongate plate members,

each of said plurality of pairs of elongate plate members comprising two elongate plate members of dissimilar length, each having an orifice disposed a selected distance from one end thereof,

each of said two elongate plate members being disposed in spaced apart parallel relationship, one with the other, with said orifice in one elongate plate member being aligned with said orifice in the other elongate plate member, and

each of said pairs of elongate plate members being interconnected at at last three points with said plurality of pairs of elongate plate members wherein a central junction is formed with said plurality of pairs of elongate plate members extending outward therefrom.

4,534,673

ELASTOMERIC PAVEMENT MARKER

David C. May, Stillwater, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

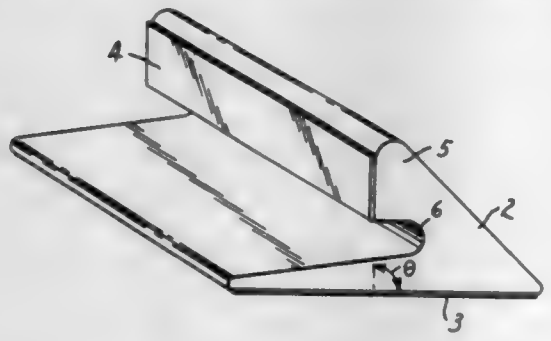
Filed Apr. 11, 1983, Ser. No. 483,603

Int. Cl.³ E01F *9/06*

U.S. Cl. 404—14 **9 Claims**

1. A roadway marker comprising a body having a base which can be attached to the surface of a roadway without requiring a recess or hole in the roadway, and which has a raised surface adapted to face oncoming traffic when the marker is mounted on a roadway, and a reflective material

attached to said raised surface on the side adapted to face oncoming traffic, said body being made of a cellular elastomer



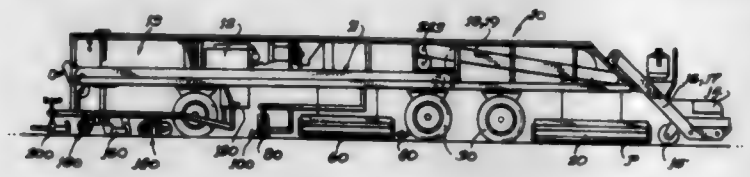
having a compressive strength of 25 percent compression at less than about 100 kPa.

4,534,674

DUAL-LIFT REPAVING MACHINE

Earl F. Cutler, Lawrence, Kans., assignor to Cutler Repaving, Inc., Lawrence, Kans.

Filed Apr. 20, 1983, Ser. No. 486,726
Int. Cl.³ E01C *23/00*
U.S. Cl. 404—75 22 Claims



1. A road resurfacing machine comprising, in combination, a chassis, preliminary heater means depending from the chassis and located adjacent the road surface; preliminary scarifier means depending from the chassis and spaced apart from the preliminary neater means for carifying a heated road surface; main heater means depending from the chassis and located adjacent the pavement behind the preliminary scarifier means for heating scarified road material; main scarifier means depending from the chassis and spaced apart from the primary heater means for further scarifying hot road material and the road surface; spray means depending from the chassis for spraying liquid asphalt over hot, scarified material; ramp means located behind the main scarifier means and in front of the spray means; rotor means associated with the ramp means for causing scarified road material to travel up the ramp and for whipping the traveling scarified material through the air past the spray means; first macadam dispensing means carried by the chassis and located behind the spray means for dispensing new hot mix material on the hot sprayed material and road surface; first mixing means located behind the first macadam dispensing means for commingling the the newly-added hot mix material with the hot, sprayed material on the road surface; first screed means connected to the chassis for leveling the hot, mixed material to form a first lift; second macacam dispensing means carried by the chassis and located behind the first screed means for dispensing additional new hot mix material atop the mixed, leveled material on the road surface; second mixing means carried by the chassis behind the second macadam dispensing means for spreading the additional new hot mix material over the first lift; and second screed means connected to the

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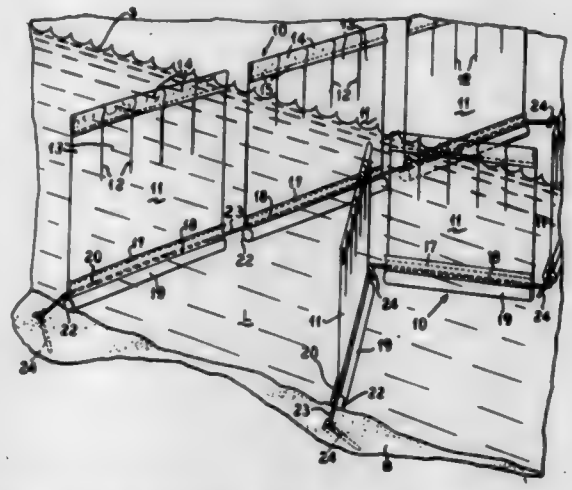
4,534,675

ARTIFICIAL SEAWEED

John P. Morrisroe, 283 Park Dr., Palatine, Ill. 60067

Filed Sep. 26, 1983, Ser. No. 535,792
Int. Cl.³ E02B *3/04*
U.S. Cl. 405—24 12 Claims

3. In a body of water having a bottom bed of particulate material, artificial seaweed deployed in said body which comprises a plurality of sheets of flexible water resisting buoyant plastics material, said sheets having folded over bottom ends, spaced parallel seals uniting the folded over ends to the sheet forming superimposed adjacent sleeves along the widths of the sheets, slits extending from the top edges of the sheets providing individual fingers across the widths of the sheets, pockets



on the upper ends of the fingers, floats in said pockets, lake bed sediment filling the bottom sleeves holding the sheets on the lake bed bottom, a flexible rope threaded through the sleeves superimposed adjacent the sediment filled bottom sleeves of the sheets, and anchors on the rope whereby the sheets are maintained in a fixed fence row position on the lake bed bottom.

4,534,676

EXCAVATING AND PROPELLING MACHINE FOR LAYING PIPELINES UNDERGROUND

Hiroshi Saito, Isehara, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,525
Claims priority, application Japan, Dec. 23, 1982, 57-194011
Int. Cl.³ F16L *1/00*
U.S. Cl. 405—184 2 Claims



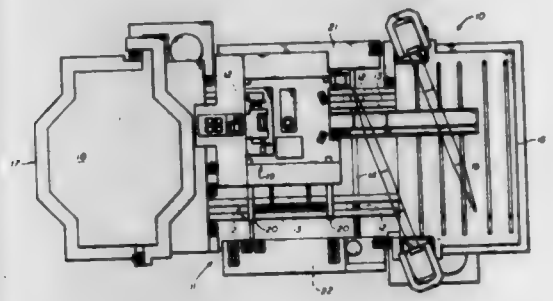
1. An excavating and propelling machine for laying pipelines underground, comprising a disk-shaped rotating cutter head having a plurality of excavating bits and a plurality of excavated earth and sand intake ports and adapted to be mounted on the leading end of a pilot excavator device body arranged to propel underground ahead of a pipeline to be laid underground; a plurality of rod-shaped rotary teeth formed integrally on the rear face of said cutter head in a manner of extending radially at uniform intervals spaced apart from one another; an annular front face plate having a plurality of excavated earth and sand passage holes communicating with the inside of said pilot excavator device body and located adjacent and opposite to said cutter head; and a plurality of rod-shaped stator teeth formed integrally on the front surface of the front face plate in a manner of extending radially at uniform intervals spaced apart from one another, said rotary teeth and said stator teeth forming in combination a plum-pudding stone crusher device.

4,534,677

SECONDARY CAPPING BEAMS FOR OFFSHORE DRILLING PLATFORMS

Edward K. Albaugh, Houston, Tex., assignor to Dolphin Titan International, Inc., Houston, Tex.

Filed Feb. 6, 1984, Ser. No. 577,265
Int. Cl.[3] E02D *21/00*
U.S. Cl. 405—203 7 Claims



1. A cantilever support means having a pair of secondary capping beams, and being secured to an existing drilling platform structure and extending therebeyond for supporting modified, self-contained drilling rigs, said existing drilling platform structure comprising,

a platform structure secured to four main supporting columns,

said modified self-contained drilling rigs being of sufficient size and weight to accommodate drilling and associated production equipment for drilling multiple wells, said modified drilling rig further comprising,

a pump package and a pipe rack deck supported on one extended end of the secondary capping beams,

an engine package and main quarters package cantilevered on the opposed extended end of said secondary capping beams,

combination tank and mud processing packages disposed on center wing deck areas on the main deck of said platform between said pump package and engine package, and

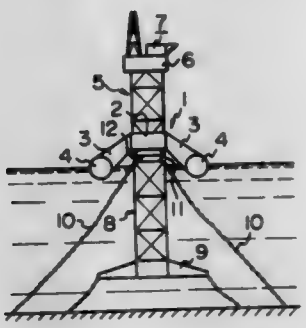
a drilling substructure mounted on a skid base between said packages.

4,534,678

OFFSHORE STRUCTURE AND METHOD OF CONSTRUCTING SAME

Takuzo Nakazato, Abiko; Koichiro Okuto, Tokyo, and Toshio Kai, Kashiwa, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka, Japan

Filed Feb. 10, 1983, Ser. No. 465,482
Claims priority, application Japan, Feb. 24, 1982, 57-28604; Feb. 24, 1982, 57-28605
Int. Cl.[3] E02B *17/00*
U.S. Cl. 405—204 9 Claims



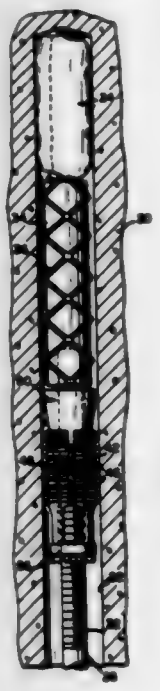
1. An offshore structure comprising a jacket assembly, a bottom tank secured to the bottom of said jacket assembly for providing ballast to said jacket, a movable tank and means for connecting said movable tank to said jacket so that said movable tank is vertically slidable along said jacket assembly, said movable tank being positionable on said bottom tank for providing ballast and storage, said movable tank being positionable spaced from said bottom tank for providing flotation to said structure, said means for connecting including a supporting frame movably coupled with said jacket assembly, a plurality of brackets connecting said movable tank to said supporting frame, and a guide mechanism between said jacket assembly and said supporting frame to guide the vertical sliding of said movable tank, and a buffer disposed between said jacket assembly and movable tank.

4,534,679

COMBINATION EXPANSION SHELL AND RESIN SECURED MINE ROOF ANCHOR ASSEMBLY

Claude C. White, Birmingham, and Frederick Carr, Tuscaloosa, both of Ala., assignors to Birmingham Bolt Company and Jim Walter Resources, Inc., both of Birmingham, Ala.

Division of Ser. No. 349,006, Feb. 16, 1982, Pat. No. 4,483,645.
This application Nov. 1, 1984, Ser. No. 667,139
Int. Cl.[3] E21D *20/02*
U.S. Cl. 405—261 6 Claims



1. A mine roof anchor assembly in combination with a dual compartment, resin and catalyst cartridge inserted into a mine roof opening, the anchor assembly including

(a) an elongated bolt having a head at one end, an unthreaded portion at the head end of the bolt and a threaded portion at the opposite end thereof

(b) a mixing and securing member engaged with the threaded portion of said elongated bolt, and rotatable therewith, for mixing the resin and catalyst

(c) an expansion member carried by said elongated bolt adjacent said mixing and securing member

(d) the resin and catalyst cartridge being ruptured by said mixing and securing member when the latter is forced upwardly into the mine roof opening, thereby permitting the resin and catalyst to gravitate downwardly between the wall of the opening and said mixing and securing member

(e) a first means threadedly engaged with the threaded portion of said elongated bolt a predetermined distance from the unthreaded portion of the elongated bolt, and in supporting engagement with said expansion member

(f) said expansion member frictionally engaging the wall of the mine roof opening during rotation of the elongated bolt and said mixing and securing member, to prevent rotation of the expansion member

(g) a second means threadedly engaged with the threaded portion of the elongated bolt and adapted to operatively engage said expansion member for urging the latter into gripping engagement with the mine roof

(h) said expansion member, first means and second means moving longitudinally of the elongated bolt upon rotation of the latter until said first means engages the unthreaded portion of the elongated bolt, continued rotation of the elongated bolt effecting actuation of said expansion member into gripping engagement with the mine roof

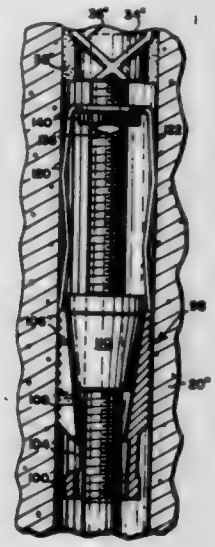
(i) the number of revolutions required to move said first means to the unthreaded portion of the elongated bolt corresponding to the number of revolutions required by said mixing and securing member to effect proper mixing of the resin and catalyst after the resin cartridge has been ruptured.

4,534,680

COMBINATION EXPANSION SHELL AND RESIN SECURED MINE ROOF ANCHOR ASSEMBLY

Claude C. White, Birmingham, and Frederick Carr, Tuscaloosa, both of Ala., assignors to Birmingham Bolt Company and Jim Walter Resources, Inc., both of Birmingham, Ala.

Division of Ser. No. 349,006, Feb. 16, 1982, Pat. No. 4,483,645.
This application Nov. 1, 1984, Ser. No. 667,140
Int. Cl.³ E21D *20/02*
U.S. Cl. 405—261 **7 Claims**



1. A mine roof anchor assembly in combination with a dual compartment resin and catalyst cartridge inserted into a mine roof opening, the anchor assembly including

(a) an elongated bolt having a head at one end and threaded for a portion of its length at the other end

(b) a mixing and securing member carried by said elongated bolt

(c) an expansion member carried by said elongated bolt adjacent said mixing and securing member

(d) the resin and catalyst cartridge being ruptured by said assembly when it is forced upwardly into the mine roof opening, thereby permitting the resin and catalyst to gravitate downwardly between the wall of the opening and said mixing and securing member

(e) a nut threadedly engaged with said elongated bolt, and in supporting engagement with said expansion member

(f) stop means for holding said nut in fixed engagement with said elongated bolt, said stop means comprising distorted threads on the threaded portion of the elongated bolt

(g) said expansion member frictionally engaging the wall of the mine roof opening during rotation of the elongated bolt, and said mixing and securing member, to prevent rotation of the expansion member

(h) a wedge member threadedly engaged with said elongated bolt for engagement with said expansion member, to urge the latter into gripping engagement with the mine roof, and

(i) means for preventing rotation of said wedge member

(j) said wedge member being initially positioned on said elongated bolt in predetermined longitudinally spaced relation to said expansion member whereby, upon rotation of said elongated bolt relative to said expansion member, said wedge member moves longitudinally of said elongated bolt until said wedge member engages said expansion member, and continued rotation causes said wedge member to activate said expansion member into gripping engagement with the mine roof

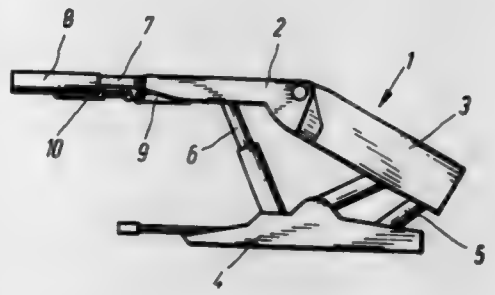
(k) the number of revolutions of said elongated bolt required to move said wedge member into engagement with said expansion member corresponding to the number of revolutions required by said mixing and securing member to effect proper mixing of the resin and catalyst after the resin cartridge has been ruptured.

4,534,681

MINE ROOF SUPPORTS

Walter Weirich, Dortmund, and Michael Dettmers, Kamen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Sep. 21, 1983, Ser. No. 534,524
Claims priority, application Fed. Rep. of Germany, Oct. 12, 1982, 3237719
Int. Cl.³ E21D *15/44*
U.S. Cl. 405—294 **4 Claims**



1. A mine roof support, comprising: a main roof-engaging structure (2), a multi-part auxiliary roof-engaging structure carried by the main structure and including a first component (7) pivotably linked to the main structure and a second component (8) slidably displaceable to extend and retract in relation to the first component, first hydraulic means (9) for setting the auxiliary structure against the roof of a mine working, second hydraulic means (10) for slidably displacing the second component in relation to the first component of the auxiliary roof-engaging structure, and hydraulic control means (16–18) operatively associated with the first and second hydraulic means for automatically reducing the setting pressure applied to the auxiliary structure by the first hydraulic means in response to the second hydraulic means being actuated to displace the second component of the auxiliary roof-engaging structure in relation to the first component thereof, to thereby maintain a temporarily reduced but still adequate support of a forward zone of the roof while simultaneously enabling the more facile displacement of the second component.

4,534,682

HAND AIRFEED POWERTOOL

Ronald F. Carlson, La Jolla, Calif., assignor to General Dynamics Corporation/Convair Div., San Diego, Calif.

Filed Dec. 27, 1982, Ser. No. 453,308
Int. Cl.³ B23B *45/04*
U.S. Cl. 408—14 **5 Claims**

1. In combination with a drilling tool having an outer housing and a drill bit feed assembly attached to said housing for controlling the rate of feed and depth of the drill bit toward and into a workpiece comprising:

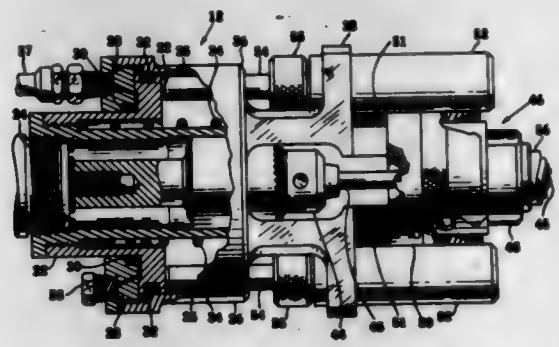
a piston fixedly attached to said housing, said piston having a face portion;

a cylinder carried by said piston for relative translation thereto;

hydraulic damper means attached to said cylinder and having translating means continually bearing against the face

portion of said piston within the cylinder to regulate the movement of said piston relative to said cylinder; and

a stop member for controlling the length of relative travel of said cylinder and piston, said stop member comprises a



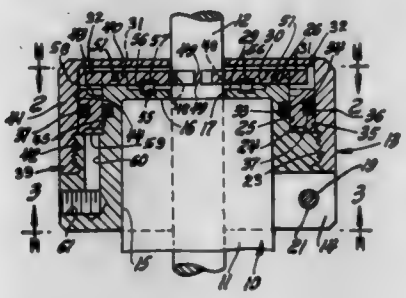
bolt threadedly engaging said cylinder and penetrating a selected depth into said cylinder for piston face engagement to control the depth of said drill bit into said workpiece.

4,534,683

RECIPROCATING DRILL FEED CONTROL ROD HOLDING MEANS

Joel D. Colliau, Northville, Mich., assignor to Ace Controls, Inc., Farmington, Mich.

Filed Jan. 20, 1984, Ser. No. 572,463
Int. Cl.³ B23B *47/22*
U.S. Cl. 408—17 **4 Claims**



1. A holding means for use with a reciprocating tool apparatus controlled by a constant velocity hydraulic feed control apparatus having a feed control rod, and wherein the holding means operates to hold the feed control rod in successive advanced positions during feeding of a tool into a workpiece by the reciprocating tool apparatus in alternate advancing and retracting steps, characterized in that, said holding means includes:

(a) a cylindrical body having a recess in one end for the releasable mounting reception of a constant velocity feed control apparatus, and having a recess end wall through which is slidably mounted the feed control rod which is engageable by the reciprocating tool apparatus during successive advancing tool movements for moving the feed control rod inwardly of the feed control apparatus against the hydraulic resistance created by the feed control apparatus;

(b) a pair of yoke members pivotally mounted in diametrically opposite positions on the cylindrical body end wall, and each yoke having a semi-circular feed control rod engaging recess disposed in close proximity to the periphery of the feed control rod;

(c) a biasing means mounted between said yoke members and said body end wall and biasing said yoke members into frictional holding engagement with the feed control rod to hold it in an advanced position when the reciprocating tool apparatus retracts a tool from a workpiece, and wherein said biasing means allows the yoke members to be pivoted into a released position from the feed control rod during an inward movement of the same, into the constant velocity hydraulic feed control apparatus during an advancing tool movement by the reciprocating tool apparatus;

(d) a cover member releasably mounted on the holding means cylindrical body and having an end wall with an opening through which the feed control rod extends;

(e) an annular piston cylinder formed between said cover and said cylindrical body, and having mounted therein an axially movable circular piston; and,

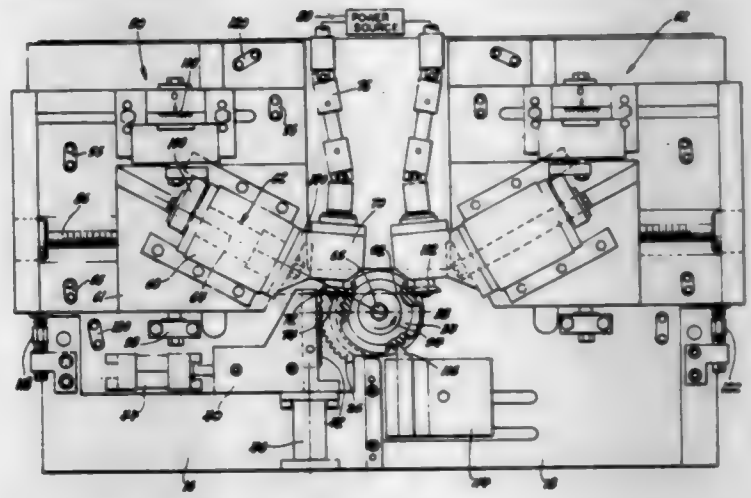
(f) a passageway means in said cylindrical body for admittance of fluid under pressure into the piston cylinder beneath the circular piston to move it in one axial direction to move the yoke arms into a feed control rod releasing position, to permit the feed control rod to be moved to an initial operating position, outwardly of the constant velocity hydraulic feed control apparatus, to an initial position for the beginning of another succession of advancing and retracting tool operations by the reciprocating tool apparatus.

4,534,684

APPARATUS FOR MILLING A GEAR FOR A DOUBLE ENVELOPING WORM GEAR DRIVE

Bernard H. Johnson, Plymouth, Mich.

Filed Sep. 30, 1982, Ser. No. 431,724
Int. Cl.³ B23F *9/14*
U.S. Cl. 409—26 **17 Claims**



1. A method for cutting the flank of a straight-sided tooth of a double-enveloping worm drive gear, comprising the steps of:

supporting a gear blank having a first axis of rotation in a fixed position during cutting, and a base circle with a center lying on said first axis; and

engaging a cutting member rotating about an axis with the gear blank along a first linear path of motion tangential to said base circle while progressively tilting the cutting member as it is being moved in a rotating cutting motion from the tip to the root of the tooth being formed.

4,534,685

TRACER CONTROL SYSTEM

Hidetsugu Komiya, Hino, and Etsuo Yamazaki, Hachioji, both of Japan, assignors to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP82/00118, § 371 Date Dec. 1, 1982, § 102(e) Date Dec. 1, 1982, PCT Pub. No. WO82/03590, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 9, 1982, Ser. No. 451,152
Claims priority, application Japan, Apr. 10, 1981, 56-54149
Int. Cl.³ B23Q *35/14;* H02P *7/06;* G06F *15/46*
U.S. Cl. 409—99 **7 Claims**

1. A tracer control system for performing tracing of a model in an arbitrary direction to cut a workpiece using a cutter on a feed shaft, according to the tracing, said tracer control system comprising:

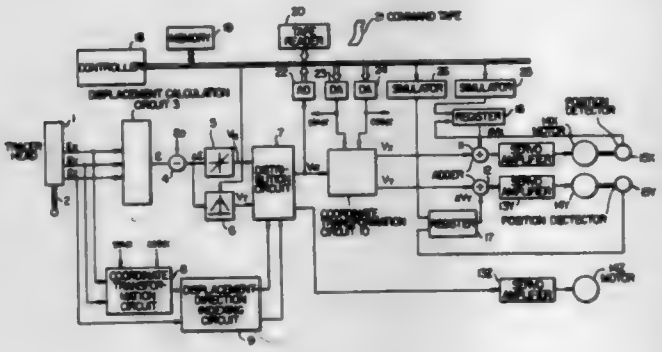
a tracer head for tracing the surface of the model and generating displacement signals; and

a combination tracer control-numerical control unit, comprising:

a numerical control unit, operatively connected to the cutter, for performing numerical control of the cutting of the workpiece by the cutter, comprising signal generating means for generating an angle signal indicating an angle of horizontal movement of the feed shaft on the basis of numerical control information; and

a tracer control unit, operatively connected to the cutter, said tracer head and said numerical control unit, for performing tracer control according to the displacement signals from said tracer head to control the cutting of the workpiece by the cutter, comprising:

a first coordinate transformation circuit, operatively connected to said tracer head and said signal generating means, for producing a displacement component



signal in the direction of the horizontal movement of the feed shaft on the basis of the displacement signals from the tracer head along an X-axis and a Y-axis and the angle signal;

feed rate means, operatively connected to said tracer head, said numerical control unit and said first coordinate transformation circuit, for generating a feed rate signal indicating velocity of the horizontal movement of the feed shaft; and

a second coordinate transformation circuit, operatively connected to said tracer head, said signal generating means and said feed rate means, for converting, in accordance with the angle signal, the feed rate signal into signals for controlling the feed rates along the X-axis and the Y-axis.

4,534,686

SPINDLE HEAD UNIT

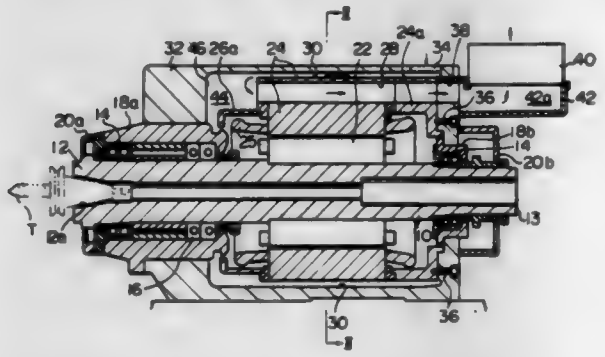
Kosei Nakamura, and Yoshikazu Takano, both of Hino, Japan, assignors to Fanuc Ltd., Hino, Japan

Filed Jan. 6, 1983, Ser. No. 455,987

Claims priority, application Japan, Jan. 8, 1982, 57-1006; Jan. 8, 1982, 57-1007

Int. Cl.³ B23B *19/02*

U.S. Cl. 409—135 **4 Claims**



1. A spindle head unit for use in a machine tool, comprising:

an outer framework having a mounting space therein;

a spindle extending axially in said mounting space of said outer framework, said spindle having front and rear portions, wherein said spindle includes a bore in the front portion thereof for receiving a tool therein;

front bearing means for supporting the front portion of said spindle and rear bearing means for supporting the rear portion of said spindle, wherein said spindle is rotatable about the axis thereof;

a drive motor for said spindle, in said mounting space, said motor including a rotor assembly rotatably fixed on said spindle and a stator assembly disposed around said rotor assembly with an annular space between said stator assembly and said outer framework, said annular space being connected to the atmosphere via air ports formed in said outer framework, wherein a gap is formed between said stator assembly and said front bearing means such that said front bearing means does not contact said stator assembly;

holding means for holding said stator assembly in said mounting space, said holding means defining at least an axial through-bore having one end fluidly interconnected with said annular space in said mounting space and the other end fluidly connected to the outside of said outer framework, wherein said holding means are cantilever holding means for holding only the rear portion of said stator assembly, thereby thermally isolating said stator assembly from the front portion of said spindle; and

a means for forming a stream of cooling air, wherein the stream of cooling air passes through said annular space and said axial through-bore and is then discharged to the outside of said outer framework.

4,534,687

POLYMERIC BELT CUTTING APPARATUS

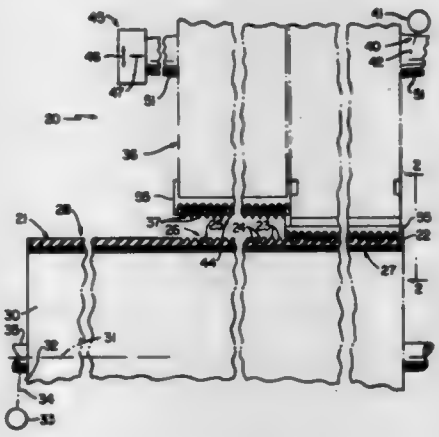
G. Brian Hetz, 1733 E. Holiday, Springfield, Mo. 65807

Division of Ser. No. 267,189, May 26, 1981, Pat. No. 4,496,269.

This application Oct. 24, 1983, Ser. No. 544,928

Int. Cl.³ B23C *3/04, 3/28;* B29H *7/22*

U.S. Cl. 409—157 **14 Claims**



1. In an apparatus for cutting a non-contoured and cured polymeric belt sleeve to define an endless power transmission belt construction having a plurality of alternating annular belt projections and grooves; each of said grooves having a pair of symmetrical radially diverging side walls; said apparatus comprising a mandrel for supporting said belt sleeve for rotation about a longitudinal axis; means for rotating said mandrel and belt sleeve about said longitudinal axis; a rotatable cutting instrument having axially spaced cutting projections for cutting said annular grooves; means for rotating said cutting instrument; each of said cutting projections having integral cutting means for cutting an associated pair of said symmetrical side walls of an associated groove; and means for moving said cutting instrument toward and away from said sleeve; said moving means being adapted to urge said cutting instrument during rotation thereof against the rotating belt sleeve to define said belt construction; the improvement in which said cutting instrument comprises a first support body having a first central axis, a first plurality of rake-like cutting bars each having an elongate axis and each having integral spaced parallel teeth which define said cutting projections and are disposed perpen-

dicular to their elongate axis, each of said teeth having integral knife-like cutting edges defining opposite sides thereof, means supporting each bar on said first support body with its elongate axis parallel to said first central axis and with each bar on a common cylindrical arrangement with the other bars, said supporting means also supporting each bar with each tooth thereof circumferentially aligned with corresponding teeth of the remaining bars, each tooth cooperating with said corresponding teeth to define said integral cutting means for cutting an associated pair of side walls of an associated groove, a second support body, said second support body having a second central axis and comprising, a second plurality of rake-like cutting bars each having an elongate axis and each having integral spaced parallel teeth which also comprise said cutting projections and are disposed perpendicular to their elongate axis, each of said teeth of said second plurality of bars having integral knife-like cutting edges defining opposite sides thereof, and means supporting each bar of said second purality on said second body with its elongate axis parallel to said second central axis and with each bar also on a common second cylindrical arrangement with the other bars, said supporting means also supporting each bar of said second plurality on said second body with each tooth thereof circumferentially aligned with corresponding teeth of the remaining bars of said second plurality, each tooth of said second plurality of bars cooperating with said corresponding teeth of the remaining bars of said second plurality to define said integral cutting means for cutting an associated pair of side walls of an associated groove, a central support shaft, and means fixing said support bodies concentrically around and in side-by-side relation on said shaft with their central axes coaxially aligned on a common axis and with said second cylindrical arrangement cooperating with said first-named cylindrical arrangement to define an extended cylindrical arrangement, said first plurality of rake-like cutting bars being angularly displaced about said first support body with the same angular displacement therebetween, said second plurality of rake-like cutting bars are also angularly displaced about said second support body with said same angular displacement therebetween, the rake-like cutting bars of said second plurality being further angularly displaced with respect to said first cutting bars yet all cutting bars being disposed on said extended cylindrical arrangement.

4,534,688

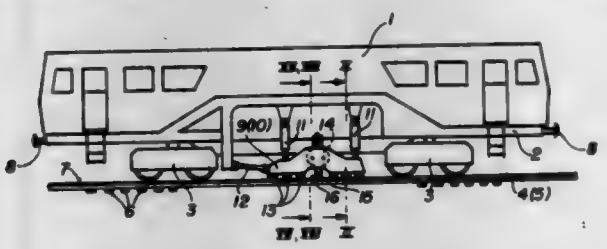
Patent Not Issued For This Number

4,534,689

MOBILE RAIL CONTOURING MACHINE

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumasch Inenindustriegesellschaft m.b.H., Vienna, Austria

Continuation of Ser. No. 141,892, Apr. 21, 1980, abandoned.
This application Jan. 31, 1983, Ser. No. 462,526
Claims priority, application Austria, Aug. 14, 1979, 5538/79
The portion of the term of this patent subsequent to Dec. 28, 1999, has been disclaimed.
Int. Cl.[3] B23D *1/20;* E01B *31/15*
U.S. Cl. 409—296 **19 Claims**



1. A mobile rail contouring machine mounted on a railroad track for continuous movement in an operating direction, the track including two rails each having a rail head defining a gage side, a field side and a running surface, the gage and field sides extending from the running surface to a lower edge of the rail head, the machine being arranged for continuously removing such running surface irregularities as ripples, corrugations and overflow metal during the continuous movement and comprising

(a) a frame running on the track on undercarriages having flanged wheels engaging the gage and field sides in a zone adjacent the running surface,

(b) a respective rail contouring tool mounting linked to the frame and associated with each rail,

(c) drive means for adjusting each mounting vertically relative to the running surface of the rail head of the associated rails and for pressing the mounting thereagainst,

(d) additional drive means for laterally pressing each mounting independently of the other mounting and without play against a selected one of the rail head sides of the associated rail,

(e) guide roller means for vertically and laterally guiding each mounting along said rail head, the guide roller means including

(1) a plurality of guide rollers engaging the running surface of said rail head and vertically guiding the mounting therealong, the guide rollers being spaced along the mounting in the operating direction and being stationary with respect to the mounting during the continuous movement, and

(2) an additional guide roller laterally guiding the mounting without play along a selected one of the sides of said rail head and engaging the selected rail head side in a region extending from the lower edge to below the zone adjacent the running surface,

(f) a rail contouring tool head including a tool holder mounted on each mounting between two of the plurality of guide rollers, and

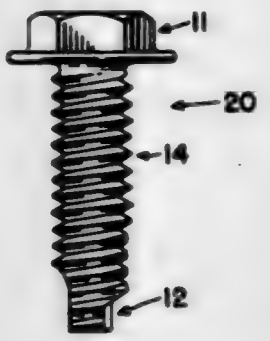
(g) a rail contouring tool mounted in the tool holder.

4,534,690

ASSYMETRICALLY SHAPED THREAD FORMING SCREW AND METHOD OF MAKING SAME

Gerald D. Barth, South Elgin, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Oct. 26, 1983, Ser. No. 545,814
Int. Cl.[3] F16B *39/30;* B21K *1/56*
U.S. Cl. 411—386 **4 Claims**

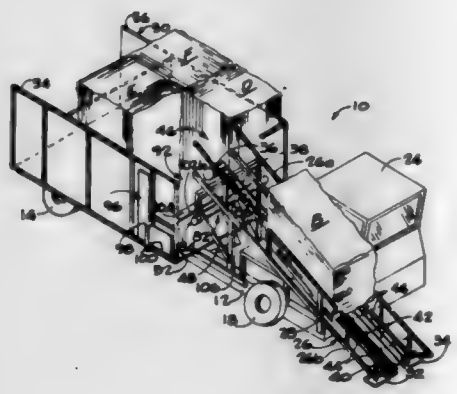


1. A thread forming fastener comprising a generally cylindrical shank with a head at one end and a tip at the other end, said tip having a generally asymmetrical cross-sectional shape with a pair of outer lead surfaces having blunt generally rounded shape, and said tip having a substantially fully formed and interrupted thread formed thereon, said tip including a pair of diametrically oppositely disposed indented inner surfaces intermediate said lead surface, one of said inner surfaces being comprised of a pair of generally flat parallel axially oriented surfaces, and one of said inner surfaces being generally arcuate and spiral in cross-section and generally parallel with said flat surfaces, said thread extending over a major portion of the length of said tip and continuing uninterruptedly at a constant pitch on at least a portion of said shank.

4,534,691
SELF-PROPELLED AGRICULTURAL VEHICLE FOR PICKING UP AND TRANSPORTING LARGE BALES OF HAY

Marvin E. Miguel, Armona, Calif., assignor to J. A. Freeman & Son, Inc., Portland, Oreg.

Filed Oct. 17, 1983, Ser. No. 542,594
Int. Cl.[3] A01D *87/12*
U.S. Cl. 414—38 4 Claims



1. An agricultural vehicle for picking up and transporting bales of hay, which comprises

a vehicle chassis and means supporting the chassis for movement over the ground,

a bale-receiving box having forward and rear ends, a floor, spaced apart lateral sides, and an entry zone at said forward end, said box being pivotally mounted on the chassis to permit tilting of the box about a horizontal axis extending transversely of the vehicle axis,

an upright wall disposed within the box extending transversely of the vehicle axis and mounted for movement in a path extending along such vehicle axis for movement from the forward to the rear end of the box,

means connected to said wall, resisting free movement of the wall rearwardly in the box along said path,

conveyor means mounted on the chassis operable to pick up and transport bales to the forward end of the box forward of said wall, said conveyor means being operable to pick up bales lying on the ground and then transport the bales, while on their sides endo therealong, the conveyor means having an off-bearing end adjacent said entry zone which is elevated above the floor of the box whereby a bale rotates over its end substantially 90° on leaving said off-bearing end and falling to the floor of the box to become positioned on its end in said entry zone of the box,

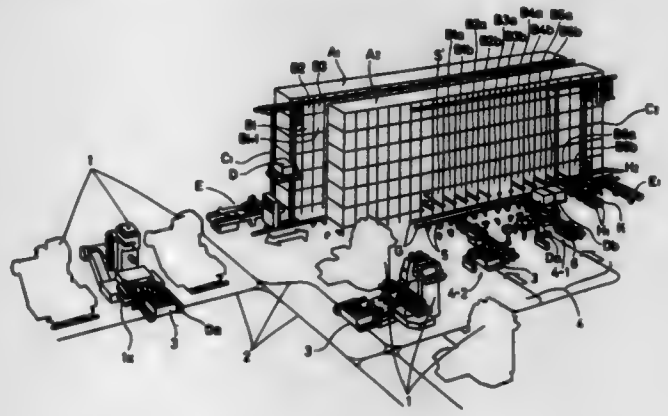
lateral pushing means for pushing a bale laterally within said box out of said entry zone into a standby zone located laterally of the entry zone within said box, such pushing of a bale freeing said entry zone for another bale, said lateral pushing means having a powered ram affixed under the floor of said box and a lateral push bar operatively connected to said ram for pushing a bale, and

rear pushing means for pushing bales within the box and in said entry zone and said standby zone rearwardly in the box whereby to free the entry zone and the standby zone to receive other bales, with such bales pushed by said pushing means pushing against said wall and rearward movement of such bales being restrained by the means resisting free movement of the wall.

4,534,692
MATERIAL FLOW SYSTEM FOR AUTOMATIC WAREHOUSES

Tadataka Shiomi; Kouichi Nabika, both of Gifu, and Takashi Kawagoe, Shiga, all of Japan, assignors to Murata Kikai Kabushiki Kaisha, Kyoto, Japan

Continuation of Ser. No. 380,776, May 21, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 654,036
Claims priority, application Japan, May 24, 1981, 56-79007
Int. Cl.[3] B65G *1/04*
U.S. Cl. 414—282 6 Claims



1. A materials flow system for an automatic warehouse serving to supply materials to and store materials from a plurality of work stations, comprising:

a pair of automatic warehouses arranged to be mutually parallel, each automatic warehouse having a plurality of housing blocks;

a first stacker crane interposed between the two automatic warehouses arranged in parallel, adapted to be capable of transferring materials to, from, and between either of said automatic warehouses;

at least one automatic trailer;

at least one delivery station, disposed adjacent said automatic warehouses and adapted to receive materials from the first stacker crane and to deliver materials to the automatic trailer, and the reverse;

a second stacker crane, disposed in front of either of said automatic warehouses, said second stacker crane having two sets of slide forks for simultaneously transferring two materials to or from a pair of side-by-side housing blocks of said automatic warehouse adjacent said second stacker crane;

at least one setting station, disposed adjacent the second stacker crane, each of said at least one setting station being capable of receiving two materials, said second stacker crane being further adapted to simultaneously transfer two materials to or from the at least one setting station;

means for transferring materials between the at least one setting area and the at least one automatic trailer; and

means for controllably guiding the at least one automatic trailer between said at least one delivery station, each of said plurality of work stations, and said at least one setting station.

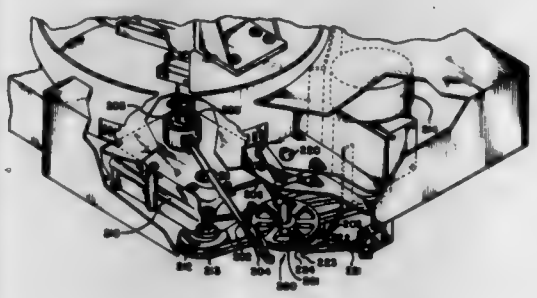
4,534,693
SILO UNLOADING APPARATUS

Richard L. Weaver, R.D. 4, Myerstown, Pa. 17067

Continuation-in-part of Ser. No. 302,191, Sep. 14, 1981, Pat. No. 4,432,687, which is a continuation-in-part of Ser. No. 191,071, Sep. 26, 1980, Pat. No. 4,337,364. This application Jun. 22, 1983, Ser. No. 506,666
The portion of the term of this patent subsequent to May 21, 2001, has been disclaimed.
Int. Cl.[4] B65G *65/46*
U.S. Cl. 414—307 3 Claims

1. In a silo unloader of the bottom unloader type having an unloading auger generally radially disposed at the bottom of

the silo and mounted for rotation on its own axis for intermittent arcuate sweeping movement across the floor of the silo, including an auger mount substantially at the center of the silo at about the floor level, said mount being rotationally moveable about a generally vertical axis and having a ring-like portion disposed in the silo floor and moveable therewith, including intermittent drive means for engaging said ring-like portion and driving it in a series of repeated intermittent arcuate motions, for driving the auger in a uniform intermittent sweeping motion across the silo floor, whereby materials may be delivered through a generally centrally located discharge



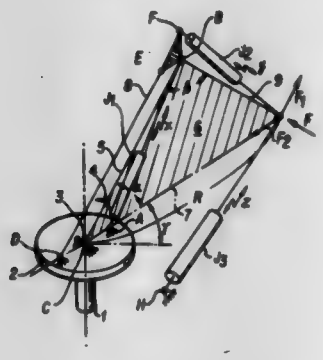
opening in the silo floor, wherein a drive shaft is provided inside said silo, and motor means is provided for driving said drive shaft in a continuous rotational motion with means operatively connecting said drive shaft and said auger for rotationally driving the auger on its own axis in a continuous rotational motion from said drive shaft, and wherein conversion means is provided in said silo at the general center thereof as part of said intermittent drive means, operatively connected to said drive shaft for converting continuous rotational motion from said drive shaft to an intermittent motion provided to said intermittent drive means.

4,534,694

MULTI-ARTICULATE ARM MECHANISM

Goro Tuda, Kobe, Japan, assignor to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Jan. 17, 1983, Ser. No. 458,706
Claims priority, application Japan, Jan. 18, 1982, 57-6485
Int. Cl.[3] B66C *23/00*
U.S. Cl. 414—735 **7 Claims**



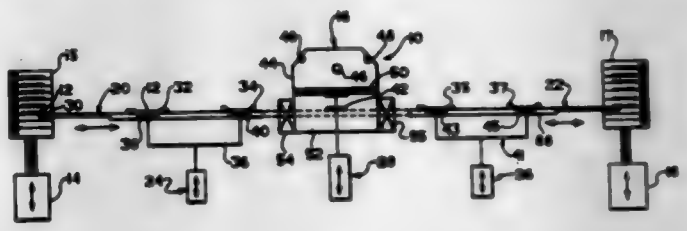
1. A multi-articulated arm mechanism, comprising:
a first base plate;
a rotary member rotatably mounted to said first base plate so as to be rotatable with respect to said first base plate about a first axis of rotation;
a first arm pivotally mounted at a first point thereof on said rotary member so as to be pivotable in a plane containing said first axis;
first positioning means for selectively changing the angle formed between said first arm and said first axis;
a second arm pivotally attached at a first point thereof to said first arm at a second point on said first arm remote from said first point of said first arm, said second arm being attached to said first arm so as to be pivotable in a plane common to both said first and second arms;
second positioning means for selectively changing the angle formed between said second arm and said first arm,
a second base plate located in a position outside said common plane; and
third positioning means pivotally mounted at a first point thereof on said second base plate, said third positioning means further comprising a slide arm pivotally connected to said second arm at a second point of said second arm remote from said first point of said second arm, wherein said third positioning means further comprises means for selectively changing the distance between said second base plate and said second point of said second arm by extending said slide arm along a straight line running between said first point of said third positioning means and said second point of said second arm.

4,534,695

WAFER TRANSPORT SYSTEM

Paul O. Stump, Byfield, and Calvin G. Taylor, Andover, both of Mass., assignors to Eaton Corporation, Cleveland, Ohio

Filed May 23, 1983, Ser. No. 497,333
Int. Cl.[3] B65G *25/00*
U.S. Cl. 414—749 **7 Claims**



1. In apparatus for processing semiconductor wafers; a wafer transport system comprising a first horizontally movable shuttle having first, second and third wafer holding elements formed thereon in equally spaced relation to one another; a first vertically movable lift mechanism underlying said first shuttle, said lift mechanism including first and second wafer engaging surfaces formed thereon and spaced apart an amount equal to the spacing between the first and second and second and third wafer holding elements; means for moving said shuttle along a linear path between a first position wherein said first and second wafer holding elements are in vertical alignment with said first and second wafer engaging surfaces and a second position wherein said second and third wafer holding elements are in vertical alignment with said first and second wafer engaging surfaces, said moving means being operable to move said shuttle at a velocity which increases gradually from zero to a maximum midway between said first and second positions and which decreases gradually to zero during the remaining travel; and means for moving said lift mechanism vertically between a first position beneath the wafer holding elements formed on said first shuttle and a second position wherein said wafer engaging surfaces are operable to lift wafers free of said wafer holding elements, said moving means being operable to move said lift mechanism at a velocity which increases gradually from zero to a maximum midway between said first and second positions and which decreases gradually to zero during the remaining travel.

4,534,696

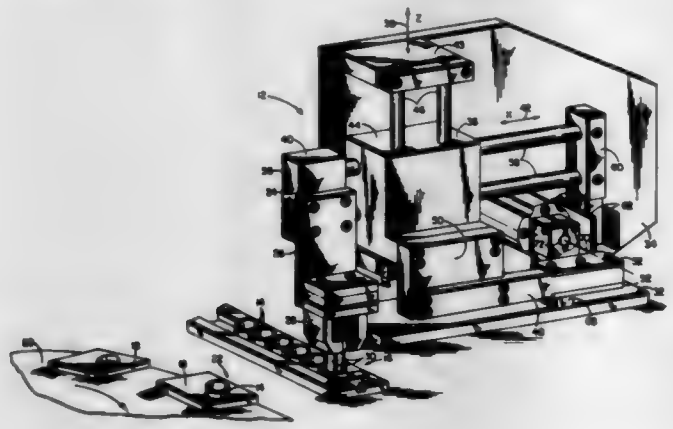
ARTICLE TRANSFER MECHANISM

Robert J. Ensminger, Winchester, Conn., assignor to The Arthur G. Russell Company, Incorporated, Bristol, Conn.

Filed May 5, 1983, Ser. No. 491,817
Int. Cl.[3] B65G *47/90*
U.S. Cl. 414—751 **17 Claims**

16. A transfer tool mechanism having a tool mounting surface movable along a path extending in two coordinate direc-

tions between two spaced end stations, said transfer mechanism comprising a base, a first body supported for movement relative to said base along a first axis fixed relative to said base, a second body supported on said first body for movement relative to said first body along a second axis fixed relative to said first body and generally perpendicular to said first axis, a crank arm supported by said base for movement relative thereto about a third axis fixed relative to said base and generally perpendicular to the plane of said first and second axes, means for repeatedly driving said crank arm back and forth about said third axis through repeated cycles each including a forward stroke starting at a first angular position and ending at a second angular position and a return stroke in the opposite direction of rotation starting at said second position and ending at said first position, a first protruding member on said crank arm, means providing a pair of spaced parallel surfaces on said first body extending generally parallel to said second axis and engaging opposite sides of said first protruding member so as to move said first body along said first axis in response to rotation of said crank arm throughout the full extent of each forward stroke and each return stroke of said crank arm, a second protruding member on said crank arm, means providing a



second pair of spaced parallel surfaces on said second body, said second pair of parallel surfaces extending generally parallel to said first axis and being arranged to receive between them said second protruding member of said crank arm during an intermediate portion of each forward stroke and during a corresponding intermediate portion of each return stroke of said crank arm so as to move said second body relative to said first body along said second axis during the time said second protruding member is received between said second pair of surfaces, each of said forward and return strokes of said crank arm having end portions on opposite sides of said intermediate portion throughout which end portions said second protruding member is out of engagement with said second pair of parallel surfaces on said second body, means providing a third pair of parallel surfaces on said second body which third pair of surfaces face one another and extend generally parallel to said first axis, protruding means on said base arranged to enter between said third pair of parallel surfaces to prevent movement of said second body relative to said first body along said second axis throughout said end portions of said forward and return strokes of said crank arm, and a tool mounting surface on said second body.

4,534,697

TRANSFER DEVICE FOR ROBOTS

Jean-Pierre Poncet, Saint Ismier, France, assignor to Allibert S.A., France

Filed Jun. 13, 1983, Ser. No. 503,594

Claims priority, application France, Jun. 17, 1982, 82 10619

Int. Cl.³ B65C *1/00*

U.S. Cl. 414—787 **5 Claims**

1. A telescopic transfer device for use in robots, comprising:

a support,

a first tubular member which is extendable/retractable over substantially a certain distance with respect to said support,

a second tubular member telescopically disposed within said first tubular member, and being extendable/retractable over substantially said certain distance with respect to said first tubular member,

a first set of three tracks oriented around an outer periphery of said second tubular member at approximate angles of 120° with respect to one another,

a first set of three rollers disposed on an inner periphery of said first member, with each roller engaging a respective track on said second member,

a second set of three tracks oriented around an outer periphery of said first member at approximate angles of 120° with respect to one another,

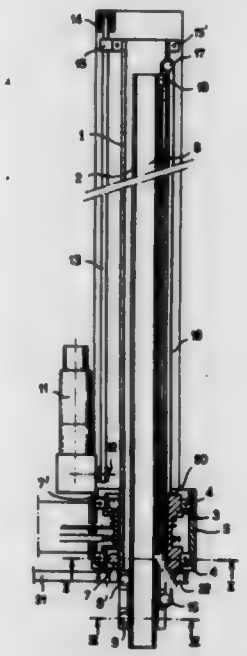
a second set of three rollers engaged with said support, with each roller engaging a respective track on said first member,

first means for extending and/or retracting said first member substantially said certain distance with respect to said support, and comprising

motor means mounted on said support,

a first pair of pulleys with one affixed to said motor means and the other mounted on said support, and

first belt means engaged with said motor means and with



said first tubular member, wound around said first pair of pulleys, and movable back and forth in a direction substantially parallel to a median axis of said first tubular member,

second means for extending/retracting said second member substantially said certain distance with respect to said first member, such that upon said first member being extended/retracted in a direction over substantially said certain distance with respect to a fixed point of reference, said second member is extended/retracted over substantially twice said certain distance with respect to the fixed point of reference,

said second extending/retracting means comprising

a second pair of pulleys, both affixed to said first tubular member, and

second belt means engaged with said second member and with said support, and wound around said second pair of pulleys,

electric and/or pneumatic control means actuatable from an extremity of said second member,

at least one flexible power supply line engaged with said control means,

at least one additional pulley situated on said first member, with said at least one power supply line passing along an interior portion of said second member substantially parallel to a median axis of said second member, around said

additional pulley, along the outer periphery of said first member, and to said support, and

means for rotating said first and second members about said respective median axes thereof, which comprises

a rotatable hub rotatably mounted with respect to said support and engaged with said second set of rollers, and

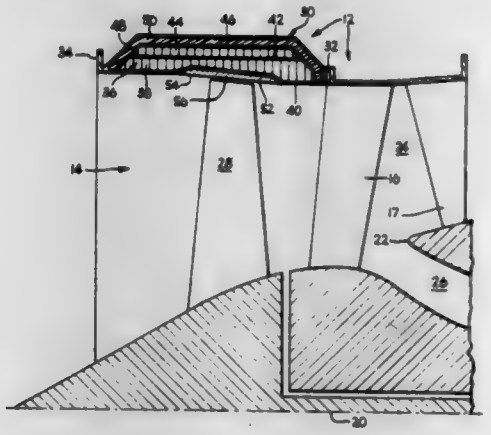
a rotatable bearing through which said first belt means is engaged with said first tubular member.

4,534,698

BLADE CONTAINMENT STRUCTURE

Michael J. Tomich, Lynnfield, Mass., assignor to General Electric Company, Lynn, Mass.

Filed Apr. 25, 1983, Ser. No. 488,563
Int. Cl.³ F01D *21/00*
U.S. Cl. 415—9 **17 Claims**



9. A blade containment structure for surrounding blades of a gas turbine engine comprising:

an annular honeycomb structure positionable radially outwardly of the entire axially extent of blade tips of said blades and including:

a radially inner honeycomb region bounded by a septum and an inner wall spaced radially inwardly therefrom and being faceable toward said blade tips; and

a radially outer honeycomb region bounded by said septum and an outer wall spaced radially outwardly therefrom; and

a fabric containment blanket disposed radially outwardly of said outer wall of said second honeycomb region and being of a type effective for containing blade fragments thrown outwardly upon damage to said blades.

4,534,699

COAL FIRED TURBINE

Clarence P. Possell, 19867 Cajon Blvd., San Bernadino, Calif. 92407

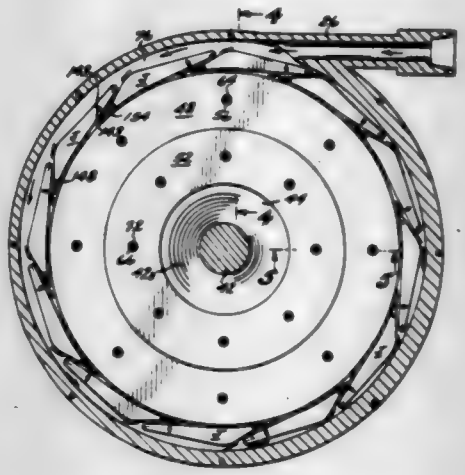
Filed Jun. 22, 1983, Ser. No. 506,785
Int. Cl.³ F01D *1/36*
U.S. Cl. 415—42 **7 Claims**

1. In combination with a source of pressurized gaseous products of combustion resulting from the burning of coal and that contains fly ash, a turbine that includes a housing that has a pair of laterally spaced side walls connected by an end wall, which end wall has an inlet therein through which a stream of said pressurized gaseous products of combustion flow to the interior of said housing; nozzle means in said interior adjacent said end wall that subdivide said gaseous products of combustion in said interior into a plurality of circumferentially spaced inwardly directed pressurized streams thereof; a centered power take off shaft that transversely spans said interior and is rotatably supported from said housing; a rotor mounted on said power take off shaft and occupying a centered position in said interior, with both of said side walls having centered outlets therein through which said gaseous products of combustion flow, said turbine being characterized by said rotor delivering rotational power to said power take off shaft to two stages, by means of "boundary layer drag" said rotor including:

a. a first circular rotor plate secured to said power output shaft and occupying a centered position in said interior;

b. a plurality of laterally spaced first ring shaped discs disposed on opposite sides of said first rotor plate in equal number within said interior, said first ring shaped discs defining a plurality of first passages of a first width therebetween;

c. a plurality of laterally spaced second ring shaped discs of substantially smaller external diameter than that of said first ring shaped discs and situated between the latter in equal number on opposite sides of said first rotor plate, said second ring shaped discs cooperating with said first ring shaped discs to define a plurality of second passages of a second width, said pressurized streams of gaseous products of combustion entering said first passages substantially tangentially thereto at a first velocity and first pressure to flow inwardly in a spiral path through said first passages to impart first stage rotational power to said power take off shaft due to the boundary layer drag imposed on said first ring shaped discs, said gaseous products of combustion exiting from said first passages at a second pressure and second velocity, said gaseous products of combustion entering said second passages at said second velocity and second pressure to thereafter flow therethrough in an inwardly directed spiral path to discharge



through said centered outlets and in so doing imparting second stage rotational power to said power take off shaft due to boundary layer drag imposed on said second ring shaped blades and portions of said first ring shaped blades adjacent thereto, with the velocity of flow of said gaseous products of combustion through said second passages being at least partially at a third velocity greater than said second velocity due to said second passages being of said second width that is substantially less than said first width, and said power take off shaft being subjected to substantially no side thrust due to said gaseous products of combustion flowing through an equal number of said first and second passages on opposite sides of said first rotor plate; and

d. first means for maintaining said first and second ring shaped discs at fixed positions relative said first circular rotor plate, with said second width being greater than the maximum overall dimension of a particle of fly ash to permit said fly ash to discharge freely through said first and second passages to said centered outlet with said first means including:

1. a plurality of first, circumferentially spaced rods supported by said first rotor plate and extending outwardly from opposite sides thereof to engage aligned openings in said first ring shaped discs;

2. a plurality of second, circumferentially spaced rods supported by said first rotor and inwardly disposed from said first rods a substantial distance, said second

rods engaging aligned openings in said first and second ring shaped discs;

3. a plurality of first tubular spacers on said first rods that are in abutting contact with said first ring shaped discs and so maintain said first ring shaped discs relative to one another that said first passages of first width are provided therebetween;

4. a plurality of second tubular spacers on said second rods that are in abutting contact with said first and second ring shaped discs and so maintain said first and second ring shaped discs relative to one another that said second passages of said second width are defined therebetween; and

5. a pair of second rotor plates of ring shape that are secured to opposite ends of said first and second rods to maintain said first and second ring shaped discs in fixed positions relative said first rotor plate.

4,534,700

EXTERNALLY MOUNTED EXHAUST-GAS TURBOCHARGER WITH UNCOOLED GAS DUCT

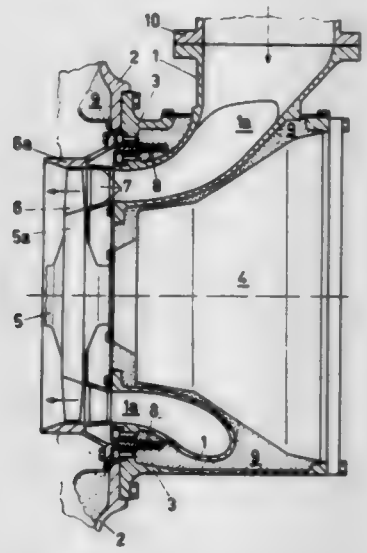
Hansulrich Hörler, Zurich, and Ambrogio Perego, Wettingen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jan. 10, 1984, Ser. No. 569,656

Claims priority, application Switzerland, Jan. 18, 1983, 263/83

Int. Cl.³ F01D *25/26*; F02C *7/20*

U.S. Cl. 415—135 **4 Claims**



1. In an externally mounted exhaust gas turbocharger of the type comprising a rigid support casing, a turbine shaft, a bearing casing carrying said turbine shaft and attached to said support casing, and an uncooled gas casing defining a duct for supplying exhaust gas, said gas casing being attached to said supporting casing by connecting means which permits said gas casing to expand radially relative to said support casing, the improvement wherein said connecting means comprises an annular supporting member which is resilient in the radial direction and which includes at least two diaphragm flanks which extend predominantly in the axial direction and which are joined together on one end by a fold and are connected at the other end by respective flanges to the hot gas casing and the supporting casing, respectively, said flanges lying at least approximately in a common radial plane; the coefficient of thermal expansion of the material of the diaphragm flanks being from 5 to 40% higher than that of the material of the hot gas casing.

4,534,701

ROTOR OR GUIDE WHEEL OF A TURBINE ENGINE WITH SHROUD RING

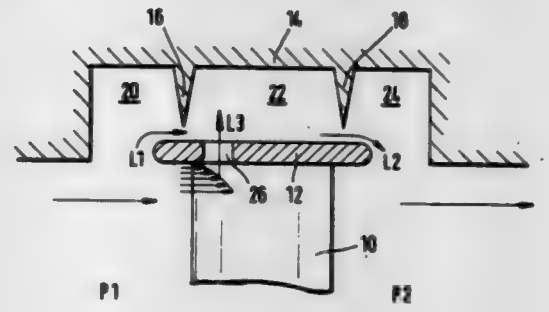
Gerhard Wisser, Grubweg 11, 7745 Schonach, Fed. Rep. of Germany

Filed Jun. 28, 1983, Ser. No. 508,724

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1982, 3225280

Int. Cl.³ F04D *29/68*; F01D *11/02*

U.S. Cl. 415—168 **5 Claims**



1. In a rotor or guide wheel of a turbine engine having a turbine blade equipped with a shroud ring, wherein the engine has a labyrinth seal including at least two sealing combs (16,18) cooperating with the blade and forming three chambers, the first of which (20) is on the upstream compression side of the blade, the second of which (24) is on the downstream side of the blade, and the third of which (22) is intermediate the first and second chambers, the improvement which comprises at least one opening (26) provided in the shroud ring (12) in the vicinity of the upstream compression side (A) of each turbine blade (10) in a region defining a source of secondary leakage flow in which the pressure drop between the blade channel and the third chamber is greatest, and substantially immediately beyond the first sealing comb (16) for connecting the blade channel with the third chamber 22 between the sealing combs (16,18) of the labyrinth seal, whereby the pressures before and after the sealing comb (16) are substantially equalized, thereby minimizing the peripheral and gap losses.

4,534,702

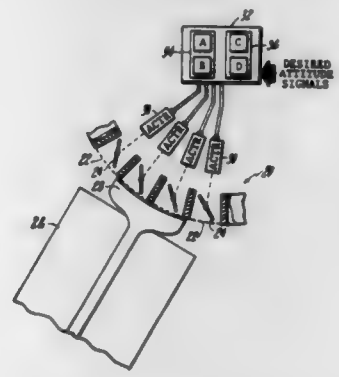
PNEUMATIC CONTROL VALVE ACTUATOR COMPUTER CONTROL ARRANGEMENT

Raymond G. Johnson, Jr., Orange, Conn.; Bill L. Trustee, Jamaica, N.Y., and William C. Fischer, Monroe, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,668

Int. Cl.³ F01D *17/00*; B64C *11/18, 27/06, 19/00*

U.S. Cl. 416—20 R **3 Claims**



1. A control system for a circulation control rotor system in an aircraft comprising:

a compressed air supply;

a plenum connected to receive compressed air from the compressed air supply;

a plurality of valves distributed in a series around a circumference of the plenum for modulating the escape of air

through openings in the plenum in response to signals for controlling the aircraft, wherein one of the valves in the series is designated as the first plenum valve and the valve which is next to the first plenum valve in the series is designated as the second plenum valve and the valve which is next to the second plenum valve in the series is designated as the third valve and the valve which is next to the third plenum valve in the series is designated as the fourth plenum valve;

means for providing signals indicative of a desired control response; and

a quad-redundant flight control computer for providing the signals for controlling the airflow to the valves in response to the signals indicative of a desired control response, including a first signal processor; a second signal processor; a third signal processor; and a fourth signal processor; characterized in that:

the first plenum valve and every incremental fourth valve in the series thereafter is responsive to the first signal processor and the third signal processor;

the second plenum valve and every incremental fourth valve in the series thereafter is responsive to the second signal processor and the fourth signal processor;

the third plenum valve and every incremental fourth valve in the series thereafter is responsive to the first signal processor and the fourth signal processor; and

the fourth plenum valve and every incremental fourth valve in the series thereafter is responsive to the second signal processor and the third signal processor.

4,534,703

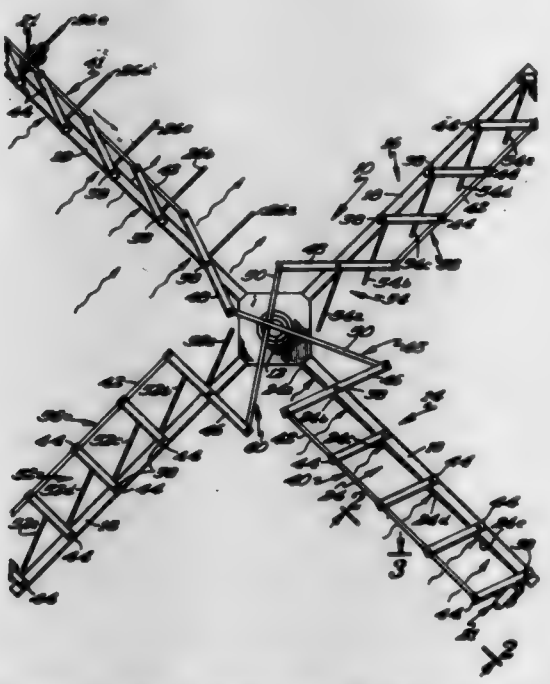
WIND POWER SYSTEM

George A. Flavell, 3425 E. 50th St., Minneapolis, Minn. 55417

Filed Aug. 30, 1983, Ser. No. 527,686

Int. Cl.[3] F03D *3/06*

U.S. Cl. 416—119 6 Claims



1. Wind power system comprising, in combination: a vertically orientated main shaft; a horizontally orientated main frame operatively attached to the main shaft; a first set of vanes, with the first set of vanes including at least a first vane; a second set of vanes, with the second set of vanes including the same number of vanes as the first set of vanes; with the vanes including at least a first wind abutment surface and means for pivotally mounting the vanes to the horizontally orientated main frame about a vertical axis generally parallel to but spaced from the main shaft, with the vanes being pivotal between a first, wind catching position and a second, wind releasing position, with the first set of vanes being located on diametrically opposite sides of the main shaft than the second set of vanes; and means for pivotally relating the first set of vanes with the second set of vanes for smoothly alternating between a first condition and a second condition as the wind power system is being rotated about the vertically oriented main shaft by the wind, with the first condition having the first set of vanes in its first position and the second set of vanes in its second position and thus allowing the wind to blow against the first wind abutment surface of the first set of vanes causing rotation of the vertically orientated main shaft and allowing the wind to pass through the second set of vanes to substantially not impede the rotation caused by the first set of vanes, and with the second condition having the first set of vanes in its second position and the second set of vanes in its first position and thus allowing the wind to blow against the second wind abutment surface of the second set of vanes causing rotation of the vertically orientated main shaft and allowing the wind to pass through the first set of vanes to substantially not impede the rotation caused by the second set of vanes, wherein the pivotally relating means comprises, in combination: a first vane set orientation pivot arm having a first end operatively attached to the first vane of the first set of vanes generally perpendicular to the vane vertical axis and having a second end; a second vane set orientation pivot arm having a first end operatively attached to the first vane of the second set of vanes generally perpendicular to the vane axis and having a second end; and a linkage arm extending between and pivotally attached about vertical axes to the second ends of the first and second vane set orientation pivot arms; a second horizontally orientated main frame operatively attached to the main shaft; a third set of vanes, with the third set of vanes including at least a first vane; a fourth set of vanes, with the fourth set of vanes including the same number of vanes as the third set of vanes; with the third set of vanes being located on the second horizontally orientated main frame on diametrically opposite sides of the main shaft than the fourth set of vanes; and means for pivotally relating the third set of vanes with the fourth set of vanes for smoothly alternating between a first condition and a second condition as the wind power system is being rotated about the vertically oriented main shaft by the wind, with the first condition having the third set of vanes in its first position and the fourth set of vanes in its second position and thus allowing the wind to blow against the first wind abutment surface of the third set of vanes causing rotation of the vertically oriented main shaft and allowing the wind to pass through the fourth set of vanes to substantially not impede the rotation caused by the third set of vanes, and with the second condition having the third set of vanes in its second position and the fourth set of vanes in its first position and thus allowing the wind to blow against the first wind abutment surface of the fourth set of vanes causing rotation of the vertically orientated main shaft and allowing the wind to pass through the third set of vanes to substantially not impede the rotation caused by the fourth set of vanes, with the pivotal position of the third and fourth sets of vanes being mechanically independent of the pivotal position of the first and second set of vanes, wherein the pivotally relating means comprises, in combination: a third vane set orientation pivot arm having a first end operatively attached to the first vane of the third set of vanes generally perpendicular to the vane vertical axis and having a second end; a fourth vane set orientation pivot arm having a first end operatively attached to the first vane of the fourth set of vanes generally perpendicular to the vane axis and having a second end; and a linkage arm extending between and pivotally attached about vertical axes to the second ends of the third and fourth vane set orientation pivot arms; wherein each set of vanes includes a plurality of vanes, and wherein the pivoting relating means further comprises, in combination: means for maintaining the plurality of vanes of each set of vanes in the same pivotal position relative to each other; and means for maintaining the plurality of vanes of each set of vanes in the same pivotal position relative to each other; wherein the means for maintaining the plurality of vanes in the same pivotal position comprises, in combination: vane orientation pivot arms having a first end operatively attached to the vane generally perpendicular to the vane vertical axis and having a second end; and an elongated member, with the second ends of the

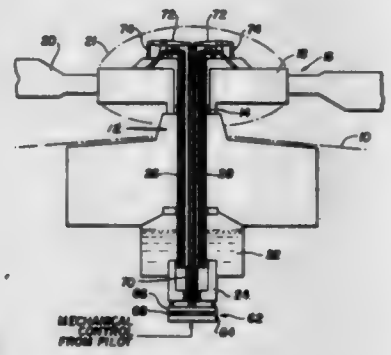
vane orientation pivot arms of each of the vanes in the set of vanes being pivotally attached to the elongated member such that the vane orientation pivot arms of each of the vanes are parallel to each other; and wherein the vane set orientation pivot arms are formed by the continuation of the vane orientation pivot arms extending beyond the vane pivot axis; wherein the vane set orientation pivot arms are formed by the continuation of the vane orientation pivot arms extending beyond the vane pivot axis; and wherein the pivotal position of the third and fourth sets of vanes are mechanically independent of the pivotal position of the first and second set of vanes.

4,534,704

HELICOPTER ROTOR CONTROL SYSTEM WITH INTEGRATED HUB

Francis H. McArdle, Norristown, Pa., assignor to The Boeing Company, Seattle, Wash.

Filed Feb. 8, 1983, Ser. No. 464,810
Int. Cl.³ B64C *27/72*
U.S. Cl. 416—158 **17 Claims**



1. A rotor control system for a helicopter, comprising:
a rotor hub having a plurality of rotor blade attaching arms, each arm defining a longitudinal axis, which axes intersect at the center of the rotor hub;
actuator means mounted to each blade attaching arm; and
means for producing rotation of each actuator means independently of its respective attaching arm and relative to the longitudinal axis of its respective attaching arm, wherein each actuator means comprises a hydraulic actuator, wherein the means for producing rotation of each actuator means comprises a hydraulic circuit including a pump, a hydraulic line for each actuator connected to the pump and to a respective actuator, and control means for controlling the flow of hydraulic fluid through the hydraulic lines, and wherein the control means are mounted in the rotor hub.

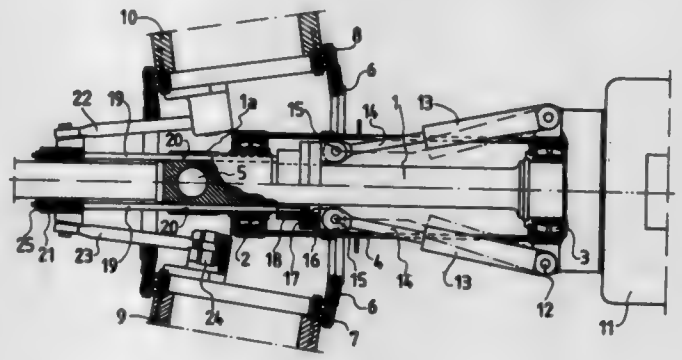
4,534,705

HORIZONTAL-SHAFT WIND TURBINE WITH FEW BLADES

Rune K. Selestam, P.O. Box 2947 b, Kungsbacka, and Ingemar K. Nygren, Kevingeringen 21, Danderyd, both of Sweden

Filed Jan. 21, 1983, Ser. No. 460,025
Int. Cl.³ F03D *7/02*
U.S. Cl. 416—162 **3 Claims**

1. In a horizontal shaft wind turbine with few blades, and including a shaft driven by said blades at high speed, a tubular housing having first and second bearings disposed at opposite ends thereof supporting said shaft, and a device for rotating the turbine blades about their chief axes, comprising:
(a) actuation means located within said housing, between said first and second bearings, enclosing part of said shaft and axially displaceably mounted thereon, said actuation means having first and second halves, said first half secured against rotation on said shaft and said second half rotatable with respect to said shaft;
(b) a power source fixedly disposed outside the turbine shaft and coupled to said second half;
(c) bearing means interconnecting said first and second halves axially while permitting rotational movement therebetween whereby said power source can move said second half to impart axial motion to said actuation means;
(d) a diametrically enlarged portion at said shaft for carrying said first bearing;
(e) a collar axially displaceable on said shaft outside said housing;
(f) links connecting said collar to said turbine blades;



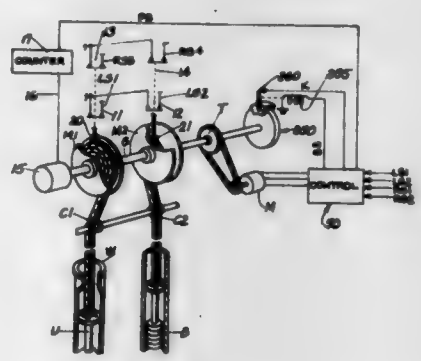
(g) rods coupled between said first half of said actuation means and said collar to transfer the axial motion to said collar; and
(h) said diametrically enlarged shaft portion carrying said first bearing located between said collar and said actuation means having formed therein axial bores, said rods passing through said bores.

4,534,706

SELF-COMPENSATING OSCILLATORY PUMP CONTROL

Richard R. Palm, Fullerton; Robert G. James, Whittier, and Robert E. Fisher, Los Nietos, all of Calif., assignors to Armco Inc., Middletown, Ohio

Filed Feb. 22, 1983, Ser. No. 468,341
Int. Cl.³ F04B *49/00*
U.S. Cl. 417—17 **23 Claims**



1. In an oscillatory pumping system of the type having a pumping member reciprocably slidable within a well bore, a counterbalance member connected to said pump member for at least partially counterbalancing the weight of the pump member to affect an oscillatory action, means for reciprocating said pumping member in upward and downward stroke directions comprising a pump cycle wherein the pump member is moved cyclically in an upward direction to a top stroke position and in a downward direction to a bottom stroke position, and a reversible electric motor for operating said reciprocating means, the improvement in combination therewith comprising control system means for applying power to and removing power from the motor at optimally determined points during the pumping cycle so as to minimize motor peak load current requirements including:
sensing means for establishing at one or more points during the pumping cycle and for a plurality of cycles, values representative of pump member movement;
means for continually calculating from said established val-

ues a first reference position in said pump cycle including means for applying power to the motor when the pump member reaches said first position and is moving in the upward direction at a point following pump member reversal at the bottom of its stroke so as to smoothly accelerate the motor to synchronous speed and to continue pump member movement in the upward direction;

first means for removing power from the motor before the pumping member reaches the top of its stroke so that the pump member reverses direction and begins moving in the downward direction;

means for continually calculating from said established values, a second reference position in said pump cycle including means for applying power to the motor when the pumping member reaches said second position and is moving in a downward direction at a point following pump member reversal at the top of its stroke so as to smoothly accelerate the motor to synchronous speed and to continue pump member movement in the downward direction; and

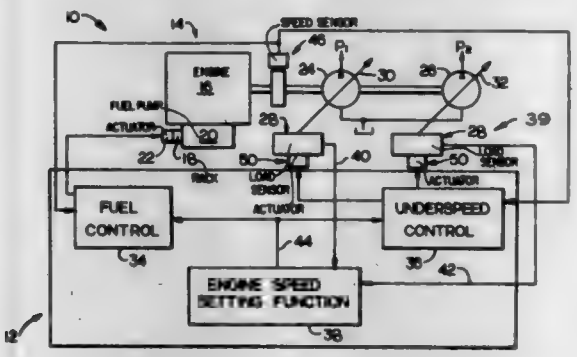
second means for removing power from the motor before the pumping member reaches the bottom of its stroke so that the pump member reverses direction and begins moving in the upward direction, said first and second calculated reference positions being chosen so as to minimize the motor peak load current when power is applied to the motor.

4,534,707

HYDROSTATIC VEHICLE CONTROL

Randall M. Mitchell, Washington, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed May 14, 1984, Ser. No. 609,675
Int. Cl.[3] F04B *49/00*
U.S. Cl. 417—34 13 Claims



1. An apparatus for controlling an internal combustion engine having a rack for controlling a fuel injection pump, and at least one variable displacement hydraulic pump, the apparatus comprising:

first means for delivering a first signal responsive to the hydraulic flow demanded of said variable displacement hydraulic pump;

control means for receiving said first signal and delivering a desired engine speed signal responsive to the magnitude of said first signal;

fuel control means for receiving said desired engine speed signal and delivering a signal responsive to the magnitude of said desired engine speed signal; and,

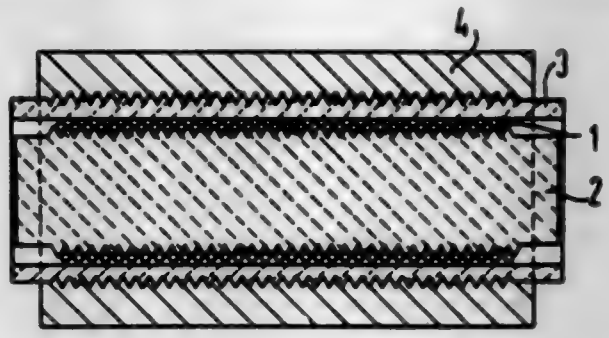
rack actuator means for receiving said signal and controlling the supply of fuel to said engine responsive to the magnitude of said signal.

4,534,708

GETTER SORPTION PUMP WITH HEAT ACCUMULATOR FOR HIGH-VACUUM AND GAS DISCHARGE SYSTEMS

Heinz Mägdefessel, Haslach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 7, 1984, Ser. No. 638,496
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332660
Int. Cl.[3] F04B *37/04*
U.S. Cl. 417—51 6 Claims



1. In a getter sorption pump for high-vacuum and gas discharge systems having at least one getter member of non-evaporating getter material and a corresponding heating element, the improvement comprising:

the element being attached to a sintered ceramic body; and

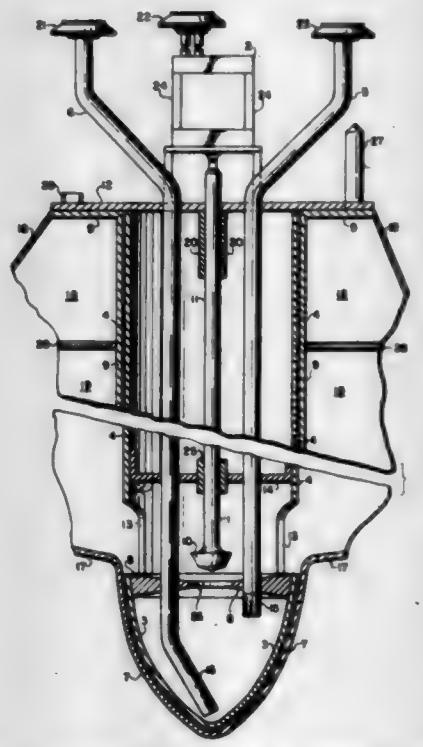
an insulating tube onto which the getter member is sintered externally thereto, said heating element and sintered ceramic body being located within the insulating tube.

4,534,709

WATER DISPLACEMENT MERCURY PUMP

Marshall G. Nielsen, Woodside, Calif., assignor to United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 20, 1984, Ser. No. 602,243
Int. Cl.[3] F04F *11/00*
U.S. Cl. 417—65 4 Claims



1. A pump for displacing a heavier fluid by a lighter fluid, comprising:

a heavier fluid;

a lighter fluid;

a process vessel adapted to receive a cannister;

a cannister adapted to receive fluid under pressure and further adapted to be received within a process vessel;

said cannister having a top wall;

said top wall having an opening therein which is adapted to

serve as a valve seat and which is further adapted to permit passage of fluid therethrough;

a fluid inlet conduit which extends through said top wall and which is fixedly attached thereto along an outer peripheral portion of said fluid inlet conduit such that a leak resistant barrier is formed between the outer periphery of said fluid inlet conduit and said top wall;

a fluid outlet conduit passing through said top wall and being fixedly secure along the outer periphery of said fluid outlet conduit to said top wall such that a pressurized barrier is formed between the outer periphery of said fluid outlet conduit and said top wall;

a valve head adapted to move into fluid-tight engagement with said valve seat in said top wall;

said valve head being movable by a valve stem;

a means for moving said valve stem to operate said valve head selectively into engagement with said valve seat; and

a support shaft fixedly attached to said top wall;

said support shaft extending away from said top wall and enclosing said fluid inlet conduit, said fluid outlet conduit, and said valve stem;

said support shaft being fixedly attached to a pump top closure wall;

whereby said lighter fluid can be introduced under pressure into said cannister through said fluid inlet conduit with sufficient pressure to displace said heavier fluid from said cannister through said fluid outlet conduit and above said top wall of said cannister, when said valve head is seated in said valve seat; and

whereby said cannister, said fluid inlet conduit, said fluid outlet conduit, said valve stem, and said valve head are removable from said process vessel by movement of said support shaft out of said process vessel.

4,534,710

SWASH-PLATE-TYPE COMPRESSOR HAVING SUCTION AND DISCHARGE DAMPING CHAMBERS

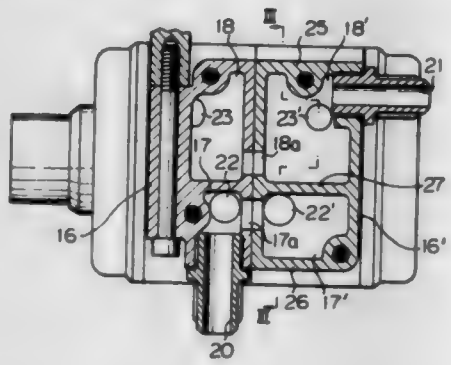
Takeshi Higuchi, Toyota; Yoshio Itakura, and Hidekazu Iwamori, both of Kariya, all of Japan, assignors to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Aichi, Japan

Filed Feb. 23, 1984, Ser. No. 583,101

Claims priority, application Japan, Mar. 2, 1983, 58-29993[U]

Int. Cl.³ F04B *1/16, 21/00*

U.S. Cl. 417—269 **8 Claims**



1. A multi-cylinder swash-plate-type compressor provided with axially extending cylinder block means having a generally circular outer circumference thereof from which mounting bracket means outwardly extend and have a length substantially equal to an outermost diameter of the compressor, and suction and discharge pipes held on the circular outer circumference of the cylinder block means and also having therein a swash-plate-operated reciprocative piston mechanism for sucking, compressing, and discharging a gas, housing means arranged so as to close axial ends of the cylinder block means and having therein suction and discharge chambers in communication with the reciprocative piston mechanism, and suction and discharge ports formed in a part of the outer circumference of the cylinder block means in communication with the suction and discharge chambers and with the suction and discharge pipes, wherein an improvement comprises damping means arranged between said suction and discharge ports of said cylinder block means and said suction and discharge pipes for suppressing pulsation in suction and discharge pressure of said gas, said damping means comprising extension means including a plurality of walls extending outward from said circular outer circumference of said cylinder block means and two of said walls being spaced apart a length substantially equal to the length of said mounting bracket means and said extension means cooperating with said mounting bracket means so as to define suction and discharge damping chambers having considerable volumes and cross-sectional areas larger than those of said suction and discharge pipes, respectively.

4,534,711

APPARATUS FOR PRODUCING ULTRAHIGH PRESSURE WATER JET

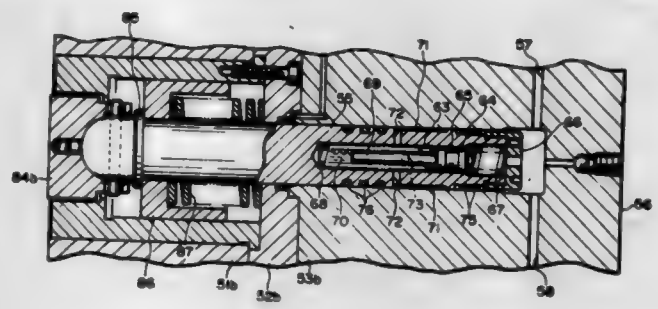
Masakatsu Wakatsuki, Ota, Japan, assignor to Wakatsuki Kikai Kabushiki Kaisha, Gunma, Japan

Filed Oct. 17, 1983, Ser. No. 542,810

Claims priority, application Japan, Jul. 1, 1983, 58-103124[U]; Aug. 8, 1983, 58-123085[U]

Int. Cl.³ F04B *1/04, 27/04;* **F01B** *31/14, 31/10*

U.S. Cl. 417—273 **3 Claims**



1. An ultrahigh pressure water apparatus, provided with a drive source for a pump, an ultrahigh pressure pump driven by said drive source and adapted to receive feed water, impart increased pressure to said feed water, and discharge said water at increased pressure, and a nozzle gun adapted to receive ultrahigh pressure water emanating from said ultrahigh pressure pump and project said ultrahigh pressure water in the form of beams, which apparatus is characterized in that said ultrahigh pressure pump comprises:

a cylinder,

a piston disposed inside said cylinder so as to be reciprocated parallelly to the axis of said cylinder,

a feed water pipe adapted to supply water to the interior of said cylinder and disposed near the end plate of said cylinder so as to communicate through a check valve with the interior of said cylinder,

a discharge water pipe adapted to discharge ultrahigh pressure water from inside said cylinder and disposed near the end plate of said cylinder so as to communicate through a check valve with the interior of said cylinder,

a piston hole formed in the surface of said piston opposed to said end plate in the axial direction of said piston substantially at the axial position thereof,

a free piston rotatably disposed inside said piston hole parallelly with the axis thereof,

an oil collecting recess formed annularly on the peripheral surface of said piston and adapted to communicate with said piston hole,

a first O-ring fitted around the peripheral surface of said free piston,

a second O-ring fitted around the peripheral surface of said piston on said end plate side of said oil collecting recess,

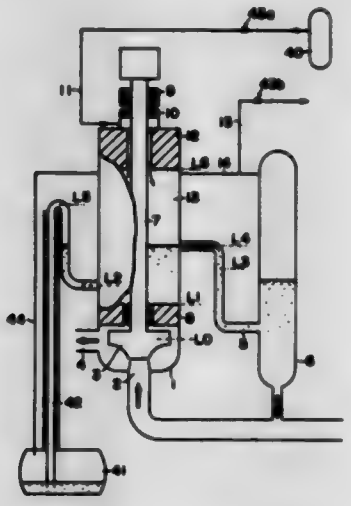
a piston ring interposed between said piston and said cylinder on the side opposite said end plate of said oil collecting recess, and

lubricating oil filling said oil collecting recess and said piston hole.

4,534,712
LIQUID METAL MECHANICAL PUMP EQUIPPED WITH EMERGENCY SYPHON

Mitsuru Kanbe, Yokohama, Japan, assignor to Doryokuro Kakunenryo Kaihatsu Jigyodan, Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 479,078
Claims priority, application Japan, Mar. 30, 1982, 57-45068[U]
Int. Cl.³ F04B *39/06*; F01D *25/16*
U.S. Cl. 417—366 3 Claims



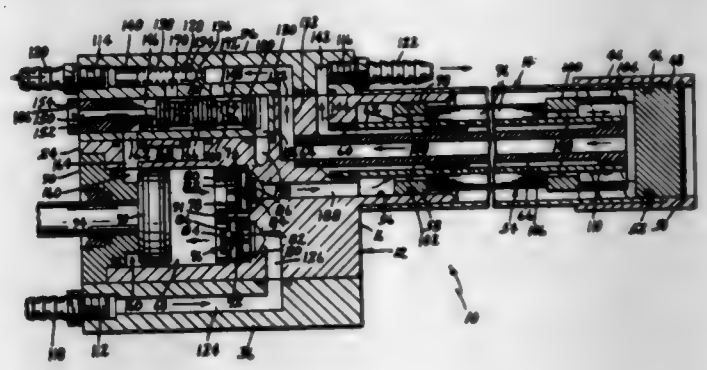
1. A mechanical pump means for liquid metal, comprising:
a pump casing having a lower hydrostatic bearing near the lower end thereof, an upper mechanical bearing at the upper end thereof, and a shield plug between said mechanical bearing and said casing and sealing the upper end of said casing and having the lower surface thereof exposed in said casing and defining with said hydrostatic bearing an overflow chamber in said casing, said overflow chamber normally having a liquid metal therein with a free surface and the remainder of said overflow chamber above said free surface being a cover gas space;
a drive shaft extending through said pump casing and rotatably supported in said bearings;
an overflow pipe connected to said pump casing at a level between the lower hydrostatic bearing and the upper mechanical bearing;
an emergency syphon system comprising a syphon pipe and a liquid metal dump tank disposed outside said pump casing, said syphon pipe having a shorter leg opening into said pump casing at a level between said lower hydrostatic bearing and the lever of said overflow pipe and having a longer leg emptying into said dump tank and having the top of the syphon pipe at a level between the level of said overflow pipe and said lower surface of said shielding plug.

4,534,713
PUMP APPARATUS

William F. Wanner, 5805 View La., Minneapolis, Minn. 55436

Filed Aug. 10, 1984, Ser. No. 639,911
Int. Cl.³ F04B *17/00*
U.S. Cl. 417—377 11 Claims

1. Apparatus for filtering a liquid, comprising:
a pump having a reciprocable rod and plunger, said pump having a space separated into driving and pumping chambers by said plunger, said driving chamber having a first end closure, said rod extending from said plunger through said first end closure, said pump being in fluid communication with polluted liquid from a liquid source;
means, attached to said rod, for driving said pump;
means for filtering purified liquid and unfiltered concentrate liquid fractions from the polluted liquid;
first means for communicating the polluted liquid from the pumping chamber of said pump to said filtering means;
second means for communicating the purified liquid fr said filtering means to an outlet port;
third means for communicating unfiltered concer liquid from said filtering means to a vent port, said third communicating means including valve means for selectively directing concentrate liquid along one of a first path from said filtering means to the drive chamber of said pump and a second path from the drive chamber to said vent port, said valve means including a movable shuttle and stem, said valve means further having a passage in which said shuttle moves between a first position for directing the concentrate liquid along the first path and a second position for directing the concentrate liquid along the second path

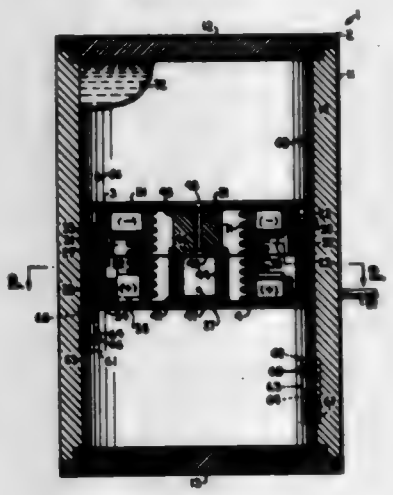


said passage having a second end closure, said stem extending from said shuttle through said second end closure, said shuttle having a stem end and an end opposite, said rod, said plunger, said stem and said shuttle having cross-sectional areas normal to directional movements so that relative displacement volumes through which said rod, said plunger, said stem and said shuttle move on opposite sides of said shuttle and on opposite sides of said plunger are the same;
third means for communicating from said driving chamber to the stem end of the shuttle; and
fourth means for communicating from said pumping chamber to the end opposite the stem of said shuttle.

4,534,714
FLUID OPERATING DEVICE

Raymond H. Smith, Rte. 2 - 5AAA, Larned, Kans. 67550

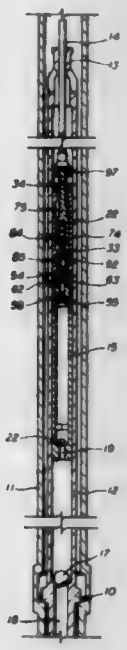
Continuation-in-part of Ser. No. 466,667, Feb. 15, 1983, abandoned. This application Aug. 3, 1984, Ser. No. 637,520
Int. Cl.³ F04B *7/04, 17/04*; F16K *31/08*; H02K *33/10*
U.S. Cl. 417—416 19 Claims



1. A fluid operating device, which comprises:
(a) a cylinder including a cylinder bore;
(b) a piston slidably movable in said cylinder bore;
(c) a first electromagnet mounted on said piston;

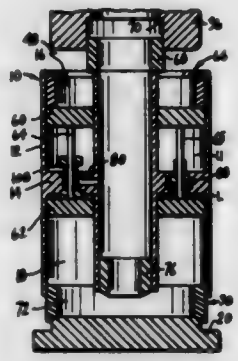
(d) a second electromagnet positioned in said cylinder bore in opposed relation to said first electromagnet;
(e) mounting means for mounting said second electromagnet in said cylinder bore;
(f) said piston being adapted to move from a retracted position to an extended position upon energization of said electromagnets by a magnetic repulsion therebetween;
(g) a spring connected to said piston and said mounting means, said spring being adapted for returning said piston to its retracted position upon deenergization of said electromagnets;
(h) an inlet valve attached to said cylinder and adapted to admit fluid to said cylinder bore upon a retraction stroke of said piston, said inlet valve including a permanent magnet member adapted for opening said valve upon deenergization of said electromagnets; and
(i) an outlet valve attached to said cylinder and adapted to release fluid from said cylinder bore upon an extension stroke of said piston, said outlet valve including a permanent magnet member adapted for opening said valve upon energization of said electromagnets.

4,534,715
TRAVELING VALVE ASSEMBLY
Roy C. Jones, 28111 Autumn La., Pinehurst, Tex. 77362
Filed Aug. 17, 1983, Ser. No. 523,844
Int. Cl.[3] F04B *39/08, 21/04*
U.S. Cl. 417—456 24 Claims



1. A traveling valve assembly adapted for connection in a pump housing, comprising
a tubular housing having a normal vertical orientation with open top and bottom ends,
a longitudinally movable check valve assembly positioned in the bottom end portion of said housing to receive fluid entering therein, and opening on flow of fluid upward and closing on cessation of upward flow of fluid,
said housing having a valve port in an upper portion thereof,
a rotary valve member positioned in operative engagement with said valve port and rotatable relative to said housing between a first position closing said valve port and a second position opening said valve port,
a longitudinally reciprocally movable member extending from said valve member through said tubular housing and out of the top end thereof,
means securing said reciprocally movable member against rotation in relation to said housing while permitting longitudinal movement,
mechanical linkage means interconnecting said reciprocally movable member and said valve member operable to convert longitudinal reciprocal movement of said movable member to rotary movement of said valve member relative to said housing,
whereby movement of said movable member a predetermined distance in one direction rotates said rotary valve member to said first position and thereafter movement of said movable member a predetermined distance in the other direction rotates said rotary valve member to said second position.

4,534,716
DOWN HOLE PUMP
James B. Tichy, P.O. Box 746 Waldo Point, Sausalito, Calif. 94965
Filed Sep. 27, 1983, Ser. No. 536,917
Int. Cl.[3] F04B *9/08*
U.S. Cl. 417—469 4 Claims



1. A pump comprising:
an elongate cylinder which is open at each end;
a partition attached to the cylinder and dividing said cylinder into approximately equal halves;
an outlet tube axially aligned with the cylinder at its center and defining a fluid path through the partition;
an upper end plate spaced-apart from one end of the cylinder and the return tube, said upper end plate having an outlet passage substantially aligned with the return tube;
a lower end plate spaced apart from the other ends of the cylinder and return tube;
upper and lower pistons mounted to reciprocate within the cylinder on either side of the partition, said pistons being attached to each other to move in unison;
means for reciprocating the pistons; and
means for alternately sealing (1) the cylinder against the upper end plate and the return tube against the lower end plate, or (2) the cylinder against the lower end plate and the return tube against the upper end plate, whereby the reciprocation of the piston will alternately (1) draw fluid into the lower half of the cylinder and discharge fluid from the upper half into the outlet passage, or (2) draw fluid into the upper half of the cylinder and discharge fluid from the lower half of the cylinder and into the outlet passage through the return tube.

4,534,717
FLUSHABLE METERING PUMP
Bernard J. McCabe, Wyandotte, and David T. Courtney, Livonia, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.
Continuation of Ser. No. 260,221, May 1, 1981, abandoned. This application Apr. 18, 1984, Ser. No. 601,110
Int. Cl.[3] F04C *2/18, 13/00;* B05B *15/02*
U.S. Cl. 418—181 4 Claims

1. A flushable, positive displacement, gear-type metering pump assembly comprising;
(A) a pump housing;
(B) inlet and outlet chambers within said pump housing;
(C) gear means comprising two cylindrical gears disposed within said pump housing, being rotatable such that gear faces thereof mesh and form a seal which separates said

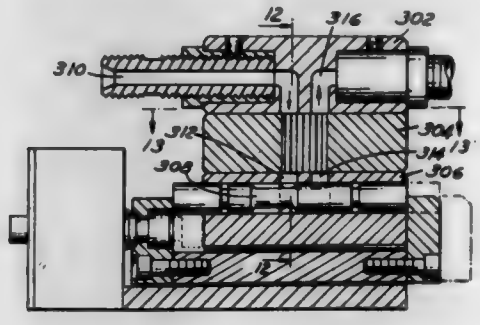
inlet and outlet chambers, and being capable of carrying metered amounts of fluid between said gear faces and the wall of said pump housing from said inlet chamber to said outlet chamber;

(D) means for driving said gear means:

(E) channel means for conveying fluid into said inlet chamber and directing said fluid against said gear faces exposed to said inlet chamber;

(F) channel means for conveying fluid from said inlet chamber to valve means;

(G) channel means for conveying fluid from said valve means to said outlet chamber, said channel means being disposed such that fluid passing therethrough into said outlet chamber is directed against said gear faces in a direction substantially parallel to the axes of said gears from a location substantially near one end of said axes;



(H) valve means which may be (i) in a closed mode when said metering pump assembly is in a metering mode such that fluid may pass from said inlet chamber to said outlet chamber only by being carried between said gear faces and said wall of said pump housing and (ii) in an open mode when said metering pump assembly is in a flushing mode such that pressurized fluid may pass from said inlet chamber to said outlet chamber not only between said gear faces and said wall of said pump housing, but also through said channel means (F), said valve means, and channel means (G); and

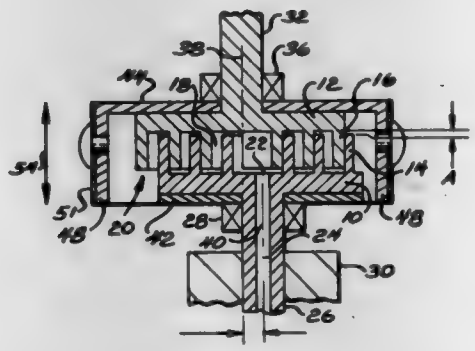
(I) channel means for conveying fluid from said outlet chamber and out of said metering pump assembly, all of said channel means (E), (F), (G) and (I) at the ends of said gear faces being sustantially parallel to the axes of said gears.

4,534,718

POSITIVE DISPLACEMENT SCROLL APPARATUS WITH BAND LINKING SCROLLS

Edward S. Blain, Rockford, Ill., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Jul. 5, 1984, Ser. No. 627,968
Int. Cl.³ F01C *1/04, 17/00*
U.S. Cl. 418—55 **10 Claims**



1. A positive displacement apparatus comprising:

first and second scrolls having interfitting vanes adapted to define at least one fluid receiving pocket movable between an inlet and an outlet;

means for causing the vane on one of said scrolls to move in an orbital path relative to the vane on the other scroll such that said pocket moves between said inlet and outlet; and

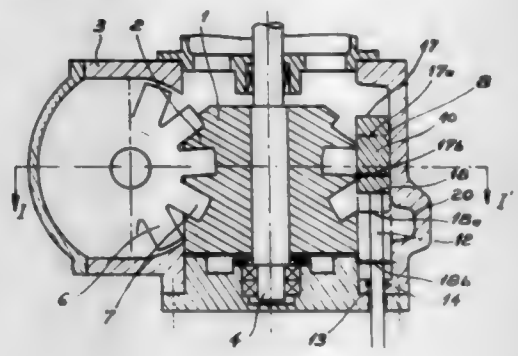
means coupling said scrolls together to prevent substantial relative angular movement therebetween allowing said orbital movement including a flexible, ring-like band interconnecting said scrolls.

4,534,719

VOLUMETRIC SCREW-AND-PINION MACHINE AND A METHOD FOR USING THE SAME

Bernard Zimmern, 27, rue Delabordére, 92200 Neuilly sur Seine, France

Filed May 9, 1983, Ser. No. 492,637
Claims priority, application France, May 13, 1982, 82 08324
Int. Cl.³ F04C *2/00, 18/00*
U.S. Cl. 418—195 **11 Claims**



1. A volumetric screw-and-pinion machine such as a compressor or an expansion machine comprising, in a combination, a screw having a cylindrical outer profile, provided with several threads and rotatably mounted inside a stationary casing, at least one pinion-wheel meshing with the screw, and a slide displaceably mounted near the pinion-wheel in a channel made in the casing parallel to the axis of the screw, the slide comprising a body located in the channel and having a concave face which matches with the cylindrical outer profile of the screw and two end-edges, one of which is on a low pressure side of the body and the other of which is on a high pressure side of the body, a stationary high pressure port being provided in the casing between the pinion-wheel and the channel, wherein the slide is movable between two conditions i.e. a first condition including a series of full load positions in which the slide body uncovers in the casing beyond the high pressure edge a high pressure portion of said channel, while the slide body, said high pressure portion of said channel and the stationary port are together substantially covering the threads of the screw which are in mesh with the pinion-wheel, and a second condition in which the slide body substantially obturates said high pressure portion of said channel and, remote from the high pressure edge, uncovers a low pressure portion of said channel extending over at least part of the threads which are in mesh with the pinion-wheel teeth, wherein in at least the first of said conditions, the slide is displaceable to vary the extent of the uncovered portion of said channel while maintaining obturation of the other portion of said channel.

4,534,720

APPARATUS FOR THE PREPARATION OF BONDING FIBERS FROM POLYMER DISPERSIONS

Richard Büng; Karl Gans; Gerold Schreyer, all of Ludwigshafen, and Gerhard Welzel, Mannheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 20, 1982, Ser. No. 400,045
Claims priority, application Fed. Rep. of Germany, Jul. 22, 1981, 3128873
Int. Cl.³ B22F *9/00*
U.S. Cl. 425—7 **3 Claims**

1. Apparatus for the preparation of bonding fibers, especially for the production of nonwoven materials by a wet-lay process, comprising means for combining a polymer dispersion, containing an anionic or nonionic dispersant, and an aqueous

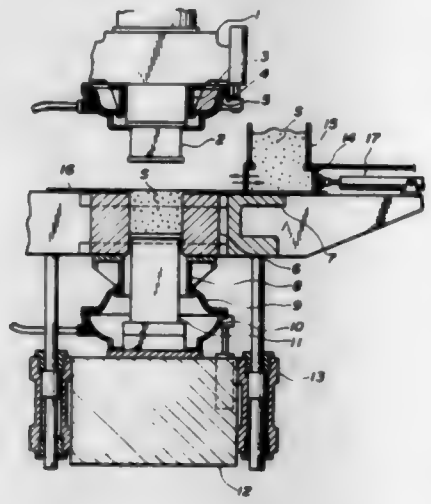
solution, containing a dissolved cationic precipitant and causing fiber formation from precipitated polymer particles, which apparatus comprises: a feed funnel for maintaining a column of liquid, a nozzle for introducing the polymer dispersion into said feed funnel and a metering device for the precipitant, which are aimed at an angle into the feed funnel, and a homogenization chamber connected to the feed funnel via a gap, and thence to a discharge chamber having a discharge port, whereby a vortex is produced in the said funnel and a dispersion thread of polymer forms therein and is broken into fiber lengths as the liquid and thread flow from the funnel to said homogenization chamber.

4,534,721

BRICK-FORMING VACUUM PRESS

Shigeo Iwasaki, Okayama, and Hiroshi Haguchi, Saidaiji, both of Japan, assignors to Mitsuishi Fukai Tekkosho Ltd., Okayama, Japan

Continuation-in-part of Ser. No. 333,821, Dec. 16, 1981, Pat. No. 4,417,864. This application Oct. 12, 1983, Ser. No. 541,172
Claims priority, application Japan, Oct. 14, 1982, 57-180197
The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.
Int. Cl.³ B30B *11/02*
U.S. Cl. 425—73 **12 Claims**



1. A vacuum press for forming brick compacts, comprising,
a die, a top plunger and a bottom plunger all disposed on a common vertical central axis,
upper and lower vacuum chamber means for enclosing upper and lower spaces which surround the top and bottom plungers and extend to the die,
at least one of said vacuum chamber means including a sealing flange and a flexible bowl-like skirt, said sealing flange being connected to said flexible skirt.

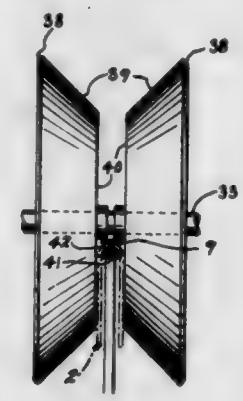
4,534,722

FORMING AND CONVEYING OF BAKED CONFECTION SHELLS

Thomas H. Lutsey, and Vernon L. Bero, both of Green Bay, Wis., assignors to Gold Bond Ice Cream, Inc., Green Bay, Wis.

Filed Apr. 16, 1984, Ser. No. 600,764
Int. Cl.³ A21C *9/00, 15/02*
U.S. Cl. 425—104 **19 Claims**

1. An apparatus for forming and conveying hot baked shells for use in confections, comprising, in combination:
(a) pick-up means for receiving a plurality of hot baked relatively soft confection discs in successions and for feeding said discs in a longitudinal direction,
(b) rotary forming means disposed downstream of said pick-up means for receiving said discs therefrom and for forming said hot baked discs into lap folded taco-shaped shells having generally parallel spaced legs joined by a folded portion,
(c) an elongated fixed conveyor rail extending downstream from said forming means for receiving said shells therefrom so that said shells hang from said rail,



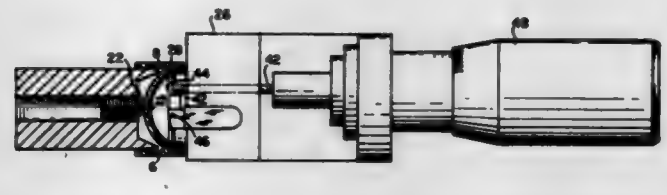
(d) and driven belt means disposed above and generally coextensive with said conveyor rail for frictionally engaging and slidingly driving said hanging shells progressively along said rail toward a discharge point.

4,534,723

CUTTING DEVICE FOR THE PRECISION TRIMMING OF THE EDGE OF A CENTRIFUGALLY CAST LENS

Michael A. Dillon, Rockaway Point, and David L. Rawlings, Bayville, both of N.Y., assignors to International Hydron Corporation, Woodbury, N.Y.

Filed Jan. 30, 1984, Ser. No. 575,250
Int. Cl.³ B29C *17/08, 25/00*
U.S. Cl. 425—289 **8 Claims**



1. A cutting device for trimming a selected peripheral edge segment of a lens secured within a mold, said mold having a flange with an annular face disposed normal to the axis of the mold and said annular face defining a cavity, said cavity having a base into which the lens is secured and the exposed outer surface of the base disposed within a peripheral skirt extended from one end of the mold; said cutting device comprising:
(a) securing means adapted to be disposed and secured within the extended skirt of the mold, said securing means having a centrally disposed projected member adapted to abut the outer surface of the base of the cavity at the longitudinal axis of the mold so that said secured mold can pivot on said projected member;
(b) cutting support means having a longitudinal axis and a support base which is adapted to seat and slide upon the annular face of the flange of the mold;
(c) cutting means secured to the cutting support means, said cutting means having a cutting edge which is radially offset from the longitudinal axis of the cutting support means and projects beyond the support base of said support means by a predetermined amount;
(d) rotatable means for rotating at least one of the means selected from the group consisting of the securing means and the cutting support means; and
(e) means for permitting relative movement between the securing means and the cutting support means from a first position where said support base of the cutting support means is axially aligned with and spaced apart from the face of the flange of the mold such that the cutting edge is disposed adjacent at least a peripheral edge segment of the lens, to a second position in which the cutting edge contacts said at least peripheral edge segment of the lens

to remove a portion of the lens until said support base of the cutting support means contacts and slides on the annular face of the flange of the mold so as to insure proper alignment of the mold with the cutting edge and thereby impart a precision trimming of the peripheral edge segment of the lens.

4,534,724

APPARATUS FOR PRODUCING PROFILED STRANDS

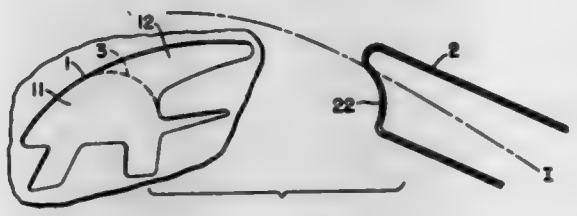
Rolf Fischer, Hanover, and Dietmar Hermann, Garbsen, both of Fed. Rep. of Germany, assignors to Continental Gummi-Werke Aktiengesellschaft, Hanover, Fed. Rep. of Germany

Filed Jul. 1, 1983, Ser. No. 510,366

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1982, 3224906

Int. Cl.³ B29C *17/14*

U.S. Cl. 425—295 **1 Claim**



1. An apparatus for producing, with an extruder having an inlet and a nozzle opening, a profiled strand which is made of elastomeric material, said strand produced in practically infinite lengths having a curved outer contour and being provided with sealing lips along some of the portions of the curved outer contour thereof; said apparatus including in combination therewith a cutting knife which is arranged after said nozzle opening when viewed in the direction of extrusion, said cutting knife being movable transverse to the longitudinal direction of said profiled strand such that said cutting knife also can be advanced over the cross section of said sealing lips; said cutting knife having a curved shape which conforms to the adjacent outer contour of said profiled strand which is cut by said cutting knife pursuant to a prescribed pattern in such a way as to vary cross-sectional shape and to remove portions of the sealing lip from the profiled strand while the elastomeric material is still predominantly unpolymerized in the plastic state for reprocessing thereof, said cutting knife being formed by a relatively narrow high-strength metal band of steel drawn back and bent into itself over a curvature which conforms to the outer contour of said profiled strand still predominantly unpolymerized to avoid drawbacks of time-consuming and uneconomical mechanical cutting of unusable polymerized elastomeric material, said cutting knife being pivotable over a curved line up to a limiting line to cut off a cross-sectional portion that emerges from the sealing lip and means to return this cut-off cross-sectional portion to the inlet of the extruder for reprocessing of the elastomeric material which is still predominantly unpolymerized in the plastic state.

4,534,725

APPARATUS FOR MANUFACTURING OVENABLE PAPERBOARD ARTICLES

Donald J. Hemmelgarn, Minster, and Arthur L. Grow, Versailles, both of Ohio, assignors to International Paper Company, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,305

Int. Cl.³ B29C *17/00*

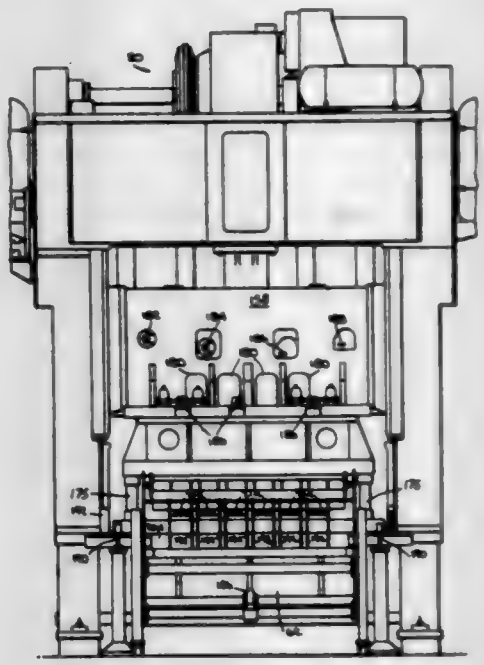
U.S. Cl. 425—394 **19 Claims**

1. A system for forming a web material into a finished product of a desired shape, said system comprising:

first and second dies for cooperating to press a blank between them to form the blank;

reciprocating means for reciprocating said first die along a reciprocation path having a first portion in which said first die is out of contact with said blank and said second die, a second portion in which said first die is in contact with said blank and in partial operative engagement with said second die, and a third portion in which said first die is in full operative engagement with said second die with said blank between said dies; and

reciprocating support means for said second die for reciprocating said second die along with said first die while maintaining said second die in full operative engagement with said first die, with a blank between said dies, while said reciprocating means for said first die is moving said first die along said third portion of the reciprocation path of said first die, for maintaining the blank in dwell between said dies with sufficient pressure for forming, while said dies move along said third portion of said reciprocation path.



4,534,726

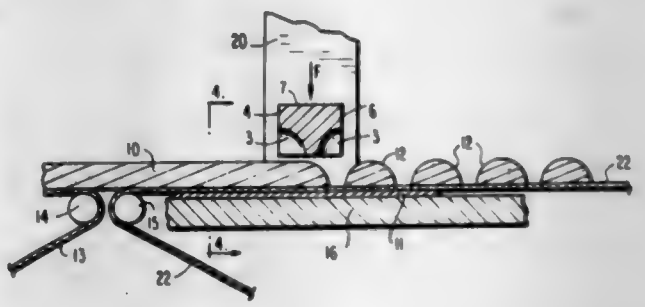
APPARATUS HAVING SHIMS UNDERLYING PORTIONS OF A DIE

William J. Simelunas, Glen Rock, N.J., assignor to Nabisco Brands, Inc., Parsippany, N.J.

Filed Oct. 11, 1983, Ser. No. 540,983

Int. Cl.³ A21C *5/00, 11/10*; B29C *17/08*

U.S. Cl. 425—363 **29 Claims**



1. An apparatus for producing separate pieces from an extrudate rope, comprising:

a die having a generally flat lower surface;

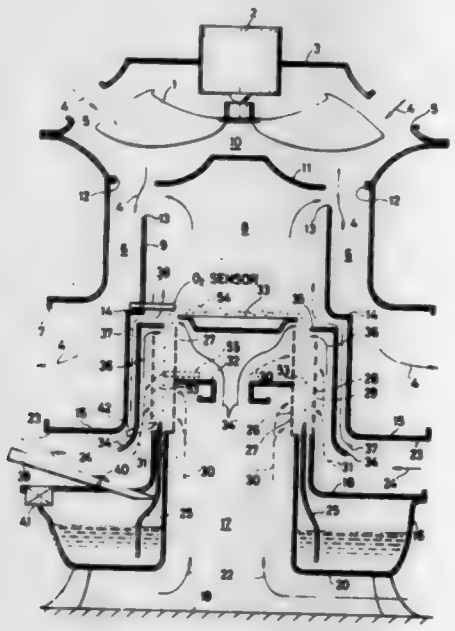
a means for driving the die in a cyclic operation having an upstroke and a downstroke, in which, at some point in the cycle, the die travels with a downward velocity as well as a forward velocity;

a means for conveying an extrudate rope under said generally flat surface of said die said forward velocity being in the direction of conveyor movement;

and shims underlying predetermined portions of said die;

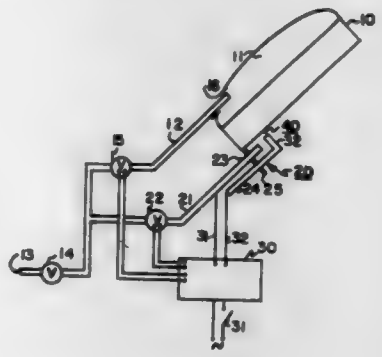
said means for conveying overlying said shims;
and a support underlying said means for conveying and said shims;
said die having opposed pairs of indentations formed therein;
said indentations opening into said lower surface of said die;
said opposing pairs of indentations lying generally in a straight line along a forward direction of travel of the extrudate rope;
and said shims underlie predetermined portions of said die between said indentations, so that during the downstroke, extrudate between said shims is forced toward said indentations;
whereby, the die moves downward against the extrudate rope to separate the extrudate rope into pieces, the lower surface of the die and the shims having dough forced therebetween toward areas where no shims are present, thereby minimizing scrap loss; and whereby during a downstroke, the die forms a trailing edge of a leading piece as well as a leading edge of a trailing piece.

4,534,727
LIQUID FUEL BURNER HAVING AN OXYGEN SENSOR LOCATED IN A FLAME
Mituhiro Imajima, Koriyama, Japan, assignor to Matsushita Electric Industrial Company, Limited, Japan
Filed Nov. 12, 1981, Ser. No. 320,761
Claims priority, application Japan, Nov. 13, 1980, 55-160143
Int. Cl.³ F23N *5/00*
U.S. Cl. 431—76 **13 Claims**



1. A liquid fuel burner comprising:
a capillary wick partially immersed in a fuel tank for vaporizing the liquid fuel;
means for igniting the vaporized fuel;
perforated, concentrically arranged inner and outer members for defining a primary combustion area adjacent to an upper edge of said wick to provide combustion of said ignited vaporized fuel with primary air supplied through the perforation of said inner and outer members thereby generating a primary flame, and a third member defining a secondary combustion area above said primary combustion area and admitting secondary air to said secondary combustion area for effecting the combustion of unburned component of said fuel vapor with the secondary air thereby generating a secondary flame;
an oxygen sensor located in said secondary flame and providing an output signal; and
a safety device operable in response to said output signal from said oxygen sensor,
said safety device comprising electrical burner control means including:
safety means responsive to an output signal from said oxygen sensor for removing said wick from said primary combustion area;
first timing means for activating said means for igniting for a first predetermined time period after energization of said burner control means; and
second timing means for locking said capillary wick in a predetermined position for a second predetermined time period after energization of said burner control means,
said fuel burner comprising:
wick positioning means for positioning said wick to a raised position and
power switch means responsive to said wick positioning means for energizing said burner control means when said wick is in said raised position,
said wick positioning means responsive to said second timing means for locking said capillary wick in said raised position for said second predetermined time period upon activation of said power switch means,
said safety means comprising further means for activating said wick positioning means to lock said capillary wick in said raised position in response to a signal from said oxygen sensor indicative of an oxygen concentration above a predetermined threshold and for deactivating said wick positioning means to unlock said capillary wick means in response to a signal from said oxygen sensing means indicative of an oxygen concentration less than said predetermined threshold.

4,534,728
COMBINATION GAS ENRICHER, SPARK IGNITER, FLAME SENSOR
Joseph A. Vogels, Long Beach, Calif., assignor to Honeywell Inc., Minneapolis, Minn.
Filed Apr. 2, 1984, Ser. No. 595,878
Int. Cl.³ F23N *5/10*
U.S. Cl. 431—80 **3 Claims**

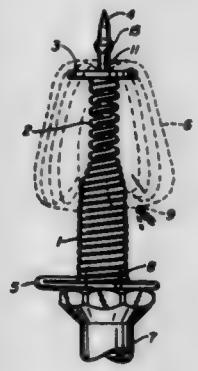


1. An improvement in an electrical ignition apparatus for igniting a main gas burner being supplied with an air and gas mixture having a high air to gas ratio wherein an air to gas ratio is reduced in an area where the electrical ignition apparatus produces an ignition spark to enhance ignition with less ignition power, the improvement comprising
a gas supply pipe and an igniter electrode connected by an insulating material to form a single unit adapted to be mounted adjacent a main burner receiving a gas mixture having a high air to gas ratio, said gas supply pipe being adapted to be connected to a source of gas under pressure for furnishing pure gas to the area where a spark is to occur to reduce said air to gas ratio,
a source of high voltage having two output terminals for producing an ignition spark, and
means connecting one of said output terminals to said igniter electrode and a second of said output terminals to said pipe whereby said ignition spark generated between said electrode and said pipe is surrounded by an air and gas mixture with a lower air to gas ratio than the gas mixture furnished to the main burner to enhance ignition of the main burner gas mixture.

4,534,729
MANTLE SUPPORT DEVICE

Ward L. Kelly, Santa Rosa, Calif., assignor to 49er Products, Sun Valley, Calif.

Filed Sep. 28, 1983, Ser. No. 536,748
Int. Cl.³ F21H *7/00*
U.S. Cl. 431—110 15 Claims



1. In a device for the burning of gas by means of a mantle, the improvement being a support for said mantle comprising:

A. attachment means for connecting the support to a gas outlet tube emanating from said device;

B. lower body means connected to the attachment means characterized as being substantially incapable of communicating significant amounts of gas from the interior to the exterior of the lower body means;

C. upper body means connected to the lower body means characterized as having a substantially porous side wall for the communication of gas to the exterior of the upper body means, wherein said upper and lower body means comprises a wire wound in the shape of a spring;

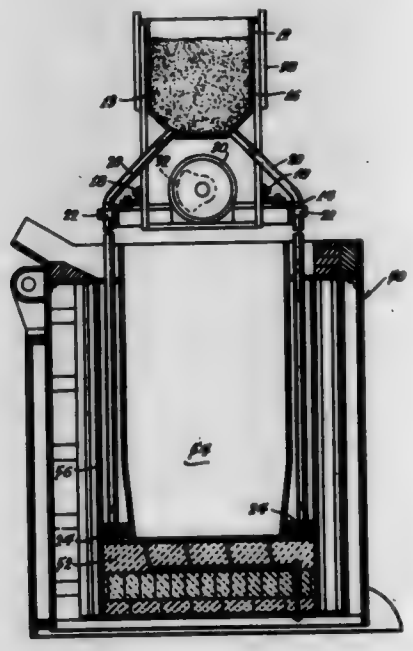
D. a support plate having a substantially circular configuration being connected to said upper body means; and

E. mantle piercing means emanating from said support plate.

4,534,730
METHOD OF AND APPARATUS FOR FORMING A LINER IN A FURNACE OR OTHER VESSEL

Richard B. Kraus, Barrington, Ill., assignor to General Kinematics Corporation, Barrington, Ill.

Filed May 31, 1984, Ser. No. 615,773
Int. Cl.³ F27D *1/16*; C21B *7/04*
U.S. Cl. 432—3 10 Claims



1. An apparatus for forming a lining of particulate material in a vessel having an inner wall, a form being disposed in the vessel and being of a size such that a space separates the form from the inner wall, comprising:

a hopper for storing the particulate material;

a plurality of material delivery tubes communicating with the hopper and extending into the space between the form and the inner wall;

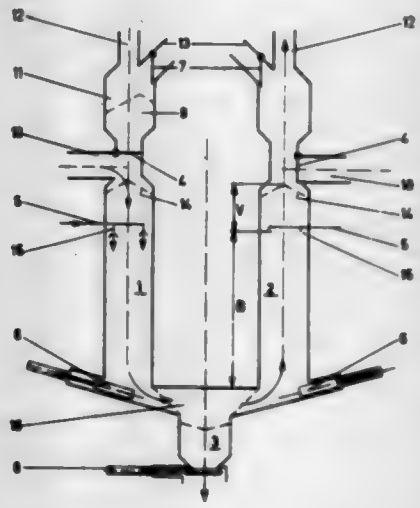
a compaction plate disposed in the space and having a plurality of bores therethrough communicating with the material delivery tubes; and

means for vibrating the hopper, material delivery tubes and the compaction plate so that the particulate material is transferred from the hopper to the space through the material delivery tubes and the compaction plate bores and is compacted by the compaction plate.

4,534,731
PROCESS AND APPARATUS FOR CALCINING LIMESTONE

Erwin Füssl, Zurich, and Max Ranner, Stallikon, both of Switzerland, assignors to Maerz Ofenbau AG, Zurich, Switzerland

Filed Jul. 12, 1983, Ser. No. 513,046
Claims priority, application Austria, Jul. 12, 1982, 2700/82
Int. Cl.³ F27B *15/00*; F27D *1/08, 17/00*
U.S. Cl. 432—14 5 Claims

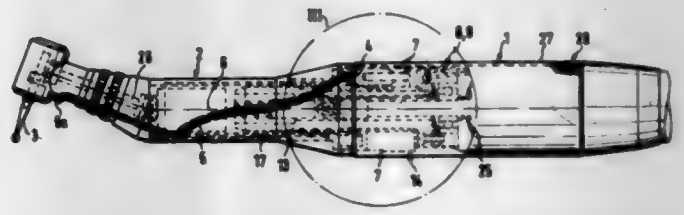


1. In a process for calcining limestone and similar mineral raw material in a parallel flow regenerative shaft furnace having at least two furnace shafts each being designed to define only a calcining zone and a preheating zone with a transfer duct interconnecting said furnace shafts, said furnace shafts being operated alternately one as calcining or parallel flow shaft and the other as a counterflow shaft, the improvement comprising discharging burnt lime from said furnace uncooled at the lower end of the calcining zone of the one of said shafts operating as the calcining shaft.

4,534,732
DENTAL HANDPIECE

Ernst Strohmaier, Bd. Schussenried, Fed. Rep. of Germany, assignor to Kaltenbach & Voigt GmbH & Co., Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,693
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1983, 3332627
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—29 21 Claims



1. In a dental handpiece, including a connector portion and an elongated, removable gripping sleeve portion coupled to

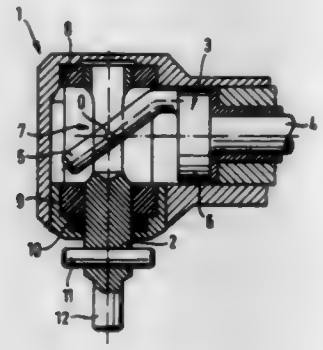
the connector portion so as to be axially rotatable thereabout; a treating implement arranged on a forward end of said sleeve portion distant from the connector portion; incandescent lamp means arranged eccentrically in said handpiece; and light conductor means in said gripping sleeve portion and having a forward end remote from the connector portion directed towards the treating implement, and a rearward end adapted to receive light from said incandescent lamp means; the improvement comprising in that said incandescent lamp is rotatable in conjunction with the gripping sleeve portion relative to the connector portion; slide contacts cooperate with contact rings to connect said incandescent lamp means with power supply lines in said connector portion; said incandescent lamp is arranged on a retainer rotatable along an arcuate path about a longitudinal axis of the handpiece; the retainer is arranged on a forward end of the connector portion facing the gripping sleeve portion; and said retainer includes first engaging means cooperating with complementary second engaging means on the gripping sleeve portion upon alignment of the incandescent lamp means with the rearward end of the light conductor means for transmission of the rotational movement of said gripping sleeve portion.

4,534,733

DEVICE FOR DENTAL MASSAGE TO PREVENT TOOTH DECAY

Michel Seigneurin, Douvaine, and Roger Blanc, Chambery, both of France, assignors to Micro-Mega, Besancon, France

Filed Nov. 22, 1983, Ser. No. 554,359
Claims priority, application France, Apr. 6, 1983, 83 05726
Int. Cl.[3] A61C *3/03*
U.S. Cl. 433—122 5 Claims



1. In a dental tool, a head on the tool, a rotary drive shaft driven rotationally about its longitudinal axis, an output spindle driven reciprocably rotationally from the rotary drive shaft and having a part thereof extending out of said head with its axis of rotation normal to the longitudinal axis of the rotary drive shaft, bearings in said head mounting the output spindle for reciprocatory rotation, a drive device coupling the rotary drive shaft and the output spindle and converting the rotary motion of the drive shaft to reciprocatory rotary motion of the output spindle comprising an eccentric stud mounted eccentrically on the drive shaft extending therefrom at an angle relative to a projection of the longitudinal axis of the drive shaft, the output spindle having an axial slit into which the eccentric stud extends, the stud having a point of connection to the rotary shaft eccentric to the longitudinal axis and extending therefrom to another point on another side of said longitudinal axis and eccentric thereto, the output spindle having surfaces coactive with the stud for driving the stud with said reciprocatory rotary motion when the drive shaft is driven rotationally.

4,534,734

SWIVEL DENTAL HANDPIECE

Joseph P. Lares, Redwood City, Calif., assignor to Lares Research, San Carlos, Calif.

Filed Jun. 9, 1983, Ser. No. 502,492
Int. Cl.[3] A61C *1/08*
U.S. Cl. 433—126 5 Claims



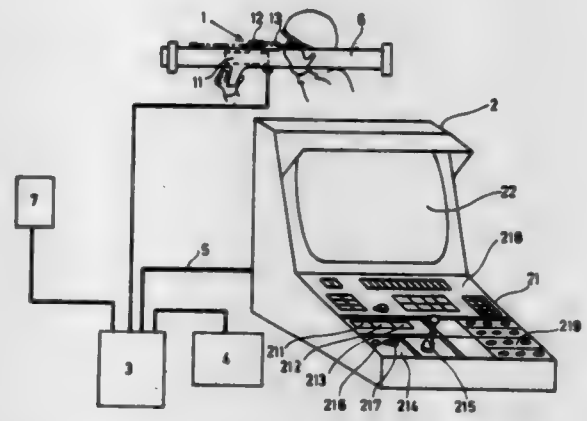
1. A swivel dental handpiece comprising a first hollow casing and a second hollow casing interengaged for relative rotation about an axis and for relative movement along said axis, means including a plurality of flexible fingers for releasably holding said first and said second casings against said relative movement along said axis, said fingers having spaces between them, an air turbine in said second hollow casing, means for supplying air to said turbine, and means for exhausting air from said turbine through said second hollow casing and between said fingers directly to the atmosphere.

4,534,735

FIRE SIMULATION DEVICE FOR TRAINING IN THE OPERATION OF SHOULDER WEAPONS AND THE LIKE

Jean-Claude Allard, Bourg la Reine; Rene Briard, Orgeval, and Christian Saunier, Ermont, all of France, assignors to Giravions Dorand, Suresnes, France

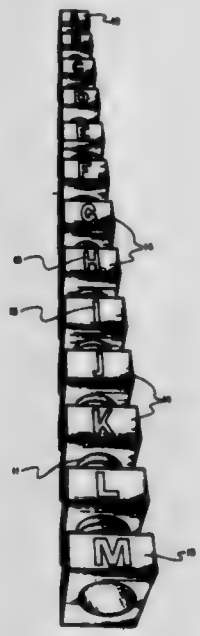
Filed Jul. 27, 1983, Ser. No. 517,618
Claims priority, application France, Jul. 29, 1982, 82 13239
Int. Cl.[3] F41G *3/26*
U.S. Cl. 434—20 8 Claims



1. A simulation device for training in the operation of shoulder weapons or the like, comprising a weapon having a sighting line which can be oriented by the firer and is fitted with an optical unit for providing the firer with a field of view comprising a firing ground and a target, and means for initiating fictitious firing of a projectile by the firer, means for transmitting an image of said field of view picked up through the optical unit to an instructor station and for projecting said field of view on to a display screen, and a computer functionally connected to the optical unit for determining the position of impact of the projectile in the plane of the target, wherein said simulation device comprises means for displaying either a target locating contour in superimposition on an image of the target displayed on the instructor screen or a fictitious target on the instructor screen, occulting means for concealing the field of view from the firer at the instant of firing a shot while allowing the display target to remain on the screen of the instructor station at the time of occultation of the firer's field of view, and means for displaying the impact position with re-

spect to the target on the display screen of the instructor station.

4,534,736
EDUCATIONAL TOY
Ben Cogdill, 2771 E. Christofferson Cir., Ogden, Utah 84403
Filed Apr. 23, 1984, Ser. No. 602,713
Int. Cl.[3] G09B *1/20*
U.S. Cl. 434—403 3 Claims

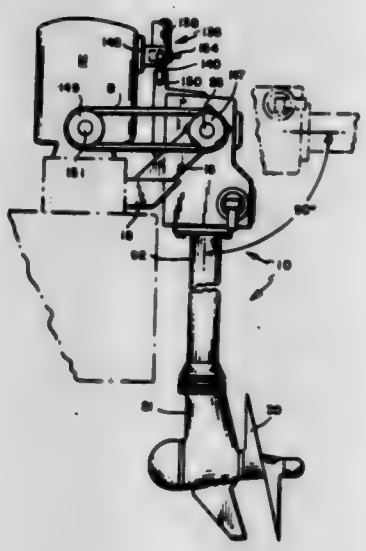


1. An educational toy for use by children and the like, comprising

a threaded shaft;

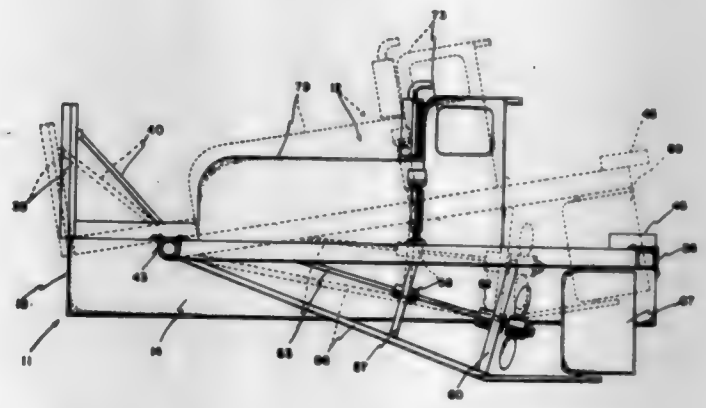
first block means rigidly affixed to one end of the threaded shaft; second block means rigidly fixed to the opposite end of the threaded shaft, said first and second block means having aligned faces; and a plurality of rotatable and traveling blocks, each being interiorly threaded to travel along the threaded shaft, spaced between the first and second rigidly fixed blocks, with the distance between the first and second rigidly fixed blocks being greater than the total thickness of the moveable blocks along the threaded shaft.

4,534,737
OUTBOARD MOTOR SYSTEM
Ronald C. Henderson, Cohassett, Mass., assignor to Mathewson Corporation, Quincy, Mass.
Filed May 17, 1983, Ser. No. 495,528
Int. Cl.[3] B63H *5/12*
U.S. Cl. 440—53 14 Claims



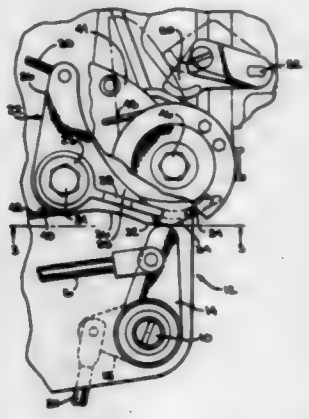
14. An outboard motor system comprising a propulsion assembly including a propeller and input shaft adapted to be pivotally suspended athwartship of a vessel for arcuate movement about a horizontal axis coinciding with its input shaft, a hydraulic cylinder for effecting elevation and depression of the propulsion assembly about said horizontal axis, a hydraulic clutch for establishing a driving connection between the input shaft and the propeller, a hydraulic motor for effecting steering, said hydraulic clutch, hydraulic cylinder and hydraulic motor comprising integrated component parts and the propulsion assembly, and a hydraulic pump mounted to the propulsion assembly and coupled to the input shaft for supplying hydraulic pressure to said cylinder, clutch and motor.

4,534,738
TUG TYPE VESSEL
Thomas J. McKnight, New Bern, N.C. 28560
Filed Mar. 9, 1982, Ser. No. 356,354
Int. Cl.[3] B63H *5/12*; B63B *1/12*
U.S. Cl. 440—61 6 Claims



1. A tug type vessel comprising: at least two spaced water supported float means; a propulsion means including an engine, a transmission, a V-drive, a propeller, and a rudder operatively associated with each other to form an integral unit pivotably mounted between said float means; a pilot house means operatively mounted on said propulsion means; hydraulic means for pivoting said propulsion means and its pilot house relative to said float means; and tug type push knee means forwardly extending from said propulsion means whereby a variable draft tug type vessel is provided.

4,534,739
RECOIL STARTER LOCK AND NEUTRAL GEAR THROTTLE LIMIT FOR MARINE DRIVES
Gordon C. Slattery, Omro, Wis., assignor to Brunswick Corp., Skokie, Ill.
Filed Dec. 23, 1983, Ser. No. 564,882
Int. Cl.[3] F02N *17/00*
U.S. Cl. 440—84 5 Claims



1. In a marine drive having a rotatable shaft operable between neutral and drive positions, a throttle control means for opening and closing the throttle valve of the marine drive, and

a recoil starter lock, an improved means for releasing the starter lock and limiting throttle opening when the shaft is in the neutral position, said means comprising:

a cam mounted on said shaft for movement therewith, said cam being mounted normal to the axis of rotation of the shaft;

a recoil starter lock actuator member coacting with said cam and pivotally movable about a pivot point by the movement of said cam between the neutral and drive positions, said recoil starter lock actuator member having a generally L-shaped configuration with a pair of angularly displaced arms extending outwardly from said pivot point, a first of said arms being coupled to said recoil starter lock for releasing the lock when the shaft and said cam and actuator member are in the neutral position, the second of said arms having a rise and fall configuration for moving said actuator means by coaction with said cam, one of said arms having a stop thereon; and

a stop on the throttle control means engaging said stop on said actuator member when the shaft and said cam and actuator member are in the neutral position for limiting the amount by which the throttle valve of the marine drive can be opened when the shaft is in the neutral position.

4,534,740

SYSTEM FOR MAINTAINING A BUOYANT BODY IN POSITION IN RELATION TO ANOTHER BODY

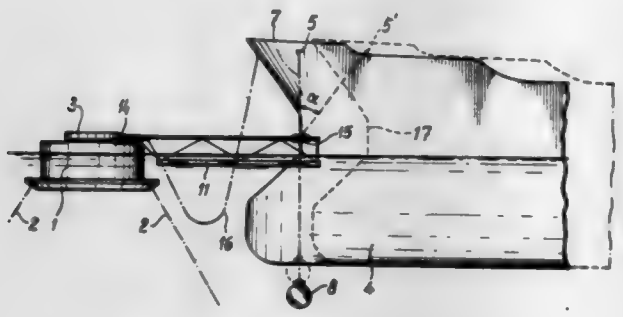
Leendert Poldervaart, La Turbie, France, assignor to Single Buoy Moorings, Inc., Marly, Switzerland

Filed Jun. 9, 1983, Ser. No. 502,733

Claims priority, application Netherlands, Jun. 9, 1982, 8202334

Int. Cl.³ B63B *21/52*

U.S. Cl. 441—3 **4 Claims**



1. In a mooring system for maintaining a vessel on the surface of a body of water in a position in relation to a body which is secured to the bottom of the body of water, which mooring system comprises a rigid arm attached at one end of the arm to said body for horizontal swinging movement relative to said body about a vertical axis, said arm having its other end cooperating with connecting means which are suspended from the vessel and are attached to a weight, the point of cooperation between said connecting means and the rigid arm being situated between the suspension point of the connecting means and the weight; the improvement in which said connecting means comprise at least one flexible cable directly connected to the vessel at its upper end, said rigid arm and said point of cooperation being disposed at least as high as said surface of said body of water and said weight being disposed below said surface of said body of water, said arm and said vessel being movable horizontally relative to each other, the weight urging said vessel to move horizontally toward a position in which the connecting means above the arm is vertical.

4,534,741

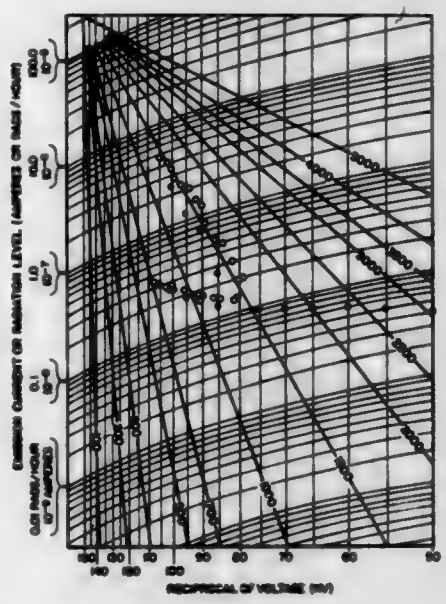
METHOD FOR ASSESSING THE DIELECTRIC STATE OF A HIGH VOLTAGE VACUUM DEVICE USING RADIATION GENERATED BY FIELD EMISSION CURRENT

George A. Farrall, Rexford, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 5, 1984, Ser. No. 568,318

Int. Cl.³ H01J *9/50*

U.S. Cl. 445—3 **11 Claims**



4. A method for assessing the dielectric state of a high voltage vacuum device of the type having a vacuum chamber housing enclosing a cathode and an anode, by using the radiation generated by field emission currents to determine the field enhancement factor, β, associated with said dielectric state, which factor is inversely proportional to the dielectric strength of said vacuum device, comprising:

applying a variable voltage across the gap between said cathode and said anode of said high voltage vacuum device, with said voltage being less than that required to produce breakdown, so as to produce field emission current between said cathode and said anode;

measuring the radiation produced by electrons from said field emission current striking said anode, while varying said variable voltage;

correlating said radiation measurement for each value of said variable voltage to the amount of field emission current between said cathode and said anode corresponding to each value of said variable voltage, by means of a predetermined relationship which is a function of said radiation measurement and said applied voltage; and

determining said field enhancement factor, β, from the slope of a plot in which the ordinate is the logarithm of the quantity resulting from dividing said emission current by the square of said applied voltage, and the abscissa is the reciprocal of said applied voltage.

4,534,742

METHOD AND APPARATUS FOR DISPENSING SMALL QUANTITIES OF MERCURY FROM EVACUATED AND SEALED GLASS CAPSULES

Mark W. Grossman, Framingham; William A. George, Rockport, and Robert Y. Pai, Hamilton, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

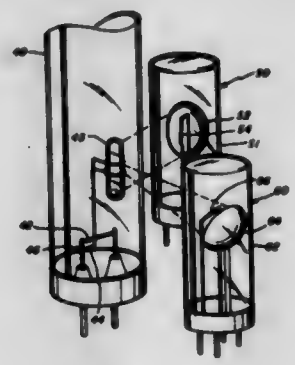
Filed Jan. 4, 1984, Ser. No. 568,023

Int. Cl.³ H01J *9/395*

U.S. Cl. 445—9 **14 Claims**

1. A method of opening an evacuated and sealed glass capsule containing a material to be dispensed having a relatively high vapor pressure, said capsule being disposed in an evacuated envelope, said method comprising the steps of: radiating the capsule from a first light source imaged along the capsule,

substantially simultaneously radiating the capsule from a second light source imaging substantially transversely to the imaging of the first light source, and constraining a segment of



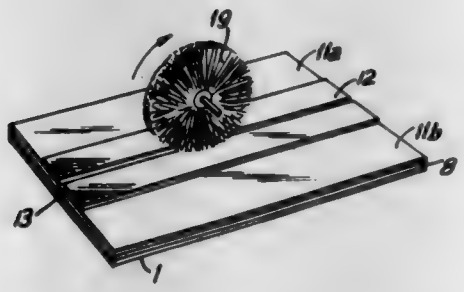
the capsule by constraining means about the capsule which restricts formation of the bubble occurring from said radiating steps.

4,534,743

PROCESS FOR MAKING AN ELECTROLUMINESCENT LAMP

Anthony D'Onofrio, West Hartford, and Walter Kitik, Wolcott, both of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Aug. 31, 1983, Ser. No. 528,310
Int. Cl.³ H01J 9/02
U.S. Cl. 445—24 **4 Claims**



1. The process of making a flexible split-electrode electroluminescent lamp, comprising the steps of:

providing a transparent flexible carrier strip of insulating plastic material,

providing a first continuous thin transparent coating of electrically conductive material on said carrier strip,

moving said carrier strip at a substantially continuous rate of speed,

depositing a slurry of a mixture of uncured resin binder and electroluminescent phosphor material continuously on said coated carrier strip to a controlled depth,

curing the resin to bind the phosphor material in a flexible matrix and adhering it to said first coating,

depositing a slurry of liquid-borne conductive particulate matter continuously on said carrier strip as it moves,

drying said slurry to provide a second continuous coating of electrically conductive material on top of said flexible matrix,

removing conductive material to define a narrow groove in said second one of said conductive coatings, wherein said conductive material is removed from said second coating by applying a solvent and brushing the coating while protecting the unremoved coating with a shielding device thereby providing at least two laterally spaced contiguous electrodes formed from the same conductive layer, and

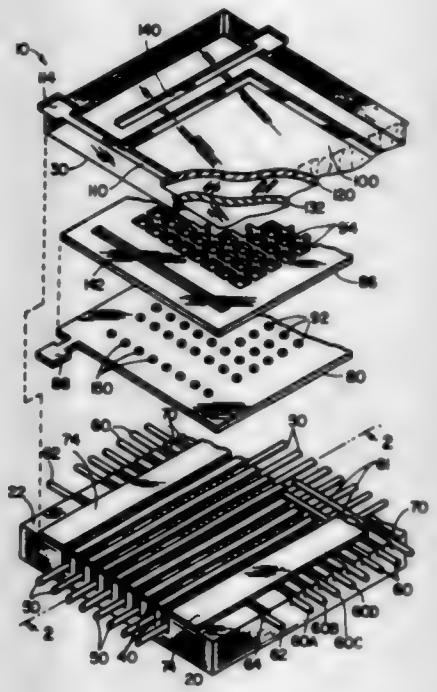
cutting said carrier strip into a desired lamp size, having exposed conductive sections on said respective contiguous electrodes which are adapted for attachment of electric contact terminals.

4,534,744

DISPLAY PANEL AND METHOD OF MAKING IT

Philip Kuznetzoff, Bridgewater, N.J., assignor to Burroughs Corporation, Detroit, Mich.

Filed May 2, 1983, Ser. No. 490,495
Int. Cl.³ H01J 9/00
U.S. Cl. 445—47 **3 Claims**



1. The method of making a display panel comprising the steps of

forming a plurality of relatively deep parallel, longitudinal first slots in a glass base plate having a top surface,

securing an anode electrode in each of said first slots,

providing a plurality of cathode electrodes adjacent to the top surface of said base plate oriented generally transverse to said anode electrodes,

said cathode electrodes crossing said anode wires and forming a first glow cell at each crossing, said first glow cells being disposed in rows and columns in a first layer,

placing means comprising strips of insulating material on said base plate overlying said cathodes,

mounting an electrode plate on said base plate, said electrode plate having an array of small holes, each of which overlies one of said first glow cells,

preparing a face plate assembly made up of a glass plate having two surfaces, on one of which is formed a large-area transparent electrode covered by a thin layer of glass which is covered by a second insulating layer and a third insulating layer having an array of apertures therein,

mounting said face plate assembly on said electrode plate with the apertures in said third insulating layer aligned with the small holes in said electrode plate, and

hermetically sealing together all of said parts to form the completed panel and filling the panel with an ionizable gas,

said third insulating layer in said face plate assembly being prepared by

forming on the bottom surface of a glass plate, in order, first a large-area transparent electrode, second a layer of glass, and third a layer of insulating material,

providing a layer of photosensitive material on said third layer,

exposing said layer in a pattern and developing said pattern in said layer to render portions thereof resistant to removal,

removing portions of said layer to leave an apertured insulating plate which is the reverse of said third insulating layer and has solid material where said third insulating layer has apertures,

providing areas of insulating material in the apertures in said insulating plate, and

removing all of apertured insulating plate to leave said areas of insulating material which comprise said third layer of insulating material.

4,534,745

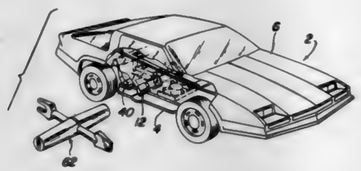
PERCUSSION CAP FIRING TOY VEHICLE AND TRACK ASSEMBLY

Lawrence T. Jones, Los Angeles; Robert S. Lee, Westlake Village; Walter Moe, Santa Monica; Ashley G. Howden, Los Angeles, and Paul J. Ishikawa, Hermosa Beach, all of Calif., assignors to California R&D Center, Culver City, Calif.

Filed Feb. 3, 1984, Ser. No. 576,867

Int. Cl.³ A63H *5/00, 29/00*

U.S. Cl. 446—398 **21 Claims**





1. A toy vehicle capable of igniting a toy cap comprising:
a housing body member;
means for transporting the body member across a support surface;
a striker member pivotally mounted within the housing member;
means for biasing the striker member to rotate in a predetermined direction;
a keeper member movably mounted in the housing member for selective retention of the biased striker member in a biased position, a portion of the keeper member extending beyond the housing body member in a position to permit actuation for releasing the striker member; and
a movably mounted door connected to the housing member and carrying an anvil for mounting a toy percussion detonatable cap, the position of the anvil within the housing member with the door in a closed position being within the operative striking movement of the striker member.

4,534,746

COUPLING FOR THE DETACHABLE CONNECTION OF A SUBDIVIDED DRIVE SHAFT OF A MOTOR VEHICLE

Otto Hausinger, Gerlingen, Fed. Rep. of Germany, assignor to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed Sep. 8, 1982, Ser. No. 416,000

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1981, 3135689

Int. Cl.³ B60K *17/22*; F16D *1/00*

U.S. Cl. 464—170 **4 Claims**

1. A coupling for detachably connecting portions of a subdivided drive shaft operatively connecting a forwardly disposed drive unit with a rearwardly disposed transmission unit of a motor vehicle, the coupling comprising a plurality of shell means for connecting opposed ends of the portions of the subdivided drive shaft, means for fastening the plurality of shell means relative to one another when said coupling is in an assembled condition, and unitary ring means surrounding said plurality of shell means for maintaining the plurality of shell means relative to one another when said coupling is in a disassembled condition, said means for fastening engaging means associated with each of the opposed ends for preventing axial displacement of the opposed ends relative to one another and said opposed ends being drivingly connected with each other by said coupling within the area of the transmission unit when



said coupling is in the assembled condition, said unitary ring means surrounding the shell means with a clearance when said coupling is in the assembled condition for enabling movement of the plurality of shell means relative to one another during disassembly and maintaining said plurality of shell means relative to one another when said coupling is in the disassembled condition, said plurality of shell means including means for positioning said unitary ring means relative thereto.

4,534,747

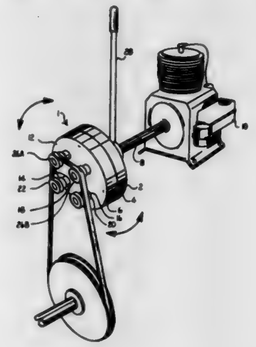
TRANSMISSION

Clement J. Fitzsimmons, 12338 Lakeshore Dr., Lakeside, Calif. 92040

Filed Aug. 12, 1983, Ser. No. 522,598

Int. Cl.³ F16H *9/00*

U.S. Cl. 474—1 **9 Claims**



1. A transmission for transmitting rotational power from an engine to a drive shaft comprising:
(a) a first shaft means for transmitting rotational power from the engine to the transmission,
(b) a casing coaxially rotatable about the first shaft, the first shaft extending into the casing through an orifice defined by the casing,
(c) first, second, third and fourth casing pulleys each rotatably affixed to the casing and spaced apart from each other such that each of the pulleys occupies one corner of an imaginary square, the planes of all the pulleys being aligned in a single plane generally perpendicular to the axis of casing rotation, the first and second casing pulleys occupying adjacent corners of the imaginary square, the diagonals of the imaginary square intersecting a longitudinal axis of the first shaft,
(d) a means disposed within the casing to transmit rotational power from the first shaft to the first casing pulley such that the first casing pulley rotates in a direction opposite to the direction of rotation of the first shaft,
(e) a means disposed in the casing to transmit rotational power from the first shaft to the second casing pulley such that the second casing pulley rotates in the same direction as the direction of rotation of the first shaft,
(f) a pulley affixed to a drive shaft, the plane of the pulley being aligned with the plane of the casing pulleys,
(g) a belt means for coupling the drive shaft pulley with at least two of the casing pulleys, and
(h) a means for rotating the casing to at least a first, second, and a third position, the drive shaft pulley being adapted to permit the belt when suitably taut to be in contact with only two casing pulleys when the casing is in the first, second and third positions, the first position being when the belt is in contact with the first casing pulley and either the third or fourth casing pulley, the second position being when the belt is in contact with only the third and fourth casing pulleys, the third position being when the belt is in contact with only the second casing pulley and either the third or fourth casing pulley.

4,534,748

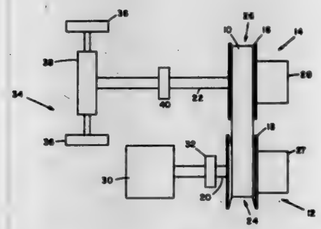
VARIABLE SPEED BELT DRIVEN TRANSMISSION SYSTEM AND METHOD

Richard F. Stieg, Boulder; John P. Dolan, Littleton; W. Spencer Worley, Aurora, all of Colo., and Göran Gerbert, Staffanstorp, Sweden, assignors to The Gates Rubber Company, Denver, Colo.

Filed Dec. 30, 1981, Ser. No. 335,981

Int. Cl.³ F16H *55/56, 11/06, 55/54, 55/52*

U.S. Cl. 474—17 **18 Claims**



1. In a variable speed belt drive system of the type with a driver pulley having axially separable pulley halves; a driven pulley having axially separable pulley halves responsively operable to axial forces variable with rotational torque for closing the driven pulley halves together; a V-belt entrained by the driver and driven pulleys, the driven pulley axial forces and driver pulley cooperatively causing variable belt tensions for transmitting predetermined power loads between the driver and driven pulleys from (1) a maximum (speed down) ratio where the driver pulley halves are axially separated to a full open position and the driven pulley halves are axially together to a full closed position to a (2) a minimum (speed up) ratio where the driver pulley halves are axially together to a full closed position and the driven pulley halves are axially separated to a full open position; and a family of ideal driven pulley axial force lines, each force line of the family corresponding to a specific torque value expressed as a percentage of the maximum input torque at the driver pulley, each force line representing, for its specific torque value, the locus of points where slip is impending between the belt and driven pulley for corresponding maximum input torques at the driver pulley between the minimum ratio and the maximum ratio, the force lines generally decreasing from the driven pulley full closed position to the full open position, the improvement comprising:
an actuator means for closing the driven pulley halves while generating an operating family of axial closing forces that follow the ideal force lines of the required driven pulley axial forces to the extent that the maximum generated axial force to close the driven pulley at 100 percent peak input torque exceeds the ideal force by no more than 120 percent.

4,534,749

PULLEY

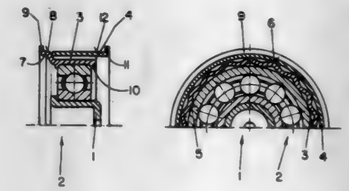
Rudiger Hans, Niederwerrn; Manfred Brandenstein, Eussenheim; Wolfgang Friedrich, Schweinfurt, and Roland Haas, Lendershausen, all of Fed. Rep. of Germany, assignors to SKF GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,367

Claims priority, application Fed. Rep. of Germany, May 11, 1982, 3217579

Int. Cl.³ F16H *55/36*

U.S. Cl. 474—174 **11 Claims**



1. In a pulley comprised of a support body and a roller casing rotatably mounted thereon by a bearing; the improvement wherein the roller casing is comprised of an outer ring part coaxially over one inner ring part, said inner ring having radially outwardly directed projections radially supporting said outer ring.

4,534,750

AUTOMOTIVE V-BELT

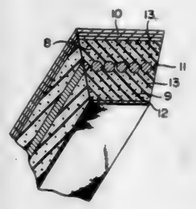
Shigeki Okumoto, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 1, 1982, Ser. No. 413,721

Claims priority, application Japan, Sep. 12, 1981, 56-135694[U]

Int. Cl.³ F16G *5/06*

U.S. Cl. 474—261 **4 Claims**



1. An automotive V-belt useful for power transmission to drive accessory units to an automotive internal combustion engine, in which the inner material of the belt consists of rubber, an elongation-inhibiting member embedded in the rubber, and a surface smoothing agent for reducing attachment of dust to the belt surface dispersed throughout the cross-section of the rubber.

4,534,751

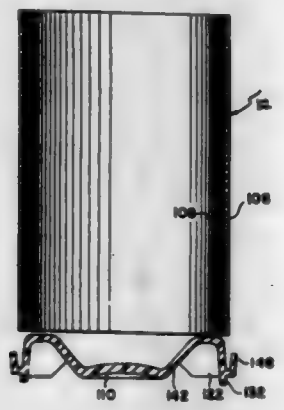
THERMOPLASTIC CONTAINER END AND METHOD AND APPARATUS FOR INERTIAL SPINWELDING OF THERMOPLASTIC CONTAINER ENDS

Vincent Fortuna, Huntington Beach, Calif., and Donald MacLaughlin, Midland, Mich., assignors to Cosden Technology, Inc., Dallas, Tex.

Division of Ser. No. 405,642, Aug. 5, 1982, , which is a continuation-in-part of Ser. No. 234,344, Feb. 13, 1981, abandoned. This application May 2, 1983, Ser. No. 490,610

Int. Cl.[3] B29C *27/08, 19/00;* B32B *31/00*

U.S. Cl. 493—108 3 Claims



1. A method of making a container having a paperboard sidewall portion and a thermoplastic end portion spinweld bonded thereto, comprising the steps of:

providing a thermoplastic container end comprising

(a) a first portion for receiving one end of the container sidewall, said first portion comprising a first annular groove formed by a first wall member extending from the bottom of said groove and adapted to lie on the outer surface of the container sidewall and a second wall member relatively longer than said first wall member and extending from the bottom of said groove and being adapted to enter into the container and lie on the inner surface of the container sidewall; and

(b) a second portion, connected to said second wall member at a position remote from said first wall member and near the end of said second wall member adapted to enter into the container, said second portion including means for transferring to a direction normal to a spinwelded bond, any shear forces which arise due to axial forces on the container end which tend to shear said spinwelded bond, said shear force transmitting means comprising (i) an end-wall portion connected to and extending from said second wall member in a serpentine manner to form therewith a second annular groove of generally opposite orientation from said first annular groove and (ii) a plurality of circumferentially spaced radial ribs, extending between said second wall portion and said serpentine end-wall portion, said plurality of ribs being operable to transfer forces acting on said container end from shearing said spinwelded bond;

positioning said paperboard sidewall on a first mandrel having a vertical axis;

positioning said container end on a second mandrel, coaxial with said first mandrel;

rotating said second mandrel about said axis whereby said radial ribs on said end portion engage driving means on said second mandrel to rotate said end portion;

positioning an end of said paperboard sidewall into said first annular groove of said container end, whereby said shear force transmitting means supports said second wall member against lateral deflection and whereby the rotary inertia of said second mandrel generates frictional heat which spinweld bonds said container to said sidewall.

4,534,752

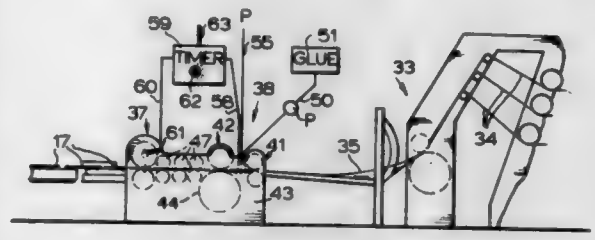
APPARATUS AND METHOD FOR SECURING TOP ENDS OF SACK GUSSETS

Robert A. Ferrell, Shelbyville, and Richard G. Rebber, Flat Rock, both of Ind., assignors to KCL Corporation, Shelbyville, Ind.

Continuation of Ser. No. 383,986, Jun. 1, 1982, abandoned. This application Apr. 12, 1984, Ser. No. 599,216

Int. Cl.[3] B31B *1/62, 1/84*

U.S. Cl. 493—213 15 Claims



1. In apparatus for making sacks having openable tops for access into the sacks, and each sack adapted to carry separable closure means across its top:

means for transporting along a given path sack blanks each having an expansion gusset on at least one side and with an end of the gusset adjacent to a bag top end of the sack blank;

and means located along said path for applying securing means selectively to said gusset end of each sack blank but leaving the remainder of the gusset of each sack blank freely expansible and leaving the openable top of each sack blank free for opening, and comprising means for spreading the gusset to facilitate application of adhesive to the inside of the gusset, an adhesive applicator selectively operable for applying respective spots of adhesive to limited portions at the inside walls of the gusset adjacent to said end and with the spot of adhesive on one wall being tansversely offset from the spot of adhesive on the other wall so that when the gusset walls are pressed back together the adhesive spots will engage adhesive-free areas of the respective opposing walls, and means downstream from said applicator for pressing the gusset walls together for assuring adhesion of the gusset walls to one another by means of the offset spots of adhesive.

4,534,753

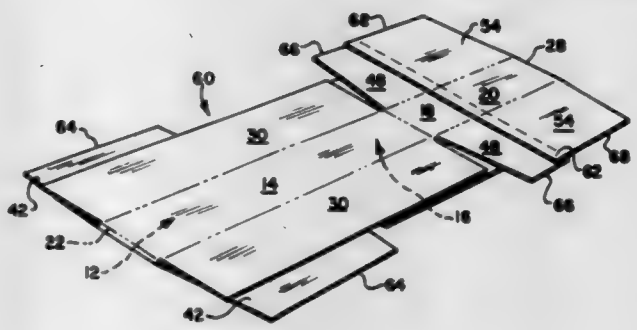
METHOD OF FORMING INTERMEDIATE FOLDED BLANKS FOR CENTER SPECIAL SLOTTED CONTAINERS

Oscar J. Kistner, Cincinnati, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Division of Ser. No. 317,103, Nov. 2, 1981, Pat. No. 4,477,002. This application Dec. 9, 1983, Ser. No. 559,672

Int. Cl.[3] B31B *1/26, 1/62*

U.S. Cl. 493—453 5 Claims



1. A method of forming an intermediate folded blank for a center special slotted container comprising the steps of:

selecting a blank having a full end panel, a first side panel joined to a side of said full end panel along a score line and having a length greater than that of said full end panel, a

second side panel joined to a side of said full end panel along a score line opposite said score line joining said full end panel to said first side panel, said second side panel having a length equal to that of said first side panel, a first full end flap joined to said full end panel along a score line and extending from a longitudinal edge thereof, said first full end flap being substantially equal in length to one-half said lengths of said first and second side panels, first and second cover flaps joined to said first and second side panels, respectively, along score lines and extending from longitudinal edges thereof such that said first and second cover flaps are correspondingly disposed to said full end flap, said first and second cover flaps having lengths less than that of said full end flap, a first partial end panel joined to said first side panel along a score line opposite said score line joining said first side panel to said full end panel, a second partial end panel joined to said second side panel at a score line opposite said score line joining said first side panel to said full end panel, said first and second partial end panels having a combined length at least equal to that of said full end panel, a first partial end flap joined to said first partial end panel along a score line and extending from a longitudinal edge thereof, said first partial end flap being equal in length to and correspondingly disposed to said first full end flap, and a second partial end flap joined to said second partial end panel along a score line and extending from a longitudinal edge thereof, said second partial end flap being equal in length to and correspondingly disposed to said first partial end flap;

folding said blank along one of said score lines joining said full end panel to one of said side panels and along one of said score lines joining one of said partial end panels to a contiguous other one of said side panels such that said partial end panels both overlap said other one of said side panels and are contiguous with respect to each other, thereby forming a folded blank;

squaring said blank by contacting only opposing edges of said blank defined by outer edges of said full end flap and said first and second partial end flaps on one side, and longitudinal edges of at least said end panels on an opposite side of said blank; and

sealing said first partial end panel to said second partial end panel.

4,534,754

FEEDER FOR CENTRIFUGAL APPARATUS

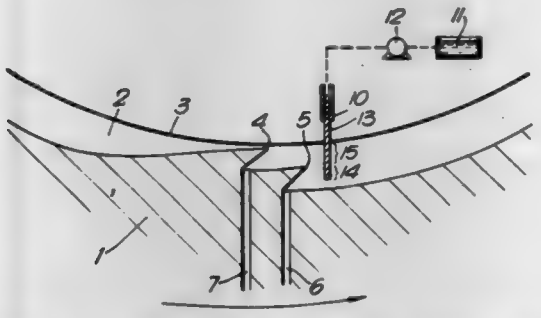
David Shepherd, Cheshire, England, assignor to Imperial Chemical Industries PLC, Hertfordshire, England

Filed May 30, 1984, Ser. No. 615,273

Claims priority, application United Kingdom, Jun. 7, 1983, 8315611

Int. Cl.³ B01D *45/12*; B04B *11/00*

U.S. Cl. 494—37 **9 Claims**



1. Apparatus for providing a regulated flow of liquid medium to a device mounted in or on a rotor of a centrifuge rotatable with respect to a housing, comprises in combination,

a scoop located in or on the rotor and comprising a mouth opening forwards in the direction of rotation of the rotor and a duct connecting the mouth to the device; and

a nozzle located in or on the housing and being adapted for receiving the liquid medium from a source and for projecting the received liquid medium as a free moving jet into the path of the scoop as it rotates with the rotor;

the scoop, source of liquid medium and nozzle all being mutually dimensioned and positioned such that during operation as the rotor rotates, the mouth of the scoop strikes and removes a mid-portion of the jet of liquid medium and directs it via the duct to the device, the continuing projection of the liquid medium then extending the jet again beyond the path of the scoop so that a further mid-portion of the jet can be removed during each subsequent revolution of the rotor.

4,534,755

CENTRIFUGES

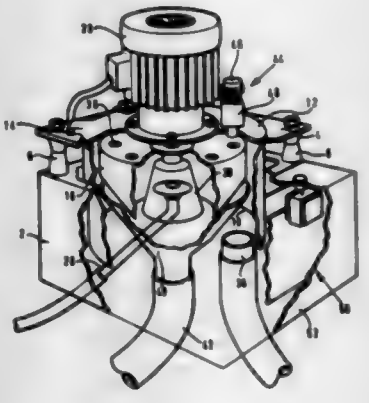
Colin Calvert, Ampthill, and Peter Cox-Smith, Bletchley, both of England, assignors to Hoccum Developments Limited, Slough, England

Filed Feb. 22, 1983, Ser. No. 468,562

Claims priority, application United Kingdom, Feb. 22, 1982, 8205209

Int. Cl.³ B01D *21/26*

U.S. Cl. 494—37 **3 Claims**



1. A method of operating a centrifuge, the method comprising a separating stage and a solids removal stage, wherein the separating stage includes passing a suspension containing a less dense and a more dense material into the rotor of the centrifuge, and rotating the rotor in one direction so that the more dense material separates from the less dense material to accumulate on an inwardly facing surface of the rotor, and wherein the solids removal stage commences when the more dense material has accumulated in this manner, sequence of deceleration and acceleration of the rotor to dislodge the accumulated more dense material from the inwardly facing surface, thereby to facilitate the removal of said more dense material from the rotor.

4,534,756

FAULT DETECTION APPARATUS AND METHOD FOR PARENTERAL INFUSION SYSTEM

Peter E. Nelson, Mountain View, Calif., assignor to Ivac Corporation, San Diego, Calif.

Filed Apr. 11, 1983, Ser. No. 483,903

Int. Cl.³ H61M *5/00*

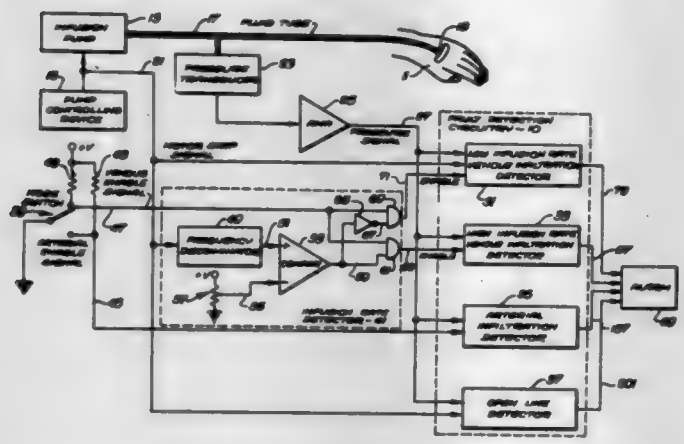
U.S. Cl. 604—50 **53 Claims**

1. Fault detection apparatus for use with a parenteral administration system having an infusion device for infusing parenteral fluid through a fluid tube to the vascular system of a patient, comprising:

pressure transducer means for monitoring the pressure of the fluid in the fluid tube and producing a corresponding pressure signal;

fault detection means for evaluating the pressure signal over a period of time to detect characteristic patterns in the waveform of the pressure signal evaluated which are

indicative of improper fluid communication between the fluid tube and the vascular system of the patient; and



means for producing a corresponding alarm signal whenever the fault detection means detects such a characteristic pattern.

4,534,757

DEVICE FOR RELEASING ACTIVE INGREDIENT, INSERTABLE IN A SYSTEM OF PARENTERAL ADMINISTERING THE INGREDIENT

Leo Geller, Riehen, Switzerland, assignor to ALZA Corporation, Palo Alto, Calif.

Filed Jun. 3, 1983, Ser. No. 500,744

Claims priority, application Switzerland, Jun. 14, 1982, 3668/82; Jul. 2, 1982, 4051/82

Int. Cl.³ A61M *5/00*

U.S. Cl. 604—85 **10 Claims**



1. A device for releasing active ingredient, which device is insertable in the liquid flow line of a system for the parenteral application of the ingredient, and comprises a receptacle having an inlet and outlet for a liquid flow passing therethrough, and ingredient-releasing means, lodged in the receptacle, for releasing active ingredient into the said liquid flow, said receptacle further comprising in its interior two liquid flow paths leading from the inlet to the outlet thereof, one of which paths comprises a section through which the liquid passes in a direction substantially opposite to a general direction in which the receptacle is passed by the liquid, and an ingredient-releasing unit being present in the said path section of opposite liquid flow.

4,534,758

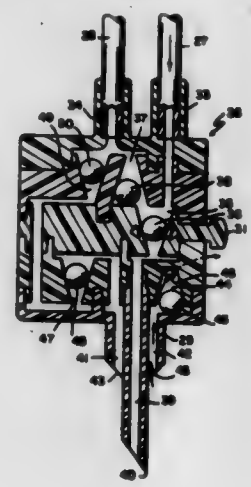
CONTROLLED RELEASE INFUSION SYSTEM

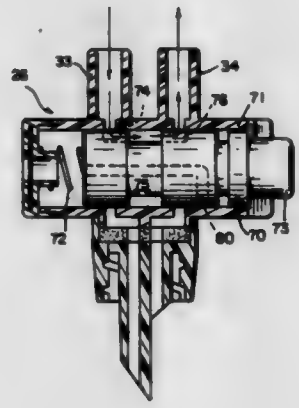
Michael J. Akers, Greenwood; William W. Hargrove, Indianapolis; Dale C. Harris, Fairland, all of Ind., and Charles R. Sperry, Westport, Conn., assignors to Eli Lilly & Company, Indianapolis, Ind.

Filed Jul. 15, 1983, Ser. No. 514,268

Int. Cl.³ A61M *5/14*

U.S. Cl. 604—85 **11 Claims**





1. Apparatus for connecting a vial in the delivery tube of an intravenous administration set, the set including a source of fluid connected to one end of the delivery tube, the other end of which is adapted to be inserted in a patient, the apparatus comprising:

a valve having three operating positions and including bypass means operable in the first operating position for conducting fluid from the fluid source toward the patient, dilution means operable in the second operating position for admitting fluid from the source to the vial while permitting air to escape from the vial, and delivery means operable in the third operating position for directing the fluid from the source to pass through the vial and dilute the contents thereof while directing fluid leaving the vial to proceed through the delivery tube toward the patient.

4,534,759

VALVE FOR SUPPLYING, CONTROLLING AND TAKING OUT A MEDIUM CONTAINED IN AN IMPLANTED CONTAINER

Werner Trawöger, Höttinger Au Nr. 60, A-6020 Innsbruck, Austria

PCT No. PCT/AT82/00011, § 371 Date Mar. 7, 1983, § 102(e) Date Mar. 7, 1983, PCT Pub. No. WO83/00367, PCT Pub. Date Feb. 3, 1983

PCT Filed Apr. 19, 1982, Ser. No. 488,543

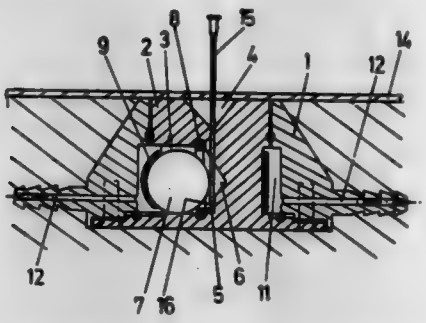
Claims priority, application Austria, Jul. 16, 1981, 3137/81

Int. Cl.³ A61B *17/34*

U.S. Cl. 604—117 **9 Claims**

1. Valve for supplying, controlling and taking out a medium

contained in an implanted container, comprising a valve body having an exterior and an interior, wherein a flow channel is provided which widens conically toward the exterior of said valve body for the introduction of an injection needle and which runs into a chamber in the interior of the valve body, said chamber being connectable with said container, and in which chamber a closure member acted upon by a reset means is inserted which clears said flow channel when said injection



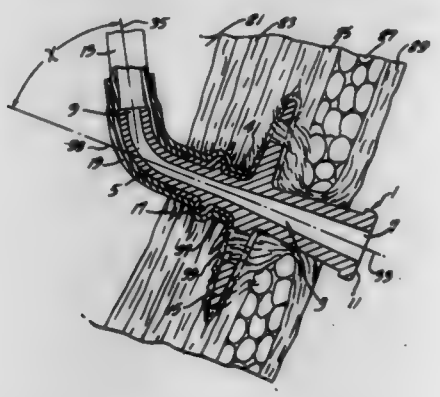
needle is inserted and recloses when it is taken out, characterized in that said flow channel (3) comprises an introduction channel (5) for said injection needle (15) in the form of a first pocket bore terminating at a needle penetration limiting end portion in said chamber and a second pocket bore (6) angularly arranged crosswise relative to and intersecting said introduction channel (5), which said second pocket bore receives said closure member (7), whereby said closure member (7) projects into said introduction channel (5) in the closed condition.

4,534,760

ANGULAR IMPLANT DEVICE

Donald A. Raible, Irvine, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 292,844, Aug. 14, 1981, abandoned.
This application Jun. 26, 1984, Ser. No. 624,801
Int. Cl.[3] A61F *1/00*; A61M *25/00*
U.S. Cl. 604—175 3 Claims



1. A ureterostomy device comprising: a passageway having an anchor means, both of which are formed from a material selected from the group consisting of (1) pyrolytic carbon disposed on a graphite substrate and (2) vitreous carbon, for attachment to an opened vessel;

said anchor means for establishing a biological anchor; and

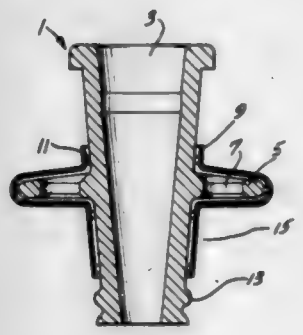
said passageway being further defined as having a substantially rigid inlet section initiated with a passageway inlet and a substantially rigid outlet section terminated with a passageway outlet and in communication with said inlet section wherein the axial centerline passing through the center of said passageway inlet is inclined with respect to the axial centerline passing through the center of said passageway outlet from between about 45 degrees and about 75 degrees.

4,534,761

IMPLANT DEVICE

Donald A. Raible, Irvine, Calif., assignor to Bentley Laboratories, Inc., Irvine, Calif.

Continuation of Ser. No. 292,845, Aug. 14, 1981, abandoned.
This application Oct. 6, 1983, Ser. No. 539,622
Int. Cl.[3] A61M *31/00*; A61F *1/00*
U.S. Cl. 604—175 7 Claims



1. An implant device comprising:

a passageway having an anchor means, both of which are formed from a material selected from the group consisting of (1) pyrolytic carbon disposed on a graphite substrate of (2) vitreous carbon, for attachment to an opened vessel;

said anchor means for establishing a biological anchor;

a grafting mesh annularly and longitudinally disposed about at least a portion of the exterior of said implant device, said grafting mesh being formed from a material selected from the group consisting of (1) pyrolytic carbon disposed on a graphite substrate or (2) vitreous carbon; and

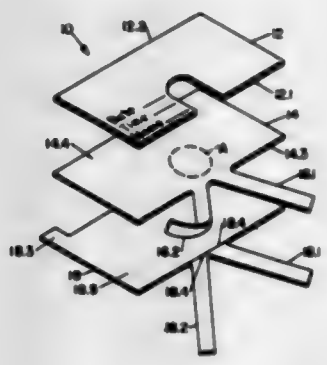
means for radially and longitudinally spacing said grafting mesh away from the exterior of said implant device such that tissue is permitted to grow between the exterior of said implant device and said mesh longitudinally on both sides of said space means.

4,534,762

VASCULAR PUNCTURE DRESSING

Hal B. Heyer, 5546 Perry Ave. N., Crystal, Minn. 55429

Filed Dec. 27, 1982, Ser. No. 453,606
Int. Cl.[3] A61M *25/02*
U.S. Cl. 604—180 3 Claims

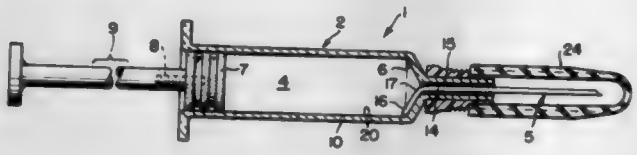


1. A dressing for covering a vascular puncture wound and for stabilizing a cannula extending into the wound against movement, the dressing comprising means defining a section of adhesive tape having forward and rearward edges and having a recess in said forward edge through which a vascular puncture wound may be observed; means defining a transparent sheet carried by the section of adhesive tape and extending across said recess, and means defining at least a pair of flexible tape strips carried by the dressing and extending forwardly beyond the forward edge of the adhesive tape section and adapted to be wrapped about the hub of a cannula and adhered to a patient's skin adjacent a puncture wound or to the dressing to stabilize the hub against movement.

4,534,763
HYPODERMIC CARTRIDGE

William A. Gettig, Linwood, Box 417, Millheim, Pa. 16854, and Gerald S. Fetterolf, P.O. Box 53, Madisonburg, Pa. 16852

Filed Sep. 14, 1983, Ser. No. 532,050
Int. Cl.[3] A61M 5/00
U.S. Cl. 604—239 10 Claims

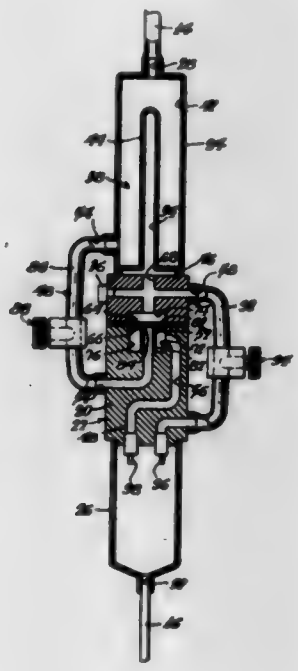


1. A hypodermic cartridge including, a barrel provided with a peripheral wall defining an interior adapted to contain a medicament, said peripheral wall including an inner surface, a forward end wall communicating with a nose projecting forward of said end wall, said nose having a bore communicating with said barrel interior, a cannula provided with a central passageway, said cannula including a substantially straight main section having a rear portion disposed in said nose bore, said cannula having an inner end projecting from said rear portion into said barrel interior, said cannula inner end angularly deflected toward said barrel peripheral wall to provide a bent inner end, said forward end wall tapered from said barrel peripheral wall to said bore of said nose, said cannula bent inner end disposed at an angle substantially coinciding with that of said forward end wall and flushly engaging same throughout its extent, said bent inner end provided with a distal portion juxtaposed said barrel inner surface, and said cannula distal portion juxtaposed the intersection of said barrel peripheral wall and forward end wall whereby, upon aspiration blood is readily visually detected at said cannula distal portion through said barrel wall.

4,534,764
SEQUENTIAL MEDICATION DELIVERY DEVICE

Herbert Mittleman, Deerfield, and Stanislaw Sulek, Chicago, both of Ill., assignors to Trimedyne, Inc., Santa Ana, Calif.

Filed Jul. 25, 1983, Ser. No. 517,224
Int. Cl.[3] A61M 5/00
U.S. Cl. 604—81 22 Claims

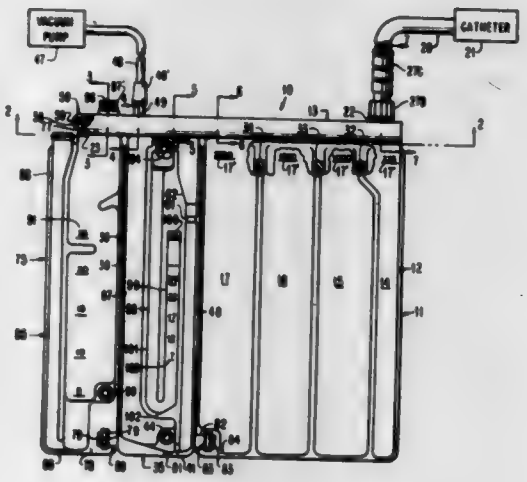


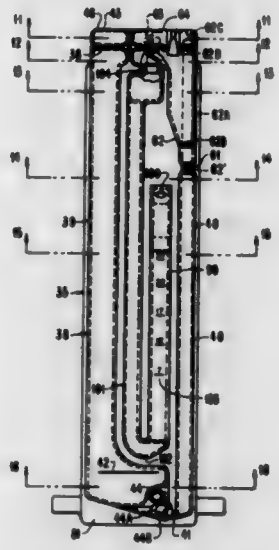
1. A sequential medication delivery device for administering plural medications to a patient, the device comprising:
(a) an inlet means for receiving a primary medication from a primary medication source;
(b) an outlet means for placement in fluid communication with the patient;
(c) a liquid passageway means in fluid communication between the inlet means and the outlet means;
(d) a housing defining a chamber adapted to receive a secondary medication and in fluid communication with the outlet means; the housing also including a volume reducing means in fluid communication with the inlet means for reducing the volume of the chamber to deliver secondary medication from the chamber to the outlet means; and
(e) valve means for occluding the liquid passageway means until substantially all of the secondary medication has been delivered from the chamber.

4,534,765
MODULAR DRAINAGE APPARATUS HAVING EXCESS NEGATIVITY CONTROL

Edward P. Todd, Lexington, Ky., and Eugene E. Weilbacher, New Philadelphia, Ohio, assignors to Snyder Laboratories, Inc., Dover, Ohio

Filed Jun. 8, 1982, Ser. No. 386,252
Int. Cl.[3] A61M 1/00
U.S. Cl. 604—321 43 Claims





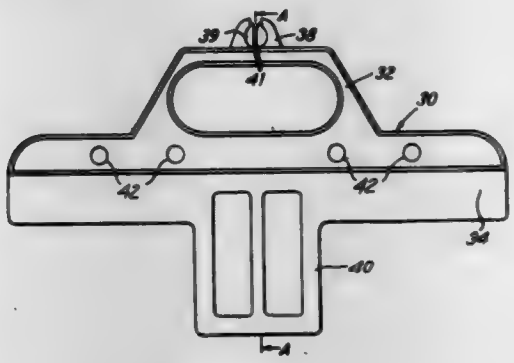
1. A modular drainage apparatus including:
three bodies;
support means to support each of said bodies;
said support means having two passage means;
a first of said bodies having a pressure regulating chamber communicating with one of said passage means;
a second of said bodies including a liquid seal chamber adapted to have a selected quantity of liquid therein, said liquid seal chamber having one end communicating with said one passage means to communicate with said pressure regulating chamber of said first body and said liquid seal

chamber having its other end communicating with the other of said passage means;
a third of said bodies having a collection chamber communicating with said other passage means to communicate with said other end of said liquid seal chamber of said second body;
said collection chamber having inlet means for connection to a pleural cavity of a body to receive fluids therefrom;
said one passage means including means to enable a negative pressure to be applied to said liquid seal chamber and said collection chamber and to remove gases from the fluids in said collection chamber to said liquid seal chamber;
said pressure regulating chamber of said first body controlling the negative pressure produced in said liquid seal chamber and said collection chamber;
and said second body including an excess negativity chamber having one end communicating with said other passage means and its other end continuously open and communicating with the atmosphere and adapted to have a selected quantity of liquid therein to limit the negative pressure within said collection chamber to a selected maximum above the negative pressure controlled by said pressure regulating chamber.

4,534,766
DRAINAGE BAG FOR URINE AND SUPPORT THEREFOR

Peter L. Steer, and John V. Edwards, both of East Grinstead, England, assignors to Craig Medical Products Limited, East Grinstead, England

Filed Apr. 6, 1983, Ser. No. 482,669
Claims priority, application United Kingdom, Apr. 16, 1982, 8211103
Int. Cl.³ A61M *1/00*
U.S. Cl. 604—323 **2 Claims**



1. A combined urine drainage bag and support therefor comprising:
(a) a bag having front and rear plastic walls with elongated top edges, said walls being welded together along their top edges in such a way as to define a plurality of reinforced, linearly-spaced through holes which do not communicate with the interior of said bag and which are capable of accepting hooks or studs on a hanger separate from said bag, an inlet tube in said top edges communicating with the interior of said bag and terminating in an anti-reflux valve within said bag; and
(b) separate support means having a transverse portion supporting linearly-spaced hooks, said hooks removably received in said holes of said bag, whereby a single support means can be simultaneously used with a plurality of bags, said support means characterized by an apertured tongue means located to extend downwardly behind or in front of said bag, said tongue having a downward extending length which is greater than the length of the transverse portion of said support means, whereby said tongue means prevents the flaps of an anti-reflux valve, from being kinked and so prevents said valve from becoming closed off should said bag be placed in a position where said flaps otherwise would have been folded or kinked.

4,534,767
PROTECTIVE SEALING COMPOSITION IN MOLDED FORM

Wagdi W. Habib, Roselle, Ill., assignor to Hollister Incorporated, Libertyville, Ill.

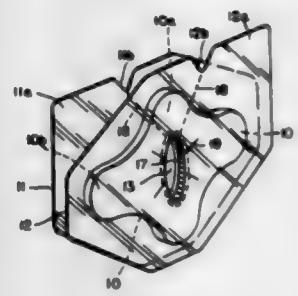
Continuation-in-part of Ser. No. 185,003, Sep. 8, 1980, abandoned, which is a continuation-in-part of Ser. No. 90,855, Nov. 2, 1979, abandoned. This application Jun. 10, 1981, Ser. No. 272,191
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—336 **10 Claims**

1. A protective sealing composition in the form of a molded gelled ring, sheet, or the like, said composition comprising essentially a gelled mixture of gellable, water-absorbing, particulate hydrocolloid gum and a non-toxic liquid polyhydroxy alcohol, wherein the improvement comprises having dispersed in said composition an amount of fumed silica within the range from 0.1 to 4.0% by weight, said amount of fumed silica being effective to increase appreciably the mechanical endurance of said sealing composition when exposed to urine or intestinal fluid.

4,534,768
SEALANT PAD FOR EXTERNAL CATHETER AND METHOD OF USE THEREOF

Frank G. Osburn, Hanover Park, and Kenneth E. Riedel, Naperville, both of Ill., assignors to Hollister Incorporated, Libertyville, Ill.

Filed Jul. 12, 1982, Ser. No. 397,183
Int. Cl.³ A61F *5/44*
U.S. Cl. 604—350 **26 Claims**



12. A sealant pad combination for a male urinary incontinence device, comprising a thin planar pad having flat opposite surfaces and formed entirely of soft, pliable polymeric material having characteristics of stretchability, elastic recovery, surface tackiness, and stability upon exposure to urine; said pad having a flat oval-shaped ring portion with outer limits of generally elliptical shape and a pair of integral coplanar wing portions projecting radially outwardly from diametrically opposite sides of said ring portion beyond said outer limits thereof; said ring portion having an oval opening therethrough and oriented with its minor axis aligned in the direction of said wing portions; and a pair of thin, flexible release sheets covering said opposite surfaces of said pad; each of said release sheets having an outline substantially larger than said pad and being provided with an oval aperture in register with the opening in said pad; each release sheet having a line of separation extending from the perimeter thereof to a point along the edge of said aperture adjacent the intersection of said major axis with said edge, whereby, when said wing portions, covered by said release sheets, are gripped between the fingers of both hands and urged apart, the width of said oval opening of said pad and said oval apertures of said sheets increase in size and those stretches of said ring portion extending between said wing portions tend to flex towards each other.

4,534,769

DIAPER

Raphael De Jonckheere, Bondues, and Jacques Dussaud, La Madeleine, both of France, assignors to Boussac Saint Freres B.S.F., Lille, France

Filed Jun. 15, 1983, Ser. No. 504,413
Claims priority, application France, Jun. 24, 1982, 82 11107
Int. Cl.[3] A41B *13/02*
U.S. Cl. 604—369 28 Claims

1. A diaper, especially for infants, comprising

an outer sheet of plastic foam which is elastic and air-permeable but water-impermeable,

an inner sheet of plastic foam which is elastic, air-permeable, and water-permeable,

a water absorbent pad located between said outer sheet and said inner sheet, and



fastening means fixed on two opposite side margins of the diaper in order to close the diaper around the waist of the infant.

4,534,770

MULTI-RING FLUORINATED CARBAMATES WITH TEXTILES SOIL REPELLENT ACTIVITY

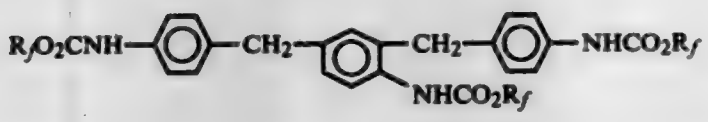
Michael G. Kelly, Coventry, R.I., assignor to American Hoechst Corporation, Sommerville, N.J.

Division of Ser. No. 507,407, Jun. 24, 1983, Pat. No. 4,500,438. This application Nov. 23, 1984, Ser. No. 674,398

Int. Cl.[3] D06M *13/40;* C07C *125/06;* C09B *67/00*

U.S. Cl. 8—115.6 4 Claims

1. A polyester or polyamide fiber having incorporated therewith a compound of the formula:



wherein R_f is a fluorinated radical of the formula $-W(C_nF_{2n})Y$ wherein W has from 1 to 10 carbon atoms and is selected from alkylene and $W'—Z—(W'')_b$ where W' and W'' are alkylene, Z is O, S, NHCO, or N $(R)SO_2$ wherein R is H or lower alkyl, and b is 0 or 1, Y is hydrogen, fluoro, or perfluoroalkoxy of 1 to 6 carbon atoms, and n is 2 to 20;

in an amount sufficient to impart oil or water repellency.

4,534,771

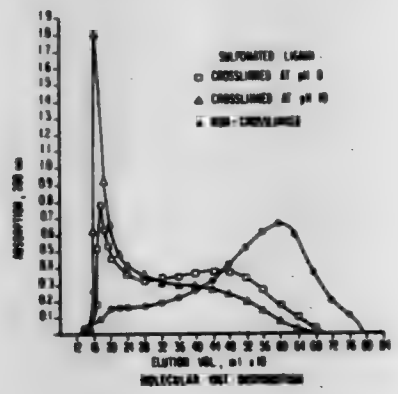
SELECTIVE CROSSLINKING OF LOW MOLECULAR WEIGHT SULFONATED LIGNINS AND LIGNOSULFATE PRODUCTS PRODUCED THEREBY

Peter Dilling, Isle of Palms, S.C., assignor to Westvaco Corporation, New York, N.Y.

Division of Ser. No. 532,677, Sep. 16, 1983, abandoned. This application Mar. 21, 1984, Ser. No. 591,809

Int. Cl.[3] D06P *67/02*

U.S. Cl. 8—524 21 Claims



1. An improved dyestuff composition comprising a disperse or vat dye and a crosslinked sulfonated lignin dispersant prepared by the sequential steps of preparing a sulfonated lignin and crosslinking the sulfonated lignin by the addition of a crosslinking agent, wherein the improvement comprises crosslinking only the low molecular weight lignin fraction by maintaining the crosslinking reaction pH in the range from about 6.1 to below 9.

4,534,772

PROCESS OF ETHER SYNTHESIS

Eric H. Reichl, Greenwich, Conn., assignor to Conoco Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 372,507, Apr. 28, 1982, abandoned. This application Oct. 28, 1983, Ser. No. 546,233

Int. Cl.[3] C10L *1/02, 1/18*

U.S. Cl. 44—53 2 Claims

1. A process for producing a high octane liquid gasoline fuel product mixture rich in methanol and methyl ethers from coal consisting of the sequence of steps as follows:

(a) gasifying coal to form a coal gasification product gas mixture comprising hydrogen and carbon monoxide,

(b) contacting said coal gasification product gas with water and a shift conversion catalyst to catalytically react said water with said carbon monoxide of said gasification product gas to form a shift product gas mixture comprising carbon dioxide and hydrogen,

(c) subjecting said shift product gas mixture to a clean-up step to produce a cleaned shift product gas mixture,

(d) contacting said cleaned shift product gas mixture with an alcohol synthesis catalyst to form a synthesis product mixture of alcohols, said synthesis product mixture of alcohols comprising methanol, and said alcohol synthesis catalyst comprising alkali modified zinc oxide and chromium oxide,

(e) separating said synthesis product mixture of alcohols into a methyl alcohol separation product mixture and a higher alcohol separation product mixture, said methyl alcohol separation product mixture comprising a substantially larger proportion of methanol than said synthesis product mixture of alcohols, and said higher alcohol separation product mixture further comprising substantially all of the alcohols other than methanol from said synthesis product mixture of alcohols,

(f) dehydrating said higher alcohol separation product mixture with a catalyst to form a dehydration product mixture and water, said dehydration product mixture comprising olefins, and said catalyst comprising alumina,

(g) catalytically reacting said olefins of said dehydration product mixture with a portion of said methyl alcohol separation product mixture in the presence of an ether synthesis catalyst at about 125° F. and 300 psig to form a methyl ether product mixture, said ether synthesis catalyst comprising acidic ion exchange resin,

(h) mixing the remainder of said methyl alcohol separation product with said methyl ether product mixture to form a methyl alcohol and methyl ether product mixture as substantially the only liquid product of said coal gasified in step (a), and

(i) mixing gasoline with said methyl alcohol and methyl ether product mixture to form a high octane fuel product,

whereby substantially all of the alcohols formed in step (d) are formed into a mixture of methyl alcohol and methyl ethers and are mixed with gasoline to produce a high octane liquid gasoline fuel product rich in methyl alcohol and methyl ethers.

4,534,773

ABRASIVE PRODUCT AND METHOD FOR MANUFACTURING

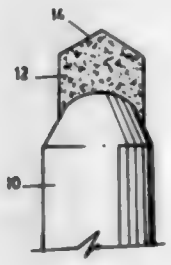
Cornelius Phaal, 34 Rutland Ave., Craighall Park, Johannesburg, Transvaal; Noel J. Pipkin, 115 Pritchard St., Johannesburg North, Randburg, Transvaal, and Richard P. Burnand, 39 Constantia Ave., Alan Manor, Johannesburg, Transvaal, all of South Africa

Filed Dec. 29, 1983, Ser. No. 566,862

Claims priority, application South Africa, Jan. 10, 1983, 83/0139; Feb. 4, 1983, 83/0754

Int. Cl.[3] B24D *3/00*

U.S. Cl. 51—293 9 Claims



1. An abrasive body comprising a mass of diamond particles present in an amount of 80 to 90 percent by volume of the body

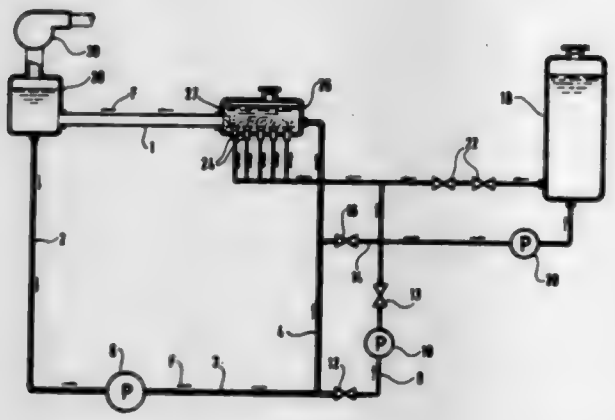
and a second phase present in an amount of 10 to 20 percent by volume of the body, the mass of diamond particles containing substantial diamond-to-diamond bonding to form a coherent skeletal mass and the second phase containing nickel and silicon. the nickel being in the form of nickel and/or nickel silicide and the silicon being in the form of silicon, silicon carbide, and/or nickel silicide.

4,534,774

METHOD OF DEGASSING A LIQUID

Yves Lecoffre, Le Versoud, and Jean Marcoz, Grenoble, both of France, assignors to Societe anonyme dite: Alsthom-Atlantique, Paris, France

Filed Aug. 24, 1984, Ser. No. 643,937
Claims priority, application France, Aug. 26, 1983, 83 13780
Int. Cl.[3] B01D *19/00*
U.S. Cl. 55—44 **3 Claims**



1. A method of degassing a liquid, the method being applicable to a liquid containing an unwanted gas in solution and serving to reduce the concentration of the gas to final concentration below its initial concentration, said method comprising the steps of:

effecting mass exchange at reduced pressure during which the liquid is to be degassed by placing said liquid in a free separation enclosure, and

aspirating the gaseous medium above the liquid to reduce the pressure of the unwanted gas to a degassing value below its saturation pressure which corresponds to the desired final concentration, and

maintaining said degassing pressure for the time required to obtain the desired final pressure by mass exchange through the interface between the liquid and the gas phases,

injecting bubbles of said unwanted gas itself into the undegassed liquid to thereby increase the area of the interface between the liquid and gas phases during the reduced pressure exchange operation, thereby accelerating mass exchange,

the improvement wherein said step of injecting microbubbles comprising injecting microbubbles of a diameter substantially in the range of about 50 micrometers to about 100 micrometers under a condition of a small rate of gas injection whereby said bubbles initially rise slowly through the liquid and create a large interface area,

wherein said method is applicable to a liquid circulating in a closed circuit and further comprises the following steps:

taking a fraction of said liquid flow, said fraction being a fraction for injection;

pressurizing said fraction to an injection pressure greater than twice the degassing pressure;

taking a fraction of said liquid flow, said fraction being a fraction for engassing;

engassing the fraction for engassing in an engassing enclosure which is supplied with said unwanted gas and which is subjected to an engassing pressure greater than the injection pressure, thereby dissolving the gas in a liquid to a concentration which is greater than twice the initial concentration; and

transforming said fraction into a superengassed fraction; and

progressively and adjustably relaxing the superengassed fraction to mix it in adjustable proportions with the injection fraction and thus to supply an injection mixture having a substantially constant injection concentration of said unwanted gas;

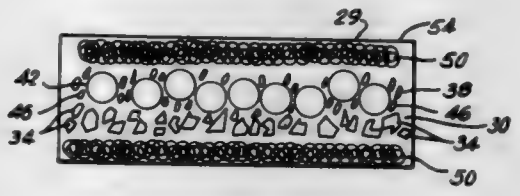
with said step of injecting bubbles into said liquid taking place through injection holes supplied with the injection mixture and leading to said liquid substantially at the degassing pressure.

4,534,775

AIR TREATMENT FILTER ELEMENT AND AIR TREATMENT FILTER

Stephen E. Frazier, Orlando, Fla., assignor to General Time Corp., Norcross, Ga.

Continuation of Ser. No. 354,030, Mar. 2, 1982, abandoned. This application Apr. 19, 1984, Ser. No. 601,946
Int. Cl.[3] B01D *53/04*
U.S. Cl. 55—74 **40 Claims**



1. A method for removing odors and harmful gases from indoor air which comprises contacting the air, odors and harmful gases with an air treatment filter element, said element consisting essentially of at least one layer of an adsorbent material selected from the group consisting of zeolite, activated carbon, silica gel, and a combination thereof, said adsorbent material containing a liquid for inhibiting the growth of microorganisms, said liquid being present in an amount from about 5 to about 50% by weight of the combined weight of said adsorbent and said liquid;

said liquid comprising:

(a) a fungicide/bacteriocide preservative composition in an amount from about 0.5 to 2% by weight of the liquid;

(b) at least one polyhydric alcohol, said polyhydric alcohol being present in an amount from about 83 to 99.5% by weight of the liquid; and

(c) at least one compound for modifying the vapor pressure of said polyhydric alcohol, said compound being present in an amount of less than about 15% by weight of the liquid.

12. An air treatment filter element consisting essentially of an adsorbent material selected from the group consisting of zeolite, activated carbon and a combination thereof, said adsorbent material containing a liquid for inhibiting the growth of microorganisms, said liquid comprising:

(a) a fungicide/bacteriocide preservative composition in an amount from about 0.5 to 2% by weight of the liquid,

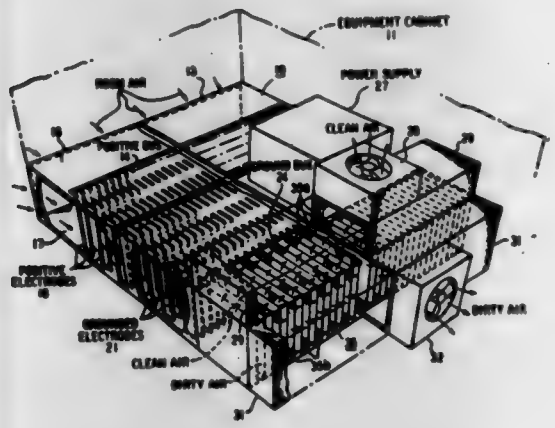
(b) at least one polyhydric alcohol, said polyhydric alcohol being present in an amount from about 83 to 99.5% by weight of the liquid, and

(c) at least one additional compound for modifying the vapor pressure of said polyhydric alcohol, said additional compound being present in an amount from about 0 to 15% by weight of the liquid, said liquid being present in an amount from about 5 to about 50% by weight of the combined weight of said adsorbent and said liquid.

4,534,776
AIR CLEANER

Lewis H. Mammel, Holmdel, and Walter J. Shakespeare, Middletown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 408,218, Aug. 16, 1982, abandoned. This application Jul. 30, 1984, Ser. No. 635,895
Int. Cl.[3] B03C *3/00*
U.S. Cl. 55—136 6 Claims



1. Apparatus for providing air to an enclosure located within a room, said apparatus comprising

a housing,

means within said housing adapted to be in communication with said room for creating a stream of air taken from said room, said stream being laden with dust,

means within said housing for moving dust that is in at least a first longitudinal region of said air stream transversely to the direction of flow of said air stream into at least a second longitudinal region of said air stream, said second region being contiguous in said air stream to said first region, said dust moving means comprising first and second interleaved pluralities of rows of electrodes disposed in said first and second regions, respectively, and means for connecting the electrodes of said first and second pluralities to respective electrical potentials,

baffle means within said housing for separating said first and second regions to form streams of clean and dirty air, respectively, said dirty stream being more laden with dust than said clean stream and said baffle means having formed therein at least first and second channels aligned with said first and second regions, respectively, and

output means for directing said clean air into said enclosure and for discharging into said room said dirty air and substantially all of said dust that is not in said clean stream.

4,534,777
GAS SEPARATION APPARATUS

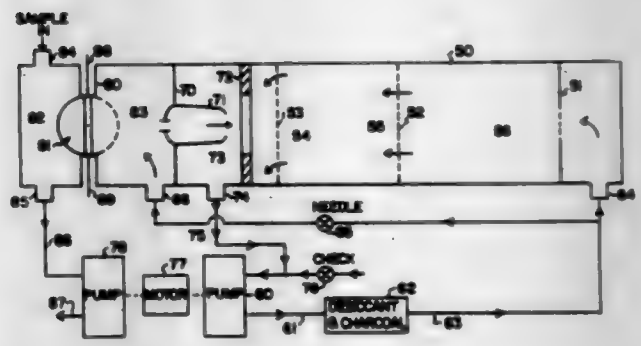
Bruce W. Castleman, Kenneth City; David P. McQuire, Dade City, and Eugene L. Szonntagh, Largo, all of Fla., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Jun. 29, 1984, Ser. No. 626,811
Int. Cl.[3] B01D *53/06*
U.S. Cl. 55—181 4 Claims

1. In combination:

a housing defining sorption and desorption chambers separated by a partition having an aperture which is bilaterally symmetrical about an axis;

and sorption means comprising a plate, pivotally mounted in said aperture for rotation about said axis through first and second positions in which it substantially occludes said aperture, and a plurality of generally semicircular, mutually spaced sorption wafers mounted on one face of said plate and generally orthogonal to said axis, so that in said first position of said plate said wafers are in said sorption

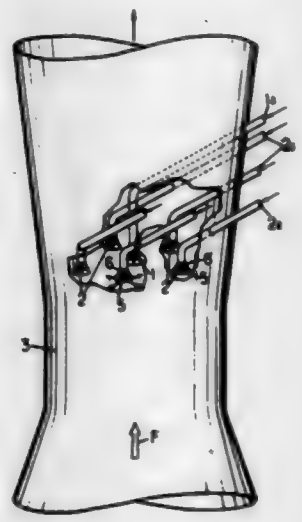


chamber, while in said second position of said plate said wafers are in said desorption chamber.

4,534,778
INSTALLATION FOR INJECTING A POWDERY MATERIAL, PARTICULARLY AN ADSORBENT MATERIAL, INTO A CONTACT COLUMN

Christian Carré , Houilles, and Jean P. Guibet, Dormont St. Pierre de Bailleul, both of France, assignors to Air Industrie, Courbevoie, France

Filed Oct. 14, 1983, Ser. No. 542,058
Claims priority, application France, Oct. 25, 1982, 82 17826
Int. Cl.[3] B01D *53/06*
U.S. Cl. 55—340 9 Claims



1. An installation for injecting an adsorbent powdery material into a generally vertical contact column having a lateral wall, through which column flows a stream of gas laden with polluting effluents which it is desired to fix on said material, said installation comprising means opening into the column for injecting fresh material and for injecting recycled material already having served the same purpose, said injecting means comprising a plurality of nozzles for injecting recycled material spaced apart about at least one nozzle for injecting fresh material, said plurality of nozzles and said at least one nozzle being disposed in said column.

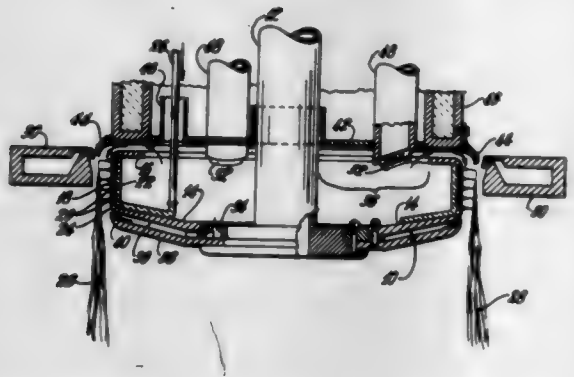
4,534,779
METHOD AND APPARATUS FOR HEATING A MINERAL FIBER FORMING SPINNER

Max G. Herschler, Newark, Ohio, assignor to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation-in-part of Ser. No. 452,272, Dec. 22, 1982, abandoned. This application Aug. 16, 1984, Ser. No. 641,248
Int. Cl.[3] C03B *37/04*
U.S. Cl. 65—6 10 Claims

9. A method for fiberizing molten mineral material comprising supplying molten mineral material to a rotating spinner,

centrifuging the molten mineral material into mineral fibers by passing the molten mineral material through the orificed peripheral wall of said spinner, directing hot gases toward the interior of said peripheral wall, venting the hot gases from said



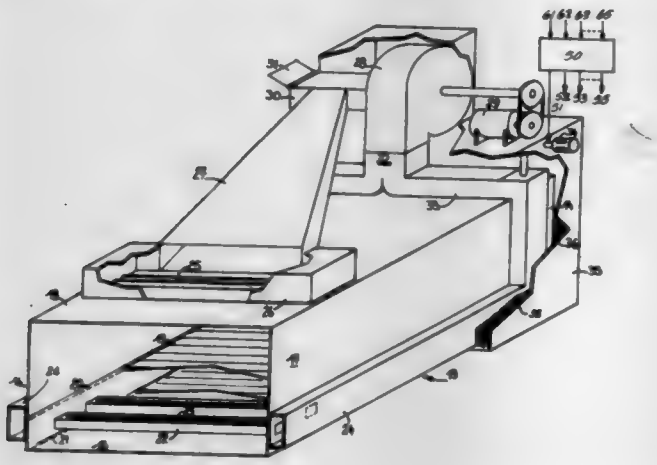
spinner, deflecting the vented hot gases radially outwardly toward said peripheral wall, and changing the direction of the vented hot gases so that they flow along the exterior of said peripheral wall in the absence of external heating means.

4,534,780

APPARATUS FOR HEAT TREATMENT OF OBJECTS BY CONVECTION

Hans Cemin, Fullingsdorf, Switzerland, assignor to Societe d'Etudes et Installations Industrielles CNUD S.A., Brussels, Belgium

Filed Mar. 15, 1983, Ser. No. 475,549
Claims priority, application France, Mar. 25, 1982, 82 05087
Int. Cl.³ C03B *25/06*
U.S. Cl. 65—348 **21 Claims**



21. A modular section for use in a generally horizontal tunnel furnace for heat treatment by convection of separate bodies of hollow glass, the furnace being formed by assembly of juxtaposed modular sections, each module having an exterior, an upper wall, and sides, the assembly forming a heat treatment enclosure having a width, the tunnel furnace comprising a conveyor with a horizontal belt disposed in the enclosure causing said bodies to travel in a direction through the tunnel furnace, a circulation system comprising a gas circulating loop for creating a circulation of gas, transverse to the movement of the belt and between the bodies to be treated, and a system for maintaining temperatures of the gas in each modular section such that gas temperatures in the modular sections are individually regulated to a desired value in each of the successive sections, the modular section comprising:

gas discharging means comprising a plurality of horizontal and mutually parallel flues each defining an opening substantially occupying the width of the heat treatment enclosure beneath the conveyor, each flue being oriented in a direction perpendicular to the direction of travel of the conveyor, such that a sheet of ascending gas is produced from the opening;

gas collecting means comprising at least one horizontal collecting flue defining an opening formed in the upper wall substantially occupying the entire width of the heat treatment enclosure, the collecting flue being oriented in a direction perpendicular to the direction of travel of the conveyor, such that the collecting flue collects the sheets of ascending gas;

at least one temperature adjusting device for adjusting the temperature of the collected gas to the temperature desired in the heat treatment enclosure of the modular section; and

a circulating fan for taking up the gas collected by the gas collecting means and for returning the gas along a gas circulating path to the gas discharging means after exposing the gas to the temperature adjusting device.

4,534,781

MUSHROOM SUPPLEMENT CONTAINING PROTEIN AND A TIME DELAY COATING

Lung-chi Wu, and Carl W. Bretzloff, both of Napoleon, Ohio, assignors to Campbell Soup Company, Camden, N.J.

Filed Jul. 27, 1982, Ser. No. 402,314
Int. Cl.³ C05F *11/00*
U.S. Cl. 71—5 **20 Claims**

1. An improved nutrient supplement for enhancing the growth of mushroom mycelium in a compost bed comprising a particulate primarily non-denatured protein-containing nutrient supplement having a coating of a hydrophobic material that is not readily assimilable by competing microorganisms in the compost, which coating delays the availability of the nutrient to the mushroom mycelium while said coating is gradually removed under the conditions of mushroom growth.

4,534,782

METHOD FOR INCREASING THE BIOLOGICAL VALUE OF MANURES, DUNG-WATERS, ORGANIC WASTES AND/OR SOILS RICH IN LYSINE

István Rusznák; Lajos Trézl, both of Budapest; Dezsö Földesi, Budakalász-felsö; Béla Szabó, Tiszaföldvár; Imre Bódi, Tiszaföldvár; Szilveszter Császár, Tiszaföldvár; Mihály Szopko, Szeged; Mihály Gombár, Tiszaföldvár; Gabriella Kovács, and Ernö Tyihák, both of Budapest, all of Hungary, assignors to Magyar Tudományos Akadémia Központi Hivatala, Budapest and Lenin Mezögazdasági Termelöszövetkezet, Tiszaföldvár, both of, Hungary

Filed Oct. 6, 1981, Ser. No. 309,224
Claims priority, application Hungary, Aug. 10, 1980, 2447/80
Int. Cl.³ C05F *3/00*
U.S. Cl. 71—21 **11 Claims**

1. A method of increasing the biological value of soils which comprises: applying to soil that is to be used to support crop growth a methylated lysine derivative that is formed by treating a lysine source with at least 0.01 mole of formaldehyde or an equivalent amount of a formaldehyde source, calculated for one mole of free or bound lysine that is present, at a pH of from 1 to 13.

4,534,783

HIGH CONCENTRATION ENCAPSULATION OF WATER SOLUBLE-MATERIALS

George B. Beestman, St. Louis County, Mo., assignor to Monsanto Co., St. Louis, Mo.

Filed Jan. 3, 1984, Ser. No. 567,585
Int. Cl.³ B01J *13/02*
U.S. Cl. 71—27 **19 Claims**

1. A process of encapsulating a water-soluble material within a shell wall of polymeric materials which comprises:

(a) providing an organic continuous phase liquid containing an oil soluble alkylated polyvinylpyrrolidone emulsifier;

(b) dispersing in said continuous phase liquid an aqueous discontinuous phase liquid containing a first shell wall component and a water-soluble material dissolved therein

to form a dispersion of discontinuous phase droplets throughout the continuous phase;

(c) adding with agitation to said dispersion a second shell wall component, whereby said second shell wall component reacts with said first shell wall component to form a polymeric shell wall about said discontinuous phase droplet;

wherein the concentration of said water-soluble material is from about 480 grams to about 700 grams per liter of composition; wherein the concentration of said emulsifier is from 0.5% to about 15.0% by weight of said water-soluble material; wherein the concentration of said first shell wall component is from about 1.5% to about 10.0% by weight of said water soluble material and wherein the concentration of said second shell wall component is from about 3.5% to about 20.0% by weight of said water-soluble material.

4,534,784

METHOD OF CONTROLLING WEED PESTS

James L. Ahle, San Jose, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Aug. 6, 1984, Ser. No. 638,078
Int. Cl.[3] A01N *57/10*
U.S. Cl. 71—87 6 Claims

1. A method for the pre-emergent control of undesirable grass weed pests which comprises applying to the locus where control is desired by pre-emergent application of a herbicidally effective amount of the trimethylsulfonium salt of N-phosphonomethylglycine, said salt being applied at a rate of at least about four pounds per acre.

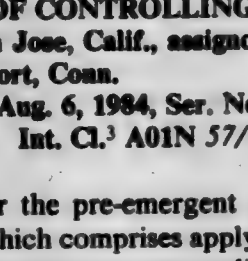
4,534,785

HERBICIDAL 5-DEOXY-3-O-ARYLMETHYL OR SUBSTITUTED ARYLMETHYL-1,2-O-ETHYLENE-ALPHA-D-XYLOFURANOSE DERIVATIVES

William Loh, Petaluma, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 15, 1984, Ser. No. 589,815
Int. Cl.[3] A01N *43/08*; C07H *17/04*
U.S. Cl. 71—88 21 Claims

1. A compound having the formula:



(I)

wherein

R is linear lower alkyl having 1 through 4 carbon atoms or linear alkenyl having 2 through 4 carbon atoms;

R^1 is 2-trifluoromethylphenyl, aryl having 6 through 10 carbon atoms or substituted aryl having 1 through 4 substituents independently selected from the group of lower alkyl having 1 through 4 carbon atoms, lower alkoxy having 1 through 4 carbon atoms, cyano and halo.

17. A method for controlling undesired vegetation which comprises supplying a herbicidally effective amount of the compound of claim 1 or mixtures thereof, to the foliage or growth medium of said vegetation.

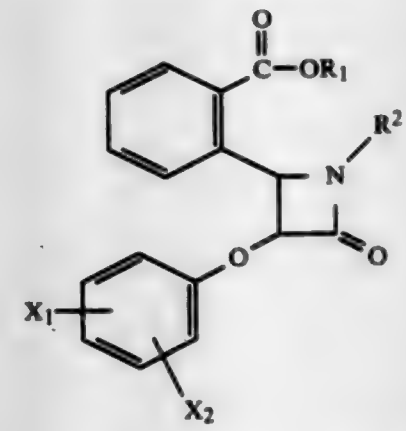
4,534,786

1-ALKYL DERIVATIVES OF 3-ARYLOXY-4-(2-CARBALKOXY)-PHENYL-AZET-2-ONES AS PLANT GROWTH REGULATORS

Tatao Luo, El Sobrante; Louis Russo, Walnut Creek, and Francis J. Freenor, III, Richmond, all of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 391,798, Jun. 23, 1982, Pat. No. 4,443,372.
This application Apr. 13, 1984, Ser. No. 600,260
Int. Cl.[3] A01N *43/44*
U.S. Cl. 71—88 24 Claims

1. A plant growth regulating composition comprising a biologically inert carrier and a plant growth regulating effective amount of a compound of the formula:



wherein R_1 is methyl or ethyl; R_2 is lower alkyl; and X_1 and X_2 are independently hydrogen or halogen.

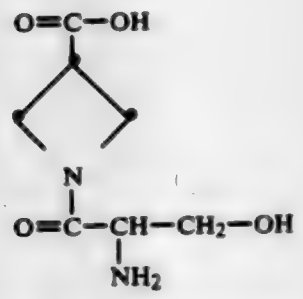
4,534,787

N-L-SERYL-3-AZETIDINECARBOXYLIC ACID

Gary M. Gardner, Manteca, and J. Edward Semple, Modesto, both of Calif., assignors to Shell Oil Company, Houston, Tex.

Filed May 24, 1984, Ser. No. 613,496
Int. Cl.[3] C07D *205/04*; A01N *43/44*
U.S. Cl. 71—88 5 Claims

1. A compound of the formula:



2. A method for sterilizing the male parts of a wheat plant, which comprises applying to the plant prior to pollen shed an effective dosage of the compound of claim 1.

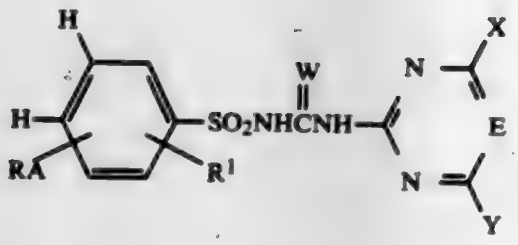
4,534,788

HERBICIDAL SULFONAMIDES

John B. Adams, Jr., Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 152,021, May 30, 1980, Pat. No. 4,452,628, which is a continuation-in-part of Ser. No. 60,869, Jul. 26, 1979, abandoned. This application Nov. 15, 1983, Ser. No. 538,261
Int. Cl.[3] A01N *47/36*; C07D *239/42*
U.S. Cl. 71—92 24 Claims

1. A compound selected from



wherein
W is O or S;
R is CHF_2, CF_3, CH_2CF_3 or CF_2CHFG, where G is F, Cl, CF_3 or Br;
A is O or $S(O)_n$, where n is 0, 1 or 2;
R^1 is H, F, Cl, Br or CH_3;
X is CH_3 or OCH_3;
Y is CH_3, OCH_3, OCH_2CH_3, $(CH_2)_mOCH_3$ (where m is 1 or 2), $OCH_2CH_2OCH_3$, or $OCHR^2CO_2R^3$, where R^2 is H or CH_3 and R^3 is CH_3 or C_2H_5; and
E is CH and agriculturally suitable salts thereof.

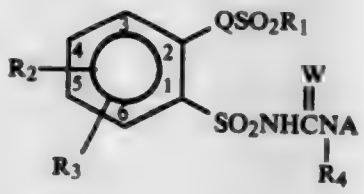
4,534,789

HERBICIDAL O-ALKYLSULFONYLOXY- AND O-ALKYLSULFONYLAMINOBENZENESULFONAMIDES

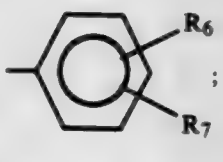
James J. Reap, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 368,809, Apr. 15, 1983, Pat. No. 4,435,205, which is a continuation-in-part of Ser. No. 262,813, May 19, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,344, Jul. 11, 1980, abandoned. This application Oct. 21, 1983, Ser. No. 544,429
Int. Cl.³ C07D *251/46, 251/52, 251/18;* A01N *43/70*
U.S. Cl. 71—93 25 Claims

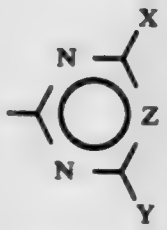
1. A compound of the formula



where
W is O or S;
Q is O or NR_5;
R_1 is C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br, $CH_2CH_2OCH_3$, $CH_2CH_2CH_2OCH_3$ or



R_2 is H, F, Cl, Br, OCH_3, NO_2, CF_3 or C_1–C_2 alkyl;
R_3 is H, F, Cl, Br or CH_3;
R_4 is H, CH_3 or OCH_3;
R_5 is C_1–C_4 alkyl;
R_6 and R_7 are independently H, F, Cl, Br, CH_3, CF_3, NO_2 or OCH_3;
A is



X is NH_2, $N(CH_3)_2$, $NHCH_3$, C_1–C_4 alkyl, C_1–C_4 alkyl substituted with 1–3 atoms of F, Cl or Br, CH_2OCH_3, $CH_2OCH_2CH_3$, C_1–C_4 alkoxy, C_1–C_4 alkylthio, C_3–C_4 alkenyloxy, C_3–C_4 alkynyloxy, $OCH_2CH_2OCH_3$ or C_2–C_4 alkoxy substituted with 1–3 atoms of F, Cl or Br;
n is 1 or 2;
Y is CH_3 or OCH_3; and
Z is N;
provided that
(1) when W is S, then R_4 is H; and
(2) when R_4 is OCH_3, then Q is O.

15. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

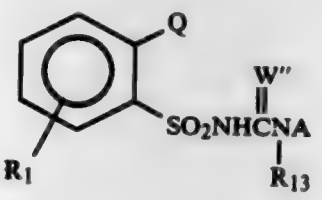
4,534,790

HERBICIDAL SULFONAMIDES

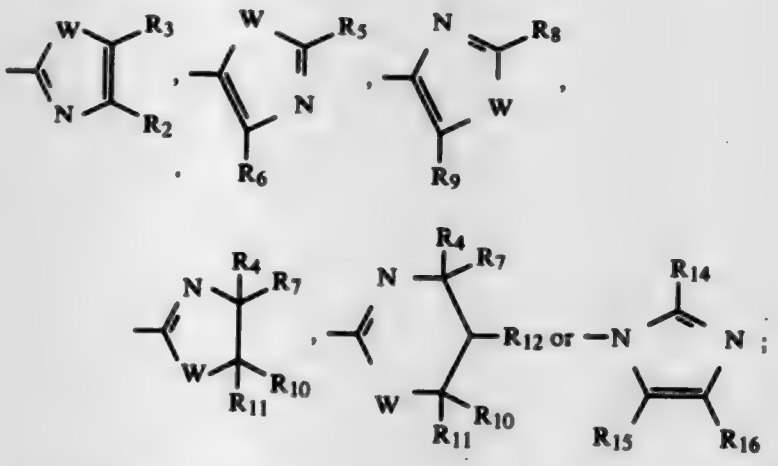
Anthony D. Wolf, Elkton, Md., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 428,806, Oct. 7, 1982, Pat. No. 4,465,505, which is a continuation-in-part of Ser. No. 337,932, Jan. 7, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,222
Int. Cl.³ C07D *403/12, 413/12;* A01N *43/70, 43/66*
U.S. Cl. 71—93 32 Claims

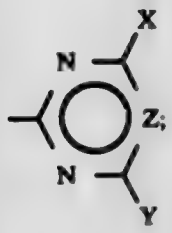
1. A compound of the formula:



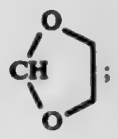
where
Q is



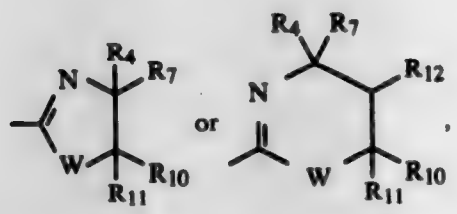
W'' is O or S;
W is O, S, or NR;
R is H or C_1–C_4 alkyl;
R_1 is H, F, Cl, Br, CH_3, CF_3 or OCH_3;
R_2 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;
R_3 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;
R_5 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;
R_6 is H, CH_3 or C_2H_5;
R_8 is H, CH_3, C_2H_5, OCH_3, OC_2H_5, SCH_3, Cl or Br;
R_9 is H, CH_3 or C_2H_5;
R_4, R_7, R_{10} and R_{11} are independently H or C_1–C_4 alkyl;
R_{12} is H or CH_3;
R_{13} is H or CH_3;
R_{14} is H, CH_3, C_2H_5, Cl, Br, CH_3O, C_2H_5O or CH_3S;
R_{15} is H, CH_3 or C_2H_5;
R_{16} is H, CH_3 or C_2H_5;
A is



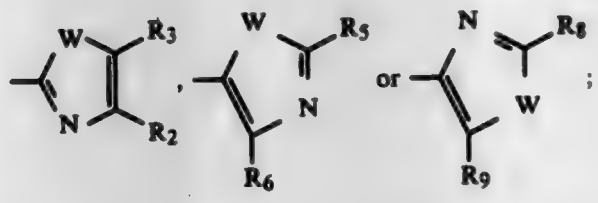
X is CH_3, or OCH_3;
Y is CH_3, C_2H_5, CH_2OCH_3, OCH_3, OC_2H_5, $CH(OCH_3)_2$, NH_2, $NHCH_3$, $N(CH_3)_2$, $OCH_2CH_2OCH_3$, OCH_2CF_3, CF_3, SCH_3 or



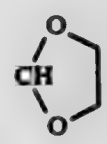
Z is N;
and their agriculturally suitable salts; provided that
(a) when R_8 is other than H, CH_3, C_2H_5 or CH_3S, then W is S or O;
(b) the total number of carbon atoms of R_4, R_7, R_{10} and R_{11} is less than or equal to 4;
(c) when Q is



then R_{13} is H, R is other than H, X is OCH_3 and Y is OCH_3 or OC_2H_5; and
(d) when W'' is S, then R_{13} is H;
Q is



and
Y is CH_3, OCH_3, C_2H_5, OC_2H_5, CH_2OCH_3, $CH(OCH_3)_2$ or



25. A composition suitable for controlling the growth of undesired vegetation which comprises an effective amount of a compound of claim 1 and at least one of the following: surfactant, solid or liquid diluent.

4,534,791
PROCESS FOR TREATING SILICON AND FERROSILICON WITH SLAG

Anton More, Burghausen, Fed. Rep. of Germany; Winfried Lang, Ach, Austria; Rudolf Riedle, Burghausen, Fed. Rep. of Germany; Herbert Straussberger, and Willi Streckel, both of Mehring-Öd, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Munich, Fed. Rep. of Germany

Filed Jul. 30, 1984, Ser. No. 635,794
Claims priority, application Fed. Rep. of Germany, Aug. 29, 1983, 3331046
Int. Cl.³ C22B *4/00*
U.S. Cl. 75—10 R 1 Claim

1. The process for treating silicon or ferrosilicon with a slag that is liquefied and kept in a molten state by means of electrical resistance heating, comprising the step of bringing at least one of said silicon and ferrosilicon into contact with a slag having the following analytical composition:

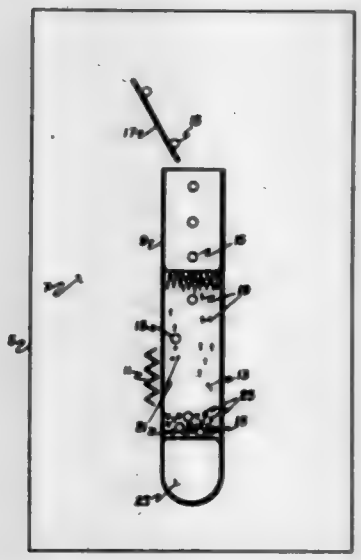
K_2O	from 2 to 13% by weight
Na_2O	from 0 to 2% by weight
Σ K_2O + Na_2O	from 2 to 13% by weight
SiO_2	from 45 to 72% by weight
Al_2O_3	from 0 to 30% by weight
Σ SiO_2 + Al_2O_3	from 60 to 78% by weight
CaO	from 0 to 30% by weight
MgO	from 0 to 30% by weight
Σ CaO + MgO	from 15 to 30% by weight
CaF_2	from 0 to 10% by weight
MgF_2	from 0 to 10% by weight
Σ CaF_2 + MgF_2	from 0 to 10% by weight
Σ CaO + MgO + CaF_2 + MgF_2	from 15 to 30 % by weight

and impurities resulting from the raw materials.

4,534,792
MAGNESIUM REDUCTION OF URANIUM OXIDE

Guy R. B. Elliott, 133 La Senda Rd., Los Alamos, N. Mex. 87544

Filed Jan. 27, 1983, Ser. No. 446,762
Int. Cl.³ C22B *5/00, 60/02*
U.S. Cl. 75—84.1 R 15 Claims



1. A method of reacting uranium oxide with magnesium to produce uranium comprising:
(a) holding in a container, a molten-salt solution comprising halides of lanthanides, strontium, and/or barium and having a density greater than 3.4 grams per cubic centimeter,
(b) adding solid uranium oxide to the said molten-salt solution, thereby placing the said molten-salt solution in contact with the said solid uranium oxide,
(c) adding magnesium to the said molten-salt solution,
(d) dissolving at least some of the said magnesium into the said molten-salt solution,

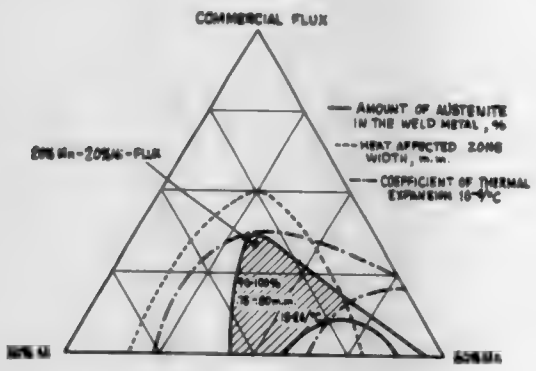
(e) reacting the said magnesium and the said uranium oxide, thereby forming magnesium oxide and uranium,
(f) separating by density differences the said uranium and the said magnesium oxide in the said molten-salt solution, and
(g) removing separately the said uranium and the said magnesium-oxide from the said molten-salt solution.

4,534,793

CAST IRON WELDING MATERIALS AND METHOD

David L. Olson, Golden, Colo., and Alfredo D. Marquez, Caracas, Venezuela, assignors to Research Corporation, New York, N.Y.

Continuation of Ser. No. 77,038, Sep. 19, 1979, abandoned. This application Nov. 16, 1982, Ser. No. 442,172
Int. Cl.³ B23K *35/22*
U.S. Cl. 75—123 N **16 Claims**



1. A welding composition for use in the submerged arc welded of cast iron, said composition consisting essentially of a mixture of nickel, manganese and flux delineated by the cross-hatched area of FIG. 9 in the drawings, said composition, when used with an iron welding wire producing a cast iron weldment having an improved coefficient of thermal expansion ranging from $(15 \text{ to } 20)\times 10^{-6}$/°C. at 850° C. and a fusion zone wherein 1% to 10% of the weld metal matrix is discontinuous carbides.

4,534,794

SALT CORROSION INHIBITORS

Robert J. Walter, Thousand Oaks, and Bernard J. Gerik, Canoga Park, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed May 14, 1981, Ser. No. 263,646
Int. Cl.³ C09D *5/18*
U.S. Cl. 106—14.05 **1 Claim**

1. The salt system which significantly retards corrosion of mild and low alloy steels comprising a salt selected from the group consisting of KNO_3, $NaNO_3$ and mixtures thereof and a corrosion inhibitor comprising an intimate mixture of a low valence metal oxide selected from the group consisting of Li_2O, Na_2O, CuO, MgO, NiO, CaO, and mixtures thereof, and a high valence metal oxide selected from the group consisting of Al_2O_3, Cr_2O_3, SiO_2, Mn_3O_4, Ti_2O_3, Y_2O_3, and mixtures thereof.

4,534,795

LONG SHELF LIFE CEMENTITIOUS ANCHORING CAPSULE

Christopher G. Lewis, 27 Dunster Ct., Furzton, Milton Keynes, Buckinghamshire, England (MK4 1DG), and Patrick Martin, 26 The Orchard, Fen Drayton, Cambridgeshire, England (CB4 5SN)

Filed Dec. 28, 1983, Ser. No. 566,131
Claims priority, application United Kingdom, Jan. 5, 1983, 8300166
Int. Cl.³ C04B *7/35*; E21D *20/02*
U.S. Cl. 106—89 **12 Claims**

1. A frangible anchoring capsule containing in separate compartments an interactive base and catalyst component of a self-setting cementitious composition, the base component comprising a cement and water, and the catalyst component comprising a catalyst and water, in which
(i) the base component includes cement particles coated with a water insoluble coating and an additive to complex any calcium ion released from the cement into solution, and
(ii) the catalyst component includes a material which will interact with the insoluble coating to release cement particles to allow self-setting to take place.

11. A self setting composition comprising a cement base and a catalyst thereof, in which the cement base component comprises cement particles coated with a water insoluble coating and including an additive to complex any calcium ion released from the cement into solution, and in that the catalyst component therefor includes a material which will interact with the insoluble coating to release cement particles to allow self setting to take place when the cement and catalyst are mixed.

4,534,796

GLASS FIBERS FOR THE REINFORCEMENT OF CEMENT

Jean-Jacques Massol, Asnieres, France, assignor to Isover Saint-Gobain, Neuilly-sur-Seine, France

Continuation of Ser. No. 115,679, Jan. 28, 1980, abandoned. This application Oct. 1, 1981, Ser. No. 307,448
Claims priority, application France, Jan. 30, 1979, 79 02276
Int. Cl.³ C04B *7/02, 31/06*
U.S. Cl. 106—99 **5 Claims**

1. Composite products made up of cement reinforced by the glass fibers comprising, in percentages by weight:
SiO_2: 25 to 54%
Al_2O_3: 20 to 40%
MgO: 24 to 40%
ZrO_2: 1 to 5%
P_2O_5: 0 to 10%
TiO_2: 0 to 10%
B_2O_3: 0 to 10%
F: 0 to 5%
Cr_2O_3: 0 to 2%
the sum of $2MgO+Al_2O_3$ comprising at least 70% of the total weight.

4,534,797

METHOD FOR PROVIDING AN ELECTROLESS COPPER PLATING BATH IN THE TAKE MODE

David E. King, Endicott; Voya Markovich, Endwell; Carlos J. Sambucetti, Croton-on-Hudson; Stephen L. Tisdale, and Donna J. Trevitt, both of Vestal, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jan. 3, 1984, Ser. No. 567,723
Int. Cl.³ C23C *3/02*
U.S. Cl. 106—1.23 **18 Claims**

1. A method for providing an electroless copper plating bath in the take mode which comprises:
A. determining the amount in said bath of at least four of the components selected from the group of dissolved oxygen, reducing agent selected from the group of formaldehyde, formaldehyde precursors, formaldehyde homopolymers, and mixtures thereof, cyanide ion, cupric ion, and complexing agent;
B. solving the following equation:

$$R=(CABD)/E$$

wherein
C=concentration of cupric salt in g/l, calculated as $CuSO_4.5H_2O$
A=concentration of reducing agent in g/l
B=concentration of O_2, ppm
D=concentration of cyanide ion in mg/l, calculated as NaCN

E=concentration of complexing agent in g/l

C. providing the bath with quantities of said oxygen, reducing agent, cyanide ion source, cupric ion source, and complexing agent so that R, in said equation, is between about 5 and about 15 (g.ppm.mg/(liter)^2 and wherein the amount of said dissolved oxygen is about 0.5–2.0 ppm; amount of said reducing agent is about 2.0–2.5 ml/l calculated as formaldehyde; the amount of said cyanide salt is about 10 to about 12 mg/l, calculated as sodium cyanide; the amount of said cupric salt is about 8.5 to 10 g/l calculated as $CuSO_4.5H_2O$, and the amount of said complexing agent is about 38 to 45 g/l.

4,534,798

COMPOSITION FOR PARTITIONING BLOOD COMPONENTS

Seiichirou Honda, Takarazuka; Hiroshi Ogawara, Ohtsu, and Mutsumi Fukuda, Osaka, all of Japan, assignors to Sekisui Kagaku Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 292,029, Aug. 11, 1981, Pat. No. 4,457,782. This application Nov. 18, 1983, Ser. No. 553,187

Claims priority, application Japan, Aug. 18, 1980, 55-113811; Aug. 28, 1980, 55-119397; May 29, 1981, 56-83050

Int. Cl.^{3} C08L *91/00*; B01D *12/00*

U.S. Cl. 106—266 **6 Claims**

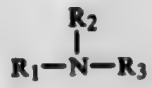
1. A blood-partitioning composition consisting essentially of a mixture of

(1) a thixotropy-imparting agent which is an inorganic solid powder having an average particle diameter of from 1 to 1,000 millimicrons, a specific surface area of at least 10 m^2/g and a specific gravity in the range of from 1.5 to 3.0;

(2) a first viscous liquid material having strong interaction with the thixotropy-imparting agent such that when the thixotropy-imparting agent is uniformly dispersed with the first viscous liquid and then centrifuged, no localization of said thixotropic agent occurs in the centrifuged liquid, said first viscous liquid having a viscosity at 20° C. of at least 200 centripoises and a specific gravity at 20° of from 0.9 to 1.2, said first material being a natural animal or vegetable oil modified with epoxy groups or a synthetic polymeric material containing carbonyl or epoxy groups in the molecule, and wherein said first material is liquid at room temperature;

(3) a second viscous liquid material having no strong interaction with the thixotropy-imparting agent such that when the thixotropy-imparting agent is uniformly dispersed with the second viscous liquid material and then centrifuged, the thixotropy-imparting agent is localized in said second viscous liquid, said second viscous liquid having good compatibility with the first viscous liquid material such that no substantial phase separation occurs upon mixing the two liquids, said second liquid material having a viscosity at 20° C. of at least 1,000 centipoises and a specific gravity at 20° C. of 0.85 to 1.20 and being a high-molecular-weight material liquid at room temperature composed substantially only of carbon and hydrogen or a high-molecular-weight material liquid at room temperature composed substantially of carbon, hydrogen and chlorine; and

(4) (a) at least one water-insoluble amine(;) of the following formula:



wherein R_1, R_2 and R_3 each represent a hydrogen atom or an alkyl group, provided that at least one of R_1, R_2 and R_3 is a higher alkyl group containing at least 8 carbon atoms, which alkyl group may be substituted with one polyoxyalkylene group;

said composition having a specific gravity at 20° C. of from 1.03 to 1.08, a viscosity at a shearing speed of 1 sec^{-1} of from 60,000 to 400,000 centipoises and a thixotropy coefficient of at least 1.8, the amount of said thixotropy-imparting agent being from 2 to 30 parts by weight per 100 parts by the combined weight of the first and second viscous liquid material, and the amount of said second viscous liquid material being from 20 to 600 parts by weight per 100 parts by weight of the first viscous liquid material.

4,534,799

PROCESSING AIDS FOR NATURAL AND SYNTHETIC RUBBER

Juan E. Aguirre, Hackensack, N.J., assignor to Technical Processing Inc., Paterson, N.J.

Filed Sep. 5, 1984, Ser. No. 647,479

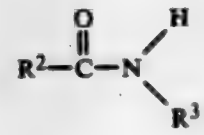
Int. Cl.^{3} C08L *91/00*; C08K *9/04*

U.S. Cl. 106—270 **9 Claims**

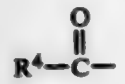
1. A partially-neutralized, fatty-acid modified alkylbenzene sulfonic acid useful as a rubber processing aid produced by heating at an elevated temperature an alkylbenzene sulfonic acid whose alkyl group contains from about 10 to about 14 carbon atoms with a saturated or unsaturated long chain fatty acid having from about 14 to about 20 carbon atoms in a weight ratio of fatty acid to sulfonic acid of at least about 1:1 until the pH of the resulting mixture is from about 2 to about 3, and thereafter adding base to adjust the pH of the mixture to from about 4.5 to about 6.5.

6. A lubricant composition consisting essentially of:

(a) From about 5 to about 50 weight percent of a fatty acid amide represented by the formula:



wherein R^2 is a straight or branched chain alkyl or alkenyl group having from about 8 to about 22 carbon atoms, and R^3 is hydrogen or a



group wherein R^4 is a straight or branched chain alkyl or alkenyl group having from about 8 to 22 carbon atoms;

(b) From about 0.5 to about 10 weight percent of a normally-solid, water soluble polyethylene oxide having an average molecular weight of from about 50,000 to about 2,000,000;

(c) From about 2 to about 50 weight percent of a polyolefin wax having a melting point of from about 90° C. to about 110° C.;

(d) Up to about 20 weight percent of a natural wax having a melting point of from about 45° C. to about 90° C.; and

(e) From about 2 to about 20 weight percent of a partially-neutralized, modified sulfonic acid according to claim 1.

4,534,800

PROCESS AND APPARATUS FOR THE PRODUCTION OF SUGAR THICK JUICE FOR THE MANUFACTURE OF SUGAR

Bjarne Winstrom-Olsen, Nakskov, Denmark, assignor to Aktieselskabet de Danske Sukkerfabrikker, Copenhagen, Denmark

Filed Nov. 23, 1983, Ser. No. 554,681

Claims priority, application Denmark, Nov. 24, 1982, 5237/82

Int. Cl.^{3} C13D *3/06*

U.S. Cl. 127—12 **6 Claims**

1. A process for the production of sugar thick juice for the manufacture of sugar which process comprises the steps of

(a) carbonating lime-containing raw sugar juice in at least one stage by adding thereto carbon dioxide and soda to

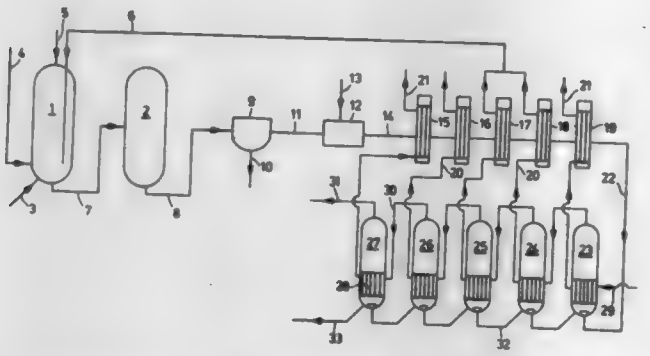
precipitate excessive amounts of calcium ions in the form of calcium salts,

(b) separating the precipitated calcium salts obtained in step (a) from the raw juice to form a thin juice,

(c) indirectly preheating the thin juice with a heating medium, concurrently forming a gaseous medium containing ammonia,

(d) evaporating the preheated thin juice obtained in step (c) to form thick juice and a gaseous effluent, said gaseous effluent being used as said heating medium in step (c), and

(e) collecting at least part of the gaseous medium containing ammonia formed in step (c) and adding said gaseous medium to the lime-containing raw sugar juice during step (a) so as to reduce the amount of soda required to precipitate calcium salts and to increase the sugar yield in said thick juice.



6. An apparatus for the production of sugar thick juice comprising at least one carbonation container having inlet means for lime-containing thin juice, means for adding carbon dioxide and soda to said container and outlet means for a slurry of calcium salts and sugar juice, means for separating calcium salts from said slurry so as to form thin juice, a plurality of preheaters connected in series and having means for indirectly heating thin juice and for forming a gaseous medium containing ammonia, a plurality of evaporators connected in series, each evaporator comprising an evaporation zone and a steam zone, the steam zone of at least one evaporator being connected with said means for indirectly heating thin juice of at least one preheater, and means for collecting gaseous medium formed in at least one preheater and for introducing said gaseous medium into said carbonation container.

4,534,801

PROCESS FOR REMOVING ADHERED SUBSTANCE FROM STEEL INGOTS

Shigeki Matsuoka, and Yoshihiro Naitoh, both of Tokai, Japan, assignors to Daido Steel Company Limited, Japan

Filed Feb. 17, 1983, Ser. No. 467,523
Claims priority, application Japan, Feb. 19, 1982, 57-24294
Int. Cl.³ B08B *7/00*
U.S. Cl. 134—15 **8 Claims**

1. A process for removing an adhered substance from a steel ingot formed by a casting process using molding additives comprising heating said steel ingot subsequent to the casting process with a heating rate at the surface layer portion of the steel ingot being not less than 2° C./second to provide a temperature difference between the starting point and the end point of the heating which is not less than 300° C. whereby said adhered substance caused by said molding additives is removed from the surface of said steel ingot.

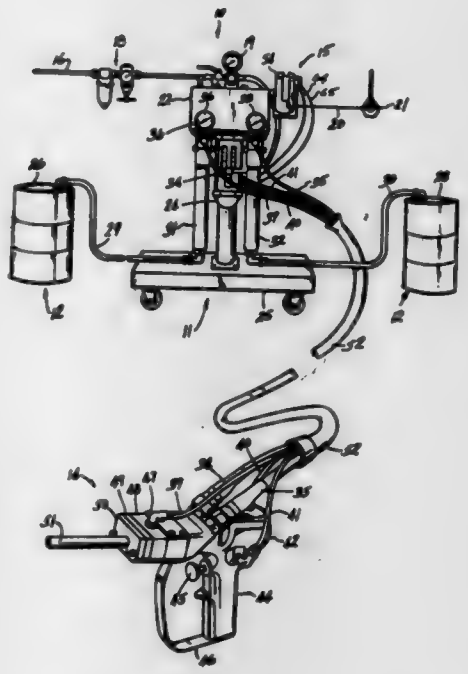
6. A process for removing an adhered substance from a steel ingot formed by a casting process using molding additives comprising cooling said steel ingot subsequent to said casting process with a cooling rate at the surface layer portion of said steel ingot being not less than 2° C./second to provide a temperature difference between the starting point and the end point of the cooling which is not less than 300° C. whereby said adhered substance caused by said molding additives is removed from the surface of said steel ingot.

4,534,802

AIR PURGE/SOLVENT BATH METHOD

William J. Gates, Glen Ellyn, Ill., and John F. Zwirlein, New Haven, Conn., assignors to Olin Corporation, Cheshire, Conn.

Division of Ser. No. 354,427, Mar. 3, 1982, Pat. No. 4,460,126.
This application Jan. 23, 1984, Ser. No. 573,259
Int. Cl.³ B08B *9/00*; B05B *15/02*
U.S. Cl. 134—22.12 **24 Claims**



12. A method of cleaning a plural component foam dispensing apparatus after a shot of foam has been dispensed, the apparatus further utilizing a mixing gas of predetermined pressure to mix the plural components prior to dispensing the foam, comprising the steps of:

(a) delaying for a predetermined duration after dispensing the foam;

(b) dispensing a blast of purging gas under pressure for a predetermined duration through at least a portion of the dispensing apparatus;

(c) venting the mixing gas and purging gas from the dispensing apparatus;

(d) immersing at least a portion of the dispensing apparatus in a static, non-circulating solvent bath for a predetermined period of time to permit the solvent to displace the vented mixing gas and purging gas by traveling up at least a portion of the dispensing apparatus;

(e) removing the dispensing apparatus from the static solvent bath; and

(f) directing the mixing gas back through at least a portion of the dispensing apparatus.

4,534,803

METHOD OF CLEANING MACHINED SURFACE AND CHIP REMOVING TOOL

Hiroshige Asano, Kani, and Masayuki Moroto, Mie, both of Japan, assignors to Okuma Machinery Works Ltd., Kita, Japan

Filed Oct. 20, 1983, Ser. No. 543,616
Claims priority, application Japan, Oct. 23, 1982, 57-186592
Int. Cl.³ B08B *3/02, 5/00*
U.S. Cl. 134—30 **3 Claims**

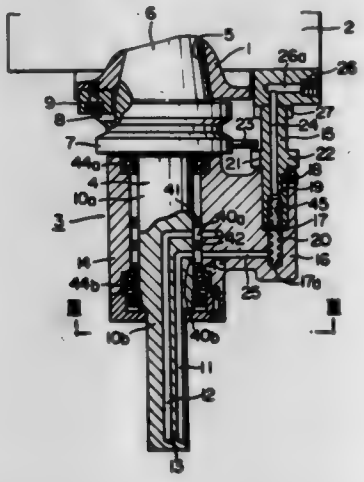
2. A method of cleaning a machined surface comprising:

mounting a chip removing tool having a compressed air flow path and a cooling water flow path, respectively, on a main spindle of a machining center, said pair of flow paths communicating with a mutual outlet;

rotating said chip removing tool unitarily with said main spindle whereby said mutual outlet rotates;

simultaneously jetting out compressed air and cooling water

from said mutual outlet, thereby to remove chips attached to a machined surface of a workpiece; and



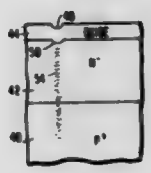
thereafter, jetting out only said compressed air from said outlet to dry said machined surface.

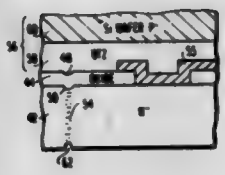
4,534,804

LASER PROCESS FOR FORMING IDENTICALLY POSITIONED ALIGNMENT MARKS ON THE OPPOSITE SIDES OF A SEMICONDUCTOR WAFER

Paul E. Cade, Colchester, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 14, 1984, Ser. No. 620,644
Int. Cl.[3] H01C *7/00*; H01L *21/265, 21/66*
U.S. Cl. 148—1.5 5 Claims





1. A method of forming alignment marks in a semiconductor body having a lightly doped first layer and an heavily doped second layer, said first layer having an optically exposed surface, comprising the steps of:

directing a laser beam onto said exposed surface in a direction perpendicular thereto, thereby forming in said exposed surface a scribed first alignment mark; and

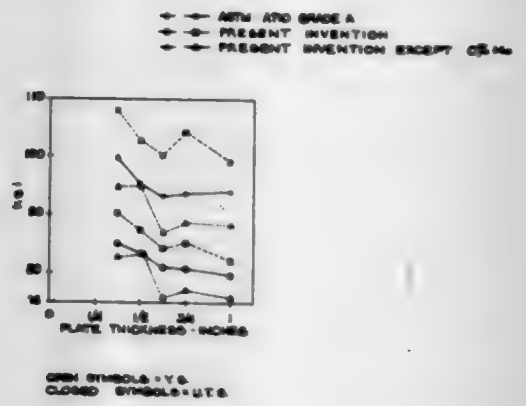
choosing the wavelength of the laser beam to be beyond the absorption edge of the material of said semiconductor body so that the beam passes through said first layer without absorption but is absorbed by said second layer to produce therein a defect representing a second alignment mark positioned identically to the scribed first alignment mark.

4,534,805

LOW ALLOY STEEL PLATE AND PROCESS FOR PRODUCTION THEREOF

Rodney J. Jesseman, Middletown, Ohio, assignor to Armco Inc., Middletown, Ohio

Continuation of Ser. No. 476,353, Mar. 17, 1983, abandoned. This application Sep. 26, 1983, Ser. No. 535,542
Int. Cl.[3] C21D *8/02*
U.S. Cl. 148—12.3 7 Claims



1. A process for producing a low alloy steel shape of at least 3/16 inch thickness exhibiting a yield strength of at least 80 ksi at room temperature and a Charpy V-Notch impact strength (longitudinal) of at least 50 ft-lbs (68 Joules) at −80° F. (−62° C.) in the austenitized, quenched, and precipitation hardened condition together with excellent weldability including retained toughness in the heat affected zone of a weldment, comprising the steps of providing a steel starting material consisting essentially of, in weight percent, from about 0.02% to 0.07% carbon, 1.2% to 2.0% manganese, 0.020% maximum sulfur, up to 0.5% silicon, 0.1% to 0.4% molybdenum, 0.01% to 0.1% columbium, about 0.01% to 0.10% acid soluble aluminum, about 0.8% to 2.0% copper, about 0.4% to 2.0% nickel, residual chromium, and balance iron except for incidental impurities; hot reducing said starting material to a desired final thickness; cooling to a temperature at which the steel transforms to ferrite; reheating the hot reduced shape to a temperature of about 1600° to 1800° F. (871° to 982° C.) and within the austenization range whereby to transform said ferrite to austenite; quenching at a rate which transforms substantially all said austenite to predominantly fine acicular ferrite and lower-bainite and which avoids substantial precipitation of copper-rich particles; and precipitation hardening by heating within the range between about 900° F. and the A_{C1} point.

5. Precipitation hardened low alloy steel shape of at least 3/16 inch thickness having a predominantly acicular ferrite and lower-bainite microstructure, exhibiting a yield strength of at least 85 ksi at room temperature and a Charpy V-notch impact strength (longitudinal) of at least 50 ft-lb at −80° F., together with excellent weldability including retained toughness in the heat affected zone of a weldment, said steel consisting essentially of, in weight percent, from about 0.02% to 0.07% carbon, from 1.2% to 2.0% manganese, 0.020% maximum sulfur, up to 0.5% silicon, 0.1% to 0.4% molybdenum, 0.01% to 0.1% columbium, about 0.01% to 0.10% acid soluble aluminum, about 0.8% to 2.0% copper, about 0.4% to 2.0% nickel, residual chromium and balance iron except for incidental impurities.

4,534,806

METHOD FOR MANUFACTURING VERTICAL PNP TRANSISTOR WITH SHALLOW EMITTER

Ingrid E. Magdo, Hopewell Junction, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Continuation of Ser. No. 99,695, Dec. 3, 1979, abandoned. This application Mar. 7, 1983, Ser. No. 472,897
Int. Cl.[3] H01L *21/265, 21/225*
U.S. Cl. 148—1.5 10 Claims

1. A process for forming a vertical PNP transistor having a

high current gain exceeding about 200 and a high frequency response due to said transistor having a shallow, dislocation-free, P-type diffused emitter, said emitter further characterized by a steep concentration gradient, said process comprising the steps of:

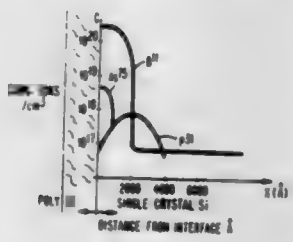
(a) providing a monocrystalline semiconductor silicon substrate having a subcollector region doped with a P-type impurity;

(b) forming an N-type base region for said transistor in said substrate;

(c) forming an insulator layer over said base region;

(d) defining and forming an emitter window in said insulator layer exposing a planar surface region of said base region;

(e) forming a polycrystalline silicon layer on said exposed planar surface of said base region;





(f) doping said polycrystalline silicon layer with P-type impurities in a region adjacent to a desired emitter region to maintain a critical concentration of said P-type impurities at the interface between the polycrystalline silicon layer and the monocrystalline substrate below the concentration level of about 5×10^{19} ions/cm^3; and

(g) subjecting the resulting structure to conditions whereby the P-type doping ions contained in the polycrystalline silicon layer are controllably driven into the monocrystalline silicon forming an emitter region having a steep concentration gradient given by a concentration of P-type ions of at least 1×10^{19} ions/cm^3 extending to a depth of at least 2000 Å and a concentration of less than about 1×10^{16} ions/cm^3 at a depth of about 3500 Å from the surface of the monocrystalline silicon without effecting dislocations in the monocrystalline silicon.

4,534,807

HEAT TREATMENT OF ALUMINIUM ALLOYS CONTAINING LITHIUM

David J. Field, Staffordshire; Ernest P. Butler, Tunbridge Wells, and Katherine-Ann Bassett, Banbury, all of England, assignors to Alcan International Limited, Montreal, Canada

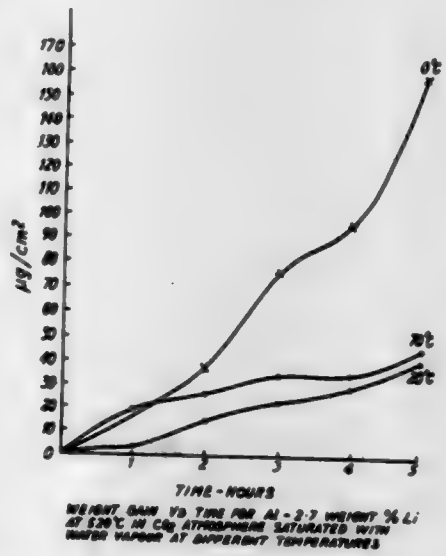
Filed Mar. 27, 1984, Ser. No. 593,958

Claims priority, application United Kingdom, Apr. 6, 1983, 8309349

Int. Cl.^{3} C22F *1/02*

U.S. Cl. 148—20.3 6 Claims

1. In a process for heat treating an article of an alloy having a major content of aluminium and a minor content of at least one alloying element, said one alloying element being lithium present in a proportion of above 0.5% by weight, and said process comprising the step of heating the article to a temperature above 450° C., the improvement which comprises performing said heating step in an atmosphere of carbon dioxide



and water vapour, the partial pressure of water vapour in such atmosphere being at least 4 torr.

4,534,808

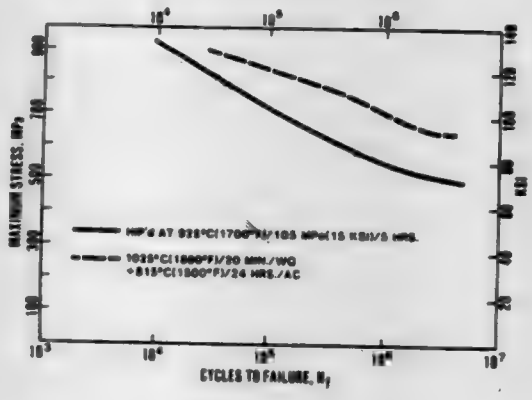
METHOD FOR REFINING MICROSTRUCTURES OF PREALLOYED POWDER METALLURGY TITANIUM ARTICLES

Daniel Eylon, Dayton, and Francis H. Froes, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 5, 1984, Ser. No. 617,445

Int. Cl.^{3} B22F *3/00*

U.S. Cl. 148—133 7 Claims



1. A method for improving the microstructure of an article made by powder metallurgy of prealloyed titanium powder which comprises, in combination, the steps of:

a. beta-solution heat treating said article at a temperature approximately equal to the beta-transus temperature of said alloy;

b. cooling said article at a rate in excess of air cooling to room temperature;

c. annealing said article at a temperature in the approximate range of 10 to 20% below said beta-transus temperature for about 4 to 36 hours; and,

d. air cooling said article to room temperature.

4,534,809
WATER-IN-OIL EMULSION EXPLOSIVE COMPOSITION

Fumio Takeuchi; Masao Takahashi; Katsuhide Hattori, and Hiroshi Sakai, all of Aichi, Japan, assignors to Nippon Oil and Fats Company Limited, Tokyo, Japan

Filed Aug. 28, 1984, Ser. No. 645,079
Claims priority, application Japan, Sep. 7, 1983, 58-163119
Int. Cl.[3] C06B *45/18*
U.S. Cl. 149—3 11 Claims

1. In a water-in-oil emulsion explosive composition containing microvoids, the improvement comprising said microvoids being neutral or weakly acidic hollow microspheres coated with at least one coating material selected from the group consisting of inorganic acid salts, organic acid salts and chlorides of ammonium, alkali metal or alkaline earth metal which ammonium, alkali metal or alkaline earth metal may be partly replaced by hydrogen.

4,534,810
RED PHOSPHOROUS SMOKE PRODUCING COMPOSITION

Charles A. Knapp, Wayne, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

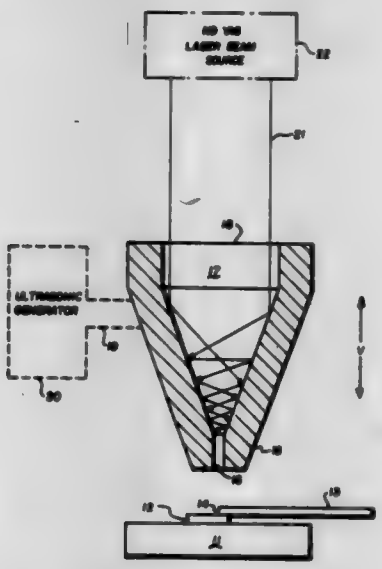
Filed Jan. 30, 1984, Ser. No. 574,836
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.6 12 Claims

1. An improved smoke producing composition for military screening operations having an intiation period of about 5 seconds, and a persistent cloud lasting about 10 minutes consisting of (a) red phosphorus having a particle size of between about 5μ and about 15μ and being present in an amount of between about 75 to about 90 parts by weight, (b) sodium nitrate having a particle size of about 15μ and about 45μ and being present in an amount between about 10 and 20 parts by weight, and (c) an epoxy binder between about 4 and about 10 parts by weight.

4,534,811
APPARATUS FOR THERMO BONDING SURFACES

Norman G. Ainslie, Croton-on-Hudson, and Swie-In Tan, Bedford Hills, both of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1983, Ser. No. 567,219
Int. Cl.[3] B23K *9/04, 26/00;* B29C *27/08*
U.S. Cl. 156—73.1 6 Claims



1. A bonding apparatus for bonding circuit elements together comprising:

a laser generator for producing a laser beam;

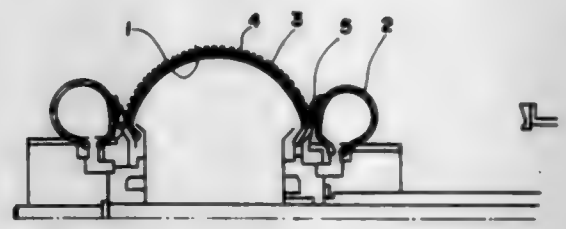
a bonding tip having one end open to receive said laser beam, said bonding tip having an interior wall surface conically tapered from said one open end to an opposite heating end, an interior generally conical taper of said tip forming a black body cavity whereby said laser beam energy is absorbed by black body absorption to heat said tip; and

means for adding ultrasonic bonding energy to said tip whereby said tip, when applied to surfaces to be joined together, results in said sufaces being bonded.

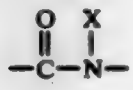
4,534,812
METHOD FOR FORMING TIRES

Yoshihiro Fukui, Hadano; Isamu Tuchiya, Nirayama, and Shun Yoshida, Kamakura, all of Japan, assignors to Zeon Kosan Co., Ltd., Chuo, Japan

Filed Feb. 28, 1984, Ser. No. 584,324
Int. Cl.[3] B29H *17/22*
U.S. Cl. 156—132 5 Claims



1. A method for forming tires by the use of a tire-forming machine including a drum bladder and a turnup bladder, the method comprising applying an organic halogen compound having in the molecule a

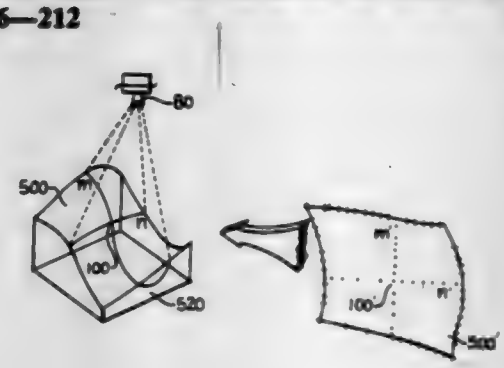


bond, in which X represents a halogen, to the surfaces of the drum bladder and turnup bladder to form a layer of the organic halogen compound thereon, whereby sticking of a unvulcanized rubber for tires to the bladders is prevented during the course of the forming of a tire from the unvulcanized rubber.

4,534,813
COMPOUND CURVE-FLAT PATTERN PROCESS

Robert D. Williamson, St. Charles, and Sidney M. Furst, Maryland Heights, both of Mo., assignors to McDonnell Douglas Corporation, Long Beach, Calif.

Filed Jul. 26, 1982, Ser. No. 402,051
Int. Cl.[3] B29C *17/04;* B65H *81/00;* B32B *31/00*
U.S. Cl. 156—212 11 Claims



1. A process for forming an article comprising bonded multiple plies of a woven material arrayed to form a compound curved surface, the process comprising:

forming a unique flat pattern equivalent for the compound curved surface for each ply wherein the flat pattern and the compound curved surface each have common reference means;

forming each ply to correspond to its flat pattern equivalent;

laying up the plies upon a tool which duplicates the compound curved surface wherein the plies and the tool also have the common reference means such that each ply is

referenced to the common reference means on the tool; and

bonding the plies together to form the article wherein said step of forming a unique flate pattern equivalent for the compound curved surface comprises:

forming two tooling lines upon a portion of the surface such that the lines intersect within the boundaries of the portion;

forming a surface grid of quadrilateral elements with identifiable points at the vertices of the elements upon the surface such that each of the points is separated from an adjacent point by an identical chordal distance, one such point being coincident with the intersection of the tooling lines, and two groups of such points being formed at consecutive said identical chordal distances along the tooling lines;

marking the intersections of selected surface features of the portion of the surface with the surface grid;

forming a flat pattern grid having a grid of quadrilateral elements having a grid spacing equal to the chordal distance; and,

determining a flat pattern equivalent for the portion of the compound curved surface by translating the compound curved surface grid containing the marked intersections onto the flat pattern grid.

4,534,814

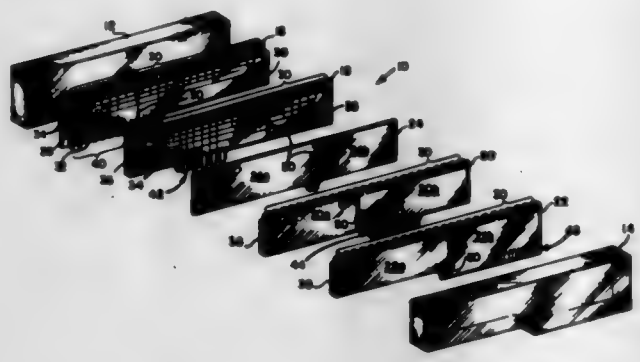
LARGE-SCALE PRINTHEAD FOR NON-IMPACT PRINTER AND METHOD OF MANUFACTURE

Luke Volpe, Melrose, and Lowell E. Thomas, Tewksbury, both of Mass., assignors to Dynamics Research Corporation, Wilmington, Mass.

Filed Jul. 5, 1983, Ser. No. 510,921

Int. Cl.³ B32B *31/00*; B29C *19/00*; G01D *15/10*; H05B *1/00*

U.S. Cl. 156—300 **4 Claims**



1. A method of fabricating a large-scale printhead comprising the steps of

providing a first support substrate;

adhering a number of butted styli-bearing substrate sections to the first support substrate to provide a first composite structure in which the butted sections lie in the same plane;

providing a second support substrate;

adhering a number of butted styli-bearing substrate sections to the second support substrate to provide a second composite structure in which the butted sections lie in the same plane; and

adhering the first and second composite structures together such that the butted styli-bearing substrate sections on each of the first and second support substrates are facing each other.

4,534,815

ADHESIVE PRIMER COMPOSITION AND BONDING METHOD EMPLOYING SAME

Mitsuo Hamada, and Sadami Yasuda, both of Chiba, Japan, assignors to Toray Silicone Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 497,761, May 24, 1983, abandoned, which is a division of Ser. No. 308,335, Oct. 5, 1981,. This application Nov. 15, 1984, Ser. No. 671,807

Claims priority, application Japan, Oct. 9, 1980, 55-141637

Int. Cl.³ C09J *5/02*

U.S. Cl. 156—307.5 **2 Claims**

1. A method of bonding thermosetting silicone rubber to a substrate consisting of

(1) coating the substrate with an adhesive primer composition consisting essentially of

(A) 100 parts by weight of an organosilicon compound of the average unit formula

$$R_a(XR^1)_b(OR^2)_cSiO_{\frac{4-a-b-c}{2}}$$

in which R represents a monovalent hydrocarbon radical or a halogenated monovalent hydrocarbon radical, X represents a monovalent radical selected from the group consisting of epoxy, acryloxy, methacryloxy, amino, N-alkylamino, N-phenylamino, N-aminoalkylamino, cyano, and mercapto, R^1 represents a bivalent radical selected from the group consisting of hydrocarbon radicals, halogenated hydrocarbon radicals, hydroxyhydrocarbon radicals, and ether radicals, R^2 represents an alkyl radical or an alkoxyalkyl radical, a has a value such that $0 \leqq a \leqq 3$, b has a value such that $0 \leqq b \leqq 3$, c has a value such that $0 < c \leqq 4$, and the sum of $a+b+c$ has a value such that $0 < (a+b+c) \leqq 4$, and there is at least one $-OR^2$ per molecule of organosilicon compound,

(B) 3 to 60 parts by weight of vinyltris(tertiary-butylperoxy)silane, and

(C) at least 4.5 parts by weight of an organic solvent,

(2) air drying the coated substrate obtained from step (1) for at least 30 minutes at room temperature,

(3) applying over the dried primer coating obtained from step (2), a silicone rubber composition which is heat vulcanizable,

(4) heating the assembly obtained from step (3) to cure the silicone rubber composition.

4,534,816

SINGLE WAFER PLASMA ETCH REACTOR

Lee Chen, Poughkeepsie; Charles J. Hendricks, Wappingers Falls; Gangadhara S. Mathad, Poughkeepsie, and Stanley J. Poloncic, Wappingers Falls, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 22, 1984, Ser. No. 623,670

Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*

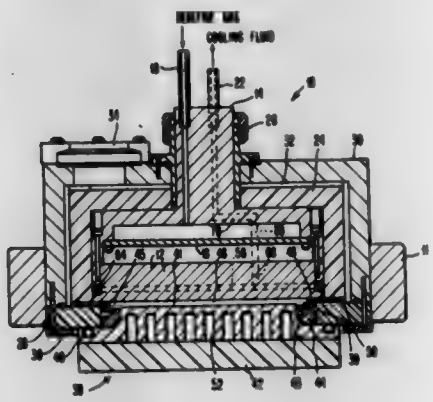
U.S. Cl. 156—345 **14 Claims**

1. Apparatus for plasma etching a semiconductor wafer comprising:

a fluid cooled lower electrode for supporting said wafer;

a fluid cooled upper electrode substantially parallel to and spaced apart from said lower electrode a distance such that the aspect ratio is greater than about 25, said upper electrode including means for distributing a reactive gas uniformly over said wafer;

means for coupling RF power to one or both of said electrodes; and



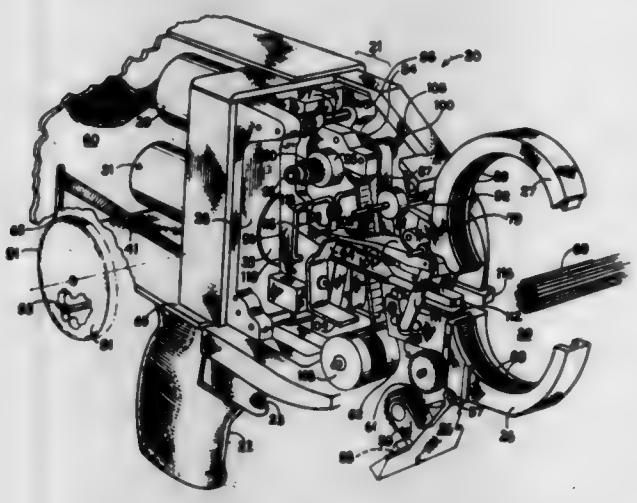
means for confining a plasma between said upper and lower electrodes.

4,534,817

AUTOMATIC BUNDLE-TYING TOOL

Denis P. O'Sullivan, 91 Shelter Rock Rd., Danbury, Conn. 06810

Filed Apr. 8, 1983, Ser. No. 483,124
Int. Cl.[3] B65B *13/06, 13/32*
U.S. Cl. 156—352 17 Claims



1. An automatic bundle-tying tool for wrapping flexible plastic tape around a bundle of wires or similar elongated objects, drawing the tape taut to compress the bundle, bonding the overlapped tape and then severing the bonded tape to release the wrapped bundle, comprising

A. a housing having a hollow central enclosure, and a movable actuator resiliently depressible from a forward position to a depressed latched position,

B. a tape-guiding fixed jaw protruding from the forward end of the housing,

C. a tape-guiding movable jaw pivoted at the forward end of the housing for movement between an open position spaced away from the fixed jaw and a closed position abutting the fixed jaw in which means forming inward-facing, tape-guiding grooves in both jaws are aligned to encircle a bundle-tying zone,

D. a resiliently biased tape-rewinding tape storage spool rotatably mounted on the rear of the housing,

E. an arming linkage inside the hollow housing operatively connecting the actuator to close the movable jaw when the actuator is depressed to its latched position,

F. drive means in the housing having a forward mode tractively drawing flexible plastic tape from the tape storage spool and feeding it endwise via the tape-guiding grooves to encircle the tying zone with at least one layer of tape whose leading end is thence returned to overlap itself in a tape bonding zone, and a reverse mode retracting the tape to draw the tape around the bundle,

G. an ultrasonic transducer anchored in the housing and having a bonding tip protruding into the bonding zone,

H. a tape cutter mounted near the bonding tip for movement between a forward position protruding into the bonding zone and a rearward retracted position,

I. a pair of tape-clamping anvil blades having thin beveled tips flanking the transducer's bonding tip and movable between an unclamped position wherein the anvil tips are moved forward and retracted laterally and a clamped position wherein the anvil tips are moved inward and rearward into juxtaposition directly in front of the bonding tip for sandwiching and clamping the overlapped tying tape in the bonding zone between the anvil blade tips and bonding tip,

J. a forwardly resiliently biased retracting arm pivotally mounted in the housing provided with means connecting its free end to the anvil blades and with the arm being movable between a forward position wherein the anvil blade tips are laterally retracted forward, and a rear latched position wherein the anvil blade tips are drawn back into their clamped position,

K. means operatively connecting the cutter to the arming linkage and positioning the cutter in its retracted position when the movable jaw is closed and in its forward position when the movable jaw is open,

L. control means responsive to the completion of the tape feeding forward drive mode operation and thereafter propelling the retracting arm to its rear latched position clamping the anvil blade tips against the overlapped tape to actuate timing means initiating reverse mode tape tautening, and then energizing the transducer to bond the overlapped tape,

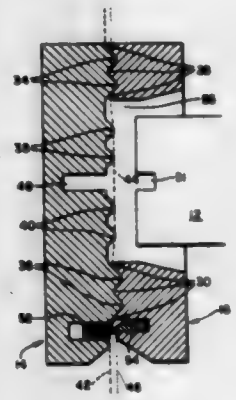
M. and actuator release means responsive to completion of the tape-bonding operation of the transducer and connected to unlatch the depressed actuator releasing the retracting arm from its latched rear position which then moves the cutter forward to sever the rearmost layer of tape while opening the anvil tips and the movable jaw to release the wrapped and tied bundle.

4,534,818

METHOD AND APPARATUS FOR ULTRASONIC SEALING

William D. Kreager, Dallas, and Kenneth R. Berger, Grapevine, both of Tex., assignors to Frito-Lay, Inc., Dallas, Tex.

Filed Dec. 22, 1983, Ser. No. 564,754
Int. Cl.[3] B29C *27/08;* B29D *23/10*
U.S. Cl. 156—466 6 Claims



4. An apparatus for sealing flexible packaging material on a form and fill packaging machine to produce flexible bags having ultrasonically sealed end seals, comprising:

a. cooperating land and valley regions provided on a portion of first and second movable members;

b. a plurality of first land regions comprising an anvil on said first movable member, said first land regions extending

beyond a centerline of said first and second members when closed;

c. said first land regions interacting with a plurality of second land regions on said second member, said second land regions extending beyond said centerline;

d. said first and second land regions cooperating such that packaging material is biased against said anvil when said first and second movable members are closed;

e. said second movable member provided with an ultrasonic horn which effects an ultrasonic seal at the location of said anvil when the packaging material is biased thereagainst; and

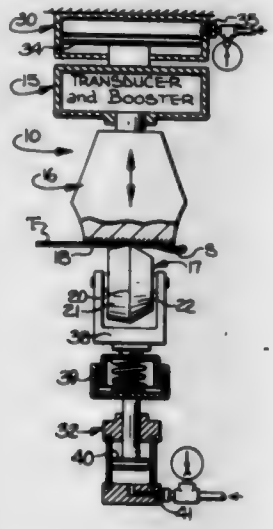
f. an ultrasonic back seal forming device for making continuous longitudinal ultrasonic back seals, said back seal being sealed in the direction of travel of said packaging material.

4,534,819

WOVEN TEXTILE FABRIC HAVING AN ULTRASONICALLY CUT AND SEALED EDGE AND APPARATUS AND PROCESS FOR PRODUCING SAME

George L. Payet, Fort Mill, and Stephen C. Ballard, Lancaster, both of S.C., assignors to Springs Industries, Inc., Fort Mill, S.C.

Filed Nov. 28, 1983, Ser. No. 555,664
Int. Cl.[3] B29C *27/08*; B32B *31/18*
U.S. Cl. 156—515 20 Claims



1. In an ultrasonic apparatus for edge cutting and sealing moving lengths of at least partially thermoplastic material, particularly textile fabric having at least some thermoplastic fibers, and including anvil means and vibrating sonic horn means having a flat working face cooperating with and vibrating against said anvil means for the ultrasonic edge cutting and sealing as the material moves between said sonic horn and said anvil means; the improvement of a construction of said anvil means characterized by effecting clean and sharp edge cutting and desired amounts of edge sealing in the material while resisting wear on said anvil means, said anvil means comprising:

a wheel having a beveled periphery defining therearound a peaked cutting edge for cutting the moving material as said sonic horn vibrates against said cutting edge and first and second surfaces extending in respective opposite directions from said peaked cutting edge;

said first surface forming a predetermined included acute angle with said horn face from said cutting edge for fusing the thermoplastic material and sealing the cut edge of the material a predetermined distance inwardly of the cut edge as said sonic horn vibrates against said anvil means, the predetermined distance of sealing being determined by and increasing with the increasing acuteness of the predetermined included angle of said first surface; and

said second surface forming a predetermined included acute angle with said horn face from said cutting edge for reinforcing said anvil cutting edge to resist wear on said anvil cutting edge, the included angle of said second reinforcing surface being greater than the included angle of said first sealing surface so that said first and second surfaces will form a sharpness for said peaked anvil cutting edge which will effect a clean and sharp cutting of the moving material.

4,534,820

METHOD FOR MANUFACTURING CRYSTALLINE FILM

Hidefumi Mori, and Masahiro Ikeda, both of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Oct. 15, 1982, Ser. No. 434,536
Claims priority, application Japan, Oct. 19, 1981, 56-166950; Aug. 9, 1982, 57-137392
Int. Cl.[3] C30B *25/04, 3/00*
U.S. Cl. 156—603 17 Claims



1. A method for manufacturing a crystalline film, comprising the steps of:

depositing a thin film of a metallic material of which a eutectic compound is produced together with a material to be crystallized, on a planar amorphous or metallic substrate;

patterning said thin film with a periodic relief having the same rotation symmetry as the crystal axis of a crystal face which is to be grown preferentially in parallel to the plane of said planar substrate, said periodic relief exposing said planar substrate corresponding to portions of said thin film removed by the patterning;

heating the resulting substrate on which said thin film patterned with said periodic relief is disposed at a temperature higher than the eutectic temperature of said material to be crystallized and said metallic material; and

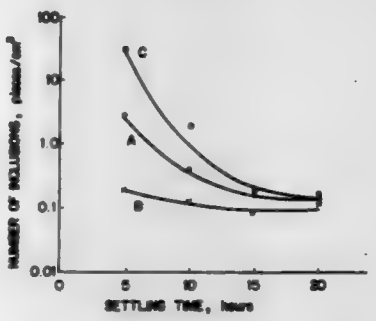
depositing said material to be crystallized on said thin film patterned with said periodic relief under the heating conditions, whereby a crystalline film is precipitated on the initial planar substrate from the euctectic alloy layer which is composed of said material to be crystallized and said metallic thin film by the above steps.

4,534,821

SINGLE CRYSTAL GROWING OF RARE EARTH-GALLIUM GARNET

Susumu Sakaguchi; Ken Itoh; Masahiro Ogihara; Shinji Makigawa; Toshihiko Ryuo, and Kazuyoshi Watanabe, all of Gunma, Japan, assignors to Shin-Etsu Chemical Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,837
Claims priority, application Japan, Nov. 8, 1982, 57-195703
Int. Cl.[3] C30B *15/14*
U.S. Cl. 156—617 SP 4 Claims



1. In the method for the preparation of a single crystal boule of a rare earth-gallium garnet by the Czochralski crystal grow-

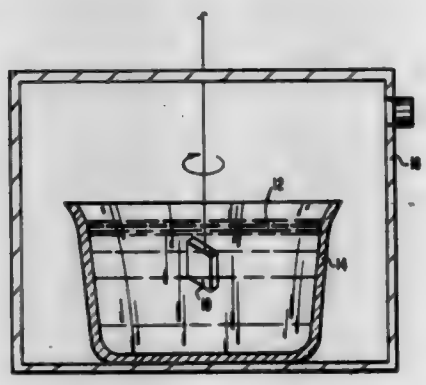
ing procedure comprising melting a mixture of a rare earth oxide and gallium oxide to form an oxide melt in an iridium crucible, contacting a seed crystal of the rare earth-gallium garnet to the surface of the oxide melt and pulling up the seed crystal to start growing of the single crystal on the seed crystal under a gaseous atmosphere, wherein the improvement comprises keeping the oxide melt formed in the crucible in the molten state for at least 15 hours before the oxide melt is contacted with the seed crystal to start growing of a single crystal, contacting the seed crystal with the oxide melt to start the growing and growing the garnet to a diameter of at least 50 mm in an iridium crucible having an inner diameter of at least 80 mm.

4,534,822

METHOD OF SYNTHESIZING THIN, SINGLE CRYSTAL LAYERS OF SILVER THIOGALLATE ($AGGAS_2$)

Sanat K. Sashital, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Apr. 30, 1984, Ser. No. 605,363
Int. Cl.[3] C30B *19/02*
U.S. Cl. 156—624 14 Claims



1. A method of growing a single crystal layer of high purity silver thiogallate comprising the steps of:
(a) preparing a liquid solution of silver thiogallate in a solvent selected from the group consisting of antimony sulfide and lead sulfide;
(b) placing in the solution a seed crystal which has an appropriate lattice parameter relationship with silver thiogallate; and
(c) slowly cooling the solution to form on the seed crystal a layer of a single crystal of silver thiogallate.

4,534,823

CHEMICAL MILLING IN-100 NICKEL SUPERALLOY

Robert E. Fishter, Boca Raton; Paul L. McDaniel, Hobe Sound, both of Fla., and Stephen W. Tefft, Houston, Tex., assignors to United Technologies Corporation, Hartford, Conn.

Filed Dec. 5, 1983, Ser. No. 558,415
Int. Cl.[3] C23F *1/00*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—626 7 Claims

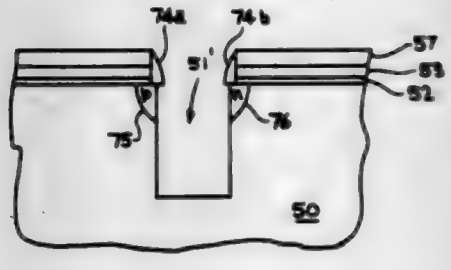
1. The method of chemically milling the surface of a nickel superalloy workpiece having a composition which is essentially IN-100 alloy which comprises contacting the alloy with an aqueous solution consisting essentially by volume percent of 32.5–85 hydrochloric acid, the solution containing as ingredients proportioned on the volume of hydrochloric acid, 35–45 ml/l nitric acid; 0.0122–0.0160M/l metal sulfate ion; 0.0283–0.0369M/l metal chloride ion; 0.0146–0.0190M/l metal fluoride ion; and 0.0063–0.0083M/l citric acid.

4,534,824

PROCESS FOR FORMING ISOLATION SLOTS HAVING IMMUNITY TO SURFACE INVERSION

Pau-Ling Chen, San Jose, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Apr. 16, 1984, Ser. No. 600,911
Int. Cl.[3] H01L *21/306*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—628 6 Claims



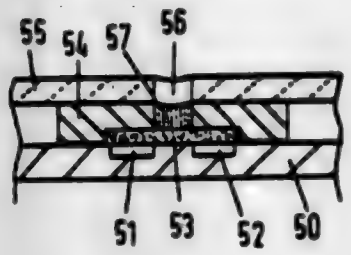
1. A process for fabricating slots in semiconductor substrates which slots have inversion stoppers adjacent the mouths of the slots, comprising the steps of:
applying at least one overlying layer to said substrate to define a region in which a slot is to be formed;
patterning said at least one layer to define a slot region to be formed;
forming a spacer on the surface of said substrate adjacent the edge of said at least one layer that defines whenever said inversion stopper regions are to be formed;
forming an inversion stopper of one conductivity type in said substrate adjacent said mouth of said slot around at least a portion of the periphery of said slot, said one conductivity type being the opposite conductivity type to the conductivity type of said substrate adjacent said stopper; and
forming said slot by a directed beam process whereby said spacer serves to impede the undercutting of said at least one layer and thereby retains the original extent of said inversion stopper region.

4,534,825

METHOD OF MAKING AN ELECTROCHEMICAL SENSING CELL

Gerrit Koning, Vries, and Piet Bergveld, Enschede, both of Netherlands, assignors to Cordis Europa, N.V., Roden, Netherlands

Division of Ser. No. 242,351, Mar. 10, 1981, Pat. No. 4,478,222.
This application Mar. 9, 1984, Ser. No. 587,819
Claims priority, application Netherlands, Mar. 10, 1980, 8001420
Int. Cl.[3] G01N *27/46*
U.S. Cl. 156—644 5 Claims



1. A method of making a sensing cell for a chemically sensitive probe for measuring the properties of biological fluids in vivo, comprising the steps of
producing a wafer comprising an ISFET with spaced source and drain regions spanned by an ion-sensitive gate portion,
covering said source and drain regions and gate portion of said ISFET with a temporary first layer of soluble material,

covering said temporary first layer with a second layer of relatively insoluble material,

defining an opening in said second layer directly above said gate region, and

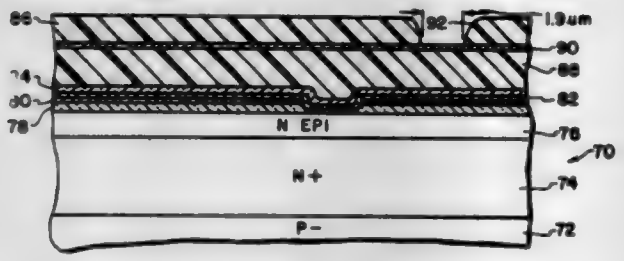
removing said temporary first layer which covers the source and drain regions and the gate portion by introducing a solvent through said opening to dissolve said first layer, thus forming a sensing chamber encompassing the source and drain regions as well as the gate portion of said ISFET.

4,534,826

TRENCH ETCH PROCESS FOR DIELECTRIC ISOLATION

George R. Goth; Thomas A. Hansen, and Robert T. Villetto, Jr., all of Poughkeepsie, N.Y., assignors to IBM Corporation, Hopewell Junction, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,593
Int. Cl.[3] H01L *21/20*; C23C *13/04*
U.S. Cl. 156—643 7 Claims



1. In a process of forming integrated circuit devices in a semiconductor substrate, according to which isolation trenches are produced by selectively etching through at least one trench-defining masking layer and at least one passivating layer disposed above the substrate, in order to reach down to the upper surface of said substrate, subsequent to an initial step of forming a pattern of openings through a conventional uppermost photoresist layer disposed above said trench-defining mask layer, the improvement comprising the steps of:

first, plasma-depositing SiO_2 to define the trench-defining masking layer;

interposing between said trench-defining masking layer and said uppermost photoresist layer, a first organic underlayer and a second, barrier layer above said organic underlayer;

then, creating the conventional pattern of openings through the uppermost photoresist layer, followed by selectively etching corresponding openings in said barrier layer;

followed by the further step of selectively etching the organic underlayer, by using a highly selective etchant, whereby substantially perfectly vertical walls are produced in the corresponding pattern of openings in the organic underlayer;

extending said openings by anisotropically etching through said trench-defining masking layer and said passivating layer down to said substrate whereby substantially perfectly vertical walls are produced in the corresponding pattern of openings in the masking layer and passivating layer;

removing said organic underlayer;

forming the isolation trenches within the semiconductor substrate by using an anisotropic highly selective etchant to etch into said substrate whereby substantially perfectly vertical walls are produced in the trenches,

said highly selective etchant being a gas comprising SF_6,CL_2 and an inert gas,

removing said trench-defining masking layer by the use of an HF solution such that the high etch ratio, which obtains between the plasma-deposited trench-defining masking layer of SiO_2 and the passiating layer of SiO_2 when such HF solution is used, precludes significant etching of said passivating layer, and

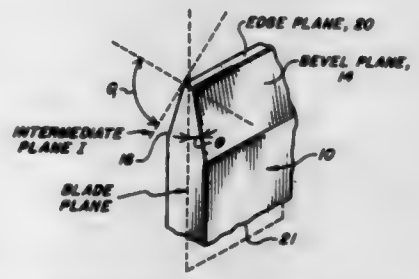
opening device contact holes in said passivating layer without the use of masking to protect said walls of said trenches.

4,534,827

CUTTING IMPLEMENT AND METHOD OF MAKING SAME

Donald W. Henderson, 20 Woodlane Rd., Ithaca, N.Y. 14850

Filed Aug. 26, 1983, Ser. No. 527,165
Int. Cl.[3] C23F *1/00, 1/06*; A61B *17/32*
U.S. Cl. 156—647 8 Claims



1. A method of fabricating a cutting instrument from single crystal material comprising the steps of:

providing a blank of single crystal aluminum oxide material having bevel surfaces which provide a preliminary cutting instrument edge, said blank oriented such that the (0001) plane is parallel to the planar bisector of the angle formed by the bevel surfaces of the blank which meet at the edge, the c-axis being perpendicular to said plane; and

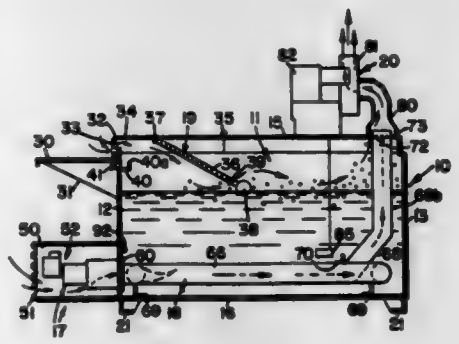
simultaneously etching and chemically polishing the blank to form the cutting instrument edge, said etchant acting as a chemical polish for the bevels forming said cutting instrument edge, said cutting instrument edge being perpendicular to said c-axis.

4,534,828

EVAPORATOR APPARATUS

Dale C. Erickson, St. Paul, and Norton J. Erickson, New Brighton, both of Minn., assignors to Nordale Incorporated, Blane, Minn.

Continuation-in-part of Ser. No. 310,649, Oct. 13, 1981, abandoned. This application Sep. 30, 1983, Ser. No. 537,976
Int. Cl.[3] B01D *1/04*; C02F *1/04*
U.S. Cl. 159—16.1 6 Claims



1. An apparatus for converting a liquid of mostly water contaminated with water soluble and insoluble substances into a less contaminated vapor, comprising:

(a) a container for holding said liquid, said container having a bottom and a top portion, said liquid having a top surface;

(b) means positioned in said container for heating said liquid in said container, whereby vapor is formed from the evaporation of said liquid;

(c) means attached to said container for mixing air with said

vapor, said mixing means including a first opening in the top portion of said container and means for directing a flow of air along the top surface of said liquid thereby replacing saturated air with unsaturated air to enhance vaporization, said directing means including a floating baffle attached to the top portion of said container, said baffle having a second opening therethrough; and

(d) means attached to said container for exhausting said air and said vapor from said container, said exhausting means including a fan for drawing air passed said directing means to mix with the vapor and exhaust the mixture.

4,534,829

CALENDER

Karl-Heinz Ahrweiler, Willich; Helmut Anstötz, Tönisvorst, and Werner Hartmann, Krefeld, all of Fed. Rep. of Germany, assignors to Eduard Küsters, Krefeld-Forstwald, Fed. Rep. of Germany

Filed Jan. 19, 1983, Ser. No. 459,198

Claims priority, application Fed. Rep. of Germany, Jan. 20, 1982, 3201635

Int. Cl.³ D21G *1/00*

U.S. Cl. 162—361 **8 Claims**

1. A supercalender for in-line employment at a paper machine, comprising:

a first pair of zone-wise deflection-controlled rollers forming a first roller nip;

a second pair of zone-wise deflection-controlled rollers forming a second roller nip, said second pair being closely spaced from said first pair along a paper travel path extending from the output of the paper machine; and

each of said pairs including a hard roller and a soft roller with an elastic covering having a hardness of at least 85° Shore D, and a thickness of at least fifteen millimeters.

4,534,830

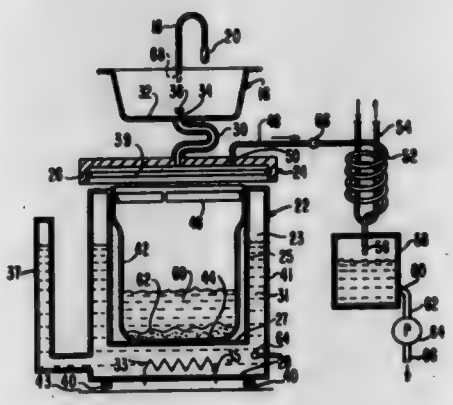
SOLVENT RECOVERY METHOD

Manuel G. Pastor, Berkeley, Calif., assignor to Zerpa Industries, Inc., San Jose, Calif.

Division of Ser. No. 485,496, Apr. 22, 1983, Pat. No. 4,457,805, which is a continuation of Ser. No. 250,798, Apr. 3, 1981,. This application Oct. 5, 1983, Ser. No. 539,202

Int. Cl.³ B01D *3/02*

U.S. Cl. 203—86 **12 Claims**



1. In a solvent recovery method having a distilling mode and an emptying mode, the improvement comprising:

providing a tank having a heating means for heating the interior of said tank;

placing a plastic bag within said interior of the tank so that at least a part of the bag forms a substantially liquid-tight barrier between contaminated solvent within said bag and said heating means during said distilling mode;

heating the contaminated solvent during the distilling mode to separate clean solvent vapor from the contaminants;

allowing the clean solvent vapor to be directed out of the bag; and

removing said plastic bag when it contains a quantity of contaminants during the emptying mode.

4,534,831

METHOD OF AND APPARATUS FOR FORMING A 3D ARTICLE

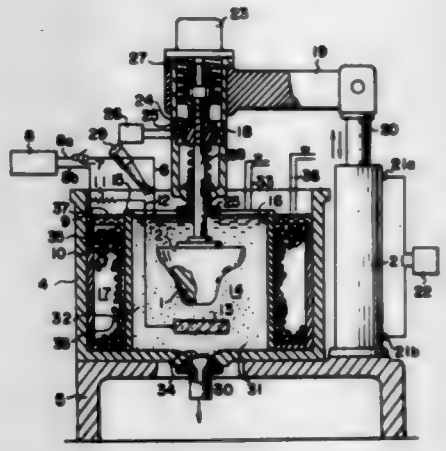
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Sep. 23, 1983, Ser. No. 535,357

Claims priority, application Japan, Sep. 27, 1982, 57-166536; Oct. 4, 1982, 57-173247; Nov. 19, 1982, 57-202058

Int. Cl.³ C25D *1/10, 1/20, 17/00*

U.S. Cl. 204—4 **18 Claims**



1. A method of making a shaped article, comprising the steps of:

(a) preparing a shaped mold having a contoured surface complementary to that of the shaped article;

(b) electroforming a layer of metal onto said mold;

(c) without destroying said mold, mechanically separating said layer of metal therefrom to provide said shaped articles and, subsequent to step (a) and prior to step (b),

(d) mirror-finishing the contoured surface of said shaped mold; and

(e) anodizing the mirror-finished contoured surface to form an oxide film thereon at least over a substantial proportion of the surface area thereof to a degree sufficient to assure the mechanical separation in step (c) without impairing said electroformed layer of metal and without materially destroying said mold.

4,534,832

ARRANGEMENT AND METHOD FOR CURRENT DENSITY CONTROL IN ELECTROPLATING

Laurea Doiron, Jr., Pelham, N.H., assignor to Emtek, Inc., Haverhill, Mass.

Filed Aug. 27, 1984, Ser. No. 644,711

Int. Cl.³ C25D *5/02, 21/10*

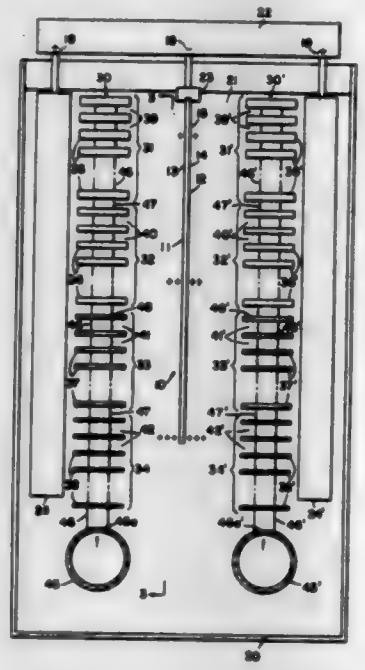
U.S. Cl. 204—15 **11 Claims**

1. In an arrangement for plating a circuit board or the like, the board having a surface to be plated and on the surface a vertically disposed conductive foil having a connection to serve as a cathode, the foil being masked by a non-conductive layer leaving the foil exposed in a pattern to be plated:

an anode; and

a shield of non-conductive material between the board and

the anode and having sections with spacing between the non-conductive material of a section varied vertically to



compensate for the voltage drop from one portion of the foil to another when in use as a cathode.

4,534,833

ZINC-CHLORIDE BATTERY IN A CHLORINE PRODUCING/CONSUMING PLANT

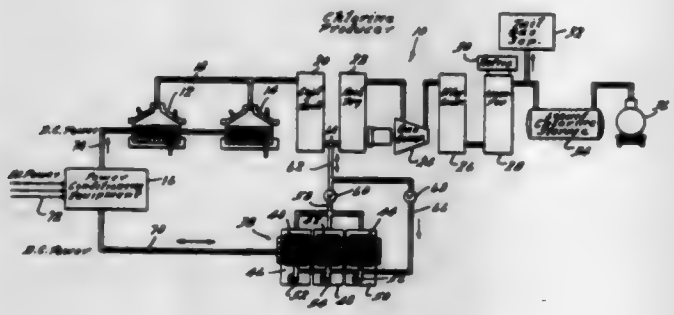
Peter Carr, Utica, Mich., and John W. Rowan, Stamford, Conn., assignors to Energy Development Associates, Inc., Greensboro, N.C.

Continuation of Ser. No. 374,395, Mar. 5, 1982, abandoned. This application Feb. 14, 1984, Ser. No. 579,290

Int. Cl.³ C25B *1/00*; H01M *8/18*

U.S. Cl. 204—128

33 Claims



1. An electrochemical system comprising:

gas producing means having at least one electrolytic cell for generating gas and having outlet means for removing said gas from said system;

secondary energy storage cell in contact with an electrolyte for generating said gas during a charging cycle and for consuming a portion of said gas during a discharging cycle;

conduit means cooperating with said gas producing means and said secondary energy storage cell for permitting said secondary energy storage cell during said charging cycle to supplement the amount of said gas generated by said gas producing means, and for permitting said gas producing means to supply said gas to said secondary energy storage cell during said discharging cycle;

power conditioning means electrically coupled to said secondary energy storage cell and also receptive of electrical energy from a source other than said secondary energy storage cell, said conditioning means providing electrical energy for energizing said gas producing means and also providing electrical energy to said secondary energy storage cell during said charging cycle, and further receiving electrical energy from said secondary energy storage cell during said discharging cycle.

4,534,834

PROCESS FOR CONTINUOUS PRETREATMENT BY ELECTROCHEMICAL OXIDATION OF STRIP OR FOIL OF ALUMINUM

Maly Zdenek, Kreuzlingen, Switzerland, assignor to Swiss Aluminium Ltd., Chippis, Switzerland

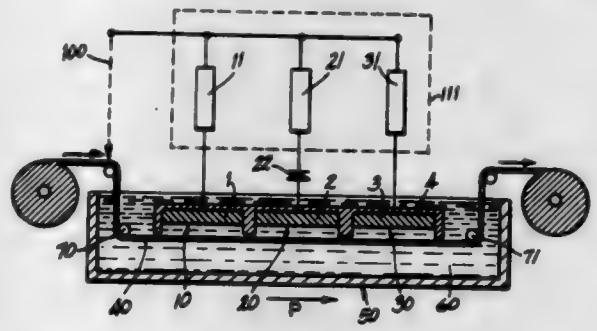
Filed Jul. 9, 1984, Ser. No. 628,755

Claims priority, application Switzerland, Jul. 14, 1983, 3860/83

Int. Cl.³ C25D *5/02, 11/08*

U.S. Cl. 204—28

14 Claims



1. A process for pretreating an aluminum strip or foil by means of electrochemical oxidation for subsequent coating of same which comprises: providing an aluminum strip or foil; subjecting at least one side of said aluminum strip or foil to an electrochemical oxidation in a single electrolyte wherein said aluminum is subjected to a three phase alternating current, one phase of which is rectified, and said side passes sequentially three electrodes of which at least one is connected to the rectified phase while the others are connected to the other phases of the alternating current.

4,534,835

ELECTROLYTIC AL PRODUCTION WITH REACTION SINTERED MULTIPHASE CERAMIC

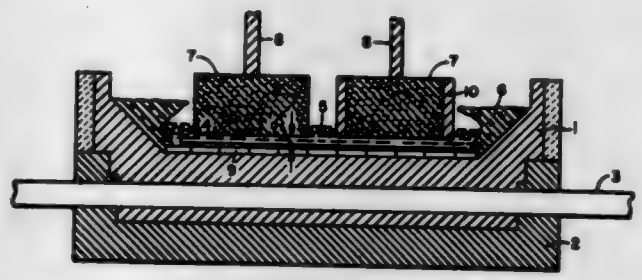
Thomas P. DeAngelis, Horseheads, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,674

Int. Cl.³ C25C *3/06*

U.S. Cl. 204—67

20 Claims



1. A component of an electrolytic aluminum production cell which in use is normally in contact with molten aluminum or in electrical contact with another component which is normally in contact with molten aluminum, characterized in that said component has a portion made of a reaction sintered ceramic consisting essentially of a fine-grained, homogeneous, intimate interdispersion of:

(a) 5–95 mole percent of nitride phase or phases having a maximum grain size not greater than about 10 μm and being nitride of one or both of Al and Si, and

(b) 5–95 mole percent of second phase or phases having a maximum grain size not greater than about 10 μm and being boride, carbide, silicide, sulfide or combination thereof of one or more of the elements of Groups 4b, 5 b and 6b;

said reaction sintered ceramic contains 0 to 4 weight precent oxygen and is prepared by the process comprising:

(c) admixing particulate reactants of maximum particle size not greater than about 150 μm and being elements, compounds, intermetallic compounds, alloys or combination thereof in stoichiometric proportions to form the nitride and second phases, and

(d) shaping and heating the admixture to form the reaction sintered ceramic, the heating being done in nonreactive atmosphere and at temperature at which the reaction and sintering occurs between the reactants to substantially form the nitride and second phases.

20. A method of producing aluminum by electrolysis in an electrowinning or electrorefining cell characterized by using a cell component as claimed in claim 1.

4,534,836

USE OF TEMPERATURE AND CORROSION RESISTANT GASTIGHT MATERIALS AS GUARD ELEMENTS FOR THE METAL PORTION OF COMBINATION ELECTRODES IN THE WINNING OF METALS BY MOLTEN SALT ELECTROLYSIS

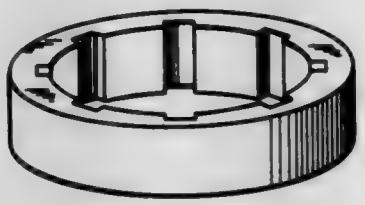
Dieter H. Zöllner; Christine Zöllner, both of Schwaig b. Nürnberg; Franz Schieber, Röthenbach an der Pegnitz; Inge Lauterbach-Dammler, Nuremberg, and Konrad Koziol, Röthenbach an der Pegnitz, all of Fed. Rep. of Germany, assignors to C. Conradty Nürnberg GmbH & Co., KG, Röthenbach a.d. Pegnitz, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,276

Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215537

Int. Cl.³ C25C *3/02, 3/04, 3/06, 7/00*

U.S. Cl. 204—67 51 Claims



1. In the winning of metals by electrolysis in a molten salt system, use of a combination anode having a metal shaft portion protected by guard elements in form of detachably mounted moldings consisting of a composite material comprising at least one ceramic oxide component and a carbon component containing structural elements of graphite.

4,534,837

PROCESS FOR THE MANUFACTURE OF AN ELECTRODE FOR ELECTROCHEMICAL PROCESSES AND A CATHODE FOR THE ELECTROLYTIC PRODUCTION OF HYDROGEN

Edgard Nicolas, Meise-Eversem, and Louis Merckaert, Brussels, both of Belgium, assignors to Solvay & Cie, Brussels, Belgium

Filed Jun. 19, 1984, Ser. No. 622,222

Claims priority, application France, Jun. 20, 1983, 83 10285

Int. Cl.³ C25B *1/02, 11/04*

U.S. Cl. 204—129 11 Claims

1. Process for the manufacture of an electrode for electrochemical processes, according to which an electrically conductive substrate is coated with a material containing a powder of at least one metal which is active for electrochemical proton reduction and the said material is heated on the substrate, successively in an oxidizing atmosphere and then in a reducing atmosphere, characterized in that a material is employed in which the abovementioned active metal is in the form of an unsintered powder, associated with colloidal silica.

4,534,838

SILOXANE POLYPHOTOINITIATORS OF THE SUBSTITUTED ACETOPHENONE TYPE

Samuel Q. S. Lin, Fort Lee, N.J., and Anthony F. Jacobine, Meriden, Conn., assignors to Loctite Corporation, Newington, Conn.

Continuation-in-part of Ser. No. 600,628, Apr. 16, 1984, abandoned. This application Sep. 27, 1984, Ser. No. 655,398

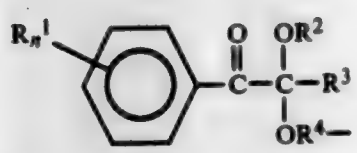
Int. Cl.³ C08F *2/46*

U.S. Cl. 204—159.13 14 Claims

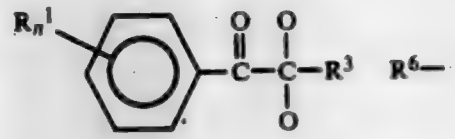
1. An organopolysiloxane photoinitiator having an average of at least two siloxane units, of which at least an average of one siloxane unit per organopolysiloxane molecule has the formula:

$$X_aR_bSiO_{(4-a-b)/2} \quad (I)$$

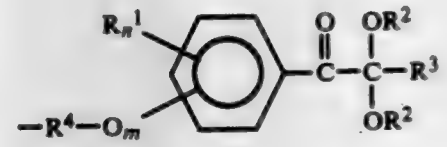
wherein a is an integer of 1–3, b is an integer of 0–2 and a plus b equals 1–3; R is C_1–C_{10} hydrocarbyl or halogen substituted C_1–C_{10} hydrocarbyl; and X is a substituted acetophenone photomoiety selected from:



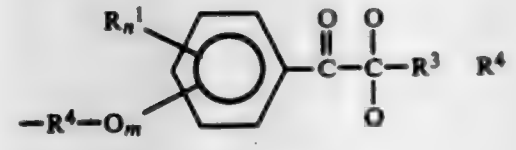
(II)



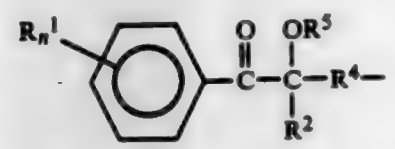
(IIa)



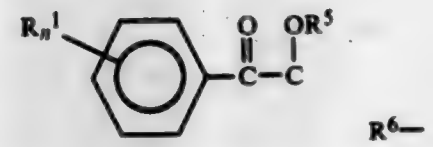
(III)



(IIIa)



(IV)



(IVa)

where R^1 is any substituent which will not interfere with hydrosilation, n is an integer between 0 and 5 in formulas (II), (IIa), (III), (IIIa), (IV) and (IVa) and between 0 and 4 in formula (III) and (IIIa); m is 0 or 1; R^2 is alkyl or substituted alkyl; R^3 is H, alkyl or aryl; R^4 is a divalent hydrocarbon group having between 2 and 10 carbon atoms or an alkylene oxy alkylene group; R^5 is a group selected from H, alkyl, aryl, organosilyl, or the reaction product of an isocyanate esterification reagent or an etherification reagent with the hydroxyl product formed when R^5 is H and R^6 is a trivalent hydrocarbon or hydrocarbon oxyhydrocarbon group.

4,534,839

PROCESS FOR THE PHOTOPOLYMERIZATION OF VINYL COMPOUNDS AND PHOTOPOLYMERIZABLE MATERIALS

Roland Schaefer, Friedrichsdorf, Fed. Rep. of Germany, assignor to Kulzer & Co. GmbH, Wehrheim, Fed. Rep. of Germany

Filed Sep. 1, 1982, Ser. No. 413,804

Claims priority, application Fed. Rep. of Germany, Sep. 15, 1981, 3136484

Int. Cl.³ C08F *2/50*

U.S. Cl. 204—159.23 9 Claims

1. In a process for the production of a dental composition by the photopolymerization of at least one vinyl monomer in the presence of a photoinitiator, the improvement comprising polymerizing said at least one vinyl monomer in the presence of a photoinitiator, the improvement comprising polymerizing said at least one vinyl monomer in the presence of a photoinitiator comprising:

(a) camphorquinone as a photosensitizer; and

(b) at least one reducing agent selected from the group consisting of a 5-alkyl barbituric acid and a 5-aryl barbituric acid.

4,534,840

METHOD FOR FORMING A COMPOUND SEMICONDUCTOR FILM

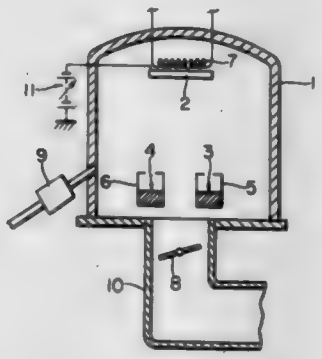
Masanari Shindo, Hachioji; Shigeru Sato, Hino, and Akinari Kaneko, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Sep. 16, 1983, Ser. No. 532,758

Claims priority, application Japan, Sep. 27, 1982, 57-168101

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 R 10 Claims



1. A vacuum deposition method for forming a compound semiconductor film comprising, depositing compound semiconductor film forming materials on a substrate in the presence of sufficient ionized hydrogen to react with impurities.

4,534,841

SOLAR CONTROLLED GLAZING AND METHOD OF PRODUCING GLAZING

Klaus Hartig, Ronneburg; Anton Dietrich, and Michael Scherer, both of Rodenbach, all of Fed. Rep. of Germany, assignors to Leybold-Heraeus GmbH, Cologne, Fed. Rep. of Germany

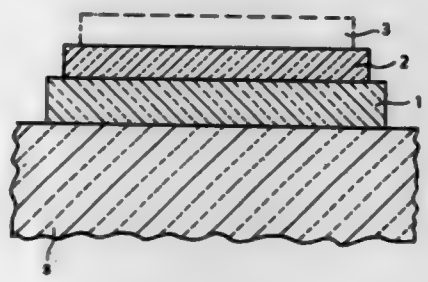
Filed Mar. 23, 1984, Ser. No. 592,907

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1983, 3311815

Int. Cl.³ C23C *15/00*

U.S. Cl. 204—192 P 7 Claims

1. A method of producing glazing having a transmission of between 5 and 40% in the visual spectrum range and heat-reflection properties, comprising the steps of applying at least first and second coating layers to a transparent substrate by cathode sputtering, said first layer comprising an oxide layer having an optical thickness of between 20 and 280 nm and applied by cathode sputtering directly to the substrate in an oxygen-containing atmosphere, and said second layer comprising a chromium nitride layer having a geometric thickness of between 10 and 40 nm applied by cathode sputtering in an atmosphere consisting of an inert gas and nitrogen.



4,534,842

PROCESS AND DEVICE FOR PRODUCING A HOMOGENEOUS LARGE-VOLUME PLASMA OF HIGH DENSITY AND OF LOW ELECTRONIC TEMPERATURE

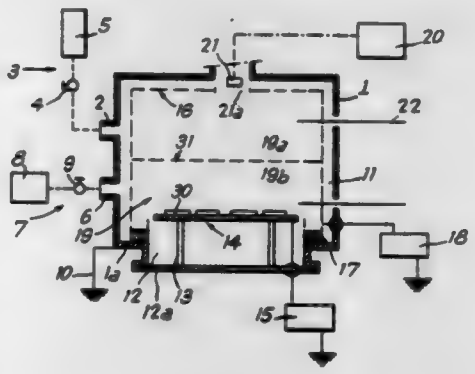
Yves Arnal, 44, Eybens; Jacques Pelletier, Saint Martin D'Heres, and Claude Pomot, La Tronche, all of France, assignors to Centre National de la Recherche Scientifique (CNRS), Paris, France

Filed Jun. 13, 1984, Ser. No. 620,136

Claims priority, application France, Jun. 15, 1983, 83 10116; Jun. 15, 1983, 83 10117

Int. Cl.³ C25B *11/04;* C23C *15/00*

U.S. Cl. 204—192 E 13 Claims



1. A process for producing a plasma of homogeneous large volume, of high density and of low electronic temperature, comprising the steps of:

maintaining a gaseous medium in an enclosure at a pressure in the range of 10^{-5} to 10^{-1} Torr;

exciting said gaseous medium in the enclosure by means of UHF waves in the range of one to ten gigahertz, producing a plasma; and

maintaining this plasma in the enclosure by means of a magnetic confinement shell comprising a plurality of elongated magnetic elements arranged parallel to each other inside the enclosure near the respective interior surfaces, the faces of alternate said magnetic elements which face the interior of the enclosure being of opposite polarity.

4,534,843

APPARATUS FOR ELECTROPLATING AND CHEMICALLY TREATING CONTACT ELEMENTS OF ENCAPSULATED ELECTRONIC COMPONENTS AND THEIR LIKE

Frank Johnson, San Jose; Dieter Reese, Simi Valley, and Louis Hirbour, Anaheim, all of Calif., assignors to Technic, Inc., Cranston, R.I.

Filed Jan. 28, 1983, Ser. No. 462,038

Int. Cl.³ C25D *17/00, 17/06, 17/28;* B05C *3/10*

U.S. Cl. 204—202 16 Claims

1. An improved apparatus for electroplating projecting

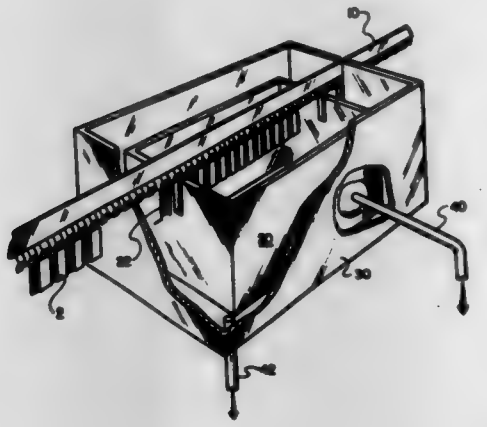
contact elements of encapsulated electronic components, and their like, comprising:

a continuous flexible conveyor belt of electrically conductive material;

guide means for said conveyor belt, constraining the motion thereof in a substantially horizontal plane, with a web of said conveyor belt in a substantially vertical alignment;

grip means, comprised of adjacent, multiply-bent elastic elements of alternatingly assymetrical shape, configured to frictionally engage portions of said contact elements therebetween, arrayed along the distal edge of said conveyor belt and in intimate, electrically conductive contact therewith;

drive means for said conveyor belt;



a plurality of containers for liquid treatment media disposed along the path of said conveyor belt, with at least one of said containers supplied with liquid electrolyte, each such container being provided with weirs in its upper edge adapted to pass the conveyor belt and encapsulated electronic components suspended therefrom inwardly and outwardly of the liquid contained in said tank;

recirculating means, for recovering liquid treatment media escaping from said containers through said weirs and returning such media to said containers, and

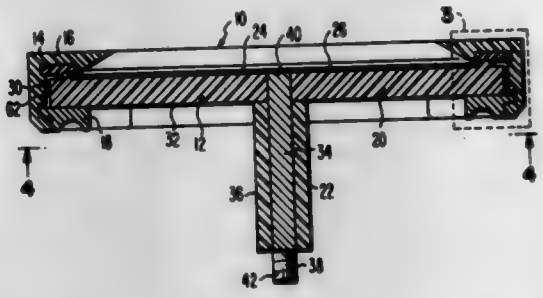
electroplating current supply means, including at least one electrode disposed within the liquid volume of said one container and at least one current transfer brush in contact with the conveyor belt, for supplying plating current for the deposition of a metallic substance from said electrolyte onto said contact elements.

4,534,844

ELECTROFORMING APPARATUS

John J. Prusak, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 5, 1984, Ser. No. 678,480
Int. Cl.[3] C25D *1/10, 17/06*
U.S. Cl. 204—281 4 Claims



1. A cathode head assembly for holding a matrix of a given diameter comprising:

a disc-shaped support member having an outer diameter which is at least as large as the given diameter;

a circular seal member comprised of a compressable elastic material having an inside diameter less than the given diameter of the matrix and an outer diameter the same or less than the outer diameter of the support member, said seal member being positioned adjacent the outer diameter of the support member with the inner diameter edge being aligned to sealingly engage a matrix when positioned on the support member;

a ring member having a radially inwardly extending portion in engagement with the seal member and a downward extending cylindrical portion with an inside diameter larger than the outer diameter of the support member which is cylindrically aligned with the outer diameter of the support member; and

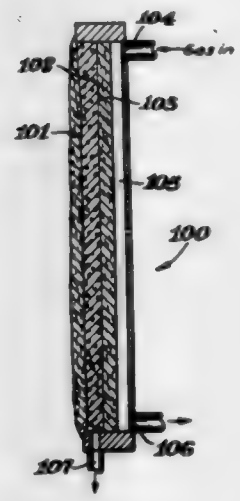
lock means associated with the ring member for holding the ring member in a position where the radially inwardly extending portion of the ring member holds the seal member in a compressed electrolyte tight sealing engagement.

4,534,845

SEPARATOR-GAS ELECTRODE COMBINATION

James A. McIntyre, and Robert F. Phillips, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 404,690, Aug. 3, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,456
Int. Cl.[3] C25B *1/46*
U.S. Cl. 204—283 13 Claims



1. A separator-gas electrode combination comprising:

(a) a separator adapted to permit the flow of fluids or ions therethrough and having at least a first and a second face; and

(b) a hydraulically permeable gas electrode adapted to permit a liquid and gas to enter and exit the electrode and having at least a first and second face; and

(c) a gas chamber contiguous to at least a portion of the second face of the gas electrode; and

(d) a means to introduce an oxygen-containing gas into said gas chamber; and

(e) an electrically non-conductive self-draining member having a fluid outlet opening external to the separator-gas electrode combination and at least two faces, at least a portion of a first face being contiguous to at least a portion of one face of the separator, and at least a portion of a second face being contiguous to at least a portion of the first face of the gas electrode; said member having a plurality of interconnected passageways in fluid-transferring communication with the separator, the gas electrode and the fluid outlet and providing the major conduit therebetween.

4,534,846

ELECTRODES FOR ELECTROLYTIC CELLS

Kenneth E. Woodard, Jr., Cleveland, Tenn., and Ronald L. Dotson, Cheshire, Conn., assignors to Olin Corporation, Cheshire, Conn.

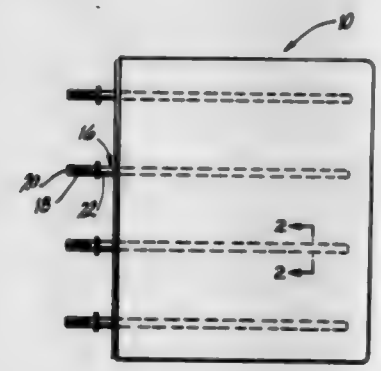
Continuation-in-part of Ser. No. 518,595, Jul. 29, 1983, Pat. No. 4,513,904, which is a division of Ser. No. 490,612, May 2, 1983, Pat. No. 4,452,685. This application Nov. 23, 1984, Ser. No. 674,373

The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.

Int. Cl.[3] C25B *11/00*; C25C *7/02*

U.S. Cl. 204—290 R

16 Claims



1. An electrode for use in an electrolytic cell having cell electrolyte flowing through the cell, comprising in combination:

(a) a generally flat, planar conductor plate connectable to an electrical connection supplying electrical current having a contact surface;

(b) a generally flat, planar element fastened to at least a portion of the conductor plate, the element being of a material that is corrosion-resistant to the cell electrolyte and having a contact surface;

(c) conducting means fastened to the generally flat, planar element of corrosion-resistant material;

(d) an electrode surface fastened to the conducting means spaced apart from the generally flat, planar element of corrosion-resistant material; and

(e) an electrically conductive coating in contact with the contact surfaces of the conductor plate and the generally flat, planar element of corrosion resistant material immediately in line and opposite the conducting means, the electrically conductive coating being a liquid-metal mixture comprising between about 20 and about 30 percent indium by weight and between about 80 and about 70 percent gallium by weight such that the electrical contact resistance between the conductor plate and the generally flat, planar element of corrosion resistant material is reduced.

4,534,847

PROCESS FOR PRODUCING LOW-SULFUR BOILER FUEL BY HYDROTREATMENT OF SOLVENT DEASHED SRC

George W. Roberts, Emmaus, and John C. Tao, Perkiomenville, both of Pa., assignors to International Coal Refining Company, Allentown, Pa.

Filed Jan. 16, 1984, Ser. No. 571,311

Int. Cl.[3] C10G *1/00, 1/06*

U.S. Cl. 208—8 LE

4 Claims

1. An improved process for producing a substantially ash-free, low-sulfur solid boiler fuel by hydrotreating deashed solvent refined coal wherein hydrogen consumption and the occurrence of coking in said hydrotreating step are minimized, said process comprising:

(a) mixing finely divided coal with a hydrogen donor solvent for the hydrocarbonaceous material in said coal, said solvent having a boiling range of about 400° F. to 850° F. (204.4° to 454.4° C.), to form a slurry,

(b) pressurizing said slurry to a pressure of between 500 and 3000 psig (70.3 to 210.8 kg/cm^2 gauge),

(c) adding a gas comprising molecular hydrogen to the pressurized slurry to form a hydrogen-containing slurry having a hydrogen/coal weight ratio of about 0.025 to 0.15,

(d) preheating said hydrogen-containing slurry to about 750° F. (398.9° C.),

(e) passing the heated hydrogen-containing slurry to a dissolving zone having an outlet temperature in the range from about 750° F. to 900° F. (398.9° to 482.2° C.),

(f) maintaining said heated hydrogen-containing slurry in said dissolving zone for a residence time of about 2 to 120 minutes,

(g) removing the treated slurry as effluent from said dissolving zone and passing the same to a first flash separating zone to reduce the pressure and to cool said effluent,

(h) removing overhead light gases comprising H_2, H_2S, NH_3, H_2O and C_1 to C_4 hydrocarbons from said first flash separating zone,

(i) removing the flashed effluent from said first flash separating zone and passing the same to a vacuum distillation zone,

(j) vacuum distilling said flashed effluent to separate a first portion having an initial boiling point below about 850° F. (454.4° C.) and a second portion having an initial boiling point above about 850° F. (454.4° C.),

(k) removing said first portion from said vacuum distillation zone and passing the same through a distillation zone to separate a light distillate fraction and a process derived solvent fraction,

(l) removing said second portion from said vacuum distillation zone and passing the same through a critical solvent deashing zone to produce deashed solvent refined coal having a boiling point greater than 850° F. consisting predominantly of asphaltenes and preasphaltenes and having a hydrogen content of less than 6.5% and ash concentrate comprising solid ash and undissolved coal,

(m) removing said deashed solvent refined coal having a boiling point greater than 850° F. consisting predominantly of asphaltenes and preasphaltenes and having a hydrogen content of less than 6.5% from said critical solvent deashing zone and combining same with at least a portion of said process solvent from said first distillation zone to produce a hydrotreater feedstock stream,

(n) pressurizing said hydrotreater feedstock stream with hydrogen and adjusting the temperature of said stream to from about 400° F. to 800° F. (204.4° to 426.7° C.),

(o) passing said preheated hydrotreater feedstock stream containing said preasphaltenes and asphaltenes to a hydrotreating zone containing a sulfided hydrotreating catalyst at hydrogenation conditions including a temperature of from 650° F. to 850° F. (343.3° to 454.4° C.) and a pressure ranging from about 1000 to 2500 psig (70.3 to 175.7 kg/cm^2 gauge) for a sufficient time effective to produce a liquid hydrotreating effluent containing a solid boiler fuel at room temperature, without substantial reduction in said asphaltene and preasphaltene levels and without substantial coking, wherein said hydrotreating is effective to desulfurize and denitrogenate said preheated hydrotreated feedstock stream,

(p) removing the hydrotreated liquid effluent from said hydrotreating zone and passing the same to a second flash separating zone to reduce the pressure and temperature of said effluent and to separate light gases therefrom and,

(q) removing the remaining portion of the flashed hydrotreated liquid effluent from said second flash separating zone and passing the same to a second distillate zone to separate a second light distillate stream, a second recycle solvent stream and a substantially ash-free low sulfur solid boiler fuel.

4,534,848

COAL LIQUEFACTION WITH A SELENIUM CATALYST

Yuzo Sanada; Susumu Yokoyama, both of Sapporo; Tadatoshi Chiba, Ishikari; Tetsuro Yokono, Sapporo; Hiroshi Moritomi, Sapporo; Toshiyuki Obara, Sapporo, and Hiroshi Nagaishi, Sapporo, all of Japan, assignors to Hokkaido University, Sapporo, Japan

Filed Nov. 13, 1984, Ser. No. 671,045
Claims priority, application Japan, Jan. 26, 1983, 58-11146
Int. Cl.³ C10G *1/00*
U.S. Cl. 208—10 **5 Claims**

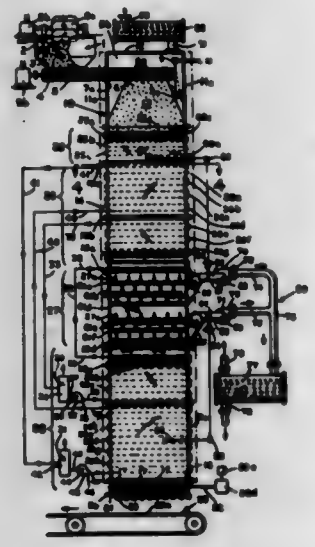
1. A method for the direct liquefaction of coal, comprising heating powdered coal, a catalyst, and hydrogen to a temperature of 400°–470° C. under a pressure of 1 to 200 atms wherein said catalyst consists of selenium, a compound of selenium, or a mixture of selenium or the compound of selenium with a metal oxide.

4,534,849

METHOD FOR ABOVEGROUND SEPARATION, VAPORIZATION AND RECOVERY OF OIL FROM OIL SHALE

Ray C. Edwards, Kinnelon, N.J., assignor to Edwards Engineering Corporation, Pompton Plains, N.J.

Continuation-in-part of Ser. No. 508,738, Jun. 29, 1983, abandoned, Division of Ser. No. 457,975, Jan. 14, 1983, Pat. No. 4,502,920. This application Aug. 20, 1984, Ser. No. 642,084
Int. Cl.³ C10G *1/02, 1/00*
U.S. Cl. 208—11 R **8 Claims**



1. A method of recovering hydrocarbons from oil shale including the steps of:

a. crushing said oil shale to an approximate predetermined size,

b. delivering said oil shale to an elongated housing for controlled movement through a transfer passage extending end to end therethrough.

c. moving the crushed oil shale through a drying zone in the transfer passage and heating the same within a first temperature range.

d. moving the crushed oil shale from the drying zone to a preheating zone in the transfer passage which follows the drying zone and heating the same within a second temperature range higher than said first temperature range,

e. moving the crushed oil shale through a cracking and distillation zone in the transfer passage which follows the preheating zone and heating the crushed oil shale in said cracking and distillation zone within a third temperature range higher than said second temperature range and to a temperature above the critical temperature for releasing hydrocarbon in vapor form from the crusher oil shale,

f. separating the hydrocarbon vapors from the crushed oil shale therein by pump means,

g. condensing the hydrocarbon vapors and passing the same to any suitable point of storage,

h. moving the crushed oil shale from the cracking and distillation zone to a waste heat recovery zone in the transfer passage which follows the cracking and distillation zone to recover waste heat from the spent crushed oil shale and utilizing the recovered waste heat for preheating the incoming crushed oil shale.

i. removing the spent oil shale from the transfer passage in the elongated housing,

j. sensing the pressure within said elongated housing on opposite sides of said cracking and distillation zone, and

k. adjusting the pressure in said cracking and distillation zone by regulating the pump means in response to the sensed pressures to a pressure greater than the pressures in the other zones such that substantially all hydrocarbon vapors are separated by said pump means and such that gases in said adjacent zones do not enter into said cracking and distillation zone.

4,534,850

OPTICALLY ANTISOTROPIC CARBONACEOUS PITCH

Takayuki Izumi; Tsutomu Naito, and Tomoo Nakamura, all of Saitama, Japan, assignors to Toa Nenryo Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 321,597, Nov. 16, 1981, abandoned. This application Apr. 22, 1983, Ser. No. 487,700
Claims priority, application Japan, Nov. 19, 1980, 55-162972
Int. Cl.³ C10C *3/00*
U.S. Cl. 208—22 **12 Claims**

1. An improved spinnable optically anisotropic carbonaceous pitch having above about 90% of an optically anisotropic phase and a softening point in the range of about 230° C. to about 320° C., said pitch comprising:

(a) about 2 to 20 percent by weight of a first n-heptane-soluble component, said first component having a carbon-hydrogen atomic ratio of at least 1.3, a ratio of carbon atoms in the aromatic structure to the total carbon atoms of at least 0.8, a number average molecular weight of greater than 1000 and a molecular weight of not less than 150;

(b) about 15 to 45 percent by weight of a second n-heptane-insoluble and benzene-soluble component, said second component having a carbon-hydrogen atomic ratio of at least 1.4, a ratio of carbon atoms in the aromatic structure to the total carbon atoms of at least 0.8, a number average molecular weight of no greater than 2000 and a molecular weight of no greater than 10,000;

(c) about 5 to 55 percent of a third benzene-insoluble quinoline-soluble component, said third component having a carbon-hydrogen atomic ratio of at least 1.5, a ratio of carbon atoms in the aromatic structure to the total carbon atoms of at least 0.8, a number average molecular weight of no greater than 2000 and a molecular weight no higher than 10,000;

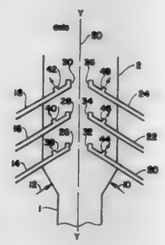
(d) about 20 to 70 percent by weight of a benzene-insoluble and a quinoline-insoluble fourth component having a carbon-hydrogen ratio of at least 1.8, a ratio of carbon atoms in the aromatic structure to the total carbon atoms of at least 0.85, a number average molecular weight of no greater than 3000 and a molecular weight no higher than 30,000.

4,534,851

FEED INJECTION METHOD TO PREVENT COKING ON THE WALLS OF TRANSFER LINE REACTORS

David E. Allan, and Charles H. Martinez, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Jun. 2, 1983, Ser. No. 500,408
Int. Cl.[3] C10G 9/12, 9/16
U.S. Cl. 208—48 R 6 Claims



1. A method of introducing a hydrocarbonaceous liquid feed into a transfer line reaction zone, which comprises:

introducing said hydrocarbonaceous liquid feed and steam into said transfer line reaction zone as separate concentric streams, said hydrocarbonaceous feed being introduced into a conduit disposed in inner concentric relation to an outer conduit, and said steam being introduced into said outer conduit, discharging a first portion of said steam as a stream directed towards an inner wall of said transfer line reaction zone through a nozzle positioned on said outer conduit to cover at least a portion of said inner wall of said transfer line reaction zone with said first portion of steam, and discharging said hydrocarbonaceous liquid feed and a second portion of said steam in a direction parallel to the longitudinal axis of said transfer line reaction zone through outlets comprised by said outer conduit and said inner conduit.

4,534,852

SINGLE-STAGE HYDROTREATING PROCESS FOR CONVERTING PITCH TO CONVERSION PROCESS FEEDSTOCK

Don M. Washecheck, Katy, and Charles T. Adams, Houston, both of Tex., assignors to Shell Oil Company, Houston, Tex.

Filed Nov. 30, 1984, Ser. No. 676,742
Int. Cl.[3] C10G 45/06
U.S. Cl. 208—89 17 Claims

1. A process for converting residual hydrocarbon oils to catalytic cracking feedstocks which comprises:

mixing from about 5–60%v residual oils with catalytic cracking feedstock and hydrogen and passing said mixture downwardly into a hydrotreating zone over a stacked-bed of two hydrotreating catalysts under conditions suitable to convert from about 45–75% of the sulfur compounds present to H_2S; said stacked bed comprising an upper bed consisting of about 15–85%v, basis total catalyst, of a high-activity hydrotreating catalyst containing from about 2–4%w nickel, from about 8–15%w molybdenum and from about 2–4%w phosphorus supported on a carrier consisting mostly of alumina, said catalyst having a compacted bulk density of about 0.7–0.95 gm/cc and a surface area greater than 140 m^2/gm; and a lower bed consisting of about 15–85%v, basis total catalyst, of a high-activity desulfurization catalyst which contains from about 2–4%w cobalt and/or nickel and from about 8–15%w molybdenum and less than about 0.5%w phosphorus supported on a carrier consisting mostly of alumina, said catalyst having a compacted bulk density of about 0.6–0.8 gm/cc and a surface area greater than 180 m^2/gm; and separating the reaction product from said hydrotreating zone into a hydrogen-rich gas and a liquid residue-containing oil having reduced sulfur and/or heavy metal content and being suitable as a catalytic cracking feedstock.

4,534,853

METHOD FOR CRACKING RESIDUAL OILS

Gary N. Long, Putnam Valley; Regis J. Pellet, Croton-on-Hudson, and Jule A. Rabo, Armonk, all of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 19, 1983, Ser. No. 543,359
Int. Cl.[3] C10G 11/02, 11/04
U.S. Cl. 208—120 26 Claims

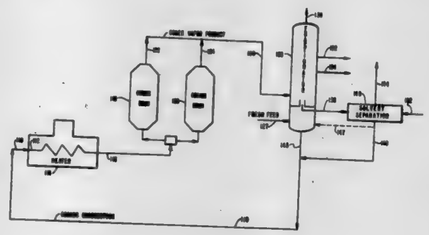
1. In a method for converting hydrocarbons comprising residual oils which comprises charging hot particles of catalyst at a temperature above 1400° F. and at least equal to the pseudo-critical temperature of a hydrocarbon feed comprising residual oils to the lower portion of a riser conversion zone for flow upwardly therethrough, charging the hydrocarbon feed comprising residual oils to said riser conversion zone as a multiplicity of separate streams so as to substantially completely vaporize vaporizable components of the feed whereby thermal and catalytic cracking of the feed is accomplished and recovering a hydrocarbon product of said thermal and catalytic cracking of the feed separate from catalyst particles the improvement comprising employing a catalyst comprising a zeolitic aluminosilicate selected from the group consisting of LZ-210, LZ-210-M, LZ-210-T, LZ-210-A and mixtures thereof.

4,534,854

DELAYED COKING WITH SOLVENT SEPARATION OF RECYCLE OIL

Harold N. Weinberg, Livingston; David W. Savage, Lebanon, and Walter Weissman, Berkeley Heights, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 17, 1983, Ser. No. 523,962
Int. Cl.[3] C10G 9/14
U.S. Cl. 208—131 8 Claims



1. A delayed coking process which comprises the steps of:

(a) preheating a hydrocarbonaceous oil chargestock to a coking temperature;

(b) introducing the resulting preheated oil chargestock into a coking zone at delayed coking conditions to form coke and a vapor phase product, including light and heavy normally liquid hydrocarbons;

(c) separating at least a portion of said heavy hydrocarbons from said vapor phase product in a separation zone wherein a fresh hydrocarbonaceous oil is introduced, said separated heavy hydrocarbons having a Conradson carbon content ranging from about 3 to about 50 weight percent;

(d) removing at least a portion of said heavy hydrocarbons from said separation zone of step (c) as a sidestream above the location of the introduction of said fresh oil into said separation zone of step (c) to prevent said portion of heavy hydrocarbons from mixing with said fresh oil;

(e) subsequently contacting at least a portion of said separated hydrocarbons, said portion of separated hydrocarbons having a Conradson carbon content of about 3 to about 50 weight percent, with a solvent in a solvent separation zone at separation conditions to separated said heavy hydrocarbons into a high Conradson carbon hydrocarbonaceous product and a low Conradson carbon hydrocarbonaceous product;

(f) recycling at least a portion of said high Conradson carbon hydrocarbonaceous product from said separation zone to said preheating zone of step (a);

(g) passing at least a portion of said hydrocarbonaceous oil from said separation zone of step (c) to said pre-heating zone of step (a), and

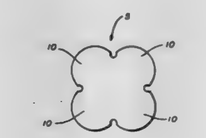
(h) recovering said low Conradson carbon hydrocarbonaceous product of step (e).

4,534,855

SHALE OIL DEMETALLIZATION PROCESS

Michael A. Silverman, Houston, Tex., assignor to Tenneco Oil Company, Houston, Tex.

Filed Jan. 3, 1983, Ser. No. 454,740
Int. Cl.[3] C10G 25/00, 45/60
U.S. Cl. 208—253 20 Claims





1. The method of removing trace metals from a hydrocarbonaceous oil comprising,

(a) contacting a hydrocarbonaceous oil containing trace amounts of a metal selected from the group consisting of As, Fe, Ni and mixtures thereof with a bed of polylobe contact structures consisting essentially of unmodified alumina at a temperature in the range 500° F. to 700° F., and

(b) recovering said hydrocarbonaceous oil having a substantial portion of said trace metal removed from said oil wherein said method is characterized in that the presence or absence of hydrogen or nitrogen process gas produces substantially the same level of trace metal removal.

4,534,856

ELECTRODYNAMIC METHOD FOR SEPARATING COMPONENTS

Louis C. Weiss, and Devron P. Thibodeaux, both of Metairie, La., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 30, 1983, Ser. No. 527,730
Int. Cl.[3] B03C 7/00
U.S. Cl. 209—1 8 Claims

1. An electrodynamic method for separating components of agricultural by-products comprising:

(a) feeding onto a horizontal electric undulating traveling wave contact panel an agricultural by-product mixture comprising individual components that can be differentially charged;

(b) energizing the panel with sufficient charging voltage for sufficient time to impart different charge to mass ratios to the individual components;

(c) increasing the voltage to a separation voltage for sufficient time to effect separation of the components, said



separation voltage being that which is sufficient to move said components, in opposite directions but less than that voltage which is necessary to transport all of the components in the same direction;

(d) separating the individual components by cyclically repeating steps (b) and (c) until all of the components are moved off of the panel for recovery.

4,534,857

ORE FLOTATION WITH COMBINED COLLECTORS

Robert M. Parlman, and Clarence R. Bresson, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 584,673, Feb. 29, 1984, and Ser. No. 409,254, Aug. 18, 1982, Pat. No. 4,462,898. This application Dec. 7, 1984, Ser. No. 679,655
Int. Cl.[3] B03D 1/14
U.S. Cl. 209—166 9 Claims

1. A composition comprising a mixture which contains both of the following compounds in substantial quantities

(a) S-allyl-S'-n-butyl trithiocarbonate

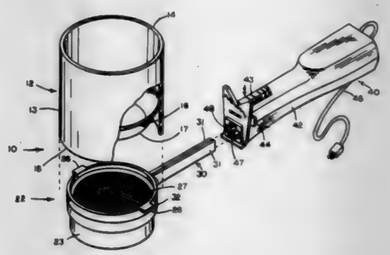
(b) N,N-dimethyl-S-benzyl dithiocarbamate.

4,534,858

SIFTER

Warren S. Aldrich, 1965 Old Dominion Dr., Dunwoody, Ga. 30338, and Brian Ingersoll, Marietta, Ga., assignors to Warren Aldrich, Dunwoody, Ga.

Filed Jun. 4, 1984, Ser. No. 616,905
Int. Cl.[3] B07B 1/02, 1/28
U.S. Cl. 209—236 8 Claims



1. A sifter comprising a casing, a screen mounted to said casing through which material introduced into said casing may be sifted, and a handle mounted to said screen having an end portion provided with coupling means for coupling said handle with an electric knife drive means of the type having two juxtaposed drive rods such that said screen may be driven by said drive means with a generally linear, reciprocating movement, and wherein said handle end portion is bar-shaped, one

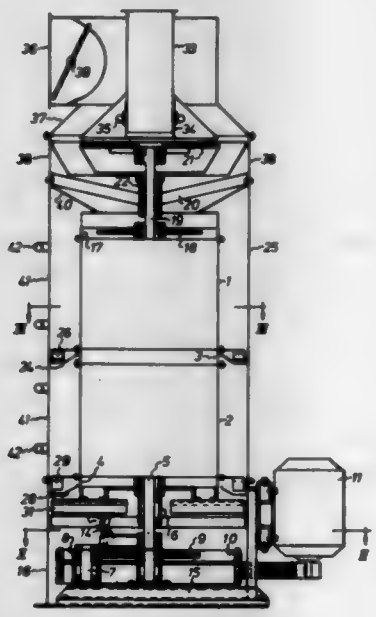
side of which is completely flat and the other side of which has a stud projecting outwardly therefrom.

4,534,859

CLEANING MACHINE WITH A VERTICAL CYLINDER SCREEN

Ingmar Andrén, Lindesberg, Sweden, assignor to Lindema Kommanditbolag, Lindesberg, Sweden

Filed Nov. 21, 1983, Ser. No. 553,721
Claims priority, application Sweden, Dec. 1, 1982, 8206874
Int. Cl.³ B07B *1/26*
U.S. Cl. 209—301 **19 Claims**



1. A cleaning machine comprising
a center shaft (5),
a vertical cylinder screen (1–3) connected to said center shaft for rotation with said center shaft,
a driven eccentric means connected to said center shaft to give said screen an oscillatory angular motion,
carrier means mounted for rotation about said center shaft to give a rotary motion to said vertical cylinder screen,
said carrier means including a disc (10) which is rotatable about said center shaft and having a driving means (11) connected to said disc to rotate said disc,
said driven eccentric means including
an eccentric unit shaft (7) carried by said disc for rotation relative to said disc,
an eccentric (12) on said eccentric unit shaft,
a gearwheel (8) fixedly mounted on said eccentric unit shaft, and
a stationary gearwheel (9) mounted around said center shaft in a position to engage said gearwheel (8) on said eccentric unit shaft.

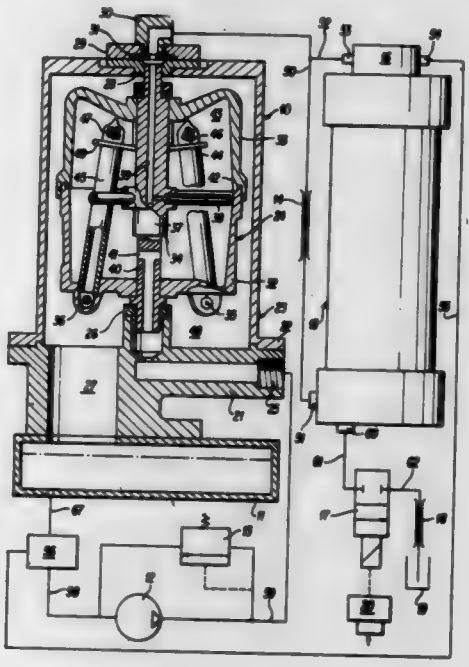
4,534,860

WATER-OIL SEPARATING SYSTEM FOR USE WITH CENTRIFUGAL TYPE SEPARATOR

Tadeusz Budzich, 80 Murwood Dr., Moreland Hills, Ohio 44022

Filed Jul. 11, 1984, Ser. No. 629,907
Int. Cl.³ B01D *33/04*; B04B *9/06*
U.S. Cl. 210—137 **12 Claims**

1. A centrifugal filter separator system comprising a stationary housing having an inlet port supplied with pressurized oil by a pump having a suction port connected to a reservoir, a clean oil outlet port connected to said reservoir, a centrifuged water port, and a rotatable drum journalled in said housing and functionally connected with said inlet port, said clean oil outlet port and said centrifuged water port, gravity type separating means having flow resistance means interconnected to said centrifuged water port, pressurizing means of said gravity type separating means operable to maintain a relatively constant pressure differential across said flow resistance means and oil conducting means down stream of said pressurizing means interconnected to exhaust means whereby oil-water mixture



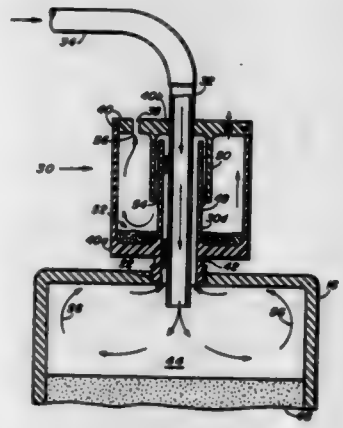
supplied from said centrifuged water port can be separated into oil and water, said water retained in said gravity type separator and said oil returned to said exhaust means.

4,534,861

VACUUM PUMP PURGING APPARATUS

Robert C. Wedemeyer, San Francisco, and Robert H. Giebeler, Jr., Cupertino, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Apr. 30, 1984, Ser. No. 605,340
Int. Cl.³ B01D *45/06*
U.S. Cl. 210—168 **19 Claims**



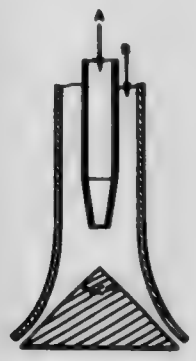
1. An apparatus for purging contaminating liquids from a vacuum pump of the type having a housing that encloses an oil sump, comprising:
(a) a separator for collecting said liquids from the pump housing including:
(i) a purging air inlet,
(ii) a purged air inlet,
(iii) a purged air outlet, and
(iv) a liquid trap connected between the purged air inlet and the purged air outlet,
(b) first means for connecting the purging air inlet and purged air inlet in fluid communication with the pump housing, and
(c) second means for connecting the purging air inlet to a source of purging air.

4,534,862

APPARATUS FOR FLOTATION

Marko Zlokarnik, Cologne, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Continuation of Ser. No. 406,692, Aug. 9, 1982, abandoned, which is a continuation of Ser. No. 236,485, Feb. 23, 1981, abandoned. This application Aug. 9, 1983, Ser. No. 521,775
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1980, 3008476
Int. Cl.³ C02F 1/24
U.S. Cl. 210—221.2 2 Claims



1. In a flotation cell including means for dispensing a gas in a liquid, such means comprising a liquid propulsion jet nozzle arranged axially inside a gas-providing tube, the nozzle and tube ending in a funnel-shaped mixing chamber, the mixing chamber being formed by a funnel-shaped casing containing a conical deflecting element arranged in line with the axis of the propulsion jet, thereby forming an annular passage, the improvement wherein the funnel has a concave curvature over its entire length and the angle of the conical deflecting element is between 60° and 120° such that the annular passage has a first zone of decreasing cross-section followed by a second zone of increasing cross-section in the flow direction, wherein the ratio of diameter of the conical deflecting element (d_1) to the diameter of the jet nozzle (d) is more than 3, and wherein the jet nozzle diameter (d) is at least 10 mm and the width of the annular passage at the increasing cross-section (h) is at least 5 mm, whereby the nozzle acts as a confuser in the first zone and a diffuser in the second zone to obtain high self-aspirated gas throughputs.

4,534,863

CENTRIFUGAL FILTERING DEVICE AND FILTER UNIT THEREFOR

David L. Bacon; Richard D. Kremer, and Randall H. Morse, all of Keene, N.H., assignors to Schleicher & Schuell, Inc., Keene, N.H.

Filed May 22, 1984, Ser. No. 612,905
Int. Cl.³ B01D 25/02
U.S. Cl. 210—232 24 Claims

1. A centrifugal filtering device, comprising:

(a) a generally cylindrical sample tube having an open inlet end and an open outlet end;

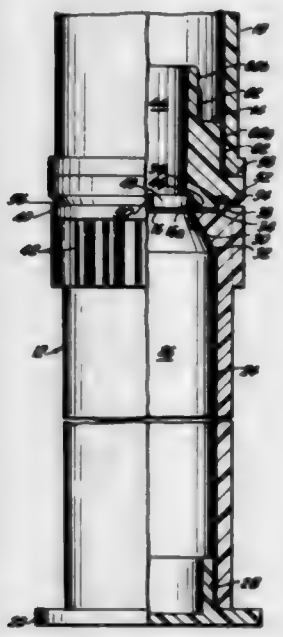
(b) a filter support element ultrasonically welded to the outlet end of the sample tube at an annuular joint and defining an open-ended passage coaxial with the sample tube, said support element having a forward end formed with an annular seat surrounding said passage;

(c) a filter clamped between the outlet end of the sample tube and the support element for completely occluding said passage such that liquid can enter said passage from said sample tube only by passing through said filter;

(d) a receiver vessel having an open inlet end removably mounted on said seat, and a closed outer end, for collecting and retaining liquid advancing forwardly through said passage from said filter; and

(e) a cap for closing the inlet end of said sample tube;

(f) said annular joint being sufficiently mechanically weaker than said sample tube and said filter support element to enable the sample tube and the support element to be



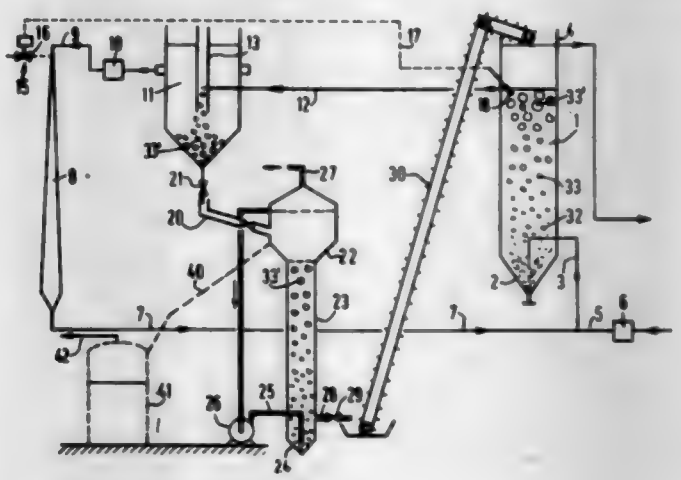
separated by application of manual bending forces at said joint for recovering said filter.

4,534,864

PROCESS AND DEVICE FOR THE REGENERATION OF A GROUP OF SOLID PARTICLES HAVING A COATING OF A BIOLOGICAL MATERIAL

Alain Rigouard, Echirolles, France, assignor to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude, Paris, France

Filed Apr. 17, 1984, Ser. No. 601,333
Claims priority, application France, Apr. 28, 1983, 83 07016
Int. Cl.³ C02F 3/28, 3/30
U.S. Cl. 210—603 7 Claims



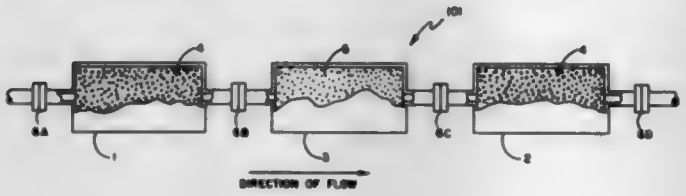
1. A process for regenerating a group of solid particles provided with a coating of biological material by substantially eliminating said coating of biological material, said process comprising producing and anaerobically fermenting the coating of said particles in a bed fluidized in an ascending current of liquid, degassing at an upper end of said bed a gaseous mixture comprising essentially methane and carbon dioxide resulting from said fermentation, and recovering at a lower end of said bed the regenerated solid particles from which their coating of biological materials has been substantially removed.

4,534,865

METHOD AND APPARATUS FOR REDUCING LEVELS OF ORGANICS IN LIQUIDS

Donald C. Sundberg, 21 Garrison La., Madbury, N.H. 03820; Paul L. Bishop, 16 Granger Dr., R.F.D. #1, Durham, N.H. 03824, and David G. McBee, 15 Cardiff Rd., Nashua, N.H. 03062

Filed Apr. 24, 1984, Ser. No. 604,571
Int. Cl.³ C02F *1/28*
U.S. Cl. 210—692 10 Claims



1. Apparatus for reducing levels of organic contaminants present in flowing contaminated water and for automatically terminating the flow of the contaminated water, which comprises:

a. a first activated carbon bed and a second activated carbon bed serially connected and spaced from one another to receive contaminated water, adsorb organic contaminants therein, and then pass the cleansed water therethrough, and

b. absorption means comprising an absorption bed of given volume disposed between the first activated carbon bed and the second activated carbon bed, responding, upon being exposed to organic contaminants in the water, by absorbing any contaminants that pass through the first activated carbon bed and swelling within said given volume because of the absorption of the contaminants to decrease flow of contaminated water from the first activated carbon bed to the second activated bed and ultimately to fill the given volume and terminate the flow of the contaminated water, the relative volumes of the serially connected spaced activated carbon beds and the absorption bed being chosen to provide proper residence times for the water in the spaced activated carbon beds and a proper expansion time for the particles in the absorption bed to decrease the flow and ultimately to terminate the flow from the first activated carbon bed to the second activated carbon bed upon exhaustion of the first activated carbon bed.

4,534,866

DEPOSIT CONTROL METHOD

Larry W. Becker, Syracuse, N.Y., assignor to Betz Laboratories, Inc., Trevose, Pa.

Filed Feb. 17, 1983, Ser. No. 467,528
Int. Cl.³ C02F *5/14*
U.S. Cl. 210—697 11 Claims

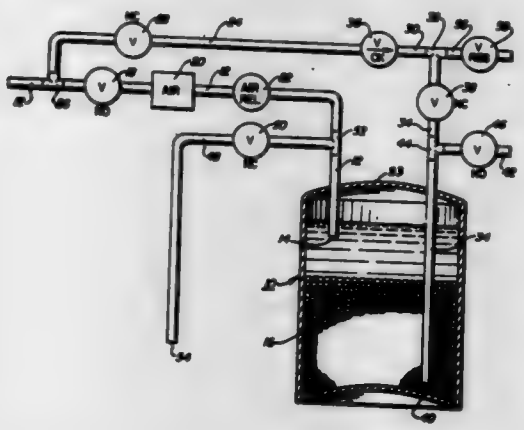
1. Method of controlling the deposition of calcium phosphate on the structural parts of a system exposed to an aqueous medium prone to said deposition, said aqueous medium comprising a calcium ion concentration of about 400 ppm calcium (as Ca^{+2}) and greater, said method comprising adding to said aqueous medium an effective amount for the purpose of a water soluble reaction product formed from acrylic acid, an hydroxylated lower alkyl acrylate and hypophosphorous acid, the molar ratio of acrylic acid:hydroxylated lower alkyl acrylate:hypophosphorous acid being about 3: about 1: about 1, and the number average molecular weight of said reaction product being about 4,400, said water soluble reaction product being capable of controlling said calcium phosphate deposition without resulting in substantial adduct formation with said calcium.

4,534,867

SYSTEM FOR REMOVING IRON AND/OR OTHER CHEMICALLY REDUCING SUBSTANCES FROM POTABLE WATER

Edward G. Kreusch, Arlington Heights, and Bruce F. Brodzik, Mundelein, both of Ill., assignors to Culligan International Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 525,966, Aug. 24, 1983, abandoned, which is a continuation-in-part of Ser. No. 502,238, Jun. 8, 1983, abandoned. This application Mar. 16, 1984, Ser. No. 590,575
Int. Cl.³ C02F *1/64*
U.S. Cl. 210—722 7 Claims



1. A process for removing iron and other chemically reducing substances from potable water having a pH between 5 and 9, which comprises the steps of:

providing a tank for receiving all of the potable water to be treated, said tank containing a bed of granular activated carbon;

aerating the water with an air pump prior to its communication with the granular activated carbon;

directing all of the aerated water into said tank to introduce the aerated water to said bed of granular activated carbon, whereby the activated carbon provides a catalytic action so that substantially all of the oxidation occurs throughout the bed of activated carbon and the use of chemical oxidizing agents is obviated and the need for a detention tank is obviated; and

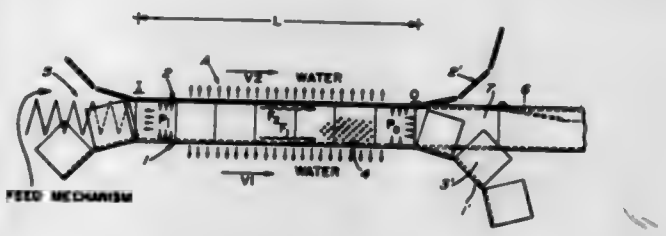
removing excess gas from the aerated water prior to its communication with the activated carbon.

4,534,868

SYSTEM AND METHOD FOR EXTRACTING LIQUID FROM A HUMID MASS BY COMPRESSION

Adrian Barbulescu, Ste-Foy; Rodrique Boulet, Duberger, and Denis Lessard, Ste-Foy, all of Canada, assignors to Centre de Recherche Industrielle du Quebec, Quebec, Canada

Filed May 12, 1983, Ser. No. 493,811
Claims priority, application Canada, Jun. 1, 1982, 404223
Int. Cl.³ B01D *33/00*
U.S. Cl. 210—780 23 Claims



1. A system for extracting liquid from a humid mass, said system comprising a conduit having an inlet end for admitting a humid mass therein as a continuous stream, said conduit having perforations in at least a working section of said conduit, means to gradually and progressively create an axial pressure at the interior of said humid mass, said conduit having

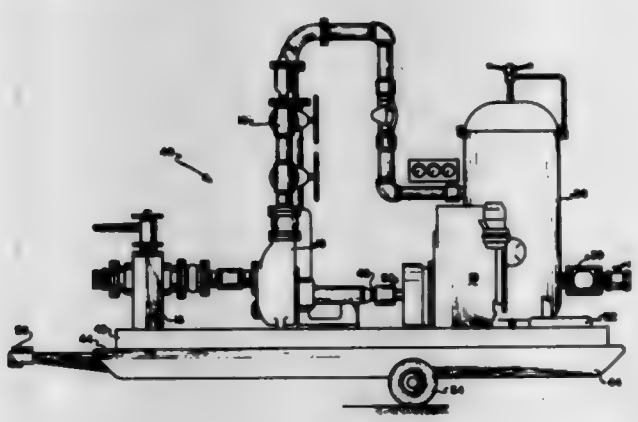
a movable side wall section having a surface area greater than the surface area of the remaining side wall section, means to impart continuous movement to said movable side wall so that said movable side wall is displaced axially along at least said working section of said conduit for displacing a humid mass axially along at least said working section of the conduit, said movable side wall section creating a dynamic friction force between the inner surface of the conduit and the humid mass to define a pressure zone which is inferior to said axial pressure whereby to establish a differential pressure through said mass to cause liquid therein to flow out of said mass transversely to the direction of travel of said mass and out of said conduit through said perforated section, said conduit having an outlet end through which there is discharged a continuous output of said humid mass containing only a small percentage of liquid therein.

4,534,869

PORTABLE WATER FILTRATION SYSTEM FOR OIL WELL FRACTIONATION

Darrel L. Seibert, 3724 Country Club Dr., Cuyahoga Falls, Ohio 44224

Filed May 9, 1983, Ser. No. 492,877
Int. Cl.³ B01D *37/00*
U.S. Cl. 210—788 **7 Claims**



1. A portable water filtration apparatus for filtering water used in oil well processes comprising:
- a duplex strainer;
- a self priming centrifugal pump having its suction side in communication with said strainer and having a pinch valve to control flow;
- a centrifugal separator connected to the discharge side of said pump;
- a cartridge filter connected to the discharge side of said centrifuge; and
- a trailer with wheels and upturned bow at either end with the capability to travel over any type of terrain by being towed in typical fashion or dragged in sled-like fashion;
- wherein said strainer, pump, separator and cartridge filter are mounted on said trailer;
- wherein said pump is powered by an engine using a flexible, direct drive means;
- wherein the apparatus filters from about 250 to about 300 gallons per minute of water, the average particle size of particulate matter in said filtered water being less than 5 microns; and
- wherein said strainer, pump, separator and cartridge filter are carefully matched and arranged to enable the filtration system to attain maximum and eliminate particulates down to 5 microns.

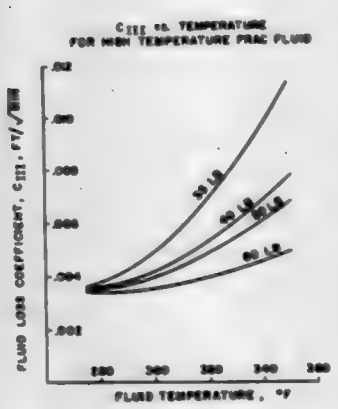
6. A portable method for filtering water used in oil well processes comprising:
- straining particulate matter in water from a nurse tank to three-eights of an inch in a duplex strainer;
- pumping said water with a centrifugal pump at a rate from about 250 to about 300 gallons per minute from said strainer;
- centrifuging said water from said pump in a centrifugal separator, reducing the particle size of said matter to 50 microns;
- filtering said water from said separator in a cartridge filter, reducing the particle size of said matter to 5 microns; and
- means for transporting an apparatus which embodies said method over any type of terrain to almost any location either easily accessable or accessable with difficulty.

4,534,870

CROSSLINKER COMPOSITION FOR HIGH TEMPERATURE HYDRAULIC FRACTURING FLUIDS

Dennis A. Williams, Fort Worth, Tex., assignor to The Western Company of North America, Fort Worth, Tex.

Filed Jun. 28, 1982, Ser. No. 392,602
Int. Cl.³ C09K *3/00*; E21B *43/16, 43/26*
U.S. Cl. 252—8.55 R **18 Claims**



11. An improved high temperature, high pH, water-based fracturing fluid incorporating a polysaccharide polymer, buffer, crosslinker, pH adjusting agent and antioxidant wherein the improvement comprises a crosslinker comprised of a zirconium/triethanolamine complex having a Zr/TEA molar ratio of between about 1/6.0 and 1/10.0, said fracturing fluid being stable at bottom hole static temperatures in excess of about 200 degrees F. at a pH in excess of 7.0.

4,534,871

LUBRICANT INSERT FOR ROLLING BEARINGS

John H. Johnson, Wayne, Pa., assignor to SKF Industries, Inc., King of Prussia, Pa.

Continuation of Ser. No. 133,404, Mar. 24, 1980, abandoned. This application Apr. 21, 1982, Ser. No. 370,514
Int. Cl.³ C10M *5/00*
U.S. Cl. 252—12 **5 Claims**

1. A self supporting lubricant insert for a rolling bearing comprising inner and outer rings having confronting spaced raceways and a plurality of rolling elements in the annular space between the rings, said insert being composed of a firm, tough, solid gel matrix consisting of a polyolefin polymer containing a lubricating oil of lubricating viscosity which exudes therefrom to provide an oily surface in contact with the bearing elements which it engages, said lubricant insert adapted for easy assembly and removal from the bearing and comprising an annular member having a plurality of tabs contoured to the shape of the rolling elements and projecting axially from the inner face of the annular member to engage the rolling elements for effecting lubricant transfer and for detachably holding the insert in place in the bearing envelope, said axially projecting tabs are of a greater transverse dimension than the radial height between the land surfaces of the inner and outer rings and have outer contoured faces which merge with the annular ring member so that when the insert is seated, the contoured face engages the outer edge of the raceways to lock the insert in place.

4,534,872

MULTIFUNCTIONAL LUBRICANT ADDITIVES AND COMPOSITIONS THEREOF

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Aug. 2, 1983, Ser. No. 519,444

The portion of the term of this patent subsequent to Jan. 11, 2000, has been disclaimed.

Int. Cl.³ C10M *1/48, 1/46*

U.S. Cl. 252—32.7 E **22 Claims**

1. A lubricant composition comprising a major proportion of an oil of lubricating viscosity or grease or other solid lubricant prepared therefrom and a minor effective amount of a multifunctional additive consisting of a metal salt of a partially borated, partially phosphosulfurized hydroxyl-containing ester derived from polyols selected from pentaerythritol, dipentaerythritol, substituted pentaerythritol or mixtures thereof and trimethylolalkanes or mixtures of trimethylolalkanes.

4,534,873

AUTOMOTIVE FRICTION REDUCING COMPOSITION

Gary G. Clark, 107 E. F, South Hutchinson, Kans. 67505

Filed Sep. 28, 1983, Ser. No. 536,652

Int. Cl.³ C10M *1/10, 1/48*

U.S. Cl. 252—32.7 E **30 Claims**

1. A friction reducing additive for direct addition to a lubricating oil crankcase, said additive comprising:
   (a) a hydrocarbon oil of lubricating viscosity;
   (b) an extreme pressure antiwear agent comprising a mixture of the following components:
      (i) an oil dispersion of solid inorganic film-forming potassium borate;
      (ii) antimony dialkylphosphorodithioate, and
      (iii) a liquid chlorinated paraffin;
   (c) an alkaline material in sufficient quantity for neutralizing acid components generated during use of said additive and having a total base number between about 10 and 400; and
   (d) a viscosity index improving agent.

11. A method for reducing friction and wear in an oil lubricated internal combustion engine, comprising adding to the engine oil in the crankcase of said engine from about 3 to about 12% by volume of an additive having the following composition:
   (a) a hydrocarbon oil of lubricating viscosity;
   (b) an extreme pressure antiwear agent comprising a mixture of the following components:
      (i) an oil dispersion of solid, inorganic film-forming potassium borate;
      (ii) antimony dialkylphosphorodithioate, and
      (iii) a liquid chlorinated paraffin;
   (c) an alkaline material in sufficient quantity for neutralizing acid components generated during use of said additive and having a total base number between about 10 and 400; and
   (d) a viscosity index improving agent.

20. A lubricating composition for internal combustion engines, said composition comprising from about 3 to about 12% by volume of the additive composition of claim 1 blended with a lubricating oil formulated for use as an automotive motor oil in compliance with standards set out by the Society of Automotive Engineers.

4,534,874

ANTI-OXIDATIVE, ANTI-THERMAL, AND ANTI-ACTINIC DEGRADATION AMIDES OF HYDROXYPHENYLALKYLTHIO ALKANOIC ACIDS, COMPOSITIONS, AND METHOD OF USE THEREFOR

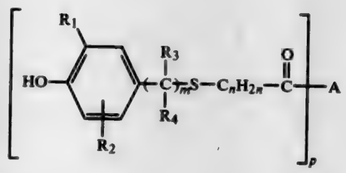
David H. Steinberg, New York; Raymond Seltzer, New City; John J. Luzzi, Carmel, and Frank P. Cortolano, Valhalla, all of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Nov. 21, 1983, Ser. No. 554,040

Int. Cl.³ C07D *251/04, 233/02, 295/04, 243/00*

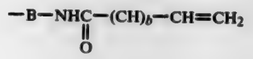
U.S. Cl. 252—51.5 A **20 Claims**

1. The compound of the formula I

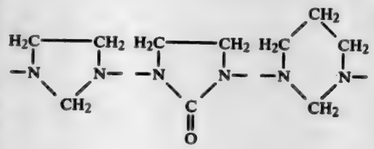


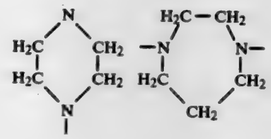
(I)

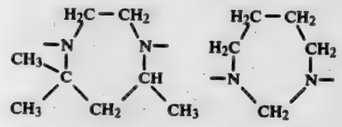
wherein
p and n are independently 1 to 4;
m is 1 or 2;
R_1 and R_2 are independently alkyl of 1 to 12 carbon atoms, cycloalkyl of 5 to 6 carbon atoms, phenyl, phenyl substituted by alkyl of 1 to 12 carbon atoms, aralkyl of 7 to 9 carbon atoms or said aralkyl substituted by alkyl of 1 to 12 carbon atoms and R_2 additionally can be hydrogen;
R_3 and R_4 are independently hydrogen, alkyl of 1 to 12 carbon atoms or phenyl;
A when p=1 is a group $-NHR_5$, R_5 is hydrogen, alkyl of 1 to 18 carbon atoms or a group of the formula



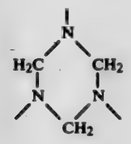
wherein
b is 0 to 2 and B is a direct bond or alkylene of 1 to 10 carbon atoms;
A when p=2 is a group of the formulae



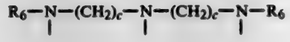




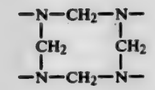
or is a group —NH—B—NH—, wherein B has the meaning given above;
A when p=3 is a group of the formula



or of the formula



wherein
c is 2 to 6 and R_6 is alkyl of 1 to 4 carbon atoms; and
A when p=4 is a group of formula



or of formula



wherein c and R_6 have the meanings given above.

4,534,875

METHOD FOR HEAT EXCHANGE FLUIDS COMPRISING VISCOELASTIC SURFACTANT COMPOSITIONS

Gene D. Rose, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 13, 1984, Ser. No. 570,577

Int. Cl.³ C09K *5/00*

U.S. Cl. 252—71 **19 Claims**

1. A method for improving heat exchange fluids wherein a heat exchange fluid is contacted with a funtionally effective amount of (1) a surfactant compound having a hydrophobic moiety chemically bonded to an ionic, hydrophilic moiety and (2) an electrolyte having a moiety that is capable of associating with the surfactant ion to form a viscoeleastic surfactant, and optionally (3) a further amount of an electrolyte having a moiety that is capable of associating with the surfactant ion, which further amount is sufficient to further reduce the friction experienced by the fluid; and which functionally effective amount is a sufficient amount to reduce the amount of friction experienced by the heat transfer fluid in the heat transfer apparatus.

4,534,876

METHOD FOR WASHING OF TEXTILES IN HARD WATER AND PHOSPHATE-FREE DETERGENT COMPOSITIONS FOR USE THEREIN

Gwendolen Browne, Rotterdam, Netherlands, assignor to De-Blauwe Lier B.V., Rotterdam-Metherlands, Netherlands

Filed May 10, 1983, Ser. No. 493,273

Int. Cl.³ C11D *7/08, 7/12, 17/04*

U.S. Cl. 252—90 **7 Claims**

1. A method for washing textiles in hard water at a temperature of at most 70° C. with substantially complete exclusion of phosphates, wherein to the washing liquor are added substantially simultaneously:
   (a) at least one inorganic salt derived from carbon dioxide inclusive hydrates, perhydrates and percarbonates thereof
   (b) at least one acidic compound devoid of formation of a precipitate with the calcium and magnesium ions in the washing liquor at usual dosage
   (c) at least one surface active compound devoid of formation of a precipitate with the calcium and magnesium ions in the washing liquor at usual dosage,
   the ratio of these components being such that the pH of the resulting washing liquor is maintained throughout the complete washing cycle within the range of 5 to 8, and the components (a) and (b) being added physically separated.

4,534,877

SHAMPOO COMPOSITIONS COMPRISING SPECIFIC BETAINE SURFACTANTS AND A QUATERNARY COMPOUND

Glen D. Russell, Middletown, and Christian Steuri, Fairfield, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 403,907, Jul. 20, 1982, abandoned. This application Jun. 22, 1983, Ser. No. 506,921

Int. Cl.³ A61K *7/08;* C11D *1/62, 1/90, 3/26*

U.S. Cl. 252—106 **14 Claims**

1. A shampoo composition having good freeze-thaw stability consisting essentially of:
   (a) from about 0.5% to about 10% of a hair conditioning agent selected from the group consisting of quaternary ammonium compounds and quaternary amidazolinium compounds;
   (b) from about 5% to about 25% of a higher alkylamido betaine, wherein the alkyl group is selected from the group consisting of lauryl, myristyl and mixtures thereof; and
   (c) the remainder water.

4,534,878

ABRASIVE-CONTAINING CONTACT LENS CLEANING MATERIALS

Edward J. Ellis, Georgetown, and Joseph C. Salamone, Marblehead, both of Mass., assignors to Polymer Technology Corporation, Wilmington, Mass.

Continuation of Ser. No. 197,223, Oct. 15, 1980, Pat. No. 4,394,179, which is a continuation-in-part of Ser. No. 51,960, Jun. 25, 1979, abandoned. This application Jan. 6, 1983, Ser. No. 455,972

The portion of the term of this patent subsequent to Jul. 19, 2000, has been disclaimed.

Int. Cl.³ C11D *3/04, 3/14, 3/37;* G02C *13/00*

U.S. Cl. 252—173 **5 Claims**

1. A hard contact lens cleaning material for cleaning plastic contact lenses and consisting essentially of a solution of a surface active agent with said agent being present in an amount of from about 0.1 to about 30% by weight,
   an inorganic silica gel abrasive having an average particle size of no more than 20 microns of a particle size sufficient for use in lens polishing and in an amount of from 0.1 to under 25% by weight,
   water as a suspending vehicle,
   and separate means to maintain said surface active agent and abrasive in substantially uniform suspension so that said suspension is capable of cleaning a contact lens without adversely affecting or scratching said lens,
   said separate means being selected from the class consisting of alkali metal halides, alkaline earth metal salts and hydrophilic polymers.

4,534,879

SYNTHETIC SURFACTANT FLAKES AND PROCESS FOR MAKING THEM

Stephen H. Iding, Cincinnati, and Robert H. Callicott, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 509,274, Jun. 29, 1983, abandoned. This application Jun. 27, 1984, Ser. No. 625,268

Int. Cl.³ C11D *17/06*

U.S. Cl. 252—174 **21 Claims**

1. A process for making improved surfactant flakes from a water-wet paste which is dried on a heated roll drum dryer comprising the steps of:

A. Forming a 25° C. to 95° C. water-wet paste containing:

(a) From 20% to 30% of an alkali metal C_9–C_{15} alkyl sulfate;

(b) From 20% to 30% of an alkali metal C_9–C_{15} alkyl benzene sulfonate, wherein said (a) and (b) have a weight ratio of 1:1.5 to 1.5:1;

(c) From 0.5% to 10% of a water-soluble inorganic salt; and

(d) The balance water;

B. Forming heat dried flakes from said paste on said heated roll drum dryer, said flakes having a thickness of 0.1 mm to 1.3 mm and a moisture content of up to about 1.2%;

C. Cooling the flakes to about ambient temperature in a controlled environment having a dewpoint of less than about 10° C.;

wherein said improved surfactant flakes can carry a larger amount of perfume in a firm cake than a comparable cake made from flakes cooled above said dewpoint; and wherein said firm cake contains from 5% to 20% perfume.

4,534,880

DETERGENT COMPOSITION WITH SILICONATE-ZEOLITE AND SILICATE BUILDER

Jeffrey A. Kosal, and Edwin P. Plueddemann, both of Midland, Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Mar. 27, 1984, Ser. No. 593,986

Int. Cl.³ C11D *3/08, 3/12*

U.S. Cl. 252—174.13 **18 Claims**

1. A detergent composition comprising

(A) 5 to 40 percent by weight of an organic surfactant selected from the group consisting of anionic, nonionic and ampholytic surfactants;

(B) 1 to 50 percent by weight of an anionic siliconate-zeolite composite containing zeolite with a surface coating of 0.1 to 10 percent by weight of anionic functional siliconate represented by the formula

$$(MO)_aO_{(3-a)/2}Si—R—Y_b$$

wherein Y represents an alkali metal salt of an oxyacid group, R is an organic linking group wherein Y or other functionality selected from the group consisting of ether, sulfide, hydroxy, amide and amine is positioned at least 2 carbon atoms removed from the silicon atom, a has a value of from 1 to 3, b is an integer from 1 to 3, and M is an alkali metal cation or hydrogen; and

(C) 1 to 20 percent by weight of a water soluble alkali metal silicate.

4,534,881

INHIBITION OF INORGANIC OR BIOLOGICAL $CACO_3$ DEPOSITION BY POLY AMINO ACID DERIVATIVES

C. Steven Sikes, Mobile, Ala., and Alfred P. Wheeler, Clemson, S.C., assignors to University of South Alabama, Mobile, Ala.

Filed Dec. 19, 1983, Ser. No. 563,144

Int. Cl.³ C02F *5/10*

U.S. Cl. 252—180 **15 Claims**

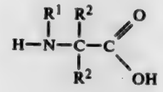
1. A method of inhibiting the formation of $CaCO_3$-containing deposits on a surface, comprising:

applying to said surface an anticalcifying composition comprising an amino acid polymer of at least 400 MW of the formula:

$$poly(X_nY_m)$$

wherein

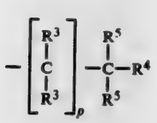
(1) each X, independently, is the residue of an amino acid of the formula:



wherein

(a) each R^1, independently, is H, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, halogen, C_1–C_4 alkoxy or C_1–C_4 haloalkoxy; and

(b) R^2 is a radical of the formula:



wherein

(i) each R^3, independently, is H, C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, C_2–C_4 haloalkynyl, halogen, OH, C_1–C_4 alkoxy or C_1–C_4 alkylamino;

(ii) each R^4, independently, is COOH, $CONH_2$, COR^6, $COOR^6$, COOM, SO_4H, SO_3NH_2, SO_3R^6, SO_4R^6, SO_4M, PO_4H_2, PO_3HNH_2, PO_3HOR^6, or $PO_2(OR^6)_2$ wherein R^6 is C_1–C_4 alkyl, C_2–C_4 alkenyl, C_2–C_4 alkynyl, C_1–C_4 haloalkyl, C_2–C_4 haloalkenyl, or C_2–C_4 haloalkynyl, and M is Na, K, ½ Ca or ½ Ba;

(iii) each R^5, independently, is R^4, R^6, H, or OH, and

(iv) each p, independently, is 0–4;

(2) each Y, independently, is X wherein R^1 has the meanings previously defined and R^2 has both the meanings previously defined and further is H, R^6, OH, C_1–C_4 alkylamino, C_1–C_4 hydroxyalkyl, phenyl C_1–C_4 alkyl, hydroxyphenyl C_1–C_4 alkyl, or phenyl; and

(3) m/n is a number from 1 to 10; in an amount effective for inhibiting the formation of $CaCO_3$-containing deposits.

4,534,882

METHOD OF MAKING AN EPOXY PREPOLYMER CURING AGENT

Norman Bilow, Encino, and Ralph D. Hermansen, Northridge, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 4, 1984, Ser. No. 646,885

Int. Cl.³ C08G *59/50*

U.S. Cl. 252—182 **11 Claims**

1. A method of making an epoxy prepolymer curing agent composition comprising the steps of:

(a) reacting a mixture of piperidine and an epoxy resin so as to form an epoxy prepolymer; and

(b) adding 2-ethyl-4-methylimidazole to said epoxy prepolymer thereby forming said curing agent composition.

4,534,883

4-UNSUBSTITUTED OR SUBSTITUTED-4 CYANOTERCYCLOHEXANE DERIVATIVES

Shigeru Sugimori, Fujisawashi; Tetsuhiko Kojima, Yokohamashi; Toyoshiro Isoyama, Yokohamashi, and Kazunori Nigorikawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

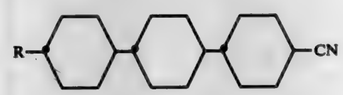
Filed Feb. 29, 1984, Ser. No. 584,768

Claims priority, application Japan, Mar. 2, 1983, 58-34225

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *121/46*

U.S. Cl. 252—299.63 **6 Claims**

1. 4-unsubstituted or substituted-4″-cyano-trans,trans,trans-tercyclohexanes having the general formula



(I)

wherein R represents hydrogen atom or an alkyl group of 1 to 10 carbon atoms.

4,534,884

PROCESS FOR THE PREPARATION OF PHOSPHOR

Satoshi Arakawa; Takashi Nakamura, and Kenji Takahashi, all of Kaisei, Japan, assignors to Fuji Photo Film Co. Ltd., Kanagawa, Japan

Filed Nov. 7, 1983, Ser. No. 549,414

Claims priority, application Japan, Nov. 8, 1982, 57-194696

Int. Cl.³ C09K *11/465*

U.S. Cl. 252—301.4 H **3 Claims**

1. A process for the preparation of a divalent europium activated alkaline earth metal fluorohalide phosphor enhanced in emission luminance comprising firing a mixture of starting materials for the phosphor under a reducing atmosphere at 600° to 1,000° C., characterized in that said mixture of starting materials for the phosphor is impregnated with a liquid organic compound thermally decomposable to produce both or either of carbon and carbon monoxide, and said reducing atmosphere is formed or reinforced by both or either of carbon and carbon monoxide produced by the thermal decomposition of the liquid organic compound in the firing stage.

4,534,885

PHOSPHATE FLUORESCENT SUBSTANCE

Shusaku Kakita, and Thihiro Yoshida, both of Odawara, Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Filed Jun. 27, 1984, Ser. No. 625,298

Claims priority, application Japan, Jun. 30, 1983, 58-118996

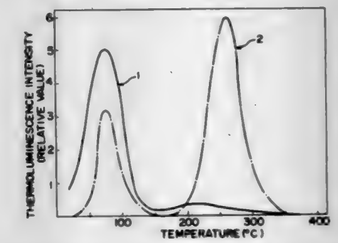
Int. Cl.³ C09K *11/08*

U.S. Cl. 252—301.4 P **11 Claims**

1. A phosphate fluorescent substance having high brightness and a high brightness maintenance ratio which comprises:

(a) a parent material of an orthophosphate of zinc or a mixture of an orthophosphate of zinc and one or more orthophosphates of a divalent metal selected from the group consisting of magnesium, calcium, strontium, barium and beryllium; and

(b) a main activator comprising manganese; wherein said phosphate fluorescent substance has a maximum intensity point in the glow curve for the range of 25° C.–400° C. in the range of 200° C.–400° C., or the ratio of Ia/Ib is within the range of 0.6–3.0, wherein Ia and Ib denote the maximum intensity of emission of the phosphate fluorescent substance when said substance is excited by an excitation energy having wavelengths of 200–280 nm and 380–420



nm, respectively; or said substance has a combination of the above.

4,534,886

NON-WOVEN HEATING ELEMENT

Robert G. Kraus, Attleboro, Mass., and James R. Quick, Warwick, N.Y., assignors to International Paper Company, New York, N.Y.

Filed Jan. 15, 1981, Ser. No. 225,291

Int. Cl.³ H01B *1/02*

U.S. Cl. 252—502 **13 Claims**

1. An electrically conductive non-woven web for a heating element comprising, in combination, conductive fibers having melting points no lower than about 400° F., electrical resistances no greater than about 25,000 ohm/cm, and lengths in the range of from about ¼ inch to about two inches, and conductive particles, the conductive particles comprising from about 5% to about 50% of the final dry weight of the web.

4,534,887

MOLDED-TO-SIZE SILVER-GRAPHITE ARTICLES AND PROCESS FOR MAKING SAME

Floyd J. Broady, Taylors, and J. Rondal Jasek, Greenville, both of S.C., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Jul. 22, 1983, Ser. No. 516,233

Int. Cl.³ H01B *1/04*

U.S. Cl. 252—503 **9 Claims**

1. A process for producing a molded graphite-silver article containing silver particles uniformly distributed throughout said article comprising the steps of:

(a) mixing graphite particles with a silver containing compound selected from the group consisting of silver nitrate, silver acetate, silver carbonate and silver protein complexes;

(b) heating said mixture to reduce said silver compound to metallic silver;

(c) milling the resulting product and mixing it with a pitch binder and a solvent to produce a slurry;

(d) removing volatiles from said slurry and milling the residue;
(e) molding the residue of step (d) to produce a dense body of a desired shape; and
(f) heating said body in an inert atmosphere to carbonize the pitch binder and convert the body into said molded graphite-silver article.

4,534,888

IN-MOLD COATING

David S. Cobbledick, Kent; Donald F. Reichenbach, Massillon, and Henry Shanoski, Akron, all of Ohio, assignors to The General Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 435,026, Oct. 25, 1982, Pat. No. 4,414,173, and a continuation-in-part of Ser. No. 316,592, Nov. 2, 1981, abandoned. This application Jul. 18, 1983, Ser. No. 514,415
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 9 Claims

1. A composition useful as a thermosetting coating composition comprising
(a) 100 parts by weight of at least one polymerizable epoxy based oligomer having at least two acrylate groups and a weight average molecular weight of from about 500 to 1,500,
(b) from about 80 to 160 parts by weight of at least one copolymerizable ethylenically unsaturated monomer selected from the group consisting of styrene, alpha methyl styrene, vinyl toluene, t-butyl styrene, chlorostyrene, methyl methacrylate, diallyl phthalate (with styrene or methyl methacrylate), triallyl cyanurate, triallyl isocyanurate, divinyl benzene and methyl acrylate,
(c) from about 10 to 120 parts by weight of at least one copolymerizable monoethylenically unsaturated compound having a —CO— group and a $—NH_2$, —NH— and/or —OH group,
(d) from about 20 to 90 parts by weight of polyvinyl acetate,
(e) from about 0.2 to 5 parts by weight of at least one zinc salt of a fatty acid having at least 10 carbon atoms,
(f) from about 0.01 to 1.0 part by weight of at least one accelerator for a peroxide initiator,
(g) from about 5 to 30 parts by weight of conductive carbon black,
(h) from about 50 to 155 parts by weight of a filler and
(i) from about 5 to 120 parts by weight of a copolymerizable or cocurable diacrylate compound having a weight average molecular weight of from about 250 to 5,000 and being selected from the group consisting of
(I) at least one polyoxyalkylene glycol oligomer having two acrylate groups and
(II) at least one polyurethane based oligomer having two acrylate groups and mixtures of (I) and (II).

4,534,889

PTC COMPOSITIONS AND DEVICES COMPRISING THEM

Peter H. van Konynenburg, Mountain View; Bernard J. Lyons, Atherton; Robert Smith-Johannsen, Portola Valley, and Wendell W. Moyer, Atherton, all of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Continuation of Ser. No. 329,589, Dec. 10, 1981, abandoned, which is a continuation of Ser. No. 969,928, Dec. 15, 1978, abandoned, which is a continuation of Ser. No. 900,907, Apr. 28, 1978, abandoned, which is a continuation of Ser. No. 732,792, Oct. 15, 1976, abandoned. This application Feb. 22, 1983, Ser. No. 468,768
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 43 Claims

1. A process for the preparation of a PTC composition which comprises
(1) dispersing conductive particles having a size of at least 18 millimicrons in a polymer;
(2) cross-linking the dispersion from step (1) at a first temperature (T_{c1}) and
(3) further cross-linking the cross-linked composition from step (2) at a second temperature (T_{c2}) which is substantially different from T_{c1}
the composition obtained in step (3) having a gel fraction of at least 0.6; exhibiting PTC behavior with an R_{14} value of at least 2.5 or a R_{100} value of at least 10 and at least one T_s within the temperature range of −100 to 250° C.; and having a volume resistivity at temperatures below T_s of 25 to 10^5 ohm·cm.

4,534,890

USES OF PARA-ACYLOXYCYCLOHEXYL ALKYLCARBOXYLATES IN AUGMENTING OR ENHANCING THE ORGANOLEPTIC PROPERTIES OF CONSUMABLE MATERIALS

Mark A. Sprecker, Sea Bright; Wilhelmus J. Wiegers, Red Bank; Robert P. Belko, Woodbridge, and Richard M. Boden, Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Jan. 12, 1984, Ser. No. 570,202
Int. Cl.[3] C11B *9/00*
U.S. Cl. 252—522 R 8 Claims

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes, and perfumed articles, comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one para-acyloxycyclohexyl alkylcarboxylate defined according to the structure:



wherein R_1 represents hydrogen or C_2–C_4 acyl and R_2 represents C_1–C_3 alkyl.

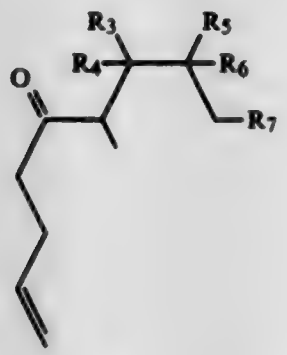
4,534,891

BRANCHED C_{13}-ALK-1-EN-5-ONES AND USE THEREOF IN PERFUMERY

Richard M. Boden, Ocean; Steven D. Temes, Hazlet; Theodore J. Tyszkiewicz, Sayreville, and Marie R. Hanna, Hazlet, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 441,375, Nov. 12, 1982, Pat. No. 4,465,863. This application Jan. 26, 1984, Ser. No. 574,155
Int. Cl.[3] C11B *9/00*
U.S. Cl. 252—522 R 5 Claims

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, perfumed articles and colognes comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one ketone defined according to the structure:



wherein R_3, R_4, R_5, R_6 and R_7 represent hydrogen or methyl with the provisos that:

(i) the sum total of the carbon atoms in R_3, R_4, R_5, R_6 and R_7 is three;

(ii) when R_7 is methyl then R_5 and R_6 are both methyl; and

(iii) when either R_3 or R_4 is methyl then R_7 is hydrogen.

4,534,892

FOAMING LIQUID DETERGENT COMPOSITION HAVING A STABLY DISPERSED WATER-INSOLUBLE FINE POWDER

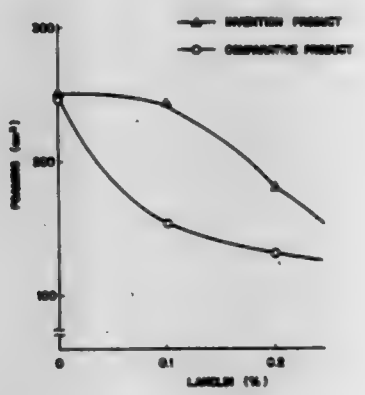
Toshio Suzuki, Ichikawa; Hiroshi Watanabe, Funabashi, and Rikio Tsuchima, Wakayama, all of Japan, assignors to Kao Corporation, Tokyo, Japan

Filed Jul. 20, 1983, Ser. No. 515,654

Claims priority, application Japan, Jul. 27, 1982, 57-130730

Int. Cl.³ C11D *3/14, 3/30*

U.S. Cl. 252—545 **16 Claims**



1. A liquid detergent comprising:

(a) an anionic surface active agent;

(b) a water-insoluble fine powder selected from the group consisting of silicon dioxide, aluminium oxide, mangesium oxide, titanium oxide, aluminosilicate, silicon carbide, calcium carbonate, calcium phosphate, chromium oxide, barium carbonate, Hansa Yellow, talc, mica, fish scale, zinc-2-pyridyl-thio-1,1'-dioxide, corundum, emery, silica, quartz sand, doromite, sand, shell, and mixtures thereof;

(c) a cross-linking amphoteric polymer selected from the group consisting of (1) a copolymerization product obtained by polymerizing acidic vinyl and basic vinyl monomers in the presence of a cross-linking monomer, and (2) a polymerization product obtained by polymerizing an amphoteric monomer in the presence of a cross-linking monomer; and,

(d) an inorganic salt selected from the group consisting of potassium sulfate, sodium sulfate, mangesium sulfate, aluminium sulfate, potassium nitrate, sodium nitrate, magnesium nitrate, calcium nitrate, aluminium nitrate, potassium chloride, sodium chloride, magnesium chloride, calcium chloride, aluminium chloride, potassium carbonate, sodium carbonate, aluminium carbonate, and mixtures thereof;

said liquid detergent being further characterized in that it comprises the anionic surface active agent in a weight percent range of from 5 to 30, the water-insoluble fine powder in a weight percent range of from 0.1 to 15, the cross-linking type amphoteric polymer in a weight percent range of from 0.1 to 5, and the inorganic salt in a weight percent range of from 1 to 10.

4,534,893

METHOD FOR SOLIDIFYING RADIOACTIVE WASTES

Theodor Dippel, Eggenstein-Leop., and Andreas Loida, Stutensee, both of Fed. Rep. of Germany, assignors to Kernforschungszentrum Karlsruhe GmbH, Fed. Rep. of Germany

Filed Sep. 30, 1982, Ser. No. 432,407

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214242

Int. Cl.³ G21F *9/16*

U.S. Cl. 252—629 **10 Claims**

1. Process of solidifying radioactive substances by producing compact blocks disposed in transporting or permanent storage containers, the compact blocks being produced from prefabricated ceramic tablets which contain radioactive substances and an inactive matrix which continuously surrounds the tablets and is solid in its final state, comprising

(a) providing as the matrix material at least one material selected from glass powder and a mixture of oxidic non-clay minerals, the glass powder being a powder of an alkali borosilicate glass having a transformation range between 840° K. and 1370° K., and a particle size distribution of 50% by weight <10 microns and 50% by weight $\geqq 10$ microns, and 99% by weight being at <63 microns, the glass powder having a composition of more than 70% by weight SiO_2, a maximum amount of 10% by weight B_2O_3, a maximum amount of 10% by weight Al_2O_3, and a maximum amount of 10% by weight Na_2O and the mixture of oxidic non-clay minerals comprising a mixture of 50 to 70% by weight SiO_2, 15 to 35% by weight Al_2O_3 and 10 to 35% by weight MgO;

(b) filling the ceramic tablets and the matrix material into a container, and compressing the ceramic tablets and matrix material by vibration to form a compressed mixture in the container;

(c) heating the thus obtained compressed mixture to a temperature in the range of 1423° to 1623° K., holding the compressed mixture at that temperature range for one to three hours, and finally gradually cooling to room temperature.

4,534,894

PROCESS FOR SULPHATION AND PHOSPHORYLATION OF PROTEINS AND PEPTIDES

Anthony Cerami, Flanders, N.J.; Sandor Pongor, and Michael Brownlee, both of New York, N.Y., assignors to The Rockefeller University, New York, N.Y.

Filed Nov. 17, 1982, Ser. No. 442,492

Int. Cl.³ A61K *37/26*; C07C *103/52*; C07G *7/00*

U.S. Cl. 260—112.7 **7 Claims**

1. A method of preparing a sulphated protein or a peptide comprising contacting a protein or peptide having a hydroxyl group with sulphuric acid in the presence of a non-aqueous apolar organic solvent and contacting the resulting solution with a dehydrating agent.

4,534,895

1-AZIDOMETHYL-3,5,7-TRINITRO-1,3,5,7-TETRAZACYCLOOCTANE AND SYNTHESIS THEREOF VIA AZIDATION WITH ACETYL AZIDE

Milton B. Frankel, Tarzana, and Dean O. Woolery, II, Reseda, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 22, 1983, Ser. No. 534,992
Int. Cl.³ C07D *257/02*
U.S. Cl. 260—239 BC **9 Claims**

1. A method of preparing 1-azidomethyl-3,5,7-trinitro-1,3,5,7-tetrazacyclooctane, which comprises the steps of:

combining the reactants 1-bromomethyl-3,5,7-trinitro-1,3,5,7-tetrazacyclooctane with acetyl azide in an inert organic solvent; and

reacting said reactants under non-basic conditions while maintaining the reaction temperature below about 40° C.

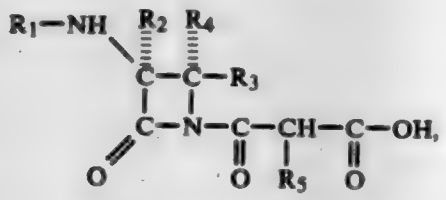
4,534,896

3-ACYLAMINO-2-OXOAZETIDINE-1-(β-OXOPROPIONIC ACID)

Uwe D. Treuner, Regensburg, and Hermann Breuer, Schoenhofen, both of Fed. Rep. of Germany, assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 13, 1983, Ser. No. 503,964
Int. Cl.³ C07D *205/08*; A61K *31/395, 403/12, 401/12*
U.S. Cl. 260—239 A **12 Claims**

1. A compound having the formula

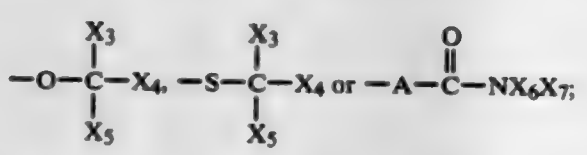


or a pharmaceutically acceptable basic salt or hydrolyzable ester thereof, wherein

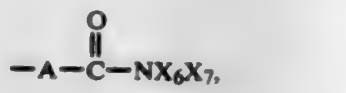
R_1 is an acyl group derived from a carboxylic acid;

R_2 is hydrogen or methoxy;

R_3 and R_4 are the same or different and each is hydrogen, alkyl, alkenyl, alkynyl, cycloalkyl, phenyl, substituted phenyl or a 4,5,6 or 7-membered heterocycle or one of R_3 and R_4 is hydrogen and the other is azido, halomethyl, dihalomethyl, trihalomethyl, alkoxycarbonyl, alkenyl, alkynyl, 2-phenylethenyl, 2-phenylethynyl, carboxyl, $-CH_2X_1$, $-S-X_2$, $-O-X_2$,



wherein X_1 is azido, amino, hydroxy, alkanoylamino. alkylsulfonyloxy, phenylsulfonyloxy, (substituted phenyl)sulfonyloxy, phenyl, substituted phenyl, cyano,



$-S-X_2$ or $-O-X_2$; X_2 is alkyl, substituted alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, alkanoyl, phenylalkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, or heteroarylcarbonyl; one of X_3 and X_4 is hydrogen and the other is hydrogen or alkyl, or X_3 and X_4 when taken together with the carbon atom to which they are attached form a cycloalkyl group; X_5 is formyl, alkanoyl, phenylcarbonyl, (substituted phenyl)carbonyl, phenylalkylcarbonyl, (substituted phenyl)alkylcarbonyl, carboxyl, alkoxycarbonyl, aminocarbonyl, (substituted amino)carbonyl, or cyano; A is $-CH=CH-$, $-(CH_2)_n-$, $-CH_2-O-$, $-CH_2-NH-$ or $-CH_2-S-CH_2-$; n is 0, 1 or 2; and X_6 and X_7 are the same or different and each is hydrogen or alkyl, or X_6 is hydrogen and X_7 is amino, substituted amino, or alkoxy); and

R_5 is hydrogen or alkyl of 1 to 4 carbon atoms;

wherein the terms "alkyl" and "alkoxy" refer to groups having 1 to 10 carbon atoms;

the term "cycloalkyl" refers to groups having 3, 4, 5, 6 or 7 carbon atoms;

the terms "alkanoyl", "alkenyl", and "alkynyl" refer to groups having 2 to 10 carbon atoms;

the term "substituted phenyl" refers to a phenyl group substituted with 1, 2 or 3 amino, halogen, hydroxyl, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms or carboxyl groups;

the term "substituted alkyl" refers to alkyl groups substituted with one or more azido, amino, halogen, hydroxy, carboxy, cyano, alkoxycarbonyl, aminocarbonyl, alkanoyloxy, alkoxy, phenyloxy, (substituted phenyl)oxy, (4, 5, 6 or 7-membered heterocycle)oxy, mercapto, alkylthio, phenylthio, (substituted phenyl)thio, alkylsulfinyl or alkylsulfonyl groups;

the term "heteroaryl" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl or one of the above groups substituted with one or more halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups;

the term "a 4, 5, 6 or 7-membered heterocycle" refers to pyridinyl, furanyl, pyrrolyl, thienyl, 1,2,3-triazolyl, 1,2,4-triazolyl, imidazolyl, thiazolyl, thiadiazolyl, pyrimidinyl, oxazolyl, triazinyl, tetrazolyl, azetinyl, oxetanyl, thietanyl, piperidinyl, piperazinyl, imidazolidinyl, oxazolidinyl, pyrrolidinyl, tetrahydropyrimidinyl, dihydrothiazolyl or hexahydroazepinyl or one of the above groups substituted with one or more oxo, halogen, hydroxy, nitro, amino, cyano, trifluoromethyl, alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylsulfonyl, phenyl, substituted phenyl, or substituted alkyl, wherein the alkyl group has 1 to 4 carbon atoms, groups; and

the term "substituted amino" refers to a group having the formula $-NY_1Y_2$ wherein Y_1 is hydrogen, alkyl, phenyl, substituted phenyl, phenylalkyl or (substituted phenyl)alkyl, and Y_2 is alkyl, phenyl, substituted phenyl, phenylalkyl, (substituted phenyl)alkyl, hydroxy, cyano, alkoxy, phenylalkoxy or amino.

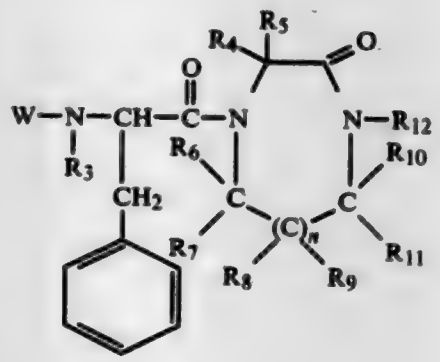
4,534,897

PIPERAZINONE, PIPERAZINE, 1,4-DIAZEPIN-2-ONE AND 1,4-DIAZEPINE INTERMEDIATE COMPOUNDS

Malcolm W. Moon, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

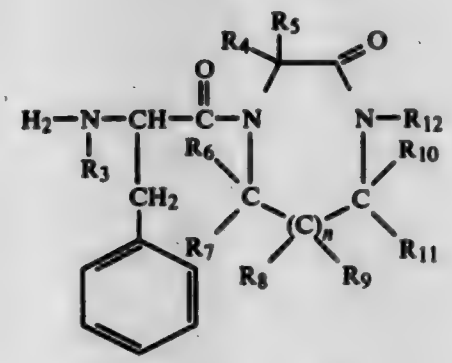
Division of Ser. No. 153,435, May 27, 1980,. This application Apr. 10, 1984, Ser. No. 598,608
Int. Cl.³ C07D *210/00*
U.S. Cl. 260—239.3 R **36 Claims**

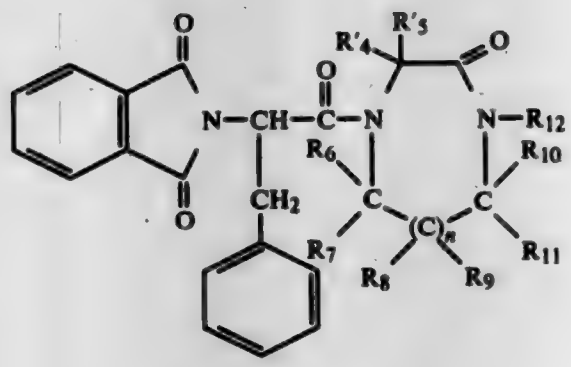
1. A compound selected from the group consisting of compounds of the formula

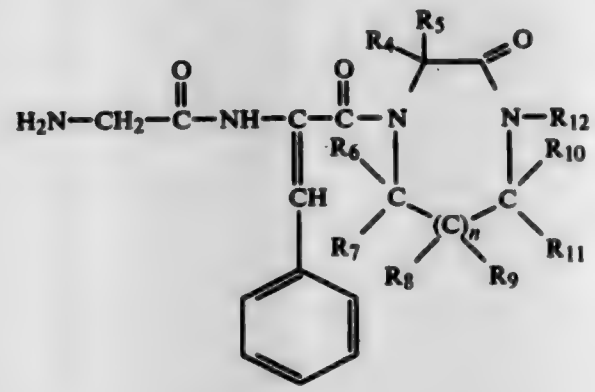


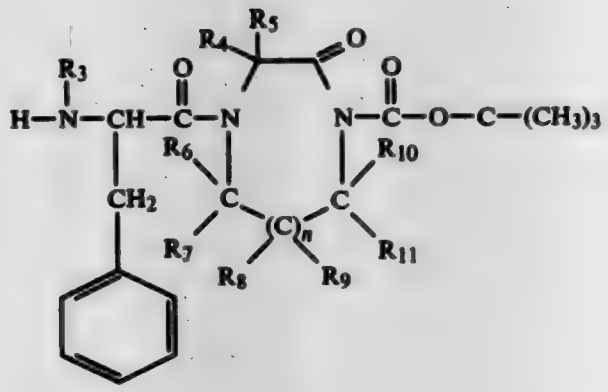
(IX)

-continued









and salts thereof where

R_3 is a hydrogen atom or methyl group;

R_4 is a hydrogen atom, alkyl of 1 thru 6 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total, hydroxyalkyl where the alkyl portion is 1 thru 4 carbon atoms, R_{4a}—S—R_{4b}— or amino substituted alkyl where the alkyl portion is 2 thru 5 carbon atoms;

R_{4a} is alkyl of 1 thru 3 carbon atoms;

R_{4b} is alkyl of 1 thru 3 carbon atoms;

R_4' is alkyl of 1 thru 6 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total, hydroxyalkyl where the alkyl portion is 1 thru 4 carbon atoms, R_{4a}—S—R_{4b}— or amino substituted alkyl where the alkyl portion is 2 thru 5 carbon atoms;

R_5, R_6, R_7, R_8, R_9, R_{10}, R_{11}, R_{12} are when present independently a hydrogen atom, alkyl of 1 thru 4 carbon atoms, cycloalkyl of 3 thru 5 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total with the proviso that the total number of carbon atoms in all these groups together when present is 0 thru 10;

R_5' is alkyl of 1 thru 4 carbon atoms, cycloalkyl of 3 thru 5 carbon atoms, cycloalkyl substituted alkyl of 4 thru 7 carbon atoms total with the proviso that the total number of carbon atoms of R_5' and R_6–R_{12} together when present is 1 thru 10;

(X) n is 0 or 1; and

W is an amino blocking group selected from the group consisting of benzyloxycarbonyl or t-butoxycarbonyl.

4,534,998

(XXIII) **1-OXA-1-DETHIA-CEPHALOSPORIN DERIVATIVES**

Seiji Shibahara, Machida; Tsuneo Okonogi, Yokohama; Yasushi Murai, Yokosuka; Shunzo Fukatsu, Tokyo; Tadashi Wakazawa; Taro Niida, both of Yokohama, all of Japan, and Burton G. Christensen, Cliffside, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Jul. 20, 1983, Ser. No. 515,422

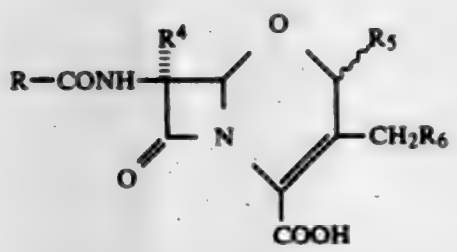
Claims priority, application Japan, Jul. 23, 1982, 57-127574; Sep. 16, 1982, 57-159548

Int. Cl.³ C07D *419/14*

U.S. Cl. 260—245.3 **4 Claims**

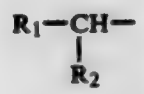
(XXXVII) 1. A compound of the formula:

(I)

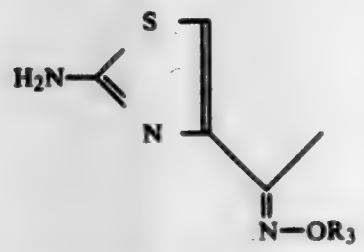


and a pharmaceutically acceptable salt or ester thereof, wherein R represents a group of the formula:

(XLIV)



in which R_1 is a 2-thienyl or 3-thienyl group, and R_2 is a hydrogen atom or a carboxyl group, or R-represents a group of the formula:



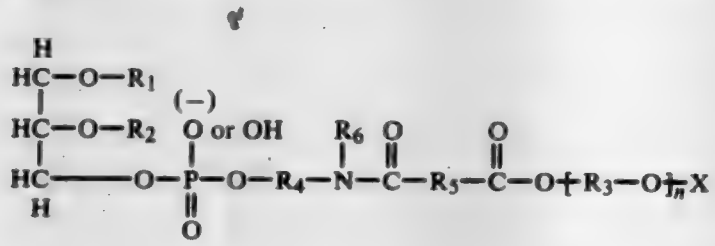
in which R_3 is a hydrogen atom, a lower alkyl or carboxyl-lower alkyl group; R_4 represents a hydrogen atom or a methoxy group, R_5 represents a lower alkyl group; R_6 represents hydrogen, azido, halo, cyano, hydroxy, carbamoyloxy, N-loweralkyl carbamoyloxy, N,N-diloweralkyl carbamoyloxy, amino, mercapto, loweralkylthio, loweralkanoyloxy, benzoyloxy, or a 5- or 6-membered optionally substituted heterocyclic thio radical selected from the group consisting of tetrazol-5-ylthio; 1-methyltetrazol-5-ylthio; 1-carboxymethyltetrazol-5-ylthio; 1-sulfomethyltetrazol-5-ylthio; N,N-dimethylaminoethyltetrazol-5-ylthio; 1,3,4-thiadiazol-5-ylthio; 2-methyl-1,3,4-thiadiazol-5-ylthio; 2-carboxymethyl-3-methylthiazol-5-ylthio; 1,2,3-triazol-5-ylthio; 4-carboxy-3-hydroxy-1,2-oxazol-5-ylthio; 6-hydroxy-2-methyl-1,2,4-triazin-5-on-3-ylthio.

4,534,899
SYNTHETIC PHOSPHOLIPID COMPOUNDS

Barry D. Sears, Marblehead, Mass., assignor to Lipid Specialties, Inc., Danvers, Mass.

Continuation-in-part of Ser. No. 284,675, Jul. 20, 1981, Pat. No. 4,426,330. This application Mar. 7, 1983, Ser. No. 472,481
Int. Cl.³ C07F *9/10*
U.S. Cl. 260—403 18 Claims

1. A synthetic phospholipid compound having the structural formula:



wherein R_1 and R_2 represent hydrogen or organic acyl radicals; R_3 represents a C_2 to C_4 alkylene radical; X represents hydrogen or an alkyl radical; R_4 represents a C_2 to C_{10} alkylene radical; R_5 represents an organic linking radical; R_6 represents hydrogen or a lower alkyl radical; and n represents a number of from 0 to 200.

4,534,900
PROCESS FOR SEPARATING FATTY ACIDS FROM UNSAPONIFIABLES

Michael T. Cleary, Elmhurst, Ill., assignor to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 598,121, Apr. 9, 1984. This application Nov. 13, 1984, Ser. No. 670,193
Int. Cl.³ C09F *5/10*; C11B *3/00*
U.S. Cl. 260—428.5 6 Claims

1. A process for separating a fatty acid from a feed mixture comprising said fatty acid and an unsaponifiable compound, said process comprising:

(a) introducing said feed mixture into an extraction zone, and therein contacting said mixture with a solvent comprising an alcohol and water solution which is selective for absorbing said fatty acid;

(b) removing a raffinate stream from said extraction zone which contains a higher concentration of unsaponifiable compound than said feed mixture; and

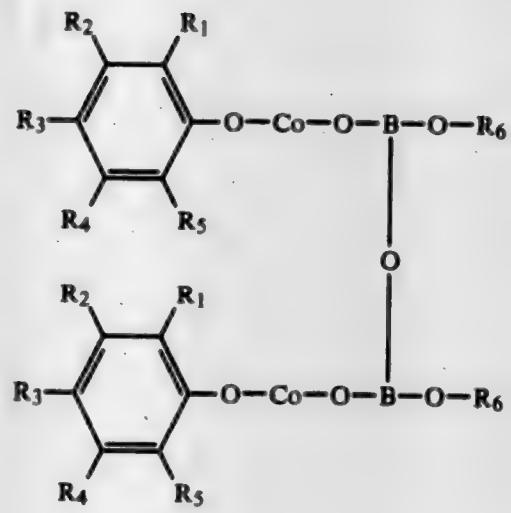
(c) removing a solvent-rich extract stream from said extraction zone containing a higher concentration of said fatty acid, on a solvent free basis, than said feed mixture.

4,534,901
COBALT-BORON COMPOUNDS

Rüdiger Schubart, and Hans Magg, both of Bergisch-Gladbach, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 17, 1983, Ser. No. 523,968
Claims priority, application Fed. Rep. of Germany, Aug. 27, 1982, 3231913
Int. Cl.³ C07F *15/06*
U.S. Cl. 556—7 2 Claims

1. Compounds corresponding to the formula

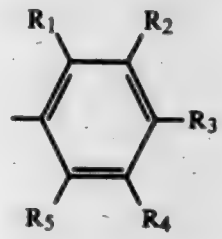


(I)

wherein

R_1, R_2, R_3, R_4 and R_5 are the same or different, and represent hydrogen, hydroxy, C_1-C_{18} alkyl, C_5-C_{12} cycloalkyl, C_1-C_{16} alkylthio, C_6-C_{14} aryl, C_6-C_{14} aryl-C_1-C_4 alkyl, C_1-C_{18} alkoxy, C_6-C_{14} aryloxy, C_6-C_{14}-aryl-C_1-C_4 alkyloxy, halogen or a hydrocarbon radical which has from 2 to 18 carbon atoms and has one or more double bonds, and

R_6 represents a linear or branched, saturated or mono- or poly-unsaturated hydrocarbon radical having from 1 to 22 carbon atoms or a radical of the formula



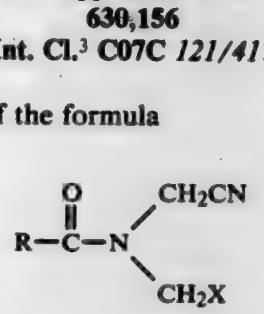
wherein R_1 to R_5 have the before-mentioned meaning.

4,534,902
METHOD FOR PREPARATION OF N-PHOSPHONOMETHYLGLYCINE

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Division of Ser. No. 540,254, Oct. 11, 1983, Pat. No. 4,476,063, which is a continuation-in-part of Ser. No. 391,033, Jun. 22, 1982, abandoned. This application Jul. 12, 1984, Ser. No. 630,156
Int. Cl.³ C07C *121/417*
U.S. Cl. 260—465.4 3 Claims

1. A compound of the formula



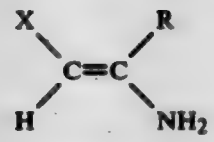
wherein R is C_1-C_4 alkyl or ethoxy and X is chlorine, bromine or iodine.

4,534,903
PROCESS FOR THE PREPARATION OF SUBSTITUTED AMINO DIENES

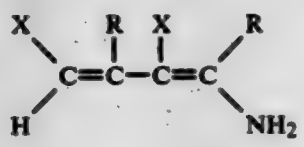
Guy R. Collins, Walnut Creek, Calif., assignor to The Dow Chemical Company, Midland, Mich.

Filed Feb. 25, 1983, Ser. No. 469,547
Int. Cl.³ C07C *120/00, 101/20*
U.S. Cl. 260—465.5 R 20 Claims

1. A process comprising contacting an aminoalkene of the formula:



wherein R is alkyl or cycloalkyl, and wherein X is —CN or —COOR$_1$ wherein R$_1$ is alkyl; with a strong non-mineral acid in the presence of a solvent under reaction conditions such that there is formed an aminodiene of the formula:



4,534,904

PROCESS FOR PRODUCING N-PHOSPHONOMETHYLGLYCINE

Hans Moser, Magden, Switzerland, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

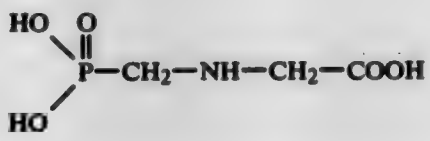
Division of Ser. No. 442,933, Nov. 19, 1982, Pat. No. 4,486,358, which is a continuation-in-part of Ser. No. 391,816, Jun. 24, 1982, abandoned, which is a continuation-in-part of Ser. No. 327,138, Dec. 3, 1981, Pat. No. 4,369,142. This application Jul. 13, 1984, Ser. No. 630,626

The portion of the term of this patent subsequent to Jan. 18, 2000, has been disclaimed.

Int. Cl.^{3} C07F *9/38*

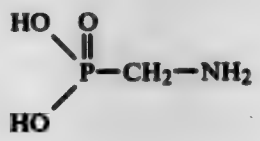
U.S. Cl. 260—502.5 F 3 Claims

1. A process for producing N-phosphonomethylglycine of the formula I



(I)

by reacting aminomethanephosphonic acid of the formula II



(II)

with glyoxal of the formula III

OHC—CHO (III)

in an aqueous medium and in the presence of sulfur dioxide, said glyoxal being added to a suspension of said aminomethanephosphonic acid and an alkali metal hydrogen sulfite as a source of sulfur dioxide, and isolating the resulting product.

4,534,905

PROCESS FOR THE PREPARATION OF NITRONAPHTHALENE-SULPHONIC ACIDS

Horst Behre, Odenthal-Eikamp; Heinz U. Blank, Odenthal; Gerhard Burmeister, Leverkusen, and Otto Lindner, Bergisch Gladbach, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

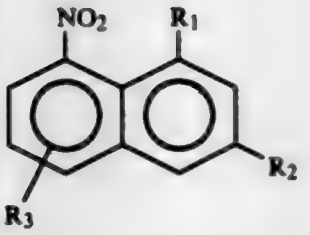
Filed May 20, 1981, Ser. No. 265,271

Claims priority, application Fed. Rep. of Germany, May 29, 1980, 3020441

Int. Cl.^{3} C07C *143/24*

U.S. Cl. 260—505 C 9 Claims

1. In the process for the preparation of α-nitronaphthalene-sulphonic acids of the formula



in which

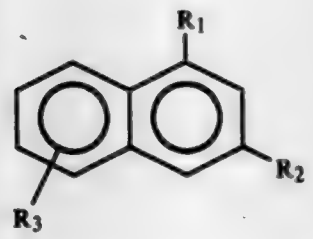
R_3 is in the 5-position or 6-position,

R_1 and R_3 independently of one another are a SO_3H group or NO_2 group and

R_2 is a hydrogen atom or a SO_3H group or

NO_2 group, with the proviso that at least one of the substituents R_1, R_2 or R_3 is a SO_3H group,

by reacting the corresponding naphthalene-sulphonic acids of the formula



in which R_1, R_2 and R_3 have the above stated meaning with nitric acid and working up the nitration mixture, the improvement comprising

(a) interrupting the reaction of the naphthalene-sulphonic acids with nitric acid already before the nitration reaction has ended and

(b) treating the nitration mixture, if appropriate after dilution with water, with bases at a pH value of 5 to 14.

4,534,906

REMOVAL OF IMPURITIES FROM HUMAN LEUKOCYTE INTERFERON PREPARATIONS

Paul D. Johnston, San Mateo, Calif., assignor to Genentech, Inc., San Francisco, Calif.

Filed Nov. 1, 1982, Ser. No. 438,129

Int. Cl.^{3} A61K *45/02*; C07G *7/00*

U.S. Cl. 260—112 R 15 Claims

1. A method of removing oligomers and slow monomer from leukocyte interferon (IFN-α) having high sequence homology with human leukocyte interferon which method comprises:

(a) incubating a buffer solution containing 1–20 mg/ml of IFN-α at a pH between 3 and approximately 4.8 for 30 minutes–24 hours at 28°–40° C. to precipitate oligomers and slow monomer followed by;

(b) recovering native IFN-α.

4,534,907

ALKOXYLATED POLYESTER POLYOLS

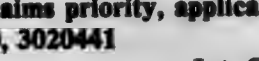
Dwight E. Peerman, and Edgar R. Rogier, both of Minnetonka, Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Sep. 7, 1982, Ser. No. 415,522

Int. Cl.^{3} C09F *5/08*

U.S. Cl. 260—410.6 28 Claims

1. Alkoxylated polyester polyols formed by reacting at least one non-gelled polyester polyol of the formula:



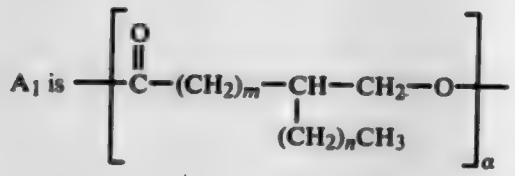
where

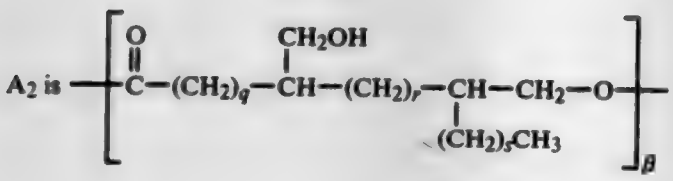
R is a polyol residue;

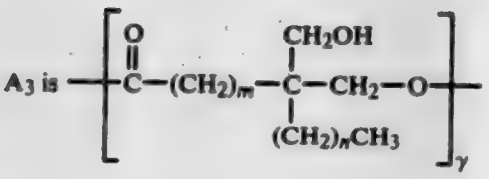
p is an integer from 2 to 6; and,

A may be the same or different and is selected from the

group consisting of A_1, A_2 and A_3 and combinations of A_1, A_2 and A_3, where







where

m, n, q, r, α, β and γ are integers and where

$m>3$

$n \geqq 0$ and

$m+n$ is from 11 to 19

$q>3$

$r \geqq 0$

$s \geqq 0$ and

$q+r+s$ is from 10 to 18

α is from 0 to 10

β is from 0 to 10 and

γ is from 1 to 10, except that all α's, β's and γ's in any given compound are not all zero;

with at least one alkylene oxide in a ratio of moles of alkylene oxide per equivalents of hydroxyl in the polyester polyol from about 0.5:1 to 5:1.

4,534,908

WATER-SOLUBLE DISAZO COMPOUNDS AND NEW BIS-(AMINOPHENOXY)-ETHANE COMPOUNDS HAVING FIBER-REACTIVE GROUPS AS THE TETRAZO COMPONENTS, AND USE OF THE DISAZO COMPOUNDS AS DYESTUFFS

Hermann Fuchs, Königstein, and Klaus Filzinger, Hofheim am Taunus, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

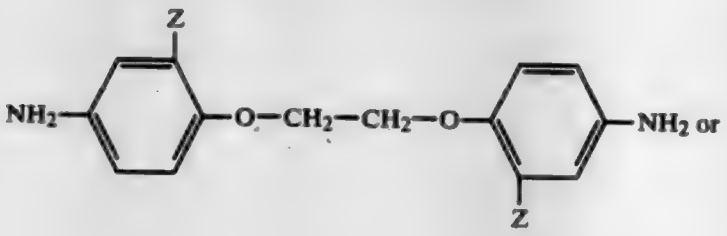
Division of Ser. No. 401,408, Jul. 23, 1982,. This application Sep. 26, 1983, Ser. No. 535,431

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1981, 3129401

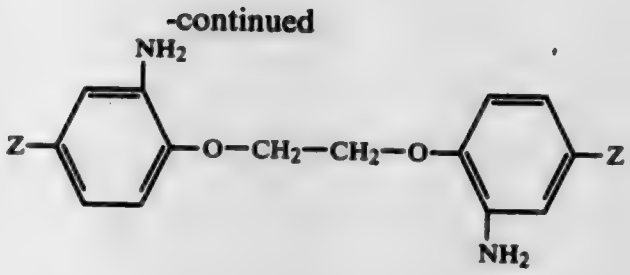
Int. Cl.³ C07C *141/16, 93/14*

U.S. Cl. 260—458 C **3 Claims**

1. A diamino compound of the formula



-continued



in which both Z substituents are identical and each is β-hydroxyethylsulfonyl, β-chloroethylsulfonyl, β-sulfatoethylsulfonyl, β-phosphatoethylsulfonyl, β-(lower alkylsulfonyloxy)-ethylsulfonyl, β-(arylsulfonyloxy)-ethylsulfonyl, vinylsulfonyl, β-thiosulfatoethylsulfonyl, β-phenoxyethylsulfonyl and β-(dialkylamino)-ethylsulfonyl.

4,534,909

PROCESS FOR PRODUCING A HALOGEN-CONTAINING ETHYLBENZENE DERIVATIVE

Kiyotaka Oyama, Hikari, and Tuneo Harada, Shin-nanyo, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

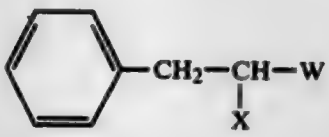
Filed Oct. 12, 1984, Ser. No. 660,087

Claims priority, application Japan, Oct. 13, 1983, 58-189857

Int. Cl.³ C07C *121/66, 69/76, 53/134*

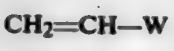
U.S. Cl. 260—465 G **19 Claims**

1. A process for producing a halogen-containing ethylbenzene derivative represented by the general formula:



(I)

where X is a halogen atom, and W is a nitrile group, a carboxyl group, a lower alkoxycarbonyl group or an amidocarbonyl group, which comprises diazotizing aniline with a nitrite in a solution mixture comprising a hydrophilic organic solvent, an aqueous mineral acid solution and a vinyl compound represented by the general formula:



(II)

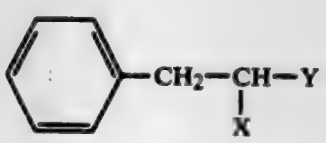
where W is as defined above, to form a benzenediazonium salt, and reacting the benzenediazonium salt, without isolating it from the reaction system, with said vinyl compound in the presence of halogen ions and a copper compound as a catalyst.

10. A process for producing a halogen-containing ethylbenzene derivative, which comprises diazotizing aniline with a nitrite in a solution mixture comprising a hydrophilic organic solvent, an aqueous mineral acid solution and a low boiling point vinyl compound represented by the general formula:



(III)

where Y is a nitrile group or a lower alkoxy carbonyl group, to form a benzenediazonium salt, then reacting the benzenediazonium salt, without isolating it from the reaction system, with said low boiling point vinyl compound and halogen ions in the presence of the halogen ions and a copper compound as a catalyst, to form a halogen-containing ethylbenzene derivative represented by the general formula:



(IV)

where X is a halogen atom, and Y is as defined above, subject-

ing the reaction mixture to distillation to recover the unreacted low boiling point vinyl compound, and recovering the halogen-containing ethylbenzene derivative from the distillation residue.

4,534,910

METHOD OF PREPARING ACETALS AND ENOL ETHERS FROM ACYLOXYMETHYLENE COMPOUNDS

Hermann Peeters, Niederkassel; Wilhelm Vogt, Cologne, and Christoph Theis, Bornheim, all of Fed. Rep. of Germany, assignors to Dynamit Nobel Aktiengesellschaft, Cologne, Fed. Rep. of Germany

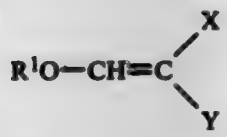
Filed Mar. 29, 1983, Ser. No. 480,153

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211679

Int. Cl.³ C07C *121/34, 69/76*

U.S. Cl. 260—465.6 **15 Claims**

1. A method for the preparation of an enol ether of the formula



I

wherein

R^1 represents straight-chain or branched alkyl moieties of 1 to 20 carbon atoms or $(CH_2)_m$—Cyc with Cyc=isocyclic or heterocyclic, mononuclear or polynuclear aromatic or cycloaliphatic ring systems bearing in some cases substituents on the rings, with m=0 to 5, the moieties $(CH_2)_nOR^4$ or $(CH_2—CH_2O)_nOR^4$ with n=1 to 4 and with R^4=straight-chain or branched alkyl moieties of 1 to 12 carbon atoms,

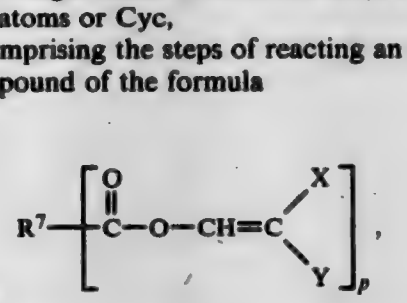
X represents CN or $COOR^1$ and

Y represents (X being) CN, $COOR^1$, (or R^3 being) H, straight-chain or branched moieties of 1 to 20 carbon atoms, straight chain or branched moieties

$(CH_2)_n$—Cn, $(CH_2)_nCOOR^4$, $(CH_2)_nNR^5_2$, $(CH_2)_mOR^4$ or $(CH_2)_m$Cyc,

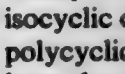
n, m, R^4 and Cyc having the same meaning as above and R^5 alike or unalike H, straight-chain or branched alkyl moieties of 1 to 12 carbon atoms, Cyc or COR^6 and R^6=H, straight-chain or branched alkyl moieties of 1 to 12 carbon atoms or Cyc,

comprising the steps of reacting an acyloxymethylene compound of the formula



III

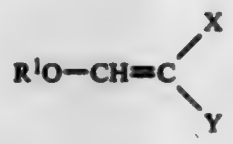
wherein X and Y have the meaning given above and R^7 represents straight-chain or branched alkyl, alkylene, alkenyl or alkenylene moieties of 1 to 12 carbon atoms, isocyclic or heterocyclic ring systems with monocyclic or polycyclic structure or $(CH_2)_n$Cyc, wherein n and Cyc have the meaning given above and R^7 represents straight-chain or branched alkyl, alkylene, alkenyl or alkenylene moieties of 1 to 12 carbon atoms, isocyclic or heterocyclic ring systems with monocyclic or polycyclic structure or $(CH_2)_n$Cyc, wherein n and Cyc have the meaning given above, and p=1 or 2, is reacted with an alcohol of the formula



IV,

wherein R^1 has the meaning given above.

11. A method for the preparation of an enol ether of the formula



I

wherein

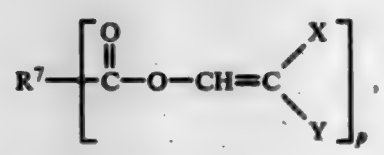
R^1 is alkyl of 1 to 4 carbon atoms, or alkyl of 2 to 3 carbon atoms and having an oxygen atom between two adjacent of the carbons;

X is CN or $COOR^1$;

Y is hydrogen, CN, $COOR^1$, R^1 or C_6H_5,

comprising the steps of

reacting an acyloxymethylene compound of the formula



III

wherein X and Y have the meaning given above and R^7 is an alkyl, alkylene, alkenyl or alkenylene moieties of 1 to 4 carbon atoms, Cyc or, $(CH_2)_n$Cyc, wherein n is 1, 2 or 3, Cyc is C_6H_5 and p=1 or 2,

with an alcohol of the formula



IV,

wherein R^1 has the meaning given above,

at a temperature in the range of 20° to 250° C., and wherein the reactants are present in a molar ratio of acyloxymethylene to alcohol of 1:1 to 1:30.

14. The method of claim 11, wherein the alcohol is selected from methanol, ethanol, propanol, isopropanol, butanol, isobutanol or sec-butanol.

4,534,911

METHOD FOR THE PREPARATION OF P-BUTOXYPHENYLACETYL-HYDROXAMIC ACID IN THE FINELY DIVIDED STATE AND A COMPOSITION CONTAINING THIS ACID

Michel R. Franz, Berchem-Sainte-Agathe; Andreas B. Vincze, Woluwé-Saint-Lambert; Georges E. Lambelin, Forest, all of Belgium, and Alain V. Polat, Onex-Geneve, Switzerland, assignors to Continental Pharma, Inc., Vaduz, Liechtenstein

Filed Dec. 7, 1983, Ser. No. 558,885

Claims priority, application Luxembourg, Dec. 13, 1982, 84530

Int. Cl.³ C07C *83/10*; A61K *31/185*

U.S. Cl. 514—575 **10 Claims**

1. Method for the preparation of micronised p-butoxyphenylacetylhydroxamic acid, characterised in that it comprises dissolving the p-butoxyphenylacetylhydroxamic acid in a basic solution of salifying agent and then precipitating it in an acid solution in the presence of a surface-active agent the hydrolipophilic balance of which is between 10 and 18.

4,534,912

PREPARATION OF ANHYDRIDES

John Cook, Sproatley, England, assignor to BP Chemicals Limited, London, England

Filed May 17, 1984, Ser. No. 611,348

Claims priority, application United Kingdom, May 21, 1983, 8314137

Int. Cl.³ C07C *51/56*

U.S. Cl. 260—549 **10 Claims**

1. A process for the preparation of acetic anhydride by reacting at elevated temperature methyl acetate or dimethyl

ether with carbon monoxide characterised in that the reaction is carried out in the presence of an effective amount of a catalyst comprising:

(1) cobalt,

(2) a compound containing at least one quaternary nitrogen or phosphorus atom, wherein said compound containing at least one quaternary nitrogen or phosphorus atom is added as two precursors, the first being a trivalent nitrogen or phosphorus compound capable of forming the quaternary compound under the reaction conditions, the second being a halide-free quaternising agent, and

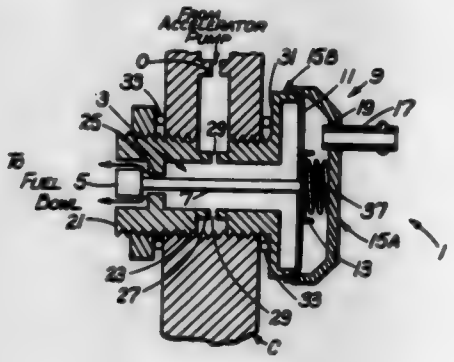
(3) a source of iodide or bromide wherein the atomic ratio of iodide or bromide to cobalt is from 0.5:1 to 5:1.

4,534,913

APPARATUS CONTROLLING DISCHARGE VOLUME OF A CARBURETOR ACCELERATOR PUMP

John G. Bathe, Taylor, Mich., assignor to ACF Industries, Inc., New York, N.Y.

Filed Jan. 23, 1984, Ser. No. 572,805
Int. Cl.[3] F02M *7/08*
U.S. Cl. 261—34 B 7 Claims



1. Apparatus for use with a carburetor attached to an internal combustion engine for controlling the discharge volume of the carburetor's accelerator pump as a function of the engine operating condition comprising:

flow control means for controlling flow of fuel from a fuel discharge port of the accelerator pump to return fuel to a fuel bowl portion of the carburetor;

vacuum operated means for moving the flow control means from a first position blocking flow of fuel from the discharge port to a second position permitting fuel flow, the vacuum operated means including a diaphragm assembly one side of which is exposed to engine vacuum, a shank portion sized to be received in a bore formed in the side of the carburetor, the shank being hollow to form a portion of the return passage from the discharge port of the accelerator pump to the fuel bowl portion of the carburetor, the shank having a cylindrical groove therearound with a series of apertures circumferentially spaced for fuel to enter into the hollow shank;

switch means controlling application of a vacuum to the vacuum operated means; and,

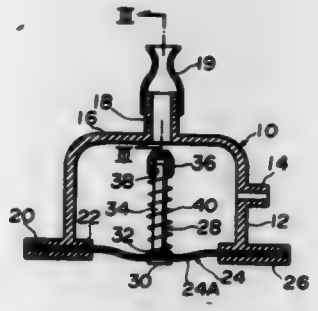
means responsive to an engine operating condition for switching the switch means from a position in which vacuum is applied to the vacuum operated means to a position in which the vacuum operated means is exposed to atmosphere whereby the vacuum operated means moves the flow control means from its first to its second position.

4,534,914

METHOD AND APPARATUS FOR PRODUCING VORTEX RINGS OF A GAS IN A LIQUID

Masashi Takahashi, Yokohama, and Minoru Yamada, 309, Yamanouchi, Kamakura-shi, Kanagawa-ken, both of Japan, assignors to Nihon Sanso Kabushiki Kaisha and Minoru Yamada, both of, Japan

Filed Dec. 20, 1982, Ser. No. 451,409
Claims priority, application Japan, Dec. 23, 1981, 56-208638; Dec. 11, 1982, 57-217412
Int. Cl.[3] B01F *3/04*
U.S. Cl. 261—64 B 13 Claims



1. An apparatus for producing vortex rings of a gas in a liquid, comprising:

(a) an accumulator including a gas inlet for introducing the gas under pressure from a gas supply source thereinto, and a gas outlet for discharging the gas;

(b) a nozzle attached to the outlet of the accumulator in communicating relation to the accumulator, the nozzle being of elasticity such that the nozzle is sealingly closed when the liquid pressure exceeds the gas pressure; and

(c) valve means, connected to the accumulator, for permitting a gas supply from the gas supply source to the nozzle and forming a gas stream at a higher velocity at the center of the nozzle than that at the inner periphery of the nozzle so that said vortex ring of the gas is formed; and

(d) means for actuating the valve means when gas pressure within the accumulator reaches predetermined pressure levels.

10. A method of producing vortex rings of a gas in liquid, comprising the steps of:

(a) positioning an accumulator in the liquid, the accumulator having a gas outlet and a valve member for closing the gas outlet;

(b) supplying the accumulator with the gas under pressure higher than that in the liquid surrounding the accumulator;

(c) providing the supplied gas to a nozzle communicated to the accumulator by bringing the valve member out of contact with the gas outlet thereby opening the nozzle instantaneously against the pressure in the surrounding liquid;

(d) then forming a gas stream at a higher velocity at the center of the nozzle than that at the inner periphery of the nozzle so that a vortex ring of the gas is formed;

(e) ejecting instantaneously the formed vortex ring from the nozzle into the liquid; and

(f) stopping instantaneously the gas supply to the nozzle to thereby close the nozzle by the pressure in the surrounding liquid.

4,534,915

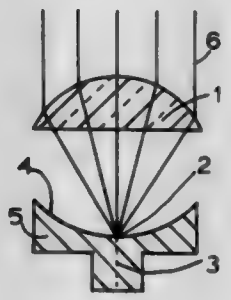
METHOD OF CONTROLLING THE ULTRAVIOLET POLYMERIZATION OF SPIN CAST LENSES

Charles W. Neefe, 811 Scurry St., Box 429, Big Spring, Tex. 79720

Continuation-in-part of Ser. No. 506,873, Jul. 5, 1983, abandoned, which is a continuation-in-part of Ser. No. 417,641, Sep. 9, 1982, Pat. No. 4,416,837. This application Aug. 17, 1984, Ser. No. 642,114

Int. Cl.[3] B29D *11/00*

U.S. Cl. 264—1.4 7 Claims



1. A method of polymerizing a spin cast lens in a rotating concave mold by providing a band of actinic light extending across the rotating lens monomer and passing through the center of the lens rotation whereby the rotating lens monomer near the center of rotation will receive more energy from the actinic light and polymerize before the rotating monomer further from the lens center of rotation.

4,534,916

METHOD FOR THE PREPARATION OF HYDROPHILIC GELS BY MONOMER CASTING

Otto Wichterle, Prague, Czechoslovakia, assignor to Ceskoslovenska, Prague, Czechoslovakia

Filed Apr. 6, 1984, Ser. No. 597,334

Claims priority, application Czechoslovakia, Aug. 17, 1983, 6009-83

Int. Cl.[3] B29D *11/00*

U.S. Cl. 264—2.1 19 Claims

1. In a process of preparing a hydrophilic gel article by monomer cast polymerization of a mixture containing a monoolefinic hydrophilic monomer in a plastic mold the improvement comprising including in the polymerizable monomer mixture a surface active agent in an amount effective to prevent grafting of the hydrophilic gel on the plastic mold.

4,534,917

METAL POWDERS AND A PROCESS FOR THE PRODUCTION THEREOF

Alfred Walz, Am Kurzarm 7, D-7830 Emmendingen, Fed. Rep. of Germany

Filed Mar. 29, 1984, Ser. No. 594,829

Claims priority, application Fed. Rep. of Germany, Mar. 29, 1983, 3311343

Int. Cl.[3] B05B *7/08*

U.S. Cl. 264—12 9 Claims

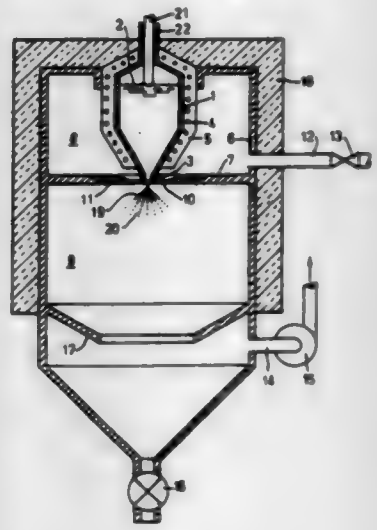
1. A process for the production of pore-free metal powders, said powders consisting of powder particles having a singly curved smooth surface and a mean diameter of between 5 and 35 microns; said process comprising the steps of:

providing a container, said container having an inflow opening;

flowing metal melt and gas into said container through said inflow opening;

maintaining the ratio of gas pressure within said container to gas pressure outside said container at said inflow opening at less than 1:5, thereby creating a supersonic flow of gas from outside said container, through said inflow opening, and into said container;

contacting said flowing metal melt with said supersonic flow of gas at a point near said inflow opening;



whereby said metal melt, after contacting said supersonic flow of gas, forms into threads which subsequently and spontaneously collapse to form said powder particles.

4,534,918

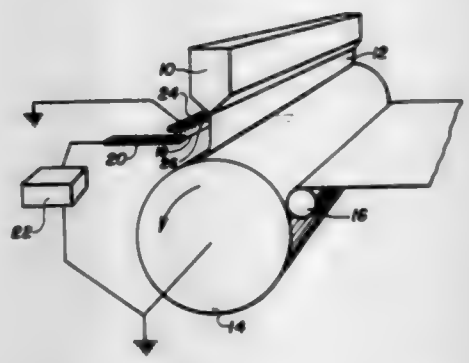
METHOD AND APPARATUS FOR THE ELECTROSTATIC PINNING OF POLYMERIC WEBS

Albert W. Forrest, Jr., Chillicothe, Ohio, assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 27, 1983, Ser. No. 546,104

Int. Cl.[3] B29D *7/22*

U.S. Cl. 264—22 7 Claims



1. In a pinning apparatus including a moving conductive grounded support for a polymeric web, an elongated charged electrode extending transversely of the support and a grounded electrode parallel therewith, the improvement comprising provision of conductive pins projecting from said grounded electrode, said pins having points located adjacent the charged electrode whereby to stabilize the flow of current between said electrodes.

6. In a method including the steps of advancing a freshly cast polymeric web to a moving support and establishing electric fields between first and second electrodes as well as between the first electrode and the support, the improvment comprising the step of localizing the flow of current between the two electrodes at spaced points along the length thereof.

4,534,919

PRODUCTION OF A CARBON FIBER MULTIFILAMENTARY TOW WHICH IS PARTICULARLY SUITED FOR RESIN IMPREGNATION

J. Eugene McAliley, Rock Hill, S.C.; Gene P. Daumit, Charlotte, and Fredrick A. Ethridge, Waxhaw, both of N.C., assignors to Celanese Corporation, New York, N.Y.

Filed Aug. 30, 1983, Ser. No. 527,728
Int. Cl.³ D01F 9/12
U.S. Cl. 264—29.2 26 Claims

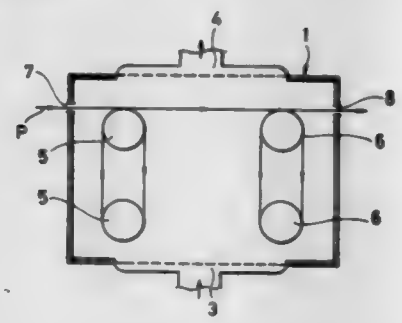
1. In a process for the simultaneous conversion of a plurality of acrylic filaments capable of undergoing conversion to a carbonaceous fibrous material selected from the group consisting essentially of an acrylonitrile homopolymer and an acrylonitrile copolymer containing at least about 85 mole percent of acrylonitrile units and up to about 15 mole percent of one or more monovinyl units copolymerized therewith, while in the form of a multifilamentary tow wherein the filaments therein are disposed in a substantially parallel relationship wherein said multifilamentary tow is passed in the direction of its length through a plurality of heating zones each containing a heated gaseous atmosphere while substantially suspended therein to form a multifilamentary fibrous product which contains at least 70 percent carbon by weight; the improvement of subjecting said multifilamentary tow during at least one stage in its processing to the impingement of at least one stream of a liquid whereby the parallel relationship of said filaments is disrupted in the substantial absence of filament damage with the filaments becoming decolumnized to a degree sufficient to enable said resulting carbonaceous fibrous material to be more readily impregnated by and dispersed within a matrix-forming resin.

4,534,920

PROCESS FOR PRODUCING CARBONIZABLE OXIDIZED FIBERS AND CARBON FIBERS

Minoru Yoshinaga; Nobuyuki Matsubara, and Ryuichi Yamamoto, all of Ehime, Japan, assignors to Toray Industries, Inc., Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,911
Claims priority, application Japan, Jun. 7, 1982, 57-96303
Int. Cl.³ D01F 9/22
U.S. Cl. 264—29.2 18 Claims



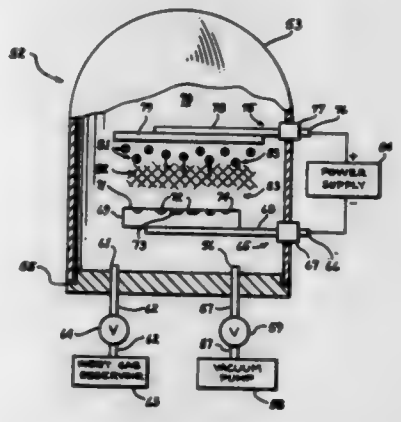
1. A process for producing carbonizable oxidized fibers, which comprises oxidizing precursor fibers in an oxidizing atmosphere containing an oxidizing gas heated to about 240° to 400° C. by intermittently contacting and removing said precursor fibers on and from a cooling means positioned inside said oxidizing atmosphere, wherein the contact time per single contact of said precursor fibers with the cooling means is from about 0.1 to about 3 seconds, and the temperature drop caused by said contact is about 5° to about 30° C.

4,534,921

METHOD AND APPARATUS FOR MOLD CLEANING BY REVERSE SPUTTERING

Richardus H. J. Fierkens, Herwen, and Ireneus J. T. M. Pas, Rozendaal, both of Netherlands, assignors to ASM Fico Tooling, b.v., Herwen, Netherlands

Filed Mar. 6, 1984, Ser. No. 586,853
Int. Cl.³ B29C 6/04; C23C 15/00
U.S. Cl. 264—39 20 Claims



1. A method of cleaning molds comprising the steps of:
providing a vacuum chamber;
transporting a mold to be cleaned to the vacuum chamber;
evacuating the chamber;
admitting an ionizible gas to the vacuum chamber; and
bombarding the mold surfaces to be cleaned with ions for removing surface contaminates by reverse sputtering.

8. In a method for encapsulating the integrated circuit and input/output lead portion of a lead frame assembly within a plastic encapsulating material including the steps of accurately positioning a lead frame assembly within the lower mold portion, placing the upper mold portion over the lower mold portion, feeding plastic material into the mold cavity, heating and applying pressure to the plastic material for melting same and causing the plastic material to flow over the portions to be encapsulated, curing the encapsulated lead frame assemblies, separating the upper and lower mold portions, cleaning the separated mold portions, and subsequently reusing the cleaned mold portions in a continuous encapsulating process, the improvement residing in said cleaning step and comprising:
transporting the upper and lower mold portions to be cleaned to a cleaning station; and
reverse sputtering the mold portions to clean surface contaminates and the like therefrom prior to reuse.

14. In a system for continuously encapsulating the integrated circuit portion and input/output lead portion of a lead frame assembly including means for locating the lead frame assembly in a lower mold portion, means for positioning and securing an upper mold portion over said lower mold portion to form a mold assembly, means for supplying plastic encapsulating material into a mold cavity of the mold assembly, means for heating and pressurizing the plastic material for flowing the molten plastic over the portions of the lead frame assembly to be encapsulated, means for curing the encapsulated lead frame assembly, means for separating the upper mold portion from the lower mold portion, means for removing the encapsulated lead frame assembly from the lower mold portion, and means for cleaning the mold portions prior to subsequent reuse, improved cleaning means for removing the remaining plastic material, plastic residue, and surface contamination such as dirt, oil, grease, dust, oxidation products, CF_4, and the like from at least selected surfaces of the mold portions prior to subsequent reuse comprising:
vacuum enclosure means;
means for positioning a mold portion to be cleaned within said vacuum enclosure means;
means for producing a substantial vacuum in said vacuum enclosure means;

means for introducing an inert ionizible gas into said vacuum chamber

means for generating a plasma field within said vacuum chamber for ionizing said gas; and

means for bombarding the selected surface areas of the mold portions to be cleaned with ions for removing the surface contaminates therefrom.

4,534,922

GASKETS

Alan W. Atkinson, Rochdale; Katryna J. Dearden, and Janet M. Lancaster, both of Littleborough, all of England, assignors to T&N Materials Research Limited, Manchester, England

Filed Sep. 29, 1983, Ser. No. 536,975

Claims priority, application United Kingdom, Oct. 1, 1982, 8228155

Int. Cl.³ D04H *1/54*

U.S. Cl. 264—119 **9 Claims**

1. A method of making a gasket having improved release characteristics for use in a joint between mating pairs, the gasket made from exfoliated graphite by a process comprising the steps of:

(1) forming a gasket from exfoliated graphite particles,

(2) pressing the gasket thus formed, and thereafter

(3) embossing the gasket by pressing against surface means having a profile such that the substrate pressed is given a pattern of relatively raised areas surrounded by predominantly interconnected depressions distributed uniformly over the gasket surfaces, the raised areas being spaced apart from each other so as to provide improved release characteristics from the mating parts.

4,534,923

METHOD AND APPARATUS FOR FORMING A DOUBLE WALLED THERMOPLASTIC TUBE WITH INTEGRAL BELLS

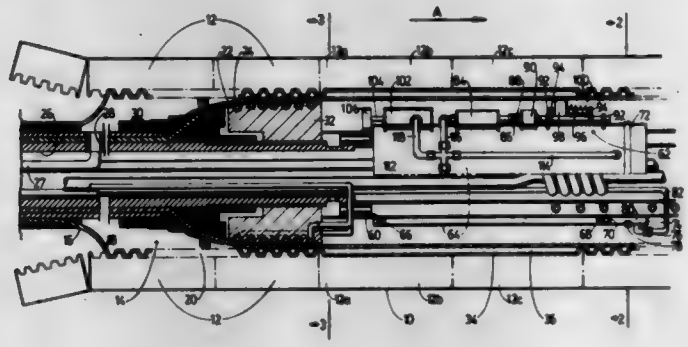
Manfred A. A. Lupke, 10 McLeary Ct., Concord, Ontario, Canada L4K 2Z3

Filed Nov. 3, 1983, Ser. No. 548,453

Claims priority, application Canada, Dec. 2, 1982, 416840

Int. Cl.³ B29C *17/07, 17/14;* B29D *23/04*

U.S. Cl. 264—156 **10 Claims**



1. A method of forming a double walled thermoplastic tube by extruding a first tube into travelling mold, molding the first tube in the mold to form a corrugated outer wall, and extruding a second tube into the first tube to form a smooth inner wall, the method being characterized by the steps of:

molding integral bell sections into the outer wall;

piercing one of the tubes between the ends of each outer wall bell section so as to allow the escape of air from between the inner and outer walls; and

pressing the inner wall into continuous contact with the outer wall along each outer wall bell section.

4. An apparatus for forming a double walled thermoplastic tube with a corrugated outer wall and a smooth inner wall, the apparatus including a travelling mold with a corrugated cavity, extruder means for extruding a first tube into the mold cavity and a second tube into the first tube, means for molding the first tube to form a corrugated outer wall and means for forming the second tube into a smooth inner wall, the apparatus being characterized by means for forming integral bells in the double walled tube, comprising the combination of:

means for molding integral bell sections into the outer wall;

piercing means for piercing one of the tubes between the ends of each outer wall bell section; and

pressing means for pressing the inner wall into continuous contact with each bell section of the outer wall.

4,534,924

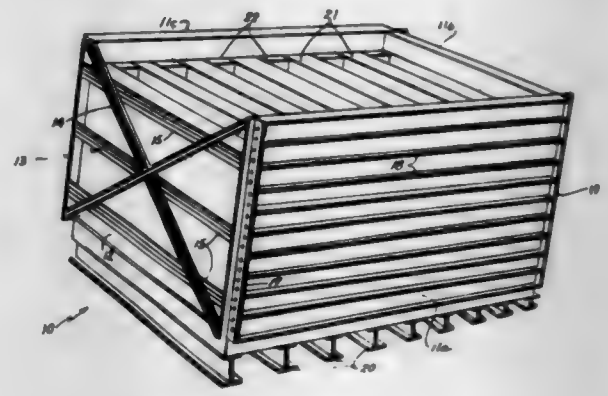
METHOD FOR MOLDING CONCRETE SLABS AND BATTERY MOLD THEREFOR

Joseph A. Kariakin, Salem, Oreg., assignor to Novi Development Corporation, Salem, Oreg.

Filed Sep. 19, 1983, Ser. No. 533,431

Int. Cl.³ B28B *1/16*

U.S. Cl. 264—259 **18 Claims**



13. A method of molding concrete slabs comprising:

(a) providing a unitary battery box with two sidewalls, a bottom wall perpendicular to and extending between said sidewalls and an end wall perpendicular to said sidewalls and bottom wall and extending between said sidewalls;

(b) arranging said battery box at a slight tilted angle whereby said end wall is tilted at a slight angle from the vertical and said bottom is tilted at the same said slight angle from the horizontal with said sidewalls being vertical;

(c) spacedly positioning one at a time a plurality of separator plates from one another within said unitary battery box so that a cavity is formed between adjacent plates, and such that said plates are substantially perpendicular to and extend between said two sidewalls and are substantially parallel to said end wall whereby said plates are each tilted and the angle of tilt is the same as said tilted angle of said bottom and end walls, such angle of tilt being slight but sufficient without any additional support to maintain said plates in said box before pouring of concrete therein;

(d) applying a force to the separator plate furthest removed from said end wall thereby holding all of said separator plates in place within said unitary battery box in spaced position; and

(e) pouring concrete into the cavities between said plates.

4,534,925

UNINHIBITED BENTONITE COMPOSITION

Todd D. Harriett, Chicago, Ill., assignor to American Colloid Company, Skokie, Ill.

Filed Nov. 22, 1982, Ser. No. 443,225

Int. Cl.³ C08K *3/34;* C08J *3/18*

U.S. Cl. 264—281 **21 Claims**

1. A water-swellable clay composition comprising water-swellable smectile clay in an amount of 75 to 90% by weight; and polypropene, polybutene or mixtures thereof in an amount of 10% or more by weight.

4,534,926

UNINHIBITED BENTONITE COMPOSITION

Todd D. Harriett, Chicago, Ill., assignor to American Colloid Company, Skokie, Ill.

Continuation-in-part of Ser. No. 443,225, Nov. 22, 1982,. This application Apr. 27, 1984, Ser. No. 604,990

The portion of the term of this patent subsequent to Aug. 13, 2002, has been disclaimed.

Int. Cl.[3] C08K *3/34;* C08J *3/18*

U.S. Cl. 264—281 18 Claims

1. A water-swellable clay composition having essentially no silicic filler comprising water-swellable smectite clay in an amount of 35 to 90% by weight; and polypropene, polybutene or mixtures thereof in an amount of 10% to 65% by weight.

4,534,927

METHOD AND APPARATUS FOR MANUFACTURING CUPS HAVING A LIP

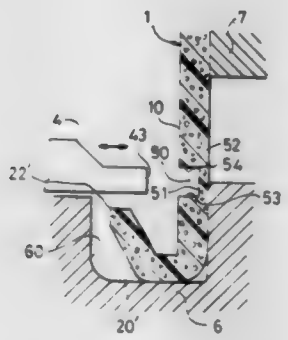
Kazumasa Morioka, and Toru Yoshimi, both of Koga, Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nara, Japan

Filed Aug. 26, 1983, Ser. No. 526,775

Claims priority, application Japan, Aug. 31, 1982, 57-151966; Mar. 11, 1983, 58-41048

Int. Cl.[3] B29D *27/00*

U.S. Cl. 264—321 15 Claims



1. A method of manufacturing cups having a lip, which comprises the steps of:

(a) forming a pre-formed up from a thermoplastic resin foamed sheet material, the side wall and bottom of the preformed cup being formed integrally at a molding temperature above the softening point of the foamed sheet material, a radially outwardly extending rim provided at the top of an opening defined by the side wall, said rim extending substantially downwardly at the end thereof,

(b) heating the side wall to a temperature within a range of temperatures above the heat deformation temperature for the material and below said molding temperature,

(c) melt-forming a bending furrow on the outer periphery of the side wall, and

(d) bending the rim on said bending furrow outwardly and down and turning the end of the rim toward the side wall.

4,534,928

MOLDING PROCESS USING ROOM TEMPERATURE CURING SILICONE COATINGS TO PROVIDE MULTIPLE RELEASE OF ARTICLES

David L. Martin, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Dec. 19, 1983, Ser. No. 562,760

Int. Cl.[3] B28B *7/36*

U.S. Cl. 264—334 8 Claims

1. In a method for molding articles comprising placing a molding composition in a mold, converting the molding composition to a solid molded article and thereafter separating the solid molded article from the mold, the improvement comprising applying a silicone mold release composition to at least one shape-determining surface of the mold, and thereafter curing the silicone mold release composition before the molding composition is placed in contact therewith, wherein the silicone mold release composition is stable if stored in containers that exclude moisture, cures when exposed to moisture, and is obtained by mixing components consisting essentially of

(I) a polydimethylsiloxane represented by the general formula

$$Y[(CH_3)_2SiO]_kH$$

in which Y is a methyl or hydroxyl radical with the stipulation that at least 80 percent of Y are hydroxyl radicals and k has an average value greater than 20;

(II) an alkoxysilane represented by the general formula

$$(RO)_nSiR'_{4-n}$$

wherein R is a methyl, ethyl, propyl or methoxyethyl radical, R' is a monovalent hydrocarbon radical or halogenated hydrocarbon radical having 1 to 4 carbon atoms, and n has a value of 3 or 4;

(III) a metal alkoxide selected from the group consisting of tetraalkyltitanates, tetraalkylgermanates, tetraalkylzirconates and vanadium trialkoxide oxides; and

(IV) a non-reactive, volatile organic solvent which is substantially water free,

the components being mixed in amounts of 25 to 98 parts by weight of (I), 1.5 to 65 parts by weight of (II), and 0.3 to 18 parts by weight of (III) for every 100 parts by weight of (I) plus (II) plus (III).

4,534,929

MATRIX AND METHOD OF USING AN ALIPHATIC ALCOHOL COATED SILICA GLASS MATRIX

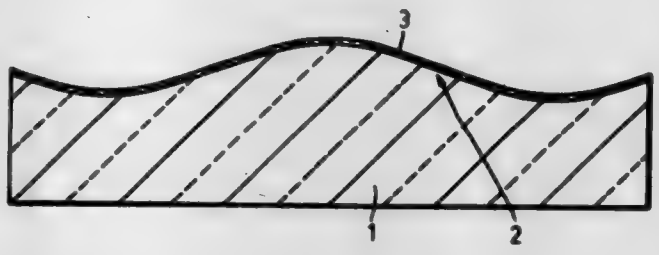
Johannes J. Ponjeé, and Christiaan J. A. Verwijlen, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 1, 1983, Ser. No. 510,101

Claims priority, application Netherlands, Apr. 27, 1983, 8301482

Int. Cl.[3] B29C *1/04*

U.S. Cl. 264—338 6 Claims



1. A method of manufacturing articles having at least one surface of a synthetic resin, in which a liquid synthetic resin composition is provided on a silica glass surface of a matrix, a supporting member is positioned in contact with a surface of said liquid synthetic resin composition, the liquid synthetic resin composition is converted into a solid synthetic resin layer and the solid synthetic resin layer, in which the configuration of the matrix surface is copied, and to which synthetic resin layer the supporting member adheres, is removed from the matrix, characterized in that a monolayer of an aliphatic alcohol, the aliphatic moiety of which is selected from the group consisting of alkyls of at least 8 carbon atoms and fluoroalkyls, is bound to said silica glass surface during said manufacture.

2. A matrix suitable for the manufacture of products having at least one surface of a synthetic resin, said matrix comprising a silica glass surface for contacting a surface of said synthetic resin during said manufacture, characterized in that during said manufacture said silica glass surface is provided with a releasing agent consisting of a monolayer of an aliphatic alcohol bound to said silica glass surface, the aliphatic moiety of said

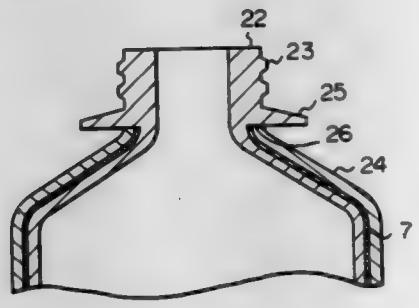
alcohol being selected from the group consisting of alkyls of at least 8 carbon atoms and fluoroalkyls.

4,534,930

PROCESS FOR PRODUCING STRETCHED MULTILAYER POLYESTER BOTTLE

Shigezo Nohara, Yokohama, Japan, assignor to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 584,515
Claims priority, application Japan, Feb. 28, 1983, 58-31033
Int. Cl.[3] B29C *17/07*; B29D *9/04*; B29F *1/10*
U.S. Cl. 264—513 5 Claims



1. A process for producing a stretched multilayer polyester bottle which comprises axially stretching a bottomed multilayer preform comprised of an inside and an outside polyester surface layer and an interlayer of a gas-barrier resin provided therebetween optionally through an adhesive layer under conditions which induce molecular orientation of the polyester and simultaneously stretching it circumferentially by blowing; wherein said multilayer preform is produced by coating a solution or emulsion of an ethylene-vinyl alcohol copolymer on one surface of a primary preform of the polyester molded in advance, drying the coated preform at a temperature at which no whitening owing to the crystallization of the polyester occurs to thereby form a thin but continuous film of the ethylene-vinyl alcohol polymer on the primary preform, the coated film of the ethylene-vinyl alcohol copolymer having such a thickness distribution that its thickness at the bottom portion of the preform is greater than the thickness of its upper end at the side wall portion of the preform sufficient to prevent extreme thinning of the coated film at the bottom portion incident to the subsequent injecting step, mounting the coated preform on an injection mold, and injecting the polyester onto the coated layer to form the inside or outside surface layer of the polyester.

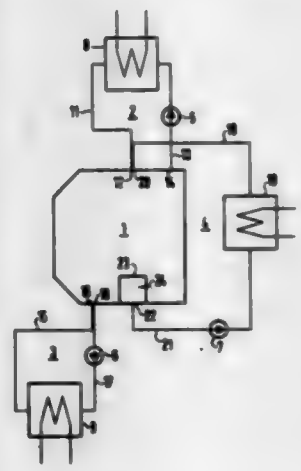
4,534,931

INSTALLATION FOR COOLING A FUEL ELEMENT STORAGE WELL WITH SEVERAL WATER CIRCUITS

Wilfried Schneider, Grosskrotzenburg, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Continuation of Ser. No. 379,572, May 18, 1982, abandoned.
This application Jul. 23, 1984, Ser. No. 633,078
Claims priority, application Fed. Rep. of Germany, May 20, 1981, 3120106
Int. Cl.[3] G21C *19/08*
U.S. Cl. 376—272 4 Claims

1. Installation for cooling fuel elements, comprising a water-filled open-top fuel element storage well, a plurality of separate water-filled cooling circuits having drain lines with connections to the well, pumps connected to said drain lines, heat exchangers connected to said pumps and feed lines being connected to said heat exchangers and having connections to the well, one of said cooling circuits having its connections of its feed line and drain line to the well being disposed at a level which is higher than the others of said drain line and feed line connections, and a downwardly directed pipe disposed in said storage well being connected to the drain line connection of said one cooling circuit and having a lower opening formed



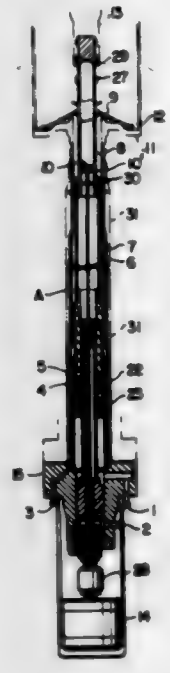
therein at a lower level than all of said drain line and feed line connections.

4,534,932

APPARATUS FOR REMOVING CLADDING MATERIAL FROM BOTTOM PORTION OF CONTROL ROD GUIDE TUBE OF NUCLEAR REACTOR

Kazuaki Yoshikawa; Yuichi Matsumura, and Noriaki Mase, all of Hitachi, Japan, assignors to Hitachi, Ltd and Hitachi Service Engineering Co., Ltd., both of Tokyo, Japan

Filed Jun. 1, 1984, Ser. No. 616,404
Claims priority, application Japan, Jun. 3, 1983, 58-97871
Int. Cl.[3] G21C *19/42*
U.S. Cl. 376—310 7 Claims



1. An apparatus for removing a cladding material from a bottom portion of a control rod guide tube of a nuclear reactor, comprising:

a rotor tube removably mounted in a housing of a control rod drive of the nuclear reactor and having at least at a forward end portion hydraulically insertable into the bottom portion of the control rod guide tube through an opening located in a lower portion of the control rod guide tube for inserting the control rod drive, said rotor tube having a foldable rotary brush and cleaning water supply nozzles provided at the forward end portion thereof; and

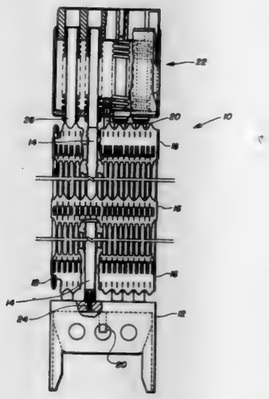
a rotary drive shaft extending through the rotor tube for rotating the rotary brush.

4,534,933

NUCLEAR REACTOR FUEL ASSEMBLY WITH IMPROVED TOP NOZZLE AND HOLD-DOWN MEANS

Robert K. Gjertsen, Monroeville, and Luciano Veronesi, Pittsburgh, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 17, 1983, Ser. No. 542,625
Int. Cl.[3] G21C *19/28*
U.S. Cl. 376—364 14 Claims



1. A fuel assembly for a nuclear reactor including a bottom nozzle, at least one longitudinally extending control rod guide thimble attached to and projecting upwardly from the bottom nozzle, a plurality of transverse grids axially spaced along said thimble for supporting an array of upstanding fuel rods, and an improved top nozzle with hold-down means attached to the upper end of said thimble in forming an integral assembly, said improved top nozzle with hold-down means comprising:

(a) a lower adapter plate having a guide thimble hole for receiving said guide thimble so as to mount said adapter plate on said guide thimble for slidable movement therealong;

(b) first retainer means on said thimble for limiting downward movement of said adapter plate along said thimble,

(c) an upper hold-down plate having a guide thimble passageway with an internal ledge for receiving said thimble so as to mount said hold-down plate on said thimble for slidable movement therealong, said internal ledge being located in a lower portion of said passageway;

(d) second retainer means on said thimble being disposed within said passageway above said ledge therein and cooperable with said ledge for limiting the upward movement of said hold-down plate along said thimble; and

(e) spring means coiled about said thimble and interposed between said lower adapter plate and said upper hold-down plate for yieldably retaining said ledge in abutting engagement with said second retainer means.

4,534,934

AXIAL SWEEP-THROUGH PROCESS FOR PREPARING DIAMOND WIRE DIE COMPACTS

Hyun S. Cho, Worthington, Ohio, assignor to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 126,050, Feb. 29, 1980, abandoned.
This application Oct. 20, 1981, Ser. No. 313,119
Int. Cl.[3] B22F *5/00, 7/06;* B21K *5/20*
U.S. Cl. 419—6 12 Claims

1. An improved process for preparing diamond wire die compacts characterized by diamond-to-diamond bonding which comprises subjecting at least one mass comprised of a metal carbide cylinder having at least one hole extending through its thickness connecting the two ends and containing diamond particles in said holes to the following high pressure-high temperature sintering conditions:

pressure of at least 50 kbar at a temperature of at least 1300° C. and within the diamond stable region; and

reaction time of 10–90 minutes;

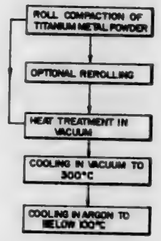
in a high pressure reaction cell containing each mass of metal carbide and diamond particles within a sub-assembly comprising a shield metal cup and a shield metal disc covering the open end of the cup; wherein the improvement comprises using a sub-assembly in which has been placed on one end of the mass of metal carbide and diamond a layer comprised of a diamond catalyst/solvent whereby axial diffusion of the catalyst/solvent into the diamond is achieved.

4,534,935

MANUFACTURING OF TITANIUM ANODE SUBSTRATES

John Ambrose, Oakville; Douglas K. Charles, Mississauga; Bruce R. Conard; Carlos Diaz, both of Oakville; Charles E. O'Neill, Mississauga, and Wayne P. Leavoy, Sudbury, all of Canada, assignors to INCO Limited, Toronto, Canada

Filed Jan. 9, 1984, Ser. No. 569,268
Claims priority, application Canada, Mar. 16, 1983, 423746
Int. Cl.[3] B22F *3/26, 3/18, 3/12*
U.S. Cl. 419—23 9 Claims



1. A process for producing electrode substrate comprising compacting sponge titanium powder to an appropriate form having a density of about 60% to about 80% of titanium metal, thereafter heat treating the thus compacted powder form at a temperature of about 500° to about 750° C. for at least one hour under conditions so as to avoid the formation of non-elemental species of titanium and cooling the thus compacted and heat treated form under conditions so as to avoid the formation of non-elemental species of titanium to a temperature of about 100° C., to thereby provide an electrode substrate having physical and mechanical properties and characteristics amenable to commercial use as an electrode including inherently low electrical resistivity that enables satisfactory current distribution over the complete surface of the electrode.

4,534,936

METHOD FOR REMOVAL OF ORGANIC BINDING AGENTS FROM MOLDED BODIES

Elis Carlström; Agneta I. Johnsson, and Leif A. G. Hermansson, all of Swedish Institute for Silicate Research, Box 5403, S-402 29 Gothenburg, Sweden

Filed Jun. 9, 1983, Ser. No. 508,455
Int. Cl.[3] B22F *3/00*
U.S. Cl. 419—36 11 Claims

1. A method of optimizing the removal of a temporary binder from a formed powder compact comprising heating of the powder compact in an inert or reactive gas or vacuum, monitoring the weight loss of the compact, and regulating the heating proportional to the difference between a preset weight-loss rate value and the actual process weight-loss rate value, the preset weight-loss rate value being below the rate above which cracks, blisters or other defects appear in the powder compact.

4,534,937

PROCESS FOR SINTERING ALUMINUM ALLOY POWDERS UNDER PRESSURE

Jean Meunier, Voreppe, and Marc Salesse, Paris, both of France, assignors to Cegedur Societe de Transformation de L'Aluminium Pechiney, Paris, France

Filed Mar. 29, 1983, Ser. No. 479,900
Claims priority, application France, Mar. 10, 1983, 83 04343
Int. Cl.[3] F16N *15/08*
U.S. Cl. 419—42 10 Claims

1. A process for sintering aluminum alloy powders under pressure in a capsule which comprises:

(a) coating the entire surface of the capsule containing said aluminum alloy powders with a vitreous material having a viscosity of 100–100,000 poises at the sintering temperature; and

(b) compressing said coated capsule in a unidirectional press and heating said capsule at a temperature of 450°–550° C., thereby sintering said alloy powders.

4,534,938

METHOD FOR MAKING ALLOY ADDITIONS TO BASE METALS HAVING HIGHER MELTING POINTS

Howard B. Bomberger, Canfield, and Francis H. Froes, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 15, 1984, Ser. No. 640,916
Int. Cl.[3] C22C *1/03, 9/00, 14/00, 30/00*
U.S. Cl. 420—590 15 Claims

1. A method for alloying at least one first metal having a density less than 7.2 g/cc and a melting point below 900° C. with a base metal having a density greater than 1.8 g/cc and a melting point greater 1000° C., said base metal comprising one or more metals selected from the group consisting of Ti, Zr, Nb, Ta, Cr and W, which comprises forming a composition of said base metal with a melting point lowering amount of a melting point-lowering element, whereby the resulting composition has a melting point below the boiling point of said first metal, melting said composition and mixing said first element therewith, and solidifying the resulting alloy.

4,534,939

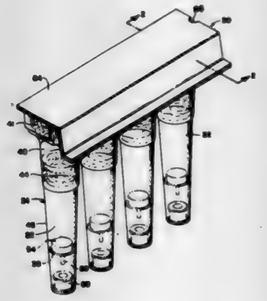
GAS FLOW CARTRIDGE WITH IMPROVED COAGULATION DETECTION AND EXPANDED ANALYTICAL TEST CAPABILITY

Leland B. Smith, Englewood, and Jacqueline J. Jackson, Denver, both of Colo., assignors to Hemotec, Inc., Englewood, Colo.

Filed Oct. 15, 1982, Ser. No. 434,558
Int. Cl.[3] G01N *33/48*
U.S. Cl. 422—61 25 Claims

1. In a cartridge defining a reaction chamber in which to hold a pool of blood or a blood derivative during a coagulation analytical test, a reagent chamber to hold a liquid reagent, means separating the reaction chamber and the reagent chamber, and means for intercommunication of the reaction chamber and the reagent chamber, an improvement comprising:

means containing a pre-determined quantity of activator agent within the reaction chamber said means being designed to release the activator agent into the blood or the blood derivative when the reaction chamber is intercommunicated with the reagent chamber to intermix the reagent with the pool of blood or the blood derivative.

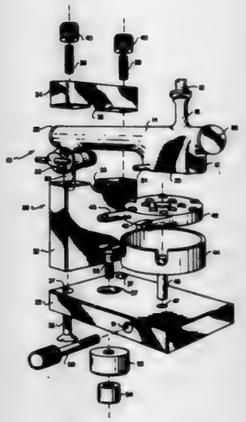


4,534,940

ATOMIC ABSORPTION SPECTROPHOTOMETRIC MEASUREMENT OF MERCURY

Denis R. Bourcier, Logan, Utah, assignor to Utah State University Foundation, Logan, Utah

Filed Mar. 26, 1982, Ser. No. 362,501
Int. Cl.[3] G01N *21/31*
U.S. Cl. 422—68 15 Claims



1. An apparatus for measurement of mercury by an atomic absorption spectrophotometer, comprising:

an absorption chamber adapted for use in the spectrophotometer;

a mixing chamber adjacent and connected to the absorption chamber into which a sample to be analyzed and a reductant are added, said mixing chamber being integral with and forming a portion of the absorption chamber such that the mixing chamber and the absorption chamber are mountable within the absorption compartment of the spectrophotometer;

an inlet port for introducing the sample and the reductant into the mixing chamber; and

an outlet port for removal of the sample and the reductant from the mixing chamber, said outlet port being positioned such that negative pressure is used to remove the

sample and the reductant after the measurement is completed;

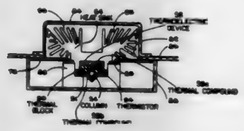
wherein samples may be added to and removed from said apparatus while said apparatus is mounted within the absorption compartment of the spectrophotometer such that multiple samples may be analyzed without the necessity of removing the apparatus from the absorption compartment of the spectrophotometer.

4,534,941

ANALYTICAL INSTRUMENT THERMOELECTRIC TEMPERATURE REGULATOR

Donald E. Stephens, Palo Alto, and Robert J. Ehret, Los Altos, both of Calif., assignors to Beckman Instruments, Inc., Fullerton, Calif.

Filed Dec. 4, 1981, Ser. No. 327,372
Int. Cl.³ G01N *31/08*
U.S. Cl. 422—70 **9 Claims**



1. A temperature regulator assembly for use in an analytical device comprising:
(a) an elongated column;
(b) thermally conductive support means for supporting said column;
(c) at least one heat sink;
(d) a plurality of thermoelectric devices connected to said support means and to said heat sink for conducting heat therebetween and thereby heating or cooling said column;
(e) a plurality of temperature sensing elements connected in temperature sensing relationship to respective parts of said column; and
(f) control means responsive to said sensing elements for controlling said plurality of thermoelectric devices to maintain a uniform temperature along said column, said control means acts in conjunction with individual control circuits connected to respective temperature sensing elements and respective thermoelectric devices.

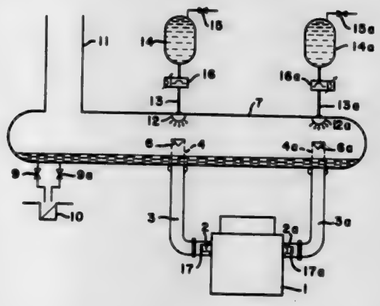
4,534,942

APPARATUS FOR REDUCING THE CHANCES OF IGNITION AND EXPLOSION FROM THE DECOMPOSITION OF HIGH-PRESSURE INDUSTRIAL PROCESS ETHYLENE GASES

Daniel Grasset, Par Lillebonne, and Bernard Martinot, Lillebonne, both of France, assignors to Societe Chimique des Charbonnages--CdF CHIMIE, Paris, France

Continuation of Ser. No. 143,631, Apr. 25, 1980, abandoned. This application Aug. 10, 1982, Ser. No. 406,997
Claims priority, application France, Apr. 25, 1979, 79 10442
Int. Cl.³ G05B *9/00*; C08F *2/34*; C08G *85/00*
U.S. Cl. 422—117 **24 Claims**

1. In combination, a high-pressure vessel operating at a pressure of at least 100 bars and an apparatus for evacuating the decomposition gases of ethylene contained in said high-pressure vessel, said apparatus being adjacent to said vessel and comprising:
(a) means defining a reservoir with a volume between 2 and 100 times that of the vessel;
(b) conduit means connecting and communicating said vessel to said reservoir means and having at least one safety means separating said apparatus from said vessel for releasing said decomposition gases from said vessel, said conduit means being located at least in part outside of both



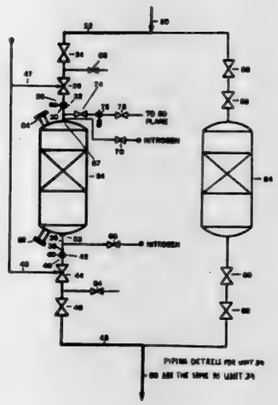
said vessel and said reservoir means whereby said vessel and said reservoir means are in a spaced-apart relationship, said conduit means constituting means for passing said decomposition gases released from said vessel to said reservoir means;
(c) at least one vertically oriented chimney connecting the reservoir means to the atmosphere; and
(d) a sealing means across the entire cross-section of said chimney, whereby an inert atmosphere is provided within said chimney.

4,534,943

APPARATUS FOR CATALYTIC REFORMING WITH CONTINUOUS SULFUR REMOVAL

William J. Novak, Guttenberg, and Ronald G. McClung, Bridgewater, both of N.J., assignors to Engelhard Corporation, Iselin, N.J.

Filed Feb. 21, 1984, Ser. No. 582,123
Int. Cl.³ B01J *8/02*
U.S. Cl. 422—188 **1 Claim**



1. An apparatus for removing residual sulfur from naphtha to be fed to a reformer comprising:
a primary absorber having a charge of manganous oxide

disposed therein; a bypass absorber having a charge of manganous oxide disposed therein; the volume of the bypass absorber being no more than about one-fourth the volume of the primary absorber; entrance duct means for passing naphtha through said primary absorber, said entrance duct means having at least one entrance seal double seat double gate wedge valve means disposed therein for interrupting flow through said primary absorber and at least one entrance seal collar means mounted on said entrance duct means adapted to receive a blind seal plate means mountable thereon locatable in said entrance duct means between said primary absorber and said entrance seal double seat double gate wedge valve means; exit duct means for withdrawing desulfurized naphtha from said primary absorber, said exit duct means having at least one exit seal double seat double gate wedge valve means disposed therein for interrupting flow through said primary absorber and at least one exit seal collar means mounted on said exit duct means adapted to receive a blind seal plate means mountable thereon locatable in said exit duct means between said primary absorber and exit seal double seat double gate wedge valve means; flare means operably associated with said primary absorber; means for passing nitrogen through said primary absorber to said flare means and purging said primary absorber when said entrance seal and exit seal double seat double gate wedge valve means are closed and said entrance seal and exit seal collar means each have blind seal plate means mounted thereon; means for supplying a nitrogen purge between the gates of each of said entrance seal and exit seal double seat double gate wedge valve means and urging each of said gates against its respective seat; means for withdrawing manganous oxide from said primary absorber into vessels having an inert atmosphere therein; and means for diverting flow of naphtha through said bypass absorber while said entrance seal and exit seal double seat double gate wedge valve means are in their closed position.

4,534,944

MERCURY VAPOR SUPPRESSANT

Richard H. Roydhouse, Vancouver, Canada, assignor to Environmental Protection Systems, Limited, Vancouver, Canada

Filed Oct. 31, 1983, Ser. No. 546,886
Claims priority, application Canada, Nov. 4, 1982, 414904
Int. Cl.³ B01D *53/34*; C09K *3/32*
U.S. Cl. 423—210 **15 Claims**

10. A process for absorbing mercury that comprises contacting the mercury with a composition that comprises a polyhydric alcohol as a liquid carrier and containing copper ions and thiosulphate ions.

4,534,945

STABILIZATION OF HIGH PURITY HYDROGEN PEROXIDE

Quentin G. Hopkins, and Jhonce N. Browning, both of Charleston, W. Va., assignors to FMC Corporation, Philadelphia, Pa.

Filed May 3, 1984, Ser. No. 606,784
Int. Cl.³ C01B *15/02*
U.S. Cl. 423—273 **8 Claims**

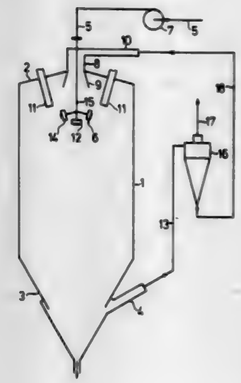
1. A 25% to 35% aqueous solution of hydrogen peroxide stabilized against decomposition in the presence of polyvalent cations so as to exhibit a maximum residue on evaporation of 20 mg/l comprising as a stabilizer 0.1 to 1.4 mg/kg of tin, 0.1 to 2.5 mg/kg of phosphate added as an organic phosphonic acid and 0.1 to 5.5 mg/kg of citric acid.

4,534,946

PROCESS FOR MAKING ALKALI METAL POLYPHOSPHATES

Ben Damman, Middelburg; Hans Scheffer, Vlissingen; Paul de Witte, Westkapelle, all of Netherlands; Johannes Kraiße, Hürth, Fed. Rep. of Germany; Hans Haas, Swisttal-Strassfeld, Fed. Rep. of Germany, and Werner Kowalski, Weilerswist-Metternich, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 6, 1983, Ser. No. 558,777
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1982, 3246727; Mar. 22, 1983, 3310272
Int. Cl.³ C01B *25/30*
U.S. Cl. 423—315 **9 Claims**



1. In a process for making alkali metal polyphosphates from alkali metal phosphate solutions and suspensions, respectively, by forcing the feed materials through at least one nozzle and spraying said feed materials inside a spray tower through a flame zone produced by a plurality of burners arranged in annular fashion, the improvement which comprises additionally introducing dusty material separated from the gas issuing from the spray tower into the spray tower from above and regularly distributing said dusty material across the spray region of the at least one nozzle and thereby effecting the formation of agglomerated alkali metal polyphosphates.

4,534,947

PROCESS FOR DIRECT SYNTHESIS OF SODIUM- AND POTASSIUM-CONTAINING ZEOLITE A

David E. W. Vaughan, Flemington, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed May 4, 1984, Ser. No. 606,939
Int. Cl.³ C01B *33/28*
U.S. Cl. 423—329 **6 Claims**

1. A process for directly preparing a Type 3A zeolite containing sodium and potassium ions comprising the steps of:
(a) preparing a reaction mixture comprising sodium silicate, potassium silicate, water, a source of alumina, and adding a seed source, said seed source comprising Type A zeolites, and the reaction mixture having a composition, expressed in mole ratios of oxides, within the ranges:

$(Na_2O+K_2O):Al_2O_3$—1.4 to 2.1
$SiO_2:Al_2O_3$—1.8 to 2.5
$H_2O:Al_2O_3$—40 to 100
$Na_2O:Al_2O_3$—0.3 to 1.0
$K_2O:Al_2O_3$—1.3 to 1.7

(b) maintaining the reaction mixture at a temperature of between about 60° and 120° C. for a time sufficient to form a substantially pure crystalline zeolite 3A product, and

(c) recovering a substantially pure Type 3A zeolite from the reaction mixture.

4,534,948

METHOD FOR PREPARING SILICON CARBIDE

Ronald H. Baney, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Division of Ser. No. 135,567, Mar. 31, 1980, Pat. No. 4,310,651, which is a continuation-in-part of Ser. No. 24,137, Mar. 26, 1979, abandoned, which is a continuation-in-part of Ser. No. 910,247, May 30, 1978, abandoned. This application Jun. 29, 1981, Ser. No. 278,292

Int. Cl.³ C01B *31/36*

U.S. Cl. 423—345 **1 Claim**

1. An improved method of preparing silicon carbide which consists of

(A) treating organohalogendisilanes with 0.1 to 10 percent by weight of a catalyst selected from the group consisting of quaternary ammonium halides having the formula $(R')_4NX$, quaternary phosphonium halides having the formula $(R')_4PX$ and hexamethylphosphoramide wherein R' is a member selected from the class consisting of alkyl and aryl radicals and X is a halogen, at a temperature of from 150° C. to 340° C. for a period of 1 to 48 hours while distilling by-produced volatile materials until there is produced a polysilane, which is a solid at 25° C., having the average formula

$$\{(CH_3)_2Si\}\{CH_3Si\}$$

in which polysilane there is from 0 to 60 mole percent $(CH_3)_2Si$=units and 40 to 100 mole percent CH_3Si=units, wherein the remaining bonds on the silicon are attached to either another silicon atom, a chlorine atom or a bromine atom such that the polysilane contains from 10–38 weight percent, based on the weight of the polysilane, of hydrolyzable chlorine or 21–58 weight percent based on the weight of the polysilane of hydrolyzable bromine,

(B) forming a shape from said polysilane,

(C) heating the shape in an inert atmosphere or in a vacuum to an elevated temperature in the range of 1150° C. to 1600° C. until said polysilane is converted to silicon carbide.

4,534,949

PROCESS FOR THE MANUFACTURE OF MOLDED CARBON BODIES

Herbert Glaser, Gladbeck, and Konrad Stolzenberg, Waltrop, both of Fed. Rep. of Germany, assignors to Rutgerswerke Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 388,006, Jun. 14, 1982, abandoned. This application Jun. 29, 1984, Ser. No. 626,091

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125609

Int. Cl.³ C01B *31/02*

U.S. Cl. 423—445 **11 Claims**

1. A process for the manufacture of an anisotropic molded carbon body having a diameter (d) from high-boiling aromatic hydrocarbon fractions derived from coal or mineral oil and having a high coking residue, without an additional binding agent and without using high pressures, comprising

filling a mold in the shape of the desired molded carbon body having a diameter of at least 0.1 m with at least one hydrocarbon fraction having a softening point in excess of 40° C. (Krämer Sarnow), said hydrocarbon fraction being in the liquid state or solid state,

and heating said fraction without pressure up to 550° C., in a first heating stage until said hydrocarbon is completely converted from the liquid into the solidified stage whereby the crystal structure is oriented by the shear forces of the rising gas bubbles and a needle-like structure is built up,

heating in a second heating stage up to approximately 800° C., at a linear heating rate of approximately

$$1.2\times(1/d^2)°K./day$$

which is a function of the diameter d in meters of the molded body,

and burning the molded body at a temperature of not less than 850° C.,

removing said body from the mold and graphitizing said molded body.

4,534,950

PROCESS FOR PRODUCING CARBON FIBERS

Seiichi Uemura, Tokyo; Takao Hirose, Kamakura, and Yoshio Sohda, Kawasaki, all of Japan, assignors to Nippon Oil Co., Ltd., Tokyo, Japan

Filed Aug. 4, 1983, Ser. No. 520,157

Claims priority, application Japan, Aug. 13, 1982, 57-139796

Int. Cl.³ D01F *9/12*

U.S. Cl. 423—447.4 **8 Claims**

1. A process for producing carbon fibers, which consist of melt spinning a carbonaceous pitch to obtain pitch fibers, contacting the thus obtained pitch fibers with hydrobromic acid, making the thus contacted fibers infusible in an oxidizing atmosphere and then carbonizing or graphitizing the thus treated pitch fibers to obtain the carbon fibers.

4,534,951

MANUFACTURE OF HIGH QUALITY GRAPHITE ELECTRODES USING CALCINED ANTHRACITE COAL AS RAW MATERIAL

James W. Kortovich, Strongsville, and Eugene Micinski, Parma, both of Ohio, assignors to Union Carbide Corporation, Danbury, Conn.

Continuation-in-part of Ser. No. 322,238, Nov. 17, 1981, abandoned, which is a continuation of Ser. No. 133,751, Mar. 25, 1980, abandoned. This application Nov. 17, 1983, Ser. No. 552,734

Int. Cl.³ C01B *31/04*

U.S. Cl. 423—448 **3 Claims**

1. In the manufacture of high quality graphite electrodes for use in electric arc furnaces wherein a mixture containing premium petroleum coke particles and a pitch binder is shaped to the form of the desired electrode, baked at carbonizing temperatures and then graphitized, the improvement comprising mixing together premium petroleum coke particles and particles of calcined anthracite coal as a filler material in a manner such as to form a substantially uniform mixture thereof, the amount of coal particles in said mixture constituuting from about 10 to 20% by weight of the total filler material, the coal particles having a particle size ranging from about 3 to about 10 mesh.

2. A shaped graphite electrode for use in an electric arc furnace composed of an all-graphitized, particulate, pitch-bonded petroleum coke matrix in which particles of calcined anthracite coal are substantially uniformly distributed, said electrode being formed from a mixture containing premium petroleum coke particles and calcined anthracite coal particles as the filler material and a carbonaceous pitch binder, the coal particles constituting from about 10 to 20% by weight of the total filler material and having a particle size ranging from about 3 to about 10 mesh and being further characterized by having the following properties measured with-grain: a coefficient of thermal expansion of less than about 0.6×10^{-6}/°C., a resistivity of less than about 8.0 micro ohm meters and a flexural strength of at least about 900 pounds per square inch.

4,534,952

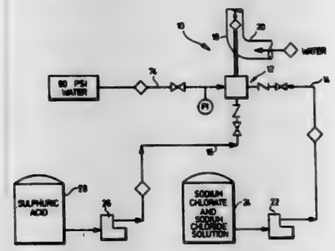
SMALL SCALE GENERATION OF CHLORINE DIOXIDE FOR WATER TREATMENT

W. Howard Rapson, Toronto, and Maurice C. J. Fredette, Mississauga, both of Canada, assignors to ERCO Industries Limited, Islington, Canada

Filed Feb. 24, 1984, Ser. No. 583,438

Int. Cl.³ C01B *11/02*

U.S. Cl. 423—478 **11 Claims**



1. A process for the production of an aqueous solution of chlorine dioxide, which comprises:

(a) feeding to a reaction zone filled with aqueous reaction medium chlorine dioxide-producing reactants, in the form of (i) an aqueous solution of sodium chlorate and sodium chloride having individual concentrations of from about 1 to about 2.5M in molar proportions of sodium chlorate to sodium chloride of about 0.9:1 to about 0.95:1 and (ii) sulphuric acid having a total acid normality of about 20 to about 36 normal, at flow rates to provide said reaction medium with concentrations of sodium chlorate and sodium chloride of about 0.5 to about 1.2 molar each and a total acid normality of about 8 to about 16 normal;

(b) subjecting said aqueous reaction medium in said reaction zone to a pressure in the range of about 60 to about 90 psig to maintain potentially gaseous products of reaction, including chlorine dioxide, substantially dissolved in said aqueous reaction medium,

(c) retaining said reaction medium in said reaction zone for at least about 12 seconds at a temperature of about 30° to about 50° C., and

(d) discharging the resulting aqueous solution of chlorine dioxide in spent reaction medium from said reaction zone to a recipient aqueous medium to be dissolved therein without the chlorine dioxide assuming a gaseous form.

4,534,953

PROCESS FOR PREPARING SOLID TITANIUM TRICHLORIDE USEFUL FOR THE POLYMERIZATION OF AN α-OLEFIN

Nobuaki Goko, and Yumito Uehara, both of Kurashiki, Japan, assignors to Mitsubishi Chemical Industries, Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 508,906

Claims priority, application Japan, Jul. 13, 1982, 57-121745; Jul. 15, 1982, 57-123698

Int. Cl.³ C01G *23/02*

U.S. Cl. 423—492 **12 Claims**

1. A process for preparing solid titanium trichloride which is useful for the polymerization of an α-olefin, which comprises:

(a) precipitating violet-colored, fine, solid particles of titanium trichloride from a liquid medium containing titanium trichloride liquefied in the presence of an ether at a temperature of no more than 150° C. under the condition that after at least 80%, based on the total amount of titanium trichloride in the system, of the violet-colored, fine, solid particles of titanium trichloride have precipitated, titanium tetrachloride is added to said liquid medium in an amount such that the molar ratio of titanium tetrachloride to the total amount of titanium trichloride in the system ranges from 0.2 to 10; and

(b) aging the precipitated particles at a temperature of from 60° to 120° C.

5. The process of claim 1, wherein said aging step (b) is conducted at a temperature of from 80° to 100° C.

4,534,954

SODIUM HYDROSULFITE SLURRIES

Edwin D. Little, and Karsten R. Minzghor, both of Portsmouth, Va., assignors to Virginia Chemicals Inc., Portsmouth, Va.

Continuation of Ser. No. 408,786, Aug. 17, 1982, abandoned. This application Mar. 8, 1984, Ser. No. 585,640

Int. Cl.³ C01B *17/66*; D06L *3/10*

U.S. Cl. 423—515 **2 Claims**

2. A method for making a storable and pumpable aqueous dithionite slurry from crystalline dithionite which comprises, on a weight basis:

(A) preparing a dilute hydrosol containing about 0.13–0.25% by weight of Xanthan gum;

(B) sequentially adding aqueous solutions of a chelate and sodium hydroxide or potassium hydroxide to the dilute hydrosol, while stirring said dilute hydrosol to form an alkaline hydrosol;

(C) cooling said alkaline hydrosol to 32° F. (0°) in an ice bath to form a cold hydrosol;

(D) adding sodium dithionite to said cold hydrosol at such a rate as to maintain its temperature below 7° C. and in sufficient amount to provide said dithionite slurry containing at least about 25% of pure sodium dithionite and having a pH of at least 10; and

(E) recovering a storable and pumpable tripolyphosphate-free aqueous sodium dithionite slurry.

4,534,955

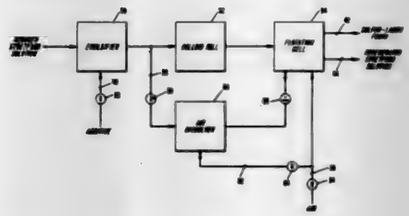
SULFUR EXTRACTION PROCESS

John M. Rosenbaum, Albany, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Jul. 1, 1983, Ser. No. 510,379

Int. Cl.³ C01B *17/05*

U.S. Cl. 423—573 R **5 Claims**



1. A method of extracting sulfur from gas containing hydrogen sulfide comprising the steps of:

contacting the gas with a liquid Stretford solution which reacts with the hydrogen sulfide to produce elemental sulfur;

separating the liquid solution containing suspended elemental sulfur from the gas;

adding a non-polar hydrocarbon to the Stretford liquid;

emulsifying the non-polar hydrocarbon and the Stretford liquid solution;

enhancing particle-bubble attachment properties of the liquid solution by agglomerating the suspended elemental sulfur by flowing the emulsified liquid Stretford solution through a colloid mill;

passing air through the liquid solution to regenerate that solution and float suspended sulfur to the top of that solution; and

removing the floated sulfur from the solution.

4,534,956

MOLTEN SALT SYNTHESIS OF BARIUM AND/OR STRONTIUM TITANATE POWDER

Ronald H. Arendt, Schenectady, and Wayne D. Pasco, Scotia, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 512,082, Jul. 8, 1983, abandoned, which is a continuation of Ser. No. 394,356, Jul. 1, 1982, abandoned. This application Mar. 15, 1984, Ser. No. 589,911

The portion of the term of this patent subsequent to Nov. 11, 1997, has been disclaimed.

Int. Cl.³ C01G *23/00*

U.S. Cl. 423—598 **4 Claims**

1. A process for producing alkaline earth titanate powder having an average crystal size ranging from about 0.3 micron to about 2 microns which consists essentially of providing particulate TiO_2 in stoichiometric amount, providing particulate alkaline earth carbonate in an amount ranging from about 2% by weight to about 10% by weight in excess of stoichiometric amount; said alkaline earth carbonate being selected from the group consisting of $BaCO_3$, $SrCO_3$ and mixtures thereof, providing an alkali carbonate salt selected from the group consisting of sodium carbonate, potassium carbonate, lithium carbonate and mixtures thereof, forming a mixture of said TiO_2, said alkaline earth carbonate and said carbonate salt, said alkali carbonate salt being used in an amount from about 20% by weight to about 70% by weight of the total amount of said TiO_2, said alkaline earth carbonate and said carbonate salt, heating said mixture to a reaction temperature at least sufficient to melt said carbonate salt and ranging from about 873 K. to about 1473 K., each said alkaline earth carbonate being decomposible at said reaction temperature to form the oxide and by-product gas, said carbonate salt in molten form being a solvent for said TiO_2 and alkaline earth carbonate, maintaining said reaction temperature, continually dissolving and reacting said added TiO_2 and alkaline earth carbonate in said molten salt producing by-product gas and precipitating said alkaline earth titanate at said reaction temperature, at said reaction temperature said TiO_2 and said alkaline earth carbonate being slightly soluble in said molten salt to maintain a reactant-saturated solution, said average crystal size of said alkaline earth titanate powder increasing with increasing reaction temperature and/or with increasing amount of said molten salt, and recovering said precipitated alkaline earth titanate.

4,534,957

PROCESS FOR CONVERTING HYDRAGILLITE INTO BOEHMITE

Alain Lectard, 22 avenue Saint Jerome, Residence Les Pins, 13100 Aix-en-Provence, and Robert Magrone, Quartier Mistral, Villa I, 13120 Gardanne, both of France

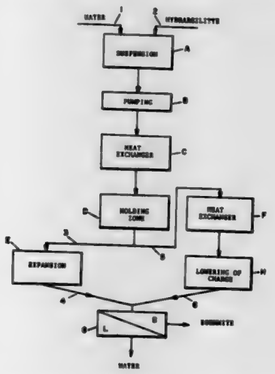
Continuation of Ser. No. 219,302, filed as PCT FR 80/00030 Feb. 6, 1980, published as WO 80/01799, Sep. 4, 1980, § 102(e) date Sep. 9, 1980, abandoned. This application May 9, 1983, Ser. No. 492,564

Claims priority, application France, Feb. 28, 1979, 79 05688

Int. Cl.³ C01F *7/02*

U.S. Cl. 423—625 **10 Claims**

1. A continuous process for the production of boehmite of controlled grain size by dehydration of hydrargillite, wherein the grain size of the boehmite produced is less than or equal to the grain size of the hydrargillite and the concentration of alkaline impurities in the boehmite produced is less than the concentration of alkaline impurities in the hydrargillite, comprising mixing hydrargillite with water to form a suspension containing 150 to 700 g/l of dry material expressed as Al_2O_3, passing the suspension under pressure through a reaction zone, heating the suspension in a heating zone of the reaction zone to a reaction temperature within the range of 200°–270° C. at a speed of temperature rise of 1° C./minute, and thereafter maintaining the suspension in a holding zone of the reaction zone for a period of from 1 minute to 60 minutes at a temperature in the said range for reaction to convert hydrargillite to boehmite, reducing the pressure of the suspension issuing from the reaction zone to atmospheric pressure with cooling whereby



the resulting suspension comprises a solid phase of boehmite within a liquid phase, and then separating the boehmite as a solid phase from the liquid phase.

4,534,958

AEROSOL GEL

Dennis V. Adams, Grosse Pointe Farms; Norbert J. Cremers, Grosse Pointe, and Raymond L. Henry, Grosse Pointe Woods, all of Mich., assignors to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Jul. 13, 1983, Ser. No. 513,439

Int. Cl.³ A61K *9/00*

U.S. Cl. 424—45 **6 Claims**

1. A pressurized composition in an aerosol container capable of forming a spray upon release of pressure therefrom which composition is a liquid inside the container and forms a gel on contact with living tissue comprising by weight about 35 to 80 percent water, 3 to 50 percent propellant, 1 to 10 percent volatile solvent and 10 to 25 percent of a polyoxyethylene-polyoxypropylene copolymer of the formula:

$$HO(C_3H_4O)_m(C_3H_6O)_n(C_2H_4O)_mH$$

wherein n is an integer; the value of which is such that the molecular weight of the oxypropylene groups is from about 2250 to 4000; and the value of m is such that the oxyethylene groups constitute about 50 to 90 percent by weight of the compound.

4,534,959

AEROSOL GEL

Irving R. Schmolka, Grosse Ile, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Aug. 22, 1983, Ser. No. 524,985

Int. Cl.³ A61K *9/00*

U.S. Cl. 424—45 **10 Claims**

1. A pressurized composition in an aerosol container capable of forming a spray upon release of pressure therefrom which composition is a liquid inside the container and forms a gel on contact with living tissue comprising by weight about 45 to 90 percent water, 3 to 50 percent propellant and 7 to 20 percent of a polyoxyethylene-polyoxypropylene copolymer of the formula:

$$Y[(C_3H_6O)_n(C_2H_4O)_mH]_x$$

wherein Y is the residue of a water-soluble organic compound containing therein x active hydrogen atoms; n is an integer; x is an integer greater than 1; the value of n and x are such that the

molecular weight of the oxypropylene groups is from about 3250 to 7500; and the value of m is such that the oxyethylene groups constitute about 45 to 90 percent by weight of the total compound and wherein the water/copolymer weight ratio is at least about 4.5:1.

4,534,960

MENTHOLATED ORAL COMPOSITION

Leonard Chavkin, Westfield, N.J., assignor to Warren Glen Products, Inc., Bloomsbury, N.J.

Filed Apr. 12, 1984, Ser. No. 599,641

Int. Cl.³ A61K *7/16, 7/26*

U.S. Cl. 424—49 **3 Claims**

1. In a method of gargling with mouth wash or mouth sprays containing menthol, the improvement which comprises raising the concentration of menthol which is orally acceptable without discomfort which consists of the step of contacting the mucous membranes of the oral cavity with

from about 0.25 to about 1% by weight of menthol and from about 10 to 50% by weight of hydrogenated glucose syrup.

4,534,961

WAX BASE MAKEUP COMPOSITION

Lawrence J. Liff, 6502 N. Central #A-101, Phoenix, Ariz. 85012

Continuation of Ser. No. 909,575, May 25, 1978, abandoned. This application Oct. 19, 1981, Ser. No. 312,934

Int. Cl.³ A61K *7/021, 7/025, 7/031*

U.S. Cl. 424—63 **7 Claims**

1. A solid base formulation for multiple makeup uses including in combination a mixture consisting of on the order of 85 to 92% of amber, microcrystalline wax intimately admixed with on the order of 8 to 15% of petrolatum, said petrolatum having a melting point of 127°–137° F.

4,534,962

SODIUM BICARBONATE SUSPENSION AS DEODORANT PRODUCT

Frank W. Marschner, Whitehouse Station, N.J., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 221,093, Dec. 29, 1980, abandoned. This application Sep. 27, 1982, Ser. No. 423,952

Int. Cl.³ A61K *7/32, 47/00*

U.S. Cl. 424—65 **10 Claims**

1. A fast-drying, stable viscous pituitous deodorant suspension comprising about 1–20% alkali metal bicarbonate particles uniformly suspended in a vehicle with substantially no bicarbonate in solution, comprising a high alcohol content of lower aliphatic monohydric alcohol and a low water content and hydroxyethyl cellulose suspending agent in an amount above its alcohol solubility and within the range of about 0.1–1%, said monohydric alcohol content exceeding the upper solubility level for the water soluble hydroxyethyl cellulose in said alcohol and within the range of about 55–75%, and the water content being sufficient to prevent precipitation of said suspending agent and at least 5%, if at least 10% polyhydric alcohol is also present in the suspension, and up to about 25% by weight.

4,534,963

HIGH PEARLESCENT PRESSED POWDER EYE SHADOW COMPOSITION

Philip J. Gordon, Southbury, Conn., assignor to Chesebrough-Pond's Inc., Greenwich, Conn.

Filed Jul. 20, 1983, Ser. No. 515,943

Int. Cl.³ A61K *7/035, 7/021, 47/00*

U.S. Cl. 424—69 **25 Claims**

1. A pressed powder cosmetic composition containing a binder and from about 40 to about 80% by weight of nacreous material, said binder comprising a dry binder ingredient consisting of a cosmetically suitable micronized polyethylene wax and a mixture of liquid/solid binder ingredients comprising petrolatum; a cosmetically suitable tetraester having the formula

$$C(CH_2O)_4[C(=O)-R]_4$$

wherein R may be a straight, branched, saturated or unsaturated alkyl having from 5 to 21 carbon atoms; and a cosmetically suitable polyolefin formed by polymerizing an alphaolefin having the formula $RCH{=}CH_2$, wherein R is a hydrocarbon group having from 3 to 18 carbon atoms.

4,534,964

HAIR CONDITIONING SHAMPOO

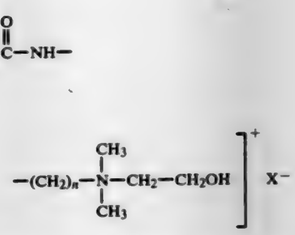
Morris S. Herstein, Nanuet, N.Y.; Walter P. Smith, Sandy Hook, and Geoffrey R. Hawkins, Branford, both of Conn., assignors to Richardson-Vicks Inc., Wilton, Conn.

Continuation-in-part of Ser. No. 433,565, Oct. 4, 1982, abandoned. This application Jan. 12, 1984, Ser. No. 569,528

Int. Cl.³ A61K *7/06, 31/16;* C11D *1/94*

U.S. Cl. 424—70 **6 Claims**

1. An aqueous hair conditioning shampoo composition containing, percentages given being by weight based upon the total weight of the composition, from about 0.5 percent to about 10 percent of cocamidopropyl hydroxysultaine and from about 0.1 to about 6 percent of a quaternary halide of an N,N,N-trialkylaminoalkylene gluconamide having the formula:



wherein X is chloro or bromo and n is an integer of from 2 to 4.

4,534,965

CONTROLLING PLANT FUNGI USING STREPTOMYCETES GROWN ON CHITIN

Lewis R. Brown, Starkville, and Susan Brown-Skrobot, Mississippi State, both of Miss., assignors to Chevron Research Company, San Francisco, Calif.

Filed Sep. 26, 1983, Ser. No. 536,025

Int. Cl.³ A01N *63/00;* C12P *1/00;* C12N *15/00, 1/20;* C12R *1/465;* A01C *1/06;* A01B *79/00*

U.S. Cl. 424—93 **8 Claims**

1. A biologically pure culture of species No. 1 which has been deposited under ATCC 39434.

4,534,966

COMPOSITION FOR TREATING INFECTIOUS DISEASES, GOUT OR ARTERIOSCLEROSIS CONTAINING HUMAN PEPSIN AND/OR HUMAN LEUKOCYTE PEPSIN-LIKE ENZYME AND METHOD FOR USING SAME

Haruo Ohnishi, Funabashi; Hiroshi Kosuzume, Yokohama; Yasuo Suzuki, Kawaguchi, and Ei Mochida, Tokyo, all of Japan, assignors to Mochida Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Nov. 17, 1983, Ser. No. 552,613
Claims priority, application Japan, Nov. 20, 1982, 57-203990
Int. Cl.³ A61K *37/54*
U.S. Cl. 424—94 **15 Claims**

1. A pharmaceutical composition having an effect to control phagocytic function, which comprises a phagocytic function controlling effective amount of a human leukocyte pepsin-like enzyme having a molecular weight of 35,000–41,000, an isoelectric point of 2.5–3.5, a maximum absorption of 278 nm, giving a positive ninhydrin reaction and being readily soluble in water and insoluble in ether and chloroform, and a pharmaceutically acceptable carrier.

7. A method for treating infectious diseases, gout or arteriosclerosis, which comprises administering a therapeutically effective amount of human pepsin and/or a human leukocyte pepsin-like enzyme to a patient suffering from an infectious disease, gout or arteriosclerosis.

4,534,967

CELL PROLIFERATION INHIBITOR AND METHOD OF PREPARATION

Bernard Jacobson, Lexington, and Laurie Raymond, Cambridge, both of Mass., assignors to Boston Biomedical Research Institute, Boston, Mass.

Filed Aug. 3, 1982, Ser. No. 404,656
Int. Cl.³ A61K *35/44*
U.S. Cl. 424—95 **14 Claims**

1. A non-extractive method for preparing an inhibitor of cell growth, comprising directly liquefying vitreous gel in the absence of extraction solvent by application of shear forces to the gel so as to directly convert the gel into a liquid, removing any insoluble and suspended material from the liquid, chromatographically separating the liquid into fractions of varying molecular weight and isolating a product having inhibitory activity.

12. The inhibitor of cell growth made by the method of claim 1.

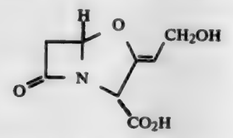
4,534,968

PHARMACEUTICAL COMPOSITIONS

John P. Clayton, Horsham, England, assignor to Beecham Group Limited, England

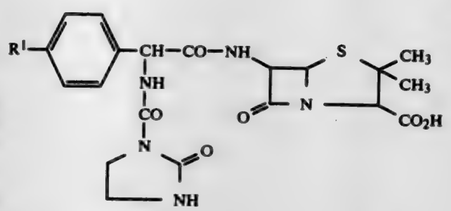
Continuation of Ser. No. 887,843, Mar. 17, 1978, abandoned, which is a continuation of Ser. No. 804,998, Jun. 9, 1977, abandoned. This application Jun. 26, 1980, Ser. No. 163,230
Claims priority, application United Kingdom, Jun. 26, 1976, 26689/76
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—114 **33 Claims**

1. An antibacterial mixture comprising a synergistically effective amount of the compound of the formula (I):



(I)

or a pharmaceutically acceptable salt thereof and an antibacterially effective amount of a compound of the formula (III):



(III)

or a pharmaceutically acceptable salt thereof wherein R^1 is hydrogen or hydroxyl, in a weight ratio of from 1:1 to 1:15.

4,534,969

METHOD FOR IMPROVING LACTATION IN RUMINANT ANIMALS

Dorothy J. Phillips, Natick, Mass., assignor to The Dow Chemical Company, Midland, Mich.

Filed Sep. 19, 1983, Ser. No. 533,824
Int. Cl.³ A61K *35/00*
U.S. Cl. 424—118 **6 Claims**

1. A method for improving lactation in lactating ruminant animals which comprises administering to said animals an effective amount of Teichomycin A_2 or its physiologically acceptable salts, esters and amides.

4,534,970

ANTIBACTERIAL ANTIBIOTICS LL-CO8078α_1, α_2, α_3 AND β

David P. Labeda, Monsey; Joseph J. Goodman, Spring Valley; Donald B. Borders, Suffern, all of N.Y.; Raymond T. Testa, Cedar Grove, N.J., and John H. E. J. Martin, deceased, late of New City, N.Y. (by Mary B. Martin, executrix), assignors to American Cyanamid Company, Stamford, Conn.

Filed Jun. 23, 1983, Ser. No. 507,184
Int. Cl.³ A61K *35/74*; C12P *1/06*
U.S. Cl. 424—122 **8 Claims**

1. Antibacterial antibiotic LL-CO8078α_1, a composition which is effective in inhibiting the growth of bacteria and in its substantially pure form has:

(a) the following elemental analysis (percent): C, 65.95; H, 8.06; N, 3.21; O, 23.16;

(b)

optical rotations $[\alpha]_D^{26}$ =	−44° ± 2 (0.496% in chloroform);
=	−89° ± 1 (0.790% in methanol);

(c) characteristic ultraviolet absorption spectra as shown in FIG. I of the attached drawings;

(d) a characterstic infrared absorption spectrum as shown in FIG. II of the attached drawings;

(e) a characteristic ^{13}C-nuclear magnetic resonance spectrum as shown in FIG. III of the attached drawings;

(f) a characteristic proton nuclear magnetic resonance spectrum as shown in FIG. IV of the attached drawings; and

(g) a molecular weight by mass spectroscopy of 778.

4,534,971

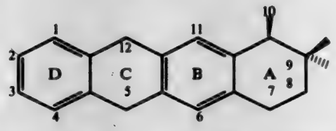
COMPLEXATION OF ANTHRACYCLINE AND ANTHRAQUINONE ANTIBIOTICS BY THE APO RIBOFLAVIN BINDING PROTEIN FROM EGGS

Jed F. Fisher, Minneapolis, Minn., assignor to Regents of the University of Minnesota, Minneapolis, Minn.

Filed Oct. 20, 1982, Ser. No. 435,616
Int. Cl.³ C12N *11/02*; A01N *31/00*; C07C *103/52*; C07G *7/00*; A23J *1/00*; C12P *19/56*
U.S. Cl. 514—21 **15 Claims**

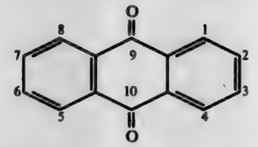
1. A method for the preparation of stable complexes of antitumor antibiotics of the anthracycline and anthraquinone classes with purified apo riboflavin binding protein from eggs which comprises:

(A) preparing a water miscible solution of an antibiotic of the class consisting of (1) anthracyclines having the formula:



wherein positions 4, 5, 6, 7, 9, 10, 11 or 12 may be substituted, positions 5 and 12 have =O or OH, positions 4, 6 and 11 may have H, OH or OCH_3 when positions 5 and 12 have =O, positions 6 and 11 have =O when positions 5 and 12 have OH, position 7 may have 7S or 7R chirality due to OCH_3 or any mono-, di- or trisaccharide substituent, position 9 may have 9S or 9R chirality due to OH and either CH_3, CH_2CH_3, $COCH_2OH$ or $COCH_2OR$ where R is an ether or ester functional group, and position 10 may have 10S or 10R chirality due to CO_2CH_3, $CO_2CH_2CH_3$ or CO_2H,

and (2) anthraquinones having the formula:



wherein positions 1, 4, 5 and 8 may be substituted, positions 1 and 4 having H or OH and positions 5 and 8 may have $N(CH_2)_2NH_2^+(CH_2)_2OH$, or any bis[(hydroxyalkyl-)amino]alkyl side chain,

(B) preparing an aqueous solution of purified apo riboflavin binding protein from eggs, and

(C) admixing the solutions in substantially equimolar proportions of antibiotic to protein to form a complex.

4,534,972

PROTEIN COMPOSITIONS SUBSTANTIALLY FREE FROM INFECTIOUS AGENTS

Kenneth J. Lembach, Danville, Calif., assignor to Miles Laboratories, Inc., Elkhart, Ind.

Filed Mar. 29, 1983, Ser. No. 480,056
Int. Cl.³ A61K *39/12, 39/02, 37/00, 39/00, 39/42, 39/40*
U.S. Cl. 424—86 **18 Claims**

1. A method for rending a composition, which contains a therapeutically or immunologically active protein, selected from the group consisting of blood plasma proteins, virus vacines, bacterial vaccines, and non-infectious antigens dissolved in an aqueous medium, substantially free from infectious agents selected from viable viruses and bacteria without substantial loss of therapeutic or immunologic activity, which comprises

(a) mixing an aqueous solution of the protein composition with an effective amount of a complex formed from mixing an angularly-fused, polynuclear heterocyclic arene have two nitrogen atoms in a "cis-ortho" relationship and a source of transition metal ions capable of complexing with said arene and a thiol in effective amounts to inactivate substantially all of the infectious agents contained in said composition and which does not result in substantial loss of therapeutic or immunological activity and

(b) holding the mixture for a time and at a temperature sufficient to render said infectious agents substantially non-infective in the protein composition without substantial loss of therapeutic or immunologic activity therein.

4,534,973

PHARMACEUTICAL COMPOSITIONS

Miwon S. Kim, Princeton Junction, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Jul. 31, 1984, Ser. No. 635,962
Int. Cl.³ A61K *31/27, 31/61*
U.S. Cl. 514—162 **4 Claims**

1. A therapeutic composition, in unit dosage form, for the systematic treatment and relief of pain, muscle spasm and limited mobility associated with acute painful muscoloskeletal conditions, said composition comprising a mixture of from about 1 to about 2 parts by weight aspirin per part by weight of N-propyl-2-methyl-2-propyl-1,3-propanediol dicarbamate.

4,534,974

PHARMACEUTICAL COMPOSITIONS WITH CODEINE

Miwon S. Kim, Princeton Junction, N.J., assignor to Carter-Wallace, Inc., New York, N.Y.

Filed Jul. 31, 1984, Ser. No. 636,192
Int. Cl.³ A61K *31/27, 31/61, 31/485*
U.S. Cl. 514—161 **4 Claims**

1. A therapeutic composition, in unit dosage form, for the systematic treatment and relief of pain, muscle spasm and limited mobility associated with acute painful muscoloskeletal conditions, said composition comprising a mixture of from about 15 to about 20 parts by weight aspirin, from about 10 to about 15 parts by weight of N-propyl-2-methyl-2-propyl-1,3-propanediol dicarbamate, and from about 1 to about 2 parts by weight codeine phosphate.

4,534,975

PHARMACEUTICAL COMPOSITION CONTAINING 24,25-DIHYDROXYCHOLECALCIFEROL IN METHODS OF TREATMENT

Hideyuki Yamato, Tokyo; Yuji Maeda, Nagareyama; Fumisato Yoshino; Kyoya Takahata, both of Tokyo; Masanori Ikuzawa, Tachikawa; Tadaaki Kato, Tokyo, and Chikao Yoshikumi, Kunitachi, all of Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 620,923, Jun. 15, 1984, Pat. No. 4,501,738. This application Oct. 1, 1984, Ser. No. 656,760
Claims priority, application Japan, Jun. 30, 1983, 58-119423; Jun. 30, 1983, 58-119424; Jun. 30, 1983, 58-119425; Jun. 30, 1983, 58-119426; Jun. 30, 1983, 58-119428
Int. Cl.³ A61V *31/59*
U.S. Cl. 514—730 **2 Claims**

1. A method for the treatment of hypertension, hypotension, hyperlipemia, or diseases due to the functional accentuation of thrombocytes, which comprises administering to a patient suffering from hypertension, hypotension, hyperlipemia, or diseases due to the functional accentuation of thrombocytes an effective amount of a compound of 24,25-dihydroxycholecalciferol.

4,534,976

METHOD AND MEANS FOR REPELLING ANIMALS

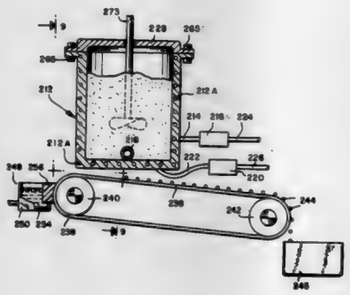
Helge Hansen; Borje Nystrom, both of Stavanger, and Eyvin Torneng, Hinna, all of Norway, assignors to International Flavors & Fragrances Inc., New York, N.Y.

Continuation-in-part of Ser. No. 474,588, Feb. 23, 1983, Pat. No. 4,451,460. This application Aug. 1, 1983, Ser. No. 519,182

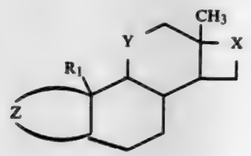
The portion of the term of this patent subsequent to May 29, 2001, has been disclaimed.

Int. Cl.³ A61K *31/56*

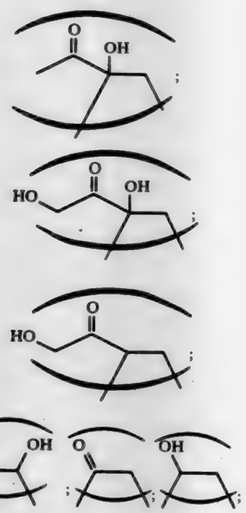
U.S. Cl. 514—169 **15 Claims**



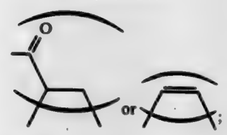
1. A method for repelling non-predatory animals by placing smelling repellent substances in the area from which the animals are to be kept off characterized by the use as a repellent substance of one or more steroids defined according to the structure:



wherein X completes a substituted cyclopentyl moiety and is one of the moieties:



-continued



wherein Y represents methylene, carbinol or keto; and wherein Z completes a substituted cyclohexyl moiety which is, in the alternative:

hydroxycyclohexyl;
ketocyclohexyl;
ketocyclohexenyl;
hydroxyphenyl;
cyclohexenyl; or
bicyclohexyl

and wherein the dashed line represents a carbon-carbon single bond or a carbon-carbon double bond, which steroids are synthetic or have been extracted from naturally occurring materials and which are of the type occurring on human skin or hair or in human sweat or urine and/or of one or more of the derivatives thereof obtainable by subjecting the steroids to air, moisture or microorganisms in such a manner as to provide in the air a concentration perceptible to the sense of smell of the non-predatory animals.

4,534,977

COMPOSITION OF MATTER COMPRISING A LOW BULK DENSITY LYOPHILIZED PREPARATION OF SODIUM PIPERACILLIN

Bruce E. Haeger, Highland Mills, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Division of Ser. No. 379,378, May 17, 1982, Pat. No. 4,477,452, which is a continuation-in-part of Ser. No. 247,586, Mar. 26, 1981, abandoned. This application Jul. 11, 1984, Ser. No. 629,859

The portion of the term of this patent subsequent to Oct. 16, 2001, has been disclaimed.

Int. Cl.³ A61K *31/495*; A23C *1/06*

U.S. Cl. 514—196 **2 Claims**

1. In a lyophilized pharmaceutical parenteral dosage unit of 6-[2-(4-ethyl-2,3-dioxo-1-piperazinecarboxamido)-2-phenylacetamido]-3,3-dimethyl-7-oxo-4-thia-1-azabicyclo[3.2.0]heptane-2-carboxylic acid sodium salt, the improvement which comprises a low bulk density cake of sodium piperacillin having a volume of from about 7 cc/gm to about 9 cc/gm, and having the capacity to be reconstituted to a concentration of about 400 mg/ml in less than 1 minute 30 seconds.

4,534,978

PERFLUOROCYCLOAMINES

Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuka; Taizo Ono, Osaka; Yoshio Arakawa, Suita, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

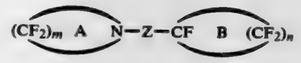
Division of Ser. No. 454,107, Dec. 28, 1982, abandoned. This application Jul. 24, 1984, Ser. No. 633,085

Int. Cl.³ C07D *265/32*

U.S. Cl. 514—429 **3 Claims**

1. An emulsion containing a perfluorocycloamine compound capable of carrying oxygen, said emulsion comprising:

5–50% (w/v) of a perfluorocycloamine compound of the formula:



wherein
either or both of ring A and ring B may be substituted with lower perfluoroalkyl groups,
m and n are independently 4, 5 or 6, and
Z is a perfluoroalkylene group or a chemical bond, with the proviso that n is 4 or 6 when n is 4 and Z is a chemical bond,
as an oxygen carrying component;
1–5% (w/v) of an emulsifying agent, and
a physiologically acceptable aqueous solution as the balance, the emulsion having a particle diameter of 0.3μ or less.

4,534,979

POLYENE COMPOUNDS USEFUL IN THE TREATMENT OF PSORIASIS AND ALLERGIC RESPONSES

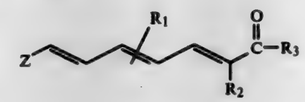
Bernard Loev, Scarsdale; Wan-Kit Chan, Yorktown Heights, both of N.Y., and Howard Jones, Holmdel, N.J., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 511,822, Jul. 8, 1983, which is a continuation-in-part of Ser. No. 392,837, Jun. 28, 1982, Pat. No. 4,472,430. This application Nov. 2, 1984, Ser. No. 667,703

Int. Cl.³ A61K *31/18, 31/19, 31/23*

U.S. Cl. 514—529 **2 Claims**

1. A therapeutic composition for the treatment of inflammatory conditions and allergic responses in a human host, in combination with at least one pharmaceutically-acceptable extender, a therapeutically effective amount of a compound of the general formula



or a pharmaceutically acceptable salt thereof in which
R_1 is hydrogen or an alkyl group of from 1 to 5 carbon atoms;
R_2 is hydrogen or an alkyl group of from 1 to 5 carbon atoms;
R_3 is hydroxyl, alkoxy of from 1 to 5 carbon atoms, NH_2,NHR_2 or HR_2R_2; and
Z is a cycloalkyl, cycloalkenyl or cycloalkdienyl group substituted with from 0 to 5 alkyl groups, a keto group or a hydroxyl group or a phenyl group substituted with from 0 to 4 hydroxy, alkoxy, alkyl or trifluoromethyl groups or halogen atoms or combinations thereof, wherein said pharmaceutically-acceptable extender is in the form of tablets, capsules or solutions for oral administration; solutions for parenteral administration; dusting powders, aerosol sprays, ointments, creams and lotions for topical administration.

4,534,980

ANTIINFLAMMATORY AND ANTIPYRETIC CREAM

Yasuo Itoh, Katsuyamashi; Hideo Kato, Fukuichi; Kugako Matsumura, Katsuyamashi; Tomoyasu Nishikawa, Oonoshi; Akira Hisano, Katsuyamashi; Takehisa Yamada, Katsuyamashi, and Eiichi Koshinaka, Katsuyamashi, all of Japan, assignors to Hokuriku Pharmaceutical Co., Ltd., Katsuyamashi, Japan

Filed Jul. 23, 1984, Ser. No. 633,139

Claims priority, application Japan, Apr. 3, 1984, 59-066228

Int. Cl.³ A61K *31/19*

U.S. Cl. 514—570 **2 Claims**

1. An antiinflammatory and antipyretic cream comprising ketoprofen and crotamiton as an agent for preventing crystalline precipitation,
crotamiton being in a ratio of 0.4 to 1.0 part by weight per 1.0 part by weight of ketoprofen; and;
a pH range of said cream being adjusted to 6.5 to 7.5.

4,534,981

COSMETIC COMPOSITIONS CONTAINING THE FAT OF *SHOREA ROBUSTA*

Arlette Zabotto, Paris, and Jacqueline Griat, Ablon, both of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Nov. 8, 1982, Ser. No. 439,984

Claims priority, application Luxembourg, Nov. 17, 1981, 83765

Int. Cl.³ A61K *47/00, 7/025, 7/06*

U.S. Cl. 514—783 **6 Claims**

6. A cosmetic composition in the form of an emulsion for application to the skin comprising 4 to 60 weight percent oil phase, 30 to 90 weight percent water phase and 1 to 20 weight percent emulsifying agent, said oil phase comprising 2 to 20 weight percent of the fat of *Shorea robusta* based on the total weight of said composition, said fat of *Shorea robusta* having the following characteristics:
melting point (°C.)-30 to 38.5,
density (30° C.)-0.860 to 0.900
index of refraction (40° C.)-1.4560 to 1.4580,
index of saponification-180 to 220,
iodine index-36 to 42,
acid index-from 0.1 to 18.9 and
nonsaponifiables (%)-0.73 to 2.2 and at least one substance or material providing for the particular cosmetic desired.

4,534,982

PROCESS FOR PRODUCING CREAM CHEESE TYPE FOOD

Hideaki Yoshida, Sennan, and Hayato Kubota, Izumi, both of Japan, assignors to Fuji Oil Company, Limited, Osaka, Japan

Filed Feb. 22, 1983, Ser. No. 468,280

Claims priority, application Japan, Oct. 27, 1982, 57-189743

Int. Cl.³ A23C *9/12*

U.S. Cl. 426—36 **10 Claims**

1. A process for producing a cream cheese type food, which comprises the steps of:
(a) homogenizing and pasteurizing an aqueous mixture of an aqueous dispersion containing non-fat milk solid, a fat or oil and an emulsifier to prepare a cream mix;
(b) adding a lactic ferment starter and 1 to 50 ppm of rennent to the cream mix to ferment the resulting mixture for 12 to 18 hours;
(c) terminating the lactic fermentation by heating the fermented mixture to 75° to 85° C.;
(d) separating and draining whey from the fermented mixture to obtain a curd;
(e) adding a stabilizer and salt to the curd, heating the resulting mixture to 70° to 85° C. and kneading the mixture with stirring at a rate of 200 to 1,000 r.p.m. in a closed system; and then
(f) homogenizing and cooling the mixture.

4,534,983

PROCESS FOR FLAVORING DRY VEGETABLE MATTER

Casper H. Koene, Hamburg, Fed. Rep. of Germany; Cornelis Voe, and Jan Brasser, both of Huizen, Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed Jun. 24, 1983, Ser. No. 507,789

Claims priority, application Netherlands, Oct. 14, 1982, 8203963

Int. Cl.³ A23F *3/40*; A23L *1/22*

U.S. Cl. 426—293 **26 Claims**

1. A process for preparing a flavored dry vegetable product comprising the steps of mixing pieces of leaf and stem of dry vegetable material selected from the group consisting of tea, herbs and spices with microcapsules of at least one microencapsulated flavor and, simultaneously or subsequently spraying said mixture with an organic solvent selected from the group consisting of ethanol, isopropanol, propylene glycol, glycerol

and benzyl alcohol in an amount of up to about 100 g/kg of flavored product, adding a finely divided aqueous adhesive solution; and continuing the mixing until a free flowing mixture is obtained in which substantially all liquids have been absorbed, wherein the amount of adhesive is sufficient to provide adhesion of the microcapsules to the vegetable material and the amount of solvent is sufficient to prevent the formation of conglomerates of particles of vegetable material or microcapsules.

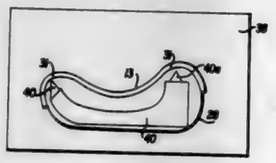
14. A process for preparing a flavored dry vegetable product comprising the steps of spraying pieces of leaf and stem of dry vegetable material selected from the group consisting of tea, herbs and spices with an organic solvent selected from the group consisting of ethanol, isopropanol, propylene glycol, glycerol and benzyl alcohol in an amount of up to about 100 g/kg of flavored product and then with an aqueous adhesive solution; adding microcapsules of at least one microencapsulated flavor, and mixing until a free flowing mixture is obtained in which substantially all liquids have been absorbed, wherein the amount of adhesive is sufficient to provide adhesion of the microcapsules to the vegetable material and the amount of solvent is sufficient to prevent the formation of conglomerates of particles of vegetable material or microcapsules.

4,534,984

PUNCTURE-RESISTANT BAG AND METHOD FOR VACUUM PACKAGING BONE-IN MEAT

Richard O. Kuehne, Greenville, S.C., assignor to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Aug. 16, 1983, Ser. No. 523,807
Int. Cl.³ B65B *31/02, 25/00;* B65D *33/02*
U.S. Cl. 426—412 **30 Claims**



1. An open ended flexible plastic container adapted to package a meat article having protruding bone sections, comprising;

a plastic bag comprising two sides and a closed end, said sides defining an opening into the interior of said bag opposite said closed end; and

a sheet of a material more puncture resistant than said plastic, one face of said sheet being adhered to one of said sides, said bag being a "lay flat" bag after the sheet of puncture resistant material has been applied thereto; and

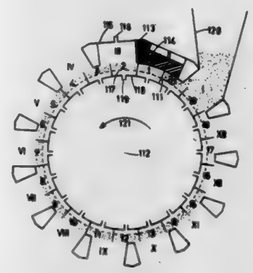
wherein the surface area of said face is less than the surface area of the side to which said face is adhered, said sheet being located on and adhered to said bag such that it can be aligned with and overlie the protruding bone sections upon insertion of said meat article into said bag, and said sheet is provided with at least one line of weakness along which a fold can be initiated to cause the puncture resistant material to drape and fold readily over said protruding bone sections when a meat article is placed in said bag said line of weakness being sufficient to allow said sheet to maintain its original alignment with the protruding bone sections of said meat article during vacuum packaging.

4,534,985

CONTINUOUS EXTRACTION PROCESS

Jacob Gasau, Yverdon, Switzerland, assignor to Nestec S.A., Vevey, Switzerland

Continuation of Ser. No. 961,716, Nov. 17, 1978, abandoned, which is a continuation of Ser. No. 805,783, Jun. 13, 1977, abandoned. This application Nov. 4, 1980, Ser. No. 203,852
Claims priority, application Switzerland, Jun. 24, 1976, 8065/76
Int. Cl.³ A23F *3/18, 5/26*
U.S. Cl. 426—432 **18 Claims**



1. A process for preparing a coffee extract suitable for use in preparation of beverages comprising the steps of:

(a) grinding roasted coffee into particles having a characteristic diameter according to Rosin, Rammler and Sperling of between about 0.25 mm and 2.0 mm;

(b) forming a bed of the ground coffee between about 0.5 cm and about 15 cm thick;

(c) continuously advancing said bed of ground coffee in a downstream direction past a first extraction station so that the advance of the bed carries said coffee past said first extraction station at a throughput rate of at least about 13 kg/hr; and

(d) forcing a first aqueous liquid extraction medium through said bed at said first extraction station by maintaining a pressure gradient in such medium as said bed advances past such station to form a first extract, the flow rate of such medium through said bed, expressed in kg/hr, being between about 2 times and about 20 times said throughput rate,

each portion of the coffee being extracted while in said bed for a total extraction time of between about 20 seconds and about 5 minutes.

17. A process for preparing a tea extract suitable for use in preparation of beverages comprising the steps of:

(a) forming a bed of particulate tea selected from the group consisting of broken tea leaves, ground tea leaves, tea leaf dust, tea stalk fragments and combinations thereof, the tea particles having dimensions on the order of a few tenths of a millimeter, the bed being between about 0.5 cm and about 15 cm thick;

(b) continuously advancing said bed of tea in a downstream direction past a first extraction station so that the advance of the bed carries the tea past said first extraction station at a throughput rate of at least about 5 kg/hr; and

(c) forcing a first aqueous liquid extraction medium through said bed at said extraction station by maintaining a pressure gradient in such medium as said bed advances past such station to form a first extract, the flow rate of such medium through said bed, expressed in kg/hr, being between about 5 times and about 30 times said throughput rate,

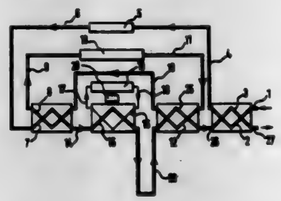
each portion of the tea being extracted while in said bed for a total extraction time of about 1 minute to about 3 minutes.

4,534,986

HIGH-TEMPERATURE TREATMENT OF LIQUIDS

Anthony P. M. Hasting, Crawley, England, assignor to APV International Limited, England

Filed Dec. 7, 1983, Ser. No. 558,968
Claims priority, application United Kingdom, Dec. 8, 1982, 8234987
Int. Cl.³ A23L *3/22*
U.S. Cl. 426—521 **8 Claims**



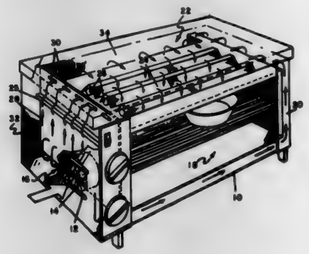
1. In a method of indirect ultrahigh temperature treatment of a liquid susceptible to thermal damage and having a variable flow rate, in which the liquid must be held at a holding temperature at or above a first holding temperature for a first period of time by which sufficient overall sterilizing effect is obtained with minimal overall thermal damage while flowing at a first flow rate, the improvement comprising determining a higher, second temperature above the first holding temperature and a corresponding higher, second flow rate for the liquid to hold the liquid at that higher temperature for a lesser second period of time to provide sufficient overall sterilizing effect with minimal overall thermal damage, varying the flow rate of the liquid between the first flow rate and the second flow rate, and varying the holding temperature of the liquid between the first holding temperature and the second temperature by means of a heating fluid in indirect counterflow heat exchange relationship with the treated liquid while the flow rate of the liquid is varied between the first flow rate and the second flow rate to maintain sufficient overall sterilizing effect with minimal overall thermal damage while varying throughput of the liquid.

4,534,987

METHOD OF CONVECTION COOKING OF FOOD

J. Harrison Holman, 340 Promenade East, #223, Portland, Me. 04101, and Jay C. Holman, 1 Orchard Hill Rd., Scarborough, Me. 04074

Continuation of Ser. No. 498,528, May 26, 1983, Pat. No. 4,465,701, which is a division of Ser. No. 233,912, Feb. 12, 1981, Pat. No. 4,386,558. This application Jul. 19, 1984, Ser. No. 632,437
The portion of the term of this patent subsequent to Aug. 14, 2001, has been disclaimed.
Int. Cl.³ A23L *1/00*
U.S. Cl. 426—523 **2 Claims**



1. A method of cooking comprising the steps of:

forming a food cooking unit having an outer casing with air intake vent means, an inner cooking chamber with air entry aperture means, at least one channel between said inner cooking chamber and a corresponding portion of said outer casing, and a heat source inside said inner cooking chamber for heating said inner cooking chamber;

forcing air through said outer casing air intake means into and through said channel between said outer casing and said inner cooking chamber;

cooling said outer casing around said channel by contact with said forced air;

heating said flow of forced air by contact with said heated inner cooking chamber;

directing said heated flow of forced air into said cooking chamber through said air entry aperture means allowing the heated air to assist in the cooking process; and

cooking food in said food cooking unit.

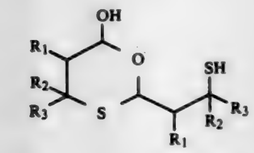
4,534,988

FLAVORING WITH 1, 3-OXATHIANES

Paul R. Zanno, Hopewell Junction, and Thomas H. Parliment, New City, both of N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Aug. 11, 1980, Ser. No. 176,947
Int. Cl.³ A23L *1/231*
U.S. Cl. 426—535 **4 Claims**

1. A foodstuff having added thereto, as an active flavoring ingredient from 0.1 to 100,000 parts per billion, and effective to impart a beef or chicken flavor thereto, of a compound selected from the formula:



Wherein R_1, R_2 and R_3 are the same or different radicals and which are H or C_1 to C_3 alkyl.

4,534,989

SOFT CANINE BISCUIT CONTAINING DISCRETE MEAT AND/OR MEAT BY-PRODUCT PARTICLES AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Morristown, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 549,353, Nov. 7, 1983, and a continuation-in-part of Ser. No. 341,970, Jan. 22, 1982, Pat. No. 4,454,164. This application May 29, 1984, Ser. No. 614,367
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.³ A23K *1/00*
U.S. Cl. 426—549 **20 Claims**

1. A method for making dry soft canine biscuits having discrete meat and/or meat by-product particles distributed substantially uniformly throughout comprising:

(a) dry blending particles containing meat and/or meat by products as substantial components with non-fat solids containing farinaceous material and added sugar, said particles having a moisture content of less than or equal to about 35 percent by weight and being present in an amount sufficient to provide particles visible on the surface of said by soft canine biscuits;

(b) admixing about 20 to 30% by weight water with said dry blended mixture to form a first stage soft dough;

(c) mixing about 0.5–10% by weight fat with said first stage soft dough to form a final soft biscuit dough;

(d) forming said final soft dough into pieces under low shear, non-cooking forming conditions; and

(e) baking and drying said pieces to form dry soft biscuits,

wherein the water activity of said particles in step (a) is less than the water activity of said final soft dough obtained by admixing said non-fat solids, said fat and said water without said particles, and whereby dry, biscuits are produced having discrete visually-apparent meat particles distributed substantially uniformly throughout and embedded in the surface of said dry soft canine biscuits.

4,534,990

SOFT CANINE BISCUIT CONTAINING DISCRETE PARTICLES OF MEAT AND OTHER MATERIALS AND METHOD FOR MAKING SAME

Gary Gellman, Pomona, N.Y.; George A. Erfurt, Summit, and James E. Roe, Wayne, both of N.J., assignors to Nabisco Brands, Inc., Parsippany, N.J.

Continuation-in-part of Ser. No. 341,970, Jan. 22, 1982, Pat. No. 4,454,164. This application Nov. 7, 1983, Ser. No. 549,353

The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.

Int. Cl.³ A23K *1/00*

U.S. Cl. 426—549 **30 Claims**

1. A method for making dry soft canine biscuits from a final biscuit dough comprising:

(a) dry blending particles, which contain (i) meat and/or meat by-product and (ii) farinaceous material and/or textured vegetable protein, and which have a moisture content of less than or equal to about 35 percent by weight of said particles, with non-fat solids to provide a substantially homogeneous dry blended mixture, said particles having a water activity less than the water activity of said final biscuit dough, said non-fat solids portion containing sufficient added sugar so that the total sugar content of the final soft biscuit dough is adequate to provide a final soft biscuit dough, no fat being added in step (a) except for the indigenous fat which is present in said particles, and said particles being present in an amount of about 3 to about 25 weight percent, based on the total weight of said dry soft canine biscuits;

(b) admixing water with said dry blended mixture (a) to form a first stage dough, said water being present in an amount of about 15 to about 35 weight percent, based on the total weight of said final biscuit dough;

(c) mixing added-fat with said first stage dough to form said final soft biscuit dough, said added-fat being present in an amount of about 0.5 to about 10 weight percent, based on the total weight of said final biscuit dough;

(d) forming said final soft biscuit dough into pieces using a low shear forming pressure of less than 75 p.s.i.g. to make said formed pieces; and

(e) baking and drying said pieces to form said dry soft biscuits, which are shelf stable, whereby dry soft canine biscuits are produced having said particles present as discrete visually-apparent particles distributed substantially uniformly throughout and embedded in the surface of said dry soft canine biscuits.

4,534,991

ASEPTIC JUICE OR BEVERAGE AND FLAVOR ENHANCEMENT SYSTEM THEREFOR

Allen C. Kryger, Holland, Mich., assignor to Squirt & Company, Holland, Mich.

Filed Aug. 17, 1983, Ser. No. 524,096

Int. Cl.³ C12G *3/12*; A23L *2/00*

U.S. Cl. 426—592 **19 Claims**

1. A method for preparing an aseptic fruit juice or beverage comprising:

creating an aseptic flavor system by adding sufficient ethyl alcohol of sufficiently high proof to concentrated juice flavor ingredients to yield a flavor system which comprises at least 70% ethanol;

adding sufficient amounts of said aseptic flavor system to a previously pasteurized juice which has been pasteurized to a sufficient degree to render it commercially sterile and aseptic, to form a flavored juice, said amounts sufficient to impart a desired flavor to the juice;

and avoiding heating to pasteurization temperatures after said aseptic flavor system has been added to said juice.

4,534,992

PROCESS FOR THE PRODUCTION OF SOYA PROTEIN FLAKES

Gyota Taguchi, and Toshiji Sato, both of Kanagawa, Japan, assignors to Nisshin Oil Mills, Ltd., Japan

Filed Jan. 6, 1984, Ser. No. 568,593

Claims priority, application Japan, Jan. 10, 1983, 58-1220

Int. Cl.³ A23J *3/00*

U.S. Cl. 426—656 **3 Claims**

1. A process for the production of soya protein flakes comprising admixing raw materials including as a chief ingredient soya protein with water and subjecting the mixture to an extrusion process under heat and pressure by using an extruder having at least a first and second die each having at least one opening and situated perpendicular to the direction of extrusion with an interval of 2–6 mm between the faces of said dies, the distance between a rim of one opening of the first die and the nearest rim of one opening of the second die being greater than or equal to the cross-sectional diameter of said opening of the first die, thereby enabling the formation of flakes having a sponge-like structure and folded parallel to said die faces between the first and second dies.

4,534,993

METHOD OF MANUFACTURING A ROTARY ANODE FOR X-RAY TUBES AND ANODE THUS PRODUCED

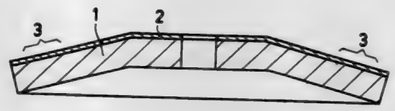
Frederik Magendans; Gerhardus A. te Raa, and Bernhard J. P. van Rheenen, all of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 11, 1984, Ser. No. 569,869

Claims priority, application Netherlands, Jan. 25, 1983, 8300251

Int. Cl.³ B05D *1/08*

U.S. Cl. 427—34 **11 Claims**



1. In a method of manufacturing a rotary anode for an X-ray tube, said rotary anode comprising a support member consisting essentially of a molybdenum alloy on which a target layer consisting essentially of tungsten or a tungsten alloy is provided by plasma spraying, the improvement comprising:

(a) deforming a cylindrical member of said molybdenum alloy, having a density of at least 90% of its theoretical maximum density, by means of a high speed deformation impact process to form a disc having a smaller height and larger circumference than said cylindrical member, the degree of deformation being at least 70%;

(b) mechanically shaping the disc to form the support member;

(c) placing the support member in a gaseous atmosphere containing less than 1% by volume of oxygen and having a pressure between 20 and 70 kilopascals; and

(d) in said gaseous atmosphere, plasma spraying the target layer onto the support member to a thickness between 0.2 and 2.0 millimeters while rotating said support member and maintaining it at a temperature between 1000° C. and 1600° C., said layer having a density at least equal to 97% of the theoretical maximum density.

4,534,994

PROCESS FOR MAKING FINE PERFORATIONS IN PLASTIC SHEETING AND/OR PLASTIC OR RUBBER COATED SHEET MATERIALS

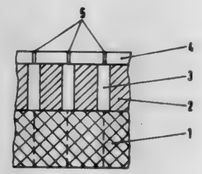
Gerhard Feld, Am Erl-Anger 3, 8501 Eckenthal, and Klaus-Peter Schmidt-Kufeke, Bernhardstr. 5, 7500 Karlsruhe 1, both of Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 608,023

Claims priority, application Fed. Rep. of Germany, May 3, 1983, 3316118

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—37 **9 Claims**



1. Process for making fine perforations in plastic sheeting and/or plastic or rubber coated sheet materials in which the sheeting or the coating is too thick and/or the dielectric constants thereof are too high for making the fine perforations by electrical pulses, comprising the steps of:

coarsely perforating the material by other means;

coating the perforated material with a layer of a coating material which is capable of being electrically perforated; and

making fine perforations in the layer of the coating material by the use of high-voltage pulses.

4,534,995

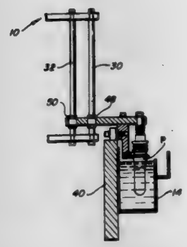
METHOD FOR COATING CONTAINERS

John F. E. Pocock, Stone Mountain; Charles A. Cole, Gainesville; James G. Villanueva, Snellville; John D. Matlack, Lilburn, and Shelton E. Lewis, Norcross, all of Ga., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Apr. 5, 1984, Ser. No. 597,090

Int. Cl.³ B05D *7/02, 1/18, 3/14, 7/24*

U.S. Cl. 427—38 **1 Claim**



1. A method of applying a polyvinylidene chloride barrier resin coating to a polyethylene terephthalate preform comprising neutralizing the static charge on said preform by conditioning said preform with ionized air, dipping said preform into a dispersion or latex of said polyvinylidene chloride over a period of 1 to 3 seconds to coat at least the lower two-thirds of said preform, removing said preform from said dispersion or latex over a period of 7 to 14 seconds, drying said coating, and removing the drip which forms on the bottom of the coated preform during said drying step.

4,534,996

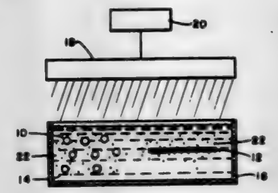
HYBRID MICROSPHERES

Alan Rembaum, Pasadena, and Richard C. K. Yen, Glendale, both of Calif., assignors to California Institute of Technology, Pasadena, Calif.

Division of Ser. No. 248,898, Mar. 30, 1981, Pat. No. 4,438,239. This application Aug. 29, 1983, Ser. No. 526,953

Int. Cl.³ B05D *3/06*

U.S. Cl. 427—44 **19 Claims**



1. A method of forming a coated product comprising the steps of:

immersing a synthetic organic resin substrate in the form of spheres, particles, sheets, rods or tubes in an aqueous solution containing up to 20 percent by weight of an unsaturated aldehyde containing 4 to 20 carbon atoms;

irradiating the solution with high energy radiation to form an addition polymerized polyaldehyde layer which is covalently bound to the organic resin surface of the substrate; and

binding an antibody to the polyaldehyde layer to form a cell specific surface.

4,534,997

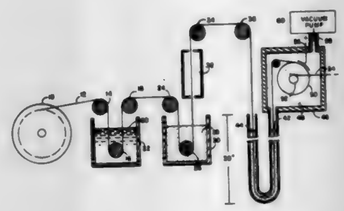
HIGH-TEMPERATURE CARBON FIBER COIL AND METHOD FOR PRODUCING SAME

Gregory R. Brotz, P.O. Box 1322, Sheboygan, Wis. 53081

Filed Mar. 19, 1984, Ser. No. 591,323

Int. Cl.³ H01L *39/12, 39/24*

U.S. Cl. 427—53.1 **9 Claims**



1. A method of providing an insulative coating on a carbon filament to be wound in a coil, comprising the steps of:

providing a spool of carbon filament;

drawing a filament from said spool;

passing said filament through an adhesive binder bath;

coating said filament with said adhesive binder;

passing said filament through a powdered insulator;

adhering said powdered insulator to said carbon filament by said adhesive binder;

passing said insulator-coated filament then through oven means;

baking said insulator onto said carbon filament;

passing said insulator-coated filament into a firing chamber;

winding said insulator-coated filament into a coil;

heating said insulator-coated filament at a high temperature as it is wound; and

fusing said insulator coating onto said filament to provide insulation of said coil windings from one to another.

6. A method of producing a carbon filament coil comprising the steps of:

combining a carbon filament coil with a particulate insulator;

holding said coil and particulate insulator in a predetermined area;

excluding oxygen from said coil and particulate insulator; and

firing said structure to melt and fuse said insulator around said coils of filament.

4,534,998

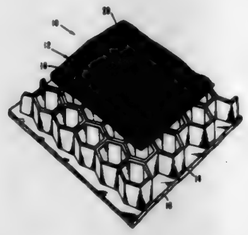
CONDUCTIVE COATING PROCESS

Preston S. DuPont, Northridge; Robert E. Ritter, Palos Verdes, and John P. Stafford, Culver City, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 24, 1982, Ser. No. 381,125

Int. Cl.³ B05D *1/02, 5/12*

U.S. Cl. 427—122 **7 Claims**



1. A process of providing a conductive coating on a substrate of dielectric fibers comprising the steps of:

mixing together by high shear mixing a first mixture of carbon black in solvent;

mixing the first mixture into thermosettable resin polymer with hardener by low shear mixing wherein the mixing is sufficiently low shear as to incompletely coat the carbon black particles with thermosettable resin polymer to form a spray solution;

cleaning the substrate of dielectric fibers; and

spraying the spray solution onto the substrate of dielectric fibers wherein the substrate is supported on a metallic support and causing the solvent to evaporate and the resin to thermoset so as to provide an electrically conductive coating to produce a coating, having a resistance of about 6×10^5 ohms per square to reduce potential gradients wherein the coating extends through the fibers to the metallic support to provide electrical conduction away from the surface of the substrate.

4,534,999

PRODUCTION OF MAGNETIC RECORDING MEDIA HAVING A BACKING COATING

Hermann Roller, Ludwigshafen; August Lehner, Roedersheim-Gronau; Joachim Hack, Ludwigshafen; Werner Grau, Bobenheim-Roxheim; Werner Balz, Limburgerhof, and Reinhold Baur, Offenburg, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,182

Claims priority, application Fed. Rep. of Germany, Jul. 15, 1983, 3325556

Int. Cl.³ H01F *10/02*

U.S. Cl. 427—130 **3 Claims**

1. A process for the production of a magnetic recording medium which has a thin backing coating and consists of a non-magnetic flexible base and a magnetic layer which is applied to one side of the base and comprises magnetic material finely dispersed in an organic binder, by applying a dispersion of finely divided non-magnetizable conductive and non-conductive solids and conventional additives in a solution of a polymeric binder in an organic solvent to that side of the base which is opposite the magnetic layer by means of a knife-coater, and then drying the layer, wherein from 3 to 30% by weight, based on the amount of polymeric binder, is a high molecular weight organic compound based on a cellulose reaction product having a K value greater than 75, and wherein the dispersion has a viscosity of from 15 to 200 mPa.s and a solid/solvent ratio of from 1:25 to 1:40, which compound causes the dispersion to exhibit elasticoviscous to thixothropic flow behavior.

4,535,000

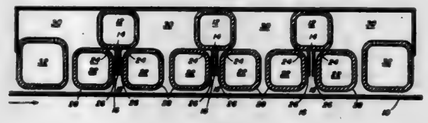
CHEMICAL VAPOR DEPOSITION OF TITANIUM NITRIDE AND LIKE FILMS

Roy G. Gordon, 22 Highland St., Cambridge, Mass. 02138

Continuation-in-part of Ser. No. 443,340, Nov. 22, 1982, abandoned. This application Oct. 28, 1983, Ser. No. 546,471

Int. Cl.³ B05B *5/00;* **B05D** *5/00*

U.S. Cl. 427—160 **16 Claims**



1. A process for depositing a transparent, solar control film composed mainly of titanium nitride on a transparent heated glass ribbon substrate, by the steps of

(a) preparing a first preheated gaseous mixture of titanium tetrahalide vapor reactant in an inert carrier gas,

(b) preparing a second preheated gaseous mixture of ammonia reactant, as a nitrogen donor and a reducing gas, and inert carrier gas,

said first and second gaseous mixtures containing at least 0.1 mole percent of said tetrahalide based on the gas in both mixtures and,

(c) mixing the two said gas mixtures at a temperature below 500° C. in the immediate proximity of said substrate which is at a temperature of at least about 500° C. such that a substantially haze free film is formed on by reaction products of said reactants on said glass substrate.

4,535,001

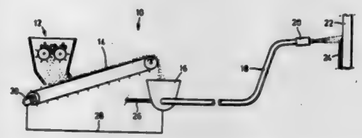
REFRACTORY PLASTIC GUNNING

Brian H. Greener, Burlington, Canada, assignor to Plibrico Limited, Burlington, Canada

Continuation of Ser. No. 436,791, Oct. 26, 1982, abandoned. This application May 29, 1984, Ser. No. 614,699

Int. Cl.³ B05D *1/12*

U.S. Cl. 427—180 **1 Claim**



1. A method of forming a refractory lining on a surface at a job site comprising the steps of;

granulating by means of a granulator at said job site a plastic refractory material having a moisture content in the range of 4% to 16% by weight to provide loosely arranged granular refractory material said granulator directly communicating with a pneumatic gunning pump and immediately after granulating pneumatically gunning the loosely arranged granulated refractory material onto the surface without adding water at the discharge nozzle.

4,535,002

PROCESS FOR RENDERING A MATERIAL FIRE RETARDANT

William J. Kirkhuff, Irvine, Calif., assignor to Kirkhuff, Shield & Fink, Santa Ana, Calif.

Division of Ser. No. 343,880, Jan. 29, 1982, Pat. No. 4,443,258, which is a continuation-in-part of Ser. No. 214,220, Dec. 8, 1980, abandoned. This application Apr. 13, 1984, Ser. No. 599,768

Int. Cl.³ B05D *1/36*

U.S. Cl. 427—203 **6 Claims**

1. A process of rendering a material fire retardant which comprises:

overlaying said material with at least one layer of a permeable mass of silica glass;

permeating among and associating within said permeable mass of silica glass a quantity of the unexpanded form of heat expandable perlite wherein said perlite is present as particles of a mesh size less than 100 mesh and said quantity of perlite is a quantity at least equal to the weight of said permeable mass of said silica glass.

4,535,003

SURFACE MODIFYING COMPOSITIONS FOR VULCANIZED RUBBER AND METHOD OF MODIFYING VULCANIZED RUBBER SURFACE USING THE SAME

Masaki Ogawa, Kodaira, and Yasuro Shiomura, Higashimurayama, both of Japan, assignors to Bridgestone Tire Co., Ltd., Tokyo, Japan

Filed Feb. 7, 1984, Ser. No. 577,907

Claims priority, application Japan, Apr. 4, 1983, 58-57917

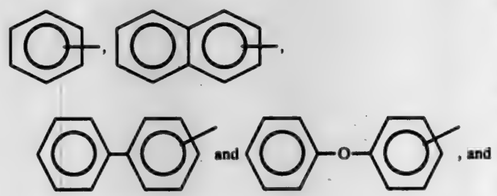
Int. Cl.³ B05D *5/10;* **C08L** *91/06*

U.S. Cl. 427—207.1 **14 Claims**

1. A surface modifying composition for vulcanized rubber comprising a halogen-releasable halogenoid, a waxy substance having a melting point of not more than 100° C., and an inorganic filler, and being non-solvent type, wherein the weight of the inorganic filler is in a range of 15–80% based on the whole surface modifying composition, and 0.6–20 times that of the halogen-releasable halogenoid, said halogen-releasable halogenoid is a compound containing N,N-dihalosulfonamide group and represented by the following general formula:

$$R—SO_2NX_2 \text{ or } R'_m—(Ar)—(SO_2NX_2)_n$$

wherein X is a halogen atom, R and R′ represent an aliphatic hydrocarbon residue having a carbon number of 1–6 and further R′ may be a hydrogen atom or a halogen atom, Ar is a residue selected from



m and n are an integer of 1–3, respectively.

4,535,004

CONSOLIDATING THE SURFACE OF A GRANULAR ADSORBENT

Franz Haas; Gerhard Janisch, and Gerold Schreyer, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,600

Claims priority, application Fed. Rep. of Germany, Mar. 31, 1982, 3211900

Int. Cl.³ B05D *3/02, 7/00*

U.S. Cl. 427—212 **5 Claims**

1. A process for consolidating the surface of a granular adsorbent, wherein the adsorbent, which initially contains virtually no water,

(1) is treated, while being mixed, with an aqueous suspension containing from 1 to 30% by weight of filamentous thermoplastic structures of self-crosslinking copolymers, in such a way that the granular adsorbent takes up water from the suspension and at the same time the suspended filamentous structures deposit on the surface of the adsorbent, the latter remaining free-flowing,

(2) the water taken up by the adsorbent is evaporated and

(3) the adsorbent covered with the filamentous structures is heated at 110°–180° C. in order to crosslink the copolymer.

4,535,005

CONSOLIDATING THE SURFACE OF A GRANULAR ADSORBENT

Franz Haas; Gerhard Janisch, and Gerold Schreyer, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Mar. 9, 1983, Ser. No. 473,602

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211629

Int. Cl.³ B05D *3/02, 7/00*

U.S. Cl. 427—212 **4 Claims**

1. A process for consolidating the surface of a granular adsorbent, wherein the adsorbent, which initially contains virtually no water,

(1) is treated with 25–70% by weight of the maximum possible amount of water which it can take up to saturation,

(2) is heated to a temperature at which the water taken up evaporates,

(3) and is treated, while water taken up is evaporating, with an aqueous dispersion of a self-crosslinking copolymer, while mixing, the ratio of the weight of copolymer adhering to the adsorbent to the weight of adsorbent being from 2:98 to 30:70 and,

(4) the adsorbent thus coated is heated at from 110° to 180° C. in order to crosslink the copolymer.

4,535,006

DEVICE FOR USE IN FLUIDIZED BED TECHNIQUES AND ITS METHOD OF USE

Dietmar Naunapper, Oberrimsingen, and Günter Braun, Grenzach-Wyhlen, both of Fed. Rep. of Germany, assignors to Glatt GmbH, Binzen, Fed. Rep. of Germany

Filed Oct. 11, 1983, Ser. No. 540,966

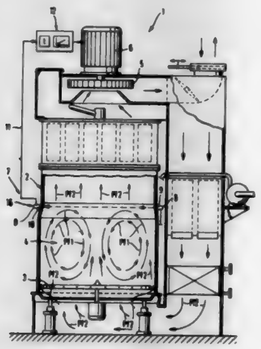
Claims priority, application Fed. Rep. of Germany, Oct. 8, 1982, 3237303

Int. Cl.³ B05D *1/22*

U.S. Cl. 427—213 **14 Claims**

1. A device for fluidized bed techniques, particularly for coating material such as tablets or the like, said device comprising a container for use as a processing zone for the material to be processed, means for moving said material through said

processing zone, and at least two sensors for detecting the upper and lower critical height values of the upper end area of



said processing zone, said sensors being mounted on said device one above the other.

4,535,007

SILICON NITRIDE-CONTAINING CERAMICS

John P. Cannady, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Jul. 2, 1984, Ser. No. 627,260
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—226 **52 Claims**

1. A method of preparing a silicon nitride-containing ceramic material, which method comprises (1) treating a R_3SiNH-containing silazane polymer with a reactive metal halide of general formula MX_n or $R_bSiX_{(4-b)}$ at a temperature below the softening point of the R_3SiNH-containing silazane polymer for a time sufficient to render the silazane polymer infusible where R is selected from the group consisting of vinyl, hydrogen, phenyl, and alkyl radicals containing 1 to 3 carbon atoms; M is a metal atom of valence n; X is a halide atom selected from the group consisting of chlorine and bromine; and b has a value of 0, 1, or 2; where said reactive metal halide has fewer carbon atoms than the R_3SiNH-endblocking group; and where said reactive metal halide has at least two halide atoms; and (2) heating the infusible silazane polymer of step (1) in an inert atmosphere or vacuum to a temperature of at least 750° C. until said infusible silazane polymer is converted to a silicon nitride-containing ceramic material.

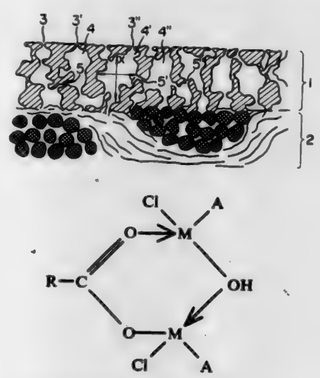
4,535,008

MOISTURE-PERMEABLE WATERPROOF COATED FABRIC HAVING A MICROPOROUS POLYURETHANE LAYER

Yasushi Naka, 4-2, Asahigaoka-cho, Hirakata-shi, Osaka-fu, and Kiyoshi Kawakami, 57, Hiragaki-cho, Karahashi, Minami-ku, Kyoto-shi, Kyoto-fu, both of Japan

Division of Ser. No. 286,615, Jul. 24, 1981, Pat. No. 4,429,000, which is a continuation of Ser. No. 102,410, Dec. 11, 1979, abandoned. This application Oct. 28, 1983, Ser. No. 546,286
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—246 **2 Claims**

1. A method of making a coated fabric having both waterproofness and moisture permeability characterized in that, in forming a microporous polyurethane layer by applying a polar organic solvent solution of a polyurethane elastomer to a base fabric, then immersing the base fabric in a coagulating bath to allow gelation to take place, followed by water-washing and drying, there is used as the coating solution a polar organic solvent solution containing a polyurethane elastomer and a metal complex represented by the following general formula;



where R is a hydrocarbon radical having 8 or more carbon atoms, M is Cr or Al, and A is Cl or OH.

4,535,009

METHOD FOR PRODUCING A COMPOSITE SHEET MATERIAL

Minoru Tanaka, 1419, Oaza Godo, Godo-cho, Ampachi-gun, Gifu-ken; Hideo Nakamura, 106, Yashima-cho, Ogaki-shi, Gifu-ken, and Shunji Mizuguchi, 5-21, Shimizu-cho, Nishinomiya-shi, Hyogo-ken, all of Japan

Filed Nov. 22, 1983, Ser. No. 554,212
Claims priority, application Japan, Nov. 24, 1982, 57-204535
Int. Cl.³ B05D *3/10, 3/12, 5/00*
U.S. Cl. 427—246 **17 Claims**

1. A method for producing a composite sheet material which comprises impregnating and/or coating a fibrous sheet with a mixture of (A) a polyurethane elastomer containing a sterically hindered amino group within its molecular chain, (B) a compound selected from the group consisting of a polybasic acid and its halide, metal salt and ammonium salt, wherein one or more hydrogen atoms remain unreacted, which amount of (B) is within the range of 0.8–5 molar equivalents relative to the sterically hindered amino group, and (C) a solvent for the polyurethane elastomer (A), and subjecting the resulting material to wet coagulation.

4,535,010

METHOD OF FORMING POLYMERIC LAYERS

Rolf E. Axén, Bälinge; Göran L. Kaj, and Bror S. Rigner, both of Uppsala, all of Sweden, assignors to Pharmacia AB, Uppsala, Sweden

Filed Oct. 17, 1983, Ser. No. 542,507
Claims priority, application Sweden, Oct. 18, 1982, 8205908
Int. Cl.³ B05D *5/00*
U.S. Cl. 427—246 **12 Claims**

1. A method of forming at least one polymeric layer on a solid substrate wherein each applied polymeric layer is formed by the cross-linking of an organic substance which can be cross-linked, which method comprises

(a) impregnating the solid substrate with at least one component which can control the cross-linking reaction,

(b) contacting the impregnated solid substrate with a surrounding solution so as to form a concentration gradient of at least one of the components which control said cross-linking reaction, and

(c) establishing the concentration gradient so that cross-linking will be restricted to the boundary layer between said solid substrate and said surrounding solution and will not occur throughout the surrounding solution.

4,535,011

MONO (PENTAFLUOROSULFUR DIACETYLENE, POLYMER THEREFROM, AND PREPARATIONS THEREOF

Thomas A. Kovacina, McConnellsburg, Pa.; Ronald A. DeMarco, Fairfax, and Arthur W. Snow, Alexandria, both of Va., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Dec. 16, 1983, Ser. No. 562,251
Int. Cl.³ C23C *11/00*; C08F *12/30, 112/30, 212/18*
U.S. Cl. 427—255.6 **2 Claims**

1. A method of coating poly mono(pentafluro sulfur)diacetylene on a surface which comprises maintaining mono(pentafluorosulfur)diacetylene at a temperature from about −20 to about 30 degrees C. to provide a gas and exposing said surface to said gas until sufficient mono (pentafluorosulfur)diacetylene has polymerized on said surface.

4,535,012

FAST CURING SOLDERABLE CONDUCTOR

F. Wayne Martin, Baldwin Place; Samson Shahbazi, Yonkers, and Ronald J. Schoonejongen, Carmel, all of N.Y., assignors to Electro Materials Corp. of America, Mamaroneck, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,735
Int. Cl.³ B05D *3/02*
U.S. Cl. 427—386 **18 Claims**

1. A method for forming a solderable electrically conductive film comprising the steps of dissolving carboxylated vinyl in a solvent to form a solution, mixing said solution with metallic silver particles and an moderate chain length epoxy to form an ink, applying said ink to a substrate to form a film thereon and applying heat to said film to evaporate said solvent to leave a solderable electrically conductive film on said substrate.

4,535,013

ADDITION OF RESINS TO LATEX BONDED NONWOVEN FABRICS FOR IMPROVED STRENGTH

Beryl M. Kuhn, 830 Sugar Creek Dr., Conyers, Ga. 30208

Filed Aug. 15, 1983, Ser. No. 523,493
Int. Cl.³ B05D *3/02*; C08L *93/04*; C09J *7/00*
U.S. Cl. 427—389.9 **19 Claims**

10. A method for increasing the multi-directional strength of nonwoven polyolefin-containing fabrics comprising

contacting a corresponding fiber web with a binding amount of a lower temperature binder system comprising

(A) An essentially non-crosslinkable non-crystalline polymer of at least one component selected from the group consisting of an ethylene/acrylic acid, styrene/lower alkyl acrylate, styrene/butadiene, ethylene/ethylacrylate, ethylene/vinyl acetate, and combination thereof with up to about 10 weight percent of acrylic or methacrylic acid as a third monomeric component; combined with

(B) about 5–35 weight percent based on total binder solids, of a rosin ester dispersion of at least partially hydrogenated rosin with a polyhydric alcohol, the ester component having an abietic acid concentration not exceeding about 2 weight percent, a drop softening point above about 70° C., and an average molecular weight not exceeding about 2000; then

drying and curing the treated fiber web to obtain a fabric.

4,535,014

METHOD OF MOLDING A MULTI-COLORED ARTICLE

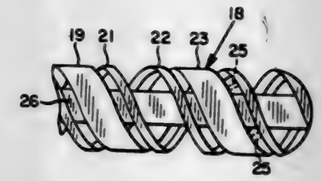
Douglas Wright, Windsor, Calif., assignor to Frederick Bugay, San Francisco, Calif.

Filed Oct. 1, 1981, Ser. No. 307,439
Int. Cl.³ B44T *1/10*; B32B *3/10*
U.S. Cl. 428—30 **5 Claims**

1. A method of manufacturing of an elongated article with multiple discrete molding materials of different colors by injection molding, the article have a series of juxtaposed surface color variations in a repeating pattern on all surfaces around the periphery of the article, comprising:

a. preparing a separate mold for each separate shot of molding material, a first mold being shaped to conform to the pattern desired for the first material, the pattern being a repeating pattern of multiple components in an elongated configuration on all surfaces around the periphery of the article and making up a portion of the surface area of the elongated article, the first mold including a cavity which forms during the first shot an interior elongated, unitary contiguous spine piece connecting and integral with the various first-material components of the pattern, sufficiently strong once formed to prevent the pressure of succeeding shot from distorting the pattern, and having interstices for the succeeding shot which are contiguous from one end of the article to the other;

b. inserting the first mold into an injection molding machine;



c. feeding molding material into the machine and heating the material to a point suitable for injection molding;

d. injecting the first shot of molding material from a single mold entry point in a continous flow of material among the spaces for that material and filling the first mold cavity with the first shot to form the interior spine piece as well as the pattern for the first material, as a preliminarily molded part;

e. placing the preliminarily molded part into a succeeding mold for a succeeding shot which fits closely over at least a part of the surface pattern of the premliminary part and which is shaped to form additional outer surface of the molded article; and

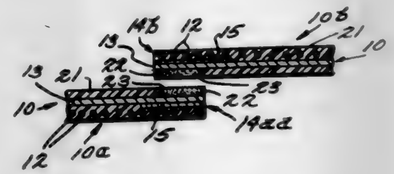
f. injecting the succeeding shot material, from a single mold entry point leading to said contiguous interstices, into the succeeding mold cavity to fill gaps in the preliminary part between components of the pattern.

4,535,015

WEFT INSERTED WARP KNIT CONSTRUCTION

Jeffrey W. Bruner, Greensboro; Delbert A. Davis, Kernersville, and Jack Leach, Greensboro, all of N.C., assignors to Burlington Industries, Inc., Greensboro, N.C.

Filed Mar. 2, 1984, Ser. No. 585,860
Int. Cl.³ B32B *3/00*
U.S. Cl. 428—44 **23 Claims**



1. A large textile panel consisting essentially of:

a plurality of small textile panels;

each small textile panel comprising a weft inserted warp knit fabric having a reinforcing substrate strip stitched thereto along the selvedges thereof to form an integral part of the

panel, said strips spaced from each other along the width of the panel, and said panel having a chemical finish thereon;

at least one selvedge edge of each of said small panels overlapping an adjacent selvedge edge of another small panel, the overlapping of the edges not extending past the selvedge edge substrate strips of each of the panels; and

means for holding the overlapped selvedge edges together in sealed relationship.

4,535,016

INSULATING ARTICLE AND METHOD OF MAKING SAME

John M. Bradley, Box 327, Manchester, Mass 01944

Continuation-in-part of Ser. No. 530,895, Sep. 12, 1983, abandoned. This application Jul. 20, 1984, Ser. No. 633,042

Int. Cl.³ B32B *1/04*

U.S. Cl. 428—74 **10 Claims**

1. An insulating article comprising:

(a) a sealed permeable-to-gas envelope;

(b) insulating material substantially filling said envelope comprising a fine fibrous insulating material;

(c) finely divided hydrophobic particulate metal oxide said insulating material in said envelop; or metalloid oxide pigment intimately admixed with

(d) a substantial excess of said pigment in said envelope beyond that required substantially completely to cover all surfaces of said material with a mono-layer of said pigment particles touching each other; and

(e) said envelope adapted substantially to retain said pigment within said envelope.

4,535,017

HEAT-RESISTANT LINING FOR WALL, SUCH AS HELICOPTER ENGINE COMPARTMENT BULKHEAD, AND WALL LINED THEREWITH

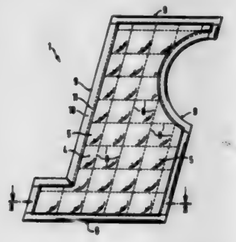
Wilfried Kuckein, Neubiberg; Albert Mylius, Brunnthal; Peter Bechtel, Ludwigshafen, and Adalbert Höfer, Limburgerhof, all of Fed. Rep. of Germany, assignors to Messerschmitt-Bolkow-Blohm GmbH, Munich and G & H Montage GmbH, Ludwigshafen, both of, Fed. Rep. of Germany

Filed Mar. 23, 1982, Ser. No. 360,983

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1981, 3111596

Int. Cl.³ F02C *7/24;* **B64C** *1/40;* **E04B** *1/76;* **B32B** *15/14*

U.S. Cl. 428—77 **17 Claims**



1. A soft liner blanket for lining a surface of a wall that is subject to vibrations and flexure in order to permanently protect the wall from the effects of heat in excess of 200° C. otherwise impinging on that surface under operating conditions, and of withstanding a flame temperature for an extended period of time on the order of five minutes without any local destruction and without any change in position of the liner blanket relative to the wall,

said liner blanket being generally planar and comprising:

a core layer made of minral fiber felt and having an outer peripheral edge;

an exposed front side covering of metal foil having means providing a heat-reflective front surface;

a rear covering made of a fabric for providing a supporting layer;

said front side covering of metal foil terminating several millimeters short of said outer peripheral edge of said core layer so as to provide a compressible marginal rim about the outer periphery of the liner blank, said liner blanket within said rim being as a result more compressible in the plane of said liner blanket than is said liner blanket in a main portion thereof that is defined inwardly of said marginal rim;

said rim being composed of a fabric layer of fiberglass material; and

means effectively securing said rim layer on said front side covering, on said core layer and on said rear covering so that said rim is loosely enclosed by said rim layer.

4,535,018

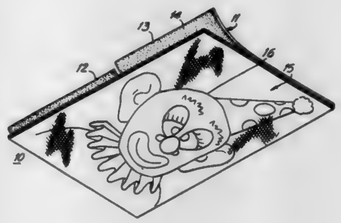
COMPOSITE DECORATIVE ARRANGEMENT WITH DUAL ADHESIVE CHARACTERISTICS

Martin Freling, Paramus, N.J., assignor to Meyer Label Co., Inc., New York, N.Y.

Filed May 12, 1983, Ser. No. 493,774

Int. Cl.³ B44C *1/16*

U.S. Cl. 428—79 **14 Claims**



1. A novelty decorative arrangement utilizing, in composite relation:

a substrate having a first overall configuration and having first and second sides, said substrate further having a first design on said first side thereof;

a fabric element having first and second surfaces, including a second design on said first surface and a heat-responsive adhesive on said second surface, said fabric element having a second overall configuration with dimensions at least as large as those of said first overall configuration of said substrate to initially cover said second side of said substrate; and

adhesive means having a substantially tacky consistency applied to said second side of said substrate and in contact with said heat-responsive adhesive for detachably coupling said fabric element to said substrate, whereby said adhesive means remains on said substrate upon detachment of said fabric element therefrom.

4,535,019

LAMINATED WOOD COUPLING ARRANGEMENT

Hector M. Coronado, 2209 Via Cerritos, Palos Verdes Estates, Calif. 90274

Filed Jun. 4, 1981, Ser. No. 270,265

Int. Cl.³ B32B *5/12*

U.S. Cl. 428—106 **11 Claims**

1. A laminated wood coupling arrangement, comprising in combination:

a plurality of layers;

a first portion of said plurality of layers having at least a first wood strip and a second wood strip;

a second portion of said plurality of layers having at least a fifth wood strip and a sixth wood strip;

each of said wood strips in each of said first portion and second portion of said plurality of layers having:

an upper planar surface;

a lower planar surface spaced a transverse distance from and parallel to said upper planar surface and said transverse distance defining the thickness of said wood strip;

a front surface;

a rear surface spaced longitudinally from said front surface and said longitudinal spacing defining the length of said wood strip;

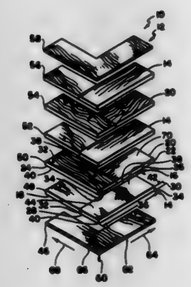
a first side surface;

a second side surface spaced a lateral distance from said first side surface and said lateral distance defining the width of said wood strip; and

wood fibers creating the grain of the wood running substantially along said longitudinal length from said front surface to said rear surface;

said first wood strip having the same thickness as said second wood strip;

said fifth wood strip having the same thickness as said sixth wood strip;



said front surface of said first strip aligned with said second side surface of said second strip, said rear surface of said second strip abutting said first side surface of said first strip, and said lower surfaces of said first and second strips substantially coplanar;

said front surface of said fifth strip abutting said first side surface of said sixth strip, said rear surface of said sixth strip aligned with said second side surface of said fifth strip, and said lower surfaces of said fifth and sixth strips substantially coplanar;

said rear surface of said sixth strip substantially aligned vertically with said second side surface of said first strip;

said front surface of said first strip substantially aligned vertically with said second side surface of said sixth strip;

said first and second portions in superimposed relationship having one of said second portion of said plurality of layers coupled in superimposed relationship to and in aligned relationship with said first portion of said plurality of layers, and said first portion of said plurality of layers coupled in superimposed relationship to and in aligned relationship with said second portion of said plurality of layers; and

said first portion and said second portion in alternating relationship.

4,535,020

PERFORATED FILM

Paul E. Thomas, and Garland E. Raley, both of Terre Haute, Ind., assignors to Ethyl Corporation, Richmond, Va.

Division of Ser. No. 401,939, Jul. 26, 1982, Pat. No. 4,456,570. This application Jan. 9, 1984, Ser. No. 569,405

Int. Cl.³ B32B *3/10;* **A61L** *15/00*

U.S. Cl. 428—131 **14 Claims**



1. A thermoplastic film forming resin in the form of a perforated, self-supporting sheet characterized in that,

(a) said self-supporting sheet containing along with the resin a sufficient amount up to about ten percent by weight based on the weight of the resin of a polarizable migrating surfactant to provide the self-supporting sheet with a runoff of less than about ten percent;

(b) said self-supporting sheet having perforations that are tapered capillaries;

(c) said self-supporting sheet having been treated with a corona discharge; and

(d) said corona discharge treated surface of said self-supporting sheet having a run off of less than ten percent.

4,535,021

BACKING MAT FOR A GROUND COVERING, PREFERABLY FOR A WATER-PERMEABLE ARTIFICIAL GRASS, AS WELL AS A METHOD FOR ITS PRODUCTION

Hans-Joachim Friedrich, Auenwald, Fed. Rep. of Germany, assignor to J. F. Adolff AG, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 587,242

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310640

Int. Cl.³ A01N *3/00;* **A41G** *1/00*

U.S. Cl. 428—137 **14 Claims**



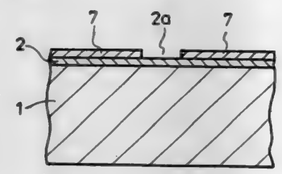
1. A backing mat for a ground covering such as artificial grass comprising a grid-like structure of elastically pliable formed plastic sections having openings arranged therebetween, characterized in the provision of bulbous projections on the underside of the mat, said projections being located at the edges of at least some of said openings and projecting downwardly beyond the material in the center regions of said sections between said openings, each of said projections being limited to less than the full periphery of the opening with which it is associated.

4,535,022

DECORATIVE TILE AND METHOD FOR MANUFACTURING THE SAME

Chizuo Kato, Tokyo, Japan, assignor to Aluteck Co., Ltd., Tokyo, Japan

Filed Jul. 6, 1984, Ser. No. 628,401
Claims priority, application Japan, Jul. 8, 1983, 58-106186[U]; Feb. 15, 1984, 59-26792; May 8, 1984, 59-91643
Int. Cl.³ B32B 3/30, 17/06
U.S. Cl. 428—142 4 Claims



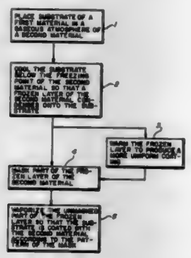
1. A decorative tile comprising:
(a) a ceramic tile blank of desired shape having a roughened surface,
(b) a first layer of metal spray-deposited on the roughened surface,
(c) a second layer of metal attached to the first layer and being discontinuous with the first layer, thereby defining a decorative pattern on the first layer, and
(d) a transparent coating material covering the roughened surface of the tile and the two layers of metal.

4,535,023

PROCESS FOR FABRICATING CRYOGENIC TARGETS AND TARGETS MADE THEREBY

Robert R. Whitlock, College Park, Md., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jun. 3, 1983, Ser. No. 500,724
Int. Cl.³ B32B 3/10; B05D 5/00, 1/32
U.S. Cl. 428—195 19 Claims



1. A process of patterning a target, for lasing at X-ray wavelengths, from materials which cannot be readily shaped, comprising the steps of:
(a) placing a substrate of one material in a gaseous atmosphere of another material;
(b) ensuring that the substrate is below the freezing point of the other material so that a frozen layer of the other material condenses onto the substrate:
(c) masking part of the frozen layer of the other material; and
(d) vaporizing the unmasked part of the frozen layer so that the substrate of the one material is coated with the other material according to the pattern of the mask.

14. The target formed in accordance with the process recited in claim 1, wherein:
the one material is a pump material, and the other material is neon.

4,535,024

GLOSS BLACK METALIZED PRODUCT AND METHOD OF PREPARATION

Harry A. Parker, Murray Hill, N.J., assignor to Transfer Print Foils, Inc., East Brunswick, N.J.

Filed Nov. 1, 1982, Ser. No. 438,220
Int. Cl.³ B32B 3/00, 15/08
U.S. Cl. 428—200 8 Claims

1. A decorative laminate offering a glossy black outer appearance of improved durability, comprising:
A. at least one base film;
B. a translucent, black reflective metal coating comprising a chromium-containing metal having a black appearance, applied over one surface of said base film, said coating formed by heating said metal to an elevated temperature above its boiling point and above the normal vaporization temperature of the metal, and vapor depositing said metal on said base film while maintaining said metal at said elevated temperature; and
C. a top coat comprising a clear thermoplastic resin, applied over the free surface of said translucent metal coating.

2. The laminate of claim 1 wherein
said base film is pigmented,
a tie coat is present between said base film and said translucent metal coating, and
an intermediate coat comprising an organic resinous coating material curable by ultraviolet light is present between said top coat and said translucent metal coating.

3. The laminate of claim 2 further including a heat-sensitive adhesive coating located on the free surface of said base film.

4,535,025

ORIENTED, HIGH DENSITY POLY(ETHYLENE TEREPHTHALATE)

Saleh A. Jabarin, Holland, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Continuation of Ser. No. 537,129, Sep. 29, 1983, abandoned, which is a continuation of Ser. No. 427,063, Sep. 29, 1982, abandoned. This application Jul. 6, 1984, Ser. No. 628,360
Int. Cl.³ B32B 27/36; B29D 17/02
U.S. Cl. 428—220 2 Claims

1. Biaxially oriented and heat set poly(ethylene terephthalate) material which has two substantially parallel faces each of an area which is extended as compared to the area of any planar cross-section cutting said two faces, the ratio of the said extended area to said cross-sectional area being at least 10, said poly(ethylene terephthalate) being clear, ductile and having a density at 25° C. of over 1.4050 and a percent haze of no more than 10 percent.

4,535,026

ANTIREFLECTIVE GRADED INDEX SILICA COATING, METHOD FOR MAKING

Bulent E. Yoldas, Churchill, and Deborah P. Partlow, Wilkinsburg, both of Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 29, 1983, Ser. No. 509,118
Int. Cl.³ C03C 15/00
U.S. Cl. 428—310.5 14 Claims



1. A radiation-transmitting non-porous vitreous substrate of predetermined refractive index having coated on at least one surface thereof a substantially non-reflecting coating which functions effectively over a predetermined wide band of radiations, said non-reflecting coating comprising:
a single silica layer overcoated on said non-porous substrate and having an exposed surface, the thickness of said silica layer as measured between the exposed surface thereof and the silica layer-substrate interface being generally uniform and in the range of from about 150 nm to about 600 nm with the silica layer displaying throughout its thickness at least ome degree of porosity, and the porosity of said overcoated silica layer together with the non-porous nature of said substrate forming a defined interface therebetween;
all of said silica layer consisting essentially of silica except for other glass-forming constituents which may diffuse from said substrate and into said silica layer proximate said layer-substrate interface during the forming-processing of said silica layer on said substrate;
that portion of said silica layer which is immediately proximate the exposed surface thereof displaying the highest degree of porosity and the porosity of said silica layer gradually decreasing from the exposed surface thereof to a depth which is at least about one-quarter of the longest wavelength of said predetermined wide band of radiations to provide a graded degree of porosity which decreases as the distace from the exposed surface thereof increases;
that portion of said silica layer which is immediately proximate the exposed surface thereof having an index of refraction which approaches unity, and that portion of said silica layer which is immediately proximate the interface between said silica layer and said substrate having an index of refraction which approaches that of said substrate; and
the size of the individual pores in said silica layer being sufficiently small that radiations impinging upon the exposed surface of said silica layer are transmitted therethrough without being significantly scattered.

8. The method of applying to a radiation-transmitting non-porous vitreous substrate of predetermined refractive index a substantially non-reflecting coating which functions effectively over a predetermined wide band of radiations, which method comprises:
preparing a coating solution comprising a mixture of a predetermined molar amount of silicon alkoxide of the formula $Si(OR)_4$ where R is alkyl having from one to six carbon atoms, water in amount of from about 1.9 moles to about 2.6 moles per mole of alkoxide, organic solvent in which both said alkoxide and said water are miscible and in such amount that the total silicon alkoxide when expressed in terms of equvalent SiO_2 content is from about 12% to about 18% by weight of said coating solution, and a small amount of mineral acid catalyst, and heating and then cooling the mixed solution constituents under predetermined conditions to effect a controlled hydrolysis and polymerization thereof;
applying the prepared coating solution to the substrate to be coated as a generally uniform liquid film, and rapidly drying the applied film under low humidity conditions to form a residual layer having a thickness of from about 300 nm to about 1200 nm;
heating the substrate and the coated layer at a predetermined temperature and for a predetermined time first to drive residual organic material and hydroxyl radicals therefrom and then to heat treat the residual silica to form a thin layer consisting essentially of porous silica except for any minor proportion of glass-forming constituent which may diffuse from the substrate during the heating thereof into the porous silica layer proximate the silica layer-substrate interface, with the size of the individual pores of said porous silica layer being sufficiently small that radiations intended to pass through said substrate are not significantly scattered by the pores in said porous silica layer; and
applying to the exposed surface of said formed porous silica layer a relatively weak silica etching solution for a predetermined time sufficient to enlarge in a graded fashion the existing pores in the porous silca layer to a depth, measured from the exposed surface, which is at least about one-quarter of the longest wavelength of radiations of said predetermined wide band of radiations to provide a graded degree of porosity which decreases as the distance from the exposed surface of said silica film increases, with the size of the largest pores in said silica layer being sufficiently small so as not to significantly scatter the radiations intended to be passed through said substrate.

4,535,027

HIGH STRENGTH POLYACRYLONITRILE FIBER AND METHOD OF PRODUCING THE SAME

Toshiyuki Kobashi, and Seiji Takao, both of Okayama, Japan, assignors to Japan Exlan Company Limited, Osaka, Japan

Filed Mar. 26, 1984, Ser. No. 593,239
Claims priority, application Japan, Apr. 20, 1983, 58-70449
Int. Cl.³ D02G 3/00
U.S. Cl. 428—364 1 Claim

1. A polyacrylonitrile fiber having a tensile strength not less than 20 g/d, and produced from a polymer composed mainly of acrylonitrile and having a weight average molecular weight not less than 400,000.

4,535,028

HOLLOW FIBER OF CUPRAMMONIUM REGENERATED CELLULOSE AND PROCESS FOR PRODUCING THE SAME

Masanobu Yokogi; Yoshifumi Sugimoto, and Yotsuo Ono, all of Miyazaki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha and Asahi Medical Co., Ltd., both of Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,296
Claims priority, application Japan, Oct. 1, 1981, 56-154808
Int. Cl.³ D02G 3/00; B01D 39/00
U.S. Cl. 428—398 12 Claims

1. A hollow fiber of cuprammonium regenerated cellulose having an axially disposed cylindrical bore extending throughout the fiber length, said fiber length being at least 10 m, said bore having an inside diameter of from 50 to 800 microns and being filled with a gas, and said hollow fiber having on its inside wall no trace of a liquid.

8. A process for producing a hollow fiber of cuprammonium regenerated cellulose having an axially disposed cylindrical bore extending throughout the fiber length of at least 10 m and having on its surface wall no trace of a liquid, said bore having an inside diameter of from 50 to 800 microns and being filled with a gas, which comprises the steps of:
(1) extruding a spinning solution of cuprammonium cellulose through an annular orifice to form a fiber extrudate with a bore while simultaneously injecting a gas into the bore of the fiber extrudate through an injection tube provided in the center of the annular orifice;
(2) allowing said fiber extrudate to free fall in an air space and substantially vertically dive into a depth of from 2 to 20 mm below the surface of a coagulation bath only with a downward force gained during said free fall;
(3) passing the fiber extrudate through the coagulation bath to obtain a hollow fiber having an axially disposed cylindrical bore; and
(4) refining and drying the so-obtained hollow fiber.

4,535,029

METHOD OF CATALYZING METAL DEPOSITIONS ON CERAMIC SUBSTRATES

Josef Intrater, Englewood Cliffs, N.J., and Gene Bertoldo, New York, N.Y., assignors to Advanced Technology, Inc., Palisades Park, N.J.

Filed Sep. 15, 1983, Ser. No. 532,618

The portion of the term of this patent subsequent to Nov. 9, 1999, has been disclaimed.

Int. Cl.[3] B32B *9/00, 15/04*

U.S. Cl. 428—408 11 Claims

1. A composite of tin, lead, indium, a tin alloy, a lead alloy, an indium alloy, or a mixture thereof as a component in combination with a carbide or carbonyl fomer and a small portion of about 2%, by weight, platinum, palladium or mixture thereof as a catalyst for improving an adherent coating, film or layer and wherein the balance, by weight, is said coating, on a base or substrate of a carbon, diamond, silicon, carbide, alumina, zirconia, sapphire, quartz, graphite, nitride, oxide, arsenide, titanate, silicide, boride, telluride, phosphide, pyrolitic graphite, silicon carbide, boron carbide, a mixed carbide, tungsten carbide, oxides of metals or metalloids, aluminum gallium arsenide, gallium arsenide, gallium phosphide, lanthanum boride, barium titanate, zirconium ortho silicate, zinc oxide, magnesium silicate, aluminum silicate, silicon nitride, beryllium oxide, boron nitride or titanium diboride.

4,535,030

COATED SUBSTRATE

Nicholas A. Rounds, 271 Tamenend Ave., New Britain, Pa. 18901

Continuation-in-part of Ser. No. 551,445, Nov. 14, 1983,. This application Apr. 13, 1984, Ser. No. 599,835

Int. Cl.[3] B32B *27/08, 27/36;* G01D *15/34*

U.S. Cl. 428—413 18 Claims

1. An information storage device having a polymeric coating thereon, said device comprising a coatable substrate capable of having information encoded on its surface, said polymeric coating having been formed on said surface of said device from the polymerization of a coating composition which comprises a diacrylate and a diester of beta-acryloxypropionic acid, said diacrylate being present in an amount of from about 4% to about 85% by weight of said diacrylate and said diester, said discrylate being selected from the class consisting of glycol esters of acrylic acid wherein the glycol portion of the ester has the formula $HO[(CH_2)_mCHR—O]_nH$, wherein R is hydrogen or methyl, m is from 1 to about 2 and n is from 1 to about 4, neopentyl glycol, ethoxylated neopentyl glycol, and propoxylated neopentyl glycol, and from about 15% to about 96%, based on the weight of said diacrylate and said diester, of said diester of beta-acryloxypropionic acid selected from the class consisting of the neopentyl glycol ester of di(beta-acryloxypropionic acid) and the esters of glycols having the formula $HO[(CH_2)_mCHR—O]_nH$, wherein R is hydrogen or methyl, m is from 1 to about 2 and n is from 1 to about 4, a surfactant, and, if said coating composition is to be ultra violet or visible light cured, a photoinitiator.

4,535,031

MODIFIED AMINOPLAST, ITS PREPARATION AND ITS USE

Peter Dorries, Frankfurt am Main; Thomas Götze, Neuenhain; Steffen Piesch, Oberursel; Manfred Schön, Rodgau; Günther Wulff, Hoisdorf; Karl Hintermeier, Frankfurt am Main; Günther Wulff, Hoisdorf, and Karl Hintermeier, Frankfurt am Main, all of Fed. Rep. of Germany, assignors to Cassella Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 371,070, Apr. 23, 1982, abandoned. This application Mar. 5, 1984, Ser. No. 586,108

Claims priority, application Fed. Rep. of Germany, Jun. 30, 1981, 3125615

Int. Cl.[3] B32B *27/10;* C08L *67/02*

U.S. Cl. 428—481 12 Claims

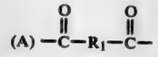
1. Modified aminoplast resin comprising

(a) 85 to 97.5% by weight of an aminoplast precondensate which has been etherified with a lower alkanol to an extent not exceeding 10% and

(b) 2.5 to 15% by weight of a modifying agent which comprises a mixture of:

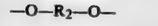
(i) a water-soluble polyester prepared from carboxylic acids with at least one carboxyl and an alcohol with at least two hydroxyls, and

(ii) sufficient free diol or polyol whereby the mixture has a ratio of the sum of free and esterified hydroxyls of 0.8 to 4.5 moles for each mole of the sum of free and esterified carboxyls, wherein the polyester of said modifying agent is a polyester comprising structural units selected from the formula:



(A)

and



(B)

wherein

R_1 is a divalent hydrocarbyl moiety,

R_2 is divalent moiety having as a statistical average, 40–100 mole % of structural units of the formula $CH_2—CH_2—O—CH_2CH_2—$, $CH_2—CH_2—O—CH_2CH_2—O—CH_2CH_2—$ or mixtures thereof,

and said polyester has an acid number of 15 to 150.

4,535,032

BLACK-METALLIZED SUBSTRATE SURFACES

Kirkor Sirinyan; Rudolf Merten, both of Leverkusen, and Henning Giesecke, Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Oct. 5, 1983, Ser. No. 539,034

Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239090

Int. Cl.[3] C23C *3/02;* C23F *5/02;* F24J *3/02*

U.S. Cl. 428—629 8 Claims

1. Sheet-like substrate surfaces having a 0.01 to 2 μm thick black metal coat consisting essentially of metallic Co, Cu, Ni, Fe, Ag, Au and mixtures thereof and having a reflection of at most 20% of electromagnetic radiation within the wavelength range from 200 to 5,000 nm and at least 50% within the wavelength range from 7,000 to 24,000 nm, the percentages relating to the mean value over the entire respective wavelength range said black metal coat obtained by utilizing a metallizing bath containing a polymeric organic surface-active compound having a molecular weight of at least 400 and being completely or partially swellable in aqueous media, said polymers being in the form of latices or emulsions based on styrene-butadiene or acrylonitrile graft polymers or copolymers, polyisoprene,

homopolymers or copolymers, polyacrylates, polyvinyl chloride, polyvinyl acetate, polyurethane dispersions which are anionic, neutral or cationic or mixtures thereof.

4,535,033

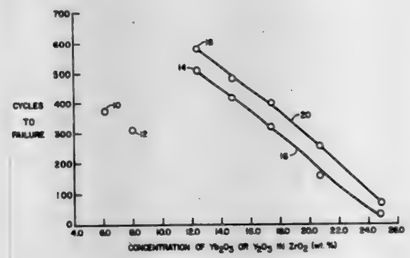
THERMAL BARRIER COATING SYSTEM

Stephan Stecura, Parma, Ohio, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 523,297, Aug. 16, 1983, Pat. No. 4,485,151, and a continuation-in-part of Ser. No. 375,784, May 6, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,712

Int. Cl.[3] C23C *7/00;* C23D *5/00;* B32B *15/04*

U.S. Cl. 428—633 10 Claims



1. A coated article of manufacture having a duplex thermal barrier coating system comprising

a substrate of a metal selected from the group consisting of nickel-base, cobalt-base, and iron-base alloys,

a bond coating covering said substrate, said bond coating consisting essentially of an alloy containing chromium, aluminum, a rare earth selected from the group consisting of yttrium and ytterbium with a metal selected from the group consisting of nickel, cobalt, and iron, and

a thermal barrier coating covering said bond coating, said thermal barrier coating consisting essentially of zirconia partially stabilized with ytterbia.

4,535,034

HIGH AL HEAT-RESISTANT ALLOY STEELS HAVING AL COATING THEREON

Takashi Zaizen; Yasuo Otoguro; Mikio Yamanaka, all of Kanagawa, and Shozo Yamane, Tokyo, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Dec. 30, 1983, Ser. No. 567,343

Int. Cl.[3] C23C *1/08*

U.S. Cl. 428—653 12 Claims

1. A high-Al heat resistant coated steel comprising a base steel consisting essentially of, in weight percent, not more than 0.7% C, not more than 3.0% Si, not more than 2.0% Mn, 10 to 40% Ni, 9 to 30% Cr, 2 to 8% Al, with balance being Fe and unavoidable impurities, and an Al coating formed on the base steel.

4,535,035

OXIDATION RESISTANT SLURRY COATING FOR CARBON-BASED MATERIALS

James L. Smialek, and George C. Rybicki, both of Strongsville, Ohio, assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 17, 1984, Ser. No. 571,617

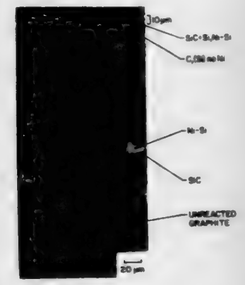
Int. Cl.[3] B05D *3/02*

U.S. Cl. 428—698 5 Claims

2. A method of coating a carbon-base material comprising the steps of

spraying a slurry containing nickel powders and silicon powders onto said carbon-base material in an air environment,

placing said slurry covered carbon-base material in a vacuum, and



sintering said slurry covered carbon-base material in said vacuum by heating the same to 1200° C. for one hour and then heating said slurry covered carbon-base material to 1325° C. for one hour.

5. A carbon-base material coated in accordance with the method of claim 2.

4,535,036

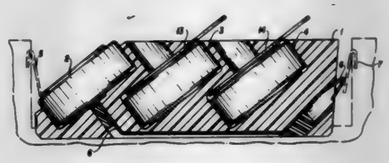
MULTI-CELL POWER SUPPLY

Roger W. Kelm, New Richmond, Wis.; Glenn W. Merry, St. Paul, and William J. McArthur, Maple Grove, both of Minn., assignors to Duracell Inc., Bethel, Conn.

Filed Jun. 4, 1984, Ser. No. 617,217

Int. Cl.[3] H01M *2/10*

U.S. Cl. 429—99 19 Claims



1. A portable electrical power source comprising housing means adapted to fit within a cell cavity of a battery-powered device, said housing means having positive and negative electrical contact means adapted to form electrical connection with corresponding positive and negative contact means of said device; a plurality of button cells releasably disposed within said housing means, at least one of said button cells being electrically connected to said contact means and at least 50 percent of said button cells being insulated from any electrical connection to said contact means and to the button cells electrically connected to said contact means.

4,535,037

LITHIUM-BORON ANODES IN NITRATE THERMAL BATTERY CELLS

George E. McManis, III; Aaron N. Fletcher, and Melvin H. Miles, all of Ridgecrest, Calif., assignors to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Nov. 23, 1984, Ser. No. 674,375

Int. Cl.[3] H01M *4/36*

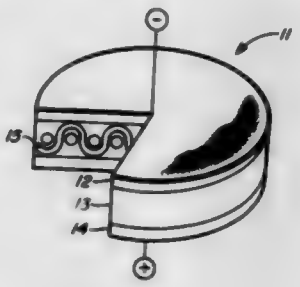
U.S. Cl. 429—103 2 Claims

1. A thermally activated electrochemical cell, comprising:

a cathode;

an anode spaced from said cathode and made of a lithium-boron alloy; and

an electrolyte disposed between and in contact with said anode and said cathode, said electrolyte selected from the



group consisting of lithium nitrate, a mixture of lithium nitrate and sodium nitrate, a mixture of lithium nitrate and potassium nitrate, and a mixture of lithium nitrate and sodium nitrate with potassium nitrate.

4,535,038

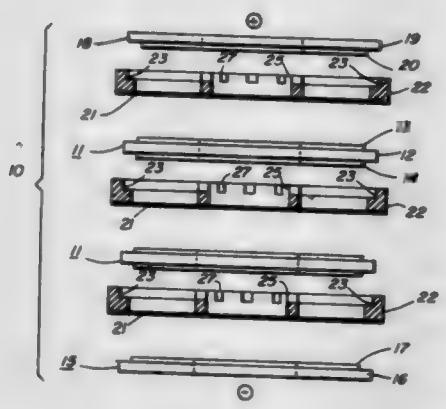
STRUCTURE FOR ELECTROCHEMICAL BATTERIES

Gerard H. Boyle, Concord; Roger K. Freeman, Boylston, and Franz Goebel, Sudbury, all of Mass., assignors to GTE Communications Products Corporation, Waltham, Mass.

Filed May 21, 1984, Ser. No. 612,222

Int. Cl.³ H01M *2/02*

U.S. Cl. 429—154 **2 Claims**



1. A structure for electrochemical batteries having a plurality of plates, comprised of:

a first fusible frame sized to overlap the outer periphery of one of said plates; and

a sheet of porous, electrically insulating material affixed to said first fusible frame wherein said sheet defines an inner hole and which further includes a second fusible frame sized to over lap the hole periphery, said sheet affixed to said second fusible frame.

4,535,039

BATTERY OR ELECTROCHEMICAL STORE BASED ON ELECTROCHEMICALLY OXIDIZABLE AND/OR REDUCIBLE POLYMERS

Herbert Naarmann, Wattenheim, and Gernot Koehler, Ludwigshafen, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Nov. 29, 1983, Ser. No. 555,983

Claims priority, application Fed. Rep. of Germany, Dec. 4, 1982, 3244900

Int. Cl.³ H01M *6/18*

U.S. Cl. 429—213 **19 Claims**

1. A battery or electrochemical store comprising one or more cathodes, one or more anodes and one or more media for current transport within the battery or electrochemical store, wherein the active material of the cathode and/or anode consists of one or more electrically conductive polymers which have an electrical conductivity greater than 10^{-2} Ohm^{-1} cm^{-1} and contain electrochemically oxidizable and/or reducible redox groups which have a defined structure and are capable of forming two or more stable oxidation states.

4,535,040

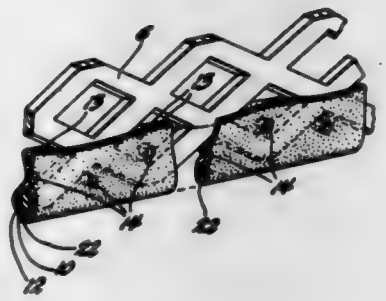
BATTERY GRID

Richard H. Kline, Anderson, Ind., assignor to General Motors Corporation, Detroit, Mich.

Continuation of Ser. No. 344,130, Jan. 29, 1982, abandoned, which is a continuation of Ser. No. 179,806, Aug. 20, 1980, abandoned. This application Dec. 27, 1983, Ser. No. 565,394

Int. Cl.³ H01M *4/74*

U.S. Cl. 429—234 **2 Claims**



1. A substantially planar grid for supporting the active material of an electric storage battery comprising: a conductive current collecting header along a first edge of said grid; a network of conductive wires extending from said header throughout the major extent of said grid, said wires defining a plurality of interstices for receiving said active material and forming a scalloped second edge opposite said first edge; a thin, flexible, thermoplastic ribbon enclosing said scalloped edge, said ribbon being folded lengthwise about said scalloped edge so as to provide a longitudinal crease in said ribbon extending along the periphery of the grid opposite said header and two wing-like ribbon portions diverging from said crease on opposite sides of said network and sandwiching said scalloped edge therebetween; and a plurality of spot welds in said ribbon portions and extending through said interstices along said second edge for joining said portions one to the other therethrough and thereby securing said folded ribbon to said scalloped edge.

4,535,041

STABILIZATION OF HOLOGRAMS

Herbert L. Fielding, Wilmington, and Richard T. Ingwall, Newton, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 20, 1984, Ser. No. 641,994

Int. Cl.³ G03H *1/04*; G03C *5/24*

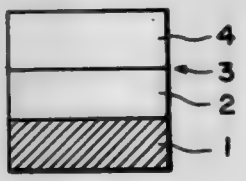
U.S. Cl. 430—1 **10 Claims**

1. A volume phase hologram comprising a polymerized ethylenic unsaturated monomer and the reaction product of zirconium with a fatty acid, said reaction product being present in said hologram in a concentration effective to increase the resistance of the hologram to changes induced by exposure to high humidity.

4,535,042
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER WITH ELECTRON DONOR AND ACCEPTOR LAYERS

Hiroyuki Kitayama, and Toyoko Kobayashi, both of c/o Canon Kabushiki Kaisha, 30-2, 3-chome, Shimomaruko, Ohta-ku, Tokyo, Japan

Filed Feb. 21, 1984, Ser. No. 581,902
Claims priority, application Japan, Feb. 24, 1983, 58-28480; Feb. 24, 1983, 58-28481
Int. Cl.³ G03G 5/06
U.S. Cl. 430—56 9 Claims



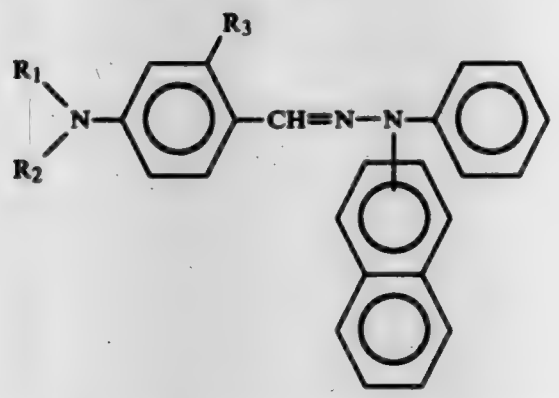
1. An electrophotographic photosensititve member constructed with a layer comprising a low molecular electron acceptor and a resin, and a layer comprising a low molecular hydrazone compound electron donor, and a resin both layers being supported by an electrically conductive substrate with themselves superposed upon each other to form a thin layer of charge transfer complex at the interface between the two layers.

4,535,043
ELECTROPHOTOGRAPHIC PHOTOSENSITIVE MEMBER

Shozo Ishikawa, Yokohama; Hitoshi Toma, Kawasaki, and Fumio Sumino, Tokyo, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 1, 1984, Ser. No. 605,839
Claims priority, application Japan, May 9, 1983, 58-81105
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 8 Claims

1. An electrophotographic photosensitive member having a photosensitive layer of a laminate structure comprising a charge generation layer and a charge transport layer on a conductive substrate, characterized in that the charge generation layer contains an aluminum chloride phthalocyanine pigment and the charge transport layer contains a hydrazone compound represented by the general formula



(1)

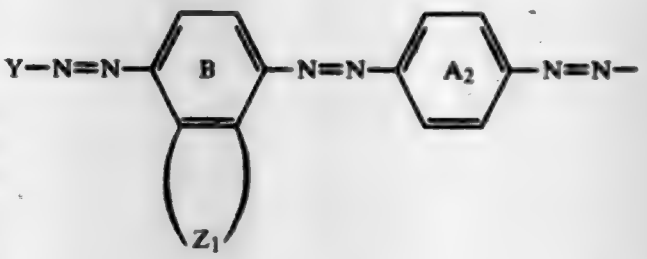
wherein, R_1 and R_2 represent alkyls or are residues forming a cyclic amino group together with the nitrogen atom which links them, and R_3 represents hydrogen or halogen.

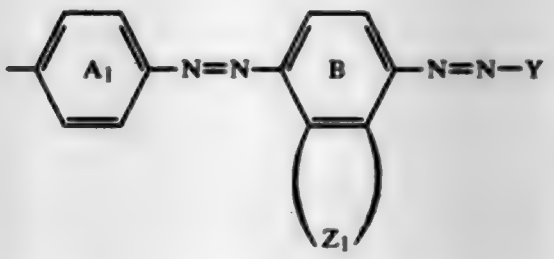
4,535,044
PHOTOSENSITIVE MATERIAL FOR ELECTROPHOTOGRAPHY CONTAINING PHOTOSENSITIVE LAYER INCORPORATING PENTAKISAZO PIGMENT

Teruaki Higashiguchi, Tokyo, and Nobuhiro Miyakawa, Abiko, both of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

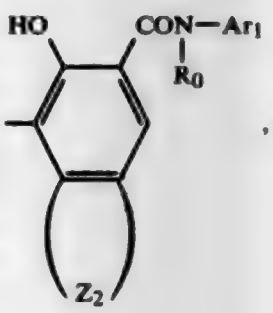
Filed May 9, 1983, Ser. No. 492,959
Claims priority, application Japan, May 10, 1982, 57-76497
Int. Cl.³ G03G 5/06, 5/10
U.S. Cl. 430—58 14 Claims

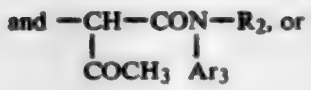
1. A photosensitive material for electrophotography, which comprises a photosensitive layer containing as a charge-generating pigment a pentakisazo pigment represented by the following formula:

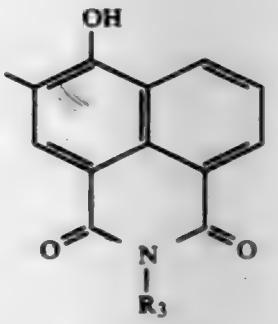




wherein the rings A_1 and A_2 may have halogen atoms, alkyl groups or alkoxy groups as substitutents at the ortho-positions to the azo groups, the ring B may have a halogen atom, an alkyl group or an alkoxy group as a substituent or may contain the ring Z_1, Z_1 selected from the group consisting of an aromatic or hetero ring fused to the benzene ring B, or a substituted derivative thereof and Y stands for a group selected from a group represented by the following formula:



, and 



in which Z_2 is an aromatic ring, a carbozole ring or a benzofuran ring or a substituted derivative thereof, Ar_1 is an aromatic ring, a hetero ring or a substituted derivative thereof, Ar_2 and Ar_3 is an aromatic ring or a substituted derivative thereof, R_0 is a hydrogen atom, a lower alkyl group or a phenyl group, R_1 is a lower alkyl group, a carboxyl group or an ester thereof,

and R_2 and R_3 is a hydrogen atom, a lower alkyl group, a phenyl group or a substituted derivative thereof.

4,535,045

ELECTRIC LIGHT-SENSITIVE MATERIAL CONTAINING A NOVEL VINYLIDENE CHLORIDE COPOLYMER

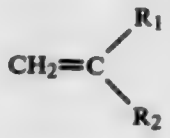
Kouichi Kawamura; Seiji Horie, and Hideo Sato, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 4, 1983, Ser. No. 548,813
Claims priority, application Japan, Nov. 5, 1982, 57-194199
Int. Cl.³ G03G *5/05*
U.S. Cl. 430—60 **9 Claims**

1. An electrophotographic light-sensitive material comprising an electrically conductive support and a light-sensitive layer on the support, wherein the light-sensitive layer contains a copolymer comprising:

(a) a monomer selected from the group consisting of a vinylidene chloride and a vinyl chloride;

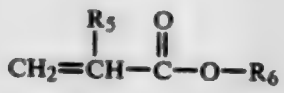
(b) a vinyl-based unsaturated monomer represented by the general formula;



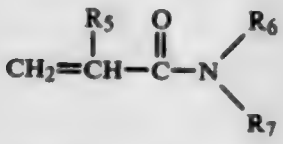
I

(wherein R_1 is a hydrogen atom or a methyl group, and R_2 is a cyano group, $-COOR_3$, $-OCOR_3$, $-OR_3$ or $-CONR_3R_4$ (wherein R_3 is an alkyl group containing from 1 to 15 carbon atoms, an aryl group containing up to 15 carbon atoms, an allyl group, a vinyl group, or a heterocyclic group, and R_4 is a hydrogen atom or an alkyl group containing from 1 to 15 carbon atoms)); and

(c) a vinyl monomer containing a hydroxyl group at the side chain thereof represented by the general formulas II and



II



III

wherein R_5 represents a hydrogen atom or an alkyl group, R_6 represents an alkyl group, an aryl group, an aralkyl group or a substituted group of them, the group represented by R_6 containing a hydroxyl group, and R_7 represents a hydrogen atom, an alkyl group, an aryl group, an aralkyl group or a substituted group of them.

4,535,046

CHLOROALUMINUMPHTHALOCYANINE EXHIBITING REDUCED GREEN SPECTRAL ABSORPTION

Henry V. Ksaacson, Webster, and Hal E. Wright, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Jun. 30, 1983, Ser. No. 509,536
Int. Cl.³ G03G *5/06*
U.S. Cl. 430—78 **4 Claims**

1. Chloroaluminumphthalocyanine which, when formed into composite particles and dispersed into Isopar G TM, as described in Example 1 herein, and the resulting dispersion is coated on a reflective support as described in Example 2 herein, exhibits a spectral absorption peak of 1.0 normalized absorption unit at about 640 nm and an absorption of no greater than 0.7 normalized absorption unit at 600 namometers.

4,535,047

FERROMAGNETIC AMORPHOUS METAL CARRIER PARTICLES FOR ELECTROPHOTOGRAPHIC TONERS

Lewis J. Colby, Jr., Short Hills, N.J., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Apr. 4, 1983, Ser. No. 482,097
Int. Cl.³ G03G *9/14*
U.S. Cl. 430—108 **10 Claims**

1. An improved two component electrophotographic developer consisting essentially of a toner and a magnetic carrier particle, the improvement comprising:

said development carrier comprising a flat polyhedral shaped particle of a ferromagnetic amorphous metal.

4,535,048

TONER FOR DEVELOPMENT OF ELECTROSTATIC CHARGES

Sukejiro Inoue, Yokohama; Masumi Sasakawa, Tokyo; Hiroshi Fukumoto, and Shinji Doi, both of Kawasaki, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 5, 1983, Ser. No. 520,576
Claims priority, application Japan, Aug. 12, 1982, 57-140241
Int. Cl.³ G03G *9/08, 9/14*
U.S. Cl. 430—110 **9 Claims**

1. A toner for the development of electrostatic charges, comprising a salicylic acid metal complex and an amorphous polyester having an acid value of from 10 to 100 prepared by the reaction of (1) at least one etherified diphenol with (2) an acid component, said diphenol being propoxylated, or propoxylated and ethoxylated wherein the propoxy group content is not less than 50 mole % of the total of the propoxy and ethoxy groups, said acid component comprising (a) at least one phthalic acid or a reactive derivative thereof and (b) at least one trivalent or higher valent aromatic carboxylic acid wherein (b) is in an amount of not more than 40 mole % based on the total amount of said acid component, and wherein the amount of the salicylic acid metal complex is at least 0.2% by weight based on the polyester.

4,535,049

PRESSURE-FIXING TONER FOR ELECTROPHOTOGRAPHY AND PROCESS FOR PREPARATION THEREOF

Nobuyasu Honda, Tenri; Toshiro Yamakawa, Osaka, and Toshimitsu Ikeda, Himeji, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Aug. 2, 1983, Ser. No. 519,594
Claims priority, application Japan, Aug. 4, 1982, 57-135134
Int. Cl.³ G03G *9/08*
U.S. Cl. 430—137 **4 Claims**

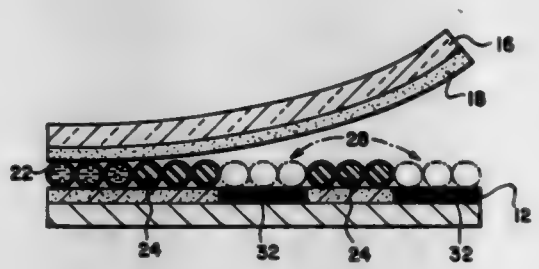
1. A process for the preparation of pressure-fixing toners for the electrophotography, which comprises the step of cooling a solution obtained by hot-dissolving a wax component in an aromatic solvent to precipitate spherical particles of the wax component having a particle size smaller than 10 microns and copolymerizing a styrene type monomer with an acrylic monomer in the system containing the spherical particles of the wax component to form a composite binder comprising the wax component and the resin component composed mainly of the resulting styrene-acrylic copolymer at a weight ratio of from 54/46 to 20/80, in which the wax component is present in the form of spherical particles having a particle size smaller than 10 microns in a continuous phase of the resin component, and the step of kneading the composite binder with a pigment, and cooling and pulverizing the kneaded composite binder and pigment to form particles having an indeterminate shape.

4,535,050

PEELING DEVELOPMENT OF PHOTOSENSITIVE MATERIALS EMPLOYING MICROENCAPSULATED RADIATION SENSITIVE COMPOSITIONS

Paul C. Adair, and David G. Adkins, both of Chillicothe, Ohio, assignors to The Mead Corporation, Dayton, Ohio

Filed Jul. 18, 1983, Ser. No. 514,397
Int. Cl.³ G03C 1/40, 1/68, 1/495
U.S. Cl. 430—138 27 Claims



1. An imaging sheet comprising:
a support,
a layer of microcapsules on said support,
said microcapsules containing an internal phase including a radiation sensitive composition which undergoes a change in viscosity upon exposure to actinic radiation and an image-forming agent, and
a strippable cover sheet formed from a material transparaent to said actinic radiation,
said cover sheet being uniformly adhered to said layer of microcapsules prior to exposure, wherein said imaging sheet is useful in forming images by image-wise exposing said imaging sheet to actinic radiation and separating said cover sheet from said layer of microcapsules, whereby said microcapsules rupture and image-wise release said image-forming agent.

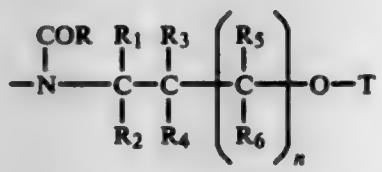
4,535,051

PHOTOGRAPHIC PRODUCTS AND PROCESSES WITH COLOR SHIFTED DYE

Myron S. Simon, West Newton, and David P. Waller, Lexington, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Filed Aug. 27, 1984, Ser. No. 644,915
Int. Cl.³ G03C 5/54, 1/40
U.S. Cl. 430—222 21 Claims

8. A photographic product comprising a photosensitive element comprising a plurality of layers including a support, a silver halide emulsion in a layer on said support, and in a layer on the same side of said support as said silver halide emulsion, a color shifted precursor of a preformed image dye, said color shifted precursor having at least one



group, wherein R is hydrogen, alkyl, provided that the α-carbon is not attached to a hydrogen atom, or aryl; R_1, R_2, R_3, R_4, R_5 and R_6 are each independently hydrogen, alkyl or aryl; n is 0 or 1, and T is a moiety containing a thiazolidin-2-yl group, said thiazolidin-2-yl group being capable of undergoing cleavage in the presence of silver ions and/or soluble silver complex, said moiety maintaining said color shifted precursor in its color shifted form at least until said thiazolidin-2-yl group undergoes said cleavage.

11. A photographic product as defined in claim 8 wherein said image dye provided by said color shifted precursor is diffusible in aqueous alkaline solution and further including an image receiving layer so positioned as to be capable of receiving by diffusion an imagewise distribution of said image dye.

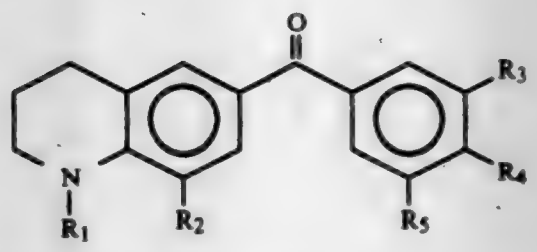
4,535,052

CONSTRAINED N-ALKYLAMINO ARYL KETONES AS SENSITIZERS FOR PHOTOPOLYMER COMPOSITIONS

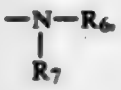
Albert G. Anderson, and Thomas E. Ducber, both of Wilmington, Del., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 490,956, May 2, 1983, abandoned. This application Aug. 28, 1984, Ser. No. 645,115
Int. Cl.³ G03C 1/94, 1/68
U.S. Cl. 430—277 10 Claims

1. A photopolymerizable composition comprising an admixture of
(a) at least one nongaseous ethylenically unsaturated compound having at least one terminal ethylenically unsaturated group, a boiling point above 100° C. at normal atmospheric pressure and being capable of addition polymerization.
(b) at least one organic polymeric binder compound,
the improvement wherein the composition contains
(c) 0.001 to 15% by weight of the total composition of at least one constrained N-alkylamino aryl ketone of the formula:



R_1 is lower alkyl of 1 to 4 carbons;
R_2 is H or taken together with R_1 is $—CH_2CH_2CH_2—$;
R_4 is H, $—OCH_3$ or



R_6 and R_7 are lower alkyl of 1 to 4 carbon atoms;
R_3 is H or taken together with R_6 is $—CH_2CH_2CH_2—$;
R_5 is H or taken together with R_7 is $—CH_2CH_2CH_2—$.

9. A photopolymerizable element comprising a support bearing a layer of a composition according to claim 1.

10. A photopolymerizable element according to claim 9 wherein the support is copper.

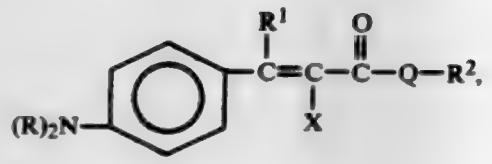
4,535,053

MULTILAYER PHOTORESIST PROCESS UTILIZING CINNAMIC ACID DERIVATIVES AS ABSORBANT DYES

Paul R. West, Clifton Park, and Bruce F. Griffing, Schenectady, both of N.Y., assignors to General Electric Company, Schenectady, N.Y.

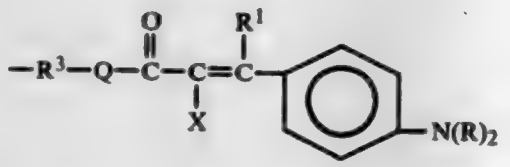
Filed Jun. 11, 1984, Ser. No. 619,526
Int. Cl.³ G03F 7/02; G03C 1/76
U.S. Cl. 430—312 1 Claim

1. A process for photopatterning a polymethylmethacrylate resist on a silicon substrate which comprises
(1) spin casting onto a silicon substrate, a polymethylmethacrylate resin composition comprising
(A) 100 parts of an inert organic solvent
(B) 1 to 15 parts of a polymethylmethacrylate and
(C) 0.01 to 1.0 parts of a cinnamic acid derivative included within the formula



(2) baking the applied resist composition of (1) to a temperature of 100° to 200° C. to produce a polymethylmethacrylate resist layer having a thickness of from 1 to 3 microns,
(3) applying onto the layer of (2) a polynovolak resist to a thickness of from about 0.2 to 1.0 microns,
(4) baking the resist layer of (3) to a temperature of 140° to 200° C.,
(5) exposing the upper resist layer of (4) to patterned UV light at about 350 to 440 nm to produce a latent positive image in the resist,
(6) developing the resist of (7) and thereafter baking the resulting portable conformable mask,
(7) exposing the composite of the portable conformable mask and the polymethylmethacrylate resist layer to UV light in the range of 190 to 250 nm to produce a positive image of the portable conformable mask, and
(8) developing the resulting polymethylmethacrylate resist,

where R and R^1 are selected from hydrogen or $C_{(1-8)}$ alkyl, Q is —O— or —N—, X is selected from nitrile and halogen, R^2 is a monovalent group selected from



polyalkylene glycol, polyalkylene amine and polyalkylene ester and R^3 is a $C_{(1-8)}$ alkylene radical or $C_{(6-13)}$ aryl radial.

4,535,054

WET PROCESS FOR DEVELOPING STYRENE POLYMER RESISTS FOR SUBMICRON LITHOGRAPHY

Robert G. Brault, Santa Monica, and Leroy J. Miller, Canoga Park, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed May 5, 1983, Ser. No. 491,636
Int. Cl.³ G03C 5/16
U.S. Cl. 430—325 **24 Claims**

1. A lithographic process for preparing a patterned resist on a substrate, which process comprises:

(1) applying a layer of negative resist polymer onto a substrate, said polymer being selected from the group consisting of:
  (a) polystyrene
  (b) halogenated polystyrene, and
  (c) substituted styrene polymer having at least one substituent, where said at least one substituent is independently selected from the group consisting of alkyl having 1–4 carbon atoms; halo; haloalkyl having 1–4 carbon atoms and at least one halo, and
  (d) mixtures thereof;
(2) irradiating said resist polymer layer to form a negative pattern image therein; and
(3) developing said image by
  (i) dissolving away unexposed polymer with a developer solvent, and
  (ii) rinsing said wet developed resist with a nonsolvent to eliminate substantially any snakiness of the developed resist pattern image;

where said developer solvent/rinse nonsolvent combination is selected from the following schedule, wherein (d/s) is the developer solvent and (r/ns) is rinse nonsolvent:

Schedule 1

I. (d/s)	R_2—$(OCH_2CH_2)_m$—O—H
(r/ns)	R_5—$(OCH_2CH_2)_m$—OH or R—OH
II. (d/s)	R_7—$(OCH_2CH_2)_m$—O—R_7
(r/ns)	R_5—$(OCH_2CH_2)_m$—OH or R—OH
III. (d/s)	R—CO—$(OCH_2CH_2)_p$—O—$(OC)_{0-1}$—R
(r/ns)	R_5—$(OCH_2CH_2)_m$—OH or R—OH
IV. (d/s)	benzene, toluene, ethylbenzene, xylene, monochlorobenzene, monochlorotoluene, monochloroethylbenzene, monochloroxylene, ortho-dichlorobenzene, meta-dichlorobenzene, and trichlorobenzene
(r/ns)	alkane having 5–8 carbon atoms, cycloalkane having 5–8 carbon atoms, and petroleum distillate boiling in the 5–8 alkane carbon atom boiling range
V. (d/s)	dioxane
(r/ns)	R—OH

where:
R is alkyl having 1–4 carbon atoms,
R_2 is alkyl having 4–8 carbon atoms,
R_5 is H, methyl, or ethyl,
R_7 is alkyl having 1–8 carbon atoms,
m is an integer equal to 1–4, and
p is an integer equal to 1–2.

4,535,055

SELF-FIXING IMAGING FILM CONTAINING REDUCTANT PRECURSOR

Terry T. Yu, Mt. Clemens, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Continuation of Ser. No. 402,120, Jul. 26, 1982, abandoned. This application May 18, 1984, Ser. No. 612,001
Int. Cl.³ G03C 5/24
U.S. Cl. 430—353 **15 Claims**

1. A method for recording electromagnetic radiation in which a fixed image is provided wherein said method comprises imagewise impinging said radiation upon a photosensitive film to produce a change in at least one property thereof, said film being made from a film-forming composition, which composition comprises:

(a) a reducible image forming compound;
(b) a reductant precursor which will abstract labile hydrogen from a labile hydrogen source under the influence of imaging energy to become a reducing agent with respect to the image forming compound, said reductant precursor present in an amount such that when the film is developed normally by heating, essentially all of the reductant precursor is removed from the film and the film is thereby fixed, said amount of reductant precursor being in the range of from 0.5% to 3.0% by weight of the total film-forming composition;
(c) a source of labile hydrogen for reaction with said reductant precursor; and
(d) a matrix in which said reducible image forming compound, reductant precursor and source of labile hydrogen are combined in amounts effective to form a composition which may be applied to a substrate,

said method further comprising subjecting the film after said impinging to normal development by heating for a period of time sufficient to develop and fix the film by removing essentially all of the reductant precursor.

4,535,056

YELLOW COLOR FORMERS FOR USE IN COLOR PHOTOTHERMOGRAPHIC SYSTEM

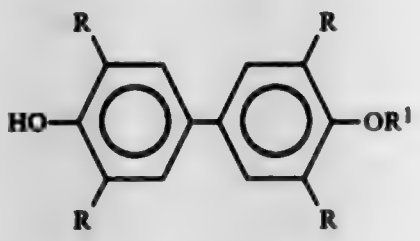
Robert A. Frenchik, Somerset Township, St. Croix County, Wis., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 15, 1984, Ser. No. 590,485
Int. Cl.[3] G03C *1/02*
U.S. Cl. 430—542 16 Claims

1. A photographic construction comprising at least one polymeric binder layer containing spectrally-sensitized photographic silver halide and, in association therewith

a. a non-light sensitive organic silver salt oxidizing agent,

b. at least one biphenol color-forming reducing agent having the formula



wherein each R is independently selected from a straight chain or branched alkyl or alkoxy group having 1 to 6 carbon atoms, and phenyl, and R^1 is hydrogen or an alkali-labile protecting group, and

c. at least one aliphatic or aromatic carboxylic acid as development modifier, the acid having the formula

$$R(COOH)_x$$

wherein

x is an integer having the value 1 or 2,

R is a group which is unsubstituted or substituted by at least one group selected from amino, hydroxyl, lower alkyl (C_1 to C_4), nitro, and one or two chloro atoms, wherein

when x is 1,

R is selected from the group consisting of alkenyl, aryl, and phenylalkyl, having up to 10 carbon atoms, and

when x is 2,

R is selected from the group consisting of alkenylene, alkylene, and arylene, having up to 14 carbon atoms; and

d. optionally, at least one toner; said polymeric binder layer being capable of providing a yellow to gold color upon development.

4,535,057

IMMUNOASSAY EMPLOYING MONOCLONAL HERPES SIMPLEX ANTIBODY AND BIOTIN-AVIDIN DETECTION SYSTEM

Gordon R. Dreesman, Houston, Tex., and Cynthia E. Kendall, Colombia, Mo., assignors to AMF Incorporated, White Plains, N.Y.

Filed Jul. 26, 1982, Ser. No. 402,009
Int. Cl.[3] G01N *33/54*
U.S. Cl. 435—5 18 Claims

1. An immunoassay which comprises:

a. forming an insoluble matrix comprising IgG antibody against a virus antigen to be detected;

b. contacting said matrix with a biological fluid to immunocapture the virus antigen sought to be detected;

c. contacting the resultant matrix with a biotin labeled monoclonal IgM antibody against said virus antigen;

d. contacting the resultant matrix with readably labeled avidin; and



e. determining the presence of and/or quantifying the immunocaptured virus antigen from the biological fluid by reading the labeled avidin immunocaptured by the matrix.

4,535,058

CHARACTERIZATION OF ONCOGENES AND ASSAYS BASED THEREON

Robert A. Weinberg, Brookline; Clifford J. Tabin, Cambridge, both of Mass., and Scott M. Bradley, McLean, Va., assignors to Massachusetts Institute of Technology, Cambridge, Mass.

Filed Oct. 1, 1982, Ser. No. 432,337
Int. Cl.[3] C12Q *1/68, 1/48, 1/34;* C12P *19/34;* C12N *15/00;* G01N *15/02;* C07H *21/04;* A61K *43/00*
U.S. Cl. 435—6 16 Claims

1. In an assay for detecting the mutation of a proto-oncogene to an oncogene:

the improvement comprising digesting the proto-oncogene or the oncogene with a restriction enzyme specific for a cleavage site present only in either said proto-oncogene or said oncogene.

4,535,059

MUCONIC ACID PRODUCTIVITY BY A STABILIZED MUTANT MICROORGANISM POPULATION

Jih-Han Hsieh, Parsippany; Sol J. Barer, Fanwood, and Peter C. Maxwell, New Providence, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Jan. 13, 1983, Ser. No. 457,807
Int. Cl.[3] C12P *7/40, 7/44;* C12N *9/02, 9/04, 1/26, 1/20, 1/28;* C12M *1/36*
U.S. Cl. 435—142 5 Claims

1. In a fermentation process for the production of muconic acid involving the culturing of a mutant Pseudomonad having the identifying characteristics of *Pseudomonas putida* ATCC No. 31,916 under conditions permitting the formation of muconic acid and recovery of muconic acid wherein the improvement comprises: limiting the presence of essential phosphate nutrient within a phosphate: growth carbon weight ratio range between about 0.04–0.08:1 in the aqueous fermentation medium which is maintained at a pH between about 5 to 8; thereby (1) increasing the specific muconic acid productivity of the microorganism, and (2) stabilizing the microorganism population whereby cell reversion is suppressed, wherein said suppressed cell reversion is to a parent strain of the microorganism which has the ability to grow on a non-growth toluene carbon source.

4,535,060

INHIBITION RESISTANT 5-ENOLPYRUVYL-3-PHOSPHOSHIKIMATE SYNTHETASE, PRODUCTION AND USE

Luca Comai, Davis, Calif., assignor to Calgene, Inc., Davis, Calif.

Filed Jan. 5, 1983, Ser. No. 455,634

Int. Cl.³ C12N *15/00, 1/20, 1/00;* C12P *19/34*

U.S. Cl. 435—172.3 **8 Claims**

1. A culture of cells consisting essentially of cells containing glyphosate resistant 5-enolpyruvyl-3-phosphoshikimate synthetase having at least one mutation originating from in vitro mutation in the aro locus for the structural gene expressing said synthetase, wherein glyphosate inhibition of said synthetase containing said mutation is less than about one-half of the synthetase of the original strain prior to mutation.

4,535,061

BACTERIA CAPABLE OF DISSIMILATION OF ENVIRONMENTALLY PERSISTENT CHEMICAL COMPOUNDS

Ananda M. Chakrabarty, Villa Park, Ill., and Scott T. Kellogg, Gaithersburg, Md., assignors to University of Illinois Foundation, Urbana, Ill.

Filed Dec. 28, 1981, Ser. No. 334,519

Int. Cl.³ C12N *1/20, 15/00;* C02F *3/00*

U.S. Cl. 435—253 **2 Claims**

1. *Pseudomonas cepacia* strain A.T.C.C. 39027.

2. A mixed culture of Pseudomonas and Arthrobacter, A.T.C.C. No. 39028.

4,535,062

APPARATUS FOR GROWING MICROORGANISMS

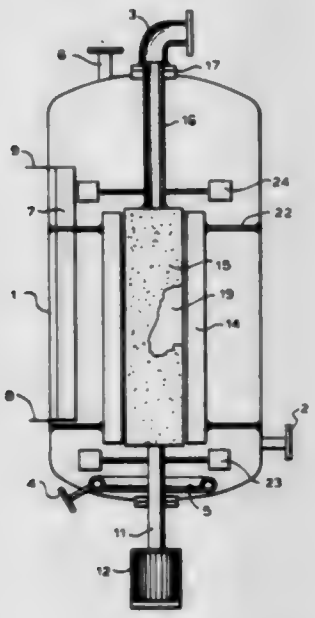
Hans Müller, Erlenbach, Switzerland, assignor to Chemap AG, Männedorf, Switzerland

Filed Feb. 7, 1983, Ser. No. 464,742

Claims priority, application Switzerland, Feb. 12, 1982, 965/82

Int. Cl.³ C12M *1/36*

U.S. Cl. 435—289 **16 Claims**



1. An apparatus for growing micro-organisms, comprising:

a fermenter accommodating a suspension of micro-organisms in a medium for fermentation and growing micro-organisms;

a diaphragm filter arranged in the interior of said fermenter for separating and withdrawing products of metabolism, said diaphragm filter having an axis and an axially extending peripheral surface radially spaced from said axis; and

stirring means arranged in the interior of said fermenter between the diaphragm filter and wall of the fermenter for stirring the suspension, said stirring means being located radially outwardly of and immediately near to said peripheral surface of said diaphragm filter and extending axially along said peripheral surface.

4,535,063

SILICON NITRIDE SINTERED BODIES AND A METHOD FOR PRODUCING THE SAME

Keiji Matsuhiro, and Minoru Matsui, both of Nagoya, Japan, assignors to NGK Insulators, Ltd., Japan

Filed Jun. 7, 1983, Ser. No. 501,824

Claims priority, application Japan, Feb. 9, 1983, 58-18963

Int. Cl.³ C04B *35/58*

U.S. Cl. 501—97 **13 Claims**

1. Silicon nitride sintered bodies consisting of oxides or oxynitrides of each element of Sr, Mg, a rare earth element and Zr, said Sr, Mg and rare earth element being present in an amount 0.1–15% by weight, respectively, and said Zr being present in an amount 0.1–11% by weight, and the remainder being Si_3N_4 present in an amount which is not less than 70% by weight.

4,535,064

CERAMIC COMPOSITIONS FOR A REDUCTION-REOXIDATION TYPE SEMICONDUCTING CAPACITOR

Yasunobu Yoneda, Kyoto, Japan, assignor to Murata Manufacturing Co., Ltd., Kyoto, Japan

Filed May 24, 1984, Ser. No. 613,628

Claims priority, application Japan, May 25, 1983, 58-93095; May 25, 1983, 58-93097; Jul. 11, 1983, 58-126500

Int. Cl.³ C04B *35/46*

U.S. Cl. 501—138 **4 Claims**

1. A ceramic composition for a reduction-reoxidation type semiconducting capacitor, said composition comprising (1) a mixture of 79.0 to 98.0 mole % barium titanate, 1.0 to 6.0 mole % cerium oxide and 1.0 to 15.0 mole % zirconium oxide and (2) 0.01 to 0.4% by weight manganese oxide, calculated as Mn based on the weight of said mixture (1).

4. A ceramic composition for a reduction-reoxidation type semiconducting capacitor, said composition comprising (1) a mixture of 79.0 to 99.0 mole % barium titanate, 0.5 to 6.0 mole % of an oxide of at least one lanthanide having an atomic number of from 59 to 66 and 0.5 to 15.0 mole % zirconium oxide, and (2) 0.01 to 0.4% by weight manganese oxide, calculated as Mn based on the weight of said mixture (1).

4,535,065

METHOD FOR REGENERATION OF MOIST POWDER ADSORPTION AGENTS

Jürgen Klein, and Peter Schulz, both of Essen, Fed. Rep. of Germany, assignors to Bergwerksverband GmbH, Essen, Fed. Rep. of Germany

Filed Sep. 20, 1982, Ser. No. 421,111

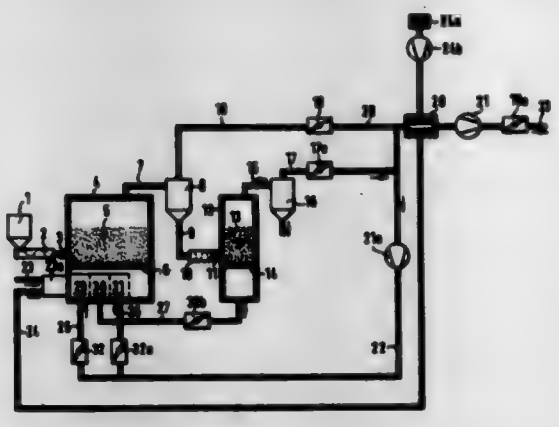
Claims priority, application Fed. Rep. of Germany, Oct. 10, 1981, 3139078

Int. Cl.³ B01J *20/34;* C01B *31/10, 31/08;* C10J *3/54*

U.S. Cl. 502—21 **4 Claims**

1. A method of regeneration of moist powder activated carbon, comprising the steps of mixing a moist powder activated carbon with a sewage sludge to obtain a mixture; feeding said mixture into a first fluidized bed filled with a heat-carrying solid material; introducing hot gases into said first fluidized bed below said solid material; drying said mixture while it is fed by said hot gases upwardly in said first fluidized bed through said solid material; withdrawing the dried mixture together with the hot gases from said first fluidized bed at a region thereof above said solid material; separating the dried mixture from the hot gases in a first gas separator; separating the dried sludge from the dried activated carbon; feeding said dried activated carbon into a second fluidized bed filled with a heat-carrying solid material; introducing hot gases into said second fluidized

bed below said solid material; regenerating the activated carbon in said second fluidized bed while the activated carbon is fed by the hot gases upwardly through the heat-carrying solid material in said second fluidized bed; withdrawing activated carbon together with the gases from said second fluidized bed at a region thereof above said solid material; and separating the activated carbon from the gases in a second gas separator.



2. The method as defined in claim 1, wherein said heat-carrying solid material in said first fluidized bed and said second fluidized bed is sand.

3. The method as defined in claim 1, further including the step of obtaining a portion of the gases from said first separator and mixing said portion with the gases freshly introduced into said first fluidized bed.

4,535,066

PASSIVATING METALS ON CRACKING CATALYSTS

Harold W. Mark; Brent J. Bertus; John S. Roberts; Dwight L. McKay, all of Bartlesville, and Lyle E. Fenska, Edmond, all of Okla., assignors to Philips Petroleum Company, Bartlesville, Okla.

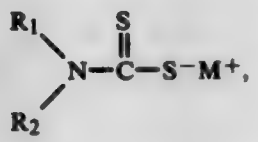
Division of Ser. No. 429,736, Sep. 30, 1982, Pat. No. 4,459,366. This application Mar. 2, 1984, Ser. No. 585,667

Int. Cl.³ B01J *29/06, 23/14, 33/00*

U.S. Cl. 502—62 **34 Claims**

1. A composition comprising a soluble salt of a dialkyldithiocarbamate that has been treated with a hydrolyzable germanium (IV) compound.

3. A composition in accordance with claim 1, wherein said salt of a dialkyldithiocarbamate has the general formula



where R_1 and R_2 are selected independently from aliphatic or alicyclic radicals, and M^+ is the cation of an alkali or alkaline earth metal, the ammonium ion, or a quaternary ammonium ion.

16. A cracking catalyst comprising materials selected from the group consisting of silica, silica-alumina and zeolites, further comprising antimony and a modifying composition prepared by treating a soluble salt of a dialkyldithiocarbamate with a hydrolyzable germanium (IV) compound in amounts effective to passivate contaminant metals deposited thereon.

27. A composition in accordance with claim 1 which is recovered in the liquid phase essentially free of germanium.

4,535,067

CATALYST CONTAINING IRON, CHROMIUM, POTASSIUM AND LANTHANUM OXIDES, ITS MANUFACTURE AND USE IN DEHYDROGENATION REACTIONS

Philippe Courty, Houilles; Michel Roussel, Antony; Philippe Varin, Massy; Jean-Francois Le Page, Rueil Malmaison, and Serge Leporq, Mantes la Ville, all of France, assignors to Institut Francais du Petrole, Rueil-Malmaison, France

Filed Dec. 14, 1983, Ser. No. 561,376

Claims priority, application France, Dec. 14, 1982, 82 21085; Dec. 14, 1982, 82 21086

Int. Cl.³ B01J *21/16, 23/10*

U.S. Cl. 502—84 **13 Claims**

1. A catalyst comprising, as oxides, iron, chromium and potassium, the iron, chromium and potassium, calculated as oxides, being in proportion corresponding to ratios by weight:

$$\frac{FeO_3}{K_2O}$$

from 1/1 to 10/1

$$\frac{CrO_3}{K_2O}$$

from 0.05/1 to 0.4/1

$$\frac{Fe_2O_3}{CrO_3}$$

from 15/1 to 40/1,
characterized in that it also comprises, as oxide, lanthanum in a proportion, calculated as oxide, from 1 to 15% by weight with respect to the catalyst weight.

2. A catalyst according to claim 1, characterized in that it comprises kaliophyllite of the formula Al_2O_3, $2SiO_2$, K_2O and an excess of potassium with respect to that comprised in kaliophyllite, the kaliophyllite proportion being from 5 to 40% of the catalyst weight, the potassium excess being, in proportion to iron and chromium, in the following ratios by weight:

$$\frac{Fe_2O_3}{K_2O \text{ excess}} = 3/1 \text{ to } 10/1 \text{ and } \frac{CrO_3}{K_2O \text{ excess}} = 0.1/1 \text{ to } 4/1.$$

4,535,068

OLEFIN POLYMERIZATION CATALYST COMPOSITIONS AND POLYMERIZATION PROCESS

Robert C. Job, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Continuation-in-part of Ser. No. 534,016, Sep. 20, 1983, abandoned. This application Oct. 5, 1984, Ser. No. 657,861

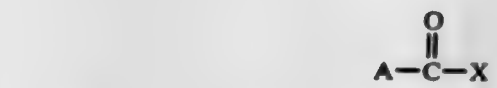
Int. Cl.³ C08F *4/64*

U.S. Cl. 502—107 **27 Claims**

1. A method for producing an improved olefin polymerization catalyst component, which method comprises:

(a) halogenating a magnesium compound of the formula $MgR'R''$ where R′ is an alkoxide or aryloxide group and R″ is an alkoxide or aryloxide group or halogen, with a tetravalent titanium halide in the presence of a halohydrocarbon and an electron donor, therein forming a hologenated product;

(b) contacting said halogenated product with an acid halide of the formula



where A is an alkyl, aryl or substituted aryl group and X is a halide, said substituted aryl group having substituents on the benzene ring selected from the group consisting of halogens, C_1–C_6 alkyl groups and C_1–C_6 alkoxy groups, at a temperature of about 40° to about 140° C.;

(c) contacting the resulting acid halide-treated product with a tetravalent titanium halide at a temperature of about 40° to about 140° C.; and

(d) washing the resulting titanium halide-treated product with an inert hydrocarbon liquid.

4,535,069

CATALYST COMPONENT FOR α-OLEFIN POLYMERIZATION

Hiroshi Shimizu; Masaki Abe, and Akihiro Sato, all of Chibaken, Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 16, 1983, Ser. No. 466,971

Claims priority, application Japan, Apr. 30, 1982, 57-72994

Int. Cl.³ C08F *4/64*

U.S. Cl. 502—115 13 Claims

1. A catalyst component for α-olefin polymerization comprising a solid product (II) obtained by

reacting at least one member selected from the group consisting of magnesium compounds expressed by the general formula MgR^1R^2 (wherein R^1 represents alkyl, aryl, alkoxy or aryloxy group and R^2 represents alkyl, aryl, alkoxy, aryloxy group or halogen atom), with a complex compound of at l least one member selected from the group consisting of aluminum compounds expressed by the general formula $AlR_n^3X_{3-n}$ (wherein R_3 represents alkyl, aryl, alkoxy or aryloxy group, X represents a halogen atom and n represents a number of $0 \leqq n < 2$) with 2 esters of carboxylic acid to obtain a solid product (I); and

reacting this solid product (I) with a liquid halogen-containing titanium compound.

4,535,070

ACRYLAMIDE POLYMER USED TO REDUCE FINES IN ALUMINUM PHOSPHATE GEL

Max P. McDaniel; Marvin M. Johnson; Gil R. Hawley; John Westerman, and Paul D. Smith, all of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 23, 1983, Ser. No. 565,251

Int. Cl.³ B01J *27/14, 31/02;* C01B *25/26*

U.S. Cl. 502—208 18 Claims

1. A method of producing aluminum phosphate comprising as a first step combining an aluminum salt, a source of phosphate ions, and a water-soluble acrylamide polymer with neutralizing agent to form an aluminum phosphate hydrogel; and thereafter as a second step removing water from said hydrogel to form a zerogel.

4,535,071

CATALYST FOR METHANOL SYNTHESIS AND METHOD OF PREPARING THE CATALYST

Michael Schneider, Ottobrunn-Riemerling; Karel Kochloefl, Moosburg, and Jürgen Ladebeck, Landshut, all of Fed. Rep. of Germany, assignors to Süd Chemie Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed May 16, 1984, Ser. No. 610,745

Claims priority, application Fed. Rep. of Germany, May 16, 1983, 3317725

Int. Cl.³ B01J *21/04, 23/06, 23/72*

U.S. Cl. 502—342 28 Claims

1. A catalyst, selective for the synthesis of methanol, which comprises:

A. a major portion by weight of the oxides of copper and zinc;

B. a minor portion by weight of aluminum oxide;

C. in which the pore distribution of the finished catalyst is as follows:

1. pores with a diameter in the range of 20–75 Å, constituting at least 20% and

2. pores with a diameter greater than 75 Å, constituting no more than 80% of the catalyst.

4,535,072

ABSORBENT FOR TREATING GASES CONTAINING THE MATERIALS USED FOR SEMICONDUCTOR PRODUCTS AND PROCESS OF TREATING SUCH GASES WITH THE SAME

Masayasu Kitayama, Kawasaki; Yoshiaki Sugimori, Tokyo, and Schunich Ohta, Fujisawa, all of Japan, assignors to Nihon Sanso Kabushiki Kaisha, Japan

Filed Sep. 12, 1983, Ser. No. 531,345

Claims priority, application Japan, Sep. 14, 1982, 57-160396

Int. Cl.³ B01J *20/04, 20/14, 20/10*

U.S. Cl. 502—411 11 Claims

2. An absorbent for treating a gas containing at least one compound of volatile inorganic hydrides, volatile inorganic halogenides and organometallic compounds, comprising an aqueous solution of alkali and an oxidizing agent capable of oxidizing germane, the aqueous solution being impregnated into a porous solid carrier, the alkali being at least one selected from the group consisting of sodium hydroxide, potassium hydroxide and calcium hydroxide.

5. An absorbent as recited in claim 2, wherein the oxidizing agent is potassium permanganate, potassium bromate, hydrogen peroxide or sodium hypochlorite.

4,535,073

ANTIHYPERTENSIVE PHOSPHONO DERIVATIVES OF HANTZSCH DIHYDROPYRIDINES

Kiyoshi Kimura, Takatsuki; Iwao Morita, Tsuzuki, and Seiichiro Morimura, Moriyama, all of Japan, assignors to Nippon Shinyaku Co Limited, Japan

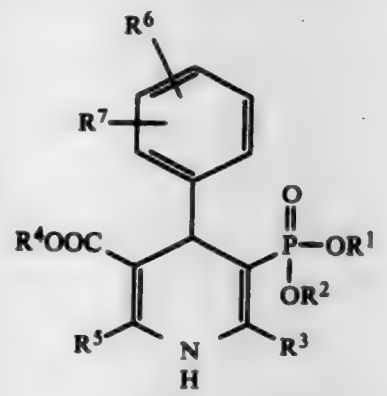
Filed Mar. 2, 1984, Ser. No. 585,574

Claims priority, application Japan, Mar. 4, 1983, 58-36211

Int. Cl.³ A61K *31/675;* C07D *211/92, 401/12*

U.S. Cl. 514—89 33 Claims

1. A 1,4-Dihydropyridine-3-carboxylate of the formula (I)



(I)

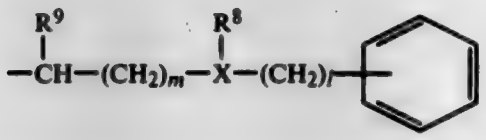
or a pharmaceutically acceptable salt thereof in which:

R^1 and R^2 are the same or different and are hydrogen; alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, alkynyl of 2 to 10 carbon atoms, cycloalkyl of 3 to 7 carbon atoms,

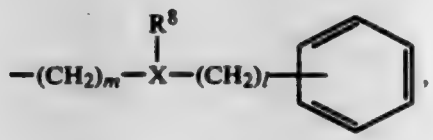
aryl of 6 to 10 carbon atoms, arylalkyl of 7 to 9 carbon atoms, or cycloalkyl-lower alkyl of 3 to 7 carbon atoms in the cycloalkyl moiety, unsubstituted or substituted by halogen or alkoxy of 1 to 4 carbon atoms; or tetrahydrofurfuryl unsubstituted or substituted by alkyl of 1 to 3 carbon atoms;

R^3 is lower alkyl,

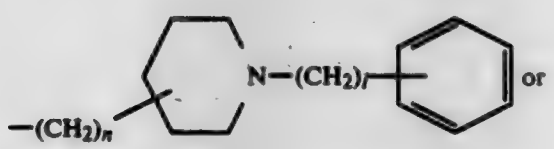
R^4 is hydrogen; alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, alkynyl of 2 to 10 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms, aryl of 6 to 10 carbon atoms, or cycloalkyl-lower alkyl or cycloalkenyl-lower alkyl of 3 to 7 carbon atoms in the cyclic moiety, unsubstituted or substituted by alkoxy of 1 to 3 carbon atoms, aryloxy of 6 to 10 carbon atoms in the aryloxy moiety, aralkyloxy of 6 to 10 carbon atoms in the aralkyloxy moiety, amino, mono- or di-lower alkylamino, alkylthio of 1 to 3 carbon atoms, mono- or di-lower alkylamino-lower alkyl, alkylthioalkyl of 1 to 3 carbon atoms in both alkyl moieties, pyridyl or pyridyl-lower alkyl; tetrahydrofurfuryl unsubstituted or substituted by alkyl of 1 to 3 carbon atoms;

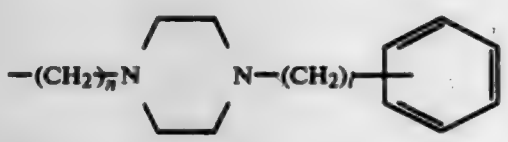


in which X is N or O, R^8 is lower alkyl or lower alkenyl when X is N and is not present when X is O, R^9 is hydrogen, alkyl of 1 to 3 carbon atoms, phenyl, or



in which R^8 and X are as above defined, l is an integer of 0 to 2, and m is an integer of 1 to 4; or



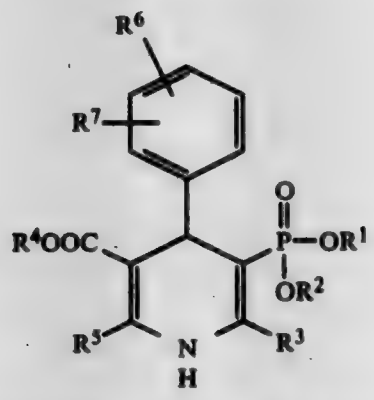


in which l is as defined above and n is an integer of 0 to 2;

R^5 is lower alkyl; and

R^6 and R^7 are the same or different and are nitro, cyano, trifluoromethyl, halogen, azide, alkoxycarbonyl of 1 to 3 carbon atoms in the alkoxy moiety, aminocarbonyl, sulfamyl, alkylsulfonyl of 1 to 3 carbon atoms in the alkyl moiety or difluoromethoxy or one of R^6 and R^7 is hydrogen and the other is as above defined.

10. A pharmaceutical composition useful for effecting vasodilation and hypotensive activity in humans and animals which comprises a therapeutically effective amount of a compound of the formula (I):



(I)

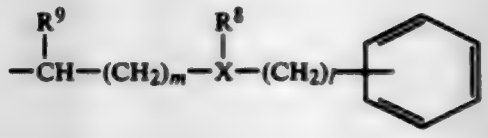
or a pharmaceutically acceptable salt thereof in which:

R^1 and R^2 are the same or different and are hydrogen; alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, alkynyl of 2 to 10 carbon atoms,

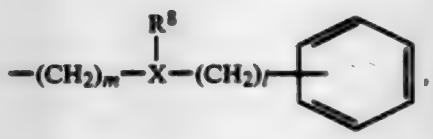
cycloalkyl of 3 to 7 carbon atoms, aryl of 6 to 10 carbon atoms, arylalkyl of 7 to 9 carbon atoms, or cycloalkyl-lower alkyl of 3 to 7 carbon atoms in the cycloalkyl moiety, unsubstituted or substituted by halogen or alkoxy of 1 to 4 carbon atoms; or tetrahydrofurfuryl unsubstituted or substituted by alkyl of 1 to 3 carbon atoms;

R^3 is lower alkyl,

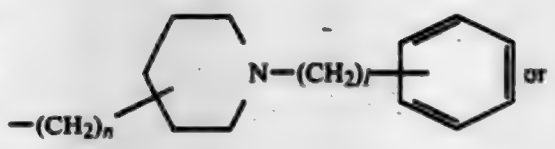
R^4 is hydrogen; alkyl of 1 to 10 carbon atoms, alkenyl of 2 to 10 carbon atoms, alkynyl of 2 to 10 carbon atoms, cycloalkyl of 3 to 7 carbon atoms, cycloalkenyl of 3 to 7 carbon atoms, aryl of 6 to 10 carbon atoms, or cycloalkyl-lower alkyl or cycloalkenyl-lower alkyl of 3 to 7 carbon atoms in the cyclic moiety, unsubstituted or substituted by alkoxy of 1 to 3 carbon atoms, aryloxy of 6 to 10 carbon atoms in the aralkyloxy moiety, aralkyloxy of 6 to 10 carbon atoms in the aralkyloxy moiety, amino, mono- or di-lower alkylamino, alkylthio of 1 to 3 carbon atoms, mono- or di-lower alkyl amino-lower alkyl, alkylthioalkyl of 1 to 3 carbon atoms in both alkyl moieties, pyridyl or pyridyl-lower alkyl; tetrahydrofurfuryl unsubstituted or substituted by alkyl of 1 to 3 carbon atoms;

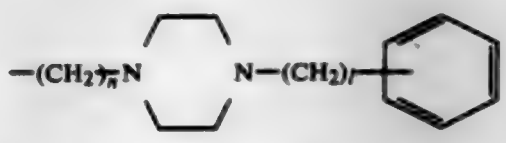


in which X is N or O, R^8 is lower alkyl or lower alkenyl when X is N and is not present when X is O, R^9 is hydrogen, alkyl of 1 to 3 carbon atoms, phenyl, or



in which R^8 and X are as above defined, l is an integer of 0 to 2, and m is an integer of 1 to 4; or





in which l is as defined above and n is an integer of 0 to 2;

R^5 is lower alkyl; and

R^6 and R^7 are the same of different and are nitro, cyano, trifluoromethyl, halogen, azide, alkoxycarbonyl of 1 to 3 carbon atoms in the alkoxy moiety, aminocarbonyl, sulfamyl, alkylsulfonyl of 1 to 3 carbon atoms in the alkyl moiety or difluoromethyoxy or one of R^6 and R^7 is hydrogen and the other is as above defined, in combination with a pharmaceutically acceptable carrier.

4,535,074

FUNGICIDAL PHOSPHORYLATED AZOLYL DERIVATIVES

Reinhard Preuss; Hermann Perrey, both of Krefeld; Helmut Ritter, Wuppertal; Paul Reinecke, Leverkusen, and Wilhelm Brandes, Leichlingen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

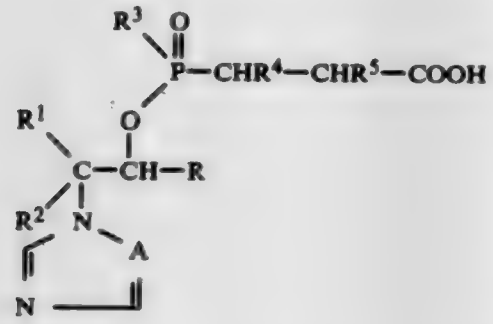
Filed Mar. 26, 1984, Ser. No. 593,323

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313719

Int. Cl.[3] A01N *57/24*; C07F *9/65*

U.S. Cl. 514—93 8 Claims

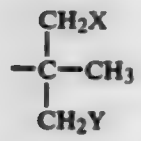
1. A phosphorylated azolyl derivative of the formula



in which

A represents a nitrogen atom or the CH group,

R represents phenyl which is optionally mono-, di- or tri-substituted by identical or different substituents from the group comprising halogen and alkyl with 1 to 4 carbon atoms, or represents the grouping



wherein X and Y are identical or different and represent hydrogen, fluorine or chlorine;

R^1 represents hydrogen and

R^2 represents hydrogen or phenoxy or benzyl, each of which is optionally mono-, di- or tri-substituted by identical or different substituents from the group comprising halogen, alkyl with 1 to 4 carbon atoms, alkoxycarbonyl with 1 to 4 carbon atoms in the alkyl part, nitro and optionally halogen-substituted phenyl, or

R^1 and R^2 together represent the grouping =CH—Z, wherein Z represents cycloalkyl which has 5 to 7 carbon atoms and is optionally mono-, di- or tri-substituted by identical or different substituents from the group comprising alkyl with 1 to 4 carbon atoms and halogen, or represents phenyl which is optionally mono-, di- or tri-substituted by identical or different substituents from the group comprising halogen, alkyl with 1 to 4 carbon atoms and haloalkyl with 1 to 2 carbon atoms and 1 to 5 identical or different halogen atoms,

R^3 represents alkyl with 1 to 4 carbon atoms, or phenyl or benzyl, each of which is optionally mono-, di- or tri-substituted by identical or different substituents, possible substituents being the substituents on phenyl which have already been mentioned under Z,

R^4 represents hydrogen or alkyl with 1 to 4 carbon atoms and

R^5 represents hydrogen or alkyl with 1 to 4 carbon atoms,

or a salt or addition product thereof with a metal salt.

7. A method of combatting fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound, salt or addition product according to claim 1.

4,535,075

DITHIOLANE DERIVATIVE, PROCESS FOR PRODUCING THE SAME AND USE THEREOF

Hitoshi Kurono, Toyonaka; Kuniaki Taninaka, Neyagawa; Tatsuyoshi Sugimoto, Hashimoto, and Minoru Katoh, Fujiidera, all of Japan, assignors to Nihon Nohyaku Co., Ltd., Tokyo, Japan

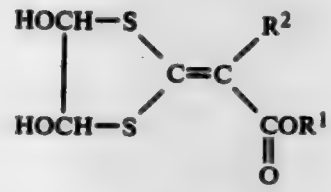
Filed Jun. 22, 1983, Ser. No. 506,830

Claims priority, application Japan, Jun. 28, 1982, 57-111182

Int. Cl.[3] C07D *495/04, 339/09*; A61K *31/38, 31/285*

U.S. Cl. 514—96 40 Claims

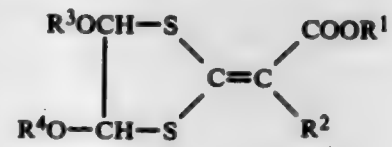
1. A dithiolane represented by the formula (I):



(I)

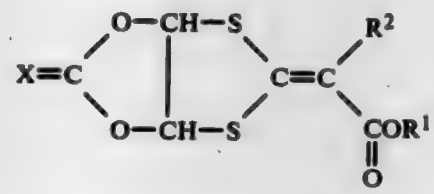
wherein R^1 is a C_1–C_8 alkyl group, a cyclohexyl group, a C_3–C_5 alkenyl group, a C_3–C_6 alkynyl group, a benzyl group or a C_2–C_8 alkoxyalkyl group and R^2 is a cyano group, a C_2–C_9 alkylcarbonyl group, a benzylcarbonyl group, a phenylcarbonyl group, a C_2–C_9 alkoxycarbonyl group, a cyclohexyloxycarbonyl group, a benzyloxycarbonyl group, a C_4–C_6 alkenyloxycarbonyl group, a C_4–C_7 alkynyloxycarbonyl group or a C_3–C_9 alkoxyalkoxycarbonyl group;

or an organic acid ester thereof which ester is:



(I)a

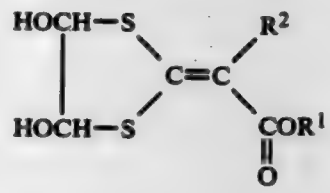
or



(I)b

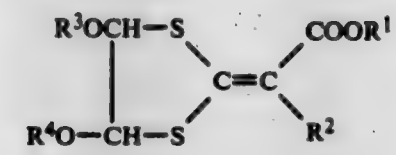
wherein R^1 and R^2 are the same as defined above; R^3 and R^4, which may be same or different, are individually hydrogen, a C_2–C_7 alkylcarbonyl group, a C_2–C_5 alkoxycarbonyl group, a C_2–C_9 mono or di-alkylcarbamoyl group, a C_3–C_6 carboxyalkylcarbonyl group, a C_4–C_7 carboxyalkenylcarbonyl group, or a salt thereof, provided that R^3 and R^4 are not both hydrogen; and X is oxygen or sulfur.

10. A pharmaceutical composition for controlling liver damage, comprising a pharmaceutically acceptable diluent and an effective amount of a dithiolane compound represented by the formula (I):



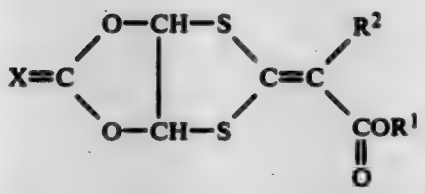
(I)

wherein R^1 is a C_1–C_8 alkyl group, a cyclohexyl group, a C_3–C_5 alkenyl group, a C_3–C_6 alkynyl group, a benzyl group or a C_2–C_8 alkoxyalkyl group and R^2 is a cyano group, a C_2–C_9 alkylcarbonyl group, a benzylcarbonyl group, a phenylcarbonyl group, a C_2–C_9 alkoxycarbonyl group, a cyclohexyloxycarbonyl group, a benzyloxycarbonyl group, a C_4–C_6 alkenyloxycarbonyl group, a C_4–C_7 alkynyloxycarbonyl group or a C_3–C_9 alkoxyalkoxycarbonyl group; or an organic acid ester thereof which ester is:



(I)a

or



(I)b

wherein R^1 and R^2 are the same as defined above; R^3 and R^4, which may be same or different, are individually hydrogen, a C_2–C_7 alkylcarbonyl group, a C_2–C_5 alkoxycarbonyl group, a C_2–C_9 mono or di-alkylcarbamoyl group, a C_3–C_6 carboxyalkylcarbonyl group, a C_4–C_7 carboxyalkenylcarbonyl group, or a salt thereof, provided that R^3 and R^4 are not both hydrogen; and X is oxygen or sulfur.

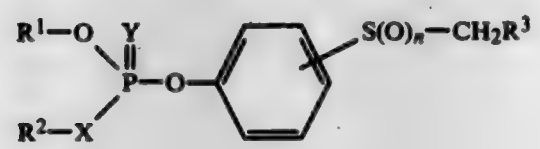
4,535,076

ORGANOPHOSPHATE PESTICIDES

Junichi Saito, Tokyo; Akio Kudamatsu, Kanagawa; Toyohiko Kume, and Shinichi Tsuboi, both of Tokyo, all of Japan, assignors to Nihon Tokushu Noyaku Seizo K.K., Tokyo, Japan

Filed Jun. 10, 1983, Ser. No. 503,371
Claims priority, application Japan, Jun. 18, 1982, 57-103908
Int. Cl.³ A01N *57/14*; C07F *9/09, 9/24*
U.S. Cl. 514—128 **15 Claims**

1. An organophosphate derivative of the formula



in which
X is O, S or NH,
Y is O or S,
R^1 is a lower alkyl group,
R^2 is a lower alkyl group or a lower alkoxy-lower alkyl group,
R^3 is a fluoro-substituted lower alkyl group, and
n is 0 or 2.
the $S(O)_n$—CH_2R^3 substituent being attached to the 2- or 4-position of the phenyl ring.

2. A method of combating pests which comprises applying to the pests or a pest habitat a pesticidally effective amount of an organophosphate derivative according to claim 1.

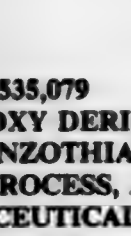
4,535,077

O-ETHYL S,S-DIALKYL PHOSPHORODITHIOATES FOR USE AS PESTICIDES

Mohamed A. H. Fahmy, Princeton, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Division of Ser. No. 470,736, Feb. 28, 1983, abandoned, which is a continuation-in-part of Ser. No. 297,437, Aug. 28, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,516
Int. Cl.³ A01N *57/12*; C07F *9/165*
U.S. Cl. 514—143 **5 Claims**

1. A compound of the formula



in which one R and R^1 is s-butyl and the other R and R^1 is s-butyl or t-butyl.

4. A method for controlling soil-borne insects and nematodes which comprises applying to the soil in which agricultural crops are planted or are to be planted a soil-borne insect and nematode controlling amount of the compound of claim 1, 2, or 3.

4,535,078

ANTIBACTERIAL COMPOSITION COMPRISING SILVER SULFADIAZINE AND SODIUM PIPERACILLIN

Charles L. Fox, Jr., Fort Lauderdale, Fla., and Shanta M. Modak, River Edge, N.J., assignors to The Trustees of Columbia University in the City of New York, New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,531
Int. Cl.³ A61K *31/429, 31/625*
U.S. Cl. 514—157 **7 Claims**

1. An antibacterial composition useful in burn therapy comprising silver sulfadiazine, sodium piperacillin and a physiologically acceptable carrier, said composition containing a total of from about 35 millimoles to about 60 millimoles of silver sulfadiazine and sodium piperacillin per kilogram of the composition in a millimole ratio of silver sulfadiazine to sodium piperacillin of from about 2:1 to about 1:2.

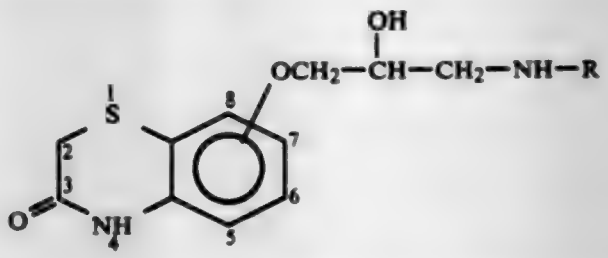
4,535,079

ALKANOLAMINOXY DERIVATIVES OF 3,4-DIHYDRO-2H-1,4-BENZOTHIAZIN-3-ONE, THEIR PRODUCTION PROCESS, AND THEIR PHARMACEUTICAL USE

Arnaldo Fravolini, S.Sisto, Italy, assignor to Mediolanum Farmaceutici S.R.L., Milan, Italy

Filed Oct. 18, 1983, Ser. No. 543,013
Claims priority, application Italy, Oct. 20, 1982, 49313 A/82
Int. Cl.³ A61K *31/38*; C07D *279/10*
U.S. Cl. 514—225 **6 Claims**

1. Alkanolaminoxy derivatives of 3,4-dihydro-2H-1,4-benzothiazin-3-one of formula



in which R is an isopropyl, secondary butyl, tertiary butyl or 2(3,4-dimethoxy-phenyl)-ethyl radical, or their salts.

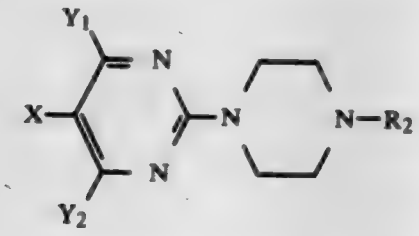
4,535,080

DERIVATIVES OF 2-PIPERAZINO-PYRIMIDINE, METHODS FOR THEIR PREPARATION AND THEIR UTILIZATION AS DRUGS OR INTERMEDIATES FOR DRUGS

Francois Audiau, Charenton; Claude G. A. Gueremy, Houilles, and Gérard R. Le Fur, Plessis Robinson, all of France, assignors to Pharmuka Laboratoires, Gennevilliers, France

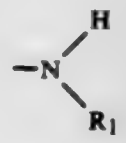
Continuation of Ser. No. 361,235, Mar. 24, 1982, abandoned.
This application Aug. 24, 1983, Ser. No. 525,799
Claims priority, application France, Apr. 7, 1981, 81 06924
Int. Cl.[3] A61K *31/505;* C07D *403/04*
U.S. Cl. 514—255 8 Claims

1. A drug, particularly useful as an antihypertension, hypoglycemic, antimigraine or antidepressant drug which contains a pharmaceutically acceptable carrier and, as the active principle, an effective amount of a compound of the formula:



(I)

in which X is hydrogen, chlorine, alkyl, alkoxy or alkylthio wherein the alkyl has from 1 to 3 carbon atoms, R_2 is hydrogen or alkyl having 1 to 3 carbon atoms, Y_2 is chlorine and Y_1 is



in which R_1 is hydrogen or straight or branched chain alkyl having 1 to 7 carbon atoms, cycloalkyl having 3 to 7 carbon atoms or cycloalkylalkyl having 4 to 8 carbon atoms or a salt of said compound with a pharmaceutically acceptable acid.

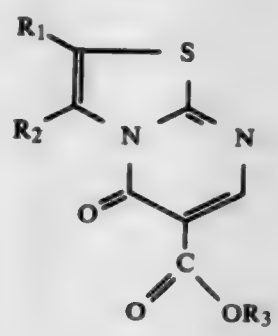
4,535,081

ANTIALLERGIC AND ANTIULCER 1-OXO-1H-THIAZOLO[3,2-A]PYRIMIDINE-2-CARBOXAMIDES AND INTERMEDIATES THEREFOR

Saul B. Kadin, New London, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 312,372, Oct. 19, 1981, Pat. No. 4,423,048, which is a division of Ser. No. 96,631, Nov. 23, 1979, abandoned.
This application Aug. 17, 1983, Ser. No. 523,932
Int. Cl.[3] A61K *31/505;* C07D *513/04*
U.S. Cl. 514—258 10 Claims

1. A compound of the formula



wherein

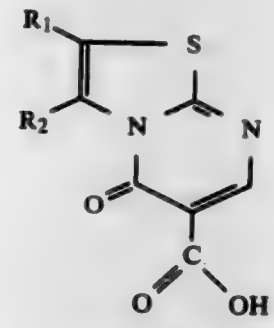
R_3 is hydrogen;

R_1 and R_2 taken together are alkylene of 3 to 9 carbon atoms or phenylalkylene of 9 to 11 carbon atoms with the proviso that the ring system so formed is 5- to 8-membered;

R_1 and R_2 taken separately are each hydrogen or lower alkyl of 1 to 5 carbon atoms, provided that when R_2 is hydrogen, R_1 is other than hydrogen or methyl and when R^1 is hydrogen, R^2 is other than methyl;

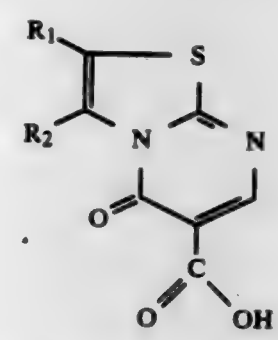
and cationic salts thereof.

4. A method of inhibiting allergic reactions in a mammal which comprises administering to said mammal a compound of the formula



or a pharmaceutically-acceptable salt thereof, wherein R_1 and R_2 when taken together are alkylene of 4 to 9 carbon atoms or phenylalkylene of 9 to 11 carbons, with the proviso that the ring system so formed is 5- to 8-membered, or, when taken separately, R_1 is alkyl or 2 to 5 carbon atoms, and R_2 is hydrogen or alkyl of 1 to 5 carbon atoms, in an amount sufficient to inhibit said allergenic reactions.

6. A method of inhibiting gastric ulcers in a mammal which comprises administering to said mammal a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein R_1 and R_2 when taken together are alkylene of 3 to 9 carbon atoms or phenylalkylene of 9 to 11 carbon atoms, with the proviso that the ring system so formed is 5- to 8-membered, and R_1 and R_2 when taken separately are each hydrogen or alkyl of 1 to 5 carbon atoms, with the proviso that when R_2 is hydrogen, R_1 is other than hydrogen or methyl, in an amount sufficient to inhibit said gastric ulcers.

4,535,082

COMBINING AN ANIONIC BLOCKING AGENT WITH DYPHYLLINE

Erwin N. Terry, Montreal, Canada, assignor to Byk Gulden Lomberg Chemische Fabrik GmbH, Fed. Rep. of Germany

Filed Dec. 9, 1980, Ser. No. 214,681
Int. Cl.[3] A61K *31/465*
U.S. Cl. 514—264 18 Claims

1. A process for increasing the half-life of dyphylline administered to a human which comprises prior or concurrent administration of an effective amount of probenecid.

4,535,083

CLEAVAGE PRODUCTS OF 4',6'-DIDESOXY-4'-THIO-,6'-AMINO-HEPTURONIC ACID NUCLEOSIDES

Günter Benz, Velbert-Neviges; Karl G. Metzger, Wuppertal-Elberfeld, and Hans-Joachim Zeiler, Velbert-Neviges, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

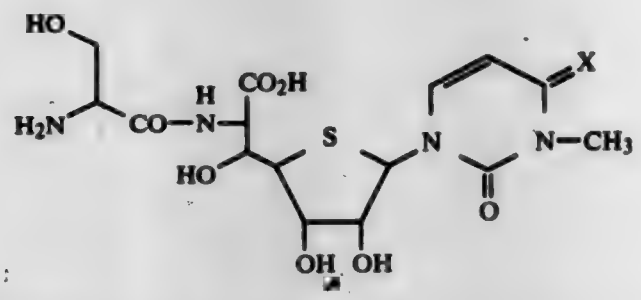
Filed Sep. 9, 1983, Ser. No. 530,835

Claims priority, application Fed. Rep. of Germany, Oct. 1, 1982, 3236389

Int. Cl.[3] A61K *31/505*; C07D *239/47, 239/54*

U.S. Cl. 514—274 13 Claims

1. A compound of the formula I



(I)

in which X is N—CO—NH_2 or 0.

7. A medicament in dosage unit form comprising an antimycrobially effective amount of a compound according to claim 1 and an inert pharmaceutical carrier.

9. A method of combating bacterial infection in warm-blooded animals which comprises administering to said animals an antibacterially effective amount of an active compound according to claim 1 either alone or in admixture with an inert pharmaceutical carrier or in the form of a medicament.

4,535,084

CERTAIN 4-(2-HYDROXYETHYLTHIOMETHYL)PYRIDINES AND DERIVATIVES THEREOF HAVING IMMUNOREGULATORY ACTIVITY

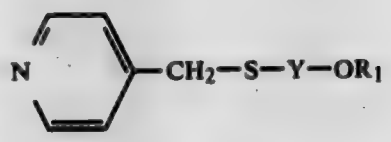
Joseph G. Lombardino, Niantic, and Charles A. Harbert, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Continuation-in-part of Ser. No. 265,856, May 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 168,127, Jul. 14, 1980, abandoned, which is a division of Ser. No. 85,011, Oct. 15, 1979, Pat. No. 4,246,263. This application Mar. 18, 1983, Ser. No. 474,571

Int. Cl.[3] C07D *213/32*; A61K *31/44*

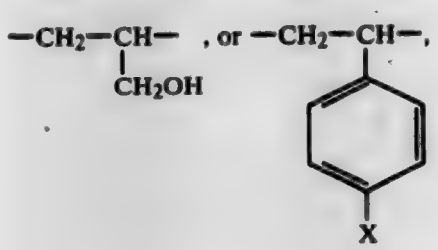
U.S. Cl. 514—277 25 Claims

1. A compound of the formula



and pharmaceutically acceptable salts thereof, wherein

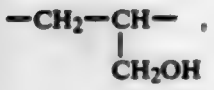
Y is propylene, ethylene (unsubstituted or substituted with up to 2 methyl groups and up to 1 phenyl group),



wherein X is nitro or methoxy;

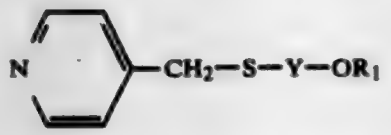
R_1 is hydrogen, (C_2–C_5)alkanoyl or benzoyl;

with the proviso that when Y is



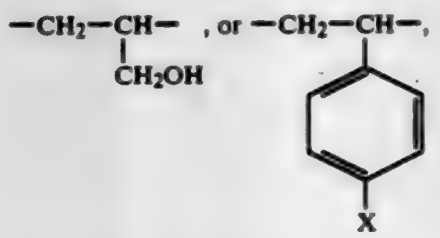
R_1 is hydrogen.

14. A method for regulating the immune response in a mammal which comprises administering to said mammal an immune response regulating amount of a compound of the formula



or a pharmaceutically acceptable salt thereof, wherein

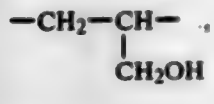
Y is propylene, ethylene (unsubstituted or substituted with up to 2 methyl groups and up to 1 phenyl group),



wherein X is nitro or methoxy;

R_1 is hydrogen, (C_2–C_5) alkanoyl or benzoyl;

with the proviso that when Y is



R_1 is hydrogen; together with a pharmaceutically acceptable carrier.

4,535,085

PERFLUOROTRICYCLIC AMINES AS OXYGEN CARRIERS

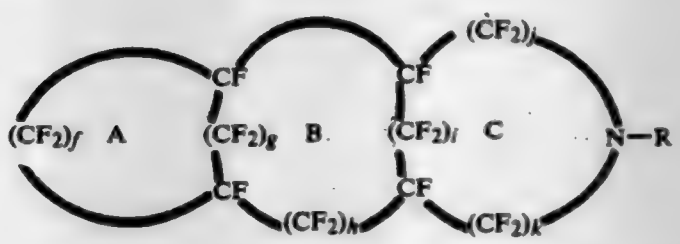
Kazumasa Yokoyama, Toyonaka; Chikara Fukaya, Osaka; Yoshio Tsuda, Takarazuka; Taizo Ono, Osaka; Yoshio Arakawa; Yoshihisa Inoue, both of Suita; Youichiro Naito, Hirakata, and Tadakazu Suyama, Kyoto, all of Japan, assignors to The Green Cross Corporation, Osaka, Japan

Filed Mar. 29, 1983, Ser. No. 480,131

Int. Cl.[3] A61K *31/445, 31/40*; C07D *221/16, 221/22*

U.S. Cl. 514—290 4 Claims

1. A perfluorotricyclic amine compound represented by the formula



wherein R denotes a perfluoroalkyl group having 1 to 4 carbon atoms; the ring A denotes a five- or six-membered ring, the ring B denotes a five-, six- or seven-membered ring, the ring C denotes a five- or six-membered ring any one of the rings A, B and C optionally being substituted by one or more lower perfluoroalkyl groups in addition to the above-mentioned substituent R: and further f, g, h, i, j and k denote integers appropriately selected to construct the above-mentioned size of rings A, B and C.

2. A composition for use as a blood substitute or an infusion fluid which composition is an aqueous emulsion of a perfluorotricyclic amine as defined in claim 1.

4,535,086

4,5,6,7-TETRAHYDRO-4,4,7,7-TETRAMETHYLBENZO-[b]-THIEN-2-YL OR FURAN-2-YL DERIVATIVES

Michael Klaus, Weil am Rhein, Fed. Rep. of Germany; Peter Loeliger, Muttenz, and Harald Weiser, Hochwald, both of Switzerland, assignors to Hoffmann-La Roche Inc., Nutley, N.J.

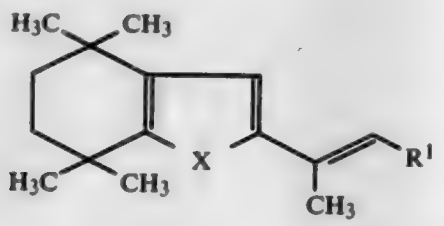
Filed Jun. 27, 1983, Ser. No. 507,857

Claims priority, application Switzerland, Jul. 6, 1982, 4117/82; May 19, 1983, 2728/83

Int. Cl.³ A61K *31/44*; C07D *405/06*

U.S. Cl. 514—337 **7 Claims**

1. A compound of the formula



I

wherein X is —O— or —S—; R^1 is a group Ar—R^2; Ar is pyridyl; R^2 is a group —CO_2R^3, —C(O)R^4, —CH_2OR^3, lower-alkylsulphonyl or formyl; R^3 is hydrogen or lower-alkyl, and R^4 is hydrogen, hydroxy, amino, lower-alkylamino, di(lower-alkyl)amino or lower-alkyl; and salts thereof.

4,535,087

N-SUBSTITUTED PHENOXYACETAMIDE FUNGICIDES

David M. Spatz, Fairfax, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Nov. 19, 1982, Ser. No. 443,010

Int. Cl.³ A61K *31/44*

U.S. Cl. 514—352 **6 Claims**

1. A method for controlling fungi which comprises contacting said fungi or their growth environment with a fungicidally effective amount of a compound of the formula:

wherein R is phenyl, or phenyl substituted with 1 to 4 of the same or different substituents independently selected from fluoro, chloro, bromo, iodo, lower alkyl, trihalomethyl, or nitro; R^1 is 3-pyridyl; R^2 and R^3 are independently hydrogen or lower alkyl; X is sulfur or oxygen; and Z is sulfur or oxygen or mixtures of such compounds.

4,535,088

PROPYNYLAMINOTHIAZOLE DERIVATIVES

Yasuo Makisumi, Hyogo; Akira Murabayashi; Katsuya Tawara, both of Osaka; Yoshihachi Watanabe, Shiga, and Toshio Takahashi, Hyogo, all of Japan, assignors to Shionogi & Co., Ltd., Osaka, Japan

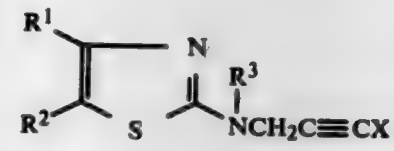
Filed Dec. 2, 1983, Ser. No. 557,365

Claims priority, application Japan, Dec. 21, 1982, 57-225271

Int. Cl.³ C07D *277/42*; A01N *43/78*

U.S. Cl. 514—370 **24 Claims**

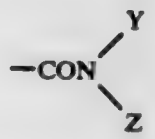
1. A compound selected from the group consisting of a compound of the formula I:



I

wherein

R^1 is hydrogen, C_{1-4} alkyl, carboxy, formyl, hydroxy-C_{1-4} alkyl, mono- or di-C_{1-4} alkyl-aminomethyl, C_{1-4} alkoxy-carbonyl, hydroxyiminomethyl, phenyl or



wherein Y is hydrogen or C_{1-4} alkyl and Z is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy, hydroxy-C_{1-4} alkyl or carboxy-C_{1-4} alkyl;

R^2 is hydrogen, C_{1-4} alkyl, C_{1-4} alkoxy-carbonyl or halogen; or

R^1 and R^2 when taken together with the attached carbons are a condensed benzene ring optionally substituted by 1 or 2 groups selected from the group consisting of C_{1-4} alkyl and C_{1-4} alkoxy;

R^3 is hydrogen or C_{1-4} alkyl; and

X is hydrogen or iodine, and

a salt of said compound.

4,535,089

ALKYLOXAZOLYLACETIC ACID DERIVATIVE FOR THE TREATMENT OF HYPERLIPIDEMIA

Kazuo Matsumoto, Ibaraki; Seiichi Takabe, Amagasaki, and Kohki Takashima, Tokyo, all of Japan, assignors to Tanabe Seiyaku Co., Ltd., Osaka, Japan

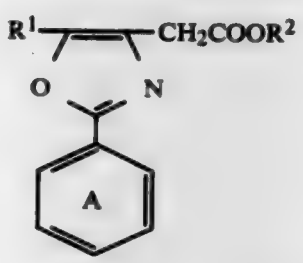
Filed May 12, 1983, Ser. No. 494,023

Claims priority, application Japan, May 19, 1982, 57-85282

Int. Cl.³ A61K *31/42*

U.S. Cl. 514—374 **3 Claims**

1. A method for the treatment or prophylaxis of hyperlipidemia which comprises administering to a host a compound of the formula:



wherein Ring A is monohalogenophenyl, R^1 is an alkyl of one to 5 carbon atoms and R^2 is hydrogen or an alkyl of one to 2 carbon atoms.

4,535,090

3,5-DIPHENYL-1H-1,2,4-TRIAZOLES PHARMACEUTICAL COMPOSITIONS AND USES

Giulio Galliani, Monza; Amedeo Omodei-Salé, Voghera; Pietro Consonni, Milan, and Alessandro Assandri, Mariano Comense, all of Italy, assignors to Gruppo Lepetit S.p.A., Italy

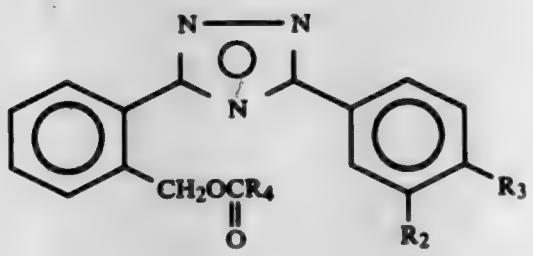
Filed Oct. 15, 1982, Ser. No. 434,451

Claims priority, application United Kingdom, Oct. 20, 1981, 8131657

Int. Cl.³ A61K *31/41*; C07D *249/10, 405/10*

U.S. Cl. 514—383 **4 Claims**

1. A 3,5-diphenyl-1H-1,2,4-triazole having the formula



wherein

R_2 is methoxy or ethoxy;

R_3 is hydrogen, methyl, methoxy, ethoxy or when R_2 and R_3 are taken together represent a methylenedioxy group; and

R_4 is an aliphatic saturated hydroxycarbyl group having from 5 to 14 carbon atoms.

4. A method of terminating pregnancy in mammal which comprises the administration of a contragestational effective amount of a compound of claim 1 to a mammal in need thereof.

4,535,091

O-PYRAZOLYL-N-CYANOALKYLSULPHENYL-CARBAMATE PESTICIDES

Fritz Maurer, Wuppertal; Bernhard Homeyer, Leverkusen, and Benedikt Becker, Mettmann, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

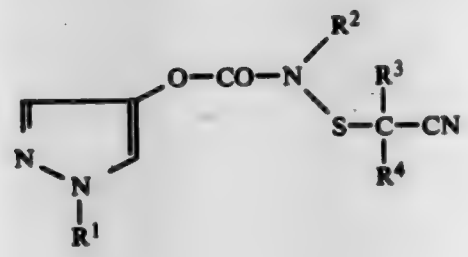
Filed Mar. 14, 1984, Ser. No. 589,290

Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 3310831

Int. Cl.³ A01N *43/56*; C07D *231/18*

U.S. Cl. 514—407 6 Claims

1. An O-(pyrazol-4-yl) N-(α-cyanoalkylsulphenyl)carbamate of the formula



in which

R^1 is C_1–C_8-alkyl or C_3–C_8-cycloalkyl,

R^2 is C_1–C_6-alkyl and

R^3 and R^4 each independently is C_1–C_6-alkyl or together are a C_4–C_7-alkylene radical.

5. A method of combating insects, acarids or nematodes which comprises administering to such insects, acarids or nematodes or a habitat thereof an insecticidally, acaricidally or nematicidally effective amount of a compound according to claim 1.

4,535,092

ACYLANILIDES HAVING ANTIANDROGENIC ACTIVITY

Leslie R. Hughes, Macclesfield, United Kingdom, assignor to Imperial Chemical Industries PLC, London, England

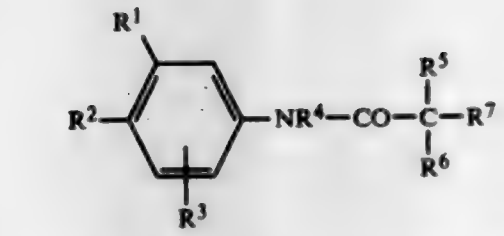
Filed Nov. 1, 1982, Ser. No. 438,351

Claims priority, application United Kingdom, Nov. 6, 1981, 8133613

Int. Cl.³ A61K *31/38*; C07D *333/32*

U.S. Cl. 514—438 9 Claims

1. An acylanilide of the formula:



wherein R^1 is cyano, carbamoyl, nitro, fluoro, chloro, bromo, iodo or hydrogen, or alkyl, alkoxy, alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl;

wherein R^2 is cyano, carbamoyl, nitro, fluoro, chloro, bromo or iodo, or alkanoyl, alkylthio, alkylsulphinyl, alkylsulphonyl, perfluoroalkyl, perfluoroalkylthio, perfluoroalkylsulphinyl or perfluoroalkylsulphonyl each of up to 4 carbon atoms, or phenylthio, phenylsulphinyl or phenylsulphonyl;

wherein R^3 is hydrogen or halogen;

wherein R^4 is hydrogen or alkyl of up to 4 carbon atoms;

wherein R^5 is hydrogen, hydroxy, or alkoxy or acyloxy each of up to 15 carbon atoms;

wherein R^6 is alkyl or halogenalkyl of up to 4 carbon atoms;

and wherein R^7 is thienyl which is unsubstituted or bears one or two substituents selected from the group consisting of halogen, cyano, alkoxy, alkylthio, alkylsulphonyl each of up to 4 carbon atoms or trifluoromethyl.

9. A method for producing an antiandrogenic effect in a warm-blooded animal in need of such treatment which comprises administering to said animal an effective amount of acylanilide claimed in claim 1.

4,535,093

PHARMACEUTICAL AND DIETARY COMPOSITION

David F. Horrobin, Montreal, Canada, assignor to Efamol Limited, London, England

Division of Ser. No. 150,402, May 15, 1980, Pat. No. 4,388,324. This application Mar. 18, 1983, Ser. No. 476,708

Claims priority, application United Kingdom, May 18, 1979, 7917456

Int. Cl.³ A01N *37/02, 37/00*

U.S. Cl. 514—560 8 Claims

1. A pharmaceutical composition for treating alcoholism or moderating the effects of taking alcohol, comprising γ-linolenic acid and/or dihomo-γ-linolenic acid, as such or as a physiologically functional ester or other derivative thereof, in combination with ethyl alcohol, said composition being presented for administration in doses comprising 50 mg to 10 g of said γ-linolenic acid or dihomo-γ-linolenic acid or derivative (calculated as γ-linolenic acid) together with 5 to 500 ml of ethyl alcohol or one-half, one-third or one-quarter of said amounts.

4,535,094

ALKENYL AROMATIC MONOMER OLEFINICALLY UNSATURATED ACID FOAMS AND METHOD FOR THE PREPARATION THEREOF

Chung P. Park, Pickerington, and Kyung W. Suh, Granville, both of Ohio, assignors to The Dow Chemical Company, Midland, Mich.

Continuation of Ser. No. 490,107, Apr. 29, 1983, abandoned, which is a continuation of Ser. No. 376,458, May 10, 1982, abandoned, which is a continuation of Ser. No. 224,427, Jan. 21, 1981, abandoned, which is a continuation-in-part of Ser. No. 141,541, Apr. 18, 1980, abandoned. This application Mar. 12, 1984, Ser. No. 588,469

Int. Cl.³ C08J *9/08*

U.S. Cl. 521—79 3 Claims

1. A method for the preparation of an improved, alkenyl

aromatic polymer foam, the method consisting essentially of intimately admixing a polymer having a weight average molecular weight of from about 100,000 to about 350,000 gram moles, the polymer having polymerized therein from about 99 to 70 parts by weight of alkenyl aromatic monomer and from about 1 to 30 parts by weight of an olefinically unsaturated acid selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid and mixtures thereof with a blowing agent which is a carbonate, carbonate hydrate or bicarbonate of an ion selected from the group consisting of sodium, magnesium, zinc, ammonium and mixtures thereof, the carbonate, carbonate hydrate or bicarbonate being present in the proportion of from about 0.5 to 20 parts by weight per hundred parts by weight of polymer, heat plastifying the polymer under a pressure sufficient to prevent foaming and a temperature sufficiently high to decompose the carbonate, carbonate hydrate or bicarbonate under a pressure sufficient to prevent foaming, subsequently passing the heat plastified polymer to a zone of lower pressure to thereby obtain a polymeric foam having a density of from about 0.5 to 8 pounds per cubic foot having a cell size of from about 0.1 to 5 millimeters.

4,535,095

POLYPHOSPHAZENE COMPOUNDING PROCESS

Warren B. Mueller, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 10, 1984, Ser. No. 680,183
Int. Cl.[3] C08J *9/00*
U.S. Cl. 521—89 **12 Claims**

1. A process for making a foamable polyphosphazene composition suitable for consistent conversion to a foamed polyphosphazene article having a density below about 5 pounds per cubic foot, said process comprising

(a) intensively mixing a masterbatch composition comprising
  (i) a curable high molecular weight substantially linear polyphosphazene gum;
  (ii) an inorganic filler;
  (iii) a chemical blowing agent; and
  (iv) processing aid(s) and optionally other conventional masterbatch components but excluding curing agents.

(b) mixing a concentrate comprising
  (i) a curable high molecular weight substantially linear polyphosphazene gum and
  (ii) 1 or more curing agents to form a concentrate, the amount of said curing agent(s) in said concentrate being at least 10 times the amount required to cure the polyphosphazene gum in said concentrate and

(c) blending said masterbatch composition and said concentrate in a weight ratio of at least 10:1 and such that the resultant blend contains an effective amount of curing agent sufficient to cure all of the gum in said blend.

4,535,096

POLYESTER POLYURETHANE FOAM BASED MEDICAL SUPPORT PAD

Barry A. Jacobs, Bethel, Conn., and Gerald Fesman, Teaneck, N.J., assignors to Stauffer Chemical Company, Westport, Conn.

Filed Feb. 27, 1984, Ser. No. 584,042
Int. Cl.[3] C08G *18/14*
U.S. Cl. 521—107 **28 Claims**

1. A pol· ·ethane foam adapted to be used as a medical support pad material for bedridden patients which is formed by the reaction of a polyester polyol, isocyanate, and blowing agent combination of water and halogenated hydrocarbon auxiliary blowing agent and which contains an effective flame retardant amount of halogenated flame retardant and a char forming and dripping ember retardant additive.

4,535,097

CELLULAR THERMOSET POLY (DICYCLOPENTADIENE)

Norman R. Newburg, deceased, late of Wilmington, Del. (by Betty Newburg, executrix), assignor to Hercules Incorporated, Wilmington, Del.

Filed Aug. 26, 1983, Ser. No. 526,835
Int. Cl.[3] C08J *9/14*
U.S. Cl. 521—139 **4 Claims**

1. A cellular thermoset homopolymer comprised of polymerized units of dicyclopentadiene monomer and having a density of from about 0.2 to about 0.85 g/ml.

4,535,098

MATERIAL FOR ABSORBING AQUEOUS FLUIDS

Syamalarao Evani, Midland; James H. Oswald, Auburn; Thomas L. Staples, and Brent T. Polak, both of Midland, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Mar. 12, 1984, Ser. No. 588,483
Int. Cl.[3] C08L *31/02*
U.S. Cl. 521—149 **27 Claims**

1. A composition capable of absorbing an aqueous liquid which composition comprises a functionally effective amount of a swellable addition polymer comprising, in polymerized form, (a) a major portion of at least one water-soluble monomer, (b) a minor portion of at least one water-insoluble monomer having a pendant hydrophobic moiety, and optionally, (c) a minor portion of a crosslinking moiety in an amount sufficient to provide gel strength to the polymer; which polymer is polymerized in the presence of at least a micelle forming amount of a surfactant composition containing at least one ionic surfactant; and which polymer is capable of undergoing hydrophobic association through hydrophobic groups of said polymer such that said polymer is swellable but not readily soluble in the presence of an aqueous liquid when said polymer is in intimate contact with an amount of surfactant, if any, which is less than that amount of surfactant which will solubilize said polymer in said aqueous liquid.

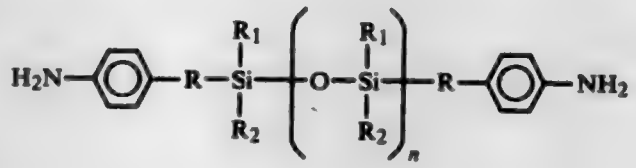
4,535,099

POLYIMIDE FOAM FROM MIXTURE OF SILICON CONTAINING DIAMINE AND DIFFERENT AROMATIC DIAMINE

Raymond Lee, Elk Grove Village; David W. Okey, Downers Grove, and Gregory A. Ferro, Mt. Prospect, all of Ill., assignors to IMI-Tech Corporation, Elk Grove Village, Ill.

Filed Apr. 3, 1984, Ser. No. 596,304
Int. Cl.[3] C08J *9/02*
U.S. Cl. 521—154 **8 Claims**

1. A polyimide foam prepared by reaction of an organic tetracarboxylic acid ester with (a) 0.1 to 15 mole % of a diamine having the formula:



wherein R is a C_2 to C_6 alkylene group, R_1 and R_2 are each independently lower alkyl containing 1 to 3 carbon atoms and n is an integer from 1 to 4 and (b) at least one amine having the formula:

$$H_2N—R_3—NH_2$$

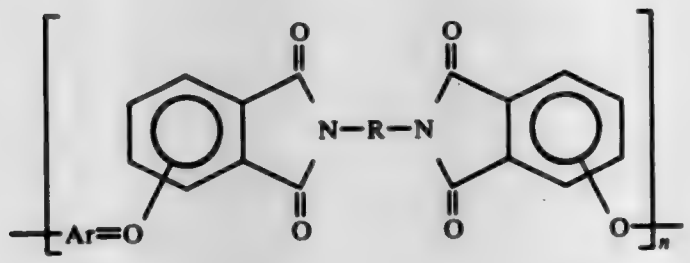
wherein R_3 is an aromatic group containing 5 to 16 carbon atoms.

4,535,100
POLYMER FOAM, THERMOFORMED SHAPES THEREOF AND METHODS OF FORMING SAME

Charles M. Krutchen, Pittsford, and Wen-Pao Wu, Victor, both of N.Y., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 12, 1983, Ser. No. 560,641
Int. Cl.[3] C08J 9/14
U.S. Cl. 521—180 4 Claims

1. A polymer in foam form having a density of less than about 20 lbs/ft^3, wherein said polymer is a solvent imbibable polyetherimide, wherein said solvent is a member selected from the group consisting of methylene chloride, chloroform, 1,1,2-trichloroethane and mixtures thereof wherein said polyetherimide is a polymer of the following structure:



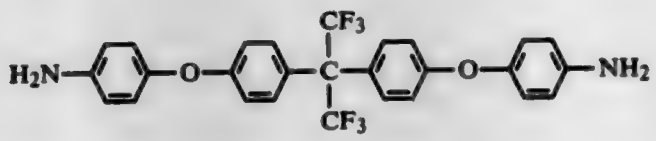
wherein n is a positive integer, Ar is a divalent radical containing from 6–20 carbon atoms, R is a bivalent radical selected from the group consisting of aliphthatic, cycloaliphatic aromatic and araliphatic groups.

4,535,101
POLYIMIDE OF 2,2-BIS(4-(4-AMINOPHENOXY)PHENYL)-HEXAFLUOROPROPANE AND PROCESS FOR THE PREPARATION OF SAME

Raymond Lee, Elk Grove Village; Usman A. K. Sorathia, Schaumburg, and Gregory A. Ferro, Mt. Prospect, all of Ill., assignors to Imi-Tech Corporation, Elk Grove Village, Ill.

Filed Apr. 3, 1984, Ser. No. 596,299
Int. Cl.[3] C08J 9/02
U.S. Cl. 521—189 8 Claims

1. A polyimide foam prepared by reaction of an organic tetracarboxylic acid ester with (a) a diamine having the formula:



(b) at least one amine having the formula:

$$H_2N—R—NH_2$$

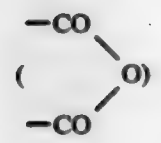
wherein R is an aromatic group containing 5 to 16 carbon atoms.

4,535,102
ADHESIVE COATING MATERIAL

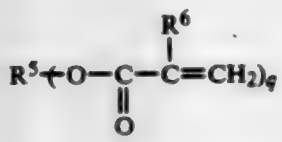
Koshi Kuzumpto, Kamakura; Toshio Kawaguchi, Fujisawa; Takeshi Nakahara, Fujisawa, and Shinichiro Kunimoto, Fujisawa, all of Japan, assignors to Tokuyama Soda Kabushiki Kaisha, Yamaguchi, Japan

Filed Oct. 6, 1983, Ser. No. 539,417
Claims priority, application Japan, Nov. 24, 1982, 57-204683
Int. Cl.[3] C08F 267/02, 265/02; C08K 5/05; A61K 6/08
U.S. Cl. 523—116 24 Claims

1. An adhesive coating material for a hard tissue, which comprises (1) a polymer having an acid value of 30 to 700 and comprising repeating units including a hydrophobic group and repeating units including two carboxyl (—COOH) groups or one carboxylic anhydride



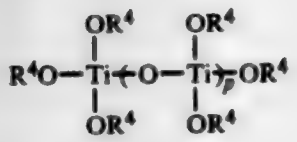
group bonded to the polymer, said carboxyl groups or carboxylic anhydride group being bonded to adjacent carbon atoms, (2) a polymerizable vinyl compound represented by the following formula



wherein R^5 stands for an organic group free of an ethylenic unsaturation, R^6 stands for a hydrogen atom or an alkyl group, and q is an integer of from 1 to 4,

or a mixture of said polymerizable vinyl compound and an organic titanate compound, a radical initiator comprising (3) and (4): (3) an organic peroxide, (4) an amine compound and (5) as a promoter, a sulfinic acid salt and/or a carboxylic acid salt.

9. An adhesive coating material as set forth in claim 1, which comprises as component (2) the mixture of the polymerizable vinyl compound and the organic titanate compound and wherein the organic titanate compound is a titanate represented by the following formula:



wherein R^4 stands for an alkyl group and p is a number of from 0 to 20.

4,535,103
COATING COMPOSITION

Hidehiko Kojo, Koshigaya, and Koji Akimoto, Tokyo, both of Japan, assignors to Asahi Denka Kogyo K.K., Tokyo, Japan

Filed Apr. 24, 1984, Ser. No. 603,395
Int. Cl.[3] C08L 63/00, 95/00
U.S. Cl. 523—450 9 Claims

1. A coating composition which comprises

(A) a polyol resin obtained by the reaction of an amino compound having at least one primary or secondary amino group with a prepolymer which prepolymer has been prepared by reacting an epoxy resin, with a phosphorus compound having at least P-OH group;

(B) a compound having more than one isocyanate group or groups which change to isocyanate groups under conditions effective for hardening the coating composition; and

(C) a material selected from the group consisting of coal tar, coal tar pitch, cut-back tar, bojuntan and asphalt

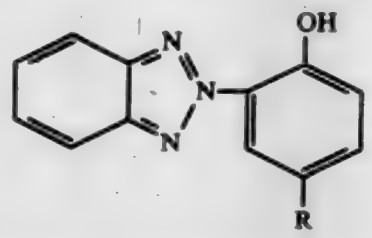
wherein the reaction ratio of said phosphorus compound to said epoxy resin, by equivalents of the hydroxy groups of said phosphorus compound to the epoxy groups of said epoxy resin, is from 0.05 to 0.9; the reaction ratio of said amino compound to said prepolymer, by equivalents of groups of said amino compound that are reactive with the epoxy groups of said prepolymer, is from 1.1 to 0.7; the ratio of (A) to (B), by equivalents of the hydroxy groups of (A) to the isocyanate groups of (B), is from 0.4 to 1.2; and the weight ratio of (C) to (A) is from 0.5 to 2.

4,535,104
ULTRAVIOLET LIGHT STABILIZED COPOLYESTERCARBONATE

Robert A. Pyles, Evansville, Ind., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Jul. 20, 1984, Ser. No. 633,116
Int. Cl.[3] C08K 5/27
U.S. Cl. 524—91 12 Claims

1. A composition comprising an aromatic copolyestercarbonate article surface impregnated with an ultraviolet light degradation inhibiting effective amount of a compound of the formula



wherein R is hydrogen or alkyl of one to twelve carbon atoms, inclusive.

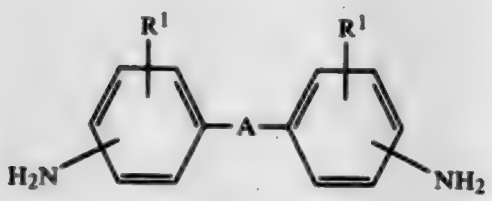
4,535,105
WHOLLY AROMATIC POLYAMIC ACID SOLUTION COMPOSITION

Toshihiro Inaike; Shuji Yamamoto; Shunji Ohe, and Kazunori Otsuka, all of Ichihara, Japan, assignors to Ube Industries, Ltd., Yamaguchi, Japan

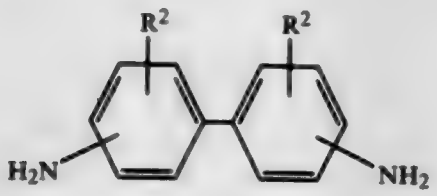
Filed Mar. 7, 1984, Ser. No. 587,177
Claims priority, application Japan, Mar. 8, 1983, 58-36682; May 9, 1983, 58-79355
Int. Cl.[3] C08K 5/34, 5/41, 5/20; C08L 79/08
U.S. Cl. 524—104 10 Claims

1. An aromatic polyamic acid solution composition comprising:

(1) an aromatic polyamic acid which is a polymerization product of (A) a tetracarboxylic acid component containing at least 80 molar % of the sum of (a) a first acid ingredient consisting of at least one member selected from the group consisting of 3,3',4,4'-biphenyl tetracarboxylic dianhydride and its functional derivatives and (b) a second acid ingredient consisting of at least one member selected from the group consisting of pyromellitic dianhydride, its functional derivatives, 3,3',4,4'-benzophenone tetracarboxylic dianhydride and it functional derivatives, the molar ratio of the first acid ingredient to the second acid ingredient being in the range of from 30:70 to 75:25, with (B) an amine component consisting of at least one aromatic diamine in a molar ratio of said tetracarboxylic acid component to said amine component of from 97:100 to 103:100, said amine component being selected from the group consisting of those of the formulae (I), (II) and (III).



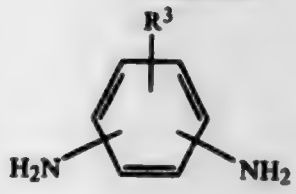
(I)



(II)

and

-continued



(III)

wherein R^1, R^2 and R^3 respectively represent, independent from each other, a member selected from the group consisting of a hydrogen atom, alkyl radicals having 1 to 5 carbon atoms, carboxyl radical, and alkoxyl radicals having 1 to 5 carbon atoms, and A represents a divalent radical selected from the group consisting of those of the formulae: —O—, —S—, —CO—, —SO_2—, —SO—, and —CH_2— and which polyamic acid has a logarithmic viscosity number of from 0.1 to 1.5 determined in a concentration of 0.5 g/100 ml in N-methyl-2-pyrrolidone at a temperature of 30° C., and dissolved in a concentration of from 5% to 40% by weight in (2) at least one organic polar solvent having a boiling point of 300° C. or less under atmospheric pressure.

4,535,106
THERMOPLASTIC COMPOSITIONS OF POLYPHENYLENE ETHER RESIN AND PRE-COMPOUNDED BLEND OF ORGANOPOLYSILOXANE AND POLY(ARYLOLEFIN-OLEFIN)

Visvaldis Abolins, Delmar, and Fred F. Holub, Schenectady, both of N.Y., assignors to General Electric Company, Pittsfield, Mass.

Filed Oct. 5, 1984, Ser. No. 658,282
Int. Cl.[3] C08K 5/51
U.S. Cl. 524—151 27 Claims

1. A thermoplastic composition comprising an admixture of:
(a) a polyphenylene ether resin; and
(b) a precompounded thermoplastic composition of a poly(arylolefin-olefin), an organopolysiloxane and an effective amount of a linking agent.

4,535,107
METHOD OF TREATING POLYESTER MATERIAL FOR RUBBER REINFORCEMENT

Shigemitsu Murase, 68-189 Terada Amatsuka, Joyo-Shi, Kyoto-Fu, Japan

Filed Sep. 16, 1983, Ser. No. 532,931
Claims priority, application Japan, Jan. 10, 1983, 58-2482
Int. Cl.[3] C08K 5/42, 5/15
U.S. Cl. 524—157 7 Claims

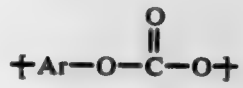
1. An aqueous composition for application to polyester cord comprising a salt of dioctylsulfosuccinate, an epoxy compound and a melamine compound.

4,535,108
FLAME RETARDANT POLYCARBONATE

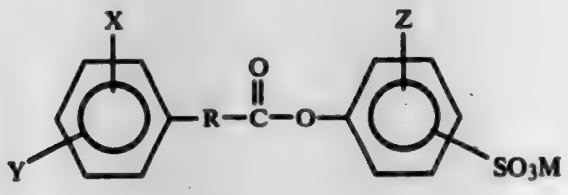
Niles R. Rosenquist, Evansville, and John A. Tyrell, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Feb. 25, 1981, Ser. No. 237,888
Int. Cl.[3] C07C 161/00; C08K 5/42
U.S. Cl. 524—162 20 Claims

1. A composition which comprises a polymer having a repeating unit

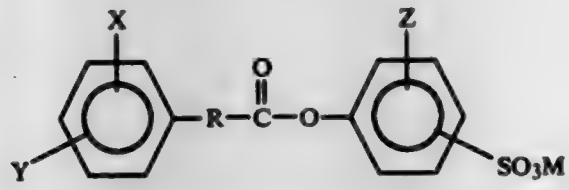


wherein Ar is an aromatic group in admixture with a flame retardant effective amount of a compound of the formula



wherein
R is a valence bond or an oxa group;
M is an alkali or alkaline earth metal;
X, Y and Z are the same or different and are hydrogen, alkyl, alkenyl, cycloalkyl, aryl, alkaryl, aralkyl, and alkoxy with the proviso that at least one of X, Y and Z is other than hydrogen.

10. A compound of the formula



wherein
R is a valence bond or an oxa group;
M is an alkali or alkaline earth metal;
X, Y and Z are the same or different and are hydrogen, alkyl of one to about twelve carbon atoms, inclusive; alkenyl of two to about twelve carbon atoms, inclusive; cycloalkyl of about five to eight carbon atoms, inclusive; phenyl; phenyl substituted alkyl of one to six carbon atoms, inclusive; alkyl substituted phenyl wherein alkyl is one to six carbon atoms, inclusive; and alkoxy of one to twelve carbon atoms, inclusive, with the proviso that at least one of X, Y and Z is other than hydrogen.

4,535,109

METHOD FOR PRODUCING SILICONE AQUEOUS EMULSION COMPOSITIONS

Hidetoshi Kondo, Ichihara, and Taro Koshii, Chiba, both of Japan, assignors to Toray Silicone Company, Ltd., Tokyo, Japan

Filed Sep. 24, 1984, Ser. No. 653,174
Claims priority, application Japan, Oct. 31, 1983, 58-204482
Int. Cl.³ C08K *3/36*
U.S. Cl. 524—188 **6 Claims**

1. A method for producing silicone aqueous emulsion composition consisting essentially of
(1) adjusting a base emulsion composition which consists essentially of
(A) 100 parts by weight of a polydiorganosiloxane which contains at least 2 silicon-bonded hydroxyl groups per molecule, the organic groups being monovalent halogenated hydrocarbon radicals or monovalent hydrocarbon radicals,
(B) from 1 to 150 parts by weight colloidal silica or from 0.3 to 30 parts by weight alkali metal silicate,
(C) from 0.01 to 10 parts by weight of a curing catalyst, said catalyst being a metal salt of an organic acid,
(D) from 2 to 30 parts by weight emulsifier, and
(E) water to a pH of from 9 to 12,
(2) ripening at a temperature of from 10° to 95° C. for a sufficient period of time that an elastomeric material will be formed when water is removed at room temperature, and
(3) adding
(F) from 0.5 to 30 parts by weight of an amino-functional silane of the formula

$$(XR)_nSi(OR')_{4-n}$$

where X is an amino-functional radical, R is a divalent hydrocarbon radical containing no more than 8 carbon atoms, R' is a monovalent hydrocarbon radical containing less than 7 carbon atoms or is selected from the group consisting of $-CH_2OC_2H_5$ or $-CH_2CH_2OCH_3$, and n is 1, 2, or 3 or its partial hydrolysis condensate.

4,535,110

DUAL FUNCTIONAL ADDITIVE

Kenneth A. Iseler, Richmond; Probir K. Guha, Mt. Clemens, and Robert C. Yen, Troy, all of Mich., assignors to The Budd Company, Troy, Mich.

Filed Jun. 25, 1984, Ser. No. 624,458
Int. Cl.³ C08K *3/22*
U.S. Cl. 524—196 **6 Claims**

1. In a maturated moldable sheet molding compound suitable for molding under pressure, said molding compound having fillers and reinforcing materials dispersed in a thermosetting resin composition said resin being comprised primarily of an unsaturated polyester resin said resin including an aliphatically unsaturated monomer, a free radical polymerization catalyst and an internal mold release agent, said resin composition further containing a dual thickening system for modifying the viscosity of the resin composition, said dual thickening system comprising an oxide or hydroxide of magnesium or calcium and a polyisocyanate; the improvement comprising: using as the polyisocyanate an isocyanate terminated prepolymer having an NCO to OH ratio of from about 1.2/1 to 5/1 said isocyanate terminated prepolymer being the reaction product of one equivalent of a polyol having an average molecular weight of about 600 to 4000 and an average functionality between 2 and 6 with from 1.1 to 5 equivalent weights of a polyisocyanate selected from the group consisting of toluene diisocyanate, ethylene diisocyanate, phenyl diisocyanate, 4,4'-dipenyl methane diisocyanate (MDI), a mixture of 4,4'-diphenyl isocyanate and its trifunctional cyclic adduct container carbondiimide linkages, 1,5-naphtalene diisocyanate, xylene diisocyanate, tetramethylene diisocyanate, and hexamethylene diisocyanate; whereby sheet molding compounds containing the improved dual thickening system have improved shrink characteristics and better viscosity index properties enhancing the moldability of the resin and quality of the products made using the improved resin.

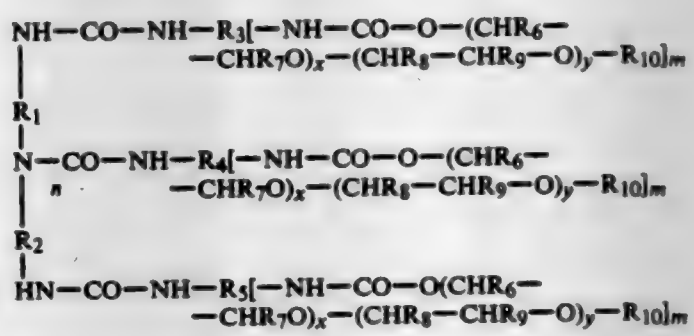
4,535,111

HEAT SENSITIZING AGENTS, THE PRODUCTION AND USE THEREOF

Hermann Perrey, Krefeld, and Martin Matner, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Aug. 8, 1984, Ser. No. 638,907
Claims priority, application Fed. Rep. of Germany, Aug. 20, 1983, 3330197
Int. Cl.³ C08K *5/16*; C07C *125/06*
U.S. Cl. 524—199 **6 Claims**

1. Heat sensitizing agents corresponding to the general formula I



wherein
R_1 and R_2 independently represent C_2–C_4alkylene or C_3–C_1-$_4$cycloalkylene,

R_3, R_4 and R_5 independently represent optionally substituted alkylene, cycloalkylene or arylene,
R_6,R_7,R_8 and R_9 independently represent hydrogen or methyl,
R_{10} represents C_1–C_{18}alkyl, C_6–C_{18}aryl, C_7–C_{18}aralkyl or C_2–C_{18}alkenyl,
n represents the values 0 to 50,
m represents the values 1 to 4
x represents the values 5 to 100, and
y represents the values 0 to 100.

4,535,112

CATION EXCHANGE ELECTROLYTIC CELL MEMBRANES AND METHOD FOR MAKING AND REPAIRING

G. Howard McCain, Painesville; Leo L. Benezra, Mentor, and Craig E. Finch, Chagrin Falls, all of Ohio, assignors to Eltech Systems Corporation, Boca Raton, Fla.

Continuation of Ser. No. 318,967, Nov. 6, 1981, abandoned. This application Sep. 21, 1983, Ser. No. 534,375
Int. Cl.³ C08J *5/22*
U.S. Cl. 524—233 **7 Claims**

1. A patching compound for use in repairing an electrolytic cell membrane made from a perfluorocarbon copolymer formed by copolymerization of at least one fluorinated vinyl monomer and at least one monomer having a structure corresponding to CF_2=CFX, CF_2CFR_1X or CF_2=$CFOR_1X$ wherein R_1 is a bifunctional perfluorinated group containing at least 2 to 8 carbon atoms, and X is a pendant functional group selected from sulphonyl fluoride, carbonyl fluoride, sulphonate esters, carboxylate esters, sulphonamides and metal, ammonium or amine salts of sulphonate or carboxylate functional groups said copolymer having an equivalent weight of between 1000 and 1500 in the intermediate sulphonyl fluoride form whenever said functional groups are predominantly sulphonyl types and between 900 and 1500 in the intermediate carbonyl fluoride form whenever said functional groups are predominantly carbonyl types, comprising a dispersion of (a) about 5 to 25 weight percent of a patching perfluorocarbon copolymer meeting the specifications just given hereinabove for the aforesaid membrane copolymer in (b) a dispersion medium capable of at least partially solvating both of said perfluorocarbon copolymers, and, when said functional groups are predominantly sulphonyl types, said dispersion medium is selected from the group consisting of halocarbon oil, perfluorooctanoic acid, perfluorodecanoic acid, perfluorotributylamine, perfluorotrialkylamine, perfluoro-1-methyldecalin, decafluorobiphenyl, pentafluorophenol, pentafluorobenzoic acid, N-butylacetamide, tetrahydrothiophene-1,1-dioxide, N,N-diethyl acetamide, N,N-dipropylacetamide, N,N-dimethylformamide, 1-methyl-2-pyrrolidinone, diethyl glycol, ethylacetamidoacetate, 1cyclohexyl-2-pyrrolidinone, glycerine, ethyl-hexyl-diphenylyphosphate, and mixtures thereof, whereas when said functional groups are predominantly carbonyl types, said dispersion medium is selected from halocarbon oil, perfluorooctanoic acid, perfluorodecanoic acid, N-butylacetamide and mixtures thereof.

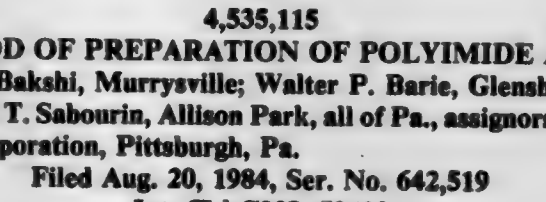
4,535,113

OLEFIN POLYMER COMPOSITIONS CONTAINING SILICONE ADDITIVES AND THE USE THEREOF IN THE PRODUCTION OF FILM MATERIAL

George N. Foster, Bloomsbury, N.J., and Richard B. Metzler, Briarcliff Manor, N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 13, 1984, Ser. No. 587,007
Int. Cl.³ C08K *5/54*
U.S. Cl. 524—262 **28 Claims**

1. An extrudable composition comprising an olefin polymer and a silicone additive having the formula:



wherein each R is an alkyl radical, R^1 is a monovalent organic radical containing at least one ethylene oxide group, vicinal epoxy group or amino group and x and y each have a value of at least 1, said silicone additive being present in an amount sufficient to improve mechanical and/or optical properties.

4,535,114

COATING MATERIAL FOR USE ON SULFUR VULCANIZED RUBBER

Michael Kaniecki, Kent; Samuel P. Landers, Uniontown, and Thomas J. Botzman, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 620,346, Jun. 13, 1984, Pat. No. 4,515,199. This application Sep. 20, 1984, Ser. No. 652,170
Int. Cl.³ C08K *5/01, 5/02, 5/07*
U.S. Cl. 524—364 **22 Claims**

1. A liquid coating material for use on a pre-vulcanized rubber article containing free sulfur comprising: a rubber cement that contains unvulcanized diene rubber, the total weight of said rubber being not greater than 10% of the weight of said liquid coating material; 0.1 to 10 phr of a sulfur rubber vulcanization accelerator; and 1 to 500 phr of particulate metallic particles that can pass through a number 325 mesh U.S. Standard Sieve, said liquid coating material being substantially free of carbon black and free sulfur.

4,535,115

METHOD OF PREPARATION OF POLYIMIDE ACIDS

Kiran R. Bakshi, Murrysville; Walter P. Barie, Glenshaw, and Edward T. Sabourin, Allison Park, all of Pa., assignors to Gulf Oil Corporation, Pittsburgh, Pa.

Filed Aug. 20, 1984, Ser. No. 642,519
Int. Cl.³ C08L *79/08*
U.S. Cl. 524—376 **12 Claims**

1. A one-step method for preparing a solution of an aromatic polyimide acid which comprises:
reacting an aromatic dianhydride with an approximately equimolar quantity of an aromatic diamine to produce a polyimide acid in the presence of a solvent comprising diglyme and an amount of a co-solvent sufficient to maintain said polyimide acid in solution, said co-solvent having the formula:

ROH

where R can be H, an aliphatic branched or straight-chain hydrocarbon having from 1 to 5 carbon atoms or a methoxy substituted aliphatic branched or straight-chain hydrocarbon having from 1 to 5 carbon atoms.

4,535,116

INHIBITION OF WATER TREEING IN POLYMERS OF ETHYLENE

Timothy W. Johnson, and Dennis S. Banasiak, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Sep. 26, 1983, Ser. No. 536,055
Int. Cl.³ C08K *5/05*
U.S. Cl. 524—385 **16 Claims**

1. A method for inhibiting formation of water trees in objects formed from compositions of polymers of ethylene used in dielectric applications comprising admixing a polymer of ethylene having a density in a range above about 0.92 g/cc as

determined by ASTM D1505 with an amount of an aliphatic, primary, monohydric, branched chain alkanol of about 9 to about 30 carbon atoms sufficient to inhibit formation of water trees in objects formed from compositions of polymers of ethylene used in dielectric applications, said alkanol defined by the formula

$$RCH_2CHCH_2OH$$
$$\quad\quad R'$$

wherein R and R′ are the same or different linear or branched chain alkyl groups with each group containing from about 3 to about 20 carbon atoms.

4,535,117

STABILIZATION OF POLYPHENYLENE SULFIDE

Ronald D. Mathis, and Jerry O. Reed, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 2, 1983, Ser. No. 548,049

The portion of the term of this patent subsequent to Nov. 29, 2000, has been disclaimed.

Int. Cl.³ C08K *5/09*

U.S. Cl. 524—397 **20 Claims**

1. A polymer composition exhibiting improved heat stability comprising an arylene sulfide polymer containing an effective stabilizing amount sufficient to retard polymer curing and cross-linking of at least one group IA and IIA metal sorbate.

4,535,118

HIGH CLARITY, LOW HAZE POLYESTERS HAVING REDUCED INFRARED HEAT-UP TIMES

Brian W. Pengilly, Akron, Ohio, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio

Continuation-in-part of Ser. No. 538,681, Oct. 3, 1983, Pat. No. 4,476,272, which is a continuation-in-part of Ser. No. 351,841, Feb. 24, 1982, Pat. No. 4,408,004. This application Oct. 5, 1984, Ser. No. 658,329

The portion of the term of this patent subsequent to Oct. 4, 2000, has been disclaimed.

Int. Cl.³ C08L *67/02*

U.S. Cl. 524—398 **20 Claims**

1. A high clarity, low haze polyester, comprising: a polyester, said polyester having a small amount of an infrared absorbing material therein wherein said infrared absorbing material is carbon black, wherein the amount of said carbon black present is less than 10 parts by weight per million parts by weight of said polyester, wherein said carbon black has an average particle size of from 10 to 500 nanometers, and wherein said high clarity, low haze polyester has a Hunter value of less than 4.0 as measured on a bottle made therefrom having a cross-sectional thickness of about 0.028 inch.

4,535,119

RUBBER COMPOSITION FOR COATING TIRE CORD

Teruo Tanibuchi, Ichihara; Koji Ishiguchi, Chiba, and Shinji Yamamoto, Yotsukaido, all of Japan, assignors to 501 UBE Industries, Ltd., Ube, Japan

Filed May 4, 1984, Ser. No. 606,970

Claims priority, application Japan, May 6, 1983, 58-78306

Int. Cl.³ C08K *3/04*

U.S. Cl. 524—496 **3 Claims**

1. A rubber composition for coating a tire cord comprising:

(A) a reinforced rubber composition comprising vulcanizable rubber having dispersed therein 5 to 100 parts by weight per 100 parts by weight of vulcanizable rubber, of fine short fibers of thermoplastic polymer having

$$-\overset{\overset{O}{\|}}{C}NH-$$

groups in the polymer molecule, said vulcanizable rubber and said thermoplastic polymer being grafted to each other through a phenol formaldehyde resin precondensate at an interface of the fiber;

(B) a diene rubber;

(C) carbon black; and

(D) 0.1 to 10 parts by weight, per 100 parts by weight of a total amount of the rubber constituents, of a cobalt salt of an organic carboxylic acid having 6 or more carbon atoms, wherein the following conditions (i) to (iv) are satisfied:

(i) the amount of said thermoplastic polymer is 1 to 15 parts by weight per 100 parts by weight of the total amount of the rubber constituents;

(ii) the ratio of the rubber is such that the total amount of natural rubber or polyisoprene in the component (A) and the component (B) is 100% to 65% by weight;

(iii) the amount of the carbon black is 50 to 70 parts by weight per 100 parts by weight of the total amount of the rubber constituents; and

(iv) the vulcanizate derived from the rubber composition has a 100% modulus of at least 60 kg/cm2.

4,535,120

AQUEOUS DISPERSIONS OF VINYLIDENE CHLORIDE RESINS

Kazuhiko Hiyoshi; Norio Matsuura; Michiharu Matsuguchi, all of Nobeoka; Norio Onofusa, and Tadao Nishikage, both of Yokohama, all of Japan, assignors to The Dow Chemical Company, Midland, Mich.

Filed Sep. 14, 1981, Ser. No. 301,806

Int. Cl.³ C08L *33/06*

U.S. Cl. 524—560 **1 Claim**

1. An aqueous dispersion of a vinylidene chloride resin obtained by emulsion polymerizing a mixture of vinylidene chloride as a major component, methyl methacrylate, methacrylonitrile, and methacrylic acid; said aqueous dispersion having an aqueous phase and a polymer solids phase, the polymer solids phase having polymerized therein from about 87 to about 93 mole percent vinylidene chloride based on polymer solids content, from about 13 to about 7 mole percent of a mixture of methyl methacrylate and methacrylonitrile, based on polymer solids content, and an amount of methacrylic acid, said amount together with a titratable amount of methacrylic acid comprising a total amount of methacrylic acid, the total amount being from 1×10^{-4} to about 3×10^{-4} moles of methacrylic acid per gram of polymer solids content, the titratable amount being an amount which exists in a form titratable with a 1/20 Normal aqueous solution of sodium hydroxide, the titratable amount not exceeding the lesser of (a) about 1.3×10^{-4} moles per grams of polymer solids content and (b) about 60 percent of the total amount of methacrylic acid.

4,535,121

FLOCKING ADHESIVE FOR FLEXIBLE SUBSTRATES

Riza N. Özelli, Stephanusstrasse 37, 4040 Neuss 22; Hans-Josef Hoffmann, Moehlenring 63, 4152 Kempen 1, and Hartmut Lippert, Geschwister-Scholl-Strasse 61, 4019 Monheim, all of Fed. Rep. of Germany

Filed Jun. 20, 1984, Ser. No. 622,601

Claims priority, application Fed. Rep. of Germany, Jun. 24, 1983, 3322695; Jan. 7, 1984, 3400340

Int. Cl.³ C08L *75/00*

U.S. Cl. 524—715 **11 Claims**

1. An adhesive composition for use in the electrostatic flocking of flexible substrates comprising

(a) at least one isocyanate-terminated polyurethane prepolymer,

(b) from about 10 to 80% by weight, based on the weight of component (a), of at least one reaction product of a polyfunctional epoxide with an aromatic diisocyanate, as an adhesion promoter, and, optionally, one or more of the following:
(c) an organic solvent,
(d) a dispersant, and
(e) other auxiliary materials.

4,535,122

WET ADHESION PROMOTERS FOR EMULSION POLYMERS

Kazys Sekmakas, Palatine, and Raj Shah, Schaumburg, both of Ill., assignors to DeSoto, Inc., Des Plains, Ill.

Division of Ser. No. 511,993, Jul. 8, 1983, Pat. No. 4,487,941. This application Sep. 28, 1984, Ser. No. 655,544
Int. Cl.³ C08F *26/06*; C08L *39/04*
U.S. Cl. 524—809 **3 Claims**

1. An aqueous emulsion-copolymerized latex of copolymerized monoethylenically unsaturated monomers including from 0.1% to 10% of a copolymerizable monomer formed by reacting an omega aminoalkyl alkylene urea with about 0.9 up to about 1.3 molar proportions of a saturated monoepoxide to consume most or all of one of the two amino hydrogen atoms available on said alkylene urea, and then reacting with about 0.9 up to about 1.4 molar proportions of glycidyl acrylate, glycidyl methacrylate, or a mixture thereof in the presence of at least 0.02%, based on the total weight of the reactants present, of an inhibitor which retards the free-radical polymerization of ethylenic unsaturation, and phenothiazine.

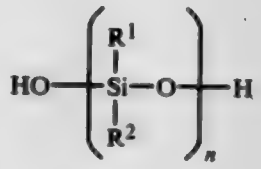
4,535,123

RELEASABLE FILM FORMING COMPOSITIONS

Shosaku Sasaki, and Nobuo Kaiya, both of Ichihara, Japan, assignors to Toray Silicone Company, Limited, Tokyo, Japan

Division of Ser. No. 589,092, Feb. 15, 1984,. This application Aug. 23, 1984, Ser. No. 643,809
Claims priority, application Japan, Jun. 15, 1982, 57-102550; Jan. 7, 1983, 58-805
Int. Cl.³ C08L *83/04*
U.S. Cl. 524—862 **4 Claims**

1. A releasable film forming composition comprising:
(1) 100 parts by weight of a substantially straight-chain organopolysiloxane containing at least two silicon atom-bonded alkenyl groups per molecule and having a viscosity not lower than 1,000 centipoise at 25° C.;
(2) 5 to 80 parts by weight of a finely divided silica;
(3) 2 to 40 parts by weight of a phenyl-containing organosilane or organopolysiloxane represented by the general formula



wherein R^1 and R^2 are each a monovalent hydrocarbon group, at least 25 mol % of R^1 and R^2 being phenyl, and n is a number of 1 to 100;
(4) 0.5 to 40 parts by weight of an organohydrogenpolysiloxane containing at least two SiH groups per molecule, provided the sum of the number of alkenyl groups per molecule of the component (1) and that of SiH groups per molecule of the component (4) is at least five;
(5) a catalytic amount of a platinic compound; and
(6) an organic solvent.

4,535,124

THERMOPLASTIC POLYESTER MOULDING COMPOSITIONS WHICH HAVE GOOD IMPACT STRENGTH

Rudolf Binsack, Krefeld; Dieter Rempel, Leverkusen; Christian Lindner, and Leo Morbitzer, both of Cologne, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jun. 26, 1984, Ser. No. 624,576
Claims priority, application Fed. Rep. of Germany, Jul. 6, 1983, 3324398; Oct. 27, 1983, 3339001
Int. Cl.³ C08L *51/04*
U.S. Cl. 525—67 **9 Claims**

1. Thermoplastic moulding compositions comprising
(A) from 65 to 97% by weight (based on A+B) of thermoplastic polyester and
(B) from 3 to 35% by weight (based on A+B) of the graft product
of at least one vinyl monomer selected from styrene, acrylonitrile and methyl methacrylate on particle-shaped, at least partially cross-linked diene rubbers and/or alkyl acrylate rubbers having an average rubber particle diameter of from 0.05 to 1 μm, the graft products having a rubber content of from 60 to 85%, by weight, characterised in that the graft products B are produced on the basis of a mixture of
a. from 20 to 80% by weight (based on a+b) of a rubber latex having a particle diameter d_{50} of from 0.05 to 0.19 μm, and
b. from 80 to 20% by weight (based on a+b) of a rubber latex having a particle diameter d_{50} of from 0.2 to 1.0 μm
with the limitation that
(1) $d_{50}(b)$ is larger than $d_{50}(a)$ by a factor of from 1.5 to 8,
(2) the quotient $Q=(d_{90}-d_{10})/d_{50}$ of the particular rubbers is at most 2, and
(3) the difference $d_{10}(b)-d_{90}(a)$ is from 0.01 to −0.10.

4,535,125

HIGH FLOW PROPYLENE POLYMER COMPOSITIONS

J. Douglas McCullough, Jr., Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Oct. 13, 1983, Ser. No. 541,624
Int. Cl.³ C08L *23/26, 53/00*
U.S. Cl. 525—88 **12 Claims**

1. A composition having a melt flow between about 5 and about 50 dg/min (ASTM D1238-Condition L), and a high impact value, said composition being obtained by visbreaking the blend of 50–95% by weight of an impact-modified propylene polymer and 5–50% by weight of a linear low density ethylene copolymer, wherein:
(a) said impact-modified propylene polymer has a melt flow (ASTM D1238-Condition L) of about 0.5 to 15 dg/min and an elastomeric propylene-ethylene copolymer content of 5–50% by weight, the copolymer fraction having an ethylene content of 30–95% by weight, which propylene polymer is the product of sequential polymerization of propylene and a propylene-ethylene mixture over a titanium halide-containing coordination catalyst; and
(b) said linear low density ethylene copolymer is the product of polymerization of ethylene with up to 15 mole percent of at least one C_3–C_8 alpha olefin monomer over a transition metal-based coordination catalyst and which has a density in the range from 0.912 to 0.940 and a melt index (ASTM D1238-Condition E) in the range from 1 to 7.

4,535,126

AIR DRYING COATING COMPOSITION

Shinji Iida, Hiratsuka, Japan, assignor to Kansai Paint Company, Ltd., Hyogo, Japan

Filed Jun. 5, 1984, Ser. No. 617,564
Claims priority, application Japan, Jun. 10, 1983, 58-104664
Int. Cl.[3] C08F *8/00*
U.S. Cl. 525—106 7 Claims

1. In an air drying coating composition comprising a resinous binder, the improvement wherein the resinous binder comprises a mixture of (A) 9% to 91% by weight of a silicone-modified alkyd resin, a silicone-modified acrylic-grafted alkyd resin and/or a silicone-modified acrylic resin, the silicone modification of the alkyd, acrylic-grafted alkyd and acrylic resins being achieved by reacting said resin with a silicone resin having a reactive group selected from hydroxyl and alkoxy in the molecule and (B) 91% to 9% by weight of a carboxyl group-containing chlorinated polyolefin resin.

4,535,127

POLYACETAL COPOLYMERS AND PROCESS FOR PRODUCTION THEREOF

Kazuhiko Matsuzaki, and Minoru Hamada, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Mar. 13, 1984, Ser. No. 588,971
Claims priority, application Japan, Mar. 23, 1983, 58-47114; Jul. 12, 1983, 58-126792; Aug. 15, 1983, 58-147960
Int. Cl.[3] C08F *8/28;* C08L *61/02*
U.S. Cl. 525—154 18 Claims

1. A polyacetal copolymer composed of an acetal polymer portion and a thermoplastic elastomer portion having soft segments and hard segments, the second-order transition temperature of said elastomer portion being in the range of from −120° to 40° C.

4,535,128

POLYCARBOXYLIC-ALKYLENEIMINE RESINOUS COMPOSITION AND COATING COMPOSITION CONTAINING SAME

Hirotoshi Umemoto, 138-97, Oneo Hirono-cho, Uji-shi, Kyoto-fu; Hisaki Tanabe, B-40-508, Ishishiro 1 Otokogomo Yawata-shi, Kyoto-fu, and Shinji Nakano, 95-401, Tonda-danchi 1319, Makita-cho, Osaka-fu, Takatsuki-shi, all of Japan

Filed Dec. 30, 1983, Ser. No. 567,314
Claims priority, application Japan, Aug. 4, 1983, 58-142885
Int. Cl.[3] C08L *61/28*
U.S. Cl. 525—162 6 Claims

3. A coating composition being excellent in storage stability, time color stability and low temperature curing properties, comprising (C) a resinous composition having a resinous acid value based on carboxyl groups of a polycarboxylic acid whose titration midpoint potential in non-aqueous potentiometric titration is more than −300 mV in a state capable of developing a resinous acid value of 2 to 50, obtained by the reaction of (A) a basic resin having as essential functional groups both carboxyl groups derived from a polycarboxylic acid whose titration midpoint potential in non-aqueous potentiometric titration is more than −300 mV in a state capable of developing a resinous acid value and groups reactive with a crosslinking agent, and (B) an alkyleneimine compound having at least one alkyleneimine ring of 2 to 3 carbon atoms, in an amount equivalent to a resinous acid value of 0.01 to 50, and (D) a crosslinking agent, the solid weight ratio of (C) to (D) being 95–45 to 5–55.

4,535,129

HIGH IMPACT GRAFT COPOLYMERS OF METHYL ETHENYL BENZENE ON RUBBER BACKBONE

Frederick C. Schwab, Metuchen, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 200,116, Oct. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 870,782, Jan. 19, 1978, abandoned. This application Feb. 12, 1982, Ser. No. 348,464
Int. Cl.[3] C08F *279/02*
U.S. Cl. 525—316 17 Claims

1. A high impact copolymer comprising a preformed backbone polymer chain and multiple branches of polymeric methyl ethenyl benzene grafted to the backbone polymer, said polymeric methyl ethenyl benzenes being derived from a polymerizable mixture of isomers of methyl ethenyl benzene consisting essentially of:
1-methyl-4-ethenyl benzene, at least 85 weight percent;
1-methyl-3-ethenyl benzene, less than 15 weight percent; and
1-methyl-2-ethenyl benzene, 0 to 0.1 weight percent;
said copolymer having greater flow, at injection molding temperatures of 260° C. and above, than the corresponding high impact copolymer of the same Melt Index in which styrene is the grafted monomer instead of said isomers of methyl ethenyl benzene.

4,535,130

COSMETOLOGICAL POLYMERS

Claude Favié, and Michel Mercadier, both of Pau, France, assignors to Societe Nationale Elf Aquitaine (Production), France

Division of Ser. No. 317,532, Nov. 2, 1981, Pat. No. 4,435,545, Continuation of Ser. No. 93,511, Nov. 13, 1979, abandoned. This application Jul. 25, 1983, Ser. No. 516,809
Claims priority, application France, Nov. 21, 1978, 78 32742; Nov. 21, 1978, 78 32743
Int. Cl.[3] C08F *8/34*
U.S. Cl. 525—327.3 16 Claims

1. An epoxy bridge opened polymer selected from the group consisting of polyolefin and a polymer or copolymer of an acrylate or methacrylate in which 16–90% of the epoxy bridge carbon atom pairs have an active group attached to one carbon atom thereof and the adjacent epoxy carbon atom carries a hydroxyl group, and in which the remaining epoxy bridge carbon atom pairs have a hydroxyl group bonded to one carbon atom thereof and the adjacent epoxy carbon atom carries a halogen, hydroxy, amine, mercaptan or mercaptocarboxylate group, wherein said active group is a cinnamic acid, methoxycinnamic acid or salicylic acid moiety.

4,535,131

PROCESS FOR PRODUCING PARTIALLY HYDROLYZED ACRYLAMIDE POLYMER

Ryoji Handa, Yokosuka; Jun Hosoda, and Norimasa Yoshida, both of Yokohama, all of Japan, assignors to Nitto Kagaku Kabushiki Kaisha; Mitsubishi Rayon Co., Ltd. and Diafloc Co., Ltd., all of Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 596,102
Claims priority, application Japan, Apr. 4, 1983, 58-59055
Int. Cl.[3] C08F *8/12*
U.S. Cl. 525—369 10 Claims

1. In a process for producing a partially hydrolyzed acrylamide polymer which comprises mixing small pieces of the aquagel of an acrylamide polymer with an alkali agent and then drying the mixture thereby to produce a partially hydrolyzed acrylamide polymer, the improvement comprising maintaining said small pieces of the aquagel mixed with said alkali agent at a temperature of 50° to 95° C. for a time sufficient to effect hydrolysis to a degree of 1.1 to 3 times the theoretical hydrolysis percentage corresponding to the amount of the alkali agent mixed and until the hydrolysis is substantially completed, and thereafter drying said small pieces of the aquagel.

4,535,132

THERMOSETTING HIGH SOLIDS SOLVENT-BASED POLYESTER POLYOL COATING COMPOSITIONS

Ronald R. Ambrose, Allison Park; Wen-Hsuan Chang, Gibsonia; David T. McKeough, Gibsonia; Delano R. Eslinger, Gibsonia, and Samuel Porter, Jr., Natrona Heights, all of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Dec. 12, 1983, Ser. No. 560,688
Int. Cl.[3] C08L *67/02*
U.S. Cl. 525—443 19 Claims

1. A high solids, solvent-based, thermosetting coating composition having a sprayability of at least 40 percent which when cured is flexible and hard in that when the coating composition is deposited on an elastomeric substrate and cured, the coated substrate can be bent around a ½-inch mandrel with the coating facing outwardly and the coating exhibits substantially no breaks or cracks when tested at 35° F.; and in that when the coating composition is deposited on a metallic substrate and cured, the coated substrate has a Sward hardness of at least 14; said coating composition contains a film-former consisting essentially of a polyester polyol and a curing agent; the polyester polyol has a hydroxyl value of at least 50 and comprises from about 10 to 35 percent cyclic moieties.

4,535,133

POLYETHER POLYOLS MODIFIED WITH EPOXY RESIN-DIAMINE ADDUCTS

Michael Cuscurida, and Harold G. Waddill, both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,435
Int. Cl.[3] C08G *59/14, 18/48, 18/58*
U.S. Cl. 525—504 20 Claims

1. A modified polyether polyol being produced by the process comprising adding an epoxy resin-diamine adduct to a polyether polyol during the reaction of an alkylene oxide with a polyol initiator.

4,535,134

METHOD AND APPARATUS FOR CONTROLLING THE DISCHARGE OF PRODUCT FROM VAPOR PHASE POLYMERIZATION OF MONOMERS IN A HORIZONTAL STIRRED-BED REACTOR

Mark X. de Lorenzo, Webster; Charles R. Hoffpauir; Johnnie R. Hutchins, both of Alvin; Timmy R. Meyer, Webster; John E. Page, Friendswood, and Michael E. Poehl, Lake Jackson, all of Tex., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 31, 1983, Ser. No. 480,833
Int. Cl.[3] C08F *2/34*
U.S. Cl. 526—88 13 Claims

1. A method for discharging polymeric product in powdered form from the take-off end of a horizontal vapor phase polymerization stirred-bed reactor comprising the steps of:

(a) setting a rate for discharging powdered polymerized monomer when the reactor is operating in a steady state so as to maintain a powder level above a discharge port at the take-off end of the reactor; and

(b) actuating a take-off zone discharge apparatus at the set rate for removing powdered polymerized monomer from the discharge port below the powder level;

thereby reducing gas blowby.

4,535,135

ASSOCIATIONS OF BASES, RESULTING FROM THE COMBINATION OF A LITHIUM ALKYL OR ARYL WITH AN ALKALI METAL AMIDE OR HYDRIDE, POLYMERIZATION PROCESS IN WHICH THEY ARE USED, AND PRODUCT OBTAINED

Serge L. M. B. Lecolier, Janville Sur Juine, and Serge F. Raynal, Draveil, both of France, assignors to Societe Nationale des Poudres et Explosifs, Paris, France

Division of Ser. No. 340,078, Jan. 18, 1982, Pat. No. 4,435,312.
This application Oct. 24, 1983, Ser. No. 544,807
Claims priority, application France, Jan. 19, 1981, 81 00854
Int. Cl.[3] C08F *4/48*
U.S. Cl. 526—174 11 Claims

1. Process for the polymerisation or copolymerisation of vinylic, heterocyclic or diene monomers capable of undergoing anionic polymerisation by the opening of an ethylenic double bond or an heterocyclic ring, wherein said monomers are initiated, in the presence or absence of a solvent, with an association of bases, of formula:

$$n'RLi—nMZ$$

wherein n and n′ are the numbers of mols of each compound, R is alkyl or aryl, M is sodium or potassium and Z is an hydride or an inorganic amide, the ratio n/n′ being between 0.2 and 50.

4,535,136

FLUOROOLEFIN POLYMERIZATION PROCESS USING ACYL HYPOFLUORITE CATALYST

Robert C. Wheland, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Apr. 23, 1984, Ser. No. 603,289
Int. Cl.[3] C08F *2/00, 214/18, 4/32*
U.S. Cl. 526—214 16 Claims

1. A process for polymerizing one or more olefin monomers, at least one of which is fluorinated, comprising contacting said monomers with a fluoroxy compound solution of at least one fluoroxy compound, said solution containing an acyl hypofluorite compound of the formula RCOOF and having a fluoroxy compound concentration of at least 0.5 meq/liter; said concentration containing, based on the total number of equivalents of fluoroxy compounds present, about 35 to 100% of RCOOF; other fluoroxy compounds in said solution having the formulae RCF_2OF and $RCF(OF)_2$; wherein for each occurrence R is $X(CF_2)_n—$, n is 1 to 16, and X is H or F, provided that X is F when n is 4 or less.

4,535,137

METHOD FOR MAKING A SALT FREE SOLID POLYMER FROM A POLYMER EMULSION

Werner Siol, Darmstadt; Hubert Rauch, Weiterstadt, and Guenter Fleck, Darmstadt-Arheilgen, all of Fed. Rep. of Germany, assignors to Röhm GmbH, Darmstadt, Fed. Rep. of Germany

Filed Dec. 9, 1982, Ser. No. 448,407
Claims priority, application Fed. Rep. of Germany, Dec. 17, 1981, 3149941
The portion of the term of this patent subsequent to May 15, 2001, has been disclaimed.
Int. Cl.[3] C08F *2/00*
U.S. Cl. 526—216 7 Claims

1. A method for making a solid polymer product containing less than 0.01 percent of salt by weight of said polymer, which method comprises dispersing monomers in an aqueous phase with from 0.01 to 2 percent, by weight of the polymer solids produced, of an emulsifier consisting essentially of a free emulsifier acid which is a long chain activated carboxylic acid or an acidic phosphate ester, phosphite ester, or phosphonic acid having a long chain alkyl group in the molecule, said free emulsifier acid having a pK_a between 1.0 and 4.5, whereby an emulsion of said monomers is formed, free radically polymerizing said monomers in the absence of strong acids with an

initiator which is free of salt and which will not form a salt in the course of the claimed method, whereby a stable polymer emulsion is formed, and then precipitating the polymer from said stable polymer emulsion by the addition thereto of a sufficient amount of a strong acid.

4,535,138

SILANE ESTER CONTACT LENS COMPOSITION, ARTICLE AND METHOD OF MANUFACTURE

Donald J. Ratkowski, Mesa, and Ping-Chang Lue, Scottsdale, both of Ariz., assignors to Paragon Optical, Inc., Mesa, Ariz.

Filed Nov. 1, 1982, Ser. No. 438,904

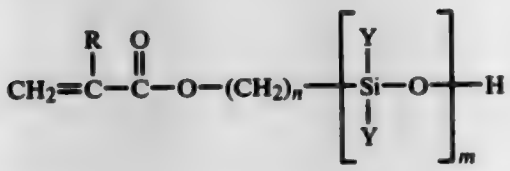
The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ C08F *30/08, 130/08, 230/08*

U.S. Cl. 526—279 **8 Claims**

1. A copolymer composition especially adapted for use in fabricating a contact lens comprising a copolymer of comonomers including the product resulting when

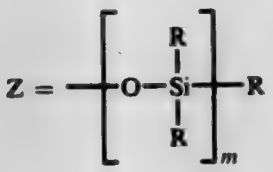
(a) about 5–60 parts by weight of a silane ester containing a silanol functionality of and having the structure:



wherein:

R=CH_3— and H—;

X,Y=C_1–C_6 alkyl, phenyl and Z;

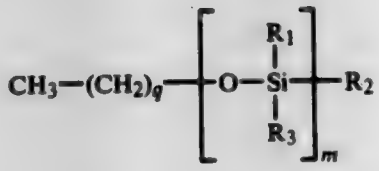


n=1–3

m=1–2

is mixed with 4–15 parts by weight of

(b) an alkylalkoxysilane of the structure



wherein R_1, R_2, and R_3=C_1–C_6 alkyl, and q=0 or 1; said alkylalkoxysilane being present in the mixture in an amount of less than a stoichiometric proportion with respect to said hydroxy silane ester; and

(c) about 80–20 parts by weight of a C_1–C_{20} alkyl acid ester selected from the group consisting of acrylic and methacrylic acid.

4,535,139

POLYMERS CONTAINING SULPHONYL AND CARBOXYLIC ESTER GROUPS

Wolfgang Bräuer; Siegfried Korte, both of Leverkusen; Theo Neukam, Dormagen, and Carlhans Süling, Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 5, 1983, Ser. No. 491,682

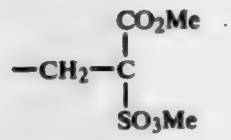
Claims priority, application Fed. Rep. of Germany, May 25, 1982, 3219641

Int. Cl.³ C08F *228/02*

U.S. Cl. 526—287 **4 Claims**

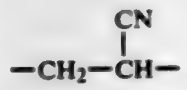
1. A polymer comprising:

(A) 0.1 to 80 mole percent of polymerized units corresponding to the following formula



and,

(B) 20 to 99 mole percent of polymerized units of 1 or more comonomer corresponding to the formula



said polymer selected from the group consisting of

(1) from 89 to 99.9 mole percent of acrylonitrile and from 0.1 to 11 mole percent of 2-methoxysulphonyl propenoic acid methyl ester,

(2) from 90 to 99.8 mole percent of acrylonitrile, from 0.1 to 6 mole percent of methyl acrylate and from 0.1 to 4 mole percent of 2-methoxysulphonyl propenoic acid methyl ester and,

(3) from 40 to 89.9 mole percent of acrylonitrile, from 0.1 to 15 mole percent of 2-methoxysulphonyl propenoic acid methyl ester and from 10 to 59.9 mole percent of vinyl chloride or vinylidene chloride.

4,535,140

HOT-MELT ADHESIVES BASED ON VINYL POLYMER

Jules E. Schoenberg, Scotch Plains; Thomas P. Flanagan, Green Brook, and Dilip K. Ray-Chaudhuri, Bridgewater, all of N.J., assignors to National Starch and Chemical Corporation, Bridgewater, N.J.

Filed Jul. 17, 1981, Ser. No. 284,162

Int. Cl.³ C08F *210/14*; C09J *00/00*

U.S. Cl. 526—329 **9 Claims**

1. A solvent-free 100 percent solid vinyl polymer hot melt adhesive comprising:

(a) 10–90% by weight of a C_1–C_{12} alkyl acrylate and

(b) 10–60% by weight of an alpha-olefin of C_{20}–C_{40}, wherein said alkyl acrylate is partially replaced with up to 60% by weight, based on the polymer, of vinyl acetate or with up to 10% by weight, based on the polymer, of a C_6–C_{12} olefin or with a mixture of vinyl acetate and C_6–C_{12} olefin, provided that the polymer in all instances contains at least 10% by weight of said alkyl acrylate.

4,535,141

LIQUID CURABLE POLYORGANOSILOXANE COMPOSITIONS

Loretta A. Kroupa, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Continuation-in-part of Ser. No. 592,481, Mar. 23, 1984, abandoned. This application Dec. 13, 1984, Ser. No. 682,562

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—15 **12 Claims**

1. A curable liquid polyorganosiloxane composition consisting essentially of the product obtained by mixing (A) 100 parts by weight of at least one liquid triorganosiloxy endblocked polydimethylsiloxane, said triorganosiloxy radicals being selected from dimethylvinylsiloxy and methylphenylvinylsiloxy, where said polydimethylsiloxane exhibits a viscosity of from 1.0 to 500 Pa·s at 25° C.; (B) from 5 to 25 parts of a benzene-soluble copolymer consisting essentially of units of the formulae $CH_2{=}CH(CH_3)_2SiO_{\frac{1}{2}}$, $(CH_3)_3SiO_{\frac{1}{2}}$ and $SiO_{4/2}$, where the molar ratio of the combination of $CH_2{=}CH(CH_3)_2SiO_{\frac{1}{2}}$ and $(CH_3)_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.7:1 to 1.2:1, inclusive, and $CH_2{=}CH(CH_3)_2SiO_2$ units constitute from 2 to 8 percent by weight of said copolymer; (C) an organosiloxane of the formula $H(CH_3)_2SiO[Si(CH_3)_2O]_xSi(CH_3)_2H$, where x is an integer from 0 to 50, in an amount sufficient to provide at least 1.6 silicon-bonded hydrogen atoms per vinyl radical present in said composition; (D) a polyorganosiloxane containing at least three silicon-bonded hydrogen atoms per molecule in an amount sufficient to provide from 5 to 15 percent of the silicon-bonded hydrogen atoms present in (C) and (D), with the proviso that the total number of silicon-bonded hydrogen atoms present in (C) and (D) is from 1.8 to 2.9 times the number of vinyl radicals present in said composition; and (E) an amount of platinum catalyst sufficient to promote curing of said composition.

4,535,142

HIGH SOLIDS COATINGS BASED ON DIRICINOLEATE DERIVATIVES

Melvin Brauer, East Brunswick, and Dominic Simone, Lincroft, both of N.J., assignors to CasChem, Inc., Bayonne, N.J.

Filed Jul. 10, 1984, Ser. No. 629,522

Int. Cl.³ C08G *18/36*

U.S. Cl. 528—75 **23 Claims**

1. A low viscosity sprayable polyurethane coating composition comprising at least one diricinoleate diol and a polyisocyanate compound; said diricinoleate diol and said polyisocyanate compound being present in substantially stoichiometric amounts.

4,535,143

PROCESS FOR THE PREPARATION OF COPOLYCARBONATES OF SULFONYL DIPHENOL

Ronald L. Price, Moundsville, W. Va.; Mark W. Witman, and Sivaram Krishnan, both of Pittsburgh, Pa., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Aug. 6, 1984, Ser. No. 637,945

Int. Cl.³ C08G *63/62*

U.S. Cl. 528—174 **8 Claims**

1. A continuous process for the preparation of a copolycarbonate resin containing at least 15 wt. percent of at least one unit derived from an aromatic dihydroxy compound having at least one sulfonyl bridging group comprising a reaction between a mixture containing said aromatic dihydroxy compound and at least one sulfonyl-free aromatic dihydroxy compound and a carbonic acid precursor under the conditions of interfacial polycondensation characterized in that a quaternary salt at an amount sufficient to avoid formation of emulsion is present in the precondensation step and that a tertiary amine catalyst in a sufficient amount to effect the build-up of molecular weight is present in the secondary polycondensation step.

4,535,144

SYNTHESIS OF HIGH MOLECULAR WEIGHT POLYBENZIMIDAZOLE WITH ARYLHALO PHOSPHORUS COMPOUND CATALYST

Eui W. Choe, Randolph, and Anthony B. Conciatori, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 461,887, Jan. 28, 1983,. This application Jun. 27, 1984, Ser. No. 625,294

Int. Cl.³ C08G *73/18*

U.S. Cl. 528—207 **2 Claims**

1. A two-stage polymerization process for the production of high molecular weight polybenzimidazole from at least one monomeric aromatic reactant having a pair of amine substituents in an ortho position relative to each other and a carboxylate ester group positioned on an aromatic nucleus, which comprises heating the reactant above the melting temperature thereof in a first stage melt polymerization zone in contact with a halophosphorus polymerization catalyst selected from arylhalophosphines or arylhalophosphites to provide a foamed prepolymer; and heating the prepolymer in a second stage solid state polymerization zone at a temperature above about 250° C. to produce high molecular weight polybenzimidazole product.

4,535,145

PROCESS FOR THE PREPARATION OF POLYESTERS FROM ALIPHATIC DICARBOXYLIC ACIDS AND POLYALKYLPIPERIDYL DIOLS

Eduard Troxler, Basel, Switzerland; Thomas Kainmüller, Lindenfels, and Rudolf Maul, Lorsch, both of Fed. Rep. of Germany, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

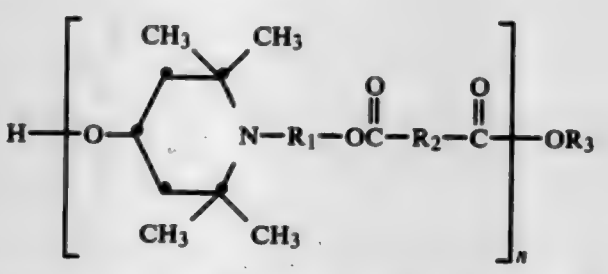
Filed Jun. 29, 1984, Ser. No. 626,507

Claims priority, application Switzerland, Jul. 8, 1983, 3765/83

Int. Cl.³ C08G *63/44, 73/16*

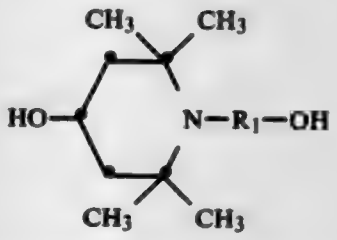
U.S. Cl. 528—289 **5 Claims**

1. A process for the preparation of a compound of the formula I



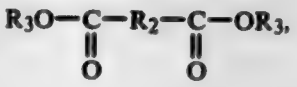
(I)

wherein n is a value from 8 to 25, preferably from 10 to 20, R_1 and R_2, each independently of the other, are C_1–C_{18}alkylene, C_2–C_{18}alkylene which is interrupted by —O—, —S— or —N(-R)—, in which R is hydrogen or C_1–C_4alkyl, or are C_4–C_8alkenylene, and R_3 is C_1–C_4alkyl, by polycondensation of a diol of the formula II



(II)

with a dicarboxylic acid ester of the formula III



(III)

which process comprises stirring the reaction medium which contains an excess of 2 to 50 mol.%, based on the diol of the formula II, of the dicarboxylic acid ester of the formula III, in

the presence of at least 0.03 mol.%, of an oxide or of an organometal compound of a metal of the 4th main group or of the 4th auxiliary group of the Periodic Table, until the bulk of the alkanol of the formula R_3OH which forms during the reaction is distilled off, under a pressure of 0.7 to 1.3 bar, and thereafter stirring under a pressure of less than 10 mbar, in the temperature range from 100° to 170° C., and then working up the melt so obtained in conventional manner.

4,535,146

POLYESTER FORMULATIONS HAVING FLEXIBILITY PROPERTIES

Aram Mekjian, Hillsdale, N.J., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed May 7, 1984, Ser. No. 607,983

Int. Cl.³ C08G *63/54*

U.S. Cl. 528—295.3 **5 Claims**

1. Method of making an unsaturated polyester resin comprising (1) heating together, for about forty to about 100 minutes at a temperature between about 100° and 120° C. a mixture of about 85 moles of maleic anhydride, about 10 to about 20 moles of a dimer or trimer of a fatty acid having from 15 to 21 carbon atoms, about 15 to about 25 moles of dicyclopentadiene, and about 84–90 moles of water, (2) adding to the reaction mixture an additional 60 to 100 moles of dicyclopentadiene and continuing to maintain the reaction mixture for about 100 to about 140 minutes at temperatures between about 120° to about 140° C., and (d3) adding to the reaction mass about 50 to about 65 mole percent, based on the total polycarboxylic acid content (hydrolyzed maleic acid, fatty acid dimer, and fatty acid trimer) of a glycol having 2 to 6 carbon atoms and maintaining the mixture at temperatures between about 190° and 212° C. for about 12 to about 20 hours.

4,535,147

PHOSPHAZENE MODIFIED AMINE TERMINATED POLYMERS AND METHOD

Ronald E. Myers, Strongsville, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Jul. 9, 1984, Ser. No. 629,281

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—321 **14 Claims**

1. A composition of matter comprising: a reaction product of (a) an amine terminated reactive liquid polymer and (b) a phosphazene; the phosphazene being one of cyclical or straight chained having at least 3 but not more than 20 phosphorous atoms and including at least one amine reactive phosphorous substituent, the reactive liquid polymer having a backbone including at least one polymerized vinylidene monomer selected from a group consisting of: (a) monoolefins having between 2 and 14 carbon atoms; (b) dienes having between 4 and 10 carbon atoms; (c) vinyl and allyl esters; (d) vinyl and allyl ethers and (e) acrylates of the form CH_2=CH-COOR", R" being: hydrogen, an alkyl radical of not more than 18 carbon atoms, or an alkoxyalkyl, alkylthioalkyl or cyanoalkyl radical having not more than 12 carbon atoms.

4,535,148

POLYGLYCIDYL ETHERS OF TRICYCLODECANE AND CURED EPOXY RESINS THEREFROM

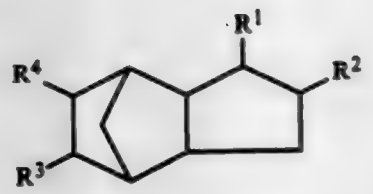
Elizabeth J. Gladfelter, St. Paul; Edgar R. Rogier, Minnetonka, and Edward D. DiDomenico, Anoka, all of Minn., assignors to Henkel Corporation, Minneapolis, Minn.

Filed Aug. 1, 1984, Ser. No. 636,645

Int. Cl.³ C08G *59/34, 59/32*

U.S. Cl. 528—365 **24 Claims**

1. A composition of matter comprising a polyglycidyloxy compound having the structural formula:



wherein R^1, R^2, R^3 and R^4 are selected from the group consisting of hydrogen, hydroxyl and glycidyloxy radicals, provided that at least three of R^1, R^2, R^3 and R^4 are glycidyloxy radicals.

12. An epoxy resin formed by reacting a polyglycidyloxy containing composition in accordance with claim 1 with an epoxy curing agent.

4,535,149

PROCESS FOR THE PRODUCTION OF POLYARYLENE SULPHIDES

Wolfgang Ebert; Rolf-Volker Meyer; Karsten-Josef Idel, and Rolf Dhein, all of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed May 7, 1984, Ser. No. 607,957

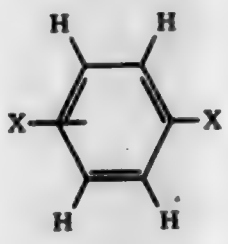
Claims priority, application Fed. Rep. of Germany, May 17, 1983, 3317821

Int. Cl.³ C08G *75/14*

U.S. Cl. 528—388 **10 Claims**

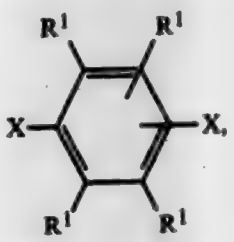
1. A process for the production of optionally branched, high molecular weight polyarylene sulphides, from

(a) dihalo-benzenes, of which from 0 to 100 mol % correspond to formula (I)



(I)

and from 0 to 100 mol % correspond to formula (II)



(II)

wherein each

X represents a halogen which is in the meta- or para-position with respect to the other and

R^1 is the same or different, and represent hydrogen, C_1–C_{20} alkyl, C_5–C_{20} cycloalkyl, C_6–C_{24} aryl, C_7–C_{24} alkaryl or C_7–C_{24} aralkyl, or two radicals R^1 which are in the ortho-position with respect to one another linked to form an aromatic or heterocyclic 5 to 10-membered ring which contains up to three heteroatoms, and at least one radical R^1 is always different from hydrogen, and

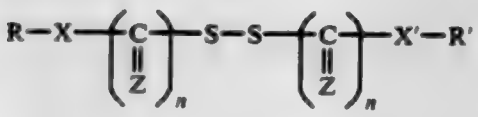
(b) from 0 to 5.0 mol %, based on the total of the dihalogen aromatic compounds corresponding to formulae (I) and (II), of a tri- or tetrahalogen aromatic compound corresponding to formula (III)

$$ArHal_n \quad \text{(III)},$$

wherein

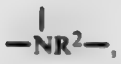
Ar represents an aromatic or heterocyclic radical which contains up to three heteroatoms, and has from 6 to 24 carbon atoms,

Hal represents halogen, and
n represents the number 3 or 4, and
(c) alkali sulphides, the molar ratio of (a+b):c ranging from 0.85:1 to 1.14,
(d) in a polar solvent the molar ratio of (c) to (d) ranging from 1:2 to 1:15,
characterized in that the above-mentioned components are reacted together in the presence of disulphides corresponding to formmula (IV)



(IV)

wherein
R and R′ which are the same or different, represent C_1–C_{20} alkyl, C_5–C_{20} cycloalkyl, C_6–C_{24} aryl or C_7–C_{24} aralkyl, and in the case of the cycloalkyl, or aryl or aralkyl radicals with from 1 to 3 ring carbon atoms replaced by heteroatoms,
X and X′ which may be the same or different, represent a single bond, O, S or



wherein R^2 represents hydrogen and has the meaning stated for R,
Z which is the same or different, represents O, S, NR, wherein R is as defined above, and
n represents 0 or 1.

4,535,150

PROCESS FOR PREPARING EPOXY RESINS HAVING LOW HYDROLYZABLE CHLORINE CONTENTS

Joe M. Hunter, Fern Creek, Ky., assignor to Celanese Corporation, New York, N.Y.

Filed Dec. 4, 1984, Ser. No. 677,711
Int. Cl.³ C08G *59/14*
U.S. Cl. 528—489 **10 Claims**

1. A process for preparing epoxy resins having low hydrolyzable chlorine content which comprises
(a) dissolving the epoxy resin in a solvent in the amount of about 50 to about 95 weight percent resin based on the total weight of resin and solvent wherein the epoxy resin is a derivative of epichlorohydrin and a polyhydric alcohol or polyhydric phenol and which has a hydrolyzable chlorine content of at least about 0.07 weight percent, and wherein the solvent is isopropanol or secondary butanol;
(b) adding aqueous alkali metal hydroxide in the amount of about 1.2 to about 33 equivalents of hydroxide per hydrolyzable chlorine equivalent of the epoxy resin; and
(c) heating the reactants at an elevated temperature for a time sufficient to reduce the hydrolyzable chlorine content to the desired level.

4,535,151

PROCESS FOR THE WET GRANULATION OF ORGANIC PIGMENTS IN AN AQUEOUS SYSTEM WITH HYDROLYSIS OF ACETIC ANHYDRIDE, PROPIONIC ANHYDRIDE OR A MIXTURE THEREOF

Pierre L. E. Fournier, Sotteville-Lés-Rouen, France, assignor to I.C.I. Francolor S.A., Clamart, France

Continuation of Ser. No. 377,094, May 11, 1982, abandoned. This application May 16, 1984, Ser. No. 610,935
Claims priority, application France, Jun. 25, 1981, 81 12494
Int. Cl.³ C09B *5/00, 46/00, 47/00, 57/04*
U.S. Cl. 534—739 **12 Claims**

1. In a process for the wet granulation of pigment particles to form granules by stirring said pigment in a multi-phase system comprising water and an organic solvent which is incompletely miscible with water, the improvement wherein the organic solvent is an easily hydrolyzable compound selected from the group consisting of acetic anhydride, propionic anhydride and mixtures thereof, whereby, after agglomeration of the solid particles of the pigment, the initial multiphase liquid medium is converted into a homogeneous aqueous phase containing the granules suspended therein.

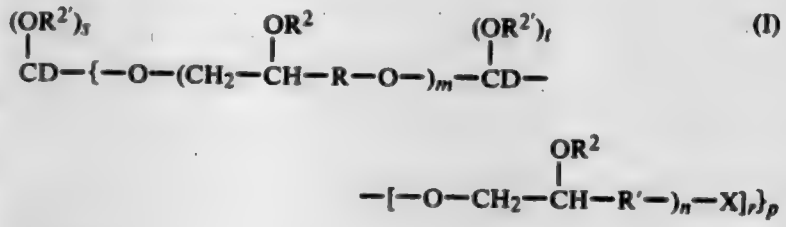
4,535,152

WATER SOLUBLE CYCLODEXTRIN POLYMERS SUBSTITUTED BY IONIC GROUPS AND PROCESS FOR THE PREPARATION THEREOF

József Szejtli; Éva Fenyvesi; Béla Zsadon; Mária Szilasi, and Lajos Décsei, all of Budapest, Hungary, assignors to Chinoin, Gyogyszer Es Vegyeszeti Termekek Gyara Rt., Budapest, Hungary

Filed Feb. 14, 1984, Ser. No. 580,098
Claims priority, application Hungary, Feb. 14, 1983, 488
Int. Cl.³ C08B *37/16*
U.S. Cl. 536—103 **14 Claims**

1. Process for the preparation of water soluble cyclodextrin polymers substituted by ionic groups, containing structural units of formula (I)



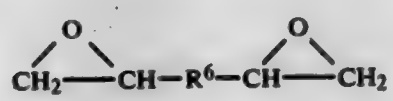
(I)

wherein
CD stands for a group obtained from α-, β- or γ-cyclodextrin by a cleaving p+s or 1+t+r hydroxy group,
R and R′ stand independently for $—CH_2—$, $—CHOH—CH_2—$, $—CH_2—O—(CH_2)_2—O—CH_2—CHOH—CH_2—$, $—CH_2—O—CH_2—CHOH—CH_2—$, $—CH_2—O—(CH_2)_4—O—CH_2—CHOH—CH_2—$,
X stands for a secondary or tertiary amino or $—OR^1$ or $—OR^2$, wherein
R^1 stands for hydrogen or when r is other than O, a group obtained from α-, β-, or γ-cyclodextrin by cleaving a hydroxy group,
R^2 are the same or different and stand for hydrogen, $—PO(OH)_2—$, $—SO_2OH—$, $—R^3—(COOH)_u$, $—R^3—(SO_2OH)_u$, $—R^3—(NR^4R^5)_u$, or a group obtained from α-, β- or γ-cyclodextrin by cleaving a hydroxy group or one, two or three R^2 substituents together from an $R^3—NR^4—R^3—$ or $(—R^3—)_3N$ group,
$R^{2'}$ has the same meaning as R^2 excepting the groups obtained from cyclodextrin molecules,
R^3 stands for u+1 groups obtained from an alkane or an aliphatic hydrocarbon having 1 to 10 carbon atoms, the end carbon atom standing nearer to the polymeric chain of which is unsubstituted or substituted by an oxo group,
R^4 and R^5 stand independently for hydrogen, alkyl having 1 to 4 carbon atoms unsubstituted or substituted by halogen, aryl having 6 to 10 carbon atoms or aralkyl or alkylaryl groups being obtainable by the combination thereof,
m and n stand independently for an integer from 1 to 10,
r stands for an integer from 0 to 23,
p stands for an integer from 1 to 24,
s and t stand independently for an integer from 0 to 7,
u stands for an integer from 1 to 5,
wherein m, n, r, t, and u can differ also in the side-chains within a unit and when
CD stands for a group obtained from α-cyclodextrin, then $p+s \leqq 18$ and $r+5 \leqq 17$ and when
CD stands for a group obtained from β-cyclodextrin, then $p+s \leqq 21$ and $r+t \leqq 20$ and when

CD stands for a group obtained from γ-cyclodextrin, then $p+s \leqq 24$ and $r+t \leqq 23$,

or the aqueous solutions thereof characterized in that

(a) calculated on 1 mole of the cyclodextrin, the α-, β- or γ-cyclodextrin is reacted with 0.1 to 7 moles of a halogen derivative of formula $R^{2''}$-Hal, wherein Hal stands for halogen and $R^{2''}$ has the same meaning as $R^{2'}$ except hydrogen, $—PO(OH)_2$ and $—SO_2OH$, or 0.1 or 7 moles of a sulfone derived from a hydroxy sulfonic acid of formula $HO—R^3—SO_2OH$, wherein R^3 has the same meaning as defined above, in the presence of 0.2 to 14 moles of an alkali metal or an alkali-earth metal hydroxide in 0.7 to 1.0 liter of water, the reaction mixture containing the cyclodextrin substituted by ionic groups is reacted calculated on 1 mole of the cyclodextrin contained therein with 5 to 15 moles of epichlorohydrin or a bisepoxy derivative of formula (II)



(II)

wherein R^6 stands for a direct bond or $—CH_2—O—CH_2—$, $—CH_2—O—CH_2—CH_2—O—CH_2—$ or $—CH_2O—(CH_2)_4—O—CH_2—$.

after adding 5 to 15 moles of an alkali metal or alkali-earth metal hydroxide and 1.8 to 2.5 liter of water at a temperature of 40° to 80° C., or

(b) calculated on 1 mole of the cyclodextrin the α-, β- or γ-cyclodextrin is reacted with 0.1 to 7 moles of a halogen derivative of formula $R^{2''}$-Hal, wherein $R^{2''}$ and Hal have the same meanings as defined above, or a sulfone derived from a hydroxy sulfonic acid of formula $HO—R^3—SO_2OH$, wherein R^3 has the same meaning as defined above, or a primary or secondary amine or a hydroxy compound of formula $R^{2''}—OH$, wherein $R^{2''}$ has the same meaning as defined above, as well as with 5 to 15 moles of epichlorohydrin or a bis epoxy derivative of formula (II), wherein R^6 has the same meaning as defined above, in the presence of 5 to 20 moles of an alkali metal or alkali-earth metal hydroxide and 2.5 to 3.5 liter of water, or

(c) claculated on 1 mole of the cyclodextrin the α-, β- or γ-cyclodextrin is reacted with 5 to 15 moles of an alkali metal or alkali-earth metal hydroxide, 2.5 to 3.5 liter of water and 5 to 15 moles of epichlorohydrin or a bisepoxy derivative of formula (II), wherein the cyclodextrin polymer solution obtained is reacted calculated on 1 mole of the cyclodextrin contained therein with 0.1 to 7 moles of a halogen derivative of formula $R^{2''}$-Hal, wherein $R^{2''}$ and hal have the same meanings as defined above, or a sulfone derived from a hydroxy sulfonic acid of formula $HO—R^3—SO_2OH$, wherein R^3 has the same meaning as defined above, in the presence of 0.2 to 14 moles alkali metal or alkali-earth metal hydroxide, or

(d) for preparing cyclodextrin polymers having structural units of formfula (I), which contain on place of R^2 and/or $R^{2'}$ the inorganic or organic acyl groups stated above, the α-, β- or γ-cyclodextrin is reacted, calculated on 1 mole of the cyclodextrin with 5 to 15 moles of an alkali metal or alkali-earth metal hydroxide, 2.5 to 3.5 liter of water and 5 to 15 moles of epichlorohydrin or bisepoxy derivative of formula (II), wherein R^6 has the same meaning as defined above, and the cyclodextrin polymer obtained is reacted under heating with the corresponding inorganic or organic acid anhydride in the presence of an organic solvent and/or acid binding agent or with the salt of the corresponding acid in the absence of an organic solvent and/or acid binding agent, and

from the reaction mixture containing the cyclodextrin polymer substituted by ionic groups, obtained by anyone of the processes (a) to (d) the by-products of low molecular weight, the salts dissolved and the water are removed and so the solid polymer is obtained.

4,535,153

HETEROPOLYSACCHARIDE S-88

Kenneth S. Kang, LaJolla, and George T. Veeder, San Diego, both of Calif., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation of Ser. No. 355,934, Mar. 8, 1982, abandoned, which is a continuation-in-part of Ser. No. 256,625, Apr. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 73,575, Sep. 7, 1979, abandoned. This application Mar. 8, 1984, Ser. No. 587,736

Int. Cl.[3] **C08B** *37/00;* **C12P** *19/06*

U.S. Cl. 536—123 **3 Claims**

1. Heteropolysaccharide S-88, which is principally carbohydrate, comprising 3–7% (calculated as O-acetyl) O-acyl groups, said O-acyl groups being primarily O-acetyl and O-formyl and substantially free of O-succinyl, 11.8–18.7% glucuronic acid, and the neutral sugars mannose, glucose, and rhamnose in the approximate molar ratio 1:2:2, wherein the ratio of terminally linked rhamnose to 1,4 linked rhamnose is 2:1 and the mannose is principally 1,4 linked.

4,535,154

REDUCTIVE DESTRUCTION OF NITROSAMINES, HYDRAZINES, NITRAMINES, AZO- AND AZOXY-COMPOUNDS

Larry K. Keefer, Bethesda, and George Lunn, Frederick, both of Md., assignors to United States of America, Washington, D.C.

Continuation of Ser. No. 282,844, Jul. 13, 1981, abandoned. This application Jul. 13, 1983, Ser. No. 513,249

Int. Cl.[3] **C07D** *295/00;* **C07C** *85/11*

U.S. Cl. 544—106 **24 Claims**

1. A single stage process for reducing the toxicity and the carcinogenic potential of the class of suspected carcinogenic compounds characterized by having at least two nitrogens bonded together within the molecule by conversion to the corresponding amine which comprises reducing said compounds with a nickel-aluminum alloy in a hydroxide solution in the absence of a hydrogen atmosphere, at room temperature and at atmospheric pressure, whereby destruction of the nitrogen-nitrogen bond is greater than 99% complete.

4,535,155

METHOD FOR SEPARATING CEPHALOSPORINS

Kiyoshi Nara, Kyoto; Kazuyoshi Katamoto, Suita, and Kazuhiko Ohta, Ikeda, all of Japan, assignors to Takeda Chemical Industries, Ltd., Osaka, Japan

Continuation of Ser. No. 220,727, Dec. 29, 1980, abandoned, which is a continuation-in-part of Ser. No. 74,808, Sep. 11, 1979, abandoned. This application Aug. 11, 1983, Ser. No. 522,549

Claims priority, application Japan, Sep. 14, 1978, 53-113096

Int. Cl.[3] **C07D** *501/12*

U.S. Cl. 544—20 **15 Claims**

1. A method for isolating at least two members selected from the group consisting of cephalosporin C, desacetylcephalosporin C and desacetoxy-cephalosporin C from each other as contained in a crude aqueous solution of said members, which comprises contacting the crude aqueous solution with activated carbon to adsorb the said members in the solution on the carbon, and eluting the adsorbed members fractionally with water containing 0 to 20 percent (V/V) of an organic solvent or a mixture of organic solvents in the order of:

desacetyl-cephalosporin C if present;

desacetoxy-cephalosporin C if present;

cephalosporin C if present.

4,535,156

CHROMOGENIC CEPHALOSPORIN COMPOUND

Jürgen Blumbach, Frankfurt am Main, and Peter Schindler, Mörfelden-Walldorf, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 236,539, Feb. 20, 1981,. This application Dec. 29, 1983, Ser. No. 565,847

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1980, 3006889

Int. Cl.[3] C07D *501/36*; A61K *31/545*

U.S. Cl. 544—26 1 Claim

1. 7-β-thien-2-yl-acetamido-3-[(4-nitro-carboxyphenyl)-thiomethyl]-3-cephem-4-carboxylic acid.

4,535,157

PROCESS FOR MAKING 6-DESOXY-6-METHYLENENALOXONE AND 6-DESOXY-6-METHYLENENALTREXONE

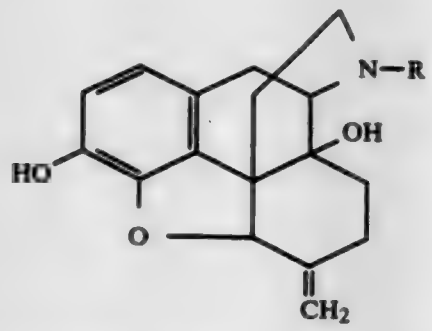
Peter C. Meltzer, Lexington, and Jotham W. Coe, Belmont, both of Mass., assignors to Key Pharmaceuticals, Inc., Miami, Fla.

Filed Nov. 1, 1983, Ser. No. 547,676

Int. Cl.[3] C07D *489/08*

U.S. Cl. 546—44 3 Claims

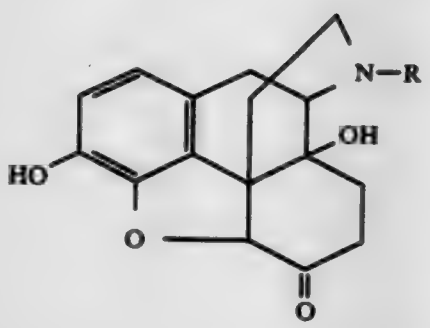
1. A method of preparing a 6-desoxy-methylene compound of the formula



wherein R is $CH_2CH{=}CH_2$ or



which comprises combining approximately equal molar amounts of potassium t-butoxide and methyltriphenylphosphonium formide to form a mixture and adding to that mixture tetrahydrofuran and stirring at about 20° C. for about 0.5 hours and then reacting with a compound of the formula



at about 20° C. for about 40 minutes and stirring for about 1.25 hours and decomposing the reaction mixture by the addition of water in the presence of ammonium chloride and recovering the resultant 6-desoxy-6-methylene compound.

4,535,158

OPTIONALLY N-SUBSTITUTED AMINODESOXY-1.4;3.6-DIANHYDROHEXITOL DERIVATIVES

Klaus Klessing, Ettlingen, Fed. Rep. of Germany, assignor to Willmar Schwabe GmbH & Co., Karlsruhe, Fed. Rep. of Germany

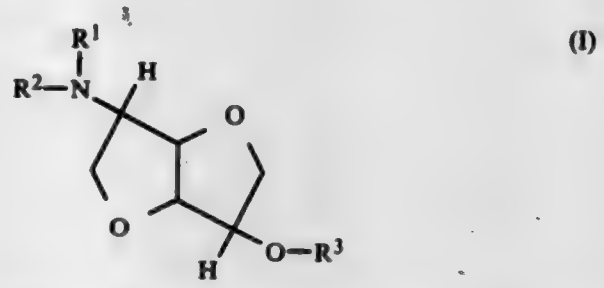
Division of Ser. No. 285,358, Jul. 20, 1981, Pat. No. 4,413,122. This application Sep. 19, 1983, Ser. No. 533,538

Claims priority, application Fed. Rep. of Germany, Jul. 25, 1980, 3028288

Int. Cl.[3] C07D *473/08, 473/10, 473/34, 493/04*

U.S. Cl. 544—118 43 Claims

1. Aminodesoxy-1.4;3.6-dianhydrohexitol derivatives of the general formula



(I)

wherein R^1 and R^2, together with the nitrogen atom to which they are attached,

(a) signify the aden(9)yl radical possibly mono or disubstituted on the 6-amino group or

(b) the 6-alkylmercaptopurin(9)yl radical or

(c) the theophyllin(7)yl radical or

(d) the 6-chloropurin-9-yl radical or wherein

R^1 signifies a hydrogen atom or a lower alkyl group with 1 to 4 carbon atoms and

R^2 an ω-theophyllin(7)ylalkyl radical or an ω-theobromin-1-ylalkyl radical or an ω-(N,N′-di-lower alkyl-substituted xanthin-N″-yl)-alkyl radical, whereby lower alkyl signifies an alkyl group with 1 to 5 carbon atoms, or an ω-adenin-9-ylalkyl radical, whereby the alkyl radical has 2 to 7 carbon atoms and can be straight chained or branched, and wherein

R^3 signifies a hydrogen atom, a methanesulphonyl or toluenesulphonyl group,

as well as their acid addition salts.

4,535,159

PROCESS FOR PRODUCING 1-POSITION AMINO-DERIVATIVES OF 1-(3′,4′-METHYLENEDIOXYPHENYL)PROPANE-2-OL

Ernesto Forné ; Rafael Foguet; Aurelio Sacristán, and José A. Ortiz, all of Barcelona, Spain, assignors to Ferrer Internacional, S.A., Barcelona, Spain

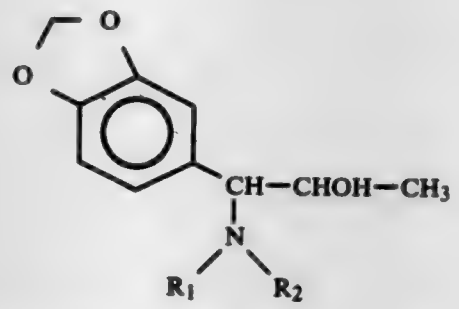
Filed Apr. 30, 1982, Ser. No. 374,593

Claims priority, application Spain, May 13, 1981, 502.470

Int. Cl.[3] C07D *413/00, 403/00, 317/44*

U.S. Cl. 544—148 18 Claims

1. A compound selected from the group consisting of 1-position amino derivatives of 1-(3′,4′-methylenedioxyphenyl)-propane-2-ol having the formula



I

wherein R_1 and R_2 are each independently selected from the group consisting of hydrogen, alkyl having a maximum of 2

carbon atoms, cycloalkyl having 3 to 6 carbon atoms and benzyl, provided that R_1 and R_2 are not both hydrogen, cycloalkyl or benzyl and where R_1 and R_2 taken together with the nitrogen atom to which they are attached can form a ring having 5 to 7 bonds, which ring may contain another heteroatom selected from the group of oxygen and nitrogen and wherein said ring can be substituted with a member selected from the group consisting of benzyl and hydroxyl; and the non-toxic acid addition salts thereof.

2. A compound according to claim 1 designated d,l-erythro-1-(3',4'-methylenedioxyphenyl)-1-morpholine-propane-2-ol.

14. A therapeutic composition having analgesic activity comprising an analgesically effective amount of a compound according to claim 1 as active ingredient in admixture with a pharmaceutically acceptable carrier.

17. Method of inducing analgesia in a mammal comprising administering an analgesically effective amount of a compound according to claim 1.

4,535,160

PROCESS FOR OBTAINING SOLID CYANURIC CHLORIDE IN FINELY DIVIDED FORM

Stefan Elischer, Münchsmünster; Hans-Günther Höbel, Aiglsbach; Robert Merkt, and Fritz Wagner, both of Münchsmünster, all of Fed. Rep. of Germany, assignors to SKW Trostberg Aktiengesellschaft, Trostberg, Fed. Rep. of Germany

Filed Jul. 31, 1984, Ser. No. 636,335

Claims priority, application Fed. Rep. of Germany, Oct. 11, 1983, 3336993

Int. Cl.³ C07D *251/28*

U.S. Cl. 544—191 **12 Claims**

1. A process for recovering solid cyanuric chloride from the cyanuric chloride vapour obtained by trimerizing cyanogen chloride comprising the steps of separately introducing the cyanuric chloride vapour and cold air into a separation chamber through obliquely upwardly directed inlets in the chamber, in such a manner that an intensive mixing up of the cyanuric chloride vapour with the cold air takes place after emergence from the inlet pipes to precipitate solid cyanuric chloride from the vapor, withdrawing cyanuric chloride-free waste gases from the upper part of the separation chamber and removing the precipitated solid cyanuric chloride from the lower part of the separation chamber.

4,535,161

BENZOQUINOLIZINE DERIVATIVES

Isao Hayakawa, Tokyo, Japan, assignor to Daiichi Seiyaku Co., Ltd., Tokyo, Japan

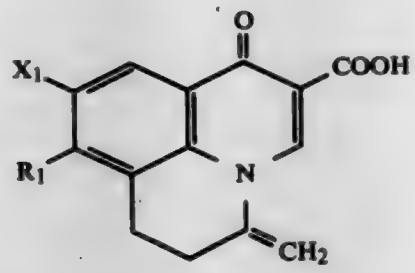
Filed Jun. 27, 1983, Ser. No. 507,635

Claims priority, application Japan, Dec. 10, 1982, 57-216545

Int. Cl.³ C07D *401/10*

U.S. Cl. 546—94 **5 Claims**

1. A benzoquinolizine derivative of formula (I)



(I)

wherein:

X_1 represents a hydrogen atom or a halogen atom and R_1 represents a 4- to 7-membered saturated cyclic amino group selected from the group consisting of a 1-azetidinyl, a substituted pyrrolidinyl, 1-piperidinyl, 1-piperazinyl and 4-morpholinyl which may be substituted with one or more substituents selected from the group consisting of hydroxyl group, amino group, alkyl group, mono- or dialkylamino group, hydroxyalkyl group and aminoalkyl group, wherein the alkyl moiety in said one or more substituents contains 1 to 6 carbon atoms, a nitrogen atom of said cyclic amino group being bonded to the benzoquinolizine moiety, and physiologically acceptable salts thereof.

5. A compound as claimed in claim 1, wherein X_1 is a fluorine atom and R_1 is a 3-amino-1-pyrrolidinyl group.

4,535,162

PROCESS FOR CATALYTICALLY REDUCING NITROAROMATIC COMPOUNDS

Giovanni Mestroni; Grazia Zassinovich, both of Trieste, and Enzo Alessio, Gorizia, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Jun. 16, 1983, Ser. No. 504,748

Claims priority, application Italy, Jun. 21, 1982, 21953 A/82

Int. Cl.³ C07D *215/38, 211/72, 239/02*

U.S. Cl. 546—159 **6 Claims**

1. A process for catalytically reducing nitroaromatic compounds by displacement of hydrogen from carbon monoxide and water or from synthesis gas to nitroaromatic compounds, such reduction being catalyzed by complexes of rhodium, iridium, ruthenium and osmium; characterized in that the $CO+H_2O$ system or the $(CO+H_2)+H_2O$ system is reacted with a nitroaromatic compound of formula;

$$Ar—(NO_2)_x \quad (I)$$

wherein Ar is an aryl group or a hetero-aryl group, optionally substituted by inert groups; x is an integer selected from 1 to 3, in the presence of a complex catalyst having the formula:

$$[MChel(L)_2]^+X^- \quad (II)$$

or of a catalyst composed by carbonyl compounds and chelants of formula:

$$Mz(CO)_y+nChel \quad (III)$$

wherein M=Rh, Ir, Ru, Os; "Chel" is a chelating bidentate or tridentate aromatic nitrogen compound selected from the group consisting of 2,2'-dipyridyl, 4,4'-dimethyl-2,2'dipyridyl, 1,10-phenanthroline, 5,6-dimethyl-1,10-phenanthroline, 2,9-dimethyl-1,10-phenanthroline, 4,7-dimethyl1,10-phenanthroline, 3,4,7,8-tetra-methyl-1,10-phenanthroline, 3,4,5,6,7,8-hexamethyl-phenanthroline, 2,3,4,7,8,9-hexamethyl-phenanthroline, 2,4,7,9-tetramethylphenanthroline, sulphonated phenanthrolines, N,N,N'N'-ortho-phenylene diamine and N,N,N',N'-ortho-phenylene diamine and N,N,N',N'-1,8-diaminonaphthalene and terpyridyl; "L" is a molecule of carbon monoxide or of an olefin or half a molecule of a diolefin; X^- is an anion selected from Cl^-, Br^-, I^-, PF_6^-, BF_4^-, $(B(C_6H_5)_4$, $-CO_3--$ and HCO_3^-; z and y, are integers and n is an integer or a fractional number, at temperatures ranging from about 25° C. to 250° C., at a carbon monoxide pressure ranging from 1 to 150 atmospheres.

4,535,163

2-AMINOALKYL-PYRIDINE DERIVATIVES

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

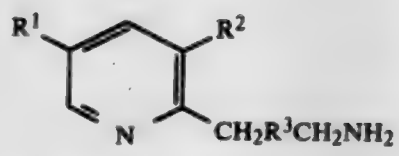
Division of Ser. No. 391,077, Jun. 22, 1982, Pat. No. 4,444,772. This application Feb. 2, 1984, Ser. No. 576,244

Claims priority, application United Kingdom, Jun. 12, 1981, 8119906

Int. Cl.³ A61K *31/44*; C07D *213/38*

U.S. Cl. 546—300 **8 Claims**

1. A compound of the formula:



or a salt thereof; where R^1 is C_{1-4} alkyl; R^2 is C_{3-4} alkoxy; halogen, or amino; and R^3 is a C_{1-3} alkylene group.

4,535,164

PROCESS FOR PREPARING CERTAIN SUBSTITUTED 4-THIAZOLIDINONES

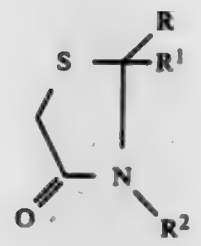
Robert M. Di Pardo, Lansdale, and Mark G. Bock, Hatfield, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 312,607, Oct. 19, 1981, abandoned. This application Mar. 30, 1983, Ser. No. 478,272

Int. Cl.³ C07D *277/34*

U.S. Cl. 548—187 **5 Claims**

1. A process for preparing compounds of the formula:



wherein

R and R_1 are independently H; or C_1–C_8 alkyl; phenyl; or $-(CH_2)_n-A-R^3$ wherein:

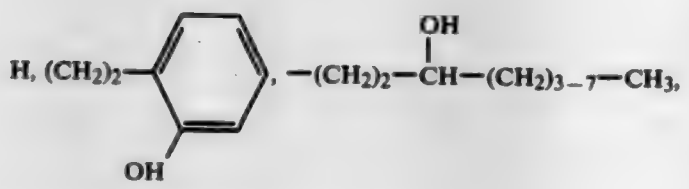
R^3 is carboxy, a carboxy salt, a carboxy ester of the formula $COOR^5$ wherein R^5 is C_{1-10} alkyl;

A is p-phenylene, m-phenylene or subsituted phenylene derivative in which one or two of the phenylene hydrogens is replaced by methyl, halo, or 2,5-furylene; and

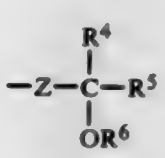
n is 3 or 4;

and

R^2 is



phenyl, phen-C_1–C_8-straight chain alkyl or



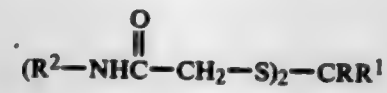
wherein:

Z is alkylene or unsaturated alkylene having from 2–3 carbon atoms;

R^6 is hydrogen or lower alkanoyl;

R^5 is hydrogen or straight chain C_{1-3} alkyl; and

R^4 is lower straight chain or branched alkyl having from 3–7 carbon atoms, an unsaturated alkyl having from 3–7 carbon atoms, or a substituted lower alkyl selected from polyfluoro alkyl of from 3–7 carbon atoms and lower alkoxy methylene; or R^4 and R^5 taken together with the carbon atom connecting R^4 and R^5 is a cyclic substituent selected from a bridged or unbridged alicyclic ring of from 5–9 carbon atoms or a heterocyclic ring containing oxygen and from 5–7 ring-forming carbon atoms such that at least one of R, R^1 and R^2 is other than H which comprises cyclizing a compound of the formula:



in an aprotic reaction medium in the presence of a Hg^{+2} metal catalyst.

4,535,165

SUBSTITUTED DIAZOLES AND THIAZOLES

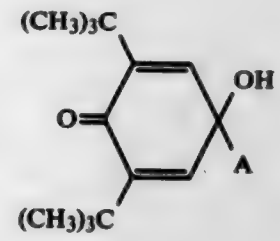
George G. I. Moore, Houlton, Wis., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Division of Ser. No. 324,063, Nov. 23, 1981,. This application Nov. 16, 1983, Ser. No. 552,407

Int. Cl.³ C07D *277/24, 231/12, 233/64*

U.S. Cl. 548—204 **5 Claims**

1. A compound of the formula



wherein A is a monofunctional diazole or thiazole radical selected from the group consisting of a 1-N-methylpyrazole radical which is bonded to the cyclohexadien-1-one ring via a carbon atom which is alpha to a nitrogen atom of the pyrazole ring, a 1-N-methylimidazole radical which is bonded to the cyclohexadien-1-one ring via a carbon atom which is alpha to a nitrogen atom of the imidazole ring, and a thiazole radical which may be optionally substituted by a single halogen or methyl radical.

4,535,166

PROCESS FOR PREPARING ALPHA-ARYLALKANOIC ACIDS

Graziano Castaldi, Briona, and Claudio Giordano, Vicenza, both of Italy, assignors to Zambon S.p.A., Vicenza, Italy

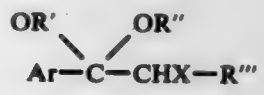
Filed Aug. 3, 1983, Ser. No. 520,131

Claims priority, application Italy, Aug. 6, 1982, 22760 A/82; Mar. 7, 1983, 19930 A/83

Int. Cl.³ C07C *67/333*

U.S. Cl. 548—204 **6 Claims**

1. A process for preparing an alpha-arylalkanoic acid or a salt thereof, which comprises the rearrangement of an alpha-halo-alkylarylketal of formula



wherein

Ar is an aromatic ring selected from the group comprising (a) a phenyl ring substituted by one or two substituents slected from the group comprising halogen, 1–6 C alkyl, 1–4 C alkoxy, 2–4 C alkenyloxy, phenyl, phenoxy, dichlorophenoxy, dichloroanilino, benzoyl, indolinyl, dihydropyrrolyl, thenoyl (b) a naphthyl ring substituted by one or two substituents selected from the group comprising halogen and 1–4 C alkoxy (c) a pyrrolyl ring substituted by one or two radicals selected from the group comprising 1–4 C alkyl and $alkyl_{1-4\ C}$-phenyl, (d) chlorocarbazolyl, (e) benzoxazolyl substituted by one chlorophenyl radical, and (f) thiazolyl substituted by one or two radical selected from the group comprising phenyl and chlorophenyl and (g) thienyl,

R′ and R″, independently from each other, are a satured or unsatured, straight or branched alkyl radical having from 1 to 12 C atoms or, when taken together, are a satured or unsatured straight or branched alkylene radical having from 2 to 12 C atoms which completes an alicyclic ring having from 5 to 7 members;

X is halogen;

R‴ is hydrogen, alkyl having from 1 to 6 C atoms or cycloalkyl having from 3 to 7 C atoms. in neutral or weakly alkaline conditions and in the presence of a polar-protic medium and the subsequent hydrolysis of the thus obtained ester in the same reaction medium to afford the corresponding alpha-arylalkanoic acid or a salt thereof.

4,535,167

CHIRAL, N-PROTECTED, N-SUBSTITUTED α-AMINO ACIDS

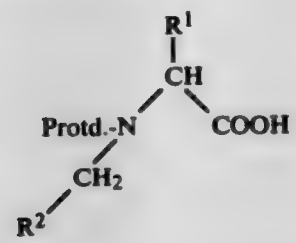
Roger M. Freidinger, Hatfield, Pa., assignor to Merck & Co. Inc., Rahway, N.J.

Continuation-in-part of Ser. No. 330,634, Dec. 14, 1981, abandoned. This application May 23, 1983, Ser. No. 497,301

Int. Cl.³ C07C *125/065, 103/46*

U.S. Cl. 548—344 **4 Claims**

1. A process for preparing chiral, N-protected, N-substituted α-amino acids of Formula III:



III

wherein

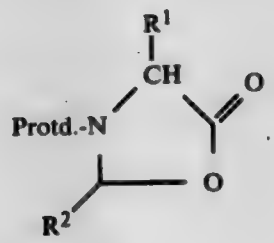
(a) R^1 is loweralkyl, hydroxyloweralkyl, mercaptoloweralkyl, aminoloweralkyl, mono- or di-loweralkylaminoloweralkyl, loweralkylthioloweralkyl, phenyl, benzyl, phenylloweralkyl, p-hydroxybenzyl, indolylloweralkyl, phthalimidylloweralkyl, imidazolylloweralkyl, benzyloxyloweralkyl, guanidinoloweralkyl, carboxyloweralkyl and loweralkylcarboxyloweralkyl;

(b) R^2 is loweralkyl, straight or branched C_1–C_{22} alkyl, cyclooloweralkyl, benzyl, phenyl, and phenylloweralkyl, carboxyloweralkyl, loweralkoxycarbonylloweralkyl and carboxyloweralkylaminoloweralkyl;

(d) Protd, is an N-protecting group selected from the group consisting of 9-fluorenylmethoxycarbonyl, trifluoroacetyl, 4-toluenesulfonylethyloxycarbonyl, carbobenzoxy, 2-chlorocarbobenzoxy, methylsulfonyl-ethyloxycarbonyl, 2-(triphenylphosphino)-ethoxycarbonyl, and 2-cyano-t-butyloxycarbonyl;

which comprises

treating an N-protected oxazolidinone of Formula II:



II

with a selective reducing agent.

4,535,168

PREPARATION OF INDOLINE-2-CARBOXYLIC ACID VIA THE INTERMEDIATE INDOLINE-2-CARBOXYLIC ACID ESTER TIN COMPLEX

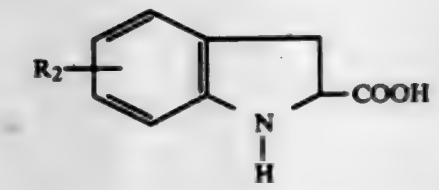
Charles J. Guinosso, King of Prussia, Pa., assignor to American Home Products Corporation, New York, N.Y.

Filed Feb. 3, 1983, Ser. No. 463,430

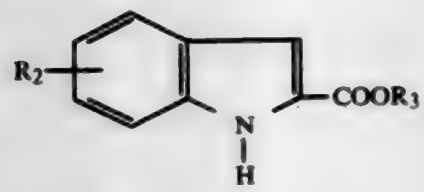
Int. Cl.³ C07D *209/18*

U.S. Cl. 548—402 **4 Claims**

1. A process for producing an indoline-2-carboxylic acid of the formula:

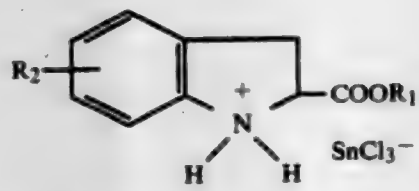


wherein R_2 is hydrogen, alkyl of 1–4 carbon atoms, alkoxy of 1–4 carbon atoms, or halogen, which process comprises (a) contacting an indole-2-carboxylic acid or ester of the formula:



wherein R_2 is as defined above and R_3 is hydrogen or R_1 (R_1 being alkyl of 1–4 carbon atoms) with dry hydrogen chloride gas and stannous chloride in an alkanol of the formula R_1OH at atmospheric pressures for a period of 2 to 24 hours at temperatures between −25° C. and +25° C., (b) contacting the resulting indoline-2-carboxylic acid ester tin complex of the formula:

II



wherein R_1 and R_2 are as defined above, which is dissolved in an alkanol solvent of 1–3 carbon atoms, with an aqueous potassium or sodium hydroxide solution, and (c) acidifying the resulting solution.

4,535,169

5H-6-OXO-2,3,4,4A,7,7A-HEXAHYDROPYRANO[2,3-B]PYRROLE AND THE PREPARATION THEREOF

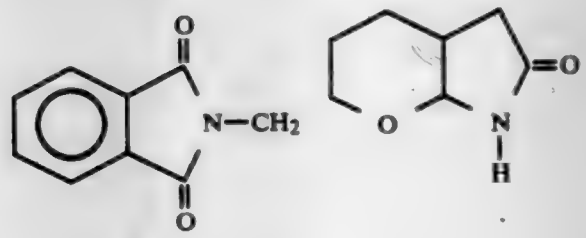
John L. Krstenansky, Tucson, Ariz., and Bruce L. Currie, Woodridge, Ill., assignors to The Board of Trustees of the University of Illinois, Urbana, Ill.

Filed Sep. 12, 1983, Ser. No. 530,992

Int. Cl.³ C07D *471/04*

U.S. Cl. 548—453 **2 Claims**

1. A compound having the structure

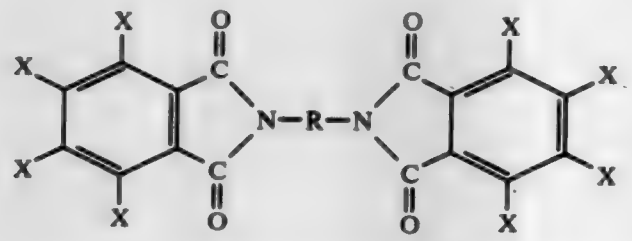


4,535,170
FLAME RETARDANTS AND COMPOSITIONS CONTAINING THEM

Joseph Sonnenberg, San Jose, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 760,664, Sep. 18, 1968,. This application Sep. 21, 1980, Ser. No. 77,494
Int. Cl.[3] C07D *209/48*
U.S. Cl. 548—462 5 Claims

1. A bisimide compound of the formula



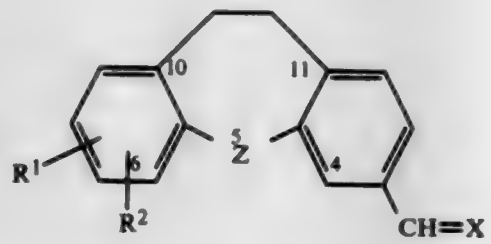
wherein each X is independently bromine or hydrogen with the proviso that at least 4 of said X's are bromine, and R represents an alkylene radical of 2 to 18 carbon atoms.

4,535,171
DIBENZO[B,F]THIEPIN-3-CARBOXALDEHYDES AS PROSTAGLANDIN ANTAGONISTS

Joshua Rokach, Laval, Canada, assignor to Merck Frosst Canada, Inc., Kirkland, Canada

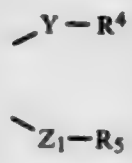
Continuation-in-part of Ser. No. 442,921, Nov. 18, 1982, abandoned, which is a continuation of Ser. No. 328,096, Feb. 25, 1981, abandoned, which is a continuation of Ser. No. 097,759, Nov. 27, 1979, abandoned. This application Oct. 11, 1983, Ser. No. 540,587
Int. Cl.[3] C07D *337/14*
U.S. Cl. 549—12 12 Claims

1. A compound of the formula:



wherein

X is O, N—R^3, wherein R^3 is hydrogen, loweralkyl, aryl, hydroxy, loweralkoxy, loweracyloxy, amino or loweralkylamino; or X may have the formula:



wherein

Y and Z_1 are each independently O or S and

R^4 and R^5 are each independently hydrogen or loweralkyl; and the broken line represents a possible bond between R^4 and R^5 when R^4 and

R^5 are not hydrogen;

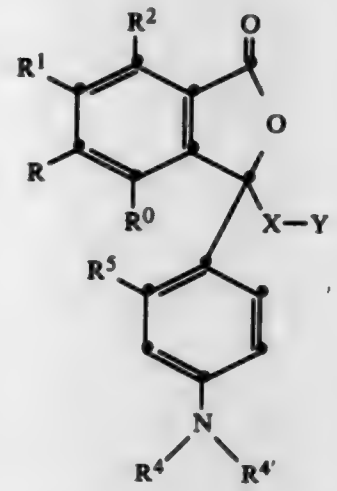
R^1 and R^2 are each independently hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, nitro, and C_1 to C_4 alkyl or dialkylamino, benzyl, phenethyl or hydroxyalkyl; and the dotted line indicates either an olefinic bond or saturation at the 10-, 11-position.

4,535,172
3(ETHER AND THIOETHER) 3'-(4-DIALKYLAMINOPHENYL) PHTHALIDES

Paul J. Schmidt, Sharonville, and William M. Hung, Cincinnati, both of Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Filed Jan. 8, 1982, Ser. No. 338,008
Int. Cl.[3] C07D *307/88*
U.S. Cl. 549—310 8 Claims

1. A 3-(X-Y)-3-(2-R^5-4-N-R^4-N-$R^{4'}$-aminophenyl)-4-R^0-5-R-6-R^1-7-R^2-phthalide having the formula



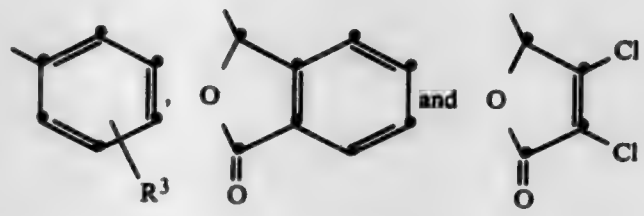
I

wherein:

R^0, R, R^1 and R^2 each represent hydrogen or halo or when R^0, R^2 and one of R and R^1 are each hydrogen the other of R and R^1 represents dialkylamino dibenzylamino or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 alkyl and benzyl is substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl;

X represents oxygen or sulfur;

Y represents a non-tertiary C_1 to C_{16} alkyl or is selected from the group consisting of



in which

R^3 represents hydrogen, non-tertiary C_1 to C_8 alkyl, non-tertiary C_1 to C_4 alkoxy or halo;

R^4 and $R^{4'}$ may be identical or different and each represent non-tertiary C_1 to C_4 alkyl, benzyl or benzyl substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl; and

R^5 represents hydrogen, C_1 to C_3 alkyl, non-tertiary C_1 to C_4 alkoxy, halo, dialkylamino, dibenzylamino or N-alkylbenzylamino in which alkyl is non-tertiary C_1 to C_4 alkyl; and benzyl may be substituted in the benzene ring by one or two of halo or C_1 to C_3 alkyl.

4,535,173

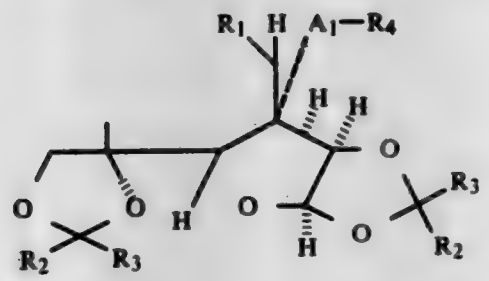
INTERMEDIATES FOR THE PRODUCTION OF PROSTAGLANDINS FROM D-GLUCOSE

Bruce A. Pearlman, Kalamazoo, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Dec. 13, 1982, Ser. No. 449,115
Int. Cl.[3] C07D *317/70, 317/44*
U.S. Cl. 549—433 6 Claims

1. A prostaglandin intermediate of the formula A-6A

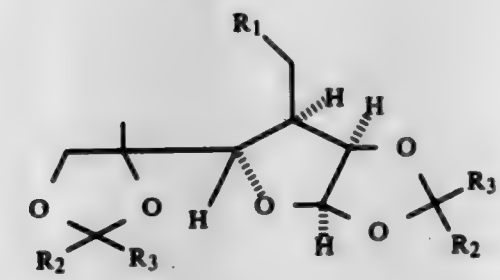
A-6A



wherein R_1 is
(a) $-CO_2M$, where M is a metal cation,
(b) $-CN$,
(c) $-CO_2R_2$,
(d) $-CONHR_2$,
(e) $-CON(R_2)_2$, wherein each R_2 is the same or different,
(f) $-CH{=}NR_3$,
(g) $-CHNOR_3$, or
(h) $-CHNN(R_3)_2$;
wherein R_2 is
(a) $(C_1\text{-}C_5)$alkyl, or
(b) $(C_6\text{-}C_{12})$aryl;
wherein R_3 is
(a) hydrogen,
(b) $(C_1\text{-}C_5)$alkyl, or
(c) $(C_6\text{-}C_{12})$aryl;
wherein A_1 is
(a) cis$-CH_2CH{=}CH-CH_2-(CH_2)_g-CH_2-$,
(b) cis$-CH_2CH{=}CH-CH_2-(CH_2)_g-CF_2-$,
(c) cis$-CH_2CH_2-CH{=}CH-(CH_2)_g-CH_2-$,
(d) $-(CH_2)_4-(CH_2)_g-CH_2-$,
(e) $-(CH_2)_4-(CH_2)_g-CF_2-$,
(f) $-CH_2CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(g) $-CH_2C{\equiv}C-CH_2-(CH_2)_g-CH_2-$, or
(h) $-CH_2CH_2-C{\equiv}C-(CH_2)_g-CH_2-$;
wherein g is one, 2, or 3; and
wherein R_4 is
(a) hydrogen,
(b) halogen,
(c) $-OR_2$,
(d) $-OSO_2R_2$,
(e) $-OSi(R_2)_3$, wherein each R_2 is the same or different,
(f) $-CH(OR_2)_2$, wherein each R_2 is the same or different, or
(g) $-CN$.

2. A compound of the formula A-5A

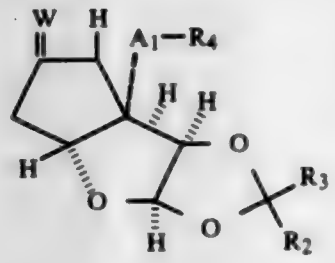
A-5A



wherein R_1 is
(a) $-CO_2M$, wherein M is a metal cation,
(b) $-CN$,
(c) $-CO_2R_2$,
(d) $-CONHR_2$,
(e) $-CON(R_2)_2$, wherein each R_2 is the same or different,
(f) $-CHNR_3$,
(g) $-CHNOR_3$, or
(h) $-CHNN(R_3)_2$;
wherein R_2 is
(a) $(C_1\text{-}C_5)$alkyl, or
(b) $(C_6\text{-}C_{12})$aryl; and
wherein R_3 is
(a) hydrogen,
(b) $(C_1\text{-}C_5)$alkyl, or
(c) $(C_6\text{-}C_{12})$aryl.

6. A compound of the formula A-11A,

A-11A



wherein A_1 is
(a) cis$-CH_2CH{=}CH-CH_2-(CH_2)_g-CH_2-$,
(b) cis$-CH_2CH{=}CH-CH_2-(CH_2)_g-CF_2-$,
(c) cis$-CH_2CH_2-CH{=}CH-(CH_2)_g-CH_2-$,
(d) $-(CH_2)_4-(CH_2)_g-CH_2-$,
(e) $-(CH_2)_4-(CH_2)_g-CF_2-$,
(f) $-CH_2CH_2-O-CH_2-(CH_2)_g-CH_2-$,
(g) $-CH_2C{\equiv}C-CH_2-(CH_2)_g-CH_2-$, or
(h) $-CH_2CH_2-C{\equiv}C-(CH_2)_g-CH_2-$;
wherein R_2 is
(a) $(C_1\text{-}C_5)$alkyl, or
(b) $(C_6\text{-}C_{12})$aryl;
wherein R_3 is
(a) hydrogen,
(b) $(C\text{-}C_5)$alkyl, or
(c) $(C_6\text{-}C_{12})$aryl;
wherein R_4 is
(a) hydrogen,
(b) halogen,
(c) $-OR_2$,
(d) $-OSO_2R_2$,
(e) $-OSi(R_2)_3$, wherein each R_2 is the same or different,
(f) $-CH(OR_2)_2$, wherein each R_2 is the same or different, or
(g) $-CN$; and
wherein W is divalent and is
(a) $-H$, $-SO_2(C_6H_5)$,
(b) $-H$, $-CN$,
(c) $=P(C_6H_5)$,
(d) $-H$, $-PO(C_6H_5)_2$,
(e) $CH_3CH(OCH_2CH_3)O-$; $-CN$,
(f) $-H$, $-SO_2CH_3$,
(g) $-CH_3S-$, CH_3S-,
(h) $-H$, $-NO_2$, or
(i) $-H$, $-SO(C_6H_5)$.

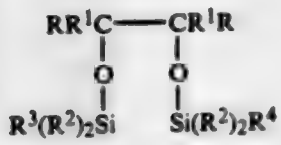
4,535,174

FREE-RADICAL INITIATORS AND METHOD FOR MAKING

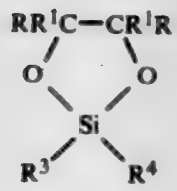
James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Nov. 2, 1984, Ser. No. 667,931
Int. Cl.[3] C07F *7/08, 7/18*
U.S. Cl. 556—443 6 Claims

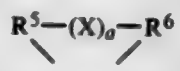
1. Free-radical initiators selected from the class consisting of



-continued
and



where R and R^1 are monovalent radicals selected from $C_{(6-13)}$ aryl hydrocarbon radicals and substituted $C_{(6-13)}$ aryl hydrocarbon radicals, and when joined together and attached to the same carbon atom are selected from divalent aryl radicals having the formula,



R^2 is a monovalent radical selected from hydrogen, $C_{(1-8)}$ alkyl, $C_{(1-8)}$ haloalkyl, $C_{(1-8)}$ alkoxy or $C_{(6-13)}$ aryl, R^3 is selected from $C_{(2-20)}$ aliphatically unsaturated hydrocarbon radicals, substituted $C_{(2-20)}$ aliphatically unsaturated monovalent hydrocarbon radicals, $C_{(4-20)}$ cycloaliphatic unsaturated hydrocarbon radicals and substituted $C_{(4-20)}$ cycloaliphatic unsaturated hydrocarbon radicals and R^4 is selected from R^2 radicals and R^3 radicals and R^5 and R^6 are selected from divalent $C_{(6-13)}$ aryl hydrocarbon radicals and substituted $C_{(6-13)}$ aryl hydrocarbon radicals, X is selected from —O—, —S—, $—CH_2—$ and



and a is 0 or 1.

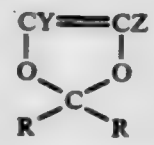
4,535,175

FLUORODIOXOLES

Edward N. Squire, Glen Mills, Pa., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

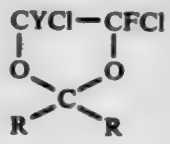
Filed Apr. 18, 1984, Ser. No. 601,590
Int. Cl.³ C07D *317/00*
U.S. Cl. 549—455 **10 Claims**

1. A fluorodioxole having the following formula



wherein Y is hydrogen or chlorine; Z is hydrogen, fluorine, or chlorine; and R is fluorine or the trifluoromethyl group; with the proviso that when one of Y and Z is hydrogen, the other one of Y and Z is other than chlorine; and when R is trifluoromethyl, only one of Y and Z can be hydrogen.

10. A dioxolane having the formula



wherein R is fluorine and Y is hydrogen or chlorine.

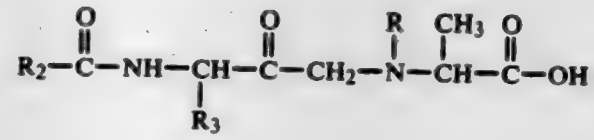
4,535,176

INTERMEDIATES FOR SUBSTITUTED PEPTIDE COMPOUNDS

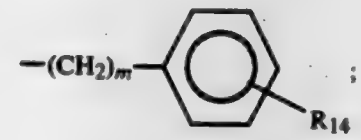
Sesha I. Natarajan, Neshanic Station, and Eric M. Gordon, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Division of Ser. No. 500,581, Jun. 2, 1983, Pat. No. 4,470,973, which is a continuation-in-part of Ser. No. 399,650, Jul. 19, 1982, abandoned. This application May 29, 1984, Ser. No. 615,014
Int. Cl.³ C07C *125/063, 101/024*
U.S. Cl. 560—27 **4 Claims**

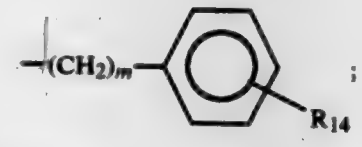
1. A compound of the formula



wherein:
R_2 is



R_3 is



R is benzyloxycarbonyl;
m is zero, one, or two; and
R_{14} is hydrogen, methyl, methoxy, methylthio, chloro, bromo, fluoro, or hydroxy.

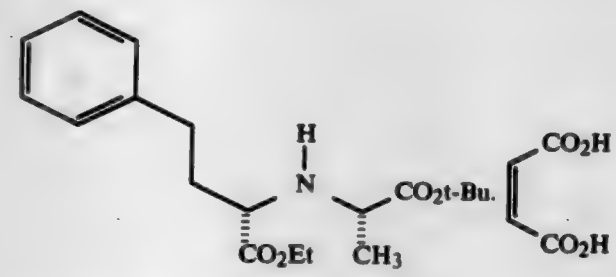
4,535,177

N-SUBSTITUTED AMINO ACID DERIVATIVES

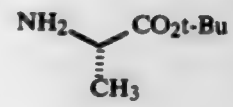
Frederick A. Golec, Jr., Ossining, and Thomas Goetzen, Tuckahoe, both of N.Y., assignors to USV Pharmaceutical Corp., Tarrytown, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,448
Int. Cl.³ C07C *101/20*
U.S. Cl. 560—38 **16 Claims**

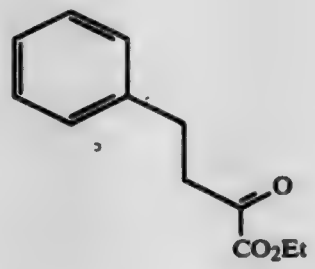
1. A process of preparing the compound of the formula



comprising the steps of:
a., dissolving the compound of the formula



in a reaction medium to form a solution;
b., adjusting the pH of the solution to about 4.0 to 5.0;
c., adding with mixing the compound of the formula



to the solution to form a mixture;
d., adding a hydrogenation catalyst to form a reaction mixture;
e., hydrogenating the reaction mixture;
f., removing the catalyst;
g., isolating a crude product;
h., reacting the crude product with maleic acid to form the desired compound.

4,535,178

PROCESS FOR THE PREPARATION OF POLYETHER-ESTER POLYOLS

Curtis J. Reichel, Wyandotte, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Filed Sep. 29, 1982, Ser. No. 426,306
Int. Cl.³ C07C *67/08*
U.S. Cl. 560—91 **6 Claims**

1. In a process for the preparation of polyether-ester polyols by the reaction of a polyether polyol and tetrahydrophthalic anhydride to form a half acid ester followed by the reaction of the half acid ester with an alkylene oxide to obtain a product having an acid number of less than about 5 mg KOH/gm the improvement which comprises conducting the reaction between the polyether polyol and the anhydride and the following reaction with the alkylene oxide in the presence of an effective amount of a catalyst selected from the group consisting of calcium naphthenate and cobalt naphthenate.

4,535,179

SYNTHESIS OF BICYCLIC AND TRICYCLIC 7-OXA PROSTAGLANDIN ENDOPEROXIDE ANALOGS VIA OXYPALLADATION OF NORBORNADIENE

Richard C. Larock, Ames, Iowa, assignor to Iowa State University Research Foundation Inc., Ames, Iowa

Filed Mar. 3, 1983, Ser. No. 471,760
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—117 **7 Claims**

1. A method of synthesis of 7-oxa bicyclic prostaglandin analogs, comprising,
reacting norbornadiene palladium dichloride with t-butyl 6-hydroxyhexanoate in an oxypalladation reaction to provide an oxypalladium bicyclic intermediate;
carbonylating said intermediate, in the presence of an organic trialkylamine selected from the group consisting of triethylamine and diisopropylethylamine to provide a bicyclic ester intermediate which in part has the basic prostaglandin analogue carbon skeletal structure; and thereafter
selectively hydrolyzing said ester to an acid,
reducing said acid to an aldehyde,
olefinating said aldehyde by reaction with 2-oxoheptyl phosphonate to provide a keto compound containing the complete carbon skeletal structure of a 7-oxa prostaglandin analog.

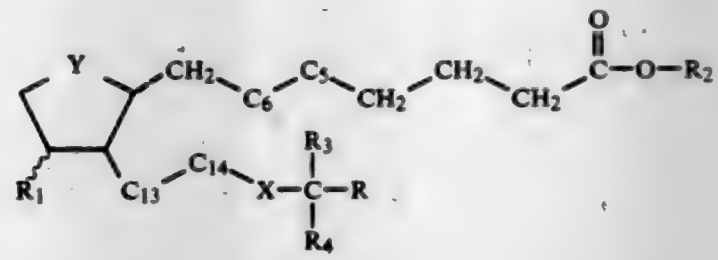
4,535,180

11-DEOXY-11-SUBSTITUTED PROSTAGLANDINS OF THE E AND F SERIES

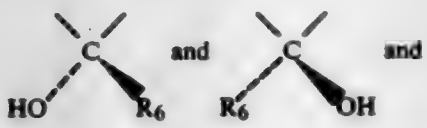
Charles V. Grudzinskas, Garnerville, N.Y., and Martin J. Weiss, Oradell, N.J., assignors to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 77,707, Sep. 21, 1979, abandoned, which is a division of Ser. No. 776,444, Mar. 10, 1977, Pat. No. 4,241,221, which is a continuation of Ser. No. 552,403, Feb. 24, 1977, Pat. No. 4,057,571, which is a continuation-in-part of Ser. No. 274,559, Jul. 24, 1972, Pat. No. 4,141,914. This application Jul. 30, 1981, Ser. No. 288,396
Int. Cl.³ C07C *177/00*
U.S. Cl. 560—121 **15 Claims**

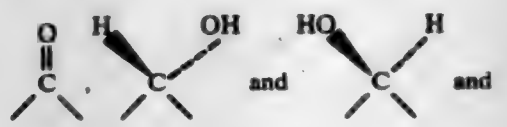
1. A compound selected from the group consisting of an optically active compound of the formula:



and a racemic compound of that formula and the mirror image thereof wherein R is selected from the group consisting of an alkyl group having from 3 to 7 carbon atoms; R_1 is CH_3 or C_2 to C_4 1-alkenyl; R_2 is selected from the group consisting of hydrogen and an alkyl group having from 1 to 12 carbon atoms; R_3 is selected from the group consisting of hydrogen, fluorine and lower alkyl, with the proviso that R_3 is fluorine only if R_4 is fluorine; R_4 is selected from the group consisting of fluorine and lower alkyl with the proviso that R_4 is fluorine only if R_3 is fluorine or hydrogen; X is a divalent moiety selected from the group of those of the formulae:



wherein R_6 is selected from the group consisting of hydrogen and lower alkyl; Y is a divalent moiety selected from the group consisting of those of the formulae:



the moiety $-C_5-C_6-$ is ethylene or cis vinylene and the moiety $-C_{13}-C_{14}-$ is ethylene or trans-vinylene; with the proviso that when $-C_5-C_6-$ is cis-vinylene then $-C_{13}-C_{14}$ be trans-vinylene; and the non-toxic cationic salts thereof when R_2 is hydrogen.

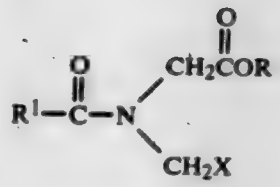
4,535,181

N-CARBOALKOXYMETHYL-N-HALOMETHYL AMIDES

Raymond A. Felix, Richmond, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Continuation of Ser. No. 468,223, Feb. 22, 1983, Pat. No. 4,482,504, which is a continuation-in-part of Ser. No. 412,624, Aug. 30, 1982, Pat. No. 4,425,284. This application May 14, 1984, Ser. No. 609,921
Int. Cl.³ C07C *103/48*
U.S. Cl. 560—172 **3 Claims**

1. A compound of the formula



wherein R and R^1 are C_1-C_4 alkyl and X is chlorine, bromine or iodine.

4,535,182

PROCESS FOR PREPARING 2-CYCLOPENTENONE ESTERS

Masayoshi Minai, Moriyama, and Tadashi Katsura, Osaka, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Aug. 16, 1983, Ser. No. 523,602

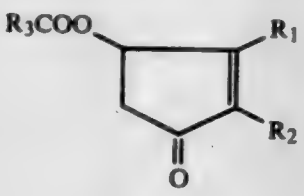
Claims priority, application Japan, Aug. 26, 1982, 57-148609; Aug. 27, 1982, 57-149450; Nov. 12, 1982, 57-199588

The portion of the term of this patent subsequent to Jan. 29, 2002, has been disclaimed.

Int. Cl.³ C07C *69/02*

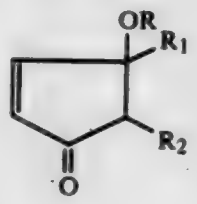
U.S. Cl. 560—231 **9 Claims**

1. A process for preparing 2-cyclopentenone esters of the formula:



(I)

wherein R^1 is hydrogen, lower alkyl or lower alkenyl, R^2 is lower alkyl, lower alkenyl, lower alkynyl, cycloalkyl, cycloalkenyl or substituted or unsubstituted aryl and R^3 is hydrogen or lower alkyl, which comprises reacting a racemic or optically active 4-cyclopentenone of the formula:



(II)

wherein R^1 and R^2 are each defined above and R is hydrogen or acyl with at least one lower aliphatic carboxylic acid and/or a metal or amine salt thereof.

4,535,183

PHARMACEUTICAL COMPOUNDS, PREPARATION, USE AND INTERMEDIATES THEREFOR AND THEIR PREPARATION

Geoffrey Kneen, Bromley, England, assignor to Burroughs Wellcome Co., Research Triangle Park, N.C.

Filed Dec. 18, 1981, Ser. No. 332,246

Claims priority, application United Kingdom, Dec. 18, 1980, 8040512

Int. Cl.³ C07C *65/40*

U.S. Cl. 514—568 **21 Claims**

1. 4-(2-Formyl-3-hydroxyphenoxymethyl)benzoic acid and salts thereof.

4,535,184

TRIS(DISUBSTITUTED AMINO)SULFONIUM PERFLUOROCARBANION SALTS

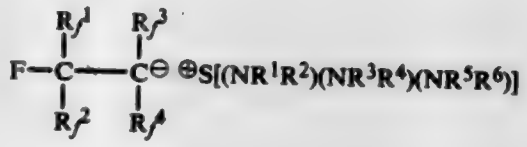
William J. Middleton, Chadds Ford, Pa., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Jun. 8, 1984, Ser. No. 618,737

Int. Cl.³ C07C *145/02*; C07D *207/48, 211/96*

U.S. Cl. 564—102 **5 Claims**

1. Tris(disubstituted amino)sulfonium perfluorocarbanion salt of the formula



wherein

R^1 through R^6, each selected independently, are C_1–C_{20} alkyl, each having at least 2 alpha hydrogen atoms, or any or all of the pairs R^1 and R^2, R^3 and R^4, and R^5 and R^6, each pair selected independently, are $—CH_2)_4$ or $—CH_2)_2CHY—CH_2)_2$, wherein Y is hydrogen or methyl;

R_f^1, R_f^2 and R_f^3, each selected independently, are F, $C_{1\text{-}20}$ perfluoroalkyl or $C_{4\text{-}12}$ perfluorocycloalkyl; and

R_f^4 is $C_{1\text{-}20}$ perfluoroalkyl or $C_{4\text{-}12}$ perfluorocycloalkyl; or

any one of the pairs R_f^1 and R_f^2, R_f^3 and R_f^4, R_f^1 and R_f^3, and R_f^2 and R_f^4, taken together, is $—CF_2)_n$ wherein n is an integer and is 2 to 6; or

each of the pairs R_f^1 and R_f^2 and R_f^3 and R_f^4, or each of the pairs R_f^1 and R_f^3 and R_f^2 and R_f^4, taken together, is $—CF_2)_n$ wherein n, each selected independently, is an integer and is 2 to 6.

4,535,185

PROCESS FOR THE PRODUCTION OF GUANIDINE NITRATE FROM A MIXTURE OF UREA AND AMMONIUM NITRATE

Matthias Thoma, Waldkraiburg, Fed. Rep. of Germany, assignor to Industrie Chemie Thoma GmbH & Co Produktions KG, Waldkraiburg, Fed. Rep. of Germany

Filed Sep. 13, 1983, Ser. No. 531,713

Claims priority, application Fed. Rep. of Germany, Sep. 30, 1982, 3236221

Int. Cl.³ C07C *128/00*; B01J *37/00*

U.S. Cl. 564—242 **7 Claims**

1. In a process for the production of guanidine nitrate of the type wherein a mixture of urea and ammonium nitrate are reacted in the presence of an SiO_2 catalyst, at an elevated temperature, and in the presence of an excess of ammonium nitrate, followed by recovery of the guanidine nitrate, the improvement comprising:

removing the catalyst from the reaction mixture by filtration;

slurrying the catalyst with a melt of a material selected from the group consisting of ammonium nitrate, and a mixture of ammonium nitrate and urea at a temperature of from 135° C. to 200° C. to thereby regenerate the catalyst; and

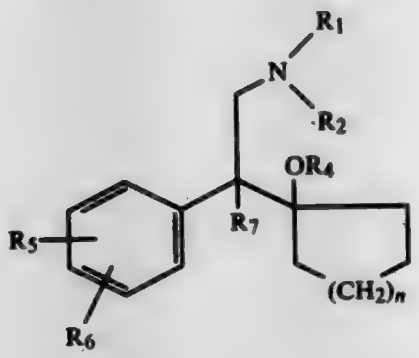
recovering the regenerated catalyst from the slurry by filtration.

4,535,186
2-PHENYL-2-(1-HYDROXYCYCLOALKYL OR 1-HYDROXYCYCLOALK-2-ENYL)ETHYLAMINE DERIVATIVES

G. E. Morris Husbands, Berwyn; John P. Yardley, Gulph Mills, and Eric A. Muth, West Chester, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 486,594, Apr. 19, 1983, abandoned, which is a continuation-in-part of Ser. No. 449,032, Dec. 13, 1982, abandoned. This application Oct. 26, 1983, Ser. No. 545,701
Int. Cl.³ C07C *87/28*
U.S. Cl. 564—336 32 Claims

1. A compound of the formula:



wherein
the dotted line represents optional olefinic unsaturation, and
R_1 is hydrogen or alkyl of 1 to 6 carbon atoms;
R_2 is alkyl of 1 to 6 carbon atoms;
R_4 is hydrogen, alkyl of 1 to 6 carbon atoms, formyl, or alkanoyl of 2 to 7 carbon atoms;
R_5 and R_6 are independently hydrogen, hydroxyl, alkyl of 1 to 6 carbon atoms, alkoxy of 1 to 6 carbon atoms, alkanoyloxy of 2 to 7 carbon atoms, nitro, alkylmercapto of 1 to 6 carbon atoms, amino, alkylamino of 1 to 6 carbon atoms, dialkylamino in which each alkyl group is of 1 to 6 carbon atoms, alkanamido of 2 to 7 carbon atoms, halo, or trifluoromethyl;
R_7 is hydrogen or alkyl of 1 to 6 carbon atoms; and
n is one of the integers 0, 1, 2, 3 or 4;
or a pharmaceutically acceptable salt thereof.

4,535,187
PREPARATION OF ISOPHORONE AND MESITYL OXIDE FROM ACETONE

Anthony J. Papa, St. Albans, and Steven W. Kaiser, South Charleston, both of W. Va., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 21, 1983, Ser. No. 564,023
Int. Cl.³ C07C *45/45*
U.S. Cl. 568—353 5 Claims

1. Method of converting acetone to isophorone and mesityl oxide which comprises contacting acetone vapor at a temperature of about 275° C. to about 350° C. and at a flow rate of about one volume of feed per volume of catalyst per hour with a heterogeneous catalyst prepared by

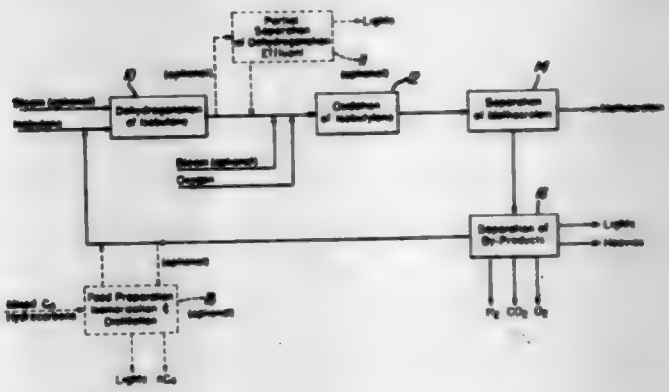
(a) Introducing onto an alumina support a sufficient amount of an inorganic or organic calcium salt to provide a loading of from about 1 to 20 weight percent of calcium in the final catalyst whereby said alumina has a surface area in excess of about 30 meters²/gram and an average pore volume in excess of about 0.40 cc/gram and

(b) calcining the alumina supported calcium salt from step (a) at a temperature of about 300° to about 600° C. for at least about 3 hours; and recovering a product of unreacted acetone. isophorone and mesityl oxide.

4,535,188
CONVERSION OF ISOBUTANE TO METHACROLEIN

Sargis Khoobiar, Kinnelon, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 368,196, Apr. 14, 1982, Pat. No. 4,413,147. This application Sep. 20, 1982, Ser. No. 420,077
The portion of the term of this patent subsequent to Nov. 8, 2000, has been disclaimed.
Int. Cl.³ C07C *45/35*
U.S. Cl. 568—479 15 Claims



1. A process for the preparation of methacrolein from isobutane in the presence of other C_4 hydrocarbons comprising:

(a) dehydrogenating a C_4 hydrocarbon feed stream comprising isobutane as a major fraction thereof in the presence of steam over a dehydrogenation catalyst comprising a Group VIII noble metal on a support at a temperature in the range of about 300°–700° C. and up to about 10 kg/cm² gauge pressure to form an effluent stream comprising isobutylene, hydrogen, carbon oxides, normal butenes, steam, and unreacted C_4 hydrocarbons;

(b) mixing oxygen and optionally steam with said effluent stream of (a) and passing the mixture over a molybdenum-based catalyst at conditions selected to produce methacrolein and producing an effluent stream comprising methacrolein, unreacted isobutylene and isobutane, butadiene, oxygen, hydrogen, steam, and carbon oxides;

(c) recovering the methacrolein from said effluent of (b);

(d) separating from said effluent of (b) after recovery of methacrolein therefrom the hydrogen produced in (a), the carbon oxides produced in (a) and (b), and the unreacted oxygen of (b); and

(e) returning as feed to (a) the effluent of (b) after recovering methacrolein, hydrogen, oxygen, and carbon oxides therefrom.

4,535,189
POLYOL PURIFICATION PROCESS

Michael Cuscurida, Austin, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 21, 1984, Ser. No. 591,703
Int. Cl.³ C07C *41/03*
U.S. Cl. 568—620 8 Claims

1. In a method wherein a C_2–C_4 alkylene oxide is reacted with an initiator to form an alkylene oxide polymer under alkaline conditions in the presence of a hydroxide, hydride or alkoxide of sodium or potassium and wherein the alkylene oxide polymer is thereafter neutralized with an acid component comprising sulfuric acid, phosphoric acid, acetic acid or oxalic acid and then passed through a filter to obtain a final alkylene oxide polymer product, the improvement which comprises:

(a) recovering filter cake resulting from the filtration step;

(b) mixing said filter cake with a treating agent comprising a lower aliphatic alcohol containing from about 1 to 4 carbon atoms and also containing from 0 up to about 40 wt. % of water;

(c) filtering said mixture; and

(d) recovering additional alkylene oxide polymer from said filtrate from said second filtration step.

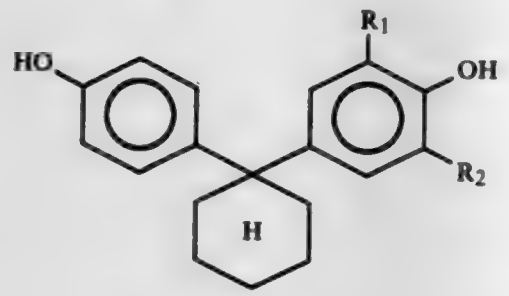
4,535,190

PHENOLIC COMPOUNDS AND A HEAT-SENSITIVE RECORDING MATERIAL CONTAINING THE SAME

Naoto Arai; Takeshi Murakami; Toshitake Suzuki, all of Hyogo; Toranosuke Saito, Osaka; Masakatu Kitani, Hyogo, and Takashi Ishibashi, Osaka, all of Japan, assignors to Sanko Kaihatsu Kagaku Kenkyusho, Osaka and Kanzai Paper Manufacturing Company Ltd., Tokyo both of, Japan

Filed Mar. 23, 1984, Ser. No. 592,598
Claims priority, application Japan, Mar. 25, 1983, 58-48939
Int. Cl.[3] C07C *39/17, 39/12*
U.S. Cl. 568—721 2 Claims

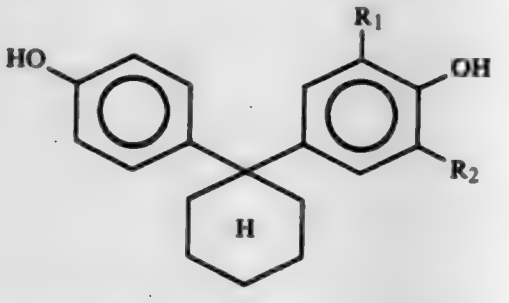
1. Novel phenolic compounds expressed by the general formula I



I

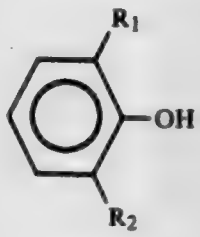
wherein R_1 represents an alkyl group or a cycloalkyl group and R_2 represents hydrogen atom or an alkyl group.

2. A process for producing phenolic compounds expressed by the general formula I



I

wherein R_1 represents an alkyl group or a cycloalkyl group and R_2 represents hydrogen atom or an alkyl group, which process comprises reacting p-cyclohexenylphenol with an o-substituted phenol expressed by the general formula



wherein R_1 and R_2 are as defined above, in the presence of an acidic catalyst selected from the group consisting of metal halides, sulfuric acid, phosphoric acid, sulfonic acid, activated clay and ion exchange resins, at temperatures of from 30° to 130° C.

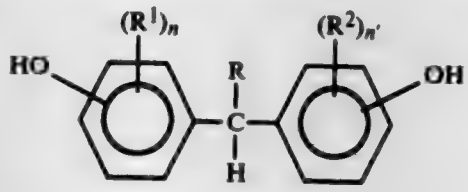
4,535,191

DIHYDRIC PHENOLS

Victor Mark, Evansville, and Charles V. Hedges, Mt. Vernon, both of Ind., assignors to General Electric Company, Mt. Vernon, Ind.

Filed Feb. 23, 1984, Ser. No. 582,946
Int. Cl.[3] C07C *39/16, 39/24*
U.S. Cl. 568—727 13 Claims

1. Dihydric phenols represented by the general formula



wherein:

R is selected from straight chain alkyl radicals containing from 11 to about 30 carbon atoms;

each R^1 is independently selected from halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals;

each R^2 is independently selected from halogen, monovalent hydrocarbon, and monovalent hydrocarbonoxy radicals; and

n and n′ are independently selected from whole numbers having a value of from 0 to 4 inclusive.

4,535,192

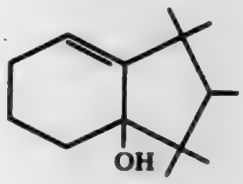
TERTIARY PENTAMETHYLINDANOL DERIVATIVES AND ORGANOLEPTIC USES THEREOF

John B. Hall, Rumson, and Takao Yoshida, West Long Branch, both of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

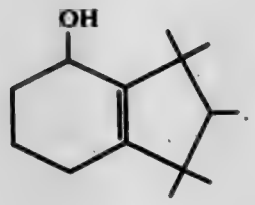
Division of Ser. No. 589,662, Mar. 14, 1984,. This application Nov. 14, 1984, Ser. No. 671,330
Int. Cl.[3] C07C *35/23*
U.S. Cl. 568—819 2 Claims



1. The compound having the structure:



in the absence of the compound having the structure:



4,535,193

1,4,6,9-TETRANITRODIAMANTANE

Gilbert P. Sollott, Plymouth Meeting, Pa., and Everett E. Gilbert, Morristown, N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Mar. 5, 1984, Ser. No. 586,364
Int. Cl.³ C07C *79/08*
U.S. Cl. 568—941 **7 Claims**

2. A process for preparing 1,4,6,9-tetranitrodiamantane which comprises reacting 1,4,6,9-tetraminodiamantane tetrahydrochloride with an oxidizing agent.

4,535,194

PROCESS FOR PRODUCING 1,1,2,3-TETRACHLOROPROPENE

Scott S. Woodard, Maryland Heights, Mo., assignor to Monsanto Co., St. Louis, Mo.

Filed Jul. 6, 1983, Ser. No. 511,131
Int. Cl.³ C07C *17/00*
U.S. Cl. 570—236 **6 Claims**

1. A process for producing 1,1,2,3-tetrachloropropene comprising the steps of:

preparing 1,1,1,3-tetrachloropropane by reacting ethylene with carbon tetrachloride in the presence of both a source of metallic iron that is effective as an activator for the reaction, and a promoter for the reaction, said promoter being selected from phosphorus (V) compounds containing a phosphoryl group;

dehydorchlorinating said 1,1,1,3-tetrachloropropane to produce a mixture of 1,1,3- and 3,3,3-trichloropropenes;

chlorinating at least one of the trichloropropenes obtained by said dehydrochlorination of 1,1,1,3-tetrachloropropane to produce 1,1,1,2,3-pentachloropropane;

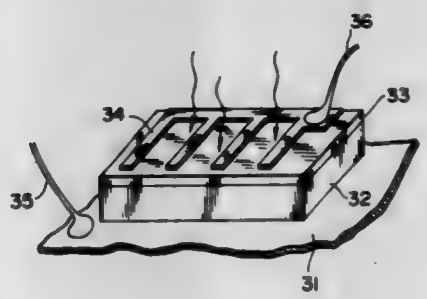
dehydrochlorinating the 1,1,1,2,3-pentachloropropane to produce a mixture of 1,1,2,3- and 2,3,3,3-tetrachloropropenes; and

contacting the mixture of tetrachloropropenes with a rearrangement catalyst, thereby converting the 2,3,3,3-tetrachloropropene content thereof to 1,1,2,3-tetrachloropropene.

4,535,195
PHOTOELECTROMOTIVE FORCE ELEMENT

Kiyoshi Morimoto, Mobara, and Toshinori Takagi, Nagaoka-kyo, both of Japan, assignors to Futaba Denshi Kogyo K.K., Mobara, Japan

Filed Jan. 18, 1984, Ser. No. 571,692
Claims priority, application Japan, Jan. 19, 1983, 58-5883
Int. Cl.[3] H01L *31/06*
U.S. Cl. 136—261 3 Claims

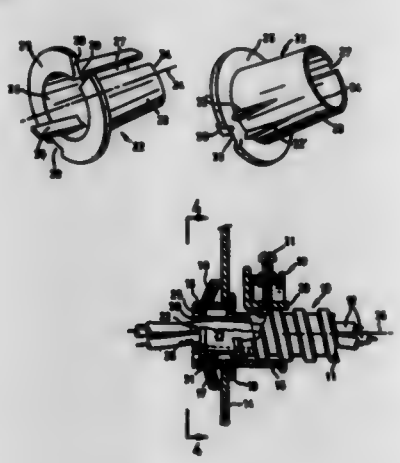


1. A photoelectromotive force element comprising one conductivity type semiconductor substrate and the other conductivity type iron oxide film consisting essentially of FeOx ($1 \leqq X \leqq 2$) deposited on said semiconductor substrate.

4,535,196
ELECTRICAL ANTI-SHORT BUSHING

John D. Milne, 77 Bywood Dr., Islington, Ontario, Canada M9A 1M2

Filed Nov. 4, 1982, Ser. No. 439,109
Int. Cl.[3] H02G *15/06*
U.S. Cl. 174—83 11 Claims

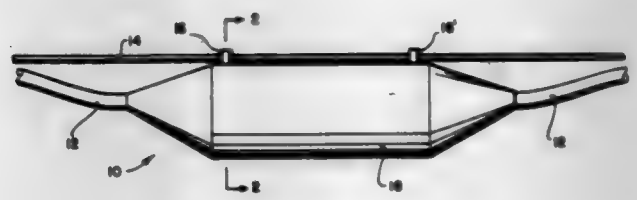


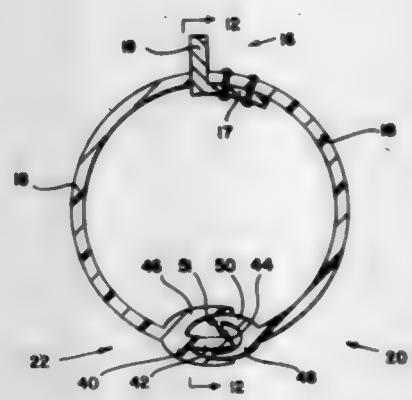
11. An electrical anti-short bushing mounted on an electrical cable which has a longitudinal axis and which comprises an outer casing in the form of a helically wound metallic cladding strip adjacent coils of which are interlocked, and electrically insulated conductor wiring extending through and projecting from an end of the outer casing, said end of the outer casing comprising a cut through the metallic cladding strip with the cut extending substantially parallel to the longitudinal axis of the cable and having an inwardly projecting portion of sharp form, the bushing comprising a tubular portion having a longitudinal axis and having a first end and a second end, and an outwardly extending flange portion presented by said first end of the tubular portion, the tubular portion being disposed between the outer casing of the electrical cable and the insulated conductor wiring which extends therethrough, the bushing having a discontinuity extending throughout its axial length, and two outwardly projecting, circumferentially spaced ribs extending axially along at least a portion of the tubular portion of the bushing with a part of the tubular portion being between the ribs and with said cut through the metallic cladding strip of the outer casing being positioned between the ribs whereby inadvertent turning of the bushing in either direction relative to the cable to dispose the discontinuity of the bushing in alignment with said inwardly projecting sharp portion of said cut through the metallic cladding strip is substantially prevented by interengagement of a respective one of the outwardly projecting ribs of the bushing with said inwardly projecting portion of said cut through the metallic cladding strip.

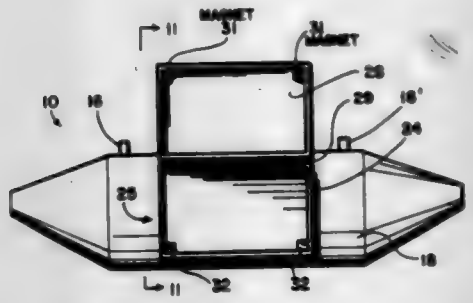
4,535,197
UNITARY CABLE CLOSURE

David O. Butler, 1306 Vermont Ave., Tarpon Springs, Fla. 33589

Filed Apr. 6, 1984, Ser. No. 597,673
Int. Cl.[3] H02G *15/113, 15/18, 7/08*
U.S. Cl. 174—41 28 Claims







1. A unitary cable closure for enclosing a communications cable suspended from a support strand, comprising:

a hollow, flexible wall, tubular housing having a pair of longitudinal mating edges separated by a longitudinal access slot, said edges being manually fastenable together in mating engagement after passing a cable through said slot;

a circumferential rib portion integrally formed in said wall of said tubular housing;

a metal hanger bracket having a lower, substantially horizontal portion fastened to the inside upper surface of said tubular housing at said rib portion and a vertical portion projecting upwardly through said upper surface of said rib portion of said tubular housing, for fastening to a support strand;

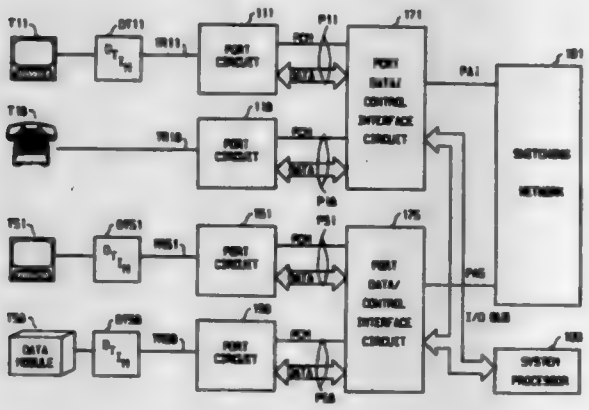
whereby said closure can be manually fastened about a cable.

4,535,198

DIGITAL TERMINAL KEYBOARD DIALING

Gaetano N. Squicciarini, Freehold Township, Monmouth County, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jul. 18, 1983, Ser. No. 514,882
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 DP **8 Claims**



1. In a switching system which serves a plurality of communications circuits (T11–T58), each of which is connected by an associated port circuit (111–158) to a switching network (101) of said switching system, which switching network (101) establishes communications connections among said port circuits (111–158) under control of a system processor (100) and wherein one or more of said communications circuits (T11–T58) are digital terminals (T11), a digital terminal keyboard dialing arrangement comprising:

digital terminal interface means (200) associated on a one-to-one basis with said digital terminals (T11) for interconnecting said associated digital terminal (T11) with said switching network (101) via said associated port circuit (111);

control signalling means (S channel) connected to and interconnecting said digital terminal interface means (200) and said system processor (100) over a path exclusive of said switching network (101);

control means (205) in said digital terminal interface means (200) responsive to a predefined signal output by said associated digital terminal (T11) for transmitting a call origination signal to said system processor (100) via said control signalling means (S channel);

means (201, 203–205) in said digital terminal interface means (200) responsive to all keystroke signals output by said associated digital terminal (T11) following said predefined signal for routing said keystroke signals to said system processor (100) via said control signalling means (S channel); and

means in said system processor (100) responsive to said keystroke signals representing a called party identifier for activating said switching network (101) to establish a network connection between the port circuits associated with said digital terminal (T11) and said called party.

7. In a switching system which serves a plurality of communications circuits (T11–T58), each of which is connected by an associated port circuit (111–158) to a switching network (101) of said switching system, which switching network (101) establishes network connections among said port circuits (111-158) under control of a system processor (100), a call origination method comprising the steps of:

monitoring said communications circuits (T11–T58) for a signal (BREAK) indicative of a call origination at any one of said communications circuits (T11);

transmitting ASCII keystroke signals representing the identification of a called communication circuit from said call originating communication circuit (T11) to said system processor (100) over a signalling path exclusive of said switching network; and

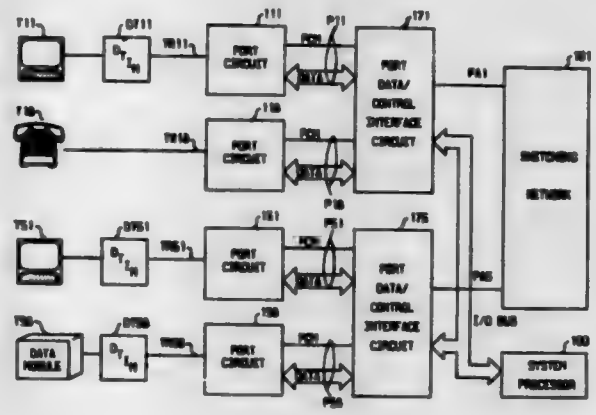
activating said switching network (101) in response to the reception of said ASCII keystroke signals to establish a network connection between said call originating communication circuit (T11) and said called communication circuit (T58).

4,535,199

DATA CALL TRANSFER PREINDICATION

John H. Zink, Manalapan, N.J., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed Jul. 18, 1983, Ser. No. 514,518
Int. Cl.³ H04M *11/00*
U.S. Cl. 179—2 DP **7 Claims**



1. In a switching system which serves a plurality of communications circuits (T11–T58) each of which is connected by an associated port circuit (111–158) to a switching network (101) of said switching system, which switching network (101) establishes network connections among said communications circuits (T11–T58) by interconnecting said associated port circuits (111–158), wherein one or more of said communications circuits (T18, T51) are telephone station sets, each of which has associated therewith one or more of said communications circuits which are digital terminals (T11), said association including one or more designated buttons on said telephone station set (T18) corresponding to each of said digital terminals (T11) associated with said telephone station set (T18), a data call preindication method comprising the step of:

scanning said telephone station sets (T18, T51) for an operation of one of said designated buttons on any one of said telephone station sets (T18) in response to the initiation of a call at said telephone station set (T18); and

reserving in response to the operation of one of said designated buttons on said telephone station set (T18), the one of said digital terminals (T11) associated with said operated designated button.

4,535,200

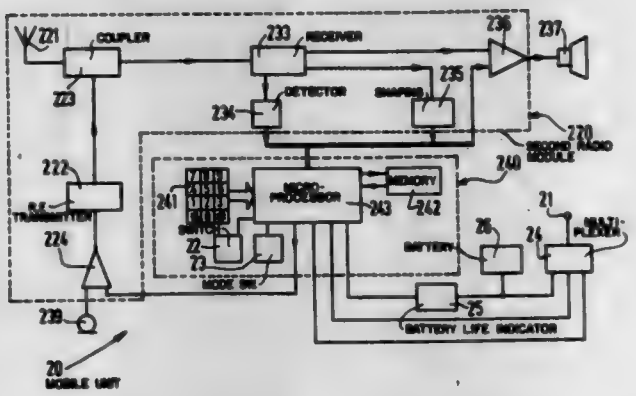
CORDLESS TELEPHONE SYSTEM WITH SECURITY CODING

Alain J. Himmelbauer, Lognes, and Régis J. P. Poubelle, Gretz, both of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 16, 1984, Ser. No. 571,224
Claims priority, application France, Jan. 24, 1983, 83 01036
Int. Cl.³ H04Q *7/04*; H04M *1/66*
U.S. Cl. 179—2 EA **4 Claims**

1. An arrangement for telephone communication by means of a radio-electric link, said link being formed by a base unit and a mobile unit which constitute the fixed part of the arrangement and its optionally movable part, respectively, said base unit comprises an interface module for the connection to the telephone network, a first radio-electric module for transmitting to the mobile unit signals coming from the telephone

network and for receiving and conveying to this network signals coming from the mobile unit, and a first processing module formed by a first microprocessor and a first memory, said mobile unit comprises a second radio-electric module for transmitting speech signals to the base unit and for receiving signals coming from the telephone network via the base unit, and a second processing module formed by a programming keyboard, a second microprocessor and a second memory, said

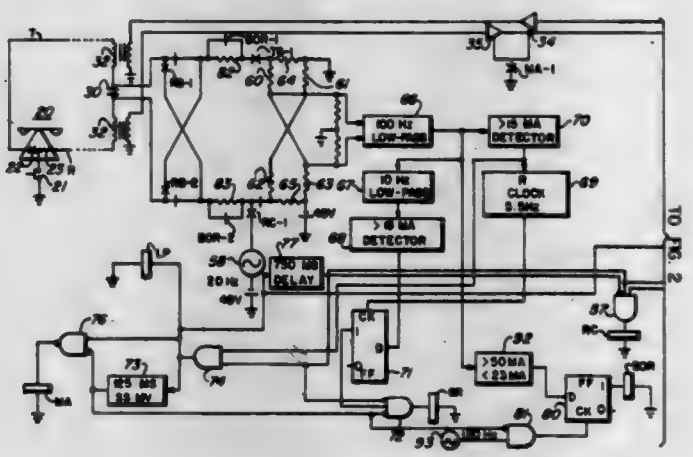


base and mobile units each comprise a multiplexer and also a contact for interconnecting them during a pre-operational, start-up procedure wherein storage in said memories by the user of a personal, characteristic code is accomplished, said code being input via said programming keyboard of said mobile unit and stored simultaneously in the memories of the base and the mobile units, this personal code assuring that only communications between said mobile unit and said base unit are enabled.

4,535,201
GROUND START DETECTION IN TELEPHONE LOOP SIGNALLING CIRCUIT

Puran S. Kasbia, Kanata, and Yuan-Lu Li, Toronto, both of Canada, assignors to Northern Telecom Limited, Montreal, Canada

Filed Apr. 16, 1984, Ser. No. 600,789
Int. Cl.³ H04M *3/22, 7/14*
U.S. Cl. 179—18 FA **3 Claims**



1. A loop signalling circuit capable of operating in the presence of spurious signals, for replicating signalling functions on a telephone line when serially connected between a central office and a remote terminal operating in either a loop start or a ground start configuration, comprising:

low-pass filter means for passing signals from the remote terminal below the frequency of said spurious signals;

first detector means for detecting when the line current on the remote terminal side of the telephone line exceeds a preselected value;

second detector means for detecting signals from the low-pass filter means when the line current exceeds the preselected value;

a clock generator which is synchronized on each occurrence that the first detector means detects current in the line that exceeds said preselected value;

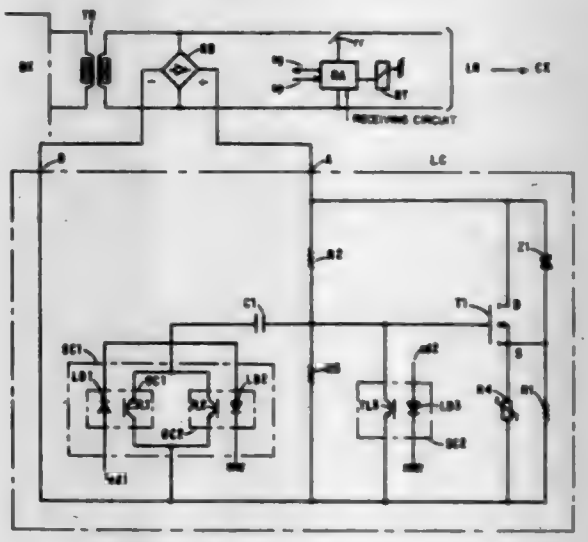
latch means set to the output state of the second detector means on each occurrence of a pulse signal from the clock generator; and

control means responsive to the latch means for applying a ground start impedance on the central office side of the telephone line.

4,535,202
LOOP-CIRCUIT FOR TELEPHONE LINE

Bernard Meunier, Le Chesnay, France, assignor to Compagnie Generale de Constructions Telephoniques, Paris, France

Filed Jun. 30, 1983, Ser. No. 509,789
Claims priority, application France, Jul. 7, 1982, 82 11898
Int. Cl.³ H03K *17/00*; H04M *1/31*
U.S. Cl. 179—18 FA **4 Claims**



1. A loop-circuit for a telephone line comprising a gyrator circuit consisting of a transistor of which a first electrode is directly connected to one of the wires of the line, of which a second electrode is connected to the other of the wires of the line via a resistor, of which the gate electrode is connected via a resistor to said one of the wires of the line, and via a capacitor to said other wire of the line, characterized in that a switch (SC2) directly connected between the gate electrode of said transistor (T1) and said other wire of the line is arranged responsive to a signal cutting off said transistor (T1), and that another switch (SC1) directly connected between said capacitor (C1) and said other wire of the line is arranged responsive to a signal disconnecting one of the plates of said capacitor (C1) from the rest of the circuit.

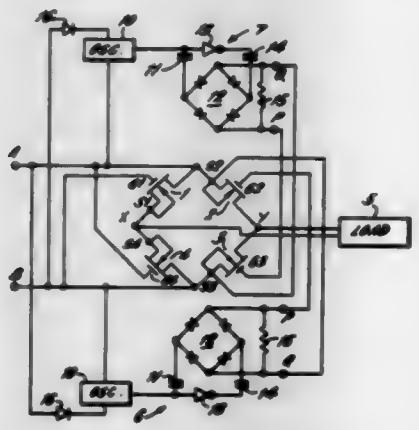
4,535,203
BRIDGE RECTIFIER CIRCUIT

James O. M. Jenkins, and Nigel C. Gardner, both of Swansea, Wales, assignors to Siliconix Limited, United Kingdom

Filed Dec. 7, 1983, Ser. No. 558,830
Claims priority, application United Kingdom, Dec. 8, 1982, 8235044
Int. Cl.³ H03K *5/22*
U.S. Cl. 179—81 R **14 Claims**

1. A bridge rectifier circuit comprising a bridge of switching transistors having their control terminals connected to switch the transistors to provide either full wave rectification of an AC input voltage or polarity correction of a DC input voltage of either polarity, the switching transistors being all of the same polarity type, at least two floating drivers connected to generate and supply control potentials to the control terminals respectively of a pair of the switching transistors, said floating drivers comprising a source of voltage pulses, means controlling said source to produce voltage pulses only when the input voltage has a predetermined polarity, a respective bridge rectifier for each said driver, and capacitor means linking each said

respective bridge rectifier to the said sorce of voltage pulses, and the rectified outputs of said bridge rectifiers providing said



control potentials to said control terminals of the switching transistors.

4,535,204

TELEPHONE DIALLING SYSTEM

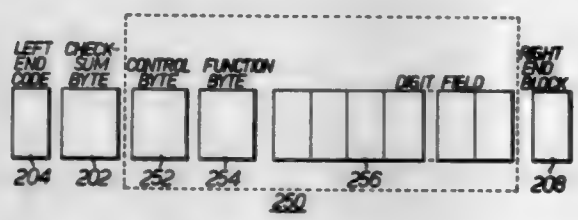
John Hughes, and John Mouncher, both of Bristol, England, assignors to LHW Telephone Auto Diallers Limited, London, England

Filed Jul. 16, 1982, Ser. No. 398,803

Claims priority, application United Kingdom, Jul. 17, 1981, 8122132

Int. Cl.³ H04M *1/26, 1/30, 1/36*

U.S. Cl. 179—90 BD **12 Claims**



1. Apparatus for dialling telephone numbers, comprising:

means for inputting telephone numbers as a sequence of signals,

a microprocessor and an associated digital memory connected to said inputting means for processing and storing numbers represented by signals entered by said inputting means,

means connectable to a telephone line for outputting telephone numbers thereto as signals in a predetermined format, said output means being connected to said microprocessor to receive signals representing a stored number,

means storing routines for controlling the operation of the microprocessor, and

means for applying a signal to said microprocessor whereby the latter is controlled to detect whether a number stored in said digital memory has a predetermined characteristic and upon detection of such characteristic to inhibit the sending of the stored number signals to said output means.

4,535,205

ELECTROACOUSTIC TRANSDUCER OF THE PIEZOELECTRIC POLYMER TYPE

Pierre Ravinet; Christian Claudepierre; Denis Guillou, and Francois Micheron, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 9, 1982, Ser. No. 406,517

Claims priority, application France, Aug. 11, 1981, 81 15506

Int. Cl.³ H04R *17/00*

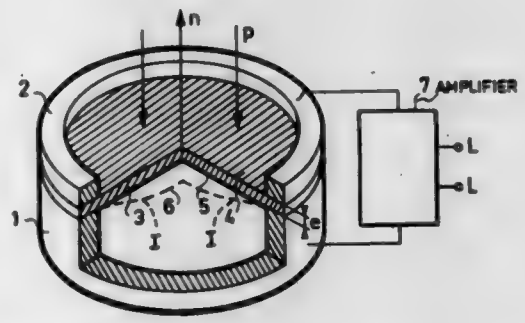
U.S. Cl. 179—110 A **14 Claims**

1. An electroacoustic transducer of the piezoelectric polymer type comprising:

a vibrating element including at least one elastic structure made from a piezoelectric polymer in the form of a rigid plate, said rigid plate being subjected directly to acoustic pressure on at least one of its faces;

at least two electrodes forming a capacitor and one of said at least two electrodes being disposed on each face of said rigid plate;

an impedance-matching electric circuit connected to said at least two electrodes;



a casing containing said rigid plate and said electric circuit, said casing including a base having a wavy end surface, an annular clamping member having a mating wavy end surface for clamping said rigid plate to said base, and a pair of output terminals, wherein when said at least one face is subjected to acoustic pressure a sag is formed in the middle of said rigid plate and inflection points are formed on either side of said sag.

4,535,206

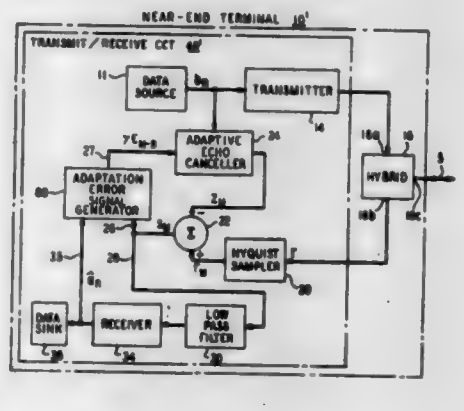
ECHO CANCELLATION IN TWO-WIRE FULL-DUPLEX DATA TRANSMISSION WITH ESTIMATION OF FAR-END DATA COMPONENTS

David D. Falconer, Red Bank, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Continuation of Ser. No. 138,663, Apr. 9, 1980, abandoned. This application Jun. 8, 1982, Ser. No. 386,224

Int. Cl.³ H04B *3/24*

U.S. Cl. 179—170.2 **25 Claims**



1. An arrangement for processing samples of an incoming signal which is corrupted by echoes of a transmitted signal representing a train of transmitted near-end data symbols, said incoming signal representing a train of transmitted far-end data symbols and said samples having respective far-end data components and echo components, said arrangement comprising

echo cancelling means operative in response to a stream of said transmitted near-end data symbols and a stream of adaptation error signals for generating a replica of each of said echo components, and

signal processing means for producing a stream of echo compensated samples as a function of the difference between each of said samples and the replica of its echo component and for forming decisions as to the values of said transmitted far-end data symbols in response to said echo compensated signals,

and means for generating an individual one of said adapta-

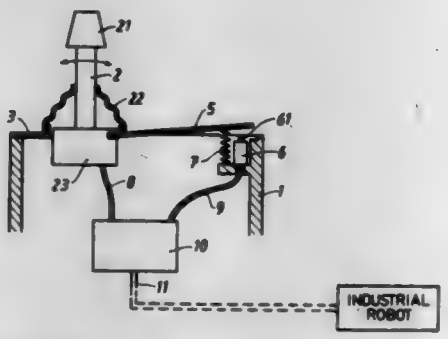
tion error signals as a function of said difference between an individual one of said samples and the replica of its echo component and as a function of an estimate signal, said estimate signal being substantially equal to the far-end data component of said individual one of said samples, said generating means including reference former means for forming said estimate signal as a function of individual ones of said decisions and as a function of at least ones of said stream of adaptation error signals.

4,535,207

SAFETY DEVICE IN AN OPERATING UNIT FOR AN INDUSTRIAL ROBOT

Ake Lindqvist, Västerås, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 10, 1983, Ser. No. 503,122
Claims priority, application Sweden, Jun. 24, 1982, 8203945
Int. Cl.[3] H01H *9/54*
U.S. Cl. 200—17 R 9 Claims



1. An operating unit for an industrial robot, said operating unit comprising:

a hand operated joystick for controlling the movement of such a robot when programming it;

transducer means for sensing the presence of the heel of the hand of an operator when the same hand is resting on said transducer means while fingers of the same hand are operating said joystick, said transducer means being positioned so that during operation of said joystick, the heel of the operator's hand rests thereon; and control means operatively associated with said transducer means and said joystick for preventing said joystick from controlling the movement of such a robot when said transducer means does not sense the presence of the heel of the operator's hand.

4,535,208

ACTUATING DEVICE FOR A HIGH-VOLTAGE SWITCH

Hubert Wallimann, Oberentfelden, and Johann Blatter, Schönenwerd, both of Switzerland, assignors to Sprecher & Schuh AG, Aarau, Switzerland

Filed Jan. 16, 1984, Ser. No. 571,098
Claims priority, application Switzerland, Jan. 25, 1983, 410/83
Int. Cl.[3] H01H *35/38*
U.S. Cl. 200—82 B 9 Claims

1. An actuating device for a high-voltage switch, comprising:

an actuating rod movable through two strokes of mutually opposite direction for actuating the high-voltage switch to perform a cut-off stroke and a cut-on stroke;

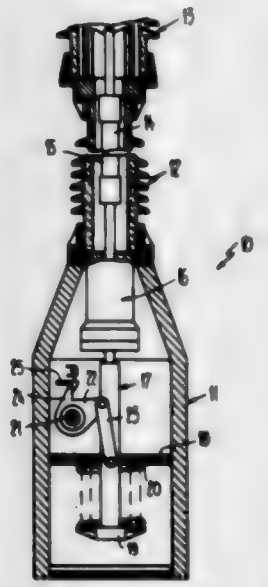
at least one cut-off spring operatively coupled with said actuating rod;

said at least one cut-off spring being loaded and exerting a force on said actuating rod when said cut-on stroke has been performed;

means for variably altering, during said cut-off stroke and said cut-on stroke the force exerted by said cut-off spring upon said actuating rod;

said variably altering means comprising a force transmission mechanism arranged between said cut-off spring and said actuating rod;

said force transmission mechanism possessing a first force-displacement characteristic when said cut-on stroke is performed and a second force-displacement characteristic when said cut-off stroke is performed;



said first force-displacement characteristic differing from said second force-displacement characteristic; and

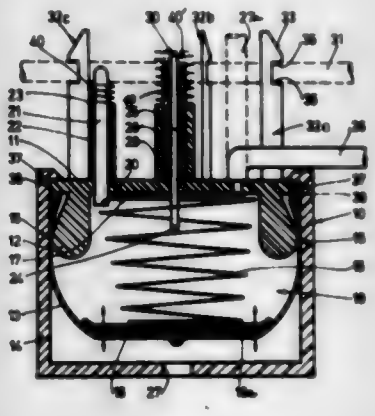
said second force-displacement characteristic comprising a sudden reduction of the force acting upon said actuating rod during said cut-off stroke.

4,535,209

PRESSURE-SENSITIVE ELECTRICAL SWITCH

Gerhard Kurz, Industriestrasse, 7262 Althengstett, Fed. Rep. of Germany

Filed Dec. 16, 1983, Ser. No. 562,209
Claims priority, application Fed. Rep. of Germany, Nov. 9, 1983, 3340436
Int. Cl.[3] H01H *35/34*
U.S. Cl. 200—83 R 10 Claims

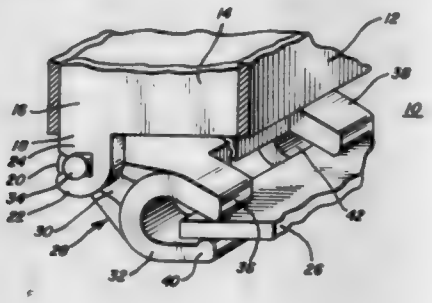


1. A pressure-sensitive switch comprising a housing having a pressure chamber therein, said housing being provided with a base, a diaphragm within said pressure chamber normally in a home position and movable therefrom in response to pressure changes within said chamber, biasing means for biasing said diaphragm to said home position, at least one electrical contact projecting outwardly from said housing base and adapted to be connected to a circuit board, at least one latching element positioned inwardly from the edge of said base and extending outwardly from said housing for mounting said housing on the circuit board, said latching element comprising a depending leg having engaging means at the end thereof for engaging a portion of the circuit board to mount said housing thereon in spaced relation to the board, and electrical connecting means for connecting said contact to the circuit board.

4,535,210
KEYSWITCH STABILIZING DEVICE

Charles Shedore, Elmhurst, and Stanley E. Filipiak, Chicago, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Apr. 18, 1984, Ser. No. 601,418
Int. Cl.[3] H01H *3/12*
U.S. Cl. 200—340 5 Claims

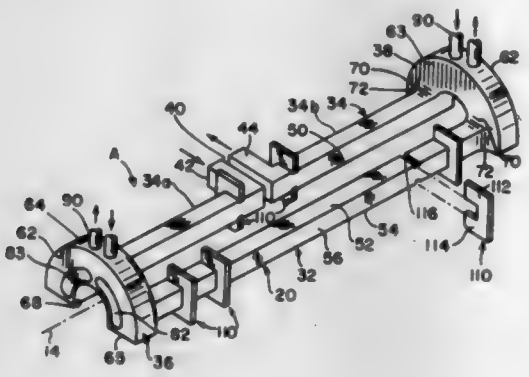


1. An apparatus for stabilizing operational movement of an actuator for a keyswitch mounted to a base, said base having a top surface and a bottom surface, said apparatus comprising one or more unitary, substantially rigid members; said one or more members being movably attached to said actuator at a first end and having a gripping means at a second end for slidingly gripping said base by engaging said top surface and said bottom surface substantially adjacent a free edge of said base, said gripping means slidingly bearing against at least one of said top surface and said bottom surface in response to said operational movement of said actuator.

4,535,211
INDUCTOR AND METHOD OF MAKING SAME

Michael J. Carter, Troy, Mich., assignor to Tocco, Inc., Boaz, Ala.

Filed Oct. 24, 1984, Ser. No. 664,414
Int. Cl.[3] H05B *6/42*
U.S. Cl. 219—10.49 R 14 Claims



1. A single loop inductor suitable for inductively heating a generally cylindrical elongated part comprising:

a one piece member, adapted to be positioned coaxial with the part, having a pair of arcuate axially spaced crossover conductors lying in a plane transverse to the axis and integrally interconnected with a pair of linear conductors extending parallel to the axis and mutually radially spaced therefrom;

a first set of drilled passages formed longitudinally in each said linear conductors, said passages having ends extending through said crossover conductors;

slot means formed in the end faces of said cross-over conductors and communicating said ends of said passages;

means establishing an electrical discontinuity in one of said conductors;

lead means electrically connected to said one of said conductors on opposite sides of said electrical discontinuity;

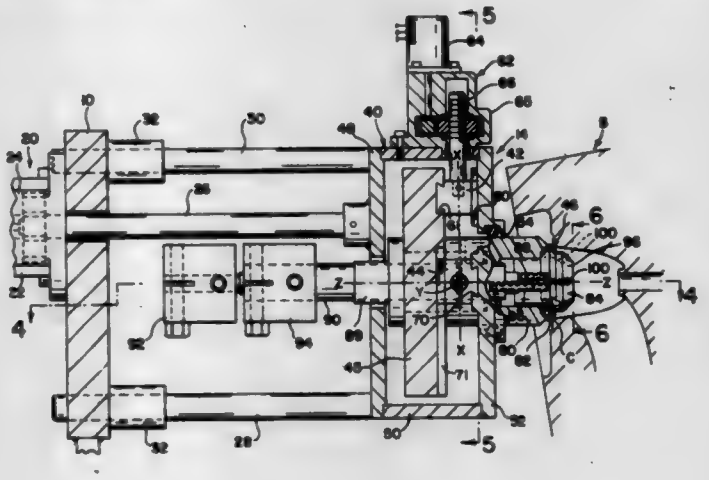
means for sealing said slot means in said end faces of said crossover conductors whereby said slot means and said first set of drilled passages define internal coolant passages in said conductors;

a second set of drilled passages formed at spaced locations of the conductors fluidly communicating with said coolant passages and having exteriorally opening ends adapted to be connected to a coolant supply during said heating for establishing a coolant circuit for cooling said conductors.

4,535,212
APPARATUS AND METHOD OF HARDENING VALVE SEATS

Richard S. Sheetz, Shaker Hts., and John F. Cachat, Rocky River, both of Ohio, assignors to Tocco, Inc., Boaz, Ala.

Filed Jul. 6, 1984, Ser. No. 628,394
Int. Cl.[3] H05B *6/06*
U.S. Cl. 219—10.77 9 Claims



1. An induction heating device for heating the conical surface of a valve seat of an engine component prior to quench hardening, said induction heating device comprising:

inductor means having a conical surface complementary to the conical surface of the valve seat;

means for advancing said inductor means toward said valve seat;

guide means for accommodating movement of the inductor means in a plane wherein the axes of the conical surfaces are parallel;

means coacting between said guide means, the valve seat, and said inductor means for coaxially positioning said conical surfaces;

means for detecting the distance between said inductor means and the valve seat subsequent to the coaxial positioning and during said advancing toward said valve seat, said detecting means including transceiver means reflectively coacting with the conical surface of the valve seat and transmitting a signal related to the distance between said inductor means and said valve seat;

means for receiving said signal and operable for further continuing said advancing of said inductor means toward said valve seat until said conical surfaces are coaxially aligned at a predetermined spaced relationship;

means for energizing said inductor means at said predetermined spaced relationship; and,

means operative after said heating for retracting said inductor coil away from the component.

4,535,213
APPARATUS FOR WELDING IN VERTICAL, HORIZONTAL AND SLANTING POSITION

Srnic Ljubomir, 41000 Zagreb, Vidikovac 18, Yugoslavia

Filed Oct. 20, 1982, Ser. No. 435,509
Int. Cl.[3] B23K *11/02*
U.S. Cl. 219—57 6 Claims

1. A welding apparatus having a hydraulically-actuated, controllable mechanical handling assembly for holding and positioning elements to be joined by welding, a movable and

adjustable support assembly for supporting the handling assembly relative to the elements to be joined, an electric system for providing electric welding current to the handling assembly, and a hydraulic system including a hydraulic drive providing pressurized fluid for the apparatus, control means regulating flow of the pressurized fluid to operate the mechanical handling assembly, and coupling means fluidly interconnecting the hydraulic drive, the handling assembly and the control means, the mechanical handling assembly comprising:

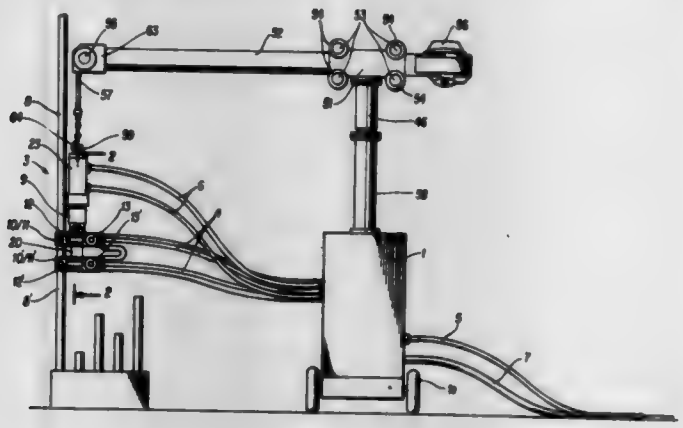
a first mechanical hand having a tubular body portion coupled to a first hydraulic actuator;

a second mechanical hand having an elongated portion slidably disposed within the tubular body portion of the first mechanical hand;

connecting means connecting the elongated portion of the second mechanical hand to the first hydraulic actuator, said actuator operable to reciprocate the second mechanical hand relative to the first mechanical hand;

adjustment means cooperating with the connecting means to adjust the limits of reciprocal movement of the second mechanical hand relative to the first mechanical hand;

each of said first and said second mechanical hands having a first gripping member pivotally movable relative to a second gripping member; and



a second hydraulic actuator associated with the gripping members of each mechanical hand and operable to cause each pair of gripping members to hold the element to be joined by welding;

said support system comprising:

a support post mounted on a movable base;

a tubular housing coaxial with and rotatable relative to the support post;

a hollow holder horizontally fixed to and rotatable with the tubular housing; and

an elongated support member disposed within the hollow holder and adjustably movable relative to the holder, one end of the support member adapted to support the mechanical handling assembly, and the other end having a counterbalancing weight; and

said electric system having a pair of cables, one end of each cable connected to one end of the first and the second mechanical hands, each cable having means for the flow of a fluid therethrough to cool the cable and the mechanical hand;

said control means operable to effect gripping of the elements to be joined by said first and said second mechanical hands and to place the elements in position for welding.

4,535,214

METHOD AND APPARATUS FOR JOINING A TUBE TO A TUBESHEET

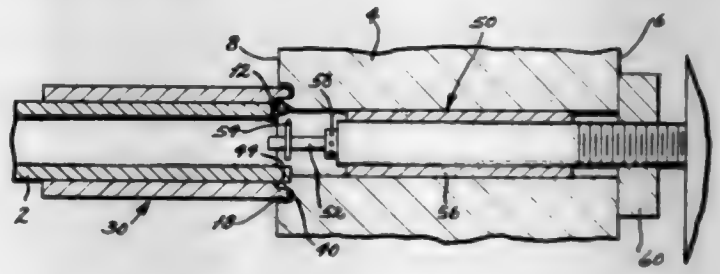
John J. Meyer, St. Louis County, Mo., and Stanley D. Barth, Alton, Ill., assignors to Nooter Corporation, St. Louis, Mo.

Filed Aug. 26, 1983, Ser. No. 526,679

Int. Cl.³ B23K *9/02*

U.S. Cl. 219—60.2 **17 Claims**

1. A process for joining a metal tube to a metal tubesheet having front and back faces, a hole extending through it, and an annular groove opening out of its back face and extending around the hole, said process comprising: positioning the tube in alignment with the hole in the tubesheet when the end of the tube is at the back face of the tubesheet; placing a ring mold



around the tube and inserting the end of the ring mold into the annular groove that opens out of the back face of the tube sheet; and autogenously welding the tube to the tubesheet at the back face of the tubesheet, but not to the ring mold, by applying heat to the end of the tube and the adjacent portion of the tubesheet from within the hole in the tubesheet.

4,535,215

METHOD AND DEVICE FOR CONTROLLING THE WELDING PROCESS IN THE MANUFACTURING OF PIPES WITH LONGITUDINAL SEAMS

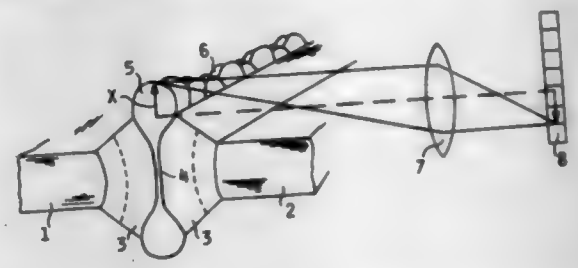
Wilfried Kliesch, Iserlohn; Friedrich-Otto Koch, Unna-Massen; Hans-Jürgen Wahl, Münster; Rolf Krebs, Hamm; Peter Schorr, Münster, all of Fed. Rep. of Germany, and Heinz Strauch, deceased, late of Hagen-Emst, Fed. Rep. of Germany (by Ruth Strauch, Christel Strauch, legal representatives), assignors to Hoesch Werke AG, Dortmund, Fed. Rep. of Germany

Filed Oct. 17, 1983, Ser. No. 542,345

Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238767

Int. Cl.³ B23K *11/24*

U.S. Cl. 219—61.5 **4 Claims**



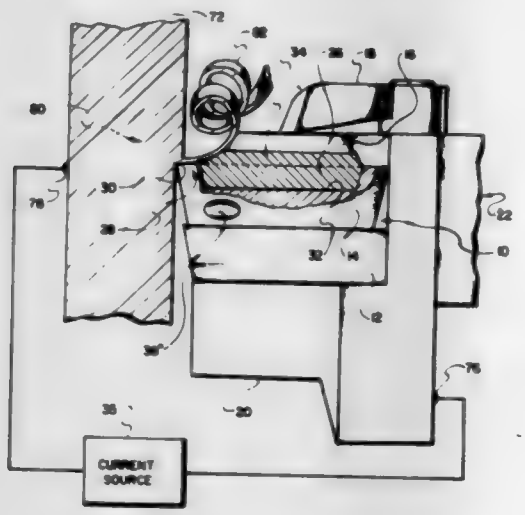
1. Method of controlling an electric welding process in the manufacture of pipes with longitudinal seams comprising the steps of: welding under high frequency a seam along a skelp that is continuously shaped into an open-seamed pipe; applying welding pressure that forces the edges of the skelp together; maintaining welding temperature within ranges at which the seams will weld together properly; controlling welding pressure in accordance with mass of a welding bead; and measuring absolute height of said bead for controlling the welding pressure continously without contacting said bead by sensing light emitted by melted fluid material of the bead, said absolute height of said bead being dependent on the mass of said welding bead and being proportional to the welding pressure.

4,535,216

METAL-WORKING TOOL USING ELECTRICAL HEATING

Michael L. Cassidenti, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Oct. 14, 1983, Ser. No. 542,282
Int. Cl.³ B23B *27/10*; B23P *1/02*
U.S. Cl. 219—68 **8 Claims**



1. A metal-working tool held in a metal clamp means, for machining a workpiece so that a chip is sheared from the shear zone thereof, comprising:

a high-strength electrically conductive frame having at least one upper surface having a metal-working region which has a cutting edge thereon;

a core, integral with and within said frame, having an upper extension projecting above said upper surface of said frame, said core being spaced from the workpiece by said frame, said core being formed from an electrically conductive material and said frame and core being formed with an internal fluid passage means having an exit port, said passage and port being located proximate said cutting edge; and

means for connecting said tool to one terminal of a source of electical current and said workpiece to the other terminal of said source,

whereby, when the tool is shearing a chip from said workpiece and wherein the chip has not been broken at the shear zone, the chip comes in contact with the core extension, so that electric current can flow, not only through the frame and cutting edge to the shear zone of the workpiece, but especially through the core and chip to the shear zone.

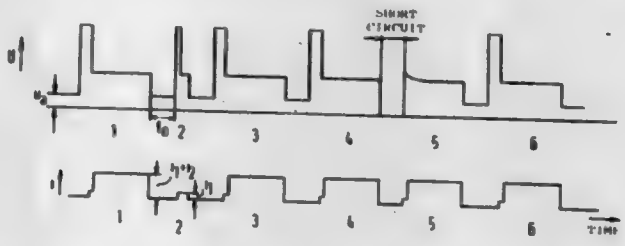
4,535,217

METHOD FOR THE PREVENTION OF ARCING IN A SPARK EROSION PROCESS

Hendrik E. de Bruyn, Delft, Netherlands, assignor to Stichting Steunfonds Laboratorium voor Werkplaatstechniek en Organisatie van de Technische Hogeschool Delft, Delft, Netherlands

Filed Jul. 21, 1983, Ser. No. 516,144
Claims priority, application Netherlands, Jul. 22, 1982, 8202964
Int. Cl.³ B23P *1/08*
U.S. Cl. 219—69 M **6 Claims**

1. A method for the prevention of arcing in a spark erosion process, in which a pulse-shaped voltage is applied between an electrode and an electrically conducting workpiece, which voltage has a first, predetermined amplitude during a variable ignition retarding period determined by the process parameters, and on the termination of said ignition retarding period a discharge takes place between the electrode and the workpiece, resulting in the flow of a pulse-shaped current and in the voltage dropping to a second amplitude determined by the process, characterized by determining during each pulse interval whether a short circuit between the electrode and workpiece has occurred and, upon the detection of such a short circuit, permitting the next successive voltage pulse to be generated without being suppressed or terminated irrespective of the duration of the ignition retarding period exhibited by said pulse, sensing the ignition retarding period and terminating the voltage in response to the absence of a short circuit if the retarding period is less than a predetermined value; and



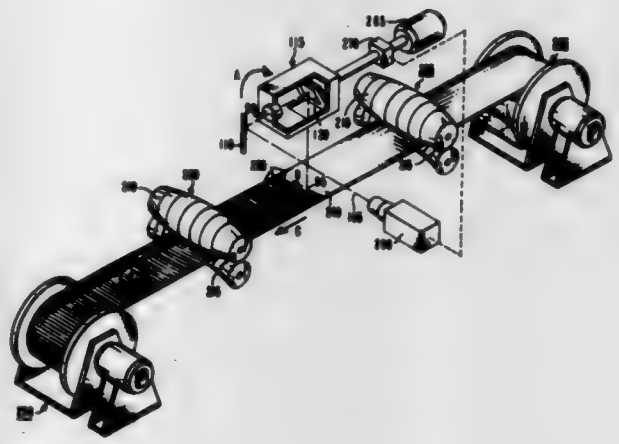
characterized further in that on the termination of the ignition retarding period a first current of relatively low amplitude will flow for a first, relatively short period of time and that a second current of an amplitude a selected amount greater than that of said first current will be added to said first current in response to the ignition retarding period being found to exceed said predetermined duration.

4,535,218

LASER SCRIBING APPARATUS AND PROCESS FOR USING

Robert F. Krause; Gary C. Rauch, both of Murrysville, and William H. Kasner, Penn Hills Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 20, 1982, Ser. No. 435,444
Int. Cl.³ B23K *27/00*
U.S. Cl. 219—121 LH **27 Claims**



1. A machine comprising:

a rotatable means for deflecting a laser beam;

a means for focusing said laser beam;

a means for moving a ferromagnetic sheet surface to be treated by said laser beam into the path of said laser beam within a predetermined distance from the focal plane of said focusing means;

wherein rotation of said rotatable means for deflecting translates said laser beam substantially transverse to the direction of movement of said sheet surface; and

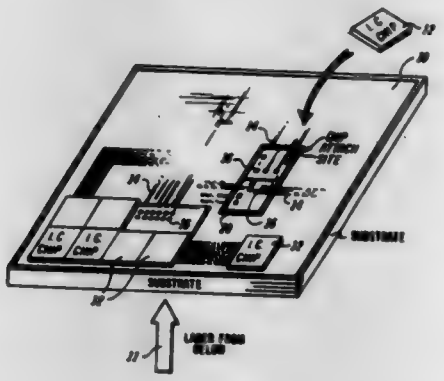
said means for focusing having optical means for producing an elongate laser beam cross-section on said sheet surface, and said elongate beam cross section having a major axis aligned substantially parallel to the direction of translation of said laser beam across said sheet surface.

4,535,219

INTERFACIAL BLISTER BONDING FOR MICROINTERCONNECTIONS

John W. Sliwa, Jr., Cupertino, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Oct. 12, 1982, Ser. No. 433,577
Int. Cl.[3] B23K *27/00*
U.S. Cl. 219—121 LC 20 Claims



1. A method for producing microinterconnections characterized by including the following steps,

providing a first support member bearing electrical circuit elements including first electrical contact means and first electrical trace means,

providing a second support member bearing electrical circuit elements including second electrical contact means and second electrical trace means,

placing said second support member in face-to-face spaced relationship with respect to said first support member,

aligning said second contact means with said first contact means, and

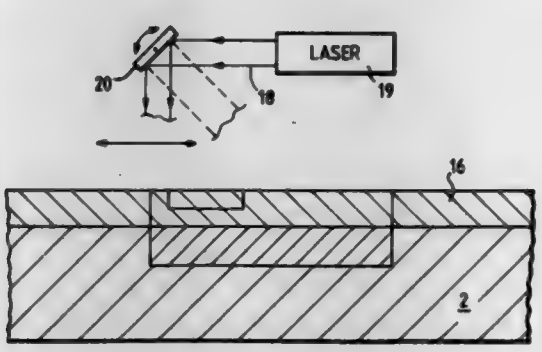
applying energy to said first support member for moving portions of said first support member, bearing ones of said first contact means, toward and into intimacy with aligned ones of said second contact means, and for heating said ones of said first contact means to bond aligned ones of said first and second electrical contact means.

4,535,220

INTEGRATED CIRCUITS

Anthony G. Cullis, Worcester; Hugh C. Webber, and Nigel G. Chew, both of Malvern, all of England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Sep. 30, 1982, Ser. No. 430,381
Claims priority, application United Kingdom, Nov. 10, 1981, 8133926
Int. Cl.[3] B23K *26/00*
U.S. Cl. 219—121 LM 3 Claims



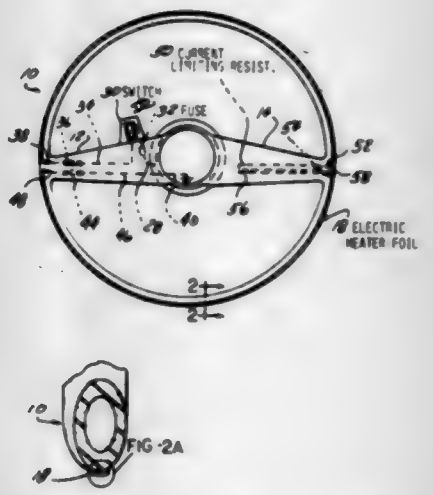
1. A method of providing electrical separation between electrical components on a single crystalline silicon substrate, the method comprising the steps of forming amorphous regions in the crystalline silicon substrate by selectively irradiating the silicon substrate with laser radiation of a wavelength less than 400 nanometers and a pulse length less than 10 nanoseconds so that most of the radiation is absorbed in the top 3,000 Å of the irradiated regions of the substrate which rapidly melts and rapidly freezes into an amorphous state, the amorphous regions forming electrically insulating regions adjacent single crystalline silicon regions of substrate.

4,535,221

ELECTRICALLY HEATED STEERING WHEEL WITH ADHESIVELY ATTACHED FOIL STRIP HEATING ELEMENT

Herbert Holsworth, 1267 Muskingum, Pontiac, Mich. 48054

Filed Jul. 1, 1983, Ser. No. 510,275
Int. Cl.[3] H05B *3/34;* B62D *1/10*
U.S. Cl. 219—204 4 Claims



1. In combination with a generally circular steering wheel having cross spokes, and mounted for rotation on a steering column, a heater arrangement comprising:

a strip of metal foil adhesively bonded to and extending substantially entirely about the outer periphery of said steering wheel, the outer surface of said metal foil coated with an insulating plastic film, said strip of metal foil being adhesively bonded directly to the surface of said steering wheel, and further including a cover disposed over said foil strip and said steering wheel outer periphery;

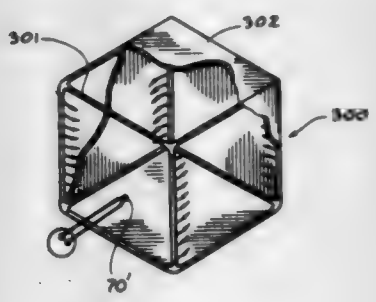
power supply means for causing an electrical current to be passed through said strip of metal foil, including a switch mounted to one of said spokes and power supply leads extending along said spoke and electrically connected to the ends of said strip of metal foil, whereby electrical current passed through said metal foil causes heating of said steering wheel.

4,535,222

TEMPERATURE CONTROL SYSTEM

Walter K. Moen, Newport Beach, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 655,331, Feb. 5, 1976, Pat. No. 4,386,650. This application Jul. 12, 1982, Ser. No. 396,992
Int. Cl.[3] H05B *3/42;* F26B *23/06, 21/00*
U.S. Cl. 219—300 4 Claims



1. A temperature control system comprising:

a supply means for supplying fluid, the fluid acting as the temperature effecting agent for the temperature control system;

an outlet;

fluid conveying means for conveying the fluid from said supply means to said outlet;

temperature control means for regulating temperature of the fluid at said outlet, said temperature control means including a helix of electrically resistant tubing, said helix being connected to said fluid conveying means in fluid conveying relation such that the fluid passes through said helix;

fluid control means for regulating flow of the fluid through said fluid conveying means; and

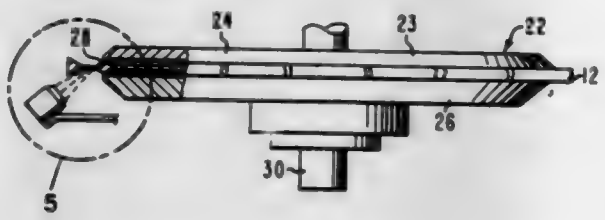
distribution network means for governing efflux of the fluid from the system such that the fluid is uniformly distributed in a desired area, said distribution network means including a plurality of tubes, said tubes being shaped and connected to each other to define said area, said distribution network means also including walls mounted to said tubes to enclose said area, said tubes providing the framework for and supporting said walls, said distribution network means being connected to said outlet in fluid conveying relation such that the fluid passes from said outlet to said distribution network means, said distribution network means having substantially all the fluid therein flow into said tubes, said tubes each having a plurality of apertures for efflux of the fluid from the system.

4,535,223

APPARATUS FOR USE IN TRIMMING MOLDED RECORDS

Harry H. Westerman, Jr., Middle Township, Hendricks County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 24, 1983, Ser. No. 544,830
Int. Cl.³ H05B *1/00*; B29C *17/12*
U.S. Cl. 219—354 **4 Claims**



1. Apparatus for use in trimming flash from an outer diameter of a record molded from a thermoplastic composition having a softening point in which the flash is secured to the outer diameter of the record by a circumferential web of thermoplastic composition, said web having a given width and a cross-sectional thickness which is substantially less than the flash and the outer diameter of the record; said apparatus comprising in combination;

(a) a holding means for receiving and holding a molded record to be trimmed, said holding means having upper and lower turntables each having outer edges for holding the record, said edges being approximately the same diameter as the outer diameter of the record,

(b) means for rotating said holding means in a predetermined plane of rotation, and

(c) infrared heating means for producing a beam of infrared heat, said infrared heating means further including means for focusing the infrared heating beam within a predetermined area of approximately said given width for length which is substantially less that the diameter of the web, said infrared heating means being positioned relative to said holding means whereby the infrared heating beam is focused on the web of a record to be trimmed while the record is held and rotated by the holding means:

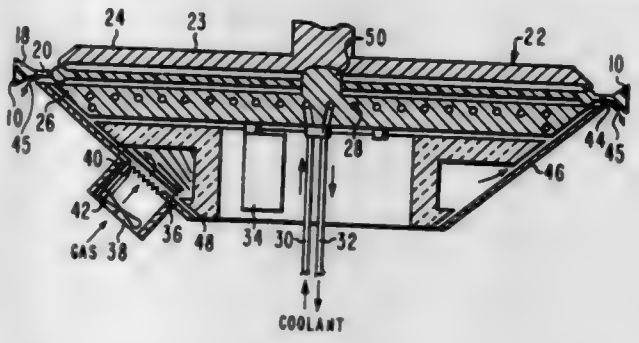
whereby said web can be selectively heated to a temperature above the softening point of the thermoplastic resin thereby facilitating the trimming of the flash from the outer diameter of the record.

4,535,224

APPARATUS FOR USE IN TRIMMING OF MOLDED RECORDS

Harry H. Westerman, Jr., Middle Township, Hendricks County, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Oct. 24, 1983, Ser. No. 544,829
Int. Cl.³ H05B *1/00*; F24H *3/04*; B29C *17/12*
U.S. Cl. 219—373 **6 Claims**



1. Apparatus for use in trimming of molded flash from an outer diameter of a record molded from a thermoplastic composition having a softening point wherein the molded flash is secured to the outer diameter of the record by a web of the thermoplastic composition which has a cross-sectional thickness which is substantially thinner than the outer diameter of the record and the flash; said apparatus comprising in combination:

(a) a holding means for receiving and holding an untrimmed molded record, said holding means having an outer diameter which is approximately the same as the outer diameter of the final molded record;

(b) manifold means for receiving and distributing a heated gas, said manifold means being positioned adjacent to the holding means and including an inlet port and a circumferential discharge orifice and guide means for selectively directing a heated gas introduced into the manifold means into heating contact with the web; and

(c) means for heating a gas to a predetermined temperature and imparting a predetermined rate of flow to said gas; said means being in communication with the inlet port of the manifold means, said predetermined temperature and rate of flow being sufficient to produce a heated gas flow exiting from the discharge orifice sufficient to selectively soften the web;

whereby the flash and web can be more readily removed and the outer diameter of the record more precisely trimmed.

4,535,225

HIGH POWER ARC HEATER

Charles B. Wolf, Irwin; Thomas N. Meyer, Murrysville; Maurice G. Fey, Plum Boro, and John E. Heidrich, Livermore, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 12, 1984, Ser. No. 588,595
Int. Cl.³ H05B *7/18*
U.S. Cl. 219—383 **40 Claims**

1. An electric arc heater, comprising:

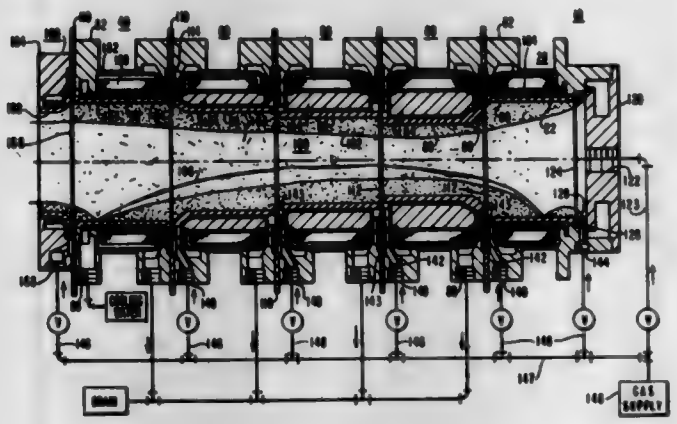
an upstream electrode segment;

a downstream electrode segment, the upstream and downstream electrode segments being substantially cylindrical, spaced apart, hollow, and axially aligned;

a plurality of electrically insulated interelectrode segments positioned intermediate the upstream electrode segment and the downstream electrode segment, the interelectrode segments being substantially cylindrical, hollow, axially spaced apart from each other and the electrode segments forming a series of axial gaps therebetween, and forming

an arcing chamber therein, the interelectrode segment adjacent the upstream electrode segment having an internal diameter less than the internal diameter thereof and the interelectrode segment adjacent the downstream electrode segment having an internal diameter less than or equal to the internal diameter thereof with the internal diameters of the interelectrode segments increasing in a stepwise manner in the downstream direction;

gas inlet means for admitting a gas into the arc chamber so as to form a boundary layer of gas about the surface thereof; and



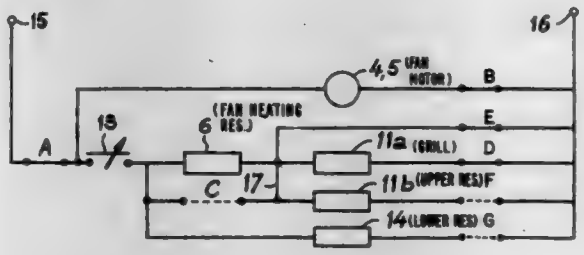
DC power supply means adapted to be connected to the upstream electrode segment and the downstream electrode segment for forming an arc therebetween and extending through the interelectrode segments with one electrode segment connected as the anode and the other electrode segment connected as the cathode, the arc heating a portion of the admitted gas to form a core of arc-heated gas, the arc-heated gas and boundary layer of gas exiting the arc heater at the downstream end of the downstream electrode segment with the boundary layer of gas decreasing convective heat loss of the core region of hot gas to the segments while maintaining the electrical insulation between segments.

4,535,226

DOMESTIC ELECTRIC COOKING OVEN

Bernard Logel, Gundershoffen, and Robert Koehl, Bischholtz, both of France, assignors to De Dietrich & Cie, Niederbronn les Bains, France

Continuation of Ser. No. 454,415, Dec. 29, 1982, abandoned.
This application Jan. 14, 1985, Ser. No. 691,366
Claims priority, application United Kingdom, Jan. 6, 1982, 8200089
Int. Cl.³ H05B *1/02*; F24C *15/32*; A21B *1/22*
U.S. Cl. 219—400 **4 Claims**



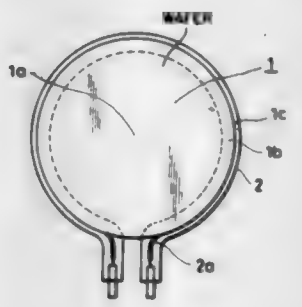
1. A domestic electric cooking oven comprising a muffle which defines a chamber and in which are mounted at least one upper heating element, at least one lower heating element, an air circulating fan provided in a rear wall of the muffle for creating a current of air, a heating element associated with the fan and placed in the current of air from the fan, air conditioning means adapted to orient the air blown by the fan in accordance with substantially horizontal streams in the chamber defined by the muffle, and an electric switching device for connection to an electric power supply and for selectively connecting said heating elements and said fan to said supply, wherein said switching device comprises a given position in which given position it is capable of connecting said heating element associated with the fan in series with the upper heating element while connecting each of the fan and said lower heating element to said supply in parallel with said serially connected fan heating element and upper heating element.

4,535,227

METHOD FOR HEATING SEMICONDUCTOR WAFER BY MEANS OF APPLICATION OF RADIATED LIGHT

Hiroshi Shimizu, Yokohama, Japan, assignor to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 4, 1983, Ser. No. 538,934
Int. Cl.³ F27D *11/02*; C23C *13/08*; H05B *1/00*
U.S. Cl. 219—411 **15 Claims**



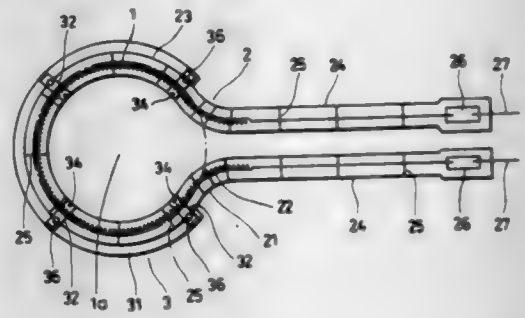
1. A method for heating a semiconductor wafer having a surface by means of application of light radiated from a light source, which method comprises arranging subsidiary heating means in contact with at least one of the surface of a circumferential edge and a surface portion lyin in a vicinity of the circumferential edge of the semiconductor wafer; and heating the semiconductor wafer by means of application of light radiated from the light source while additionally heating the semiconductor wafer principally at the surface portion lying in the vicinity of the circumferential edge by the subsidiary heating means.

4,535,228

HEATER ASSEMBLY AND A HEAT-TREATMENT METHOD OF SEMICONDUCTOR WAFER USING THE SAME

Yoshiki Mimura, Yokohama; Tetsuji Arai, Tachikawa; Hiroshi Shimizu, Yokohama, and Satoru Fukuda, Kawasaki, all of Japan, assignors to Ushio Denki Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 6, 1983, Ser. No. 539,413
Claims priority, application Japan, Dec. 28, 1982, 57-227534; Dec. 28, 1982, 57-227535
Int. Cl.³ F27D *11/00*; H05B *1/00*; C23C *13/08*
U.S. Cl. 219—411 **6 Claims**



1. A heater assembly for heating a wafer to a uniform temperature in association with heating of the wafer by application of radiated light comprising:

a holder on which the wafer to be heat-treated is to be held in contact by gravity and means for heating principally a circumferential portion of the wafer, said means for heat-

ing including a heating device combined detachably with the holder, wherein the heating device has an elongated positioning arm which extends in one direction.

4,535,229

SAUCEPAN AND COVER FOR A COOKING UTENSIL, PARTICULARLY A STEAM PRESSURE COOKING PAN

Kurt Wolf, Langwiesenweg, and Wolfram K. Andre, Eichenweg, both of Fed. Rep. of Germany, assignors to Kurt Wolf & Co. KG, Fed. Rep. of Germany

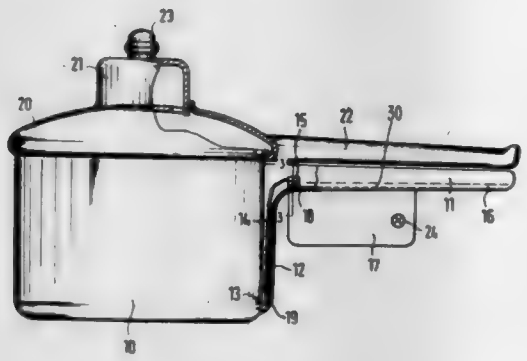
Filed Oct. 6, 1983, Ser. No. 539,482

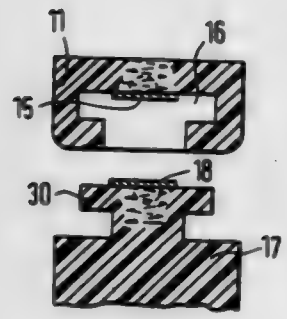
Claims priority, application Fed. Rep. of Germany, Oct. 20, 1982, 3238768

Int. Cl.³ F27D *11/00*

U.S. Cl. 219—440

11 Claims





1. A cooking vessel comprising a saucepan of heat conductive material and a cover, particularly a steam pressure cooker, to which heat is applied from an external heat source underneath said saucepan and to which a temperature-dependent resistor is attached as a temperature sensor and connected to a computing device for determination of the temperature inside said saucepan and for the transmission of electrical signals corresponding to the temperature detected, characterized by a measuring point (13) being located on the external surface of said saucepan (10) in the transition region between the pan wall and the pan bottom, said temperature sensor (19) being mounted to said pan (10) at said measuring point (13) in a heat-conducting fashion; said measuring point (13) and said temperature sensor (19) being covered by an attachment portion (12) of a handle (11) which is mounted detachably on said pan (10); said handle (11) of said pan (10) having a plug receptacle (16) to receive said computing device formed as a separate plug unit (17) in which connection contact (15) in communication with said temperature sensor (19) is provided to match counter-contact (18) provided on said plug unit (17); and said plug unit (17) being insertable mechanically in said plug receptacle (16), whereby said counter-contact (18) of said plug unit (17) and said connection contact (15) in said plug receptacle are in electrically-conductive contact.

4,535,230

VARIABLE PROFILE ROLLER PARTICULARLY FOR THE PAPER MAKING INDUSTRY

Francois M. P. Brieu, Saint-Cloud, France, assignor to Chlq Frote et Cie, Paris, France

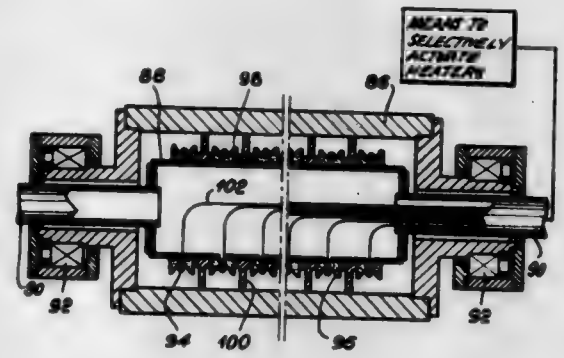
Filed Apr. 9, 1982, Ser. No. 367,056

Claims priority, application France, Apr. 9, 1981, 81 07114

Int. Cl.³ B21B *27/06*

U.S. Cl. 219—470

5 Claims



1. A variable contour roller comprising an external hollow cylindrical jacket made of a heat expandable material mounted for rotation about its axis and a stationary internal member, the internal member including support means, successively space along the axis of said cylindrical member alternate discs of thermally insulating material and electric resistance radiant heaters mounted on said support means, the discs of thermally insulating material extending substantially wholly radially across the interior of hollow cylindrical member and the heaters being selectively actuatable to heat selected ring-shaped regions of said exterior cylindricakl member.

4,535,231

PHOTODETECTOR OUTPUT CIRCUIT

Shuhei Tanaka, Musashimurayama, Japan, assignor to Hitachi Denshi Kabushiki Kaisha, Tokyo, Japan

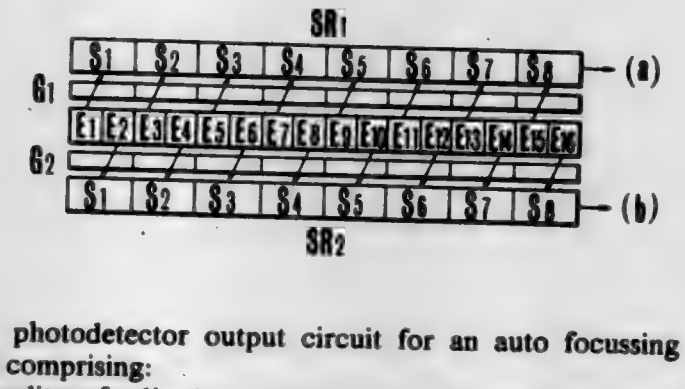
Filed Jul. 21, 1982, Ser. No. 400,450

Claims priority, application Japan, Jul. 24, 1981, 56-116326

Int. Cl.³ G01J *1/20*

U.S. Cl. 250—201

5 Claims



1. A photodetector output circuit for an auto focussing camera comprising:

a plurality of adjacent photodetectors grouped into pairs having first and second photodetectors for generating signals indicative of levels of light from an object to be photographed falling thereon;

a first analog shift register for receiving the signals from said first photodetectors in said pairs;

a second analog shift register for receiving the signals from said second photodetectors in said pairs;

a pair of first and second sample and hold circuits for successively sampling and holding said analog outputs from final states of said first and second shift registers, respectively, and for successively resetting held samples after they have overlapped in time; and

a comparator receptive as inputs of outputs from said first and second sample and hold circuits having gated output for delivering out digital logic signals representing when the received overlapped inputs have a level difference of

a predetermined value or higher thereby providing comparator output which rejects gradual changes in incident light.

4,535,232

METHOD OF BIASING A PHOTOCONDUCTIVE DETECTOR AND DETECTOR APPARATUS THEREFOR

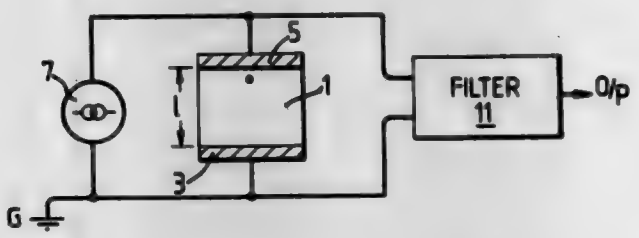
Charles T. Elliott; Anthony M. White, and Howard J. Field, all of Malvern, England, assignors to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 15, 1982, Ser. No. 441,863

Claims priority, application United Kingdom, Dec. 7, 1981, 8136752

Int. Cl.³ H01J *40/14*

U.S. Cl. 250—206 **20 Claims**



11. A photosensitive detector apparatus, comprising:

detector means for detecting photon radiation and generating output signals, said detector means including at least one photoconductive element which has a bias versus responsivity curve including linear and non-linear portions and which has a photocarrier lifetime;

bias source means, connected to said detector means, for generating a bias having an alternating and a D.C. component, and providing a peak amplitude sufficient to drive operation of said photoconductive element into said non-linear portion of said bias versus responsivity curve, said alternating component having a cycle longer than said photocarrier lifetime; and

output means for processing said output signals to generate a photoresponse signal frequency component arising from said non-linear portion of said bias versus responsivity curve, and having a frequency different than the frequency of said alternating component.

4,535,233

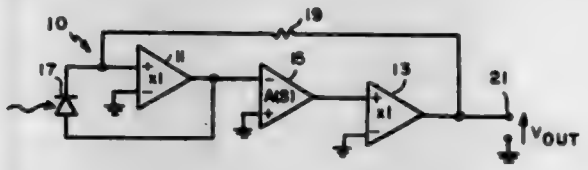
BOOTSTRAP-TRANSIMPEDANCE PREAMPLIFIER FOR A FIBER OPTIC RECEIVER

Menachem Abraham, Lexington, Mass., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed Jan. 22, 1982, Ser. No. 342,491

Int. Cl.³ H01J *40/14*; H03F *17/00, 3/08*

U.S. Cl. 250—214 A **9 Claims**



1. A bootstrap-transimpedance preamplifier for receiving signals from a capacitive current source comprising:

bootstrap buffer means having an input connected to the capacitive current source for receiving signals therefrom, and for generating an output signal in response to signals from the capacitive current source;

voltage amplifer means having an input connected receive the output signal from the bootstrap buffer means and for generating an output signal in response thereto;

second buffer means connected to the output of said voltage amplifier means for generating an output signal in response to the output signal from said voltage amplifier means; and

feedback means connected to the output of said second buffer means and the input of said bootstrap buffer means for coupling a signal proportional to the output signal from said second buffer means to the input of said bootstrap buffer means.

4,535,234

LIGHT EXPOSURE APPARATUS WITH COOLING MEANS

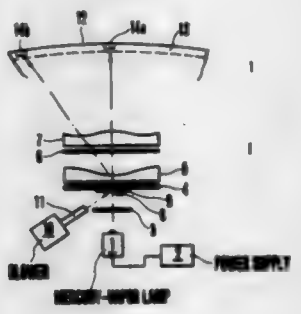
Takashi Fujimura; Katsuyu Takahashi, and Masahiro Nishizawa, all of Mobara, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 29, 1981, Ser. No. 306,606

Claims priority, application Japan, Oct. 1, 1980, 55-135862

Int. Cl.³ H01J *7/24*

U.S. Cl. 250—238 **5 Claims**



1. In a light exposure system having a lamp house containing a lamp simultaneously emitting ultraviolet rays and heat rays, the improvement comprising a plurality of spaced glass optical elements for transmitting light from said lamp and lamp house, said glass optical elements each having an optical characteristic which varies with temperature, and means for controlling cooling pressure flow of a gas on the light incident side of said optical element nearest said lamp house in order to cool said optical elements thereby to minimize influence of said heat rays upon the ultraviolet rays passed by said optical elements.

4,535,235

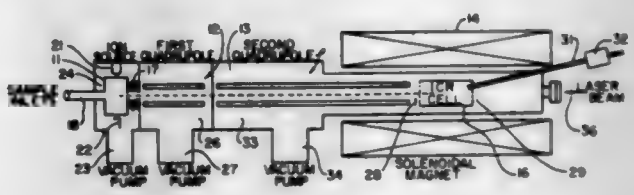
APPARATUS AND METHOD FOR INJECTION OF IONS INTO AN ION CYCLOTRON RESONANCE CELL

Robert T. McIver, Jr., Irvine, Calif., assignor to Finnigan Corporation, San Jose, Calif.

Filed May 6, 1983, Ser. No. 492,473

Int. Cl.³ B01D *59/44*

U.S. Cl. 250—282 **13 Claims**



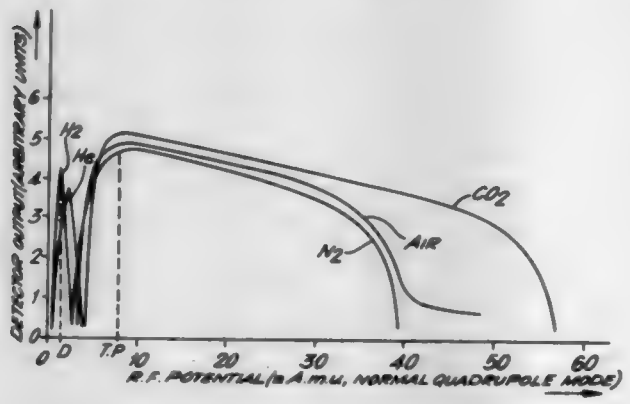
13. The method of conducting ion cyclotron resonance analysis of samples in an ion resonance spectrometer including an ion analyzer cell which comprises the steps of ionizing the sample outside of the homogeneous magnetic field associated with the spectrometer, selecting ions in a predetermined mass range and introducing into the analyzer cell the selected ionized atoms.

4,535,236

APPARATUS FOR AND METHOD OF OPERATING QUADRUPOLE MASS SPECTROMETERS IN THE TOTAL PRESSURE MODE

Jonathan H. Batey, Kingsley, England, assignor to VG Instruments Group Limited, England

Filed Feb. 23, 1984, Ser. No. 582,789
Claims priority, application United Kingdom, Feb. 25, 1983, 8305228
Int. Cl.³ H01J *49/42*
U.S. Cl. 250—292 **17 Claims**



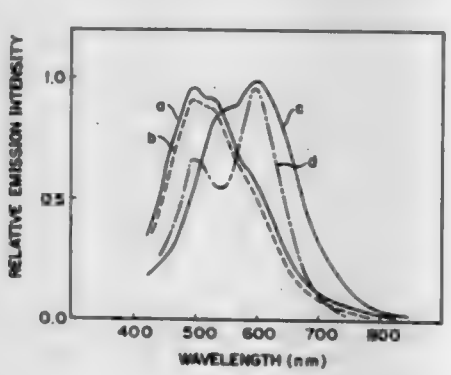
1. A method of determining the total pressure of a gas mixture present in the source of a quadrupole mass spectrometer having a detector and a mass filter to which only an RF potential is supplied, when the gas mixture contains components from which ions are formed which have maximum transmission efficiencies at different values of said RF potential, the improvement comprising maintaining the RF supply to said mass filter at a first potential at which ions of a first range of m/e values are efficiently transmitted and determining the ion current falling on said detector, and subsequently maintaining said RF supply at one or more further potentials at which ions of one or more further ranges of m/e values are efficiently transmitted and determining the ion current falling on the detector at each of said further potentials, and combining signals indicative of all said ion currents to produce an indication of the total pressure of the said gas mixture.

4,535,237

RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Kenji Takahashi, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 13, 1983, Ser. No. 560,924
Claims priority, application Japan, Dec. 15, 1982, 57-218393
Int. Cl.³ G03C *5/16*; C09K *11/46*
U.S. Cl. 250—327.2 **6 Claims**



1. A radiation image recording and reproducing method comprising steps of:

(i) causing a radiation image storage panel to absorb a radiation having passed through an object or having radiated from an object, the radiation image storage panel containing a divalent europium activated barium fluorobromide phosphor having the bromine-containing portion stoichiometrically in excess of the fluorine and showing a stimulation spectrum in which the emission intensity at the stimulation wavelength of 500 nm is higher than the emission intensity at the stimulation wavelength of 600 nm;

(ii) exposing said radiation image storage panel to an electromagnetic wave having a wavelength within the range of 550–800 nm to release the radiation energy stored therein as light emission; and

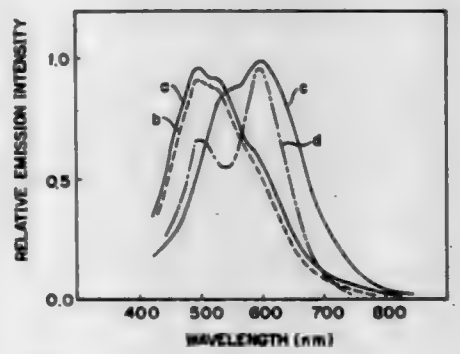
(iii) detecting the emitted light.

4,535,238

RADIATION IMAGE RECORDING AND REPRODUCING METHOD

Kenji Takahashi, and Takashi Nakamura, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Dec. 13, 1983, Ser. No. 560,815
Claims priority, application Japan, Dec. 15, 1982, 57-218394
Int. Cl.³ G03C *5/16*; C09K *11/46*
U.S. Cl. 250—327.2 **6 Claims**



1. A radiation image recording and reproducing method comprising steps of:

(i) causing a radiation image storage panel to absorb a radiation having passed through an object or having radiated from an object, the radiation image storage panel containing a divalent europium activated barium fluorobromide phosphor having the bromine-containing portion stoichometrically in excess of the fluorine and showing a stimulation spectrum in which the emission intensity at the stimulation wavelength of 500 nm is higher than the emission intensity at the stimulation wavelength of 600 nm;

(ii) exposing said radiation image storage panel to an electromagnetic wave having a wavelength within the range of 400–550 nm, the wavelength of 550 nm being exclusive, to release the radiation energy stored therein as light emission; and

(iii) detecting the emitting light.

4,535,239

METHOD AND APPARATUS FOR REMOTE MEASUREMENT OF A PARTICULATE MATTER ON A MOVING SHEET

Andrew P. Brighton, Muncie, Ind., assignor to Ball Corporation, Muncie, Ind.

Filed Jun. 3, 1983, Ser. No. 500,675
Int. Cl.³ G01J *1/00*
U.S. Cl. 250—339 **7 Claims**

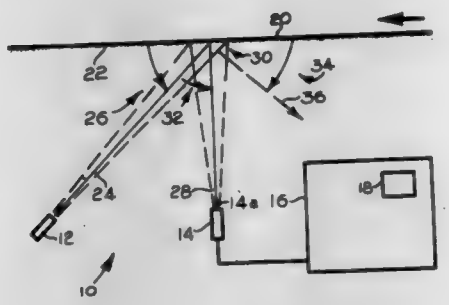
1. A method of measuring the particulate coating material on a substrate, comprising:

directing infrared energy having a wave length of about 940 nanometers at a substrate at an angle of about 45°,

detecting infrared energy from the particulate material along a line that is normal to the substrate and lying at an angle at 45° from the direction from the incident infrared energy,

generating a voltage from the detected infrared energy,

amplifying the voltage signal to provide a voltage level from which coating weight can be derived by the relationship



$$W_p = \log_{10}^{-1} \frac{(V_R - k_1)}{k_2},$$

where

W_p is the density of coating material on one surface of the substrate,

V_R is the level of the amplified voltage signal, and

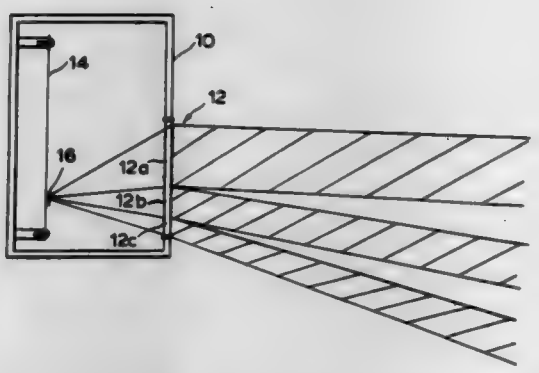
k_1 and k_2 are constants of the system.

4,535,240

INTRUDER DETECTION

John P. C. Vigurs, 7, Church Rd., East Molesley, Surrey, England

Filed Sep. 23, 1983, Ser. No. 535,384
Int. Cl.[3] B42F *13/00*
U.S. Cl. 250—342 6 Claims



1. An intruder detector comprising a sensor responsive to changes in the level of incident radiation and an imaging system for focusing energy from only monitored zones of an area of surveillance onto the sensor, the imaging system comprising a window constructed as a flat, integrally formed, segmented Fresnel lens of which each segment is operative to focus radiation from a different respective monitored zone onto the sensor.

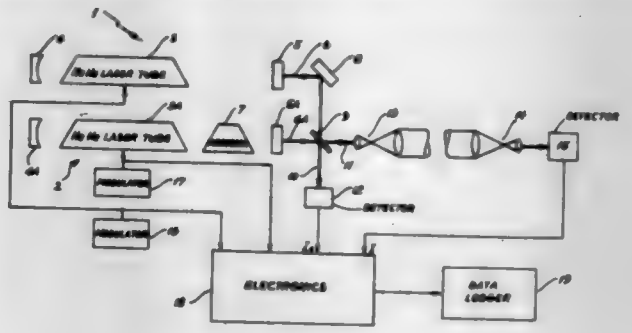
4,535,241

MEASURING THE CONCENTRATION OF GASEOUS HYDROGEN FLUORIDE

John E. Eberhardt, Sans Souci, Australia, assignor to Australian Atomic Energy Commission, New Wales, Australia

PCT No. PCT/AU82/00055, § 371 Date Nov. 17, 1982, § 102(e) Date Nov. 17, 1982, PCT Pub. No. WO82/03687, PCT Pub. Date Oct. 28, 1982
PCT Filed Apr. 8, 1982, Ser. No. 444,900
Claims priority, application Australia, Apr. 13, 1981, PE8425; May 13, 1981, PE8858
Int. Cl.[3] G01N *21/35*
U.S. Cl. 250—339 13 Claims

1. A method for quantitatively determining the concentration of gaseous hydrogen fluoride in a medium containing gaseous hydrogen fluoride, characterised in that said method comprises combining the results of (a) a measurement of the transmission or absorption of a laser beam at a first frequency corresponding to a neon 3 p_4–2 s_2 transition through said medium containing gaseous hydrogen fluoride, and (b) a measurement of the transmission or absorption of a laser beam at a second frequency excluding said first frequency, through said medium containing gaseous hydrogen fluoride.

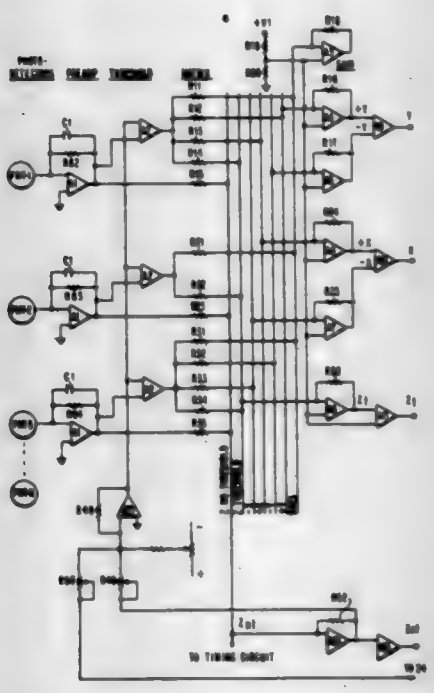


4,535,242

METHOD AND A CIRCUIT FOR PROCESSING PULSES OF A PULSE TRAIN

Franciscus J. Dirkse, Nieuwkoop, Netherlands, and Gerardus H. Kulberg, deceased, late of Noorden, Netherlands (by Julia F. Kulberg-Nierstrasz, heiress), assignors to Siemens Gammasonics, Inc., Des Plaines, Ill.

Filed Mar. 3, 1983, Ser. No. 471,915
Int. Cl.[3] G01T *1/161*
U.S. Cl. 250—363 S 55 Claims



1. A method for processing pulses of a pulse train such that tails of pulses which precede a pulse to be processed are eliminated, wherein said tails of said preceding pulses have a known and constant decay curve, the method comprising the following steps:

(a) producing a signal at the occurrence of a pulse to be processed, which signal extrapolates the known and constant decay curve of the tail of a preceding pulse,

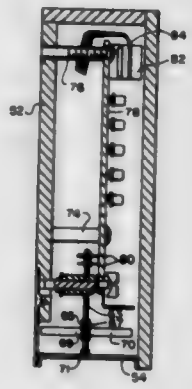
(b) superimposing said extrapolating signal with said pulse to be processed to form a differential signal,

(c) providing said differential signal for processing.

4,535,243
X-RAY DETECTOR FOR HIGH SPEED X-RAY SCANNING SYSTEM

Kristian R. Peschmann, San Francisco, Calif., assignor to Imatron Associates, San Francisco, Calif.

Filed Mar. 17, 1983, Ser. No. 476,426
Int. Cl.[3] G01T *1/20*
U.S. Cl. 250—363 S
5 Claims

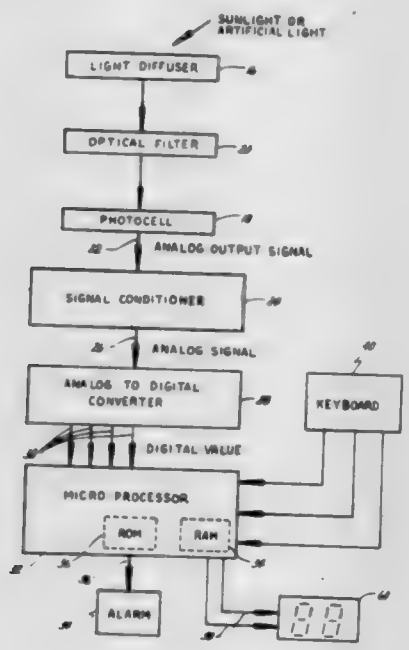


1. An X-ray detector for use in a high speed radiation scanning system comprising an elongated scintillator crystal having two opposing ends, a photodiode, means attaching said photodiode to one end of said crystal, reflection means on the opposite end of said crystal whereby said crystal functions as a light pipe in directing light to said photodiode, and an active low pass filter and amplifier means connected to said photodiode for amplifying electrical signals from said photodiode, said active low pass filter and amplifier means comprising a first operational amplifier having a first filter pole and a second operational amplifier having two filter poles.

4,535,244
PHOTODOSIMETER

Robert E. Burnham, Plymouth, Mich., assignor to BPA Calscan, Inc., Plymouth, Mich.

Filed May 19, 1983, Ser. No. 496,062
Int. Cl.[3] G01J *5/32*
U.S. Cl. 250—372
7 Claims

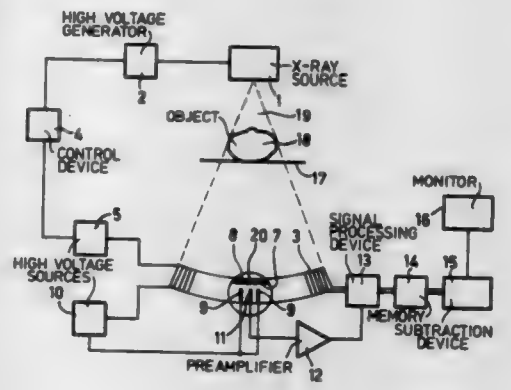


1. A photodosimeter comprising:
a housing having an opening,
means mounted beneath said opening for generating an output signal having a magnitude proportional to the intensity of ultraviolet radiation entering said housing opening,
means for manually inputting and storing a value corresponding to the solar protection factor of a sunscreen material,
means for accumulating said output signals and for storing the accumulated result,
means for dividing said accumulated result by said value corresponding to said solar protection factor,
means for actuating an alarm when the result of said division exceeds a predetermined amount.

4,535,245
WAVELENGTH-SENSITIVE RADIOGRAPHY APPARATUS

Frans W. Zonneveld, and Cornelis Kramer, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Continuation of Ser. No. 311,563, Oct. 15, 1981, abandoned.
This application Apr. 23, 1984, Ser. No. 602,625
Claims priority, application Netherlands, Nov. 13, 1980, 8006216
Int. Cl.[3] G01T *1/185*
U.S. Cl. 250—385
5 Claims



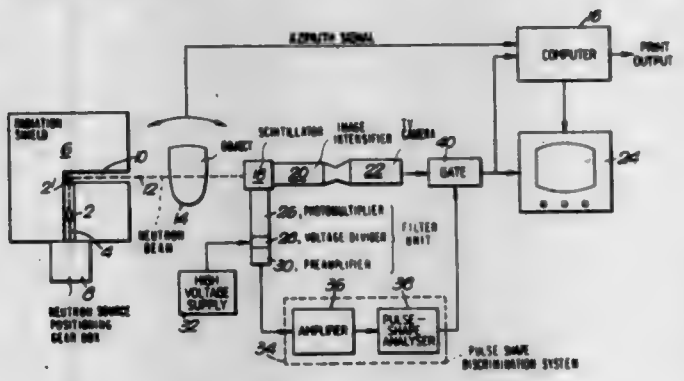
1. A radiography apparatus comprising:
a radiation source for generating at least two different energy spectra of radiation;
a radiation detector for measuring the radiation from the source which is incident thereon, said detector comprising an ionization chamber having first and second ends, the first end being nearer to the radiation source than the second end, said chamber having an entrance window at the first end thereof;
a high voltage electrode in the ionization chamber extending in a direction from the first end toward the second end of the detector, said high voltage electrode having an electric potential;
a signal electrode in the ionization chamber extending in a direction from the first end toward the second end of the detector, said signal electrode being separated from the high voltage electrode by a space which is located behind the entrance window, said signal electrode having electric potential;
an auxiliary electrode in the ionization chamber and arranged substantially parallel to and near the entrance window; and
a voltage source having an output electrically connected to the auxiliary electrode, the output of said voltage source selectively switchable between two different values so as to selectively favor the measurement of radiation absorbed at locations toward the first end of the detector or to selectively favor the measurement of radiation absorbed at locations toward the second end of the detector.

4,535,246

FAST NEUTRON RADIOGRAPHY SYSTEM

Gad Shani, Beer-Sheva, Israel, assignor to Ben-Gurion University of the Negev Research & Development Authority, Israel

Filed Aug. 6, 1982, Ser. No. 405,776
Claims priority, application Israel, Aug. 7, 1981, 63529
Int. Cl.³ G01T *3/00*
U.S. Cl. 250—390 12 Claims



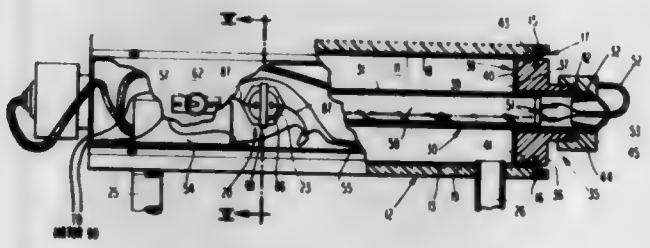
1. A system for gamma-ray interference-free fast-neutron radiography, comprising a radiation detector adapted to distinguish between fast-neutron and gamma radiation passing through an object, imaging means transducing object-point related signals generated by said object-modified neutron and gamma radiation in said radiation detector; pulse-shape discrimination and gating means for passing only neutron-induced image-producing pulses, and for filtering out the gamma-ray induced, interfering signals; and utilization means for receiving said neutron-induced image-producing pulses.

4,535,247

WATER STERILIZATION SYSTEM

Mark E. Kurtz, P.O. Box 1707, Rutland, Vt. 05701

Filed Jul. 11, 1983, Ser. No. 512,483
Int. Cl.³ G01N *21/00*
U.S. Cl. 250—436 18 Claims



1. A water sterilization system which includes
a sterilizer comprising an elongated cylindrical housing of a plastic normally degraded by ultraviolet light, having opposing ends and an inside wall, said inside wall being covered with a protective liner to expose an ultraviolet light-reflecting inner surface; a hollow, open-ended cylindrical sleeve of a material transmitting ultraviolet light, extending coaxially within said housing, and having an outer surface spaced from said inner surface to form an annular water chamber; closure means affixed at each of said opposing ends for sealing said chamber, including a plastic insert plug having an inside surface lined with a protective cover to expose an ultraviolet light-reflecting interior surface; water inlet and outlet conduits in communication with said chamber and adapted to connect to a central water supply; a UV electric lamp enclosed within said sleeve, said lamp carrying terminals to receive electric power from leads fed into said sleeve; together with a lamp power supply connected electrically to said lamp terminals and adapted to connect to an AC power line; in combination with
fail safe control mechanism comprising a normally closed water valve in said inlet or outlet conduit; and a series electrical circuit adapted to be AC line-powered and including a photoresistor adapted to receive light from said lamp, the resistance of said photoresistor decreasing as the intensity of the light increases, and a stallable electric motor coupled mechanically to said water valve to hold said valve open so long as said photoresistor receives sufficient light than an operating voltage appears across said motor;
whereby UV-induced degradation of the plastic wetted surfaces and contamination of the water by the degradation products are avoided.

4,535,248

METHOD FOR DETECTING AFLATOXIN IN ALMONDS

John E. Schade, Walnut Creek, and A. Douglas King, Jr., Martinez, both of Calif., assignors to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Aug. 24, 1984, Ser. No. 643,990
Int. Cl.³ G01N *21/33;* B07C *5/342*
U.S. Cl. 250—459.1 10 Claims

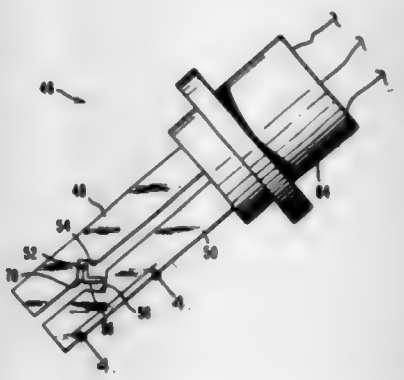
1. A method for detecting aflatoxin contamination in almonds, which comprises:
(a) exposing almond kernels to long wave ultraviolet light and
(b) detecting the presence of aflatoxin as determined by violet-purple fluorescence.

4,535,249

BENCHMARK DETECTOR

John W. Reeds, Thousand Oaks, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Jun. 17, 1983, Ser. No. 505,564
Int. Cl.³ G01N *23/00;* H01L *21/30*
U.S. Cl. 250—491.1 14 Claims



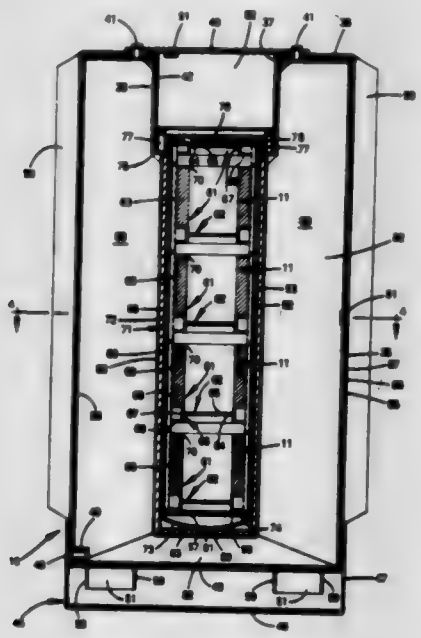
1. A benchmark detector consisting of only first and second light pipes lying adjacent each other, said light pipes each having a notch therein so that said notches face each other and define two corners of an opening between said light pipes, a scintillator material on each of said light pipes adjacent said notches so that electrons striking the scintillator material generate photons in the associated light pipes, said detector being for positioning substantially parallel to the surface of the target carrying a benchmark and with a line between the light pipes lying at an acute angle with respect to the axes of movement of the target carrying the benchmark so that comparative sensing of photons in said first and second light pipes indicates the position of the benchmark.

4,535,250

CONTAINER FOR RADIOACTIVE MATERIALS

Stanley R. Fields, Richland, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 30, 1984, Ser. No. 615,210
Int. Cl.[3] G21C *19/40*
U.S. Cl. 250—507.1 15 Claims



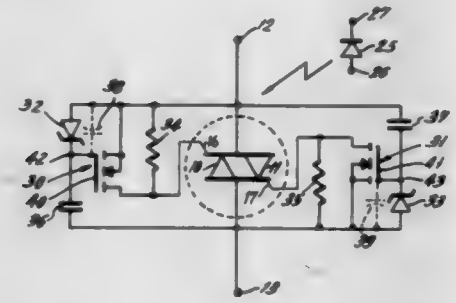
1. A container for shipping and storing radioactive material comprising: an outer shell, an inner payload package mounted concentrically within said shell, a radiation shielding material interposed between said pay load package and said shell, said payload package comprising a basket for housing a plurality of canister assemblies containing said radioactive material, said basket comprises a side wall and an end wall supporting alternate canister assemblies and spaces in a stacked relation therein thin, said canister assemblies arranged in a longitudinally spaced relation, a plurality of spacers associated with said canister assemblies, respectively, each spacer having a base member longitudinally spacing adjacent canister assemblies and a sleeve portion surrounding said associated canister assembly wherein said base of each spacer comprises a web portion for supporting a canister assembly and a peripheral rim of thickness adapted to rest on an adjacent canister assembly, said web having a central access opening there through.

4,535,251

A.C. SOLID STATE RELAY CIRCUIT AND STRUCTURE

Thomas Herman, Redondo Beach, and Oliver Williams, Camarillo, both of Calif., assignors to International Rectifier Corporation, Los Angeles, Calif.

Filed Dec. 21, 1982, Ser. No. 451,792
Int. Cl.[3] G02B *27/00*
U.S. Cl. 250—551 24 Claims



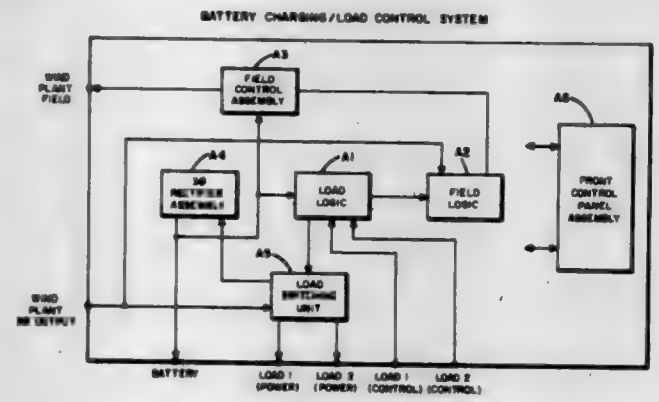
1. A solid state a.c. relay comprising first and second thyristors each having respective anode and cathode electrodes and a respective gate circuit; each of said thyristors being formed in separate respective first and second semiconductor chips and being of the lateral conductivity type, wherein said anode and cathode electrodes of each of said thyristors are on the same first surface of their said first and second chips respectively; said first surface of said first and second chips being optically sensitive, whereby said first and second chips can be switched to conduct current by illuminating said one surface; said solid state relay further comprising a light emitting diode arranged to illuminate said first surfaces upon its energization; a pair of a.c. terminals; said anode and cathode electrodes of said first and second thyristors connected to said pair of a.c. terminals and in anti-parallel relation with one another; a pair of control terminals insulated from said a.c. terminals and connected to said light emitting diode; and first and second control circuits connected to said gate circuits of said first and second thyristors respectively for clamping said first and second gate circuits respectively to prevent firing of said first and second thyristors when the voltage between said pair of a.c. terminals exceeds a given value and for clamping said first and second gate circuits in response to transient pulses having a dV/dt greater than a given value.

4,535,252

WIND ELECTRIC GENERATION PLANT AND SYSTEM WITH IMPROVED ALTERNATOR FIELD EXCITATION

Marcellus L. Jacobs, and Paul R. Jacobs, both of Fort Myers, Fla., assignors to Jacobs Wind Electric Company, Minneapolis, Minn.

Filed Apr. 29, 1983, Ser. No. 489,951
Int. Cl.[3] H02P *9/04*; F03D *9/00*
U.S. Cl. 290—44 7 Claims



1. In a wind electric generation plant and like system of the type including a wind driven propeller or the like supported at the top of a tower and connected to drive an alternator supported on the tower to generate electrical energy, storage battery means connected to be charged by the alternator, electrical control circuit means supplying current from the storage battery means to the field winding of the alternator, load means requiring A.C. energy connected with the A.C. output circuit of the alternator, and circuit means connected with said electrical control circuit means and operable to selectively supply alternator A.C. energy to the load means and a charging circuit for the storage battery means, said circuit means including means to automatically divert the supply of alternator A.C. energy to and from said load means and said charging circuit thereby maintaining a constant load on the wind electric plant to thereby insure quiet operation of said wind electric plant even at times of strong wind conditions, the improvement including:

alternator overspeed detection means for detecting the occurrence of an overspeed condition of said alternator;

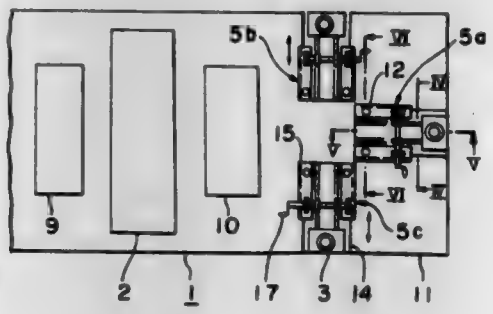
means to reduce the field current of said alternator to a predetermined low rate level;

and means to provide the said predetermined low rate level of field current to the said alternator during the time period of the detected occurrence of said overspeed condition.

4,535,253
MOBILE ELECTRICAL APPARATUS

Kenichi Ootsuka, and Yoshikazu Miyake, both of Amagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 10, 1983, Ser. No. 493,239
Claims priority, application Japan, May 20, 1982, 57-75302[U]
The portion of the term of this patent subsequent to Jan. 24, 2001, has been disclaimed.
Int. Cl.³ H02B 5/00
U.S. Cl. 307—9 6 Claims

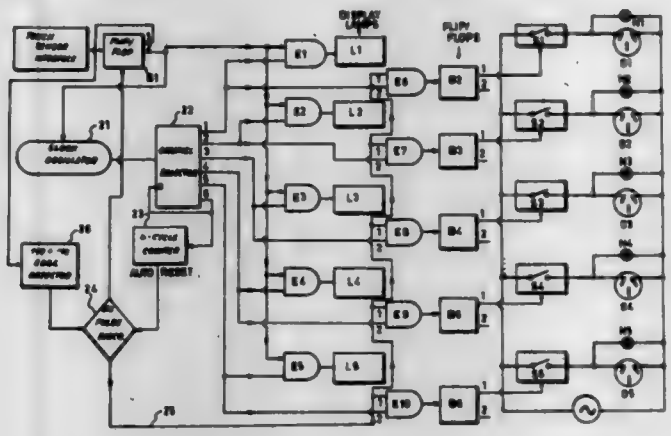


1. A mobile electrical apparatus comprising:
a vehicle body having length and width dimensions;
a main electrical apparatus mounted on said vehicle body;
three holding means mounted on said vehicle body;
three lightning arresters disposed adjacent to one another, each lightning arrester being mounted on one of said holding means;
said holding means acting to move said lightning arresters in different predetermined directions by a linear sliding movement from a retracted position within said dimensions of said vehicle body for transporting to an extended position beyond said dimensions of said vehicle body for operation;
whereby said lightning arresters are in right triangular positional relationship when in the extended position so that equidistant interphase insulation is obtained.

4,535,254
TOUCH-OPERATED POWER CONTROL DEVICE

Dilip K. Khatri, Miranda, Australia, assignor to Electrical Equipment Limited, Sydney, Australia

PCT No. PCT/AU82/00140, § 371 Date Apr. 22, 1983, § 102(e) Date Apr. 22, 1983, PCT Pub. No. WO83/00780, PCT Pub. Date Mar. 3, 1983
PCT Filed Aug. 26, 1982, Ser. No. 492,025
Claims priority, application Australia, Aug. 26, 1981, PF0436
Int. Cl.³ H02J 3/14
U.S. Cl. 307—38 7 Claims

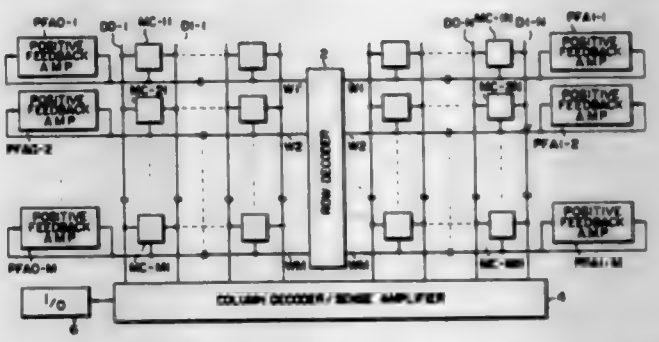


1. A selective power control device for the connection of electric power from a source to a selected one of a plurality of power lines associated with individual electrical functions or applicances, comprising a visual display to the operator of the functions or appliances available to him, operator-controlled sensor means, cycling control means including a clock oscillator responsive to a first signal from said sensor means to initiate repeated cycling providing an automatic successive identification to said operator of individual ones of said functions or appliances, means responsive to a second signal from said sensor means to halt said successive identification at a selected one of said functions or appliances, switches for controlling power application to said power lines, an electronic counter having a plural outputs connected to respective ones of said switches to switch on power from said source to said power line associated with said selected one of said functions or appliances, and an auto-reset counter connected to an output of said electronic counter to de-energise said clock oscillator after cycling through a predetermined number of repetitions.

4,535,255
POSITIVE FEEDBACK AMPLIFIER CIRCUITRY

Kiyofumi Ochii, Yokohama; Masami Masuda, Tokyo, and Takeo Kondo, Yokosuka, all of Japan, assignors to Tokyo-Shibaura Denki Kabushiki Kaisha, Japan

Continuation of Ser. No. 452,127, Dec. 22, 1982, abandoned, which is a division of Ser. No. 170,687, Jul. 21, 1980, Pat. No. 4,379,346. This application Nov. 8, 1984, Ser. No. 669,724
Claims priority, application Japan, Jul. 26, 1979, 54-95526
Int. Cl.³ H03K 5/01, 19/094
U.S. Cl. 307—264 5 Claims



1. A positive feedback amplifier circuit responsive to a clock signal and an I/O signal, said amplifier circuit comprising:
an I/O terminal receiving said I/O signal;
a clock receiving terminal receiving said clock signal;
first and second power source terminals;
a first MOS transistor whose current path is connected at one end to said first power source terminal and whose gate is connected to said clock receiving terminal;
a second MOS transistor whose current path is connected between the other end of said first MOS transistor's current path and said second power source terminal and whose gate is connected to said I/O terminal;
a third MOS transistor whose current path is connected between said first power source terminal and the gate of said second MOS transistor and whose gate is connected to the junction between said first and second MOS transistors; and
resistive means connected between said first power source terminal and the gate of said third MOS transistor.

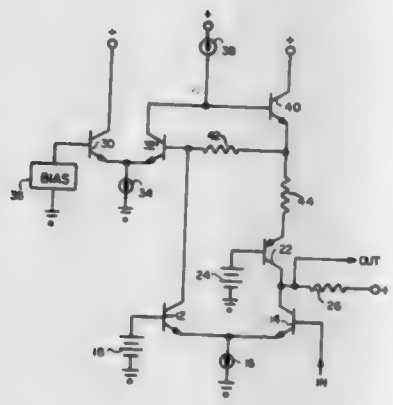
4,535,256
INTEGRATED VIDEO AMP WITH COMMON BASE LATERAL PNP TRANSISTOR

Daniel L. Reneau, Elmhurst, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Apr. 26, 1983, Ser. No. 488,889
Int. Cl.³ H03F 3/18
U.S. Cl. 307—264 10 Claims

1. In an integrated circuit, signal translation means for DC coupling an input signal from an NPN transistor to develop a level shifted output signal without degradation of frequency response, comprising:

a high gain amplifier, having an input terminal and an output terminal, being coupled to said NPN transistor at said input terminal for transforming input signal current therefrom to a voltage at said output terminal;



a lateral common base connected PNP transistor having an emitter and a collector; and

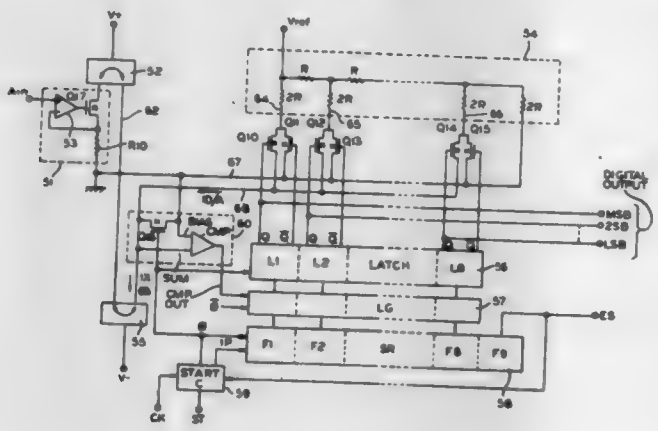
means for supplying the emitter of said PNP transistor with said voltage for developing a level shifted output signal responsive thereto at said collector.

4,535,257

COMPARATOR CIRCUIT

Kyuichi Hareyama, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 127,201, Mar. 4, 1980, abandoned. This application Sep. 28, 1982, Ser. No. 424,866
Claims priority, application Japan, Mar. 6, 1979, 54-25864
Int. Cl.³ H03K *5/153*
U.S. Cl. 307—362 9 Claims



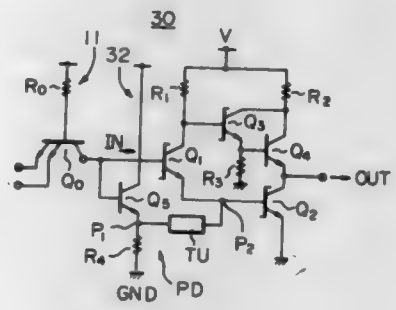
1. A comparator circuit comprising a differential amplifier circuit means having a pair of input terminals, means for supplying a fixed potential to a first of said input terminals, means for supplying to a second of said input terminals an input potential which maintains a level that is different from said fixed potential during at least a comparison period of time, short circuiting means connected between said first and second input terminals for operatively completing a short circuit therebetween prior to the start of said comparison period, control means for periodically driving said short circuiting means to complete and remove said short circuit a plurality of times during said comparison period, said short circuiting means including a field effect transistor coupled directly between said first and second input terminals and being driven responsive to said control means to periodically short circuit and remove said short circuit between said input terminals, whereby a potential at said second input terminal is periodically made equal to said fixed potential every time said short circuiting means is driven into a short circuiting condition during said comparison period, and comparison means responsive to differences between said input potential and said fixed potential when said short circuit is removed during said comparison period, whereby a comparison result is indicated every time said short circuiting means is driven to remove said short circuit.

4,535,258

TRANSISTOR-TRANSISTOR LOGIC CIRCUIT WITH IMPROVED SWITCHING TIMES

Tetsu Tanizawa, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 17, 1982, Ser. No. 408,846
Claims priority, application Japan, Aug. 17, 1981, 56-128468
Int. Cl.³ H03K *19/013, 19/092, 17/04*
U.S. Cl. 307—454 10 Claims



1. A transistor circuit operatively connectable to a power supply line and a ground line, comprising:

an input terminal operatively connected to reveive an input signal;

an output terminal;

a phase-inverting transistor of a first conductivity type, operatively connected to said input terminal, having a base for receiving the input signal, having a collector operatively connected to the power supply line and having an emitter, and generating an output signal;

first and second output transistors, each having a base operatively connected to the emitter and collector, respectively, of said phase inverting transistor and said first transistor having a collector operatively connected to the output terminal, and said second transistor having a collector operatively connected to the power supply line, and said first and second output transistors being alternately turned on and off in response to the output signal of said phase-inverting transistor; and

a pull-down circuit, operatively connected to said input terminal and said first output transistor, for discharging electric charges stored in the base of said first output transistor, said pull-down circuit comprising:

a control circuit, operatively connected to said input terminal and operatively connected to the power supply line, having an output node for generating a signal having the same phase as the input signal at the output node, said control circuit includes:

a control transistor, having a base operatively connected to said input terminal, having a collector operatively connected to the power supply line, and having an emitter connected to said output node for receiving the input signal and generating the signal having the same phase as the input signal; and

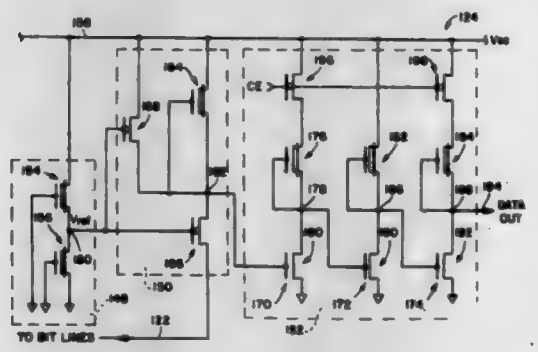
a resistor operatively connected between the emitter of said control transistor and the ground line; and

two-terminal impedance means, operatively connected between the base of said first output transistor and the output node of said control circuit, for providing an impedance.

4,535,259
SENSE AMPLIFIER FOR USE WITH A SEMICONDUCTOR MEMORY ARRAY

George Smarandoiu, Palo Alto, and George Perlegos, Fremont, both of Calif., assignors to Seeq Technology, Inc., San Jose, Calif.

Filed Jun. 18, 1982, Ser. No. 389,819
Int. Cl.³ G11C 7/06, 9/00, 17/04, 11/40
U.S. Cl. 307—530 5 Claims



1. A sense amplifier apparatus for detecting the presence or absence of current flow through a device, which device is connected to an electrical conductor for periodically drawing current therefrom, said sense amplifier apparatus comprising:

a voltage node connectable to the electrical conductor;

a current source means connected to said voltage node for supplying the electrical conductor with current and for raising the voltage at said voltage node to a first predetermined voltage level, said current source means including a first transistor;

a voltage source means connected to said voltage node for charging the electrical conductor to a second predetermined voltage level less than said first predetermined voltage level, said voltage source means including a second transistor having a large current and voltage capacity relative to said first transistor; and

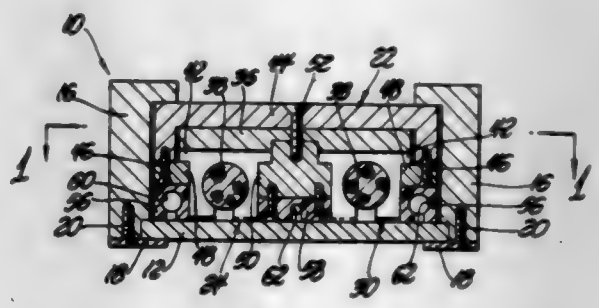
a transfer means connected between said voltage node and the electrical conductor for clamping the voltage on the electrical conductor at said second predetermined voltage level and for permitting said current source means to raise the voltage at said voltage node to said first predetermined voltage level when current is not flowing through the device while permitting the voltage at said voltage node to drop to said second predetermined voltage level when current is flowing through the device, said transfer means including a third transistor having a large current and voltage capacity relative to said first transistor.

4,535,260
MAGNETIC LINEAR MOTOR

Robert J. Pritchard, Lansdale, and Kevin Lindenmuth, Sellersville, both of Pa., assignors to Teleflex Incorporated, Limerick, Pa.

Filed Oct. 15, 1984, Ser. No. 660,540
Int. Cl.³ H02K 41/00
U.S. Cl. 310—12 9 Claims

1. A magnetic linear motor assembly (10) comprising; a platen defining a planar surface presenting a grid of magnetic (12) and nonmagnetic (14) zones spaced from one another along an axis (A) of relative movement a distance pn where n is any whole number and p is the pitch of the grid as defined by the distance between center lines of next adjacent magnetic zones (12) or of next adjacent nonmagnetic zones (14), a head (22) movable along said axis (A) over said platen, said head (22) including a first plurality (24) of U-shaped laminations extending transversely to said axis (A) and disposed on adjacent centerlines spaced $p(n\pm\frac{1}{4})$ apart with the lower extremity of one leg (26, 28′) of each lamination being shorter than the other long leg (26′, 28) so as to be spaced farther above said magnetic zones (12) of said platen and with each short leg (26, 28′) being sandwiched between the axially aligned long legs (26, 28′) of the next adjacent laminations so that the first legs (26, 26′) of said laminations are alternately short and long and the second legs (28, 28′) of said laminations are alternately short and long, said head including a second plurality (30) of U-shaped laminations extending transversely to said axis (A) of movement and disposed on adjacent centerlines spaced $p(n+\frac{1}{4})$ apart with the lower extremity of one leg (26, 28′) of each lamination being shorter than the other long leg (26′, 28) thereof so as to be spaced farther above said magnetic zones (12) of said platen and with each short leg (26, 28′) being sandwiched between the axially aligned long legs (26′, 28) of the next adjacent laminations so that the first legs (26, 26′) of said second plurality of laminations (30) are alternately short and long as are the second legs (28, 28′) thereof, said laminations of said first plurality (24) being transversely aligned with the laminations (26, 26′) of said second plurality (30) and with said first (26, 26′) and second (28, 28′) legs thereof being alternately short and long across aligned laminations of said first and second pluralities (24, 30) aligned transversely of said axis (A) of movement, said head (22) including a third plurality (32) of U-shaped laminations extending transversely to said axis (A) of movement and disposed on adjacent centerlines spaced $p(n\pm\frac{1}{4})$ apart with the lower extremity of one leg (26, 28′) of each lamination being shorter than the other long leg (26, 28′) thereof so as to be spaced farther above said magnetic (26, 28′) zones (12) of said platen and with each short leg (26, 28′) being sandwiched



between the axially aligned long legs (26′, 28) of the next adjacent laminations to that the first legs (26, 26′) of said third plurality (32) of laminations are alternately short and long as are the second legs (28, 28′) thereof, said head (22) including a fourth plurality (34) of U-shaped laminations extending transversely to said axis (A) of movement and disposed on adjacent centerlines spaced $p(n\pm\frac{1}{4})$ apart with the lower extremity of one leg (26, 28′) of each lamination being shorter than the other long leg (26′, 28) thereof so as to be spaced farther above said magnetic zones (12) of said platen and with each short leg (26, 28′) being sandwiched between the axially aligned long legs (26′, 28) of the next adjacent laminations so that the first legs (26, 26′) of said fourth plurality (34) of laminations are alternately short and long as are the second legs (28, 28′) thereof, said laminations of said third plurality (32) being transversely aligned with the laminations of said fourth plurality (34) and with said first (26, 26′) and second (28, 28′) legs thereof being alternately short and long across aligned laminations of said third (32) and fourth (34) pluralities aligned transversely of said axis (A) of movement, first bias magnet means (36) establishing magnetic flux for polarizing said first (26, 26′) and second (28, 28′) legs of said first plurality (24) of laminations (26, 26′) in opposite polarity to said first (26, 26′) and second (28, 28′) legs of said second plurality (30) of laminations, second bias magnet means (36′) establishing magnetic flux for polarizing said first (26, 26′) and second (28, 28′) legs of said third plurality (32) of laminations in opposite polarity to said first (26, 26′) and second (28, 28′) legs of said fourth plurality (34) of laminations, first winding means (38) looped between the first (26, 26′) and second (28, 28′) legs of said first plurality (24) of laminations for reinforcing the flux in axially aligned first legs (26, 26′)

while opposing the flux in the other axially aligned second legs (28, 28′) of said first plurality (24) of laminations and looped between the first (26, 26′) and second (28, 28′) legs of said second plurality (30) of laminations for reinforcing the flux in the axially aligned first legs (26, 26′) while opposing the flux in the other axially aligned second leg (28, 28′) of said second plurality (30) of laminations, and vice versa, depending upon the direction of electrical current flow in said first winding means (38), and second winding means (40) looped between said first (26, 26′) and second (28, 28′) legs of said third plurality (32) of laminations for reinforcing the flux in axially aligned first legs (26, 26′) while opposing the flux in the other axially aligned second legs (28, 28′) of said third plurality (32) of laminations and looped between said first (26, 26′) and second (28, 28′) legs of said fourth plurality (34) of laminations for reinforcing the flux in the axially aligned first legs (26, 26′) while opposing the flux in the other axially aligned second legs (28, 28′) of said fourth plurality (34) of laminations, and vice versa, depending upon the direction of electrical current flow in said second winding means (40) so that when said first (24) and second (30) plurality of laminations are axially aligned with and transversely overlying said magnetic zones (12) and said third (32) and fourth (34) plurality of laminations are axially offset p(n±½) and transversely overlapping said magnetic (12) and nonmagnetic (14) zones, said long legs (28) of said second legs (28, 28′) of each of said third (32) and fourth (34) plurality of laminations coact with the underlying magnetic zones (12) in response to current flow in said second winding means (40) in loop direction one (clockwise) to move said head (22) axially in one direction and said long legs (26′) of said first legs (26, 26′) of each of said third (32) and fourth (34) plurality of laminations coact with the underlying magnetic zones (12) in response to current flow in said second winding means (40) in loop direction two (counterclockwise opposite to direction one to move said head (22) axially in the opposite direction at which position current flow in said first winding means (38) in loop direction one causes said long legs (26′) of said first legs (26, 26′) of each of said first (24) and second (30) plurality of laminations to coact with the underlying magnetic zones (12) to move said head (22) axially in one direction or alternatively current flow in said first winding means (38) in loop direction two opposite to direction one causes said long legs (28) of said second legs (28, 28′) of each of said first (24) and second (30) plurality of laminations to coact with the underlying magnetic zones (12) to move said head (22) axially in the opposite direction.

4,535,261

SMALLSIZE MOTOR WITH REDUCTION GEAR AND CLUTCH MECHANISM

Kou Tsukamoto, and Masatoshi Hirate, both of Kasugai, Japan, assignors to CKD Controls Limited, Kasugai, Japan

PCT No. PCT/JP82/00214, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983

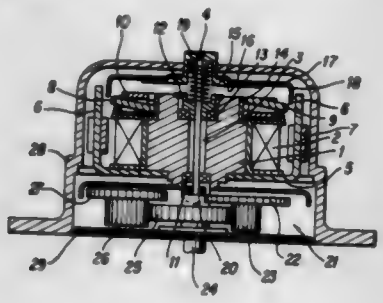
PCT Filed Jun. 1, 1982, Ser. No. 474,587

Claims priority, application Japan, Jun. 3, 1981, 56-85200; Aug. 13, 1981, 56-127096

Int. Cl.³ H02K 7/10

U.S. Cl. 310—78

1 Claim



1. A combined small-size motor and speed reduction mechanism which comprises:

a motor having a cylindrical magnetic core with an axial hole therethrough and an excitation coil disposed therearound,

a yoke disposed adjacent a first end of said core having pole pieces extending axially along said core in spaced relation to the circumference of said coil,

a rotatable shaft mounted for rotation within said core and for axial movement with respect to said motor,

a main pole and an interpole mounted on said core adjacent to second end thereof,

an annular spring support means mounted on said rotatable shaft adjacent second end of said core, said spring support means having an axial annular recess,

an absorbing member of magnetic material affixed to an end of said rotatable shaft and having an axial annular recess in opposed relationship to the recess of said spring support means,

a coil spring extending between and having its ends disposed in the annular recesses of said spring support means and said absorbing member, said spring axially moving said rotatable shaft away from the first end of said core when said field is not excited,

a non-magnetic disk means extending radially outward from said absorbing member and having a hysteresis ring depending axially therefrom, said disk means having a diameter larger than the diameter of said interpole and main pole,

a gear means mounted on the second end of said rotatable shaft, and

a speed reduction means activatable by the axial movement of said shaft,

wherein when said coil is excited a magnetic closed loop circuit is formed through said core, said absorbing member, said main pole, said interpole, said hysteresis ring, said yoke, and said core causing axial movement of said rotating shaft to thereby activate said speed reduction means.

4,535,262

DYNAMOELECTRIC MACHINE HAVING MEANS FOR DRAINING WATER FROM ENDSHIELD

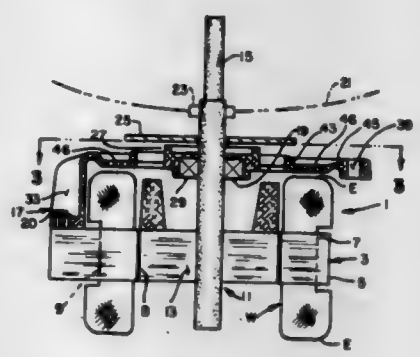
Barry M. Newberg, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Aug. 30, 1984, Ser. No. 646,008

Int. Cl.³ H02K 5/00

U.S. Cl. 310—88

5 Claims



1. In a dynamoelectric machine comprising a stator having a stator core, with the latter having a central bore therethrough, said stator core having a plurality of slots extending generally radially outwardly from said bore, and a plurality of windings inserted in said slots and extending out beyond the end faces of said core, a rotor assembly including a rotor body received within said bore, and a rotor shaft rotatable with said rotor body, said dynamoelectric machine further comprising endshield means secured to said core for rotatably journalling said rotor shaft relative to said core, said dynamoelectric machine being normally disposed in its application with said rotor shaft in a generally vertical direction, and with said end shield facing generally upwardly, said endshield means having portions thereof extending out beyond said stator and said windings,

wherein the improvement comprises: means formed integral with said endshield means in the outer, upwardly facing surface thereof for channeling water generally radially outwardly away from said rotor shaft to said portions of said endshield means out beyond said stator and windings, and drain opening means in said portions of said endshield means out beyond said stator and windings, said drain means receiving water from said portions of said endshields and extending down below said endshields so as to permit the drainage of water away from said endshield means in a direction clear of said stator and said windings.

4,535,263

ELECTRIC D.C. MOTORS WITH A PLURALITY OF UNITS, EACH INCLUDING A PERMANENT MAGNET FIELD DEVICE AND A WOUND ARMATURE FOR PRODUCING POLES

Robert W. Avery, Blagdon, England, assignor to Fairey Hydraulics, Ltd., England

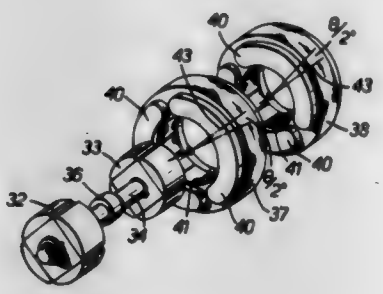
PCT No. PCT/GB82/00019, § 371 Date Sep. 13, 1982, § 102(e) Date Sep. 13, 1982, PCT Pub. No. WO82/02619, PCT Pub. Date Aug. 5, 1982

PCT Filed Jan. 25, 1982, Ser. No. 422,903

Claims priority, application United Kingdom, Jan. 23, 1981, 8102022

Int. Cl.³ H02K *7/20, 37/00*

U.S. Cl. 310—112 **4 Claims**



1. An electric D.C. motor comprising two or more units each including a permanent magnet field device mounted to move angularly through a limited angle of rotation only relatively to a wound armature having coils for producing, when energized by a direct current, the same number of poles as the field, but located in a second number of equally spaced slots equal to an integral multiple of the number of poles, the wound armatures of all of said units being connected for simultaneous energization by a direct current in accordance with a demand signal, the units being mounted with the permanent field devices mechanically connected together in such relative position that the relative positions of the armature slots in relation to the poles of the permanent magnet field device of different motor units differs by an angle substantially equal to the slot pitch divided by the number of motor units so that their cogging torques substantially cancel out.

4,535,264

SLIP RING ASSEMBLY WITH INNER RECESS TO PREVENT SHORTING

Maurice J. Allport, Edgbaston, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

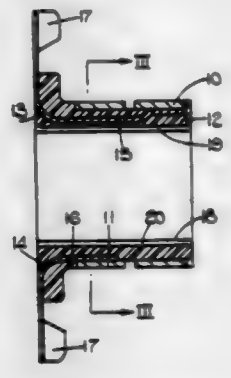
Filed Apr. 26, 1983, Ser. No. 488,660

Claims priority, application United Kingdom, May 6, 1982, 8213148

Int. Cl.³ H02K *39/08*

U.S. Cl. 310—232 **7 Claims**

1. A slip ring assembly for a rotary electric machine, comprising a body formed from electrically insulating material and having an external surface, at least one electrically conductive slip ring supported on said external surface of said body, and at least one electrically conductive connector element electrically connected to said at least one slip ring and extending axially of said body, said at least one connector element having a part which is disposed inwardly of said at least one slip ring and which is embedded in said body, said body having an internal bore which is adapted to receive a shaft of said rotary electric machine, the internal bore being provided with recess means for maintaining a positive clearance between said connector element and the shaft to prevent shorting of said connector element and the shaft, said recess means being defined in



the surface of said body adjacent to said internal bore and extending axially of said body for substantially the entire axial extent of said port along said body, said recess means being disposed radially inwardly of said part of said at least one connector element to be interadjacent thereto and interposed between said connector element and the shaft whereby the shaft is separated from said body adjacent to said part by said recess means.

4,535,265

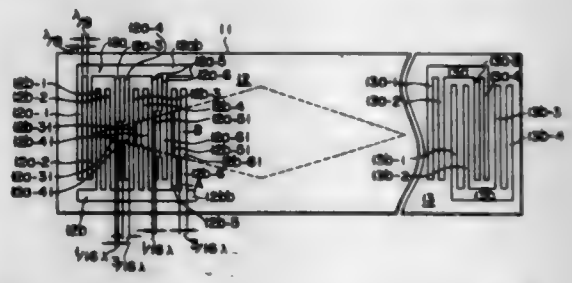
SURFACE ACOUSTIC WAVE TRANSDUCER WITH INTERNAL ACOUSTIC REFLECTION

Toshikazu Kodama, and Koji Sato, both of Yokohama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed May 17, 1984, Ser. No. 611,544

Int. Cl.³ H03H *9/25*

U.S. Cl. 310—313 C **11 Claims**



1. A surface acoustic wave transducer comprising:

a piezoelectric substrate;

a first comb-shaped electrode formed on one surface of the piezoelectric substrate and having a plurality of parallel strips extending at right angles to the direction in which surface acoustic waves propagate; and

a second comb-shaped electrode formed on the piezoelectric substrate and having a plurality of parallel strips interdigitated with the strips of said first comb-shaped electrode, extending at right angles to the direction in which the waves propagate;

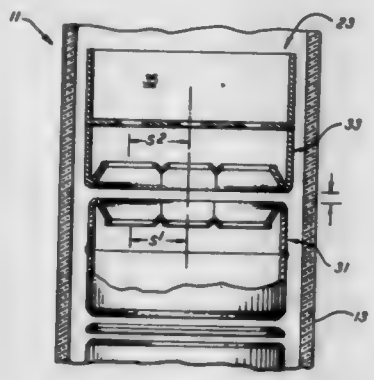
the parallel strips provided in at least one of said first and second comb-shaped electrodes having each a first portion which corresponds to said first portion and which only electrically reflects the waves and a second portion which both electrically and acoustically reflects the waves, and an effective length of said second portion being weighted in a propagation direction of a surface acoustic wave in a predetermined fashion.

4,535,266

IN-LINE ELECTRON GUN STRUCTURE FOR COLOR CATHODE RAY TUBE HAVING TAPERED WALLS AND ELONGATED APERTURES FOR BEAM SPOT-SHAPING

Donald L. Say, Waterloo, N.Y., assignor to North American Philips Consumer Electronics Corp., New York, N.Y.

Filed May 2, 1983, Ser. No. 490,639
Int. Cl.[3] H01J *26/62*
U.S. Cl. 313—414 9 Claims



1. In an in-line electron gun structure for a color cathode ray tube, a lensing arrangement in the final focusing and accelerating electrodes comprising:

a first lensing structure in the forward portion of the focusing electrode, such structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having front beam exits and smaller dimensioned rear beam entrances, the front exits and rear entrances being generally circular and separated by sloping sidewalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate rounded saddle along the region of intersection, such structure resulting from the partial overlapping of geometric constructions of the volumetric configurations; and

a second lensing structure in the rear portion of the final accelerating electrode in adjacent, facing relationship with the first structure, such second structure having three in-line tapered apertures of substantially truncated volumetric configuration having substantially parallel axes of symmetry, each aperture having rear beam entrances and smaller dimensioned front beam exits, the front exits and rear entrances being generally circular and separated by sloping sidwalls, a portion of the sidewall of each aperture intersecting with a portion of the sidewall of an adjacent aperture to form an inwardly sloping arcuate rounded saddle along the region of intersection, such structure resulting from the partial overlapping of geometric constructions of the volumetric configurations,

at least one of said entrances and exits in said first and second lensing structures being elongated to provide electron beam spot-shaping, elongation in the first structure being normal to the in-line plane and elongation in the second structure being in the direction of the in-line plane.

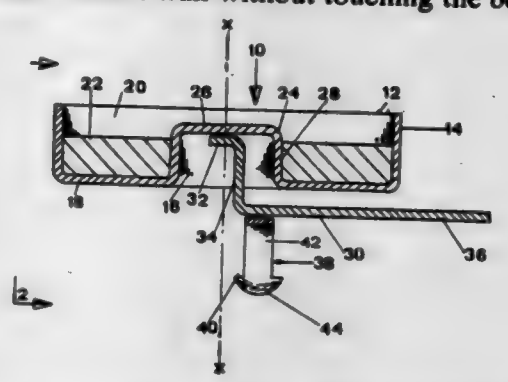
4,535,267

GETTER ASSEMBLY WITH IMPROVED SUPPORT

Daniele Martelli, and Giuseppe Lani, both of Milan, Italy, assignors to SAES Getters S.p.A., Milan, Italy

Filed Nov. 7, 1983, Ser. No. 549,406
Claims priority, application Italy, Nov. 11, 1982, 24192 A/82
Int. Cl.[3] H01J *29/94*
U.S. Cl. 313—481 7 Claims

1. A getter assembly for a cathode ray tube comprising an annular getter material container having an outer side wall, an inner side wall and a bottom wall joining said outer side wall to said inner side wall so defining an annular channel which contains powdered getter material the top of said inner side wall being integrally formed round a disc shaped member to form an upraised bottom portion, a tab member is affixed centrally of said disc shaped member by means of a horizontal welding zone and further comprises a downwardly dependent zone which is distanced away from said inner side wall and an outwardly extending zone situated in a plane substantially parallel to said bottom wall without touching the bottom wall



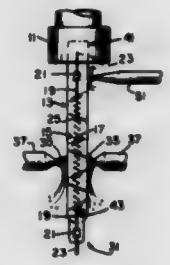
and extending to a distance greater than the radius of the outer wall and a support means attached to said tab member said support means having at least two concave surfaces facing said bottom wall and lying in a plane perpendicular to the outwardly extending zone of the tab member.

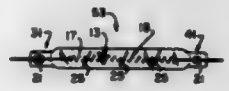
4,535,268

HIGH PRESSURE TIPLESS TUNGSTEN HALOGEN LAMP

Merle E. Morris, Lexington; Steven L. Meade, Winchester, and Lawrence M. Rice, Lexington, all of Ky., assignors to GTE Products Corporation, Danvers, Mass.

Filed Mar. 30, 1983, Ser. No. 480,530
Int. Cl.[3] H01K *1/28, 1/50, 3/22, 3/26*
U.S. Cl. 313—569 24 Claims



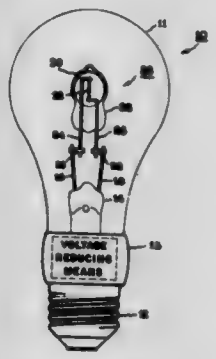


1. In a tungsten halogen lamp including a tubular envelope of vitreous material containing a combined atmosphere therein and having substantially regular and smooth outer surfaces and first and second, opposed sealed end portions, and a coiled tungsten filament located within said envelope, the improvement wherein said combined atmosphere is established at high pressure greater than one atmosphere and comprises a gas misture and nitrogen, said gas mixture including an inert gas and a halogen compound formed by gasification of a pool of liquified gas sealed within said envelope, said nitrogen being present within said envelope at a pressure of one atmosphere by flowing said nitrogen established at a pressure of one atmosphere into an open end of said envelope immediately prior to sealing thereof, said tubular envelope not including a protruding, residual tip or the like thereon.

4,535,269
INCANDESCENT LAMP

Charles D. Tschetter, Mayfield Village, and Rolf S. Bergman, Cleveland Heights, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,164
Int. Cl.[3] H01J *5/02;* H01K *1/32*
U.S. Cl. 313—579 4 Claims



1. An efficacy improved general service incandescent lamp comprising:

(a) a housing having an electrically conductive base;

(b) an outer envelope attached to said housing;

(c) an inner envelope having an outer surface of revolution which is substantially ellipsoidal with internally located related foci, said inner envelope being spatially supported within said outer envelope, containing a halogen gas along with a fill-gas at a pressure significantly above atmospheric, and having an IR reflective film covering the substantially ellipsoidal outer surface thereof,

(d) a filament adapted to be effectively energizable for normal operating wattage rating at a reduced voltage relative to a typical household power source, said filament being spatially predetermined within said inner envelope, located longitudinally along the major axis of the inner envelope, and its lighted length fully occupying the distance between the foci of the inner envelope;

whereby during the operation of said lamp said film substantially transmits visible radiation and substantially reflects toward said filament infrared radiation emitted by said filament, said film being capable of such transmission and reflection for temperatures approaching the softening point of the material of the inner envelope.

4,535,270
RESONANT DEGAUSSING WITHOUT RESIDUAL MAGNETISM

Keith R. Frantz, Myerstown; Robert A. Barnes, Bainbridge, and Bruce G. Marks, Lancaster, all of Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Nov. 17, 1983, Ser. No. 553,007
Int. Cl.[3] H01J *29/06*
U.S. Cl. 315—8.0 5 Claims

1. A degaussing circuit for a cathode ray tube of a video display apparatus incorporating means for providing field and line rate deflection currents during a field and line deflection interval through a deflection yoke disposed on said cathode ray tube, said degaussing circuit comprising:

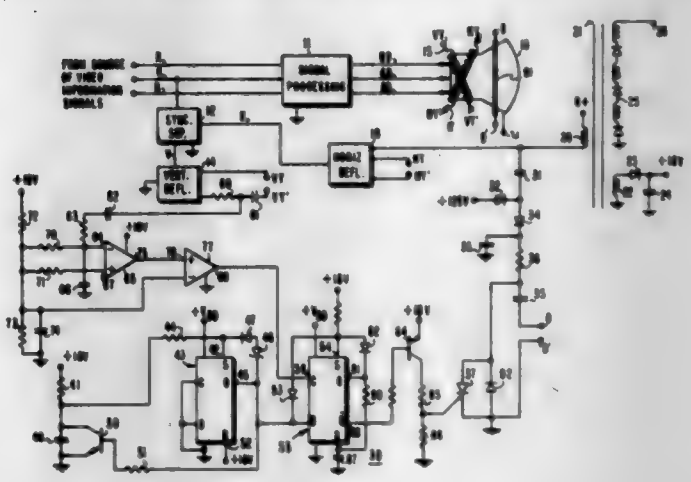
a source of voltage;

a capacitor charged from said source of voltage;

a degaussing coil disposed about said cathode ray tube;

means providing an output signal as an indication of substantially zero deflection current; and

switch means responsive to said output signal for coupling said capacitor to said degaussing coils for providing a decaying alternating current flow in said degaussing coil,

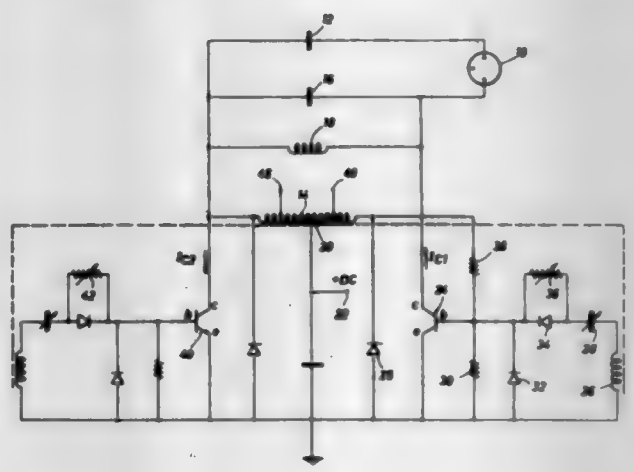


said alternating current decaying substantially to zero during a fraction of said field deflection interval.

4,535,271
HIGH FREQUENCY CIRCUIT FOR OPERATING A HIGH-INTENSITY, GASEOUS DISCHARGE LAMP

Kenneth P. Holmes, Houston, Tex., assignor to Wide-Lite International, San Marcos, Tex.

Continuation of Ser. No. 700,222, Jul. 26, 1976, abandoned, which is a continuation-in-part of Ser. No. 654,926, Feb. 2, 1976, abandoned. This application Apr. 24, 1978, Ser. No. 899,479
Int. Cl.[3] H05B *37/02, 39/04, 41/36*
U.S. Cl. 315—209 R 19 Claims



1. A circuit for operating a high frequency, gaseous discharge lamp, comprising

a push-pull, Class C oscillator having a resonant circuit including a high-Q coil connected to a first operating electrode of the lamp, said oscillator being connected to a power source, said resonant circuit establishing an operating frequency in the range between approximately 60 kHz and 100 kHz,

a ballast impedance connected to a second operating electrode of the lamp, and

said high-Q coil in said resonant circuit providing the lamp with high power and high frequency current.

4,535,272

IMAGE DISPLAY APPARATUS

Minoru Ueda, Takatsuki; Sadahiro Iyehara, Suita; Mitsuya Masuda, Kyoto; Shizuo Inohara, Toyonaka, and Keisuke Yamamoto, Ibaraki, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

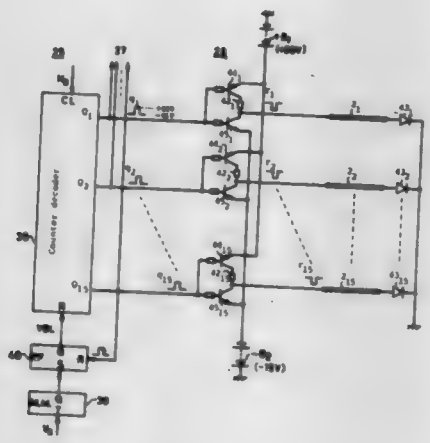
Filed Nov. 5, 1982, Ser. No. 439,548

Claims priority, application Japan, Nov. 16, 1981, 56-183555; Oct. 1, 1982, 57-173425; Oct. 5, 1982, 57-175517; Oct. 5, 1982, 57-175518

Int. Cl.[3] H01J *29/70, 29/72*

U.S. Cl. 315—366

17 Claims



1. An image display apparatus comprising:

a phosphor screen,

an electron beam source having a first predetermined number of line cathode for in turn emitting said first predetermined number of horizontal rows of electron beams, each row having a second predetermined number of rod shaped electron beams,

horizontal deflection means for horizontal deflections of said electron beams,

vertical deflection means for vertical deflections of said electron beams of the horizontal rows and electron beams for controlling said electron beams,

characterized by further comprising,

switch pair means of said first predetermined number, each switch pair means being for controlling heatings and electron emissions of corresponding one of said line cathodes and comprising each other oppositely working first switching means and second switching means, said first switching means being for switching cathode heating current from a first power source and said second switching means being for switching cathode bias voltage from a second power source to bias a selected cathode and

control means for controlling said switch pair means by giving control signals to said switch pair means thereby closing said first switch and opening said second switch to in turn make the line cathode to emit electrons.

4,535,273

TRANSFORMERLESS SWITCHING CIRCUIT FOR DRIVING A HORIZONTAL OUTPUT TRANSISTOR

Richard W. Midland, Inverness, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Continuation of Ser. No. 312,583, Oct. 19, 1981, abandoned. This application Aug. 17, 1984, Ser. No. 641,633

Int. Cl.[3] H01J *29/70, 29/76*

U.S. Cl. 315—401

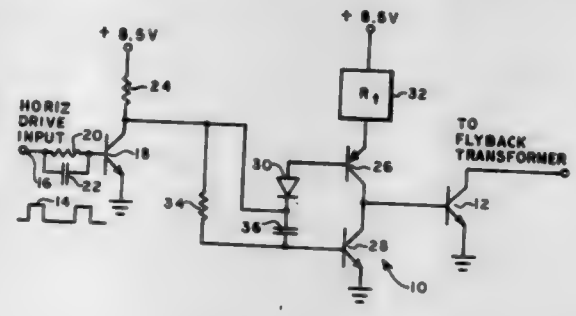
6 Claims

1. A transformerless, temperature compensated switching circuit for turning a horizontal output transistor off and on in response to horizontal rate input pulses, comprising:

a first transistor responsive to the input pulses for alternately switching from a conductive state to a non-conductive state;

a second transistor having a collector-emitter circuit coupled to the horizontal output transistor and being responsive to the conductive state of the first transistor for supplying base current from said collector-emitter circuit to the horizontal output transistor;

temperature compensating means coupled to the collector-emitter circuit of the second transistor for varying the gain thereof and thereby the amplitude of the base current supplied to the hozizontal output transistor as a function



of temperature so as to maintain the saturation current of the latter transistor substantially constant as its current gain changes with variations in temperature; and

a third transistor coupled to the horizontal output transistor and responsive to the non-conductive state of the first transistor for providing a low impedance current discharge path at the base of the horizontal output transistor for rapidly turning off the latter transistor.

4,535,274

DRIVING CIRCUIT FOR BRUSHLESS D.C. MOTOR

Isamu Suzuki, Funabashi, and Yoshio Hattori, Zushi, both of Japan, assignors to Toyo Electric Co., Ltd., Tokyo, Japan

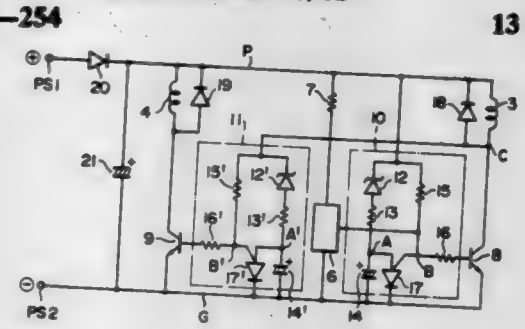
Filed Jul. 16, 1984, Ser. No. 630,961

Claims priority, application Japan, Jul. 20, 1983, 58-130864; Sep. 2, 1983, 58-160486

Int. Cl.[3] H02P *6/02*

U.S. Cl. 318—254

13 Claims



13. A driving circuit for a brushless motor which is adapted to supply exciting current to exciting windings of said motor from a power supply in turn to rotate a permanent-magnetic rotor, comprising:

a rotor position detecting means for detecting the position of said rotor;

transistors connected in series to said exciting windings and adapted to allow exciting current to flow to said exciting windings when they are rendered conductive, respectively; and

transistor control circuits provided with respect to said transistors to control said transistors depending upon the output of said rotor position detecting means;

said transistor control circuits each comprising:

a series circuit comprising first and second resistors and provided between the base of said transistor and one of the outputs of said power supply to allow current to be supplied to said base of said transistor;

a series circuit comprising a Zener diode, a third resistor and a capacitor connected in series together and provided between both outputs of said power supply, said Zener diode having a Zener level selected to exceed the starting voltage of said motor; and

a PUT of which the anode-cathode circuit is connected in

parallel to both ends of said capacitor and the gate is connected to the connection between said first and second resistors.

4,535,275

BRUSHLESS D-C MOTOR SYSTEM WITH IMPROVED COMMUTATION CIRCUIT

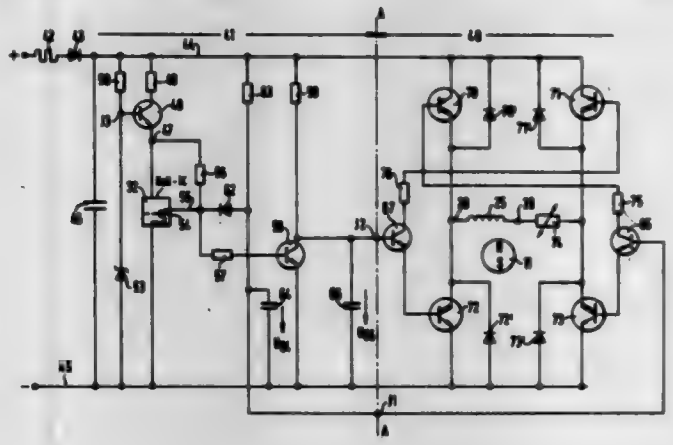
Rolf Müller, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co., KG, St. Georgen, Fed. Rep. of Germany

Filed Dec. 7, 1982, Ser. No. 447,688

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1981, 3150922; Dec. 23, 1981, 3150923

Int. Cl.³ H02P *6/02*

U.S. Cl. 318—254 **33 Claims**



1. Brushless d-c motor system having

a stator having at least one winding;

a permanent magnet rotor in magnetic inductive position with respect to the stator;

means for sensing rotor position and for deriving a signal representative of the position of the rotor with respect to the stator;

power supply buses for connection to a direct current source;

a four transistor bridge circuit having four transistors arranged as two bridge-halves, of which each half includes two of the four transistors, and carries current through the winding in a respective one of two opposite directions,

said four transistor bridge circuit forming a full bridge, and being connected to the terminals of said winding,

said full bridge circuit being further connected to and controlled by the rotor position sensing means;

two capacitance means;

first and second voltage changing means, connected to the capacitance means for changing the voltage on the associated capacitance means, each bridge-half including a respective capacitance means,

one of said voltage changing means forming a capacitance charging means and the other of said voltage changing means forming a capacitance discharge means;

each of said capacitance means being connected to the respective bridge-half such that the voltage of the capacitance means determines the degree of conductivity of at least one of the two transistors of the respective bridge-half;

the change of voltage on the capacitance means, effected by the associated first voltage changing means causing the respective bridge-half to become conductive, and the change in the voltage on the capacitance means effected by the associated second voltage changing means causing the respective bridge-half to become non-conductive or to block;

and wherein the transistors of the four transistor bridge circuit, the capacitance means, and the first and second voltage changing means are so dimensioned relative to each other that the voltage change effected by each of the first voltage changing means is slower than that effected by the second voltage changing means, to produce a time gap between switching OFF of one bridge-half and subsequent switching ON of the other bridge-half.

4,535,276

OUTPUT CIRCUIT AND BRUSHLESS MOTOR USING THE SAME

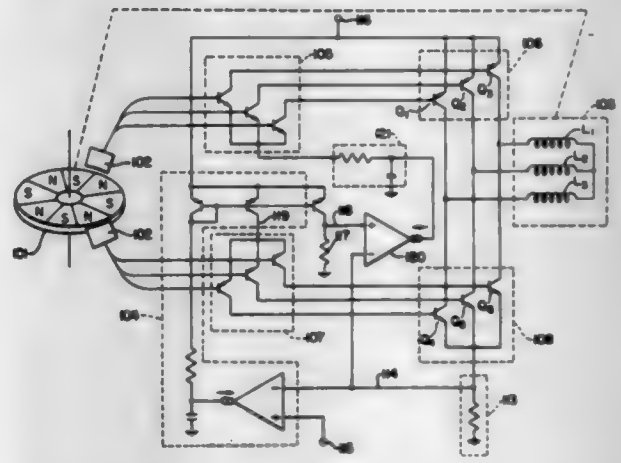
Nobuyoshi Yokobori, Osaka, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Jan. 10, 1984, Ser. No. 569,762

Claims priority, application Japan, Jan. 12, 1983, 58-3675; Jan. 24, 1983, 58-10405; Jan. 25, 1983, 58-10698; Jan. 26, 1983, 58-11858; Jan. 27, 1983, 58-12318; Jan. 28, 1983, 58-13054

Int. Cl.³ H02P *6/02*; G05F *1/56*

U.S. Cl. 318—254 **9 Claims**



1. An output circuit comprising: a voltage control means connected to one end of a load; a current control transistor connected to the other end of said load; first current detecting means for detecting the emitter current of said current control transistor; a first amplifier for amplifying an error between an output signal of said first current detecting means and a current command signal; a distributor for distributing the output of said first amplifier to the base of said current control transistor and a second current detecting means; a second amplifier for amplifying a difference between the output signals of said first and second current detecting means, whereby the output of said second amplifier controls said voltage control means.

4,535,277

POSITION CONTROL APPARATUS AND METHOD

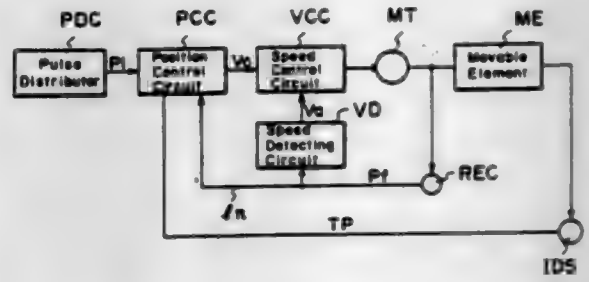
Mitsuo Kurakake, Hino, Japan, assignor to Fanuc Ltd., Minamitsuru, Japan

Filed Apr. 13, 1983, Ser. No. 484,537

Claims priority, application Japan, Apr. 16, 1982, 57-63309

Int. Cl.³ G05B *13/00*

U.S. Cl. 318—561 **5 Claims**



1. A position control apparatus of a closed-loop configuration for controlling the position of a movable machine element driven by a motor having a shaft and receiving position command pulses, comprising:

a position detector provided on the movable machine element for detecting the position thereof, said position de-

tector producing a position signal indicative of the detected position;

a rotary encoder provided on the motor shaft for detecting the rotational speed of the motor, said rotary encoder generating pulses of a number proportional to the detected rotational speed, the total number of said pulses representing the position of the motor and the frequency thereof representing the actual speed of the motor;

position control means, operatively connected to said position detector and said rotary encoder, for producing a control signal based upon the position signal from said position detector and the total number of pulses from said rotary encoder, said position control means comprising:

an arithmetic unit, operatively connected to said rotary encoder and said position detector, for computing a first difference between the position signal and the total number of pulses;

a first order lag circuit operatively connected to receive the first difference;

an adder, operatively connected to said first order lag circuit and to receive the position command pulses, for summing the position command pulses and the first difference; and

a first subtractor, operatively connected to said adder and said rotary encoder, for computing a difference between the sum produced by said adder and the total number of pulses, and outputting the difference as the control signal; and

speed control means, operatively connected to said position control means, said rotary encoder and the motor, for producing a motor control signal based upon the control signal from said position control means and the frequency of the pulses from said rotary encoder, the motor being driven by said motor control signal to control the position of the movable machine element, said speed control means comprising:

a frequency converter, operatively connected to said rotary encoder, for converting the frequency into an actual speed signal; and

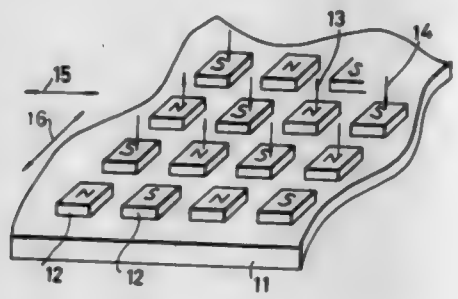
a second subtractor, operatively connected to said first subtractor, said frequency converter and the motor, for computing the difference between the control signal and the actual speed signal and producing the motor control signal.

4,535,278

TWO-DIMENSIONAL PRECISE POSITIONING DEVICE FOR USE IN A SEMICONDUCTOR MANUFACTURING APPARATUS

Teruo Asakawa, Nirasaki, Japan, assignor to Telmec Co., Ltd., Nirasaki, Japan

Filed Apr. 1, 1983, Ser. No. 481,324
Claims priority, application Japan, Apr. 5, 1982, 57-56344
Int. Cl.³ G05B *11/00*
U.S. Cl. 318—687 **18 Claims**



1. A two-dimensional current-motion converter comprising:

a magnetic field group formed from a plurality of magnetic fields disposed on a plane in a two-dimensional array, the centers of the magnetic fields of the array being separated by an equal period, the magnetic fields of the array being disposed perpendicular to the plane andadjacent magnetic fields being directed in alternate directions; and

a first coil group comprising at least first, second, third and fourth coils having a fixed dimensional relationship:

(i) each coil of said first coil group being provided with an outer dimension approximately equal to 3/2 of the period of the array of magnetic fields;

(ii) each coil of said first coil group being provided with a winding width approximately equal to ½ of the period of the array of magnetic fields;

(iii) said second coil of said first coil group being displaced along the plane from said first coil by an odd number multiple of approximately ½ of the period of the array of magnetic fields;

(iv) said third coil of said first coil group being displaced aong the plane in a direction orthogonal to the direction of displacement of said second coil by an odd number multiple of approximately ½ of the period of the array of magnetic fields; and

(v) said fourth coil of said first coil group being displaced along the plane from both said second and said third coils by an odd number multiple of approximately ½ the period of the array of magnetic fields;

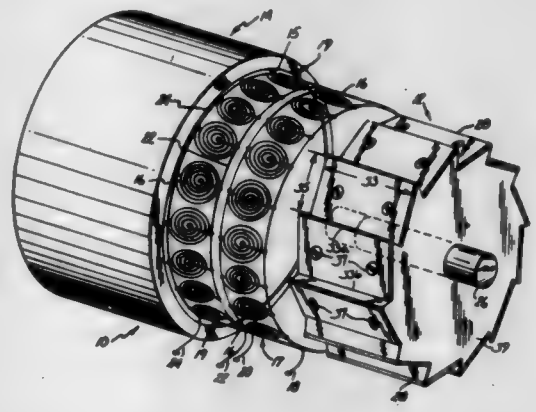
one of said magnetic field groups and said first coil group being freely movable along the plane.

4,535,279

IMPULSE MOTOR STRUCTURE, DRIVE SYSTEM AND CONTROL CIRCUIT

Dominic Arbisi, 13001 Berkshire Dr., Minnetonka, Minn. 55343, and Roger E. Mitchell, 3710 Vincent Ave. South, Minneapolis, Minn. 55410

Filed Aug. 1, 1983, Ser. No. 519,203
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—696 **18 Claims**



16. An impulse motor comprising:

a stator of cylindrical shape positioned about a rotational axis and containing a plurality of primary drive coils circumferentially arranged around the stator in a first track, each primary drive coil of the first track being oriented to produce a magnetic field in a radial direction when energized; and

a rotor positioned for rotation about the rotational axis and containing a plurality of electrically conductive elements circumferentially arranged around the rotor; each electrically conductive element being oriented parallel to the rotational axis and tilted with respect to a plane orthogonal to a radial axis, the primary drive coils when energized inducing circulating currents in the conductive elements thereby creating opposing forces between the conductive elements and the primary drive coils, a sum of the opposing forces including a circumferential component which causes rotational motion of the rotor; and

means for periodically energizing the coils of the first track.

4,535,280

STABILIZING CIRCUIT FOR AN INVERSE RECTIFIER MOTOR CONTROL

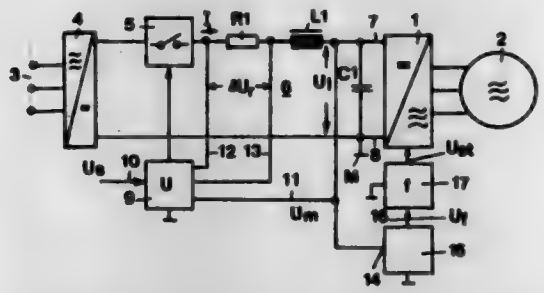
Nils-Ole Harvest, and Anna Melamed, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 28, 1984, Ser. No. 594,300

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3313124

Int. Cl.[3] H02P *5/40*

U.S. Cl. 318—798 10 Claims



1. A stabilizing circuit for an inverse rectifier motor control, comprising, a D.C. voltage supply having a D.C. voltage regulator followed by a smoothing intermediate circuit which outputs a supply voltage, a frequency control circuit for converting said supply voltage to a frequency control voltage, a generator for converting said frequency control voltage to control signals for said inverse rectifier motor control, a frequency dependent filter for for said control circuit, said frequency control circuit including longitudinal branch means having a main resistor and a shunt connection of two series connected resistors, said frequency control circuit including transverse branch means having parallel diode and resistor means and a capacitor connected in series therewith, said capacitor being connected between said series connected resistors, said longitudinal and transverse branches being responsive to an increased frequency of the A.C. voltage components of said supply voltage and being operable to charge said capacitor at a slower rate than the discharge thereof so that the output of said frequency control circuit is a summation of said supply voltage and the voltage of said capacitor to effect (1) an increase of the mean value of said frequency control voltage relative to the mean value of said supply voltage and (2) a reduction of the amplitude of the A.C. voltage component of said frequency control voltage relative to said A.C. voltage component of said supply voltage.

4,535,281

AUTOMATIC VOLTAGE REGULATING SYSTEM FOR ELECTRIC GENERATOR

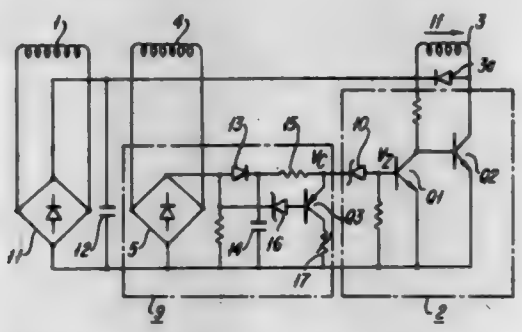
Motohiro Shimizu, Asaka, and Shigeru Fujii, Sayama, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1983, Ser. No. 550,673

Claims priority, application Japan, Nov. 10, 1982, 57/197139

Int. Cl.[3] H02P *9/30, 9/14*

U.S. Cl. 322—28 18 Claims



1. An automatic voltage regulating system for an electric generator comprising a detection coil for detecting the output voltage of an AC generator; said generator having a field coil and an exciting coil for supplying a field current to said field coil; a detection circuit means for rectifying and smoothing the output voltage of the detection coil to form a pulse voltage therefrom; and a control circuit means coupled to said detection circuit means, for comparing the pulse voltage to a predetermined voltage and for controlling the supply of field current to said field coil as a function of the comparison; said detection circuit means including a rectifying circuit means for rectifying the output voltage of said detection coil, a smoothing circuit means, coupled thereto, for smoothing the output voltage, and regulating circuit means coupled to the output of said smoothing circuit means for shifting the voltage level thereof, wherein said regulating circuit means shifts the level of the voltage in said smoothing circuit means by comparing the voltage in said rectifying circuit means with the predetermined voltage to control the field current during the period of the shifting of the voltage level.

4,535,282

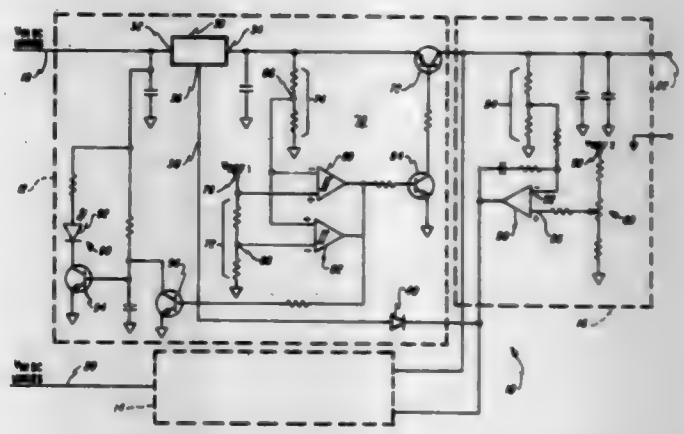
VOLTAGE REGULATION CIRCUIT

Chien Nguyen, Davie, Fla., assignor to Stromberg-Carlson Corp., Lake Mary, Fla.

Filed Dec. 14, 1983, Ser. No. 560,881

Int. Cl.[3] G05F *1/58*

U.S. Cl. 323—269 14 Claims



1. A circuit for supplying power at a regulated voltage level to an external circuit comprising:

(A) a plurality of power circuit means each for supplying power to the external circuit, each of said power circuit means having an input terminal for connection to an unregulated power supply and having an output terminal, with all of the output terminals being connected together for connection to the external circuit, each said power circuit means further having:

(i) voltage regulating means connected to said input terminal for receiving power from said unregulated power supply and for generating at an output a regulated voltage at a level determined by a correction signal; and

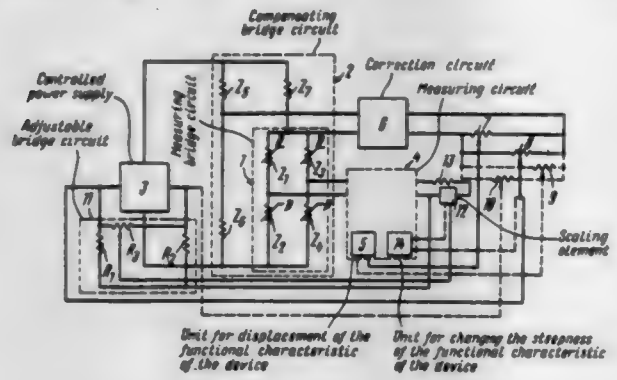
(ii) switch means connected to the output of said voltage regulating means and to said output terminal for receiving the regulated output from said voltage regulating means and for coupling the voltage to the external circuit and for switching off the voltage provided by said voltage regulating means if the voltage from said voltage regulating means is outside of a selected range; and

(B) correction signal generating means connected to the output terminals of all of said power circuit means and to all of said voltage regulating means for generating the correction signal and for coupling it to all of said voltage regulating means in response to variations in the regulated voltage at said output terminals to maintain the voltage supplied to the external circuit at a selected level.

4,535,283
DEVICE FOR CONVERSION OF NON-ELECTRICAL QUANTITY INTO ELECTRICAL SIGNAL

Lev M. Rabinovich; Albert Y. Jurovsky; Jury M. Brodkin; Viktor A. Puginsky; Georgy G. Iordan; Vilen I. Serdjukov; Vadim K. Sukhodolets; Galina V. Tikhnova, and Galina M. Golikova, all of Moscow, U.S.S.R., assignors to Gosudarstvenny Nauchno-Issledovatelsky Institut Teploenergeticheskogo Priborostroenia, Moscow, U.S.S.R.

Filed Apr. 18, 1983, Ser. No. 485,631
Int. Cl.[3] H03H *9/02*
U.S. Cl. 323—365 6 Claims



1. A device for conversion of a nonelectrical quantity into an electrical signal comprising:

a measuring bridge circuit for forming an electrical signal corresponding to the nonelectrical quantity being converted;

said measuring bridge circuit including arms, which are elements whose impedances change under the influence of the nonelectrical quantity;

one of said arms being a supply arm of said measuring bridge circuit;

another of said arms being a measuring arm of said measuring bridge circuit;

a compensating bridge circuit for forming a signal to correct the initial amplitude and steepness of the functional characteristic of the device;

first, second third and fourth arms of said compensating bridge circuit;

said measuring bridge circuit being said first arm of said compensating bridge circuit;

said other arms of said compensating bridge circuit being elements whose impedances are not functions of said nonelectrical quantity being converted;

one of said other arms being a supply arm of said compensating bridge circuit;

another of said other arms being a measuring arm of said compensating bridge circuit;

a controlled power supply providing passage of current through said elements of said measuring and compensating bridge circuits and including control inputs;

said supply or arms of said measuring and compensating bridge circuits, connected to said controlled power supply;

a measuring circuit for measuring the level of the electrical signal and including an input and an output;

a load forming an output circuit connected to said output of said measuring circuit;

a unit for displacement of the functional characteristic of the device of said measuring circuit for regulation of the initial amplitude of the output signal of the device, said unit including a control output;

said measuring arm of said measuring bridge circuit, being connected to said input of said measuring circuit;

a circuit for scaling the functional characteristic of the device;

a correction circuit for conversion of the signal taken from said measuring arm of said compensating bridge circuit into a control signal for said unit for displacement of the functional characteristic of the device and for the circuit for scaling the functional characteristic of the device, said correction circuit including an input and differential outputs;

said measuring arm of said compensating bridge circuit, connected to said input of said correction circuit;

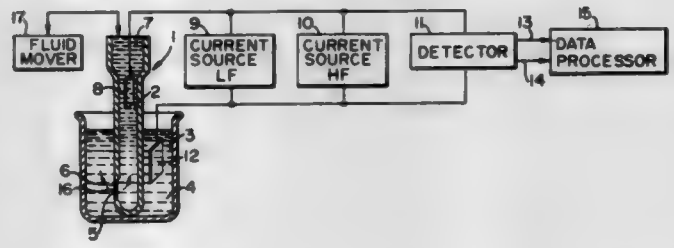
at least one first adjustable divider intended for compensation of variations of the initial value of the functional characteristic of the device, the number of said correction circuits being determined by the number of required corrections of the initial value of the functional characteristic of the device, said correction circuits being connected to said input of said unit for displacement of the functional characteristic of the device; and

at least one second adjustable divider intended for compensation of variations in the steepness of the functional characteristic of the device, each second adjustable divider including an output, the number of said second adjustable dividers being determined by the number of required corrections of the steepness of the functional characteristic of the device, said second adjustable dividers being connected to said circuit for scaling the functional characteristic of the device.

4,535,284
HIGH AND LOW FREQUENCY ANALYSIS OF OSMOTIC STRESS OF CELLS

Michael R. Groves, and Carlos M. Rodriguez, both of Miami, Fla., assignors to Coulter Electronics, Inc., Hialeah, Fla.

Filed Jul. 10, 1981, Ser. No. 282,293
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—71.1 19 Claims



1. In a method wherein osmotic activity of biological cells is induced by an osmotic or lytic shock and is monitored in a particle analyzer having an aperture for electronic particle volume sensing, the improvement comprising the steps of:

passing a high frequency current through said aperture to generate a detectable high frequency signal for each cell passing therethrough;

detecting said high frequency signals;

classifying the cells into subpopulations, representative of the state of osmotic activity of each cell, by their said high frequency signals.

4,535,285
APPARATUS FOR DETERMINING AN ELECTRICAL CHARACTERISTIC OF A FIBROUS DISPERSION

Brian E. Evans; Stephen R. Hemm, both of High Wycombe, and Rupert A. V. Russell, London, all of England, assignors to The Wiggins Teape Group Limited, Hampshire, England

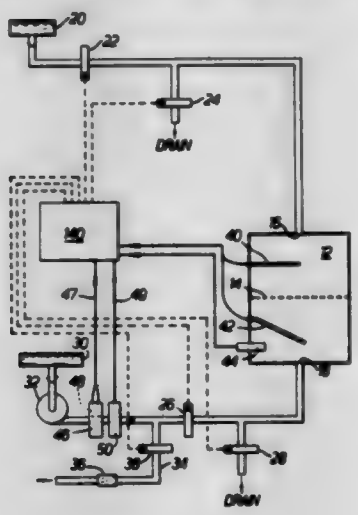
Filed Nov. 5, 1982, Ser. No. 439,406
Claims priority, application United Kingdom, Nov. 9, 1981, 8133786
Int. Cl.[3] G01N *27/00*
U.S. Cl. 324—71.1 23 Claims

1. A measuring apparatus for use in the measurement of an electrical characteristic of a fibrous dispersion comprising:

a measuring cell having a housing defining a hollow interior, upper and lower ports in said housing to allow fluid to be passed therethrough in a generally vertical direction, and an essentially horizontally disposed filter mesh in said

housing dividing said interior hollow into upper and lower compartments, and a respective electrode in each of said compartments for measuring the streaming potential generated in the cell; and

respective first and second fluid conduit arrangements connected to said upper and lower ports respectively, the first conduit arrangement including respective connections for a source of flushing fluid and drain and valve means for



controlling the flow of fluid through said connections, and the second conduit arrangement including respective connections for a source of particle-bearing stock and drain, and valve means for controlling the flow of fluid through these last mentioned connections, whereby stock enters the cell to build a pad of particles on the underside of the filter mesh and the pad is subsequently flushed from the filter mesh to drain through said lower port.

4,535,286

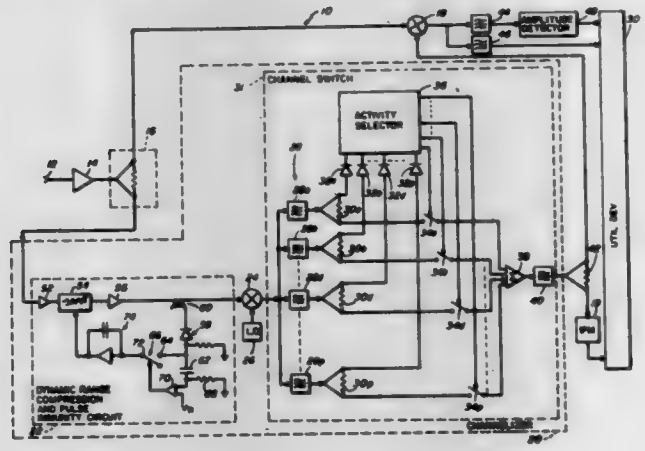
RADIO FREQUENCY RECEIVER

William B. Sullivan, Jr., Verona, N.J., assignor to Raytheon Company, Lexington, Mass.

Division of Ser. No. 90,811, Nov. 2, 1979, Pat. No. 4,363,139. This application Sep. 24, 1982, Ser. No. 423,411

Int. Cl.³ G01R *23/14*

U.S. Cl. 324—79 R **6 Claims**



1. In combination:

(a) passing means, having a predetermined bandwidth, for passing signals in a plurality of different portions of the predetermined bandwidth;

(b) detecting means, fed by the signals passed by the passing means, for detecting signals passing through the plurality of different portions of the predetermined bandwidth;

(c) coupling means, responsive to the detected signals, for coupling signals passing through a selected portion of the different portions of the predetermined bandwidth of the passing means to a common output while decoupling signals passing through the remaining different portions of the predetermined bandwidth of the passing means from the common output; and

(d) a frequency measuring means, responsive to signals having frequencies in the predetermined bandwidth, for determining the frequency of signals passing through the coupling means to the common output and having a frequency within the selected portion of the different portions of the predetermined bandwidth.

4,535,287

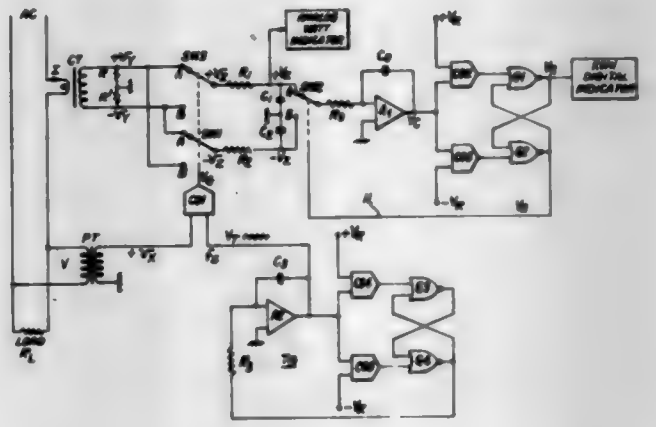
ELECTRONIC WATT/WATTHOUR METER WITH AUTOMATIC ERROR CORRECTION AND HIGH FREQUENCY DIGITAL OUTPUT

Miran Milkovic, Scotia, N.Y., assignor to General Electric Company, Somersworth, N.H.

Filed Mar. 25, 1983, Ser. No. 478,717

Int. Cl.³ G01R *21/06, 1/02*

U.S. Cl. 324—142 **13 Claims**



1. An improved electronic watt/watthour meter circuit having analog and high frequency digital outputs with automatic error correction comprising:

first transformer means having a primary winding for connection to a source of electric energy for excitation in response to either the electric current or the electric voltage supplied from the source of electric energy and a secondary winding for providing a first signal proportional thereto;

second transformer means having a primary winding for connection to the source of electric energy for excitation in response to the other of the electric current or electric voltage supplied from the source of electric energy and a secondary winding for providing a second signal proportional thereto;

multiplier circuit means for receiving and multiplying said first and second signals together and deriving an output product signal representative of instantaneous power being supplied by the source of electric energy;

said multiplier circuit means comprising comparator means for receiving said first signal and a sampling signal from a sampling signal source and deriving a pulse width modulated switching signal, and a multiplier switching circuit means responsive to and controlled by said pulse width modulated switching signal and having the second signal supplied to an output thereof for providing at its output a pulse width modulated and amplitude modulated product signal of the first and second signals and representative of the instantaneous power being supplied by the source of electric energy;

multiplier low pass filter circuit means coupled to the output from said multiplier circuit means for deriving from the pulse width modulated and amplitude modulated product signal an average value power signal V where $V = VI \cos \theta$ where V is the load voltage, I is the load current and θ is the load impedance phase angle;

analog-to-pulse rate converter means responsive to the average value power signal V from said multiplier low pass filter circuit means for summing and integrating the aver-

age value power signal V and converting it into a high frequency train of output signal pulses wherein each output signal pulse represents a predetermined quantized amount of electric energy;

automatic offset error correction circuit means responsive to the output from said analog-to-pulse rate converter means for automatic addition/subtraction averaging of system offset error signals during each quantizing period of operation of the analog-to-pulse rate converter means, said automatic offset error correction circuit means comprising polarity reversing switching means coupled intermediate the output from the multiplier low pass filter circuit means and the input to the analog-to-pulse rate converter means, the polarity reversing switching means being responsive to the output from the analog-to-pulse rate converter means for automatically switching the polarity of the average value power signal V supplied to the input of the analog-to-pulse rate converter means midway through the quantizing period for supplying unlike polarity average value power signals during respective half cycles of the quantizing period to cause an up/down integration of the average value power signal V over each quantizing period of operation of the analog-to-pulse rate converter means and simultaneously producing a sequential addition/subtraction of like polarity offset error signals over each quantizing period of operation to thereby cancel out the offset error signals automatically.

4,535,288

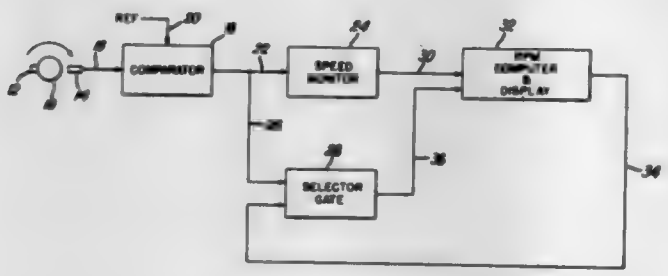
METHOD AND SYSTEM FOR ROTARY SPEED DETERMINATION

Joseph L. Vitulli, Jr., New Rochelle, N.Y., assignor to Magnetic Analysis Corporation, Mount Vernon, N.Y.

Filed Jul. 19, 1982, Ser. No. 399,320

Int. Cl.³ G01P *3/56*

U.S. Cl. 324—161 **13 Claims**



13. In combination, for determining the rotational speed of a body having a sensible indicium rotatable therewith, comprising:

(a) transducer means for sensing each revolution of said indicium and generating an output signal indicative of each such sensing;

(b) selector means for receiving each such means (a) output signal and responsive to a control signal for gating selective but not all of such received means (a) output signals therethrough;

(c) means for generating said control signals for such selective gating and for applying same to said means (b); and

(d) means for receiving such signals gated selectively through said means (b) for determining body rotational speed therefrom.

4,535,289

DEVICE FOR MEASURING A POSITION OF A MOVING OBJECT

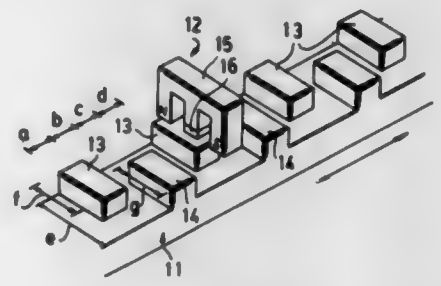
Kunihiro Abe, Higashimurayama, and Yoshihiko Morimoto, Hachioji, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 13, 1982, Ser. No. 377,640

Claims priority, application Japan, May 15, 1981, 56-73757

Int. Cl.³ G01B *7/14*; G01R *33/06*

U.S. Cl. 324—208 **11 Claims**



1. In a device for detecting the position of a moving body, having a sensor member including magnetic means for producing a magnetic field, converting means for converting variation of magnetic flux density of said magnetic field to variation of voltage, and a detected member made of magnetic material and one of said members being secured to said moving body such that said members undergo relative movement, said magnetic means and said detected member being disposed to form a magnetic circuit passing through said converting means, the improvement wherein

said detected member includes a plurality of projections arranged one after the other substantially in a direction of motion of said moving body with a space between adjacent of said projections, said spaces being one after the other substantially in said direction of motion of said moving body,

said magnetic means including a central end portion and two opposite end portions arranged transverse to the direction of motion of said moving body, said opposite end portions being magnetized in opposite polarity,

said converting means being provided on said central end portion,

said projections being offset relative to each other transverse to the direction of motion of said moving body and being arranged relative to said end portions of said magnetic means such that the central end portion and alternate of said opposite end portions respectively form the magnetic circuit together with respective of said adjacent projections and the polarity of the magnetic circuit passing through said converting means is alternately inverted, respectively, said circuit having a zero level when each said space between said adjacent projections passes said converting means.

4,535,290

METHOD FOR MEASURING THE NUCLEAR MAGNETIC RESONANCE FOR NMR TOMOGRAPHY

Hans Post, Schriesheim, and Dieter Ratzel, Rheinstetten, both of Fed. Rep. of Germany, assignors to Bruker Medizintechnik GmbH, Fed. Rep. of Germany

Filed Mar. 11, 1983, Ser. No. 474,699

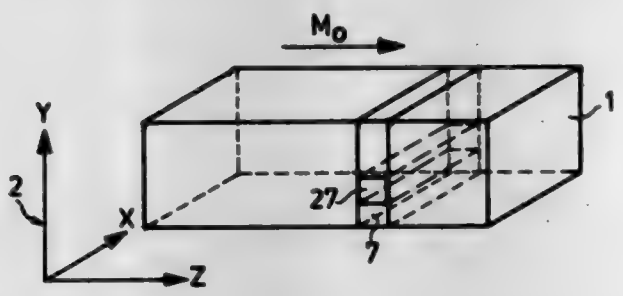
Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209264

Int. Cl.³ G01R *33/08*

U.S. Cl. 324—309 **10 Claims**

1. A method useful in NMR tomography for measuring the nuclear magnetic resonance in selected areas of a body for the purpose of representing body cross-sections in the form of images comprising the steps of subjecting the body to a homogeneous static magnetic field M_O and superimposing upon the said homogeneous magnetic field a first magnetic field gradient

G_Z of identical orientation whose strength varies in the direction of a first space coordinate Z of the body, selectively exciting thereafter selected nuclear spins contained in the body in a selected X-Y plane extending perpendicular to the direction of the first space coordinate Z and defined by the Larmor frequency of the selected nuclear spins in the magnetic field resulting from the superimposition of the said homogeneous magnetic field and the said first gradient field G_Z, applying thereafter another gradient field exhibiting in turn an orientation identical to that of the homogeneous magnetic field and varying in a direction perpendicular to the direction of the said first space coordinate Z and processing finally the induction signals supplied by the nuclear spins excited by the said homogeneous magnetic field and the said other gradient field to form image signals, characterized by the steps of exciting, when the



first gradient field G_Z is applied, the entirety of the selected nuclear spins present within the homogeneous magnetic field M_O, and effecting the selective excitation of the nuclear spins located in the selected X-Y body plane a manner causing the selected nuclear spins located in the said X-Y plane to be shifted back into the direction of the homogeneous magnetic field M_O so that their orientation is identical with or, alternatively, opposite to that of the homogeneous magnetic field, effecting after application of the gradient field G_X a repeated excitation of the selected nuclear spins contained in the selected X-Y plane so that these nuclear spins supply a desired induction signal, and carrying out the measurements in pairs with nuclear spins oriented alternately in the same and in opposite direction to the homogeneous magnetic field M_O and subtracting the obtained induction signals from each other.

4,535,291

METHOD FOR SUPERCONDUCTING MAGNET SHIMMING

Reuy-Lin Lee, Fremont; George D. Kneip, Jr., Menlo Park, and Marvin H. Anderson, Mountain View, all of Calif., assignors to Varian Associates, Inc., Palo Alto, Calif.

Filed Aug. 9, 1982, Ser. No. 406,418

Int. Cl.³ G01R *33/08*

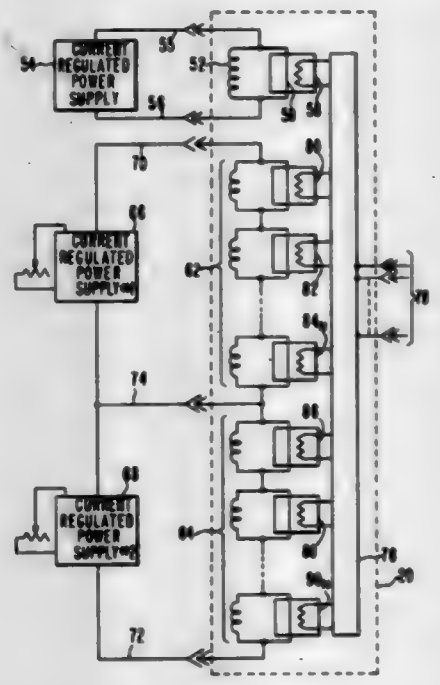
U.S. Cl. 324—320 **5 Claims**

2. Apparatus for selectively adjusting one of a plurality of interacting inductive elements, said inductive elements subject to a substantial mutual inductance therebetween, comprising

A. first current regulated power supply means operatively associated with a first inductive element for excitation thereof;

B. second current regulated power supply means operatively associated with the second inductive element for stabilizing the current flow thereof; and

C. means for varying a parameter of at least first said current regulated power supply means, thereby to vary the current in the first inductive element associated therewith, the second said power supply means compensating in-



duced current variations in the inductive element connected thereto.

4,535,292

TRANSMITTER FOR AN ELECTROMAGNETIC SURVEY SYSTEM WITH IMPROVED POWER SUPPLY SWITCHING SYSTEM

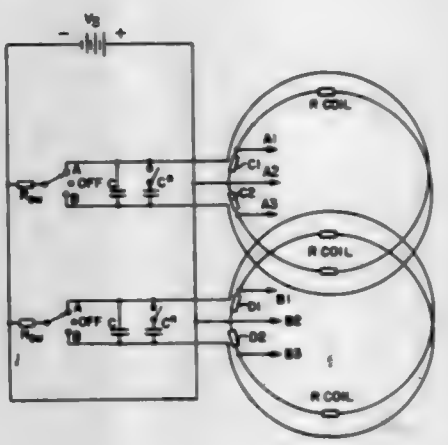
Lukas Ensing, Rijswijk, Netherlands, assignor to Shell Internationale Research Maatschappij B.V., Netherlands

Filed Apr. 5, 1982, Ser. No. 365,298

Claims priority, application United Kingdom, Apr. 14, 1981, 8111781

Int. Cl.³ G01V *3/10, 3/16*

U.S. Cl. 324—330 **10 Claims**



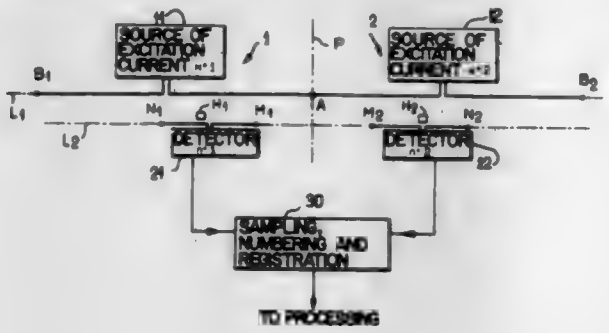
1. A geophysical large dipole moment transmitter for an airborne electromagnetic inductive survey system for emitting primary electromagnetic signals to the earth for the purpose of detecting conductive bodies at a large depth in an area by means of measuring secondary electromagnetic signals which are generated by eddy currents induced in the earth by the primary electromagnetic signals, said transmitter comprising: a unit comprising a plurality of assembled or stacked transmitting coils of large diameter for installation on an aircraft for radiating a primary electromagnetic signal to the area; a power supply means for said coils; a plurality of switches for connecting said power supply means to said coils; each of said coils connected through its own switch to said power supply means, and means for activating said switches of said coils simultaneously.

4,535,293

METHOD FOR GEOPHYSICAL PROSPECTING USING IMPULSINE CURRENTS

Jean-Pierre C. Rocroi, Massy, and Francois V. Gole, Meudon, both of France, assignors to Compagnie Generale de Geophysique, Massy, France

Division of Ser. No. 166,893, Jul. 8, 1980, Pat. No. 4,417,210.
This application Aug. 26, 1983, Ser. No. 526,727
Claims priority, application France, Jul. 9, 1979, 79 17766; Feb. 13, 1980, 80 03159
Int. Cl.[3] G01V *3/02, 3/08*
U.S. Cl. 324—336 26 Claims



1. A method of geophysical prospecting to obtain a figurative representation for geophysical interpretation, comprising:

(a) positioning a first transmitter dipole and a first receiver dipole in cooperation with subsoil;

(b) supplying an impulsive excitation current to said first transmitter dipole, said current comprising a group of excitation pulses of alternate polarity, each followed by a zero current;

(c) detecting transient signals, produced at the output of said first receiver dipole;

(d) defining predetermined time intervals consecutive to said excitation pulses and simultaneous to said zero current and which include substantially all useful parts of said transient phenomenon, wherein said detecting occurs as a function of time, at least during said time intervals;

(e) preprocessing said signals including sampling, digitalizing, recording and temporally marking said signals during said time interval to produce digitally recorded samples which correspond temporarily to said time intervals;

(f) processing said digitally recorded samples, wherein said step of processing comprises:

(i) statistically evaluating said digitally recorded samples of said transient phenomenons as a function of time;

(ii) after said evaluating step, smoothing said digitally recorded samples by digital filtering to produce a smoother digital representation of said transient phenomenon free of a substantial portion of surrounding noise.

4,535,294

DIFFERENTIAL RECEIVER WITH SELF-ADAPTIVE HYSTERESIS

James P. Ericksen, Windsor, and Timothy F. Stack, Enfield, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Feb. 22, 1983, Ser. No. 468,613
Int. Cl.[3] H03K *5/153, 13/24, 19/092*
U.S. Cl. 328—150 1 Claim

1. Apparatus for providing unipolar conditioned output signal manifestations of a varying peak-to-peak amplitude bipolar input signal, comprising:

differential amplifier input means having two input nodes, responsive to the bipolar input signal at said input nodes for providing at an output node a bipolar first conditioned signal representative of the input signal having common mode noise rejected;

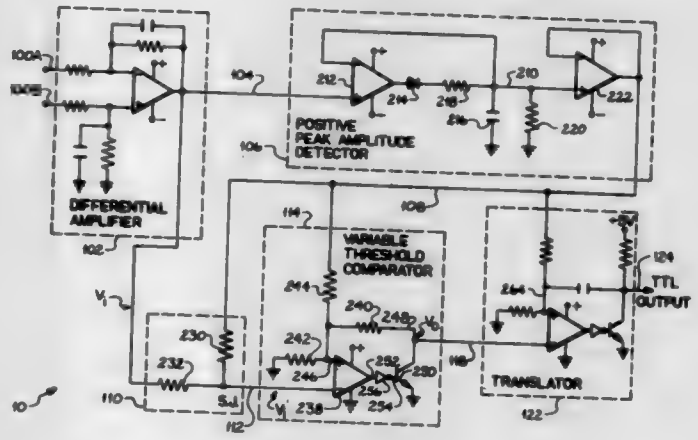
peak detector means responsive to said first conditioned signal for providing a bias voltage signal at an output node thereof at a present magnitude directly proportional to a present peak amplitude of said first conditioned signal;

summing means, responsive to said first conditioned signal and to said bias voltage signal for summing said first conditioned signal and said bias voltage signal thereby converting said first conditioned signal to a unipolar second conditioned signal;

comparator means; having a two-state output signal and having noninverting and inverting signal inputs with said inverting signal input responsive to said second conditioned signal and with said noninverting signal input responsive to said bias voltage signal at a first gain value in the presence of a first output state caused by a noninverting signal input magnitude greater than an inverting signal input magnitude and responsive to said bias voltage signal at a second gain value in the presence of a second output state caused by an inverting signal input magnitude greater than a noninverting signal input magnitude;

inverter means, responsive to said two-state output signal for providing inverted first and second output state signals;

switching means, responsive to said inverted first and second output state signals for providing a conditioned output



signal and for providing an effective ground path at a switched output node thereof in the presence of said inverted second output state and for opening said effective ground path in the presence of said inverted first output state;

variable voltage divider means, having three resistive legs with a common node connected to said noninverting input and having a first leg connected to said peak detector output node, a second leg connected to ground, and a third leg connected to said switching means' switched output node, said variable voltage divider means responsive to the switched state of said switching means for providing a voltage dividing network having said first leg in series with said second leg only in the presence of said inverted first output state and having said first leg in series with said second and third legs in parallel in the presence of said inverted second output state; and

signal level translator means, responsive at a first input to said conditioned output signal and responsive at a second input to said bias voltage signal for translating said conditioned output signal to a conditioned output signal manifestation compatible with TTL logic.

4,535,295

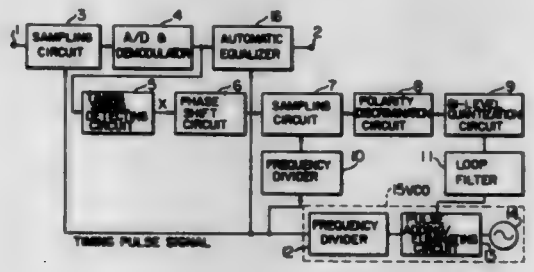
METHOD AND DEVICE FOR CONTROLLING THE PHASE OF TIMING SIGNAL

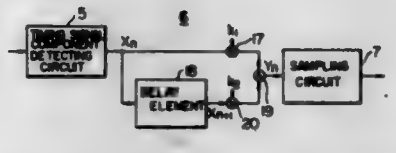
Yoshiro Kokuryo, Kodaira, Japan, assignor to Hitachi, Ltd. and Hitachi Denshi Kabushiki Kaisha, both of Tokyo, Japan

Filed Nov. 24, 1982, Ser. No. 444,225
Claims priority, application Japan, Nov. 27, 1981, 56-189305
Int. Cl.[3] H03K *5/153*
U.S. Cl. 328—155 7 Claims

1. A timing signal pulse control circuit comprising timing signal component detecting means for extracting a timing signal component from a received signal, a sampling circuit

which samples said timing signal component in response to the output pulses of a digital signal generator, means including a phase shift circuit for shifting the phase of the output signal from said sampling circuit, detection means for detecting the zero-cross point of the phase-shifted signal produced by said





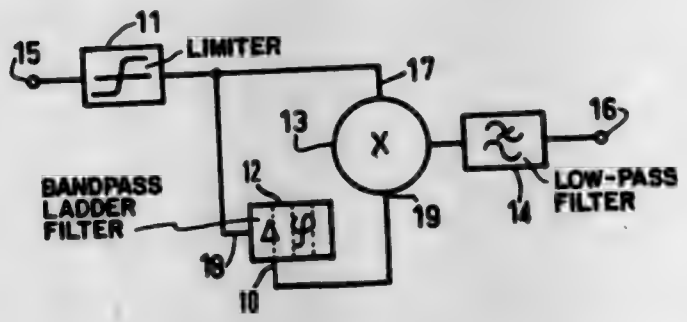
phase shift circuit, and control for controlling the phase of the output of said digital signal generator in response to the output of said detection means so that the output pulses of said digital signal generator are produced at the zero-cross points of the phase shifted signal produced by said phase shift circuit.

4,535,296

FM-DEMODULATOR WITH LADDER FILTER DELAY LINE AND MULTIPLIER

Mohammed Hajj Chehade, Asnieres; Jean Lecat, Suresnes, and Claude Tartois, Paris, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 12, 1982, Ser. No. 397,254
Claims priority, application France, Jul. 24, 1981, 81 14453
Int. Cl.³ H03D *3/02*; H03K *9/06*
U.S. Cl. 329—103 **5 Claims**



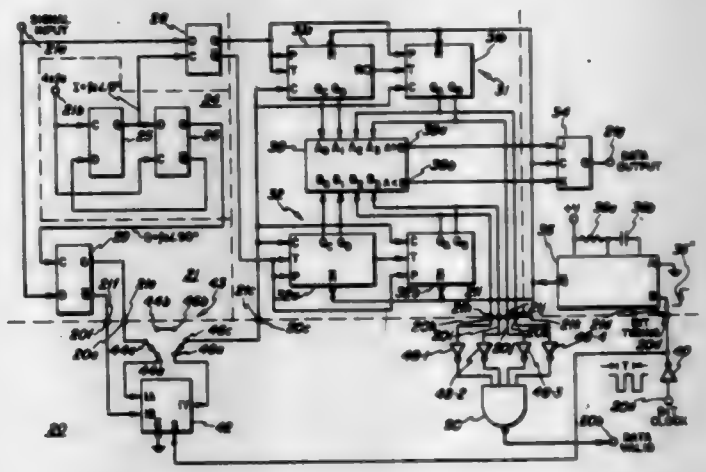
1. An FM-demodulator comprising a multiplier circuit and a phase shifting circuit, an input of the multiplier circuit being electrically connected to an input of the phase shifting network, a further input of the multiplier circuit being directly electrically connected to an output of the phase shifting circuit, characterized in that the phase shifting circuit comprises at least one section from a plurality of sections of a bandpass-ladder filter having a short and constant group time delay and at most a number of sections which is less than the total number of sections of said bandpass filter, whereby signal reflections via the unused section or sections of said bandpass filter are used to obtain an improvement in the linearity of the phase shift variation within the passband.

4,535,297

BINARY SIGNAL DEMODULATOR WITH COMPARATIVE VALUE DECISION CIRCUITRY

Charles M. Puckette, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,429
Int. Cl.³ H03D *3/00*
U.S. Cl. 329—126 **18 Claims**



1. In a demodulator for recovering binary data bits from a received signal varying between first and second frequencies, said demodulator comprising: means for generating first and second reference frequency signals in phase-quadrature; first and second mixing means each receiving a different one of the phase-quadrature local reference signals for each converting the received signal to respective complementary first and second output signals; first and second counting means each respectively for counting a respective number of transitions in a predetermined direction of the respective first and second output signals of said first mixing means, responsive to a clock signal recovered from one of said second mixing means output signals; and output means for providing a recovered binary data signal responsive to the contents of said first and second counting means during each of a plurality of data bit time intervals, the improvement comprising:

means for substantially reversing the phase of the clock signal applied to both said counting means at a predetermined time during each data bit time interval; and

said output means determines the binary value of the demodulator recovered data output signal by a comparison, at the completion of each binary data bit time interval, of the count in said first counting means with the count in said second counting means.

4,535,298

DRIVER CIRCUIT

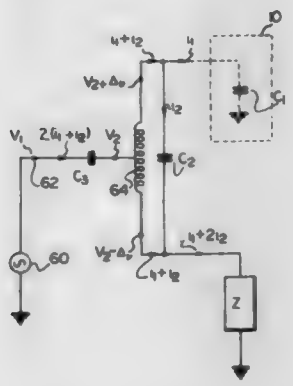
Dennis H. Covill, Tantallon, Canada, assignor to Nautical Electronics Laboratories Limited, Nova Scotia, Canada

Filed Nov. 7, 1983, Ser. No. 549,479
Claims priority, application Canada, Nov. 17, 1982, 415785
Int. Cl.³ H03F *3/68*
U.S. Cl. 330—189 **17 Claims**

1. A circuit for use in connecting a source of RF driving voltage to an amplifier input comprising:

a transformer having a center tap, a first terminal connected to a first branch of said transformer and a second terminal connected to a second branch of said transformer;

a first capacitor connecting said source to said center tap;
a second capacitor connecting said first and second terminals, wherein said first terminal is connected to the input of said amplifier; and
a dummy load connected to said second terminal.

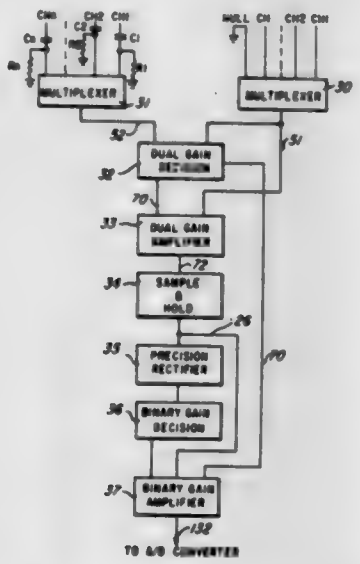


4,535,299

COMPOUND FLOATING POINT AMPLIFIER

George L. Streckmann, Dallas, and Ralph A. Harris, Hockley, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1983, Ser. No. 504,333
Int. Cl.[3] H03G *3/10*
U.S. Cl. 330—279
12 Claims



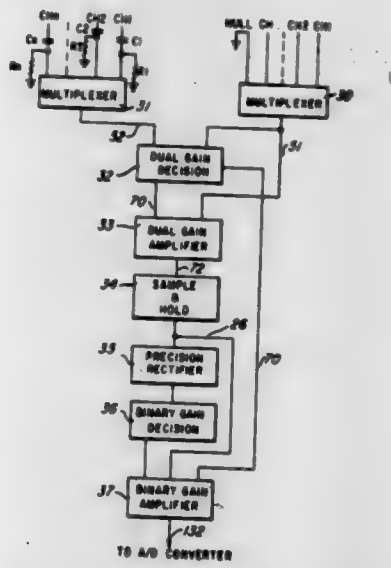
1. A compound floating point amplifier for amplifying an analog signal for presentation to an analog-to-digital converter, comprising:
(a) means connected to receive the analog signal, for providing a signal representative of the slew rate of the analaog signal;
(b) dual gain amplifying means connected to receive the analog signal and the slew rate signal, for performing a single gain step if the signals are within a predetermined range;
(c) sample and hold means connected to receive the output from the dual gain amplifying means and to store that output; and
(d) binary gain amplifying means for receiving the output of the sample and hold means, for modifying the gain of the binary gain amplifying means in response to the output of the sample and hold means.

4,535,300

EXTENDED RANGE SAMPLE AND HOLD CIRCUIT

George L. Streckmann, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 14, 1983, Ser. No. 504,334
Int. Cl.[3] H03G *3/10*
U.S. Cl. 330—279
20 Claims



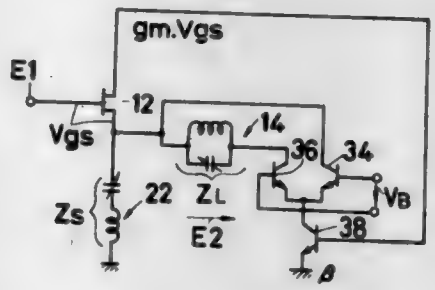
1. An extended range sample and hold circuit for receiving a varying analog signal input, sampling the signal at a predetermined time and holding the sampled signal, comprising:
(a) input means for receiving the varying analog signal input;
(b) sample switch means, selectively operable to pass the varying analog signal when closed and to block the varying analog signal when opened at the predetermined time;
(c) sample holding means connected to the sample switch means for holding an amplitude sample of the varying analog signal when the sample switch means is opened at the predetermined time;
(d) output amplifier means having an output connected to the input means and also to provide the output for the sample and hold circuit; and
(e) nonlinear circuit means connected to the output of the sample holding means and to the input of the output amplifier means for providing a signal to the output amplifier means that ranges from a proportional fraction of the amplitude sample to essentially the amplitude sample, depending upon the amplitude of amplitude sample.

4,535,301

HIGH FREQUENCY AMPLIFIER CIRCUIT

Kazuo Takayama, Hyogo, Japan, assignor to Fujitsu Ten Limited, Hyogo, Japan

Filed Jul. 19, 1983, Ser. No. 515,171
Claims priority, application Japan, Jul. 28, 1982, 57-131598
Int. Cl.[3] H03G *3/10*
U.S. Cl. 330—279
1 Claim



1. A high frequency amplifier circuit comprising:
a series resonance circuit resonating at a desired frequency,
a first transistor to the gate of which signals are applied and to the source of which is connected said series resonance circuit,

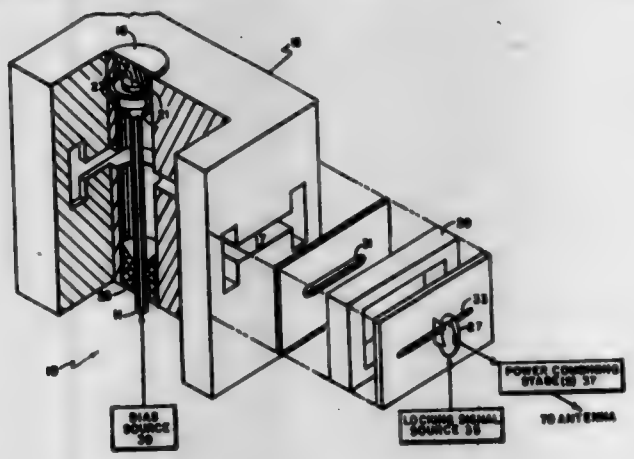
a second transistor to the base of which is applied an output signal from said first transistor,
third and fourth transistors having their emitters connected to said second transistor,
the collector of said third transistor being connected to said source of said first transistor,
a parallel resonance circuit resonating at said desired frequency,
the collector of said fourth transistor being connected to said source of said first transistor via said parallel resonance circuit, and
an AGC circuit for applying AGC voltage to the bases of said third and fourth transistors for the purpose of varying the collector current ratio of both said third and fourth transistors,
whereby negative feedback is accomplished and output power is obtained from said parallel resonance circuit.

4,535,302

MICROWAVE AMPLIFIER

Charles S. Ward; Richard W. Laton, both of Lexington, and John A. Spada, Revere, all of Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Dec. 5, 1983, Ser. No. 558,217
Int. Cl.³ H03F 3/60
U.S. Cl. 330—287 **1 Claim**



1. In a microwave amplifier utilizing an IMPATT diode as the active element therein, such diode being in circuit with the center conductor of a coaxial line coupled to a resonant cavity, the improvement wherein the resonant cavity is a section of a rectangular double-ridged waveguide, such waveguide having a first short-circuited end and a second end with a compound coupling iris formed therethrough, such iris comprising:
(a) a first rectangular opening formed centrally through a first wall covering the second end of the rectangular double-ridged waveguide and aligned with such waveguide; and
(b) a second rectangular opening formed centrally through a second wall outwardly spaced at a distance less than ¼ wavelength from the first wall and aligned with such waveguide, the dimensions of the second rectangular opening and the thickness of the second wall being, respectively, greater than the dimensions of the first rectangular opening and the first wall.

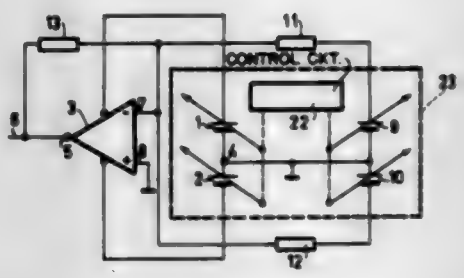
4,535,303

DRIVER CIRCUIT

Franciscus A. C. M. Schoofs, and Aloysius J. Nijman, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jul. 22, 1982, Ser. No. 400,823
Claims priority, application Netherlands, Jul. 29, 1981, 8103572
Int. Cl.³ H03F 3/04
U.S. Cl. 330—297 **10 Claims**

4. A driver circuit comprising a first integrated circuit amplifier having first and second operating voltage terminals, and an operating voltage supply comprising first and second voltage supplies of first and second voltages respectively of opposite polarity, said first and second voltage supplies having a common reference voltage point, the sum of the maximum values of said first and second voltages exceeding the breakdown voltage of said integrated circuit amplifier, first and second reference points having third and fourth voltages respectively



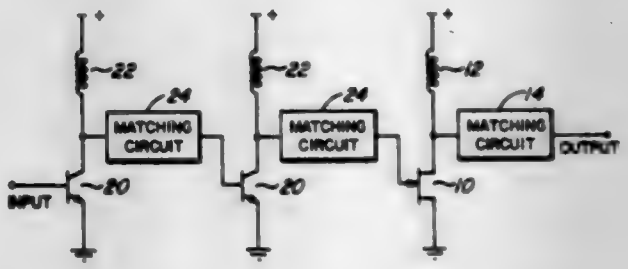
of lower maximum voltage than the voltages of said first and second supplies whereby the sum of said first and third voltages and the sum of said second and fourth voltages is less than said breakdown voltage, and means for alternately applying said first and third voltages respectively and said second and fourth voltages respectively, to said first and second terminals, respectively.

4,535,304

HIGH FREQUENCY AMPLIFIER WITH PHASE COMPENSATION

Paul Bura, Montreal, Canada, assignor to Northern Telecom Limited, Montreal, Quebec, Canada

Filed Apr. 19, 1984, Ser. No. 602,210
Claims priority, application Canada, Apr. 2, 1984, 451108
Int. Cl.³ H03F 3/16
U.S. Cl. 330—300 **6 Claims**



1. A high frequency amplifier comprising a plurality of cascaded amplifier stages, wherein at least one of said stages comprises a Schottky-gate field-effect transistor amplifier stage which produces a positive phase change with increasing signal level, and at least one other of said stages comprises a bipolar transistor amplifier stage which produces a negative phase change with increasing signal level, said negative phase change compensating for said positive phase change.

4,535,305

TRANSMISSION GATE RELAXATION OSCILLATOR HAVING COMPARATOR

Kenji Matsuo, and Akira Yamaguchi, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

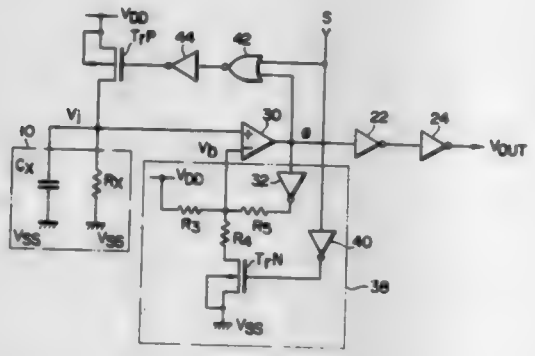
Filed Jul. 27, 1982, Ser. No. 402,223
Claims priority, application Japan, Jul. 30, 1981, 56-119766; Jul. 30, 1981, 56-119767
Int. Cl.³ H03K 3/26
U.S. Cl. 331—111 **17 Claims**

1. A transmission gate relaxation oscillator circuit comprising:
first and second power source terminals;

a capacitor and resistor (CR) circuit including a parallel connection of a capacitor and a resistor;

transmission gate circuit means connected in series with said CR circuit between said first and second power source terminals, for controlling a current flowing through said CR circuit in response to a gate control signal;

a reference voltage circuit connected between said first and second power source terminals to produce a reference voltage which is obtained by dividing a power source voltage between said first and second power source terminals at a predetermined ratio; and



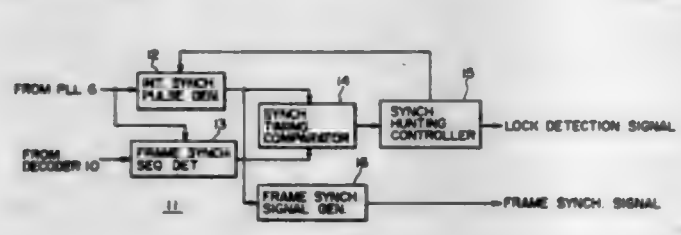
comparing circuit means including first and second resistors, and a comparing circuit having first and second input terminals and an output terminal, said first input terminal being connected to a first junction between said CR circuit and said transmission gate circuit means through said first resistor, said second input terminal being connected to receive said reference voltage from said reference voltage circuit, and said output terminal being connected to said first input terminal through said second resistor for comparing a voltage at said first junction with said reference voltage to form said gate control signal and feeding said gate control signal back to said first input terminal.

4,535,306

PHASE-LOCKED LOOP DETECTING CIRCUIT

Tadahiro Yamaguchi, and Ryuichi Naito, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Jul. 27, 1983, Ser. No. 517,554
Claims priority, application Japan, Jul. 27, 1982, 57-131008
Int. Cl.³ H03L *7/00*
U.S. Cl. 331—23 **8 Claims**



1. An apparatus for detecting the occurence of proper phase lock between the output of a phase-locked loop and a received composite signal containing a timing component, comprising:

means for producing a frame synchronization sequence detection signal having pulses in synchronization with the occurrence of frame synchronization sequences in said composite signal;

means for producing an internal synchronization pulse signal in response to said output of said phase-locked loop, said internal synchronization pulse signal having a phase determined in accordance with a control signal supplied to said means for producing said internal synchronization pulse signal;

means for detecting whether or not pulses of said internal synchronization pulse signal and said frame synchronization sequence detection signal are in time coincidence and producing a reset signal when time coincidence occurs and no reset signal otherwise; and

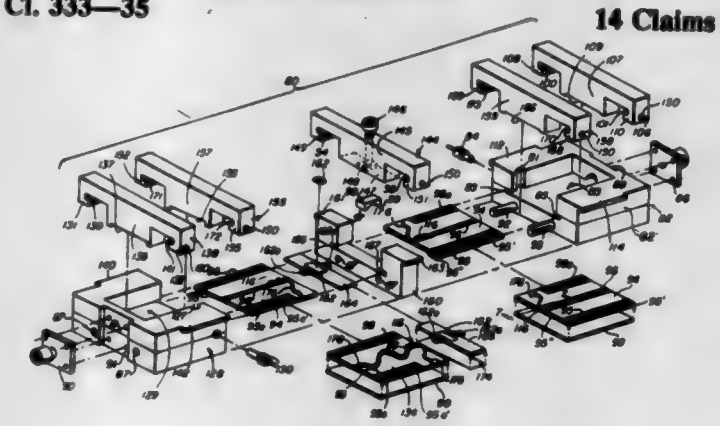
synchronization hunting controller means operating in response to said reset signal for producing a control signal and a lock detection signal, said control signal being applied to said internal synchronization pulse generator.

4,535,307

MICROWAVE CIRCUIT DEVICE PACKAGE

Toshikazu Tsukii, 89 Austin Rd., Sudbury, Mass. 01776

Filed Jun. 30, 1982, Ser. No. 393,961
Int. Cl.³ H01P *5/00*
U.S. Cl. 333—35 **14 Claims**



1. A microwave circuit device package comprising:

a conductive housing;

a transmission line disposed in said housing comprising:

(i) a dielectric substrate having a pair of opposing surfaces;

(ii) a strip conductor disposed on a first one of the pair of surfaces;

(iii) a ground plane conductor disposed on a second one of the pair of surfaces; and

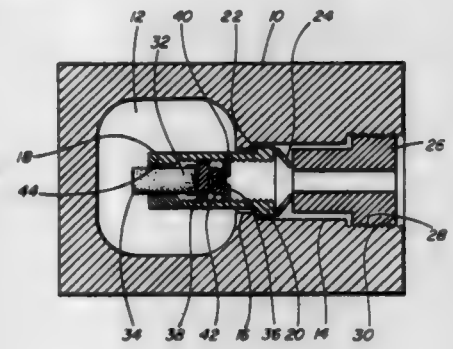
a slidable tuner means for adjusting the impedance of said transmission line, said tuner means including a conductive member carried by said housing and arranged to slidably traverse only over an exposed surface portion of the strip conductor portion of the transmission line.

4,535,308

MICROWAVE CAVITY TUNER

Maciej E. Znojkiewicz, Mount Royal, Canada, assignor to Northern Telecom Limited, Montreal, Canada

Filed Sep. 15, 1983, Ser. No. 532,388
Claims priority, application Canada, May 16, 1983, 428267
Int. Cl.³ H01P *7/06*
U.S. Cl. 333—232 **5 Claims**



1. A microwave device comprising a housing containing a cavity with a hole through one wall thereof, a tubular member of a material having a thermal coefficient of expansion that is low in comparison to the thermal coefficient of the housing, said tubular member being supported by one end portion positively located in the hole with its other end portion projecting into the cavity, and a dielectric tuner element located in said

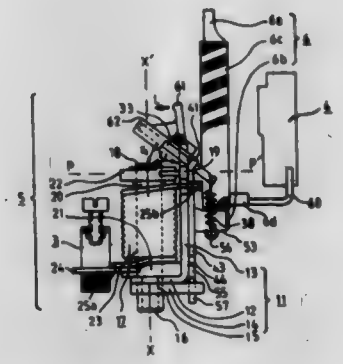
other end portion so as to protrude therefrom into the cavity, the tuner element being movable relative to the tubular member to vary the extent of protrusion, wherein the tuner element comprises a slug of dielectric material protruding partly from the tubular member and supported at one end in the tubular member by a metallic support member cooperating with the interior of the tubular member, means being provided for preventing the movement of the support member beyond a predetermined distance from the inner end of the tubular member such that the support member is R.F. shielded by the tubular member.

4,535,309

MAGNETO-THERMAL DEVICE FOR OVERCURRENT RELAYS

Dominique Moreau, Saint Germain en Laye; Pierre Duchemin, Fourqueux, and Jean-Pierre Duchemin, Jouy le Moutier, all of France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Feb. 17, 1984, Ser. No. 581,160
Claims priority, application France, Feb. 23, 1983, 83 02909
Int. Cl.³ H01H *75/10*
U.S. Cl. 335—42 **5 Claims**



1. A magneto-thermal device adapted for causing the opening of a safety switch when the current which passes therethrough presents either an excessive instantaneous intensity or a smaller intensity but of too long a duration, said device comprising a bi-metallic strip, a magnetizable yoke with which are associated, on the one hand, an adjustable screwed core which is surrounded by a coil and, on the other hand, a plate angularly movable about one end of the yoke for cooperating with an end of this core placed substantially at the same level and against a return spring, and locking means associated with this core for ensuring the adjustment position, wherein, in a plane PP' perpendicular to the axis XX' of the core and adjacent the end of the yoke serving as a pivot for the plate said locking means comprising a flat non magnetizable piece which is placed under radial compression between the end of the core and a face of a leg of the yoke situated opposite thereto, the radial dimension of said piece being slightly greater than the distance which separates said end and said face in the absence of said piece.

4,535,310

PNEUMATIC TIMING ATTACHMENT FOR AN ELECTROMAGNETIC DEVICE

Allin W. Schubring, Milwaukee, and Robert W. Sehmer, Grafton, both of Wis., assignors to Square D Company, Palatine, Ill.

Filed Sep. 2, 1983, Ser. No. 528,906
Int. Cl.³ H01H *7/03*
U.S. Cl. 335—61 **19 Claims**

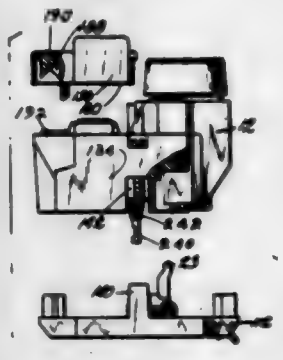
1. A timer attachment for an electromagnetically operated device wherein the device includes:

a housing having a front end and a member that is movable in the housing from an at rest position to an operated position in response to an energization of an electromagnet, said attachment comprising:

a housing part secured at the front end of the device housing in either of two selected positions, an operator movable along an axis in the housing part, means in the housing part for translating movement of the member to the operator for causing the operator to move from a first position to a second position an adjusted interval after the member is moved from the at rest position to the operated position when the housing part is secured at the front end of the housing in one of the two selected positions and for causing the operator to move from the second position to the first position an adjustable interval after the member moves from the operated position to the at rest position when the housing part is secured at the front end of the housing in a second of the two selected positions,

a cover secured at a front end of the housing part,

a slider mounted for movement adjacent a rear surface of the



cover, said slider having a pair of spaced advisory legends on a front surface that is adjacent the rear surface of the cover with the distance between the legends equal to a distance between a pair of openings in the cover,

a pair of oppositely facing inclined surfaces extending rearwardly from a rear surface of the slider,

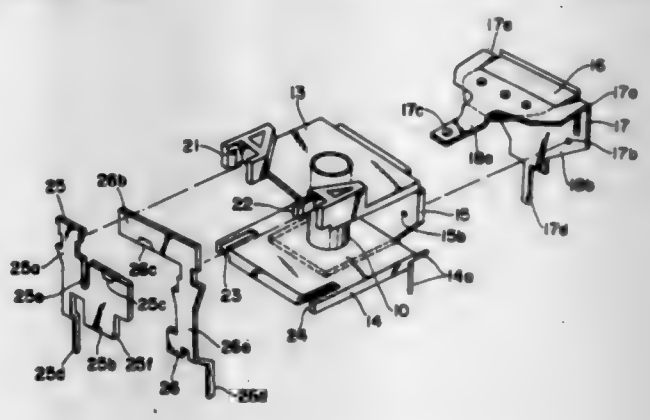
and a pair of individually operable plungers extending through the housing part with each of the plungers having a first end engagable with one of the inclined surfaces and a second end engageable with portions of the housing for actuating one of the plungers and moving the slider in a first direction when the housing part is secured to the housing in the first position and actuating a second one of the two plungers and moving the slider in a direction opposite the first direction when the housing part is mounted in the second position.

4,535,311

CONTACT SUPPORT MEANS FOR AN ELECTROMAGNETIC RELAY

Naoto Okihara; Masayuki Morimoto, and Tatsumi Ide, all of Tokyo, Japan, assignors to NEC Corporation, Tokyo, Japan

Filed May 16, 1984, Ser. No. 610,685
Claims priority, application Japan, May 20, 1983, 58-88449; Sep. 30, 1983, 58-152899[U]
Int. Cl.³ H01H *67/02*
U.S. Cl. 335—124 **11 Claims**



1. An electromagnetic relay comprising:

a pair of first and second insulative supports in spaced apart parallel relationship;

a first stationary member of conductive material having a first, elongated portion extending between said first and second supports and a second portion extending in a direction normal to said first portion, said second portion having a first stationary contact element therein and a heat radiating surface for radiating a substantial amount of heat generated in said first stationary contact element in response to an arc on the surface of said first stationary contact element so that heat conducted to said supports is insufficient to cause them to fuse or vaporize;

a second stationary member of conductive material having a third, elongated portion extending between said first and second supports and a fourth, elongated portion extending in a direction normal to said third portion in spaced relationship to said second portion, said fourth portion having a second stationary contact element therein in opposed relationship with said first stationary contact element;

a movable member of conductive material having an elongated portion movable between said first and second stationary contact elements and having a pair of contact elements one on each side thereof for selectively making contact with one of said first and second stationary contact elements; and

means secured between said first and second supports for generating magnetic flux in response to a current supplied thereto for moving the elongated portion of said movable member into contact with one of said first and second stationary contact elements.

4,535,313

ELECTROMAGNETIC DEFLECTION UNIT AND COLOR DISPLAY TUBE PROVIDED WITH SUCH A UNIT

Martin C. Van der Heijde, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

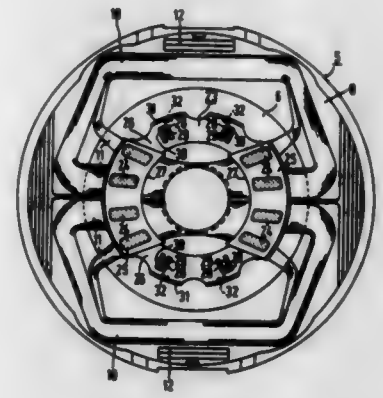
Filed Sep. 18, 1984, Ser. No. 651,964

Claims priority, application Netherlands, Sep. 21, 1983, 8303238

Int. Cl.[3] H01F *1/00;* 313 *421;426;429;430;431*

U.S. Cl. 335—212

6 Claims



1. An electromagnetic deflection unit for a color display tube comprising a conical coil holder which carries a set of coils for the horizontal deflection of electron beams, said coils having segments which extend substantially in the longitudinal direction of the coil holder, soft-magnetic members being arranged on the inwardly facing side of said coils in the proximity of the said segments, said soft-magnetic members being incorporated in an annular body of synthetic material.

4,535,312

ELECTRICAL CONTACT UNITS

Ronald W. Lomax, Harlow, England, assignor to International Standard Electric Corporation, New York, N.Y.

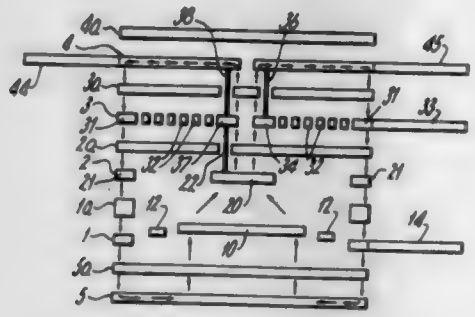
Filed Sep. 8, 1983, Ser. No. 530,182

Claims priority, application United Kingdom, Sep. 8, 1982, 8225565

Int. Cl.[3] H01H *1/54*

U.S. Cl. 335—196

27 Claims



27. A contact unit comprising: a structure of laminated operable component layers, including a pair of conductive contacts, at least one of which is magnetically susceptible and moveable relative to the other for making and breaking electrical contact therebetween, said moveable contact including a stationary portion, a moveable portion and integral resilient means connecting the stationary and moveable portions;

an insulator laminated between the contacts for maintaining spaced insulated separation of at least portions thereof;

ferromagnetic means for producing a magnetic flux through at least one of said magnetically susceptible contact layers for effecting relative movement of one contact with respect to the other for causing said contacts to make and break electrical contact therebetween.

4,535,314

VARISTOR INCLUDES OXIDES OF BISMUTH, COBALT, MANGANESE, ANTIMONY, NICKEL AND TRIVALENT ALUMINUM

Hideyuki Kanai, Kawasaki; Takashi Takahashi, Tokyo; Motomasa Imai, Tokyo, and Osamu Furukawa, Sagamihara, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

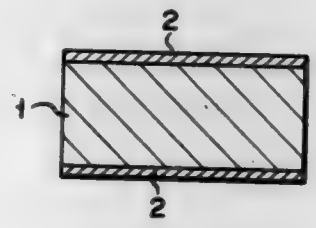
Filed Dec. 19, 1983, Ser. No. 563,250

Claims priority, application Japan, Dec. 24, 1982, 57-226208

Int. Cl.[3] H01C *7/10;* C04B *35/00*

U.S. Cl. 338—21

4 Claims



1. A varistor formed of a sintered body consisting essentially of:

zinc oxide as a major component;

0.1 to 5 mol % of bismuth in terms of Bi_2O_3;

0.1 to 5 mol % of cobalt in terms of Co_2O_3;

0.1 to 5 mol % of manganese in terms of MnO;

0.1 to 5 mol % of antimony in terms of Sb_2O_3;

0.1 to 5 mol % of nickel in terms of NiO; and

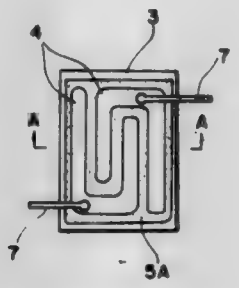
0.001 to 0.05 mol % of aluminum in terms of Al^{3+}.

4,535,315

ALKANE GAS SENSOR COMPRISING TIN OXIDE SEMICONDUCTOR WITH LARGE SURFACE AREA

Sai Sakai, Osaka, Japan, assignor to New Cosmos Electric Co., Ltd., Japan

Filed Dec. 22, 1983, Ser. No. 564,445
Claims priority, application Japan, Dec. 28, 1982, 57-227567
Int. Cl.[3] G01N *27/12;* H01L *7/00*
U.S. Cl. 338—34 3 Claims



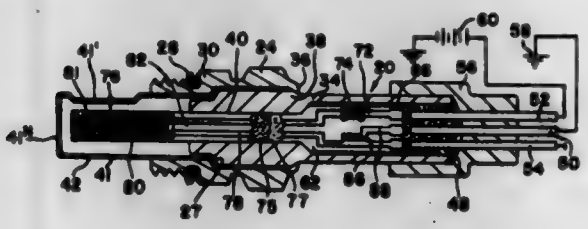
1. An alkane gas sensor comprising a semiconductor composed of sintered tin oxide and adapted to absorb an alkane gas thereby decreasing an electric resistance of the sensor so as to detect existence of said gas, wherein a specific surface area of the semiconductor is at least thirty square meters per gram.

4,535,316

HEATED TITANIA OXYGEN SENSOR

Harry P. Wertheimer, Findlay, Ohio; Thomas A. Libsch, Novi, Mich.; Jerome L. Pfeifer, Livonia, Mich., and Paul C. Becker, Bloomfield Hills, Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Mar. 26, 1984, Ser. No. 593,076
Int. Cl.[3] G01N *27/46, 27/12;* H01L *7/00*
U.S. Cl. 338—34 5 Claims



1. A resistive type sensor for detecting oxygen in an exhaust gas of an operating engine, said exhaust gas having a temperature of from 200° to 850° C., said sensor supplying an electronic control unit with an input signal to maintain a desired air to fuel ratio for operating said engine, said sensor comprising:

an insulating substrate having a first side and a second side with a first end and a second end;

a band of an electrically conductive thick film located on said first side, said band forming a loop that extends from said first end to said second end, said band having a substantially constant width from said first end to a location adjacent said second end where the band width is reduced, said thick film having an electrical resistance that increases with temperature, said loop having one end connected to a voltage source and its other end connected to an electrical ground, said thick film in resisting the flow of electrical current to said ground creating thermal energy adjacent said second end, said electrically conductive thick film sensor having a positive temperature coefficient of about 3.8×10^{-3}/° C., said reduced width of said band of electrical conductive thick film having a pattern such that any power loss in the constant width portion of said loop is substantially eliminated to maintain the temperature of said second end within a temperature range of from 650° to 900° C. at substantially all times when voltage is available;

a first strip of an electrically conductive thick film located on said second side and extending from said first end to said second end, said first end of said first strip being connected to said voltage source;

a second strip of an electrically conductive thick film located on said second side and extending from said first end to said second end, said first end of said second strip being connected to said electronic control unit;

a titania film applied to said second ends of said first and second strips to provide an electrical conductive path between said first and second strips;

a third strip of an electrical conductive thick film located on said second side for connecting said second resistor with said electrical ground;

a fixed value resistor connected in series within said first strip;

a second fixed value resistor connected to said second strip and electrical ground, said titania film responding to changes in the amount of oxygen in the exhaust gas by modifying the flow of electrical current in said first strip and said second strip, said first and second fixed value resistors being selected such that the total voltage drop between said second and third strips varies from near 0 to 900 mV as the resistance of said titania film changes from near 100K ohms to near 100 ohms as the amount of oxygen in the exhaust gas correspondingly changes from near 10^{-3} to near 10^{-14} atmospheres, said resistance to current flow being indicative of said voltage drop and communicated through said second strip as an input signal to operate said control unit;

a coating of alumina borosilicate glass material applied to said titania film to prevent particles in said exhaust gas from being deposited on said electrical conductive path, said glass material having sufficient porosity to allow exhaust gas to flow to said electrical conductive path without effecting the development of said input signal; and

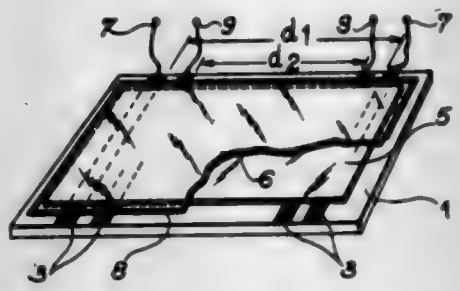
a coating of alumina silicate glass glaze applied to said band and to said first and second strips of electrically conductive thick film to prevent carbon particles carried by said exhaust gas from being deposited thereon and establishing electrical conductive shorting paths that could affect the development of said input signal.

4,535,317

PIEZORESISTIVE GAUGE FORMED BY AN ELECTRICALLY CONDUCTIVE ORGANIC COMPOUND

Roland Canet, Lormont; Pierre Delhaes, Gradignan; Eliane Dupart, Cestas; Adolphe Pacault, Tolence; Claude Pascal, Cestas, and Jean-Pierre Manceau, Préignac, all of France, assignors to Commissariat a l'Energie Atomique, France

Filed Dec. 19, 1985, Ser. No. 562,523
Claims priority, application France, Dec. 21, 1982, 82 21445
Int. Cl.[3] H01C *10/10;* G01L *1/18*
U.S. Cl. 338—36 8 Claims



1. A piezoresistive gauge that is particularly sensitive to pressure between 500 bars and a few kilobars comprising a piezoresistive element constituted by an electricity-conducting organic compound chosen from the group consisting of tetramethyl-tetrathiofulvalene salts, the quaternary ammonium salts of tetracyanoquinodimethane and diethyl-dimethyl-tetra-

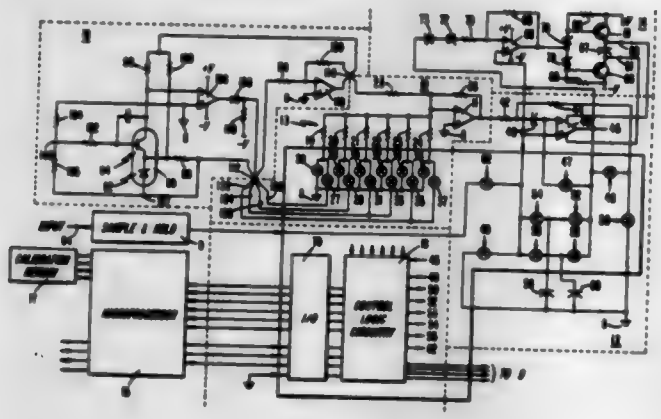
thiofulvalene-tetracyanoquinodimethane (DEDMTFF-TCNQ).

4,535,318

CALIBRATION APPARATUS FOR SYSTEMS SUCH AS ANALOG TO DIGITAL CONVERTERS

Peter S. Duryee, Lynnwood, and John M. Anholm, Jr., Snohomish, both of Wash., assignors to John Fluke Mfg. Co., Inc., Everett, Wash.

Filed Nov. 16, 1983, Ser. No. 552,589
Int. Cl.³ H03K *13/09*
U.S. Cl. 340—347 CC **2 Claims**



1. In a recirculation of remainder type analog-to-digital converter, a calibration circuit, comprising:

a digital reference signal source;

digital to analog converter means responsive to said digital reference signal source for generating an analog reference signal;

sources of digital and analog calibration signals;

comparator means for comparing said analog calibration and analog reference signals and generating an indicator signal when said analog calibration and analog reference signals have a predetermined relationship;

means for controlling said digital reference signal source to generate a predetermined pattern of digital reference signals;

means for determining a first pattern of digital reference signals that, together with said digital calibration signals, causes said comparator means to generate said indicator signal;

means for determining a second pattern of digital reference signals that, together with said input analog calibration signals, causes said comparator means to generate said indicator signal; and

means for storing the difference between said first and second patterns of digital reference signals as conversion coefficients.

4,535,319

METHOD AND CIRCUIT FOR MEASURING NONLINEARITY IN DUAL-FLASH ANALOG-TO-DIGITAL CONVERTER

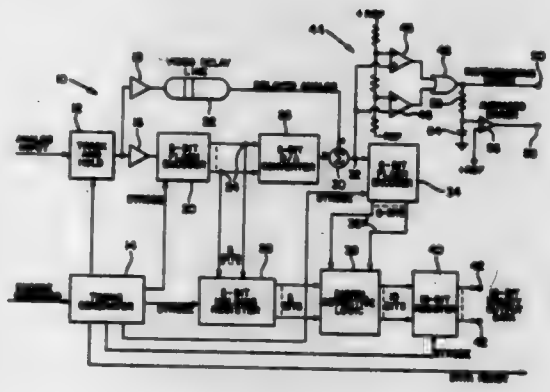
Bruce J. Penney, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 8, 1983, Ser. No. 483,323
Int. Cl.³ H03K *13/02, 13/75*
U.S. Cl. 340—347 AD **19 Claims**

1. A method for diagnosing nonlinearities in the internal operation of a dual-flash analog-to-digital converter including a first quantizer means for quantizing an analog input signal in accordance with a plurality of coarse quantizing levels to produce a more-significant-digits digital output signal, numerically indicating a truncated portion of the analog input signal, and a remainder analog signal corresponding to the undigitized portion of the analog input signal, and a second quantizer means for quantizing the remainder analog signal in accordance with a plurality of fine quantizing levels to produce a less-significant-digits digital output signal numerically indicating the value of the remainder analog signal; the method comprising:

applying an analog input test signal to the converter;

repetitively actuating the converter to convert said test signal to produce said digital output signals and remainder analog signal;



comparing the remainder analog signal to a predetermined threshold to produce an error signal whenever the remainder analog signal exceeds said threshold; and

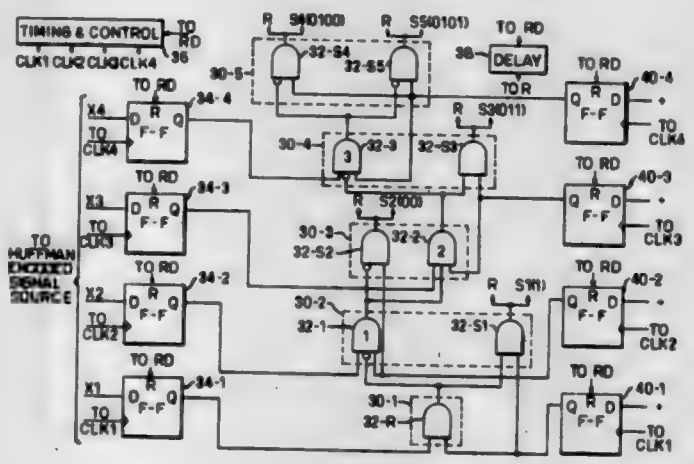
averaging the error signals from a plurality of successive actuations of the converter to produce an average error signal.

4,535,320

METHOD AND APPARATUS FOR DIGITAL HUFFMAN DECODING

Charles S. Weaver, Palo Alto, Calif., assignor to Digital Recording Research Limited Partnership, Menlo Park, Calif.

Filed Jun. 22, 1984, Ser. No. 623,342
Int. Cl.³ H03K *13/24*
U.S. Cl. 340—347 DD **19 Claims**



1. In a digital decoder for decoding encoded digital data words which have been encoded using a code comprising a plurality of different length code words, said decoder comprising

a plurality of logic gates connected in the form of a binary decoding tree having branches and interior and leaf nodes,

means for supplying bits of encoded digital data words to gates of the tree, said bits being supplied to gates at different levels of the tree dependent upon the position of the bit in the encoded word,

a plurality of gate enable lines coupled to gates at different levels of the tree for selectively enabling said gates, different gate enable lines being connected to different gates of the tree,

means for sequentially supplying said gate enable lines with gate enable signals for sequentially enabling gates of the tree, an increasing number of gate enable lines being si-

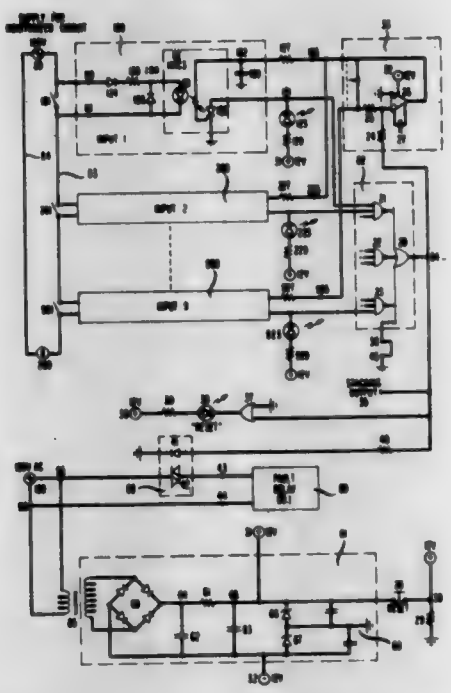
multaneously supplied with gate enable signals as gate enable signals are sequentially supplied to said gate enable lines, outputs from gates associated with leaf nodes of the binary decoding tree being indicative of the digital data word.

4,535,321

METHOD AND SYSTEM FOR MONITORING FAULTS IN ELECTRICAL CIRCUITS

Craig Merz, R.D. 3, Box 224, First St., Califon, N.J. 07830

Filed May 21, 1984, Ser. No. 612,551
Int. Cl.[3] G08B *19/00*
U.S. Cl. 340—520 6 Claims



1. A monitoring circuit for detecting and indicating the first of a series of faults in one or more electrical systems comprising a plurality of N switches connected to a source of power which comprises in combination:

a series of N isolated input circuits each connected across a corresponding one of said switches, and each said isolated input circuits including a triggering optical signal means for producing an optical signal in response to disconnect of one of said switches;

an optical responsive device corresponding to, and optically, but not electrically, coupled to each of said triggering optical signal means, each said optical responsive device having means responsive to a signal from said triggering optical signal means to impose a threshold voltage V_t across said optical responsive device, at which voltage said optical responsive device becomes conducting, said device being constructed and arranged once it has been rendered conducting to remain conducting even when the voltage across said device falls below the threshold voltage V_t to a lower voltage V_c;

display optical signal means connected in energy transfer relation to each said optical responsive device, and constructed and arranged to produce an optical signal as long as said optical responsive device remains conducting;

the outputs of said optical responsive devices connected in cascaded arrangement with a succession of stacked gating devices constructed and arranged to produce an output signal whenever at least one of said optical responsive devices becomes conducting;

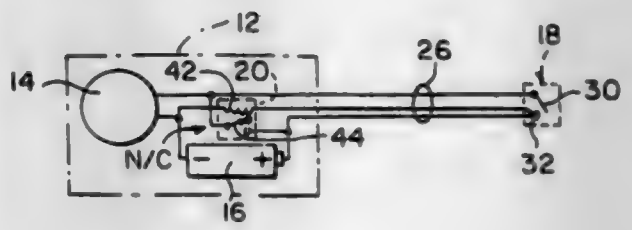
lock-out means connected to receive an output signal from said cascaded gating circuits and in response to said received signal to impose a negative voltage $-V_n$ across each of said optical responsive devices, thereby to negatively bias each said optical responsive device to maintain a voltage V_t across each said optical responsive device in response to a signal received from said triggering optical signal means in any of said isolated input circuits, wherein V_t is below V_t but above a voltage V_c, whereby only the optical responsive device which is initially conducting after receiving the first said optical signal, remains conducting, and the other optical responsive devices are disabled from becoming conducting in response to subsequent received signals.

4,535,322

SKI THEFT ALARM AND RUNAWAY SKI LOCATOR

Frederick R. Yeski, 23 Hughes St., Plainville, Conn. 06032

Filed Aug. 1, 1983, Ser. No. 519,258
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—571 4 Claims



1. A ski alarm and locator which comprises:

(a) a housing for mounting to the top surface of a ski;

(b) an audible signaling device within the housing;

(c) a power source within the housing;

(d) a remote switch which, via a cable, connects the power source to the audible signaling device within the housing when the switch is closed; and

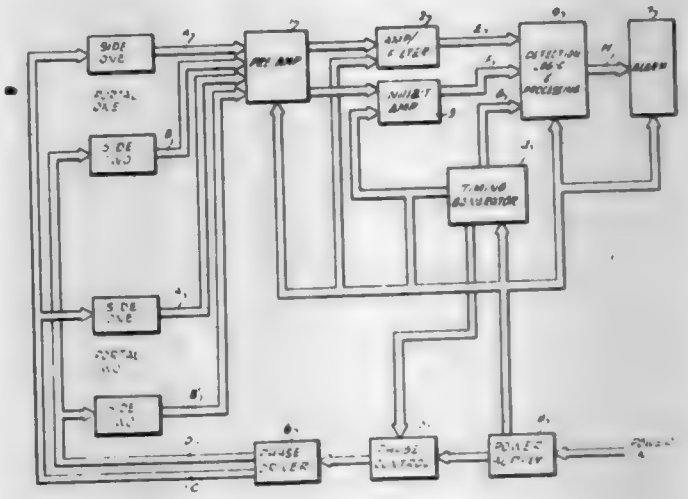
(e) a relay within the housing for connecting the power source to the audible signaling device when power to the relay is interrupted by cutting the cable to disconnect the remote switch.

4,535,323

PREAMPLIFYING AND SIGNAL PROCESSING METHOD AND APPARATUS FOR THEFT DETECTION SYSTEMS

Larry Eccleston, Marshall, Mich., assignor to Progressive Dynamics, Inc., Marshall, Mich.

Filed Mar. 15, 1982, Ser. No. 358,299
Int. Cl.[3] G08B *13/24*
U.S. Cl. 340—572 25 Claims



1. In a method of detecting the presence of a particular marker member within an electromagnetic interrogation field established between a pair of mutually spaced portal side members, wherein said electromagnetic field is made to alternate at one or more nominal frequencies and the field is monitored by at least first and second receiver means each disposed to access the field from a different side position at said portal to detect the presence of signal indicia introduced by such a marker in

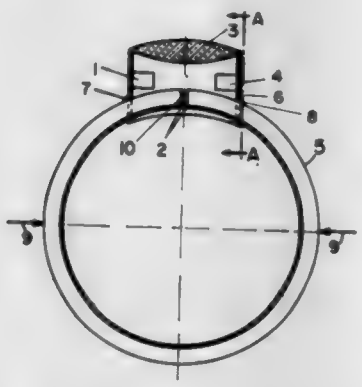
response to its exposure to the alternations of the field, and wherein said receivers each produce an electrical signal representative of the frequency content of the alternating field at least in the area of proximity nearer to that receiver, the improvement for use in detecting said marker which comprises the steps of: producing a first composite electrical signal for marker-presence analysis by summing representations of the said electrical signals produced by said first and second receivers, to thereby increase detection sensitivity; and producing a second composite electrical signal for use in marker-presence analysis by differencing representations of the said electrical signals produced by said first and second receivers, to reduce common-mode noise or other undesired signal characteristics in that composite electrical signal.

4,535,324

REMOTE ACTIVATED ALARM TRIGGERING DEVICE

Mark Levental, 7925 Kingsley Rd., No. 811, Cote St. Luc, Montreal, Quebec, Canada (H4W 1P5)

Filed Jul. 12, 1982, Ser. No. 397,538
Int. Cl.[3] G08B *13/02*
U.S. Cl. 340—574 12 Claims



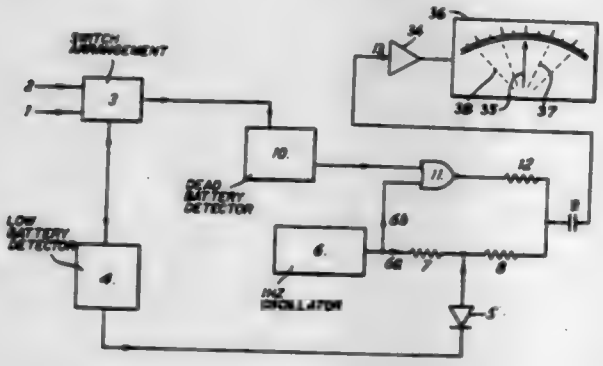
1. A remotely activated alarm triggering device comprising a transmitter means mounted in a casing which is secured to an incomplete finger ring, said ring having opposed free ends forming a gap, an electrical conductor secured to each of said opposed free ends, said gap forming a normally open contact, said normally open contact being closed by applying opposing forces on said ring by fingers adjacent said ring when worn to close the normally open contact whereby to activate said transmitter to generate a signal to activate a remote alarm circuit.

4,535,325

LOW CHARGE DETECTOR

Hugh R. Marsh, Canterbury, England, assignor to Thorn Emi Instruments Limited, Dover, England

Filed Jul. 5, 1983, Ser. No. 510,586
Claims priority, application United Kingdom, Jul. 8, 1982, 8219857
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—636 6 Claims



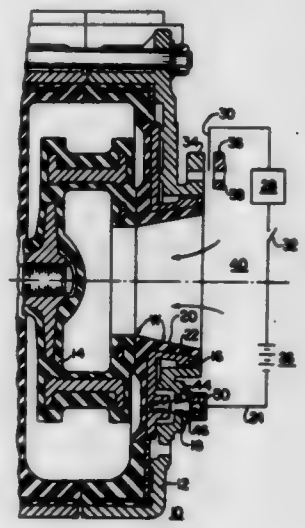
1. A low charge detector suitable for use in a measuring instrument comprising a meter having a moveable measuring indicator associated therewith and a rechargeable means for supplying power to the instrument, said detector comprising means for causing said indicator to execute oscillations of a first amplitude when said rechargeable means reaches a first predetermined level of exhaustion and means for causing the indicator to execute oscillations of a second amplitude when said rechargeable means reaches a second predetermined level of exhaustion.

4,535,326

LINER DETERIORATION WARNING FOR FLUID MOVERS

Lance A. Mullins, Colorado Springs, Colo., and Michael A. Self, Rockland, Calif., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jul. 21, 1982, Ser. No. 400,566
Int. Cl.[3] G08B *21/00*; F01B *25/26*
U.S. Cl. 340—679 10 Claims



1. A system for transporting an electrically conductive fluid medium, comprising:

a pump having a primary metallic casing through which a fluid is transported, said casing configured to removably receive an electrically non-conductive liner configured to overlay a substantial portion of the interior of said casing:

means, including a conductive member disposed within said casing, contiguous with said liner and electrically insulated from said fluid medium, for providing an electrical signal indicative of wear through a portion of said liner, said wear placing said conductive member into direct electrical contact with said electrically conductive fluid medium; and

means for providing an alarm in response to said signal.

4,535,327

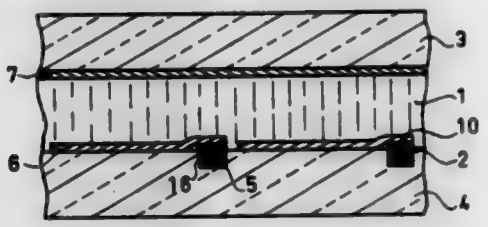
ELECTRICALLY CONTROLLED DISPLAY USING A THICK LAYER, NON-LINEAR ELEMENT AND ITS PRODUCTION PROCESS

Michel Hareng; Jean-Noël Perbet, and Michel Graciet, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 23, 1982, Ser. No. 410,558
Claims priority, application France, Aug. 25, 1981, 81 16217
Int. Cl.[3] G09G *3/00*
U.S. Cl. 340—719 9 Claims

1. A display for displaying images or pictures by electrical control of elementary display cells on a surface of a substrate, each cell comprising a material, whose optical properties vary as a function of an electrical field created by a voltage applied to a pair of first and second electrodes arranged in staggered manner parallel to said surface and forming a capacitor, each cell being connected to electrical connections carried by the substrate by means of a discrete varistor element for each cell whose resistance is a decreasing function of the voltage ap-

plied, wherein the substrate is formed from a refractory dielectrical plate, said discrete varistor elements being isolated from



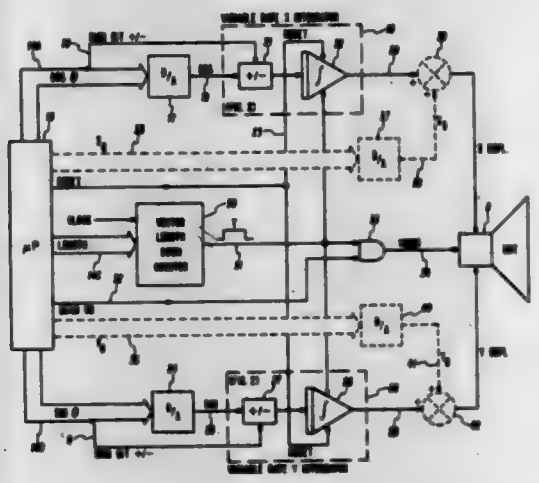
each other and having a first face in contact with said electrical connections and a second face in contact with one of said first and second electrodes.

4,535,328

DIGITALLY CONTROLLED VECTOR GENERATOR FOR STROKE WRITTEN CRT DISPLAYS

William A. Morey, Marion, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 13, 1982, Ser. No. 417,319
Int. Cl.[3] G09G *1/08*
U.S. Cl. 340—739 10 Claims



1. An open loop system for developing deflection signals effective to position the beam of a cathode ray tube to impact the face of said cathode ray tube along a predetermined vector path comprising first and second signal integrating means;

means for developing first and second signals respectively proportional to the sine and cosine functions of the polar angle defining the slope of said vector;

means for applying said sine and cosine functions as respective inputs to said first and second signal integrator means;

means for enabling each of said first and second integrators as a direct function of time proportional to the length of said vector;

means for applying, for said period of time, the outputs of said first and second signal integrator means as respective inputs to the vertical and horizontal deflection signal generating means of said cathode ray tube; and

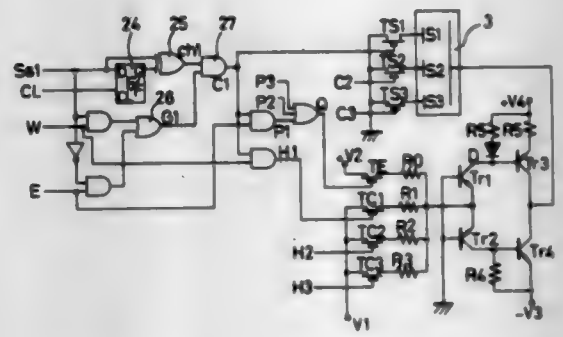
means for selectively resetting each of said first and second signal integrating means to zero at reset times exclusive of said period of time during which said integrators are integrating.

4,535,329

CONSTANT CURRENT/CONSTANT VOLTAGE DRIVE FOR AN ELECTROCHROMIC DISPLAY CELL

Katubumi Koyanagi; Hiroshi Take, both of Tenri, and Hisashi Uede, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 370,154, Apr. 21, 1982, abandoned, which is a continuation of Ser. No. 915,003, Jun. 13, 1978, abandoned. This application Aug. 18, 1983, Ser. No. 524,111
Claims priority, application Japan, Jun. 14, 1977, 52-70838; Jun. 16, 1977, 52-71714
Int. Cl.[3] G09G *3/34*
U.S. Cl. 340—785 2 Claims



1. A display system comprising:

an electrochromic display having a predetermined number of display segments having at least on and off display states, each of said segments being associated with individual display electrodes and all associated with a counter electrode;

writing means for applying constant current to said counter electrode to place said display in an on display mode;

erasing means for applying a constant voltage to said counter electrode to place said display in an off display mode; and

selection means for connecting the display electrodes associated with display segments desired to be changed to ground, said selection means further energizing said writing means or said erasing means in correspondence with the display mode desired;

said writing means varying the magnitude of current applied to said counter electrode in correspondence with the numbers of display segments to be placed in an on display state.

4,535,330

BUS ARBITRATION LOGIC

Richard A. Carey, Ashland, and Jerry Falk, Medway, both of Mass., assignors to Honeywell Information Systems, Inc., Waltham, Mass.

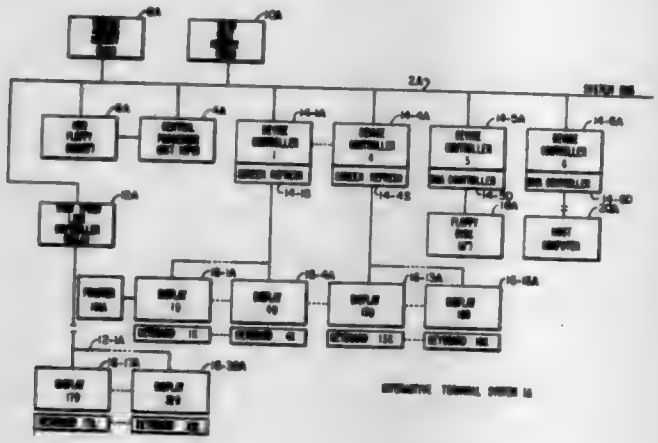
Filed Apr. 29, 1982, Ser. No. 372,907
Int. Cl.[3] G06F *9/00*; H04Q *9/00*
U.S. Cl. 340—825.5 8 Claims

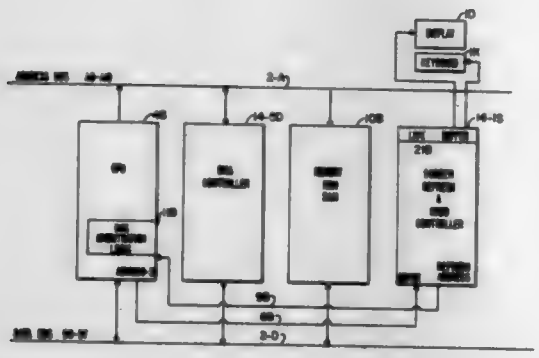
1. In an interactive computer terminal having a bus and various subsystems, accessing said bus according to their assigned priority level, such as a central processor unit (CPU), a direct memory access controller (DMA), a random access memory (RAM), terminal display unit, a keyboard, chip refresh controller, direct memory access channel (DMA), screen refresh controller and keyboard controller communicating with each other via a bus system, each of said subsystems having a priority level which may vary according to their individual states of operation, for accessing said bus, bus arbitration logic for arbitrating access to said bus among the various subsystems comprising:

(a) bus decoder means in said bus arbitration logic responsive to first electronic signals indicative of requests from said subsystems in different states of operation which have predetermined priority levels which vary according to the state of operation of the subsystem requesting access to

said bus, said decoder for decoding the first electronic signals into second electronic signals;

(b) first logic means responsive to said second electronic signals from said bus decoder means for providing third signals for awarding said bus system to one of said subsystems according to a priority level based on the state of operation of said subsystem, and;





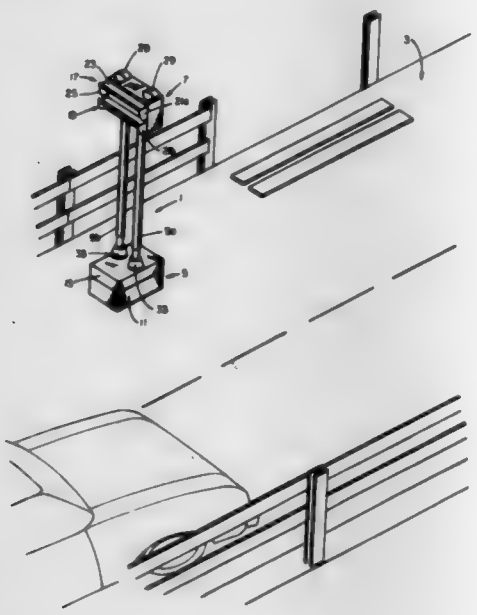
(c) second logic means responsive to said first logic means for providing fourth signals for awarding access of said bus to said subsystems in accordance to predetermined different priority levels of said subsystems independent of their state of operation.

4,535,331

PORTABLE TRAFFIC WARNING LIGHT

Kurt L. Koenig, P.O. Box 68, Arnold, Mo. 63010

Filed Sep. 19, 1983, Ser. No. 533,120
Int. Cl.[3] G08G *1/095;* E01F *9/00*
U.S. Cl. 340—908
5 Claims



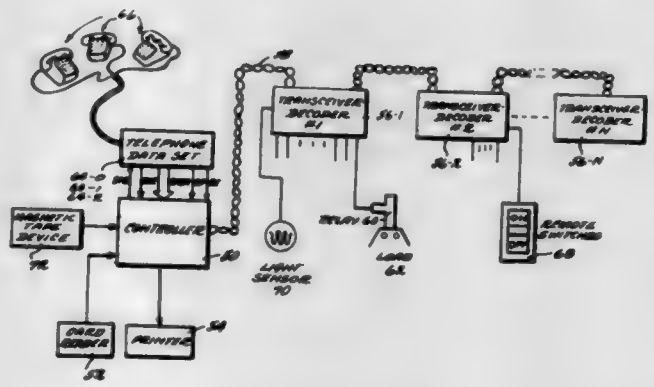
1. A portable traffic warning light having a base for support directly upon the ground, a lens housing, and a pair of columns extending up from said base, said columns being adjustable heightwise, said lens housing being supported on top of said adjustable columns, said lens housing having a plurality of selectively energizable lamps mounted therein with each of said lamps having a lens associated therewith so as to display a warning signal to oncoming traffic when selected of said lamps are energized, said base including a power supply for energization of said lamps, said power supply comprising at least one battery installable in said base, said battery aiding in and stabilizing said base and traffic warning light as it rests upon the ground, said columns being telescopically adjustable so as to vary the heighth of said lens housing above said base, said columns being detachable from said base and from said lens housing such that one pair of relatively short columns may be exchanged for a pair of relatively longer columns or vice-versa so as to vary the heighth of said lens housing, and a flexible power cable connecting said power supply to said lens housing, with said flexible power cable permitting vertical adjustable movement of said lens housing with respect to its supporting base.

4,535,332

METHOD AND APPARATUS FOR CONTROLLING DISTRIBUTED ELECTRICAL LOADS

Edward B. Miller, West Warwick, R.I., and Charles W. Eichelberger, Schenectady, N.Y., assignors to General Electric Company, Bridgeport, Conn.

Division of Ser. No. 89,478, Oct. 30, 1979, abandoned. This application Nov. 25, 1981, Ser. No. 325,031
Int. Cl.[3] H04Q *9/00*
U.S. Cl. 340—825.06
12 Claims



1. A programmable system including a central controller for controlling plural distributed electrical loads, said system comprising:

plural relays, each connected to control a respectively corresponding one of said plural distributed electrical loads,

plural remotely located transceiver decoders, each connected to control a predetermined subset of said relays in response to received and decoded data signals, and each transceiver decoder including mode control means for controlling the operational mode of said transceiver decoder in response to receiving a predetermined mulit-bit word,

a bi-directional data link comprising a common data communication link connected to each of said transceiver decoders,

a programmable central controller connected to said data link to provide said data signals to each of said transceiver decoders via said bi-directional data link and for controlling said relays,

the central controller and each transceiver decoder including data register means for holding a predetermined number of bits for transmission as a group to, and/or derived by reception as a group from, said bi-directional data link, and

said central controller including means for (a) repeatedly

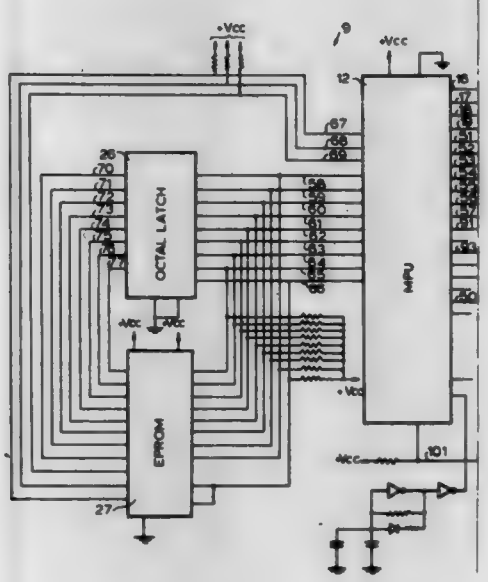
interrogating any given transceiver decoder, after issuing a control instrument thereto, for the then indicated present status or condition level of its controlled relay until a response is received therefrom, (b) annunciating an error condition if the interrogated transceiver decoder fails to respond, (c) self-clearing the error condition if a response is eventually received and (d) retransmitting an appropriate control instruction to the interrogated transceiver decoder if it responds with an incorrect status or condition level.

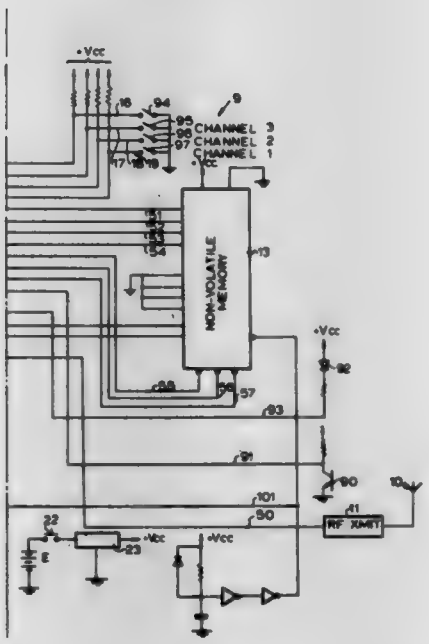
4,535,333

TRANSMITTER AND RECEIVER FOR CONTROLLING REMOTE ELEMENTS

Joseph W. Twardowski, Schaumburg, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Sep. 23, 1982, Ser. No. 422,452
Int. Cl.³ H04B *9/00*; H04Q *9/00*
U.S. Cl. 340—825.69 **12 Claims**





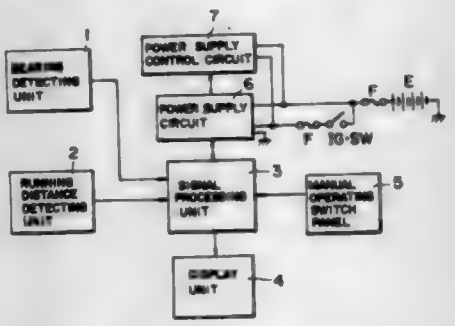
1. Apparatus for controlling a receiver with a remote radio frequency transmitter comprising a first micro-processor and a first memory means in said receiver for storing at least one address code, non-radio frequency transmitting means in said receiver, switch means for energizing said non-radio frequency transmitting means to transmit an address code, a non-radio frequency receiving means in said transmitter for receiving said address code, a second micro-processor and second memory means in said transmitter for storing said address code, radio frequency radiating means in said transmitter for radiating said address code, receiving means in said receiver for receiving said radio frequency radiated address code, said first micro-processor in said receiver comparing the received address code with the address code stored in said first memory, an output circuit energized by said comparing means when said addresses are the same, wherein said first memory means comprises a non-volatile memory and a programmable read only memory and said second memory means comprises a non-volatile memory and a programmable read only memory.

4,535,334

APPARATUS FOR VISUALLY INDICATING THE TRAVEL ROUTE OF AN AUTOMOTIVE VEHICLE

Katsutoshi Tagami; Tsuneo Takahashi, both of Saitama; Shinichiro Yasui, Tokyo, and Akira Ichikawa, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 4, 1982, Ser. No. 384,919
Claims priority, application Japan, Jun. 4, 1981, 56-86135
Int. Cl.³ G08G *1/12*; G08B *1/00*
U.S. Cl. 340—995 **2 Claims**



1. A travel route indicating apparatus for use in an automotive vehicle, wherein a current travel route of the automotive vehicle in terms of two-dimensional coordinates may be obtained arithmetically by means of signal processing means on the basis of the outputs from a travel distance detecting unit adapted to detect a current travel distance of the vehicle, and from a bearing detecting unit adapted to detect a resultant azimuth taken by the vehicle after the travel of the vehicle up to a current point of travel, so that the thus obtained locational data on the location of the vehicle varying from time to time may be stored in sequence, and so that the travel path of the vehicle may be continuously indicated, as the vehicle travels, on the screen of a display from the thus-obtained travel data leading to the resulting current location of the vehicle, which comprises, in operative combination:

power supply control circuit means for detecting the opening status of an ignition key switch and outputting a power conducting command for a predetermined period of time;

power supply circuit means for self-holding the power conducting status to said signal processing unit upon the receipt of said command when the ignition key switch is opened, while holding the thus-stored data in said signal processing unit for a predetermined period of time of from 5 to 10 minutes even after the ignition key switch is opened; and

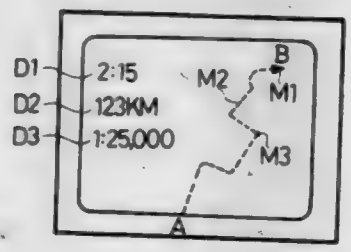
a power switch (SW) operatively cooperating with said power supply circuit means, said power switch being adapted to selectively forcibly release said power supply circuit means from the self-holding status thereof.

4,535,335

FIXED RANGE INDICATING SYSTEM FOR USE IN A VEHICLE TRAVEL PATH INDICATING APPARATUS

Katsutoshi Tagami; Tsuneo Takahashi, both of Saitama; Shinichiro Yasui, Tokyo, and Masao Sugimura, Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 3, 1984, Ser. No. 637,342
Claims priority, application Japan, Oct. 27, 1980, 55-150370
Int. Cl.[3] G06F *15/50*
U.S. Cl. 340—995 1 Claim



1. A fixed range indication system for use in a vehicle travel path indicating apparatus, comprising:

a pulse generator for generating a pulse at every moment when the travel distance of the vehicle increases by a predetermined first distance ("1");

counter means for counting said pulse;

a bearing detection unit for generating a bearing signal (θ) corresponding to the heading of the vehicle;

arithmetic operation means for receiving said bearing signal (θ), arithmetically obtaining a variation of the location of the vehicle on the two-dimensional coordinates from said first distance ("1") and said bearing signal (θ) at every moment when receiving said pulse, and accumulating said variation of location to obtain and output a locational data of the vehicle which is updated at every moment when receiving said pulse;

data extractor means for reading out the number registered in said counter to detect the travel distance of the vehicle and extracting the locational data from the outputs of said arithmetic operation means at every moment when the travel distance of the vehicle increases by a predetermined second distance (d) which is greater than said first distance ("1");

scale selector means for selecting one scale of the indication of the travel path from a plurality of predetermined scales of the indication and generating a selection signal indicating a selected scale;

data selector means for selecting the locational data from all of said extracted locational data at each rate predetermined in accordance with each said scale of the indication, the locational data selected for each said scale of the indication forming a data group, respectively, each said data group being discretely output from said data selector means;

data storing means including a plurality of data tables each adapted for storing one of said data groups and a storing system for storing each of said selected locational data in said data table as a data fraction in the manner of endless memory mode;

data reading means for reading out the number registered in said counter to detect the travel distance of the vehicle, receiving said selection signal, and reading out said data fraction from said memory table for said selected scale to output said data fraction at every moment when the travel distance of the vehicle increases by a fixed range predetermined in accordance with said selected scale, said fixed range being greater than said second distance (d);

data restoring means for restoring a locational data based on said data fraction output from said reading means; and

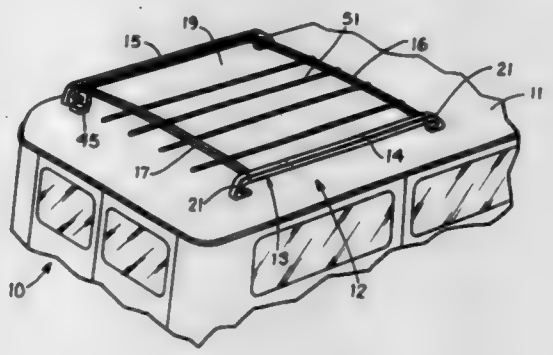
display means for receiving said restored locational data and indicating the vehicle travel path on a screen in accordance with said restored locational data.

4,535,336

ANTENNA LUGGAGE RACK

Larry D. Shaver, 3312 Remington Dr., Plano, Tex. 75023

Filed Oct. 25, 1983, Ser. No. 545,402
Int. Cl.[3] H01Q *1/32*
U.S. Cl. 343—713 4 Claims



1. An antenna roof rack for a vehicle, comprising:

a rigid, rectangular, ringlike frame defined by right and left substantially parallel side rails rigidly joined together by front and rear cross rails which extend perpendicularly therebetween, said rails all being of metal;

stanchion means fixedly secured to said frame adjacent each of the four corners thereof and projecting downwardly therefrom for fixed attachment to the roof of a vehicle, said stanchion means maintaining said frame in upwardly spaced relationship from the vehicle roof, said stanchion means having insulator means associated therewith for insulating said frame from said roof;

said frame including bracket means at each of the corners thereof for providing a fixed connection between each side rail and the adjacent end of the respective cross rail, said bracket means at a first diametrically opposed pair of corners of said frame being of an electrically nonconductive material to effectively insulate the side and cross rails from one another at these corners, and said bracket means at the other pair of diametrically opposed corners of said frame being of an electrically conductive material to create an electrically conductive path between the connected side and cross rails at these latter corners; and

television transformer means connected to said frame adjacent one of the corners having said nonconductive bracket means associated therewith, said transformer means having a first conductive lead which is electrically connected to the respective side rail at said one corner in close proximity to the nonconductive bracket means, said transformer means having a second conductive lead which is electrically connected to the respective cross rail at said one corner in close proximity to said nonconductive bracket means;

the side rail which connects to said one corner and the remaining cross rail defining a first long conductive path, and the cross rail which connects to said one corner and the remaining side rail defining a second long conductive path, said first and second paths being of substantially the same length.

4,535,337

CROSS POLARIZED WIRE GRID ANTENNA

David H. MacAnlis, Rte. 2, Box 282A4, Berryville, Va. 22611

Filed Aug. 30, 1983, Ser. No. 527,723
Int. Cl.[3] H01Q *11/04*
U.S. Cl. 343—737 17 Claims

1. A cross polarized wire grid antenna producing electromagnetic radiation of circular polarization, said radiation hav-

ing a wavelength λ substantially at a center frequency of operation of said antenna, said antenna comprising:

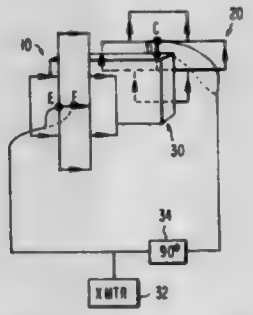
a first subarray of radiating elements, comprising

a first layer of conductors arranged to form a grid of first rectangular elements, the long sides of which operate essentially as transmission line elements and the short sides of which operate essentially as radiating elements for producing electromagnetic radiation of a first linear polarization, and

a second layer of conductors arranged to form a grid of second rectangular elements, the long sides of which operate essentially as transmission line elements and the short sides of which operate essentially as radiating elements for producing electromagnetic radiation of said first linear polarization,

said first layer being displaced ½λ with respect to said second layer in a direction perpendicular to the direction of said first polarization;

a second subarray of radiating elements, parallel to said first



subarray and rotated 90° with respect to said first subarray, and comprising

a third layer of conductors arranged to form a grid of third rectangular elements, the long sides of which operate essentially as transmission line elements and the short sides of which operate essentially as radiating elements for producing electromagnetic radiation of a second linear polarization at an angle of 90° relative to said first linear polarization, and

a fourth layer of conductors arranged to form a grid of fourth rectangular elements, the long sides of which operate essentially as transmission line elements and the short sides of which operate essentially as radiating elements for producing electromagnetic radiation of said second linear polarization,

said third layer being displaced ½λ with respect to said fourth layer in a direction perpendicular to the direction of said second polarization; and

means for feeding electrical current to said first subarray and said second array.

4,535,338

MULTIBEAM ANTENNA ARRANGEMENT

Edward A. Ohm, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

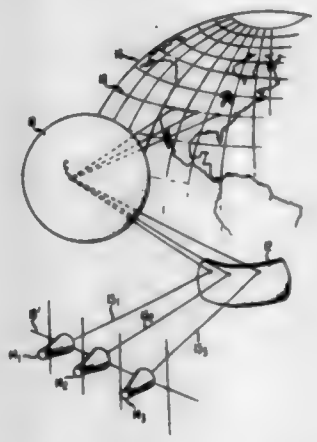
Filed May 10, 1982, Ser. No. 376,604
Int. Cl.³ H01Q *15/16, 19/19*
U.S. Cl. 343—781 CA **5 Claims**

1. A multibeam antenna arrangement comprising:

a main focusing reflector comprising a predetermined sized reflecting surface and far field of view;

a subreflector disposed confocally with the main reflector along a feed axis of the antenna arrangement, the subreflector being curved in orthogonal directions by separate predetermined amounts for transforming a predetermined three-dimensional non-rectangular matrix in the far field of view of the main reflector into a substantially rectangular matrix image of the far field of view on a focal surface of the antenna arrangement; and

a plurality of feeds disposed at predetermined separate locations on the substantially rectangular matrix image of the



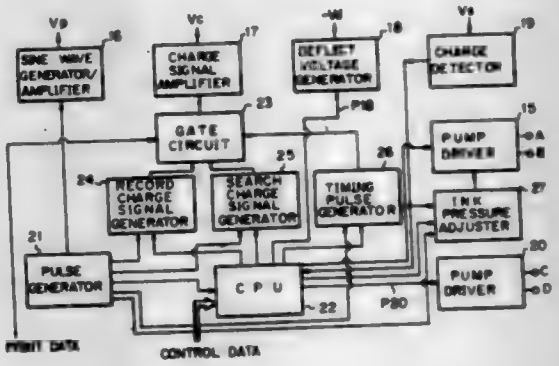
far-field of view on the focal surface of the antenna arrangement and aimed at the subreflector.

4,535,339

DEFLECTION CONTROL TYPE INK JET RECORDER

Masanori Horike, Tokyo; Tatsuya Furukawa, Yokohama; Yutaka Ebi, Kawasaki, and Hiroshi Yamazaki, Tokyo, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,390
Claims priority, application Japan, Sep. 1, 1982, 57-151930
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 **6 Claims**



1. A deflection control type ink jet recording apparatus having an ink ejection head equipped with an ink ejection nozzle and a vibrator for applying pressure oscillation having a predetermined period to ink in an ink chamber, which communicates to the ink ejection nozzle, a pump for supplying ink under pressure to the ink ejection head, a charging electrode for applying a charging electric field to ink ejected from the nozzle, charge voltage generator means for applying a charge voltage to the charging electrode, and a deflection electrode for applying a deflecting electric filed to charged ink drops, said apparatus comprising:

means for detecting arrival of a charged ink drop, said means being located in an ink flight path or neighborhood thereof, said ink flight path extending from the charging electrode to a recording sheet;

electric circuit means connected to said charged ink drop arrival detecting means for generating a signal indicative of arrival of a charged ink drop;

charge voltage generator means for generating a charge voltage for controlling an ink pressure;

sync means for synchronizing the charge signal for ink pressure control to a pump drive signal; and

ink pressure adjuster means for supplying a pump drive circuit, which drives the pump, an ink pressure command signal which is based on a period from an instant of charging of an ink drop in response to the ink pressure control charge signal to an instant of detection of the charged ink

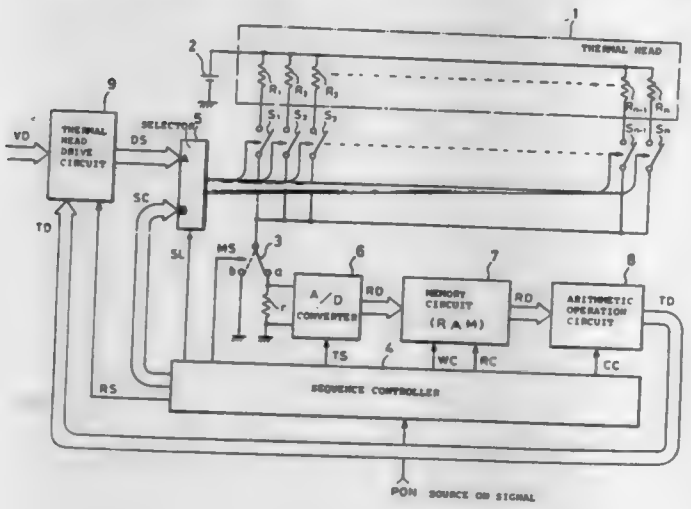
drop, starting from a point where the ink pressure control charge signal appears.

4,535,340

METHOD AND APPARATUS FOR THERMAL PRINTING

Haruhiko Moriguchi; Takashi Omori, and Toshiharu Inui, all of Ebina, Japan, assignors to Fuji Xerox Co. Ltd., Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,258
Claims priority, application Japan, Jun. 21, 1983, 58-111474
Int. Cl.[3] H05B *3/00*
U.S. Cl. 346—76 PH 10 Claims



6. Thermal printing apparatus comprising:

a thermal head including a plurality of heat generating resistors which generate heat when supplied with electric power;

means for detecting resistance values of said heat generating resistors in accordance with a signal at a predetermined time before driving said thermal head;

memory means for storing resistance values of said heat generating resistors detected by said detecting means;

means for updating contents of said memory means each time said detecting means operates;

an arithmetic operating circuit for calculating quantity of electric power to be supplied to respective heat generating resistors in accordance with the contents of said memory means; and

a thermal head drive circuit for selecting one of said heat generating resistors to be operated in accordance with a picture information supplied to said thermal printing apparatus;

said thermal head drive circuit supplying to said selected one of said heat generating resistors electric power of a quantity calculated by said arithmetic operating circuit.

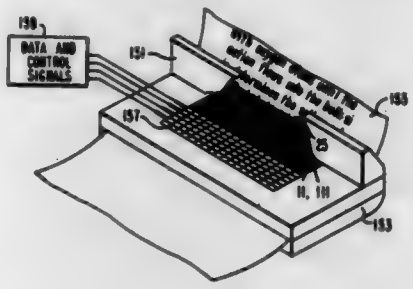
4,535,341

THIN FILM ELECTROLUMINESCENT LINE ARRAY EMITTER AND PRINTER

Zoltan K. Kun, and Paul R. Malmberg, both of Pittsburgh, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 19, 1983, Ser. No. 524,807
Int. Cl.[3] B60Q *1/00*; H05B *37/00*
U.S. Cl. 346—107 R 21 Claims

15. In combination with a printer means including a thin film electroluminescent drive circuitry for providing excitation voltage, and a paper drive means; a thin film electroluminescent line array emitter structure comprising a common electrode, a first dielectric layer disposed on said common electrode, a second dielectric layer, a phosphor layer disposed between said first and second dielectric layer, and a plurality of control electrodes disposed on said second dielectric electrode and defining thereby a plurality of pixels; said emitter structure having a first and a second face generally defined by said common and control electrodes respectively and an emitting edge generally perpendicular to said first and second faces, said emitting edge being defined by said plurality of pixels wherein said drive circuitry voltage is addressed to the individual control electrodes and pixel areas of the line array and wherein the drive means moves the paper relative to the line array.

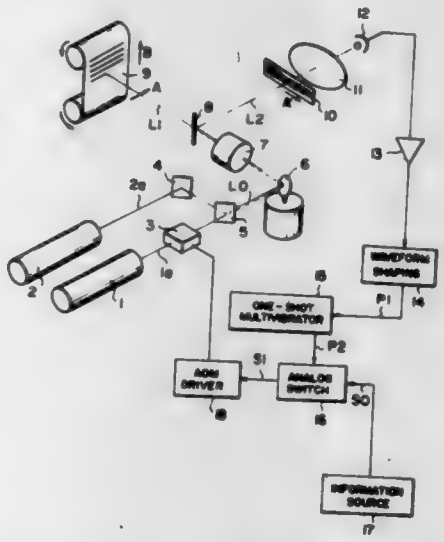


4,535,342

METHOD OF AND SYSTEM FOR LASER BEAM RECORDING

Yuji Ohara, and Kazuo Horikawa, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Continuation of Ser. No. 309,131, Oct. 6, 1981, abandoned. This application Jan. 17, 1984, Ser. No. 571,142
Claims priority, application Japan, Oct. 9, 1980, 55-141443
Int. Cl.[3] G01D *9/42, 15/04*
U.S. Cl. 346—108 3 Claims

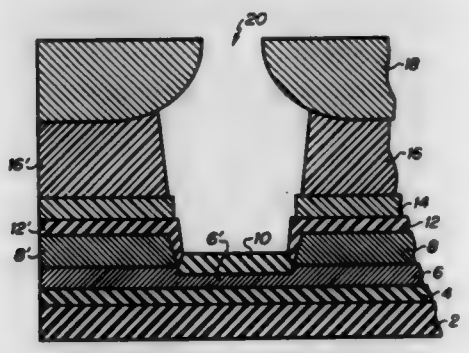


1. A laser beam recording system conprising an image signal generating means, a laser source, a light modulator for modulating a laser beam emitted from the laser source in accordance with the image signal generated by the image signal generating means, a photosensitive recording material capable of recording half tone images, means for causing the modulated laser beam to two-dimensionally scan the photosensitive recording material in a main and sub scanning directions, means for generating a position reference pulse in response to beam deflection each time the modulated laser beam moves along the photosensitive recording material by a predetermined constant distance in the main scanning direction, switch means for preventing transfer of the image signal to the light modulator for all but a predetermined constant time interval between adjacent position reference pulses; said means for preventing transfer of the image signal comprises an analog switch connected between said image signal generating means and said light modulator, and means connected between the analog switch and the means for generating the position reference pulses for closing the analog switch for said predetermined constant time interval between adjacent position reference pulses.

4,535,343
THERMAL INK JET PRINTHEAD WITH SELF-PASSIVATING ELEMENTS

Conrad L. Wright; James G. Bearrs; C. S. Chan; Robert R. Hay, all of Boise, Id., and Frank Ura, Woodside, Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Oct. 31, 1983, Ser. No. 547,700
Int. Cl.[3] G01D *15/18*
U.S. Cl. 346—140 R 11 Claims

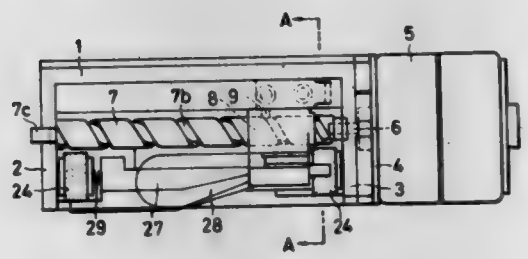


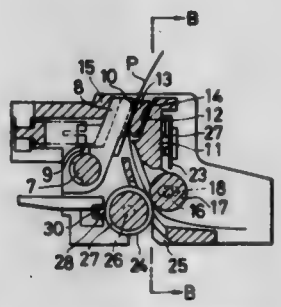
1. A thermal ink jet printhead assembly comprising a printhead support member, an orifice plate having at least one orifice therein, means for supporting said orifice plate on said support member, heating means formed of a resistive material capable of being anodized insulatingly disposed between said orifice plate and said support member and adjacent said orifice, electrically conductive means capable of being anodized in contact with said heating means, and passivating means disposed on said heating means and said conductive means, said passivating means comprising respectfully different compounds of said resistive material and said conductive means being formed in situ from and integral with said heating means and said conductive means.

4,535,344
RECORDING APPARATUS

Atsushi Noda, Yokohama, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 21, 1983, Ser. No. 487,087
Claims priority, application Japan, Apr. 28, 1982, 57-70495
Int. Cl.[3] G01D *15/24*; B41J *19/50*
U.S. Cl. 346—139 D 4 Claims





1. A recording apparatus operable in cooperation with recording paper, said apparatus comprising:

a recording head for recording a series of records on a recording paper;

means for generating a rotational force;

feed means having an axis and being coupled to said recording head and to said rotational force generating means, said feed means being driven by said rotational force generating means for pivoted movement about the axis to shift the relative position of said recording head and said recording paper, said recording head being operable to record a series of records on the recording paper during shifting of the relative position of said recording head and paper;

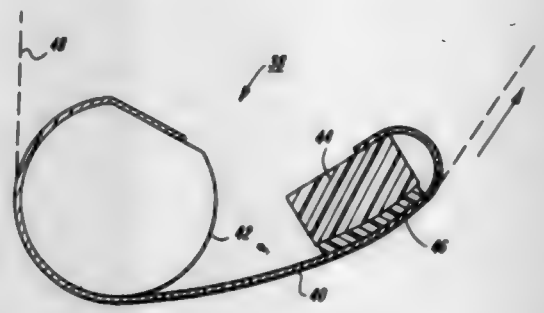
first holding means for holding said feed means respectively at a first bearing portion and a second bearing portion for said pivoted movement about the axis and for sliding movement in the direction of the axis; and

second holding means for holding said rotational force generating means, said second holding means being fixed to said first holding means and limiting the sliding movement of said feed means in one direction of the axis thereof.

4,535,345
ION PROJECTION PRINTER WITH EXTENDED BACK ELECTRODE

Jean K. Wilcox, El Granada, and Gene F. Day, Cupertino, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 20, 1983, Ser. No. 505,641
Int. Cl.[3] G01D *15/06*
U.S. Cl. 346—159 1 Claim



1. An ion projection printing apparatus for printing on one side of a charge receptor sheet and comprising, sequentially, ion projection charging means, development means and fusing means and characterized by including

back electrode means for receiving the sheet in intimate, sliding, contact and positioned on the opposite side of the sheet from the charging means and development means and extending continuously from the charging means through the fusing means,

said back electrode means comprising an electrically conductive foil sheet along whose lateral dimensions thermal flow is inhibited,

the surface configuration of said foil sheet is defined by a support block to which said foil sheet is secured,

said support block defines a recess therein, within which a thermally insulating member is positioned, and

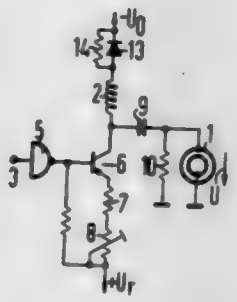
an electrically heated resistance blanket is sandwiched between said foil sheet and said thermally insulating member.

4,535,346

DRIVE CIRCUIT FOR PIEZOELECTRIC TRANSDUCER IN INK JET PRINTERS

Reiner Lichti, Germering, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 10, 1983, Ser. No. 493,317
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223636
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—140 R
3 Claims



1. Apparatus for driving a piezoelictric transducer surrounding a fluid ink path in an ink jet printer, said transducer being adapted to expand upon application of a voltage poled opposite to the polarization direction of the transducer, and constricting in response to application of an oppositely poled voltage, including, in combination; a resonant circuit having a two-terminal inductor and a piexoelectric transducer functioning as a capacitance, means including a transistor having its collector conductively connected to said inductor for exciting said inductor directly by means of a current pulse having a predetermined duration flowing between its two terminals, the waveform of the voltage applied to said piezoelectric transducer being determined by the shape of said current pulse, and including a damping circuit connected in series with said inductor for damping the voltage waveform applied to said transducer, said damping beginning after a time interval delay relative to the beginning of oscillation of said resonant circuit initiated by said current pulse and damping said voltage waveform after the conclusion of said current pulse.

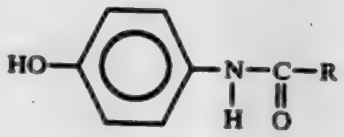
4,535,347

THERMALLY-RESPONSIVE RECORD MATERIAL

Kenneth D. Glanz, Appleton, Wis., assignor to Appleton Papers Inc., Appleton, Wis.

Filed May 7, 1984, Ser. No. 607,558
Int. Cl.[3] B41M *5/18*
U.S. Cl. 346—208
11 Claims

1. A thermally-responsive record material comprising a support member bearing a thermally-sensitive color-forming composition comprising chromogenic material and acidic developer material in contiguous relationship, whereby the melting or sublimation of either material produces a change in color by reaction between the two, one or more hydroxyanilide compounds represented by the formula:



wherein R represents a straight or branched alkyl group of not more than 17 carbon atoms;
and a suitable binder therefor.

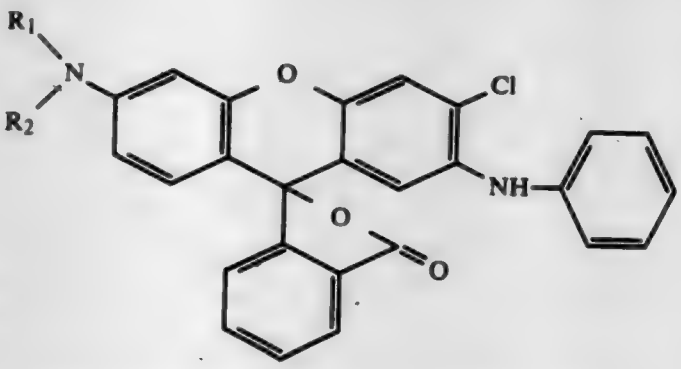
4,535,348

FLUORAN DERIVATIVES AND RECORDING MATERIAL USING SAME

Ken Iwakura, and Sadao Ishige, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jul. 6, 1982, Ser. No. 395,237
Claims priority, application Japan, Jul. 6, 1981, 56-105416
Int. Cl.[3] B41M *5/16, 5/18, 5/22*
U.S. Cl. 346—221
4 Claims

1. A recording material comprising a support onto which is coated or into which is incorporated a fluoran derivative having an arylamino group at the 2-position of the fluoran skeleton thereof and a halogen atom at the 3-position of the fluoran skeleton thereof, wherein the fluoran derivative has the following Formula (II):



(II)

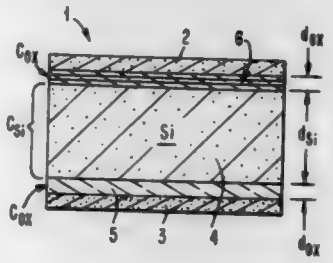
wherein R_1 and R_2, which may be the same or different, each represents an alkyl group having 2 to 9 carbon atoms, and the fluoran derivative forms a black image.

4,535,349

NON-VOLATILE MEMORY CELL USING A CRYSTALLINE STORAGE ELEMENT WITH CAPACITIVELY COUPLED SENSING

Zeev A. Weinberg, White Plains, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 31, 1981, Ser. No. 336,477
Int. Cl.[3] H01L *29/78*; G11C *11/40*
U.S. Cl. 357—23.6
4 Claims



1. A memory device capable of assuming two electrical states comprising:
an element of undoped single crystal semiconductor material,
a pair of silicon-rich, silicon dioxide layers disposed in insulated spaced relationship with each other disposed on one side of said element, one of said layers being contiguous with said element,
means disposed over said pair of layers for applying voltages sufficient to inject carriers into or withdraw carriers from said element and sufficient to interrogate said states of said element,
a layer of insulation disposed on the opposite side of said element, and,
means responsive to an interrogation signal disposed on said layer of insulation electrically coupled to said element for sensing the motion of carriers in said element said memory device having one value of capacitance in the presence of

injected carriers and another value of capacitance in the absence of injected carriers.

4,535,350

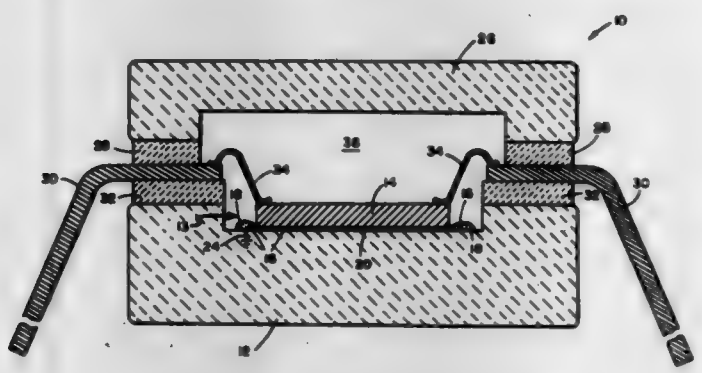
LOW-COST SEMICONDUCTOR DEVICE PACKAGE AND PROCESS

Gary B. Goodrich, and Jadish G. Belani, both of Cupertino, Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Division of Ser. No. 316,310, Oct. 29, 1981,. This application Jun. 29, 1984, Ser. No. 626,428

Int. Cl.³ H01L *23/02, 39/02*

U.S. Cl. 357—74 **6 Claims**

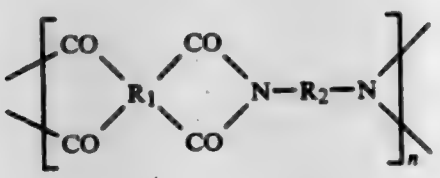


1. An hermetically sealed semiconductor device package, which comprises:

a ceramic substrate,

a semiconductor die,

a body of cured polyimide resinous material cured from a composition containing a crosslinkable resinous polyimide precursor which will cure to give a polyimide having a recurring unit of the formula:



in which R_1 and R_2 are radicals of a tetravalent aromatic group and a divalent aromatic group, respectively, and n is a positive integer, a sufficient amount of an alkylaminotrialkoxysilane crosslinking agent to cure said resinous polyimide precursor, a sufficient amount of a finely divided conductive metal to render said composition conductive in the cured state and a polar organic solvent for said polyimide precursor and alkylaminotrialkoxysilane crosslinking agent, said body of cured polyimide resinous material containing the finely divided conductive metal, said body attaching said semiconductor die to said ceramic substrate, and

a closure covering said semiconductor die and said body of cured polyimide resinous material, said closure being in sealed relationship with said ceramic substrate, so that said closure, body of cured resinous material and ceramic substrate provide hermetic isolation for said semiconductor die.



4,535,351

SETTING-UP SYSTEM FOR A TELEVISION CAMERA

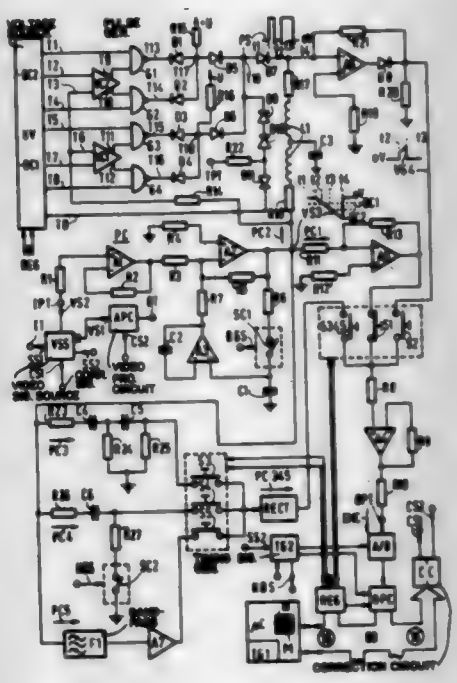
Frederik J. Van Roessel, Upper Saddle River, N.J., assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,942

Claims priority, application Netherlands, Jan. 22, 1982, 8200234

Int. Cl.³ H04N *9/62*

U.S. Cl. 358—10 **12 Claims**



1. A system for establishing the parameters for a television camera which produces a video signal, comprising:

a signal processing circuit including a plurality of parallel signal channels, each of said channels having a different signal transfer characteristic;

a microcomputer having a memory with separate storage locations for storing digital correction values corresponding to minimum error values of distinct sub areas of a television video signal;

a digital error measuring circuit for determining error values between the average value of a video signal taken over distinct sub areas of a television picture and a reference value;

a signal correction circuit for substituting said stored digital correction values in said video signal; and

means for selectively connecting each of said channels to said digital error measuring circuit, whereby an error in each of said channels may be detected to indicate said stored correction values should be substituted in said television video signal.

4,535,352

TECHNIQUE FOR GENERATING SEMI-COMPATIBLE HIGH DEFINITION TELEVISION SIGNALS FOR TRANSMISSION OVER TWO CABLE TV CHANNELS

Barin G. Haskell, Tinton Falls, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 16, 1984, Ser. No. 600,805

Int. Cl.³ H04N *9/38, 9/39, 9/42, 9/32*

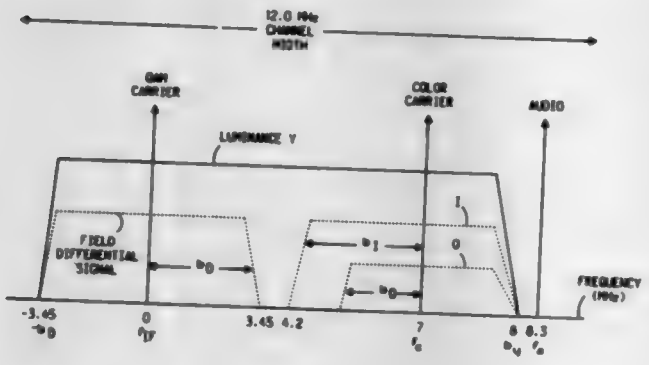
U.S. Cl. 358—16 **14 Claims**

1. An arrangement for generating a semi-compatible high-definition television (SC-HDTV) color picture signal including a predetermined bandwidth and format, the arrangement comprising:

first generating means (10-12) responsive to line signals of a HDTV color picture signal including luminance and chrominance components received at a first line scan rate for generating therefrom stretched color picture signals which include line signals at a second line scan rate that is both a submultiple of the first line scan rate and at a same

line scan rate as that of an associated conventional standard television system picture signal;

second generating means (15-25) responsive to a first and a second sequential line of a field of a stretched color picture signal at the output of the first generating means for generating therefrom a first output signal comprising the first line signal substantially as is, and a second output signal comprising the second line signal as a field differential signal; and



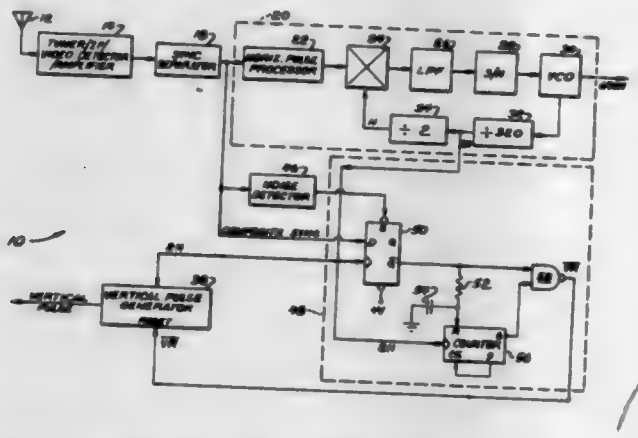
modulating means (40–41, 43–47) responsive to the first and second output signals from the second generating means for quadrature amplitude modulating (QAM) the second output signal on the video carrier of the first output singal, said modulated second output signal being disposed to lie within a luminance bandwidth of, and outside a chrominance bandwidth of, the modulated first output signal such that the first line and field differential signals lie within said predetermined bandwidth of the SC-HDTV color picture signal.

4,535,353

VERTICAL REFERENCE SIGNAL IDENTIFICATION SYSTEM

Rudolf Turner, Vernon Hills, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 18, 1984, Ser. No. 662,219
Int. Cl.³ H04N 9/62
U.S. Cl. 358—21 V **9 Claims**



1. Apparatus responsive to a composite video signal including a composite sync signal having horizontal and vertical sync components for generating a precise vertical reference signal comprising:

sync separation means responsive to the composite video signal for removing the composite sync signal therefrom;

signal processing means coupled to said sync separation means and responsive to the horizontal sync component of the composite sync signal for generating a sampling signal defining a plurality of sampling points occurring at twice the rate of the horizontal sync component and coincident with only the broad pulses of the vertical sync component of the composite sync signal; and

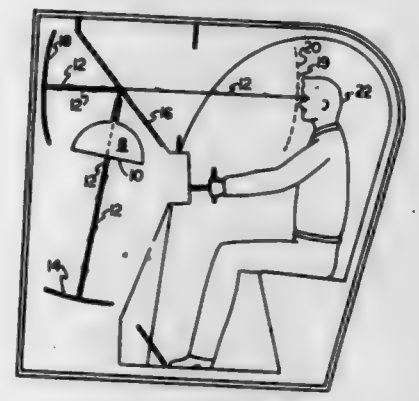
circuit means coupled to said sync separation means and to said signal processing means and sampling the composite sync signal in response to the sampling signal for generating a vertical reference signal upon the detection of a predetermined relationship between the sampling signal and the vertical sync component of said composite sync signal.

4,535,354

PROJECTED STEREOSCOPIC PICTURE SEPARATION

Glenn E. Rickert, 3429 W. 700 North, Huntington, Ind. 46750

Filed Mar. 24, 1983, Ser. No. 478,533
Int. Cl.³ H04N 9/54
U.S. Cl. 358—88 **20 Claims**



1. An improved method of limiting the visibility of stereoscopic pictures on a screen without an observer using special eye glasses wherein at least two stereoscopic pictures comprising first and second pictures are projected onto a screen having light concentrating capability for directing the light of at least two projection optics comprising first and second optics into corresponding first and second limited viewing areas for use by respective eyes of the observer such that the observer can position himself to see the first picture and not the second picture with his first eye and see the second picture and not the first picture with his second eye whereby he can see the picture as a three-dimensional display, the improvement comprising:

projecting the first picture onto said screen by means of said first projection optic and a beam splitter;

projecting the second picture onto said screen by means of said second projection optic and said beam splitter;

whereby a substantially distortion free three-dimensional display is provided the observer.

4,535,355

METHOD AND APPARATUS FOR SCRAMBLING AND UNSCRAMBLING DATA STREAMS USING ENCRYPTION AND DECRYPTION

Robert M. Arn; Peter H. Csanky, and Glen F. Waszek, all of Toronto, Canada, assignors to Microdesign Limited, Toronto, Canada

Filed Sep. 7, 1982, Ser. No. 415,317
Claims priority, application Canada, Jun. 23, 1982, 405818
Int. Cl.³ H04N 7/16, 1/04
U.S. Cl. 358—123 **28 Claims**

1. A method of scrambling and unscrambling a plurality of data streams having differing data on a plurality of signal channels, where each data stream has discrete and recognizable synchronizing information contained therein, which is periodically or aperiodically transmitted, and where there are at least as many signal channels, each having a fixed carrier frequency, as there are differing data streams to be scrambled and unscramble; comprising the steps of:

(a) synchronizing all of said plurality of data streams;

(b) generating an encryption key code and imposing said encryption key code onto said plurality of data streams;

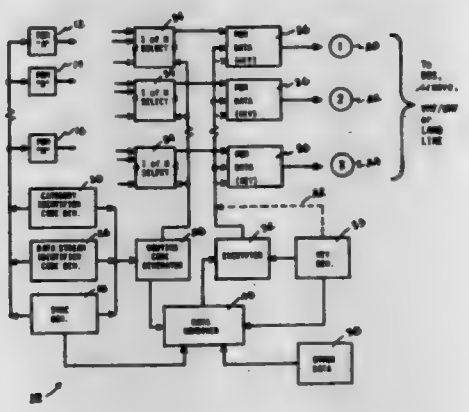
(c) generating a data package which contains an identifier code for each data stream and a routing code by which said plurality of data streams are routed at any instant of time, so that each said data stream is assigned at that

instant of time to a specific one of said plurality of signal channels;

(d) encrypting said data package in each of said data streams by inserting the same in said data stream at a specific place therein relative to said synchronizing information;

(e) transmitting said assigned routed data streams on their respective assigned signal channels;

(f) receiving said assigned routed data streams at any receiver equipped to receive and de-modulate the same;



(g) at any authorized receiver, capturing said encryption key code and utilizing said encryption key code to decrypt said encrypted data package so as to decode said identifier codes and said routing code; and

(h) utilizing said identifier codes and said routing codes so as to track a given data stream, no matter on which transmitted channel it appears at any instant of time.

4,535,356

MUSIC INFORMATION TRANSMISSION SYSTEM

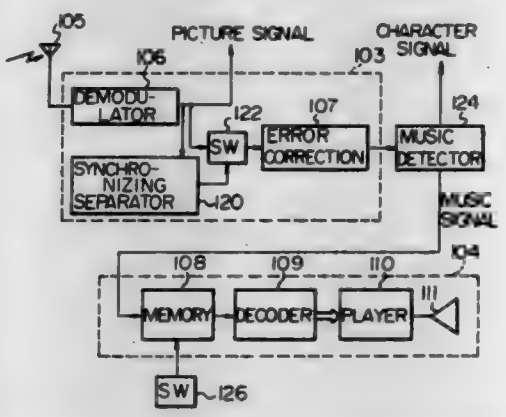
Koichi Nakagawa; Yoshio Sugimori; Yoshihide Kimata; Yosai Araki, and Tomoji Arai, all of Tokyo, Japan, assignors to Nippon Television Network Corporation; OKI Electric Industry Co., Ltd. and KEIO Electronic Laboratory Corporation, all of Tokyo, Japan

Filed Dec. 20, 1982, Ser. No. 451,552

Claims priority, application Japan, Dec. 28, 1981, 56-209647; Dec. 28, 1981, 56-209648

Int. Cl.³ H04N *7/04, 7/08*

U.S. Cl. 358—145 **3 Claims**



1. A music information transmission system comprising:

input means having a keyboard for quantizing and modulating a music symbol representable on a music sheet into a digital signal by providing said symbol through said keyboard,

means for assembling said digital signal and a character signal into a packet which has a header portion and a data portion, said header portion having at least a music detector area for indicating that the data portion relates to music,

means for multiplexing said packet in a blanking period of a television signal,

means for transmitting said television signal,

reception means for receiving said television signal and separating said packet from a picture signal which is to be displayed on a screen,

means for separating from said packet said digital signal relating to said music symbol and said character signal,

memory means for storing temporarily said separated digital signal,

decoding means for reading out the content of said memory means and decoding the digitally encoded music symbol,

means for displaying characters in said packet on a screen, and

means for playing audio represented by the music symbols decoded by said decoding means.

4,535,357

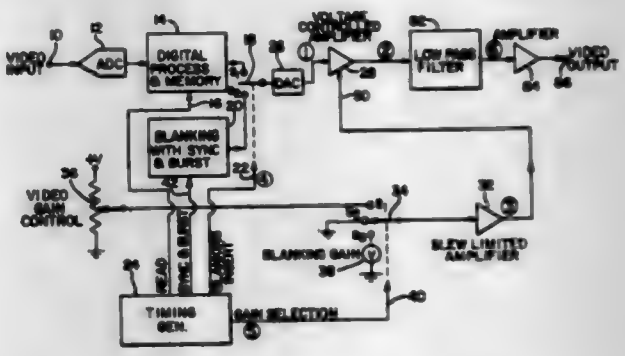
VIDEO SIGNAL PROCESSING CIRCUIT AND METHOD FOR BLANKING SIGNAL INSERTION WITH TRANSIENT DISTORTION SUPPRESSION

Bruce J. Penney, Portland, Oreg., assignor to Tektronix, Inc., Beaverton, Oreg.

Filed Apr. 8, 1983, Ser. No. 483,321

Int. Cl.³ H04N *5/06*

U.S. Cl. 358—150 **18 Claims**



1. A video signal processing circuit comprising:

video input means for supplying an input video signal;

blanking data means for generating a separate blanking data signal including blanking pulse and horizontal sync signal components;

signal insertion means for inserting said blanking data signal into said input video signal to provide a modified video signal; and

signal shaping means for shaping a portion of the modified video signal to reduce the slopes of the front and rear edges of the blanking pulse portion to provide a shaped video signal, and to enable the transmission of the shaped video signal through a low pass filter to provide an output video signal and to suppress transient distortion of said output video signal.

4,535,358

LINE SYNCHRONIZING CIRCUIT FOR A PICTURE DISPLAY DEVICES AND PICTURE DISPLAY DEVICE COMPRISING SUCH A CIRCUIT

Peter A. Duijkers, Nijmegen, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 7, 1983, Ser. No. 483,084

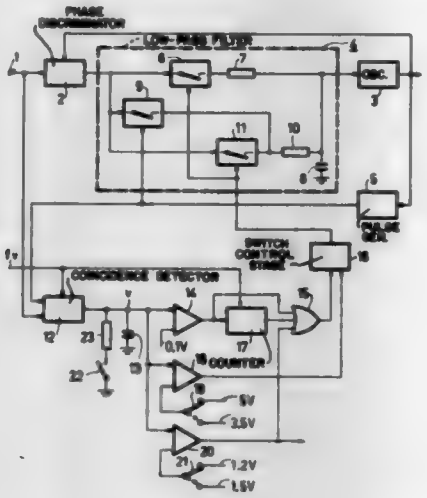
Claims priority, application Netherlands, Apr. 13, 1982, 8201531

Int. Cl.³ H03L *7/00*; H04N *5/04*

U.S. Cl. 358—158 **12 Claims**

1. A line synchronizing circuit for a picture display device, comprising a control loop for controlling the frequency and/or the phase of a line oscillator, said control loop including means for applying an incoming line synchronizing signal and a reference signal generated by the oscillator to a phase discriminator for determining the phase difference between the applied signals, and a low-pass filter for smoothing the output signal of the phase discriminator and for applying the smoothed output signal to the oscillator for controlling this oscillator, the circuit

also comprising a coincidence detector for determining the phase difference between the incoming line synchronizing signal and the reference signal, and means coupled to said coincidence detector for switching elements of the control loop when said phase difference is less than a predetermined value for bringing the loop from a first into a second state, respectively, in which second state the loop gain and the pull in rate, respectively, have a higher value than in the first state,



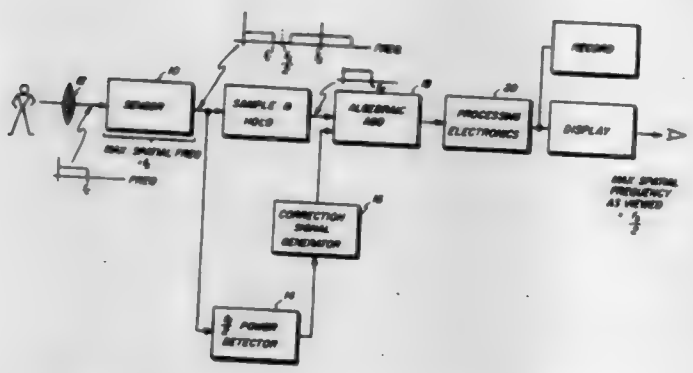
characterized in that said switching means comprises: a level detector for comparing the output signal of the coincidence detector with a first reference level which indicates the presence of an incoming line synchronizing signal but no coincidence, and for bringing the control loop into the second state until said output signal reaches the first reference level, and a signal prolonging element coupled to said level detector for subsequently maintaining the control loop in the said second state during a predetermined period of time.

4,535,359

DEFECT CORRECTION IN SOLID STATE IMAGING

William T. Fearnside, Fishers, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,497
Int. Cl.[3] H04N *5/14, 3/14*
U.S. Cl. 358—163
7 Claims



1. Apparatus for use with an electrooptic imager adapted to receive and sample an optical image at a given sampling frequency, thereby to produce a composite signal comprised of a baseband signal and sidebands of said sampling frequency, comprising:

(a) means for limiting the optical spatial frequency bandwidth of any optical image cast upon said imager to a frequency that is less than one-half the sampling frequency of said imager,

(b) means for receiving said composite signal for detecting electrical power having a frequency that approximates or equals one-half said sampling frequency, thereby to register the existence of at least one defective pixel of said imager, and

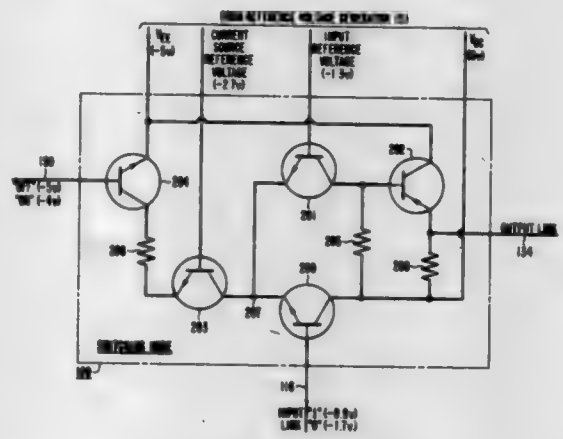
(c) means for modifying said baseband signal in proportion to the magnitude of said electrical power and in accordance with the phase thereof.

4,535,360

LOW POWER WIDEBAND SWITCHING ARRAY ELEMENT

Bruce E. Briley, Countryside, and Jeffrey A. Hiltner, Winfield, both of Ill., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 27, 1983, Ser. No. 536,947
Int. Cl.[3] H04N *5/22, 1/00, 5/68, 5/64*
U.S. Cl. 358—181
6 Claims



1. A switching device comprising a pair of transistors each having a base, an emitter, and a collector, and configured as an emitter-coupled pair for the communication of video signals from said base of one of said pair of transistors to said collector of another one of said pair of transistors, a transistor current source having an emitter and a collector and having its collector connected to said emitters of said pair of transistors, a resistor connected with said emitter of said current source, a transistor switch serially connected to said resistor and said emitter of said current source and responsive to a receipt of an enable signal to allow current to flow through said resistor for enabling said pair of transistors to communicate said video signals and further responsive to a receipt of a disable signal for inhibiting the flow of current through said resistor thereby inhibiting the communication of said video signals and dissipation of power by said pair of transistors.

4,535,361

EQUIPMENT FOR THE RETRANSMISSION OF TELEVISION SIGNALS IN A COMMON CHANNEL, WITH AN AUTOMATIC CONTROL OF THE VIDEO/AUDIO RATIO

Jean Yves Corbel, Chatou, France, assignor to LGT, Laboratoire General des Telecommunications, Chatou, France

Filed Nov. 30, 1982, Ser. No. 445,750
Claims priority, application France, Dec. 7, 1981, 81 22854
Int. Cl.[3] H04N *5/62, 7/04*
U.S. Cl. 358—184
3 Claims

1. A retransmission device for receiving a television signal and retransmitting a corrected television signal, comprising:

first mixing means for receiving said television signal and a first local signal and for translating said television signal into an intermediate frequency signal having video and audio components;

automatic control circuit means coupled to said first mixer and for controlling the video/audio ratio between said video and audio components, said automatic control circuit including,

(a) a power distributor having two outputs, for dividing the power at its input between said two outputs,

(b) an audio filter having an input connected to one of said power distributor outputs, for filtering said intermediate frequency audio component signal,

(c) a video filter having an input connected to the other one

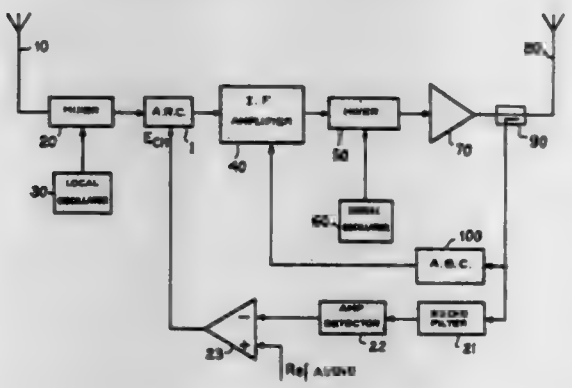
of said power distributor outputs, for filtering said intermediate frequency video component signal,

(d) audio sampling means having an input connected to the output of said audio filter, a main output and an auxiliary output, for sampling said intermediate frequency audio component signal,

(e) video sampling means having an input connected to the output of said video filter, a main output and an auxiliary output, for sampling said intermediate frequency video component signal,

(f) first and second detecting means, respectively, connected to said auxiliary outputs of said audio and video sampling means, for respectively detecting the peak amplitude of said intermediate frequency signal audio and video components,

(g) adding means connected to said main outputs of said audio and video sampling means for outputting said corrected television signal to be retransmitted,



(h) comparing means connected to the outputs of said first and second detecting means for determining whether the video/audio ratio is equivalent to greater than or lesser than a predetermined ratio and outputting a corresponding comparison signal, said video filter and said video sampling means forming a video channel and said audio filter and said audio sampling means forming an audio channel, and

(i) a variable gain amplifier connected in any one of said video and audio channels, between said respective filter and sampling means, and having a control input connected to the output of said comparing means, the gain of said variable gain amplifier being adjusted in accordance with said comparison signal;

an amplifier coupled to said automatic control circuit;

a second mixer coupled to said amplifier, for translating the output signal from said amplifier into high frequency; and

transmitting means coupled to said second mixer for transmitting said high frequency output signal from said second mixer.

4,535,362

METHOD OF TRANSFERRING DATA IN A TELEVISION RECEIVER

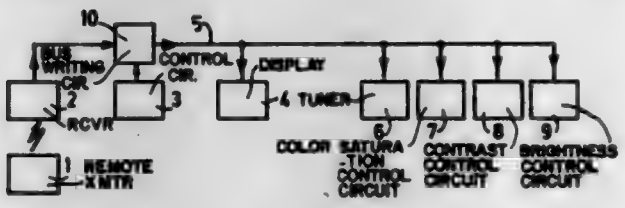
Guy J. C. Gerot, Nanterre, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 14, 1983, Ser. No. 465,935

Claims priority, application France, Mar. 24, 1982, 82 05009

Int. Cl.³ H04N *5/44*

U.S. Cl. 358—194.1 **4 Claims**



1. A method for use in a control system of a television receiver for transferring messages from a control circuit to several circuits to be controlled, said television receiver generating a sequence of line retrace pulses and field synchronizing pulses as timing signals for said control system, said messages being digitally encoded and being transferred serially over a single-wire line, characterized in that said method comprises the steps:

detecting said sequence of line retrace pulses and field synchronizing pulses;

digitally encoding said messages such that in each encoded message at least one bit thereof is significant and defines which one of said several circuits is to be controlled thereby; and

forming a sequence from said encoded messages having a fixed number of significant bits which all occur in a time interval located between two consecutive field synchronizing pulses in said sequence of line retrace pulses and field synchronization pulses, said messages being arranged in said sequence such that the significant bits therein correspond ordinally with the line retrace pulses in said sequence of line retrace pulses and field synchronizin pulses.

4,535,363

ELECTRONIC IMAGE SENSING APPARATUS

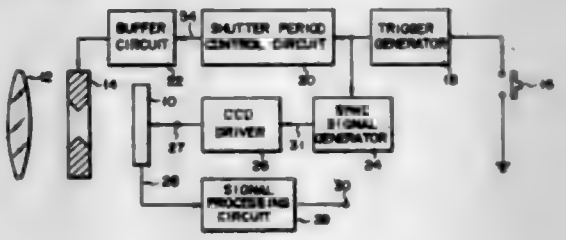
Nozomu Harada, and Okio Yoshida, both of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 23, 1983, Ser. No. 478,104

Claims priority, application Japan, Mar. 31, 1982, 57-51418

Int. Cl.³ H04N *3/14*

U.S. Cl. 358—213 **9 Claims**



1. An electronic image sensing apparatus for photographing a scene image to produce a still image of the photographed scene, said apparatus comprising:

(a) a solid state image sensing element having a photosensitive section containing a plurality of photosensitive cells and a charge readout section, which receives incident image light to generate and store signal charges corresponding to the image light in said photosensitive section, and simultaneously transfers said signal charges to said charge readout section to read out the signal charges during a signal charge readout period, and responds to the image light coming in after the readout of said signal charge to generate and store signal charges again;

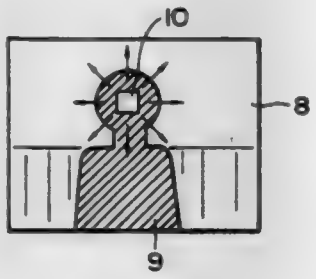
(b) shutter means for opening at a proper shutter speed so as to irradiate the image light to said solid state image sensing element; and

(c) control means connected to said solid state image sensing element and said shutter means, for driving said shutter means so that said shutter means opens before and after the signal charge readout period in synchronism with the signal charge readout operation of said image sensing element.

4,535,364
SPOT EXPOSURE ADJUSTMENT CIRCUIT

Hitoshi Hirobe, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 10, 1981, Ser. No. 320,029
Claims priority, application Japan, Nov. 13, 1980, 55-159898
Int. Cl.[3] H04N *5/193*
U.S. Cl. 358—228
2 Claims



1. In a television camera of the type having an image pickup element for converting the image of an object to be photographed into electrical signals, an exposure control apparatus having a voltage detector and controlling the exposure of said image according to the voltage level of said electrical signals, the improvement comprising:

spot selection means for providing to said exposure control apparatus electrical signals corresponding to a portion of said image less than the entire image, whereby the exposure of said entire image is controlled in accordance with the detected voltage levels of said electrical signals corresponding to a portion of said image and further comprising a switch for receiving said electrical signals corresponding to said image and passing said electrical signs to its output in response to a control signal; and

control means for providing said control signal to said switch only during reception by said switch of electrical signals corresponding to said image portion; said control means further comprises:

spot portion selection means operable by a camera operator for selecting at least one of the size and a position of said portion of said image; and

spot selection signal generating means responsive to an output from said spot position selection means for providing said control signal to said switch; wherein said spot position selection means provides an output signal defining first, second, third and fourth voltage levels, and wherein said spot selection signal generating means comprises:

a first waveform generating circuit for generating a first signal having a voltage level which changes over the course of a vertical image scan, whereby the value of said first signal represents a vertical position of said image;

a second waveform generating circuit for generating a second signal having a voltage level which changes over the course of a horizontal image scan whereby the value of said second signal represents a horizontal position of said image;

first comparator means for providing an output signal when said first signal is between said first and second voltages;

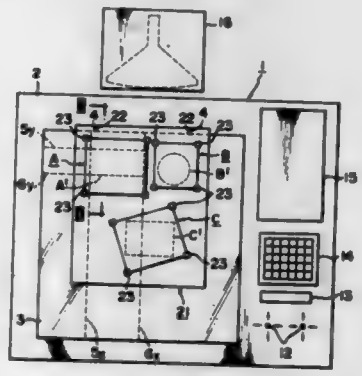
second comparator means for providing an output signal when said second signal is between said third and fourth voltages; and

means for providing said control signal to said switch during the simultaneous occurrence of output signals from both of said first and second comparator means.

4,535,365
METHOD AND APPARATUS FOR POSITIONING ORIGINAL PICTURES INTO A TRANSPARENT SHEET TO BE MOUNTED TO A PICTURE CYLINDER OF A PICTURE REPRODUCING MACHINE

Takashi Sakamoto, Kyoto, Japan, assignor to Dainippon Screen Seizo Kabushiki Kaisha, Kyoto, Japan

Filed Sep. 29, 1982, Ser. No. 427,292
Claims priority, application Japan, Sep. 29, 1981, 56-153065; Sep. 29, 1981, 56-153066
Int. Cl.[3] H04N *1/18*
U.S. Cl. 358—287
12 Claims



1. A method for arranging substantially transparent originals on a picture cylinder suitable for recording in a predetermined layout, comprising the steps of:

(A) setting a transparent sheet to a transparent plate at a predetermined positional relation therebetween,

(B) positioning the originals on said transparent sheet by using X and Y cursors so that orientations of parts to be reproduced of originals are respectively consistent with those of reproduction images,

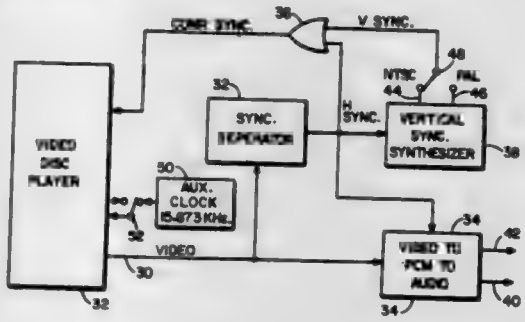
(C) fixing said originals on said transparent sheet at respective positions positional in said step (B),

(D) mounting said transparent sheet onto the picture cylinder.

4,535,366
UNIVERSAL VIDEO DATA PLAYBACK

Alan J. Pullen, Canoga Park, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Feb. 22, 1982, Ser. No. 350,858
Int. Cl.[3] H04N *5/76, 7/08*
U.S. Cl. 358—342
6 Claims



1. A method for recovering, at a predetermined rate, encoded digital data signals from a recording medium having said data recorded thereon in contiguous segments which alternate with cyclically recurring pulse signals recoverable as video level horizontal sync pulses by a recording medium video player apparatus, wherein no vertical sync pulse signals are recorded on said recording medium, comprising the steps of:

playing said recording medium on a predetermined format recording medium video player apparatus to recover the signals recorded thereon as video format signals;

separating said cyclically recurring pulse signals from said recovered signals;

synthesizing from said separated pulse signals, vertical pulse signals having a repetition rate, relative to said separated

pulses, equal to the repetition rate of vertical sync pulses relative to horizontal sync pulses in said predetermined format;

providing said vertical sync pulses to the circuitry in said player apparatus which normally utilize, when recorded video is played, the separated vertical sync pulses from the recovered video; and

decoding the recovered video format signals into digital data signals.

4,535,367

MAGNETIC RECORD STILL MODE REPRODUCTION APPARATUS AND METHOD

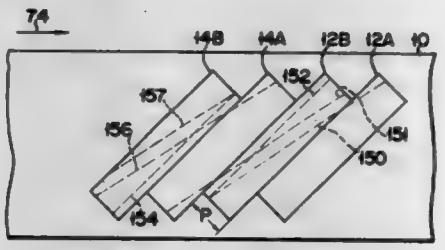
Shuhei Kanda, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 293,939, Aug. 18, 1981, abandoned. This application Dec. 21, 1983, Ser. No. 563,547

Claims priority, application Japan, Aug. 28, 1980, 55-118741

Int. Cl.³ H04N *5/783*

U.S. Cl. 360—10.2 **29 Claims**



1. A helical scanning type recording and/or reproduction apparatus which effects a slow motion reproduction consisting of a still reproduction period and a normal reproduction period, said apparatus comprising:

(a) speed control means for controlling travel of a recording medium in such a way that said recording medium runs at a prescribed constant normal speed in a normal recording-/reproduction mode and runs in a slow motion reproduction mode alternately between said normal speed and a still condition substantially corresponding to still reproduction;

(b) a first pair of head means for normal mode recording and reproduction having different azimuth angles from each other and having the same head width, said first pair of head means for defining, at a predetermined pitch on the recording medium, a plurality of video tracks on which field image signals are magnetically recorded, neighboring ones of said tracks having different azimuth angles from one other;

(c) a second pair of head means for special mode reproduction, said second pair of head means each having the azimuth angle of the same one of said first pair of head means, for reproducing the image signals recorded on the video tracks having the same azimuth angles as those of said second pair of head means, said second pair of head means having the same head width as that of said first pair of head means;

(d) head-supporting means, defining first and second parallel circumferential lines spaced from each other by a prescribed distance d which is greater than zero but less than one pitch of said video tracks, for (i) supporting said first pairs of heads means in such a manner that each head of said first pair of head means is diametrically positioned with respect to the other and aligned with said first circumferential line, and (ii) supporting said second pair of head means in such a manner that each head of said second pair of head means is diametrically positioned with respect to the other, wherein one head of said second pair of head means is aligned with said first circumferential line and the other head of said second pair of head means is aligned with said second circumferential line so that said one head and said other head of said second pair of head means are spaced apart by said distance d; and

(e) rotating means, operatively connected to said supporting means, for, (i) in the still reproduction period included in said slow motion reproduction, causing said second pair of head means to trace an aimed video track during said still condition having an azimuth angle equal to that of said second pair of head means, said aimed track including first and second paths spaced from one other by said predetermined distance d and inclined with respect to said aimed video track, thereby increasing the tracing area of said aimed video track traced by said second pair of head means, and for, (ii) in the subsequent normal reproduction period included in said slow motion reproduction, causing one of said second pair of head means to slide on said aimed video track along a third path parallel to said aimed video track having substantially the same width as the head of said second pair of head means and a tracing deviation width smaller than the half of the width of said aimed video track, thereby maximizing the image signal level reproduced during the still reproduction period during said normal reproduction period included in said slow motion reproduction.

4,535,368

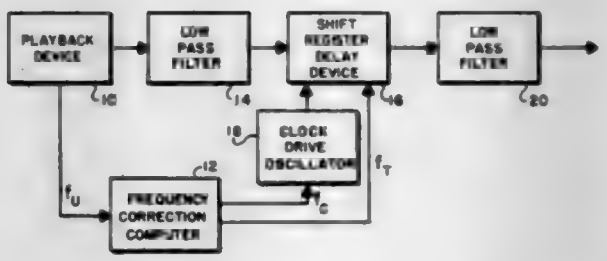
WOW AND FLUTTER CONTROL APPARATUS FOR AUDIO AND VIDEO PLAYBACK SYSTEMS

Jack Schwartz, and Tai T. Wu, both of 147 Ridge St., Arlington, Mass. 02174

Filed Jun. 1, 1983, Ser. No. 499,981

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—28 **9 Claims**



1. Apparatus for correcting instantaneous frequency deviation in the output signal of a playback device, said apparatus comprising

means for providing a constant frequency signal at the output of said playback device in addition to the normal recorded program material to be reproduced by said playback device;

a frequency to voltage converter having an input coupled to said playback device, adapted to receive said constant frequency signal as reproduced by said playback device, and operating to produce an output voltage proportional to the frequency of the input signal;

a voltage averaging means having an input coupled to the output of said frequency to voltage converter and operating to average the input signal over a predetermined time period and produce an output signal representing said constant frequency signal as originally provided;

means coupled to the output of said frequency to voltage converter and to the output of said voltage averaging means for comparing the outputs thereof and producing an output voltage proportional to the frequency of a control signal required to correct said instantaneous frequency deviations in the output of said playback device;

a first voltage to frequency converter coupled to the output of said comparing means and operating to produce a first control signal;

a delay device coupled to the output of said playback device and adapted to receive signals representing the normal recorded program material as reproduced by said playback device, said delay device having a clock drive

adapted to be driven by a control signal of variable frequency and coupled to the output of said first voltage to frequency converter;

whereby the signals representing the normal recorded program material as reproduced by said playback device are selectively delayed by a time proportional to the frequency of said first control signal to thereby substantially correct said instantaneous frequency deviations in the output of said playback device.

4,535,369

MAGNETIC RECORDING AND REPRODUCING APPARATUS

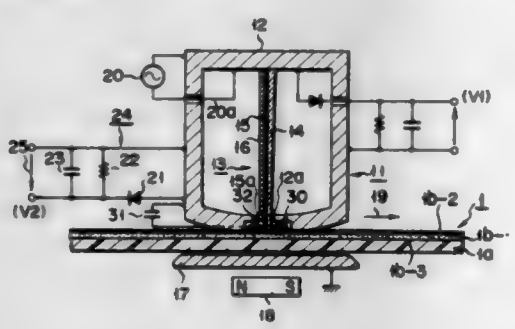
Norikazu Sawazaki, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 513,386, Jul. 13, 1983,. This application Nov. 16, 1983, Ser. No. 552,390

Claims priority, application Japan, Jul. 16, 1982, 57-122942; Jul. 16, 1982, 57-122943; Nov. 9, 1982, 57-196377; Nov. 18, 1982, 57-202283

Int. Cl.³ G11B *5/02*

U.S. Cl. 360—55 **9 Claims**



1. A magnetic recording and reproducing apparatus comprising:

a magnetic material whose high frequency characteristic varies with a signal magnetic field from a magnetic recording medium;

a high frequency coupling circuit whose coupling degree varies with said high frequency characteristic of the magnetic material; and

means for reproducing a signal recorded on said magnetic recoding medium in accordance with the variation of the coupling degree of said high frequency coupling circuit.

4,535,370

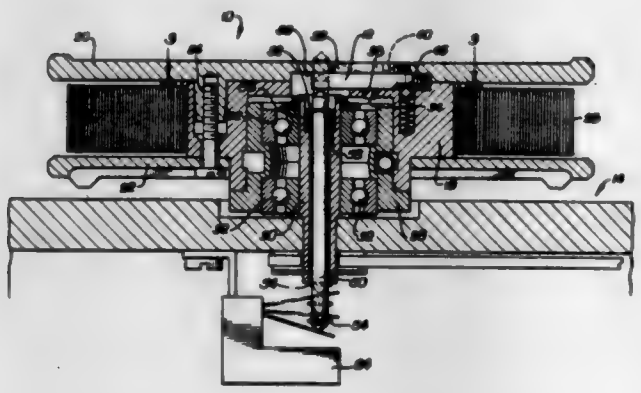
MAGNETIC TAPE REEL WRITE PROTECT MECHANISM

William J. Gervais, Northridge, Calif., assignor to Rosstream Research Assoc. Ltd., Cerritos, Calif.

Filed Dec. 22, 1982, Ser. No. 452,335

Int. Cl.³ G11B *15/04*

U.S. Cl. 360—60 **9 Claims**



1. A mechanism to reduce the risk of inadvertent erasure or over-writing of a magnetic tape, said mechanism comprising:

a tape reel having a front flange and a rear flange;

switching means incorporated into said front flange and operable from the front face thereof, for switching the status of said reel between protected and unprotected conditions, such switching means including an actuator rotatable from the front face of said front flange, about an axis eccentric to the axis of rotation of said reel, and rotatable between first and second angular positions; and

sensing means located on the axis of rotation of said reel, for sensing the status of said switching means, said sensing means including a rod mounted for limited axial movement along the axis of rotation of said reel and biasing means for urging said rod toward an extended position, wherein said actuator presents a camming surface toward an end of said rod, and is operative to move said rod axially between extended and retracted positions as said actuator is rotated between its two angular positions.

4,535,371

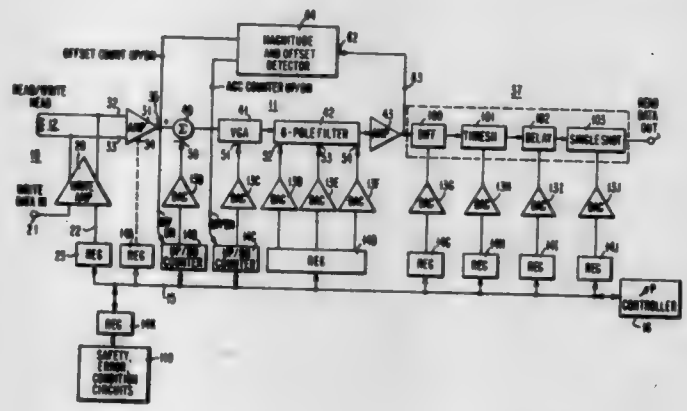
RECORDING CHANNEL WITH SIGNAL CONTROLLED INTEGRATED ANALOG CIRCUITS

Jerome D. Harr, San Jose, and Karl R. Hense, Los Altos, both of Calif., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed May 16, 1983, Ser. No. 494,822

Int. Cl.³ G11B *5/02, 5/09*

U.S. Cl. 360—67 **14 Claims**



1. A recording channel for a data storage file including means for converting the signal in the read transducer to a binary digital signal having a value which corresponds to the value of stored data that produced said signal, said converting means comprising:

a plurality of integrated circuits including

(1) a read amplifier having its input connected to said read transducer;

(2) a peak detector including an input terminal, a first set of interconnected analog circuits and a digital output circuit to provide said binary digital signal, and at least one control terminal for each of said circuits of said peak detector to permit the adjustment of an operating parameter of each said circuit of said peak detector in accordance with a control signal supplied to said at least one control terminal; and

(3) circuit means including

(a) a second set of analog circuits connected betwen said read amplifier and said input terminal of said peak detector to

(i) maintain the amplitude of said signal supplied to said peak detector at a predetermined amplitude independent of the output of said read amplifier; and

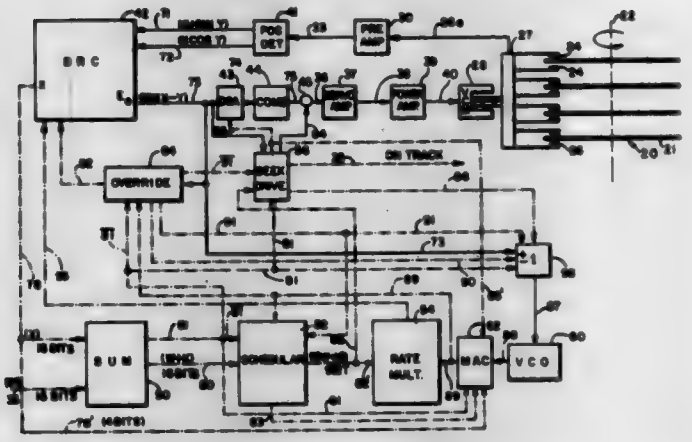
(ii) eliminate any DC component present in the signal supplied from said read amplifier; and

(b) means for dynamically and continuously adjusting preselected parameters of said second set of analog circuits, including means for developing control signals for said second set of analog circuits in accordance with the signal supplied to said peak detector.

4,535,372
POSITION TRACKING SERVO CONTROL SYSTEMS AND METHODS

Lester M. Yeakley, Boulder, Colo., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Jun. 29, 1983, Ser. No. 509,238
Int. Cl.[3] G11B 5/55, 5/58
U.S. Cl. 360—77 58 Claims



1. In a positioning system for moving a movable member along a defined path of movement from an initial position to a final position and including the movable member having the defined path of movement, means for dividing the path of movement into a series of contiguous segments, actuator means coupled to the movable member for moving said movable member, a control system comprising:

reference position means for storing a reference position of the movable member with respect to the path of movement, the stored reference position being variable, indicating an approximate position of the movable member with respect to the segments along the path of movement including an approximate incremental position with respect to a segment and initially indicating said initial position;

position means for generating an indication of actual incremental position of the movable member with respect to a segment;

controller means responsive to said position means and to said reference position means for generating a position error value having a magnitude indicating a difference between said approximate incremental position and said actual incremental position;

means for controlling said actuator means in response to said position error value; and

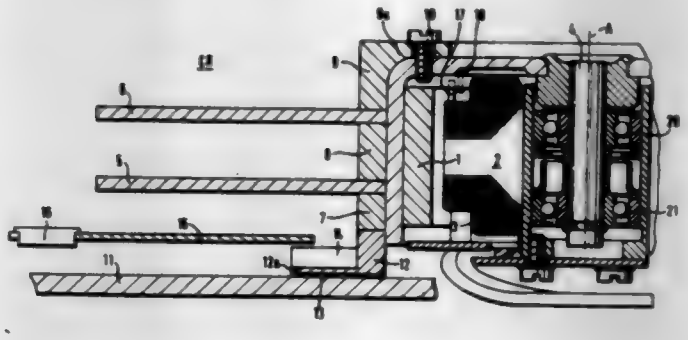
updating means responsive to a command indicating a final position of the member for incrementing the stored reference position from said initial position to said final position.

4,535,373
LABYRINTH SEAL IN DISK STORAGE DRIVE

Bernhard Schub, St. Georgen, Fed. Rep. of Germany, assignor to Papst-Motoren GmbH & Co. KG, St. Georgen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 127,404, Mar. 5, 1980, abandoned. This application Dec. 29, 1981, Ser. No. 335,483
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1980, 3049334
Int. Cl.[3] G11B 5/012
U.S. Cl. 360—97 25 Claims

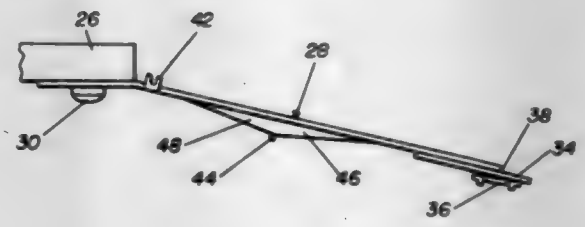
1. In a disk storage drive having a chamber of contaminant-free environment without provision of air intake, a combination comprising at least one storage disk mounted for rotation in said chamber; a DC brushless electric motor having a stator and a rotor to drive said disk; means connecting said disk to said rotor for rotation with the same; and a labyrinth seal defined by an airgap between portions of said stator and said rotor and located to substantially stop the movement of contaminent particles from the inside of the motor to the contaminent-free chamber.



4,535,374
WHITNEY-TYPE HEAD LOADING/UNLOADING APPARATUS

Kurt M. Anderson, Louisville, and James H. Morehouse, Jamestown, both of Colo., assignors to Amcodyne Incorporated, Longmont, Colo.

Filed Nov. 4, 1982, Ser. No. 439,190
Int. Cl.[3] G11B 5/60, 15/64, 17/32
U.S. Cl. 360—103 6 Claims



1. In an apparatus for positioning a head relative to a magnetic disk for translating data during read/write operations, an assembly comprising:

a Whitney-size head, said Whitney-size head being spaced from the disk during the positioning of said Whitney-size head for read/write operations;

a Whitney-type flexure to which said Whitney-size head is supportably connected;

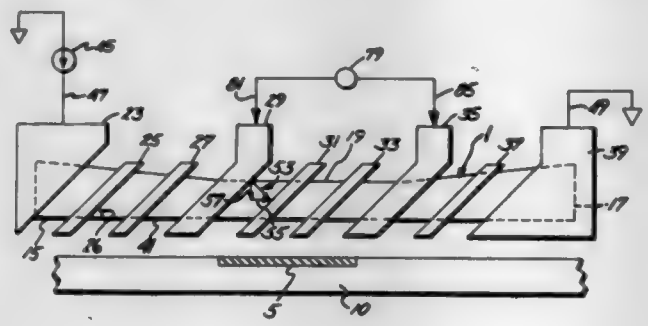
a substantially triangular-shaped Whitney-type suspension arm having a longitudinal axis, said Whitney-type suspension arm being sent about an axis that perpendicularly intersects said longitudinal axis of said Whitney-type suspension arm; and

dynamic loading means, operatively associated with said Whitney-type suspension arm, said dynamic loading means including a cooperating portion and a ramp-like member for use in positioning said Whitney-size head relative to the magnetic disk for data translation therewith, wherein said cooperating portion and said ramp-like member provide for simultaneous horizontal and vertical movement of said Whitney-size head relative to the disk as said cooperating portion and said ramp-like member movingly engage each other, said moving engagement between said cooperating portion and said ramp-like member being along the gravitational center line of the combination of said Whitney-type suspension arm, said Whitney-type flexure, and said Whitney-size head to minimize unwanted movement of the Whitney-size head during positioning thereof relative to the magnetic disk.

4,535,375
MAGNETORESISTIVE HEAD

Gregory S Mowry, Burnsville, and Peter K. George, Bloomington, both of Minn., assignors to Magnetic Peripherals, Inc., Minneapolis, Minn.

Filed Jan. 14, 1983, Ser. No. 457,830
Int. Cl.[3] G11B *5/30*
U.S. Cl. 360—113 4 Claims



1. A magnetic head for detecting information representing magnetic fields on a selected track of a magnetic recording medium, comprising:

an elongated magnetoresistive element having a distant first end and a distant second end opposite thereto, and a central region intermediate to said distant first and second ends;

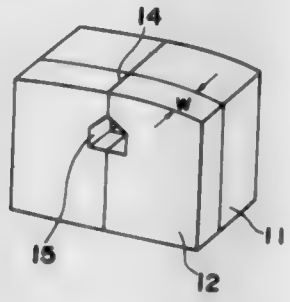
a means for generating a magnetic field within said element; and

a means for detecting a change in resistance of said magnetoresistive element across said central region of said element as said magnetic fields of said recording medium are presented to said central region, said detection means excluding any changes in resistance of the ends of said element.

4,535,376
MAGNETIC HEAD INCORPORATING AN AMORPHOUS MAGNETIC METALLIC FILM HAVING A THICKNESS EQUAL TO A TRACK WIDTH

Noboru Nomura, Kyoto; Eiichi Hirota, Hirakata, and Kiyotaka Wasa, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Continuation-in-part of Ser. No. 17,537, Mar. 5, 1979, abandoned. This application Mar. 15, 1982, Ser. No. 358,608
Claims priority, application Japan, Mar. 3, 1978, 53-24888
Int. Cl.[3] G11B *5/12*
U.S. Cl. 360—126 24 Claims



1. A magnetic head including at least a core for constituting a magnetic circuit, and a magnetic gap formed in said core, said core comprising:

a support substrate having a first face which is brought into contact with a magnetic recording medium;

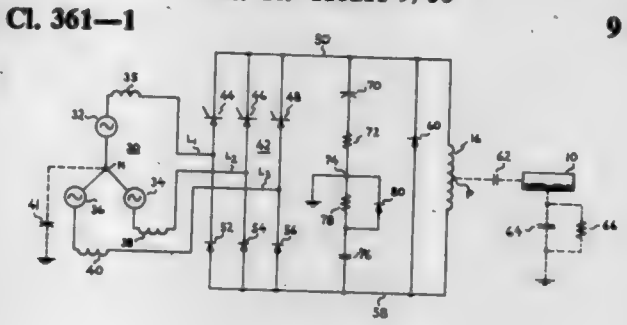
a portion including said first face of said support substrate or said substrate as a whole being made of a non-magnetic high-resistance material; and

an amorphous magnetic metallic film deposited on one or a plurality of faces of said support substrate, which abut on said first face of said support substrate, and deposited at least on said non-magnetic high-resistance material portion, said amorphous magnetic metallic film having a thickness equal to a track width.

4,535,377
SHAFT VOLTAGE SUPPRESSION CIRCUIT

Lawrence J. Lane, Salem, Va., assignor to General Electric Company, Salem, Va.

Filed Mar. 28, 1984, Ser. No. 594,214
Int. Cl.[3] H02H *9/00*
U.S. Cl. 361—1 9 Claims



1. For use with electric motors and generators, of the type including a field winding supported by a shaft which is movable within bearings, which is supplied by way of relative positive and negative buses with electrical power from a source including an electrical power conversion bridge having controlled rectifiers and uncontrolled rectifiers, circuit means for suppressing voltages coupled to said shaft from said field winding, said circuit means comprising:

(a) a first series combination of a first resistor and a first capacitor connected between said positive bus and a common voltage;

(b) a second series combination of a second resistor and a second capacitor connected between said negative bus and said common voltage; and,

(c) means associated with said second series combination to establish a low impedance path including said second capacitor for currents flowing from the negative bus to the common voltage and a path having a high impedance relative to said low impedance path including said second resistor and said second capacitor for currents flowing from said common voltage to said negative bus.

4,535,378
OVERCURRENT DETECTOR FOR AN INVERTER

Tamotu Endo, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Nov. 1, 1983, Ser. No. 547,588
Claims priority, application Japan, Nov. 16, 1982, 57-200641; Dec. 17, 1982, 57-221328; Jun. 28, 1983, 58-116392
Int. Cl.[3] H02H *7/122*
U.S. Cl. 361—18 18 Claims

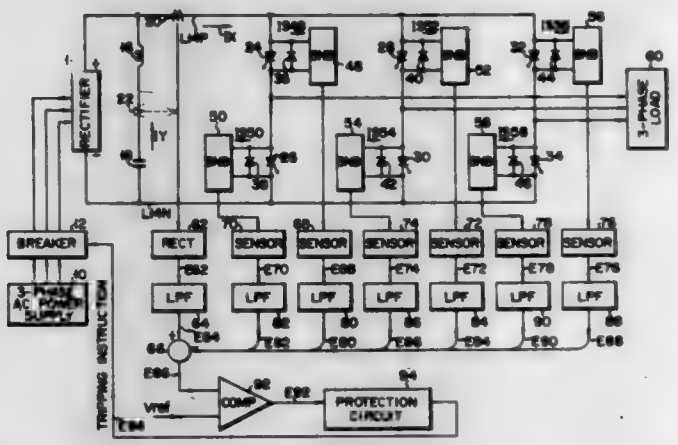
1. An overcurrent detector for an inverter, which includes a filter capacitor and a snubber circuit, comprising:

first means for detecting a current flowing through the DC main circuit of said inverter or a current flowing through said filter capacitor, and for providing a first signal in proportion to the magnitude of said current;

second means for generating a second signal corresponding to the magnitude of a snubber current flowing through said snubber circuit; and

third means for generating a third signal corresponding to

the difference between said first and second signals, said third signal being an output signal of said overcurrent



detector and being utilized for the purpose of protecting the operation of said inverter.

4,535,379

TELEPHONE PROTECTOR MODULE WITH AUXILIARY FUSIBLE ELEMENT

Paul V. De Luca, Plandome Manor, and Helmuth Neuwirth, Garden City, both of N.Y., assignors to Porta Systems Corp., Syosset, N.Y.

Filed Apr. 27, 1984, Ser. No. 604,882
Int. Cl.³ H02H *9/06*
U.S. Cl. 361—124 **3 Claims**



1. In a telephone protector module for protecting individual subscriber pairs, including a housing, a pair of long and short contacts for tip and ring circuits, a pair of heat coil assemblies for protecting against excess current surges, a pair of arcing devices for protecting against excess voltage surges, and a grounding element communicating with said tip and ring circuits, the improvement comprising: said grounding element including a ground pin axially aligned within said housing and having an outer end projecting outwardly therefrom, said ground pin having an inner end; a planar ground plate secured to said inner end and lying in a plane perpendicular to the axis of said pin, said ground plate having laterally extending portions overlying one end of said arcing devices; a solder plate of fusible material maintained in congruent relation to said ground plate, and interposed between said ground plate and arcing devices, said solder plate serving as a heat sink upon the occurrence of an excess current surge during a period prior to the firing of said heat coil assemblies.

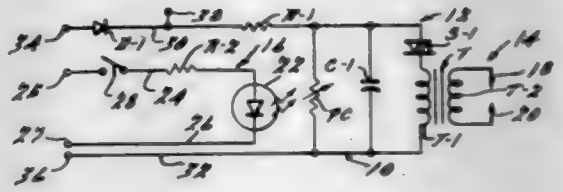
4,535,380

IGNITION SYSTEM

Frederick J. Geary, Holland, Mich., assignor to Robertshaw Controls Company, Richmond, Va.

Filed May 23, 1984, Ser. No. 613,183
Int. Cl.³ F23Q *3/01*; F02P *3/08*
U.S. Cl. 361—256 **21 Claims**

1. In an ignition system, the combination including a high voltage pulse generator circuit, a combustion initiator circuit, a low voltage control circuit, and means interfacing said pulse generator circuit and said combustion initiator circuit, said high voltage pulse generator circuit including a load, a breakover device connected in series with said load, a capacitor connected in parallel with the series combination of said breakover device and said load, a resistor connected to said capaci-



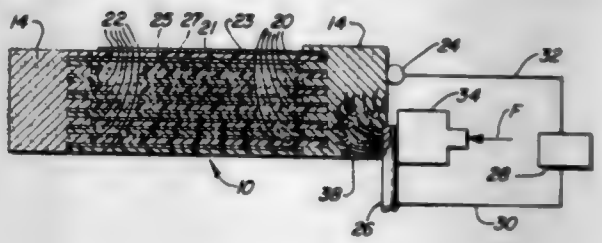
tor, and shunt means connected across said capacitor, said low voltage control circuit including means controlling conduction through said shunt means and additional switch means controlling the energization of said low voltage control circuit.

4,535,381

CAPACITIVE DEVICE AND METHOD OF PACKAGING THAT DEVICE

Charles C. Rayburn, Lynchburg, Va., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Nov. 17, 1983, Ser. No. 552,891
Int. Cl.³ H01G *1/13, 4/10*; B65D *65/00*
U.S. Cl. 361—308 **44 Claims**



1. A capacitive device formed in a solid shape having a length defined by a first end and a second end, a width defined by a first edge and a second edge and a height defined by a top and a bottom, said capacitive device comprising a plurality of strata of capacitive structure, a protective means and electrical connection means; said plurality of strata of capacitive structure comprising a plurality of layers of dielectric film, each of said plurality of layers of dielectric material having affixed thereto a metallic film, said plurality of layers being disposed with said metallic film of each layer being separated by dielectric material from said metallic film of an adjacent layer, each of said plurality of layers having metal film extending substantially from said first end to said second end and having said metal film electrically discontinuous at a discontinuity between said first edge and said second edge; said protective means comprising wrapping means covering said top, said first end, said bottom and said second end; said electrical connection means comprising an electrically conductive coating applied to said first edge and said second edge to electrically connect said metallic films of each of said plurality of layers, and said wrapping means being applied sufficiently tightly to the device to mechanically enhance the device, thereby increasing capability of the device to resist delamination.

4,535,382

OIL-IMPREGNATED CAPACITOR

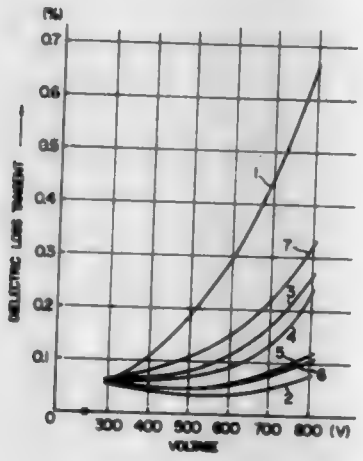
Hidekazu Wada, Itami; Hironori Yoshino, Osaka, and Kohei Shiota, Kyoto, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Mar. 14, 1984, Ser. No. 589,546
Claims priority, application Japan, Mar. 14, 1983, 58-41792; Mar. 14, 1983, 58-41787; Apr. 19, 1983, 58-69444; Apr. 19, 1983, 58-69441; Jun. 20, 1983, 58-111239
Int. Cl.³ H01G *4/22*
U.S. Cl. 361—319 **29 Claims**

1. An oil-impregnated capacitor comprising,

(a) a capacitor element comprising at least one member

selected from the group consisting of paper and plastic films,



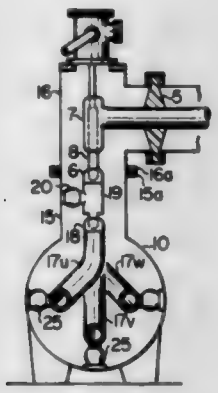
(b) said capacitor element impregnated with a liquid impregnated containing at least one organometallic compound having both a hydrolyzable group and an organic functional group.

4,535,383

GAS-INSULATED SWITCHGEAR EQUIPMENT

Yukinori Yamaoka, Hitachi, and Takeshi Takahashi, Kitaibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed May 2, 1984, Ser. No. 606,221
Claims priority, application Japan, May 2, 1983, 58-76143
Int. Cl.³ H02B *1/20;* H01H *33/54*
U.S. Cl. 361—341 2 Claims



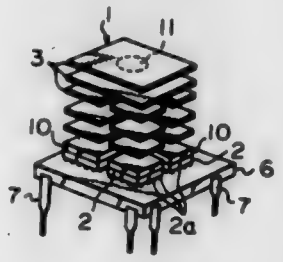
1. In a gas-insulated switchgear equipment which includes a main bus conduit containing a main bus conductor and disposed substantially horizontally, and a container connected to said main bus conduit at a top portion thereof for accommodating a disconnecting switch unit, wherein said disconnecting switch unit is composed of a pair of contact members one of which is to be electrically connected to said bus conductor, said gas-insulated switchgear equipment comprising: spacers disposed substantially vertically at predetermined positions in said main bus conduit for defining a gas-filled compartment for said disconnecting switch unit, post-like insulation support means fixedly mounted on said container of said disconnecting switch unit for securely supporting a stationary conductor mounted on the contact member to be electrically connected said bus bar, and a tulip-like current collector for connecting one end of a branch conductor having the other end connected to said bus conductor and said stationary conductor to each other.

4,535,384

HEAT SINK FOR A SEMICONDUCTOR DEVICE

Tetsushi Wakabayashi, Kawasaki; Norio Honda, Aizuwakamatsu, and Osamu Sakuma, Yokohama, all of Japan, assignors to Fujitsu Ltd., Kawasaki, Japan

Continuation of Ser. No. 538,846, Oct. 5, 1983, abandoned. This application Jun. 12, 1984, Ser. No. 620,522
Claims priority, application Japan, Feb. 29, 1980, 55-24689
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—386 13 Claims



1. A semiconductor device, comprising:
(a) a mother board;
(b) a plurality of IC packages mounted in a matrix arrangement on said mother board, each with a first main surface thereof adjacent to said mother board and a second main surface thereof remote from said mother board, each of said plurality of IC packages housing a semiconductor element therein and having electrical connecting means projecting from said first main surface, and being coupled to said mother board by using only said electrical connecting means; and
(c) heat sink means including a base board portion being joined only to said second main surface of said plurality of IC packages, a heat conducting shaft portion arranged approximately perpendicular to said base board portion and a plurality of heat dissipating fins disposed on and extending outwardly from and approximately perpendicular to said heat conducting shaft portion in spaced, approximately parallel relationship to each other,
wherein said heat sink means includes a common heat sink having at least one slit extending parallel to and through said heat conducting shaft from said base board portion to approximately midway of the height of said heat conducting shaft to define a number of sections of said base board portion respectively corresponding to said plurality of IC packages, and
wherein said common heat sink is joined to said plurality of IC packages at said sections of said base board portion.

4,535,385

CIRCUIT MODULE WITH ENHANCED HEAT TRANSFER AND DISTRIBUTION

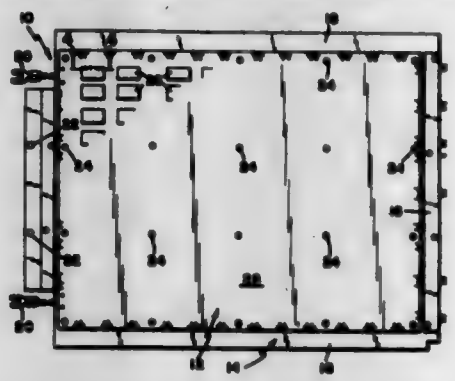
Melvin C. August, and John T. Williams, both of Chippewa Falls, Wis., assignors to Cray Research, Inc., Minneapolis, Minn.

Filed Apr. 22, 1983, Ser. No. 487,516
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—388 7 Claims

7. A circuit module with enhanced heat transfer and distribution characteristics, comprising:
a pair of circuit boards each having top and bottom sides, and conductive signal plane and ground plane layers;
a plurality of electronic devices mounted on the top side of each circuit board;
a cooling plate extending between said circuit boards;
means mechanically interconnecting said circuit boards and said cooling plate in predetermined minimal spaced-apart relationship;
a first thermally-conductive pad engaged between each electronic device and the top side of each circuit board;

a second thermally-conductive pad disposed on the bottom side of each circuit board opposite each first pad; and

at least one thermally-conductive plated-through hole interconnecting each associated pair of first and second pads,



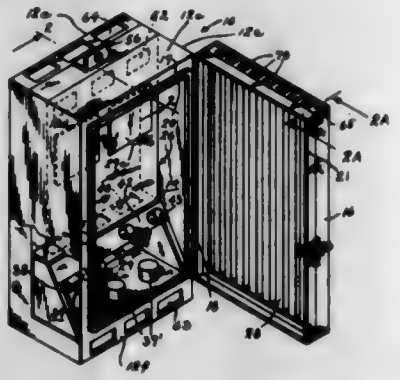
said plated-through holes being isolated from the signal plane layers but connected to the ground plane layer of said circuit boards so as to distribute heat from said electronic devices across said boards while conducting heat through said boards for transfer to said cooling plate.

4,535,386

NATURAL CONVECTION COOLING SYSTEM FOR ELECTRONIC COMPONENTS

Sydney W. Frey, Jr., Brookfield, and Mark I. Herson, South Milwaukee, both of Wis., assignors to Allen-Bradley Company, Milwaukee, Wis.

Filed May 23, 1983, Ser. No. 497,099
Int. Cl.³ H05K *7/20*
U.S. Cl. 361—389 **8 Claims**



1. A convection cooling system which houses electronic components, said system comprising:

a housing which defines a cavity and which includes a door that may be opened to gain access to the cavity;

a chassis base secured within said housing near its bottom, the chassis base supporting said electronic components;

an inner chimney secured within said housing and mounted to the top of said chassis base so that the chassis base and the inner chimney divide the cavity into a forward compartment and a rearward compartment, said inner chimney ducting the air heated by the electronic components upward through a chimney void to the top of the forward compartment of said housing, thereby creating an upward draft in the chimney void which forces a downward air circulation within the forward compartment of said housing; and

a heat exchanger providing a cool surface exposed to the interior of said forward compartment so that the heated air at the top of said forward compartment flows downwardly along said heat exchanger cooled surface to the bottom of said housing.

4,535,387

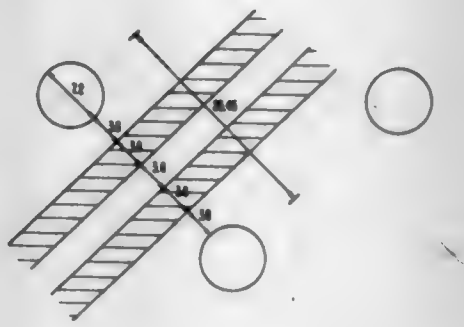
Patent Not Issued For This Number

4,535,388

HIGH DENSITY WIRED MODULE

Charles J. Kraus, Poughkeepsie; Herbert I. Stoller, Wappingers Falls, and Leon L. Wu, Hopewell Junction, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Jun. 29, 1984, Ser. No. 626,359
Int. Cl.³ H05K *1/08*
U.S. Cl. 361—414 **5 Claims**



1. A high density module with semiconductor device chips comprising:

a first plurality of wiring planes, each having a first number of vias with a first number of wiring channels running orthogonally between said vias, and a first number of conductors in said channels,

a second plurality of wiring planes, each having half said first number of vias corresponding to alternate ones of said first number of vias and with a greater than said first number of channels with second conductors running diagonally between said vias of said second plurality of wiring planes,

said first planes being assembled into a first group and

said second planes being assembled into a second group,

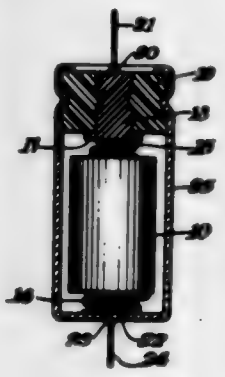
said first group being placed between said chips and said second group.

4,535,389

ELECTROLYTIC CAPACITOR

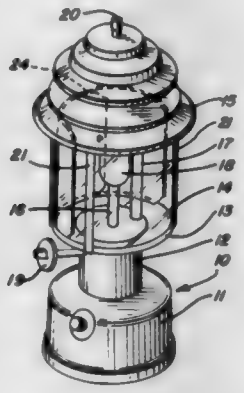
Gary J. Buczkowski, and E. James Fresia, both of Williamstown, Mass., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 21, 1984, Ser. No. 652,998
Int. Cl.³ H01G *9/02*
U.S. Cl. 361—433 **5 Claims**



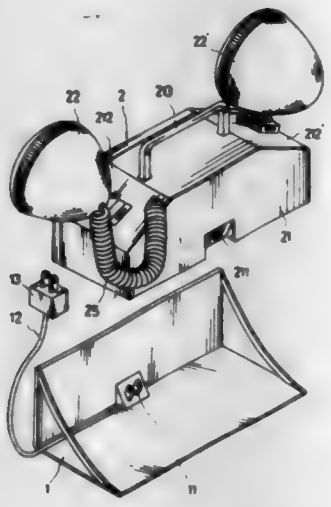
1. An electrolytic capacitor comprising two contiguously wound foil electrodes with interleaved spacer material, at least one of said electrodes bearing a barrier layer dielectric oxide, said electrodes being in contact with an electrolyte consisting of 3 to 10 wt percent ammonium benzoate, 4 to 16 wt percent water, 75 to 93 wt percent ethylene glycol, 0 to 4 wt percent of a nitro compound as a depolarizer and 0 to 0.5 wt percent of a phosphate, said electrolyte having a resistivity of 385 to 620 ohm-cm and providing a capacitor capable of operation above 100 V and 95° C. and higher.

4,535,390
FOLDING REFLECTOR FOR A LANTERN
Richard D. Curtis, and James R. Conley, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.
Filed Jun. 22, 1984, Ser. No. 623,834
Int. Cl.[3] F21L *19/00*
U.S. Cl. 362—179 14 Claims



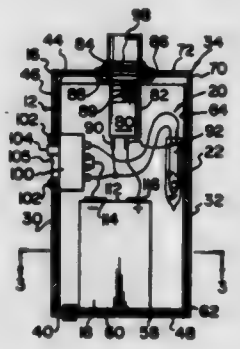
1. A folding reflector for a lantern having a fuel fount, a light source above the fuel fount, and a globe surrounding the light source, the reflector comprising a pair of reflecting panels and means for pivotally securing the panels for pivoting movement about an axis which extends perpendicularly to the panels so that the panels may be pivoted between a folded position in which the panels are superposed and an extended position in which the panels extend in opposite directions from the securing means and in which the panels can extend around a portion of the globe.

4,535,391
PORTABLE EMERGENCY LIGHT
Meng-Chang Hsiao, No. 61-1, Fu-Te St., Sung-Shan Dist., Taipei, R.O.C., Taiwan
Filed Jul. 20, 1984, Ser. No. 632,886
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—183 4 Claims



1. A portable emergency light which can be used as a stationary emergency light while it is fixed at a place and as a portable light after removing it from its fixed place comprising:
a light housing
at least two lamps wherein at least one lamp has an extension cord which can be detached from the light housing;
lamp lowering means for minimizing the space requirements of the lamps; and
a flickering controller for said lamps and switches which control each said lamp for lighting, extinguishing or flickering respectively a said lamp.

4,535,392
PERSONAL ALERT SIGNAL
William J. I. Montgomery, 9250 Pinetree Rd., Sidney, B.C., Canada (V8L 3W2)
Filed Feb. 2, 1984, Ser. No. 576,160
Int. Cl.[3] F21L *7/00*
U.S. Cl. 362—186 11 Claims



1. A personal safety device for producing a controllable flashing light signal, comprising:
a casing constructed of light-weight plastic and arranged to be carried in the hand of a user, including an elongated main body portion having an open top end and a closed bottom end and a cap having a closed top end and an open bottom end arranged to removably telescopingly receive the open top end of said main body portion, said main body, portion and said cap together defining a chamber for removably retaining electrical battery means therein and a hand grippable outer surface;
a lamp assembly secured to and projectng longitudinally from said closed end of said cap, said assembly including a tubular lens having a closed end remote from said casing and a lamp disposed within said lens, said lens having end and side walls permitting light to pass longitudinally and radially, respectively, therethrough;
electrical circuit means disposed in said chamber for electrically connecting said lamp with battery means disposed in said chamber, said circuit means including mercury switch means responsive to the orientation and/or motion of said casing for opening and closing said circuit means and thereby providing positive control of said lamp to produce an "ON" and "OFF" signal; and
second switch means for selectively (a) electrically connecting said mercury switch means in series between said lamp assembly and said battery, (b) electrically connecting said lamp assembly directly to said battery and bypassing said mercury switch means for providing control of a continuous light signal, and (c) electrically disconnecting said lamp assembly and battery.

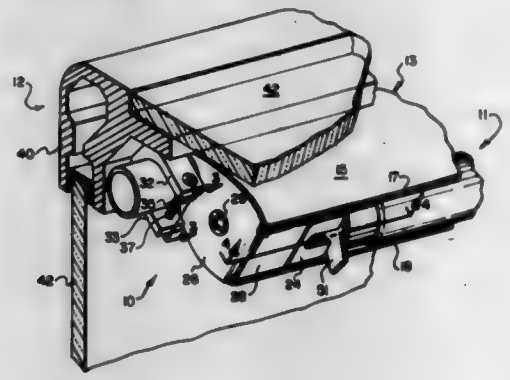
4,535,393
FLUORESCENT LAMP HOUSING
John E. Aspenwall, Lehi, Utah, assignor to Jahabow Industries, Inc., Owensville, Mo.
Filed Nov. 10, 1983, Ser. No. 550,228
Int. Cl.[3] F21S *3/00*
U.S. Cl. 362—217 1 Claim

1. A housing for a fluorescent tube comprising
a casing having a curved back, curved apart, diverging legs extending from the curved back;
converging edges at the ends of the legs remote from the curved back;
means forming an electrical chamber and a lamp chamber separated from said electrical chamber in the casing by a divider strip inserted into opposing grooves in the legs;
socket means in the lamp chamber to receive the contact pins of a fluorescent tube; and
mounting means for mounting the casing to a support structure, said mounting means including tubular means ex-

tending axially from opposite ends of the electrical chamber; and

clamp means adapted to be fixed to said support structure, said clamp means having a bracket with a back and spaced apart legs extending from the bracket and straddling each tubular means;

a bolt extending through one leg and threaded into the other leg whereby turning of the bolt will clamp the legs to the tubular means; and



means to attach the bracket to a display case or the like, said means comprising an opening through the back for inserting of a screw therethrough to be threaded into a display case, and

a hole through one leg for insertion of a screw therethrough to be threaded into a display case and a larger aligned access hole through the other leg to provide for screwdriver insertion.

4,535,394

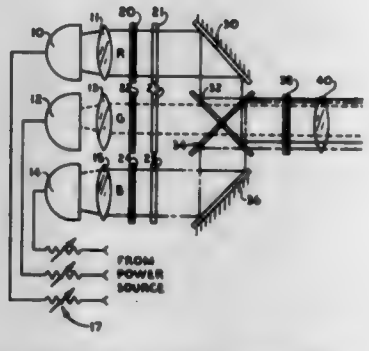
VARIABLE COLOR FLOODLIGHT

Michael A. Dugre, 1218 Hawkes St., Orlando, Fla. 32809

Filed Dec. 8, 1983, Ser. No. 559,298

Int. Cl.³ H05B *41/34*

U.S. Cl. 362—231 **12 Claims**



1. A variable color lighting system comprising:

a variable intensity source of red light;

a variable intensity source of green light;

a variable intensity source of blue light;

a first mirror disposed adjacent said red light source for reflecting a beam of red light from said red light source;

a second mirror disposed adjacent said blue light source for reflecting a beam of blue light from said blue light source;

a first dichroic mirror disposed to reflect said red light beam from said first mirror to form a red component of an output beam, to pass a beam of green light from said green light source therethrough to form a green component of said output beam, and to pass said blue light beam therethrough;

a second dichroic mirror disposed to reflect said blue light beam from said second mirror to form a blue component of said output beam, and to pass said beam of green light from said green light source therethrough, and to pass said red light beam therethrough, and in which said second dichroic mirror and said first dichroic mirror are crossed;

said first dichroic mirror disposed at right angles to said second dichroic mirror to cause said red output beam component, said blue output beam component, and said green light beam to be superimposed forming an additive output beam;

control means associated with said red, green, and blue light sources for independently varying the intensity of each of said sources, thereby varying the color of said output beam.

4,535,395

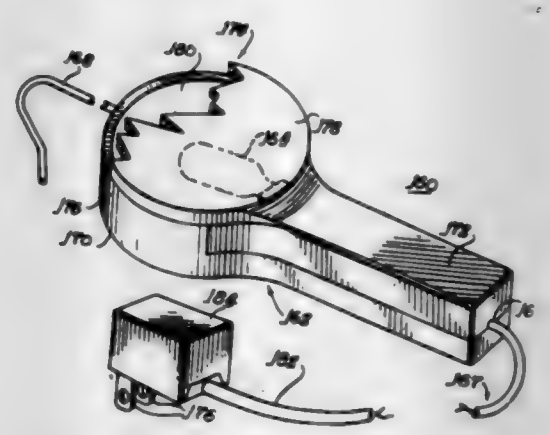
LAMP

Lorrain W. Prester, Box 38, Dorchester, Nebr. 68343

Division of Ser. No. 859,304, Dec. 12, 1977,. This application Aug. 8, 1983, Ser. No. 521,026

Int. Cl.³ F21V *29/00*

U.S. Cl. 362—267 **1 Claim**



1. A lamp comprising;

an incandescent light bulb;

a clear plastic housing;

said light bulb being within said clear plastic housing;

said clear plastic housing having two relatively wide parallel walls and a narrower connecting edge;

conductors extending from said incandescent light bulb and being electrically connected to opposite ends of the filament thereof;

said housing including internal walls forming an opening communicating with said conductors;

means for electrically connecting said conductors to an external source of electrical power;

a magnet;

said magnet being embedded in said plastic housing, whereby said lamp may be magnetically mounted above a work place;

said handle being integrally formed with said plastic housing and said conductors extending through said handle;

said housing including a reflector and a plastic lens;

said reflector and lens being positioned on opposite sides of said incandescent light bulb;

said plastic lens being shaped as a convex lens; and

said lens being integrally formed with at least a portion of said handle.

4,535,396

SUNLIGHT READABLE ILLUMINATED INDICIA DISPLAY DEVICES

Don W. Guthrie, Bedford, Tex., assignor to Aerospace Optics, Inc., Fort Worth, Tex.

Continuation of Ser. No. 384,033, Jun. 1, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 642,152

Int. Cl.³ F21V *9/00*

U.S. Cl. 362—293 **40 Claims**

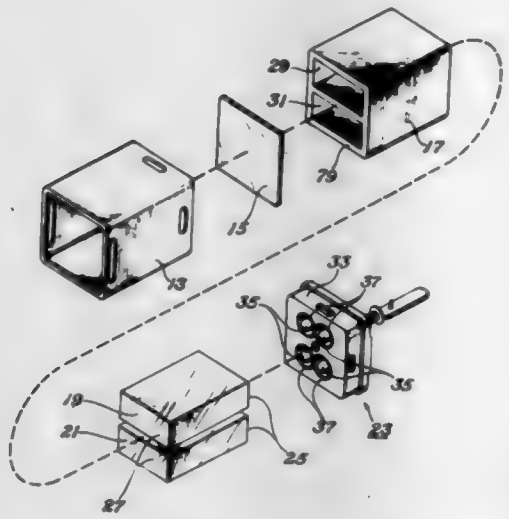
1. An indicia display device for presenting an indicia display that is sunlight readable, comprising:

a. a lens system having one or more body portions each of which provides a transparent internal light reflecting

medium interposed between a light receiving surface and a light transmitting surface;

b. a legend plate disposed to receive light from said light transmitting surface, said legend plate being a laminate made up of mutually bonded elements including one or more filters and wherein the front bonded element is an absorption filter having a diffuse front surface; and

c. a light source disposed to supply light to said light receiving surface;



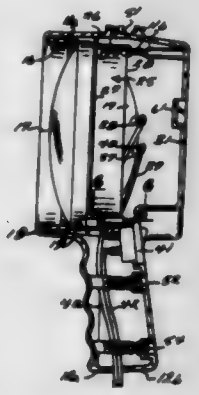
d. said lens system, legend plate and light resulting in an indicia display device wherein the contrast ratio of the lighted indicia to background is 0.6 minimum, the contrast ratio of the lighted indicia to unlighted indicia is 0.6 minimum, and the contrast ratio of unlighted indicia to background is 0.05 (absolute value) maximum, with said contrast ratios being measured in an ambient light level of not less than 10,000 foot candles including light resulting from direct sunlight impinging on said indicia display device at a glare producing angle.

4,535,397

PORTABLE SPOTLIGHT

Richard L. May, Manhattan Beach, Calif., assignor to Mr. Gasket Company, Cleveland, Ohio

Filed Dec. 5, 1983, Ser. No. 558,318
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—369 **3 Claims**



1. A portable spotlight assembly conformed for electrical excitation from the battery circuit of a motor vehicle comprising:

a housing including a hollow front housing section and a hollow rear housing section conformed to mate to each other, said front and rear housing sections effecting latching engagement proximate one end thereof and fastening means proximate the other end;

a sealed beam lamp received within the common interior of said front and rear housing sections cooperate to define a cylindrical enclosure receiving said lamp and a handle extending radially therefrom, said front and rear housing sections effecting latching engagement on the cylindrical enclosure thereof and fastening means in the handle;

a retaining ring mounted in the rear housing section and aligned to translate along a plurality of guide posts against the rear surface of said lamp including spring means for urging the translation thereof; and

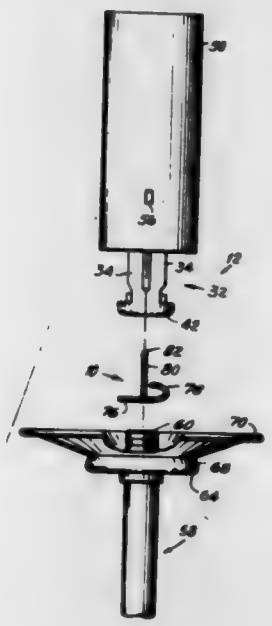
a retaining bead in said front housing section for opposing said lamp and said ring.

4,535,398

COMBINED LINER LOCKING AND LOCKING WASHER SYSTEM FOR MOUNTING AN INCANDESCENT LAMP

George E. Johnson, Bronxville, and Stanley Brenner, Massapequa, both of N.Y., assignors to Leviton Manufacturing Company, Inc., Little Neck, N.Y.

Filed Aug. 20, 1984, Ser. No. 641,902
Int. Cl.³ F21V *21/14*
U.S. Cl. 362—404 **8 Claims**



1. A liner locking and locking washer system for mounting an incandescent lamp, comprising, in combination:

a socket body for holding said incandescent lamp,

electrical conductor means for connecting said incandescent lamp with a source of electrical power,

elongated bracket means for holding said socket body at one end and forming a hole provided with internal threads at the opposed end, said bracket means also being for passing said conductor means from said socket body through said hole.

an elongated liner having a cylindrical wall forming a hollow cylinder adapted to be slidingly positioned around said socket body and said elongated bracket means, said outer wall forming a slot proximate to said internal threads,

fixture means for mounting said bracket means to a support structure at one end and having external threads at the other end that are matingly connected to said internal threads of said elongated bracket means, said fixture means also being for passing said conductor means from said bracket means to said source of electrical power, said fixture means including stop means positioned proximate to said external threads for preventing said liner from sliding onto said fixture member, and

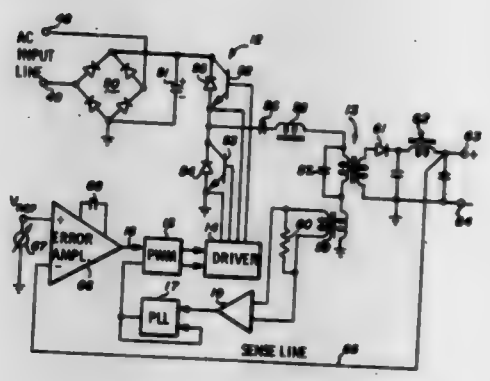
unitary washer and clip means for providing a locking washer between said stop means of said fixture means and for interacting waith said slot of said liner for removably locking said unitary means with said liner and so preventing said liner from sliding away from said fixture means while in a locked mode.

4,535,399

REGULATED SWITCHED POWER CIRCUIT WITH RESONANT LOAD

Tamas S. Szepesi, Eichenau, Fed. Rep. of Germany, assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Jun. 3, 1983, Ser. No. 500,750
Int. Cl.[3] H02M 1/00
U.S. Cl. 363—41 6 Claims



1. A circuit for controlling a substantial power output with a d-c control potential, said circuit comprising:

a resonant load in which a tuned circuit provides a quasi sine shaped current wave form in a power dissipating element;

a source of d-c input power;

switching means coupled between said source of input power and said resonant load whereby said load is supplied with current pulses at a rate that is slightly in excess of the resonant frequency of said resonant load;

means for modulating the width of said pulses to vary the power transferred into said resonant load;

a phase locked loop having an internal oscillator coupled to a divide by two buffer whereby said oscillator is operated at two times the desired frequency and produces asymmetrical output signals that includes a sawtooth output and a pulse output, a memory type phase comparator, an integrator type loop filter, an output, and a pair of inputs one of which is coupled to said output whereby the frequency of said oscillator is varied until the output phase matches the phase of the signal fed to the other of said pair of inputs;

means for sensing the current flowing in said resonant load;

means for shaping the signal provided by said means for sensing to develop a pulse signal in phase with said quasi sine wave load current;

means for applying the shaped signal to said other of said pair of inputs of said phase locked loop;

a high gain comparator having one input coupled to receive said sawtooth oscillator output and the other input coupled to receive a d-c control voltage with the comparator output being a pulse of variable width as determined by said d-c control voltage; and

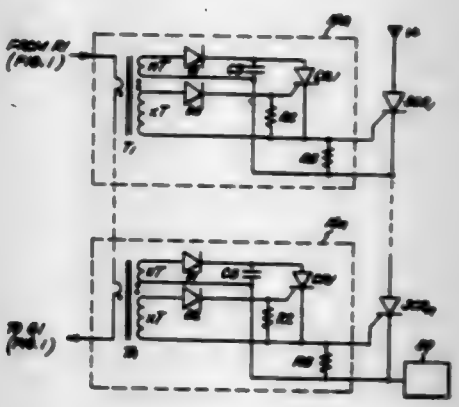
means for feeding said comparator output to one input each of first and second three input AND gates, means for feeding the output of said divide by two buffer to the second input of said first AND gate and its complement to said second input of said second AND gate, and means for feeding the pulse output of said oscillator to each of the third imputs of said first and second three input AND gates whereby said AND gates develop alternating output pulses having widths determined by said d-c control voltage.

4,535,400

MEANS AND METHOD FOR SIMULTANEOUSLY TRIGGERING SERIES SCR'S

Abdallah M. Itani, Saratoga, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,307
Int. Cl.[3] H02M 7/12; H03K 17/56
U.S. Cl. 363—68 5 Claims



1. A method for simultaneously triggering a plurality of serially connected silicon controlled rectifiers (SCR's) having a relatively high voltage impressed across the plurality of SCR's, each SCR including a gate input adapted to receive a triggering signal thereto, comprising:

(a) storing in each of a plurality of first storage means at least a portion of energy available from a relatively low voltage source of energy;

(b) storing at least said portion of the energy available from said source of energy in a second storage means;

(c) transferring energy stored in said second storage means to each of said plurality of first storage means by discharging the energy stored in said second storage means through each primary winding, respectively, of a plurality of pulse transformers, respectively, each pulse transformer comprising a secondary winding connected to a respective one of said plurality of first storage means so as to provide a pulse of energy thereto of duration substantially half that of the discharge of energy stored in said second storage means; and

(d) releasing simultaneously the energy stored in each of said plurality of first storage means, respectively, to each respective gate input of a corresponding one of each of said plurality of SCR's, respectively, whereby a triggering signal is generated for each of said plurality of SCR's.

4,535,401

APPARATUS AND METHOD FOR PROVIDING POWER FROM MASTER CONTROLLER TO SUBCONTROLLERS AND DATA COMMUNICATION THEREBETWEEN

Thomas C. Penn, Richardson, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 30, 1982, Ser. No. 394,033
Int. Cl.[3] G06F 15/46
U.S. Cl. 364—132 12 Claims

1. A communication system comprising:

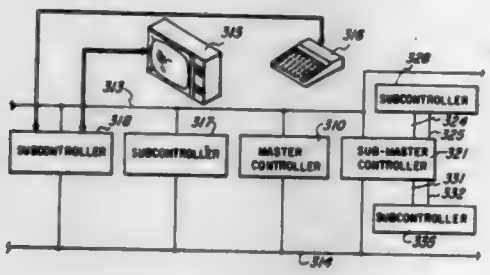
master controller means for providing three different voltage levels including pulses of first and second voltage levels, the pulses of said first voltage level being power pulses;

subcontroller means including at least one subcontroller adapted to store energy and to selectively transmit information upon being powered by the energy stored thereby;

first and second conductors extending between said master controller means and said subcontroller means and coupling said subcontroller means to said master controller means, said first and second conductors being normally disposed at the third voltage level;

said master controller means providing pulses of said first voltage level to supply power along said first and second

conductors to be received by said subcontroller means as energy stored therein and providing said second voltage level pulses to address said at least one subcontroller; and



said at least one subcontroller transmitting information on said first and second conductors to said master controller means in response to receiving said second voltage level pulses therefrom.

4,535,402

DIGITAL CONTROL METHOD

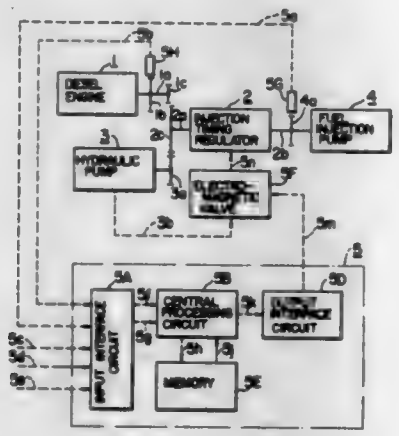
Yuzo Koyanagi, Warabi, Japan, assignor to Sanwa Seiki Mfg. Co., Ltd., Saitama, Japan

Filed Dec. 18, 1981, Ser. No. 332,010

Claims priority, application Japan, Dec. 27, 1980, 55-189100; Dec. 27, 1980, 55-189104; Dec. 27, 1980, 55-189105

Int. Cl.³ G05B *15/02*

U.S. Cl. 364—152 **5 Claims**



1. A method of digital control by use of a train of command signal pulses, comprising the steps of:

(a) intermittently detecting the successive values of a parameter;

(b) determining the deviation of each detected value from a target value of the parameter;

(c) comparing the absolute value of each deviation with the absolute value of a predetermined minimum reference deviation;

(d) if the absolute value of a determined deviation is less than the absolute value of said minimum reference deviation, setting the next command signal pulse to zero;

(e) if the absolute value of a determined deviation is greater than the absolute value of said minimum reference deviation, determining the sign of the determined deviation and settiing the duration of the next command signal pulse to a fundamental duration proportional to the determined deviation;

(f) if the absolute values of a determined deviation and its next preceding determined deviation are both greater than the absolute value of said minimum reference deviation, determining the signs of the two successive deviations and, if both signs are the same, adding a given duration to the fundamental duration of the next command signal pulse or, if the signs are different, subtracting a predetermined duration from the fundamental duration; and

(g) outputting the next command signal pulse with a time lapse after each detection of the value of the parameter.

4,535,403

SIGNAL GENERATOR FOR INTERFACING DIGITAL COMPUTER TO A PLURALITY OF PERIPHERAL DEVICES

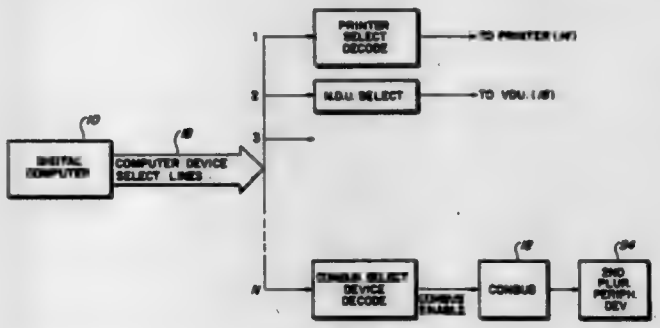
Geoffrey N. Holland, Chagrin Falls, Ohio, assignor to Picker International Limited, Middlesex, England

Continuation of Ser. No. 337,186, Jan. 5, 1982,. This application Jun. 11, 1984, Ser. No. 618,776

Claims priority, application United Kingdom, Feb. 2, 1981, 8101174

Int. Cl.³ G06F *3/04, 13/00*

U.S. Cl. 364—200 **2 Claims**



1. An apparatus allowing a digital computer adapted to directly select one of a predetermined number of peripheral devices to interface with more than the predetermined number of peripheral devices, said apparatus comprising:

(a) a digital computer;

(b) a first plurality of peripheral devices wherein one of said first plurality of peripheral devices is an interface apparatus, said first plurality of peripheral devices being of said predetermined number;

(c) a device select bus directly coupled between said digital computer and said first plurality of peripheral devices for directly selecting one of said first plurality of peripheral devices;

(d) a data output bus directly coupled between said digital computer and said first plurality of peripheral devices for allowing said digital computer to provide data output signals directly to a selected one of said first plurality of peripheral devices;

(e) an output control bus directly coupled between said digital computer and said first plurality of peripheral devices for allowing said computer to provide output control signals directly to a selected one of said first plurality of peripheral devices;

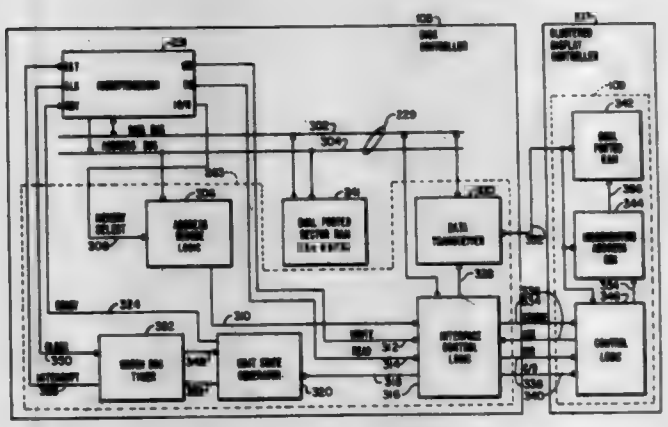
(f) a second plurality of peripheral devices; and

(g) said interface apparatus being coupled to said second plurality of peripheral devices and being coupled to said data output bus and selectively responsive to the data output signals to supplement said device select bus for selecting one of said second plurality of peripheral devices for allowing said digital computer to be interfaced with said second plurality of peripheral devices, said interface apparatus being selected by said digital computer via said device select bus, said interface apparatus including a decoder coupled to said output control bus for being enabled by the output control signals provided by said digital computer, said decoder being coupled to said data output bus and being responsive to the data output signals provided by said digital computer for deriving from the data output signals an address of one of said second plurality of peripheral devices to be interfaced with said digital computer, said decoder providing output signals for selecting the addressed one of said second plurality of peripheral devices.

4,535,404
METHOD AND APPARATUS FOR ADDRESSING A PERIPHERAL INTERFACE BY MAPPING INTO MEMORY ADDRESS SPACE

William H. Shenk, Acton, Mass., assignor to Honeywell Information Systems Inc., Waltham, Mass.

Filed Apr. 29, 1982, Ser. No. 373,062
Int. Cl.[3] G06F *3/04*
U.S. Cl. 364—200 13 Claims



1. An apparatus for transferring information across an interface between a first subsystem and a second subsystem of a system, wherein said first subsystem includes a programmable processor and a memory, said processor capable of executing memory reference instructions which reference by a memory address data stored in said memory, said apparatus comprising:

A. address decoding means coupled to said processor, said address decoding means for detecting said memory address of said memory reference instructions which address a predetermined memory location in said memory;

B. interface control means coupled to said address decoding means and said processor, said interface control means responsive to said address decoding means when said address decoding means detects said memory reference instruction being executed which addresses said predetermined memory location for generating a strobe signal to said second subsystem and for receiving an acknowledge signal from said second subsystem;

C. a wait means coupled to said interface control means and said processor, said wait means responsive to said interface control means for generating a wait signal to place said processor in a wait state at the time said interface control means generates said strobe signal and for removing said processor from said wait state upon receipt of said acknowledge signal by said interface control means from said second subsystem; and

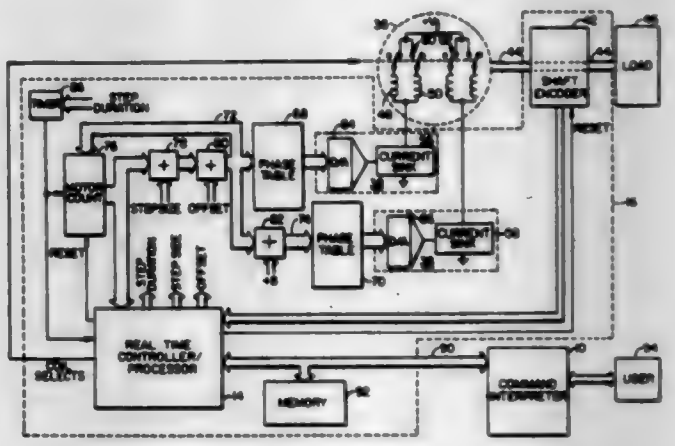
D. transceiver means coupled to said interface control means, said processor and said second subsystem, said transceiver means for receiving data from said processor during the execution of said write memory reference instruction and transmitting the data to said second subsystem and for receiving data from said second subsystem and transmitting the data to said processor during the execution of said read memory reference instruction

whereby said first subsystem can transfer information to or from said second subsystem by said processor executing memory reference instructions addressing said predetermied memory locations thereby effectively mapping said interface into the address space of said memory.

4,535,405
CONTROL AND FORCE-SENSING METHOD AND APPARATUS FOR MOTORS

John W. Hill, Palo Alto, and Anthony J. Sword, San Francisco, both of Calif., assignors to Microbot, Inc., Mountain View, Calif.

Filed Sep. 29, 1982, Ser. No. 426,631
Int. Cl.[3] G05B *19/40*
U.S. Cl. 364—400 9 Claims



1. A method of measuring a torque being applied by the shaft of a brushless motor to a load which is driven by the shaft of the brushless motor, comprising the steps of

calibrating the brushless motor for angular displacement versus magnitude of applied load to form a calibration table;

commanding the brushless motor to a designated angular position;

measuring the actual angular position of the shaft of the brushless motor;

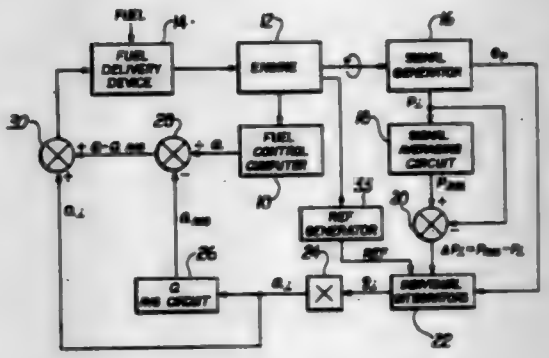
determining the angular displacement between the commanded and the actual positions; and

converting the angular difference into a torque quantity by obtaining, from the calibration table, the torque quantity which corresponds to the angular difference.

4,535,406
FUEL DISTRIBUTION CONTROL FOR AN INTERNAL COMBUSTION ENGINE

Edwin A. Johnson, Clarkston, Mich., assignor to Allied Corporation, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,817
Int. Cl.[3] F02B *3/12;* F02D *5/02;* F02M *51/00*
U.S. Cl. 364—431.08 22 Claims



1. A fuel distribution control for a multiple cylinder internal combustion engine having a rotary output member, a fuel control computer responsive to the operational parameters of the engine for generating base fuel quantity signals, fuel delivery means responsive to fuel delivery signals for delivering fuel to each engine cylinder, and an operational cycle in which each cylinder produces a torque impulse rotating the engine's output member; the fuel distribution control characterized by:

means for detecting predetermined rotational positions of

the engine's output member to generate sequential position signals indicative of equal rotational intervals of the output member during an operational cycle of the engine, each of said equal rotational intervals being associated with the torque impulses produced by one of the engine cylinders;

means for detecting when of of the engine cylinders has a predeterminable state to generate a reference signal once during each engine operational cycle.

means for measuring the time between sequential position signals to generate period signals indicative of the time required by the output member to rotate through each of said equal rotational intervals,

means for averaging said period signals to generate an average period signal,

difference means for subtracting said period signals and said average period signal, one from the other, to generate a set of difference signals, one of said difference signals associated with each of said torque impulses;

integrator means responsive to said reference and said position signals for accumulating said difference signals with respect to each of said rotational intervals to generate a set of correction signals, one correction signal associated with each of the engine cylinders;

means for averaging said set of correction signals to generate an average correction signal; and

means for summing said correction signals one at a time and in a predetermined sequence, with said average correction signal and said base fuel quantity signal to generate fuel delivery signals activating said fuel delivery means to deliver a quantity of fuel to each engine cylinder tending to equalize the torque impulse produced by all of the engine's cylinders and equalize the contribution of each engine cylinder to the total torque output of the engine.

20. A method for distributing the fuel being delivered to a multiple cylinder internal combustion engine having an output member rotatable through a predetermined angle during each operational cycle of the engine, fuel control computer means for generating base fuel quantity signals in response to the operational parameters of the engine, and fuel delivery means for delivering fuel to the cylinders in response to fuel delivery signals, and wherein the burning of the fuel in the individual cylinders produces torque impulses rotating the output member, said method comprising the steps of:

detecting predetermined rotational positions of the engine's output member to generate position signals dividing the predetermined angle of the engine's operational cycle into equal angular increments equal in number to the number of cylinders in the multiple cylinder engine;

detecting a predetermined state of one particular cylinder to generate a reference signal once during each operational cycle of the engine;

measuring the time between said position signals to generate sequential first signals indicative of the magnitude of individual torque impulses imparted to the output member by the cylinders;

averaging said sequentially generated first signals to generate an average first signal;

subtracting said first signal and said average first signal, one from the other, to generate difference signals;

activating a plurality of accumulators with said reference and said position signals to individually accumulate said differ nce signals with respect to each cylinder to generate fuel quantity correction signals for each cylinder;

averaging the fuel quantity correction signals for all of the cylinders to generate an average fuel quantity correction signal;

summing said base fuel quantity signal with said average fuel quantity correction signal and the fuel quantity correction associated with cylinder to which fuel is to be delivered to generate a corrected fuel quantity signal; and

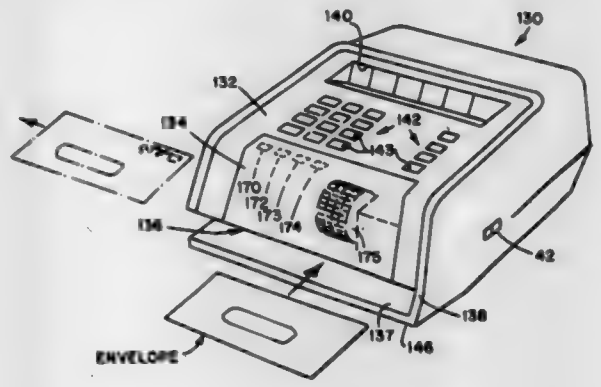
activating fuel delivery means with said corrected fuel quantity signals to deliver a quantity of fuel to each engine cylinder tending to equalize the contribution of each cylinder to the total output torque of the engine.

4,535,407

POSTAGE METER WITH KEYBOARD KEYS FOR CHANGING POSTAGE UNUSED AMOUNT

Alton B. Eckert, Norwalk; John H. Soderberg, Stratford, and Edward C. Duwel, Trumbull, all of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,870
Int. Cl.[3] G06F *15/20*
U.S. Cl. 364—464 21 Claims



1. In a postage meter having means for printing postage, means for displaying numerical values, means for entering data, computer means electrically connected to each of the aforesaid means and programmed for processing data for controlling the operation thereof, wherein said computer means includes means for storing a first amount corresponding to all postage then available for printing, an improvement for changing the said first amount to a new first amount, said improvement comprising:

(a) said data entering means including a keyboard, said keyboard including a plurality of depressable numeric keys and at least two depressable special purpose keys;

(b) said computer means programmed for causing said displaying means to display a first numerical value in response to the depression of selected numeric keys, said first numerical value corresponding to a second amount desired to be added to said first amount;

(c) said computer means programmed for causing said display means to display a second numerical value in reponse to the depression of selected numeric keys, said second numerical value corresponding to a predetermined combination;

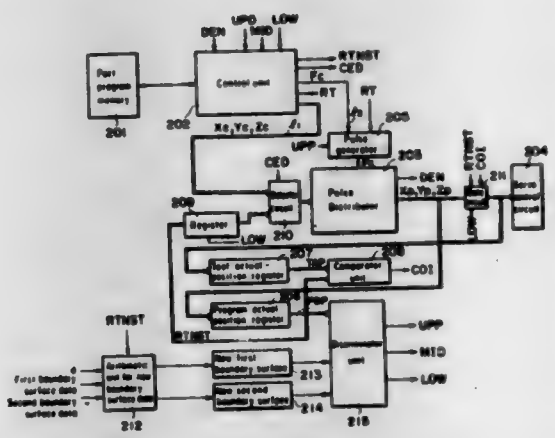
(d) said computer means programmed for entering said second amount in response to the depression of one of said special purpose keys and for entering said combination in response to the depression of another of said special purpose keys; and

(e) said computer means programmed for automatically processing said second amount and said combination in response to entry of the later one of said second amount and said combination for adding said second amount to said first amount, whereby said first amount is changed to said new first amount.

4,535,408
NUMERICAL CONTROL MACHINING METHOD AND APPARATUS

Hajimu Kishi, Hino; Kunio Tanaka, Hachioji, and Masaki Seki, Tokyo, all of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

PCT No. PCT/JP82/00093, § 371 Date Nov. 26, 1982, § 102(e) Date Nov. 26, 1982, PCT Pub. No. WO82/03353, PCT Pub. Date Oct. 14, 1982
PCT Filed Apr. 1, 1982, Ser. No. 445,371
Claims priority, application Japan, Apr. 1, 1981, 56-049195
Int. Cl.[3] G06F *15/46*; G05B *19/18*
U.S. Cl. 364—475 10 Claims



1. A numerical control machining method in which a workpiece is machined on the basis of curved surface data defining a curved surface, comprising the steps of:

(a) entering an appointed boundary surface as a first machining limit;

(b) determining a second machining limit from the first machining limit;

(c) discriminating whether a tool lies between the first and second machining limits;

(d) machining on the basis of said curved surface data when said tool lies between the first and second machining limits and machining on the basis of both said curved surface data not outside the first and second machining limits and the machining limit exceeded when said tool would be outside the machining limit exceeded;

(e) setting the first machining limit to the second machining limit and rapid feeding the tool to the intersection of the first machining limit and said curved surface data when it reaches the first machining limit while machining on the basis of said curved surface data; and

(f) returning to step (b).

4,535,409
MICROPROCESSOR BASED RECLOSER CONTROL

James A. Jindrick, Racine; Thomas G. Dolnik, Kenosha; Naresh K. Nohria, Milwaukee; Clyde Gilker, So. Milwaukee; James R. Harley, Brookfield; Michael P. Dunk, Racine; Norbert J. Reis, and Thomas J. Bray, both of Milwaukee, all of Wis., assignors to McGraw-Edison Company, Rolling Meadows, Ill.

Filed Sep. 18, 1981, Ser. No. 303,626
Int. Cl.[3] G06G *7/62, 7/63*; G01R *19/00, 21/00*
U.S. Cl. 364—481 9 Claims

1. A recloser control comprising:

an input circuit for sensing current in each of the three phases of a power line and ground, and providing an analog signal for each;

a multiplexing circuit for selectively transmitting each of the analog input signals;

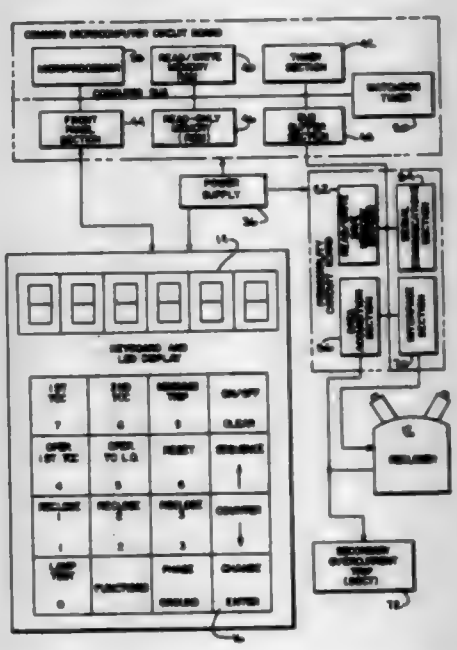
a normalizing scaling amplifier for selectively normalizing each of the analog input signals selected by the multiplexer in accordance with a preselected normalizing reference selected from a plurality of normalizing references;

a sample and hold circuit for sampling the analog output of the normalizing scaling amplifier and maintaining it for a desired preselected holding period;

an analog to digital converter for converting the analog output of the sample and hold circuit to a digital form;

memory means for storing command information in digitized form including normalizing references, time current characteristics, instantaneous trip values, number of operations associated with a given time current characteristic, time intervals for selected measurements and operations, and status information such as digitized current magnitudes;

processing means for generating an equivalent to a mean square value for each digitized normalized input signal, comparing the mean square equivalent values of the inputs with a preselected one of a number of time current characteristics stored in memory means in accordance with other command information stored in the memory means, and receiving and issuing operating signals including an operation command which causes the recloser to change its state between close and trip conditions;



a power supply for selectively supplying power to the other portions of the control from the power line being protected, said power supply including a storage means to supply power when the power lines being protected are interrupted;

a secondary overcurrent trip circuitry which continually receives input signals proportionate to currents in each of the three phases of a power line and ground for generating a trip signal when any sensed current exceeds a fixed secondary time current characteristic after a period of time in accordance with that time current characteristic, if not disabled by said processor means;

output means for activating trip means in the recloser in accordance with operation commands from the processor means or a trip signal from the secondary overcurrent trip circuitry, or close means in the recloser in accordance with operational commands from the processor means; and

input means for entering command information.

4,535,410
POWER SUPPLY FAILURE EARLY WARNING DETECTOR

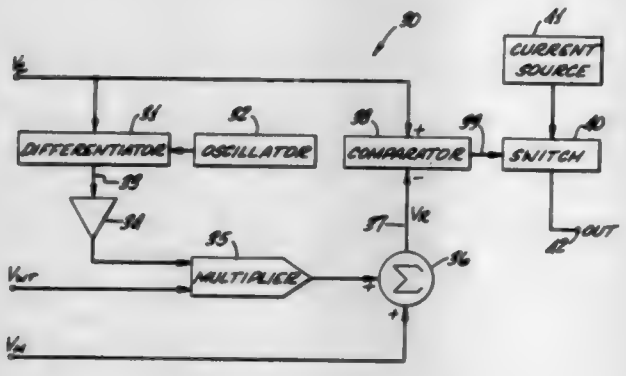
Bradley E. O'Mara, Sunnyvale, Calif., assignor to Intersil, Inc., Cupertino, Calif.

Filed Jul. 6, 1982, Ser. No. 395,670
Int. Cl.[3] G06F *15/20*; G06G *7/62*; G08B *21/00*
U.S. Cl. 364—483 16 Claims

1. Apparatus for detecting imminent failure of a power supply of the type including energy storage means comprising:

means for monitoring the magnitude of the voltage and the rate of change of the voltage on said energy storage means;

means responsive to said monitoring means for calculating a trigger value of voltage on said energy storage means in accordance with said rate of change of voltage on said energy storage means and a predetermined time interval



so that said calculated trigger value of voltage represents an amount of stored energy sufficient to sustain normal output power for a desired time interval; and

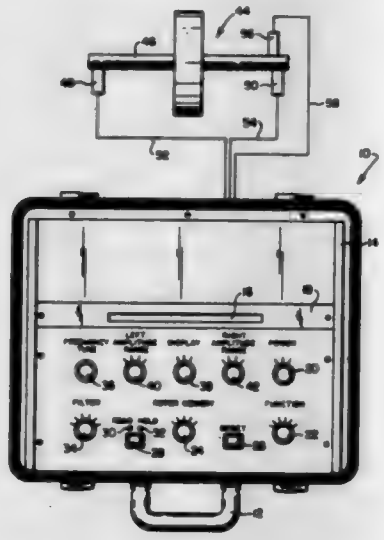
means responsive to said monitoring means and said calculating means for signalling imminent power supply failure when the voltage on said energy storage means reaches said calculated trigger value of voltage.

4,535,411

FIELD BALANCING APPARATUS

Bobby J. Blackburn, Columbus, and John M. Csokmay, Johnstown, both of Ohio, assignors to IRD Mechanalysis, Inc., Columbus, Ohio

Filed Nov. 22, 1982, Ser. No. 443,541
Int. Cl.³ G01M *7/00*
U.S. Cl. 364—508 **20 Claims**
MICROFICHE APPENDIX INCLUDED
(1 Microfiche, 27 Pages)



1. Apparatus for balancing an identifiable rotor utilizing vibration responsive transducer means having vibration responsive output signals, rotation transducer means providing rotation responsive signals correspoding with a reference location of said rotor, and select utilization of a tral balance weight removably connectable with said rotor comprising:

means for receiving said vibration responsive output signals;

means for receiving said rotation responsive signals;

analyzer nework means responsive to said vibration responsive output signals and to said rotation responsive signals, and including means defining a filter synchronous with respect to said rotation responsive signals for deriving vector categorized signals corresponding with amplitudes and phase of vibration with respect to said reference location;

hold switch means for selectively deriving a data accept condition;

function switching means actuable to effect a balance condition;

memory switching means actuable to effect store and recall conditions;

display means for providing a visible readout of information;

a random access memory;

non-volatile random access memory means, for retaining balance parameter data at discrete identifiable locations in the absence of applied electrical power;

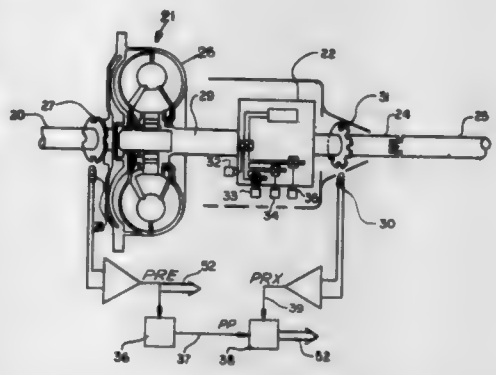
processor means responsive to first said vector categorized signals derived from an initial rotation of said rotor when said function switching means is in said balance condition and said hold switch means is in said data accept condition for effecting the submittal of said first signals to said random access memory, responsive to second said vector categorized signals derived from a next rotation of said rotor with said trial balance weight connected therewith when said function switching means is in said balance condition and said hold switch means is in said data accept condition for effecting the submittal of said second signals to said random access memory, for computing balance correction parameters with respect to said first and second signals, for effecting the readout of balance correction information corresponding therewith at said display means, and subsequently responsive to actuation of said memory switching means to said store condition for effecting the storage of said computed balance correction parameters in said nonvolatile memory means.

4,535,412

DRIVETRAIN TORQUE DETERMINATION USING TORQUE CONVERTER CHARACTERISTICS

Alf L. Cederquist, Ann Arbor, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Nov. 6, 1981, Ser. No. 319,156
Int. Cl.³ G01L *3/00, 5/12;* G06F *15/20*
U.S. Cl. 364—511 **6 Claims**



1. In a system for determining the torque produced by a power generating device that drives a crankshaft and the torque applied to other components of a powertrain driven by the device comprising:

a torque converter having an impeller drivably connected to the crankshaft and a turbine driven from the impeller whose speed and torque may vary from those of the impeller;

an automatic transmission drivably connected to the turbine by a turbine shaft and to an output shaft, capable of producing multiple ratios, G, of the rotational speed of the output shaft to the speed of the turbine shaft in accordance with the ON-OFF state of pressure solenoids that activate and deactivate speed ratio control elements of the transmission;

means for sensing the state of the pressure solenoids and for determining from that state the speed ratio at which the transmission is operating;

first means for producing a first signal having a frequency that is proportional to the variable speed of the crankshaft;

second means for producing a second signal having multiple successive pulses whose frequency is proportional to the speed of the output shaft;

means for producing a high frequency signal having a frequency that is a selected multiple, M, of the frequency of the first signal;

first counter means operative to receive and count the number, C, of high frequency signal pulses occuring between successive second signal pulses; and

means for repetitively computing the impeller speed, NP, from the frequency of the first signal, the speed ratio, S, of the torque converter from the relationship $S=M\times G/C$ and the crankshaft torque, TP, from the relationship $TP=(NP/K)^2$, the computing means being provided with a data base that includes the values of the capacity factor, K, of the torque converter that corresponds to the computed values of the speed ratio of the torque converter, the computer impeller speed, the number C, and the transmission ratio, G, corresponding to the state of the pressure solenoids.

4,535,413

HUE IDENTIFYING APPARATUS

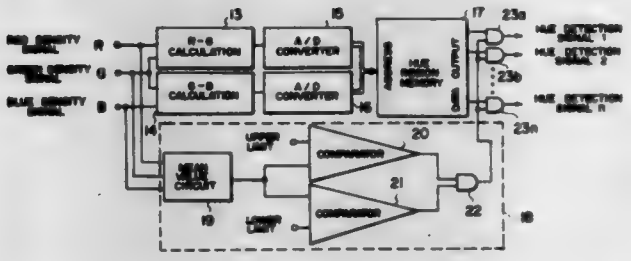
Kazuo Shiota, and Taizo Akimoto, both of Minamiashigara, Japan, assignors to Fuji Photo Film Co., Ltd., Japan

Filed Jun. 2, 1982, Ser. No. 384,238

Claims priority, application Japan, Jun. 18, 1981, 56-94350

Int. Cl.³ G03F *3/08*; G01J *3/46*

U.S. Cl. 364—526 **11 Claims**



8. A hue identifying apparatus comprising a means for creating an M-bit high order address signal and an N-bit low order address signal, wherein M and N each designate an arbitrary integer, from the difference between a combination of two of the red, green and blue density signals read out at each point on a color photographic film and from the difference between another combination of two of said density signals respectively; a hue region memory storing at each address the hue information based on a predetermined hue region defined with respect to a two-dimensional coordinate system wherein the coordinate axes represent quantized values of said differences, said address being designated by said high order and low order address signals; a means for detecting inadequate exposure based on the three-color density signals at each said point; and a means for obstructing the transfer of the hue information, which is output from said hue region memory, based on the output signal of said inadequate exposure detecting means.

4,535,414

POSITION INDICATING SYSTEM AND METHOD

Jerome H. Lemelson, 85 Rector St., Metuchen, N.J. 08840

Filed Feb. 26, 1982, Ser. No. 352,795

Int. Cl.³ G05B *19/19*

U.S. Cl. 364—561 **19 Claims**

1. Apparatus for indicating distance travelled between machine components comprising:

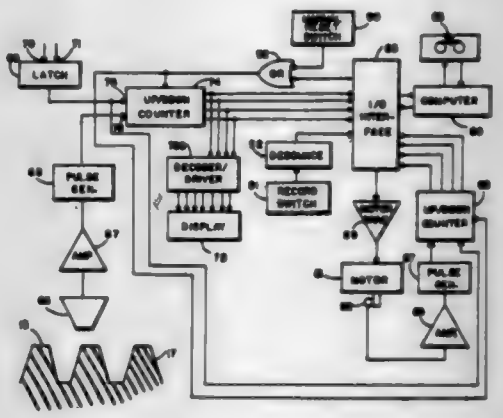
a first machine component,

a spirally threaded screw rotatably supported by said first machine component,

a second machine component operable to be power driven with respect to said first machine component,

thread containing means supported by said second component and adapted to be threadably assembled with the spiral thread of said screw,

means for power rotating said screw in synchronization with the movement between said first and second machine components,



a portion of the surface of said thread of said screw containing marker recordings therein,

means supported by said second machine component for sensing said marker recordings of said thread as said screw rotates and effects relative movement between said first and second components and generates variable output signals which vary as each marker of said thread is sensed, and

means for receiving and recording said output signals.

4,535,415

MEASUREMENT CONVERSION AND VISUAL DISPLAY INSTRUMENT

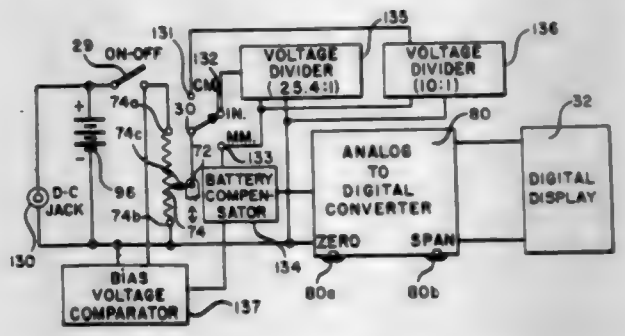
Edwin A. Hird, 10200 DeSoto Ave. #331, Chatsworth, Calif. 91311

Filed Jul. 6, 1976, Ser. No. 702,745

The portion of the term of this patent subsequent to Dec. 6, 2000, has been disclaimed.

Int. Cl.³ G01B *3/08*

U.S. Cl. 364—562 **18 Claims**



1. A measurement conversion and visual display instrument comprising:

an extensible and resilient tape being cross-sectionally curved defining tape concave and tape convex surfaces;

a housing and tape follower, the housing having means mounting the tape follower consisting of first and second parallel rollers, the first roller having a firm periphery for transversely supporting the tape that is extensible from the housing, and the second roller having a rubberized periphery springily urging the tape against the first roller, and the second roller thereby rotating in response to the tape being longitudinally moved with respect to the housing;

a tip member having means being attached to the extensible, distal end of the tape;

a potentiometer mounted on the housing and connected across a voltage source, and the potentiometer including a

rotatable shaft coupled whereby the potentiometer responds electrically, with analog signals, to movements of the tip member, and the tip member and the housing including measurement contact surfaces, and zero and span distances between said contact surfaces synchronized with national measurement standards; and

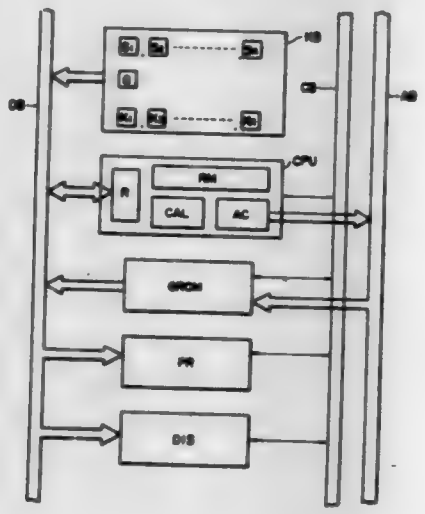
calculator means electrically coupled to convert said analog signals to digital signals and mathematically specify units of measurements and portions thereof relative to the distances between said contact surfaces when the tip member is extended or retracted, and the calculator means including digital read-out means displaying said units of measurements and portions thereof.

4,535,416

ELECTRONIC COMPACT FUNCTION CALCULATOR

Kuniomi Kano, Yokohama; Hideo Fushimoto; Kazumi Sekine, both of Kawasaki; Akira Miyagawa; Osamu Hirata, both of Tokyo, and Yoshiaki Nishimuro, Hachiohji, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 350,061, Feb. 18, 1982, abandoned.
This application Dec. 12, 1984, Ser. No. 681,065
Claims priority, application Japan, Mar. 9, 1981, 56-32443
Int. Cl.[3] G06F *15/02*
U.S. Cl. 364—715
2 Claims



1. An electronic apparatus for graphically displaying a function, said apparatus comprising:

memory means for independently storing a graphic function pattern and a graphic coordinate pattern for the function pattern;

input means for entering numerical values associated with a characteristic of the function pattern stored in said memory means, the characteristic representing the relative position of the function pattern and the coordinate pattern stored in said memory means;

processor means connected to said input means and responsive to the numerical values entered thereby for determining the relative positions of the function pattern and the coordinate pattern represented by the characteristic;

display means for displaying the function pattern and the coordinate pattern; and

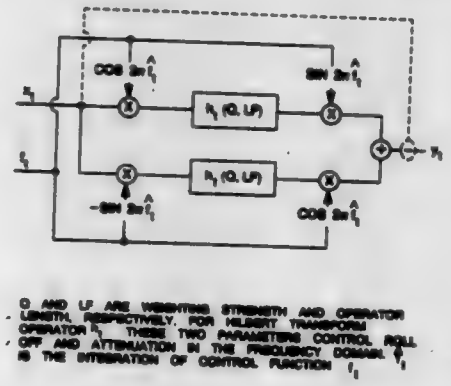
control means connected to said processor means and responsive to the relative positions determined thereby for relatively positioning the function pattern and the coordinate pattern in accordance with the characteristic for display by said display means.

4,535,417

METHOD AND APPARATUS FOR DIGITAL TIME-VARIANT FILTERING

Kenneth L. Peacock, Tulsa, Okla., assignor to Standard Oil Company, Chicago, Ill.

Filed Dec. 23, 1982, Ser. No. 452,474
Int. Cl.[3] G06F *15/31*
U.S. Cl. 364—724
15 Claims



Q AND LF ARE WEIGHTING STRENGTH AND OPERATOR LENGTH, RESPECTIVELY, FOR HILBERT TRANSFORM OPERATOR h_i. THESE TWO PARAMETERS CONTROL ROLL OFF AND ATTENUATION IN THE FREQUENCY DOMAIN $\hat{f}_i$ AS THE INTEGRATION OF CONTROL FUNCTION f_i

1. A method for processing a digital electrical signal having a time-varying character, comprising the steps of:

selecting a digital time-varying control function signal for controlling cutoff frequency;

discretely integrating the selected control function signal;

combining the electrical signal with the integrated control function signal;

applying a Hilbert transform operator to the combined electrical signal and integrated control function signal; and

extracting a time-variant filtered electrical signal from the combined electrical signal and integrated control function signal to which the operator has been applied;

wherein the Hilbert transform operator is determined by:

selecting a roll-off interval for time-variant filtering;

selecting an attenuation value for time-variant filtering;

determining a Hilbert transform stength of weighting based on the selected attenuation value;

determining a Hilbert transform operator length based on the selected roll-off interval and the attenuation value; and

determining the Hilbert transform operator based on the strength of weighting and the operator length.

4,535,418

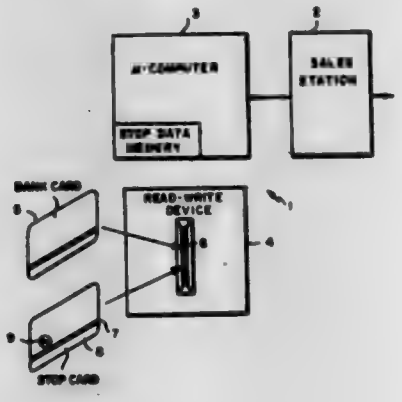
DATA CARRIER CONTROLLED DATA PROCESSING

Hermann Stockburger, Kirnachweg 7, D-7742 St. Georgen, and Hans-Georg Winderlich, Niedere Str. 36, D-7730 Villingen, both of Fed. Rep. of Germany

PCT No. PCT/EP82/00060, § 371 Date Nov. 17, 1982, § 102(e) Date Nov. 17, 1982, PCT Pub. No. WO82/03288, PCT Pub. Date Sep. 30, 1982
PCT Filed Mar. 23, 1982, Ser. No. 445,378
Claims priority, application Fed. Rep. of Germany, Mar. 23, 1981, 3111353
Int. Cl.[3] G06F *3/00*
U.S. Cl. 364—900
5 Claims

1. A data carrier controlled data processing system for receiving a first data carrier having data stored thereon relating to another data carrier to be received by said system, said system including first means for authenticating the validity of said first data carrier, second means for comparing a personal code of the user with data on said first data carrier to determine if the user is authorized, and third means for reading data relating to another data carrier from said first data carrier into

said system if both the first data carrier is authenticated as being a valid data carrier by said first means and the user



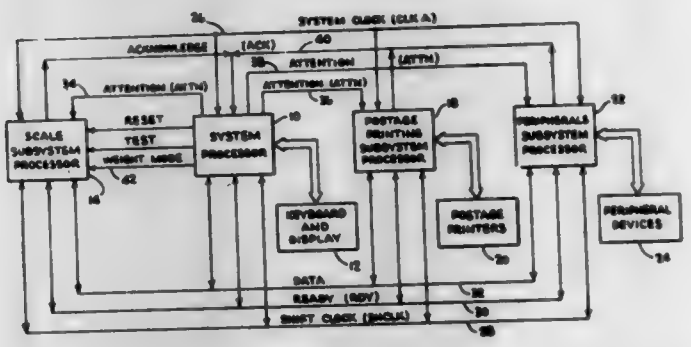
thereof has been determined to be authorized by said second means.

4,535,419

SYSTEM AND METHOD FOR COMPUTING FRACTIONAL POSTAGE VALUES

Daniel F. Dlugos, Huntington, and Edward P. Daniels, Bridgeport, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Oct. 22, 1982, Ser. No. 436,122
Int. Cl.³ G06F *1/00*
U.S. Cl. 364—900 **13 Claims**



1. An apparatus for determining postage values for items to be mailed, comprising:

(a) means for determining the weights of said items;

(b) data entry means for entering data necessary to determine the postage applicable to said items, said data including data defining the class of service applicable to each of said items;

(c) processor means connected to said weight determining means and said data entry means for determining the postage value applicable to each of said items, said processing means further comprising memory means for storing tables of data defining applicable postage rates, selection among said tables being made in terms of said determined weights and said entered data, each of said tables corresponding to a particular one of said classes of service, and each of said tables including additional data more precisely defining said postage rate defining data in that table, and said additional data in each of said tables including data defining the decimal point location in the postage values determined from that table; and,

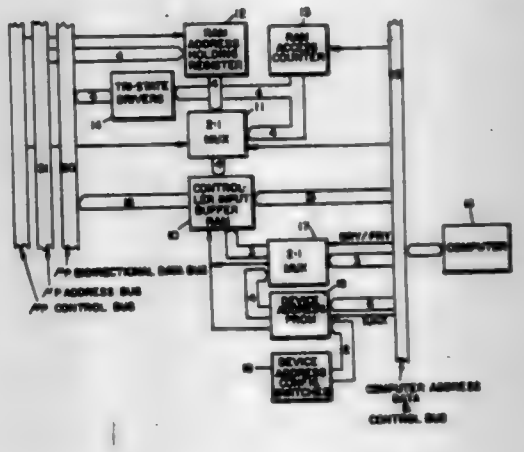
(d) said processor means responding to said determined weights and said entered data to select and output the appropriate postage value from said tables for each of said items, the decimal point location in said output values being determined in accordance with said additional data.

4,535,420

CIRCULAR-QUEUE STRUCTURE

Anthony K. Fung, Fountain Valley, Calif., assignor to Sperry Corporation, New York, N.Y.

Continuation of Ser. No. 79,208, Sep. 26, 1979, abandoned. This application Jun. 18, 1982, Ser. No. 389,823
Int. Cl.³ G06F *11/00*
U.S. Cl. 364—900 **18 Claims**



1. An interfacing system comprising,

multiplexer means (11) for selectively passing signals therethrough,

memory means (10) having the address terminals thereof connected to the output terminals of said multiplexer means (11) to receive signals therefrom,

first memory addressing means (13) connected to said multiplexer means to supply address signals thereto,

second memory addressing means (12) connected to said multiplexer means to supply address signals thereto,

input means (16) for supplying information to be stored in said memory means at a location addressed by said first memory addressing means via said multiplexer means,

output means (20) for retrieving information from said memory means at a location addressed by said second memory addressing means via said multiplexer means, and

control means (404) connected to said first memory addressing means (13) and to said output means (20) in order to monitor the address signals produced by said first memory addressing means (13) so as to prevent said output means (20) from operating on information which was retrieved from said memory means (10) at the same time as said input means (16) supplied information to said memory means (10) which information retrieval condition is indicated by a change in the address signals monitored at said first memory addressing means (13).

4,535,421

UNIVERSAL REAL TIME TRANSPARENT ASYNCHRONOUS SERIAL/ECHOPLEX CONVERTER

Edward C. Duwel, Trumbull, and John H. Soderberg, Stratford, both of Conn., assignors to Pitney Bowes Inc., Stamford, Conn.

Filed Jul. 5, 1983, Ser. No. 510,792
Int. Cl.³ G06F *5/04*
U.S. Cl. 364—900 **10 Claims**

1. Transparent interface apparatus for providing real time data communication between a first device utilizing serial communication and a second device utilizing echoplex communication comprising:

a first microprocessor having a serial data port and a first parallel data port;

a second microprocessor having a second parallel data port and an echoplex data port;

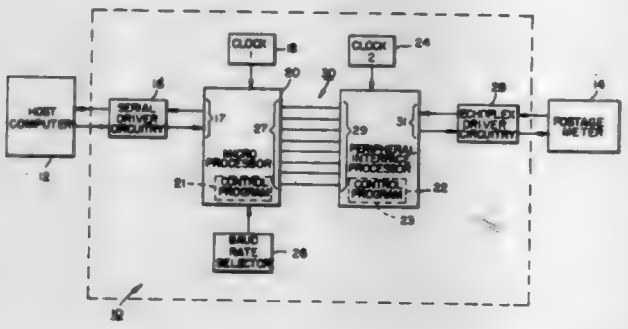
a parallel communication path coupling said first and second parallel data ports;

means within said first microprocessor for converting serial data from said serial data port into a parallel format and for transferring this parallel formatted data to said second paral-

lel data port from said first parallel data port across said parallel communication path;

means within said second microprocessor for converting parallel data from said second parallel data port into an echoplex format and for outputting said echoplex formatted data from said echoplex data port;

means within said second microprocessor for converting echoplex data from said echoplex data port into a parallel format and for transferring this parallel formatted data to said first parallel data port from said second parallel data port across said parallel communication path;



means within said first microprocessor for converting parallel data from said first parallel data port into a serial formal and for outputting this serial formatted data from said serial data port; and

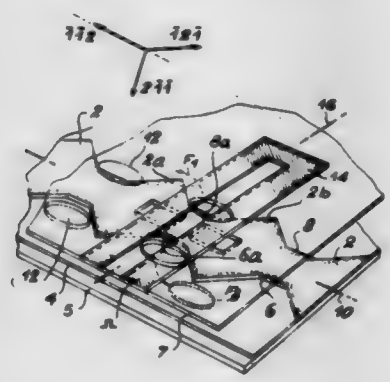
means for prioritizing data transfer between said first and second microprocessors, said prioritizing means awarding first priority to echoplex data to be transferred from said echoplex port for output from said serial data port and second priority to serial data to be transferred from said serial port for output from said echoplex data port.

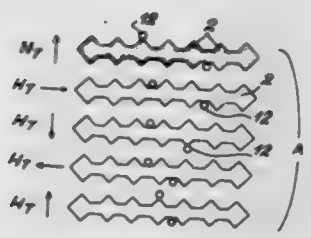
4,535,422

MAGNETIC BUBBLE MEMORY WITH UNIMPLANTED MOTIFS

Hubert Jouve, Biviers, and Joël Magnin, Saint Martin d'Heres, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 22, 1983, Ser. No. 506,688
Claims priority, application France, Jun. 29, 1982, 82 11407
Int. Cl.³ G11C *19/08*
U.S. Cl. 365—36 **25 Claims**





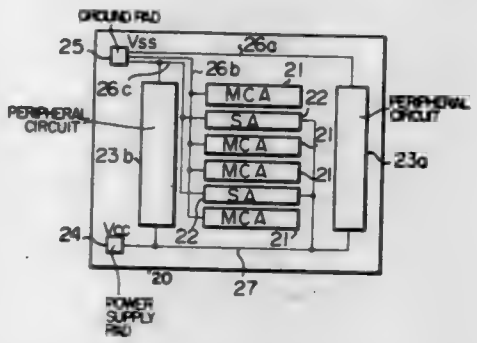
1. A magnetic bubble memory having a first layer of monocrystalline magnetic material with at least one crystallographic axis having the property of being a planar easy magnetization axis, whereby said first layer has groups of unimplanted, contiguous and aligned motifs, called first motifs, permitting the propagation of the bubbles in a second magnetic layer, positioned below the first magnetic layer, said first motifs being shaped in such a way that two cavities are defined between two first adjacent motifs, wherein each group of first motifs has an axis such that the first motifs of said group are arranged symmetrically with respect to said axis, said groups being arranged parallel to the crystallographic axis of the first layer of material, and wherein it comprises, associated with each group, an electrical conductor, called the first conductor, permitting the duplication of the bubbles, each conductor being arranged perpendicular to the crystallographic axis of the first layer of material, the corresponding group of first motifs being tranversed by said conductor.

4,535,423

SEMICONDUCTOR MEMORY DEVICE

Shigeki Nozaki, Kawasaki, and Hatsuo Miyahara, Yokohama, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 7, 1982, Ser. No. 447,660
Claims priority, application Japan, Dec. 7, 1981, 56-196465
Int. Cl.³ G11C *5/10*
U.S. Cl. 365—51 **6 Claims**



1. A semiconductor memory device comprising:

a semiconductor substrate;

a first ground-potential supplying line and second ground-potential supplying lines having impedances and formed on said substrate, said first ground-potential supplying line physically separated from said second ground-potential supplying lines except at a common connection portion having an impedance lower than the impedance of each of said first and second ground-potential supplying lines;

a plurality of memory cells integrated on said semiconductor substrate, each of said memory cells having a capacitor for storing data, said capacitor having a storage electrode and an electrode opposite to said storage electrode, said opposite electrode being connected to said first ground-potential supplying line; and

one or more peripheral units integrated on said semiconductor substrate and arranged on the periphery of said memory cells, said peripheral units being connected to said second ground-potential supplying lines.

4,535,424

SOLID STATE THREE DIMENSIONAL SEMICONDUCTOR MEMORY ARRAY

Lee R. Reid, Plano, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 3, 1982, Ser. No. 384,451
Int. Cl.³ G11C *17/00*
U.S. Cl. 365—63 **6 Claims**

1. A three-dimensional memory array, comprising:

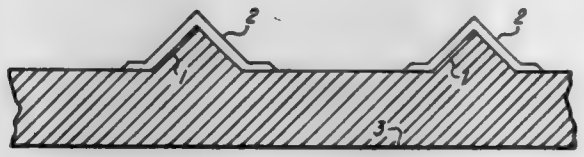
(a) a plurality of substantially planar semiconductor substrates;

(b) at least one of said substrates having memory circuits fabricated upon a surface thereof;

(c) at least one of said substrates having a plurality of integral elevated portions projecting from a surface thereof, at least one of said elevated portions characterized by forma-

tion by orientation-dependent etching of said substrate; and

(d) said substrates oriented parallel and stacked together,



said stacking characterized by said elevated portions of a first of said substrates abutting a second of said substrates, said abuttings the only contact between said first and second substrates.

4,535,425

HIGHLY INTEGRATED, HIGH-SPEED MEMORY WITH BIPOLAR TRANSISTORS

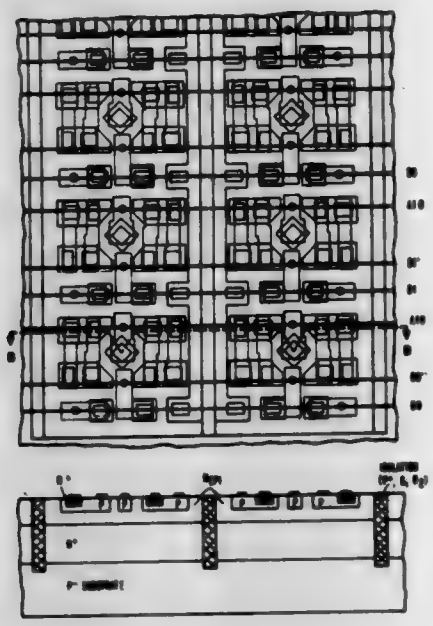
Siegfried K. Wiedmann, Stuttgart, Fed. Rep. of Germany, assignor to International Business Machines Corporation, Armonk, N.Y.

Filed May 7, 1982, Ser. No. 375,896

Claims priority, application European Pat. Off., May 30, 1981, 81104145

Int. Cl.³ H01L *27/04;* H03K *19/091;* G11C *11/40*

U.S. Cl. 365—156 **8 Claims**



1. A memory with MTL memory cells each comprising:

a first address line;

a pair of integrated transistor structures connected as switching transistors of a flip-flop circuit, each transistor structure comprising:

a first semiconductor region of one conductivity type and constituting the emitter connected to said address line;

a second semiconductor region of the opposite conductivity type and within said first region and constituting the base; and

a third semiconductor region of said one conductivity type and within said second region and constituting the collector;

a primary injector provided in common for at least two adjacent memory cells, said injector being formed by at least one fourth semiconductor region of said opposite conductivity type provided adjacent said second semiconductor region and adapted to feed an injection current into said second semiconductor region in a first direction;

a pair of bit lines; and

a pair of bit line injectors provided in common for at least two adjacent memory cells, said pair of bit line injectors being formed by a fifth and sixth semiconductor region of said opposite conductivity type and each being provided adjacent one of said second semiconductor regions and adapted to collect part of said injection current via said second semiconductor region in a second direction different from said first direction;

whereby through an angular injection course via the base region of the respective conductive switching transistor of said pair of switching transistors the memory cell is provided with a low series resistance signal path from the primary injector to the respective bit line injector.

4,535,426

SEMICONDUCTOR MEMORY DEVICE

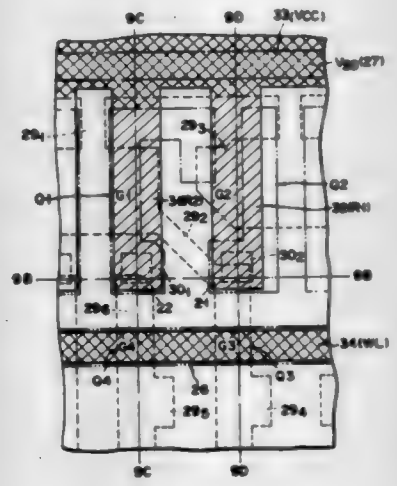
Shoji Ariizumi; Makoto Segawa, both of Tokyo, and Fujio Masuoka, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Jun. 14, 1983, Ser. No. 504,157

Claims priority, application Japan, Jul. 19, 1982, 57-125344

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—182 **34 Claims**



1. A semiconductor memory device including memory cells which have bistable flip-flop circuits formed of cross-coupled transistors, comprising:

a semiconductor substrate;

a first drain area of one of said cross-coupled transistors formed at a given position on said substrate, said first drain area being of a first conductivity type;

a second drain area of another of said cross-coupled transistors being so formed in said substrate that said second drain area is arranged close to said first drain area, said second drain area being of said first conductivity type; and

a source area of said cross-coupled transistors being so formed in said substrate that said source area surrounds said first and second drain areas from three sides of a location in which said cross-coupled transistors are formed, said source area being of said first conductivity type.

4,535,427

CONTROL OF SERIAL MEMORY

Ching-Lin Jiang, Dallas, Tex., assignor to Mostek Corporation, Carrollton, Tex.

Filed Dec. 6, 1982, Ser. No. 447,348

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—205 **6 Claims**

1. An integrated circuit serial memory comprising:

an array of memory cell elements;

writing means for writing data sequentially into said array;

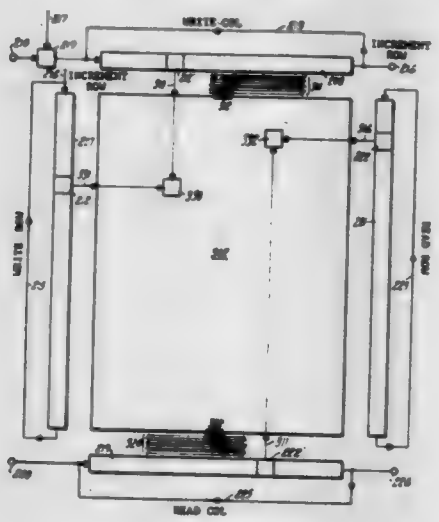
reading means for reading data sequentialy out of said array; and

control means for setting flags indicating memory-full and memory-empty states;

characterized in that:

said array comprises a two dimensional array of non-shifting memory cells, having an X and a Y dimension;

said writing means includes a first write shift register carrying a first write pointer bit along the X dimension of said array and a second write shift register carrying a second write pointer bit along the Y dimension of the array, which first and second write shift register pointer bits point in the X and Y dimensions to a write cell; and



said reading means includes a first read shift register carrying a first read pointer bit along the X dimension of said array and a second read shift register carrying a second read pointer bit along the Y dimesion of said array, which first and second read shift register pointer bits point in the X and Y dimensions to a read cell.

4,535,428

MULTI-PORT REGISTER IMPLEMENTATIONS

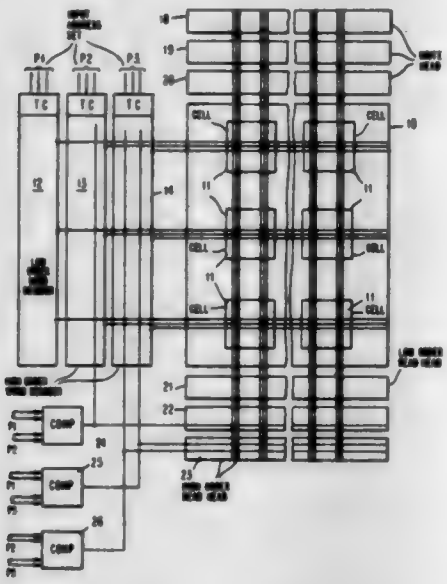
Anatol Furman, Jericho, Vt., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 10, 1983, Ser. No. 474,071

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—230

10 Claims



1. In a memory array having cells each of which is separately addressable from a plurality of write lines and is readable by a plurality of sets of bit lines, comprising:

a memory cell array, each cell of which is separately addressable from a plurality of write lines and readable by a plurality of sets of bit lines,

a low order word decoder and at least one high order word decoder coupled to each cell of the array,

a low order read head and at least one high order read head coupled to each cell of the array, via said plurality of bit lines, the number of said high order read heads being equal in number to the number of high order word decoders,

at least one multiplexer circuit coupled to each of said high order read heads,

address comparison means coupled to each of said high order word decoders and to each of said high order read heads and

means for applying a respective one set of a plurality of sets of addresses to each respective word decoder, and all of said sets of addresses to said address comparison means,

said address comparison means comparing said sets of addresses.

4,535,429

APPARATUS FOR SIGNALLING WITHIN A BOREHOLE WHILE DRILLING

Anthony W. Russell, and Michael K. Russell, both of Cheltenham, England, assignors to NL Sperry-Sun, Inc., Stafford, Tex.

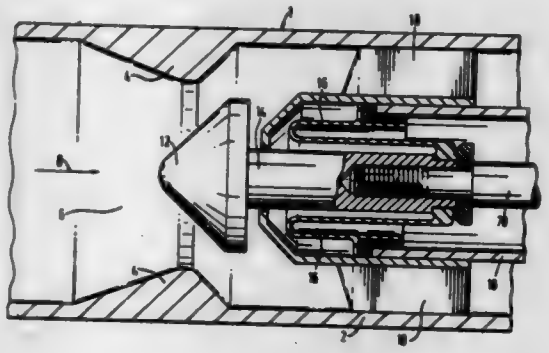
Filed Jul. 11, 1983, Ser. No. 512,308

Claims priority, application United Kingdom, Jul. 10, 1982, 8220119

Int. Cl.³ G01V *1/40*

U.S. Cl. 367—85

16 Claims



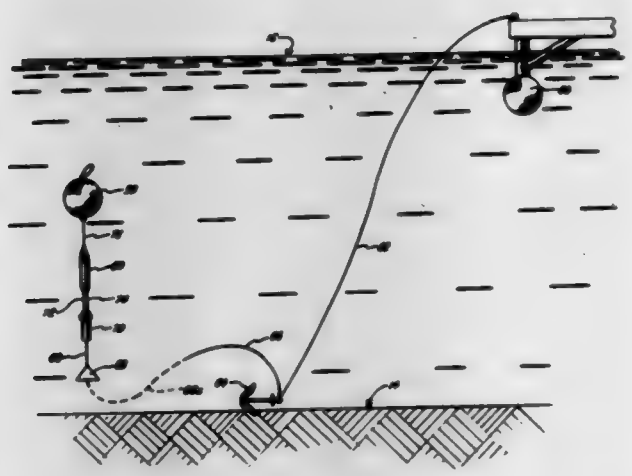
1. A down-hole signal transmitter for a mud-pulse telemetry system, comprising a flow constrictor defining a throttle orifice for the mud flow passing along a drill string, a throttling member displaceable with respect to the throttle orifice to vary the throughflow cross-section of the throttle orifice, a pump for displacing the throttling member against the mud flow, and valve means switchable between a first state in which the throttling member is displaceable by the output pressure of the pump against the mud flow and a second state in which said output pressure is relieved so as to enable the throttling member to be moved in the direction of the mud flow by the pressure of the mud flow acting on the throttling member, whereby the pressure of the mud flow may be modulated, wherein the valve means comprises a hydraulic amplifier incorporating a main, pressure relief valve and a subsidiary, control valve for controlling a main flow of fluid through the main valve by acting on a subsidiary flow of fluid of relatively low magnitude, the pressure relief valve being adapted to open when the control valve is opened and comprising a spring-biased valve member having a bore extending therethrough for the subsidiary flow of fluid towards the control valve, and the valve member being movable by pressure of fluid acting against the spring force when the control valve is opened, to open the pressure relief valve.

4,535,430

SUBSEA ACOUSTIC RELOCATION SYSTEM

Douglas A. Cochrane, Jr., and Fred W. Styer, both of Lafayette, La., assignors to Cochrane Subsea Acoustics, Inc., Lafayette, La.

Filed Jul. 7, 1982, Ser. No. 395,918
Int. Cl.³ B63B *21/52*
U.S. Cl. 367—133 10 Claims



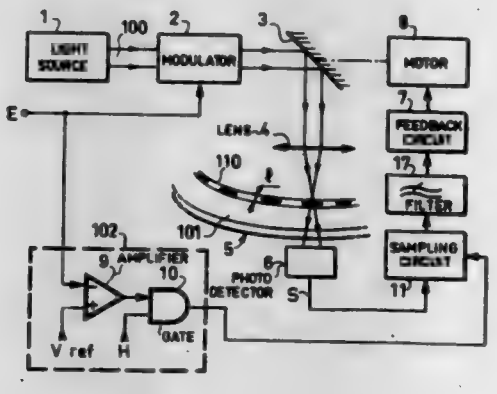
1. A method of undersea relocation comprising the steps of:
a. positioning a weighted line containing canister near a desired object on the seabed to be relocated at a future designated relocation time;
b. attaching one end of the line to the weighted canister and the other free end to a buoyed structure which can lift the canister line free end, but having a buoyancy value insufficient to overcome the weight of the line canister;
c. attaching an anchor pennant line to the line in the canister by using an intermediate anchor pennant line having a weight per foot greater than the weight per foot of the canister line but less than the weight per foot of the anchor pennant line;
d. securing the buoyed structure to the canister with a removable connection that can be broken with an acoustic signal; and
e. emitting an acoustic signal at the designated relocation time, causing the buoyed structure and the free end of the canister line to rise to the water surface area as line dispenses from the line canister on the seabed.

4,535,431

OPTICAL TRACK FOLLOWER DEVICE WITH SAMPLING

Claude Bricot; Jean Louis Gérard, and Michel Audoin, all of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Aug. 10, 1982, Ser. No. 406,917
Claims priority, application France, Aug. 14, 1981, 81 15765
Int. Cl.³ G11B *7/00, 21/10*
U.S. Cl. 369—44 15 Claims



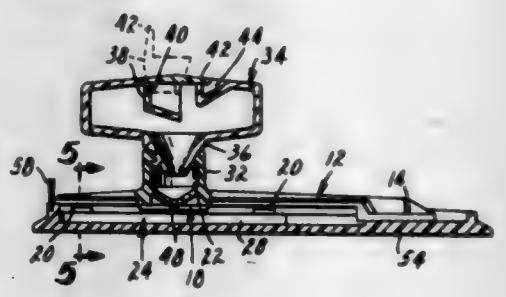
1. A tracking device for use in an optical data transcription system, said system including a data storage medium for storing data and having a reference surface wherein a set of radially adjacent track elements are pre-engraved, said tracking device causing an illuminating spot to selectively follow any one of said adjacent track elements, said illuminating spot corresponding to an area of impact of a focussed beam of radiant energy impinging on said reference surface, said tracking device comprising:
actuator means for displacing said illuminating spot transversely of said radially adjacent track elements;
photodetector means sensing the radiant energy emerging from said area of impact for generating from optical interaction with a scanned one of said radially adjacent track elements a signal representative of the error of tracking of said illuminating spot in relation with the radial axis of said scanned one track element; and
feedback loop means for controlling said actuator means with said signal, said feedback loop means including means for blanking out the transmission of the values taken by said signal while scanning non-contiguous portions, of said scanned one track element, respectively allotted for post recording of said data, thereby preventing unreliable control of said actuator means arising from the scanning of said non-contiguous portions, each of said radially adjacent track elements being provided with gaps, intermediate said non-contiguous portions, having pre-engraved tracking items.

4,535,432

DEVICE FOR CLEANING A PHONOGRAPH RECORD

Gerald J. Niles, and Thomas A. Sandberg, both of St. Paul, Minn., assignors to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.

Filed Mar. 1, 1984, Ser. No. 585,346
Int. Cl.³ G11B *3/58*
U.S. Cl. 369—72 20 Claims

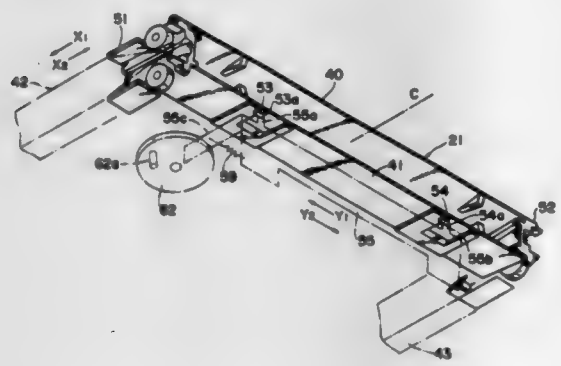


1. A phonograph-record cleaning device comprising an elongated arm, one end of which is formed to engage the spindle of a phonograph tuntable, an elongated porous cleaning pad mounted on the underside of the arm and extending radially across the working surface of a record when positioned for cleaning, a rotatable member carried by the upperside of the arm, a cleaning-fluid reservoir carried by the rotatable member, and the rotatable member and arm together forming a fluid passage from the reservoir to the cleaning pad, wherein the improvement comprises:
the fluid capacity of each of the reservoir and pad barely wets one entire working surface of the largest record to be cleaned, and the reservoir is mounted in the rotatable member for pivotable movement between a fill position affording manual filling of the reservoir, and a dump position at which the contents of the reservoir will be poured onto the porous cleaning pad.

4,535,433
APPARATUS FOR PLAYING BACK ROTATING RECORDING MEDIUMS

Toru Kishi, Zama, and Takashi Saito, Ayase, both of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Jan. 17, 1984, Ser. No. 571,653
Claims priority, application Japan, Jan. 18, 1983, 58-6016
Int. Cl.[3] G11B *17/04, 1/00*
U.S. Cl. 369—77.2 8 Claims



1. An apparatus for playing back a rotating recording medium removably housed in a case including a jacket for containing the rotating recording medium and a lid plate closing a slot in the jacket, said apparatus comprising:

(a) turntable for placing the rotating recording medium thereon;

(b) a signal pickup head for reproducing signals recorded on the rotating recording medium on said turntable;

(c) means including a support movable selectively into an elevated position for supporting the rotating recording medium above said turntable and into a lowered position for placing the rotating recording medium on said turntable;

(d) a jacket opener movable over and across said turntable in response to being pushed by the case when the case is inserted into a position over said turntable, said jacket opener comprising a pair of beams for opening the slot in the jacket, one of said beams having a pair of ledges spaced from each other; and

(e) locking means responsive to operation of said means for supporting, for locking said jacket opener at laterally spaced positions thereon against movement over and across said turntable when said support is in said lowered position, said locking mechanism comprising a locking plate having a pair of locking fingers spaced from each other for lockingly engaging said ledges, respectively.

4,535,434
OPTICAL DISC AND DISC DRIVE MECHANISM

Yoshio Kishi, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Mar. 23, 1981, Ser. No. 246,904
Claims priority, application Japan, Mar. 27, 1980, 55-39434
Int. Cl.[3] G11B *7/00, 23/02*
U.S. Cl. 369—111 4 Claims

4. A radiation-sensitive record cartridge comprising:

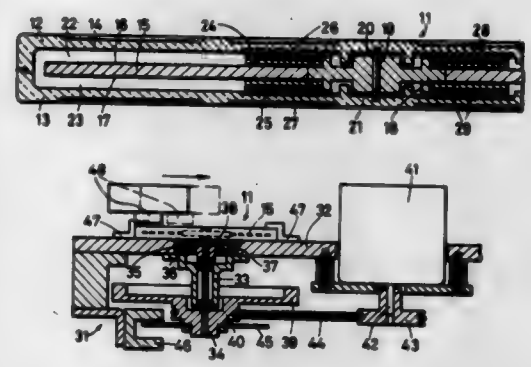
a disc-shaped member having a radiation-sensitive recording layer on at least one planar side thereof;

an enclosure spaced from and completely surrounding said disc-shaped member;

means for supporting said disc-shaped member within said enclosure and for enabling rotation of said disc-shaped member around an axis extending through the center of and perpendicular to the plane of said disc-shaped member;

means for coupling said disc-shaped member to drive means which is outside said enclosure, said coupling means comprising a magnetically influenceable means attached to said disc-shaped member and rotatable magnetic drive means situated outside said enclosure which generates a magnetic field for interaction with said magnetically influenceable means;

means for aligning said enclosure and the disc shaped member therein with the said disc shaped member and said drive means in coaxial condition; and

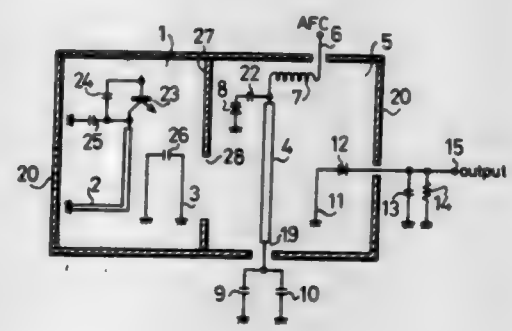


means in said enclosure for allowing access to the radiation-sensitive layer on said disc-shaped member so that information is recorded on and read from said disc-shaped member through said access allowing means.

4,535,435
CAPACITANCE DETECTOR FOR VIDEO DISK

Akiyuki Yoshisato, and Kohta Iijima, both of Soma, Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Jun. 29, 1982, Ser. No. 393,292
Claims priority, application Japan, Jun. 30, 1981, 56-97306
Int. Cl.[3] G11B *9/00, 3/00*
U.S. Cl. 369—126 3 Claims



1. In a capacitance detector for detecting a capacitance variation recorded on a video disk by converting an FM-modulated video signal, and for demodulating the detected capacitance variation into an electric signal; a capacitance detector for a video disk comprising:

a first block provided with a fixed oscillator and a coupling loop comprising a coupling coil and a coupling capacitor, the inductance of said fixed oscillator and said coupling loop being inductively coupled,

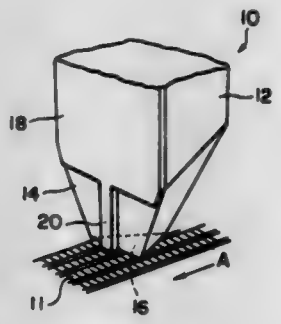
a second block provided with a disk stylus resonator having its resonance frequency varied by the capacitance variation of the video disk, and

means including a shield plate separating the components of said first block from the components of said second block and having a coupling window for inductively coupling said coupling loop of said first block with a resonant inductance of said disk stylus resonator of said second block through said coupling window.

4,535,436
STYLUS HAVING A GRAPHITE ELECTRODE

Hideaki Takehara, Yokohama, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Division of Ser. No. 268,888, Jun. 1, 1981, Pat. No. 4,409,712.
This application Jun. 14, 1983, Ser. No. 504,223
Claims priority, application Japan, May 30, 1980, 55-72517
Int. Cl.³ G11B 9/06
U.S. Cl. 369—173 6 Claims

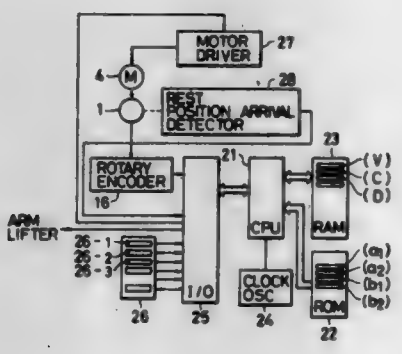


1. A stylus for use in recording signals on a lacquer disc record or reproducing signals from a lacquer disc record, comprising a body of diamond and an electrode attached to a surface of said diamond body, said electrode comprising a layer of graphite which is integrally formed with the diamond body, said graphite layer being formed by heating said diamond body in an environment of vacuum or inert gas containing a small amount of oxygen at an elevated temperature in a range from 1100° C. to 1500° C.

4,535,437
PICKUP ARM DRIVING CONTROL SYSTEM WITH REPEAT PLAYBACK FUNCTION

Satoshi Hiranuma, Tokyo, Japan, assignor to Trio Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 16, 1982, Ser. No. 450,296
Claims priority, application Japan, Dec. 25, 1981, 56-209285
Int. Cl.³ G11B 3/36, 19/14, 17/06
U.S. Cl. 369—223 1 Claim



1. A pickup tonearm drive system applicable to a record disc player comprising:

drive means for the pickup tonearm;

a pulse generator for generating a pulse at every predetermined distance of movement of a pickup tonearm;

a counter for obtaining a count representative of the current position of the tonearm compared to a rest position by upcounting the pulses from said generator in a first-direction movement of the tonearm and downcounting the pulses from said generator in a second direction movement of the tone arm which is reverse in direction to the first direction;

a repeat key for issuing a repeat signal upon the actuation thereon; and

a processor and memory programmed by the steps of:

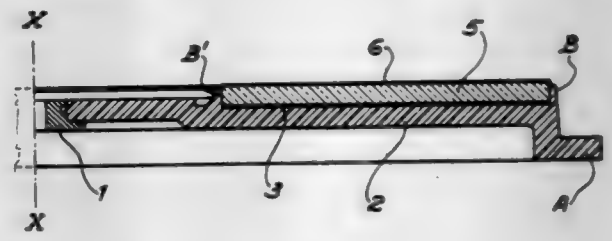
in response to the repeat signal first issued from said repeat key after the playback operation of the tonearm has started, memorizing a first count of said counter as a repeat start position information,

in response to the repeat signal secondly issued from said repeat key, (a) memorizing a second count of said counter as a repeat end position information and also controlling the tonearm to terminate the playback operation, and (b) controlling the tonearm to repeatedly perform a playback operation between the positions represented by said first and second counts by actuating the drive means to drive the tonearm according to comparison of the count of said counter with the memorized first and second counts.

4,535,438
TURNTABLE PLATTER FOR RECORD PLAYERS

Liberto Massarelli, Vasto, and Luigi Capriotti, Porto d'Ascoli, both of Italy, assignors to Società Italiana Vetro-SIV-S.p.A., Italy

Filed Aug. 13, 1982, Ser. No. 407,734
Claims priority, application Italy, Sep. 2, 1981, 23743 A/81
Int. Cl.³ G11B 3/60
U.S. Cl. 369—264 1 Claim



1. A turntable platter comprising:

a base disk having a center of rotation, a lower surface and an upper surface, said disk being made of plastic and including inner and outer edges extending upwardly from said upper surface defining an annular trough therebetween, said disk having an outer peripheral edge extending lower than a plane containing said lower surface of said disk, said outer peripheral edge being transparent;

a glass layer member engaged with said upper surface of said disk in said annular trough and covering at least a portion of said top surface, said glass layer member being annular in shape and being positioned on an outer portion of said upper surface of said disk spaced away from said center of rotation, a portion of said upper surface of said disk adjacent said center of rotation being in a lower plane than a plane containing an upper surface of said glass layer member;

adhesive between said base disk and said glass layer member for connecting said glass layer member to said disk; and

an electrically conductive thin layer disposed on said upper surface of said glass layer and made of one of dielectric and metallic material and having a thickness which is less than micron.

4,535,439
OPTICAL HAVING INDEX MARK AND SECTOR MARK

Isao Satoh, Neyagawa; Tomio Yoshida, Katano; Shunji Ohara, Higashiosaka, and Kenji Koishi, Hyogo, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Nov. 24, 1982, Ser. No. 444,456
Claims priority, application Japan, Dec. 1, 1981, 56-193970; Dec. 4, 1981, 56-196044
Int. Cl.³ G11B 7/24, 17/22, 7/00
U.S. Cl. 369—275 4 Claims

1. An optical recording and reproducing disc for optically recording and reproducing information, and comprising:

a data track section including groove-like guide tracks;

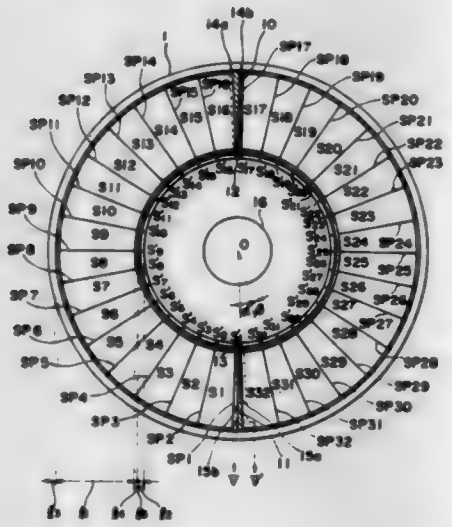
said groove-like guide tracks being divided by sector separating zones into track address zones formed by groove-like pits and a plurality of information recording sectors;

said sector separating zones being constituted by repetition

of concave and convex pit portions formed by a large number of approximately circular pits and elongated uniform pits of approximately the same length;

an index track section formed at an outer side or an inner side of said data track section;

said index track portion having index marks at positions corresponding to said track address zones, and sector



marks at positions corresponding to said sector separating zones;

said sector marks being formed by elongated arcuate uniform pits so as to be concentrically positioned with respect to said groove-like guide tracks; and

said index marks being formed by using at least two of said sector marks.

4,535,440

OPTICAL MULTIPLEXER

Lothar Mannschke, Eckental, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

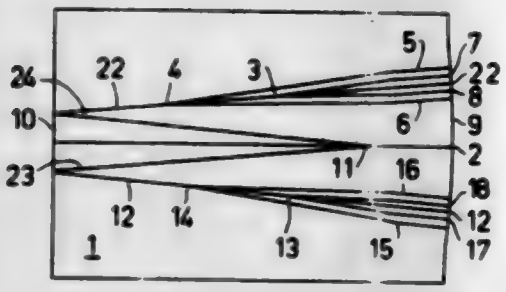
Filed Jul. 20, 1983, Ser. No. 515,701

Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230657

Int. Cl.³ H04B *9/00*

U.S. Cl. 370—1

4 Claims



1. An optical multiplexer formed by branching light-guiding tracks which are embedded in the surface of a solid body, the improvement therein comprising a reflective side in said solid body, a light-guiding central track in said solid body, said central track being diverted symmetrically into at least two angled tracks connecting to said central track from opposite sides of said central track at a joining point along the length of said central track, said angled tracks extending to said reflective side of said solid body and turning back and extending to the opposite side of said body, said angled tracks having successive branches along their respective lengths, each branch including a pair of branch tracks opening from opposite sides into said respective angled track at the same angle, and at the same longitudinal position along said angled track, said branches being separated along the length of said respective angled tracks.

4,535,441

COMMUNICATION SYSTEM FOR STATIONARY AND MOBILE SUBSCRIBERS

Heinz Schwaertzel, and Hans Unterberger, both of Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

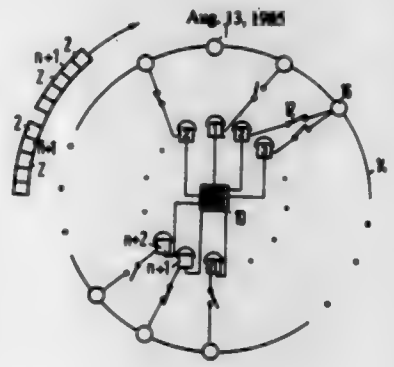
Filed Jul. 30, 1979, Ser. No. 61,899

Claims priority, application Fed. Rep. of Germany, Sep. 29, 1978, 2842632

Int. Cl.³ H04B *9/00*

U.S. Cl. 370—4

8 Claims



1. A communication system for stationary and mobile subscribers, comprising; a ring circuit for interconnecting a plurality of subscriber stations having input-output devices, a switch located at each subscriber station for selectively interconnecting said station with said ring circuit, said subscriber stations also being interconnected by means of a conventional switching network, a transceiver station connected to said ring circuit, said transceiver station having a transmitter and a receiver for carrying on two-way communication with a mobile subscriber terminal device; whereby a call to a subscriber is switched onto the ring circuit via said switch at the subscriber's station and is transmitted wirelessly with an address allocated to the called subscriber, which call is received by a mobile subscriber terminal device corresponding to said address; and whereby two-way communication may be carried out between the subscriber and the originator of said call.

4,535,442

DIGITAL SWITCHING NETWORK FOR TELECOMMUNICATIONS EXCHANGE

Thomas S. Maddern; John W. Ansell, and Alexander S. Philip, all of Dorset, England, assignors to The Plessey Company plc, Ilford, England

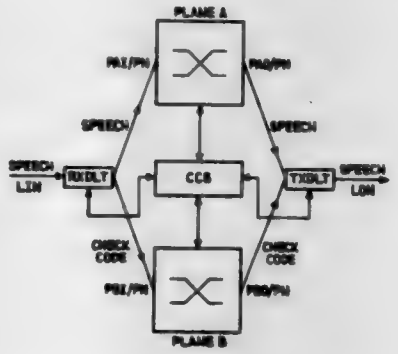
Filed Apr. 22, 1983, Ser. No. 487,871

Claims priority, application United Kingdom, Apr. 24, 1982, 8211924

Int. Cl.³ H04T *1/16*; H04Q *11/04*

U.S. Cl. 370—13

9 Claims



1. A digital telecommunications exchange handling information samples in time division multiplex form carried by incoming and outgoing junction paths, the exchange comprising:

a receive interface for each incoming junction path;

a transmit interface for each outgoing junction path;

first and second time division multiplex switch networks, each network being controlled by a common control system to provide identical selectable connections in each network between any one of the receive interfaces and any one of the transmit interfaces on a time division multiplex basis;

each receive interface includes error code generating means for generating a first error indicating code dependent upon each information sample received thereby and for generating a second error indicating code which is a function of said first error indicating code, said first and second error indicating codes defining a checkcode, and each receive interface includes information sample and checkcode insertion means arranged to pass to one of the switching networks said information sample and to the other switching network said checkcode;

each transmit interface includes error detection means for comparing the first error indicating code with the second error indicating code both defining said checkcode received via said other switching network and includes means for validating the information sample received via said one of the switching networks against said first error indicating code after the successful comparison by said means for comparing to detect errors in said information samples received via said one of the switching networks; and

said common control system having means for selecting the switching network dependent upon said means for comparing and said means for validating.

4,535,443

TERMINAL ARRANGEMENT FOR A DUPLEX TRANSMISSION SYSTEM

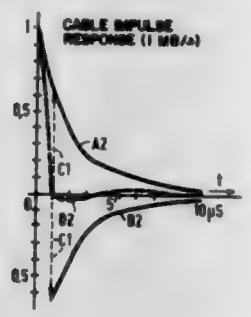
Geerlof J. Korevaar, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 15, 1983, Ser. No. 504,101

Claims priority, application Netherlands, Jun. 16, 1982, 8202438

Int. Cl.[3] H04B *1/58, 3/04*

U.S. Cl. 370—24 2 Claims



1. A terminal for a transmission system having a duplex transmission path for transmitted and received digital signals, comprising:

a transmitter which includes a pulse-shaping equalizer for generating a number (n) of variably delayed versions of the digital signal to be transmitted, multiplying such versions by respective correction factors ($\alpha 1, \alpha 2, \ldots \alpha_n$) and adding such multiplied versions to the digital signal to be transmitted, thereby predistorting such digital signal;

a receiver which includes an adaptive quantized feedback equalizer having adaptively adjustable coefficients (C1, C2, . . . C_n);

and converter means coupling said transmitter equalizer to said receiver equalizer, said converter means being adapted to convert the adaptively adjustable coefficients (C1, C2, . . . C_n) of the receiver equalizer into the correction factors ($\alpha 1, \alpha 2, \ldots \alpha_n$) for the pulse-shaping transmission equalizer in accordance with recursive expressions which signify minimum intersymbol interference between successive pulses in received digital signals.

4,535,444

DIGITAL SWITCHING EXCHANGE FOR TELEPHONE SYSTEMS

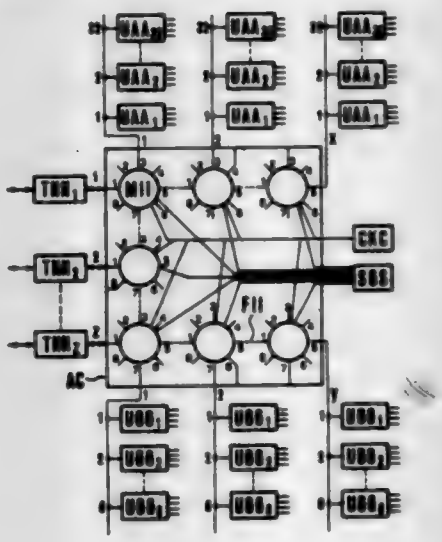
Vincenzo Falzone, and Marcello Tommasi, both of Rome, Italy, assignors to Italtel Societa Italiana Telecomunicazioni S.p.A., Milan, Italy

Filed Jan. 22, 1982, Ser. No. 341,671

Claims priority, application Italy, Jan. 30, 1981, 19414 A/81

Int. Cl.[3] H04J *3/02;* H04Q *11/04*

U.S. Cl. 370—58 23 Claims



1. A digitally operating telephone exchange comprising:

a switching assembly (AC) including a multiplicity of mutually identical routing modules (MII) interconnected by PCM lines (FII) giving each module direct access to some of the other modules;

first interface means (UAA) connected to certain of said routing modules and providing same with access to respective sets of subscriber lines;

second interface means (TNN) connected to other of said routing modules providing same with access to respective digital trunks extending to remote exchanges;

third interface means (UGG) connected to further of said routing modules and providing same with access to respective analog trunks;

centralized oscillation-generating means (GC) connected to said first interface means for supplying same with ringing current and with a modulable audio-frequency signalization carrier;

supervisory processing means (SGS) connected to all said routing modules and to said second interface means for controlling the operations thereof; and

centralized timing means (CKC) connected via a data channel to all said routing modules and to said second interface means for synchronizing the operations thereof;

each routing module including circuitry for receiving incoming messages from PCM lines and interface means connected thereto and for transmitting outgoing messages to the PCM lines and to the interface means connected thereto.

4,535,445

CONFERENCING SYSTEM ADAPTIVE SIGNAL CONDITIONER

Michael S. Lane, Colts Neck, and Steven D. Scholbrock, Freehold, both of N.J., assignors to AT&T Information Systems, Holmdel, N.J.

Filed Jun. 16, 1983, Ser. No. 505,106

Int. Cl.[3] H04Q *11/04*

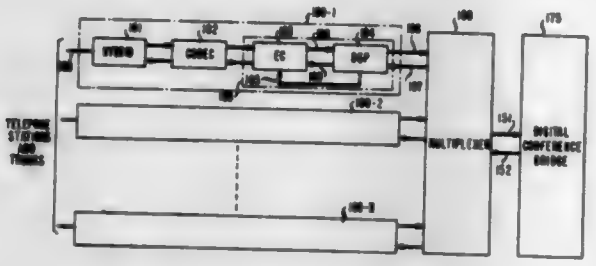
U.S. Cl. 370—62 15 Claims

1. A speech conditioning arrangement adapted for use in a transmission line having a transmit channel for receiving signals from a first conferee and a receive channel for receiving signals from at least one other conferee comprising

means for identifying signals contained on said transmit

channel as being either transmit speech signals or transmit nonspeech signals, and

means for adjusting the level of said transmit speech signals and said transmit nonspeech signals and for supplying the



resulting signals to said transmit channel, the level of said transmit nonspeech signals being adjusted to the level of transmit speech signals priorly supplied to said transmit channel when said first conferee was the last of said conferees to speak.

4,535,446

DIGITAL TRANSMISSION SYSTEMS

Peter J. Mountain, The Hague, Netherlands, assignor to British Telecommunications, London, England

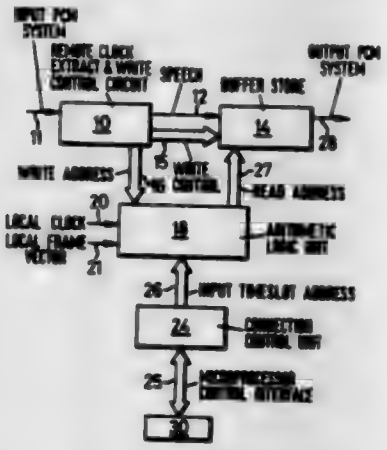
Filed Aug. 19, 1983, Ser. No. 524,776

Claims priority, application United Kingdom, Aug. 26, 1982, 8224481

Int. Cl.³ H04Q *11/04*

U.S. Cl. 370—68

12 Claims



1. An aligner with a time switching capability for use in a digital transmission system, said aligner comprising:

storage means for storing n bytes of data in frames comprising m bytes where n>m,

the storage means being arranged such that data is written sequentially under the control of timing signals associated with incoming data, and

means for controlling the reading of data bytes from said storage means to generate outgoing frames of m bytes, including logic means which generates read addresses for the particular bytes to be read at any given read time as determined by other timing signals, said logic means being arranged to detect when a generated read address is in a predetermined relationship with the present write address and, in response to such detection, to instead cause reading of a data byte from the corresponding address of the just-previous or just-subsequent frame of m bytes.

4,535,447

REMOTE MONITORING SYSTEM TRANSMITTER

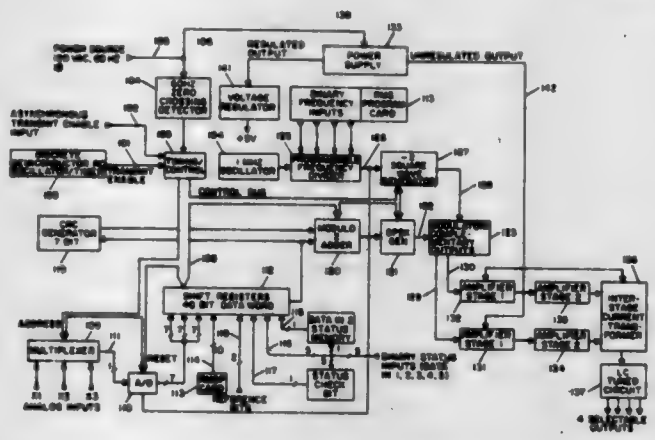
Albert P. Rosanes, Centerport and Timothy P. Haley, Massapequa, both of N.Y., assignors to Hazeltine Corporation, Commack, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,301

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—77

5 Claims



1. An apparatus for transmitting information over the secondary network of a power distribution network including a power source, a primary source, a primary network, a transformer and a secondary network comprising:

(a) a multiplexer having multiple inputs and an output;

(b) first means for providing to the inputs of the multiplexer analog information corresponding to the information to be transmitted;

(c) second means having an input connected to the output of the multiplexer for converting analog information provided by the multiplexer output into digital information and supplying the digital information at an output;

(d) a shift register for storing the digital information having an input connected to the output of the second means and having an output supplying the digital information stored in the shift register;

(e) third means for modulating a carrier signal with the digital information stored in the shift register;

(f) fourth means for transmitting over the power distribution network the modulated carrier signal supplied by the third means; and

(g) timing means associated with the secondary network of a power distribution network and including a zero crossing detector for supplying a clock signal and for synchronizing said timing means to the power source, said timing means being responsive to the clock signal and controlling the multiplexer switching and the third means.

4,535,448

DUAL BUS COMMUNICATION SYSTEM

Leslie A. Baxter, Eatontown, and Sanford S. Brown, River Plaza, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 10, 1982, Ser. No. 448,771

Int. Cl.³ H04J *3/02*

U.S. Cl. 370—85

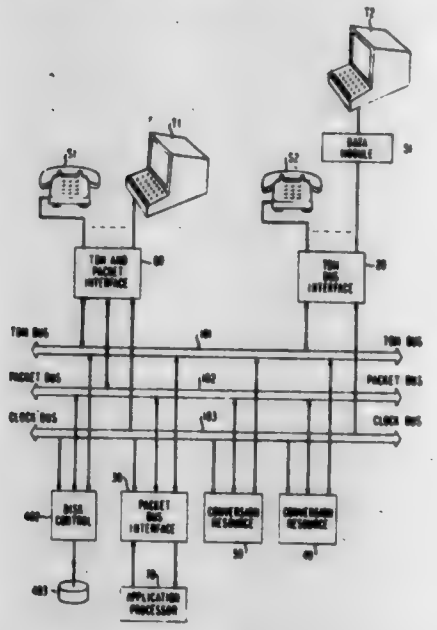
8 Claims

1. In a communication system, a time division bus arranged to interconnect a plurality of communication circuit boards for intercommunication among said circuit boards in established time slots on said time division bus, said time division bus characterized in that data communicated on said bus is routed by the time slot relationship of said data on said time division,

a packet-switched bus arranged for intercommunication in bursty fashion among said plurality of communication circuit boards, said packet-switched bus characterized in that data communicated on said bus is routed in accordance with information contained within said data on said packet-switched bus,

means for connecting certain of said circuits directly to said time division bus, certain of said circuits directly to said

packet-switched bus, and certain of said circuits directly and concurrently to both of said busses, and wherein said communication circuits are contained within one or more circuit board housings, each circuit board housing having multiple positions therein for the placement of said communication circuit boards and wherein any of said communication circuit boards may be placed in any of said



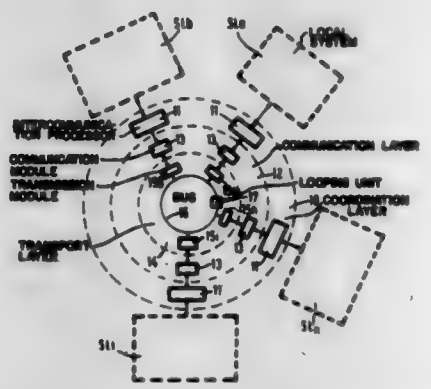
positions while still having said direct connection to either or both of said busses and wherein each of said busses includes a multipath cable having a termination for each said path at each said position of each said housing, and wherein said circuits which are connectable to both of said busses include means for receiving first data from one of said busses and for delivering second data to the other one of said busses in response to receipt of said first data.

4,535,449

TIME-LOCKING METHOD FOR STATIONS WHICH FORM PART OF A LOCAL LOOP NETWORK, AND LOCAL LOOP NETWORK FOR PERFORMING THIS TIME-LOCKING METHOD

Jean-Pierre Arragon, Roissy, France, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 2, 1983, Ser. No. 490,619
Claims priority, application France, Apr. 30, 1982, 82 07536
Int. Cl.[3] H04J *3/00*
U.S. Cl. 370—86 12 Claims



1. In a local loop network comprising a plurality of stations which are distributed along a bus, each station being connected to the bus by way of a coupler, said bus comprising a looping unit inserted in the bus, a method for the time-locking of the stations, said method including an initialization phase for allocating to each station a time reference with respect to a master clock of the looping unit, characterized in that the initialization phase forms part of a transmission phase which comprises the following steps:

(a) the transmission of a frame, referred to as the transmission frame, by the looping unit, said transmission frame comprising:

a synchronization word which initializes the transmission and initialization phase,

at least one slot which initially does not contain data and which has for each station a different position with respect to the position of the synchronization word, said position corresponding to the time position occupied by each station in the transmission frame;

(b) the generating of a transmission command by at least one station after the transmission of the synchronization word;

(d) the insertion, by the station and under the control of the transmission command, of a word into the empty slot allocated to the station;

said transmission phase being followed by a receiving phase which comprises the following steps:

(a) the demodulation of the transmission frame by the looping unit;

(b) the retransmission, in the form of a frame which is referred to as the receiving frame, of said demodulated transmission frame by the looping unit,

(c) the measurement by the station of the delay, with respect to the beginning of the slot allocated thereto, with which the word has been inserted into the allocated slot by the station during the transmission phase;

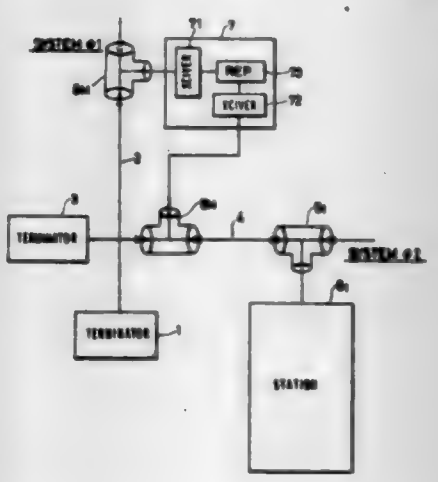
(d) the storage by the station of the measured delay value in order to enable the station to advance the insertion of the word into the allocated slot during a next transmission by a period which corresponds to the delay value.

4,535,450

DIGITAL SIGNAL REPEATING SYSTEM

Yoichi Tan, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Oct. 29, 1982, Ser. No. 437,595
Claims priority, application Japan, Oct. 30, 1981, 56-172899
Int. Cl.[3] H04J *3/00, 6/00, 3/02*
U.S. Cl. 370—94 10 Claims



1. A digital signal repeating system, comprising: a plurality of digital signal transmission systems interconnected by repeating installations, each such system being a time division multiple access system of the type in which multiple stations access a communication cable by transmitting packets of information during available time slots of successive periodically repeated frames, each one of said stations selecting a time slot for transmission of its packets on a time slot available basis, wherein each of said repeating installations comprises: input/output means for effecting digital signal input or output operations between two signal transmission systems interconnected by said repeating installation, packet selecting means for selecting only packets to be sent from one of said two signal transmission systems to the other signal transmission system, buffer memory

means for writing thereinto transfer information of a packet which is to be sent to said other signal transmission system and which is selected by said packet selecting means, and transmission control means for reading out the transfer information so as to transmit it as a packet to said other signal transmission system, thereby enabling digital signal transmission in packet form between different signal transmission systems in one and the same communication system; said transmission control means comprising frame detection means responsive to the digital signal transmissions on said other signal transmission system for controlling the time of transmission of said packet to place said packet within said frame in a time slot not otherwise occupied by digital signal transmissions.

4,535,451

FOURTH-ORDER DIGITAL MULTIPLEX SYSTEM FOR TRANSMITTING A PLURALITY OF DIGITAL SIGNALS AT A NOMINAL BIT RATE OF 44 736 KBIT/S

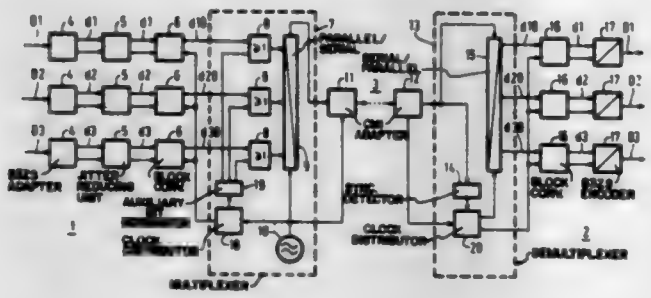
Jan Drupsteen, Hilversum, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Feb. 11, 1983, Ser. No. 465,741

Claims priority, application Netherlands, Aug. 5, 1982, 8203110

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—99 **3 Claims**



1. A fourth-order digital multiplex system comprising a transmitter having a digital multiplexer and a receiver having a digital demultiplexer for TDM transmission of a plurality of digital signals at a nominal third-order bit rate of 44,736 kbit/s over a common digital path between the said multiplexer and the said demultiplexer, characterized in that the said multiplexer is adapted for cyclically bit-wise interleaving three digital signals having nominal third-order bit rates of 44,736 kbit/s into a composite digital signal having a nominal fourth-order bit rate of 139,264 kbit/s and a frame comprising a 12 bit frame alignment signal, a number of service bits and, in addition, for each of the said three signals, a number N of information bits as well as one justification bit with five associated justification service bits, the said number N being such that the nominal justification ratio of the composite digital signal is in the range from 0.40 to 0.60 but exclusive of the range from 0.46 to 0.54, which frame is arranged in six consecutive sets having equal numbers of bit time slots, wherein

the bits of the frame alignment signal occupy the first 12 bit positions of the first set,

the justification service bits of the first, second and third of the said three signals occupy the first, second and third bit positions, respectively of, in succession, the second set to the sixth set,

the service bits occupy the bit positions following after the third bit position in the fourth set, and

the information bits of the said three signals cyclically occupy the remaining bit positions of the six sets; and the said demultiplexer is adapted for separating the said composite signal into the said three signals.

4,535,452

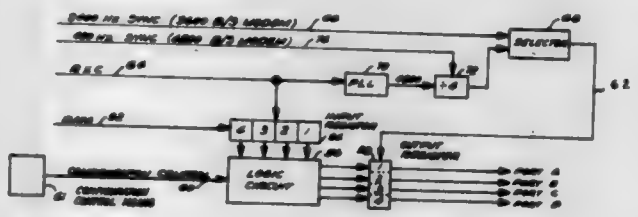
MULTI-MODEM VARIABLE PORT DEMULTIPLEXER SYNCHRONIZATION ADAPTER

Terrel W. Sandberg, Cedar City, Utah, and Stanley Bottoms, Seminole, Fla., assignors to Paradyne Corp., Largo, Fla.

Filed Feb. 29, 1984, Ser. No. 582,785

Int. Cl.³ H04J *3/06*

U.S. Cl. 370—100 **7 Claims**



1. In a digital communication system adapted to transmit multi-valued signals which are modulated to provide a demultiplex synchronizing signal, a demultiplexer comprising:

a first memory element for storing received data bits said signals having a preselected configuration;

a second memory element for transferring received data to several remote units in accordance with said demultiplex synchronizing signal;

configuration control means for generating a command signal indicative of said signal configuration; and

a logic array without memory for transferring from said first memory element to a second memory element in response to said command signal.

4,535,453

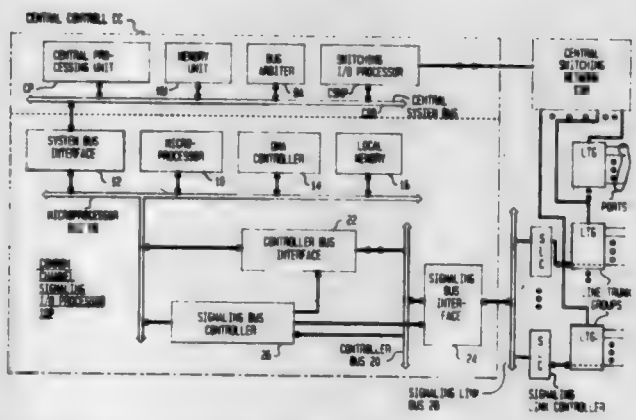
SIGNALING INPUT/OUTPUT PROCESSING MODULE FOR A TELECOMMUNICATION SYSTEM

Robert B. Rhodes, Plantation, and James R. Paolantonio, Coral Springs, both of Fla., assignors to Siemens Corporate Research & Support, Inc., Iselin, N.J.

Filed Dec. 27, 1982, Ser. No. 453,858

Int. Cl.³ H04J *3/12*; H04Q *11/04*

U.S. Cl. 370—110.1 **21 Claims**



1. An input/output processing module providing common channel signaling and being arranged in a central control unit of a digital telecommunications system, said system being composed of a plurality of central offices each including a respective central control unit, a central switching network and a plurality of line trunk group units forming interfaces of transmission lines of the telecommunication system to the switching network, said transmission lines including trunks dedicated to transferring signaling information and being associated at each end with respective signaling link controllers, wherein the central control unit has a main processing system including a central system bus, and said input/output processing module, forming an independent module residing on this central system bus, is dedicated to processing of signaling control information to be exchanged between the central processing system and said signaling link controllers, said input-/output processing module comprising:

a microprocessor system provided for initiating, starting and controlled resetting of signaling information transfer operations under supervision of the central processing system by means of respective input/output control commands and having a system bus interface unit connected to the central system bus, a microprocessor unit, a local memory unit and a microprocessor bus interconnecting said units of the microprocessor system;

a further bus arrangement constituting a signaling link bus and being commonly connected to said signaling link controllers; and

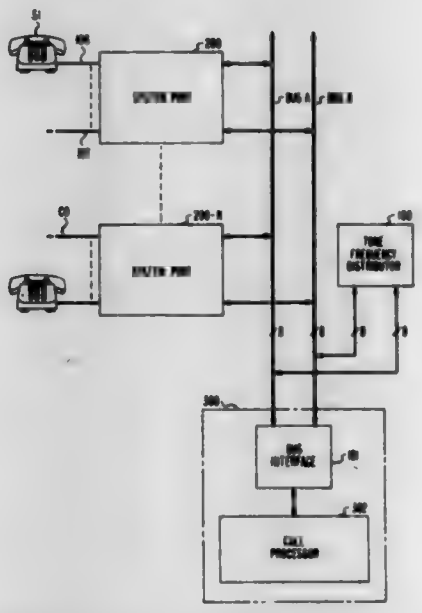
a signaling link bus control arrangement connected to both the microprocessor bus and the signaling link bus and including programmable control means for sequentially executing transfer operations of signaling information and related input/output control information, and further including interface means being independently accessible by both the microprocessor system and the control means of the signaling link bus control arrangement for enabling bi-directional data transfers between the microprocessor system and said control means.

4,535,454

MULTIFREQUENCY TONE DISTRIBUTION USING A CONFERENCING ARRANGEMENT

Clair A. Buzzard, Lincroft, and Kent V. Mina, Colts Neck, both of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Sep. 15, 1983, Ser. No. 532,313
Int. Cl.[3] H04J *3/12, 3/16*
U.S. Cl. 370—110.2 14 Claims



10. A multifrequency tone distribution arrangement adapted for use in a communication system in which a call processor is in communication with at least one port circuit via a common time division multiplexed bus of n-time slots occurring within each of a plurality of system frames of time slots, comprising

means for generating a plurality of single frequency signals, each of said single frequency signals being a component of a predetermined plurality of multifrequency tones, each of said tones being associated with a respective digit,

means for supplying each of said single frequency signals to said bus during respective ones of said time slots, and

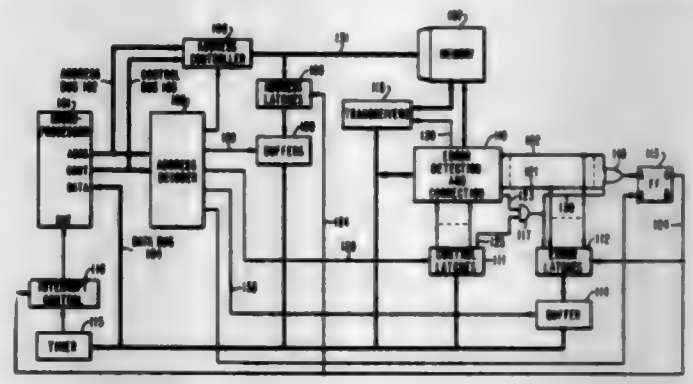
port circuit means responsive to a signal indicative of said respective digit for forming the associated multifrequency tone by removing from said bus, during its respective one of said time slots, each component of said associated multifrequency tone and conferencing each said removed component together.

4,535,455

CORRECTION AND MONITORING OF TRANSIENT ERRORS IN A MEMORY SYSTEM

Donald W. Peterson, Yorkville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Mar. 11, 1983, Ser. No. 474,447
Int. Cl.[3] G06F *11/10*; G11C *29/00*
U.S. Cl. 371—13 20 Claims



1. An arrangement for correcting and monitoring errors occurring in memory means having a plurality of memory locations, comprising

means for detecting an occurrence of one of said errors in an accessed memory location of said memory;

generating means responsive to the occurrence of one of said errors for generating an error signal;

processor means responsive to said error signal and a first set of program instructions to generate a set of signals for reaccessing said accessed memory location;

means for correcting the reaccessed contents of said accessed memory location;

said processor means being further responsive to a second set of program instructions and the corrected reaccessed contents for rewriting the latter into said accessed memory location; and

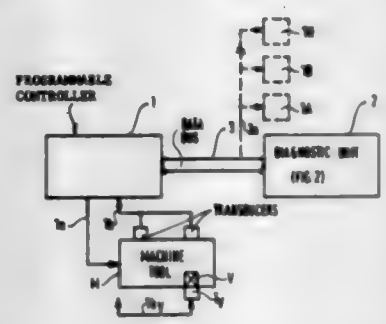
said processor means being further responsive to said reaccessed corrected contents and a third set of program instructions for updating an error rate table stored in said memory means.

4,535,456

METHOD OF DETECTING EXECUTION ERRORS IN PROGRAM-CONTROLLED APPARATUS

Kurt Bauer, Ostfildern-Nellingen; Karl-Heinz Fischer, Markgröningen, and Heinz Huber, Ludwigsburg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 16, 1983, Ser. No. 466,875
Claims priority, application Fed. Rep. of Germany, Feb. 26, 1982, 3206891
Int. Cl.[3] G06F *11/00*
U.S. Cl. 371—16 8 Claims



8. The combination of a programmable controller (1), a diagnostic unit (2), a data bus (3) interconnecting said controller and diagnostic unit, a device (M) controlled by the programmable controller, and transducers (T) and input lines (1b)

connected to, and signaling operating conditions of, the device (M) to the programmable controller (1)

wherein, in accordance with the invention,

the programmable controller includes a memory storing a particular application program therein;

the diagnostic unit (2) includes a microprocessor (8), a random-access memory (4), a read-only memory (5), and an interconnecting data bus (9); and diagnostic routines are stored in said read-only memory (5), said routines including:

means for recognizing each time that a new applications program is read into said programmable controller, abstracting the step structure of said applications program, and recording said abstract in said random-access memory (5);

means for determining whether execution by said programmable controller of said applications program has taken more than a predetermined period of time;

means for determining which instruction of said applications program was in progress when said predetermined period of time was exceeded;

means for determining from which of said transducers signals were necessary for execution of said instruction in progress, and which of said necessary signals were missing;

and means for generating a code identifying which input line failed to provide said missing signal.

4,535,457

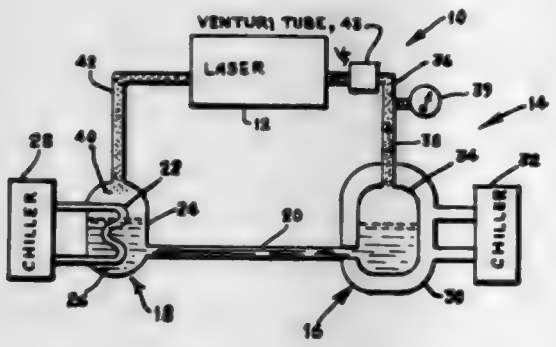
TRANSVERSE FLOW CW ATOMIC IODINE LASER SYSTEM

LaVerne A. Schlie, and Robert D. Rathge, both of Albuquerque, N. Mex., assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Mar. 27, 1984, Ser. No. 593,759

Int. Cl.[3] H01S *3/22*

U.S. Cl. 372—58 10 Claims



1. A transverse flow CW atomic iodine laser system, said system comprising:

means for providing ultraviolet radiation to a lasing gas medium to produce excited atomic iodine,

a closed cycle fuel system, said fuel system providing a continuous flow of a laser gas to form said lasing gas medium when said ultraviolet radiation interacts with said laser gas, said fuel system having a condenser for liquifying said laser gas after lasing to form a liquid fuel, said condenser outputting said liquid fuel to an evaporator, said evaporator providing said laser gas for lasing at a predetermined velocity, said velocity being regulated by a temperature difference of said liquid fuel in said condenser and said evaporator and by laser gas flow orifices in said fuel system, whereby said closed cycle fuel system operates without loss of said liquid fuel condenser, said evaporator and said condenser connected together such that a liquid fuel is transferred to said evaporator, said evaporator providing said laser gas at a predetermined velocity,

a transverse laser flow section, said flow section attached to said means for providing ultraviolet radiation and to said closed cycle fuel system, said flow section comprising: a housing, a transverse flow cavity, and said laser cell, said housing having a void therein, said housing having a coolant input port and output port for allowing said coolant to circulate about said transverse flow cavity and about said laser cell positioned within said void, said housing having a laser gas input port and output port for allowing said laser gas to flow into and out of said transverse flow cavity, and said housing having laser beam output ports, said transverse flow cavity having an upstream and a downstream flow cavity, said flow cavities being surrounded by walls to confine the flow of laser gas therein, said upstream flow cavity having therein a flow diffuser and a flow straightener, said downstream flow cavity having therein a flow straightner, said laser cell being attached between said upstream and said downstream flow cavities, and said laser cell having a window for allowing said ultraviolet radiation to enter said cell to pump said laser gas, a radiation reflector for reflecting ultraviolet radiation back onto a transverse laser axis within said laser cell, and a void therein for said lasing gas medium, and

a laser resonator connected to said laser cell to receive and output laser radiation.

4,535,458

LASER APPARATUS

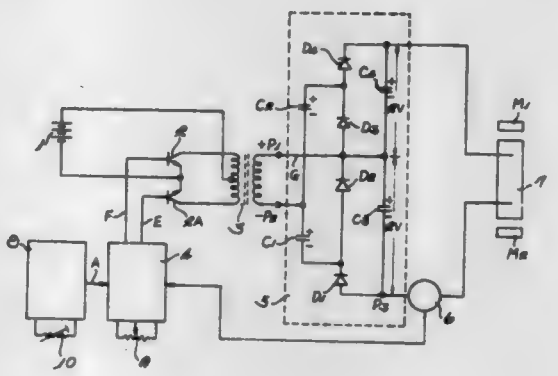
Hitosi Inoue, Kanagawa; Norihiro Suenaga, Tokyo, and Nobuyuki Suenaga, Kanagawa, all of Japan, assignors to Nippon Infrared Industries Co., Ltd., Tokyo, Japan

Filed Apr. 29, 1982, Ser. No. 373,246

Claims priority, application Japan, May 1, 1981, 56-65241; Nov. 21, 1981, 56-174008[U]

Int. Cl.[3] H01S *3/10*

U.S. Cl. 372—25 7 Claims



1. A laser apparatus comprising:

a pulse power source which intermittently produces a pulse train consisting of a plurality of successive high frequency pulses;

an m times voltage multiplier circuit which boosts the voltage value of the high frequency pulses produced from said pulse power source m times as many as the value and rectifies the high frequency pulses; and

a laser discharge tube directly connected to the DC output terminal of said m times voltage multiplier circuit,

the number m of the voltage multiplying steps of said voltage multiplier circuit being at least 3 and the voltage value of said high frequency pulses not exceeding about $\frac{1}{3}$ of the working voltage of said laser discharge tube,

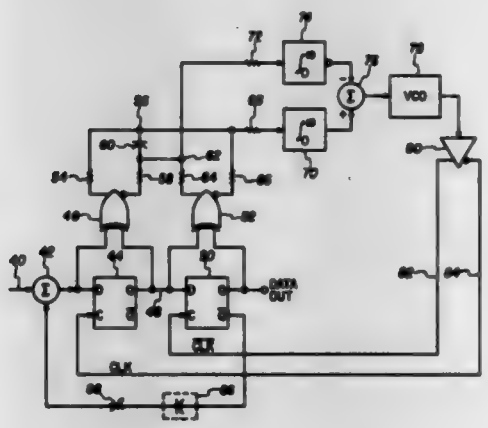
said pulse power source including means for adjusting the pulse width of an output laser beam by varying the number of the high frequency pulses included in said train of successive high frequency pulses.

4,535,459

SIGNAL DETECTION APPARATUS

Charles R. Hogge, Jr., Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 26, 1983, Ser. No. 498,385
Int. Cl.³ H03K *1/17, 5/156*
U.S. Cl. 375—80 **10 Claims**



1. Phase detector means comprising, in combination:
data signal input means for supplying input data;
first D flip-flop means, including D and C (clock) input terminal means and Q output terminal means;
second D flip-flop means, including D and C (clock) input terminal means and Q output terminal means;
first EOR (exclusive OR) means, including input means and output means, connected to receive input signals at said input means thereof from the D and Q terminal means of said first flip-flop means
second EOR (exclusive OR) means, including input means and output means, connected to receive input signals at said input means thereof from the D and Q terminal means of said second flip-flop means
means connecting said data signal input means to said D input terminal means of said first flip-flop means;
means connecting said Q output terminal means of said first flip-flop means to said D input terminal means of said second flip-flop means;
first and second integrating means, each including input means and output means, connected to said output means of said first and second EOR means for receiving input signals therefrom;
VCO (controlled variable frequency oscillator) means, including input means and first and second opposite phase signal output means, connected to said output means of said first and second integrator means for receiving output signals therefrom, said VCO means varying in frequency as a function of the sum of the signals received from said first and second integrator means;
means connecting said first and second output means of said VCO to said C input means of said first and second D flip-flop means respectively; and
means for outputting retimed data from the Q output terminal means of said second flip-flop means.

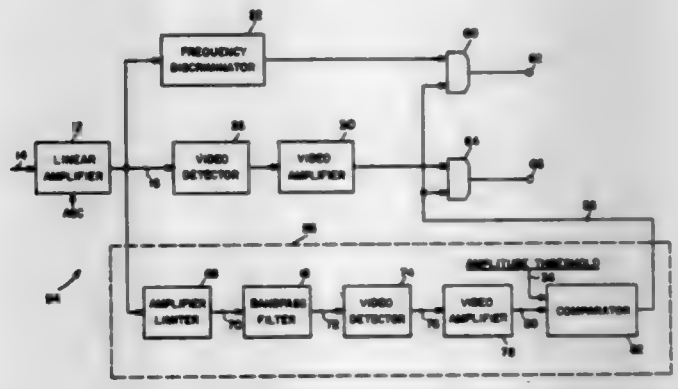
4,535,460

METHOD AND APPARATUS TO FILTER PULSED RF SIGNALS

John O. Wedel, Jr., 4218 Southfield Rd., Ellicott City, Md. 21043

Filed Feb. 1, 1984, Ser. No. 576,093
Int. Cl.³ H04B *1/10*
U.S. Cl. 375—104 **14 Claims**

1. A receiver, comprising:
input means for filtering pulsed RF signals and passing any pulsed RF signals which are within a first selected frequency band;
signal limiting means for converting said filtered pulsed RF signals into hard-limited pulsed RF signals having either a first or second instantaneous value;
bandpass filter means for filtering said hard-limited pulsed RF signals and passing any hard-limited pulsed RF signals within a second selected frequency band which is narrower than, and included within, said first frequency band;
first detector means for detecting the envelope of said filtered hard-limited pulsed RF signals passed by said bandpass filter means and generating first video signals;
signal comparator means for comparing said first video signals with a selected threshold value and generating a



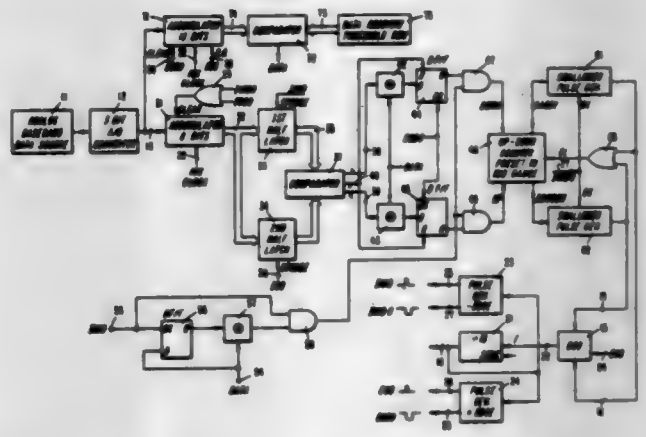
gate signal whenever said first video signals exceeds said threshold value;
first switching means, which is controlled by said gate signal and which is closed or rendered conductive upon receipt of said gate signal;
second detector means, connected in series with said first switching means between said input means and a first output of the receiver, for detecting the envelope of said filtered pulsed RF signals passed by said input means and providing second video signals at the receiver first output whenever said first video signals exceed said threshold value.

4,535,461

DIGITAL CLOCK BIT SYNCHRONIZER

Elvin D. Stepp, Fairfield, and Gary L. Claypoole, West Chester, both of Ohio, assignors to Cincinnati Electronics Corporation, Cincinnati, Ohio

Filed Jun. 1, 1983, Ser. No. 500,088
Int. Cl.³ H04L *7/02*
U.S. Cl. 375—110 **19 Claims**



19. Apparatus for synchronizing a clock wave normally having a reference frequency to the frequency of serial binary data bits comprising digital circuit means responsive to the data bits for deriving the clock wave by selectively (a) incrementing the reference frequency, (b) decrementing the reference frequency and (c) not changing the reference frequency, the digital circuit means including: means responsive to the derived clock wave for dividing each data bit into nN sub bits so that each data bit is divided into n groups of N sub bits,

means for comparing the binary values associated with the n groups of N sub bits with each other, and control means responsive to the derived clock wave and the comparing means for: (a) not changing the reference frequency when the binary values associated with the N bits of each of the n sub groups are the same, (b) incrementing the reference frequency when the binary values associated with the N bits of each of the n sub groups have a first relation different from being the same, and (c) decrementing the reference frequency when the binary values associated with the N bits of each of the n sub groups have a second relation different from being the same.

4,535,462

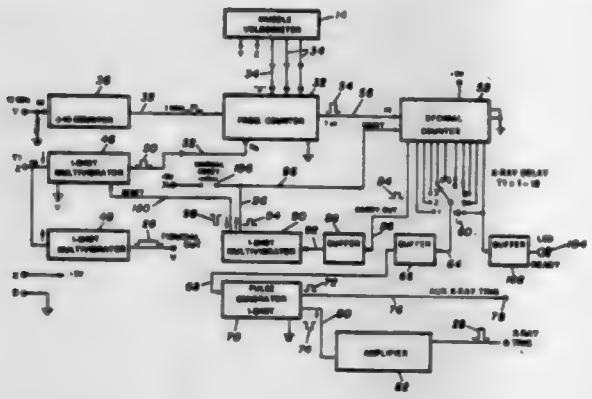
AUTOMATIC VELOCITY CONTROLLED DELAY CIRCUIT

Jimmy Q. Schmidt, Baltimore, Md., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 11, 1983, Ser. No. 465,733

Int. Cl.³ G01P *3/64*; G06M *3/02*

U.S. Cl. 377—2 **3 Claims**



1. In a system having a machine for X-raying a projectile in selected muzzle blast regions of a gun, an automatic velocity controlled delay circuit for triggering the X-raying, said circuit comprising: muzzle velocimeter means for generating a time interval, first pulse at a "Z" output terminal thereon, which analogously represents the sensed presence by the velocimeter means of the projectile in a selected blast region of the gun, and for generating clocking, second pulses at a "Y" output terminal thereon, and for generating digital decade, third signals equal in time duration, in microseconds to said time interval, first pulse duration;

divide counter means electrically coupled to said "Y" output terminal for generating a clocking, fourth pulse which is proportional to the number of said second clocking pulses received from said velocimeter means;

first multivibrator means electrically coupled to said "Z" output terminal for generating a positive output, fifth pulse when triggered by a negative trailing edge of said first pulse;

second multivibrator means electrically coupled to said "Z" output terminal for generating a positive output, sixth pulse having a leading edge which coincides in time with the sensed exiting by the velocimeter means of a front edge of said projectile as it exits said gun;

second digital counter means electrically coupled to the fourth pulse output of said divide counter means, and to said fifth pulse output of said first multivibrator means, and having "J" input terminals thereon for receiving said third signals of said velocimeter means, for switching from a master preset mode to a count mode upon receipt of said fifth pulse from said first multivibrator, and for counting the number of fourth pulses of said divide counter means until their duration is the same as the time in microseconds of said third signals, the number entered in said "J" input terminals; and decimal counter switching means including a decimal counter and a settable rotary switch means for generating a consecutive output, seventh pulse train wherein the seventh pulses are separated from each other an amount the same as the time duration of said third signals entering said second digital counter means, for providing an X-ray triggering output at discrete, eighth, time delays equal to the said third time interval pulse duration plus "n" times the said third time interval pulse duration, said rotary switch having a plurality of settable outputs for selection of eighth time delays as increments n of said third pulse duration;

means for amplifying the said X-ray triggering output of said switching means for providing a signal to trigger the X-ray machine in said system, including a first buffer circuit electrically coupled to a pole terminal of said rotary switch and a pulse generator electrically connected to the output of said first buffer circuit;

means for resetting said second digital counter means and said decimal counter switching means, including a second buffer circuit electrically coupled to a carry out terminal of said decimal counter to receive a carry out signal therefrom, and third multivibrator means electrically connected to the output of said second buffer means for providing a reset input signal to said first multivibrator means and to a reset terminal of said decimal counter switching means; and

indicator means electrically connected to said decimal counter switching means for determining if it is properly reset after initial power is applied.

4,535,463

APPARATUS FOR DETECTING NUMBER OF REMAINING SHEETS

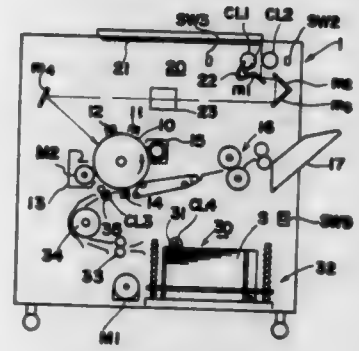
Masazumi Ito, Toyokawa, and Kenzo Nagata, Okazaki, both of Japan, assignors to Minolta Camera Co., Ltd., Osaka, Japan

Filed Sep. 24, 1982, Ser. No. 423,078

Claims priority, application Japan, Oct. 13, 1981, 56-163825; Oct. 13, 1981, 56-163826

Int. Cl.³ G06M *7/06*

U.S. Cl. 377—8 **15 Claims**



1. In a paper feeder having a mechanism for holding a stack of sheets on a tray and lifting the stack to a predetermined upper limit position every time the height of the stack decreases by a specified amount due to removal of sheets from the tray, an apparatus for detecting the number of remaining sheets comprising:

means for generating corresponding signals relative to the lifting movement of the stack;

means for counting the number of sheets removed from the tray which corresponds to a predetermined lifting movement of the stack;

means for detecting the signals generated with a lifting movement of the stack to obtain numerical data corresponding to the amount of the lift;

means for obtaining numerical data corresponding to the height of the remaining stack; and

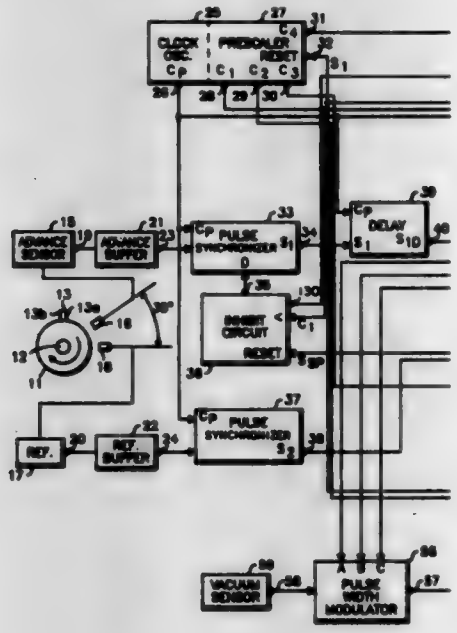
means for calculating the number of remaining sheets from the data corresponding to the amount of the lift, the number of sheets used and the data corresponding to the height of the remaining stack and producing a representative signal.

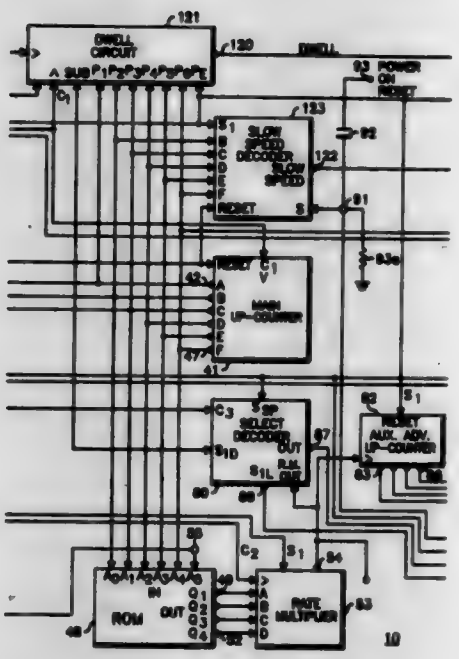
4,535,464

DIGITAL CIRCUITRY FOR PRODUCING INDICATIVE SIGNALS AT PREDETERMINED TIMES PRIOR TO PERIODIC PULSES

Adelore F. Petrie, Arlington Hgts., Ill., assignor to Motorola, Inc., Schaumburg, Ill.

Division of Ser. No. 49,014, Jun. 15, 1979,. This application Nov. 2, 1981, Ser. No. 317,710
Int. Cl.[3] G06M *3/02*
U.S. Cl. 377—39 7 Claims





1. Improved digital circuitry for receiving a signal comprising periodic pulse transitions and producing indicative signals commencing at predetermined times prior to the occurrence of the periodic pulse transitions, said circuitry comprising:

means for producing a periodic signal comprising periodic signal pulse transitions occurring at a predetermined variable rate;

means for receiving said periodic signal and for periodically developing a running count by counting pulses occurring at a predetermined rate, independent of said variable rate, between first and second predetermined time occurrences directly corresponding to the occurrence of sequential first and second pulse transitions of said periodic signal, and for providing at said second time occurrences maximum running counts related to the time duration between said first and second pulse transitions;

means for periodically receiving said maximum counts and effectively subtracting a predetermined number of counts therefrom to obtain a resultant subtracted count, said subtraction being completed at substantially said second time occurrences; wherein the improvement comprises,

means counting down from said resultant subtracted count at a rate which is independent of said variable rate; and

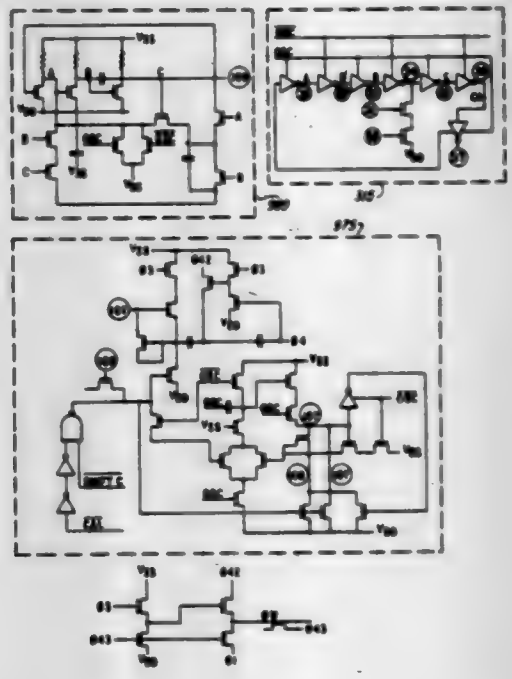
means for periodically initiating an indicative signal when the down count from said resultant subtracted count equals a predetermined threshold count subsequent to said second time occurrence and at a predetermined time prior to the next of said periodic signal pulse transitions.

4,535,465

LOW POWER CLOCK GENERATOR CIRCUIT

Jerald G. Leach, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Dec. 24, 1981, Ser. No. 334,486
Int. Cl.[3] H03K *23/22*
U.S. Cl. 377—46 2 Claims



1. A digital counter for counting the number of times an input signal alternates between a first logic state and a second logic state comprising:

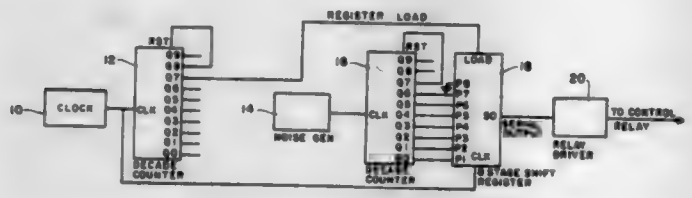
a plurality of inverter means for inverting of signals, having at least a first inverter means and a last inverter means, each inverter means includes an input means for receiving of the input signal; a node; first output and a second output for the last inverter means; a first circuit means for periodically precharging the node; a second circuit means for discharging the node when the input signal is at the first logic state and the first circuit means is not precharging the node; a third circuit means for isolating the node from the first and second output line when the first circuit means is precharging the node; the plurality of inverter means further being connected in cascade arrangement from the first inverter means to the last inverter means and with the first output being connected to the input of the next member of the cascade arrangement and the second output of the last inverter means being connected to the input of the first inverter means, the input of the first inverter means additionally being the input terminal for receiving of the input signal and the first output of the last inverter means being the output terminal for providing a counted output signal; reference potential; and switch means for selectively connecting a first output of a predetermined inverter means to the reference potential in response to the input signal connected thereto.

4,535,466

RANDOM TIMER

Frank A. Palvolgyi, Granville, Ohio, assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Aug. 10, 1983, Ser. No. 521,803
Int. Cl.[3] H03K *21/14*
U.S. Cl. 377—54 1 Claim



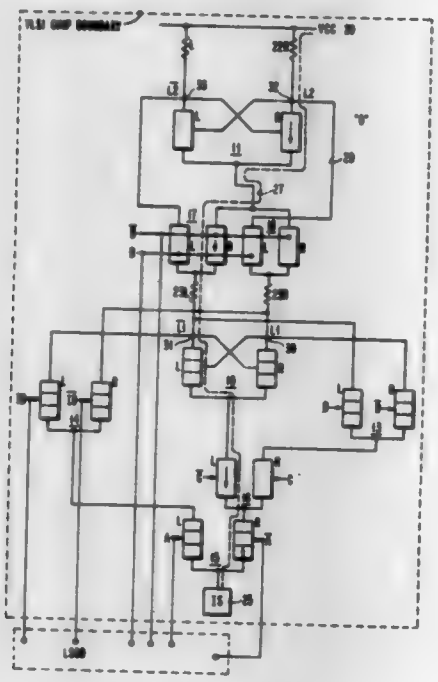
1. A timer system comprising: a clock providing pulses at a given frequency on a clock output lead, a first counter having a clock input connected to the clock output lead, the first counter having N stages continuously recycling, a digital noise generator, a second counter having a clock input connected to an output of the digital noise generator so that its outputs are sequentially high at a random frequency, the second counter being connected to continuously recycle, an N-stage shift register having parallel inputs one of which is connected to a fixed potential for a low logic level, the other parallel inputs being connected to different outputs of the second counter, the shift register having a load input connected to one output of the first counter so that the shift register is loaded at its parallel inputs on every Nth clock pulse with an N-bit word having one and only one stage high, the shift register having a clock input connected to the clock output lead so that the word appears bit by bit at a serial output, whereby time is divided into equal intervals with a pulse appearing at said serial output at random within each interval.

4,535,467

SWITCH LOGIC FOR SHIFT REGISTER LATCH PAIR

James W. Davis; Joel C. Leininger, both of Boca Raton; Carlos Munoz-Bustamante, Highland Beach, all of Fla., and Gordon J. Robbins, Wappingers Falls, N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 30, 1982, Ser. No. 445,601
Int. Cl.[3] G11C *19/00*
U.S. Cl. 377—81 14 Claims



1. A Level Sensitive Scan Design (LSSD) Shift Register Latch (SRL) pair comprising in combination:

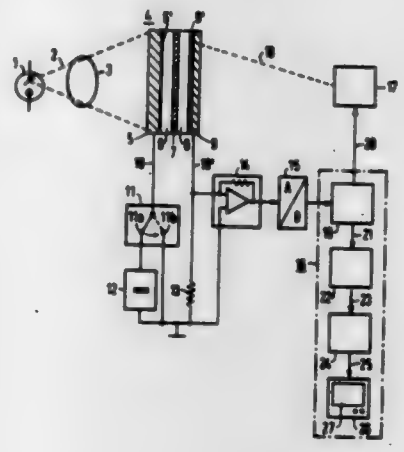
an L1 bistable latch having an input, cross-coupled conductive devices and output nodes;
an L2 bistable latch having an input, cross-coupled conductive devices and output nodes;
a first clock signal;
first current switch logic means responsive to said first clock signal to interconnect the output nodes of said L1 latch alternately to the input and the output nodes of said L2 latch for selectively transferring data in said L1 latch to said L2 latch;
one current source; and
second current switch logic means for connecting said one current source to the input of said L1 latch, so as to establish a current through a device of each latch to maintain each in a latched condition.

4,535,468

IMAGE CONVERTED FOR X-RAY EQUIPMENT AND THE LIKE

Karl Kempter, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,458
Claims priority, application Fed. Rep. of Germany, Sep. 29, 1982, 3236137
Int. Cl.[3] G01T *1/24;* H01L *31/10*
U.S. Cl. 378—31 21 Claims



1. In X-ray exposure apparatus having two transparent electrodes extending over an area and connected to a d-c voltage which is on the order of 3000 volts, and first and second solid substance layers, located between the electrodes and in direct contact with the electrodes, whose free surfaces abut a charge storage layer, wherein the first solid substance layer is a photoconductive layer which is 100 to 500 microns thick and receives the image beams, and the second solid substance layer is a photoconductive layer which receives an optical ray imaged in a scanning raster, the improvement comprising:

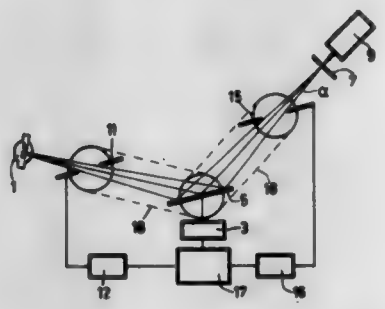
(a) said storage layer comprising arsenic and sulphur, having traps for charge carriers, and being 0.01 to 10.0 microns thick, and

(b) said electrode connected to said first solid substance layer has the same polarity as the charge carriers which are trapped by the storage layer.

4,535,469
X-RAY ANALYSIS APPARATUS HAVING AN ADJUSTABLE STRAY RADIATION SLIT

Cornelis G. Brandt, Almelo, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,279
Claims priority, application Netherlands, Mar. 31, 1982, 8201343
Int. Cl.[3] G01N *23/20*
U.S. Cl. 378—081 10 Claims

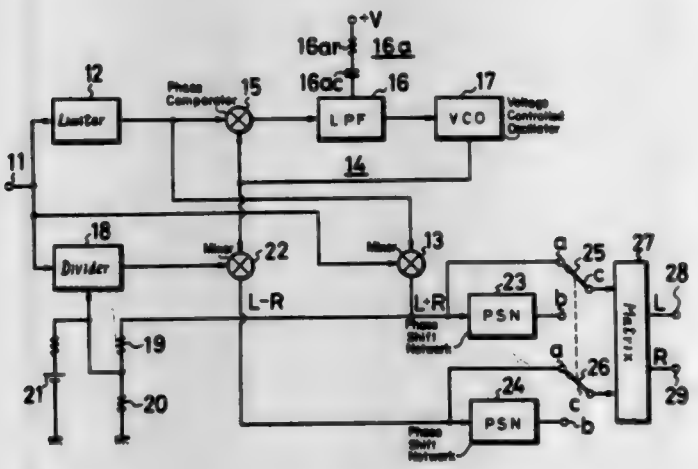


1. An X-ray analysis apparatus comprising an X-ray source,
a goniometer for mounting a specimen which receives radiation from said X-ray source, said goniometer having an angle adjusting mechanism,
a stray radiation slit controlling said radiation from said specimen, the effective width of said stray radiation slit being adjustable in correspondence with said angular adjustment of said goniometer,
a detector slit receiving said radiation from said stray radiation slit, and
an X-ray detector receiving said radiation from said detector slit,
wherein signal-to-noise ratios of analysis measurements are significantly improved.

4,535,470
AM STEREO DECODER FOR MULTIPLE CODING SYSTEMS

Satoshi Yokoya, Chofu; Norio Numata, and Ikuo Shimizu, both of Tokyo, all of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed May 6, 1983, Ser. No. 492,269
Claims priority, application Japan, May 27, 1982, 57-90364
Int. Cl.[3] H04H *5/00*
U.S. Cl. 381—15 25 Claims

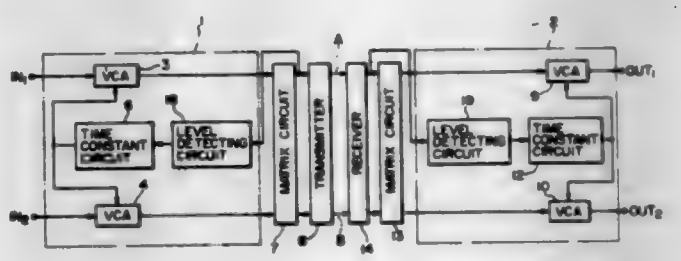


1. Apparatus for decoding left channel signals and right channel signals from AM stereo signals coded according to any of several known methods, comprising:
envelope detecting means responsive to said AM stereo signals for producing stereo sum signals formed of the sum of the left channel signals and the right channel signals;
synchronous detecting means responsive to said AM stereo signals for producing stereo difference signals formed of the difference between the left channel signals and the right channel signals;
selective phase shift means connected to receive said stereo sum signals and said stereo difference signals for selectively producing either a first output signal pair formed of said stereo sum signals and said stereo difference signals or a second output signal pair formed of said stereo sum signals and said stereo difference signals each shifted in phase by a predetermined amount; and
matrix means connected to said selective phase shift means to receive either said first output signal pair or said second output signal pair for producing left channel signals and right channel signals therefrom.

4,535,471
COMPRESSION/EXPANSION DEVICE

Kazuo Kuroda, Saitama, Japan, assignor to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 26, 1983, Ser. No. 526,843
Claims priority, application Japan, Aug. 27, 1982, 57-129585[U]
Int. Cl.[3] H03G *7/00*; H04H *5/00*
U.S. Cl. 381—2 9 Claims

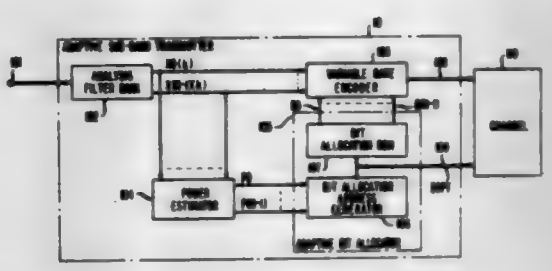


1. A compression/expansion device of the type for processing first and second audio signals and having means for generating an additive signal corresponding to the sum of said first and second audio signals and a subtractive signal corresponding to the difference between said first and second audio signals, said device comprising:
compression means for compressing at least one of said first signal, said second signal, said additive signal and said subtractive signal in accordance with the level of said additive signal; and
expansion means for expanding said at least one signal in accordance with the level of said additive signal.

4,535,472
ADAPTIVE BIT ALLOCATOR

James D. Tomcik, Aberdeen, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 5, 1982, Ser. No. 439,345
Int. Cl.[3] G10L *1/00*
U.S. Cl. 381—31 20 Claims



1. Apparatus for allocating bits from a predetermined total number of bits to individual ones of a plurality of signals comprising:
means for generating a representation of a prescribed characteristic of each of the plurality of signals;
means for storing a plurality of predetermined bit allocation patterns and being responsive to an address signal for

outputting one of said predetermined bit allocation patterns identified by said address; and

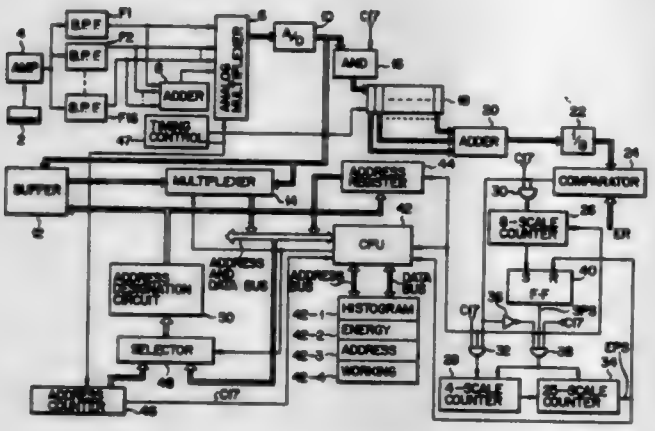
means for storing a plurality of templates each including predetermined representations of said prescribed characteristic of said plurality of signals, said templates corresponding on a one-to-one basis to said plurality of bit allocation patterns, and being responsive to said generated representations of said plurality of signals for generating said address by matching, in accordance with a first prescribed criterion, said generated representations to said representations of one of said stored templates.

4,535,473

APPARATUS FOR DETECTING THE DURATION OF VOICE

Tomio Sakata, Tokyo, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Aug. 27, 1982, Ser. No. 412,234
Claims priority, application Japan, Oct. 31, 1981, 56-175431
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—46 **5 Claims**



1. An apparatus for detecting the duration of voice comprising:

sampling means for sampling an input voice signal and generating a time-sequence of voice parameters;

memory means, connected to said sampling means, for storing the time-sequence of voice parameters;

first determining means for determining an interval by examining the time-sequence of voice parameters, said interval being divided into three periods, an estimated voice period, a first non-voice period preceding said voice period and a second non-voice period succeeding said voice period;

means for forming a histogram based on the voice parameters generated during said interval and divide the voice parameters into non-voice class and voice class based on the histogram;

second determining means for determining a threshold value based on the average of voice parameters in the non-voice class; and

third determining means for determining the voice duration based on the threshold value and the voice parameters generated during said interval and stored in said memory means.

4,535,474

AUDIO AMBIENCE SIMULATOR

Jeffrey G. Borish, Santa Clara, and M. Dale Ewy, Cupertino, both of Calif., assignors to Signal Research Laboratory, San Rafael, Calif.

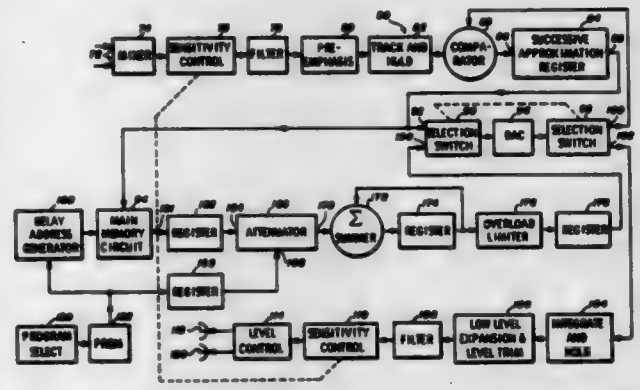
Filed Aug. 15, 1983, Ser. No. 522,993
Int. Cl.³ H03G *3/00*
U.S. Cl. 381—61 **14 Claims**

1. An ambience simulator comprising in combination:

an input connection means for receiving into the ambience simulator an electrical signal wherein said electrical signal corresponds to an audio signal;

a storage means for storing a representation of said electrical signal provided by the input connection means;

a recovery means for recovering said representation of said electrical signal from the storage means as a plurality of more than twelve delayed signals, with each of said delayed signals being a substantial reproduction of said representation of said electrical signal at a delay, which delay is distinct from the delay of each other of said delayed signals;



an attenuating means connected to receive said delayed signals and for attenuating each of said delayed signals at a preselectable amount of attenuation, with said attenuation being separately selectable for each of said delayed signals;

a combining means connected to receive and combine said delayed signals after each said delayed signal has been attenuated, thereby forming a composite signal;

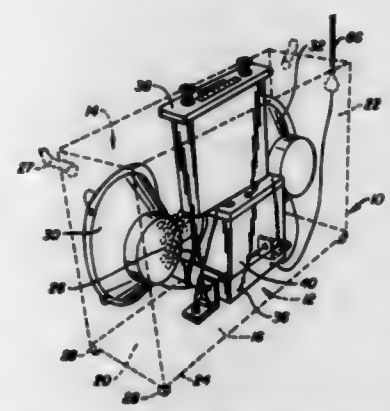
whereby said composite signal represents an ambience signal representative of an ambience which could be generated by an actual auditorium.

4,535,475

AUDIO REPRODUCTION APPARATUS

Cornelius S. Ward, 2038 85th Ave., Oakland, Calif. 94621

Filed Sep. 23, 1982, Ser. No. 427,000
Int. Cl.³ G11B *5/02*
U.S. Cl. 381—88 **6 Claims**



1. An audio reproduction apparatus having at least one speaker, an electrical battery, and component means for supplying electrical signals to the at least one speaker to produce sound, the improvement comprising:

a. a case for supporting the at least one speaker, electrical battery, and component means for supplying electrical signals; and

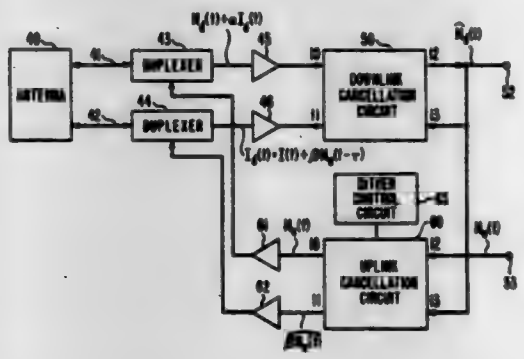
b. means for holding said electrical battery in relation to said component means for supplying electrical signals within said case, said means including bracket means for contacting said component means for supplying electrical signals, said bracket means being connected to said case, and a member connected to said bracket means and said electrical battery, said member further including means for

urging said battery and said component means for supply electrical signals into mechanical compression.

4,535,476
OFFSET GEOMETRY, INTERFERENCE CANCELING RECEIVER

James W. Carlin, Holmdel, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 1, 1982, Ser. No. 446,022
Int. Cl.[3] H04B *1/12, 15/00*
U.S. Cl. 455—63 8 Claims



1. A signal communications arrangement including

antenna means for receiving signals from a desired signal source and from an interference signal source located adjacent to the desired signal source, said antenna means comprising a main feedhorn which is focused on said desired signal source and an auxiliary feedhorn which is focused on said interference signal source, the antenna means being responsive to signals from the desired signal source for generating a composite signal including a desired message signal and a first interference signal, the antenna means also being responsive to signals from the interference signal source for generating a second interference signal comprising the first interference signal,

combining means including a first feedback control circuit responsive to a representation of the desired message signal for generating appropriate control signals to cause variations of the phase and amplitude of the first interference signal, means responsive to the control signals for adjusting the phase and amplitude of the first interference signal, and a combiner for combining the adjusted first interference signal with the composite signal to generate said representation of the desired message signal, and

signal translation means including a first duplexer coupled to the antenna means for interfacing the composite signal received therefrom, a first amplifier means for adjusting the amplitude of the composite signal to a predetermined level, a second duplexer coupled to the antenna means for interfacing the second interference signal received therefrom, and a second amplifier means for adjusting the amplitude of the second interference signal to a predetermined level.

DESIGN PATENTS

GRANTED AUG. 13, 1985

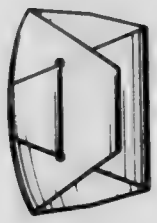
ERRATA

For CLASS	See PATENT NO.
D02–361	280,053

DESIGNS

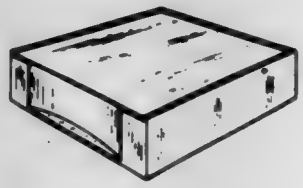
AUGUST 13, 1985

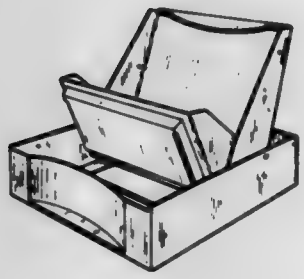
280,040
KNEE PROTECTOR
Albert E. Ostermaier, 4710 Sunnyslope Ave., Sherman Oaks, Calif. 91403
Filed Jun. 6, 1983, Ser. No. 501,146
Term of patent 14 years
U.S. Cl. D2—27





280,041
DISKETTE STORAGE CONTAINER
Jerry M. Long, Scotts Valley, and James A. Womack, Los Gatos, both of Calif., assignors to Innovative Concepts, Inc., San Jose, Calif.
Filed Jan. 24, 1983, Ser. No. 444,982
Term of patent 14 years
U.S. Cl. D3—35



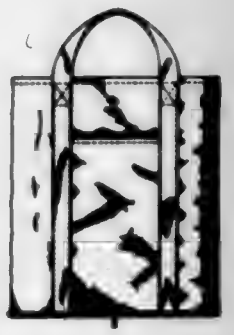


280,042
HOLDER FOR A RADIO FOR MOUNTING OVER THE TRANSMISSION HUMP OF A VEHICLE
Eduard A. Jaeger, c/o R. L. Mikesell, Esq., 16311 Ventura Blvd., Suite 580, Encino, Calif. 91436
Filed Jan. 28, 1983, Ser. No. 433,544
Term of patent 14 years
U.S. Cl. D3—40



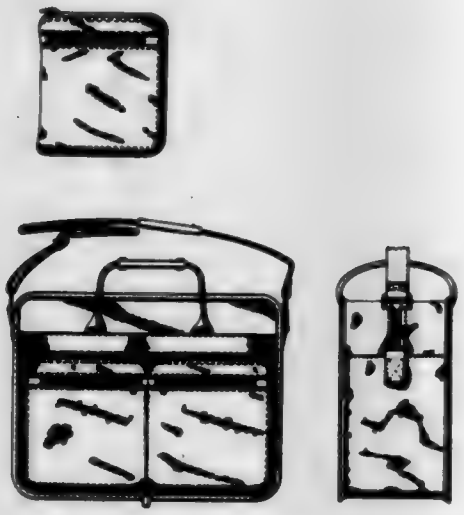
280,043
EXPANDABLE SHOPPING BAG
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Filed Apr. 18, 1983, Ser. No. 486,051
Term of patent 14 years
U.S. Cl. D3—42



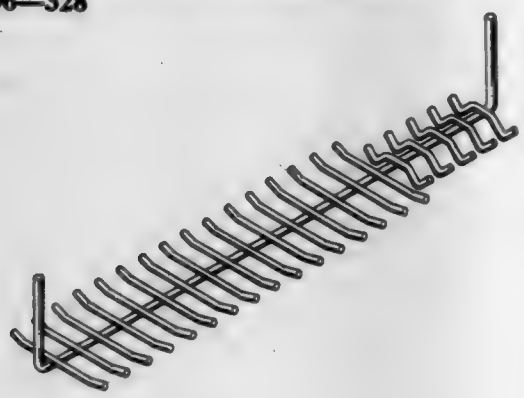




280,044
EXPANDABLE HAND AND SHOULDER BAG
James H. Allen, Covington, Ky., assignor to 'totes', incorporated, Loveland, Ohio
Filed Apr. 18, 1983, Ser. No. 486,049
Term of patent 14 years
U.S. Cl. D3—48



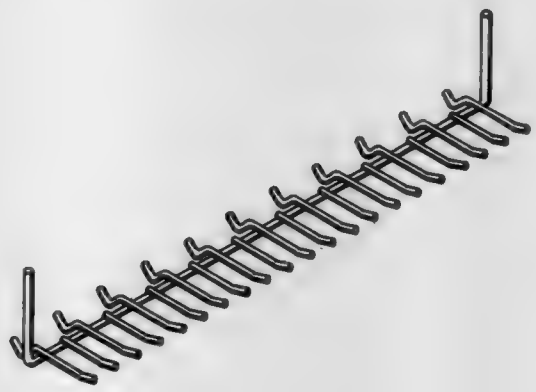
280,045
ARTICLE SUPPORT RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Division of Ser. No. 453,053, Dec. 27, 1982, Pat. No. D. 277,436.
This application Sep. 12, 1984, Ser. No. 649,771
Term of patent 14 years
U.S. Cl. D6—328



280,046
ARTICLE SUPPORT RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Division of Ser. No. 453,052, Dec. 27, 1982, Pat. No. D. 277,248.
This application Oct. 12, 1984, Ser. No. 660,163
Term of patent 14 years
U.S. Cl. D6—328



280,047
ARTICLE SUPPORT RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Division of Ser. No. 453,053, Dec. 27, 1982, Pat. No. D. 277,436.
This application Oct. 12, 1984, Ser. No. 660,165
Term of patent 14 years
U.S. Cl. D6—328



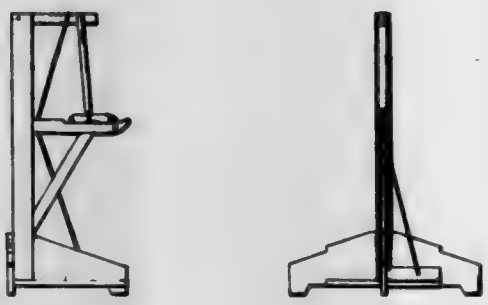
280,048
ARTICLE SUPPORT RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Division of Ser. No. 453,053, Dec. 27, 1982, Pat. No. D. 277,436.
This application Oct. 12, 1984, Ser. No. 660,166
Term of patent 14 years
U.S. Cl. D6—328



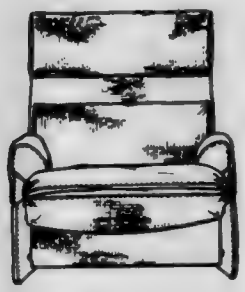
280,049
ARTICLE SUPPORT RACK
Charles E. Benedict, Tallahassee, Fla., assignor to Telescoping Tie Racks, Inc., Winter Haven, Fla.
Division of Ser. No. 453,052, Dec. 27, 1982, Pat. No. D. 277,248.
This application Oct. 12, 1984, Ser. No. 661,473
Term of patent 14 years
U.S. Cl. D6—328



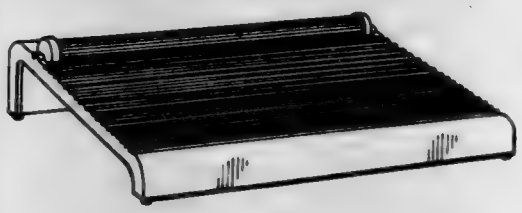
280,050
ACCESSORY STAND FOR USE IN SHINING BOOTS AND SHOES
John A. Kempf, Rte. 3, Fayette, Mo. 65248
Filed Apr. 4, 1983, Ser. No. 482,032
Term of patent 14 years
U.S. Cl. D6—329



280,051
PARLOR CHAIR
Giovanni Offredi, Milan, Italy, assignor to Fratelli Saporiti Industria Arredamenti di Saporiti Sergio e Giorgio S.N.C., Varese, Italy
Filed Sep. 28, 1982, Ser. No. 426,020
Term of patent 14 years
U.S. Cl. D6—334



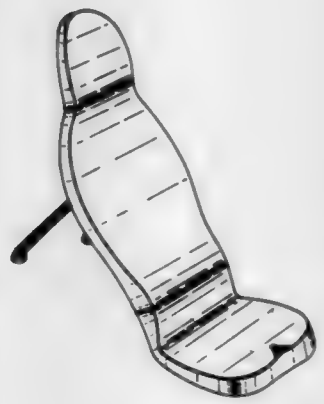
280,052
FOOT SUPPORT PANEL
Matti Hypponen, Iittala, Finland, assignor to Treston OY, Turku, Finland
Filed Apr. 18, 1983, Ser. No. 485,601
Claims priority, application Finland, Jan. 7, 1983, 17/83
Term of patent 14 years
U.S. Cl. D6—349



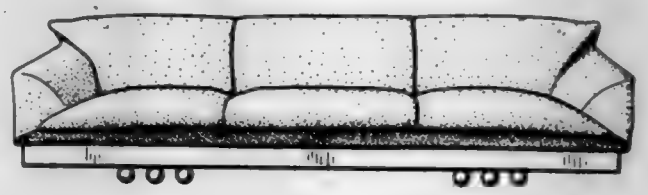
280,053
VIDEO GAME GLOVE
Michael S. Singer, 10751 NW. 21st Ct., Sunrise, Fla. 33322
Filed Jul. 5, 1983, Ser. No. 510,601
Term of patent 14 years
U.S. Cl. D2—361



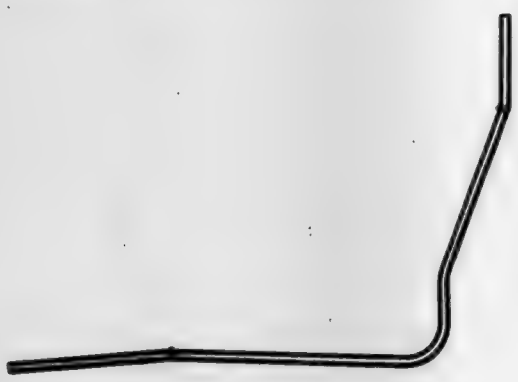
280,054
COMBINED SEAT AND BACKREST UNIT
Hugo Pedersen, Kristineholmsvägen 12, 441 39 Alingsås, Sweden
Filed Feb. 22, 1983, Ser. No. 468,862
Claims priority, application Sweden, Aug. 31, 1982, 82-2079
Term of patent 14 years
U.S. Cl. D6—375



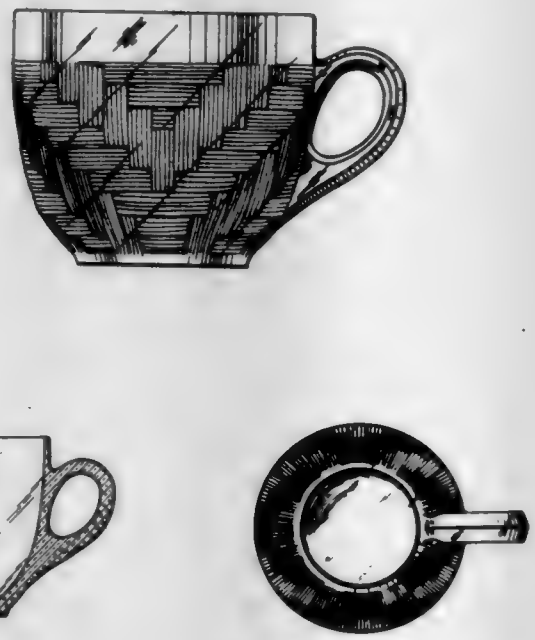
280,055
SOFA
Giovanni Offredi, Milan, Italy, assignor to Saporiti Italia S.p.A., Varese, Italy
Filed Mar. 10, 1983, Ser. No. 474,025
Claims priority, application Italy, Sep. 17, 1982, 6094/82[U]
Term of patent 14 years
U.S. Cl. D6—381



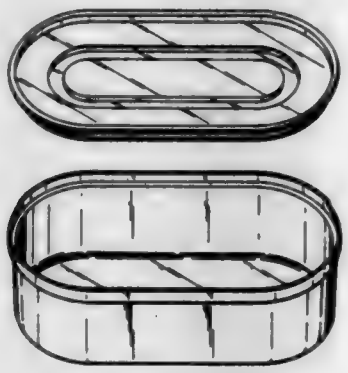
280,056
TUBULAR FRAME ROD FOR A LOUNGE SET
Jan Dranger, Carl Milles väg 7, S-181 34 Lidingö, Sweden
Filed Sep. 23, 1982, Ser. No. 422,496
Claims priority, application Sweden, Mar. 30, 1982, 82-0837
Term of patent 14 years
U.S. Cl. D6—491



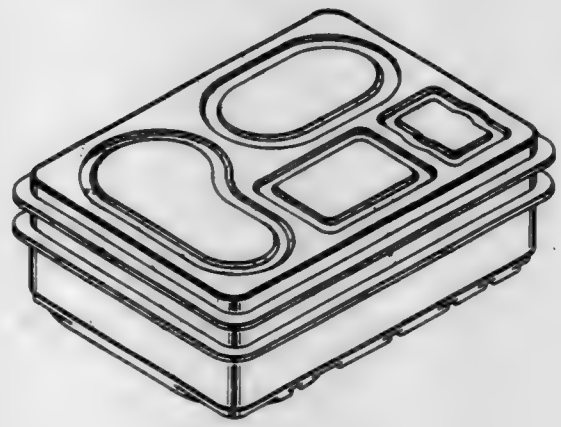
280,057
CUP OR SIMILAR ARTICLE
Philippe J. Durand, Les Daneaux, Chemin de la Garenne, 62510 Argues, France
Filed Aug. 23, 1982, Ser. No. 410,848
Term of patent 14 years
U.S. Cl. D7—9

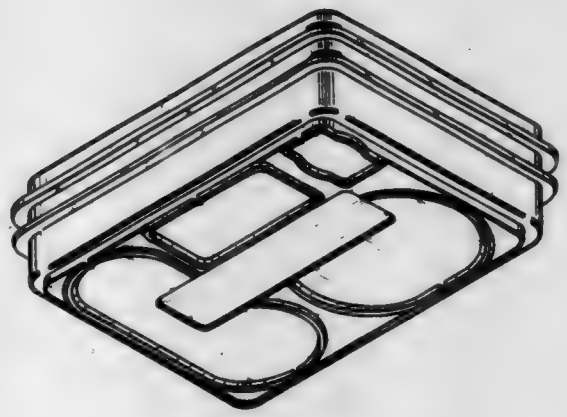


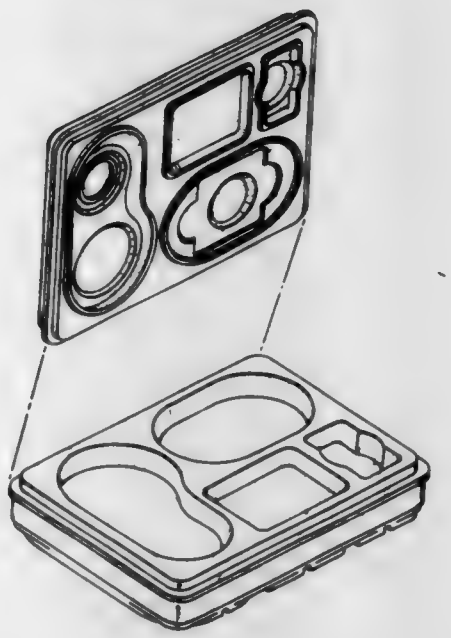
280,058
FOOD CONTAINER WITH PRESS-IN LID
Arthur R. Carlson, East Malvern, Australia, assignor to Brian Davis and Company Proprietary Limited, Scoresby, Australia
Filed Jan. 25, 1982, Ser. No. 342,728
The portion of the term of this patent subsequent to Nov. 30, 1996, has been disclaimed.
Term of patent 14 years
U.S. Cl. D7—16



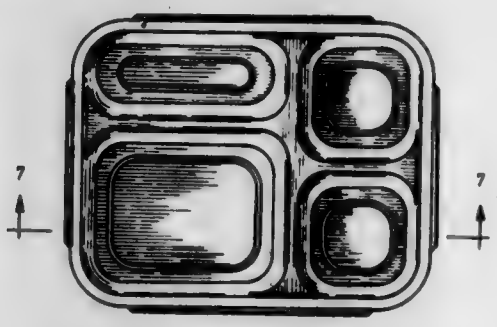
280,059
COMBINED INSULATED FOOD SERVICE TRAY AND COVER
Edgar Otto, Scotch Plains, N.J., assignor to Therma-Tray Corporation, South Plainfield, N.J.
Filed Mar. 7, 1983, Ser. No. 473,075
Term of patent 14 years
U.S. Cl. D7—16







280,060
COMPARTMENTED FOOD TRAY
Michael E. Holzkopf, Libertyville, Ill., assignor to Ekco Products, Inc., Wheeling, Ill.
Filed Jan. 17, 1983, Ser. No. 458,294
Term of patent 14 years
U.S. Cl. D7—38







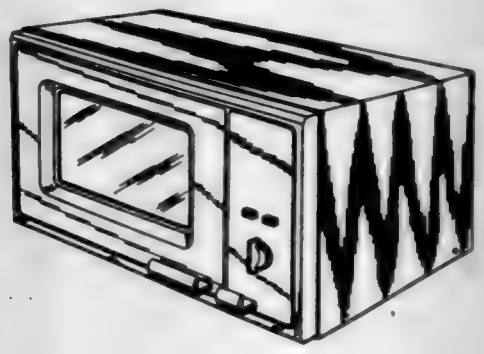
280,061
PITCHER
Douglas D. Mugglin, 25 Marvin Ave., Walton, N.Y. 13856
Filed Feb. 16, 1983, Ser. No. 467,031
Term of patent 14 years
U.S. Cl. D7—316



280,062
APPARATUS FOR POPPING CORN
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Jan. 14, 1983, Ser. No. 458,090
Term of patent 14 years
U.S. Cl. D7—325



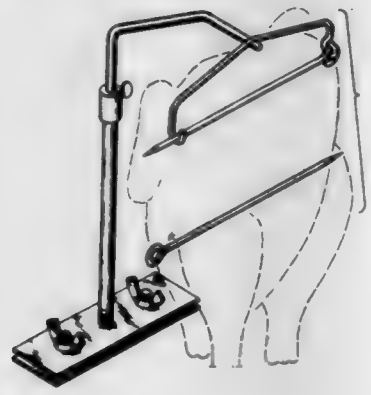
280,063
MICROWAVE OVEN
Jong S. Choi, Seoul, Rep. of Korea, assignor to Gold Star Co., Ltd., Seoul, Rep. of Korea
Filed Mar. 18, 1983, Ser. No. 476,463
Claims priority, application Rep. of Korea, Oct. 7, 1982, 8819-82
Term of patent 14 years
U.S. Cl. D7—351

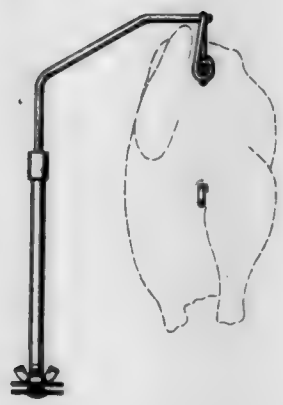


280,064
ELECTRIC RICE COOKER
Takeichi Obata, Hino, and Shinji Oe, Kunitachi, both of Japan, assignors to Hitachi Heating Appliances Co., Ltd., Chiba, Japan
Filed Mar. 9, 1983, Ser. No. 473,859
Term of patent 14 years
U.S. Cl. D7—360

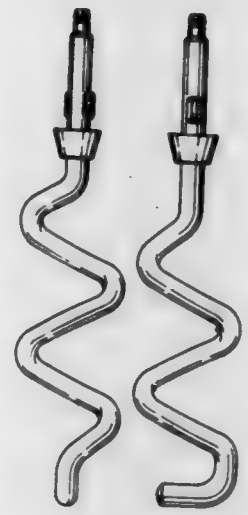


280,065
FOWL ROASTER RACK
Leo C. Pierscinski, 1400 N St., Ste. 5, Sacramento, Calif. 95814
Filed Aug. 26, 1983, Ser. No. 526,749
Term of patent 14 years
U.S. Cl. D7—409



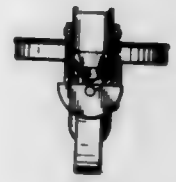


280,066
SET OF DOUGH HOOKS
Reid F. Engstrom, Whitefish Bay, Wis., assignor to Sunbeam Corporation, Oak Brook, Ill.
Filed Jun. 16, 1982, Ser. No. 388,825
Term of patent 14 years
U.S. Cl. D7—412

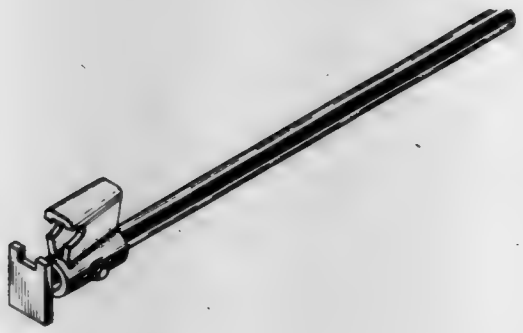


280,067
SEED PLANTER
James H. Patrick, Thunderbird Meadows, Kirkland, Ariz. 96332
Filed Jan. 27, 1983, Ser. No. 461,619
Term of patent 14 years
U.S. Cl. D8—2

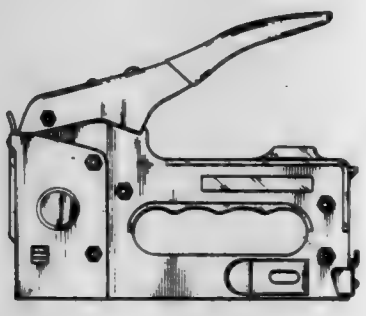




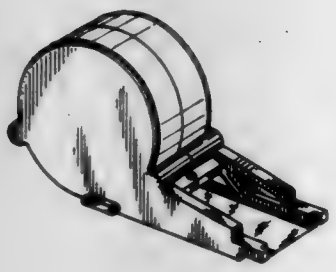
280,068
SICKLE GUARD ALIGNING HAND TOOL
John M. Kapphahn, Rte. 1, Elbow Lake, Minn. 56511
Filed Jan. 28, 1983, Ser. No. 461,947
The portion of the term of this patent subsequent to Mar. 13, 1998, has been disclaimed.
Term of patent 14 years
U.S. Cl. D8—14



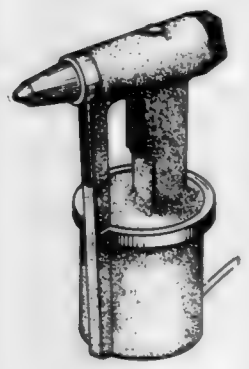
280,069
STAPLE GUN HAVING A STAPLE STORAGE COMPARTMENT
George Hillinger, Los Angeles, Calif., assignor to Alltrade Inc., Commerce, Calif.
Filed Aug. 10, 1983, Ser. No. 521,218
Term of patent 14 years
U.S. Cl. D8—49



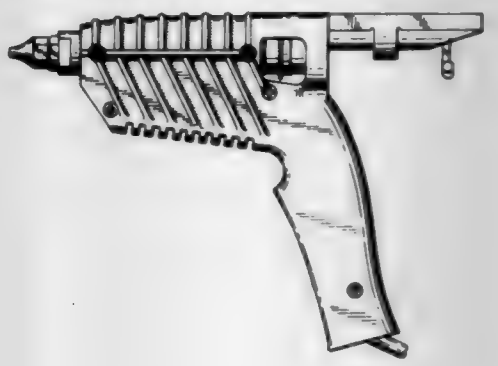
280,070
STAPLE CARTRIDGE
Paul Olesen, Bellmore; Richard J. Pendzich, Brooklyn, and Albert Lensky, Fresh Meadows, all of N.Y., assignors to Swingline Inc., Long Island City, N.Y.
Filed Aug. 30, 1983, Ser. No. 527,770
Claims priority, application Japan, Jun. 30, 1983, 58-28011
Term of patent 14 years
U.S. Cl. D8—49



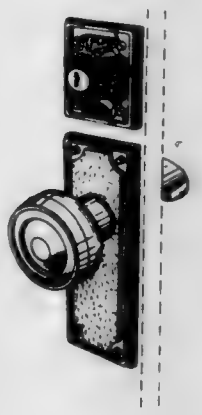
280,071
RIVET GUN
Richard W. Oefinger, Shelton, Conn., assignor to USM Corporation, Farmington, Conn.
Filed Oct. 12, 1982, Ser. No. 433,691
Term of patent 14 years
U.S. Cl. D8—61

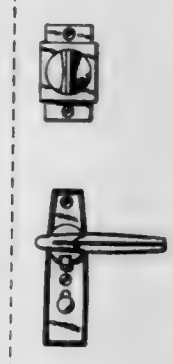


280,072
THERMOPLASTIC DISPENSING DEVICE
Michael M. Dziki, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, Saint Paul, Minn.
Filed Jan. 20, 1983, Ser. No. 459,521
Int. Cl. D8—*30;61;68;107*
Term of patent 14 years
U.S. Cl. D8—61



280,073
COMBINED DOOR OPENER AND ESCUTCHEON UNIT
Leo F. Wildgen, Minneapolis, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed Jan. 7, 1983, Ser. No. 456,516
Term of patent 14 years
U.S. Cl. D8—301



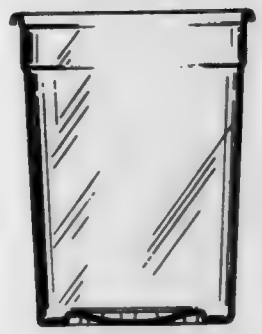


280,074
STORM DOOR HANDLE UNIT
Leo F. Wildgen, Minneapolis, Minn., assignor to Ideal Security Hardware Corporation, St. Paul, Minn.
Filed Jan. 7, 1983, Ser. No. 456,515
Term of patent 14 years
U.S. Cl. D8—302

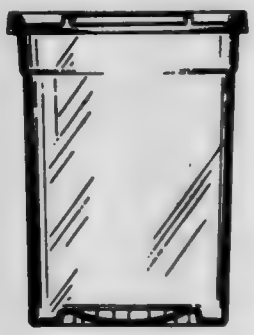




280,075
PACKAGING CONTAINER
John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 11, 1983, Ser. No. 483,979
Term of patent 14 years
U.S. Cl. D9—370



280,076
COMBINED PACKAGING CONTAINER AND LID
John H. Haag, Sr., Evansville, Ind., assignor to Ball Corporation, Muncie, Ind.
Filed Apr. 11, 1983, Ser. No. 483,980
Term of patent 14 years
U.S. Cl. D9—370



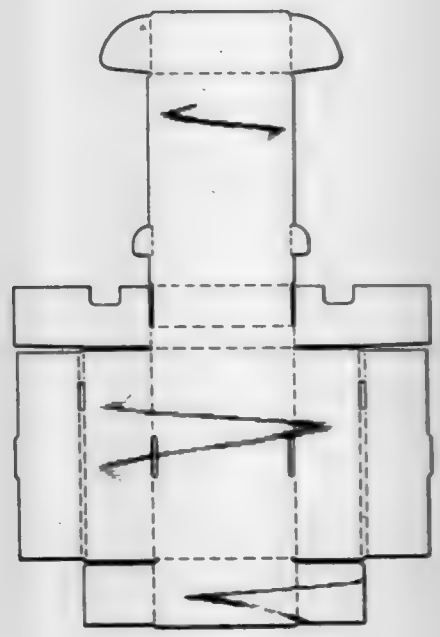
280,077
BOTTLE
Emile Lemaire, Bassenge, Belgium, assignor to Colgate-Palmolive Company, New York, N.Y.
Filed Nov. 12, 1982, Ser. No. 441,210
Claims priority, application Benelux, May 13, 1982, 02766-00
Term of patent 14 years
U.S. Cl. D9—372



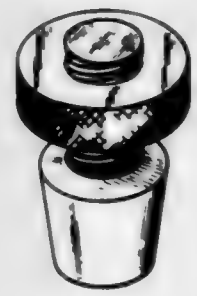
280,078
PACKAGING CUP WITH A PEDESTAL BASE
Vincent E. Fortuna, Huntington Beach, Calif., assignor to Coden Technology, Inc., Dallas, Tex.
Filed Oct. 15, 1982, Ser. No. 434,698
The portion of the term of this patent subsequent to Jun. 25, 1999, has been disclaimed.
Term of patent 14 years
U.S. Cl. D9—390



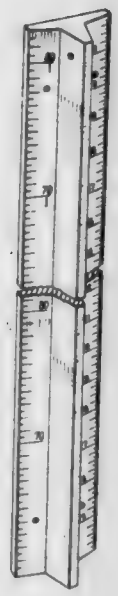
280,079
BLANK FOR A SHIPPING AND DISPLAY CARTON
Brenda K. Levetz, Dallas, Tex., assignor to Anderson, Clayton & Co., Houston, Tex.
Filed Jun. 20, 1983, Ser. No. 505,590
Term of patent 14 years
U.S. Cl. D9—433



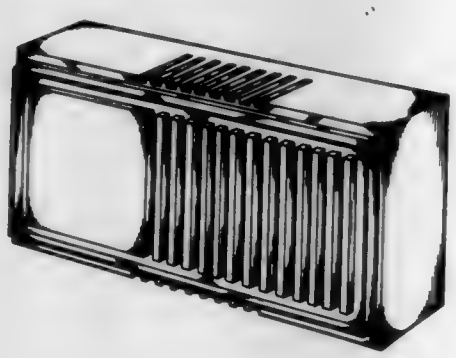
280,080
REUSABLE EXTRACTOR-STOPPER FOR LABORATORY GLASSWARE
Robert J. Miskinis, 10020 Prospect Ave. A15, Santee, Calif. 92071
Filed Jul. 19, 1982, Ser. No. 399,364
Term of patent 14 years
U.S. Cl. D9—439



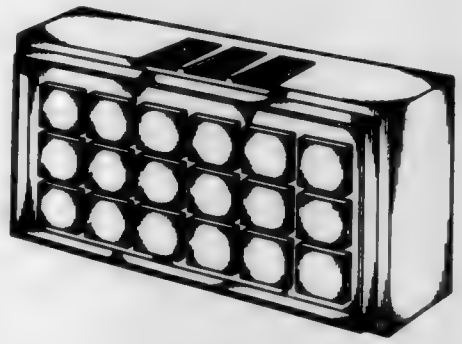
280,081
COMBINED MEASURING STICK AND BACKSCRATCHER
Robert J. Groves, 5 Ann St., Penthouse 2, Mississauga, Ontario, Canada (L5G 4M1)
Filed Jun. 14, 1983, Ser. No. 504,169
Term of patent 14 years
U.S. Cl. D10—71



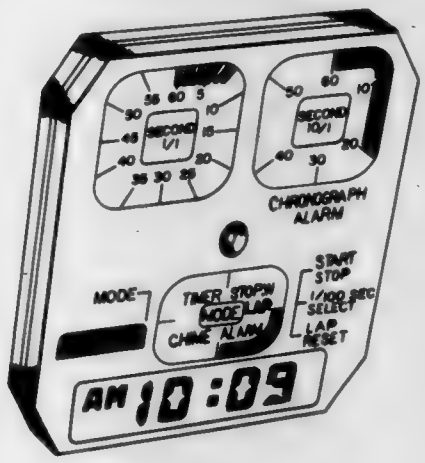
280,082
CHIME COVER PLATE
Monte L. Levin, New York, and John J. Daly, Port Washington, both of N.Y., assignors to Square D Company, Palatine, Ill.
Filed Oct. 20, 1983, Ser. No. 543,726
Term of patent 14 years
U.S. Cl. D10—118



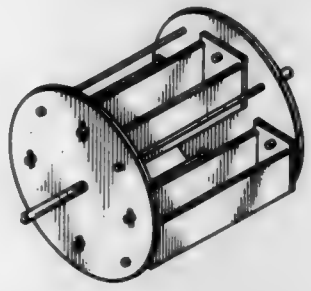
280,083
CHIME COVER PLATE
Monte L. Levin, New York, and John J. Daly, Port Washington, both of N.Y., assignors to Square D Company, Palatine, Ill.
Filed Oct. 20, 1983, Ser. No. 543,732
Term of patent 14 years
U.S. Cl. D10—118



280,084
ELECTRO-OPTIC DISPLAY FOR A TIMEPIECE
Hayao Kano, Tokyo, Japan, assignor to Citizen Watch Co., Ltd., Tokyo, Japan
Filed Jan. 29, 1982, Ser. No. 343,842
Claims priority, application Japan, Oct. 31, 1981, 56-48771
Term of patent 14 years
U.S. Cl. D10—125



280,085
ROTATABLE PLANTER SUPPORT UNIT
Michael W. O'Connor, 25518 3rd St., Barstow, Calif. 92311
Filed Jan. 21, 1983, Ser. No. 460,129
Term of patent 14 years
U.S. Cl. D11—156

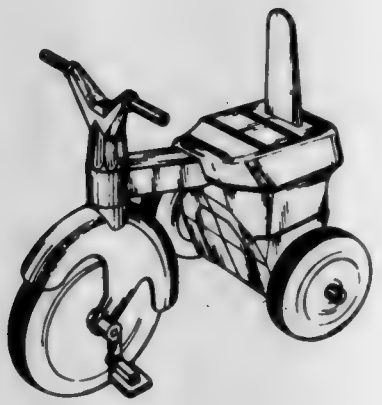


280,086
FIGURINE
Eddie L. Shaw, 8132 Ramsgate Rd., Jacksonville, Fla. 32208
Continuation-in-part of Ser. No. 172,277, Jul. 25, 1980, abandoned. This application Apr. 11, 1983, Ser. No. 483,891
Term of patent 14 years
U.S. Cl. D11—158

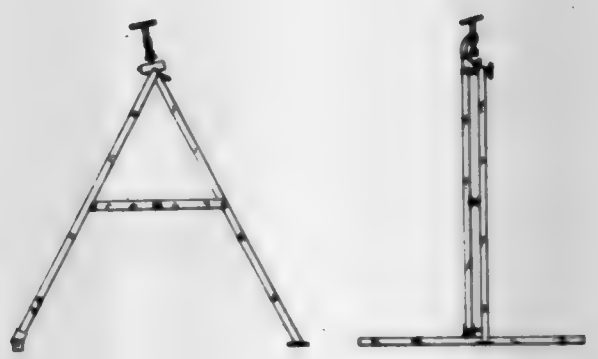




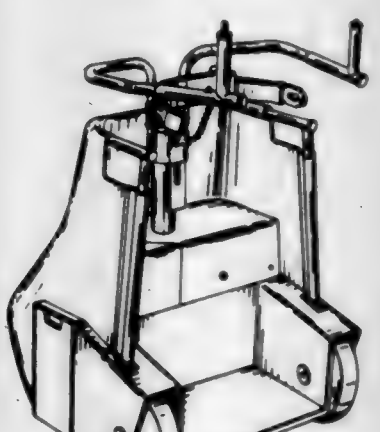
280,087
TOY TRICYCLE
Chong Wing-Fong, Hong Kong, Hong Kong, assignor to Playmates Holdings Limited, Hong Kong, Hong Kong
Filed Mar. 14, 1983, Ser. No. 475,150
Claims priority, application United Kingdom, Oct. 7, 1982, 1009130
Term of patent 14 years
U.S. Cl. D12—112



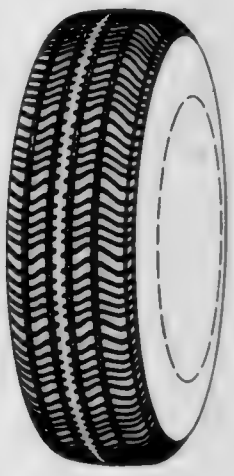
280,088
RACING BICYCLE STAND
Joel T. Shedden, P.O. Box 628, Lake Elsinore, Calif. 92330
Filed May 16, 1983, Ser. No. 494,719
Term of patent 14 years
U.S. Cl. D12—115



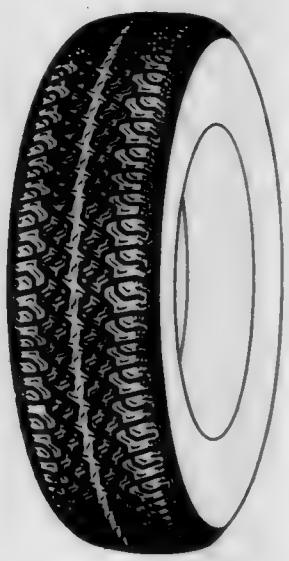
280,089
VEHICLE FOR PARAPLEGIC PERSONS
Peter Blower, Hertfordshire, England, assignor to British Aerospace PLC, London, England
Filed Oct. 21, 1982, Ser. No. 435,737
Term of patent 14 years
U.S. Cl. D12—128



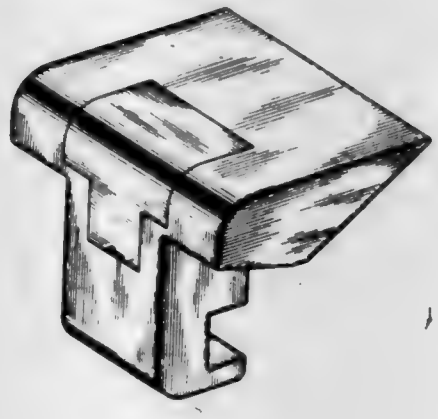
280,090
TIRE TREAD AND BUTTRESS
Maurice Graas, Luxembourg, Luxembourg, assignor to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Oct. 24, 1983, Ser. No. 544,675
Term of patent 14 years
U.S. Cl. D12—146



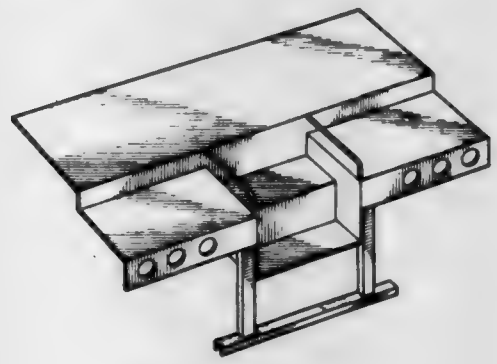
280,091
TIRE
Harold D. Fetty, Birmingham, Mich., and Daniel J. Lindner, Canal Fulton, Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio
Filed Mar. 17, 1983, Ser. No. 476,307
Term of patent 14 years
U.S. Cl. D12—147



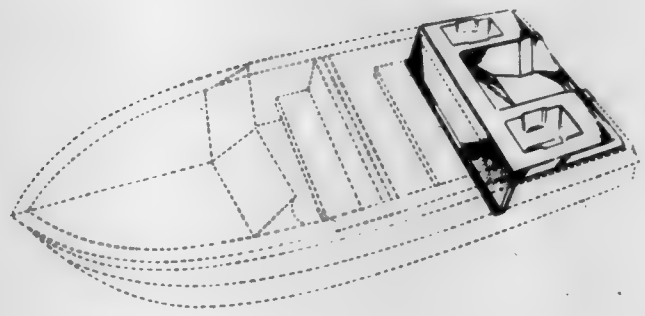
280,092
CAR LUGGAGE CARRIER
Herbert H. McKee, 135 Poplar Ave., NW., Canton, Ohio 44708
Filed Feb. 28, 1983, Ser. No. 470,231
Term of patent 14 years
U.S. Cl. D12—157



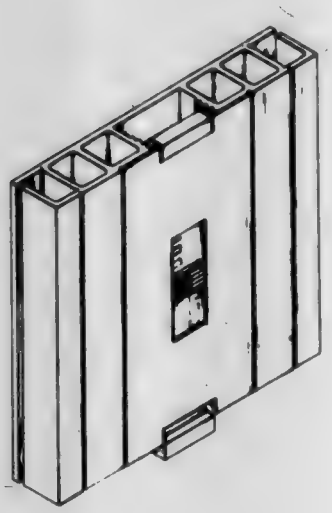
280,093
COMBINED TRUCK REAR STEPS AND PLATFORM
Don A. Bresie; Jack M. Burns; Donald W. Fowler, and Marion S. Sheets, all of 5407 N. IH 35, Suite 304, Austin, Tex. 78723
Filed Jan. 28, 1983, Ser. No. 461,898
Term of patent 14 years
U.S. Cl. D12—203



280,094
BOAT MOTOR COMPARTMENT
Tony L. Riviezzo, Elkhart, Ind., assignor to Holiday Rambler Corporation, Wakarusa, Ind.
Filed Jun. 7, 1982, Ser. No. 385,502
Term of patent 14 years
U.S. Cl. D12—318



280,095
LIGHT DIMMER SWITCH OR SIMILAR ARTICLE
Lynn Roszel, 1206 Tappan Clr., Carrollton, Tex. 75006
Filed Feb. 28, 1983, Ser. No. 470,060
Term of patent 14 years
U.S. Cl. D13—32

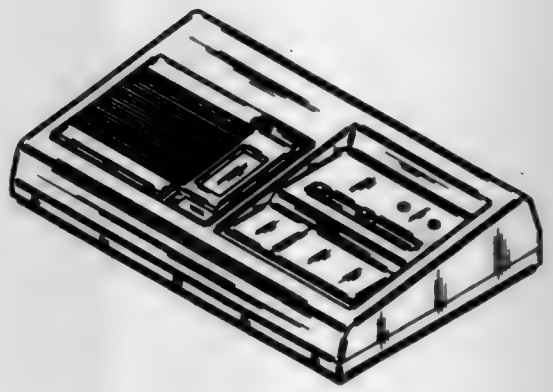


280,096
COMBINED MICROPHONE, AMPLIFIER AND HEADSET
Jack B. Meister, 68 Chimney Ridge, Convent Station, N.J. 07961
Filed Mar. 7, 1983, Ser. No. 472,965
Term of patent 14 years
U.S. Cl. D14—12



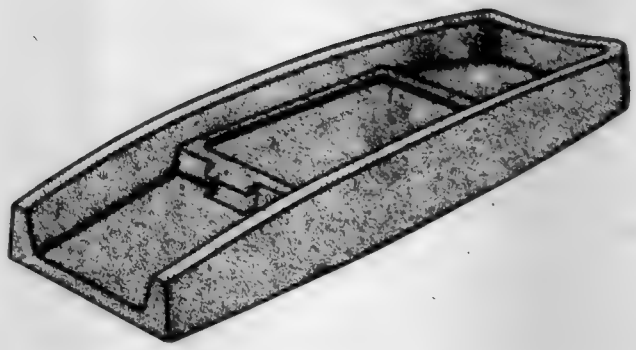
280,097
ELECTRONIC INTERCOMMUNICATION UNIT
Hiroshi Yamagata, and Kendo Makihara, both of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed May 25, 1983, Ser. No. 497,908
Claims priority, application Japan, Nov. 30, 1982, 57-54178
Term of patent 14 years
U.S. Cl. D14—58



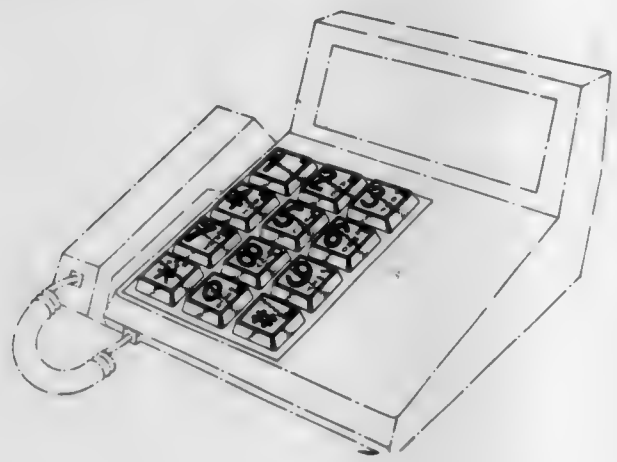


280,098
TELEPHONE STAND OR SIMILAR ARTICLE
John N. McGarvey, Drexel Hill, Pa., and Alvin R. Tilley, Red Bank, N.J., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Jul. 19, 1984, Ser. No. 632,189
Term of patent 14 years
U.S. Cl. D14—60



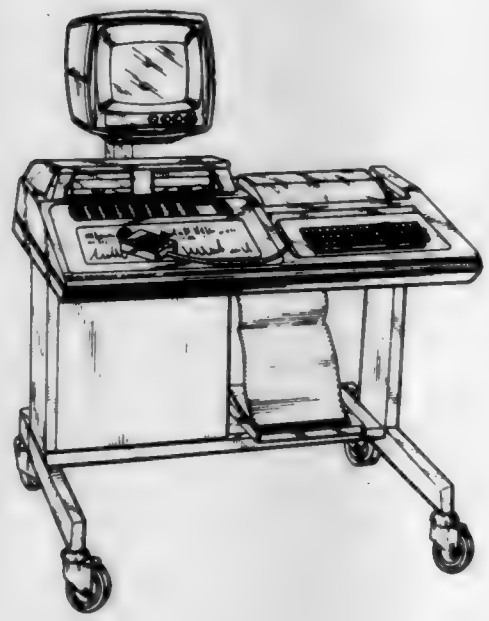


280,099
TELEPHONE KEYPAD FOR A COMBINED RADIO, CLOCK AND TELEPHONE SET
David Topp, Miami, Fla., assignor to Multi-Tech Industries Corp., Miami, Fla.
Continuation-in-part of Ser. No. 601,965, Apr. 19, 1984,. This application Jul. 6, 1984, Ser. No. 628,592
Term of patent 14 years
U.S. Cl. D14—66

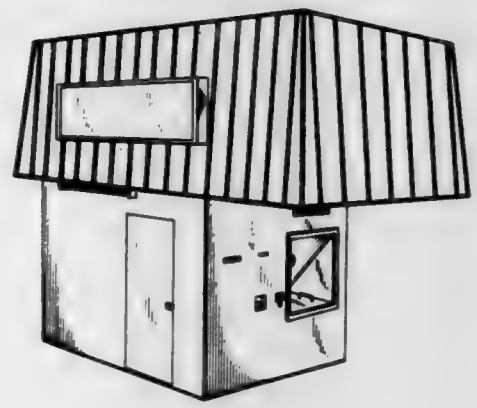




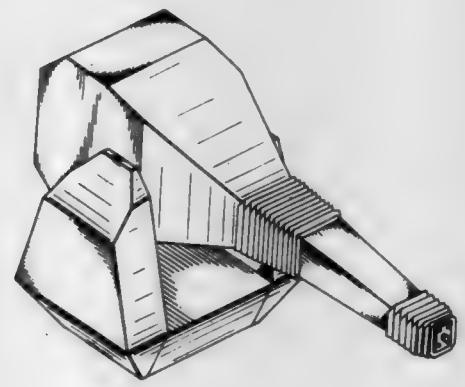
280,100
PORTABLE COMPUTER WORK STATION
Joseph L. Ungar, 17120 NE. 96th St., Redmond, Wash. 98052, assignor to Jospeph Lindsay Ungar, Redmond, Wash.
Filed Aug. 19, 1982, Ser. No. 409,760
Term of patent 14 years
U.S. Cl. D14—103



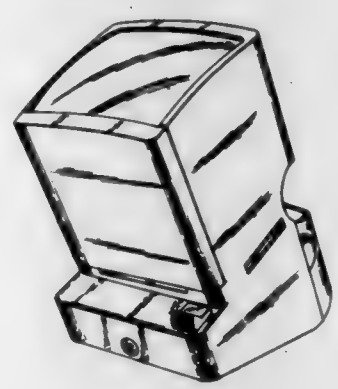
280,101
MACHINE FOR RECEIVING USED CANS
Layle B. Barker, Richmond; Frederick R. Fleischman, Goochland County, and George F. Swenck, Henrico County, all of Va., assignors to Reynolds Metals Company, Richmond, Va.
Filed Dec. 9, 1982, Ser. No. 448,397
Term of patent 14 years
U.S. Cl. D15—123



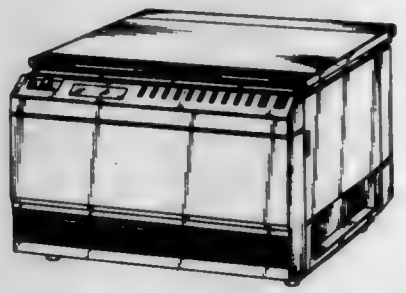
280,102
ROBOT
Ray Hicks, 3101 Corunna Rd., Flint, Mich. 48503
Filed Mar. 7, 1983, Ser. No. 461,624
Term of patent 14 years
U.S. Cl. D15—199



280,103
SLIDE VIEWER
Francis Bonnefoy, Fontainebleau, France, assignor to Posso S.A., France
Filed Feb. 23, 1983, Ser. No. 469,049
Claims priority, application Hague, Dec. 2, 1982, DM/002023
Term of patent 14 years
U.S. Cl. D16—17



280,104
ELECTRONIC COPYING MACHINE
Shigeru Sutoh, Urawa, and Hideyuki Horie, Kamagaya, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed May 9, 1983, Ser. No. 492,718
Claims priority, application Japan, Nov. 10, 1982, 57-50472
Term of patent 14 years
U.S. Cl. D16—31



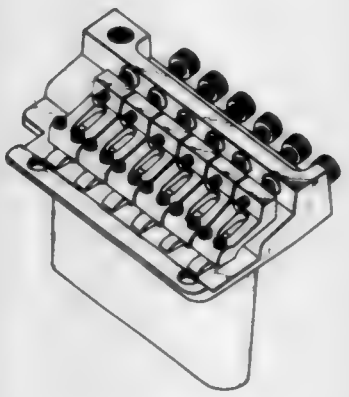
280,105
COVER FOR A FIELD CAMERA FOCUS PLATE
Douglas I. Busch, 3828 Crosby St., Rockford, Ill. 61107
Filed Mar. 21, 1983, Ser. No. 477,524
Term of patent 14 years
U.S. Cl. D16—38



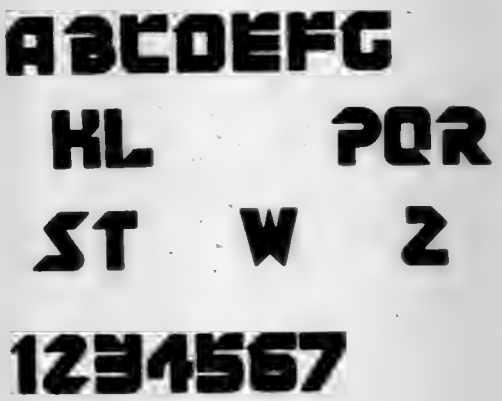
280,106
EYEGLASS FRAME
Ulrich J. Haas, Vienna, Austria, assignor to Optyl Eyewear Fashion International Corporation, Norwood, N.J.
Filed Nov. 2, 1983, Ser. No. 547,837
Claims priority, application Fed. Rep. of Germany, Jul. 28, 1983, 11ar2596/83; Sep. 28, 1983, 11ar3292/83
Term of patent 14 years
U.S. Cl. D16—102



280,107
ELECTRIC GUITAR TREMOLO UNIT
Yuji Tanaka, Akishima, and Hideo Matsumoto, Shizuoka, both of Japan, assignors to Tokai Gakki Co., Ltd., Japan
Filed Mar. 23, 1983, Ser. No. 478,153
Claims priority, application Japan, Dec. 31, 1982, 57-58619
Term of patent 14 years
U.S. Cl. D17—21



280,108
FRONT OF TYPE
William E. Shuman, Evansville, Ind., assignor to American Standard Inc., New York, N.Y.
Filed Aug. 11, 1983, Ser. No. 522,426
Term of patent 14 years
U.S. Cl. D18—24



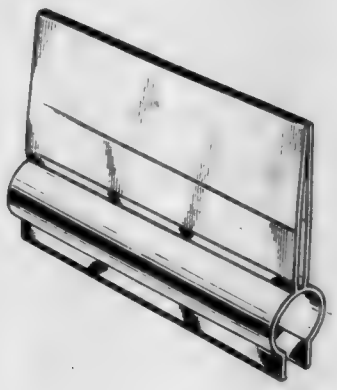
280,109
CLEANING CARD FOR INK JET PRINT HEAD OR SIMILAR ARTICLE
Arthur M. Lewis, and Aldo Scudo, both of Ridgefield, Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.
Filed Feb. 17, 1983, Ser. No. 467,423
Term of patent 14 years
U.S. Cl. D18—99



280,110
WRITING INSTRUMENT
Loren L. Brooks, 1967 SE. 28th, Portland, Oreg. 97214
Filed Feb. 14, 1983, Ser. No. 466,019
Term of patent 14 years
U.S. Cl. D19—42



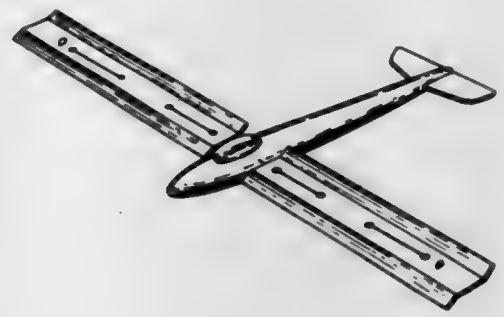
280,111
HOLDER FOR FLAT ARTICLES SUCH AS DISPLAY CARDS OR THE LIKE
Robert M. Brus, Apple Valley, Minn., assignor to The Toro Company, Minneapolis, Minn.
Filed Apr. 4, 1983, Ser. No. 481,560
Term of patent 14 years
U.S. Cl. D20—43



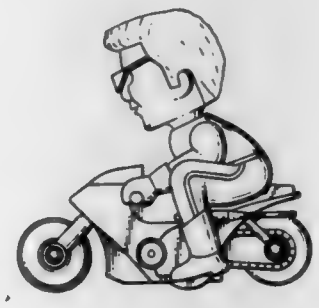
280,112
PLAYING CARD HOLDER
Philip C. Calabro, East Greenwich, R.I., assignor to Job, Inc., East Greenwich, R.I.
Filed Mar. 30, 1983, Ser. No. 481,052
Term of patent 14 years
U.S. Cl. D21—54



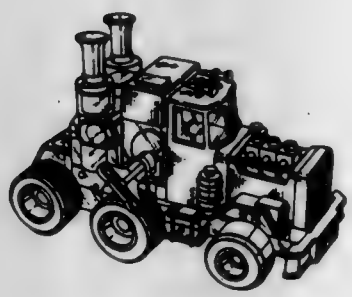
280,113
TOY AIRCRAFT
Hendrick J. G. Lorist, Santa Clara, Calif., assignor to Tolsir Products, Santa Clara, Calif.
Filed Dec. 12, 1983, Ser. No. 560,545
Term of patent 14 years
U.S. Cl. D21—88



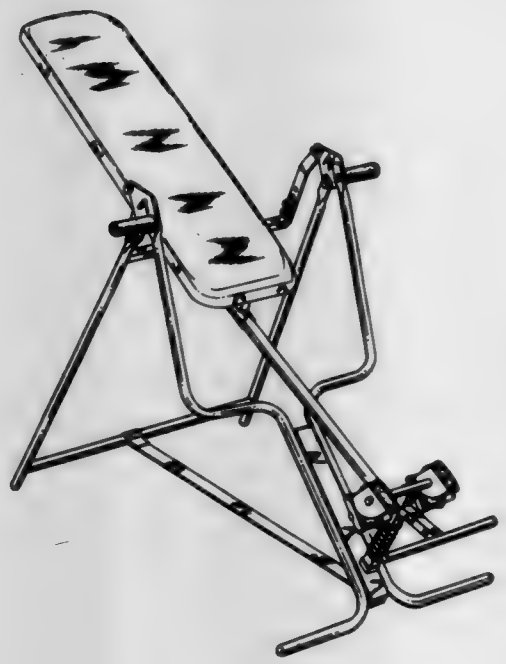
280,114
COMBINED TOY VEHICLE AND RIDER FIGURE
Kunio Miyazaki, and Shiro Ito, both of Tokyo, Japan, assignors to Tomy Kogyo Co., Inc., Tokyo, Japan
Filed Jul. 27, 1982, Ser. No. 402,289
Claims priority, application Japan, Jan. 29, 1982, 57-3764
Term of patent 14 years
U.S. Cl. D21—134



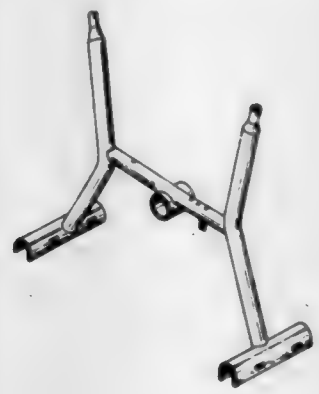
280,115
TOY TRUCK
Kazutaka Takeuchi, Murakami Yachiyo, Japan, assignor to Blue Box Toy Factory Limited, Hong Kong
Filed Nov. 26, 1982, Ser. No. 444,544
Claims priority, application United Kingdom, Jul. 8, 1982, 1007605
Term of patent 14 years
U.S. Cl. D21—139



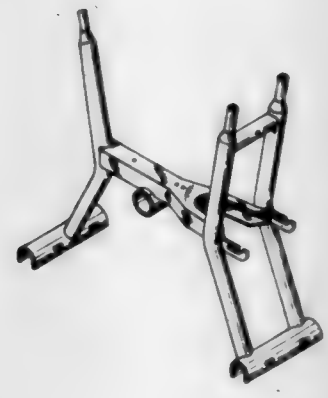
280,116
THERAPEUTIC EXERCISER OR SIMILAR ARTICLE
Wayne H. McGowen, 4930 Mill Creek, Dallas, Tex. 75234
Filed Oct. 21, 1983, Ser. No. 544,277
Term of patent 14 years
U.S. Cl. D21—191



280,117
FRAME FOR EXERCISE CYCLE
Gerald W. Collins, Cudahy, Wis., assignor to Huffy Corporation, Dayton, Ohio
Filed May 5, 1983, Ser. No. 491,826
Term of patent 14 years
U.S. Cl. D21—194



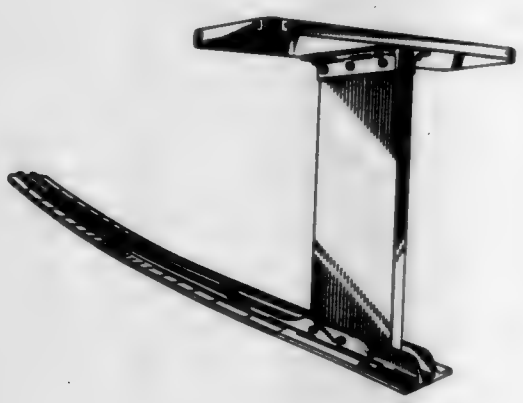
280,118
FRAME FOR EXERCISE CYCLE
Gerald W. Collins, Cudahy, Wis., assignor to Huffy Corporation, Dayton, Ohio
Filed May 5, 1983, Ser. No. 491,825
Term of patent 14 years
U.S. Cl. D21—194



280,119
GOLF PUTTER GRIP
Kirk M. McRae, 2963 Country Club Dr., Cameron Park, Calif. 95682
Filed Apr. 21, 1983, Ser. No. 487,323
Term of patent 14 years
U.S. Cl. D21—222



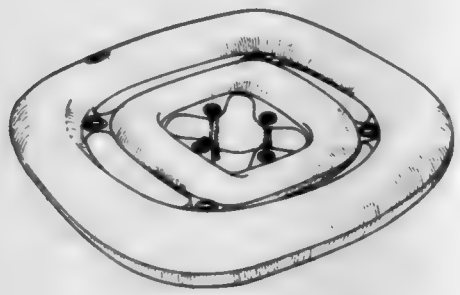
280,120
RIDING TYPE SKI
Larry L. Decker, and Roger L. Decker, both of Canton, Ohio, assignors to Gyro Manufacturing, Inc., Canton, Ohio
Filed Apr. 4, 1983, Ser. No. 481,873
Term of patent 14 years
U.S. Cl. D21—229



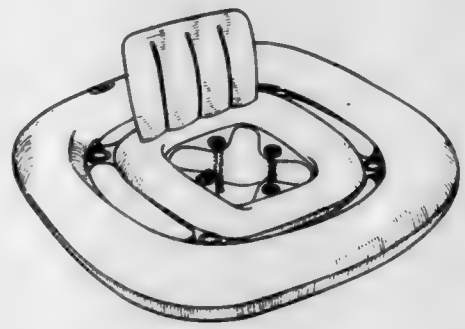
280,121
HAND GRIP AID FOR GOLF
Leroy J. Klein, 4525 Brookshire Cir., Fort Wayne, Ind. 46815
Filed Jun. 20, 1983, Ser. No. 505,880
Term of patent 14 years
U.S. Cl. D21—234



280,122
FLOATING SEAT
Klaus P. H. Maertin, 7 Villiers Pl., Dee Why West, New South Wales 2099, Australia
Filed Sep. 20, 1982, Ser. No. 420,204
Term of patent 14 years
U.S. Cl. D21—237



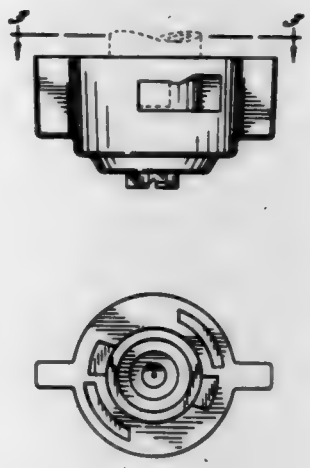
280,123
FLOATING SEAT WITH BACKREST
Klaus P. H. Maertin, 7 Villiers Place, Dee Why West, New South Wales 2099, Australia
Filed Sep. 20, 1982, Ser. No. 420,205
Term of patent 14 years
U.S. Cl. D21—237



280,124
FISHING LINE SPOOL HOLDER
Richard D. Collins, 1511 Woodview West, Eagan, Minn. 55122
Filed Feb. 16, 1983, Ser. No. 466,852
Term of patent 14 years
U.S. Cl. D22—25



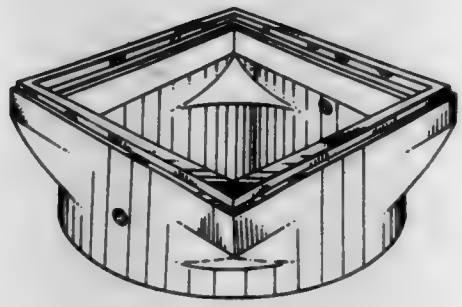
280,125
COMBINED CAP AND SPRAY TIP FOR SPRAY NOZZLE ASSEMBLY
Ted Butterfield, Naperville; George E. Bird, Hickory Hills; Gary A. Paulsen, Geneva, and Edward J. O'Brien, Barrington, all of Ill., assignors to Spraying Systems Co., Wheaton, Ill.
Filed May 28, 1982, Ser. No. 383,189
Term of patent 14 years
U.S. Cl. D23—35



280,126
PRECAST DRAIN INLET

William R. Provan, Napa, and Douglas P. Allard, Sonoma, both of Calif., assignors to Central States Concrete Products, Inc., Napa, Calif.

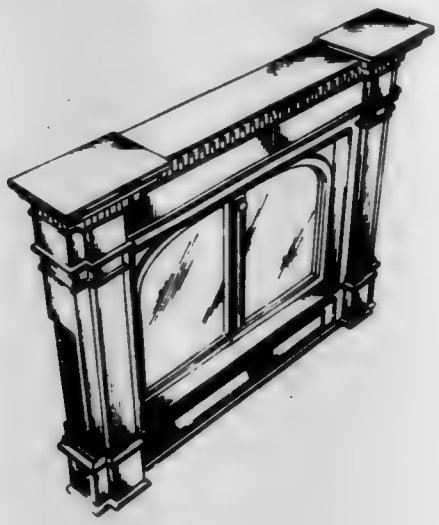
Filed Jun. 20, 1983, Ser. No. 506,097
Term of patent 14 years
U.S. Cl. D23—45



280,127
FIREPLACE FRONT

Duncan C. Syme, Norwich, and Vance R. Smith, Randolph, both of Vt., assignors to Vermont Castings, Inc., Randolph, Vt.

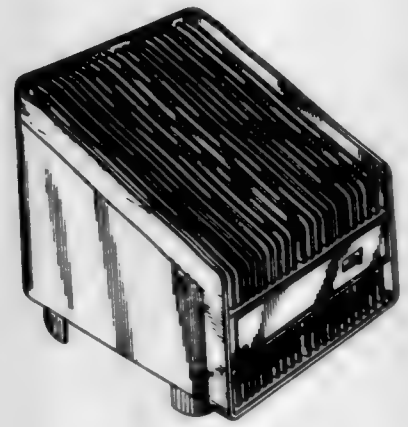
Filed May 11, 1983, Ser. No. 493,665
Term of patent 14 years
U.S. Cl. D23—128



280,128
AIR CLEANER

Edward J. Doyle, Hatboro, Pa., and James M. Rittenhouse, Watchung, N.J., assignors to Conair Corporation, Edison, N.J.

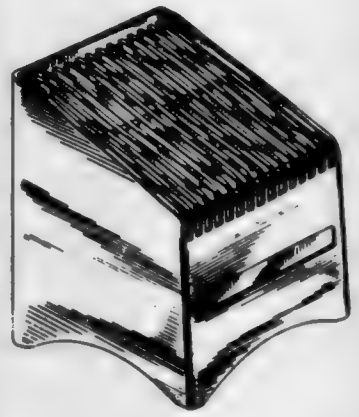
Filed Mar. 14, 1983, Ser. No. 476,023
Term of patent 14 years
U.S. Cl. D23—149



280,129
AIR FILTER

Edward J. Doyle, Hatboro, Pa., assignor to Conair Corporation, Edison, N.J.

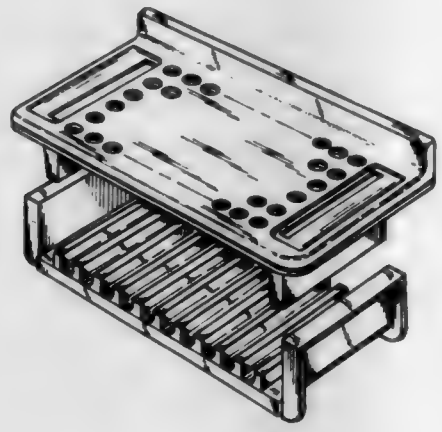
Filed Mar. 28, 1983, Ser. No. 479,886
Term of patent 14 years
U.S. Cl. D23—149



280,130
MAGNETIC SEPARATOR

Jack R. Harkins, Hollis; Henry J. Rahn, Sharon, and David E. Roche, Nashua, all of N.H., assignors to Corning Glass Works, Corning, N.Y.

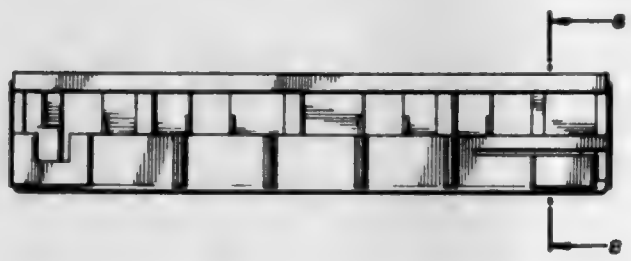
Filed Sep. 9, 1983, Ser. No. 531,162
Term of patent 14 years
U.S. Cl. D24—21



280,131
CASE FOR A MULTIPLICITY OF LIQUID SAMPLE CONTAINERS FOR A MULTITEST CHEMISTRY ANALYZER

Noboru Takasugi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Japan

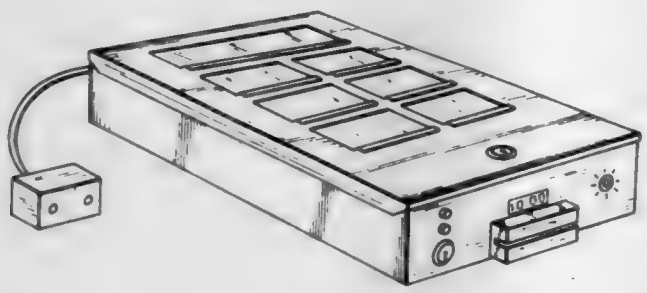
Filed Oct. 7, 1982, Ser. No. 433,267
Claims priority, application Japan, Apr. 10, 1982, 57-15434
Term of patent 14 years
U.S. Cl. D24—31



280,132
COMPARTMENTAL MEDICINE DISPENSER

John T. McLaughlin, Glendale, Calif., assignor to Macma Incorporated, Costa Mesa, Calif.

Filed Dec. 2, 1982, Ser. No. 446,340
Term of patent 14 years
U.S. Cl. D24—31



280,133
UPLIGHTING LAMP

Laurence R. Cocking, 42, Gorst Rd., London NW 10 6LD, England

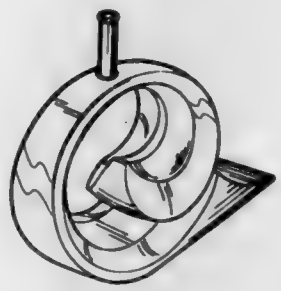
Filed Jun. 10, 1983, Ser. No. 503,020
Claims priority, application United Kingdom, Dec. 21, 1982, 1010432
Term of patent 14 years
U.S. Cl. D26—105



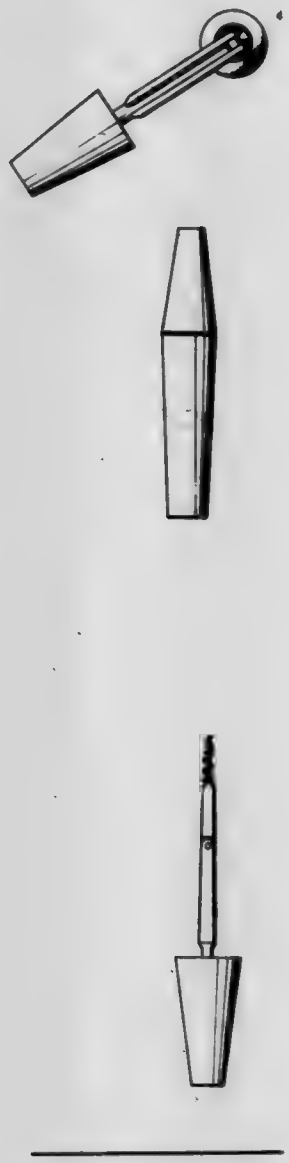
280,134
LAMP BASE

Sante G. Alessandro, New York, N.Y., assignor to Erwin-Lambeth, Inc., Thomasville, N.C.

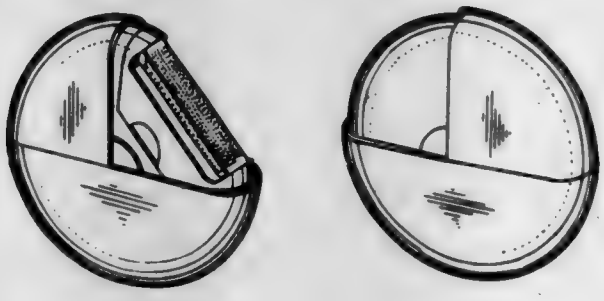
Filed Jun. 9, 1983, Ser. No. 479,013
Term of patent 14 years
U.S. Cl. D26—106



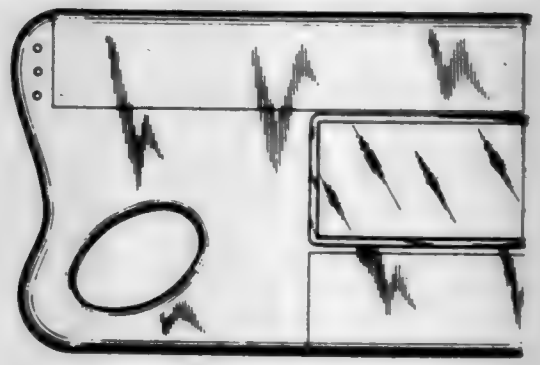
280,135
COMBINED COSMETIC CONTAINER AND APPLICATOR CAP
Gino H. Cassai, 924 E. 96th St., Brooklyn, N.Y. 11236, and Henry J. Cassai, 163-47 85 St., Howard Beach, N.Y. 11414
Filed Aug. 10, 1982, Ser. No. 406,938
Term of patent 14 years
U.S. Cl. D28—7

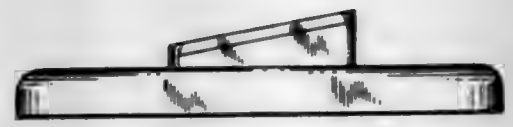


280,136
ELECTRIC SHAVER
Hiroshi Yajima, Osaka; Kazuo Takada, Nara; Yuichiro Yamawaki, Osaka; Teruaki Egashira, Osaka; Nobuo Matsui, Osaka, and Toyomi Arita, Hyogo, all of Japan, assignors to Sanyo Electric Co., Ltd., Japan
Filed Aug. 4, 1983, Ser. No. 520,106
Claims priority, application Japan, Feb. 4, 1983, 58-4363
Term of patent 14 years
U.S. Cl. D28—49

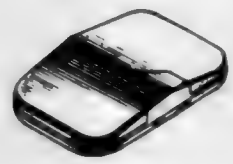


280,137
PALETTE FOR FACIAL MAKEUP
Mark B. Guttenplan, and Paul H. Friedman, both of New York, N.Y., assignors to Art Eyes, Inc., New Rochelle, N.Y.
Filed Jan. 20, 1983, Ser. No. 459,520
Term of patent 14 years
U.S. Cl. D28—76





280,138
COSMETIC CASE
Dieter Bakic, Roemerstrasse 15, D-8000 Munich 40, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 531,472
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 11AR892/83
Term of patent 14 years
U.S. Cl. D28—83





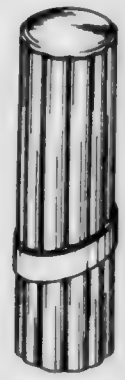
280,139
LIPSTICK CASE
Dieter Bakic, Roemerstrasse 15, D-8000 Munich 40, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 531,333
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 11AR892/83
Term of patent 14 years
U.S. Cl. D28—85



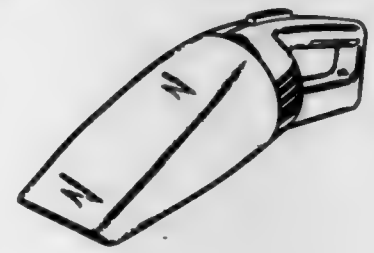
280,140
LIPSTICK CASE
Dieter Bakic, Roemerstrasse 15, D-8000 Munich 40, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 531,334
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 11 AR 892/83
Term of patent 14 years
U.S. Cl. D28—85

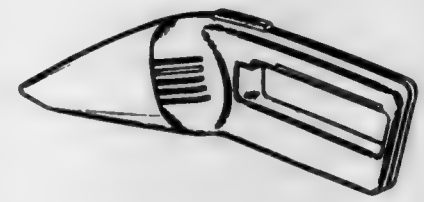


280,141
LIPSTICK TUBE
Thomas F. Holloway, Southbury, Conn., assignor to Risdon Corporation, Naugatuck, Conn.
Filed Aug. 31, 1983, Ser. No. 528,089
Term of patent 14 years
U.S. Cl. D28—89

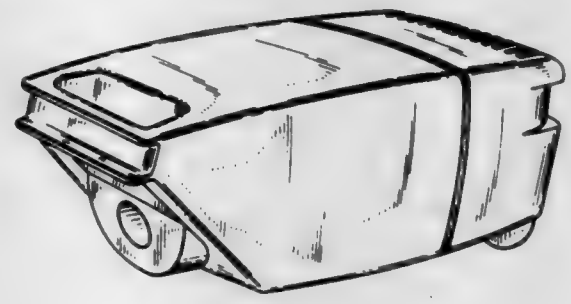


280,142
PORTABLE VACUUM CLEANER
Horst Pudwill, Kowloon, Hong Kong, assignor to Continental Engineering Products, Hong Kong, Hong Kong
Filed Oct. 17, 1983, Ser. No. 542,811
Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, URA459/83
Term of patent 14 years
U.S. Cl. D32—18

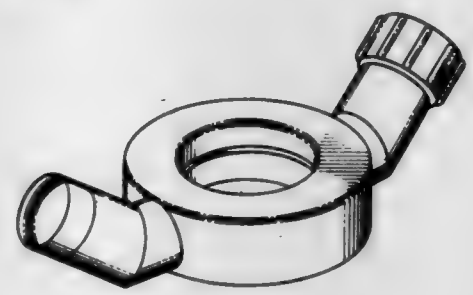




280,143
ELECTRIC VACUUM CLEANER
Robert C. Berfield, Jersey Shore, and Ronald F. Meland, Muncy, both of Pa., assignors to Shop-Vac Corporation, Williamsport, Pa.
Filed Sep. 8, 1983, Ser. No. 530,396
Term of patent 14 years
U.S. Cl. D32—21



280,144
PAINT ROLLER CLEANING DEVICE
James J. Cooney, 763 Sapphire St., San Diego, Calif. 92109
Filed Aug. 17, 1983, Ser. No. 524,018
Term of patent 14 years
U.S. Cl. D32—35



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. Ahlstrom Osakeyhtio: *See*—
Schneck, Hans; and Tiitinen, Esko, 4,534,151, Cl. 53-415.000.

A. J. Sackett & Sons Co.: *See*—
Alt, Daniel M.; and Sackett, Michael J., 4,534,654, Cl. 366-137.000.

A. O. Smith Harvestore Products, Inc.: *See*—
Silverthorn, Charles R.; and Allhands, Marcus N., 4,534,461, Cl. 198-592.000.

A/S Loegstrup-Steel: *See*—
Loegstrup, Joergen; and Sparre, Preben C., 4,534,612, Cl. 339-255.00P.

A. T. Newell Co. Inc.: *See*—
Newell, Alfred T., III; and Newell, Alfred T., Jr., 4,534,406, Cl. 165-12.000.

AB Volvo: *See*—
Remmerfelt, Arne; and Larsson, Sten, 4,534,241, Cl. 74-597.000.

Abe, Kunihiro; and Morimoto, Yoshihiko, to Fuji Jukogyo Kabushiki Kaisha. Device for measuring a position of a moving object. 4,535,289, Cl. 324-208.000.

Abe, Masaki: *See*—
Shimizu, Hiroshi; Abe, Masaki; and Sato, Akihiro, 4,535,069, Cl. 502-115.000.

Abe, Tadafumi; and Takahashi, Isao, to Tachikawa Spring Co., Ltd. Vehicle seat. 4,534,595, Cl. 297-452.000.

Abolins, Visvaldis; and Holub, Fred F., to General Electric Company. Thermoplastic compositions of polyphenylene ether resin and precompounded blend of organopolysiloxane and poly(arylolefin-olefin). 4,535,106, Cl. 524-151.000.

Abraham, Menachem, to Digital Equipment Corporation. Bootstrap-transimpedance preamplifier for a fiber optic receiver. 4,535,233, Cl. 250-214.00A.

Ace Controls, Inc.: *See*—
Colliau, Joel D., 4,534,683, Cl. 408-17.000.

ACF Industries, Inc.: *See*—
Bathe, John G., 4,534,913, Cl. 261-34.00B.

Ackley, James W., to Varian Associates, Inc. Load lock pumping mechanism. 4,534,314, Cl. 118-733.000.

Adachi, Kuniomi: *See*—
Sawa, Yuji; Itoh, Toshio; and Adachi, Kuniomi, 4,534,155, Cl. 53-459.000.

Adair, Paul C., and Adkins, David G., to Mead Corporation, The. Peeling development of photosensitive materials employing microencapsulated radiation sensitive compositions. 4,535,050, Cl. 430-138.000.

Adams, Charles T.: *See*—
Washecheck, Don M.; and Adams, Charles T., 4,534,852, Cl. 208-89.000.

Adams, Dennis V.; Cremers, Norbert J.; and Henry, Raymond L., to BASF Wyandotte Corporation. Aerosol gel. 4,534,958, Cl. 424-45.000.

Adams, John B., Jr., to Du Pont de Nemours, E. I., and Company. Herbicidal sulfonamides. 4,534,788, Cl. 71-92.000.

Adaptor, Inc.: *See*—
Gagas, Michael S.; and Gagas, Stanley J., 4,534,378, Cl. 137-367.000.

Adkins, David G.: *See*—
Adair, Paul C.; and Adkins, David G., 4,535,050, Cl. 430-138.000.

Adkins, Jean. Thimble. 4,534,495, Cl. 223-101.000.

Advanced Micro Devices, Inc.: *See*—
Chen, Pau-Ling, 4,534,824, Cl. 156-628.000.

Advanced Technology, Inc.: *See*—
Intrater, Josef; and Bertoldo, Gene, 4,535,029, Cl. 428-408.000.

Advanced Technology Laboratories, Inc.: *See*—
Powers, Jeffry E., 4,534,357, Cl. 128-663.000.

Aerospace Optics, Inc.: *See*—
Guthrie, Don W., 4,535,396, Cl. 362-293.000.

Affeldt, Karl-Heinz: *See*—
Berger, Klaus; Affeldt, Karl-Heinz; and Bottcher, Lutz, 4,534,361, Cl. 128-680.000.

AGA Aktiebolag: *See*—
Norrstrom, Hans; and Idner, Kristina, 4,534,397, Cl. 162-23.000.

Agetsuma, Fumio: *See*—
Ishida, Keiichi; Okumura, Junji; and Agetsuma, Fumio, 4,534,506, Cl. 236-35.300.

Aghnides, Elie P. Concealed aerator. 4,534,513, Cl. 239-428.500.

Aghnides, Elie P. Concealed aerator which seals against a spout when inserted therein. 4,534,514, Cl. 239-428.500.

Aguirre, Juan E., to Technical Processing Inc. Processing aids for natural and synthetic rubber. 4,534,799, Cl. 106-270.000.

Ahle, James L., to Stauffer Chemical Company. Method of controlling weed pests. 4,534,784, Cl. 71-87.000.

Ahrweiler, Karl-Heinz; Anstotz, Helmut; and Hartmann, Werner, to Kusters, Eduard. Calender. 4,534,829, Cl. 162-361.000.

Ainslie, Norman G.; and Tan, Swie-In, to International Business Machines Corporation. Apparatus for thermo bonding surfaces. 4,534,811, Cl. 156-73.100.

Air Industrie: *See*—
Carre , Christian; and Guibet, Jean P., 4,534,778, Cl. 55-340.000.

Aisin Seiki Kabushiki Kaisha: *See*—
Fujikawa, Motoi, 4,534,455, Cl. 192-40.000.
Hattori, Takemi, 4,534,592, Cl. 297-284.000.
Ishida, Keiichi; Okumura, Junji; and Agetsuma, Fumio, 4,534,506, Cl. 236-35.300.
Nishii, Michiharu, 4,534,270, Cl. 91-376.00R.

Aisin Warner Kabushiki Kaisha: *See*—
Yokoyama, Shoji; and Sakakibara, Shiro, 4,534,243, Cl. 74-868.000.

Akatsu, Yohsuke: *See*—
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,534,435, Cl. 180-140.000.

Akers, Michael J.; Hargrove, William W.; Harris, Dale C.; and Sperry, Charles R., to Eli Lilly & Company. Controlled release infusion system. 4,534,758, Cl. 604-85.000.

Akili-Mudarris, Choukrie: *See*—
Kassis, Amin I.; and Akili-Mudarris, Choukrie, 4,534,483, Cl. 215-306.000.

Akimoto, Koji: *See*—
Kojo, Hidehiko; and Akimoto, Koji, 4,535,103, Cl. 523-450.000.

Akimoto, Taizo: *See*—
Shiota, Kazuo; and Akimoto, Taizo, 4,535,413, Cl. 364-526.000.

Akio, Kimura: *See*—
Toshimasa, Kuroda; Akio, Kimura; Takumi, Horiuchi; Koki, Sasaki; and Terukuni, Ikuta, 4,534,164, Cl. 57-290.000.

Akkala, Walter I. Self sealing vacuumed package. 4,534,152, Cl. 53-434.000.

Aktiebolaget Draco: *See*—
Wetterlin, Kjell I. L., 4,534,345, Cl. 128-203.150.

Aktieselskabet de Danske Sukkerfabrikker: *See*—
Winstrom-Olsen, Bjarne, 4,534,800, Cl. 127-12.000.

Albaugh, Edward K., to Dolphin Titan International, Inc. Secondary capping beams for offshore drilling platforms. 4,534,677, Cl. 405-203.000.

Alcan International Limited: *See*—
Field, David J.; Butler, Ernest P.; and Bassett, Katherine-Ann, 4,534,807, Cl. 148-20.300.
Tracy, John A., 4,534,092, Cl. 29-21.100.

Aldrich, Allyn M., to Sundstrand Corporation. Position and control system for helicopter blade actuation. 4,534,524, Cl. 244-17.250.

Aldrich, Warren: *See*—
Aldrich, Warren S.; and Ingersoll, Brian, 4,534,858, Cl. 209-236.000.

Aldrich, Warren S.; and Ingersoll, Brian, to Aldrich, Warren. Sifter. 4,534,858, Cl. 209-236.000.

Alessio, Enzo: *See*—
Mestroni, Giovanni; Zassinovich, Grazia; and Alessio, Enzo, 4,535,162, Cl. 546-159.000.

Alfa-Laval AB: *See*—
Munde, Jan, 4,534,570, Cl. 277-95.000.

Allan, David E.; and Martinez, Charles H., to Exxon Research and Engineering Co. Feed injection method to prevent coking on the walls of transfer line reactors. 4,534,851, Cl. 208-48.00R.

Allan, David T. Tool assembly. 4,534,421, Cl. 173-130.000.

Allard, Jean-Claude; Briard, Rene; and Saunier, Christian, to Giravions Dorand. Fire simulation device for training in the operation of shoulder weapons and the like. 4,534,735, Cl. 434-20.000.

Allen-Bradley Company: *See*—
Frey, Sydney W., Jr.; and Herson, Mark I., 4,535,386, Cl. 361-389.000.

Allhands, Marcus N.: *See*—
Silverthorn, Charles R.; and Allhands, Marcus N., 4,534,461, Cl. 198-592.000.

Allibert S.A.: *See*—
Poncet, Jean-Pierre, 4,534,697, Cl. 414-787.000.

Allied Corporation: *See*—
Colby, Lewis J., Jr., 4,535,047, Cl. 430-108.000.
Johnson, Edwin A., 4,535,406, Cl. 364-431.080.
Tomsa, Vladimir, 4,534,607, Cl. 339-89.00R.
Wertheimer, Harry P.; Libsch, Thomas A.; Pfeifer, Jerome L.; and Becker, Paul C., 4,535,316, Cl. 338-34.000.

Allison, Arlie E. Room heat circulation system. 4,534,276, Cl. 98-34.500.

Allport, Maurice J., to Lucas Industries Public Limited Company. Slip ring assembly with inner recess to prevent shorting. 4,535,264, Cl. 310-232.000.

Alps Electric Co., Ltd.: *See*—
Yoshisato, Akiyuki; and Iijima, Kohta, 4,535,435, Cl. 369-126.000.

Alt, Daniel M.; and Sackett, Michael J., to A. J. Sackett & Sons Co. High-speed fluid blender. 4,534,654, Cl. 366-137.000.
Aluminum Company of America: *See—*
Huet, Roger, 4,534,266, Cl. 89-36.020.
Aluteck Co., Ltd.: *See—*
Kato, Chizuo, 4,535,022, Cl. 428-142.000.
ALZA Corporation: *See—*
Geller, Leo, 4,534,757, Cl. 604-85.000.
Amada Company, Limited: *See—*
Taguchi, Masayuki, 4,534,247, Cl. 83-13.000.
Ambrose, John; Charles, Douglas K.; Conard, Bruce R.; Diaz, Carlos; O'Neill, Charles E.; and Leavoy, Wayne P., to INCO Limited. Manufacturing of titanium anode substrates. 4,534,935, Cl. 419-23.000.
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., to PPG Industries, Inc. Thermosetting high solids solvent-based polyester polyol coating compositions. 4,535,132, Cl. 525-443.000.
Amcodyne Incorporated: *See—*
Anderson, Kurt M.; and Morehouse, James H., 4,535,374, Cl. 360-103.000.
American Can Company: *See—*
LaRosa, John; and Panipinto, David C., 4,534,201, Cl. 72-348.000.
American Colloid Company: *See—*
Harriett, Todd D., 4,534,925, Cl. 264-281.000.
Harriett, Todd D., 4,534,926, Cl. 264-281.000.
American Cyanamid Company: *See—*
Grudzinskas, Charles V.; and Weiss, Martin J., 4,535,180, Cl. 560-121.000.
Haeger, Bruce E., 4,534,977, Cl. 514-196.000.
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,534,970, Cl. 424-122.000.
American Hoechst Corporation: *See—*
Kelly, Michael G., 4,534,770, Cl. 8-115.600.
American Home Products Corporation: *See—*
Guinosso, Charles J., 4,535,168, Cl. 548-402.000.
Husbands, G. E. Morris; Yardley, John P.; and Muth, Eric A., 4,535,186, Cl. 564-336.000.
American Microsystems, Inc.: *See—*
Heide, Carsten, 4,534,544, Cl. 254-9.00C.
American Safety Closure Corp.: *See—*
Conti, Vincent N., 4,534,479, Cl. 215-252.000.
AMF Incorporated: *See—*
Dreesman, Gordon R.; and Kendall, Cynthia E., 4,535,057, Cl. 435-5.000.
Amiboshi, Saburo: *See—*
Ishitani, Kenichiro; Unseki, Takashi; Amiboshi, Saburo; and Kawamura, Eiichi, 4,534,569, Cl. 277-27.000.
AMP Incorporated: *See—*
Bowen, Terry P.; Caron, Bernard G.; Cooper, Ronald F.; and Glover, Douglas W., 4,534,616, Cl. 350-96.200.
Esser, Wilhelm C. J., 4,534,613, Cl. 339-258.00S.
Maack, Werner, 4,534,107, Cl. 29-751.000.
Olsson, Billy E., 4,534,606, Cl. 339-75.00M.
AMSTED Industries Incorporated: *See—*
Riggs, Peter P.; Data, Harry L.; and Hoganson, Robert B., Jr., 4,534,162, Cl. 57-217.000.
Anderson, Albert G.; and Dueber, Thomas E., to Du Pont de Nemours, E. I., and Company. Constrained n-alkylamino aryl ketones as sensitizers for photopolymer compositions. 4,535,052, Cl. 430-277.000.
Anderson, Kurt M.; and Morehouse, James H., to Amcodyne Incorporated. Whitney-type head loading/unloading apparatus. 4,535,374, Cl. 360-103.000.
Anderson, Marvin H.: *See—*
Lee, Reuy-Lin; Kneip, George D., Jr.; and Anderson, Marvin H., 4,535,291, Cl. 324-320.000.
Anderson, Norman J. Transducing assembly responsive to string movement in intersecting planes. 4,534,258, Cl. 84-1.150.
Andersson, Thorbjorn, to Tetra Pak International AB. Method and an apparatus for the removal of waste material in rotary punching. 4,534,248, Cl. 83-24.000.
Andre, Wolfram K.: *See—*
Wolf, Kurt; and Andre, Wolfram K., 4,535,229, Cl. 219-440.000.
Andren, Ingmar, to Lindema Kommanditbolag. Cleaning machine with a vertical cylinder screen. 4,534,859, Cl. 209-301.000.
Anholm, John M., Jr.: *See—*
Duryee, Peter S.; and Anholm, John M., Jr., 4,535,318, Cl. 340-347.0CC.
Ansell, John W.: *See—*
Maddern, Thomas S.; Ansell, John W.; and Philip, Alexander S., 4,535,442, Cl. 370-13.000.
Anstotz, Helmut: *See—*
Ahrweiler, Karl-Heinz; Anstotz, Helmut; and Hartmann, Werner, 4,534,829, Cl. 162-361.000.
Aoki, Takashi: *See—*
Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, 4,534,236, Cl. 74-364.000.
Aoyama, Shunichi: *See—*
Kato, Manabu; and Aoyama, Shunichi, 4,534,323, Cl. 123-90.160.
Aozuka, Rikio: *See—*
Shinya, Ryohei; Miura, Shin'ichi; and Aozuka, Rikio, 4,534,312, Cl. 118-666.000.
Appleton Papers Inc.: *See—*
Glanz, Kenneth D., 4,535,347, Cl. 346-208.000.
APV International Limited: *See—*
Hasting, Anthony P. M., 4,534,986, Cl. 426-521.000.
Arai, Kenichiro: *See—*
Mori, Masahiko; Arai, Kenichiro; and Tezuka, Chikao, 4,534,665, Cl. 400-145.200.
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, to Sanko Kaihatsu Kagaku Kenkyusho; and Kanzai Paper Manufacturing Company Ltd. Phenolic compounds and a heat-sensitive recording material containing the same. 4,535,190, Cl. 568-721.000.
Arai, Tetsuji: *See—*
Mimura, Yoshiki; Arai, Tetsuji; Shimizu, Hiroshi; and Fukuda, Satoru, 4,535,228, Cl. 219-411.000.
Arai, Tomoji: *See—*
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.
Arakawa, Satoshi; Nakamura, Takashi; and Takahashi, Kenji, to Fuji Photo Film Co. Ltd. Process for the preparation of phosphor. 4,534,884, Cl. 252-301.40H.
Arakawa, Yoshio: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; and Suyama, Tadakazu, 4,534,978, Cl. 514-429.000.
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.
Araki, Ryosuke, to Kabushiki Kaisha Suwa Seikosha. Horizontally-stacked metal-insulator-metal element for electro-optical device and method for manufacture. 4,534,623, Cl. 350-339.00R.
Araki, Yosai: *See—*
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.
Arbisi, Dominic; and Mitchell, Roger E. Impulse motor structure, drive system and control circuit. 4,535,279, Cl. 318-696.000.
Arendt, Ronald H.; and Pasco, Wayne D., to General Electric Company. Molten salt synthesis of barium and/or strontium titanate powder. 4,534,956, Cl. 423-598.000.
Ariizumi, Shoji; Segawa, Makoto; and Masuoka, Fujio, to Tokyo Shibaura Denki Kabushiki Kaisha. Semiconductor memory device. 4,535,426, Cl. 365-182.000.
Armco Inc.: *See—*
Jesseman, Rodney J., 4,534,805, Cl. 148-12.300.
Palm, Richard R.; James, Robert G.; and Fisher, Robert E., 4,534,706, Cl. 417-17.000.
Arn, Robert M.; Csanky, Peter H.; and Waszek, Glen F., to Microdesign Limited. Method and apparatus for scrambling and unscrambling data streams using encryption and decryption. 4,535,355, Cl. 358-123.000.
Arnal, Yves; Pelletier, Jacques; and Pomot, Claude, to Centre National de la Recherche Scientifique (CNRS). Process and device for producing a homogeneous large-volume plasma of high density and of low electronic temperature. 4,534,842, Cl. 204-192.00E.
Aronsson, Bo. Supporting feeder assembly for material handling machines. 4,534,431, Cl. 180-9.000.
Arragon, Jean-Pierre, to U.S. Philips Corporation. Time-locking method for stations which form part of a local loop network, and local loop network for performing this time-locking method. 4,535,449, Cl. 370-86.000.
Arthur G. Russell Company, Incorporated, The: *See—*
Ensminger, Robert J., 4,534,696, Cl. 414-751.000.
Artistic Desk Pad & Novelty Co., Inc.: *See—*
Mayo, Irving A., 4,534,475, Cl. 211-126.000.
Asahi Denka Kogyo K.K.: *See—*
Kojo, Hidehiko; and Akimoto, Koji, 4,535,103, Cl. 523-450.000.
Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Matsuzaki, Kazuhiko; and Hamada, Minoru, 4,535,127, Cl. 525-154.000.
Yokogi, Masanobu; Sugimoto, Yoshifumi; and Ono, Yotsuo, 4,535,028, Cl. 428-398.000.
Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Hirobe, Hitoshi, 4,535,364, Cl. 358-228.000.
Sugawara, Saburo, 4,534,636, Cl. 354-403.000.
Tabata, Yasushi; Ogawa, Kimiaki; and Takahashi, Toshimitsu, 4,534,634, Cl. 354-268.000.
Asahi Medical Co., Ltd.: *See—*
Yokogi, Masanobu; Sugimoto, Yoshifumi; and Ono, Yotsuo, 4,535,028, Cl. 428-398.000.
Asai, Isao: *See—*
Muramatsu, Shigeru; Asai, Isao; and Morita, Takayuki, 4,534,517, Cl. 242-35.50A.
Asakawa, Teruo, to Telmec Co., Ltd. Two-dimensional precise positioning device for use in a semiconductor manufacturing apparatus. 4,535,278, Cl. 318-687.000.
Asano, Hiroshige; and Moroto, Masayuki, to Okuma Machinery Works Ltd. Method of cleaning machined surface and chip removing tool. 4,534,803, Cl. 134-30.000.
ASEA Aktiebolag: *See—*
Lindqvist, Ake, 4,535,207, Cl. 200-17.00R.
ASM Fico Tooling, b.v.: *See—*
Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,534,921, Cl. 264-39.000.
Aspenwall, John E., to Jahabow Industries, Inc. Fluorescent lamp housing. 4,535,393, Cl. 362-217.000.
Assandri, Alessandro: *See—*
Galliani, Giulio; Omodei-Sale, Amedeo; Consonni, Pietro; and Assandri, Alessandro, 4,535,090, Cl. 514-383.000.

AT&T Bell Laboratories: *See*—
Baxter, Leslie A.; and Brown, Sanford S., 4,535,448, Cl. 370-85.000.
Briley, Bruce E.; and Hiltner, Jeffrey A., 4,535,360, Cl. 358-181.000.
Carlin, James W., 4,535,476, Cl. 455-63.000.
Cho, Alfred Y.; Glance, Bernard; Lubzens, Daniel; and Schneider, Martin V., 4,534,103, Cl. 29-571.000.
Falconer, David D., 4,535,206, Cl. 179-170.200.
Haskell, Barin G., 4,535,352, Cl. 358-16.000.
Mammel, Lewis H.; and Shakespeare, Walter J., 4,534,776, Cl. 55-136.000.
Ohm, Edward A., 4,535,338, Cl. 343-781.0CA.
Peterson, Donald W., 4,535,455, Cl. 371-13.000.
Smith, Arnold R., 4,534,586, Cl. 292-228.000.
Tomcik, James D., 4,535,472, Cl. 381-31.000.

AT&T Information Systems: *See*—
Lane, Michael S.; and Scholbrock, Steven D., 4,535,445, Cl. 370-62.000.

AT&T Information Systems Inc.: *See*—
Buzzard, Clair A.; and Mina, Kent V., 4,535,454, Cl. 370-110.200.
Squicciarini, Gaetano N., 4,535,198, Cl. 179-2.0DP.
Zink, John H., 4,535,199, Cl. 179-2.0DP.

AT&T Nassau Metals Corporation: *See*—
Budzich, Mieczlyslaw; and Fitz, Forest G., Jr., 4,534,254, Cl. 83-425.200.

Atkinson, Alan W.; Dearden, Katryna J.; and Lancaster, Janet M., to T&N Materials Research Limited. Gaskets. 4,534,922, Cl. 264-119.000.

Atlantic Richfield Company: *See*—
Piurek, Walter J., 4,534,502, Cl. 228-102.000.

Audiau, Francois; Gueremy, Claude G. A.; and Le Fur, Gerard R., to Pharmuka Laboratoires. Derivatives of 2-piperazino-pyrimidine, methods for their preparation and their utilization as drugs or intermediates for drugs. 4,535,080, Cl. 514-255.000.

Audoin, Michel: *See*—
Bricot, Claude; Gerard, Jean Louis; and Audoin, Michel, 4,535,431, Cl. 369-44.000.

August, Melvin C.; and Williams, John T., to Cray Research, Inc. Circuit module with enhanced heat transfer and distribution. 4,535,385, Cl. 361-388.000.

Australian Atomic Energy Commission: *See*—
Eberhardt, John E., 4,535,241, Cl. 250-339.000.

AUTOMATIK Apparate-Maschinenbau H. Hench GmbH: *See*—
Stade, Kurt, 4,534,652, Cl. 366-85.000.

Autry Industries, Inc.: *See*—
Autry, James C., 4,534,121, Cl. 36-35.00R.

Autry, James C., to Autry Industries, Inc. Insole with concentric circular heel structure. 4,534,121, Cl. 36-35.00R.

Avery, Robert W., to Fairey Hydraulics, Ltd. Electric D.C. motors with a plurality of units, each including a permanent magnet field device and a wound armature for producing poles. 4,535,263, Cl. 310-112.000.

Awerbuch, Leon; and Van der Mast, Victor C., to Bechtel International Corporation. Geothermal reboiler apparatus and method. 4,534,174, Cl. 60-641.500.

Axen, Rolf E.; Kaj, Goran L.; and Rigner, Bror S., to Pharmacia AB. Method of forming polymeric layers. 4,535,010, Cl. 427-246.000.

Aydin, Kemal, to Kadex, Incorporated. Electronic lock system. 4,534,194, Cl. 70-278.000.

B. F. Goodrich Company, The: *See*—
Fisher, John M., 4,534,445, Cl. 182-48.000.
Myers, Ronald E., 4,535,147, Cl. 528-321.000.

Babet, Jean-Michel: *See*—
Thibonnet, Bernard, 4,534,408, Cl. 165-108.000.

Bacon, David L.; Kremer, Richard D.; and Morse, Randall H., to Schleicher & Schuell, Inc. Centrifugal filtering device and filter unit therefor. 4,534,863, Cl. 210-232.000.

Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., to Gulf Oil Corporation. Method of preparation of polyimide acids. 4,535,115, Cl. 524-376.000.

Ball Corporation: *See*—
Brighton, Andrew P., 4,535,239, Cl. 250-339.000.

Ballard, Stephen C.: *See*—
Payet, George L.; and Ballard, Stephen C., 4,534,819, Cl. 156-515.000.

Bally Midway Mfg. Co.: *See*—
White, Johnnie W., 4,534,609, Cl. 339-117.00R.

Baltz, Robert J.: *See*—
Boggs, John A.; and Baltz, Robert J., 4,534,488, Cl. 220-323.000.

Balz, Werner: *See*—
Roller, Hermann; Lehner, August; Hack, Joachim; Grau, Werner; Balz, Werner; and Baur, Reinhold, 4,534,999, Cl. 427-130.000.

Ban, Keisuke; and Daimaru, Akimasa, to Honda Giken Kogyo Kabushiki Kaisha. Method for making a reinforced article for an internal combustion engine. 4,534,400, Cl. 164-97.000.

Banasiak, Dennis S.: *See*—
Johnson, Timothy W.; and Banasiak, Dennis S., 4,535,116, Cl. 524-385.000.

Baney, Ronald H., to Dow Corning Corporation. Method for preparing silicon carbide. 4,534,948, Cl. 423-345.000.

Barbulescu, Adrian; Boulet, Rodrique; and Lessard, Denis, to Centre de Recherche Industrielle du Quebec. System and method for extracting liquid from a humid mass by compression. 4,534,868, Cl. 210-780.000.

Barer, Sol J.: *See*—
Hsieh, Jih-Han; Barer, Sol J.; and Maxwell, Peter C., 4,535,059, Cl. 435-142.000.

Barge, Fred H. Reclining radiographic wall table. 4,534,076, Cl. 5-147.000.

Barie, Walter P.: *See*—
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,535,115, Cl. 524-376.000.

Barlian, Reinhold. Device for detecting vapor leakages. 4,534,662, Cl. 374-4.000.

Barnes, Robert A.: *See*—
Frantz, Keith R.; Barnes, Robert A.; and Marks, Bruce G., 4,535,270, Cl. 315-8.000.

Barrows, Thomas H., to Minnesota Mining and Manufacturing Company. Absorbable sutureless nerve repair device. 4,534,349, Cl. 128-334.00R.

Bart, Gordon B.; Hiemstra, Carol L.; and Tyo, James H., to Camp International, Inc. Gravity lumbar reduction maintenance apparatus. 4,534,341, Cl. 128-75.000.

Barth, Gerald D., to Illinois Tool Works Inc. Assymetrically shaped thread forming screw and method of making same. 4,534,690, Cl. 411-386.000.

Barth, Stanley D.: *See*—
Meyer, John J.; and Barth, Stanley D., 4,535,214, Cl. 219-60.200.

Bartlett, James V. Biohazard waste container. 4,534,489, Cl. 220-404.000.

BASF Aktiengesellschaft: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,534,720, Cl. 425-7.000.
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,004, Cl. 427-212.000.
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,005, Cl. 427-212.000.
Kretschmer, Alfred, 4,534,308, Cl. 118-260.000.
Naarmann, Herbert; and Koehler, Gernot, 4,535,039, Cl. 429-213.000.
Roller, Hermann; Lehner, August; Hack, Joachim; Grau, Werner; Balz, Werner; and Baur, Reinhold, 4,534,999, Cl. 427-130.000.

BASF Wyandotte Corporation: *See*—
Adams, Dennis V.; Cremers, Norbert J.; and Henry, Raymond L., 4,534,958, Cl. 424-45.000.
Reichel, Curtis J., 4,535,178, Cl. 560-91.000.
Schmolka, Irving R., 4,534,959, Cl. 424-45.000.

Bass, David L. Anti-kerf bind device. 4,534,112, Cl. 30-383.000.

Bassett, Katherine-Ann: *See*—
Field, David J.; Butler, Ernest P.; and Bassett, Katherine-Ann, 4,534,807, Cl. 148-20.300.

Bateman, Ivor: *See*—
Morey, Norval K.; and Bateman, Ivor, 4,534,390, Cl. 144-373.000.

Bates, Jack; and Clayson, Arthur E., to United States of America, Navy. Sabot diverter. 4,534,265, Cl. 89-14.600.

Batey, Jonathan H., to VG Instruments Group Limited. Apparatus for and method of operating quadrupole mass spectrometers in the total pressure mode. 4,535,236, Cl. 250-292.000.

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Perrey, Hermann; and Matner, Martin, 4,535,111, Cl. 524-199.000.
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Beestman, George B., to Monsanto Co. High concentration encapsulation of water soluble-materials. 4,534,783, Cl. 71-27.000.
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Benuzzi, Gino. Device for making a groove in the edge of a panel. 4,534,256, Cl. 83-863.000.
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Blackburn, Bobby J.; and Csokmay, John M., to IRD Mechanalysis, Inc. Field balancing apparatus. 4,535,411, Cl. 364-508.000.
Blackston, Michael D.; and Reinecke, Gary, to Heise Manufacturing. Revolving door security system. 4,534,131, Cl. 49-42.000.
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Bomberger, Howard B.; and Froes, Francis H., to United States of America, Air Force. Method for making alloy additions to base metals having higher melting points. 4,534,938, Cl. 420-590.000.
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Broady, Floyd J.; and Jasek, J. Rondal, to Union Carbide Corporation. Molded-to-size silver-graphite articles and process for making same. 4,534,887, Cl. 252-503.000.
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Iseler, Kenneth A.; Guha, Probir K.; and Yen, Robert C., 4,535,110, Cl. 524-196.000.
Budzich, Mieczlyslaw; and Fitz, Forest G., Jr., to AT&T Nassau Metals Corporation. Cable stripping apparatus. 4,534,254, Cl. 83-425.200.
Budzich, Tadeusz. Water-oil separating system for use with centrifugal type separator. 4,534,860, Cl. 210-137.000.
Buehler Ltd.: *See—*
Nelson, James A.; and Zimmer, Robert E., 4,534,536, Cl. 249-83.000.
Bugay, Frederick: *See—*
Wright, Douglas, 4,535,014, Cl. 428-30.000.
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, to BASF Aktiengeseilschaft. Apparatus for the preparation of bonding fibers from polymer dispersions. 4,534,720, Cl. 425-7.000.
Bura, Paul, to Northern Telecom Limited. High frequency amplifier with phase compensation. 4,535,304, Cl. 330-300.000.
Burbank, Charles H.; and Lewis, Robert J., to Raymond Corporation, The. Material handling vehicle. 4,534,433, Cl. 180-19.100.
Burbank, Edward W., Jr. Wireline tension gage.. 4,534,228, Cl. 73-862.450.
Burchfield, William L.; Carr, Edward L.; and Laskowski, Gordon J., to United States of America, Navy. Bridge crane. 4,534,476, Cl. 212-190.000.
Burda, Josef: *See—*
von Laar, Klaus; Heberlein, Werner; and Burda, Josef, 4,534,294, Cl. 102-520.000.
Burge, Donald G., to Parker-Hannifin Corporation. Locking frame for valves. 4,534,379, Cl. 137-385.000.
Burkert GmbH: *See—*
Dettmann, Heinrich, 4,534,539, Cl. 251-65.000.
Burlington Industries, Inc.: *See—*
Bruner, Jeffrey W.; Davis, Delbert A.; and Leach, Jack, 4,535,015, Cl. 428-44.000.
Burmeister, Gerhard: *See—*
Behre, Horst; Blank, Heinz U.; Burmeister, Gerhard; and Lindner, Otto, 4,534,905, Cl. 260-505.00C.
Burnand, Richard P.: *See—*
Phaal, Cornelius; Pipkin, Noel J.; and Burnand, Richard P., 4,534,773, Cl. 51-293.000.
Burnham, Robert E., to BPA Calscan, Inc. Photodosimeter. 4,535,244, Cl. 250-372.000.
Burrell, Leo L. String musical instrument. 4,534,260, Cl. 84-293.000.
Burroughs Corporation: *See—*
Kuznetzoff, Philip, 4,534,744, Cl. 445-47.000.
Burroughs Wellcome Co.: *See—*
Kneen, Geoffrey, 4,535,183, Cl. 514-568.000.
Bury, John E., to Grafton Limited. Drive mechanisms for inked ribbon cassettes. 4,534,667, Cl. 400-207.000.
Bush, Thomas J.; Dellinger, Charles L.; and Fregeolle, Gerald P., to Hunt Manufacturing Co. Scissors. 4,534,109, Cl. 30-260.000.
Bussiere, Jean F.: *See—*
Nadeau, Francois; Bussiere, Jean F.; and Vaudreuil, Ghislain, 4,534,219, Cl. 73-587.000.
Butler, David O. Unitary cable closure. 4,535,197, Cl. 174-41.000.
Butler, Ernest P.: *See—*
Field, David J.; Butler, Ernest P.; and Bassett, Katherine-Ann, 4,534,807, Cl. 148-20.300.
Buzzard, Clair A.; and Mina, Kent V., to AT&T Information Systems Inc. Multifrequency tone distribution using a conferencing arrangement. 4,535,454, Cl. 370-110.200.
BWG Bergwerk - und Walzwerk-Maschinenbau GmbH: *See—*
Noe, Oskar; Noe, Andreas; and Noe, Rolf, 4,534,198, Cl. 72-201.000.
Byk Gulden Lomberg Chemische Fabrik GmbH: *See—*
Terry, Erwin N., 4,535,082, Cl. 514-264.000.
C. Conradty Nurnberg GmbH & Co., KG: *See—*
Zollner, Dieter H.; Zollner, Christine; Schieber, Franz; Lauterbach-Dammler, Inge; and Koziol, Konrad, 4,534,836, Cl. 204-67.000.
Cabus, Marcello M.; Howard, Billy D.; Colt, James W.; and Tuft, Edward S., to Sun-Flo International, Inc. Solar-assisted mobile food dehydrator. 4,534,118, Cl. 34-34.000.
Cachat, John F.: *See—*
Sheetz, Richard S.; and Cachat, John F., 4,535,212, Cl. 219-10.770.
Cadars, Patrick, to Societe Anonyme Francaise Du Ferodo. Tubular heat exchanger and helical agitators for use with such exchangers. 4,534,409, Cl. 165-109.00T.
Cade, Paul E., to International Business Machines Corporation. Laser process for forming identically positioned alignment marks on the opposite sides of a semiconductor wafer. 4,534,804, Cl. 148-1.500.
Calgene, Inc.: *See—*
Comai, Luca, 4,535,060, Cl. 435-172.300.
California Institute of Technology: *See—*
Rembaum, Alan; and Yen, Richard C. K., 4,534,996, Cl. 427-44.000.
California R&D Center: *See—*
Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., 4,534,745, Cl. 446-398.000.
Callicott, Robert H.: *See—*
Iding, Stephen H.; and Callicott, Robert H., 4,534,879, Cl. 252-174.000.
Calvert, Colin; and Cox-Smith, Peter, to Hoccum Developments Limited. Centrifuges. 4,534,755, Cl. 494-37.000.
Camco, Incorporated: *See—*
Pringle, Ronald E., 4,534,414, Cl. 166-317.000.
Camp International, Inc.: *See—*
Bart, Gordon B.; Hiemstra, Carol L.; and Tyo, James H., 4,534,341, Cl. 128-75.000.
Campbell Soup Company: *See—*
Wu, Lung-chi; and Bretzloff, Carl W., 4,534,781, Cl. 71-5.000.
Canadian Patents & Development Limited: *See—*
van Eyken, Lawrence A. J.; and Perlin, Semion, 4,534,527, Cl. 246-445.000.
Canadian Ursus Rubber Limited: *See—*
Bonetta, Angelo A.; and Galiotto, Bruno R., 4,534,365, Cl. 128-779.000.
Canet, Roland; Delhaes, Pierre; Dupart, Eliane; Pacault, Adolphe; Pascal, Claude; and Manceau, Jean-Pierre, to Commissariat a l'Energie Atomique. Piezoresistive gauge formed by an electrically conductive organic compound. 4,535,317, Cl. 338-36.000.
Cangialosi, Arthur D., to United States of America, Navy. Gyro sensor block suspension. 4,534,648, Cl. 356-350.000.
Cannady, John P., to Dow Corning Corporation. Silicon nitride-containing ceramics. 4,535,007, Cl. 427-226.000.
Canon Kabushiki Kaisha: *See—*
Hirohata, Michio; and Ikari, Hideo, 4,534,638, Cl. 354-418.000.
Inoue, Sukejiro; Sasakawa, Masumi; Fukumoto, Hiroshi; and Doi, Shinji, 4,535,048, Cl. 430-110.000.
Ishikawa, Shozo; Toma, Hitoshi; and Sumino, Fumio, 4,535,043, Cl. 430-58.000.
Ito, Tadashi; Isobe, Yasuo; Ito, Fumio; and Nakamoto, Soichi, 4,534,640, Cl. 354-448.000.
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.
Konishi, Yuichiro; Tsunekawa, Tokuichi; and Someya, Hiromi, 4,534,639, Cl. 354-432.000.
Noda, Atsushi, 4,535,344, Cl. 346-139.00D.
Ohara, Tsunemasa; Suzuki, Masayuki; and Yamamichi, Masayoshi, 4,534,633, Cl. 354-237.000.
Suzuki, Takashi; Matsumura, Susumu; and Ohtaka, Keiji, 4,534,637, Cl. 354-403.000.
Toda, Katuhiko; and Sugiura, Susumu, 4,534,624, Cl. 350-429.000.
Cape Cod Research: *See—*
Walsh, Myles A., 4,534,317, Cl. 119-51.00R.
Capriotti, Luigi: *See—*
Massarelli, Liberto; and Capriotti, Luigi, 4,535,438, Cl. 369-264.000.
Cardiff, Raymond S. Air directing apparatus. 4,534,279, Cl. 98-40.180.
Carey, Richard A.; and Falk, Jerry, to Honeywell Information Systems, Inc. Bus arbitration logic. 4,535,330, Cl. 340-825.500.
Carlin, James W., to AT&T Bell Laboratories. Offset geometry, interference canceling receiver. 4,535,476, Cl. 455-63.000.
Carlin, John A.: *See—*
Bigelow, Stephen L.; and Carlin, John A., 4,534,557, Cl. 273-55.00A.
Carlson, Ronald F., to General Dynamics Corporation/Convair Div. Hand airfeed powertool. 4,534,682, Cl. 408-14.000.
Carlstrom, Elis; Johnsson, Agneta I.; and Hermansson, Leif A. G. Method for removal of organic binding agents from molded bodies. 4,534,936, Cl. 419-36.000.
Caron, Bernard G.: *See—*
Bowen, Terry P.; Caron, Bernard G.; Cooper, Ronald F.; and Glover, Douglas W., 4,534,616, Cl. 350-96.200.
Carosino, Paul J. Shift controller. 4,534,237, Cl. 74-476.000.
Carr, Edward L.: *See—*
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Carr, Frederick: *See—*
White, Claude C.; and Carr, Frederick, 4,534,679, Cl. 405-261.000.
White, Claude C.; and Carr, Frederick, 4,534,680, Cl. 405-261.000.
Carr, Peter; and Rowan, John W., to Energy Development Associates, Inc. Zinc-chloride battery in a chlorine producing/consuming plant. 4,534,833, Cl. 204-128.000.
Carre , Christian; and Guibet, Jean P., to Air Industrie. Installation for injecting a powdery material, particularly an adsorbent material, into a contact column. 4,534,778, Cl. 55-340.000.
Carroll, William F., to Secton Pty. Ltd. Folding door. 4,534,395, Cl. 160-199.000.

Carter, Michael J., to Tocco, Inc. Inductor and method of making same. 4,535,211, Cl. 219-10.49R.
Carter-Wallace, Inc.: *See*—
Kim, Miwon S., 4,534,973, Cl. 514-162.000.
Kim, Miwon S., 4,534,974, Cl. 514-161.000.
CasChem, Inc.: *See*—
Brauer, Melvin; and Simone, Dominic, 4,535,142, Cl. 528-75.000.
Casino Technology: *See*—
Glinka, John; and Fish, Leonard A., 4,534,373, Cl. 133-5.00R.
Casio Computer Co., Ltd.: *See*—
Mitarai, Tsuyoshi, 4,534,257, Cl. 84-1.030.
Cassella Aktiengesellschaft: *See*—
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, 4,535,031, Cl. 428-481.000.
Cassidenti, Michael L., to Rockwell International Corporation. Metalworking tool using electrical heating. 4,535,216, Cl. 219-68.000.
Castaldi, Graziano; and Giordano, Claudio, to Zambon S.p.A. Process for preparing alpha-arylalkanoic acids. 4,535,166, Cl. 548-204.000.
Castleman, Bruce W.; McQuire, David P.; and Szonntagh, Eugene L., to Honeywell Inc. Gas separation apparatus. 4,534,777, Cl. 55-181.000.
Caterpillar Tractor Co.: *See*—
Grawey, Charles E., 4,534,394, Cl. 152-396.000.
Mitchell, Randall M., 4,534,707, Cl. 417-34.000.
Cattani, Alberto, to COMAU S.p.A. Device for locating and locking a work holding pallet on a machine tool fixture. 4,534,546, Cl. 269-58.000.
Caus, Frans, to Tate & Lyle Public Limited Company. Measuring the draft of a vessel. 4,534,217, Cl. 73-178.00R.
Cazinha, John R.: *See*—
Wilger, John F.; Nakano, Gregory S.; Orillo, Stephen, Jr.; and Cazinha, John R., 4,534,135, Cl. 51-241.00S.
Cederquist, Alf L., to Ford Motor Company. Drivetrain torque determination using torque converter characteristics. 4,535,412, Cl. 364-511.000.
Cedrone, Nicholas J.; and Lee, Kenneth R., to Daymarc Corporation. Symmetrical, single point drive for contacts of an integrated circuit tester. 4,534,605, Cl. 339-75.00M.
Cegedur Societe de Transformation de L'Aluminium Pechiney: *See*—
Meunier, Jean; and Salesse, Marc, 4,534,937, Cl. 419-42.000.
Cegielski, John M., Jr.: *See*—
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Celanese Corporation: *See*—
Choe, Eui W.; and Conciatori, Anthony B., 4,535,144, Cl. 528,207.000.
Hsieh, Jih-Han; Barer, Sol J.; and Maxwell, Peter C., 4,535,059, Cl. 435-142.000.
Hunter, Joe M., 4,535,150, Cl. 528-489.000.
McAliley, J. Eugene; Daumit, Gene P.; and Ethridge, Fredrick A., 4,534,919, Cl. 264-29.200.
Celette, Germain, to Celette S.A. Apparatus for mounting an automobile body on a checking frame. 4,534,200, Cl. 72-305.000.
Celette S.A.: *See*—
Celette, Germain, 4,534,200, Cl. 72-305.000.
Cemin, Hans, to Societe d'Etudes et Installations Industrielles CNUD S.A. Apparatus for heat treatment of objects by convection. 4,534,780, Cl. 65-348.000.
Centre de Recherche Industrielle du Quebec: *See*—
Barbulescu, Adrian; Boulet, Rodrique; and Lessard, Denis, 4,534,868, Cl. 210-780.000.
Centre National de la Recherche Scientifique (CNRS): *See*—
Arnal, Yves; Pelletier, Jacques; and Pomot, Claude, 4,534,842, Cl. 204-192.00E.
Cerami, Anthony; Pongor, Sandor; and Brownlee, Michael, to Rockefeller University, The. Process for sulphation and phosphorylation of proteins and peptides. 4,534,894, Cl. 260-112.700.
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Wichterle, Otto, 4,534,916, Cl. 264-2.100.
Chakrabarty, Ananda M.; and Kellogg, Scott T., to University of Illinois Foundation. Bacteria capable of dissimilation of environmentally persistent chemical compounds. 4,535,061, Cl. 435-253.000.
Chamberlain Manufacturing Corporation: *See*—
Twardowski, Joseph W., 4,535,333, Cl. 340-825.690.
Champigny, Lucien. Foldable ladder scaffold. 4,534,447, Cl. 182-152.000.
Champion International Corporation: *See*—
Locke, Frank W., 4,534,504, Cl. 229-15.000.
Chan, C. S.: *See*—
Wright, Conrad L.; Bearrs, James G.; Chan, C. S.; Hay, Robert R.; and Ura, Frank, 4,535,343, Cl. 346-140.00R.
Chan, Wan-Kit: *See*—
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Chang, Wen-Hsuan: *See*—
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., 4,535,132, Cl. 525-443.000.
Chapin, Richard D. Drip irrigation system employing adjacently arranged flow-restricting passages. 4,534,515, Cl. 239-542.000.
Charbonnages de France: *See*—
Courbon, Paul, 4,534,230, Cl. 73-863.230.
Charles, Douglas K.: *See*—
Ambrose, John; Charles, Douglas K.; Conard, Bruce R.; Diaz, Carlos; O'Neill, Charles E.; and Leavoy, Wayne P., 4,534,935, Cl. 419-23.000.
Chavkin, Leonard, to Warren Glen Products, Inc. Mentholated oral composition. 4,534,960, Cl. 424-49.000.
Chee, Wan T., to Boeing Company, The. Inlet cowl attachment for jet engine. 4,534,167, Cl. 60-226.100.
Chemap AG: *See*—
Muller, Hans, 4,535,062, Cl. 435-289.000.
Chen, Lee; Hendricks, Charles J.; Mathad, Gangadhara S.; and Poloncic, Stanley J., to International Business Machines Corporation. Single wafer plasma etch reactor. 4,534,816, Cl. 156-345.000.
Chen, Pau-Ling, to Advanced Micro Devices, Inc. Process for forming isolation slots having immunity to surface inversion. 4,534,824, Cl. 156-628.000.
Chesebrough-Pond's Inc.: *See*—
Gordon, Philip J., 4,534,963, Cl. 424-69.000.
Chevron Research Company: *See*—
Brown, Lewis R.; and Brown-Skrobot, Susan, 4,534,965, Cl. 424-93.000.
Loh, William, 4,534,785, Cl. 71-88.000.
Luo, Tatao; Russo, Louis; and Freenor, Francis J., III, 4,534,786, Cl. 71-88.000.
Rosenbaum, John M., 4,534,955, Cl. 423-573.00R.
Spatz, David M., 4,535,087, Cl. 514-352.000.
Chew, Nigel G.: *See*—
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Chiba, Tadatoshi: *See*—
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Chinoin, Gyogyszer Es Vegyeszeti Termekek Gyara Rt.: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zsadon, Bela; Szilasi, Maria; and Decsei, Lajos, 4,535,152, Cl. 536-103.000.
Chisso Corporation: *See*—
Shimizu, Hiroshi; Abe, Masaki; and Sato, Akihiro, 4,535,069, Cl. 502-115.000.
Sugimori, Shigeru; Kojima, Tetsuhiko; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,534,883, Cl. 252-299.630.
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Brieu, Francois M. P., 4,535,230, Cl. 219-470.000.
Cho, Alfred Y.; Glance, Bernard; Lubzens, Daniel; and Schneider, Martin V., to AT&T Bell Laboratories. Method of making self-aligned metal gate field effect transistors. 4,534,103, Cl. 29-571.000.
Cho, Hyun S., to General Electric Company. Axial sweep-through process for preparing diamond wire die compacts. 4,534,934, Cl. 419-6.000.
Choe, Eui W.; and Conciatori, Anthony B., to Celanese Corporation. Synthesis of high molecular weight polybenzimidazole with arylhalo phosphorus compound catalyst. 4,535,144, Cl. 528-207.000.
Chow, Ho; and Goodman, Sidney J., to Melnor Industries, Inc. Fluid dispenser. 4,534,512, Cl. 239-394.000.
Christensen, Burton G.: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.
Christian, James E., III. Hub for geodesic dome construction. 4,534,672, Cl. 403-172.000.
Christian Miesen Fahrzeug-Und Karosseriewerk GmbH: *See*—
Schnitzler, Alois, 4,534,075, Cl. 5-82.00R.
Churyo Engineering Co., Ltd.: *See*—
Watabe, Shin; and Shibata, Hideto, 4,534,410, Cl. 165-126.000.
Ciba-Geigy Corporation: *See*—
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Steinberg, David H.; Seltzer, Raymond; Luzzi, John J.; and Cortolano, Frank P., 4,534,874, Cl. 252-51.50A.
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Cincinnati Electronics Corporation: *See*—
Stepp, Elvin D.; and Claypoole, Gary L., 4,535,461, Cl. 375-110.000.
Ciupak, Leonard A.: *See*—
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CKD Controls Limited: *See*—
Tsukamoto, Kou; and Hirate, Masatoshi, 4,535,261, Cl. 310-78.000.
Clark, Gary G. Automotive friction reducing composition. 4,534,873, Cl. 252-32.70E.
Claudepierre, Christian: *See*—
Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, 4,535,205, Cl. 179-110.00A.
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Clayson, Arthur E.: *See*—
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Clayton, John P., to Beecham Group Limited. Pharmaceutical compositions. 4,534,968, Cl. 424-114.000.
Cleary, Michael T., to UOP Inc. Process for separating fatty acids from unsaponifiables. 4,534,900, Cl. 260-428.500.
Clement, Maurice C., to Crepaco, Inc. Blending and emulsifying apparatus. 4,534,657, Cl. 366-265.000.
Clerget, Michel; Germain, Francois; Kryze, Jiri; and Poujois, Robert, to INRIA Institut National de Recherche en Informatique et en Au-

tomatique. Device for the determination of the position of points on the surface of a body. 4,534,650, Cl. 356-376.000.
Clifford, Albert F. Apparatus for applying chemicals to textiles. 4,534,189, Cl. 68-5.00D.
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, to General Tire & Rubber Company, The. In-mold coating. 4,534,888, Cl. 252-511.000.
Cochrane, Douglas A., Jr.; and Styer, Fred W., to Cochrane Subsea Acoustics, Inc. Subsea acoustic relocation system. 4,535,430, Cl. 367-133.000.
Cochrane Subsea Acoustics, Inc.: *See—*
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Coe, Jotham W.: *See—*
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Coffman, Allen B.: *See—*
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Cogdill, Ben. Educational toy. 4,534,736, Cl. 434-403.000.
Colby, Lewis J., Jr., to Allied Corporation. Ferromagnetic amorphous metal carrier particles for electrophotographic toners. 4,535,047, Cl. 430-108.000.
Cole, Charles A.: *See—*
Pocock, John F. E.; Cole, Charles A.; Villanueva, James G.; Matlack, John D.; and Lewis, Shelton E., 4,534,995, Cl. 427-38.000.
Coleman Company, Inc., The: *See—*
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Zwick, David J., 4,534,601, Cl. 312-266.000.
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Colliau, Joel D., to Ace Controls, Inc. Reciprocating drill feed control rod holding means. 4,534,683, Cl. 408-17.000.
Collins, Guy R., to Dow Chemical Company, The. Process for the preparation of substituted amino dienes. 4,534,903, Cl. 260-465.50R.
Collins, Ian P.; and Fernie, Douglas P., to Warner-Lambert Technologies, Inc. Endoscope. 4,534,339, Cl. 128-6.000.
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Columbia University in the City of New York, The Trustees of: *See—*
Fox, Charles L., Jr.; and Modak, Shanta M., 4,535,078, Cl. 514-157.000.
Comai, Luca, to Calgene, Inc. Inhibition resistant 5-enolpyruvyl-3-phosphoshikimate synthetase, production and use. 4,535,060, Cl. 435-172.300.
COMAU S.p.A.: *See—*
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Combustion Engineering, Inc.: *See—*
Milberger, Lionel J.; Martin, Jimmy R.; and Mataway, Thomas P., 4,534,583, Cl. 285-24.000.
Comfort, Gloria N. Blanket garment wrap. 4,534,065, Cl. 2-69.500.
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Compagnie Generale de Constructions Telephoniques: *See—*
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Compagnie Generale de Geophysique: *See—*
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Compagnie Industrielle De Mecanismes en abrege C.I.M.: *See—*
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Conard, Bruce R.: *See—*
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Conciatori, Anthony B.: *See—*
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Conley, James R.: *See—*
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Connecticut Artcraft Corp.: *See—*
Viesturs, Eric A.; and Viesturs, Gundar E., 4,534,078, Cl. 5-452.000.
Conoco Inc.: *See—*
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Consay, Joseph A.; and Meier, Douglas R., to Universal Skate Sharpeners Ltd. Ice skate sharpening machine. 4,534,134, Cl. 51-96.000.
Consolidated Papers, Inc.: *See—*
Damrau, Wayne A.; Vreeland, William C.; Bernert, Richard; and Wohrle, Albert, 4,534,309, Cl. 118-410.000.
Consonni, Pietro: *See—*
Galliani, Giulio; Omodei-Sale, Amedeo; Consonni, Pietro; and Assandri, Alessandro, 4,535,090, Cl. 514-383.000.
Constance-Hughes, Trevor, to Siebe Gorman & Company Limited. Breathing apparatus and facemasks therefor. 4,534,344, Cl. 128-201.150.
Container Corporation of America: *See—*
Montealegre, James W., 4,534,505, Cl. 229-33.000.
Conti, Vincent N., to American Safety Closure Corp. Tamper evident container closure. 4,534,479, Cl. 215-252.000.
Continental Gummi-Werke Aktiengesellschaft: *See—*
Fischer, Rolf; and Hermann, Dietmar, 4,534,724, Cl. 425-295.000.
Continental Pharma, Inc.: *See—*
Franz, Michel R.; Vincze, Andreas B.; Lambelin, Georges E.; and Polat, Alain V., 4,534,911, Cl. 514-575.000.
Contraves AG: *See—*
Hanseler, Urs; Meier, Urs; and Muther, Franz, 4,534,472, Cl. 211-41.000.
Cook, John, to BP Chemicals Limited. Preparation of anhydrides. 4,534,912, Cl. 260-549.000.
Cooper, Ronald F.: *See—*
Bowen, Terry P.; Caron, Bernard G.; Cooper, Ronald F.; and Glover, Douglas W., 4,534,616, Cl. 350-96.200.
Corbel, Jean Yves, to LGT, Laboratoire General des Telecommunications. Equipment for the retransmission of television signals in a common channel, with an automatic control of the video/audio ratio. 4,535,361, Cl. 358-184.000.
Cordis Corporation: *See—*
Gold, Philip, 4,534,363, Cl. 128-772.000.
Cordis Europa, N.V.: *See—*
Koning, Gerrit; and Bergveld, Piet, 4,534,825, Cl. 156-644.000.
Corning Glass Works: *See—*
DeAngelis, Thomas P., 4,534,835, Cl. 204-67.000.
Coronado, Hector M. Laminated wood coupling arrangement. 4,535,019, Cl. 428-106.000.
Cortolano, Frank P.: *See—*
Steinberg, David H.; Seltzer, Raymond; Luzzi, John J.; and Cortolano, Frank P., 4,534,874, Cl. 252-51.50A.
Cosden Technology, Inc.: *See—*
Fortuna, Vincent; and MacLaughlin, Donald, 4,534,751, Cl. 493-108.000.
Cosenza, Frank J., to Rexnord Inc. Fastener of the hold-down type. 4,534,234, Cl. 74-89.150.
Cosme, Peter A. Drawer slide assembly. 4,534,600, Cl. 308-3.600.
Coue, Maurice E. L., to Huret et ses Fils. Lever and collar unit in particular for a cycle. 4,534,238, Cl. 74-489.000.
Coulter Electronics, Inc.: *See—*
Groves, Michael R.; and Rodriguez, Carlos M., 4,535,284, Cl. 324-71.100.
Rothermel, William F.; Matthews, John P.; Walker, James W.; and Coulter, Wallace H., 4,534,465, Cl. 206-443.000.
Coulter, Wallace H.: *See—*
Rothermel, William F.; Matthews, John P.; Walker, James W.; and Coulter, Wallace H., 4,534,465, Cl. 206-443.000.
Courbon, Paul, to Charbonnages de France. Individual portable dust collector. 4,534,230, Cl. 73-863.230.
Courtay, Robert Y., to Fuller Company. Blender for powdery material. 4,534,653, Cl. 366-106.000.
Courtney, David T.: *See—*
McCabe, Bernard J.; and Courtney, David T., 4,534,717, Cl. 418-181.000.
Courty, Philippe; Roussel, Michel; Varin, Philippe; Le Page, Jean-Francois; and Leporq, Serge, to Institut Francais du Petrole. Catalyst containing iron, chromium, potassium and lanthanum oxides, its manufacture and use in dehydrogenation reactions. 4,535,067, Cl. 502-84.000.
Covill, Dennis H., to Nautical Electronics Laboratories Limited. Driver circuit. 4,535,298, Cl. 330-189.000.
Cox, Edward A., to Wilton Corporation. Rapid acting C-clamp. 4,534,547, Cl. 269-182.000.
Cox, Ron; and Pettovello, Elzi. Wire drive mechanism. 4,534,499, Cl. 226-184.000.
Cox-Smith, Peter: *See—*
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Craig Medical Products Limited: *See—*
Steer, Peter L.; and Edwards, John V., 4,534,766, Cl. 604-323.000.
Crane & Co.: *See—*
Crane, Timothy T., 4,534,398, Cl. 162-103.000.
Crane, Timothy T., to Crane & Co. Security paper. 4,534,398, Cl. 162-103.000.
Cray Research, Inc.: *See—*
August, Melvin C.; and Williams, John T., 4,535,385, Cl. 361-388.000.
Cremers, Norbert J.: *See—*
Adams, Dennis V.; Cremers, Norbert J.; and Henry, Raymond L., 4,534,958, Cl. 424-45.000.
Crepaco, Inc.: *See—*
Clement, Maurice C., 4,534,657, Cl. 366-265.000.
Cristell, Frank A., to Donahue, Robert H. Duct molding and cable mounting clips. 4,534,147, Cl. 52-287.000.
Crivello, James V., to General Electric Company. Free-radical initiators and method for making. 4,535,174, Cl. 556-443.000.
Cros, Pierre, to Promecam Sisson-Lehmann. Adapter device for mounting punches on a bending press. 4,534,203, Cl. 72-481.000.
Crosbie, Richard J.; and Edwards, Paul R., to United States of America, Navy. Servo operated anti-G suit pressurization system. 4,534,338, Cl. 128-1.00A.
Crown Zellerbach Corporation: *See—*
Steen, Conrad, 4,534,399, Cl. 162-212.000.
Csanky, Peter H.: *See—*
Arn, Robert M.; Csanky, Peter H.; and Waszek, Glen F., 4,535,355, Cl. 358-123.000.
Csaszar, Szilveszter: *See—*
Rusznak, Istvan; Trezl, Lajos; Foldesi, Dezso ; Szabo, Bela; Bodi, Imre; Csaszar, Szilveszter; Szopko, Mihaly; Gombar, Mihaly; Kovacs, Gabriella; and Tyihak, Erno , 4,534,782, Cl. 71-21.000.

Csokmay, John M.: *See—*
Blackburn, Bobby J.; and Csokmay, John M., 4,535,411, Cl. 364-508.000.

Cuff, Richard A.; and Hoffman, Paul R., to Tyler Griffin Company. Playing card coding system and apparatus for dealing coded cards. 4,534,562, Cl. 273-149.00P.

Cuhel, Leon L., to FMC Corporation. Hydraulic disk brake circuit for crane draw works. 4,534,598, Cl. 303-10.000.

Culligan International Company: *See—*
Kreusch, Edward G.; and Brodzik, Bruce F., 4,534,867, Cl. 210-722.000.

Cullis, Anthony G.; Webber, Hugh C.; and Chew, Nigel G., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Integrated circuits. 4,535,220, Cl. 219-121.0LM.

Currie, Bruce L.: *See—*
Krstenansky, John L.; and Currie, Bruce L., 4,535,169, Cl. 548-453.000.

Curtis, Richard D.; and Conley, James R., to Coleman Company, Inc., The. Folding reflector for a lantern. 4,535,390, Cl. 362-179.000.

Cuscurida, Michael; and Waddill, Harold G., to Texaco Inc. Polyether polyols modified with epoxy resin-diamine adducts. 4,535,133, Cl. 525-504.000.

Cuscurida, Michael, to Texaco Inc. Polyol purification process. 4,535,189, Cl. 568-620.000.

Cutler, Earl F., to Cutler Repaving, Inc. Dual-lift repaving machine. 4,534,674, Cl. 404-75.000.

Cutler Repaving, Inc.: *See—*
Cutler, Earl F., 4,534,674, Cl. 404-75.000.

Dada, Abdul G.: *See—*
Sakash, George; Grier, Robert K., Jr.; Stern, Hansjoerg; Dada, Abdul G.; and McKeel, Daniel W., 4,534,301, Cl. 110-255.000.

Daido Steel Company Limited: *See—*
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Daiichi Seiyaku Co., Ltd.: *See—*
Hayakawa, Isao, 4,535,161, Cl. 546-94.000.

Daimaru, Akimasa: *See—*
Ban, Keisuke; and Daimaru, Akimasa, 4,534,400, Cl. 164-97.000.

Daimler-Benz Aktiengesellschaft: *See—*
Eltze, Georg; Luttge, Klaus; Pickard, Jurgen; Rubmann, Hans; and Sandner, Helmut, 4,534,457, Cl. 192-70.200.

Dainippon Screen Seizo Kabushiki Kaisha: *See—*
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Daiwa Golf Co., Ltd.: *See—*
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Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, to Hoechst Aktiengesellschaft. Process for making alkali metal polyphosphates. 4,534,946, Cl. 423-315.000.

Damrau, Wayne A.; Vreeland, William C.; Bernert, Richard; and Wohrle, Albert, to Consolidated Papers, Inc.; and J. M. Voith GmbH. Paper coating apparatus. 4,534,309, Cl. 118-410.000.

Dana Corporation: *See—*
Belter, Jerome G., 4,534,572, Cl. 277-235.00B.

Danfoss A/S: *See—*
Harvest, Nils-Ole; and Melamed, Anna, 4,535,280, Cl. 318-798.000.

Daniels, Edward P.: *See—*
Dlugos, Daniel F.; and Daniels, Edward P., 4,535,419, Cl. 364-900.000.

Danko, Arthur J., to Phillips Plastics Corporation. Support assembly and apparatus using same. 4,534,530, Cl. 248-239.000.

Data, Harry L.: *See—*
Riggs, Peter P.; Data, Harry L.; and Hoganson, Robert B., Jr., 4,534,162, Cl. 57-217.000.

Daumit, Gene P.: *See—*
McAliley, J. Eugene; Daumit, Gene P.; and Ethridge, Fredrick A., 4,534,919, Cl. 264-29.200.

Davis, Delbert A.: *See—*
Bruner, Jeffrey W.; Davis, Delbert A.; and Leach, Jack, 4,535,015, Cl. 428-44.000.

Davis, James E., to Lenzar Optics Corporation. Adapter for boresight telescope. 4,534,116, Cl. 33-234.000.

Davis, James W.; Leininger, Joel C.; Munoz-Bustamante, Carlos; and Robbins, Gordon J., to International Business Machines Corporation. Switch logic for shift register latch pair. 4,535,467, Cl. 377-81.000.

Davis, L. Berkley, Jr.; Hilt, Milton B.; and Wilkes, Colin, to General Electric Co. Catalytic combustion system. 4,534,165, Cl. 60-39.020.

Day, Gene F.: *See—*
Wilcox, Jean K.; and Day, Gene F., 4,535,345, Cl. 346-159.000.

Day, San-Tong. Fully automatic single push button type umbrella. 4,534,374, Cl. 135-22.000.

Dayco Corporation: *See—*
Howerton, Anderson W.; and Lewis, James A., 4,534,437, Cl. 180-185.000.

Daymarc Corporation: *See—*
Cedrone, Nicholas J.; and Lee, Kenneth R., 4,534,605, Cl. 339-75.00M.

De Dietrich & Cie: *See—*
Logel, Bernard; and Koehl, Robert, 4,535,226, Cl. 219-400.000.

DeAngelis, Thomas P., to Corning Glass Works. Electrolytic Al production with reaction sintered multiphase ceramic. 4,534,835, Cl. 204-67.000.

Dearden, Katryna J.: *See—*
Atkinson, Alan W.; Dearden, Katryna J.; and Lancaster, Janet M., 4,534,922, Cl. 264-119.000.

DeBlauwe Lier B.V.: *See—*
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de Bruyn, Hendrik E., to Stichting Steunfonds Laboratorium voor Werkplaatstechnieck en Organisatie van de Technische Hogeschool Delft. Method for the prevention of arcing in a spark erosion process. 4,535,217, Cl. 219-69.00M.

de Bruyne, Norman A., to Techne Corporation. Floating magnetic stirrer with driving guide rod. 4,534,656, Cl. 366-247.000.

Decsei, Lajos: *See—*
Szejtli, Jozsef; Fenyvesi, Eva; Zsadon, Bela; Szilasi, Maria; and Decsei, Lajos, 4,535,152, Cl. 536-103.000.

Defontaine S.A.: *See—*
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Degen, Peter J.: *See—*
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Degtev, Evgeny I.: *See—*
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Heyne, Carl J.; and Deis, Daniel W., 4,534,263, Cl. 89-8.000.

De Jonckheere, Raphael; and Dussaud, Jacques, to Boussac Saint Freres B.S.F. Diaper. 4,534,769, Cl. 604-369.000.

Deland, Francois. Water cooler bottle closure. 4,534,484, Cl. 215-307.000.

de Leur, Eric J. A.; and Heijenga, Berend. Accessory for counteracting the consequences of vesical incontinence with males. 4,534,353, Cl. 128-346.000.

Delhaes, Pierre: *See—*
Canet, Roland; Delhaes, Pierre; Dupart, Eliane; Pacault, Adolphe; Pascal, Claude; and Manceau, Jean-Pierre, 4,535,317, Cl. 338-36.000.

Dellinger, Charles L.: *See—*
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de Lorenzo, Mark X.; Hoffpauir, Charles R.; Hutchins, Johnnie R.; Meyer, Timmy R.; Page, John E.; and Poehl, Michael E., to Standard Oil Company (Indiana). Method and apparatus for controlling the discharge of product from vapor phase polymerization of monomers in a horizontal stirred-bed reactor. 4,535,134, Cl. 526-88.000.

De Luca, Paul V.; and Neuwirth, Helmuth, to Porta Systems Corp. Telephone protector module with auxiliary fusible element. 4,535,379, Cl. 361-124.000.

DeMarco, Ronald A.: *See—*
Kovacina, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,535,011, Cl. 427-255.600.

Dengen Automatic Co. Ltd.: *See—*
Okuno, Toshinori; and Nakamura, Hiroshi, 4,534,561, Cl. 273-149.00R.

Denny Bros. Printing: *See—*
Howard, Robin G., 4,534,582, Cl. 283-81.000.

Desjardins, Yvon. Sandblaster. 4,534,139, Cl. 51-438.000.

DeSoto, Inc.: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,535,122, Cl. 524-809.000.

Dettmann, Heinrich, to Burkert GmbH. Pulsed magnetic valve assembly. 4,534,539, Cl. 251-65.000.

Dettmers, Michael: *See—*
Weirich, Walter; and Dettmers, Michael, 4,534,681, Cl. 405-294.000.

Deutsche Babcock Werke Aktiengesellschaft: *See—*
Buchmuller, Horst; and Michelbrink, Bernhard, 4,534,299, Cl. 110-165.00R.

Deutschmann, Herbert; and Dinger, Hans, to MTU-Motoren-und Turbinen-Union Friedrichshafen GmbH. Valve control for a reciprocating piston internal combustion engine. 4,534,324, Cl. 123-90.220.

De Vries, Jan W., to Isem B.V. Mixing apparatus, having seals which may be satisfactorily cleaned, particularly for the pharmaceutical industry. 4,534,658, Cl. 366-287.000.

de Witte, Paul: *See—*
Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, 4,534,946, Cl. 423-315.000.

Dham, Vinod K.; Honnigford, Edward H.; Stewart, John K., Jr.; Pfeifer, Robert F.; and Trudel, Murray L., to NCR Corporation. Mixed dielectric process and nonvolatile memory device fabricated thereby. 4,534,104, Cl. 29-571.000.

Dhein, Rolf: *See—*
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Dhein, Rolf, 4,535,149, Cl. 528-388.000.

Diafloc Co., Ltd.: *See—*
Handa, Ryoji; Hosoda, Jun; and Yoshida, Norimasa, 4,535,131, Cl. 525-369.000.

Diamond Shamrock Chemicals Company: *See—*
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Diaz, Carlos: *See—*
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Diaz, Paul T.: *See—*
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Dickey-john Corporation: *See—*
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DiDomenico, Edward D.: *See—*
Gladfelter, Elizabeth J.; Rogier, Edgar R.; and DiDomenico, Edward D., 4,535,148, Cl. 528-365.000.
Diehl GmbH & Co.: *See—*
von Laar, Klaus; Heberlein, Werner; and Burda, Josef, 4,534,294, Cl. 102-520.000.
Weber, Adolf; Strauss, Hans; and Pauly, Hans, 4,534,292, Cl. 102-241.000.
Diener, Lawrence R.: *See—*
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Dietrich, Anton: *See—*
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Dietz, Dennis R.: *See—*
Fife, Michael J.; Diaz, Paul T.; and Dietz, Dennis R., 4,534,221, Cl. 73-626.000.
Dietz, Gunter; and Flagmeyer, Friedhelm, to Gebr. Happich GmbH. Actuating knob, particularly for window cranks of automotive vehicles. 4,534,240, Cl. 74-545.000.
Digital Equipment Corporation: *See—*
Abraham, Menachem, 4,535,233, Cl. 250-214.00A.
Digital Recording Research Limited Partnership: *See—*
Weaver, Charles S., 4,535,320, Cl. 340-347.0DD.
Dilling, Peter, to Westvaco Corporation. Selective crosslinking of low molecular weight sulfonated lignins and lignosulfate products produced thereby. 4,534,771, Cl. 8-524.000.
Dillon, Michael A.; and Rawlings, David L., to International Hydron Corporation. Cutting device for the precision trimming of the edge of a centrifugally cast lens. 4,534,723, Cl. 425-289.000.
Dinger, Hans: *See—*
Deutschmann, Herbert; and Dinger, Hans, 4,534,324, Cl. 123-90.220.
Di Pardo, Robert M.; and Bock, Mark G., to Merck & Co., Inc. Process for preparing certain substituted 4-thiazolidinones. 4,535,164, Cl. 548-187.000.
Dippel, Theodor; and Loida, Andreas, to Kernforschungszentrum Karlsruhe GmbH. Method for solidifying radioactive wastes. 4,534,893, Cl. 252-629.000.
Dirkse, Franciscus J.; and Kulberg, Gerardus H., deceased (by Kulberg-Nierstrasz, Julia F., heiress), to Siemens Gammasonics, Inc. Method and a circuit for processing pulses of a pulse train. 4,535,242, Cl. 250-363.00S.
Discovision Associates: *See—*
Pullen, Alan J., 4,535,366, Cl. 358-342.000.
Dlugos, Daniel F.; and Daniels, Edward P., to Pitney Bowes Inc. System and method for computing fractional postage values. 4,535,419, Cl. 364-900.000.
Doble, Henry P., Jr.: *See—*
Nuckols, Walter S.; Leonard, Walter G.; and Doble, Henry P., Jr., 4,534,468, Cl. 206-534.000.
Dr. Ing. h.c.F. Porsche AG: *See—*
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Dr. Ing. h.c.F. Porsche A.G.: *See—*
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Doerner, Frank. Cover for chair leg. 4,534,533, Cl. 248-345.100.
Doi, Shinji: *See—*
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Doiron, Laurea, Jr., to Emtek, Inc. Arrangement and method for current density control in electroplating. 4,534,832, Cl. 204-15.000.
Dolan, John P.: *See—*
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Gerbert, Goran, 4,534,748, Cl. 474-17.000.
Dolnik, Thomas G.: *See—*
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Dolphin Titan International, Inc.: *See—*
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Doman, H. Michael: *See—*
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Donahue, Robert H.: *See—*
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D'Onofrio, Anthony; and Kitik, Walter, to Timex Corporation. Process for making an electroluminescent lamp. 4,534,743, Cl. 445-24.000.
Dorner, Steven C. Shelf bracket and cooperable locking bracket retainer. 4,534,529, Cl. 248-222.100.
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, to Cassella Aktiengesellschaft. Modified aminoplast, its preparation and its use. 4,535,031, Cl. 428-481.000.
Doryokuro Kakunenryo Kaihatsu Jigyodan: *See—*
Kanbe, Mitsuru, 4,534,712, Cl. 417-366.000.
Dotson, Ronald L.: *See—*
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., 4,534,846, Cl. 204-290.00R.
Douglas, Ellwood S.: *See—*
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Dourdeville, Theodore A.; and Lymneos, Anthony, to Millipore Corporation. Passive fluid mixing system. 4,534,659, Cl. 366-338.000.
Dovan, Hoai T.; and Hutchins, Richard D., to Union Oil Company of California. Continuous permeability reduction in subterranean reservoirs. 4,534,412, Cl. 166-295.000.
Dow Chemical Company, The: *See—*
Collins, Guy R., 4,534,903, Cl. 260-465.50R.
Evani, Syamalarao; Oswald, James H.; Staples, Thomas L.; and Polak, Brent T., 4,535,098, Cl. 521-149.000.
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,535,120, Cl. 524-560.000.
McIntyre, James A.; and Phillips, Robert F., 4,534,845, Cl. 204-283.000.
Park, Chung P.; and Suh, Kyung W., 4,535,094, Cl. 521-79.000.
Phillips, Dorothy J., 4,534,969, Cl. 424-118.000.
Rose, Gene D., 4,534,875, Cl. 252-71.000.
Dow Corning Corporation: *See—*
Baney, Ronald H., 4,534,948, Cl. 423-345.000.
Cannady, John P., 4,535,007, Cl. 427-226.000.
Kosal, Jeffrey A.; and Plueddemann, Edwin P., 4,534,880, Cl. 252-174.130.
Kroupa, Loretta A., 4,535,141, Cl. 528-15.000.
Martin, David L., 4,534,928, Cl. 264-334.000.
Downs, Michael J. Surface profile interferometer. 4,534,649, Cl. 356-351.000.
Dreesman, Gordon R.; and Kendall, Cynthia E., to AMF Incorporated. Immunoassay employing monoclonal herpes simplex antibody and biotin-avidin detection system. 4,535,057, Cl. 435-5.000.
Drefahl, Jens. Roof covering. 4,534,142, Cl. 52-90.000.
Drupsteen, Jan, to U.S. Philips Corporation. Fourth-order digital multiplex system for transmitting a plurality of digital signals at a nominal bit rate of 44 736 kbit/s. 4,535,451, Cl. 370-99.000.
Drzewiecki, Thadeusz M.: *See—*
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Duchemin, Jean-Pierre: *See—*
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Duchemin, Pierre: *See—*
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Ducros, Guy, to Technique et Esthetique pour l'Industrie et la Distribution. Device for decanting a liquid from a recipient. 4,534,377, Cl. 137-212.000.
Dueber, Thomas E.: *See—*
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DuFrene, Clement O., to Rosenmeier, Gordon, a part interest. Control valve apparatus and steering systems. 4,534,436, Cl. 180-144.000.
Dugre, Michael A. Variable color floodlight. 4,535,394, Cl. 362-231.000.
Duijvers, Peter A., to U.S. Philips Corporation. Line synchronizing circuit for a picture display devices and picture display device comprising such a circuit. 4,535,358, Cl. 358-158.000.
Dunk, Michael P.: *See—*
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Dunmire, Howard L.: *See—*
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Du Pont de Nemours, E. I., and Company: *See—*
Adams, John B., Jr., 4,534,788, Cl. 71-92.000.
Anderson, Albert G.; and Dueber, Thomas E., 4,535,052, Cl. 430-277.000.
Forrest, Albert W., Jr., 4,534,918, Cl. 264-22.000.
Middleton, William J., 4,535,184, Cl. 564-102.000.
Reap, James J., 4,534,789, Cl. 71-93.000.
Squire, Edward N., 4,535,175, Cl. 549-455.000.
Wheland, Robert C., 4,535,136, Cl. 526-214.000.
Wolf, Anthony D., 4,534,790, Cl. 71-93.000.
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., to Hughes Aircraft Company. Conductive coating process. 4,534,998, Cl. 427-122.000.
Duracell Inc.: *See—*
Kelm, Roger W.; Merry, Glenn W.; and McArthur, William J., 4,535,036, Cl. 429-99.000.
Durkoppwerke GmbH: *See—*
Reinke, Kurt, 4,534,304, Cl. 112-262.100.
Durrnagel, Klaus; Jeschke, Willi; and Jahn, Hans-Georg, to Heidelberger Druckmaschinen AG. Cooling roller with different preselected cooling zones. 4,534,289, Cl. 101-348.000.
Duryee, Peter S.; and Anholm, John M., Jr., to John Fluke Mfg. Co., Inc. Calibration apparatus for systems such as analog to digital converters. 4,535,318, Cl. 340-347.0CC.
Dussaud, Jacques: *See—*
De Jonckheere, Raphael; and Dussaud, Jacques, 4,534,769, Cl. 604-369.000.
Dutt, Herbert V.: *See—*
Santostasi, Paul A.; Dutt, Herbert V.; and Pirkau, Arno F., 4,534,480, Cl. 215-252.000.

Duwel, Edward C.; and Soderberg, John H., to Pitney Bowes Inc. Universal real time transparent asynchronous serial/echoplex converter. 4,535,421, Cl. 364-900.000.

Duwel, Edward C.: *See—*
Eckert, Alton B.; Soderberg, John H.; and Duwel, Edward C., 4,535,407, Cl. 364-464.000.

Dyer, Kermit W.: *See—*
Parks, James D.; Moss, Charles A.; and Dyer, Kermit W., 4,534,281, Cl. 98-115.300.

Dynacycle Corporation: *See—*
Irwin, Everett F., 4,534,272, Cl. 91-493.000.

Dynamics Research Corporation: *See—*
Volpe, Luke; and Thomas, Lowell E., 4,534,814, Cl. 156-300.000.

Dynamit Nobel Aktiengesellschaft: *See—*
Peeters, Hermann; Vogt, Wilhelm; and Theis, Christoph, 4,534,910, Cl. 260-465.600.

E.M.M. s.r.l. Emiliana Macchine Maglierie: *See—*
Stoppazzini, Benito, 4,534,186, Cl. 66-75.200.

E. R. Squibb & Sons, Inc.: *See—*
Natarajan, Sesha I.; and Gordon, Eric M., 4,535,176, Cl. 560-27.000.
Treuner, Uwe D.; and Breuer, Hermann, 4,534,896, Cl. 260-239.00A.

Eagle Industry Co., Ltd.: *See—*
Ishitani, Kenichiro; Unseki, Takashi; Amiboshi, Saburo; and Kawamura, Eiichi, 4,534,569, Cl. 277-27.000.

Eastman Kodak Company: *See—*
Fearnside, William T., 4,535,359, Cl. 358-163.000.
Ksaacson, Henry V.; and Wright, Hal E., 4,535,046, Cl. 430-78.000.

Eaton Corporation: *See—*
Stump, Paul O.; and Taylor, Calvin G., 4,534,695, Cl. 414-749.000.
Zukausky, Keith E., 4,534,537, Cl. 251-30.030.

Ebara Corporation: *See—*
Yasuda, Takashi; Inoue, Naoyuki; and Tanaka, Syouji, 4,534,180, Cl. 62-141.000.

Eberhardt, John E., to Australian Atomic Energy Commission. Measuring the concentration of gaseous hydrogen fluoride. 4,535,241, Cl. 250-339.000.

Eberle, William J., to General Battery Corporation. Automatic battery stacker. 4,534,549, Cl. 271-103.000.

Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Dhein, Rolf, to Bayer Aktiengesellschaft. Process for the production of polyarylene sulphides. 4,535,149, Cl. 528-388.000.

Ebi, Yutaka: *See—*
Horike, Masanori; Furukawa, Tatsuya; Ebi, Yutaka; and Yamazaki, Hiroshi, 4,535,339, Cl. 346-75.000.

Eccleston, Larry, to Progressive Dynamics, Inc. Preamplifying and signal processing method and apparatus for theft detection systems. 4,535,323, Cl. 340-572.000.

Eckert, Alton B.; Soderberg, John H.; and Duwel, Edward C., to Pitney Bowes Inc. Postage meter with keyboard keys for changing postage unused amount. 4,535,407, Cl. 364-464.000.

Eden, Per-Olof: *See—*
Jonsson, Mats; and Eden, Per-Olof, 4,534,231, Cl. 73-864.430.

Edwards Engineering Corporation: *See—*
Edwards, Ray C., 4,534,849, Cl. 208-11.00R.

Edwards, John V.: *See—*
Steer, Peter L.; and Edwards, John V., 4,534,766, Cl. 604-323.000.

Edwards, Paul R.: *See—*
Crosbie, Richard J.; and Edwards, Paul R., 4,534,338, Cl. 128-1.00A.

Edwards, Ray C., to Edwards Engineering Corporation. Method for aboveground separation, vaporization and recovery of oil from oil shale. 4,534,849, Cl. 208-11.00R.

Efamol Limited: *See—*
Horrobin, David F., 4,535,093, Cl. 514-560.000.

Egawa, Takeshi: *See—*
Miki, Yukio; and Egawa, Takeshi, 4,534,621, Cl. 350-257.000.

Eheim, Franz; and Laufer, Helmut, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines with an adjustment of the instant of injection. 4,534,332, Cl. 123-502.000.

Ehrat, Kurt, to GRETAG Aktiengesellschaft. Mechanical lock having a variable key. 4,534,195, Cl. 70-316.000.

Ehret, Robert J.: *See—*
Stephens, Donald E.; and Ehret, Robert J., 4,534,941, Cl. 422-70.000.

Eichelberger, Charles W.: *See—*
Miller, Edward B.; and Eichelberger, Charles W., 4,535,332, Cl. 340-825.060.

Eidson, Lawrence E. Cover plate fastening device. 4,534,486, Cl. 220-241.000.

Eistrat, Thomas. Combined chain saw and positioning tool. 4,534,111, Cl. 30-371.000.

Ekber, Boris Y.: *See—*
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.

Electric Power Research Institute, Inc.: *See—*
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,534,425, Cl. 175-53.000.

Electrical Equipment Limited: *See—*
Khatri, Dilip K., 4,535,254, Cl. 307-38.000.

Electro Materials Corp. of America: *See—*
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,535,012, Cl. 427-386.000.

Eli Lilly & Company: *See—*
Akers, Michael J.; Hargrove, William W.; Harris, Dale C.; and Sperry, Charles R., 4,534,758, Cl. 604-85.000.

Elischer, Stefan; Hobel, Hans-Gunther; Merkt, Robert; and Wagner, Fritz, to SKW Trostberg Aktiengesellschaft. Process for obtaining solid cyanuric chloride in finely divided form. 4,535,160, Cl. 544-191.000.

Elliott, Charles T.; White, Anthony M.; and Field, Howard J., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Method of biasing a photoconductive detector and detector apparatus therefor. 4,535,232, Cl. 250-206.000.

Elliott, Guy R. B. Magnesium reduction of uranium oxide. 4,534,792, Cl. 75-84.10R.

Ellis, Edward J.; and Salamone, Joseph C., to Polymer Technology Corporation. Abrasive-containing contact lens cleaning materials. 4,534,878, Cl. 252-173.000.

Elsmo, Thad F. Tray assembly. 4,534,469, Cl. 206-560.000.

Eltech Innovations Inc.: *See—*
Larson, Eldon E., 4,534,449, Cl. 184-105.200.

Eltech Systems Corporation: *See—*
McCain, G. Howard; Benezra, Leo L.; and Finch, Craig E., 4,535,112, Cl. 524-233.000.

Eltze, Georg; Luttge, Klaus; Pickard, Jurgen; Rubmann, Hans; and Sandner, Helmut, to Daimler-Benz Aktiengesellschaft. Multi-disc clutch or brake with a resilient clamping means insertable between a lamella and the associated lamella carrier. 4,534,457, Cl. 192-70.200.

Emerson Electric Co.: *See—*
Newberg, Barry M., 4,535,262, Cl. 310-88.000.

Emtek, Inc.: *See—*
Doiron, Laurea, Jr., 4,534,832, Cl. 204-15.000.

Encon Products, Inc.: *See—*
Simpson, Harold G.; and Neyer, Leo E., 4,534,148, Cl. 52-640.000.

Endo, Tamotu, to Tokyo Shibaura Denki Kabushiki Kaisha. Overcurrent detector for an inverter. 4,535,378, Cl. 361-18.000.

Energy Conversion Devices, Inc.: *See—*
Yu, Terry T., 4,535,055, Cl. 430-353.000.

Energy Development Associates, Inc.: *See—*
Carr, Peter; and Rowan, John W., 4,534,833, Cl. 204-128.000.

Engelhard Corporation: *See—*
Novak, William J.; and McClung, Ronald G., 4,534,943, Cl. 422-188.000.
Sweeney, William J., 4,534,315, Cl. 119-1.000.

Engh, Gordon L., to Nekoosa Envelopes, Inc. Product and method for using airline tickets. 4,534,581, Cl. 281-15.00R.

Ensing, Lukas, to Shell Internationale Research Maatschappij B.V. Transmitter for an electromagnetic survey system with improved power supply switching system. 4,535,292, Cl. 324-330.000.

Ensminger, Robert J., to Arthur G. Russell Company, Incorporated, The. Article transfer mechanism. 4,534,696, Cl. 414-751.000.

Environmental Protection Systems, Limited: *See—*
Roydhouse, Richard H., 4,534,944, Cl. 423-210.000.

Epson Corporation: *See—*
Mori, Masahiko; Arai, Kenichiro; and Tezuka, Chikao, 4,534,665, Cl. 400-145.200.

ERCO Industries Limited: *See—*
Rapson, W. Howard; and Fredette, Maurice C. J., 4,534,952, Cl. 423-478.000.

Erfurt, George A.: *See—*
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,534,989, Cl. 426-549.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,534,990, Cl. 426-549.000.

Ericksen, James P.; and Stack, Timothy F., to United Technologies Corporation. Differential receiver with self-adaptive hysteresis. 4,535,294, Cl. 328-150.000.

Erickson, Dale C.; and Erickson, Norton J., to Nordale Incorporated. Evaporator apparatus. 4,534,828, Cl. 159-16.100.

Erickson, Norton J.: *See—*
Erickson, Dale C.; and Erickson, Norton J., 4,534,828, Cl. 159-16.100.

Eslinger, Delano R.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., 4,535,132, Cl. 525-443.000.

Esser, Wilhelm C. J., to AMP Incorporated. Receptacle terminal having locking lance. 4,534,613, Cl. 339-258.00S.

Estlund, Kenneth F.: *See—*
Estlund, Paul D.; and Estlund, Kenneth F., 4,534,556, Cl. 273-1.50R.

Estlund, Paul D.; and Estlund, Kenneth F. Break-away basketball goal. 4,534,556, Cl. 273-1.50R.

ETA S.A., Fabriques d'Ebauches: *See—*
Laesser, Claude, 4,534,660, Cl. 368-220.000.

Ethicon, Inc.: *See—*
Golden, Donald M.; and McVay, William P., 4,534,350, Cl. 128-334.00C.

Ethridge, Fredrick A.: *See—*
McAliley, J. Eugene; Daumit, Gene P.; and Ethridge, Fredrick A., 4,534,919, Cl. 264-29.200.

Ethyl Corporation: *See—*
Mueller, Warren B., 4,535,095, Cl. 521-89.000.
Thomas, Paul E.; and Raley, Garland E., 4,535,020, Cl. 428-131.000.

Euteneuer, Charles L.; and Diesch, Robert E., to Pako Corporation. Photographic paper roll core holding device. 4,534,519, Cl. 242-68.300.

Evani, Syamalarao; Oswald, James H.; Staples, Thomas L.; and Polak, Brent T., to Dow Chemical Company, The. Material for absorbing aqueous fluids. 4,535,098, Cl. 521-149.000.

Evans, Brian E.; Hemm, Stephen R.; and Russell, Rupert A. V., to Wiggins Teape Group Limited, The. Apparatus for determining an electrical characteristic of a fibrous dispersion. 4,535,285, Cl. 324-71.100.

Everett, Harry J.: *See*—
MacArthur, Alexander D.; and Everett, Harry J., 4,534,320, Cl. 122-406.00R.

Ewy, M. Dale: *See*—
Borish, Jeffrey G.; and Ewy, M. Dale, 4,535,474, Cl. 381-61.000.

Exxon Production Research Co.: *See*—
Ramsey, Mark S., 4,534,424, Cl. 175-40.000.

Exxon Research and Engineering Co.: *See*—
Allan, David E.; and Martinez, Charles H., 4,534,851, Cl. 208-48.00R.
Vaughan, David E. W., 4,534,947, Cl. 423-329.000.
Weinberg, Harold N.; Savage, David W.; and Weissman, Walter, 4,534,854, Cl. 208-131.000.

Eylon, Daniel; and Froes, Francis H., to United States of America, Air Force. Method for refining microstructures of prealloyed powder metallurgy titanium articles. 4,534,808, Cl. 148-133.000.

Fabrizio, Raymond. Vent key modification for flute. 4,534,261, Cl. 84-384.000.

Facuseh, Elias. Cleaning device. 4,534,670, Cl. 401-270.000.

Fagel, Roger. Self-propelled armored vehicle. 4,534,267, Cl. 89-40.030.

Fagnoni, Giovanna Maria. Transportable pre-fabricated building structure. 4,534,141, Cl. 52-68.000.

Fahmy, Mohamed A. H., to FMC Corporation. O-ethyl S,S-dialkyl phosphorodithioates for use as pesticides. 4,535,077, Cl. 514-143.000.

Fairchild Camera & Instrument Corp.: *See*—
Bley, David W., 4,534,602, Cl. 339-14.00R.

Fairey Hydraulics, Ltd.: *See*—
Avery, Robert W., 4,535,263, Cl. 310-112.000.

Fairman, Ronald E.: *See*—
Wright, Eric C.; and Fairman, Ronald E., 4,534,599, Cl. 303-22.00R.

Falconer, David D., to AT&T Bell Laboratories. Echo cancellation in two-wire full-duplex data transmission with estimation of far-end data components. 4,535,206, Cl. 179-170.200.

Falk, Jerry: *See*—
Carey, Richard A.; and Falk, Jerry, 4,535,330, Cl. 340-825.500.

Falzone, Vincenzo; and Tommasi, Marcello, to Italtel Societa Italiana Telecomunicazioni S.p.A. Digital switching exchange for telephone systems. 4,535,444, Cl. 370-58.000.

Fannin, Wayne V.; and Pees, James M., to General Motors Corporation. Vehicle suspension unit with replacement air spring. 4,534,545, Cl. 267-64.240.

Fanuc Ltd.: *See*—
Kishi, Hajimu; Tanaka, Kunio; and Seki, Masaki, 4,535,408, Cl. 364-475.000.
Komiya, Hidetsugu; and Yamazaki, Etsuo, 4,534,685, Cl. 409-99.000.
Kurakake, Mitsuo, 4,535,277, Cl. 318-561.000.
Nakamura, Kosei; and Takano, Yoshikazu, 4,534,686, Cl. 409-135.000.

Farrall, George A., to General Electric Company. Method for assessing the dielectric state of a high voltage vacuum device using radiation generated by field emission current. 4,534,741, Cl. 445-3.000.

Fasano, Anthony; Roberts, John H.; and Motycka, David L., to United Technologies Corporation. Method and apparatus for determining the accuracy of wind tunnel test data. 4,534,216, Cl. 73-147.000.

Favie, Claude; and Mercadier, Michel, to Societe Nationale Elf Aquitaine (Production). Cosmetological polymers. 4,535,130, Cl. 525-327.300.

Fearnside, William T., to Eastman Kodak Company. Defect correction in solid state imaging. 4,535,359, Cl. 358-163.000.

Federal-Mogul Corporation: *See*—
Ladin, Eli M., 4,534,458, Cl. 192-98.000.

Federal Paper Board Co., Inc.: *See*—
Neale, Douglas L., 4,534,497, Cl. 225-25.000.

Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; Karavaev, Alexandr A.; and Yakushev, Vladimir M., to Moskovsky Nauchno-Issledovatelsky Institut Mirrokhirurgii Glaza. Instrument for making corneal incisions. 4,534,348, Cl. 128-305.000.

Fehrer, Ernst. Apparatus for making fibrous webs. 4,534,086, Cl. 19-99.000.

Feld, Gerhard; and Schmidt-Kufeke, Klaus-Peter. Process for making fine perforations in plastic sheeting and/or plastic or rubber coated sheet materials. 4,534,994, Cl. 427-37.000.

Felix, Raymond A., to Stauffer Chemical Company. Method for preparation of N-phosphonomethylglycine. 4,534,902, Cl. 260-465.400.

Felix, Raymond A., to Stauffer Chemical Company. N-carboalkoxymethyl-N-halomethyl amides. 4,535,181, Cl. 560-172.000.

Fenska, Lyle E.: *See*—
Mark, Harold W.; Bertus, Brent J.; Roberts, John S.; McKay, Dwight L.; and Fenska, Lyle E., 4,535,066, Cl. 502-62.000.

Fenyvesi, Eva: *See*—
Szejtli, Jozsef; Fenyvesi, Eva; Zsadon, Bela; Szilasi, Maria; and Decsei, Lajos, 4,535,152, Cl. 536-103.000.

Ferag AG: *See*—
Reist, Walter, 4,534,550, Cl. 271-183.000.

Ferguson, Vivian: *See*—
Off, Joseph W. A.; and Ferguson, Vivian, 4,534,303, Cl. 112-114.000.

Fernie, Douglas P.: *See*—
Collins, Ian P.; and Fernie, Douglas P., 4,534,339, Cl. 128-6.000.

Ferrell, Robert A.; and Rebber, Richard G., to KCL Corporation. Apparatus and method for securing top ends of sack gussets. 4,534,752, Cl. 493-213.000.

Ferrer Internacional, S.A.: *See*—
Forne , Ernesto; Foguet, Rafael; Sacristan, Aurelio; and Ortiz, Jose A., 4,535,159, Cl. 544-148.000.

Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game with reversible secondary pieces. 4,534,566, Cl. 273-248.000.

Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., to Marvin Glass & Associates. Board game with chance device playing piece. 4,534,567, Cl. 273-255.000.

Ferro, Gregory A.: *See*—
Lee, Raymond; Okey, David W.; and Ferro, Gregory A., 4,535,099, Cl. 521-154.000.
Lee, Raymond; Sorathia, Usman A. K.; and Ferro, Gregory A., 4,535,101, Cl. 521-189.000.

Fesman, Gerald: *See*—
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Fetterolf, Gerald S.: *See*—
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Fey Maurice G.: *See*—
Wolf, Charles B.; Meyer, Thomas N.; Fey, Maurice G.; and Heidrich, John E., 4,535,225, Cl. 219-383.000.

Fey, Robert M., to Speed Queen Company. Tilt washer with automatic lid. 4,534,188, Cl. 68-3.00R.

Fiat Auto S.p.A.: *See*—
Filtri, Giorgio, 4,534,329, Cl. 123-383.000.

Field, David J.; Butler, Ernest P.; and Bassett, Katherine-Ann, to Alcan International Limited. Heat treatment of aluminium alloys containing lithium. 4,534,807, Cl. 148-20.300.

Field, Howard J.: *See*—
Elliott, Charles T.; White, Anthony M.; and Field, Howard J., 4,535,232, Cl. 250-206.000.

Fielding, Herbert L.; and Ingwall, Richard T., to Polaroid Corporation. Stabilization of holograms. 4,535,041, Cl. 430-1.000.

Fields, Stanley R., to United States of America, Energy. Container for radioactive materials. 4,535,250, Cl. 250-507.100.

Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., to ASM Fico Tooling, b.v. Method and apparatus for mold cleaning by reverse sputtering. 4,534,921, Cl. 264-39.000.

Fife, Michael J.; Diaz, Paul T.; and Dietz, Dennis R., to Technicare Corporation. Ultrasonic diagnostic imaging systems for varying depths of field. 4,534,221, Cl. 73-626.000.

Figgie International Inc.: *See*—
McGill, Robert W.; and Robinson, Chris E., 4,534,157, Cl. 53-531.000.
Mitchell, Hal D.; Glover, Richard W.; Walker, Donald R.; and Rosenberg, Isadore, 4,534,068, Cl. 2-414.000.

Filipiak, Stanley E.: *See*—
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Filtri, Giorgio, to Fiat Auto S.p.A. Supply system for super charged diesel engines. 4,534,329, Cl. 123-383.000.

Filzinger, Klaus: *See*—
Fuchs, Hermann; and Filzinger, Klaus, 4,534,908, Cl. 260-458.00C.

Finch, Craig E.: *See*—
McCain, G. Howard; Benezra, Leo L.; and Finch, Craig E., 4,535,112, Cl. 524-233.000.

Finch, George W.; and Udd, Eric, to McDonnell Douglas Corporation. Fiber-optic seismic sensor. 4,534,222, Cl. 73-653.000.

Finnigan Corporation: *See*—
McIver, Robert T., Jr., 4,535,235, Cl. 250-282.000.

Firestone Tire & Rubber Company, The: *See*—
Yang, James H. C.; Tomaszewski, Walter; and Beneze , Heinz W., 4,534,145, Cl. 52-222.000.

Firmenich SA: *See*—
Holzner, Gunter, 4,534,509, Cl. 239-34.000.

Fischer, Karl-Heinz: *See*—
Bauer, Kurt; Fischer, Karl-Heinz; and Huber, Heinz, 4,535,456, Cl. 371-16.000.

Fischer, Rolf; and Hermann, Dietmar, to Continental Gummi-Werke Aktiengesellschaft. Apparatus for producing profiled strands. 4,534,724, Cl. 425-295.000.

Fischer, Werner; Flaig, Ulrich; and Locher, Johannes, to Robert Bosch GmbH. Emergency control apparatus for a Diesel engine. 4,534,328, Cl. 123-359.000.

Fischer, William C.: *See*—
Johnson, Raymond G., Jr.; Trustee, Bill L.; and Fischer, William C., 4,534,702, Cl. 416-20.00R.

Fish, Leonard A.: *See*—
Glinka, John; and Fish, Leonard A., 4,534,373, Cl. 133-5.00R.

Fisher, Don E.; and Wilkie, Arnold E., to Monsanto Company. Ring spinning processes for converting sliver to carpet yarn. 4,534,161, Cl. 57-125.000.

Fisher, Jed F., to University of Minnesota, Regents of the. Complexation of anthracycline and anthraquinone antibiotics by the apo riboflavin binding protein from eggs. 4,534,971, Cl. 514-21.000.

Fisher, John M., to B. F. Goodrich Company, The. Aircraft slide packing fixture. 4,534,445, Cl. 182-48.000.
Fisher, Robert E.: *See*—
Palm, Richard R.; James, Robert G.; and Fisher, Robert E., 4,534,706, Cl. 417-17.000.
Fishter, Robert E.; McDaniel, Paul L.; and Tefft, Stephen W., to United Technologies Corporation. Chemical milling IN-100 nickel superalloy. 4,534,823, Cl. 156-626.000.
Fitz, Forest G., Jr.: *See*—
Budzich, Mieczlyslaw; and Fitz, Forest G., Jr., 4,534,254, Cl. 83-425.200.
Fitzsimmons, Clement J. Transmission. 4,534,747, Cl. 474-1.000.
Flagmeyer, Friedhelm: *See*—
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Flaig, Ulrich: *See*—
Fischer, Werner; Flaig, Ulrich; and Locher, Johannes, 4,534,328, Cl. 123-359.000.
Flanagan, Thomas P.: *See*—
Schoenberg, Jules E.; Flanagan, Thomas P.; and Ray-Chaudhuri, Dilip K., 4,535,140, Cl. 526-329.000.
Flavell, George A. Wind power system. 4,534,703, Cl. 416-119.000.
Flax, Stephen W.: *See*—
Miller-Jones, Stockton M.; and Flax, Stephen W., 4,534,359, Cl. 128-660.000.
Fleck, Guenter: *See*—
Siol, Werner; Rauch, Hubert; and Fleck, Guenter, 4,535,137, Cl. 526-216.000.
Fleming, Paul D., to W & F Manufacturing, Inc. Latch assembly. 4,534,587, Cl. 292-263.000.
Fletcher, Aaron N.: *See*—
McManis, George E., III; Fletcher, Aaron N.; and Miles, Melvin H., 4,535,037, Cl. 429-103.000.
Flight Refueling, Inc.: *See*—
Graham, Frank C.; and Parker, James T., II, 4,534,384, Cl. 137-899.200.
FMC Corporation: *See*—
Cuhel, Leon L., 4,534,598, Cl. 303-10.000.
Fahmy, Mohamed A. H., 4,535,077, Cl. 514-143.000.
Hopkins, Quentin G.; and Browning, Jhonce N., 4,534,945, Cl. 423-273.000.
Foguet, Rafael: *See*—
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Foldesi, Dezso : *See*—
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Ford Motor Company: *See*—
Cederquist, Alf L., 4,535,412, Cl. 364-511.000.
McCabe, Bernard J.; and Courtney, David T., 4,534,717, Cl. 418-181.000.
Forerank, Inc.: *See*—
Summers, David P., 4,534,541, Cl. 251-331.000.
Forne , Ernesto; Foguet, Rafael; Sacristan, Aurelio; and Ortiz, Jose A., to Ferrer Internacional, S.A. Process for producing 1-position amino-derivatives of 1-(3',4'-methylenedioxyphenyl)propane-2-ol. 4,535,159, Cl. 544-148.000.
Forrest, Albert W., Jr., to Du Pont de Nemours, E. I., and Company. Method and apparatus for the electrostatic pinning of polymeric webs. 4,534,918, Cl. 264-22.000.
Forster, Franz, to Linde Aktiengesellschaft. Dual machine aggregates with a connection for a consumer of mechanical energy. 4,534,271, Cl. 91-472.000.
Fortuna, Vincent; and MacLaughlin, Donald, to Cosden Technology, Inc. Thermoplastic container end and method and apparatus for inertial spinwelding of thermoplastic container ends. 4,534,751, Cl. 493-108.000.
Foster, George N.; and Metzler, Richard B., to Union Carbide Corporation. Olefin polymer compositions containing silicone additives and the use thereof in the production of film material. 4,535,113, Cl. 524-262.000.
Fournier, Pierre L. E., to I.C.I. Francolor S.A. Process for the wet granulation of organic pigments in an aqueous system with hydrolysis of acetic anhydride, propionic anhydride or a mixture thereof. 4,535,151, Cl. 534-739.000.
Fox, Charles L., Jr.; and Modak, Shanta M., to Columbia University in the City of New York, The Trustees of. Antibacterial composition comprising silver sulfadiazine and sodium piperacillin. 4,535,078, Cl. 514-157.000.
Fox, Clarence D., to Borg-Warner Corporation. Proportional solenoid valve. 4,534,375, Cl. 137-82.000.
Frankel, Milton B.; and Woolery, Dean O., II, to Rockwell International Corporation. 1-Azidomethyl-3,5,7-trinitro-1,3,5,7-tetrazacyclooctane and synthesis thereof via azidation with acetyl azide. 4,534,895, Cl. 260-239.0BC.
Fransson, Rolf G.: *See*—
Hillstrom, Kennert E. G.; and Fransson, Rolf G., 4,534,631, Cl. 353-95.000.
Frantz, Keith R.; Barnes, Robert A.; and Marks, Bruce G., to RCA Corporation. Resonant degaussing without residual magnetism. 4,535,270, Cl. 315-8.000.
Franz, Michel R.; Vincze, Andreas B.; Lambelin, Georges E.; and Polat, Alain V., to Continental Pharma, Inc. Method for the preparation of p-butoxyphenylacetyl-hydroxamic acid in the finely divided state and a composition containing this acid. 4,534,911, Cl. 514-575.000.
Franz Plasser Bahnbaumasch Inenindustriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,534,689, Cl. 409-296.000.
Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H.: *See*—
Theurer, Josef, 4,534,295, Cl. 104-7.00B.
Theurer, Josef; and Brunninger, Manfred, 4,534,415, Cl. 171-16.000.
Franzke, Jurgen, to Roscherwerke GmbH. Ham mold closing apparatus. 4,534,286, Cl. 100-219.000.
Fravolini, Arnaldo, to Mediolanum Farmaceutici S.R.L. Alkanolaminoxy derivatives of 3,4-dihydro-2H-1,4-benzothiazin-3-one, their production process, and their pharmaceutical use. 4,535,079, Cl. 514-225.000.
Frazier, Stephen E., to General Time Corp. Air treatment filter element and air treatment filter. 4,534,775, Cl. 55-74.000.
Fredette, Maurice C. J.: *See*—
Rapson, W. Howard; and Fredette, Maurice C. J., 4,534,952, Cl. 423-478.000.
Freeman, Roger K.: *See*—
Boyle, Gerard H.; Freeman, Roger K.; and Goebel, Franz, 4,535,038, Cl. 429-154.000.
Freenor, Francis J., III: *See*—
Luo, Tatao; Russo, Louis; and Freenor, Francis J., III, 4,534,786, Cl. 71-88.000.
Fregeolle, Gerald P.: *See*—
Bush, Thomas J.; Dellinger, Charles L.; and Fregeolle, Gerald P., 4,534,109, Cl. 30-260.000.
Freidinger, Roger M., to Merck & Co. Inc. Chiral, N-protected, N-substituted α-amino acids. 4,535,167, Cl. 548-344.000.
Freling, Martin, to Meyer Label Co., Inc. Composite decorative arrangement with dual adhesive characteristics. 4,535,018, Cl. 428-79.000.
Frenchik, Robert A., to Minnesota Mining and Manufacturing Company. Yellow color formers for use in color photothermographic system. 4,535,056, Cl. 430-542.000.
Fresia, E. James: *See*—
Buczkowski, Gary J.; and Fresia, E. James, 4,535,389, Cl. 361-433.000.
Frey, Sydney W., Jr.; and Herson, Mark I., to Allen-Bradley Company. Natural convection cooling system for electronic components. 4,535,386, Cl. 361-389.000.
Friedrich, Hans-Joachim, to J. F. Adolff AG. Backing mat for a ground covering, preferably for a water-permeable artificial grass, as well as a method for its production. 4,535,021, Cl. 428-137.000.
Friedrich, Wolfgang: *See*—
Hans, Rudiger; Brandenstein, Manfred; Friedrich, Wolfgang; and Haas, Roland, 4,534,749, Cl. 474-174.000.
Frito-Lay, Inc.: *See*—
Kreager, William D.; and Berger, Kenneth R., 4,534,818, Cl. 156-466.000.
Froes, Francis H.: *See*—
Bomberger, Howard B.; and Froes, Francis H., 4,534,938, Cl. 420-590.000.
Eylon, Daniel; and Froes, Francis H., 4,534,808, Cl. 148-133.000.
Froment, Jean-Paul; and Houlon, Louis P. Leveling device for weaving mechanisms incorporating cams of the negative type. 4,534,385, Cl. 139-79.000.
Fuchs, Hermann; and Filzinger, Klaus, to Hoechst Aktiengesellschaft. Water-soluble disazo compounds and new bis-(aminophenoxy)-ethane compounds having fiber-reactive groups as the tetrazo components, and use of the disazo compounds as dyestuffs. 4,534,908, Cl. 260-458.00C.
Fuji Jukogyo Kabushiki Kaisha: *See*—
Abe, Kunihiro; and Morimoto, Yoshihiko, 4,535,289, Cl. 324-208.000.
Takahashi, Toshio, 4,534,214, Cl. 73-118.000.
Fuji Oil Company, Limited: *See*—
Yoshida, Hideaki; and Kubota, Hayato, 4,534,982, Cl. 426-36.000.
Fuji Photo Film Co. Ltd.: *See*—
Arakawa, Satoshi; Nakamura, Takashi; and Takahashi, Kenji, 4,534,884, Cl. 252-301.40H.
Iwakura, Ken; and Ishige, Sadao, 4,535,348, Cl. 346-221.000.
Kawamura, Kouichi; Horie, Seiji; and Sato, Hideo, 4,535,045, Cl. 430-60.000.
Ohara, Yuji; and Horikawa, Kazuo, 4,535,342, Cl. 346-108.000.
Shiota, Kazuo; and Akimoto, Taizo, 4,535,413, Cl. 364-526.000.
Takahashi, Kenji; and Nakamura, Takashi, 4,535,237, Cl. 250-327.200.
Takahashi, Kenji; and Nakamura, Takashi, 4,535,238, Cl. 250-327.200.
Fuji Xerox Co. Ltd.: *See*—
Moriguchi, Haruhiko; Omori, Takashi; and Inui, Toshiharu, 4,535,340, Cl. 346-76.0PH.
Tan, Yoichi, 4,535,450, Cl. 370-94.000.
Fujii, Shigeru: *See*—
Shimizu, Motohiro; and Fujii, Shigeru, 4,535,281, Cl. 322-28.000.
Fujikawa, Motoi, to Aisin Seiki Kabushiki Kaisha. Wheel hub clutch assembly. 4,534,455, Cl. 192-40.000.
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, to Kewpie Kabushiki Kaisha. High speed egg breaking apparatus. 4,534,284, Cl. 99-498.000.
Fujimura, Takashi; Takahashi, Katsuyu; and Nishizawa, Masahiro, to Hitachi, Ltd. Light exposure apparatus with cooling means. 4,535,234, Cl. 250-238.000.
Fujitsu Limited: *See*—
Nozaki, Shigeki; and Miyahara, Hatsuo, 4,535,423, Cl. 365-51.000.

Tanizawa, Tetsu, 4,535,258, Cl. 307-454.000.
Wakabayashi, Tetsushi; Honda, Norio; and Sakuma, Osamu, 4,535,384, Cl. 361-386.000.
Fujitsu Ten Limited: *See*—
Takayama, Kazuo, 4,535,301, Cl. 330-279.000.
Fujiwara, Chikara: *See*—
Kiyoto, Shinichiro; and Fujiwara, Chikara, 4,534,196, Cl. 72-61.000.
Fukatsu, Shunzo: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.
Fukaya, Chikara: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; and Suyama, Tadakazu, 4,534,978, Cl. 514-429.000.
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.
Fukuda, Mutsumi: *See*—
Honda, Seiichirou; Ogawara, Hiroshi; and Fukuda, Mutsumi, 4,534,798, Cl. 106-266.000.
Fukuda, Satoru: *See*—
Mimura, Yoshiki; Arai, Tetsuji; Shimizu, Hiroshi; and Fukuda, Satoru, 4,535,228, Cl. 219-411.000.
Fukui, Yoshihiro; Tuchiya, Isamu; and Yoshida, Shun, to Zeon Kosan Co., Ltd. Method for forming tires. 4,534,812, Cl. 156-132.000.
Fukumoto, Hiroshi: *See*—
Inoue, Sukejiro; Sasakawa, Masumi; Fukumoto, Hiroshi; and Doi, Shinji, 4,535,048, Cl. 430-110.000.
Fukunaga, Tokio: *See*—
Kiso, Mataichiro; Futakawa, Akemi; and Fukunaga, Tokio, 4,534,206, Cl. 73-12.000.
Fulguvit GmbH & Co. K.G.: *See*—
Reinlein, Karl-Heinz; and Stablein, Bruno, 4,534,311, Cl. 118-630.000.
Fuller Company: *See*—
Courtay, Robert Y., 4,534,653, Cl. 366-106.000.
Fung, Anthony K., to Sperry Corporation. Circular-queue structure. 4,535,420, Cl. 364-900.000.
Funk, David B.; and Kallmeyer, James B., to Dickey-john Corporation. Method and apparatus for preparing a meat sample for determination of composition of same. 4,534,229, Cl. 73-863.000.
Furman, Anatol, to International Business Machines Corporation. Multi-port register implementations. 4,535,428, Cl. 365-230.000.
Furst, Sidney M.: *See*—
Williamson, Robert D.; and Furst, Sidney M., 4,534,813, Cl. 156-212.000.
Furukawa, Osamu: *See*—
Kanai, Hideyuki; Takahashi, Takashi; Imai, Motomasa; and Furukawa, Osamu, 4,535,314, Cl. 338-21.000.
Furukawa, Tatsuya: *See*—
Horike, Masanori; Furukawa, Tatsuya; Ebi, Yutaka; and Yamazaki, Hiroshi, 4,535,339, Cl. 346-75.000.
Fushimoto, Hideo: *See*—
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.
Fussl, Erwin; and Ranner, Max, to Maerz Ofenbau AG. Process and apparatus for calcining limestone. 4,534,731, Cl. 432-14.000.
Futaba Denshi Kogyo K.K.: *See*—
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,535,195, Cl. 136-261.000.
Futakawa, Akemi: *See*—
Kiso, Mataichiro; Futakawa, Akemi; and Fukunaga, Tokio, 4,534,206, Cl. 73-12.000.
G. D. Societa' per Azioni: *See*—
Seragnoli, Enzo, 4,534,253, Cl. 83-336.000.
G & H Montage GmbH: *See*—
Kuckein, Wilfried; Mylius, Albert; Bechtel, Peter; and Hofer, Adalbert, 4,535,017, Cl. 428-77.000.
Gagas, Michael S.; and Gagas, Stanley J., to Adaptor, Inc. Gate valve adaptor. 4,534,378, Cl. 137-367.000.
Gagas, Stanley J.: *See*—
Gagas, Michael S.; and Gagas, Stanley J., 4,534,378, Cl. 137-367.000.
Gale, Michael T.; and Lehmann, Hans W., to RCA Corporation. Standardized multi-stack dielectric-layer filter blank and method for fabricating color-encoding filter therefrom. 4,534,620, Cl. 350-166.000.
Galiotto, Bruno R.: *See*—
Bonetta, Angelo A.; and Galiotto, Bruno R., 4,534,365, Cl. 128-779.000.
Galliani, Giulio; Omodei-Sale, Amedeo; Consonni, Pietro; and Assandri, Alessandro, to Gruppo Lepetit S.p.A. 3,5-Diphenyl-1H-1,2,4-triazoles pharmaceutical compositions and uses. 4,535,090, Cl. 514-383.000.
Gans, Karl: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,534,720, Cl. 425-7.000.
Garcia, Frank, Jr.; and Brown, David L., to Vetco Offshore, Inc. Valve seat with trapped O-ring. 4,534,096, Cl. 29-157.10R.
Gardner, Gary M.; and Semple, J. Edward, to Shell Oil Company. N-L-seryl-3-azetidinecarboxylic acid. 4,534,787, Cl. 71-88.000.
Gardner, Nigel C.: *See*—
Jenkins, James O. M.; and Gardner, Nigel C., 4,535,203, Cl. 179-81.00R.
Garrison, Lee E.: *See*—
Heck, Samuel C.; and Garrison, Lee E., 4,534,669, Cl. 401-134.000.
Garrocho, Jose M. Miniature pneumatic punch. 4,534,250, Cl. 83-98.000.
Gasau, Jacob, to Nestec S.A. Continuous extraction process. 4,534,985, Cl. 426-432.000.
Gason Energy Engineering Ltd.: *See*—
Kogan, Abraham; and Moore, Uri, 4,534,175, Cl. 60-649.000.
Gates Rubber Company, The: *See*—
Stieg, Richard F., 4,534,232, Cl. 74-89.200.
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Gerbert, Goran, 4,534,748, Cl. 474-17.000.
Gates, William J.; and Zwirlein, John F., to Olin Corporation. Air purge/solvent bath method. 4,534,802, Cl. 134-22.120.
Gaubert, Rene J. Method and machine for filling bags with liquid. 4,534,154, Cl. 53-458.000.
Geary, Frederick J., to Robertshaw Controls Company. Ignition system. 4,535,380, Cl. 361-256.000.
Gebr. Happich GmbH: *See*—
Dietz, Gunter; and Flagmeyer, Friedhelm, 4,534,240, Cl. 74-545.000.
Geib, Lawrence: *See*—
Brown, Vincent B.; and Geib, Lawrence, 4,534,603, Cl. 339-17.00C.
Geller, Leo, to ALZA Corporation. Device for releasing active ingredient, insertable in a system of parenteral administering the ingredient. 4,534,757, Cl. 604-85.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Soft canine biscuit containing discrete meat and/or meat by-product particles and method for making same. 4,534,989, Cl. 426-549.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., to Nabisco Brands, Inc. Soft canine biscuit containing discrete particles of meat and other materials and method for making same. 4,534,990, Cl. 426-549.000.
Genentech, Inc.: *See*—
Johnston, Paul D., 4,534,906, Cl. 260-112.00R.
General Battery Corporation: *See*—
Eberle, William J., 4,534,549, Cl. 271-103.000.
General Dynamics Corporation/Convair Div.: *See*—
Carlson, Ronald F., 4,534,682, Cl. 408-14.000.
General Electric Company: *See*—
Abolins, Visvaldis; and Holub, Fred F., 4,535,106, Cl. 524-151.000.
Arendt, Ronald H.; and Pasco, Wayne D., 4,534,956, Cl. 423-598.000.
Cho, Hyun S., 4,534,934, Cl. 419-6.000.
Crivello, James V., 4,535,174, Cl. 556-443.000.
Davis, L. Berkley, Jr.; Hilt, Milton B.; and Wilkes, Colin, 4,534,165, Cl. 60-39.020.
Farrall, George A., 4,534,741, Cl. 445-3.000.
Itani, Abdallah M., 4,535,400, Cl. 363-68.000.
Lane, Lawrence J., 4,535,377, Cl. 361-1.000.
Mark, Victor; and Hedges, Charles V., 4,535,191, Cl. 568-727.000.
Milkovic, Miran, 4,535,287, Cl. 324-142.000.
Miller, Edward B.; and Eichelberger, Charles W., 4,535,332, Cl. 340-825.060.
Miller-Jones, Stockton M.; and Flax, Stephen W., 4,534,359, Cl. 128-660.000.
Puckette, Charles M., 4,535,297, Cl. 329-126.000.
Pyles, Robert A., 4,535,104, Cl. 524-91.000.
Rose, Leonard, 4,534,226, Cl. 73-861.840.
Rosenquist, Niles R.; and Tyrell, John A., 4,535,108, Cl. 524-162.000.
Sakash, George; Grier, Robert K., Jr.; Stern, Hansjoerg; Dada, Abdul G.; and McKeel, Daniel W., 4,534,301, Cl. 110-255.000.
Stocking, George E.; and Pohl, Walter J., 4,534,179, Cl. 62-128.000.
Tomich, Michael J., 4,534,698, Cl. 415-9.000.
Tschetter, Charles D.; and Bergman, Rolf S., 4,535,269, Cl. 313-579.000.
West, Paul R.; and Griffing, Bruce F., 4,535,053, Cl. 430-312.000.
General Foods Corporation: *See*—
Zanno, Paul R.; and Parliment, Thomas H., 4,534,988, Cl. 426-535.000.
General Instrument Corp.: *See*—
Meloni, Robert A., 4,534,287, Cl. 101-93.050.
General Kinematics Corporation: *See*—
Kraus, Richard B., 4,534,730, Cl. 432-3.000.
General Motors Corporation: *See*—
Fannin, Wayne V.; and Pees, James M., 4,534,545, Cl. 267-64.240.
Kline, Richard H., 4,534,091, Cl. 29-2.000.
Kline, Richard H., 4,535,040, Cl. 429-234.000.
General Packaging Equipment Company: *See*—
Kelly, Robert C., 4,534,159, Cl. 53-552.000.
General Signal Corporation: *See*—
Wright, Eric C.; and Fairman, Ronald E., 4,534,599, Cl. 303-22.00R.
General Time Corp.: *See*—
Frazier, Stephen E., 4,534,775, Cl. 55-74.000.
General Tire & Rubber Company, The: *See*—
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, 4,534,888, Cl. 252-511.000.
George, Peter K.: *See*—
Mowry, Gregory S; and George, Peter K., 4,535,375, Cl. 360-113.000.

George, William A.: *See—*
Grossman, Mark W.; George, William A.; and Pai, Robert Y., 4,534,742, Cl. 445-9.000.
Geoscience Ltd: *See—*
Poppendiek, Heinz F.; and Sabin, Cullen M., 4,534,663, Cl. 374-43.000.
Gerard, Jean Louis: *See—*
Bricot, Claude; Gerard, Jean Louis; and Audoin, Michel, 4,535,431, Cl. 369-44.000.
Gerbert, Goran: *See—*
Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Gerbert, Goran, 4,534,748, Cl. 474-17.000.
Gerik, Bernard J.: *See—*
Walter, Robert J.; and Gerik, Bernard J., 4,534,794, Cl. 106-14.050.
Germain, Francois: *See—*
Clerget, Michel; Germain, Francois; Kryze, Jiri; and Poujois, Robert, 4,534,650, Cl. 356-376.000.
Gero, Gary: *See—*
Bogle, Robert W.; and Gero, Gary, 4,534,629, Cl. 352-140.000.
Gerot, Guy J. C., to U.S. Philips Corporation. Method of transferring data in a television receiver. 4,535,362, Cl. 358-194.100.
Gervais, William J., to Rosstream Research Assoc. Ltd. Magnetic tape reel write protect mechanism. 4,535,370, Cl. 360-60.000.
Gettig, William A.; and Fetterolf, Gerald S. Hypodermic cartridge. 4,534,763, Cl. 604-239.000.
Gewerkschaft Eisenhutte Westfalia: *See—*
Weirich, Walter; Melis, Jurgen; and Wollenhaupt, Peter, 4,534,584, Cl. 285-24.000.
Weirich, Walter; and Dettmers, Michael, 4,534,681, Cl. 405-294.000.
Geyer, Roger D.: *See—*
Peacock, Bobbie D.; Mushovic, John N.; and Geyer, Roger D., 4,534,225, Cl. 73-860.000.
Giebeler, Robert H., Jr.: *See—*
Wedemeyer, Robert C.; and Giebeler, Robert H., Jr., 4,534,861, Cl. 210-168.000.
Giesecke, Henning: *See—*
Sirinyan, Kirkor; Merten, Rudolf; and Giesecke, Henning, 4,535,032, Cl. 428-629.000.
Gilbert, Everett E.: *See—*
Sollott, Gilbert P.; and Gilbert, Everett E., 4,535,193, Cl. 568-941.000.
Gilker, Clyde: *See—*
Jindrick, James A.; Dolnik, Thomas G.; Nohria, Naresh K.; Gilker, Clyde; Hurley, James R.; Dunk, Michael P.; Reis, Norbert J.; and Bray, Thomas J., 4,535,409, Cl. 364-481.000.
Gilliland, James L., Jr.: *See—*
Toub, Samuel G.; Gilliland, James L., Jr.; and Holder, Homer W., 4,534,182, Cl. 62-193.000.
Gilliland, W. Keith; Hart, Lawrence M.; and Nesta, Charles, to Xerox Corporation. Charge erase device for copying or reproduction machines and printers. 4,534,641, Cl. 355-3.00R.
Gillmor, Richard H., to Gillmor, Richard H.; and Wise, Benjamin W. Geometric air projection and containment. 4,534,277, Cl. 98-36.000.
Gilman, Harry. Check-out counter divider. 4,534,126, Cl. 40-19.000.
Giordano, Claudio: *See—*
Castaldi, Graziano; and Giordano, Claudio, 4,535,166, Cl. 548-204.000.
Giravions Dorand: *See—*
Allard, Jean-Claude; Briard, Rene; and Saunier, Christian, 4,534,735, Cl. 434-20.000.
Gjertsen, Robert K.; and Veronesi, Luciano, to Westinghouse Electric Corp. Nuclear reactor fuel assembly with improved top nozzle and hold-down means. 4,534,933, Cl. 376-364.000.
Gladfelter, Elizabeth J.; Rogier, Edgar R.; and DiDomenico, Edward D., to Henkel Corporation. Polyglycidyl ethers of tricyclodecane and cured epoxy resins therefrom. 4,535,148, Cl. 528-365.000.
Gladky, Petr V.: *See—*
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.
Glance, Bernard: *See—*
Cho, Alfred Y.; Glance, Bernard; Lubzens, Daniel; and Schneider, Martin V., 4,534,103, Cl. 29-571.000.
Glanz, Kenneth D., to Appleton Papers Inc. Thermally-responsive record material. 4,535,347, Cl. 346-208.000.
Glaser, Herbert; and Stolzenberg, Konrad, to Rutgerswerke Aktiengesellschaft. Process for the manufacture of molded carbon bodies. 4,534,949, Cl. 423-445.000.
Glass, Henry P., to Mall, David. Triple-edge safety razor and blade. 4,534,110, Cl. 30-346.570.
Glatt GmbH: *See—*
Naunapper, Dietmar; and Braun, Gunter, 4,535,006, Cl. 427-213.000.
Glicksman, Leon R., to Massachusetts Institute of Technology. Apparatus and method for drying insulation. 4,534,119, Cl. 34-95.000.
Glinka, John; and Fish, Leonard A., to Casino Technology. Dispensing machine with removable dispensing unit. 4,534,373, Cl. 133-5.00R.
Glover, Douglas W.: *See—*
Bowen, Terry P.; Caron, Bernard G.; Cooper, Ronald F.; and Glover, Douglas W., 4,534,616, Cl. 350-96.200.
Glover, Richard W.: *See—*
Mitchell, Hal D.; Glover, Richard W.; Walker, Donald R.; and Rosenberg, Isadore, 4,534,068, Cl. 2-414.000.
GNB Batteries Inc.: *See—*
Schaumburg, Edward G.; Benson, Cory D.; Wolf, Alby H.; and Zais, Michael G., 4,534,401, Cl. 164-102.000.
Goebel, Franz: *See—*
Boyle, Gerard H.; Freeman, Roger K.; and Goebel, Franz, 4,535,038, Cl. 429-154.000.
Goetzen, Thomas: *See—*
Golec, Frederick A., Jr.; and Goetzen, Thomas, 4,535,177, Cl. 560-38.000.
Goines, Fredrick J.; and Reifsteck, David A., to Midwest Irrigation and Foundation, Inc. System for controlling the moisture in the subsurface soil surrounding a building. 4,534,143, Cl. 52-169.500.
Goko, Nobuaki; and Uehara, Yumito, to Mitsubishi Chemical Industries, Ltd. Process for preparing solid titanium trichloride useful for the polymerization of an α-olefin. 4,534,953, Cl. 423-492.000.
Gold Bond Ice Cream, Inc.: *See—*
Lutsey, Thomas H.; and Bero, Vernon L., 4,534,722, Cl. 425-104.000.
Gold, Philip, to Cordis Corporation. Coating for angiographic guidewire. 4,534,363, Cl. 128-772.000.
Goldelius, Rainer, to Black & Decker Inc. Electric tool with torque monitor. 4,534,420, Cl. 173-12.000.
Golden, Donald M.; and McVay, William P., to Ethicon, Inc. Two-piece tissue fastener with compressible leg staple and retaining receiver. 4,534,350, Cl. 128-334.00C.
Gole, Francois V.: *See—*
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Hashizume, Iwao. Dynamic separator for a grinding mill. 4,534,516, Cl. 241-171.000.
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Hillstrom, Kennert E. G.; and Fransson, Rolf G., to Victor Hasselblad Aktiebolag. Slide guide adjusting device at slide projector. 4,534,631, Cl. 353-95.000.
Hilt, Milton B.: *See*—
Davis, L. Berkley, Jr.; Hilt, Milton B.; and Wilkes, Colin, 4,534,165, Cl. 60-39.020.

Hilti Aktiengesellschaft: *See—*
Jochum, Peter, 4,534,500, Cl. 227-7.000.

Hiltner, Jeffrey A.: *See—*
Briley, Bruce E.; and Hiltner, Jeffrey A., 4,535,360, Cl. 358-181.000.

Hilton-Davis Chemical Co., The: *See—*
Schmidt, Paul J.; and Hung, William M., 4,535,172, Cl. 549-310.000.

Himmelbauer, Alain J.; and Poubelle, Regis J. P., to U.S. Philips Corporation. Cordless telephone system with security coding. 4,535,200, Cl. 179-2.0EA.

Hintermeier, Karl: *See—*
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, 4,535,031, Cl. 428-481.000.
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, 4,535,031, Cl. 428-481.000.

Hiramatsu, Takeo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Automatic transmission gear system for vehicles. 4,534,244, Cl. 74-869.000.

Hiranuma, Satoshi, to Trio Kabushiki Kaisha. Pickup arm driving control system with repeat playback function. 4,535,437, Cl. 369-223.000.

Hirata, Osamu: *See—*
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.

Hirate, Masatoshi: *See—*
Tsukamoto, Kou; and Hirate, Masatoshi, 4,535,261, Cl. 310-78.000.

Hirbour, Louis: *See—*
Johnson, Frank; Reese, Dieter; and Hirbour, Louis, 4,534,843, Cl. 204-202.000.

Hird, Edwin A. Measurement conversion and visual display instrument. 4,535,415, Cl. 364-562.000.

Hirobe, Hitoshi, to Asahi Kogaku Kogyo Kabushiki Kaisha. Spot exposure adjustment circuit. 4,535,364, Cl. 358-228.000.

Hirohata, Michio; and Ikari, Hideo, to Canon Kabushiki Kaisha. Exposure control device for camera. 4,534,638, Cl. 354-418.000.

Hirose, Takao: *See—*
Uemura, Seiichi; Hirose, Takao; and Sohda, Yoshio, 4,534,950, Cl. 423-447.400.

Hirota, Eiichi: *See—*
Nomura, Noboru; Hirota, Eiichi; and Wasa, Kiyotaka, 4,535,376, Cl. 360-126.000.

Hirota, Yoshinobu: *See—*
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.

Hisano, Akira: *See—*
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, 4,534,980, Cl. 514-570.000.

Hisey, Durward A., to Hy-C Company, Inc. Chimney cap. 4,534,280, Cl. 98-67.000.

Hitachi Construction Machinery Co., Ltd.: *See—*
Yagyu, Takashi; Yamaguchi, Takeshi; Tanaka, Sotaro; and Sakaki, Yasuo, 4,534,268, Cl. 91-6.000.

Hitachi Denshi Kabushiki Kaisha: *See—*
Kokuryo, Yoshiro, 4,535,295, Cl. 328-155.000.
Tanaka, Shuhei, 4,535,231, Cl. 250-201.000.

Hitachi, Ltd.: *See—*
Fujimura, Takashi; Takahashi, Katsuyu; and Nishizawa, Masahiro, 4,535,234, Cl. 250-238.000.
Kokuryo, Yoshiro, 4,535,295, Cl. 328-155.000.
Ogasawara, Tsuyoshi; Ichiryu, Ken; Nakamura, Ichiro; and Kido, Yasuo, 4,534,452, Cl. 187-29.00A.
Osuga, Minoru; and Oyama, Yoshishige, 4,534,330, Cl. 123-440.000.
Ueno, Sadayasu, 4,534,218, Cl. 73-204.000.
Yamaoka, Yukinori; and Takahashi, Takeshi, 4,535,383, Cl. 361-341.000.

Hitachi, Ltd: *See—*
Yoshikawa, Kazuaki; Matsumura, Yuichi; and Mase, Noriaki, 4,534,932, Cl. 376-310.000.

Hitachi Service Engineering Co., Ltd.: *See—*
Yoshikawa, Kazuaki; Matsumura, Yuichi; and Mase, Noriaki, 4,534,932, Cl. 376-310.000.

Hiura, Hiromi: *See—*
Yoshikane, Tetsuo; Kagata, Akira; and Hiura, Hiromi, 4,534,136, Cl. 51-283.00R.

Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, to Dow Chemical Company, The. Aqueous dispersions of vinylidene chloride resins. 4,535,120, Cl. 524-560.000.

Hobel, Hans-Gunther: *See—*
Elischer, Stefan; Hobel, Hans-Gunther; Merkt, Robert; and Wagner, Fritz, 4,535,160, Cl. 544-191.000.

Hoccum Developments Limited: *See—*
Calvert, Colin; and Cox-Smith, Peter, 4,534,755, Cl. 494-37.000.

Hockensmith, John L.: *See—*
Grove, John L.; Hockensmith, John L.; and Coffman, Allen B., 4,534,575, Cl. 280-6.110.

Hoechst Aktiengesellschaft: *See—*
Blumbach, Jurgen; and Schindler, Peter, 4,535,156, Cl. 544-26.000.
Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, 4,534,946, Cl. 423-315.000.
Fuchs, Hermann; and Filzinger, Klaus, 4,534,908, Cl. 260-458.00C.

Hoesch Werke AG: *See—*
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Hofer, Adalbert: *See—*
Kuckein, Wilfried; Mylius, Albert; Bechtel, Peter; and Hofer, Adalbert, 4,535,017, Cl. 428-77.000.

Hoffman, Paul R.: *See—*
Cuff, Richard A.; and Hoffman, Paul R., 4,534,562, Cl. 273-149.00P.

Hoffmann, Hans-Josef: *See—*
Ozelli, Riza N.; Hoffmann, Hans-Josef; and Lippert, Hartmut, 4,535,121, Cl. 524-715.000.

Hoffmann-La Roche Inc.: *See—*
Klaus, Michael; Loeliger, Peter; and Weiser, Harald, 4,535,086, Cl. 514-337.000.

Hoffpauir, Charles R.: *See—*
de Lorenzo, Mark X.; Hoffpauir, Charles R.; Hutchins, Johnnie R.; Meyer, Timmy R.; Page, John E.; and Poehl, Michael E., 4,535,134, Cl. 526-88.000.

Hofmann, Peter, to Dr. Ing. h.c.F. Porsche AG. Air discharge installation for the air feed into the interior space of a vehicle. 4,534,275, Cl. 98-2.000.

Hoganson, Robert B., Jr.: *See—*
Riggs, Peter P.; Data, Harry L.; and Hoganson, Robert B., Jr., 4,534,162, Cl. 57-217.000.

Hogge, Charles R., Jr., to Rockwell International Corporation. Signal detection apparatus. 4,535,459, Cl. 375-80.000.

Hokkaido University: *See—*
Sanada, Yuzo; Yokoyama, Susumu; Chiba, Tadatoshi; Yokono, Tetsuro; Moritomi, Hiroshi; Obara, Toshiyuki; and Nagaishi, Hiroshi, 4,534,848, Cl. 208-10.000.

Hokuriku Pharmaceutical Co., Ltd.: *See—*
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, 4,534,980, Cl. 514-570.000.

Holder, Homer W.: *See—*
Toub, Samuel G.; Gilliland, James L., Jr.; and Holder, Homer W., 4,534,182, Cl. 62-193.000.

Holland, Geoffrey N., to Picker International Limited. Signal generator for interfacing digital computer to a plurality of peripheral devices. 4,535,403, Cl. 364-200.000.

Hollister Incorporated: *See—*
Habib, Wagdi W., 4,534,767, Cl. 604-336.000.
Osburn, Frank G.; and Riedel, Kenneth E., 4,534,768, Cl. 604-350.000.

Holman, J. Harrison; and Holman, Jay C. Method of convection cooking of food. 4,534,987, Cl. 426-523.000.

Holman, Jay C.: *See—*
Holman, J. Harrison; and Holman, Jay C., 4,534,987, Cl. 426-523.000.

Holmes, Kenneth P., to Wide-Lite International. High frequency circuit for operating a high-intensity, gaseous discharge lamp. 4,535,271, Cl. 315-209.00R.

Holstein, Siegbert, to Johannes Heidenhain GmbH. Length measuring apparatus. 4,534,113, Cl. 33-125.00R.

Holsworth, Herbert. Electrically heated steering wheel with adhesively attached foil strip heating element. 4,535,221, Cl. 219-204.000.

Holub, Fred F.: *See—*
Abolins, Visvaldis; and Holub, Fred F., 4,535,106, Cl. 524-151.000.

Holzner, Gunter, to Firmenich SA. Multiple compartment plastic packing. 4,534,509, Cl. 239-34.000.

Homeyer, Bernhard: *See—*
Maurer, Fritz; Homeyer, Bernhard; and Becker, Benedikt, 4,535,091, Cl. 514-407.000.

Honda Giken Kogyo Kabushiki Kaisha: *See—*
Ban, Keisuke; and Daimaru, Akimasa, 4,534,400, Cl. 164-97.000.
Matsuda, Minoru; and Mitsuishi, Toshiro, 4,534,322, Cl. 123-55.00R.
Matsuda, Tamotsu, 4,534,507, Cl. 237-12.30A.
Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, 4,534,236, Cl. 74-364.000.
Sekizaki, Satoshi; Hosoya, Eiji; and Takasu, Hotoyuki, 4,534,440, Cl. 180-215.000.
Shimazaki, Taiichi; and Takenaka, Masahico, 4,534,439, Cl. 180-215.000.
Shimizu, Motohiro; and Fujii, Shigeru, 4,535,281, Cl. 322-28.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Ichikawa, Akira, 4,535,334, Cl. 340-995.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Sugimura, Masao, 4,535,335, Cl. 340-995.000.
Tsukamoto, Hiroaki, 4,534,173, Cl. 60-606.000.

Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, to Mita Industrial Co., Ltd. Pressure-fixing toner for electrophotography and process for preparation thereof. 4,535,049, Cl. 430-137.000.

Honda, Norio: *See—*
Wakabayashi, Tetsushi; Honda, Norio; and Sakuma, Osamu, 4,535,384, Cl. 361-386.000.

Honda, Seiichirou; Ogawara, Hiroshi; and Fukuda, Mutsumi, to Sekisui Kagaku Kogyo Kabushiki Kaisha. Composition for partitioning blood components. 4,534,798, Cl. 106-266.000.

Honeywell Inc.: *See—*
Castleman, Bruce W.; McQuire, David P.; and Szonntagh, Eugene L., 4,534,777, Cl. 55-181.000.
Vogels, Joseph A., 4,534,728, Cl. 431-80.000.

Honeywell Information Systems, Inc.: *See*—
Carey, Richard A.; and Falk, Jerry, 4,535,330, Cl. 340-825.500.
Shenk, William H., 4,535,404, Cl. 364-200.000.

Honig, Gunter: *See*—
van Belzen, David; Honig, Gunter; Lotterbach, Gerhard; van Woudenberg, Jan-Faas; and Zucker, Udo, 4,534,331, Cl. 123-492.000.

Honnigford, Edward H.: *See*—
Dham, Vinod K.; Honnigford, Edward H.; Stewart, John K., Jr.; Pfeifer, Robert F.; and Trudel, Murray L., 4,534,104, Cl. 29-571.000.

Hooper, David W., to Unique Oil Tools, Inc. Packer weighted and pressure differential method and apparatus for Big Hole drilling. 4,534,426, Cl. 175-65.000.

Hoover, Alan A.; and Harris, Richard D., to Pentek Corporation. Motion detector and control system for an accumulating live conveyor. 4,534,462, Cl. 198-781.000.

Hopkins, Quentin G.; and Browning, Jhonce N., to FMC Corporation. Stabilization of high purity hydrogen peroxide. 4,534,945, Cl. 423-273.000.

Horie, Seiji: *See*—
Kawamura, Kouichi; Horie, Seiji; and Sato, Hideo, 4,535,045, Cl. 430-60.000.

Horikawa, Kazuo: *See*—
Ohara, Yuji; and Horikawa, Kazuo, 4,535,342, Cl. 346-108.000.

Horike, Masanori; Furukawa, Tatsuya; Ebi, Yutaka; and Yamazaki, Hiroshi, to Ricoh Company, Ltd. Deflection control type ink jet recorder. 4,535,339, Cl. 346-75.000.

Horler, Hansulrich; and Perego, Ambrogio, to BBC Brown, Boveri & Company, Limited. Externally mounted exhaust-gas turbocharger with uncooled gas duct. 4,534,700, Cl. 415-135.000.

Horn, Stuart B.; Wright, Richard A.; and Dunmire, Howard L., to United States of America, Army. Linear resonance cryogenic cooler. 4,534,176, Cl. 62-6.000.

Horodysky, Andrew G.; and Kaminski, Joan M., to Mobil Oil Corporation. Multifunctional lubricant additives and compositions thereof. 4,534,872, Cl. 252-32.70E.

Horrobin, David F., to Efamol Limited. Pharmaceutical and dietary composition. 4,535,093, Cl. 514-560.000.

Horsley, John K.: *See*—
Harrington, Timothy C.; and Horsley, John K., 4,534,252, Cl. 83-310.000.

Horton Manufacturing Co., Inc.: *See*—
Brooks, Edward D., 4,534,454, Cl. 192-18.00A.

Hosiden Electronics Co., Ltd.: *See*—
Takihara, Yukio, 4,534,610, Cl. 339-206.00P.

Hosoda, Jun: *See*—
Handa, Ryoji; Hosoda, Jun; and Yoshida, Norimasa, 4,535,131, Cl. 525-369.000.

Hosoya, Eiji: *See*—
Sekizaki, Satoshi; Hosoya, Eiji; and Takasu, Hotoyuki, 4,534,440, Cl. 180-215.000.

Houlon, Louis P.: *See*—
Froment, Jean-Paul; and Houlon, Louis P., 4,534,385, Cl. 139-79.000.

Howard, Billy D.: *See*—
Cabus, Marcello M.; Howard, Billy D.; Colt, James W.; and Tuft, Edward S., 4,534,118, Cl. 34-34.000.

Howard, Durrell U. Remotely adjustable steering compensator. 4,534,577, Cl. 280-90.000.

Howard, Robin G., to Denny Bros. Printing. Adhesive labels. 4,534,582, Cl. 283-81.000.

Howden, Ashley G.: *See*—
Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., 4,534,745, Cl. 446-398.000.

Howe, Arthur T., to Standard Oil Company (Indiana). Method of making multilayer photoelectrodes and photovoltaic cells. 4,534,099, Cl. 29-572.000.

Howerton, Anderson W.; and Lewis, James A., to Dayco Corporation. Snow track belt for motorcycle. 4,534,437, Cl. 180-185.000.

Hoyland, Trevor B., to Thurne Engineering Co. Ltd. Machine for closing filled bags. 4,534,149, Cl. 53-76.000.

Hozumi, Kazuhiro; and Tamaki, Shigeo, to Kuroda Seiko Company Limited. Electromagnetic valve. 4,534,381, Cl. 137-625.650.

Hsiao, Meng-Chang. Portable emergency light. 4,535,391, Cl. 362-183.000.

Hsieh, Jih-Han; Barer, Sol J.; and Maxwell, Peter C., to Celanese Corporation. Muconic acid productivity by a stabilized mutant microorganism population. 4,535,059, Cl. 435-142.000.

Hube, Lawrence D. Multi-level board game. 4,534,565, Cl. 273-241.000.

Huber, Heinz: *See*—
Bauer, Kurt; Fischer, Karl-Heinz; and Huber, Heinz, 4,535,456, Cl. 371-16.000.

Huet, Roger, to Aluminum Company of America. Composite armour plating. 4,534,266, Cl. 89-36.020.

Hughes Aircraft Company: *See*—
Bilow, Norman; and Hermansen, Ralph D., 4,534,882, Cl. 252-182.000.
Brault, Robert G.; and Miller, Leroy J., 4,535,054, Cl. 430-325.000.
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., 4,534,998, Cl. 427-122.000.
Reeds, John W., 4,535,249, Cl. 250-491.100.
Sashital, Sanat K., 4,534,822, Cl. 156-624.000.

Hughes, John; and Mouncher, John, to LHW Telephone Auto Diallers Limited. Telephone dialling system. 4,535,204, Cl. 179-90.0BD.

Hughes, Leslie R., to Imperial Chemical Industries PLC. Acylanilides having antiandrogenic activity. 4,535,092, Cl. 514-438.000.

Hulek, Anton; and Polanschutz, Wolfgang, to Voest-Alpine Aktiengesellschaft. Method and an arrangement for inspecting the surface of steel stock having a temperature above the Curie point. 4,534,405, Cl. 164-451.000.

Hummel, Peter: *See*—
Schroder, Peter; Kunkel, Fred; and Hummel, Peter, 4,534,290, Cl. 101-365.000.

Hung, William M.: *See*—
Schmidt, Paul J.; and Hung, William M., 4,535,172, Cl. 549-310.000.

Hunt Manufacturing Co.: *See*—
Bush, Thomas J.; Dellinger, Charles L.; and Fregeolle, Gerald P., 4,534,109, Cl. 30-260.000.

Hunt, Michael S., to South African Inventions Development Corp. Power transmission system. 4,534,169, Cl. 60-414.000.

Hunter, Joe M., to Celanese Corporation. Process for preparing epoxy resins having low hydrolyzable chlorine contents. 4,535,150, Cl. 528-489.000.

Huret et ses Fils: *See*—
Coue, Maurice E. L., 4,534,238, Cl. 74-489.000.

Hurley, James R.: *See*—
Jindrick, James A.; Dolnik, Thomas G.; Nohria, Naresh K.; Gilker, Clyde; Hurley, James R.; Dunk, Michael P.; Reis, Norbert J.; and Bray, Thomas J., 4,535,409, Cl. 364-481.000.

Hurst, Stanley A., to International Harvester Company. Foldable throttle control linkage for a tiltable truck cab. 4,534,443, Cl. 180-328.000.

Husbands, G. E. Morris; Yardley, John P.; and Muth, Eric A., to American Home Products Corporation. 2-Phenyl-2-(1-hydroxycycloalkyl or 1-hydroxycycloalk-2-enyl)ethylamine derivatives. 4,535,186, Cl. 564-336.000.

Hutchins, Johnnie R.: *See*—
de Lorenzo, Mark X.; Hoffpauir, Charles R.; Hutchins, Johnnie R.; Meyer, Timmy R.; Page, John E.; and Poehl, Michael E., 4,535,134, Cl. 526-88.000.

Hutchins, Richard D.: *See*—
Dovan, Hoai T.; and Hutchins, Richard D., 4,534,412, Cl. 166-295.000.

Hy-C Company, Inc.: *See*—
Hisey, Durward A., 4,534,280, Cl. 98-67.000.

I.C.I. Francolor S.A.: *See*—
Fournier, Pierre L. E., 4,535,151, Cl. 534-739.000.

Ichikawa, Akira: *See*—
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Ichikawa, Akira, 4,535,334, Cl. 340-995.000.

Ichiryu, Ken: *See*—
Ogasawara, Tsuyoshi; Ichiryu, Ken; Nakamura, Ichiro; and Kido, Yasuo, 4,534,452, Cl. 187-29.00A.

Ide, Tatsumi: *See*—
Okihara, Naoto; Morimoto, Masayuki; and Ide, Tatsumi, 4,535,311, Cl. 335-124.000.

Idel, Karsten-Josef: *See*—
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Dhein, Rolf, 4,535,149, Cl. 528-388.000.

Iding, Stephen H.; and Callicott, Robert H., to Procter & Gamble Company, The. Synthetic surfactant flakes and process for making them. 4,534,879, Cl. 252-174.000.

Idner, Kristina: *See*—
Norrstrom, Hans; and Idner, Kristina, 4,534,397, Cl. 162-23.000.

Iida, Shinji, to Kansai Paint Company, Ltd. Air drying coating composition. 4,535,126, Cl. 525-106.000.

Iijima, Kohta: *See*—
Yoshisato, Akiyuki; and Iijima, Kohta, 4,535,435, Cl. 369-126.000.

Ikari, Hideo: *See*—
Hirohata, Michio; and Ikari, Hideo, 4,534,638, Cl. 354-418.000.

Ikawa, Kazuo: *See*—
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,534,435, Cl. 180-140.000.

Ikeda, Atsunobu: *See*—
Yamamura, Yukio; Nakayama, Jingo; Ikeda, Atsunobu; and Kawamoto, Takashi, 4,534,590, Cl. 297-180.000.

Ikeda, Masahiro: *See*—
Mori, Hidefumi; and Ikeda, Masahiro, 4,534,820, Cl. 156-603.000.

Ikeda, Toshimitsu: *See*—
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,535,049, Cl. 430-137.000.

Ikuzawa, Masanori: *See*—
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,534,975, Cl. 514-730.000.

Illinois Tool Works Inc.: *See*—
Barth, Gerald D., 4,534,690, Cl. 411-386.000.
Rayburn, Charles C., 4,535,381, Cl. 361-308.000.
Shedore, Charles; and Filipiak, Stanley E., 4,535,210, Cl. 200-340.000.

Imai, Motomasa: *See*—
Kanai, Hideyuki; Takahashi, Takashi; Imai, Motomasa; and Furukawa, Osamu, 4,535,314, Cl. 338-21.000.

Imajima, Mituhiro, to Matsushita Electric Industrial Company, Limited. Liquid fuel burner having an oxygen sensor located in a flame. 4,534,727, Cl. 431-76.000.

Imatron Associates: *See*—
Peschmann, Kristian R., 4,535,243, Cl. 250-363.00S.

Imax Systems Corporation: *See*—
Williamson, Geoffry H., 4,534,630, Cl. 352-194.000.

IMI-Tech Corporation: *See—*
Lee, Raymond; Okey, David W.; and Ferro, Gregory A., 4,535,099, Cl. 521-154.000.
Lee, Raymond; Sorathia, Usman A. K.; and Ferro, Gregory A., 4,535,101, Cl. 521-189.000.
Imperial Chemical Industries PLC: *See—*
Hughes, Leslie R., 4,535,092, Cl. 514-438.000.
Shepherd, David, 4,534,754, Cl. 494-37.000.
Inaike, Toshihiro; Yamamoto, Shuji; Ohe, Shunji; and Otsuka, Kazunori, to Ube Industries, Ltd. Wholly aromatic polyamic acid solution composition. 4,535,105, Cl. 524-104.000.
INCO Limited: *See—*
Ambrose, John; Charles, Douglas K.; Conard, Bruce R.; Diaz, Carlos; O'Neill, Charles E.; and Leavoy, Wayne P., 4,534,935, Cl. 419-23.000.
Industrie Chemie Thoma GmbH & Co Produktions KG: *See—*
Thoma, Matthias, 4,535,185, Cl. 564-242.000.
Ingersoll, Brian: *See—*
Aldrich, Warren S.; and Ingersoll, Brian, 4,534,858, Cl. 209-236.000.
Ingwall, Richard T.: *See—*
Fielding, Herbert L.; and Ingwall, Richard T., 4,535,041, Cl. 430-1.000.
Inohara, Shizuo: *See—*
Ueda, Minoru; Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; and Yamamoto, Keisuke, 4,535,272, Cl. 315-366.000.
Inoue, Hidesuke: *See—*
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,534,284, Cl. 99-498.000.
Inoue, Hitosi; Suenaga, Norihiro; and Suenaga, Nobuyuki, to Nippon Infrared Industries Co., Ltd. Laser apparatus. 4,535,458, Cl. 372-25.000.
Inoue-Japax Research Incorporated: *See—*
Inoue, Kiyoshi, 4,534,831, Cl. 204-4.000.
Inoue, Kiyoshi, to Inoue-Japax Research Incorporated. Method of and apparatus for forming a 3D article. 4,534,831, Cl. 204-4.000.
Inoue, Naoyuki: *See—*
Yasuda, Takashi; Inoue, Naoyuki; and Tanaka, Syouji, 4,534,180, Cl. 62-141.000.
Inoue, Sukejiro; Sasakawa, Masumi; Fukumoto, Hiroshi; and Doi, Shinji, to Canon Kabushiki Kaisha. Toner for development of electrostatic charges. 4,535,048, Cl. 430-110.000.
Inoue, Yoshihisa: *See—*
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.
INRIA Institut National de Recherche en Informatique et en Automatique: *See—*
Clerget, Michel; Germain, Francois; Kryze, Jiri; and Poujois, Robert, 4,534,650, Cl. 356-376.000.
Inspiration Consolidated Copper Company: *See—*
Tittes, Allan F.; Larson, Kenneth H.; and Britton, Kennith L., 4,534,571, Cl. 277-128.000.
Institut Francais du Petrole: *See—*
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Gross, Valery N.; and Stupnik, Vyacheslav D., 4,534,647, Cl. 356-344.000.
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Ainslie, Norman G.; and Tan, Swie-In, 4,534,811, Cl. 156-73.100.
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Chen, Lee; Hendricks, Charles J.; Mathad, Gangadhara S.; and Poloncic, Stanley J., 4,534,816, Cl. 156-345.000.
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Roberts, George W.; and Tao, John C., 4,534,847, Cl. 208-8.0LE.
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Hurst, Stanley A., 4,534,443, Cl. 180-328.000.
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Herman, Harry H., Jr., 4,534,074, Cl. 4-564.000.
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Dillon, Michael A.; and Rawlings, David L., 4,534,723, Cl. 425-289.000.
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Herman, Thomas; and Williams, Oliver, 4,535,251, Cl. 250-551.000.
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Larock, Richard C., 4,535,179, Cl. 560-117.000.
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Iwakura, Ken; and Ishige, Sadao, 4,535,348, Cl. 346-221.000.
Ishiguchi, Koji: *See—*
Tanibuchi, Teruo; Ishiguchi, Koji; and Yamamoto, Shinji, 4,535,119, Cl. 524-496.000.
Ishikawa, Paul J.: *See—*
Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., 4,534,745, Cl. 446-398.000.
Ishikawa, Shozo; Toma, Hitoshi; and Sumino, Fumio, to Canon Kabushiki Kaisha. Electrophotographic photosensitive member. 4,535,043, Cl. 430-58.000.
Ishitani, Kenichiro; Unseki, Takashi; Amiboshi, Saburo; and Kawamura, Eiichi, to Mitsubishi Jukogyo Kabushiki Kaisha; and Eagle Industry Co., Ltd. Stern tube seal device providing a seal about a rotatable shaft. 4,534,569, Cl. 277-27.000.
Isobe, Yasuo: *See—*
Ito, Tadashi; Isobe, Yasuo; Ito, Fumio; and Nakamoto, Soichi, 4,534,640, Cl. 354-448.000.
Isover Saint-Gobain: *See—*
Massol, Jean-Jacques, 4,534,796, Cl. 106-99.000.
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Higuchi, Takeshi; Itakura, Yoshio; and Iwamori, Hidekazu, 4,534,710, Cl. 417-269.000.
Italtel Societa Italiana Telecomunicazioni S.p.A.: *See—*
Falzone, Vincenzo; and Tommasi, Marcello, 4,535,444, Cl. 370-58.000.
Itani, Abdallah M., to General Electric Company. Means and method for simultaneously triggering series SCR's. 4,535,400, Cl. 363-68.000.
Ito, Fumio: *See—*
Ito, Tadashi; Isobe, Yasuo; Ito, Fumio; and Nakamoto, Soichi, 4,534,640, Cl. 354-448.000.
Ito, Masazumi; and Nagata, Kenzo, to Minolta Camera Co., Ltd. Apparatus for detecting number of remaining sheets. 4,535,463, Cl. 377-8.000.
Ito, Tadashi; Isobe, Yasuo; Ito, Fumio; and Nakamoto, Soichi, to Canon Kabushiki Kaisha. Exposure control system for a camera having a digital computer. 4,534,640, Cl. 354-448.000.
Itoh, Ken: *See—*
Sakaguchi, Susumu; Itoh, Ken; Ogihara, Masahiro; Makigawa, Shinji; Ryuo, Toshihiko; and Watanabe, Kazuyoshi, 4,534,821, Cl. 156-617.0SP.
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Sawa, Yuji; Itoh, Toshio; and Adachi, Kuniomi, 4,534,155, Cl. 53-459.000.
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, to Hokuriku Pharmaceutical Co., Ltd. Antiinflammatory and antipyretic cream. 4,534,980, Cl. 514-570.000.

Ivac Corporation: *See—*
Nelson, Peter E., 4,534,756, Cl. 604-50.000.

Iwakura, Ken; and Ishige, Sadao, to Fuji Photo Film Co., Ltd. Fluoran derivatives and recording material using same. 4,535,348, Cl. 346-221.000.

Iwamori, Hidekazu: *See—*
Higuchi, Takeshi; Itakura, Yoshio; and Iwamori, Hidekazu, 4,534,710, Cl. 417-269.000.

Iwasaki, Kenji, to Tokyo Shibaura Denki Kabushiki Kaisha. Scanning type laser system. 4,534,615, Cl. 350-6.100.

Iwasaki, Shigeo; and Haguchi, Hiroshi, to Mitsuishi Fukai Tekkosho Ltd. Brick-forming vacuum press. 4,534,721, Cl. 425-73.000.

Iyehara, Sadahiro: *See—*
Ueda, Minoru; Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; and Yamamoto, Keisuke, 4,535,272, Cl. 315-366.000.

Izawa, Koji: *See—*
Harada, Nozomu; Oana, Yasuhisa; Ogi, Keisuke; Izawa, Koji; Taya, Akira; and Sakamoto, Masanori, 4,534,622, Cl. 350-334.000.

Izumi, Takayuki; Naito, Tsutomu; and Nakamura, Tomoo, to Toa Nenryo Kogyo Kabushiki Kaisha. Optically antisotropic carbonaceous pitch. 4,534,850, Cl. 208-22.000.

J. A. Freeman & Son, Inc.: *See—*
Miguel, Marvin E., 4,534,691, Cl. 414-38.000.

J. F. Adolff AG: *See—*
Friedrich, Hans-Joachim, 4,535,021, Cl. 428-137.000.

J. M. Voith GmbH: *See—*
Damrau, Wayne A.; Vreeland, William C.; Bernert, Richard; and Wohrle, Albert, 4,534,309, Cl. 118-410.000.

Jabarin, Saleh A., to Owens-Illinois, Inc. Oriented, high density poly(ethylene terephthalate). 4,535,025, Cl. 428-220.000.

Jackson, Jacqueline J.: *See—*
Smith, Leland B.; and Jackson, Jacqueline J., 4,534,939, Cl. 422-61.000.

Jacobine, Anthony F.: *See—*
Lin, Samuel Q. S.; and Jacobine, Anthony F., 4,534,838, Cl. 204-159.130.

Jacobs, Barry A.; and Fesman, Gerald, to Stauffer Chemical Company. Polyester polyurethane foam based medical support pad. 4,535,096, Cl. 521-107.000.

Jacobs, Marcellus L.; and Jacobs, Paul R., to Jacobs Wind Electric Company. Wind electric generation plant and system with improved alternator field excitation. 4,535,252, Cl. 290-44.000.

Jacobs, Paul R.: *See—*
Jacobs, Marcellus L.; and Jacobs, Paul R., 4,535,252, Cl. 290-44.000.

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Jacobson, Bernard; and Raymond, Laurie, to Boston Biomedical Research Institute. Cell proliferation inhibitor and method of preparation. 4,534,967, Cl. 424-95.000.

Jahabow Industries, Inc.: *See—*
Aspenwall, John E., 4,535,393, Cl. 362-217.000.

Jahn, Hans-Georg: *See—*
Durrnagel, Klaus; Jeschke, Willi; and Jahn, Hans-Georg, 4,534,289, Cl. 101-348.000.

Jahnke, William R.; Rockel, Bruce H.; Brown, Barry J.; Hawley, Floyd E.; Pennella, Andrew J.; Sugrue, John C.; and Wiggins, William R., to Textron Inc. Beo-type machining system. 4,534,093, Cl. 29-26.00A.

James, Robert G.: *See—*
Palm, Richard R.; James, Robert G.; and Fisher, Robert E., 4,534,706, Cl. 417-17.000.

Janisch, Gerhard: *See—*
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,004, Cl. 427-212.000.
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,005, Cl. 427-212.000.

Janson, Gosta. Solar-energy collector. 4,534,337, Cl. 126-445.000.

Japan Exlan Company Limited: *See—*
Kobashi, Toshiyuki; and Takao, Seiji, 4,535,027, Cl. 428-364.000.

Jasek, J. Rondal: *See—*
Broady, Floyd J.; and Jasek, J. Rondal, 4,534,887, Cl. 252-503.000.

Jaworowsky, Igor. Method and apparatus for water flow stimulation in a well. 4,534,413, Cl. 166-302.000.

Jenkins, Garry W. Smokers equipment. 4,534,369, Cl. 131-235.100.

Jenkins, James O. M.; and Gardner, Nigel C., to Siliconix Limited. Bridge rectifier circuit. 4,535,203, Cl. 179-81.00R.

Jeschke, Willi: *See—*
Durrnagel, Klaus; Jeschke, Willi; and Jahn, Hans-Georg, 4,534,289, Cl. 101-348.000.

Jesseman, Rodney J., to Armco Inc. Low alloy steel plate and process for production thereof. 4,534,805, Cl. 148-12.300.

Jet Research Center, Inc.: *See—*
Regalbuto, John A., 4,534,423, Cl. 175-4.600.

JGC Corporation: *See—*
Maeda, Katsutoshi; and Shimoda, Ikuo, 4,534,535, Cl. 248-636.000.

JGR Enterprises, Inc.: *See—*
Harshbarger, Harry F.; Kurz, John L.; and Young, Patrick J., 4,534,192, Cl. 70-118.000.

Jiang, Ching-Lin, to Mostek Corporation. Control of serial memory. 4,535,427, Cl. 365-205.000.

Jim Walter Resources, Inc.: *See—*
White, Claude C.; and Carr, Frederick, 4,534,679, Cl. 405-261.000.
White, Claude C.; and Carr, Frederick, 4,534,680, Cl. 405-261.000.

Jindrick, James A.; Dolnik, Thomas G.; Nohria, Naresh K.; Gilker, Clyde; Hurley, James R.; Dunk, Michael P.; Reis, Norbert J.; and Bray, Thomas J., to McGraw-Edison Company. Microprocessor based recloser control. 4,535,409, Cl. 364-481.000.

JLG Industries, Inc.: *See—*
Grove, John L.; Hockensmith, John L.; and Coffman, Allen B., 4,534,575, Cl. 280-6.110.

Job, Robert C., to Shell Oil Company. Olefin polymerization catalyst compositions and polymerization process. 4,535,068, Cl. 502-107.000.

Jochum, Peter, to Hilti Aktiengesellschaft. Setting device with a driving piston propelled by high pressure gases. 4,534,500, Cl. 227-7.000.

Johann Knupp GmbH & Co.: *See—*
Berns, Harald, 4,534,501, Cl. 227-65.000.

Johannes Heidenhain GmbH: *See—*
Holstein, Siegbert, 4,534,113, Cl. 33-125.00R.

John Fluke Mfg. Co., Inc.: *See—*
Duryee, Peter S.; and Anholm, John M., Jr., 4,535,318, Cl. 340-347.0CC.

John Zink Company: *See—*
Reed, Robert D.; and Cegielski, John M., Jr., 4,534,300, Cl. 110-171.000.

Johnson, Bernard H. Apparatus for milling a gear for a double enveloping worm gear drive. 4,534,684, Cl. 409-26.000.

Johnson, Edwin A., to Allied Corporation. Fuel distribution control for an internal combustion engine. 4,535,406, Cl. 364-431.080.

Johnson, Frank; Reese, Dieter; and Hirbour, Louis, to Technic, Inc. Apparatus for electroplating and chemically treating contact elements of encapsulated electronic components and their like. 4,534,843, Cl. 204-202.000.

Johnson, George E.; and Brenner, Stanley, to Leviton Manufacturing Company, Inc. Combined liner locking and locking washer system for mounting an incandescent lamp. 4,535,398, Cl. 362-404.000.

Johnson, Gerald E.: *See—*
Graham, James T.; and Johnson, Gerald E., 4,534,460, Cl. 198-482.000.

Johnson, John H., to SKF Industries, Inc. Lubricant insert for rolling bearings. 4,534,871, Cl. 252-12.000.

Johnson, Marvin M.: *See—*
McDaniel, Max P.; Johnson, Marvin M.; Hawley, Gil R.; Westerman, John; and Smith, Paul D., 4,535,070, Cl. 502-208.000.

Johnson, Raymond G., Jr.; Trustee, Bill L.; and Fischer, William C., to United Technologies Corporation. Pneumatic control valve actuator computer control arrangement. 4,534,702, Cl. 416-20.00R.

Johnson, Roy B.: *See—*
Scerbo, Joseph E.; and Johnson, Roy B., 4,534,269, Cl. 91-41.000.

Johnson, Terry L., to Beatrice Foods Co. Automatic lock for farm equipment transport wheel. 4,534,416, Cl. 172-311.000.

Johnson, Theodore C., Sr. Wheel position control for railway maintenance vehicle. 4,534,297, Cl. 105-215.00C.

Johnson, Timothy W.; and Banasiak, Dennis S., to Phillips Petroleum Company. Inhibition of water treeing in polymers of ethylene. 4,535,116, Cl. 524-385.000.

Johnsson, Agneta I.: *See—*
Carlstrom, Elis; Johnsson, Agneta I.; and Hermansson, Leif A. G., 4,534,936, Cl. 419-36.000.

Johnston, Gary M.; and Ciupak, Leonard A. Method and apparatus for conveying a flexible, imperforate member through a fluid. 4,534,635, Cl. 354-322.000.

Johnston, Paul D., to Genentech, Inc. Removal of impurities from human leukocyte interferon preparations. 4,534,906, Cl. 260-112.00R.

Jones, Howard: *See—*
Loev, Bernard; Chan, Wan-Kit; and Jones, Howard, 4,534,979, Cl. 514-529.000.

Jones, Jack E., to Xerox Corporation. Document belt normal force control. 4,534,551, Cl. 271-275.000.

Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., to California R&D Center. Percussion cap firing toy vehicle and track assembly. 4,534,745, Cl. 446-398.000.

Jones, Roy C. Traveling valve assembly. 4,534,715, Cl. 417-456.000.

Jones, William J., Jr. Apparatus for transporting firewood. 4,534,576, Cl. 280-47.260.

Jonsson, Mats; and Eden, Per-Olof. Method and device for taking soil samples. 4,534,231, Cl. 73-864.430.

Jouve, Hubert; and Magnin, Joel, to Commissariat a l'Energie Atomique. Magnetic bubble memory with unimplanted motifs. 4,535,422, Cl. 365-36.000.

Joy Manufacturing Company: *See—*
Mullins, Lance A.; and Self, Michael A., 4,535,326, Cl. 340-679.000.

Jung, Stig. Roller shade return mechanism. 4,534,396, Cl. 160-298.000.

Jurovsky, Albert Y.: *See—*
Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., 4,535,283, Cl. 323-365.000.

K. J. Law Engineers, Inc.: *See—*
Targosz, Thomas C., 4,534,212, Cl. 73-83.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Konishi, Satoshi, 4,534,429, Cl. 177-25.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.
Tuda, Goro, 4,534,694, Cl. 414-735.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Saito, Hiroshi, 4,534,676, Cl. 405-184.000.

Kabushiki Kaisha Sato: *See—*
Kashiwaba, Tadao, 4,534,518, Cl. 242-56.00R.

Kabushiki Kaisha Suwa Seikosha: *See—*
Araki, Ryosuke, 4,534,623, Cl. 350-339.00R.
Kurita, Hirohisa, 4,534,661, Cl. 368-250.000.
Mori, Masahiko; Arai, Kenichiro; and Tezuka, Chikao, 4,534,665, Cl. 400-145.200.

Kabushiki Kaisha Toshiba: *See—*
Kodama, Toshikazu; and Sato, Koji, 4,535,265, Cl. 310-313.00C.
Minikane, Tomiharu, 4,534,651, Cl. 356-440.000.
Watanabe, Junji, 4,534,666, Cl. 400-207.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Higuchi, Takeshi; Itakura, Yoshio; and Iwamori, Hidekazu, 4,534,710, Cl. 417-269.000.
Muramatsu, Shigeru; Asai, Isao; and Morita, Takayuki, 4,534,517, Cl. 242-35.50A.

Kabushiki Kaisha Universal: *See—*
Okada, Kazuo, 4,534,560, Cl. 273-143.00R.

Kabushikikaisha Aichidenkikosakusho: *See—*
Yamamoto, Osamu; and Norizuki, Senichiro, 4,534,108, Cl. 7-152.000.

Kadex, Incorporated: *See—*
Aydin, Kemal, 4,534,194, Cl. 70-278.000.

Kadin, Saul B., to Pfizer Inc. Antiallergic and antiulcer 1-oxo-1H-thiazolo[3,2-a]pyrimidine-2-carboxamides and intermediates therefor. 4,535,081, Cl. 514-258.000.

Kadonaga, Toshiki: *See—*
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.

Kagata, Akira: *See—*
Yoshikane, Tetsuo; Kagata, Akira; and Hiura, Hiromi, 4,534,136, Cl. 51-283.00R.

Kai, Toshio: *See—*
Nakazato, Takuzo; Okuto, Koichiro; and Kai, Toshio, 4,534,678, Cl. 405-204.000.

Kainmuller, Thomas: *See—*
Troxler, Eduard; Kainmuller, Thomas; and Maul, Rudolf, 4,535,145, Cl. 528-289.000.

Kaiser, Steven W.: *See—*
Papa, Anthony J.; and Kaiser, Steven W., 4,535,187, Cl. 568-353.000.

Kaiya, Nobuo: *See—*
Sasaki, Shosaku; and Kaiya, Nobuo, 4,535,123, Cl. 524-862.000.

Kaj, Goran L.: *See—*
Axen, Rolf E.; Kaj, Goran L.; and Rigner, Bror S., 4,535,010, Cl. 427-246.000.

Kakita, Shusaku; and Yoshida, Thihiro, to Kasei Optonix, Ltd. Phosphate fluorescent substance. 4,534,885, Cl. 252-301.40P.

Kalinowski, James E.: *See—*
Rutten, Peter T.; and Kalinowski, James E., 4,534,306, Cl. 114-311.000.

Kallmeyer, James B.: *See—*
Funk, David B.; and Kallmeyer, James B., 4,534,229, Cl. 73-863.000.

Kaltenbach & Voigt GmbH & Co.: *See—*
Strohmaier, Ernst, 4,534,732, Cl. 433-29.000.

Kamijo, Ken; and Uekusa, Yasuyuki, to Nissan Motor Co., Ltd. Seat belt retractor. 4,534,441, Cl. 180-268.000.

Kaminski, Joan M.: *See—*
Horodysky, Andrew G.; and Kaminski, Joan M., 4,534,872, Cl. 252-32.70E.

Kanai, Hideyuki; Takahashi, Takashi; Imai, Motomasa; and Furukawa, Osamu, to Tokyo Shibaura Denki Kabushiki Kaisha. Varistor includes oxides of bismuth, cobalt; manganese, antimony, nickel and trivalent aluminum. 4,535,314, Cl. 338-21.000.

Kanbe, Mitsuru, to Doryokuro Kakunenryo Kaihatsu Jigyodan. Liquid metal mechanical pump equipped with emergency syphon. 4,534,712, Cl. 417-366.000.

Kanda, Shuhei, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic record still mode reproduction apparatus and method. 4,535,367, Cl. 360-10.200.

Kaneko, Akinari: *See—*
Shindo, Masanari; Sato, Shigeru; and Kaneko, Akinari, 4,534,840, Cl. 204-192.00R.

Kang, Kenneth S.; and Veeder, George T., to Merck & Co., Inc. Heteropolysaccharide S-88. 4,535,153, Cl. 536-123.000.

Kaniecki, Michael; Landers, Samuel P.; and Botzman, Thomas J., to Goodyear Tire & Rubber Company, The. Coating material for use on sulfur vulcanized rubber. 4,535,114, Cl. 524-364.000.

Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, to Canon Kabushiki Kaisha. Electronic compact function calculator. 4,535,416, Cl. 364-715.000.

Kansai Paint Company, Ltd.: *See—*
Iida, Shinji, 4,535,126, Cl. 525-106.000.

Kanzai Paper Manufacturing Company Ltd.: *See—*
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.

Kao Corporation: *See—*
Suzuki, Toshio; Watanabe, Hiroshi; and Tsushima, Rikio, 4,534,892, Cl. 252-545.000.

Karavaev, Alexandr A.: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; Karavaev, Alexandr A.; and Yakushev, Vladimir M., 4,534,348, Cl. 128-305.000.

Kariakin, Joseph A., to Novi Development Corporation. Method for molding concrete slabs and battery mold therefor. 4,534,924, Cl. 264-259.000.

Karr, Michael A., Jr.: *See—*
Mitcham, John P.; and Karr, Michael A., Jr., 4,534,235, Cl. 74-128.000.

Kasbia, Puran S.; and Li, Yuan-Lu, to Northern Telecom Limited. Ground start detection in telephone loop signalling circuit. 4,535,201, Cl. 179-18.0FA.

Kasei Optonix, Ltd.: *See—*
Kakita, Shusaku; and Yoshida, Thihiro, 4,534,885, Cl. 252-301.40P.

Kashiwaba, Tadao, to Kabushiki Kaisha Sato. Automatic label winder. 4,534,518, Cl. 242-56.00R.

Kashubara, Dan. Vehicle wheel location device. 4,534,115, Cl. 33-203.180.

Kasner, William H.: *See—*
Krause, Robert F.; Rauch, Gary C.; and Kasner, William H., 4,535,218, Cl. 219-121.0LH.

Kassis, Amin I.; and Akili-Mudarris, Choukrie. Culture flask closure. 4,534,483, Cl. 215-306.000.

Katamoto, Kazuyoshi: *See—*
Nara, Kiyoshi; Katamoto, Kazuyoshi; and Ohta, Kazuhiko, 4,535,155, Cl. 544-20.000.

Kato, Chizuo, to Aluteck Co., Ltd. Decorative tile and method for manufacturing the same. 4,535,022, Cl. 428-142.000.

Kato, Hideo: *See—*
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, 4,534,980, Cl. 514-570.000.

Kato, Manabu; and Aoyama, Shunichi, to Nissan Motor Co., Ltd. Valve operation changing system of internal combustion engine. 4,534,323, Cl. 123-90.160.

Kato, Tadaaki: *See—*
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,534,975, Cl. 514-730.000.

Katoh, Minoru: *See—*
Kurono, Hitoshi; Taninaka, Kuniaki; Sugimoto, Tatsuyoshi; and Katoh, Minoru, 4,535,075, Cl. 514-96.000.

Katsura, Tadashi: *See—*
Minai, Masayoshi; and Katsura, Tadashi, 4,535,182, Cl. 560-231.000.

Kawada, Yasuyuki: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,534,411, Cl. 166-274.000.

Kawagoe, Takashi: *See—*
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,534,692, Cl. 414-282.000.

Kawaguchi, Kizo: *See—*
Matsuda, Teruo; and Kawaguchi, Kizo, 4,534,133, Cl. 51-58.000.

Kawaguchi, Toshio: *See—*
Kusumoto, Koshi; Kawaguchi, Toshio; Nakahara, Takeshi; and Kunimoto, Shinichiro, 4,535,102, Cl. 523-116.000.

Kawakami, Kiyoshi: *See—*
Naka, Yasushi; and Kawakami, Kiyoshi, 4,535,008, Cl. 427-246.000.

Kawamoto, Takashi: *See—*
Yamamura, Yukio; Nakayama, Jingo; Ikeda, Atsunobu; and Kawamoto, Takashi, 4,534,590, Cl. 297-180.000.

Kawamura, Eiichi: *See—*
Ishitani, Kenichiro; Unseki, Takashi; Amiboshi, Saburo; and Kawamura, Eiichi, 4,534,569, Cl. 277-27.000.

Kawamura, Kouichi; Horie, Seiji; and Sato, Hideo, to Fuji Photo Film Co., Ltd. Electric light-sensitive material containing a novel vinylidene chloride copolymer. 4,535,045, Cl. 430-60.000.

KCL Corporation: *See—*
Ferrell, Robert A.; and Rebber, Richard G., 4,534,752, Cl. 493-213.000.

Keefer, Larry K.; and Lunn, George, to United States of America, America. Reductive destruction of nitrosamines, hydrazines, nitramines, azo- and azoxy-compounds. 4,535,154, Cl. 544-106.000.

KEIO Electronic Laboratory Corporation: *See—*
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.

Keller, Roland. Muscle driven, single track bicycle. 4,534,578, Cl. 280-281.00R.

Kellogg, Scott T.: *See—*
Chakrabarty, Ananda M.; and Kellogg, Scott T., 4,535,061, Cl. 435-253.000.

Kelly, Michael G., to American Hoechst Corporation. Multi-ring fluorinated carbamates with textiles soil repellent activity. 4,534,770, Cl. 8-115.600.

Kelly, Robert C., to General Packaging Equipment Company. Apparatus for forming, filling and sealing bags with fluid contents. 4,534,159, Cl. 53-552.000.

Kelly, Ward L., to 49er Products. Mantle support device. 4,534,729, Cl. 431-110.000.

Kelm, James S.; Vickers, Edward C.; Williams, Jesse J.; and Taylor, Jack R., to United States of America, National Aeronautics and Space Administration. Flow modifying device. 4,534,166, Cl. 60-39.230.

Kelm, Roger W.; Merry, Glenn W.; and McArthur, William J., to Duracell Inc. Multi-cell power supply. 4,535,036, Cl. 429-99.000.

Kelman, Charles D. Intraocular lens and method of positioning the same in an eye. 4,534,069, Cl. 623-6.000.

Kemper, Franz, to Bergwerksverband GmbH. Mining tool with automatic sprinkler control. 4,534,597, Cl. 299-81.000.

Kempter, Karl, to Siemens Aktiengesellschaft. Image converted for X-ray equipment and the like. 4,535,468, Cl. 378-31.000.

Kendall, Cynthia E.: *See*—
Dreesman, Gordon R.; and Kendall, Cynthia E., 4,535,057, Cl. 435-5.000.

Kendrew, Thomas J.: *See*—
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,534,425, Cl. 175-53.000.

Kernforschungszentrum Karlsruhe GmbH: *See*—
Dippel, Theodor; and Loida, Andreas, 4,534,893, Cl. 252-629.000.

Kerr, Blanche S., executrix: *See*—
Kerr, Ronald R., deceased; Smith, David W.; and Trenary, John M., 4,534,340, Cl. 128-66.000.

Kerr, Ronald R., deceased (by Kerr, Blanche S., executrix); Smith, David W.; and Trenary, John M., to Teledyne Industries, Inc. Combination handle. 4,534,340, Cl. 128-66.000.

Kessler, H. Fred: *See*—
Query, Grady W.; Query, O. Grady; and Kessler, H. Fred, 4,534,128, Cl. 43-132.100.

Kessler, John R. Method of making an ink roller assembly with capillary ink supply. 4,534,094, Cl. 29-148.40D.

Kewpie Kabushiki Kaisha: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,534,284, Cl. 99-498.000.

Key Pharmaceuticals, Inc.: *See*—
Meltzer, Peter C.; and Coe, Jotham W., 4,535,157, Cl. 546-44.000.

Keystone Industries, Inc.: *See*—
Scott, Mark P., 4,534,298, Cl. 105-282.00R.

Khatri, Dilip K., to Electrical Equipment Limited. Touch-operated power control device. 4,535,254, Cl. 307-38.000.

KHD Canada, Inc.: *See*—
Slezak, Paul J., 4,534,456, Cl. 192-58.00A.

Khoobiar, Sargis, to Halcon SD Group, Inc., The. Conversion of isobutane to methacrolein. 4,535,188, Cl. 568-479.000.

Khromov, Sergei V.: *See*—
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; Karavaev, Alexandr A.; and Yakushev, Vladimir M., 4,534,348, Cl. 128-305.000.

Kido, Yasuo: *See*—
Ogasawara, Tsuyoshi; Ichiryu, Ken; Nakamura, Ichiro; and Kido, Yasuo, 4,534,452, Cl. 187-29.00A.

Kim, Miwon S., to Carter-Wallace, Inc. Pharmaceutical compositions. 4,534,973, Cl. 514-162.000.

Kim, Miwon S., to Carter-Wallace, Inc. Pharmaceutical compositions with codeine. 4,534,974, Cl. 514-161.000.

Kimata, Yoshihide: *See*—
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.

Kimura, Kiyoshi; Morita, Iwao; and Morimura, Seiichiro, to Nippon Shinyaku Co Limited. Antihypertensive phosphono derivatives of hantzsch dihydropyridines. 4,535,073, Cl. 514-89.000.

Kimura, Masashi: *See*—
Miura, Kunihiko; Takano, Shouji; and Kimura, Masashi, 4,534,642, Cl. 355-14.00E.

King, A. Douglas, Jr.: *See*—
Schade, John E.; and King, A. Douglas, Jr., 4,535,248, Cl. 250-459.100.

King, David E.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., to International Business Machines Corporation. Method for providing an electroless copper plating bath in the take mode. 4,534,797, Cl. 106-1.230.

King, L. Tony; and Peters, Mark W., to Komax Systems, Inc. Proportioning device. 4,534,655, Cl. 366-137.000.

Kirkhuff, Shield & Fink: *See*—
Kirkhuff, William J., 4,535,002, Cl. 427-203.000.

Kirkhuff, William J., to Kirkhuff, Shield & Fink. Process for rendering a material fire retardant. 4,535,002, Cl. 427-203.000.

Kishi, Hajimu; Tanaka, Kunio; and Seki, Masaki, to Fanuc Ltd. Numerical control machining method and apparatus. 4,535,408, Cl. 364-475.000.

Kishi, Toru; and Saito, Takashi, to Victor Company of Japan, Ltd. Apparatus for playing back rotating recording mediums. 4,535,433, Cl. 369-77.200.

Kishi, Yoshio, to Sony Corporation. Optical disc and disc drive mechanism. 4,535,434, Cl. 369-111.000.

Kiso, Mataichiro; Futakawa, Akemi; and Fukunaga, Tokio, to Mitsubishi Denki Kabushiki Kaisha. Strike diagnosis apparatus. 4,534,206, Cl. 73-12.000.

Kistner, Oscar J., to Mead Corporation, The. Method of forming intermediate folded blanks for center special slotted containers. 4,534,753, Cl. 493-453.000.

Kitani, Masakatu: *See*—
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.

Kitayama, Hiroyuki; and Kobayashi, Toyoko. Electrophotographic photosensitive member with electron donor and acceptor layers. 4,535,042, Cl. 430-56.000.

Kitayama, Masayasu; Sugimori, Yoshiaki; and Ohta, Schunich, to Nihon Sanso Kabushiki Kaisha. Absorbent for treating gases containing the materials used for semiconductor products and process of treating such gases with the same. 4,535,072, Cl. 502-411.000.

Kitik, Walter: *See*—
D'Onofrio, Anthony; and Kitik, Walter, 4,534,743, Cl. 445-24.000.

Kiyoto, Shinichiro; and Fujiwara, Chikara, to Mitsubishi Jukogyo Kabushiki Kaisha. Method for manufacturing a mold. 4,534,196, Cl. 72-61.000.

Klaus, Michael; Loeliger, Peter; and Weiser, Harald, to Hoffmann-La Roche Inc. 4,5,6,7-Tetrahydro-4,4,7,7-tetramethylbenzo[8]thien-2-yl or furan-2-yl derivatives. 4,535,086, Cl. 514-337.000.

Kleeper, John R.; Reid, John M.; Miwa, Hirohide; Shimura, Takaki; and Murakami, Keiichi. Apparatus for measuring the characteristics of an ultrasonic wave medium. 4,534,220, Cl. 73-599.000.

Klein, Jurgen; and Schulz, Peter, to Bergwerksverband GmbH. Method for regeneration of moist powder adsorption agents. 4,535,065, Cl. 502-21.000.

Klessing, Klaus, to Willmar Schwabe GmbH & Co. Optionally N-substituted aminodesoxy-1.4;3.6-dianhydrohexitol derivatives. 4,535,158, Cl. 544-118.000.

Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased (by Strauch, Ruth, Christel Strauch, legal representatives), to Hoesch Werke AG. Method and device for controlling the welding process in the manufacturing of pipes with longitudinal seams. 4,535,215, Cl. 219-61.500.

Kline, Richard H., to General Motors Corporation. Battery grid and method of making same. 4,534,091, Cl. 29-2.000.

Kline, Richard H., to General Motors Corporation. Battery grid. 4,535,040, Cl. 429-234.000.

Kloots, Jacobus; and Marengo, John, to Luxtec Corporation. Fiberoptic cable assemblies. 4,534,617, Cl. 350-96.200.

Knapp, Charles A., to United States of America, Army. Red phosphorous smoke producing composition. 4,534,810, Cl. 149-19.600.

Kneen, Geoffrey, to Burroughs Wellcome Co. Pharmaceutical compounds, preparation, use and intermediates therefor and their preparation. 4,535,183, Cl. 514-568.000.

Kneip, George D., Jr.: *See*—
Lee, Reuy-Lin; Kneip, George D., Jr.; and Anderson, Marvin H., 4,535,291, Cl. 324-320.000.

Kobashi, Toshiyuki; and Takao, Seiji, to Japan Exlan Company Limited. High strength polyacrylonitrile fiber and method of producing the same. 4,535,027, Cl. 428-364.000.

Kobayashi, Kazuyoshi; and Takizawa, Shozo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Suspension system for vehicles. 4,534,580, Cl. 280-712.000.

Kobayashi, Toyoko: *See*—
Kitayama, Hiroyuki; and Kobayashi, Toyoko, 4,535,042, Cl. 430-56.000.

Koch, Friedrich-Otto: *See*—
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Kochloefl, Karel: *See*—
Schneider, Michael; Kochloefl, Karel; and Ladebeck, Jurgen, 4,535,071, Cl. 502-342.000.

Kodama, Toshikazu; and Sato, Koji, to Kabushiki Kaisha Toshiba. Surface acoustic wave transducer with internal acoustic reflection. 4,535,265, Cl. 310-313.00C.

Koehl, Robert: *See*—
Logel, Bernard; and Koehl, Robert, 4,535,226, Cl. 219-400.000.

Koehler, Gernot: *See*—
Naarmann, Herbert; and Koehler, Gernot, 4,535,039, Cl. 429-213.000.

Koehring GmbH: *See*—
Vural, Gulertan, 4,534,419, Cl. 173-1.000.

Koene, Casper H.; Vos, Cornelis; and Brasser, Jan, to Naarden International N.V. Process for flavoring dry vegetable matter. 4,534,983, Cl. 426-293.000.

Koenig, Kurt L. Portable traffic warning light. 4,535,331, Cl. 340-908.000.

Kogan, Abraham; and Moore, Uri, to Gason Energy Engineering Ltd. Method and apparatus for the absorption of a gas in a liquid and their use in energy conversion cycles. 4,534,175, Cl. 60-649.000.

Koishi, Kenji: *See*—
Satoh, Isao; Yoshida, Tomio; Ohara, Shunji; and Koishi, Kenji, 4,535,439, Cl. 369-275.000.

Kojima, Tetsuhiko: *See*—
Sugimori, Shigeru; Kojima, Tetsuhiko; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,534,883, Cl. 252-299.630.

Kojo, Hidehiko; and Akimoto, Koji, to Asahi Denka Kogyo K.K. Coating composition. 4,535,103, Cl. 523-450.000.

Koki, Sasaki: *See*—
Toshimasa, Kuroda; Akio, Kimura; Takumi, Horiuchi; Koki, Sasaki; and Terukuni, Ikuta, 4,534,164, Cl. 57-290.000.

Kokuryo, Yoshiro, to Hitachi, Ltd.; and Hitachi Denshi Kabushiki Kaisha. Method and device for controlling the phase of timing signal. 4,535,295, Cl. 328-155.000.

Kolomiets, Alexandr S.: *See*—
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.

Komax Systems, Inc.: *See*—
King, L. Tony; and Peters, Mark W., 4,534,655, Cl. 366-137.000.

Komiya, Hidetsugu; and Yamazaki, Etsuo, to Fanuc Ltd. Tracer control system. 4,534,685, Cl. 409-99.000.

Kondo, Hidetoshi; and Koshii, Taro, to Toray Silicone Company, Ltd. Method for producing silicone aqueous emulsion compositions. 4,535,109, Cl. 524-188.000.

Kondo, Takeo: *See*—
Ochii, Kiyofumi; Masuda, Masami; and Kondo, Takeo, 4,535,255, Cl. 307-264.000.

Koning, Gerrit; and Bergveld, Piet, to Cordis Europa, N.V. Method of making an electrochemical sensing cell. 4,534,825, Cl. 156-644.000.

Konishi, Satoshi, to Kabushiki Kaisha Ishida Koki Seisakusho. Combinatorial weighing apparatus. 4,534,429, Cl. 177-25.000.

Konishi, Yuichiro; Tsunekawa, Tokuichi; and Someya, Hiromi, to Canon Kabushiki Kaisha. Camera having an exposure mode change-over device. 4,534,639, Cl. 354-432.000.

Konishiroku Photo Industry Co., Ltd.: *See*—
Ohnuki, Mitsuo, 4,534,625, Cl. 350-429.000.
Shindo, Masanari; Sato, Shigeru; and Kaneko, Akinari, 4,534,840, Cl. 204-192.00R.

Korevaar, Geerlof J., to U.S. Philips Corporation. Terminal arrangement for a duplex transmission system. 4,535,443, Cl. 370-24.000.

Korotkikh, Jury B.: *See*—
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.

Korte, Siegfried: *See*—
Brauer, Wolfgang; Korte, Siegfried; Neukam, Theo; and Suling, Carlhans, 4,535,139, Cl. 526-287.000.

Korthoff, Herbert W., to United States Surgical Corporation. Surgical fastener member having increased rate of absorption. 4,534,352, Cl. 128-334.00C.

Kortovich, James W.; and Micinski, Eugene, to Union Carbide Corporation. Manufacture of high quality graphite electrodes using calcined anthracite coal as raw material. 4,534,951, Cl. 423-448.000.

Kosal, Jeffrey A.; and Plueddemann, Edwin P., to Dow Corning Corporation. Detergent composition with siliconate-zeolite and silicate builder. 4,534,880, Cl. 252-174.130.

Koshii, Taro: *See*—
Kondo, Hidetoshi; and Koshii, Taro, 4,535,109, Cl. 524-188.000.

Koshinaka, Eiichi: *See*—
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, 4,534,980, Cl. 514-570.000.

Kosuzume, Hiroshi: *See*—
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,534,966, Cl. 424-94.000.

Kovacina, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., to United States of America, Navy. Mono (pentafluorosulfur diacetylene,polymer therefrom, and preparations thereof. 4,535,011, Cl. 427-255.600.

Kovacs, Gabriella: *See*—
Rusznak, Istvan; Trezl, Lajos; Foldesi, Dezso ; Szabo, Bela; Bodi, Imre; Csaszar, Szilveszter; Szopko, Mihaly; Gombar, Mihaly; Kovacs, Gabriella; and Tyihak, Erno , 4,534,782, Cl. 71-21.000.

Kowalski, Werner: *See*—
Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, 4,534,946, Cl. 423-315.000.

Koyanagi, Katubumi; Take, Hiroshi; and Uede, Hisashi, to Sharp Kabushiki Kaisha. Constant current/constant voltage drive for an electrochromic display cell. 4,535,329, Cl. 340-785.000.

Koyanagi, Yuzo, to Sanwa Seiki Mfg. Co., Ltd. Digital control method. 4,535,402, Cl. 364-152.000.

Koziol, Konrad: *See*—
Zollner, Dieter H.; Zollner, Christine; Schieber, Franz; Lauterbach-Dammler, Inge; and Koziol, Konrad, 4,534,836, Cl. 204-67.000.

Kramer, Cornelis: *See*—
Zonneveld, Frans W.; and Kramer, Cornelis, 4,535,245, Cl. 250-385.000.

Kraus, Charles J.; Stoller, Herbert I.; and Wu, Leon L., to International Business Machines Corporation. High density wired module. 4,535,388, Cl. 361-414.000.

Kraus, Richard B., to General Kinematics Corporation. Method of and apparatus for forming a liner in a furnace or other vessel. 4,534,730, Cl. 432-3.000.

Kraus, Robert G.; and Quick, James R., to International Paper Company. Non-woven heating element. 4,534,886, Cl. 252-502.000.

Krause, Johannes: *See*—
Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, 4,534,946, Cl. 423-315.000.

Krause, Robert F.; Rauch, Gary C.; and Kasner, William H., to Westinghouse Electric Corp. Laser scribing apparatus and process for using. 4,535,218, Cl. 219-121.0LH.

Kreager, William D.; and Berger, Kenneth R., to Frito-Lay, Inc. Method and apparatus for ultrasonic sealing. 4,534,818, Cl. 156-466.000.

Krebs, Rolf: *See*—
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Kremer, Richard D.: *See*—
Bacon, David L.; Kremer, Richard D.; and Morse, Randall H., 4,534,863, Cl. 210-232.000.

Kretschmer, Alfred, to BASF Aktiengesellschaft. Apparatus for applying treating media onto webs. 4,534,308, Cl. 118-260.000.

Kreusch, Edward G.; and Brodzik, Bruce F., to Culligan International Company. System for removing iron and/or other chemically reducing substances from potable water. 4,534,867, Cl. 210-722.000.

Krishnan, Sivaram: *See*—
Price, Ronald L.; Witman, Mark W.; and Krishnan, Sivaram, 4,535,143, Cl. 528-174.000.

Kroupa, Loretta A., to Dow Corning Corporation. Liquid curable polyorganosiloxane compositions. 4,535,141, Cl. 528-15.000.

Krstenansky, John L.; and Currie, Bruce L., to University of Illinois, The Board of Trustees of the. 5H-6-oxo-2,3,4,4a,7,7a-hexahydropyrano[2,3-b]pyrrole and the preparation thereof. 4,535,169, Cl. 548-453.000.

Krupp Bruninghaus GmbH: *See*—
Hegemann, Fritz; and Beihammer, Horst, 4,534,418, Cl. 172-708.000.

Krutchen, Charles M.; and Wu, Wen-Pao, to Mobil Oil Corporation. Polymer foam, thermoformed shapes thereof and methods of forming same. 4,535,100, Cl. 521-180.000.

Kryger, Allen C., to Squirt & Company. Aseptic juice or beverage and flavor enhancement system therefor. 4,534,991, Cl. 426-592.000.

Kryze, Jiri: *See*—
Clerget, Michel; Germain, Francois; Kryze, Jiri; and Poujois, Robert, 4,534,650, Cl. 356-376.000.

Ksaacson, Henry V.; and Wright, Hal E., to Eastman Kodak Company. Chloroaluminumphthalocyanine exhibiting reduced green spectral absorption. 4,535,046, Cl. 430-78.000.

Kubota, Hayato: *See*—
Yoshida, Hideaki; and Kubota, Hayato, 4,534,982, Cl. 426-36.000.

Kuckein, Wilfried; Mylius, Albert; Bechtel, Peter; and Hofer, Adalbert, to Messerschmitt-Bolkow-Blohm GmbH; and G & H Montage GmbH. Heat-resistant lining for wall, such as helicopter engine compartment bulkhead, and wall lined therewith. 4,535,017, Cl. 428-77.000.

Kudamatsu, Akio: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,535,076, Cl. 514-128.000.

Kuehne, Richard O., to W. R. Grace & Co., Cryovac Div. Puncture-resistant bag and method for vacuum packaging bone-in meat. 4,534,984, Cl. 426-412.000.

Kufrin, Fred W.: *See*—
Zahn, William L.; and Kufrin, Fred W., 4,534,471, Cl. 211-39.000.

Kuhl, David K.: *See*—
Rothfuss, Robert G.; Kuhl, David K.; Bilotti, Federico; Melling, Hugh; and Mills, Earl J., 4,534,351, Cl. 128-334.00R.

Kuhn, Beryl M. Addition of resins to latex bonded nonwoven fabrics for improved strength. 4,535,013, Cl. 427-389.900.

Kulberg, Gerardus H., deceased: *See*—
Dirkse, Franciscus J.; and Kulberg, Gerardus H., deceased, 4,535,242, Cl. 250-363.00S.

Kulberg-Nierstrasz, Julia F., heiress: *See*—
Dirkse, Franciscus J.; and Kulberg, Gerardus H., deceased, 4,535,242, Cl. 250-363.00S.

Kulzer & Co. GmbH: *See*—
Schaefer, Roland, 4,534,839, Cl. 204-159.230.

Kume, Toyohiko: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,535,076, Cl. 514-128.000.

Kun, Zoltan K.; and Malmberg, Paul R., to Westinghouse Electric Corp. Thin film electroluminescent line array emitter and printer. 4,535,341, Cl. 346-107.00R.

Kunikyo, Hiroshi: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,534,284, Cl. 99-498.000.

Kunimoto, Shinichiro: *See*—
Kusumoto, Koshi; Kawaguchi, Toshio; Nakahara, Takeshi; and Kunimoto, Shinichiro, 4,535,102, Cl. 523-116.000.

Kunkel, Fred: *See*—
Schroder, Peter; Kunkel, Fred; and Hummel, Peter, 4,534,290, Cl. 101-365.000.

Kurakake, Mitsuo, to Fanuc Ltd. Position control apparatus and method. 4,535,277, Cl. 318-561.000.

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Sawa, Yuji; Itoh, Toshio; and Adachi, Kuniomi, 4,534,155, Cl. 53-459.000.
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,534,975, Cl. 514-730.000.

Kurisu, Yoshitaka: *See*—
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Kurita, Hirohisa, to Kabushiki Kaisha Suwa Seikosha. Electric alarm wristwatch including cylindrical sound tube for transmitting sound. 4,534,661, Cl. 368-250.000.

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Kuroda Seiko Company Limited: *See*—
Hozumi, Kazuhiro; and Tamaki, Shigeo, 4,534,381, Cl. 137-625.650.

Kurono, Hitoshi; Taninaka, Kuniaki; Sugimoto, Tatsuyoshi; and Katoh, Minoru, to Nihon Nohyaku Co., Ltd. Dithiolane derivative, process for producing the same and use thereof. 4,535,075, Cl. 514-96.000.

Kurt Wolf & Co. KG: *See*—
Wolf, Kurt; and Andre, Wolfram K., 4,535,229, Cl. 219-440.000.

Kurtz, Mark E. Water sterilization system. 4,535,247, Cl. 250-436.000.

Kurz, Gerhard. Pressure-sensitive electrical switch. 4,535,209, Cl. 200-83.00R.

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Harshbarger, Harry F.; Kurz, John L.; and Young, Patrick J., 4,534,192, Cl. 70-118.000.

Kusters, Eduard: *See*—
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Kusumoto, Koshi; Kawaguchi, Toshio; Nakahara, Takeshi; and Kunimoto, Shinichiro, to Tokuyama Soda Kabushiki Kaisha. Adhesive coating material. 4,535,102, Cl. 523-116.000.
Kuznetzoff, Philip, to Burroughs Corporation. Display panel and method of making it. 4,534,744, Cl. 445-47.000.
La Telemecanique Electrique: *See*—
Moreau, Dominique; Duchemin, Pierre; and Duchemin, Jean-Pierre, 4,535,309, Cl. 335-42.000.
Labbe, Francis A., to Mlins PLC. Cigarette manufacture. 4,534,368, Cl. 131-110.000.
Labconco Corporation: *See*—
Parks, James D.; Moss, Charles A.; and Dyer, Kermit W., 4,534,281, Cl. 98-115.300.
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased (by Martin, Mary B., executrix), to American Cyanamid Company. Antibacterial antibiotics LL-CO8078α_1, α_2, α_3 and β . 4,534,970, Cl. 424-122.000.
Ladebeck, Jurgen: *See*—
Schneider, Michael; Kochloefl, Karel; and Ladebeck, Jurgen, 4,535,071, Cl. 502-342.000.
Ladin, Eli M., to Federal-Mogul Corporation. Self-aligning clutch release bearing assembly. 4,534,458, Cl. 192-98.000.
Ladriere, Serje. Solar collectors. 4,534,336, Cl. 126-431.000.
Laesser, Claude, to ETA S.A., Fabriques d'Ebauches. Portable device including a visible mechanism. 4,534,660, Cl. 368-220.000.
L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude: *See*—
Petit, Roland, 4,534,227, Cl. 73-861.870.
Rigouard, Alain, 4,534,864, Cl. 210-603.000.
Lamb Technicon Corp.: *See*—
Graham, James T.; and Johnson, Gerald E., 4,534,460, Cl. 198-482.000.
Lambelin, Georges E.: *See*—
Franz, Michel R.; Vincze, Andreas B.; Lambelin, Georges E.; and Polat, Alain V., 4,534,911, Cl. 514-575.000.
Lamoreux, Larry W. Sagittal knee test apparatus. 4,534,364, Cl. 128-774.000.
Lancaster, Janet M.: *See*—
Atkinson, Alan W.; Dearden, Katryna J.; and Lancaster, Janet M., 4,534,922, Cl. 264-119.000.
Landers, Samuel P.: *See*—
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Lane, Clyde H., to United States of America, Air Force. Electrical method of making conductive paths in silicon. 4,534,100, Cl. 29-586.000.
Lane, Lawrence J., to General Electric Company. Shaft voltage suppression circuit. 4,535,377, Cl. 361-1.000.
Lane, Michael S.; and Scholbrock, Steven D., to AT&T Information Systems. Conferencing system adaptive signal conditioner. 4,535,445, Cl. 370-62.000.
Lang, Winfried: *See*—
More, Anton; Lang, Winfried; Riedle, Rudolf; Straussberger, Herbert; and Streckel, Willi, 4,534,791, Cl. 75-10.00R.
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Lankton, Gordon B., to Nypro Inc. Manufacture and use of closely spaced attachments. 4,534,464, Cl. 206-343.000.
Lardner, Graham G., to Unipart Group, Limited. Heat exchangers. 4,534,407, Cl. 165-81.000.
Lares, Joseph P., to Lares Research. Swivel dental handpiece. 4,534,734, Cl. 433-126.000.
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Lares, Joseph P., 4,534,734, Cl. 433-126.000.
Larock, Richard C., to Iowa State University Research Foundation Inc. Synthesis of bicyclic and tricyclic 7-oxa prostaglandin endoperoxide analogs via oxypalladation of norbornadiene. 4,535,179, Cl. 560-117.000.
LaRosa, John; and Panipinto, David C., to American Can Company. Undercut punch to control ironing. 4,534,201, Cl. 72-348.000.
Larson, Eldon E., to Eltech Innovations Inc. Perforating, seal-greasing apparatus and method. 4,534,449, Cl. 184-105.200.
Larson, Kenneth H.: *See*—
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Larsson, Sten: *See*—
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Latsch, Reinhard; and Schlembach, Hans, to Robert Bosch GmbH. Externally ignited internal combustion engine. 4,534,327, Cl. 123-263.000.
Lau, Wah. Adjustable buckle. 4,534,087, Cl. 24-163.00K.
Laub, Herman, III. One-piece childproof tamper-evident bottle and cap. 4,534,477, Cl. 215-215.000.
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Laursen, Donald, Jr., to Thrum, Edmund Arthur. Game playing apparatus. 4,534,559, Cl. 273-113.000.
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Zollner, Dieter H.; Zollner, Christine; Schieber, Franz; Lauterbach-Dammler, Inge; and Koziol, Konrad, 4,534,836, Cl. 204-67.000.
Laviolette, Andre . Camera-protecting apparatus including a fan for deflecting particles. 4,534,632, Cl. 354-81.000.
Leach, Jack: *See*—
Bruner, Jeffrey W.; Davis, Delbert A.; and Leach, Jack, 4,535,015, Cl. 428-44.000.
Leach, Jerald G., to Texas Instruments Incorporated. Low power clock generator circuit. 4,535,465, Cl. 377-46.000.
Leavoy, Wayne P.: *See*—
Ambrose, John; Charles, Douglas K.; Conard, Bruce R.; Diaz, Carlos; O'Neill, Charles E.; and Leavoy, Wayne P., 4,534,935, Cl. 419-23.000.
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Lecoffre, Yves; and Marcoz, Jean, to Societe anonyme dite: Alsthom-Atlantique. Method of degassing a liquid. 4,534,774, Cl. 55-44.000.
Lecolier, Serge L. M. B.; and Raynal, Serge F., to Societe Nationale des Poudres et Explosifs. Associations of bases, resulting from the combination of a lithium alkyl or aryl with an alkali metal amide or hydride, polymerization process in which they are used, and product obtained. 4,535,135, Cl. 526-174.000.
Lecomte, Francois. Sail ski device. 4,534,305, Cl. 441-73.000.
Lectard, Alain; and Magrone, Robert. Process for converting hydragillite into boehmite. 4,534,957, Cl. 423-625.000.
Lee, Kenneth R.: *See*—
Cedrone, Nicholas J.; and Lee, Kenneth R., 4,534,605, Cl. 339-75.00M.
Lee, Raymond; Okey, David W.; and Ferro, Gregory A., to IMI-Tech Corporation. Polyimide foam from mixture of silicon containing diamine and different aromatic diamine. 4,535,099, Cl. 521-154.000.
Lee, Raymond; Sorathia, Usman A. K.; and Ferro, Gregory A., to Imi-Tech Corporation. Polyimide of 2,2-bis(4-(4-aminophenoxy)-phenyl)-hexafluoropropane and process for the preparation of same. 4,535,101, Cl. 521-189.000.
Lee, Reuy-Lin; Kneip, George D., Jr.; and Anderson, Marvin H., to Varian Associates, Inc. Method for superconducting magnet shimming. 4,535,291, Cl. 324-320.000.
Lee, Robert S.: *See*—
Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., 4,534,745, Cl. 446-398.000.
Le Fur, Gerard R.: *See*—
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Lehmann, Hans W.: *See*—
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Leloux, Arnoldus W. J., to Wavin B.V. Device for cooling molds. 4,534,184, Cl. 62-376.000.
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Lemelson, Jerome H. Position indicating system and method. 4,535,414, Cl. 364-561.000.
Lenin Mezogazdasagi Termeloszovetkezet: *See*—
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Leporq, Serge: *See*—
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Leviton Manufacturing Company, Inc.: *See*—
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Lewis, Christopher G.; and Martin, Patrick. Long shelf life cementitious anchoring capsule. 4,534,795, Cl. 106-89.000.
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Lewis, Robert J.: *See—*
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LGT, Laboratoire General des Telecommunications: *See—*
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Lichti, Reiner, to Siemens Aktiengesellschaft. Drive circuit for piezoelectric transducer in ink jet printers. 4,535,346, Cl. 346-140.00R.
Liff, Lawrence J. Wax base makeup composition. 4,534,961, Cl. 424-63.000.
Lin, Samuel Q. S.; and Jacobine, Anthony F., to Loctite Corporation. Siloxane polyphotoinitiators of the substituted acetophenone type. 4,534,838, Cl. 204-159.130.
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Lindqvist, Ake, to ASEA Aktiebolag. Safety device in an operating unit for an industrial robot. 4,535,207, Cl. 200-17.00R.
Lion Corporation: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,534,411, Cl. 166-274.000.
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Lipski, Mordechai. W.C. Seat for children. 4,534,072, Cl. 4-237.000.
Little, Edwin D.; and Minzghor, Karsten R., to Virginia Chemicals Inc. Sodium hydrosulfite slurries. 4,534,954, Cl. 423-515.000.
Ljubomir, Srnic. Apparatus for welding in vertical, horizontal and slanting position. 4,535,213, Cl. 219-57.000.
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Loegstrup, Joergen; and Sparre, Preben C., to A/S Loegstrup-Steel. Current connecting device for the establishing of electrical connection between conductors. 4,534,612, Cl. 339-255.00P.
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Loev, Bernard; Chan, Wan-Kit; and Jones, Howard, to USV Pharmaceutical Corp. Polyene compounds useful in the treatment of psoriasis and allergic responses. 4,534,979, Cl. 514-529.000.
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Logel, Bernard; and Koehl, Robert, to De Dietrich & Cie. Domestic electric cooking oven. 4,535,226, Cl. 219-400.000.
Loh, William, to Chevron Research Company. Herbicidal 5-deoxy-3-O-arylmethyl or substituted arylmethyl-1,2-O-ethylene-alpha-D-xylofuranose derivatives. 4,534,785, Cl. 71-88.000.
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Lomax, Ronald W., to International Standard Electric Corporation. Electrical contact units. 4,535,312, Cl. 335-196.000.
Lombardino, Joseph G.; and Harbert, Charles A., to Pfizer Inc. Certain 4-(2-hydroxyethylthiomethyl)pyridines and derivatives thereof having immunoregulatory activity. 4,535,084, Cl. 514-277.000.
Long, Gary N.; Pellet, Regis J.; and Rabo, Jule A., to Union Carbide Corporation. Method for cracking residual oils. 4,534,853, Cl. 208-120.000.
Lopp, Loran C., Jr.: *See—*
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van Belzen, David; Honig, Gunter; Lotterbach, Gerhard; van Woudenberg, Jan-Faas; and Zucker, Udo, 4,534,331, Cl. 123-492.000.
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Price, Anthony G.; and Gornall, Graham J., 4,534,172, Cl. 60-578.000.
Lucien, Staub, to National Company Air France, The. Leg-rest, notably for transport vehicles and especially for aeroplanes. 4,534,594, Cl. 297-438.000.
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Luo, Tatao; Russo, Louis; and Freenor, Francis J., III, to Chevron Research Company. 1-Alkyl derivatives of 3-aryloxy-4-(2-carbalkoxy)-phenyl-azet-2-ones as plant growth regulators. 4,534,786, Cl. 71-88.000.
Lupke, Manfred A. A. Method and apparatus for forming a double walled thermoplastic tube with integral bells. 4,534,923, Cl. 264-156.000.
Lutsey, Thomas H.; and Bero, Vernon L., to Gold Bond Ice Cream, Inc. Forming and conveying of baked confection shells. 4,534,722, Cl. 425-104.000.
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M. A. Industries, Inc.: *See—*
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Maack, Werner, to AMP Incorporated. Wire insertion and terminal crimping tool. 4,534,107, Cl. 29-751.000.
MacAnlis, David H. Cross polarized wire grid antenna. 4,535,337, Cl. 343-737.000.
MacArthur, Alexander D.; and Everett, Harry J., to Westinghouse Electric Corp. Method for determining the amount of dissolved oxygen from above and below water level air leakage in a steam power plant. 4,534,320, Cl. 122-406.00R.
Macin, Bruce J.; and Bresin, Mark S., to Motorola, Inc. Method and apparatus for testing a sealed container. 4,534,208, Cl. 73-49.300.
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MacLaughlin, Donald: *See—*
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MacPhail, David M., to Macpod Enterprises Ltd. Fit and support system for sports footwear. 4,534,122, Cl. 36-88.000.
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Maddern, Thomas S.; Ansell, John W.; and Philip, Alexander S., to Plessey Company plc, The. Digital switching network for telecommunications exchange. 4,535,442, Cl. 370-13.000.
Maeda, Katsutoshi; and Shimoda, Ikuo, to JGC Corporation; and Oiles Industry Co., Ltd. Damping support for piping system. 4,534,535, Cl. 248-636.000.
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Magdefessel, Heinz, to Siemens Aktiengesellschaft. Getter sorption pump with heat accumulator for high-vacuum and gas discharge systems. 4,534,708, Cl. 417-51.000.
Magdo, Ingrid E., to International Business Machines Corporation. Method for manufacturing vertical PNP transistor with shallow emitter. 4,534,806, Cl. 148-1.500.
Magendans, Frederik; te Raa, Gerhardus A.; and van Rheenen, Bernhard J. P., to U.S. Philips Corporation. Method of manufacturing a rotary anode for X-ray tubes and anode thus produced. 4,534,993, Cl. 427-34.000.
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Magnetic Analysis Corporation: *See*—
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Mowry, Gregory S; and George, Peter K., 4,535,375, Cl. 360-113.000.
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Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; and Takahashi, Toshio, to Shionogi & Co., Ltd. Propynylaminothiazole derivatives. 4,535,088, Cl. 514-370.000.
Malaval, Claude, to Novatome. Annular slab for closing the vessel of a fast neutron nuclear reactor. 4,534,140, Cl. 52-21.000.
Mali, David: *See*—
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Malmberg, Paul R.: *See*—
Kun, Zoltan K.; and Malmberg, Paul R., 4,535,341, Cl. 346-107.00R.
Mammel, Lewis H.; and Shakespeare, Walter J., to AT&T Bell Laboratories. Air cleaner. 4,534,776, Cl. 55-136.000.
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Manno, Joseph T. Wood burning stove heat exchanger. 4,534,319, Cl. 122-15.000.
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Plesko, George A., 4,534,459, Cl. 194-1.00D.
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Marsh, Hugh R., to Thorn Emi Instruments Limited. Low charge detector. 4,535,325, Cl. 340-636.000.
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Martin Marietta Corporation: *See*—
Bergquist, Lyle E., 4,534,204, Cl. 73-1.00G.
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Allan, David E.; and Martinez, Charles H., 4,534,851, Cl. 208-48.00R.
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Grasset, Daniel; and Martinot, Bernard, 4,534,942, Cl. 422-117.000.
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Ferris, Michael J.; Wise, Paul H.; and Breslow, Jeffrey D., 4,534,566, Cl. 273-248.000.
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Glicksman, Leon R., 4,534,119, Cl. 34-95.000.
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Masuda, Mitsuya: *See*—
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Chen, Lee; Hendricks, Charles J.; Mathad, Gangadhara S.; and Poloncic, Stanley J., 4,534,816, Cl. 156-345.000.
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Henderson, Ronald C., 4,534,737, Cl. 440-53.000.
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Pocock, John F. E.; Cole, Charles A.; Villanueva, James G.; Matlack, John D.; and Lewis, Shelton E., 4,534,995, Cl. 427-38.000.
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Matsubara, Nobuyuki: *See*—
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Matsuda, Minoru; and Mitsuishi, Toshiro, to Honda Giken Kogyo Kabushiki Kaisha. Arrangement for insertion of spark plugs in cylinder head. 4,534,322, Cl. 123-55.00R.
Matsuda, Tamotsu, to Honda Giken Kogyo Kabushiki Kaisha. Air temperature regulating apparatus for vehicles. 4,534,507, Cl. 237-12.30A.
Matsuda, Teruo; and Kawaguchi, Kizo, to Osaka Seiki Kabushiki Kaisha. Machine for superfinishing annular workpieces. 4,534,133, Cl. 51-58.000.
Matsuguchi, Michiharu: *See*—
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Matsushita Electric Industrial Company, Limited: *See—*
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Nomura, Noboru; Hirota, Eiichi; and Wasa, Kiyotaka, 4,535,376, Cl. 360-126.000.
Satoh, Isao; Yoshida, Tomio; Ohara, Shunji; and Koishi, Kenji, 4,535,439, Cl. 369-275.000.
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Yamamura, Yukio; Nakayama, Jingo; Ikeda, Atsunobu; and Kawamoto, Takashi, 4,534,590, Cl. 297-180.000.

Matsuura, Norio: *See—*
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Rothermel, William F.; Matthews, John P.; Walker, James W.; and Coulter, Wallace H., 4,534,465, Cl. 206-443.000.

Maul, Rudolf: *See—*
Troxler, Eduard; Kainmuller, Thomas; and Maul, Rudolf, 4,535,145, Cl. 528-289.000.

Maurer, Fritz; Homeyer, Bernhard; and Becker, Benedikt, to Bayer Aktiengesellschaft. O-Pyrazolyl-N-cyanoalkylsulphenyl-carbamate pesticides. 4,535,091, Cl. 514-407.000.

Maxwell, Peter C.: *See—*
Hsieh, Jih-Han; Barer, Sol J.; and Maxwell, Peter C., 4,535,059, Cl. 435-142.000.

May, David C., to Minnesota Mining and Manufacturing Company. Elastomeric pavement marker. 4,534,673, Cl. 404-14.000.

May, Richard L., to Mr. Gasket Company. Portable spotlight. 4,535,397, Cl. 362-369.000.

Mayo, Irving A., to Artistic Desk Pad & Novelty Co., Inc. Tray stacking. 4,534,475, Cl. 211-126.000.

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Tanaka, Fusatoshi, 4,534,325, Cl. 123-90.270.

McAliley, J. Eugene; Daumit, Gene P.; and Ethridge, Fredrick A., to Celanese Corporation. Production of a carbon fiber multifilamentary tow which is particularly suited for resin impregnation. 4,534,919, Cl. 264-29.200.

McArdle, Francis H., to Boeing Company, The. Helicopter rotor control system with integrated hub. 4,534,704, Cl. 416-158.000.

McArthur, William J.: *See—*
Kelm, Roger W.; Merry, Glenn W.; and McArthur, William J., 4,535,036, Cl. 429-99.000.

McBee, David G.: *See—*
Sundberg, Donald C.; Bishop, Paul L.; and McBee, David G., 4,534,865, Cl. 210-692.000.

McBride, Mark A. Insulated panel system for storage tanks. 4,534,490, Cl. 220-435.000.

McCabe, Bernard J.; and Courtney, David T., to Ford Motor Company. Flushable metering pump. 4,534,717, Cl. 418-181.000.

McCain, G. Howard; Benezra, Leo L.; and Finch, Craig E., to Eltech Systems Corporation. Cation exchange electrolytic cell membranes and method for making and repairing. 4,535,112, Cl. 524-233.000.

McClosky, Robert B., to Wrapade Machine Company, Inc. Packaging machine. 4,534,158, Cl. 53-562.000.

McClung, Ronald G.: *See—*
Novak, William J.; and McClung, Ronald G., 4,534,943, Cl. 422-188.000.

McCullough, J. Douglas, Jr., to Shell Oil Company. High flow propylene polymer compositions. 4,535,125, Cl. 525-88.000.

McDaniel, Max P.; Johnson, Marvin M.; Hawley, Gil R.; Westerman, John; and Smith, Paul D., to Phillips Petroleum Company. Acrylamide polymer used to reduce fines in aluminum phosphate gel. 4,535,070, Cl. 502-208.000.

McDaniel, Paul L.: *See—*
Fishter, Robert E.; McDaniel, Paul L.; and Tefft, Stephen W., 4,534,823, Cl. 156-626.000.

McDonnell Douglas Corporation: *See—*
Finch, George W.; and Udd, Eric, 4,534,222, Cl. 73-653.000.
Williamson, Robert D.; and Furst, Sidney M., 4,534,813, Cl. 156-212.000.

McGill, Robert W.; and Robinson, Chris E., to Figgie International Inc. Case lift outfeed apparatus. 4,534,157, Cl. 53-531.000.

McGowen, Wayne H. Therapeutic device for a human body. 4,534,555, Cl. 272-145.000.

McGraw-Edison Company: *See—*
Jindrick, James A.; Dolnik, Thomas G.; Nohria, Naresh K.; Gilker, Clyde; Hurley, James R.; Dunk, Michael P.; Reis, Norbert J.; and Bray, Thomas J., 4,535,409, Cl. 364-481.000.

McIntyre, James A.; and Phillips, Robert F., to Dow Chemical Company, The. Separator-gas electrode combination. 4,534,845, Cl. 204-283.000.

McIver, Robert T., Jr., to Finnigan Corporation. Apparatus and method for injection of ions into an ion cyclotron resonance cell. 4,535,235, Cl. 250-282.000.

McKay, Dwight L.: *See—*
Mark, Harold W.; Bertus, Brent J.; Roberts, John S.; McKay, Dwight L.; and Fenska, Lyle E., 4,535,066, Cl. 502-62.000.

McKeel, Daniel W.: *See—*
Sakash, George; Grier, Robert K., Jr.; Stern, Hansjoerg; Dada, Abdul G.; and McKeel, Daniel W., 4,534,301, Cl. 110-255.000.

McKeough, David T.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., 4,535,132, Cl. 525-443.000.

McKnight, Thomas J. Tug type vessel. 4,534,738, Cl. 440-61.000.

McLane, Jack E.; Schenk, Raymond L.; Rader, Robert R.; and Wirtz, John W., to Wirtz Manufacturing Company, Inc. Machine for continuously casting battery grids. 4,534,404, Cl. 164-429.000.

McManis, George E., III; Fletcher, Aaron N.; and Miles, Melvin H., to United States of America, Navy. Lithium-boron anodes in nitrate thermal battery cells. 4,535,037, Cl. 429-103.000.

McNulty, Chris. Adjustable wrench. 4,534,246, Cl. 81-111.000.

McQuire, David P.: *See—*
Castleman, Bruce W.; McQuire, David P.; and Szonntagh, Eugene L., 4,534,777, Cl. 55-181.000.

McVay, William P.: *See—*
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Mead Corporation, The: *See—*
Adair, Paul C.; and Adkins, David G., 4,535,050, Cl. 430-138.000.
Kistner, Oscar J., 4,534,753, Cl. 493-453.000.

Meade, Steven L.: *See—*
Morris, Merle E.; Meade, Steven L.; and Rice, Lawrence M., 4,535,268, Cl. 313-569.000.

Mediolanum Farmaceutici S.R.L.: *See—*
Fravolini, Arnaldo, 4,535,079, Cl. 514-225.000.

Meier, Douglas R.: *See—*
Consay, Joseph A.; and Meier, Douglas R., 4,534,134, Cl. 51-96.000.

Meier, Urs: *See—*
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Mekjian, Aram, to United States Steel Corporation. Polyester formulations having flexibility properties. 4,535,146, Cl. 528-295.300.

Melamed, Anna: *See—*
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Melis, Jurgen: *See—*
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Melling, Hugh: *See—*
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Melnor Industries, Inc.: *See—*
Chow, Ho; and Goodman, Sidney J., 4,534,512, Cl. 239-394.000.

Meloni, Robert A., to General Instrument Corp. Dot matrix print head. 4,534,287, Cl. 101-93.050.

Meltzer, Peter C.; and Coe, Jotham W., to Key Pharmaceuticals, Inc. Process for making 6-desoxy-6-methylenenaloxone and 6-desoxy-6-methylenenaltrexone. 4,535,157, Cl. 546-44.000.

Mercadier, Michel: *See—*
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Merck & Co., Inc.: *See—*
Di Pardo, Robert M.; and Bock, Mark G., 4,535,164, Cl. 548-187.000.
Freidinger, Roger M., 4,535,167, Cl. 548-344.000.
Kang, Kenneth S.; and Veeder, George T., 4,535,153, Cl. 536-123.000.
Rokach, Joshua, 4,535,171, Cl. 549-12.000.
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.

Merckaert, Louis: *See—*
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Merkt, Robert: *See—*
Elischer, Stefan; Hobel, Hans-Gunther; Merkt, Robert; and Wagner, Fritz, 4,535,160, Cl. 544-191.000.

Merry, Glenn W.: *See—*
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Merten, Rudolf: *See—*
Sirinyan, Kirkor; Merten, Rudolf; and Giesecke, Henning, 4,535,032, Cl. 428-629.000.

Merz, Craig. Method and system for monitoring faults in electrical circuits. 4,535,321, Cl. 340-520.000.

Messerschmitt-Bolkow-Blohm GmbH: *See—*
Kuckein, Wilfried; Mylius, Albert; Bechtel, Peter; and Hofer, Adalbert, 4,535,017, Cl. 428-77.000.

Mestroni, Giovanni; Zassinovich, Grazia; and Alessio, Enzo, to Montedison S.p.A. Process for catalytically reducing nitroaromatic compounds. 4,535,162, Cl. 546-159.000.

Metallwerk Max Brose GmbH & Co.: *See—*
Hess, Peter; Schulz, Volkmar; and Rampel, Hans, 4,534,534, Cl. 248-424.000.

Methode Electronics, Inc.: *See—*
Brown, Vincent B.; and Schreiner, Donald G., 4,534,098, Cl. 29-564.800.
Brown, Vincent B.; and Geib, Lawrence, 4,534,603, Cl. 339-17.00C.

Metzger, Frederick B.; and Magliozzi, Bernard, to United Technologies Corporation. Cabin noise suppression in propeller driven aircraft. 4,534,526, Cl. 244-38.000.

Metzger, Karl G.: *See—*
Benz, Gunter; Metzger, Karl G.; and Zeiler, Hans-Joachim, 4,535,083, Cl. 514-274.000.

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Foster, George N.; and Metzler, Richard B., 4,535,113, Cl. 524-262.000.

Meunier, Bernard, to Compagnie Generale de Constructions Telephoniques. Loop-circuit for telephone line. 4,535,202, Cl. 179-18.0FA.

Meunier, Jean; and Salesse, Marc, to Cegedur Societe de Transformation de L'Aluminium Pechiney. Process for sintering aluminum alloy powders under pressure. 4,534,937, Cl. 419-42.000.

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Meyer Label Co., Inc.: *See—*
Freling, Martin, 4,535,018, Cl. 428-79.000.

Meyer, Rolf-Volker: *See—*
Ebert, Wolfgang; Meyer, Rolf-Volker; Idel, Karsten-Josef; and Dhein, Rolf, 4,535,149, Cl. 528-388.000.

Meyer, Thomas N.: *See—*
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Meynier, Guy, to Societe Anonyme D. B. A. Brake-pressure generator system. 4,534,170, Cl. 60-547.100.

Michelbrink, Bernhard: *See—*
Buchmuller, Horst; and Michelbrink, Bernhard, 4,534,299, Cl. 110-165.00R.

Micheron, Francois: *See—*
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Micinski, Eugene: *See—*
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Micro-Mega: *See—*
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Microbot, Inc.: *See—*
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Microdesign Limited: *See—*
Arn, Robert M.; Csanky, Peter H.; and Waszek, Glen F., 4,535,355, Cl. 358-123.000.

Middleton, William J., to Du Pont de Nemours, E. I., and Company. Tris(disubstituted amino)sulfonium perfluorocarbanion salts. 4,535,184, Cl. 564-102.000.

Midland, Richard W., to Zenith Electronics Corporation. Transformerless switching circuit for driving a horizontal output transistor. 4,535,273, Cl. 315-401.000.

Midon Engineered Products, Inc.: *See—*
Mowat, Donald J.; and Doman, H. Michael, 4,534,438, Cl. 180-209.000.

Midwest Irrigation and Foundation, Inc.: *See—*
Goines, Fredrick J.; and Reifsteck, David A., 4,534,143, Cl. 52-169.500.

Miguel, Marvin E., to J. A. Freeman & Son, Inc. Self-propelled agricultural vehicle for picking up and transporting large bales of hay. 4,534,691, Cl. 414-38.000.

Mihara, Shin-ichi, to Olympus Optical Co., Ltd. Large relative aperture telephoto lens system. 4,534,626, Cl. 350-454.000.

Miki, Yukio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Mounting and demounting device of optical unit. 4,534,621, Cl. 350-257.000.

Milberger, Lionel J.; Martin, Jimmy R.; and Mataway, Thomas P., to Combustion Engineering, Inc. Mudline casing hanger assembly. 4,534,583, Cl. 285-24.000.

Miles Laboratories, Inc.: *See—*
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Miles, Melvin H.: *See—*
McManis, George E., III; Fletcher, Aaron N.; and Miles, Melvin H., 4,535,037, Cl. 429-103.000.

Milkovic, Miran, to General Electric Company. Electronic watt/watt-hour meter with automatic error correction and high frequency digital output. 4,535,287, Cl. 324-142.000.

Miller, Edward B.; and Eichelberger, Charles W., to General Electric Company. Method and apparatus for controlling distributed electrical loads. 4,535,332, Cl. 340-825.060.

Miller, Jack V., to Gravity Guidance, Inc. Full body weight traction device. 4,534,554, Cl. 272-144.000.

Miller-Jones, Stockton M.; and Flax, Stephen W., to General Electric Company. Method and means for determining frequency selective tissue attenuation in a baseband ultrasonic imaging system. 4,534,359, Cl. 128-660.000.

Miller, Leroy J.: *See—*
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Millipore Corporation: *See—*
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Mills, Earl J.: *See—*
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Mills, George A. Apparatus and method for processing fruit and the like. 4,534,470, Cl. 209-585.000.

Milne, John D. Electrical anti-short bushing. 4,535,196, Cl. 174-83.000.

Mimura, Yoshiki; Arai, Tetsuji; Shimizu, Hiroshi; and Fukuda, Satoru, to Ushio Denki Kabushiki Kaisha. Heater assembly and a heat-treatment method of semiconductor wafer using the same. 4,535,228, Cl. 219-411.000.

Mina, Kent V.: *See—*
Buzzard, Clair A.; and Mina, Kent V., 4,535,454, Cl. 370-110.200.

Minai, Masayoshi; and Katsura, Tadashi, to Sumitomo Chemical Company, Limited. Process for preparing 2-cyclopentenone esters. 4,535,182, Cl. 560-231.000.

Minikane, Tomiharu, to Kabushiki Kaisha Toshiba. Photometric biochemical analyzer. 4,534,651, Cl. 356-440.000.

Minnesota Mining and Manufacturing Company: *See—*
Barrows, Thomas H., 4,534,349, Cl. 128-334.00R.
Frenchik, Robert A., 4,535,056, Cl. 430-542.000.
May, David C., 4,534,673, Cl. 404-14.000.
Niles, Gerald J.; and Sandberg, Thomas A., 4,535,432, Cl. 369-72.000.
Zarr, Myron, 4,534,523, Cl. 242-192.000.

Minolta Camera Co., Ltd.: *See—*
Ito, Masazumi; and Nagata, Kenzo, 4,535,463, Cl. 377-8.000.

Minolta Camera Kabushiki Kaisha: *See—*
Miki, Yukio; and Egawa, Takeshi, 4,534,621, Cl. 350-257.000.

Minzghor, Karsten R.: *See—*
Little, Edwin D.; and Minzghor, Karsten R., 4,534,954, Cl. 423-515.000.

Mirikidani, Tatsumi, to Nissan Motor Company, Limited. Exhaust monitoring sensor for a closed-loop air-to-fuel ratio control system of a multiplex exhaust manifold engine. 4,534,213, Cl. 73-118.000.

Mischenko, John, III: *See—*
Pall, David B.; Degen, Peter J.; and Mischenko, John, III, 4,534,388, Cl. 141-1.000.

Mr. Gasket Company: *See—*
May, Richard L., 4,535,397, Cl. 362-369.000.

Mita Industrial Co., Ltd.: *See—*
Higashiguchi, Teruaki; and Miyakawa, Nobuhiro, 4,535,044, Cl. 430-58.000.
Honda, Nobuyasu; Yamakawa, Toshiro; and Ikeda, Toshimitsu, 4,535,049, Cl. 430-137.000.

Mitarai, Tsuyoshi, to Casio Computer Co., Ltd. Electronic musical instrument. 4,534,257, Cl. 84-1.030.

Mitcham, John P.; and Karr, Michael A., Jr., to Gray Tool Company. Rotary stepper actuator. 4,534,235, Cl. 74-128.000.

Mitchell, Hal D.; Glover, Richard W.; Walker, Donald R.; and Rosenberg, Isadore, to Figgie International Inc. Shock attenuation system. 4,534,068, Cl. 2-414.000.

Mitchell, Randall M., to Caterpillar Tractor Co. Hydrostatic vehicle control. 4,534,707, Cl. 417-34.000.

Mitchell, Roger E.: *See—*
Arbisi, Dominic; and Mitchell, Roger E., 4,535,279, Cl. 318-696.000.

Mitsubishi Chemical Industries, Ltd.: *See—*
Goko, Nobuaki; and Uehara, Yumito, 4,534,953, Cl. 423-492.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Hashimoto, Masahide; Kurisu, Yoshitaka; Zuiki, Shigeo; and Sasaki, Yoshio, 4,534,183, Cl. 62-374.000.
Kiso, Mataichiro; Futakawa, Akemi; and Fukunaga, Tokio, 4,534,206, Cl. 73-12.000.
Okumoto, Shigeki, 4,534,750, Cl. 474-261.000.
Ootsuka, Kenichi; and Miyake, Yoshikazu, 4,535,253, Cl. 307-9.000.

Mitsubishi Jidosha Kogyo Kabushiki Kaisha: *See—*
Hiramatsu, Takeo, 4,534,244, Cl. 74-869.000.
Kobayashi, Kazuyoshi; and Takizawa, Shozo, 4,534,580, Cl. 280-712.000.
Murakami, Nobuaki; and Oomori, Shogo, 4,534,334, Cl. 123-571.000.

Mitsubishi Jukogyo Kabushiki: *See—*
Watabe, Shin; and Shibata, Hideto, 4,534,410, Cl. 165-126.000.

Mitsubishi Jukogyo Kabushiki Kaisha: *See—*
Ishitani, Kenichiro; Unseki, Takashi; Amiboshi, Saburo; and Kawamura, Eiichi, 4,534,569, Cl. 277-27.000.
Kiyoto, Shinichiro; and Fujiwara, Chikara, 4,534,196, Cl. 72-61.000.

Mitsubishi Rayon Co., Ltd.: *See—*
Handa, Ryoji; Hosoda, Jun; and Yoshida, Norimasa, 4,535,131, Cl. 525-369.000.

Mitsuishi Fukai Tekkosho Ltd.: *See—*
Iwasaki, Shigeo; and Haguchi, Hiroshi, 4,534,721, Cl. 425-73.000.

Mitsuishi, Toshiro: *See—*
Matsuda, Minoru; and Mitsuishi, Toshiro, 4,534,322, Cl. 123-55.00R.

Mittleman, Herbert; and Sulek, Stanislaw, to Trimedyne, Inc. Sequential medication delivery device. 4,534,764, Cl. 604-81.000.

Miura, Kunihiko; Takano, Shouji; and Kimura, Masashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrophotographic copying apparatus for effecting a copying operation on the basis of a set copying characteristic. 4,534,642, Cl. 355-14.00E.

Miura, Shin'ichi: *See—*
Shinya, Ryohei; Miura, Shin'ichi; and Aozuka, Rikio, 4,534,312, Cl. 118-666.000.

Miwa, Hirohide: *See—*
Kleeper, John R.; Reid, John M.; Miwa, Hirohide; Shimura, Takaki; and Murakami, Keiichi, 4,534,220, Cl. 73-599.000.

Miyagawa, Akira: *See—*
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.

Miyahara, Hatsuo: *See—*
Nozaki, Shigeki; and Miyahara, Hatsuo, 4,535,423, Cl. 365-51.000.
Miyakawa, Nobuhiro: *See—*
Higashiguchi, Teruaki; and Miyakawa, Nobuhiro, 4,535,044, Cl. 430-58.000.
Miyake, Yoshikazu: *See—*
Ootsuka, Kenichi; and Miyake, Yoshikazu, 4,535,253, Cl. 307-9.000.
Mizoguchi, Mitsuru: *See—*
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.
Mizuguchi, Shunji: *See—*
Tanaka, Minoru; Nakamura, Hideo; and Mizuguchi, Shunji, 4,535,009, Cl. 427-246.000.
Mlins PLC: *See—*
Labbe, Francis A., 4,534,368, Cl. 131-110.000.
Mobay Chemical Corporation: *See—*
Price, Ronald L.; Witman, Mark W.; and Krishnan, Sivaram, 4,535,143, Cl. 528-174.000.
Mobil Oil Corporation: *See—*
Horodysky, Andrew G.; and Kaminski, Joan M., 4,534,872, Cl. 252-32.70E.
Krutchen, Charles M.; and Wu, Wen-Pao, 4,535,100, Cl. 521-180.000.
Saliger, Kenneth C., 4,534,585, Cl. 285-92.000.
Schwab, Frederick C., 4,535,129, Cl. 525-316.000.
Mochida, Ei: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,534,966, Cl. 424-94.000.
Mochida Pharmaceutical Co., Ltd.: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,534,966, Cl. 424-94.000.
Modak, Shanta M.: *See—*
Fox, Charles L., Jr.; and Modak, Shanta M., 4,535,078, Cl. 514-157.000.
Moe, Walter: *See—*
Jones, Lawrence T.; Lee, Robert S.; Moe, Walter; Howden, Ashley G.; and Ishikawa, Paul J., 4,534,745, Cl. 446-398.000.
Moen, Walter K., to Rockwell International Corporation. Temperature control system. 4,535,222, Cl. 219-300.000.
Molina, Orlando G. Testing apparatus for quantitatively measuring creepability of liquids. 4,534,211, Cl. 73-64.400.
Molins PLC: *See—*
Harrington, Timothy C.; and Horsley, John K., 4,534,252, Cl. 83-310.000.
Monsanto Co.: *See—*
Beestman, George B., 4,534,783, Cl. 71-27.000.
Fisher, Don E.; and Wilkie, Arnold E., 4,534,161, Cl. 57-125.000.
Woodard, Scott S., 4,535,194, Cl. 570-236.000.
Montealegre, James W., to Container Corporation of America. Expandable food container. 4,534,505, Cl. 229-33.000.
Montedison S.p.A.: *See—*
Mestroni, Giovanni; Zassinovich, Grazia; and Alessio, Enzo, 4,535,162, Cl. 546-159.000.
Montgomery, William J. I. Personal alert signal. 4,535,392, Cl. 362-186.000.
Moon, Malcolm W., to Upjohn Company, The. Piperazinone, piperazine, 1,4-diazepin-2-one and 1,4-diazepine intermediate compounds. 4,534,897, Cl. 260-239.30R.
Moore, George G. I., to Riker Laboratories, Inc. Substituted diazoles and thiazoles. 4,535,165, Cl. 548-204.000.
Moore, Uri: *See—*
Kogan, Abraham; and Moore, Uri, 4,534,175, Cl. 60-649.000.
Morbark Industries, Inc.: *See—*
Morey, Norval K.; and Bateman, Ivor, 4,534,390, Cl. 144-373.000.
Morbitzer, Leo: *See—*
Binsack, Rudolf; Rempel, Dieter; Lindner, Christian; and Morbitzer, Leo, 4,535,124, Cl. 525-67.000.
More, Anton; Lang, Winfried; Riedle, Rudolf; Straussberger, Herbert; and Streckel, Willi, to Wacker-Chemie GmbH. Process for treating silicon and ferrosilicon with slag. 4,534,791, Cl. 75-10.00R.
Moreau, Dominique; Duchemin, Pierre; and Duchemin, Jean-Pierre, to La Telemecanique Electrique. Magneto-thermal device for overcurrent relays. 4,535,309, Cl. 335-42.000.
Morehouse, James H.: *See—*
Anderson, Kurt M.; and Morehouse, James H., 4,535,374, Cl. 360-103.000.
Morel, Michel, to Paget et Morel. Hinge for mounting spectacles. 4,534,628, Cl. 351-153.000.
Morey, Norval K.; and Bateman, Ivor, to Morbark Industries, Inc. Portable chipper with relatively low power high torque tree feed mechanism for feeding the tree or other product to be chipped at a controlled feed angle. 4,534,390, Cl. 144-373.000.
Morey, William A., to Rockwell International Corporation. Digitally controlled vector generator for stroke written CRT displays. 4,535,328, Cl. 340-739.000.
Mori, Hidefumi; and Ikeda, Masahiro, to Nippon Telegraph & Telephone Public Corporation. Method for manufacturing crystalline film. 4,534,820, Cl. 156-603.000.
Mori, Masahiko; Arai, Kenichiro; and Tezuka, Chikao, to Epson Corporation; and Kabushiki Kaisha Suwa Seikosha. Serial printer. 4,534,665, Cl. 400-145.200.
Moriguchi, Haruhiko; Omori, Takashi; and Inui, Toshiharu, to Fuji Xerox Co. Ltd. Method and apparatus for thermal printing. 4,535,340, Cl. 346-76.0PH.
Morimoto, Kiyoshi; and Takagi, Toshinori, to Futaba Denshi Kogyo K.K. Photoelectromotive force element. 4,535,195, Cl. 136-261.000.
Morimoto, Masayuki: *See—*
Okihara, Naoto; Morimoto, Masayuki; and Ide, Tatsumi, 4,535,311, Cl. 335-124.000.
Morimoto, Yoshihiko: *See—*
Abe, Kunihiro; and Morimoto, Yoshihiko, 4,535,289, Cl. 324-208.000.
Morimura, Seiichiro: *See—*
Kimura, Kiyoshi; Morita, Iwao; and Morimura, Seiichiro, 4,535,073, Cl. 514-89.000.
Morioka, Kazumasa; and Yoshimi, Toru, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Method and apparatus for manufacturing cups having a lip. 4,534,927, Cl. 264-321.000.
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, to Lion Corporation. Micellar slug for oil recovery. 4,534,411, Cl. 166-274.000.
Morita, Iwao: *See—*
Kimura, Kiyoshi; Morita, Iwao; and Morimura, Seiichiro, 4,535,073, Cl. 514-89.000.
Morita, Takayuki: *See—*
Muramatsu, Shigeru; Asai, Isao; and Morita, Takayuki, 4,534,517, Cl. 242-35.50A.
Moritomi, Hiroshi: *See—*
Sanada, Yuzo; Yokoyama, Susumu; Chiba, Tadatoshi; Yokono, Tetsuro; Moritomi, Hiroshi; Obara, Toshiyuki; and Nagaishi, Hiroshi, 4,534,848, Cl. 208-10.000.
Moroto, Masayuki: *See—*
Asano, Hiroshige; and Moroto, Masayuki, 4,534,803, Cl. 134-30.000.
Morris, Merle E.; Meade, Steven L.; and Rice, Lawrence M., to GTE Products Corporation. High pressure tipless tungsten halogen lamp. 4,535,268, Cl. 313-569.000.
Morrisroe, John P. Artificial seaweed. 4,534,675, Cl. 405-24.000.
Morse, Randall H.: *See—*
Bacon, David L.; Kremer, Richard D.; and Morse, Randall H., 4,534,863, Cl. 210-232.000.
Moser, Hans, to Ciba-Geigy Corporation. Process for producing N-phosphonomethylglycine. 4,534,904, Cl. 260-502.50F.
Mosher, Oren A.; and Douglas, Ellwood S., to Package Machinery Co. Vibratory feeder control for a weighing system. 4,534,428, Cl. 177-1.000.
Moskovsky Nauchno-Issledovatelsky Institut Mirrokhirurgii Glaza: *See—*
Fedorov, Svyatoslav N.; Degtev, Evgeny I.; Golubev, Vladimir N.; Khromov, Sergei V.; Yatsenko, Igor A.; Karavaev, Alexandr A.; and Yakushev, Vladimir M., 4,534,348, Cl. 128-305.000.
Moss, Charles A.: *See—*
Parks, James D.; Moss, Charles A.; and Dyer, Kermit W., 4,534,281, Cl. 98-115.300.
Mostek Corporation: *See—*
Jiang, Ching-Lin, 4,535,427, Cl. 365-205.000.
Motorola, Inc.: *See—*
Macin, Bruce J.; and Bresin, Mark S., 4,534,208, Cl. 73-49.300.
Petrie, Adelore F., 4,535,464, Cl. 377-39.000.
Motter Printing Press Co.: *See—*
Rahe, Thomas E., 4,534,552, Cl. 271-279.000.
Motycka, David L.: *See—*
Fasano, Anthony; Roberts, John H.; and Motycka, David L., 4,534,216, Cl. 73-147.000.
Mouncher, John: *See—*
Hughes, John; and Mouncher, John, 4,535,204, Cl. 179-90.0BD.
Mountain, Peter J., to British Telecommunications. Digital transmission systems. 4,535,446, Cl. 370-68.000.
Mowat, Donald J.; and Doman, H. Michael, to Midon Engineered Products, Inc. Motorized vehicles. 4,534,438, Cl. 180-209.000.
Mowry, Gregory S; and George, Peter K., to Magnetic Peripherals, Inc. Magnetoresistive head. 4,535,375, Cl. 360-113.000.
Moyer, Wendell W.: *See—*
van Konynenburg, Peter H.; Lyons, Bernard J.; Smith-Johannsen, Robert; and Moyer, Wendell W., 4,534,889, Cl. 252-511.000.
MTU-Motoren-und Turbinen-Union Friedrichshafen GmbH: *See—*
Deutschmann, Herbert; and Dinger, Hans, 4,534,324, Cl. 123-90.220.
Mueller, Warren B., to Ethyl Corporation. Polyphosphazene compounding process. 4,535,095, Cl. 521-89.000.
Muller, Hans, to Chemap AG. Apparatus for growing microorganisms. 4,535,062, Cl. 435-289.000.
Muller, Rolf, to Papst-Motoren GmbH & Co., KG. Brushless D-C motor system with improved commutation circuit. 4,535,275, Cl. 318-254.000.
Mullins, Lance A.; and Self, Michael A., to Joy Manufacturing Company. Liner deterioration warning for fluid movers. 4,535,326, Cl. 340-679.000.
Munde, Jan, to Alfa-Laval AB. Sealing ring for a centrifugal separator. 4,534,570, Cl. 277-95.000.
Munoz-Bustamante, Carlos: *See—*
Davis, James W.; Leininger, Joel C.; Munoz-Bustamante, Carlos; and Robbins, Gordon J., 4,535,467, Cl. 377-81.000.
Murabayashi, Akira: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; and Takahashi, Toshio, 4,535,088, Cl. 514-370.000.

Murai, Yasushi: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.

Murakami, Keiichi: *See*—
Kleeper, John R.; Reid, John M.; Miwa, Hirohide; Shimura, Takaki; and Murakami, Keiichi, 4,534,220, Cl. 73-599.000.

Murakami, Nobuaki; and Oomori, Shogo, to Mitsubishi Jidosha Kogyo Kabushiki Kaisha. Exhaust-gas recirculation system for internal combustion engine. 4,534,334, Cl. 123-571.000.

Murakami, Takeshi: *See*—
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.

Muramatsu, Shigeru; Asai, Isao; and Morita, Takayuki, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Method of automatic doffing in a spinning unit. 4,534,517, Cl. 242-35.50A.

Murase, Shigemitsu. Method of treating polyester material for rubber reinforcement. 4,535,107, Cl. 524-157.000.

Murata Kikai Kabushiki Kaisha: *See*—
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,534,692, Cl. 414-282.000.

Murata Manufacturing Co., Ltd.: *See*—
Yoneda, Yasunobu, 4,535,064, Cl. 501-138.000.

Mushovic, John N.: *See*—
Peacock, Bobbie D.; Mushovic, John N.; and Geyer, Roger D., 4,534,225, Cl. 73-860.000.

Muth, Eric A.: *See*—
Husbands, G. E. Morris; Yardley, John P.; and Muth, Eric A., 4,535,186, Cl. 564-336.000.

Muther, Franz: *See*—
Hanseler, Urs; Meier, Urs; and Muther, Franz, 4,534,472, Cl. 211-41.000.

Myers, Ronald E., to B. F. Goodrich Company, The. Phosphazene modified amine terminated polymers and method. 4,535,147, Cl. 528-321.000.

Mylius, Albert: *See*—
Kuckein, Wilfried; Mylius, Albert; Bechtel, Peter; and Hofer, Adalbert, 4,535,017, Cl. 428-77.000.

Naarden International N.V.: *See*—
Koene, Casper H.; Vos, Cornelis; and Brasser, Jan, 4,534,983, Cl. 426-293.000.

Naarmann, Herbert; and Koehler, Gernot, to BASF Aktiengesellschaft. Battery or electrochemical store based on electrochemically oxidizable and/or reducible polymers. 4,535,039, Cl. 429-213.000.

Nabika, Kouichi: *See*—
Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, 4,534,692, Cl. 414-282.000.

Nabisco Brands, Inc.: *See*—
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,534,989, Cl. 426-549.000.
Gellman, Gary; Erfurt, George A.; and Roe, James E., 4,534,990, Cl. 426-549.000.
Simelunas, William J., 4,534,726, Cl. 425-363.000.

Nadeau, Francois; Bussiere, Jean F.; and Vaudreuil, Ghislain. Acoustic detection of cracks in metal pieces. 4,534,219, Cl. 73-587.000.

Nagaishi, Hiroshi: *See*—
Sanada, Yuzo; Yokoyama, Susumu; Chiba, Tadatoshi; Yokono, Tetsuro; Moritomi, Hiroshi; Obara, Toshiyuki; and Nagaishi, Hiroshi, 4,534,848, Cl. 208-10.000.

Nagata, Kenzo: *See*—
Ito, Masazumi; and Nagata, Kenzo, 4,535,463, Cl. 377-8.000.

Naito, Ryuichi: *See*—
Yamaguchi, Tadahiro; and Naito, Ryuichi, 4,535,306, Cl. 331-23.000.

Naito, Tsutomu: *See*—
Izumi, Takayuki; Naito, Tsutomu; and Nakamura, Tomoo, 4,534,850, Cl. 208-22.000.

Naito, Youichiro: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.

Naitoh, Yoshihiro: *See*—
Matsuoka, Shigeki; and Naitoh, Yoshihiro, 4,534,801, Cl. 134-15.000.

Naka, Yasushi; and Kawakami, Kiyoshi. Moisture-permeable waterproof coated fabric having a microporous polyurethane layer. 4,535,008, Cl. 427-246.000.

Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, to Nippon Television Network Corporation; OKI Electric Industry Co., Ltd.; and KEIO Electronic Laboratory Corporation. Music information transmission system. 4,535,356, Cl. 358-145.000.

Nakahara, Takeshi: *See*—
Kusumoto, Koshi; Kawaguchi, Toshio; Nakahara, Takeshi; and Kunimoto, Shinichiro, 4,535,102, Cl. 523-116.000.

Nakamoto, Soichi: *See*—
Ito, Tadashi; Isobe, Yasuo; Ito, Fumio; and Nakamoto, Soichi, 4,534,640, Cl. 354-448.000.

Nakamura, Hideo: *See*—
Tanaka, Minoru; Nakamura, Hideo; and Mizuguchi, Shunji, 4,535,009, Cl. 427-246.000.

Nakamura, Hiroshi: *See*—
Okuno, Toshinori; and Nakamura, Hiroshi, 4,534,561, Cl. 273-149.00R.

Nakamura, Ichiro: *See*—
Ogasawara, Tsuyoshi; Ichiryu, Ken; Nakamura, Ichiro; and Kido, Yasuo, 4,534,452, Cl. 187-29.00A.

Nakamura, Kosei; and Takano, Yoshikazu, to Fanuc Ltd. Spindle head unit. 4,534,686, Cl. 409-135.000.

Nakamura, Shigeharu: *See*—
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.

Nakamura, Takashi: *See*—
Arakawa, Satoshi; Nakamura, Takashi; and Takahashi, Kenji, 4,534,884, Cl. 252-301.40H.
Takahashi, Kenji; and Nakamura, Takashi, 4,535,237, Cl. 250-327.200.
Takahashi, Kenji; and Nakamura, Takashi, 4,535,238, Cl. 250-327.200.

Nakamura, Tomoo: *See*—
Izumi, Takayuki; Naito, Tsutomu; and Nakamura, Tomoo, 4,534,850, Cl. 208-22.000.

Nakamuta, Masamichi. Method and apparatus for manufacturing bean curd. 4,534,283, Cl. 99-468.000.

Nakano, Gregory S.: *See*—
Wilger, John F.; Nakano, Gregory S.; Orillo, Stephen, Jr.; and Cazinha, John R., 4,534,135, Cl. 51-241.00S.

Nakano, Shinji: *See*—
Umemoto, Hirotoshi; Tanabe, Hisaki; and Nakano, Shinji, 4,535,128, Cl. 525-162.000.

Nakayama, Jingo: *See*—
Yamamura, Yukio; Nakayama, Jingo; Ikeda, Atsunobu; and Kawamoto, Takashi, 4,534,590, Cl. 297-180.000.

Nakazato, Takuzo; Okuto, Koichiro; and Kai, Toshio, to Sumitomo Metal Industries, Ltd. Offshore structure and method of constructing same. 4,534,678, Cl. 405-204.000.

Nara, Kiyoshi; Katamoto, Kazuyoshi; and Ohta, Kazuhiko, to Takeda Chemical Industries, Ltd. Method for separating cephalosporins. 4,535,155, Cl. 544-20.000.

Natarajan, Sesha I.; and Gordon, Eric M., to E. R. Squibb & Sons, Inc. Intermediates for substituted peptide compounds. 4,535,176, Cl. 560-27.000.

National Can Corporation: *See*—
Snyder, Walter W., 4,534,202, Cl. 72-349.000.

National Company Air France, The: *See*—
Lucien, Staub, 4,534,594, Cl. 297-438.000.

National Semiconductor Corporation: *See*—
Goodrich, Gary B.; and Belani, Jadish G., 4,535,350, Cl. 357-74.000.
Szepesi, Tamas S., 4,535,399, Cl. 363-41.000.

National Starch and Chemical Corporation: *See*—
Schoenberg, Jules E.; Flanagan, Thomas P.; and Ray-Chaudhuri, Dilip K., 4,535,140, Cl. 526-329.000.
Sedran, Roger H., 4,534,493, Cl. 222-146.200.

Naunapper, Dietmar; and Braun, Gunter, to Glatt GmbH. Device for use in fluidized bed techniques and its method of use. 4,535,006, Cl. 427-213.000.

Nautical Electronics Laboratories Limited: *See*—
Covill, Dennis H., 4,535,298, Cl. 330-189.000.

NCR Corporation: *See*—
Dham, Vinod K.; Honnigford, Edward H.; Stewart, John K., Jr.; Pfeifer, Robert F.; and Trudel, Murray L., 4,534,104, Cl. 29-571.000.

Neale, Douglas L., to Federal Paper Board Co., Inc. Blank for carton for holding and dispensing plastic film. 4,534,497, Cl. 225-25.000.

NEC Corporation: *See*—
Okihara, Naoto; Morimoto, Masayuki; and Ide, Tatsumi, 4,535,311, Cl. 335-124.000.

Neefe, Charles W. Method of controlling the ultraviolet polymerization of spin cast lenses. 4,534,915, Cl. 264-1.400.

Nekoosa Envelopes, Inc.: *See*—
Engh, Gordon L., 4,534,581, Cl. 281-15.00R.

Nelson, James A.; and Zimmer, Robert E., to Buehler Ltd. Apparatus for mounting samples for polishing. 4,534,536, Cl. 249-83.000.

Nelson, Peter E., to Ivac Corporation. Fault detection apparatus and method for parenteral infusion system. 4,534,756, Cl. 604-50.000.

Nesta, Charles: *See*—
Gilliland, W. Keith; Hart, Lawrence M.; and Nesta, Charles, 4,534,641, Cl. 355-3.00R.

Nestec S.A.: *See*—
Gasau, Jacob, 4,534,985, Cl. 426-432.000.

Neukam, Theo: *See*—
Brauer, Wolfgang; Korte, Siegfried; Neukam, Theo; and Suling, Carlhans, 4,535,139, Cl. 526-287.000.

Neuwirth, Helmuth: *See*—
De Luca, Paul V.; and Neuwirth, Helmuth, 4,535,379, Cl. 361-124.000.

New Cosmos Electric Co., Ltd.: *See*—
Sakai, Sai, 4,535,315, Cl. 338-34.000.

New England Ropes, Inc.: *See*—
Schuerch, Peter E., 4,534,163, Cl. 57-233.000.

Newberg, Barry M., to Emerson Electric Co. Dynamoelectric machine having means for draining water from endshield. 4,535,262, Cl. 310-88.000.

Newburg, Betty, executrix: *See*—
Newburg, Norman R., deceased, 4,535,097, Cl. 521-139.000.

Newburg, Norman R., deceased (by Newburg, Betty, executrix), to Hercules Incorporated. Cellular thermoset poly (dicyclopentadiene). 4,535,097, Cl. 521-139.000.

Newell, Alfred T., Jr.: *See*—
Newell, Alfred T., III; and Newell, Alfred T., Jr., 4,534,406, Cl. 165-12.000.
Newell, Alfred T., III; and Newell, Alfred T., Jr., to A. T. Newell Co. Inc. Thermostat. 4,534,406, Cl. 165-12.000.
Newsome, Reginald W., to Philip Morris Incorporated. Roll-your-own cigarette maker. 4,534,367, Cl. 131-75.000.
Neyer, Leo E.: *See*—
Simpson, Harold G.; and Neyer, Leo E., 4,534,148, Cl. 52-640.000.
Ng, Min-Hing, to Concord Tool and Machine Company. Collapsible kitchen utensil holder. 4,534,474, Cl. 211-70.000.
NGK Insulators, Ltd.: *See*—
Matsuhiro, Keiji; and Matsui, Minoru, 4,535,063, Cl. 501-97.000.
Nguyen, Chien, to Stromberg-Carlson Corp. Voltage regulation circuit. 4,535,282, Cl. 323-269.000.
Nicolas, Edgard; and Merckaert, Louis, to Solvay & Cie. Process for the manufacture of an electrode for electrochemical processes and a cathode for the electrolytic production of hydrogen. 4,534,837, Cl. 204-129.000.
Nielsen, Marshall G., to United States of America, Energy. Water displacement mercury pump. 4,534,709, Cl. 417-65.000.
Nigorikawa, Kazunori: *See*—
Sugimori, Shigeru; Kojima, Tetsuhiko; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,534,883, Cl. 252-299.630.
Nihon Nohyaku Co., Ltd.: *See*—
Kurono, Hitoshi; Taninaka, Kuniaki; Sugimoto, Tatsuyoshi; and Katoh, Minoru, 4,535,075, Cl. 514-96.000.
Nihon Sanso Kabushiki Kaisha: *See*—
Kitayama, Masayasu; Sugimori, Yoshiaki; and Ohta, Schunich, 4,535,072, Cl. 502-411.000.
Takahashi, Masashi; and Yamada, Minoru, 4,534,914, Cl. 261-64.00B.
Nihon Tokushu Noyaku Seizo K.K.: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,535,076, Cl. 514-128.000.
Niida, Taro: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.
Niimi, Tomohide: *See*—
Takemura, Yukihito; and Niimi, Tomohide, 4,534,193, Cl. 70-218.000.
Nijman, Aloysius J.: *See*—
Schoofs, Franciscus A. C. M.; and Nijman, Aloysius J., 4,535,303, Cl. 330-297.000.
Niles, Gerald J.; and Sandberg, Thomas A., to Minnesota Mining and Manufacturing Company. Device for cleaning a phonograph record. 4,535,432, Cl. 369-72.000.
Nilsson, Thorsten, to Tetra Pak International AB. Guiding and braking unit for a material web. 4,534,498, Cl. 226-181.000.
Nippon Cable System Inc.: *See*—
Hamaguchi, Osamu, 4,534,233, Cl. 74-89.200.
Nippon Electric Co., Ltd.: *See*—
Hareyama, Kyuichi, 4,535,257, Cl. 307-362.000.
Nippon Infrared Industries Co., Ltd.: *See*—
Inoue, Hitosi; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,535,458, Cl. 372-25.000.
Nippon Kogaku K. K.: *See*—
Nohda, Masao, 4,534,645, Cl. 356-125.000.
Nippon Oil Co., Ltd.: *See*—
Uemura, Seiichi; Hirose, Takao; and Sohda, Yoshio, 4,534,950, Cl. 423-447.400.
Nippon Oil and Fats Company Limited: *See*—
Takeuchi, Fumio; Takahashi, Masao; Hattori, Katsuhide; and Sakai, Hiroshi, 4,534,809, Cl. 149-3.000.
Nippon Shinyaku Co Limited: *See*—
Kimura, Kiyoshi; Morita, Iwao; and Morimura, Seiichiro, 4,535,073, Cl. 514-89.000.
Nippon Steel Corporation: *See*—
Zaizen, Takashi; Otoguro, Yasuo; Yamanaka, Mikio; and Yamane, Shozo, 4,535,034, Cl. 428-653.000.
Nippon Telegraph & Telephone Public Corporation: *See*—
Mori, Hidefumi; and Ikeda, Masahiro, 4,534,820, Cl. 156-603.000.
Nippon Television Network Corporation: *See*—
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.
Nishii, Michiharu, to Aisin Seiki Kabushiki Kaisha. Vacuum booster assembly. 4,534,270, Cl. 91-376.00R.
Nishikage, Tadao: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,535,120, Cl. 524-560.000.
Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, to Honda Giken Kogyo Kabushiki Kaisha. Vibration and noise reduction means for a transmission vehicle. 4,534,236, Cl. 74-364.000.
Nishikawa, Tomoyasu: *See*—
Itoh, Yasuo; Kato, Hideo; Matsumura, Kugako; Nishikawa, Tomoyasu; Hisano, Akira; Yamada, Takehisa; and Koshinaka, Eiichi, 4,534,980, Cl. 514-570.000.
Nishimuro, Yoshiaki: *See*—
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.
Nishizawa, Masahiro: *See*—
Fujimura, Takashi; Takahashi, Katsuyu; and Nishizawa, Masahiro, 4,535,234, Cl. 250-238.000.
Nissan Motor Co., Ltd.: *See*—
Kamijo, Ken; and Uekusa, Yasuyuki, 4,534,441, Cl. 180-268.000.
Kato, Manabu; and Aoyama, Shunichi, 4,534,323, Cl. 123-90.160.
Mirikidani, Tatsumi, 4,534,213, Cl. 73-118.000.
Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, 4,534,435, Cl. 180-140.000.
Nisshin Oil Mills, Ltd.: *See*—
Taguchi, Gyota; and Sato, Toshiji, 4,534,992, Cl. 426-656.000.
Nitto Kagaku Kabushiki Kaisha: *See*—
Handa, Ryoji; Hosoda, Jun; and Yoshida, Norimasa, 4,535,131, Cl. 525-369.000.
NL Sperry-Sun, Inc.: *See*—
Russell, Anthony W.; and Russell, Michael K., 4,535,429, Cl. 367-85.000.
Noda, Atsushi, to Canon Kabushiki Kaisha. Recording apparatus. 4,535,344, Cl. 346-139.00D.
Noe, Andreas: *See*—
Noe, Oskar; Noe, Andreas; and Noe, Rolf, 4,534,198, Cl. 72-201.000.
Noe, Oskar; Noe, Andreas; and Noe, Rolf, to BWG Bergwerk - und Walzwerk-Maschinenbau GmbH. Cooling hot-rolled steel strip. 4,534,198, Cl. 72-201.000.
Noe, Rolf: *See*—
Noe, Oskar; Noe, Andreas; and Noe, Rolf, 4,534,198, Cl. 72-201.000.
Nohara, Shigezo, to Toyo Seikan Kaisha, Ltd. Process for producing stretched multilayer polyester bottle. 4,534,930, Cl. 264-513.000.
Nohda, Masao, to Nippon Kogaku K. K. Automatic lens meter. 4,534,645, Cl. 356-125.000.
Nohria, Naresh K.: *See*—
Jindrick, James A.; Dolnik, Thomas G.; Nohria, Naresh K.; Gilker, Clyde; Hurley, James R.; Dunk, Michael P.; Reis, Norbert J.; and Bray, Thomas J., 4,535,409, Cl. 364-481.000.
Nomura, Noboru; Hirota, Eiichi; and Wasa, Kiyotaka, to Matsushita Electric Industrial Co., Ltd. Magnetic head incorporating an amorphous magnetic metallic film having a thickness equal to a track width. 4,535,376, Cl. 360-126.000.
Nooter Corporation: *See*—
Meyer, John J.; and Barth, Stanley D., 4,535,214, Cl. 219-60.200.
Nordale Incorporated: *See*—
Erickson, Dale C.; and Erickson, Norton J., 4,534,828, Cl. 159-16.100.
Nordson Corporation: *See*—
Simashkevich, Richard M.; and Sharp, William J., 4,534,106, Cl. 29-613.000.
Norizuki, Senichiro: *See*—
Yamamoto, Osamu; and Norizuki, Senichiro, 4,534,108, Cl. 7-152.000.
Norrstrom, Hans; and Idner, Kristina, to AGA Aktiebolag. Method for producing chemimechanical high yield pulp using an oxygen alkali treatment followed by an oxygen mechanical defibration. 4,534,397, Cl. 162-23.000.
North American Philips Consumer Electronics Corp.: *See*—
Say, Donald L., 4,535,266, Cl. 313-414.000.
Northern Telecom Limited: *See*—
Bura, Paul, 4,535,304, Cl. 330-300.000.
Kasbia, Puran S.; and Li, Yuan-Lu, 4,535,201, Cl. 179-18.0FA.
Znojkiewicz, Maciej E., 4,535,308, Cl. 333-232.000.
Norton, Henry J.; and Urion, Kenard E., to Scott Paper Company. Wet tissue dispensing port. 4,534,491, Cl. 221-63.000.
Novak, William J.; and McClung, Ronald G., to Engelhard Corporation. Apparatus for catalytic reforming with continuous sulfur removal. 4,534,943, Cl. 422-188.000.
Novatome: *See*—
Malaval, Claude, 4,534,140, Cl. 52-21.000.
Novi Development Corporation: *See*—
Kariakin, Joseph A., 4,534,924, Cl. 264-259.000.
Nowacki, Christopher; and Brisson, Alfred G., to Trutek Research, Inc. Metered dose inhaler. 4,534,343, Cl. 128-200.230.
Nowicki, Casimir W. Method and apparatus for packing plastic bottles. 4,534,153, Cl. 53-448.000.
Nozaki, Shigeki; and Miyahara, Hatsuo, to Fujitsu Limited. Semiconductor memory device. 4,535,423, Cl. 365-51.000.
NSK-Warner K.K.: *See*—
Yanagihara, Hideo, 4,534,520, Cl. 242-107.000.
Nuckols, Walter S.; Leonard, Walter G.; and Doble, Henry P., Jr. Calendar-oriented pill dispenser. 4,534,468, Cl. 206-534.000.
Numata, Norio: *See*—
Yokoya, Satoshi; Numata, Norio; and Shimizu, Ikuo, 4,535,470, Cl. 381-15.000.
Nygren, Ingemar K.: *See*—
Selestam, Rune K.; and Nygren, Ingemar K., 4,534,705, Cl. 416-162.000.
Nypro Inc.: *See*—
Lankton, Gordon B., 4,534,464, Cl. 206-343.000.
Nystrom, Borje: *See*—
Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, 4,534,976, Cl. 514-169.000.
Oana, Yasuhisa: *See*—
Harada, Nozomu; Oana, Yasuhisa; Ogi, Keisuke; Izawa, Koji; Taya, Akira; and Sakamoto, Masanori, 4,534,622, Cl. 350-334.000.
Obara, Toshiyuki: *See*—
Sanada, Yuzo; Yokoyama, Susumu; Chiba, Tadatoshi; Yokono, Tetsuro; Moritomi, Hiroshi; Obara, Toshiyuki; and Nagaishi, Hiroshi, 4,534,848, Cl. 208-10.000.

Ochii, Kiyofumi; Masuda, Masami; and Kondo, Takeo, to Tokyo-Shibaura Denki Kabushiki Kaisha. Positive feedback amplifier circuitry. 4,535,255, Cl. 307-264.000.

Off, Joseph W. A.; and Ferguson, Vivian, to Train-A-Mation, Inc. Apparatus for sewing 360 degree pattern. 4,534,303, Cl. 112-114.000.

Ogasawara, Tsuyoshi; Ichiryu, Ken; Nakamura, Ichiro; and Kido, Yasuo, to Hitachi, Ltd. Hydraulic elevator. 4,534,452, Cl. 187-29.00A.

Ogawa, Kimiaki: *See*—
Tabata, Yasushi; Ogawa, Kimiaki; and Takahashi, Toshimitsu, 4,534,634, Cl. 354-268.000.

Ogawa, Masaki; and Shiomura, Yasuro, to Bridgestone Tire Co., Ltd. Surface modifying compositions for vulcanized rubber and method of modifying vulcanized rubber surface using the same. 4,535,003, Cl. 427-207.100.

Ogawara, Hiroshi: *See*—
Honda, Seiichirou; Ogawara, Hiroshi; and Fukuda, Mutsumi, 4,534,798, Cl. 106-266.000.

Ogi, Keisuke: *See*—
Harada, Nozomu; Oana, Yasuhisa; Ogi, Keisuke; Izawa, Koji; Taya, Akira; and Sakamoto, Masanori, 4,534,622, Cl. 350-334.000.

Ogihara, Masahiro: *See*—
Sakaguchi, Susumu; Itoh, Ken; Ogihara, Masahiro; Makigawa, Shinji; Ryuo, Toshihiko; and Watanabe, Kazuyoshi, 4,534,821, Cl. 156-617.0SP.

O'Hanlon, Thomas A.: *See*—
Reichman, James M.; O'Hanlon, Thomas A.; and Kendrew, Thomas J., 4,534,425, Cl. 175-53.000.

Ohara, Shunji: *See*—
Satoh, Isao; Yoshida, Tomio; Ohara, Shunji; and Koishi, Kenji, 4,535,439, Cl. 369-275.000.

Ohara, Tsunemasa; Suzuki, Masayuki; and Yamamichi, Masayoshi, to Canon Kabushiki Kaisha. Delay mechanism for single reflex camera. 4,534,633, Cl. 354-237.000.

Ohara, Yuji; and Horikawa, Kazuo, to Fuji Photo Film Co., Ltd. Method of and system for laser beam recording. 4,535,342, Cl. 346-108.000.

Ohe, Shunji: *See*—
Inaike, Toshihiro; Yamamoto, Shuji; Ohe, Shunji; and Otsuka, Kazunori, 4,535,105, Cl. 524-104.000.

Ohm, Edward A., to AT&T Bell Laboratories. Multibeam antenna arrangement. 4,535,338, Cl. 343-781.0CA.

Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, to Mochida Pharmaceutical Co., Ltd. Composition for treating infectious diseases, gout or arteriosclerosis containing human pepsin and-/or human leukocyte pepsin-like enzyme and method for using same. 4,534,966, Cl. 424-94.000.

Ohnuki, Mitsuo, to Konishiroku Photo Industry Co., Ltd. Lens tube for a high vari-focal ratio zoom lens. 4,534,625, Cl. 350-429.000.

Ohta, Kazuhiko: *See*—
Nara, Kiyoshi; Katamoto, Kazuyoshi; and Ohta, Kazuhiko, 4,535,155, Cl. 544-20.000.

Ohta, Schunich: *See*—
Kitayama, Masayasu; Sugimori, Yoshiaki; and Ohta, Schunich, 4,535,072, Cl. 502-411.000.

Ohtaka, Keiji: *See*—
Suzuki, Takashi; Matsumura, Susumu; and Ohtaka, Keiji, 4,534,637, Cl. 354-403.000.

Oiles Industry Co., Ltd.: *See*—
Maeda, Katsutoshi; and Shimoda, Ikuo, 4,534,535, Cl. 248-636.000.

Ojala, William K., to Practical Technology Incorporated. Vehicle seat lumbar support insert and method of utilizing the same. 4,534,593, Cl. 297-284.000.

Okada, Kazuo, to Kabushiki Kaisha Universal. Slot machine. 4,534,560, Cl. 273-143.00R.

Okazaki, Narukazu, to Wakayama Iron Works, Ltd. Dryer for a continuous textile fabric. 4,534,120, Cl. 34-119.000.

Okey, David W.: *See*—
Lee, Raymond; Okey, David W.; and Ferro, Gregory A., 4,535,099, Cl. 521-154.000.

OKI Electric Industry Co., Ltd.: *See*—
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.

Okihara, Naoto; Morimoto, Masayuki; and Ide, Tatsumi, to NEC Corporation. Contact support means for an electromagnetic relay. 4,535,311, Cl. 335-124.000.

Okonogi, Tsuneo: *See*—
Shibahara, Seiji; Okonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., 4,534,898, Cl. 260-245.300.

Okuma Machinery Works Ltd.: *See*—
Asano, Hiroshige; and Moroto, Masayuki, 4,534,803, Cl. 134-30.000.

Okumoto, Shigeki, to Mitsubishi Denki Kabushiki Kaisha. Automotive V-belt. 4,534,750, Cl. 474-261.000.

Okumura, Junji: *See*—
Ishida, Keiichi; Okumura, Junji; and Agetsuma, Fumio, 4,534,506, Cl. 236-35.300.

Okuno, Toshinori; and Nakamura, Hiroshi, to Dengen Automatic Co. Ltd. Tile arranging apparatus for automatic game playing table. 4,534,561, Cl. 273-149.00R.

Okuto, Koichiro: *See*—
Nakazato, Takuzo; Okuto, Koichiro; and Kai, Toshio, 4,534,678, Cl. 405-204.000.

Olin Corporation: *See*—
Gates, William J.; and Zwirlein, John F., 4,534,802, Cl. 134-22.120.
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., 4,534,846, Cl. 204-290.00R.

Olofinsky, Evgeny P.: *See*—
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.

Olschewski, Armin; and Bauer, Bernhard, to SKF Kugellagerfabriken GmbH. Cage for rolling bearings. 4,534,095, Cl. 29-148.40C.

Olson, David L.; and Marquez, Alfredo D., to Research Corporation. Cast iron welding materials and method. 4,534,793, Cl. 75-123.00N.

Olsson, Billy E., to AMP Incorporated. Connector for printed circuit boards. 4,534,606, Cl. 339-75.00M.

Olympus Optical Co., Ltd.: *See*—
Mihara, Shin-ichi, 4,534,626, Cl. 350-454.000.

O'Mara, Bradley E., to Intersil, Inc. Power supply failure early warning detector. 4,535,410, Cl. 364-483.000.

Omodei-Sale, Amedeo: *See*—
Galliani, Giulio; Omodei-Sale, Amedeo; Consonni, Pietro; and Assandri, Alessandro, 4,535,090, Cl. 514-383.000.

Omori, Takashi: *See*—
Moriguchi, Haruhiko; Omori, Takashi; and Inui, Toshiharu, 4,535,340, Cl. 346-76.0PH.

O'Neill, Charles E.: *See*—
Ambrose, John; Charles, Douglas K.; Conard, Bruce R.; Diaz, Carlos; O'Neill, Charles E.; and Leavoy, Wayne P., 4,534,935, Cl. 419-23.000.

Ono, Taizo: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; and Suyama, Tadakazu, 4,534,978, Cl. 514-429.000.
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.

Ono, Yotsuo: *See*—
Yokogi, Masanobu; Sugimoto, Yoshifumi; and Ono, Yotsuo, 4,535,028, Cl. 428-398.000.

Onofusa, Norio: *See*—
Hiyoshi, Kazuhiko; Matsuura, Norio; Matsuguchi, Michiharu; Onofusa, Norio; and Nishikage, Tadao, 4,535,120, Cl. 524-560.000.

Oomori, Shogo: *See*—
Murakami, Nobuaki; and Oomori, Shogo, 4,534,334, Cl. 123-571.000.

Ootsuka, Kenichi; and Miyake, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Mobile electrical apparatus. 4,535,253, Cl. 307-9.000.

Oozeki, Hikaru: *See*—
Yamano, Yuzo; and Oozeki, Hikaru, 4,534,215, Cl. 73-862.440.

Orillo, Stephen, Jr.: *See*—
Wilger, John F.; Nakano, Gregory S.; Orillo, Stephen, Jr.; and Cazinha, John R., 4,534,135, Cl. 51-241.00S.

Ortiz, Jose A.: *See*—
Forne , Ernesto; Foguet, Rafael; Sacristan, Aurelio; and Ortiz, Jose A., 4,535,159, Cl. 544-148.000.

Osaka Seiki Kabushiki Kaisha: *See*—
Matsuda, Teruo; and Kawaguchi, Kizo, 4,534,133, Cl. 51-58.000.

Osburn, Frank G.; and Riedel, Kenneth E., to Hollister Incorporated. Sealant pad for external catheter and method of use thereof. 4,534,768, Cl. 604-350.000.

Osuga, Minoru; and Oyama, Yoshishige, to Hitachi, Ltd. Air/fuel ratio detector. 4,534,330, Cl. 123-440.000.

O'Sullivan, Denis P. Automatic bundle-tying tool. 4,534,817, Cl. 156-352.000.

Oswald, James H.: *See*—
Evani, Syamalarao; Oswald, James H.; Staples, Thomas L.; and Polak, Brent T., 4,535,098, Cl. 521-149.000.

Otoguro, Yasuo: *See*—
Zaizen, Takashi; Otoguro, Yasuo; Yamanaka, Mikio; and Yamane, Shozo, 4,535,034, Cl. 428-653.000.

Otsuka, Kazunori: *See*—
Inaike, Toshihiro; Yamamoto, Shuji; Ohe, Shunji; and Otsuka, Kazunori, 4,535,105, Cl. 524-104.000.

Ottestad, Nils T. Gas regulator valve. 4,534,380, Cl. 137-490.000.

Overs, Ronald R. Adapter for installation of marine instruments. 4,534,307, Cl. 114-343.000.

Owens-Corning Fiberglas Corporation: *See*—
Herschler, Max G., 4,534,779, Cl. 65-6.000.

Owens-Illinois, Inc.: *See*—
Jabarin, Saleh A., 4,535,025, Cl. 428-220.000.

Oyama, Kiyotaka; and Harada, Tuneo, to Toyo Soda Manufacturing Co., Ltd. Process for producing a halogen-containing ethylbenzene derivative. 4,534,909, Cl. 260-465.00G.

Oyama, Yoshishige: *See*—
Osuga, Minoru; and Oyama, Yoshishige, 4,534,330, Cl. 123-440.000.

Ozelli, Riza N.; Hoffmann, Hans-Josef; and Lippert, Hartmut. Flocking adhesive for flexible substrates. 4,535,121, Cl. 524-715.000.

Pacault, Adolphe: *See*—
Canet, Roland; Delhaes, Pierre; Dupart, Eliane; Pacault, Adolphe; Pascal, Claude; and Manceau, Jean-Pierre, 4,535,317, Cl. 338-36.000.

Pacific Display Corporation: *See*—
Post, William L., 4,534,473, Cl. 211-58.000.

Package Machinery Co.: *See—*
Mosher, Oren A.; and Douglas, Ellwood S., 4,534,428, Cl. 177-1.000.

Page, John E.: *See—*
de Lorenzo, Mark X.; Hoffpauir, Charles R.; Hutchins, Johnnie R.; Meyer, Timmy R.; Page, John E.; and Poehl, Michael E., 4,535,134, Cl. 526-88.000.

Paget et Morel: *See—*
Morel, Michel, 4,534,628, Cl. 351-153.000.

Pai, Robert Y.: *See—*
Grossman, Mark W.; George, William A.; and Pai, Robert Y., 4,534,742, Cl. 445-9.000.

Pako Corporation: *See—*
Euteneuer, Charles L.; and Diesch, Robert E., 4,534,519, Cl. 242-68.300.

Palitex Project-Company GmbH: *See—*
Lorenz, Rainer, 4,534,160, Cl. 57-22.000.

Pall Corporation: *See—*
Pall, David B.; Degen, Peter J.; and Mischenko, John, III, 4,534,388, Cl. 141-1.000.

Pall, David B.; Degen, Peter J.; and Mischenko, John, III, to Pall Corporation. Dispersion system and method. 4,534,388, Cl. 141-1.000.

Palm, Richard R.; James, Robert G.; and Fisher, Robert E., to Armco Inc. Self-compensating oscillatory pump control. 4,534,706, Cl. 417-17.000.

Palvolgyi, Frank A., to United States of America, Air Force. Random timer. 4,535,466, Cl. 377-54.000.

Pangburn, William E. Nail file having flexible abrasive sheet. 4,534,138, Cl. 51-392.000.

Panipinto, David C.: *See—*
LaRosa, John; and Panipinto, David C., 4,534,201, Cl. 72-348.000.

Paolantonio, James R.: *See—*
Rhodes, Robert B.; and Paolantonio, James R., 4,535,453, Cl. 370-110.100.

Papa, Anthony J.; and Kaiser, Steven W., to Union Carbide Corporation. Preparation of isophorone and mesityl oxide from acetone. 4,535,187, Cl. 568-353.000.

Papadakis, Nicholas, to Diamond Shamrock Chemicals Company. Solid state transcutaneous blood gas sensors. 4,534,356, Cl. 128-635.000.

Papst-Motoren GmbH & Co., KG: *See—*
Muller, Rolf, 4,535,275, Cl. 318-254.000.
Schuh, Bernhard, 4,535,373, Cl. 360-97.000.

Paradyne Corp.: *See—*
Sandberg, Terrel W.; and Bottoms, Stanley, 4,535,452, Cl. 370-100.000.

Paragon Optical, Inc.: *See—*
Ratkowski, Donald J.; and Lue, Ping-Chang, 4,535,138, Cl. 526-279.000.

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Park, Chung P.; and Suh, Kyung W., to Dow Chemical Company, The. Alkenyl aromatic monomer olefinically unsaturated acid foams and method for the preparation thereof. 4,535,094, Cl. 521-79.000.

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Burge, Donald G., 4,534,379, Cl. 137-385.000.

Parker, Harry A., to Transfer Print Foils, Inc. Gloss black metalized product and method of preparation. 4,535,024, Cl. 428-200.000.

Parker, James T., II: *See—*
Graham, Frank C.; and Parker, James T., II, 4,534,384, Cl. 137-899.200.

Parker, Michael S. Controlled rocking action furniture. 4,534,591, Cl. 297-270.000.

Parks, James D.; Moss, Charles A.; and Dyer, Kermit W., to Labconco Corporation. Laboratory fume hood. 4,534,281, Cl. 98-115.300.

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Zanno, Paul R.; and Parliment, Thomas H., 4,534,988, Cl. 426-535.000.

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Yoldas, Bulent E.; and Partlow, Deborah P., 4,535,026, Cl. 428-310.500.

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Fierkens, Richardus H. J.; and Pas, Ireneus J. T. M., 4,534,921, Cl. 264-39.000.

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Canet, Roland; Delhaes, Pierre; Dupart, Eliane; Pacault, Adolphe; Pascal, Claude; and Manceau, Jean-Pierre, 4,535,317, Cl. 338-36.000.

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Pastor, Manuel G., to Zerpa Industries, Inc. Solvent recovery method. 4,534,830, Cl. 203-86.000.

Pauly, Hans: *See—*
Weber, Adolf; Strauss, Hans; and Pauly, Hans, 4,534,292, Cl. 102-241.000.

Paxa, Charles. Nose bandage. 4,534,342, Cl. 128-163.000.

Payet, George L.; and Ballard, Stephen C., to Springs Industries, Inc. Woven textile fabric having an ultrasonically cut and sealed edge and apparatus and process for producing same. 4,534,819, Cl. 156-515.000.

Pazar, Charles A. Apparatus for burning bales of trash. 4,534,302, Cl. 110-346.000.

Peacock, Bobbie D.; Mushovic, John N.; and Geyer, Roger D., to M. A. Industries, Inc. Method and apparatus for supporting cylindrical concrete samples for testing. 4,534,225, Cl. 73-860.000.

Peacock, Kenneth L., to Standard Oil Company. Method and apparatus for digital time-variant filtering. 4,535,417, Cl. 364-724.000.

Pearlman, Bruce A., to Upjohn Company, The. Intermediates for the production of prostaglandins from D-glucose. 4,535,173, Cl. 549-433.000.

Peerman, Dwight E.; and Rogier, Edgar R., to Henkel Corporation. Alkoxylated polyester polyols. 4,534,907, Cl. 260-410.600.

Pees, James M.: *See—*
Fannin, Wayne V.; and Pees, James M., 4,534,545, Cl. 267-64.240.

Peeters, Hermann; Vogt, Wilhelm; and Theis, Christoph, to Dynamit Nobel Aktiengesellschaft. Method of preparing acetals and enol ethers from acyloxymethylene compounds. 4,534,910, Cl. 260-465.600.

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Pelletier, Jacques: *See—*
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Pengilly, Brian W., to Goodyear Tire & Rubber Company, The. High clarity, low haze polyesters having reduced infrared heat-up times. 4,535,118, Cl. 524-398.000.

Penn, Thomas C., to Texas Instruments Incorporated. Apparatus and method for providing power from master controller to subcontrollers and data communication therebetween. 4,535,401, Cl. 364-132.000.

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Jahnke, William R.; Rockel, Bruce H.; Brown, Barry J.; Hawley, Floyd E.; Pennella, Andrew J.; Sugrue, John C.; and Wiggins, William R., 4,534,093, Cl. 29-26.00A.

Penney, Bruce J., to Tektronix, Inc. Method and circuit for measuring nonlinearity in dual-flash analog-to-digital converter. 4,535,319, Cl. 340-347.0AD.

Penney, Bruce J., to Tektronix, Inc. Video signal processing circuit and method for blanking signal insertion with transient distortion suppression. 4,535,357, Cl. 358-150.000.

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Perbet, Jean-Noel: *See—*
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Perepletchikov, Evgeny F.: *See—*
Bragin, Boris F.; Kolomiets, Alexandr S.; Korotkikh, Jury B.; Markuntovich, Felix D.; Olofinsky, Evgeny P.; Gladky, Petr V.; Perepletchikov, Evgeny F.; and Ekber, Boris Y., 4,534,540, Cl. 251-203.000.

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Perrey, Hermann; and Matner, Martin, to Bayer Aktiengesellschaft. Heat sensitizing agents, the production and use thereof. 4,535,111, Cl. 524-199.000.

Perrey, Hermann: *See—*
Preuss, Reinhard; Perrey, Hermann; Ritter, Helmut; Reinecke, Paul; and Brandes, Wilhelm, 4,535,074, Cl. 514-93.000.

Peschmann, Kristian R., to Imatron Associates. X-ray detector for high speed X-ray scanning system. 4,535,243, Cl. 250-363.00S.

Peter, Karl, to ROMEX Aktiengesellschaft. Inclined elevator with single rail. 4,534,451, Cl. 187-12.000.

Peters, Mark W.: *See—*
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Peterson, Donald W., to AT&T Bell Laboratories. Correction and monitoring of transient errors in a memory system. 4,535,455, Cl. 371-13.000.

Peterson, Steven G. Vertical mounting device for electrical circuit board components. 4,534,604, Cl. 339-17.00D.

Petit, Roland, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Device for measuring the flow of a fluid. 4,534,227, Cl. 73-861.870.

Petrie, Adelore F., to Motorola, Inc. Digital circuitry for producing indicative signals at predetermined times prior to periodic pulses. 4,535,464, Cl. 377-39.000.

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Pfarrwaller, Erwin, to Sulzer Brothers Limited. Tensioning beam assembly for a weaving machine. 4,534,386, Cl. 139-114.000.

Pfeifer, Jerome L.: *See—*
Wertheimer, Harry P.; Libsch, Thomas A.; Pfeifer, Jerome L.; and Becker, Paul C., 4,535,316, Cl. 338-34.000.

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Pfizer Inc.: *See—*
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Lombardino, Joseph G.; and Harbert, Charles A., 4,535,084, Cl. 514-277.000.

Phaal, Cornelius; Pipkin, Noel J.; and Burnand, Richard P. Abrasive product and method for manufacturing. 4,534,773, Cl. 51-293.000.

Pharmacia AB: *See—*
Axen, Rolf E.; Kaj, Goran L.; and Rigner, Bror S., 4,535,010, Cl. 427-246.000.

Pharmuka Laboratoires: *See—*
Audiau, Francois; Gueremy, Claude G. A.; and Le Fur, Gerard R., 4,535,080, Cl. 514-255.000.

Philip, Alexander S.: *See—*
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Philip Morris Incorporated: *See—*
Newsome, Reginald W., 4,534,367, Cl. 131-75.000.

Philips Petroleum Company: *See—*
Mark, Harold W.; Bertus, Brent J.; Roberts, John S.; McKay, Dwight L.; and Fenska, Lyle E., 4,535,066, Cl. 502-62.000.

Phillippi, R. Michael; and Drzewiecki, Thadeusz M., to United States of America, Army. Fluidic set point pressure sensor. 4,534,383, Cl. 137-840.000.

Phillips, Dorothy J., to Dow Chemical Company, The. Method for improving lactation in ruminant animals. 4,534,969, Cl. 424-118.000.

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Johnson, Timothy W.; and Banasiak, Dennis S., 4,535,116, Cl. 524-385.000.
Mathis, Ronald D.; and Reed, Jerry O., 4,535,117, Cl. 524-397.000.
McDaniel, Max P.; Johnson, Marvin M.; Hawley, Gil R.; Westerman, John; and Smith, Paul D., 4,535,070, Cl. 502-208.000.
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Phillips Plastics Corporation: *See—*
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Phillips, Robert F.: *See—*
McIntyre, James A.; and Phillips, Robert F., 4,534,845, Cl. 204-283.000.

Pickard, Jurgen: *See—*
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Picker International Limited: *See—*
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Young, Ian R., 4,534,358, Cl. 128-653.000.

Piesch, Steffen: *See—*
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, 4,535,031, Cl. 428-481.000.

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Pirkau, Arno F.: *See—*
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Pitney Bowes Inc.: *See—*
Dlugos, Daniel F.; and Daniels, Edward P., 4,535,419, Cl. 364-900.000.
Duwel, Edward C.; and Soderberg, John H., 4,535,421, Cl. 364-900.000.
Eckert, Alton B.; Soderberg, John H.; and Duwel, Edward C., 4,535,407, Cl. 364-464.000.

Piurek, Walter J., to Atlantic Richfield Company. Automatic solder machine. 4,534,502, Cl. 228-102.000.

Plantronics, Inc.: *See—*
Silverglate, David E., 4,534,614, Cl. 350-1.400.

Plesko, George A., to Mars Incorporated. Low power coin routing gate apparatus. 4,534,459, Cl. 194-1.00D.

Plessey Company plc, The: *See—*
Maddern, Thomas S.; Ansell, John W.; and Philip, Alexander S., 4,535,442, Cl. 370-13.000.

Plibrico Limited: *See—*
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Plueddemann, Edwin P.: *See—*
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Pneumo Corporation: *See—*
Vanderlaan, Robert D., 4,534,273, Cl. 91-510.000.

Pocock, John F. E.; Cole, Charles A.; Villanueva, James G.; Matlack, John D.; and Lewis, Shelton E., to Standard Oil Company (Indiana). Method for coating containers. 4,534,995, Cl. 427-38.000.

Poehl, Michael E.: *See—*
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Pohl, Walter J.: *See—*
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Polak, Brent T.: *See—*
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Polaroid Corporation: *See—*
Fielding, Herbert L.; and Ingwall, Richard T., 4,535,041, Cl. 430-1.000.
Simon, Myron S.; and Waller, David P., 4,535,051, Cl. 430-222.000.

Polat, Alain V.: *See—*
Franz, Michel R.; Vincze, Andreas B.; Lambelin, Georges E.; and Polat, Alain V., 4,534,911, Cl. 514-575.000.

Poldervaart, Leendert, to Single Buoy Moorings, Inc. System for maintaining a buoyant body in position in relation to another body. 4,534,740, Cl. 441-3.000.

Poloncic, Stanley J.: *See—*
Chen, Lee; Hendricks, Charles J.; Mathad, Gangadhara S.; and Poloncic, Stanley J., 4,534,816, Cl. 156-345.000.

Polymer Technology Corporation: *See—*
Ellis, Edward J.; and Salamone, Joseph C., 4,534,878, Cl. 252-173.000.

Pomot, Claude: *See—*
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Poncet, Jean-Pierre, to Allibert S.A. Transfer device for robots. 4,534,697, Cl. 414-787.000.

Pongor, Sandor: *See—*
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Poppendiek, Heinz F.; and Sabin, Cullen M., to Geoscience Ltd. Means and techniques for testing of heat insulation materials. 4,534,663, Cl. 374-43.000.

Porta Systems Corp.: *See—*
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Porter, Samuel, Jr.: *See—*
Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., 4,535,132, Cl. 525-443.000.

Possell, Clarence P. Coal fired turbine. 4,534,699, Cl. 415-42.000.

Post, Hans; and Ratzel, Dieter, to Bruker Medizintechnik GmbH. Method for measuring the nuclear magnetic resonance for NMR tomography. 4,535,290, Cl. 324-309.000.

Post, William L., to Pacific Display Corporation. Display stand. 4,534,473, Cl. 211-58.000.

Potter, William D., to Smith and Nephew Associated Companies Inc. Electrochemical sensor employing a gas-permeable hydrophilic polyurethane membrane. 4,534,355, Cl. 128-635.000.

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Poujois, Robert: *See—*
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Powers, Jeffry E., to Advanced Technology Laboratories, Inc. Multiple demodulation frequency Doppler. 4,534,357, Cl. 128-663.000.

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Ambrose, Ronald R.; Chang, Wen-Hsuan; McKeough, David T.; Eslinger, Delano R.; and Porter, Samuel, Jr., 4,535,132, Cl. 525-443.000.

Practical Technology Incorporated: *See—*
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Precision Fukuhara Works, Ltd.: *See—*
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Prester, Lorrain W. Lamp. 4,535,395, Cl. 362-267.000.

Preston, William. Partition structure. 4,534,146, Cl. 52-239.000.

Preuss, Reinhard; Perrey, Hermann; Ritter, Helmut; Reinecke, Paul; and Brandes, Wilhelm, to Bayer Aktiengesellschaft. Fungicidal phosphorylated azolyl derivatives. 4,535,074, Cl. 514-93.000.

Price, Anthony G.; and Gornall, Graham J., to Lucas Industries public limited company. Master cylinder assembly for a vehicle hydraulic braking system. 4,534,172, Cl. 60-578.000.

Price, Ronald L.; Witman, Mark W.; and Krishnan, Sivaram, to Mobay Chemical Corporation. Process for the preparation of copolycarbonates of sulfonyl diphenol. 4,535,143, Cl. 528-174.000.

Pringle, Ronald E., to Camco, Incorporated. Hydraulic control fluid communication nipple. 4,534,414, Cl. 166-317.000.

Pritchard, Robert J.; and Lindenmuth, Kevin, to Teleflex Incorporated. Magnetic linear motor. 4,535,260, Cl. 310-12.000.

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Progressive Dynamics, Inc.: *See—*
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Promecam Sisson-Lehmann: *See—*
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Prusak, John J., to RCA Corporation. Electroforming apparatus. 4,534,844, Cl. 204-281.000.

Puckette, Charles M., to General Electric Company. Binary signal demodulator with comparative value decision circuitry. 4,535,297, Cl. 329-126.000.

Puginsky, Viktor A.: *See*—
Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., 4,535,283, Cl. 323-365.000.

Pujol-Barcons, Salvador. System of movable footbridges for their use in the construction. 4,534,446, Cl. 182-146.000.

Pullen, Alan J., to Discovision Associates. Universal video data playback. 4,535,366, Cl. 358-342.000.

Pullman Standard, Inc.: *See*—
Yates, Donald B., 4,534,453, Cl. 188-52.000.

Pyles, Robert A., to General Electric Company. Ultraviolet light stabilized copolyestercarbonate. 4,535,104, Cl. 524-91.000.

Query, Grady W.; Query, O. Grady; and Kessler, H. Fred. Method for pest control using anesthetic and insecticide. 4,534,128, Cl. 43-132.100.

Query, O. Grady: *See*—
Query, Grady W.; Query, O. Grady; and Kessler, H. Fred, 4,534,128, Cl. 43-132.100.

Quick, James R.: *See*—
Kraus, Robert G.; and Quick, James R., 4,534,886, Cl. 252-502.000.

Quick, Nathaniel R. Apparatus and method for processing wire strand cable for use in prestressed concrete structures. 4,534,310, Cl. 118-620.000.

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White, Jackie L., 4,534,372, Cl. 131-359.000.

Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., to Gosudarstvenny Nauchno-Issledovatelsky Institut Teploenergeticheskogo Priborostroenia. Device for conversion of non-electrical quantity into electrical signal. 4,535,283, Cl. 323-365.000.

Rabo, Jule A.: *See*—
Long, Gary N.; Pellet, Regis J.; and Rabo, Jule A., 4,534,853, Cl. 208-120.000.

Rader, Robert R.: *See*—
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Raftis, Spiros G., to Red Valve Company, Inc. Isolation fluid pressure detector. 4,534,224, Cl. 73-730.000.

Rahe, Thomas E., to Motter Printing Press Co. Sheet diverting system. 4,534,552, Cl. 271-279.000.

Raible, Donald A., to Bentley Laboratories, Inc. Angular implant device. 4,534,760, Cl. 604-175.000.

Raible, Donald A., to Bentley Laboratories, Inc. Implant device. 4,534,761, Cl. 604-175.000.

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Rampel, Hans: *See*—
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Ramsey, Mark S., to Exxon Production Research Co. Retrievable telemetry system. 4,534,424, Cl. 175-40.000.

Ranner, Max: *See*—
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Rapata, George M. Blind securement of cover plates and the like. 4,534,487, Cl. 220-305.000.

Rapson, W. Howard; and Fredette, Maurice C. J., to ERCO Industries Limited. Small scale generation of chlorine dioxide for water treatment. 4,534,952, Cl. 423-478.000.

Rathbun, Daniel L. Tamperproof capsule. 4,534,467, Cl. 206-530.000.

Rathge, Robert D.: *See*—
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Ratkowski, Donald J.; and Lue, Ping-Chang, to Paragon Optical, Inc. Silane ester contact lens composition, article and method of manufacture. 4,535,138, Cl. 526-279.000.

Ratzel, Dieter: *See*—
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Rauch, Gary C.: *See*—
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Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, to Thomson-CSF. Electroacoustic transducer of the piezoelectric polymer type. 4,535,205, Cl. 179-110.00A.

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van Konynenburg, Peter H.; Lyons, Bernard J.; Smith-Johannsen, Robert; and Moyer, Wendell W., 4,534,889, Cl. 252-511.000.

Raymond Corporation, The: *See*—
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Raymond, Laurie: *See*—
Jacobson, Bernard; and Raymond, Laurie, 4,534,967, Cl. 424-95.000.

Raynal, Serge F.: *See*—
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RCA Corporation: *See*—
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Gale, Michael T.; and Lehmann, Hans W., 4,534,620, Cl. 350-166.000.
Prusak, John J., 4,534,844, Cl. 204-281.000.
Reusch, Raymond K., 4,534,105, Cl. 29-589.000.
Westerman, Harry H., Jr., 4,535,223, Cl. 219-354.000.
Westerman, Harry H., Jr., 4,535,224, Cl. 219-373.000.

Reap, James J., to Du Pont de Nemours, E. I., and Company. Herbicidal o-alkylsulfonyloxy- and o-alkylsulfonylaminobenzenesulfonamides. 4,534,789, Cl. 71-93.000.

Rear, Ian G. Fluid operated hammer. 4,534,422, Cl. 173-134.000.

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Raftis, Spiros G., 4,534,224, Cl. 73-730.000.

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Richardson, Donald, 4,534,067, Cl. 2-234.000.

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Reichl, Eric H., to Conoco Inc. Process of ether synthesis. 4,534,772, Cl. 44-53.000.

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Kleeper, John R.; Reid, John M.; Miwa, Hirohide; Shimura, Takaki; and Murakami, Keiichi, 4,534,220, Cl. 73-599.000.

Reid, Lee R., to Texas Instruments Incorporated. Solid state three dimensional semiconductor memory array. 4,535,424, Cl. 365-63.000.

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Goines, Fredrick J.; and Reifsteck, David A., 4,534,143, Cl. 52-169.500.

Reinecke, Gary: *See*—
Blackston, Michael D.; and Reinecke, Gary, 4,534,131, Cl. 49-42.000.

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Reinke, Kurt, to Durkoppwerke GmbH. Stitch correction method and apparatus for a sewing machine. 4,534,304, Cl. 112-262.100.

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Woyton, Joseph T.; and Grant, George G., 4,534,114, Cl. 33-181.00R.

Rembaum, Alan; and Yen, Richard C. K., to California Institute of Technology. Hybrid microspheres. 4,534,996, Cl. 427-44.000.

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Binsack, Rudolf; Rempel, Dieter; Lindner, Christian; and Morbitzer, Leo, 4,535,124, Cl. 525-67.000.

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Republic Steel Corporation: *See—*
Wood, Kenneth L., 4,534,466, Cl. 206-518.000.
Research Corporation: *See—*
Olson, David L.; and Marquez, Alfredo D., 4,534,793, Cl. 75-123.00N.
Taylor, Leonard S., 4,534,347, Cl. 128-303.100.
Reusch, Raymond K., to RCA Corporation. Method for grounding a pellet support pad in an integrated circuit device. 4,534,105, Cl. 29-589.000.
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Cosenza, Frank J., 4,534,234, Cl. 74-89.150.
Rosan, Jose Jr., 4,534,101, Cl. 29-432.000.
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Rhodes, Stephen M.: *See—*
Haefner, LeRoy H.; and Rhodes, Stephen M., 4,534,117, Cl. 33-379.000.
Rice, Frederick H. Solar heat collector and reflector. 4,534,335, Cl. 126-429.000.
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Richardson, Donald, to Reece Corporation, The. Fly construction and method of forming it. 4,534,067, Cl. 2-234.000.
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Herstein, Morris S.; Smith, Walter P.; and Hawkins, Geoffrey R., 4,534,964, Cl. 424-70.000.
Ricke, James. Hole plug. 4,534,088, Cl. 24-295.000.
Rickert, Glenn E. Projected stereoscopic picture separation. 4,535,354, Cl. 358-88.000.
Ricoh Company, Ltd.: *See—*
Horike, Masanori; Furukawa, Tatsuya; Ebi, Yutaka; and Yamazaki, Hiroshi, 4,535,339, Cl. 346-75.000.
Shinya, Ryohei; Miura, Shin'ichi; and Aozuka, Rikio, 4,534,312, Cl. 118-666.000.
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Osburn, Frank G.; and Riedel, Kenneth E., 4,534,768, Cl. 604-350.000.
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More, Anton; Lang, Winfried; Riedle, Rudolf; Straussberger, Herbert; and Streckel, Willi, 4,534,791, Cl. 75-10.00R.
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Summers, Kenneth L.; and Baughman, Gary M., 4,534,481, Cl. 215-253.000.
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Axen, Rolf E.; Kaj, Goran L.; and Rigner, Bror S., 4,535,010, Cl. 427-246.000.
Rigouard, Alain, to L'Air Liquide, Societe Anonyme pour l'Etude et l'Exploitation des Procedes Georges Claude. Process and device for the regeneration of a group of solid particles having a coating of a biological material. 4,534,864, Cl. 210-603.000.
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Moore, George G. I., 4,535,165, Cl. 548-204.000.
Rinkewich, Isaac. Area pattern controlled sprinkler. 4,534,510, Cl. 239-97.000.
Ripberger, Emil; and Stuska, Gotthard, to Mahle GmbH. Piston assembly for internal combustion engines. 4,534,274, Cl. 92-187.000.
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Robbins, Gordon J.: *See—*
Davis, James W.; Leininger, Joel C.; Munoz-Bustamante, Carlos; and Robbins, Gordon J., 4,535,467, Cl. 377-81.000.
Robert Bosch GmbH: *See—*
Bauer, Kurt; Fischer, Karl-Heinz; and Huber, Heinz, 4,535,456, Cl. 371-16.000.
Berger, Klaus; Affeldt, Karl-Heinz; and Bottcher, Lutz, 4,534,361, Cl. 128-680.000.
Eheim, Franz; and Laufer, Helmut, 4,534,332, Cl. 123-502.000.
Fischer, Werner; Flaig, Ulrich; and Locher, Johannes, 4,534,328, Cl. 123-359.000.
Latsch, Reinhard; and Schlembach, Hans, 4,534,327, Cl. 123-263.000.
Leiber, Heinz, 4,534,171, Cl. 60-551.000.
van Belzen, David; Honig, Gunter; Lotterbach, Gerhard; van Woudenberg, Jan-Faas; and Zucker, Udo, 4,534,331, Cl. 123-492.000.
Roberts, George W.; and Tao, John C., to International Coal Refining Company. Process for producing low-sulfur boiler fuel by hydrotreatment of solvent deashed SRC. 4,534,847, Cl. 208-8.0LE.
Roberts, John H.: *See—*
Fasano, Anthony; Roberts, John H.; and Motycka, David L., 4,534,216, Cl. 73-147.000.
Roberts, John S.: *See—*
Mark, Harold W.; Bertus, Brent J.; Roberts, John S.; McKay, Dwight L.; and Fenska, Lyle E., 4,535,066, Cl. 502-62.000.
Robertshaw Controls Company: *See—*
Geary, Frederick J., 4,535,380, Cl. 361-256.000.
Robinson, Chris E.: *See—*
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Robinson, Robert E.: *See—*
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Cerami, Anthony; Pongor, Sandor; and Brownlee, Michael, 4,534,894, Cl. 260-112.700.
Rockel, Bruce H.: *See—*
Jahnke, William R.; Rockel, Bruce H.; Brown, Barry J.; Hawley, Floyd E.; Pennella, Andrew J.; Sugrue, John C.; and Wiggins, William R., 4,534,093, Cl. 29-26.00A.
Rockwell International Corporation: *See—*
Cassidenti, Michael L., 4,535,216, Cl. 219-68.000.
Frankel, Milton B.; and Woolery, Dean O., II, 4,534,895, Cl. 260-239.0BC.
Hogge, Charles R., Jr., 4,535,459, Cl. 375-80.000.
Moen, Walter K., 4,535,222, Cl. 219-300.000.
Morey, William A., 4,535,328, Cl. 340-739.000.
Walter, Robert J.; and Gerik, Bernard J., 4,534,794, Cl. 106-14.050.
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Rodriguez, Carlos M.: *See—*
Groves, Michael R.; and Rodriguez, Carlos M., 4,535,284, Cl. 324-71.100.
Roe, James E.: *See—*
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Rogers, John; and White, Malcolm J. Security lock for sliding doors. 4,534,191, Cl. 70-116.000.
Rogers, William S. Flower tote. 4,534,130, Cl. 47-66.000.
Rogier, Edgar R.: *See—*
Gladfelter, Elizabeth J.; Rogier, Edgar R.; and DiDomenico, Edward D., 4,535,148, Cl. 528-365.000.
Peerman, Dwight E.; and Rogier, Edgar R., 4,534,907, Cl. 260-410.600.
Rohm GmbH: *See—*
Siol, Werner; Rauch, Hubert; and Fleck, Guenter, 4,535,137, Cl. 526-216.000.
Rokach, Joshua, to Merck & Co., Inc. Dibenzo[b,f]thiepin-3-carboxaldehydes as prostaglandin antagonists. 4,535,171, Cl. 549-12.000.
Roller, Hermann; Lehner, August; Hack, Joachim; Grau, Werner; Balz, Werner; and Baur, Reinhold, to BASF Aktiengesellschaft. Production of magnetic recording media having a backing coating. 4,534,999, Cl. 427-130.000.
ROMEX Aktiengesellschaft: *See—*
Peter, Karl, 4,534,451, Cl. 187-12.000.
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Bouchard, Claude, 4,534,463, Cl. 206-267.000.
Rosan, Jose Jr., to Rexnord Inc. Method of installing self-locking nut and bolt assembly. 4,534,101, Cl. 29-432.000.
Rosanes, Albert; and Haley, Timothy P., to Hazeltine Corporation. Remote monitoring system transmitter. 4,535,447, Cl. 370-77.000.
Roscherwerke GmbH: *See—*
Franzke, Jurgen, 4,534,286, Cl. 100-219.000.
Rose, Gene D., to Dow Chemical Company, The. Method for heat exchange fluids comprising viscoelastic surfactant compositions. 4,534,875, Cl. 252-71.000.
Rose, Leonard, to General Electric Company. Counter rotating, multi turbine flow measuring system. 4,534,226, Cl. 73-861.840.
Rosemount, Inc.: *See—*
Brown, Gregory C., 4,534,376, Cl. 137-83.000.
Rosenbaum, John M., to Chevron Research Company. Sulfur extraction process. 4,534,955, Cl. 423-573.00R.
Rosenberg, Isadore: *See—*
Mitchell, Hal D.; Glover, Richard W.; Walker, Donald R.; and Rosenberg, Isadore, 4,534,068, Cl. 2-414.000.
Rosenmeier, Gordon: *See—*
DuFrene, Clement O., 4,534,436, Cl. 180-144.000.
Rosenquist, Niles R.; and Tyrell, John A., to General Electric Company. Flame retardant polycarbonate. 4,535,108, Cl. 524-162.000.
Rossmann, William F. Tight-grip wrench. 4,534,245, Cl. 81-90.100.
Rosstream Research Assoc. Ltd.: *See—*
Gervais, William J., 4,535,370, Cl. 360-60.000.
Rothermel, William F.; Matthews, John P.; Walker, James W.; and Coulter, Wallace H., to Coulter Electronics, Inc. Cassette for supporting test tubes of different diameters and/or lengths. 4,534,465, Cl. 206-443.000.
Rothfuss, Robert G.; Kuhl, David K.; Bilotti, Federico; Melling, Hugh; and Mills, Earl J., to Senmed, Inc. Ligator. 4,534,351, Cl. 128-334.00R.
Rounds, Nicholas A. Coated substrate. 4,535,030, Cl. 428-413.000.
Rousseau, Michel. Paint can holder. 4,534,528, Cl. 248-210.000.
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Rowan, John W.: *See—*
Carr, Peter; and Rowan, John W., 4,534,833, Cl. 204-128.000.

Roydhouse, Richard H., to Environmental Protection Systems, Limited. Mercury vapor suppressant. 4,534,944, Cl. 423-210.000.

Rubmann, Hans: *See—*
Eltze, Georg; Luttge, Klaus; Pickard, Jurgen; Rubmann, Hans; and Sandner, Helmut, 4,534,457, Cl. 192-70.200.

Russell, Anthony W.; and Russell, Michael K., to NL Sperry-Sun, Inc. Apparatus for signalling within a borehole while drilling. 4,535,429, Cl. 367-85.000.

Russell, Glen D.; and Steuri, Christian, to Procter & Gamble Company, The. Shampoo compositions comprising specific betaine surfactants and a quaternary compound. 4,534,877, Cl. 252-106.000.

Russell, Michael K.: *See—*
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Russell, Rupert A. V.: *See—*
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Russo, Louis: *See—*
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Russo, Ronald D., to Superior Plastic Products Corp. Suction control device for aspirator system. 4,534,542, Cl. 251-342.000.

Russomanno, Charles, to Block Drug Company, Inc. Automatic dispenser for disinfectant and bowl cleaning fluid. 4,534,071, Cl. 4-228.000.

Russomanno, Charles G.: *See—*
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Rusznak, Istvan; Trezl, Lajos; Foldesi, Dezso ; Szabo, Bela; Bodi, Imre; Csaszar, Szilveszter; Szopko, Mihaly; Gombar, Mihaly; Kovacs, Gabriella; and Tyihak, Erno , to Magyar Tudomanyos Akademia Kozponti Hivatala; and Lenin Mezogazdasagi Termeloszovetkezet. Method for increasing the biological value of manures, dung-waters, organic wastes and/or soils rich in lysine. 4,534,782, Cl. 71-21.000.

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Glaser, Herbert; and Stolzenberg, Konrad, 4,534,949, Cl. 423-445.000.

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Rutten, Peter T.; and Kalinowski, James E., to Blue Harbor, Inc. Sea anchor. 4,534,306, Cl. 114-311.000.

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Smialek, James L.; and Rybicki, George C., 4,535,035, Cl. 428-698.000.

Rydborn, Sten A. Apparatus for controlling a number of boilers. 4,534,321, Cl. 122-448.00B.

Ryuo, Toshihiko: *See—*
Sakaguchi, Susumu; Itoh, Ken; Ogihara, Masahiro; Makigawa, Shinji; Ryuo, Toshihiko; and Watanabe, Kazuyoshi, 4,534,821, Cl. 156-617.0SP.

Sabin, Cullen M.: *See—*
Poppendiek, Heinz F.; and Sabin, Cullen M., 4,534,663, Cl. 374-43.000.

Sabota, James J.; and Bradshaw, William G. Method and apparatus for cleaning printing presses. 4,534,291, Cl. 101-426.000.

Sabourin, Edward T.: *See—*
Bakshi, Kiran R.; Barie, Walter P.; and Sabourin, Edward T., 4,535,115, Cl. 524-376.000.

Sach, George S., to Smith Kline & French Laboratories Limited. 2-Aminoalkyl-pyridine derivatives. 4,535,163, Cl. 546-300.000.

Sackett, Michael J.: *See—*
Alt, Daniel M.; and Sackett, Michael J., 4,534,654, Cl. 366-137.000.

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Forne , Ernesto; Foguet, Rafael; Sacristan, Aurelio; and Ortiz, Jose A., 4,535,159, Cl. 544-148.000.

SAES Getters S.p.A.: *See—*
Martelli, Daniele; and Lani, Giuseppe, 4,535,267, Cl. 313-481.000.

Saito, Hiroshi, to Kabushiki Kaisha Komatsu Seisakusho. Excavating and propelling machine for laying pipelines underground. 4,534,676, Cl. 405-184.000.

Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, to Nihon Tokushu Noyaku Seizo K.K. Organophosphate pesticides. 4,535,076, Cl. 514-128.000.

Saito, Takashi: *See—*
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Saito, Toranosuke: *See—*
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.

Sakaguchi, Susumu; Itoh, Ken; Ogihara, Masahiro; Makigawa, Shinji; Ryuo, Toshihiko; and Watanabe, Kazuyoshi, to Shin-Etsu Chemical Co., Ltd. Single crystal growing of rare earth-gallium garnet. 4,534,821, Cl. 156-617.0SP.

Sakai, Hiroshi: *See—*
Takeuchi, Fumio; Takahashi, Masao; Hattori, Katsuhide; and Sakai, Hiroshi, 4,534,809, Cl. 149-3.000.

Sakai, Sai, to New Cosmos Electric Co., Ltd. Alkane gas sensor comprising tin oxide semiconductor with large surface area. 4,535,315, Cl. 338-34.000.

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Yagyu, Takashi; Yamaguchi, Takeshi; Tanaka, Sotaro; and Sakaki, Yasuo, 4,534,268, Cl. 91-6.000.

Sakakibara, Shiro: *See—*
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Sakamoto, Takashi, to Dainippon Screen Seizo Kabushiki Kaisha. Method and apparatus for positioning original pictures into a transparent sheet to be mounted to a picture cylinder of a picture reproducing machine. 4,535,365, Cl. 358-287.000.

Sakash, George; Grier, Robert K., Jr.; Stern, Hansjoerg; Dada, Abdul G.; and McKeel, Daniel W., to General Electric Company. Incinerator ash removal systems. 4,534,301, Cl. 110-255.000.

Sakata, Tomio, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting the duration of voice. 4,535,473, Cl. 381-46.000.

Sakuma, Osamu: *See—*
Wakabayashi, Tetsushi; Honda, Norio; and Sakuma, Osamu, 4,535,384, Cl. 361-386.000.

Salamone, Joseph C.: *See—*
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Salesse, Marc: *See—*
Meunier, Jean; and Salesse, Marc, 4,534,937, Cl. 419-42.000.

Saliger, Kenneth C., to Mobil Oil Corporation. Pipe joint locking device. 4,534,585, Cl. 285-92.000.

Salomon, Georges P. J.; and Vinay, Jean-Paul, to Salomon S.A. Cross-country or touring ski boot and method of manufacture. 4,534,123, Cl. 36-99.000.

Salomon S.A.: *See—*
Salomon, Georges P. J.; and Vinay, Jean-Paul, 4,534,123, Cl. 36-99.000.

Salvagnini, Guido, to Salvagnini Transferica S.p.A. Shearing machine for metal sheet having blades at right angles consisting of mutually movable segments. 4,534,255, Cl. 83-530.000.

Salvagnini Transferica S.p.A.: *See—*
Salvagnini, Guido, 4,534,255, Cl. 83-530.000.

Sambucetti, Carlos J.: *See—*
King, David E.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,534,797, Cl. 106-1.230.

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Sandberg, Terrel W.; and Bottoms, Stanley, to Paradyne Corp. Multimodem variable port demultiplexer synchronization adapter. 4,535,452, Cl. 370-100.000.

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Niles, Gerald J.; and Sandberg, Thomas A., 4,535,432, Cl. 369-72.000.

Sanders, Howard E. Atmospheric consistometer. 4,534,209, Cl. 73-59.000.

Sandner, Helmut: *See—*
Eltze, Georg; Luttge, Klaus; Pickard, Jurgen; Rubmann, Hans; and Sandner, Helmut, 4,534,457, Cl. 192-70.200.

Sani-Fresh International, Inc.: *See—*
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Sanko Kaihatsu Kagaku Kenkyusho: *See—*
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.

Sano, Mikio: *See—*
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Santostasi, Paul A.; Dutt, Herbert V.; and Pirkau, Arno F., to Sun Coast Plastics, Inc. Tamper evident closure. 4,534,480, Cl. 215-252.000.

Sanwa Seiki Mfg. Co., Ltd.: *See—*
Koyanagi, Yuzo, 4,535,402, Cl. 364-152.000.

Sarofeen, George M. J.; and Perkins, Jeffrey T. Method for pattern generation and surfacing of optical elements. 4,534,137, Cl. 51-284.00R.

Sasakawa, Masumi: *See—*
Inoue, Sukejiro; Sasakawa, Masumi; Fukumoto, Hiroshi; and Doi, Shinji, 4,535,048, Cl. 430-110.000.

Sasaki, Shosaku; and Kaiya, Nobuo, to Toray Silicone Company, Limited. Releasable film forming compositions. 4,535,123, Cl. 524-862.000.

Sasaki, Yoshio: *See—*
Hashimoto, Masahide; Kurisu, Yoshitaka; Zuiki, Shigeo; and Sasaki, Yoshio, 4,534,183, Cl. 62-374.000.

Sashital, Sanat K., to Hughes Aircraft Company. Method of synthesizing thin, single crystal layers of silver thiogallate ($AgGaS_2$). 4,534,822, Cl. 156-624.000.

Sato, Akihiro: *See—*
Shimizu, Hiroshi; Abe, Masaki; and Sato, Akihiro, 4,535,069, Cl. 502-115.000.

Sato, Hideo: *See—*
Kawamura, Kouichi; Horie, Seiji; and Sato, Hideo, 4,535,045, Cl. 430-60.000.

Sato, Koji: *See—*
Kodama, Toshikazu; and Sato, Koji, 4,535,265, Cl. 310-313.00C.

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Shindo, Masanari; Sato, Shigeru; and Kaneko, Akinari, 4,534,840, Cl. 204-192.00R.

Sato, Toshiji: *See—*
Taguchi, Gyota; and Sato, Toshiji, 4,534,992, Cl. 426-656.000.

Sato, Yoichi: *See—*
Nishikawa, Masao; Aoki, Takashi; Sato, Yoichi; and Yoshizawa, Hiroshi, 4,534,236, Cl. 74-364.000.

Satoh, Isao; Yoshida, Tomio; Ohara, Shunji; and Koishi, Kenji, to Matsushita Electric Industrial Co., Ltd. Optical having index mark and sector mark. 4,535,439, Cl. 369-275.000.

Saunier, Christian: *See*—
Allard, Jean-Claude; Briard, Rene; and Saunier, Christian, 4,534,735, Cl. 434-20.000.

Savage, David W.: *See*—
Weinberg, Harold N.; Savage, David W.; and Weissman, Walter, 4,534,854, Cl. 208-131.000.

Savaria, Pierre. Invalid lift. 4,534,450, Cl. 187-9.00R.

Sawa, Yuji; Itoh, Toshio; and Adachi, Kuniomi, to Kureha Kagaku Kogyo Kabushiki Kaisha. Solid material packing method and machine. 4,534,155, Cl. 53-459.000.

Sawada, Kazuyoshi, to Silver Seiko Ltd. Printing mechanism having a plurality of type plates. 4,534,664, Cl. 400-110.000.

Sawazaki, Masatoshi; and Yorisue, Shozo, to Precision Fukuhara Works, Ltd. Sliding latch needles. 4,534,187, Cl. 66-120.000.

Sawazaki, Norikazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Magnetic recording and reproducing apparatus. 4,535,369, Cl. 360-55.000.

Sawicki, Nina P. Tamper indicating cover. 4,534,478, Cl. 215-230.000.

Saxby, Robert M. Cigarette extinguisher and ash disposal device. 4,534,370, Cl. 131-237.000.

Say, Donald L., to North American Philips Consumer Electronics Corp. In-line electron gun structure for color cathode ray tube having tapered walls and elongated apertures for beam spot-shaping. 4,535,266, Cl. 313-414.000.

Scerbo, Joseph E.; and Johnson, Roy B., to York Industries, Inc. Locking, bearing and actuating apparatus. 4,534,269, Cl. 91-41.000.

Schade, John E.; and King, A. Douglas, Jr., to United States of America, Agriculture. Method for detecting aflatoxin in almonds. 4,535,248, Cl. 250-459.100.

Schaefer, Roland, to Kulzer & Co. GmbH. Process for the photopolymerization of vinyl compounds and photopolymerizable materials. 4,534,839, Cl. 204-159.230.

Schaumburg, Edward G.; Benson, Cory D.; Wolf, Alby H.; and Zais, Michael G., to GNB Batteries Inc. Apparatus and method for casting straps on battery cell elements. 4,534,401, Cl. 164-102.000.

Scheffer, Hans: *See*—
Damman, Ben; Scheffer, Hans; de Witte, Paul; Krause, Johannes; Haas, Hans; and Kowalski, Werner, 4,534,946, Cl. 423-315.000.

Schenk, Raymond L.: *See*—
McLane, Jack E.; Schenk, Raymond L.; Rader, Robert R.; and Wirtz, John W., 4,534,404, Cl. 164-429.000.

Scherer, Michael: *See*—
Hartig, Klaus; Dietrich, Anton; and Scherer, Michael, 4,534,841, Cl. 204-192.00P.

Schieber, Franz: *See*—
Zollner, Dieter H.; Zollner, Christine; Schieber, Franz; Lauterbach-Dammler, Inge; and Koziol, Konrad, 4,534,836, Cl. 204-67.000.

Schindler, Peter: *See*—
Blumbach, Jurgen; and Schindler, Peter, 4,535,156, Cl. 544-26.000.

Schlaechter, John, to Guild Associates, Inc. Pressure swing cycle for the separation of oxygen from air. 4,534,346, Cl. 128-205.120.

Schleicher & Schuell, Inc.: *See*—
Bacon, David L.; Kremer, Richard D.; and Morse, Randall H., 4,534,863, Cl. 210-232.000.

Schlembach, Hans: *See*—
Latsch, Reinhard; and Schlembach, Hans, 4,534,327, Cl. 123-263.000.

Schlie, LaVerne A.; and Rathge, Robert D., to United States of America, Air Force. Transverse flow CW atomic iodine laser system. 4,535,457, Cl. 372-58.000.

Schlumberger Technology Corporation: *See*—
Sinha, Bikash K.; and Gouilloud, Michel, 4,534,223, Cl. 73-703.000.

Schmidt, Jimmy Q., to United States of America, Army. Automatic velocity controlled delay circuit. 4,535,462, Cl. 377-2.000.

Schmidt-Kufeke, Klaus-Peter: *See*—
Feld, Gerhard; and Schmidt-Kufeke, Klaus-Peter, 4,534,994, Cl. 427-37.000.

Schmidt, Paul J.; and Hung, William M., to Hilton-Davis Chemical Co., The. 3(Ether and thioether) 3'-(4-dialkylaminophenyl) phthalides. 4,535,172, Cl. 549-310.000.

Schmolka, Irving R., to BASF Wyandotte Corporation. Aerosol gel. 4,534,959, Cl. 424-45.000.

Schneck, Hans; and Tiitinen, Esko, to A. Ahlstrom Osakeyhtio. Method and apparatus for packaging paper rolls. 4,534,151, Cl. 53-415.000.

Schneider, Martin V.: *See*—
Cho, Alfred Y.; Glance, Bernard; Lubzens, Daniel; and Schneider, Martin V., 4,534,103, Cl. 29-571.000.

Schneider, Michael; Kochloefl, Karel; and Ladebeck, Jurgen, to Sud Chemie Aktiengesellschaft. Catalyst for methanol synthesis and method of preparing the catalyst. 4,535,071, Cl. 502-342.000.

Schneider, Wilfried, to Siemens Aktiengesellschaft. Installation for cooling a fuel element storage well with several water circuits. 4,534,931, Cl. 376-272.000.

Schnell, Joachim. Spring-action running and jumping shoe. 4,534,124, Cl. 36-114.000.

Schnell, Wolfgang: *See*—
Hildel, Heinz; Schnell, Wolfgang; and Westphal, Gerald, 4,534,668, Cl. 400-477.000.

Schnitzler, Alois, to Christian Miesen Fahrzeug-Und Karosseriewerk GmbH. Stretcher having backrest and safety harness. 4,534,075, Cl. 5-82.00R.

Schoenberg, Jules E.; Flanagan, Thomas P.; and Ray-Chaudhuri, Dilip K., to National Starch and Chemical Corporation. Hot-melt adhesives based on vinyl polymer. 4,535,140, Cl. 526-329.000.

Scholbrock, Steven D.: *See*—
Lane, Michael S.; and Scholbrock, Steven D., 4,535,445, Cl. 370-62.000.

Schon, Manfred: *See*—
Dorries, Peter; Gotze, Thomas; Piesch, Steffen; Schon, Manfred; Wulff, Gunther; Hintermeier, Karl; Wulff, Gunther; and Hintermeier, Karl, 4,535,031, Cl. 428-481.000.

Schoofs, Franciscus A. C. M.; and Nijman, Aloysius J., to U.S. Philips Corporation. Driver circuit. 4,535,303, Cl. 330-297.000.

Schoonejongen, Ronald J.: *See*—
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,535,012, Cl. 427-386.000.

Schorr, Peter: *See*—
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Schreiner, Donald G.: *See*—
Brown, Vincent B.; and Schreiner, Donald G., 4,534,098, Cl. 29-564.800.

Schreyer, Gerold: *See*—
Bung, Richard; Gans, Karl; Schreyer, Gerold; and Welzel, Gerhard, 4,534,720, Cl. 425-7.000.
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,004, Cl. 427-212.000.
Haas, Franz; Janisch, Gerhard; and Schreyer, Gerold, 4,535,005, Cl. 427-212.000.

Schroder, Peter; Kunkel, Fred; and Hummel, Peter, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Ink film dispensing system for a printing press. 4,534,290, Cl. 101-365.000.

Schubart, Rudiger; and Magg, Hans, to Bayer Aktiengesellschaft. Cobalt-boron compounds. 4,534,901, Cl. 556-7.000.

Schubring, Allin W.; and Sehmer, Robert W., to Square D Company. Pneumatic timing attachment for an electromagnetic device. 4,535,310, Cl. 335-61.000.

Schuerch, Peter E., to New England Ropes, Inc. Rope or cable and method of making same. 4,534,163, Cl. 57-233.000.

Schuh, Bernhard, to Papst-Motoren GmbH & Co. KG. Labyrinth seal in disk storage drive. 4,535,373, Cl. 360-97.000.

Schulz, Peter: *See*—
Klein, Jurgen; and Schulz, Peter, 4,535,065, Cl. 502-21.000.

Schulz, Volkmar: *See*—
Hess, Peter; Schulz, Volkmar; and Rampel, Hans, 4,534,534, Cl. 248-424.000.

Schumacher, Gebhard F. B. A.; and Usala, Stephen J., to University Patents, Inc. Method and apparatus for detection of fertility. 4,534,362, Cl. 128-738.000.

Schwaab Inc.: *See*—
Zahn, William L.; and Kufrin, Fred W., 4,534,471, Cl. 211-39.000.

Schwab, Frederick C., to Mobil Oil Corporation. High impact graft copolymers of methyl ethenyl benzene on rubber backbone. 4,535,129, Cl. 525-316.000.

Schwaertzel, Heinz; and Unterberger, Hans, to Siemens Aktiengesellschaft. Communication system for stationary and mobile subscribers. 4,535,441, Cl. 370-4.000.

Schwartz, Jack; and Wu, Tai T. Wow and flutter control apparatus for audio and video playback systems. 4,535,368, Cl. 360-28.000.

Schwarzli, Joseph W. Coin operated vending machine having a secure cashbox and an antitampering safety mechanism. 4,534,492, Cl. 221-203.000.

Scott, Fred J.; and Walker, Gary W., to Sperry Corporation. Shielded connector shell for flat cable. 4,534,608, Cl. 339-91.00R.

Scott, Mark P., to Keystone Industries, Inc. Lock and seal for hopper outlet. 4,534,298, Cl. 105-282.00R.

Scott Paper Company: *See*—
Norton, Henry J.; and Urion, Kenard E., 4,534,491, Cl. 221-63.000.

Scott, William T.: *See*—
Buckley, John J.; and Scott, William T., 4,534,538, Cl. 251-62.000.

Sears, Barry D., to Lipid Specialties, Inc. Synthetic phospholipid compounds. 4,534,899, Cl. 260-403.000.

Secton Pty. Ltd.: *See*—
Carroll, William F., 4,534,395, Cl. 160-199.000.

Sedran, Roger H., to National Starch and Chemical Corporation. Apparatus for dispensing high viscosity thermoplastic materials. 4,534,493, Cl. 222-146.200.

Seeq Technology, Inc.: *See*—
Smarandoiu, George; and Perlegos, George, 4,535,259, Cl. 307-530.000.

Segawa, Makoto: *See*—
Ariizumi, Shoji; Segawa, Makoto; and Masuoka, Fujio, 4,535,426, Cl. 365-182.000.

Sehmer, Robert W.: *See*—
Schubring, Allin W.; and Sehmer, Robert W., 4,535,310, Cl. 335-61.000.

Seibert, Darrel L. Portable water filtration system for oil well fractionation. 4,534,869, Cl. 210-788.000.

Seigneurin, Michel; and Blanc, Roger, to Micro-Mega. Device for dental massage to prevent tooth decay. 4,534,733, Cl. 433-122.000.

Seki, Masaki: *See*—
Kishi, Hajimu; Tanaka, Kunio; and Seki, Masaki, 4,535,408, Cl. 364-475.000.

Sekine, Kazumi: *See—*
Kano, Kuniomi; Fushimoto, Hideo; Sekine, Kazumi; Miyagawa, Akira; Hirata, Osamu; and Nishimuro, Yoshiaki, 4,535,416, Cl. 364-715.000.

Sekisui Kagaku Kogyo Kabushiki Kaisha: *See—*
Honda, Seiichirou; Ogawara, Hiroshi; and Fukuda, Mutsumi, 4,534,798, Cl. 106-266.000.

Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See—*
Morioka, Kazumasa; and Yoshimi, Toru, 4,534,927, Cl. 264-321.000.

Sekizaki, Satoshi; Hosoya, Eiji; and Takasu, Hotoyuki, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for attaching transmission casing and brake casing in motorized three-wheeled vehicle. 4,534,440, Cl. 180-215.000.

Sekmakas, Kazys; and Shah, Raj, to DeSoto, Inc. Wet adhesion promoters for emulsion polymers. 4,535,122, Cl. 524-809.000.

Selestam, Rune K.; and Nygren, Ingemar K. Horizontal-shaft wind turbine with few blades. 4,534,705, Cl. 416-162.000.

Self, Michael A.: *See—*
Mullins, Lance A.; and Self, Michael A., 4,535,326, Cl. 340-679.000.

Seltzer, Raymond: *See—*
Steinberg, David H.; Seltzer, Raymond; Luzzi, John J.; and Cortolano, Frank P., 4,534,874, Cl. 252-51.50A.

Semple, J. Edward: *See—*
Gardner, Gary M.; and Semple, J. Edward, 4,534,787, Cl. 71-88.000.

Senmed, Inc.: *See—*
Rothfuss, Robert G.; Kuhl, David K.; Bilotti, Federico; Melling, Hugh; and Mills, Earl J., 4,534,351, Cl. 128-334.00R.

Seragnoli, Enzo, to G. D. Societa' per Azioni. Feeding and cutting device for a continuous web. 4,534,253, Cl. 83-336.000.

Serdjukov, Vilen I.: *See—*
Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., 4,535,283, Cl. 323-365.000.

Shackelford, G. Raymond, Sr. Automobile wheel lift for a tow truck. 4,534,579, Cl. 280-402.000.

Shah, Raj: *See—*
Sekmakas, Kazys; and Shah, Raj, 4,535,122, Cl. 524-809.000.

Shahbazi, Samson: *See—*
Martin, F. Wayne; Shahbazi, Samson; and Schoonejongen, Ronald J., 4,535,012, Cl. 427-386.000.

Shakespeare, Walter J.: *See—*
Mammel, Lewis H.; and Shakespeare, Walter J., 4,534,776, Cl. 55-136.000.

Shani, Gad, to Ben-Gurion University of the Negev Research & Development Authority. Fast neutron radiography system. 4,535,246, Cl. 250-390.000.

Shanoski, Henry: *See—*
Cobbledick, David S.; Reichenbach, Donald F.; and Shanoski, Henry, 4,534,888, Cl. 252-511.000.

Sharp Kabushiki Kaisha: *See—*
Koyanagi, Katubumi; Take, Hiroshi; and Uede, Hisashi, 4,535,329, Cl. 340-785.000.

Sharp, William J.: *See—*
Simashkevich, Richard M.; and Sharp, William J., 4,534,106, Cl. 29-613.000.

Shaver, Larry D. Antenna luggage rack. 4,535,336, Cl. 343-713.000.

Shedore, Charles; and Filipiak, Stanley E., to Illinois Tool Works Inc. Keyswitch stabilizing device. 4,535,210, Cl. 200-340.000.

Sheetz, Richard S.; and Cachat, John F., to Tocco, Inc. Apparatus and method of hardening valve seats. 4,535,212, Cl. 219-10.770.

Shell Internationale Research Maatschappij B.V.: *See—*
Ensing, Lukas, 4,535,292, Cl. 324-330.000.

Shell Oil Company: *See—*
Gardner, Gary M.; and Semple, J. Edward, 4,534,787, Cl. 71-88.000.
Job, Robert C., 4,535,068, Cl. 502-107.000.
McCullough, J. Douglas, Jr., 4,535,125, Cl. 525-88.000.
Szakasits, Julius J.; and Robinson, Robert E., 4,534,207, Cl. 73-23.100.
Washecheck, Don M.; and Adams, Charles T., 4,534,852, Cl. 208-89.000.

Shenk, William H., to Honeywell Information Systems Inc. Method and apparatus for addressing a peripheral interface by mapping into memory address space. 4,535,404, Cl. 364-200.000.

Shepherd, David, to Imperial Chemical Industries PLC. Feeder for centrifugal apparatus. 4,534,754, Cl. 494-37.000.

Shibahara, Seiji; Ókonogi, Tsuneo; Murai, Yasushi; Fukatsu, Shunzo; Wakazawa, Tadashi; Niida, Taro; and Christensen, Burton G., to Merck & Co., Inc. 1-Oxa-1-dethia-cephalosporin derivatives. 4,534,898, Cl. 260-245.300.

Shibahata, Yasuji; Irie, Namio; Ikawa, Kazuo; and Akatsu, Yohsuke, to Nissan Motor Co., Ltd. Compliance steer control arrangement for automotive vehicle suspension. 4,534,435, Cl. 180-140.000.

Shibata, Hideto: *See—*
Watabe, Shin; and Shibata, Hideto, 4,534,410, Cl. 165-126.000.

Shimazaki, Taiichi; and Takenaka, Masahico, to Honda Giken Kogyo Kabushiki Kaisha. Parking lock device for motor tricycles. 4,534,439, Cl. 180-215.000.

Shimizu, Hiroshi; Abe, Masaki; and Sato, Akihiro, to Chisso Corporation. Catalyst component for α-olefin polymerization. 4,535,069, Cl. 502-115.000.

Shimizu, Hiroshi, to Ushio Denki Kabushiki Kaisha. Method for heating semiconductor wafer by means of application of radiated light. 4,535,227, Cl. 219-411.000.

Shimizu, Hiroshi: *See—*
Mimura, Yoshiki; Arai, Tetsuji; Shimizu, Hiroshi; and Fukuda, Satoru, 4,535,228, Cl. 219-411.000.

Shimizu, Ikuo: *See—*
Yokoya, Satoshi; Numata, Norio; and Shimizu, Ikuo, 4,535,470, Cl. 381-15.000.

Shimizu, Motohiro; and Fujii, Shigeru, to Honda Giken Kogyo Kabushiki Kaisha. Automatic voltage regulating system for electric generator. 4,535,281, Cl. 322-28.000.

Shimoda, Ikuo: *See—*
Maeda, Katsutoshi; and Shimoda, Ikuo, 4,534,535, Cl. 248-636.000.

Shimura, Takaki: *See—*
Kleeper, John R.; Reid, John M.; Miwa, Hirohide; Shimura, Takaki; and Murakami, Keiichi, 4,534,220, Cl. 73-599.000.

Shin-Etsu Chemical Co., Ltd.: *See—*
Sakaguchi, Susumu; Itoh, Ken; Ogihara, Masahiro; Makigawa, Shinji; Ryuo, Toshihiko; and Watanabe, Kazuyoshi, 4,534,821, Cl. 156-617.0SP.

Shindo, Masanari; Sato, Shigeru; and Kaneko, Akinari, to Konishiroku Photo Industry Co., Ltd. Method for forming a compound semiconductor film. 4,534,840, Cl. 204-192.00R.

Shinya, Ryohei; Miura, Shin'ichi; and Aozuka, Rikio, to Ricoh Company, Ltd. Vacuum evaporation apparatus. 4,534,312, Cl. 118-666.000.

Shiomi, Tadataka; Nabika, Kouichi; and Kawagoe, Takashi, to Murata Kikai Kabushiki Kaisha. Material flow system for automatic warehouses. 4,534,692, Cl. 414-282.000.

Shiomura, Yasuro: *See—*
Ogawa, Masaki; and Shiomura, Yasuro, 4,535,003, Cl. 427-207.100.

Shionogi & Co., Ltd.: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; and Takahashi, Tcshio, 4,535,088, Cl. 514-370.000.

Shiota, Kazuo; and Akimoto, Taizo, to Fuji Photo Film Co., Ltd. Hue identifying apparatus. 4,535,413, Cl. 364-526.000.

Shiota, Kohei: *See—*
Wada, Hidekazu; Yoshino, Hironori; and Shiota, Kohei, 4,535,382, Cl. 361-319.000.

Shirley, Steven E. Exercise apparatus. 4,534,553, Cl. 272-73.000.

Shirota Denki Rozai Kabushiki Kaisha: *See—*
Shirota, Kazunori, 4,534,150, Cl. 53-390.000.

Shirota, Kazunori, to Shirota Denki Rozai Kabushiki Kaisha. Tool for use with refilling empty ampules with dental impression materials. 4,534,150, Cl. 53-390.000.

Siebe Gorman & Company Limited: *See—*
Constance-Hughes, Trevor, 4,534,344, Cl. 128-201.150.

Siemens Aktiengesellschaft: *See—*
Kempter, Karl, 4,535,468, Cl. 378-31.000.
Lichti, Reiner, 4,535,346, Cl. 346-140.00R.
Magdefessel, Heinz, 4,534,708, Cl. 417-51.000.
Schneider, Wilfried, 4,534,931, Cl. 376-272.000.
Schwaertzel, Heinz; and Unterberger, Hans, 4,535,441, Cl. 370-4.000.
Wohlfart, Artur, 4,534,611, Cl. 339-217.00S.

Siemens Corporate Research & Support, Inc.: *See—*
Rhodes, Robert B.; and Paolantonio, James R., 4,535,453, Cl. 370-110.100.

Siemens Gammasonics, Inc.: *See—*
Dirkse, Franciscus J.; and Kulberg, Gerardus H., deceased, 4,535,242, Cl. 250-363.00S.

Signal Research Laboratory: *See—*
Borish, Jeffrey G.; and Ewy, M. Dale, 4,535,474, Cl. 381-61.000.

Sikes, C. Steven; and Wheeler, Alfred P., to University of South Alabama. Inhibition of inorganic or biological $CaCO_3$ deposition by poly amino acid derivatives. 4,534,881, Cl. 252-180.000.

Siliconix Limited: *See—*
Jenkins, James O. M.; and Gardner, Nigel C., 4,535,203, Cl. 179-81.00R.

Silver Seiko Ltd.: *See—*
Sawada, Kazuyoshi, 4,534,664, Cl. 400-110.000.

Silverglate, David E., to Plantronics, Inc. Aspherical lens for concentrating diffuse optical radiation. 4,534,614, Cl. 350-1.400.

Silverman, Michael A., to Tenneco Oil Company. Shale oil demetallization process. 4,534,855, Cl. 208-253.000.

Silverthorn, Charles R.; and Allhands, Marcus N., to A. O. Smith Harvestore Products, Inc. Conveyor construction for conveying materials to an elevated location. 4,534,461, Cl. 198-592.000.

Simashkevich, Richard M.; and Sharp, William J., to Nordson Corporation. Method for replacing dielectric material at the high-value resistor of an electrostatic spray gun to prevent corona discharge. 4,534,106, Cl. 29-613.000.

Simelunas, William J., to Nabisco Brands, Inc. Apparatus having shims underlying portions of a die. 4,534,726, Cl. 425-363.000.

Simmons Universal Corporation: *See—*
Martin, Kelly D., 4,534,077, Cl. 5-424.000.

Simon, Myron S.; and Waller, David P., to Polaroid Corporation. Photographic products and processes with color shifted dye. 4,535,051, Cl. 430-222.000.

Simone, Dominic: *See—*
Brauer, Melvin; and Simone, Dominic, 4,535,142, Cl. 528-75.000.

Simpson, Harold G.; and Neyer, Leo E., to Encon Products, Inc. Adjustable roofing support spacer apparatus and erection method. 4,534,148, Cl. 52-640.000.

Sinclair & Rush, Inc.: *See*—
Ventimiglia, Joseph J.; and Diener, Lawrence R., 4,534,391, Cl. 150-52.00R.
Single Buoy Moorings, Inc.: *See*—
Poldervaart, Leendert, 4,534,740, Cl. 441-3.000.
Sinha, Bikash K.; and Gouilloud, Michel, to Schlumberger Technology Corporation. Surface acoustic wave sensors. 4,534,223, Cl. 73-703.000.
Siol, Werner; Rauch, Hubert; and Fleck, Guenter, to Rohm GmbH. Method for making a salt free solid polymer from a polymer emulsion. 4,535,137, Cl. 526-216.000.
Sirinyan, Kirkor; Merten, Rudolf; and Giesecke, Henning, to Bayer Aktiengesellschaft. Black-metallized substrate surfaces. 4,535,032, Cl. 428-629.000.
SKF GmbH: *See*—
Hans, Rudiger; Brandenstein, Manfred; Friedrich, Wolfgang; and Haas, Roland, 4,534,749, Cl. 474-174.000.
SKF Industries, Inc.: *See*—
Johnson, John H., 4,534,871, Cl. 252-12.000.
SKF Kugellagerfabriken GmbH: *See*—
Olschewski, Armin; and Bauer, Bernhard, 4,534,095, Cl. 29-148.40C.
Skobel, Max. Releasable clasp. 4,534,090, Cl. 24-625.000.
SKW Trostberg Aktiengesellschaft: *See*—
Elischer, Stefan; Hobel, Hans-Gunther; Merkt, Robert; and Wagner, Fritz, 4,535,160, Cl. 544-191.000.
Slattery, Gordon C., to Brunswick Corporation. Internal combustion engine with air-fuel mixture heating. 4,534,333, Cl. 123-545.000.
Slattery, Gordon C., to Brunswick Corp. Recoil starter lock and neutral gear throttle limit for marine drives. 4,534,739, Cl. 440-84.000.
Slezak, Paul J., to KHD Canada, Inc. Hydrodynamic power transmission unit. 4,534,456, Cl. 192-58.00A.
Sliwa, John W., Jr., to Xerox Corporation. Interfacial blister bonding for microinterconnections. 4,535,219, Cl. 219-121.0LC.
Smarandoiu, George; and Perlegos, George, to Seeq Technology, Inc. Sense amplifier for use with a semiconductor memory array. 4,535,259, Cl. 307-530.000.
Smialek, James L.; and Rybicki, George C., to United States of America, National Aeronautics and Space Administration. Oxidation resistant slurry coating for carbon-based materials. 4,535,035, Cl. 428-698.000.
Smith, Arnold R., to AT&T Bell Laboratories. Automatic locking device. 4,534,586, Cl. 292-228.000.
Smith, David W.: *See*—
Kerr, Ronald R., deceased; Smith, David W.; and Trenary, John M., 4,534,340, Cl. 128-66.000.
Smith, Gary T., to Pennwalt Corporation. Box filling apparatus. 4,534,156, Cl. 53-503.000.
Smith, Gene. Toilet seat lifter. 4,534,073, Cl. 4-251.000.
Smith-Johannsen, Robert: *See*—
van Konynenburg, Peter H.; Lyons, Bernard J.; Smith-Johannsen, Robert; and Moyer, Wendell W., 4,534,889, Cl. 252-511.000.
Smith Kline & French Laboratories Limited: *See*—
Sach, George S., 4,535,163, Cl. 546-300.000.
Smith, Leland B.; and Jackson, Jacqueline J., to Hemotec, Inc. Gas flow cartridge with improved coagulation detection and expanded analytical test capability. 4,534,939, Cl. 422-61.000.
Smith and Nephew Associated Companies Inc.: *See*—
Potter, William D., 4,534,355, Cl. 128-635.000.
Smith, Paul D.: *See*—
McDaniel, Max P.; Johnson, Marvin M.; Hawley, Gil R.; Westerman, John; and Smith, Paul D., 4,535,070, Cl. 502-208.000.
Smith, Raymond H. Fluid operating device. 4,534,714, Cl. 417-416.000.
Smith, Richard J., to USM Corporation. Stroke control for press. 4,534,249, Cl. 83-74.000.
Smith, Russell D., to Red Plastic Co., Inc. Spring assisted doors for sidewalk, pit and floor openings. 4,534,132, Cl. 49-386.000.
Smith, Van Z., to Time Manufacturing Company. Insulated boom structure for telescoping aerial lift. 4,534,444, Cl. 182-2.000.
Smith, Walter P.: *See*—
Herstein, Morris S.; Smith, Walter P.; and Hawkins, Geoffrey R., 4,534,964, Cl. 424-70.000.
Snow, Arthur W.: *See*—
Kovacina, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,535,011, Cl. 427-255.600.
Snyder Laboratories, Inc.: *See*—
Todd, Edward P.; and Weilbacher, Eugene E., 4,534,765, Cl. 604-321.000.
Snyder, Walter W., to National Can Corporation. Cup feeding mechanism. 4,534,202, Cl. 72-349.000.
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Massarelli, Liberto; and Capriotti, Luigi, 4,535,438, Cl. 369-264.000.
Societe Anonyme D. B. A.: *See*—
Meynier, Guy, 4,534,170, Cl. 60-547.100.
Tanguy, Christian, 4,534,382, Cl. 137-627.500.
Societe anonyme dite: Alsthom-Atlantique: *See*—
Lecoffre, Yves; and Marcoz, Jean, 4,534,774, Cl. 55-44.000.
Societe Anonyme dite: Etude de Realisation de Chaines Automatiques ERCA: *See*—
Hautemont, Jean-Claude H., 4,534,494, Cl. 222-148.000.
Societe Anonyme dite: L'Oreal: *See*—
Zabotto, Arlette; and Griat, Jacqueline, 4,534,981, Cl. 514-783.000.
Societe Anonyme Francaise Du Ferodo: *See*—
Cadars, Patrick, 4,534,409, Cl. 165-109.00T.
Societe Chimique des Charbonnages--CdF CHIMIE: *See*—
Grasset, Daniel; and Martinot, Bernard, 4,534,942, Cl. 422-117.000.
Societe d'Etudes et Installations Industrielles CNUD S.A.: *See*—
Cemin, Hans, 4,534,780, Cl. 65-348.000.
Societe Nationale des Poudres et Explosifs: *See*—
Lecolier, Serge L. M. B.; and Raynal, Serge F., 4,535,135, Cl. 526-174.000.
Societe Nationale Elf Aquitaine (Production): *See*—
Favie, Claude; and Mercadier, Michel, 4,535,130, Cl. 525-327.300.
Soderberg, John H.: *See*—
Duwel, Edward C.; and Soderberg, John H., 4,535,421, Cl. 364-900.000.
Eckert, Alton B.; Soderberg, John H.; and Duwel, Edward C., 4,535,407, Cl. 364-464.000.
Sohda, Yoshio: *See*—
Uemura, Seiichi; Hirose, Takao; and Sohda, Yoshio, 4,534,950, Cl. 423-447.400.
Sollott, Gilbert P.; and Gilbert, Everett E., to United States of America, Army. 1,4,6,9-Tetranitrodiamantane. 4,535,193, Cl. 568-941.000.
Solvay & Cie: *See*—
Nicolas, Edgard; and Merckaert, Louis, 4,534,837, Cl. 204-129.000.
Somers, Robert I., to Black & Decker, Inc. Chuck key. 4,534,573, Cl. 279-1.00K.
Someya, Hiromi: *See*—
Konishi, Yuichiro; Tsunekawa, Tokuichi; and Someya, Hiromi, 4,534,639, Cl. 354-432.000.
Sonnenberg, Joseph, to Raychem Corporation. Flame retardants and compositions containing them. 4,535,170, Cl. 548-462.000.
Sony Corporation: *See*—
Kishi, Yoshio, 4,535,434, Cl. 369-111.000.
Yamano, Yuzo; and Oozeki, Hikaru, 4,534,215, Cl. 73-862.440.
Yokoya, Satoshi; Numata, Norio; and Shimizu, Ikuo, 4,535,470, Cl. 381-15.000.
Sorathia, Usman A. K.: *See*—
Lee, Raymond; Sorathia, Usman A. K.; and Ferro, Gregory A., 4,535,101, Cl. 521-189.000.
Sotoma, Koichi: *See*—
Fujimura, Gen; Sotoma, Koichi; Kunikyo, Hiroshi; Hata, Masahito; and Inoue, Hidesuke, 4,534,284, Cl. 99-498.000.
Soukup, Thomas M. Carbon fiber pacing electrode. 4,534,366, Cl. 128-786.000.
South African Inventions Development Corp.: *See*—
Hunt, Michael S., 4,534,169, Cl. 60-414.000.
Southern Railway Company: *See*—
Stubbs, John L.; and Loflin, Carl B., 4,534,296, Cl. 104-8.000.
Spada, John A.: *See*—
Ward, Charles S.; Laton, Richard W.; and Spada, John A., 4,535,302, Cl. 330-287.000.
Spademan, Richard G. Tooth cleaning bristle and holder. 4,534,081, Cl. 15-167.00R.
Sparre, Preben C.: *See*—
Loegstrup, Joergen; and Sparre, Preben C., 4,534,612, Cl. 339-255.00P.
Spatz, David M., to Chevron Research Company. N-Substituted phenoxyacetamide fungicides. 4,535,087, Cl. 514-352.000.
Spector, George: *See*—
Berry, James B.; and Spector, George, 4,534,185, Cl. 63-1.00R.
Speed Queen Company: *See*—
Fey, Robert M., 4,534,188, Cl. 68-3.00R.
Spence, Robert L. Spool retaining device. 4,534,522, Cl. 242-172.000.
Sperry, Charles R.: *See*—
Akers, Michael J.; Hargrove, William W.; Harris, Dale C.; and Sperry, Charles R., 4,534,758, Cl. 604-85.000.
Sperry Corporation: *See*—
Fung, Anthony K., 4,535,420, Cl. 364-900.000.
Scott, Fred J.; and Walker, Gary W., 4,534,608, Cl. 339-91.00R.
Underhill, Kenneth R., 4,534,285, Cl. 100-88.000.
Spilde, Rodney L. Livestock confinement building wall-vent controller. 4,534,278, Cl. 98-37.000.
Sprague Electric Company: *See*—
Buczkowski, Gary J.; and Fresia, E. James, 4,535,389, Cl. 361-433.000.
Sprecher & Schuh AG: *See*—
Wallimann, Hubert; and Blatter, Johann, 4,535,208, Cl. 200-82.00B.
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., to International Flavors & Fragrances Inc. Uses of para-acyloxycyclohexyl alkylcarboxylates in augmenting or enhancing the organoleptic properties of consumable materials. 4,534,890, Cl. 252-522.00R.
Springs Industries, Inc.: *See*—
Payet, George L.; and Ballard, Stephen C., 4,534,819, Cl. 156-515.000.
Square D Company: *See*—
Schubring, Allin W.; and Sehmer, Robert W., 4,535,310, Cl. 335-61.000.
Squicciarini, Gaetano N., to AT&T Information Systems Inc. Digital terminal keyboard dialing. 4,535,198, Cl. 179-2.0DP.
Squire, Edward N.; to Du Pont de Nemours, E. I., and Company. Fluorodioxoles. 4,535,175, Cl. 549-455.000.
Squirt & Company: *See*—
Kryger, Allen C., 4,534,991, Cl. 426-592.000.
Stablein, Bruno: *See*—
Reinlein, Karl-Heinz; and Stablein, Bruno, 4,534,311, Cl. 118-630.000.
Stack, Timothy F.: *See*—
Ericksen, James P.; and Stack, Timothy F., 4,535,294, Cl. 328-150.000.

Stade, Kurt, to AUTOMATIK Apparate-Maschinenbau H. Hench GmbH. Multishafted, continuous mixing and kneading of plastifiable materials. 4,534,652, Cl. 366-85.000.

Stafford, John P.: *See—*
DuPont, Preston S.; Ritter, Robert E.; and Stafford, John P., 4,534,998, Cl. 427-122.000.

Staib, Philippe H.: *See—*
Thibonnet, Bernard, 4,534,408, Cl. 165-108.000.

Standard Oil Company: *See—*
Peacock, Kenneth L., 4,535,417, Cl. 364-724.000.

Standard Oil Company (Indiana): *See—*
de Lorenzo, Mark X.; Hoffpauir, Charles R.; Hutchins, Johnnie R.; Meyer, Timmy R.; Page, John E.; and Poehl, Michael E., 4,535,134, Cl. 526-88.000.
Howe, Arthur T., 4,534,099, Cl. 29-572.000.
Pocock, John F. E.; Cole, Charles A.; Villanueva, James G.; Matlack, John D.; and Lewis, Shelton E., 4,534,995, Cl. 427-38.000.

Stanich, Judith A. Padlock cover. 4,534,190, Cl. 70-54.000.

Stanley, Thomas R., to Teepak, Inc. Meat stuffing apparatus. 4,534,084, Cl. 17-39.000.

Staples, Thomas L.: *See—*
Evani, Syamalarao; Oswald, James H.; Staples, Thomas L.; and Polak, Brent T., 4,535,098, Cl. 521-149.000.

Stauffer Chemical Company: *See—*
Ahle, James L., 4,534,784, Cl. 71-87.000.
Felix, Raymond A., 4,534,902, Cl. 260-465.400.
Felix, Raymond A., 4,535,181, Cl. 560-172.000.
Jacobs, Barry A.; and Fesman, Gerald, 4,535,096, Cl. 521-107.000.

Stecura, Stephan, to United States of America, National Aeronautics and Space Administration. Thermal barrier coating system. 4,535,033, Cl. 428-633.000.

Steel, Henry J. Combination weighing machines and method. 4,534,430, Cl. 177-25.000.

Steen, Conrad, to Crown Zellerbach Corporation. Paper stock diffuser system. 4,534,399, Cl. 162-212.000.

Steer, Peter L.; and Edwards, John V., to Craig Medical Products Limited. Drainage bag for urine and support therefor. 4,534,766, Cl. 604-323.000.

Steinberg, David H.; Seltzer, Raymond; Luzzi, John J.; and Cortolano, Frank P., to Ciba-Geigy Corporation. Anti-oxidative, anti-thermal, and anti-actinic degradation amides of hydroxyphenylalkylthio alkanoic acids, compositions, and method of use therefor. 4,534,874, Cl. 252-51.50A.

Stephen, David; Mansbridge, Martin H.; and Highnam, Alan W., to British Aerospace Public Limited Company. Stiffened panel. 4,534,503, Cl. 228-157.000.

Stephens, Donald E.; and Ehret, Robert J., to Beckman Instruments, Inc. Analytical instrument thermoelectric temperature regulator. 4,534,941, Cl. 422-70.000.

Stepp, Elvin D.; and Claypoole, Gary L., to Cincinnati Electronics Corporation. Digital clock bit synchronizer. 4,535,461, Cl. 375-110.000.

Stern, Hansjoerg: *See—*
Sakash, George; Grier, Robert K., Jr.; Stern, Hansjoerg; Dada, Abdul G.; and McKeel, Daniel W., 4,534,301, Cl. 110-255.000.

Steuri, Christian: *See—*
Russell, Glen D.; and Steuri, Christian, 4,534,877, Cl. 252-106.000.

Stewart, John K., Jr.: *See—*
Dham, Vinod K.; Honnigford, Edward H.; Stewart, John K., Jr.; Pfeifer, Robert F.; and Trudel, Murray L., 4,534,104, Cl. 29-571.000.

Stewart, Thomas M. Fish filleting system. 4,534,085, Cl. 17-46.000.

Stichting Steunfonds Laboratorium voor Werkplaatstechnieck en Organisatie van de Technische Hogeschool Delft: *See—*
de Bruyn, Hendrik E., 4,535,217, Cl. 219-69.00M.

Stieg, Richard F., to Gates Rubber Company, The. Alternating rotary to reciprocating actuator. 4,534,232, Cl. 74-89.200.

Stieg, Richard F.; Dolan, John P.; Worley, W. Spencer; and Gerbert, Goran, to Gates Rubber Company, The. Variable speed belt driven transmission system and method. 4,534,748, Cl. 474-17.000.

Stockburger, Hermann; and Winderlich, Hans-Georg. Data carrier controlled data processing. 4,535,418, Cl. 364-900.000.

Stocking, George E.; and Pohl, Walter J., to General Electric Company. Air conditioning apparatus. 4,534,179, Cl. 62-128.000.

Stocking, William B. Propulsion plant for air-cushioned vehicles. 4,534,434, Cl. 180-120.000.

Stoller, Herbert I.: *See—*
Kraus, Charles J.; Stoller, Herbert I.; and Wu, Leon L., 4,535,388, Cl. 361-414.000.

Stolzenberg, Konrad: *See—*
Glaser, Herbert; and Stolzenberg, Konrad, 4,534,949, Cl. 423-445.000.

Stoppazzini, Benito, to E.M.M. s.r.l. Emiliana Macchine Maglierie. Electromechanical device for selecting the metal straps that carry into operation the needles of an automatic straight bar knitting machine. 4,534,186, Cl. 66-75.200.

Storage Technology Corporation: *See—*
Yeakley, Lester M., 4,535,372, Cl. 360-77.000.

Strang, Hans-Erik: *See—*
Gustafsson, Bert; and Strang, Hans-Erik, 4,534,144, Cl. 52-169.600.

Strauch, Heinz, deceased: *See—*
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Strauch, Ruth, Christel Strauch, legal representatives: *See—*
Kliesch, Wilfried; Koch, Friedrich-Otto; Wahl, Hans-Jurgen; Krebs, Rolf; Schorr, Peter; and Strauch, Heinz, deceased, 4,535,215, Cl. 219-61.500.

Strauss, Hans: *See—*
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Straussberger, Herbert: *See—*
More, Anton; Lang, Winfried; Riedle, Rudolf; Straussberger, Herbert; and Streckel, Willi, 4,534,791, Cl. 75-10.00R.

Streckel, Willi: *See—*
More, Anton; Lang, Winfried; Riedle, Rudolf; Straussberger, Herbert; and Streckel, Willi, 4,534,791, Cl. 75-10.00R.

Streckmann, George L.; and Harris, Ralph A., to Texas Instruments Incorporated. Compound floating point amplifier. 4,535,299, Cl. 330-279.000.

Streckmann, George L., to Texas Instruments Incorporated. Extended range sample and hold circuit. 4,535,300, Cl. 330-279.000.

Strohmaier, Ernst, to Kaltenbach & Voigt GmbH & Co. Dental handpiece. 4,534,732, Cl. 433-29.000.

Stromberg-Carlson Corp.: *See—*
Nguyen, Chien, 4,535,282, Cl. 323-269.000.

Stubbs, John L.; and Loflin, Carl B., to Southern Railway Company. Rail gauger. 4,534,296, Cl. 104-8.000.

Stuckey, William C. Plant support. 4,534,129, Cl. 47-47.000.

Stump, Paul O.; and Taylor, Calvin G., to Eaton Corporation. Wafer transport system. 4,534,695, Cl. 414-749.000.

Stupnik, Vyacheslav D.: *See—*
Gross, Valery N.; and Stupnik, Vyacheslav D., 4,534,647, Cl. 356-344.000.

Stuska, Gotthard: *See—*
Ripberger, Emil; and Stuska, Gotthard, 4,534,274, Cl. 92-187.000.

Stuttgen, Friedel: *See—*
Ippen, Jakob; and Stuttgen, Friedel, 4,534,393, Cl. 152-524.000.

Styer, Fred W.: *See—*
Cochrane, Douglas A., Jr.; and Styer, Fred W., 4,535,430, Cl. 367-133.000.

Subramanian, Naranammalpuram S. Pressure cookers having vent means. 4,534,485, Cl. 220-203.000.

Sud Chemie Aktiengesellschaft: *See—*
Schneider, Michael; Kochloefl, Karel; and Ladebeck, Jurgen, 4,535,071, Cl. 502-342.000.

Suenaga, Nobuyuki: *See—*
Inoue, Hitosi; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,535,458, Cl. 372-25.000.

Suenaga, Norihiro: *See—*
Inoue, Hitosi; Suenaga, Norihiro; and Suenaga, Nobuyuki, 4,535,458, Cl. 372-25.000.

Sugawara, Saburo, to Asahi Kogaku Kogyo Kabushiki Kaisha. Automatic focusing device for camera. 4,534,636, Cl. 354-403.000.

Sugimori, Shigeru; Kojima, Tetsuhiko; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, to Chisso Corporation. 4-Unsubstituted or substituted-4 cyanotercyclohexane derivatives. 4,534,883, Cl. 252-299.630.

Sugimori, Yoshiaki: *See—*
Kitayama, Masayasu; Sugimori, Yoshiaki; and Ohta, Schunich, 4,535,072, Cl. 502-411.000.

Sugimori, Yoshio: *See—*
Nakagawa, Koichi; Sugimori, Yoshio; Kimata, Yoshihide; Araki, Yosai; and Arai, Tomoji, 4,535,356, Cl. 358-145.000.

Sugimoto, Tatsuyoshi: *See—*
Kurono, Hitoshi; Taninaka, Kuniaki; Sugimoto, Tatsuyoshi; and Katoh, Minoru, 4,535,075, Cl. 514-96.000.

Sugimoto, Yoshifumi: *See—*
Yokogi, Masanobu; Sugimoto, Yoshifumi; and Ono, Yotsuo, 4,535,028, Cl. 428-398.000.

Sugimura, Masao: *See—*
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Sugimura, Masao, 4,535,335, Cl. 340-995.000.

Sugiura, Susumu: *See—*
Toda, Katuhiko; and Sugiura, Susumu, 4,534,624, Cl. 350-429.000.

Sugrue, John C.: *See—*
Jahnke, William R.; Rockel, Bruce H.; Brown, Barry J.; Hawley, Floyd E.; Pennella, Andrew J.; Sugrue, John C.; and Wiggins, William R., 4,534,093, Cl. 29-26.00A.

Suh, Kyung W.: *See—*
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Sukhodolets, Vadim K.: *See—*
Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., 4,535,283, Cl. 323-365.000.

Sulek, Stanislaw: *See—*
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Suling, Carlhans: *See—*
Brauer, Wolfgang; Korte, Siegfried; Neukam, Theo; and Suling, Carlhans, 4,535,139, Cl. 526-287.000.

Sullivan, Hack A., to Sullivan Mfg. & Sales Corp. Flocking apparatus. 4,534,511, Cl. 239-336.000.

Sullivan Mfg. & Sales Corp.: *See—*
Sullivan, Hack A., 4,534,511, Cl. 239-336.000.

Sullivan, William B., Jr., to Raytheon Company. Radio frequency receiver. 4,535,286, Cl. 324-79.00R.

Sulzer Brothers Limited: *See—*
Pfarrwaller, Erwin, 4,534,386, Cl. 139-114.000.

Sumino, Fumio: *See—*
Ishikawa, Shozo; Toma, Hitoshi; and Sumino, Fumio, 4,535,043, Cl. 430-58.000.
Sumitomo Chemical Company, Limited: *See—*
Minai, Masayoshi; and Katsura, Tadashi, 4,535,182, Cl. 560-231.000.
Sumitomo Metal Industries, Ltd.: *See—*
Nakazato, Takuzo; Okuto, Koichiro; and Kai, Toshio, 4,534,678, Cl. 405-204.000.
Summers, David P., to Forerank, Inc. Valve incorporating deformable valve body. 4,534,541, Cl. 251-331.000.
Summers, Kenneth L.; and Baughman, Gary M., to Rieke Corporation. Snap-on, tamper-evident container closure. 4,534,481, Cl. 215-253.000.
Sun Coast Plastics, Inc.: *See—*
Santostasi, Paul A.; Dutt, Herbert V.; and Pirkau, Arno F., 4,534,480, Cl. 215-252.000.
Sun-Flo International, Inc.: *See—*
Cabus, Marcello M.; Howard, Billy D.; Colt, James W.; and Tuft, Edward S., 4,534,118, Cl. 34-34.000.
Sundberg, Donald C.; Bishop, Paul L.; and McBee, David G. Method and apparatus for reducing levels of organics in liquids. 4,534,865, Cl. 210-692.000.
Sundstrand Corporation: *See—*
Aldrich, Allyn M., 4,534,524, Cl. 244-17.250.
Blain, Edward S., 4,534,718, Cl. 418-55.000.
Superior Plastic Products Corp.: *See—*
Russo, Ronald D., 4,534,542, Cl. 251-342.000.
Suyama, Tadakazu: *See—*
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Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.
Suzuki, Isamu; and Hattori, Yoshio, to Toyo Electric Co., Ltd. Driving circuit for brushless D.C. motor. 4,535,274, Cl. 318-254.000.
Suzuki, Masayuki: *See—*
Ohara, Tsunemasa; Suzuki, Masayuki; and Yamamichi, Masayoshi, 4,534,633, Cl. 354-237.000.
Suzuki, Takashi; Matsumura, Susumu; and Ohtaka, Keiji, to Canon Kabushiki Kaisha. Camera with active optical range finder. 4,534,637, Cl. 354-403.000.
Suzuki, Toshio; Watanabe, Hiroshi; and Tsushima, Rikio, to Kao Corporation. Foaming liquid detergent composition having a stably dispersed water-insoluble fine powder. 4,534,892, Cl. 252-545.000.
Suzuki, Toshitake: *See—*
Arai, Naoto; Murakami, Takeshi; Suzuki, Toshitake; Saito, Toranosuke; Kitani, Masakatu; and Ishibashi, Takashi, 4,535,190, Cl. 568-721.000.
Suzuki, Yasuo: *See—*
Ohnishi, Haruo; Kosuzume, Hiroshi; Suzuki, Yasuo; and Mochida, Ei, 4,534,966, Cl. 424-94.000.
Swan, Thomas C. Fastening device for flexible sheets. 4,534,089, Cl. 24-559.000.
Sweeney, William J., to Engelhard Corporation. Animal litter container. 4,534,315, Cl. 119-1.000.
Swenson, Richard C., to United States of America, Navy. Safety mooring line. 4,534,262, Cl. 87-6.000.
Swiss Aluminium Ltd.: *See—*
Zdenek, Maly, 4,534,834, Cl. 204-28.000.
Sword, Anthony J.: *See—*
Hill, John W.; and Sword, Anthony J., 4,535,405, Cl. 364-400.000.
Sylven, Hans C. Inertia sensor in belt reels for vehicle belts. 4,534,521, Cl. 242-107.40A.
Szabo, Bela: *See—*
Rusznak, Istvan; Trezl, Lajos; Foldesi, Dezso ; Szabo, Bela; Bodi, Imre; Csaszar, Szilveszter; Szopko, Mihaly; Gombar, Mihaly; Kovacs, Gabriella; and Tyihak, Erno , 4,534,782, Cl. 71-21.000.
Szakasits, Julius J.; and Robinson, Robert E., to Shell Oil Company. Reformer process analyzer. 4,534,207, Cl. 73-23.100.
Szejtli, Jozsef; Fenyvesi, Eva; Zsadon, Bela; Szilasi, Maria; and Decsei, Lajos, to Chinoin, Gyogyszer Es Vegyeszeti Termekek Gyara Rt. Water soluble cyclodextrin polymers substituted by ionic groups and process for the preparation thereof. 4,535,152, Cl. 536-103.000.
Szepesi, Tamas S., to National Semiconductor Corporation. Regulated switched power circuit with resonant load. 4,535,399, Cl. 363-41.000.
Szilasi, Maria: *See—*
Szejtli, Jozsef; Fenyvesi, Eva; Zsadon, Bela; Szilasi, Maria; and Decsei, Lajos, 4,535,152, Cl. 536-103.000.
Szonntagh, Eugene L.: *See—*
Castleman, Bruce W.; McQuire, David P.; and Szonntagh, Eugene L., 4,534,777, Cl. 55-181.000.
Szopko, Mihaly: *See—*
Rusznak, Istvan; Trezl, Lajos; Foldesi, Dezso ; Szabo, Bela; Bodi, Imre; Csaszar, Szilveszter; Szopko, Mihaly; Gombar, Mihaly; Kovacs, Gabriella; and Tyihak, Erno , 4,534,782, Cl. 71-21.000.
T&N Materials Research Limited: *See—*
Atkinson, Alan W.; Dearden, Katryna J.; and Lancaster, Janet M., 4,534,922, Cl. 264-119.000.
Tabata, Yasushi; Ogawa, Kimiaki; and Takahashi, Toshimitsu, to Asahi Kogaku Kogyo Kabushiki Kaisha. Erroneous release preventing device for camera. 4,534,634, Cl. 354-268.000.
Tabin, Clifford J.: *See—*
Weinberg, Robert A.; Tabin, Clifford J.; and Bradley, Scott M., 4,535,058, Cl. 435-6.000.
Tachikawa Spring Co., Ltd.: *See—*
Abe, Tadafumi; and Takahashi, Isao, 4,534,595, Cl. 297-452.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Ichikawa, Akira, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for visually indicating the travel route of an automotive vehicle. 4,535,334, Cl. 340-995.000.
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Sugimura, Masao, to Honda Giken Kogyo Kabushiki Kaisha. Fixed range indicating system for use in a vehicle travel path indicating apparatus. 4,535,335, Cl. 340-995.000.
Taguchi, Gyota; and Sato, Toshiji, to Nisshin Oil Mills, Ltd. Process for the production of soya protein flakes. 4,534,992, Cl. 426-656.000.
Taguchi, Masayuki, to Amada Company, Limited. Method and apparatus for controlling the feeding of a bandsaw blade in bandsaw machines. 4,534,247, Cl. 83-13.000.
Takabe, Seiichi: *See—*
Matsumoto, Kazuo; Takabe, Seiichi; and Takashima, Kohki, 4,535,089, Cl. 514-374.000.
Takagi, Toshinori: *See—*
Morimoto, Kiyoshi; and Takagi, Toshinori, 4,535,195, Cl. 136-261.000.
Takahashi, Isao: *See—*
Abe, Tadafumi; and Takahashi, Isao, 4,534,595, Cl. 297-452.000.
Takahashi, Katsuyu: *See—*
Fujimura, Takashi; Takahashi, Katsuyu; and Nishizawa, Masahiro, 4,535,234, Cl. 250-238.000.
Takahashi, Kenji; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing method. 4,535,237, Cl. 250-327.200.
Takahashi, Kenji; and Nakamura, Takashi, to Fuji Photo Film Co., Ltd. Radiation image recording and reproducing method. 4,535,238, Cl. 250-327.200.
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Takahashi, Takashi: *See—*
Kanai, Hideyuki; Takahashi, Takashi; Imai, Motomasa; and Furukawa, Osamu, 4,535,314, Cl. 338-21.000.
Takahashi, Takeshi: *See—*
Yamaoka, Yukinori; and Takahashi, Takeshi, 4,535,383, Cl. 361-341.000.
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Tabata, Yasushi; Ogawa, Kimiaki; and Takahashi, Toshimitsu, 4,534,634, Cl. 354-268.000.
Takahashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. System for diagnosing an internal combustion engine. 4,534,214, Cl. 73-118.000.
Takahashi, Toshio: *See—*
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; and Takahashi, Toshio, 4,535,088, Cl. 514-370.000.
Takahashi, Tsuneo: *See—*
Tagami, Katsutoshi; Takahashi, Tsuneo; Yasui, Shinichiro; and Ichikawa, Akira, 4,535,334, Cl. 340-995.000.
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Takahata, Kyoya: *See—*
Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, 4,534,975, Cl. 514-730.000.
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, to Kabushiki Kaisha Kobe Seiko Sho. Method and apparatus for produced stepped tubes. 4,534,199, Cl. 72-276.000.
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Miura, Kunihiko; Takano, Shouji; and Kimura, Masashi, 4,534,642, Cl. 355-14.00E.
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Nakamura, Kosei; and Takano, Yoshikazu, 4,534,686, Cl. 409-135.000.
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Takashima, Kohki: *See—*
Matsumoto, Kazuo; Takabe, Seiichi; and Takashima, Kohki, 4,535,089, Cl. 514-374.000.
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Sekizaki, Satoshi; Hosoya, Eiji; and Takasu, Hotoyuki, 4,534,440, Cl. 180-215.000.
Takayama, Kazuo, to Fujitsu Ten Limited. High frequency amplifier circuit. 4,535,301, Cl. 330-279.000.
Take, Hiroshi: *See—*
Koyanagi, Katubumi; Take, Hiroshi; and Uede, Hisashi, 4,535,329, Cl. 340-785.000.
Takeda Chemical Industries, Ltd.: *See—*
Nara, Kiyoshi; Katamoto, Kazuyoshi; and Ohta, Kazuhiko, 4,535,155, Cl. 544-20.000.
Takehara, Hideaki, to Victor Company of Japan, Limited. Stylus having a graphite electrode. 4,535,436, Cl. 369-173.000.
Takemura, Yukihito; and Niimi, Tomohide, to Toyota Jidosha Kabushiki Kaisha. Lock mechanism for the glovebox door of an automobile. 4,534,193, Cl. 70-218.000.

Takenaka, Masahico: *See*—
Shimazaki, Taiichi; and Takenaka, Masahico, 4,534,439, Cl. 180-215.000.

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Takihara, Yukio, to Hosiden Electronics Co., Ltd. Jack. 4,534,610, Cl. 339-206.00P.

Takizawa, Shozo: *See*—
Kobayashi, Kazuyoshi; and Takizawa, Shozo, 4,534,580, Cl. 280-712.000.

Takumi, Horiuchi: *See*—
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Tamaki, Shigeo: *See*—
Hozumi, Kazuhiro; and Tamaki, Shigeo, 4,534,381, Cl. 137-625.650.

Tamm, Rolf G. A.; and Tomoff, Toma, to Bodenseewerk Perkin-Elmer & Co., GmbH. Device for atomizing a sample in flameless atomic absorption spectroscopy. 4,534,646, Cl. 356-312.000.

Tamura, Masamitsu: *See*—
Takaishi, Kazuhide; Kadonaga, Toshiki; Tamura, Masamitsu; Nakamura, Shigeharu; Mizoguchi, Mitsuru; Hirota, Yoshinobu; and Yamazaki, Yukinobu, 4,534,199, Cl. 72-276.000.

Tan, Swie-In: *See*—
Ainslie, Norman G.; and Tan, Swie-In, 4,534,811, Cl. 156-73.100.

Tan, Yoichi, to Fuji Xerox Co., Ltd. Digital signal repeating system. 4,535,450, Cl. 370-94.000.

Tanabe, Hisaki: *See*—
Umemoto, Hirotoshi; Tanabe, Hisaki; and Nakano, Shinji, 4,535,128, Cl. 525-162.000.

Tanabe Seiyaku Co., Ltd.: *See*—
Matsumoto, Kazuo; Takabe, Seiichi; and Takashima, Kohki, 4,535,089, Cl. 514-374.000.

Tanaka, Fusatoshi, to Mazda Motor Corporation. Cam shaft holding system for internal combustion engine. 4,534,325, Cl. 123-90.270.

Tanaka, Kunio: *See*—
Kishi, Hajimu; Tanaka, Kunio; and Seki, Masaki, 4,535,408, Cl. 364-475.000.

Tanaka, Minoru; Nakamura, Hideo; and Mizuguchi, Shunji. Method for producing a composite sheet material. 4,535,009, Cl. 427-246.000.

Tanaka, Shuhei, to Hitachi Denshi Kabushiki Kaisha. Photodetector output circuit. 4,535,231, Cl. 250-201.000.

Tanaka, Sotaro: *See*—
Yagyu, Takashi; Yamaguchi, Takeshi; Tanaka, Sotaro; and Sakaki, Yasuo, 4,534,268, Cl. 91-6.000.

Tanaka, Syouji: *See*—
Yasuda, Takashi; Inoue, Naoyuki; and Tanaka, Syouji, 4,534,180, Cl. 62-141.000.

Tanguy, Christian, to Societe Anonyme D.B.A. Three-way solenoid valve. 4,534,382, Cl. 137-627.500.

Tanibuchi, Teruo; Ishiguchi, Koji; and Yamamoto, Shinji, to 501 UBE Industries, Ltd. Rubber composition for coating tire cord. 4,535,119, Cl. 524-496.000.

Taninaka, Kuniaki: *See*—
Kurono, Hitoshi; Taninaka, Kuniaki; Sugimoto, Tatsuyoshi; and Katoh, Minoru, 4,535,075, Cl. 514-96.000.

Tanizawa, Tetsu, to Fujitsu Limited. Transistor-transistor logic circuit with improved switching times. 4,535,258, Cl. 307-454.000.

Tao, John C.: *See*—
Roberts, George W.; and Tao, John C., 4,534,847, Cl. 208-8.0LE.

Targosz, Thomas C., to K. J. Law Engineers, Inc. Fully automatic penetration hardness tester. 4,534,212, Cl. 73-83.000.

Tarnoff, Sherwin S.; and Sano, Mikio. Recoil reducer. 4,534,264, Cl. 89-14.300.

Tartois, Claude: *See*—
Hajj Chehade, Mohammed; Lecat, Jean; and Tartois, Claude, 4,535,296, Cl. 329-103.000.

Tate & Lyle Public Limited Company: *See*—
Caus, Frans, 4,534,217, Cl. 73-178.00R.

Tawara, Katsuya: *See*—
Makisumi, Yasuo; Murabayashi, Akira; Tawara, Katsuya; Watanabe, Yoshihachi; and Takahashi, Toshio, 4,535,088, Cl. 514-370.000.

Taya, Akira: *See*—
Harada, Nozomu; Oana, Yasuhisa; Ogi, Keisuke; Izawa, Koji; Taya, Akira; and Sakamoto, Masanori, 4,534,622, Cl. 350-334.000.

Taylor, Calvin G.: *See*—
Stump, Paul O.; and Taylor, Calvin G., 4,534,695, Cl. 414-749.000.

Taylor, Jack R.: *See*—
Kelm, James S.; Vickers, Edward C.; Williams, Jesse J.; and Taylor, Jack R., 4,534,166, Cl. 60-39.230.

Taylor, Leonard S., to Research Corporation. Microwave coagulating scalpel. 4,534,347, Cl. 128-303.100.

Techne Corporation: *See*—
de Bruyne, Norman A., 4,534,656, Cl. 366-247.000.

Technic, Inc.: *See*—
Johnson, Frank; Reese, Dieter; and Hirbour, Louis, 4,534,843, Cl. 204-202.000.

Technical Processing Inc.: *See*—
Aguirre, Juan E., 4,534,799, Cl. 106-270.000.

Technicare Corporation: *See*—
Fife, Michael J.; Diaz, Paul T.; and Dietz, Dennis R., 4,534,221, Cl. 73-626.000.

Technique et Esthetique pour l'Industrie et la Distribution: *See*—
Ducros, Guy, 4,534,377, Cl. 137-212.000.

Teepak, Inc.: *See*—
Stanley, Thomas R., 4,534,084, Cl. 17-39.000.

Tefft, Stephen W.: *See*—
Fishter, Robert E.; McDaniel, Paul L.; and Tefft, Stephen W., 4,534,823, Cl. 156-626.000.

Teijin Limited: *See*—
Toshimasa, Kuroda; Akio, Kimura; Takumi, Horiuchi; Koki, Sasaki; and Terukuni, Ikuta, 4,534,164, Cl. 57-290.000.

Tektronix, Inc.: *See*—
Penney, Bruce J., 4,535,319, Cl. 340-347.0AD.
Penney, Bruce J., 4,535,357, Cl. 358-150.000.

Teledyne Industries, Inc.: *See*—
Kerr, Ronald R., deceased; Smith, David W.; and Trenary, John M., 4,534,340, Cl. 128-66.000.

Teleflex Incorporated: *See*—
Pritchard, Robert J.; and Lindenmuth, Kevin, 4,535,260, Cl. 310-12.000.

Telmec Co., Ltd.: *See*—
Asakawa, Teruo, 4,535,278, Cl. 318-687.000.

Temes, Steven D.: *See*—
Boden, Richard M.; Temes, Steven D.; Tyszkiewicz, Theodore J.; and Hanna, Marie R., 4,534,891, Cl. 252-522.00R.

Tenneco Oil Company: *See*—
Silverman, Michael A., 4,534,855, Cl. 208-253.000.

te Raa, Gerhardus A.: *See*—
Magendans, Frederik; te Raa, Gerhardus A.; and van Rheenen, Bernhard J. P., 4,534,993, Cl. 427-34.000.

Terry, Erwin N., to Byk Gulden Lomberg Chemische Fabrik GmbH. Combining an anionic blocking agent with dyphylline. 4,535,082, Cl. 514-264.000.

Terukuni, Ikuta: *See*—
Toshimasa, Kuroda; Akio, Kimura; Takumi, Horiuchi; Koki, Sasaki; and Terukuni, Ikuta, 4,534,164, Cl. 57-290.000.

Testa, Raymond T.: *See*—
Labeda, David P.; Goodman, Joseph J.; Borders, Donald B.; Testa, Raymond T.; and Martin, John H. E. J., deceased, 4,534,970, Cl. 424-122.000.

Tetra Pak International AB: *See*—
Andersson, Thorbjorn, 4,534,248, Cl. 83-24.000.
Nilsson, Thorsten, 4,534,498, Cl. 226-181.000.

Texaco Inc.: *See*—
Cuscurida, Michael; and Waddill, Harold G., 4,535,133, Cl. 525-504.000.
Cuscurida, Michael, 4,535,189, Cl. 568-620.000.

Texas Instruments Incorporated: *See*—
Leach, Jerald G., 4,535,465, Cl. 377-46.000.
Penn, Thomas C., 4,535,401, Cl. 364-132.000.
Reid, Lee R., 4,535,424, Cl. 365-63.000.
Streckmann, George L.; and Harris, Ralph A., 4,535,299, Cl. 330-279.000.
Streckmann, George L., 4,535,300, Cl. 330-279.000.

Textron Inc.: *See*—
Jahnke, William R.; Rockel, Bruce H.; Brown, Barry J.; Hawley, Floyd E.; Pennella, Andrew J.; Sugrue, John C.; and Wiggins, William R., 4,534,093, Cl. 29-26.00A.

Tezuka, Chikao: *See*—
Mori, Masahiko; Arai, Kenichiro; and Tezuka, Chikao, 4,534,665, Cl. 400-145.200.

Theis, Christoph: *See*—
Peeters, Hermann; Vogt, Wilhelm; and Theis, Christoph, 4,534,910, Cl. 260-465.600.

Theurer, Josef, to Franz Plasser Bahnbaumaschinen-Industriegesellschaft m.b.H. Track tamping, leveling and lining operating unit. 4,534,295, Cl. 104-7.00B.

Theurer, Josef; and Brunninger, Manfred, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Ballast cleaning machine with two ballast screening installations. 4,534,415, Cl. 171-16.000.

Theurer, Josef, to Franz Plasser Bahnbaumasch Inenindustriegesellschaft m.b.H., Mobile rail contouring machine. 4,534,689, Cl. 409-296.000.

Thibodeaux, Devron P.: *See*—
Weiss, Louis C.; and Thibodeaux, Devron P., 4,534,856, Cl. 209-1.000.

Thibonnet, Bernard, to Thibonnet, Bernard; Staib, Philippe H.; and Babet, Jean-Michel. Induction device fitted inside a tank for drawing in fluids such as liquid fuels. 4,534,408, Cl. 165-108.000.

Thoma, Matthias, to Industrie Chemie Thoma GmbH & Co Produktions KG. Process for the production of guanidine nitrate from a mixture of urea and ammonium nitrate. 4,535,185, Cl. 564-242.000.

Thomas, Lowell E.: *See*—
Volpe, Luke; and Thomas, Lowell E., 4,534,814, Cl. 156-300.000.

Thomas, Paul E.; and Raley, Garland E., to Ethyl Corporation. Perforated film. 4,535,020, Cl. 428-131.000.

Thomson-CSF: *See*—
Bricot, Claude; Gerard, Jean Louis; and Audoin, Michel, 4,535,431, Cl. 369-44.000.
Hareng, Michel; Perbet, Jean-Noel; and Graciet, Michel, 4,535,327, Cl. 340-719.000.
Ravinet, Pierre; Claudepierre, Christian; Guillou, Denis; and Micheron, Francois, 4,535,205, Cl. 179-110.00A.

Thorn Emi Instruments Limited: *See*—
Marsh, Hugh R., 4,535,325, Cl. 340-636.000.

Thorvaldsen, Sverre L. Device for a casting float. 4,534,127, Cl. 43-41.200.

Thrum, Edmund Arthur: *See*—
Laursen, Donald, Jr., 4,534,559, Cl. 273-113.000.

Thurne Engineering Co. Ltd.: *See*—
Hoyland, Trevor B., 4,534,149, Cl. 53-76.000.
Tichy, James B. Down hole pump. 4,534,716, Cl. 417-469.000.
Tiitinen, Esko: *See*—
Schneck, Hans; and Tiitinen, Esko, 4,534,151, Cl. 53-415.000.
Tikhnova, Galina V.: *See*—
Rabinovich, Lev M.; Jurovsky, Albert Y.; Brodkin, Jury M.; Puginsky, Viktor A.; Iordan, Georgy G.; Serdjukov, Vilen I.; Sukhodolets, Vadim K.; Tikhnova, Galina V.; and Golikova, Galina M., 4,535,283, Cl. 323-365.000.
Time Manufacturing Company: *See*—
Smith, Van Z., 4,534,444, Cl. 182-2.000.
Timex Corporation: *See*—
D'Onofrio, Anthony; and Kitik, Walter, 4,534,743, Cl. 445-24.000.
Tisdale, Stephen L.: *See*—
King, David E.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,534,797, Cl. 106-1.230.
Tittes, Allan F.; Larson, Kenneth H.; and Britton, Kennith L., to Inspiration Consolidated Copper Company. Circumferential sealing assembly. 4,534,571, Cl. 277-128.000.
Toa Nenryo Kogyo Kabushiki Kaisha: *See*—
Izumi, Takayuki; Naito, Tsutomu; and Nakamura, Tomoo, 4,534,850, Cl. 208-22.000.
Tocco, Inc.: *See*—
Carter, Michael J., 4,535,211, Cl. 219-10.49R.
Sheetz, Richard S.; and Cachat, John F., 4,535,212, Cl. 219-10.770.
Toda, Katuhiko; and Sugiura, Susumu, to Canon Kabushiki Kaisha. Construction of lens barrel operated by electromagnetic induction. 4,534,624, Cl. 350-429.000.
Todd, Edward P.; and Weilbacher, Eugene E., to Snyder Laboratories, Inc. Modular drainage apparatus having excess negativity control. 4,534,765, Cl. 604-321.000.
Tokuyama Soda Kabushiki Kaisha: *See*—
Kusumoto, Koshi; Kawaguchi, Toshio; Nakahara, Takeshi; and Kunimoto, Shinichiro, 4,535,102, Cl. 523-116.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Ariizumi, Shoji; Segawa, Makoto; and Masuoka, Fujio, 4,535,426, Cl. 365-182.000.
Endo, Tamotu, 4,535,378, Cl. 361-18.000.
Harada, Nozomu; Oana, Yasuhisa; Ogi, Keisuke; Izawa, Koji; Taya, Akira; and Sakamoto, Masanori, 4,534,622, Cl. 350-334.000.
Harada, Nozomu; and Yoshida, Okio, 4,535,363, Cl. 358-213.000.
Iwasaki, Kenji, 4,534,615, Cl. 350-6.100.
Kanai, Hideyuki; Takahashi, Takashi; Imai, Motomasa; and Furukawa, Osamu, 4,535,314, Cl. 338-21.000.
Kanda, Shuhei, 4,535,367, Cl. 360-10.200.
Matsuo, Kenji; and Yamaguchi, Akira, 4,535,305, Cl. 331-111.000.
Miura, Kunihiko; Takano, Shouji; and Kimura, Masashi, 4,534,642, Cl. 355-14.00E.
Ochii, Kiyofumi; Masuda, Masami; and Kondo, Takeo, 4,535,255, Cl. 307-264.000.
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Sawazaki, Norikazu, 4,535,369, Cl. 360-55.000.
Watanabe, Junji, 4,534,643, Cl. 355-3.0SH.
Toma, Hitoshi: *See*—
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Tomaszewski, Walter: *See*—
Yang, James H. C.; Tomaszewski, Walter; and Beneze , Heinz W., 4,534,145, Cl. 52-222.000.
Tomcik, James D., to AT&T Bell Laboratories. Adaptive bit allocator. 4,535,472, Cl. 381-31.000.
Tomich, Michael J., to General Electric Company. Blade containment structure. 4,534,698, Cl. 415-9.000.
Tommasi, Marcello: *See*—
Falzone, Vincenzo; and Tommasi, Marcello, 4,535,444, Cl. 370-58.000.
Tomoff, Toma: *See*—
Tamm, Rolf G. A.; and Tomoff, Toma, 4,534,646, Cl. 356-312.000.
Tomsa, Vladimir, to Allied Corporation. Connector assembly and coupling ring. 4,534,607, Cl. 339-89.00R.
Tone, Richard D. Archery arrow with freely rotational broad blade arrowhead to avoid windplaning. 4,534,568, Cl. 273-421.000.
Toray Industries, Inc.: *See*—
Yoshinaga, Minoru; Matsubara, Nobuyuki; and Yamamoto, Ryuichi, 4,534,920, Cl. 264-29.200.
Toray Silicone Co., Ltd.: *See*—
Hamada, Mitsuo; and Yasuda, Sadami, 4,534,815, Cl. 156-307.500.
Kondo, Hidetoshi; and Koshii, Taro, 4,535,109, Cl. 524-188.000.
Sasaki, Shosaku; and Kaiya, Nobuo, 4,535,123, Cl. 524-862.000.
Torneng, Eyvin: *See*—
Hansen, Helge; Nystrom, Borje; and Torneng, Eyvin, 4,534,976, Cl. 514-169.000.
Toshimasa, Kuroda; Akio, Kimura; Takumi, Horiuchi; Koki, Sasaki; and Terukuni, Ikuta, to Teijin Limited. Textured yarn and method and apparatus for producing the same. 4,534,164, Cl. 57-290.000.
Toub, Samuel G.; Gilliland, James L., Jr.; and Holder, Homer W. Oil collection/recirculation for vapor-compression refrigeration system. 4,534,182, Cl. 62-193.000.
Toyo Electric Co., Ltd.: *See*—
Suzuki, Isamu; and Hattori, Yoshio, 4,535,274, Cl. 318-254.000.
Toyo Seikan Kaisha, Ltd.: *See*—
Nohara, Shigezo, 4,534,930, Cl. 264-513.000.
Toyo Soda Manufacturing Co., Ltd.: *See*—
Oyama, Kiyotaka; and Harada, Tuneo, 4,534,909, Cl. 260-465.00G.
Toyota Jidosha Kabushiki Kaisha: *See*—
Takemura, Yukihito; and Niimi, Tomohide, 4,534,193, Cl. 70-218.000.
Tracy, John A., to Alcan International Limited. Apparatus for joining lengths of metal strip. 4,534,092, Cl. 29-21.100.
Train-A-Mation, Inc.: *See*—
Off, Joseph W. A.; and Ferguson, Vivian, 4,534,303, Cl. 112-114.000.
Trainer, Peter C. Scaffold clamp. 4,534,448, Cl. 403-396.000.
Transfer Print Foils, Inc.: *See*—
Parker, Harry A., 4,535,024, Cl. 428-200.000.
Trawoger, Werner. Valve for supplying, controlling and taking out a medium contained in an implanted container. 4,534,759, Cl. 604-117.000.
Trenary, John M.: *See*—
Kerr, Ronald R., deceased; Smith, David W.; and Trenary, John M., 4,534,340, Cl. 128-66.000.
Treuner, Uwe D.; and Breuer, Hermann, to E. R. Squibb & Sons, Inc. 3-Acylamino-2-oxoazetidine-1-(β-oxopropionic acid). 4,534,896, Cl. 260-239.00A.
Trevitt, Donna J.: *See*—
King, David E.; Markovich, Voya; Sambucetti, Carlos J.; Tisdale, Stephen L.; and Trevitt, Donna J., 4,534,797, Cl. 106-1.230.
Trezl, Lajos: *See*—
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Trimedyne, Inc.: *See*—
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Trio Kabushiki Kaisha: *See*—
Hiranuma, Satoshi, 4,535,437, Cl. 369-223.000.
Triumph-Adler Aktiengesellschaft fur Buro- and Informationstechnik: *See*—
Hildel, Heinz; Schnell, Wolfgang; and Westphal, Gerald, 4,534,668, Cl. 400-477.000.
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F. Method and apparatus for removing condensate and oil particles from a stream of compressed air used in the production of snow. 4,534,178, Cl. 62-124.000.
Tropeano, Joseph T.: *See*—
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F., 4,534,178, Cl. 62-124.000.
Tropeano, Thomas F.: *See*—
Tropeano, Joseph C.; Tropeano, Joseph T.; and Tropeano, Thomas F., 4,534,178, Cl. 62-124.000.
Troxler, Eduard; Kainmuller, Thomas; and Maul, Rudolf, to Ciba-Geigy Corporation. Process for the preparation of polyesters from aliphatic dicarboxylic acids and polyalkylpiperidyl diols. 4,535,145, Cl. 528-289.000.
Trudel, Murray L.: *See*—
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Trustee, Bill L.: *See*—
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Trutek Research, Inc.: *See*—
Nowacki, Christopher; and Brisson, Alfred G., 4,534,343, Cl. 128-200.230.
Tschetter, Charles D.; and Bergman, Rolf S., to General Electric Company. Incandescent lamp. 4,535,269, Cl. 313-579.000.
Tsuboi, Shinichi: *See*—
Saito, Junichi; Kudamatsu, Akio; Kume, Toyohiko; and Tsuboi, Shinichi, 4,535,076, Cl. 514-128.000.
Tsuda, Yoshio: *See*—
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; and Suyama, Tadakazu, 4,534,978, Cl. 514-429.000.
Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; Inoue, Yoshihisa; Naito, Youichiro; and Suyama, Tadakazu, 4,535,085, Cl. 514-290.000.
Tsukamoto, Hiroaki, to Honda Giken Kogyo Kabushiki Kaisha. Means for supplying a secondary air in an internal combustion engine which is provided with a turbo charger. 4,534,173, Cl. 60-606.000.
Tsukamoto, Kou; and Hirate, Masatoshi, to CKD Controls Limited. Smallsize motor with reduction gear and clutch mechanism. 4,535,261, Cl. 310-78.000.
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Konishi, Yuichiro; Tsunekawa, Tokuichi; and Someya, Hiromi, 4,534,639, Cl. 354-432.000.
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Tucker, Maurice K., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Transportable folding bridge. 4,534,079, Cl. 14-14.000.
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Tuft, Edward S.: *See—*
Cabus, Marcello M.; Howard, Billy D.; Colt, James W.; and Tuft, Edward S., 4,534,118, Cl. 34-34.000.
Tullis, Barclay J., to Hewlett-Packard Company. Interlocking door latch for dockable interface for integrated circuit processing. 4,534,389, Cl. 141-98.000.
Turner, Rudolf, to Zenith Electronics Corporation. Vertical reference signal identification system. 4,535,353, Cl. 358-21.00V.
Twardowski, Joseph W., to Chamberlain Manufacturing Corporation. Transmitter and receiver for controlling remote elements. 4,535,333, Cl. 340-825.690.
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Tyrell, John A.: *See—*
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Ueda, Minoru; Iyehara, Sadahiro; Masuda, Mitsuya; Inohara, Shizuo; and Yamamoto, Keisuke, to Matsushita Electric Industrial Co., Ltd. Image display apparatus. 4,535,272, Cl. 315-366.000.
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Uemura, Seiichi; Hirose, Takao; and Sohda, Yoshio, to Nippon Oil Co., Ltd. Process for producing carbon fibers. 4,534,950, Cl. 423-447.400.
Ueno, Sadayasu, to Hitachi, Ltd. Thermal flow meter. 4,534,218, Cl. 73-204.000.
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Underhill, Kenneth R., to Sperry Corporation. Actuator mechanism for continuous roll baling machine. 4,534,285, Cl. 100-88.000.
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Foster, George N.; and Metzler, Richard B., 4,535,113, Cl. 524-262.000.
Kortovich, James W.; and Micinski, Eugene, 4,534,951, Cl. 423-448.000.
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Elliott, Charles T.; White, Anthony M.; and Field, Howard J., 4,535,232, Cl. 250-206.000.
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Agriculture: *See—*
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Buckley, John J.; and Scott, William T., 4,534,538, Cl. 251-62.000.
Eylon, Daniel; and Froes, Francis H., 4,534,808, Cl. 148-133.000.
Lane, Clyde H., 4,534,100, Cl. 29-586.000.
Palvolgyi, Frank A., 4,535,466, Cl. 377-54.000.
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Knapp, Charles A., 4,534,810, Cl. 149-19.600.
Phillippi, R. Michael; and Drzewiecki, Thadeusz M., 4,534,383, Cl. 137-840.000.
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Cangialosi, Arthur D., 4,534,648, Cl. 356-350.000.
Crosbie, Richard J.; and Edwards, Paul R., 4,534,338, Cl. 128-1.00A.
Kovacina, Thomas A.; DeMarco, Ronald A.; and Snow, Arthur W., 4,535,011, Cl. 427-255.600.
McManis, George E., III; Fletcher, Aaron N.; and Miles, Melvin H., 4,535,037, Cl. 429-103.000.
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Brandt, Cornelis G., 4,535,469, Cl. 378-081.000.
Bruggendieck, Siegfried, 4,534,618, Cl. 350-96.230.
Drupsteen, Jan, 4,535,451, Cl. 370-99.000.
Duijkers, Peter A., 4,535,358, Cl. 358-158.000.
Gerot, Guy J. C., 4,535,362, Cl. 358-194.100.
Hajj Chehade, Mohammed; Lecat, Jean; and Tartois, Claude, 4,535,296, Cl. 329-103.000.
Himmelbauer, Alain J.; and Poubelle, Regis J. P., 4,535,200, Cl. 179-2.0EA.
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United Technologies Corporation: *See—*
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University of Illinois, The Board of Trustees of the: *See—*
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Bourcier, Denis R., 4,534,940, Cl. 422-68.000.
van Belzen, David; Honig, Gunter; Lotterbach, Gerhard; van Woudenberg, Jan-Faas; and Zucker, Udo, to Robert Bosch GmbH. Control device for a fuel metering system of an internal combustion engine. 4,534,331, Cl. 123-492.000.
Van Caneghem, Rene J., to United States of America, Army. Method of shock testing aluminum alloy welded joints. 4,534,205, Cl. 73-12.000.
Van der Heijde, Martin C., to U.S. Philips Corporation. Electromagnetic deflection unit and color display tube provided with such a unit. 4,535,313, Cl. 335-212.000.
Vanderlaan, Robert D., to Pneumo Corporation. Control actuation system including staged direct drive valve with fault control. 4,534,273, Cl. 91-510.000.
Van der Mast, Victor C.: *See*—
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VandeVelde, Noel. Device for tying-up an animal. 4,534,318, Cl. 119-147.00R.
van Eyken, Lawrence A. J.; and Perlin, Semion, to Canadian Patents & Development Limited. All weather switch for railroads. 4,534,527, Cl. 246-445.000.
van Hest, Cornelius A. J. H., to Ruti-te Strake B.V. Method and apparatus for inserting different weft threads having different properties into the warp shed of a jet weaving machine. 4,534,387, Cl. 139-435.000.
van Konynenburg, Peter H.; Lyons, Bernard J.; Smith-Johannsen, Robert; and Moyer, Wendell W., to Raychem Corporation. PTC Compositions and devices comprising them. 4,534,889, Cl. 252-511.000.
van Rheenen, Bernhard J. P.: *See*—
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Van Roessel, Frederik J., to U.S. Philips Corporation. Setting-up system for a television camera. 4,535,351, Cl. 358-10.000.
van Woudenberg, Jan-Faas: *See*—
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Vaughan, David E. W., to Exxon Research and Engineering Co. Process for direct synthesis of sodium- and potassium-containing zeolite A. 4,534,947, Cl. 423-329.000.
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Ventimiglia, Joseph J.; and Diener, Lawrence R., to Sinclair & Rush, Inc. Beverage insulator with advertising panel. 4,534,391, Cl. 150-52.00R.
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Vetco Offshore, Inc.: *See*—
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VG Instruments Group Limited: *See*—
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Victor Company of Japan, Ltd.: *See*—
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Victor Hasselblad Aktiebolag: *See*—
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Viesturs, Eric A.; and Viesturs, Gundar E., to Connecticut Artcraft Corp. Body supporting mattress. 4,534,078, Cl. 5-452.000.
Viesturs, Gundar E.: *See*—
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Vigurs, John P. C. Intruder detection. 4,535,240, Cl. 250-342.000.
Villanueva, James G.: *See*—
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Voest-Alpine Aktiengesellschaft: *See*—
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Vogels, Joseph A., to Honeywell Inc. Combination gas enricher, spark igniter, flame sensor. 4,534,728, Cl. 431-80.000.
Vogt, Wilhelm: *See*—
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Volpe, Luke; and Thomas, Lowell E., to Dynamics Research Corporation. Large-scale printhead for non-impact printer and method of manufacture. 4,534,814, Cl. 156-300.000.
von Laar, Klaus; Heberlein, Werner; and Burda, Josef, to Diehl GmbH & Co. Fin-stabilized projectile with propellant cage. 4,534,294, Cl. 102-520.000.
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W. R. Grace & Co., Cryovac Div.: *See*—
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Wagner, Fritz: *See*—
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Wahl, Hans-Jurgen: *See*—
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Wakatsuki, Masakatsu, to Wakatsuki Kikai Kabushiki Kaisha. Apparatus for producing ultrahigh pressure water jet. 4,534,711, Cl. 417-273.000.
Wakayama Iron Works, Ltd.: *See*—
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Waller, David P.: *See—*
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Wallimann, Hubert; and Blatter, Johann, to Sprecher & Schuh AG. Actuating device for a high-voltage switch. 4,535,208, Cl. 200-82.00B.
Walsh, Myles A., to Cape Cod Research. Procedures for monitoring fish food consumption. 4,534,317, Cl. 119-51.00R.
Walter, Robert J.; and Gerik, Bernard J., to Rockwell International Corporation. Salt corrosion inhibitors. 4,534,794, Cl. 106-14.050.
Walz, Alfred. Metal powders and a process for the production thereof. 4,534,917, Cl. 264-12.000.
Wang, Fun-Den; and Yie, Gene G. Abrasive containing fluid jet drilling apparatus and process. 4,534,427, Cl. 175-67.000.
Wanner, William F. Pump apparatus. 4,534,713, Cl. 417-377.000.
Ward, Charles S.; Laton, Richard W.; and Spada, John A., to Raytheon Company. Microwave amplifier. 4,535,302, Cl. 330-287.000.
Ward, Cornelius S. Audio reproduction apparatus. 4,535,475, Cl. 381-88.000.
Warner-Lambert Technologies, Inc.: *See—*
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Watabe, Shin; and Shibata, Hideto, to Mitsubishi Jukogyo Kabushiki; and Churyo Engineering Co., Ltd. Air cooling type heat exchanger for a refrigerating apparatus accommodated in a container. 4,534,410, Cl. 165-126.000.
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Gjertsen, Robert K.; and Veronesi, Luciano, 4,534,933, Cl. 376-364.000.
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Williamson, Robert D.; and Furst, Sidney M., to McDonnell Douglas Corporation. Compound curve-flat pattern process. 4,534,813, Cl. 156-212.000.
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Wilson, Ben F., to United States of America, Army. Coiled curvilinear solid propellant grain. 4,534,293, Cl. 102-289.000.
Wilson, Michael S. Stripping assembly for noodle cutting machinery. 4,534,251, Cl. 83-111.000.
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Wolf, Wilhelm. Chin rest for a violin or the like. 4,534,259, Cl. 84-279.000.
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Wood, Kenneth L., to Republic Steel Corporation. Nestable container for parts storage. 4,534,466, Cl. 206-518.000.
Woodard, Kenneth E., Jr.; and Dotson, Ronald L., to Olin Corporation. Electrodes for electrolytic cells. 4,534,846, Cl. 204-290.00R.
Woodard, Scott S., to Monsanto Co. Process for producing 1,1,2,3-tetrachloropropene. 4,535,194, Cl. 570-236.000.
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Wright, Douglas, to Bugay, Frederick. Method of molding a multi-colored article. 4,535,014, Cl. 428-30.000.
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Yagyu, Takashi; Yamaguchi, Takeshi; Tanaka, Sotaro; and Sakaki, Yasuo, to Hitachi Construction Machinery Co., Ltd. Hydraulic fluid circuit of hydraulic shovel. 4,534,268, Cl. 91-6.000.
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Yamada, Takehisa: *See*—
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Yamamoto, Osamu; and Norizuki, Senichiro, to Kabushikikaisha Aichidenkikosakusho. Electric can opener with juice squeezing attachment. 4,534,108, Cl. 7-152.000.
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Yamamura, Yukio; Nakayama, Jingo; Ikeda, Atsunobu; and Kawamoto, Takashi, to Matsushita Electric Works, Ltd. Chair with a back for reclining. 4,534,590, Cl. 297-180.000.
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Yamane, Shozo: *See*—
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Yamato, Hideyuki; Maeda, Yuji; Yoshino, Fumisato; Takahata, Kyoya; Ikuzawa, Masanori; Kato, Tadaaki; and Yoshikumi, Chikao, to Kureha Kagaku Kogyo Kabushiki Kaisha. Pharmaceutical composition containing 24,25-dihydroxycholecalciferol in methods of treatment. 4,534,975, Cl. 514-730.000.
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Yang, James H. C.; Tomaszewski, Walter; and Beneze , Heinz W., to Firestone Tire & Rubber Company, The. Attachment device for securing flexible sheets. 4,534,145, Cl. 52-222.000.
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Yasuda, Takashi; Inoue, Naoyuki; and Tanaka, Syouji, to Ebara Corporation. Absorption refrigeration system with solution flow control. 4,534,180, Cl. 62-141.000.
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Yeakley, Lester M., to Storage Technology Corporation. Position tracking servo control systems and methods. 4,535,372, Cl. 360-77.000.
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Yen, Robert C.: *See*—
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Yeski, Frederick R. Ski theft alarm and runaway ski locator. 4,535,322, Cl. 340-571.000.
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Yokobori, Nobuyoshi, to Matsushita Electric Industrial Co., Ltd. Output circuit and brushless motor using the same. 4,535,276, Cl. 318-254.000.
Yokogi, Masanobu; Sugimoto, Yoshifumi; and Ono, Yotsuo, to Asahi Kasei Kogyo Kabushiki Kaisha; and Asahi Medical Co., Ltd. Hollow fiber of cuprammonium regenerated cellulose and process for producing the same. 4,535,028, Cl. 428-398.000.
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Yokoyama, Kazumasa; Fukaya, Chikara; Tsuda, Yoshio; Ono, Taizo; Arakawa, Yoshio; and Suyama, Tadakazu, to Green Cross Corporation, The. Perfluorocycloamines. 4,534,978, Cl. 514-429.000.
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Yoshida, Hideaki; and Kubota, Hayato, to Fuji Oil Company, Limited. Process for producing cream cheese type food. 4,534,982, Cl. 426-36.000.
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Yoshikane, Tetsuo; Kagata, Akira; and Hiura, Hiromi, to Matsushita Electric Industrial Co., Ltd. Information signal regenerating stylus and manufacturing method thereof. 4,534,136, Cl. 51-283.00R.
Yoshikawa, Kazuaki; Matsumura, Yuichi; and Mase, Noriaki, to Hitachi, Ltd; and Hitachi Service Engineering Co., Ltd. Apparatus for removing cladding material from bottom portion of control rod guide tube of nuclear reactor. 4,534,932, Cl. 376-310.000.
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Yoshinaga, Minoru; Matsubara, Nobuyuki; and Yamamoto, Ryuichi, to Toray Industries, Inc. Process for producing carbonizable oxidized fibers and carbon fibers. 4,534,920, Cl. 264-29.200.
Yoshino, Fumisato: *See*—
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Yu, Terry T., to Energy Conversion Devices, Inc. Self-fixing imaging film containing reductant precursor. 4,535,055, Cl. 430-353.000.
Zabotto, Arlette; and Griat, Jacqueline, to Societe Anonyme dite: L'Oreal. Cosmetic compositions containing the fat of *Shorea robusta*. 4,534,981, Cl. 514-783.000.
Zahn, William L.; and Kufrin, Fred W., to Schwaab Inc. Stamp holding clip and rack therefor. 4,534,471, Cl. 211-39.000.
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Zanno, Paul R.; and Parliment, Thomas H., to General Foods Corporation. Flavoring with 1, 3-oxathianes. 4,534,988, Cl. 426-535.000.
Zarr, Myron, to Minnesota Mining and Manufacturing Company. Tape guidance for belt driven cartridge. 4,534,523, Cl. 242-192.000.
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Zimmern, Bernard. Volumetric screw-and-pinion machine and a method for using the same. 4,534,719, Cl. 418-195.000.
Zink, John H., to AT&T Information Systems Inc. Data call transfer preindication. 4,535,199, Cl. 179-2.0DP.
Zlokarnik, Marko, to Bayer Aktiengesellschaft. Apparatus for flotation. 4,534,862, Cl. 210-221.200.
Znojkiewicz, Maciej E., to Northern Telecom Limited. Microwave cavity tuner. 4,535,308, Cl. 333-232.000.
Zollner, Christine: *See—*
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Zollner, Dieter H.; Zollner, Christine; Schieber, Franz; Lauterbach-Dammler, Inge; and Koziol, Konrad, to C. Conradty Nurnberg GmbH & Co., KG. Use of temperature and corrosion resistant gas-tight materials as guard elements for the metal portion of combination electrodes in the winning of metals by molten salt electrolysis. 4,534,836, Cl. 204-67.000.
Zonneveld, Frans W.; and Kramer, Cornelis, to U.S. Philips Corporation. Wavelength-sensitive radiography apparatus. 4,535,245, Cl. 250-385.000.
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Zwick, David J., to Coleman Company, Inc., The. Lift assembly for movable cabinet. 4,534,601, Cl. 312-266.000.
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49er Products: *See—*
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LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 13TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

AT&T Bell Laboratories: *See*—
Sell, Darrell D., Re. 31,969, Cl. 372-38.000.

Boeing Company, The: *See*—
Mickelsen, Reid A.; and Chen, Wen S., Re. 31,968, Cl. 136-260.000.

Burns, Carmen D., to National Semiconductor Corporation. Gang bonding interconnect tape for semiconductive devices and method of making same. Re. 31,967, Cl. 430-314.000.

Chen, Wen S.: *See*—
Mickelsen, Reid A.; and Chen, Wen S., Re. 31,968, Cl. 136-260.000.

General Electric Company: *See*—
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, Re. 31,970, Cl. 315-276.000.

Hammer, Edward E.: *See*—
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, Re. 31,970, Cl. 315-276.000.

Lemmers, Eugene: *See*—
Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, Re. 31,970, Cl. 315-276.000.

Mickelsen, Reid A.; and Chen, Wen S., to Boeing Company, The. Methods for forming thin-film heterojunction solar cells from I-III-VI_2 chalcopyrite compounds, and solar cells produced thereby. Re. 31,968, Cl. 136-260.000.

National Semiconductor Corporation: *See*—
Burns, Carmen D., Re. 31,967, Cl. 430-314.000.

Riesland, David H.; Hammer, Edward E.; and Lemmers, Eugene, to General Electric Company. High efficiency ballast system for gaseous discharge lamps. Re. 31,970, Cl. 315-276.000.

Sell, Darrell D., to AT&T Bell Laboratories. Laser control circuit. Re. 31,969, Cl. 372-38.000.

LIST OF DESIGN PATENTEES

Alessandro, Sante G., to Erwin-Lambeth, Inc. Lamp base. 280,134, 8-13-85, Cl. D26-106.000.

Allard, Douglas P.: *See*—
Provan, William R.; and Allard, Douglas P., 280,126, Cl. D23-45.000.

Allen, James H., to 'totes', incorporated. Expandable shopping bag. 280,043, 8-13-85, Cl. D3-42.000.

Allen, James H., to 'totes', incorporated. Expandable hand and shoulder bag. 280,044, 8-13-85, Cl. D3-48.000.

Alltrade Inc.: *See*—
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American Standard Inc.: *See*—
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Anderson, Clayton & Co.: *See*—
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Arita, Toyomi: *See*—
Yajima, Hiroshi; Takada, Kazuo; Yamawaki, Yuichiro; Egashira, Teruaki; Matsui, Nobuo; and Arita, Toyomi, 280,136, Cl. D28-49.000.

Art Eyes, Inc.: *See*—
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AT&T Technologies, Inc.: *See*—
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Bakic, Dieter. Cosmetic case. 280,138, 8-13-85, Cl. D28-83.000.

Bakic, Dieter. Lipstick case. 280,139, 8-13-85, Cl. D28-85.000.

Bakic, Dieter. Lipstick case. 280,140, 8-13-85, Cl. D28-85.000.

Ball Corporation: *See*—
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Haag, John H., Sr., 280,076, Cl. D9-370.000.

Barker, Layle B.; Fleischman, Frederick R.; and Swenck, George F., to Reynolds Metals Company. Machine for receiving used cans. 280,101, 8-13-85, Cl. D15-123.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Article support rack. 280,045, 8-13-85, Cl. D6-328.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Article support rack. 280,046, 8-13-85, Cl. D6-328.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Article support rack. 280,047, 8-13-85, Cl. D6-328.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Article support rack. 280,048, 8-13-85, Cl. D6-328.000.

Benedict, Charles E., to Telescoping Tie Racks, Inc. Article support rack. 280,049, 8-13-85, Cl. D6-328.000.

Berfield, Robert C.; and Meland, Ronald F., to Shop-Vac Corporation. Electric vacuum cleaner. 280,143, 8-13-85, Cl. D32-21.000.

Bird, George E.: *See*—
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Blower, Peter, to British Aerospace PLC. Vehicle for paraplegic persons. 280,089, 8-13-85, Cl. D12-128.000.

Blue Box Toy Factory Limited: *See*—
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Bonnefoy, Francis, to Posso S.A. Slide viewer. 280,103, 8-13-85, Cl. D16-17.000.

Bresie, Don A.; Burns, Jack M.; Fowler, Donald W.; and Sheets, Marion S. Combined truck rear steps and platform. 280,093, 8-13-85, Cl. D12-203.000.

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Collins, Gerald W., to Huffy Corporation. Frame for exercise cycle. 280,118, 8-13-85, Cl. D21-194.000.

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Levin, Monte L.; and Daly, John J., to Square D Company. Chime cover plate. 280,083, 8-13-85, Cl. D10-118.000.
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Minnesota Mining and Manufacturing Company: *See*—
Dziki, Michael M., 280,072, Cl. D8-61.000.
Miskinis, Robert J. Reusable extractor-stopper for laboratory glassware. 280,080, 8-13-85, Cl. D9-439.000.
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Topp, David, 280,099, Cl. D14-66.000.
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Pudwill, Horst, to Continental Engineering Products. Portable vacuum cleaner. 280,142, 8-13-85, Cl. D32-18.000.
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Yajima, Hiroshi; Takada, Kazuo; Yamawaki, Yuichiro; Egashira, Teruaki; Matsui, Nobuo; and Arita, Toyomi, 280,136, Cl. D28-49.000.
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Yamagata, Hiroshi; and Makihara, Kendo, 280,097, Cl. D14-58.000.
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Shedden, Joel T. Racing bicycle stand. 280,088, 8-13-85, Cl. D12-115.000.
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Levin, Monte L.; and Daly, John J., 280,083, Cl. D10-118.000.
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Takada, Kazuo: *See—*
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Takeuchi, Kazutaka, to Blue Box Toy Factory Limited. Toy truck. 280,115, 8-13-85, Cl. D21-139.000.
Tanaka, Yuji; and Matsumoto, Hideo, to Tokai Gakki Co., Ltd. Electric guitar tremolo unit. 280,107, 8-13-85, Cl. D17-21.000.
Telescoping Tie Racks, Inc.: *See—*
Benedict, Charles E., 280,045, Cl. D6-328.000.
Benedict, Charles E., 280,046, Cl. D6-328.000.
Benedict, Charles E., 280,047, Cl. D6-328.000.
Benedict, Charles E., 280,048, Cl. D6-328.000.
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Brus, Robert M., 280,111, Cl. D20-43.000.
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Wing-Fong, Chong, to Playmates Holdings Limited. Toy tricycle. 280,087, 8-13-85, Cl. D12-112.000.
Womack, James A.: *See—*
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Yajima, Hiroshi; Takada, Kazuo; Yamawaki, Yuichiro; Egashira, Teruaki; Matsui, Nobuo; and Arita, Toyomi, to Sanyo Electric Co., Ltd. Electric shaver. 280,136, 8-13-85, Cl. D28-49.000.
Yamagata, Hiroshi; and Makihara, Kendo, to Sharp Corporation. Electronic intercommunication unit. 280,097, 8-13-85, Cl. D14-58.000.
Yamawaki, Yuichiro: *See—*
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Fischer, Arnold, to Pan American Plant Company. African violet plant named Cindarella. 5,535, 8-13-85, Cl. 69.000.
Fischer, Arnold, to Pan American Plant Company. African violet plant named Kathryn. 5,536, 8-13-85, Cl. 69.000.
Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant named Hilda. 5,532, 8-13-85, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Klanchoe plant named Citation. 5,533, 8-13-85, Cl. 68.000.
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Mikkelsen, James C., 5,532, Cl. 68.000.
Mikkelsen, James C., 5,533, Cl. 68.000.
Pan American Plant Company: *See—*
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CLASSIFICATION OF PATENTS

ISSUED AUGUST 13, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

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665	4,534,360
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4,534,430

CLASS 179

2 DP 4,535,198
4,535,199
2 EA 4,535,200
18 FA 4,535,201
4,535,202
81 R 4,535,203
90 DD 4,535,204
110 A 4,535,205
170.2 4,535,206

CLASS 180

1 T 4,534,432
9 4,534,431
19.1 4,534,433
120 4,534,434
140 4,534,435
144 4,534,436
185 4,534,437
209 4,534,438
215 4,534,439
4,534,440
268 4,534,441
294 4,534,442
328 4,534,443

CLASS 182

2 4,534,444
48 4,534,445
146 4,534,446
152 4,534,447

CLASS 184

105.2 4,534,449

CLASS 187

9 R 4,534,450
12 4,534,451
29 A 4,534,452

CLASS 188

52 4,534,453

CLASS 192

18 A 4,534,454
40 4,534,455
58 A 4,534,456
70.2 4,534,457
98 4,534,458

CLASS 194

1 D 4,534,459

CLASS 198

482 4,534,460
592 4,534,461
781 4,534,462

CLASS 200

17 R 4,535,207
82 B 4,535,208
83 R 4,535,209
340 4,535,210

CLASS 203

86 4,534,830

CLASS 204

4 4,534,831
15 4,534,832
28 4,534,834
67 4,534,835
4,534,836
128 4,534,833
129 4,534,837
159.13 4,534,838
159.23 4,534,839
192 E 4,534,842
192 P 4,534,841
192 R 4,534,840
202 4,534,843
281 4,534,844
283 4,534,845
290 R 4,534,846

CLASS 206

267 4,534,463
343 4,534,464
443 4,534,465
518 4,534,466
530 4,534,467
534 4,534,468
560 4,534,469

CLASS 208

8 LE 4,534,847
10 4,534,848
11 R 4,534,849
22 4,534,850
48 R 4,534,851
89 4,534,852
120 4,534,853
131 4,534,854
253 4,534,855

CLASS 209

1 4,534,856
166 4,534,857
236 4,534,858
301 4,534,859
585 4,534,470

CLASS 210

137 4,534,860
168 4,534,861
221.2 4,534,862
232 4,534,863
603 4,534,864
692 4,534,865
697 4,534,866
722 4,534,867
780 4,534,868
788 4,534,869

CLASS 211

39 4,534,471
41 4,534,472
58 4,534,473
70 4,534,474
126 4,534,475

CLASS 212

190 4,534,476

CLASS 215

215 4,534,477
230 4,534,478
252 4,534,479
4,534,480
253 4,534,481
272 4,534,482
306 4,534,483
307 4,534,484

CLASS 219

10.49 R 4,535,211
10.77 4,535,212
57 4,535,213
60.2 4,535,214
61.5 4,535,215
68 4,535,216
69 M 4,535,217
121 LC 4,535,219
121 LH 4,535,218
121 LM 4,535,220
204 4,535,221
300 4,535,222
354 4,535,223
373 4,535,224
383 4,535,225
400 4,535,226
411 4,535,227
4,535,228
440 4,535,229
470 4,535,230

CLASS 220

203 4,534,485
241 4,534,486
305 4,534,487
323 4,534,488
404 4,534,489
435 4,534,490

CLASS 221

63 4,534,491
203 4,534,492

CLASS 222

146.2 4,534,493
148 4,534,494

CLASS 223

101 4,534,495

CLASS 224

326 4,534,496

CLASS 225

25 4,534,497

CLASS 226

181 4,534,498
184 4,534,499

CLASS 227

7 4,534,500
65 4,534,501

CLASS 228

102 4,534,502
157 4,534,503

CLASS 229

15 4,534,504
33 4,534,505

CLASS 236

35.3 4,534,506

CLASS 237

12.3 A 4,534,507

CLASS 238

14 4,534,508

CLASS 239

34 4,534,509
97 4,534,510
336 4,534,511
394 4,534,512
428.5 4,534,513
4,534,514
542 4,534,515

CLASS 241

171 4,534,516

CLASS 242

35.5 A 4,534,517
56 R 4,534,518
68.3 4,534,519
107 4,534,520
107.4 A 4,534,521
172 4,534,522
192 4,534,523

CLASS 244

17.25 4,534,524
30 4,534,525
38 4,534,526

CLASS 246

445 4,534,527

CLASS 248

210 4,534,528
222.1 4,534,529
239 4,534,530
345.1 4,534,533
351 4,534,531
371 4,534,532
424 4,534,534
636 4,534,535

CLASS 249

83 4,534,536

CLASS 250

201 4,535,231
206 4,535,232
214 A 4,535,233
238 4,535,234
282 4,535,235
292 4,535,236
327.2 4,535,237
4,535,238
339 4,535,239
4,535,241
342 4,535,240
363 S 4,535,242
4,535,243
372 4,535,244
385 4,535,245
390 4,535,246
436 4,535,247
459.1 4,535,248
491.1 4,535,249
507.1 4,535,250
551 4,535,251

CLASS 251

30.03 4,534,537
62 4,534,538
65 4,534,539
203 4,534,540
331 4,534,541
342 4,534,542

CLASS 252

8.55 R 4,534,870
12 4,534,871
32.7 E 4,534,872
4,534,873
51.5 A 4,534,874
71 4,534,875
90 4,534,876
106 4,534,877
173 4,534,878
174 4,534,879
174.13 4,534,880
180 4,534,881
182 4,534,882
299.63 4,534,883
301.4 H 4,534,884
301.4 P 4,534,885
502 4,534,886
503 4,534,887
511 4,534,888
4,534,889
522 R 4,534,890
4,534,891
545 4,534,892
629 4,534,893

CLASS 254

1 4,534,543
9 C 4,534,544

CLASS 260

112 R 4,534,906
112.7 4,534,894
239 A 4,534,896
239 BC 4,534,895
239.3 R 4,534,897
245.3 4,534,898
403 4,534,899
410.6 4,534,907
428.5 4,534,900
458 C 4,534,908
465 G 4,534,909
465.4 4,534,902
465.5 R 4,534,903
465.6 4,534,910
502.5 F 4,534,904
505 C 4,534,905
549 4,534,912

CLASS 261

34 B 4,534,913
64 B 4,534,914

CLASS 264

1.4 4,534,915
2.1 4,534,916
12 4,534,917
22 4,534,918
29.2 4,534,919
4,534,920
39 4,534,921
119 4,534,922
156 4,534,923
259 4,534,924
281 4,534,925
4,534,926
321 4,534,927
334 4,534,928
338 4,534,929
513 4,534,930

CLASS 267

64.24 4,534,545

CLASS 269

58 4,534,546
182 4,534,547

CLASS 270

58 4,534,548

CLASS 271

103 4,534,549
183 4,534,550
275 4,534,551
279 4,534,552

CLASS 272

73 4,534,553
144 4,534,554
145 4,534,555

CLASS 273

1.5 R 4,534,556
55 A 4,534,557
78 4,534,558
113 4,534,559
143 R 4,534,560
149 P 4,534,562
149 R 4,534,561
157 R 4,534,563
169 4,534,564
241 4,534,565
248 4,534,566
255 4,534,567
421 4,534,568

CLASS 277

27 4,534,569
95 4,534,570
128 4,534,571
235 B 4,534,572

CLASS 279

1 K 4,534,573
112 4,534,574

CLASS 280

6.11 4,534,575
47.26 4,534,576
90 4,534,577
281 R 4,534,578
402 4,534,579
712 4,534,580

CLASS 281

15 R 4,534,581

CLASS 283

81 4,534,582

CLASS 285

24 4,534,583
4,534,584
92 4,534,585

CLASS 290

44 4,535,252

CLASS 292

228 4,534,586
263 4,534,587

CLASS 294

81.5 4,534,588

CLASS 296

182 4,534,589

CLASS 297

180 4,534,590
270 4,534,591
284 4,534,592
4,534,593
438 4,534,594
452 4,534,595

CLASS 298

27 4,534,596

CLASS 299

81 4,534,597

CLASS 303

10 4,534,598
22 R 4,534,599

CLASS 307

9 4,535,253
38 4,535,254
264 4,535,255
4,535,256
362 4,535,257
454 4,535,258
530 4,535,259

CLASS 308

3.6 4,534,600

CLASS 310

12 4,535,260
78 4,535,261
88 4,535,262
112 4,535,263
232 4,535,264
313 C 4,535,265

CLASS 312

266 4,534,601

CLASS 313

414 4,535,266
481 4,535,267
569 4,535,268
579 4,535,269

CLASS 315

8.0 4,535,270
209 R 4,535,271
276 Re.31,970
366 4,535,272
401 4,535,273

CLASS 318

254 4,535,274
4,535,275
4,535,276
561 4,535,277
687 4,535,278
696 4,535,279
798 4,535,280

CLASS 322

28 4,535,281

CLASS 323

269 4,535,282
365 4,535,283

CLASS 324

71.1 4,535,284
4,535,285
79 R 4,535,286
142 4,535,287
161 4,535,288
208 4,535,289
309 4,535,290
320 4,535,291
330 4,535,292
336 4,535,293

CLASS 328

150 4,535,294
155 4,535,295

CLASS 329

103 4,535,296
126 4,535,297

CLASS 330

189 4,535,298
279 4,535,299
4,535,300
4,535,301
287 4,535,302
297 4,535,303
300 4,535,304

CLASS 331

23 4,535,306
111 4,535,305

CLASS 333

35 4,535,307
232 4,535,308

CLASS 335

42 4,535,309
61 4,535,310
124 4,535,311
196 4,535,312
212 4,535,313

CLASS 338

21 4,535,314
34 4,535,315
4,535,316
36 4,535,317

CLASS 339

14 R 4,534,602
17 C 4,534,603
17 D 4,534,604
75 M 4,534,605
4,534,606
89 R 4,534,607
91 R 4,534,608
117 R 4,534,609
206 P 4,534,610
217 S 4,534,611
255 P 4,534,612
258 S 4,534,613

CLASS 340

347 AD 4,535,319
347 CC 4,535,318
347 DD 4,535,320
520 4,535,321
571 4,535,322
572 4,535,323
574 4,535,324
636 4,535,325
679 4,535,326
719 4,535,327
739 4,535,328
785 4,535,329
825.06 4,535,332
825.5 4,535,330
825.69 4,535,333
908 4,535,331
995 4,535,334
4,535,335

CLASS 343

713 4,535,336
737 4,535,337
781 CA 4,535,338

CLASS 346

75 4,535,339
76 PH 4,535,340
107 R 4,535,341
108 4,535,342
139 D 4,535,344
140 R 4,535,343
4,535,346
159 4,535,345
208 4,535,347
221 4,535,348

CLASS 350

1.4 4,534,614

6.1 4,534,615
96.20 4,534,616
4,534,617
96.23 4,534,618
98 4,534,619
166 4,534,620
257 4,534,621
334 4,534,622
339 R 4,534,623
429 4,534,624
4,534,625
454 4,534,626

CLASS 351

47 4,534,627
153 4,534,628

CLASS 352

140 4,534,629
194 4,534,630

CLASS 353

95 4,534,631

CLASS 354

81 4,534,632
237 4,534,633
268 4,534,634
322 4,534,635
403 4,534,636
4,534,637
418 4,534,638
432 4,534,639
448 4,534,640

CLASS 355

3 R 4,534,641
3 SH 4,534,643
14 E 4,534,642

CLASS 356

30 4,534,644
125 4,534,645
312 4,534,646
344 4,534,647
350 4,534,648
351 4,534,649
376 4,534,650
440 4,534,651

CLASS 357

23.6 4,535,349
74 4,535,350

CLASS 358

10 4,535,351
16 4,535,352
21 V 4,535,353
88 4,535,354
123 4,535,355
145 4,535,356
150 4,535,357
158 4,535,358
163 4,535,359
181 4,535,360
184 4,535,361
194.1 4,535,362
213 4,535,363
228 4,535,364
287 4,535,365
342 4,535,366

CLASS 360

10.2 4,535,367
28 4,535,368
55 4,535,369
60 4,535,370
67 4,535,371
77 4,535,372
97 4,535,373
103 4,535,374
113 4,535,375
126 4,535,376

CLASS 361

1 4,535,377
18 4,535,378
124 4,535,379
256 4,535,380
308 4,535,381
319 4,535,382
341 4,535,383
386 4,535,384
388 4,535,385
389 4,535,386
414 4,535,388
433 4,535,389

CLASS 362

179 4,535,390
183 4,535,391
186 4,535,392
217 4,535,393
231 4,535,394
267 4,535,395
293 4,535,396
369 4,535,397
404 4,535,398

CLASS 363

41 4,535,399
68 4,535,400

CLASS 364

132 4,535,401
152 4,535,402
200 4,535,403
4,535,404
400 4,535,405
431.08 4,535,406
464 4,535,407
475 4,535,408
481 4,535,409
483 4,535,410
508 4,535,411
511 4,535,412
526 4,535,413
561 4,535,414
562 4,535,415
715 4,535,416
724 4,535,417
900 4,535,418
4,535,419
4,535,420
4,535,421

CLASS 365

36 4,535,422
51 4,535,423
63 4,535,424
156 4,535,425
182 4,535,426
205 4,535,427
230 4,535,428

CLASS 366

85 4,534,652
106 4,534,653
137 4,534,654
4,534,655
247 4,534,656
265 4,534,657
287 4,534,658
338 4,534,659

CLASS 367

85 4,535,429
133 4,535,430

CLASS 368

220 4,534,660
250 4,534,661

CLASS 369

44 4,535,431
72 4,535,432
77.2 4,535,433
111 4,535,434
126 4,535,435
173 4,535,436
223 4,535,437
264 4,535,438
275 4,535,439

CLASS 370

1 4,535,440
4 4,535,441
13 4,535,442
24 4,535,443
58 4,535,444
62 4,535,445
68 4,535,446
77 4,535,447
85 4,535,448
86 4,535,449
94 4,535,450
99 4,535,451
100 4,535,452
110.1 4,535,453
110.2 4,535,454

CLASS 371

13 4,535,455
16 4,535,456

CLASS 372

25 4,535,458
38 Re.31,969
58 4,535,457

CLASS 374

4 4,534,662
43 4,534,663

CLASS 375

80 4,535,459
104 4,535,460
110 4,535,461

CLASS 376

272 4,534,931
310 4,534,932
364 4,534,933

CLASS 377

2 4,535,462
8 4,535,463
39 4,535,464
46 4,535,465
54 4,535,466
81 4,535,467

CLASS 378

31 4,535,468
081 4,535,469

CLASS 381

2 4,535,471
15 4,535,470
31 4,535,472
46 4,535,473
61 4,535,474
88 4,535,475

CLASS 400

110 4,534,664
145.2 4,534,665
207 4,534,666
4,534,667
477 4,534,668

CLASS 401

134 4,534,669
270 4,534,670

CLASS 402

80 R 4,534,671

CLASS 403

172 4,534,672
396 4,534,448

CLASS 404

14 4,534,673
75 4,534,674

CLASS 405

24 4,534,675
184 4,534,676
203 4,534,677
204 4,534,678
261 4,534,679
4,534,680
294 4,534,681

CLASS 408

14 4,534,682
17 4,534,683

CLASS 409

26 4,534,684
99 4,534,685
135 4,534,686
157 4,534,687
296 4,534,689

CLASS 411

386 4,534,690

CLASS 414

38 4,534,691
282 4,534,692
307 4,534,693
735 4,534,694
749 4,534,695
751 4,534,696
787 4,534,697

CLASS 415

9 4,534,698
42 4,534,699
135 4,534,700
168 4,534,701

CLASS 416

20 R 4,534,702
119 4,534,703
158 4,534,704
162 4,534,705

CLASS 417

17 4,534,706
34 4,534,707
51 4,534,708
65 4,534,709
269 4,534,710
273 4,534,711
366 4,534,712
377 4,534,713
416 4,534,714
456 4,534,715
469 4,534,716

CLASS 418

55 4,534,718
181 4,534,717
195 4,534,719

CLASS 419

6 4,534,934
23 4,534,935
36 4,534,936
42 4,534,937

CLASS 420

590 4,534,938

CLASS 422

61 4,534,939
68 4,534,940
70 4,534,941
117 4,534,942
188 4,534,943

CLASS 423

210 4,534,944
273 4,534,945
315 4,534,946
329 4,534,947
345 4,534,948
445 4,534,949
447.4 4,534,950
448 4,534,951
478 4,534,952
492 4,534,953
515 4,534,954
573 R 4,534,955
598 4,534,956
625 4,534,957

CLASS 424

45 4,534,958
4,534,959
49 4,534,960
63 4,534,961
65 4,534,962
69 4,534,963
70 4,534,964
86 4,534,972
93 4,534,965
94 4,534,966
95 4,534,967
114 4,534,968
118 4,534,969
122 4,534,970

CLASS 425

7 4,534,720
73 4,534,721
104 4,534,722
289 4,534,723
295 4,534,724
363 4,534,726
394 4,534,725

CLASS 426

36 4,534,982
293 4,534,983
412 4,534,984
432 4,534,985
521 4,534,986
523 4,534,987
535 4,534,988
549 4,534,989
4,534,990
592 4,534,991
656 4,534,992

CLASS 427

34 4,534,993
37 4,534,994
38 4,534,995
44 4,534,996
53.1 4,534,997
122 4,534,998
130 4,534,999
160 4,535,000
180 4,535,001
203 4,535,002
207.1 4,535,003
212 4,535,004
4,535,005
213 4,535,006
226 4,535,007
246 4,535,008
4,535,009
4,535,010
255.6 4,535,011
386 4,535,012
389.9 4,535,013

CLASS 428

30 4,535,014
44 4,535,015
74 4,535,016
77 4,535,017
79 4,535,018
106 4,535,019
131 4,535,020
137 4,535,021
142 4,535,022
195 4,535,023
200 4,535,024
220 4,535,025
310.5 4,535,026
364 4,535,027
398 4,535,028
408 4,535,029
413 4,535,030
481 4,535,031
629 4,535,032
633 4,535,033
653 4,535,034
698 4,535,035

CLASS 429

99 4,535,036
103 4,535,037
154 4,535,038
213 4,535,039
234 4,535,040

CLASS 430

1 4,535,041
56 4,535,042
58 4,535,043
4,535,044
60 4,535,045
78 4,535,046
108 4,535,047
110 4,535,048
137 4,535,049
138 4,535,050
222 4,535,051
277 4,535,052
312 4,535,053
314 Re.31,967
325 4,535,054
353 4,535,055
542 4,535,056

CLASS 431

76 4,534,727
80 4,534,728
110 4,534,729

CLASS 432

3 4,534,730
14 4,534,731

CLASS 433

29 4,534,732
122 4,534,733
126 4,534,734

CLASS 434

20 4,534,735
403 4,534,736

CLASS 435

5 4,535,057
6 4,535,058
142 4,535,059
172.3 4,535,060
253 4,535,061
289 4,535,062

CLASS 440

53 4,534,737
61 4,534,738
84 4,534,739

CLASS 441

3 4,534,740
73 4,534,305

CLASS 445

3 4,534,741
9 4,534,742
24 4,534,743
47 4,534,744

CLASS 446

398 4,534,745

CLASS 455

63 4,535,476

CLASS 464

170 4,534,746

CLASS 474

1 4,534,747
17 4,534,748
174 4,534,749
261 4,534,750

CLASS 493

108 4,534,751
213 4,534,752
453 4,534,753

CLASS 494

37 4,534,754
4,534,755

CLASS 501

97 4,535,063
138 4,535,064

CLASS 502

21 4,535,065
62 4,535,066
84 4,535,067
107 4,535,068
115 4,535,069
208 4,535,070
342 4,535,071
411 4,535,072

CLASS 514

21 4,534,971
89 4,535,073
93 4,535,074
96 4,535,075
128 4,535,076
143 4,535,077
157 4,535,078
161 4,534,974
162 4,534,973
169 4,534,976
196 4,534,977
225 4,535,079
255 4,535,080
258 4,535,081
264 4,535,082
274 4,535,083
277 4,535,084
290 4,535,085
337 4,535,086
352 4,535,087
370 4,535,088
374 4,535,089
383 4,535,090
407 4,535,091
429 4,534,978
438 4,535,092
529 4,534,979
560 4,535,093
568 4,535,183
570 4,534,980
575 4,534,911
730 4,534,975
783 4,534,981

CLASS 521

79 4,535,094
89 4,535,095
107 4,535,096
139 4,535,097
149 4,535,098
154 4,535,099
180 4,535,100
189 4,535,101

CLASS 523

116 4,535,102
430 4,535,103

CLASS 524

91 4,535,104
104 4,535,105
151 4,535,106
157 4,535,107
162 4,535,108
188 4,535,109
196 4,535,110
199 4,535,111
233 4,535,112
262 4,535,113
364 4,535,114
376 4,535,115
385 4,535,116
397 4,535,117
398 4,535,118
496 4,535,119
560 4,535,120
715 4,535,121
809 4,535,122
862 4,535,123

CLASS 525

67 4,535,124
88 4,535,125
106 4,535,126
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103		4,535,152	159	4,535,162	12	4,535,171	117	4,535,179	721	4,535,190	4,534,758
123		4,535,153	300	4,535,163	310	4,535,172	121	4,535,180	727	4,535,191	117 4,534,759
	CLASS 544			CLASS 548	433	4,535,173	172	4,535,181	819	4,535,192	175 4,534,760
20		4,535,155	187	4,535,164	455	4,535,175	231	4,535,182	941	4,535,193	4,534,761
26		4,535,156	204	4,535,165		CLASS 556		CLASS 564			180 4,534,762
106		4,535,154		4,535,166	7	4,534,901	102	4,535,184		CLASS 570	239 4,534,763
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148		4,535,159	402	4,535,168		CLASS 560	336	4,535,186		CLASS 604	323 4,534,766
191		4,535,160	453	4,535,169	27	4,535,176		CLASS 568	50	4,534,756	336 4,534,767
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44		4,535,157					479	4,535,188	85	4,534,757	369 4,534,769
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D3—	35	280,041		38	280,060		390	280,078	D14—	12	280,096		88	280,113	D24—	21	280,130
	40	280,042		316	280,061		433	280,079		58	280,097		134	280,114		31	280,131
	42	280,043		325	280,062		439	280,080		60	280,098		139	280,115			280,132
	48	280,044		351	280,063	D10—	71	280,081		66	280,099		191	280,116	D26—	105	280,133
D6—	328	280,045		360	280,064		118	280,082		103	280,100		194	280,117		106	280,134
		280,046		409	280,065			280,083	D15—	123	280,101			280,118	D28—	7	280,135
		280,047		412	280,066		125	280,084		199	280,102		222	280,119		49	280,136
		280,048	D8—	2	280,067	D11—	156	280,085	D16—	17	280,103		229	280,120		76	280,137
		280,049		14	280,068		158	280,086		31	280,104		234	280,121		83	280,138
	329	280,050		49	280,069	D12—	112	280,087		38	280,105		237	280,122		85	280,139
	334	280,051			280,070		115	280,088		102	280,106			280,123			280,140
	349	280,052		61	280,071		128	280,089	D17—	21	280,107	D22—	25	280,124		89	280,141
	375	280,054			280,072		146	280,090	D18—	24	280,108	D23—	35	280,125	D32—	18	280,142
	381	280,055		301	280,073		147	280,091		99	280,109		45	280,126		21	280,143
	491	280,056		302	280,074		157	280,092	D19—	42	280,110		128	280,127		35	280,144
D7—	9	280,057	D9—	370	280,075		203	280,093									

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P.—	68	5,532		5,533		69	5,534	5,535	5,536	

GEOGRAPHICAL INDEX
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280,129

280,143
44 : 280,112
48 : 280,079
280,093
280,095
280,116
50 : 280,127
51 : 280,101
53 : 280,100
55 : 280,066
280,117
280,118

PLANT PATENTS

39 : 5,532

5,533

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Vol. 1057 Number 3

OFFICIAL GAZETTE

of the

UNITED STATES PATENT AND TRADEMARK OFFICE

Route to:

PATENTS

August 20, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 20, 1985 Volume 1057 Number 3

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
• No corresponding prior U.S. national application filed	500.00
• Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
• All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 17, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,344,189 through 4,345,334

Reissue Patents based on the above identified patents.

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,277,321, Re. S.N. 437,471, Filed Oct. 28, 1982, Cl. 204/192, TREATING MULTILAYER PRINTED WIRING BOARDS, Charles J. Bartlett, et al., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: S. E. Hollander, et al., Ex. Gp.: 112

4,393,497, Re. S.N. 750,894, Filed July 1, 1985, Cl. 370/089, LOOP SWITCHING SYSTEM, Richard F. Cantwell, Jr., Owner of Record: *Bell Telephone Laboratories, Inc., Murray Hill, N.J.,* Attorney or Agent: Roy C. Litton, Ex. Gp.: 264

4,398,614, Re. S.N. 748,488, Filed June 25, 1985, Cl. 177/2S, COMBINATORIAL WEIGHING SYSTEM WITH DISCHARGE CONTROL, Yukio Kakita, et al., Owner of Record: *Ishida Scales Mfg. Co., Ltd., Kyoto, Japan,* Attorney or Agent: Paul D. Flehr, et al., Ex. Gp.: 216

4,420,694, Re. S.N. 749,676, Filed June 28, 1985, Cl. 307/130, MUTING CIRCUIT, Teppei Yokota, et al., Owner of Record: *Sony Corp., Tokyo, Japan,* Attorney or Agent: James van Santen, et al., Ex. Gp.: 214

4,435,467, Re. S.N. 638,240, Filed Aug. 6, 1984, Cl. 428/254, ATHLETIC SUPPORT FABRIC, Jack S. Rogers, Owner of Record: *Milliken Research Corp., Spartanburg, S.C.,* Attorney or Agent: H. William Petry, et al., Ex. Gp.: 154

4,470,.508, Re. S.N. 745,538, Filed June 17, 1985, Cl. 206/334, DUSTFREE PACKAGING CONTAINER AND METHOD, Yung-Tsai Yen, Owner of Record: *By Mesne Assight, Yung-Tsai Yen, Los Altos, Calif.,* Attorney or Agent: J. Pierre Kolisch, et al., Ex. Gp.: 241

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

Des. 278,415, Reexam. No. 90/000,816, Requested: July 5, 1985, Cl. 10/40, WALL TIMER, Kenneth R. Fenne, Owner of Record: *Pittway Corp., Aurora, Ill.,* Attorney or Agent: Emrich & Dithmar, Ex. Gp.: 290, Requester: Owner

3,951,033, Reexam. No. 90/000,818, Requested: July 8, 1985, Cl. 411/468, CONNECTOR PLATE, Walter G. Moehlenpah, Owner of Record: *Moehlenpah Industries, Inc., Creve Coeur, Md.,* Attorney or Agent: Senniger, Powers, et al., Ex. Gp.: 350, Requester: Owner

4,132,164, Reexam. No. 90/000,820, Requested: July 12, 1985, Cl. 100/89, BALER LOADING METHOD AND APPARATUS, Allan A. White, Owner of Record: *Hesston Corp., Hesston, Kans.,* Attorney or Agent; Schmidt, Johnson, et al., Ex. Gp.: 240, Requester: Sperry New Holland, New Holland, Pa.

4,296,570, Reexam. No. 90/000,822, Requested: July 15, 1985, Cl. 49/360, HYDRAULIC DOOR OPERATOR, George C. Balbach, et al., Owner of Record: *Arthur Smith Industries, Inc., Milwaukee, Wis.,* Attorney or Agent: Thomas W. Ehrmann, Ex. Gp.: 350, Requester: Owner

4,353,991, Reexam. No. 90/000,812, Requested: July 2, 1985, Cl. 501/20, GLASS COMPOSITION AND METHOD OF MANUFACTURE AND ARTICLE PRODUCED THEREFROM, John F. van Ness, et al., Owner of Record: *Ferro Corp., Cleveland, Ohio,* Attorney or Agent: Baldwin, Egan, et al., Ex. Gp.: 110, Requester: E. Merck, Darmstat, Fed. Rep. of Germany

4,479,466, Reexam. No. 90/000,814, Requested: July 5, 1985, Cl. 123/527, NATURAL GAS AND AIR MIXING DEVICE, Donald O. Greenway, et al., Owner of Record: *Inventors,* Attorney or Agent: Jones & Askew, Ex. Gp.: 340, Requester: Dual Fuels Assocs. Corp., Orem, Utah

4,495,285, Reexam. No. 90/000,821, Requested: July 12, 1985, Cl. 435/215, PLASMINOGEN ACTIVATOR DERIVATIVES, Kimihiro Shimizu, et al., Owner of Record: *Nippon Chemiphar Co., Ltd., Tokyo, Japan,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 120, Requester: Enzon, Inc., South Plainfield, N.J.

Service by Publication

A petition to cancel the registration identified below having been filed, and the notice of such proceeding sent by registered mail to the registrant at the last known address having been returned by the Postal Service as undeliverable, notice is hereby given that unless the registrant listed herein, its assignes or legal representatives, shall enter an appearance within thirty days from the date of this publication, the cancellation will be proceeded with as in the case of default.

Envirofood, Inc., assignee by mesne assignment of Richard B. Sawtelle, dba Farmers Market Preserving Kitchen, Santa Barbara, Calif., Reg. No. 828,850, for the mark "FARMERS MARKET", Canc. No. 14,392.

ERMA S. BROWN,
Administrator
Trademark Trial and
Appeal Board.
For MARGARET M. LAURENCE,
Assistant Commissioner
for Trademarks.

Availability of Concordance — Fifth Edition

The Patent and Trademark Office announces the availability of the "Concordance Fifth Edition-1985 United States Patent Classification to International Patent Classification" which relates the U.S. Patent Classification, as revised through Feb. 29, 1984, (Classification Order No. 929) to the Fourth Edition of the International Patent Classification, 1984, as published for the World Intellectual Property Organizations by Carl Heymanns Verlag K. G., Munich.

Copies of the Concordance are for sale by the Superintendent of Documents, U.S. Government Printing Office, Washington, D.C. 20402, Stock Number 003-004-00611-1. The price for this publication is $6.50 for U.S. and $8.15 for foreign mailing.

July 3, 1985.

WILLIAM S. LAWSON,
Administrator for
Documentation.

U.S. GOVERNMENT-OWNED INVENTIONS
Notice of Availability for Licensing

The inventions listed below are owned by agencies of the U.S. Government and are available for licensing in the U.S. in accordance with 35 U.S.C. 207 to achieve expeditious commercialization of results of federally funded research and development. Foreign patents are filed on selected inventions to extend market coverage for U.S. companies and may also be available for licensing.

Technical and licensing information on specific inventions may be obtained by writing to:

Office of Federal Patent Licensing
U.S. Department of Commerce
P.O. Box 1423
Springfield, Va. 22151

Please cite the number and title of inventions of interest.

DOUGLAS J. CAMPION,
Office of Federal Patent Licensing
National Technical Information Service
U.S. Department of Commerce.

DEPARTMENT OF AGRICULTURE

SN 6-734,647. BOLL WEEVIL TRAP.

DEPARTMENT OF HEALTH AND HUMAN SERVICES

SN 6-623,923. PROCESS FOR SITE-SPECIFIC MUTAGENESIS WITHOUT PHENOTYPIC SELECTION.

SN 6-675,276. SYNTHESIS AND UTILIZATION OF 17-METHYL AND 17-CYCLOPROPYLMETHYL-3, 14-DIHYDROXY-4, 5-EPOXY 6-FLUOROMORPHINANS (FOXY AND CYCLOFOXY) AS [^{18}F]— LABELED OPIOID LIGANDS FOR POSITRON EMISSION TRANSAXIAL TOMOGRAPHY (PETT).

SN 6-741,600. ISOLATED, SOLUBLE IMMUNOGEN AGAINST SCHISTOSOMA MANSONI AND A METHOD OF VACCINATION EMPLOYING SAME.

SN 6-743,570. HUMAN MONOCYTES CULTURED IN SUSPENSION IN SERUM FREE MEDIUM.

DEPARTMENT OF THE AIR FORCE

SN 6-541,594. TEST TARGET FOR ADATIVE OPTICS.

SN 6-541,820. CCD GAUSSIAN CONVOLUTION METHOD.

SN 6-640,623. OVER-CENTER TOGGLE LATCH.

SN 6-693,927. VISION TEST CHART AND METHOD USING GAUSSIANS.

SN 6-726,872. TOTAL INTERNAL REFLECTION MODULATOR/DEFLECTOR.

SN 6-727,507. TUNABLE ACOUSTO-OPTIC FILTER WITH IMPROVED SPECTRAL RESOLUTION AND INCREASED APERTURE.

SN 6-729,388. IMPROVED TEMPERATURE DETECTION SYSTEM FOR USE ON FILM COOLED TURBINE AIRFOILS.

SN 6-738,817. PHOTOIONIZATION TECHNIQUE FOR GROWTH OF METALLIC FILMS.

SN 6-739,413. INSTANTANEOUS FREQUENCY MEASUREMENT RECEIVER WITH DIGITAL PROCESSING.

SN 6-742,825. SIGNAL ANALYSIS RECEIVER WITH ACOUSTO-OPTIC DELAY LINES.

DEPARTMENT OF THE ARMY

SN 6-742,152. DUAL OPTICAL MECHANICAL POSITION TRACKER.

SN 6-744,344. RECHARGEABLE LITHIUM-ORGANIC ELECTROLYTE BATTERY HAVING OVERCHARGE PROTECTION AND METHOD OF PROVIDING OVERCHARGE PROTECTION FOR A LITHIUM-ORGANIC ELECTROLYTE BATTERY.

In the Official Gazette, Vol. 1056, No. 1, July 2, 1985, the Table of Official Gazette Volume Numbers contained two errors. The corrected table below should be substituted for the earlier version.

TABLE OF OFFICIAL GAZETTE VOLUME NUMBERS: 1872–1990

A table which relates volume numbers of the Official Gazette comprising collections of weekly issues of that publication to the month of their publication has found good use in the Patent and Trademark Office and Patent Depository Libraries in a variety of applications. The need for such a table arises, in part, from the fact that Official Gazette volumes have not been uniformly numbered on a monthly basis over the 110 year history of that publication. From Jan. 1872 through June 1883, they were numbered on a semi-annual basis; from July 1883 through Dec. 1902, quarterly; from Jan. 1902 through Dec. 1908, bi-monthly; and, since Jan. 1909, the volume of issues for each month has been separately numbered. To fulfill the interest which has been expressed in this table, it is published below:

Calendar Table of Official Gazette Volume Numbers

Month-by-Month Volume Numbers: Jan. 1872 to Present

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1872*	1	1	1	1	1	1	2	2	2	2	2	2
1873	3	3	3	3	3	3	4	4	4	4	4	4
1874	5	5	5	5	5	5	6	6	6	6	6	6
1875	7	7	7	7	7	7	7	8	8	8	8	8
1876	9	9	9	9	9	9	10	10	10	10	10	10
1877	11	11	11	11	11	11	12	12	12	12	12	12
1878	13	13	13	13	13	13	14	14	14	14	14	14
1879	15	15	15	15	15	15	16	16	16	16	16	16
1880	17	17	17	17	17	17	18	18	18	18	18	18
1881	19	19	19	19	19	19	20	20	20	20	20	20
1882	21	21	21	21	21	21	22	22	22	22	22	22
1883*	23	23	23	23	23	23	24	24	24	25	25	25
1884	26	26	26	27	27	27	28	28	28	29	29	29
1885	30	30	30	31	31	31	32	32	32	33	33	33
1886	34	34	34	35	35	35	36	36	36	37	37	37
1887	38	38	38	39	39	39	40	40	40	41	41	41
1888	42	42	42	43	43	43	44	44	44	45	45	45
1889	46	46	46	47	47	47	48	48	48	49	49	49
1890	50	50	50	51	51	51	52	52	52	53	53	53
1891	54	54	54	55	55	55	56	56	56	57	57	57
1892	58	58	58	59	59	59	60	60	60	61	61	61
1893	62	62	62	63	63	63	64	64	64	65	65	65
1894	66	66	66	67	67	67	68	68	68	69	69	69
1895	70	70	70	71	71	71	72	72	72	73	73	73
1896	74	74	74	75	75	75	76	76	76	77	77	77
1897	78	78	78	79	79	79	80	80	80	81	81	81
1898	82	82	82	83	83	83	84	84	84	85	85	85
1899	86	86	86	87	87	87	88	88	88	89	89	89
1900	90	90	90	91	91	91	92	92	92	93	93	93
1901	94	94	94	95	95	95	96	96	96	97	97	97
1902	98	98	98	99	99	99	100	100	100	101	101	101
1903*	102	102	103	103	104	104	105	105	106	106	107	108
1904	108	108	109	109	110	110	111	111	112	112	113	113
1905	114	114	115	115	116	116	117	117	118	118	119	119
1906	120	120	121	121	122	122	123	123	124	124	125	125
1907	126	126	127	127	128	128	129	129	130	130	313	131
1908	132	132	133	133	134	134	135	135	136	136	137	137
1909*	138	139	140	141	142	143	144	145	146	147	148	149
1910	150	151	152	153	154	155	156	157	158	159	160	161
1911	162	163	164	165	166	167	168	169	170	171	172	173
1912	174	175	176	177	178	179	180	181	182	183	184	185
1913	186	187	188	189	190	191	192	193	194	195	196	197
1914	198	199	200	201	202	203	204	205	206	207	208	209
1915	210	211	212	213	214	215	216	217	218	219	220	221
1916	222	223	224	225	226	227	228	229	230	231	232	233
1917	234	235	236	237	238	239	240	241	242	243	244	245
1918	246	247	248	249	250	251	252	253	254	255	256	257
1919	258	259	260	261	262	263	264	265	266	267	268	269
1920	270	271	272	273	274	275	276	277	278	279	280	281
1921	282	283	284	285	286	287	288	289	290	291	292	293
1922	294	295	296	297	298	299	300	301	302	303	304	305
1923	306	307	308	309	310	311	312	313	314	315	316	317
1924	318	319	320	321	322	323	324	325	326	327	328	329
1925	330	331	332	333	334	335	336	337	338	339	340	341

Calendar Table of Official Gazette Volume Numbers
Month-by-Month Volume Numbers: Jan. 1872 to Present—Continued

Year	Jan.	Feb.	Mar.	Apr.	May	June	July	Aug.	Sept.	Oct.	Nov.	Dec.
1926	342	343	344	345	346	347	348	349	350	351	352	353
1927	354	355	356	357	358	359	360	361	362	363	364	365
1928	366	367	368	369	370	371	372	373	374	375	376	377
1929	378	379	380	381	382	383	384	385	386	387	388	389
1930	390	391	392	393	394	395	396	397	398	399	400	401
1931	402	403	404	405	406	407	408	409	410	411	412	413
1932	414	415	416	417	418	419	420	421	422	423	424	425
1933	426	427	428	429	430	431	432	433	434	435	436	437
1934	438	439	440	441	442	443	444	445	446	447	448	449
1935	450	451	452	453	454	455	456	457	458	459	460	461
1936	462	463	464	465	466	467	468	469	470	471	472	473
1937	474	475	476	477	478	479	480	481	482	483	484	485
1938	486	487	488	489	490	491	492	493	494	495	496	497
1939	498	499	500	501	502	503	504	505	506	507	508	509
1940	510	511	512	513	514	515	516	517	518	519	520	521
1941	522	523	524	525	526	527	528	529	530	531	532	533
1942	534	535	536	537	538	539	540	541	542	543	544	545
1943	546	547	548	549	550	551	552	553	554	555	556	557
1944	558	559	560	561	562	563	564	565	566	567	568	569
1945	570	571	572	573	574	575	576	577	578	579	580	581
1946	582	583	584	585	586	587	588	589	590	591	592	593
1947	594	595	596	597	598	599	600	601	602	603	604	605
1948	606	607	608	609	610	611	612	613	614	615	616	617
1949	618	619	620	621	622	623	624	625	626	627	628	629
1950	630	631	632	633	634	635	636	637	638	639	640	641
1951	642	643	644	645	646	647	648	649	650	651	652	653
1952	654	655	656	657	658	659	660	661	662	663	664	665
1953	666	667	668	669	670	671	672	673	674	675	676	677
1954	678	679	680	681	682	683	684	685	686	687	688	689
1955	690	691	692	693	694	695	696	697	698	699	700	701
1956	702	703	704	705	706	707	708	709	710	711	712	713
1957	714	715	716	717	718	719	720	721	722	723	724	725
1958	726	727	728	729	730	731	732	733	734	735	736	737
1959	738	739	740	741	742	743	744	745	746	747	748	749
1960	750	751	752	753	754	755	756	757	587	759	760	761
1961	762	763	764	765	766	767	768	769	770	771	772	773
1962	774	775	776	777	778	779	780	781	782	783	784	785
1963	786	787	788	789	790	791	792	793	794	795	796	797
1964	798	799	800	801	802	803	804	805	806	807	808	809
1965	810	811	812	813	814	815	816	817	818	819	820	821
1966	822	823	824	825	826	827	828	829	830	831	832	833
1967	834	835	836	837	838	839	840	841	842	843	844	845
1968	846	847	848	849	850	851	852	853	854	855	856	857
1969	858	859	860	861	862	863	864	865	866	867	868	869
1970	870	871	872	873	874	875	876	877	878	879	880	881
1971	882	883	884	885	886	887	888	889	890	891	892	893
1972	894	895	896	897	898	899	900	901	902	903	904	905
1973	906	907	908	909	910	911	912	913	914	915	916	917
1974	918	919	920	921	922	923	924	925	926	927	928	929
1975	930	931	932	933	934	935	936	937	938	939	940	941
1976	942	943	944	945	946	947	948	949	950	951	952	953
1977	954	955	956	957	958	959	960	961	962	963	964	965
1978	966	967	968	969	970	971	972	973	974	975	976	977
1979	978	979	980	981	982	983	984	985	986	987	988	989
1980	990	991	992	993	994	995	996	997	998	999	1000	1001
1981	1002	1003	1004	1005	1006	1007	1008	1009	1010	1011	1012	1013
1982	1014	1015	1016	1017	1018	1019	1020	1021	1022	1023	1024	1025
1983	1026	1027	1028	1029	1030	1031	1032	1033	1034	1035	1036	1037
1984	1038	1039	1040	1041	1042	1043	1044	1045	1046	1047	1048	1049
1985	1050	1051	1052	1053	1054	1055	1056	1057	1058	1059	1060	1061
1986	1062	1063	1064	1065	1066	1067	1068	1069	1070	1071	1072	1073
1987	1074	1075	1076	1077	1078	1079	1080	1081	1082	1083	1084	1085
1988	1086	1087	1088	1089	1090	1091	1092	1093	1094	1095	1096	1097
1989	1098	1099	1100	1101	1102	1103	1104	1105	1106	1107	1108	1109
1990	1110	1111	1112	1113	1114	1115	1116	1117	1118	1119	1120	1121

• SUMMARY OF CHANGES IN VOLUME NUMBERING:

Semi-annual:	*Jan. 1872 through Jun. 1883*
Quarterly:	*Jul. 1883 through Dec. 1902*
Bi-monthly:	*Jan. 1903 through Dec. 1908*
Monthly:	*Jan. 1909 to the present*

The *Official Gazette* was published on successive Wednesdays from 3 Jan. 1872 through 17 Jan. 1872. From 23 Jan. 1872 to the present, it has been published weekly on Tuesday.

DEPARTMENT OF COMMERCE

Patent and Trademark Office

37 CFR Part 1

[Docket No. 50725-5025]

Revision of Patent Fees

AGENCY: Patent and Trademark Office, Commerce.

ACTION: Final rule.

SUMMARY: The Patent and Trademark Office is amending the rules of practice in patent cases, Part 1 of title 37, Code of Federal Regulations to adjust fee amounts. This action is necessary at this time because operating costs have increased over the past three years and the Commissioner is authorized by section 41(f) of title 35, United States Code, to adjust fees established in section 41(a) and section 41(b) of title 35, United States Code, on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index. Fees for other processing, services or materials related to patents as provided by section 41(d) and section 376 of title 35, United States Code, are being adjusted to recover the estimated average cost of the Office of such processing, services or materials.

EFFECTIVE DATE: October 5, 1985.

FOR FURTHER INFORMATION CONTACT: Frances Michalkewicz by telephone at (703) 557-1610 or by mail marked to her attention and addressed to the Commissioner of Patents and Trademarks, Washington, D.C. 20231.

SUPPLEMENTARY INFORMATION: This rule change is designed primarily to adjust patent fees because costs have increased and the Commissioner is authorized to: (1) Adjust statutory patent fees set forth in section 41(a) and section 41(b) of title 35, United States Code, to reflect fluctuations occurring during the previous three years in the Consumer Price Index (CPI), as authorized by section 41(f) of title 35, United States Code; (2) adjust fees for processing, services, or materials related to patents which have been established by the Commissioner in accordance with section 41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing, services or materials; and (3) adjust fees for filing and processing an application under the Patent Cooperation Treaty which have been established by the Commissioner to recover the estimated average cost of such processing in accordance with section 376 of title 35, United States Code.

Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending review of trademark automation cost requirements.

A notice of proposed rulemaking was published in the **Federal Register** on June 21, 1985, at 50 FR 25896-25902. Corrections of typographical errors were published on July 1, 1985, at 50 FR 27030, and on July 15, 1985, at 50 FR 28596. The notice also was published in the *Official Gazette* on July 2, 1985, at Volume 1056, pages 6 through 25. An oral hearing was held on July 18, 1985. Fifteen written letters and statements were submitted. One person testified at the oral hearing. Full consideration has been given to all of these letters, statements, and testimony.

Background Information

Patent and Trademark Office fees are authorized by sections 41 and 376 of title 35, United States Code. Section 41(a) of title 35, United States Code, establishes a number of statutory fees. Among the more significant of these are fees for filing a patent application and issuing a patent. Certain other fees, such as appeal fees, the fee for filing a disclaimer, fees for filing petitions seeking to revive an abandoned application and for extensions of time also are set in section 41(a) of title 35, United States Code. Section 41(b) of title 35, United States Code, sets forth the statutory fees for maintaining a patent in force if the application was filed on or after August 27, 1982.

The provisions of Public Law 96-517 also authorize maintenance fees for applications other than design and plant patent applications filed on or after December 12, 1980 and before August 27, 1982. These maintenance fees are to recover 25 percent of the estimated cost to the Office of processing patent applications.

Section 1 of Pub. L. 97-247 authorized the reduction by 50 percent in the fees paid under section 41(a) and section 41(b) of title 35, United States Code, by independent inventors, small business concerns, and nonprofit organizations, who meet the definitions established. This authorization will expire on September 30, 1985. Legislation has been introduced to authorize this reduction for an additional three years. If such authority is not continued, the small entity reduction will be rescinded and appropriate amendments to the regulations will be made.

Section 41(f) of title 35, United States Code, provides that fees established in section 41(a) and section 41(b) of title 35, United States Code, "may be adjusted by the Commissioner on October 1, 1985, and every third year thereafter, to reflect any fluctuations occurring during the previous three years in the Consumer Price Index, as determined by the Secretary of Labor." Section 41(f) also provides that changes of less than one percent may be ignored.

Policy for Applying the Consumer Price Index

The Department of Labor's Consumer Price Index (CPI) is made public approximately twenty-one days after the end of the month being calculated. The time lag between the initiation and the completion of the rulemaking process dictated that the March through September 1985 inflation rate be projected in the original rulemaking proposal. This estimate resulted in a cumulative three-year CPI of 11.7 percent applied to patent fees.

Based upon actual data through June 1985 and projecting the CPI to September 30, 1985, the Administration's revised projected cumulative CPI for the three-year (1982-1985) period is 11.8 percent. The Patent and Trademark Office has used the 11.8 percent projection in adjusting the fees established in section 41(a) and section 41(b) of title 35, United States Code. The revised CPI projection has not caused a change from the proposal in any of the section 41(a) and section 41(b) fees.

After application of the 11.8 percent projected fluctuation in the CPI to fees set forth in section 41(a) and section 41(b), amounts for all non-small entity fees were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees below $100 were rounded to the nearest even number so that all comparable small entity fees would be in whole numbers. Section 41(d) of title 35, United States Code, provides that the "Commissioner will establish fees for all other processing, services, or materials related to patents" which are not covered in section 41(a) and section 41(b) of title 35, United States Code, "to recover the estimated average cost to the Office of such processing, services or materials."

Section 376 of title 35, United States Code, authorizes the Commissioner to set fees for patent applications filed under the Patent Cooperation Treaty. The fees under the Patent Cooperation

Treaty are keyed to full cost recovery of the processing costs under the Treaty.

The general guidelines used by the Patent and Trademark Office in determining the non-statutory fees are set forth in OMB Circular A–25. Costs were determined from the best available records and included direct and indirect costs to the Office of carrying out the activity.

Since these non-statutory fees are expected to remain in place for the three year fee cycle 1986–1988, the calculated costs were then adjusted by a mid-cycle inflation rate of 6.21 percent derived from the Administration's inflation projection. After application of the projected mid-cycle inflation rate, amounts were rounded by applying standard arithmetical rules so that the amounts rounded would be de minimis and convenient to the user. Fees of $100 or more were rounded to the nearest $10. Fees between $2 and $99 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

The fees established under section 41(d) and section 376 of title 35, United States Code have been modified from the proposal. For the first fee cycle (1983–1985), fees established under section 41(d) and section 376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on October 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 to $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under section 41(d) and section 376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish section 41(d) and section 376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes, (2) virtual elimination of the reserve income for fluctuations in cost or workload, and (3) greater reliance upon and use of the individual fee costs developed by the PTO's Office of Finance.

It is intended that the amount of any fee due and payable on or after October 5, 1985 is the amount set in this rulemaking. For purposes of determining the amount of the fee to be paid, the date of mailing indicated on a proper Certificate of Mailing, where authorized under § 1.8 of title 37, Code of Federal Regulations, will be considered to be the date of receipt in the Office. A "Certificate of Mailing under § 1.8" is *not* "proper" for items which are specifically excluded from the provisions of § 1.8. Section 1.8 of title 37, Code of Federal Regulations, should be consulted for those items for which a Certificate of Mailing is *not* "proper". Such items include, *inter alia*, the filing of national and international applications for patents and the filing of trademark applications. The provisions of § 1.10 of title 37, Code of Federal Regulations relating to filing of papers and fees by "Express Mail" with certificate, however, do apply to *any paper or fee* (including patent and trademark applications) to be filed in the Office. If an application or fee is filed by "Express Mail" with a certificate of mailing dated on or after October 5, 1985, the amount of the fee to be paid is the fee established herein if a change is being made in the fee.

It is further intended that the amount due and payable for services provided in Fiscal Year 1986 will be the amount set in this rulemaking even if the fee becomes due prior to October 5, 1985. Such fees include, but are not limited to, the annual service charge for subscription services (§ 1.19(c)(1)) and the annual rental for a delivery box (§1.21(d)).

In order to ensure clarity in the implementation of the fee proposals, a discussion of specific sections is set forth below:

Discussion for Specific Rules

Section 1.16 National application filing fees

Section 1.16 is amended to adjust patent application filing fees established in section 41(a) of title 35, United States Code and set forth in paragraphs (a)–(d) and (f)–(j) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.16, paragraph (e) is amended to adjust the patent application surcharge fee authorized by section 111 of title 35, United States Code. Paragraph (e) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.17 Patent application processing fees

Section 1.17 is amended to adjust patent application processing fees established in section 41(a) of title 35, United States Code, and set forth in paragraphs (a)–(g), (1) and (m) of this section to reflect fluctuations in the Consumer Price Index. The wording of paragraph (1) has been broadened to include reference to applications abandoned under section 371(d) of title 35, United States Code.

Section 1.17, paragraphs (h)–(k) are amended to adjust the patent application processing fees authorized by section 41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Paragraphs (h)–(k) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing petitions to the Commissioner, public use proceedings, and non-English language specifications.

Section 1.18 Patent issue fees

Section 1.18 is amended to adjust patent issue fees established in section 41(a) of title 35, United States Code and set forth in paragraphs (a)–(c) of this section to reflect fluctuations in the Consumer Price Index.

Section 1.19 Document supply fees

Section 1.19 is amended to adjust the fees authorized by 41(d) of title 35, United States Code for services and materials as set forth in paragraph (a)–(c), (e) and (f) of this section to recover the estimated average cost to the Office of the specified services and materials. Paragraphs (a)–(c) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified in these paragraphs. Section 1.19 has been modified further to reduce the fees specified in paragraphs (e) and (f), which were not proposed for adjustment to more precisely recover the estimated average cost to the Office of supplying the documents.

Section 1.19, paragraph (a) is amended further to clarify the services and documents provided. It would provide for copies of specific documents at a flat fee. Copies of general Office records would be provided at a per page fee. Paragraph (a)(4) has been modified from the proposal to provide copies of a patent file wrapper and its contents at $75 for each 200 pages or a fraction thereof.

Section 1.19, paragraph (b) is amended further to delete subparagraph (3). A flat fee for comparing and certifying copies of documents made

from Office records is provided in new paragraph (j) of this section.

Section 1.19, paragraph (c) is amended further to provide for ten subclasses with the annual service charge.

Section 1.19 is amended to provide in new paragraph (h) a $10 per document flat fee for an uncertified copy of a non-United States patent document. This fee would apply to copies of foreign patent applications such as those which are published at 18 months or when allowable for opposition.

Section 1.19 is amended to provide in new paragraph (i) a flat fee for comparison and certification of each copy of a document made from Office records but not prepared by the Office.

Section 1.19 is amended to provide in new paragraph (j) a fee for duplicate filing receipts and corrected filing receipts due to applicant error.

Paragraphs (i) and (j) have been modified from the proposal to more precisely recover the estimated average cost to the Office of supplying the documents specified.

Section 1.20 Post-issuance fees

Section 1.20, paragraphs (a)–(c) are amended to adjust patent post-issuance fees authorized by section 41(d) of title 35, United States Code, to recover the estimated average cost to the Office of such processing. Section 1.20 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the post-issuance fees set forth in paragraphs (b)–(c). Section 1.20 has been modified further to reduce the fee set forth in paragraph (a), which was not proposed for adjustment, to more precisely recover the estimated average cost to the Office of providing a certificate of correction.

Section 1.20, paragraphs (d) and (h)–(j), are amended to adjust patent post-issuance fees established in section 41(a) and section 41(b) of title 35, United States Code, to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraphs (e)–(g), are amended to adjust post-issuance fees authorized by section 2 of Public Law 96–517, as modified by section 404 of Public Law 98–622. These fees must be set at a level to eventually recover 25 percent of the estimated cost to the Office of processing patent applications. In order to achieve this level of recovery, these maintenance fees are adjusted to reflect fluctuations in the Consumer Price Index.

Section 1.20, paragraph (k), is amended to adjust the patent maintenance surcharge fee authorized by section 2 of Public Law 96–517. Paragraph (k) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.20, paragraph (l), is amended to adjust the post-issuance fee authorized by section 41(b) of title 35, United States Code. Paragraph (l) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index.

Section 1.21 Miscellaneous fees and charges

Section 1.21 is amended to adjust the miscellaneous fees and charges authorized by section 41(d) of title 35, United States Code and set forth in paragraphs (a)-(f), (h) and (i) of this section to recover the estimated average cost to the Office of such processing. Section 1.21 has been modified from the proposal to more precisely recover the estimated average cost to the Office of the miscellaneous services for which fees were set forth in paragraphs (a)(2)-(a)(6), (b)(1), (d)-(f), (h)(1) and (i). Section 1.21 has been modified further to reduce the fees specified in paragraphs (c) and (h)(2), which were not proposed for adjustment, to more precisely recover the estimated average cost to the Office of those services.

Section 1.21, paragraph (g), is modified from the proposal to change the term "copy machine tokens" to "CopiShare card."

Section 1.21, paragraph (k), is amended to change the word "section" to "part" to clarify that any charge not provided for in these rules would be made at actual cost.

Section 1.21 is amended to provide in new paragraph (m) a $20 fee for processing checks returned "unpaid" by a bank.

Section 1.24 Coupons

Section 1.24 is amended to adjust the fees for the purchase of coupons for patents to make it comparable to the fee required for the purchase of U.S. patents.

Section 1.24 is amended to delete references to forty cent coupons which are no longer sold by the Patent and Trademark Office.

Section 1.25 Deposit accounts

Section 1.25 is amended to establish a restricted subscription deposit account to be used exclusively for subscription orders of patent copies as issued. A minimum deposit of $300 is required to establish and maintain, without payment of a monthly service fee, a restricted subscription deposit account.

Section 1.26 Refunds

Section 1.26 is amended to change paragraph (c) to provide for a refund of $1,300 if the Commissioner decides not to institute reexamination proceedings. The $1,300 refund would apply to those instances where the reexamination fee of $1,770 under § 1.20(c) was paid. The current $1,200 refund will be made in those cases where the current $1,500 reexamination fee was paid.

Section 1.53 Serial number, filing date, and completion of application

Section 1.53 is amended to change paragraph (c) to reduce to $15 the handling fee charged in the event a specification or drawing is not submitted within the time period set by the Office. Section 1.53 has been modified to more precisely recover the estimated average cost to the Office of handling an application with missing parts.

Section 1.297 Publication of statutory invention registration

Section 1.297, paragraph (b), is amended to modify the statement to be printed on each statutory invention registration. The language of the statement is modified so as to be more easily understood.

Section 1.445 International application filing and processing fees

Section 1.445, paragraphs (a)(1), (a)(4), are amended to adjust the fees authorized by section 376 of title 35, United States Code, for international application processing to recover the estimated average cost to the Office of such processing. The cost of the international search fee set forth in § 1.445(a)(2)(i) has been reduced and the amount credited by the Office under § 1.445(a)(2)(ii) is not changed. Paragraphs (a)(1) and (a)(3) have been modified from the proposal to more precisely recover the estimated average cost to the Office of processing international applications. However, the amount of the credit under § 1.445(a)(4) is somewhat less than at present and is the same as in the proposed rules.

Section 1.445(a)(5) is amended to adjust the surcharge authorized by section 371(d) of title 35, United States Code.

Paragraph (a)(5) has been modified from the proposal to limit the adjustment to the surcharge fee to changes which occurred during the past three years in the Consumer Price Index and to provide for a small and large entity amount to be consistent with § 1.16(e).

Section 1.445(a)(6) is amended to adjust the processing fee for an English translation filed after 20 months from the priority date to recover the estimated average cost to the Office of such processing. Paragraph (a)(6) has been modified from the proposal to more precisely recover the estimated average cost to the Office of processing an English translation and to be consistent with § 1.17(k).

Section 1.446 Refund of international application filing and processing fees.

Section 1.446 is amended to delete paragraph (b). The substance of the deleted material is included in § 1.445, paragraph (a)(4).

Response to Comments on the Rules

Specific comments were received on a number of the proposed rule changes. Fifteen letters submitting written comments and eight questions by telephone were received. Oral testimony was presented by one person at the public hearing conducted on July 18, 1985. All of the written and oral comments were considered in adopting the changes set forth herein. The comments submitted appear below along with responses thereto.

Comment: PTO fees are already too high and burdensome to the patent community.

Reply: There has been no indication that PTO fees are burdensome to the patent community. In 1984, we expected to receive 107,000 patent applications and actually received 109,539. In 1985, we are currently receiving applications at an annual rate of approximately 116,000.

The PTO is adjusting patent processing and patent service fees because costs have increased. The Commissioner may adjust patent statutory fees by changes which have occurred during the past three years in the Consumer Price Index (CPI). This authority is provided by 35 U.S.C. 41(f). The intent of the Congress in indexing the statutory patent fees set in 1982 to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation. Indexing of statutory patent fees was not intended to raise additional revenues beyond the rate of inflation.

The Commissioner also is authorized to adjust non-statutory patent fees to recover the estimated average cost to the Office of processing, services and materials. This authority is provided by 35 U.S.C. 41(d). As previously discussed, several of the proposed fees have been modified to more precisely recover the estimated average cost to the Office of processing, materials and services.

Comment: PTO has failed to abide by the provisions of Pub. L. 96–517 and the accompanying report (House Report 96–1307). Specifically, the PTO has failed to abide by the 50 percent recovery limitation for patent processing fees and the restrictions on the use of fee income.

Reply: Pub. L. 96–517, although enacted into law, was never fully implemented because the Congress passed H.R. 6260 which was enacted as Pub. L. 97–247 on August 27, 1982. Pub. L. 97–247 provides for an eventual 100 percent cost recovery through processing and maintenance fees except for the subsidy for certain small entities, and contains no restrictions on the use of income from fee revenues.

This rulemaking adjusts, by the Consumer Price Index (CPI), the patent processing (41(a)) and patent maintenance (41(b)) fees established by Pub. L. 97–247. The CPI adjustment allows the programs supported by sections 41 (a) and (b) fees to keep pace with inflation. Any growth in the aggregate rate of recovery of fees versus costs in this second cycle of fees is due primarily to the first time collection of maintenance fee receipts.

The restrictions on the use of income from fee revenues, which were included in House Report 96–1307 accompanying Pub. L. 96–517, were based upon a 50 percent recovery of patent costs from user fees. Then-Commissioner Mossinghoff testified before the Subcommittee on Courts, Civil Liberties, and Administration of Justice, when Congress was considering H.R. 6260, that the Administration's PTO user fee program was proposed to improve the quality of service at the PTO by reducing patent pendency, trademark pendency and automating patent and trademark operations. The Commissioner went on to say that "The major increases in the three program areas will be paid for by the sharp increase in user fees that we are recommending." The Congressional debate on this proposal indicates that the Subcommittee approved these innovative fee provisions in order to improve the level of patent and trademark services provided to users of the office.

Comment: Fees should relate to the actual "costs of processing patent applications" and should not include "overhead" expenses.

Reply: The fees applicable to patent filing, issuance and maintenance fees were established by the Congress and set forth in 35 U.S.C. sections 41 (a) and (b). Regardless if Congress included "overhead" expenses when setting these statutory patent fees, these fees may be adjusted only to reflect the fluctuations in the CPI every three years. Fees for other processing, services or materials related to patents are set by the Commissioner pursuant to 35 U.S.C. 41(d) to recover the Office's estimated average cost. The legislative history of Pub. L. 97–247, including the accompanying House Report, does not provide guidance regarding how "estimated average cost" was to be determined. These fees were determined under the general guidelines of OMB Circular A–25, entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain government services and property. Circular A–25 provides that a reasonable charge should be imposed to recover the full cost to the Government of rendering a service to an identifiable recipient, who receives a substantial benefit not accruing to the general public, e.g., receiving a patent. The concept of full cost recovery includes an appropriate overhead charge. Therefore, the inclusion of overhead expenses in calculating the costs of processing patent applications is appropriate.

Comment: The PTO does not include a description of any cost containment measure.

Reply: The PTO has taken all possible measures to contain costs. During fiscal year 1985, a zero-based analysis was conducted of all programs and their associated funding. The purpose of the review was to assure that adequate resources were available to meet the PTO's most important priorities while addressing unanticipated costs such as, the full absorption of the fiscal year 1985 pay raise, new pay scale for patent examiners, higher postal and telephone rates, greater use of PTO services, etc. The PTO's annual budget request is thoroughly reviewed by the Department of Commerce, by the Office of Management and Budget, and by the Congressional Appropriations Committees prior to enactment. The PTO is complying with the President's Deficit Reduction Program. The fiscal year 1986 budget request reflects reductions to travel, printing and consultants as required by the Deficit Reduction Act of 1984; administrative cost savings; and grade reductions and pay cuts. The PTO program to reduce patent pendency, once achieved in 1987, will require less resources than are currently expended. The Automation program, too, as it achieves its major milestones, will deliver cost benefits.

Comment: The PTO has proposed to adjust fees because costs have increased but they did not include an

explanation of how costs were calculated.

Reply: Patent statutory fees, which are set forth in 35 U.S.C. 41 (a) and (b), can be adjusted on October 1, 1985 and every three years thereafter to reflect fluctuations which have occurred in the Consumer Price Index (CPI). The costs of processing a patient application from receipt to issue or abandonment were calculated in 1982 at the time the present fees were set by statute. The most significant elements of processing a patent application are compensation costs, space and the costs incurred for printing the *Official Gazette* and patent grants.

As a result of these increases to the major costs incurred in the processing of a patent application, the PTO is adjusting the statutory 41 (a) and (b) patent fees by the full CPI of 11.8 percent in order to recover the projected budgeted collections for patent processing for the years 1986–1988.

Non-statutory patent and patent service fees are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A–25 entitled "User Charges," which establishes general policies for developing an equitable and uniform system of charges for certain Government services and property. The cost of all processing, services and/or materials associated with each non-statutory (section 41(d)) patent fee was determined. Since these fees are expected to remain in place for three years (1986–1988), each cost was adjusted by a mid-cycle inflation rate of 6.21 percent which was derived from the Administration's 1986–1988 inflation projection.

Comment: The PTO has proposed to set section 41(d) fees at a level which exceeds the estimated average cost to the Office. PTO's cost calculations do not support the proposed section 41(d) fees.

Reply: Fees established pursuant to 35 U.S.C. 41(d) and 376, non-statutory patent and patent service fees, are being set to recover the estimated average cost to the Office over the next three years (1986–1988) of processing, services and materials. Costs for goods and services were determined under the general guidelines set forth in OMB Circular A–25 entitled "User Charges," which establishes general policies for developing and equitable and uniform system of charges for certain Government services and property.

The PTO employed cost-finding techniques for determining the costs of all processing, services and/or materials associated with each non-statutory patent fee. These costs were documented by the Director, Office of Finance and reviewed by each responsible Assistant Commissioner. Since the revised fees are expected to remain in place for the next three years (1986–1988), each cost was adjusted by the mid-cycle inflation rate of 6.21 percent. The fee was then set based upon this inflated cost.

For the first fee cycle (1983–1985), fees established under section 41(d) and section 376 were set in the aggregate to recover the estimated average cost to the Office of processing, services and materials as defined in PTO budget documents. Because of the significant increase in fees that was instituted on October 1, 1982, as well as the establishment of new fees, the PTO did not have the necessary experience to accurately predict (nor could it control) fee volumes for the first fee cycle. First cycle fees were thus set at levels sufficient to maintain financial solvency despite possible fluctuations in costs or in workload. Fee amounts in most cases also were set at convenient integers (e.g., $5 or $10). For the second fee cycle (1986–1988), the PTO had proposed to set fees established under section 41(d) and section 376 using the same methodology. Several comments to the proposed rules suggested that the PTO should establish section 41(d) and section 376 fees to more precisely recover the estimated average cost to the Office of the processing, service or material. The fees have been modified to reflect the following: (1) PTO experience over the past two and one-half years in predicting fee volumes; (2) virtual elimination of the reserve income for fluctuations in cost or in workload; and (3) greater reliance upon and use of the individual fee costs developed by PTO financial analysts.

In modifying the proposed fees, the PTO used the raw cost data derived for each fee, adjusted that amount by the projected mid-cycle inflation rate of 6.21 percent, and rounded the adjusted cost by applying standard arithmetical rules. Fees of $100 or more were rounded to the nearest $10. Fees between $99 and $2 were rounded to the nearest whole number. Fees under $2 were rounded for convenience.

Comment: The increase in maintenance fees appears to be driven by non-cost considerations. Since they have just begun to be collected, there could be no actual cost histories on which to base the adjustments.

Comment: The increases in claims fees seem to be proposed without any seemingly real increase in cost specifically attributable to these items.

Reply: Patent statutory fees such as claim and maintenance fees, which are set forth in 35 U.S.C. 41 (a) and (b), may be adjusted every three years to reflect changes which have occurred in the Consumer Price Index (CPI) for the prior three years. The costs of processing, issuing and maintaining patents were calculated in 1982 at the time the present fees were set by statute. Patent maintenance fees as set forth in both Public Laws 96–517 and 97–247 are one of several sources of income available to the PTO to cover the costs of processing, issuing and maintaining a patent. The most significant elements of processing, issuing and maintaining patents are personnel compensation, benefits, space and printing costs. Since 1982, these costs have risen in an amount equal to and in some cases, in an amount exceeding, the CPI increase for the individual year.

As a result of these cost increases, the PTO is adjusting section 41(a) and section 41(b) patent fees and the Public Law 96–517 maintenance fees by the full CPI of 11.8 percent.

Comment: PTO's proposed adjustments to section 41(a) and section 41(b) fees are higher than the 11.7 percent fluctuation in the Consumer Price Index because of the rounding principles PTO has applied.

Reply: The intent of the Congress in indexing the statutory patent fees, 35 U.S.C. 41 (a) and (b), to the CPI was to assure that a precipitous drop in the level of recovery did not occur due to inflation with regard to the fees set in 1982. Indexing of statutory patent fees was not intended to be a method of raising additional revenues, nor has the PTO used it for that purpose, but rather for administrative ease. Rounding will ease the administration of these fees by permitting the PTO and users to deal in increments of ten when the adjusted fee is $100 or greater or in even amounts when the fee is below $99. This will ease implementation of the 50 percent reduction in fees for small businesses, non-profit organizations and individuals. Moreover, any surpluses which may result are for the short-term only. By applying routine rounding techniques, there should be a balancing out of shortfalls and surpluses in the long-run.

Comment: The fee for a deferred declaration under 35 U.S.C. 111 should be changed so that such a fee would only be required if the declaration were filed later than three months from the actual filing date.

Reply: The suggestion for permitting the declaration to be filed up to three

months after the actual filing date without a surcharge has not been adopted. It would place administrative burdens on the Office since it would encourage the late filing of oaths or declaration.

Comment: There appears to be no justification for the significant increase to the surcharge fees.

Reply: In proposing adjustments to penalty surcharge fees, the PTO considered the costs incurred in providing special handling to certain cases, and proposed to set the fee at a level that would recover costs and preclude unnecessary resort to pertinent procedures but not so high as to be burdensome where resort to these procedures is necessary. In response to several comments received on the proposed surcharge fees, the proposal has been modified to limit the adjustments to surcharge fees set forth in § 1.16(e), § 1.20(k), § 1.20(l) and § 1.445(a)(5) to changes which have occurred during the past three years in the Consumer Price Index.

Comment: Patent Cooperation Treaty (PCT) fee increases far exceed the 11.7 percent average increase applied to national applications. This increase could seriously affect use of PCT system.

Reply: The PCT fees set under 35 U.S.C. 376 are based on cost recovery and are not adjusted by the Consumer Price Index. The fees under § 1.445 are set to reflect estimated average processing costs. A reduction was made in the amount of the international search fee if performed by the U.S. Patent and Trademark Office. While the credit for a prior U.S. search is unchanged and other PCT fees are increased, the overall adjustment level of PCT fees is generally in line with the CPI.

Comment: The small entity reduction should be adopted for the PCT surcharge.

Reply: The final rule has been modified from the proposal to provide for small and large entity amounts in § 1.445(a)(5). This is to correspond to a similar fee in § 1.16(e).

Comment: The proposed fees for a copy of a patent file wrapper and its contents (§ 1.19(a)(4)) are unfair at the breakpoint. It would be more equitable to charge $75 for each 200 pages or fraction thereof.

Reply: In proposing a fee of $75 for up to 200 pages and $350 for 201 pages or more for a copy of a patent file wrapper and its contents, the PTO was attempting to move to a flat fee for this service. Since there were objections to the breakpoint, the final rule has been modified from the proposal to reflect a fee of $75 for each 200 pages or fraction thereof.

Comment: The proposed increase in § 1.20(c) regarding requests for reexamination and the related decrease in § 1.26(c) relating to refunds where reexamination is not ordered, appeared to be set from a revenue generating standpoint rather than being cost-driven.

Reply: While the comment does not suggest what the fees should be, it is noted that the two fees have to be considered together. The notice of proposed rulemaking set a fee of $1,800 for filing a request for reexamination, which was an increase from the previous fee of $1,500. This fee has been modified from the proposal and is now set at $1,770. The refund where reexamination is denied was proposed to be raised from $1,200 to $1,300, which raises the refund from the amount previously refunded. The amount refunded has not changed from the proposal. The relative amounts of the initial fee and the refund are set to obtain the necessary recovery of costs from reexamination.

Comment: A separate schedule of fees should be instituted for interference proceedings, but such fees should apply only to junior parties, since interferences are conducted primarily for their benefit.

Reply: The rules already provide for certain fees relating to interference proceedings; see § 1.644 (e) and (f), and § 1.666 (b) and (c). In general, however, the PTO decided in 1982 that the costs of interference proceedings should be factored into the fees charged in connection with the processing and examination of patent applications, because: (1) An interference is a proceeding instituted by the PTO; and (2) it would not be administratively feasible to attempt to provide a fee schedule to cover the myriad of different situations which may occur in the course of an interference. Since these reasons are still considered applicable, the suggestion has not been adopted.

Comment: The proposed fee for admission to the examination (§ 1.21(a)(1)) for registration to practice is too high for students who often sit for the exam and it is inappropriate because administering the exam is not a service to the public but a cost of operating the PTO.

Reply: The fee for admission to the examination for registration to practice reflects the costs of conducting the examination twice a year nationwide. The significant increase is due to the fact that the fee had been understated in relation to cost during the 1983–1985 fee cycle. Fees established in this rulemaking will more precisely recover the estimated average cost to the Office of administering and grading the examination and are consistent with the cost recovery principles of OMB Circular A–25.

Comment: The proposed fee for requesting a regrading of an examination (§ 1.21(a)(6)) should be waived if the regrading request was necessitated by a PTO error.

Reply: Any fee may be refunded if paid by mistake or paid in excess of that required. See 35 U.S.C. 42(d).

Comment: The PTO should retain the present fee for admission to the examination to practice before the Office (§ 1.21(a)(1)) and increase the fee payable upon registration to practice (§ 1.21(a)(2)).

Reply: This suggestion has not been adopted in this rulemaking. The fees for admission to the examination and for registration to practice have been set to recover the cost of those services.

Comment: The proposed fee for reviewing a decision of the Director of Enrollment and Discipline (§ 1.21(a)(5)) appears to be low in view of the significant amount of time and effort involved in a review.

Reply: The fee for this service, as modified, recovers the estimated average cost to the Office of providing the service.

Comment: The fees for processing an application filed with a specification in a non-English language (§ 1.17(k)) and for filing an English translation of an international application later than 20 months after the priority date (§ 1.445(a)(6)) appear to be in excess of cost.

Reply: The final rules have been modified from the proposed to provide for a fee of $26, the cost of processing applications filed with non-English language specifications in both domestic and international cases.

Comment: An extension of time to August 16, 1985 for the submission of comments was requested.

Reply: The PTO is required by 35 U.S.C. 41(g) to publish a notice of fee increases in the **Federal Register** at least 60 days prior to the effective date of the fee increase. In order to have the proposed fee increases become effective near the start of the fiscal year, the extension of time could not be granted.

Comment: Why were there no proposals to adjust trademark fees?

Reply: Adjustments to fees for filing and processing a trademark application and for other processing, services or materials related to trademarks were not proposed at this time, pending

review of trademark automation cost requirements.

Comment: De we plan to verify the inflation rate before publication of the final rules?

Reply: The projected inflation rate has been verified. The Administration's latest projected annual cumulative Consumer Price Index for the three year period 1982–1985 is 11.8 percent. Application of this index to § 41(a) and § 41(b) fees results in no change from the proposal.

Other Considerations

The rule change is in conformity with the requirements of the Regulatory Flexibility Act (Pub. L. 96–354), Executive Order 12291, and the Paperwork Reduction Act of 1980, 44 U.S.C. 3501 et seq. There are no information collection requirements relating to patent fee rules.

The General Counsel of the Department of Commerce certified to the Small Business Administration that the rule change will not have a significant adverse economic impact on a substantial number of small entities (Regulatory Flexibility Act, Pub. L. 96–354). The principal impact of the major patent fees has already been taken into account in Pub. L. 97–247, which provided small entities with a 50 percent reduction in the major patent fees. Although that legislation will expire on September 30, 1985, legislation has been introduced fo reauthorize the 50 percent reduction in patent fees for an additional three years. The rule change adjusts fees to reflect the change in the Consumer Price Index and cost of processing services as provided by statute (35 U.S.C. 41(d) and 41(f)).

The Patent and Trademark Office has determined that this rule change is not a major rule under Executive Order 12291. The annual effect on the economy will be less than $100 million. There will be no major increase in costs or prices for consumers, individual industries, federal, state, or local government agencies, or geographic regions. There will be no significant adverse effects on competition, employment, investment, productivity, innovation, or on the ability of United States-based enterprises to compete with foreign-based enterprises in domestic or export markets.

List of Subjects in 37 CFR Part 1

Administrative practice and procedure, Authority delegations (government agencies), Conflict of interests, Courts, Inventions and patents, Lawyers.

Notice is hereby given that, pursuant to the authority granted to the Commissioner of Patents and Trademarks by 35 U.S.C. 6, 41, 111, 157, 302, and 376 and Pub. L. 96–517, 97–247 and 98–622, the Patent and Trademark Office is amending 37 CFR Part 1 as set forth below.

PART 1—[AMENDED]

1. The authority citation for 37 CFR Part 1 continues to read as follows:

Authority: 35 U.S.C. 6, unless otherwise noted.

2. Section 1.16 is revised to read as follows.

§ 1.16 National application filing fees.

(a) Basic fee for filing each application for an original patent, except design or plant cases:	
By a small entity (§ 1.9(f))	$170.00
By other than a small entity	340.00
(b) In addition to the basic filing fee in an original application, for filing or later presentation of each independent claim in excess of 3:	
By a small entity (§ 1.9(f))	17.00
By other than a small entity	34.00
(c) In addition to the basic filing fee in an original application, for filing or later presentation of each claim (whether independent or dependent) in excess of 20. (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee calculation purposes):	
By a small entity (§ 1.9(f))	6.00
By other than a small entity	12.00
(d) In addition to the basic filing fee in an original application, if the application contains, or is amended to contain, a multiple dependent claim(s), per application:	
By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00
(If the additional fees required by paragraphs (b), (c) and (d) are not paid on filing or on later presentation of the claims for which the additional fees are due, they must be paid or the claims canceled by amendment, prior to the expiration of the time period set for response by the Office in any notice of fee deficiency.)	
(e) Surcharge for filing the basic filing fee or oath or declaration on a date later than the filing date of the application:	
By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00
(f) For filing each design application:	
By a small entity (§ 1.9(f))	70.00
By other than a small entity	140.00
(g) Basic fee for filing each plant application:	
By a small entity (§ 1.9(f))	110.00
By other than a small entity	220.00
(h) Basic fee for filing each reissue application:	
By a small entity (§ 1.9(f))	170.00
By other than a small entity	340.00
(i) In addition to the basic filing fee in a reissue application, for filing or later presentation of each independent claim which is in excess of the number of independent claims in the original patent:	
By a small entity (§ 1.9(f))	17.00
By other than a small entity	34.00
(j) In addition to that basic filing fee in a reissue application; for filing or later presentation of each claim (whether independent or dependent) in excess of 20 and also in excess of the number of claims in the original patent. (Note that § 1.75(c) indicates how multiple dependent claims are considered for fee purposes):	
By a small entity (§ 1.9(f))	6.00
By other than a small entity	12.00
(Note, see § 1.445 for international application filing and processing fees).	

(35 U.S.C. 6, 41, 111; Pub. L. 97–247)

3. Section 1.17 is amended by revising paragraphs (a) through (m) to read as follows:

§ 1.17 Patent application processing fees.

(a) Extension fee for response within first month pursuant to § 1.136(a):	
By a small entity (§ 1.9(f))	$25.00
By other than a small entity	50.00
(b) Extension fee for response within second month pursuant to § 1.136(a):	
By a small entity (§ 1.9(f))	85.00
By other than a small entity	170.00
(c) Extension fee for response within third month pursuant to § 1.136(a):	
By a small entity (§ 1.9(f))	195.00
By other than a small entity	390.00
(d) Extension fee for response within fourth month pursuant to § 1.136(a):	
By a small entity (§ 1.9(f))	305.00
By other than a small entity	610.00
(e) For filing a notice of appeal from the examiner to the Board of Patent Appeals and Interferences:	
By a small entity (§ 1.9(f))	65.00
By other than a small entity	130.00
(f) In addition to the fee for filing a notice of appeal, for filing a brief in support of an appeal:	
By a small entity (§ 1.9(f))	65.00
By other than a small entity	130.00
(g) For filing a request for an oral hearing before the Board of Patent Appeals and Interferences in appeal under 35 U.S.C. 134:	
By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00
(h) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph	140.00
§ 1.47—for filing by other than all the inventors or a person not the inventor.	
§ 1.48—for correction of inventorship.	
§ 1.182—for decision on questions not specifically provided for.	
§ 1.183—to suspend the rules.	
§ 1.295—for review of refusal to publish a statutory invention registration.	
§ 1.377—for review of decision refusing to accept and record payment of a maintenance fee filed prior to expiration of patent.	
§ 1.378(e)—for reconsideration of decision on petition refusing to accept delayed payment of maintenance fee in expired patent.	
§ 1.644(e)—for petition in an interference.	
§ 1.644(f)—for request for reconsideration of a decision on petition in an interference.	
§ 1.666(c)—for late filing of interference settlement agreement.	
§§ 5.12, 5.13, & 5.14—for expedited handling of foreign filing license.	
§ 5.15—for changing the scope of a license.	
§ 5.25—for retroactive license.	
(i) For filing a petition to the Commissioner under a section of this part listed below which refers to this paragraph	72.00
§ 1.12—for access to an assignment record.	
§ 1.14—for access to an application.	
§ 1.55—for entry of late priority papers.	
§ 1.102—to make application special.	
§ 1.103—to suspend action in application.	
§ 1.177—for divisional reissues to issue separately.	
§ 1.312—for amendment after payment of issue fee.	
§ 1.313—to withdraw an application from issue.	
§ 1.314—to defer issuance of a patent.	
§ 1.334—for patent to issue to assignee, assignment recorded late.	
§ 1.666(b)—for access to interference settlement agreement.	
(j) For filing a petition to institute a public use proceeding under § 1.292	860.00
(k) For processing an application filed with a specification in a non-English language (§ 1.52(d))	26.00
(l) For filing a petition (1) for the revival of an unavoidably abandoned application under 35 U.S.C. 133, or 371 or (2) for delayed payment of the issue fee under 35 U.S.C. 151:	
By a small entity (§ 1.9(f))	28.00
By other than a small entity	56.00

(m) For filing a petition (1) for revival of an unintentionally abandoned application or (2) for the unintentionally delayed payment of the fee for issuing a patent:	
By a small entity (§ 1.19(f))	280.00
By other than a small entity	560.00

(35 U.S.C. 6, 41, 157, 376; Pub. L. 97–247)

4. Section 1.18 is revised to read as follows:

§ 1.18 Patent issue fees.

(a) Issue fee for issuing each original or reissue patent, except a design or plant patent:	
By a small entity (§ 1.9(f))	$280.00
By other than a small entity	560.00
(b) Issue fee for issuing a design patent:	
By a small entity (§ 1.9(f))	100.00
By other than a small entity	200.00
(c) Issue fee for issuing a plant patent:	
By a small entity (§ 1.9(f))	140.00
By other than a small entity	280.00

(35 U.S.C. 6, 41, Pub. L. 97–247)

5. Section 1.19 is amended by revising paragraphs (a)–(c), (e) and (f), and by adding new paragraphs (a)(7) and (h) through (j) to read as follows:

§ 1.19 Document supply fees.

The Patent and Trademark Office will supply copies of the following documents upon payment of the fees indicated:

(a) Uncertified copies of Office documents:	
(1) Printed copy of a patent, including a design patent, statutory invention registration, or defensive publication document, except color plant patent or color statutory invention registration	$1.50
(2) Printed copy of a plant patent or statutory invention registration in color	6.00
(3) Copy of patent application as filed	9.00
(4) Copy of patent file wrapper and contents, per 200 pages or a fraction thereof	75.00
(5) Copy of Office records, except as otherwise provided in this section, per page	.50
(6) Microfiche copy of microfiche, per microfiche	.50
(7) Copy of patent assignment record	1.50
(b) Certified copies of Office documents:	
(1) For certifying Office records, per certificate	3.00
(2) For a search of assignment records, abstract of title and certification, per patent	12.00
(c) Subscription services:	
(1) Subscription orders for printed copies of patents as issued, annual service charge for entry of order and ten subclasses	7.00
(2) For annual subscription to each additional subclass in addition to the ten covered by the fee under paragraph (c)(1) of this section, per subclass	.70
• • • • •	
(e) List of patents in subclass.	
(1) For list of all United States patents and statutory invention registrations in a subclass, per 100 numbers or fraction thereof	1.00
(2) For list of United States patents and statutory invention registrations in a subclass limited by date or number, per 50 numbers or fraction thereof	1.00
(f) Microfiche copy of patent file record	6.00
• • • • •	
(h) Uncertified copy of a non-United States patent document, per document	10.00
(i) To compare and certify copies made from Patent and Trademark Office records but not prepared by the Patent and Trademark Office, per copy of document	5.00
(j) Additional filing receipts:	
Duplicate	14.00
Corrected due to applicant error	14.00

(35 U.S.C. 6, 41, 157)

6. Section 1.20 is amended by revising paragraphs (a)–(l) to read as follows:

§ 1.20 Post-issuance fees.

(a) For providing a certificate of correction of applicant's mistake (§ 1.323)	$29.00
(b) Petition for correction of inventorship in patent (§ 1.324)	140.00
(c) For filing a request for reexamination (§ 1.510(a))	1,770.00
(d) For filing each statutory disclaimer (§ 1.321):	
By a small entity (§ 1.9(f))	28.00
By other than a small entity	56.00
(e) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant	225.00
(f) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant	445.00
(g) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after December 12, 1980 and before August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant	670.00
(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:	
By a small entity (§ 1.9(f))	225.00
By other than a small entity	450.00
(i) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 8 years; the fee is due by seven years and six months after the original grant:	
By a small entity (§ 1.9(f))	445.00
By other than a small entity	890.00
(j) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after August 27, 1982, in force beyond 12 years; the fee is due by eleven years and six months after the original grant:	
By a small entity (§ 1.9(f))	670.00
By other than a small entity	1,340.00
(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after December 12, 1980 and before August 27, 1982	110.00
(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after August 27, 1982:	
By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00
• • • • •	

(35 U.S.C. 6, 41, 302; Public Laws 96–517, 97–247, 98–622)

7. Section 1.21 is amended by revising paragraphs (a) through (i), and (k), and adding a new paragraph (m) to read as follows:

§ 1.21 Miscellaneous fees and charges.

The Patent and Trademark Office has established the following fees for the services indicated:

(a) Registration of attorneys and agents:	
(1) For admission to examination for registration to practice, fee payable upon application	$250.00
(2) On registration to practice	81.00
(3) For reinstatement to practice	9.00
(4) For certificate of good standing as an attorney or—	
agent	10.00
Suitable for framing	15.00
(5) For review of a decision of the Director of Enrollment and Discipline under § 10.2(c)	92.00
(6) For requesting regrading of an examination under § 10.7(c)	92.00
(b) Deposit accounts:	
(1) For establishing or reinstating a deposit account	8.00
(2) Service charge for each month when the balance at the end of the month is below $1,000	20.00
(3) Service charge for each month when the balance at the end of the month is below $300 for restricted subscription deposit accounts used exclusively for subscription order of patent copies as issued	20.00
(c) Disclosure document: For filing a disclosure document	6.00
(d) Delivery box: Local delivery box rental, per annum	43.00
(e) International-type search reports: For preparing an international-type search report of an international type search made at the time of the first action on the merits in a national patent application	28.00
(f) Search of Office records: For searching Patent and Trademark Office records for purposes not otherwise specified, per one-half hour or fraction thereof	14.00
(g) CopiShare card: Cost per copy	0.20
(h) Recording of documents:	
(1) For recording each assignment, agreement or other paper relating to the property in a patent or application	7.00
(2) Where a document to be recorded under paragraph (h)(1) of this section refers to more than one patent or application, for each additional patent or application	2.00
(i) Publication in *Official Gazette*: For publication in the *Official Gazette* of a notice of the availability of an application or a patent for licensing or sale, each application or patent	7.00
• • • • •	
(k) For items and services, that the Commissioner finds may be supplied, for which fees are not specified by statute or by this part, such charges as may be determined by the Commissioner with respect to each such item or service	[1]
• • • • •	
(m) For processing each check returned "unpaid" by a bank	25.00

[1] Actual cost.

(35 U.S.C. 6, 41)

8. Section 1.24 is proposed to be revised to read as follows:

§ 1.24 Coupons.

Coupons in denominations of one dollar for the purchase of trademark registrations and one dollar and fifty cents for the purchase of patents, designs, defensive publications, and statutory invention registrations are sold by the Patent and Trademark Office for the convenience of the general public; these coupons may not be used for any other purpose. The one dollar coupons are sold individually and in books of 50 with stubs for record for $50 and the one dollar and fifty cent coupons are sold individually and in books of 50 with stubs for record for $75. These coupons are good until used; they may be transferred but cannot be redeemed.

(35 U.S.C. 6)

9. Section 1.25, paragraph (a), is revised to read as follows:

§ 1.25 Deposit accounts.

(a) For the convenience of attorneys, and the general public in paying any fees due, in ordering services offered by the Office, copies of records, etc., deposit accounts may be established in the Patent and Trademark Office upon payment of the fee for establishing a deposit account (§ 1.21(b)(1)). A minimum deposit of $1,000 is required for paying any fees due or in ordering any services offered by the Office. However, a minimum deposit of $300 may be paid to establish a restricted subscription deposit account used exclusively for subscription order of patent copies as issued. At the end of each month, a deposit account statement will be rendered. A remittance must be made promptly upon receipt of the statement to cover the value of items or services charged to the account and thus restore the account to its established normal deposit. An amount sufficient to cover all fees, services, copies, etc., requested must always be on deposit. Charges to accounts with insufficient funds will not be accepted. A service charge (§ 1.21(b)(2)) will be assessed for each month that the balance at the end of the month is below $1,000. For restricted subscription deposit accounts, a service charge (§ 1.21(b)(3)) will be assessed for each month that the balance at the end of the month is below $300.

* * * * *

(35 U.S.C. 6)

10. Section 1.26 is amended by revising paragraph (c) to read as follows:

§1.26 Refunds.

* * * * *

(c) If the Commissioner decides not to institute a reexamination proceeding, a refund of $1,300 will be made to the requester of the proceeding. Reexamination requesters should indicate whether any refund should be made by check or by credit to a deposit account.

(35 U.S.C. 6, 41)

11. Section 1.53 is amended by revising paragraph (c) to read as follows:

§1.53 Serial number, filing date, and completion of application.

* * * * *

(c) If any application is filed without the specification or drawing required by paragraph (b) of this section, applicant will be so notified and given a time period with which to submit the omitted specification or drawing in order to obtain a filing date as of the date of filing of such submission. If the omission is not corrected within the time period set, the application will be returned or otherwise disposed of; the fee, if submitted, will be refunded less a $15.00 handling fee.

* * * * *

12. Section 1.297, paragraph (b), is revised to read as follows:

§1.297 Publication of statutory invention registration.

* * * * *

(b) Each statutory invention registration published will include a statement relating to the attributes of a statutory invention registration. The statement will read as follows:

A statutory invention registration is not a patent. It has the defensive attributes of a patent but does not have the enforceable attributes of a patent. No article or advertisement or the like may use the term patent, or any term suggestive of a patent, when referring to a statutory invention registration. For more specific information on the rights associated with a statutory invention registration see 35 U.S.C. 157.

(35 U.S.C. 6, 157)

13. Section 1.445 is amended by revising paragraph (a) to read as follows:

§ 1.445 International application filing and processing fees.

(a) The following fees and charges are established by the Patent and Trademark Office under the authority of 35 U.S.C. 376:

(1) A transmittal fee (see U.S.C. 361(d) and PCT Rule 14)	$170.00
(2) A search fee (see 35 U.S.C. 361(d) and PCT Rule 16) where:	
(i) No corresponding prior United States national application with fee has been filed	420.00
(ii) Corresponding prior United States national application with fee has been filed	250.00
(3) A supplemental search fee when required (see PCT Art. 17(3)(a) and PCT Rule 40.2), per additional invention	140.00
(4) The national fee, that is, the amount set forth as the filing fee under § 1.16 (a) through (d) credited, if requested at the time of filing, by an amount of $170.00 where an international search fee as required by paragraph (a)(2)(i) of this section has been paid on the corresponding international application to the United States Patent and Trademark Office as an International Searching Authority. Only one such credit is permitted based on a single international search fee.	
(5) Surcharge for filing the national fee or oath or declaration later than 20 months from the priority date:	
By a small entity (§ 1.9(f))	55.00
By other than a small entity	110.00
(6) For filing an English translation of an international application later than 20 months after the priority date (§ 1.61(b))	26.00

* * * * *

(35 U.S.C. 6, 376)

14. Section 1.446 is amended by removing paragraph (b):

§ 1.446 Refund of international application filing and processing fees.

* * * * *

(b) [Reserved]

(35 U.S.C. 6, 376)

Dated: July 31, 1985.

Donald J. Quigg,

Acting Commissioner of Patents and Trademarks.

[FR Doc. 85-18720 Filed 8-5-85; 8:45 am]

BILLING CODE 3510-16-M

PATENT NOTICES

Certificates of Correction for the Week of Aug. 20, 1985

Re. 31,898	4,473,103	4,497,039	4,507,653
D. 279,002	4,474,422	4,497,804	4,507,854
4,036,979	4,474,609	4,497,856	4,508,098
4,254,122	4,475,308	4,497,877	4,508,655
4,351,966	4,476,194	4,498,141	4,508,689
4,353,581	4,476,349	4,498,282	4,509,748
4,356,002	4,476,547	4,498,389	4,509,876
4,373,954	4,478,400	4,498,402	4,510,039
4,386,363	4,478,905	4,498,535	4,510,427
4,387,900	4,479,099	4,498,680	4,510,482
4,392,095	4,479,177	4,499,018	4,511,691
4,408,070	4,479,572	4,499,056	4,511,907
4,410,520	4,480,411	4,499,196	4,512,038
4,413,060	4,481,269	4,499,414	4,512,147
4,413,390	4,481,478	4,499,506	4,512,247
4,415,316	4,482,432	4,499,578	4,513,015
4,419,719	4,483,384	4,499,654	4,513,082
4,423,137	4,486,860	4,499,875	4,513,096
4,425,574	4,487,504	4,499,962	4,513,953
4,427,648	4,487,957	4,500,209	4,514,335
4,429,188	4,488,229	4,500,661	4,514,494
4,433,020	4,488,419	4,500,664	4,514,577
4,433,125	4,489,137	4,500,758	4,515,420
4,434,434	4,489,279	4,501,629	4,515,461
4,439,721	4,489,281	4,501,794	4,515,731
4,446,087	4,490,536	4,502,854	4,515,773
4,447,863	4,490,582	4,503,961	4,515,905
4,448,465	4,490,749	4,504,414	4,516,219
4,449,565	4,490,843	4,504,417	4,516,919
4,451,180	4,490,852	4,504,688	4,516,992
4,456,519	4,491,421	4,505,034	4,517,249
4,459,532	4,491,900	4,505,184	4,517,316
4,460,092	4,492,664	4,505,206	4,517,318
4,461,646	4,492,968	4,505,793	4,517,916
4,461,758	4,493,050	4,505,900	4,518,774
4,461,859	4,493,053	4,505,943	4,518,941
4,462,720	4,493,965	4,506,491	4,519,192
4,463,765	4,494,193	4,506,550	4,519,994
4,466,311	4,495,407	4,506,600	4,520,195
4,467,253	4,495,684	4,506,953	4,520,272
4,468,248	4,495,948	4,506,992	4,520,307
4,469,124	4,496,430	4,507,053	4,522,655
4,469,699	4,496,440	4,507,245	
4,469,767	4,496,508	4,507,399	
4,472,569	4,496,536	4,507,488	

Reference Collections of U.S. Patents Available for Public Use in Patent Depository Libraries

The following libraries, designated as Patent Depository Libraries, receive current issues of U.S. Patents and maintain collections of earlier issued patents. The scope of these collections varies from library to library, ranging from patents of only recent years to all or most of the patents issued since 1790.

These patent collections are open to public use and each of the Patent Depository Libraries, in addition, offers the publications of the U.S. Patent Classification System (e.g. The Manual of Classification, Index to the U.S. Patent Classification, Classification Definitions, etc.) and provides technical staff assistance in their use to aid the public in gaining effective access to information contained in patents. With one exception, as noted in the table following, the collections are organized in patent number sequence.

Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

Owing to variations in the scope of patent collections among the Patent Depository Libraries and in their hours of service to the public, anyone contemplating use of the patents at a particular library is advised to contact that library, in advance, about its collection and hours, so as to avert possible inconvenience.

State	*Name of Library*	*Telephone Contact*
Alabama	Auburn University Libraries	(205) 826-4500 Ext.21
	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
Indiana	Indianapolis-Marion County Public Library	(317) 269-1706
Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
Maryland	College Park: Engineering and Physical Sciences Library, University of Maryland	(301) 454-3037
Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
Missouri	Kansas City: Linda Hall Library	(816) 363-4600
	St. Louis Public Library	(314) 241-2288 Ext. 390
Montana	Butte: Montana College of Mineral Science and Technology Library	(406) 496-4283
Nebraska	Lincoln: University of Nebraska-Lincoln, Engineering Library	(402) 472-3411
Nevada	Reno: University of Nevada Library	(702) 784-6579
New Hampshire	Durham: University of New Hampshire Library	(603) 862-1777
New Jersey	Newark Public Library	(201) 733-7815
New Mexico	Albuquerque: University of New Mexico Library	(505) 277-5441
New York	Albany: New York State Library	(518) 474-5125
	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
Pennsylvania	Cambridge Springs: Alliance College Library	(814) 398-2098
	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
Tennessee	Memphis & Shelby County Public Library and Information Center	(901) 725-8876
	Nashville: Vanderbilt University Library	(615) 322-2775
Texas	Austin: McKinney Engineering Library, University of Texas.	(512) 471-1610
	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 20, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	11-30-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-11-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	7-16-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-11-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-19-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-11-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-15-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . Numbers 3,390,405 to 3,395,405, inclusive

Plant Patents . . . . . Numbers 2,817 to 2,824 inclusive

REISSUES

AUGUST 20, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,971
WHEEL UNBALANCE MEASUREMENT SYSTEM AND METHOD

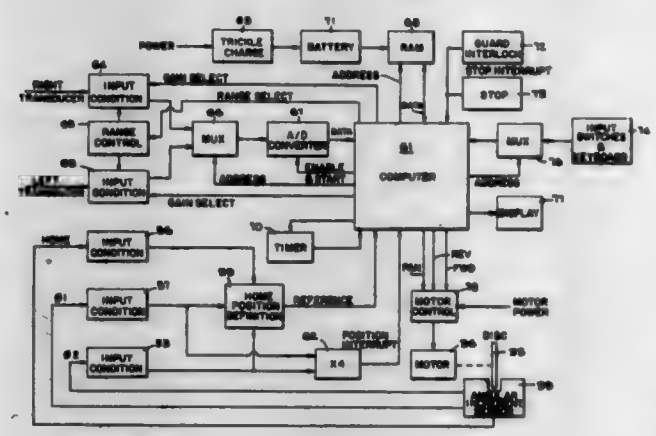
Kenneth S. Gold, Canoga Park, Calif., assignor to FMC Corporation, Chicago, Ill.

Original No. 4,285,240, dated Aug. 25, 1981, Ser. No. 111,159, Jan. 11, 1980. Application for reissue Jan. 26, 1983, Ser. No. 464,094

Int. Cl.[3] G01M *1/22*

U.S. Cl. 73—462

45 Claims



27. A method of calibrating apparatus for measuring unbalance in a body mounted on a spin shaft having an angular reference position relative to a supporting framework therefor and being coupled to a force transducer which provides an unbalance signal having an instantaneous magnitude indicative of a component of the unbalance force which results when the shaft is spun, comprising the steps of spinning the shaft with no load applied, digitizing the unbalance signal indicative of no load shaft unbalance, storing a plurality of digital sine and cosine representative quantities corresponding to predetermined angular increments of spin shaft rotation, modifying the digitized no load unbalance signal in accordance with the corresponding digital sine representative quantity at a plurality of the angular shaft increments while the shaft is being spun to obtain combined no load signals containing sine representative factors, modifying the digitized no load unbalance signal in accordance with the corresponding digital cosine representative quantity at a plurality of the angular shaft increments while the shaft is being spun to obtain combined no load signals containing cosine representative factors, summing the combined no load signals containing sine representative factors, summing the combined no load signals containing cosine representative factors, whereby shaft unbalance sums containing sine and cosine representative factors are obtained, and applying the shaft unbalance sums containing sine and cosine representative factors to the measured unbalance signals for the unbalanced body, thereby obtaining measured unbalance quantities corrected for shaft unbalance.

Re. 31,972
CASTING MOLD WITH CONSTRICTING DEVICE

John R. Nieman, Pekin, and Roger A. Worman, Peoria, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

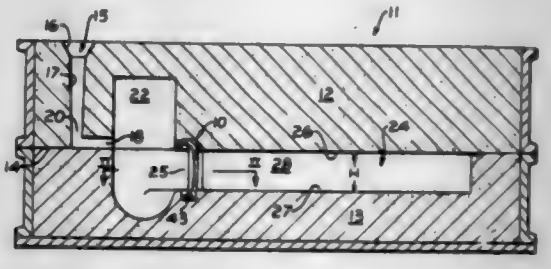
Original No. 3,831,662, dated Aug. 27, 1974, Ser. No. 317,522, Dec. 22, 1972. Application for reissue Oct. 6, 1980, Ser. No. 194,535

Int. Cl.[3] B22C *9/08*

U.S. Cl. 164—362

2 Claims

1. In a mold assembly for casting having an upper portion and a lower portion and a casting cavity defined by said upper and lower portions in which a casting is to be formed, said upper and lower portions mating along an interface plane, said casting cavity communicating with a riser cavity in which a riser is formed for feeding molten material to the casting cavity as the casting solidifies, means for forming a stricture between the riser cavity and casting cavity and for regulating the flow of molten metal from the riser cavity into the casting cavity, said means including a constriction device *formed from a fired ceramic material and* having aperture means therein, *a thin wall of about one-eighth inch in thickness, and a thickened ribbed peripheral portion, said aperture means being an aperture defined*



by a rounded edge of the thin wall and of a size sufficient in inhibiting the flow of molten metal from the riser cavity into the casting cavity to maintain the level of molten metal within the riser cavity about said aperture means, said device being interposed between the casting cavity and the riser cavity at the point of communication thereof, and *said thickened ribbed peripheral portion of* said device simultaneously engaging both said upper and lower portion of said mold when said portions are in mating engagement along said interface plane.

Re. 31,973
FLUIDIC FLOW SENSING AND CONTROL APPARATUS

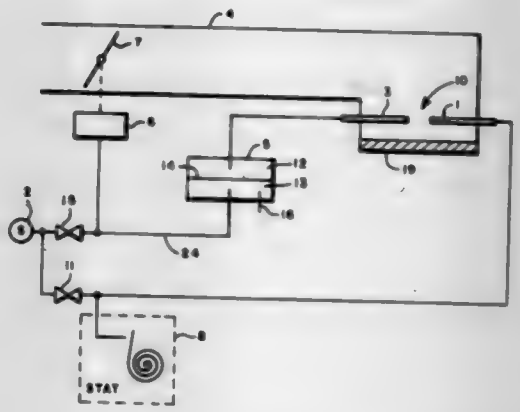
Richard C. Mott, Harwood Heights, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Original No. 4,182,486, dated Jan. 8, 1980, Ser. No. 770,471, Feb. 22, 1977. Continuation of Ser. No. 590,995, Jun. 27, 1975, abandoned. Application for reissue Apr. 22, 1983, Ser. No. 487,631

Int. Cl.[3] G01F *1/00*; F24F *11/04*

U.S. Cl. 236—49

25 Claims



1. A variable volume system for controlling the position of a damper to regulate a condition of air in a duct, said system comprising:

air velocity sensor means comprising first nozzle means and second nozzle means for directly measuring the velocity of air moving past said first and second nozzle means, said first and second nozzle means adapted to be arranged for sensing said condition of said air in said duct by passing at least a portion of said air past said first and second nozzle means, said first nozzle means arranged to issue a jet of

fluid and said second nozzle means arranged for receiving a portion of said fluid dependent upon said condition of said air;

fluid supply terminal means;

first connecting means connecting said terminal means to said first nozzle means, *said first connecting means including condition responsive pressure control means for regulating the fluid supplied to said first nozzle means to control the velocity of said jet of fluid;*

damper actuator means adapted to control the position of said damper; and,

second connecting means connecting said second nozzle means to said damper actuator means for varying the position of said damper dependent upon said condition of said air and dependent upon the velocity of said jet of fluid.

PLANT PATENTS

GRANTED AUGUST 20, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,537

HYBRID CHESTNUT TREE 'REVIVAL'

Robert D. Wallace, Rte. 3, Box 267, Alachua, Fla. 32615

Filed Nov. 4, 1983, Ser. No. 548,761
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—30 **1 Claim**

1. A new and distinct variety of Chestnut tree, substantially as illustrated and described, which is of medium size, vigorous, upright, with abundant foliage and large, glossy, elliptical leaves with dentate margins and late (post leaf appearance) flowering; the tree being a regular and heavy bearer of large and very sweet nuts in burrs that crack in mid-September and release the crop easily; the trees being especially characterized by a very high inherent resistance to the chestnut bark blight.

5,538

BEGONIA PLANT NAMED TANGO

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Nov. 1, 1983, Ser. No. 547,722
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant named Tango, as described and illustrated, and particularly characterized by its relatively large, full semiball shaped double flowers with ruffled edges; uniform deep peach-pink flower color; slow and compact growth habit; firm foliage; excellent propagation by leaf or stem cuttings, and by its excellent keeping qualities.

5,539

BEGONIA PLANT NAMED IMKE

James C. Mikkelsen, Ashtabula, Ohio, assignor to Mikkelsens, Inc., Ashtabula, Ohio

Filed Nov. 1, 1983, Ser. No. 547,723
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 **1 Claim**

1. A new and distinct cultivar of begonia plant named Imke, as described and illustrated, and particularly characterized by its medium pink flower color; double flower form, tending to nearly single in periods of low light; compact and vigorous growth habit, and floriferousness.

5,540

AFRICAN VIOLET PLANT NAMED CAPRICORN

Reinhold Holtkamp, Isselburg, Fed. Rep. of Germany, assignor to Gesellschaftsvertrag uber die Erfindergemeinschaft "Optimara", Rees Haffen, Fed. Rep. of Germany

Filed Sep. 23, 1983, Ser. No. 535,388
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 **1 Claim**

1. A new and distinct cultivar of African violet named Capricorn, as illustrated and described, and particularly characterized by its deep purple-red slightly waved single flowers, variegated leaves having a bright green leaf center, with the leaves being wavy and funnel shaped, and serrated at the edges; very floriferous flowering habit, with 7–9 upright and rigid flower stems being formed, each carrying up to 13 or more single flowers, and by its compact and full flower bouquet positioned centrally above the leaves.

5,541

VARIEGATED SCHEFFLERA PLANT 'JOSEF RESCH'

Josef Resch, 5699 State Rd. 775, Venice, Fla. 33595

Filed Jan. 10, 1983, Ser. No. 456,980
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—88 **1 Claim**

1. A new and distinct variety of Schefflera plant of the species *Brassaia actinophylla* substantially as herein shown and described, characterized particularly as to novelty by the overall variegation of leaves, stems, and trunk from mimosa to green, close noded position of stems and upright rapid growth with leaves of leathery semi-gloss appearance on the top side and leathery matte appearance on the underside, and with a preponderance of leaf stems at the top portion and the intermediary portion of the plant extending umbrella-like with leaves hanging on towards the lower portion of the plant.

PATENTS

GRANTED AUG. 20, 1985

ERRATA

For CLASS	See PATENT NO.
623–002	4,535,483
623–002	4,535,484
623–016	4,535,485
623–022	4,535,486
623–022	4,535,487
623–006	4,535,488
604–051	4,535,773
114–103	4,535,825
290–040	4,536,126
446–102	4,536,162
514–007	4,536,395
514–002	4,536,396
514–011	4,536,397
514–043	4,536,398
514–063	4,536,399
514–120	4,536,400
514–173	4,536,401
514–443	4,536,402
514–483	4,536,403
514–627	4,536,404
514–781	4,536,405

PATENTS

GRANTED AUGUST 20, 1985

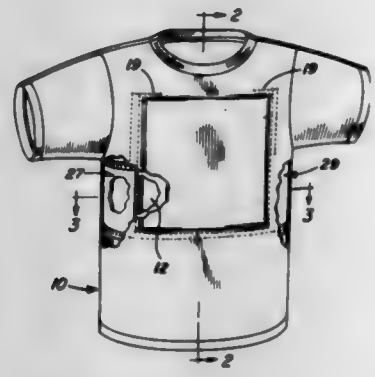
GENERAL AND MECHANICAL

4,535,477
DRY SUIT
Franklyn K. Musto; Hugh E. Bourn; John Buchanan, and Duncan A. Kay, all of Essex, England, assignors to Musto & Hyde Accessories Ltd., Essex, England
Filed Mar. 28, 1984, Ser. No. 594,319
Claims priority, application United Kingdom, Mar. 29, 1983, 8308636
Int. Cl.[3] B63C *11/04*
U.S. Cl. 2—2.1 R **5 Claims**



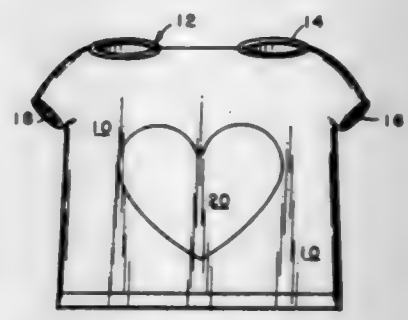
1. A two-piece dry suit comprising top and bottom suit pieces having respective sealing bands for producing a rolled seal between said suit pieces at the waist of the suit, and a part securely fastened to one of said pieces at a position to one side of the rolled seal, said part being adapted to overlie and extend around said rolled seal so as to terminate between said rolled seal and the other of said pieces, and including means to hold said part in firm engagement with said other piece, whereby said part retains the seal securely in the rolled condition without any additional securing device being applied to the suit.

4,535,478
BODY ARMOR
Tim T. Züfle, 230 Lafayette St., Gretna, La. 70053
Filed May 20, 1983, Ser. No. 496,618
Int. Cl.[3] F41H *1/02*
U.S. Cl. 2—2.5 **9 Claims**



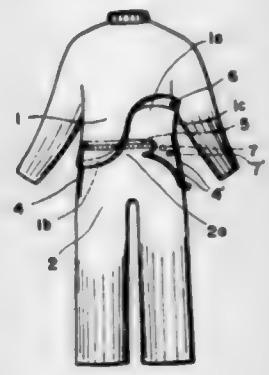
1. An article of body armor comprising a standard-style undergarment such as a T-shirt having front and rear panels defining a neck opening, a first piece of material seamed along bottom and side edges thereof to an inner surface of the front panel so as to provide a first open-topped pocket in the front of the undergarment covering a substantial area of the front panel, a second piece of material seamed along bottom and side edges thereof to an inner surface of the rear panel so as to provide a second open-topped pocket in the rear of the undergarment covering a substantial area of the rear panel, and first and second armor insert panels of soft armor construction comprising plural layers of flexible sheet material for selective receipt in and removal from the respective pockets through the open tops thereof.

4,535,479
TWO PERSON GARMENT
M. Fatima M. Paula, P.O. Box 224, Dorchester, Mass. 02122
Filed Oct. 29, 1984, Ser. No. 665,613
Int. Cl.[3] A41B *1/12*
U.S. Cl. 2—69.5 **5 Claims**



1. A single garment for covering the upper bodies of two persons comprising a fabric body covering said two persons in a single wrap in the manner of a T-shirt, sweatshirt, beach cover, robe or jacket, means forming two neck openings spaced far enough from each other to fit two persons comfortably, means forming one left arm opening, and means forming one right arm opening respectively at each side of the body.

4,535,480
ONE-PIECE GARMENT
Hirohiko Kunieda, Ogaki, Japan, assignor to Hinomaru Seni Co., Ltd., Ogaki, Japan
Filed Jan. 5, 1984, Ser. No. 567,983
Claims priority, application Japan, Oct. 4, 1983, 58-154609
Int. Cl.[3] A41D *1/06*
U.S. Cl. 2—079 **5 Claims**



1. A one-piece garment comprising:
an opening formed in a portion of the back near the small of the back,
a seat flap provided at the side of said opening adjacent to the lower half of said back, said seat flap having an upper edge extending to a portion near said small of the back and both lateral side edges openably connected to the front, said seat flap being provided at its upper end portion with a horizontally stretchable rubber belt;
a hanging flap extending from the top of said opening adjacent to the upper half of the back and having a point of separation from said front positioned above the upper edge of said seat flap, said hanging flap having an enlarged lower end extending beyond both side edges of said seat flap to lap said seat flap; and

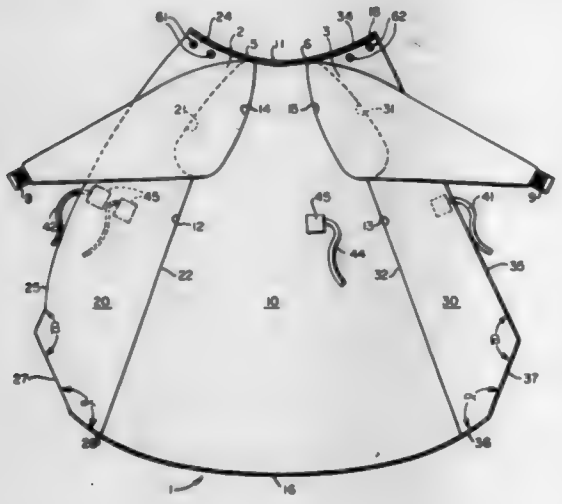
a first set of fasteners attached to the enlarged lower end of said hanging flap, and a second set of fasteners which mate with the first set of fasteners, said second set of fasteners being attached to both sides of the front of the garment at locations corresponding to said enlarged lower end of said hanging flap.

4,535,481

SURGICAL GOWN FOR HIGH FLUID PROCEDURES

Dawn Ruth-Larson, Norcross, Ga., and James S. Nels, Montclair, N.J., assignors to Kimberly-Clark Corporation, Neenah, Wis.

Filed Jul. 12, 1984, Ser. No. 630,475
Int. Cl.[3] A41B *9/00*
U.S. Cl. 2—114 **12 Claims**



1. A back-opening gown of nonwoven material comprising:
a pair of sleeves;
a front panel joined at its upper lateral edges to said sleeves, said front panel flaring pronouncedly below said sleeves;
a pair of side panels attached to said sleeves and to the lateral edges of said front panel below said sleeves, each of said side panels having a lower opposed corner section, the edge of said corner section forming an obtuse angle with respect to the bottom edge of said front panel in the range of about 125 to about 145 degrees; and
back closure means, the gown being constructed so that the upper portion of said gown conforms substantially to the torso of the wearer, said gown extending from the neck to the ankles of a wearer and said flaring front panel providing girth to the lower portion of said gown to permit the wearer to spread his legs while in a seated position without being constrained by the gown material, and the angled edges of the corner sections causing the edges of the sections to be located clear of a floor while the wearer is seated.

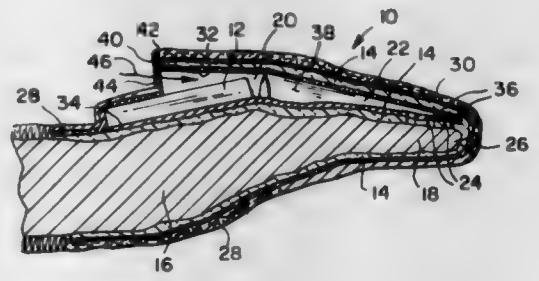
4,535,482

HEATED GLOVE

George Spector, c/o George Spector, 3615 Woolworth Bldg., 233 Broadway, and Lesley Spector, 3615 Woolworth Bldg., 233 Broadway, both of New York, N.Y. 10007

Filed Jan. 24, 1983, Ser. No. 460,750
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—160 **5 Claims**

1. A he ..ed glove for utilizing a hand warmer which comprises:
(a) an inner layer of insulated material placed around a hand and fingers, the inner layer forming a sealable top pocket to hold the hand warmer and five ducts, each duct extending from the top pocket over each finger and having a plurality of holes above each finger tip;
(b) a middle layer of waterproof material placed around the inner layer;
(c) an outer layer of leather material placed around the middle layer to form the heated glove; and



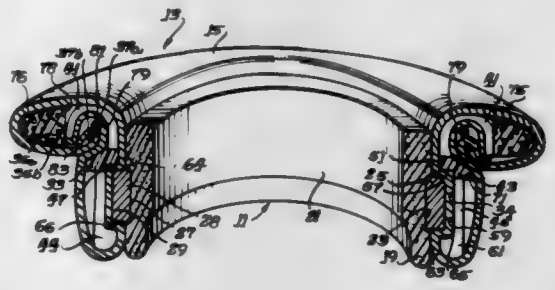
(d) means for allowing heat to travel from the hand warmer to top of each finger tip of the hand in the heated glove.

4,535,483

SUTURE RINGS FOR HEART VALVES

Jerome J. Klawitter, Austin, Tex., and Harry W. Cromie, Pittsburgh, Pa., assignors to Hemex, Inc., Austin, Tex.

Filed Jan. 17, 1983, Ser. No. 458,618
Int. Cl.[3] A61F *1/22*
U.S. Cl. 623—2 **20 Claims**



2. A suture ring for a heart valve having a valve body providing a blood flow passageway, occluder means mounted within said valve body for opening and closing the passageway and a protrusion around the valve body having first and second end surfaces, the suture ring comprising
a retainer ring having an interior surface proportioned to surround said protrusion, inwardly extending means for engaging said first end surface of the protrusion and a deformable end portion for engaging the second end surface to lock said retainer ring onto the protrusion,
a fabric tube,
band means for securing the ends of said fabric tube to said retainer ring so that exposed surfaces of said retainer ring when it is locked onto said protrusion are fully covered by said fabric tube, said band means comprising a first band for securing one end of said fabric tube to said retainer ring and a second band for securing the other end of said fabric tube to said retianer ring, and
deformable means which forms a part of said retainer ring for holding at least said first band in permanent position.

4,535,484

CARDIAC VALVULAR PROSTHESIS OF MECHANICAL TYPE PROVIDED WITH TWO FREELY MOVING LEAFLETS

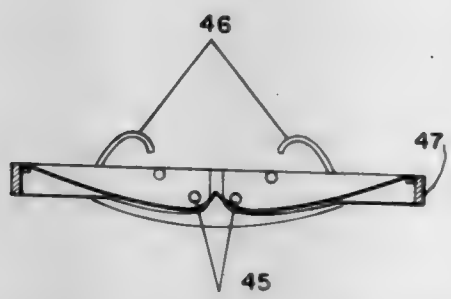
Walter Marconi, Via A. Barilatti no. 72, 00144 Roma, Italy

Filed Mar. 5, 1982, Ser. No. 355,129
Claims priority, application Italy, Mar. 17, 1981, 48040 A/81; Dec. 11, 1981, 49893 A/81
Int. Cl.[3] A61F *1/22*
U.S. Cl. 623—2 **10 Claims**

1. A mechanical cardiac valve prosthesis comprising:
(a) a housing ring forming a flow orifice;
(b) a sewing ring on the external surface of said housing ring;
(c) a pair of leaflets with edges free of projections placed in said housing, each leaflet guided by a rotation fulcrum structure and by a constraint structure on said housing

ring so that it moves freely from an opened to a closed position;

(d) said housing ring having on its internal surface curved



grooves that engage the edges of each of said leaflets and imparts mixed rotation and translational movement to said leaflets as they move from said open to said closed position.

4,535,485

POLYMERIC ACRYLIC PROTHESIS

Arthur Ashman, New York, N.Y., and Paul F. Bruins, Austin, Tex., assignors to Medical Biological Sciences, Inc., New York, N.Y.

Filed Mar. 12, 1982, Ser. No. 357,739
Int. Cl.³ A61F *1/00, 5/04*
U.S. Cl. 623—16 **30 Claims**

1. A packing material for forming in vivo prosthetic implants for hard tissue, the packing material comprising disjoint micron sized particles, each particle having an inner core comprised of a first biologically-compatible polymeric material and having an outer coating generally surrounding the inner core, the outer coating being comprised of a second biologically-compatible polymeric material, the second polymeric material being hydrophilic and having a composition different from the composition of the first polymeric material, each particle incorporating a sufficient quantity of barium sulfate to render a prosthetic implant formed of a compacted mass of the particles visible in an X-ray radiograph, the particles being of a size to permit a mass of the disjoint particles to be packed in a body cavity having at least one surface comprised of a hard tissue to form a prosthetic implant for the hard tissue with interstices between compacted particles of the prosthetic implant forming pores into which tissue can grow.

4,535,486

LOW FRICTION BEARING SURFACES AND STRUCTURES PARTICULARLY FOR ARTIFICIAL PROSTHETIC JOINTS

Jack Roberts, Farmington Hills, Mich., and Robert L. Johnson, Edina, Minn., assignors to Rensselaer Polytechnic Institute, Troy, N.Y.

Filed May 18, 1981, Ser. No. 264,950
Int. Cl.³ A61F *1/04*
U.S. Cl. 623—22 **3 Claims**

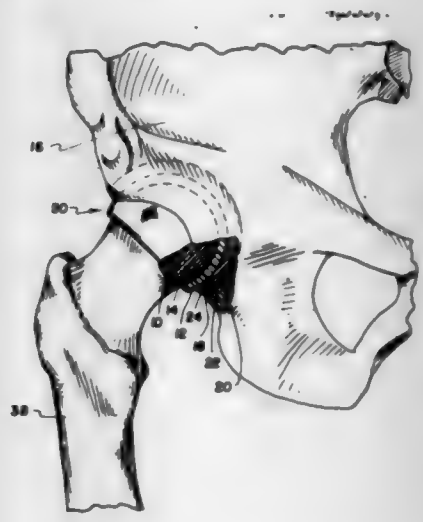
1. A prosthetic joint for engaging a bone head in a body socket, the bone head having a trabecular structure and a modulus of elasticity, comprising:

a cup adapted to be secured in the body socket; and

a shell having a matrix of cured epoxy resin adapted to be secured over the bone head and slidably engaged in said cup;

said shell having a composite coating in sliding engagement with said cup which is made of from 2 to 30 parts by weight epoxy, from 1 to 5 parts by weight Al_2O_3 and from 1 to 10 parts by weight metallic substance chosen from the group consisting of Cu and stainless steel;

said epoxy matrix including reinforcing glass fibers embedded therein and oriented with the trabecular structure of the bone head, said glass fibers being provided in an amount to



cause said matrix to mimic the modulus of elasticity of the bone head.

4,535,487

ENDOPROSTHESIS SHAFT

Friedrich J. Esper, Leonberg, and Walter Gohl, Aidlingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jan. 13, 1984, Ser. No. 570,663
Claims priority, application Fed. Rep. of Germany, Jan. 18, 1983, 3301415
Int. Cl.³ A61F *1/00*
U.S. Cl. 623—22 **12 Claims**



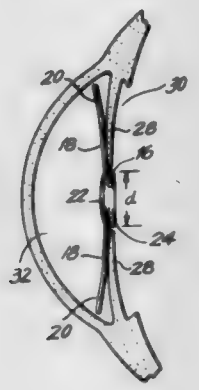
1. Endoprosthesis shaft for a hip joint having tension-release effect, said shaft having front, back, medial and lateral surfaces and being tapered for fitting into a bore in the top of a femur, said shaft having an oblique collar for fitting over the resected surface of the femur; and

said lateral surface including tension force resisting means along a portion of the length thereof, said medial surface including compression force resisting means along the length thereof, said front and back surfaces including load-bearing means along the length thereof, said front and back surfaces further including a plurality of transversely formed, longitudinally spaced apart cavities located solely in the upper portion of said shaft adjacent said collar, each of said cavities being separated by transverse ribs, wherein said ribs and cavities are continuous about the juncture of said front, back and lateral surfaces and terminate in spaced apart relation on said lateral surface, said lateral surface having a continuous, longitudinally extending rib separating said ribs and cavities and terminating in the region of said tension resisting force means whereby said cavities accept tissue ingrowth thereby relieving tensional forces tending to shift said shaft relative to the bone.

4,535,488
ANTERIOR-POSTERIOR CHAMBER INTRAOCULAR LENS

Heskel M. Haddad, 1200 Fifth Ave., New York, N.Y. 10029

Filed Sep. 30, 1982, Ser. No. 431,490
Int. Cl.[3] A61F 1/16, 1/24
U.S. Cl. 623—6 6 Claims



1. An intraocular lens implant device for an eye having anterior and posterior chambers and an iris partially separating said chambers, said iris having a pupil opening therethrough, comprising:

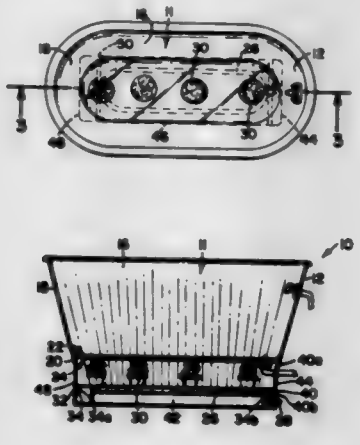
a lens dimensioned to fit within said pupil opening; and

two support legs each attached at one end to said lens and extending laterally from said lens, said support legs being adapted to engage the tissues of said eye entirely in said anterior chamber and being adapted to hold said lens without use of sutures or pegs in a position within said eye at which said lens is aligned with said pupil opening and extends through said pupil opening in part into said posterior chamber, at least one leg being adapted to make contact with a surface of the iris in the anterior chamber, said at least one leg being cambered in transverse cross-section, said camber being adapted to reduce the area of contact between the iris surface and said at least one leg, whereby said lens implant device may be implanted through a small corneal incision.

4,535,489
DECORATIVE BATHTUB

Carol M. Elkins, 4728 Elliot Ave., S., Minneapolis, Minn. 55407

Filed Dec. 8, 1983, Ser. No. 559,388
Int. Cl.[3] A61H 3/02
U.S. Cl. 4—546 9 Claims



1. An elevated bathtub comprising:

(a) a tub having front, rear, and side walls, and a transparent bottom wall having a top and bottom surface, the transparent bottom wall being positioned such that the bottom wall can be illuminated from below;

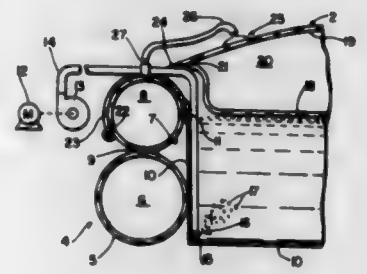
(b) means for illuminating the transparent bottom wall from below; and

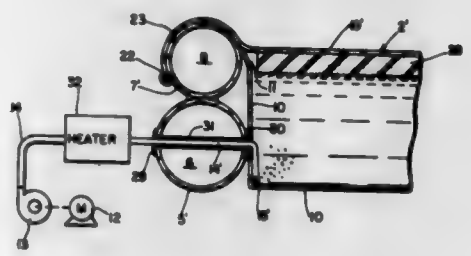
(c) means for gaining access to the area beneath the transparent bottom wall so as to permit placement, removal and rearrangement of any articles contained therein.

4,535,490
INFLATABLE HOT TUB WITH COVER

Robert B. Wright, Akron, Ohio, assignor to The B. F. Goodrich Company, New York, N.Y.

Filed Oct. 17, 1983, Ser. No. 542,847
Int. Cl.[3] A47K 3/06
U.S. Cl. 4—585 15 Claims





1. An inflatable hot tub, comprising:

an endless inflatable tube composed of flexible sheet material and having inflation coupling means for introducing pressurized gas to its interior for inflating the same, said tube extending in a closed horizontal loop;

a liquid impervious sheet material bottom extending horizontally and generally coextensive with the interior area of said tube loop;

means joining said bottom around its entire periphery to said tube in a liquid impervious manner to form therewith an open top tub for containing liquid;

a sheet material cover generally coextensive with the open top area of said tub, and including means for securing said cover in a manually releasable manner around the entire top periphery of said tube and heat insulating means secured to said sheet cover within the open top area of said tub;

a rigid pipe extending around generally the entire periphery of the inside of said hot tub adjacent said bottom, and having a plurality of nozzle means spaced along its length for ejecting a stream of gas bubbles into said hot tub when pressurized; and means supplying pressurized air to said tube.

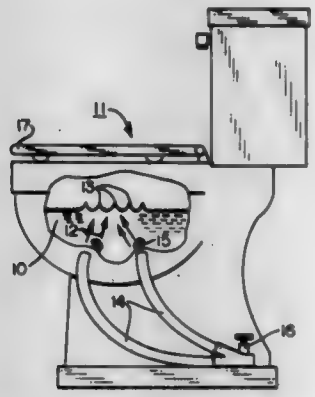
4,535,491
COMMODE ANTI-SPLASH DEVICE AND METHOD

Scott C. Young, 203-B Wilson St., Greensboro, N.C. 27401

Filed Apr. 20, 1984, Ser. No. 602,528
Int. Cl.[3] E03D 9/08
U.S. Cl. 4—658 5 Claims

1. An anti-splash device for use with a commode having a bowl and a quantity of water for receiving human waste, said water and waste remaining in the bowl until flushed, the anti-splash device comprising: agitating means, said agitating means including a supply nozzle for directing a stream of liquid through the bowl water, said agitating means positioned proxi-

mate said bowl for agitating said bowl water to maintain it in a turbulent state to prevent splash and to reduce the noise of



the waste contacting the water while the water is contained in the bowl prior to flushing.

4,535,492

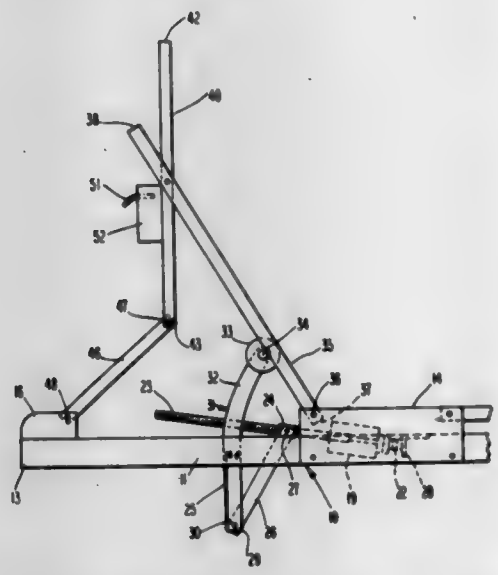
PILLOW BED MECHANISM

Albert E. Sebest, Lancaster, Pa., assignor to Spectro Industries, Inc., Jenkintown, Pa.

Filed Dec. 16, 1982, Ser. No. 450,264

Int. Cl.³ A61G 7/00

U.S. Cl. 5—68 **4 Claims**



1. An improved body supporting assembly wherein a horizontal frame member has a back-support section pivotally connected to head-rest section with a drive means for providing a force for raising and lowering said back-support section and said head-rest section from horizontal positions to angularly inclined positions relative to said frame, the improvement comprising linking said head-rest section to said back-support section at a predetermined point and deflecting said drive means to allow independent inclined movement of said head-rest section relative to the horizontal position of said back-support section.

4,535,493

CRIB DROP SIDE LATCH

Edmond P. Guillot, Putnam, Conn., assignor to Gem Industries, Inc., Gardner, Mass.

Filed Apr. 27, 1984, Ser. No. 604,731

Int. Cl.³ A47D 7/02

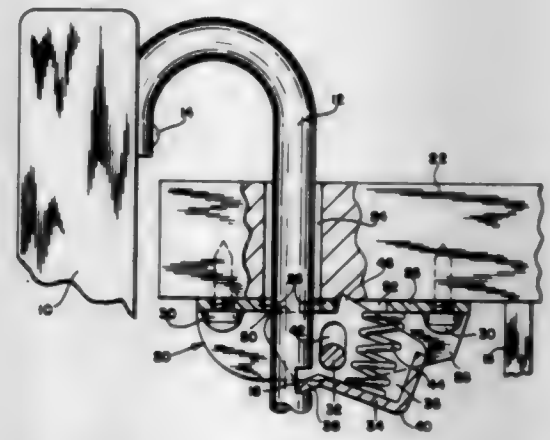
U.S. Cl. 5—100 **9 Claims**

1. A crib having a drop side, a drop rod for the drop side, a notch in the rod, a double acting latch therefor,

said latch comprising a first part fixed with relation to the drop side,

a second part secured to but movable on the first part, a projection on the second part for selective engagement in the drop rod notch,

means holding the second part with the projection in the notch so that the drop side is fixed vertically on the drop rod,



said first part being movable upwardly with the drop side releasing said means so that the second part may be moved to release the projection from the notch and the drop side lowered said means including a second projection bearing on a portion of the drop side and held immobile thereby until the drop side is moved upwardly.

4,535,494

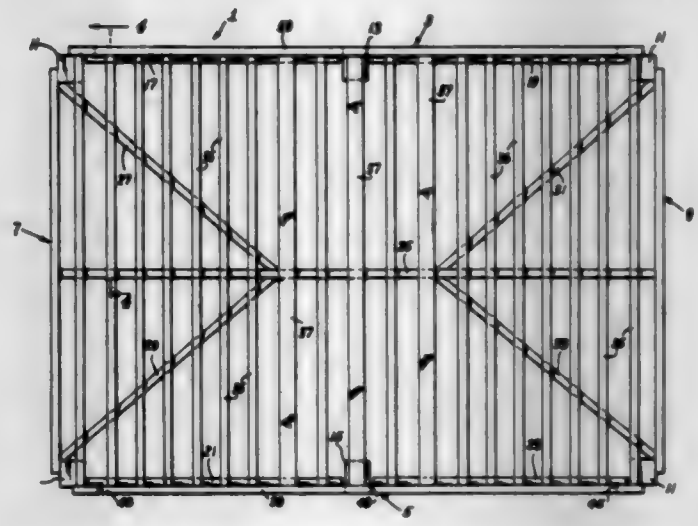
SLAT TYPE MATTRESS FOUNDATION

Arthur Diamonstein, Norfolk, Va., assignor to Paramount Industrial Companies, Inc., Norfolk, Va.

Filed Jan. 6, 1984, Ser. No. 568,612

Int. Cl.³ A47C 23/06

U.S. Cl. 5—400 **7 Claims**



1. A mattress foundation comprising:

(a) A rectangular frame defined by a pair of longitudinal side assemblies, a pair of transverse end assemblies, and a longitudinal center board having its opposite ends secured to the end assemblies;

(b) a support surface defined substantially by a plurality of primary and secondary slats extending transverely across the frame and spaced longitudinally therealong;

(c) each primary slat being of a first width and each secondary slat being of a second width, with the first width being narrower than the second width;

(d) the secondary slats being confined to substantially the longitudinal one-third portion of the frame; and

(e) a pair of braces extending from the corresponding corners of each end assembly and converging to the center board at two points substantially adjacent the opposite sides of the longitudinal central one-third portion of the frame.

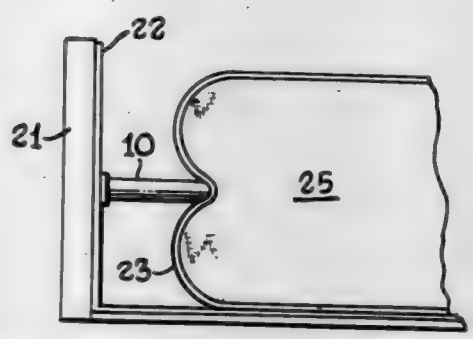
4,535,495
BACK REST CUSHION
Peter M. Oldfield, Sausalito, Calif., assignor to Easy Ride, Inc., San Mateo, Calif.
Filed Jul. 25, 1983, Ser. No. 517,076
Int. Cl.[3] A47C 7/02
U.S. Cl. 5—432 6 Claims



1. A therapeutic back support comprising:
a unitary cushion of resilient material, having a forward back engaging side,
said cushion having a lower end adapted to rest on a support surface for a seated person and having an upper end extending above the thoracic vertebrae,
said cushion having a width about equal to the width of a human back and being symmetrical about a vertical central plane,
the back engaging side of said cushion having merging concave and convex surfaces,
said cushion being formed to a first convex surface adjacent to the lower end and centrally thereof for abutting the coccyx of the person and having concave surfaces laterally outwardly of said first convex surface, merging with the first convex surface and positioned for receiving the upper buttocks of the seated person,
at approximately a lower-central location the cushion being formed with a second convex surface positioned to abut the lumbosacral region of the person's spine across the lower back and spaced from the first convex surface with a concave surface interposed therebetween,
the upper end of the cushion being formed with a central third convex surface for abutting the thoracic region of the person's spine and spaced above the second convex portion by a merging concave surface, and
the cushion being cut away to left and right of the central third convex surface to provide open space to freely accommodate movement of the upper torso, arms and shoulder blades of the seated person.

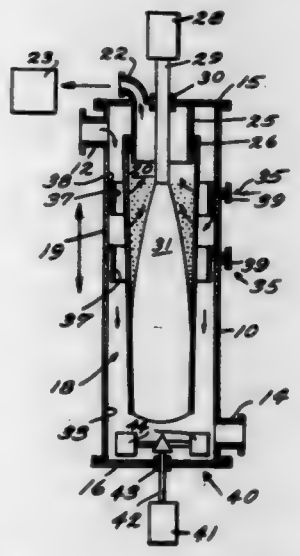
4,535,496
WATER BED BAR
Dennis D. Parker, 6435 SE. Clatsop, Portland, Oreg. 97206
Filed Nov. 8, 1983, Ser. No. 549,717
Int. Cl.[3] A47C 27/08
U.S. Cl. 5—451 10 Claims

1. An apparatus in combination with a water bed comprising; a bed frame; a bed liner, a bedsheet, and a water bladder having a filling closure whereby the apparatus is employed to facilitate the insertion of the bedsheet between the water bladder and the bed liner, and wherein the apparatus comprises;
an elongated cylindrical unit,
a contact surface element provided on one end of the cylindrical unit, and adapted to contact the bedsheet, and



a support surface element provided on the other end of the elongated cylindrical unit, and adapted to contact the bed liner inside the bed frame, to maintain the said contact surface in contact with the bed sheet.

4,535,497
METHOD FOR TREATMENT OF SUSPENSIONS IN MOVEMENT
Finn Jacobsen, Karlstad, Sweden, assignor to Kamyr AB, Karlstad, Sweden
Division of Ser. No. 223,741, Jan. 9, 1981, Pat. No. 4,368,628.
This application Aug. 18, 1982, Ser. No. 409,031
Claims priority, application Sweden, Jan. 10, 1980, 8000196; Jan. 10, 1980, 8000198
Int. Cl.[3] D21D 5/02
U.S. Cl. 8—156 4 Claims



1. A method of treating a suspension flowing through a container in a first direction, the container elongated in a dimension coextensive with said first direction and having mounted therein a screen body reciprocal in the dimension of elongation of the container both in the first direction and in a second direction opposite the first direction, the screen body having a perforated screen surface defining a screen cavity volume therewithin, said method comprising the steps of:
(a) introducing suspension under a motive force into the container inlet and withdrawing it from the container outlet so that it flows in the first direction within the container;
(b) effecting movement of the screen body in the first and second directions within the container to extract some of the liquid from the moving suspension within the container so that it flows into the screen cavity volume;
(c) withdrawing the liquid passing into the screen cavity volume from that volume to an area remote from the container; and
(d) introducing treatment liquid into the container, from an interior sidewall of the container, so that during liquid extraction with the screen body a crosswise flow of treat-

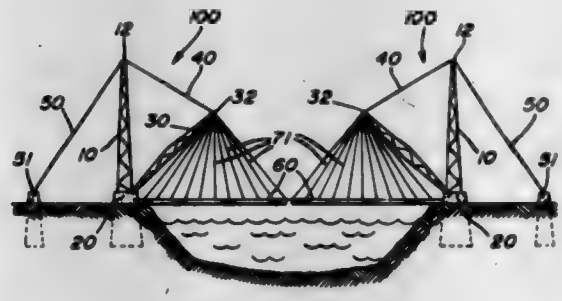
ment liquid is obtained through substantially all suspension flowing through the container; and wherein at the points of treatment liquid introduction a baffle plate is provided directing the treatment liquid in the first direction, and substantially evenly around the entire circumference of the container, and wherein step (d) is practiced by introduced treatment liquid into the container adjacent each baffle plate so that the treatment liquid initially has a velocity component in the first direction and is introduced substantially evenly around the circumference of the container.

4,535,498

SUSPENSION BRIDGE

David R. Webster, 320 Victoria Ave., Westmount, Quebec, Canada H3Z 2M8

Filed Apr. 14, 1983, Ser. No. 485,041
Int. Cl.[3] E01D *11/00*
U.S. Cl. 14—18 23 Claims



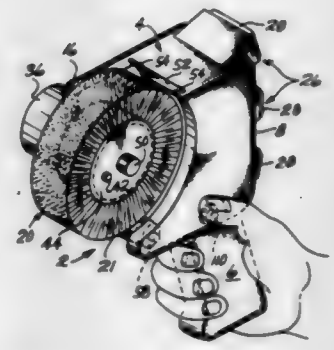
1. A bridge structure comprising in combination:
(a) a first elongated compression member having one end thereof supported upon a first base and the other free end thereof disposed upwardly of said first base;
(b) a first elongated boom-like compression member supported upon one end thereof, said first elongated boom-like compression member being disposed angularly relative to said first elongated compression member whereby the free ends of said first elongated compression member and said first elongated boom-like compression member are spaced one from another in a first vertical plane;
(c) a first tension tie means having a fixed length extending between said free ends of said first elongated compression member and said first elongated boom-like compression member, whereby to connectedly support said first elongated boom-like compression member off said first elongated compression member, a second tension tie means having a fixed length extending between said free end of said first elongated compression member and a first anchor point spaced from said first base whereby an acute angle is formed between said second tension tie means and said first elongated compression member;
(d) a second elongated compression member, being similar to said first elongated compression member, said second elongated compression member having one end thereof supported upon a second base and the other free end thereof disposed upwardly of said second base in similar manner to said first elongated compression member, said first and second bases being positioned in selected spaced relation one to another;
(e) a second elongated boom-like compression member supported upon one end thereof, said second elongated boom-like compression member being similarly angularly disposed, as said first elongated boom-like compression member, relative to said second elongated compression member whereby the free ends of said second elongated compression member and said second elongated boom-like compression member are spaced one from another in a second vertical plane substantially parallel spaced from said first vertical plane;
(f) a third tension tie means having a fixed length, similar to said first tension tie means, said third tension tie means extending between said free ends of said second elongated compression member and said second elongated boom-like compression member, whereby to connectedly support said second elongated boom-like compression member off said second elongated compression member, fourth tension tie means having a fixed length, similar to said second tension tie means, said fourth tension means extending between said free end of said second elongated compression member to a second anchor point spaced from said second base whereby an acute angle is formed between said fourth tension tie means and said second elongated compression member; and
(g) an elongated traffic deck structure, comprising a rigid deck truss, disposed below and longitudinally of said first and second elongated boom-like compression members and supported from above via respectively fifth and sixth tension tie means connected between the free ends of said first and second elongated boom-like compression members and said deck structure, said fifth and sixth tension tie means lying respectively in said first and second vertical planes and comprising a plurality of elongated tension members depending in fan-like configuration toward said deck structure.

4,535,499

SHOE POLISHING DEVICE AND SERVO-APPLICATOR MEANS FOR USE THEREIN

Chun S. Cho, 554 Winslow Way East, Winslow, Wash. 98110

Filed Feb. 23, 1984, Ser. No. 583,010
Int. Cl.[3] A47L *23/06*
U.S. Cl. 15—24 20 Claims



1. A shoe polishing device comprising a support having a rotor rotatably mounted thereon which is adapted so that an applicator wheel with a cylindrical outline can be mounted on the same for the transfer of polishing compound to the shoe at the outline of the wheel, servo-applicator means for applying a polishing compound to the outline of the wheel for transfer to the shoe, including pushbutton-like carrier means which are mounted on the support to reciprocate along a parallel to a line intersecting the outline of the wheel, and holder means which are mounted on the carrier means to reciprocate in relation to the carrier means along the line, and adapted to support an elongated stick-like body of polishing compound thereon, the body of compound being supported on the holder means so that it projects along the line with the tip thereof oriented toward the outline of the wheel, and there being means operable to position the holder means and thus the tip of the compound with respect to the carrier means along the line, yieldable biasing means which are operable to displace the carrier means in the direction relatively away from the outline of the wheel, and restrainer means which are operable to restrain the carrier means in a position on the support in which, when the holder means has assumed a predetermined position on the line, the body of compound will assume in turn an armed condition in which the tip of it is spaced apart from the outline of the wheel by a predetermined distance therebetween, the carrier means being displaceable the length of said distance in opposition to the bias thereon, to engage the tip of the com-

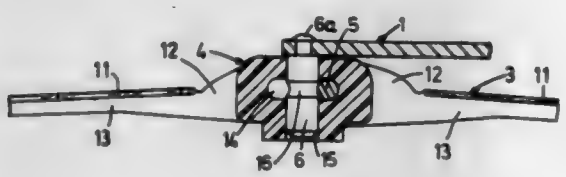
pound with the outline of the wheel for transfer of the compound thereto.

4,535,500

CONNECTING DEVICE FOR WIPER BLADES

José Verton, Saint-Vincent, and Alain Henrion, Saint-Mard, both of Belgium, assignors to Champion Spark Plug S.A., Diegem, Belgium

Filed Jun. 12, 1984, Ser. No. 619,885
Claims priority, application France, Jun. 27, 1983, 83 10575
Int. Cl.[3] B60S *1/32, 1/40*
U.S. Cl. 15—250.23 10 Claims



1. A connecting device (4,5,6,19,5,6) for connecting a wiper blade (3,9) to a wiper arm (1), wherein the wiper blade (3,9) is capable of rotating about a first pivot pin (6) attached to the wiper arm (1) and about a second pivot pin (5) attached to the superstructure (3) of the wiper blade (3,9) and extending substantially perpendicularly with respect to the first pivot pin (6) characterized in that:

the body (4,19) of the device comprises a seat (15,25) for the first pivot pin (6) which has the form of a straight circular cylinder and a seat (14,24) for the second pivot pin (5) which has the form of a T or L-shaped straight cylinder; and

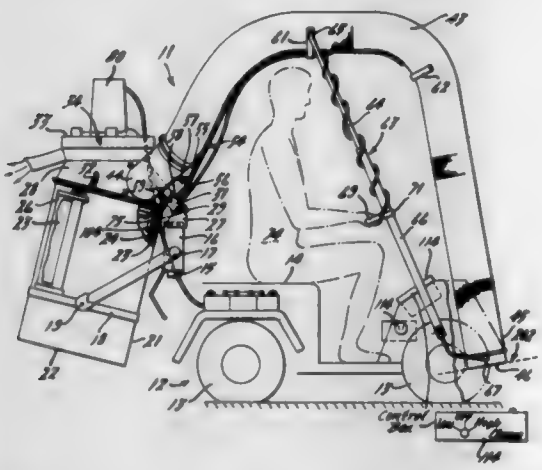
the first pivot pin (6) of the device includes an annular recess (16) capable of cooperating with the second pivot pin (5).

4,535,501

BATTERY POWERED VACUUM TRASH COLLECTOR

John R. Hollowell, 22179 Long Blvd., Dearborn, Mich. 48124, and John F. Hollowell, 6526 Sharon Dr., Garden City, Mich. 48135

Filed Jul. 19, 1983, Ser. No. 515,341
Int. Cl.[3] A47L *9/00*
U.S. Cl. 15—339 15 Claims



1. A mobile vacuum trash collector comprising a bin, a lid mounted on said bin which acts as a plenum chamber, a vacuum blower disposed on said lid, a direct current motor having a predetermined finite no load speed limit coupled to said vacuum blower and operable to produce a steady state suction under load, means for connection to a storage battery power source for energizing said motor, a flexible hose having an inner end communicating with said plenum chamber and an outer end, means accessible to an operator for maneuvering said outer end, said outer end disposed substantially in a flat plane and arranged to permit the closing of said outer end against a surface thereby substantially diminishing the volume of air drawn into said plenum chamber causing said motor speed to approach said speed limit, and thereby developing a greater than steady state suction when said outer end is removed from against said surface;

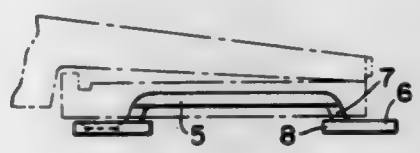
said trash collector further comprising electrical circuit means having first and second nodes for coupling to a first source of electrical energy and having third and fourth nodes for coupling to a second source of electrical energy, and switching means coupled to said nodes and to said motor and operable between a series connected position in which said second node is coupled to said third node and a parallel connected position in which said first node is coupled to said third node and said second node is coupled to said fourth node, said series providing greater suction than said parallel position and said parallel position providing greater energy economy than said series position.

4,535,502

METHOD OF FABRICATING A BASE PLATE FOR A METAL FITTING, AND STAMPING UTILIZED IN FORMING THE BASE PLATE

Alfred Grass, Konsumstrasse 20, A-6973 Höchst, Austria

Filed Sep. 9, 1983, Ser. No. 530,857
Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233512
Int. Cl.[3] B21D *53/36*
U.S. Cl. 16—382 11 Claims



1. A method of fabricating a base plate adapted to receive a fitting of C-shaped cross-section, and having a longitudinal axis and generally U-shaped configuration with outwardly extending lower end mounting portions, a guide plate protion spaced from and generally parallel to the end mounting portions, leg portions perpendicular to and interconnecting the end mounting portions and the guide plate portion, said guide plate portion being wider than the legs transversely of the longitudinal axis to define therewith a T-shaped cross-section, said method comprising:

providing a metal stamping having a longitudinal axis, and bending opposite end portions of said stamping at two spaced lines extending at right angles to the longitudinal axis to define said legs, guide plate portion and end mounting portions.

4,535,503

DOOR GLASS HINGE HAVING A SPACER RING

Ryuhei Narita, Yokohama; Hiroyuki Aida, Hatano, and Yoshinori Kamiya, Zama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Continuation of Ser. No. 386,647, Jun. 9, 1982, abandoned. This application Jun. 19, 1984, Ser. No. 621,887
Claims priority, application Japan, Aug. 17, 1981, 56-128325
Int. Cl.[3] E05D *5/02*
U.S. Cl. 16—382 1 Claim

1. An apparatus for hinging a back door of an automotive vehicle wherein the back door includes a door glass with a hinge having a movable member and a backing member which together clamp a portion of the door glass therebetween with deformable packings respectively interposed between the glass and both the backing member and the movable member, a stationary hinge member to which the movable hinge member is pivotally connected, the stationary hinge member being fixed to the vehicle body, the improvement comprising in combination means for adjusting the clamping force on the

glass to a predetermined magnitude, the clamping force adjustment means comprising:

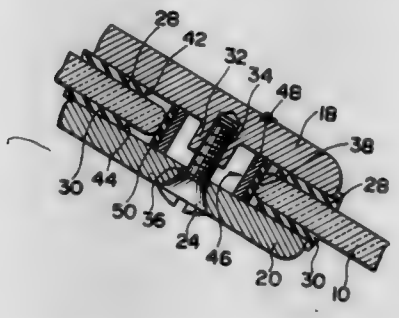
a first opening defined by said movable member in alignment with a second opening defined by said backing member receiving a fastening member therein to secure said movable member to said backing member;

a third opening in said movable member and located about said first opening, said third opening being larger in diameter than said first opening;

a fourth opening in said door glass aligned with said first and second opening;

fifth and sixth openings defined respectively by said packings, each having a diameter greater than said fourth opening defined by said door glass; said first through sixth openings together defining a cavity in the combination of said movable member, backing member, and fastening member;

a separate ring spacer located in said cavity and extending coaxially through said fourth, fifth, and sixth openings, said ring spacer including a rigid member and a resilient member fixed to the periphery of said rigid member radi-



ally outwardly adjacent said door glass, said resilient member contacting the door glass, and said ring spacer having an outside diameter substantially equal to the inside diameter of said fourth opening and structurally adapted to accommodate the passage of said fastening member therethrough, said ring spacer having an axial length greater than the thickness of said door glass but less than the sum of the thickness of the door glass and the thickness of said packings when relaxed thereby to define a minimum distance between said movable member and said backing member, said axial length being further characterized so that when the fastening member is tightened, the fixed member and the movable member clamp said door glass therebetween with a force determined and limited by a tightening of the fastening member until said movable member and said fixed member contact said spacer,

whereby excessive force is not exerted on said door glass wherein the spacer is spaced from the screw by a gap, and the movable hinge member is formed with a boss disposed within the spacer and having a hole receiving the screw, the boss being spaced from the spacer by a gap.

4,535,504

DEVICE FOR SEVERING THE MEAT ADHERING TO BONES FROM THESE BONES

Otto Prosenbauer, Vienna, Austria, assignor to Inject Star Pokelmaschinen Gesellschaft m.b.H., Vienna, Austria

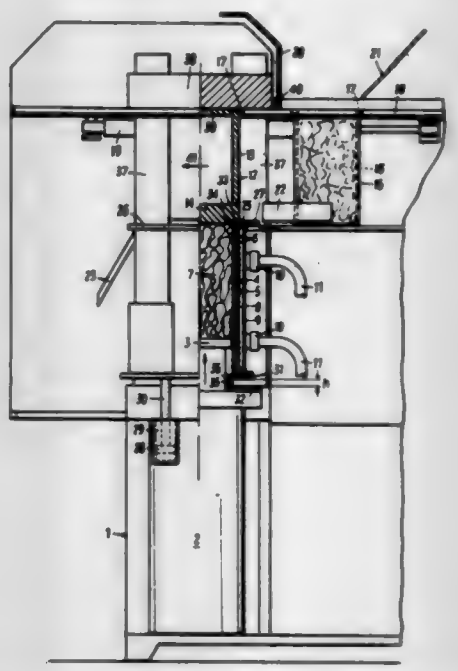
Continuation of Ser. No. 404,172, Aug. 2, 1982, abandoned. This application Oct. 1, 1984, Ser. No. 657,033

Claims priority, application Austria, Aug. 4, 1981, 3442/81

Int. Cl.³ A22C *17/00*

U.S. Cl. 17—1 G **11 Claims**

1. A device for severing meat adhering to bones from these bones by compressing the bones with the adhering meat within a press cavity having an upright axis, comprising a compressing piston being insertable into said press cavity from below and being movable within the cavity along said axis, an abutment member for closing the press cavity at its upper end during compressing the bones, said abutment member being arranged for being moved transversely to the axis of said press cavity between a position above the press cavity and a position remote thereof, a cylindrical side wall in said press cavity extending over the length of the cavity generally parallel to said axis, the side wall having openings oriented transversely to said axis for the passage of a meat mass being given a pasty condition under the action of the compressing pressure and being impermeable for the bones, a filling member having a filling cavity for the mass of meat and bones to be compressed,



and filling member being arranged for being moved transversely to the axis of said press cavity between a filling position located remote from the axis of said press cavity and a discharge position located at the area of the axis of said press cavity, said mass to be compressed falling from the filling cavity into the press cavity after having removed from said position above the press cavity said abutment member, said abutment member and filling member being movable in the same plane, said filling cavity directly adjoining said press cavity in the discharge position of said filling cavity.

4,535,505

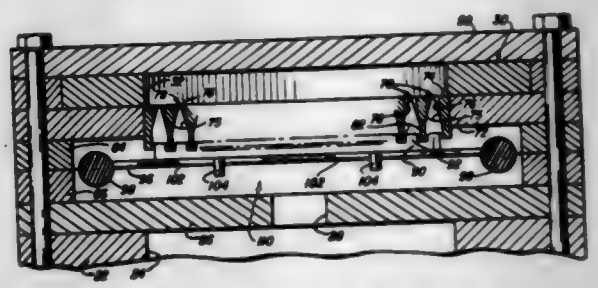
METHOD AND APPARATUS FOR FORMING A PATTY TO ACCOMMODATE TISSUE FIBER FLOW

Harry H. Holly, Boca Raton, Fla., and James A. Holly, Crestwood, Ill., assignors to Holly Systems, Inc., Boca Raton, Fla.

Division of Ser. No. 443,212, Nov. 23, 1982,. This application May 7, 1984, Ser. No. 607,965

Int. Cl.³ A22C *7/00*

U.S. Cl. 17—45 **13 Claims**



1. A method for forming a patty of plastic food material containing tissue fibers, said method comprising the steps of:

(a) providing a foraminous member having, (1) an upstream side, (2) a downstream side, (3) rows of apertures communicating between said upstream side and said downstream side with slots extending through said foraminous member connecting adjacent apertures in each row, (4) ribs on said upstream side with each rib being located generally parallel to, and between, two adjacent rows of apertures for

defining between two adjacent ribs a channel-like region communicating with one of said rows of apertures;

(b) providing means defining a food material reservoir adjacent the upstream side of said foraminous member;

(c) providing mold parts defining a mold opening and at least a portion of a mold cavity having the shape of at least a portion of the exterior surface of said patty and positioning said mold parts to dispose said mold opening adjacent said downstream side of said foraminous member;

(d) providing an agitator bar having spaced-apart teeth and disposing said agitator bar adjacent said upstream side of said foraminous member so that at least one tooth is received between two adjacent ribs;

(e) forcing said food material under pressure from said food material reservoir through said foraminous member apertures and into said mold opening as extrudate masses which together define a packed array forming said patty; and

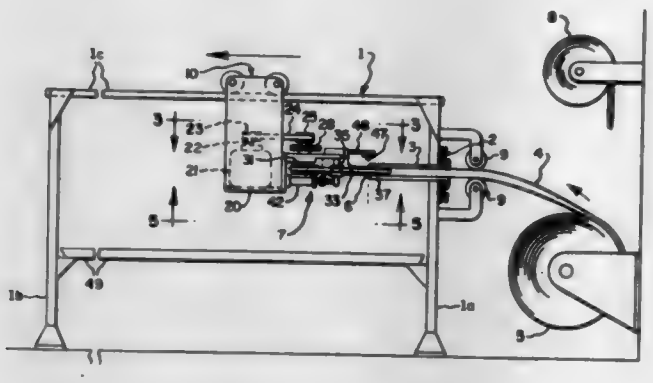
(f) before, during, or after step (e), moving said agitator bar across at least part of the upstream side of said foraminous member to dislodge tissue fibers at the upstream side of said member.

4,535,506

METHOD AND DEVICE FOR EVERTING FLEXIBLE TUBULAR MEMBER

Ivo G. M. Hendriks, Overpelt, and Theo Stals, Peer, both of Belgium, assignors to Teepak, Inc., Oak Brook, Ill.

Filed Nov. 2, 1983, Ser. No. 548,168
Int. Cl.³ A22C *13/00*
U.S. Cl. 17—45 **28 Claims**



1. A device for everting a flexible tubular member or the like comprising frictional engagement means insertable into a distal end portion of said tubular member to frictionally engage the interior surface thereof to axially displace said tubular member to a point of everting, and means for displacing everted tubular member from the point of everting over the exterior surface of the noneverted tubular member.

22. A method for everting a flexible tubular member comprising frictionally engaging the interior surface of said tubular member, axially displacing said member to a point of everting by means of said frictional engaging, everting, and displacing everted tubular member from the point of everting over the exterior surface of the noneverted tubular member.

4,535,507

METHOD AND APPARATUS FOR REMOVING LUMP MEAT FROM A CHESAPEAKE BAY BLUE CRAB

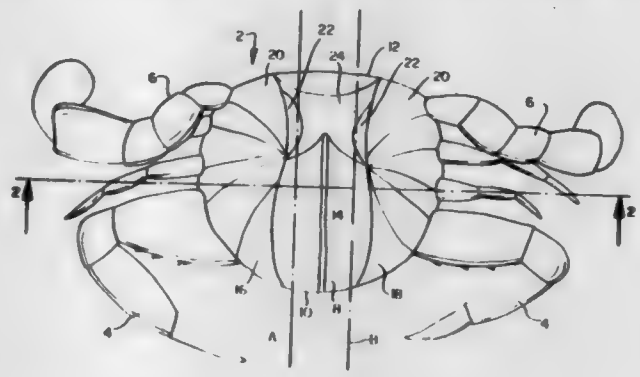
Theodore S. Reinke, Kennett Square, Pa., assignor to Sea Savory, Inc., Cambridge, Md.

Filed Oct. 12, 1983, Ser. No. 541,092
Int. Cl.³ A22C *29/00*
U.S. Cl. 17—48 **2 Claims**

1. In the processing of a cooked Chesapeake Bay blue crab having two lumps of crab meat each of which is within a cavity which is connected to a back fin by a knuckle and is bounded internally of the crab body by a bony wall extending from the back of the crab body to the carapace, the method of removing the lumps of crab meat ccmprising the steps of:

(a) removing the carapace, cleaning the visceral cavity, and supporting the back of the crab body,

(b) cutting the crab body from mouth end to stern end along two planes each of which passes closely outside the bony wall bounding one of the lump meat cavities and which



converge to meet at the center of the back of the crab body,

(c) removing the part of the crab body between the saw cuts, including the bony walls bounding the lump cavities, and

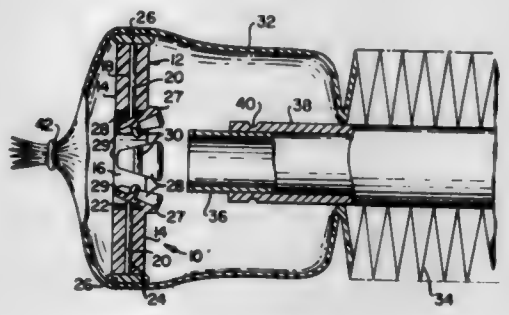
(d) removing the lump meat from each cavity through the opening formed by removal of the bony wall which bounded the cavity internally of the crab body.

4,535,508

EXPANDABLE CASING SIZING MECHANISM AND METHOD

Roger Aceto, Brookfield Center, Conn., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Mar. 30, 1984, Ser. No. 595,364
Int. Cl.³ A22C *11/02*
U.S. Cl. 17—49 **13 Claims**



1. An expandable sizing means for diametrically expanding a food casing about a stuffing horn assembly adjacent the discharge thereof prior to stuffing the casing, said sizing means comprising:

(a) a sizing member capable of fitting within an unshirred substantially unstretched portion of casing, said member having an opening therethrough to accommodate passage of the stuffing horn assembly;

(b) a radially movable rod carried by said sizing member, said rod having an inner end extending into said opening and an outer end substantially flush with the outer periphery of said sizing member;

(c) a casing contacting member on the outer end of said rod; and

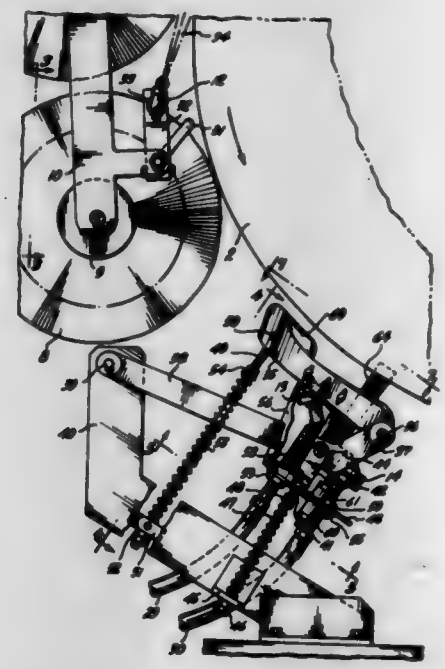
(d) lifter means on said sizing member which engages against the inner end of said rod upon passage of the stuffing horn assembly through said opening to thereby move said rod radially outward and lift said casing contacting member to a casing stretching position.

4,535,509

FISH-CLEANING MACHINE FINISHING SPRAY ACCESSORY

Kenneth W. Bullock, Seattle, and Robert J. Story, Everett, both of Wash., assignors to Smith Berger Marine, Inc., Seattle, Wash.

Filed Jul. 6, 1983, Ser. No. 511,433
Int. Cl.³ A22C *25/14*
U.S. Cl. 17—58 **8 Claims**



1. A finishing accessory for a bull ring type of fish-cleaning machine having rotatable bull rings for carrying a fish comprising a spreader bar adjacent to the periphery of the bull rings but spaced therefrom, and geniculate mounting means including a pair of links composed of a first link pivotally mounted by stationary pivot means and arranged generally parallel to the periphery of the bull rings and a second link pivotally connected to said first link in a position folded relative thereto by a pivot spaced from said stationary pivot means and arranged generally parallel to the periphery of the bull rings and supporting said spreader bar for movement toward and away from the periphery of the bull rings and for engagement with the belly cavity walls of a fish carried by the bull rings for spreading such walls apart.

4,535,510

COTTON DRYING TOWER FOR GINNERIES

Ilan Shoham, Kibbutz Einat, Israel

Filed Oct. 5, 1983, Ser. No. 539,277
Claims priority, application Israel, Oct. 15, 1982, 67002
Int. Cl.³ D01G *37/00*
U.S. Cl. 19—0.27 **7 Claims**

1. A gin drying system for controlling the moisture content of seed cotton, comprising—

a four-sided drying tower;

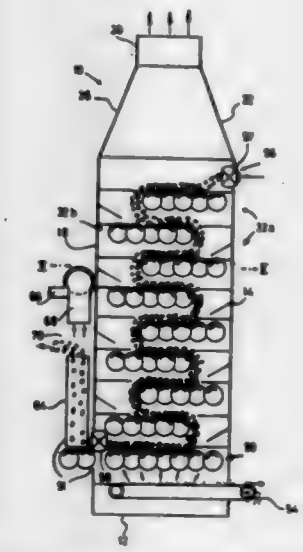
heated air supplying means provided at a lower section of the tower;

air exhaust means provided at a higher section of the tower;

seed cotton feeding means provided at a higher section of the tower;

seed cotton transferring means provided between said higher and said lower sections of the tower, said transferring means comprising two sets of horizontally extending cotton conveying means having a length less than the distance between two opposite sides of the tower, one of the sets being arranged in superimposed, spaced relationship along one of said sides and the other set being arranged in superimposed, spaced relationship along the other of said sides so that at least a centrally located portion of one of the sets is spaced from and overlaps the corresponding centrally located portions of the other set, and

means for driving the conveying means in opposite direc-



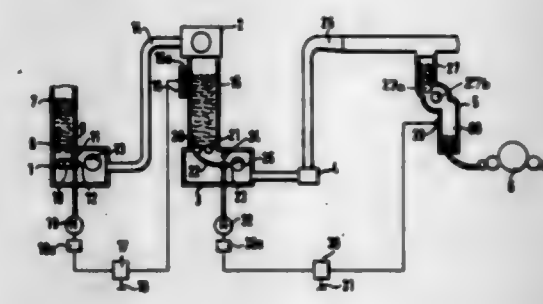
tions so that seed cotton fed to the tower will be conveyed by the conveying means of the two sets while dropping by gravity from one conveying means of one set to a lower conveying means of the other set.

4,535,511

METHOD AND APPARATUS FOR CONTROLLING AND REGULATING MACHINES OF A TEXTILE FIBER PROCESSING LINE

Ferdinand Leifeld, Kempen, and Fritz Höcel, Monchen-Gladbach, both of Fed. Rep. of Germany, assignors to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Apr. 1, 1983, Ser. No. 481,398
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212148; Dec. 2, 1982, 3244619
Int. Cl.³ D01H *5/38*
U.S. Cl. 19—105 **8 Claims**



2. In a regulating apparatus for regulating fiber quantities supplied to a fiber processing machine of a fiber processing line including a fiber storing apparatus connected downstream of said fiber processing machine and receiving processed fiber therefrom; said fiber processing machine including a feed roller supplying fiber to said fiber processing machine, an opening roller and a regulatable drive means for rotating said feed roller and said opening roller; the improvement comprising

(a) a sensor connected to said fiber storing apparatus for generating a sensor signal representing the fiber quantity in said fiber storing apparatus;

(b) regulator means connected to said sensor for receiving said sensor signal from said sensor and connected to said regulatable drive means for applying thereto an analog control signal for varying the rpm of said feed roller and said opening roller as a function of the fiber quantities in said fiber storing apparatus; and

(c) proportioning means operatively interconnecting said feed roller and said opening roller for proportionately

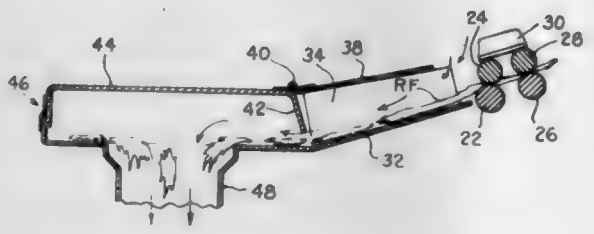
varying the rpm of the feed roller and the opening roller relative to one another.

4,535,512

METHOD AND MEANS FOR PROVIDING ASSEMBLAGES OF OPENED FIBERS FOR INTIMATE BLENDS

Carey A. Glazener, Pickens, S.C., assignor to Platt Saco Lowell Corporation, Greenville, S.C.

Filed Sep. 26, 1983, Ser. No. 535,489
Int. Cl.³ D01G *19/14*
U.S. Cl. 19—229 **15 Claims**



1. Improved means for providing fully opened, combed, discrete and non-condensed assemblages of staple fibers for subsequent blending in admixture with other such assemblages of staple fibers of diverse type thereto, then to produce intimate blends of such fibers of diverse types and, upon yet further processing, elongate strands or yarns which have uniquely uniform admixture compositions, said means comprising:

a. separating and combing means
for separating a discrete tuft of fibers from a mass thereof and
for combing said tuft to remove impurities, foreign matter and immature fibers therefrom and to align its contituent fibers into an orientation substantially axially parallel one another while maintaining the same in a substantially non-condensed state;

b. fiber tuft engaging, advancing and disengaging means
for engaging said tuft as a discrete entity in a substantially non-condensed state,
for advancing said fully opened, combed, discrete, non-condensed tuft in a direction substantially parallel to that of the axial orientation of its constituent fibers, and then
for disengaging said tuft as a discrete entity; and

c. fiber tuft receiving, conveying and collecting means
for receiving said disengaged combed tuft as a discrete entity and in a substantially non-condensed state, and like preceding and succeeding ones thereof, individually as discrete entities,
for conveying said tufts as discrete entities while maintaining said tufts in a substantially non-condensed state during said conveying, and
for collecting said conveyed, non-condensed tufts as discrete entities; and

d. wherein said fiber tuft receiving, conveying and collecting means includes means for providing currents of air to receive said tufts disengaged by said disengaging means, to convey said received tufts to a collection chamber and there to collect said conveyed tufts in a substantially non-condensed state.

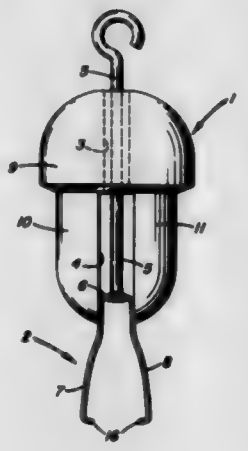
4,535,513

DETACHABLE DRAPE CLAMP

Vinko Sterle, Stari trg pri Lozu, Yugoslavia, assignor to Roland Sattler, Aufham, Fed. Rep. of Germany

Filed May 12, 1983, Ser. No. 494,025
Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, MR20 189
Int. Cl.³ A44B *21/00*
U.S. Cl. 24—346 **4 Claims**

1. A clamp for the detachable holding of web-shaped materials, comprising a spring steel clamping strip consisting of two downwardly extending legs having lower free ends and an intermediate section interconnecting said legs at upper ends thereof, a pull bar fastened at one end to the intermediate section and an elongated slide element defining a transverse groove through a portion of said element to define two arms and a longitudinal bore through the ungrooved portion, said bar passing slidingly through said bore and permitting said



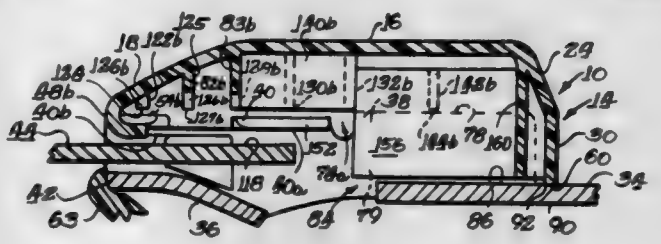
clamping strip to be completely drawn into said groove to create a bringing together of said legs, the distance between the two arms being less than the distance between the lower free ends of the legs when in an open position, the lower free ends of said legs being bent towards each other and serrated, the legs contacting said arms at only one point when in said groove.

4,535,514

SEAT BELT WITH PLASTIC COVER

Richard M. Grabowski, Country Club Hills, Ill., assignor to Gateway Industries, Inc., Hazel Crest, Ill.

Filed Sep. 27, 1982, Ser. No. 423,813
Int. Cl.³ A44B *11/26*
U.S. Cl. 24—633 **8 Claims**



1. In a safety belt buckle, the combination comprising:
a generally channel shaped frame having a bottom wall and a pair upstanding side walls,
a tongue plate slideable along the bottom wall of the frame,
latch means mounted in the frame for movement between a latched position for holding the tongue plate against removal and an unlatched position allowing removal of the tongue plate from the frame,
a push button operator for shifting the latching means from the latched position to the unlatched position,
a bottom plastic cover for the covering the bottom wall of the channel shaped frame and having sidewalls for upwardly along the upstanding side walls of the frame, and
a one-piece plastic top cover having a shell for covering the upper open side of the channel shaped frame and having an opening exposing the pushbutton operator for operation by a user,
a plurality of side ribs on each side of the top over depending internally from the shell for engaging the side walls of the channel shaped frame and for supporting the cover shell thereabove,
said bottom cover and said top cover abutting each other adjacent the frame side walls,

a rear support having ribs depending internally at the rear of the shell for positioning to abut the frame bottom wall,

a back wall on the shell extending to abut the bottom wall of the frame at the rearward side of the buckle, and

a front support having a plurality of ribs depending internally from the shell and positioned over the tongue plate and spaced therefrom by a predetermined distance less than the distance the shell will be deflected under heavy loading so that the ribs engage the tongue plate which engages the frame bottom wall and thereby supports the front portion of the shell when deflected, said ribs being spaced with openings therebetween to reduce cross sectional thickness and to decrease mold cycling time and the distortion of the plastic during cooling.

4,535,515

DRAW-ROLL ASSEMBLY

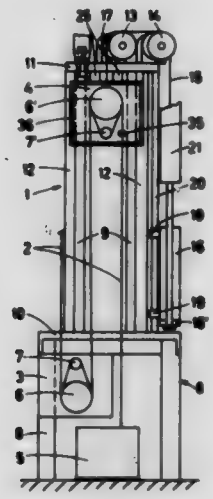
Peter Baertschi, Kriens; Kurt Wetter, Weinfelden-Hagenbuch, and Felix Graf, Winterthur, all of Switzerland, assignors to Rieter Machine Works, Ltd., Winterthur, Switzerland

Filed Oct. 25, 1982, Ser. No. 436,388

Claims priority, application Switzerland, Oct. 29, 1981, 6913/81

Int. Cl.³ D02J *1/22*

U.S. Cl. 28—245 **16 Claims**



1. In combination with a draw frame for filamentary material;

a pair of draw-roll assemblies for drawing filamentary material; and

a plurality of guides for guiding one of said draw-roll assemblies from an abutment defining a working position to a filament take-up position adjacent the other of said draw-roll assemblies to permit a laying on of filamentary material.

4,535,516

APPARATUS FOR THE PRODUCTION OF FIXED POINT MULTIFILAMENT YARNS

Gerhard Egbers, Reutlingen, and Helmut Weinsdorfer, Pliezhausen, both of Fed. Rep. of Germany, assignors to Maschinenfabrik Rieter AG, Winterthur, Switzerland

PCT No. PCT/EP81/00123, § 371 Date Mar. 25, 1982, § 102(e) Date Mar. 25, 1982, PCT Pub. No. WO82/00668, PCT Pub. Date Mar. 4, 1982

PCT Filed Aug. 13, 1981, Ser. No. 364,862

Claims priority, application Austria, Aug. 18, 1980, 4215/80

Int. Cl.³ D02J *1/08;* D02G *1/16*

U.S. Cl. 28—272 **5 Claims**

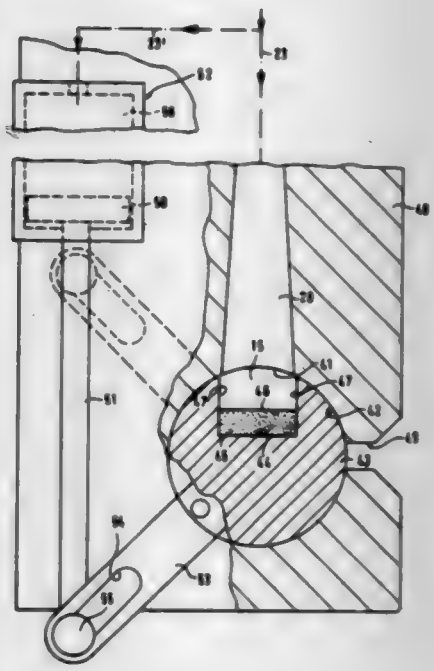
1. Apparatus for the interlacing of multifilament yarns to produce fixed point multifilament yarns, the apparatus comprising

an interlacing unit having a bore, a rotatable body arranged in said bore, a longitudinal passage for accommodating multifilament yarns during treatment therein, said passage having a longitudinal direction with a first portion formed in said rotatable body and a second position formed by a wall portion of said bore, an elongate lateral slot intersecting said bore;

means for moving the multifilament yarns through said passage under tension at speeds in excess of 1000 meters per minute;

a pneumatic positioning motor for rotating said rotatable body to position said first portion of said passage in a threading position in alignment with said slot, whereby multifilament yarns can be inserted through said slot into said first portion of said passage and whereby said lateral slot is closed by said rotatable body on rotation of said rotatable body to an operating position in which said first portion of said passage is aligned with said second portion of said passage;

a blasting nozzle in the form of De Laval nozzle having a convergent section leading to a throat and a divergent section extending through said interlacing unit to open



into said passage transversely to said longitudinal direction at an angle in the range of from 60° to 90° to said longitudinal direction, said divergent section having an opening at a junction with said passage extending peripherally of said passage in the range from 0.2 to 0.5 times the peripheral length of said passage;

gas source means for blowing gas under pressure into said De Laval nozzle to cause the gas to emerge in a stream through said opening into said passage at a desired speed to effect interlacing;

means for varying said gas pressure to select said desired speed;

a gas supply line extending from said means for varying said gas pressure to select said desired speed to said De Laval nozzle; and

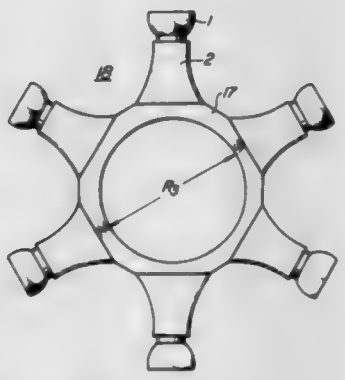
means for connecting said pneumatic positioning motor to said gas supply line whereby on supply of gas to said De Laval nozzle, said positioning motor is actuated to move said rotatable body from said threading position to said operating position.

4,535,517

METHOD FOR PRODUCING A CONNECTING ROD FOR A RADIAL PISTON MOTOR

Yoshio Iijima, Nagoya, Japan, assignor to Daido Metal Company Ltd., Nagoya, Japan

Division of Ser. No. 242,767, Mar. 11, 1981, Pat. No. 4,432,122.
This application Oct. 3, 1983, Ser. No. 538,732
Claims priority, application Japan, Oct. 8, 1980, 55-141779
Int. Cl.³ B23P *15/10*
U.S. Cl. 29—156.5 A **2 Claims**



1. A method for producing a connecting rod for a radial piston motor, comprising the steps of:

(A) producing from a steel material a star-shape cylindrical monolithic blank having a single cylindrical centrally located axial opening, bearing six equally spaced outwardly radiating, integral rod portions (2), each rod portion (2) bearing an integral, substantially spherical surface portion (1) at its distal end;

(B) applying by centrifugal casting a white metal bearing alloy or a copper base bearing alloy onto an inner surface of said single cylindrical centrally located axial opening in said blank (18);

(C) machining an inner surface of said bearing alloy applied by centrifugal casting; and

(D) dividing said blank (18) along a radial axis at a position between each of said rod portions (2) and the adjacent rod portions.

2. A method for producing a connecting rod for a radial piston motor, comprising the steps of:

(A) producing from a steel material a star-shape cylindrical monolithic blank having a single cylindrical centrally located axial opening, bearing six equally spaced outwardly radiating, integral rod portions (2), each rod portion (2) bearing an integral, substantially spherical surface portion (1) at its distal end;

(B) applying by centrifugal casting a white metal bearing alloy or a copper base bearing alloy onto an inner surface of said single cylindrical centrally located axial opening in said blank (18);

(C) machining an inner surface of said bearing alloy applied by centrifugal casting;

(D) applying onto said machined surface of bearing alloy an overlay (T_2) of Pb-base alloy; and

(E) dividing said blank (18) along a radial axis at a position between each of said rod portions (2) and the adjacent rod portions.

4,535,518

METHOD OF FORMING SMALL-DIAMETER CHANNEL WITHIN AN OBJECT

Vance W. Jaqua, Canoga Park, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Sep. 19, 1983, Ser. No. 533,680
Int. Cl.³ B21D *53/00*
U.S. Cl. 29—157 C **13 Claims**

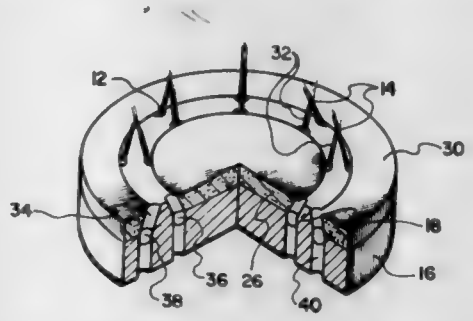
1. A method for forming channels in an object having at least one flat surface comprising the steps of:

forming at least one prominence having at least two tapered sides extending outwardly from said surface;

forming two manifold grooves, one at the intersection of each side with said surface;

forming a duct groove on each tapered side extending from the top of the prominence to the manifold groove at its base;

filling the grooves with a removable filler material;



forming a layer of material over said surface to cover the top of said prominence, said layer forming a bond with said surface, whereby a manifold and a duct are formed from said manifold groove and said each duct groove, respectively;

removing a portion of said layer to a depth sufficient to uncover said ducts; and

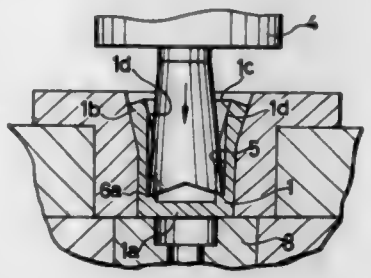
removing said filled material from said manifold and ducts.

4,535,519

METHOD OF MANUFACTURING A VALVE SLEEVE

Hiromi Kajikawa, Namegawa, and Masao Sugita, Higashi-matsuyama, both of Japan, assignors to Jidosha Kiki Co., Ltd., Tokyo, Japan

Filed Apr. 2, 1984, Ser. No. 595,791
Claims priority, application Japan, Apr. 6, 1983, 58-60530
Int. Cl.³ B21D *53/00*
U.S. Cl. 26—157.1 R **11 Claims**



1. A method of manufacturing a valve sleeve, comprising a first step of expanding one end of a cylindrical member hollow, a second step of forming a plurality of axial grooves in the internal surface of the cylindrical member leaving the opposite ends thereof intact, and a third step of restoring the expanded portion to its original diameter which it assumes before the expanding step.

4,535,520

DEVICE FOR FACILITATING REMOVAL AND INSERTION OF PLUGS IN GAS JETS IN CORE MOLDING OPERATIONS

John R. Scherer, 1251 S. Reynolds Rd., Apt. 175, Toledo, Ohio 43615

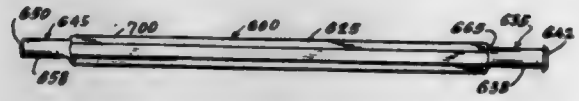
Filed Apr. 28, 1983, Ser. No. 489,363
Int. Cl.³ B23P *19/02*
U.S. Cl. 29—235 **1 Claim**

1. A longitudinally extending tool member, with opposing first and second ends thereon, for facilitating the insertion and removal of gas jet plug members used in metal casting wherein such gas jet plug members have an open chamber, said tool member comprising:

(a) a longitudinally extending rod member having an intermediate handle portion with a base diameter, said longitu-

dinally extending rod member having a first end and a second end;

(b) longitudinally extending insert means on the first end of said longitudinal member, said insert means being of generally cylindrical configuration, said insert means having an inner end adjacent the handle portion of said rod member and an outer end on the opposing end of said insert means, and wherein said insert means has a diameter less than the base diameter of said handle portion on said rod member, said insert means having a uniform diameter over its longitudinal extent with the extreme outer end of said insert means being rounded and;



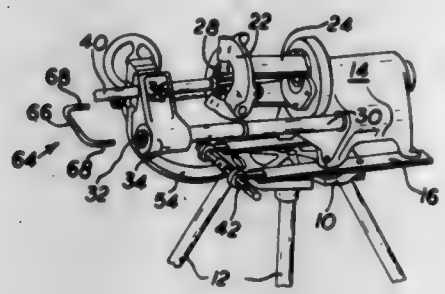
(c) a longitudinally extending removal means on the sedond end of said rod member, said removal means having an inner end adjacent the handle portion and on outer end remote from said handle portion, said removal means being cylindrically configured with a uniform diameter less than that of said handle portion between said inner and outer ends, said removal means further comprising a circumferentially extending flange at said outer end, said flange having a taper which increases towards the inner end.

4,535,521

SOCKETING MACHINE HOSE PULL

James A. VerPlanck, Jackson, Mich., assignor to Aeroquip Corporation, Jackson, Mich.

Filed Aug. 24, 1983, Ser. No. 526,013
Int. Cl.³ B23P *19/04*
U.S. Cl. 29—235 **3 Claims**



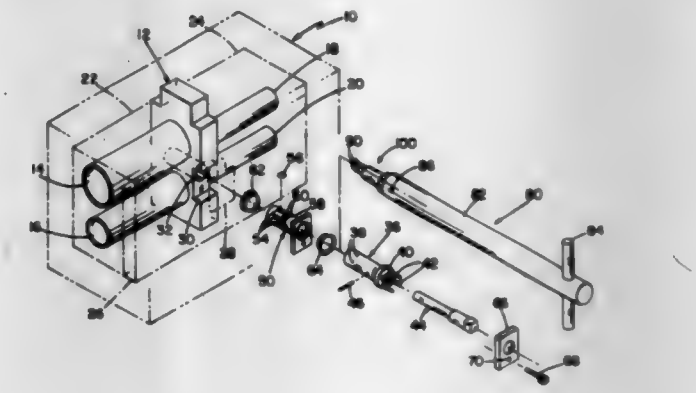
1. Apparatus for assembling a hose fitting socket having an internally spirally, serrated recess, having an axis to the end of a flexible hose, wherein the apparatus includes a frame rotatably supporting a socket holding chuck having an axis whereby the socket may be rotated about its axis, power drive means drivingly connected to the chuck, a hose clamp adapted to clamp a flexible hose, guide means mounting the hose clamp upon the frame in substantial alignment with the chuck axis for reciprocal movement toward and away from the chuck, the improvement comprising, manually operated force multiplying hose clamp translating means mounted upon the frame operatively connected to the hose clamp for selectively translating the hose clamp upon the guide means toward and away from the chuck to aid in assembling and disassembling of a chucked socket and a hose held within the hose clamp, said manually operated hose clamp translating means comprising a winch defined by a shaft rotatably mounted upon the frame below the chuck at a location closer to the chuck than the hose clamp having a length substantially perpendicular to the chuck axis and an accessible end, a flexible strand wound upon said shaft having an outer end attached to the hose clamp, and manual shaft rotating means defined on said shaft end.

4,535,522

ANALYZER MAINTENANCE

John A. Averill, Randolph, Mass., assignor to Allied Corporation, Morristown, N.J.

Filed Feb. 1, 1984, Ser. No. 575,760
Int. Cl.³ B25B *27/14*
U.S. Cl. 29—280 **4 Claims**



1. A maintenance tool for removal of a valve sleeve assembly from a valve cavity in a flow through cell of a blood gas analysis system or the like, comprising

stepped sleeve structure having a cylindrical lead portion adapted to provide support for toroidal seal members carried by said valve sleeve, a cylindrical support portion of cross sectional dimension greater than said cylindrical lead portion and corresponding to the inner cross sectional dimension of said valve sleeve assembly for aligning engagement with the inner surface of said valve sleeve, and a limit shoulder for engaging an end of said valve sleeve, said stepped sleeve structure including a bore that is eccentric with respect to the cylindrical surfaces of said lead and support portions,

a shaft disposed in said bore,

gripping structure carried by said stepped sleeve structure including a cam member at the end of said stepped sleeve structure opposite said limit shoulder portion that is movable between a retracted position and an extended position, said cam member in said extended position having a portion that extends radially beyond said cylindrical lead portion at the end of said stepped sleeve structure, and

handle structure for rotating said shaft to move said cam member between said retracted and extended positions, said stepped sleeve structure being adapted to be inserted into a valve sleeve assembly in a valve cavity with said cam member in said retracted position so that said cylindrical support portion is piloted on the inner surface of said valve sleeve assembly and then said handle structure is operated to place said cam member in said extended position so that subsequent withdrawal of said stepped sleeve structure supports and removes said valve sleeve from said valve cavity while concurrently providing support for said toroidal seal members.

4,535,523

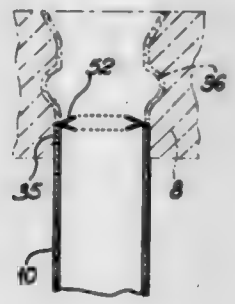
FUEL ASSEMBLIES FOR NUCLEAR REACTORS

Joseph Leclercq, Saint Didier, France, assignor to Commissariat a l'Energie Atomique, Paris and Framatome, Courbevoie, both of, France

Division of Ser. No. 242,454, Mar. 11, 1981,. This application Jun. 3, 1983, Ser. No. 500,824
Int. Cl.³ B23P *7/00*
U.S. Cl. 29—402.08 **1 Claim**

1. A process for disassembling the guide tubes of a fuel assembly of the type in which each guide tube is fixed to the upper end part by expansions in orifices provided with annular grooves made in said part, wherein for the purpose of replacing one or more defective fuel rods during a maintainance operation the upper part of the guide tube assembly is cut out beneath the expansion, the upper part removed, the defective

fuel rods replaced, a new upper part equipped with a number of short tubes whose number is at the most equal to that of the guide tubes of the assembly is introduced, the internal diameter



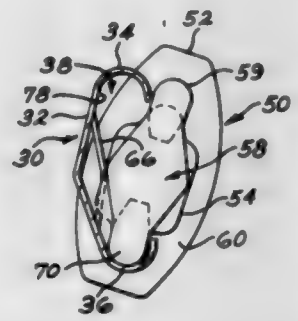
thereof being slightly larger than the external diameter of the cut-out tubes and then said short tubes, which have previously been fitted on to the corresponding guide tubes are joined with the latter by expansion shaping.

4,535,524

METHOD OF ASSEMBLING A RACK-SUPPORTING CHANNEL AND STOP

Thomas E. Jenkins, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Division of Ser. No. 282,107, Jul. 10, 1981, Pat. No. 4,437,715.
This application Jan. 30, 1984, Ser. No. 563,278
Int. Cl.[3] B23P *11/02*
U.S. Cl. 29—453 3 Claims



1. A method of assembling a rack-supporting channel and stop arrangement for a structure providing a chamber having a front opening and side walls wherein there is an article-holding rack supported by rack-supporting members for inward and outward movement of the rack relative to the structure, the rack-supporting members being carried in a trackway of an elongated channel member having a side wall and upper and lower curved walls converging toward each other defining a substantially C-shaped cross section and having one end facing the front opening of the chamber comprising the steps of:

deforming a portion of the channel member side wall near its front-facing end to project inwardly into the trackway to form a retaining means; and

inserting a stop member into the front opening of the channel member, the stop member having a cap portion of enlarged cross section and a central body portion joined to the cap section by a neck portion of reduced cross section and a lateral positioning member resilient in the longitudinal direction and rigid in the lateral direction extending from the central body portion, self-biased to a normal position and flexibly movable to an assembly position, and constructed to substantially span the trackway between the uppermost and lowermost interior faces of the curved wall portions of the channel member when in its normal position and to clear that portion of the trackway within one of the curved wall portions and the side wall portion of the trackway when flexed to its assembly position, insertion of the stop member comprising the steps of

canting the stop member laterally relative to the channel member away from the trackway;

inserting a first portions of the central body portion within one of the curved portion of the trackway with the inner face of the cap portion abuttingly engaging the front-facing end of the channel member and the central body portion extending inwardly beyond the retainer means;

flexing the lateral positioning member to its assembly position;

rotating the stop member about its first portion into abutting engagement with the interior side wall portion of the channel member with the central body portion extending laterally behind the retainer means;

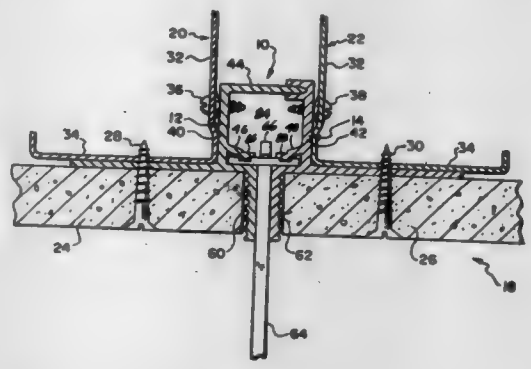
releasing the lateral positioning member for return to its normal position, thereby securing the stop member laterally by the capture of lateral positioning member within the curved wall portions of the channel member, inwardly by the cap portion abutting the front-facing end of the channel member, and outwardly by engagement of the central body portion with the channel member retainer means.

4,535,525

ADAPTER FOR BRACKET SECUREMENT TO WALL STUDS AND METHOD OF MANUFACTURE

David Varon, Highland Park; Steven C. Dorner, Western Springs, and Burton L. Siegal, Skokie, all of Ill., assignors to Crown Metal Mfg. Company, Chicago, Ill.

Division of Ser. No. 295,487, Aug. 24, 1981, Pat. No. 4,443,979.
This application Feb. 2, 1984, Ser. No. 576,360
Int. Cl.[3] B21D *39/02*
U.S. Cl. 29—463 6 Claims



1. A method of making an adapter for holding a slott ed standard in the form of a flat bar having longitudinally spaced slots along a center line thereof to a pair of back to-back studs in a wall construction, the adapter comprising a box-like housing having a rear wall, a pair of side walls, front wallboard supporting wings with inner extensions that stop short of one another and have right angle spaced apart parallel entrance flanges formed thereon, a pair of inwardly extending flanges spaced rearwardly of the extensions and forming therewith a split channel for receiving the flat bar and with the slots of the bar aligned with the space between the entrance flanges, said method comprising:

A. forming recesses in at least one of the faces of said flat bar between said slots and opposite parallel edges of said bar,

B. assembling the flat bar in said split channel together with said housing,

C. rolling portions of at least one of said extensions and inwardly extending flanges into said recesses between said slots and said opposite parallel edges of said bar to form locking keys for holding the flat bar and the adapter in assembly.

4,535,526

METHOD FOR COVERING A LENGTH OF PIPE

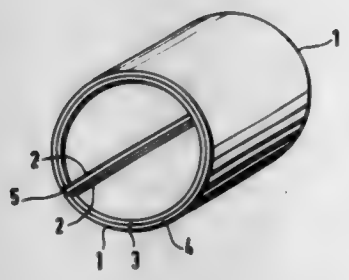
Karl C. Zerfass, and Martin Urban, both of Wiesbaden, Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Continuation of Ser. No. 27,648, Apr. 6, 1979, abandoned. This application Jan. 10, 1983, Ser. No. 456,983

Claims priority, application Fed. Rep. of Germany, Apr. 7, 1978, 2815049

Int. Cl.[3] B21D *35/00*

U.S. Cl. 29—469.5 12 Claims



1. A process for using a laminated foil which is free from elastic memory, comprising the steps of:

(1) cutting from a foil web a predetermined length of foil at right angles to the longitudinal axis of said foil web, said foil consisting essentially of;

(a) a carrier layer having a thickness between 300 μm and 400 μm and comprising a polymeric material selected from the group consisting of rigid PVC, polyethylene and polypropylene,

(b) directly adjacent to said carrier layer, a single layer of adhesive having a negligibly small thickness such that it does not contribute to the rigidity of the laminate, and

(c) a layer of aluminum bonded directly to one side only of said carrier layer, said aluminum layer being directly adjacent to said adhesive layer and having a thickness between about 25 and about 100 μm,

the relative thickness of said carrier layer and said aluminum layer being selected so that the laminated foil is free from elastic memory, such that a rectangular piece of the laminated foil is capable at room temperature of both independently lying flat and of independently exhibiting a stable shape when a shape is imparted to it by bending and the laminated foil can be reversibly converted from any desired spatial shape to another and will not tend to independently alter the shape imparted to it;

(2) bending said foil, at room temperature, around a length of pipe to fit said foil in a formfitting manner to said length of pipe with said carrier layer against said pipe, said foil having an independently stable shape after said bending.

4,535,527

TOOL EXCHANGING DEVICE FOR A MULTI-SPINDLE MACHINE TOOL

Peter Fischer, and Paul Schubert, both of Aalen, Fed. Rep. of Germany, assignors to Alfing Kessler Sondermaschinen GmbH, Aalen, Fed. Rep. of Germany

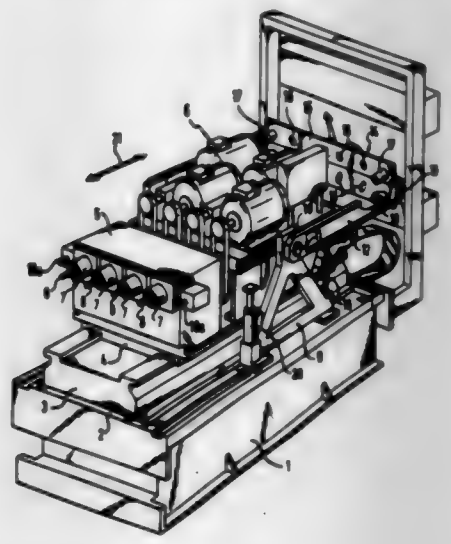
Filed Jul. 12, 1983, Ser. No. 512,953

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1982, 3242439

Int. Cl.[3] B23Q *3/157*

U.S. Cl. 29—568 19 Claims

1. A machine tool for mounting on a lateral unit or console unit of a transfer machine, and comprising: a spindle unit; a plurality of processing spindles; drive elements for the spindle unit; a tool support for the receipt of used and new tools, each corresponding in number to the number of spindles, said tool support having means for holding both used tools of said number and new tools of said number disposed to align with said processing spindles, and movable mounting means carrying the tool support for moving said tool support from a charging position on the rear of the machine tool, over the spindle unit



and the associated drive elements, to a tool exchange position in front of said processing spindles.

4,535,528

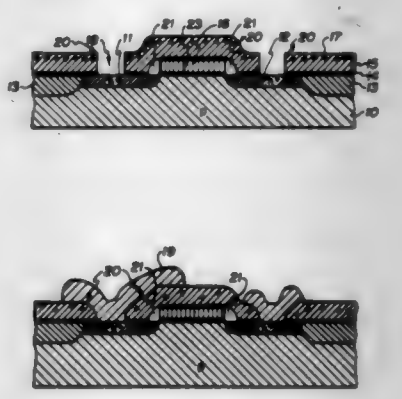
METHOD FOR IMPROVING REFLOW OF PHOSPHOSILICATE GLASS BY ARSENIC IMPLANTATION

Devereaux C. Chen, Mt. View, and Horng-Sen Fu, Sunnyvale, both of Calif., assignors to Hewlett-Packard Company, Palo Alto, Calif.

Filed Dec. 2, 1983, Ser. No. 557,577

Int. Cl.[3] H01L *21/95, 21/283*

U.S. Cl. 29—571 32 Claims



1. A method of smoothing a layer comprising a phosphosilicate glass layer having a step profile in a semiconductor device comprising the steps of:

implanting arsenic into said layer; and

reflowing said layer by heating said layer sufficiently to smooth said layer.

12. A method of making a semiconductor device comprising the steps of:

forming a region of another conductivity type in a substrate of one conductivity type;

forming an insulator layer comprising a phosphosilicate glass layer on said substrate;

implanting arsenic into said insulator layer;

forming a contact window through said insulator layer for allowing a metal coverage contact to said region of another conductivity type; and

reflowing said insulator layer by heating said insulator layer sufficiently to smooth said insulator layer.

4,535,529

METHOD OF MAKING SEMICONDUCTOR DEVICES BY FORMING AN IMPURITY ADJUSTED EPITAXIAL LAYER OVER OUT DIFFUSED BURIED LAYERS HAVING DIFFERENT LATERAL CONDUCTIVITY TYPES

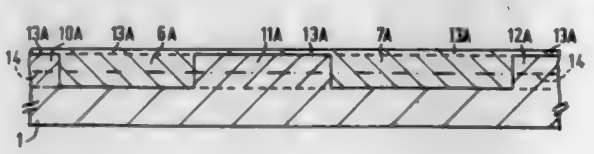
Pieter J. W. Jochems, Heeze, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

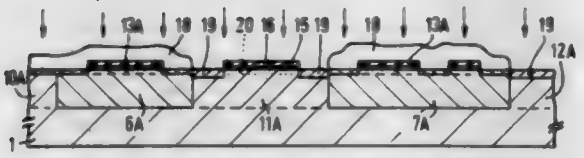
Filed Jul. 2, 1984, Ser. No. 627,308

Claims priority, application Netherlands, Jul. 5, 1983, 8302383

Int. Cl.[3] H01L *21/20, 21/225*

U.S. Cl. 29—571 10 Claims





1. A method of manufacturing a semiconductor device comprising the steps of forming at least a first buried layer of a first conductivity type by introducing a dopant into a surface of a semiconductor substrate, growing onto said substrate an epitaxial layer having a lower overall doping in atoms/cm^2 than said buried layer, forming a region of said first conductivity type in said epitaxial layer by diffusion from said buried layer, and providing surface adjoining semiconductor zones of a semiconductor circuit element in said region,

wherein the improvement comprises the steps of

limiting said diffusion into said epitaxial layer to form a surface layer of said epitaxial layer having substantially the same doping concentration as the original epitaxial layer, and

providing at least one insulated gate field effect transistor in said surface layer.

4,535,530

PROCESS FOR MANUFACTURING A SEMICONDUCTOR MEMORY DEVICE

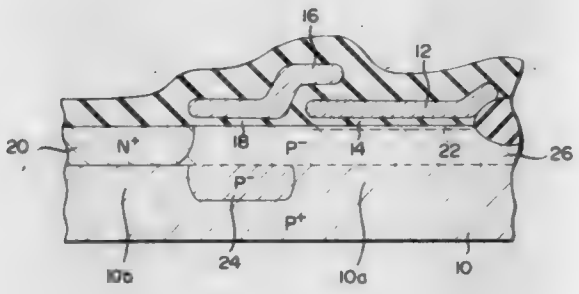
Masahiko Denda, Kobe; Shinichi Sato, Nishinomiya; Natsuro Tsubouchi, Kawanishi; Shigeji Kinoshita, Itami, and Yoshikazu Ohbayashi, Ashiya, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 267,521, May 27, 1981, abandoned. This application Apr. 5, 1984, Ser. No. 596,577

Claims priority, application Japan, Jun. 3, 1980, 55-75206

Int. Cl.[3] H01L *21/425, 21/265*

U.S. Cl. 29—571 3 Claims



1. A process of manufacturing a semiconductor memory device comprising the steps of: selectively implanting, into a main surface of a semiconductor substrate of a first type of conductivity, a second type of conductivity forming impurity so as to form impurity implanted regions of said first type of conductivity which are higher in resistivity than said semiconductor substrate; epitaxially growing surface regions on said semiconductor substrate including said impurity implanted regions, said surface regions being similar in resistivity to said impurity implanted regions; forming a bit line region of said second type conductivity in said surface regions except for a portion of said surface regions which are disposed on said impurity implanted regions, said bit line region reaching said semiconductor substrate from the surface of said surface regions; and forming a gate electrode of a transfer gate transistor above said surface regions and also above said impurity implanted regions through an electrically insulating material and forming through said electrically insulating material an electrode of a capacitor above a portion of said surface regions which are located opposite to said bit line region with respect to said portion of said surface regions disposed on said impurity implanted regions.

4,535,531

METHOD AND RESULTING STRUCTURE FOR SELECTIVE MULTIPLE BASE WIDTH TRANSISTOR STRUCTURES

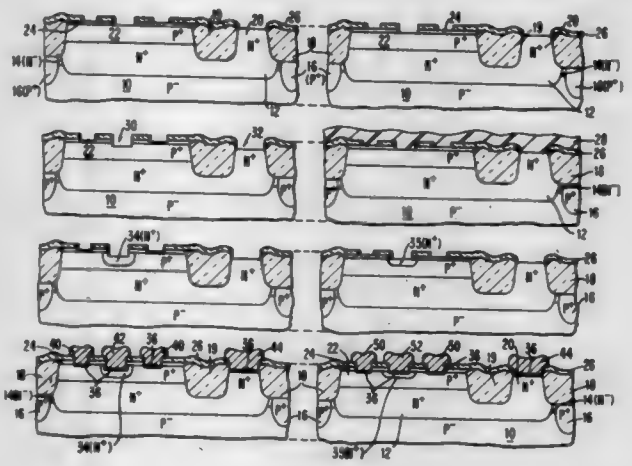
Harsaran S. Bhatia, Wappingers Falls; Jack A. Dorler, Poughkeepsie; Santosh P. Gaur; John S. Lechaton, both of Wappingers Falls; Joseph M. Mosley, Hopewell Junction, and Gurumakonda R. Srinivasan, Poughkeepsie, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 22, 1982, Ser. No. 360,730

The portion of the term of this patent subsequent to Mar. 13, 2001, has been disclaimed.

Int. Cl.[3] H10L *21/302, 21/22*

U.S. Cl. 29—577 C 15 Claims



1. A method for making an integrated circuit having two bipolar transistor types each having different operating speeds and amplification characteristics due to said transistor types being formed of different base widths, said method comprising:

providing a monocrystalline silicon substrate having a pattern of regions of said silicon isolated from one another by a dielectric pattern on one major surface of said substrate;

providing a subcollector region within said silicon and spaced from said major surface;

forming a base region in at least certain of said regions of silicon down to said subcollector region wherein said base region has a surface concentration of more than about 1×10^{18} atoms/cm^3;

forming a block-out mask over said major surface in regions where said transistor type of lower said characteristics are desired;

subjecting in areas uncovered by said block-out mask the said base regions wherein an emitter region is planned to

be formed to reactive ion etching to form a depression having a depth between about 70 to 100 nanometers;

removing said block-out mask;

forming an emitter region in said etched portion of said base regions and in unetched base regions which were in areas covered by said block-out mask and heating said emitter region wherein the intrinsic base regions are formed of different base widths; and

making electrical contact to each of the elements of said bipolar transistor types.

4,535,532

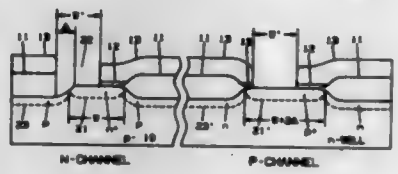
INTEGRATED CIRCUIT CONTACT TECHNIQUE

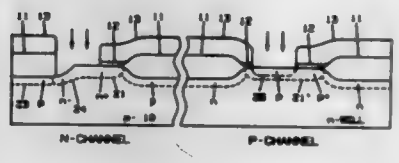
Loren T. Lancaster, Allentown, Pa., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Apr. 9, 1984, Ser. No. 598,179

Int. Cl.³ H01L *21/265, 29/78;* B01J *17/00*

U.S. Cl. 29—576 B **14 Claims**





1. Technique for forming contact to semiconductor impurity regions of opposite conductivity type comprising the steps of:

forming a p-type impurity region in an n-type substrate region of a semiconductor substrate,

forming an n-type impurity region in a p-type substrate region of said semiconductor substrate,

forming an insulating layer over said impurity regions,

forming a first opening in said insulating layer exposing at least a portion of said p-type impurity region,

forming a second opening in said insulating layer exposing at least a portion of said n-type impurity region and a portion of said p-type substrate,

implanting n-type impurities into said first and second openings at a level sufficient to convert the exposed portion of said p-type substrate to n-type but insufficient to convert said exposed portion of said p-type region to n-type.

4,535,533

CABLE CONNECTOR SEATING TOOL

James J. Grammas, Westchester; Walter J. Moskal, Chicago, and Craig J. Witt, Schaumburg, all of Ill., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 19, 1983, Ser. No. 562,879

Int. Cl.³ B23P *19/02*

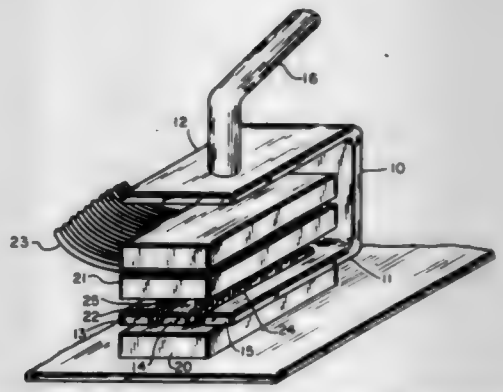
U.S. Cl. 29—749 **2 Claims**

1. A generally "U" shaped tool for facilitating the insertion of a multi-contact miniature connector having a pair of parallel rows of contact pins into a complimentary receptacle and comprising:

a base portion and a spaced apart pair of parallel arms attached thereto and adapted to receive a connector body therebetween;

a first of said arms including a first outer tine, a central tine and second outer tine, said central tine thus limiting inward displacement and said outer tines preventing any outward displacement of the contact pins of a contained connector,

a second of said arms including a handle attached thereto for ease of handling said tool, said handle comprises a rod



slanted at an angle with its free end leaning toward said base portion.

4,535,534

METHOD OF MOUNTING A SWITCH BODY ON A PRINTING WIRING BOARD OR PANEL

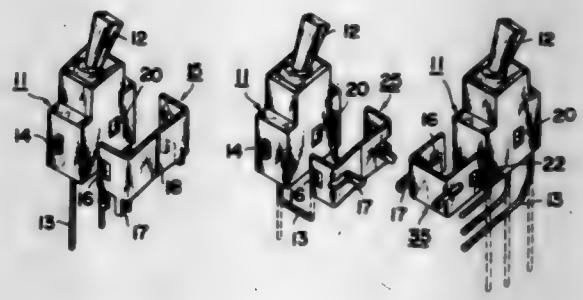
Shigeo Ohashi, and Hiroyuki Suga, both of Tokyo, Japan, assignors to Nihon Kaiheiki Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation-in-part of Ser. No. 284,913, Jul. 20, 1981, abandoned. This application Oct. 4, 1983, Ser. No. 538,878

Claims priority, application Japan, Jul. 31, 1980, 55-109354

Int. Cl.³ H01H *9/00, 11/00*

U.S. Cl. 29—832 **12 Claims**



1. A method of mounting an miniature switch on a printed wiring board or panel using one of a plurality of a different brackets, comprising the steps of:

(A) preparing a rectangular switch body having a plurality of terminals of round flexible wire rods and provided at its four outer side surfaces with first engagement members;

(B) preparing more than two different cross-sectionally C-shaped brackets of a resilient metal plate, each having a plurality of legs and provided at opposite side surfaces of said bracket with second engagement members;

(C) preparing a plurality of different inserting mounts having a mount frame with at least three side walls engageable with at least three side surfaces of said switch body, flanges outwardly extending in opposite directions from upper portions of two opposite side walls of said mount frame, elastic plates upwardly extending from those portions of the outer surfaces of said opposite side walls of said mount frame which are below said flanges, and second engagement members provided on opposite portions of said side walls;

(D) selecting one of the brackets or the inserting mounts of steps (B) and (C) above in accordance with an intended position of the printed wiring board or panel;

(E) mounting said switch body to said selected bracket or inserting mount by engaging the second engagement members of the selected bracket or inserting mount with selected portions of the first engagement members of the switch body; and

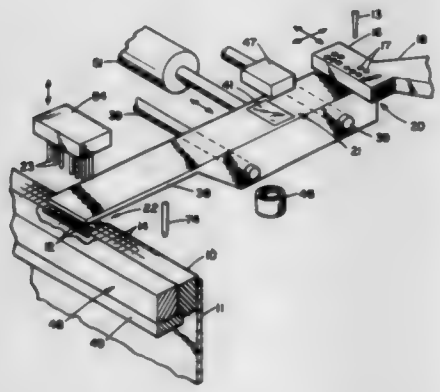
(F) mounting said switch body together with said selected bracket or inserting mount onto the printed wiring board or panel.

4,535,535

METHODS AND APPARATUS FOR ASSEMBLING PERMUTATIONS OF ELEMENTS INTO OR ONTO ARTICLES

David R. Dines, Oklahoma City, Okla.; George Svoboda, Sun City West, Ariz., and Robert G. Workman, Yukon City, Okla., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Aug. 15, 1983, Ser. No. 523,222
Int. Cl.[3] H05K *3/00*; B23P *19/00*
U.S. Cl. 29—845 18 Claims



1. An apparatus for positioning a number of elements arranged in various first predetermined arrays on articles at element receiving sites which are in an array large enough to encompass the various arrays of elements, which comprises:

a plurality of work stations including a load station, an unload station, and an inspect station located between the load and unload stations;

a fixture located at the unload station for holding an article having the array of receiving sites;

means proximate to the load station for feeding a succession of elements into a load position at said load station;

a carrier selectively movable relative to the plurality of work stations having an array of element receiving holes corresponding to the array of element receiving sites on the article; an elongated bar longitudinally extending between the load station and the unload station and slidably positioned beneath said carrier for supporting the elements in said carrier receiving holes;

means including a programmed controller for moving the carrier relative to the load position to receive in said receiving holes a predetermined array of elements from said feeding means;

means located at the inspect station for sensing the array of elements loaded into the carrier to determine if the array of received elements is in accordance with the predetermined array and for generating one out-of-three different control signals; the controller operating said moving means (i) to advance the carrier from the inspect station to overlay said fixture in response to a first control signal of said three different signals, or (ii) to return the carrier from the inspect station to the load station in response to a second control signal of said three different signals, or (iii) to shift the carrier out of the inspect station in response to the third control signal of said three different signals; and

means located at the unload station rendered effective upon said carrier being advanced to overlay the fixture for transferring the array of elements from the carrier receiving holes to the element receiving sites on the article held in the fixture.

17. A method of inserting a predetermined permutation of plugs in an array of holes formed in an article comprising the steps of:

loading a permutation of plugs in a transfer carrier, at a load station;

moving the transfer carrier to an inspection station;

sensing the absence of plugs in the permutation at the inspection station;

returning the transfer carrier to the load station upon sensing one or more missing plugs from the permutation;

loading the transfer carrier with additional plugs in accordance with the sensing of the absence of plugs and returning the transfer carrier to the inspection station;

advancing the transfer carrier to an insertion station only upon ascertaining the presence of the predetermined permutation of plugs; and

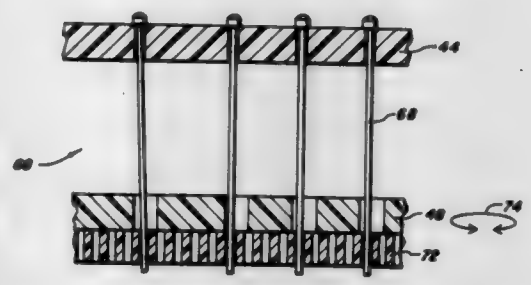
inserting the permutation of plugs advanced to the insertion station into the array of holes in an article positioned in the insertion station.

4,535,536

METHOD OF ASSEMBLING ADAPTOR FOR AUTOMATIC TESTING EQUIPMENT

Robert P. Wyss, Manhattan Beach, Calif., assignor to Augat Inc., Mansfield, Mass.

Filed Nov. 3, 1983, Ser. No. 548,422
Int. Cl.[3] H05K *3/00*
U.S. Cl. 29—845 3 Claims



1. A method for fabricating an adaptor for automatic testing equipment comprising the steps of:

aligning a first plate having a plurality of apertures each having a first size and arrayed in a first pattern that conforms to the pattern of an electronic circuit device to be tested with a second plate having a plurality of apertures each having a second size larger than the first size and arrayed in a second pattern that corresponds to the pattern of the terminals of the electronic circuit device to be tested such that confronting ones of the apertures of the first and second plate are coaxially aligned;

disposing a plurality of rigid probes each having tail portions through respective ones of said confronting aligned apertures in the first and second plates;

displacing the second plate a selected distance in a selected direction in the plane defined by the plane of the second plate;

positioning a third plate having apertures arrayed in a third pattern that conforms to the pattern of the signal contacts of a universal test fixture proximate the tails of the rigid probes; and

vibrating the second plate controlably in the plane defined by the second plate such that corresponding ones of the tails are received in preselected ones of the apertures of the third plate.

4,535,537

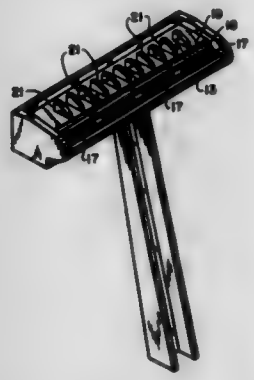
DISPOSABLE PLASTIC RAZOR

Frank A. Ferraro, Trumbull, Conn., and David S. Byrne, Atlantic Highlands, N.J., assignors to Warner-Lambert Company, Morris Plains, N.J.

Filed Sep. 12, 1984, Ser. No. 649,643
Int. Cl.[3] B26B *21/14*
U.S. Cl. 30—32 5 Claims

1. A one-piece plastic razor cartridge comprising a blade

support including a face-engaging guard bar, a plurality of spaced posts projecting from said support, a perforated blade having a cutting edge disposed upon said support so that said posts project through mating perforations and said cutting



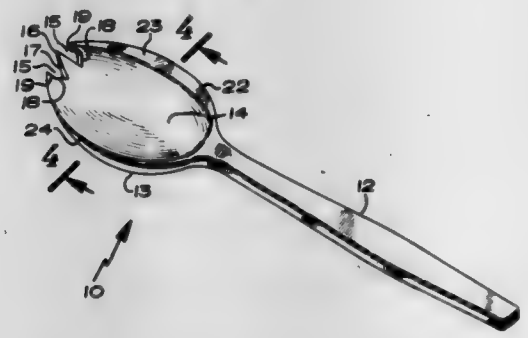
edge projects toward said guard bar, each post terminating in a predetermined configuration so as to develop collectively a contoured face-engaging surface which in combination with said guard bar and blade develop optimum blade edge geometry and means for securing the blade to the blade support.

4,535,538

COMBINATION NON-DISPOSABLE TABLE UTENSIL

Shelby W. Nelson, 170-15th Ave. Northeast, Minneapolis, Minn. 55413

Filed Apr. 10, 1984, Ser. No. 598,906
Int. Cl.[3] A47G *21/06*
U.S. Cl. 30—147 2 Claims



1. A non-disposable eating utensil molded from an inert plastic material, comprising:

a handle of sufficient rigidity to withstand vigorous manual pressure and having a concave-convex scoop at one end, said scoop being generally in the shape of a spoon;

tines extending outwardly from one end of said scoop, said tines functioning generally in the manner of a fork;

said scoop having first and second edges and a basin bowl, said first edge being parallel to the plane of said handle and beveled along its length to function as a knife, and capable, under rocking pressure, to sever food, said first edge being nonserrated to prevent injury to the mouth of a user, said scoop having a smoothly uninterrupted concave upper surface;

said handle being centered proportionally between said first and second edges of said scoop so as to provide balance; and

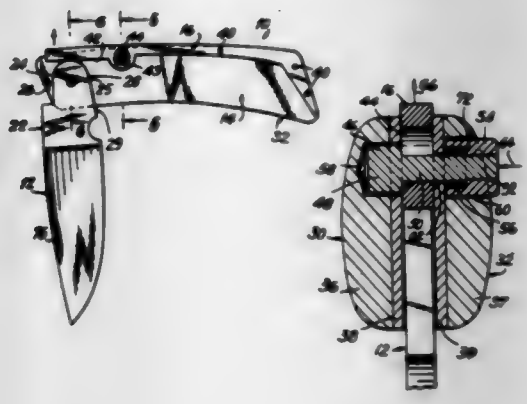
said scoop including a plurality of indentations between said tines, said indentations including a short and a long edge, said short and long edges being connected by a downwardly sloping edge, said indentations cooperating with said tines so that the upper surface of the latter is co-extensive with the upper concave surface of the scoop thereby maximizing surface area for containment of liquid materials within said basin bowl of said scoop.

4,535,539

FOLDING KNIFE WITH SAFETY LOCKING FEATURE

Harry Friedman, Franklin Lakes, N.J.; Isao Sengoku, Seki, Japan; Yukiro Hattori, Seki, Japan, and Minoru Isikawa, Seki, Japan, assignors to Jet AER Corporation, Paterson, N.J.

Filed Mar. 13, 1984, Ser. No. 589,159
Int. Cl.[3] B26B *1/04*
U.S. Cl. 30—161 16 Claims



1. A foldable knife comprising:

a handle having a longitudinal recess and an opening perpendicular to said recess and communicating therewith, said opening being open-ended on one side of the handle;

a blade having a cutting edge at the front end and a tang at the rear end, said tang having first and second camming surfaces;

means for securing said blade to said handle for pivotal movement between a closed position wherein the cutting edge is received in the recess and an open position wherein the cutting edge is exposed;

a bar spring secured at one end to the handle in the recess, the free end of the bar spring being adjacent the first camming surface in the open position and the second camming surface in the closed position, said bar spring having a hole therein generally aligned with said opening in said handle;

a mechanism secured in said opening and extending through said hole, said mechanism comprising an enlarged portion and a reduced portion, means for moving said mechanism between a locking position wherein said enlarged portion is in said hole for limiting movement of said bar spring under the urging of said first or second camming surfaces for preventing movement of the blade to the closed or open positions respectively, and a release position wherein said reduced portion is in said hole and sufficient movement of said bar spring is accommodated under urging of said first or second camming surfaces for moving said blade to said closed or open positions, respectively; and

means for biasing said mechanism to said locking position;

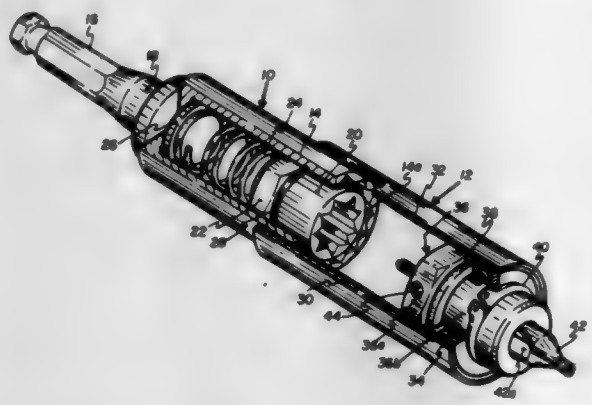
wherein said mechanism moving means comprises a push button secured to the end of said reduced portion opposite said enlarged portion, said push button being accessible through said open end of said opening, and wherein the open-ended side of said opening includes an enlarged section and a reduced section, said reduced section being dimensioned to receive said reduced portion of said mechanism but not said enlarged portion, wherein said biasing means comprises a coil spring disposed about said reduced portion and seating at one end on a shoulder defined between said enlarged and reduced sections of said opening and at the other end against said push button, and wherein the opening in said handle is close-ended on the other side thereof.

4,535,540

"HOLE-IN-ONE" METAL PUNCH DRIVE UNIT

Michael J. Morgan, 8500 Central, SE., Unit 16, Albuquerque, N. Mex. 87123, and Steven G. Gray, 3921 Doroteo Pl., NE., Albuquerque, N. Mex. 87111

Filed Mar. 14, 1983, Ser. No. 475,119
Int. Cl.[3] B26F *1/00*
U.S. Cl. 30—358 5 Claims



1. A combination pilot drill and drive assembly for use with one or more draw punches, comprising:

a drill unit including a tubular casing and a drill chuck for holding a pilot drill rotatably mounted at one end thereof, said drill chuck including a hex head located inside said dirve casing; and

a drive unit including a tubular large diameter first socket and a relatively smaller diameter second socket slidably engaged therein, said second socket being springloaded so as to be normally urged outwardly toward the open end of said first socket;

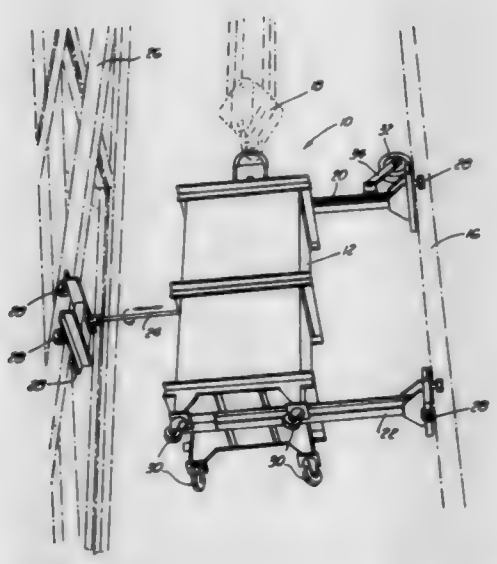
said casing of said drill unit being sized to fit over said first socket of said drive unit, and said hex head of said drill chuck being sized to engage said first socket, whereby said drill unit may be selectively coupled to said drive unit for use of said drill and drive units in combination in a first mode of use as a pilot drill for drilling a pilot hole in a metal panel, and whereby said drill unit may be removed from said drive unit for use of said drive unit alone in a second mode of use to engage by means of one of said sockets a draw punch for punching a hole in a metal panel.

4,535,541

DEVICE FOR MEASURING GUIDE ALIGNMENT FOR MINE SHAFTS AND THE LIKE

Francis A. Penning, Denver, Colo., assignor to Colorado School of Mines, Golden, Colo.

Filed Mar. 26, 1984, Ser. No. 593,693
Int. Cl.[3] G01C *9/00;* E21B *47/02*
U.S. Cl. 33—1 H 14 Claims



1. A guide alignment measuring device adapted for being raised and lowered in a vertical or inclined shaft and engaging one or more guides, the device comprising:

a housing having an instrument shelf therein;

a first contact arm attached to the housing and engaging a reference guide; and

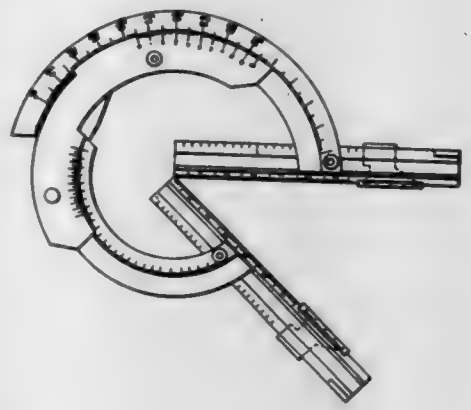
a first inclination means received on the instrument shelf for measuring a first tilt angle of the instrument shelf from the vertical as the device is raised and lowered.

4,535,542

VERNIER GAUGE

Bao-Shen Liu, and Bao-Horng Liu, both of 3rd Fl., No. 20, Alley 6, Lane 190, Chung 12th Rd., Tien Mu District, Taipei, Taiwan

Filed Oct. 24, 1983, Ser. No. 544,467
Int. Cl.[3] G01B *3/38*
U.S. Cl. 33—148 E 24 Claims



1. A vernier gauge comprising:

a first arc member having a free end and a clamped end; and said first arc member having radially inner and outer sides, a second arc member also having a free end and a clamped end as well as inner and outer sides, said second arc member slidably engaged with said first arc member and provided with a first scale, said first and second arc members defining a free space at the center, whereby the stretched angle between the two free ends of said first and second arc members can be read from said first scale and wherein a first vernier scale on said second arc member is placed along said first scale to permit accurate fractional reading.

4,535,543

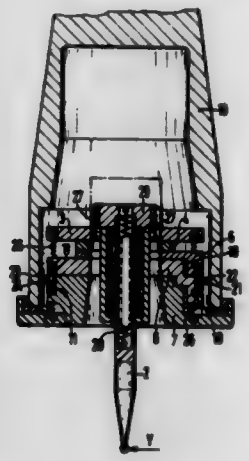
DYNAMIC FEELER HEAD

Kurt Linder, Karlsruhe, Fed. Rep. of Germany, assignor to Mauser-Werke Oberndorf GmbH, Fed. Rep. of Germany

Filed Sep. 16, 1983, Ser. No. 533,009
Claims priority, application Fed. Rep. of Germany, Sep. 21, 1982, 3234851
Int. Cl.[3] G01B *3/22*
U.S. Cl. 33—169 R 4 Claims

1. A dynamic feeler head having four side edges for use in measuring units and machine tools, comprising a feeler head housing having one end with a recess, a plurality of plates having side edges some of which are disposed in an X-plane and some of which are disposed in a Y-plane, said plates comprising a first, second, third, fourth and fifth plate disposed in said recess and arranged in superposed juxtaposition, tension springs means connected to said plates for holding said plates in superposed juxtaposition, a feeler pin carried by said plates, and support spring means connected between said plates and said feeler pin for permitting a linear movement of said feeler pin along a Z-axis, a plurality of spring members forming tilting axis hinges and interconnecting adjacent ones of said plates to each other, said plates having lever arms between said feeler pin and said tilting axis hinges which are of mutually equal lengths, each of said second, third, and fourth plates being hinged by its respective lever arm and through a respec-

tive tilting axis hinge to both a respective superjacent plate and, on a side offset through 90°, to a respective subjacent plate so that feeler pin is tiltable with respect to ones of said plates about respective coordinate directions in the X and Y plane, said tilting axis hinges all being spaced from said feeler pin by a known distance, said plates each having side faces all of



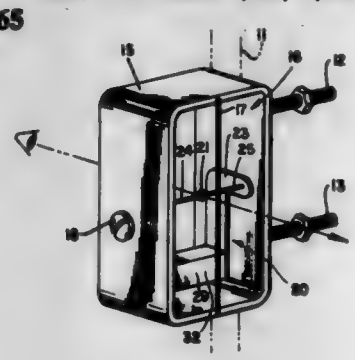
which are equidistantly spaced from said feeler pin which is centrally arranged with respect to said plates, said side faces extending parallel to the coordinate directions in the X and Y plane, all of said tilting axis hinges lying in a common plane with one of said tilting axis hinges extending in each of said four side edges of the feeler head.

4,535,544

SIGHTING APPARATUS

Thomas F. Jones, Rte. 2, Adairsville, Ga. 30103, and Jesse L. Morehead, Rte. 1, Rydal, Ga. 30171

Filed Jul. 6, 1982, Ser. No. 395,407
Int. Cl.³ F41G *1/34, 1/46*
U.S. Cl. 33—265 **9 Claims**



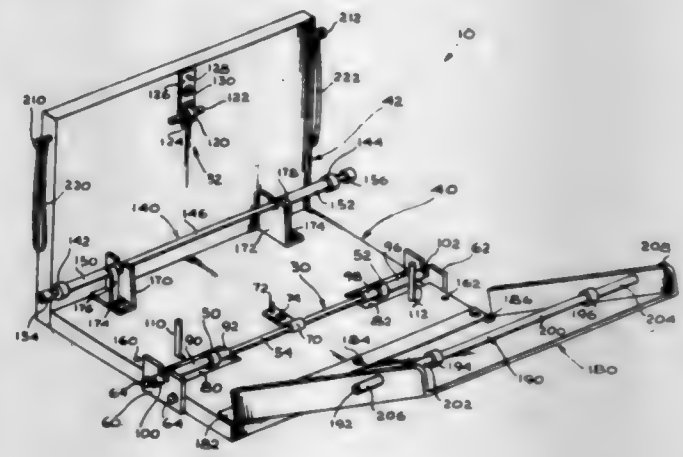
1. An improved bow sight apparatus comprising:
a housing defining an opening therethrough;
a sight assembly including two substantially vertical plate members disposed in parallel spaced apart relation,
said sight assembly further comprising means for emitting a point of light suspended between said plate members;
a power source mounted on said sight assembly for supplying electrical energy to said light-emitting means; and
means for suspending said sight assembly within said opening defined by said housing for pendulous movement about a horizontal axis spaced apart from said light-emitting means and from the center of gravity of said sight assembly, said power source being mounted below said axis.

4,535,545

INSPECTION DEVICE AND METHOD FOR CYLINDRICAL WORK PIECES

Larry H. Becnel, West Covina, Calif., assignor to General Dynamics, Pomona Division, Pomona, Calif.

Filed Nov. 21, 1983, Ser. No. 554,036
Int. Cl.³ A61B *5/08*
U.S. Cl. 33—550 **39 Claims**



1. A device for checking the concentricity of a cylindrical workpiece, comprising:
first reference support means for rotatably supporting said workpiece at a first location on the outer perimeter of said workpiece, said first reference support means establishing a fixed reference point from which a measurement of the diameter of said workpiece may be taken as said workpiece is rotated to determine the concentricity of said workpiece;
second reference support means for rotatably supporting said workpiece at a second location on the outer perimeter of said workpiece, said second location being defined by a tangent to said workpiece orthogonal to the tangent to said workpiece at said first location, said second reference support means maintaining said workpiece to allow said measurement of the diameter of said workpiece to be taken;
a base member rigidly mounting the first and second reference support means at said first and second locations, respectively; and
biasing means hingedly attached to the base member for removably maintaining said workpiece in contact with said first and second reference support means.

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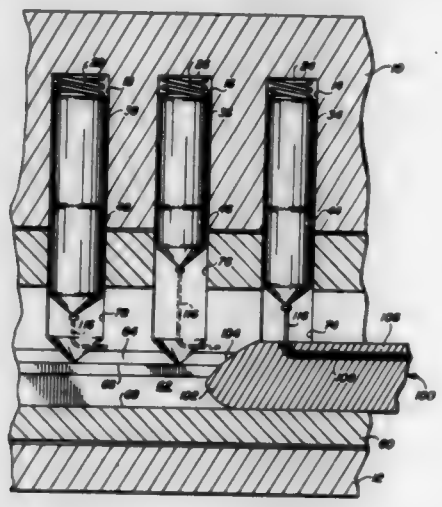
LOCKSMITH TOOL APPARATUS FOR DETERMINING LENGTH OF LOCKING ELEMENTS IN LOCKS

Rodney D. Smith, 6550 N. 2nd Dr., Phoenix, Ariz. 85013

Filed Feb. 27, 1984, Ser. No. 583,679
Int. Cl.³ G01B *5/20*
U.S. Cl. 33—540 **18 Claims**

1. Locksmith tool apparatus usable with a lock having a key way, a tumbler pin, a driver pin, and a compression spring biasing the driver pin and the tumbler pin, comprising, in combination:
key blade means, including a key blade for insertion into the key way of the lock;
a wire having a tip movably disposed on the key blade means;
handle means secured to the key blade means;
indicator means movably disposed on the handle means and secured to the wire for moving the wire to move the

tumbler pin and the driver pin to compress the compression spring to a minimum length and to measure the distance moved by the wire to move the pins and compress the compression spring.



4,535,547

MOUNT FOR AN EARTH MAGNETISM SENSOR FOR USE IN AN AUTOMOTIVE VEHICLE

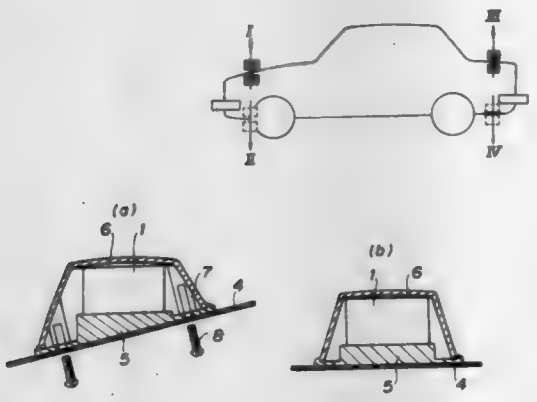
Norimitsu Kurihara, Saitama; Toshiyasu Suzuki, Tokyo; Takashi Iwanaga, and Masaru Hisadomi, both of Saitama, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 3, 1982, Ser. No. 345,415

Claims priority, application Japan, Feb. 4, 1981, 56-15155; Jun. 2, 1981, 56-84846

Int. Cl.³ G01C *17/38*

U.S. Cl. 33—356 3 Claims



1. A method of mounting an earth magnetism sensor adapted to detect a horizontal component of the earth magnetism for a bearing detecting apparatus, on a vehicle, comprising the step of:

mounting said earth magnetism sensor in a horizontal position within a mount member mounted on a sloped bonnet portion of the vehicle, at a location at which an orientation of magnetic field, which is generated when the vehicle body becomes magnetized, crosses a horizontal plane substantially at a right angle;

said location being substantially intermediate with respect to the vehicle height, proximal the front end of said vehicle, and substantially at or near a longitudinal center line of said vehicle; and

said earth magnetism sensor being mounted at said location such that an axis of detecting a primary direction of said sensor is horizontally angularly offset by a number of degrees corresponding to a terrestrial magnetic declination at a given observation point with respect to a desired orientation by way of a map.

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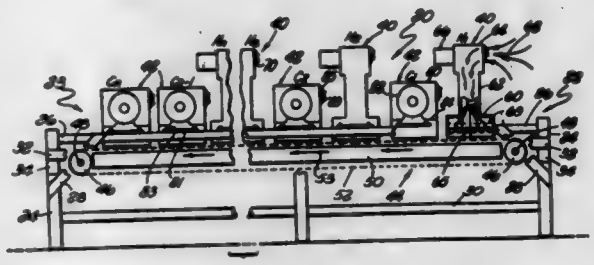
METHOD AND MEANS FOR DRYING COATINGS ON HEAT SENSITIVE MATERIALS

James L. Hyde, Palos Verdes Estates, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Oct. 25, 1982, Ser. No. 436,213

Int. Cl.³ F26B *3/30*

U.S. Cl. 34—4 2 Claims



1. A method for drying coatings on heat sensitive materials, comprising the steps of:

subjecting the coated heat sensitive material to alternate sources of radiant heat energy and relatively cool air; and

maintaining the time of exposure to each source and the amounts of heating and cooling of the respective sources at levels sufficient to significantly decrease the time needed to dry the coating while limiting the temperature increase of said material to a level insufficient to deform or distort said material including the surfaces thereof; and wherein:

said radiant heat energy is effective to heat said coating by direct radiation thereof; and

said coated heat sensitive material has a heat reflecting layer between the coating and the heat sensitive material and said radiant heat energy is reflected away from said heat sensitive material and is effective to further heat the coating indirectly by radiant heat energy reflected back into said coating by said reflective layer.

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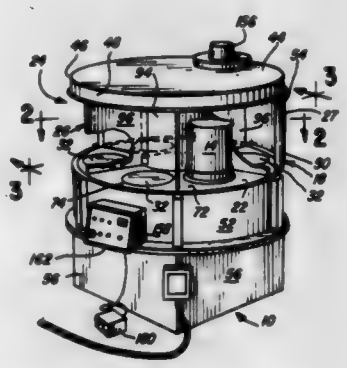
CURING APPARATUS

Louis A. Lala, Skokie, and James H. Frenchy, Chicago, both of Ill., assignors to American Screen Printing Equipment Company, Chicago, Ill.

Filed Nov. 2, 1983, Ser. No. 548,207

Int. Cl.³ F26B *3/30*

U.S. Cl. 34—4 15 Claims



10. A method for curing ink on exterior surfaces of articles by exposing the articles to a radiation source at a curing station within a housing, the method comprising the steps of:

inserting the articles one by one through an opening in the housing and placing each article on a horizontally disposed spin table rotatably supported upon a horizontally disposed turntable within the housing either manually or mechanically;

rotating the turntable to bring each of series of compartments on the table to transport the articles in a circular path successively past the radiation source within the housing;

selectively rotating each spin table about a vertical axis as it passes through the curing station and past the radiation source while the turntable continues to rotate; and

removing the articles one by one from their associated spin tables as the turntable continues to rotate.

4,535,550

PROCESSING OF PARTICULATE MATERIAL

Karl H. Walter, Henley South, Australia, assignor to Adelaide & Wallaroo Fertilizers Ltd., Adelaide, Australia

PCT No. PCT/AU82/00125, § 371 Date Apr. 11, 1983, § 102(e) Date Apr. 11, 1983, PCT Pub. No. WO83/00546, PCT Pub. Date Feb. 17, 1983

PCT Filed Aug. 6, 1982, Ser. No. 488,539

Claims priority, application Australia, Aug. 10, 1981, PF0152

Int. Cl.³ F26B *3/04*

U.S. Cl. 34—33 **22 Claims**



1. Apparatus for processing of particulate material, said apparatus comprising: a vessel including a cylindrical shell having its axis inclined to the horizontal so that one end is raised relative to the other end, a respective end plate at each end of the shell, and means for charging processing gas into the shell from a source thereof; said vessel being open at said ends to enable particulate material solids to be charged continuously through said one end thereof into the shell and to enable said solids to be discharged continuously from the other end thereof; said shell being rotatable on said axis so that a tumbling bed of particulate solids is formed and retained during rotation substantially within a second one, in the direction of said rotation, of first and second lower quadrants of the shell; said gas charging means comprising a gas supply pipe passing into the vessel through an end thereof, and at least one discharge conduit in communication with the gas supply pipe and extending within and along substantially the full length of the shell; the at least one gas discharge conduit being fixed, within said second quadrant, against rotation with the shell, and having port means comprising a plurality of outlets spaced along its length; the at least one conduit being fixed within said second quadrant at a location such that, during rotation of the shell, the at least one conduit is within said tumbling bed and mechanically disperses particulate material of the bed by engagement therewith, and at a location such that the at least one conduit is spaced from, and discharges said gas outwardly toward, said shell to cause the gas to be discharged within said bed and to effect contact between said gas and particulate material of the bed at substantially below the elutriation velocities for particles of said material.

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TRANSFER APPARATUS

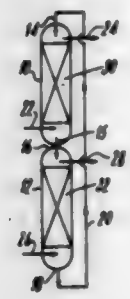
Michiel J. Groeneveld, Oldenzaal; Albert B. Verver, Huissen, and Willibrordus P. M. Van Swaaij, Losser, all of Netherlands, assignors to James Howden & Company, Glasgow, Scotland

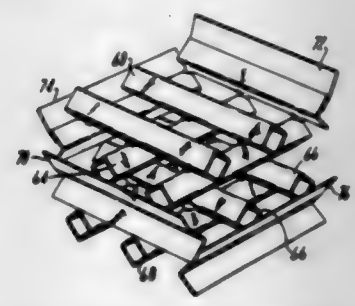
Filed Mar. 14, 1984, Ser. No. 589,635

Claims priority, application Netherlands, Sep. 15, 1982, 8203577

Int. Cl.³ F26B *17/14*

U.S. Cl. 34—170 **13 Claims**





1. Transfer apparatus comprising, in combination:

a. a vessel defining a vertically extending contact chamber having upper and lower parts;

b. a solids inlet in the upper part of said vessel for solid particulate material;

c. a solids oulet in the lower part of said vessel for solid particulate material;

d. a fluid inlet in the lower part of said vessel;

e. A fluid outlet in the upper part of said vessel;

f. A plurality of layers of bars extending generally horizontally across said vessel, at a level below the solids inlet and fluid outlet and above the solids outlet and fluid inlet, the bars of each layer being substantially parallel to one another and having a spacing between adjacent bars which is substantially the same for the bars of that layer, the parallel bars of each layer extending transversely, at an angle to the parallel bars of the adjacent layer or layers, said bars being effective to give an even distribution of solid particulate material over the cross-section of the contact chamber as it flows downwardly in said contact chamber and an even distribution of fluid over the cross-section of the contact chamber as it flows upwardly in said contact chamber.

4,535,552

SPAGHETTI DRYER

Gregory K. McManus, San Mateo, and Masato Otani, Hayward, both of Calif., assignors to Microdry Corporation, San Ramon, Calif.

Filed May 12, 1983, Ser. No. 493,996

Int. Cl.³ F26B *19/00*

U.S. Cl. 34—236 **13 Claims**

1. In combination,

a drying oven,

a first pair of spaced apart, parallel shafts respectively having an external, generally helical groove therein,

said first pair of shafts extending in a vertical direction,

a plurality of rods each having spaced apart portions respectively located in said grooves,

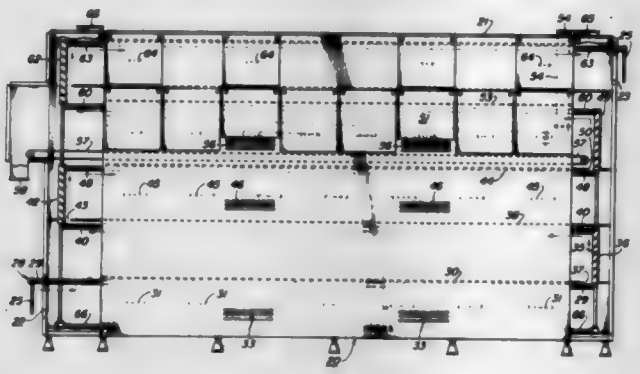
drive means for rotating said shafts in synchronism to move

said rods in a direction parallel to said shafts through said oven,

a second pair of spaced apart, parallel shafts respectively having an external groove therein,

said second pair of shafts being horizontally disposed,

transfer means for transferring said rods from the grooves of one of said pairs of shafts to the grooves of the other of said pair of shafts during the transfer thereof from one of said pairs to the other,



said rods being simultaneously located in said grooves of both of said pairs of shafts during the transfer thereof from one of said pairs to the other,

the shafts in said one of said pair of shafts extend in proximity to the shafts in said other of said pair of shafts, and

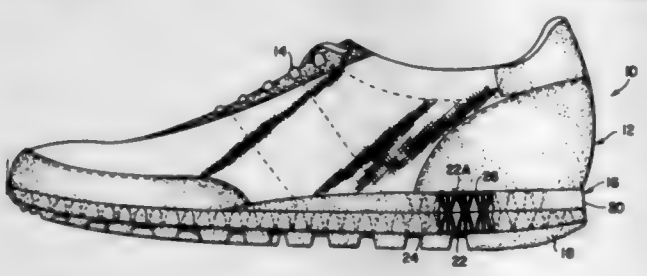
the end portions of said grooves adjacent said vertical shafts in said second pair of shafts having an increasing base diameter to lift said rods into the lower ends of the grooves in said vertically disposed shafts.

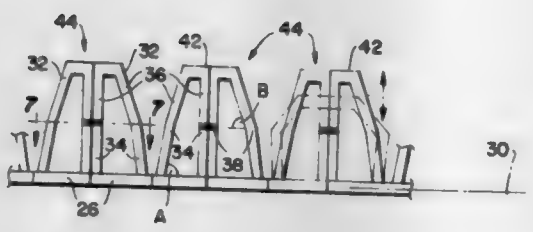
4,535,553

SHOCK ABSORBING SOLE LAYER

Thomas Derderian, Exeter; Edward C. Frederick, Kingston, both of N.H., and Alexander L. Gross, Aspen, Colo., assignors to Nike, Inc., Beaverton, Oreg.

Filed Sep. 12, 1983, Ser. No. 531,087
Int. Cl.³ A43B *13/18*
U.S. Cl. 36—28 **41 Claims**





1. A shock absorbing member for use in a sole of footwear comprising:

a plurality of elongate base elements interconnected to delineate the base perimeters of a plurality of interconnected open cells;

a plurality of elongate flexible legs extending from said base elements in a plurality of groups of elements converging toward one another to define a plurality of generally conical shaped projections; and

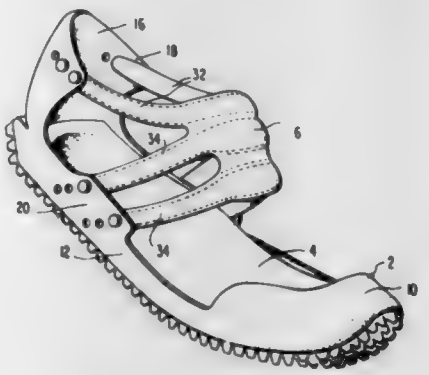
a plurality of connecting elements, each connecting the convergent ends of said flexible legs of one of said conical shaped projections, whereby a load placed on said base elements or said connecting elements causes said flexible legs to resiliently flex to absorb said load.

4,535,554

MOLDED FOOTWEAR

Marcos G. De Obaldia B., P.O. Box 9-089, Panama 9, Panama

Filed Aug. 17, 1983, Ser. No. 524,061
Claims priority, application Panama, Jan. 25, 1983, 032057
Int. Cl.³ A43B *5/1*
U.S. Cl. 36—113 **13 Claims**



13. An article of footwear, comprising,

a body member, a foot support member and a harness member,

said body member being a flexible integrally molded plastic member which has a sole portion, a forward portion with a toe cup, a rear portion with a forwardly open pocket and a heel cup which has forwardly extending side flaps, upstanding longitudinal sidewalls located on opposite sides of the foot support member and having upper edges which are about at the same height as the upper surface of the foot support member, each of said sidewalls having an upwardly extending tab portion,

said foot support member being a flexible integrally molded member which overlies the sole portion and has an upper surface provided with a toe recess, recess means for accommodating a ball of a wearer's foot, recess means for accommodating the heel of a wearer's foot, and a raised arch support portion, said foot support member having a rear portion retained in said forwardly open pocket of the body member,

said harness member being connected to the body member and being operable to retain the body member on a wearer's foot, said harness member being a piece of flexible molded elastic plastic material which has a soft texture for the comfort of a wearer, said harness member having generally horizontal straps and inclined straps which are inclined downwardly and rearwardly, said generally horizontal straps being connected to the side flaps of the heel cup, said inclined straps being connected to the tab portions of said sidewalls;

said article of footwear being open from the toe cup to the harness to expose a wearer's foot.

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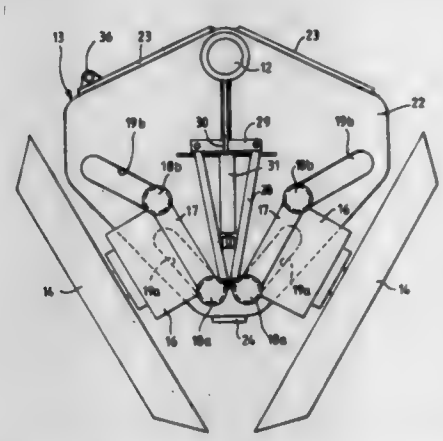
TRENCHER WITH PLURAL DIGGING WHEELS HAVING ADJUSTABLE INCLINATION

Gilles Petraud, Moncoutant, France, assignor to Cerimon, Moncoutant, France

Filed Feb. 28, 1984, Ser. No. 585,215
Claims priority, application France, Mar. 4, 1983, 83 03602
Int. Cl.³ E02F *5/08*
U.S. Cl. 37—94 **9 Claims**

1. A machine for digging and cleaning out trenches comprising a frame, a support carried by the frame, two cutters having a frustoconical shape and axes of rotation which are inclined to the horizontal, mounting means mounting said cutters on said support and comprising, for each cutter, a housing carrying

guide rollers, slots defined by said support and having different inclinations, said rollers being guidedly engaged in said slots, means for adjusting the inclination of said axes for the purpose



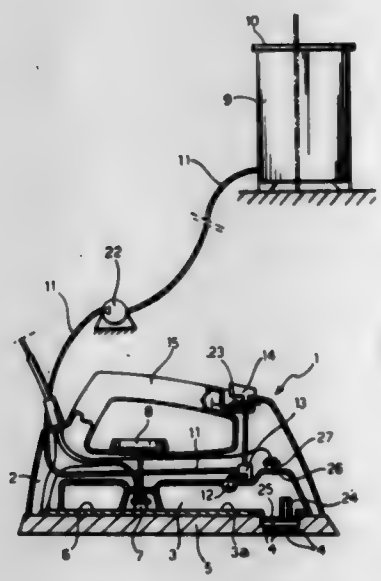
of modifying the inclination of walls of the trench to be produced, said means for adjusting the inclination comprising a jack mounted in said support, and links connecting said jack to said housings.

4,535,556

STEAM IRONING APPARATUS WITH A SEPARATE WATER RESERVOIR

Alfredo Cavalli, 9, Via G. Galilei, Pessano Con Bornago, Milan, Italy

Filed Feb. 22, 1984, Ser. No. 582,461
Claims priority, application Italy, Mar. 1, 1983, 20966/83[U]; Mar. 22, 1983, 21223/83[U]
Int. Cl.³ D06F *75/12*
U.S. Cl. 38—77.6 **6 Claims**



1. Steam ironing apparatus comprising a steam iron having a body provided with a hand-grip, a steam generating evaporation chamber within said body, an ironing plate attached to said body and provided with a plurality of through holes in fluid communication with said chamber, and a unit for supplying water to said steam generating chamber wherein the improvements consist in said unit comprising:

a water reservoir structurally independent of said iron;

a water supply duct providing liquid communication between said reservoir and said steam generating chamber in said steam iron;

a cut-off valve carried by said steam iron and connected in said duct,

a manual valve control located on said hand-grip of said steam iron and operatively connected to said valve for operating the latter;

a pump in said duct operatively connected to said manual control so as to be rendered operative when said cut-off valve is opened; and

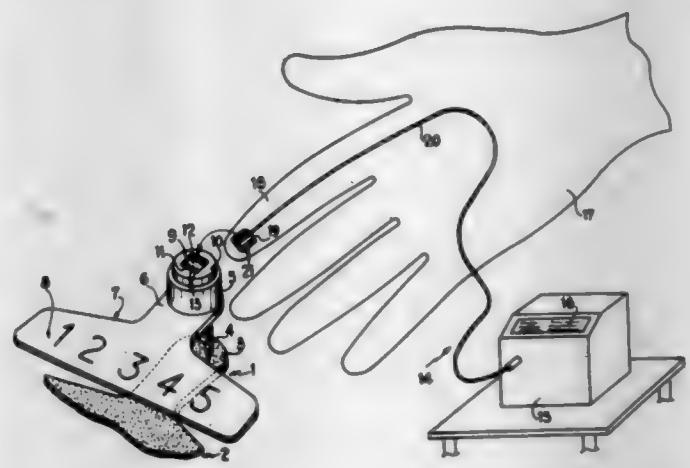
a spray nozzle connected within the body of said steam iron to said water supply duct through said cut-off valve, said spray nozzle being disposed in said steam generating chamber to supply liquid thereto in spray form; said ironing plate being provided with a recessed steam manifold communicating with said steam generating chamber having a base which is structurally independent of said ironing plate and being povided internally with a steam duct having an open end close to the top of said chamber, the other end of said steam duct opening outside the chamber into said steam manifold.

4,535,557

LABEL FOR THE IDENTIFICATION OF OBJECTS AND APPARATUS FOR USING SAID LABEL

Alain Porcher, Vitre, France, assignor to Societe Nouvelle Rockall France S.A., Vitre, France

Filed Feb. 23, 1982, Ser. No. 351,366
Claims priority, application France, Oct. 7, 1981, 81 18862
Int. Cl.³ G09F *3/00*
U.S. Cl. 40—300 **3 Claims**



1. An apparatus for the identification of a large number of objects in combination with a label, said label comprising a support element for carrying information, means for attaching said support element to the object to be identified, the support element having a region of information for receiving intelligible data concerning the object, a region carrying items of information which are not directly intelligible to unauthorized persons, and electronic means in said region carrying unintelligible items of the information, said electronic means being for processing said information and comprising a semi-conductor circuit which permits the storage and the reading of data relating to the object, said apparatus comprising a portable device for communicating with said electronic means for processing the information and a device connected to said portable device for utilizing the information recorded on said labels, said portable communication device comprising a glove having fingers, said semi-conductor circuit comprising contact elements and one of said fingers carrying contact means for application against said contact elements.

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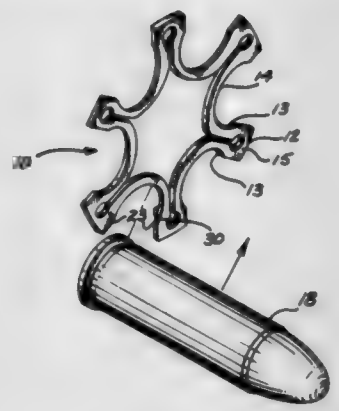
CARTRIDGE HOLDER

Vladimir Benesh, 14036 95th Ave., NE., Bothell, Wash. 98011

Filed Mar. 16, 1984, Ser. No. 590,156
Int. Cl.³ F42B *39/04*
U.S. Cl. 42—89 **5 Claims**

1. A cartridge holder which comprises a substantially annular flat member having a plurality of separate radially extending outward extensions, said extensions formed from the end portions of substantially arcuately shaped resilient bands, the outer ends of adjacent bands being joined by flexible bars, said bands opening outwardly so that when the end portion of a

standard cartridge is pressed between any two extensions, the resilient band encompasses and conforms to a substantial portion of the circumference of said cartridge, securing said cartridge to said flat member, adjacent extensions being flexible in a circumferential direction when cartridges are positioned therein, so that said cartridges can move relative to each other upon insertion into a cylinder.

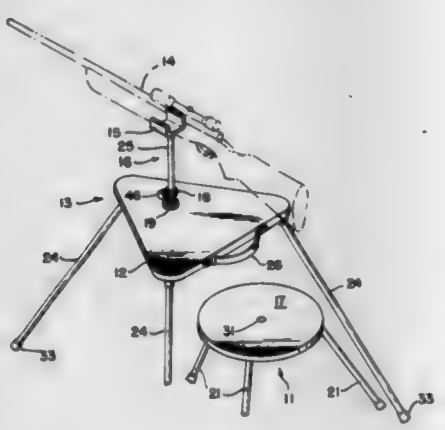


4,535,559

PORTABLE SHOOTING BENCH

Michael F. Hall, 328 NW. 202nd, Seattle, Wash. 98177

Filed Jul. 20, 1983, Ser. No. 515,475
Int. Cl.³ F41C *29/00*
U.S. Cl. 42—94 **16 Claims**



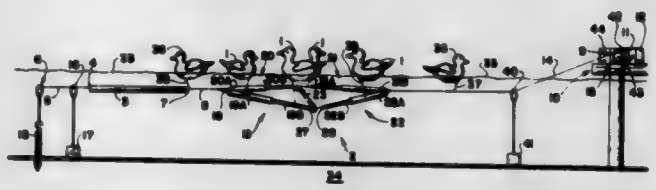
1. Apparatus for optimizing the accuracy of shooting of rifles, comprising:
a rifle support apparatus comprising:
means for mounting said support apparatus,
a bracket,
a table having a top,
said top having a hole for accomodation of said means for mounting said support apparatus,
said hole having an axis normal to said top and a center,
said means for mounting said support apparatus comprising:
a plurality of parts and
a subassembly of some of said plurality of parts,
said subassembly including a shaft having a first, longitudinal axis and a hole having a second axis normal to said first axis,
said means for mounting said support apparatus further comprising:
means for adjusting the position of said shaft linearly along said first axis and means for adjusting the position of said shaft rotationally about said first axis,
said bracket being pivotally attached to said shaft at said hole having said second axis, and being adjustable about said second axis,
said means for mounting said support apparatus being attached in said hole,
in said top of said table with said first axis coincident with said axis of said hole in said top of said table,
whereby the position of a rifle inserted into and supported by said apparatus is rotationally adjustable about said second axis of said shaft, linearly adjustable along said first axis normal to said top of said table and rotationally adjustable about said first axis.

4,535,560

DUCK DECOY MOVEMENT APPARATUS

Jack O'Neil, Baton Rouge, La., assignor to Roy & Kiesel, Baton Rouge, La.

Filed Sep. 27, 1982, Ser. No. 424,074
Int. Cl.³ A01M *31/06*
U.S. Cl. 43—3 **5 Claims**



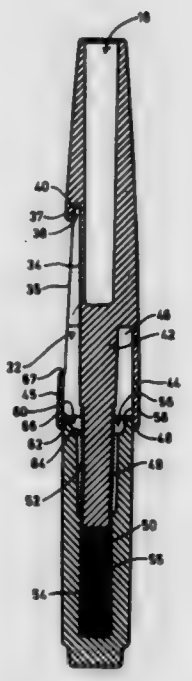
1. An apparatus for creating life-like movements in floating decoys comprising:
(a) a submersible frame comprising two arcuately-shaped tubular members hingedly connected to one another at their ends to which said decoys are attached by flexible lines,
(b) an elastic band anchored at one end away from said frame, said band being attached at its opposite end to said frame, and
a motor having a reel attached to a shaft of said motor for reeling in and out a reel line attached at one end to said frame and attached at is opposite end to said reel, wherein said motor is provided which turn said motor on and off at time intervals which are vareid by voltage to said timers, said voltage being generated by the backspin on said motor shaft caused by the contraction of said elastic band.

4,535,561

TWO PIECE MOLDED ADJUSTABLE ROD HANDLE

Lorens G. Hlava, Tulsa, Okla., assignor to Brunswick Corporation, Skokie, Ill.

Filed Jul. 5, 1983, Ser. No. 510,728
Int. Cl.³ A01K *87/06*
U.S. Cl. 43—22 **3 Claims**



1. A telescoping fishing rod handle for mounting a rod and a fishing reel of the type having an elongate mounting foot

with forwardly and rearwardly directed legs, each leg tapering toward a free end, comprising:

a foregrip having a rearwardly opening slot for reception of the forwardly directed leg of the reel foot, a sloping wall surface extending from the entrance to the slot into the slot, a longitudinally directed stem threaded at least partially along its length and an outer continuous wall which in conjunction with the stem, forms an annular, cylindrical recess; and

a buttgrip having an outer peripheral wall, an annular forwardly opening undercut for the reception of the rearwardly directed leg of the reel foot defined cooperatively between an end of the peripheral wall and the stem, a sloping wall surface defined at said end of the peripheral wall extending from the entrance to the undercut into the undercut and being continuous about the periphery of the undercut, and an internally threaded bore for mating with the stem, the buttgrip extending within the cylindrical recess,

said foregrip and buttgrip being adjustably movable, each toward and away from the other in a lengthwise direction by effecting relative rotation between the foregrip and buttgrip about a longitudinal axis,

the forwardly and rearwardly directed, tapering legs being of a dimension to wedge respectively within the slot and the undercut,

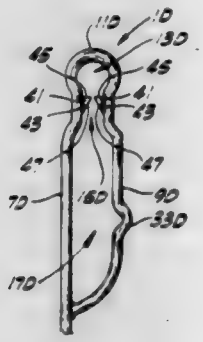
the adjustment of the buttgrip and foregrip toward each other captures the foot in a mounted position between the sloping walls of the slot and the undercut and adjustment of the foregrip and buttgrip away from each other permits the reel foot to be freed for disassembly of the reel.

4,535,562

DEVICE FOR ATTACHING A HOOKED ITEM FOR CATCHING FISH OR THE LIKE TO A LINE WITH A KNOT THEREIN

Jewell C. Fry, Rte. 2, Box A-18, Osage Beach, Mo. 65065

Filed Mar. 25, 1983, Ser. No. 478,694
Int. Cl.³ A01K *83/00*
U.S. Cl. 43—44.95 1 Claim



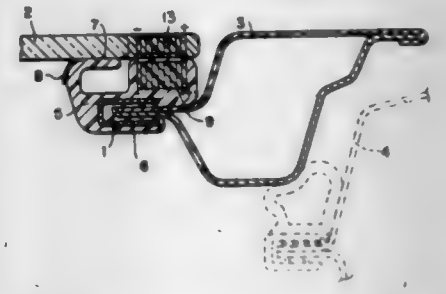
1. A device for attaching a hooked item for catching fish or the like to a line with a knot therein, said line having a predetermined diameter, said device being generally U-shaped having first and second side portions and an end portion joining the side portions, said device further having a first section near the end portion with a width between the side portions at least as great as the diameter of the line, a second section adjacent said first section with a width between the side portions less than the width of the first section, a third section adjacent the second section with a width between the side portions at least as great as the diameter of the line, and the end of one side portion opposite the end portion being joined to the hooked item, a latch disposed between the side portions of the second section, said latch comprising two latch elements, one latch element being attached to the inside of one side portion of the second section and the other latch element being attached to the inside of the other side portion of the second section, said latch elements being adapted for permitting the line to be pulled from the third section through the second section to the first section and preventing the line from slipping back from the first section through the second section to the third section.

4,535,563

WINDOW SEAL

Francois Mesnel, Neuilly-sur-Seine, France, assignor to Etablissements Mesnel, Carrieres-sur-Seine, France

Filed Nov. 8, 1983, Ser. No. 550,041
Claims priority, application France, Nov. 8, 1982, 82 18659
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—478 10 Claims



1. A seal for a movable window, said window being mounted in a supporting structure having a window opening and being capable of movement between a closed position in which said window covers said window opening, and an open position in which said window uncovers said window opening, said supporting structure having an outer surface, and said window having an outer surface substantially flush with said supporting structure outer surface when said window is in said closed position, said opening having an inner peripheral edge and said window having an outer peripheral edge, said seal comprising:

a first portion mounted to at least a part of said inner peripheral edge, said first portion comprising: a flexible body, a first magnetic element received in said flexible body, and a flexible sealing member;

a second portion mounted to at least a part of said outer peripheral edge in a position to face said first portion and to contact said flexible sealing member when said window is in said closed position, said second portion comprising: a casing member, and a second magnetic element received in said casing member; and

flocking connected to at least one of said first and second portions, said flocking being positioned between said contacting area of said first and second portions when said window is in said closed position for reducing friction between said first and second portions to facilitate sliding of said window in said window opening;

wherein at least one of said first and second magnetic elements is a permanent magnet.

4,535,564

WEATHERSTRIP MOUNTABLE IN A SLOT

Charles Yackiw, Fairport, N.Y., assignor to Schlegel Corporation, Rochester, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,481
Int. Cl.³ E06B *7/16*
U.S. Cl. 49—489 13 Claims

1. An elongate weatherstrip comprising:

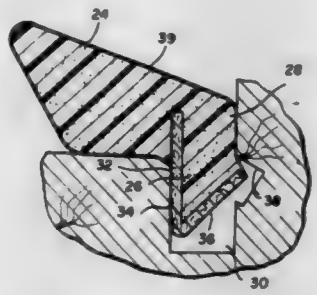
an elongate sealing body of resilient foamed synthetic resin material,

said sealing bodyhaving a pair of elongate sealing and anchoring lobes joined by a narrow elongate rib portion of resilient foamed synthetic resin material;

a thin flexible moisture resistant coating covering at least said sealing lobe and said rib portion; and

a flexible elongate hook-shaped anchoring member of a

material less compressible than said synthetic resin material enclosing at least a portion of said anchoring lobe and



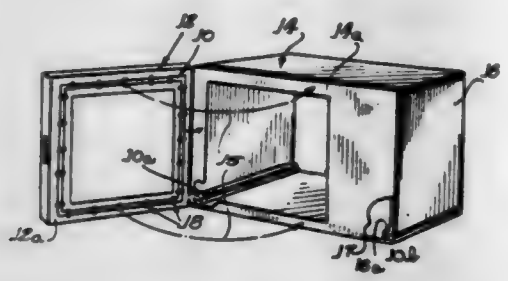
resiliently biased into an open position by said resin material.

4,535,565

GASKET FASTENER ARRANGEMENT

Lloyd A. Erickson, Park Ridge, Ill., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed May 26, 1983, Ser. No. 498,387
Int. Cl.[3] E06B *7/16*
U.S. Cl. 49—493 8 Claims



1. In combination, a one-piece, integrally formed clip for securing an elongate compressible gasket of given cross-sectional dimensions to a panel and a clip-receiving aperture in the panel, said clip comprising: means defining a bight portion dimensioned for receiving said elongate gasket therewithin; a pair of resilient leg portions integrally joining said bight portion and normally extending outwardly therefrom in substantially parallel, spaced apart relation; said legs respectively terminating in substantially similar, oppositely outwardly diverging resilient barb portions; said barb portions diverging generally in the direction of said bight portion for resisting removal with respect to said through panel aperture; said aperture comprising a single, continuous aperture including means for permitting ingress of said legs and associated barb portions therethrough but substantially resisting removal thereof; and said leg portions include a pair of complementary and similar inwardly converging surfaces spaced apart from said bight portion, whereby a compressive forced applied to said strap results in said compressible gasket urging said leg portions substantially mutually outwardly.

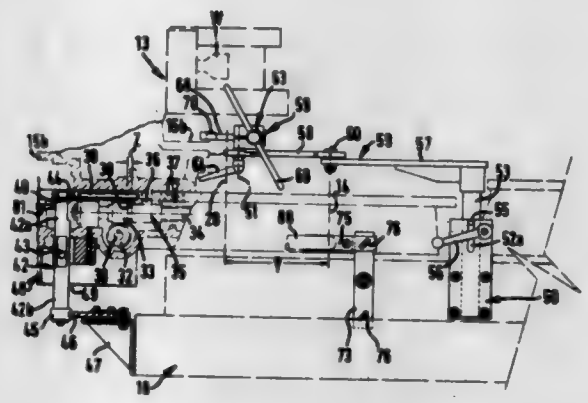
4,535,566

APPARATUS FOR MOVING A TOOL IN A CONTROLLED MANNER

Peter H. H. Soper, Rugby, and Andrew S. Cammack, Estover, both of Great Britain, assignors to Autoflow Engineering Limited, Warwickshire, England

Filed May 10, 1983, Ser. No. 493,331
Claims priority, application United Kingdom, May 10, 1982, 8213396
Int. Cl.[3] B24B *13/00, 17/02*
U.S. Cl. 51—124 L 11 Claims

1. Lens generating apparatus comprising a bed, a mounting pivotally mounted on the bed, a tool carrier supported on the mounting for pivotal movement therewith along a first path, and means for sliding the carrier along a second path generally transverse to the first path as a result of movement of the carrier along the first path, the tool carrier comprising a fixed first section on said mounting and a second section pivotally mounted on the first section to enable the orientation of the



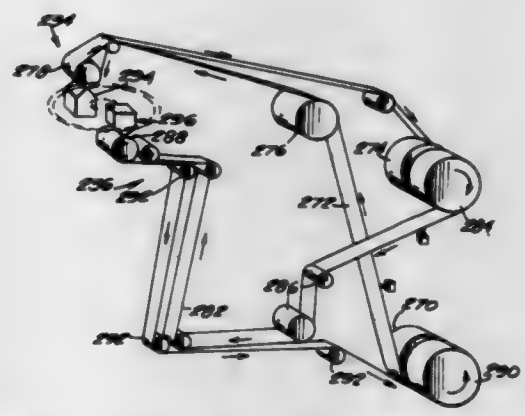
tool relative to a workpiece, and adjustment means for pivoting the second section relative to the first section as a result of said movement of the carrier along the first path.

4,535,567

COMPUTER MAGNETIC MEDIA BURNISHER

Paul E. Seaborn, Los Gatos, Calif., assignor to Seaborn Development, Inc., San Jose, Calif.

Filed Aug. 26, 1983, Ser. No. 526,966
Int. Cl.[3] B24B *21/00*
U.S. Cl. 51—140 5 Claims



1. A device for burnishing floppy disks, said device comprising:

a frame;

means mounted on the frame for supporting and rotating the disks;

a first burnishing roller mounted on the frame and positioned relative to the disk supporting means so that the roller will lie proximate a disk mounted on said supporting means, said roller being capable of receiving a burnishing tape and supporting said tape to contact the disk;

an air nozzle directed at and spaced-apart from the first burnishing roller so that an air stream emerging from the nozzle will urge a disk mounted on the supporting means against the burnishing tape on the roller; and

means for directing an airstream through the nozzle.

4,535,568

BELT SANDER

Charles H. LaFave, 11500 SW. Denny Rd., Beaverton, Oreg. 97005

Filed Nov. 18, 1983, Ser. No. 553,046
Int. Cl.[3] B24B *21/00*
U.S. Cl. 51—148 7 Claims

1. A belt sander comprising:

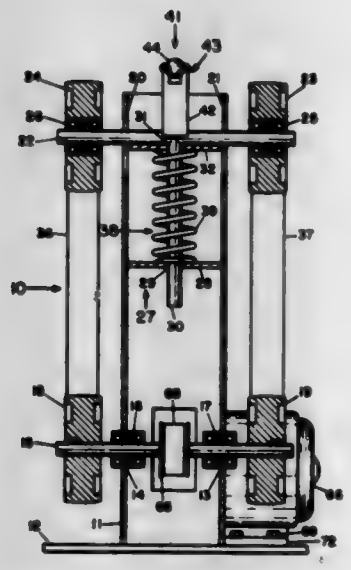
a vertical casing having two horizontally opposing vertical slots;

an idler shaft passing through said slots;

a first idler pulley mounted external to the casing on one end of the idler shaft for rotation about an axis;

a first power driven, rotatable drive pulley, externally mounted on the casing, having a fixed, horizontally disposed rotation axis;

a lower alignment plate mounted in the interior of the casing and having a vertical bore;



an upper alignment plate slideably mating the interior of the casing and having a vertical bore;

a guide shaft slideably mating the vertical bores of the upper and lower alignment plates and attached to the idler shaft; and

means for positioning the idler pulley rotational axis with respect to the drive pulley rotational axis to tension a belt trained about the drive and idler pulleys.

4,535,569

ARRANGEMENT FOR STARTING-UP A POSITION REGULATOR OF A GRINDING WHEEL SUPPORT

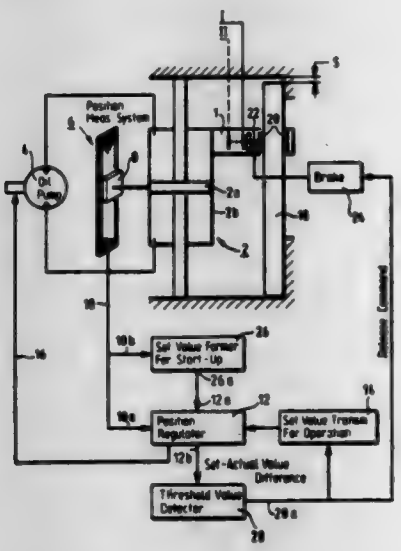
Guy-Francois Blanc, Zürich, and Fritz Loehrer, Bïch, both of Switzerland, assignors to Maag Gear-Wheel and Machine Company, Zürich, Switzerland

Filed Sep. 24, 1982, Ser. No. 423,436

Claims priority, application Switzerland, Oct. 1, 1981, 6346/81

Int. Cl.³ B24B *49/00*

U.S. Cl. 51—165.9 9 Claims



1. An arrangement for regulating the start-up of a position-regulated displaceable grinding wheel support, comprising;

a linear motor which does not have any self-locking action and serves to move the grinding wheel support out of a defined rest position thereof;

a position measuring system detecting the defined rest position of said grinding wheel support;

a position regulating system regulating the position of said grinding wheel support during a start-up phase and during an operational phase of the positional regulation thereof;

said position measuring system being operatively connected with said position regulating system;

brake means operatively associated with said grinding wheel support;

a retaining element defining a predetermined displacement path;

said brake means acting upon said retaining element such that said brake means engage said retaining element in said defined rest position of the grinding wheel support which thus is supported at said retaining element; and

said brake means being operatively connected to said position regulating system such that, during said start-up phase of said positional regulation of said grinding wheel support and starting from said defined rest position thereof, a start-up set position is determined by means of a small start-up distance which is selected within said predetermined displacement path defined by said retaining element, and such that said operational phase of the positional regulation of said grinding wheel support is started and said brake means are released at said start-up set position of said grinding wheel support.

4,535,570

MACHINE FOR BEVELING

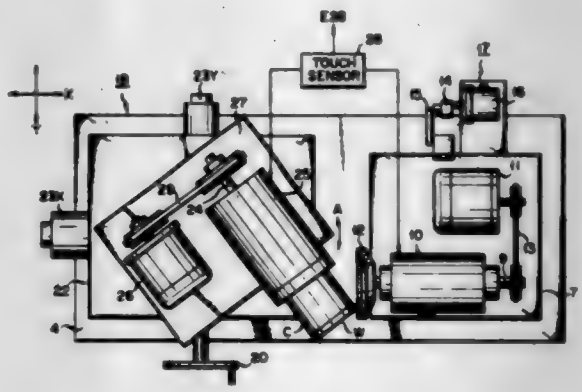
Nobuo Ochiai, Kawasaki, and Takashi Tsumagari, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 4, 1983, Ser. No. 491,645

Claims priority, application Japan, May 4, 1982, 57-73357; Jul. 1, 1982, 57-112561

Int. Cl.³ B24B *49/02*

U.S. Cl. 51—165.77 13 Claims



1. An apparatus for machining the periphery of an electrically nonconductive workpiece, comprising:

a grinding wheel with an electrically conductive grinding surface,

means for holding either said workpiece or, an electrically conductive test piece having a predetermined bevel,

moving means for changing the relative distance between said holding means and said wheel,

touch sensor means for generating a touch signal when the bevel of said test piece held by said holding means electrically contacts the grinding surface of said wheel, and

control means coupled to said touch sensor means and to said moving means, for detecting, when said touch signal is generated, machining end position data (N1) corresponding to the relative distance between said holding means and said wheel, and for actuating, when said workpiece is held by said holding means, said moving means according to said machining end position data (N1), so that machining of the periphery of said workpiece is effected.

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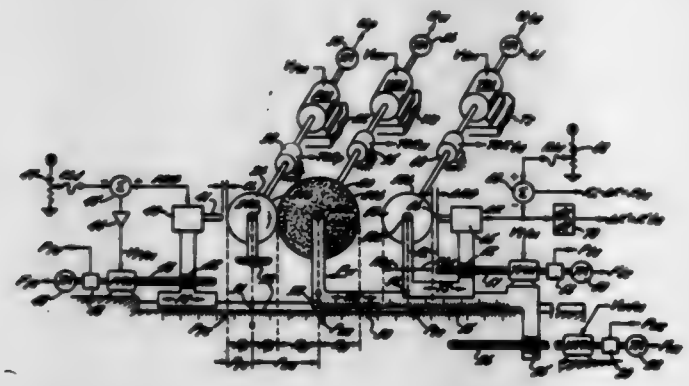
GRINDING CONTROL METHODS AND APPARATUS

Roderick L. Smith, Rockford, Ill., assignor to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Division of Ser. No. 249,192, Mar. 30, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,242

Int. Cl.[3] B24B *53/00*

U.S. Cl. 51—165.87 34 Claims



1. The method of restoring the face of a grinding wheel which has deteriorated from the desired shape, said method comprising

rotating the wheel and feeding the wheel face into relative rubbing contact with the operative surface of a truing element, said surface conforming to the desired shape for the wheel face, the hardness of the truing element material being less than the hardness of the grit material of the wheel, and

said method being characterized by and including

conjointly establishing the relative surface speed of said rubbing contact and relative infeed rate of said element and wheel to make the ratio W′/TE′ greater than 1.0, where W′ and TE′ are the volume per unit time rates of removal of materials from the wheel and element, respectively.

4,535,572

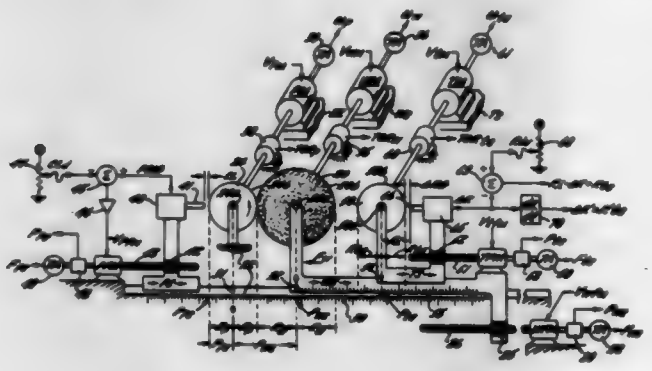
GRINDING CONTROL METHODS AND APPARATUS

Roderick L. Smith, Rockford, Ill., assignor to Energy-Adaptive Grinding, Inc., Rockford, Ill.

Continuation of Ser. No. 249,192, Mar. 30, 1981, abandoned. This application Feb. 15, 1984, Ser. No. 580,601

Int. Cl.[3] B24B *53/00*

U.S. Cl. 51—165.87 93 Claims



1. The method of restoring or maintaining the face of a grinding wheel in a desired shape or sharpness, said method comprising:

rotating the wheel and relatively feeding the wheel face into relative rubbing contact with the operative surface of a truing element, said surface conforming to said desired shape, and

said method being characterized by and including

controlling said relative motions of said wheel and element to make the specific truing energy ratio fall within a preselected range.

4,535,573

PROFILING APPARATUS FOR A GRINDING WHEEL IN A GEAR GRINDING MACHINE

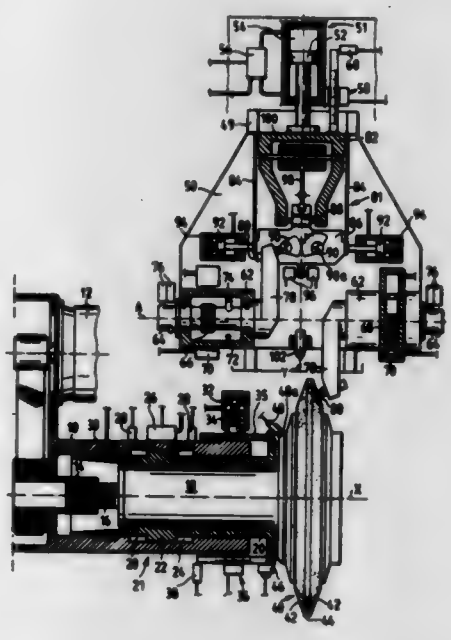
Milton Mesey, Wallisellen; Roman Shcwaighofer, Geroldswil, and Meinrad Donner, Nuolen, all of Switzerland, assignors to Maag Gear-Wheel & Machine Company Limited, Zurich, Switzerland

Filed Dec. 16, 1983, Ser. No. 562,085

Claims priority, application Switzerland, Dec. 24, 1982, 7543/82

Int. Cl.[3] B24B *53/00*

U.S. Cl. 51—165.87 12 Claims



1. A profiling apparatus for at least one substantially ring-shaped flank of a grinding wheel having a grinding wheel axis in a gear grinding machine, comprising:

at least one dressing tool for dressing the substantially ring-shaped flank of the grinding wheel;

a radial slide displaceable at substantially right angles relative to said grinding wheel axis;

said at least one dressing tool being arranged at said radial slide;

radial drive means for relative radial displacement between said at least one dressing tool and said grinding wheel at substantially right angles relative to said grinding wheel axis;

a radial displacement measuring device for measuring the radial displacement of said dressing tool relative to said grinding wheel;

said at least one dressing tool defining an operative position and a wear measuring position at said radial slide;

means for displacing said at least one dressing tool between said operative position and said wear measuring position;

a wear measuring device arranged at said radial slide by means of which the wear of said at least one dressing tool can be measured;

axial drive means for relative axial displacement between said at least one dressing tool and said grinding wheel in the direction of said grinding wheel axis;

an axial displacement measuring device for measuring the axial displacement of said at least one dressing tool relative to said grinding wheel;

control means for coordinating said relative radial and axial displacements of said dressing tool and said grinding wheel in correspondence to a desired flank profile of said substantially ring-shaped flank of said grinding wheel; and

said control means increasing said relative axial displacement of said dressing tool and said grinding wheel essen-

tially by the amount of the wear of said at least one dressing tool.

4,535,574

SANDING TOOL AND METHOD OF MAKING SUCH TOOL

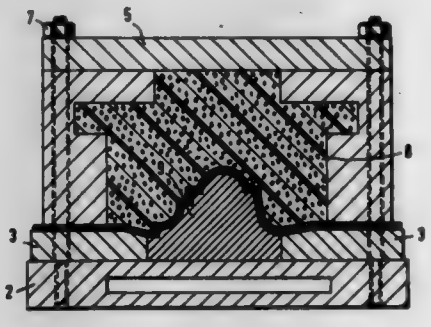
Alfred Dettelbach, Stuttgart, and Gerhard Gresser, Oberboihingen, both of Fed. Rep. of Germany, assignors to REICH Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany

Filed Oct. 25, 1982, Ser. No. 436,311

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3144077

Int. Cl.³ B24D *15/00*

U.S. Cl. 51—204 **4 Claims**



1. A sanding or finishing tool, comprising a molded, cured foam material body having a longitudinal dimension, said body having at least one profiled surface contour for supporting abrasive or finishing material, an intermediate layer of elastic material having said abrasive or finishing material secured to one of its surfaces, said intermediate layer of elastic material having initially a substantial ability to expand in a direction across said longitudinal dimension for assuming precisely said profiled surface contour, said elastic material of said intermediate layer remaining sufficiently elastic or flexible in said direction across said longitudinal dimension even with the abrasive or finishing material secured thereto for precisely hugging said profiled surface contour, said intermediate layer being bonded with its other surface to the profiled surface contour of said foam material body as a result of the foaming and curing of the foam material.

4,535,575

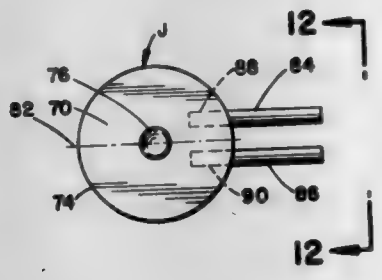
MOUNTING APPARATUS FOR PROCESSING LENS BLANKS

Frank D. Sorrells, Knoxville, Tenn., assignor to Cole National Corporation, Cleveland, Ohio

Filed Dec. 2, 1982, Ser. No. 446,412

Int. Cl.³ B24B *13/02*

U.S. Cl. 51—216 LP **11 Claims**



1. An adapter for holding a lens blank and lens block assembly in a fining and polishing apparatus comprising:

an adapter body having opposite faces, a non-circular socket extending into said body from one of said faces for receiving a correspondingly shaped projection on a lens block, said socket providing a lens block base line reference axis;

guide means projecting laterally from the outer periphery of said adapter body parallel to said axis for cooperation with locating means on the fining and polishing apparatus to prevent rotation of said body and thereby maintain a desired orientation of the reference axis, said guide means including a pair of guide rods extending outwardly from the outer periphery of said body adjacent each other in a parallel spaced-apart relationship on opposite sides of said reference axis, said locating means extending between said two guide rods; and,

a substantially centrally located recess extending into said body from the other face thereof and adapted for receiving an associated pin on an associated spindle pressure arm of the fining and polishing apparatus.

4,535,576

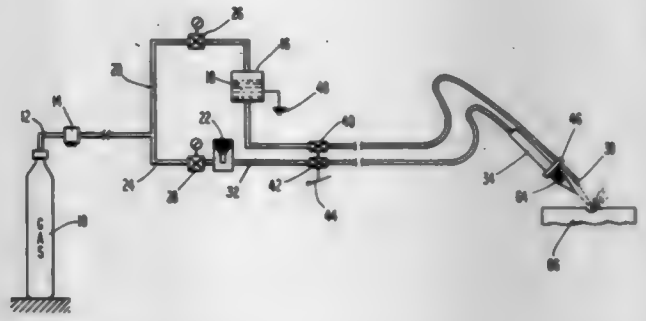
ANTI-STATIC PROCESS FOR ABRASIVE JET MACHINING

Rahul B. Shukla, and Douglas L. Shipman, both of Piscataway, N.J., assignors to Pennwalt Corporation, Philadelphia, Pa.

Filed Mar. 28, 1984, Ser. No. 594,169

Int. Cl.³ B24C *3/32*

U.S. Cl. 51—413 **13 Claims**



1. Abrasive jet machining apparatus for removing portions of a workpiece comprising,

a gas supply and means for containing said gas supply,

an abrasive powder supply communicating with said gas supply, and means for containing said abrasive powder supply,

means for providing a powder stream from said gas and abrasive powder,

an electrically conducting electrolyte solution, connected to a ground, communicating with said gas supply, and means for containing said electrolyte solution,

means for simultaneously delivering said powder stream and solution to said workpiece portions whereby build-up of static charges on said workpiece are instantaneously discharged to said ground through said electrolyte solution connected to said ground.

4,535,577

OFFICE PANELLING SYSTEM

Adrian Tenser, Markham, Canada; Alfred J. Prizlow, and Gerald I. Peters, both of Warren, Mich., assignors to Global Upholstery Company Limited, Downsview, Canada

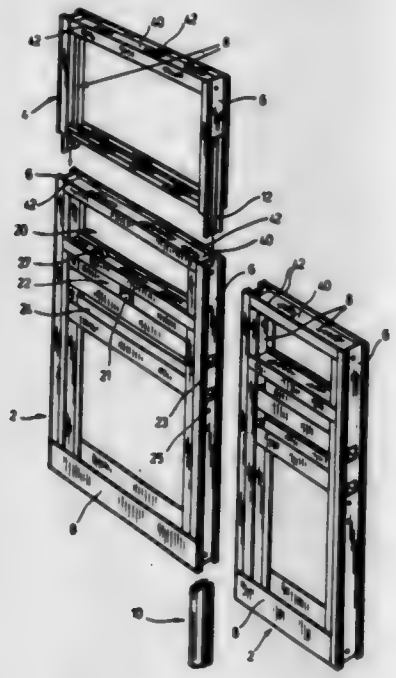
Filed Dec. 15, 1982, Ser. No. 448,401

Int. Cl.³ E04F *19/06, 19/08*

U.S. Cl. 52—221 **4 Claims**

1. In an office panelling system having a plurality of free standing panels horizontally connected to adjacent panels by hinge strips a portion of which are slidably received in said adjacent panels, at least some of said panels having a steel generally rectilinear framework which is divided horizontally in the height thereof by a horizontal member dividing said panel into separate and distinct upper and lower horizontally extending compartments, said horizontal member receiving at least one electrical receptacle which extends through said horizontal member into said lower compartment for connection to a power supply and is exposed within said upper compartment to receive electrical plugs of office equipment within said upper compartment and interior to said panel, said upper and lower compartments each having separate decorative panels removably secured to said framework to close the sides

thereof, said upper compartment being separately accessible by removing said separate upper compartment decorative panel to access said electrical receptacle for receipt of electrical plugs of office equipment in said receptacle and to store excess



electrical cord of such office equipment within said upper compartment, and means for accommodating such cord to extend between said upper compartment and the panel exterior.

4,535,578

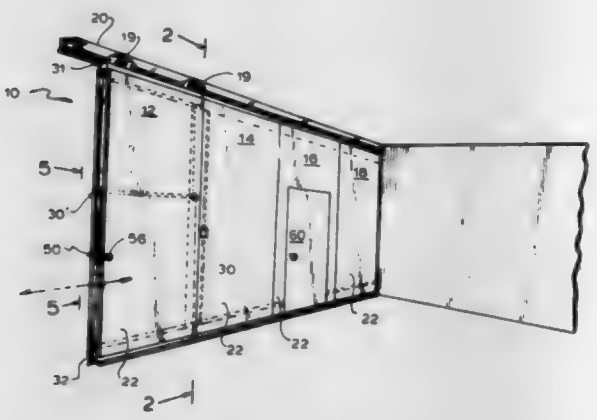
SEAL-ACTUATING MECHANISM FOR A WALL PANEL

Carl F. Gerken, New Castle, Ind., assignor to American Standard Inc., New York, N.Y.

Continuation of Ser. No. 502,862, Jun. 9, 1983, abandoned. This application Jul. 20, 1984, Ser. No. 632,923

Int. Cl.³ E04D *15/00*

U.S. Cl. 52—243.1 **30 Claims**



1. A seal-actuating mechanism, adapted to be coupled to a spring-loaded seal assembly of a wall panel, said seal assembly being shiftable vertically to and away from one side of said panel, said wall panel including a frame having a pair of opposed members, said seal-actuating mechanism comprising:

a shaft extending between said pair of opposed frame members and mounted for rotation therein;

a pair of operator members including pivot lever means mounted on said shaft and disposed in spaced relation between said opposed frame members; and

a pair of tension members disposed in said wall panel, one end of each tension member being coupled to its respective pivot lever means, and the other ends coupled to said shiftable seal assembly, said pivot lever means and said tension members cooperating with said shaft to provide releaseable latch means so that when said shaft is rotated, said seal assembly is shifted, respectively from its retracted, latched position to its extended, unlatched position.

4,535,579

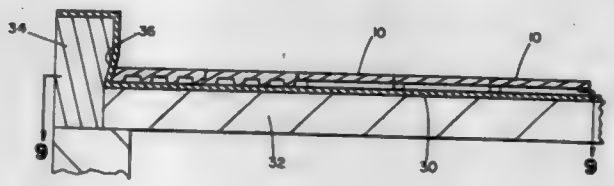
ROOF BALLAST BLOCK

John V. Burgoyne, Waltham, and Thomas E. Phalen, Jr., Winchester, both of Mass., assignors to Roofblok Limited, Fitchburg, Mass.

Filed Aug. 5, 1983, Ser. No. 520,647

Int. Cl.³ B32B *3/14*

U.S. Cl. 52—408 **4 Claims**



1. A roof ballast block having generally rectangular top and bottom faces, and two parallel edge faces bevelled at substantially identical angles of 12° to 23° from the vertical, the remaining two edge faces being parallel and substantially vertical, and having a plurality of parallel spaced channels in its bottom face,

said block being characterized by a density of 85 to 155 lb. per cu ft., a compressive strength of at least 2500 psi, a flexure tensile strength of at least 300 psi, and a capability of undergoing at least 100 freeze-thaw cycles without cracking.

4,535,580

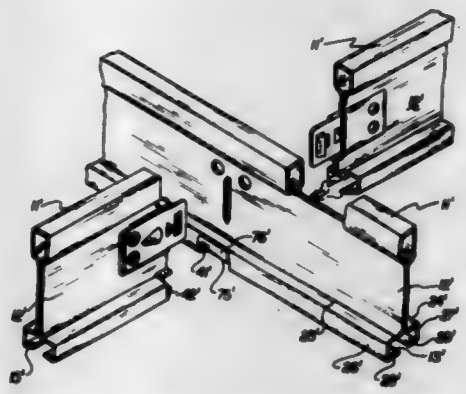
SCREW SLOT RUNNER SYSTEM

Richard Shirey, Avon, Ohio, assignor to Donn Incorporated, Westlake, Ohio

Continuation-in-part of Ser. No. 281,829, Jul. 9, 1981, abandoned, which is a continuation-in-part of Ser. No. 267,737, May 28, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 500,943

Int. Cl.³ C04B *5/52*

U.S. Cl. 52—484 **10 Claims**



1. A suspension ceiling grid system comprising elongated runners formed with a bulb at their upper edge, a planar central web, and an open channel at their lower edge, said open channel being defined by lateral flanges extending in opposite directions from the lower edge of said web, a pair of laterally spaced, substantially parallel channel sidewalls, and inturned lips extending laterally toward each other from said sidewalls and terminating at spaced and opposed inner edges, said lips cooperating to define a longitudinal opening along the lower side of said channel, said grid system including first runners having end connectors adapted to connect with second runners at predetermined locations, said second runners providing notches in their channels at said locations, said notches extending through said lips and a first portion of the associated sidewalls adjacent to said lips leaving intact a second portion of

said sidewalls and said flanges extending uninterrupted past said notch, said lips at the ends of said first runners and adjacent to the notches of said second runners being shaped to fit together to form a miter joint when said runners are interconnected, said second portions providing substantial resistance to buckling of said runners at said notches when lateral load are applied thereto.

4,535,581

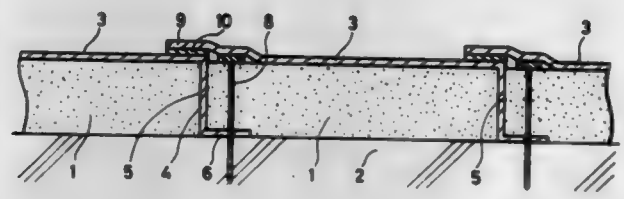
METHOD OF HEAT-INSULATING AND WATER-PROOF CONSTRUCTION UTILIZING A ROLL HAVING A WEB PORTION AND A FLAP PORTION

Toshiaki Fujiki, and Hikaru Kano, both of Hyogo, Japan, assignors to Mitsuboshi Belting Ltd., Hyogo, Japan

Continuation-in-part of Ser. No. 321,012, Nov. 13, 1981, Pat. No. 4,443,993. This application May 17, 1983, Ser. No. 495,326

Int. Cl.³ E04D *1/28*

U.S. Cl. 52—746 **7 Claims**



1. A method of constructing a heat-insulating and water-proof structure, comprising the steps of:

forming a water-proof membrane having a flat web portion and a plurality of flap portions by connecting a plurality of water-proof membrane sections together, each membrane section comprising a flat portion and a flap portion integral therewith wherein adjacent first and second membrane sections are connected by connecting a lower surface of the flat portion of the second adjacent membrane section with an upper surface of the flap portion of the first adjacent membrane section;

laying at least one first heat-insulating member on a base surface;

placing said water-proof membrane on said at least one first heat-insulating member so as to align said web portion therewith;

bending a flap portion along an edge of said first insulating member;

placing an edge of said flap portion on said base surface; and

laying a second heat-insulating member on said base surface so as to position an edge portion of said second heat-insulating member on said edge of said flap portion.

4,535,582

SKIN PACKAGING MACHINE HAVING MICROPROCESSOR-BASED CONTROL

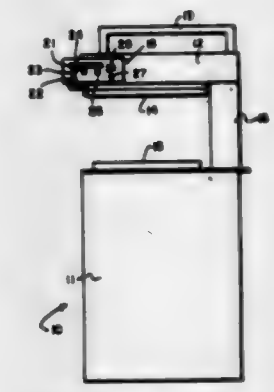
Stephen H. Jones, LaFrance, S.C., assignor to Nordson Corporation, Amherst, Ohio

Filed Nov. 12, 1982, Ser. No. 441,132

Int. Cl.³ B65B *11/52*

U.S. Cl. 53—52 **8 Claims**

1. A skin packaging machine comprising an oven, a frame adapted to receive film from a film supply, a base having a perforated surface, means for drawing a vacuum at the surface, and means for moving the frame from a position adjacent the oven to a position adjacent the perforated surface, an alphanumeric display, and a control arrangement including means for producing control signals to effect operation of functions of the skin packaging machine in accordance with parameters such as time input to the control arrangement, means for successively displaying skin packaging machine functions on the alphanumeric display, and means for entering parameter information related to functions displayed on the alphanumeric display.



4,535,583

ROTARY TYPE CAPPING APPARATUS

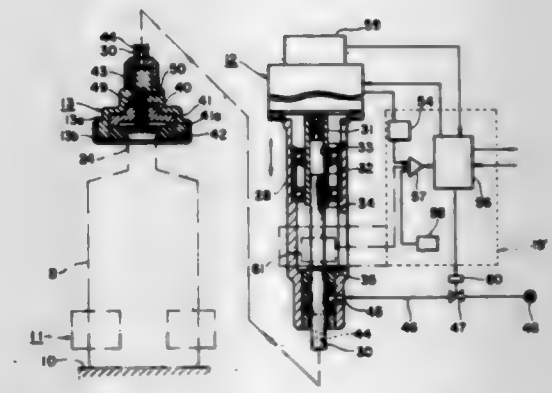
Hideo Tanaka, and Shiaru Muranaka, both of Kanazawa, Japan, assignors to Shibuya Kogyo Co., Ltd., Japan

Filed Sep. 29, 1983, Ser. No. 537,465

Claims priority, application Japan, Oct. 4, 1982, 57-174235; Oct. 4, 1982, 57-174236

Int. Cl.³ B65B *57/00*; B67B *3/26*

U.S. Cl. 53—75 **13 Claims**



1. Apparatus for capping screw caps onto the mouths of containers, comprising:

carrier means for securely and temporarily carrying said containers;

cap holding means for releasably holding said caps to cap said containers, said cap holding means being rotatably supported;

driving means for rotating said cap holding means in a predetermined direction, said driving means including a torque motor which is operatively connected to said cap holding means so as to rotate said cap holding means in said predetermined direction;

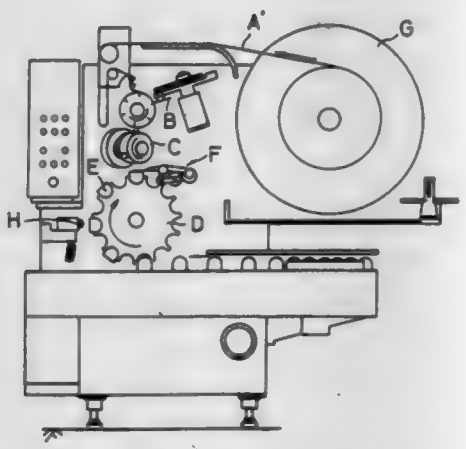
moving means for moving said cap holding means between an operative position where capping is to be carried out and an inoperative position where said cap holding means is located away from said containers carried on said carrier means; and

control means for controlling said driving means to increase the torque of said cap holding means until a predetermined level is reached while said cap holding means are capping said caps onto the mouths of said containers, said control means including first detecting means for detecting the rotating condition of said torque motor and a control circuit for controlling the torque of said cap holding means in accordance with information supplied from said first detecting means.

4,535,584
DEVICE FOR BONDING AN ARTICLE TO A COMMODITY

Nobutaka Tsubota, Kyoto, Japan, assignor to Tetra Pak International Aktiebolag, Alle Lund, Sweden

Filed Dec. 22, 1983, Ser. No. 565,020
Claims priority, application Japan, Dec. 24, 1982, 57-232088; Dec. 30, 1982, 57-234156
Int. Cl.³ B32B *31/00*
U.S. Cl. 53—128 4 Claims



1. In an adhering device of the type including a roll of long, narrow, continuous package, a means for feeding the continuous package to a cutter, a bucket wheel from picking up the commodity and transferring the commodity to an adhering position and means for transferring the cut continuous package to the adhering position and for adhering the cut package to the commodity, said means for transferring and adhering comprising:

a vacuum transfer device comprising:

a rotatable transfer drum;

a plurality of suction pipes provided uniformly about a periphery of the transfer drum;

a source of compressed air;

a void chamber provided in said drum;

a plurality of Venturi tubes for generating a vacuum provided in said void chamber and communicating each with a suction pipe; and

a pressure chamber provided in said drum to which said compressed air is supplied and which supplies compressed air to each of said Venturi tubes; and

a pusher plate which receives the cut continuous package from the vacuum transfer device and adheres it to the commodity, said pusher plate being characterized in that it is adapted to make a combined movement including a circular movement in synchronism with a movement of said bucket wheel and a movement in a direction tangential to said bucket wheel.

4,535,585
CAP REMOVAL DEVICE FOR A CELLULAR SAMPLE TREATMENT APPARATUS

Ivan Gardos, Montreal, Canada, assignor to Biomatics Inc., Montreal, Quebec, Canada

Filed Mar. 8, 1984, Ser. No. 587,660
Int. Cl.³ B65B *1/04*
U.S. Cl. 53—247 3 Claims

1. In an apparatus for treating samples of cellular materials wherein the samples are contained in a plurality of sample holders joined together to form a stack,

the apparatus including at least one stack holding tube, open at the top, having a removable cap,

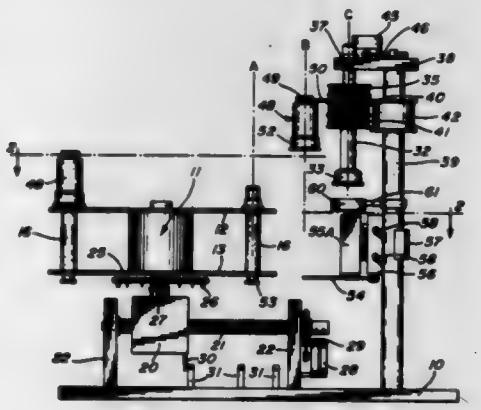
positioning means to move the stack holding tube between a treatment position and a cap removal position,

a transfer tube having a bottom opening positioned in the treatment position above the stack holding tube, and

means to move the stack from the stack holding tube to the transfer tube,

the improvement of a cap removable device comprising

a fork means attached to the means to move the stack from the stack holding tube to the transfer tube,

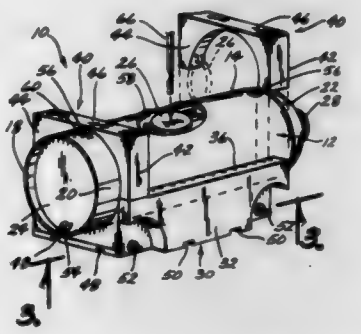


fork mating means on the removable cap, the fork means engaging the fork mating means when the means to move the stack is at a predetermined position, and the stack holding tube is moved to the cap removal position, and the cap is lifted when the means to move the stack is raised.

4,535,586
METHOD OF CONTAINING, STORING, AND TRANSPORTING AGRICULTURAL PRODUCTS IN A HIGH MOISTURE CONDITION

John W. Eberle, Cedar Bluffs, Nebr., assignor to Hawkeye Container Company, Omaha, Nebr.

Filed Oct. 27, 1980, Ser. No. 201,163
Int. Cl.³ B65B *3/04*
U.S. Cl. 53—432 7 Claims



1. A method of containing and storing agricultural products in a high moisture condition, comprising,

providing a generally rigid permanent reusable container having a product opening, an inlet valve and an exhaust valve,

substantially filling said container by inserting an agricultural product into said container through said product opening,

closing and sealing said product opening and container in a substantially fluid tight condition,

displacing the air from said container to the ambient atmosphere through said exhaust valve,

connecting said inlet valve to a source of a substitute gas, replacing said air with the substitute gas, and

disconnecting said inlet valve from said source of substitute gas whereby said agricultural product is independently preserved in said generally rigid container in a high moisture condition.

4,535,587

MULTI-ROLL PACKAGE OF COMPRESSIBLE MATERIALS

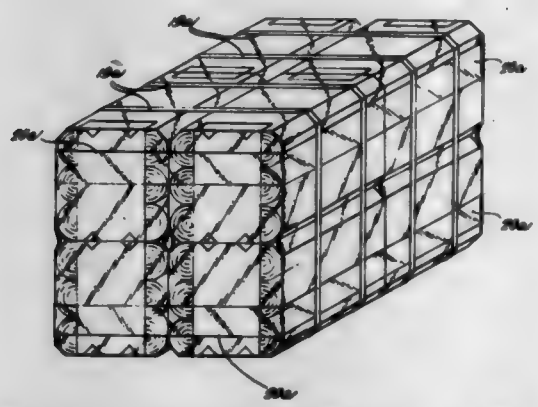
Jean-Claude Rias, Villennes-sur-Seine, France, assignor to Isover Saint-Gobain, Neuilly-sur-Seine, France

Continuation of Ser. No. 250,700, Apr. 2, 1981, abandoned, which is a continuation-in-part of Ser. No. 217,001, filed as PCT FR80/00116, Jul. 9, 1980, published as WO81/00091, Jan. 22, 1981, § 102(e) date Mar. 9, 1981, abandoned. This application Aug. 23, 1983, Ser. No. 525,796

Claims priority, application France, Jul. 9, 1979, 79 17771; Oct. 10, 1980, 80 21735

Int. Cl.[3] B65B *13/20, 53/06, 63/02*

U.S. Cl. 53—436 7 Claims



1. A method for integrating a multiplicity of rolls of compressible material into a unitarily handleable multiple stack, which method comprises assembling a plurality of rolls in groups, the rolls of each group being substantially the same length and being assembled with a plurality of rolls in each of at least two layers superposed upon each other, with the axes of individual rolls of each layer overlying the axes of individual rolls of adjoining layers in common vertical planes and the rolls overlying each other being in contact with each other, assembling each multilayer group of rolls between a pair of contoured panels having grooves in which the adjoining opposite side portions of the assembly of rolls are received, establishing predetermined package dimensions in both directions transverse to the axes of the rolls by partially compressing the assembly of rolls between said contoured panels while restraining lateral spreading of the assembly of rolls between assembly forming walls having predetermined lateral dimension of the assembly, applying bindings to the assembled and partially compressed rolls of each group to form separate integrated multiple roll packages of predetermined dimensions in both directions transverse to the axes of the rolls, releasing the pressure after application of the binding, assembling a plurality of said packages in a stack with the package side surfaces in common planes at both sides of stack, and applying bindings to said stack, the stack bindings comprising shrinkable plastic sheet material, at least a portion of which bridges and is shrunk onto adjoining laterally exposed surfaces in said common planes at the sides of the stacked packages.

4,535,588

CARBON PARTICULATES CLEANING DEVICE FOR DIESEL ENGINE

Susumu Sato, Okazaki; Yukihisa Takeuchi, Aichi, and Masahiro Tomita, Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 479,911, Mar. 28, 1983, abandoned, which is a continuation of Ser. No. 157,082, Jun. 6, 1980, abandoned. This application Oct. 5, 1984, Ser. No. 657,947

Claims priority, application Japan, Jun. 12, 1979, 54-74419; Jul. 11, 1979, 54-88577; Jul. 20, 1979, 54-92753; Oct. 9, 1979, 54-130545; Oct. 16, 1979, 54-133114; Jan. 22, 1980, 55-6491

Int. Cl.[3] F01N *3/02*

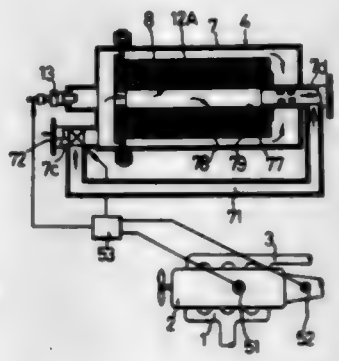
U.S. Cl. 60—286 3 Claims

2. A system for cleaning carbon particulates contained in exhaust gas discharged from an engine, comprising:

a carbon particulates cleaning device adapted to be connected to an exhaust pipe of an engine, said device including therein oxidizing catalyst and filter means for collecting carbon particulates contained in exhaust gas flowing into said device and for cleaning said exhaust gas;

a by-pass pipe for communicating an upstream end of said device with a downstream end thereof;

a valve disposed in said upstream side of said device for opening and closing said bypass pipe and correspondingly



closing and opening the upstream end of said device;

fuel supply means attached to said device at said upstream end thereof for supplying fuel thereinto;

means for detecting operational conditions of said engine; and

computer means for operating said valve and said fuel supply means in response to output signals from said detecting means.

4,535,589

EXHAUST GAS CLEANING DEVICE FOR INTERNAL COMBUSTION ENGINE

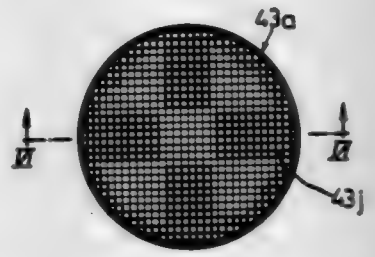
Hitoshi Yoshida, Kariya; Masahiro Tomita, and Shigeru Takagi, both of Anjo, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Division of Ser. No. 381,887, May 25, 1982, abandoned. This application Jun. 13, 1984, Ser. No. 620,543

Claims priority, application Japan, May 26, 1981, 56-79841; Jun. 9, 1981, 56-88483

Int. Cl.[3] F01N *3/02*

U.S. Cl. 60—303 15 Claims



1. An exhaust gas cleaning device for collecting particulates in exhaust gases of an internal combustion engine and burning the collected particulates, comprising:

a filter member which is disposed in an exhaust gas passage of said internal combustion engine for collecting the particulates in the exhaust gases,

said filter member being formed of ceramic and provided with a large number of interconnected passages for passing the exhaust gases therethrough;

an electrical heating means composed of a ceramic base body having at least one heating element which is partially and integrally formed in said base body, said heating element being arranged about the axis of said ceramic base body uniformly;

said ceramic base body being provided with opposed end surfaces and a large number of passages for passing the exhaust gases therethrough and one of said opposed end

surfaces of said base body being closely adhered to an exhaust gas inlet end surface of said filter member; and

an electric power supplying means for electrically connecting said heating element to an electric power source.

4,535,590

THERMAL SERVO-MOTOR, PARTICULARLY FOR VALVES

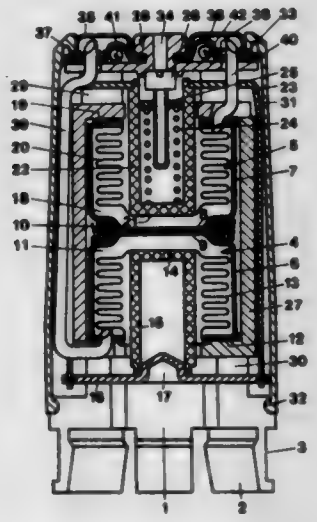
Finn Jacobsen, Nordborg; Jens J. Molbaek, Lavensby; Jan Zangenberg, Nordborg, and Poul S. Dam, Ketting, all of Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Filed Mar. 29, 1984, Ser. No. 594,977

Claims priority, application Fed. Rep. of Germany, Apr. 18, 1983, 3313999

Int. Cl.³ F03C *5/00*

U.S. Cl. 60—531 **15 Claims**



1. A thermal valve actuating servomotor, comprising, casing means, valve actuating means, first and second operating elements forming expansible chambers, each said element having fixed and moveable parts with said fixed parts being connected to said casing means and said moveable parts being connected to said valve actuating means, first and second container means attached to said casing means and first and second fluid conduit means connecting said container means respectively to said expansible chambers, a temperature dependent vapour filling in each of said casing means and said chambers, first and second heating means respectively for said container means for respectively thermally influencing said fillings, said container means forming spaces which have relatively small volumes compared to the spaces formed by said expansible chambers.

4,535,591

REACTION FORCE MECHANISM FOR BRAKE POWER SERVO BOOSTER

Michio Kobayashi, Saitama, Japan, assignor to Jidosha Kiki Co., Ltd., Japan

Filed Sep. 27, 1983, Ser. No. 536,094

Claims priority, application Japan, Sep. 27, 1982, 57-167850; Sep. 30, 1982, 57-172402

Int. Cl.³ B60T *13/20*; F15B *9/10*

U.S. Cl. 60—554 **18 Claims**

1. A reaction force mechanism for a brake power booster, comprising:

a power piston (**4**) slidably disposed in a shell (**1**);

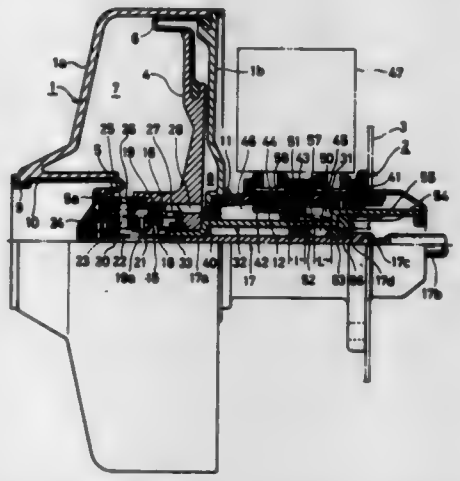
a master cylinder (**2**) connected to said shell on a brake pedal side;

an output shaft (**32**) for linking said power piston with a second piston (**31**) of said master cylinder;

an elastic member (**53**) situated between said output shaft (**32**) and an input shaft (**17**), and forming a boundary of a first hydraulic pressure reaction force chamber (**50**) and capable of being elastically deformed upon reception of pressure in said first hydraulic pressure chamber;

a passage (**57**) for providing communication between said first hydraulic pressure chamber and a second pressure chamber (**45**) of said master cylinder;

said input shaft (**17**) having an end surface (**17*d***) disposed in opposition to said elastic member with a predetermined distance (**δ**) therebetween, said elastic member being made



to abut against said end surface when it is elastically deformed so that the pressure in said first hydraulic pressure chamber is transmitted to said input shaft; and

a valve mechanism (**15**) linked to said input shaft so as to be actuated to generate a fluid pressure difference between a front side and a rear side of said power piston.

4,535,592

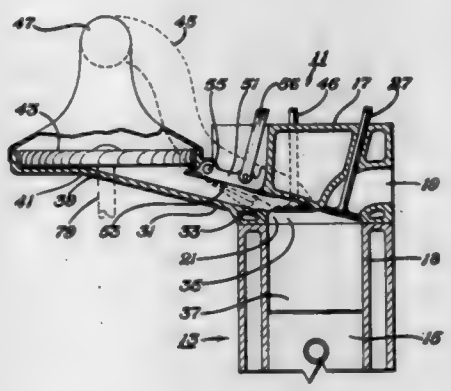
INTERNAL COMBUSTION ENGINE HAVING AN EXHAUST GAS TURBINE

Herbert G. Zinsmeyer, Austin, Tex., assignor to Specialty Systems, Inc., Austin, Tex.

Filed Apr. 12, 1983, Ser. No. 484,208

Int. Cl.³ F02B *41/10*

U.S. Cl. 60—597 **4 Claims**



1. In combination with an internal combustion engine having at least one cylinder carrying a respective reciprocally movable piston, a respective cylinder head closure on said at least one cylinder and closing the end of the respective said cylinder to define a respective combustion chamber with respect to said cylinder piston, inlet manifold means connected with said cylinder for conveying at least an oxygen-containing gas thereto, means for admixing incoming fuel with the oxygen-containing gas, ignition means for firing the fuel in the oxygen-containing gas, to develop power, and exhaust port for the periodic discharging of hot, high pressure combustion products from said cylinder, said exhaust port being disposed in a respective boundary wall of the combustion chamber or cylinder; the improvement comprising:

(a) at least one respective nozzle means adapted for accelerating and conveying the hot, high pressure combustion products from the respective said cylinder to a turbine, said nozzle means having inlet and discharge ends and having its said inlet end contiguous said boundary wall at said exhaust port and sealingly encompassing said exhaust

port so as to prevent leakage of said hot, high pressure combustion products to the atmosphere;

(b) a valve means;

(c) means coupled to said valve means for controlling said valve means to allow cylinder combustion gases to flow through the nozzle means near the end of the expansion (power) stroke of the piston; and

(d) at least one turbine having respective inlet and discharge passageways and an output shaft for delivering power and disposed closely adjacent the nozzle means and having its inlet passageway connected with said discharge end of said nozzle means and sealingly connected therewith so as to prevent leakage of said expanded, high velocity combustion products to the atmosphere and constraining said expanded, high velocity combustion products to pass through said turbine, thereby giving up their energy to said turbine to become low pressure, low velocity exhaust gas, said discharge passageway conveying said low pressure exhaust gas away from said turbine;

said nozzle and valve means including a combination variable geometry nozzle throat valve that varies the nozzle during blowdown beginning with a convergent-divergent nozzle structure at high cylinder pressures so as to produce supersonic flow at initial high cylinder pressures and progresses with smaller discharge end-to-throat area ratios to a simple converging nozzle structure for sonic and slower flows at the succeedingly lower cylinder pressures, that provides variable nozzle shapes throughout the valve opening sequence and that eliminates otherwise irreversible valve throttling losses ahead of said nozzle means, thereby maximizing the nozzle exit gas velocity and energy recovery by the turbine whereby said output shaft of said turbine can deliver power efficiently removed by said variable geometry nozzle valve and said turbine from said hot, high pressure cylinder combustion gases.

4,535,593

METHOD OF AND APPARATUS FOR WARMING HIGH-PRESSURE FEED WATER HEATERS FOR POWER PLANTS

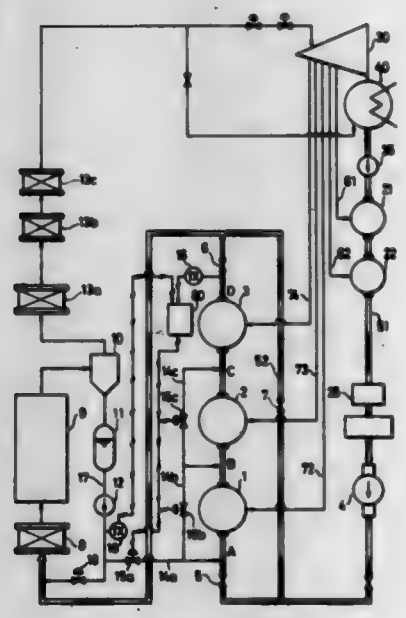
Kenji Sakka, Hitachi, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 23, 1982, Ser. No. 410,601

Claims priority, application Japan, Aug. 28, 1981, 56-133966

Int. Cl.³ F01K *13/02*

U.S. Cl. 60—646 **11 Claims**



1. A method of warming high-pressure feed water heaters for power plants provided with a boiler having a boiler circulation system adapted to return hot water separated by a gas water separator provided in an outlet of a boiler water wall to an inlet side thereof, the method comprising the steps of introducing part of the high temperature water which has circulated in the boiler circulation system into a feedwater system on an inlet side of the high-pressure feed water heater through a warming pipe branching from the boiler circulation system, during a period of time between an ignition of the boiler and a coming into service of said high pressure feed water heater, returning the circulating feed water which has passed through said high pressure feed water heater to said boiler, and controlling the flow rate of said high temperature water flowing through said warming pipe in accordance with the temperature of the feed water at the outlet side of said high pressure feed water heater.

4,535,594

METHOD AND APPARATUS FOR GENERATING POWER AND LOW PRESSURE SATURATED OR NEAR SATURATED STEAM

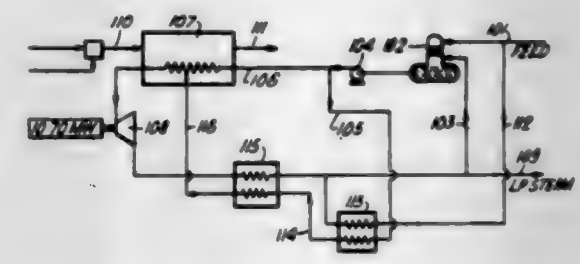
Rodney J. Allam, Guildford, and Alan L. Prentice, Surbiton, both of England, assignors to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Apr. 19, 1984, Ser. No. 601,882

Claims priority, application European Pat. Off., Apr. 19, 1983, 83302191.8

Int. Cl.³ F01K *7/38, 19/10*

U.S. Cl. 60—654 **13 Claims**



1. A method for generating power and low pressure saturated or near saturated steam, which method comprises the steps of:

(a) heating feed water in a boiler to produce superheated steam; and

(b) expanding said superheated steam through a turbine to provide mechanical and/or electrical power and low pressure steam;

characterized in that said method includes the steps of:

(c) using at least part of said low pressure steam to heat a major part of said feed water to a temperature higher than the remainder of said feed water; and

(d) introducing the thus heated part of said feed water and the remainder of said feed water into said boiler at different temperature zones therein.

4,535,595

COOLING DEVICE FOR A LOW TEMPERATURE MAGNET SYSTEM

Tony W. Keller, Rheinstetten, and Wolfgang Müller, Karlsruhe, both of Fed. Rep. of Germany, assignors to Bruker Analytische MeBtechnik GmbH, Rheinstetten-Forchheim, Fed. Rep. of Germany

Filed Feb. 7, 1984, Ser. No. 577,699

Claims priority, application Fed. Rep. of Germany, Feb. 9, 1983, 3304375; Mar. 8, 1983, 3308157

Int. Cl.³ F25B *21/02*

U.S. Cl. 62—3 **37 Claims**

1. A cooling apparatus for a superconducting magnet, comprising:

a magnet coil encircling a test space;

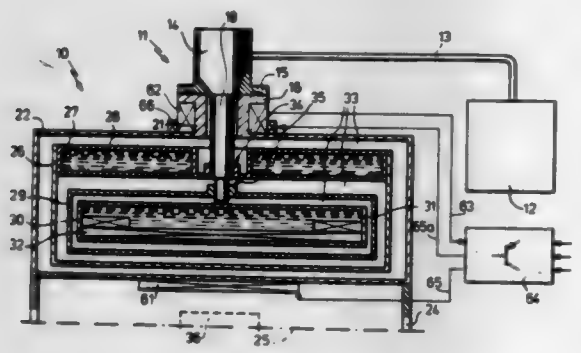
an evacuated outer shell surrounding said magnet coil;

an intermediate shield arranged between said magnet coil and said outer shell;

a refrigerator with moving parts mounted on the outside of said outer shell, said refrigerator having a cooling arm

extending through said outer shell and being in thermally conductive connection with said intermediate shield;

sensing means for picking up magnetic and/or mechanical signals generated by said moving parts of said refrigerator during operation and for producing output signals related to said picked up magnetic and/or mechanical signals; and



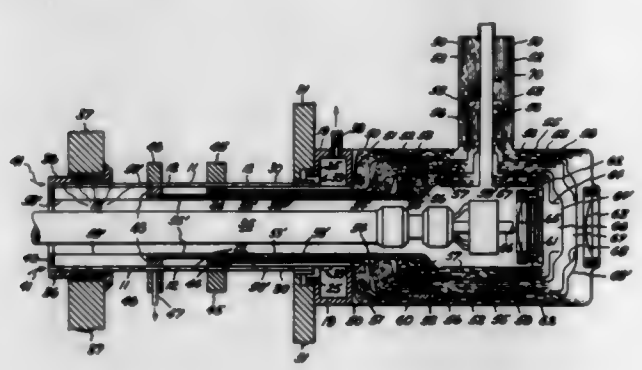
at least one additional coil to which said output signals of said sensing means are fed for compensating magnetic fields generated within said test space by said moving parts of said refrigerator.

4,535,596

PLUG FOR HORIZONTAL CRYOSTAT PENETRATION

Evangelos T. Laskaris, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Mar. 30, 1984, Ser. No. 595,200
Int. Cl.³ F17C *1/00*
U.S. Cl. 62—45 **16 Claims**



1. A plug for a horizontal penetration of a cryostat having an inner wall and an outer wall, said plug comprising:

an outermost, low thermal conductivity housing;

an inner, low thermal conductivity housing disposed within said outermost housing;

at least one intermediate high thermal conductivity housing disposed between said inner housing and said outermost housing;

thermal insulation disposed between said inner housing and said at least one intermediate housing;

thermal insulation disposed between said outermost housing and said at least one intermediate housing;

said inner housing including an inner tubular extension for insertion into said cryostat penetration, said inner extension having first heat station means for fixing the temperature of at least a portion of said inner extension;

said at least one intermediate housing including an intermediate tubular extension for insertion into said cryostat penetration, said intermediate extension having second heat station means for fixing the temperature of at least a portion of said intermediate extension;

said outermost housing including an outermost tubular extension for insertion into said cryostat penetration, said outermost extension being sealably attached to said inner tubular extension so that the volume defined by said outermost housing and said inner housing is evacuable;

said inner housing having pressure relief means disposed therein; and

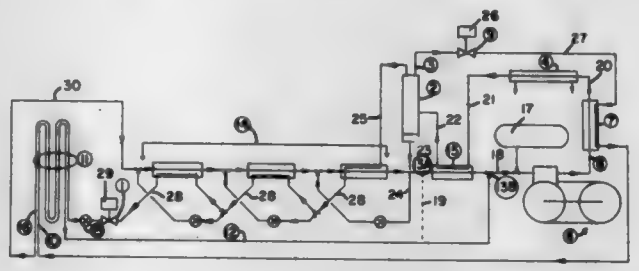
said outermost housing having pressure relief means disposed therein.

4,535,597

FAST CYCLE WATER VAPOR CRYOPUMP

Dale J. Missimer, San Anselmo, and Michael R. St. Pierre, Petaluma, both of Calif., assignors to Marin Tek, Inc., San Rafael, Calif.

Filed Jan. 25, 1984, Ser. No. 573,679
Int. Cl.³ B01D *8/00*
U.S. Cl. 62—55.5 **6 Claims**



1. A system for controlling the temperature of a cryosurface wherein the cryosurface is provided with both a defrost tube and an evaporator tube respectively thermally coupled thereto,

a source of compressed refrigerant,

heater means,

means for directing flow of said refrigerant from said source to said heater means to raise the temperature of the refrigerant,

cooling means,

means for directing flow of said refrigerant to said cooling means to cool the refrigerant, and

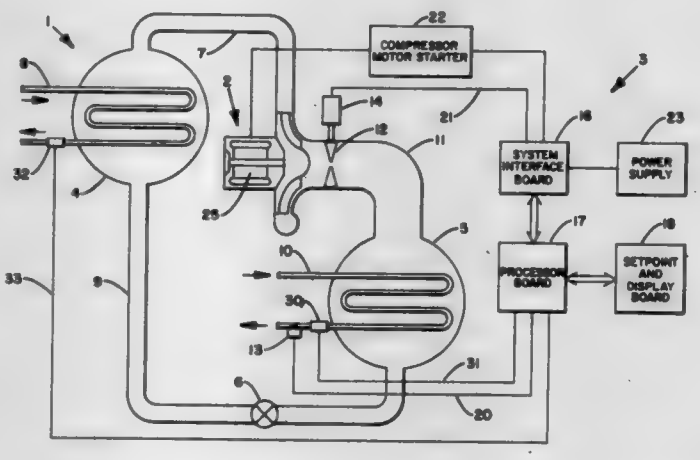
valve means for selectively controlling the flow of said raised temperature refrigerant into the defrost tube and the cooled refrigerant into the evaporator tube.

4,535,598

METHOD AND CONTROL SYSTEM FOR VERIFYING SENSOR OPERATION IN A REFRIGERATION SYSTEM

Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 14, 1984, Ser. No. 610,058
Int. Cl.³ F25B *49/00*
U.S. Cl. 62—126 **9 Claims**



1. A safety control system for sensors in a refrigeration system including a compressor, a condenser, and an evaporator, comprising:

a sensor means for sensing an operating condition and for generating a signal in response to the operating condition, said sensor means having a first prescribed operating range prior to startup wherein any signal generated out-

side said first prescribed range indicates a malfunction of said sensor means and a second prescribed operating range during system operation wherein any preselected number of consecutive signals generated outside said second prescribed range indicates a malfunction of said sensor means,

processor means connected to said sensor means for monitoring generated signals from said sensor means and for determining whether the signals are within respective said first and said second prescribed operating ranges,

said processor means further generating a first alarm signal when a monitored signal falls outside said first prescribed operating range prior to startup, and generating a second alarm signal when any monitored preselected number of consecutive signals falls outside said second prescribed operating range during system operation, and

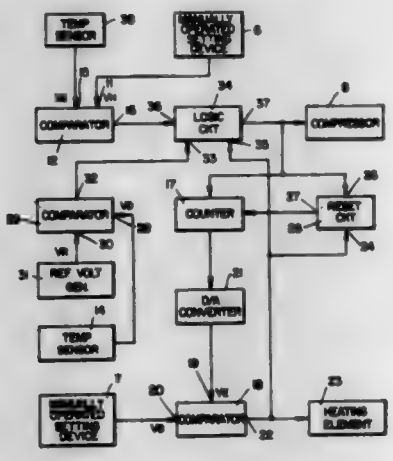
safety means connected to said processor means for receiving said first and said second alarm signals, for aborting startup upon receiving said first alarm signal, and for shutting down said system upon receiving said second alarm signal, whereby shutdowns of said refrigeration system due to malfunctioning sensors is eliminated.

4,535,599

CONTROL DEVICE FOR REFRIGERATING EQUIPMENT

Duilio Besson; Claudio De Marco; Roberto Peruzzo, all of Pordenone, and Giuseppe Ardit, Venice, all of Italy, assignors to Industrie Zanussi S.p.A., Pordenone, Italy

Filed Nov. 18, 1982, Ser. No. 442,777
Claims priority, application Italy, Feb. 5, 1982, 45704 A/82
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—154 **5 Claims**



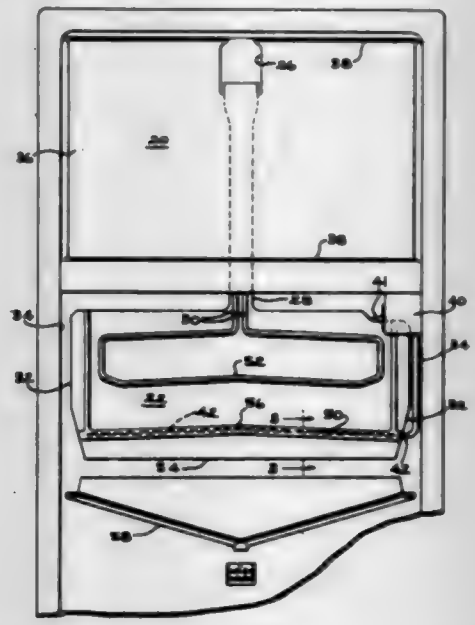
1. A control device for refrigerating equipment having at least one compressor and one defrostable evaporator placed in a space to be refrigerated, said device comprising: first and second manual setting means for generating respective output voltage corresponding to the temperature to be selected for said space and to the number of work cycles corresponding to the humidity level to be obtained in said space, said second manual setting means controlling the number of on-off work cycles to be performed by said means compressor between defrost operations; first and second sensor means for respectively detecting the temperatures of said space and of said evaporator and for generating corresponding output voltages, which respectively control the on-off work cycles of the said compressor according to the space temperature and to the evaporator temperature; a first electronic control means for controlling the on-off work cycles of said compressor depending on the output voltages generated respectively by said first manual setting means, according to the temperature to be obtained in said space and by said first sensor means, according to the temperature detected in said space; a second electronic control means for controlling the on-off work cycles of said compressor between defrost operations, depending on the output voltages generated by said second manual setting means, according to the selected number of on-off work cycles to be performed by said compressor and by a counter means which counts the number of on-off work cycles performed by said compressor, said second electronic control means stopping said compressor when the number of on-off work cycles counted by said counter means is equal to the number selected by said second manual setting means; a heating means for heating said evaporator and defrosting it, said heating means being controlled by said second electronic control means so as to be switched off when said compressor is operating and switched on when said compressor is stopped; and a third electronic control means for controlling the re-start of said compressor depending on the output voltages which are respectively generated by said second sensor means and by at least one reference voltage generator having a fixed reference voltage corresponding to the end of the evaporator defrosting, said third electronic control means determining the re-start of said compressor when said evaporator has been heated by said heating means at a temperature corresponding to the end of its defrosting.

4,535,600

TEMPERATURE CONTROL FOR A CYCLE DEFROST REFRIGERATOR INCORPORATING A ROLL-BONDED EVAPORATOR

Robert B. Gelbard, Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Apr. 16, 1984, Ser. No. 600,986
Int. Cl.³ F25D *21/06*
U.S. Cl. 62—156 **8 Claims**



1. A cycle defrost household refrigerator including a cabinet having an upper lower temperature food compartment and a lower relatively high temperature food compartment, evaporator means for refrigerating said compartments comprising:

a first evaporator located in said low temperature compartment and a second evaporator arranged substantially vertically in said relatively high temperature compartment and connected to said first evaporator in series refrigerant flow relationship;

means for supplying liquid refrigerant to said liquid carrying conduits in said first and second sections in series and for withdrawing evaporated refrigerant therefrom;

a temperature control means in said high temperature food compartment including a temperature sensitive capillary tube portion having a length corresponding substantially to the width of said second evaporator;

said temperature control being operable by the coldest temperature sensed along the length of said capillary for causing said compressor to cycle off to cause defrosting of said section of said evaporator;

a passageway positioned in heat exchange relationship to

said second evaporator extending substantially the entire width between the vertical sides thereof;

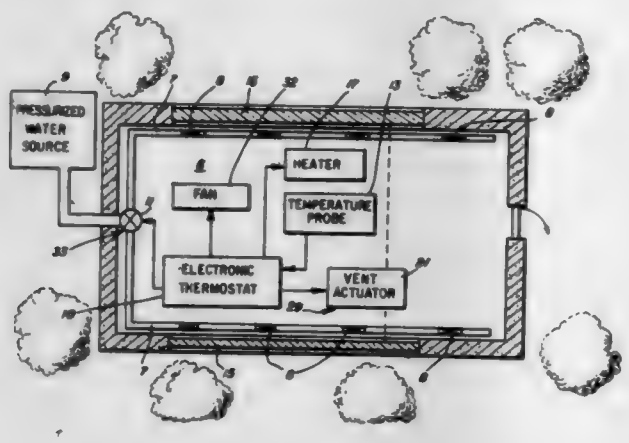
said passageway having a cross-sectional dimension for allowing insertion of said capillary tube portion to a position substantially the full length of said passageway and for insuring thermal relationship between said capillary tube portion and said passageway so that said capillary tube portion is subjected to the limited environment of said passageway and the temperature of said second section.

4,535,601

ENVIRONMENTAL CONTROL SYSTEM

Alfred T. Newell, Jr., and Alfred T. Newell, III, both of Birmingham, Ala., assignors to A. T. Newell Co. Inc., Birmingham, Ala.

Filed Feb. 28, 1984, Ser. No. 584,387
Int. Cl.³ F28D *3/00*
U.S. Cl. 62—171 **28 Claims**



1. In a building having a fogging system for spraying atomized water into a building for cooling animals and or birds contained therein, an improved environmental control system, comprising:

an electronic thermostat including

means for sensing the temperature within the building including a probe with a sensor and means for protecting the sensor from direct contact with the atomized water sprayed into the building, and

means for generating an actuation signal when a preselected temperature associated therewith is sensed by said sensing means and until the temperature is altered by a preselected incremental amount relative to said first preselected temperature; and

means responsive to the actuation signal for actuating said fogging system while said actuation signal is being generated and for deactuating the fogging system when said actuation signal is terminated.

4,535,602

SHIFT LOGIC CONTROL APPARATUS FOR UNEQUAL CAPACITY COMPRESSORS IN A REFRIGERATION SYSTEM

Richard H. Alsenz, 4730 Creek Meadow, Missouri City, Tex. 77459, and Roger C. Ansted, Houston, Tex., assignors to Richard H. Alsenz, Missouri City, Tex.

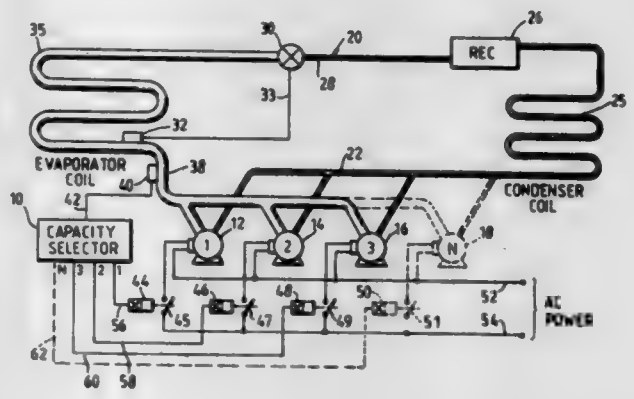
Filed Oct. 12, 1983, Ser. No. 541,278
Int. Cl.³ F25B *7/00*
U.S. Cl. 62—175 **6 Claims**

1. In combination with apparatus for matching the capacity of a cooling system to a cooling load, comprising

a number of commonly piped compressors, at least some of which are not of equal capacity, controllably energized and deenergized by a plurality of actuation means and having a common suction pressure load, each said compressor selectably energized and deenergized independently of the energization state of any other of said compressors to enable more than one said compressor to be selected at a time for change in state energization, and where each combination of energized and deenergized compressors defines a capacity stage;

measurement means for generating an increase capacity signal when said suction pressure exceeds a first preselected value and a decrease capacity signal when said suction pressure falls below a second predetermined value; and

selection means for selecting at least one said compressor to be energized or deenergized in response to and at a delayed time following said increase capacity signal or a decrease capacity signal so as to match capacity to the cooling load,



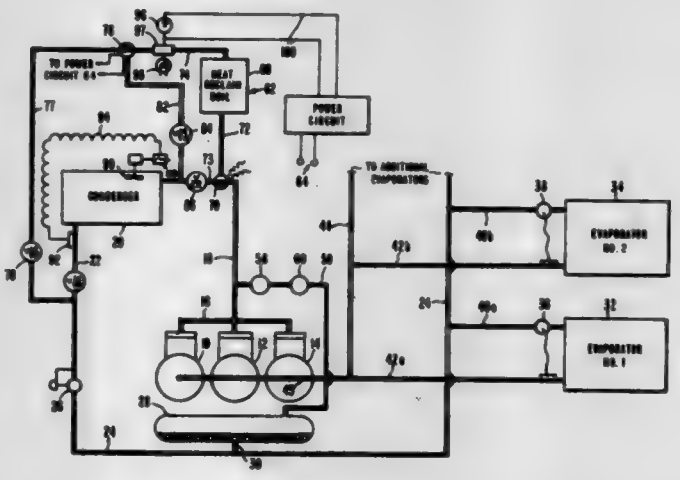
the improvement in said selection means comprising a logic means for selecting no more than two of said compressors at a time for change in state energization, said selection means minimizing cycling of said compressors when matching capacity to the cooling load by skipping over those capacity stages which would require more than two of said compressors to change energization states when increasing or decreasing the capacity of the cooling system.

4,535,603

HIGHLY ENERGY EFFICIENT HEAT RECLAMATION MEANS FOR FOOD DISPLAY CASE REFRIGERATION SYSTEMS

Benjamin R. Willitts, Lawrenceville, and Charles W. Klossman, Burlington, both of N.J., assignors to Emhart Industries, Inc., Farmington, Conn.

Filed Jul. 2, 1984, Ser. No. 627,137
Int. Cl.³ F25B *41/00*
U.S. Cl. 62—196.4 **22 Claims**



1. In a refrigerating system including at least one compressor in which refrigerant is compressed into the form of a hot gas, a condenser, hot gas discharge line means extending from the compressor to the condenser, at least one evaporator, a liquid line extending from the condenser to the evaporators, and

suction line means extending from the evaporator to the compressor, the improvement comprising:

(a) a heat reclaim coil;

(b) means for, at times, diverting the flow of hot gas from the discharge line means to the coil for heat-exchange with the surrounding ambient and at least a partial condensation of the refrigerant within the coil; and

(c) means for bypassing the outflow of refrigerant from the coil around the condenser to the liquid line whenever said refrigerant has been condensed fully to a liquid form within the coil and for, alternatively, directing said outflow to the condenser for further condensation whenever the refrigerant exits the coil as a mixture of gas and liquid.

4,535,604

MACHINE FOR MAKING ICE CREAM AND SIMILAR COLD PRODUCTS, HAVING A REMOVABLE ICE CREAM-MAKING VESSEL

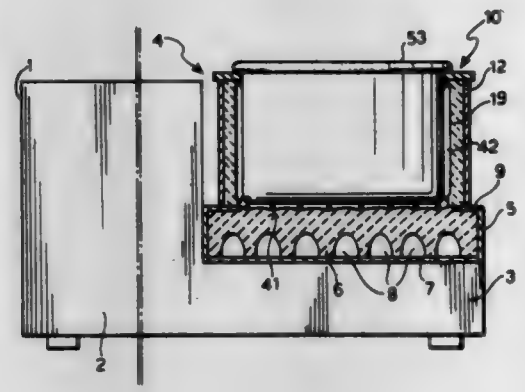
Alfredo Cavalli, 9, Via Galileo Galilei, Pessano Con Bornago (Milan), Italy

Filed May 16, 1984, Ser. No. 610,766

Claims priority, application Italy, May 19, 1983, 21185 A/83

Int. Cl.³ A23G *9/00*

U.S. Cl. 62—342 **4 Claims**



1. A machine for making ice cream and similar cold products comprising a removable ice cream making vessel, a support structure with a base housing, and a substantially cylindrical cooling chamber mounted on said base housing for receiving said removable ice cream making vessel, said cooling chamber having a side wall, at least said side wall of said cooling chamber having a circular cross-section which is incompletely closed on itself whereby it defines a slot extending along a generatrix, said side wall including an outer substantially cylindrical resiliently deformable layer, a stratum of elastically yielding material fixed inside said layer, ducts for circulating refrigerant fluid fixed within said stratum, and means for enlarging said cooling chamber by widening said slot against the resilient reaction of said outer layer, said cooling chamber being mounted on said base housing by means of a first vertical pin located in correspondence with said slot and a second vertical pin in a position diametrically opposite said first pin.

4,535,605

APPARATUS FOR EXTRACTION OF ARTICLES FROZEN IN MOULDS IN A FREEZING MACHINE

Klaus Gram, Vojens, Denmark, assignor to Brodrene Gram A/S, Vojens, Denmark

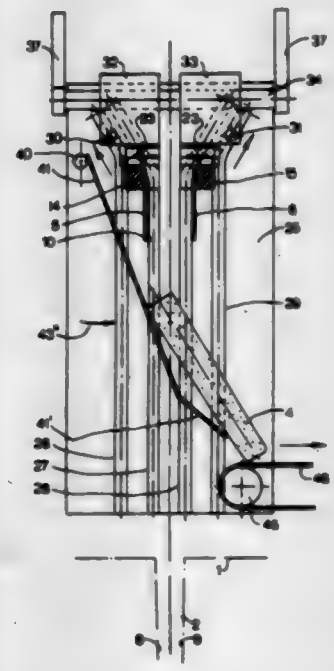
Filed Apr. 9, 1984, Ser. No. 598,057

Claims priority, application Denmark, Apr. 14, 1983, 1640/83

Int. Cl.³ A23G *9/00*

U.S. Cl. 62—345 **5 Claims**

4. An apparatus for extraction of articles frozen in rows of moulds in a freezing machine, said apparatus comprising means for inserting retaining means in the moulds for engagement with said articles and means for lifting said retaining means for extraction of the articles, wherein the retaining means for a row of moulds comprise two rows of plate sections designed for insertion along the inner surfaces of two oppositing outer side walls of the moulds of the row of moulds concerned, the lower edges of the plate sections of one of said rows of plate sections including a retaining flange facing the opposing plate sections of the other of said rows of plate sections, said apparatus, moreover, comprising a chute pivotal about an axis extending in substantially parallel relationship to the longitudinal direction of said rows of plate sections in the extraction position and being, as seen in the vertical direction, offset laterally in relation to that of the rows of plate sections provided with retaining flanges, actuating means being provided for moving



said chute from a first position in which it, as seen in the vertical direction, extends laterally of the two rows of plate sections concerned and to a second position in which it extends inclined with the lower end of said chute positioned below the rows of plate sections concerned in their lifted position and wherein the upper ends of the plate sections of each of said rows of plate sections are secured to a bar, both ends of said bars being provided with means for engagement with guide means provided in said apparatus, said guide means being adapted for guiding said bars so that they are first travelling in parallel relationship and then separated from each other.

4,535,606

HIGH EFFICIENCY AIR CYCLE AIR CONDITIONING SYSTEM

George C. Rannenberg, Canton, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Dec. 9, 1983, Ser. No. 560,007

Int. Cl.³ F25D *9/00*

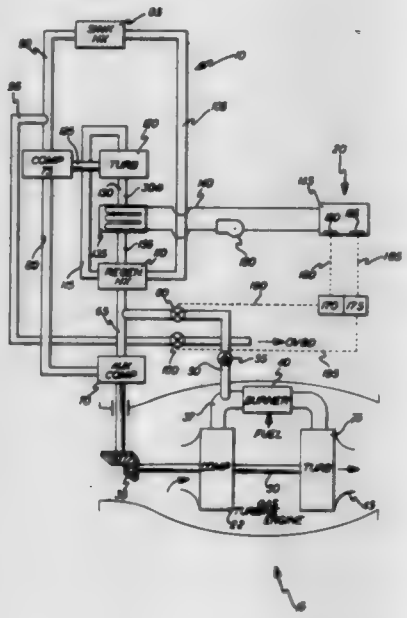
U.S. Cl. 62—402 **22 Claims**

1. In an air cycle refrigeration system for providing chilled refrigerant air to a load for the cooling thereof, said system being adapted for the supply thereto of compressed charge air from the compressor discharge section of a gas turbine engine and comprising a bootstrap compressor for increasing the pressure of said refrigerant air, airflow exhausted from said refrigerant compressor being directed to an expansion turbine for cooling thereby and discharge therefrom to said load, said expansion turbine and bootstrap compressor being mechanically interconnected whereby said expansion turbine provides a measure of input power for driving said bootstrap compressor, said air cycle refrigeration system being characterized by:

means for exhausting substantially the entire airflow from said load to an inlet of said bootstrap compressor whereby said bootstrap compressor, said expansion turbine and said load define a closed-loop circulatory system;

a first conduit connecting said compressor discharge section of said gas turbine engine with said closed-loop circula-

tory system between said expansion turbine discharge and said bootstrap compressor inlet for providing said charge air to said refrigeration system whereby the system air pressure may be maintained at least at substantially the same level as the gas turbine engine compressor discharge pressure;



means for sensing the cooling requirements of said load and providing an output signal indicative thereof; and

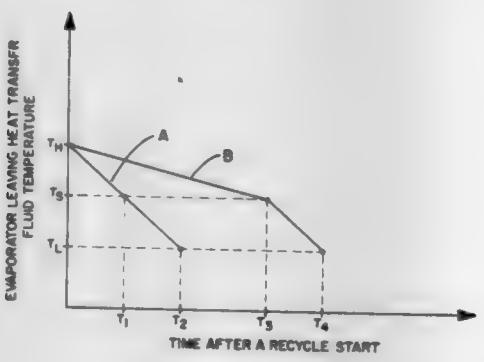
a first control means disposed in said refrigeration system and responsive to the output signal from said sensing means for controlling the flow of air through said refrigeration system, thereby controlling the capacity thereof in response to the cooling requirements of said load.

4,535,607

METHOD AND CONTROL SYSTEM FOR LIMITING THE LOAD PLACED ON A REFRIGERATION SYSTEM UPON A RECYCLE START

Gordon L. Mount, West Monroe, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.

Filed May 14, 1984, Ser. No. 610,061
Int. Cl.³ F25D *17/02*
U.S. Cl. 62—201 **7 Claims**



1. In a method of operating a vapor compression refrigeration system including a compressor which is part of the refrigeration system, including the steps of

monitoring a load to be satisfied by operation of the refrigeration system;

turning on the refrigeration system, including the refrigeration system compressor, when the step of monitoring detects a load to be satisfied by operation of the refrigeration system;

adjusting the capacity of the refrigeration system to match the load on the refrigeration system when the refrigeration system is turned on to satisfy the load detected by the step of monitoring;

turning off the refrigeration system compressor when, to match a low load, the refrigeration system is adjusted to its minimum capacity level by the step of adjusting and the refrigeration system is providing excess capacity for satisfying this low load even though the refrigeration system is operating at its minimum capacity level;

a recycle start method for gradually increasing refrigeration system capacity, comprising the steps of:

turning the refrigeration system compressor back on when the step of monitoring detects a new and relatively small increased load to be satisfied by operation of the refrigeration system after the refrigeration system compressor has been turned off due to excess capacity;

controlling the refrigeration system to meet a pseudo load which is initially less than the new load and which is relatively gradually increased to equal the actual load on the refrigeration system; and

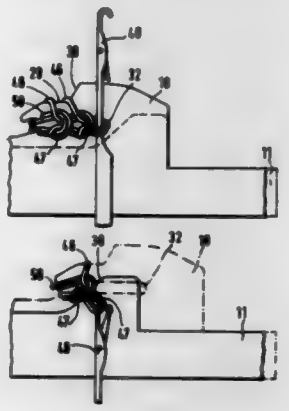
repeating the step of adjusting after the pseudo load is increased by the step of controlling to equal the actual load on the refrigeration system.

4,535,608

CIRCULAR KNITTING MACHINE FOR PRODUCING ONE-FACE PLUSH WEBS

Ernst-Dieter Plath, Albstadt, and Dieter Klinger, Oberndorf, both of Fed. Rep. of Germany, assignors to Sipra Patententwicklungs-und Beteiligungsgesellschaft mbH, Stuttgart, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 303,712, Sep. 18, 1981, abandoned. This application Jan. 20, 1984, Ser. No. 572,923
Claims priority, application Fed. Rep. of Germany, Sep. 20, 1980, 3035582
Int. Cl.³ D04B *9/12, 15/24*
U.S. Cl. 66—9 R **7 Claims**



1. A circular knitting machine for producing one-face plush webs from main threads and plush threads, the machine comprising a plurality of movable needles; a plate ring including a plurality of plate members cooperating with said needles for producing a mesh from said threads; and a plurality of cam members for controlling a longitudinal movement of said needles and for controlling a movement of said plate members radially towards and away of said needles, said needles and said plate members being arranged so that each of said needles cooperates with two adjacently positioned, parallel plate members to produce and tighten plush loops to form a mesh, one of said two plate members having a slot for receiving a main thread and a stepped back portion for supporting a plush thread, whereas the other of said two plate members has a thread placing edge adapted to limit the effective length of said slot of said one plate member, said cam members being adapted to control said two plate members separately and independently from each other and being arranged so that a relative movement between said two plate members results

(a) for tightening a plush loop (**46**) when the associated needle (**40**) is in a raised position,

(b) for positioning main and plush threads when the needle is moved to a loop sinking position, and

(c) for tightening a mesh (**47**) produced from plush and main

threads when the needle is in the loop sinking position and is beginning to be raised.

4,535,609

YARN TENSION DEVICE FOR A FLAT KNITTING MACHINE

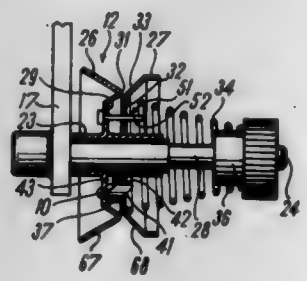
Ernst Goller, Reutlingen, and Fritz Walker, Kusterdingen, both of Fed. Rep. of Germany, assignors to H. Stoll GmbH & Company, Fed. Rep. of Germany

Filed Mar. 13, 1984, Ser. No. 589,248

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, 3310132

Int. Cl.³ D04B *15/44*

U.S. Cl. 66—146 **24 Claims**



1. A yarn tension device for a flat knitting machine, comprising a yarn brake having first and second juxtaposed brake plates, said brake plates being adapted to receive a yarn therebetween, biassing means urging at least one of the brake plates towards the other brake plate, and a securing device which defines a yarn path between said brake plates, said securing device being capable of being opened to permit the yarn to be open-threaded into said yarn path but being operative thereafter to close automatically access to said yarn path.

4,535,610

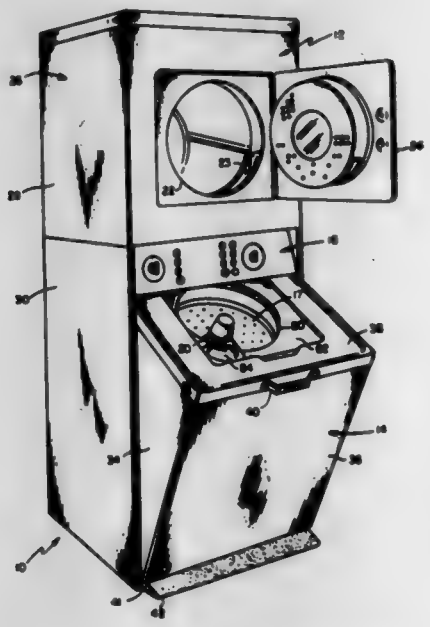
APPARATUS AND CONTROL FOR TILT-OUT WASHER

Robert M. Fey, Rocky Face, Ga.; Harold L. Woehler, and Philip J. Manthei, both of Ripon, Wis., assignors to Speed Queen Company, Ripon, Wis.

Filed May 31, 1984, Ser. No. 615,973

Int. Cl.³ D06F *39/00*

U.S. Cl. 68—3 R **13 Claims**



1. A top loading clothes washer rotatable about a horizontal axis to a forward tilt-out position from under a stationary structure, comprising:

a stable base comprising means for pivotally supporting said washer about said horizontal axis wherein said washer is rotatable between an upright position used for washing and said tilt-out position used for loading and unloading clothes; and

means responsive to water in said washer being above a predetermined level for locking said washer in said upright position thereby preventing forward rotation of said washer toward said tilt-out position.

4,535,611

TREATING TEXTILE MATERIAL WITH NON WOVEN FABRIC ROLLS

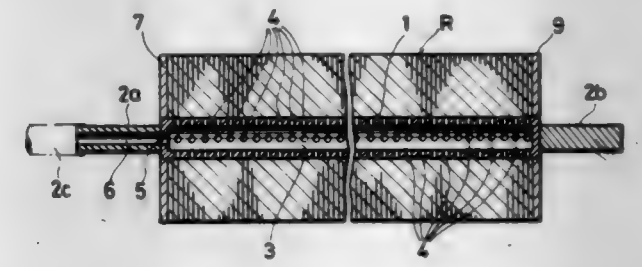
Masao Masuda, Toyoake, Japan, assignor to Kabushiki Kaisha Masuda Seisakusho, Aichi, Japan

Filed Sep. 15, 1983, Ser. No. 532,566

Claims priority, application Japan, Sep. 17, 1982, 57-162697; Jan. 17, 1983, 58-6184

Int. Cl.³ D06B *1/16*

U.S. Cl. 68—202 **10 Claims**



1. A combination of nonwoven fabric rolls for use in carrying out a method of treating textile material, comprising

at least one fluid supply roll which includes a first cylindrical core extending coaxially of said fluid supply roll, a number of first nonwoven fabric elements mounted on said first cylindrical core in tight contact relation to one another, and first fluid passageways which are formed internally of said fluid supply roll for intercommunicating connection through first conduit means to an external forcible fluid supply source and which are open to said first nonwoven fabric elements for forcibly letting treatment fluid flow out of the circumferential periphery of said fluid supply roll,

at least one suction roll opposed in cooperative relationship with said fluid supply roll, and

said suction roll including a second cylindrical core extending coaxially of said suction roll, a number of second nonwoven fabric elements mounted on said second cylindrical core in tight contact relation to one another, and second fluid passageways which are formed internally of said suction roll for intercommunicating connection through second conduit means to an external negative pressure source and which are open to said second nonwoven fabric elements for forcibly sucking said treatment fluid flowing out of said circumferential periphery of said fluid supply roll.

4,535,612

PADLOCK SHIELD

Louis J. Seremet, Rural Box 44, Brookfield, Mass. 01506

Filed Apr. 8, 1983, Ser. No. 483,245

Int. Cl.³ E05B *67/38*

U.S. Cl. 70—56 **11 Claims**

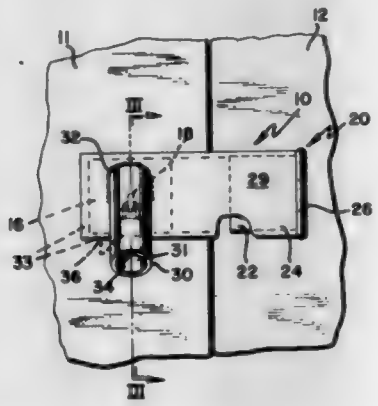
1. Lock assembly for securing first and second closure members, comprising:

(a) a staple secured to one of said closure members and having a padlock receiving loop,

(b) a hasp having a back plate secured to the other of said closure members, and a front plate hingedly connected to the back plate for movement from an open position in which the front plate is clear of said one closure member to a closed position in which the front plate overlies said loop, said front plate having a slot for receiving the loop

of said staple so that loop extends forwardly of the outwardly facing surface of the front plate when the front plate is in said closed position,

(c) a padlock having a body portion, a shackle at one end of the body portion, and a keyhole at the other end of the body portion, said shackle being adapted to extend through the loop portion of said staple to secure the front plate of said hasp in said closed position, and



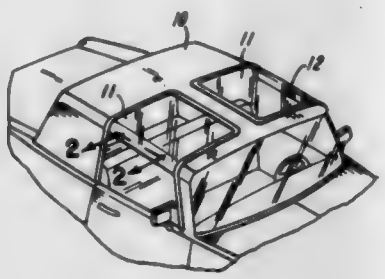
(d) a tubular shield having an inner end which is fixed to said outwardly facing surface and which completely circumscribes said slot, said shield having an outer end which has an opening that is large enough to permit the insertion of a human hand, said tubular shield defining a cavity having a central longitudinal axis which extends at a substantial angle to the plane of said outwardly facing surface, said tubular shield being sufficiently long so that an adult human hand must be inserted beyond the wrist joint in order to reach the padlock.

4,535,613

T-TOP LOCK-HANDLE

Frank J. Mastromatteo, 6150 Ironside Dr., Centerville, Ohio 45459

Filed Aug. 19, 1982, Ser. No. 409,627
Int. Cl.³ E05B *13/10*
U.S. Cl. 70—221 **7 Claims**



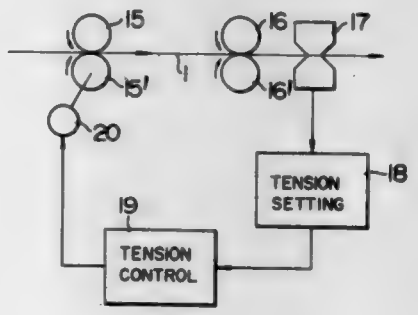
1. A "T-top" lock-handle combination wherein both the key and locking mechanisms operate in three positions but the handle operates in two positions comprising a latch stud adapter mechanism including a friction washer permitting its handle-housing to rotate to a false open (false unlocked) position and including an adapter having an internal configuration which mates with the external configuration of a latch stud mounted in a vehicle roof; notches or surfaces and means to secure said adapter to said latch stud on one end; means to secure another end of said adapter mechanism to one portion of a lock handle-housing which encase locking, locking cam and adapter mechanisms, and wherein said locking mechanism and locking cam operate over an arc from locked to unlocked ranging from about 60° to about 180° whereas said handle housing operates over an arc of about 90° in two positions; said locking mechanism being located within said lock-handle housing and including a locking cam having notches or surfaces responsive in movement to key-operated alignment means to position the locking cam in response to three key positions such that operation of the key from locked to false unlocked (handle pivot but locked) to unlocked positions causes the locking cam notches or surfaces to engage mating notches or surfaces of said adapter to drive same to permit removal of said "T-top" upon rotation of the handle housing to unlocked position.

4,535,614

METHOD OF GAUGING AND CONTROLLING WORKPIECE PROFILE IN A ROLLING MILL

Toshihiro Oka, Muroran, Japan, assignor to Nippon Steel Corporation, Tokyo, Japan

Filed Jun. 8, 1983, Ser. No. 502,392
Int. Cl.³ B21B *37/02*
U.S. Cl. 72—16 **8 Claims**



1. A method of gauging the diameter of a moving bar or like workpiece in a rolling mill, comprising the steps of:

disposing about said workpiece at a gauging station gauging means for continuously gauging diameters at n equally spaced angular positions on the periphery of said workpiece while said gauging means is continuously rotating around the moving workpiece with its axis of rotation registered with the pass line of the rolling mill;

computing and displaying for said workpiece a roll-free diameter Df, and a maximum diameter Dx and a minimum diameter Dn other than said roll-free diameter Df, on the basis of the diameter values gauged by said workpiece gauging means for at least half of the periphery of said workpiece and on the basis of assigning as Df the gauged diameter corresponding to the largest value of Y computed in accordance with the regression curve $Y = A \sin \phi$ where Y is a calculated deviation from a desired diameter of the workpiece, A is a constant representing the maximum deviation when $\phi = 90°$ and ϕ is the angle of the position of the deviation Y taken from a zero value position selected so that the regression curve best approximates the actual measured deviations from the desired diameter of the workpiece; and

computing and displaying the corresponding peripheral positions of Dx and Dn relative to the peripheral position of said Df at said gauging station, said computation of the diameters and positions of Dx and Dn excluding gauged values in the angular range of 30° to either side of the peripheral position of said Df at said gauging station.

4,535,615

PROCESS AND APPARATUS USING ULTRA-FILTRATION IN THE PRODUCTION OF CAN SHELLS

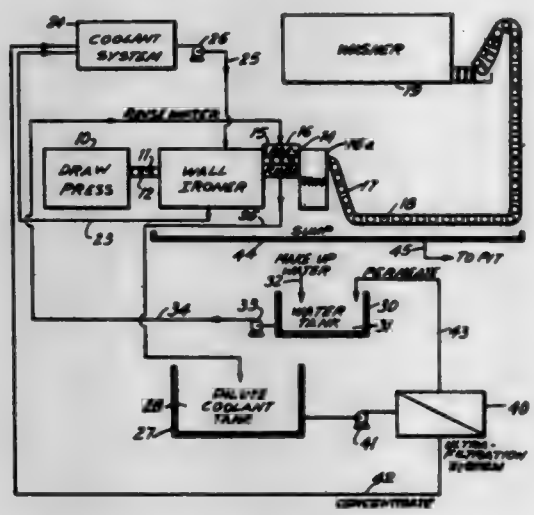
Gerald J. Ebben, Barrington, Ill., assignor to American Can Company, Greenwich, Conn.

Filed Dec. 30, 1982, Ser. No. 454,576
Int. Cl.³ B21D *22/20, 51/26*
U.S. Cl. 72—39 **6 Claims**

1. In the process of producing drawn and ironed can shells from sheet metal by drawing cup-shaped cups from the sheet metal, elongating the sidewalls of the cups by ironing the sidewalls in a series of ironing rings of a die stack, applying an oil-in-water emulsion coolant from a coolant system as a lubricant and coolant into the die stack, and trimming the free end

of the drawn and ironed cups to obtain can shells having uniform height, the improvement of:

rinsing the can shells with water subsequent to the last ironing step, and prior to trimming, thereby mixing coolant and rinse water;



separating the coolant from the rinse water by passing the combined coolant and rinse water along one side of a membrane in an ultrafilter pressurized membrane system;

returning the re-concentrated coolant to the coolant system for re-use in the ironing process; and

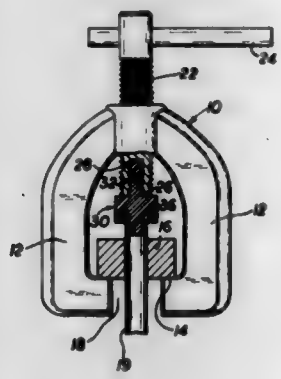
using the separated rinse water as the said rinse water subsequent to the last ironing step, and prior to trimming.

4,535,616

FLARING TOOL

Lloyd R. Eason, Concord, Mich., assignor to Dowley Manufacturing, Inc., Spring Arbor, Mich.

Filed Apr. 8, 1983, Ser. No. 483,113
Int. Cl.³ B21D *19/02, 41/02*
U.S. Cl. 72—116 **1 Claim**



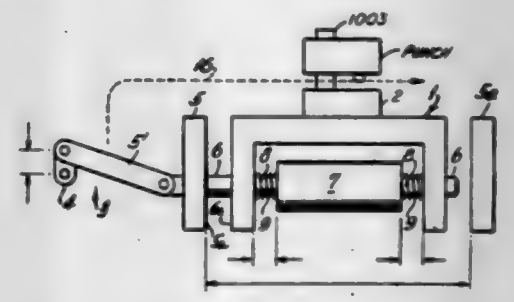
1. In a flaring tool including a yoke having an anvil surface for supporting a tube holding bar and a threaded bore for receiving a threaded actuator, the thread of the bore and actuator having a given lead, the actuator having an outer end having a torque handle mounted thereon and an inner end disposed toward the yoke anvil surface, and a tube flaring head mounted upon the actuator inner end adapted to engage and flare the end of a tube held within the tube holding bar, the improvement comprising, first connection means defined upon the actuator inner end comprising a coaxial bore within the actuator intersecting the actuator inner end and first threads defined within said bore, the tube flaring head comprising an adapter, and second connection means defined upon said adapter adapted to selectively cooperate with said first connection means whereby said adapter is removably mounted upon the actuator inner end, said second connection means comprising a stem defined upon said adapter and second threads defined upon said stem, said second threads mating with said first threads, said first and second threads having a lead different from the given lead of the threads of the threaded actuator and yoke bore to prevent torque forces imposed on said adapter during rotation of the threaded actuator from loosening said adapter on the actuator during retraction.

4,535,617

STAMPING MACHINE

Arnold Ochsner, deceased, late of Naples, Fla. (by Edith Ochsner, Administratrix), assignor to Forster-Willi Corporation, St. Gallen, Switzerland

Filed Jan. 5, 1984, Ser. No. 568,299
Int. Cl.³ B21D *11/04*
U.S. Cl. 72—307 **9 Claims**



1. A material stamping machine comprising

(a) a support frame,

(b) a reciprocally movable carriage supported by said frame,

(c) barrier walls having interfaces and restricting the reciprocal movements of said carriage,

(d) one or more punch and die apparatus carried by said carriage,

(e) power driving means including an eccentric for reciprocally actuating said carriage against the interface of the barrier walls in a pre-determined time sequence,

(f) restraining means connected to said power means and disposed to engage the carriage after wall contact to restrict the movements thereof,

(g) stamping means responsive to said eccentric power means for actuating said punch according to said predetermined time sequence, and

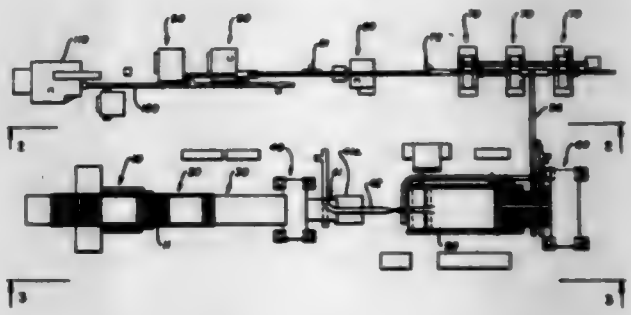
(h) material clamping means responsive to the actuations of said stamping means for clamping and releasing material in the timed sequence.

4,535,618

SYSTEM, METHOD FOR FORMING CONTAINERS

Joseph D. Bulso, Jr., Canton; Stephen D. Doyle, and James A. McClung, both of North Canton, all of Ohio, assignors to Redicon Corporation, Canton, Ohio

Division of Ser. No. 444,789, Nov. 26, 1982, Pat. No. 4,483,172.
This application Jul. 23, 1984, Ser. No. 633,472
Int. Cl.³ B21D *22/00*
U.S. Cl. 72—349 **2 Claims**



1. A method of forming containers from flat metal stock, comprising the steps of:

(A) blanking and cupping the metal to form a cup;

(B) drawing, redrawing, and bottom profiling the cup into a container in a single press; including:

(1) inserting the cup into the press and drawing it,

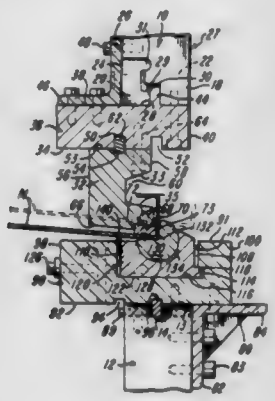
(2) removing the drawn cup from the press to an accumulator/divider table for orientation and inspection;
(3) reinserting the drawn cup into the press and
(4) redrawing and bottom profiling it into a container; and
(5) removing the container from the press;
(C) trimming the drawn and redrawn container;
(D) flanging the drawn and redrawn container; and
(E) beading the container.

4,535,619

ROTARY BENDING, PARTICULARLY FOR PRESS BRAKES

Robert J. Gargrave, 4717 James Hill Rd., Kettering, Ohio 45429

Filed Oct. 13, 1982, Ser. No. 433,882
Int. Cl.³ B21D *37/04*
U.S. Cl. 72—481 **8 Claims**



1. Apparatus providing tooling for a bending and forming of sheet material in a press or press brake, said tooling including two separate halves for connection in a press or press brake to dispose in a relatively opposed normally spaced relation in an open condition thereof and be brought together in a closing condition thereof to produce a bend in and forming of sheet material interposed therebetween, one half of said tooling comprising a forming tool having opposite ends, one of which ends is adapted for connection to a portion of the structure of said press or press brake and the other of which is adapted to project toward and be positioned most adjacent the other of said halves of said tooling which is in an opposed relation thereto, said other of said halves of said tooling comprising a rotary bending tool including a rotor having a notch therein mounted on and for rotation in and with respect to a saddle, said saddle being seated in and for movement relative to a base member, said base member being adapted for the anchoring thereof to another portion of the structure of said press or press brake to position a portion of the notch of said rotor outwardly thereof in an opposed relation to a forming portion of said most adjacent end of said forming tool which is contoured in accordance with the bending and forming operation to be effected on the sheet, means for releasably fixing said saddle and thereby said portion of said notch and the bounding wall surface thereof in one of a plurality of optional positions with reference to said base member and said forming portion of said adjacent end of said forming tool and means for application between adjacent surface portions of said saddle and said base member to determine the said releasably fixed position of said saddle and establish said portion of the notch of said rotor so as to provide that in the closing of said halves of said tooling bounding wall surface portions of said notch, which are made complementary in contour to that of said forming portion of said tool are spaced from said forming portion of said tool a distance corresponding substantially with the thickness of the stock being worked by said tooling.

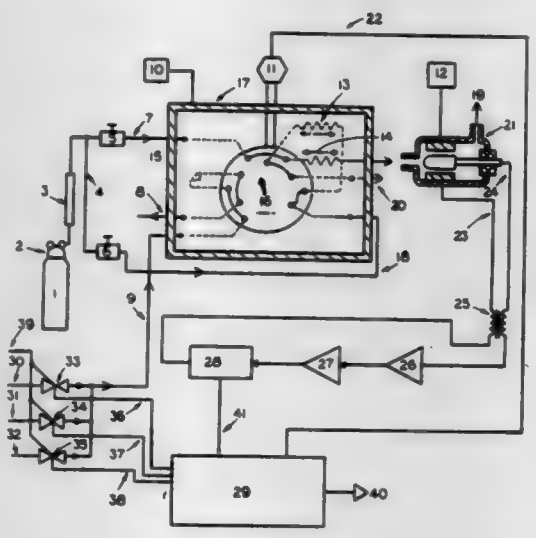
3. A method of conducting a forming operation on sheet stock in a press or press brake utilizing a die assembly respective portions of hich are respectively mounted to the ram and bed thereof wherein one of said portions of said die assembly comprises a tool including a main body having a head end and an opposite end, the head end of which is connected to the ram of the press or press brake, as the case may be, to position said main body with said opposite end thereof in an outwardly projected relation thereto, said opposite end including a forming portion of said tool, surface portions of which respectively differ in configuration and/or dimension to provide it with a construction conditioning it for use in different forming operations, said main body including a leading face and a trailing face, with reference to the diretion in which material is applied to the press or press brake in the forming thereof, and said opposite end of said main body presenting means defining a surface which is angularly inclined from said leading face to and in the direction of said trailing face, and another portion of said die assembly comprises rotary bending apparatus mounted on and in connection with the bed of the press or press brake including a notched rotor mounted on and for rotation in and with respect to a saddle, said saddle being contained in and for movement relative to a base member to selectively position said rotor and the notch thereof in relation to said forming portion of said tool to provide, on closing of said press or press brake on sheet stock interposed therebetween for forming, that the bounding wall surface portions of said notch, which are made complementary in contour to that of said forming portion of said tool are spaced from said forming portion of said tool in accordance with the thickness of the stock worked characterized by inserting sheet stock to be formed between said forming tool and said rotary bending apparatus and establishing said stock in an attitude and orientation which corresponds with the angle of inclination of said angularly inclined surface of said opposite end of said main body.

4,535,620

METHOD FOR AUTOMATICALLY MEASURING THE AMOUNT OF WATER IN A NATURAL GAS PIPELINE WITH THE AID OF A COMPUTER CONTROLLED GAS CHROMATOGRAPH

Richard D. Cunningham, Omaha, Nebr., assignor to InterNorth, Inc., Omaha, Nebr.

Filed Aug. 12, 1983, Ser. No. 522,791
Int. Cl.³ G01N *31/08*
U.S. Cl. 73—23.1 **1 Claim**

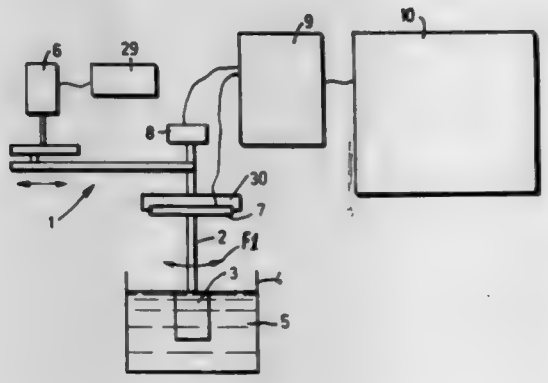


1. A method for automatically measuring low water levels in a natural gas pipeline with the aid of an electron capture gas chromatograph selectively fluidly connected to the natural gas pipeline and a computer control unit, comprising the steps of:
providing said computer control unit with a data base for operating said electron capture gas chromatograph, the data base capable of at least,
(a) periodically causing a sample of the natural gas to be supplied to said gas chromatograph;
(b) operating said gas chromatograph to measure the water in said natural gas;
(c) computing the amount of said water in said natural gas; and
(d) reporting the amount of said water in said natural gas.

4,535,621
PROCESS AND APPARATUS FOR MEASURING RHEOLOGICAL PROPERTIES OF SEMI-SOLID BODIES BY HARMONIC SHEAR IN ROTATION

Alain Gervais, Igny; Daniel Vermeire, Jouy en Josas; Olivier Cerf, Paris, and Jacques Toux, Chartres, all of France, assignors to Institut National de la Recherche Agronomique, France

Filed Oct. 25, 1983, Ser. No. 545,300
Claims priority, application France, Oct. 25, 1982, 82 17835
Int. Cl.³ G01N *11/14, 33/04*
U.S. Cl. 73—59 **12 Claims**



1. A process for measuring rheological properties of semi-solid bodies utilizing a measuring head (3) including an axle, comprising the steps of:

introducing the measuring head into the body to be tested;

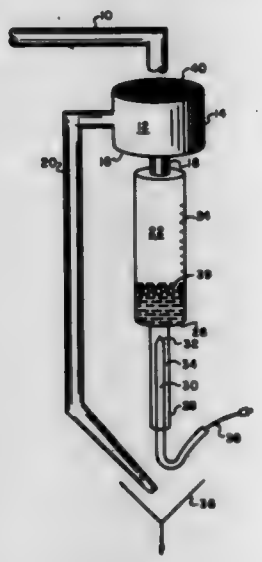
reciprocally rotating the measuring head axle starting from a continuous circular motion, converting said continuous circular motion into a rectilinear reciprocating motion and then into a sinusoidal or pseudo-sinusoidal rotational motion, thereby driving the measuring head with a sinusoidal or pseudo-sinusoidal rotational motion, with controllable frequency and amplitude, and independently of the body to be tested; and

determining the conditions of motion of the head which serve as values representing the rheological properties of the semi-solid body due to the stressed applied by the head moving within the body.

4,535,622
NON-CLOGGING DEPOSIT MONITOR

Alan M. Yeoman, Naperville, and Richard J. Mouché , Batavia, both of Ill., assignors to Nalco Chemical Company, Oak Brook, Ill.

Filed Jul. 28, 1983, Ser. No. 518,182
Int. Cl.³ G01N *15/00*
U.S. Cl. 73—61.2 **3 Claims**

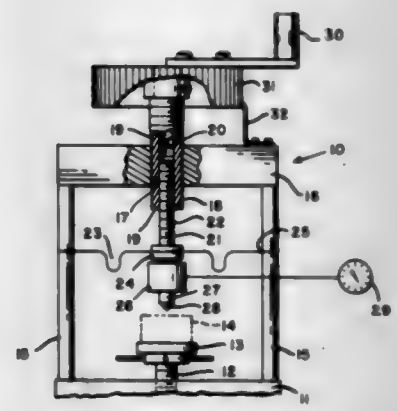


1. A non-clogging deposit monitor for measuring the tendency of inorganic particulate containing water to form scale deposits on equipment surfaces exposed thereto comprising a constant head tank having associated therewith a rough inlet screen, an overflow line, and a head tank drain positioned in its bottom; a vertically disposed cylindrical tank having marked thereon volume indicating graduations positioned below the constant head tank drain and adapted to receive the entire discharge from said drain and fitted with a drain tube at the bottom of the cylindrical tank; and a conically tipped cylindrical member of smaller diameter than the drain tube positioned concentrically within said drain tube, thereby defining an annular opening between the drain tube and the cylindrical member.

4,535,623
MATERIAL HARDNESS TESTING APPARATUS

Paul Gilberto, 145 Carmen Rd., Milford, Conn. 06460

Continuation of Ser. No. 465,756, Feb. 11, 1983, abandoned, which is a continuation of Ser. No. 231,108, Feb. 3, 1981, abandoned, which is a continuation of Ser. No. 18,816, Mar. 8, 1979, abandoned. This application May 10, 1984, Ser. No. 608,995
Int. Cl.³ G01M *3/42*
U.S. Cl. 73—81 **19 Claims**



1. In an apparatus for testing the hardness of material comprising a rigid platform on which the material is adapted to be positioned, a frame spaced from the platform, means mounted on the frame for linear movement towards and away from the platform, said means comprising an end part (21) adjacent the platform and having a penetrating end (28) adapted to engage the surface of the material (14) and an other end (20) adjacent the frame 16, compressive force measuring means (26, 29) for indicating the force exerted by the penetrating end on the material, and penetrating motion measuring means (31, 32) for indicating the penetrating motion of the penetrating end into the material, the improvement comprising:

differential thread means comprising a rotatable part (18) having a pair of coaxial threads (19, 19) of different pitches formed thereon; means (17) on the frame (16) engaging the threads of one pitch; means on the other end (20) of the end part (21) engaging the threads of another pitch; means (30) for revolving the rotatable part to effect linear movement of the penetrating end, and flexure means (23) connected between the frame 15 and the end part allowing free axial motion between said frame and said end part but preventing relative rotation therebetween.

4,535,624
ENGINE MONITORING SYSTEM

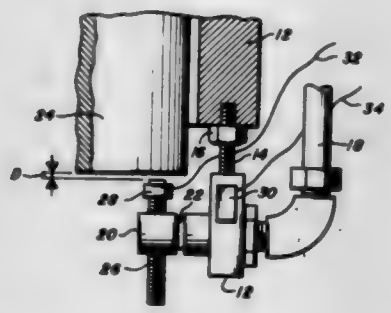
Haskell Ginns, Belmont, and Albert E. Finn, Marblehead, both of Mass., assignors to The Indikon Company, Inc., Cambridge, Mass.

Filed Jun. 1, 1983, Ser. No. 499,820
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—119 R **8 Claims**

1. An extent of travel measurement system comprising:

transducer means for providing a signal corresponding to the position of a cyclically moving element;

detector means responsive to the signal from said transducer means for providing an output signal corresponding to an extreme in the position of said element;



means for averaging said detector means output signal over a selected number of element cycles of motion providing an averaged extreme position output signal; and

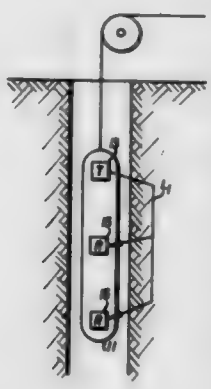
display means for providing a visual indication of the averaged extreme position output signal.

4,535,625

METHOD OF INCREASING THE VERTICAL RESOLUTION OF WELL LOG DATA

W. D. Lyle, Jr., Grapevine, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Feb. 6, 1984, Ser. No. 577,093
Int. Cl.[3] E21B *47/00*
U.S. Cl. 73—152 5 Claims



1. A method of increasing the vertical resolution of well log data, comprising the steps of:

moving a well logging tool relative to a well bore and taking parameter measurements at a plurality of discrete points along the well bore to produce a log of said parameter measurements, said parameter measurements being weighted average measurements of true parameter values;

inverse filtering the data contained in said log to reduce the effects of weighted averaging on parameter measurements, said inverse filtering operation determining higher resolution estimates of said logged measurements from information contained in said measurements, and the response function of said logging tool and without emulating a white-noise driven system;

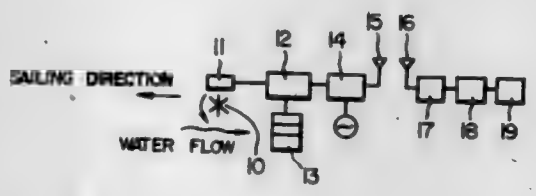
producing a log of said inverse filtered data which more accurately reflects said true parameter values.

4,535,626

DISPLAY SYSTEM TO INDICATE SAILING DATA OF A SMALL SIZE BOAT

Toshibumi Wakayama, Tokyo, Japan, assignor to Nippon Eurotec Co., Ltd., Tokyo, Japan

Filed Mar. 8, 1984, Ser. No. 587,379
Claims priority, application Japan, Sep. 5, 1983, 58-162972
Int. Cl.[3] G01C *21/10*
U.S. Cl. 73—187 3 Claims



1. A display system to indicate the sailing data, such as, speed of a small size boat comprising:

a speed detecting sensor set up on the hull,

a speed measuring means connected to said sensor in which pulses therefrom are received and processed,

a memory means connected to said speed measuring means in which sailing data thus processed is stored,

a transmitting means connected to said memory means in which the data thus stored is read, modulated and radio-transmitted periodically,

a receiving means of wristwatch type, separated from said transmitting means, in which the data thus transmitted is received and displayed on an indicator,

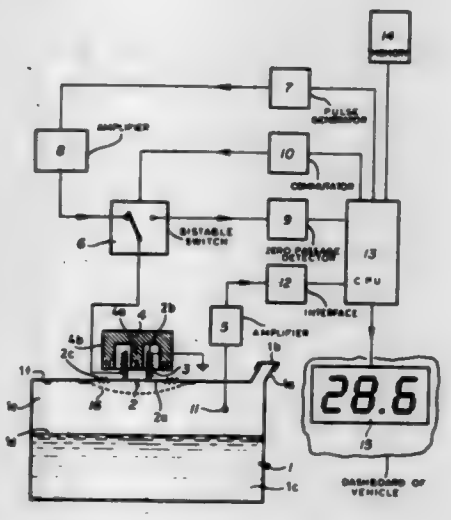
the radio communication being done by using weak electric waves.

4,535,627

METHOD OF AND APPARATUS FOR DETERMINING THE LEVEL OF LIQUID IN A VESSEL

Jean-Louis Prost, Geneva, and Daniel Gross, Carouge, both of Switzerland, assignors to Battelle Memorial Institute, Geneva, Switzerland

Filed Mar. 31, 1983, Ser. No. 480,690
Claims priority, application Switzerland, Apr. 1, 1982, 2014/82
Int. Cl.[3] G01F *17/00, 23/18*
U.S. Cl. 73—290 B 16 Claims



1. A method of determining the quantity of a liquid in a variably filled container of known volume wherein a gas space is provided above said liquid in said container, the method comprising the steps of:

(a) selectively forcibly moving at least a portion of one of the walls of the container so as to vary the volume of said gas space briefly and thereafter permitting the pressure in said space to oscillate with a natural frequency, said portion being plastically deformable;

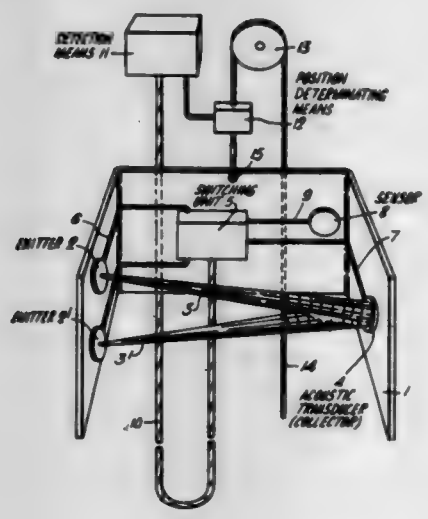
(b) transforming the oscillation of said pressure in said space into a signal of an amplitude varying with the frequency of said oscillation;
(c) detecting the period of said signal and calculating the volume of said gas space as a function of said period; and
(d) indicating the difference between the volume of said gas space and the known volume of said container as a measure of the volume of the liquid in said container.

4,535,628

APPARATUS FOR LEVEL MEASUREMENTS

Bjorn R. Hope, Kampeveien 20, N-1350 Lommedalen, Norway

PCT No. PCT/NO82/00028, § 371 Date Jan. 21, 1983, § 102(e) Date Jan. 21, 1983, PCT Pub. No. WO82/04122, PCT Pub. Date Nov. 25, 1982
PCT Filed May 21, 1982, Ser. No. 463,885
Claims priority, application Norway, May 22, 1981, 811752; May 19, 1982, 821682
Int. Cl.³ G01F *23/28*; G01N *29/02*
U.S. Cl. 73—290 V **8 Claims**



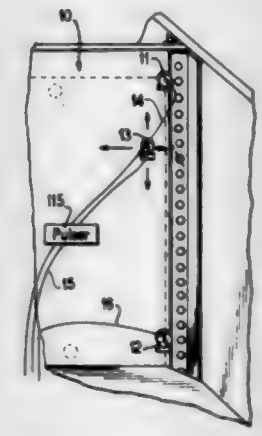
1. An apparatus for measuring acoustic transmission characteristics of at least one medium to be measured, e.g. for measuring levels of the medium, in which at least one elongated hollow chamber is immersed, said hollow chamber comprising a guiding chamber filled with an acoustic connection liquid, wherein at least two separated transducers are immersed in said connection liquid inside said guiding chamber, said transducers being arranged on respective branches of a mounting support so that said transducers face one another said guiding chamber having a cross-sectional shape such that a directional acoustic path between opposite transducers passes through said medium to be measured, said guiding chamber being closed at its bottom to avoid contact between said medium and said transducers, and wherein said mounting support on which said transducers are mounted has a cross-sectional shape substantially the same as that of said guiding chamber, but of a lesser cross-sectional area than that of said guiding chamber, one said transducer being arranged on one side of said support and serving as an emitter of an acoustic wave that is emitted toward another said transducer serving as a collector on the other side of said support, said support being selectively movable within said chamber, the primary acoustic path extending from said emitter, through said connection liquid surrounding it, through the wall of the guiding chamber adjacent thereto, through the medium to be measured, through the guiding chamber wall near the collector, through the connection liquid surrounding said collector and to the collector itself.

4,535,629

METHOD AND APPARATUS FOR STRUCTURAL MONITORING WITH ACOUSTIC EMISSION AND USING PATTERN RECOGNITION

David W. Prine, Maywood, Ill., assignor to Chamberlain Manufacturing Corporation, Elmhurst, Ill.

Filed Mar. 16, 1984, Ser. No. 590,378
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—587 **7 Claims**



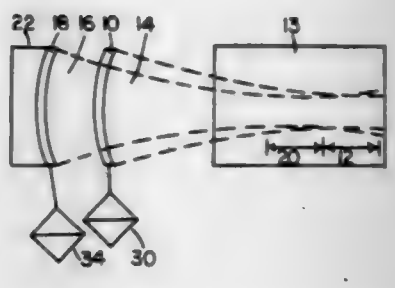
1. Apparatus for detecting and locating flaws in metal bridges or other specimens subject to acoustical emission comprising, first, second and third acoustical transducers with means for attaching them to a bridge in a predetermined pattern with the transducers spaced generally in a straight line, a pulser connected to the one of said transducers which is mounted between the other two transducers, first and second amplifiers connected, respectively, to said first and second transducers, amplitude discriminating means connected to said first and second amplifiers to pass signals with amplitudes above a predetermined level, rate discrimination means connected to the output of said amplitude discriminating means to pass signals which have rates within predetermined criteria, location discriminating means receiving the outputs of said rate discriminating means to determine if the events which pass the energy and rate discrimination tests all come from the same location within preset tolerances, and locating flaws wherein said amplitude discriminating means and said rate discriminating means comprise a microcomputer, and wherein said location determining means is connected to said microcomputer.

4,535,630

MULTIPLE CURVED TRANSDUCERS PROVIDING EXTENDED DEPTH OF FIELD

Arthur J. Samodovitz, 1 Lakeshore Dr., Apt. A-4, Farmington, Conn. 06032

Filed Jan. 17, 1983, Ser. No. 458,742
The portion of the term of this patent subsequent to Jun. 14, 2000, has been disclaimed.
Int. Cl.³ G01N *29/00*
U.S. Cl. 73—642 **12 Claims**



1. Apparatus for focussing ultrasonic waves over a large field comprising:

first and second curved transducers located along an axis,

having similar operating frequencies, and focussing upon adjacent

fields forming a composite, extended field, the curvature of each transducer being continuous, the first transducer being in the path of the focussed waves transmitted by the second transducer, and the first transducer being large enough to intersect substantially all forward, focussed waves transmitted by the second transd cer, and

means for coupling the first transducer to the second transducer so that ultrasonic waves can travel efficiently between the first and second transducers.

4,535,631

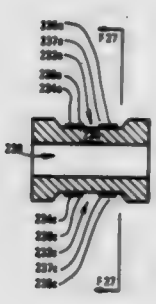
SURFACE ACOUSTIC WAVE SENSORS

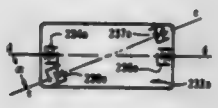
Bikash K. Sinha, West Redding, and Michel Gouilloud, Norwalk, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 427,240

Int. Cl.³ G01L *11/00*

U.S. Cl. 73—703 **41 Claims**





1. A surface acoustic wave signal frequency apparatus comprising a crystalline diaphragm section having a cylindrical or spherical outer surface and a cylindrical or spherical inner surface, wherein:

one of said outer and inner surfaces is adapted for subjection to an applied pressure; and

the other of said outer and inner surfaces includes a first area thereof adapted for the fabrication of a surface acoustic wave device, said first area having a selected orientation having:

for a first selected propagation direction, a high sensitivity to pressure effects and a low sensitivity to temperature effects; and

for a second selected propagation direction, a low sensitivity to pressure effects and a high sensitivity to temperature effects.

4,535,632

SURFACE ACOUSTIC WAVE SENSORS

Bikash K. Sinha, West Redding, and Michel Gouilloud, Norwalk, both of Conn., assignors to Schlumberger Technology Corporation, New York, N.Y.

Division of Ser. No. 427,240, Sep. 29, 1982,. This application Aug. 1, 1984, Ser. No. 636,873

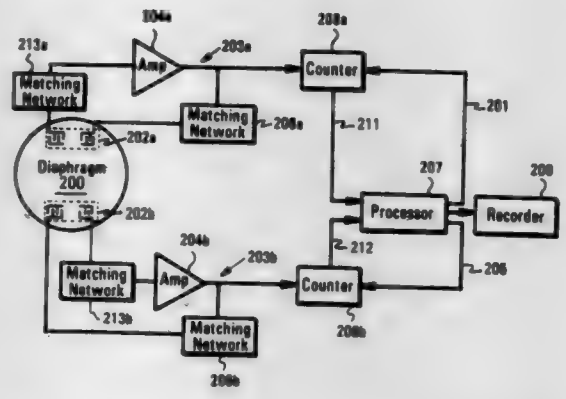
Int. Cl.³ G01L *11/00*

U.S. Cl. 73—703 **15 Claims**

1. A surface acoustic wave signal frequency apparatus comprising a crystalline diaphragm section having a cylindrical or spherical outer surface and a cylindrical or spherical inner surface, wherein:

one of said outer and inner surfaces is adapted for subjection to an applied pressure;

the other of said outer and inner surfaces includes a first area thereof adapted for the fabrication of a surface acoustic wave device, said first area having a selected orientation having, for a selected propagation direction, a high sensitivity to pressure effects and a low sensitivity to temperature effects; and



said other surface further includes a second area thereof adapted for the fabrication of a surface acoustic wave device, said second area having a selected orientation having, for a selected propagation direction, a low sensitivity to pressure effects and a high sensitivity to temperature effects.

4,535,633

METHOD AND APPARATUS FOR THE PROTECTION OF ANALYZERS AND OTHER SENSITIVE COMPONENTS FROM SOILING AND CORROSION

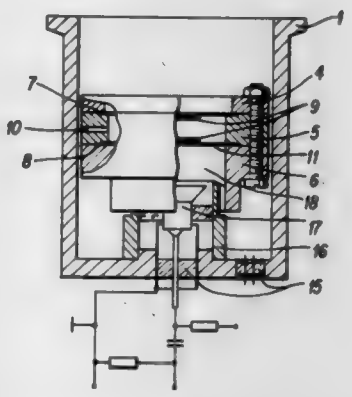
Wolfgang Schiess, and Herbert Thorandt, both of Dresden, German Democratic Rep., assignors to VEB Hochvakuum Dresden, Dresden, German Democratic Rep.

Filed Jun. 13, 1984, Ser. No. 620,296

Claims priority, application German Democratic Rep., Jun. 29, 1983, 2525158; Jun. 29, 1983, 2525174; Jun. 29, 1983, 2525166

Int. Cl.³ G01L *7/08, 9/12*

U.S. Cl. 73—706 **20 Claims**

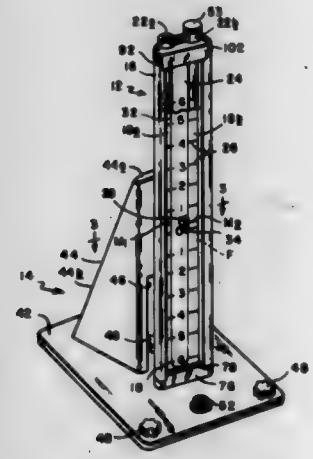


12. An apparatus for the protection of a sensitive device by prevention of the intrusion of a deleterious component into the inside of said sensitive device which comprises a sensitive device, a gas-containing transfer or measurement connection member, said connection member extending to the inside of said sensitive device and containing a low frequency oscillatable diaphragm element, said diaphragm element comprising an alternating pressure transmitter system, means to oscillate said diaphragm element in periodic low operating frequency, so that said diaphragm element produces an alternating pressure in the environment of said connection member by periodic movement, so as to transmit kinetic energy to the gaseous phase in said connection member, whereby kinetic energy is transmitted to any deleterious component in said gaseous phase, thereby forcing said deleterious component in an opposite direction relative to said sensitive device, so that the intrustion of said deleterious component into said sensitive device is prevented.

4,535,634
MANOMETER

S. J. Troutman, Jr., and D. Wayne Hixenbaugh, both of Albuquerque, N. Mex., assignors to Dynatech Frontier Corporation, Albuquerque, N. Mex.

Filed May 25, 1984, Ser. No. 614,055
Int. Cl.[3] G01L 7/18
U.S. Cl. 73—747 30 Claims



1. Manometer apparatus comprising

A. an elongated rigid frame

1. formed as a channel having a rear wall and a pair of spaced-apart sidewalls, and

2. defining an internal scale slide extending substantially the entire length of the frame;

B. an elongated open-ended manometer tube positioned in the frame;

C. upper closure means for closing the upper end the frame, said upper closure means including fluid conduit means extending through the closure means and establishing a fluid connection to one end of the tube;

D. lower closure means closing the lower end of the frame;

E. means for removeably securing the upper and lower closure means to the upper and lower ends of the frame;

F. an elongated, card-like scale, said scale being

1. somewhat shorter than the frame, and

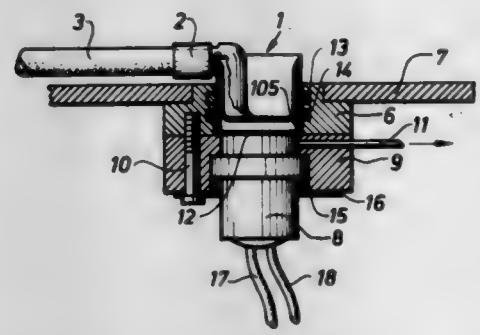
2. slideably mounted in said scale slide for lengthwise movement therein; and

G. scale adjusting means releasably secured to the scale and extending outside of said frame for adjustably positioning the scale lengthwise in the frame relative to the tube.

4,535,635
PRESSURE MEASURING SYSTEM

Jan S. Claren, Lund; Jan-Bertil Jeppson, Lomma, and Peter R. Staehr, Lund, all of Sweden, assignors to Gambro Lundia AB, Sweden

Filed Jun. 21, 1984, Ser. No. 622,798
Claims priority, application Sweden, Jun. 30, 1983, 8303740
Int. Cl.[3] G01L 7/08
U.S. Cl. 73—756 20 Claims

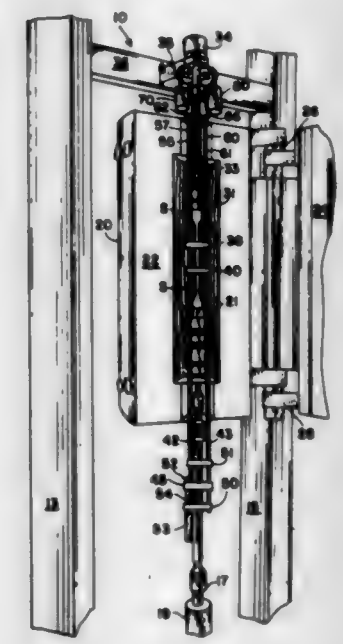


1. Apparatus for measuring the pressure of a fluid comprising pressure sensing means and pressure transmitting means, said pressure transmitting means having at least one inlet for receiving said fluid whose pressure is to be measured and a pressure transmitting wall member in fluid communication with said inlet, whereby said pressure transmitting wall member may be brought into contact with said pressure sensing means, and negative pressure means for drawing said pressure transmitting wall member against said pressure sensing means so that said pressure sensing means can substantially measure the absolute pressure of said fluid.

4,535,636
TENSILE TESTING APPARATUS

Linda B. Blackburn, and John R. Ellingsworth, both of Hampton, Va., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Mar. 19, 1984, Ser. No. 590,923
Int. Cl.[3] G01N 3/08, 3/18
U.S. Cl. 73—831 6 Claims



1. In combination with an extensometer for accurately measuring strain on foil-gage type materials under elevated temperature test conditions including a displacement transducer strain measuring device, a clam shell type furnace, a pair of platens for supporting a test specimen within the furnace, and means for exerting a constant tensile load on the test sample supported therein, the improvement therewith comprising:

counterbalance means connected to each of said pair of platens to offset the weight contribution of the extensometer on the test specimen,

sample engaging means forming part of each of said pair of platens, said sample engaging means in each said platen comprising a first flat edge surface and a second conical tip surface,

said flat edge surface and said conical tip surface engaging and retaining a foil-gage type test specimen therebetween, and

means for adjusting relative movement of said flat edge surface and said conical tip surface to adjust and maintain the engagement thereof with the test specimen.

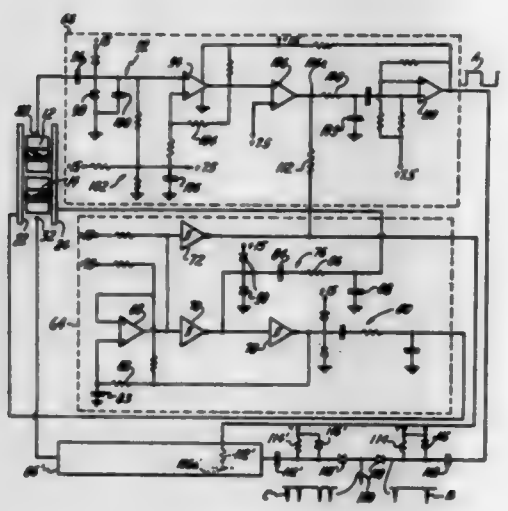
4,535,637
FLOW DETECTION APPARATUS

Murray F. Feller, Citrus County, Fla., assignor to Wilgood Corporation, Dunnellon, Fla.

Continuation-in-part of Ser. No. 487,226, Apr. 4, 1983, abandoned, which is a continuation-in-part of Ser. No. 467,138, Feb. 16, 1983, abandoned, which is a continuation-in-part of Ser. No. 427,611, Sep. 6, 1982, abandoned, which is a continuation-in-part of Ser. No. 215,524, Dec. 11, 1980, Pat. No. 4,399,696, which is a continuation-in-part of Ser. No. 150,142, May 15, 1980, Pat. No. 4,333,354, which is a continuation-in-part of Ser. No. 31,419, Apr. 19, 1979, abandoned. This application Feb. 8, 1984, Ser. No. 578,283

Int. Cl.³ G01F *1/56*

U.S. Cl. 73—861.77 **28 Claims**



1. Flow-detecting apparatus including means forming a liquid flow passage, an alternating excitation source, means for developing an excitation pattern in liquid in a region in said passage and for sensing said excitation pattern, said pattern developing and sensing means including (a) excitation electrode means connected to said excitation source and (b) sensing electrode means, a flow-driven tracker having at least one pattern-distorting element movably cyclically through said region, signal-receiving means connected to said sensing electrode means for providing an output signal that is alternately in phase with or out of phase with the output of the excitation source during cyclic movement of the tracker, and flow-representing signal means including gating means for combining the output of said alternating excitation source with the output of said signal-receiving means to provide trains of signals and signal-interruption intervals representing cyclic movement of said pattern-distorting element past the sensing electrode means and the excitation electrode means.

4,535,638
RESONATOR TRANSDUCER SYSTEM WITH TEMPERATURE COMPENSATION

Errol P. EerNisse, Sandy, and Roger W. Ward, Salt Lake City, both of Utah, assignors to Quartztronics, Inc., Salt Lake City, Utah

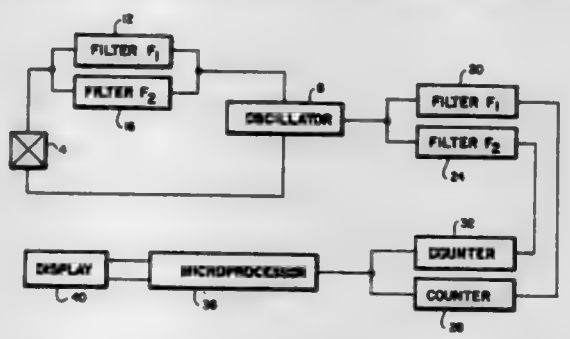
Filed Oct. 3, 1983, Ser. No. 538,171

Int. Cl.³ G01L *1/10, 1/16*

U.S. Cl. 73—862.59 **32 Claims**

1. A resonator transducer system comprising a single vibratory element which is responsive to an oscillatory electrical signal for resonating at frequencies f_1 and f_2, selected from the fundamental frequency and overtone frequencies of the vibratory element, where the two frequencies vary with variation in force or other parameter applied to the vibratory element and with variation in temperature to which the vibratory element is exposed, with the magnitude of variation due to the change in temperature for frequency f_1 being different from that for frequency f_2,

means for applying an oscillatory signal to the vibratory element to cause the vibratory element to resonate and for producing a vibratory signal having a frequency f_1 and a frequency f_2 which follow the selected frequencies f_1 and f_2 respectively of the vibratory element, and



processing means responsive to the frequencies f_1 and f_2 of the vibratory signal produced by the oscillator means for producing a first signal representing the force or other parameter applied to the vibratory element, and a second signal representing the temperature to which the vibratory element is subjected.

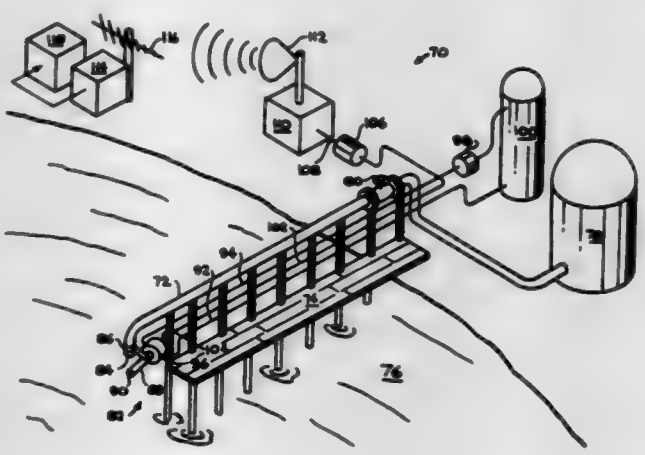
4,535,639
VAPOR SPILL MONITORING METHOD

Gregory M. Bianchini, and Thomas G. McRae, both of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 23, 1983, Ser. No. 507,188

Int. Cl.³ G01N *1/24*

U.S. Cl. 73—863.11 **7 Claims**



1. Method for continuous monitoring of LNG composition from a spill pipe comprising:

positioning the tip of a probe having three concentric spaced tubes in a generally downward orientation in a flow of LNG;

applying suction on the opposite end of the inside tube to draw a quantity of LNG into the inner tube;

flowing hot water in through the annular channel between the inner and middle tubes, and out through the annular channel between the middle and outer tubes, to provide heat transfer to vaporize the LNG;

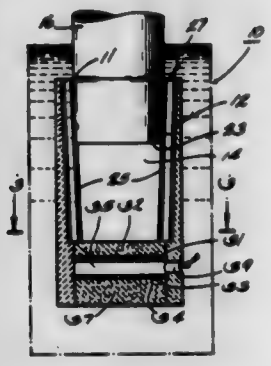
transporting the vaporized LNG gas to a remote analyzer for determining the composition of the LNG.

4,535,640

CERAMIC FIBER MOLTEN METAL SAMPLER

Richard A. Falk, 519 Westminster Dr., Waukesha, Wis. 53186

Filed Nov. 2, 1983, Ser. No. 547,930
Int. Cl.[3] G01N 1/12
U.S. Cl. 73—864.55 8 Claims



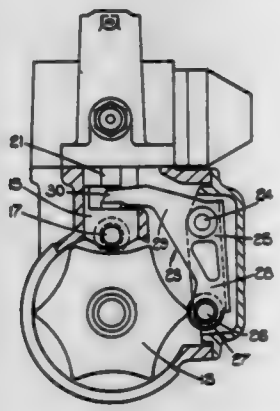
1. A molten metal sampler comprising first wall means defining a generally cylindrical sample cavity, said first wall means being formed from temperature resistant fibers, and second wall means for sealing the ends of said sample cavity, said second wall means comprising molded sand-resin plugs spanning said cavity, said plugs being in sealing contact with said first wall means and a side entry port to introduce molten metal between said plugs, and smooth plates between said sand plugs and spaced to form disc samples with smooth surfaces.

4,535,641

RECIPROCATING PLUNGER FUEL INJECTION PUMP

Miroslav Kriz, and Kenneth M. Harris, both of London, England, assignors to Lucas Industries plc, Birmingham, England

Filed Jun. 8, 1982, Ser. No. 386,272
Claims priority, application United Kingdom, Jun. 13, 1981, 8118238
Int. Cl.[3] F16H 25/14, 53/06; F04B 7/00
U.S. Cl. 74—53 3 Claims



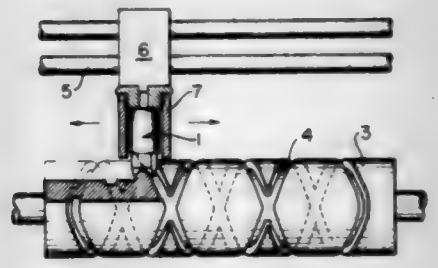
1. A reciprocating plunger fuel injection pump comprising a body defining a bore in which a plunger is mounted, a tappet assembly including a roller, a rotary cam mounted on a rotary cam shaft, a plurality of equiangularly shaped cam lobes on said cam, said roller co-operating with the cam to impart movement to the tappet assembly and plunger in one direction to cause fuel to be displaced from said bore, a lever assembly pivotally mounted in the body, said lever assembly comprising first and second levers, the first lever being of bellcrank form having a forked end of one arm for engagement with a head on the plunger and the end of the other arm engaging the second lever, one side of the head being engaged by the tappet assembly and the other side of the head being engaged by the forked end, said second lever adjacent its point of contact with the first lever mounting a roller engaging with the cam, the arrangement being such that following movement in said one direction by a cam lobe, the plunger and tappet assembly upon continued rotation of the cam are moved in the other direction by one of said lobes.

4,535,642

TRAVERSING MECHANISM

Ryuichi Ohmura, Shizuoka, Japan, assignor to Fuji Kogyo Co., Ltd., Japan

Filed Apr. 28, 1983, Ser. No. 489,356
Int. Cl.[3] F16H 25/12, 53/06
U.S. Cl. 74—58 3 Claims



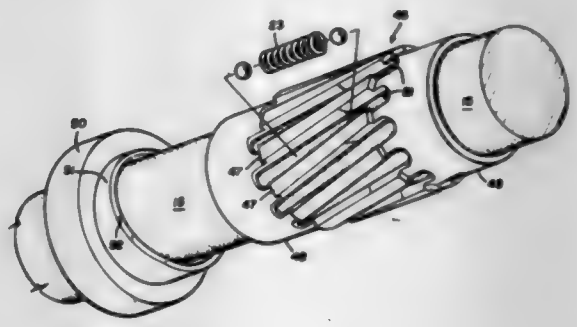
1. A traversing mechanism comprising a guide member and a cam shaft having on its outer surface an endless helical cam groove, said guide member comprising a cam shoe adapted to engage with said cam groove to thereby cause the guide member to reciprocate along the axis of said cam shaft, and further including a cylindrical retaining portion having an axis essentially perpendicular to said cam shaft axis for receiving said cam shoe, said cam shoe comprising a rotatable member rotatably fitted into said cylindrical retaining portion and a separate slidable member fixedly mounted in said rotatable member, said slidable member being formed from a flat piece of hard ceramic material with one end serving as an engaging end portion to engage said cam groove and slide therein, and said rotatable member being cylindrical and having at one end a grooved retaining slot into which the other end of said slidable member is fitted for assembling of both members.

4,535,643

THREADLESS FEED SCREW

Murray L. Hauptman, 27330 Arborway, Southfield, Mich. 48034

Filed May 10, 1982, Ser. No. 376,063
Int. Cl.[3] F16H 27/02
U.S. Cl. 74—89 1 Claim



1. In a feed mechanism of the type including an elongated inner race and an elongated outer race concentrically surrounding said inner race and radially spaced apart therefrom, a cage disposed between said races and a plurality of elongated rollers carried by said cage, said rollers having axes inclined relative to the race axes, the inner surface of said outer race and the outer surface of said inner race defining the facing surfaces of the races; said rollers normally being in contact with said facing surfaces, the improvement comprising:

a portion of at least one of said facing surfaces having a recess for providing a clearance, said rollers each being sequentially out of contact with at least one of said facing surfaces when each said roller is in said recess;

each of said rollers is of lesser axial length than the axial length of said cage, said rollers each rolling and also moving axially in a first direction in said cage; each roller moving axially in a second direction opposite to said first direction when each said roller is in said recess;

said cage includes a plurality of elongated slots; each of said plurality of elongated rollers being mounted in one of said slots; each of said rollers being of lesser axial length than said slot;

said mechanism further includes a cam means positioned at opposite ends of said cage, said cam means for moving said rollers when said rollers are in said recess;

each cam means includes an annular sleeve having an axial extension, the axially inwardmost portion of each such cam means for moving said rollers;

said inner race is mounted for rotational movement and constrained against axial movement, and said outer race is mounted for axial movement and constrained against rotational movement; and

said cage includes a central portion of a first diameter and axially extending end portions of a second diameter smaller than said first diameter.

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LEVER UNIT IN PARTICULAR FOR A CYCLE

Maurice E. L. Coué, Feucherolles, France, assignor to Huret et ses Fils, Nanterre, France

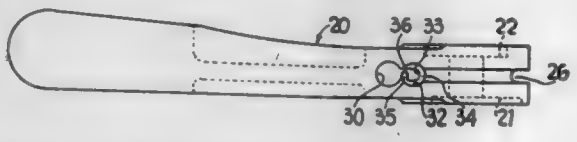
Division of Ser. No. 452,710, Dec. 23, 1982,. This application Dec. 29, 1983, Ser. No. 566,490

Claims priority, application France, Dec. 30, 1981, 81 24503

Int. Cl.[3] F16C *1/10*; G05G *11/00*

U.S. Cl. 74—489

8 Claims



1. A lever unit for combination with a cable and cable head which head is fixed to an end of the cable and has a larger cross-sectional size than that of said cable, said lever comprising means mounting the lever on a collar so as to be rotatable about an axis, and a throughway cavity in the lever, said cavity having a part of a large cross-sectional size large enough to receive said cable head and a part of a small cross-sectional size large enough to freely receive said cable but too small to allow passage of said head therethrough, whereby said two cavity parts define a shoulder against which shoulder said head abuts when said cable is placed in said cavity part of small cross-sectional size, a partition portion of said lever defining a lateral passage providing a lateral entrance to said cavity to allow said cable to be inserted in said cavity by shifting said cable transversely of said cable and transversely of said cavity, said lateral passage being slightly smaller in cross-sectional size than the cross-sectional size of said cable, said partition portion being sufficiently resilient to allow passage of said cable through said passage upon application of lateral force on said cable whereby said cable is retained laterally in said cavity after passage through said passage.

4,535,645

VEHICLE STEERING SUB-ASSEMBLY

James De Bisschop, Litchfield; Anthony A. Neri, and Thomas J. Williams, both of Torrington, all of Conn., assignors to The Torrington Company, Torrington, Conn.

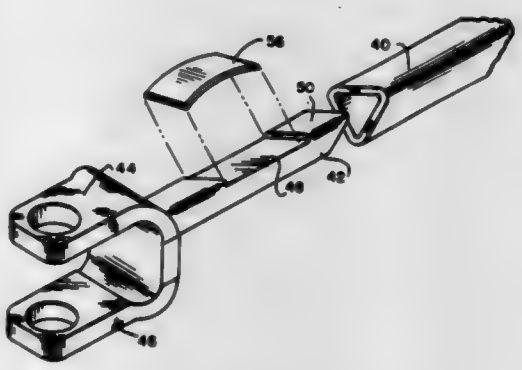
Filed Mar. 24, 1983, Ser. No. 478,318

Int. Cl.[3] B62D *1/16*

U.S. Cl. 74—492

4 Claims

1. In a vehicle steering assembly: a telescopically arranged coaxial rotatable driving shaft and rotatable driven shaft, said shafts having complementary substantially triangular cross-sectional shapes with two of the sides of the rotatable driven shaft abutting against corresponding sides of the rotatable driving shaft to prevent relative rotation of the rotatable driving shaft with respect to the rotatable riven shaft; and a spring continuously engaging, the third side of the rotatable driven



shaft and the corresponding side of the rotatable driving shaft, the spring being adapted to provide a predetermined spring force of a magnitude to permit one shaft to slide within the other shaft.

4,535,646

THROTTLE LINKAGE STRUCTURE AND METHOD FOR ITS ASSEMBLY AND DISASSEMBLY

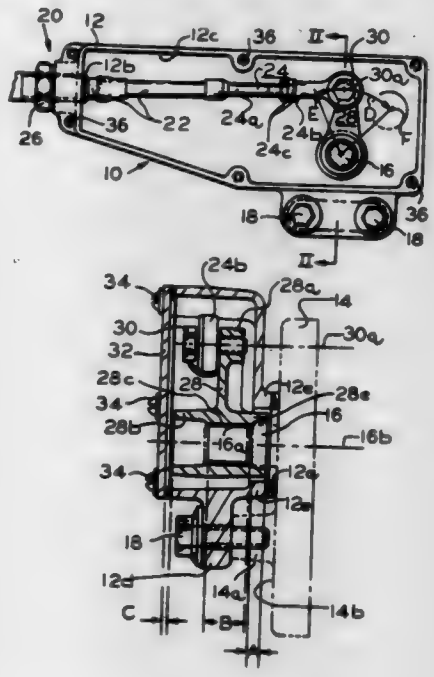
Ramon C. Kohler, Aurora, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Continuation of Ser. No. 261,095, Oct. 9, 1980, abandoned. This application Feb. 7, 1983, Ser. No. 483,079

Int. Cl.[3] F16C *1/10*

U.S. Cl. 74—501 R

9 Claims



1. A throttle linkage structure (10) which is readily removable from and reassemblable with a rotatable governor shaft (16,16') protruding from a mounting member (14), said throttle linkage structure (10) comprising:

a housing (12) which is attachable to the mounting member (14), said housing (12) having a governor shaft opening (12*a*) through which the shaft (16,16') is extendable, a linkage opening (12*b*), and an access opening (12*c*) for inspecting the interior of said housing (12);

a throttle control structure (20) extendable through said linkage opening (12*b*), said throttle control structure (20) being axially displaceable relative to said housing (12) between two displacement limits (E,F), said throttle control structure (20) including a connecting lever (28,28') disposed in said housing (12) and having an end (28*b*) including a guide neck (28*e*) which extends into the governor shaft opening (12*a*), said end (28*b*) being engageable

with the governor shaft (16,16') for a predetermined axial distance (B) so as to rotate therewith;

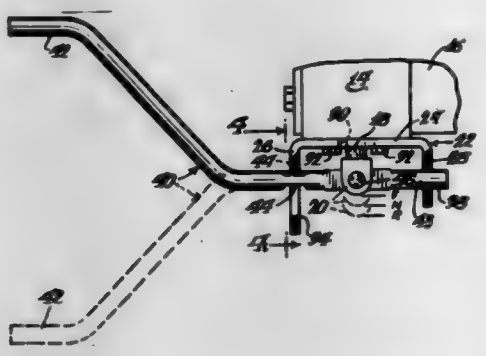
a cover (32) attachable to said housing (12) across said access opening (12*c*), said cover (32) being axially separated from said connecting lever (28,28') by a separation distance (C) which is less than said predetermined engagement distance (B) to restrict axial displacement of said connecting lever (28,28') and the governor shaft (16,16').

4,535,647

CONTROL HANDLE ARRANGEMENT FOR POWER TAKEOFF VALVE

Roger T. Gault, Wild Rose, Wis., assignor to Ingersoll Equipment Co., Inc., Winneconne, Wis.

Filed Apr. 25, 1983, Ser. No. 488,367
Int. Cl.³ G05G *1/10*
U.S. Cl. 74—543 **9 Claims**



1. A control handle arrangement for selectively moving a reciprocable valve member of a self-centering valve, comprising:

handle bracket means adapted for mounting in association with said valve member, said bracket means defining a guide slot;

control handle means adapted to be mounted in association with said bracket means and extend through said guide slot of said bracket means, said handle means being adapted for releasable operative connection with said valve member for selectively positioning said handle means in either of first and second positions with respect to said valve member and said bracket means, whereby movement of said handle means in a first direction within said guide slot of said bracket means moves said valve member from a first neutral position thereof to a second position thereof; and

selectively operable retaining means for retaining said handle in a position in which said valve member is maintained in said second position thereof, said retaining means comprising detent means defined by said bracket means in operative association with said guide slot, said retaining means being operable by movement of said handle means into said detent means when said handle means is operatively connected to said valve member in said first position of said handle means, said retaining means being inoperable whereby said handle means cannot be moved into said detent means when said handle means is operatively connected with said valve member in said second position of said handle means.

4,535,648

CONTROL HANDLE EXTENSION

Jack C. Stelzer, 11786 Duchess, Detroit, Mich. 48224, and Joseph E. Fritsch, 14001 Sherwood, Oak Park, Mich. 48237

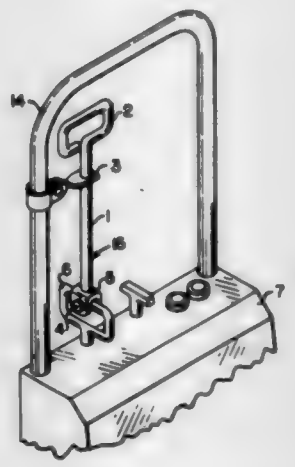
Filed Jul. 5, 1983, Ser. No. 510,546
Int. Cl.³ G05G *1/00*
U.S. Cl. 74—544 **10 Claims**

1. A control handle extension comprising:

a rod-like member having a first end portion including a handle rotatable with said rod-like member and a second end portion including an enlarged shoulder with a plurality of flanges extending axially to said enlarged shoulder;

a u-shaped connecting bracket slidably disposed on the second end portion of said rod-like member;

said connecting bracket having an opening through its center section whose contour, including enough radial clearance to facilitate axial and tilting movement, is similar to a cross section of said rod-like member taken through said flanges;



whereby said flanges prevent rotary movement between said rod-like member and said connecting bracket;

said connecting bracket including spaced apart parallel side portions extending on either side of a control handle used on a power-operated device;

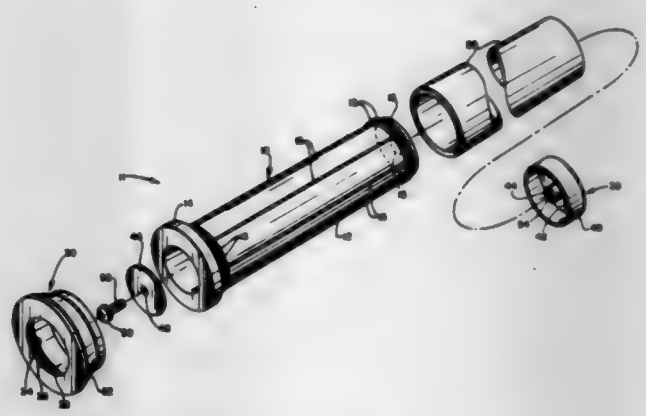
fastening means to rigidly attach said parallel side portions to said control handle.

4,535,649

ANTI-SLIP HANDLEBAR GRIP

Alwin J. Stahel, St. Paul, Minn., assignor to Drag Specialties, Inc., Minnetonka, Minn.

Filed Jan. 28, 1983, Ser. No. 461,755
Int. Cl.³ B62K *21/26*
U.S. Cl. 74—551.9 **4 Claims**



1. A handlebar grip comprising:

a. a body member for engaging a handlebar as a grip, the body member comprising:

1. a hard polymer tube having one end open for slipping partially onto one end of said handlebar and the other end closed and having an orifice therein of a diameter smaller than the inside diameter of said tube and with a hard polymer shoulder integrally formed on said open end of said tube and extending outwardly perpendicular to the outer surface of said tube, said hard, polymer tube also comprising at least one rib extending circumferentially about each end of said tube for engaging a cylindrical shock absorbent layer and preventing movement of said cylindrical shock absorbent layer along the longitudinal axis of said tube, and

2. a plurality of ribs extending along the longitudinal axis

of the outer surface of said tube to engage said shock absorbent layer and prevent rotation of said shock absorbent layer about the circumference of said tube;

b. said shock absorbent layer being formed of a sponge polymer material for use overlaying said body member; and wherein said shock absorbent layer is a sponge polymer cylinder with both ends open and having an inside diameter similar to the outside diameter of said hard polymer tube thereby permitting said longitudinally and circumferentially extending ribs on said tube to engage said sponge polymer and prevent longitudinal and circumferential slippage between said sponge polymer and said tube when said hard polymer tube is inserted into said sponge polymer cylinder such that one end of said sponge polymer cylinder abuts against said hard polymer shoulder and the other end of said sponge polymer cylinder is conterminous with the other closed end of said hard polymer tube; and

c. means on said body member for engaging said shock absorbent layer and preventing slippage of said layer with respect to said body member.

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FOUR-WHEEL DRIVING APPARATUS WITH AN AUTOMATIC TRANSMISSION

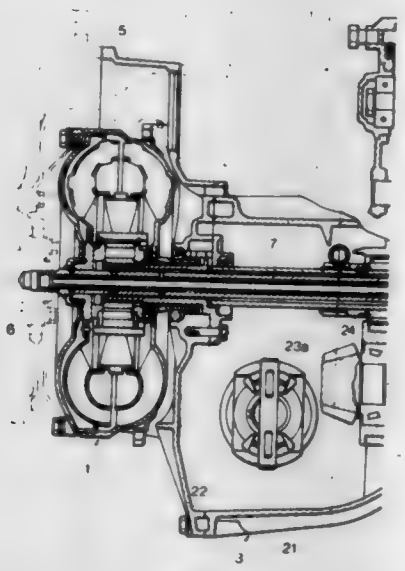
Masayuki Kodama, Hachioji, and Toshio Kobayashi, Tokyo, both of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 21, 1981, Ser. No. 333,219

Claims priority, application Japan, Dec. 24, 1980, 55-183370; Dec. 24, 1980, 55-186083[U]; Dec. 24, 1980, 55-186084[U]; Dec. 24, 1980, 55-186085[U]

Int. Cl.³ F16H *37/06*

U.S. Cl. 74—665 GA **11 Claims**



1. In a four-wheel driving apparatus with an automatic transmission for a vehicle having a torque converter connected to an engine mounted on a vehicle and having a turbine shaft for connecting the output of the torque converter to said automatic transmission, the improvement comprising

an output shaft of said automatic transmission, said output shaft being forwardly extended from the automatic transmission,

a driving gear secured to the output shaft,

a driving pinion shaft operatively connected to said driving gear,

a pinion formed on one end of said driving pinion shaft,

means comprising a final reduction device operatively connected to said pinion for driving front wheels of the vehicle;

a rear drive shaft rotatably supported and rearwardly extended along the outside of said automatic transmission,

a driven gear rotatably mounted on said rear drive shaft and operatively connected to said driving gear, and

a clutch device mounted on the rear drive shaft and adapted to connect said driven gear with said rear drive shaft for driving rear wheels of the vehicle.

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TORQUE PROPORTIONING DIFFERENTIAL

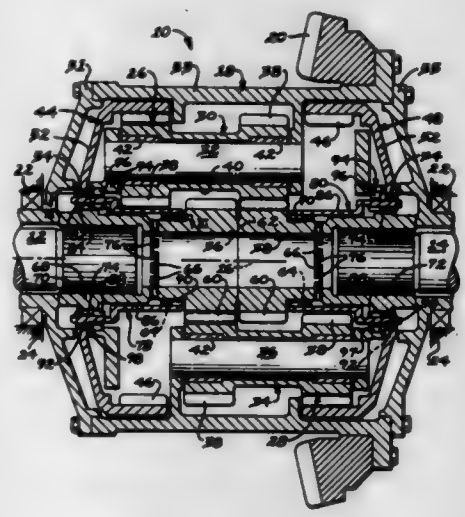
Robert O. Chambers, Peoria, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

PCT No. PCT/US82/01103, § 371 Date Aug. 13, 1982, § 102(e) Date Aug. 13, 1982

PCT Filed Aug. 13, 1982, Ser. No. 645,480

Int. Cl.³ F16H *1/44*

U.S. Cl. 74—711 **40 Claims**



1. In a torque proportioning differential (10/110) having a driven carrier (18/112) rotatable about a central axis (16/114) and first and second output members (68,72/138,140) extending along the axis (16/114), the improvement comprising:

first and second radially outer gears (44,48/122,124);

first and second radially inner gears (56,58/126,128);

gear means (26,28/116,118) for cross connecting the outer and inner gears (44,48,56,58/122,124,126,128), the gear means (26,28/116,118) being rotatably connected to the carrier (18/112); and

disengageable coupling means (78,80/130,134,142,144) for delivering a preselected ratio more than 50% and less than 100% of the total torque to the first output member (68/138) in response to a relative speed increase of the second output member (72/140) with the remaining torque being delivered thereto, the coupling means (78,80/130,134,142,144) being connected to the output members (68,72/138,140) and at least one of each of the outer gears (44,48/122,124) and the inner gears (56,58/126,128).

4,535,652

AUTOMATIC TRANSMISSION AND DIRECT COUPLING CLUTCH FOR VEHICLE

Masao Nishikawa, Tokyo, and Takashi Aoki, Fujimi, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 27, 1983, Ser. No. 508,102

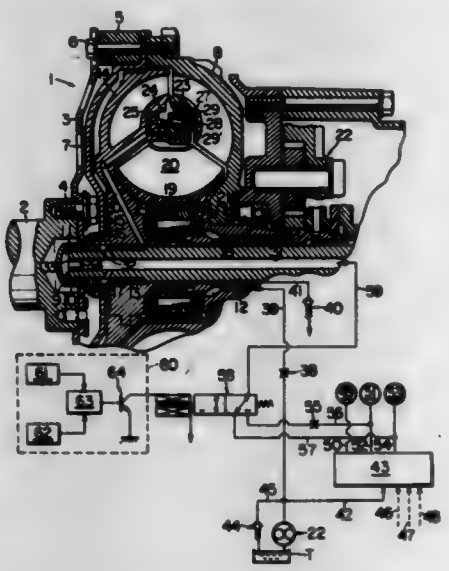
Claims priority, application Japan, Jul. 1, 1982, 57-114233

Int. Cl.³ F16H *47/00, 45/02*

U.S. Cl. 74—733 **9 Claims**

1. An automatic transmission for a vehicle, comprising: a torque convertor equipped with a rotary member on the input side and a rotary member on the output side; a semi-direct coupling clutch interposed between both of said rotary members and actuated by a control fluid pressure to mechanically transmit the torque between both of said rotary members while permitting slip of rotation therebetween; an auxiliary transmission operatively connected to said torque convertor and adapted to effect a speed change operation in accordance with speed change ratios of a plurality of transmission stages; and a

control apparatus for controlling an interconnecting force of said semi-direct coupling clutch such that the force becomes greater in accordance with operation of said auxiliary transmis-



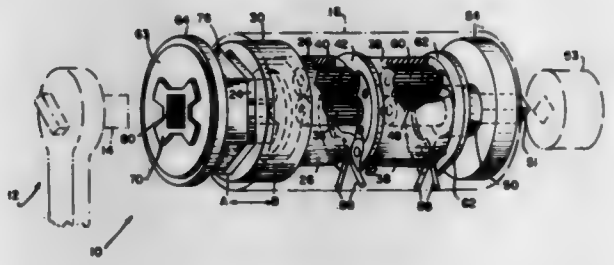
sion at the speed change ratio of a higher transmission stage and becomes lower in accordance with operation of said auxiliary transmission at the speed change ratio of a lower transmission stage.

4,535,653

RATIO SPEED ADAPTOR

Brian Coburn, 79 Bailey St., Lawrence, Mass. 01843

Filed Aug. 16, 1982, Ser. No. 408,135
Int. Cl.³ F16H *57/10, 3/44, 1/28;* B25B *17/00*
U.S. Cl. 74—765 **3 Claims**



1. A speed transformer adaptor comprising:

a substantially cylindrical casing;

a first gear system coaxially and rotatably positioned in fixed alignment within said casing comprising a first portion forming a drive shaft extending beyond one end of said casing, and a second integral cylindrical portion having internal gear teeth;

a second gear system coaxially and rotatably positioned within said casing and in fixed longitudinal alignment with said first gear system comprising a first portion forming a sun gear coaxially positioned within the cylindrical portion of said first gear system and having external gear teeth, and a second integral cylindrical portion having internal gear teeth;

a first pinion gear disposed in fixed position within the cylindrical portion of said first gear system and meshing with said sun gear of said second gear system and said internal gear of the cylindrical portion of said first gear system;

a third gear system coaxially and rotatably positioned within said casing and in fixed longitudinal alignment with said first and second gear systems comprising a first portion forming a sun gear coaxially positioned within the cylindrical portion of said second gear system and having external gear teeth, and a second integral portion forming a drive shaft extending beyond the other end of said casing;

a second pinion gear disposed in fixed position within the cylindrical portion of said second gear system and meshing with the sun gear of said third gear system and the internal gear of the cylindrical portion of said second gear system; and

a clutch member slidably mounted on said drive shaft of said first gear system and adapted to slidably engage said casing whereby to interlock said casing and gear sytems to provide a direct drive between said input and output shafts.

4,535,654

CHAIN SAW SHARPENING GUIDE

Mark E. White, 1437 W. 11th, Port Angeles, Wash. 98262

Filed Nov. 10, 1983, Ser. No. 550,554
Int. Cl.³ B23D *63/16*
U.S. Cl. 76—36 **2 Claims**



1. A guide for sharpening chain saw blades comprising:

an elongated member having first and second planar faces, said planar faces being orthogonally disposed relative to each other;

a strip of magnetic material affixed to said first face, said magnetic material allowing said guide to be magnetically positioned adjacent to the bar of the chain saw so that said second planar face extends orthogonally outwardly from said chain bar, said second planar face having a plurality of indicia thereon, said indicia being positioned on said second planar face to visually indicate the angle at which a filing device is to be held during filing of a chain saw tooth; and

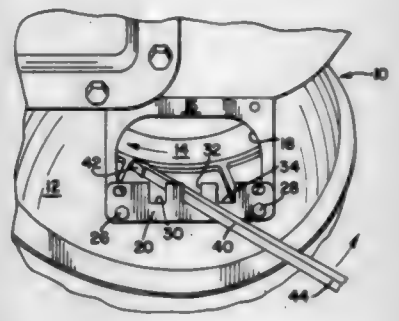
gauge means formed in the second planar face, the gauge means being positionable immediately adjacent to the cutting edge of the chain saw tooth for gauging the optimum shape of the cutting edge of the chain saw tooth.

4,535,655

ENGINE TURNING TOOL BRACKET

Robert C. Avery, 14 Penny La., Chicago Heights, Ill. 60411

Filed Dec. 1, 1983, Ser. No. 577,041
Int. Cl.³ B25B *31/00*
U.S. Cl. 81—484 **11 Claims**



1. An apparatus useful for manually rotating a rotatable system comprising a stationary housing having a hole therethrough and having said rotatable system located therein; plate means having a plurality of slots, said plate means being secured to said housing so that at least a portion of each of said slots extends into the space defined by the perimeter of said

hole; and bar means having first and second ends, said bar means being capable of being placed at least partially in any of said slots so that said first end contacts said system and said second end is capable of being manually held, whereby manually rotating said bar means about said slot in which said bar means is placed causes said system to rotate.

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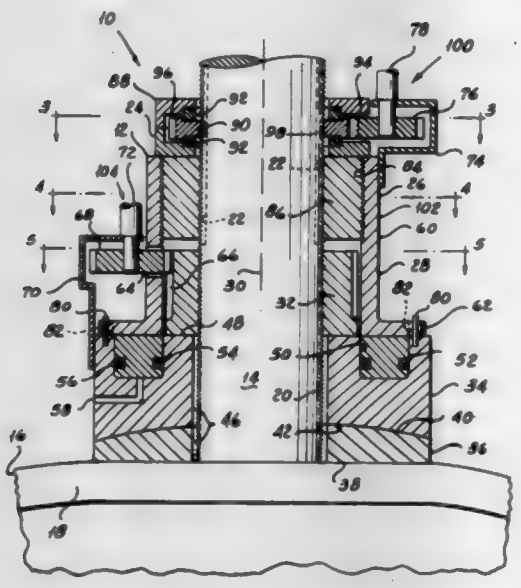
INTEGRAL TENSIONER ASSEMBLY FOR TENSIONING, INSERTING AND REMOVING A STUD

Joseph N. Orban, 12 Greensview Dr., Scotch Plains, N.J. 07076

Continuation-in-part of Ser. No. 243,138, Mar. 12, 1981, abandoned. This application Jun. 28, 1982, Ser. No. 392,740

Int. Cl.[3] **B25B** *29/02*

U.S. Cl. 81—57.38 **7 Claims**



1. A stud rotation system for mounting and removing a stud from a pressure vessel comprising:

(a) a housing disposed about the stud,

(b) rotation means rotatably mounted on the housing adapted to rotate the stud,

(c) drive means engaging the rotation means to rotate the rotation means and the stud whereby the stud will be threadably inserted or removed from the pressure vessel,

(d) holding means disposed within the housing, to engage the stud and to permit turning of and axial motion of the stud

(e) the holding means includes an engaging nut affixed to the housing threadably receiving the stud to permit relative axial motion therebetween on rotation of the nut or the stud,

(f) the housing has a base,

(g) a sleeve disposed on the base and circumferentially spaced from the stud,

(h) the engaging nut is affixed to the sleeve in axially spaced relation to the base, and

(i) the sleeve comprises a plurality of annular housing rings axially disposed upon each other, each ring having a portion of its inner surface frictionally affixed to the engaging nut.

4,535,657

SOCKET WRENCH HAVING AUTOMATIC NUT-EJECTING CAPABILITY

Eugene A. Farris, R.R. #1, Murray, Nebr. 68409

Filed Jun. 18, 1984, Ser. No. 621,610

Int. Cl.[3] **B25B** *13/02*

U.S. Cl. 81—124.1 **8 Claims**

1. A socket wrench having automatic nut ejector capability and comprising:

A. a tubular sleeve surrounding a longitudinally extending central sleeve-axis and having a front-end and a rear-end respectively substantially perpendicular to said sleeve—axis, said tubular sleeve having an internal-wall having a finite-length extending leadwardly from rear-end to front-end and including four consecutively longitudinally extending length portions along said finite-length as follows:

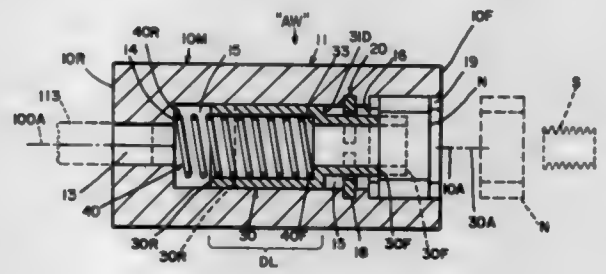
Ai. a fitting-length commencing at the sleeve rear-end and having a noncircular cross-sectional shape whereby the socket wrench sleeve might be removably mounted to a selectable socket driving means,

Aii. a relatively lengthy medial-length commencing at the forward terminus of the fitting-length and having a cross-sectional shape that is larger than that for the fitting-length whereby an abrupt sleeve-shoulder surrounding the sleeve-axis exists at the juncture of the fitting-length and the medial-length, said medial-length providing the major proportion of the sleeve internal-wall finite-length,

Aiii. a fastener-length commencing at the forward terminus of the medial-length, said fastener-length at the sleeve-front-end being of regular polygonal cross-sectional shape whereby the socket wrench sleeve might grip a polygonal nut fastener for disengagement from a threaded stud therefor, and

Aiv. a groove-length interrupting a minor proportion of said medial-length nearer the fastener-length than to the fitting-length, said groove-length circularly surrounding the sleeve-axis and having a circularly cross-sectional size larger than that for the medial-length;

B. a hollow plunger surrounding a longitudinally extending central plunger-axis that is superimposable along said sleeve-axis and having a forward lead-end and a rearward trail-end respectively substantially perpendicular to said



plunger-axis, said lead-end and trail-end defining therebetween a plunger given-length that is less than the sleeve internal-wall finite-length,

Bi. said plunger having an outside-wall extending from lead-end to trail-end, said plunger outside-wall including a lengthier and relatively cross-sectionally enlarged trail-length surrounding the plunger-axis and being longitudinally slidably engaged along a major proportion of the sleeve internal-wall medial-length rearwardly of the groove-length, said plunger outside-wall also including a shorter and necked lead-length surrounded by the sleeve groove-length and terminating at the plunger lead-end, said plunger lead-length being sufficiently longitudinally arrested with respect to the groove-length that the plunger lead-end is permanently rearwardly recessed from the sleeve front-end, and

Bii. said hollow plunger including a lead-bore extending trailwardly from the plunger lead-end and also including a trail-bore extending longitudinally leadwardly from the plunger trail-end and being cross-sectionally larger than said lead-bore, said trail-bore leadwardly remote of the plunger trail-end including an abrupt plunger-shoulder;

C. a longitudinally rearwardly compressible helical spring surrounding the colinear sleeve-axis and plunger-axis and bearing between the sleeve-shoulder and the plunger-shoulder and resiliently yieldably urging the plunger enlarged trail-length toward the sleeve internal-wall groove-length;

D. a C-shaped retainer seated within the sleeve groove-length and having a substantially fully-closed circular shape wherein the inside-opening area thereof is less than the cross-sectional area for the sleeve internal-wall medi-

al-length and is intermediate in cross-sectional size to that for the plunger outside-wall trail-length and lead-length whereby the C-shaped retainer maintains the cross-sectionally enlarged trail-length permanently trailwardly thereof and the plunger lead-end leadwardly thereof for nut ejecting capability; and

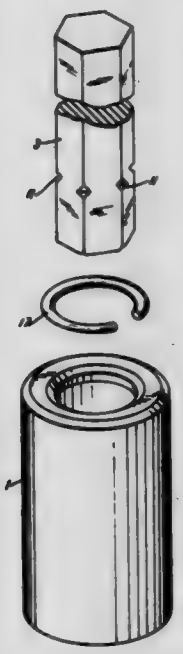
E. nut impact prevention means for preventing a said disengaged nut fastener from impacting trailwardly against the C-shaped retainer immediately prior to the nut being leadwardly ejected from the sleeve fastener-length by the resiliently longitudinally movable plunger.

4,535,658

SOCKET BIT HOLDER

Paul J. Molinari, Manchester, Conn., assignor to Allen Manufacturing Company, Bloomfield, Conn.

Filed Mar. 5, 1982, Ser. No. 354,137
Int. Cl.³ B25B *23/16*
U.S. Cl. 81—177.85 **3 Claims**



1. A socket bit holder comprising a socket member having a circumferential groove near one end of a tool bit opening formed in the socket member, said groove having a 45° surface tapering toward the end of the socket member, a tool bit adapted for insertion in the tool bit opening, a plurality of notches formed on the tool bit which notches are arranged to be adjacent the circumferential groove when the tool bit is in the socket member, and a resilient ring means positioned in the circumferential groove which ring is arranged to engage the tool bit notches.

4,535,659

TORQUE LIMITING WRENCH WITH AN AUDIO ALARM

Tai-Her Yang, 5-1 Tay Pyng St., Shi Hwu Jenn, Jang Huah Shiann, Taiwan

Filed Nov. 2, 1983, Ser. No. 547,922
Int. Cl.³ B25B *23/142*
U.S. Cl. 81—478 **13 Claims**

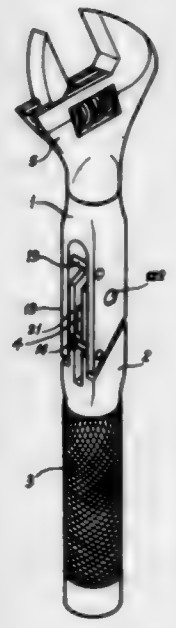
1. A torque wrench for limiting the magnitude of torque applied to a load comprising:

a fore-section rod having a head structure of a wrench at a first end thereof and a fore-section member at a second end thereof, said fore-section member forming two prongs having opposing spaced prestress coupling faces on the interior thereof defining a cavity, and exterior faces,

a rear-section rod having a rear-section member,

pivot means for connecting said fore-section member to said rear-section member, and for permitting pivoting of said rods,

said rear-section rod having upper and lower ends, said rear-section member at said upper end forming two flanges having interior surfaces on the interior sides of said flanges, and prestress coupling surfaces on the exterior sides of said flanges, said flanges received in said cavity with said prestress coupling surfaces in engagement with said prestress coupling faces of said prongs, one of said prestress coupling surfaces having indentations in an arc-shaped pattern,



a position audio alarm means for making an audible sound when said rods pivot, in which a protrusion means for restricting the pivoting of said rods on one of said prestress coupling faces of said fore-section member is received by one of said indentations on said rear-section member, and

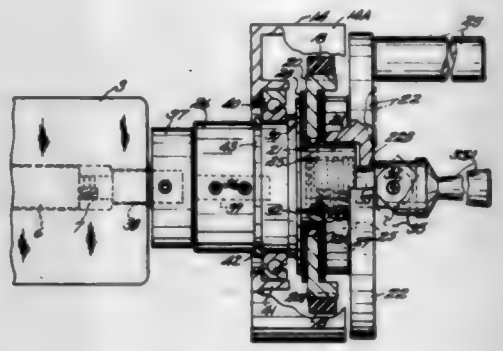
means for varying the amount of restriction provided by said protrusion means.

4,535,660

LATHE TAILSTOCK DRIVE ATTACHMENT

Daniel E. Osterman, Springfield, Oreg., assignor to Pesiri Enterprises, Inc., Springfield, Oreg.

Filed Jun. 7, 1983, Ser. No. 501,930
Int. Cl.³ B23B *23/00*; F16D *13/54, 21/00*; F16H *37/06*
U.S. Cl. 82—31 **4 Claims**



1. An attachment for the tailstock of a machine lathe to advance a tool carried by the tailstock feed screw, said attachment comprising,

mounting means for securement to the tailstock,

a variable speed reversible electric motor and speed reduction means carried by said mounting means, said speed reduction means having an output shaft,

power transmission means including a toothed timing belt powered by said output shaft and including a driven component,

a powered rotary member for coupling to the feed screw of

the tailstock and driveable by said driven component of the power transmission means,

clutch means coupling said driven component of the power transmission means and said powered rotary member, said clutch means including an axially positionable handwheel, friction discs, a manually attached cam lock serving to engage said handwheel with said driven component and the latter with said powered rotary member to drive the tailstock feed screw, said cam lock including a threaded stud in threaded engagement with said powered rotary member whereby the cam lock may be adjusted for wear by manual rotation of the threaded stud, said cam lock being of the over center type and including a post, said handwheel carried by said post and axially positionable therealong by said cam lock,

a motor speed control and a double pole-double throw switch in circuit with a power source and said motor to control motor speed and hence the rotational speed of the feed screw and rate of axial displacement of a tool carried by said tailstock.

4,535,661

POWER-DRIVEN STEADY REST FOR LATHES

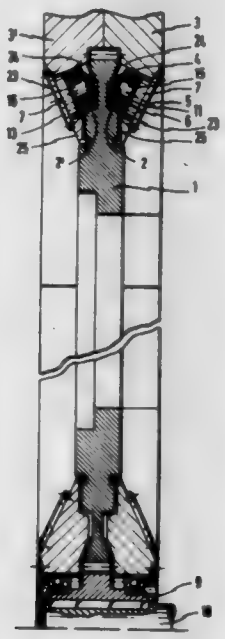
Hermann Berbalk, Göppingen, Fed. Rep. of Germany, assignor to Oerlikon-Boehringer GmbH, Goppingen, Fed. Rep. of Germany

Filed Dec. 8, 1983, Ser. No. 559,415

Claims priority, application Fed. Rep. of Germany, Dec. 10, 1982, 3245790

Int. Cl.³ B23B *5/22*

U.S. Cl. 82—40 R **12 Claims**



1. In a power driven steady rest for a lathe, especially for a crankshaft turning machine: a supporting plate to be fastened to a machine bed of the lathe; a drive gear rotatably supported in said plate for encompassing a workpiece to be machined, and having means for receiving a chuck for holding a workpiece; said drive gear having an axis; means drive said driving gear; and bearing means rotatably supporting said gear on opposite sides adjacent its outer circumference in said supporting plate, said bearing means comprising two sets consisting of a plurality of individual roller bearings respectively on opposite sides of said drive gear; the roller bearings of each set being closely spaced with respect to each other and extending around a major part of the circumference of the drive gear; each of said bearings being formed by a roller and a roller holder fastened to said supporting plate, the rollers having axes at an oblique angle to the axis of the drive gear, and having obliquely angled races disposed on the supporting plate and on the drive gear.

4,535,662

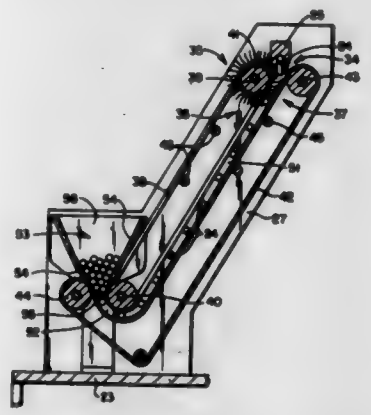
METHOD AND APPARATUS FOR GATHERING BEVERAGE STRAWS AND THE LIKE

Homer S. Lynn, 5300 Dublin Rd., Dublin, Ohio 43017

Filed Mar. 12, 1984, Ser. No. 588,779

Int. Cl.³ B26D *3/16*

U.S. Cl. 83—23 **6 Claims**



6. The method of gathering an axially extending tubular beverage stem from a cutting mechanism that severs said stem from an axially advancing elongated supply, said method comprising:

(a) advancing the stem into a substantially stationary guide disposed downstream of said cutting mechanism;

(b) severing the stem from the supply while a substantial portion of said stem is in the guide;

(c) brushing the stem from the guide into an adjacent entrant portion of a stem-transporting run defined by at least two relatively aligned belts after said stem is severed from the supply;

(d) maintaining substantially constant contact with the stem as it is brushed from the guide into the entrant portion of said stem-transporting run; and

(e) forcing the stem into a collecting station having a relatively restricted stem receiving opening extending into a discharge portion of the stem-transporting run.

4,535,663

APPARATUS FOR REMOVING CUT STAPLE

James B. Shealy, Irmo, S.C., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jun. 2, 1983, Ser. No. 500,610

Int. Cl.³ D01G *1/04*

U.S. Cl. 83—100 **4 Claims**



1. In an apparatus for cutting filamentary material into predetermined lengths comprising a cutting assembly including a plurality of knife edges secured to a reel having a mounting member and having means adapted to receive successive wrappings of filamentary material to be cut in contact with the plurality of knife edges and means for forcing said material in

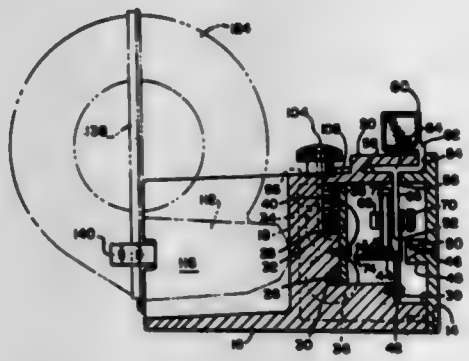
contact with the knife edges to thereby sever the material and force it between adjacent knife edges to a doffing point, the improvement comprising means for removing the severed material, said means comprising: (a) a tub connected to the mounting member, the ratio of the cutter reel diameter to the depth of the tub ranging from 0.85–4.8 to 1; (b) means for creating an air flow across the tub adjacent to and beneath the doff point and cutter reel, parallel to the plane of the cutter reel, to a collection point, said means for creating an air flow comprising means for communicating with an air source, said means delivering air from the air source to said tub adjacent to the contact point of said filamentary material and the means for forcing the filamentary material in contact with the knife edges, responsive to the suction induced by a fan through a duct in communication with said tub.

4,535,664

DISPENSER MEANS FOR ROLLED SHEET MATERIALS

Gary E. Raymond, 755 S. Rainbow Dr., Hollywood, Fla. 33021

Continuation of Ser. No. 415,656, Sep. 7, 1982, Pat. No. 4,455,905. This application Jun. 21, 1984, Ser. No. 623,233
The portion of the term of this patent subsequent to Jun. 26, 2001, has been disclaimed.
Int. Cl.³ B65H *75/32*
U.S. Cl. 83—162 **2 Claims**



1. Dispenser means for rolled sheet materials, such as negative stock, emulsified paper, and like photographic supplies, comprising:

a housing having an outer wall with a materials-discharging slot formed therein;

said housing further having first means comprising nipping rollers therewithin operative (a) for grasping an end of rolled sheet material, and (b) for moving any selective lengths of such sheet material through said housing along a given pathway into said slot;

said housing also having second means therewithin, and interposed intermediate said rollers and said slot, operative for (a) gripping sheet material disposed in said pathway, and (b) severing such aforesaid selective lengths of such gripped sheet material; wherein

said first and second means each has a means (a) manipulatable for, and (b) requiring manipulation for, effecting operation thereof independent of operation of the other thereof, whereby said first means is manipulatably operative for moving arbitrarily chosen lengths of such sheet material along said pathway, and said second means is manipulatably operative for severing such chosen lengths; and

said housing further having a channel for nestably receiving therewithin only a sheet material-discharging portion of a sheet material cassette; wherein

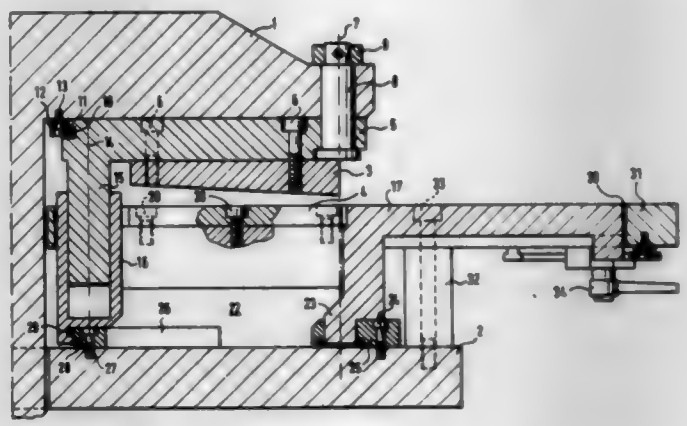
said channel is defined by substantially parallel, spaced-apart end walls, and substantially parallel, spaced-apart upper and lower or side walls, forming a substantially rectilinear frame, having a given depth, for light-sealingly nesting therewithin such sheet material-discharging portion of a sheet material cassette.

4,535,665

NOTCHING MACHINE

Harald Fazis, Weil, Fed. Rep. of Germany, assignor to Ludwig Boschert GmbH & Co., KG, Lorrach-Hauingen, Fed. Rep. of Germany

Filed Sep. 6, 1983, Ser. No. 529,551
Claims priority, application Fed. Rep. of Germany, Sep. 7, 1982, 3233208
Int. Cl.³ B21D *28/02*
U.S. Cl. 83—556 **12 Claims**



1. A notching machine having a vertically moving ram which is provided with a projecting head serving as a tool holder for an upper knife of a blade assembly which further comprises a lower knife that is attached to a machine table, the upper and the lower knives each being provided at a nose formed by two included cutting edges with an identical fixed minimum vertex, comprising:

an upper set collar for mounting said upper knife to the head of said ram with such an attachment that the upper set collar in common with the upper knife may be turned around a vertical axis of rotation which is in parallel with the longitudinal axis of said ram and extends near the nose of the upper knife;

a lower set collar for mounting said lower knife to the machine table with such an attachment that the lower set collar in common with the lower knife may be turned around said vertical axis of rotation which extends near the nose of the lower knife, said lower set collar further for serving as an auxiliary supporting table for a work piece; and

means along an axis parallel to said vertical axis of rotation for rigidly connecting the upper set collar with the lower set collar for a common turning of the two knives about their vertical axis of rotation, wherein a notching of said workpiece with a notching angle greater than said fixed minimum vertex of the two knives is accomplished by two successive working strokes of the ram made at two respectively different turning positions of the upper and lower set collars as successively and simultaneously adjusted relative to the workpiece.

4,535,666

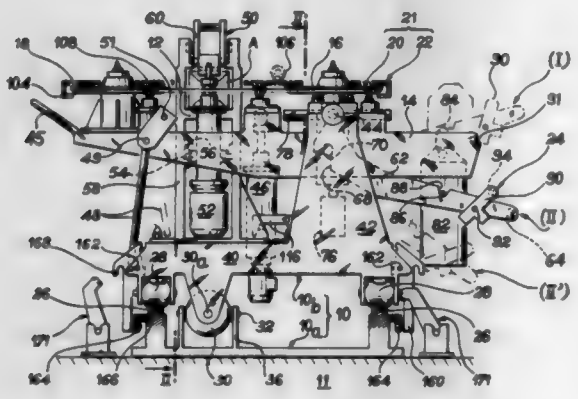
BAND SAW

Robert Fiori, Connaux; Philippe Seyfried, and José Symard, both of Bagnols sur Ceze, all of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed May 18, 1983, Ser. No. 495,935
Claims priority, application France, May 18, 1982, 82 08702
Int. Cl.³ B23D *53/04*
U.S. Cl. 83—795 **9 Claims**

1. A band saw comprising a plate supporting the workpiece to be sawn, a closed saw blade defining a cutting plane and supported by at least two wheels, one of which is a leading wheel rotated by control means, the saw also having means for moving the saw blade in relation to the workpiece to be sawn in the cutting plane, wherein the saw also comprises blade-tensioning means enabling at least one of the wheels to be moved

between a tensioning position and an action-taking position, and a detachable casing which receives such blade, the casing and the blade which it contains forming an assembly which can



be interchanged as a unit without any other demounting when the tensioning means retain such wheel in the action-taking position.

4,535,667

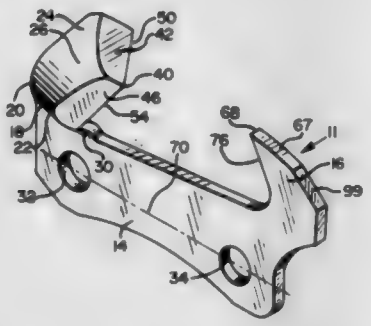
SAW CHAIN

Duane M. Gibson, Milwaukie, and Lewis A. Scott, Lake Oswego, both of Oreg., assignors to Omark Industries, Inc., Portland, Oreg.

Continuation-in-part of Ser. No. 329,593, Dec. 10, 1981, abandoned, Continuation of Ser. No. 36,842, Aug. 7, 1979, abandoned. This application Dec. 22, 1982, Ser. No. 452,092

Int. Cl.³ B27B *33/14*

U.S. Cl. 83—830 **21 Claims**



1. A cutter for an endless cutting device movable along an endless path in a forward direction for cutting a kerf in material such as wood, said cutter in an upright position having forward and rearward ends with respect to said direction comprising:

a body portion disposed in a predetermined vertical plane,

a side plate portion joined to said body portion and extending upwardly from and positioned to one side of said body portion, said side plate portion, from front to rear thereof, sloping inwardly at an acute angle with respect to said plane,

said side plate portion adjacent its forward end having an outer surface, an inner surface, and an outwardly facing sharpenable work engaging forward end surface intersecting said inner surface at an acute angle to define a forward side cutting edge on said side plate portion, and

a top plate portion integral with and extending inwardly from an upper part of said side plate portion, said top plate portion, from front to rear thereof, sloping downwardly,

said top plate portion having an upper surface, a lower surface, and an upwardly facing sharpenable forward end surface intersecting said lower surface of said top plate portion at an acute angle to define a forward top cutting edge for said top plate portion, said cutting edge functioning to cut and lift material from the kerf being cut.

4,535,668

MAGNETIC PICKUP FOR STRINGED INSTRUMENTS

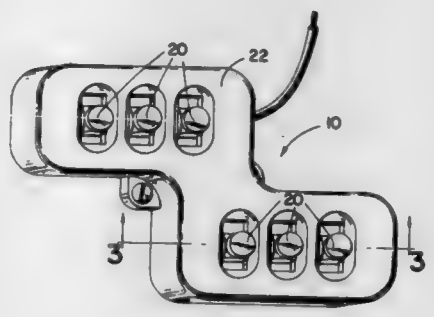
Helmut F. K. Schaller, Kuckucksweg 16, Feucht 1, Fed. Rep. of Germany

Filed Jan. 25, 1984, Ser. No. 573,813

Claims priority, application Fed. Rep. of Germany,

Int. Cl.³ G10H *3/18*

U.S. Cl. 84—1.15 **6 Claims**



1. A magnetic pickup for use with guitars or other musical instruments having ferro-magnetic strings, said pickup comprising a magnet adapted to underlie at least one string of an instrument and having opposite poles displaced from one another along the length of such a string when said pickup is attached to an instrument, a coil surrounding said magnet, and a pole piece located between said magnet and said string when said pickup is attached to said instrument, said pole piece being movable relative to said magnet in the direction parallel to said string.

4,535,669

TOUCH RESPONSE APPARATUS FOR ELECTRONIC MUSICAL APPARATUS

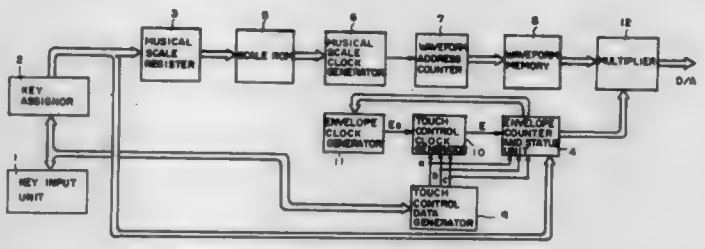
Youji Kaneko, Tachikawa, Japan, assignor to Casio Computer Co., Ltd., Shinjuku, Japan

Filed Jul. 8, 1983, Ser. No. 512,143

Claims priority, application Japan, Jul. 13, 1982, 57-120551; Jul. 13, 1982, 57-120552; Jul. 13, 1982, 57-120553

Int. Cl.³ G10H *1/057*

U.S. Cl. 84—1.26 **19 Claims**



1. A touch response apparatus for an electronic musical instrument comprising:

a touch data generating means for generating touch data as a function of a depression status of a key, an envelope count means for counting a clock signal to generate an envelope data,

a setting means for establishing a reached value of count value of said envelope count means in accordance with said touch data generated by said touch data generating means,

a relative value data generating means for generating a relative value data of a present value data of said envelope data generated by said envelope count means relative to said reached value data, and

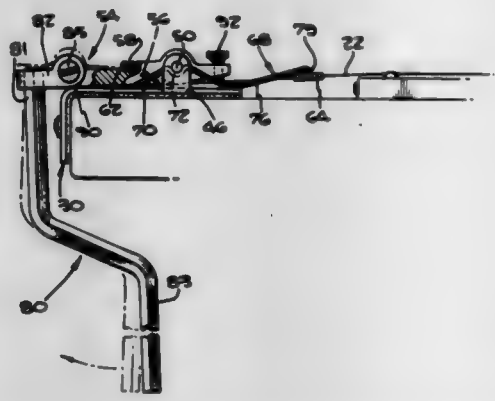
a control means coupled to said relative value data generating means for controlling a count rate of said envelope count means in accordance with said relative value data, thereby effecting a count of said envelope count means in an exponential manner.

4,535,670

STRING BENDER ATTACHMENT CONSTRUCTION

David J. Borisoff, 7726 Burnet Ave., Van Nuys, Calif. 91405

Filed May 15, 1984, Ser. No. 610,553
Int. Cl.[3] G10D *3/14*
U.S. Cl. 84—312 R 2 Claims



1. A string bender for mounting on a stringed instrument of the guitar family having a set of tensioned strings and adapted to be carried by a performer in use with the strings lying adjacent to the forwardly directed face of the instrument, said device comprising:

a bracket adapted to be mounted on a guitar at its lower end including means anchoring a selected one of the tensioned strings;

means carried by the bracket for changing the tension imposed on the selected string;

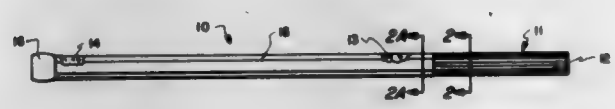
and means actuable by body movement of the performer for actuating the changing means, said actuating means including an arm mounted on the bracket and projecting rearwardly from the lower end of the guitar.

4,535,671

STICK TYPE DRUMSTICK

Paul C. Stromberg, 2417 Clinton Ave. South, Minneapolis, Minn. 55404, and Van A. Luoma, 2800 West 42nd St., Minneapolis, Minn. 55410

Filed Aug. 6, 1984, Ser. No. 637,762
Int. Cl.[3] G10D *13/02*
U.S. Cl. 84—422 S 19 Claims



1. A stick type drumstick comprising:

a plurality of elongated, substantially straight wooden rods disposed to form a bundle, said bundle having two ends and a longitudinal axis;

first retaining means securing said bundle tightly together in a band-like manner for a relatively short longitudinal span at a location spaced from but closer to the playing end thereof; and

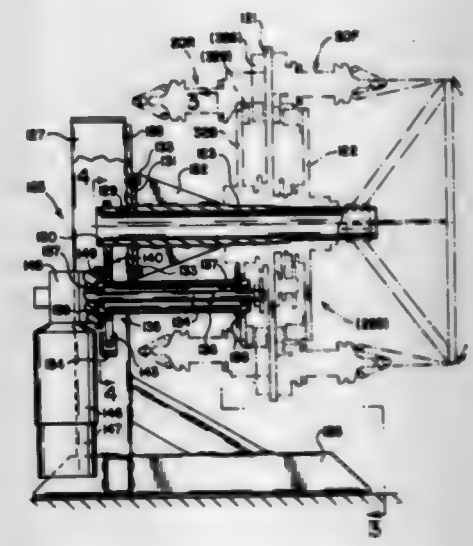
second retaining means securing said bundle together at the handle end thereof.

4,535,672

APPARATUS FOR MOUNTING COMPONENTS FOR ROTATION OF CARRIERS FOR STRAND SUPPLY BOBBINS AND FOR TIMING STRAND MOVEMENT RELATIVE TO ROTATION

Jeffrey F. Bull, Akron, and Michael E. Winiasz, Lorain, both of Ohio, assignors to James F. Karg, Akron, Ohio

Filed Nov. 20, 1984, Ser. No. 673,382
Int. Cl.[3] D04C *3/06, 3/24, 3/40*
U.S. Cl. 87—29 5 Claims



1. In a braiding machine having a set of rear carriers for a strand supply bobbin mounted on the rear side of a first table for rotation in one direction, a set of front carriers for a strand supply bobbin movable around the front side of said first table for rotation by a second table in the opposite direction, a central axis stationary shaft for rotatable mounting of said first and second tables thereon, and a power input shaft for connection to a drive mechanism for rotating said first and second tables in opposite directions, a mounting assembly for said central axis stationary shaft and said power input shaft, said mounting assembly comprising: a frame base; a vertically extending frame stanchion carried by said frame base and having an upper end for attachment of the rear end of said central axis stationary shaft; said frame stanchion further having a medial lattice opening below said upper end; a drive torque tube extending from within said frame stanchion medial lattice opening and substantially parallel to said central axis stationary shaft and toward the rear side of said first table, said torque tube housing and rotatably mounting said power input shaft; and, an arcuately adjustable means projecting into said frame stanchion medial lattice opening for support of the rear end of said drive torque tube.

4,535,673

APPARATUS FOR ROTATION OF CARRIERS FOR A STRAND SUPPLY BOBBIN

Michael E. Winiasz, Lorain, Ohio, assignor to James F. Karg, Akron, Ohio

Filed Nov. 20, 1984, Ser. No. 673,383
Int. Cl.[3] D04C *3/06, 3/24, 3/38, 3/40*
U.S. Cl. 87—29 4 Claims

1. In a braiding machine having a set of rear carriers for a strand supply bobbin mounted on the rear side of a first table for rotation in one direction, a set of front carriers for a strand supply bobbin movable around the front side of said first table for rotation by a second table in the opposite direction, a central axis stationary shaft for rotatable mounting of said first and second tables thereon, a drive mechanism power input shaft extending substantially parallel to said stationary shaft and toward the rear side of said first table, and a frame base carrying a vertically oriented frame stanchion for mounting said stationary shaft and said power input shaft, a drive mechanism

for rotating said first and second tables in opposite directions, said table drive mechanism comprising:

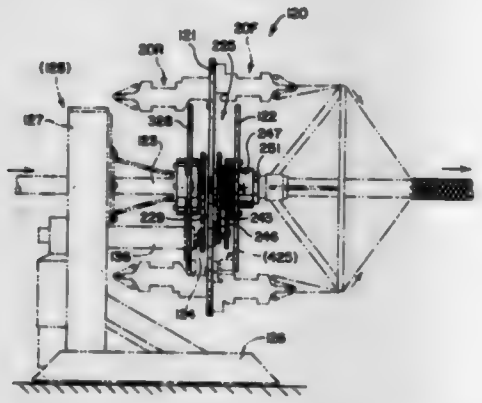
a first sprocket mounted on the forward end of said power input shaft and behind the rear side of said first table;

a second sprocket positioned around said stationary shaft and aligned with said first sprocket and coupled to said first table;

a first chain means connecting said first sprocket with said second sprocket whereby a rotation of said power input shaft will rotate said first table in one direction;

a post shaft extending from the front side of said first table substantially parallel to said stationary shaft and toward said second table;

a third sprocket positioned around said post shaft on the medial portion thereof and rotatable thereon; a fourth sprocket positioned around said post shaft on the end



thereof and coupled to said third sprocket for rotation thereof;

a fifth sprocket positioned around said stationary shaft and coupled thereto and aligned with said third sprocket;

a second chain means connecting said third sprocket with said fifth sprocket whereby said third sprocket is rotated in a second direction during rotation of said first table in the opposite direction;

a sixth sprocket positioned around said stationary shaft and aligned with said fourth sprocket and coupled to said second table; and,

a third chain means connecting said fourth sprocket with said sixth sprocket whereby said fourth sprocket, coupled to said third sprocket, and said second table are rotated in a second direction during rotation of said first table in the opposite direction.

4,535,674

APPARATUS FOR CONTROL OF MOVING STRANDS FROM ROTATING STRAND SUPPLY BOBBINS

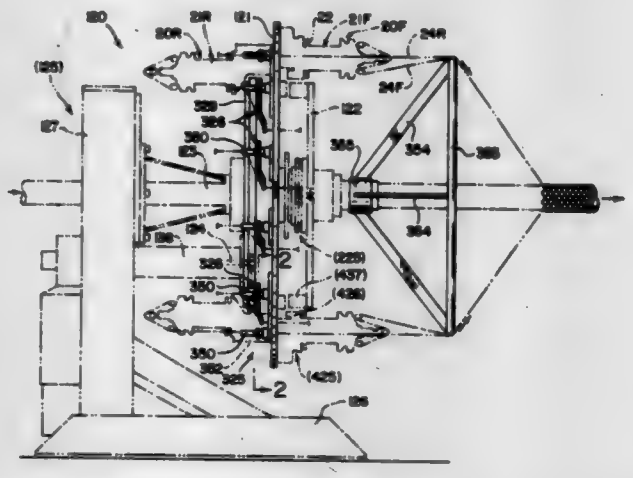
Jeffrey F. Bull, Akron; Harlan Johnson, Copley, both of Ohio; James F. Karg, 4550 Shaw Rd. Ext., Akron, Ohio 44313, and Michael E. Winiasz, Lorain, Ohio, assignors to James F. Karg, Akron, Ohio

Filed Nov. 20, 1984, Ser. No. 673,384

Int. Cl.³ D04C *3/40, 3/42*

U.S. Cl. 87—29 **8 Claims**

1. In a braiding machine having a set of rear carriers for a strand supply bobbin mounted on the rear side of a first table for rotation in one direction, the strands from a set of supply bobbins on said rear carriers passing through a set of peripheral slots in said first table, a second table in front of said first table, a set of front carriers for a strand supply bobbin mounted on and driven around the front side of said first table by rotation of said second table, a central axis stationary shaft for rotatable mounting of said first and second tables thereon, a drive mechanism for rotating said first and second tables in opposite direction, and an apparatus for control of moving strands from the sets of supply bobbins on said rear and front carriers during movement thereof around and along said central axis stationary shaft and toward the "work center" of said braiding machine, said apparatus having a set of said first table peripheral slots which are radially arcuate for movement of a set of strands from said rear carriers through an arc segment relative to the axis of said stationary shaft, said apparatus further comprising: a set of mechanisms carried on the rear side of said first table for guiding a set of strands from said rear carriers prior to movement thereof into said radially arcuate slots, each said rear strand guide mechanism being between two of said radially arcuate slots; a variable radius cam track selectively posi-



tioned behind the rear side of said first table and radially inward of said set of rear carriers, said cam track actuating and controlling said set of rear strand guide mechanisms by rotation of said first table; and, a circular braid ring mounted coaxially on said central axis stationary shaft in front of said second table and having an outer diameter substantially coincident with the axes of rotation of a set of bobbins on said front carriers.

4,535,675

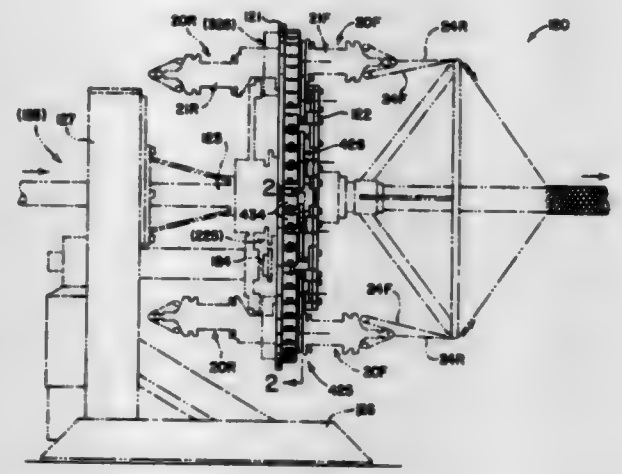
APPARATUS FOR ROTATING A SET OF CARRIERS FOR A STRAND SUPPLY BOBBIN RELATIVE TO MOVING STRANDS FROM A SET OF CONTRA-ROTATING CARRIERS FOR A STRAND SUPPLY BOBBIN

Jeffrey F. Bull; Daniel W. Karg, both of Akron, and Michael E. Winiasz, Lorain, all of Ohio, assignors to James F. Karg, Akron, Ohio

Filed Nov. 20, 1984, Ser. No. 673,385

Int. Cl.³ D04C *3/06, 3/24, 3/42*

U.S. Cl. 87—29 **3 Claims**



1. In a braiding machine having a set of rear carriers for a strand supply bobbin mounted on the rear side of a first table for rotation in one direction, the strands from a set of supply bobbins on said rear carriers passing through a set of peripheral and radially arcuate slots in said first table, a second table in front of said first table, a central axis stationary shaft for rotatable mounting of said first and second tables thereon, a drive mechanism for rotating said first and second tables in opposite directions, and an apparatus for mounting and driving a set of

front carriers for a strand supply bobbin around the front side of said first table, said apparatus comprising:

a shuttle for each said front carrier, each said shuttle having a forwardly facing platform for mounting the base of a front carrier and a rearwardly projecting segment of an arcuate slide tang having a length less than the spacing between any two of said first table arcuate slots, the radially inner side of each shuttle platform carrying a shuttle drive block having two exteriorly opening actuator slots;

a circular shuttle mounting track carried on the front side of said first table and having arcuate segments extending between any two of said first table arcuate slots and engaging said shuttle slide tangs;

a circular actuator cam track carried on the front side of said first table radially inwardly of said shuttle mounting track, said cam track following a constant diameter broken by a set of inwardly directed V's, the apex of each said cam track V being positioned radially inwardly of the inner end of one of said first table arcuate slots; and,

a shuttle drive assembly for each said front carrier mounted on the periphery of the rear side of said second table and having two symmetrical and articulated drive arms mounted on and projecting laterally from a single actuator post, each said drive arm being in confined engagement with said actuator cam track on said first table and carrying an actuator dog for articulated movement into and out of engagement with one of each said two shuttle drive block actuator slots.

4,535,676

COOLING ARRANGEMENT FOR THE GUN BARRELS OF FIREARMS

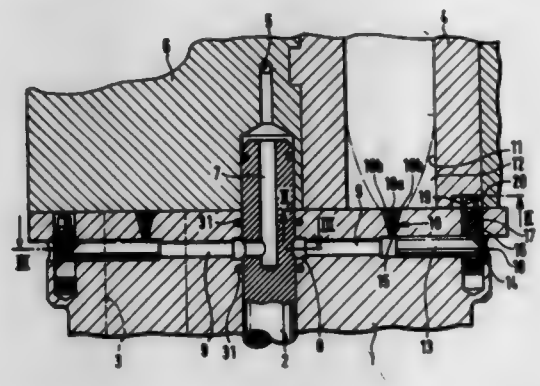
Anton Politzer, Lauf, and Roland Bertiller, Schramberg, both of Fed. Rep. of Germany, assignors to Diehl GmbH & Co., Nuremberg, Fed. Rep. of Germany

Filed Oct. 7, 1982, Ser. No. 433,272

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1981, 3145764

Int. Cl.³ F41F *17/14*

U.S. Cl. 89—14.1 **9 Claims**



1. In a cooling arrangement for the gun barrels of firearms, including a rotatable drum having a longitudinal axle at the rearward portion of the gun barrel provided with passageways in the drum which passageways are directed radially outwardly intermediate individual projectile chambers which passageways are joined in the region of the end portion of the gun barrel axially adjoining the drum, a main passageway for a central cooling medium infeed located in a hollow bore along the longitudinal axle of said drum, said radial passageways being connected to said main passageway; the improvement comprising: cooling medium flow nozzles extending in predetermined angular relationship with the longitudinal axis of the drum and connecting with the radially directed cooling passageways; closure members in said radial passageways automatically opening and closing only during the firing of said firearm and in dependence upon the rotational drum position, said nozzles having outlet openings located in the axial end surface of the drum facing towards the gun barrel and openly communication for a predetermined time interval with the associated end portion of the gun barrel.

4,535,677

DRUM MAGAZINE FOR LARGE-CALIBER AMMUNITION

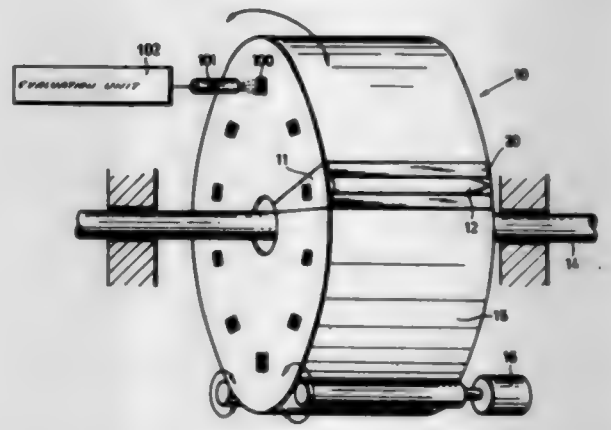
Klaus-Dieter Panhke, Hilden, and Wilfried Becker, Duesseldorf, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 11, 1983, Ser. No. 512,452

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227214

Int. Cl.³ F41F *9/00*

U.S. Cl. 89—46 **11 Claims**



1. An improved drum magazine for large caliber ammunition having an outer peripheral cover in which at least one extraction opening is disposed and including extraction means adapted to selectively extract the outermost of a plurality of cartridges disposed in said drum magazine, the improvement comprising in combination, a plurality of ammunition chambers exchangeably mounted in said drum magazine independently from each other, each ammunition chamber defining a storage space for a plurality of radially juxtaposed cartridges.

4,535,678

HYDRAULIC CONTROL APPARATUS FOR A SERVO-MOTOR, PARTICULARLY FOR VEHICLE STEERING

Svend E. Thomsen, and Thorkild Christensen, both of Nordborg, Denmark, assignors to Danfoss A/S, Nordborg, Denmark

Division of Ser. No. 178,146, Aug. 14, 1980, Pat. No. 4,364,302. This application Sep. 16, 1982, Ser. No. 419,154

Claims priority, application Fed. Rep. of Germany, Aug. 14, 1979, 2932847

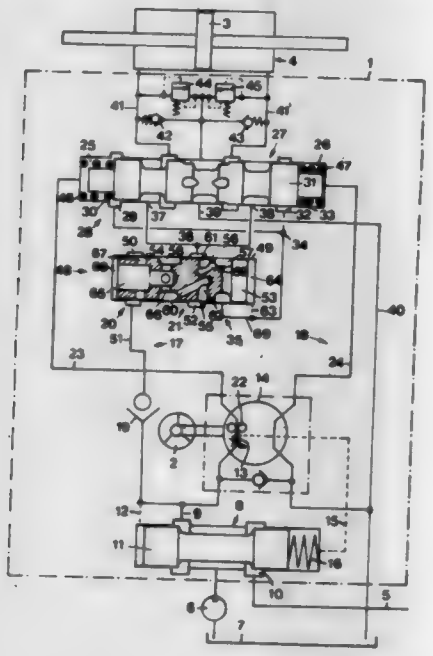
The portion of the term of this patent subsequent to Dec. 21, 1999, has been disclaimed.

Int. Cl.³ F15B *13/042*

U.S. Cl. 91—29 **3 Claims**

1. A hydraulic steering control assembly, comprising, a bidirectional servomotor having two operating ports on opposite sides thereof, a pump and a tank, a steering wheel operated metering control unit having inlet and outlet ports and left and right control ports to which pressurized fluid may be selectively directed via a measuring motor from said inlet port and returned from the other of said control ports to said outlet port, bidirectional valve means having inlet port means and directional power control ports connected to said servomotor ports for selectively supplying and exhausting pressurized fluid therefrom, said bidirectional valve means having left and right turn control ports, a two sided control circuit connected to said metering unit control ports and to said bidirectional valve means left and right turn control ports, utility valve means having pressure regulating and control and power valve capabilities, said utility valve means having a single slidable spool disposed in a valve housing having inlet and outlet passage means, said spool and said housing forming first and second

chambers at opposite ends thereof, a power circuit connected to said pump and to said utility valve inlet means, said spool having first internal passage means having fluid communication with said first chamber and being in an adjustable throttling relationship with one of said passage means of said housing to regulate the pressure of fluid thereat, said spool having second internal passage means in constant fluid communication



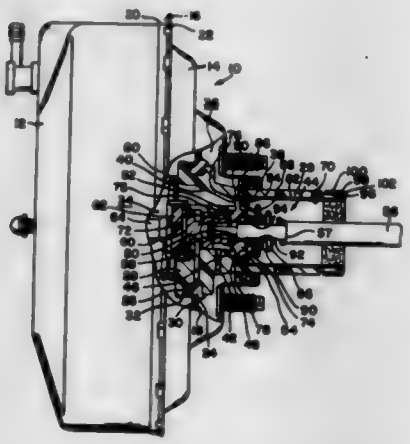
with said first internal passage means thereof and one side of said metering control unit measuring motor, fluid passage joining means for combining the fluid flow of said first and second internal passage means of said utility valve to combine pressure fluids from said control and power circuits, said fluid passage joining means providing a common path for pressurized fluids from said power and control circuits to a selected one of said servomotor ports.

4,535,679

CONTROL VALVE FOR A BRAKE BOOSTER

Oswald O. Kytta, South Bend, Ind., assignor to The Bendix Corporation, Southfield, Mich.

Filed Oct. 2, 1981, Ser. No. 307,919
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R **12 Claims**



1. A control valve for use in a fluid pressure operated motor having a housing with a cavity therein separated by a wall to define first and second chambers therein, a hub connected to said wall having a projection that extends through the housing, said projection having a bore therein through which the first and second chambers are connected to each other in a first mode of operation and said first chamber is connected to a source of fluid in a second mode of operation, said control valve controlling the fluid communication through said bore in response to force applied to an input member to terminate said first mode of operation whereby a pressure differential develops across said wall and an output force is produced, said valve being characterized by:

a plunger located in said bore;

a disc having a central opening and a peripheral surface;

a retainer connected to said projection for holding said peripheral surface against a shoulder to fix the position of the disc within said bore, said retainer having an inwardly projecting lip, said plunger contacting said disc adjacent said central opening and moving the disc against said lip on the retainer during said first mode of operation and said plunger moving away from said disc during said second mode of operation to allow fluid to flow through said central opening and into said first chamber to develop said pressure differential;

a first resilient member located between said inwardly projecting lip and said input member for urging said plunger toward said disc and said lip, said lip limiting the movement of said disc toward said retainer and establish a rest position for said disc during said first mode of operation; and

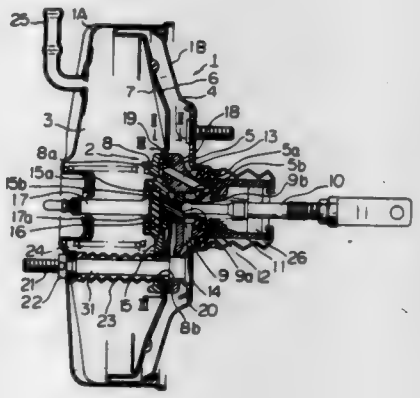
a second resilient member located between said retainer and said disc for urging said disc toward a seat during said second mode of operation to seal said second chamber from said bore.

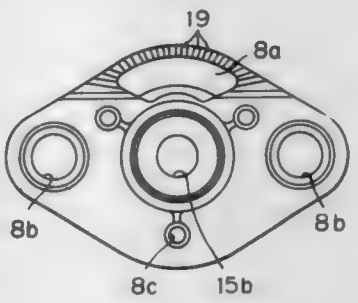
4,535,680

PNEUMATIC SERVO BOOSTER

Toshio Takayama, Kanagawa; Hiromi Ando, Tokyo, and Mitsuhiro Endou, Kanagawa, all of Japan, assignors to Tokico Ltd., Kanagawa, Japan

Filed Dec. 28, 1983, Ser. No. 566,385
Claims priority, application Japan, Jan. 10, 1983, 58-1906
Int. Cl.³ F15B *9/10*
U.S. Cl. 91—376 R **5 Claims**





1. In a pneumatic servo booster of the type including a housing, a power piston unit partitioning the interior of said housing into front and rear chambers and having therein a generally longitudinally extending first passage having a first end communicated with said front chamber and a second end communicated with the interior of said power piston unit, and a generally radially extending second passage having a first end communicated with said rear chamber and a second end communicated with said interior of said power piston unit, a valve mechanism provided in said interior of the power piston unit

and being associated with an input rod to control the communication between said first and second passages and between said second passage and another passage which is communicated with a source of a first reference pressure, said front chamber being communicated with a source of a second reference pressure which is lower than said first reference pressure, and an output rod connected to said power piston unit, the improvement wherein said power piston unit comprises:

a power piston main body;

a cover member secured to said power piston main body and covering said first end of said first passage; and

a plurality of diversion channel means, provided between adjacent surfaces of said cover member and said power piston main body and extending radially outwardly from the periphery of said first end of said first passage and through said cover member, for communicating said first passage with said front chamber and for reducing noise caused by fluid passing from said first passage into said front chamber.

4,535,681

FLUID OPERATED TRANSMISSION CONTROL SYSTEM

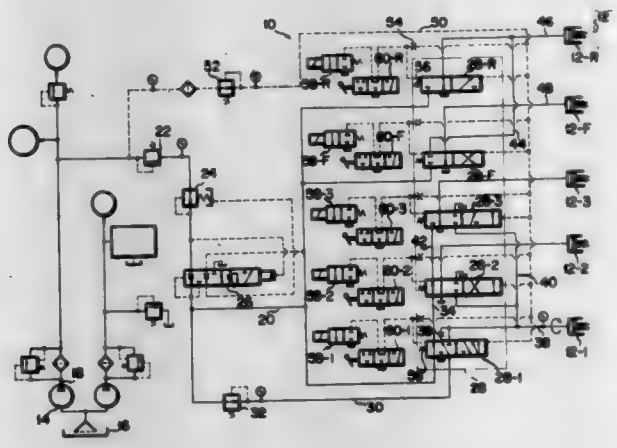
Masaru Nakamura, Matsuto, and Takashi Kuse, Komatsu, both of Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 29, 1984, Ser. No. 614,479

Claims priority, application Japan, May 31, 1983, 58-081047; May 31, 1983, 58-081048; May 31, 1983, 58-094878; May 31, 1983, 58-094880

Int. Cl.³ F15B *11/16, 13/06*

U.S. Cl. 91—527 **8 Claims**



1. A fluid operated transmission control system comprising:

(a) a source of fluid under pressure;

(b) a first group of fluid actuated drive establishing devices to be selectively actuated by the pressurized fluid from the source for selecting a drive speed;

(c) a second group of fluid actuated drive establishing devices to be selectively actuated by the pressurized fluid from the source for selecting a drive direction;

(d) a plurality of speed select valves, associated one with each of the first group of drive establishing devices, to be pilot operated individually for directing the pressurized fluid from the source to the associated ones of the first group of drive establishing devices;

(e) a plurality of direction select valves, associated one with each of the second group of drive establishing devices, to be pilot operated individually for directing the pressurized fluid from the source to the associated ones of the second group of drive establishing devices;

(f) a plurality of speed select control valves, associated one with each speed select valve, to be electrically actuated individually for pilot operating the associated speed select valves to cause the same to direct the pressurized fluid to the associated ones of the first group of drive establishing devices;

(g) a plurality of direction select control valves, associated one with each direction select valve, to be electrically actuated individually for pilot operating the associated direction select valves to cause the same to direct the pressurized fluid to the associated ones of the second group of drive establishing devices; and

(h) a plurality of emergency control valves interposed one between each of the speed select control valves and direction select control valves and the associated one of the speed select valves and direction select valves, each emergency control valve being operated manually upon malfunctioning of the associated one of the speed select control valves and direction select control valves to actuate or deactuate the associated one of the first and second groups of drive establishing devices via the associated one of the speed select valves and direction select valves.

4,535,682

PISTONS

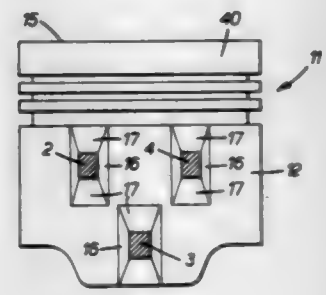
John G. Collyear, and David A. Parker, both of Rugby, England, assignors to AE PLC, Rugby, England

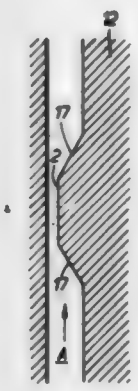
Continuation-in-part of Ser. No. 305,990, Sep. 28, 1981, abandoned. This application Aug. 6, 1982, Ser. No. 406,099

Claims priority, application United Kingdom, Aug. 11, 1981, 8124473

Int. Cl.³ F16J *9/20*

U.S. Cl. 92—153 **47 Claims**





1. A piston for reciprocation in a cylinder of an internal combustion engine wherein lubrication with an associated cylinder is provided by an oil film, comprising

a crown,

a gudgeon pin bore,

a ring belt,

a first generally cylindrical skirt portion to one side of a plane including the piston axis and the gudgeon pin bore axis,

a second generally cylindrical skirt portion to the other side of said plane,

said skirt portions being attached to the ring belt,

a small number of discrete bearing surfaces formed on the first and second skirt portions,

each of said skirt portions having an associated one of said skirt portions therearound and being spaced radially outwardly of the associated one of said skirt portions by a small distance,

a circumferentially extending front edge to each bearing surface,

a circumferentially extending rear edge to each bearing surface,

generally axially extending side edges interconnecting the front and rear edges of each bearing surface,

a shallow hydrodynamic ramp connecting each said circumferential front edge to the surrounding skirt portion, the end of said ramp remote from the associated bearing surface being spaced from the surface in a radial direction by less than 125 microns.

a shallow hydrodynamic ramp connecting each said circumferential rear edge to the surrounding skirt portion, the end of said ramp remote from the associated bearing surface being spaced from the surface in a radial direction by less than 125 microns, the surrounding skirt portions providing retained oil said small distance from said bearing surfaces and said ramps co-operating with the cylinder to force a thin oil film over the bearing surfaces during motion of the piston relative to the cylinder to hydrodynamically lubricate said bearing surfaces as the bearing surfaces transmit lateral thrust from the piston to the co-operating cylinder.

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PISTON WITH A MEMBER MADE OF PARTIALLY STABILIZED ZIRCONIUM OXIDE

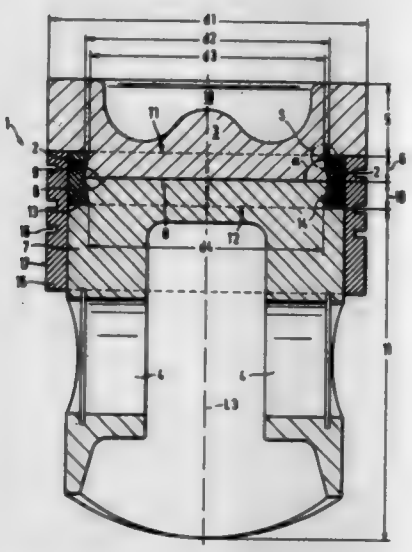
Ulf Dworak, Baltmannsweiler; Hans Olapinski, Aichwald; Dieter Fingerle, Hochdorf, and Ulrich Krohn, Leonberg, all of Fed. Rep. of Germany, assignors to Feldmuhle Aktiengesellschaft, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,214

Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237469

Int. Cl.³ F02F *3/12*; F16J *1/01*

U.S. Cl. 92—224 **11 Claims**



1. A piston arrangement comprising: a metal shaft and a piston head of zirconium oxide attached to said shaft; the entire cross-section of the top of said piston head facing a combustion chamber and comprising said zirconium oxide; said piston head having a bottom shaped as a truncated cone with a first base diameter contacting said shaft at a plane, said cone having a second base diameter at a transition into the top of said piston head, said first diameter being longer than said second diameter; an annular element surrounding substantially the truncoconicular bottom of said piston head, said annular element having separate sections, said annular element having an inside contour matching said truncated cone at the bottom of said piston head, wherein the improvement comprises:

(a) said zirconium oxide being partially stabilized;

(b) said shaft having a top in the form of a truncated cone with a first base diameter contacting the base of said piston head at said plane and being substantially equal to the diameter of said base of said piston head, said shaft having a cylindrically-shaped section substantially below the truncoconicular top, said shaft having a diameter shorter at the transition from its truncoconicular top to said cylindrical section below thereof than the diameter of the base of the truncoconicular bottom of said piston head;

(c) said annular element having an inside contour surrounding and matching the truncoconical top of said shaft;

(d) said annular element being secured with a shrink ring, surrounding said annular element;

(e) said shrink ring stressing said annular element for inducing compression strain in said truncoconicular bottom of said piston head to counteract thermally induced critical tangential tensile stresses.

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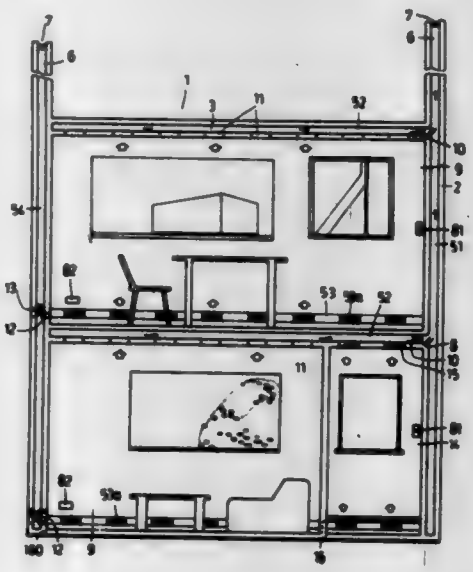
VENTILATION SYSTEM FOR AN ENCLOSED SPACE

Guu Perng, No. 15, Lane 129, Kee-Chin 1 Rd., Kee Lung City, Taiwan

Filed Aug. 22, 1984, Ser. No. 643,052

Int. Cl.³ F24F *7/00*

U.S. Cl. 98—31 **8 Claims**



1. A ventilation system for an enclosed occupied space defined by hollow walls and a ceiling comprising a fresh air inlet and a fresh air passage provided in the lower side of the walls, said fresh air passage having a plurality of fresh air outlet for supplying fresh air into the space, a plurality of exhaust air inlets provided in the ceiling of the space, a first exhaust air discharge passage communicated with said exhaust air inlets and lying in the ceiling, a second exhaust air discharge passage communicated with said first discharge passage and lying in the wall, an exhaust air outlet at the top of said second exhaust air passage, means for preventing backdraft at the exhaust air outlet, said means including a roof-shaped member having a first and a second flow regulating arrangement each of which has a plurality of overlapping slats for opening and closing said air outlet, the first and second flow regulating arrangement being so arranged that when one of them is fully closed, the other will be fully opened.

4,535,685

AIR OUTLET FOR AIR CONDITIONING SYSTEMS

Rolf Reuter, Essen, Fed. Rep. of Germany, assignor to Maurmann Ingenieurbüro GmbH, Heiligenhaus, Fed. Rep. of Germany

Filed Mar. 5, 1984, Ser. No. 586,061

Int. Cl.³ F24F *13/06*

U.S. Cl. 98—40.12 **3 Claims**

1. An air outlet device for air conditioning systems comprising:

(a) a housing,

(b) air guide blade means closing the housing on one side

thereof and having air guide blades extending obliquely outwards, said air guide blade means including peripheral portions and central portions,

(c) a partition in said housing, said partion subdividing said housing into an inlet chamber and a second chamber which is limited by said air guide blade means,

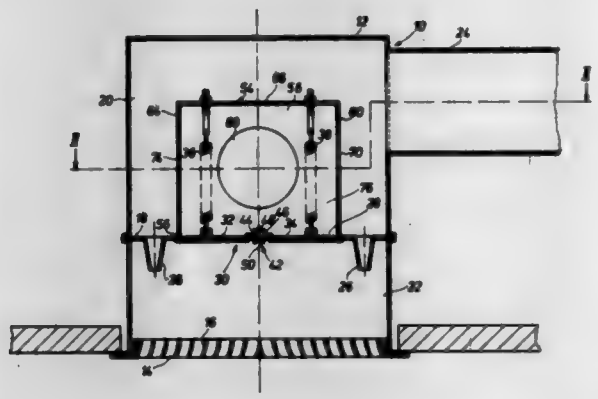
(d) an air inlet port in said housing, said air inlet port communicating with said inlet chamber,

(e) a ring of air outlet nozzles provided in said partition and directed towards said peripheral portions of said air guide blade means,

(f) a central passage in said partition opposite said central portions of said air guide blade means, and

(g) spring-loaded flap means for controlling the air flow through said central passage,

characterized in that



(h) said spring-loaded flap means comprise a flap assembly of pivotably mounted flaps which governs said central passage,

(i) said flaps are pivotable from a closed position into said second chamber to open said passage,

(j) springs are provided acting on said flaps to urge them towards said closed position,

(k) an intermediate housing is provided in said inlet chamber, said intermediate housing being open towards said partition and thereby forming an edge, said edge being attached to said partition around said passage,

(l) said intermediate housing has apertures therethrough, through which said inlet chamber communicates with said passage, and has an end face opposite said passage, and

(m) said springs are tension springs, each having one end attached to one of said flaps and having its other end attached to said end face.

4,535,686

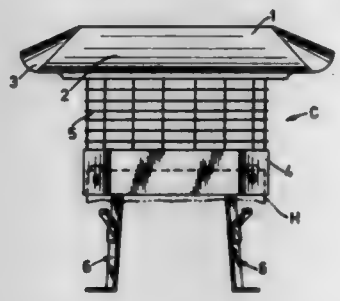
CHIMNEY CAP

Durward A. Hisey, St. Louis County, Mo., assignor to Hy-C Company, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 545,229, Oct. 25, 1983, which is a division of Ser. No. 357,733, Mar. 12, 1982, Pat. No. 4,436,021. This application Mar. 12, 1984, Ser. No. 588,746

Int. Cl.³ F23L *17/02*

U.S. Cl. 98—67 **6 Claims**



1. In a chimney cap for use in providing coverage for the upper end of the formed chimney flue and thereby preventing the entrance of any extraneous elements therein, comprising, a cover means provided upwardly of the flue and preventing the entrance of rain or other elements downwardly into the chimney flue, a band means arranged downwardly of the said cover means and designed for proximity fitting upon the said chimney flue, said cover means and band means being spaced apart a distance heightwise to allow sufficient draft to develop and remove smoke and fumes from the chimney flue, a foraminous means arranged connecting with both the said cover means and band means and disposed for spanning the space in between the said means and arranged substantially in alignment with the said band means, retention means operatively associated with the said band means for assuring its securement with the chimney flue upon which it seats, said retention means including a series of appendages connecting with the band means and projecting downwardly therefrom for extending into and biasing against the interior of the chimney flue for securement of the cap therewith, said appendages being removable from the band means, said band means being formed having a series of sides, adjacent sides of the band means being intervened by a substantially flattened corner, there being an appendage securing with each said band means corner to assure snug securement of the chimney cap with its flue, each appendage being formed of resilient material, each appendage including a leg that removably connects with the band means, extends inwardly and then downwardly to its lowest end, said appendage being arranged for biasing against the interior of the chimney flue for securing said cap firmly in place, a support means provided with the band means at each said corner, each support means being a strap provided interiorly of the band means corner, there being a space provided between the strap and band means with the associated appendage inserting therein and being substantially aligned and contiguous with its associated band means thereat, and fastening means securing through said support means for fixing the appendate in place.

4,535,687

DEVICE FOR THE MANUFACTURE AND PROCESSING OF BISCUIT MIXTURE SHAPES

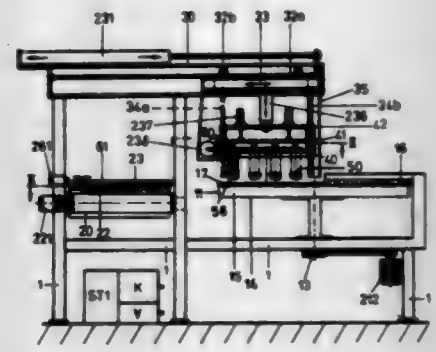
Heinz-Josef Antpöhler, Lippstädter; Strasse 68, D-4795 Delbrück, Fed. Rep. of Germany

Filed Jul. 8, 1983, Ser. No. 512,061

Claims priority, application Fed. Rep. of Germany, Jul. 17, 1982, 3226795

Int. Cl.³ A47J *37/00*

U.S. Cl. 99—334 **20 Claims**

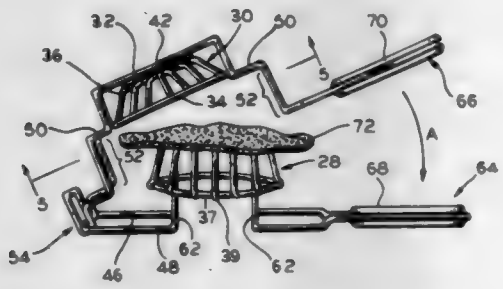


1. In a device for the manufacture of biscuit mixture shapes and for individually depositing said biscuit mixture shapes on to a band conveyor, the improvement comprising: a trough for the biscuit mixture having a floor, at least one pick up device having a forming wall defining a cylindrical forming chamber open at one end and terminating in a rim and an axial bore opening into said forming chamber at the other end thereof, drive means for moving the forming chamber into a first position wherein the rim touches the floor of the trough and into a second position wherein the rim is above the band conveyor and for rotating the pick up device axially of the forming chamber, relative to the floor when the pick up device is in the first position, and ejector means coactive with the axial bore for ejecting biscuit material from the forming chamber.

4,535,688
TORTILLA BASKET FRYER

Wade A. Bentson, San Francisco, Calif., assignor to Amco Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 553,369, Nov. 18, 1983, Pat. No. 4,494,453. This application Jul. 23, 1984, Ser. No. 633,610
The portion of the term of this patent subsequent to Jan. 22, 2002, has been disclaimed.
Int. Cl.[3] A47J *37/12*
U.S. Cl. 99—353 17 Claims

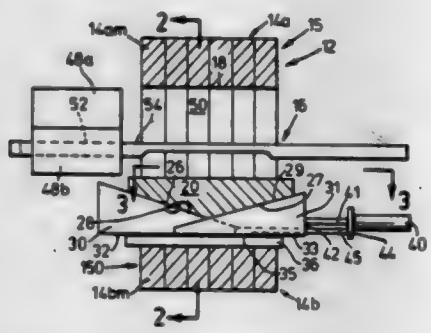


1. A device for deep frying tortillas, said device comprising a nesting pair of inner and outer wire frame baskets, defining a somewhat dish shaped space being between them to receive and mold the shape of a food product, a pair of elongated handles extending from one side of each one of the baskets, the handle on at least the inner one of the basket being shaped to form a vertical stand for supporting and holding at least one side of said inner basket in a stable and inverted position to facilitate a loading and unloading of said food product in said dish shaped space.

4,535,689
PRESS WITH WEDGE

Ladislao W. Putkowski, 2350 Bridletown Cir., Unit 1710, Scarborough, Ontario M1W 3E6, Canada

Filed Aug. 22, 1983, Ser. No. 525,519
Claims priority, application Canada, Aug. 25, 1982, 410056
Int. Cl.[3] B30B *1/40*
U.S. Cl. 100—214 20 Claims



1. A press comprising:
(a) a frame forming a closed loop;
(b) a first pressure surface disposed within said loop;
(c) a movable platen within said loop, which has a second pressure surface opposed to and spaced from said first pressure surface to permit the introduction between said first and second pressure surfaces of a structure to be compressed;
(d) means supporting said movable platen for movement thereof in a direction towards and away from said first pressure surface;
(e) wedge means acting between said frame and platen for moving the movable platen towards said first pressure surface to compress a structure disposed between said first and second pressure surfaces, said wedge means including first and second wedges which are movable in opposite directions in a plane generally at right angles to said direction of platen movement, said wedges having respective inclined surfaces which taper in opposite directions with respect to said plane and respective support surfaces which are disposed in said plane; said platen having correspondingly inclined surfaces co-operating with said inclined surfaces of the wedge means and adapted to cause movement of the movable platen towards the first pressure surface in response to inward movement of the wedges in said opposite directions; and
(f) drive means for propelling said first and second wedges in opposite directions to move said movable pressure surface; said inclined surfaces and drive means being arranged to cause said movement of the movable platen towards said first pressure surface without imparting any substantial lateral force to the movable platen.

4,535,690
DUPLICATING STENCIL

Jonathan Gestetner, London; Cyril Green, Cockfosters, and Thomas Hanrahan, London, all of England, assignors to Gestetner Manufacturing Limited, London, England

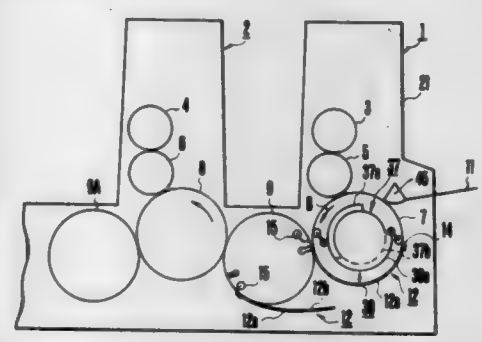
Filed Mar. 15, 1983, Ser. No. 475,623
Claims priority, application United Kingdom, Jan. 28, 1983, 8302373
Int. Cl.[3] B41N *1/24*; B41L *13/14*
U.S. Cl. 101—127 1 Claim

1. In a duplicating stencil comprising:
a sheet of stencil tissue having an ink-impervious plastics impregnation comprising highly plasticized nitrocellulose which is capable of displacement by impact imaging,
a heading fastened to one edge of the said sheet, and
a backing sheet removably attached to said heading and adjacent to said sheet of stencil tissue,
the improvement which consists in providing the said sheet of stencil tissue in an area between the heading and the image-receiving area of the said sheet with a thin, integral reinforcement coating comprising nitrocellulose which is less highly plasticized than the ink-impervious impregnation, which coating is resistant to imaging by impact, does not substantially reduce the flexibility of the impregnated stencil tissue and which renders the stencil resistant to abrasion by the leading edge of an image-receiving paper sheet.

4,535,691
GRIPPER OPENING/CLOSING APPARATUS OF SHEET-FED ROTARY PRESS

Kenji Kida, Ibaragi, Japan, assignor to Komori Printing, Tokyo, Japan

Filed Sep. 12, 1984, Ser. No. 650,319
Int. Cl.[3] B41F *5/02*
U.S. Cl. 101—230 6 Claims



1. A gripper opening/closing apparatus in a sheet-fed rotary printing press, said apparatus having a broadside printing cam and a perfecting cam which are commonly brought into contact with cam followers, and which are adjacent to each other to be coaxial with an impression cylinder, and said apparatus being arranged such that, in a broadside printing mode, grippers of said impression cylinder are opened/closed by said broadside printing cam to cause a reversing gripper of a reversing cylinder to grip a leading end of a printed sheet gripped by said grippers of said impression cylinder, and that, in a perfect-

ing mode, said grippers of said impression cylinder are opened/closed by said perfecting cam and said broadside printing cam to cause said reversing grippers of said reversing cylinder to grip a trailing end of the printed sheet gripped by said grippers of said impression cylinder, wherein a central angle of said impression cylinder which is formed between a sheet gripping position where said grippers of said impression cylinder grip the sheet from a preceding stage and a transfer position where the sheet is transferred from said gripper of said impression cylinder to said reversing grippers of said reversing cylinder are set to be smaller than a remaining central angle of said impression cylinder, and wherein shapes of said broadside printing cam and said perfecting cam are determined in such a manner that, in the broadside printing mode, said perfecting cam is located in a portion of said impression cylinder which corresponds to the remaining central angle so as to set said perfecting cam away from a sheet release position of said broadside printing cam and to set said perfecting cam in an inactive state, and that, in the perfecting mode, said perfecting cam is located to be continuous with the sheet release position of said broadside printing cam.

4,535,692

APPARATUS FOR SUPPLYING LIQUID MEDIUMS TO ROLLERS OF PRINTING MACHINES UTILIZING A DISTRIBUTOR PLATE

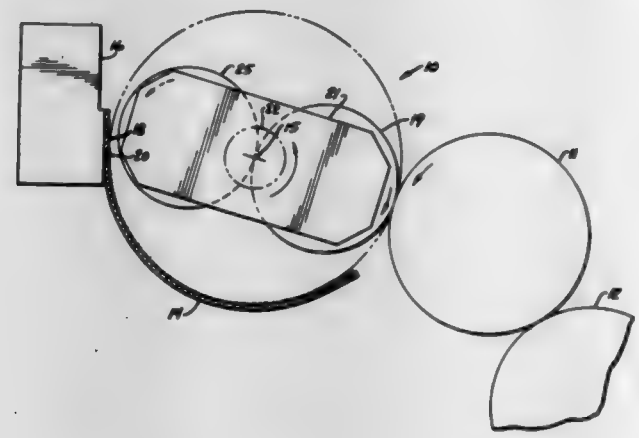
Johannes Schubert, Mainhausen, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Fed. Rep. of Germany

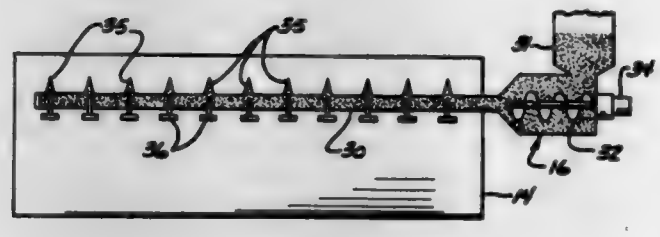
Filed Jan. 20, 1984, Ser. No. 572,583

Claims priority, application Fed. Rep. of Germany, Jan. 21, 1983, 3301909

Int. Cl.³ B41F *31/00*

U.S. Cl. 101—337 **12 Claims**





1. An apparatus for supplying a liquid medium to a roller of a machine comprising an arcuate shaped distributor plate having a determined center of curvature, means for feeding a controlled quantity of said liquid medium onto said distributor plate, a feed roller, a guide rotatably supporting said feed roller, means rotatably supporting said guide for movement about the center of curvature of said distributor plate, and means for cyclically moving said guide in a path whereby said feed roller on said distributor plate to mix and uniformly spread the medium along the plate and about the periphery of said feed roller and then is moved into contact with said machine roller to transfer liquid medium thereto in a controlled manner, a smoothing roller rotatably mounted on said guide for constant rotational contact with said feed roller as it is rolled in contact with said distributor plate, and said smoothing roller having a diameter less then the diameter of said feed roller so as not to contact said distributor plate during cyclic rolling movement of said feed roller along said distributor plate.

4,535,693

DEVICE FOR DISPENSING VISCOUS MATERIALS

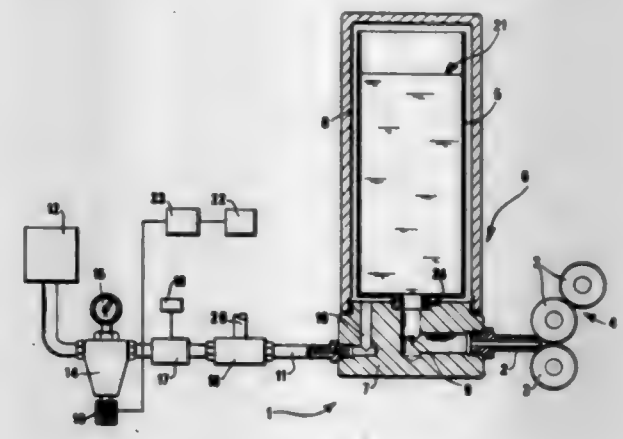
Bruno Belvederi, S. Martino di Monte S. Pietro, Italy, assignor to G.D. Societa per Azioni, Bologna, Italy

Filed Jul. 22, 1983, Ser. No. 516,326

Claims priority, application Italy, Sep. 8, 1982, 3526 A/82

Int. Cl.³ B41F *31/08*

U.S. Cl. 101—366 **3 Claims**



1. A device for dispensing viscous material, comprising:

an airtight container;

a first pipe connecting the inside of said airtight container to a nozzle for supplying the viscous material to a consumption area;

a second pipe for connecting the inside of said airtight container to a line connected, with the interposition of an air flow regulator, to a source of compressed air;

means for fixing, inside said container, a cartridge containing viscous material said cartridge having a low aperature at the bottom of said cartridge and an upper aperature located above the uppermost level of said viscous material, said low aperature being adjacent and communicating with the inlet of said first pipe said upper aperature being in communication with said second pipe, whereby, air from said second pipe forcing said viscous material through said nozzle and exiting through said nozzle when the supply of viscous material has been exhausted;

a flow control element interposed in said line and connected to an alarm device so as to set such alarm in operation upon sensing that air is passing directly from the said source to the said nozzle because said cartridge has become depleted of said viscous material.

4,535,694

LOOPED, ELONGATE LETTERPIECES PRINTING PLATE FOR USE ON ROTARY PRESSES, AND METHOD OF PREPARATION

Manabu Fukuda, 122, Takano-1 Chome, Misato-Shi, Saitama-Ken, Japan

Filed Apr. 7, 1983, Ser. No. 482,952

Claims priority, application Japan, Apr. 8, 1982, 57-57281

Int. Cl.³ G03F *7/02*; B41N *1/16*

U.S. Cl. 101—395 **16 Claims**

1. A letterpress printing plate for use on a rotary press of the kind having a plate cylinder for printing on paper or the like against an impression cylinder, the plate cylinder having a series of sprockets formed on its surface along at least one edge thereof, and a guide cylinder disposed in parallel spaced relation to the plate cylinder; the letterpress printing plate being in the form of an elongate, looped band of flexible materials to be

wrapped around the plate cylinder and the guide cylinder, and comprising:

(a) a base layer;

(b) a photoetched photosensitive layer attached to one face of the base layer and containing in relief both a printing

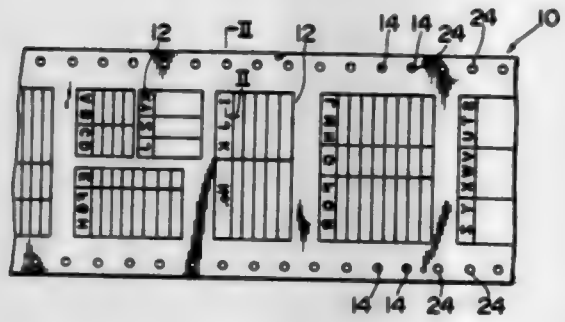


image and a series of annular projections along at least one marginal side edge portion of the base layer; and

(c) a series of sprocket holes, each formed through both the base layer and one of said annular projections, for engagement with the sprockets on the plate cylinder.

4,535,695

FUSE FOR A SPIN-TYPE PROJECTILE

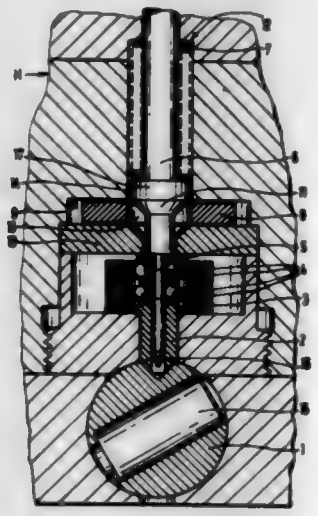
Walter Winterhalter, Tennenbronn, Fed. Rep. of Germany, assignor to Gebruder Junghans GmbH, Schramberg, Fed. Rep. of Germany

Filed Nov. 28, 1983, Ser. No. 555,485

Claims priority, application Fed. Rep. of Germany, Dec. 2, 1982, 3244529

Int. Cl.³ F42C *15/22, 15/26*

U.S. Cl. 102—240 **10 Claims**



1. A fuse for a spinning type projectile having percussion means, comprising:

a housing,

a firing pin disposed in said housing for movement in the direction of its longitudinal axis, said firing pin comprising an ignition end projecting toward said percussion means,

a conical surface disposed coaxially with said axis and widening in a direction away from said ignition end, said conical surface being spaced axially from said ignition end, and

a cylindrical shoulder disposed adjacent the widened end of said conical surface and arranged concentrically relative to said axis,

a spring yieldably urging said firing pin toward said percussion means,

centrifugal means disposed in said housing and arranged to move radially relative to said firing pin,

a winding band surrounding said centrifugal means for urging said centrifugal means radially inwardly to a position wherein said centrifugal means lies in a blocking relationship with a portion of said firing pin at a location between and spaced from said conical surface and said ignition end to block axial travel of said firing pin, said band being radially outwardly yieldable in response to centrifugal forces generated by the spinning of said projectile to enable said centrifugal means to be radially outwardly displaced by centrifugal forces out of blocking relationship with said firing pin,

an inertia body mounted in said housing for movement in a radial direction relative to said firing pin, said inertia body being located at a position which is situated adjacent said conical surface when said centrifugal means is disposed in said blocking relationship with said firing pin, said inertia body including a throughbore through which said firing pin extends,

said throughbore being sized to permit said firing pin to travel therethrough to reach said percussion means, said inertia body being displaceable radially in response to centrifugal forces generated during spinning of the projectile such that one end edge of said throughbore, which end edge is of blunt configuration, lies in the path of said conical surface to block axial travel of said firing pin to said percussion means against the force of said spring, the force of said spring being great enough to displace said inertia body radially out of its blocking relationship with said firing pin when the centrifugal forces are reduced to a predetermined strength.

4,535,696

DEVICE FOR UNDERWATER MISSILES FOR USE AGAINST SUBMERGED SUBMARINES

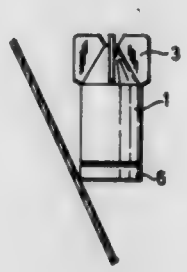
Sven Landström, Fjäelgatan 16, Stockholm, Sweden S-116 45

Filed Aug. 30, 1983, Ser. No. 527,866

Claims priority, application United Kingdom, Aug. 31, 1982, 8224837

Int. Cl.³ F42B *15/10*

U.S. Cl. 102—380 **17 Claims**



1. In a device for underwater missiles for use against submerged submarines, said missiles including a housing having a front portion, intended to contact the outside surface of a submarine, the improvement comprising a tubular ring member rotatably attached to the front portion of the housing, said ring member being arranged to take up a rotary movement in relation to the housing when making contact with the outside surface of a submarine in motion.

4,535,697

CARTRIDGE CASE AND APPARATUS FOR PRODUCING THE SAME

Franz Moser, Fehraltorf, and Max Steinemann, Regensberg, both of Switzerland, assignors to Werkzeugmaschinenfabrik Oerlikon-Bührle AG, Zürich, Switzerland

Filed May 2, 1983, Ser. No. 490,532

Claims priority, application Switzerland, Jun. 8, 1982, 3515/82

Int. Cl.³ F42B *5/28*

U.S. Cl. 102—468 **1 Claim**

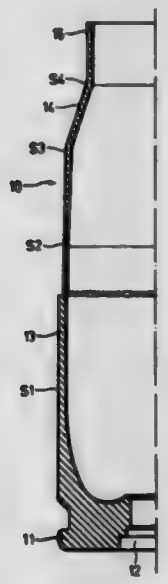
1. An extruded steel cartridge case integrally formed from a one-piece blank, comprising:

a case base;

a case body having a wall thickness;

a conical shoulder having a wall having the same wall thickness throughout;

the wall thickness of said case body continuously decreasing from said case base to a predetermined intermediate location and continuously increasing from said predetermined intermediate location to a predetermined location in the direction towards said conical shoulder;



said predetermined intermediate location being closer to said conical shoulder than said case base;

said wall of said conical shoulder having a greater wall thickness than said wall thickness of said case body at said predetermined intermediate location thereof; and

a case neck following and adjacent to the conical shoulder having a wall which is thinner than said wall of said conical shoulder.

4,535,698

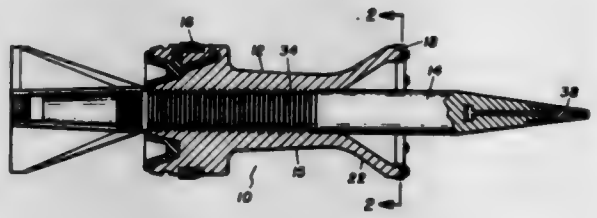
PYROTECHNIC NOSE CAP FOR PRACTICE MUNITIONS

Harvard Yuen, Parsippany, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Nov. 4, 1983, Ser. No. 548,902

Int. Cl.³ F42B 9/20

U.S. Cl. 102—529 **1 Claim**



1. In an improved practice munition having a self-destruct, fin-stablized sub-projectile with an elongated body having a convergent end poriton made of a plurality of contiguous mating segments,

a discarding sabot mounted on said sub-projectile,

a nose cap encompassingly mounted on said convergent end poriton holding said contiguous mating segments together during launch and initial flight prior to release thereof,

the improvement consisting of:

a pyrotechnic nose cap containing 60 parts of magnesium, 30 parts of polytetrafluoroethylene, 20 parts of potassium nitrate and 10 parts of an epoxy binder, all parts being by weight based on the total weight of said nose cap, and

said nose cap fully disintegrating after initial flight of less than 5 miles for the destruction of said sub-projectile by the separating of said contiguous mating segments.

4,535,699

DEVICE FOR CONTROLLING A RAILROAD TRACK MAKING OR REPAIRING MACHINE

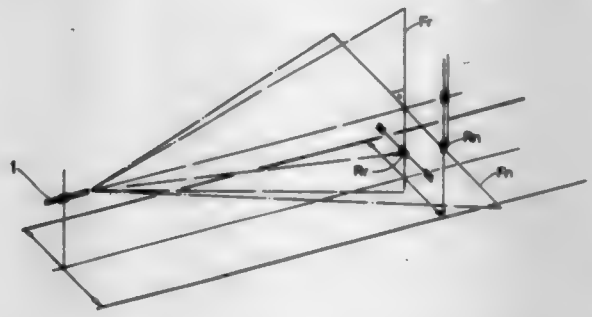
Fritz Bühler, Ecublens, Switzerland, assignor to Les Fils D'Auguste Scheuchzer S.A., Switzerland

Filed Sep. 3, 1982, Ser. No. 414,805

Claims priority, application European Pat. Off., Mar. 31, 1982, 82200403.2

Int. Cl.³ E01B 35/08, 35/10

U.S. Cl. 104—7 B **13 Claims**



1. A device for controlling a railroad track making and repairing machine having working members for levelling, tamping and shifting a track in accordance with a first and second relative reference base, comprising:

a laser emitter system mounted ahead of said machine and having a laser adapted to emit a planar beam, along a predetermined axis parallel to said track, and means for rotating said beam around said axis between a first position in which said planar beam is horizontal and a second position in which the said planar beam is vertical; and

a laser beam receiving system mounted on said machine and consisting of a first receiver arranged and constructed to intercept said beam when said beam is horizontal, said first receiver being adapted to shift vertically until said planar beam impacts said first receiver at a first preselected point, said first receiver being operatively connected to orient said first relative base, and second receiver means arranged and constructed to intercept said planar beam when said beam is vertical, said second receiver being adapted to shift horizontally until said planar beam impacts said second receiver at a second preselected point, said second receiver being operatively connected to orient the second relative base.

11. A method for levelling, shifting and tamping a railroad track comprising:

providing a machine adapted to level, shift and to tamp the railroad track in accordance with a first relative reference base and a second relative reference base perpendicular to said first reference base;

providing a laser assembly adapted to generate a planar beam along a predetermined axis, said laser assembly further being adapted to emit said planar beam selectively along a horizontal or vertical plane by rotating said beam between a first and second positions;

providing a first receiver mounted on said machine and adapted to orient said first relative reference base when a planar beam is intercepted at a first point, said first receiver being adapted to move vertically with respect to said machine, and and a second receiver mounted on said machine and adapted to orient said first relative reference base when a planar beam is intercepted at a second point, said second receiver being adapted to move horizontally with respect to said machine;

positioning said laser assembly ahead of said machine with said preselected axis in parallel with said track;

directing said planar beam along one of said horizontal and vertical planes at the corresponding receiver; and

rotating said planar beam to direct along the other of said horizontal and vertical planes.

4,535,700

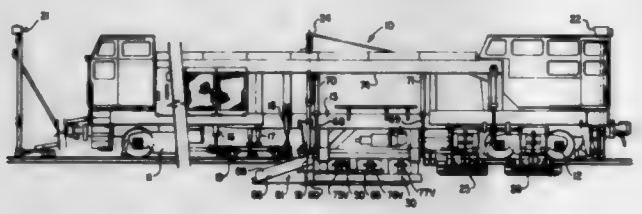
DEVICE FOR TAMPING RAILROAD TRACK ADJACENT THE TIE ENDS THEREOF

Helmuth von Beckmann, Columbia, S.C., assignor to Canron Inc., Toronto, Canada

Continuation-in-part of Ser. No. 235,032, Feb. 17, 1981, abandoned. This application Jan. 27, 1982, Ser. No. 343,331

Int. Cl.³ E01B *27/17*

U.S. Cl. 104—12 **46 Claims**



1. A tamping device for tamping railway track ballast adjacent the track tie ends, comprising a track working machine; a tamper frame mounted on said machine; said frame, in operative position, extending substantially parallel to the rails of the track adjacent the tie ends thereof; a plurality of longitudinally extending tamping plate members mounted one behind the other on the frame and extending inwardly thereof towards the track center in stepped formation; each tamping plate member having a leading edge and a trailing edge, one of said edges being flexibly connected to said frame and the other of the edges being connected to positive displacement plate vibrator means mounted on said frame to drivingly vibrate the tamping plate relative to said frame.

4,535,701

DEVICE FOR SLOWING DOWN AND STOPPING MACHINES ROLLING ON RAILS

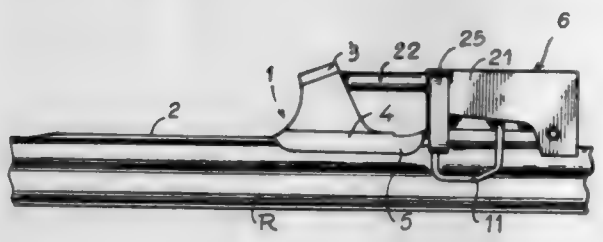
Guy Prioretti, 8 Rue Saint-Louis, 54400 Longwy, France

Filed Feb. 17, 1983, Ser. No. 467,225

Claims priority, application France, Feb. 17, 1982, 82 02582

Int. Cl.³ B61K *7/06, 7/20*

U.S. Cl. 104—258 **20 Claims**



1. A slowing down and stopping device for a machine rolling on rails which have a head and a narrower web below said head, said device comprising a longitudinal axis and a longitudinally extending body for placing on top of said head of the rail for the purpose of receiving on top of the body a wheel of said machine and forming an abutment for said wheel, and means for connecting the device to the rail, the connecting means comprising a plate, resiliently yieldable claws which are mounted on the plate and are movable relative to said plate transversely of said axis between a spread-apart first position of rest for receiving said head therebetween and a second position in which said claws can close around and engage under said head, the plate being adapted to be applied against the top of the rail, and moving means pivotally connected to the plate and pivotable relative to said plate about an axis extending transversely of said longitudinal axis between an inoperative position in which inoperative position said moving means allow said claws to assume said first position and operative positions in which operative positions said movable means are cooperative with said claws for moving said claws toward each other and maintaining said claws in said second position thereof, said moving means comprising an element which is pivotally mounted on said plate and is rigid with said body so that said body is also pivotable about said transverse axis.

4,535,702

ARTICULATED RAILWAY VEHICLE

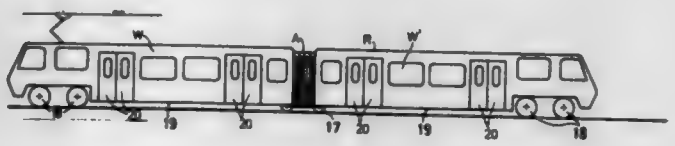
Fritz Hess, La Tour-de-Peilz, and Fernand Dalliard, Villeneuve, both of Switzerland, assignors to Ateliers de Constructions Mecaniques de Vevey S.A., Vevey, Switzerland

Filed Nov. 20, 1981, Ser. No. 323,477

Claims priority, application Switzerland, Jul. 30, 1981, 4934/81

Int. Cl.³ B61D *17/10, 19/00, 23/02*

U.S. Cl. 105—4 R **1 Claim**



1. A railway vehicle, particularly adapted for urban use with access to and exit from and to a street, comprising, a frame including at least two sections adjacent each other, articulation means on a vertical axis connecting said sections to each other, each said section provided with a floor extending the length of said respective sections, stringers supporting each floor along its longitudinal edges, walls fitted with doors and windows, a roof connected to said walls, a single folding step provided at a level mid-way between the street and said floor of the vehicle adjacent said doors, said vehicle supported by at least two trucks, one said truck comprising a motorized truck, the other said truck comprising a supporting truck, said supporting truck including longitudinal beams each provided with a wheel at its opposite ends, said supporting truck wheels having a substantially smaller diameter than the diameter of the wheels of said motorized truck, a cross-beam extending between said longitudinal beams, bearing means joining one end of said cross-beam to one said longitudinal beam to permit articulation between said other longitudinal beam, said supporting truck located close to the end of one said frame section adjacent said articulation means connecting said two frame sections, the level of said floor of the vehicle at a right angle to the area corresponding to said supporting truck substantially lowered to provide ready access to and exit from said vehicle when said step is folded to a lowered position of use, said lowered floor having a flat surface extending longitudinally at least a majority of the length of said vehicle to a point adjacent said motorized truck, and said stringers supporting said floor extending from one end to the other end of that part of the vehicle where the floor is lowered and are located at the same level as said lowered floor.

4,535,703

WIRE OR LINE MANAGER

Jay M. Henriott, and David L. Hostetter, both of Jasper, Ind., assignors to Kimball International, Inc., Jasper, Ind.

Filed Jun. 30, 1983, Ser. No. 509,958

Int. Cl.³ A47C *35/00;* H02G *3/04*

U.S. Cl. 108—50 **16 Claims**

1. In a work station including a work platform having a top surface and an edge,

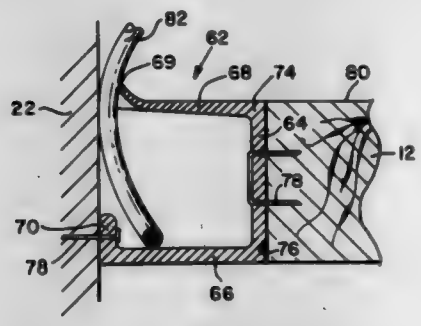
a wall member disposed adjacent to and spaced apart from said edge, and

a line-supporting trough disposed in the space between said edge and said wall member and comprising:

a support member secured to said edge,

said line-supporting trough including a rigid lower flange member connected to said support member and extending between said edge portion and said wall member and a flexible upper flange member secured to said support member and extending towards said wall member and

having an edge portion thereof spaced apart from said wall member, said upper flange forming a continuous coplanar surface with said work surface whereby electri-



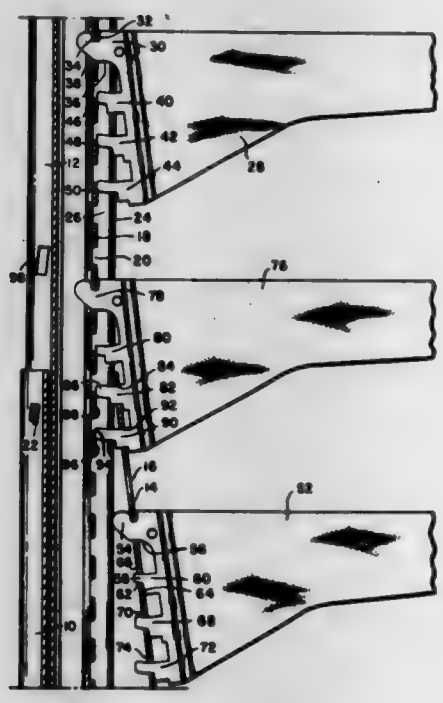
cal lines from electrical appliances and the like can be run in said trough from any point between said wall member and said flexible upper flange member and along said rigid lower flange member to selected areas.

4,535,704

SYSTEM OF SHELVING

James M. Suttles, Elberton, Ga., assignor to The Mead Corporation, Atlanta, Ga.

Filed Sep. 6, 1983, Ser. No. 529,397
Int. Cl.³ A47B *96/12*
U.S. Cl. 108—108 **8 Claims**



1. A system of shelving wherein identical shelves may be mounted interchangeably on the upper and lower parts of two-part, telescoping slotted supporting members in which the slotted surface of one of the telescoping members is recessed relative to the slotted surface of the other member, said system comprising:

a first support having a surface with a vertically extending series of slots and having an upper end;

a second support having a surface with a vertically extending series of slots and extending upwardly from the upper end of the first support; and

a shelf having a supporting surface and at least one shelf bracket, the shelf bracket having upper and lower tabs;

the series of slots in the slotted surface of the first support extending to a location adjacent to the upper end of said first support whereby said shelf can be mounted with its upper tab in engagement with a slot in the second support and its lower tab extending into a slot in the lower support;

the slotted surface of the second support being recessed behind the slotted surface of the first support by a distance such that, when the shelf is mounted at any position on the first support with its tabs extending through slots in said first support, the recess provides clearance for said tabs;

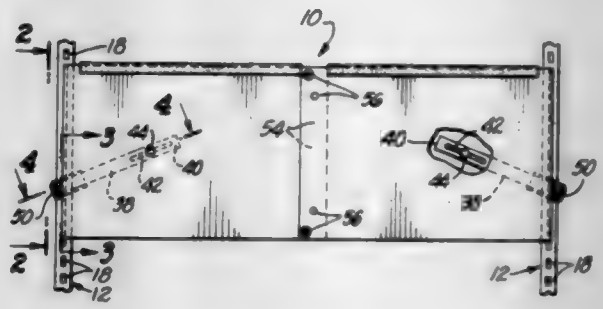
and having means for causing the supporting surface to be situated in the same relationship to the horizontal when the shelf is mounted with both tabs engaged with the second support, and when the shelf is mounted with its upper tab engaged with a slot in the second support and its lower tab extending into a slot in the first support.

4,535,705

SYSTEMS IN WHICH ONE OR MORE OBJECTS ARE SUPPORTED BY VERTICAL STANDARDS

George Soulakis, Hermosa Beach, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.

Filed Aug. 11, 1983, Ser. No. 522,405
Int. Cl.³ A47B *5/00*
U.S. Cl. 108—152 **7 Claims**



1. A system in which an object is held by two spaced, parallel, vertically extending standards having perforate surfaces facing the same direction and hollow interiors adjacent to said perforate surfaces through the use of hooks on said object extending through perforations in both of said surfaces and engaging the interiors of said standards, in which the improvement comprises:

a sloped surface on said object adjacent to one of said standards,

a wedging member associated with said sloped surface, and mounted on said object so as to be capable of being moved relative to said object,

said wedging member being capable of being moved relative to its associated sloped surface so as to be wedged between its associated sloped surface and the adjacent standard so as to move said object outward from said standard in order to pull said hook firmly in contact with the interior of said standard.

4,535,706

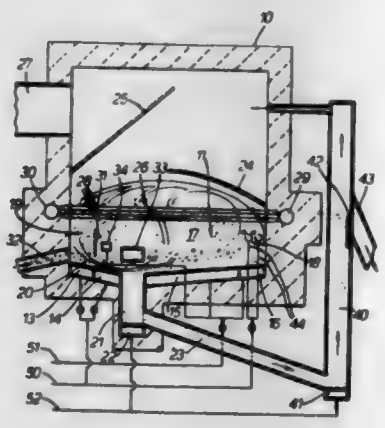
FLUIDISED BEDS

John T. Klaschka, Fleet, England, assignor to Sodic Societe Anonyme, Fribourg, Switzerland

PCT No. PCT/GB81/00172, § 371 Date Apr. 20, 1982, § 102(e) Date Apr. 20, 1982, PCT Pub. No. WO82/00871, PCT Pub. Date Mar. 18, 1982
Continuation of Ser. No. 375,119, Apr. 20, 1982, abandoned.
This PCT application Aug. 28, 1981, Ser. No. 592,725
Claims priority, application United Kingdom, Aug. 29, 1980, 8028032
Int. Cl.³ F22B *1/02*; F23G *5/00*
U.S. Cl. 110—245 **16 Claims**

1. A fluidised bed combustor comprising a housing and an air diffuser bed support arrangement disposed in the housing to support and fluidise a bed of material in the housing, there being formed in the bed a combustion zone in which material to be burned is burned, a feed zone into which material or fuel to be burned may be fed and mixed with the material of the bed, an ash segregation zone in which ash resulting from combustion may be at least partially separated from the bed material, and in which a diffuser is arranged to cause the bed mate-

rial to circulate in operation around a path extending from the combustion zone, through the feed zone, through the ash segregation zone, and back into the combustion zone, in which an ash collecting trough is provided below said diffuser to lie adjacent said path between said ash segregation zone and said combustion zone, in which a conduit leads from the bottom of said ash trough to the bottom of a generally vertical conduit extending outside the housing to above the surface of the bed,



means being provided in the bottom of the vertical conduit to fluidise bed material and ash therein, in which a weir is provided in the vertical column over which ash material and any entrained bed material may be ejected, and in which in operation the height of the surface of the bed is controlled by the height of said weir and the material in the vertical conduit is fluidised to a sufficient extent to achieve flow of excess material over the weir.

4,535,707

HIGH TURNDOWN RATIO FLUIDIZED BED REACTOR AND METHOD OF OPERATING THE REACTOR

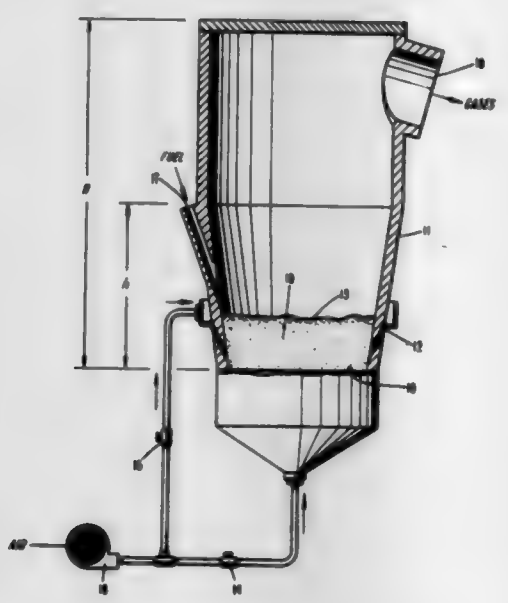
Jakob Korenberg, York, Pa., assignor to York-Shipley, Inc., York, Pa.

Continuation of Ser. No. 233,507, Feb. 11, 1981, Pat. No. 4,341,515. This application Apr. 22, 1982, Ser. No. 370,918

The portion of the term of this patent subsequent to Jul. 27, 1999, has been disclaimed.

Int. Cl.³ F22B *1/02*

U.S. Cl. 110—245 **9 Claims**



1. A method of operating an adiabatic fluidized bed reactor that utilizes a bed of granular material for combusting non-uniform particulate matter to obtain a hydrodynamic turndown ratio in excess of 2 to 1 comprising:

providing an adiabatic fluidized bed reactor having reactor walls terminating in a support surface that supports a bed of granular material;

feeding non-uniform particulate matter to said reactor;

supplying pressurized air to said reactor in excess of the stoichiometric amount needed for combustion both through openings located in said support surface and through openings located in said reactor walls having outlets below the surface of said bed of granular material, wherein said supplying pressurized air is independent of said feeding non-uniform particulate matter, and

adjusting the distribution of pressurized air between said support surface openings and reactor wall openings to permit a hydrodynamic turndown ratio in excess of 2 to 1 to be obtained.

4,535,708

HOT BULB IGNITION HEAD FOR A DEVICE FOR FIRING ROUGH CERAMICS, PARTICULARLY BRICKS

Andreas Friedl, Marienberger Str. 27, D-8263 Burghausen, Fed. Rep. of Germany

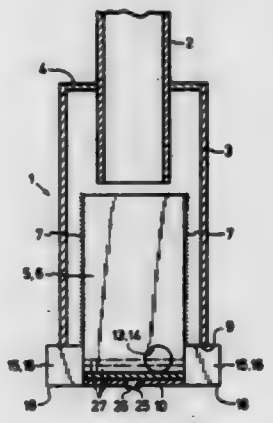
PCT No. PCT/DE82/00132, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO83/00209, PCT Pub. Date Jan. 20, 1983

Continuation of Ser. No. 433,127, Sep. 30, 1982, abandoned. This PCT application Jun. 22, 1982, Ser. No. 606,848

Claims priority, application Fed. Rep. of Germany, Jun. 29, 1981, 8118921[U]

Int. Cl.³ F23D *1/00*

U.S. Cl. 110—265 **10 Claims**



1. A hot bulb ignition head adapted for receiving therein a solid fuel, comprising:

an elongate hollow body member of finite length and defining a central chamber therein;

an elongate hollow connecting conduit connected to one end of said hollow body member and for the intermittent delivery of solid fuel by compressed air, the interior of said connecting conduit being in open communication with said central chamber, said hollow body member having a larger diameter than said connecting conduit;

a pair of side plates oppositely disposed in said hollow body member and secured to the interior wall of said hollow body member along lateral edges thereof extending coextensively with the longitudinal axis of said hollow body member, said side plates extending beyond the other end of said hollow body member remote from said connecting conduit, the terminal ends of said side plates terminating externally of said hollow body member, each said side plate between said lateral edges thereof being spaced from said interior wall of said hollow body member to define a back-pressure chamber which opens outwardly of said hollow body member at said other end; and

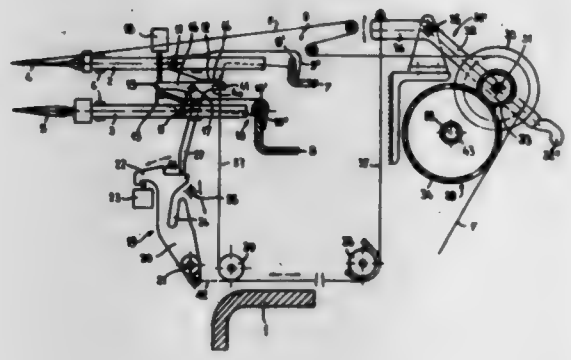
a baffle plate secured to and extending between the terminal ends of said side plates located externally of said hollow body member, the mutually adjacent edges of said baffle plate, said side plates and said hollow body member defining oppositely and radially facing first openings between said central chamber and the exterior of said hollow body member.

4,535,709

SWITCHABLE BRAKING MECHANISM, ESPECIALLY FOR THE INDIVIDUAL THREADS OF AN EMBROIDERY MACHINE

Ernst Kühnis; Armin Kobler, both of Oberriet; Max Schreiber, Arbon, and Hans Wallimann, Goldach, all of Switzerland, assignors to Aktiengesellschaft Adolph Saurer, Arbon, Switzerland

Filed Jun. 4, 1984, Ser. No. 616,716
Claims priority, application Switzerland, Jun. 16, 1983, 3307/83
Int. Cl.³ D05C 3/04
U.S. Cl. 112—83 17 Claims



1. A switchable braking mechanism for braking an individual thread supplied to the needle at a related embroidery location in an embroidery machine including a linear arrangement of such embroidery locations at each of which a related needle is mounted and operated according to a programmed control of the embroidery machine, said switchable braking mechanism comprising:

a predetermined number of switching levers;

each one of said switching levers being operatively associated with a related needle and automatically and individually adjusting the related needle into a working position or into a rest position in accordance with the programmed control of the embroidery machine;

a predetermined number of thread guiding rollers;

each one of said thread guiding rollers being operatively associated with said related needle and supplying the individual thread to said related needle;

a predetermined number of roller supporting levers;

each one of said thread guiding rollers being journaled at the related roller supporting lever for free rotation;

a common braking member;

each one of said roller supporting levers being pivotable between an operative position and an inoperative position in which each said thread guiding roller is respectively coupled to or decoupled from said common braking member;

a predetermined number of driving connection arrangements;

each said driving connection arrangement being provided between a related one of said thread guiding rollers and said common braking member and acting in the manner of a reducing gear when said related thread guiding roller is coupled to said common braking member;

a predetermined number of connecting members; and

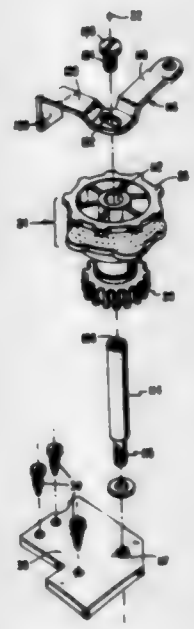
each one of said roller supporting levers being pivotable via a related one of said connecting members leading to a related one of said switching levers acting on the related needle in order to activate or deactivate the related embroidery location.

4,535,710

STABILIZING ARRANGEMENT FOR A SEWING MACHINE CAM POST

Jan Szostak, Lincroft, and Frank Fennesz, Jr., Manhawkin, both of N.J., assignors to The Singer Company, Stamford, Conn.

Filed Dec. 7, 1984, Ser. No. 679,341
Int. Cl.³ D05B 3/00
U.S. Cl. 112—459 8 Claims



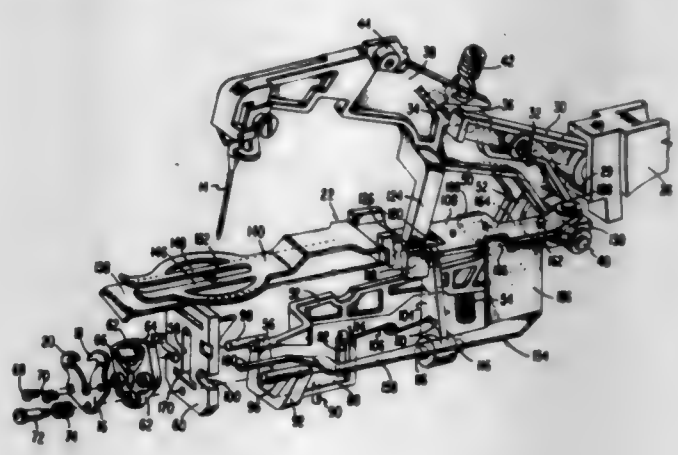
1. In a sewing machine, a vertical post which is affixed at one end in the machine; a rotatable cam for controlling a sewing function, the cam being supported on the post; a cam follower which is spring biased for enforced engagement with the cam, and which while so biased against the cam, subjects the post to a bending moment; a bracket for resisting distortion of the post, the bracket being angularly configured and being pivotally mounted at one end portion in the machine to permit adjustment of the bracket into a position wherein another end portion is supported against fixed machine structure, said bracket including an elongate slot; and a fastener extending through the slot into the upper end of the post for affixing the bracket to the post while said another end portion is against the fixed machine structure.

4,535,711

LOOPER-CAM SHIFTING ARRANGEMENT FOR A SEWING MACHINE

Stanley J. Ketterer, Jamesburg, N.J., assignor to The Singer Company, Stamford, Conn.

Filed Oct. 12, 1984, Ser. No. 660,167
Int. Cl.³ D05B 57/02, 97/02, 97/10
U.S. Cl. 112—199 5 Claims



1. In a sewing machine; a frame; a driving member; a needle;

means operably connected to the driving member for reciprocating the needle; a looper and cam assembly mounted for pivotal movement on the frame in a plane extending transversely therein, the looper being formed with a pair of loop seizing points and the cam including a pair of intersecting cam tracks; a longitudinally extending actuator in the frame operably connected to the driving member and engageable with the cam on said cam tracks for imparting pivotal movement to said assembly and disposing the looper points for cooperation with the needle in the formation of chain stitches; a longitudinally extending bed; means for moving work laterally on the bed including a longitudinally extending member which is operably connected to said driving member for actuation thereby and is mounted in the frame for pivotal reciprocable movement about an axis extending perpendicular with respect to the plane of the bed; and an arm including a resiliently flexible portion, the arm being operably connected at one end to the longitudinally extending pivotable reciprocable member for flexure thereby, and at the other end to the looper-cam assembly for biasing the looper-cam assembly in opposite directions according to the position of the longitudinally extending pivotably reciprocable member to thereby control movement of the said actuator between the cam tracks.

4,535,712

VARIABLE AIR CUSHION MODE VEHICLE

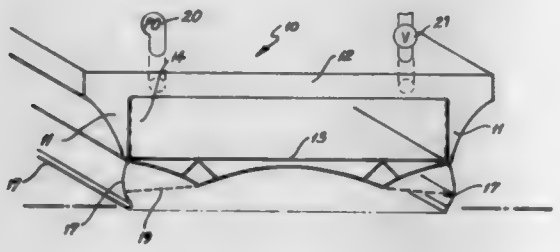
Leslie N. Matthews, 110 Fitzgerald St., Geraldton, W.A., Australia 6530

Filed Dec. 14, 1982, Ser. No. 453,888

Claims priority, application Australia, Apr. 16, 1981, PE8497

Int. Cl.³ B63B *1/38*

U.S. Cl. 114—61 **11 Claims**



1. A boat hull comprising at least one longitudinally extending hull having lateral extremities, an intermediate hull portion between the lateral extremities of said at least one hull, air entrainment means extending between the lateral extremities of the hull adjacent the rear end of the intermediate hull portion, means to raise and lower the intermediate hull portion relative to the remainder of the hull between a lowered position wherein the intermediate hull portion is in contact with the water in which the boat hull floats and a raised position wherein a chamber is defined, when air is introduced under pressure beneath said intermediate hull portion, between said intermediate hull portion, the water, said lateral extremities of the hull and said air entrainment means, and means to introduce air beneath the intermediate hull portion when it is in the raised position so that the hull may then be supported on a cushion of air.

4,535,713

LAYOUT OF A SHIP STEERING-HOUSE

Johannes van Roon, A 74, 2975 BC Ottoland, Netherlands

Continuation of Ser. No. 407,814, Aug. 13, 1982, abandoned, which is a continuation of Ser. No. 170,973, Jul. 18, 1980, abandoned. This application Mar. 20, 1984, Ser. No. 590,531

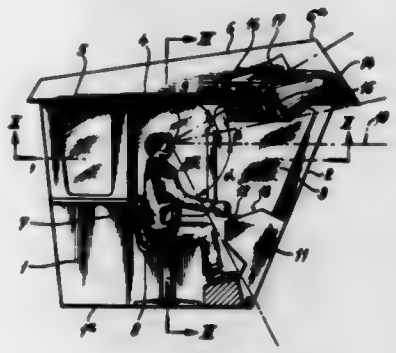
Claims priority, application Netherlands, Jul. 20, 1979, 7905665

Int. Cl.³ B63B *29/00*

U.S. Cl. 114—71 **13 Claims**

1. A steering house for a ship or other floating vessel, said steering house having a front window slanting outwardly at its upper end and arranged to provide a free angle of vision between about 15° upward and at least about 30° downward from a horizontal plane through the center of vision for a seated commander, said steering house being provided with means for navigation and control of different functions in the ship, and comprising:

(a) an integrated reading unit, including a radar apparatus and other essential instrument means for supplying visual information for navigation and control of the ship, fitted near the roof-ceiling of said steering house and in front of the seated commander, and located in an upper position with an angle of vision for the seated commander between about 15° and 30° upward, wherein said instrument means are placed at either side of the radar apparatus screen, such that the instrument reading surfaces are oriented



substantially perpendicular to the direction of view and from the center of vision of the seated commander and have a mainly spherical-sector shaped reading surface, said reading unit being vertically movable by the commander from said upper position to a position below said horizontal plane by suitable guiding means, which maintain said integrated reading unit surface during its vertical movement continuously substantially perpendicular to the direction of view of the commander, all positions of said reading unit being working positions; and

(b) control means located in floor-mounted consoles at both sides of the seated commander, said control means being located within hand reach of the commander, so as to provide the commander with a free field of vision roundabout and especially in forward directions of the ship.

4,535,714

RUDDER ROTOR FOR WATERCRAFT AND FLOATING EQUIPMENT

Fred Petersen, Hamburg, Fed. Rep. of Germany, assignor to Firma Jastram-Werke GmbH KG, Hamburg, Fed. Rep. of Germany

Filed Oct. 31, 1979, Ser. No. 90,042

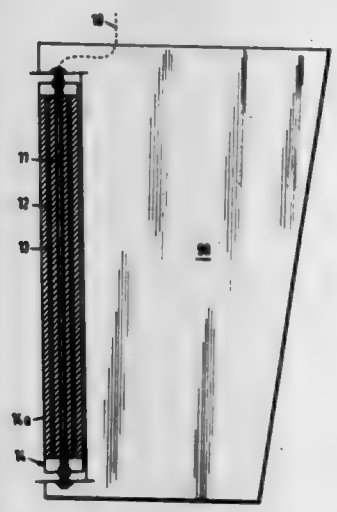
Claims priority, application Fed. Rep. of Germany, Nov. 30, 1978, 2851733

Int. Cl.³ B63H *25/40*

U.S. Cl. 114—162 **13 Claims**

1. In a rudder assembly for watercraft and floating equipment including a rudder plate and a rudder rotor mounted on said rudder plate, said rudder rotor including rotating external surface means, the improvement comprising that said rudder rotor is itself constructed as an electric motor to include components forming said rudder rotor as an underwater electric motor consisting essentially of a motor stator and a motor rotor operative to rotatively drive said rotating external surface means, said motor stator and said motor rotor being physically completely contained within the structure of said rudder rotor, said assembly further comprising power supply means extend-

ing externally of said rudder rotor for supplying power to drive said electric motor, and wherein the inner area of said

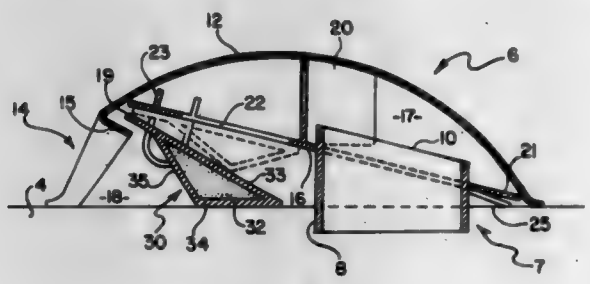


rudder rotor is sealed in an air-tight manner at the top and has no seal towards the bottom.

4,535,715
AIR VENT

Ian A. McIntosh, 4 Muston St., Mosman, N. SW., Australia (2088)

PCT No. PCT/AU83/00046, § 371 Date Jan. 10, 1984, § 102(e) Date Jan. 10, 1984, PCT Pub. No. WO83/04010, PCT Pub. Date Nov. 24, 1983
PCT Filed Apr. 19, 1983, Ser. No. 569,625
Claims priority, application Australia, May 11, 1982, PF3949
Int. Cl.³ B63J *2/00*
U.S. Cl. 114—211 **9 Claims**



1. A deck ventilator comprising a squat cap having a side wall formed with a window next to the deck; a common-wall formed with an orifice and dividing the cap interior into two chambers one of which communicates with the window; a ventilator duct in the other chamber and having its lower end portion projecting downwardly through the deck; hinge means in said one chamber; a closure member turnable about the hinge means from a first position at which the orifice is unobstructed and to which the member is biased, to a second position at which the member closes the orifice and a buoyant element effectively integral with the member and which biases it to the second position when the closure member is impacted upon by a horizontally directed surge of water running along the deck and entering said one chamber by way of the sideways facing window.

4,535,716
MINESWEEPING

John W. Hill, Church Point, Australia, assignor to The Commonwealth of Australia, Canberra, Australia

Filed Dec. 21, 1982, Ser. No. 451,907
Claims priority, application Australia, Dec. 24, 1981, PF2077
Int. Cl.³ B63G *9/00*
U.S. Cl. 114—221 R **19 Claims**

1. A sweep comprising an elongated rigid buoyant body dimensioned and constructed for deployment in water as a magnetic mine sweep and being resistant to explosive forces released by a magnetic mine when activated by the sweep, the rigid body including:

at least one block of permanent magnet material having pole faces; and

distributor elements of a material of high magnetic permeability and high saturation level, the distributor elements being mounted with faces thereof in intimate proximity to the pole faces for conducting the flux with little loss of

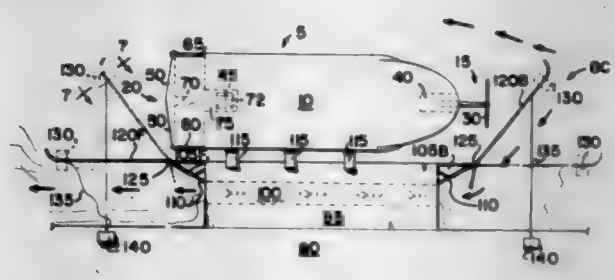


magnetomotive force, the distributor elements associated with the or each said block extending away from the pole faces thereof in opposite directions and along the direction of elongation of said rigid body for distributing the magnetic flux so as to establish a magnetic field extending through the water for magnetic mine sweeping purposes and whereby the sweep has long service life between remagnetizations and a high ratio of magnetic moment to mass.

4,535,717
MARINE SURFACE DEBRIS DEFLECTOR

Darold R. Bryan, Seattle, and George Z. Porter, Bellevue, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Continuation of Ser. No. 318,718, Nov. 6, 1981, abandoned. This application Dec. 14, 1983, Ser. No. 562,027
Int. Cl.³ B63B *35/38*
U.S. Cl. 114—230 **6 Claims**



1. An apparatus for diverting debris, borne by a variable direction current water stream, from the proximity of a water-ingesting watercraft employing a waterjet propulsion system, said watercraft being moored adjacent to a dock, located in said water stream, where debris tends to accumulate, said apparatus comprising:

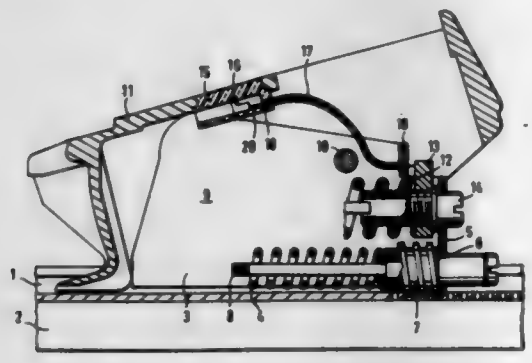
a floatable structure disposable adjacent to said watercraft in said water stream, said structure comprising a first and a second pontoon which are separated to define an internal open-ended channel for conducting debris borne by said variable direction current along a path away from said watercraft, said first pontoon being disposed contiguous to said watercraft and having a surface capable of being presented to said watercraft, said channel having an inlet and an outlet for conducting currentborne debris, and

means for guiding debris into said channel, said debris guiding means comprising a deflecting member disposable in said water stream and affixed, at said inlet and at said outlet, to said first pontoon, each of said deflecting members having a first surface extending parallel to and coextensive with said first pontoon surface, each of said deflecting members also having an inclined surface intersecting said first surface and extending toward said channel, whereby debris may be guided away from said watercraft and into said channel.

4,535,718
INDICATOR FOR SAFETY SKI BINDING

Gerd Klubitschko, Oberau, Fed. Rep. of Germany, assignor to Marker International Company, Salt Lake City, Utah

Filed Feb. 9, 1983, Ser. No. 465,111
Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204649
Int. Cl.³ G01L 5/03
U.S. Cl. 116—212 2 Claims



1. An indicator in a safety ski binding, said binding including at least one grasping piece having latching and releasing positions for latching and releasing a portion of a ski boot, respectively, said grasping piece comprising:

a stationary part fixable to a ski;

a pivoting part pivotally connected to said stationary part along a transverse axle for engaging a ski boot;

a spring for establishing a force release threshold for said pivoting part;

mounting means fixed in said stationary part and an adjusting nut mounted for movement on said mounting means relative to said stationary part for changing the compression of said spring to vary said force release threshold;

window means in said pivoting part for viewing an indicating means;

sliding indicating means disposed in said pivoting part and visible through said window means for indicating the setting of said adjusting nut;

flexible indicator connecting means including first and second ends for movably interconnecting said sliding indicating means and said adjusting nut, said first end being connected to said adjusting nut and said second end being connected to said sliding indicating means for movement of said sliding indicating means by said adjusting nut when said adjusting nut moves on said mounting means and said connecting means comprising a flexible cable and a flexible sheath through which said cable passes.

4,535,719
LIQUID DISPENSING GUN WITH SUBSTRATE SEPARATOR

Donald J. Regan, deceased, late of Kennesaw, Ga. (by Joyce H. Regan, heir), assignor to Nordson Corporation, Amherst, Ohio

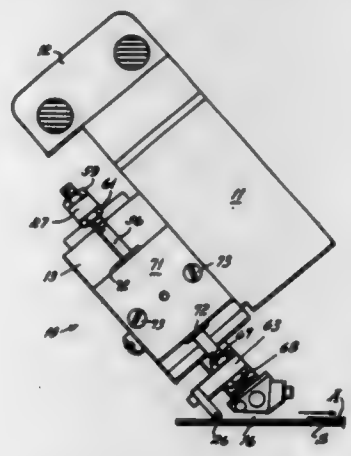
Filed Apr. 6, 1984, Ser. No. 597,445
Int. Cl.³ B05C 3/02
U.S. Cl. 118—410 8 Claims

1. A dispensing gun, for applying a liquid to a substrate, including a gun body and a nozzle, the gun having a liquid storage chamber, a passage communicating between the liquid storage chamber and a source of the liquid to be applied, and a nozzle outlet communicating with the liquid storage chamber from which the liquid is dispensed onto the substrate, and further comprising:

valve means for controlling liquid flow from the liquid storage chamber to the nozzle outlet including a movable valve stem having a valve-opened position in which liquid flows through the nozzle outlet from the liquid storage chamber and a valve-closed position in which the flow of liquid from the liquid storage chamber is prevented;

means for moving the valve stem between said valve-opened and valve-closed positions;

a deflector element movably mounted on the gun substantially adjacent the substrate, the deflector element having a first position in which it has substantially no influence on the substrate and a second position in which the deflector element deflects the substrate out of contact with the nozzle; and

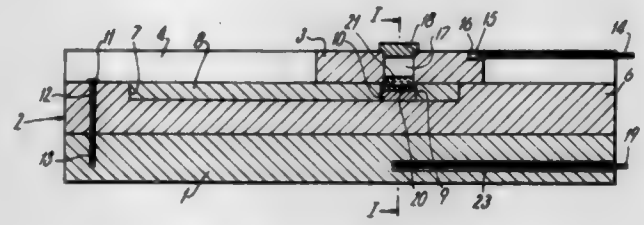


means for moving the deflector element to its first position when the valve stem is moved to its valve-opened position and for moving the deflector element to its second position when the valve stem is moved to its valve-closed position.

4,535,720
LIQUID PHASE EPITAXY APPARATUS

John C. Brice, Copthorne Bank; John L. Page, Haywards Heath, and Peter A. C. Whiffin, Horsham, all of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 592,770
Claims priority, application United Kingdom, Apr. 27, 1983, 8311429
Int. Cl.³ H01L 21/208
U.S. Cl. 118—415 9 Claims



1. A sliding boat liquid phase epitaxy apparatus comprising

a supporting base structure;

a substrate supporting structure disposed on said base structure, said supporting structure being horizontally fixed with respect to said base structure;

wherein said supporting structure includes a block member on said base structure; a flat-bottom recess in a portion of the top surface of said block member, said recess being located between ends of said block member; and a plate member fitted into said recess so that said plate member has a top surface level with the top surface of said block member outside of said plate member, said plate member having an aperture for containing a substrate for epitaxial growth; and

a slidable well member disposed above said substrate supporting structure in abutting relationship, said well member having at least one well containing growth solution, and said well member being slidable in the length direction of said base structure;

wherein said aperture of said plate member can be disposed beneath said well, and

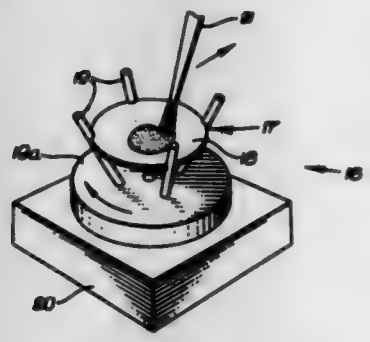
wherein said plate member is a material different from material of said well member.

4,535,721

APPARATUS FOR ROTATING A WAFER

John Yakura, Visalia, Calif., assignor to California Linear Circuits, Inc., La Mirada, Calif.

Division of Ser. No. 556,893, Dec. 1, 1983, Pat. No. 4,490,111, which is a division of Ser. No. 421,811, Sep. 23, 1982, Pat. No. 4,510,672. This application Mar. 16, 1984, Ser. No. 590,167
Int. Cl.[3] B05C *13/02*
U.S. Cl. 118—503 1 Claim



1. An apparatus for supporting and rotating a semi-conductor wafer while a dopant is applied thereto, comprising:

a base member mounted for rotation about a vertical axis, and

a plurality of non-pivotally mounted resilient fingers projecting upwardly from said base member in divergent relationship with each other, each of said fingers being notched on a side facing said base member vertical rotation axis to peripherally support said wafer in said notches in a generally horizontal plane, and

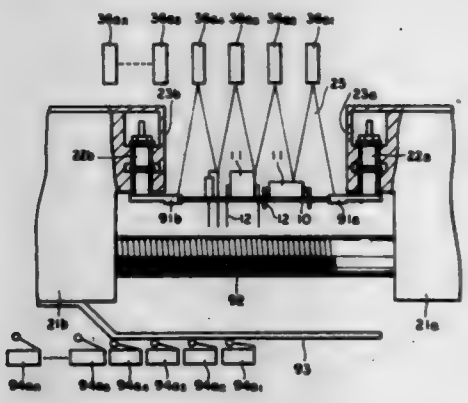
means for slowly rotating said base member and fingers while said wafer is generally horizontally supported in said notches of said fingers.

4,535,722

APPARATUS FOR APPLYING MOLTEN WAX ONTO PRINTED CIRCUIT BOARD

Kenshi Kondo, Tokyo, Japan, assignor to Nihon Den-Netsu Keiki Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,187
Claims priority, application Japan, Dec. 1, 1982, 57-209287
Int. Cl.[3] B05B *12/00*
U.S. Cl. 118—692 7 Claims



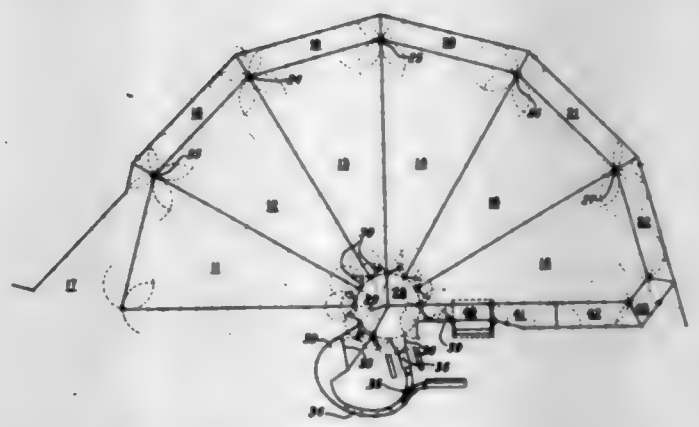
1. An apparatus for applying molten wax onto a printed circuit board travelling along a predetermined transfer path, comprising a vessel for containing a molten wax, a plurality of ejection nozzles arranged in a direction transverse to the transfer path, individual valve means connected to each of the ejection nozzles and operable so that the molten wax is ejected from each nozzle onto the printed circuit board travelling adjacent thereto upon actuation of the corresponding valve means, a pump having an intake in fluid communication with the vessel and a discharge in fluid communication with each of the valve means, means for selectively rendering the valve means operable according to the width of the printed circuit board, and an adjustable flow control means in fluid communication with said ejection nozzles and having an inlet in fluid communication with the discharge of the pump and an outlet in fluid communication with the intake of the pump, said flow control means adjustable for controlling the rate of the flow of the molten wax through the ejection nozzles by diverting a controlled amount of the molten wax through the inlet and out of the outlet.

4,535,723

ANIMAL HANDLING AND PROCESSING FACILITY

Elizabeth L. Gealy, P.O. Box 1103, La Jolla, Calif. 92038

Filed Jun. 9, 1980, Ser. No. 157,685
Int. Cl.[3] A01K *1/00*
U.S. Cl. 119—20 5 Claims



1. An animal handling facility comprising:

a first plurality of gates defining at least a portion of the perimeter of a generally circular sorting area;

a second plurality of gates hinged on a single post centrally located in said sorting area, dividing said sorting area into separate sections; a plurality of enclosures adjoining said sorting area, such that each of said enclosures is separated from the sorting area by one of said perimeter gates; means for guiding an animal from said sorting area into one or more processing stations; and

means for guiding said animal from said station or stations back into a different section of said sorting area, such that re-sorting of processed animals may be achieved without interrupting the passage of incoming animals.

4,535,724

TRAINING AND CARE APPARATUS FOR HORSES

Constant V. David, 4952 Field St., San Diego, Calif. 92110

Filed Aug. 2, 1984, Ser. No. 637,113
Int. Cl.[3] A01K *15/00*
U.S. Cl. 119—29 13 Claims



1. A horse training apparatus, comprising:

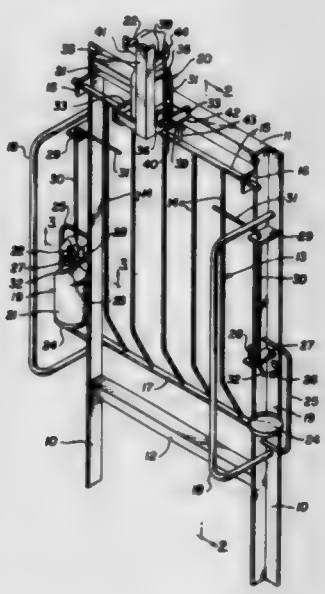
means for storing a quantity of a fluid;
means for mounting the fluid storing means on a body portion of a horse;
conduit means for delivering fluid to the horse's mouth;
pump means for drawing fluid from the storing means and propelling it through the conduit means; and
control means actuable by a handler for selectively operating the pump means.

4,535,725
HAIR-CONTAINING RAWHIDE TOYS
Stanton E. Fisher, 16 Brentmoor Park, St. Louis, Mo. 63105
Filed Jun. 3, 1977, Ser. No. 803,164
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—29 **8 Claims**



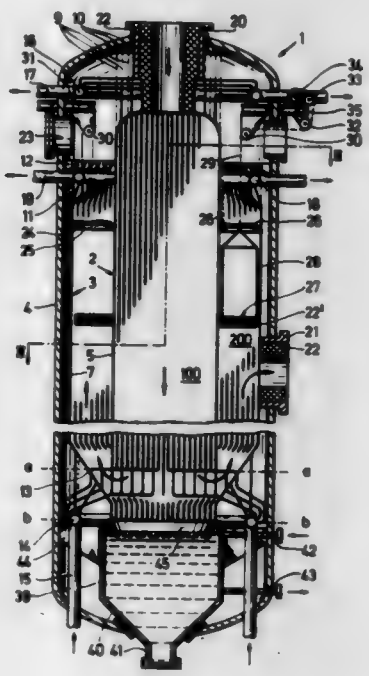
2. An animal chew toy consisting of undehaired natural hair containing rawhide dried to yield a hard, shape-retaining body, having inherent resiliency and is cut in an animal shape configuration.

4,535,726
ANIMAL SPRAYING APPARATUS
Grover L. Cauthron, Rte. 1, Box 29, Fairview, Mo. 64842
Continuation-in-part of Ser. No. 473,053, Mar. 7, 1983, Pat. No. 4,459,942. This application May 11, 1984, Ser. No. 609,325
The portion of the term of this patent subsequent to Jul. 17, 2001, has been disclaimed.
Int. Cl.[3] A01K *29/00*
U.S. Cl. 119—159 **5 Claims**



1. An animal spraying apparatus comprising an upright support frame adapted to be positioned adjacent to one side of an animal feed box or watering trough, a free-hanging normally substantially vertical barrier on the support frame and being connected therewith through an upper horizontal axis rocker shaft whereby the barrier is vertically swingable forwardly and rearwardly on the axis of said rocker shaft, an upper center animal spraying unit on the support frame above said barrier and adapted to apply spray to the back of a drinking or feeding animal, two laterally spaced opposing side spraying units on the support frame on opposite sides of the barrier and near the lower end of the barrier and at an elevation substantially below the elevation of the upper spraying unit, the two side spraying units being adapted to apply sprays simultaneously to the opposite sides of the face of a drinking or feeding animal subsequent to the application of spray by the upper spraying unit and while the drinking or feeding animal is retreating from the apparatus, said upper and two side spraying units having individual vertical axis rotary actuating elements including parts in the path of movement of parts on said barrier, whereby forward displacement of the barrier caused by the approach of a drinking or feeding animal activates the upper spraying unit and rearward displacement of the barrier by gravity during retreat of the drinking or feeding animal deactivates the upper spraying unit and activates the two side spraying units.

4,535,727
HEAT EXCHANGER WITH ADJUSTABLE PLATFORM FOR CLEANING AND REPAIRING
Georg Ziegler, Winterthur, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland
Filed Jul. 6, 1984, Ser. No. 628,473
Claims priority, application Switzerland, Jul. 7, 1983, 3730/83
Int. Cl.[3] F22B *1/02*; F27D *1/16*
U.S. Cl. 122—32 **11 Claims**



1. A heat exchanger comprising
a pair of coaxial vertical flues disposed in spaced relation to define an annular space therebetween with the inner flue defining a central chamber, each said flue including wall tubes for passage of a medium therethrough;
at least one gas lead-through communicating with said central chamber at one end of the heat exchanger;
at least one gas lead-through communicating with said annular space at said one end of the heat exchanger;
at least one orifice in said inner flue communicating said central chamber with said annular space at an opposite end of the heat exchanger;
an annular platform disposed within said space coaxial of said flues;
means for moving said platform vertically between said flues; and
at least one manhole between said gas leadthroughs for providing access to said space.
7. A heat exchanger comprising

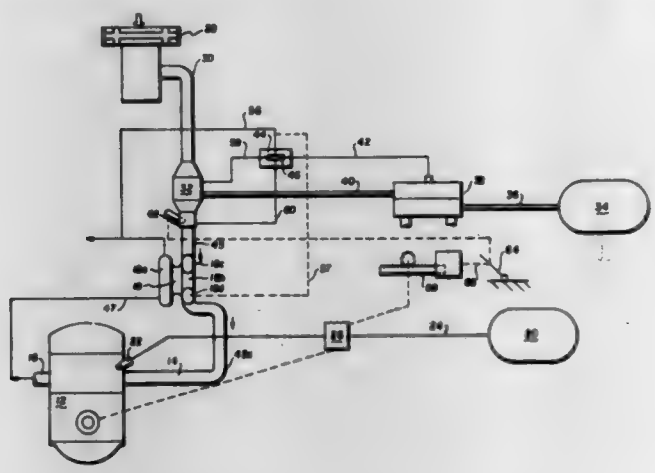
a pressure vessel;
a pair of concentric vertical flues disposed within said vessel in spaced relation to define an annular space therebetween with the inner flue defining a central chamber;
at least one spigot in said vessel communicating with said central chamber at one end of said vessel;
at least one spigot in said vessel communicating with said space at said end of said vessel;
an annular platform disposed within said space concentrically of said flues;
means for moving said platform vertically between said flues; and
at least one manhole in said vessel between said spigots for providing access to said space.

4,535,728

FUEL FEED CONTROL SYSTEM AND CONTROL VALVE FOR DUAL FUEL OPERATION OF AN INTERNAL COMBUSTION ENGINE

William H. Batchelor, Jensen Beach, Fla., assignor to Propane Carburetion Systems, Inc., Stuart, Fla.

Filed Feb. 2, 1984, Ser. No. 576,428
Int. Cl.³ F02M *21/02*
U.S. Cl. 123—27 GE **15 Claims**



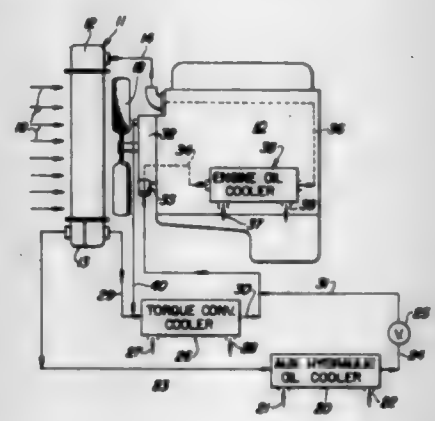
1. A supplemental gas fuel control system for a dual fuel supply system for an internal combustion engine having an air intake duct for conveying an intake airstream to the engine, an exhaust duct, and using a primary liquid fuel, the control system comprising a pressure regulator including a movable regulator valve positionable for controlling flow of supplemental gas fuel from a high pressure source to the intake airstream of the engine within said air intake duct, the position of the regulator valve normally governed by engine inlet airstream flow conditions, said flow conditions communicated normally to the pressure regulator by using an air intake duct suction pressure signal acting on a controller for the regulator valve; a condition comparator means; means for sensing exhaust gas rate of flow of the engine and communicating an exhaust flow signal corresponding to same to the condition comparator means; means for sensing a reference pressure in a reference pressure zone in the engine air intake duct and communicating a reference signal corresponding to same to the condition comparator means; means for sensing intake air rate of flow at an intake duct zone downstream of a source of said reference signal, and communicating an intake air flow signal corresponding to same to said condition comparator means; said condition comparator means including means for proportioning said exhaust flow, reference and intake air flow signals to produce a net control signal; means for communicating said net control signal to said supplemental fuel pressure regulator; said pressure regulator including means for modulating the position of said regulator valve in response to both said suction pressure signal and said net control signal.

4,535,729

VEHICLE COOLING SYSTEM UTILIZING ONE RADIATOR

Lawrence E. Faylor, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Oct. 5, 1984, Ser. No. 658,253
Int. Cl.³ F01P *3/12*
U.S. Cl. 123—41.1 **8 Claims**



1. An integrated cooling system for cooling a vehicle engine, transmission oil, and auxiliary hydraulic function oil, comprising: a radiator having upper and lower cavities joined by a plurality of tubes, said lower cavity being divided into first and second separate sections; a coolant pump having an intake and a discharge, the latter being connected to the engine for cooling thereof; a first oil cooler having an oil intake and outlet in communication with and for circulating the transmission oil in the cooler, said cooler having a connection to said first section for transferring coolant from the latter to said first oil cooler; a second oil cooler having an oil inlet and outlet in communication with and for circulating auxiliary hydraulic oil through the cooler, said latter cooler having a connection to the coolant in said second section for transferring coolant from said second section to said second cooler; first and second coolant discharge conduit means receiving the respective coolant from the first and second coolers and connected to the intake of the pump; a valve means in said conduit means for controlling the quantity and temperature of coolant moving through the respective coolers; and a return from the engine to said upper cavity.

4,535,730

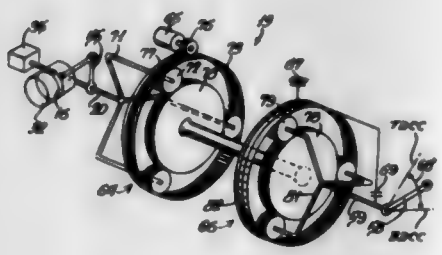
ROCKER ENGINE

Dillis V. Allen, 1080 Nerge Rd., Suite 205, Elk Grove Village, Ill. 60007

Filed Dec. 8, 1980, Ser. No. 214,082
Int. Cl.³ F02B *75/04*
U.S. Cl. 123—78 F **12 Claims**

1. An internal combustion engine of the piston and cylinder type having valves for admitting fuel to the cylinder and exhausting the products of combustion, comprising; a cylinder, a piston reciprocable in the cylinder and having a stroke length with piston top dead center and piston bottom dead center positions, a crank driven by the piston rotationally mounted about an axis, an output shaft driven in rotation by the piston, means for varying the length of stroke of the piston as the

engine is operating, and means for varying the top dead center position of the piston as the engine is operating without varying the length of stroke of the piston and without moving the rotational axis of the crank.

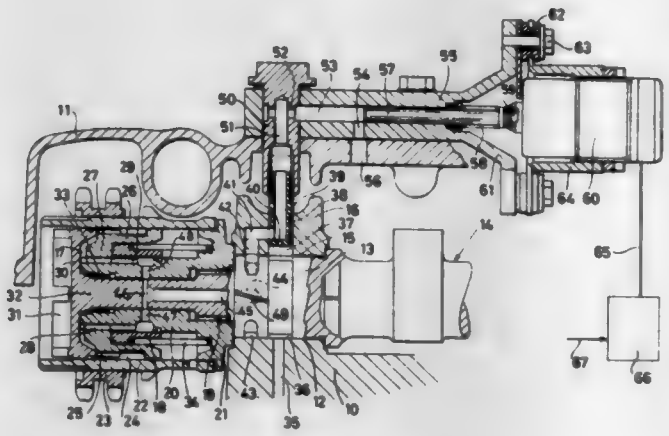


4,535,731

DEVICE FOR AUTOMATICALLY VARYING THE TIMING OF A CAMSHAFT

Ambrogio Banfi, Milan, Italy, assignor to Alfa Romeo Auto S.p.A., Naples, Italy

Filed May 5, 1983, Ser. No. 491,705
Claims priority, application Italy, May 17, 1982, 21313 A/82
Int. Cl.³ F01L *1/34*
U.S. Cl. 123—90.15
4 Claims



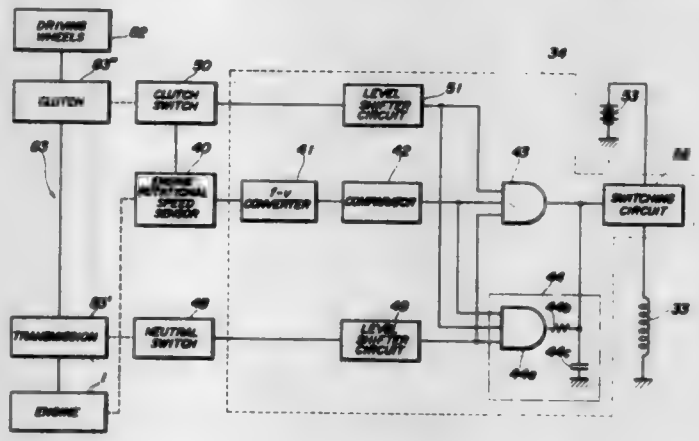
1. A device for automatically varying the timing of a camshaft relative to the drive shaft of an internal combustion engine, the camshaft being supported by bearings lubricated by pressurized oil of the engine lubrication circuit, the camshaft being driven in timed relation with the drive shaft by a toothed pulley rigidly affixed with a tubular member, the device comprising a sleeve movable axially within the tubular member in order to connect the toothed pulley to the camshaft, the sleeve being constrained to the tubular member by means of a straight toothed splined connection and being constrained to the camshaft by means of a helical toothed connection, an annular piston being rigidly affixed with the sleeve, a circular plate being rigidly affixed with the camshaft, the circular plate with the tubular member and the annular piston forming a chamber, the chamber being integrally connected to the engine lubrication circuit which feeds the pressurized oil to the camshaft support bearings by passage means for permitting oil to flow to the chamber, a presized orifice in said passage means for controlling the rate of oil flow to said chamber, vent means coupled to said passage means downstream of said presized orifice for communicating the passage means to atmosphere, said vent means including axially movable valve means for opening and closing said vent means and thereby regulating the feed and discharge flow of oil through the passage means, said vent means being normally open to allow the discharge of oil from said chamber, the axially movable valve means being operationally connected to an electromagnetic linear actuator which receives a command in the form of an electric signal from an electronic central unit in response to signal received from prechosen engine parameter sensors whereby the axially movable valve means moves to close the vent means causing oil to flow to the chamber.

4,535,732

VALVE DISABLING DEVICE FOR INTERNAL COMBUSTION ENGINES

Yoshikatsu Nakano, Kawagoe, and Masaaki Matsuura, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 26, 1984, Ser. No. 624,572
Claims priority, application Japan, Jun. 29, 1983, 58-117826; Jun. 29, 1983, 58-117827; Jun. 29, 1983, 58-117828; Jun. 29, 1983, 58-117829
Int. Cl.³ F01L *1/34, 1/26*
U.S. Cl. 123—90.16
16 Claims



1. A valve disabling device for use in an internal combustion engine having inlet valve means, exhaust valve means, at least one of which comprises a plurality of valves, an output shaft, and power transmission means for selectively establishing and interrupting power transmission between said output shaft and a load on said engine, the device comprising:

disabling means for selectively holding said at least one of said inlet valve means and said exhaust valve means in a first state wherein part of said valves thereof are inoperative, and in a second state wherein all said valves thereof are operative for alternate closing and opening actions;

transmission state detecting means for detecting whether said power transmission means is in a connected state wherein said power transmission is allowed, or in a disconnected state wherein said power transmission is inhibited; and

control means responsive to an output from said detecting means to cause said disabling means to hold said at least one of said inlet valve means and said exhaust valve means in said first state when said power transmission means is in said disconnected state, irrespective of the rotational speed of said engine.

4,535,733
VARIABLE VALVE TIMING APPARATUS

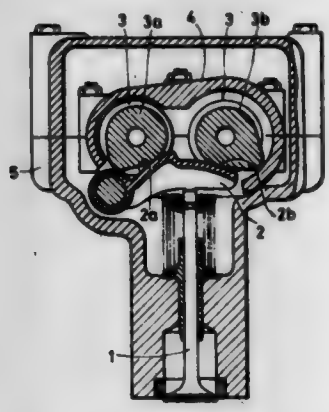
Shoichi Honda, Tokyo, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 376,090, May 7, 1982, abandoned. This application Feb. 12, 1985, Ser. No. 700,327

Claims priority, application Japan, May 15, 1981, 56-72158; May 15, 1981, 56-72159; Jun. 22, 1981, 56-95263; Jun. 22, 1981, 56-95264

Int. Cl.[3] F01L *1/34*

U.S. Cl. 123—90.17 9 Claims



1. A variable valve timing apparatus for use in a four-cycle internal combustion engine, said engine including intake and exhaust valves each operated by a rocker arm, comprising:

(a) a pair of camshafts extending in parallel with each other, one of said camshafts mounting thereon at least one cam for low speed operation, and the other camshaft mounting thereon at least one cam for high speed operation,

(b) a camshaft holder for supporting said pair of camshafts, said camshaft holder being housed within a cylinder head, each of said camshafts having one end provided with a fixed gear, and said gears of said camshafts being in fixed meshing engagement with each other and being fixed against axial movement relative to each other, said one of said camshafts having an axial extension connected to a shaft drive means; and

(c) means for selectively operating said rocker arm by the selective actuation of at least said high speed cam.

4,535,734
SELF-CONTAINED HYDRAULIC LASH ADJUSTER

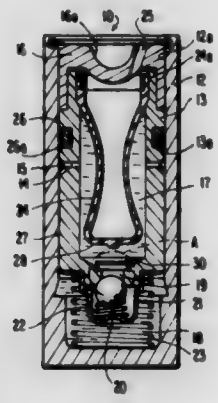
Hisashi Kodama, Nagoya; Tooru Hamamoto, Okazaki; Tetsuomi Tamura, Aichi; Katsujiro Sato, and Kazuharu Yamada, both of Toyota, all of Japan, assignors to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Mar. 9, 1983, Ser. No. 473,421

Claims priority, application Japan, Mar. 9, 1982, 57-32016[U]

Int. Cl.[3] F01L *1/24*

U.S. Cl. 123—90.58 2 Claims



1. A self-contained hydraulic lash adjuster comprising a cup-shaped cylindrical body having a bore therein open at one end, a plunger having an oil reservoire chamber therein slidably disposed within said body, and defining an oil pressure chamber between the bottom of said plunger and the bottom of said bore, an oil passage provided in said bottom of said plunger to provide fluid communication between said reservoir chamber and said pressure chamber, a check valve operatively associated with said oil passage for permitting oil flow in only one direction from said reservoir chamber to said pressure chamber through said oil passage, a flexible diaphragm secured within said reservoir chamber and a cover means positioned in said reservoir chamber over said oil passage to prevent said oil passage from being closed by said diaphragm upon deformation of said diaphragm wherein said cover means is comprised of a cup-shaped member having an apertured side wall in engagement with said bottom of said plunger and a flat end wall spaced above said oil passage in said bottom of said plunger.

4,535,735
MULTI-GAP SPARK IGNITION SYSTEM

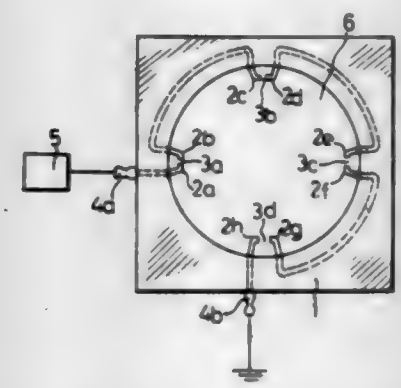
Toru Yoshinaga, Okazaki; Toshihiko Igashira, Toyokawa; Hisasi Kawai, Toyohashi; Seiji Morino, Okazaki, and Norihiko Nakamura, Mishima, all of Japan, assignors to Nippon Soken, Inc., Nishio and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed May 7, 1982, Ser. No. 376,132

Claims priority, application Japan, May 9, 1981, 56-69761

Int. Cl.[3] F02P *15/08*

U.S. Cl. 123—310 1 Claim



1. A multi-gap spark ignition system to be installed in an internal combustion engine for igniting air-fuel mixture introduced therein, comprising:

a plurality of electrodes which are adapted to be installed in the wall defining a combustion chamber of the engine to form at least three spark gaps therebetween exposed to the chamber;

a high voltage power source which supplies an electric current to said plurality of electrodes for generating breakdown in said spark gaps;

said electrodes being composed of a high voltage electrode which is connected to said high voltage power source, an earth electrode which is earthed, and a plurality of intermediate electrodes which are positioned between said high voltage electrode and said earth electrode;

said electrodes projecting into said combustion chamber to form said spark gaps between two projecting ends of adjacent two electrodes with said electrodes being arranged in series through said spark gaps and said projecting ends being in the shape of the Letter L with said ends of adjacent electrodes being opposed;

said electrodes being buried within an insulating plate which is adapted to be interposed between a cylinder block and a cylinder head of the internal combustion engine;

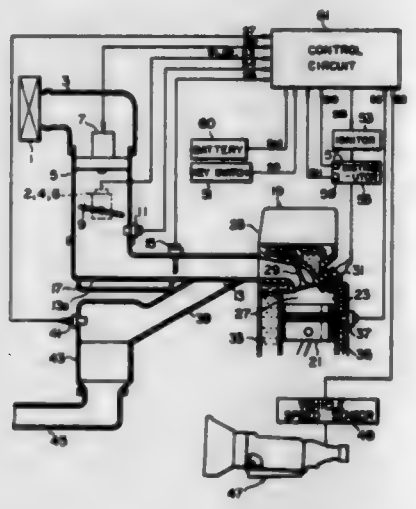
said insulating plate being provided with a central hole to define one portion of the combustion chamber with one end of each electrode projecting into said hole; and

the length of said spark gaps gradually increasing from the high voltage power source side towards the earth side.

4,535,736
METHOD AND APPARATUS FOR CONTROLLING AIR-FUEL RATIO IN INTERNAL COMBUSTION ENGINE

Mitsuharu Taura, Toyota, and Toshiaki Mizuno, Nagoya, both of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Apr. 17, 1984, Ser. No. 601,341
Claims priority, application Japan, Apr. 18, 1983, 58-68174
Int. Cl.[3] F02M 51/00
U.S. Cl. 123—344
11 Claims



1. A method of controlling the air-fuel ratio of an air-fuel mixture to be supplied to an internal combustion engine having an injector by selectively using a feedback control in which the air-fuel ratio is maintained at the stoichiometric level and a lean control in which the air-fuel ratio is maintained at a leaner side of the stoichiometric level at least during an idling of the engine after a warming up of the engine, said method comprising the steps of:

calculating a mean value of the engine idling speed for a predetermined period of time;

comparing the mean value thus calculated with a predetermined reference value;

prohibiting said lean control at least when said comparing step determines that the mean value is less than the predetermined reference value, whereby the air-fuel ratio is feedback-controlled with said feedback control so as to be maintained at the stoichiometric ratio;

computing a basic fuel injection time duration corresponding to a fuel injection rate of said injector in accordance with an engine speed and a load on the engine; and

correcting said basic fuel injection time duration in the lean control by at least a lean correction coefficient and in the feedback control by at least a feedback correction coefficient to thereby determine a final injection time duration, said lean correction coefficient being determined in accordance with a load on the engine such that the air-fuel ratio is in a leaner side of the stoichiometric air-fuel ratio, and said feedback correction coefficient being determined in accordance with the actual air-fuel ratio such that the air-fuel ratio substantially becomes a stoichiometric level, wherein when the result of said comparing step is that the mean value is less than the predetermined reference value, a correction of the basic injection time duration by the lean correction coefficient is prohibited.

7. An apparatus for controlling the air-fuel ratio of an air-fuel mixture to be supplied to an internal combustion engine, comprising:

control means for selectively using feedback control to maintain said air-fuel ratio at a stoichiometric level and using lean control to maintain said air-fuel ratio at a leaner side of said stoichiometric level at least during idling of said engine after a warming up of said engine;

means for calculating a mean value of idling speed of said engine for a predetermined period of time;

means for comparing said mean value with a predetermined reference value;

means for prohibing said lean control operation of said control means when said comparing means determines that said mean value is less than said predetermined reference value, so that said air-fuel ratio is maintained by said feedback control operation of said control means;

an injector for said engine;

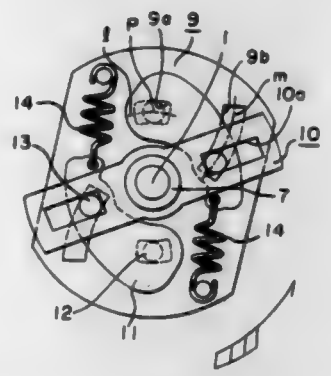
means for computing a basic fuel injection time duration corresponding to a fuel injection rate of said injector in accordance with an engine speed and a load on said engine; and

means for correcting said basic fuel injection time duration during said lean control operation by at least a lean correction coefficient and during said feedback control operation by at least a feedback correction coefficient to thereby determine a final injection time duration, said lean correction coefficient being determined in accordance with a load on said engine such that said air-fuel ratio becomes a leaner side of said stoichiometric air-fuel ratio, and said feedback correction coefficient being determined in accordance with an actual air-fuel ratio such that said air-fuel ratio substantially becomes stoichiometric level; and wherein said means for correcting, when said comparing means determines that said mean value is less than said predetermined reference value, prohibits correction of said basic injection time duration by said lean correction coefficient.

4,535,737
CENTRIFUGAL SPARK-ADVANCE CONTROLLING DEVICE

Akira Takami, Hyogo, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 14, 1984, Ser. No. 579,953
Claims priority, application Japan, Feb. 18, 1983, 58-26828; Mar. 15, 1983, 58-44859
Int. Cl.[3] F02P 5/06
U.S. Cl. 123—420
4 Claims



1. A centrifugal spark-advance controlling device in which a weight is subjected to centrifugal force caused by the revolution of a driving shaft to be opened against the elastic force of a spring member to thereby advance an advancing sleeve with respect to said driving shaft, comprising:

a base plate fixed to said driving shaft, said base plate being provided with an elongated groove for guiding which serves as a guide for said weight to be moved in the direction of opening and an advancing plate fixed to said advancing sleeve,

a position-determining pin extending downwardly from said weight to be engaged with an elongated groove for determining position in an arcuate form formed in said base plate and said elongated groove for guiding is of an arcuate form, said advancing plate being provided with an elongated groove for advancing which determines a relative advance angle of said advancing sleeve with respect to said driving shaft in association with said elongated groove for guiding, wherein said weight is placed between said base plate and said advancing plate and there are

provided on said base plate a cylindrical projection for guiding which is inserted into said elongated groove for guiding to be engaged therewith and a cylindrical projection for advancing which is inserted into said elongated groove for advancing to be engaged therewith.

4,535,738

ENGINE CONTROL SYSTEMS

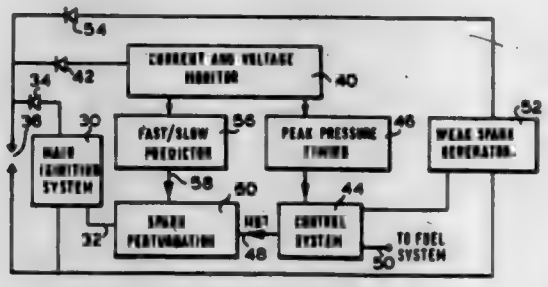
Thomas T. Ma, Sth Woodham Ferrers, England, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 18, 1984, Ser. No. 621,823

Claims priority, application United Kingdom, Jun. 23, 1983, 8317042

Int. Cl.³ F02P *5/14*; F02D *37/02*

U.S. Cl. 123—425 **3 Claims**



1. A method of engine control, characterised by the steps of firing a weak spark through a spark gap between two electrodes of a spark plug in a combustion cylinder of an internal combustion engine, measuring a current through or a voltage across the electrodes following the weak spark, analysing the voltage or current to derive a prediction of a flame propagation speed in the combustion cylinder and subsequently firing a stronger spark through the spark gap to ignite a combustion charge in the combustion cylinder, the stronger spark having an ignition timing varied in dependence upon the prediction of the flame propagation speed, and further including the step of firing several weak sparks in a single engine cycle to obtain several gas velocity readings, the readings being processed to provide by extrapolation an estimate of the gas velocity at the instant of the ensuing stronger spark.

4,535,739

SYSTEM FOR PREVENTING KNOCKING IN A COMBUSTION ENGINE

Ichiro Kudo, Higashikurume; Yoshiaki Kasai, Kiyose, and Masaharu Yuasa, Fujisawa, all of Japan, assignors to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 17, 1984, Ser. No. 611,274

Claims priority, application Japan, May 19, 1983, 58-88070

Int. Cl.³ F02P *5/04*

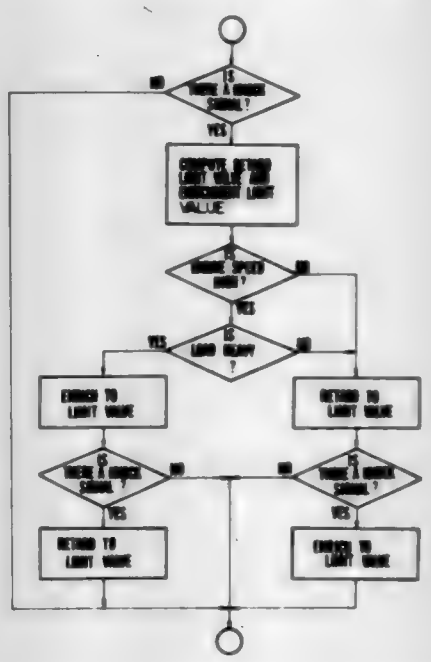
U.S. Cl. 123—425 **6 Claims**

1. A method for preventing knocking in a combustion engine comprising:

sensing conditions of knocking in said engine for producing a knock signal;

computing limit values of retardation of ignition timing and of enrichment of air-fuel mixture in response to said knock signal, with reference to engine speed and amount of intake air;

enriching the mixture to the respective limit value at high engine speed and heavy load and then retarding the ignition timing to the respective limit value; and



retarding the ignition timing to the respective limit value at low engine speed and light load and then enriching the mixture to the respective limit value.

4,535,740

ENGINE CONTROL SYSTEM

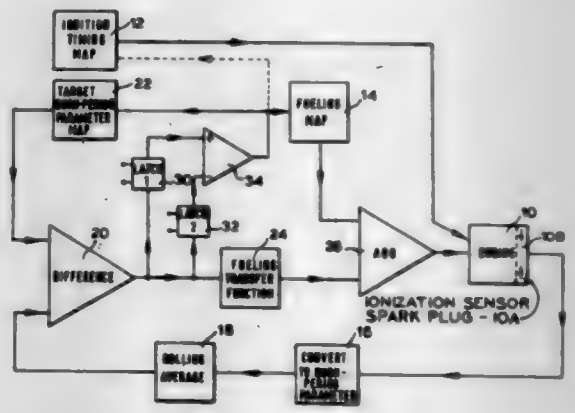
Thomas T. Ma, Chelmsford, United Kingdom, assignor to Ford Motor Company, Dearborn, Mich.

Filed May 31, 1984, Ser. No. 615,632

Claims priority, application United Kingdom, Jun. 3, 1983, 8315221

Int. Cl.³ F02D *37/02*

U.S. Cl. 123—435 **3 Claims**

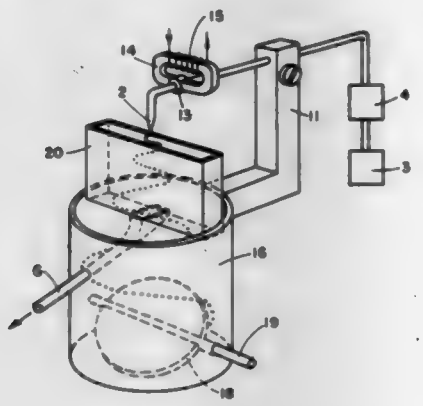


1. An internal combustion engine in which the ignition timing and the fuel-to-air ratio are determined by an open loop control system including tables (**12,22,14**) stored in a microcomputer, the tables providing signals indicating predetermined settings of the ignition timing and the fuel to air ratio in dependence upon sensed parameters and in which a closed loop control circuit (**16,18,20,24**) incorporating an ionisation sensor disposed within a combustion chamber is provided for sensing a burn period duration and applying a correction to one of the signals derived from the tables stored in the microcomputer in dependence upon the sensed burn period duration, characterised in that the closed loop applies a correction to the signal for regulating the fuel-to-air ratio and has a response time substantially greater than the response time of the open loop, and in that changes in the correction effected by the closed loop are permitted only when the engine is operating within a predetermined range for which the operation of the ionisation sensor is accurately representative of the burn period duration.

4,535,741
FUEL METERING METHOD AND DEVICE

Carl H. Hertz, Skolbanksvagen 8, Lund, S-223 67, Sweden, assignor to C. Hellmuth Hertz, Lund, Sweden

Filed Feb. 16, 1984, Ser. No. 580,685
Int. Cl.[3] F02N *37/14*; F02M *27/08*
U.S. Cl. 123—444 31 Claims



1. A fuel supply control system for an internal combustion engine said engine having at least one cylinder and operable in conjunction with apparatus to control the flow of air to each of said cylinders comprising:

a. means connectable with said air control apparatus for regulating the flow of air to said engine;

b. at least one chamber being in fluid communication with each of said at least one cylinder;

c. fuel delivery means terminating in an aperture such that said fuel, when forced through said aperture forms a continuous stream;

d. pump means adapted to transfer said fuel under pressure from a reservoir through said fuel delivery means thereby forming said continuous stream;

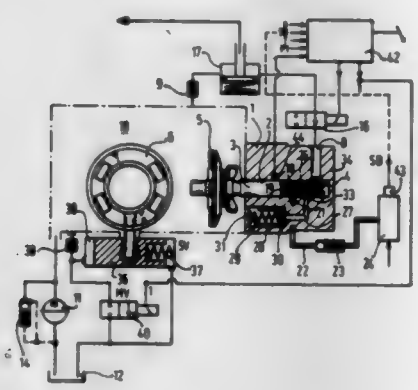
e. control means adapted to control the direction of flow of said continuous stream and to impart to said continuous stream a controlled periodic oscillation and adapted to control the amplitude of said periodic oscillation;

f. receptor means in said at least one chamber for receiving at least a portion of the continuous stream of fuel.

4,535,742
FUEL INJECTION PUMP FOR INTERNAL COMBUSTION ENGINES

Helmut Laufer; Helmut Pfeifle, and Max Straubel, all of Stuttgart, Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Mar. 30, 1984, Ser. No. 595,189
Claims priority, application Fed. Rep. of Germany, May 19, 1983, 3318236
Int. Cl.[3] F02M *39/00*
U.S. Cl. 123—447 29 Claims

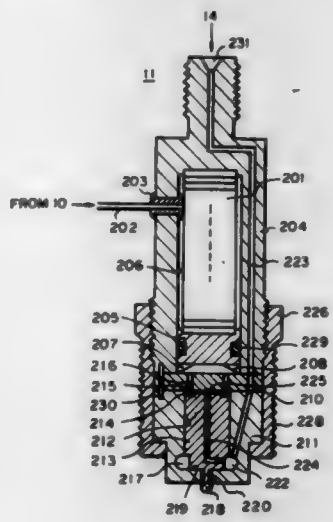


1. A fuel injection pump comprising a housing, a cylinder in said housing, at least one work chamber, in said cylinder, a pump piston enclosing said work chamber in said cylinder, a plurality of fuel injection supply lines in said housing connectable in turn with said work chamber during a pump stroke of said pump piston, a fuel supply conduit in communication with said work chamber during at least part of a rest position of said pump piston between a suction stroke and a pump stroke, a fuel quantity dispensing valve in said fuel supply conduit upstream from said work chamber which has a time controlled opening period, at least one relief conduit in said housing in communication with said work chamber and at least one reservoir, said relief conduit being operably opened up from a predetermined stroke of said pump piston during its pump stroke by a first control edge on said pump piston in synchronism with said pump stroke of said pump piston, said first control edge being formed by a recess disposed on a jacket face of said pump piston which rotates in synchronism with a pump piston drive means, said pump piston being guided within said cylinder thereby simultaneously serving as a fuel distributor, said pump piston having a distributor opening communicating with said pump work chamber, said distributor opening, during rotation of said pump piston, and during a pump stroke registering in turn with one of said fuel injection supply lines thus brought in communication with said work chamber, and at least one second edge on said pump piston, said at least one second edge on said pump piston functioning to provide communication between said pump work chamber and said at least one reservoir during at least part of said rest position of said piston and said at least one second control edge is disposed on said pump piston such that a connection with said reservior is closed prior to a subsequent pump stroke of said piston and prior to an injection of fuel into said injection supply line.

4,535,743
FUEL INJECTION APPARATUS FOR AN INTERNAL COMBUSTION ENGINE

Toshihiko Igashira, Toyokawa; Taro Tanaka, Nagoya, and Yasuyuki Sakakibara, Nishio, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Apr. 9, 1984, Ser. No. 598,436
Claims priority, application Japan, Apr. 15, 1983, 58-65603; Jun. 17, 1983, 58-107954; Aug. 12, 1983, 58-146731
Int. Cl.[3] B05B *1/30*
U.S. Cl. 123—472 22 Claims



1. A fuel injection apparatus for an internal combustion engine comprising:

a nozzle body;

a nozzle formed at the bottom of said nozzle body;

an electroexpansive actuator having an electroexpansive effect;

a valve member, slideably mounted within said nozzle body, for opening and closing said nozzle; and

a fuel chamber formed between said electroexpansive actuator and said valve member;

said electroexpansive actuator and said valve member being disposed so that expansion of said electroexpansive actuator reduces the volume of said fuel chamber, thereby

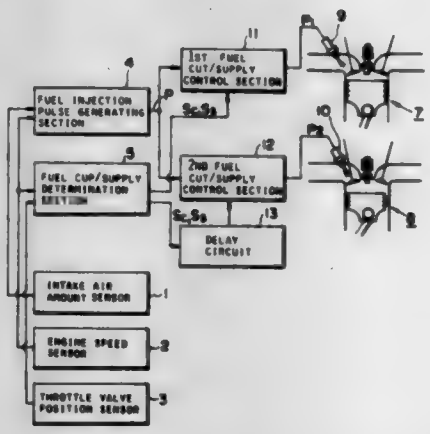
moving said valve member in the closed direction of said nozzle and contraction of said electroexpansive actuator increases the volume of said fuel chamber, thereby moving said valve member in the open direction of said nozzle.

4,535,744

FUEL CUT-SUPPLY CONTROL SYSTEM FOR MULTIPLE-CYLINDER INTERNAL COMBUSTION ENGINE

Ryouichi Matsumura, Ebina, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Feb. 9, 1983, Ser. No. 465,198
Claims priority, application Japan, Feb. 10, 1982, 57-18907
Int. Cl.³ F02D *17/00*
U.S. Cl. 123—493 **6 Claims**



1. A fuel cut-supply control system for a multiple-cylinder internal combustion engine including a first engine cylinder group provided with a first fuel injection valve group and a second engine cylinder group provided with a second fuel injection valve group and a throttle valve, which comprises:

(a) intake air amount sensing means for detecting the amount of intake air introduced into the engine cylinders;

(b) engine speed sensing means for detecting the revolution speed of the engine;

(c) throttle valve position sensing means for detecting the opening position of the throttle valve to determine whether the engine is being accelerated or idled;

(d) fuel injection pulse generating means responsive to said intake air amount sensing means and said engine speed sensing means for calculating an appropriate pulse width of a fuel injection pulse signal applied to the first and second fuel injection valve groups to supply fuel;

(e) fuel cut-supply determining means responsive to said engine speed sensing means and said throttle valve position sensing means for outputting a fuel out command signal when engine speed is above a predetermined value and the opening position of the throttle valve corresponds to engine idling and a fuel supply command signal when the opening position of the throttle valve does not correspond to engine idling;

(f) delay circuit means responsive to said fuel cut-supply determining means for delaying the fuel cut command signal and the fuel supply command signal to such an extent that the engine vibration caused by the first engine cylinder group is 180 degrees out of phase with that caused by the second engine cylinder group when fuel is cut off or supplied;

(g) first fuel cut-supply control means responsive to said fuel injection pulse generating means and said fuel cut-supply determinating means for applying the fuel injection pulse signal to the first engine cylinder group in response to the fuel supply command signal and interrupting the fuel injection pulse signal in response to the fuel cut command signal; and

(h) second fuel cut-supply control means responsive to said fuel injection pulse generating means and said delay circuit means for applying the fuel injection pulse signal to the second engine cylinder group in response to the delayed fuel supply command signal and interrupting the fuel injection pulse signal in response to the delayed fuel cut command signal,

whereby engine vibration can be reduced in dependence upon destructive interference caused between the first and second engine cylinder groups.

3. A method of cutting fuel off from or supplying fuel to a multiple-cylinder internal combustion engine including a first engine cylinder group provided with a first fuel injection valve group and a second engine cylinder group provided with a second fuel injection valve group and a throttle valve, which comprises the following steps of:

(a) checking whether the engine is being idled by determining if the throttle valve is fully closed;

(b) if the engine is being idled, detecting engine speed and comparing the detected engine speed with a predetermined reference engine speed at which fuel can be cut;

(c) if the detected engine speed exceeds the reference fuel-cut engine speed, setting a delay time to a fuel-cut timer activated when the throttle valve is fully closed and cutting fuel off from the first engine cylinder group;

(d) decrementing the delay time set in the fuel-cut timer;

(e) if the decremented fuel-cut delay time reaches zero, further cutting fuel off from the second engine cylinder group;

(f) if the engine is not being idled, setting a delay time to a fuel-supply timer activated when the throttle valve is opened and supplying fuel to the second engine cylinder group;

(g) decrementing the delay time set in the fuel-supply timer; and

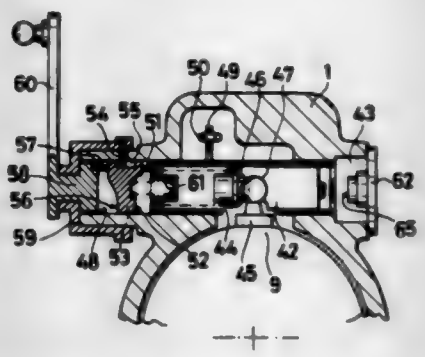
(h) if the decremented fuel-supply delay time reaches zero, further supplying fuel to the first engine cylinder group.

4,535,745

ADVANCE VARIATOR FOR A FUEL INJECTION PUMP

Manuel Roca Nierga, Leghorn, Italy, assignor to SPICA S.p.A., Italy

Filed Feb. 14, 1984, Ser. No. 579,978
Claims priority, application Italy, May 2, 1983, 20879 A/83
Int. Cl.³ F02M *59/20*
U.S. Cl. 123—502 **23 Claims**



1. A fuel injection pump for an internal combustion engine comprising a pump casing (1), means (6, 13-15, 23-35, etc.) for effecting and controlling the fuel throughput of said fuel injection pump, means (9) relatively arcuately adjustable in said pump casing (1) for varying the injection timing of said fuel injection pump, hydraulic actuator means (41) for arcuately adjusting said injection timing varying means (9), said hydraulic actuator means (41) includes a reciprocal piston (42) having first and second opposite end portions opposingly biased by fuel pressure and biasing means (44), respectively; means (45) operatively coupled between said injection timing varying means (9) and said reciprocal piston (42) for arcuately adjusting said injection timing varying means (9) in response to movement of said reciprocal piston (42), a housing (47) within and movable relative to said pump casing (1) housing said reciprocal piston (42), said housing (47) having opposite first and second end portions, said housing second end portion

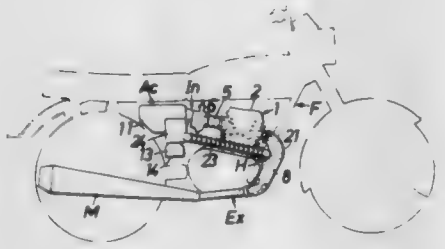
being exposed to fuel pressure in said pump casing (1), a double cam element (53) having first and second cam surfaces (56 and 52, respectively), said double cam element (53) being positioned with said second cam surface (52) adjacent said housing second end portion whereby said housing second end portion is urged into operative relationship with said second cam surface (52) under the resultant pressure of the fuel pressure acting upon said reciprocal piston (42) and said housing second end portion; means (49, 50) for connecting said housing (47) to said fuel throughput effecting and controlling means (6, 13-15, 23-35, etc.) whereby selective movement of said fuel throughput effecting and controlling means (6, 13-15, 23-35, etc.) effects rotary movement of said housing (47) and the position of its operative relationship with said second cam surface (52), and means (57, 60, 64) operative through said first cam surface (56) for shifting said double cam element (53) relative to said housing second end portion thereby shifting said housing (47), said piston (42) and said injection timing varying means (9) through said coupling means (45) to effect a variation in the timing of the commencement of injection pump fuel delivery.

4,535,746

INTAKE AIR HEATING DEVICE FOR INTERNAL COMBUSTION ENGINE FOR MOTORCYCLES

Junji Otani, Oomiya, and Makoto Hirano, Asaka, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 394,690, Jul. 2, 1982, abandoned. This application Dec. 19, 1984, Ser. No. 683,338
Claims priority, application Japan, Jul. 3, 1981, 56-99308[U]
Int. Cl.³ F02M *31/00*
U.S. Cl. 123—556 **3 Claims**



1. In an internal combustion engine for a motorcycle wherein the engine is mounted on a motorcycle frame, the engine having an intake port and an exhaust port opening at its rear and front sides respectively, in the traveling direction of the motorcycle, the engine also having an air cleaner connected to a carburetor, which is in turn connected to said intake port, and the exhaust port is connected to an exhaust pipe leading to an exhaust muffler which is positioned rearward of the frame, said exhaust pipe having a part which extends downwardly in front of the engine and then along the side of the engine, an intake air heater, comprising:

an air heater means for heating air before entering the intake port, said air heater means having an air heating chamber, disposed around at least part of said exhaust pipe, for heating intake air taken from the external atmosphere through an opening which is provided in the air heater means; and

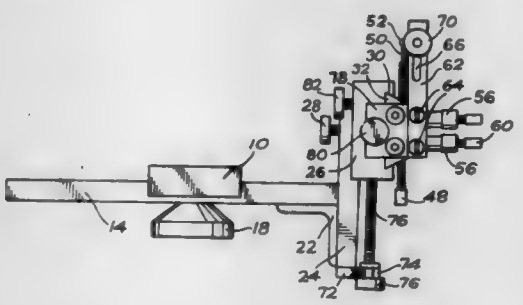
a heated air conduit extending in the longitudinal direction of the motorcycle and passing to the side of the engine cylinder within the transverse breadth of the engine for connection at one end thereof to the air heating chamber at a portion thereof located within the transverse breadth of the engine and at the other end to one side of the air cleaner.

4,535,747

BOWSIGHT FOR COMPOUND ARCHERY BOWS

Donald S. Kudlacek, 3412 Oak St., Longview, Wash. 98632

Filed Mar. 17, 1983, Ser. No. 476,057
Int. Cl.³ F41B *5/00*
U.S. Cl. 124—87 **14 Claims**



1. An archery bowsight, comprising:

(a) a base configured for mounting to the handle member of an archery bow,

(b) a windage carriage mounted on the base for horizontal movement relative thereto,

(c) an elevation carriage mounted on the windage carriage for vertical movement relative thereto,

(d) a sight pin mounting block mounted on the elevation carriage for movement therewith,

(e) a plurality of elongated sight pins,

(f) a plurality of sight pin mounting members each mounting a different one of the sight pins for longitudinal adjustment relative to its associated mounting member, and

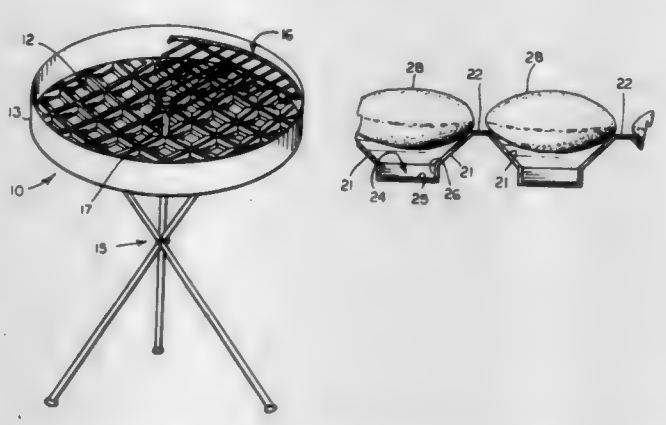
(g) an elongated pin mount support on the sight pin mounting block for supporting the sight pin mounting members for adjustment therealong with the elongated sight pins mounted on the sight pin mounting members for longitudinal adjustment in the direction perpendicular to the pin mount support.

4,535,748

CHARCOAL GRILL

Moritz H. Hunerwadel, 2186 Collins Dr., NW., Atlanta, Ga. 30318

Filed Aug. 27, 1984, Ser. No. 644,613
Int. Cl.³ A47J *37/00*
U.S. Cl. 126—25 R **3 Claims**



1. A charcoal grill having a solid sheet metal bowl member formed with a set of indentations in which charcoal briquettes may be individually placed, burned and the ashes therefrom collected and with each of said indentations having four inclined flat walls upon which a rounded charcoal briquette may be supported at a plurality of contact points which walls incline downwardly from an indentation lip to four upright walls of a sump in which fluids and ashes may be collected, and a wire mesh grill member supported above said bowl.

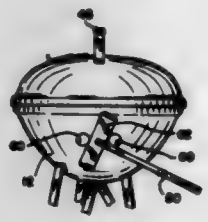
4,535,749

PORTABLE BARBECUE GRILL

Erich J. Schlosser, Lindenhurst, and James C. Stephen, Arlington Heights, both of Ill., assignors to Weber-Stephen Products Co., Palatine, Ill.

Filed Aug. 10, 1984, Ser. No. 639,951
Int. Cl.[3] F24C 5/04
U.S. Cl. 126—25 R 12 Claims





1. A portable barbecue grill unit comprising a grill body defining an open top fire chamber having vent openings below said top, a cover for closing said fire chamber, vent closures for said vent openings and a carrying handle for said unit, the improvement of said carrying handle being pivoted on said body and having said vent closures secured thereto and movable therewith, said carrying handle having a first position locking said cover on said body with said vent closures covering said vent openings in said position and a second position where said cover is removable and said vent openings are uncovered.

8. A portable barbecue grill comprising a generally semi-hemishperical bowl having an open top with said bowl having support means thereon and a cover for said open top, said cover having a generally U-shaped gripping handle with a base and a pair of spaced legs secured to said cover, the improvement of a locking bar having opposite ends pivoted about diametrically-opposed fixed pivots on said bowl and having an open position located below said open top and a locked position wherein said locking bar extends across the base to lock said cover to said bowl, said base of said gripping handle having a recess receiving said locking bar in said locked position so that said gripping handle on said cover can be grasped when said locking bar is in said locked position to transport said grill.

4,535,750

BROILER OVEN

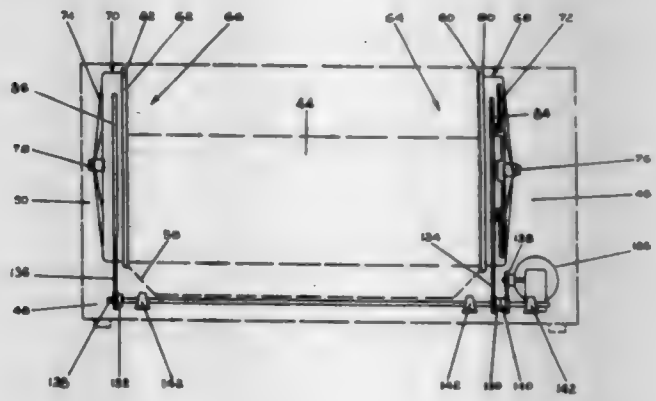
Philip J. Hebert, Barrie, and Leon G. Blanchette, Mississauga, both of Canada, assignors to LeBlanco Limited, Oakville, Canada

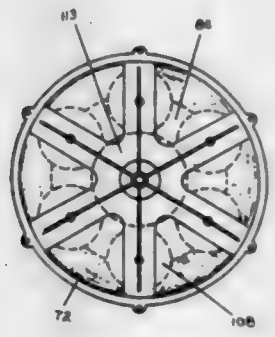
Filed Sep. 9, 1983, Ser. No. 531,481
Claims priority, application Canada, Sep. 1, 1983, 435909
Int. Cl.[3] A47J 37/00, 37/04
U.S. Cl. 126—41 B 12 Claims

1. A broiler oven comprising an elongated cooking compartment, first and second rotisserie drive drums, and a dual drive unit;

said cooking compartment defined by top, bottom, front and rear walls, at least one of which includes a door, and first and second end walls each including a large circular opening therethrough; said compartment including at least one heating unit in an upper part thereof and being substantially unobstructed below said heating unit;

said first and second rotisserie drive drums each having a spit support disc of diameter just less than said circular openings and being mounted for rotation on respective first and second axially aligned shafts centrally mounted in respective ones of said circular openings, said shafts not penetrating substantially into said compartment; each said drum having a series of spit sockets extending through and mounted for rotation in the said discs, said sockets being equispaced around a circular axis on said discs, and individual ones of





said sockets in said first disc being axially aligned with corresponding ones of said second disc; the sockets in said first disc being driven in rotation by a set of planetary gears;

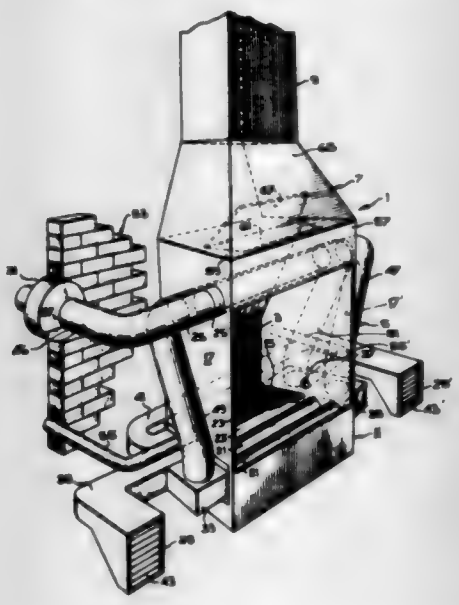
and wherein said dual drive unit is located outside said cooking compartment and is operatively connected to drive said first and second shafts.

4,535,751

HEAT RECUPERATOR FOR FIREPLACE

Jean-Louis Bourgeois, Duvernay, Canada, assignor to Foyer d'Aciernergie Inc., St. Vincent de Paul Laval, Canada

Filed May 14, 1984, Ser. No. 610,122
Int. Cl.[3] F24B 7/00
U.S. Cl. 126—121 16 Claims



1. A forced air space heating fireplace for heating a room, said fireplace comprising:

(a) a metal casing defining a combustion chamber having an opening facing said room to be heated, said casing comprising:

top wall means having a flue connection for the exit of gas from said combustion chamber;

lower wall means defining an enclosure closed at the top by a floor wall for the support of a grate;

a pair of side walls connected, at the bottom, to said floor wall and, at the top, to said top wall means;

a back wall connected, at the bottom, to said floor wall, at the top to said top wall means and, along vertical side edges thereof, to said side walls, said back wall facing said combustion chamber opening;

(b) forced air flow circuit means comprising:

lower air flow tubes, beneath said floor wall, in and across said enclosure, between said said side walls;

upper air flow tubes at the top and across said combustion chamber;

lateral air flow tube means outside said casing, said lateral tube means interconnecting said lower and upper tubes to form therewith a single air flow path having one air inlet and a pair of air outlet, said air outlets opening on either side of said casing, outwardly thereof, to face said room to be heated whereby to discharge heated air thereinto;

means surrounding said casing except for said combustion chamber opening and said air outlets and enclosing said lateral air flow tube means, and

(c) a blower connected to said air inlet to force air through said air flow path and out through said air outlets into said room to be heated, said blower being disposed to draw air from outside said room to be heated, wherein said upper air flow tubes are exposed to radiant heat from a fire in said combustion chamber and are disposed between said combustion chamber and said flue gas connection so as to be also exposed to convection heat from combustion gases produced by said fire,

wherein said lower air flow tubes comprise at least one forward tube and two rearward tubes and said upper air flow tubes comprise two air flow tubes, said lateral air flow tube means comprising:

a pair of forward plenum boxes each on one of said casing side walls and in said casing surrounding means, said forward tube being operatively connected, at the ends thereof, to said forward plenum boxes;

a rearward plenum box on one of said casing side walls and in said surrounding means, said rearward plenum box being operatively connected to adjacent ends of said rearward tubes;

a pair of outlet air tubes each connected at the ends thereof respectively to the other end of one of said rearward tubes and to one of said air outlets;

interconnecting air flow tubes respectively joining said blower and one end of one of said upper tubes; the other end of said one of said upper tubes and one of said forward plenum boxes; the other of said forward plenum boxes and one end of the other of said upper tubes, and the other end of the other of said upper tubes and said rearward plenum box, whereby said air flow tubes circumscribes said combustion chamber.

4,535,752

FIREPLACE CROSS-CIRCULATING AIR HEATER

Bunyan B. Cagle, 1700 Towson Ave., Fort Smith, Ark. 72901

Filed Sep. 13, 1982, Ser. No. 417,708

Int. Cl.³ F24B *7/00*

U.S. Cl. 126—121 **6 Claims**

1. A fireplace cross-circulating air heater comprising

a first plurality of parallel heat exchanger tubes,

a second plurality of parallel heat exchanger tubes,

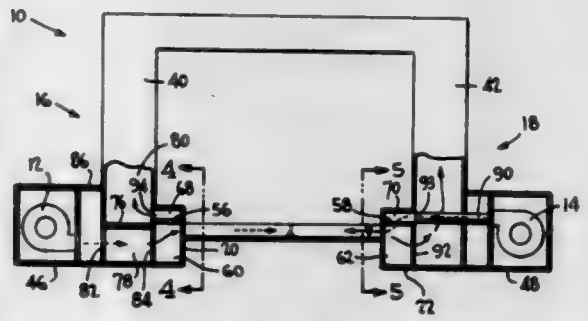
said first and second plurality of tubes being disposed coplanar with a horizontal plane and adapted to extend horizontally across a fireplace,

left and right blowers,

left duct means for directing air from the left blower to left ends of and through said first plurality of tubes,

right duct means for directing air from the right blower to right ends of and through said second plurality of tubes,

said left duct means including left chambers means receiving air from the left ends of said second plurality of tubes for delivery to a room, and



said right duct means including right chamber means receiving air from the right ends of said first plurality of tubes for delivery to the room,

said left and right blowers providing input air from opposite sides of the heater and said left and right chamber means delivering output air to reverse opposite sides of the heater.

4,535,753

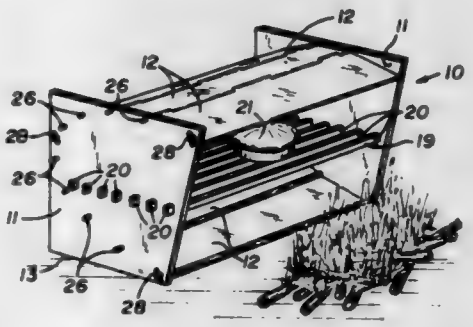
RADIANT HEAT COLLECTOR

Leo Zayauskas, 9327 S. Hamilton Ave., Chicago, Ill. 60620

Filed Apr. 12, 1984, Ser. No. 599,516

Int. Cl.³ A21B *1/00*

U.S. Cl. 126—274 **16 Claims**



1. A radiant heat collector for collecting radiant heat from an elongated heat source, and distributing it to a load, comprising:

means for defining an elliptical segment concave cylindrical surface, which cylindrical surface is approximately that developed by a straight line generatrix and a directrix that is a portion of an ellipse, said surface being formed to reflect radiant heat;

means for positioning said developed cylindrical surface means in relation to the elongated heat source such that said heat source is located along one focus line of the elliptical segment cylindrical surface; and

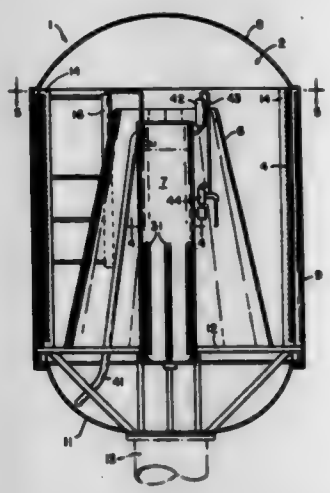
means for holding the load in proximity to the other focus line of the elliptical segment cylindrical surface;

whereby radiant heat generated by the source is reflected by said surface and concentrated at the other focus line and substantially distributed to the load.

4,535,754
MANUFACTURED FUEL ASSISTED SOLAR HEAT EXCHANGER

Harry W. Darr, Kirkland, Wash., assignor to D&M Investments, Yakima, Wash.

Continuation-in-part of Ser. No. 236,691, Feb. 23, 1981, abandoned. This application Feb. 14, 1983, Ser. No. 466,071
Int. Cl.³ F24J 3/02
U.S. Cl. 126—419 8 Claims

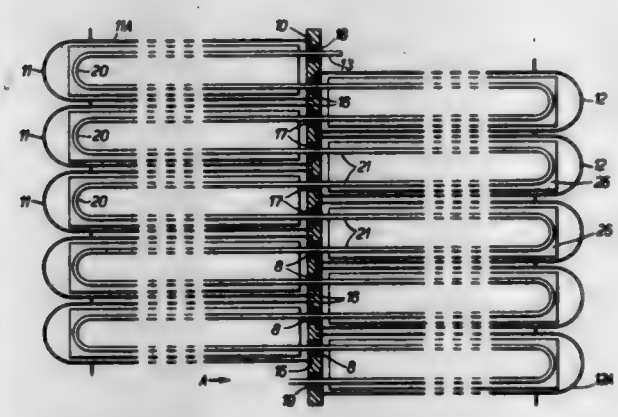


1. A solar energy collector system comprising
means for absorbing solar energy, including a cylindrical coil for containing a heat absorbing fluid;
means for reflecting solar radiation onto said coil, including a plurality of reflective surfaces connected in a frustro-conical configuration within and substantially coaxial with said coil, and;
a housing enclosing said coil, said housing having an exterior surface which is transparent to solar radiation, and an interior surface which is reflective of solar radiation.

4,535,755
SOLAR ENERGY COLLECTOR

Griffith T. Roberts, Maes yr Haul, Cross Inn, Llantrisant, Mid-Glamorgan, Wales

Filed Mar. 5, 1984, Ser. No. 586,360
Claims priority, application United Kingdom, Mar. 5, 1983, 8306016
Int. Cl.³ F24J 3/02
U.S. Cl. 126—443 5 Claims

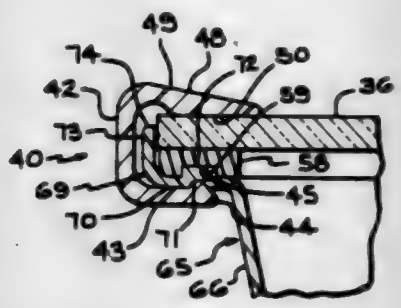


1. A solar energy collector, comprising a manifold base, a plurality of separately formed vacuum vessels positioned on and sealed to said manifold base, each said vessel having a wall which is capable of transmitting solar energy, the interiors of said vessels being interconnected via passages through said base to provide a continuous vacuum path through the vessels, and a conduit for a heat exchange medium extending in a zig zag path through said manifold base, and within each of said vessels and in which the vessels each have one closed end, and the other ends of said vessels are sealed to said manifold base, some of said vessels being disposed on one side of said base and others of said vessels being disposed on the other side of said base, the vessels on one side of said base being staggered and partly overlapping the vessels on the other side of said base, and said conduit passes directly from one vessel on one side of said base into the next adjacent vessel on the other side of said base.

4,535,756
SOLAR COLLECTORS

James W. Rinehart, Melbourne, Fla.; Frank W. Gilleland, Toledo, and Byron W. Engen, Sylvania, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Continuation of Ser. No. 334,016, Dec. 23, 1981, abandoned. This application Dec. 27, 1983, Ser. No. 565,131
Int. Cl.³ F24J 3/02
U.S. Cl. 126—450 6 Claims

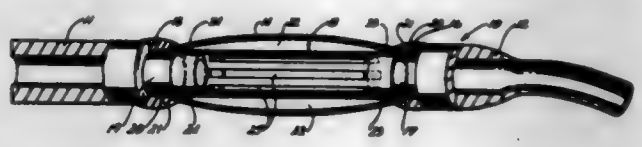


1. A solar collector assembly comprising:
an absorber means adapted to transfer heat to a fluid moving therealong;
a glass cover member adapted to transmit solar energy therethrough;
a housing adapted to contain said absorber means, said housing having a collar section extending around the periphery thereof having a ledge extending laterally outward from the housing;
sealing means located intermediate the ledge and the cover; and
a plurality of plastic, tubular spring clips positioned along the collar section to substantially uniformly bias the cover member toward the ledge at the sealing means to provide a seal between the cover and the housing, said spring clips having a means for securing the clip to the collar section, said spring clip having a plastic interior surface in direct, pressured contact with said glass cover and an upper surface angled from said interior surface to define a third section of said spring clip, said third section presenting a low edge profile effected to promote self-cleaning of snow that accumulates on the cover member.

4,535,757
AUTOINFLATABLE CATHETER

Wilton W. Webster, Jr., 1388 Crest Dr., Altadena, Calif. 91001

PCT No. PCT/US82/00319, § 371 Date Apr. 26, 1982, § 102(e) Date Apr. 26, 1982, PCT Pub. No. WO83/03204, PCT Pub. Date Sep. 29, 1983
PCT Filed Mar. 12, 1982, Ser. No. 371,727
Int. Cl.³ A61M 25/00, 29/00
U.S. Cl. 128—1 D 15 Claims



1. An autoinflatable catheter comprising:
a. an elongated first catheter tube section having open anterior and posterior ends forming a main catheter body;
b. a short second catheter tube section having open anterior

and posterior ends forming a catheter tip having a smaller cross-sectional area at its anterior end than at its posterior end;

c. a balloon support comprising a rigid cage having an open anterior end connected to the posterior end of the catheter tip, an open posterior end connected to the anterior end of the main catheter body and a continuous hollow interior forming an unobstructed pathway between the main catheter body and the catheter tip, said cage having openings through the cage intermediate the cage ends for the flow of a liquid between the interior of the cage and the balloon chamber formed between the cage and a balloon positioned in a surrounding relation to the cage, said openings being sufficiently large not to significantly restrict the flow of a liquid through the openings and to prevent pooling of liquid in the balloon chamber; and

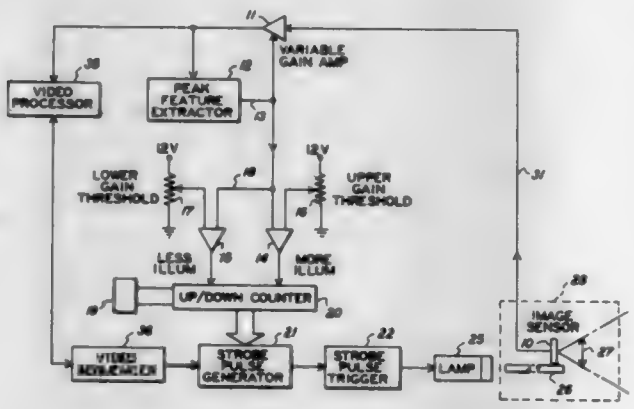
d. an inflatable and deflatable balloon surrounding the balloon support having an anterior end sealed about the posterior end of the catheter tip and a posterior end sealed about the anterior end of the main catheter body.

4,535,758

SIGNAL LEVEL CONTROL FOR VIDEO SYSTEM

Andrew Longacre, Jr., Skaneateles, N.Y., assignor to Welch Allyn Inc., Skaneateles Falls, N.Y.

Filed Oct. 7, 1983, Ser. No. 540,137
Int. Cl.³ A61B *1/04*
U.S. Cl. 128—6 **12 Claims**



1. An automatic signal level control for use in a video system wherein a solid state image sensor records light images of a remote target and provides video signals indicative of the target information that includes

a variable gain amplifier for adjusting the level of the video signal delivered to the video processor,

an automatic gain control circuit for sensing the level of the video signal output of the amplifier and providing a feedback signal to the amplifier for maintaining the level of the said video signal within an optimum range,

a strobe lamp for illuminating a target within the viewing range of the sensor, said lamp having a programmable lamp drive for adjusting the pulse rate of the lamp to control the amount of illumination falling on the target during each imaging sequence,

a comparator means for sensing the level of the feedback signal in the gain control circuit and providing a first output signal when the gain level falls below a lower threshold level and a second output signal when the gain level rises above an upper threshold level, and

control means responsive to the comparator means output for programming the lamp drive to increase the pulse rate when the gain exceeds the upper threshold level and to decrease the pulse rate when the gain falls below the lower threshold level whereby the video signal level is maintained within the desired optimum range.

4,535,759

ULTRASONIC MEDICAL INSTRUMENT

Todd J. Polk, Holland, and James F. Morrin, Philadelphia, both of Pa., assignors to Cabot Medical Corporation, Langhorne, Pa.

Filed Sep. 30, 1982, Ser. No. 431,197
Int. Cl.³ A61H *23/00*
U.S. Cl. 128—24 A **5 Claims**



1. An ultrasonic medical instrument for providing access to an interior portion of a body comprising the combination of:

a. an elongated probe adapted to be introduced into the body;

b. an ultrasonic driver adapted to vibrate the probe along its longitudinal axis at an ultrasonic frequency, whereby the vibration applied to the probe reduces friction between the probe and the body, said driver comprising a back-up piece, a pair of piezo-electric transducers separated by an electrical conductor and arranged positive to positive, a director, and means for compressing said back-up piece, transducers and director into intimate contact with each other,

c. a frequency regulator connected for maintaining the vibration frequency of the instrument at or near the resonant frequency of the instrument, said regulator including an automatic frequency sensing circuit connected and arranged to detect the resonant frequency of the probe, and means responsive to a signal from said circuit to bring the instrument to its resonant frequency; and

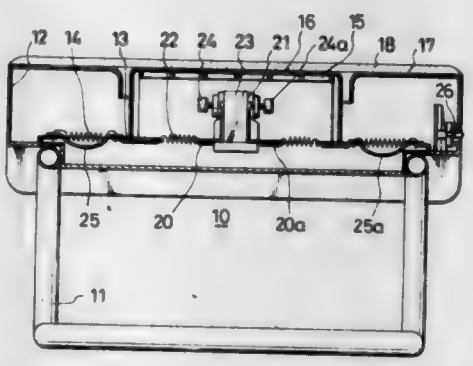
d. means forming a hollow core extending lengthwise through all of said back-up piece, transducers, director and probe to permit the introduction of therapeutic agents or the application of suction through the probe.

4,535,760

VIBRATORY MASSAGE APPARATUS

Shigayuki Ikeda, and Takafumi Hamabe, both of Hikone, Japan, assignors to Matsushita Electric Works, Ltd., Osaka, Japan

Filed Jan. 28, 1983, Ser. No. 461,999
Claims priority, application Japan, Feb. 16, 1982, 57-24197
Int. Cl.³ A61H *1/00*
U.S. Cl. 128—33 **1 Claim**



1. A vibratory massage apparatus comprising

a support means;

treating means eleastically supported on said support means for treating the user's affected body part;

vibration generating means held on the support means and including a motor for generating a vibratory motion which is transmitted to said treating means;

a vibratory plate carrying said treating means;

first spring means elastically coupling said vibratory plate to said support means;

second spring means elastically coupling said vibration generating means to said vibratory plate;

said vibratory plate, said vibration generating means and said first and second spring means defining a vibration system in which said vibratory plate is vibrated at a frequency close to a natural frequency of said vibration system; and

a controlling means electrically connected to said motor for controlling said vibratory motion by cyclically varying its vibration amplitude;

said controlling means including a first means for actuating said motor to produce a vibratory motion at a relatively smaller amplitude, a second means for actuating said motor to produce vibratory motion at a relatively larger amplitude, and means for actuating said first and second means immediately succeedingly and for imposing a halt period of zero amplitude immediately following the actuation of said second means to produce cyclical vibratory pattern comprising immediately succeeding periods of smaller, larger and zero vibratory amplitudes.

4,535,761

GUM MASSAGER

Lewis Rabinowitz, Glendale, Ariz., assignor to Arnell Inc., Glendale, Ariz.

Filed Jun. 24, 1982, Ser. No. 391,530
Int. Cl.³ A61H 7/00
U.S. Cl. 128—62 A **6 Claims**



1. Apparatus for massaging gums, comprising in combination:

(a) handle means for manipulation of the apparatus;

(b) a substantially rigid massaging means arranged for insertion between the teeth of a user of the apparatus; and

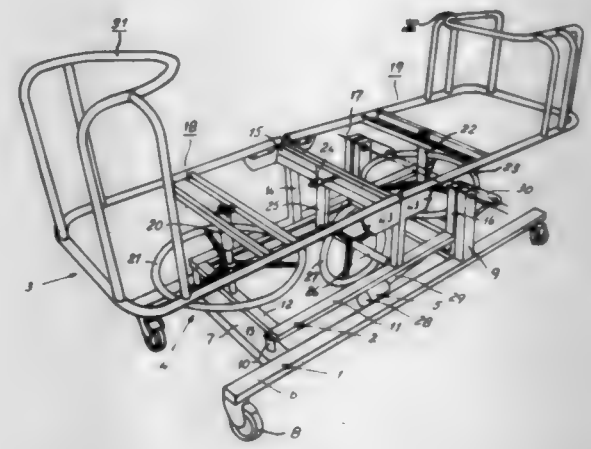
(c) a universal joint coupling means interconnecting said handle means and said massaging means so that said massaging means normally extends perpendicularly from said handle means, said universal joint coupling means being cooperatively formed by a bore means provided transversely in said handle means and an axially extending shank and an enlarged head provided on said massaging means, said shank extending through the bore means of said handle means and being of slightly reduced diameter in relation to the bore means of said handle means to allow a free changing of the angular relationship between said massaging means and said handle means and to allow a swivel-like movement to be imparted to said massaging means upon insertion of said massaging means between the teeth of the user and upon manipulation of said handle means.

4,535,762

MECHANICAL BIO-FEED-BACK AUTO-TRACTION BENCH

Emil J. Natchev, Upplandsgatan 50, S-113 28 Stockholm, Sweden

Filed Aug. 8, 1983, Ser. No. 521,357
Claims priority, application Sweden, Apr. 6, 1983, 83018937
Int. Cl.³ A61F 5/00
U.S. Cl. 128—71 **14 Claims**



1. A traction bench for the traction treatment of spinal conditions of human beings, comprising:

a lower frame;

a bench frame pivotally connected to the lower frame for rotation about a transverse axis adjacent an end of the bench frame;

a support frame carried by the bench frame and divided into an upper body section and a lower body section which meet at a central portion of the support frame, each of said upper body section and lower body section being connected to the bench frame in the vicinity of said central portion by a pivot axis providing pivotal movement of each section independently of the other relative to the bench frame,

a support bed carried by the support frame for receiving a patient to be treated, said support bed having a head part on the upper body section of the support frame and a foot part on the lower body section of the support frame;

means for rotating the upper body section about its said pivot axis to raise or lower that portion of the patient's body supported thereby;

means for rotating the lower body section about its said pivot axis to raise or lower that portion of the patient's body support thereby;

whereby the pivotal adjustments of the upper body section and the lower body section allow either of said sections to be inclined upwardly from the central portion to the opposite end thereof, with the other of said sections inclined downwardly from the central portion to the opposite end thereof to arrange the support frame and support bed inclined either upwardly or downwardly from the said opposite end of the upper body section to the said opposite end of the lower body section;

means for mounting at least one of said upper body or lower body sections for rotation about a longitudinal axis to impart torsional movement to the body of a patient thereon and means for rotating said at least one section about said longitudinal axis;

means for rotating the bench frame about said transverse axis for elavating one end of the bench frame to elevate the corresponding end of the support frame and support bed for traction treatment of a patient thereon by a gravational force;

said means for raising the bench frame, said means for pivoting at least one of the upper body or lower body sections and said means for rotating one of said sections about a longitudinal axis all being operable independently of each other, to permit the body of a patient carried by said

bench to adjust to different angular and torsional positions during different relevant positions of the upper body and lower body sections relative to each other and during different elevations of the bench frame relative to the lower frame.

4,535,763

EXTERNAL BONE-ANCHORING ELEMENT

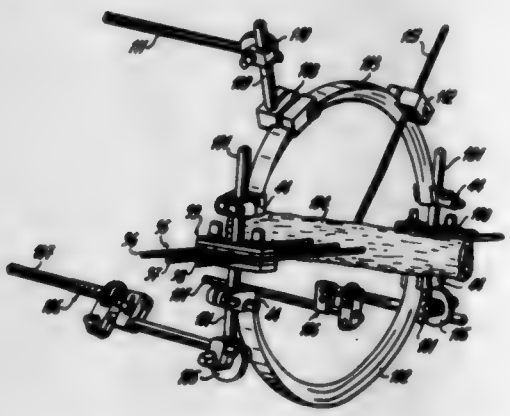
Henri Jaquet, Le Grand Saconnex, Switzerland, assignor to Jaquet Orthopedic S.A., Switzerland

Continuation of Ser. No. 107,546, Dec. 27, 1979, Pat. No. 4,365,624. This application Sep. 3, 1982, Ser. No. 417,902

Claims priority, application Switzerland, Jan. 16, 1979, 386/79

Int. Cl.³ A61F *5/04*

U.S. Cl. 128—92 A **23 Claims**



1. An external bone-anchoring means comprising:

two groups of pins, each group being comprised of at least one pin, or the like, for retaining a bone portion;

first and second supporting means, each of the first and second supporting means being for supporting the pins of a respective one of the two groups of pins;

at least one assembly rod connected to each of the first and second supporting means for interconnecting the first and second supporting means;

at least one of the first and second supporting means comprising an arcuate member of polygonal cross-section connected to the assembly rod and at least one support piece on the arcuate member for supporting the pins of the respective group on the arcuate member, the at least one support piece being movably connected to the arcuate member, the connection between the arcuate member and the support piece enabling the pins of that group to be supported on the arcuate member anywhere along its length, the support piece comprising jaws having internal recesses adapted to complement at least a portion of the polygonal cross-section of the arcuate member so as to be capable of being pressed onto and immobilized on the arcuate member without being able to rotate about it or move along it.

4,535,764

SURGICAL BONE TIE

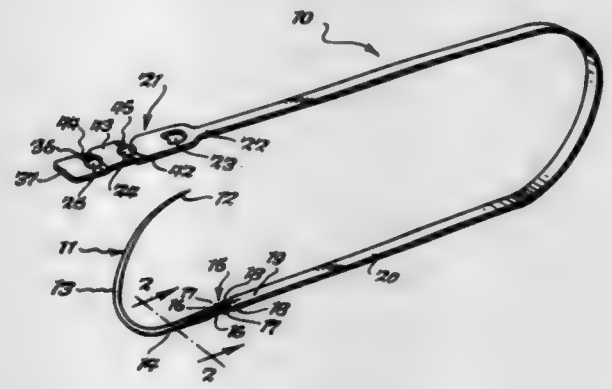
Edward A. Ebert, Snyder, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed Apr. 15, 1983, Ser. No. 485,449

Int. Cl.³ A61B *17/18*

U.S. Cl. 128—92 B **18 Claims**

17. A surgical bone tie comprising a needle having a leading end for penetrating adjacent bone sections of a bone, a trailing end on said needle, a cutting section of a first cross section adjacent said trailing end of said needle for shaping the holes in the bone sections penetrated by said needle to include the shape of said first cross section, a substantially flat band having a second cross section for fitting within said holes of said first cross section, a leading end on said band secured proximate said cutting section, a trailing end on said band, and a substantially flat locking member having a leading end and a trailing end, said leading end of said locking member being secured to said trailing end of said band, locking means on said locking member for receiving an intermediate portion of said band between said leading and trailing ends of said band in locking



engagement with said locking member, and means operatively associated with said locking means for concealing a free end of said intermediate portion of said band which is produced after said intermediate portion of said band has been severed.

4,535,765

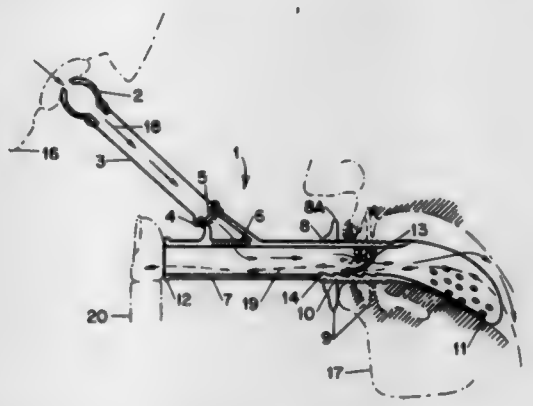
LIFESAVING DEVICE

John A. Paoluccio, 3530 Kiernan Ave., Modesto, Calif. 95356, and Robert Paoluccio, Sacramento, Calif., assignors to John A. Paoluccio, Modesto, Calif.

Filed Jul. 7, 1983, Ser. No. 511,496

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—203.11 **20 Claims**



1. Apparatus for facilitating administration of mouth to mouth artificial respiration to a patient, which comprises:

first, second and third fluid conduits, at least said first and second fluid conduits being axially elongated, each fluid conduit having first and second axial extremities, said first axial extremity of each fluid conduit being connected together and in fluid communication with said first axial extremity of each other fluid conduit;

means for sealing disposed around said second axial extremities of said first and second fluid conduits for cooperation with the respective lips of the patient and the person administering artificial respiration; and

means for substantially preventing back flow of debris into the mouth of a patient, said means comprising a flapper member hingedly mounted in said first fluid conduit to permit free flow in said first conduit from said second to said first axial extremity thereof and having air passageways therethrough to substantially prevent said back flow in the reverse direction.

4,535,766

METHOD AND APPARATUS FOR MONITORING A RESPIRATOR USABLE WITH AN ENDOTRACHEAL TUBE

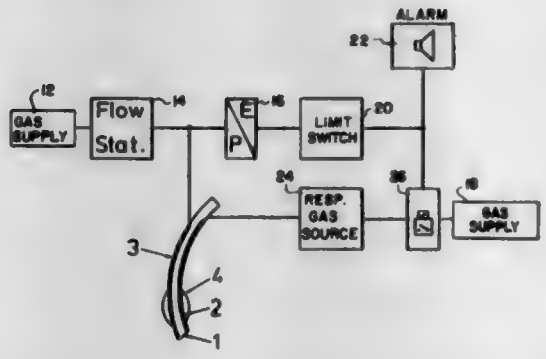
Marcel Baum, Vienna, Austria, assignor to Drägerwerk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,644

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206482

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—204.23 10 Claims



6. Respirator for use with an endotracheal tube, comprising an endotracheal tube having an interior remote end insertable in a person's trachea, a measuring tube connected into the endotracheal tube and termination in an opening at the interior remote end thereof, at least one jet nozzle for respiratory gas connected into said endotracheal tube in the interior thereof adjacent the remote end thereof for discharging respiratory gas into the endotracheal tube for thereby providing a corresponding ambient pressure in the endotracheal tube, a fluid source having a flow control and connected to said measuring tube for supplying a fluid to said measuring tube set at a substantially constant flow rate, a respiratory gas supply having a regulatory switch connected to said at least one jet nozzle and pressure sensor means connected to said measuring tube for directly measuring pressure therein, means responsive to said pressure sensing means and connected to said regulatory switch and effective to shut off the flow of said at least one jet nozzle at a predetermined value of the sensed pressure in said measuring tube, said predetermined value exceeding the corresponding ambient pressure provided by the respiratory gas discharging from said at least one jet nozzle into the endotracheal tube such that in the event of a kinking or otherwise blockage of said measuring tube the pressure therein will in turn at least approximately correspond to such ambient pressure and will increase under the substantially constant flow rate of the fluid supplied thereto until the pressure sensed exceeds said predetermined amount for shutting off the flow of said at least one jet nozzle.

4,535,767

OXYGEN DELIVERY APPARATUS

Brian L. Tiep, 632 Norumbega Dr., Monrovia, Calif. 91016; Robert E. Phillips, 12217 Iredell St., Studio City, Calif. 91601, and Ben A. Otsap, 7661 Airport Blvd., Los Angeles, Calif. 90045

Filed Oct. 1, 1982, Ser. No. 432,187

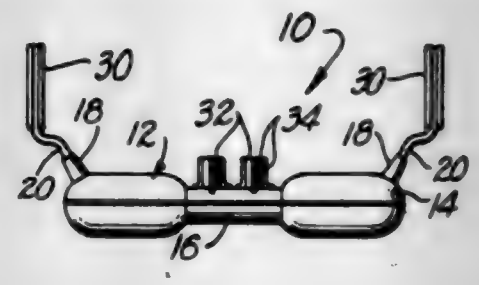
Int. Cl.³ A61M *16/00*

U.S. Cl. 128—207.18 7 Claims

1. An oxygen delivery apparatus including cannula means for use in conveying gases into and out of the human body through the nostrils, oxygen supply line means for conveying oxygen to said apparatus and inhalation and exhalation responsive flow control means connected to said cannula means and said supply line means for controlling the flow of oxygen to said cannula means as said apparatus is used in which the improvement comprises:

said cannula means being sufficiently small so that they will not close off air flow through the nostrils of the human body,

said flow control means including an elongated receptacle with first and second opposite ends and defining an open sided elongated chamber extending therebetween, said supply line means connected into the interior of said chamber and said cannula means connected to the interior of the chamber, said receptacle further having an elongated diaphragm means formed of flexible material and mounted on said receptacle over said open side thereby enclosing said chamber, said diaphragm means being mounted transversely to said cannula means to move forward and away from said cannula means, said supply line means and said cannula means spaced from one another by said chamber a sufficient distance so that gas flow from said supply line means will be through said enclosed chamber and will be capable by forcing gas from within said chamber out through said cannula means,



said supply line means being connected to said cannula only through the interior of said chamber, said diaphragm means having a side opposite the side adjacent said enclosed chamber communicating with the surrounding atmosphere,

said diaphragm means being sufficiently flexible and responsive to pressures that are developed during inhalation and exhalation so as to receive gas in said chamber during exhalation and to substantially close off the flow of gas between said supply line means and cannula means through said chamber in response to inhalation.

4,535,768

SET OF SURGICAL INSTRUMENTS

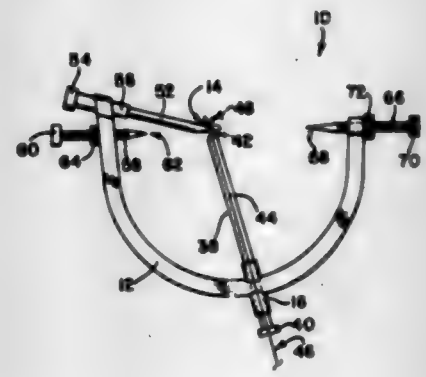
Donald H. Hourahane, Roodepoort, and Angus E. Strover, Halfway House, both of South Africa, assignors to South African Inventions Development Corporation, Pretoria, South Africa

Filed Aug. 25, 1982, Ser. No. 411,711

Claims priority, application South Africa, Aug. 26, 1981, 81/5918

Int. Cl.³ A61F *17/32, 5/04*

U.S. Cl. 128—305.1 15 Claims



1. A set of surgical instruments suitable for threading a surgical implant in the form of a tow of carbon fibers through a passage formed in a bone, which comprises:

an elongated adaptor having an interior elongated guide formation extending along its length for insertion into a passage in a bone;

a flexible fish wire having a leading end provided with a forwardly tapering and resiliently deformable connector portion; and

a frame for supporting the adaptor, said frame including an extraction member having a passage therethrough and said frame being adapted to position said extraction member so that said passage thereof is in alignment with the interior elongated guide formation of the adaptor,

the fish-wire being insertable, leading end first, along the guide formation of the adaptor when the adaptor is located in a passage in a bone and the connector portion of the fish-wire being deformably insertable in its forward direction through the passage of the extraction member, and being adapted resiliently to spring back into shape with sufficient resistance to withdrawal in the rearward direction to permit the fish-wire to be pulled in the forward direction by the extraction member.

4,535,769

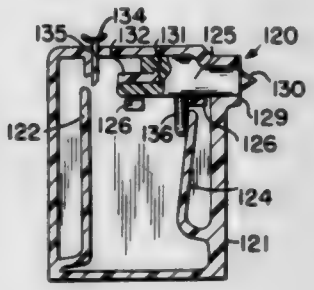
AUTOMATIC RETRACTABLE LANCET ASSEMBLY

James A. Burns, Elizabeth, N.J., assignor to Becton, Dickinson and Company, Paramus, N.J.

Division of Ser. No. 322,344, Nov. 18, 1981, abandoned, which is a continuation-in-part of Ser. No. 246,523, Mar. 23, 1981, Pat. No. 4,388,925. This application Jan. 20, 1984, Ser. No. 572,339

Int. Cl.[3] A61B *17/34*

U.S. Cl. 128—314 **4 Claims**



1. An automatic retractable lancet assembly comprising

a housing having an aperture;

a lancet mounted for movement in said housing with its point lying substantially adjacent the interior side of said aperture;

a first spring mounted inside said housing in a substantially relaxed condition and adapted to be compressed in a biased condition and further adapted to decompress upon release to cause the movement of said lancet point outward of said aperture for penetration of the skin of a patient;

said first spring adapted to become dissociated from further movement of said lancet after said lancet completes its outward movement;

actuating means for compressing said first spring into a biased condition;

latching means connected to said actuating means for retaining said first spring in said biased condition until use;

release means slidable through said housing for releasing said first spring from its biased condition;

said release means including a sharp point for permanently severing said latching means;

a second spring inside said housing in a substantially relaxed condition before said first spring is released and adapted to become biased when said first spring becomes dissociated from further movement of said lancet to cause said lancet point to be automatically retracted back inside said housing.

4,535,770

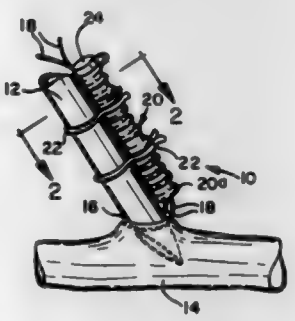
CARDIOVASCULAR TOURNIQUET

Gerald M. Lemole, 404 Tomlinson Rd., Huntingdon Valley, Pa. 19046

Filed Nov. 2, 1983, Ser. No. 547,985

Int. Cl.[3] A61M *25/02*

U.S. Cl. 128—327 **8 Claims**



1. A tourniquet for use in support of a cannula operatively inserted into a blood vessel comprising:

a tubular member;

a plurality of protruding members disposed about the outer surface of said tubular member and separated along its length; and

a plurality of clip members adapted to be fastened about the cannula and disposed to engage said tubular member between said protruding members.

4,535,771

CALCULUS DISINTEGRATING APPARATUS

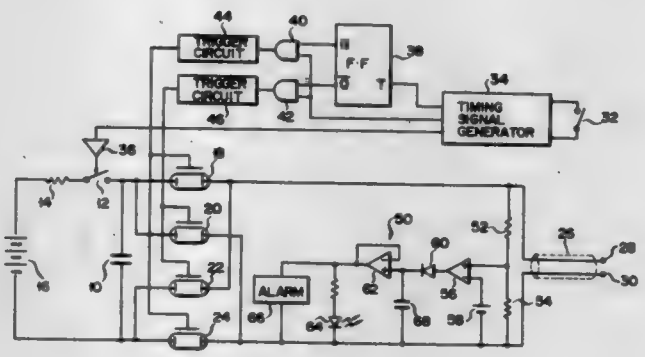
Syuichi Takayama, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1982, Ser. No. 449,699

Claims priority, application Japan, Dec. 22, 1981, 56-206107; Dec. 26, 1981, 56-214252; Jan. 19, 1982, 57-6576

Int. Cl.[3] A61B *17/22, 17/36*

U.S. Cl. 128—328 **4 Claims**



1. A calculus disintegrating apparatus, which comprises:

first and second electrodes provided separately from each other;

discharge energy source means including a D.C. power source and a capacitor arranged to be charged by the D.C. power source, wherein said discharge energy source means is connected to said first and second electrodes to apply a D.C. impulse voltage across said first and second electrodes when the capacitor is discharged;

polarity changing means which is connected to said capacitor, and arranged to change the polarity of D.C. impulse voltage applied across said first and second electrodes in response to each discharge of said capatitor;

wherein said polarity changing means comprises a switching circuit connected between said capacitor and said D.C. power source for selectively defining the direction in which charge current flows from said D.C. power source to said capacitor; and

said switching circuit comprises a first switch connected

between one end of said capacitor and the positive terminal of said D.C. power source, a second switch connected between said one end of said capacitor and the negative terminal of said D.C. power source, a third switch connected between the other end of said capacitor and the positive terminal of said D.C. power source, a fourth switch connected between the other end of said capacitor and the negative terminal of said D.C. power source, a first actuator for closing said first and said fourth switches, a second actuator for closing said second and said third switches, and a flip-flop circuit having a trigger input connected to receive switch signals for alternately operating said first and said second actuators in response to each succeeding switch signal applied to said trigger input.

4,535,772

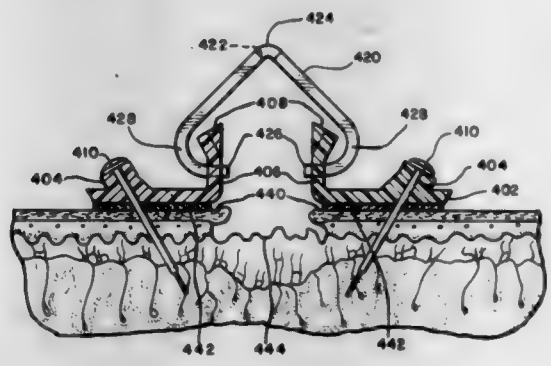
SKIN CLOSURE DEVICE

Joseph C. M. Sheehan, Burr Ridge, Ill., assignor to Kells Medical, Incorporated, Burr Ridge, Ill.

Continuation-in-part of Ser. No. 472,053, Mar. 10, 1983, , which is a continuation-in-part of Ser. No. 367,671, Apr. 12, 1982, abandoned. This application Jun. 3, 1983, Ser. No. 500,854

Int. Cl.³ A61B *17/08*

U.S. Cl. 128—337 **20 Claims**



1. A skin closure device for closing a skin wound which defines first and second wound margins separated by a denuded region, said device comprising:

first and second attachment members;

means for adhesively securing the first and second attachment members to the skin alongside the first and second wound margins, respectively;

means for mechanically securing the first and second attachment members to the skin alongside the first and second wound margins; and

means for interconnecting the first and second attachment members across the wound to adjustably control the separation therebetween through a range of at least 0.5 inches in order to to allow said separation to be reduced gradually and progressively in order to close the denuded region gradually;

said means for adhesively securing and said means for mechanically securing configured such that the attachment members can be adhesively secured to the skin prior to being mechanically secured to the skin.

4,535,773

SAFETY PUNCTURING INSTRUMENT AND METHOD

InBae Yoon, 2101 Highland Ridge Dr., Phoenix, Md. 21131

Filed Mar. 26, 1982, Ser. No. 362,410

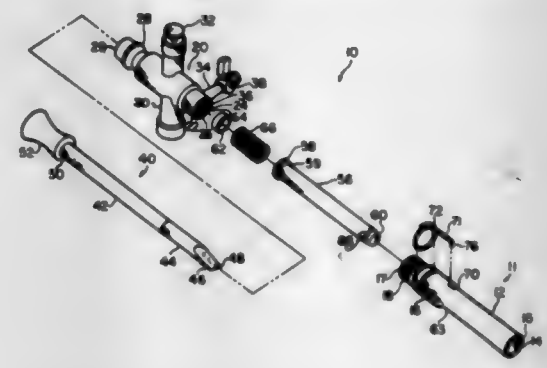
Int. Cl.³ A61B *17/34*

U.S. Cl. 604—51 **55 Claims**

1. A surgical instrument for providing communication through an anatomical organ structure, comprising:

means providing a first lumen for accommodating longitudinal interior passage of a shaft of an elongate implement, said elongate implement having a proximal section exhibiting a transverse cross-sectional dimension greater than the transverse cross-sectional dimension of said shaft and a distal end, said accommodating means including means having an abutment surface for preventing passage of said proximal section through said first lumen;

shielding means providing a second lumen permitting longitudinal interior passage of said elongate implement through said second lumen and having a distal end terminating in a bearing surface open to longitudinal passage of said elongate implement, for reciprocating longitudinally inside said first lumen between said accommodating means and said shaft while said proximal section of said elongate implement is held against said abutment surface; and



means positionable between said accommodating and shielding means for biasing said bearing surface to protrude beyond the distal end of said first lumen and for permitting a section of said shielding means to recede into said first lumen while said proximal section of said elongate implement is held against said abutment surface when said bearing surface is subjected to force along its longitudinal axis, whereby said shielding means obstructs anatomical members from making inadvertent contact with the distal end of said elongate implement when said distal end of said implement is extended beyond said distal end of said first lumen.

4,535,774

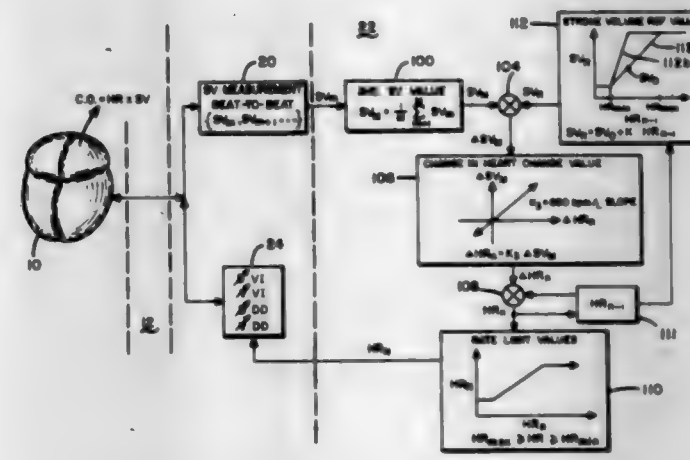
STROKE VOLUME CONTROLLED PACER

Walter H. Olson, North Oaks, Minn., assignor to Medtronic, Inc., Minneapolis, Minn.

Filed Jun. 30, 1983, Ser. No. 509,573

Int. Cl.³ A61N *1/36*

U.S. Cl. 128—419 PG **6 Claims**



1. A cardiac pacer for the therapeutic stimulation of a heart comprising:

lead system means for coupling said pacer to the patient's heart;

measuring means coupled to said lead for inferring the stroke volume of said heart from the measurement of a physiologic parameter and for producing a measurement indicative of stroke volume;

computation and control means coupled to said measuring means for determining a heart rate value in response to

said stroke volume measurements wherein said heart rate is defined as the V—V interval;

means for comparing the value of said stroke volume measurement with the value of a stroke volume set point for producing a stroke volume difference value;

means for determining a heart rate difference value, wherein said heart rate value is defined as the V—V interval, from said stroke volume difference value;

means for adding said heart rate difference value to the previous heart rate value yielding a current, heart rate value; and

pulse generator means coupled to said lead system and said computational and control means for providing stimulation pulses to said heart at a frequency which is a function of said heart rate value.

4,535,775

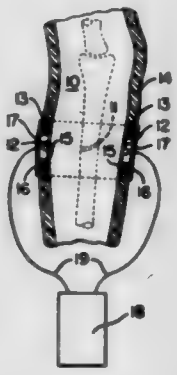
METHOD FOR TREATMENT OF NON-UNION BONE FRACTURES BY NON-INVASIVE ELECTRICAL STIMULATION

Carl T. Brighton, Malvern, and Solomon R. Pollack, Dresher, both of Pa., assignors to Biolectron, Inc., Hackensack, N.J.

Filed Feb. 10, 1983, Ser. No. 465,526

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 F 6 Claims



1. A method for the treatment of a bone fracture in a living human body comprising the steps of disposing at least one pair of electrodes in contact with the skin of a living human body in proximity to the bone fracture, supplying to said electrodes an alternating electric signal of symmetrical waveform relative to the axis and of substantially constant amplitude, said signal having a frequency in the range from about 20 to 100 KHz and a value in the range from about two volts peak to peak to ten volts peak to peak, and continuing the application of said signal to said electrodes for a period of time sufficient to produce healing of said bone fracture.

4,535,776

CARDIAC PACEMAKER WITH TWO UNIPOLAR ELECTRODES

Hans G. Strandberg, Sundbyberg, and Hans Andersen, Vaellingby, both of Sweden, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

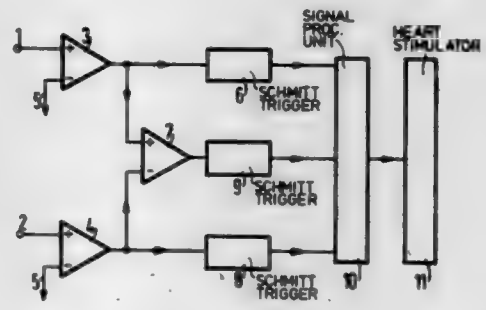
Filed Dec. 12, 1983, Ser. No. 560,712

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247264

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—419 PG 5 Claims

1. In a cardiac pacemaker comprising (a) two unipolar electrodes; (b) one indifferent electrode, (c) a series-connected amplifier and detector coupled to each of said unipolar electrodes, and (d) means for generating and controlling heart stimulation pulses in dependence upon the ouput signals of said detectors; the improvement comprising signal processing means, responsive to said output signals of said detectors, for suppressing the application of said output signals to said means



for generating heart stimulation pulses when both of said detectors produce output signals at substantially the same time.

4,535,777

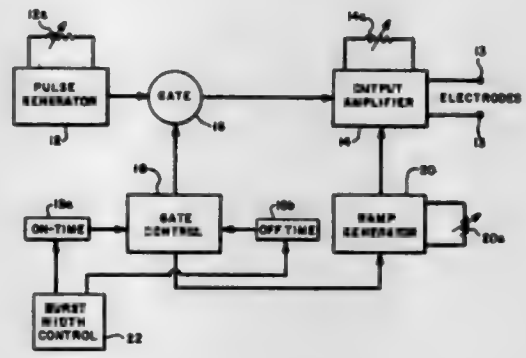
METHOD OF PROVIDING ELECTRICAL STIMULATION OF TISSUE

John C. Castel, Lake Bluff, Ill., assignor to Physio Technology, Inc., Topeka, Kans.

Continuation of Ser. No. 294,715, Aug. 20, 1981, abandoned. This application Sep. 28, 1984, Ser. No. 656,403

Int. Cl.[3] A61N *1/36*

U.S. Cl. 128—421 25 Claims



1. A method of providing electrical stimulation of tissue comprising:

generating a continuous train of repetitive pulses having a frequency in the range of 500 Hz to 100,000 Hz;

gating said pulse train to produce an output signal having intervals of continuous pulse train output alternated with intervals of no pulse train output in the frequency range of 0.1 to 200 Hz; and

delivering said output signal through electrodes to a tissue treatment area, said sequence of intervals of the pulse train output signal having a width of each successive interval different than the preceding and successive intervals.

4,535,778

METHOD AND APPARATUS FOR DETECTING BLOOD GAS

Sotiris Kitrilakis, Berkeley, and Theodore R. Johnson, Point Reyes, both of Calif., assignors to Ancet Corporation, Richmond, Calif.

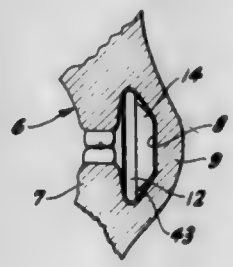
Filed May 13, 1983, Ser. No. 494,534

Int. Cl.[3] A61B *5/00*

U.S. Cl. 128—635 9 Claims

1. A blood gas detector comprising a positioning assembly including a flat base plate of approximately elliptical outline and of a thickness adapted to fit within the closed human mouth alongside and against both the upper and lower gums and the inside of the adjacent cheek and of a width to fit against the upper and lower merging portions of the inside of the cheek and the gums, a dome included in said positioning assembly and disposed on and projecting away from said base plate to displace the inside surface of said cheek to lie over said dome, a first sensing electrode disposed at the center of said

dome and adapted to lie close to the inside of said cheek, a second sensing electrode disposed around the center of said dome spaced from and in electrical relationship with said first



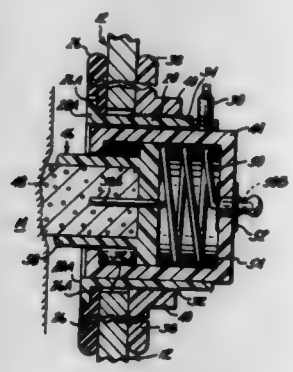
electrode and adapted to lie close to the inside of said cheek, and sensing electrical conductors respectively joined to said sensing electrodes and supported by and extending from said base plate.

4,535,779

TRANSCUTANEOUS ELECTRODE DEVICE FOR CAST-COVERED SITES

Stephen H. Ober, Chaska, Minn., assignor to EMPI, Inc., Fridley, Minn.

Filed Mar. 4, 1983, Ser. No. 472,086
Int. Cl.³ A61B *5/04*; A61N *1/04*
U.S. Cl. 128—644 **31 Claims**



1. An apparatus for providing electrical connection to anatomical site through an intervening cast which surrounds a portion of a patient's body and overlies and restricts access to the site, the apparatus comprising:

support means adapted to be attached to and supported by the cast in spaced relationship to the site for defining an aperture through the cast; the support means comprising:

aperture defining means for extending through the cast to define the aperture through the cast which is aligned with the site;

first and second cast engaging means extending generally radially outward from the aperture defining means for engaging interior and exterior surfaces of the cast, respectively; and

connection means for connecting the first and second cast engaging means and the aperture defining means in fixed relationship;

an electrode comprising:

a carrier which is insertable into the aperture from outside the cast toward the anatomical site and removable from the aperture by movement away from the anatomical site;

an electrically conductive medium carried at a first end of the carrier for making electrical contact to the anatomical site when the carrier is inserted in the aperture; and

electrical connection means adjacent a second end of the carrier for providing electrical connection to the electrically conductive medium; and

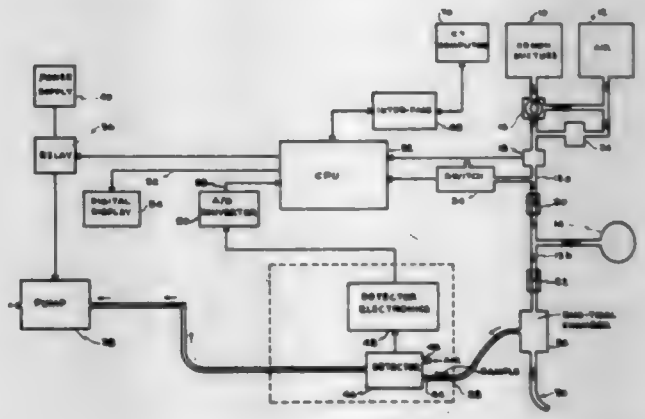
means for releasably holding the carrier in a fixed position with respect to the support means when the carrier is inserted in the aperture.

4,535,780

APPARATUS FOR MEASURING XENON CONCENTRATION IN XENON CEREBRAL BLOOD-FLOW STUDIES

David Gur; John M. Herron, both of Pittsburgh, Pa., and Robert H. Pedersen, Milwaukee, Wis., assignors to General Electric Company, Milwaukee, Wis.

Filed Nov. 7, 1984, Ser. No. 669,136
Int. Cl.³ A61B *6/00*
U.S. Cl. 128—659 **11 Claims**



1. An apparatus for measuring end-tidal xenon concentration in samples of air exhaled by a patient breathing a xenon-gas-containing atmosphere, said xenon gas concentration measurement being useful in combination with CT X-ray attenuation measurements to reconstruct images containing cerebral blood-flow information, said apparatus comprising:

means for retaining xenon-containing end-tidal air exhaled by the patient;

means for sensing the beginning of the inhalation portions of successive breathing cycles, and providing signals indicative thereof;

thermal conductivity gas-detector means capable of providing an output signal indicative of the concentration of xenon gas in a sample of the exhaled end-tidal air;

pump means for drawing a sample of end-tidal air from said means for retaining; and

control means responsive to each of said signals from said means for sensing to provide an activating signal to said pump means to draw a sample of end-tidal air held in said means for retaining into said thermal conductivity detector for analysis.

4,535,781

MANUALLY OPERATED ULTRASOUND APPLICATOR

Walter Hetz, Erlangen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,785
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1982, 3215529
Int. Cl.³ A61B *10/00*
U.S. Cl. 128—660 **1 Claim**

1. A manually operated ultrasound applicator for scanning tissues and internal organs of a living subject, comprising:

an ultrasound transducer which is mounted in an elongated transducer housing having a scanning surface for placement on a region to be scanned and a bearing bracket mounted to an end thereof and projecting horizontally outwardly therefrom;

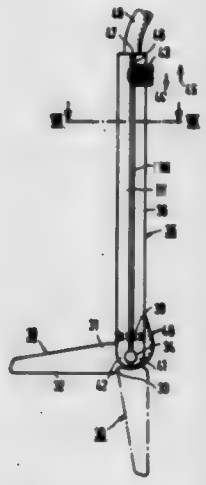
an elongated handle, said handle being divided into first and second half shells separated by an elongated slot;

a bearing pin pivotally connecting the bearing bracket to a first end of the handle, said pin being embraced between said half shells and being rotatable therebetween, whereby the housing is pivotable with respect to the handle;

at least one screw extending transversely between said half shells adjacent said bearing pin to create a center of rota-

tion of the handle and to thereby cause said half shells at said first end to act as jaws; and

a sleeve means slidably mounted on the handle on that side of the center of rotation which is opposed to said first end,



said sleeve bearing against the half shells to force them apart and thereby change the spacing between the half shells as a function of its position on the handle, permitting the housing to be locked in position with respect to the handle.

4,535,782

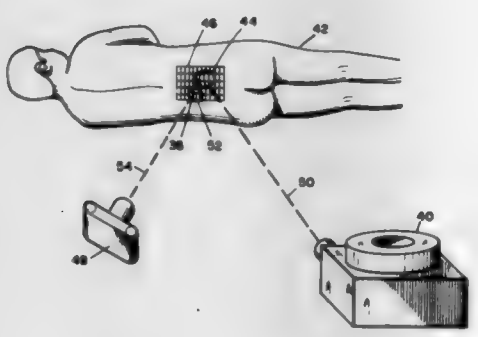
METHOD FOR DETERMINING WOUND VOLUME

Bart J. Zoltan, Old Tappan, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Mar. 7, 1984, Ser. No. 586,895

Int. Cl.³ A61B *5/00*

U.S. Cl. 128—665 **10 Claims**



1. A method of determining the volume of a wound comprising:

(a) placing a reference volume of known geometry adjacent a wound,

(b) projecting a pattern of lines onto said wound and unto an area contiguous with said wound,

(c) imaging said wound and said contiguous area from said projecting step, with means for imaging,

(d) obtaining the image from said imaging step,

(e) measuring the area of said image bounded by the projected pattern of the lines on said wound surface, and by the projected pattern of the lines were said wound not present, and

(f) using the areas from said measuring step and said reference volume to calculate said volume of said wound.

4,535,783

PERSONAL ELECTROCARDIOLOGY RECORDER

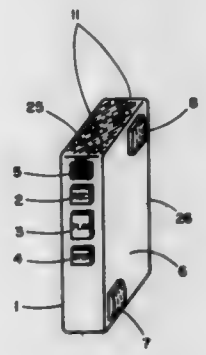
Daniele Marangoni, Milan, Italy, assignor to Kontron Holding A.G., Zurich, Switzerland

Filed Aug. 1, 1983, Ser. No. 518,859

Claims priority, application Switzerland, Aug. 5, 1982, 4717/82

Int. Cl.³ A61B *5/04*

U.S. Cl. 128—711 **17 Claims**



1. A hand-held electrocardiology recorder for recording heart signals of a patient comprising:

(a) a hand-held tape recording means having a casing with at least first and second walls;

(b) a measuring electrode and a reference electrode disposed on the first wall of the casing for contacting the chest of the patient and detecting heart signals;

(c) a grounding electrode disposed on the second wall of the casing such that electrical contact between the patient's chest and the grounding electrode can be made by the patient's hand touching the grounding electrode while the patient's wrist contacts the chest;

(d) amplifier means located within the casing for amplifying the signals detected by the electrodes; and

(e) converter means located within the casing for converting the detected and amplified signals into recordable signals.

4,535,784

APPARATUS FOR STIMULATING ACUPUNCTURE POINTS BY LIGHT RADIATION

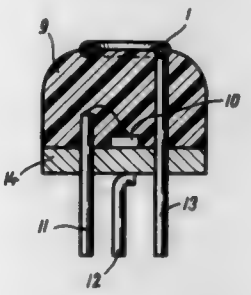
Vojtech Rohlicek; Jaroslav Hruby; Dusan Nohavica; Jan Hrdlicka; Vlastimil Vykouk, and Frantisek Kubec, all of Prague, Czechoslovakia, assignors to Ceskoslovenska akademie ved, Prague, Czechoslovakia

Continuation of Ser. No. 431,121, Sep. 30, 1982, abandoned. This application Nov. 29, 1984, Ser. No. 676,220

Claims priority, application Czechoslovakia, Oct. 9, 1981, 7420-81; Oct. 13, 1981, 7477-81; Apr. 22, 1982, 2889-82; May 24, 1982, 3816-82

Int. Cl.³ A61H *39/00*

U.S. Cl. 128—735 **3 Claims**



1. An apparatus for stimulating acupuncture points on the skin of a living subject by light radiation and for detecting acupuncture points on the skin of a living subject by evaluating variations in skin impedance, comprising a light emitting diode and a surface electrode, said surface electrode being mounted

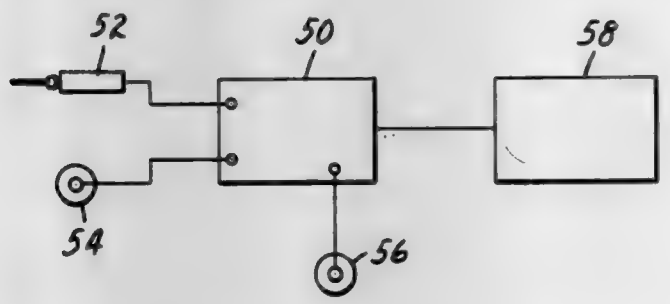
on the surface of the light emitting diode for contact with the skin of the subject, a source of electric current for feeding the light emitting diode, circuit means for electrically connecting the light emitting diode with the source of electric current, and indicator means for evaluating variations in the impedance of skin of the subject at the location engaged by the suface electrode.

4,535,785

METHOD AND APPARATUS FOR DETERMINING THE VIABILITY AND SURVIVAL OF SENSORI-NEUTRAL ELEMENTS WITHIN THE INNER EAR

Christopher van den Honert, St. Paul, and Paul H. Stypulkowski, Vadnais Heights, both of Minn., assignors to Minnesota Mining and Manufacturing Co., St. Paul, Minn.

Filed Sep. 23, 1982, Ser. No. 421,992
Int. Cl.³ A61B *5/05, 5/12*
U.S. Cl. 128—746 **15 Claims**



1. A method of diagnosing the extent of survival of the peripheral sensori-neural elements with a patient, comprising the steps of:

stimulating the inner ear of the patient with a first electrical stimulus signal and a second electrical stimulus signal having a first predetermined delay with respect to said first electrical stimulus signal;

measuring the electrical activity within the nervous system of the patient which results from said first electrical stimulus signal and said second electrical stimulus signal having a first predetermined delays

then stimulating the inner ear of the patient with said first electrical stimulus signal and said second electrical stimsulus signal having a second predetermined delay with respect to said first electrical stimulus signal;

measuring the electrical activity within the nervous system of the patient which results from said first electrical stimulus signal and said second electrical stimulus signal having a second predetermined delay; and

comparing the electrical activity within the nervous system of the patient which results from said first and second electrical stimulus signals with said first predetermined delay with the electrical activity within the nervous system of the patient which results from said first and second electrical stimulus signal with said second predetermined delay.

4,535,786

MEASUREMENT OF BODY FLUID CHEMISTRY

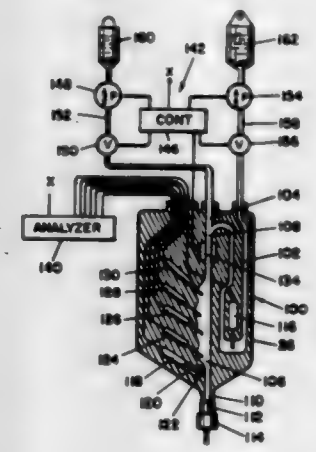
John A. R. Kater, 2037 W. San Lorenzo, Santa Ana, Calif. 92704

Filed Jul. 25, 1983, Ser. No. 516,627
Int. Cl.³ G01N *27/46*
U.S. Cl. 128—760 **10 Claims**

1. The method of measuring a chemical property of a body fluid using a conduit which terminates in a quantity of the body fluid and which incorporates a first electrode selective to said property and a second, reference electrode at spaced points along its length, which method comprises the steps of:

filling said conduit with a quantity of reference fluid sufficiently to subject both of said electrodes to the reference fluid; and

at another time, filling said conduit with a quantity of the reference fluid such that the reference electrode is subjected to reference fluid, and with a quantity of the body



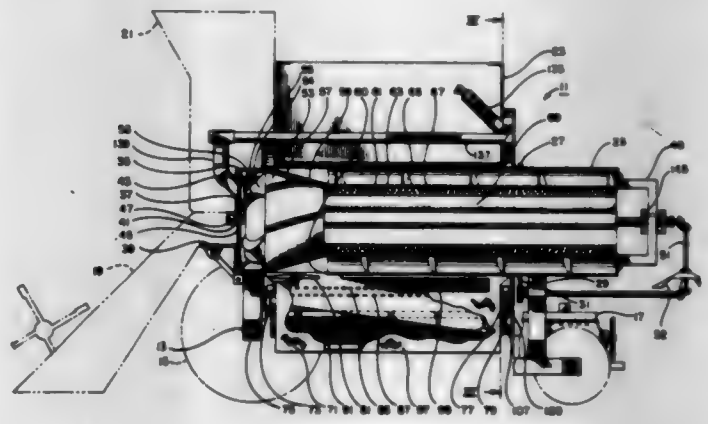
fluid such that the first electrode is subjected to the body fluid.

4,535,787

AXIAL FLOW COMBINE

Mark R. Underwood, Burr Oak, Kans., assignor to Probe Adventures, Inc., Burr Oak, Kans.

Division of Ser. No. 409,294, Aug. 18, 1982, Pat. No. 4,487,733. This application Jun. 21, 1984, Ser. No. 622,887
Int. Cl.³ A01F *12/18*
U.S. Cl. 130—27 T **5 Claims**



1. In a combine having a frame mounted on wheels, an improved means for threshing and separating grain from crop, comprising:

an outer body mounted on the frame;

an inner body mounted inside the outer body for rotation with respect to the frame, the inner body containing a plurality of slots;

an outer helical flight located between the inner and outer bodies and spiraled for causing grain that has fallen through the slots to move forwardly as the inner body rotates;

a hollow grate mounted at the forward end of the inner body for rotation therewith and having a sidewall containing a plurality of apertures for threshed grain to pass, the grate being frusto-conical with a circular entrance for receiving crop and having a circular exit spaced rearwardly for discharging crop, the entrance of the grate being of larger diameter than the exit;

a threshing drum mounted inside the grate, the threshing drum having a frusto-conical sidewall with a larger forward end than a rearward end;

a beater rigidly mounted to the threshing drum and extending rearwardly through the inner body, the threshing drum and beater being driven in a direction opposite to the direction of rotation of the inner body; and

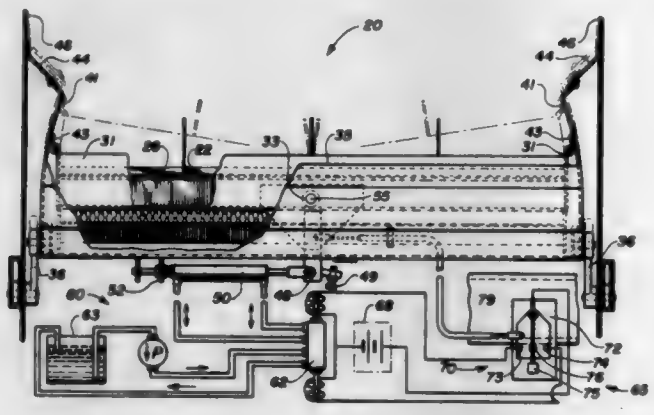
inner flight means mounted inside the inner body for causing crop to move rearwardly for discharge as the inner body rotates.

4,535,788

LATERAL LEVELING MECHANISM FOR COMBINE CLEANING APPARATUS

E. William Rowland-Hill, and Ronald T. Sheehan, both of Lancaster, Pa., assignors to Sperry Corporation, New Holland, Pa.

Filed Oct. 11, 1984, Ser. No. 659,932
Int. Cl.[3] A01F *12/32*
U.S. Cl. 130—27 AE **13 Claims**



1. In a combine harvester having a mobile frame; threshing and separating means supported by said main frame to thresh crop material fed thereto for separating threshed grain from trash residue, said threshing and separating means being operable to convey threshed grain for further harvesting treatment and to discharge the crop residue along a path separate from said threshed grain; cleaning means supported by said main frame in flow communication with said threshing and separating means to receive threshed grain therefrom and to clean debris from said threshed grain, said cleaning means having first sieve means to permit the passage of cleaned grain therethrough, a fan operable to blow air through said first sieve means to facilitate the removal of debris from said threshed grain, a grain pan for receiving threshed grain from said threshing and separating means, and conveying means to convey said threshed grain from said grain pan to said first sieve means; and drive means for powering the operation of said threshing and separating means and said cleaning means, the improvement comprising:

a subframe supported on said main frame for movement about a generally fore-and-aft extending axis such that said subframe can be tilted in a transverse direction relative to said main frame, said subframe mounting said grain pan and said first sieve means for lateral pivotal movement relative to said main frame without affecting movement of said fan relative to said main frame;

an actuator operably associated with said subframe for selectively controlling the pivotal movement of said subframe to permit said grain pan and said first sieve means to be maintained in a transversely level attitude relative to the ground irrespective of the transverse attitude of said main frame; and

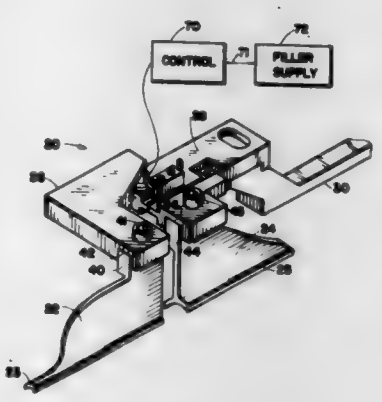
control means operable to sense the transverse inclination of said main frame and control the subsequent operation of said actuator to maintain a transversely level attitude of said actuator to maintain a transversely level attitude of said subframe, said control means including an inclinometer mounted on a transversely extending portion of said main frame and having a first contact member movable in response to gravitational forces when said main frame is laterally inclined and a second contact member movable in response to movements of said subframe.

4,535,789

TOBACCO ROD FIRMNESS SENSOR

Christopher L. Irving, Chesterfield, and Jerome S. Osmalov, Richmond, both of Va., assignors to Philip Morris, Inc., New York, N.Y.

Filed Aug. 2, 1983, Ser. No. 519,605
Int. Cl.[3] A24C *5/14*
U.S. Cl. 131—84.1 **7 Claims**



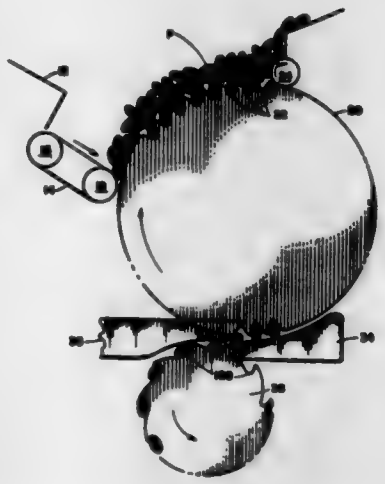
1. In a cigarette making machine of a type having means for forming, from tobacco filler and tobacco paper, a continuous tobacco rod between a tapered concave garniture and a tapered concave tongue, the improvement comprising: the tongue being divided into an upstream portion and a downstream portion; said portions being independently mounted to said machine; and, sensing means for measuring the force exerted on said upstream portion by the filler compressed between said upstream portion and the garniture and for providing an indication of the force.

4,535,790

METHOD AND APPARATUS FOR ALIGNING OVAL CIGARETTE FILTERS

Jack C. Wheless, Richmond, Va., assignor to Philip Morris Incorporated, New York, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,809
Int. Cl.[3] A24C *5/32*
U.S. Cl. 131—94 **13 Claims**



1. A cigarette tipping machine comprising: a hopper; feed means for receiving filter plugs of oval cross section from said hopper for presenting the filter plugs at a predetermined point with a predetermined angular orientation; said feed means comprising a plug drum located adjacent said hopper for receiving filter plugs at predetermined locations about the peripheral surface of said plug drum, said plug drum including means for retaining filter plugs thereon at said predetermined locations; said plug drum having a respective flute at each said predetermined location for receiving a filter plug therein within a predetermined seating zone; refuser means for preventing a filter plug received in one said flute but protruding

from the respective said seating zone from leaving said hopper; a plurality of rotating drum means for transporting the filter plugs along a predetermined path from said predetermined point; said rotating drum means each having a plurality of flutes in their peripheral surfaces, each said flute having an oval shape to fit the oval filter plugs with which said machine is to be used; means for supplying oval tobacco rods and aligning them with respective filter plugs; and means for applying tipping material to assemblies comprising a filter plug and a tobacco rod, for securing the filter plug to the tobacco rod.

4,535,791

SMOKING COMPOSITIONS CONTAINING ACYLPYRAZINE ETHER FLAVORANTS

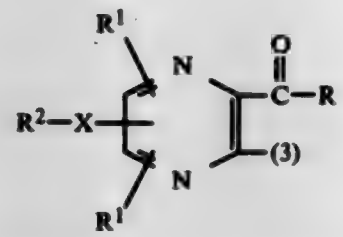
David L. Williams; Everett W. Southwick, and Yoram Houminer, all of Richmond, Va., assignors to Philip Morris Incorporated, Richmond, Va.

Filed Jan. 10, 1984, Ser. No. 569,693

Int. Cl.[3] A24B *3/12, 15/38*

U.S. Cl. 131—278 7 Claims

1. A smoking composition comprising an admixture of (1) combustible filler selected from natural tobacco, reconstituted tobacco, non-tobacco substitutes, and mixtures thereof, and (2) between about 0.00001 and 2 weight percent, based on the total weight of filler of an acylpyrazine ether corresponding to the formula:



where R is a substituent selected from aliphatic, alicyclic and aromatic groups containing between about 2–12 carbon atoms, R^1 is a substituent selected from hydrogen and alkyl groups containing between about 1–6 carbon atoms, X is etheric oxygen or sulfur, and R^2 is a substituent selected from aliphatic, alicyclic and aromatic groups containing between about 1–12 carbon atoms, with the proviso that the position-(3) substituent is not hydrogen.

4,535,792

APPARATUS FOR TREATING PERFORATED WEBS OF TIPPING PAPER OR THE LIKE

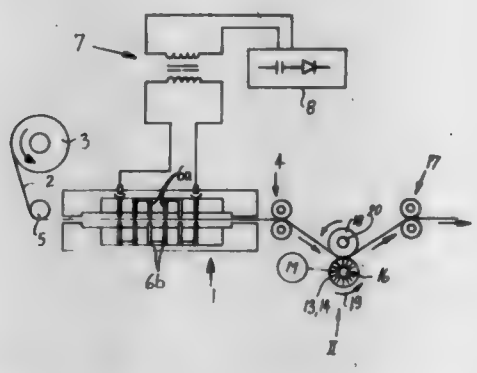
Rolf Lindemann, Oststeinbek, Fed. Rep. of Germany, assignor to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Sep. 17, 1982, Ser. No. 419,394

Claims priority, application Fed. Rep. of Germany, Feb. 17, 1982, 3205661

Int. Cl.[3] A24F *5/60*

U.S. Cl. 131—281 9 Claims



1. Apparatus for treating a running perforated web which is advanced along a predetermined path and whose perforations are formed by the application of heat to and resulting burning or charring of portions of the material of the web, comprising a mechanical wiping device adjacent to at least one side of said path and bodily contacting the respective side of the running web; and a back support disposed at the other side of said path opposite said wiping device.

4,535,793

SMOKING ARTICLE FILTERS

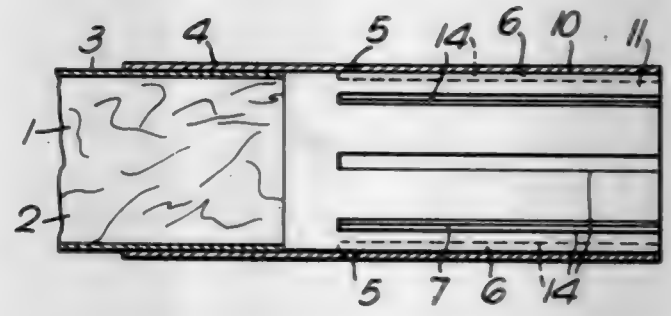
John A. Luke, Eastleigh, England, assignor to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 18, 1983, Ser. No. 514,990

Claims priority, application United Kingdom, Aug. 18, 1982, 8223775

Int. Cl.[3] A24D *3/04*

U.S. Cl. 131—336 8 Claims



1. A smoking article ventilated filter element comprising a plug of fibrous filtration material wrapped in an air permeable wrapper, a plurality of equiangularly spaced apart grooves extending parallel to the longitudinal axis of the filter element from the mouth end of the element for a distance less than the total length of the element, each groove being defined in the wrapper by a longitudinal strip of wrapper being removed exposing the fibrous material of the plug.

4,535,794

MACHINE HAVING A COIN OR TOKEN PAYOUT MECHANISM

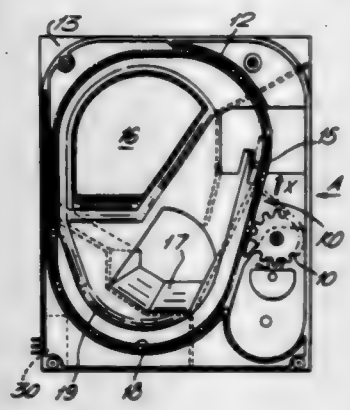
Robert D. Bellis, Nr. Oldham; Timothy W. Tod, Abergavenny, and Roger J. Tod, Crickhowell, all of Great Britain, assignors to Coin Controls Limited, Lancashire, England

Filed Nov. 18, 1982, Ser. No. 442,801

Claims priority, application United Kingdom, Nov. 20, 1981, 8135027

Int. Cl.[3] G07D *9/04*

U.S. Cl. 133—8 E 22 Claims



1. A coin dispensing mechanism comprising a selectably drivable endless loop conveyor whose path includes a bight portion, a store for continuously feeding a supply of the coins to be dispensed into said bight, the conveyor having a plurality of upstanding lips thereon extending obliquely across the width of the conveyor, in parallel relationship and with a

spacing greater than one but less than two coin diameters, the conveyor also having stirrer means thereon for stirring the supply of coins in the bight when the conveyor is driven and causing coins to drop into the spaces between adjacent lips, the entrained coins thence being transported upwardly by conveyor to an exit point above the bight where the coins are fed from the conveyor.

4,535,795

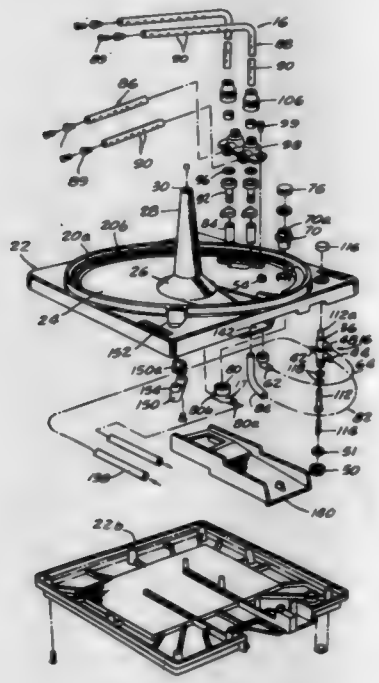
NON-ELECTRIC PORTABLE DISHWASHER

Frank J. P. Taylor, 25301 Cabot Rd., Laguna Hills, Calif. 92653

Continuation-in-part of Ser. No. 441,384, Nov. 12, 1982, Pat. No. 4,444,213, which is a continuation-in-part of Ser. No. 205,710, Nov. 13, 1980, Pat. No. 4,368,747. This application Apr. 23, 1984, Ser. No. 602,836

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—93 **8 Claims**



1. A dishwasher, comprising:

(a) a base;

(b) a closure housing carried by said base;

(c) a rack rotatably mounted within said housing, said rack being adapted to support articles to be washed;

(d) jet means adapted for interconnection with sources of hot and cold water under pressure for directing jets of water in the direction of said rack to impart rotational movement thereto, said jet means comprising:

(1) a first collimated jet means for emitting a collimated stream of cold water in the direction of said rack for initiating rotation of said rack;

(2) a second spray jet means for emitting jets of cold water in the direction of said rack for sustaining rotation thereof;

(3) a third spray jet means for emitting jets of hot water in the direction of said rack for cooperating with said second spray means to sustain rotation of said rack; each of said second and third spray jet means comprising at least one apertured conduit disposed within said closure housing proximate said rack; and

(4) control means for controllably and simultaneously regulating the flow of water between said first collimated jet means and said second spray jet means whereby a stream of cold water can be directed at said rack with sufficient velocity to initiate rotation thereof.

4,535,796

SEISMIC ACTUATED SHUT-OFF VALVE

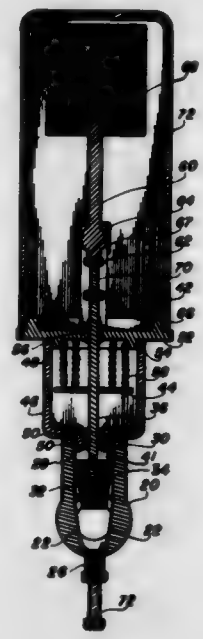
Johnny Terrones, 13201 Bombay St., Sylmar, Calif. 91342, and Walter E. Kennard, 8333 Columbus Ave., Sepulveda, Calif. 91343

PCT No. PCT/US82/00873, § 371 Date Feb. 10, 1984, § 102(e) Date Feb. 10, 1984, PCT Pub. No. WO84/00200, PCT Pub. Date Jan. 19, 1984

PCT Filed Jun. 28, 1982, Ser. No. 608,051

Int. Cl.³ F16K *17/36*

U.S. Cl. 137—45 **7 Claims**



1. A seismic actuated shut-off valve for fluid flow conduits comprising:

a. a valve body having an open passageway for passing fluid therethrough having a centrally located plug seat, and a planar threaded opening;

b. a piston plug positioned within said body slideably maintained in alignment with said plug seat for blocking said passageway to impede the flow of fluid;

c. a piston stem fixed to said piston plug on the first end for urging said plug linearly into said plug seat maintaining alignment thereof;

d. a stem link jaw disposed on the second end of said piston stem having a cavity with coarctation when rotated therewith;

e. a stem spring flange fixed to said piston stem at right angles in arcuate fashion between said piston plug and said stem link jaw providing a platform with the superficies at right angles to said piston stem;

f. a spring housing having an internal chamber defining an axial wall, open on each end with the first end containing attaching means to embrace said valve body on the exterior and surround said piston stem distal-proximate the interior creating a chamber to enclose said piston stem along with said stem spring flange and the second end having flange attaching means;

g. a plurality of stem seals contained within said spring housing urgingly embracing said stem and said housing restricting the flow of fluid from said valve body to said spring housing while allowing said stem to slide longitudinally therethrough;

h. an inertia weight flange containing attaching means to interface with said spring housing on said second open end, with said attaching means, and further containing a centrally located bore slideably receiving said piston stem providing a chamber with said stem extending therethrough;

j. an inertia weight arm with inertia weight, link jaw and attaching means having a weight mass on the first end and a link jaw cavity on the second end with coarctation when rotated, being affixed pivotally to said inertia weight flange with attaching means extended therefrom, creating

a lever arm allowing free movement as interacted with external vibratory or shock wave forces; and,

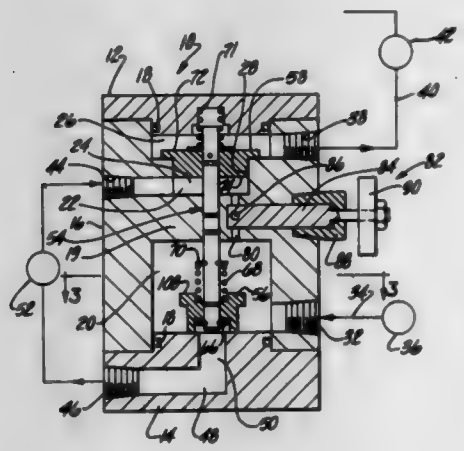
k. a severable tension link disposed between and compressibly engaged within said stem link jaw cavity and said inertia weight link jaw cavity defining a continuous member from said piston plug to said piston spring allowing reactance of said inertia weight to axially rotate under the dominance of a seismic shock wave causing the link to structurally yield, fracture and separate, thus permitting said piston spring to expand between said stem spring flange and said inertia weight flange linearly urging said piston plug into said valve body plug seat obstructing the flow of fluid therethrough.

4,535,797

AUTOMATIC SHUT OFF VALVE

Nils O. Rossen, Norco Products, Inc., 2139 Heide, Troy, Mich. 48084

Filed Aug. 17, 1983, Ser. No. 523,926
Int. Cl.³ F16K *17/10*
U.S. Cl. 137—87 **6 Claims**



1. An automatic shut off valve comprising:

a housing having a main inlet, a main outlet, a user inlet and a user outlet,

first fluid passage means for fluidly connecting said main inlet to said user outlet, said first fluid passage means having a first port at a midpoint,

second fluid passage means for fluidly connecting said user inlet to said main outlet, said second fluid passage means having a second port at a midpoint,

said first and second ports being coaxial and axially spaced from each other,

valve means movable between an open and closed position for simultaneously opening and closing said ports in first and second fluid passage means,

said valve means comprising an elongated valve stem extending axially between said ports and axially slidably mounted to said housing, a first valve member attached at one end of the valve stem for closing said first port when said valve means is in said closed position, and a second valve member attached at the other end of said valve stem for closing said second port when said valve means is in said closed position,

means for resiliently urging said valve means towards its closed position,

means for moving said valve means to its open position, and

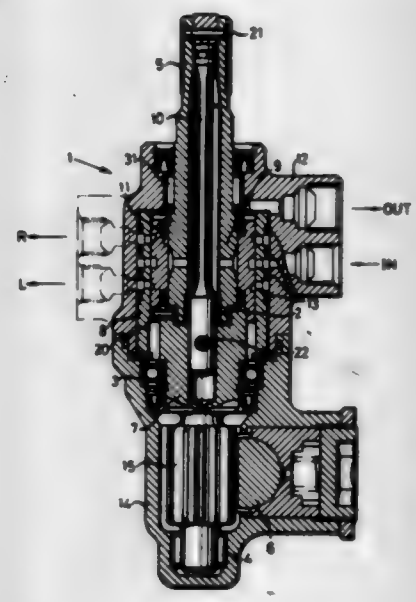
means responsive to a fluid flow rate through said second fluid passage means greater than a predetermined amount for retaining said valve means in said open position.

4,535,798

ROTATION CONTROL VALVE OF POWER STEERING SYSTEM

Osamu Sano, Kashihara, Japan, assignor to Koyo Auto-Mech. Co., Ltd., Kashihara, Japan

Filed Sep. 21, 1982, Ser. No. 420,635
Claims priority, application Japan, Sep. 22, 1981, 56-148807
Int. Cl.³ B62D *5/08*
U.S. Cl. 137—625.21 **2 Claims**



1. A rotation control valve for a power steering system, said rotation control valve comprising:

an input shaft;

a spool section of the input shaft;

an output shaft;

a valve housing;

a chamber defined by the valve housing;

a valve body mounted within the chamber of the valve housing, said valve body surrounding the spool section and being secured to the output shaft;

a torsion bar interconnecting the input shaft and the output shaft for controlling supply and discharge of pressure fluid to and from a hydraulic pressure cylinder acting on said output shaft in accordance with angular displacement of the spool section and the valve body commensurate with a load applied to the output shaft;

a seal housing floatingly mounted within the chamber of the valve housing between said valve housing and said valve body, said seal housing surrounding the valve body, the valve body being rotatably mounted within the seal housing and a clearance in the range of 0.005 to 0.02 mm exists between the seal housing and the valve body; and

O-rings supporting the seal housing within the chamber of the valve housing, said seal housing thereby being movable in a radial direction within the valve housing.

4,535,799

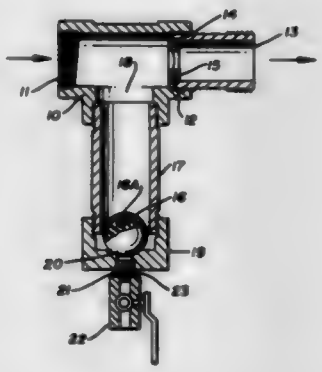
AUTOMATIC LIQUID SHUT-OFF VALVE

Robert E. Boley, 1802 Tremont, Massillon, Ohio 44646

Filed Oct. 29, 1984, Ser. No. 666,157
Int. Cl.³ F16K *31/22*
U.S. Cl. 137—174 **6 Claims**

1. A device for interposition in a gas line, said device comprising a hollow body member having oppositely disposed horizontally aligned inlet and outlet ports and a liquid receiving chamber depending therefrom and in communication therewith, a vertically positioned valve seat positioned in the device in said outlet port and a horizontally positioned valve seat positioned in said device in the lower portion of said liquid receiving chamber, a drain opening in said liquid receiving chamber below said horizontally positioned valve seat, a floatable spherical valve element movably positioned in said liquid receiving chamber for movement from a first position on said

horizontal valve seat controlling said drain opening to a second position adjacent said vertically positioned valve seat by fluid received in said liquid receiving chamber from said gas line,



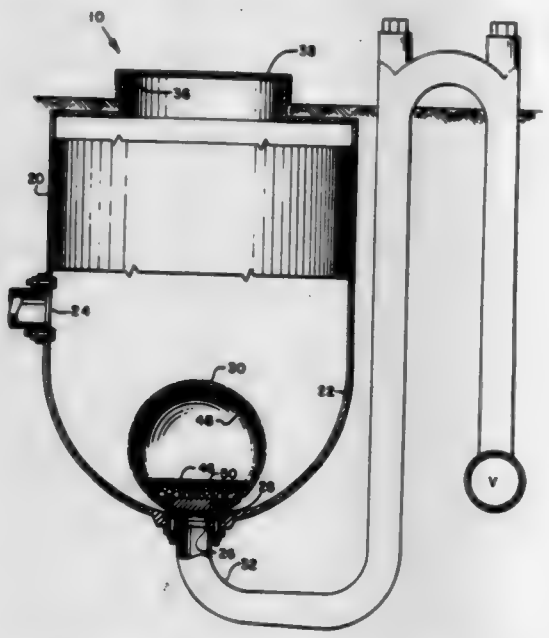
said spherical valve element being of a size to move partially into the area within said liquid receiving chamber between said inlet and outlet ports so as to be movable by said gas into seating engagement with said vertically positioned valve seat.

4,535,800

VALVE SYSTEM FOR VACUUM SEWAGE COLLECTION SYSTEM

Edward H. Leech, 721 Edgar Dr., Salisbury, Md. 21801

Filed Mar. 27, 1984, Ser. No. 594,038
Int. Cl.³ E03F *1/00*; F16K *31/18, 33/00*
U.S. Cl. 137—205 **1 Claim**



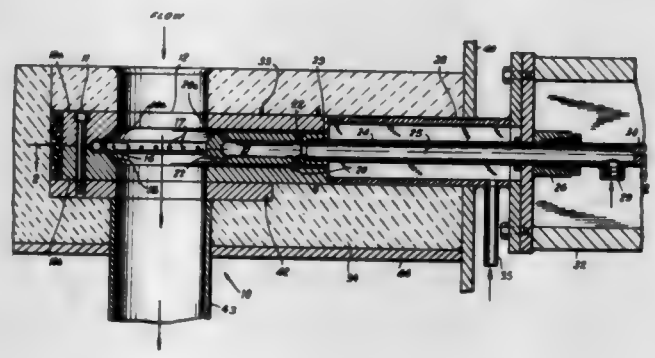
1. In a vacuum-type sewage collection system having a holding tank with top and bottom and at least one intake port, a discharge port and discharge line connected with a vacuum main, and means for controlling discharge of sewage through said discharge port, the improvement comprising: the discharge port being at the bottom of the holding tank, the means for controlling comprising a float with a part thereof proportioned for fitting against said discharge port, said float porportion including a generally rounded lower portion, means for orienting said float, said orienting means being permanent ballast in said float generally rounded lower portion; means for adjusting buoyancy of said float, including means for holding liquid within said float; said generally rounded lower portion being part of a spherical overall shape of the float, means for causing the float to center gravitationally on the discharge port including the holding tank bottom having a generally rounded shape; the generally rounded shape of the holding tank bottom being faired into the overall shape of the holding tank, means for preserving sewage portage in said discharge line comprising a plurality of leakage-producing contours at said part of the float proportioned for fitting against said discharge port, said holding tank having an access port therein above the discharge port, and a cover for said access port, and the access port being large enough for removal of the float therethrough.

4,535,801

MULTI-PURGE GATE VALVE FOR PARTICULATE SOLIDS FLOW

Thomas J. Neale, Parsippany, N.J., assignor to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 7, 1983, Ser. No. 482,809
Int. Cl.³ B08B *3/04, 9/00*
U.S. Cl. 137—240 **15 Claims**



1. A gate valve assembly for controlling the flow of fine particulate solids therethrough, comprising:

(a) an elongated valve body having a transverse opening therethrough near one end and packing means provided at the opposite end, said body containing a centrally-located groove located transverse to said opening and having dual adjacent inner seating surfaces;

(b) a conduit retained in said groove in the valve body, said conduit having a plurality of spaced openings oriented radially inwardly and arranged for inward flow of a pressurized purging gas through the openings to purge the gate valve assembly seating surfaces;

(c) a gate member longitudinally movable within said body, said gate being aligned within said groove and mating with said seating surfaces, said conduit surrounding said seating surfaces and said gate member for purging said seating surfaces, and

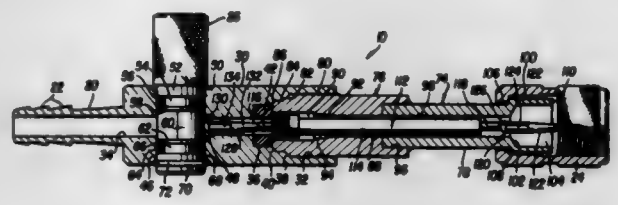
(d) a valve stem rigidly connected to said gate member and extending through said packing means, for moving the gate longitudinally within said body to open and close said transverse opening in the valve body.

4,535,802

TWIST-CAM REFRIGERANT DISPENSING VALVE

James D. Robertson, 231 NW. 69 Way, Hollywood, Fla. 33024

Filed Jan. 26, 1984, Ser. No. 574,309
Int. Cl.³ F25B *45/00*
U.S. Cl. 137—322 **9 Claims**



1. In a system for charging refrigeration apparatus with refrigerant gas from a portable pressurized source of said gas, the refrigeration apparatus having an inlet port for receiving gas and the source having an outlet port through which gas is discharged, the improvement comprising a valve apparatus capable of connection between the inlet port of the refrigeration apparatus and the outlet port of the gas source, comprising:

means connectible to the valve apparatus for detachably

joining a first portion of the valve apparatus to the outlet port of the gas source;

means carried by the valve apparatus for detachably joining a second portion of the valve apparatus to the inlet port of the refrigeration apparatus, a longitudinal channel extending through the valve apparatus to communicate said first and second portions with each other and with ambient and through which fluid is capable of flowing;

valve means carried within the channel for closing the channel to fluid flow when in an unbiased configuration and for allowing fluid flow through the channel when biased to an open position;

manually manipulable means carried by the valve apparatus for biasing the valve means to an open position to allow fluid flow through the valve apparatus, the manually manipulable means including an eccentric cam rotatable internally of the valve apparatus to bias the valve means to an open position, and further including a rotary thumb turn extending externally of the valve apparatus and being connected to the cam such that the cam is rotated to bias the valve means into an open position on rotary manipulation of the thumb turn;

first needle element disposed adjacent to the valve means and biasable outwardly thereof toward the second portion of the valve apparatus to engage and open for fluid transport valving structure associated with the inlet port of the refrigeration apparatus; and,

the valve means comprising a valve element having an internal spring, a first pin biased outwardly of the valve element by the spring, a second pin biased inwardly of the valve element by the spring, a second needle element disposed adjacent to the valve means on the opposite end thereof, the second needle element being biased against the first pin by the cam of the manually manipulable means on rotation of the thumb turn to a position biasing the first pin inwardly of the valve element against pressure exerted by the spring, thereby to open the valve element to fluid flow through the valve apparatus and the second needle element being in constant contact with the first pin and the cam in all positions of the cam.

4,535,803

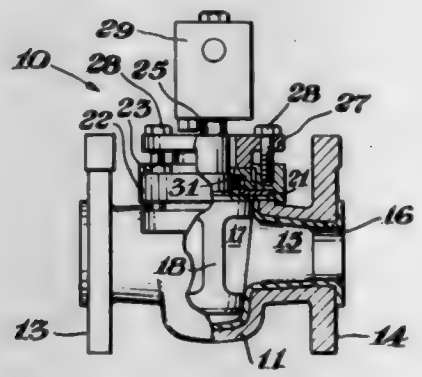
PLUG VALVE

Robert W. Price, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Mar. 19, 1984, Ser. No. 590,947

Int. Cl.³ F16K *27/00*

U.S. Cl. 137—375 **6 Claims**



1. A plug valve, the plug valve comprising in cooperative combination a valve body, the body having a first end and a second end, a fluid passageway extending from the first end to the second end, a plug receiving cavity defined by the body with the plug receiving cavity extending generally normally to the axis of the fluid passageway extending from the first end to the second end; a plug disposed within the passageway, the plug having a stem, the stem extending away from said valve body, the valve body and the plug having a synthetic resinous coating thereon, a generally planar seal member disposed over said plug adjacent the stem, a bonnet disposed over said seal member, said bonnet being affixed to the valve body and forcing said sealing member in sealing engagement with the valve body, said bonnet defining a generally centrally disposed stem receiving passageway of a diameter substantially greater than the diameter of the stem; a gland adjustably positionable on said bonnet and extending into the passageway of the bonnet about the stem, the improvement which comprises said plug at a location adjacent the juncture of the plug and the stem defining an annular frustoconical surface having its major diameter adjacent said plug and its minor diameter adjacent said stem; said seal member defining a generally centrally disposed opening therein of sufficient diameter to pass over said stem, the opening being defined by a flexible annular seal portion which when the seal is positioned against the plug, the flexible annular seal portion conforms to the annular frustoconical surface, a retaining ring having an inside diameter approximating the major diameter of the frustoconical surface; a cup seal of annular configuration having a trapezoidal cross section disposed against the sealing member and having a face generally parallel to the frustoconical surface, the cup seal being restrained from radial movement by said annular retaining ring, said cup seal being of a pressure deformable synthetic resinous material, a rigid annular cup seal support ring disposed adjacent said cup seal and remote from said plug; means to resiliently tension the cup seal support ring toward said plug to thereby provide a plug valve with a reduced tendency to leak and desirable service life.

4,535,804

CONDUIT-BREAK VALVE FOR A PRESSURE CONDUIT OR HOSE WITH A SURROUNDING PROTECTIVE CONDUIT OR HOSE

Karl S. Palmgren, Luleå, Sweden, assignor to Regioninvest I Norr AB, Luleå, Sweden

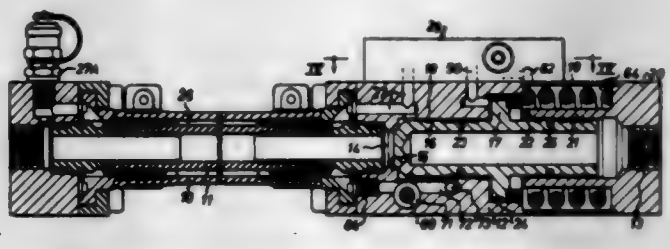
PCT No. PCT/SE83/00020, § 371 Date Sep. 15, 1983, § 102(e) Date Sep. 15, 1983, PCT Pub. No. WO83/02988, PCT Pub. Date Sep. 1, 1983

PCT Filed Jan. 25, 1983, Ser. No. 537,410

Claims priority, application Sweden, Feb. 25, 1982, 8201177

Int. Cl.³ F16K *17/24*; F17D *5/04*

U.S. Cl. 137—458 **5 Claims**



1. A conduit-break valve for a pressure conduit or hose (11) with a surrounding protective conduit or hose (10) and with a space (26) for containing pressure medium between said conduits or hoses, comprising in its valve housing (12) a throughflow passage (13, 14) and a main valve member (16) which is movable between an open position and a closed position preventing flow through the throughflow passage (13, 14) and is adapted to be actuated by the pressure medium in said space (26) to be kept in the open position against the action of a loading device (19) which is adapted yieldingly to urge the main valve member (16) towards the closed position and, if the pressure of the pressure medium in said space (26) drops, to move the main valve member (16) to its closed position, and a pressure relief device (28) which is connected to said space (26) and adapted to relieve the pressure therein if the pressure exceeds a predetermined upper limit value, characterised in that the pressure relief device (28) has a pilot controlled check valve (41, 42) with a control piston (37) which is adapted to be actuated by the pressure in said space (26) and, when the upper limit value is exceeded, to open the check valve member (42) of the check valve (41, 42) which is yieldingly loaded in accor-

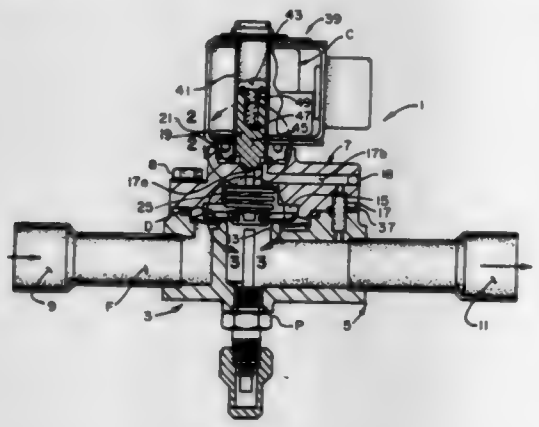
dance with said limit value, thus relieving the pressure in said space (26).

4,535,805

PILOT OPERATED VALVE WITH PRESSURE RELIEF

Denny W. Mertz, St. Louis County, Mo., assignor to Emerson Electric Co., St. Louis, Mo.

Filed Apr. 21, 1983, Ser. No. 487,848
Int. Cl.³ F16K *31/12*
U.S. Cl. 137—489 **7 Claims**



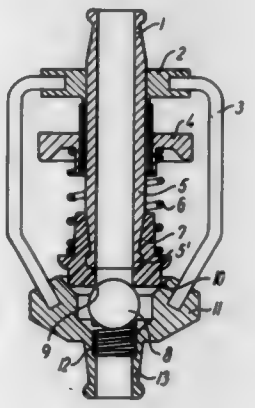
1. In a pilot-operated valve comprising a valve body having a flow path therethrough, the latter having an inlet and an outlet, said valve body having a valve seat within said flow path and main valve means sealably mounted within said valve body for movement between an open position in which said main valve means is clear of said valve seat thereby to permit the flow of fluid through said flow path and a closed position in which said main valve means sealably engages said valve seat thereby to block the flow of fluid through said flow path, said valve body further having a chamber therewithin in which said main valve means is received as it moves between its closed and open positions, a fluid supply passage for communication between said flow path upstream from said valve seat and said chamber for supplying pressurized fluid to said chamber, fluid pressure within said chamber acting to hold said main valve means in one of its stated positions, a pilot passage for communication between said chamber and said flow path downstream from said valve seat, said pilot passage including a pilot valve seat, a pilot valve member movable relative to said pilot valve seat between an open position in which said pilot valve member permits the flow of fluid from said chamber via said pilot passage to said flow path downstream from said valve seat and a closed position in which said pilot valve member is in sealing engagement with said pilot valve seat thereby to blook the flow of fluid from said chamber, a spring for biasing said pilot valve member toward its closed position, and selectively actuable means for effecting movement of said pilot valve between its said one and the other of its said positions so that with said pilot valve open, fluid pressure within said chamber being less than the fluid pressure within said flow path whereby the fluid pressure within the flow path maintains said valve means in its said one position and so with the pilot valve member closed fluid pressure within said chamber increases so as to positively hold the valve means in its said other position, wherein the improvement comprises: said pilot passage having a first portion between said chamber and said pilot valve seat and a second portion between said pilot valve seat and said flow path downstream from said valve seat, said pilot valve member having an area of sufficient size exposed to fluid pressure within said first portion of said pilot passage when said pilot valve member is in its closed position so as to overcome the bias of said spring forcing said pilot valve member toward its closed position upon the pressure differential of said fluid between said chamber and said flow passage downstream from said valve seat exceeding a predetermined level thereby to cause said pilot valve member to open which in turn effects movement of said main valve means from its said one to its said other position.

4,535,806

VALVE ASSEMBLY FOR THE SUPPLY OF A PRESSURIZED GASEOUS FLUID TO CLOSED CONTAINERS

Kaj Ottung, No. 8 Askebyvej, 2830 Virum, Denmark

Filed Dec. 6, 1983, Ser. No. 558,450
Claims priority, application Denmark, Dec. 21, 1982, 5646/82
Int. Cl.³ F16K *17/26*
U.S. Cl. 137—493.6 **9 Claims**



1. A pressure valve assembly for the supply of a pressurized gaseous fluid to a closed container, comprising:

a valve housing with a valve seat therein;

a tubular member guided for axial displacement towards and away from said valve seat and forming a fluid supply channel;

a resilient hollow pressure valve member releasably secured to said tubular member by a bulb connection at one end of the tubular member, the resilient valve member forming itself a seat for a non-return check valve; and

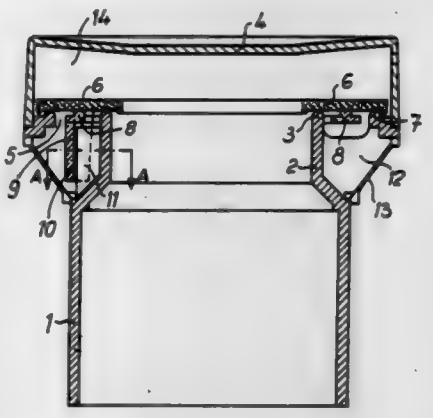
a spring urging said tubular member with the resilient pressure valve member thereon towards the valve seat in said housing.

4,535,807

AUTOMATIC AIR VALVE DEVICE FOR DUCTS

Kurt S. B. Ericson, Prins Boudewijnlaan, 48, B-2230 Schilde, Belgium

Filed Nov. 21, 1983, Ser. No. 553,762
Claims priority, application Belgium, Nov. 19, 1982, 0/209.518
Int. Cl.³ F16K *15/08, 17/12*
U.S. Cl. 137—533.31 **5 Claims**



1. In an automatic air valve device for a conduit used for passing fluids and capable of being subjected to a partial vacuum, said device being of the type comprising a tubular body, a cover cooperating with the tubular body to form a channel or peripheral air inlet therebetween, an annular flap cooperating with the valve body and said cover and disposed above said

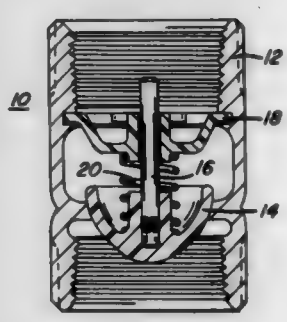
channel or peripheral air inlet so as to close the same, and a chamber formed in the space above said annular flap and defined by the inner periphery of said cover so that, when a partial vacuum occurs in the conduit, said annular flap is raised by ambient air upwardly into the chamber, the improvement which comprises said annular flap provided with an annular support having guiding lugs oriented downardly and the tubular body having integrally formed ribs disposed on the outer periphery thereof, said guiding lugs being provided with a U-shaped internal groove which cooperates with said integrally formed ribs.

4,535,808

CHECK VALVE

Leonard T. Johanson, Algonquin, Ill., and Harry L. Forrester, Wheeling, W. Va., assignors to Dicken Manufacturing Company, Siloam Springs, Ark.

Filed Jul. 8, 1983, Ser. No. 511,807
Int. Cl.³ F16K *15/06*
U.S. Cl. 137—543 **8 Claims**



1. A check valve adaptable to threaded pipe comprising:
a generally tubular body having a longitudinal axis, an inlet section, an outlet section, an intermediate interior section, an annular valve seat disposed between said intermediate section and said inlet section, said valve seat being angled with respect to said longitudinal axis, and a circumferential groove disposed between said intermediate section and said outlet section, said groove being of larger outside diameter than the interior diameter of said outlet section;
a flexible guide fabricated of an acetal copolymer and having a hub defining a longitudinal aperture having a square cross section and a plurality of arms extending outwardly therefrom, one of said arms having a first generally radially extending portion coupled to a second circumferentially extending portion having arcuate outer edges;
a poppet fabricated of an acetal copolymer and having a smoothly curved face and movable within said body between a first position whereat said poppet is seated upon said valve seat and a second position whereat said poppet is lifted from said valve seat;
a metallic stem secured to said poppet opposite said face and disposed for sliding motion within said aperture, said stem having a circular cross section; and
means reacting against said guide and said poppet for biasing said poppet toward said first position.

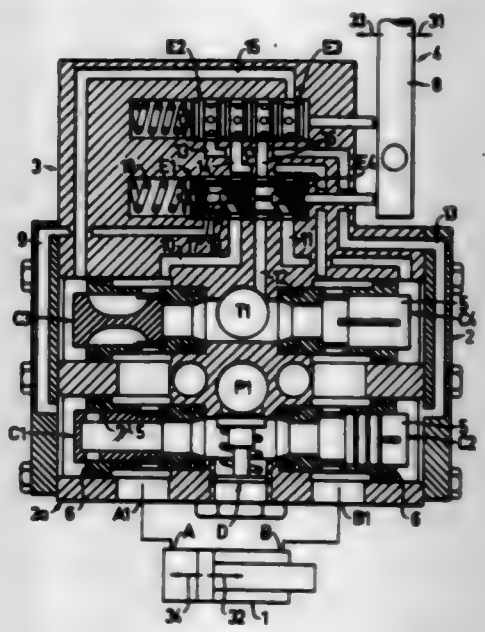
4,535,809

HYDRAULIC VALVE MEANS

Bo Andersson, 11 Venusvägen, Ljungsbro, S-590 60, Sweden

PCT No. PCT/SE82/00299, § 371 Date May 27, 1983, § 102(e) Date May 27, 1983, PCT Pub. No. WO83/01095, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 27, 1982, Ser. No. 503,131
Claims priority, application Sweden, Sep. 28, 1981, 8105719
Int. Cl.³ F17D *1/20*
U.S. Cl. 137—596.14 **13 Claims**

1. A hydraulic system for controlling a hydraulic motor as to speed as well as to direction of movement, said motor having motor ports serving alternatingly as an inlet for receiving a medium and as an outlet for returning the medium, said hydraulic system comprising:
a tank for containing a supply of the medium;
a main supply flow passage for delivering the medium to said inlet port;
a return flow passage for returning medium from said outlet port to said tank;
a pump connected to said tank for delivering pressurized medium to said main supply flow passage; and
a plurality of valve means for controllably opening and closing said main supply flow passage and said return flow passage to control the movement direction of the motor, said plurality of valve means including:
an inlet seat valve for each motor port located in said main supply flow passage between said pump and said motor port and an outlet seat valve for each motor port located in said return flow passage between said motor port and said tank, wherein said inlet and outlet seat valves each comprise a housing and a valve body movable within said housing from a closed position to an opened position and being pilot operable independent of the pressure by a pilot flow through a variable flow restriction channel in each valve body for conveying said pressure medium to a pilot flow chamber in the housing of each seat valve to any position between said closed and said opened positions to control the amount



of the pressure medium flowing through the main supply flow passage to the inlet motor port and of the pressure medium flowing through the return flow passage to the tank, respectively, and a pilot valve for each one of the inlet and outlet seat valves to obtain and control said pilot flow through said seat valves, wherein each pilot valve associated with the inlet seat valve for controlling the position of the valve body thereof independent of the pressure in the main supply flow passage comprising a housing having a pilot valve channel with a pilot inlet and a pilot outlet, means for selectively opening and closing said pilot valve channel, a first inlet pilot valve passage communicating said pilot inlet with said pilot chamber of the inlet seat valve and a first outlet pilot valve passage communicating said pilot outlet with said main supply flow passage at a location downstream of said inlet seat valve, and wherein each pilot valve associated with said outlet seat valve for controlling the position of the valve body thereof independent of the pressure in the return flow passage comprising a housing having a pilot valve channel with a pilot inlet and a pilot outlet, means for selectively opening and closing said pilot valve channel, a second inlet pilot valve passage communicating said pilot inlet with said pilot flow chamber of the outlet seat valve and a second outlet pilot flow passage communicating said

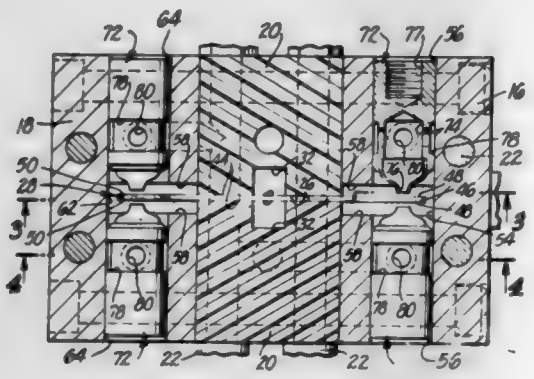
pilot outlet with said return flow passage at a location downstream of said outlet seat valve.

4,535,810

ELECTRICALLY CONTROLLED VALVES

Richard A. Duder, Campbell, and Allan B. Corral, San Jose, both of Calif., assignors to Dynamic Valves, Inc., Palo Alto, Calif.

Filed Mar. 27, 1984, Ser. No. 593,944
Int. Cl.³ F15B *13/044*
U.S. Cl. 137—596.17 **9 Claims**



1. A valve, said valve having a body formed so as to include separate pressure and return chambers, separate first and second load passages, each of said passages extending between and terminating in an opening in each of said chambers, a pressure port leading into said pressure chamber, a return port leading from said return chamber, first and second load ports connected to said first and second load passages, respectively, actuator means extending into said chambers for controlling the flow of fluid from said pressure port through said openings in said pressure chamber into each of said load passages for controlling the flow of fluid from said openings in said return chamber from said load passages to said return port in which the improvement comprises:

said actuator means comprising a member mounted on said body so as to extend into each of said chambers in such a manner that said chambers are isolated from one another,

said member being capable of being electrically actuated so that the portion of it within said pressure chamber and the portion of it within said return chamber are concurrently moved relative to said openings in said chambers upon the application of an electric signal so as to permit increased flow to either one of said passages from said pressure chamber and concurrently to restrict the flow from such passage into said return chamber while concurrently restricting the flow into the other of said flow passages from said pressure chamber and increasing the flow from such other passages into said return chamber,

said member is an elongated member held at its center by said body so that equal amounts of said member located at the ends of said member extend into each of said chambers,

said actuator means is a piezoelectric bender strip mounted on said body so that one end of said strip extends into one of said chambers and the other end of said strip extends into the other of said chambers, said body engaging said strip so as to isolate said chambers from one another.

4,535,811

AIR FLOW CONTROL APPARATUS

Joseph A. Wood, Greenville, and William C. Peebles, Jr., Washington, both of N.C., assignors to Flanders Filters, Inc., Washington, N.C.

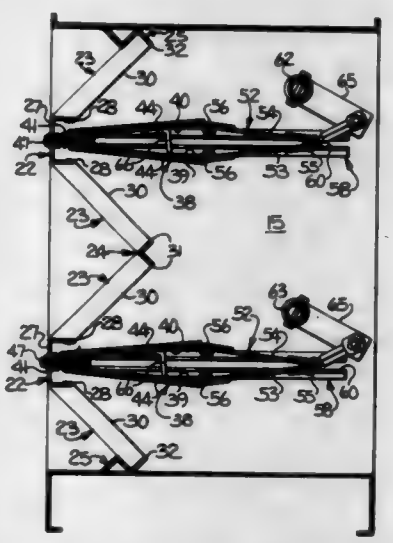
Filed Jan. 20, 1984, Ser. No. 572,696
Int. Cl.³ F16K *1/20*; F24F *13/10*
U.S. Cl. 137—601 **13 Claims**

11. An air flow control apparatus for regulating the volume of air flow in a ventilating system or the like, and comprising

a housing defining an air passageway therethrough,

supporting framework means mounted within said housing and including at least one trough of generally V-shaped cross section extending transversely across said housing, with said at least one trough including two opposite sides and an intermediate bight portion, and with each side having an opening which occupies a substantial portion of the area of such side,

closure means operatively associated with said at least one trough for selectively opening and closing each of the openings in the associated sides thereof, said closure means including a pair of plates, a plate pin pivotally interconnecting said plates, and means mounting said plate pin to said housing along an axis which extends along the trough and adjacent the bight thereof and so that the plates are pivotable between a spread-apart position overlying and covering the adjacent openings and a collapsed



position withdrawn from said openings, said mounting means including adjustable interconnection means for permitting adjustable movement of said plate pin along a direction which bisects the associated V-shaped trough in cross section and for fixing said pin in a selected position along such line, and such that a uniform pressure may be achieved between each of the plates and the sides of the troughs about the entire periphery of each opening,

resilient pad means surrounding the periphery of each opening and mounted to one of either said trough sides or said plates, and

control means for effecting selective movement of said closure means between said spread apart and said collapsed positions, to permit full closing or full opening of the openings as well as modulation of the air flow rate, and such that movement of said closure means to said spread apart position causes compression of said resilient pad means to effect an air tight seal about each opening.

4,535,812

TIME CONTROLLED GAS FLOWS

Elwood O. Miller, South Plainfield, N.J., assignor to The BOC Group, Inc., Montvale, N.J.

Filed Jul. 12, 1982, Ser. No. 397,653
Int. Cl.³ F15B *21/02*
U.S. Cl. 137—624.11 **4 Claims**

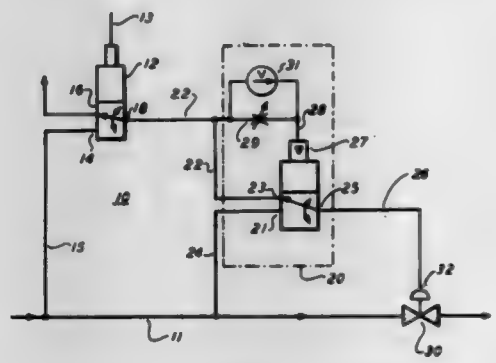
1. Apparatus for supplying a flow of gas under pressure through a conduit comprising

first valve means disposed in said conduit and having a control port with said first valve means being closed and opened in response to the presence and absence of gas pressure at said control port, respectively;

a pneumatic timed valve adapted to selectively supply said gas pressure to, and for a predetermined time period, remove said pressure from said control port, said pneumatic timed valve having first and second inputs, a pilot stage and timer means for releasing pressure in said pilot

stage over said predetermined time period, said second input being connected to said conduit; and

a solenoid valve having an output connected to said first input of said pneumatic timed valve, a first port coupled to ambient pressure and a second port connected to said conduit and normally coupled to said output such that the pilot stage of the pneumatic timed valve is connected



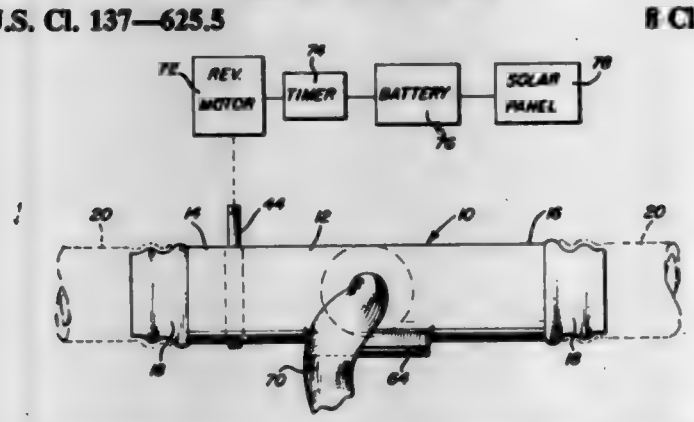
through said pneumatic timed valve to said control port of said first valve means whereby (i) the gas pressure in said conduit is supplied to said control port to retain the first valve means in a closed condition and (ii) upon activation of said solenoid valve, said pneumatic timed valve is operated to remove said gas pressure from said control port of said first valve means for said predetermined time period.

4,535,813

SOLAR ENERGY OPERATED IRRIGATION SURGE VALVE

Robin L. Spain, Drawer U, Olton, Tex. 79064

Filed Oct. 19, 1984, Ser. No. 662,510
Int. Cl.³ F16K *11/00*
U.S. Cl. 137—625.5 **8 Claims**



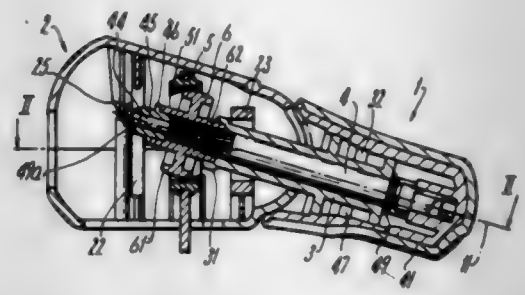
1. An irrigation surge valve including a hollow tubular body defining opposing axially spaced annular outlet seats, said body including an inlet opening into said body intermediate said seats, an elongated support mounted in said body for guided recilinear movement between first and second predetermined positions, a valve disc slidably mounted on said support for shifting therealong between relatively axially displaced limit positions, means operatively connected between said disc and support yieldingly biasing said disc toward an intermediate position on said support between said limit positions, said disc being alternately sealingly engageable with said seats upon alternate shifting of said support between said predetermined positions, reversible motor means operatively connected to said support for shifting said support between said first and second predetermined positions, said body including upper and lower sides and said lower side defining an internal upwardly opening sump communicated with the interior of said body between said seats and disposed below the path of movement of said disc between aid seats, said body further including a third outlet of smaller cross-sectional area than the effective flow cross-sectional area of said outlet seats, said third outlet opening into said body intermediate said seats and generally opposite from said inlet opening, said third outlet being disposed above the level of said sump.

4,535,814

LEVER HEAD FOR SINGLE-LEVER MIXING VALVES

Manfred Pawelzik, Soest; William P. Herring, Hemer, and Jan R. Kostorz, Menden, all of Fed. Rep. of Germany, assignors to Friedrich Grohe Armaturenfabrick GmbH & Co., Hemer, Fed. Rep. of Germany

Filed Aug. 11, 1983, Ser. No. 522,026
Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230815
Int. Cl.³ F16K *11/02, 31/54*
U.S. Cl. 137—625.17 **18 Claims**



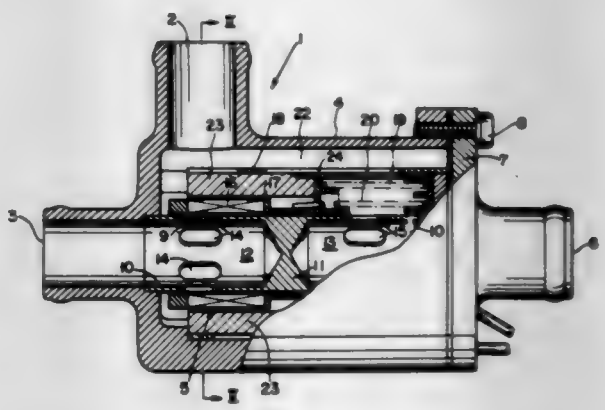
1. In a lever head for a single-lever mixing valve for sanitary use for regulating the mixing and volume flowing of cold and hot water with a hand lever which is pivoted substantially at right angles to a valve slide, the improvement wherein said valve slide is mounted for axial displacement and swinging movement transverse to said axial displacement in a plane thereof, and the control settings for adjusting the mixing ratio of cold and hot water are produced by turning the hand lever about its longitudinal axis to effect said swinging movement independently of said axial displacement and the control settings for adjusting the volume flow are produced by swivelling the lever about a pivot on the body to effect said axial displacement independently of said swinging movement.

4,535,815

ELECTROMAGNETIC SOLENOID TYPE FLOW CONTROL VALVE

Takeharu Ohumi; Yasuo Kurahashi, both of Toyota; Kyo Hattori, and Kazuhiro Sakurai, both of Susono, all of Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Toyota and Aisin Seiki Kabushiki Kaisha, Kariya, both of, Japan

Continuation of Ser. No. 156,162, Jun. 3, 1980, abandoned. This application May 14, 1984, Ser. No. 608,936
Int. Cl.³ F16K *11/07, 31/08*
U.S. Cl. 137—625.48 **2 Claims**



1. An electromagnetic solenoid valve comprising:

a valve body having inlet port means and outlet port means;

linear motor means including hollow core means disposed in said valve body between said inlet and outlet port means and having a plurality of valve ports, sliding valve member means slidable along said hollow core means for cooperating with said valve ports in said hollow core means, including spring means and flange means for supporting said spring means, and solenoid means associated with said

sliding valve member means for slidably moving the sliding valve member means along the hollow core member against the bias of said spring means when the solenoid means is energized;

said linear motor means including a yoke member fixed within said valve body, and a pair of magnets fixed to said yoke member at spaced apart locations, each said magnet including an outer surface, an inner surface, and a pair of ends, said flange means including surfaces abutting each said magnet on one end thereof for avoiding exposure of said abutting surfaces of said flange means to dynamic pressure from said flowing fluid when said solenoid means is in a de-energized state;

bypass passage means in said valve body extending radially outwardly around said linear motor means, and linearly parallel to said hollow core means, said linear motor means including openings into said bypass passage means for establishing direct radial fluid communication between said bypass passage means and said valve ports around said magnets for introducing fluid from said inlet port means through said passage means into said valve ports, said valve ports being controlled by said sliding valve member means

said outlet port means comprising two outlet ports communicating with said inlet port means through said bypass passage means and the valve ports in said hollow core means, said valve ports being linearly spaced away from each other along said core means for substantial alignment with respective outlet ports.

4,535,816

PRESSURE CONTROLLER

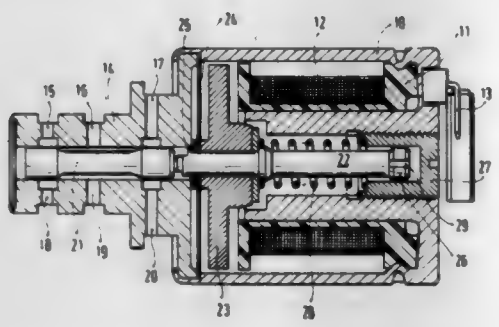
Meinrad Feder, Leonberg, and Alwain Stegmaier, Schwieberdingen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jul. 14, 1983, Ser. No. 513,978

Claims priority, application Fed. Rep. of Germany, Jul. 21, 1982, 3227229

Int. Cl.³ F16K *31/06*

U.S. Cl. 137—625.65 **6 Claims**



1. A pressure controller, comprising

a housing;

a magnetic coil arranged in said housing;

a magnetic armature arranged in said housing;

a distributor housing;

a control piston movable in said distributor housing and actuatable by said armature;

a shaft which supports said armature and is arranged coaxial with said coil, said shaft having two ends which respectively face toward and away from said control piston and are axially and radially supported;

a bearing bush which is arranged to slidingly support said shaft at its end facing away from said control piston; and

a membrane spring which is arranged to hold said shaft at its end facing toward said control piston and has a periphery held in said first-mentioned housing, so that the ends of said shaft are supported differently with one end of said shaft supported by said bearing bush and the other end of said shaft supported by said membrane spring.

4,535,817

DRIVE FOR AN OSCILLATORY MECHANICAL SYSTEM

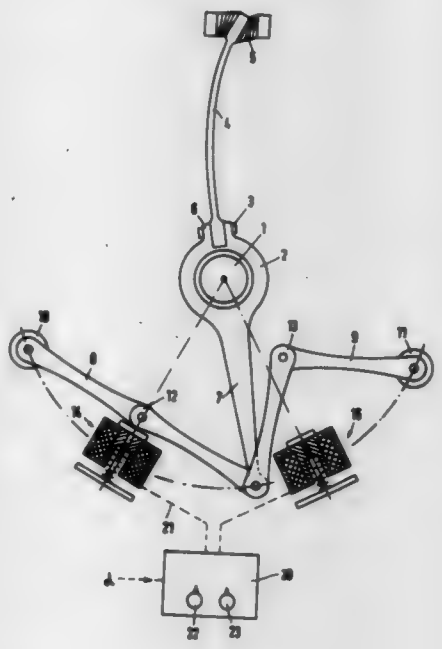
Anton Steiger, Illnau, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Mar. 20, 1984, Ser. No. 591,554

Claims priority, application Switzerland, Mar. 30, 1983, 1771/83

Int. Cl.³ F15B *13/044*; F16K *31/56*

U.S. Cl. 137—625.65 **8 Claims**



1. In combination

an oscillatory mechanical system having a first means for oscillating between two discrete operative positions and a resilient prestressing means for biasing said first means from one position to the other position; and

a drive for actuating said system, said drive including a pair of toggle levers connected to said first means, each said toggle lever being disposed to locate said first means in a respective operative position corresponding to an extended self-locking position of said respective toggle lever, a pair of movable abutments, each said abutment being disposed in the path of a respective toggle lever to inhibit overshooting of said respective toggle lever past said extended position thereof, and a control mechanism for selectively moving said abutments to effect a deflection of a respective toggle lever from an extended self-locking position thereof.

4,535,818

VALVE ASSEMBLY

Richard K. Duncan, and Norton A. Russell, both of Yellow Springs, Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Sep. 26, 1983, Ser. No. 536,108

Int. Cl.³ F16K *15/14*

U.S. Cl. 137—846 **7 Claims**

1. Valve assembly for use within a flow path for permitting relatively free flow in said flow path in a first direction and for preventing flow in said path in a second, opposite direction, comprising:

a housing defining a housing interior having an interior surface and having first and second ports opening into said housing;

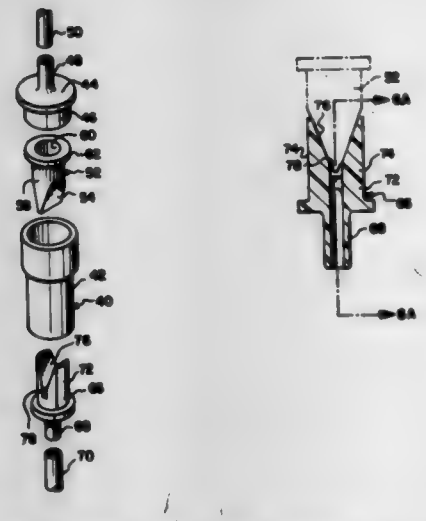
a flow regulator constructed as a single piece from a resilient material, said regulator including a pair of planar lips arranged in a converging relationship to define for said regulator an open end and a normally closed end whereat said lips are disposed adjacent each other to define a normally closed slit therebetween and to define inner and outer planar surfaces for said lips, said regulator further including at least one side wall interconnecting said lips;

means for securing said regulator within said housing interior with said normally closed end toward said second port and said open end toward said first port; and

means for forming a seal between said open end of said regulator and said housing interior so that flow in said first direction is from said first port, through said open end, through said normally closed end and to said second port;

said housing interior defining a shape such that said regulator is secured therein by said securing means with said outer surface of each of said lips being substantially adjacent to said housing interior surface when said normally closed end of said regulator is closed; and

said first and said second ports each having a cross-sectional area smaller than any cross-sectional area of said housing interior, said second port opening into said housing immediately adjacent said normally closed end of said regulator.

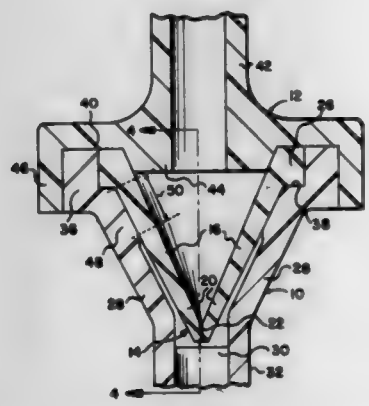


4,535,819

VALVE ASSEMBLY

Gordon E. Atkinson, Cedarville, and Stephen J. Kubina, Dayton, both of Ohio, assignors to Vernay Laboratories, Inc., Yellow Springs, Ohio

Filed Jun. 4, 1984, Ser. No. 616,997
Int. Cl.[3] F16K *15/14*
U.S. Cl. 137—846 **7 Claims**



1. Valve assembly for use within a flow path for permitting relatively free flow in said flow path in a first direction and for preventing flow in said path in a second, opposite direction, comprising:

a flow regulator constructed as a single piece from a resilient material, said regulator including a pair of lips, each of said lips having a lip base and an outer end;

said lips being arranged in a converging relationship to define for said regulator an open end adjacent said lip bases, and a normally closed end at said lip outer ends whereat said lips are disposed adjacent each other to define a normally closed slit therebetween, said regulator further including at least one side wall interconnecting said lips and an annular flange extending outwardly at said open end;

a housing outlet portion defining a housing interior approximating the shape of said regulator, said housing interior having a pair of planar surfaces corresponding to said pair of lips, each of said planar surfaces having a planar surface base, said surfaces being arranged in a converging relationship from said planar surface bases toward an outlet end, said housing outlet portion further including an outlet port communicating with said outlet end and an annular collar disposed outwardly adjacent said planar surface bases; and

a housing inlet portion having a cover plate and an inlet port communicating therethrough;

said regulator being disposed within said housing outlet portion with said annular flange contained within said annular collar and said lip outer ends extending toward said outlet end of said housing interior, and with said lips being substantially adjacent to but not in contact with said planar surfaces;

said cover plate being attached to said annular collar for securing said regulator and for sealing said housing interior; and

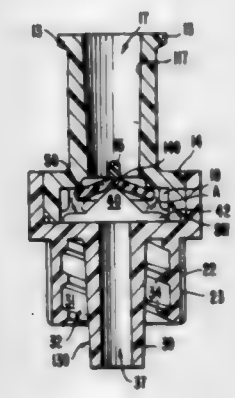
each of said planar surfaces of said housing interior having a raised portion formed thereon adjacent said planar surface base and extending along at least a portion of said planar surface, each of said raised portions being formed of a height sufficient to cause said raised portion to contact the adjacent one of said lips.

4,535,820

NORMALLY CLOSED CHECK VALVE

Kenneth C. Raines, Bethlehem, Pa., assignor to Burron Medical Inc., Bethlehem, Pa.

Filed May 24, 1984, Ser. No. 613,644
Int. Cl.[3] F16K *15/14*
U.S. Cl. 137—854 **17 Claims**



1. A valve device comprising:

a first body element having an input opening therethrough;

a second body element which complements said first body element and having an outlet opening therefrom;

a resilient valve disc mountable between said first and second body elements;

first means with one body element for supporting the disc at the center thereof;

means with the other body element for holding said disc firmly against said first means in such a manner that said disc is restrained from sideways movement; and

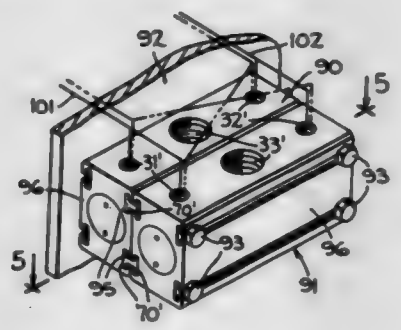
wherein said disc element is round, and both said first and second body elements have round container portions in which said disc element upon mounting is suitably spaced from the edges thereof, and wherein said means for preventing sideways movement of said disc element includes pressure between said two body element means for partially deforming the center area of said disc to restrain same against sideways movement.

4,535,821

THREE WAY VALVE

John Anderson, 2109 Yosemite Dr., Milpitas, Calif. 95035

Continuation of Ser. No. 379,734, May 19, 1982, abandoned.
This application Jul. 25, 1984, Ser. No. 634,282
Int. Cl.[3] F16K *11/20*
U.S. Cl. 137—884 5 Claims



1. A valve comprising a plurality of valve bodies, each of said bodies being formed with a central cylindrical longitudinally-extending cavity, a flow-control spool disposed in each of said cavities for sliding reciprocating movement, each of said flow-control spools being formed with passages, means defining a material inlet passage in the wall of each of said bodies extending from the exterior thereof to its associated cavity, means defining a plurality of discharge passages in each of said bodies communicating with the associated cavity and spaced angularly about the axis of the associated cylindrical cavity from the associated inlet passage and spaced axially along its associated cavity on either side of the associated inlet passage, each of said bodies being formed with spaced apart locking grooves to form spaced apart joint grooves when said bodies are in juxtaposition, and spaced apart elongated locking I-shaped beams disposed in said joint grooves respectively in tight fitting relation for locking said bodies to one another when said bodies are disposed in juxtaposition, each of said joint grooves having an I-shaped cross-sectional area, each of said locking I-shaped beams being adapted to be inserted endwise into its associated joint groove as a sliding rail, each of said locking grooves being defined by projecting means in the wall of its associated body engageable with an abutment on the elongated locking I-shaped beam disposed therein for preventing movement of the associated body away from the beam disposed therein, each of said locking grooves being defined in its associated body by a recess, wherein each of said projecting means is formed with a flange overhanging its associated recess, and the abutment means on each of said beams including an upstanding wall disposed along one side of its associated recess.

4,535,822

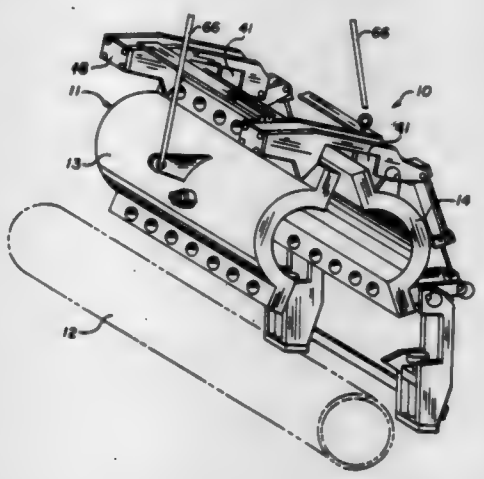
FITTING INSTALLATION DEVICE

Elmer V. Rogers, Jr., North Olmsted, Ohio, assignor to The Pipe Line Development Company, Cleveland, Ohio

Filed Jan. 21, 1983, Ser. No. 459,786
Int. Cl.[3] F16Z *55/16*
U.S. Cl. 138—99 18 Claims

1. Apparatus for remotely installing a fluidtight split fitting on an intermediate location of a pipeline, the fitting being split longitudinally into mating segments and being provided with means for hinging the segments together in the manner of a clamshell, manipulator means mounted on the segments and being constructed and arranged to engage portions of the segments and forcibly close them together into fluidtight mating contact with one another, said manipulator means including C-shaped clamp means and power operated means for moving said clamp means relative to said segments, said clamp means including power-operated means, said clamp means being movable by said power operated means from a retracted position to an operational position, said clamp means in said retracted position allowing said segments, while hinged together, to pass onto the pipeline at said location and in said operational position being disposed adjacent a line at which the fitting is split and bridging a gap between the segments at such line, the poweroperated means being arranged to engage and maintain the segments closed in fluidtight relation against forces developed by pressure prevailing in the pipeline.

16. A method of assembling a fitting on the intermediate length of a pipeline including the steps of supplying a longitudinally split fitting of mating half segments, the segments being provided with means for hinging the segments together at one side in the manner of a clamshell and with radially extending flange elements at an opposite side, mounting manipulator means including a power actuator and C-clamp means on one



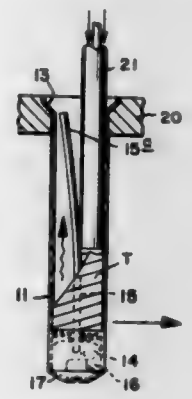
of the segments in a manner permitting such hinged segments to assume a pipeline clearance position wherein the segments can pass over the pipeline while hinged together and an operational position wherein the segments encircle the pipeline, using the power actuator of the manipulator means to move the C-clamp means from a retracted position permitting passage of said segments over the pipeline to an operational position wherein the C-clamp means extends generally transverse to the mating plane of said segments when they are closed over the pipeline such that it bridges said flange elements of both segments, and using means on said C-clamp means to squeeze said segments together through said flange elements.

4,535,823

METHOD OF FILLING CONTAINERS WITH A VISCOUS SUBSTANCE

Richard Powers, Wayne, Pa., assignor to Accupac, Inc., Mainland, Pa.

Filed Aug. 17, 1983, Ser. No. 521,105
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—5 9 Claims



1. A method of rapidly flowing a viscous substance into a container having at one end an actuating mechanism and a depending flexible central stem terminating adjacent an open opposite end of the container without forming substantial air pockets at said one end, said method comprising the steps of:

disposing the container with its open end facing upwardly,

advancing relative to the open end of the container the lower end of a filling tube,

engaging the filling tube laterally against the stem and displacing it toward a side of the container,

inserting the filling tube lengthwise in the container to a predetermined location,

at said location initiating the discharge of the viscous substance into the container laterally of the stem for displacing air laterally and axially out of the container, and

withdrawing the filling tube from the container while simultaneously discharging the viscous substance therefrom and thereby continuing to discharge air axially out the open end of the container, whereby the container can be filled rapidly without forming substantial air pockets adjacent to its one end.

4,535,824

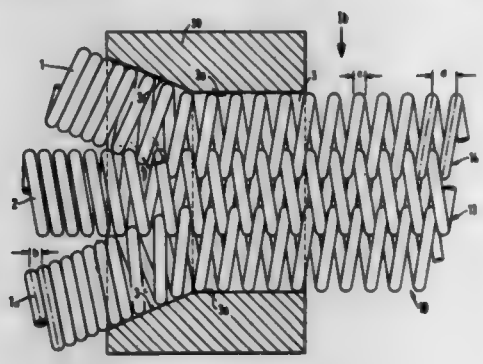
METHOD AND APPARATUS FOR THE MANUFACTURE OF WIRE LINK BANDS

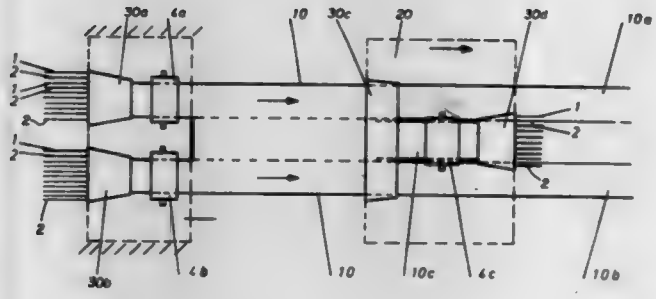
Heinz Kerber, Weidenthal, and Hella Kerber, Himberg 12, D-6731 Weidenthal/Pfalz, both of Fed. Rep. of Germany, assignors to Hella Kerber, Weidenthal, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 260,698, May 5, 1981, abandoned. This application Jun. 3, 1983, Ser. No. 500,669

Int. Cl.[3] B21F *15/02*

U.S. Cl. 140—111 19 Claims





1. A method for manufacturing link bands of wire-like monofilament material comprising the steps of:

providing a set of at least three helices comprising helically formed wire-like monofilaments of metal or synthetic material, wherein the pitch and diameter of the several helices are substantially equal and alternate ones of said helices are right-hand wound coils and the others are left-hand wound coils, the pitch of said helices being less than twice the diameter of the monofilaments of said helices,

simultaneously pulling the set of helices through a narrow closure slot adapted to align the helices and exert resistance to the pulling tension thereon, whereby to open the pitch of the coils elastically and to press adjacent turns of the aligned helices toward each other to cause each turn of each wire helix to become interdigitated between the adjacent two turns of the adjacent helices, and thereafter releasing the tension on said coils to permit the interdigitated coils to grip one another.

7. An apparatus for manufacturing wire-link bands from a set of at least three aligned, alternately right-hand and left-hand helices of metal or synthetic material and of substantially uniform diameter and each helix having a pitch of less than twice the diameter of the wire of the helices comprising

closure slot means having a closure slot which has a lateral entrance opening with one dimension equal approximately to the sum of the overall diameters of the individual helices, the closure slot narrowing down from the entrance opening to an exit opening smaller than the sum of the diameters of the set of helices, whereby said helices must interengage or interdigitate to pass out of said exit opening,

drive means adjacent the exit side of said closure slot means for moving the interengaged or interdigitated set of helices away from the exit of said slot and for applying sufficient tension to the helices to open the pitch of the helices and cause the adjacent helices to engage each other as the set of helices passes through said closure slot of the closure means.

4,535,825

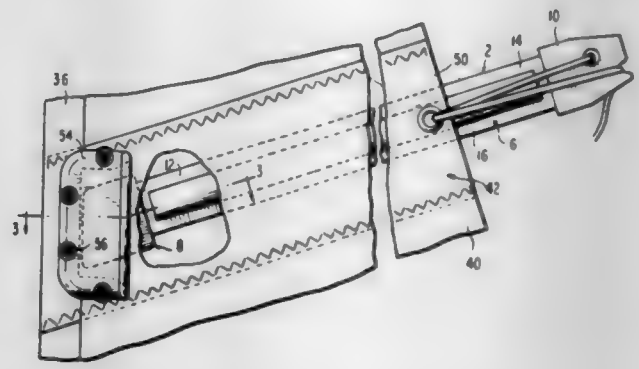
SAIL BATTEN IMPROVEMENTS

John Hackney, P.O. Box 1146, Jensen Beach, Fla. 33457

Filed Apr. 18, 1983, Ser. No. 486,216

Int. Cl.[3] B63H *9/04*

U.S. Cl. 114—103 13 Claims



1. A batten for a full battened sail provided on its fore end with a luff cap that comprises:

a fore portion and an integral aft portion,

means on said aft portion to attach said luff cap to said batten,

said fore portion having a leading edge that for the majority of its length defines a straight line which forms a single acute angle with the longitudinal axis of said batten.

4,535,826

APPARATUS FOR RAPID REFUELING OF ARMORED FIGHTING VEHICLES

Edward D. Bell, 5846 Denny Ave., North Hollywood, Calif. 91601

Filed Aug. 29, 1983, Ser. No. 527,422

Int. Cl.[3] B67D *5/00*

U.S. Cl. 141—231 5 Claims



1. Apparatus for remotely transferring fuel between armored and/or tracked ground vehicles comprising the combination of:

a mobile storage or tanker vehicle having a quantity of liquid fuel stored therein;

a mobile fuel consuming vehicle;

fuel dispensing means operably carried on said storage vehicle for conducting stored fuel therefrom which includes an elongated pivoting telescoping boom outwardly cantilivered from a selected end of said storage vehicle and terminating at its free end in a nozzle configured for operation without human contact;

a remotely operating cover enclosing said nozzle resiliently carried on said boom including a pair of doors having open and closed positions responsive to control means for exposing and covering said nozzle;

receptacle mean carried on said fuel consuming vehicle at a selected end thereof for insertably receiving said exposed nozzle for receiving fuel from said storage vehicle in a remote manner;

spacing means operably carried on said selected ends of said vehicle for abutting engagement to establish a predetermined spacing or distance between said vehicle selected ends; and

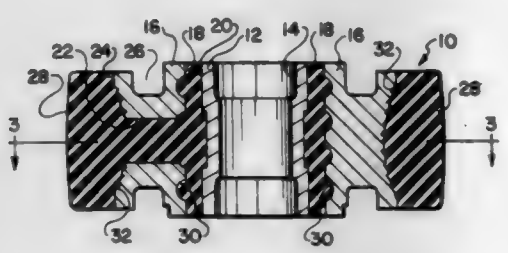
said predetermined spacing or distance related to said insertable reception penetration depth of said dispensing means within said receptacle means.

4,535,827

MOLDED SHOCK-ABSORBING WHEEL ASSEMBLY

F. Leo Seaford, Concord, N.C., assignor to Wil-Mat Corporation, Gastonia, N.C.

Filed Mar. 7, 1984, Ser. No. 587,302
Int. Cl.³ B60B *5/02, 9/12;* B60C *7/08*
U.S. Cl. 152—7 **4 Claims**



1. A shock-absorbing wheel assembly comprising:

(a) annular bearing means;

(b) an annular core member disposed concentrically about said bearing means with the interior surface of said core member spaced from the exterior surface of said bearing means, said annular core member having at least one passageway extending radially therethrough from the exterior surface thereof to said interior surface thereof; and

(c) a moldable plastic material disposed to cover said exterior surface of said core member with a predetermined thickness, to fill said radial passageway, and to fill said spacing between said core member and said bearing means, whereby said moldable plastic material constitutes the sole bond between said bearing member and said core, and forms a tread portion at the exterior surface of said core member.

4,535,828

WINDOW INSULATOR

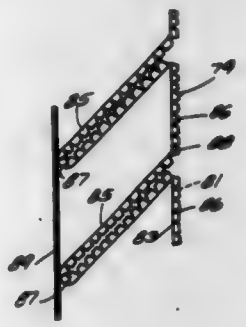
Peter B. Brockhaus, Rte. 1, Owen, Wis. 54460

Filed May 2, 1983, Ser. No. 490,466
Int. Cl.³ E06B *9/06*
U.S. Cl. 160—84 R **6 Claims**

4. Apparatus for inhibiting heat transfer through a building opening pane comprising:

(a) sill means for vertical movement within the building opening;

(b) a shade fastened to the sill means and fabricated from a laminated insulating material including a layer of air bubbles encapsulated between a thin sheet of flexible material embossed with a multiplicity of indentations and a skin of thin flexible material bonded to the embossed thin sheet to encapsulate the bubbles within the indentations, the shade having a plurality of sets of first, second, and third panels, the first and second panels of each set being of substantially equal length with each other and being folded over into facing contact with each other and bonded along their facing surfaces to form a bonded panel having a free end and a hinged end, the third panel of each set being



interposed between and hinged to successive bonded panels, the bonded panels being sloped toward the building opening pane when in the operative condition to form a plurality of three-sided pockets of stagnant air between the pane and the third panels; and

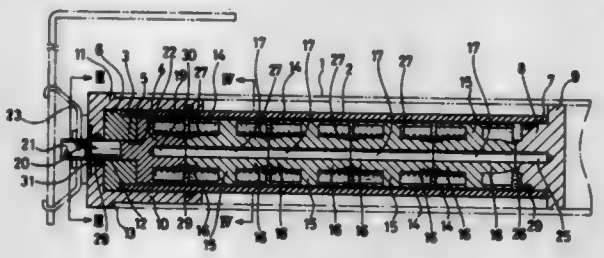
(c) at least one flexible strap fastened to the sill means and to the free end of each bonded panel to fixedly maintain the sloped attitude of the bonded panels when in the operative condition.

4,535,829

BRAKE APPARATUS FOR WINDING A ROLL-SCREEN

Shigeki Fukuchi, Tokyo, Japan, assignor to Metako Kigyo Co., Ltd., Tokyo, Japan

Filed Dec. 14, 1983, Ser. No. 561,187
Claims priority, application Japan, Dec. 24, 1982, 57-230334
Int. Cl.³ E06B *9/208*
U.S. Cl. 160—291 **1 Claim**



1. A brake apparatus for winding a roll-screen which comprises a pipe for winding the roll-screen; a cylinder fixed coaxially within a pipe; a plurality of brake bodies in the form of a double-cylinder integrated at its intermediate part, an inner cylinder of which is tapered toward its end faces or its center, said brake bodies being arranged in series within the cylinder and being slidably rotatable on the inner circumference of the cylinder; a fixing brake body in the form of a double-cylinder having a diameter equal to the brake body and closed one end, or in the form of a single-cylinder of a shape lacking an outer cylinder of the double-cylinder, said fixing brake body being arranged in one end of the cylinder and having its open end abutted to the brake body, said fixing brake body being provided at its bottom center opposite to the open end with a fixing shaft having a top end extended from one end of the winding pipe; a viscous fluid optionally filled between the outer circumference of the brake body and the fixing brake body on one hand and the inner circumference of the cylinder on the other hand; and coil springs having an inner diameter slightly less than an outer diameter of the inner cylinder and wound in the winding direction of the roll-screen, said coil springs being fitted over the inner cylinders of the fixing brake

body and the adjacent brake body and over the inner cylinders of the adjacent brake bodies to form an one way spring clutch having a play or a torsional flexure in one way of the winding direction.

4,535,830

LATERAL-TRACTION ROLLER SHADE

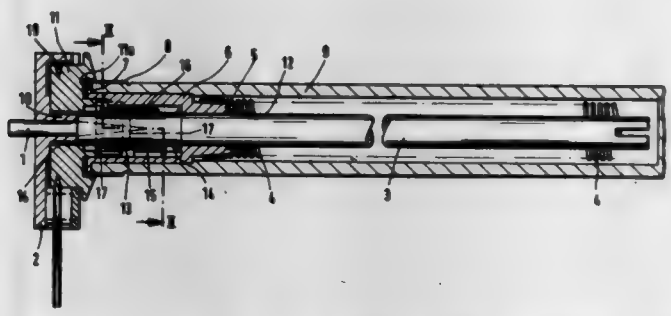
Hans Appel, Bremen, and Hermann Heidenescher, Melle, both of Fed. Rep. of Germany, assignors to Zundwarenfabrik Stracke GmbH & Co., Melle, Fed. Rep. of Germany

Filed Aug. 31, 1983, Ser. No. 528,019

Claims priority, application Fed. Rep. of Germany, Sep. 3, 1982, 3232722

Int. Cl.³ E06B *9/208*

U.S. Cl. 160—299 **8 Claims**



1. In a lateral-traction roller shade having a housing, a lateral sheave rotatably mounted in the housing, means effecting a driving relation between the sheave and a tubular roller-shade shaft and resiliently active means for retaining the shaft in position relative to the housing and which is releasable in response to the rotation of the sheave, the improvement comprising: a rod disposed in the interior of the shaft and fixed at one end to the housing; wherein the means effective a driving relation between the sheave and the shaft comprises a bushing mounted around the rod and within the shaft for rotation relative to the rod without any longitudinal displacement and fixed to the sheave and the shaft, the bushing including means forming an annular compartment around a portion of the rod; a retracting spring disposed around the rod and fixed at one end to the rod; means connecting the other end of the retraction spring to the bushing thereby functionally connecting the shaft to the retracting spring; wherein the retaining means includes a retaining spring disposed around the rod and in the annular compartment, means connecting the one end of the retaining spring furthest from the sheave to the bushing to effect rotation of the retaining spring with the bushing and wherein the other end projects outwardly and is movable in a given circular path, a drive segment connected to the sheave and disposed in the given path of the other end of the retaining spring and a drive member fixed on the bushing and in said given path downstream of the other end in the unwinding direction.

4,535,831

PATTERN FOR PRODUCING A MOLD AND METHOD FOR MANUFACTURE OF THE PATTERN

Kan-ichi Sato; Akio Yamanishi, and Takashi Higashino, all of Hirakata, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Mar. 11, 1982, Ser. No. 357,273

Claims priority, application Japan, Mar. 17, 1981, 56-37215

Int. Cl.³ B22D *13/10*

U.S. Cl. 164—33 **2 Claims**

1. A method of producing a pattern for use in the manufacture of a mold, comprising the steps of:

(a) forming a rolled-over male pattern by using a wooden pattern;

(b) forming a rolled-over female pattern having a thin-walled scale-off layer along a boundary thereof with said rolled-over male pattern by using the latter;

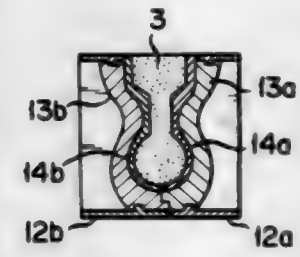
(c) removing the thin-walled scale-off layer from said rolled-over female pattern;

(d) pouring a silicone RTV rubber into a cavity of said rolled-over female pattern to form a match plate therein;

(e) setting a metallic frame on said match plate;

(f) filling the interior of the metallic frame with a mixture of microwave-pervious resin and silica sand;

(g) causing said mixture to be thermally cured thereby forming a reinforcing layer on the peripheral surface of said match plate;



(h) placing said rolled-over male pattern within said metallic-frame-supported reinforcing layer after removing said match plate therefrom; and

(i) injecting a microwave-pervious and heatproof material into the gap formed between said reinforcing layer and said rolled-over male pattern thereby forming a mold defining layer on the inner surface of said reinforcing layer.

4,535,832

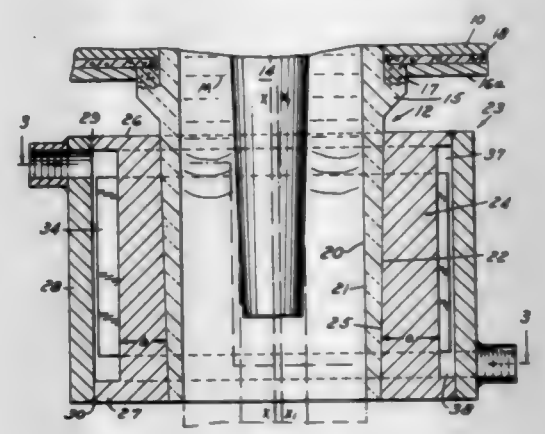
CONTINUOUS CASTING APPARATUS

Gus Sevastakis, 5645 Angola Rd., Toledo, Ohio 43615

Continuation-in-part of Ser. No. 258,590, Apr. 29, 1981, abandoned. This application Dec. 8, 1983, Ser. No. 559,276

Int. Cl.³ B22D *11/00, 11/04*

U.S. Cl. 164—421 **22 Claims**



1. In a continuous casting apparatus wherein molten metal flows through a die progressively and is solidified in the die and withdrawn from the die, a die and cooling assembly comprising

a tubular die having opposite inlet and outlet ends and an external tapered surface which is uniformly tapered radially inwardly towards the outlet end of the die,

a cooling sleeve having a longitudinal axis, and an internal surface complementary to the external surface of the die and in substantial intimate surface contact with the external surface of said die,

an annular cooling shell surrounding said cooling sleeve and having portions thereof spaced from said sleeve to define a cooling chamber,

at least one coolant inlet into the chamber for admitting coolant into the chamber,

at least one coolant outlet from said chamber for discharging coolant from the chamber,

said inlet and said outlet being spaced along the axis of the

sleeve with the outlet being nearest the inlet end of the die into which the molten metal flows,

means forming a first annular coolant chamber about the sleeve in the region of and in communication with said coolant inlet,

means forming a second annular coolant chamber in the region of and in communication with said coolant outlet,

said cooling sleeve having a body and a plurality of circumferentially spaced integral ribs extending longitudinally along the body and extending radially outwardly from the body in spaced relation to the inner surface of said cooling shell such that in use coolant flows from the coolant inlet about said first annular coolant chamber along the inner surface of the cooling shell and in a plurality of axial paths along the surfaces of said ribs, about said second annular chamber and then through said coolant outlet.

4,535,833

VERTICAL MULLION HAVING HEAT TRANSFER MEDIUM FLOW PASSAGE

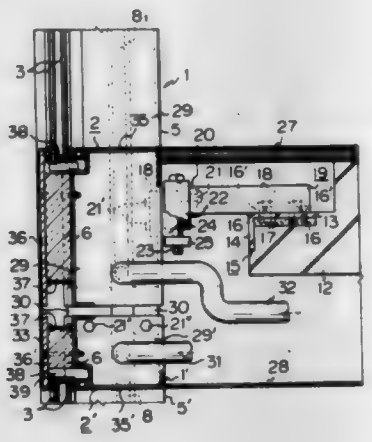
Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Aug. 10, 1983, Ser. No. 521,970

Claims priority, application Japan, Aug. 10, 1982, 57-121466[U]

Int. Cl.³ F24D *5/10*

U.S. Cl. 165—53 **3 Claims**



1. A vertical mullion comprising an outer structural member and a vertical mullion body coupled together by coupling means and embracing a heat insulating member therebetween, said vertical mullion body being an integrally extruded member having a generally rectangular cross-section and a heat transfer medum passage integrally set in a central portion thereof, one end portion of said mullion body being adapted to receive said coupling means, and the other end portion of said mullion body having a bracket means disposed for vertically slidable movement in a stationary fastener.

4,535,834

METHOD AND APPARATUS FOR CONTROLLING THERMAL TRANSFER IN A CYCLIC VACUUM PROCESSING SYSTEM

Norman L. Turner, Gloucester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Filed May 2, 1984, Ser. No. 606,051

Int. Cl.³ F28F *9/00*

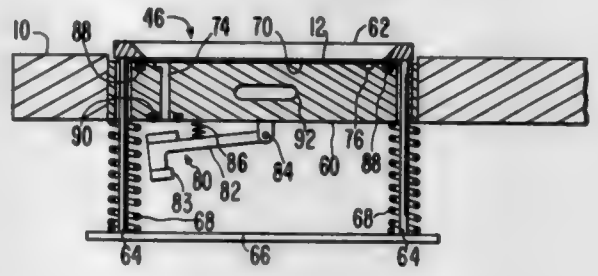
U.S. Cl. 165—80 R **9 Claims**

1. In a vacuum processing chamber which is vented during one portion of a processing cycle and is vacuum pumped to a low pressure during another portion of said cycle, apparatus for providing thermal transfer between a workpiece and a heat sink or source comprising:

a platen against which said workpiece is sealed to define a thermal transfer region therebetween, said platen including a passage for gas flow between said chamber and said thermal transfer region;

valve means for controllably opening and closing said passage; and

control means for closing said valve means when the pressure in said chamber reaches a predetermined intermediate pressure,



whereby gas at said intermediate pressure is trapped in said thermal transfer region during vacuum processing and conducts thermal energy between the workpiece and said platen.

4,535,835

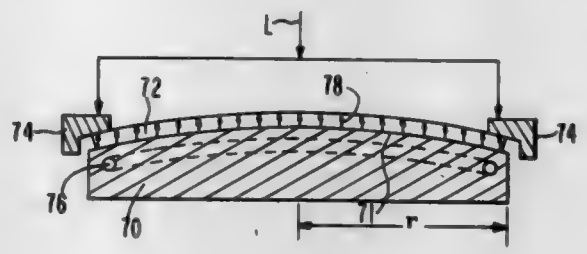
OPTIMUM SURFACE CONTOUR FOR CONDUCTIVE HEAT TRANSFER WITH A THIN FLEXIBLE WORKPIECE

Scott C. Holden, Manchester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Continuation of Ser. No. 381,668, May 25, 1982, abandoned. This application Jul. 18, 1984, Ser. No. 631,527

Int. Cl.³ F28F *9/00*

U.S. Cl. 165—80 R **10 Claims**



1. Apparatus for removal of heat from a planar article under irradiation by a radiation source, said apparatus comprising:

heat sink means for removal of heat transferred thereto from said article, said heat sink means including a nonplanar, nonspherical convex contact surface; and

clamping means for securing a peripheral portion of said planar article to said contact surface such that said article conforms to said contact surface, said contact surface having a contour which cooperates with said clamping means to impose uniformity of contact pressure over the surface area of said article in contact with said contact surface and to stress said article to approach the limiting elastic stress thereof.

4,535,836

VERTICALLY EXTENDING HEAT EXCHANGER

Edward B. Thomas, Verona, and Mark C. Peters, Pewaukee, both of Wis., assignors to Crepaco, Inc., Lake Mills, Wis.

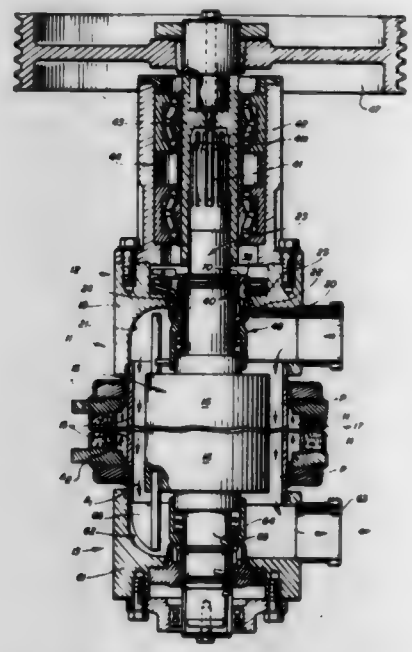
Filed Oct. 18, 1983, Ser. No. 543,080

Int. Cl.³ F28D *11/02*; F28F *5/02*

U.S. Cl. 165—86 **10 Claims**

1. A vertically extending heat exchanger comprising an upright chamber fixedly supported to assume a predetermined elevated position, said chamber having the interior thereof provided with a stationary inner sleeve of thermal conductive material, the exterior of said sleeve being encompassed by a heat exchange means; an elongated dasher mounted within said sleeve for selective relative longitudinal vertical movement

between operative and inoperative modes; when in an operative mode, said dasher being assembled within said sleeve and being adapted to be rotated about a central longitudinal axis of said sleeve and coacting with the latter to provide a product flow passage defined by an exterior portion of said dasher and an interior surface portion of said sleeve; an elevated first endwall assembly removably mounted on a lower exterior end portion of said chamber, said assembly being provided with dasher bearing means; a second endwall assembly elevated in relation to said first endwall assembly and mounted on an upper exterior end portion of said chamber, said second endwall assembly including a removable static seal section in encompassing non-rotating relation with an upwardly projecting axial segment of said dasher, and dynamic seal section in encompassing relation with said axial segment and rotatable



therewith as a unit, said static and dynamic seal sections having portions thereof in sealing engagement, both of said seal sections being movable endwise as a unit with the dasher relative to said second endwall assembly when said dasher is longitudinally moved between said operative and inoperative modes, unitary longitudinal movement of said seal sections and said dasher occurring without any manual adjustment of said second endwall assembly and while the latter remains mounted on the chamber upper exterior end portion; product inlet and outlet ports communicating with said product flow passage; and drive means elevated relative to said first endwall assembly and fixedly mounted adjacent the second endwall assembly and being provided with a drive segment operatively connected to the dasher axial segment for imparting rotational movement to said dasher when the latter is in said operative mode.

4,535,837

LATENT HEAT STORAGE DEVICE

Takahito Ishii, Yamatokoriyama; Kazuo Yamashita, Ikoma, and Hiroshi Uno, Nara, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

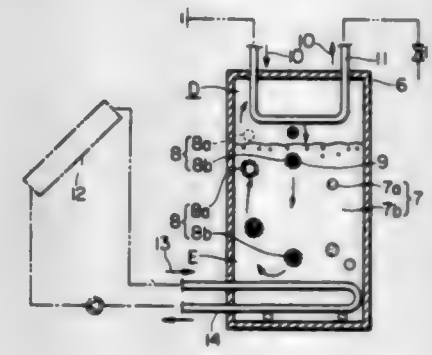
Filed Feb. 28, 1984, Ser. No. 584,393

Claims priority, application Japan, Mar. 2, 1983, 58-34967; Mar. 29, 1983, 58-54431; Mar. 29, 1983, 58-54432

Int. Cl.³ F28D *21/00*

U.S. Cl. 165—104.17 **22 Claims**

1. A latent heat storage device comprising a closed vessel sealingly containing therein a latent heat storage material, a heat transfer medium substantially immiscibile with said latent heat storage material and changing from a liquid state to a gaseous state at the time of absorption of heat and from a gaseous state to a liquid state at the time of liberation of heat, and a heat output accelerating material having a density higher than at least the density of liquid phase of said latent heat storage material and being selectively wettable with said heat transfer medium more than with said latent heat storage material, and a space portion being left in the uppermost area of the interior of the closed vessel.



4,535,838

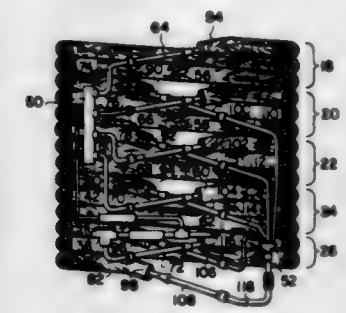
HEAT EXCHANGE COIL AND METHOD OF MAKING

David A. Gray, and Donald O. Webb, both of Tyler, Tex., assignors to American Standard Inc., New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,053

Int. Cl.³ F28F *1/10, 9/26, 19/00*

U.S. Cl. 165—134 R **13 Claims**



1. A heat exchanger coil for a multiple circuit heat exchange unit comprising:

a plurality of adjacent individual fin and tube coil circuits disposed vertically one above another, each of said individual circuits having a lower end and an upper end, the upper end of an individual coil circuit juxtaposed the lower end of the individual coil circuit disposed immediately above to form a pair of adjacent circuit ends in said heat exchange coil and the axis of each of said upper and lower circuit ends being skewed downwardly and away from the portion of the individual coil circuit from which said ends extend so that moisture on the exterior of said circuit ends flows downwardly and away from said upper and lower circuit ends;

a first manifold;

a second manifold; and

means for connecting the upper end of each of said individual coil circuits to said first manifold and the lower end of each of said individual coil circuits to said second manifold, said connecting means intercrossed once for each of said pairs of adjacent upper and lower circuit ends said connecting means being fabricated from a metal dissimilar to the metal from which said coil circuits are fabricated.

4,535,839

HEAT EXCHANGER WITH CONVOLUTED AIR CENTER STRIP

Demetrio B. Sacca, Lockport, N.Y., assignor to General Motors Corporation, Detroit, Mich.

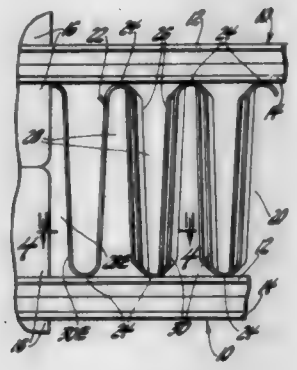
Filed Dec. 20, 1982, Ser. No. 450,963

Int. Cl.³ F28F *1/22, 3/06*

U.S. Cl. 165—153 **2 Claims**

1. In a heat exchanger having adjacent tube passes formed by plates with adjoining cup configurations at their ends wherein

a convoluted air center strip with rows of louvers across the width thereof is located between the plates of adjacent tube passes with its ends adjacent the cup configurations: an im-



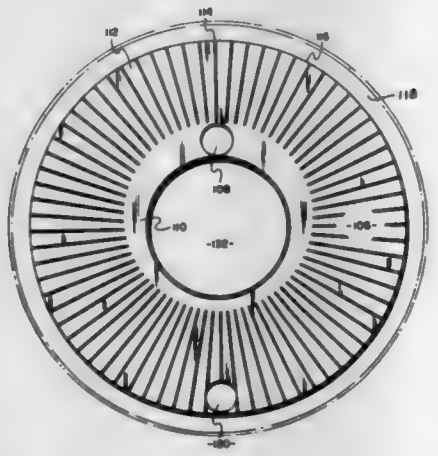
proved air center strip having at least one row of louvers at both ends of the strip closed so as to prevent air leakage through the ends of the strip around the adjoining cup configurations.

4,535,840

INTERNALLY MANIFOLDED UNIBODY PLATE FOR A PLATE/FIN-TYPE HEAT EXCHANGER

Irwin E. Rosman, Woodland Hills, and William R. Wagner, Los Angeles, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 80,877, Oct. 1, 1979, Pat. No. 4,347,896.
This application Apr. 30, 1982, Ser. No. 375,511
Int. Cl.³ F28F *3/08*
U.S. Cl. 165—167 **8 Claims**



1. An annular structure for a plate/fin-type heat exchanger, comprising:

at least one open-faced inlet plate wherein said plate comprises:

an inlet plate having an inner and an outer periphery, for channeling a fluid;

at least one side port adjacent to the outer periphery of said plate and transversely oriented through the top edge of said open-faced inlet plate;

one pair of integral external side manifolds for each side port, wherein one external side manifold is positioned at said side port and the second integral external side closed manifold is diagonally positioned on the opposite side wall;

means for internally manifolding, wherein said means are contiguous with said side port and adjacent to the outer periphery of said inlet plate;

a closed end coincidental with said outer periphery of said inlet plate;

a plurality of contact fins and channels for directing fluid flow and for enhancing heat transfer, and wherein each of said plurality of contact fins and channels are contiguous with, in the plane of, and radially extending from said means for internally manifolding;

an open end port contiguous with said contact fins and channels; and

a bottom for mating with an open face of a superposed outlet plate;

one open-faced outlet plate for each inlet plate, wherein said outlet plate comprises:

an outlet plate having an inner and an outer periphery for channeling a fluid;

at least one outlet plate side port adjacent to the inner periphery of said outlet plate and transversely oriented through the top edge of said open-faced outlet plate;

at least one pair of integral external side manifolds wherein one external side manifold is positioned at said outlet plate side port and the second integral external side closed manifold is diagonally positioned on the opposite side wall;

means for internally manifolding said outlet plate, wherein said means for internally manifolding said outlet plate are contiguous with said outlet plate side port and adjacent to the inner periphery of said outlet plate;

a closed end coincidental with said outer periphery of said outlet plate;

a plurality of outlet plate contact fins and channels for directing fluid flow and for enhancing heat transfer, and wherein each of said plurality of outlet plate contact fins and channels are contiguous with, in the plane of, and transverse to said means for internally manifolding said outlet plate;

an open end port contiguous with said outlet plate contact fins and channels; and

a bottom for mating with an open face of a superposed inlet plate; and

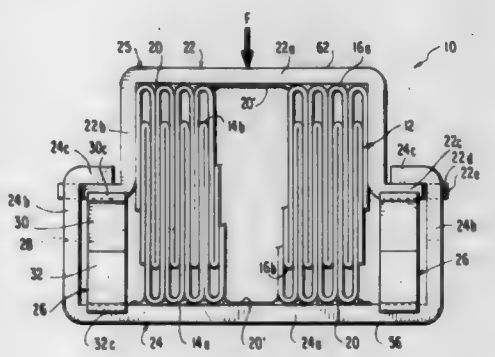
means for sealably connecting said inlet and said outlet plates through their respective integral external side manifolds so as to form said annular structure.

4,535,841

HIGH POWER CHIP COOLING DEVICE AND METHOD OF MANUFACTURING SAME

Paul Kok, Wappingers Falls, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,907
Int. Cl.³ H01L *23/36*
U.S. Cl. 165—185 **8 Claims**



6. A leaf-type cooling device for semiconductor chip packages manufactured in accordance with the method comprising the steps of:

removably laminating two strips of a heat transfer metal together back-to-back with a solvent soluble adhesive to form a composite strip;

coating the non-mating exposed planar surfaces of said composite strip with a solder;

folding said composite strip in accordion pleated fashion with compacted folds in abutment with one another and forming ridges at the fold lines thereof;

positioning said folded composite strip between solderable

supports having opposed faces of said supports in contact with respective opposed ridges of said folded composite;

heating said composite strip to solder said ridges to respective ones of said supports and to solder adjacent folds of the same strip to each other; and

removing said adhesive by solvation in a solvent to form interleaved fins between said supports;

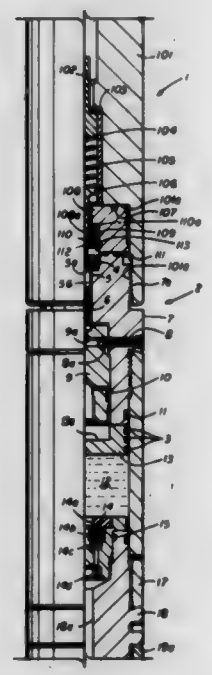
thereby producing a low cost, low impedance heat transport device of a minimal number of components which may be subject to standard stamping and forming operations.

4,535,842

WELL TOOL SETTING ASSEMBLY

Richard J. Ross, Houston, Tex., assignor to Baker Oil Tools, Inc., Orange, Calif.

Filed Jul. 1, 1983, Ser. No. 510,210
Int. Cl.³ E21B *23/04*
U.S. Cl. 166—63 **6 Claims**



1. An apparatus for use in applying a force to a tool disposed at a sub-surface location in a well bore comprising:

a hollow housing having at least one port extending therethrough and communicable between the interior of the housing and the exterior well bore;

a valving piston axially shiftably mounted in the hollow housing for movement between a first position overlapping said port and a second position axially spaced from said port;

shearable means mounted in said port for closing said port and securing said valving piston in said first position;

means operating in response to an external signal for shifting said valving piston to said second position and thereby shearing said shearable means to open said port;

a first piston within the housing responsive to hydrostatic pressure in the well bore when the port is opened;

an actuating piston shiftable relative to the housing and having means for transmitting movement of the actuating piston to the well tool;

a hydraulic fluid disposed within the housing between the first piston and the actuating piston, the hydrostatic pressure force acting on the first piston being applied to the hydraulic fluid for driving the actuating piston; and

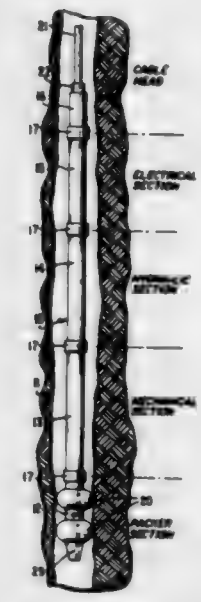
metering means disposed between the first piston and the actuating piston for establishing a pressure drop thereacross and for reducing the flow rate of fluid therethrough during the period from initiation until completion of movement of the actuating piston, whereby the actuating force applied through the actuating piston, and the rate at which the well wool is actuated, are determined by the well bore hydrostatic force and the metering means.

4,535,843

METHOD AND APPARATUS FOR OBTAINING SELECTED SAMPLES OF FORMATION FLUIDS

Alfred H. Jageler, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation of Ser. No. 380,689, May 21, 1982, abandoned. This application Jun. 8, 1984, Ser. No. 618,613
Int. Cl.³ E21B *49/08*
U.S. Cl. 166—250 **16 Claims**



1. A method for obtaining formation fluid samples from a bore hole which method comprises:

(a) lowering a tool suspended by a wireline into said bore hole to a preselected level;

(b) utilizing a pair of packers carried by said tool to isolate an interval of said bore hole by inflating said packers to expand them into sealing contact with said bore hole;

(c) withdrawing fluid from said isolated interval and measuring its resistivity in a resistivity test chamber within said tool and sending the resistivity measurement to the surface via said wireline;

(d) when the resistivity becomes constant, indicating that formation fluid uncontaminated by drilling mud components is being withdrawn into said tool, directing the withdrawn fluid into a second test chamber and measuring therein the redox potential, acidity and temperature of said fluid and sending results thereof to the surface by said wireline;

(e) determining from the thus transmitted results whether it is desired to retain a sample and, if the determination is positive, pumping said fluid to one of a plurality of sample collection chambers within said tool, if the determination is negative returning said fluid to said bore hole;

(f) deflating said packers to free said tool for vertical movement and moving said tool to another preselected location;

(g) repeating steps (b) through (f) until the sample chambers in said tool are filled with desired samples; and

(h) retracting said wireline to return the tool and the collected samples to the surface.

4,535,844

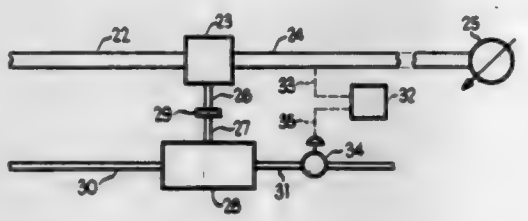
METHOD OF USING POLYMER FLOW CONTROL APPARATUS

Wayne E. Luetzelschwab, Littleton, Colo., assignor to Marathon Oil Company, Findlay, Ohio

Filed Jul. 20, 1983, Ser. No. 515,416
Int. Cl.³ E21B *43/22, 47/00*
U.S. Cl. 166—252 **7 Claims**

1. A method for controlling the flow of polymer solutions of the type employed as drive fluids and/or mobility control agents in the recovery of oil from subterranean oil-bearing reservoirs to prevent shear degradation of the polymer solu-

tion prior to introducing the polymer solution into an input well of an oil-bearing reservoir: comprising the steps of diluting the polymer solution to provide a concentration of the polymer in the solution sufficient to enable the solution to substantially meet the permeability requirements of the oil-bearing reservoir; passing the diluted polymer solution at one fluid pressure through flow control means to effect a lowering



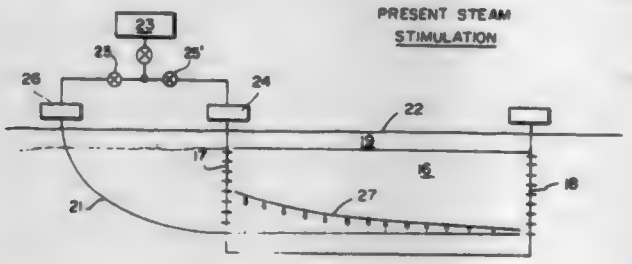
of the fluid pressure of the polymer solution while at the same time extracting from the flow control means the energy resulting from the lowering of the fluid pressure of the polymer solution; and utilizing at least a portion of the extracted energy to regulate the rate at which the polymer solution passes through the flow control means so as to minimize any shear degradation of the polymer solution as it undergoes a change in fluid pressure.

4,535,845

METHOD FOR PRODUCING VISCOUS HYDROCARBONS FROM DISCRETE SEGMENTS OF A SUBTERRANEAN LAYER

Alfred Brown; Wann-Sheng Huang, and Yick-Mow Shum, all of Houston, Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,672
Int. Cl.³ E21B *43/24*
U.S. Cl. 166—272 **2 Claims**



1. Method for producing viscous hydrocarbon from a productive substrate layer in which the hydrocarbon is releasably held, which method includes the steps of;

segregating a discrete vertical subsection of said substrate layer which is marginated between a pair of laterally spaced, substantially vertically oriented wells, and at least one other well, a portion of the latter being disposed substantially horizontal, and positioned adjacent to the bottom of the laterally spaced vertical wells,

said respective vertical walls and at least one other well, being perforated along a portion of the lengths thereof which contacts the productive substrate layer,

preheating said discrete vertical subsection,

introducing multi-directional flows of a pressurized heating medium concurrently from one of said vertical wells and the horizontal well respectively, into said vertical subsection to form thermal fronts in the productive layer, which fronts combine to establish an aggregate thermal front which is urged toward the other of said laterally spaced vertically oriented wells,

producing hydrocarbon from said other vertically oriented well,

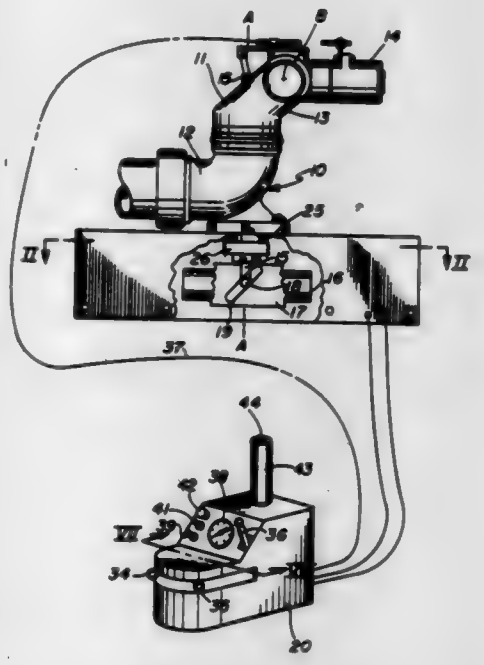
and the production of hydrocarbon from said vertical subsection by way of said at least one other well is achieved prior to the introduction of said multi-directional flows of heating medium thereto, and subsequent to said vertical subsection becoming preheated.

4,535,846

FIRE FIGHTING TURRET

John P. Gagliardo, Shrewsbury; Donald K. Morse, and Albert Pruneau, Jr., both of Worcester, all of Mass., assignors to Feecon Corporation, Westboro, Mass.

Filed Sep. 6, 1983, Ser. No. 529,329
Int. Cl.³ A62C *31/02*; B05B *13/04*
U.S. Cl. 169—25 **7 Claims**



1. Fire fighting turret, comprising:

(a) a nozzle apparatus, including a main body adapted to receive fluid under pressure, an intermediate body mounted on the main body for swinging motion about a vertical axis, and a nozzle mounted on the intermediate body for movement about a horizontal axis,

(b) a control rod extending through the main body and the intermediate body, mounted therein for vertical sliding movement, and connected at its upper end to the nozzle for bringing about the said movement about a horizontal axis,

(c) an elevation cylinder mounted in fixed relationship to the main body, and

(d) an actuating element with an inclined slot, a vertical slot, and a guide element riding in the slots, the elements joining a mo able element of the cylinder and the control rod to bring about vertical movement of the rod when the cylinder is energized.

4,535,847

TRACTOR WITH THREE-POINT LINKAGE CONNECTING SCRAPER THERETO AND AUTOMATIC TILT CONTROL

Shigekazu Hasegawa, Sakai; Naoki Okita, Nara, and Satoshi Machida, Sakai, all of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 2, 1983, Ser. No. 490,806
Claims priority, application Japan, Oct. 29, 1982, 57-191712
Int. Cl.³ A01B *65/02*
U.S. Cl. 172—2 **11 Claims**

1. A tractor comprising:

a tractor body;

a scraper;

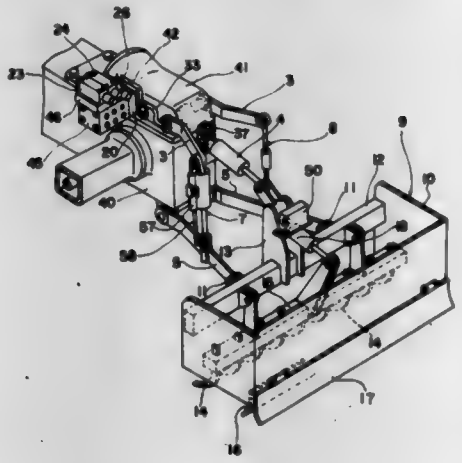
a three-point linkage means for connecting said scraper to said tractor body, said linkage means including a top central link means and left and right lower link means;

a pair of lift arm means connected to said left and right lower link means, a hydraulic operated cylinder connected to said lift arm means for raising and lowering said scraper;

a position controlling mechanism, a hand lever operatively connected thereto, said controlling mechanism being adapted to control said hydraulic operated cylinder to raise

and lower said scraper to a position corresponding to a position selected by said hand lever and which automatically retains said scraper in said position;

a first hydraulic actuator included in one of said pair of lift arm means for rolling adjustment of said scraper;



a sensor for detecting right and left slant postures of said scraper, said sensor generating a tilt detection signal; and

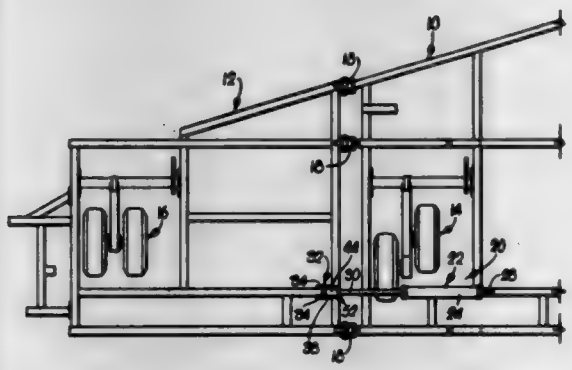
an automatic control mechanism responsive to said tilt detection signal for actuating said first hydraulic actuator for automatically correcting the slant posture of said scraper.

4,535,848

WING LIFT FOR FOLDABLE IMPLEMENTS

Billy J. Pfenninger, and F. Harrison Stansel, both of Hutchinson, Kans., assignors to Krause Plow Corporation, Hutchinson, Kans.

Filed Aug. 17, 1983, Ser. No. 523,958
Int. Cl.[3] A01B *63/32*
U.S. Cl. 172—311 5 Claims



1. In a farm implement having a normally horizontal, main, wheel-supported frame and a wheel-supported wing frame having a normally horizontal position and provided with hinge means pivotally attaching the same to the main frame for up and down swinging movement about a normally horizontal, fore and aft axis, mechanism normally overlying the frames for swinging the wing frame about said hinge means from said horizontal position to an upright position and thence to a folded position overlying the main frame with said mechanism disposed between the frames, said mechanism including:

an elongated, double-acting, fluid pressure, piston and cylinder assembly having a longitudinal axis, said assembly being provided with a cylinder having means at one end thereof pivotally connecting the same to said main frame remote from the hinge means and a reciprocable piston rod having an outermost end and extending outwardly from the opposite end of the cylinder;

a single, elongated, normally upstanding arm having its longitudinal axis angularly offset relative to the longitudinal axis of said assembly when the wing frame is in said horizontal position;

means pivotally connecting the arm directly to the wing, frame at the normally lowermost end of the arm adjacent, but spaced from the hinge means;

a knee joint adjacent the uppermost end of the arm presenting an articulation between the arm and the outermost end of the rod whereby, upon retraction of the rod, a pulling force is applied to the joint to raise the wing frame from said horizontal position to said upright position and to move said axis of the arm into alignment with said axis of the assembly until the wing frame reaches the folded position;

an upstanding lug rigid to the wing frame said disposed between the arm and the hinge means for engagement by the arm and transmitting said pulling force from the assembly to the wing frame,

a block secured to the rod at the outermost end of the latter;

means pivotally connecting the block to the arm at the normally uppermost end of the arm; presenting a knee joint; and

stop means rigidly secured to said arm and spaced from said main frame and said wing frame,

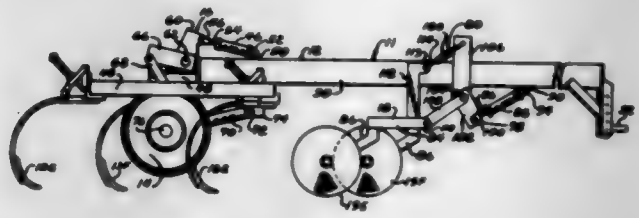
said stop means being disposed for cooperative engagement with said block as said axis of said assembly and said axis of said arm become aligned such that downward jackknifing of said knee joint is precluded.

4,535,849

IMPLEMENT WITH HORIZONTAL LINKAGE DEPTH CONTROL

William J. Dietrich, Sr., Congerville, Ill., assignor to DMI, Inc., Goodfield, Ill.

Filed Sep. 16, 1983, Ser. No. 532,678
Int. Cl.[3] A01B *13/08*
U.S. Cl. 172—468 11 Claims



1. In a tillage apparatus adapted to be pulled by a vehicle, including a main frame adapted to carry a first set of ground working tools; wheel means coupled to said main frame for supporting and carrying said main frame; and first lift means coupled to said wheel means and main frame for raising and lowering said main frame, the improvement comprising: a sub-frame carried by said main frame at a location forward of said first set of tools; a second set of ground working tools mounted to said sub-frame, at least some tools of said second set being located forward of other tools of said second set; and a second lift means coupled to said main frame and said sub-frame for adjusting the height of said sub-frame, including a single rock shaft rotatably mounted to said main frame; power means coupled to said rock shaft for rotating it; and linkage means for mounting said sub-frame to said main frame and constructed and arranged to support said sub-frame while maintaining said sub-frame in horizontal disposition when said second set of tools are in working engagement with the soil, said linkage means comprising a first pair of generally parallel opposing links formed by a generally vertical frame extension of said main frame and said sub-frame respectively; and a second pair of generally parallel opposing links formed by a shaft arm rigidly attached to said rock shaft at one end and pivotally connected to said sub-frame at the other end, and a connecting link means pivotally mounted to said main frame vertical extension at one end and pivotally mounted to said sub-frame vertical extension at the other end.

4,535,850

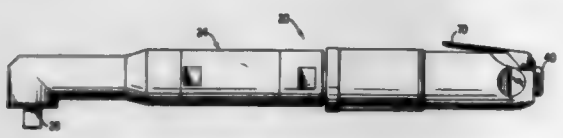
POWER-OPERATED FASTENER TOOL

Robert H. Alexander, Columbia, S.C., assignor to Rockwell International Corporation, Pittsburgh, Pa.

Continuation of Ser. No. 104,209, Jan. 6, 1971, abandoned. This application Mar. 8, 1982, Ser. No. 356,095

Int. Cl.[3] B25B *23/14*

U.S. Cl. 173—12 17 Claims



1. A power-operated tool for tightening fasteners comprising an air motor; an output member adapted to rotate a fastener engaging component; a speed reducing drive train means drive-connecting the motor of said tool to the output member therof, said motor and said drive train means including rotatable components; and means drive-connected between said drive train means and said output member providing an energy sink capable of absorbing substantially all of the kinetic energy generated by said rotatable motor and drive train means components whereby, as said fastener is tightened, the kinetic energy of said components is absorbed by said energy sink providing means and the speed of said motor is decreased to a speed below its no-load speed.

4,535,851

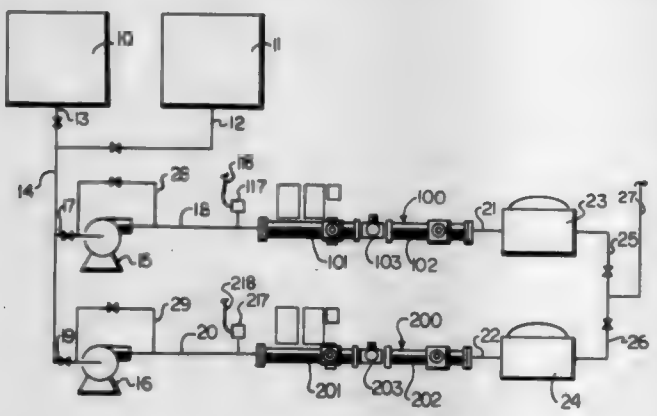
FLUID FLOW MEASUREMENT SYSTEM

Lloyd V. Kirkpatrick, Beaumont, and John R. McGee, Simonton, both of Tex., assignors to Kirkpatrick-McGee, Inc., Houston, Tex.

Filed Mar. 9, 1983, Ser. No. 473,645

Int. Cl.[3] E21B *21/08, 44/00*

U.S. Cl. 175—38 16 Claims



1. Apparatus for the measurement or control, or both, of the flow of a fluid over a wide range of flow conditions and compositions, which comprises:

a measurement primary device through which said fluid is passed, the primary measuring device being provided with a variable orifice primary, means for measuring density, and rate of flow of the fluid via differential pressure means located on opposite sides of said variable orifice, these measurements being input to a computer which calculates the density, viscosity and the compensated flow of the fluid, the computer controlling the variable orifice of the measurement primary in relation to input signals received from the measurement primary device.

4,535,852

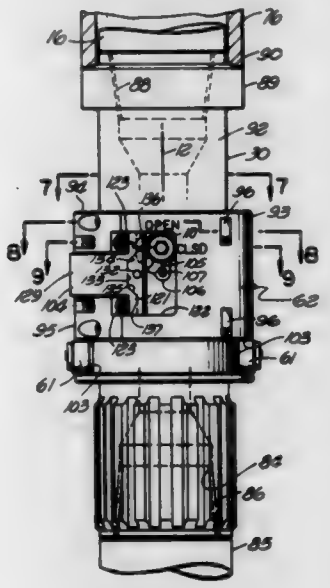
DRILL STRING VALVE ACTUATOR

George I. Boyadjieff, Anaheim, and Igor Krasnov, Fountain Valley, both of Calif., assignors to Varco International, Inc., Orange, Calif.

Filed Dec. 27, 1983, Ser. No. 565,702

Int. Cl.[3] E21B *21/10, 34/16;* F16K *31/00*

U.S. Cl. 175—170 21 Claims



1. A well pipe valve actuator comprising:

a tubular element to be connected to the upper end of a drill string and containing a passage through which fluid flows;

a valve within said tubular element actuable between an open position permitting fluid flow through said passage and a closed position preventing such flow;

a member for actuating said valve and which is mounted for pivotal movement about an axis relative to said tubular element to open and close the valve;

a part mounted near said member for movement between first and second positions relative to said tubular element and which is engageable with said member in an interfitting relation pivoting said member to open the valve upon movement of said part to said first position thereof, and pivoting said member to close the valve upon movement of said part to said second position thereof;

powered means for moving said part to open and close the valve; and

manual override means enabling said member to be pivoted manually to open and close the valve without actuation of said powered means;

said part being constructed and mounted to move out of interfitting relation with respect to said member upon arrival at at least one of said first and second positions of said part to avoid interferences by said part with manual actuation of the valve.

20. The combination comprising:

a top drive drilling unit including a housing, a tubular element rotatable relative to said housing and connectable to the upper end of a drill string, and a motor carried by said housing for driving said tubular element to turn the string;

an elongated support member connected to said drilling unit and projecting downwardly lower than said housing;

a first piston and cylinder mechanism suspended from a lower portion of said support member;

a torque wrench for making and breaking joints in the drill string and which is suspended by said piston and cylinder mechanism and is actuable upwardly and downwardly thereby;

at least one additional piston and cylinder mechanism suspended by said support member at a location spaced lower than said housing;

a valve for closing off the flow of fluid through said drill string; and

means actuable by said additional piston and cylinder mechanism to open and close said valve;

said tubular element of the top drive drilling unit having a tubular extension projecting downwardly therefrom and containing said valve;

said means including a sleeve disposed about said tubular extension and movable upwardly and downwardly relative thereto and operable by such upward and downward movement to actuate said valve, and at least one lever structure actuable by said additional piston and cylinder mechanism and having a portion engaging an essentially annular relatively rotatable portion of said sleeve to actuate the sleeve upwardly and downwardly.

4,535,853

DRILL BIT FOR JET ASSISTED ROTARY DRILLING

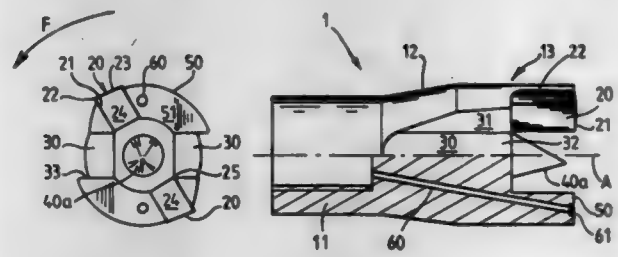
Serge Ippolito, Freyming-Merlebach, and Georges A. Cagnioncle, Mulhouse, both of France, assignors to Charbonnages de France, Paris and Cocentall - Ateliers de Carspach, Mulhouse, both of, France

Filed Dec. 23, 1983, Ser. No. 564,804

Claims priority, application France, Dec. 23, 1982, 82 21674

Int. Cl.³ E21B *10/02*

U.S. Cl. 175—404 **20 Claims**



1. A rock drill bit for very high pressure jet assisted rotary drilling to be mounted to the end of a rotational drive rod for rotation around a rotational axis, comprising a body, a discontinuous peripheral crown axially extending from said body opposite to said rod, a central burster within said crown, at least two drilling plates inserted in said crown, having a small radial dimension and formed with working edges radially and axially projecting from said crown, said drilling plates being circumferentially separated by debris discharge ramps provided across said crown, and very high pressure fluid supply channels crossing through said crown and opening close to said plates.

4,535,854

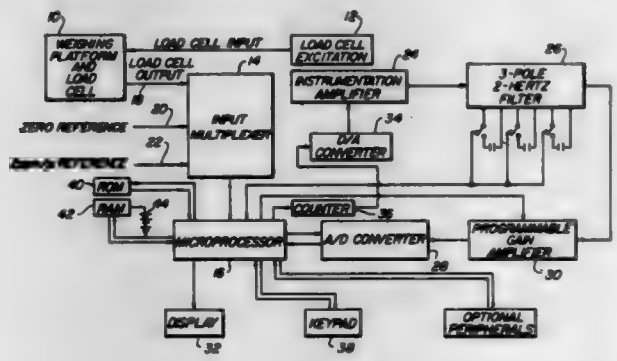
CALIBRATION METHOD AND APPARATUS FOR AN ELECTRONIC WEIGHT INDICATOR

Eric A. Gard; William J. Kautter, Jr., both of Lancaster, and Kenneth E. Bartsch, Manheim, all of Pa., assignors to Pennsylvania Scale Company, Leola, Pa.

Filed Nov. 16, 1982, Ser. No. 442,026

Int. Cl.³ G01G *9/00, 19/34, 23/01, 23/14*

U.S. Cl. 177—1 **11 Claims**



1. A method of calibrating and correcting for changes after calibration in an electronic weight indicator adapted to convert an analog output of a load cell into a digital display with the aid of a digital computer comprising:

(a) initially calibrating the weight indicator to display, in digital form, a range of weights, the analog signal of which is produced by the load cell including inputing the computer with a data base including at least,

1. a zero reference measurement;
2. a deadload correction offset measurement;
3. a span measurement of the analog and A/D circuitry;
4. the data base corresponds to:

$$M = \frac{M\,Sig - M\,Bias}{M\,Ref - M\,Zero},$$

if the deadload correction is positive, and

$$M = \frac{M\,Sig - M\,Bias - (M\,Gref - M\,Zero)}{M\,Gref - M\,Zero},$$

if the deadload correction is negative where:

M=corrected measurement of load cell output;

M Sig=uncorrected measurement of load cell output;

M Zero=zero reference measurement;

M Gref=2 ppm/°C. reference measurement;

M Bias=measurement of deadload correction;

5. the deadload correction offset measurement is determined by a count contained in a counter;

(b) converting the analog output of the load cell to a digital value with the aid of an A/D converter;

(c) repetitively measuring the zero reference, the deadload correction offset, and the span of the analog and A/D circuitry;

(d) multiplexing the zero reference, deadload correction offset and span of the analog and A/D circuitry with the load cell output; and

(e) normalizing the analog input to the zero, deadload correction offset and span measurements to obtain a displayed weight independent of all analog and A/D offsets and gains.

4,535,855

ARTICLE DISCHARGE APPARATUS AND METHOD IN AUTOMATIC WEIGHING SYSTEM

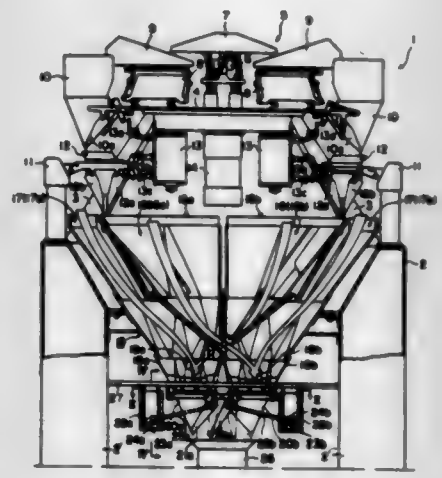
Asashiro Izumi, Kusatsu; Yoshiharu Mikami, and Seiji Yamada, both of Kyoto, all of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Dec. 29, 1983, Ser. No. 566,879

Claims priority, application Japan, Dec. 29, 1982, 57-234380; Jan. 28, 1983, 58-13053

Int. Cl.³ G01G *19/22*

U.S. Cl. 177—1 **10 Claims**



5. A method of discharging weighed articles in an automatic

weighing system, wherein weighed articles are collected and discharged by selectively introducing the weighed articles, released from a plurality of weighing hoppers, into first and second collecting routes of a collecting chute, said method comprising the steps of:

(a) temporarily gathering weighed articles at outlets of respective ones of the first and second collecting routes; and

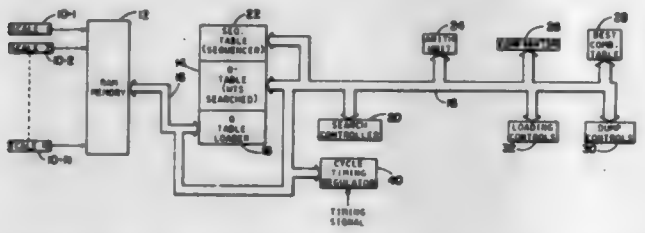
(b) selectively discharging the weighed articles from one of the outlets once the weighed articles have been gathered at the outlet, so that when weighed articles are released into one of the first and second collecting routes of the collecting chute from weighing hoppers selected by a combinatorial computation, said step (b) includes a step of discharging weighed articles previously gathered at the outlet corresponding to the one of the first and second collecting routes during the time needed for the weighed articles just released to reach the outlet via the one of the first and second collecting routes.

4,535,856

COMBINATION WEIGHING MACHINE HAVING SHORT SEARCH

Oren A. Mosher, Hayward, and Ellwood S. Douglas, Orinda, both of Calif., assignors to Package Machinery Co., East Longmeadow, Mass.

Filed Feb. 16, 1984, Ser. No. 580,847
Int. Cl.³ G01G *19/00, 19/22, 19/52*
U.S. Cl. 177—1 **18 Claims**



1. A combination weighing machine for forming a charge of product closely approximating a target amount in a cyclic machine operation comprising:

a plurality of weigh scales, each receiving a quantity of product in an amount preferably a fraction of the target amount and providing a data signal indicative of the quantity of product received;

arithmetic means for receiving the data signals from the scales in various combinations and combining the signals to produce total sums indicative of the total quantity of product in each respective combination;

combination searching means for supplying the data signals to the arithmetic means is selected combinations in a search sequence during a combination search operation;

comparator means for determining in the course of a search operation which of the combinations of scales have total sums most nearly approximating the target amount;

memory means for storing the searched combination most nearly approximating the target amount during the course of the search operation;

means for terminating the search operation of the combination searching means upon a specified condition whether the search sequence is completed or not; and

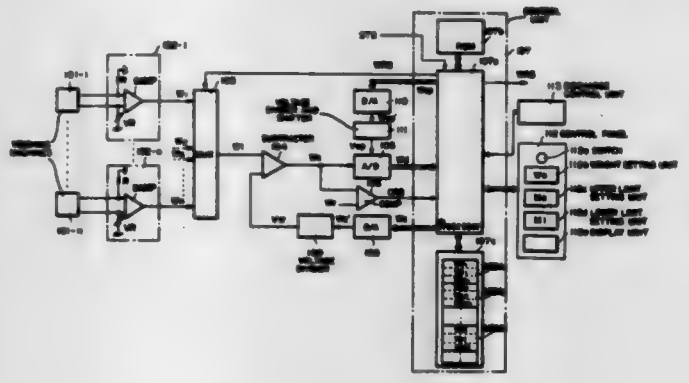
utilization means for receiving from the memory means the preferred combination at the termination of a search operation.

4,535,857

SPAN ADJUSTING METHOD AND APPARATUS

Setsuo Haze, Shiga, Japan, assignor to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Apr. 27, 1984, Ser. No. 605,375
Claims priority, application Japan, Apr. 28, 1983, 58-075445
Int. Cl.³ G01G *19/52, 19/22, 23/14;* G01L *25/00*
U.S. Cl. 177—50 **10 Claims**



1. A span adjustment method for applying a known load to a weighing machine which produces an analog output, and effecting an adjustment so that a true weight value, in the form of a digital value conforming to the known load, is obtained, said method comprising the steps of:

(a) producing a digital span adjustment value;

(b) converting the digital span adjustment value into an analog span adjustment value;

(c) converting the analog output of the weighing machine into a digital output value using an analog-to-digital converter, and comparing the digital output value and the digital value conforming to the known load, while changing a conversion characteristic of the analog-to-digital converter in accordance with the analog span adjustment value; and

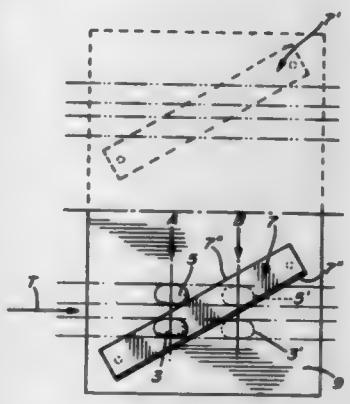
(d) sequentially changing the digital span adjustment value, in accordance with the relative sizes of the compared digital values, to obtain a true weight value, which conforms to the known load, as the digital output value produced as an output by the analog-to-digital converter.

4,535,858

WEIGHING SCALE FOR INDIVIDUAL WHEELS OF A TANDEM SET OF WHEELS

Pierre Provost, Vauquor, and Jean T. Bédard, Barfleur, both of Canada, assignors to Vaqua Pneumatique, Quebec, Canada

Filed Mar. 27, 1984, Ser. No. 593,935
Claims priority, application Canada, Dec. 9, 1983, 442926
Int. Cl.³ G01G *19/02, 21/24*
U.S. Cl. 177—134 **11 Claims**



1. A weighing scale for weighing, individually the loads on the wheels of a set of wheels of a vehicle mounted at either end of an axle in side-by-side relationship for movement along a

weighing surface in a direction transverse to the axis of the axle, said scale comprising:

a weighing element arranged substantially in said surface plane and having at least one side edge at an oblique angle to said direction of travel;

said weighing element being supported, in a vertical sense, solely by weight detector means.

4,535,859

VEHICLE

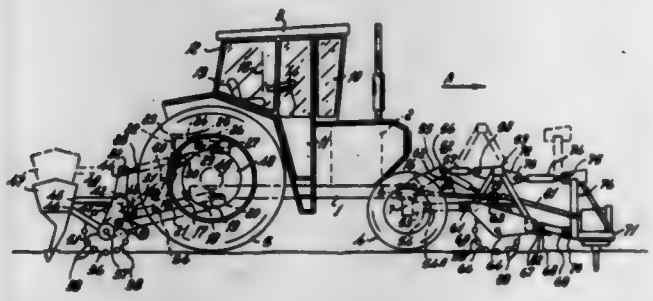
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Division of Ser. No. 445,738, Nov. 30, 1982, which is a continuation of Ser. No. 131,043, Mar. 17, 1980, Pat. No. 4,448,274. This application Feb. 29, 1984, Ser. No. 584,591

Claims priority, application Netherlands, Mar. 21, 1979, 7902198; Mar. 21, 1979, 7902199; Mar. 21, 1979, 7902200

Int. Cl.[3] B60K *25/00*

U.S. Cl. 180—15 19 Claims



1. An agricultural tractor comprising an engine, wheels driven by said engine and a power take-off shaft driven by said engine with a rotational speed proportional to the rotational speed of said wheels, in combination with an agricultural implement which includes at least one rotational soil contacting member and coupling means which connects said soil contacting member with said power take-off shaft so that the rotational speed of said member is proportional to the rotational speed of said wheels and its operational peripheral speed is the same as the tractor's travelling speed, said member being constructed and arranged to avoid compaction of the soil which is adverse to plant growth and to improve traction of the combined tractor and said member.

4,535,860

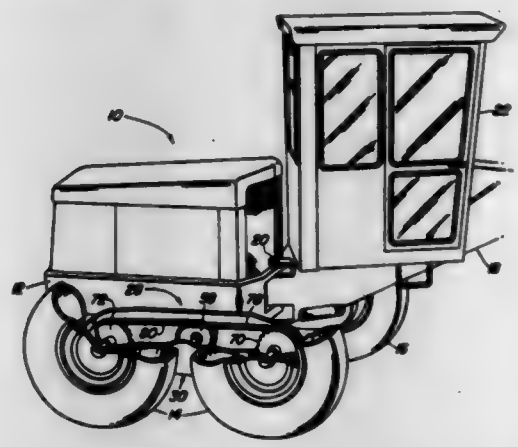
TANDEM DRIVE MOUNTING

Van E. Waggoner, Dubuque, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 30, 1982, Ser. No. 412,734

Int. Cl.[3] B62D *61/10*

U.S. Cl. 180—24.05 3 Claims



1. In a tandem drive including a tandem housing having inner and outer vertical walls, a first circular opening provided in the inner wall centrally between opposite ends of the tandem housing, second and third circular openings provided in the outer wall at respective locations on opposite sides of and equidistant from the first opening, a final drive housing secured to the inner wall and supporting a drive shaft centrally within the first opening, and first and second axle housings respectively fixed to the outer wall and supporting first and second axles centrally within the second and third openings, the improvement comprising: at least one dowel pin provided in the inner wall and received in a locating hole in the final drive housing and at least two dowel pins provided in the outer wall with one each respectively received in a locating hole of each of the first and second axle housings; said one and two dowels being precisely located one to the other whereby the drive and first and second axle shafts are located precisely one to the other; said final drive and first and second axle housings respectively including annular surfaces engaged with a mating surface of the tandem housing located annularly about the first, second and third openings; and each annular surface being provided with an annular groove having a seal located therein.

4,535,861

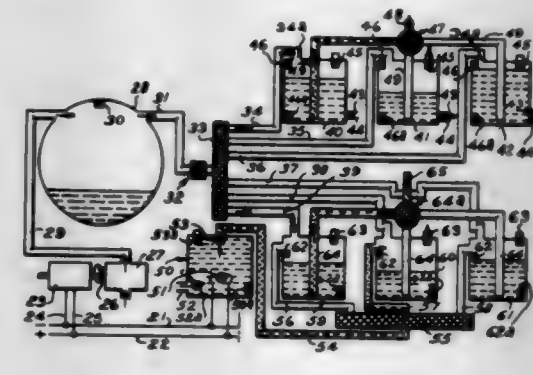
POWER SOURCE FROM GENERATING CAUSED BY BRAKING ELECTRIC POWERED VEHICLES

Janos Nagy, 2600 Monroe St., Hollywood, Fla. 33020

Filed Apr. 28, 1983, Ser. No. 489,376

Int. Cl.[3] B60K *17/28, 25/00*

U.S. Cl. 180—53.5 1 Claim



1. A power source, comprising, in combination, a secondary circuit secured to the electrical motors of an electrically driven vehicle, and a hot and cold water pumping system secured to said secondary circuit; said secondary circuit being secured to the output side of said electrical motors of said electrically driven vehicle; the output side of said secondary circuit being connected to a compressor motor and a thermostatically controlled electric heating coil within a boiler for hot water, and said compressor motor filling a compressed air tank which supplies compressed air to a plurality of hot water tanks and a plurality of cold water tanks, to force hot water and cold water up in a tall building; and programmed valve and switch means whereby when one of said cold water tanks and one of said hot water tanks are in a now water supplying phase, another one of said cold water tanks, and another one of said hot water tanks are in a tank filling phase, and a third of said cold water tanks and a third of said hot water tanks are in a ready to supply phase for a continuous cold and hot water supply.

4,535,862

ENGINE COOLING SYSTEM FOR VEHICLES

James C. LeBlanc, 38261 Long St., Mt. Clemens, Mich.

Continuation-in-part of Ser. No. 287,042, Jul. 27, 1981, abandoned, which is a continuation of Ser. No. 145,604, May 1, 1980, abandoned, which is a division of Ser. No. 927,600, Jul. 21, 1978, abandoned. This application Oct. 29, 1982, Ser. No. 437,851

Int. Cl.[3] B60L *11/00*

U.S. Cl. 180—68.1 35 Claims

1. In a vehicle having a body of monocoque construction and an engine mounted in said body, a cooling system comprising:

a means disposed on said body defining a plenum chamber

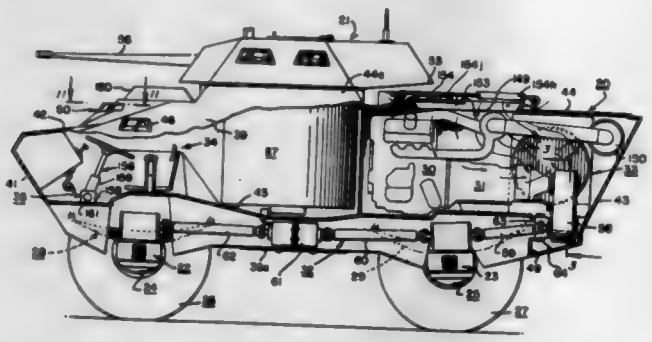
disposed between said engine and a side wall of said vehicle body,

an exhaust means associated with said plenum chamber,

a radiator disposed between an interior portion of said body including said engine and said plenum chamber, mounted substantially in a rear corner of said body, and operatively connected to said engine,

a fan mounted in said plenum chamber between said radiator and said exhaust means and adjacent said radiator,

a driving means for driving said fan, whereby upon operation of said fan air within the interior portion of said body



including said engine is drawn through said radiator and said plenum chamber and expelled through said exhaust means,

an access means on said body positioned generally over said engine for providing access to said engine from outside said body,

an air inlet means associated with said access means for providing air from outside said body to said radiator, and

a directing means associated with said access means for directing air provided by said air inlet means to said radiator so that the incoming ambient air does not scrub over said engine.

4,535,863

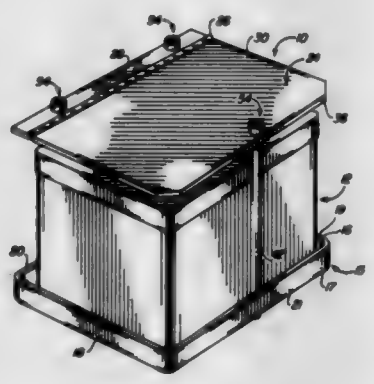
BATTERY SECURITY AND HOLD-DOWN DEVICE

John R. Becker, 3751 W. Crocus Dr., Phoenix, Ariz. 85029

Filed Aug. 26, 1983, Ser. No. 526,705

Int. Cl.³ E05B *73/00*; H01M *2/04*; B60R *18/02*

U.S. Cl. 180—68.5 **18 Claims**



1. A device for securing an electric storage battery against theft from a battery support tray provided in an automotive vehicle, said device comprising:

(a) at least a pair of stanchions for attachment to the battery support tray adjacent and upstanding from opposite side edges thereof, said pair of stanchions being elongated to locate their upper ends above the top of the battery when the battery is in the support tray and said pair of stanchions are attached thereto;

(b) fastener receiver means integrally formed on the upper end of each of said pair of stanchions;

(c) plate means for attachment to the upper ends of said pair of stanchions in overlaying relationship with the top of the battery when the battery is in the support tray and said pair of stanchions are attached thereto, said plate means including,

I. an elongated relatively narrow rigid flange for attachment to at least one of said pair of stanchions,

II. a rigid relatively wider battery cover flap for attachment to the other of said pair of stanchions,

III. a hinge interconnecting said flange and said flap; and

(d) at least a pair of security fastener means each for engaging said plate means and one of said fastener receiver means for attaching and deterring removal of said plate means from said fastener receiver means.

4,535,864

CRUISE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Kou Tanigawa, Akashi; Jiro Masuda, Kobe; Kazumasa Nakamura, Okazaki, and Kazuhiko Hayashi, Toyota, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Division of Ser. No. 382,413, May 26, 1982, Pat. No. 4,463,822.

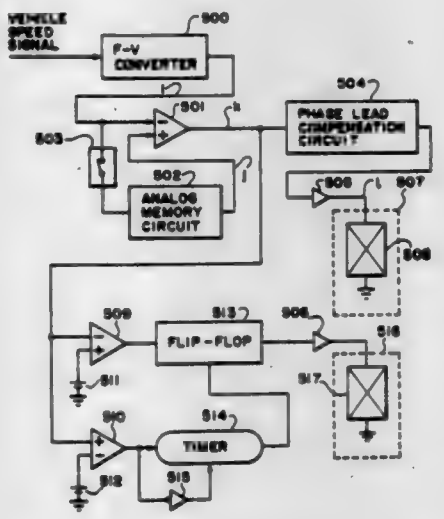
This application May 29, 1984, Ser. No. 614,861

Claims priority, application Japan, May 27, 1981, 56-80286; May 27, 1981, 56-80287; May 27, 1981, 56-80288

The portion of the term of this patent subsequent to Aug. 7, 2001, has been disclaimed.

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—177 **3 Claims**



1. A cruise control system for controlling the speed of a vehicle, comprising

first means for setting a desired speed for said vehicle, for comparing the actual speed of said vehicle with said desired speed, and for providing an output corresponding to the difference therebetween,

a negative pressure type actuator which controls an accelerator of the vehicle according to said output of said first means,

automatic gearshift means for providing an automatic gearshift function from a high gear to a lower gear of said vehicle and back and,

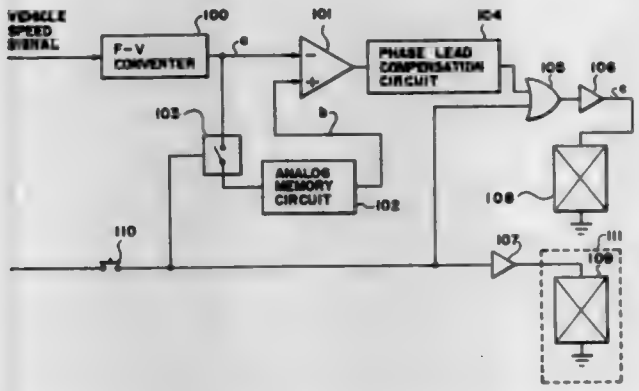
second means for operating said automatic gearshift means, for automatically shifting from said high gear into said lower gear when the actual speed of said vehicle is at least a first predetermined amount less than said desired speed, and for shifting back to said high gear at a predetermined time with respect to when the actual speed comes within a second predetermined amount of said desired speed, said first predetermined amount being larger than said second predetermined amount.

4,535,865

CRUISE CONTROL SYSTEM FOR AUTOMOTIVE VEHICLE

Kou Tanigawa, Akashi; Jiro Masuda, Kobe; Kazumasa Nakamura, Okazaki, and Kazuhiko Hayashi, Toyota, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, both of, Japan

Continuation of Ser. No. 614,861, May 29, 1984, which is a division of Ser. No. 382,413, May 26, 1982, Pat. No. 4,463,822.
This application Dec. 24, 1984, Ser. No. 685,541
Claims priority, application Japan, May 27, 1981, 56-80287; May 27, 1981, 56-80288; May 27, 1981, 56-80286
Int. Cl.[3] B60K *31/00*
U.S. Cl. 180—177 4 Claims



1. A system for controlling the speed of a vehicle having an accelerator operated by an operator and a transmission, said system comprising:

means for producing a speed signal corresponding to the speed of said vehicle,

a memory for inputting, storing and outputting a value corresponding to a selected speed of said vehicle,

a comparator for comparing the output of said memory and said speed signal and for providing a corresponding output signal when the speed signal is less than said output of said memory,

an actuator, linked to said accelerator, for depressing said accelerator for increasing the speed of said vehicle in response to an input signal to said actuator,

shift means for shifting said transmission from a higher gear to a lower gear in response to an input signal thereto, and for shifting back to said high gear after said input thereto ceases,

increase set switch means for changing said value stored in said memory, in correspondence to the vehicle speed during the operation of the increase means, and for providing said input signal to said shift means, and

an OR circuit having as inputs the signals corresponding to said output signal of said comparator and to said input of said shift means, and having an output that provides said input to said actuator,

wherein, (1) upon operation of said increase set switch means, the speed of said vehicle tends to increase, (2) upon the release of said increase set switch means, a value is stored in said memory corresponding to a value of the vehicle speed during the operation of said increase set switch means, and (3) after said release of said increase set switch means, said actuator is controlled according to the output of said comparator.

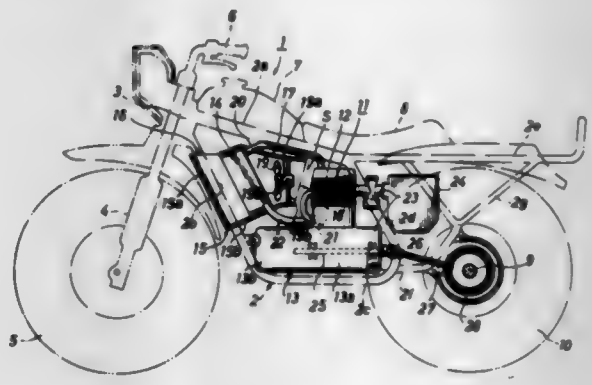
4,535,866

THREE-WHEELED MOTOR VEHICLE

Mitsuo Shiga, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 22, 1983, Ser. No. 487,734
Claims priority, application Japan, Apr. 22, 1982, 57-68524
Int. Cl.[3] B60K *11/04*
U.S. Cl. 180—215 6 Claims

1. A three-wheeled motor vehicle including a frame, one steerable front wheel attached to said frame, two rear wheels attached to said frame and serving as drive wheels, a fuel tank mounted on an upper portion of said frame, a seat mounted on said frame behind said fuel tank, an engine mounted on a lower portion of said frame, said engine being a water cooled engine and comprising a cylinder portion comprising a cylinder head



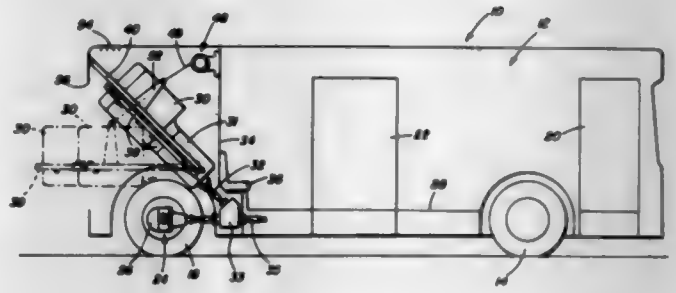
and cylinder block and a crankcase portion which underlies said cylinder portion, a transmission case integral with said crankcase portion having a transmission-containing portion forward of said crankcase portion, and a radiator being disposed within a space formed in front of said cylinder portion of said engine.

4,535,867

VERTICALLY INCLINED ENGINE LOW FLOOR BUS

Bela Botar, 10205 Collins Ave., Miami, Fla. 33154

Continuation-in-part of Ser. No. 388,119, Jun. 14, 1982. This application Sep. 24, 1982, Ser. No. 423,849
Int. Cl.[3] B60K *5/00*
U.S. Cl. 180—294 4 Claims



1. A vertically inclined engine bus comprising a bus body having front steerable wheels and rear drive wheels interconnected by a drive axle assembly, a floor, and drive motor and transmission means connected to the drive axle assembly, said drive, motor and transmission means being disposed in vertically inclined position above the drive axle assembly thereby enabling the drive axle assembly and rear wheels to be oriented closer to the rear of the body and increasing the wheelbase without increasing the overall length of the bus, said body having a rear wall providing a partition between the rear of the floor and the compartment receiving the drive motor and transmission means, said floor being disposed in a single plane and extending forwardly from the rear axle assembly and positioned in a horizontal plane below the upper limit of movement of the drive axle assembly whereby the floor may be positioned closer to the ground surface, and a rearmost seat assembly affixed to the body forwardly of the rear wall in a manner eliminating access to the rear engine compartment through said partition provided by the rear wall, said drive motor and transmission means being supported from a sub-frame, means pivotally supporting the lower end of the sub-frame from the body to enable the drive mtor and transmission means to swing down and slide rearwardly to a generally horizontal position extending rearwardly longitudinally of the body for easy access to all areas of the drive motor and transmission means, said sub-frame being retained in upwardly

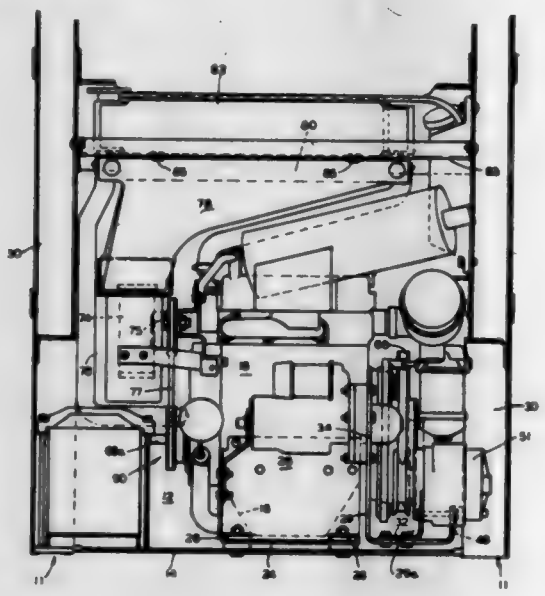
extending position by removable fastener means adjacent the upper end thereof, winch means for raising and lowering the sub-frame, drive motor and transmission means about a transverse axis defined by the pivotal support means.

4,535,868

TRANSVERSE ENGINE MOUNTING

Joseph M. Mather, Lisbon, and Larry E. Albright, Gwinner, both of N. Dak., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Jun. 8, 1983, Ser. No. 502,409
Int. Cl.³ B62D *11/04*
U.S. Cl. 180—297 **13 Claims**



1. A mounting arrangement for the engine and pump mechanism of a hydrostatic drive vehicle which has two frame side members and a frame cross member extending between the two frame side members near one end of the vehicle comprising

a longitudinally extending first bracket located adjacent one frame side member and connected thereto by a vibration dampening connection,

one end of the engine and one end of the pump mechanism rigidly connected to said first bracket,

the engine and the pump mechanism being located transversely of the frame,

a second transverse bracket rigidly connected to the engine and connected by at least one vibration dampening connection to the frame cross member,

a third engine-pump bracket rigidly connected to the engine adjacent the other end thereof and rigidly connected to the pump mechanism, and

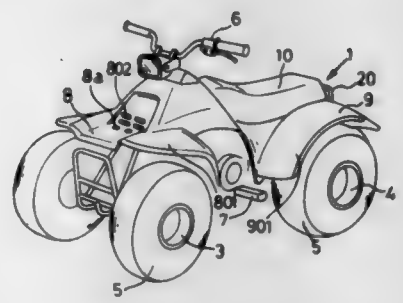
a fourth pump-frame bracket rigidly connected adjacent the other end of the pump mechanism and connected to the other frame side member by a vibration dampening connection.

4,535,869

SADDLE RIDING TYPE MOTORCAR HAVING FOUR WHEELS

Shinobu Tsutsumikoshi, Lamirada; Akira Goto, Fullerton, both of Calif.; Tsuyoshi Murakami; Masao Takasaka, both of Hamamatsu, Japan, and Yoshiki Shinohara, Hamamatsu, Japan, assignors to Suzuki Motor Company Limited, Kamimura, Japan

Filed Jan. 31, 1983, Ser. No. 462,236
Claims priority, application Japan, Feb. 5, 1982, 57-017324; Feb. 6, 1982, 57-017768; Nov. 13, 1982, 57-199640; Nov. 13, 1982, 57-199641
Int. Cl.³ B62J *15/00*; B62K *5/00, 11/02*
U.S. Cl. 180—311 **13 Claims**



1. A saddle riding type motorcar having four wheels comprising:

two front wheels and two rear wheels;

a frame structure comprising a pair of upper frames, a pair of lower frames and a plurality of spacer frames;

said pair of upper frames comprising a pair of fore end portions extending downward from a bent portion of each upper frame at a forward inclination angle and a pair of inclined portions extending rearward a certain distance at a gentle downward slope;

said pair of lower frames being fixedly connected to the pair of upper frames by a fore axle at their fore ends and by vertically extending frames at their rear ends;

said spacer frames extending in the transverse direction relative to the upper and lower frames and connecting one of the upper frames to the other upper frame and one of the lower frames to the other lower frame;

a steering head disposed at said bent portion of the upper frames;

front wheel supporting sections disposed at both the end parts of the fore axle; and

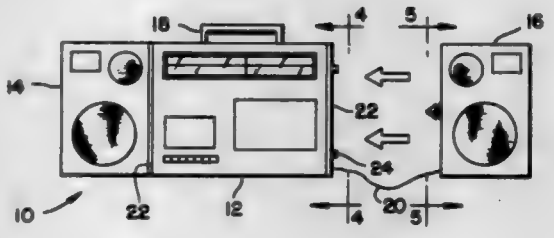
rear wheel supporting sections disposed at the rearmost end parts of the lower frames.

4,535,870

QUICK ATTACH-DETACH MECHANISM FOR AUDIO COMPONENTS

Paul H. Lindsay, Vernon, N.Y., assignor to General Electric Company, Portsmouth, Va.

Filed Nov. 15, 1984, Ser. No. 671,624
Int. Cl.³ G10K *10/00*
U.S. Cl. 181—141 **12 Claims**



1. In a portable audio apparatus including at least two components having separate housings, a quick attach-detach mechanism for selectively locking the components into a substantially rigid and vibration free integrated unit and selectively

releasing the components for stand-alone operation, said quick attach-detach mechanism comprising:

a plurality of studs projecting from a first one of said housings along spaced-apart parallel axes,

resilient means on a second one of said housings located thereonto abut the distal ends of said studs when the components are positioned to form an integrated unit, said resilient means being resiliently compressible along the axes of said studs,

a first locking means projecting outwardly from a selected one of said first and second housings along an axis parallel to the axes of said studs at least when the components are positioned to form an integrated unit, and first locking means having detent means thereon,

a second locking means carried by the non-selected one of said first and second housings, said second locking means having a first operatve position adapted to engage said detent means only when the components are positioned to form an integrated unit with said resilient means substantially compressed to apply separating forces on said studs along the axes of said studs, and said second locking means having a second operative position adapted to avoid engagement with said detent means in all relative positions of the components,

and manual operating means movable between a latched position and an unlatched position, said manual operating means coupled to said second locking means such that said second locking means is in its first operative position when said manual operating means is in its latched position and said second locking means is in its second operative position when said manual operating means is in its unlatched position,

said second locking means and said manual operating means being normally biased toward said respective first operative and latched positions,

whereby manual movement of said manual operating means to its unlatched position when the components comprise an integrated unit will move said second locking means to its second operative position to disengage said first locking means and permit separation of the components as a result of the separating forces exerted on the distal ends of said studs by said resilient means.

4,535,871

UNITARY STAIRWAY

James M. Lapeyre, New Orleans, La., assignor to The Laitram Corporation, New Orleans, La.

Continuation-in-part of Ser. No. 306,585, Sep. 28, 1981, abandoned. This application Jul. 26, 1982, Ser. No. 402,218

Int. Cl.[3] E06C *9/02*; B63B *29/20*

U.S. Cl. 182—93 9 Claims

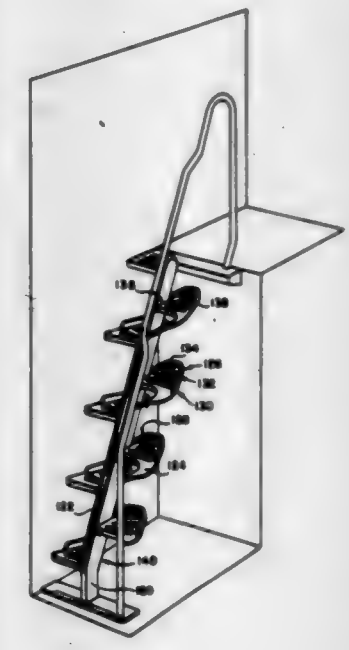
1. A stairway comprising:

a central tread support member having a first side, a second side, a front edge and a rear edge, said central tread support member adapted for mounting between an upper level and a lower level;

a plurality of tread members including an uppermost member, a lowermost member and middle members, said middle members disposed in alternating arrangement on said first and second sides of the central tread support member, each of said middle members having a rearward periphery, an inner edge and a front edge; and

an upwardly extending flange about the rearward periphery of the respective middle members to serve as a stop to a user's foot, said flange having a substantially vertical inward facing surface; an edge of said flange confronting said rear edge of the central support member;

selected ones of said middle members including a recessed mounting portion along the inner edge of the respective middle members adjacent the front edge of said middle members, said portion adapted to confront one of said sides of the central tread support member when said central tread support member and respective middle members are disposed in assembled relation.



4,535,872

RETARDERS SUITABLE FOR WAGON SPEED CONTROL AND HAVING MEANS FOR HOLDING THEM IN THEIR OPERATIVE CONDITION

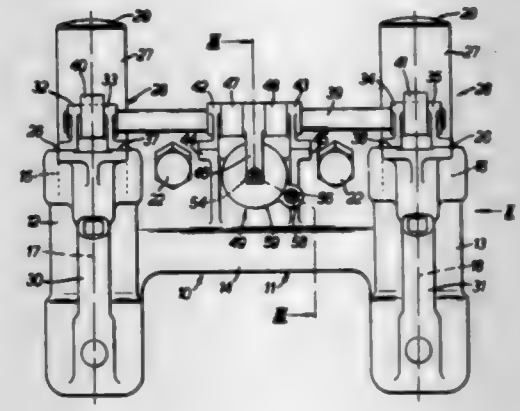
David E. Bick, Newent; Christopher F. Flippance, and Ian C. Parry, both of Cheltenham, all of England, assignors to Dowty Hydraulic Units Limited, England

Filed Sep. 21, 1982, Ser. No. 420,889

Claims priority, application United Kingdom, Oct. 6, 1981, 8130165

Int. Cl.[3] B61K *7/02*

U.S. Cl. 188—62 15 Claims



1. A retarder, suitable for reducing the speed of a wagon rolling along a railway track, including a retainer which is adapted to be secured with respect to a rail of said track, an hydraulic unit which is so fitted in said retainer that a portion thereof, which normally projects from the retainer thus to lie in the path of a wheel of said wagon so as to be engageable by that wheel, is movable inwardly of said retainer to a position out of said path in which it permits said wheel to pass said retarder, and holding means movable into engagement with said portion for maintaining said portion in that position, wherein said portion of said hydraulic unit is so movable inwardly of said retainer by said wheel as in rolling along said rail it engages said portion.

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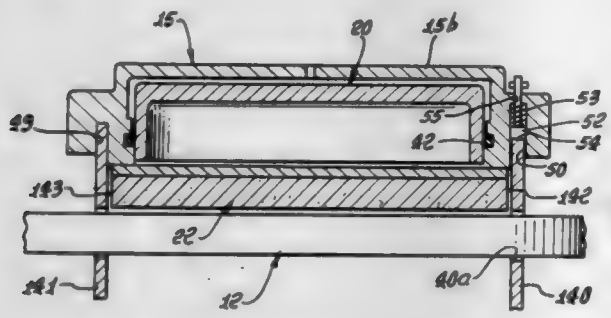
COMPACT HIGH PERFORMANCE DISC BRAKE

Franklin B. Airheart, Sacramento, Calif., assignor to Alston Industries, Inc., Sacramento, Calif.

Filed Aug. 15, 1983, Ser. No. 523,154

Int. Cl.[3] F16D *55/18, 65/00*

U.S. Cl. 188—72.4 10 Claims



1. In caliper brake apparatus having a caliper housing, an actuator including a plunger having an axis and movable axially longitudinally to urge a lining against a rotating disc, the lining having the form of a plate which is laterally elongated and defining a plane generally perpendicular to said axis, the improvement combination comprising

(a) said plunger having cross sections in planes normal to said axis and characterized as laterally elongated and as having lateral length dimensions which are substantially greater than the plunger transverse width dimension, said width dimension being generally normal to said axis and to said lateral length dimension, and

(b) said actuator having a recess receiving said plunger, said recess having cross sections in planes normal to said longitudinal axis characterized as conforming in shape to said plunger cross sections, said plunger and recess cross sections having kidney shaped outlines,

(c) the housing removably supporting the lining, and including laterally spaced end plates carried by the housing and confining opposite ends of said lining therebetween, at least one end plate being removable to permit endwise removal and replacement of the lining, the housing defining at least one slot proximate ends of the lining and plunger and slidably receiving at least one of said end plates, with said end plate freely projecting outwardly of the slot and having an external tang for lift-out removal, relative to the slot, each slot and end plate extending inward sufficiently that the end plate faces substantially the entirety of the full end extent of the lining,

(d) the housing having transversely shaped shoulders defining at least one ledge spaced from the plunger and between which, portions of the lining between opposite ends of the lining, are loosely confined to accomodate endwise removal of the lining after removal of said removable end plate, but which also allows plunger actuated axial longitudinal displacement of the lining, said ledge being closer to the lining than the plunger.

4,535,874

CARRIER FOR BRAKE LININGS FOR DISK BRAKES HAVING DIVIDED LINING ELEMENTS

Hans Pollinger, Munich; Eckart Saumweber, Gauting; Mathias Schörwerth, Geretsried, and Xaver Wirth, Ismaning, all of Fed. Rep. of Germany, assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

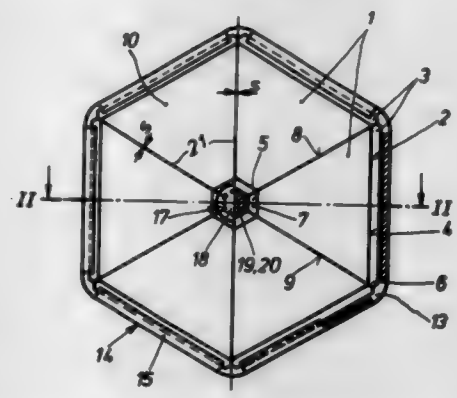
Filed Aug. 5, 1983, Ser. No. 520,628

Claims priority, application Fed. Rep. of Germany, Aug. 23, 1982, 3231279

Int. Cl.[3] F16D *69/04*

U.S. Cl. 188—73.1 10 Claims

1. A brake lining carrier for disc brakes having divided lining elements, particularly for rail vehicles, comprising a base plate having one side detachably mountable on a brake lining support member and a second side, means on the edge portion of said second side of said base plate for defining a frame having a perimeter, said frame having a lip bent away from said edge portion to define a groove, a plurality of brake lining elements disposed laterally on said second side of said base plate and within said frame to define a friction lining block having a friction braking surface, each of said brake lining elements being fixed upon a carrier plate having projecting flange portions on at least two longitudinal sides of the brake lining element and substantially flush on remaining sides of the brake lining element, most of the adjacent brake lining elements being in contact with each other along their respective lateral sides, said frame perimeter enclosing the friction lining block defined by said plurality of mounted brake lining elements, said friction lining block having an open central portion, a layer of resilient material interposed between said friction lining block



and said base plate, the projecting flange portions on the outer longitudinal sides of said brake lining elements being received within said groove, the projecting flange portions on the inner longitudinal sides of said brake lining elements extending into said open central portion, clamping means disposed in the open central portion of said friction lining block for exerting a force perpendicular to said friction surface against said flange portion extending into the open central portion to retain said flange portions, said brake lining elements within said frame having a lateral play parallel to said friction braking surface such that in the direction of friction force occurring on the friction surface during braking, the brake lining elements can be positioned against each other and can be supported jointly against said frame while mutually supporting each other.

4,535,875

ACTUATOR FOR AN INTERNAL SHOE DRUM BRAKE

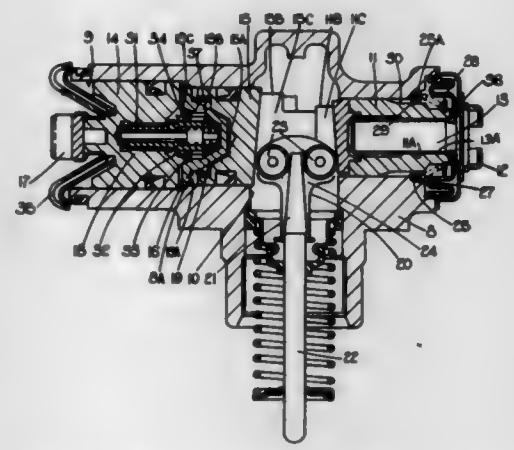
Brian Ingram, Coventry, and Michael J. England, West Midlands, both of England, assignors to Lucas Industries, Public Limited Company, Birmingham, England

Filed Mar. 3, 1983, Ser. No. 471,711

Claims priority, application United Kingdom, Mar. 9, 1982, 8206792

Int. Cl.[3] F16D *65/24*

U.S. Cl. 188—106 F 12 Claims



1. In an actuator for a shoe drum brake, having an actuator

body, an actuating wedge disposed between a pair of force-transmitting tappets slidable in opposed bores of the actuator body and intended, in use, to transmit actuating force to a pair of brake shoes to expand the brake shoes, one of the tappets being split to form outer and inner pistons with a hydraulic chamber between them to permit the pistons to be urged in opposed directions by the application of hydraulic pressure to the chamber, the improvement comprising:

a respective automatic adjustment means operatively associated with each tappet to maintain a substantially constant shoe-to drum clearance;

the adjustment means associated with the split tappet comprising,

a rotatable screw-threaded member between the inner and outer pistons,

a screw thread on said outer piston cooperatively engaging with said screw-threaded member,

abutment means disposed between the inner and outer pistons,

abutment engaging means on the actuator body, means to resiliently urge said abutment means away from said outer piston into engagement with said abutment engaging means, and

clutch means operatively engaging said screw-threaded member and said abutment means to control rotation of said screw-threaded member in response to outward movement of said outer piston,

so that said outer piston is adjusted independently of the tappet on the other side of the wedge.

4,535,876

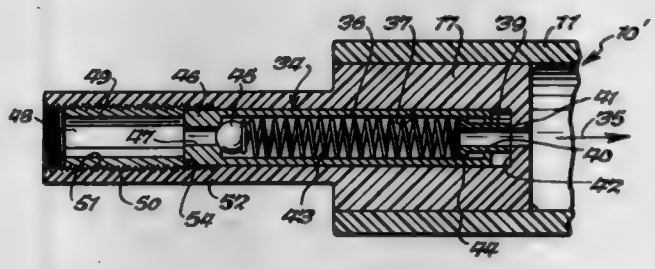
SHOCK ABSORBER CONSTRUCTION

Paul H. Taylor, Grand Island, N.Y., assignor to Tayco Developments, Inc., North Tonawanda, N.Y.

Filed Mar. 16, 1983, Ser. No. 475,914

Int. Cl.[3] F16F *9/18*; F16D *51/00*

U.S. Cl. 188—311 **8 Claims**



1. A shock absorber comprising a casing having first and second ends, a chamber in said casing for containing fluid, a piston head in said chamber, a piston rod mounting said piston head and extending through said first end, means at said first end of said casing for supporting said piston rod for sliding movement, bleed means in said casing for providing said fluid to said chamber from an area external of said casing, reversible check valve means mountable in first and second positions on said casing for causing said shock absorber to provide shock absorption in a first direction of piston movement when said check valve means is in said first position and for causing said shock absorber to provide shock absorption in a second direction which is opposite to said first direction when said check valve means is in said second position, said check valve means comprising a cartridge, said cartridge comprising an elongated housing having first and second housing ends, a housing orifice in said first end, a check valve member, an elongated spring extending between said check valve member and said second housing end for biasing said check valve member toward said housing orifice in said first housing end, means at said second end of said casing for mounting said cartridge, an end wall at said second end of said casing, a bore in said end wall, an opening in said second housing end, spring pressing means mounted in said opening in said second housing end for bearing on the end of said spring remote from said check valve member, retaining means for retaining said cartridge in said bore in said second end wall, said spring pressing means comprising a presser member extending through said opening in said second housing end, a first end on said presser member for engaging said spring, and a second end on said presser member for receiving a force for effecting movement of said presser member into said cartridge for compressing said spring.

4,535,877

HYDRAULIC DAMPER OF ADJUSTABLE DAMPING FORCE TYPE

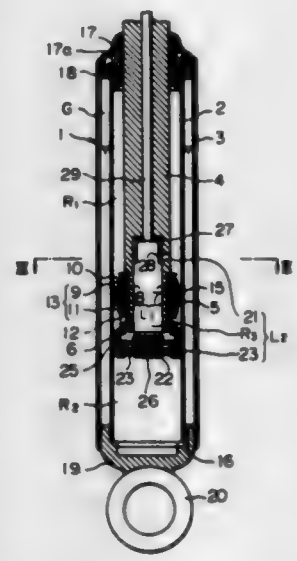
Akihiro Shimokura, Tokyo, Japan, assignor to Tokico Ltd., Kanagawa, Japan

Filed Jul. 13, 1983, Ser. No. 513,272

Claims priority, application Japan, Jul. 14, 1982, 57-106598[U]; Jul. 14, 1982, 57-106599[U]

Int. Cl.[3] F16F *9/44*

U.S. Cl. 188—319 **6 Claims**



1. A hydraulic damper of the adjustable damping force type comprising:

a piston working in a cylinder and partitioning the interior thereof into two liquid chambers;

a piston rod secured to said piston and extending to the outside of said cylinder;

a first passage means for connecting said two liquid chambers;

a first damping force generating valve means comprising first and second oppositely opening resilient valve disc means provided in said first passage means for generating a relatively high damping force both in the extension and contraction strokes of said damper;

a second passage means for connecting said two liquid chambers independently from said first passage means;

a second damping force generating valve means comprising a resilient valve disc provided in said second passage means for generating a relatively low damping force both in the extension and contraction strokes of said damper as said valve disc opens in respective opposite directions; and

adjusting valve means provided in said piston rod and controlling the effective passage area of said second passage means.

4,535,878

PILLOW-TOTE BAG DEVICE

Norma S. Grahl, 831 Cleveland St., Greenville, S.C. 29601

Filed Sep. 21, 1984, Ser. No. 653,087

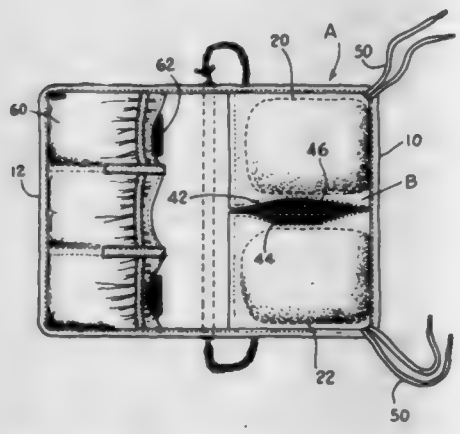
Int. Cl.[3] A45C *9/00*

U.S. Cl. 190—1 **17 Claims**

1. A pillow-tote bag device for use as a pillow and a tote comprising:

a pillow panel;

a pocket panel integral with said pillow panel;
a central casing extending across a width of said panels;
a generally rigid spine member received in said casing to provide a non-sagging configuration for said bag device;
an air mask carried by said pillow panel including an air opening formed in said pillow panel for breathing;
bifurcated pillow means carried by said pillow panel generally overlying said air mask;
said bifurcated pillow means including two separable generally rectangular pillow cushions carried on adjacent sides of said air mask having juxtaposed edges which are separable to provide access to said air mask for breathing and being closable to cover said air mask;



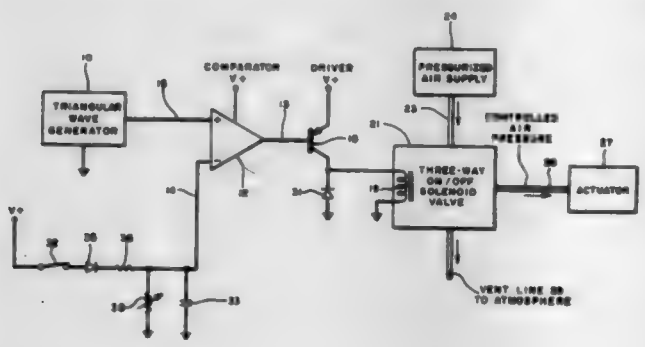
closure means carried by said juxtaposed edges for closing said separable pillow cushions along a length of said edges to form a head cradle sling connecting said pillow cushions together and resisting separation thereof to provide a continuous unitary head support for supporting a back head portion of a person lying in a supine position; and
said closure means being openable to separate said juxtaposed edges of said two pillow cushions along their length for providing access to said air mask when said person is lying in a prone position with his face supported on said bifurcated pillow means.

4,535,879

CONTROL SYSTEM FOR CONTROLLING THE ENGAGEMENT OF A PRESSURE-OPERATED ACTUATOR

Fred D. Sturges, Rockford, Ill., assignor to Borg-Warner Corporation, Chicago, Ill.

Filed Feb. 29, 1984, Ser. No. 584,565
Int. Cl.³ F16D *11/06*
U.S. Cl. 192—52 **12 Claims**



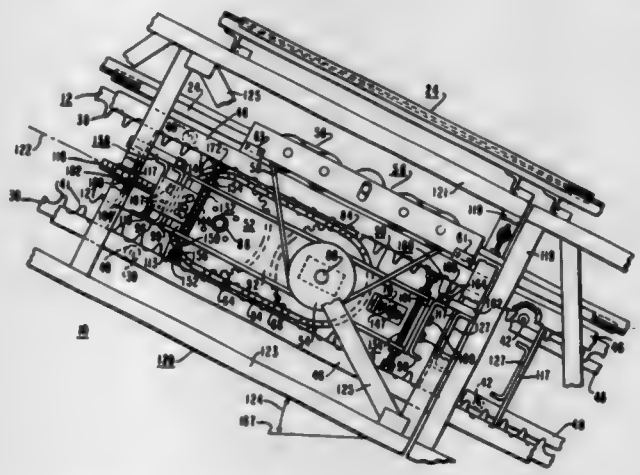
1. A control system for controlling the rate of engagement of a pressure-operated actuator, comprising:
means for developing a pulse width modulated signal having a duty cycle which gradually changes in a constant direction;
means responsive to said pulse width modulated signal for producing a gradually increasing fluid pressure;
and means for applying the gradually increasing fluid pressure to the actuator to effect a smooth engagement thereof.

4,535,880

ESCALATOR

Henry Boltrek, Freeport, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 15, 1983, Ser. No. 532,437
Int. Cl.³ B65B *9/12, 9/14*
U.S. Cl. 198—330 **8 Claims**



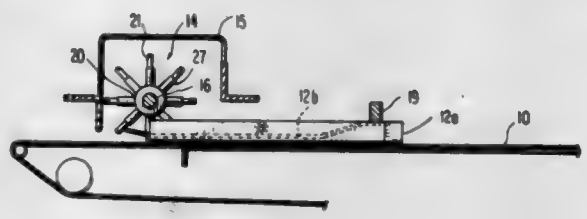
1. An escalator comprising:
a truss, said truss including a portion having a longitudinal axis inclined with respect to a horizontal plane,
a conveyor supported by said truss, a drive unit in said truss for driving said conveyor, said drive unit having X-, Y-, and Z-axes, with said X-axis being a longitudinal axis to be oriented parallel with the longitudinal axis of said truss, said Y-axis being perpendicular to said X-axis in a predetermined plane, and said Z-axis being perpendicular to the predetermined plane which includes the X- and Y- axes,
first adjustment means for positionally adjusting said drive unit along its Z-axis, and also about its X- and Y- axes,
second adjustment means for positionally adjusting said drive unit along its Y-axis, and also for positionally adjusting said drive unit about its Z-axis,
and third adjustment means for positionally adjusting said drive unit along its X-axis,
said third adjustment means having a single adjustment point, with said third adjustment means being capable of adjusting said drive unit along its X-axis without changing the associated positional adjustments selected by said first and second adjustment means.

4,535,881

SORTING APPARATUS FOR FOOD ITEMS

Herman Mims, 601 N. I-85, Charlotte, N.C. 28216

Filed Aug. 3, 1982, Ser. No. 404,733
Int. Cl.³ B65G *47/26*
U.S. Cl. 198—420 **7 Claims**



1. Apparatus for arranging conveyed food items into one or more parallel lines of uniformly spaced food items, comprising:
a travelling web conveyor having a planar conveying surface for receiving food items to be conveyed and sorted, said food items having a thickness which is relatively smaller than a length or width dimension thereof;
a plurality of indexing rotary members disposed above said conveying surface for peripherially contacting and uniformly spacing said food items while said food items are being advanced by said conveyor; each of said rotary members having a plurality of spokes extending therefrom and respectively extending to aat least said conveying surface and each of said spokes being resiliently urged into

contact with said planar conveying surface, said spokes having a smaller horizontal velocity, at said conveying surface, than said conveying surface;

means for rotating said rotary members, said spokes being arranged such that a pair of spokes on one said rotary member may be in simultaneous contact with said planar conveying surface such that one spoke contacts said surface before a rotationally preceeding spoke leaves said surface, and said spokes of pairs of adjacent rotary members having a pitch in the lateral direction of said conveying surface which is less than a diameter of one of said food items, whereby a pair of said spokes substantially straddle one of said food items; and

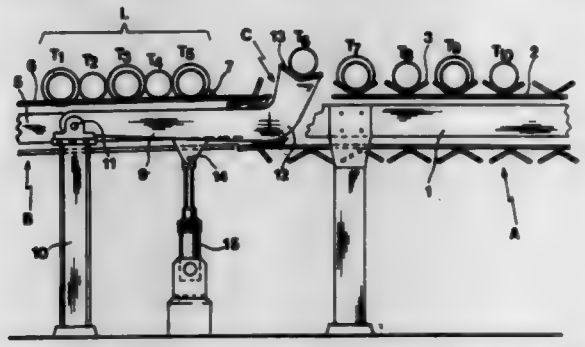
guide means for guiding said food items in at least one parallel line to said rotary members.

4,535,882

METHOD AND APPARATUS FOR ARRANGING CAST-IRON PIPES IN ODD NUMBER STACKS

Roger Malivoir, Pont-a-Mousson, and Gilbert Mayer, Nancy, both of France, assignors to Pont-a-Mousson S.A., Nancy, France

Filed Nov. 3, 1983, Ser. No. 548,586
Claims priority, application France, Dec. 24, 1982, 82 21855
Int. Cl.³ B65G *47/30*
U.S. Cl. 198—425 **8 Claims**



3. An apparatus for arranging elongate pipes in horizontal, odd numbered beds, each pipe having a uniform male end and an enlarged female mouth end, and the pipes being delivered from a supply source in reversed pairs with a male end of one pipe adjacent a female end of the other pipe, comprising:

(a) a first, horizontally oriented upstream transporter (A) including spaced, parallel endless chains (2) and a plurality of V-shaped pipe supports (3) mounted on said chains at regular intervals,

(b) drive means (4) for intermittently advancing said first transporter in steps equal to twice the distance between adjacent pipe supports,

(c) a second, horizontally oriented downstream transporter (B) including spaced, parallel endless chains (6), said second transporter being disposed in series with the first transporter and such that an input end of the second transporter overlaps an output end of the first transporter,

(d) drive means (8) for continuously advancing said second transporter,

(e) a single pipe elevator (C) disposed between overlapping ends of the chains of the first and second transporters, and

(f) means (15) for selectively raising and lowering said elevator between a first position above the level of the chains and a second position below the level thereof.

4,535,883

SHOCK MOUNT TELESCOPING CONVEYOR BELT CLEANER

James F. Kerr, Croswell, Mich., assignor to Material Control, Inc., Croswell, Mich.

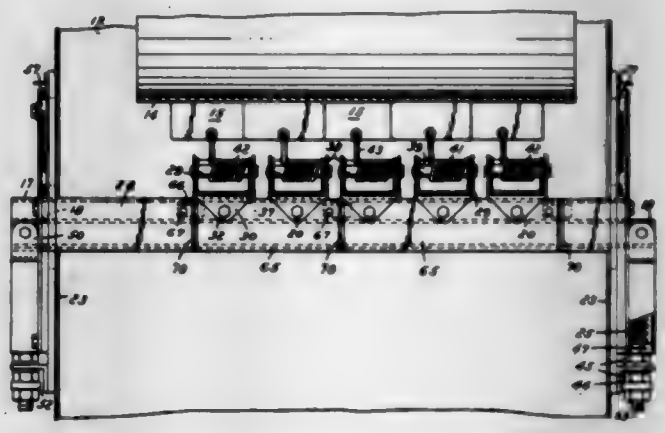
Continuation-in-part of Ser. No. 473,474, Mar. 9, 1983, abandoned. This application Jan. 24, 1984, Ser. No. 573,445
Int. Cl.³ B65G *45/00*
U.S. Cl. 198—499 **14 Claims**

1. A conveyor belt cleaner for use on a conveyor having an endless belt comprising:

an elongate support member having a first longitudinal axis adapted to extend transversely of the endless belt;

a blade carrying member having a blade affixed thereto and being carried by said support member and having a second longitudinal axis spaced from and parallel to said first longitudinal axis;

said blade carrying member including one or more blades adapted to scrape the endless conveyor belt;



rotatable means interposed between said support member and said blade carrying member for rolling the blade carrying member along the support member, said rotatable means being mounted for rotation on one of said members and in rolling contact with the other of said members; and

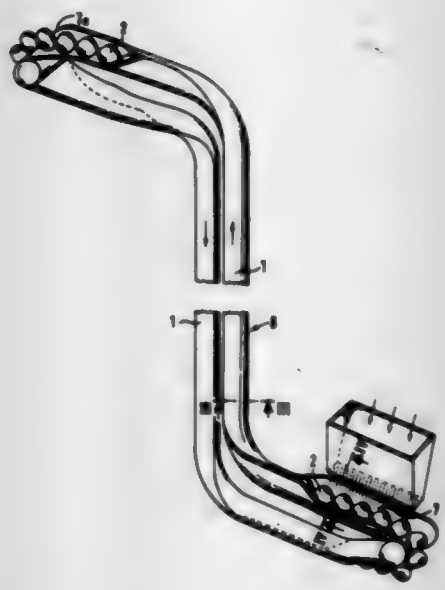
first and second mounting means interconnecting the elongate support and the conveyor at spaced locations for adjustably biasing said blade carrying member toward the endless belt.

4,535,884

BULK-HANDLING BELT CONVEYOR

Anton Suppan, Röthenbach, Fed. Rep. of Germany, assignor to M.A.N. Maschinenfabrik, Nuremberg, Fed. Rep. of Germany

Filed Jan. 10, 1984, Ser. No. 569,750
Claims priority, application Fed. Rep. of Germany, Jan. 11, 1983, 3300638
Int. Cl.³ B65G *15/14*
U.S. Cl. 198—626 **8 Claims**



1. A bulk-handling belt for a conveyor, comprising:

a flat conveyor belt having reinforced edges cooperative with guiding means of the conveyor for at least substantially closing the conveyor belt on itself along the reinforced edges into at least a trough of generally-circular cross section at least along a material-conveying run of the conveyor belt; and

a twisted, or spiral belt disposed along the flat conveyor belt and arranged to be substantially enclosed and entrained by the flat conveyor belt when said flat conveyor belt is substantially closed thereabout.

4,535,885

PNEUMATIC SEALING APPARATUS

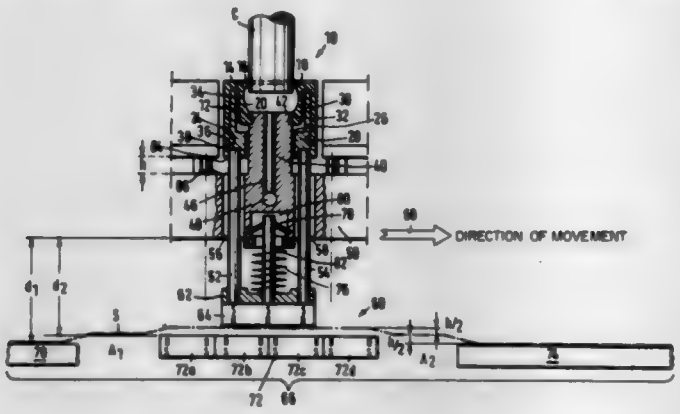
Karl-Heinz Grell, Ahrensburg, and Heinz Krappitz, Reinbek, both of Fed. Rep. of Germany, assignors to B.A.T. Cigaretten-Fabriken GmbH, Fed. Rep. of Germany

Filed May 11, 1983, Ser. No. 493,752

Claims priority, application Fed. Rep. of Germany, May 18, 1982, 3219101

Int. Cl.³ B65G *47/86*; A24C *5/34*

U.S. Cl. 198—695 **16 Claims**



1. An apparatus for controlling the elastic deformation of the open end of a cylindrical sealing body between a closed position to momentarily enclose and seal around the end of a cylindrical article to be pneumatically tested and an enlarged open position, the sealing body mounted on a support member and attached to a holding member at the other end from the support member so that relative axial movement between the support member and holding member causes the opening and closing, the apparatus comprising:

means for carrying and moving said sealing body, said support member and said holding member along a travel path which is generally perpendicular to the axis of said sealing body, one of said members being axially movable relative to said carrying means and the other member being fixed thereon;

fixed control means for controlling relative movement between said support member and holding member, said control means being arranged along a control path generally paralleling said travel path;

a first magnetic device carried by the movable one of said members and extending toward said control means; and

said control means comprising second and third magnetic devices having magnetic properties differing from each other arranged along segments of said control path such that said first magnetic device is differently attracted and repelled thereby, causing axial movement of said first device and the movable member and concurrent opening and closing of said sealing body, at least one of said first, second and third magnetic devices being a permanent magnet.

4,535,886

FLAT PACKS FOR INCOHERENT PRODUCTS WITH ANTI-CRUSHING DEVICE

Emilio Salem, Milan, Italy, assignor to Novopac S.n.c. dei F.lli Salem E. & O., Italy

Filed May 9, 1984, Ser. No. 608,394

Claims priority, application Italy, Sep. 20, 1983, 23011B/83[U]

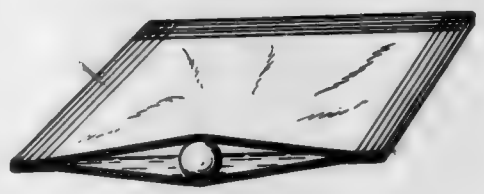
Int. Cl.³ B65D *75/54, 77/24*; B32B *3/00*

U.S. Cl. 206—205 **5 Claims**

1. A rupture-proof package comprising:

a plurality of sheet-like members sealed together;

an internal pocket formed from the plurality of sheet-like members the internal pocket containing:



an incoherent material; and

at least one support element.

4,535,887

IC PACKAGE CARRIER

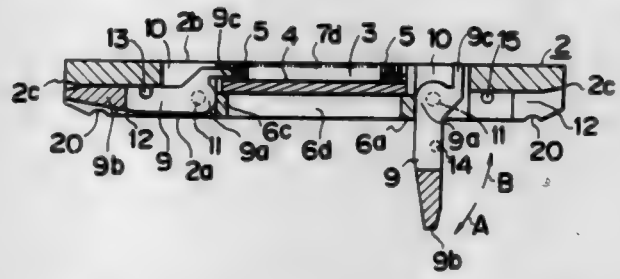
Yoshinori Egawa, Tokyo, Japan, assignor to Yamaichi Electric Mfg. Co., Ltd., Tokyo, Japan

Filed Nov. 9, 1984, Ser. No. 669,943

Claims priority, application Japan, Nov. 10, 1983, 58-174566[U]

Int. Cl.³ B65D *85/62*

U.S. Cl. 206—328 **10 Claims**



1. A carrier for an IC package having rows of IC leads extended therefrom outwardly, which comprises:

a carrier body having a receiving section defined therein for accommodating therein said IC package,

a pair of latch levers disposed at the opposed sides of said receiving section and pivotally supported by the walls of said carrier body defining said receiving section as being rotatable about pivots between their respective locking positions and their respective unlocking positions, each of said pair of latch levers comprising a base portion at which the pivot is positioned, an operation portion for operating rotation of the latch lever, and a pair of fingers for supporting the corners of the rear surface of said IC package which are free from interference with said rows of IC leads and pinching said IC package in conjunction with the lower surface of said carrier body when the latch lever is in its locking position, said operation portion extending from said base portion upwardly of said carrier body and said pair of fingers extending from said base portion downwardly of said carrier body when the latch lever is in its unlocking position, and

engaging means provided on both said carrier body and each of said pair of latch levers for maintaining said IC package in the pinched state when said pair of latch levers are in their respective locking positions.

4,535,888

STORAGE CASSETTE FOR TWO OR MORE DISK-SHAPED HIGH MEMORY DENSITY INFORMATION CARRIERS

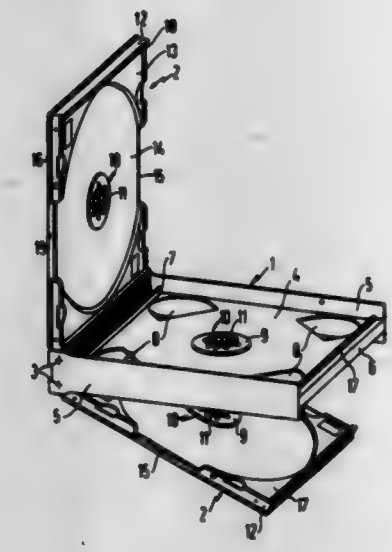
Frederik B. Nusselder, Bussum, Netherlands, assignor to Polygram GmbH, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 571,369

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301644

Int. Cl.³ B65D *85/30*

U.S. Cl. 206—444 8 Claims



1. A storage cassette for a plurality of disk-shaped information carriers, each having information tracks, a central area free of information tracks, and a central hole having an inner surface, comprising a box-like center part having a planar intermediate bottom floor and formed on two parallel sides by raised lateral sidewalls extending above and below said bottom floor, a pair of movable box-like cover parts having box floors for overlying said center part bottom floor above and below said bottom floor, hinge pivot bearings in said sidewalls of said center part for connecting together said center part and said cover parts at adjacent ends thereof such that said cover parts are movable toward or away from said center part, and a pair of tray parts for fitting in said cover parts respectively, each defining a disk-shaped trough having a centrally disposed raised seat for receiving and supporting one said information carrier and a central peg means carried on said seat for engaging the inner surface of said carrier's central hole to hold said information carrier adjacent said trough floor.

4,535,889

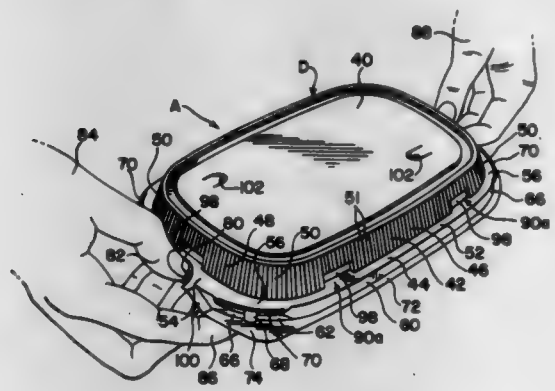
FROZEN FOOD PACKAGE AND COVER LID

Oskar R. Terauds, Willoughby, Ohio, assignor to The Stouffer Corporation, Solon, Ohio

Filed Feb. 8, 1984, Ser. No. 578,016

Int. Cl.³ B65D *43/10, 1/34*

U.S. Cl. 206—527 34 Claims



1. In a container comprised of a molded rigid plastic bottom tray with a surrounding laterally outward extending flanged rim of generally rectangular contour with gradually rounded corner portions, and an upper dome lid comprised of a semi-rigid sheet-like member of plastic material having a laterally outward extending annular seating flange matching the contour of, and seated against the upper surface of and locked onto the said rim of the tray, to join the tray and dome lid together into a unitary assembly, the said seating flange having a depending locking flange closely fitting around the flanged rim of the tray and having gradually rounded corner portions matching the said rounded corner portions of said flanged rim, and the said locking flange being provided with a plurality of inwardly projecting locking rib means spaced therearound and engaged with the tray rim under the peripheral outer edge thereof to lock the dome lid in place on the tray, the improvement comprising: said locking rib means being located within the peripheral extent of respective ones of the said rounded corner portions of said locking flange, and said seating flange having an outwardly opening thumb notch recess in the outer peripheral edge thereof exposing a portion of the said tray rim through said recess, said thumb notch recess being spaced around the said seating flange a distance, from one of said locking rib means, such as to enable engagement through said thumb recess of the said flanged rim of the tray by the thumb of a person's hand while at the same time enabling engagement of the fingers of the person's same hand with the underside of the said locking flange of the dome lid, at a region outwardly adjacent the said one locking rib means, for application of a separating force couple directly and normal to the flanged rim of the tray and the said locking flange to disengage the said one locking rib means from the tray rim.

4,535,890

CONTAINER WHICH IS A FORM OF PACKAGING IN PARTICULAR FOR MEDICAMENTS AND THE LIKE AND PROCESS FOR ITS MANUFACTURE

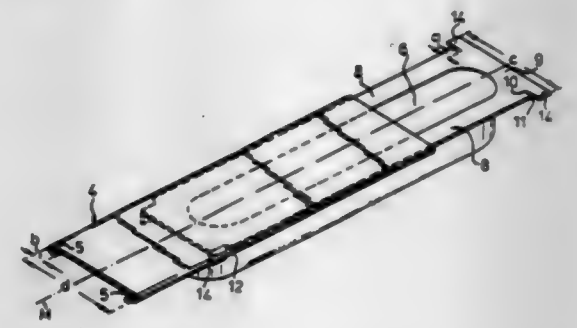
Aldo Artusi, Schaffhausen, Switzerland, assignor to Medipack AG, Schaffhausen, Switzerland

Continuation of Ser. No. 219,500, Dec. 23, 1980, abandoned. This application Apr. 21, 1983, Ser. No. 487,104

Claims priority, application Fed. Rep. of Germany, Dec. 23, 1979, 2952616

Int. Cl.³ B65D *83/04, 85/42*

U.S. Cl. 206—530 9 Claims



1. A container comprising a receptacle part and a lid part, said receptacle part having a cavity for receiving stored contents in the container, said receptacle part and lid part including respective opposed portions one of which is in the form of a groove and the other of which is in the form of an edge portion slidably engaged in said groove to permit relative slidable movement of said lid part and receptacle part between open and closed positions, and displaceable flap means on one of said parts having a first position blocking relative movement of said lid and receptacle parts and a second displaced position in which relative slidable movement of said parts is permitted, said parts having longitudinal edges parallel to the direction of relative sliding movement of said parts and opposite transverse ends, said flap means comprising flaps located at both edges of each of said opposite ends to hold the lid part and receptacle part in said closed position, said one part being provided with

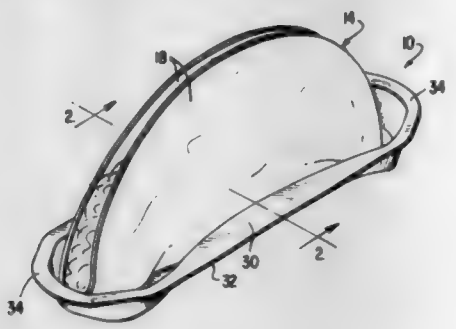
slits each forming a respective flap, each slit extending transversely from a longitudinal edge of said one part, each slit having a length at least equal to the depth of said groove, each of said flaps including stop means for holding the lid part and receptacle part in said closed position by blocking relative movement of said parts.

4,535,891

TACO TRAY

Brian K. Murdick, Columbus, and William H. Haase, Dublin, both of Ohio, assignors to International Paper Company, New York, N.Y.

Filed Aug. 23, 1983, Ser. No. 525,751
Int. Cl.³ B65D *1/34, 85/36*
U.S. Cl. 206—564 **1 Claim**



1. A tray and taco assembly for holding a taco in an upright position, said tray comprising a base, integral side and end walls extending upwardly from said base and in combination with said base defining an elongated cavity adapted to receive a taco, and a reinforcing flange extending around one top of said cavity and integrally connected to said top and end walls, the side walls being inwardly bowed so that longitudinally central portions thereof are narrowed with respect to the opposite longitudinal ends of said cavity to thereby form a support for a taco, the side walls diverging upwardly from said base for wedgingly receiving therebetween a taco, the side walls at the ends of the cavity being wider than the side walls at the longitudinally central part of the cavity, wherein said base is enlarged at ends thereof to provide a stable support against overturning of the tray when a taco is positioned in it, the end walls being rounded in outline, the reinforcing flange being generally rectangular in peripheral outline, the base being reinforced by a downwardly offset peripheral rib, said rib also defining the supporting surface for said base, the ratio of the length of the cavity to the narrowest distance between the inwardly bowed side walls being greater than a factor of three, the ratio of the width of the widest part of the base ends of the cavity to the width of the narrowest part of the cavity being at least a factor of two, a taco in the cavity and wedgingly engaged along a portion of its sides by at least the narrowest cavity portions defined by the inwardly bowed side walls, a portion of the taco extending above the top of the cavity, wherein the widest portions of the downwardly offset peripheral base rib, considered transversely of the longitudinal axis of the cavity, are wider than the widest portion of the taco, to thereby inhibit tipping over of the tray and taco assembly.

4,535,892

MODULARIZED TICKET HANDLING SYSTEM FOR USE IN AUTOMATIC TICKET PREPARATION SYSTEM

John B. Roes, San Diego; Guy M. Kelly, La Jolla; Robert F. Case, and Chandler R. Deming, both of San Diego, all of Calif., assignors to Cubic Western Data, San Diego, Calif.

Division of Ser. No. 211,022, Dec. 1, 1980, Pat. No. 4,381,705.
This application Jan. 5, 1983, Ser. No. 455,756
The portion of the term of this patent subsequent to May 3, 2000, has been disclaimed.
Int. Cl.³ B07C *3/16*
U.S. Cl. 209—3.3 **9 Claims**

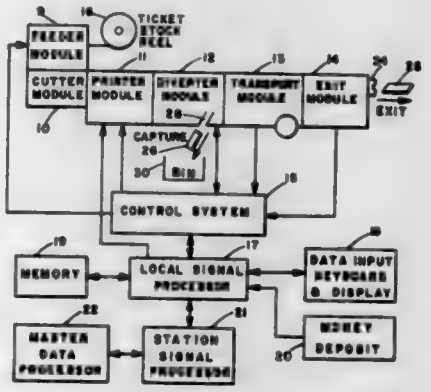
2. A ticket handling system for use in a ticket preparation system that includes processing means for providing write signals to indicate information to be encoded on said tickets; and transducer means for encoding information of tickets in response to said write signals, the ticket handling system comprising

a feeder module including feed means for feeding a strip of ticket stock;

a cutter module including cutting means for cutting ticket blanks of a given length from the fed end of the strip;

a transport module including the transducer means for encoding ticket information on the ticket blanks in response to said write signals; and

an exit module mechanically interfaced with the transport module and including means defining an exit passage for



passing said ticket from the transport module to an exit position where said ticket is accessible to a patron, sensing means for sensing the entry of an encoded ticket into the exit passage from the exit position toward the transport module, and bidirectional transport means for transporting said ticket in either direction through the exit passage; and

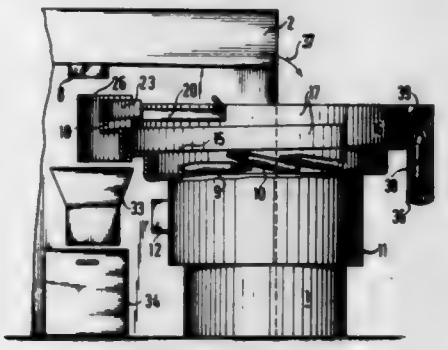
wherein the ticket handling system includes control means coupled to the sensing means and the transport means for causing said entered ticket to be transported into the transport module for encoding by the transducer means in response to the sensing means sensing said entry of said ticket into the exit passage from the exit position.

4,535,893

SPOOL SEPARATING DEVICE

Heinz Bühren, Monchen-Gladbach, Fed. Rep. of Germany, assignor to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jan. 19, 1984, Ser. No. 572,206
Claims priority, application Fed. Rep. of Germany, Jan. 19, 1983, 3301588
Int. Cl.³ B07C *5/06*
U.S. Cl. 209—628 **6 Claims**



1. Spool separating device for separating spool tubes with a relatively smaller diameter from finished wound spools with a relatively larger diameter, comprising a vibratory conveyor with a bottom, an upper end, a sliding surface extended spirally upward along a given spool transport direction from said bottom to said upper end, a wall outwardly bordering said

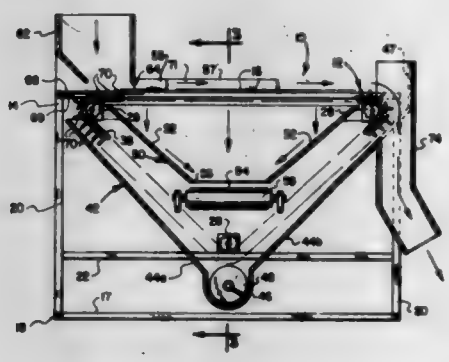
sliding surface, said wall having a slot formed at a given location therein, said slot having a height being greater than the diameter of a spool tube and smaller than the diameter of a finished wound spool and a length being greater than the length of a spool tube, an adjustable wall section in a position bordering the top of said slot determining the height of said slot, said adjustable wall section being resiliently moveable out of said position in the event of spool jamming, and an additional wall section determining the depth of said slot and approaching said bordering wall in said given spool transport direction for guiding the end of a spool tube of a spool which cannot fit completely through said slot back onto said sliding surface.

4,535,894

SEPARATOR APPARATUS FOR PEANUTS AND OTHER SEED CROPS

Melvin E. Shell, P.O. Box 1121, Stephenville, Tex. 76401

Filed Jan. 24, 1983, Ser. No. 460,248
Int. Cl.³ B07B *1/10*
U.S. Cl. 209—665 **18 Claims**



10. Separator apparatus for separating articles such as peanuts and like commodities from material such as vine stems and other debris commingled therewith, said apparatus comprising:

a frame;

means forming an endless flexible conveyor disposed on said frame for traversal with respect to said frame and including a substantially horizontal run, said horizontal run being divided into a primary separator portion and a secondary separator portion, said conveyor including means forming a screen defining a plurality of openings sized to permit said articles to fall through said horizontal run while said screen retains said material including stems and other debris of a length greater than said openings;

first hopper means disposed beneath said horizontal run for receiving articles separated from said material;

dispensing means for dispensing material including said articles to be separated onto each of said separator portions of said horizontal run; and

separate means for receiving material retained on said screen at the end of said primary and secondary separator portions, respectively.

4,535,895

SORTING DEVICE

Kiyoaki Takiguchi, Yokohama, and Seigo Takano, Tokyo, both of Japan, assignors to Computer Services Corporation, Tokyo, Japan

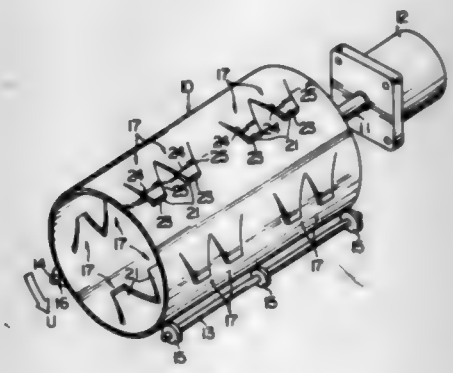
Filed Feb. 28, 1983, Ser. No. 470,720
Claims priority, application Japan, Apr. 13, 1982, 57-61308; Apr. 20, 1982, 57-66534; Apr. 24, 1982, 57-69213; Apr. 27, 1982, 57-70625; May 11, 1982, 57-79298; May 11, 1982, 57-79299
Int. Cl.³ B07C *1/10*; B07B *13/65*
U.S. Cl. 209—683 **6 Claims**

1. A device for sorting out a multiplicity of pieces according to their size, comprising:

a frame;

a drum rotatably mounted in said frame for storing therein pieces having different sizes to be sorted out, said drum having a clyindrical wall;

means on said drum including openings for passing therethrough pieces of a particular size only, said passing means comprising a plurality of rows of tapered tongues sheared off said cylindrical wall radially outwardly thereof and extending circumferentially of said cylindrical wall, each row of said tapered tongues extending axially of said drum, said tapered tongues terminating respectively in said openings and being progressively narrower toward said openings for guiding the pieces of a particular size



toward said opening, said tapering tongues further having an end edge and a pair of converging side edges extending from said cylindrical wall to said end edge, said end edge being displaced radially outwardly from said cylindrical wall to define therewith one of said openings and said passing means further includes guiding guide strips each extending along one of said said edges toward said opening to provide tapered guide passages respectively on said tapered tongues; and

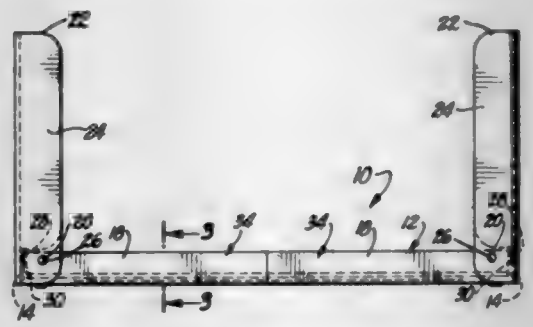
means for rotating said drum about its own axis to cause the pieces of a particular size to be discharged through said openings out of said drum.

4,535,896

FOLDING, EXTENSIBLE HOLDER

Mel Evenson, San Pedro, Calif., assignor to Eldon Industries, Inc., Inglewood, Calif.

Filed Aug. 29, 1983, Ser. No. 527,331
Int. Cl.³ A47G *19/08*
U.S. Cl. 211—41 **6 Claims**



1. In a holder for use in supporting elongated, generally rectilinear, substantially flat objects, said holder having an elongated, generally rectangular base and upstanding ends located at opposed ends of said base, said upstanding ends being shaped so as to engage and support objects held in said holder in a vertical position the improvement which comprises:

said base being formed so as to include two separate sections, one of said sections being located adjacent to one of said upstanding ends, the other of said sections being located adjacent to the other of said upstanding ends,

interfitting tongue and groove means for adjustably connecting said sections located on said sections, said tongue and groove means on said sections being capable of being manipulated so as to vary the length of said base so as to

allow said holder to be utilized with objects of varying lengths,

co-acting detent means capable of being snapped apart located on said sections for holding said sections relative to one another in various positions such that the spacing between said upstanding ends approximately corresponds to standard lengths of various objects capable of being held in said holder,

said ends are pivotally mounted upon said sections and are capable of being pivoted between a flat folded position in which they extend along said position and a normal position in which they extend outwardly from said base, and

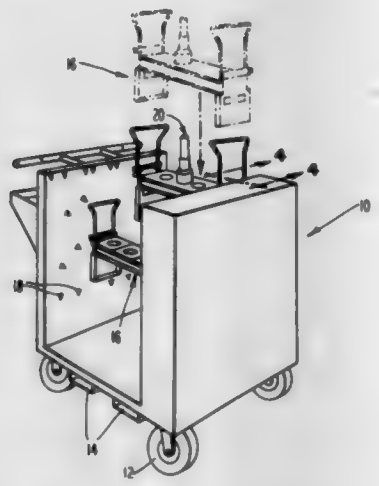
other co-acting resilient detent means capable of being snapped apart for holding said ends so that they extend outwardly from said base.

4,535,897

TOOL HANDLING AND TRANSPORTATION SYSTEM

John L. Remington, Coplay, and Harry W. Seidel, Mertztown, both of Pa., assignors to The Stanley Works, New Britain, Conn.

Filed Sep. 6, 1983, Ser. No. 529,728
Int. Cl.[3] A47F *7/00*
U.S. Cl. 211—70.6 **6 Claims**



1. An integrated tool storage and transportation system comprising a tool transportation means, a tool storage means, and an elongated tool holder member, in which said tool holder member is adapted for engagement for support by both said tool transportation means and said tool storage means, wherein said tool holder member comprises at its ends means adapted for mating with said tool transportation means, wherein said means adapted for mating with said tool transportation means comprised by said tool holder member at the ends thereof comprises pivoted handle means adapted for releasable engagement with said tool transportation means, said pivoted handle means comprising hook means for resting in slots formed in said transportation means, such that said handle means may be pivoted to move said hook means with respect to said slot means, in order to permit removal of said tool holder member from said transportation means.

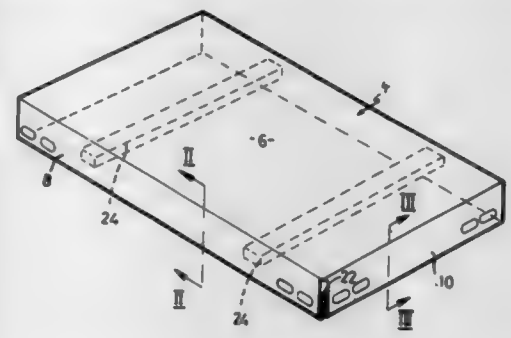
4,535,898

SHELVING

Harold Jones, Stafford, and David J. Bell, Telford, both of England, assignors to Link 51 Limited, England

Filed Feb. 22, 1983, Ser. No. 468,416
Claims priority, application United Kingdom, Feb. 27, 1982, 8205849
Int. Cl.[3] A47F *5/00*
U.S. Cl. 211—153 **9 Claims**

1. In a shelf formed from sheet material and comprising a generally rectangular shelf panel and flanges integral with the panel which flanges extend from the panel along two parallel sides thereof, each flange comprising a first portion extending downwardly from the panel, a second portion folded inwardly so as to extend towards the underside of the shelf panel generally parallel to the first portion, the improvement wherein said second portion is spaced from said first portion, and on each of the said sides of the panel a non-integral reinforcing member is located between said first and second portions of the flange, which reinforcing member extends upwardly, and into engagement with, the underside of the shelf panel, an upper end of said reinforcing member extending in angular relationship to the upwardly extending portion thereof and being in juxtaposition with said underside of the shelf panel to support the corner between the panel and the first portion of the flange along substantially the whole of the length of said side.

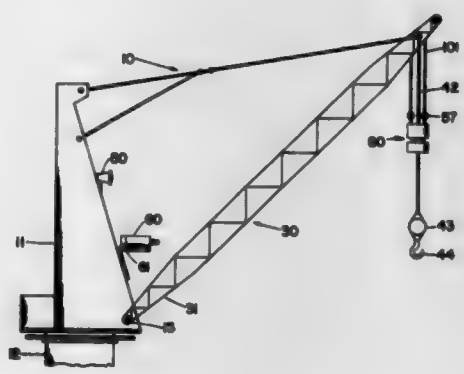


4,535,899

BOOM WARNING ACTUATOR

Ned A. Bergeron, Houma, La., assignor to B.W.B. Controls, Inc. (Louisiana), Houma, La.

Continuation of Ser. No. 266,112, May 21, 1981, Pat. No. 4,424,909. This application Dec. 12, 1983, Ser. No. 560,224
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.[3] B66D *1/56*
U.S. Cl. 212—153 **8 Claims**



1. A warning system for use on a crane wherein said crane includes a movable boom, and at least one movable weight bearing line, said system comprising:

a. a source of fluid under pressure;

b. a pressure activated signal emitting device;

c. a plurality of signal device actuators positioned in pressure communication with said source and device;

d. each of said actuators having a housing and a valve body mounted in said housing for longitudinal movement therein and shiftable between a first position permitting fluid pressure communication between said source and device and a second position blocking said communication, wherein one of said actuators further comprises:

i. a boom engageable portion of its valve body located outwardly of said housing;

ii. means internal to said housing for urging its valve body to said second position; and

iii. means for causing said boom engageable portion to shift said valve body to said first position against the force of said urging means; and wherein

e. a second of said actuators further comprises:

i. first and second body portions, each of said body por-

tions including means for passing said weight bearing line therethrough;

ii. fluid pressure inlet means provided in said first body portion in fluid pressure communication with a fluid pressure source;

iii. fluid pressure outlet means provided in said first body portion in fluid pressure communication with a fluid pressure activated signal emitter; and

iv. an elongated valve member mounted at least partially in said first body portion for longitudinal movement therein between a first position permitting pressure communication between said inlet and outlet and a second position blocking such communication.

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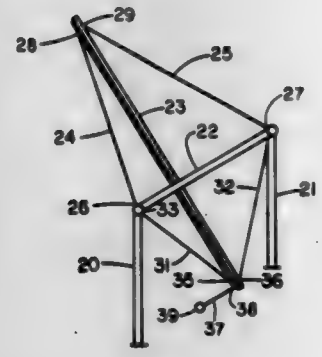
TRANSFER APPARATUS AND METHOD

Alan F. Daniell, Stafford, Tex., assignor to Fluor Corporation, Irvine, Calif.

Filed Apr. 25, 1983, Ser. No. 488,240

Int. Cl.³ B66C *23/00*

U.S. Cl. 212—193 **16 Claims**



1. A transfer apparatus comprising:

elevated support means,

a boom,

at least two ropes extending between the support means and at least first and second longitudinally spaced points on the boom,

at least two ropes extending between at least third and fourth longitudinally spaced points on the boom and anchor means spaced horizontally from said third and fourth points,

at least one rope extending between a fifth point on the boom and anchor means spaced vertically from said fifth point,

said boom being substantially completely suspended by said ropes and said ropes being arranged such that the elevation and axial movement of said boom being controlled by at least said ropes extending between said support means and said boom, slewing of said boom in the horizontal plane and luffing of said boom in the vertical plane being controlled by at least said ropes extending between said boom and said anchor means, and

means for individually and simultaneously varying the length of all said ropes to enable the boom to move in the three perpendicular planes of the universe.

4,535,901

BLOW-MOLDED MULTI-PLY VESSEL

Tadashi Okudaira; Akio Tsuboi; Yoshihisa Hama, and Mamoru Hara, all of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Japan

Filed Jan. 21, 1982, Ser. No. 341,425

Claims priority, application Japan, Jan. 22, 1981, 56-8729; Feb. 3, 1981, 56-15182

Int. Cl.³ B65D *23/00*; B32B *27/00*

U.S. Cl. 215—1 C **6 Claims**

1. A blow-molded multi-ply vessel having an open end mouth part and a thin wall part, which comprises:

a multi-ply structure of three or more odd-numbered layers at least at the thin wall part;

two or more kinds of thermoplastic resins, at least one of which being a thermoplastic polyester resin mainly composed of the repeating units of ethylene terephthalate;

the innermost and the outermost layers of said multi-ply structure being composed of said thermoplastic polyester resin;

at least one of the middle layers of said multi-ply structure being composed of a thermoplastic resin the main component of which is a resin selected from the group consisting of a polyamide resin, a polymer having a high nitrile content, an ethylene/vinyl alcohol copolymer, a polyolefin resin, a polyacrylic resin, a polyvinyl chloride resin, a polycarbonate resin and a polystyrene resin;



said innermost and outermost layers extending over the entire inside and outside surfaces of said vessel and being integrated at least at the open end mouth part to form a single layer structure of said thermoplastic polyester resin to wrap the middle layers; and

at least the thin wall part being biaxially oriented.

4,535,902

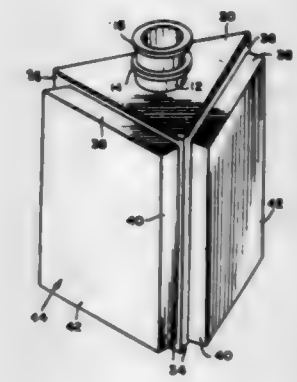
INTERMEDIATE ARTICLE OF MANUFACTURE FOR A PLASTIC CONTAINER

Richard E. Clark, Merrimack, N.H., assignor to Continental Packaging Company, Inc., Stamford, Conn.

Continuation-in-part of Ser. No. 364,563, Apr. 1, 1982,. This application Sep. 24, 1982, Ser. No. 423,358

Int. Cl.³ B65D *1/22*; B29D *23/03*; B29C *17/08*

U.S. Cl. 215—1 C **7 Claims**



1. An intermediate article of manufacture conprising a blow molded hollow shape formed of an orientable plastic material and having top and bottom walls joined by a plurality of sides in excess of two, a hollow neck extending from said top wall, and each of said sides having extending therefrom a projection, each projection being in the form of a container including a bottom wall and a side wall arrangement, said side wall arrangement including an edge remote from said container bot-

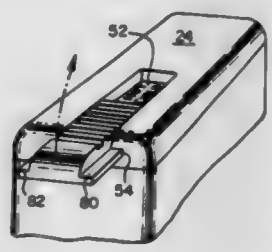
tom side wall and integrally joined to the respective one of said sides.

4,535,903

CHILD PROOF MEDICINE VIAL

Roberto D. Franchi, 167 Pequot Tr., Stonington, Conn. 06378

Filed Apr. 27, 1984, Ser. No. 604,663
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—213 7 Claims



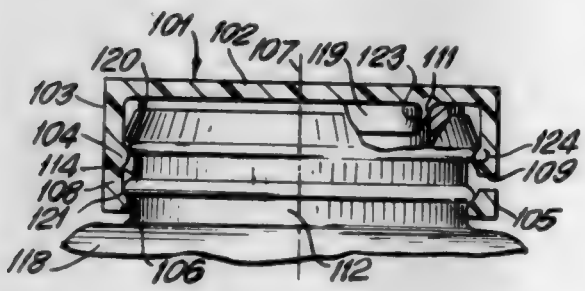
1. A medicine container comprising:
side walls and end walls having rounded corners;
a bead extending circumferentially of the inside of said walls near the open end thereof;
a cap having a top surface interrupted by a recess having a vertical surface therein and having a depending flange with a groove therein for mating with said bead;
an integral hinge between the container and the cap; and
a slidable panel in the recess in the cap, said panel having a raised boss with a rear vertical wall which abuts said vertical surface thus checking inward movement of the slidable panel.

4,535,904

TOOL REMOVABLE TAMPER INDICATING CLOSURE

Michael C. O'Connor, South Windsor, and George W. Hann, East Hartford, both of Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 11, 1984, Ser. No. 680,571
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—215 39 Claims



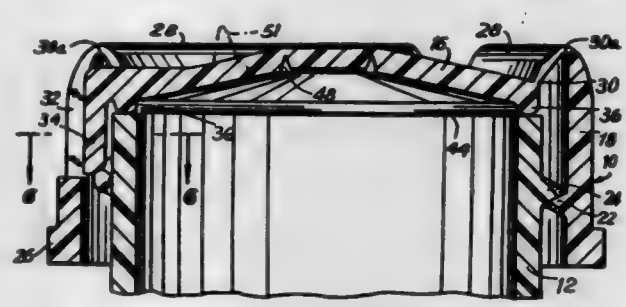
1. A tamper-indicating closure comprising a disc-shaped top with an upper skirt extending downwardly from the top; an annular upper locking bead around the inner surface of the upper skirt; a lower skirt proximate to and in center alignment with the upper skirt, the upper skirt being disposed between the top and the lower skirt; an annular retention bead around the inner surface of the lower skirt; breakable bridge means between the upper skirt and the lower skirt as the sole connection between the upper and lower skirt; and a tool aperture between the upper skirt and the lower skirt adapted to accept a tool means for breaking the bridge means so as to part the upper and lower skirts.

4,535,905

CLOSURE

Jeffrey Sandhaus, Rte. 9W, Snedens Landing, N.Y. 10964

Continuation of Ser. No. 441,546, Nov. 15, 1982, Pat. No. 4,479,585, which is a continuation-in-part of Ser. No. 399,237, Jul. 19, 1982, Pat. No. 4,442,945, which is a continuation-in-part of Ser. No. 335,216, Dec. 28, 1981, Pat. No. 4,413,742. This application Sep. 26, 1984, Ser. No. 654,856
Int. Cl.[3] B65D *55/02*
U.S. Cl. 215—218 8 Claims



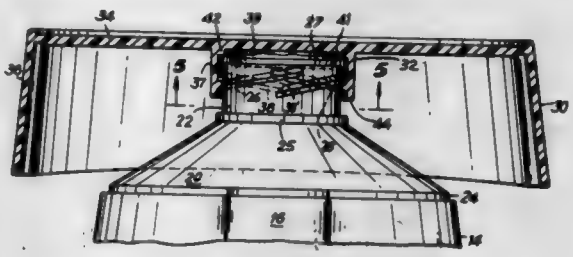
1. In a closure adapted to be fastened onto a container, said closure including a top and skirt, the improvement comprising:
at least one container engaging portion of said closure forming an integral part thereof, said container engaging portion being movable between first and second positions with respect to the container; and
means for moving said container engaging portion between said first and second positions, said moving means including a flexible resilient portion of said closure forming an integral part thereof, said resilient closure portion itself being flexible such that flexure of said resilient closure portion causes said container engaging closure portion to move between said first and second positions to coact with at least one surface of the container.

4,535,906

BOTTLE

Patricia A. Rowekamp, Cincinnati, Ohio, assignor to The Drackett Company, Cincinatti, Ohio

Filed Jun. 1, 1984, Ser. No. 615,972
Int. Cl.[3] B65D *51/18*
U.S. Cl. 215—329 18 Claims



1. A container having an overcap, which container is adapted for closure by rotatable attachment of the overcap through a quarter-turn, the container comprising an ovate container body having a centrally disposed neck, the neck having a pair of discontinuous threads describing, in opposed quadrants, arcs of about 90°, and a removable overcap having a planar top surface and an exterior ovate skirt and having a cap member extending downwardly from said planar top surface, said cap member being provided with a pair of discontinuous threads adapted for engagement with the threads provided on the neck, whereby the container is closed by placement of the cap member on the neck as to provide engagement of the terminal ends of the threads of the neck and of the cap member and rotating the overcap one quarter-turn, the ovate exterior skirt being brought into substantial alignment with the ovate container body thereby.

4,535,907

CATHODE-RAY TUBE

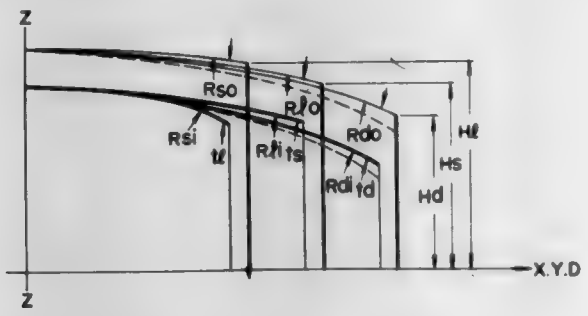
Kiyoshi Tokita, Fukaya; Toshinao Sone, Kumagaya, and Michio Nakamura, Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 5, 1984, Ser. No. 586,147

Claims priority, application Japan, Mar. 9, 1983, 58-37435; Mar. 9, 1983, 58-37436

Int. Cl.³ H01J *61/30*

U.S. Cl. 220—2.1 A 4 Claims



1. A cathode-ray tube comprising:

a glass panel section constituting a glass envelope having a tube axis, said glass panel section including a substantially rectangular faceplate, whose inner and outer surfaces are curved, and a skirt extending from a peripheral portion of said faceplate along the tube axis, wherein when ts, tl and td respectively denote thickness of said faceplate in the vicinity of the center portion of the short side, that in the vicinity of the center portion of the long side and that in the vicinity of the corner, and Hs, Hl and Hd respectively represent length of the skirt at the center portion of the short side, that at the center portion of the long side and that at the corner as the length of each of them is measured between the outer surface of said faceplate and the end portion of said skirt along the tube axis, then, the thickness of said faceplate and the length of said skirt have relations defined by the following equations of inequalities (1) and (2):

$$Hs \geqq Hd \text{ and } Hl \geqq Hd \quad (1),$$

$$tl \geqq ts \text{ and } td \geqq ts \quad (2).$$

4,535,908

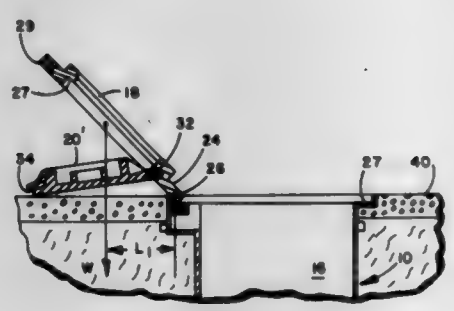
DOUBLE HINGE COUNTER-WEIGHT COVER ASSEMBLY

Robert M. Dabich, 7212 Patterson Dr., Garden Grove, Calif. 92640

Continuation-in-part of Ser. No. 538,187, Oct. 3, 1983, Pat. No. 4,467,932. This application Aug. 27, 1984, Ser. No. 644,875

Int. Cl.³ B65D *25/24*

U.S. Cl. 220—18 15 Claims



1. A lid assembly for a subsurface chamber comprising a support for covering the top of a subsurface chamber, a first access lid, first hinge means mounting said first access lid on said support for rotational movement about an axis of rotation between closed and open positions, a second, smaller access lid, second hinge means mounting said second lid on said first lid for rotational movement through an obtuse angle when said first lid is in a closed position such that the center of gravity of said second lid passes across the axis of rotation of said first access lid as said lid moves between closed and open positions.

4,535,909

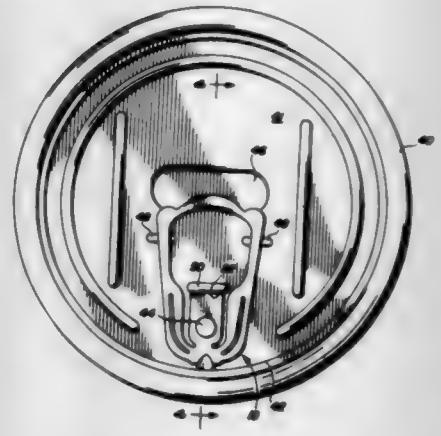
EASY OPENING CONTAINER SYSTEM

Edgar H. Zysset, St. Cloud, Fla., assignor to Automated Container Corporation, Orlando, Fla.

Filed Mar. 23, 1984, Ser. No. 592,831

Int. Cl.³ B65D *17/36*

U.S. Cl. 220—273 21 Claims



1. A container having a pull tab for the easy opening thereof, said container comprising:

a container having an end with a weakened score line the severing of which permits access to said container;

a fastener joined to said container end and spaced from said score line;

a pull tab joined to said fastener and having a pull ring extending from said fastener in a direction away from said score line and a nose portion extending adjacent said score line, said tab further including a pair of beams, each beam extending from said pull ring to said nose portion;

means for strengthening each of said beams continuously along the length from said pull ring to said nose portion; and

first and second carrier lug cutouts spaced along the rearward portion of said pull ring, with a lifting portion between said carrier lugs and with a peripheral curl along said lifting portion.

4,535,910

TANK CAP FOR POWERED MACHINE

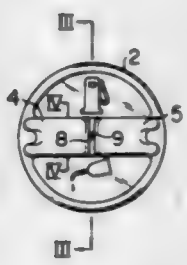
Akira Nagashima, Kawasaki, Japan, assignor to Kioritz Corporation, Tokyo, Japan

Filed Aug. 23, 1984, Ser. No. 643,378

Claims priority, application Japan, Aug. 30, 1983, 58-133121[U]

Int. Cl.³ B65D *51/00*

U.S. Cl. 220—377 2 Claims



1. A tank cap for closing the filling port of a tank mounted on a power-driven machine having an internal combustion engine, said tank containing a fuel to be supplied to said engine

or lubricating oil, wherein the improvement comprises that said tank cap is made of a transparent plastic material and has a protrusion protruding outwardly from the main surface of said cap, said protrusion defining therein a cavity communicating with the interior of said filling port of said tank such as to allow said fuel or lubricating oil to enter said cavity, and wherein said protrusion is constituted by two parts extending along a common diametrical line of the main surface of said tank cap and separated from each other by end walls defining radially inner ends of said parts of the protrusion, said end walls being made integral with the cap so as to constitute a central stiffening wall.

4,535,911

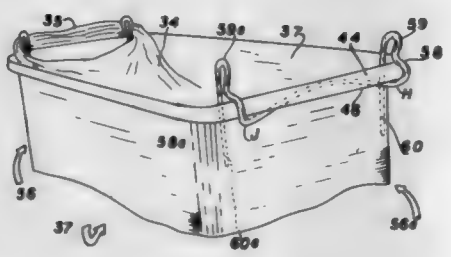
TRASH CONTAINER ATTACHMENTS FOR SUPPORTING PLASTIC BAGS

Victor H. Goulter, San Francisco, Calif., assignor to David Pressman, San Francisco, Calif., a part interest

Filed May 7, 1984, Ser. No. 607,797

Int. Cl.[3] B65D *90/04*

U.S. Cl. 220—404 **19 Claims**



1. For a trash container having an open mouth at its top and a rim around said open mouth, an attachment for holding a plastic bag having handles in an open condition within said container by hanging said handles from the top of said container at opposite sides thereof, said attachment comprising:

(a) support means which can be removably attached to said rim at the top of said container without altering said container,

(b) said support means comprising a pair of members which provide at least two upstanding portions which extend up from said rim above said container at said respective opposite sides of said container,

(c) said upstanding portions being shaped to hold said handles of said bag at said respective opposite sides of said container and to suspend said bag within said container by said handles,

(d) each of said pair of members being bent into a configuration which provides grasping means for holding each member rigidly to one side of said container such that:

(1) respective portions of said member are positioned on opposite sides of said rim so that said respective portions of said member provide a sufficient grasp of said rim to hold said member to said rim without altering said rim,

(2) each of said members can be removed from said rim by simply withdrawing said respective portions thereof from said rim, and

(3) said upstanding portions of said support means extend up from said respective members at the respective sides of said container.

4,535,912

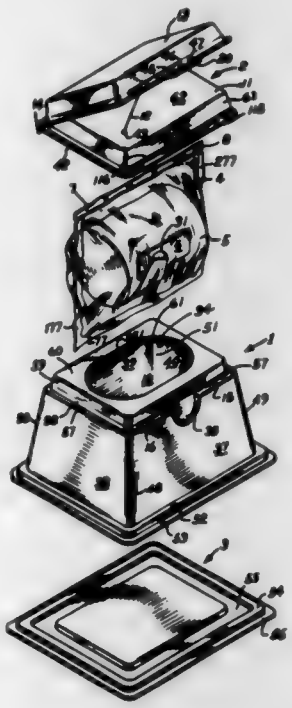
PRE-MOISTENED TOWELETTE DISPENSER

Joseph P. Bonk, Des Plaines, Ill., assignor to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 858,214, Dec. 7, 1977, abandoned, which is a continuation of Ser. No. 680,607, Apr. 26, 1976, Pat. No. 4,101,026, which is a division of Ser. No. 405,503, Oct. 11, 1973, Pat. No. 3,986,479. This application Jan. 7, 1980, Ser. No. 109,757

Int. Cl.[3] A47K *10/38*

U.S. Cl. 221—46 **10 Claims**



10. In a pre-moistened towelette dispenser assembly having a body portion defining a cavity for receiving a towelette roll comprising a web: (i) having a first and a second parallel side edge, (ii) having individual towelettes defined in said web by spaced lines of perforations transverse to the web, and (iii) being of absorbent material containing a fluid impregnated therein, and a generally planar top portion having a slit therein for withdrawing said roll material from said cavity through said slit, the improvement which comprises:

(a) said body portion adapted with at least one inclined side wall forming a juncture with said slit-containing top portion;

(b) said slit is substantially the width of said web roll and is disposed at an angle oblique to said juncture; and

(c) said perforation lines in said roll being substantially parallel to said juncture so that upon feed of said towelette material through said slit, said slit is disposed at an oblique angle to said perforations and pull on a first towelette projecting through said slit at an angle to the web as it is unrolled from said roll automatically initiates a tearing separation by action of said slit itself of said first towelette from said web from said first edge across said web to said second edge.

4,535,913

GAME CHIP STORAGE AND DISPENSING DEVICE

David W. Hooie, and Johannes Daldosch, both of Box 29, 730 NW. 90th St., Miami, Fla. 33138

Continuation-in-part of Ser. No. 577,980, Feb. 8, 1984, abandoned. This application Mar. 22, 1984, Ser. No. 592,451

Int. Cl.[3] B65G *59/00*

U.S. Cl. 221—251 **9 Claims**

6. In a game chip storage and dispensing device having:

a sleeve adapted to extend upright for holding a stack of chips, and means for urging the chips downward along said sleeve;

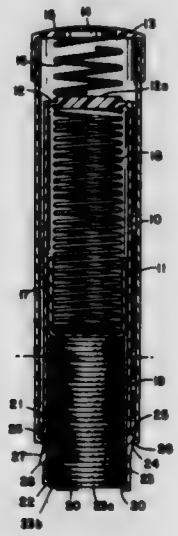
the improvement which comprises:

first and second sets of flexible and resilient fingers extending

down from said sleeve at circumferentially spaced locations thereon;

each finger of said first set having a lateral protrusion extending inward for engagement beneath the lowermost chip in the stack, each finger of said first set having a normal unstressed position permitting downward movement of the chips past said lateral protrusion;

each finger of said second set having a lateral protrusion extending inward for engagement beneath a chip in the stack and located higher than the protrusions on the fingers of said first set by substantially the thickness of one chip, each finger of said second set having a normal unstressed position



permitting downward movement of the chips past its lateral protrusion;

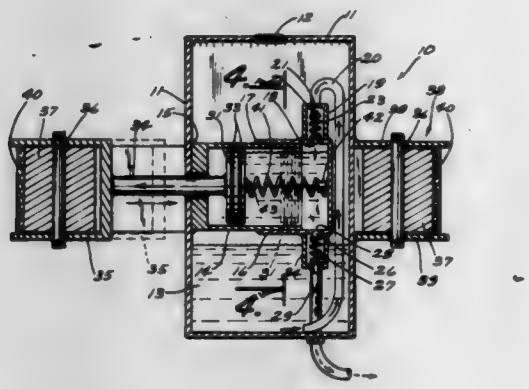
and operating means for: (a) forcing the fingers of said first set toward the stack of chips to position said protrusions thereon beneath the lowermost chip in the stack while permitting the fingers of said second set to assume their normal unstressed position; and (b) permitting the fingers of said first set to assume their normal unstressed positions to enable said lowermost chip to drop from the stack while forcing the fingers of said second set toward the stack of chips to position their protrusions beneath the next chip immediately above the chip which drops from the stack.

4,535,914

AUTOMATIC LARVICIDE DISPENSER

Raymond J. A. Coty, P.O. Box 1954, New Britain, Conn. 06050

Filed Feb. 21, 1984, Ser. No. 581,790
Int. Cl.[3] B67D *5/08*
U.S. Cl. 222—52 **5 Claims**



1. An automatic larvicide pump dispenser comprising:

container means for holding liquid larvicide;

a discharge port connected to said container means;

a sealed cylinder disposed within said container;

a piston reciprocally disposed within said cylinder and being sealed at the edges thereof against the inside of said cylinder, said piston being movable between a first and second reciprocal position within said cylinder;

means for biasing said piston to a first position within said cylinder;

first conduit means for communicating the supply of liquid larvicide in said container means with said cylinder;

a first one-way valve means disposed within said first conduit means for permitting flow of liquid to flow from the container means to said cylinder when said piston is moved from the second position to the first position thereof, and preventing flow through said first conduit means at all other times;

second conduit means for communicating the inside of said cylinder with said discharge port;

a second one-way valve means disposed in said second conduit means for permitting flow from said cylinder to said discharge port when said piston is moved from the first to the second position thereof and preventing flow of liquid through said second conduit means at all other times;

a piston rod connected to said piston and extending out of said cylinder and out of said container means; and

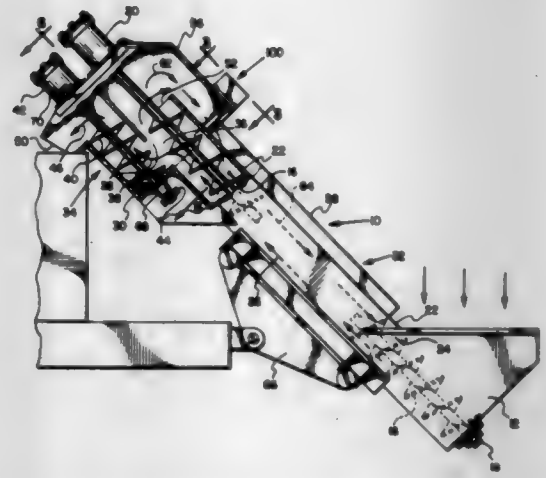
actuator means operably connected to said piston rod and to said container means which lengthens when it becomes wet and shortens when it becomes dry whereby said piston will be pushed to said first position by said biasing means when said actuator means is wet and whereby said piston will be pushed to said second position thereof, against the force of the biasing means, as said actuator means becomes dry.

4,535,915

DELIVERY AND METERING DEVICE FOR GRANULATED AND POWDERED MATERIALS

Joe E. West, Coppell, Tex., assignor to The Western Company of North America, Forth Worth, Tex.

Filed Jul. 22, 1983, Ser. No. 516,378
Int. Cl.[3] G01F *11/20*
U.S. Cl. 222—56 **15 Claims**



1. A device for delivering and metering a flow of granulated or powdered material from a collection facility to a processing stage, said device comprising:

a first metering screw;

a second metering screw parallel to and intermeshed with said first metering screw, said first and second metering screws having identical pitch and orientation;

means for driving said first and second metering screws in synchronous rotation;

means for controlling the speed at which the first and second metering screws are driven;

a metering screw housing surrounding both the first and second metering screw;

a metering inlet of said metering screw housing;

a delivery outlet of said metering screw housing having a lowest elevation at substantially the same elevation as the highest elevation of the inlet to said metering screw, said delivery outlet being disposed to pass the flow of the granulated or powdered material to the processing stage; and

means for presenting a continuous flow of the granulated or

powdered material from said collection facility to said metering inlet; and

means for separating a portion of the flow of the granulated or powdered material not entering said metering inlet from the means for presenting a continuous flow.

4,535,916

GLUE GUN

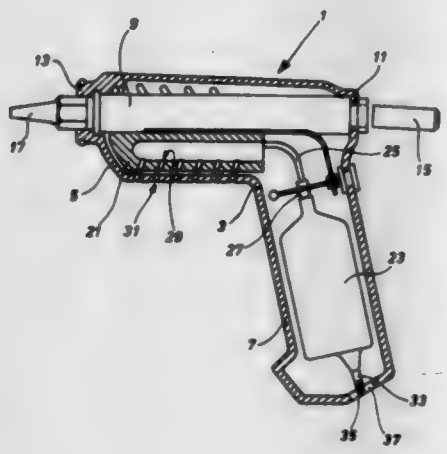
Günter Mächerle, Kandel/Pfalz, and Ludwig Lieber, Steinweiler, both of Fed. Rep. of Germany, assignors to Fritz Eichenauer, Pfalz, Fed. Rep. of Germany

Filed Apr. 11, 1983, Ser. No. 483,616

Claims priority, application Fed. Rep. of Germany, Apr. 10, 1982, 3213547

Int. Cl.³ B67D 5/66

U.S. Cl. 222—113 **9 Claims**



1. A glue gun for conducting adhesive bonding by means of a heated adhesive, comprising a housing having a heat section and an angled handle, a hollow metal block which accommodates the adhesive being arranged in the heating section of the housing, a hollow combustion chamber equipped with air inlet openings being provided within said housing, said combustion chamber being fashioned integrally with the metal block; a fuel tank arranged in the handle; and a connecting conduit extending from the tank to the combustion chamber, a shutoff element being located in this connecting conduit.

4,535,917

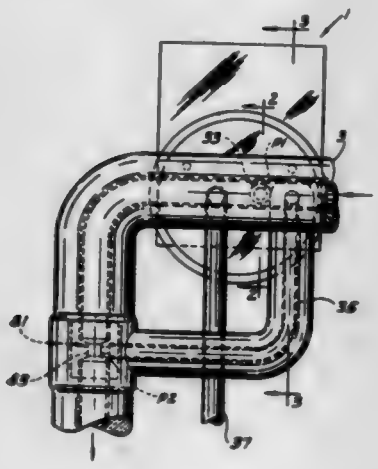
DISPENSING APPARATUS

Joseph M. Trewhella, Godfrey, Ill., assignor to Multiplex Company, Inc., St. Louis, Mo.

Continuation-in-part of Ser. No. 234,350, Feb. 13, 1981, abandoned. This application Jul. 16, 1982, Ser. No. 399,197

Int. Cl.³ B67D 5/56

U.S. Cl. 222—129.1 **10 Claims**



1. Apparatus for dispensing cold drinks comprising:

a line for supplying cold water for drinks adapted for continuous flow of water therethrough;

a valve for dispensing water from said supply line, said valve comprising a valve body having an inlet interconnected with said line at a first point along said line, an outlet for delivery of water from the valve body into a cup, a delivery passage in the body for delivery of water from the inlet to the outlet, a valve seat in the body adjacent the outlet, and a valve member associated with the body movable between a closed position engaging the seat blocking flow of water through the outlet and an open position for flow of water through the outlet; and

a system for maintaining a continuous flow of the cold water through said delivery passage and back to said line when the valve member is closed to assure having cold water on tap for being dispensed when the valve member is opened, comprising a return passage in the valve body interconnected with the delivery passage downstream from the inlet and upstream from but adjacent the valve seat and a return connection from said return passage to said supply line at a second point along said line downstream from said first point, and means for causing a pressure differential in the water between said first and second points such that, when the valve member is closed, cold water flows continuously from said first point along said line to the inlet, through said delivery passage, through said return passage and through said return connection back to the line at said second point along said line.

4,535,918

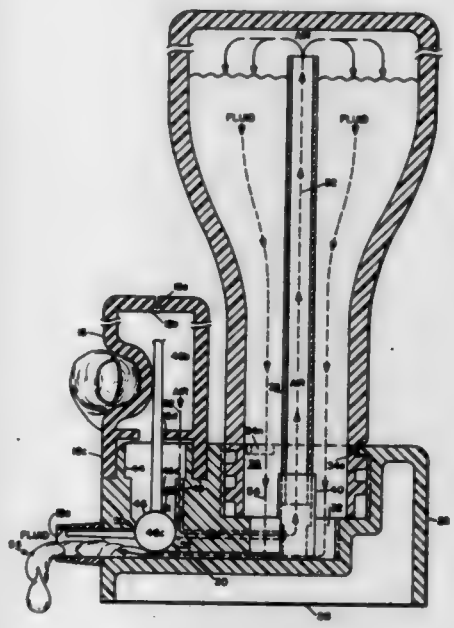
DISPENSER WITH SQUEEZE-BULB ACTUATOR

Randy B. Heiligman, 10411 S. Cedar Lake Rd., Minnetonka, Minn. 55343, and Paul Keller, 9404 NW. East River Rd., Coon Rapids, Minn. 55433

Filed Jun. 3, 1983, Ser. No. 500,765

Int. Cl.³ B67D 5/00

U.S. Cl. 222—185 **9 Claims**



1. In combination, a bottle and dispenser, bottle including:

a. bottle including a screw top lip;

b. dispenser including a housing with an air input channel, and a liquid output channel, said air input channel running downward from an upper portion of the housing, through said housing, into a tube extending upward, a bottle receiving hole surrounding said tube, a liquid dispensing chamber running from said bottle receiving hole to a spout; and,

c. a squeeze air bulb connected to said air input chamber and encompassing a portion of said bottle, and a lever positioned in said liquid dispensing channel within said spout, and in said squeeze bulb whereby squeezing said squeeze

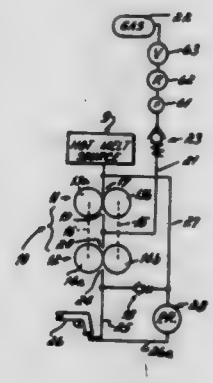
bulb pivots said lever in said spout to allow for passage of fluid.

4,535,919

HOT MELT ADHESIVE SYSTEM

Calvin R. Jameson, Atlanta, Ga., assignor to Nordson Corporation, Amherst, Ohio

Filed Aug. 19, 1981, Ser. No. 294,191
Int. Cl.[3] F04C *15/04*
U.S. Cl. 222—190 20 Claims



1. Apparatus for dispensing a foamed adhesive or sealant material, said apparatus comprising,

a pump,

means for supplying said material in a liquid state to said pump,

a source of gas,

means for supplying gas from said source to said pump such that said pump is operable to agitate said liquid material in the presence of the gas so as to distribute said gas throughout said liquid material and to pressurize said liquid material and gas to place said gas into solution with the liquid material,

means for dispensing said liquid material and gas solution at a pressure below the solution maintenance pressure of said liquid material and gas solution whereby the gas is released from solution as said liquid forms a foam,

first fluid conduit means for supplying said liquid material and gas solution from said pump to said dispensing means,

second fluid conduit means for recycling said liquid material and gas solution from said dispensing means back to said pump,

third fluid conduit means including a spring biased pressure relief valve means for interconnecting said first and second fluid conduit means, and

a spring biased pressure regulator contained within said second fluid conduit means for maintaining a substantially constant back pressure of liquid material and gas solution within said dispensing means, and

said pressure regulator including a variable orifice and means including a fixed orifice restrictor responsive to changes in flow and changes in the viscosity of liquid material and gas solution flowing through said pressure regulator to vary the size of said variable orifice.

4,535,920

APPARATUS FOR APPLYING LAP SEALANT

Leon M. Troup, 601 Hampton St., Marquette, Mich. 49855

Filed Sep. 30, 1983, Ser. No. 537,842
Int. Cl.[3] B67D *5/00, 3/00*
U.S. Cl. 222—612 8 Claims

1. An apparatus for applying a strip of material along a selected work path comprising

frame means having a pair of wheels;

said frame means having rear handle means for permitting an operator to move said frame means;

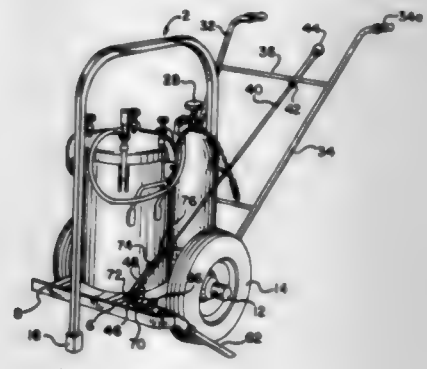
tank means for retaining a supply of material to be applied;

conduit means coupled to said tank means and having a nozzle mounted thereon at a position outboard of one of said wheels;

said nozzle having an upper end portion being pivotally mounted on said conduit means generally about a horizontal axis, said nozzle being pivotally mounted between an upper position and a lower dispensing position;

said nozzle being mounted to assume a material applying position outboard of one of said wheels and to apply a generally continuous strip of material along the work path as the frame means is rolled adjacent the work path;

said nozzle having a lower delivery edge defining a nozzle opening, and said nozzle being free to pivot with respect to said frame means whereby said nozzle lower delivery edge floats on the material being applied when said nozzle is in the lower dispensing position;



valve means connected to said conduit means operative between an open position allowing delivery of material from said supply means to said nozzle and a closed position closing delivery;

a valve control lever connecting said valve means to said handle means for controlling operation of said valve means in either open or closed position;

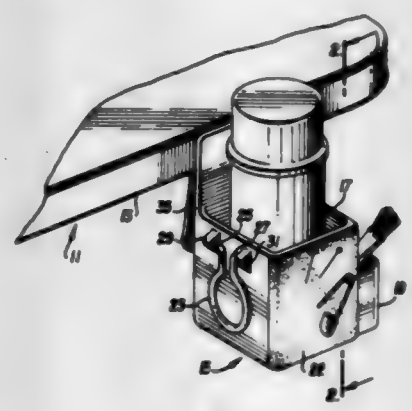
said nozzle is pivotally mounted for pivotal movement between a lower position corresponding to said material applying position and a raised position, said control lever further coupled to said nozzle for simultaneously causing said valve means to assume said open position and said nozzle means to assume said lowered position.

4,535,921

IRONING BOARD CADDY

Mildred P. Sanders, 304 Melrose Dr., Jackson, Miss. 39211

Filed Apr. 17, 1984, Ser. No. 601,201
Int. Cl.[3] D06F *81/10*
U.S. Cl. 223—106 13 Claims



1. A caddy for attachment to an ironing board having a downwardly extending peripheral flange with an inwardly extending lip, said caddy comprising

at least one substantially rigid compartment open at its upper end;

a substantially flat wall forming part of, and extending upwardly from said compartment for abutting the outer face of said flange; and

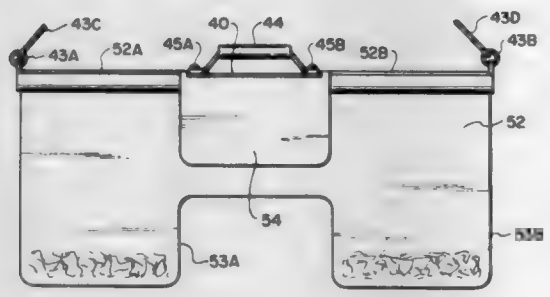
a spring biased clip pivotally secured to the outer face of said wall with its upper end opposite said upwardly extending wall for abutting the inner face of said flange whereby said upwardly extending wall and clip, when secured to said flange, support said caddy below the edge of said ironing board.

4,535,922

TRAP STAND CARRIER

Bart M Yarnold, 6425 Reseda Blvd., Reseda, Calif. 91335

Filed Apr. 5, 1984, Ser. No. 597,406
Int. Cl.[3] B65D *71/00*; G10G *7/00*
U.S. Cl. 224—202 **3 Claims**



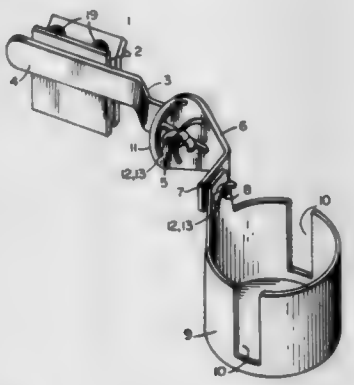
1. A carrying device for elongated, folded musical instrument stands comprising an elongated main brace; a handle; adjustable, centraly-located means on said elongated main brace for attaching said handle to said main brace; means along said main brace for holding corresponding portions or said stands tightly against said main brace comprising a continuous piece of flexible material extending from one end of said main brace to the other end in length, with one side secured along the top of said main brace; the other side of said flexible material, away from said main brace, including elongated flaps at either end to wrap around said top of said main bace on either side of said handles, and means for securing said elongated flaps on the other sides of said flexible material along the top of said main brace; the width of said material, including said elongated flaps being sufficient to wrap completely around any of said stands being carried by said device.

4,535,923

AUTOMOBILE BEVERAGE HOLDING DEVICE

James E. Manke, P.O. Box 64295, West Los Angeles, Calif. 90064

Filed Mar. 25, 1983, Ser. No. 478,678
Int. Cl.[3] B60R *7/00*
U.S. Cl. 224—273 **7 Claims**



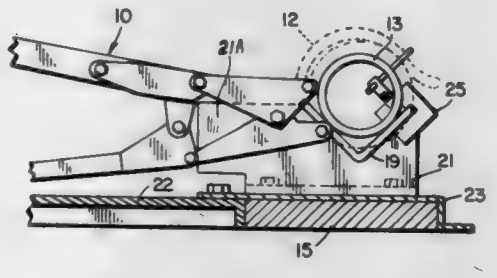
1. An automobile beverage holding device comprising, a spring biased clip member for securing said device to a support member such as an ash tray or glove compartment, a shank member attached at one end to said clip member and having an adjustable slot assembly at the other end thereof, and a receptacle, adjustably connected to said adjustable slot assembly, for holding a beverage container in a secure and upright orientation.

4,535,924

APPARATUS FOR SUPPORTING A PIPE AND PIPE SNAPPING TOOL

Harold F. Quinn, 8003-13th Ave. South, Bloomington, Minn. 55420

Filed Apr. 20, 1984, Ser. No. 602,436
Int. Cl.[3] B26F *3/00*
U.S. Cl. 225—104 **6 Claims**



1. A support for supporting a pipe to be cut and a pipe snapping tool having a pair of handles and a pair of actuator jaws, the support comprising:

base support means for supporting a pipe to be cut and the jaws of a pipe snapping tool, comprising elongated main support means and a pair of upwardly opening pipe trays fixedly attached to the main support means and aligned with each other along the longitudinal axis of the main support means, said pipe trays being separated from each other by a predetermined space adjacent the center of the main support means to create a support gap over which the pipe to be cut lies when supported on the pipe trays;

wall support means attached to the ends of each pipe tray at opposite sides of the support gap and extending perpendicular to the longitudinal axis of the pipe trays, and facing each other across the support gap, the wall support means spacing the pipe trays on the main support such that the lower jaw of a pipe snapping tool may be positioned between the wall support means, and will lie below a pipe spanning the support gap when supported by the pipe trays; and

lateral support means releasably attached to and disposed laterally of an substantially perpendicular to the main support means, and being centered between the wall support means, to provide a laterally extending base for one handle of a pipe snapping tool positioned between the wall support means.

4,535,925

SEMI-AUTOMATIC PNEUMATIC EXPANSION RIVET GUN

Carl Ramey, Yellville; Royce W. Hill, Flippin, and James H. Beijen, Mountain Home, all of Ark., assignors to Micro Plastics, Inc., Flippin, Ark.

Filed Aug. 10, 1983, Ser. No. 521,931
Int. Cl.[3] B21J *15/02*
U.S. Cl. 227—55 **11 Claims**

1. A pneumatic, semi-automatic, hand-held rivet applicator gun comprising:

rigid pistol grip means adapted to be gripped by a user for operating the gun;

magazine means for storing a plurality of rivets and for serially feeding them for subsequent application by said gun;

barrel means for serially receiving rivets from said magazine means, said barrel means having an internal chamber defined therein, said chamber including ram means and piston means axially displaceable therewithin for periodically forcibly dispensing rivets from said barrel means;

said ram means including internal, substantially coaxially aligned plunger means adapted to be forcibly contacted by said piston means for installing a rivet;

intermediate pneumatic means for actuating said barrel means; and,

trigger actuated pneumatic control means adapted to be coupled to an external pneumatic source for actuating said intermediate pneumatic control means in response to manual operation of a trigger associated with said grip means;

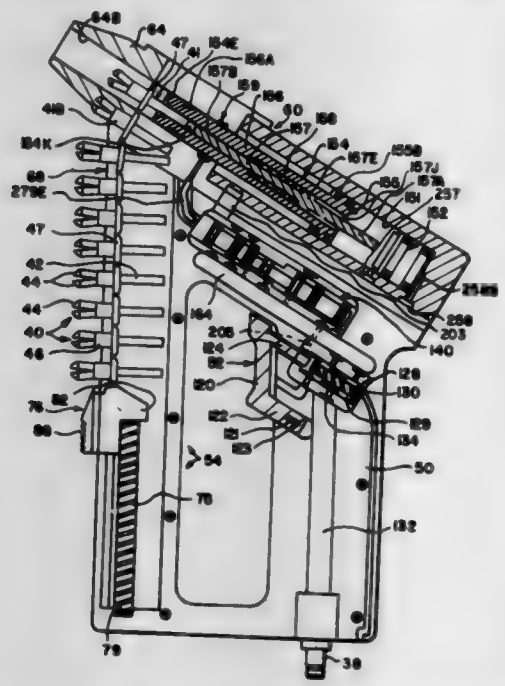
said trigger actuated pneumatic control means including a trigger valve chamber having a plurality of ports and a trigger valve disposed for axial movement therewithin;

said intermediate pneumatic means including an intermediate chamber, first and second axially aligned intermediate valves confined within said chamber for axial movement in response to pneumatic signals derived from said trigger actuated pneumatic control means, and a plurality of pneumatic input and output ports;

said pneumatic barrel chamber including a plurality of inlet ports in fluid flow communication with said intermediate pneumatic switch output ports;

said trigger valve being configured to establish, when in a rest position relative to said trigger valve chamber ports, a pneumatic path flowing to said intermediate chamber to bias said first said second intermediate valves to a rest position; and,

said second intermediate valve, when in a rest position, being



configured to establish a pneumatic path through preselected output ports in said intermediate chamber in fluid flow communication with preselected ones of said barrel chamber inlet ports to effectuate biasing of the piston means to a rest position and biasing of said ram means to a loaded rest and ready position.

7. A method of serially installing plastic expansion rivets comprising the steps of:

providing a gun-like frame adapted to be held by the hand of an operator with a magazine for storing rivets to be applied and for automatically feeding them to a feed position;

pneumatically controlling and initiating operation of said gun with a trigger-operated pneumatic trigger control valve operatively coupled to a source of high pressure air;

loading said rivets within an axially displaceable ram disposed within a generally tubular barrel;

forcibly discharging said rivets from said ram and said gun by forcibly contacting a plunger coaxially, slidably disposed within the ram by a piston axially slidable within the barrel independent of said ram;

controlling pneumatic operation of said ram and said piston with an intermediate pneumatic control valve system operated by said trigger operated pneumatic control valve by generating a plurality of pneumatic control signals with first and second independent intermediate spool valves disposed within adjacent intermediate pneumatic chambers,

said controlling step including the steps of:

first said piston in response to actuation of said trigger valve by simultaneously moving both said first and second intermediate valves to a fire position in response to said trigger valve whereby to activate said piston; and,

returning said piston to a rest state and recycling and thus recocking said ram in response to release of said trigger valve.

4,535,926

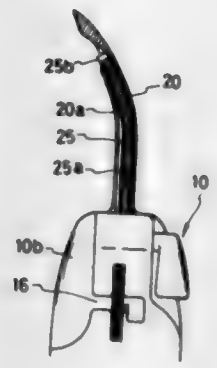
FASTENER DISPENSING DEVICE

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan and Ben Clements & Sons, Inc., South Hackensack, N.J.

Filed Nov. 30, 1983, Ser. No. 556,752

Int. Cl.³ B25C *1/00*

U.S. Cl. 227—67 **6 Claims**



1. A fastener dispensing device for applying individual tag pins from an assembly, each tag pin having a head section and a crossbar joined together by a filament, comprising a main body having a grip portion and a nose portion, an operation lever pivotably supported on said grip portion of said main body, a side-slitted hollow needle supported on said nose portion of said main body, said hollow needle being curved such that said side-slitted portion of said hollow needle lies along the inside surface of said curve, and a driver supported in said main body operatively coupled to said operation lever and adapted to reciprocate through said hollow needle as said operation lever is squeezed and released, said driver having a top end portion which abuts against successive crossbars of said tag pins in said assembly to push said crossbars through said hollow needle as said driver is reciprocated, said driver including a flexible stem portion at least along a portion of its length to permit said top end portion of said driver to travel in said curved hollow needle to press successive crossbars therethrough.

4,535,927

WORKPIECE PRESET JIG ARRANGEMENT IN A WELDING APPARATUS

Soichi Matsubara, Oura; Hirobumi Morita, Shiki, and Shinpei Watanabe, Hidaka, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,826

Claims priority, application Japan, Jun. 4, 1982, 57-94784; Jun. 5, 1982, 57-96801; Jun. 7, 1982, 57-96315; Jun. 7, 1982, 57-93423[U]

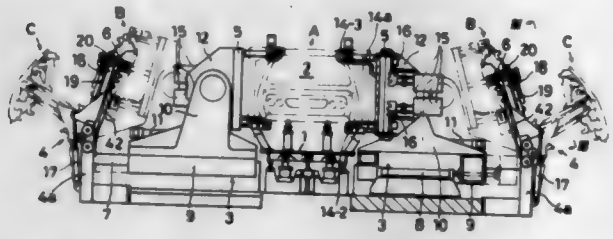
Int. Cl.³ B23K *9/32*

U.S. Cl. 228—6.1 **15 Claims**

1. A workpiece preset jig arrangement in a welding apparatus having a welding apparatus body, welding jig means on said welding apparatus body, and clamp means on said welding jig means for clamping plural component parts for constituting a workpiece to be welded to another workpiece, and means on

said welding jig means for welding said constituted workpiece to said other workpiece, said arrangement comprising:

preset arrangement body means positioned adjacent said welding apparatus body for movement relative thereto, preset jig means provided on said preset arrangement body means for presetting of said plural component parts, and preset clamp means on said preset jig means for clamping said plural component parts, said preset jig



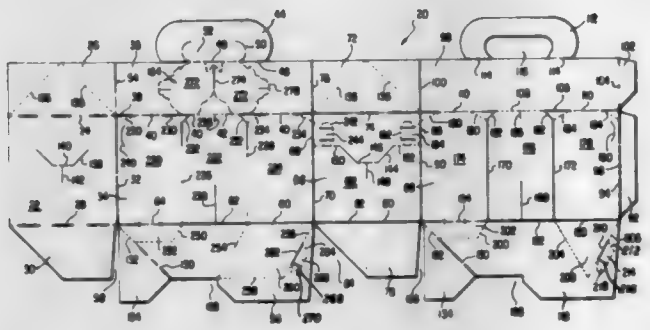
means being movable between a set position facing said welding jig means and a preset position away from said set position and said welding jig means, said set position being such that said plural component parts constituting said workpiece may be transferred from said preset jig means to said welding jig means by releasing said preset clamp means on said preset jig means and engaging said clamp means on said welding jig means.

4,535,928

DUAL PURPOSE CARTON

James L. Capo, Middletown, Ohio, assignor to International Paper Company, New York, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,251
Int. Cl.³ B65D *85/28*
U.S. Cl. 229—16 R **14 Claims**



1. A carton structure including body side and end panels, bottom flaps connected to said body side panels along fold lines, and at least one top flap; and each of said body side panels, at least one of said body end panels, each of said bottom flaps, and said one top flap having lines of weakening therein for separating from said carton structure components of a caddy for pencils, crayons and the like, wherein said caddy includes two tubular bodies each formed from one of said body side panels, and each of said tubular bodies having bottom panels formed integrally therewith from that one of said bottom flaps hingedly connected to the respective one of said body side panels, and wherein each of said tubular bodies is triangular in cross-section, a bottom panel of one of said tubular bodies is of a matching triangular outline, and a bottom panel of the other of said tubular bodies is of a double triangular, diamond shape to underlie and close both tubular bodies.

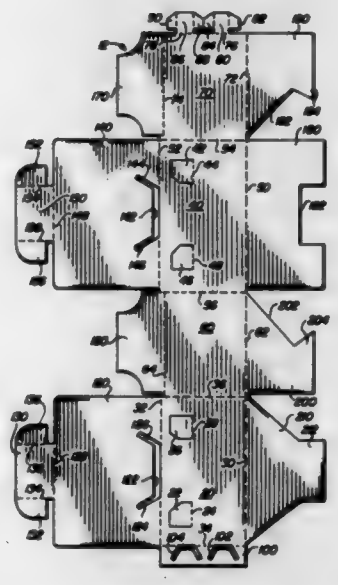
3. A caddy for pencils, crayons and the like, said caddy comprising two tubular bodies fashioned from sheet material and having like panels in back to back relation, and receiving means securing said like panels together, wherein said securing means includes a combined divider and locking member, and like panels of said tubular bodies and said combined divider and locking member have cooperating slits therein for locking entry of said member into bottom portions of said tubular bodies.

4,535,929

REUSABLE SHIPPING BOX WITH CAM TABS FOR RELEASE OF CLOSURE INTERLOCK

Ralph A. Sherman, II, and Calvin R. Watson, both of Mesa, Ariz., assignors to E-Z P.A.C., Inc., Mesa, Ariz.

Filed Sep. 19, 1983, Ser. No. 533,434
Int. Cl.³ B65D *5/10*
U.S. Cl. 229—39 R **18 Claims**



1. Carton apparatus, comprising, in combination:

first panel means defining one side of the carton apparatus;

first end panel means secured to the first panel means and defining a second side of the carton apparatus;

second panel means defining a third side of the carton apparatus and secured to the first end panel means remote from the first panel means;

second end panel means secured to the second panel means remote from the first end panel means and defining a fourth side of the carton apparatus;

means for securing together the first panel means and the second end panel means;

bottom panel means defining the bottom of the carton apparatus;

first top flap means secured to the first panel means, including first locking slot means disposed adjacent to the first panel means;

second top flap means secured to the second panel means;

locking tab means secured to the second top flap means remote from the second panel means apd adapted to extend through the first locking slot means to lock the second top flap means to the first top flap means; and

cam means for camming the locking tab means into alignment with the first locking slot means for unlocking the second top flap means from the first top flap means.

4,535,930

OVERNIGHT LETTER ENVELOPE

James O. Ward, Lake Oswego, Oreg., assignor to Nekoosa Envelopes, Inc., Englewood, Colo.

Filed Jan. 16, 1984, Ser. No. 570,881
Int. Cl.³ B65D *27/04, 27/08*
U.S. Cl. 229—71 **14 Claims**

1. An envelope comprising:

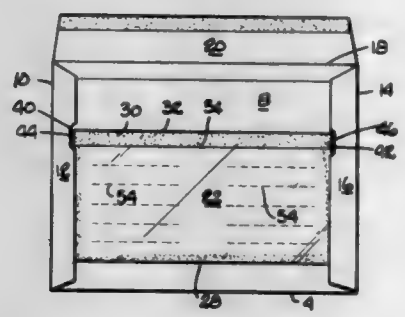
a continuous sheet of paper folded once about a fold line to form first and second panels;

said first and second panels having opposed inner surfaces and each having an outer surface;

said first and second panels having substantially the same width but said second panel being shorter in length than said first panel;

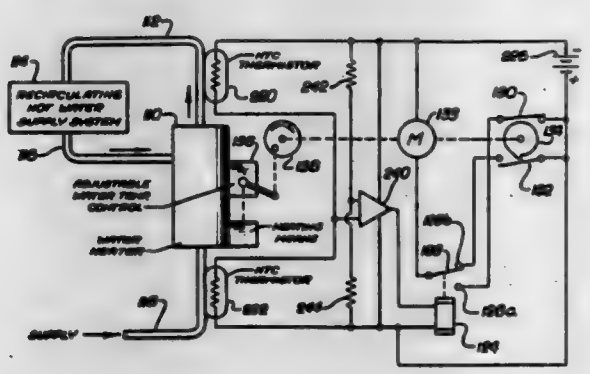
each of said panels having two lengthwise edges and two widthwise edges;

a pair of side panels each of which is joined to one of the lengthwise edges of said first panel by a fold line;
each of said side panels having a lengthwise free edge;
each of said side panels having a notch formed in the lengthwise free edges thereof;
a flexible transparent sheet superposed over a portion of said outer surface of said second panel;
said flexible transparent sheet having two lengthwise edges and two widthwise edges;
said side panels being folded over and secured to said outer surface of said second panel so that a major portion of the lengthwise edges of said flexible transparent sheet are located between said outer surface of said second panel and said side panels;
a minor portion of said lengthwise edges of said flexible transparent sheet is exposed at said notches;



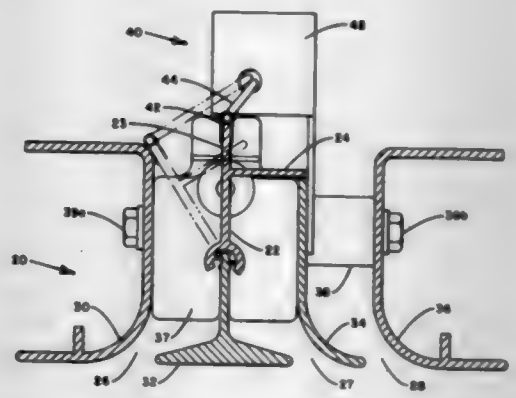
means securing said flexible transparent sheet in superposed position over said outer surface of said second panel to form a pouch between said outer surface of said second panel and an inner surface of said flexible transparent sheet;
said pouch being closed on three sides and having an opening located along a widthwise edge of said flexible transparent sheet having portions thereof adjacent said notches;
means adjacent said widthwise edge of said flexible transparent sheet for effecting a seal between said outer surface of said second panel and said flexible transparent sheet when desired; and
a flap extending from a widthwise edge of said first panel and having means for effecting a seal between said first and second panels when desired.

4,535,931
ENERGY CONSERVING WATER HEATER CONTROL SYSTEM
Stephen Bartok, Rancho Palos Verdes; Benjamin H. Stansbury, Jr., Beverly Hills, and Alan L. Backus, Los Angeles, all of Calif., assignors to Kenneth W. Scott, Coronado, Calif.
Filed Sep. 14, 1983, Ser. No. 531,998
Int. Cl.³ F23N *1/08*
U.S. Cl. 236—20 R **9 Claims**



1. An improved energy conserving water heater control system of the type having a water temperature control associated with the water heater adjustable to a warmer high demand setting and to a cooler energy saving standby setting, and having temperature sensors monitoring temperatures in thermal contact with an inlet pipe to said water heater and with an outlet pipe from said heater, wherein the improvement comprises:
a difference measuring arrangement connected between the inlet sensor and the outlet sensor; and
an adjusting means responsive to the difference measured by said arrangement for setting said control, when said difference approaches zero, to said cooler setting, and for setting said control, when the temperature sensed by said outlet sensor is substantially greater than the temperature sensed by said inlet sensor, to said warmer setting.

4,535,932
ACTUATOR FOR A HEATING/COOLING DIFFUSER
Carl C. Herb, Camillus, N.Y., assignor to Carrier Corporation, Syracuse, N.Y.
Filed Jun. 11, 1984, Ser. No. 619,417
Int. Cl.³ F24F *13/10*
U.S. Cl. 236—49 **2 Claims**

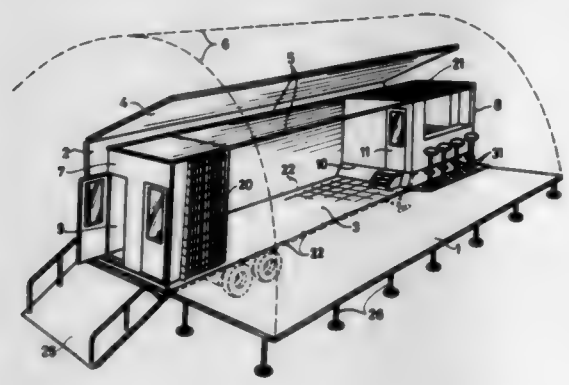


1. A thermally responsive actuator comprising:
thermally responsive means for producing linear motion by undergoing a reversible phase change;
rod means adapted to be movably secured at one end to said thermally responsive means for movement therewith and to be fixedly secured at another end so as to cause said rod means to be flexed in all positions of said thermally responsive means with the degree of flexure being determined by the position of said thermally responsive means; and
means for converting flexure of said rod means into rotary motion.

4,535,933
VEHICLE WITH TILTABLE SIDE WALLS
Johnny Kuiper, Nieuwegein, Netherlands, assignor to Foolish Fantasies B.V., Nieuwegein, Netherlands
Filed Aug. 2, 1984, Ser. No. 636,983
Claims priority, application Netherlands, Aug. 5, 1983, 8302783
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 A **9 Claims**

1. A vehicle body comprising an elongated floor having a pair of opposed ends and a pair of opposed sides, fixed upright means at the opposed ends thereof, a pair of side walls pivotably connected to the opposed sides of said floor, a roof member pivotably connected to one of said side walls, said side wall and roof member being pivotable into substantially the plane of said floor to define a floor surface, elongated longitudinal supports between said upright means extending near the roof

member and within the space enclosed by said roof member and side walls, and an unspanned roofing of pliable material at



least partially supported by said elongated supports to enclose said floor surface.

4,535,934

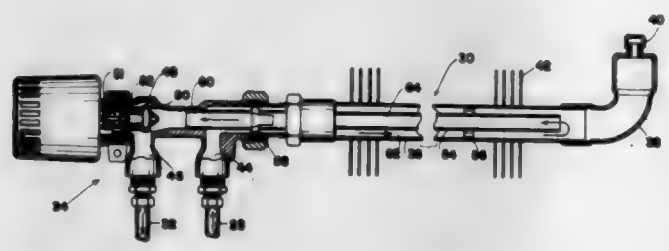
HOT WATER HEAT DISTRIBUTOR

Derek E. Rodd, 20 Hemlock Way, San Geronimo, Calif. 94963

Continuation-in-part of Ser. No. 339,306, Jan. 15, 1982, Pat. No. 4,498,623. This application May 7, 1984, Ser. No. 607,424

Int. Cl.³ F24H *3/00*

U.S. Cl. 237—70 **3 Claims**



1. For a water heating system, a reverse circulation heat distributing unit comprising:

a pair of inner and outer pipes;

heat transfer fins on said outer pipe;

a valve body connected to said outer pipe at one end thereof;

means closing off the other end of said outer pipe;

inlet and outlet flow ports opening laterally, respectively, to and from said valve body;

a longitudinal passageway in said valve body extending between said flow ports;

means sealing one end of said inner pipe in and around said passageway;

the other end of said inner pipe being open;

said inlet flow port being closer to said outer pipe than said outlet flow port so that water is circulated to said other end of the outer pipe around said inner pipe and then back through said inner pipe to said outlet flow port;

a valve seat around one end of said passageway; and

a valve closure member engageable with said valve seat to shut off flow from said outlet port.

4,535,935

RECHARGEABLE SACHET

Donald Spector, 380 Mountain Rd., Union City, N.J. 07087

Filed Oct. 13, 1983, Ser. No. 541,436

Int. Cl.³ A61L *9/04*

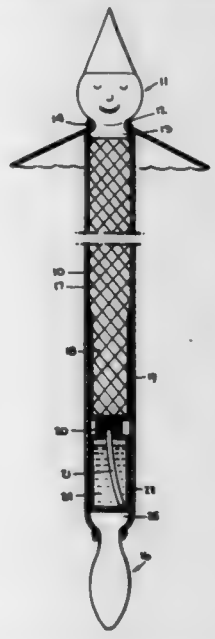
U.S. Cl. 239—34 **8 Claims**

1. A rechargeable sachet in a snake-like form so that it may be coiled about or otherwise applied to a mounting post, said sachet comprising:

A. an elongated sleeve of permeable, flexible fabric material having a predetermined length;

B. a cylindrical flexible core of absorbent material having good wicking properties stuffed in said sleeve, said core being shorter than said sleeve to define a free space therein;

C. a small squeezable bottle disposed in said free space and containing a supply of a liquid fragrance; and



D. means intercoupling said bottle and the adjacent end of the core to inject said liquid therein only when the sleeve is manually compressed to squeeze the bottle to produce an internal pressure therein.

4,535,936

BLAST NOZZLE FOR BLOWING OFF LIQUIDS FROM SURFACES

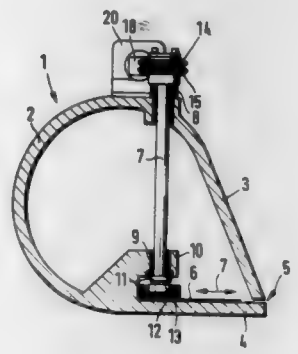
Paul Fontaine, Max-Planck-Ring 6, D-4018 Langenfeld, Fed. Rep. of Germany

Filed Sep. 8, 1983, Ser. No. 530,350

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233963

Int. Cl.³ B05D *1/04*

U.S. Cl. 239—117 **6 Claims**



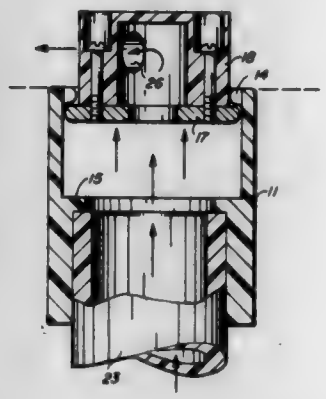
1. A blast nozzle for blowing off liquids from surfaces, which nozzle has a tubular body, on the outer surface of which converging plate-like lips are provided in a generally tangential manner to form a blow-off slit extending axially-parallel to the body, and a plate-form cleaning element which is located in the body and may be moved relative to the blow-off slit, characterized in that the cleaning element is connected to a transmission actuated by a drive provided outside the body, the transmission comprising at least two spaced adjusting rods which extend perpendicular to the cleaning element, each of the adjusting rods being provided with an eccentric lever connected to the cleaning element and mounted for rotation about its longitudinal axis.

4,535,937

GRADED ACTUATION OF HYDRAULICALLY ACTUATED POOL CLEANING HEADS

Joseph H. Fagan, 1312 N. Barkley, Mesa, Ariz. 85203, and Paul J. Pristo, 9046 N. 123rd St., Scottsdale, Ariz. 85259

Filed Apr. 20, 1983, Ser. No. 486,731
Int. Cl.³ B05B *3/06*
U.S. Cl. 239—206 **16 Claims**



1. Hydraulically actuated core means captively ejectable from its housing upon application of hydraulic force comprising:

cylindrical housing means having first and second open ends, first diameter-reducing shoulder means adjacent said first open end, second diameter-reducing shoulder means at a selected position between said first and second open ends, diametrically opposed egress means interrupting said first diameter-reducing internal shoulder means;

annular weighting means insertable within said cylindrical housing means via said egress means and positionable thereafter within said housing means with its transverse axis orthogonal to the longitudinal axis of said housing means and reciprocal therein within limits defined by said first and said second diameter-reducing shoulder means;

cylindrical core means insertable within said first open end of said cylindrical housing means and reciprocal therein and having a top end and a bottom end said top end lying at a selected position with respect to said first open end of said housing means when said bottom end is in contact with said annular weighting means and said annular weighting means is in contact with said second diameter-reducing shoulder; and

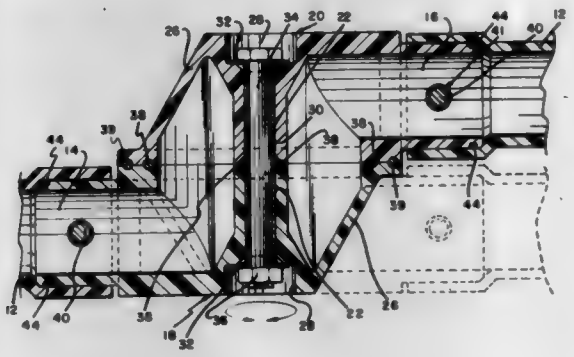
means for coupling said cylindrical core means to said annular weighting means after both have been positioned within said cylindrical housing.

4,535,938

FLUID TIGHT JOINT AND SYSTEM OF DISTRIBUTING FLUIDS

Tryon S. Lindabury, Sr., 2533 Claiborn Cir., Wichita, Kans. 67226

Filed Sep. 27, 1982, Ser. No. 423,867
Int. Cl.³ A01G *25/02*
U.S. Cl. 239—269 **5 Claims**



1. A fluid-tight joint for connecting fluid conduits in series comprising an inlet port and a discharge port, each port communicating with a body element having a central bore and a peripheral flange, the flange of the inlet port mating with the flange of the discharge port so that the central bores fall into register with one another and the body elements of the respective ports communicate so that fluid introduced into said inlet port exits through said discharge port;

fastener means received in said bores for securing said body elements together while providing an axis for relative motion between said ports;

and seal means sandwiched between said flanges and said bores for maintaining a fluid-tight connection while permitting said relative motion of said ports about said axis;

said flanges are generally L-shaped, and part of the exterior surface of each body element partially generally defines a cone including a recess, said central bores extend through said partial cones from the recesses;

said joint additionally comprising a sleeve means extending through said central bores, said sleeve means being flared at each end and flushed against the bottom of each recess;

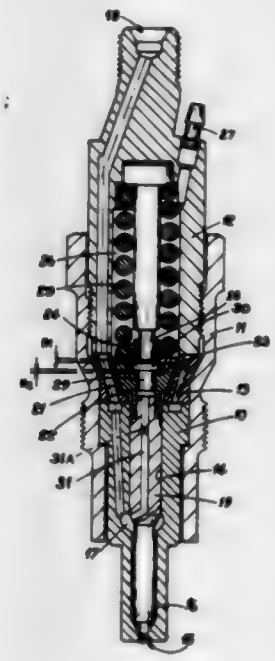
said seal means is sandwiched against said sleeve means, and said fastener means extends through said sleeve means and includes ends which are flushed against the flared ends of the sleeve means.

4,535,939

FUEL INJECTION NOZZLES

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries Public Limited Company, Birmingham, England

Filed Oct. 11, 1983, Ser. No. 540,570
Claims priority, application United Kingdom, Oct. 23, 1982, 8230331
Int. Cl.³ F02M *61/16*
U.S. Cl. 239—533.3 **6 Claims**



1. A fuel injection nozzle for supplying fuel to an internal combustion engine comprising a nozzle body, a bore formed in the body, a seating defined at one end of the bore, an outlet from said one end of the bore, a valve member slidable within the bore, said valve member being shaped for co-operation with said seating, a passage through which in use fuel can flow at high pressure to act upon an area of said valve member to lift the valve member away from said seating thereby to allow flow of fuel through said outlet, resilient means for opposing the movement of the valve member, an adaptor mounted upon the valve member and which serves to transmit to the valve member the force exerted by said resilient means, a cylinder defined in the adaptor, a plunger slidable in the cylinder, passage means for admitting fuel under pressure to one end of said cylinder, the force produced by the fuel under pressure acting

on said plunger opposing the action of said resilient means, and stop means for limiting the movement of the plunger, the arrangement being such that the initial movement of the valve member against the action of the resilient means, is assisted by the action of said plunger, the final movement of the valve member after the movement of the plunger has been halted, being due to the fuel under pressure acting on the valve member only.

4,535,940

METHOD OF REPLASTIFYING THERMOPLASTIC STRIPS, FOILS OR WEBS

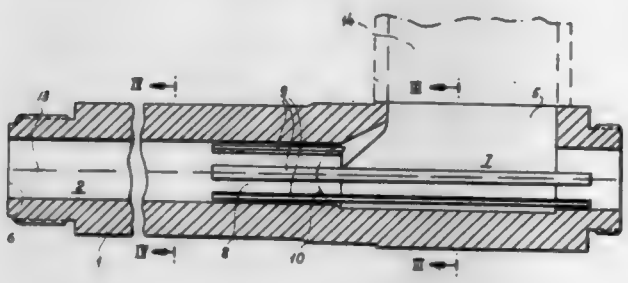
Hans Geng, Kelberg, Fed. Rep. of Germany, assignor to Plastik-Maschinenbau GmbH & Co., KG, Kelberg, Fed. Rep. of Germany

Division of Ser. No. 167,016, Jul. 9, 1980, abandoned. This application Jul. 27, 1983, Ser. No. 517,633

Claims priority, application Fed. Rep. of Germany, Mar. 21, 1980, 3010825

Int. Cl.³ B02C *19/22*

U.S. Cl. 241—3 **1 Claim**



1. A method of replastifying thermoplastic foil strips, comprising the steps of:

rotating a worm within a cylinder barrel having a chamber surrounding said worm at an inlet end, an axial outlet at an opposite end of said barrel, and a widened area in the region of said inlet end;

winding at least one continuous thermoplastic foil strip in multiple layers completely around said worm in the widened area of said chamber wherein said strips are laterally fed into said chamber;

compressing the layers of said at least one strip on said worm;

snagging said at least one strip wound on said worm in said chamber on edges of at least one longitudinal groove formed on a wall of said chamber, thereby causing said at least one strip to be cut into pieces;

advancing said pieces from said chamber by rotation of said worm; and

masticating and plastifying said pieces along said barrel, said chamber having a lateral feed opening bounded in part by a vertical surface extending parallel to an axis of said worm and said chamber and wherein said chamber is defined in part by a cylindrical surface formed in said barrel concentrically with said axis and in part by an additional surface joined on one side to said cylindrical surface at a cuspidal line extending parallel to said axis and on an opposite side to said vertical surface in a smooth connection, said additional surface spiraling outward from said cuspidal line to said vertical surface, so that said chamber is formed with an eccentric peripheral space sickle-shaped in cross section traverse to said axis whereby the foil strips are wrapped around said worm until they are compressed in said space in the sickle-shape cross section of said space.

4,535,941

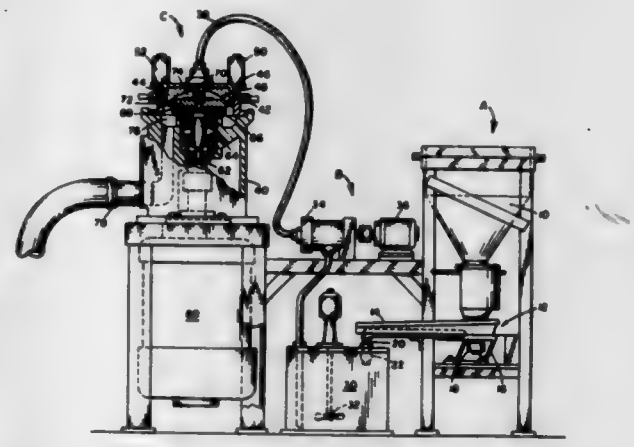
METHOD OF COMMINUTING ELASTOMERIC PELLETS

Ronald L. Brubaker, Euclid; James J. Tloczynski, Parma, both of Ohio; Melvin Budzol, Schaumburg, Ill.; Clifford J. Ahola, Cleveland, Ohio; Frederick P. Boyle, Euclid, Ohio; Truman D. Parkinson, Chardon, Ohio, and James C. Rine, Lake City, Fla., assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 316,217, Oct. 29, 1981, Pat. No. 4,469,284. This application Jul. 3, 1984, Ser. No. 627,539

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—21 **18 Claims**



1. A method of comminuting vulcanized rubber pellets with a median diameter of at least one-eighth inch to particles having a median diameter by number of less than 50 microns in a single pass, the method comprising:

receiving a slurry of the pellets and water in a receiving region disposed between a rotor and a stator, the rotor and stator having peripheral abrasive surfaces surrounding the receiving region for defining a grinding zone therebetween;

urging the pellets along outward extending recesses in the rotor abrasive surface by rotating the rotor, the rotor recess having a sloping portion along a trailing edge relative to the direction of rotation;

wedging the pellets between rotor recess sloping portion and the stator peripheral abrasive surface and into the grinding zone;

continuing rotation of the rotor comminuting the pellets into particles between the stator and rotor peripheral abrasive surfaces until the particles have a median diameter of less than 50 microns.

4,535,942

APPARATUS FOR CONTAINING EASILY SOLIDIFYING POWDER AND PARTICLES

Takeshi Hayashi, Naruto, Japan, assignor to Kyoeizoki Co., Ltd., Naruto, Japan

Filed Nov. 22, 1982, Ser. No. 443,652

Claims priority, application Japan, Dec. 2, 1981, 56-194875; Dec. 3, 1981, 56-195236

Int. Cl.³ B02C *19/12*

U.S. Cl. 241—36 **8 Claims**

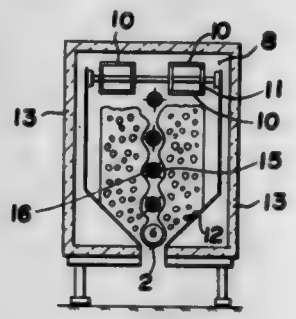
1. An apparatus for containing easily solidifying powder and particles, comprising:

a casing having a capacity for containing a desired amount of easily solidifying powder and particles and having a discharge opening in the bottom thereof for discharging powder and particles therethrough;

a discharge conveyor in the bottom of the casing and extending substantially horizontally from one end of the casing to the other along the middle of said casing for transferring powder and particles from one end to the other of the bottom of the casing, the discharge end of said discharge conveyor being communicated with said discharge opening;

a plurality of horizontally extending crusher shafts each extending substantially the full length of said casing and having a plurality of claws on the circumferential surface thereof and said shafts being positioned in a vertical plane directly above the discharge conveyor in the middle of said casing for engaging all of a vertically extending face of powder and particles extending substantially vertically from the discharge conveyor in a flat plane to a level corresponding to the level of the top of the body of powder and particles normally contained in the casing, and drive means connected to said shafts for rotating said shafts for clawing powder and particles from the face of the powder and particles to permit powder and particles to fall downward to said discharge conveyor;

said casing having side walls spaced outwardly from said crusher shafts a distance substantially greater than the diameter of said crusher shafts and having a bottom surface inclined downwardly to said discharge conveyor from the opposite sides of said casing, the angle of inclination being sufficient to cause the powder and particles to slide downwardly and inwardly toward said crusher shafts and said discharge conveyor due to their own weight, whereby powder and particles which fall down to said discharge conveyor are transferred by said discharge conveyor to the outside of said casing and the powder and particles left in said casing above said discharge conveyor slide on the bottom surface of said casing toward said crusher shafts and are pressed against said crusher shafts from the opposite sides of said vertical plane to balance the force of the powder and particles on said crusher shafts, the powder and particles in said casting being successively acted on by said crusher shafts and by said discharge conveyor and are discharged by said discharge conveyor to the outside of said casing.



4,535,943

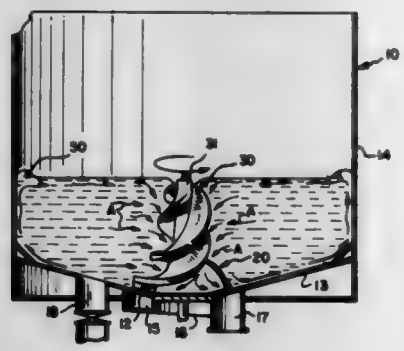
PULPING APPARATUS INCLUDING A ROTOR AND HELICAL SCREW FLIGHTS EXTENDING UPWARDLY FROM THE ROTOR

Joseph W. Couture, Dorval, Canada, assignor to The Black Clawson Company, Middletown, Ohio

Continuation of Ser. No. 495,872, May 18, 1983, abandoned. This application Aug. 24, 1984, Ser. No. 644,644

Int. Cl.³ B02C *13/18*

U.S. Cl. 241—46.02 **8 Claims**



1. Apparatus for pulping high consistency paper pulp comprising:

(a) a tub having a bottom wall and a generally cylindrical side wall extending upwardly from said bottom wall;

(b) a rotor mounted centrally of said bottom wall for rotation about a vertical axis and including a base portion and a plurality of vanes extending generally radially outwardly from said base portion and having defibering faces thereon,

(c) a plurality of helical screw flights extending upwardly from said base portion, each of said flights having a concave undersurface and having also a trailing portion terminating at said base portion and having a width in a radial direction substantially equal to the radial length of said vanes,

(d) the height of said rotor being greater than the diameter thereof, and

(e) means for rotating said rotor with said concave undersurfaces constituting the leading surfaces of said flights to cause said undersurfaces to channel high consistency pulp in their paths and push such channeled pulp downwardly to said defibering faces, whereupon said faces impel said pulp outwardly along said bottom wall and toward said side wall with minimal cavitation.

4,535,944

SPINNING MACHINE WITH A DOFFING APPARATUS

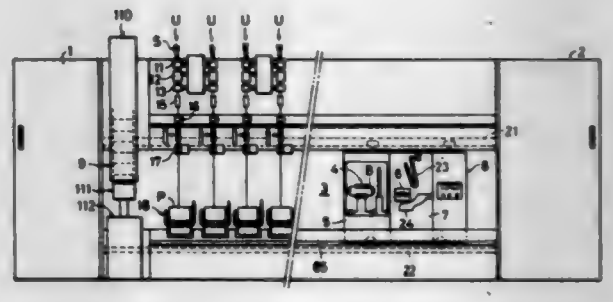
Teiji Nakahara; Shoji Sakai; Koshi Noda; Michiaki Fujiwara, and Nobunori Kubota, all of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Jul. 15, 1983, Ser. No. 514,097

Claims priority, application Japan, Jul. 19, 1982, 57-126546

Int. Cl.³ B65H *54/20, 54/26, 67/04*

U.S. Cl. 242—35.5 A **9 Claims**



1. A spinning machine of the type wherein a yarn knotting truck having a knotter provided thereon is adapted to travel in a truck travelling space provided along a number of spinning units included in said spinning machine, the travelling of said knotting truck being controlled in a known manner in order to successively effect knotting at said individual spinning units, further comprising:

a doffing truck;

a doffing apparatus, carried on said doffing truck, said doffing apparatus being operably adapted for effecting doffing of packages of said spinning units which have a fully wound yarn package thereon; and

means, associated with each spinning unit, for sensing the presence of a fully wound yarn package, for identifying the spinning unit containing said fully wound yarn package, and for communicating a doffing request signal to said doffing truck;

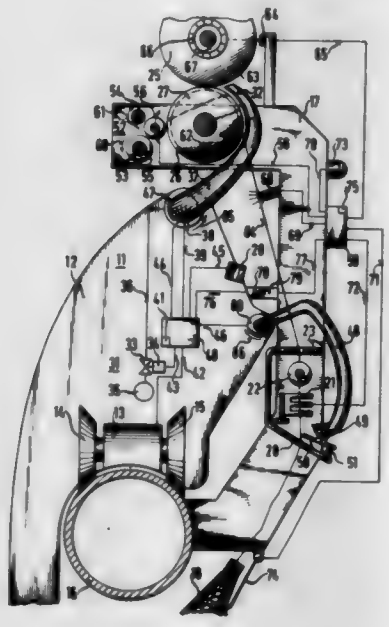
said truck travelling space being formed internal of each spinning unit such that a knotting operation and a doffing operation may be directly observable;

said doffing truck being caused to operate, in response to the doffing request signal, so that it travels in said truck travelling space until aligned, by known means, with the spinning unit communicating the doffing request signal whereat said doffing of the package is effected.

4,535,945
METHOD AND DEVICE FOR LOCATING AND HOLDING A THREAD END

Joachim Rohner, Monchen-Gladbach, and Heinz Kamp, Wegberg, both of Fed. Rep. of Germany, assignors to W. Schlafhorst & Co., Monchen-Gladbach, Fed. Rep. of Germany

Filed Jul. 7, 1983, Ser. No. 511,778
Claims priority, application Fed. Rep. of Germany, Jul. 7, 1982, 3225379
Int. Cl.[3] B65H *54/22*
U.S. Cl. 242—35.6 R 13 Claims



1. Method for locating and holding an end of a thread wound on a spool at a winding station, with a thread connector having a thread suction nozzle with a thread sensor connected thereto, for partially unwinding the thread, which comprises starting the thread connector with the winding station, simultaneously bringing the spool at the winding station to a standstill after rotation in a forward direction and bringing the thread suction nozzle of the thread connector from a starting position to a position close to the surface of the spool, subsequently supplying the thread suction nozzle with suction for a limited time as soon as the rotation of the spool has ceased for sucking-in the thread end, rotating the spool in a reverse direction during the suction step after the rotation of the spool has ceased, subsequently holding the sucked-in thread end with the suction nozzle, subsequently moving the thread suction nozzle back to the starting position thereby inserting the thread into the thread connector if the sensor has sensed the presence of the thread in the thread suction nozzle, while bringing the spool to a standstill again, and supplying the thread suction nozzle with suction again before moving the thread suction nozzle to the starting position if the thread is not sensed by the sensor.

4,535,946
FIXED POSITION MACHINE FOR COILING DOWN A CABLE

Henri Thevenon, Lyons, France

Filed Jun. 4, 1984, Ser. No. 616,762
Claims priority, application France, Jun. 3, 1983, 83 09228
Int. Cl.[3] E21B *19/00*; B21C *47/00*; B65H *75/36*, *54/76*
U.S. Cl. 242—54 R 4 Claims

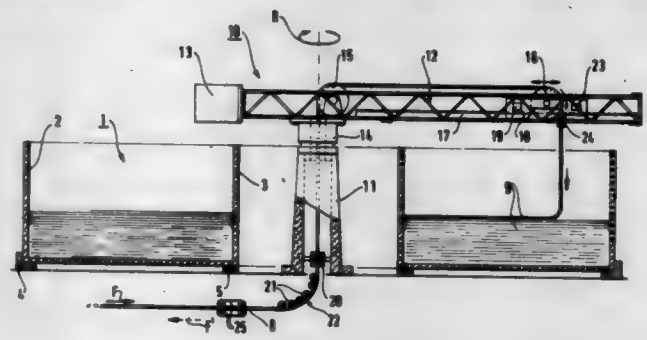
1. A fixed position machine for coiling down a cable in successive layers inside a circular tank having a vertical axis, said machine comprising:

a hollow column vertically situated on the axis of the tank, a horizontal arm mounted for rotation on said column above said tank;

means including an inlet curve of fitted rolls, for passing a cable to be coiled down under the tank and around said inlet curve of fitted rolls and up through the hollow column;

a guide pulley mounted at a fixed location on said arm for rotation about a horizontal axis above said column, said cable passing up through said hollow column being leaved about said guide pulley such that said guide pulley deflects the cable to cause it to run horizontally along the arm after emerging from the top of the column;

a carriage mounted on said arm for movement horizontally along said arm towards and away from said guide pulley,



said carriage including a motor for driving said carriage along said horizontal arm;

a drive pulley mounted to said carriage for rotation about a horizontal axis at the level of said guide pulley and being in line therewith and receiving said cable passing over said guide pulley;

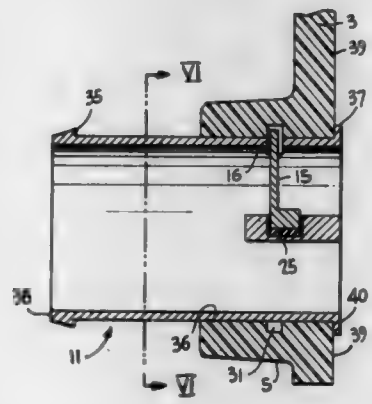
a motor on said carriage for rotating said drive pulley about its axis; and

said cable passing about said drive pulley and deflected vertically downwardly into said tank at a selectable point within said tank.

4,535,947
PAPER TOWEL INSERT AND DISPENSER

Jerry Hidle, Panama City, Fla., assignor to Pandhandle Industries, Inc., Panama City, Fla.

Filed Apr. 3, 1984, Ser. No. 596,352
Int. Cl.[3] B65H *19/00*
U.S. Cl. 242—55.2 9 Claims



1. A paper roll dispenser, comprising:

a central body portion;

first and second support arms respectively extending from opposite end portions of said central body portion for supporting a paper roll therebetween;

first and second support cylinders provided on respective end portions of said support arms for insertion within the paper roll for supporting the roll thereon, said support cylinders each having a predetermined length and extending inwardly toward each other from inner surfaces of said end portions;

a support tube axially received within at least one said support cylinder for axial movement relative thereto and having a length substantially greater than said predetermined length of said one support cylinder, grasp means on

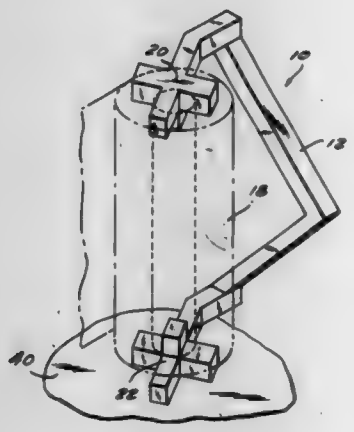
said support tube for axially moving said tube within said one support cylinder between an inwardly projected position and an outwardly extended position, first means on said support tube extending radially outwardly from the outer surface thereof engageable with said one support cylinder for limiting movement of said tube in said outwardly extended position thereof, and second means on said support tube extending radially outwardly from said outer surface thereof engageable with said one support cylinder for limiting movement of said tube in said inwardly projected position thereof and for retaining said tube in said inwardly projected position, whereby said support tube in said inwardly projected position thereof extends a greater distance within the paper roll compared to that of said one support cylinder for further supporting the roll and for preventing unintended removal of the paper roll from the dispenser.

4,535,948

DISPENSER

Mark Gillen, 675 Hudson St., New York, N.Y. 10014

Filed Sep. 17, 1982, Ser. No. 419,169
Int. Cl.³ B65H *75/02*
U.S. Cl. 242—55.2 **2 Claims**



1. A single piece dispenser for use in a dispensably holding roll of product maintained on a tubular roll, said dispenser comprising:

base portion formed in a substantially V-shaped configuration to alternatively be effectively fastened to a surface by a single fastener, removably and evenly supported on its base portion by a flat surface such as shelf, chair back, door knob or the like;

supporting means which includes two similarly shaped supporting arms oppositely disposed with respect to each other and respectively coupled at one end to respective ends of the base portion, said supporting arms extend outward and upwardly away from said base portion and legs attached to a respective distal end opposite said one end of said supporting arms and disposed at an angle with the respective arms to form a flat member perpendicular to the plane of said base portion of sufficient area to support said dispenser on a surface when said dispenser is rested on said surface with said flat member providing the contacting area with said surfaces;

means engageable with the tubular rolls respective ends, said engageable means comprising two oppositely disposed axially aligned nipples positioned on said respective flat members, said nipples being of a diameter slightly smaller than the diameter of the tubular roll, said dispenser being sufficiently flexible to allow the nipples to be inserted in respective ends of the tubular roll and allow the roll to axially rotate thereabout and said nipples being so positioned that a tubular roll maintained thereby is disposed parallel to the plane of the base position; and

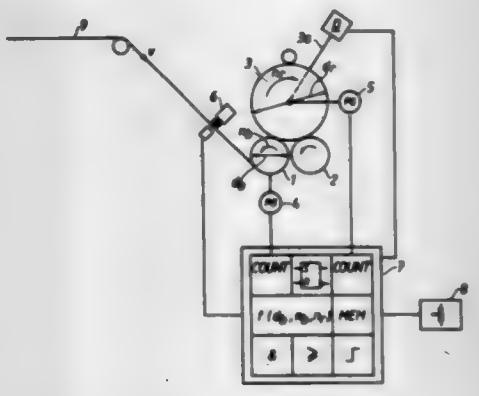
extension members coupled between said supporting arms and respective ends of the base portion, said extension members being disposed substantially perpendicular to the base portion's plane and of sufficient length so as to maintain said tubular roll at a predetermined distance from said base portion.

4,535,949

LENGTH MEASURING DURING ROLLING UP OF THIN MATERIAL

Ingemar Olsson, Vesteras, Sweden, assignor to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 12, 1984, Ser. No. 619,826
Claims priority, application Sweden, Jun. 13, 1983, 8303343
Int. Cl.³ B65H *17/12, 25/00*
U.S. Cl. 242—57 **4 Claims**



1. A measuring device in a winding machine for measuring the length of material wound on a roll when a break in the material has occurred, which device includes

a unit for setting the desired length of material on the roll,

a first pulse transducer,

means connected to the first pulse transducer to monitor the passage of material to the roll and to ensure that the pulse output of the first pulse transducer is related to the length of such material passage,

a pulse counter for counting the pulses supplied by the first pulse transducer,

a unit for comparison of the set and the measured length of wound material,

drive equipment for the roll, and

a break indicator for sensing any break in tne material fed to the roll,

characterized in that,

means is provided to measure the circumference of the roll when a material break is indicated while at the same time the length measuring is stopped,

means to store the said measure of the circumference of the roll and

means, after rejoining of the material and restart of the winding up, to resume the length measuring when the circumference of the roll acquires the stored value of the circumference of the roll at the moment of material break.

4,535,950

METHOD AND APPARATUS FOR ROLL WINDING MEASUREMENT

Khaim Lisnyansky, Chester, N.Y., assignor to International Paper Company, New York, N.Y.

Filed Jan. 13, 1984, Ser. No. 570,360
Int. Cl.³ B65H *17/08*
U.S. Cl. 242—66 **9 Claims**

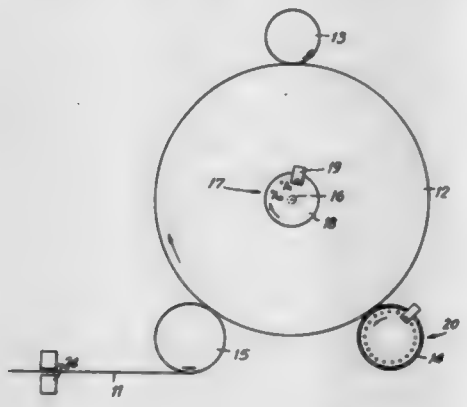
1. Apparatus for measuring the length of successive layers of a web of flexible material wound on a roll by a winder, for determining the compressive strain on the web of flexible material and for determining the accumulated length of the material which has been wound onto the roll, which comprises:

first pulse encoder means for generating signals representing a first portion of a rotation and a second portion of a rotation of the roll onto which the material is wound,

second pulse encoder means for generating signals representing the length of material being wound onto the roll,

processor means, responsive to said signals from said first and second pulse encoders, which measures for each revolution of said roll the length of material wound onto the roll during that revolution and the accumulated length of material wound onto the roll from the start of the roll,

memory means for storing said length measurements for each revolution and said accumulated length measurements,



means for deriving signals indicative of said length measurements for each revolution,

means for combining and transforming said indications into a further indication of the compressive strain on at least one layer of the material wound onto the roll, and

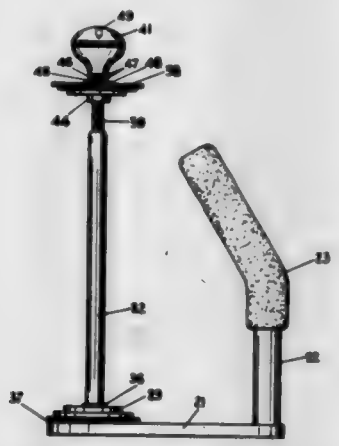
reset control means for correcting the accumulated length measurement after at least one defective layer of material has been removed from the roll.

4,535,951

STRETCH FILM WRAPPING DEVICE

Paul K. Riemenschneider, III, Grandville, Mich., assignor to Highlight Industries, Inc., Grand Rapids, Mich.

Filed May 2, 1983, Ser. No. 490,845
Int. Cl.³ B65H *23/06*; B44C *7/00*
U.S. Cl. 242—754 **18 Claims**



1. A stretch film wrapping device for rotatably supporting a roll of plastic film having a tubular rigid central core comprising:

a base member;

a bottom core holder on said base member for rotatable engagement by one end of said film roll core;

a top core holder opposing said bottom core holder for engagement by the other end of said film roll core;

a length adjustable axle member interconnecting said core holders to effect clamping of said film roll between said core holders; said top core holder being rotatably mounted on said axle member and axially shiftable upwardly on said axle member; and

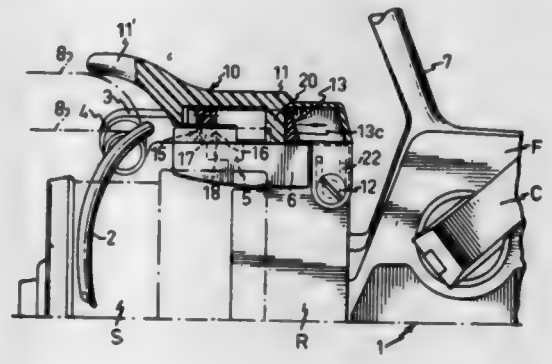
a top tension control assembly above said top core holder at the top end of said axle member for adjusting the clamping force on said film roll including compression spring biasing means engaging said top core holder to resist upward axial shifting of said top core holder when said axle member is adjusted to reduce the distance between said core holders to effect clamping of said film roll between said core holders to permit gradual changes in the clamping force between said core and core holders such that film roll rotation resistance and thus film tension can be predictably adjusted through a wide tension range.

4,535,952

BAIL OPERATING MECHANISM FOR FISHING REELS

Lars-Olof Carlsson, Asarum, Sweden, assignor to Abu Aktiebolag, Svangsta, Sweden

Filed Dec. 5, 1983, Ser. No. 557,974
Claims priority, application Sweden, Dec. 15, 1982, 8207160
Int. Cl.³ H01K *89/01*
U.S. Cl. 242—84.2 G **3 Claims**



1. An arrangement in a fishing reel with spring biasing and locking mechanism comprising a frame supporting a line spool and having at an upper side a connecting foot, a rotor which is rotatably supported by the frame, means comprising a hand-operated crank for rotating said rotor in relation to the line spool, a bail having opposite ends, pivot means supported by the rotor and bail, bail arms supported at the ends of said bail and connecting the bail to the rotor via said pivot means which permits pivotable movement of the bail from a line winding first position for winding the fishing line upon the line spool when the rotor is rotated by means of said crank, to a second position in which the bail permits the fishing line to run out freely during casting, a spring means for the biasing of said bail to said first position and a locking means for the locking of the bail in its second position and unlocking of the bail to permit return of said bail to said first position by rotation of said rotor by means of said crank for winding in the line, an operating mechanism for pivoting said bail into said free second position against the action of said spring means, said operating mechanism comprising a member supported by said rotor and extending with a portion thereof substantially parallel to the rotor axis in spaced relation to the rotor circumference, and an operating arm pivotally connected with said member, such that said operating arm, when in a position at the upper side of the fishing reel, is accessible to a finger of a hand held in a position adjacent said foot at the upper side of said fishing reel, said operating arm being mounted pivotably about a pivotable axis substantially perpendicular to the rotor axis, an intermediate movable link acting between said bail and said operating arm, said intermediate link and said bail arm comprises cooperating guiding and engaging means, said guiding means comprises an elongated slot, and said engaging means comprises a projection which movably engages said elongated slot for movement therealong to and from an abutment means for pulling the link rearwardly substantially in parallel with the rotor axis pivoting said bail arm manually outwards from the rotor, the outer end portion of said link being pivotably connected to one of said bail arms at a radial distance from the axis of rotation of said bail arm about said pivot means relative to the rotor, and the radius from said pivotable axis of the bail arm to the pivotable axis of the link relative to the bail arm forms an

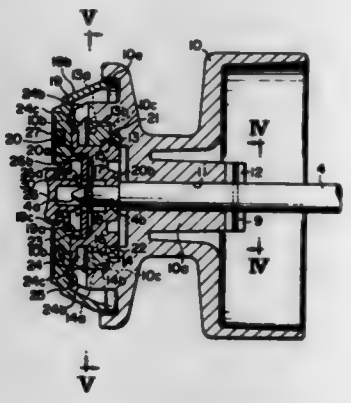
obtuse angle to the path of relative movement between said guiding and engaging means.

4,535,953

SPINNING TYPE FISHING REEL WITH AXIALLY ADJUSTABLE SPOOL

Hatsutaro Omori, Oyama-higashi, Japan, assignor to Kabushiki Kaisha Ohmori Seisakusho, Japan

Filed Dec. 28, 1983, Ser. No. 566,229
Int. Cl.[3] A01K *89/01*
U.S. Cl. 242—84.21 R 3 Claims



1. A spinning type fishing reel, comprising:
(a) a spool shaft having a tapered end and an annular groove adjacent said tapered end;
(b) a spool mounted on said spool shaft so as to be rotationally fixed relative thereto and axially movable thereon;
(c) an adjustment mechanism mounted on said spool shaft so as to be axially fixed relative thereto and rotationally movable thereon, said adjustment mechanism for adjusting the axial position of said spool relative to said spool shaft;
(d) a screw drive assembly, comprising a male threaded construction coaxial with said spool shaft and a female threaded construction threadedly cooperating with said male threaded construction and also coaxial with said spool shaft, one of said male and female threaded constructions being fixed relative to said adjustment mechanism, and the other of said male and female threaded constructions being fixed relative to said spool;
(e) stepping mechanism means for providing stepwise motion between said adjustment mechanism and said spool;
(f) a shaft grip spring mounted to said adjustment mechanism and substantially fixed thereto with regard to relative movement therebetween in the axial direction, said spring having an engagement portion which engages said spool shaft annular groove and retains said adjustment mechanism and said spool on said spool shaft; and
(g) a release mechanism mounted with said adjustment mechanism for releasing said spool and adjustment mechanism from said spool shaft by releasing said spring from said shaft annular groove, said release mechanism comprising a push button having a tapered end spring engaging surface for separating said spring from said annular groove.

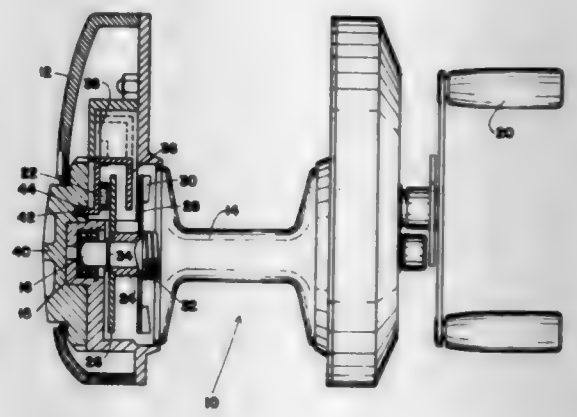
4,535,954

FISHING REEL WITH DELAYED ACTION BRAKE

Charles C. Worth, Kentfield, and John N. Young, Fairfax, both of Calif., assignors to Charles C. Worth Corporation, Kentfield, Calif.

Filed Jun. 4, 1984, Ser. No. 617,103
Int. Cl.[3] A01K *89/02*
U.S. Cl. 242—84.52 B 4 Claims

1. In a rotating spool casting reel comprising:
a frame;
a shaft rotatable on said frame; and
a spool fixed on said shaft to rotate therewith;
the improvement comprising:
a magnet carried on said frame;
a metallic rotor rotatable with said shaft but slidable thereon toward and away from said magnet;
spring means biasing said rotor toward said magnet; and



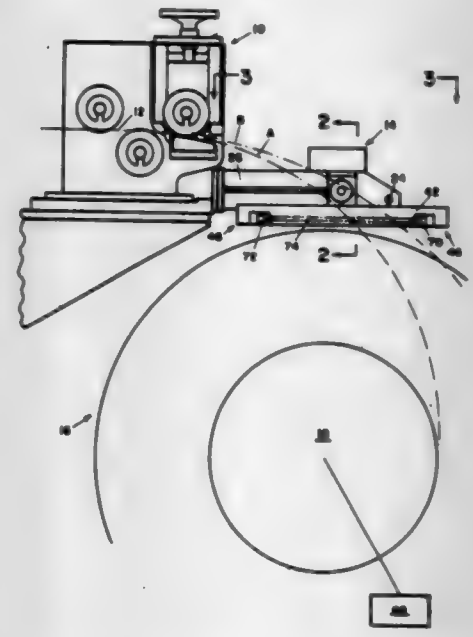
air deflector means carried on said rotor and disposed so that air impinging thereon, during rotation of said rotor when casting, imposes an axial force vector against said rotor in opposition to said spring means.

4,535,955

MEANS FOR SENSING AN UNDESIRABLE APPROACH ANGLE IN A LEVEL WIND COILER

Donald J. Custer, Akron, Ohio, assignor to Morgan Construction Company, Worcester, Mass.

Filed Mar. 31, 1983, Ser. No. 480,654
Int. Cl.[3] B65H *54/28*
U.S. Cl. 242—158 R 4 Claims



1. For use in combination with a guide device for directing an elongated strand to a rotating spool on which the strand is wound into a coil consisting of multiple layers of strand windings, with the optimum arrangement of the windings in each layer being dependent upon the strand passing from the guide device to the spool along an unrestrained path defining a selected approach angle with respect to the rotational axis of the spool, a control system for maintaining the strand on said path, said system comprising:
reciprocating means for arranging the windings on said spool by producing relative reciprocal motion between said guide device and said spool;
means for generating a pair of parallel high intensity fields spaced one from the other in the direction of the spool axis, the said fields being located on opposite sides of said

path and defining a gap therebetween in which said strand may move to accommodate variations in the diameter of the coil being formed on said spool while allowing the intensities of said fields to remain unaffected;

detector means for detecting changes in the intensities of one or the other of said fields occasioned by the strand straying from said path into said fields, thereby causing a change in said approach angle; and

control means responsive to said changes in field intensities for modifying the operation of said reciprocating means to thereby return said strand to said path.

4,535,956

THREAD BRAKING MECHANISM

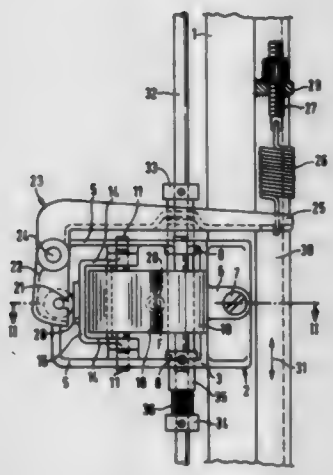
Edwin Wildi, Niederuzwil; Erwin Bossart, Flawil, and Hans Hasler, Uzwil, all of Switzerland, assignors to Maschinenfabrik Benninger AG, Uzwil, Switzerland

Filed Sep. 4, 1984, Ser. No. 647,369

Claims priority, application Switzerland, Sep. 14, 1983, 5005/83

Int. Cl.³ B65H *59/16, 59/22*

U.S. Cl. 242—151 **9 Claims**



1. A thread braking mechanism for thread comprising:

a housing;

two rollers substantially axially parallel and freely rotatably journaled in said housing;

said two rollers defining therebetween a clamping bite through which extends a thread which causes said two rollers to rotate while said thread is drawn through said clamping bite;

said two rollers comprising a stationary first roller and a displaceable second roller;

a force accumulator operatively connected to said displaceable second roller such as to displace said displaceable second roller relative to said stationary first roller in a substantially axially parallel manner and to resiliently press with an adjustable operating bias said displaceable second roller against said stationary first roller;

a rapid braking device comprising an individual spring means operatively associated with said displaceable second roller in order to suddenly increase the force acting thereupon for a rapid-braking operation; and

said spring means, in an operative state of said rapid-braking device, subjecting said displaceable second roller to a stopping force in order to suddenly increase the force acting thereupon and to rapidly brake said two rollers independently of the action of said force accumulator which generates said operating bias.

4,535,957

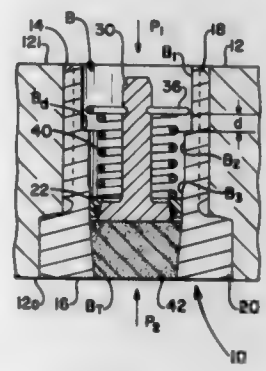
SAFETY DEVICE FOR VENTING AIRCRAFT TIRES

Andres L. Bischoff, and Robert W. Chin, both of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Jul. 18, 1983, Ser. No. 514,737

Int. Cl.³ B64C *25/00*

U.S. Cl. 244—103 R **5 Claims**



1. A safety device for mounting within an aircraft wheel to vent a tire of overpressure within the wheel/tire assembly generated by heat during high energy braking comprising in combination:

a cylindrical housing received within the wheel defining an axial bore which extends from the outside to the inside of the wheel/tire assembly;

a eutectic material plug coaxially mounted within and filling the bore toward the outside end thereof and adapted to melt at a predetermined temperature of the wheel; and

valve means coaxially mounted and completely contained within the bore toward the inside end thereof, said valve biased in a position to close off the bore under normal tire pressure and also maintained in the closed position by the presence of the eutectic plug within the bore;

said eutectic plug being melted out of the housing bore when the wheel temperature reaches a predetermined high limit to allow operation of the valve means wherein the valve means is opened by overpressure within the tire which overcomes the bias to vent the overpressure axially through the bore to the outside, said valve means being returned to the closed position when the tire pressure drops to a value insufficient to overcome the bias on the valve means.

4,535,958

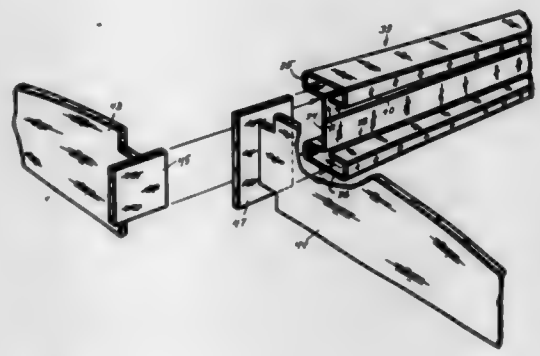
ALUMINUM COMPOSITE SPAR WING STRUCTURE AND METHOD OF ASSEMBLY

Gary A. Hutchison, 207 Plymouth Dr., Charlotte, Mich. 48813

Filed Dec. 13, 1982, Ser. No. 448,966

Int. Cl.³ B64C *1/26, 3/18*

U.S. Cl. 244—123 **4 Claims**



1. In a composite spar wing structure assembly comprising:

an elongate wing spar having a substantially I cross-sectional configuration, said wing spar defining a central web portion having a pair of opposed hollow flange members

provided therealong, said wing spar configured to make snap-engagement with front rib-plates of spaced-apart front ribs positioned along the front of said wing spar, said wing spar defining a pair of opposed longitudinal access slots at the junctures between each of said hollow flange members and said central web portion, said longitudinal access slots adapted to slidably receive rear rib-plates of spaced-apart rear ribs positioned along the rear of the said spar;

a plurality of said spaced-apart front ribs positioned along the front of said wing spar, said front ribs provided with said front rib-plates which are adapted to make snap engagement with said wing spar between said hollow flange members; and

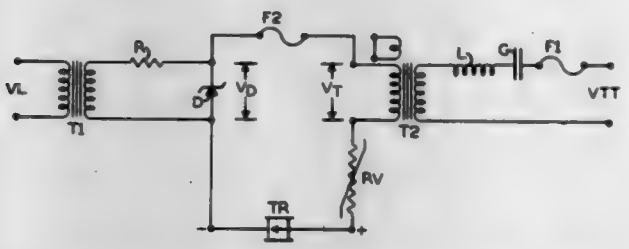
a plurality of said spaced-apart rear ribs positioned along the rear of said wing spar, said rear ribs provided with said rear rib-plates which are adapted to make sliding engagement with said longitudinal access slots so as to maintain said rear ribs in a spaced-apart relationship along the rear of said wing spar.

4,535,959

VITAL SOLID STATE RELAY FOR RAILROAD ALTERNATING CURRENT TRACK CIRCUITS

Heinz Gilcher, Export, Pa., assignor to American Standard Inc., Swissvale, Pa.

Filed Aug. 2, 1982, Ser. No. 404,182
Int. Cl.³ B61L *21/00, 25/00*
U.S. Cl. 246—34 R **7 Claims**



1. A vital solid state relay arrangement comprising,

(a) first input means coupled for receiving a first alternating current signal from a first source having a selected signal frequency,

(b) a second input means coupled for at times receiving a second alternating current signal from a second source, said second signal having said selected frequency and a predetermined phase relationship with said first signal,

(c) a varistor element,

(d) a register means normally occupying a first position and operable to a second position,

(e) a register network coupling said first and second input means, said varistor element, and said register means for operating said register means to its second position to register the presence of said second signal only when both signals are present and within said predetermind phase relationship,

(f) a first transformer coupled to said first source for producing a selected level first signal at its secondary winding output, and

(g) a Zener diode having a preselected regulating level connected across said first transformer secondary winding, and

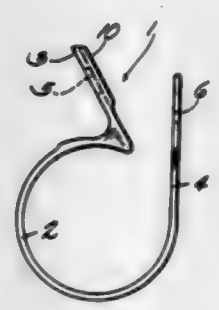
(h) the multiple path circuit through said secondary winding and said diode coupled for supplying rectified square wave pulses with peaks at said preselected regulating level into said register network.

4,535,960

CABLE CLAMP WITH ALIGNMENT MEANS

Gerald T. Downing, Port Washington, and Gregory W. Gyllstrom, Waukesha, both of Wis., assignors to W. H. Brady Co., Milwaukee, Wis.

Filed Jun. 27, 1983, Ser. No. 507,650
Int. Cl.³ F16L *3/08*
U.S. Cl. 248—74.5 **7 Claims**



1. In a cable clamp of the type including an arcuate central body portion, a first flat end portion extending from one end of the central body portion, a second flat end poriton extending from the opposite end of the central body portion, and an aperture in the first flat end portion and an aperture in the second flat end portion, the improvement wherein:

(1) one of the flat end portions includes a peripheral flange extending toward the other flat end portion,

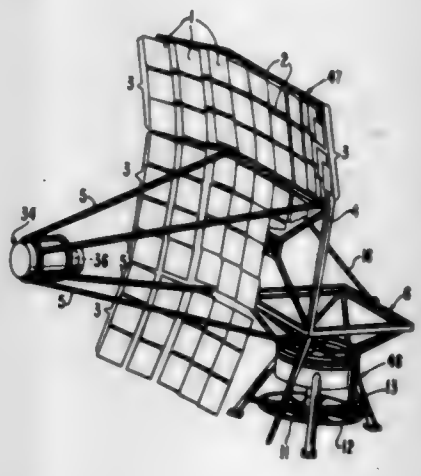
(2) the other flat end portion includes a tongue proportioned to nest within the peripheral flange when the first and second end portions are in engagement with one another, whereby the apertures in the two flat end portions are in registry for attachment of the cable clamp to an object upon engagement of the first and second flat end portions.

4,535,961

LIGHTWEIGHT AZIMUTH/ELEVATION MOUNT

Isidore F. Sobczak; William C. Cleveland, Jr., both of Santa Ana, and Robert L. Pons, Mission Veijo, all of Calif., assignors to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Mar. 8, 1982, Ser. No. 355,409
The portion of the term of this patent subsequent to Jul. 3, 2001, has been disclaimed.
Int. Cl.³ F16M *11/12*
U.S. Cl. 248—183 **5 Claims**



1. An azimuth/elevation mount for supporting and orienting a structure about an azimuth axis and an orthogonal elevation axis, comprising:

a rotary turret supporting said structure, said turret having an upper part generally in the shape of an inverted pyramid; and

a base, generally in the shape of a pyramid, for supporting said rotary turret and allowing said turret to rotate 360°

about its center vertical axis which is coincident with the azimuth axis; wherein

protruding from a bottom surface of the inverted pyramid part of the turret and fixedly attached thereto by means of a first wheel near its top is a vertical generally cylindrical torque tube, said torque tube, as it rotates, being directly embraced and restrained radially at two widely separated regions therealong by two bearings rigidly suspended from upper and lower portions, respectively, of the base, said bearings serving to react overturning loads from the structure through the base; and

a second, horizontal, drive wheel larger than the first wheel is rigidly affixed near the tube bottom for imparting azimuthal motion to the turret and structure; wherein

all portions of the inverted pyramid part of the turret lie above the base.

4,535,962

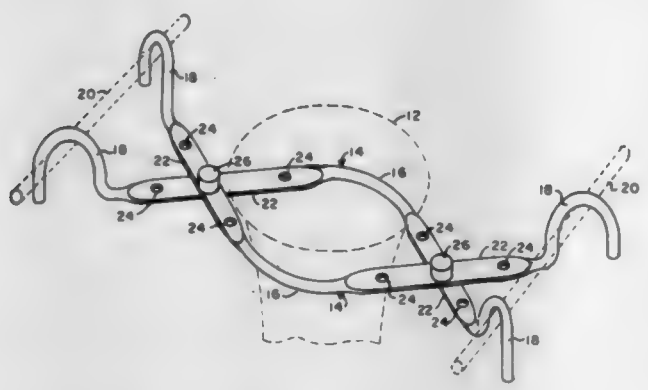
OBJECT HOLDING DEVICE FOR DECORATIVE STRUCTURE

David M. F. Chan, 1213 King Dr., El Cerrito, Calif. 94530, and Michael L. F. Chan, 1407 Arch St., Berkley, Calif. 94708

Filed Jun. 30, 1983, Ser. No. 509,966

Int. Cl.³ E04G *3/00*

U.S. Cl. 248—214 **4 Claims**



1. The device for holding an object comprising

a first end support member,

a second end support member spaced apart from said first end support member,

a first generally V-shaped object support member having its apex proximate the midpoint thereof with a first pair of legs extending at an angle to each other from said apex,

a second generally V-shaped object support member having its apex proximate the midpoint thereof with a second pair of legs extending at an angle to each other from said apex,

said first pair of legs adapted to cross over and engage said second pair of legs,

means for connecting said first pair of legs to said second pair of legs proximate the point of engagement,

means proximate each end of said outwardly extending first and second pair of legs distal said apex for respectively engaging said first and second support member.

4,535,963

HOLDER FOR RAILINGS, LISTS AND THE LIKE

Leif Lachonius, Surte, Sweden, assignor to Aktiebolaget SKF, Goteborg, Sweden

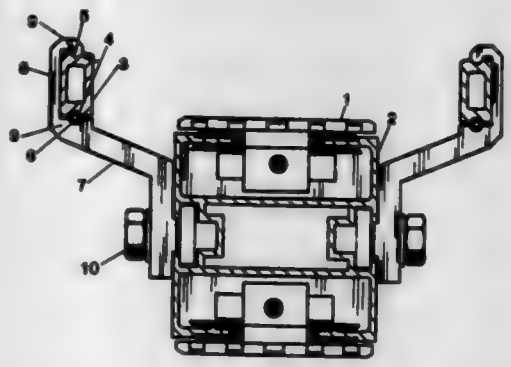
Filed Mar. 25, 1982, Ser. No. 361,569

Claims priority, application Sweden, Apr. 30, 1981, 8102745

Int. Cl.³ B65G *15/60*

U.S. Cl. 248—251 **1 Claim**

1. A holder for railings for a conveyor assembly including a frame in the form of a girder symmetrical about a horizontal plane and defining conveyor belt runs between opposing horizontal outer sides of said girder and having at opposite sides a pair of open longitudinally extending T-shaped channels, said channels having an entrance end in said horizontal outer side, said holder comprising a body adapted for mounting to the conveyor frame, said body having a shoulder which engages said entrance end and having an extension portion of U-shaped profile oriented so that the open end of said extension portion faces one of said conveyor belt runs, the confronting sides of said U-shaped profile being provided on one side with a boss intended to grip into the railing and on the other side with a



recess, and a locking pin which cooperates with said recess for arresting the railing to said holder, means for connecting said holder to the conveyor frame including a nut member engageable in said channels and a screw member engaging through said holder and cooperating with said nut member to secure said holder to said frame.

4,535,964

VIBRATION DAMPED SUSPENSION FOR A DRIVE AGGREGATE OF A MOTOR VEHICLE IN A BODY STRUCTURE

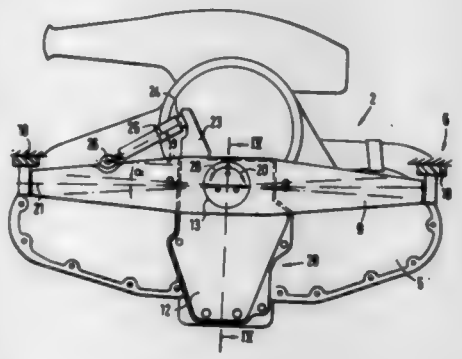
Matthias Schütz, Mundelsheim; Rolf V. Sivers, Rutesheim; Dirk Roesems, Nussdorf, and Rolf Rebmann, Stuttgart, all of Fed. Rep. of Germany, assignors to Dr. Ing. h.c.F. Porsche A.G., Fed. Rep. of Germany

Filed May 4, 1983, Ser. No. 491,449

Claims priority, application Fed. Rep. of Germany, May 7, 1982, 3217171

Int. Cl.³ F16M *13/00*

U.S. Cl. 248—607 **23 Claims**



1. A vibration-damped suspension for a drive aggregate of a vehicle in a body structure comprising first bearing support means arranged in a forward area of the drive aggregate and further bearing support means arranged in a rear area of the drive aggregate, the further bearing support means including a cross bearer means for supporting an engine of the drive aggregate, dynamic decoupling means interconnecting the cross bearer means and a bracket means secured to said engine, said vibration damped suspension thereby retaining the engine in such a manner that the decoupling means permits relative movement of the vehicle body independently of and in a defined manner relative to the drive aggregate.

4,535,965

APPARATUS FOR MOLDING A PROFILED BODY

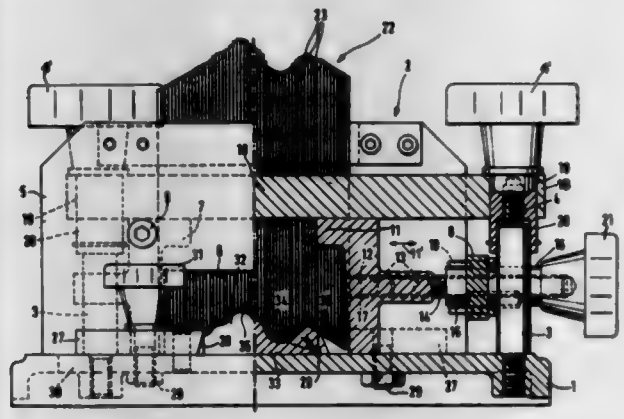
Alfred Dettelbach, Stuttgart; Gerhard Gresser, Oberboihingen, and Gerhard Einsele, Nuertingen, all of Fed. Rep. of Germany, assignors to Reich Spezialmaschinen GmbH, Nuertingen, Fed. Rep. of Germany

Filed Apr. 9, 1984, Ser. No. 597,932

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1983, 3313650

Int. Cl.³ B29C *1/00, 1/14;* B29G *1/00*

U.S. Cl. 249—83 8 Claims



1. A molding apparatus for casting a molded body such as a grinding or polishing tool having at least one contoured surface complementary to a first profiled surface of a work piece to be ground or polished by said tool, comprising a base plate, side walls, a cover plate and two end walls facing each other for forming at least one molding cavity, each end wall having a hole therein, an elongated contouring insert member extending longitudinally through said holes in said end walls so as to pass longitudinally through said molding cavity, said contouring insert member having a second profiled surface corresponding to said first profiled surface of a work piece, and adjustable sealing means having at least one edge adjustable in its contour so that said one adjustable edge defines a contour substantially conforming to said second profiled surface of said insert member for sealingly closing each hole in said end walls, and wherein each said adjustable sealing means comprise a plurality of substantially planar sealing elements which are individually adjustable in their position relative to each other in a direction extending perpendicularly to said base plate, said molding apparatus further comprising means for adjustably mounting said sealing elements in said molding apparatus.

4,535,966

THROTTLE VALVE

Karl-Heinz Post, Kaarst, and Otwin Eich, Remscheid, both of Fed. Rep. of Germany, assignors to Barmag Barmer Maschinenfabrik Aktiengesellschaft, Remscheid, Fed. Rep. of Germany

Filed Sep. 24, 1982, Ser. No. 422,968

Claims priority, application Fed. Rep. of Germany, Sep. 26, 1981, 3138345

Int. Cl.³ F16K *31/124*

U.S. Cl. 251—31 35 Claims

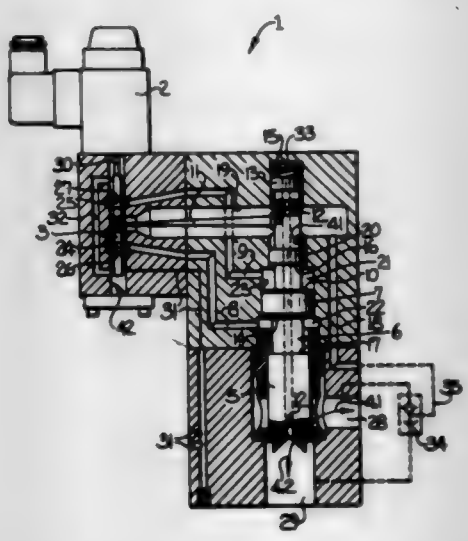
1. A hydraulic throttle valve comprising

a housing having a bore therein, with said bore having a closed inner end,

a hydraulic inlet channel and a hydraulic outlet channel, each communicating with said bore in said housing, and with one of said inlet and outlet channels including a valve seat which is coaxially aligned with said bore,

a piston rod mounting a choke piston adjacent one end thereof, said piston rod and choke piston being slideably mounted in said bore for movement between a closed position wherein said choke piston operatively engages said valve seat to close communication between said inlet and outlet channels, and an open position wherein said choke piston is axially withdrawn from said valve seat to permit such communication,

a differential piston mounted to said piston rod at a location axially spaced from said choke piston in a direction toward said closed inner end of said bore, and a blocking piston mounted to said piston rod at a location axially spaced from said differential piston in a direction toward said closed inner end of said bore, and such that a first chamber is defined within said bore between said choke piston and said differential piston and a second chamber is defined within said bore between said differential piston and said blocking piston, with the diameter of said differential piston being different from the diameter of said choke piston and different from the diameter of said blocking piston, such that a pressure within said first chamber acts to bias the choke piston toward one of either said open or closed positions and a pressure within said second chamber acts to bias the choke piston toward the other position,



control means for selectively biasing said choke piston toward one of either its closed or open positions, and including entry duct means for delivering a pressurized control fluid, first outlet duct means leading from said entry duct means to said first chamber, second outlet duct means leading from said entry duct means to said second chamber, and control valve means for providing selective communication between said entry duct means and either one of said first and second outlet duct means, whereby actuation of said control valve means results in the biasing of said choke piston toward either its open or its closed position, and

valve means operatively connected to each of said inlet channel and said outlet channel for operatively connecting at least one of said channels to said entry duct means of said control means, whereby the hydraulic fluid which flows through said channels serves as the pressurized control fluid of said control means.

4,535,967

EXPANDING GATE VALVE WITH FLUID-POWERED ACTUATOR

Brett A. Babbitt, Katy; Tri C. Le, Missouri City, and Bruce P. Noble, Lewisville, all of Tex., assignors to Joy Manufacturing Company, Pittsburgh, Pa.

Filed Jan. 5, 1984, Ser. No. 568,460

Int. Cl.³ F16K *31/12*

U.S. Cl. 251—54 3 Claims

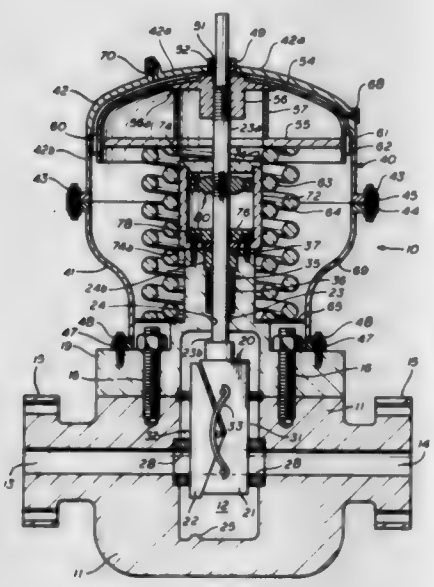
1. A gate valve structure having a valve body with a valve chamber therein and a flow passage extending through said valve body and communicating with said valve chamber, an expandable gate assembly mounted within said valve chamber for movement in a collapsed condition between open and closed positions with respect to said flow passage, said gate assembly including a gate element and a segment which are

expanded away from each other at said open and closed positions and are provided with ports which are aligned with one another and the flow passage in said open position, said gate element and segment being each provided with an outer planar sealing surface disposed parallel to one another for sealing against valve seats provided in said valve body at opposite sides of said gate assembly when the gate assembly is expanded in the open and closed positions, said valve body having a bore extending from the exterior of the valve body into said valve chamber;

pneumatic powered actuator means for moving said gate assembly transversely with respect to said flow passage between said open and closed positions, said actuator means comprising a housing mounted on said valve body and defining a piston chamber therewith;

a piston slidably received in the chamber, an actuator stem connected to said piston and movable therewith in the axial direction of said stem, said actuator stem extending through said bore and connected at one end to said gate assembly;

inlet means provided through the wall of said housing and adapted for connection to a source of pneumatic pressure whereby pressurized pneumatic fluid may be selectively



admitted to the chamber on one side of the piston for urging the piston in one direction therein from one of said open or closed positions to the other;

compression spring means in said chamber for continuously urging the piston in the opposite direction from said one direction; and

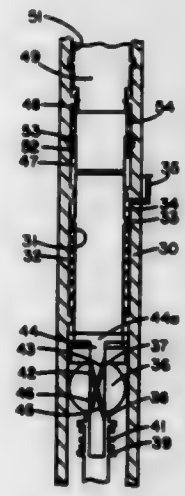
hydraulic choke means operably associated with said actuator stem for imposing a constant velocity control on said actuator piston substantially throughout the actuator stroke in both directions thereof for opening and closing the valve, said hydraulic choke means comprising a hydraulic cylinder mounted on said valve body in sleeved coaxial relation to said actuator stem, said actuator stem being adapted for axial reciprocal motion through said hydraulic cylinder, a hydraulic piston fixed to said actuator stem and mounted in said hydraulic cylinder for reciprocating motion therein, said hydraulic cylinder being filled with a hydraulic fluid, and means provided through said hydraulic piston for producing a throttling effect on the flow of hydraulic fluid from one side of the hydraulic piston to the other when said actuator piston is moved by pneumatic pressure or said spring means to thereby minimize the shock effect of the actuator stroke.

4,535,968

VALVE

John C. Gano, and Gary A. Kohn, both of Carrollton, Tex., assignors to Otis Engineering Corporation, Dallas, Tex.

Filed Nov. 16, 1983, Ser. No. 552,446
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—58 **34 Claims**



1. A valve comprising,

a housing,

an actuator in the housing,

means for reciprocating the actuator,

a ball valve member and seat controlling flow through said housing,

means maintaining said ball valve member and seat together,

ball rotation means,

at least two cooperable track followers and tracks with the tracks lying in substantially a single plane and carried by one of the ball valve member and ball rotation means and the followers carried by the other of the ball valve member and ball rotation means,

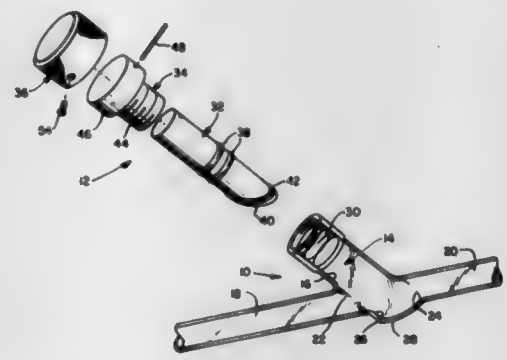
one of said ball valve member and ball rotation means carried by and reciprocal with said actuator relative to the other of said ball valve member and ball rotation means and effecting simultaneous and continuous relative movement between said track and track followers and rotation of said ball valve member about substantially a single rotational axis between o,pen and closed positions.

4,535,969

VALVE STRUCTURES

Larry T. Riley, Millville, N.J., assignor to Ace Glass Incorporated, Millville, N.J.

Filed Feb. 18, 1982, Ser. No. 349,756
Int. Cl.³ F16K *31/44*
U.S. Cl. 251—215 **14 Claims**



1. A valve structure comprising a valve housing defining a valve chamber with a cylindrical wall, means defining a first port in said cylindrical wall, means defining a second port in said cylindrical wall opposite said first port, whereby a fluid flow path extends between said ports, a cylindrical valve plug

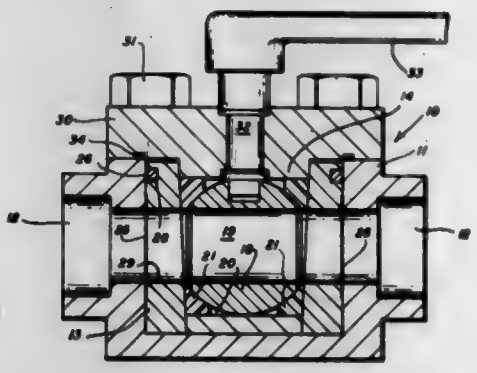
mounted in said chamber coaxially with said cylindrical wall for rotation about the axis of said cylindrical wall, means including cooperating threads on the valve chamber and the plug for providing axial movement of the plug in said valve chamber in conjunction with rotational movement of the plug about the axis of said cylindrical wall, said plug having an end portion with an end face inclined to said axis and having sealing means, including an elliptical seal extending peripherally around the plug adjacent to said end face, for isolating one port from the other when the plug is rotated to a closed position at which said end face of said plug is interposed between said ports, and for wiping said cylindrical wall as said plug is rotated, the axial movement of said plug beinng in a direction withdrawing said end face of the plug from between the ports when the plug is rotated from said closed position to an open position and in the opposite direction when the plug is rotated from said open position to said closed position, said plug being substantially withdrawn from between said ports with said end face at one side of said flow path when said plug is in said open position.

4,535,970

TOP ENTRY BALL VALVE

Jerry D. MacAfee, Glastonbury, Conn., assignor to Quamco, Inc., East Hartford, Conn.

Filed Dec. 27, 1983, Ser. No. 565,290
Int. Cl.³ F16K *43/00*
U.S. Cl. 251—315 **3 Claims**



1. A top entry ball valve comprising:

a first casing portion having a cylindrical bore extending downwardly from the top surface thereof and inlet and outlet passages extending horizontally therethrough and communicating with said vertical bore,

a second casing portion including

an upper cap portion having a bottom annular surface for matingly engaging with the top surface of said first casing portion and a downwardly projecting lower plug portion having

a pair or opposed vertical cylindrical surface means adapted to matingly engage with the surface defined by said downwardly extending bore in the first casing portion, and

a pair of opposed flat surfaces joining said opposed cylindrical surfaces and inclined inwardly downwardly towards each other, said flat surfaces extending substantially perpendicularly to said inlet and outlet passages,

a bore extending horizontally through said plug portion between said flat surfaces,

a ball having a bore therthrough and a pair of annular seats one either side of said ball located within said horizontal bore,

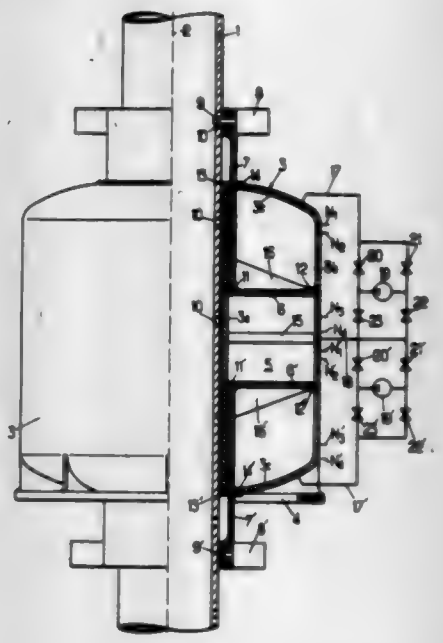
a pair of cheek elements each having one vertical cylindrical surface for matingly engaging with the surface defined by said downwardly extending bore in the first casing portion and a flat surface inclined inwardly downwardly for mating engagement with an inclined surface of said second casing portion, each of said cheek elements having a horizontal bore therethrough communicating with the flat surface thereof, and said inlet and outlet passages of said lower casing portion, the horizontal bore in each of said cheek elements and the horizontal bore in said plug portion being axially aligned.

4,535,971

PROPULSIVE-FORCE JACK INSTALLATION FOR PRODUCING THE CONTINUOUS MOVEMENT OF AN OBLONG OBJECT IN THE DIRECTION OF ITS AXIS, AND/OR FOR MOVING AN ELEMENT ALONG SAID OBJECT

Gilbert Laplante, La Croix Valmer, France, assignor to Compagnie Francaise d'Enterprises Metalliques, France

Continuation of Ser. No. 329,997, Dec. 11, 1981, abandoned.
This application Dec. 8, 1983, Ser. No. 559,017
Claims priority, application France, Dec. 16, 1980, 80 26697
Int. Cl.³ B66F *1/00*
U.S. Cl. 254—108 **8 Claims**



1. A propulsive-force jack apparatus for producing continuous movement of an oblong object in an axial direction and/or of an element along a said oblong object, said apparatus comprising at least two jack assemblies, each of which comprises a piston slidably movable in a corresponding jack body, locking means associated with the piston of each assembly for interlocking the pistons selectively, momentarily and automatically with the object, a device for supplying hydraulic fluid to said jack assemblies, and an automatic control means for controlling said locking means and for controlling supplying of said hydraulic fluid to, and the discharging of said hydraulic fluid from, said jack bodies such that engagement of said object by a said piston of one of said jack assemblies is effected in a continuous manner at the moment when the said piston of the other jack assembly is disengaged from said object and such that the relative movement of the piston of one assembly with respect to the piston of the other assembly is a synchronous seesaw movement, the offload movement of the piston of each of the jack assemblies being faster than the movement under load, effected in the opposite direction, of the piston of the other jack assembly, wherein each movement, under load, of said piston of each jack assembly is preceded by a short offload movement of the same piston in the same direction, said automatic control means comprising, for each jack assembly, a first sensor for detecting the arrival of the respective piston of the corresponding body at a position (N2, N2') situated just before the end (N1, N1') of the movement of that piston under load, said first sensor being connected, through an amplifier, to the said device for supplying hydraulic fluid to the jack assemblies responsive to detecting the arrival of said respective piston at said position such that this device automatically controls the beginning of an offload movement of the piston of one

of the other jack assemblies in the direction of movement of said object relative to said assembly at a moment which precedes the arrival at the end of travel in the same direction, of the piston under load.

4,535,972

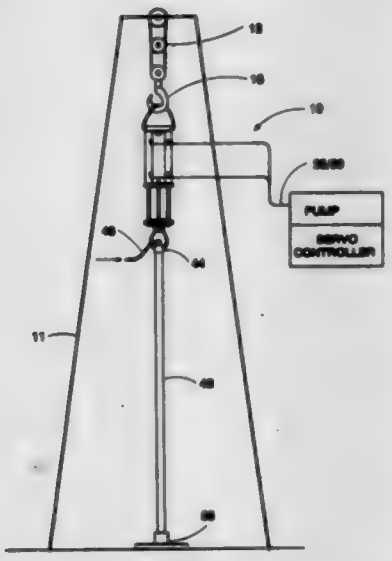
SYSTEM TO CONTROL THE VERTICAL MOVEMENT OF A DRILLSTRING

Keith K. Millheim, Terlton, and Tom M. Warren, Coweta, both of Okla., assignors to Standard Oil Co. (Indiana), Chicago, Ill.

Filed Nov. 9, 1983, Ser. No. 549,846

Int. Cl.³ B66C *1/00*

U.S. Cl. 254—277 **13 Claims**



1. A system for controlling the weight on a drill bit connected to a lower end of a drillstring and connectable to a drill rig having cable draw works, comprising:

at least one fluidic cylinder and piston assembly removably and operatively connected at an upper end thereof to a support of the drill rig and at a lower end thereof to a drillstring;

pump means for providing fluid to said fluidic cylinder and piston assembly;

valve means for controlling the flow of the fluid to and from said fluidic cylinder and piston assembly;

data measurement means, connected to the drillstring adjacent the drill bit, for generating a signal representative of the weight on the drill bit; and

computing means, in operative communication with said valve means for controlling the operation of the fluidic cylinder and piston assembly in response to the signal received from the data measurement means to maintain the weight on the drill bit within desired limits.

4,535,973

VEHICLE TIRE CARRIER

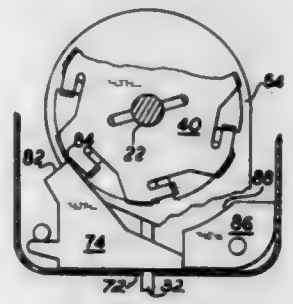
William C. Dorr, Jackson; Kenneth C. Hybarger, Belmont, and James A. Yurkinas, South Haven, all of Mich., assignors to Kent Products, Inc., Grand Haven, Mich.

Filed Jan. 11, 1984, Ser. No. 569,996

Int. Cl.³ B62D *43/04*

U.S. Cl. 254—323 **5 Claims**

1. A tire carrier winch for mounting to the underside of a vehicle for raising and lowering a spare tire between storage and access positions comprising, in combination, a housing, a driveshaft rotatably mounted upon said housing, a sheave rotatably mounted within said housing upon said driveshaft, a strand wound upon said sheave, an opening defined in said housing in substantial radial alignment with said sheave, said strand extending through said opening, a drive member connected to said shaft drivingly connected to said sheave upon rotation of said shaft, a drive member locking member within said housing shiftable between a lock position preventing rotation of said drive member and a drive member release position, and activating means connected to said locking member located adjacent said housing opening and engaging said strand adjacent said opening, said activating means shifting said locking member from said drive member release position to said lock position upon said strand being fully unwound from said sheave.



4,535,974

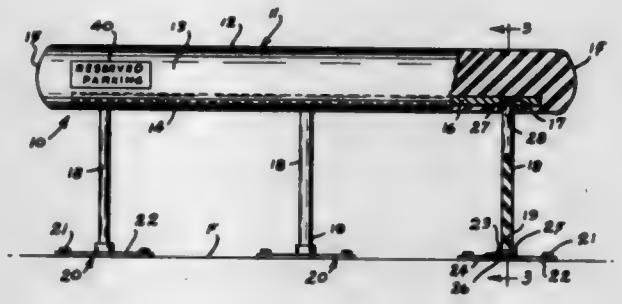
IMPACT ABSORBING PARKING SPACE BARRIER

Henry Conde, 359 English Oak Ct., Waldorf, Md. 20601

Filed Apr. 12, 1984, Ser. No. 599,140

Int. Cl.³ E04H *17/00*

U.S. Cl. 256—1 **12 Claims**



12. A barrier apparatus for use in parking lots having surfaces defined by generally parallel parking spaces comprising an elongated generally horizontally extending rail means having inner and outer portions, first and second ends and oppositely disposed elongated sidewall portions, said inner portion of said rail means being defined by an elongated core means and said outer protion being a generally resilient material which is carried by said core so that said sidewall portions have an outer surface formed of an impact absorbing material, at least two generally vertically extending horizontally spaced post means having first and second end portions, a base means engageable with the surface of the parking lot, said first end portion of said post means being connected to said base means, and said second ends of said post means being removably secured to said core means of said rail means whereby said elongated rail means may be selectively disposed in general parallel relationship between two adjacent parking spaces in an elevated position with respect to the parking lot surface.

4,535,975

GAS-TRANSMITTING WALL ELEMENT FOR A METALLURGICAL VESSEL, A METALLURGICAL VESSEL HAVING SUCH A WALL ELEMENT, AND A METHOD OF PRODUCING STEEL

Gerardus P. Bührmann, Velsen-Zuid, and Adam Steen, Heemskerk, both of Netherlands, assignors to Hoogovens Groep B.V., Ijmuiden, Netherlands

Filed Nov. 9, 1982. Ser. No. 440,401

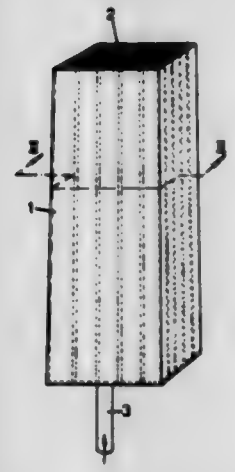
Claims priority, application Netherlands, Nov. 18, 1981, 8105221

Int. Cl.³ C21C *5/34*

U.S. Cl. 266—220 **9 Claims**

1. Gas-transmitting wall element for a converter for steel

making having a refractory lining composed of bricks, the element comprising a metal box having a base and side walls, a gas inlet opening in said box adjacent said base and a refractory filling in said box composed of at least one refractory element, said refractory element being an unfired pressure moulded brick made of refractory particles and binder, the filling being



spaced from the said base of the box and having faces contacting the side walls of the box and grooves in said faces for passage of the gas extending from the end of the element(s) adjacent the base to the opposite end thereof, said wall element having the same shape as one or more bricks in the region of the lining adjacent the wall element.

4,535,976

RUBBER VIBRATION ISOLATORS

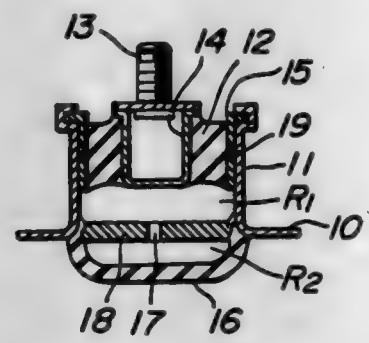
Takuya Dan, and Akio Fujita, both of Yokohama, Japan, assignors to Bridgestone Tire Co., Ltd., Japan

Continuation of Ser. No. 274,568, Jun. 17, 1981, Pat. No. 4,424,960. This application Aug. 17, 1983, Ser. No. 524,188

Claims priority, application Japan, Jun. 23, 1980, 55-84773; Jul. 12, 1980, 55-94565

Int. Cl.³ F16F 9/10

U.S. Cl. 267—8 R **1 Claim**



1. A rubber vibration isolator comprising: an inner sleeve, an annular rubber elastomer, an annular metal ring body and a metal outer sleeve; said annular rubber elastomer being inserted between said inner sleeve and said annular ring body and integrally bonded to both said inner sleeve and said annular ring body, said rubber elastomer provided at its outer circumference with plural recesses separated from each other by said rubber elastomer, and said annular ring body being fitted into said outer sleeve so as to form a metal contact therebetween and being provided with plural holes corresponding to said recesses and with fine grooves formed in the outer periphery thereof by cutting to define restricted passages together with the inner surface of said outer sleeve establishing communication between said holes and between said recesses, and said recesses, holes and fine grooves being filled with an incompressible liquid.

4,535,977

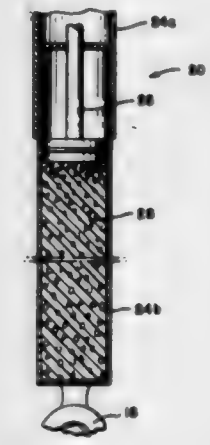
APPARATUS AND METHOD FOR A SUSPENSION SYSTEM

John R. Strong, King County, Wash., assignor to Paccar Inc., Bellevue, Wash.

Continuation of Ser. No. 285,584, Jul. 21, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 572,965

Int. Cl.³ F16F 9/06

U.S. Cl. 267—64.15 **14 Claims**



1. An apparatus for a suspension system in a vehicle which provides both spring and damping characteristics in a single unit, the apparatus acting like a pneumatic spring for a pressure change of short duration and acting like a damper for repeated pressure oscillations over a moderate time frame, the apparatus comprising:

(a) a closed container that has a variable volume;

(b) a liquid partially filling the volume;

(c) a gas in the volume which is soluble in the liquid, but which is supplied in excess to form a gas-liquid interfacial system, wherein the liquid is saturated with the gas under static conditions, the solubility of the gas in the liquid increasing with an increase in temperature in a manner that substantially counters the volume change of the gas due to the increased temperature, thereby substantially maintaining constant the static height of the closed container over an operating range of temperatures;

(d) a foam on which the liquid is capable of forming a film substantially filling the volume and holding the liquid in a film over at least a portion of the foam so that the surface area of the liquid in contact with the gas is greater than the cross-sectional area of the container; and

(e) means for connecting the container into the suspension in the vehicle to provide spring and damping characteristics for the vehicle by the gas compressing or by the gas entering or leaving solution with the liquid.

4,535,978

COIL SPRING AND SPRING ASSEMBLY

Robert F. Wagner, Lombard, Ill., assignor to Sealy, Incorporated, Chicago, Ill.

Continuation of Ser. No. 142,851, Apr. 21, 1980, abandoned, which is a continuation-in-part of Ser. No. 923,771, Jul. 12, 1978, abandoned. This application Nov. 16, 1981, Ser. No. 321,798

Int. Cl.³ F16F 1/12

U.S. Cl. 267—91 **15 Claims**

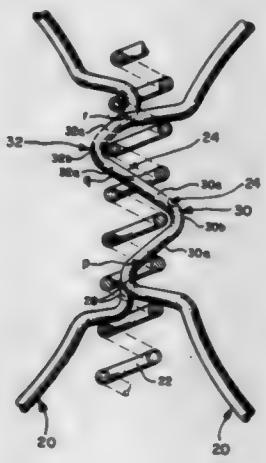
1. A spring assembly for an innerspring unit comprising:

a plurality of spiral coil springs arranged in a plurality of substantially parallel rows, each of said coil springs having opposed terminal convolutions, said opposed terminal convolutions forming first and second opposed surfaces of the assembly, said terminal convolutions including first terminal convolutions and second terminal convolutions;

said coil springs including a plurality of first coil springs each having a first terminal convolution and a plurality of second coil springs each having a second terminal convolution, said first and second coil springs being disposed adjacent each other in the same row and said first and

second terminal convolutions being disposed in the first surface of the assembly;

said first and second terminal convolutions each comprising a first and a second offset segment, each offset segment lying in the plane of its respective terminal convolution and each having a base and an apex, said base being formed of two legs diverging from said apex, and said terminal convolutions being disposed, so that the offset segments of said first terminal convolution overlie the offset segments of said second terminal convolution such that the respective first and second offset segments lie in opposed planes substantially parallel to the first surface, and said apexes of said first offset segments form a first pair of apexes and said apexes of said second offset segments form a second pair of apexes;



said bases of said first and second offset segments of each of said first and second terminal convolutions being disposed in an alignment transverse said rows of coil springs, and said first and second pairs of apexes being disposed on opposite sides of said alignment; and

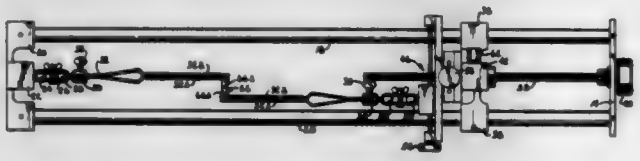
a cross helical, directly interconnecting the offset segments of said first and second terminal convolutions with one another, said offset segments and said cross helical substantially by themselves cooperating together to allow substantially unrestricted pivotal movement between said first and second terminal convolutions to a desired maximum angle upon compressive movement of said first coil spring by a load applied at the first surface of the assembly toward the second surface of the assembly, and to prevent said pivotal movement beyond said desired maximum angle upon further compressive movement of said first coil spring by said load.

4,535,979

ALIGNMENT TOOL FOR PIECE WORK

James Paarmann, R.R. 2, Box 1, Girard, Kans. 66743

Filed Jan. 9, 1984, Ser. No. 569,305
Int. Cl.³ B25B *1/20*
U.S. Cl. 269—45 **7 Claims**



1. A tool for aligning two work pieces, said tool comprising:

a rigid framework presenting an elongate guide structure having a substantially horizontal orientation to define a first horizontal axis;

a first elongated arm mounted on said framework at a location above said guide member, said first arm having means for holding one of the work pieces;

stanchion means extending upwardly from said guide structure and mounted thereon for linear movement along the length thereof to travel along said first axis generally toward and away from said first arm;

a first bracket mounted on said stanchion means at a location above said guide structure for movement along same with the stanchion means, said first bracket presenting a second axis oriented perpendicular to said first axis;

a second bracket mounted on said first bracket for linear movement relative thereto along said second axis, said second bracket presenting a third axis oriented perpendicular to both said first and second axes;

a second elongated arm having means for holding the other work piece; and

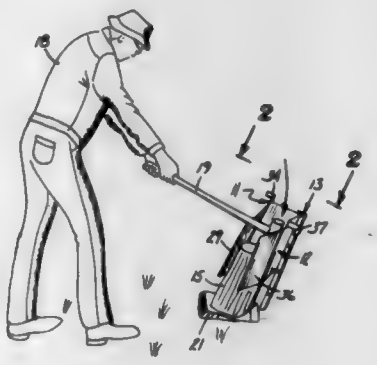
means for mounting said second arm on said second bracket for linear movement relative thereto along said third axis.

4,535,980

LOG HOLDER FOR USE IN SPLITTING LOGS

Ross W. Jordan, 1627 Gist Rd., Cloquet, Minn. 55720

Filed Dec. 21, 1983, Ser. No. 563,992
Int. Cl.³ B23Q *3/02*
U.S. Cl. 269—102 **7 Claims**



1. A log holder for holding a log in a position to facilitate splitting a log and retaining the split pieces, said log holder comprising:

two wall members of sheet metal;

ground engaging means in the form of an angle iron; and

means for detachably securing said sheet metal wall members at their rear edges to the flanges of said angle iron so that said wall members extend perpendicularly to each other, diverging from their rear to their front edges to form a log receiving area therebetween, the front edges of said wall members being spaced apart sufficiently to receive therebetween a log and to permit an axe handle to pass freely therebetween, said angle iron supporting said sheet metal wall members on the ground at such an angle that the junction of the rear edges of the wall members slopes rearwardly from bottom to top so as to support a log in such a manner that it tilts rearwardly.

4,535,981

PAPER SHEET FEEDING ARRANGEMENT

Yutaka Watanabe, Nakano, and Fumio Fukumoto, Sagamihara, both of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Nov. 8, 1983, Ser. No. 549,815
Claims priority, application Japan, Nov. 16, 1982, 57-201383
Int. Cl.³ B65H *3/52*
U.S. Cl. 271—121 **6 Claims**

1. In a paper sheet feeding arrangement for feeding paper sheets, one sheet by one sheet, from a stack of the paper sheets, which comprises a paper feeding roller contacting the paper sheet and driven for rotation in a paper sheet feeding direction and a paper sheet separating member held in pressure contact by said paper feeding roller for preventing the paper sheet fed by said paper feeding roller from advancing so as to feed only the paper sheet contacting the paper feeding roller by passing between said paper feeding roller and said paper sheet separating member, the improvement comprising;

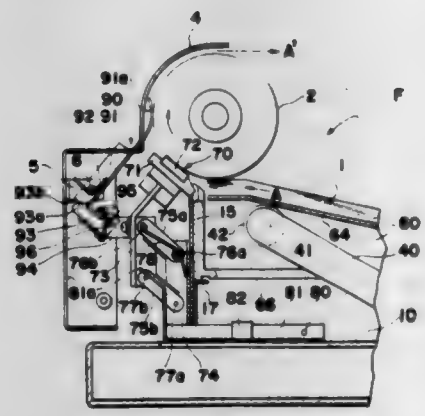
(a) means for holding the stack of paper sheets movably in a direction approximately at right angles with respect to the feeding direction of the paper sheets between a first position where the stack of paper sheets confronts said paper feeding roller and a second position where the stack of paper sheets is spaced from said paper feeding roller,

(b) a pushing member pivotally provided so as to be capable of pushing back the paper sheet located between the paper feeding roller and the paper sheet separating member towards the stack of paper sheets through pivotal movement thereof,

(c) a first biasing means for urging said pushing member to be pivoted in a direction of the pushing back,

(d) a stopper means for stopping said pushing member at a stand-by position for the pushing back against the urging force of said first-biasing means,

(e) a second biasing means for urging the holding means in a direction towards said second position when said holding means is in said first position,



(f) a locking means for locking said holding means at said first position against the urging force of said second biasing means,

(g) a lock releasing means for releasing said locking means from the locked state, and

(h) an associating means which is associated with said lock releasing means so as to release said paper sheet separating member from the pressure contact with respect to said paper sheet feeding roller, and also to release said stopper means from stopping said pushing member, said associating means functioning to associate said paper sheet separating member, said stopper means and said locking means with each other so as to effect the releasing in such order as the releasing of the pressure contact of said paper sheet separating member, releasing of stopping of the pushing member by said stopper means, and releasing of locking of said holding means by said locking means following the functioning of said lock releasing means.

4,535,982

SHEET FEEDING CASSETTE LATCHING SYSTEM

Hideaki Mochimaru, Yokohama, Japan, assignor to Ricoh Company, Ltd., Japan

Filed Feb. 1, 1984, Ser. No. 575,884

Claims priority, application Japan, Feb. 1, 1983, 58-13767; Feb. 7, 1983, 58-17424; Feb. 10, 1983, 58-17445; Apr. 4, 1983, 58-49891

Int. Cl.³ B65H *1/08*

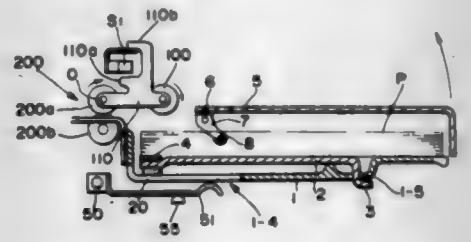
U.S. Cl. 271—127 **4 Claims**

1. A sheet feeding cassette latching system capable of latching a sheet feeding cassette on to a main body of a copying apparatus and the like and unlatching same comprising a sheet support plate pivotally supported at a rearward end portion thereof by a bottom plate of the cassette, and an upper cover capable of being opened and closed as a rearward end thereof is flipped upwardly even when the cassette is in a latched position, said sheet support plate being pivotally moved upwardly by a lifter of the main body when the cassette is inserted into the latched position to bring the uppermost sheet of a stack of sheets supported on the sheet support plate into pressing engagement with sheet feeding means of the main body to feed one sheet after another to a copying station, such system comprising:

engaging members engageable with each other located at a forward end portion of the cassette at opposite sides thereof and a cassette receiving section of the main body, said engaging members being operative to allow the cassette to be moved into and out of the cassette receiving section in a tilting position in which a rearward portion of the cassette is disposed at a higher-than-normal level while the cassette is in the process of being inserted into or withdrawn from the cassette receiving section and enable the cassette to move downwardly to the latched position when it has reached a predetermined position;

a sheet support plate lifter drive source for moving said lifter upwardly;

power transmission means which can be engaged and disengaged for transmitting power from said sheet support plate lifter drive source to said lifter;



engaging and disengaging means for engaging and disengaging said power transmission means; and

an actuating member for actuating said engaging and disengaging means by being brought into engagement therewith;

wherein said sheet support plate lifter drive source, power transmission means and engaging and disengaging means are located at the main body while said actuating member is located at the cassette and said actuating member is operative in conjunction with both the operation of opening the upper cover of the cassette and the operation of tilting the cassette when the cassette is to be unlatched to cause the engaging and disengaging means to bring the power transmission means to a disengaged condition so that the lifter and the sheet support plate of the cassette can be moved by gravitational pull from the sheet feeding position and the sheet feeding means is brought out of engagement with the uppermost sheet of the stack of sheets when there are sheets on the sheet support plate or a top surface of the sheet support plate when there are no sheets thereon.

4,535,983

RECREATIONAL DEVICE FOR PRODUCING THE THRILL OF A FREE FALL

Alfonso De-La-Concha-Caceres, Mexico City, Mexico, assignor to Free Motion Designs Corporation, Houston, Tex.

Filed Apr. 14, 1983, Ser. No. 484,997

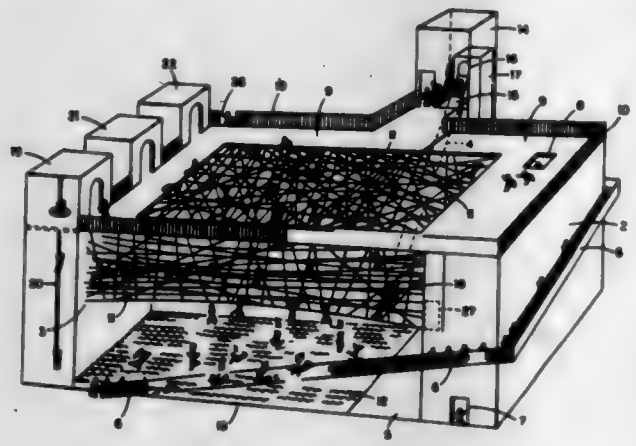
Claims priority, application Mexico, Apr. 15, 1982, 192281; Mar. 23, 1983, 196685

Int. Cl.³ A63G *31/00*

U.S. Cl. 272—6 **13 Claims**

10. A recreational device for producing the thrill of a free fall on the users and comprising in combination a housing having a bottom, tall side walls and an open top, a shock absorbing cushion extending throughout the area of the bottom of said housing, an inwardly extending peripheral deck located at the open top of said housing, said deck having an area sufficient to accommodate a predetermined number of persons and including a launching area for allowing said persons to jump into said housing, and a plurality of elastic bands having their two opposite ends fixedly attached to the interior surfaces of

the side walls of said housing, each individual elastic band extending in a horizontal position throughout its length across said housing, said elastic bands being randomly arranged at different levels within said housing to form an elastic network leaving spans between said bands which are sufficiently small to prevent a person jumping from said deck into said housing



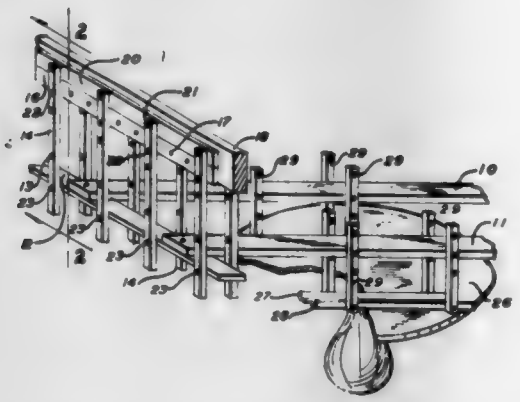
from passing through said elastic network all the way down through said housing except by bouncing on one or more said elastic bands, said elastic bands having an elasticity sufficient to permit said persons to rebound thereon as they fall from a higher level of bands to a lower level of bands, said elastic bands being arranged throughout at least a substantial part of the height of said housing.

4,535,984

SUPPORT APPARATUS

James B. Landsverk, 6893 8th St. North, St. Paul, Minn. 55119

Filed Jul. 21, 1983, Ser. No. 515,778
Int. Cl.[3] A63B *69/00*; A47F *5/08*
U.S. Cl. 272—78 7 Claims



6. Support apparatus comprising:

a. parallel spaced apart first and second elongated horizontal base track means of uniform cross-section throughout the entire length thereof, said base track means being fixedly mounted to overhead ceiling means,

b. first and second track follower assemblies adjustably mounted respectively to said first and second base track means, each said track follower assembly including elongated horizontal mating track means of uniform cross-section throughout the entire length thereof, said mating track means being substantially equal in length to said base track means and being slidable in aligned relationship with respect to said base track means and supported by said base track means in said aligned relationship, means for maintaining said mating track means against tilt elevational movement with respect to said base track means, and at least two strut means affixed to each said mating track means in vertically depending relationship therefrom and in spaced relationship along the length thereof, and

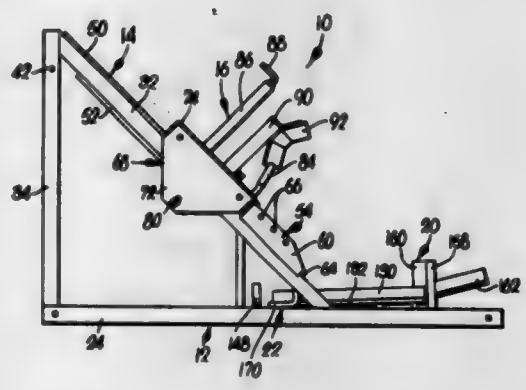
c. a suspended horizontal platform assembly adjustably fixed to and supported by said strut means.

4,535,985

POWER HIP, HACK SQUAT AND LEG EXERCISE SLED

Ernest D. Mask, 311 Marion La., Lee's Summit, Mo. 64063

Filed Jul. 19, 1983, Ser. No. 515,302
Int. Cl.[3] A63B *21/00*
U.S. Cl. 272—134 15 Claims



1. A leg exercise device adaptable to various sized athletes and operable from either a supine or squating position, said device comprising:

an elongated, floor-engaging base having a pair of elongated, spaced-apart, generally parallel frame members;

a pair of elongated, spaced-apart, generally parallel, upwardly inclined rails each having one end affixed to a respective frame member;

an elongated cross beam located between and in generally spanning relationship to said rails;

means mounting said cross beam between said rails and adjacent the ends of said rails remote from said frame members for permitting slight lateral movement of said rails;

an elongated weight-receiving unit transversely oriented relative to said rails, means adjacent each end of said unit for slidably mounting said unit on said pair of rails;

a unit positioning mechanism mounted on at least one said pair of rails proximate to the end thereof, said mechanism including an upwardly extending stop secured to of said pair of rails one rail, an elongated block movably disposed atop said one rail and presenting a contact face at one end thereof, and structure defining a plurality of openings in said block along the length thereof for alternately receiving said stop whereby said block can be selectively positioned along one rail of said pair of rails by the selective reception of said stop in one of said openings, thereby adjustably positioning said block contact face atop said one of said pair of rails for abutting engagement with said weight-receiving unit;

a flat bench located generally between said frame members; and

means adjustably securing said bench between said frame members for selective shifting of the bench along the length of said frame members,

said bench being shiftable from a normal power hip exercise position supporting the athlete in supine disposition with the athlete's feet raised and engaging the weight-receiving unit, to a stowed location allowing the athlete to assume power leg or hack squat exercise positions,

said bench having an elongated, flattened, removable portion including means adjacent one end of said portion for selectively and operably attaching said portion to said weight-receiving unit and for supporting the athlete in the hack squat exercise position,

said unit positioning mechanism and said adjustable bench thereby cooperating for selective accommodation of various sized athletes in either the supine or squating position and said laterally movable rail other ends serving to com-

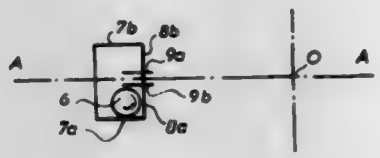
pensate for strength differences between the respective legs of a user.

4,535,986

INCLINATION SIGNALING DEVICE ON A TENNIS RACQUET

Camille Richards, 18 Avenue Emile Deschanel, Paris, France (75007)

Filed Sep. 16, 1982, Ser. No. 418,968
Claims priority, application France, Sep. 30, 1981, 81 18435
Int. Cl.³ A63B *49/08, 69/38*
U.S. Cl. 273—29 A **4 Claims**



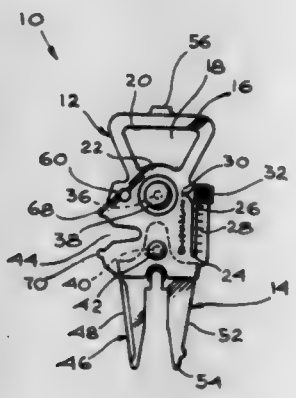
1. A device mounted in the handle of a racquet for signaling the inclination of said handle with respect to the horizontal, said racquet having a stringed surface, comprising an enclosure symmetrical with respect to the axis of said handle having dihedrals each formed by two juxtaposed planes on which a ball contained in said enclosure can move, the first plane of each dihedral being arranged along the axis of the handle and perpendicularly to the plane of said surface of the racquet, the second plane of each dihedral forming a maximum angle of 90° with said axis and said first plane, and comprising an electrical contact on the planes of the two dihedrals directed towards said stringed surface, said electrical contact being arranged substantially along said axis and being connected to signaling means, whereby said ball is projected onto said electrical contact under the effect of the centrifugal force in the course of play by rolling over said second plane of one of each dihedral and provides a signal provided the axis of the racquet is dipped downwards.

4,535,987

GOLF TOOL

Joseph K. Dikoff, P.O. Box 4553, Christiansted, St. Croix, V.I. 00820

Filed Aug. 22, 1984, Ser. No. 643,154
Int. Cl.³ A63B *57/00*
U.S. Cl. 273—32 B **1 Claim**



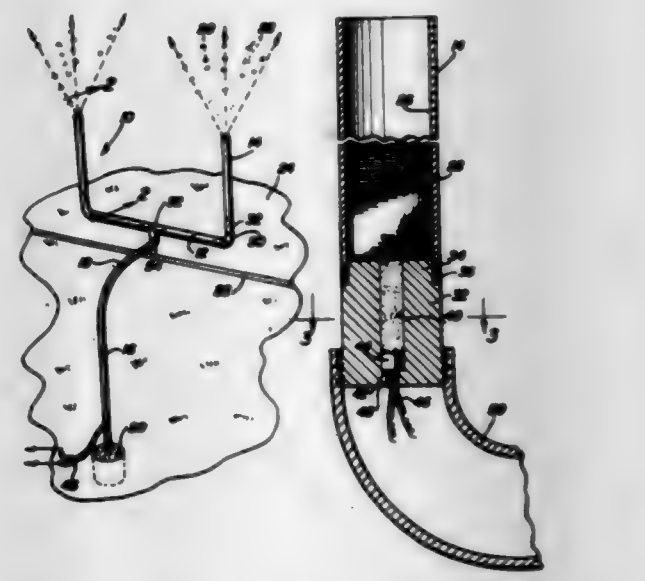
1. A golf tool including:
a main carrier element;
an ancillary carrier element pivotably connected by a first pivot to said main carrier element;
said ancillary carrier element having a pair of tapered leg portions each terminating, at its end remote from said first pivot, in a narrowed region and each having increasing spacing from the other as each of said narrowed regions is approached;
one of said leg portions carrying pointed means for cleaning the faces of golf club heads;
said main carrier element carrying along its periphery a protuberance having a screwdriver-like tip;
said main carrier element including, in addition, a region having a trapezoidally shaped opening therein sized to engage and remove caps from bottles; and,
mechanical snap means carried by said main carrier element for mechanically and releasably holding a ball marker;
said main carrier element having along the periphery thereof, in addition to said protuberance having a screwdriver-like tip, means for coupling to golf-shoe cleats for the removal of such cleats from golf shoes.

4,535,988

FOOTBALL GOAL POST WITH EXPLOSIVE-TYPE SOUVENIR PROJECTOR

Norman G. Foley, Rte. I, Box 30, Matoaka, W. Va. 24736

Filed Aug. 26, 1982, Ser. No. 412,524
Int. Cl.³ A63B *67/00*
U.S. Cl. 273—55 D **1 Claim**

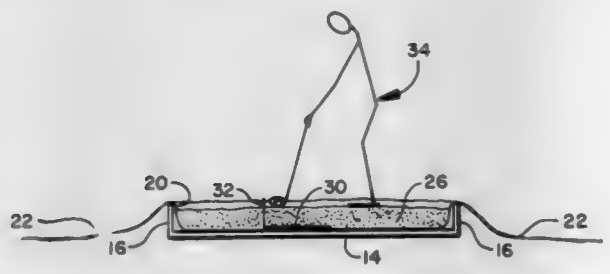


1. In combination with a football goal post comprising a horizontal cross bar and a pair of vertically disposed tubular members of equal length oriented at the ends of the cross bar, said cross bar and tubular members being constructed of tubular pipe and a pipe fitting interconnecting the cross bar and the vertical tubular members, that improvement comprising a substantially solid breech block inserted between the lower end of at least one tubular member and the pipe fitting with the breech block being screw-threadedly connected to the pipe fitting and the lower end of the tubular member thereby becoming a part of the football goal post, said breech block including a cavity communicating with the upper end thereof receiving an explosive charge for detonation and discharging expanding gases and products of combustion into the lower end of the tubular member, a plurality of thin, substantially flat, imperforate, lightweight discs oriented in a vertical stacked independent relation in the tubular member with the lowest disc supported against the upper end of the breech block whereby detonation of the explosive charge in the breech block will eject the stack of discs upwardly and out the upper end of the tubular member without rotation for discharge of the discs in a random pattern over a relatively large area around the goal post, said tubular member being in the form of a pipe having a generally circular cross-sectional configuration with the discs closely but loosely fitting the interior of the tubular member for ejection of the discs at a relatively high velocity for dispersal over a large area to provide many spectators at a football game with the opportunity to obtain one of the discs, said discs including indicia relating to a football game, said breech block having an external periphery similar to the external periphery of the tubular member.

4,535,989
SAND TRAP PRACTICE DEVICE

Arthur Lovin, 2609 Petaluma Ave., Long Beach, Calif. 90815

Filed Jun. 7, 1984, Ser. No. 617,960
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—176 FB 14 Claims

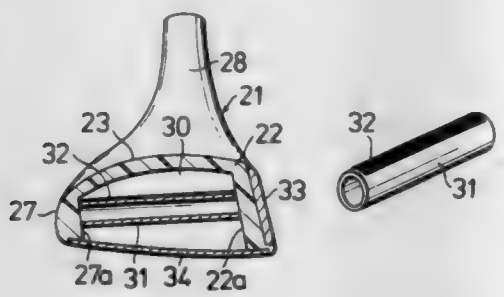


1. Apparatus for the practice of golf shots, comprising:
a tray having a planar bottom and substantially vertical sides, the horizontal dimensions of said tray being large enough to allow a person to stand in said tray and swing a golf club therein, and the height of said sides being small relative to the horizontal dimensions of said tray;
a sheet of foldable material contained in said tray, said sheet, when unfolded, having (a) an exterior portion extending over said sides and outwardly therefrom to form an apron around said tray, and (b) an interior portion forming a lining for the inside of said tray, said interior portion adapted to contain a layer of particulate material; and
golf shot aiming means, comprising first and second substantially perpendicular planar members;
whereby, when said interior portion of said sheet is filled with a layer of particulate material, said golf shot aiming means is partially embeddable in said layer of particulate material, with one of said planar members protruding from said layer to form a guide for a person hitting a golf ball out of said layer of particulate material, said apron extending outwardly from at least one of said sides a sufficient distance to catch a substantial amount of the particulate material scattered from said interior portion toward said one side as a result of a person swinging a golf club into said particulate material.

4,535,990
GOLF CLUB HEAD

Magoichi Yamada, Tokyo, Japan, assignor to Daiwa Golf Co., Ltd., Kurume, Japan

Filed Nov. 17, 1983, Ser. No. 552,757
Claims priority, application Japan, Nov. 24, 1982, 57-177367[U]; Feb. 26, 1983, 58-27875[U]
Int. Cl.[3] A63B *53/04*
U.S. Cl. 273—173 1 Claim

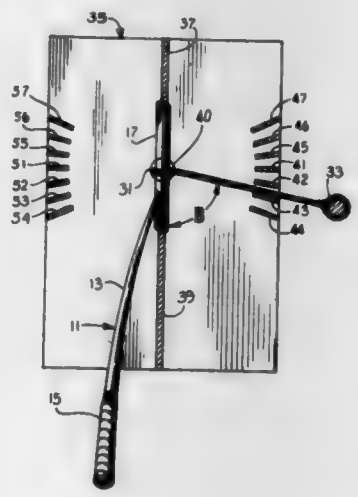


1. A golf club head formed of fiber reinforced plastic in which there is a cavity surrounded with portal shaped walls formed by a face part, a top part and a back part of the head body and provided at the rear of the impact face, characterized by arranging a tubular reinforcement material formed of plastics including reinforcement fibers and disposed, abutting at its both ends on the inner walls of the face part and of the back part, so as to span between them; and a face plate made of fiber reinforced plastics and fixed at the front of the face part wall of the head body.

4,535,991
ISOMETRIC GOLF TRAINER DEVICE AND METHOD

Edward Boatright, 1805 Lawrence, Springdale, Ark. 72764

Filed Nov. 7, 1983, Ser. No. 548,951
Int. Cl.[3] A63B *69/36*
U.S. Cl. 273—193 A 3 Claims

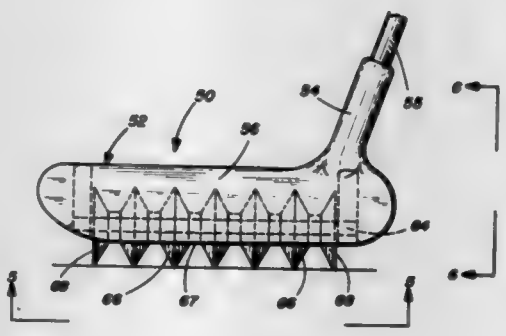


1. An isometric training device for golfers comprising
a shaft between 36 and 48 inches long having a longitudinal axis,
a handle at the top of said shaft,
an elongated head rigidly secured at the bottom end of said shaft at an angle of from 115° to 135° thereto, said head being formed of substantially rigid, inflexible material and extending from said shaft,
a substantially inextensible tie element for connecting said head to a stationary object near floor level, said tie element having an extensibility of less than 1 inch for 10 pounds force, and
means for securing said tie element to said head at selectively different fixed distances from the axis of said shaft including a first opening in the rigid material of said elongated head spaced from said shaft axis a predetermined distance and a second opening in said rigid material spaced a lesser distance from said axis than said first opening,
whereby the torque transmitted to said shaft through said elongated head may be adjusted for different isometric training procedures.

4,535,992
TRAINING DEVICE FOR PUTTING GOLF BALLS

Frederick A. Slagle, 7050 Griswold Rd., Madison, Ohio 44057

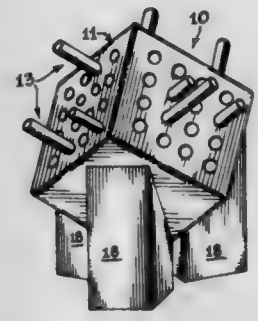
Filed Sep. 1, 1983, Ser. No. 527,951
Int. Cl.[3] A63B *69/36, 53/04*
U.S. Cl. 273—194 A 6 Claims



1. A training device of the type adapted for use for putting a golf ball, said device including a putting head and which

mounts a shaft adapted to carry a handle for putting the golf ball, said putter head including an elongated cavity which opens onto the bottom surface thereof, a reel assembly including a reel member disposed for rotational movement within said cavity, said reel member including a plurality of axially spaced disc elements having ground engaging surfaces, each of said disc elements including a substantially circular body having tapered side surfaces which extend outwardly and inwardly so as to imerge into a peripheral apex edge surface adapted for a substantially line-contact tracking action with the putting surface, said disc elements being defined also by unitary, radial spacer members which provide generally inverted, frusto-conical grooves between adjacent of said disc members, with said peripheral apex edge giving a line-contact across the putting surface to maximize the tracking ability of the putter head to insure a straight in-line back and forward putting stroke.

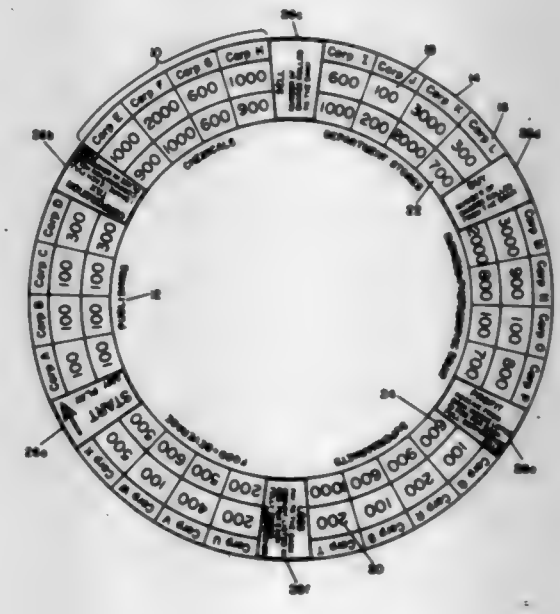
4,535,993
PUSH PEG GAME APPARATUS
John Topits, P.O. Box 1593, Coos Bay, Oreg. 97420
Filed May 31, 1984, Ser. No. 615,651
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—241 **14 Claims**

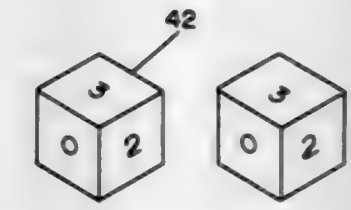


1. A push peg game apparatus comprising
a block of material formed into a geometric configuration having at least three distinct playing surfaces, wherein each of said distinct playing surfaces is provided with an equal number (n) of a plurality of apertures and each aperture defines the opening of an elongated hole formed in the block of material, wherein the elongated holes extending from the at least three distinct playing surfaces intersect one another at an angle of α; and
a plurality of elongated pegs divided into at least three distinct groups of pegs, wherein the number (m) of pegs in each group is less than the number (n) of apertures in each distinct playing surface.

4,535,994
BOARD GAME APPARATUS
William P. Cowan, 118 Chapel Hill Dr., Brentwood, N.Y. 11717
Filed Apr. 21, 1983, Ser. No. 487,101
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—256 **7 Claims**

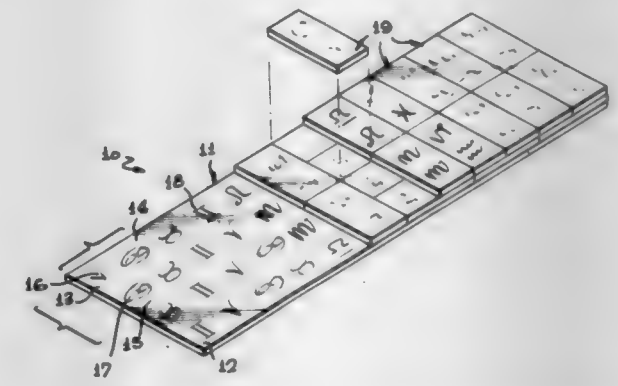
1. A business and finance game apparatus for play by two or more players comprising:
a game board on which is imprinted a track having an inner and outer circumference, radially divided into several industry segments each of which is radially subdivided into several corporation spaces each corporation space designated with the name of the corporation, and an income and price per share number for each corporation, each segment being separated by a single situation space which allows the player the opportunity to buy and sell shares at the price per share which corresponds to the price per share number on the corporation space, collect income, pay off loans and pay taxes;
a plurality of bank notes;
a set of ten corporate shares corresponding to each corporation space, bearing the same price per share number that appears on the corporate space;
two or more playing pawns employed to designate movement of the player around the board; and
means for simultaneously governing movement of said playing pawn around the board and directing the maximum





number of shares of a corporation a player may purchase upon landing on a corporation space, said means comprising a pair of dice each die bearing on each face a different single number from zero to five wherein the sum of the top exposed die faces corresponds to the maximum number of shares which can be purchased on the landing.

4,535,995
GAME APPARATUS
Gordon E. Warnick, 11837 Laurelwood Dr., Studio City, Calif. 91604
Filed Sep. 19, 1983, Ser. No. 533,242
Int. Cl.³ A63F *3/00*
U.S. Cl. 273—273 **1 Claim**



1. In a game board apparatus to be played by a single person comprising the combination of:
an elongated game board having a playing surface permanently displaying a multiplicity of playing spaces arranged in parallel rows and parallel columns;
said playing surface characterized as being borderless;
each of said playing spaces displaying given combinations of a pair of different graphic indicia;

a plurality of playing pieces, each of which displays permanent predetermined combinations of graphic indicia on one single surface only of each piece identical to said combinations of graphic indicia displayed on said game board;

said playing piece graphic indicia adapted to correspond by matching with selected ones of said playing space given combinations whereby said playing piece covers at least two of said multiplicity of playing spaces;

said plurality of playing pieces comprising multiple pairs of playing pieces wherein each pair displays the same indicia and being adapted to be disposed in multiple levels or tiers covering said playing surface;

said elongated game board establishes a longitudinal axis and a transverse axis normal thereto whereby said rows are longer than said columns;

said playing spaces arranged in at least four rows and twelve columns;

each of said playing pieces are rectangular in shape and said predetermined combination of graphic indicia constituting a pair of different graphic indicia identical to certain pairs of graphic indicia displayed on said playing spaces;

said graphic indicia is selected from combinations of astrological signs arranged in a progression; and

seclected ones of said playing pieces display said predetermined graphic indicia longitudinally along the length thereof and other playing pieces display said predetermined graphic indicia transversely across the length thereof.

4,535,996

GASKET ASSEMBLY FOR OIL PANS AND THE LIKE AND METHOD OF MAKING SAME

James C. Cardis, Chicago, and Josefino T. Inciong, Des Plaines, both of Ill., assignors to Felt Products Mfg. Co., Skokie, Ill.

Filed Jan. 18, 1985, Ser. No. 692,507
Int. Cl.³ F16J *15/12*
U.S. Cl. 277—1 **21 Claims**



1. A unitary, molded gasket assembly comprising

a pair of side sections, each having a rigid assembly comprising a rigid core member and stop members, each stop member defining a fastener aperture through which a fastener is adapted to pass, said rigid core members extending along side portions of the gasket assembly, and elastomeric envelopes enveloping each of said core members and providing side sections of a first thickness,

integral elastomeric end portions joining said envelopes,

said stop members being hard, rigid, and high-temperature resistant, and being secured in said gasket assembly, said stop members being of a second thickness less than said first thickness,

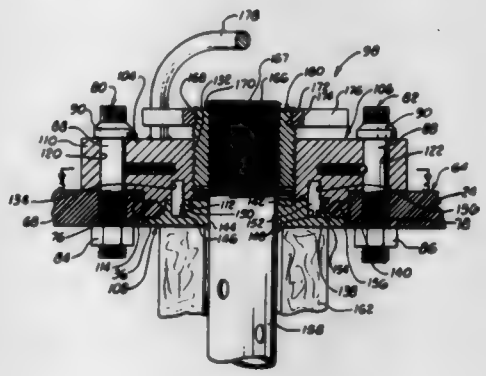
whereby when said gasket assembly is disposed to be compressed between elements to be sealed, said stop members limit compression thereof and limit displacement of said elastomeric envelopes to prevent splitting of said elastomeric envelopes.

4,535,997

SEALING SYSTEM

John E. Brust, 2600 NE. Loop 410 #3401, San Antonio, Tex. 78217

Division of Ser. No. 507,331, Jun. 24, 1983, Pat. No. 4,522,717.
This application Feb. 1, 1985, Ser. No. 697,144
Int. Cl.³ F16J *15/46*; B01D *27/00*
U.S. Cl. 277—102 **6 Claims**



1. A sealing system for effecting a seal between a sealing surface defined by the internal periphery of a circular aperture and an object disposed at least partially in said aperture, comprising:

said object comprising:

a first member having a first end and a second end, portions of the first member adjacent the second end thereof having a cicular outer periphery mating with said sealing surface, wherein a longitudinal bore threaded in a first sense is formed through the first member to intersect the first and second ends of the first member; and

a second member disposed in said aperture adjacent the second end of the first member, the second member having a first end facing the second end of the first member and abuttable therewith, the second member having a circular periphery mating with said sealing surface, and the second member having a projection externally threaded in a second sense opposite said first sense extending coaxially into the bore through the first member, wherein a shoulder is formed in the periphery in one of the first and second members at the end thereof abuttable with the other member, said shoulder extending circumferentially about portions of such member to define a groove in the periphery of the object when the first end of the second member is abutted with the second end of the first member;

a tubular coupling having external threads to mate with the threads in the bore of the first member and internal threads to mate with the threads on the projection on the second member, the coupling screwed into the bore of the first member and onto the projection on the second member;

indexing means for preventing relative rotation of the first and second members, whereby the tubular coupling can be turned in one direction to separate the members and turned in the opposite direction to draw the members into abutment; and

an elastomeric sealing ring disposed in said shoulder to extend circumferentially about the object.

4,535,998

SEALING DEVICE FOR HYDRAULIC ENERGY DISSIPATOR OF THE TELESCOPIC TYPE

Maurice Katz, Paris, France, assignor to Creusot-Loire, Paris, France

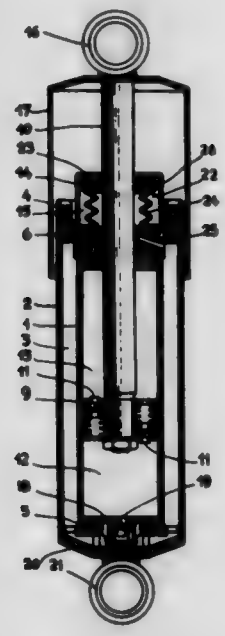
Filed Feb. 14, 1984, Ser. No. 579,938
Claims priority, application France, Feb. 18, 1983, 83 02645
Int. Cl.³ F16J *15/18*
U.S. Cl. 277—212 FB **8 Claims**

1. Sealing device for an hydraulic energy dissipator of the telescopic type, comprising

(a) a working cylinder filled with liquid and divided into two

chambers by an axially moving piston provided with calibrated valves determining the hydraulic resistance, a piston rod of said piston being guided through a first end of said cylinder;

(b) an annular compensating chamber surrounding said working cylinder and communicating through a valve and a calibrated valve with said working chamber adjacent the end of said cylinder remote from said piston rod;



(c) a fluid-tight seal for the exit of said piston arranged in a housing extending said working cylinder on the rod side, said fluid-tight seal being formed from a cylindrical ring which grips said piston rod and which is extended by a fluid-tight bellows, coaxial with said rod, enabling axial movement of said seal in said housing.

4,535,999

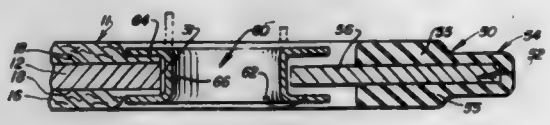
GASKET ASSEMBLY HAVING A SEALING MEMBER SUSPENDED IN A CLEAR-THROUGH OPENING AND METHOD OF MAKING SAME

Robert F. Locacius, Lake Zurich, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.

Filed Jul. 23, 1984, Ser. No. 633,449

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—235 B **18 Claims**



1. A gasket assembly adapted to be positioned between a pair of surfaces to be sealed and to be compressed therebetween, said gasket assembly comprising:

a main gasket body comprising an expansive, flat central core, said main gasket body defining a plurality of openings, including a plurality of bolt openings in said main gasket body,

a compressible sealing member positioned in at least one opening to be sealed, said sealing member comprising an insert having upper and lower surfaces and compressible material on each of said upper and lower surfaces of said

and at least two suspending members secured to said main gasket body and each member having portions spaced overlying and underlying peripheral portions of said sealing member, said suspending members each having second portions overlying and underlying said main body portion adjacent said opening to be sealed, thereby to suspend said sealing member in said opening to be sealed.

4,536,000

JAW POSITION AND/OR FORCE DETECTOR FOR POWER CHUCK

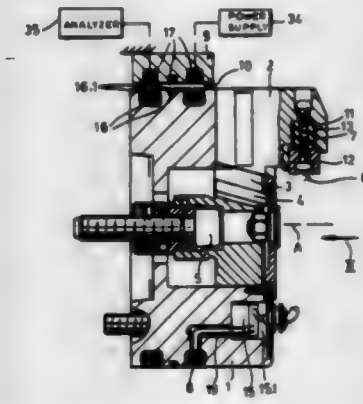
Günter H. Röhm, Heinrich-Röhm-Strasse 50, D-7927 Sontheim, Fed. Rep. of Germany

Filed Apr. 22, 1983, Ser. No. 487,698

Claims priority, application Fed. Rep. of Germany, Nov. 10, 1982, 3241556

Int. Cl.³ B23B *31/28*

U.S. Cl. 279—1 R **20 Claims**



1. In a chuck having a chuck body rotatable about an axis, a plurality of jaws radially displaceable on the body and each having a radially inwardly directed workpiece-engaging face, and an axially displaceable operator linked to the jaws to radially displace same relative to the chuck body, the improvement comprising:

respective means on the chuck body including transducers connected to the jaws for generating a signal proportional to a parameter of the respective jaw;

signal-transmitting means on the chuck for transmitting the signals from the chuck body;

stationary signal-receiving means adjacent the chuck body for receiving the transmitted signals wholly without physical contact with the signal-transmitting means;

stationary energy-transmitting means adjacent the chuck body for transmitting energy; and

respective energy-receiving means on the chuck body for receiving the transmitted energy wholly without physical contact with the energy-transmitting means and for powering the signal-transmitting means therewith, said transducer being a force transducer and is braced between the respective jaw and the operator, each jaw having a radially inner part forming the respective workpiece-engaging face and a radially outer part coupled to the operator and limitedly radially displaceable relative to the respective inner part, the transducers being engaged generally between the parts.

4,536,001

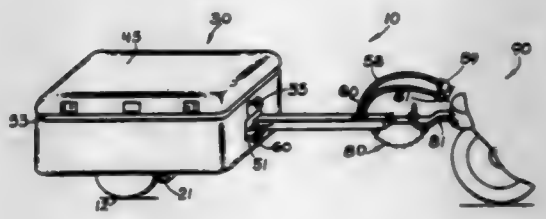
MOTORCYCLE CARGO TRAILER

Robert E. Wagner, Rte. 1, Box 34, Farmington, Wash. 99128

Filed Jan. 24, 1983, Ser. No. 460,166

Int. Cl.³ B60P *3/24*; B62K *27/00*

U.S. Cl. 280—5 C **4 Claims**



1. A motorcycle cargo trailer for use behind a motorcycle or other tandem two-wheeled vehicle comprising:

a trailer body;

left and right suspension swing arm assemblies having first

and second ends; the first end of the swing arm assemblies being pivotally mounted to the trailer;

left and right wheels rotatably mounted to the second ends of the left and right swing arm assemblies; the left and right wheels being enclosed within wheel wells which are within the trailer body;

biasing and shock absorbing means pivotally connected at one end to the left and right swing arm assemblies and at the other end pivotally connected to the trailer body; and

a fuel reservoir at the front of the trailer body; said fuel reservoir having a top plate which connects with and extends from a front wall of the trailer body to the wheel wells at each side and from a left side wall to a right side wall of the trailer body to form an integral part of the trailer body structure; said top plate connecting with the wheel wells below a top of the wheel well.

4,536,002

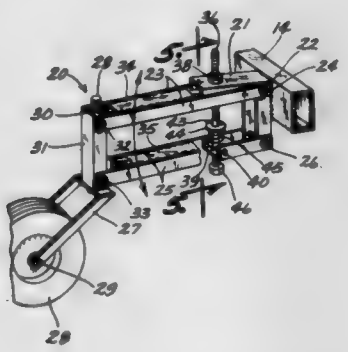
GAUGE WHEEL APPARATUS FOR A BANDING SPRAYER

Harley G. Osborn, Zearing, Iowa 50278

Filed Oct. 6, 1983, Ser. No. 539,490

Int. Cl.³ B62D *61/12*

U.S. Cl. 280—43.18 **1 Claim**



1. A shock absorbing gauge wheel apparatus for attachment to a tool bar having spraying equipment attached thereto, said apparatus comprising:

an L-shaped member rigidly attached to said tool bar;

a yoke;

a gauge wheel;

a yoke means for rotatably mounting said gauge wheel along a horizontal axis to said yoke;

journal means for pivotally mounting said yoke along a vertical axis;

an upper link member;

means for pivotally connecting said upper link member at one end thereof, along a horizontal axis, to said L-shaped member;

means for pivotally connecting the other end of said upper link member, along a horizontal axis, to said journal means;

a lower link member;

means for pivotally connecting said lower link member at one end thereof, along a horizontal axis, to said L-shaped member;

means for pivotally connecting said lower link member at the other end theroef, along a horizontal axis, to said journal means;

a rod;

adjustable means for rigidly attaching said rod to said L-shaped member, said adjustable means comprising threads on said rod and threaded means rigidly attached to said L-shaped member whereby rotation of said rod moves said rod upwardly or downwardly with respect to said L-shaped member and lock nut means on the threads of said rod for selectively preventing or allowing said rod to rotate with respect to said L-shaped member;

pivot means for pivotally attaching said rod to the lower link member; and

shock absorbing biasing means attached to said rod for biasing said link means downwardly and absorbing shock when said wheel hits a bump, said biasing means being a compression spring in abutment on one end thereof with said pivot means, said compression spring being in operative abutment on the other end thereof to a pin extending through said rod.

4,536,003

PIVOT LIMITER FOR STEERED WHEELS

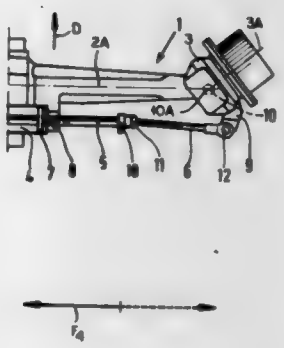
Dieter Maurer; Jürgen Rauter, both of Friedrichshafen, and Peter Dziuba, Überlingen, all of Fed. Rep. of Germany, assignors to Zahnradfabrik Friedrichshafen AG, Friedrichshafen, Fed. Rep. of Germany

Filed Feb. 17, 1983, Ser. No. 467,251

Claims priority, application Fed. Rep. of Germany, Feb. 19, 1982, 3205979

Int. Cl.³ B62D *5/06, 7/06, 7/20*

U.S. Cl. 280—95 R **14 Claims**



1. A steered axle assembly comprising:

a relatively fixed axle member;

a pair of wheel supports pivotal on the axle member about respective upright wheel pivot axes spaced horizontally apart on the member transverse to a predetermined horizontal travel direction;

an at least limitedly articulated track rod extending horizontally transverse to the travel direction between the wheel supports and having outer ends pivoted on the respective wheel supports about respective upright track axes spaced in the travel direction from the respective pivot axes;

actuator means fixed to the axle member and connected to the track rod between the track axes for relatively displacing the rod and axle member horizontally transverse to the travel direction and thereby generally identically pivoting the wheel supports on the axle member about the respective wheel pivot axes;

a rod abutment formation fixed on the track rod;

a member abutment formation fixed on the axle member and confronting the rod abutment formation horizontally transverse to the travel direction; and

means including a spacer releasably fixed to one of the formations and engageable horizontally perpendicular to the travel direction with the other formation for limiting pivoting of the wheel supports in one direction relative to the member beyond an end position with the spacer engaging the other formation.

4,536,004

MOVABLE FOOT-STEP FOR A VEHICLE

Thore Brynielsson, Borgholm; Tom Tomasson, Löttorp; Leif Ahlberg, and Magnus Johansson, both of Gothenburg, all of Sweden, assignors to Ab Thoreb, Borgholm, Sweden

Filed Jul. 19, 1982, Ser. No. 400,116

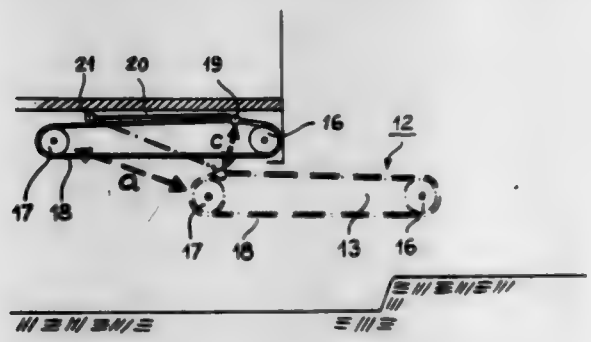
Claims priority, application Sweden, Aug. 3, 1981, 8104651

Int. Cl.³ B60R *3/02*

U.S. Cl. 280—166 **11 Claims**

1. A movable foot-step for a vehicle, operable by a mechanism including a guide device below the floor of the vehicle for extension of the step outside one side of the vehicle in an outwardly/downwardly movement, and retraction in an oppo-

site inwardly/upwardly movement, comprising: a support structure over which an endless mat is stretched with an upper part extending substantially horizontally; and means for limit-



ing the freedom of movement of one portion of the mat to facilitate upward movement of said portion, while substantially retaining said portion against movement in one direction of movement of the foot-step.

4,536,005

FRONT LEG SHIELD FOR A MOTOR SCOOTER

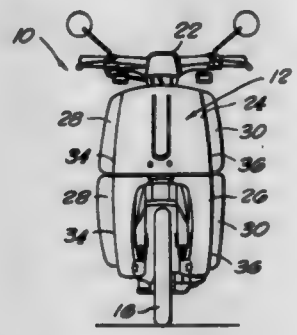
Norio Tanaka, Tokyo; Takeo Miura, Saitama, and Jiro Miyata, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 7, 1983, Ser. No. 473,136

Claims priority, application Japan, Mar. 19, 1982, 57-44088

Int. Cl.³ B62J *17/06*

U.S. Cl. 280—289 S **9 Claims**



1. A front leg shield for a motor scooter, comprising

a front panel symmetrically positionable on the front of a motor scooter;

a first extension panel;

a second extension panel;

a first attachment mechanism fixed to said front panel at a first side edge thereof and to said first extension panel at an edge thereof;

a second attachment mechanism fixed to said front panel at a second side edge thereof and to a second extension panel at an edge thereof, each said attachment mechanism including a first and second hinge, each said hinge having a hinge member fixed to one of said front panel and said extension panel and a hinge pin fixed to the other of said front panel and said extension panel, said hinge pin being oblong in cross section having a major cross-sectional dimension and a minor cross-sectional dimension, said hinge member having an oblong hole for resilient receipt of said hinge pin, the long axis of said hinge pin of said first hinge being perpendicular to the major dimension of said hinge pin of said second hinge.

4,536,006

SAFETY BINDING OF A BOOT ON A SKI

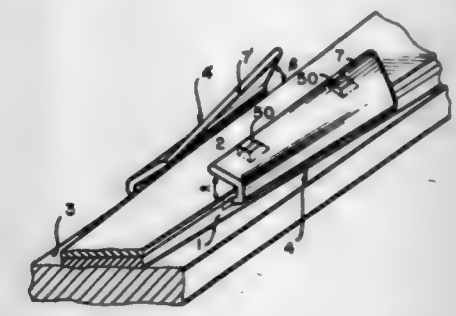
Gaston Haldemann, Fürigen, and Francois Wirz, Savièse, both of Switzerland, assignors to Haldemann A.G., Stans, Switzerland

Filed Jan. 18, 1983, Ser. No. 458,909

Claims priority, application Switzerland, Jan. 27, 1982, 495/82; Jul. 30, 1982, 4618/82

Int. Cl.³ A63C *9/085, 9/086*

U.S. Cl. 280—613 **26 Claims**



1. Safety binding for a boot on a ski comprising two lateral clamps movably mounted under the influence of a resilient member parallel to the plane of the ski between a closed position in which these clamps coact with the sole of the boot and an open position, characterized by the fact that the clamps are carried by arms pivotally mounted on the ski, said clamps having when seen from above a forwardly converging shape opening rearwardly, and by the fact that the portion of each clamp adapted to coact in closed position with the sole of the boot comprises a ramp forming with the plane of the ski an acute angle that increases from front to rear.

4,536,007

VEHICLE REAR SUSPENSION MECHANISM

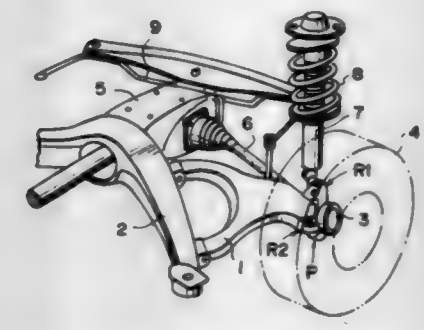
Takao Kijima; Jiro Maebayashi, and Fumitaka Ando, all of Hiroshima, Japan, assignors to Mazda Motor Corporation, Hiroshima, Japan

Filed Apr. 27, 1983, Ser. No. 489,132

Claims priority, application Japan, Apr. 28, 1982, 57-71938; Apr. 28, 1982, 57-71939; Apr. 29, 1982, 57-72159

Int. Cl.³ B60G *3/26, 7/00*

U.S. Cl. 280—701 **10 Claims**



1. A vehicle rear suspension mechanism comprising a suspension member connected with a vehicle body, wheel hub means supporting a rear wheel having a wheel center plane for rotation about a rotating axis, connecting means for connecting said wheel hub means with said suspension member, said connecting means including ball joint means having a pivot center located rearwardly of and below the rotating axis of the rear wheel and connecting said wheel hub to said suspension member pivotably about the pivot center, first resilient means located between said wheel hub means and said suspension member rearwardly of and above the rotating axis of the rear wheel, second resilient means located between said wheel hub means and said suspension member forwardly of and above the rotating axis of the rear wheel.

4,536,008

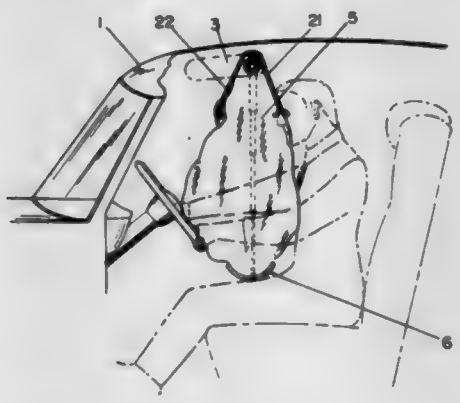
VEHICLE SAFETY RESTRAINT DEVICE

Milton F. Brown, Jr., 1105 Hartwood Ave., Virginia Beach, Va. 23454

Continuation of Ser. No. 383,001, May 28, 1982, abandoned, which is a continuation of Ser. No. 228,584, Jan. 26, 1981, abandoned, which is a continuation of Ser. No. 921,085, Jun. 30, 1978, abandoned. This application Feb. 6, 1984, Ser. No. 576,791

Int. Cl.[3] B60R *21/08*

U.S. Cl. 280—730 7 Claims



1. A confining means adapted in use for confining the upward and forward movements of an occupant of a vehicle, a housing means mounted to the interior overhead of a vehicle for containing said confining means, an actuating means adapted to release said confining means from said housing means, said confining means including at least one airbag and at least one torso and pelvic engaging safety restraint, said housing means including top and bottom covers which open upon application of an extending or expanding force or both, said housing being mounted on a rotatable means, said rotatable means being hollow and connected to said airbag and torso engaging restraint, said actuating means rotating the confinement means when actuating same and causes the release of same from said housing means to deploy the airbag and torso and pelvic restraint adjacent the occupant.

4,536,009

VEHICLE STABILIZING SYSTEM

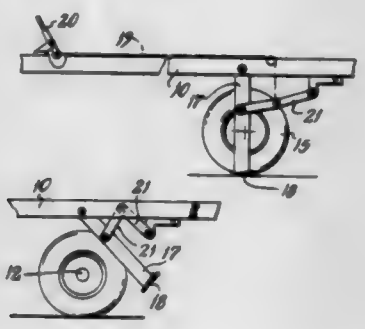
Denis H. Ashworth, Wombourne, England, assignor to Simon Engineering Dudley Limited, Dudley, England

Filed May 24, 1983, Ser. No. 497,706

Claims priority, application United Kingdom, May 28, 1982, 8215679; Oct. 29, 1982, 8230980

Int. Cl.[3] B60S *9/04, 9/10*

U.S. Cl. 280—755 11 Claims



1. A stabilizing system on a vehicle carrying a load-supporting platform, to prevent the platform from tilting when the load is moved relative to the vehicle, the system comprising at least one leg having one end pivotally attached to the platform at a side thereof generally above one of the vehicle wheels and the other end free to be lowered from an inoperative or travelling position in which said free end is raised above the ground, towards an operative position in which the leg depends substantially vertically between the platform and the ground outside said one of the vehicle wheels, said leg being pivotally attached to the platform on one side of the vertical plane which contains the rotational axis of said one of the vehicle wheels while the inoperative or travelling position of said leg is on the other side of said vertical plane, said leg being movable across said vertical plane containing said axis, the leg including at said free end a foot plate which extends inwardly such that when the leg is lowered towards said operative position, the foot plate is located closely adjacent the tire of said one of the vehicle wheels and closely adjacent the ground, and upon driving the vehicle in the appropriate direction said tire automatically rides up onto said foot plate to engage the leg in its operative position in which said one of the vehicle wheels rests directly upon said foot plate to be supported thereby.

4,536,010

AUTOMATIC SEATBELT SYSTEM

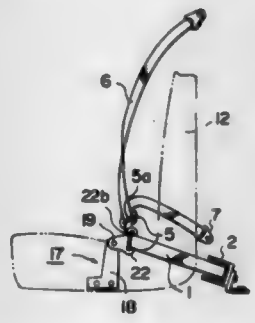
Muneharu Matsunami, Seto; Hiroshi Tsuge, Chiryu; Tatsushi Kubota, Okazaki, and Hisashi Ogawa, Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho, both of Tokyo, Japan

Continuation of Ser. No. 357,910, Mar. 15, 1982, abandoned. This application May 17, 1984, Ser. No. 610,939

Claims priority, application Japan, Mar. 30, 1981, 56-45045[U]

Int. Cl.[3] B60R *21/10*

U.S. Cl. 280—802 6 Claims



1. An automatic seatbelt system for use in a motor vehicle, comprising:

a webbing, one end of which is secured to an upper rear end of a vehicle door and the other end of which is secured to a central portion of a vehicle floor, whereby said webbing is automatically fastened over and unfastened from an occupant on a vehicle seat in accordance with closing and opening of said door, respectively;

a guide lever for guiding said webbing at the inner side of said seat, said guide lever comprising:

a main body mounted on the inner side of said seat and having a first stopper means;

a webbing guide portion with an opening thorugh which said webbing is passed, said webbing guide portion being rotatably supported on said main body through a laterally extending axis, said webbing guide portion having a second stopper means for restricting a rotational angle of said webbing guide portion within a predetermined angle in cooperation with said first stopper means;

a spring having one end portion mounted on one of said main body and said webbing guide portion and an opposite end portion urged against the other of said main body portion and said webbing guide portion, said spring biasing said webbing guide portion to urge said second stopper means in a direction toward engagement with said first stopper means; and

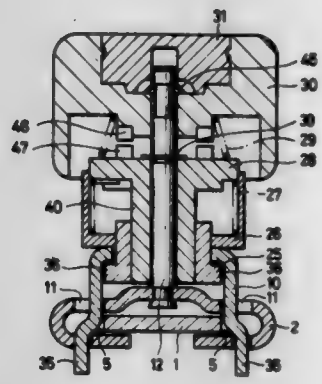
a roller rotatably mounted on said webbing guide portion, an outer periphery of said roller defining said opening through which said webbing is passed.

4,536,011
POSITION ADJUSTER FOR SEAT BELT

Katsuyasu Ono, Fujisawa, Japan, assignor to NSK-Warner K. K., Japan

Filed Feb. 6, 1984, Ser. No. 577,280
Claims priority, application Japan, Feb. 14, 1983, 58-18985[U]; Feb. 23, 1983, 58-24254[U]
Int. Cl.³ B60R *21/10*
U.S. Cl. 280—808 7 Claims





1. A device for adjusting the support position of a seat belt in a seat belt system comprising:

a base;

an adjustable anchor to be guided along said base;

a belt-supporting member provided on said anchor;

a latch member mounted on said anchor for movement between an engagement position in which said latch member is engageable with said base to fix said adjustable anchor to said base and a non-engagement position in which said latch member is out of engagexent with said base so as to render said adjustable anchor movable along said base;

an operation member, said operation member bringing said latch member from said engagement position to said non-engagement position through a two-step operation in two different directions of said operation member; and

operation transmission means for transmitting to said latch member the second step motion of the two-step operation when said operation member is operated by the two-step operation so as to bring said latch member from the engagement position to the non-engagement position.

4,536,012
BOOK BINDING PROCESS

Robert M. Hume, III, Cottage Grove, Minn., assignor to H. B. Fuller Company, St. Paul, Minn.

Filed May 15, 1984, Ser. No. 610,350
Int. Cl.³ B42D *1/00*; B05D *5/10*
U.S. Cl. 281—21 R 14 Claims

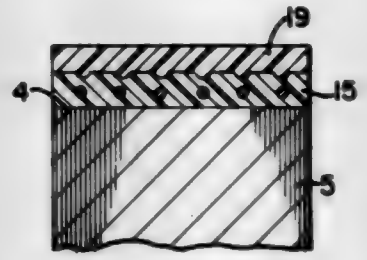
1. A continuous book binding process comprising:

forming a book block having a spine area;

coating the spine area with a primer composition comprising an adhesive latex and an amount of ungelatinized granular starch effective to complex a major portion of the latex water so that the water is evaporated in a diffuse controlled manner during the subsequent drying step;

thermally drying said coating to evaporate a substantial amount of said water and to form a flexible primer film having a uniformly irregular surface;

applying a layer of a liquid hot-melt covering adhesive to said flexible film at a temperature of about 150°-200° C., wherein the residual water released from said primer film by said applying does not disturb the integrity of said covering adhesive layer; and



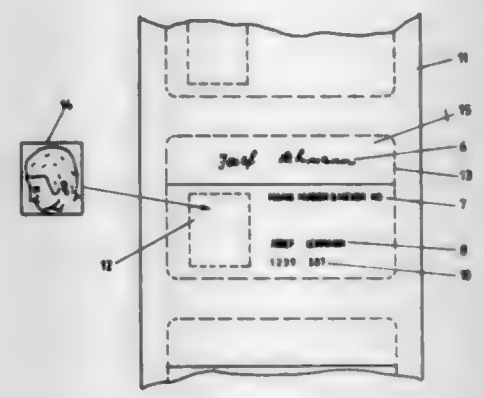
cooling said covering adhesive layer to a tacky, coherent film.

14. A book comprising a spine area coated by the binding process of claim 1.

4,536,013
MULTILAYERED INDENTIFICATION CARD

Yaya Haghiri-Therani, and Wolfgang Gauch, both of Munich, Fed. Rep. of Germany, assignors to GAO Gesellschaft fur Automation und Organisation, Munich, Fed. Rep. of Germany

Continuation of Ser. No. 177,043, Aug. 11, 1980, abandoned.
This application Mar. 11, 1983, Ser. No. 474,418
Claims priority, application Fed. Rep. of Germany, Aug. 17, 1979, 2933436
Int. Cl.³ B42D *15/00*; G09C *3/00*
U.S. Cl. 283—77 3 Claims



1. A multilayered identification card for use by an authorized user comprising a security paper having one or more security features incorporated therein; said security paper also having printed thereon a high quality printed security pattern, said security features and said security pattern affording protection against unauthorized reproduction of said security paper; first data relating broadly to the class of users of said identification card disposed on said identification card; second data specific to the authorized user of said identification card for assuring user identification incorporated in said identification card; at least said second data comprising an electrophotographically reproduced toner picture directly applied to a surface of said security paper so that the security pattern is located between the security paper and the toner picture in overlapping relation, and at least one transparent cover film secured to the security paper surface having said picture thereon.

4,536,014
INDENTIFICATION OF ARTICLES USING LIQUID CRYSTAL IDENTITY CARDS

Lucy A. Boutaleb; Aboubekr Boutaleb, and Tibor T. Kerekess, all of London, England, assignors to Securicard Systems Limited, Edinburgh, Scotland

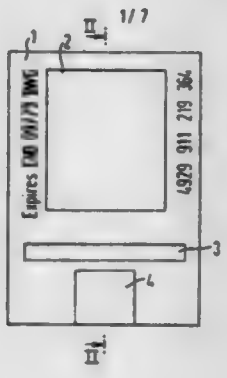
PCT No. PCT/GB82/00001, § 371 Date Aug. 24, 1982, § 102(e) Date Aug. 24, 1982, PCT Pub. No. WO82/02445, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 4, 1982, Ser. No. 414,535

Claims priority, application United Kingdom, Jan. 8, 1981, 8100492

Int. Cl.[3] G02F *1/133;* G03B *21/00;* G06K *9/74;* C09K *3/34*

U.S. Cl. 283—83 6 Claims



1. An identity system comprising a plurality of flat laminated identity cards and a viewer therefor, each said identity card comprising an element bearing markings and a mask permanently overlying said markings and opaque so as to block said markings from view, the mask being of a material which, upon the application of a suitable electric field, changes from the opaque state to an energized state whereby the said markings can be viewed, and said viewer comprising a spaced pair of plate electrodes, means for supporting any of said identity cards between said electrodes, and means for applying an electrical field to the electrodes to energize the mask of said card to change from its opaque to its energized state, one at least of said electrodes being in the energized state whereby the revealed markings in the identity card can be viewed through said electrode.

4,536,015
FORGERY-PROOF INFORMATION CARRIER

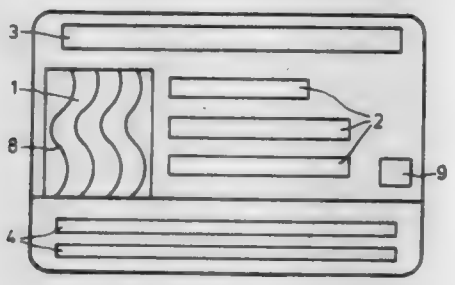
Fritz Kirstein, Cologne, Fed. Rep. of Germany, assignor to Agfa-Gevaert Aktiengesellschaft, Leverkusen-Bayerwerk, Fed. Rep. of Germany

Filed Mar. 3, 1983, Ser. No. 471,882

Claims priority, application Fed. Rep. of Germany, Mar. 13, 1982, 3209277

Int. Cl.[3] B42D *15/00;* B05D *3/00*

U.S. Cl. 283—91 6 Claims



1. An information carrier comprising an information-carrying sheet-like insert

security features imprinted in ink on at least one surface of said insert, said ink having a visible spectral range and including ink which may become visible with an aid,

a pair of films each covering one of the respective plane surfaces of the insert and firmly joined thereto

and at least one of said covering films having an externally applied imprint

impressed on the outer surface of the film in identical shape correspondence to security features for overlying the security feature with an imprint exactly positioned over the security feature.

4,536,016
BANKNOTES AND THE LIKE

David H. Solomon, 31 Brazilia Dr., Glen Waverley, Victoria 3150; John B. Ross, 6 Wandeen Rd., Glen Iris, Victoria 3146; Mario Girolamo, 50 Alpha Rd., North Balwyn, Victoria 3104, and Robert A. Brett, 32 McLaren St., Mount Waverley, Victoria 3149, all of Australia

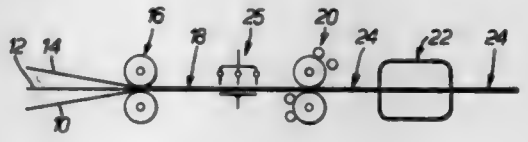
PCT No. PCT/AU82/00135, § 371 Date Apr. 25, 1983, § 102(e) Date Apr. 25, 1983, PCT Pub. No. WO83/00659, PCT Pub. Date Mar. 3, 1983

PCT Filed Aug. 24, 1982, Ser. No. 499,753

Claims priority, application Australia, Aug. 24, 1981, PF0383

Int. Cl.[3] B42D *15/00;* B42F *13/00, 5/00;* B65D *19/04*

U.S. Cl. 283—111 12 Claims



1. A token comprising a flexible film substrate bearing identifying indicia and including an optically variable security device, characterised in that the substrate comprises a transparent bi-axially-oriented polymeric film composite having a heat-activated adhesive coating and an opacifying coating on at least one side, said substrate, indicia and the security device being covered with a transparent protective layer of polymeric material intimately heat-bonded to the substrate.

4,536,017
CONNECTING DEVICES FOR USE WITH PNEUMATIC OR HYDRAULIC HOSES

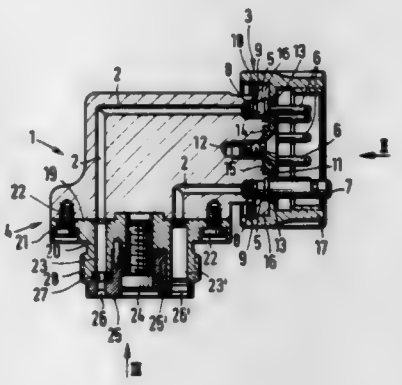
Walter Weirich, Dortmund, and Bernd Peters, Dülmen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Fed. Rep. of Germany

Filed Apr. 29, 1983, Ser. No. 489,862

Claims priority, application Fed. Rep. of Germany, May 4, 1982, 3216553

Int. Cl.[3] F16L *35/00*

U.S. Cl. 285—26 12 Claims



1. For use in multi-line hoses employed in mineral mining installation; the combination of a connecting device and an associated fitting provided with a plate supporting plug-pins; said connecting device comprising a block with internal bores leading to outlets on outer faces of the block which extend in different directions, the outlets on each said face being disposed as a group on a common pitch circle on the face, one group of outlets forming sockets for directly receiving the

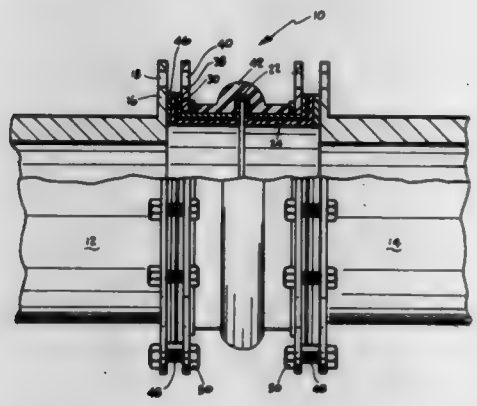
plug-pins of said associated fitting when said fitting is connected to said block, said one group of outlets having the same cross section to receive end regions of the plug-pins which all have the same cross section; wherein one of said plug-pins serves as an alignment element, is locatable in any one of said one group of outlets and is larger than the other plug-pins, other than the end region thereof.

4,536,018

RUBBER-BACKED EXPANSION JOINT

Adam J. Patarcity, Levittown, Pa., assignor to Kennecott Corporation, Cleveland, Ohio

Filed Sep. 30, 1982, Ser. No. 428,541
Int. Cl.³ F16L *27/10*
U.S. Cl. 285—229 **15 Claims**



1. An expansion joint for connecting pipe ends, comprising:
(a) a flexible tube having radially extending flanges at each end, the flanges having a front face and a rear face, each front face in use adapted to be in sealing relationship with a pipe end;
(b) a tubular stub end disposed about the tube at each end of the tube, each stub end having a radially extending flange at one end, the flange having a front face and a rear face, the front face of each stub end flange being in contact with the rear face of a tube flange; and
(c) a back-up ring disposed about the tube at each end of the tube, each back-up ring being in abutting relationship with the rear face of a stub end flange, each back-up ring having fastening means for connecting the back-up ring to a pipe end, at least one of the fastening means having a radial extent greater than the stub end flange with which the back-up ring is in contact.

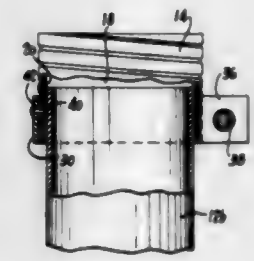
4,536,019

FLUID CONDUIT SYSTEM

Cosimo Quaranta, Turin, Italy, assignor to Tubiflex, S.p.a., Turin, Italy

Filed Jan. 12, 1983, Ser. No. 457,405
Claims priority, application Italy, Jan. 13, 1982, 52817/82[U]
Int. Cl.³ F16L *21/06*
U.S. Cl. 285—322 **9 Claims**

1. A fluid conduit system comprising:
(a) a rigid duct portion having a cylindrical outer surface;
(b) a flexible metal hose constructed from interlocking helical convolutions defining a helicoidal interior throat formed in part by a helical recess, said hose comprising:
(i) an end region telescoped over said duct portion with said interior throat confronting and contacting said duct portion surface so that said helical recess confronts said duct portion;
(ii) a plurality of generally axially extending slots formed in said hose end region and axially aligned with said duct portion;
(c) clamp means disposed about said hose end region and said duct portion, said clamp means comprising a member for urging said hose into engagement with said duct portion; and,
(d) seal means disposed in said recess, said seal means comprising a rivet extending through the hose wall and having a deformed end structure disposed in and conforming to the helical recess, said end structure urged into sealing



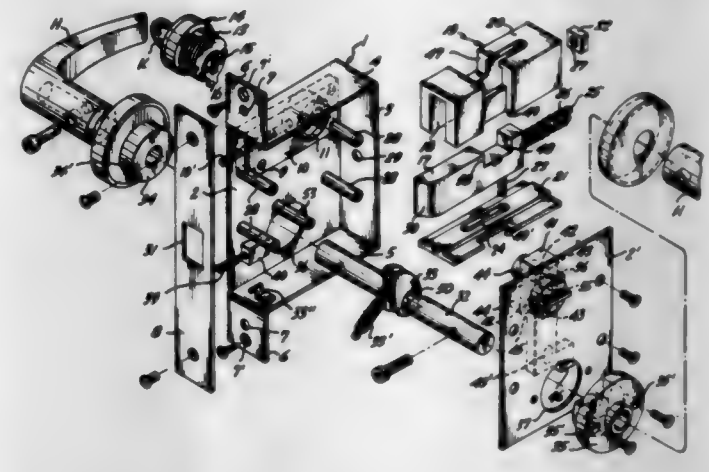
engagement with said duct portion by said clamp means for blocking passage of fluid between said hose and duct portion through said helical recess.

4,536,020

MARINE DOOR LOCKSET

Daniel C. Thomson, 5396 South Langley Rd., Langley, Wash. 98260

Filed Feb. 26, 1982, Ser. No. 352,926
Int. Cl.³ E05C *1/16*
U.S. Cl. 292—173 **13 Claims**



1. In lock mechanism for a closure member having a mortise in an edge thereof and swingably mountable in a frame member, said lock mechanism including a casing fitable in the closure member mortise, a latch bolt having a head end and a tail end and reciprocable in the casing between a latched position in which the head end portion of the bolt projects from the edge of the closure member to block opening movement of the closure member relative to the frame member and an unlatched position in which the head end of the bolt is retracted toward the edge of the closure member for enabling opening movement thereof, such latch bolt having a shoulder inside the casing and facing the tail end of such bolt, and a spindle and means operatively connecting the spindle and the latch bolt for effecting reciprocation of the latch bolt by turning of the spindle, the improvement comprising the combination of lock means movable, when the latch bolt is in its latched position, between a locking position in which a portion of said lock

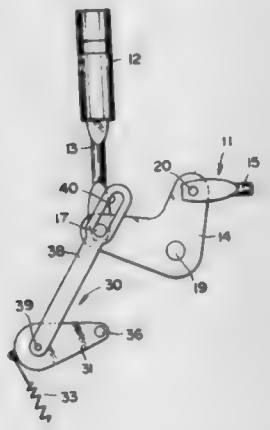
means is disposed closely behind the bolt shoulder for blocking retraction of the bolt and an unlocked position in which said lock means portion is offset from the path of movement of said bolt shoulder for enabling retraction of the bolt, and means for mounting said lock means inside the casing for movement generally linearly, transversely of the path of reciprocation of the latch bolt shoulder, between said locking and unlocked positions of said lock means, the spindle having means engageable with a portion of the lock means, when a portion of the lock means is disposed closely behind the bolt shoulder, for limiting turning of the spindle.

4,536,021

EMERGENCY UNLOCKING MECHANISM FOR DOOR OF AUTOMOBILE

Haruo Mochida, Yokohama, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Jun. 29, 1982, Ser. No. 393,327
Claims priority, application Japan, Jul. 8, 1981, 56-107434
Int. Cl.³ E05C 3/26
U.S. Cl. 292—201 **5 Claims**



1. A locking system for an automobile door comprising:

a locking unit for locking and unlocking the door, said lock unit having a locking position in which the door is locked and an unlocking position in which the door is not locked,

input means,

linkage means, connected between said input means and said lock unit, for transmitting movement from said input means to said lock unit and thereby making it possible to cause said lock unit to move from its locking position to its unlocking position or vice versa by moving said input means, said linkage means having a lock directing position in which said lock unit is in said locking position and an unlock directing position in which said locking unit is in said unlocking position, said linkage means comprising a movable member having a receiving portion, and

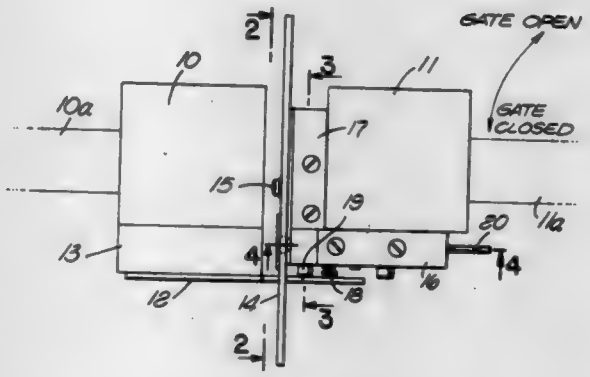
inertia actuating means comprising pushing means having a weight portion swingable in a vertical plane about a fulcrum from a normal position into a first actuating position and an actuating portion which moves together with said weight portion, lies adjacent to said receiving portion of said linkage means when said linkage means is in said lock directing position and said weight portion is in said normal position, and pushes said receiving portion to move said lock unit from its locking position to its unlocking position by moving said linkage means from said lock directing position to said unlock directing position when said weight portion swings from said normal position to said first actuating position, said inertia actuating means further comprising holding means which comprises a spring for normally holding said weight portion in said normal position irrespective of whether said linkage means is in said lock directing position or in said unlock directing position, and allowing said weight portion to swing from said normal position to said first actuating position by reason of its inertia when vehicle deceleration at a rate higher than a predetermined level takes place, said linkage means being capable of moving between said lock and unlock directing positions without causing said inertia actuating means to move as long as said weight portion is held in said normal position, said pushing means comprising an inertia lever which has a lower end having said weight portion and an upper end having said fulcrum and is capable of swinging in said vertical plane on said fulcrum from said normal position to said first actuating position, said inertia lever being capable of swinging into a second actuating position opposite to said first actuating position by reason of its inertia when a vehicle acceleration of a rate higher than a predetermined level takes place, said inertia actuating means causing said linkage means to move from its lock directing position to its unlock directing position when said inertia lever swings from its normal position to its second actuating position.

4,536,022

PARTIALLY SECURE LATCH AND LOCK DEVICE

Joseph F. Giordano, 8028 Oleander, Fontana, Calif. 92335

Filed Jun. 27, 1983, Ser. No. 508,009
Int. Cl.³ E05C 3/14
U.S. Cl. 292—228 **4 Claims**



1. A latching device for a hinged swinging gate serving an opening between first and second substantially vertical, spaced, structural members, said gate being hinged to said first structural member, and said latching device being operative between said gate and said second structural member, comprising:

first means including a strike plate mounted on said second structural member, said strike plate having an upward edge;

second means including a latch bar associated with the structure of said gate, said latch bar being pivoted about a point of the structure of said gate and having a downward opening slot, said latch bar further including a shape causing it to rotate about said pivot point and ride upward over said strike plate and thereafter engaging said upward edge of said strike place in said slot as said gate is closed;

third means including a hole in said latch bar and a latching pin for immobilizing said latch bar when said pin projects into said hole;

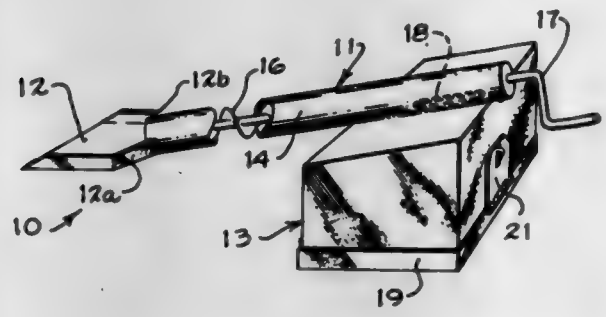
and fourth means for inhibiting the projection of said pin, whereby said latch bar is free to rotate about said pivot point and to engage said strike plate as said gate is closed;

and fifth means including a spring arranged to project said pin into said hole, said fifth means including sixth means responsive to closure of said gate to release said fourth means thereby causing said spring to project said latching pin into said hole.

4,536,023
FIREPLACE SHOVEL ASSEMBLY FOR REMOVING AND TRANSPORTING ASHES

Robert E. Sutter, 1640 Edgewood Dr., Lodi, Calif. 95240

Filed Aug. 1, 1983, Ser. No. 519,126
Int. Cl.[3] A47F *13/08*
U.S. Cl. 294—9 5 Claims

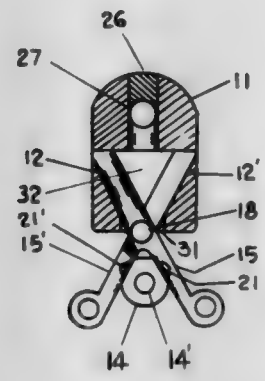


1. A portable fireplace shovel assembly to be manipulated by hand as a unit for manually scooping and transporting ashes from a residential fireplace comprising an elongate, hollow, cylindrical body open at both ends thereof, a scoop carried by one end of said body, said scoop having rearwardly converging side walls merging with said body at said one end for directing scooped material into said one end, a readily dischargeable container carried by the other end of said body to be manually transported with said body and scoop, means forming a passageway leading from said body into said container, and a screw auger conveyor disposed to rotate within said body to carry scooped material therealong from said one end to said passageway to pass into said container, and means carried at said other end of said body for rotating said auger to transport said scooped material from said one end to said container.

4,536,024
TECHNIQUES FOR SAFELY UNLOADING CARGO

Edwin Z. Gabriel, 318-B South St., Eatontown, N.J. 07724

Filed Jun. 23, 1980, Ser. No. 162,387
Int. Cl.[3] B64D *1/04*
U.S. Cl. 294—82.24 16 Claims



1. A structural device for quickly releasing and unloading suspended cargo, comprising an independent upper part A, an independent lower part B and a magnetic member C, and with hoist cables attached to parts A and B:

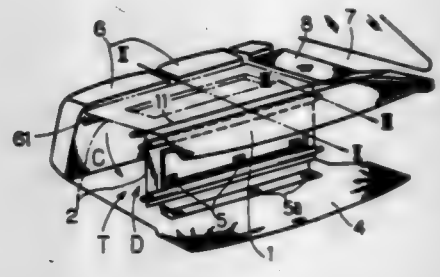
wherein said upper part A, being a block with a frustum of a right circular cone-shaped cavity at one end and having a hole through said block at the end opposite to said cavity, said cavity having its narrow portion below its wider portion, said hole for hoist cable attachment and said cavity for part B attachment;

wherein said lower part B comprising a scissorlike device having a hole in each of two handles at said handle's lower ends and having a pair of dulled blades at its upper portion and pivoted with a single pivot pin at said part's midsection and criss-crossed; with said handles and said blades held apart by a properly shaped permanent magnet with rounded side edges, said member C, inserted between the interior surfaces of said handles to prevent the closing together of said blades and the consequent separation of part A from part B under suspended load conditions; said holed handles being for hoist cable attachment to said cargo, and said blades for insertion into said cavity of part A.

4,536,025
PACKAGE TRAY TRIM DEVICE FOR VEHICLES

Takesi Yamawaki, deceased, late of Okazaki, Japan (by Hiroko Yamawaki, representative); Masakazu Kusuhara, and Tatuya Saitou, both of Toyota, Japan, assignors to Toyota Jidosha Kabushiki Kaisha, Japan

Filed Aug. 5, 1983, Ser. No. 520,593
Claims priority, application Japan, Oct. 4, 1982, 57-151171[U]
Int. Cl.[3] B60R *5/04*
U.S. Cl. 296—37.16 8 Claims



1. A package tray trim device for a vehicle for the concealment of baggage stowed in a space behind a rear seat, comprising:

a deck behind said rear seat of a vehicle;

a deck carpet covering said deck for cushioning said baggage thereon;

a package tray trim cover for concealing said baggage from outside viewing and defining a space between said rear seat and said deck, including:

a foldable first plate which is located just behind the rear seat of the vehicle,

a stationary second plate which is attached at its lateral ends to a vehicle body, and is located rearwardly behind the rear seat,

a hinge member connecting said first plate and said second plate for permitting said first plate to be downwardly folded at the hinge member,

said first plate comprising:

a main part having first fixing means secured on its back side, said back side facing said deck when said first plate is not folded; and

a return extension having second fixing means on an outward face thereof, said outward face being disposed opposite a inward face of said extension, said inward face of said extension facing said back side of said main part when said first plate is not folded,

whereby said first fixing means engages with the inward face of said extension to conceal baggage from outside viewing when said first plate is not folded, and said second fixing means engages with said deck carpet to hold said first plate in place when said first plate is folded downwardly.

4,536,026
FOLDING CHAIR

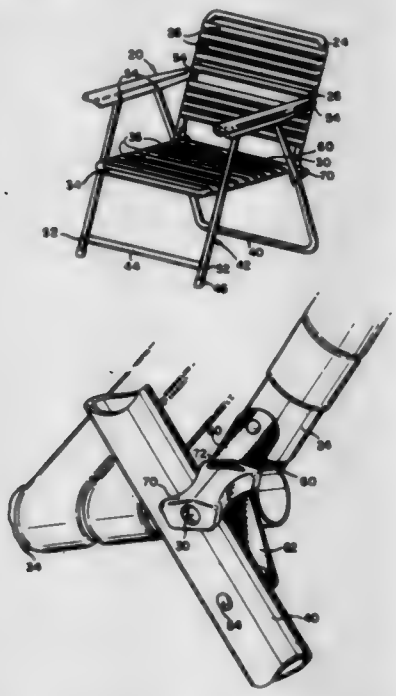
Howell N. Cornell, Miami, Fla., assignor to Keller Industries, Inc., Miami, Fla.

Filed Aug. 12, 1983, Ser. No. 522,503
Int. Cl.[3] A47C *4/00*
U.S. Cl. 297—39 9 Claims

1. A foldable chair, comprising:

a back frame and a seat frame, hingeably attached to a spreader rod, the spreader rod having ends protruding past the back frame and the seat frame;

a front leg member and a rear leg member, carrying the back frame and the seat frame, the spreader rod also extending past at least one of the front leg member and the rear leg member, the spreader rod bearing transversely against said one of the front and rear leg members when the chair is unfolded; and,



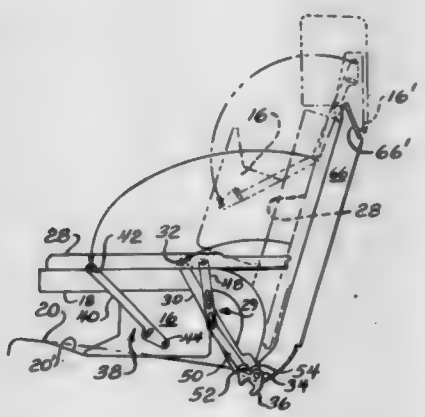
a contact pad mounted on each protruding end of the spreader rod and axially-fixed to the spreader rod, the contact pad being an externally contoured bushing, axially bored to fit over the spreader rod and having an external face shaped to engage said one of the leg members, the contact pad fixing the spreader rod against axial movement thereof over said at least one of the leg members, whereby the chair is secure when unfolded and said at least one of the leg members is protected from wear due to contact with the spreader rod.

4,536,027

CONVERTIBLE SEATING UNIT

Edward J. Brennan, Litchfield, Conn., assignor to PTC Aerospace Inc., Bantam, Conn.

Filed Apr. 30, 1984, Ser. No. 605,453
Int. Cl.³ A47B *85/04*
U.S. Cl. 297—124 **8 Claims**



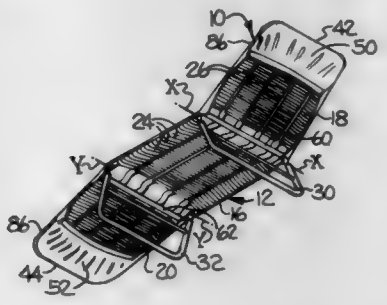
1. In a multipassenger seating unit having a plurality of seating positions, at least one of which has a backrest which is pivotally mounted for reclining movement relative to the base frame of the unit and includes portions which are selectively convertible from being useable for seating to being useable as a seat separator and cocktail table to enhance the comfort of an occupant of an immediately adjacent seating position, the improvement comprising a primary back frame member pivotally mounted at its lower end for reclining movement relative to the base frame of the seat, a secondary frame assembly pivotally mounted to a multiple link support assembly which is pivoted at or near its lower end to said primary back frame member and to said base frame on the same pivot axis as said back frame primary member, said secondary frame assembly having a back support cushion located on the side thereof which faces forward when said at least one seating position is in a seating mode and a cocktail table located on the opposite side thereof which is horizontal when said at least one seating position is in use as a seat separator, a headrest assembly pivotally mounted to said secondary frame assembly by an elongated link and means for selectively latching said headrest assembly to said elongated link, said headrest assembly being adapted when unlatched, to be pivoted downwardly approximately 180° from a use position when said back support cushion is in its seating use position to a storage position in contact with a surface portion of said back support cushion, said headrest assembly being further pivotable approximately 90° with said secondary frame assembly while in said storage position to a relatively hidden position under said cocktail table when said secondary frame assembly and multiple link support assembly are moved so as to deploy said cocktail table in its use position as a seat separator.

4,536,028

FITTED SHEET FOR LOUNGE CHAIR

Mary A. Jones, P.O. Box 154, and Donna L. Tucker, Rte. 2, both of Polkton, N.C. 28135

Filed Apr. 27, 1983, Ser. No. 488,993
Int. Cl.³ A47C *27/00*
U.S. Cl. 297—224 **4 Claims**



1. A fitted sheet for covering a lounge chair of the type having a substantially horizontal central section and joined back-support and leg-support sections capable of being tilted with respect to the central section along transverse hinge lines, and said sheet being characterized by being constructed for preventing the sheet from shifting when the chair is occupied or when the back-support or leg-support sections are being adjusted, said sheet comprising:

a substantially rectangular top panel whose perimeter defines a pair of opposed ends and a pair of opposed sides and which has a size and shape approximating the size and shape of the upper surface of a lounge chair of the mentioned type;

a pocket at each end of said top panel, each pocket comprising a continuous panel joined to a respective end of the top panel and to adjacent portions at least along about six inches of the sides said pockets being sufficiently deep to maintain opposite end portions of said sheet in position on opposite ends of said lounge chair;

a pair of transverse elastic straps joined to the opposed sides and located approximately ¼ the length of said sheet from each end thereof, one strap being located in the region where the sheet, in use, overlies the hinge line between the central section and back-support section, and the other being located in the region between the central section and the leg-support section, said transverse elastic straps serving to maintain the central portion of said sheet in position on said lounge chair; and

longitudinal elastic strip means secured to said opposed sides in the region where the sheet, in use, overlies the chair's

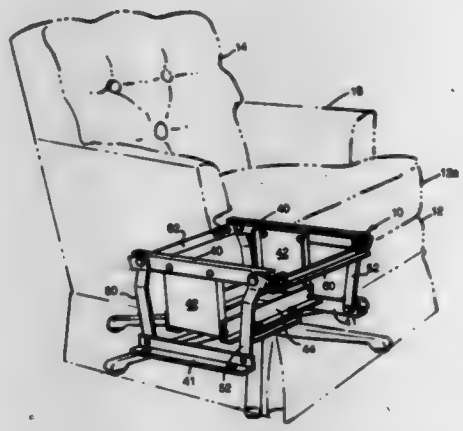
central section and maintains the central portion of said sheet in tensioned condition.

4,536,029

ROCKING CHAIR

Walter C. Rogers, Jr., Denton, N.C., assignor to Parma Corporation, Denton, N.C.

Filed Mar. 30, 1983, Ser. No. 480,255
Int. Cl.³ A47D *13/10*
U.S. Cl. 297—281 **14 Claims**



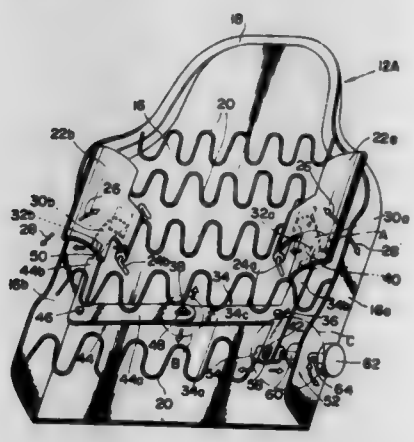
1. A rocking chair comprising a stationary base, a seat and backrest structure including a seat frame having opposite side portions and upholstery on the seat including seat springs, armrests fixed to opposite sides of the seat frame, and linkage means within the seat frame suspending the seat at said side portions from the base for rocking movement along an arc during which the seat is also displaced in a horizontal plane relative to the base, said linkage means being located below said seat springs and inwardly of said armrests and said opposite side portions of said frame, and wherein said linkage means includes two pairs of front and rear swing arms each having opposite portions pivotally mounted at pivot joints to the base and seat frame at opposite sides thereof, the distance between the pivot joints on the base being greater than the distance between the pivot joints on the seat frame, and wherein there is further included transverse anti-sway bars interconnecting the swing arms on opposite sides of the seat frame.

4,536,030

SEAT WITH ADJUSTABLE SIDE SUPPORT DEVICE

Kenichi Sakurada, Yokohama, and Takaichi Nishino, Hachioji, both of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Tachikawa Spring Company, Limited, Tokyo, both of, Japan

Filed Aug. 14, 1980, Ser. No. 178,057
Claims priority, application Japan, Aug. 22, 1979, 54-106115; Aug. 22, 1979, 54-106114
Int. Cl.³ A47C *3/00, 7/46*
U.S. Cl. 297—284 **10 Claims**



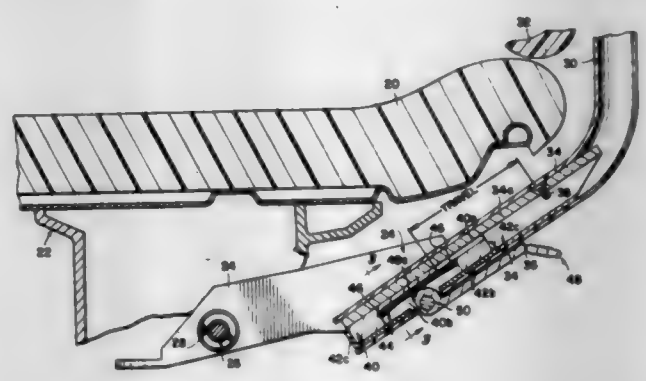
1. In combination with a vehicle seat having a backrest portion and a seating portion, a pair of movable lateral bolster sections mounted on opposite sides of at least one of said portions and projecting therefrom, and adjustment means including a pair of drive members, for selectively and simultaneously moving the bolster sections in a controlled fashion between a first lateral support position and a second lateral support position, said adjustment means being adapted to maintain the bolster sections in the first and second lateral positions wherein each of said bolster sections has inner and outer parts, said sections being connected at opposite sides of said one of said portions at their inner parts and wherein said one of said portions includes a frame assembly and wherein each of said bolster sections includes a rigid support paddle, having an outer free end portion and an inner, supported end portion, the inner end portion of said support paddle being hingedly connected to said frame assembly to permit the support paddle to rotate about a first longitudinal axis and wherein each support paddle is hingedly connected to its respective drive member to permit the support paddle to rotate with respect to the drive member about a second longitudinal axis spaced away from the first longitudinal axis to move the free end portion of the support paddle about the first longitudinal axis, coupling means pivoted to said frame assembly to rotate thereon about a pivot point, said coupling means interconnecting said drive members, operating means including a rotary drive shaft rotatably supported by said frame assembly with handle means for manually rotating said drive shaft, a coupling member threaded on said drive shaft to be movable along said shaft, said coupling member coupled to said coupling means whereby movement of said coupling member along said shaft as a result of the manual rotation of said shaft causes said coupling means to rotate about said pivot point on said frame assembly to cause said drive members to simultaneously move said support paddles.

4,536,031

BACK SUPPORT CONTROL MECHANISM FOR A CHAIR OR THE LIKE

Thomas L. Latone, Quakertown, Pa., assignor to Knoll International, Inc., New York, N.Y.

Filed Jun. 10, 1983, Ser. No. 503,226
Int. Cl.³ A47C *7/40*
U.S. Cl. 297—353 **4 Claims**



1. In a back support control mechanism for a chair or the like in which said back support is mounted for movement toward and away from a seat, the improvement for providing adjustable positioning of said back support with respect to said seat in an infinite number of positions in a range of movement of said back support comprising a channel member fixed with respect to said seat, a pressure pad positioned within said channel member and fixed with respect to said back support, said channel member permitting sliding movement of said pressure pad with respect thereto resulting in movement of said back support over said range of movement, and a lever coupled to said pressure pad and movable therewith and with respect thereto and having a cam surface thereon which, in one position of said lever with respect to said pressure pad, bears against said pressure pad, causing the latter to bear against said

channel member to fix said pressure pad in position with respect to said channel member and to prevent further movement of said pressure pad, thereby fixing the position of said back support with respect to said seat, in which said back support comprises a tubing that includes a carrier therein that holds said pressure pad, said carrier includes side rails, with said pressure pad being supported between said side rails, said channel member is positioned within said tubing, and said channel member includes tracks along the sides thereof, and said side rails of said carrier ride along said tracks.

4,536,032

BODY SUPPORT

Samuel M. Highberger, 5543 Westwood La., Birmingham, Mich. 48010

Filed Sep. 1, 1983, Ser. No. 528,798
Int. Cl.³ A47C *9/12*
U.S. Cl. 297—439 **6 Claims**



1. A foldable bodyrest comprising three main parts hinged together on a common connecting axis, the three parts when pivoted into a folded position lie substantially in a common plane, the first and second of the parts each having a pair of leg members connected together by a cross member to form a pair of "U" shaped members, one of the "U" shaped members forming an intermediate part having an outside dimension between its legs less than the inside dimension between the legs of the other "U" shaped member which forms an outer part and whereby the intermediate part can fit within the outer part, the third of the parts having a partial rectangular shape forming a body support and having a first narrow portion having a dimension less than the inside dimension between the legs of the intermediate part and a relatively wide portion having a dimension greater than the inside dimension between the legs of the intermediate part, and pivot means extending through the outer ends of the legs of the "U" shaped parts and through the narrow portion of the third part to form the common connecting axis, said "U" shaped members forming an inverted "V" support adapted to rest on the floor when swung on the pivot axis, said third member supported in a generally horizontal position by the pivot means and by the wide portion of the third member resting on the legs of one of the "U" shaped members.

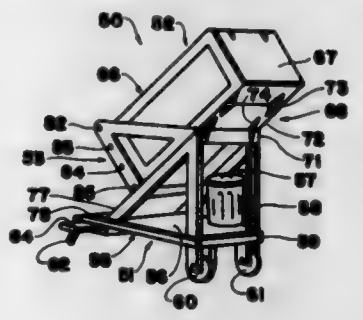
4,536,033

TRASH STORING APPARATUS

Webster F. Allen, 3005 37½ St., NW., Billings, Mont. 59102

Filed Aug. 1, 1983, Ser. No. 519,003
Int. Cl.³ B65F *1/00*
U.S. Cl. 298—2 **11 Claims**

1. Trash storing apparatus including a support portion, a container portion and a container dumping portion; said support portion including a substantially horizontal frame section, an undercarriage section including a plurality of wheels extending downwardly from said horizontal frame section, an upstanding frame section extending upwardly from said horizontal frame section adjacent one end thereof, an inclined frame section extending from adjacent an opposite end of said horizontal frame section to a point adjacent the upper end of said upstanding frame section; said container portion normally resting on said inclined frame section of said support portion, said container portion extending from adjacent the lower end of said inclined frame section and upwardly therealong beyond the upper end of said upstanding frame section, said container portion including a receptacle member with an open upper end, a cover member pivotally connected adjacent an edge of said open end of said receptacle member; said container dumping portion including pivotal connecting means located between said container portion and said inclined frame section adjacent the upper end of said upstanding frame section, said pivotal connecting means including spacer means, said spacer means being pivotally connected through first hinge means adjacent the upper end of said upstanding frame section and said spacer means being pivotally connected through second



hinge means to the lower surface of said container portion at a point thereon a significant distance above said upper end of said upstanding frame section, said second hinge means being spaced from said first hinge means, handle means disposed adjacent the bottom of said receptacle member; whereby trash can be placed into said receptacle member by opening said cover member and trash can be removed from said receptacle member by grasping said handle means and raising the lower end of said receptacle member so that it pivots about both of said hinge means of said pivotal connecting means to empty said trash through said open end thereof into a receiver having a threshold above the upper end of said upstanding frame section.

4,536,034

METHOD FOR IMMOBILIZING CONTAMINANTS IN PREVIOUSLY LEACHED ORES

John B. Otto, Jr., Dallas, and James M. Paul, DeSoto, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,766
Int. Cl.³ E21B *43/28*
U.S. Cl. 299—5 **16 Claims**

1. A method for restoring a subterranean formation subjected to oxidative leaching, excluding a carbonate leaching process, to environmentally acceptable levels of soluble contaminants by use of an aqueous restorative fluid comprising:

(a) making said restorative fluid with sufficient phosphate ions therein and a pH value suitable for forming insoluble precipitates in said fluid with the ions of said soluble contaminants; and

(b) injecting said restorative fluid into said formation in a volume sufficient to form an insoluble precipitate within said formation.

4,536,035

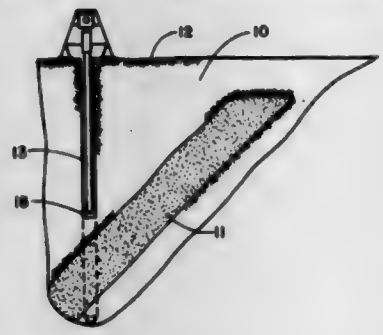
HYDRAULIC MINING METHOD

Lester H. Huffman, and Gerald S. Knoke, both of Kent, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 15, 1984, Ser. No. 621,294
Int. Cl.³ E21C *37/12*
U.S. Cl. 299—17 **9 Claims**

1. A method of hydraulically mining an underground pitched mineral vein extending downwardly at an angle into the earth's lithosphere comprising: drilling a vertical borehole extending from the ground surface to a depth adjacent the footwall of said mineral vein, forming an enlarged diameter sump cavity at the lower end of said vertical borehole, drilling

a slant borehole from said ground surface and along said footwall to intersect the lower end of said vertical borehole, removing material from said mineral vein by directing a fluid jet



stream thereagainst, said removed material forming with said water a slurry flowing down said footwall into said sump cavity, and pumping said slurry upwardly through said vertical borehole to the ground surface.

4,536,036

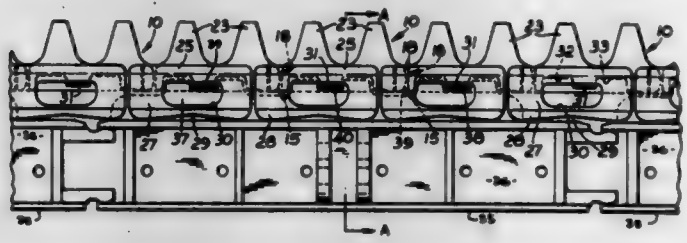
PINLESS HAULAGE DRIVE CHAIN AND RACK-FORM LINK FOR USE SERIATIM IN FORMING SAME

Thomas M. Hogg, Wishaw, Scotland, assignor to Anderson Strathclyde Plc, Glasgow, Scotland

Continuation of Ser. No. 437,529, Oct. 29, 1982, abandoned.
This application Oct. 24, 1984, Ser. No. 664,744
Claims priority, application United Kingdom, Oct. 31, 1981, 8132885

Int. Cl.³ E21C *35/20*

U.S. Cl. 299—43 **7 Claims**



1. A rack form link component adapted for loose interfitment with like rack form link components to form a chain free of hinge pins and co-operable with a drive roller means, said link component having opposite ends of mutually complementary shape one said end forming a projection of T-shape in plan view and the other said end forming a recess of T-shape in plan view to receive as a clearance fit the projection of an adjoining link component, a central upstanding spine of rack formation and integral therewith on either side of the spine two walls of the same length but one vertically deeper than the other thus forming a saddle, the shallower wall being used as trapping means for a mineral mining machine on its traverse along a conveyor, the deeper wall to be encompassed by trapping means for the link itself via a shoulder extending from this wall, and locating means situated within the saddle and in the form of a block positioned on the underside of the rack formation spine.

4,536,037

CUTTING TOOTH FOR STRIP MINING APPARATUS

Richard H. Rink, Huron, S. Dak., assignor to Huron Manufacturing Corporation, Huron, S. Dak.

Filed Jul. 18, 1983, Ser. No. 514,957
Int. Cl.³ E21B *10/62*

U.S. Cl. 299—92 **8 Claims**

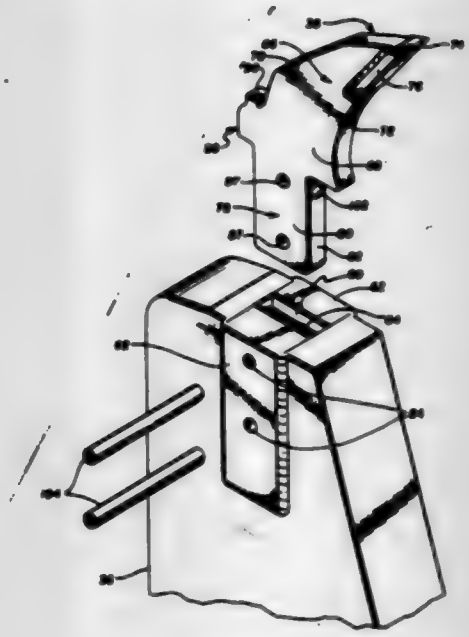
1. A replaceable cutting tooth for the cutting head of a mining machine or the like, said cutting head including a cutting arm for shifting said tooth through a cutting path of travel and said cutting arm having a plurality of inwardly facing side walls defining a tooth receiving receptacle therein and structure defining a first cutting arm retaining pin receiving channel, comprising:

a base portion having opposed, generally parallel first and second side walls and generally arcuate top and bottom walls interconnecting said side walls, said top and bottom walls intersecting with each other to define a forwardmost cutting edge;

an insert portion operably connected to and extending rearwardly from said base portion, including—

a pair of opposed insert portion sidewalls depending from said base portion sidewalls to coextensively define cutting tooth sidewalls;

structure defining a first cutting tooth retaining pin receiving channel extending between said insert portion sidewalls, and oriented generally perpendicular to said path of travel;



opposed insert portion top and bottom walls interconnecting said insert portion sidewalls, and oriented generally perpendicular to said path of travel;

structure defining a first insert portion cavity opening to said insert portion top wall, and a second insert portion cavity opening to said insert portion bottom wall;

first and second resilient, elastomeric members received within said first and second insert portion cavities respectively, said resilient members projecting beyond the surface of said insert portion in abutting relationship with the sidewealls of said cutting arm tooth receiving receptacle for providing said insert portion with a resilient, shock absorbing force fit within said cutting arm receptacle; and

a first retaining pin removably received within said first cutting tooth retaining pin receiving channel and said first cutting arm channel for removably locking said cutting tooth within said cutting arm tooth receiving receptacle.

4,536,038

WHEEL HUB ASSEMBLY FOR A MOTOR VEHICLE

Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,445
Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319472

Int. Cl.³ F16C *11/06*

U.S. Cl. 301—124 R **2 Claims**

2. A wheel hub assembly including a wheel carrier comprising:

a hub member having a spigot axially extending from one end of said hub member;

bearing means including an inner race formed on said hub member and an outer race bolted to said wheel carrier;

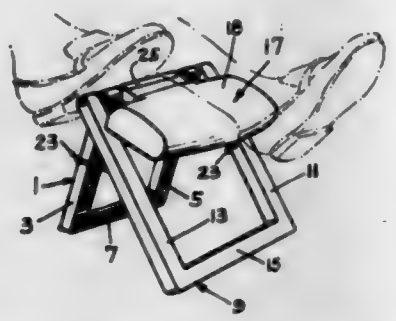
channel member to fix said pressure pad in position with respect to said channel member and to prevent further movement of said pressure pad, thereby fixing the position of said back support with respect to said seat, in which said back support comprises a tubing that includes a carrier therein that holds said pressure pad, said carrier includes side rails, with said pressure pad being supported between said side rails, said channel member is positioned within said tubing, and said channel member includes tracks along the sides thereof, and said side rails of said carrier ride along said tracks.

4,536,032

BODY SUPPORT

Samuel M. Highberger, 5543 Westwood La., Birmingham, Mich. 48010

Filed Sep. 1, 1983, Ser. No. 528,798
Int. Cl.[3] A47C *9/12*
U.S. Cl. 297—439 6 Claims



1. A foldable bodyrest comprising three main parts hinged together on a common connecting axis, the three parts when pivoted into a folded position lie substantially in a common plane, the first and second of the parts each having a pair of leg members connected together by a cross member to form a pair of "U" shaped members, one of the "U" shaped members forming an intermediate part having an outside dimension between its legs less than the inside dimension between the legs of the other "U" shaped member which forms an outer part and whereby the intermediate part can fit within the outer part, the third of the parts having a partial rectangular shape forming a body support and having a first narrow portion having a dimension less than the inside dimension between the legs of the intermediate part and a relatively wide portion having a dimension greater than the inside dimension between the legs of the intermediate part, and pivot means extending through the outer ends of the legs of the "U" shaped parts and through the narrow portion of the third part to form the common connecting axis, said "U" shaped members forming an inverted "V" support adapted to rest on the floor when swung on the pivot axis, said third member supported in a generally horizontal position by the pivot means and by the wide portion of the third member resting on the legs of one of the "U" shaped members.

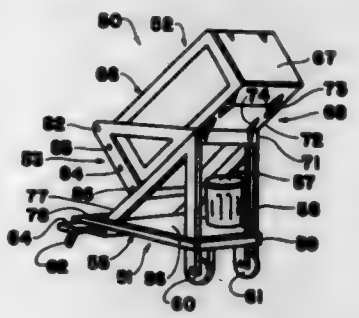
4,536,033

TRASH STORING APPARATUS

Webster F. Allen, 3005 37½ St., NW., Billings, Mont. 59102

Filed Aug. 1, 1983, Ser. No. 519,003
Int. Cl.[3] B65F *1/00*
U.S. Cl. 298—2 11 Claims

1. Trash storing apparatus including a support portion, a container portion and a container dumping portion; said support portion including a substantially horizontal frame section, an undercarriage section including a plurality of wheels extending downwardly from said horizontal frame section, an upstanding frame section extending upwardly from said horizontal frame section adjacent one end thereof, an inclined frame section extending from adjacent an opposite end of said horizontal frame section to a point adjacent the upper end of said upstandi..g frame section; said container portion normally resting on said inclined frame section of said support portion, said container portion extending from adjacent the lower end of said inclined frame section and upwardly therealong beyond the upper end of said upstanding frame section, said container portion including a receptacle member with an open upper end, a cover member pivotally connected adjacent an edge of said open end of said receptacle member; said container dumping portion including pivotal connecting means located between said container portion and said inclined frame section adjacent the upper end of said upstanding frame section, said pivotal connecting means including spacer means, said spacer means being pivotally connected through first hinge means adjacent the upper end of said upstanding frame section and said spacer means being pivotally connected through second



hinge means to the lower surface of said container portion at a point thereon a significant distance above said upper end of said upstanding frame section, said second hinge means being spaced from said first hinge means, handle means disposed adjacent the bottom of said receptacle member; whereby trash can be placed into said receptacle member by opening said cover member and trash can be removed from said receptacle member by grasping said handle means and raising the lower end of said receptacle member so that it pivots about both of said hinge means of said pivotal connecting means to empty said trash through said open end thereof into a receiver having a threshold above the upper end of said upstanding frame section.

4,536,034

METHOD FOR IMMOBILIZING CONTAMINANTS IN PREVIOUSLY LEACHED ORES

John B. Otto, Jr., Dallas, and James M. Paul, DeSoto, both of Tex., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,766
Int. Cl.[3] E21B *43/28*
U.S. Cl. 299—5 16 Claims

1. A method for restoring a subterranean formation subjected to oxidative leaching, excluding a carbonate leaching process, to environmentally acceptable levels of soluble contaminants by use of an aqueous restorative fluid comprising:

(a) making said restorative fluid with sufficient phosphate ions therein and a pH value suitable for forming insoluble precipitates in said fluid with the ions of said soluble contaminants; and

(b) injecting said restorative fluid into said formation in a volume sufficient to form an insoluble precipitate within said formation.

4,536,035

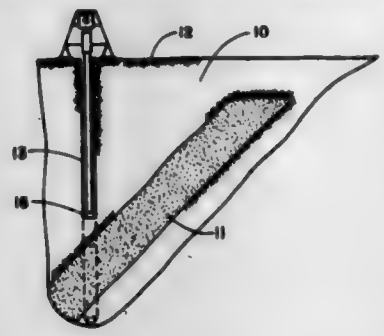
HYDRAULIC MINING METHOD

Lester H. Huffman, and Gerald S. Knoke, both of Kent, Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jun. 15, 1984, Ser. No. 621,294
Int. Cl.[3] E21C *37/12*
U.S. Cl. 299—17 9 Claims

1. A method of hydraulically mining an underground pitched mineral vein extending downwardly at an angle into the earth's lithosphere comprising: drilling a vertical borehole extending from the ground surface to a depth adjacent the footwall of said mineral vein, forming an enlarged diameter sump cavity at the lower end of said vertical borehole, drilling

a slant borehole from said ground surface and along said footwall to intersect the lower end of said vertical borehole, removing material from said mineral vein by directing a fluid jet



stream thereagainst, said removed material forming with said water a slurry flowing down said footwall into said sump cavity, and pumping said slurry upwardly through said vertical borehole to the ground surface.

4,536,036

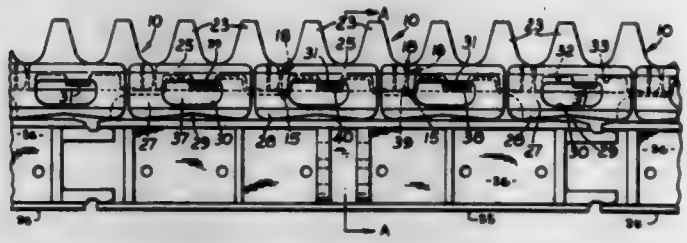
PINLESS HAULAGE DRIVE CHAIN AND RACK-FORM LINK FOR USE SERIATIM IN FORMING SAME

Thomas M. Hogg, Wishaw, Scotland, assignor to Anderson Strathclyde Plc, Glasgow, Scotland

Continuation of Ser. No. 437,529, Oct. 29, 1982, abandoned.
This application Oct. 24, 1984, Ser. No. 664,744
Claims priority, application United Kingdom, Oct. 31, 1981, 8132885

Int. Cl.[3] E21C *35/20*

U.S. Cl. 299—43 7 Claims



1. A rack form link component adapted for loose interfitment with like rack form link components to form a chain free of hinge pins and co-operable with a drive roller means, said link component having opposite ends of mutually complementary shape one said end forming a projection of T-shape in plan view and the other said end forming a recess of T-shape in plan view to receive as a clearance fit the projection of an adjoining link component, a central upstanding spine of rack formation and integral therewith on either side of the spine two walls of the same length but one vertically deeper than the other thus forming a saddle, the shallower wall being used as trapping means for a mineral mining machine on its traverse along a conveyor, the deeper wall to be encompassed by trapping means for the link itself via a shoulder extending from this wall, and locating means situated within the saddle and in the form of a block positioned on the underside of the rack formation spine.

4,536,037

CUTTING TOOTH FOR STRIP MINING APPARATUS

Richard H. Rink, Huron, S. Dak., assignor to Huron Manufacturing Corporation, Huron, S. Dak.

Filed Jul. 18, 1983, Ser. No. 514,957
Int. Cl.[3] E21B *10/62*
U.S. Cl. 299—92 8 Claims

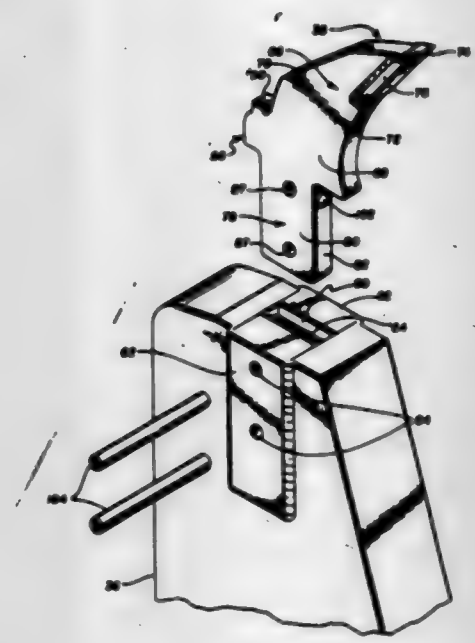
1. A replaceable cutting tooth for the cutting head of a mining machine or the like, said cutting head including a cutting arm for shifting said tooth through a cutting path of travel and said cutting arm having a plurality of inwardly facing side walls defining a tooth receiving receptacle therein and structure defining a first cutting arm retaining pin receiving channel, comprising:

a base portion having opposed, generally parallel first and second side walls and generally arcuate top and bottom walls interconnecting said side walls, said top and bottom walls intersecting with each other to define a forwardmost cutting edge;

an insert portion operably connected to and extending rearwardly from said base portion, including—

a pair of opposed insert portion sidewalls depending from said base portion sidewalls to coextensively define cutting tooth sidewalls;

structure defining a first cutting tooth retaining pin receiving channel extending between said insert portion sidewalls, and oriented generally perpendicular to said path of travel;



opposed insert portion top and bottom walls interconnecting said insert portion sidewalls, and oriented generally perpendicular to said path of travel;

structure defining a first insert portion cavity opening to said insert portion top wall, and a second insert portion cavity opening to said insert portion bottom wall;

first and second resilient, elastomeric members received within said first and second insert portion cavities respectively, said resilient members projecting beyond the surface of said insert portion in abutting relationship with the sideweallls of said cutting arm tooth receiving receptacle for providing said insert portion with a resilient, shock absorbing force fit within said cutting arm receptacle; and

a first retaining pin removably received within said first cutting tooth retaining pin receiving channel and said first cutting arm channel for removably locking said cutting tooth within said cutting arm tooth receiving receptacle.

4,536,038

WHEEL HUB ASSEMBLY FOR A MOTOR VEHICLE

Werner Krude, Siegburg-Kaldauen, Fed. Rep. of Germany, assignor to Uni-Cardan Aktiengesellschaft, Siegburg, Fed. Rep. of Germany

Filed May 25, 1984, Ser. No. 614,445
Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319472
Int. Cl.[3] F16C *11/06*
U.S. Cl. 301—124 R 2 Claims

2. A wheel hub assembly including a wheel carrier comprising:

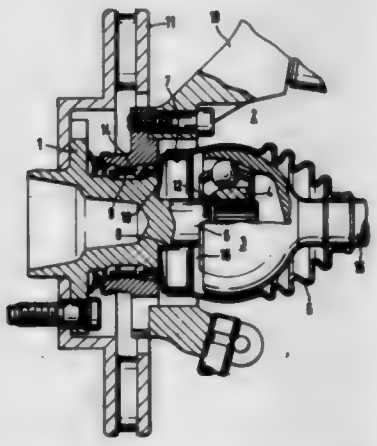
a hub member having a spigot axially extending from one end of said hub member;

bearing means including an inner race formed on said hub member and an outer race bolted to said wheel carrier;

a constant velocity ratio universal joint having an inner member received on said spigot and an outer member;

a retaining ring located on said inner member at an end thereof closest to said hub member holding said inner member on said spigot;

a collar on said hub member having an open end facing said universal joint and adapted to have mounted thereon a sealing sleeve extending over said universal joint;



said collar being provided with a hollow cylindrical portion which is press fitted on said spigot;

said wheel hub assembly being arranged such that when said joint is articulated, said outer member of the joint partially enters said collar and when said joint is not articulated, a space is provided between said outer member of said universal joint and said collar to permit access to said retaining ring to facilitate assembly and disassembly between said universal joint and said wheel hub assembly.

4,536,039

VEHICLE BRAKING APPARATUS AND METHOD

Dario Barberis, Turin, Italy, assignor to WABCO Westinghouse Compagnia Freni S.p.A., Turin, Italy

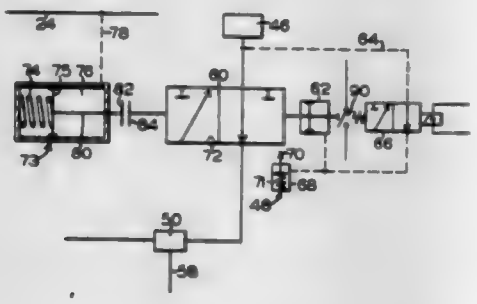
Filed Dec. 23, 1983, Ser. No. 564,665

Claims priority, application Italy, Jan. 7, 1983, 67013 A/83

Int. Cl.³ B60T *15/18*

U.S. Cl. 303—16

16 Claims



1. An improved vehicle braking apparatus that allows the vehicle brakes to resume operation when the magnitude of an electrical signal to an electro-fluidic portion of said braking apparatus is less than a predetermined minimum value, said braking apparatus comprising:

(a) a fluid pressure controlled braking means for supplying a first pressurized fluid in response to a pressure differential between a brake pipe and said fluid pressure controlled braking means;

(b) an automatic selector valve means for supplying pressurized fluid to said brakes of said vehicle, said automatic selector valve means having at least one fluid entry port connected to said fluid pressure controlled braking means to selectively receive said first pressurized fluid;

(c) an electro-fluidic braking means for supplying a second pressurized fluid in response to an electrical signal;

(d) a release means having at least one fluid entry port connected to said electro-fluidic braking means to receive said second pressurized fluid, said release means communicating said second pressurized fluid to said automatic selector valve means, said release means for isolating said electro-fluidic braking means from said automatic selector valve means and venting at least a portion of said second pressurized fluid when said electrical signal to said electro-fluidic braking means is less than said predetermined minimum value and when a pressure reduction in said brake pipe of said fluid pressure controlled braking means occurs thereby allowing release of said brakes of said vehicle and the resumption of operation under control of said fluid pressure controlled braking means.

4,536,040

SERVICE BRAKE ACCELERATOR FOR INDIRECT COMPRESSED-AIR BRAKES ON RAILWAY VEHICLES

Herbert Eder, Markt Schwaben, Fed. Rep. of Germany, assignor to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

PCT No. PCT/DE80/00170 § 371 Date Jul. 8, 1981, § 102(e) Date Jul. 8, 1981, PCT Pub. No. WO81/01393, PCT Pub. Date May 28, 1981

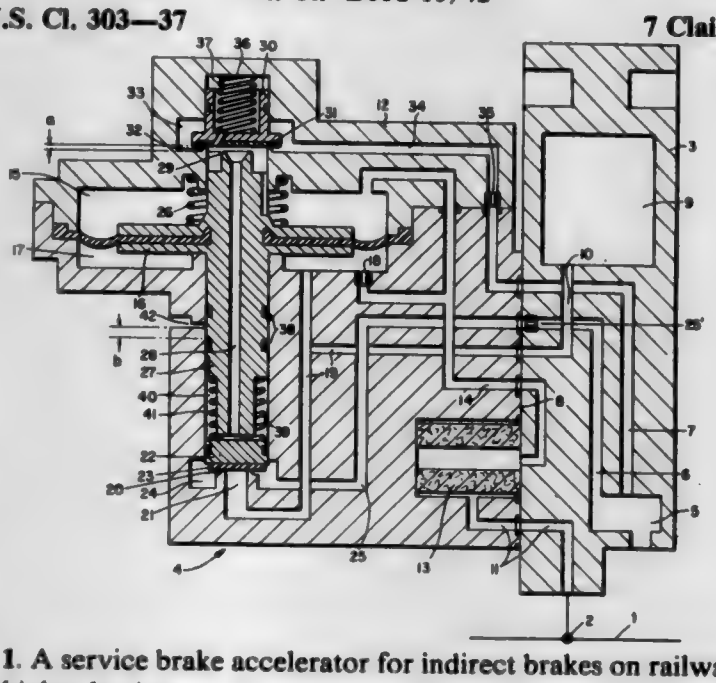
PCT Filed Nov. 12, 1980, Ser. No. 285,076

Claims priority, application Fed. Rep. of Germany, Nov. 19, 1979, 2946657

Int. Cl.³ B60T *15/42*

U.S. Cl. 303—37

7 Claims



1. A service brake accelerator for indirect brakes on railway vehicles, having

a reference pressure chamber connected via a nozzle to the main airpipe;

a control piston loaded by the pressure in the main airpipe against the pressure in the reference pressure chamber;

a shutoff valve which can be closed by the control piston in the case of predominant action by the pressure in the reference pressure chamber, and which is in a connection from the main airpipe to a piston chamber acted upon by an auxiliary pressure;

an outlet valve system which can be opened by the control piston in the case of predominant action by the pressure in the reference pressure chamber, and is in throttled connections from the main airpipe and from the piston chamber to atmosphere; and

an air vent valve controlled by a valve piston and in a connection throttled via a further nozzle, from the reference pressure chamber to the atmosphere, where:

the valve piston in the closing direction of the air vent valve is loaded by the force of a spring and the pressure in the piston chamber against the pressure in the reference pressure chamber, which with the air vent valve closed acts only upon a partial area; and where:

the control piston, the shutoff valve and the outlet valve system are arranged coaxially and the shutoff valve and the outlet valve system can be actuated by means of a valve stem connected to the control piston, characterized in that:

the outlet valve system comprises a first outlet valve (31, 32) between the main airpipe (1) and the atmosphere, and

a spatially separate second outlet valve (38, 42) between the piston chamber (40) and the atmosphere; that

the shutoff valve (29,31) having a closing stroke (a) which is at most equal to an opening stroke of the first outlet valve (31, 32) beginning from a rest position and with reference to the control piston (16), the second outlet valve (38,42) having an opening stroke (b) which is greater than the opening stroke of the first outlet valve (31,32);

the valve piston (22) is disposed coaxially with the control piston (16) and at the side thereof where said valve piston is acted upon by pressure in the piston chamber (40) and is engageable against an end of the valve stem (27).

4,536,041

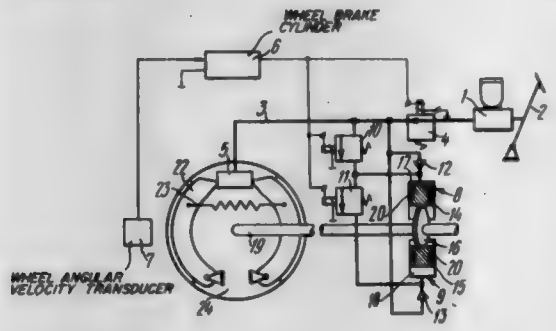
ANTI-LOCK BRAKE SYSTEM OF A MOTOR VEHICLE

Gennady M. Kosolapov; Alexandr A. Revin; Jury Y. Komarov, all of Volgograd; Vladimir A. Umnyashkin, Izhevsk; Alexandr S. Kondrashkin, Izhevsk, and Jury A. Sobolev, Izhevsk, all of U.S.S.R., assignors to Znameni Politekhnichesky Institut, Volgograd, U.S.S.R.

Filed May 2, 1983, Ser. No. 490,962

Int. Cl.³ B60T *8/02*

U.S. Cl. 303—119 **12 Claims**



1. An anti-lock brake system of a motor vehicle provided with a power drive line, hydraulically operated brakes and a hydraulic drive therefor, comprising:

a master brake cylinder intended to produce pressure in said hydraulic drive of said brakes to provide a braking action in the motor vehicle;

a wheel brake cylinder intended to convert the pressure produced in said hydraulic drive of said brakes into a mechanical braking force;

a hydraulic pressure line connecting said wheel brake cylinder with said master brake cylinder;

a wheel angular velocity transducer to generate a signal corresponding to the actual angular velocity of the wheel;

a control unit wired to said wheel angular velocity transducer and intended to generate a control signal on the point of wheel locking;

a wheel brake release means connected to said control unit and intended to modulate pressure in said wheel brake cylinder to prevent a wheel lock condition; said means comprising:

a first electromagnetic valve disposed in said hydraulic pressure line between said master brake cylinder and said wheel brake cylinder; said first electromagnetic valve being intended to limit pressure in said wheel brake cylinder when the wheel is on the point of locking;

a cam drive having an initial value connected to said power drive line and having a cam; and

first and second identical wheel release cylinders, each having a variable volume chamber communicating with said wheel brake cylinder, and a piston for each said wheel release cylinders adapted to cooperate therewith and with said cam of said cam drive to vary the volume of said chambers; said first and second wheel release cylinders each serving to reduce pressure in said wheel brake cylinder independently to ensure a wheel anti-locking action; pressure in said wheel brake cylinder being restored to the initial value by means of said cam drive subsequent to the wheel release action.

4,536,042

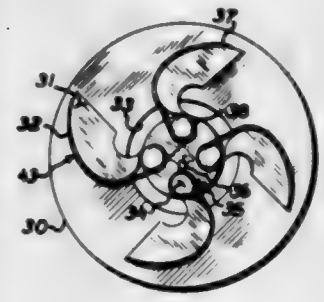
PIVOT BEARING

David G. Falconer, 4673 S. 34th St., Arlington, Va. 22206

Continuation-in-part of Ser. No. 430,704, Sep. 30, 1982, abandoned. This application May 10, 1984, Ser. No. 623,450

Int. Cl.³ F16C *32/02*

U.S. Cl. 308—2 A **6 Claims**



1. A pivot bearing for use in sensitive instruments in which a shaft structure is suspended by flexible pendulums so that sliding friction and conventional rolling friction is eliminated; said pivot bearing comprising a first set of cams arranged circumferentially mounted on an outer ring-like plate face, each individual cam of said first set of cams being positively fixed to one end of a flexible pendulum; an opposite end of said flexible pendulum being positively fixed to an individual cam of a second set of cams, said second set of cams concentrically encompassed by said first set of cams and arranged circumferentially adjacent a periphery of a utility plate face, said utility plate serving as a base and center for fastening work pieces and having a shaft bore for fitting to a longer shaft, said bore being concentric to a center of pivotal mobility, said outer ring-like plate and utility plate lying in a plane normal to the pivotal axis of said first and second sets of cams; at least one set of cams having a contour of an involute; said flexible pendulums having an intermediate section between the positively fixed ends of said flexible pendulums, each of said pendulums made taut at manufacture and remediable after manufacture by adjustment to a degree, each pendulum having the same adjustment degree as measured by an instrument for measuring tension, and each individual pendulum being contiguous to said contours of said cams, irrespective of the pivotal degree of rotation and position of said utility plate, so that concentricity of said shaft bore is maintained, and said pivotal mobility is made at manufacture.

4,536,043

OPERATING DEVICE IN A DISH-WASHING MACHINE

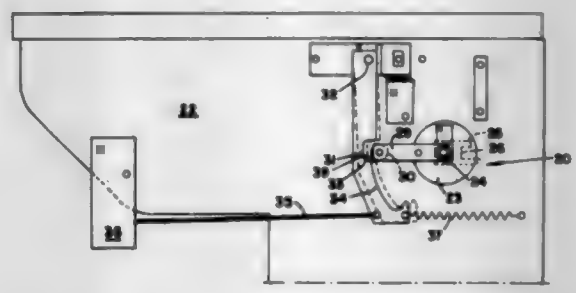
Lars G. Berglund, Alingsås; Sven-Erik B. Björklund, Älvängen, and Lars H. Linde, Alingsås, all of Sweden, assignors to Aktiebolaget Electrolux, Stockholm, Sweden

Filed Jul. 14, 1983, Ser. No. 513,606

Claims priority, application Sweden, Jul. 19, 1982, 8204395

Int. Cl.³ A47B *51/00*

U.S. Cl. 312—222 **4 Claims**



1. A locking device for a dish-washing machine having a vertically movable hood adapted to take an open position and a closed position, respectively, said hood being locked in its closed position during a cleaning operation, comprising: a locking means, an actuating member provided on said hood and co-acting with said locking means, and electro-magnetic

means operating to inactivate said locking means, wherein said locking means includes a curved part and a curve follower, an elastic member being provided for biasing said curved part into engagement with said curve follower, said curved part having a recess and a sloped portion, and a sharp edge interconnecting said recess and sloped portion, said actuating member during movement of the hood to its closed portion operating to bring said curve follower into said recess of the curved part, while said actuating member during movement of the hood to its open position operates to force said curve follower against the action of the said elastic means out of the recess through the sharp edge and to the sloped portion of the curved part.

4,536,044

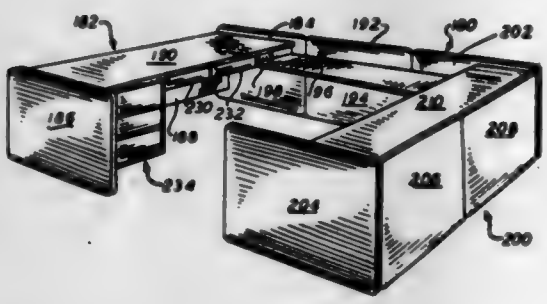
WORK STATIONS OF KNOCK-DOWN MODULAR COMPONENTS

Irwin I. Ziegelheim, Emerson, N.J., and Lawrence Lerner, New York, N.Y., assignors to Discovery Concepts, Inc., Carlstadt, N.J.

Continuation of Ser. No. 49,721, Jun. 18, 1979, which is a continuation of Ser. No. 885,351, Mar. 13, 1978. This application Jan. 12, 1981, Ser. No. 223,971

Int. Cl.³ A47B *43/00, 27/00;* F16B *12/00*

U.S. Cl. 312—257 R **5 Claims**



1. A working station comprising:

a. a work surface having a pair of opposed side edges and front edges;

b. a plurality of modular panels;

c. securing means for attaching said work surface and said modular panels;

wherein a first mode comprising a first pair of said modular panels are vertically disposed and attached to each of said side edges by said securing means, so as to support said work surface on the ground, and having a cross panel attached by said securing means to and vertically disposed between said first pair of modular panels,

wherein a second mode, said work surface front edge, has attached a pair of modular panels which are vertically disposed, abutting each other and standing on the ground for support of said work surface; and wherein

d. said work surface and said modular panels being fabricated for shipment in knock down condition and for on site assembly by said securing means, whereby said work surface and said modular panels may be assembled in said first mode and said second mode to provide different assemblies with said modular panels; and wherein

e. at least one storage area is secured beneath said work surface, adjacent at least one of said side panels and accessible from one side of said cross panel; said one storage area being a desk pedestal type cabinet; and wherein

f. at least one storage area is secured beneath said work surface, adjacent at least one of said panels and accessible from the other side of said cross panel; said one other storage area being a cabinet; and wherein said work station includes

g. an additional work surface;

h. a pair of additional side panels; and

i. additional securing means for attaching said additional side panels to each other and one of said side panels to form a vertical support for said additional work surface, and for attaching said additional work surface thereto so as to form a run-off said work surface; and wherein said work station includes

j. a further work surface;

k. further side panels; and

l. further securing means for attaching said further side panels to each other and to one of said additional side panels to form a vertical support for said further work surface, and for attaching said further work surface thereto so as to form a return for said additional work surface.

4,536,045

PLUG CONNECTION

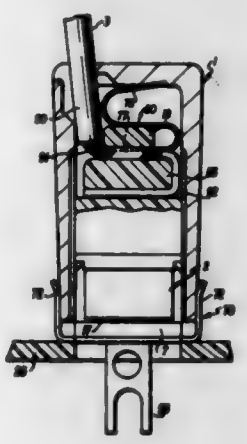
Manfred Reichardt, Weinberg, and Günter Schiltzle, Heilbronn, both of Fed. Rep. of Germany, assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Jan. 11, 1983, Ser. No. 457,315

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1982, 3201142

Int. Cl.³ H01R *4/66*

U.S. Cl. 339—14 P **10 Claims**



1. A plug connector for a flat cable including a shield, said connector comprising

a housing, said housing being formed of a metal or a metallized plastic;

an opening in said houisng;

one end of said flat cable extending through said opening for electrical connection within said housing, said flat cable comprising a cable core of a plurality of parallel wires surrounded by cable shielding; and

a shielded connecting element mounted within said housing, said element being preformed into a general S-shape cross-section and being formed of elastic sheet metal, one end of said element being in contact with an inner surface of said housing, and an opposite end of said element being inserted between said shielding and said core of said flat cable and being in electrical contact with said shielding, the width of said opposite end of said element being approximately the same as said flat cable, said element being spring loaded so as to contact said inner surface of said housing and said flat cable under spring tension, whereby said flat cable is grounded to said housing.

4,536,046

PULL OUT FUSIBLE SWITCHES

John W. Erickson, Crystal Lake, Ill., assignor to Boltswitch, Inc., Crystal Lake, Ill.

Filed Mar. 29, 1984, Ser. No. 594,905

Int. Cl.³ H01R *13/68*

U.S. Cl. 339—31 M **33 Claims**

1. An assembly system for N-pole fusible pull out switches of M different voltage/current switch ratings comprising:

a plurality of essentially identical insulator bases each including N line terminal mounts aligned one for one with N

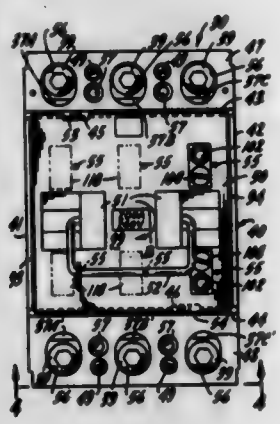
load terminal mounts, with the line terminal mounts at one end of the base and the load terminal mounts at the opposite end of the base;

a multiplicity of conductive terminals each mountable on any terminal mount in the base;

a multiplicity of conductive base contacts each mountable on a terminal in M sets of different line and load contact positions, one set for each switch rating;

a multiplicity of insulator barrier means of M types, each barrier means comprising a cover for a base, the barrier means of each type having 2N spaced connect apertures individually aligned with the line and load contact positions for one of the switch ratings and 2N similarly spaced disconnect apertures displaced from its connect apertures;

a plurality of essentially identical insulator base extensions each mountable on a base over a barrier means and defining a head receptacle;



a plurality of essentially identical insulator heads each including 2N fuseholder/stab mounts, each head being insertable into a base extension head receptacle in a connect orientation or in a disconnect orientation displaced 180° from the connect orientation;

and a multiplicity of conductive fuseholder/stab members, each fuseholder/stab member including a stab engageable with a base contact to complete a circuit connection, including fuseholder/stab members mountable on the mounts of a head in M different alignments each corresponding to the connect/disconnect aperture alignments of one type of barrier means;

each barrier means blocking insertion of any head into a head receptacle in either orientation, unless the alignment of the fuseholder/stab members in the head corresponds to the aperture alignment of that barrier means.

4,536,047

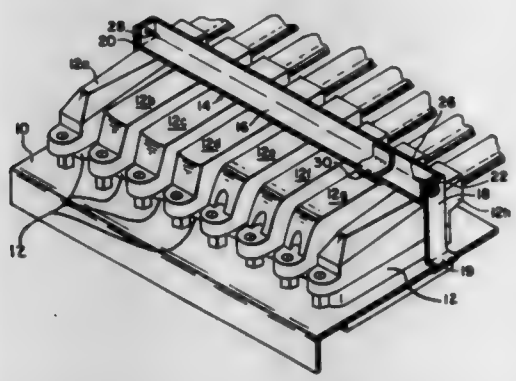
COMMUNICATIONS CONNECTOR SUPPORT BRACKET

Richard B. Varone, 81 Hilltop Dr., and Erik W. Svensson, Sr., 19 Oakside Dr., both of Smithtown, N.Y. 11787

Filed Aug. 9, 1982, Ser. No. 406,361

Int. Cl.³ H01R *13/62*

U.S. Cl. 339—75 M **1 Claim**



1. A communications connector support bracket mounted to a terminal block for keeping male and female communications connectors from becoming loose which comprises:

(a) two vertical support posts each having a top end and a lower end, said top end having an elongated aperture, said lower end having a clip fastening means for securing each of said support posts to said terminal block, said clip fastening means comprising a C-shaped member extending from said lower end of each of said support posts;

(b) cross bar means comprising a horizontal element extending in a plane parallel to said terminal block and a vertical element extending perpendicularly from said horizontal element, said horizontal element and said vertical element forming an L-shaped member, said horizontal element having at each end thereof an extension member, each of said extension members being bent in an upward direction so as to be perpendicular to said horizontal element and said vertical element, each of said extension members being provided with a central hole;

(c) means to align said central hole of each of said extension members with said elongated aperture provided on each of said support posts and to fasten said cross bar means to said support posts to hold the male connectors in engagement with the female connectors;

(d) at least one securing spacer, said securing spacer comprising a U-shaped resilient clip member and a lateral foot member, said U-shaped clip member being resiliently secured onto said horizontal element and the lateral foot member being in abutting engagement with the vertical element of said cross bar means, and said U-shaped clip member being selectively positionable above and resiliently engagable with at least one of said male connectors whereby said cross bar means can hold a plurality of male communications connectors of different heights securely onto said terminal block.

4,536,048

ANTI-DECOUPLING MECHANISM FOR AN ELECTRICAL CONNECTOR ASSEMBLY

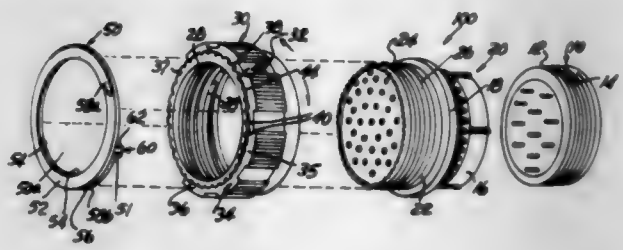
Alan L. Schildkraut, Sidney, and David W. MacAvoy, Bainbridge, both of N.Y., assignors to Allied Corporation, Morristown, N.J.

Filed May 11, 1983, Ser. No. 493,498

The portion of the term of this patent subsequent to Apr. 2, 2002, has been disclaimed.

Int. Cl.³ H01R *6/23*

U.S. Cl. 339—89 M **6 Claims**



1. An anti-decoupling mechanism for an electrical connector assembly, the connector assembly having a primary axis and comprising a pair of connector members and a coupling nut including a radial flange rotatably mounted to one of the connector members for coupling to the other connector member, said one connector member including an external annular groove having a transverse end wall facing forwardly and said radial flange having an outer end wall facing rearwardly, said anti-decoupling mechanism being adapted to resist both coupling and uncoupling rotation of the coupling nut and characterized by:

a cylindrical hub having an annular face extending coaxially rearward from the outer end wall of said radial flange;

a contiguous plurality of ratchet teeth disposed annularly around said annular face, one respective flank of each adjacent pair of ratchet teeth intersecting to form a detent

with the locus of intersected flanks describing a detent circle relative to the axis;

a radially expansible/contractible annular spring sufficiently interference fit within said annular groove to prevent relative rotation therebetween, the outer circumference of said spring annulus being defined by a diameter slightly less than the diameter of the detent circle; and

means extending tangentially from and radially expansible within a plane including said spring for expanding said spring and engaging said detents, application to the coupling nut of an external coupling/uncoupling torque radially expanding/contracting said spring to eliminate/increase frictional interference forces acting between the spring annulus and said annular groove, radial expansion allowing said spring to slide relative to said annular groove and radial contraction initially increasing the frictional interference forces preventing relative rotation until a sufficient external torque drives the expanding means radially outward of its detent whereby the coupling nut rotates and advances the next successive detent whereupon said spring radially contracts back into its interference fit about the annular groove.

4,536,049

CUTTING CONNECTOR

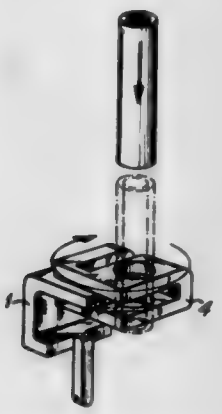
Manfred Wilmes, Detmold, Fed. Rep. of Germany, assignor to C. A. Weidmuller GmbH & Co., Detmold, Fed. Rep. of Germany

Filed Sep. 7, 1983, Ser. No. 530,134

Claims priority, application Fed. Rep. of Germany, Sep. 9, 1982, 3233458

Int. Cl.³ H01R *13/39*

U.S. Cl. 339—97 R **7 Claims**



1. In a cutting connector having two spaced apart contact knives for cutting through wire insulation to receive a conductor therebetween and an activating member displaceable relative to the knives and with openings receptive of the insulated conductor to dispose the conductor between the knives upon displacement of the activating member, the improvement wherein: the activating member comprises a U-shaped element having opposing legs with said openings therein and means mounting the U-shaped element with one contact knife disposed between the opposing legs for pivoting movement on said one contact knife between an open position wherein said openings are outside the contact knives and a closed position wherein the openings are above and below the contact knives, and wherein the U-shaped element is configured to surround the contact knives, during the pivoting movement thereof, to a variable extent which is a function of the position of the U-shaped element and the U-shaped element includes means thereon for effecting pivotal movement thereof in response to a manually applied force.

4,536,050

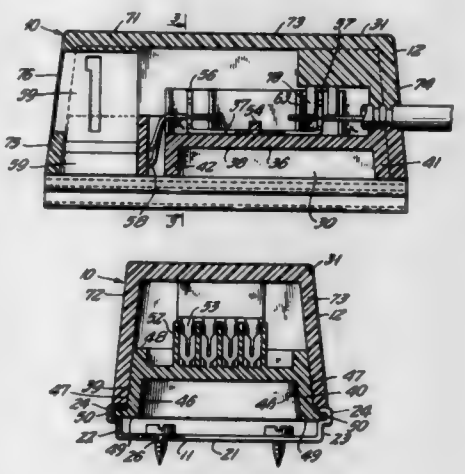
TELEPHONE MODULAR WALL JACK

Peter Hung, Huntington, N.Y., assignor to Porta Systems Corp., Syosset, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,194

Int. Cl.³ H01R *13/39*

U.S. Cl. 339—99 R **1 Claim**



1. An improved telephone modular wall jack comprising: a mounting element of generally planar configuration and having a main wall adapted to be secured to a mounting surface, said mounting element defining a pair of parallel oppositely facing grooves; a housing element including a base member and a cover member, said base member having laterally extending longitudinally oriented flanges slidably engagable with said parallel grooves in said mounting element to be frictionally retained thereby; said base member defining a recess at one end thereof and a plug element disposed in said recess, said base member having elongated quick clip members arranged in mutually parallel relation on a surface thereof, said quick clip members having insulation displacement conductor engaging means on oppositely disposed ends thereof; conductor means interconnecting one end of said clip member with said plug; and said cover member selectively surrounding said base member and having means on an inner surface thereof for engaging second conductors positioned on a second end of said clip members into operative connection therewith as said cover member is pushed into engagement with said base member; whereby said mounting means may be first positioned upon a mounting surface in detached condition, and said housing element may be separately wired and subsequently engaged with said mounting element.

4,536,051

ELECTRICAL INTERFACE ARRANGEMENTS

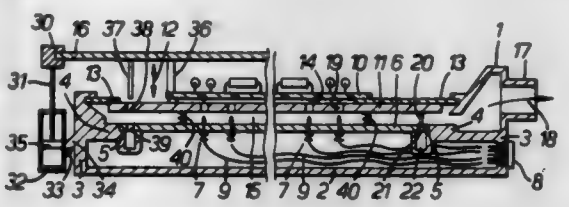
John L. Smith, and Frank H. Jenner, both of St. Albans, England, assignors to Marconi Instruments Limited, St. Albans, England

Filed Oct. 20, 1982, Ser. No. 435,361

Claims priority, application United Kingdom, Oct. 21, 1981, 8131774

Int. Cl.³ H01R *11/18*; G01R *31/02*

U.S. Cl. 339—117 P **8 Claims**



1. An electrical interface arrangement for enabling a circuit board under test to be electrically connected to test equipment including a housing arranged to locate and support a bed plate having a two dimensional array of electrical contacts projecting from one surface of it; a carriage plate mounted in align-

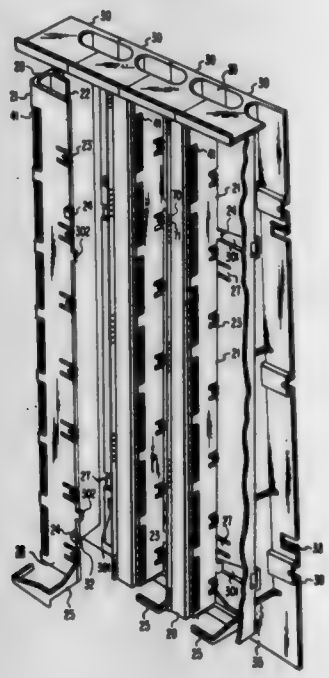
ment with the bed plate and which is movable towards and away from the bed plate and which is provided with apertures aligned with the electrical contacts so that the contacts project through the carriage plate when it is in a position closely adjacent to the bed plate; the housing being provided with a suction chamber having walls partly defined by the bed plate and the carriage plate so that when a partial vacuum is formed in the chamber the carriage plate and any circuit board carried by it can be drawn into contact with said electrical contacts; the housing also being adapted to receive and cooperate with a pressure plate assembly having a pressure plate aligned with a bed plate and which is operative to act upon the side of a circuit board remote from the carriage plate to force it into contact with said electrical contacts independently of the existence of a partial vacuum in said chamber.

4,536,052

MODULAR CROSS-CONNECT PANEL

Donn Baker, Middletown; John E. Clarke, Colts Neck, both of N.J., and Chris G. Johnson, New York, N.Y., assignors to AT&T Information Systems, Holmdel, N.J.

Filed Feb. 9, 1984, Ser. No. 578,634
Int. Cl.[3] H05K *7/16*
U.S. Cl. 339—126 R **21 Claims**



1. A modular cross-connection field comprising a vertically mountable connector panel and a stationary support panel adapted to support said connector panel, said connector panel comprising,

a plurality of slots each displaced vertically from the other when said connector panel is supported in position by said support panel,

means on a first side of said connector panel for positioning and retaining with respect to each said slot a plurality of jacks, said means arranged such that jacks positioned thereby will be accessible through said associated slot from a second side of said connector panel,

first cable support means associated with each said slot on said first side of said connector panel for positioning a cable for attachment to said jacks associated with said slot said cable support means including a second flange mounted offset from and parallel to said connection panel,

and wherein said stationary support panel comprises

means for supporting said connector panel such that said connector panel is free to rotate with respect to said support panel,

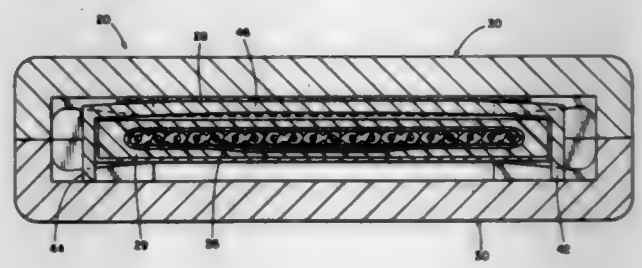
second cable support means associated with each said slot and positioned on said stationary support panel such that said second cable support means cooperates with said first cable support means when said connector panel is supported by said support panel to retain each said cable attached to each said jack associated with each said slot said second cable support means positioned with respect to said first cable support means such that when said connector panel is rotated open, said first and second cable support means are in substantially the same plane with said first cable support means displaced forward of said second cable support means and such that when said connector panel is rotated closed with respect to said stationary panel said first and second cable support means are also in substantially the same plane with said first cable support means positioned partially rearward of said second cable support means.

4,536,053

CONNECTOR ASSEMBLY HAVING GROUNDING STRAP

Ronald R. Maros, Itasca, Ill., assignor to Cooper Industries, Inc., Houston, Tex.

Filed Aug. 23, 1983, Ser. No. 525,636
Int. Cl.[3] H01R *13/648*
U.S. Cl. 339—143 R **4 Claims**



1. A connector assembly for terminating a shielded flat cable of the type comprising an array of generally parallel, regularly spaced coplanar conductors embedded in an insulative layer with a metallic shield surrounding said conductors; said connector assembly comprising:

a pair of metallic components adapted for assembly to form a housing; and

a one-piece metallic grounding strap comprising a first leg, a second leg and a spring arm extending therebetween and together with said legs defining a channel for receiving said cable, said housing defining a void for receiving said strap and said strap having a height greater than the corresponding dimension of said void whereby placing said cable in said channel and in one of the housing components, bending said shield back over said spring arm and assembling said housing results in said spring arm holding said shield in firm contact with said one of the housing components.

4,536,054

FUSE HOLDER, ESPECIALLY FUSE HOLDER FOR ELECTRICAL DEVICES

Peter Wallner, Kriens, and Peter Hollenstein, Lucerne, both of Switzerland, assignors to Schurter AG, Lucerne, Switzerland

Filed Oct. 19, 1983, Ser. No. 543,170
Claims priority, application Switzerland, Nov. 12, 1982, 6592/82
The portion of the term of this patent subsequent to Jun. 12, 2001, has been disclaimed.
Int. Cl.[3] H01R *3/00*
U.S. Cl. 339—147 R **14 Claims**

1. A fuse holder comprising:

a socket member extending along a predetermined lengthwise axis;

said socket member being formed of electrically insulating material and having an open end;

a substantially tubular-shaped head member removably inserted into said open end of said socket member along the lengthwise axis thereof;

said head member being closed at an outer end thereof and

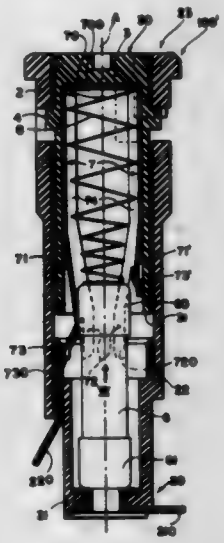
being open at an inner end thereof and being formed of electrically insulating material;

a base contact and a lateral contact containing outwardly directed connection portions secured in said socket member;

a connection conductor arranged in said head member and releasably electrically conductively connected with the lateral contact;

an axially effective compression spring;

said connection conductor and said axially effective compression spring being secured in said head member such that a fuse insert, when located in a work position thereof in the fuse holder, electrically conductively bears at one electrically conductive end thereof at the connection conductor and under the action of said compression spring



bears by means of a further electrically conductive end thereof at the base contact;

said connection conductor being formed from a spring metal and defining a substantially U-shaped bracket member having a web portion and unequal leg members;

said web portion extending transversely with respect to the lengthwise axis of the socket member and said unequal leg members protruding from said web portion;

each leg member extending at an inclination inwardly from the web portion towards an inner contact location for a related end of the fuse insert; and

one of said leg members extending outwardly from said inner contact location towards an outer contact location where it forms a frictional connection with the lateral contact at an inner side thereof.

4,536,055

STAMPED AND FORMED STACKING DEVICE FOR CIRCUIT BOARDS AND A METHOD FOR MAKING

Steven J. Kandybowski, Tower City, and Matthew M. Sucheski, Harrisburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Oct. 19, 1983, Ser. No. 543,554

Int. Cl.³ H01R *11/22, 43/00*

U.S. Cl. 339—258 R **4 Claims**

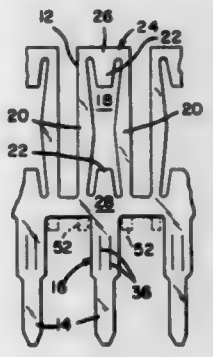
1. A method of making a device for stacking circuit boards, comprising the steps of:

a. providing an elongated strip of material and cutting out an opening adjacent a first end, defining thereby a pair of side members;

b. stamping out a leg at a second end with said leg being of less width than the width of the opening;

c. cutting a pair of longitudinal, parallel slits in the elongated strip intermediate the two ends to define three side by side parallel segments;

d. curving the first end around to near the slits so that the side members and opening define a receptacle for receiving a leg or the like therein; and



e. forming a compliant member by bending the side by side segments outwardly with alternate segments being bent in opposite directions.

3. A product as made by the method of claim 1.

4,536,056

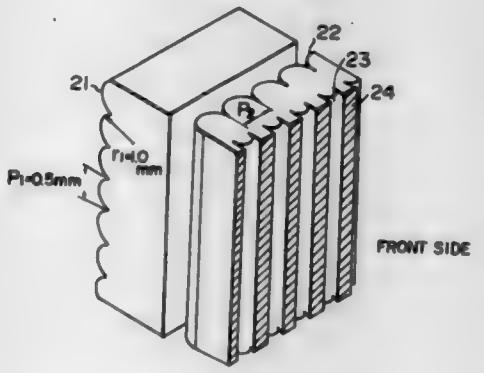
REAR PROJECTION APPARATUS

Masanori Oguino, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Division of Ser. No. 308,590, Oct. 5, 1981, Pat. No. 4,432,010. This application Oct. 7, 1983, Ser. No. 539,758

Int. Cl.³ G03B *21/60*

U.S. Cl. 350—128 **18 Claims**



1. A rear projection screen comprising a Fresnel element and a lenticular sheet, said Fresnel element having a stronger prism effect at a bottom portion than at a top portion thereof and having a finite front conjugate, said lenticular sheet having horizontally-diffusing lenticular lenses on both an input surface and an output surface thereof.

4,536,057

FILTER MOUNTING MECHANISM FOR AN OPTICAL ASSEMBLY

Akiyasu Sumi, and Tohru Kawai, both of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 363,608, Mar. 30, 1982, abandoned. This application Mar. 20, 1984, Ser. No. 591,386

Claims priority, application Japan, Apr. 14, 1981, 56-55762; Apr. 14, 1981, 56-53357; Sep. 24, 1981, 56-151270; Jan. 27, 1982, 57-12423

Int. Cl.³ G02B *7/00, 5/20*

U.S. Cl. 350—318 **3 Claims**

1. A filter mounting mechanism for use with an optical assembly comprising:

an accessory holder having a hole formed therethrough, a holding part which carries a filter and a grip part which is arranged to enable attachment and detachment of said filter mounting mechanism to and from a filter mounting part of said optical assembly; and

filter locking means for locking said filter to said holding part,

said filter locking means having a lock member inserted into said hole formed through said accessory holder, and spring means for urging said lock member, one end of said lock member projecting to the exterior of said accessory holder,



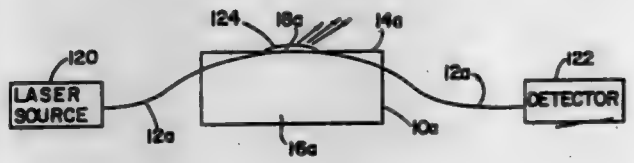
whereby said projecting portion of said lock member is pushed against the urging force of said spring means when said accessory holder is mounted on said optical assembly and said filter is held on said holding part of the accessory holder.

4,536,058

METHOD OF MANUFACTURING A FIBER OPTIC DIRECTIONAL COUPLER

Herbert J. Shaw, Stanford, and Ralph A. Bergh, Palo Alto, both of Calif., assignors to The Board of Trustees of The Leland Stanford Junior University, Stanford, Calif.

Filed Sep. 10, 1981, Ser. No. 300,955
Int. Cl.³ G01N *37/00*
U.S. Cl. 350—320 **22 Claims**



3. A method of manufacturing a fiber optic directional coupler, comprising:

removing a portion of the cladding from a clad fiber at a predetermined location intermediate the ends of said fiber;

introducing light into one end of said fiber for propagation to the other end of said fiber;

applying an index matching substance having a refractive index slightly different than the fiber core to said predetermined location;

changing the temperature of said index matching substance after it has been applied to said predetermined location to correspondingly change the refractive index thereof so that this index, at least momentarily, matches the index of the core to cause at least a portion of said light propagating through said fiber to escape from said fiber;

determining the value of the proportion of the total light introduced at said one end that propagates through said fiber to said second end when the index of said index matching substance is equal to the index of the core;

performing all of the foregoing steps until said proportion of the total light at said second end is equal to a preselected value, said preselected value corresponding to a first coupling efficiency for said coupler;

performing all of the foregoing steps for a second fiber; and

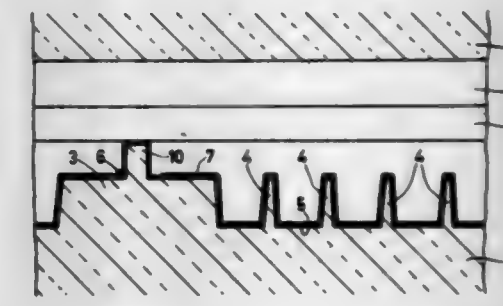
accurately positioning said fibers together, with their cores in close spaced relationship at their respective predetermined locations to form a coupler having said first coupling efficiency.

4,536,059

LIQUID CRYSTAL DISPLAY DEVICE WITH RIDGES

Theodorus H. M. van den Berk, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 27, 1982, Ser. No. 453,423
Claims priority, application Netherlands, Jan. 11, 1982, 8200069
Int. Cl.³ G02F *1/13*
U.S. Cl. 350—333 **16 Claims**



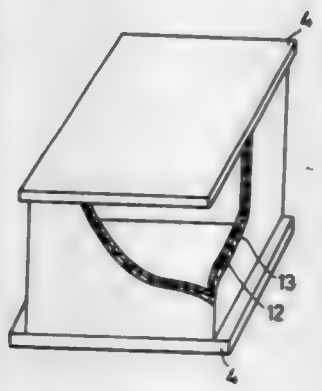
1. In a display device comprising two supporting plates; crossing patterns of strip-shaped electrodes on facing surfaces of said supporting plates, said crossing patterns forming a plurality of picture elements; orienting layers on said electrodes and exposed surfaces of said supporting plates; a layer of cholesteric liquid crystal between said supporting plates, wherein upon applying an electric field across said layer of liquid crystal, said liquid crystal has a focal-conic texture below a first field strength E_1, has a homeotropic-nematic texture above a second field strength E_2, and has one of said two textures for a field strength between E_1 and E_2; and first means for maintaining said liquid crystal in said homeotropic-nematic texture at edges of said picture elements above said field strength E_2 if said field strength between E_1 and E_2 prevails in a central part of each of said picture elements; the improvement comprising second means for dividing each picture element into a number of sub-elements, said second means further maintaining edges of each sub-element in said homeotropic-nematic texture above said field strength E_2 if said field strength between E_1 and E_2 prevails at the area of said picture element.

4,536,060

SEAL FOR DYNAMIC SCATTERING-TWISTED NEMATIC LIQUID CRYSTAL DISPLAY

Toshiaki Takamatsu, Tenri; Fumiaki Funada, Yamatokoriyama; Yutaka Ishii, and Tomio Wada, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Feb. 11, 1981, Ser. No. 233,520
Claims priority, application Japan, Feb. 29, 1980, 55-25912
The portion of the term of this patent subsequent to Sep. 20, 2000, has been disclaimed.
Int. Cl.³ G02F *1/13*; C09K *3/34*
U.S. Cl. 350—343 **13 Claims**



1. A matrix liquid crystal display device for video image

using DTN mode comprising a pair of transparent substrates defining a pair of mutually facing surfaces, a transparent electrode assembly provided on each of said mutually facing surfaces, an insulating layer with orienting property formed on said electrode assembly, a liquid crystal layer formed by depolarization in a twisted nematic layer, said liquid crystal being nematic with a negative dielectric anisotropy, said liquid crystal layer being disposed between said mutually facing insulating layers, and a polarizer provided on the opposite surface of each of said substrates from said liquid crystal layer, said liquid crystal layer satisfying the following relationship within a range of ambient temperatures:

$$16 \cdot \frac{C}{C_o} \cdot N \cdot F \gtrsim f_c \gtrsim 8 \cdot N \cdot F$$

in which N stands for the number of multiplex driving, F stands for the frame frequency of an image signal, C stands for the capacitance per unit area of said insulating layers, and C_o stands for the capacitance per unit area of said insulating layers when they have a specific dielectric constant ϵ of about 4, and a thickness of about 100 Å the fc value of the device being at least about 29 kHz, whereby the reproduction of a video image with a half-tone is achieved; said substrates being adhered to each other and sealed by two resin layers in which the outer layer is a thermoplastic polyamide layer and the inner layer is a saturated polyester layer having a higher melting point than said polyamide.

4,536,061

DISPLAY ELEMENT

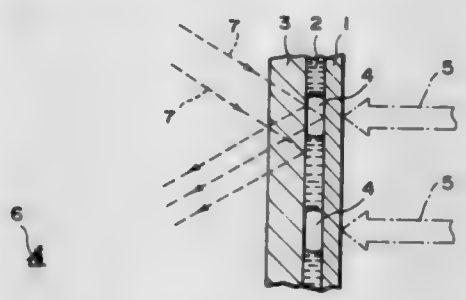
Yukuo Nishimura, Sagamihara, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 29, 1982, Ser. No. 445,069

Claims priority, application Japan, Dec. 11, 1981, 56-200766; Dec. 11, 1981, 56-200767; Dec. 11, 1981, 56-200768; Dec. 11, 1981, 56-200769; Dec. 11, 1981, 56-200770; Dec. 11, 1981, 56-200771; Dec. 11, 1981, 56-200772; Dec. 11, 1981, 56-200773; Dec. 11, 1981, 56-200774; Dec. 11, 1981, 56-200775; Dec. 11, 1981, 56-200776; Dec. 11, 1981, 56-200777; Dec. 11, 1981, 56-200778; Dec. 11, 1981, 56-200779; Dec. 11, 1981, 56-200780; Dec. 11, 1981, 56-200781; Dec. 11, 1981, 56-200782; Dec. 11, 1981, 56-200783; Dec. 11, 1981, 56-200784

Int. Cl.[3] G02F *1/01*

U.S. Cl. 350—354 **29 Claims**



1. A display element for display of a visible image, said element comprising a non-light-transmittive liquid layer and a heat generating element disposed behind said liquid layer to produce bubbles in said liquid layer in accordance with selective heating of different portions of said heat generating element;

wherein the contrast between the image and non-image sections of the display element is based on the difference between the light reflected from behind said liquid layer and the light reflected from said liquid layer.

4,536,062

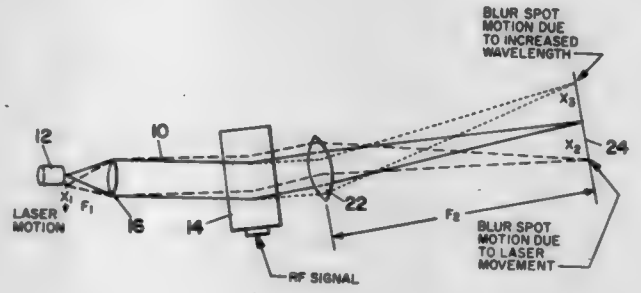
THERMAL STABILIZATION FOR AN ACOUSTO-OPTIC DEVICE

Michael G. Price, Seabrook; Otis G. Zehl, and Robert D. Bonney, both of College Park, all of Md., assignors to Litton Systems, Inc., College Park, Md.

Filed Jul. 21, 1982, Ser. No. 400,466

Int. Cl.[3] G02F *1/11*

U.S. Cl. 350—358 **11 Claims**



1. An acousto-optic device utilizing collimated light from a solid state laser that passes through an acousto-optic modulator, comprising:

means for mounting said solid state laser to direct said collimated light toward and through said acousto-optic modulator at an input angle thereto;

said solid state laser generating a beam of collimated light whose wavelength increases as heat within said laser increases;

said acousto-optic modulator causing the diffraction of said collimated light beam to increase as said wavelength of said beam increases for directing said beam from said modulator at an increased exit angle; and

said means for mounting said laser including heat sink means to displace said laser and thereby reduce said input angle as heat within said laser increases, wherein said laser displacement reduces said input angle to offset said increase in said exit angle of said beam.

4,536,063

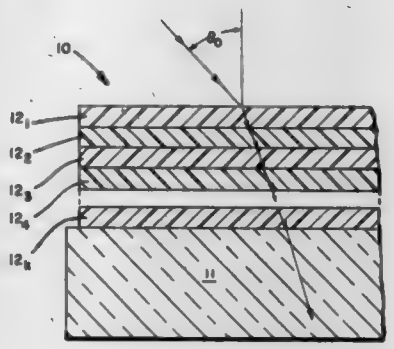
TRANSMISSIVE PHASE RETARDER

William H. Southwell, Thousand Oaks, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Continuation of Ser. No. 449,791, Dec. 14, 1982, abandoned. This application Feb. 20, 1985, Ser. No. 702,865

Int. Cl.[3] G02B *5/30, 1/10*

U.S. Cl. 350—395 **5 Claims**



1. A transmissive phase retarder in which reflection of an incident beam of light is substantially reduced and in which the incident light experiences a phase retardation between the s- and p-plane polarization components of transmitted light, said transmissive phase retarder comprising:

a transmissive substrate consisting of zinc selenide;

a plurality of superimposed, thin film, transparent layers on said transmissive substrate, adjacent layers of which are made of materials of substantially different indices of

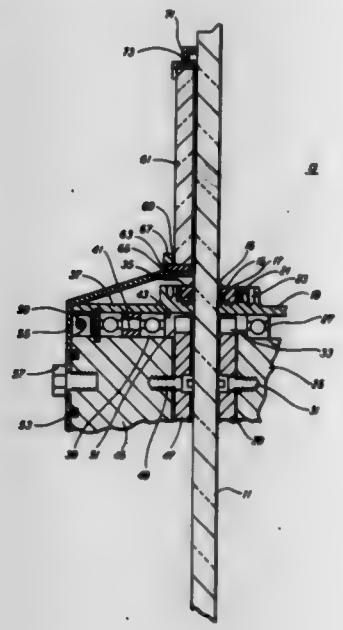
refraction, said layers being selected from the group consisting of zinc selenide and thorium fluoride, the optical thicknesses of adjacent layers being different and selected to provide a 90° phase shift between said s- and p-plane polarization components of transmitted light.

4,536,064

CLEAR VIEW SCREEN

Arnold Schindel, Fairlawn, and Edward Higgins, Jr., Madison, both of N.J., assignors to The Singer Company, Little Falls, N.J.

Filed Feb. 3, 1984, Ser. No. 576,843
Int. Cl.³ G02B *11/08*; E06B *7/00*
U.S. Cl. 350—583 **5 Claims**



1. In a clear viewing screen comprising: a fixed screen element; a rotatable disk-like screen element; means supporting said disk-like screen element for rotation; an electric motor for driving said disk-like screen element; and means mounting said motor to the fixed screen element, the improvement comprising:

a magnetic coupling having a first coupling half and a second coupling half, said first coupling half coupled to said motor and said second coupling half coupled to said disk-like screen element, said first and second coupling halves disposed opposite each other on opposite sides of said fixed screen element whereby said magnetic coupling will transmit torque from said motor through said fixed screen to said disk-like screen element without the need for a hole in said fixed screen, wherein said means supporting said disk-like element comprises a plurality of cam followers disposed at the periphery of said disk-like element; and

wherein said motor is supported at the periphery of said disk-like element and further including a ring gear surrounding said disk-like element; a pinion supported at the periphery of said disk-like element engaging said ring gear, said first and second coupling halves disposed respectively on said pinion and said motor.

4,536,065

FIXATION DEVICE FOR EYE TESTING

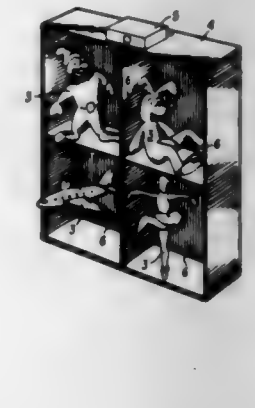
Larry A. Sheingorn, 139 Lamont La., Gaithersburg, Md. 20878

Filed Sep. 29, 1982, Ser. No. 426,886
Int. Cl.³ A61B *3/02*
U.S. Cl. 351—239 **6 Claims**

1. A fixation device for testing vision comprising:

(a) remote transmission means for transmitting any one of a plurality of characteristic signals which is selected by the examiner,

(b) receiving means having no physical connection to the transmission means for receiving and identifying said characteristic signal and for generating and directing a function command signal to the appropriate function circuitry, and





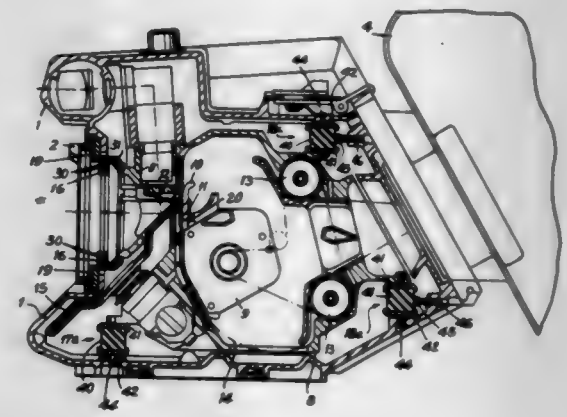
(c) function circuitry for receiving the function command signals from the receiving means and operating two or more accommodative fixation targets in response thereto, wherein said accommodative fixation targets are mechanical figures which move and emit sounds when activated.

4,536,066

ADJUSTABLE MOUNTINGS FOR A MOVIE CAMERA

Fritz Bauer, Loquaiplatz 13/26, A-1060 Vienna, Austria

Continuation-in-part of Ser. No. 61,624, Jul. 30, 1979, abandoned. This application Jul. 31, 1980, Ser. No. 174,063
Claims priority, application Austria, Jul. 30, 1979, 5242/79; Switzerland, Oct. 15, 1979, 9252/79; Austria, Jan. 2, 1980, 5/80
Int. Cl.³ G03B *31/00*
U.S. Cl. 352—35 **37 Claims**

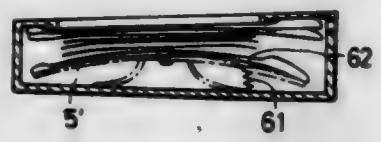


1. In a movie camera including an outer housing and an inner housing, film transport means supported on said inner housing, shutter means supported on said inner housing and film gate means supported on said inner housing, the improvement comprising at least two adjustable mounting means constructed and arranged to selectively adjustably position and secure said inner housing within said outer housing, each said adjustably mounting means being mounted to said inner housing and to said outer housing for acoustically isolating said inner housing from said outer housing, said adjustable mounting means including sound dampening means for acoustically isolating said inner housing from said outer housing, at least a first said adjustable mounting means being constructed and arranged to permit said positioning of said inner housing to be adjusted with respect to said outer housing in at least three directions, each direction being perpendicular with respect to each other.

4,536,067
FILM PACK

Yoshio Hara, and Yukihiro Sugimoto, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Nov. 7, 1983, Ser. No. 549,520
Claims priority, application Japan, Nov. 8, 1982, 57-196495
Int. Cl.[3] G03B *19/10*
U.S. Cl. 354—180 8 Claims





1. A film pack, comprising:

a box-shaped case body containing instant picture film units, supporting means for partially supporting said film units, said case body having an opening for exposing an image forming region of each film unit and a discharging outlet for discharging exposed film units therefrom;

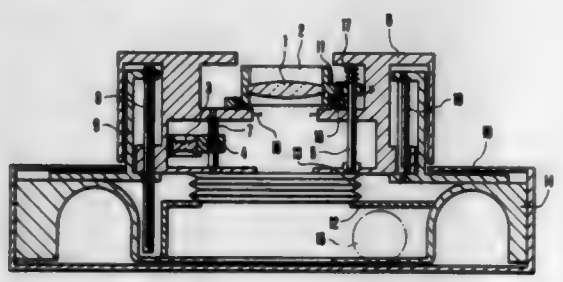
first biasing means integrally formed with said supporting means, said first biasing means located in said case body urging said film units toward said opening with a first biasing force; and

second biasing means located in said case body urging a localized portion of said image-forming region of each film unit toward said opening with a second biasing force, said second biasing force being substantially independent of said first biasing force.

4,536,068
FOCAL LENGTH CHANGEABLE CAMERA

Takanori Kodaira, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 27, 1984, Ser. No. 593,813
Claims priority, application Japan, Mar. 28, 1983, 58-52031; Mar. 28, 1983, 58-52032
Int. Cl.[3] G03B *3/00, 17/38*
U.S. Cl. 354—195.12 4 Claims



1. A focal length changeable camera comprising:

(a) a master lens system;

(b) first moving means for moving said master lens system along an optical axis of said master lens system,

said first moving means being movable between three positions, consisting of a position for moving said master lens system axially forward, another position for effecting no forward movement, and a predetermined position intervening therebetween;

(c) an auxiliary lens system;

(d) second moving means for moving said auxiliary lens system between a position where it is in the optical path of said master lens system and another position where it is retracted from said optical path,

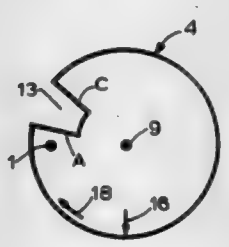
said second moving means moving said auxiliary lens system into the optical path when said first moving means is moved axially forward from said predetermined intermediate position; and

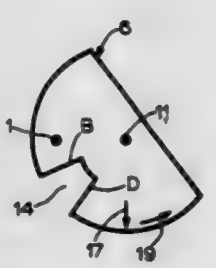
(e) lock means for holding said first moving means stationary in said predetermined position, said lock means being actuated by setting a close-up photography mode.

4,536,069
TWO ROTARY BLADE CAMERA SHUTTER

Serge Kunica, Wellesley, Mass., assignor to Itek Corporation, Lexington, Mass.

Filed Nov. 2, 1983, Ser. No. 548,057
Int. Cl.[3] G03B *9/14, 9/22*
U.S. Cl. 354—265 6 Claims





1. An improved in between lens rotary two blade shutter for interrupting a bundle of light positioned along an optical axis comprising;

A. a first blade having a first light transmitting aperture therein;

B. a second blade having a second light transmitting aperture therein;

C. support means for rotatably supporting said first and second blades;

D. blade control means for;

D-1 initially positioning said first aperture to a first side of said optical axis to cause said first blade to intercept said light bundle;

D-2 initially positioning said second aperture of said second blade to a second opposite side of said optical axis but to the side thereof to cause said second blade to intercept said light bundle;

D-3 accelerating said first blade in a first rotary direction for causing said first aperture to move away from said optical axis and for accelerating said second blade in a second direction, opposite said first rotary direction, to cause said second aperture to move away from said optical axis so that said first and second apertures become positioned at said optical axis upon rotation of said first and second blades through an angle substantially greater than 180°;

D-4 deaccelerating said first and second blades after said first and second apertures thereof are positioned at said optical axis for producing stoppage thereof when said first aperture of said first blade is positioned at said second side to cause said first blade to intercept said light bundle, and when said second aperture of said second blade is positioned at said first side of optical axis to cause said second blade to intercept light bundle; and

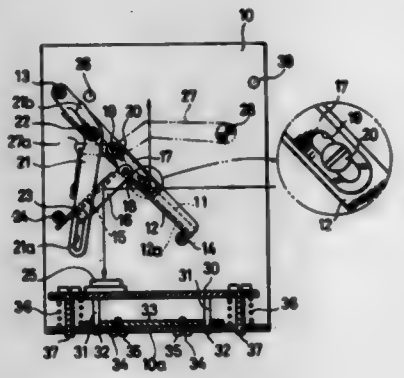
D-5 thereafter causing said first blade to become accelerated in said second rotary direction and said second blade to become accelerated in said first rotary direction, for providing rotation of said blades through an angle substantially greater than 180° before said first and second apertures again are positioned at said optical axis to effect transmission of light through said blades.

4,536,070

DEVICE FOR ADJUSTING THE FOCUSING DETECTING MECHANISM OF A SINGLE-LENS REFLEX CAMERA

Tetsuji Shono, Tokyo, Japan, assignor to Asahi Kogaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jan. 24, 1984, Ser. No. 573,457
Claims priority, application Japan, Jan. 24, 1983, 58-8053[U]
Int. Cl.[3] G03B 3/00
U.S. Cl. 354—402 3 Claims



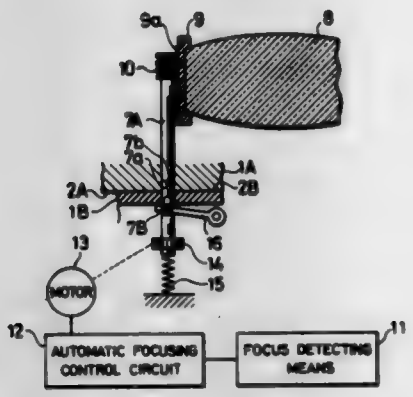
1. A device for adjusting a focusing detecting mechanism in a single-lens reflex camera which comprises: a first mirror holding frame having a first mirror of the half reflecting type adapted to divide a light beam from a lens into a reflected light beam and a transmitted light beam, and being rotatably mounted on a mirror box body; a second mirror holding frame having a second mirror adapted to reflect the transmitted light beam from said first mirror, and being rotatably mounted on said first mirror holding frame through at least one shaft; and a focusing detecting device provided at a position which is on the optical axis of said light beam reflected by said second mirror and is in conjugation with a finder focusing screen; wherein said at least one shaft for mounting said second mirror holding frame is movable in a direction which is substantially parallel with the surface of said first mirror.

4,536,071

MOUNT ARRANGEMENT AND INTERCHANGEABLE LENS UNIT FOR PHOTOGRAPHIC CAMERA

Yukio Maekawa, 5-3-1-607, Harayamadai Sakai, Osaka Prefecture; Tsuneyo Metabi, 1-29-12-306, Harumidai Sakai, Osaka Prefecture, and Masatake Niwa, 2-300-1, Higashi-uenoshiba-cho, Sakai, Osaka Prefecture, all of Japan

Filed Aug. 30, 1984, Ser. No. 645,939
Claims priority, application Japan, Sep. 2, 1983, 58-162362
Int. Cl.[3] G03B 3/10
U.S. Cl. 354—400 7 Claims



1. In a lens interchangeable photographic camera capable of automatic diaphragm control and automatic focusing and including a bayonet mount device which is adapted to mount and demount an interchangeable lens unit to and from a camera body through predetermined angle clockwise rotation and counterclockwise rotation of said lens unit relative to said camera body as viewed from the front of said camera, respectively, a mount arrangement comprising:

a lens unit mount member fixedly provided on said lens unit, and having bayonet claws formed at a rearmost portion of said lens unit and an annular mount face formed forwardly of said bayonet claws;

a camera body mount member fixedly provided on said camera body, and having an annular mount face formed at a forwardmost portion of said camera body so as to be brought into contact with said mount face of said lens unit mount member with the mounting of said lens unit on said camera body completed and bayonet claws formed rearwardly of said mount face of said camera body mount member so as to be engageable with said bayonet claws of said lens unit mount member, said bayonet claws of said lens unit mount member and said bayonet claws of said camera body mount member constituting said bayonet mount device;

a positioning recess formed on said mount face of said lens unit mount member at an immediate left side portion of said lens unit mount member as viewed from the rear of said lens unit with the mounting of said lens unit on said camera body completed;

a positioning member provided on said mount face of said camera body mount member at an immediate right side portion of said camera body mount member and urged to project from said mount face of said camera body mount member for engaging said positioning recess with the mounting of said lens unit on said camera body completed;

a driven shaft for the automatic focusing, provided on said mount face of said lens unit mount member at a lower left side portion of said lens unit mount member as viewed from the rear of said lens unit with the mounting of said lens unit on said camera body completed and angularly spaced from said positioning recess by an angle which is larger than said predetermined angle for the mounting and demounting of said lens unit to and from said camera body;

a driving shaft for the automatic focusing, provided on said mount face of said camera body mount member at a lower right side portion of said camera body mount member as viewed from the front of said camera body and arranged to be engageable with said driven shaft with the mounting of said lens unit on said camera body completed for driving said driven shaft;

lens unit electrical contacts provided along the inner peripheral side of the upper portion of said lens unit mount member with the mounting of said lens unit on said camera body completed and arranged rearwardly of said mount face of said lens unit mount member and forwardly of the rear faces of said bayonet claws of said lens unit mount member;

camera body electrical contacts provided along the inner peripheral side of an upper portion of said camera body mount member and arranged rearwardly of said mount face of said camera body mount member so as to be brought into contact with said lens unit electrical contacts with the mounting of said lens unit on said camera body completed for signal transmission between said lens unit and said camera body;

a diaphragm interlocked member for the automatic diaphragm control, provided at the inner peripheral side of a left side portion of said lens unit mount member as viewed from the rear of said lens unit with the mounting of said lens unit on said camera body completed and having a rear end portion arranged rearwardly of said mount face of said lens unit mount member and forwardly of said lens unit electrical contacts so as not to interfere with said camera body electrical contacts during the start and the course of the mounting of said lens unit on said camera body; and

a diaphragm operating member for the automatic diaphragm control, provided at the inner peripheral side of a right side portion of said camera body mount member as

viewed from the front of said camera body and having a front end arranged rearwardly of said mount face of said camera body mount member and forwardly of said electrical contacts for said camera body, said rear end portion of said diaphragm interlocked member and said front end portion of said diaphragm operating member being engageable with one another with the mounting of said lens unit on said camera body completed.

4,536,072

AUTOMATIC FOCUS CONTROL SYSTEM

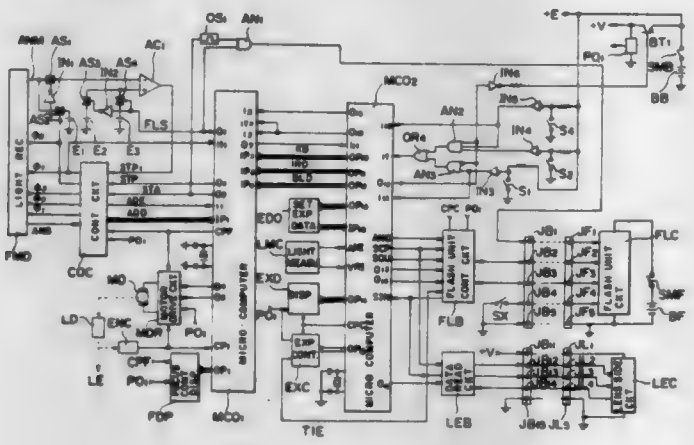
Nobuyuki Taniguchi, Tondabayashi; Norio Ishikawa, and Takeshi Egawa, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

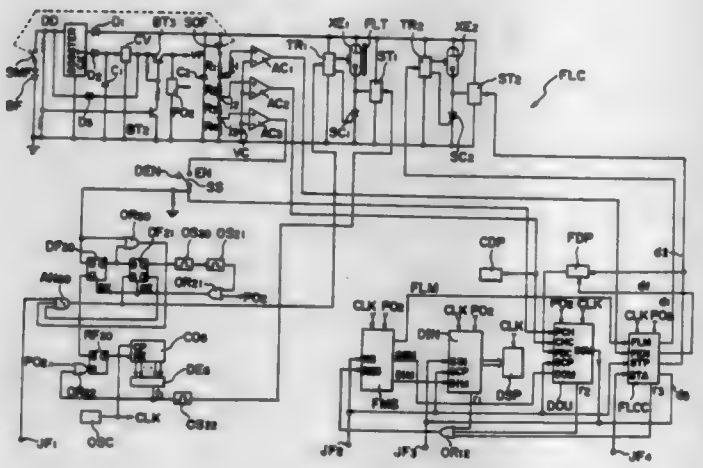
Filed Aug. 22, 1984, Ser. No. 643,669

Claims priority, application Japan, Aug. 24, 1983, 58-154378; Sep. 1, 1983, 58-161393

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—403 **36 Claims**





1. In a system for automatically controlling a focus of an objective lens operable by means of emitting a supplementary light in case the system is not satisfactorily operable under an ambient light, an improvement comprising:

means for sensing a spatial distribution of brightness of an object to provide initial data;

means for processing the initial data to provide focusing information descriptive of a focus condition of the objective lens;

means for generating a driving a power to control the focus of the objective lens in accordance with the focusing information;

means for directing the emission of the supplementary light in synchronism with the function of the sensing means;

means for examining whether or not the initial data is a reliable base of the focusing information;

means for interrupting the generating means from functioning in accordance with the focusing information obtained while the examining means fails to determine the initial data reliable;

means for detecting that the emission of the supplementary light is ready;

means for controlling the directing means to direct the emission of the supplementary light in response to a condition that the examining means fails to determine the initial data reliable and a condition that the detecting means detects the supplementary light emission ready; and

means for causing the sensing means to repeat its function.

4,536,073

APPARATUS FOR DETECTING A CONDITION OF SHARPEST FOCUS

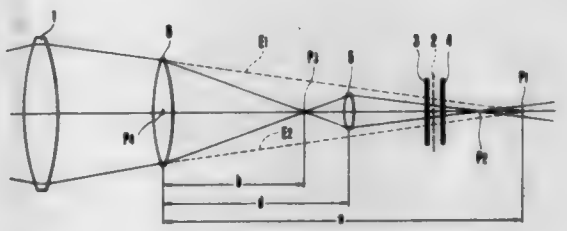
Nozomu Kitagishi, Tokyo; Kenji Suzuki, and Shinji Sakai, both of Kanagawa, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Aug. 18, 1983, Ser. No. 524,300

Claims priority, application Japan, Aug. 20, 1982, 57-145294

Int. Cl.³ G03B *13/20*

U.S. Cl. 354—406 **8 Claims**



6. An in-focus detecting apparatus comprising:

(a) an objective lens for focusing an image of an object;

(b) a secondary image forming lens for refocusing the light flux from said objective lens and having an optical axis; and

(c) first and second sensors arranged on the optical axis of the secondary image forming lens, the first sensor arranged before a predetermined focal plane of said second image forming lens and the second sensor arranged after the predetermined focal plane,

said first and second sensors each comprising a plurality of photosensitive elements connected in series, and the pitch of individual elements of the first sensor being different from that of the elements of the second sensor so as to equalize the output of the first sensor to that of the second sensor.

4,536,074

EXPOSURE CONTROL MODE SELECTION DEVICE FOR CAMERA

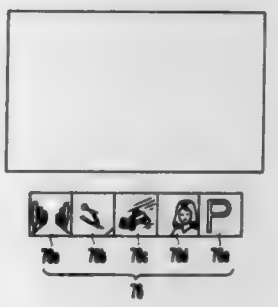
Hiromi Someya; Nobuyuki Suzuki, and Toyokazu Mizogui, all of Kanagawa, Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 491,052, May 3, 1983, abandoned. This application Dec. 7, 1984, Ser. No. 679,607

Claims priority, application Japan, May 14, 1982, 57-81766; May 14, 1982, 57-81767

Int. Cl.³ G03B *7/097*

U.S. Cl. 354—442 **7 Claims**



1. An exposure control device for a camera, comprising:

exposure control means having a plurality of program lines

which have programmed combinations of aperture values and shutter times, wherein each line of said plurality of program lines of the exposure control means is different from each other;

display means having a display part to display a picture effect obtainable by said program lines with a pictograph, said means having such plurality of display parts as corresponding to a number of the program lines;

light measuring means for measuring a brightness of an object to be photographed, said light measuring means being arranged to produce an electrical signal corresponding to the brightness of said object;

selector means for selecting one program line out of said plurality of program lines and displaying a display part corresponding to the selected program line, wherein the selection operation of said selector means is guided by a pictograph which provides a concrete idea of a picture effect obtainable through said display part of said display means; and

control means for controlling a display action of each display part of said display means, said control means controlling the display of the display part corresponding to the program line selected by said selector means and receiving an output signal from said light measuring means to vary the display of the display part corresponding to the selected program line in cases where the brightness of an object does not give the picture effect expected from said program line selected by the selector means.

4,536,075

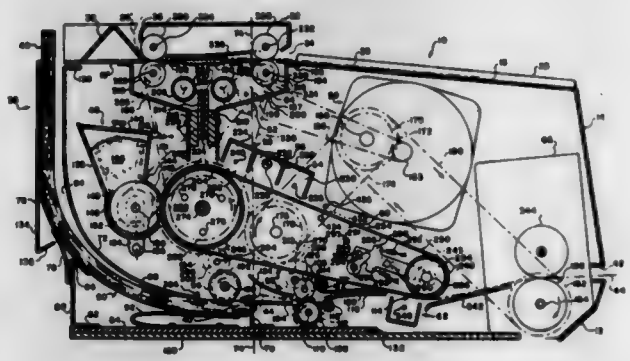
BRUSH TONING MEANS FOR ELECTROPHOTOGRAPHIC COPIER APPARATUS

Lionel B. Hoffman, Wyckoff, N.J., assignor to Tetras S.A., Paris, France

Division of Ser. No. 313,948, Oct. 22, 1981, Pat. No. 4,415,263. This application Aug. 22, 1983, Ser. No. 525,608

Int. Cl.³ G03G *15/08*

U.S. Cl. 355—3 DD **7 Claims**



1. In an electrostatic copying machine which includes an imaging system having a rotary electrophotographic member, rotary means supporting the electrophotographic member to rotate in a defined endless path including an arcuate area as at least a portion of the path, means for driving the rotary means at a predetermined speed, the imaging system including means for producing a latent image on the outer surface of the electrophotographic member adapted to be carried to said portion of said path for being toned thereat, and toning means for developing the latent image disposed at said portion of said path,

the invention herein which comprises:

said toning means comprising a rotary magnetic brush journalled for rotation on an axis parallel to said arcuate area and adapted to have a toner layer applied to at least a portion of the circumference of the brush and brought into engagement with said electrophotographic member at said area, a hopper adapted to carry a quantity of toner, a cylindrical formation connected to the bottom of the hopper spaced from and encompassing all but a segment of the volume occupied by said brush, the hopper having a wall which provides a bottom edge spaced from the surface of said brush to form a metering blade adjacent said segment, the segment extending from said blade to the electrophotographic member and means provided to rotate the brush in a direction where a layer of toner will be metered onto said brush and thereafter be carried through said segment into engagement with said electrophotographic member.

4,536,076

APPARATUS FOR SUPPLYING A LIQUID TO A HEATED SURFACE

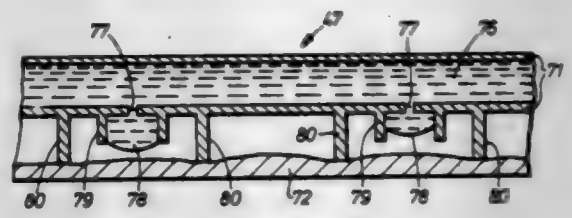
Alan E. Bickerstaff, London; Austin H. Cotton, Padbury; Michael G. Ladell, Aspley Guise, and David M. Neale, Leighton Buzzard, all of England, assignors to Xerox Corporation, Stamford, Conn.

Filed Sep. 19, 1983, Ser. No. 533,721

Claims priority, application United Kingdom, Sep. 21, 1982, 8226847

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—3 FU **5 Claims**



1. Apparatus for forming toner images on copy substrates including a heat and pressure fuser and a high viscosity release oil applicator therefor wherein said release oil applicator comprises:

a distribution gallery arranged to supply said release oil to a surface of said heat and pressure fuser, said gallery having a bottom wall;

a plurality of orifices in said bottom wall; and

a series of individual drop-forming chambers disposed above said surface, each of said orifices providing an oil flow path between said gallery and one of said drop-forming chambers each orifice and drop-forming chamber having dimensions which cause some oil to remain in each of said orifices as said fuser cools from its operating temperature to ambient temperature to thereby preclude air entering said gallery upon cooling of said release oil.

4,536,077

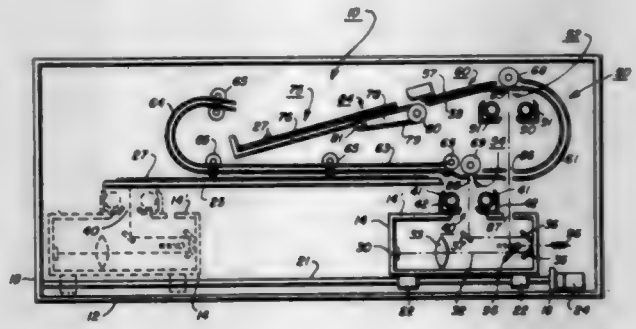
MULTI-MODE SCANNER

James C. Stoffel, Rochester, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Apr. 29, 1983, Ser. No. 489,982

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—8 **9 Claims**



1. A document scanner comprising:

(a) a document supply tray;

(b) first and second scan stations;

(c) means forming a path for conveying documents removed

from said tray past said first and second scan stations in succession and back to said tray, said path including means to invert the document as the document is moving from said first scan station to said second scan station whereby one side of the document is scanned at said first scan station and the other side at said second scan station;

(d) document transport means for transporting documents from said tray along said path past said first and second scan stations and back to said tray;

(e) each of said first and second scan stations including a scanning slit through which the document moving along said path is viewed;

(f) means for illuminating said scanning slits and the document portion thereover;

(g) at least one scanning array; and

(h) optical means for selectively transmitting images of the document portion viewed through said scanning slits of said first and second scan stations to said array whereby both sides of the document are scanned.

4,536,078

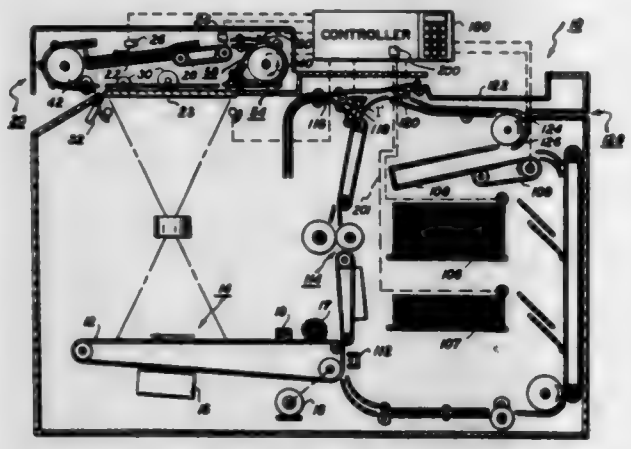
RECIRCULATIVE DOCUMENT DUPLEX COPYING

Richard T. Ziehm, Webster, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 25, 1983, Ser. No. 497,945

Int. Cl.³ B65H *5/26, 5/02, 1/06*; G03G *15/00*

U.S. Cl. 355—14 SH **7 Claims**



1. In a copier with an automatic document handling system for recirculative precollation copying, in reverse serial order, of a set of simplex document sheets to provide precollated simplex or duplex (two-sided) copies therefrom, with proper orientation of the document images on the copy sheets for copies made on preprinted, prepunched, or other special orientation restricted copy sheets, as well as for copies made on plain paper or other non-orientation sensitive copy sheets, and with counting means for counting the number of document sheets in the document set by the end of the first circulation thereof, the improvement wherein:

said copier has a special copy sheet supply means for said special orientation restricted copy sheets and a main copy sheet supply means restricted to said non-orientation sensitive copy sheets,

first switching means for selecting between the feeding of copy sheets from said main copy sheet supply means or said special copy sheet supply means for said copies,

second switching means for selecting between said simplex or duplex copying,

and control means connecting with said first and second switching means and said document handling system for causing said document handling system to circulate the set of document sheets once before copying them to count them with said counting means and determine whether there are an odd or even number only in response to both said first switching means selecting said special copy sheet supply means rather than said main copy sheet supply means and said second switching means selecting duplex copying rather than simplex copying.

5. In an automatic document handling method for recirculative precollation copying of a set of simplex document sheets on a simplex and duplex copier to provide precollated simplex or duplex (two-sided) copies therefrom, with proper orientation of the document images on the copy sheets for copies made on preprinted, prepunched, or other special orientation restricted copy sheets, as well as for copies made on plain paper or other non-orientation sensitive copy sheets, and with counting the number of document sheets in the document set by the end of the first circulation thereof, and wherein said copier has at least two separate copy sheet supplies, the improvement comprising the steps of:

loading said special orientation restricted copy sheets only into a special copy sheet supply and loading said non orientation sensitive copy sheets only into a main copy sheet supply,

selecting between the feeding of copy sheets from said main copy sheet supply or said special copy sheet supply for making copies,

selecting between said simplex or duplex copying,

and automatically circulating the set of document sheets once before copying them to count them and determine whether there are an odd or even number only in response to selecting said special copy sheet supply rather than said main copy sheet supply together with selecting duplex copying rather than simplex copying.

4,536,079

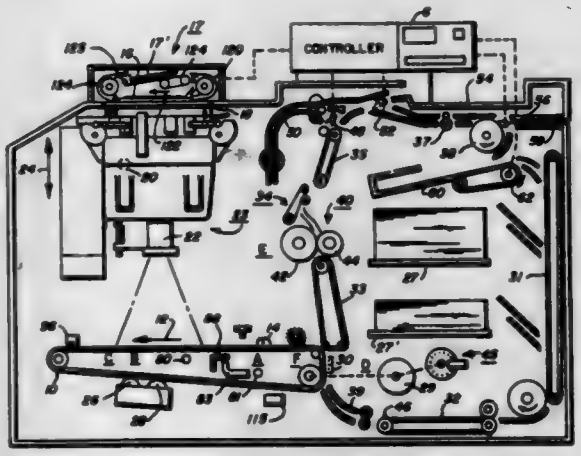
SERVICING SYSTEM FOR REPRODUCTION MACHINES

Craig S. Lippolis, and Tuan A. Nguyen, both of Webster, N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 26, 1983, Ser. No. 526,922

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **4 Claims**



1. A method for checking and adjusting the position of a test image in the interdocument area of a recording member in a reproduction machine or printer, said machine having a plurality of discrete operating components cooperable with one another to produce copies with test image generating means adapted when actuated to produce said test image on said recording member, programming means for programming said machine for copy runs, display means for displaying the copy program, and memory means for storing the operating timing parameter of said test image generating means, comprising the steps of:

(a) using said programming means, inputting a preset service routine for accessing and displaying on said display means the current timing parameter for said test image generating means, said service routine programming said machine to produce a preset number of service copies of said test image;

(b) operating said machine;

(c) viewing the service copies produced by said machine and adjusting the timing parameter of said test image generat-

ing means to thereby change the position of said test image on said recording member; and

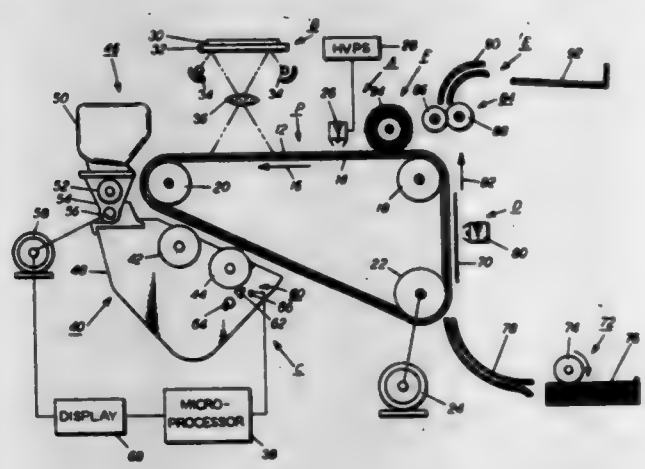
(d) repeating step c until the timing parameter of said test image generating means is set to place said test image in desired position on said recording member.

4,536,080

DEVELOPER MATERIAL END OF LIFE SENSING

Oscar G. Hauser, Rochester; Dusan G. Lysy, Fairport, and Richard F. Koehler, Jr., Webster, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Aug. 19, 1983, Ser. No. 524,612
Int. Cl.[3] G03G *15/08*
U.S. Cl. 355—14 D 22 Claims



1. An electrophotographic printing machine of the type having a developer roller transporting a developer material comprising at least carrier granules having toner particles adhering triboelectrically thereto closely adjacent to an electrostatic latent image recorded on a photoconductive surface so as to develop the latent image with toner particles, wherein the improvement includes:

a member, positioned closely adjacent to the developer roller, adapted to attract at least a portion of the toner particles to at least one surface thereof;

means for transmitting a beam of energy through said member onto the toner particles adhering to the surface thereof with the internal angle of incidence of the beam of energy being greater than the critical angle of incidence of said member;

means for detecting the intensity of the beam of energy internally reflected through said member, said detecting means generating a signal indicative of the quantity of toner particles attracted to the surface of said member; and

means for processing the signal received from said detecting means and transmitting a signal indicating the end of the useful life of the developer material.

4,536,081

DATA COPY SYSTEM

Harold A. Gell, 13720 Lockdale Rd., Silver Spring, Md. 20906

Filed Feb. 8, 1983, Ser. No. 464,853
Int. Cl.[3] G03C *3/00*
U.S. Cl. 355—20 16 Claims

1. An apparatus for copying an image on an image display means, comprising:

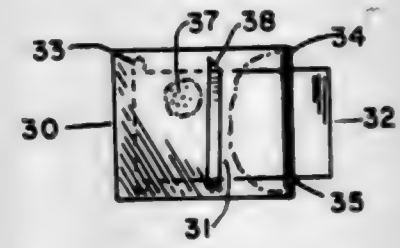
a photosensitive media;

a container for said photosensitive media adapted to hold said photosensitive media adjacent to said image display means;

an exposure opening in said container through which said photosensitive media may be exposed;

an opaque cover for said photosensitive media dimensioned to render said exposure opening light impervious;

means to permit at least partial removal of said opaque cover from said exposure opening while said photosensitive media is held adjacent to said image display means by said container, including an edge opening in said container for passing said opaque cover therethrough and between said exposure opening and said photosensitive media;



stop means on said opaque cover for preventing the complete removal of said opaque cover from said container through said edge opening; and

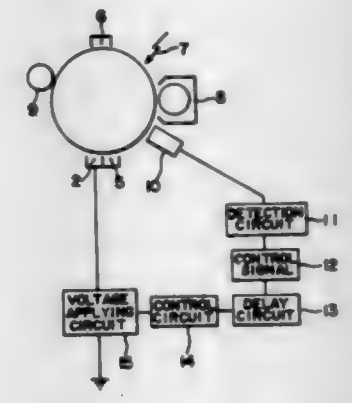
a developer applicator affixed to said opaque cover for applying developer to said photosensitive media.

4,536,082

TRANSFER TYPE ELECTROSTATIC REPRODUCING APPARATUS

Mitsuo Motohashi; Mitsugu Nemoto, and Akihiko Tamura, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 8, 1982, Ser. No. 433,437
Claims priority, application Japan, Oct. 12, 1981, 56-161056; Oct. 12, 1981, 56-161057; Oct. 12, 1981, 56-161058
Int. Cl.[3] G03G *15/00*
U.S. Cl. 355—3 SH 9 Claims



1. In electrostatic reproducing apparatus comprising a charge receptor which moves in one direction cyclically in a defined path and upon which an electrostatic latent image is formed in a first part of said path, developing means to which a developing current is supplied for developing the electrostatic image into a toner image in a second part of said path, transferring means for transferring the toner image from the charge receptor to a transfer medium in a third part of said path, and charging means for causing the transfer medium to be detached from the charge receptor in a fourth part of said path, the improvement characterized by:

A. exposure means for producing light which irradiates the charge receptor in a part of said path that is between said second and said third parts of said path, said exposure means being adjustably controllable for varying the quantity of light with which the charge receptor is irradiated;

B. detection means for detecting changes in the value of said developing current; and

C. control means connected with said detection means and with said exposure means for controlling the quantity of light produced by the exposure means in accordance with the value of said developing current.

4,536,083

PROCESS AND APPARATUS FOR THE PRODUCTION OF PHOTOGRAPHIC PRINTS FROM DISK SHAPED MASTERS

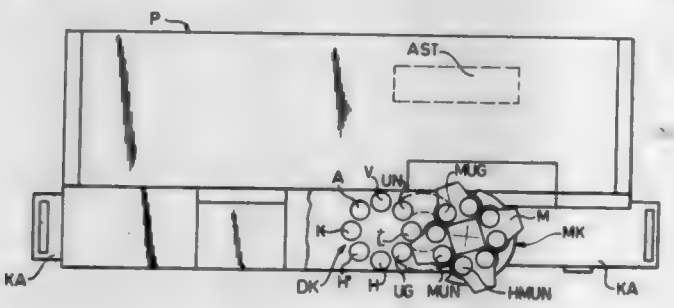
René Lüscher, Regensdorf, Switzerland, assignor to Gretag Aktiengesellschaft, Regensdorf, Switzerland

Filed Feb. 21, 1984, Ser. No. 581,577

Claims priority, application Switzerland, Mar. 10, 1983, 1285/83

Int. Cl.³ G03B *27/52, 27/32*

U.S. Cl. 355—40 **9 Claims**



1. Apparatus for the production of photographic prints from disk-shaped print masters, comprising:

a delivery magazine, a receiving magazine and at least one further magazine,

a measuring station for measuring the photographic characteristics of the individual image locations on the master disks,

a printing station for the photographic printing of the individual image locations on the master disks in accordance with the measured data determined in the measuring station, and

transportion means for transporting the master disks cyclicly from the delivery magazine into a receiving location on a transport path, guiding them over said transport path to the measuring station and the printing station and further to a transfer location on the transport path and to place them from there into the receiving magazine, said transportion means including

a magazine carrousel for rotating the delivery magazine, the receiving magazine and said further magazine in steps,

automatic switching means for rotating the magazine carrousel, after the removal of the last master disk from the delivery magazine, by one step, wherein the delivery magazine, the receiving magazine and said further magazine change positions with respect to the receiving location and the transfer location of the transport path,

follower transport means for transporting the master disks remaining on the transport path at the time of the rotation of the magazine carrousel to the receiving magazine that has moved from the transfer location to a new position by such rotation, and

stacking means for placing transported master disks into the receiving magazine.

4,536,084

PROJECTION DEVICE

Mitsuhiro Tokuhara, Chigasaki, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1984, Ser. No. 621,692

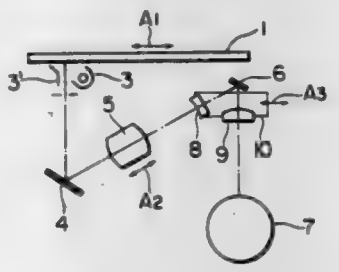
Claims priority, application Japan, Jun. 29, 1983, 58-119179

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **10 Claims**

1. A device for slit-scanning the surface of an original and projecting the image of the surface of the original onto a light-receiving medium, said device comprising:

an imaging optical system for forming the image of the surface of the original on said light-receiving medium, said imaging optical system having means which, in a first condition, has equal imaging magnifications in orthogonal directions, i.e., the widthwise direction of the slit and the lengthwise direction of the slit and is for keeping the surface of the original and said light-receiving medium in an optically conjugate relation and which, in a second condition, has different imaging magnifications in orthogonal directions, i.e., the



widthwise direction of the slit and the lengthwise direction of the slit and is for keeping the surface of the original and said light-receiving medium in an optically conjugate relation in both of said directions.

4,536,085

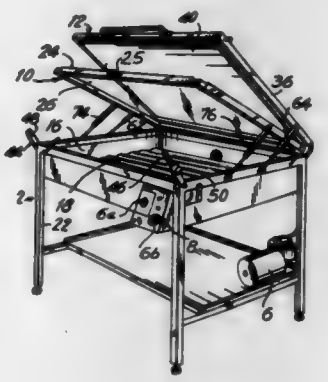
MULTIPLE VACUUM FRAME UNIT

Joseph G. Hliboki, Old Tappan, and Paul Staudenmaier, Flanders, both of N.J., assignors to Teaneck Graphics Corp., Carlstadt, N.J.

Filed Jan. 27, 1984, Ser. No. 574,489

Int. Cl.³ G03B *27/20*

U.S. Cl. 355—93 **14 Claims**



1. A vacuum frame comprising:

a base section;

glass frame means pivotally connected with respect to said base section between a closed position and a desired opened position;

blanket frame means pivotally connected with respect to said glass frame means and said base section between a closed position and a desired opened position;

vacuum means for creating a vacuum between said blanket frame means and said glass frame means when both are in their closed positions;

control means for controlling said vacuum means to create said vacuum;

first means for maintaining said blanket frame means in a desired opened position with respect to said base section; and

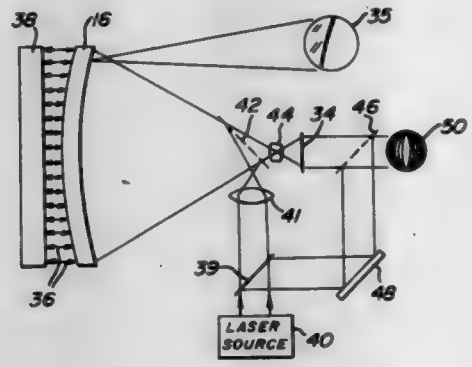
second means for maintaining said glass frame means in a desired opened position with respect to said base section independent of the desired opened position of said blanket frame means.

4,536,086

HOLOGRAPHIC FIGURE SENSOR

David M. Shemwell, Dallas, Tex., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Nov. 18, 1982, Ser. No. 442,940
Int. Cl.³ G01B *9/021*
U.S. Cl. 356—348 **5 Claims**



1. A method of making measurements of the optical figure of a thin flexible mirror from a point near the mirror focus, comprising:

(a) forming small holographic elements which when taken together, cover the entire mirrors surface;

(b) illumainting said holographic elements with a laser beam signal from a source to cause first signals to be diffracted from said holographic elements towards the focal plane of the mirror;

(c) a field lens;

(d) directing said first reflected signals through said field lens to a hologram member to record a hologram thereon representative of the optical figure of said mirror;

(e) repositioning said hologram member to permit use as a source of reference signals for subsequent measurements of said mirror;

(f) illuminating said holographic elements on said mirror with a laser signal to cause second signals to be diffracted therefrom;

(g) directing said second diffracted signals through said hologram member to produce a corrected output signal; and

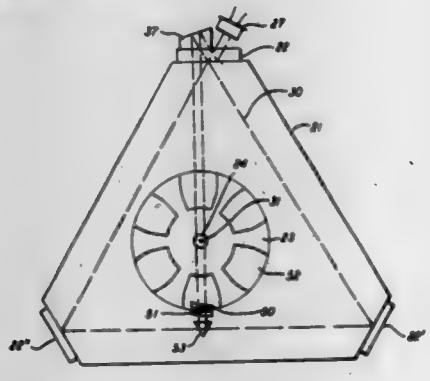
(h) directing said corrected output signal to an interferometer to indicate dimensional deviations in said optical figure of said mirror from the optical figure recorded on said hologram member.

4,536,087

DITHER COMPENSATOR FOR RING LASER GYROSCOPE

Donald Shernoff, White Plains, N.Y., assignor to The Singer Company, Little Falls, N.J.

Filed Jun. 8, 1983, Ser. No. 502,370
Int. Cl.³ G01C *19/64*
U.S. Cl. 356—350 **3 Claims**



1. In a ring laser gyroscope having an instrument casing, a gyroscope block swingably mounted to said casing, oscillating means for dithering said block with respect to said casing and about an axis of rotation, and optical sensing means attached to said casing for detecting and analyzing an interference pattern produced by a pair of laser beams traveling in opposite directions along a closed loop path lying in a first plane in said block, improved dither compensation means comprising:

(a) a passive optical element rigidly coupled at least in part to the casing and lying in a second plane parallel to the first plane;

(b) first means for directing at least one beam of the pair of laser beams to said passive optical element; and

(c) second means for directing said one beam to the optical sensing means upon passage of said one beam through said passive optical element,

wherein said passive optical element is disposed at a distance from the axis of rotation at most equal to the smallest distance between said axis and the closed loop path, and

wherein said passive optical element comprises at least one pair of juxtaposed wedges transparent to the light of said laser beams, one of said wedges being fixed to said casing and another wedge being rigidly attached to said block.

4,536,088

POLARIMETRIC FABRY-PEROT SENSOR

Scott C. Rashleigh, 5803 Queens Gate Ct., Alexandria, Va. 22303, and Samuel J. Petuchowski, 7549 Spring Lake Dr., Bethesda, Md. 20783

Filed Sep. 17, 1982, Ser. No. 419,257
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—351 **13 Claims**



1. A fiber optic interferometer for detecting an external field, comprising:

an optical fiber waveguide capable of supporting two independent radiation modes, the two ends of the waveguide being highly reflecting, the input end of which is partially transmitting,

means for launching coherent radiation of said two modes in fixed relation to each other into said input end of the waveguide,

means for tuning said waveguide to near the resonances of said modes,

means for sensing the external field to be detected that differentially affects said two modes simultaneously so that the differential mode signal of said two modes varies with said external field signal,

and means for measuring said differential mode signal.

4,536,089

ANALYZER FOR COHERENT RADIATION

Edward T. Siebert, New Fairfield, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Division of Ser. No. 760,061, Jan. 17, 1977, abandoned. This application Jan. 31, 1979, Ser. No. 8,017
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—352 **20 Claims**

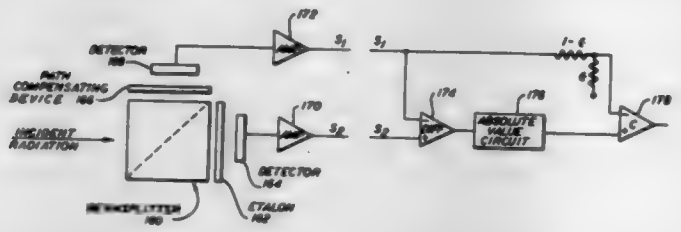
1. Apparatus for detecting the existence of a coherent source of radiation in the presence of incoherent ambient radiation comprising:

aperture means for separating incident radiation into two components to form an etalon path and a reference path;

an etalon and a first detector disposed in the etalon path;

a path compensating device and a second detector disposed

in the reference path to destroy its coherent modulation characteristics; and



means for balancing the etalon and reference paths for incoherent radiation and for producing an output indicative of the presence of a coherent source.

4,536,090

OPTICAL MULTI-BEAM GAS MEASURING APPARATUS

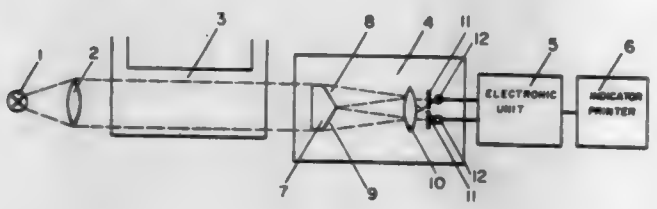
Martin Schmidt, Bad Schwartau, and Horst D. Hattendorff, Lubeck, both of Fed. Rep. of Germany, assignors to Dräger-werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,994

Claims priority, application Fed. Rep. of Germany, Mar. 11, 1982, 3208737

Int. Cl.³ G01N *21/61*

U.S. Cl. 356—414 **6 Claims**



1. An optical multi-beam gas measuring apparatus for measuring proportions of a gas mixture, comprising: a gas vessel through which a gas mixture to be measured is directed; means for directing a radiation through said gas vessel; a detecting device in the path of said radiation following the gas vessel, said detecting device including a one piece prism for splitting said radiation into a plurality of beam paths, said prism being symmetrical about a plane which is parallel to the path of said radiation, a collective lens for focusing radiation of said beam paths, an optical filter in each beam path and detection means associated with each of said beam paths for detecting radiation of said beam paths, said detecting device being changeable as a unit; an electronic unit connected to said detection means for generating signals; and an indicating unit connected to said electronic unit for indicating specific gases.

4,536,091

ABSORBANCE MONITOR

Robert W. Allington, Lincoln, Nebr., assignor to ISCO, Inc., Lincoln, Nebr.

Filed Jun. 1, 1979, Ser. No. 44,763

Int. Cl.³ G01N *21/01*

U.S. Cl. 356—435 **19 Claims**

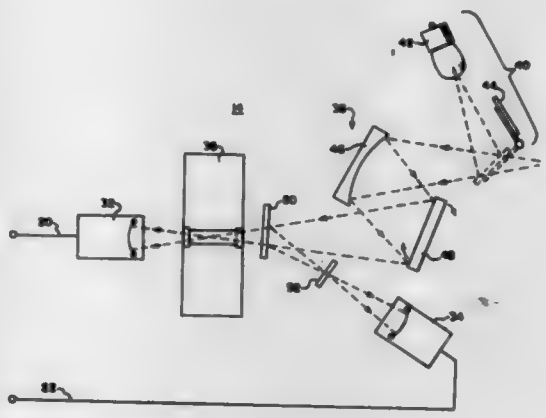
1. A method comprising the step of:

focusing light with a mirror from a small spot on the light emitting portion of a gas discharge lamp including at least a small portion of its central bright spot through an aperture in an aperture plate;

splitting the light passing through the aperture plate into two beams of light without creating a polarization difference in the two beams of light;

focusing one of said beams of light within a small aperture and using it to sense the characteristic of a sample and focusing the said other beam of light through an aperture of the same size with both apertures being of such a size as to contain within each of them the image of the aperture in the aperture plate, wherein said other beam of light serves as a reference;

converting the beams of light into electrical signals after said one beam of light has been brought into intimate contact



with the sample and comparing the signals to cancel common-mode noise; and

converting said signals to the log form of the amplitude of the signals and feeding back at least the log of one of the signals to the light source to stabilize the light source.

4,536,092

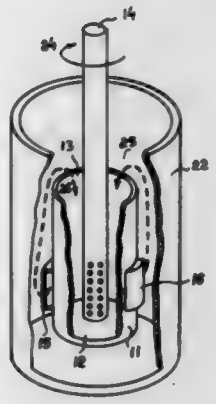
MIXING DEVICE

Abraham Kedem, 42 Weizmann St., Rehovot, Israel

Filed May 16, 1984, Ser. No. 610,835

Int. Cl.³ B01F *5/12*

U.S. Cl. 366—265 **5 Claims**



1. A mixing device to be submerged in a liquid contained in a vessel for low velocity and low shear mixing of delicate materials, such as cell suspensions, microspheres and the like, said device comprising:

a cylinder open at one end and closed at the other end;

a cylindrical drive member coaxially mounted on said cylinder for rotating the cylinder about the longitudinal axis of said tubular member;

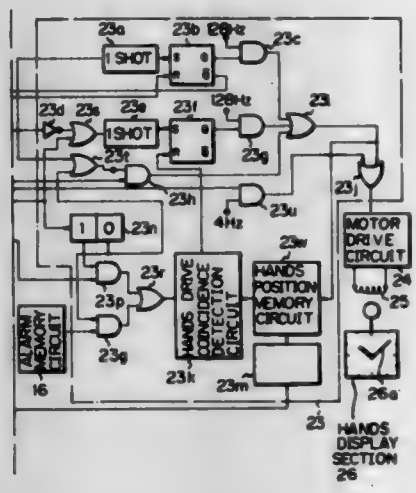
at least two vent openings defined by the sidewall of said cylinder located in the same radial plane; and

a vent cover and flow director for each of said vent openings extending peripherally from one side of the vent opening outwardly around the periphery of said cylinder terminating radially spaced from the other side of the vent opening, said vent cover and flow director defining a radially extending liquid opening bounded on one side by the periphery of said cylinder and on all other sides by the terminal edges of said vent cover and flow director for moving said liquid from the interior of the cylinder through said at least two vent openings and its vent cover and flow director, axially along the periphery of said cylinder to said open end of the cylinder by a suction created at said liquid openings when said tubular member is rotated at a speed in the range of 10 to 50 RPM.

4,536,093
ELECTRONIC TIMEPIECE WITH SYSTEM FOR SYNCHRONIZING HANDS

Masaru Yoshida, Tanashi, Japan, assignor to Citizen Watch Company Limited, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,741
Claims priority, application Japan, Oct. 29, 1982, 57-190494
Int. Cl.[3] G04B *17/12*
U.S. Cl. 368—187 9 Claims



1. An electronic timepiece, comprising:

timekeeping circuit means comprising a timebase signal source and counter circuit means for counting said timebase signal to produce a count value representing current information and a timekeeping signal comprising a pulse train;

control signal generating means comprising externally operable mode selecting switch means for producing a plurality of control signals including control signals for selectively establishing a normal mode and a hands position correction mode of operation, and externally operable correction switch means for producing correction signals;

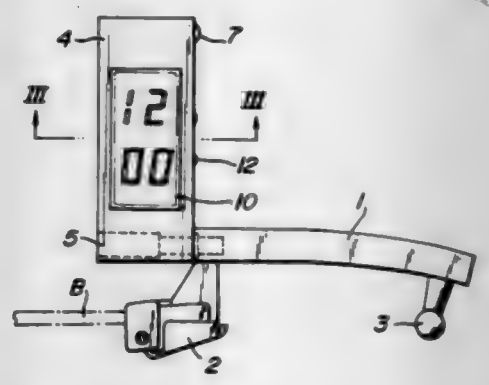
hands display means comprising time indicating hands and hands advancement means for rotating said hands;

hands drive control circuit means responsive to said control signals and said timekeeping signal in said normal mode for periodically applying drive input signal pulses to said hands advancement means for advancing said hands to thereby indicate time information, and comprising hands position memory circuit means for storing a count value which is periodically incremented by said drive input signal pulses during said normal mode, circuit means acting upon initiation of said hands position correction mode for applying rapid advancement signal pulses simultaneously to said hands advancement means and said hands position memory circuit means, reference time value detection circuit means coupled to said hands position memory circuit means for detecting when the count therein reaches a reference time value and responsive to said detection for acting to terminate application of said rapid advancement signal pulses to said hands advancement means and hands position memory circuit means, said hands advancement means being thereafter responsive to said correction signals for enabling setting of said hands to indicate said reference time value, said hands drive control circuit means being responsive to changeover from said hands position correction mode to said normal mode for applying said rapid advancement signal pulses simultaneously to said hands advancement means and hands position memory circuit means and moreover comprising coincidence detection means operable following the latter changeover for comparing the count value in said hands position memory circuit means with said count value in said timekeeping circuit means and responsive to coincidence being reached therebetween for terminating application of said rapid advancement signal pulses to said hands advancement means and hands position memory circuit means, said hands drive control circuit means acting thereafter to apply said timekeeping signal simultaneously to said hands advancement means and hands position memory circuit means to thereby synchronously update the count value in said hands position memory circuit means and the time displayed by said hands while maintaining said count value in correspondence with said displayed time.

4,536,094
BELT BUCKLE

Keisuke Nagura, No. 12-2, Kotobuki, 1-chome, Daito-ku, Tokyo, Japan

Filed Dec. 8, 1983, Ser. No. 559,224
Claims priority, application Japan, Dec. 9, 1982, 57-185409[U]
Int. Cl.[3] G04B *37/00*
U.S. Cl. 368—278 5 Claims



1. A belt buckle with a watch unit comprising a dressed plate, a lock fitting secured to one edge of the dressed plate at the rear side thereof for fixing one end of a belt, a pin secured to the other edge of the dressed plate at the rear side for clamping the belt by inserting it in one of a plurality of clamp holes provided at the other end portion of the belt, a rotatable plate pivotally provided to the edge of the dressed plate at the lock fitting side, and a watch unit embedded in the rotatable plate, the rotatable plate comprises a snap clamp, the snap clamp comprises a ball provided to the upper and side edge of the rotatable plate through a second spring in such a manner that a part of the ball is projected from the side edge of the rotatable plate in the closed condition thereof, and a recess provided at the upper and side edge of the dressed plate to receive the projected part of the ball in the closed condition of the rotatable plate.

4,536,095
CROWN SETTING SWITCH FOR A WRISTWATCH

Paul Wuthrich; Lyman R. Daigle, both of Watertown, and Anthony D. Daddona, Waterbury, all of Conn., assignors to Timex Corporation, Waterbury, Conn.

Filed Sep. 13, 1984, Ser. No. 650,011
Int. Cl.[3] G04B *29/00*
U.S. Cl. 368—321 11 Claims

1. In a timepiece having a bezel, a time display, circuit means providing timekeeping and displaying time on the time display, and a plurality of internal switch terminals connected to said circuit means for performing switching functions including time setting, the improvement comprising:

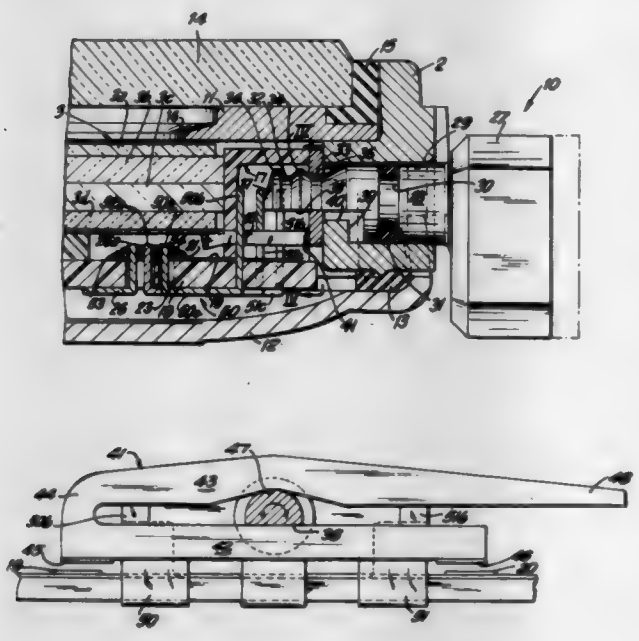
an external crown,

a crown stem attached thereto and extending through an opening in said bezel, said stem defining a plurality of axially spaced detenting grooves, said stem being axially slidable and rotatable about an axis,

a detent rocker contact spring having a spring arm biased into said grooves, means cooperating with said stem to

constrain said spring to rotate therewith, and at least one switch contact arm spaced from the stem rotation axis,

means restraining said detent rocker contact spring against axial movement with respect to the bezel, whereby detenting takes place when the crown is pushed or pulled, and



first and second switching contact pads connected to selected switch terminals, at least one of said contact pads being aligned with and circumferentially spaced from said switch contact arm to be contacted thereby to provide a switching function when the stem is rotated while the stem is in any detenting position.

4,536,096

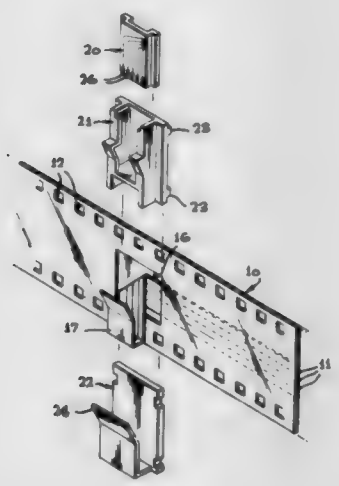
PRINT HEAD CARRIAGE MECHANISM INCLUDING A DRIVE BELT

Terry L. Branson, 1258 Gainsborough, Sunnyvale, Calif. 94087

Filed Dec. 26, 1979, Ser. No. 106,445

Int. Cl.[3] B41J *3/02*; G01D *15/10*

U.S. Cl. 400—120 **3 Claims**



1. A print head carriage apparatus for use in a character printer comprising:

a platen;

first and second rotatable belt guides attached to said printer;

belt means, looped around said belt guides, for supporting and transporting a print head between said belt guides and for precisely aligning said print head with respect to said platen;

drive means, engaging said first belt guide, for rotating said first belt guide to move said belt, thereby transporting said print head between said belt guides;

at least one electrical conductor, united with said belt means, for conveying signals along said belt means to said print heads; and

retainer clip means for detachably securing said print head to said belt means.

4,536,097

PIEZOELECTRICALLY OPERATED PRINT HEAD WITH CHANNEL MATRIX AND METHOD OF MANUFACTURE

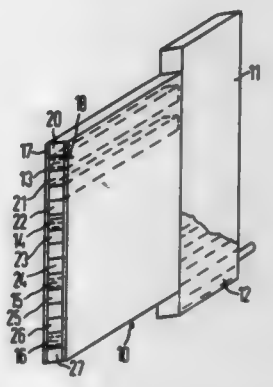
Kenth Nilsson, Akersberga, Sweden, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Feb. 14, 1984, Ser. No. 580,021

Claims priority, application Fed. Rep. of Germany, Feb. 22, 1983, 3306098

Int. Cl.[3] B41J *3/04*; G01D *15/18*

U.S. Cl. 400—126 **12 Claims**



1. A piezoelectrically operated print head for a dot matrix comprising; printing nozzles in the form of ink channels each having drive elements, said channels accepting writing fluid from which the writing fluid is ejected drop-by-drop due to piezoelectric deformation of its drive element, said ink channels being formed as a channel matrix that consists of at least one series of strips of piezoelectric material that are disposed parallel to one another at spaced intervals, and including means for electrically contacting said piezoelectric material at both sides, and means for covering said strips at both sides.

4,536,098

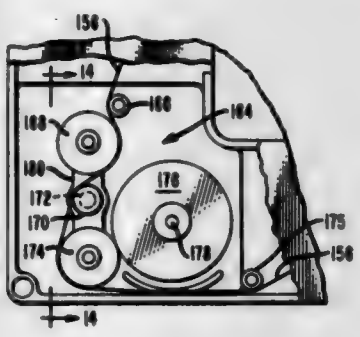
SELF-REGULATING RIBBON RE-INKING DEVICE

Bernard P. Sheehan, Cincinnati, and Volker Werwick, Miamisburg, both of Ohio, assignors to NCR Corporation, Dayton, Ohio

Continuation of Ser. No. 528,867, Sep. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 374,823, May 4, 1982, abandoned. This application Sep. 18, 1984, Ser. No. 652,157

Int. Cl.[3] B41J *32/02*

U.S. Cl. 400—196.1 **4 Claims**



1. Self-regulating ribbon reinking means in a cassette including an enclosure having a body and a cover therefor, and an endless ribbon within said enclosure, said ribbon re-inking means comprising

means for driving said ribbon for use in printing operations, an

ink supply roll rotatably supported from said body at a fixed location within the enclosure, and

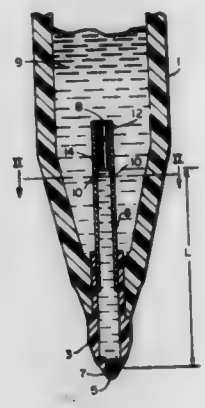
ink transfer means comprising pivot means integral with said cassette body, a carriage comprising a rigid bar, said bar being pivotally mounted at substantially its midpoint on the pivot means, a transfer roll and a balancing roll of substantially identical structure, said balancing and transfer rolls being mounted within the enclosure on opposite ends of said bar, said transfer roll engaging said ink supply roll and serving to transfer ink from said ink supply roll to said ribbon, said ribbon being trained about said transfer and balancing rolls such that tension in said ribbon creates forces acting on said balancing and transfer rolls, the force acting on said balancing roll tending to rotate the carriage in the same sense as the force acting on said transfer roll, said forces created by the tension in said ribbon being substantially the only forces acting to rotate the carriage, a decrease of ink in said ribbon increasing said forces and thus causing said carriage to rotate in a first rotational direction, thereby increasing the contact pressure between the transfer roll and the ink supply roll so that an increased volume of ink flows from said ink supply roll to said transfer roll, and an increase of ink in said ribbon decreasing said forces and causing said carriage to rotate in a second direction, opposite to said first direction, thus decreasing the contact pressure between said transfer roll and said ink supply roll so that a decrease volume of ink flows from said ink supply roll to said transfer roll.

4,536,099

WRITING INSTRUMENT WITH BALL POINT AND TWO RESERVOIRS

Charles P. Kiricoples, Salem; Henry Behrens, Topsfield, and Robert L. Brown, Hingham, all of Mass., assignors to The Gillette Company, Boston, Mass.

Filed Nov. 8, 1983, Ser. No. 550,075
Int. Cl.³ B43K *7/00, 7/08*
U.S. Cl. 401—209 **14 Claims**



1. A writing instrument comprising a tubular barrel in association with a writing tip having a rotatably mounted ball, said writing instrument having ink-filled first and second ink reservoirs in fluid communication with each other, the ink in said second ink reservoir also being in fluid communication with said ball and forming a liquid-gas interface with a body of gas contained in said second ink reservoir, the longitudinal distance between the liquid-gas interface and the rotatably mounted ball not exceeding the critical liquid column height for the writing instrument where the critical liquid column height (CLCH) has the following definition:

$$CLCH = \frac{V_s}{2} \sqrt{\frac{2 \times ShL \times \frac{\text{ball weight}}{g}}{\left[\left(\frac{e}{g}\right)(\sqrt{2gh})(V_s)(\pi r^2) - F_{ret.\ min.}\right]}}$$

-continued

$$\text{where } V_s = \sqrt{\frac{E_I}{\frac{e}{K}} \cdot \frac{1}{1 + \frac{2R}{t}\left(\frac{E_I}{E\ \text{wall}}\right)}}$$

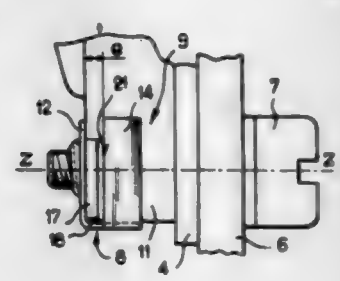
g = acceleration of gravity (i.e. 386 inches/seconds^2)
e = ink density (pounds/inch^3)
t = pen barrel wall thickness (inches)
2R = wall diameter (inches)
h = drop height (inches)
($\sqrt{2gh}$) = impact velocity (inches/sec.)
E_I = bulk modulus of ink (pounds/inch^2)
ShL = socket holding length (i.e. the allowable axial movement of the ball within the ball socket without dislodgment, in inches)
r = radius of the ball (inches)
ball weight = weight of rotatable ball (pounds)
E wall = modulus of elasticity of pen barrel wall (pounds/inch^2) and
$F_{ret.\ min.}$ = minimum point retention force (pounds).

4,536,100

PART TO BE ASSEMBLED AND SUB-ASSEMBLY COMPRISING SAID PART AND A NUT

Henri Chauviere, Courbevoie, France, assignor to Etudes Techniques et Representations Industrielles E.T.R.I., Neuilly sur Seine, France

Filed Mar. 29, 1983, Ser. No. 480,139
Claims priority, application France, Apr. 2, 1982, 82 05724
Int. Cl.³ B65D *59/00;* F16B *33/00*
U.S. Cl. 403—12 **8 Claims**



1. A sub-assembly comprising a part to be assembled and a nut, the part to be assembled being provided with a hole therethrough, the hole being surrounded by a boss having an end surface surrounding the outlet of the hole and a side surface surrounding at least partly the hole, the nut comprising a screwing cap facing the end surface of the boss and intended to rest on it, two legs bound up with the screwing cap and receiving between them the side surface of the boss, as well as means for abutment of the nut against the boss in a position of end of insertion along a direction perpendicular to the axis of the hole, wherein the side surface of the boss is provided with at least one projection situated between the end surface of the boss and at least one of the legs of the nut so as to prevent the legs from moving towards the end surface and therefore prevent the nut from getting disengaged from boss.

4,536,101

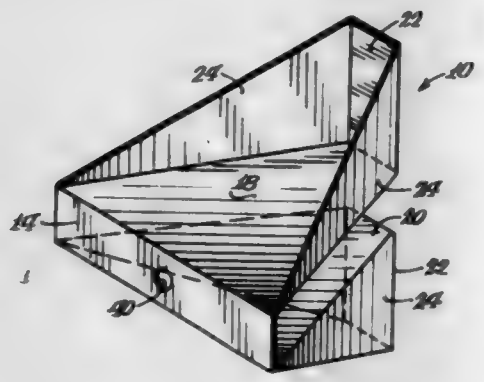
CONNECTOR DEVICE

Dixon J. Jones, P.O. Box 60973, Fairbanks, Ak. 60973

Filed Mar. 30, 1984, Ser. No. 595,430
Int. Cl.³ F16B *7/00*
U.S. Cl. 403—389 **9 Claims**

1. A connector for supporting a first member and a second member at right angles, said connector comprising a pair of spaced walls, an end wall connected between said spaced walls and defining an open channel for receiving said first member, a pair of attachment ears connected to and extending away

from said spaced walls at the open end of said channel, said attachment ears having outwardly facing surfaces to abut the second member and to enable securement thereof to the second



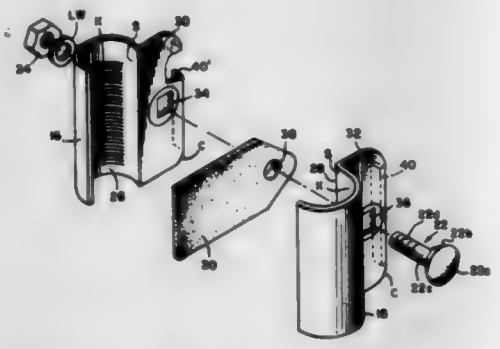
member, and pairs of spaced support webs connected between the side edges of the spaced walls and the attachment ears for reinforcing said ears.

4,536,102

BAR OR ROD OR TUBE FRAME MULTI-POSITION ASSEMBLY CLAMP

Patrick Doyle, P.O. Box 1628, New Rochelle, N.Y. 10802

Filed Mar. 18, 1983, Ser. No. 476,754
Int. Cl.³ F16B *7/04*
U.S. Cl. 403—390 1 Claim



1. A multi-positional clamp for securing rods, bars, or tubes of various lengths in fixed positions and at various angles to produce a frame assembly adapted to be covered with a woven fabric or non-woven sheet, which frame assembly may be subject to motion or vibration, and wherein said clamp includes two rigid clamping members adapted to be secured by a carriage bolt assembly and at least one resilient flexible, deformable and cushioning member, said clamp being characterized in that

(a) each of said rigid clamping members comprising

(i) a flat slidable surfaced wide flange portion, each flange portion having on a different one side extending, at right angles, a long, narrow integral flange acting to stiffen each wide flat flange, and having on the same side

(ii) a cradle embracing portion having a relatively large centrally positioned grooved or knurled inner surface surrounded by a relatively narrow smooth marginal surface,

(b) each said flat flange portion having a dished portion formed with a polygonal opening therein for cooperation with a corresponding polygonal shank, integral with and adjacent to the inner face of the head of a carriage bolt of said carriage bolt assembly, including a threaded generally cylindrical portion extending from said polygonal shank so that one of said flat flange portions can be rotated individually about the cylindrical portion of said carriage bolt and so that the second of said flat portions remains relatively stationary because of the engagement of the polygonal shank portion of said bolt with the margin of the polygonal opening therein,

(c) said carriage bolt assembly comprising a carriage bolt having

(i) a head with a flat inner surface from which coaxially extends

(ii) an integral shank having a transverse polygonal cross section from which coaxially extends a threaded cylindrical portion, and a lock washer about or surrounding said threaded portion and an internally threaded nut cooperating with said threaded portion

(d) said bolt assembly and said two clamping members and their respective parts being arranged in series as follows:

(i) first, the inner face of the bolt head contacts the convex or outwardly protruding surface of the dished portion of a flat flange of a first clamping member

(ii) second, the polygonal shank of the bolt extends through the corresponding polygonal opening in said dished portion of said first clamping member

(iii) third, the cylindrical threaded portion of said bolt extends through said deformable and cushioning member and then through the opening in the dished portion of the second clamping member

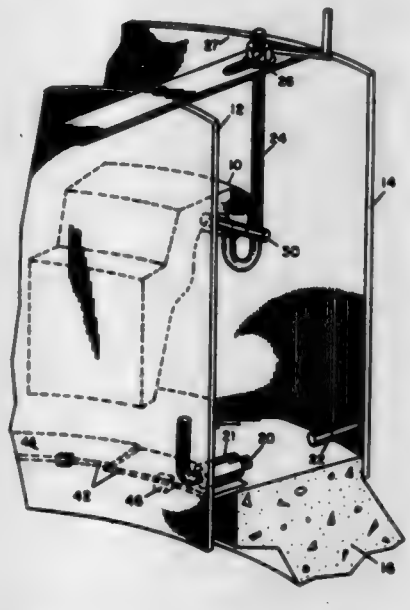
(iv) fourth, the cylindrical threaded portion extends through a lock washer which on one surface contacts the convex or outwardly protruding surface of the dished portion of the second clamping member and which on its opposite surface contacts the cooperating nut of the bolt assembly which nut is threaded on the corresponding threaded cylindrical portion of said bolt.

4,536,103

ADJUSTABLE MANHOLE FRAME AND METHOD OF CONSTRUCTION AND INSTALLATION

Everett J. Prescott, P.O. Box 600, Gardiner, Me. 04345

Continuation-in-part of Ser. No. 425,946, Sep. 28, 1982, which is a continuation-in-part of Ser. No. 263,065, May 13, 1981, which is a continuation-in-part of Ser. No. 180,394, Aug. 22, 1980, abandoned. This application Aug. 16, 1983, Ser. No. 523,743
Int. Cl.³ E02D *29/14*; B29C *1/12*
U.S. Cl. 404—26 19 Claims



1. A frame disposable in surmounting relation to a manhole cone to define a manhole opening at pavement level, the opening being closable by a manhole cover, the frame further being capable of adjustment relative to the cone and to the pavement level, comprising:

a body member having a centrally disposed opening defined at least in part by an inner skirt portion which extends substantially about the periphery of the opening, the body member having a planar upper surface normally disposed horizontally when installed relative to the cone, that por-

tion of the planar upper surface proximate to and surmounting the inner skirt portion being recessed into the body member about the perimeter of the opening to define a peripheral seat for receiving and supporting the edges of the manhole cover, the body member further having an outer skirt portion spaced from the inner skirt portion and extending downwardly from the planar upper surface and substantially about the outer perimeter of the body member, at least a portion of the lower surface of the body member between the inner and outer skirt portions being arcuate and defining an arch-like channel disposed between at least portions of the inner and outer skirt portions, innermost surfaces of the channel having a slope which is angled relative to a line taken perpendicularly to the planar upper surface of the body member to facilitate installation and adjustment of the height of the frame relative to the manhole cone.

9. A method for installing a frame in surmounting relation to a manhole cone to define a manhole opening at pavement level, comprising the steps of:

disposing a form in the opening of the manhole cover;

suspending the frame in place relative to and substantially about the outer perimeter of the form in spaced relation to the form;

adjusting outer contours of the form to expand the form to contact the form with the frame and thus support the frame in place in surmounting relation to the cone;

filling in spaces between upper portions of the cone and lower portions of the frame to support the frame relative to the cone; and,

removing the form.

4,536,104

PIPE DIVIDER FOR PIPES CONVEYING SOLIDS

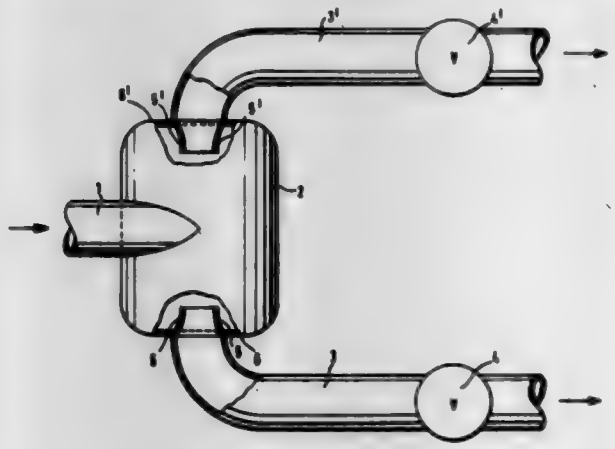
Theodor Büngert, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,515

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305078

Int. Cl.³ B65G *53/56*

U.S. Cl. 406—183 **9 Claims**



1. A pipe divider for pipes which are intended for conveying solids for small particle size, comprising:

(a) a distributor chamber comprising a substantially axially extending enclosed space having generally curved side walls;

(b) a feed pipe running essentially tangentially into said chamber;

(c) at least two distributor pipes communicating with said chamber;

(d) means for preventing blockage of said distributor pipes; and

(e) shut-off means, located in each of said distributor pipes for selectively closing said distributor pipes to flow,

wherein said means for preventing blockage of the distributor pipes comprises a radially inwardly-curved weir around the inlet point to each of said distributor pipes.

4,536,105

PIPE DIVIDER FOR PIPES CONVEYING SOLIDS OR DISPERSIONS

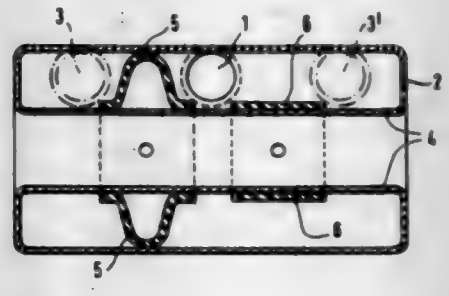
Theodor Büngert, Wiesbaden, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,462

Claims priority, application Fed. Rep. of Germany, Feb. 14, 1983, 3305079

Int. Cl.³ B65G *53/56*

U.S. Cl. 406—183 **7 Claims**



1. A pipe divider for pipes used to convey solids of small particle size or dispersions, comprising:

a generally cylindrical distribution chamber;

a feed pipe leading essentially tangentially into distributor chamber;

two distributor pipes leading essentially tangentially away from said distribution chamber;

an internal cylinder, located within said distributor chamber;

two flexible, inflatable tubes located within said distributor chamber, such that a first tube is situated between the feed pipe and a first distributor pipe, and a second tube is situated between the feed pipe and a second distributor pipe, said tubes being mounted in such a manner that they surround the internal cylinder; and

means for selectively pressurizing each of said tubes for selectively blocking either one or both of the two distributor pipes.

4,536,106

HEAVY DUTY HOB

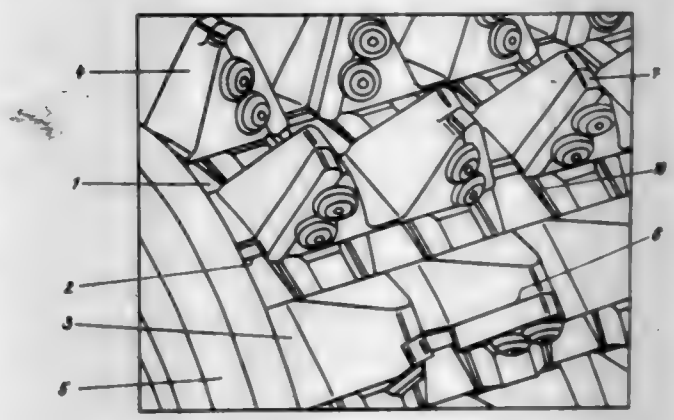
Walter Zorn, Pforzheim, Fed. Rep. of Germany, assignor to Walztechnik Saacke Zorn GmbH & Co., Pforzheim, Fed. Rep. of Germany

Filed Oct. 28, 1983, Ser. No. 546,289

Claims priority, application Fed. Rep. of Germany, Nov. 11, 1982, 3241696

Int. Cl.³ B23F *21/16*

U.S. Cl. 407—25 **3 Claims**



1. High efficiency hobbing cutter for producing gears, said hobbing cutter comprising a cylindrical body having generally axially extending grooves and tooth carrying bars which are

inserted in the grooves, means for retaining said bars in said grooves, said bars having teeth forming a helical array around the body, the improvement wherein a leading edge of each tooth is provided with an angle section groove extending generally radially outwardly of said cutter body, a reversible cutter insert having a cutting tip disposed in each said angle section groove, clamp means securing said insert in said angle section groove, said cutter insert having a rectangular cross-section, said angle section groove being inclined with respect to axial and radial directions of said cylindrical body whereby said angularly oriented angle section groove supports said cutter insert to provide a side clearance and an end clearance to improve the cutting performance of the cutting tip and a helical groove extending axially around said cylindrical body adjacent said helical array, one end of each of said inserts being supported in said groove.

4,536,107

DRILL BIT

Julius W. Sandy, Sycamore; William D. Riebock, and Billy J. Bauscher, both of Rockford, all of Ill., assignors to Ex-Cell-O Corporation, Troy, Mich.

Filed Aug. 29, 1983, Ser. No. 527,590
Int. Cl.³ B23B *51/02*; B27G *15/00*
U.S. Cl. 408—214 **14 Claims**



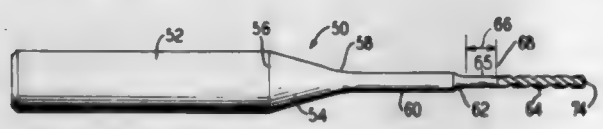
1. A drill bit for drilling a hole of selected diameter in a workpiece, said bit having a working end comprising a cylindrical portion with a selected cutting diameter and a conical threaded portion extending from the cylindrical portion and terminating in a tip, the diameter of the threaded portion increasing from the tip toward the cylindrical portion and approaching the diameter of the cylindrical portion at their juncture, said working end including at least one flute means through the threaded portion and through the cylindrical portion forming a longitudinally extending cutting edge and another edge on the threaded portion and on the cylindrical portion, whereby said threaded portion pulls the bit into the workpiece in a self-feeding effect while the cutting edge thereof cuts a progressively increasing diameter hole in the workpiece and the cutting edge of said cylindrical portion provides the finish cut for the final selected diameter hole, said conical threaded portion having peripheral threads extending from the cutting edge around said conical threaded portion except for said flute means with said threads reduced in height or eliminated adjacent said another edge.

4,536,108

FLEXIBLE MICRODRILL

Robert W. Saxton, Mount Prospect; William R. Hewitt, Clarendon Hills, and Jerome M. Nelligan, Matteson, all of Ill., assignors to Federal-Mogul Corporation, Southfield, Mich.

Continuation-in-part of Ser. No. 497,069, May 23, 1983, abandoned. This application Aug. 8, 1983, Ser. No. 521,338
Int. Cl.³ B23B *51/00*
U.S. Cl. 408—230 **15 Claims**



1. In a microdrill of the type which comprises a drill body of predetermined diameter including a cutting tip and helical flutes extending along said drill body from said cutting end to a flute terminus location, a shank to be engaged and rotated about a longitudinal axis by a drilling machine, and a frusto-conical section connecting said shank and said drill body and forming a high stress location at such connection, the improvement therein comprising:

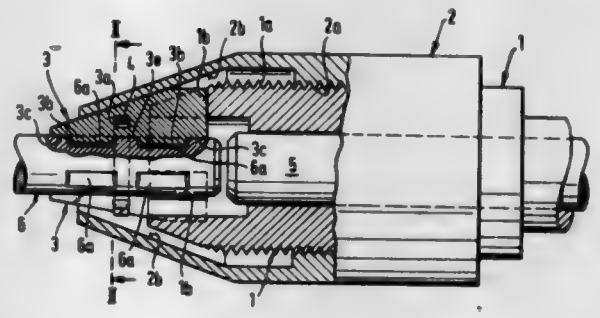
an additional, flexible, intermediate section between and connecting said frusto-conical section and said drill body and having a length at least greater than said predetermined diameter and spacing said flute terminus location from said frusto-conical section to provide spacing of the drill body from said high stress location, and to provide flexing of said microdrill in said intermediate section, at least the frustoconical section, the intermediate section and the drill body being composed of a unitary structure.

4,536,109

DRILL CHUCK FOR PERCUSSION DRILLING

Josef Hunger, Olching, and Anton Neumaier, Fürstenfeldbruck, both of Fed. Rep. of Germany, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Mar. 7, 1984, Ser. No. 587,190
Claims priority, application Fed. Rep. of Germany, Mar. 21, 1983, 3310146
Int. Cl.³ B23B *31/12*
U.S. Cl. 408—240 **6 Claims**



1. Chuck for a drilling device for use as a rotary drilling device or a rotary/percussion device, such as a hammer drill, comprising means forming a chuck housing having a central axis and arranged to receive the shank of a drilling tool removably mounted in said chuck and extending generally along the central axis, clamping jaws radially adjustably mounted in said chuck housing means and arranged to be circumferentially spaced apart around the shank of the drilling tool, each said clamping jaw has a radially inwardly facing clamping surface shaped concavely in the circumferential direction around the central axis, at least one projection on each said clamping jaw extending radially inwardly from said clamping surface, said projections extending in the axial direction of the central axis and arranged to engage in recesses in the shank of the drilling tool, wherein the improvement comprises that the clamping surface of each clamping jaw has first guide surfaces extending in the axial direction along the opposite axial extending sides of said projection and at least one second guide surface section extending transversely of the axial direction of the central axis along one of the ends of said projection spaced apart in the axial direction of the chuck.

4,536,110

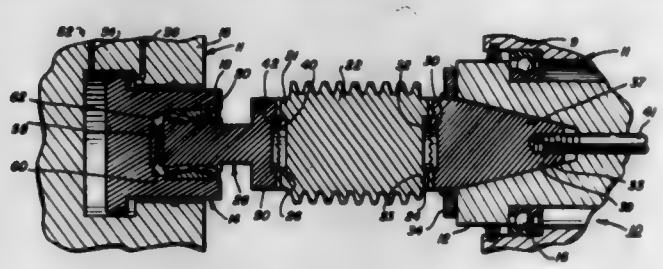
SELF CENTERING QUICK-CHANGE CUTTING TOOL ASSEMBLY

W. James Farrell, Kildeer, and Werner K. Diehl, Rolling Meadows, both of Ill., assignors to Illinois Tool Works Inc., Chicago, Ill.

Filed Feb. 17, 1984, Ser. No. 581,170
Int. Cl.³ B23F *5/20, 21/16*
U.S. Cl. 409—11 **11 Claims**

1. A tool mounting assembly for a gear hobbing machine or the like having a drive spindle and an outboard bearing support in axial alignment with said drive spindle, said tool mounting

assembly comprising a first coupling unit for detachable connecting one end of a hob in driving engagement with said drive spindle, and a second coupling unit for detachable connecting the other end of said hob to said outboard bearing support, said first coupling unit including a first portion secured in driving relation to the distal end of said drive spindle and a second portion secured to the outer end face of said one end of said hob, said first and second portions including radially disposed teeth which cooperatively intermesh in a disengageable manner for self-centering said one end of said hob relative to said drive spindle and an outboard support unit including a plunger rotatably mounted in said bearing support and axially movable



between a hob coupling position and an unload position, and said outboard support unit having a drive means for selectively moving said plunger between said hob coupling and unload positions, said second coupling unit including a first portion secured to the other end of said hob and a second portion secured to said plunger, said first and second portions of said second coupling unit including axial nesting means for self centering said other end of said hob, said plunger drive means providing sufficient end thrust on said plunger when in said hob coupling position to maintain said hob concentric with the axis of said drive spindle and to hold said first and second portions of said first coupling unit in rigid driving intermeshing relationship.

4,536,111

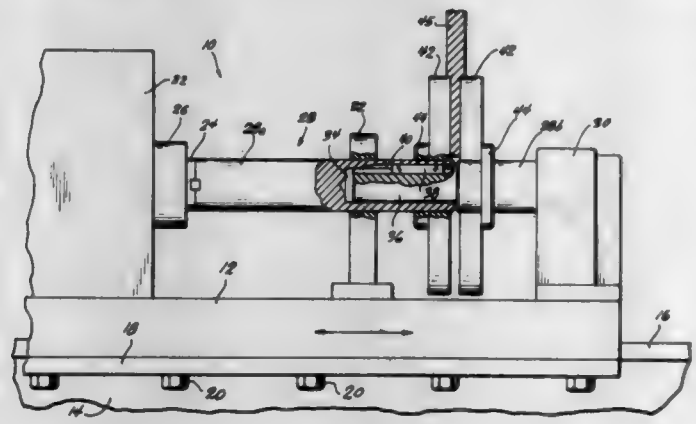
MACHINE TOOL HAVING NUMERICALLY CONTROLLED ADJUSTABLE ARBOR SET UP FOR STRADDLE MILLING

Ervin J. Kielma, West Allis, Wis., assignor to Kearney & Trecker Corporation, West Allis, Wis.

Filed Jun. 7, 1982, Ser. No. 385,906

Int. Cl.³ B23C *1/02, 7/00*

U.S. Cl. 409—80 **3 Claims**



1. In a machine tool having a rotary spindle movable axially and numerically controlled, cutting apparatus comprising:

a frame;

an arbor support carried on said frame;

a first arbor member coupled to the spindle for rotation therewith and movable axially therewith;

a second arbor member in axial alignment with said first arbor member rotatably supported by said arbor support and fixed against axial movement;

a reduced diameter end on one of said arbor members for reception in an axial bore formed in the other of said arbor members so that said first arbor is movable axially relative to said second arbor while maintaining said arbors in precise axial alignment,

means on said reduced diameter end for coupling said second arbor member to said first arbor member for rotating said first and second arbor members in unison;

a first cutter fixedly mounted on said first arbor member for rotation therewith and movable axially therewith; and

a second cutter mounted on said second arbor member for rotation therewith in axial alignment and spaced apart relationship with said first cutter so that said first and second cutters can operate simultaneously on a single workpiece.

4,536,112

PROTECTION DEVICE AGAINST OVERLOADS IN A MACHINE

Anton Horsky, Göppingen; Siegfried Kuhn, Dürnau, and Wolf-Dietrich Voss, Boll, all of Fed. Rep. of Germany, assignors to Oerlikon-Boehringer GmbH, Göppingen, Fed. Rep. of Germany

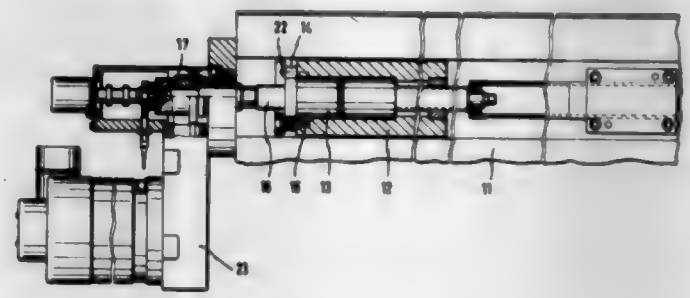
PCT No. PCT/EP82/00212, § 371 Date May 20, 1983, § 102(e) Date May 20, 1983, PCT Pub. No. WO83/01030, PCT Pub. Date Mar. 31, 1983

PCT Filed Sep. 22, 1982, Ser. No. 499,150

Claims priority, application Fed. Rep. of Germany, Sep. 23, 1981, 3137878

Int. Cl.³ B23B *21/00*

U.S. Cl. 409—134 **8 Claims**



1. In a machine tool having a machine bed, a carriage carried on said machine bed, a lead screw for reciprocating said carriage on said machine bed, a flange and a lead screw nut connected to the flange and connecting said lead screw to said carriage; an overload protecting device comprising: at least one first connecting screw connecting said flange to said carriage, and at least one second connecting screw connecting said flange to said nut, each of said connecting screws having a break-away section.

4,536,113

AUTOMATIC JAW CONTROL FOR REVERSIBLE POWER TOOL

Jim J. Hatfield, 2723 Species La., Redondo Beach, Calif. 90278

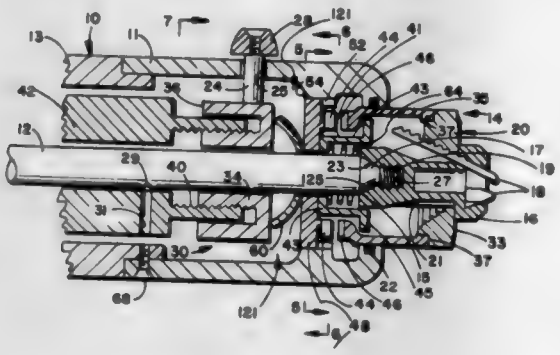
Continuation-in-part of Ser. No. 358,030, Mar. 15, 1982,. This application May 2, 1983, Ser. No. 490,857

Int. Cl.³ B23Q *3/12*; B23B *31/24*

U.S. Cl. 409—234 **5 Claims**

1. In a reversible power tool having a rotary drive shaft carried by a drill housing and having a chuck engageable for rotation with said drive shaft and formed with a jaw guide, chuck jaws constrained by said jaw guide for radial advancement and retraction relative to the axis of said drive shaft, chuck jaw reciprocating means journaled relative to said jaw guide, and coupled to said chuck jaws to selectively advance and retract said chuck jaws between completely advanced and completely retracted positions when said chuck jaw reciprocating means and said jaw guide are subjected to relative rotation in opposite directions, and manually actuable clutch means for engaging and disengaging said chuck jaw reciprocating means relative to said drill housing to respectively allow

and prevent relative rotation between said jaw guide and said chuck jaw reciprocating means, wherein said clutch means includes a clutch actuator mounted for movement relative to said drill housing, clutch interface means for engaging said drill housing to said chuck jaw reciprocating means, biasing means urging said clutch interface means into disengagement



and actuable coupling means for overcoming said biasing means and moving said clutch interface means into engagement at a mechanical advantage by said clutch actuator, the improvement comprising decoupling means for forcing said clutch interface means into disengagement as said chuck jaws approach said completely retracted position despite actuation of said coupling means.

4,536,114

VARIABLE LENGTH STRUT WITH LONGITUDINAL COMPLIANCE AND LOCKING CAPABILITY

Robert R. Belew, Huntsville, Ala., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jul. 1, 1983, Ser. No. 510,137
Int. Cl.³ F16M *13/00*
U.S. Cl. 410—156 **12 Claims**



6. A variable length strut device comprising:

an outer load bearing shell having a first end adapted for connection to a first associated structure;

a strut connection rod slidably carried by said shell having a free end adapted for connection to a second associated structure;

a compliance assembly including a housing slidably carried in said shell;

said strut rod having a second end remote from said free end slidably received within an interior of said compliance assembly housing;

biasing means acting on said second end of said strut rod resisting movement of said strut in either one of two opposing directions when operating in a compliance mode;

drive means positioning said compliance assembly housing longitudinally in said shell; and

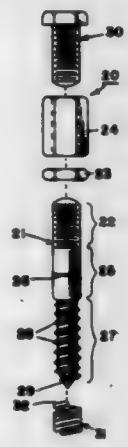
locking means for locking said strut rod in a longitudinal position when operating in a locked mode wherein said strut rod is prevented from sliding longitudinally relative to said shell.

4,536,115

ANCHOR APPARATUS FOR INSERTION INTO A PRE-FORMED HOLE

J. Frank Helderman, 414 S. Maple St., Graham, N.C. 27253

Filed Jun. 30, 1982, Ser. No. 393,668
Int. Cl.³ F16B *13/00*
U.S. Cl. 411—17 **21 Claims**



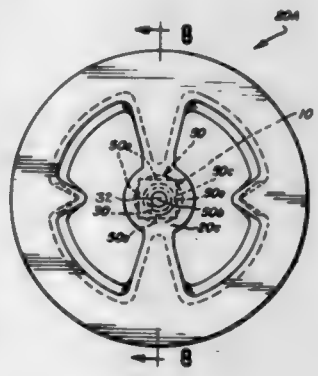
1. Anchor apparatus for insertion into a pre-formed hole for permanent embedment into the walls of the hole comprising in combination: a non-resilient coil, a lag member, said lag member including a threaded portion having threads with substantially uniform helix and flank angles, said coil releasably engaging said lag member, said coil expandable from a relaxed to an elongated posture, said coil having a plurality of turns, two of said plurality of turns being oppositely positioned end turns, one of said end turns being provided with a curved lead-in end portion that comprises a portion of the turn that is helically and radially expanded relative to the other turns when said coil is in the relaxed position.

4,536,116

COMPOSITE MOLDED PLASTIC ARTICLE

Pierre C. Murray, Buffalo Groove, Ill., assignor to MacLean-Fogg Company, Mundelein, Ill.

Filed Nov. 7, 1983, Ser. No. 549,173
Int. Cl.³ F16B *37/00, 37/14*
U.S. Cl. 411—82 **11 Claims**



1. A composite molded plastic article with a metal nut insert molded in place, comprising:

a body of molded plastic material, adapted to be formed in a mold having a pin projecting into a mold cavity used for making said article; and

a nut insert having a central threaded bore adapted to be mounted on said pin within said cavity while said body is molded around surfaces thereof,

said bore extending between a pair of opposite, parallel planar faces having a polygonal outline and including a first pair of opposite side edges normal to said planar faces comprising substantially planar surfaces, and a second pair of opposite side edges normal to said faces and angularly intersecting said first pair of edges said second side edges having a longitudinally extending, groove receiving said

molded plastic material and positioned between planar faces,

recess means in said body aligned axially of said threaded bore of said nut insert adjacent a planar face thereof spaced inwardly of an outer surface of said body for accommodating an overdriven threaded element engaged in said bore of said nut insert,

said recess means comprising a nut holding insert molded in place in said body and having means for engaging and holding said nut insert in place in said mold cavity,

said nut holding insert comprising a cup shaped member made of plastic material and said holding means thereof including wall portions engaging said opposite side edges of said nut insert, said cup shaped member further including an end wall and a stop wall spaced parallel thereof and adjacent said wall portions for engaging said adjacent planar face of said nut insert,

said cup shaped member having a circular transverse cross-section with an inner diameter greater than that of said threaded bore of said nut insert, said end wall of said cup shaped member being spaced inwardly of an adjacent outside surface of said body of said article, and

said end wall of said cup shaped member including a central spacer having an outer surface aligned with said outside surface of said body of said article.

4,536,117

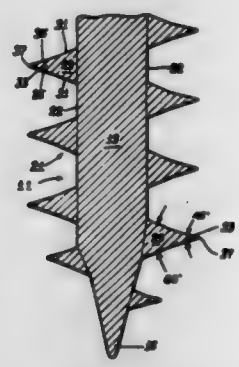
SCREW FASTENER

Ernest Yamashiro, Skokie, Ill., assignor to Mid-Continent Screw Products Company, Lincolnwood, Ill.

Continuation of Ser. No. 325,637, Nov. 30, 1981, abandoned. This application Jun. 18, 1984, Ser. No. 621,146

Int. Cl.³ F16B *25/00*

U.S. Cl. 411—411 **3 Claims**



1. A self-tapping screw fastener for driving into a workpiece comprising:

generally cylindrical shank having an entering end and a trailing end;

a tool-engagable head integrally joined with the trailing end of the shank; and

an external helical thread, integral with the shank, forming a plurality of convolutions substantially uniformly spaced along the axis of the shank so as to leave a helical portion of the shank exposed, the thread being adapted for forming a complementary thread in the workpiece;

the helical thread having a double angle thread profile determined by a transverse cross section of the thread and defined by a base portion and a crest portion;

the base portion of the helical thread being adjacent the shank and having a trapezoidal cross-section defined by a first pair of converging, spaced-apart flank surfaces that define a first included angle of about 60°;

the crest portion of the helical thread being adjacent the base portion, and having an isosceles triangular cross-section defined by a second pair of flank surfaces that converge to a sharp cutting edge to facilitate forming the complementary thread in the workpiece by making a cut therein and define a second predetermined included angle of about 45°;

the first predetermined included angle being greater than the second predetermined included angle; and

the height of the helical thread being substantially uniform along the generally cylindrical shank but tapering to zero along the entering end so that when the screw is driven into the workpiece the low angle crest leads the entry of the base portion into the workpiece.

4,536,118

APPARATUS FOR PALLETIZING PRESSINGS

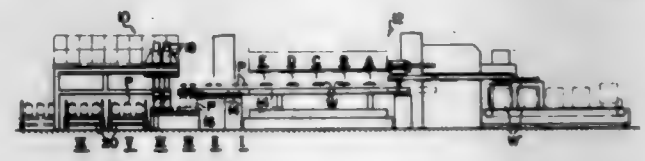
Kiyokazu Baba, Komatsu, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed May 13, 1983, Ser. No. 494,327

Claims priority, application Japan, May 17, 1982, 57-81615

Int. Cl.³ B65H *31/30, 31/32*

U.S. Cl. 414—43 **9 Claims**



1. A materials handling system for separating, sorting and stacking fabricated parts comprising:

(a) a transfer means for conveying fabricated parts away from a fabricating device;

(b) a separating means receiving said fabricated parts from said transfer means comprising a means for separating said fabricated parts in a lateral direction with respect to a direction of transfer, a means for separating said fabricated parts in a longitudinal direction with respect to said direction of transfer and a means for conveying said parts during and after separation away from said transfer means;

(c) a wheeled carriage having at its upper surface a plurality of parallel receiving bars or plates and adapted to receive said fabricated parts from said separating means;

(d) a lifting means situated beneath said carriage when said carriage is in a position to receive fabricated parts from said separating means, said lifting means being capable of raising said carriage to a point for reception of said fabricated parts from said separating means and lowering said carriage in a step-wise fashion so as to cause said fabricated parts to be stacked vertically upon said carriage;

(e) an intermediate collection means interposable between said separating means and said carriage and adapted to receive a limited number of said fabricated parts;

(f) one or more moveable overhead loading means comprising one or more overhead rails, a frame engaging said one or more of said overhead rails, depending arms projecting downward from said frame, and foldable end members pivotally attached to an end of said depending arms opposite to said frame, said overhead loading means being adapted to remove said stacked fabricated parts from said carriage;

(g) loading stations at one or more locations situated beneath said overhead rails where said fabricated parts are discharged from said overhead loading means onto pallets; and

(h) means for supplying and removing said pallets from said loading stations.

4,536,119

PALLETIZING APPARATUS WITH LAYER LEVEL DETECTING MEANS

Leonard Miaskoff, Plattsburgh, N.Y., assignor to Harris Corporation, Melbourne, Fla.

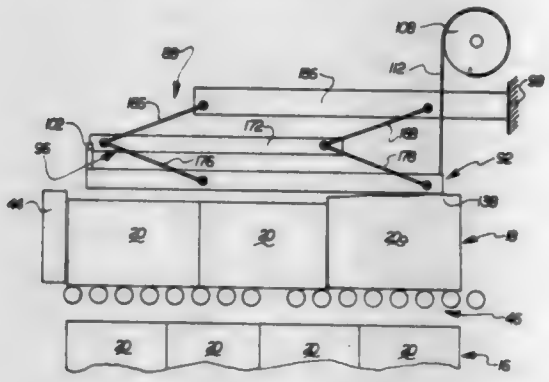
Filed Sep. 28, 1982, Ser. No. 425,611

Int. Cl.³ B65G *57/06*

U.S. Cl. 414—100 **5 Claims**

1. An apparatus for sequentially loading a plurality of layers of bundles of newspapers onto a pallet, said apparatus compris-

ing retractable floor means for supporting each layer of bundles in turn over the pallet, said floor means being movable from a closed position supporting a layer of bundles to a retracted position to drop a layer of bundles through an opening in said floor means onto the pallet, elevator means for lowering the pallet with the layer of bundles on the pallet, indicator means for engaging the top of and moving downwardly through the opening in said floor means with the layer of bundles, detector means for detecting when said indicator means has moved to a predetermined position in which the laver of bundles is beneath said floor means when said floor means is in the closed position, and control means for interrupting operation of said elevator means to stop the lowering of the pallet in response to said detector means detecting that said indicator means has moved to the predetermined position, said indicator means including a frame overlying at least a major portion of each of the bundles of newspapers in the layer of



bundles and movable downwardly with the layer of bundles through the opening in said floor means, linkage means connected with said frame for maintaining said frame in a horizontal orientation in engagement with the layer of bundles during downward movement of the layer of bundles, said linkage means comprising a first linkage connected with a first side of said frame and a second linkage connected with a second side of said frame, said first and second linkages each including a base, a pair of parallel upper links having upper end portions pivotally connected with the base, a horizontal connector link pivotally connected with lower end portions of said upper links, and a pair of parallel lower links having upper end portions pivotally connected with said connector link and lower end portions pivotally connected with said frame, and lift means connected with said frame at a location between said first and second linkages for raising said frame from a location beneath said floor means to a location above said floor means while said floor means is in the open position.

4,536,120

FEEDING MEANS FOR FEEDING SOLID FUEL FROM A STORAGE SILO OR EQUIVALENT INTO A SOLID FUEL HEATING BOILER

Pasi Kylmänen, and Pasi Takalo, both of Finnish, Finland, assignors to Saastamoinen Oy, Finland

PCT No. PCT/F181/00033 § 371 Date Dec. 27, 1982, § 102(e) Date Dec. 27, 1982, PCT Pub. No. WO82/04113, PCT Pub. Date Nov. 25, 1982

PCT Filed May 14, 1981, Ser. No. 459,632

Int. Cl.³ F23K *3/00*

U.S. Cl. 414—173 **12 Claims**

1. Feeding means for feeding solid fuel from a storage silo to a heating boiler, said feeding means comprising

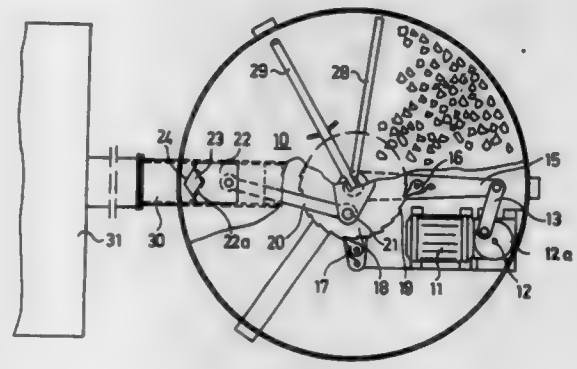
piston means adapted to move reciprocatingly,

tube means communicating with the heating boiler and in which said piston means is disposed,

aperture means communicating said tube means with the storage silo,

vane means rotatably disposed within a lower portion of the storage silo to effectuate delivery of the solid fuel from the storage silo to the boiler through said tube means, said vane means comprising a substantially rigid portion, and a turnable portion, and

hinge means for interconnecting said turnable and substantially rigid portions of said vane means, said hinge means



comprising a hinge axle substantially parallel with a longitudinal axis of said substantially rigid portion of said vane means.

4,536,121

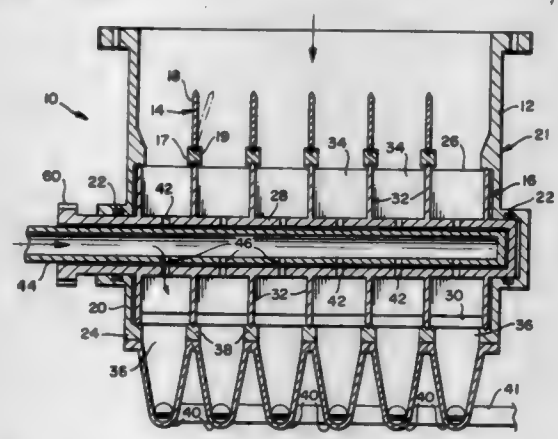
DIVIDED ROTARY VALVE FEEDER

Robert D. Stewart, Verona, and Robert L. Gamble, Wayne, both of N.J., assignors to Foster Wheeler Energy Corporation, Livingston, N.J.

Filed Apr. 22, 1983, Ser. No. 487,654

Int. Cl.³ B65G *53/40*

U.S. Cl. 414—219 **17 Claims**



1. A rotary valve feeder for feeding material, comprising:

a casing having an inlet and an outlet;

a rotor mounted in the casing between the inlet and the outlet, the rotor including a plurality of vanes defining troughs and a plurality of partitions dividing each trough into a plurality of compartments;

means for defining a plurality of passages in the outlet; and

means in said inlet for defining a plurality of channels, said channel defining means being adjustable to vary the relative sizes of the channels with respect to one another in order to evenly divide the material among the compartments of the rotor.

16. Apparatus for evenly distributing material across an area subject to pressure variations comprising:

a casing having an inlet and an outlet;

a plurality of conveyors in communication with said casing outlet and said area subject to pressure variations, each conveyor moving the material to a respective predetermined portion of said area;

means for defining a plurality of passages in said casing outlet, each conveyor being in sealed communication with a respective one of said passages; and

a rotor mounted in said casing between said inlet and said outlet, said rotor having an axis and a plurality of troughs parallel to said axis and registrable with more than one of said passages, said rotor further having means for dividing said troughs into a plurality of compartments, wherein each compartment is in registration with a respective one of said passages said trough dividing means being in sealing engagement with said means for defining a plurality of passages in said outlet in order to prevent the material

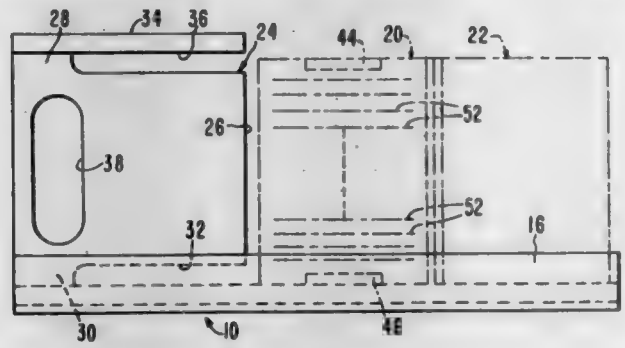
from being blown along said troughs and between said compartments.

4,536,122

WAFER TRANSFER DEVICE

John M. Herrmann, Santa Clara, and Suzanne M. Voisin, Fremont, both of Calif., assignors to Trilogy Computer Development Partners, Ltd., Cupertino, Calif.

Filed Aug. 22, 1983, Ser. No. 525,195
Int. Cl.³ B65G *65/00*
U.S. Cl. 414—404 **10 Claims**



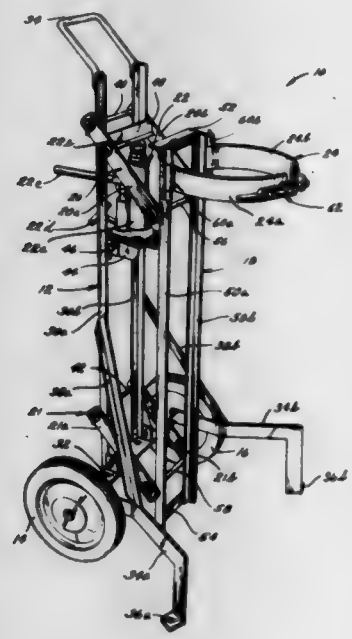
1. A wafer transfer device for a pair of wafer carriers of the type having aligned side grooves for receiving a number of wafers and front and rear openings with only a first of the openings being wide enough to allow the wafers to enter and leave the wafer carrier, said device comprising: a base having an upper surface; and a wall member secured to the base and extending upwardly therefrom; said surface adapted to support a pair of wafer carriers with the first openings thereof abutting each other and with the grooves of the wafer carriers aligned with each other, said wall member adapted to enter the other opening of the adjacent wafer carrier as the wafer carriers move over the surface toward the wall member, so that the wafers will be shifted by the wall member from the grooves of the first wafer carrier to the grooves of the second wafer carrier.

4,536,123

HAND TRUCK APPARATUS FOR ELEVATING AND TRANSPORTING AN OBJECT

Wayne E. Snyder, 11122 Township Rd. 180, Findlay, Ohio 45840

Filed Aug. 4, 1983, Ser. No. 520,411
Int. Cl.³ B60P *1/00*
U.S. Cl. 414—448 **6 Claims**



1. A hand truck apparatus for elevating and transporting an object comprising:

a main frame assembly having ground engaging wheel means;

a load supporting mechanism movably mounted on said main frame assembly, said load supporting mechanism being movable between a first lower position and a second upper position, said load supporting mechanism including a generally elongate frame member for engaging the object along a first predetermined length of the sidewall of the object, said load supporting mechanism including securing means for engaging a portion of the sidewall of the object along a second predetermined length of the sidewall of the object, said securing means urging the object into secure engagement with said elongate frame member, said first predetermined length being greater than said second predetermined length; and

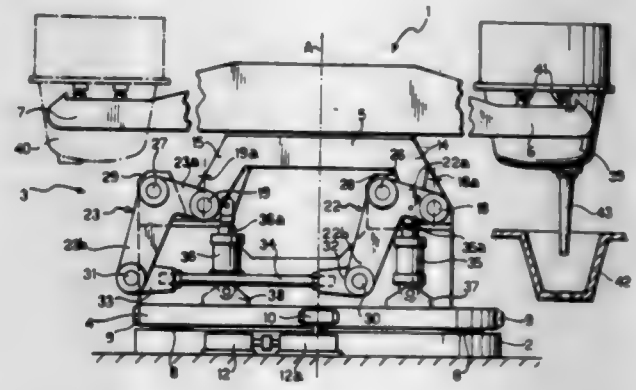
means for moving said load supporting mechanism and the object between the first lower position and the second upper position.

4,536,124

REVOLVING-LADLE TURRET FOR CONTINUOUS CASTING STEEL PLANTS

Oreste Silvestri, Segrate, Italy, assignor to Innse Innocenti Santeustacchio S.p.A., Brescia, Italy

Filed Sep. 28, 1982, Ser. No. 425,653
Claims priority, application Italy, Oct. 2, 1981, 24274 A/81
Int. Cl.³ B66C *1/44*
U.S. Cl. 414—744 R **1 Claim**



1. Revolving-ladle turret comprising:

a turret member having diametrically opposed arms for carrying ladles;

a platform for supporting said turret member;

a pair of linkage means for interconnecting said turret member and said platform, each of said linkage means comprising a pair of bell cranks and a horizontally-extending rod interconnecting lower ends of the bell cranks, each bell crank having an upper end connected to said turret member and a portion intermediate the ends connected to said platform so that said bell crank is pivotable about the connection to said platform;

means for vertically moving said turret member with respect to said platform;

a base for supporting said platform for rotation about a vertical axis; and

means for rotating said platform about the vertical axis.

4,536,125

WIND LIFT GENERATOR

George R. Herman, 2134 S. Bonarden La., Tempe, Ariz. 85282, and William A. Martin, Elma, Wash., assignors to George R. Herman, Tempe, Ariz.

Filed Apr. 25, 1983, Ser. No. 488,536
Int. Cl.³ F03D *5/02*
U.S. Cl. 415—5 **24 Claims**

1. A fluid power generator comprising:

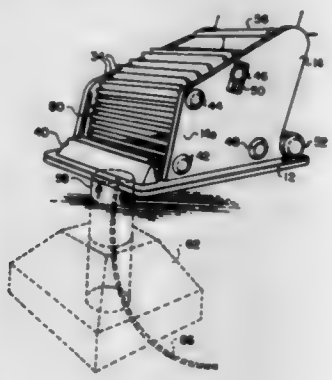
a support frame,

a plurality of coaxially disposed pairs of support and drive

sprockets rotatably mounted in spaced relations on said frame,

a pair of spaced apart endless chains mounted on separate ones of said pairs of said sprockets, and

a plurality of fluid responsive lift blades mounted on and



extending between said chains, said sprockets being positioned to define a first lift stage of said blades followed by an impact stage, and a downward lift stage, and a neutral stage on said support frame to be oriented by said support into a predetermined fluid stream wherein each of said stages presents a plurality of blades to said fluid stream.

4,536,126

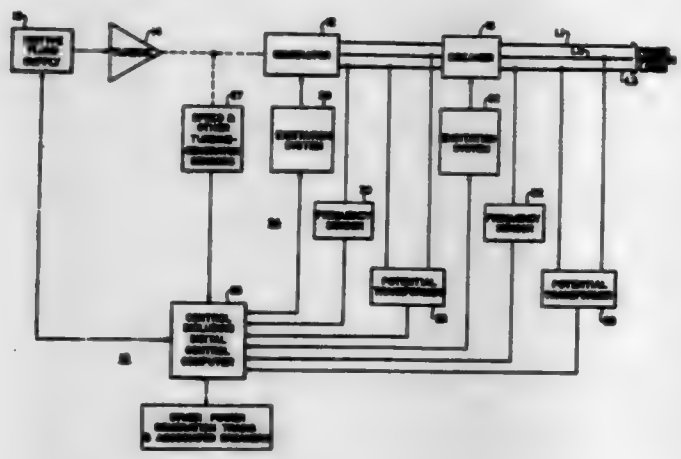
SYSTEM AND METHOD EMPLOYING A DIGITAL COMPUTER FOR AUTOMATICALLY SYNCHRONIZING A GAS TURBINE OR OTHER ELECTRIC POWER PLANT GENERATOR WITH A POWER SYSTEM

John F. Reuther, Pittsburgh, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Continuation of Ser. No. 99,491, Dec. 18, 1970, abandoned. This application Jul. 31, 1972, Ser. No. 276,508

Int. Cl.[2] H02P *9/04*

U.S. Cl. 290—40 R **21 Claims**



1. A system for operating an electric power plant comprising an electric generator, a prime mover for driving said generator, a circuit breaker for connecting the electric output of said generator to an external power system, a plant control system including means for controlling prime mover motive fluid flow, said control system including a digital control computer, means for determining a computer representation of the magnitude and rate of change of said generator output and the external system phase difference as a function of time, said control system providing a loop for controlling prime mover speed in response to a speed reference, means for operating said computer within said speed control loop at least to generate a representation of said speed reference at least during startup operations, means for operating said computer to modify said speed reference representation as a function of said phase difference representation, means for operating said computer to generate a breaker closure command when said phase difference representation reaches a predetermined condition, and means for operating said breaker in response to said closure command.

4,536,127

TURBOCOMPRESSOR PROVIDED WITH AN ABRADABLE COATING

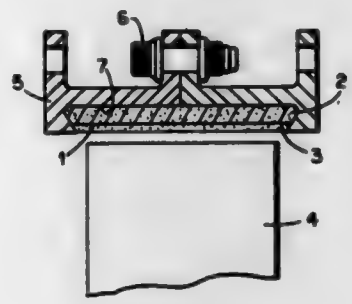
Axel Rossmann, Karlsfeld, and Herbert Merz, Munich, both of Fed. Rep. of Germany, assignors to Motoren-Und Turbinen-Union, Munich, Fed. Rep. of Germany

Filed May 1, 1984, Ser. No. 605,773

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3316535

Int. Cl.[3] F16J *15/16*

U.S. Cl. 415—174 **16 Claims**



1. In a turbocompressor having a rotatable element comprising a rotor including rotor blades, a stationary element comprising a stator including stator vanes and a casing, and a member with an abradable coating interposed between the rotatable and stationary elements, said abradable coating facing the rotor blades such that the rotor blades come into initial contact with the coating to produce a minimal clearance therewith, the improvement wherein said member with the abradable coating comprises a first layer of carbon-reinforced graphite and a second layer comprised solely of graphite, said first layer being supported by one of said elements with said second layer facing the other of said elements to be abraded upon relative rotation of said elements to establish the minimal clearance therebetween.

4,536,128

BARREL HOUSING FOR CENTRIFUGAL FLUID MACHINES

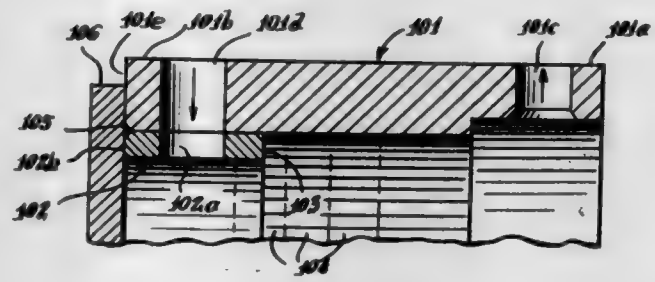
Günter Feldle, St. Leon-Rot, and Klaus Fischer, Neustadt, both of Fed. Rep. of Germany, assignors to Klein, Schanzlin & Becker Aktiengesellschaft, Frankenthal, Fed. Rep. of Germany

Filed Aug. 10, 1983, Ser. No. 522,059

Claims priority, application Fed. Rep. of Germany, Aug. 31, 1982, 3232326

Int. Cl.[3] F04D *29/42*; B23K *31/02*

U.S. Cl. 415—219 C **19 Claims**



1. An outer casing for a fluid-conveying unit of a centrifugal fluid machine, particularly for a multistage pumping unit of a centrifugal pump, comprising a tubular main section having a first and a second end portion; an annular second section at least partially installed in said main section, said second section

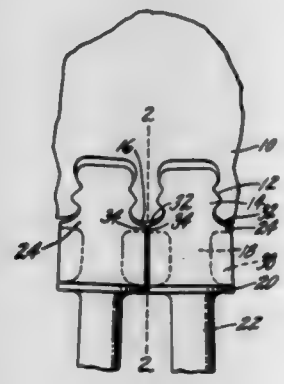
having an end face facing one of said end portions, and said end face constituting an abutment for the fluid-conveying unit of the centrifugal fluid machine, said main and second sections constituting two different bodies; and means for securing said second section to said main section, said securing means including a permanent bond between said sections.

4,536,129

TURBINE BLADE WITH DISK RIM SHIELD

Alan L. Jankot, South Glastonbury, Conn., assignor to United Technologies Corporation, Hartford, Conn.

Filed Jun. 15, 1984, Ser. No. 621,275
Int. Cl.³ F01D *5/08*
U.S. Cl. 416—95 **5 Claims**



1. A turbine blade having
an airfoil section,
a platform at the inner end of the airfoil section,
a shank extending from the platform from the side opposite to the airfoil section,
opposed flanges extending outwardly in substantially parallel relation to the platform at the end of the shank, and
a blade root immediately at the end of the shank on the other side of the flanges, said opposed flanges being of such a dimension that when the blade is assembled on the disk, the flanges of adjacent blades will be closely adjacent to one another and closely overlying and in spaced relation to the rim of the disk to form an axial air passage at said rim.

4,536,130

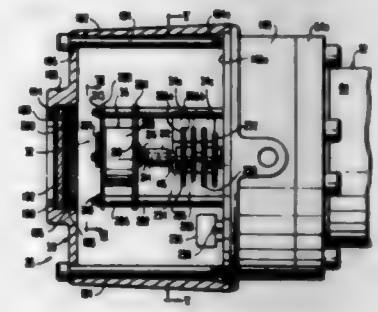
SIMPLIFIED UNLOADER INDICATOR FOR HELICAL SCREW ROTARY COMPRESSOR

Salvatore Orlando, South Windsor, and David R. Martin, Torrington, both of Conn., assignors to Dunham-Bush, Inc., West Hartford, Conn.

Filed Jun. 18, 1984, Ser. No. 621,653
Int. Cl.³ F04B *21/00*; G01D *11/00*
U.S. Cl. 417—63 **5 Claims**

1. In a helical screw rotary compressor for a gas compression system, said compressor having:
an axially shiftable unloader slide valve for varying the capacity of the compressor,
an unload cylinder mounted to said compressor and including a reciprocating piston and defining with said cylinder fluid sealed chambers on opposite sides of said piston,
a piston rod mounted to said piston at one end and mounted to said slide valve at the other end;
whereby the application and removal of a compressed fluid to and from said chambers causes said piston to reciprocate said slide valve between full load and full unload positions and vice versa,
the improvement wherein:
said piston rod is hollow,
and wherein said compressor further comprises an indicator shaft positioned coaxially within said hollow rod,
means for mounting said indicator shaft for rotation about its axis and for preventing shaft axial movement,
an indicator pin fixedly mounted to one of said rod and said shaft and extending radially therefrom,
a helical groove formed within the other of said rod and shaft, facing said pin and receiving a radially projecting portion of said pin,
means operatively engaging said indicator shaft and responsive to rotation of said indicator shaft for at least indicating the position of the slide valve and the load/unload condition or said compressor,
and wherein said compressor further comprises; a compressor housing, parallel bores formed within said housing for receiving intermeshed helical screw rotors, a recess within said housing opening to said bores, said slide valve being positioned within said recess for reciprocating movement therein, a bulkhead closing off one end of said unload cylinder, a bore within said bulkhead slidably and sealably receiving said hollow piston rod to permit reciprocation of said rod within said bulkhead bore, a counterbore within said bulkhead defining a high pressure injection liquid gallery for permitting high pressure liquid to be fed





to the gallery, a bushing fixedly carried internally of said hollow piston rod at said bulkhead and rotatably mounting said indicator shaft, said shaft being of a diameter less than the internal diameter of the hollow piston rod, at least one radial hole extending through said hollow piston rod, a cylindrical tube concentrically surrounding said hollow piston rod and being fixed at one end to said bulkhead and being sealed at its opposite end to said hollow piston rod, terminating at that end in proximity to said slide valve bearing recess of said compressor housing and being open internally to said gallery such that irrespective of axial position of the slide valve, the high pressure injection liquid for feeds from the gallery through the interior of said hollow piston rod between said bushing and said slide valve, and fluid passage means through said hollow rod and said slide valve, and opening to an injection port on the face of the slide valve proximate to said rotor receiving bores of said compressor housing; whereby, liquid injection can take place within the compression process, sealed from the chamber to the side of the unload cylinder piston proximate to said slide valve.

4,536,131

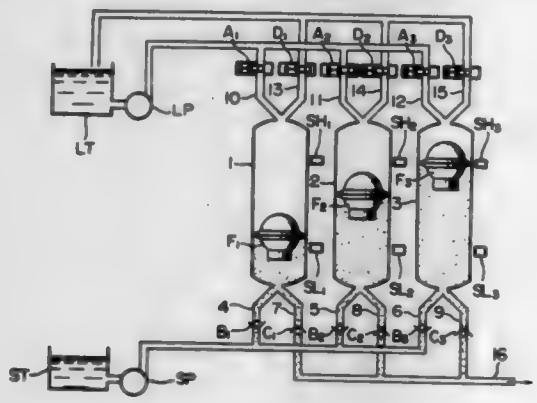
APPARATUS FOR CONTINUOUS PRESSURE FEEDING OF SLURRY

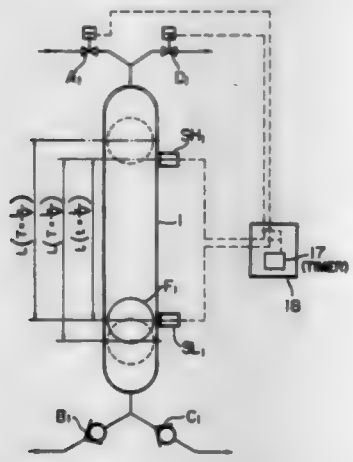
Makoto Saito, Higashihiraki; Masakatsu Sakamoto, Matsudo; Kenji Uchida, Kashiwa, and Yukishige Kamino, Tsuchiura, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Feb. 8, 1984, Ser. No. 578,109
Claims priority, application Japan, Feb. 28, 1983, 58-30709
Int. Cl.³ F04F *11/00*; F04B *15/02*
U.S. Cl. 417—102 **2 Claims**

1. An apparatus for continuous pressure feeding of slurry, including a plurality of supply chambers which are arranged in parallel to each another, each of said supply chambers having

an upper portion and a lower portion, driving liquid supply and discharge pipes having valves and connected to the upper portion of each said supply chamber, slurry supply and discharge pipes having valves and connected to the lower portion of each said supply chamber, a float floating on the interface between the driving liquid and the slurry within each of said supply chambers, and sensor means provided around the upper portion and the lower portion of each of said supply chambers wherein the valves of said driving liquid supply and discharge pipes and said slurry supply and discharge pipes are selectively





opened and closed for continuous pressure feeding of the slurry, said apparatus characterized in that means-are provided for maintaining the continuous pressure feeding of slurry by said apparatus when said sensor means fails to detect the the position of the float, said means for maintaining including a timer for generating a signal instead of a signal of the sensor means, a period of time corresponding to a flow rate within the supply chamber is set in said timer, and when said period of time lapses, a command signal is generated by said timer and selectively applied to said valves.

4,536,132

GAS COMPRESSOR

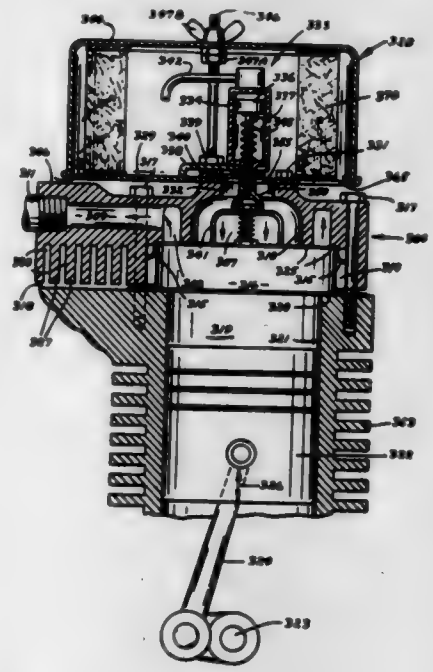
William L. Tenney, Crystal Bay, Minn., assignor to London Fog, Inc., Long Lake, Minn.

Division of Ser. No. 238,011, Feb. 25, 1981, Pat. No. 4,391,568, which is a continuation of Ser. No. 917,185, Jun. 20, 1978, abandoned. This application May 25, 1983, Ser. No. 498,133

Int. Cl.³ F04B *41/04, 17/00*

U.S. Cl. 417—237 **24 Claims**

1. An apparatus for compressing gas and delivering partially cooled gas to a desired location, comprising: a crankcase assembly having crankshaft means, a single cylinder attached to the crankcase assembly, said cylinder having a cylindrical bore defining a chamber, a piston located in said bore connected to the crankshaft means operable to reciprocate the piston in the bore, blower means for moving air toward the cylinder, said blower means having a rotor connected to the crankshaft means and a shroud surrounding the rotor and extended toward the cylinder, said shroud having an air inlet opening, said crankcase assembly, cylinder, blower means, and piston comprising engine components of a conventional, air cooled, four-cycle, single cylinder internal combustion engine, a valve assembly mounted on the cylinder over the bore for controlling the flow of gas into and out of the chamber in response to movement of the piston in the bore, head means located in engagement with the valve assembly to hold the valve assembly on the cylinder over the chamber, said head means having a recess larger .than the valve assembly accommodating the valve assembly and forming an annular space around the valve assembly, and spaced fins providing air passages leading to the



annular space whereby air from the blower means directly cools the valve assembly, said valve assembly having a gas inlet valve means allowing gas to flow into the chamber and gas outlet valve means allowing gas to flow out of the chamber, said head means and a gas outlet passage in communication with the outlet valve means, and means connected to the head means to carry gas from the head means to the desired location.

4,536,133

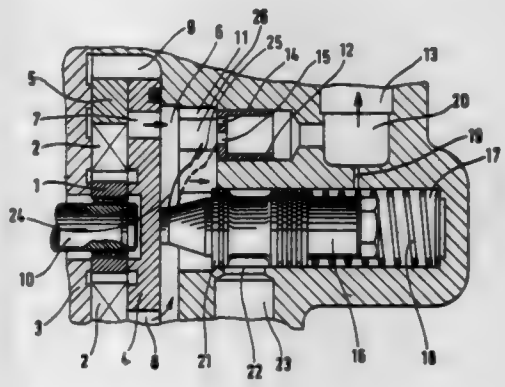
REGULATABLE VANE PUMP

Günther Seidl, Heubach, Fed. Rep. of Germany, assignor to Zahnradfabrik Friedrichshafen, AG., Friedrichshafen 1, Fed. Rep. of Germany

Filed Mar. 22, 1984, Ser. No. 592,475

Int. Cl.³ F04B *49/08;* **G05D** *11/00*

U.S. Cl. 417—307 **12 Claims**



1. In a displacement vane pump flow regulator device for a hydraulic power system wherein a pump has a housing with outlet pressure chamber (6) to communicate with a differential pressure actuated regulating piston (16); including flow restrictor means (12,24) having restrictor passage means (14, 15, 15') for pump pressure flow to a hydraulic power system; means (22, 23) whereby outlet chamber pressure actuation of said regulator piston permits pressure flow from said outlet pressure chamber to a pump suction return line and means (19, 20)

whereby pressure in said hydraulic power system effects piston actuation to shut-off said latter flow;

the improvement wherein said restrictor passage means comprises at least one restrictor bore normally open to communicate said pump pressure chamber to said hydraulic power system;

said flow restrictor means comprising closure means (24, 25) operated by said regulator piston to progressively at least partially shut off flow through said restrictor bore when said regulator piston is pressure actuated by pressure from said outlet pressure chamber, wherein said closure means comprises a closure member (25) disposed to move across the flow area of said restrictor bore with movement of said regulator piston in progressively restricting flow through said area; wherein said closure means and said restrictor bore coact to effect flexibility of closure engagement;

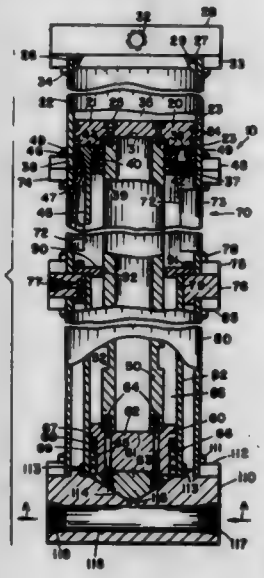
said bore having an open port in a plane intersecting the axis of said regulator piston and wherein said closure means comprises a member slidable across and flexibly biased against said port.

4,536,134

PISTON SEAL ACCESS APPARATUS

Otto A. Huiber, Kentwood, Mich., assignor to Hi-Tech Engineering, Inc., Grand Rapids, Mich.

Filed Apr. 30, 1984, Ser. No. 605,204
Int. Cl.³ F04B 9/10
U.S. Cl. 417—360 **8 Claims**



1. A liquid pump for a chemical injection molding system comprising:

a driving member movable with respect to a support housing;

a chemical injection cylinder including an injection piston;

rod means for coupling said piston and said driving member for synchronous movement, wherein said driving member is capable of moving said rod through a lineal distance sufficient to withdraw said injection piston from said injection cylinder when said piston is fixedly secured thereto;

means for securing said injection piston to said rod means to prevent rotation therebetween; and

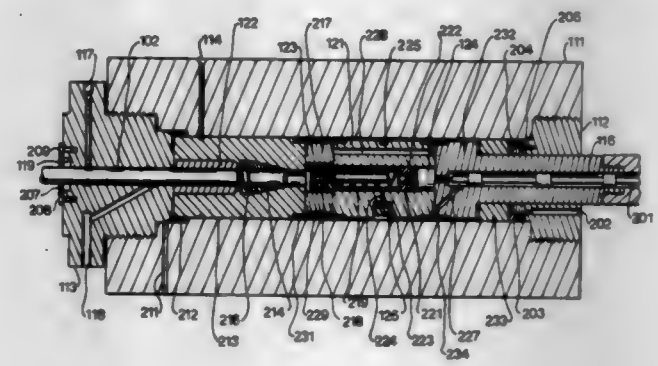
a cylindrical sleeve for coupling said housing and said injection cylinder in spaced relationship and including at least one access port such that said injection piston can be lineally withdrawn from said injection cylinder into said sleeve for servicing through said access port without disassembly of said pump.

4,536,135

HIGH PRESSURE LIQUID PISTON PUMP

John H. Olsen, Vashon, and Sigurd C. Mordre, Dockton, both of Wash., assignors to Flow Industries, Inc., Kent, Wash.

Filed Sep. 27, 1982, Ser. No. 424,206
Int. Cl.³ F04B 9/10
U.S. Cl. 417—383 **13 Claims**



1. A pump, comprising:

a housing;

inlet means for admitting fluid into said housing;

fluid pressurizing means within said housing in communication with said inlet means for pressurizing fluid received therefrom;

said fluid pressurizing means having wall means with internal and external wall surfaces, wherein said fluid pressurizing means includes a cylinder within said housing defined by said wall means, said cylinder being in fluid communication with said inlet means; a piston slidable within said cylinder for pressurizing fluid therein; and means for actuating said piston to provide an intake stroke for admitting fluid into said cylinder and a pressure stroke for pressurizing fluid within said cylinder; and wherein said means for controlling the pressure differential on said wall means includes reservoir means around the exterior surface thereof; and means for providing fluid communication between the interior of said cylinder and said reservoir, whereby high-pressure fluid within said reservoir means provides a compressive force on said wall means to control the pressure differential thereacross as said piston moves between said intake stroke and said pressure stroke;

means for conducting a high-pressure fluid output from said housing and said fluid pressurizing means; and,

means for controlling the fluid pressure differential acting on said wall surfaces, whereby stress on said wall means is controlled to prevent structural fatiguing thereof; and,

a separator in a housing between said piston and said inlet for isolating said pumped fluid from a second fluid wherein the area between said separator housing and said cylinder is vented to said inlet to urge said separator housing toward said cylinder.

4,536,136

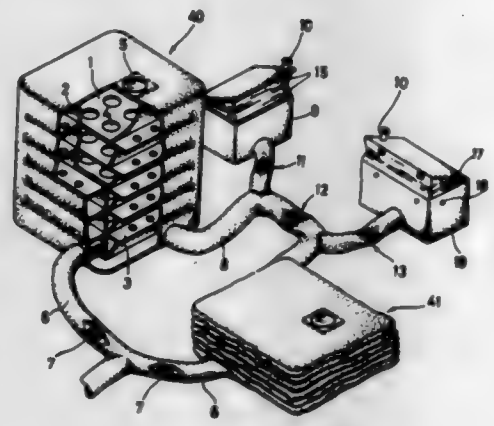
FILM-MADE PUMP DRIVEN BY THE FILLING EFFECT OF A FLUID ON FILLING INTO A CHAMBER MADE OF FILM

Yung-Huei Lan, 3 Fl. 32. Lane 61, Section 2, Hang Chou S. Rd., Taipei, Taiwan

Filed Mar. 22, 1983, Ser. No. 477,610
Int. Cl.³ F04B 9/08, 43/10, 45/00
U.S. Cl. 417—389 **5 Claims**

1. A pump composed of a flexible film consisting of a pumping chamber having a one-way valved intake port and a one-way valved exhaust port, a surrounding supporting chamber composed of a pipe network, said network having a combination intake/exhaust inlet, upon said supporting chamber being filled through said inlet with a first fluid, said pumping chamber expands, being supported by said support chamber, to absorb a second fluid through said intake port, and upon col-

lapsing said support chamber by forcibly removing the fluid therefrom said pumping chamber discharges the fluid therein



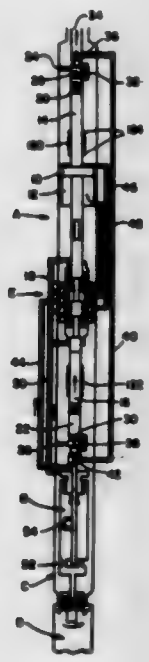
through said exhaust port, after which said pump is ready for the next cycle.

4,536,137

SUBMERGIBLE PUMPING APPARATUS

Russell J. Bookout, Bartlesville, Okla.; Bernard A. Pearson, Bothell, and John W. Jacobs, Seattle, both of Wash., assignors to TRW Inc., Cleveland, Ohio

Filed Sep. 30, 1982, Ser. No. 429,177
Int. Cl.[3] F04B *47/08*
U.S. Cl. 417—390 2 Claims



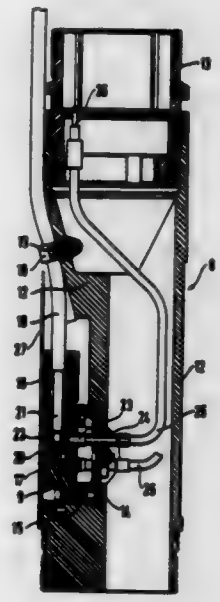
1. Submergible pumping apparatus for use in oil and other wells comprising, in a downhole unit, a piston-plunger assembly including a power piston adapted to reciprocate in a power cylinder, and a plunger connected to the piston for reciprocation in a plunger chamber, inlet valve means for admitting well fluid to the plunger chamber on suction strokes of the plunger within the chamber, discharge valve means for discharging well fluid from the plunger chamber into a discharge means on pumping strokes of the plunger within the chamber, a power fluid reservoir, pump means for delivering high pressure power fluid from the reservoir to the power cylinder for operating the power piston, and a control valve for effecting stroke reversal of the power piston by alternately providing connections for the high pressure power fluid to one or the other end of the power cylinder and for low pressure power fluid from said other or said one end of the power cylinder to the reservoir, and reversing said connections when the power piston approaches opposite ends of its stroke, respectively, the control valve comprising a spool valve including a reciprocating valve rod section formed as a part of said piston-plunger assembly, and including a reciprocating valve spool encircling the valve rod section and disposed in a stationary valve housing, the valve housing including passage means providing communication for power fluid between the reservoir, the control valve, and the power cylinder, and port means providing communication between the passage means and the exterior of the valve spool, the control valve further including a central vent hole in the valve spool connecting the exterior of the spool with an internal spool groove, further vent holes at opposite ends of the spool respectively connecting the interior of the spool with respective actuating annuli defined between opposite end portions of the spool exterior and the valve housing, and spaced annular grooves in the valve rod section for connecting the central vent hole to one of the actuating annuli while venting the other of the annuli to the reservoir when the piston-plunger assembly approaches one end of its stroke, so as to apply fluid pressure to the valve spool in a manner axially shifting the valve spool in one direction, thereby reversing said connections, the central vent hole likewise being connected to the other actuating annulus while said one actuating annulus is vented, when the piston-plunger assembly approaches the other end of its stroke, so as to apply fluid pressure to the valve spool axially shifting the spool in reverse direction.

4,536,138

MOTOR-DRIVEN PUMP ASSEMBLY WHICH CAN BE USED UNDER WATER

Jacques Romand-Monnier, Delle, and Jean-Pierre Lejeune, Beaucourt, both of France, assignors to Alsthom-Atlantique, Paris, France

Continuation of Ser. No. 480,611, Mar. 30, 1983, abandoned. This application Dec. 28, 1984, Ser. No. 687,232
Claims priority, application France, Apr. 5, 1982, 82 05852
Int. Cl.[3] F04B *35/04*
U.S. Cl. 417—422 2 Claims



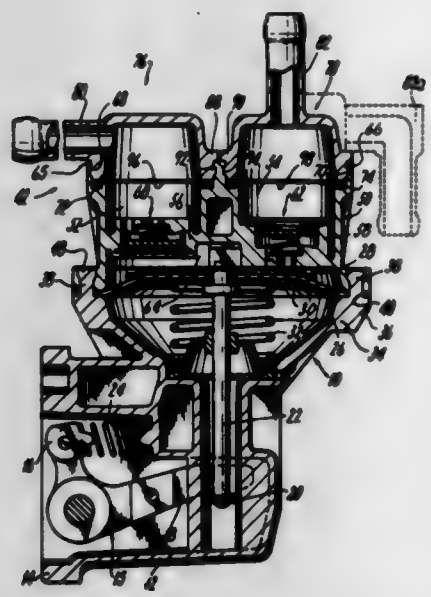
1. A submersible motor-driven pump assembly formed of axially aligned, end to end joined vertically oriented modular units for use under water, said modular units including at least one electric motor unit having an upper end and a lower end surmounted by at least one pump unit connected to the upper end of said motor unit so as to rotate the pump, the improvement wherein said end to end joined vertically oriented modular units include an electric connection module situated beneath said at least one electric motor unit coaxially aligned therewith and having an upper end detachably fixed to the lower end of the motor unit, for electrically energizing said at least one motor unit, and said electrical connection module having a connector pin connected to a cable, said cable running upwardly therefrom externally of said assembly and being fixed thereto, said connector pin being mounted within said electrical connection module, said electrical connection module further including at least one inside connector member fixed to the upper end of said electrical connection module for

effecting electrical connection at said upper end of said electrical connection module with said at least one electric motor unit at its lower end, and internal conductor means extending from said connector pin to said at least one inside connector member for supplying power from said cable to said at least one motor unit for rotating said pump.

4,536,139
DIAPHRAGM PUMP

Claudio Greco, and Silvano Biandino, both of Turin, Italy, assignors to Societa' Impianti Elettrici Telefonici Telegrafici E Costruzioni Edili, Florence, Italy

Filed Jun. 7, 1983, Ser. No. 501,792
Claims priority, application Italy, Jun. 8, 1982, 22121/82[U]
Int. Cl.³ F04B *43/14*
U.S. Cl. 417—471 7 Claims



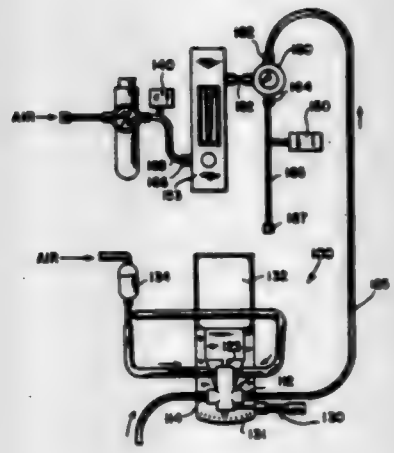
1. A diaphragm pump, of the type comprising a lower body and an upper body with mating annular peripheral flanges between which the periphery of the diaphragm is gripped, and in which the lower body contains a mechanism for deforming said diaphragm in a reciprocating manner, and in which said upper body is formed with two housings which contain respectively an automatic intake valve and an automatic delivery valve through which a chamber overlying the diaphragm is put into communication with an intake pipe union and a delivery pipe union respectively, which branch from corresponding spaces overlying the respective valves, characterised in that:

said upper body has a pair of separate cavities arranged side-by-side, each of which houses one of the valves and has an upper bell-shaped annular part of revolution; and associated with each cavity is a cap separate from said upper body and one another, each cap having a pipe union branching therefrom and having a skirt of revolution engaging the corresponding bell-shaped part, one forming an inlet and one forming an outlet; at least one of each bell-shaped part and the corresponding skirt being resilient; each skirt and the corresponding bell-shaped part having cooperating snap-engageable members and facing radial surfaces between which is clamped an annular sealing washer, at least one of said caps including said pipe union branching therefrom at an angle from the axis of said cap and said cap and pipe union rotatable to different tangential positions.

4,536,140
PUMP APPARATUS AND SYSTEM FOR CONTAINING AND METERING UNIFORM PULSES OF A SMALL AMOUNT OF A HAZARDOUS LIQUID

Roger T. Guthrie, Pasadena, Md., assignor to M&T Chemicals Inc., Woodbridge, N.J.

Filed Nov. 14, 1983, Ser. No. 551,447
Int. Cl.³ F04B *7/06*
U.S. Cl. 417—500 9 Claims



1. A pump apparatus for completely containing and precisely metering uniform pulses of small quantities of a hazardous and reactive fluid comprising:

a unitary piston housing having interior cylindrical walls, said piston housing having an elongated bore extending from a first open end to a position proximate a second closed end, said elongated bore having a pumping chamber region at said second end,

a pumping fluid inlet means to said pumping chamber,

a pumping fluid outlet means from said pumping chamber,

a reciprocating and rotating piston, said piston being positioned in a uniform mating relationship with the interior walls of said piston housing with a close tolerance therebetween during said pumping cycle for reciprocating motion within said elongated bore of said piston housing, from a first position in which said piston substantially occupies the space within said pumping chamber and displaces pumped fluid from said pumping chamber to a second position in which said piston is substantially removed from said pumping chamber and draws pumping fluid into said chamber,

a barrier fluid inlet for providing communication between a source of barrier fluid and said elongated bore at a position which is between said elongated bore first and said pumping chamber and adjacent said piston,

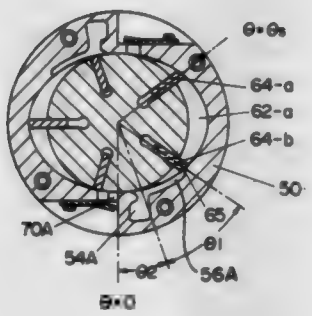
pressure means for delivering said barrier fluid directly to said elongated bore at a pressure which is greater than the maximum fluid pressure within said pumping chamber,

whereby moist air is prevented from leaking into said piston and when pumping fluid is drawn into said chamber, and migration of pumped fluid from said pumping chamber, along the piston, to said first open end is precluded by said barrier fluid.

4,536,141
ROTARY VANE COMPRESSOR WITH SUCTION PASSAGE CHANGING IN TWO STEPS

Teruo Maruyama, Hirakata, Japan, assignor to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

PCT No. PCT/JP83/00067, § 371 Date Nov. 1, 1983, § 102(e) Date Nov. 1, 1983, PCT Pub. No. WO83/03123, PCT Pub. Date Sep. 15, 1983
PCT Filed Mar. 3, 1983, Ser. No. 554,293
Claims priority, application Japan, Mar. 4, 1982, 57-34823; Mar. 23, 1982, 57-46666
Int. Cl.³ F04C *18/00, 29/08*
U.S. Cl. 418—150 1 Claim



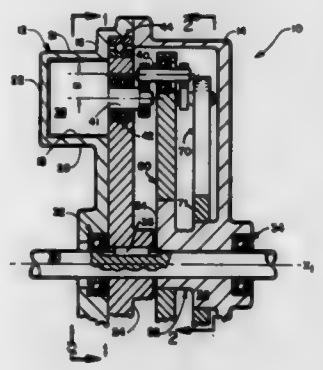
1. A rotary compressor comprising:
a cylinder having a non-circular inner peripheral surface;
side plates fixed to and closing the axial ends of said cylinder;
a rotor, rotatably mounted in said cylinder, having radially extending, equiangularly spaced slots therein; and
slidable vanes radially slidably mounted in said slots so as to slidably engage said inner surface when rotated with said rotor in a rotational direction in said cylinder, so as to define sealing spaces between the outer periphery of said rotor, said inner peripheral surface of said cylinder, and said side plates, and blade chambers in said sealing spaces respectively bounded on at least one circumferential side by said vanes so as to rotate and vary in volume as said rotor and vanes rotate in said cylinder, said blade chambers having a predetermined maximum value V_0 during said rotation;
said cylinder having suction bores and discharge bores, including a respective suction port and a respective discharge port opening into each of said sealing spaces through said cylinder adjacent respective opposite circumferential ends thereof, said respective discharge port being located downstream of said respective suction port with respect to the rotational direction of said rotor;
said vanes and said blade chambers rotating across said suction bores and discharge bores as they rotate with said rotor, such that each of said suction bores open into said blade chambers as said blade chambers rotate thereacross, and said suction bores communicate with any one of said blade chambers over a continuous total rotational angle of travel θ_s of said rotor divided into a first angle of travel θ_A and a second angle of travel θ_1, such that over said first angle of travel θ_A, said suction bore has a first effective suction area a_1 of communication with said blade chamber and, over said second angle of travel θ_1, said suction bore has a second effective suction area a_2 of communication with said blade chamber, wherein:

$a_1 > a_2$,
$\theta_1/\theta_s > 0.170$ and
$0.025 < K_{22} < 0.055$,
wherein K_{22} is defined as $a_2\,\theta_s/V_0$.

4,536,142
IMPELLING MECHANISM

Howell M. Sumrall, 4447 Marraco Dr., San Diego, Calif. 92115

Filed Nov. 9, 1983, Ser. No. 549,896
Int. Cl.³ F04C *2/00, 18/00*
U.S. Cl. 418—227 16 Claims

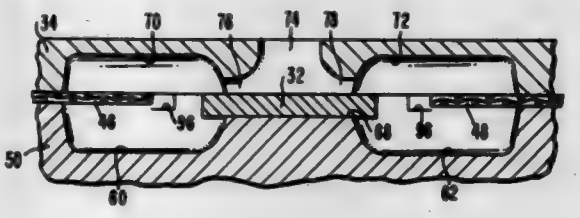


1. An impelling mechanism comprising:
a housing defined by an upper casing and a lower casing, at least one swept volume chamber formed in said upper casing, at least one fluid input port in communication with said swept volume chamber, at least one fluid output port in communication with said swept volume chamber;
a shaft oriented substantially perpendicular to the top wall of said upper casing with said shaft passing therethrough and being journaled to rotate freely with respect to said upper casing;
a rotor member fixedly mounted on said shaft and being located in said housing, a portion of the top surface of said rotor member forming the bottom wall of said swept volume chamber, a plurality of blade members each of which is mounted on its own crankshaft, said blade members being positioned within said swept volume chamber and their crankshaft being oriented substantially perpendicular to said rotor member and being journaled therein; and
means for controlling the blade attitude of each of said blade members so that they all maintain the same attitude as the rotor member travels through its 360 degree revolution comprising said crankshafts each having at least one crankshaft throw that is journaled in a blade attitude control member that is journaled about a disc member within which said shaft is journaled, said disc having a fixed relationship with said lower casing.

4,536,143
APPARATUS FOR CONTINUOUSLY MOLDING OF ARTICLES WITH PLURAL BAND-LIKE MEMBERS

George B. Moertel, Conneautville, Pa., assignor to Talon, Inc., Meadville, Pa.

Continuation of Ser. No. 285,906, Jul. 23, 1981, Pat. No. 4,350,656, which is a continuation-in-part of Ser. No. 154,650, May 30, 1980, abandoned. This application Sep. 17, 1982, Ser. No. 419,290
The portion of the term of this patent subsequent to Sep. 21, 1991, has been disclaimed.
Int. Cl.³ B29D *5/00*
U.S. Cl. 425—115 3 Claims



1. An apparatus for producing a row of coupling members for a slide-fastener stringer comprising:

a forming wheel provided on the periphery with a multiplicity of equispaced outwardly open forming beds having configurations complementary to contours of respective coupling members to be formed therein, and a circumferential outwardly open groove intersecting said beds;

an endless forming band extending around a portion of the periphery of said wheel and provided with openings respectively registering with said beds whereby said each opening and the bed in registry therewith forms a respective mold cavity;

an undercutting band received wholly in said groove and interposed between said periphery of said wheel and said forming band and projecting into said mold cavity, said forming band being of a width sufficient to span over said beds and said undercutting band on the periphery of said wheel; and

means for introducing thermoplastic synthetic resin into each of said mold cavities to produce respective coupling members of complementary shape therein whereby, upon separation of said members from said wheel and said bands, said undercutting band forms an undercut portion in each coupling member.

4,536,144

REVERSING MECHANISM FOR SAFETY GATE OF INJECTION MOLDING MACHINE

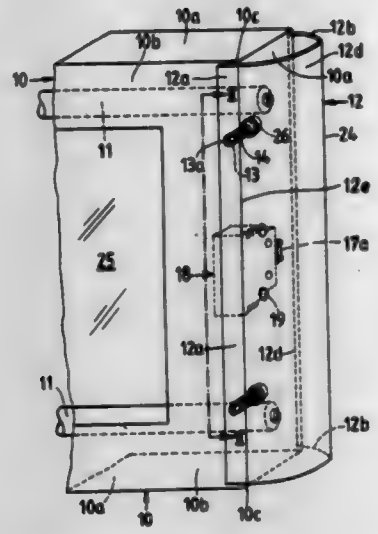
Karl Hehl, Arthur-Hehl-Strasse 32, 7298 Lossburg 1, Fed. Rep. of Germany

Filed Sep. 19, 1983, Ser. No. 533,456

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234453

Int. Cl.³ B29F *1/00*

U.S. Cl. 425—154 **9 Claims**



1. A safety gate control mechanism for a production machine having a safety gate which is movable between open and closed positions by means of a safety gate drive with a drive control circuit, which control mechanism interrupts a closing movement of the safety gate, when the safety gate encounters an object or obstacle in its closing path, said safety gate control mechanism comprising in combination:

a straight leading edge on the safety gate extending transversely to the path of the closing movement of the safety gate;

a pivotable straight contact bar extending parallel to and ahead of said leading edge of the safety gate, the contact bar being attached to the safety gate by means of a pivot connection defining a contact bar pivot axis which is likewise parallel to the leading edge of the safety gate;

means for biasing the pivotable contact bar forwardly away from the leading edge of the safety gate into a rest position from which an obstacle in the path of the closing safety gate causes the contact bar to pivot rearwardly towards said leading edge, in opposition to said contact bar biasing means; and

switching means in the drive control circuit of the safety gate drive for interrupting the closing movement of the safety gate, in response to a rearward pivoting movement of the contact bar; and wherein:

the pivotable contact bar includes a wall portion with a curved surface corresponding substantially to a sector of a cylinder around the contact bar pivot axis, said curved surface having a rearwardly pointing extremity defining a trigger edge;

the switching means includes an electrical switch with a depressible switch plunger, the switch being mounted on the safety gate, behind its leading edge, and so oriented that the axis of the switch plunger is perpendicular to the contact bar pivot axis; and

the switching means further includes an actuating lever which is pivotably supported by the safety gate on a pivot axis which is parallel to the contact bar pivot axis and located between the contact bar pivot axis and the trigger edge of the contact bar in rest position, the actuating lever being movable between a rest position and a pivoted position and having a first extremity cooperating with the switch plunger to depress the latter, when the actuating lever is pivoted out of its rest position, and a second extremity which, in the rest positions of the actuating lever and of the contact bar, extends into the the path of said trigger edge of the contact bar in the immediate vicinity of said trigger edge, overlapping its pivoting path by such a radial depth that, when the contact bar is pivoted rearwardly, its trigger edge cooperates with the second extremity of the actuating lever to pivot the actuating lever and to thereby depress the switch plunger.

4,536,145

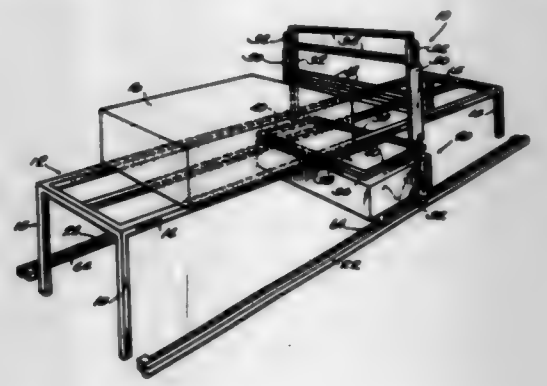
APPARATUS FOR FORMING AN EXPANDED FOAM FORM LINER INCLUDING A CONTOURED SURFACE

Robert D. Sawyer, Caledonia, and Michael W. Fohl, Brookfield, both of Wis., assignors to Tom Sawyer Supply & Equipment, Caledonia, Wis.

Filed May 7, 1984, Ser. No. 607,516

Int. Cl.³ B29C *17/00*

U.S. Cl. 425—289 **20 Claims**



1. Apparatus for use in forming a decorative surface configuration in a block of expanded polystyrene foam, the apparatus comprising:

support means for supporting a block of expanded polystyrene foam,

a wire having opposite ends and being adapted to be connected to a voltage source whereby electrical current flowing throught the wire will heat the wire to a temperature higher than the melting temperature of the polystyrene foam,

means for supporting the wire in generally linear relation, said means for supporting the wire including means for causing movement of the wire through the expanded foam block to cut a decorative surface configuration in the block, the means for causing movement including a carriage supported for linear reciprocal movement along the length of the block of expanded polystyrene foam between a retracted position and an extended position, means for causing movement of the carriage along the

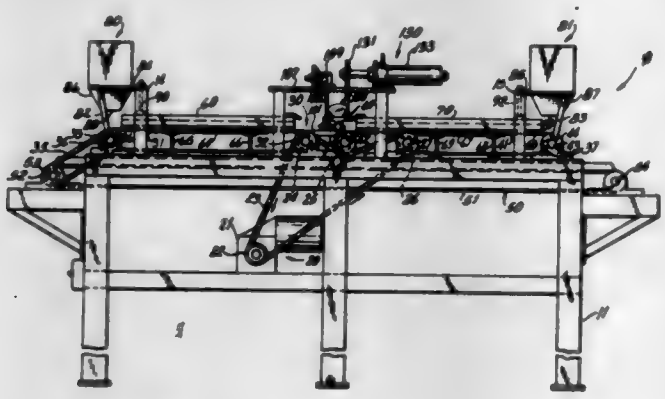
length of the block, and means for causing movement of the wire including means for causing lateral reciprocal movement of the wire in the direction of the longitudinal axis of the wire as the wire moves from the retracted position to the extended position, and means for causing vertical reciprocal movement of the wire as the wire moves from the extended position to the retracted position, the means for causing reciprocal movement of wire in the direction of the longitudinal direction and the means for causing vertical reciprocal movement of the wire being connected to the means for causing movement of the carriage along the length of the block such that the vertical position of the wire and the lateral position of the wire are dependent on the position of the carriage with respect to the block.

4,536,146

CROQUETTE MACHINE

Luis A. Hernandez, 8160 W. 16th Ave., Hialeah, Fla. 33014, and Jorge E. Gonzalez, 4724 SW. 7 St., Apt. #1, Miami, Fla. 33134

Filed Nov. 16, 1984, Ser. No. 671,928
Int. Cl.³ A21C *3/00*
U.S. Cl. 425—297 **14 Claims**



1. A machine for manufacturing food products made from a source of food mass comprising:

(a) a nozzle assembly for continuously discharging said food mass;

(b) a recriprocating chopper in close proximity to said nozzle assembly for severing said food mass from said nozzle whereby said severed mass is positioned adjacent said chopper;

(c) a tunnel in spaced apart relation to said chopper, said tunnel having a shaped internal passageway; and

(d) a conveyor extending from adjacent said chopper and along the length of said tunnel for receiving said severed mass and urging said severed mass along said passageway whereby said severed mass is shaped by said passageway during its movement along said tunnel.

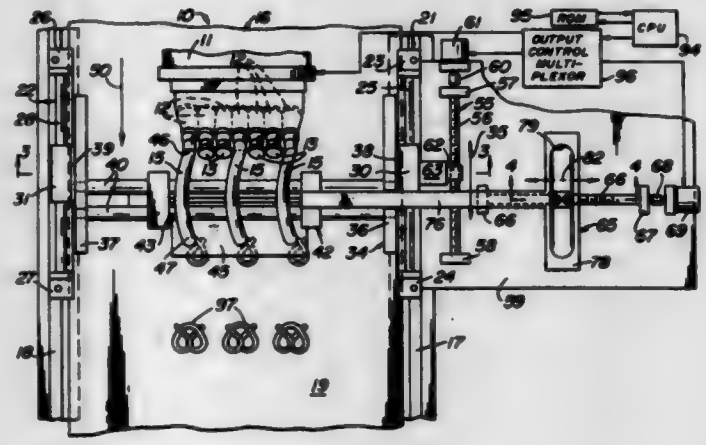
4,536,147

FOOD PROCESSING APPARATUS

Edwin T. Groff, 120 S. Third Ave., West Reading, Pa. 19611

Filed Jun. 29, 1984, Ser. No. 626,239
Int. Cl.³ A21C *3/06*
U.S. Cl. 425—323 **13 Claims**

1. A food processing apparatus comprising an extruder having an outlet, a nozzle connected to said outlet for discharging extrudate, an extrudate receiver located to receive extrudate from said nozzle, mounting means mounting said nozzle and receiver for universal relative motion in two axes to discharge extrudate in any preselected configuration on said receiver positioning means in driving relation with said mounting means for selectively effecting said universal relative motion. programmable controller means for selectively and variably controlling said positioning means to effect continuous or discontinuous relative motion of said mounting means.

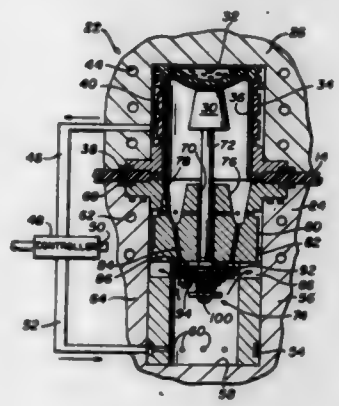


4,536,148

APPARATUS FOR MAKING A THIN WALLED CONTAINER FROM A PLASTIC RESIN

Jackie D. Murley, Big Spring, and Marion Johnson, Baytown, both of Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Jun. 26, 1984, Ser. No. 624,560
Int. Cl.³ B29C *17/04*
U.S. Cl. 425—387.1 **5 Claims**



1. In improved apparatus for thermoforming an article from a thermoplastic resin sheet wherein the apparatus includes means for heating the sheet and a source of pressure gas, the improvement comprising:

first and second mold platens each having at least one mold recess therein and moveable relatively together and apart, at least one mold recess in each said platen in alignment with the mold recess in the other said mold platen;

gas control means for connecting said recesses to the source of pressure gas and for venting said recesses;

an article mold located in the mold recess in said second mold platen, said mold including a wall defining the configuration of said article and having a plurality of gas ports extending therethrough whereby the exterior of said article can be, at times, exposed to said pressure gas and at other times vented;

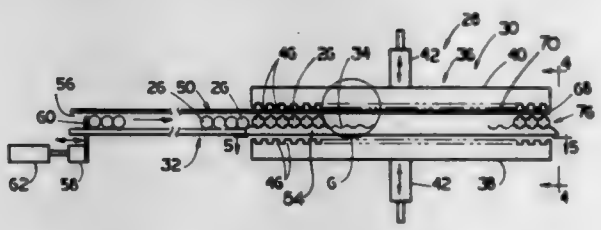
a preform mold located in the mold recess in said first mold platen, said mold including a wall forming an annular cavity therein, a plurality of gas ports extending through said wall, and pressure-actuated piston means located in said preform mold and moveable between upper and lower limits by said gas into the cavity in said article mold to aid in displacing said resin sheet into said article mold to form said article.

4,536,149

APPARATUS FOR MAKING GROOVES IN CIGARETTE FILTERS

Erik I. Naslund, Los Gatos, and Steven P. Reed, Felton, both of Calif., assignors to Brown & Williamson Tobacco Corporation, Louisville, Ky.

Filed Jul. 18, 1984, Ser. No. 632,166
Int. Cl.[3] B29D *17/00*
U.S. Cl. 425—394 18 Claims



1. An apparatus for making grooves in filter rods comprising:

die means comprising a lower die block and an upper die block, both die blocks being adapted for movement toward and away from each other, the lower die block having elongated groove forming projections projecting generally toward the upper die block and the upper die block having elongated groove forming projections projecting generally toward the lower die block, whereby the groove forming projections of the lower die block and upper die block are adapted to be embedded into a filter rod disposed between the lower and upper die block to impress grooves in the filter rod when the lower and upper die blocks are moved toward each other;

means disposed between the lower and upper die blocks defining a path of travel of the filter rods through the die means;

means associated with the path defining means for positioning the filter rods to be grooved in the die means between the lower and upper die blocks in longitudinal alignment with the groove forming projections;

stripper means for holding the grooved filter rods in the path defining means as the lower and upper die blocks move away from each other to allow the groove forming projections to be extracted from the filter rod; and,

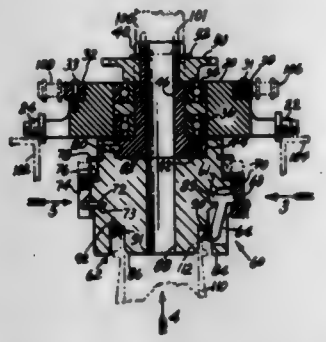
means for moving the lower and upper die blocks toward and away from each other.

4,536,150

CARRIER WITH EXCHANGEABLE CHUCK

Roger D. Smith, Bethel, Ohio, assignor to Cincinnati Milacron Inc., Cincinnati, Ohio

Division of Ser. No. 355,224, Mar. 5, 1982, Pat. No. 4,456,447.
This application Nov. 14, 1983, Ser. No. 551,041
Int. Cl.[3] B29D *23/03*
U.S. Cl. 425—526 10 Claims



1. An article gripping chuck for use in a blow molding machine conveyor including article carriers, the blow molding machine producing finished articles from article preforms having a formed portion and a formable portion injecting an expansion fluid into the preform, the article gripping chuck comprising:

(a) a chuck body having a surface for mounting to a carrier and a passage therethrough for admission of the expansion fluid;

(b) a plurality of article gripping levers rotatably supported upon the chuck body for selectively engaging the formed portion of an article preform to hold the open end thereof in communication with the passage, each lever having a formed portion engaging projection at one end thereof, and at the opposite end of such lever a first ball end on one side for rotatably engaging said chuck body and a second ball end disposed to rotatably engage the below described annular actuating means;

(c) annular actuating means slidably disposed upon the exterior of the chuck body for rotatably engaging said opposite ends of said levers for imparting radial swinging of said one ends responsive to sliding motion on said chuck body;

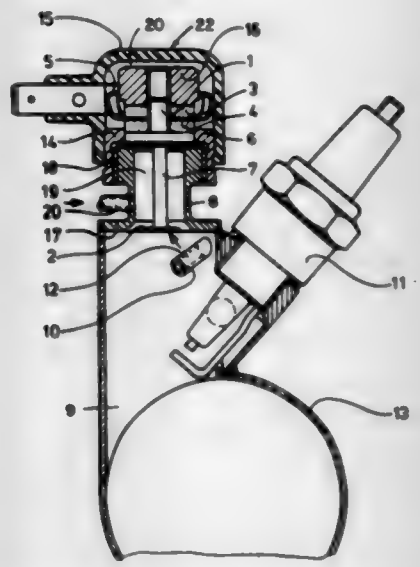
(d) biasing means for retaining urging said annular acting means in a formed portion preform engaging position.

4,536,151

MIXTURE PREPARATION FOR ENGINE-INDEPENDENT HEATERS

Herbert Langen, Altbach; Peter Reiser, and Erich Kenner, both of Esslingen, all of Fed. Rep. of Germany, assignors to J. Eberspächer, Fed. Rep. of Germany

Filed Nov. 9, 1983, Ser. No. 550,135
Claims priority, application Fed. Rep. of Germany, Dec. 1, 1982, 3244405
Int. Cl.[3] F23C *11/04*
U.S. Cl. 431—1 2 Claims

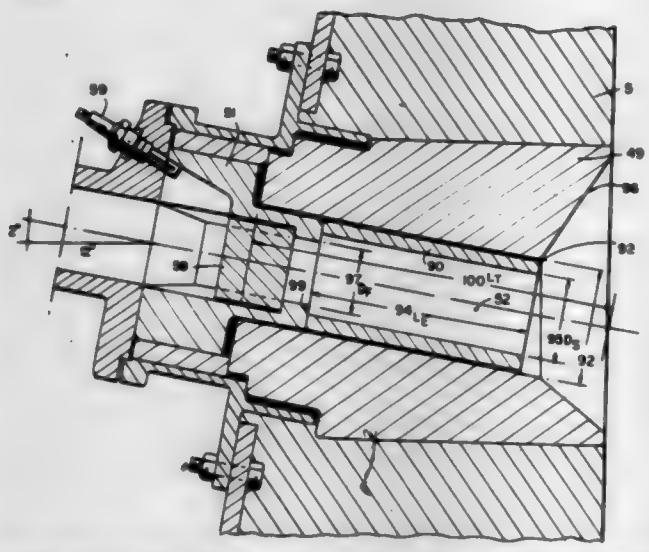


1. A space heater, particularly for automobiles, comprising a housing defining a combustion chamber, an antechamber housing defining an antechamber extending tangentially into said housing combustion chamber, ignition means in said antechamber for igniting a fuel and air explosive mixture, an ultrasonic vibrator housing connected into said antechamber, an ultrasonic vibrator in said ultrasonic vibrator housing including a vibratory plate, means for directing combustion air into said ultrasonic housing adjacent said vibratory plate, and means in said antechamber for directing a fuel toward said vibratory plate for admixture with the air moved by said plate to form a fuel and air mixture which is directed into said antechamber.

4,536,152
HIGH-VELOCITY GAS BURNERS

Victor Little, Jr., Edison, and Charles L. Thomas, South Plainfield, both of N.J., assignors to ASARCO Incorporated, New York, N.Y.

Continuation-in-part of Ser. No. 482,080, Apr. 4, 1983, abandoned. This application Apr. 10, 1984, Ser. No. 598,397
Int. Cl.[3] F23D *13/00*
U.S. Cl. 431—159 10 Claims



1. An improved gas burner providing about a 2½:1 turndown capacity while maintaining a stable flame with even and complete combustion over this range comprising a mixing section for uniting a stream of fuel and a stream of oxygen containing gas, a flame holder section having an exit diameter, D_F, for igniting the mixture of fuel and oxygen and an adjacent combustion chamber to retain the combustion and to enhance combustion, the combustion chamber being formed by a refractory burner tile and being of substantially cylindrical shape and having a diameter, D_S, an effective length, L_E, and an overall burner tile length, L_T, the improvement comprising:

correlating the burner dimensions whereby

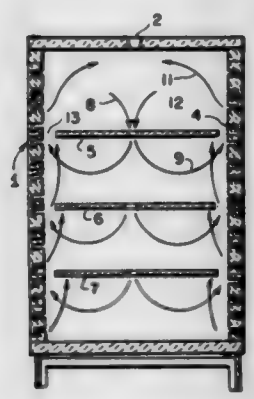
D_S/D_F is between about 1.35 to 1.70 and

L_E/D_S is between about 1.2 to 3.7.

4,536,153
REFRACTORY SHELF FOR HOME HOBBYIST KILN AND METHOD OF MAKING KILN

Frank H. Anthony, 1709 N. Hullen, Metairie, La. 70001

Filed Feb. 23, 1983, Ser. No. 468,876
Int. Cl.[3] F27D *5/00, 1/16;* A21B *1/00*
U.S. Cl. 432—258 12 Claims

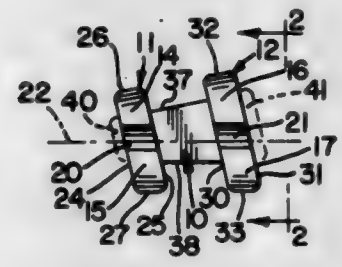


1. A refractory shelf for use in a home hobbyist kiln which has a refractory lined closed cavity, said shelf comprising a shaped, dried, and fired refractory support having a single hole located substantially at its geometric center, said shelf having outer dimensions less than the interior dimensions of said cavity so as to permit updrafts of heated air currents to pass between said shelf and the wall of said cavity.

4,536,154
EDGEWISE BRACKET

Robert E. Garton, Jr., Elkhart Lake, and John E. Viglietti, Sheboygan, both of Wis., assignors to American Orthodontics Corporation, Sheboygan, Wis.

Filed Jun. 11, 1984, Ser. No. 619,336
Int. Cl.[3] A61C *7/00*
U.S. Cl. 433—8 8 Claims



1. An orthodontic bracket for use with an archwire to impart corrective forces to a tooth comprising,

a base portion for attachment to the tooth,

a mesial tie wing integral with an extending from the base portion, said mesial tie wing having a gingival tip and an occlusal tip and a buccolabial opening archwire slot between the tips,

a distal tie wing integral with and extending from the base portion and in parallel spaced relation to said mesial tie wing, said distal tie wing having a gingival tip and an occlusal tip and a buccolabial opening archwire slot between the tips and aligned with the slot in said mesial tie wing,

each of said tie wings having parallel mesial and distal sides, said archwire slots defining a reference line for orientation parallel to the occlusal plane of a patient,

the tie wings being oriented such that said sides are obliquely angled to said reference line, whereby said tie wings can be generally vertically disposed parallel to the tooth long axis and still be inclined at an oblique angle to said reference line,

said gingival tips of said tie wings have top surfaces angularly disposed to said reference line and perpendicular to the vertical axis of the bracket and the mesial and distal sides of the wings and said occlusal tips having bottom surfaces parallel to said reference line,

whereby the outer borders of said tie wings for a trapezoidal configuration and the axis of said archwire slots is disposed relative to said tie wings so that said gingival tips and said mesial tips of said tie wings are of unequal size and the top surface of the gingival tie wings facilitate the mounting of the bracket such that the top surfaces may be disposed to extend substantially perpendicular to the long axis of a tooth.

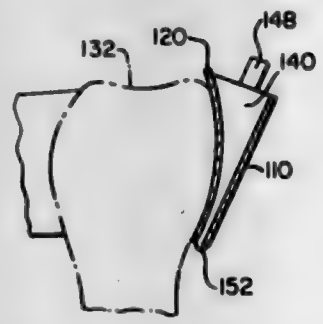
4,536,155
DENTAL MATRIX BAND

Edward J. Ireland, 925 Burdette St., New Orleans, La. 70118

PCT No. PCT/US83/01401, § 371 Date May 17, 1984, § 102(e) Date May 17, 1984, PCT Pub. No. WO84/01100, PCT Pub. Date Mar. 29, 1984
Continuation-in-part of Ser. No. 419,220, Sep. 17, 1982, abandoned. This PCT application Sep. 15, 1983, Ser. No. 611,011
Int. Cl.[3] A61C *5/04*
U.S. Cl. 433—39 14 Claims

1. In a dental matrix band having a central tooth circumscribing portion with a tooth engaging surface extending between cervical and occlusal edges, the central portion merging with a pair of arms adapted for engagement by a retainer appliance, the improvement comprising:

a leaf-like flap secured to said central portion and adapted to overlie the tooth engaging surface thereof, said flap being



deformable away from said tooth engaging surface against the surface of a tooth to be filled.

4,536,156

INSTRUMENT FOR THE TREATMENT OF DENTAL CANALS

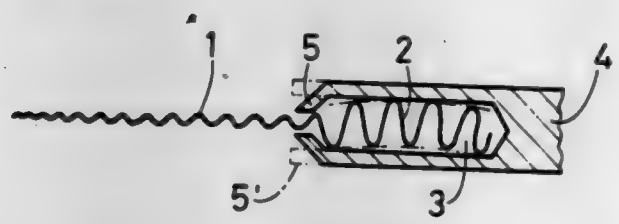
Francois Cattin, La Chaux-de-Fonds, Switzerland, assignor to Fluckiger & Huguenin S.A., La Chaux de Fonds, Switzerland

Filed Aug. 8, 1980, Ser. No. 176,333

Claims priority, application Switzerland, Sep. 26, 1979, 8659/79

Int. Cl.³ A61C *5/02*

U.S. Cl. 433—102 **11 Claims**



1. An instrument for the treatment of dental canals comprising: a mandrel having a substantially cylindrical bore extending axially of said mandrel; and a pulp burr comprising a helical wire having a helical extension fitted in the substantially cylindrical bore under stress, the cylindrical bore and the helical extension fitted in the cylindrical bore under stress together comprising drive transmitting means having a torque-limiting function for transmitting rotation of the mandrel by friction to the pulp-burr wherein said extension is of substantially cylindrical helical form which prior to being fitted under stress in the cylindrical bore is bent at an angle to the axis of the helical pulp-burr.

4,536,157

LEVER ACTUATED CHUCK MECHANISM FOR DENTAL HANDPIECE

Leonid I. Maizenberg, Chicago, Ill., assignor to Sybron Corporation, Rochester, N.Y.

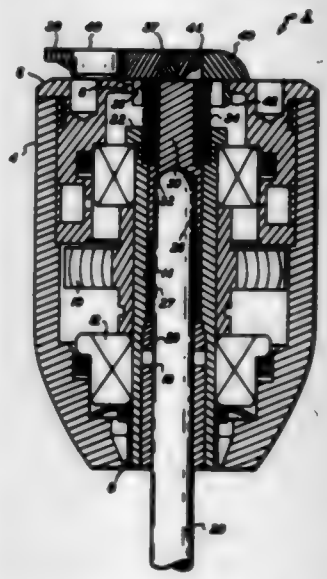
Filed Nov. 21, 1984, Ser. No. 673,863

Int. Cl.³ A61C *1/14*

U.S. Cl. 433—129 **8 Claims**

1. A chucking mechanism for inclusion in the head of a dental handpiece, said chucking mechanism including a bur tube disposed for rotation within said head, said bur tube having a tapered inner surface along a portion of its length, a drawback chuck disposed within said bur tube for rotation therewith and having a tapered outer surface along a portion of its length to coact with the tapered inner surface of said bur tube, said chuck including a radially extending retaining ring at its top end and a spring operatively disposed between said bur tube and said retaining ring urging said chuck to a clamping position, wherein the improvement comprises:

a cam lever pivotally mounted relative to said head in operative relationship with the top end of said chuck, said cam lever being reciprocable to an open position to move said chuck to its open position against said spring and to a



closed position to return said chuck to its clamping position under the influence of said spring.

4,536,158

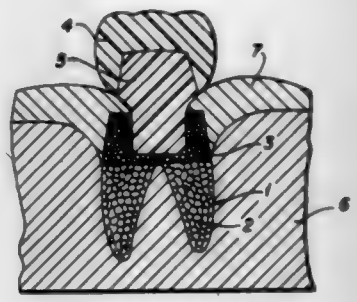
ORAL PROSTHESIS AND METHOD FOR PRODUCING SAME

Paul F. Bruins, Brooklyn, and Arthur Ashman, New York, both of N.Y., assignors to Medical Biological Sciences, Inc., New York, N.Y.

Division of Ser. No. 214,572, Dec. 8, 1980,. This application Sep. 30, 1982, Ser. No. 428,750

Int. Cl.³ A61K *6/08*

U.S. Cl. 433—201.1 **25 Claims**

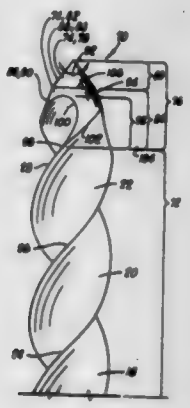


1. An implantable prosthesis for hard tissue including a porous hard-tissue-ingrowth structure, the hard-tissue-ingrowth structure comprising a mass of polymeric particles, each particle having an inner core comprised of a first biologically-compatible polymeric material and having an outer coating generally surrounding the inner core, the outer coating being comprised of a second biologically-compatible polymeric material, the second material being hydrophilic and having a composition different from the composition of the first polymeric material, the particles being bonded together to form the hard-tissue-ingrowth structure, the hard-tissue-ingrowth structure having interstices between the bonded particles forming pores into which hard tissue can grow, the size of the particles of the hard-tissue-ingrowth structure being such that the pores of the structure have dimensions effective to promote the growth of hard tissue into the pores.

2. The prosthesis according to claim 1 further including a soft-tissue-ingrowth structure comprising a mass of polymeric particles, each particle having an inner core comprised of the first biologically-compatible polymeric material and having an outer coating generally surrounding the inner core, the outer coating being comprised of the second hydrophilic biologically-compatible material, the particles being bonded together to form the soft-tissue-ingrowth structure, the soft-tissue-ingrowth structure having interstices between the bonded

particles forming pores into which soft tissue can grow, the size of the particles of the soft-tissue-ingrowth structure being generally shorter than the size of the particles of the hard-tissue-ingrowth structure and being such that the pores of the soft-tissue-ingrowth structure have dimensions effective to promote the growth of soft tissue into the pores.

4,536,159
ENDODONTIC INSTRUMENT
James B. Roane, 707 S.W. 24th St., Norman, Okla. 73069
Division of Ser. No. 464,972, Feb. 8, 1983, Pat. No. 4,443,193.
This application Jan. 24, 1984, Ser. No. 573,505
Int. Cl.[3] A61C *5/02*
U.S. Cl. 433—224 **4 Claims**



1. A method of cleaning a root canal of a tooth, said method comprising the steps of:

(a) inserting in said root canal an endodontic instrument of the type including:

a working portion defined on a flexible shaft, said working portion including a plurality of spiral rotationally bi-directional cutting edges thereon; and

a tapered tip defined on said flexible shaft and intersecting an end of each of said cutting edges of said working portion, said tapered tip including a reduced diameter cutting means immediately adjacent said ends of said cutting edges, wherein said tapered tip is shaped such that sharp cutting points which are normally present at an intersection between said ends of each of said cutting edges and a standard 75° included angle conically tapered tip are substantially eliminated;

(b) operating said instrument to clean said root canal;

(c) automatically cutting a step back in said root canal by means of said reduced diameter cutting means as said instrument is operated.

4,536,160
COMPUTER KEYBOARD EDUCATIONAL TOY
John F. Hatfield, 4314 Shamrock Way, Castro Valley, Calif. 94546
Filed Sep. 21, 1984, Ser. No. 653,066
Int. Cl.[3] G09B *13/00*; A63F *9/08*
U.S. Cl. 434—227 **4 Claims**

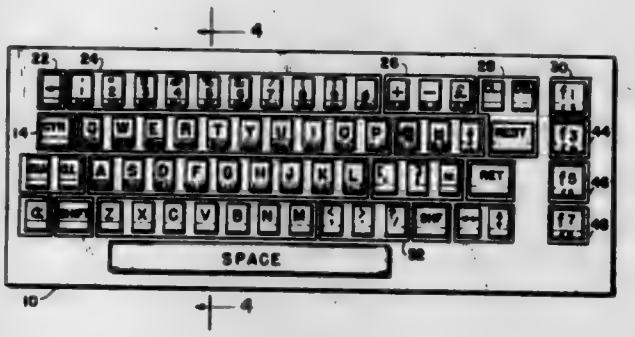
1. An educational toy comprising:

a base unit having substantially coplanar top and bottom surfaces;

a plurality of first slots in the top surface of said base unit, said slots extending partially through the thickness of said base unit and arranged in a plurality of substantially parallel rows across said top surface;

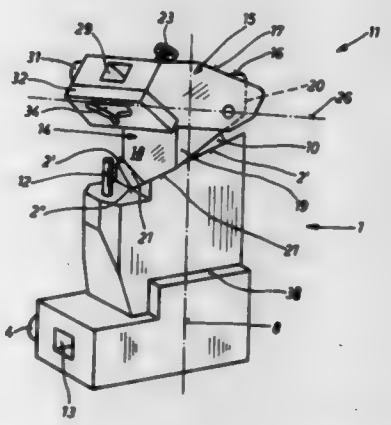
at least one second slot formed in a portion of the bottom of each of said plurality of first slots, each of said second slots extending through the lower surface of said base unit, the configuration of the combined first and second slots being unique to each first slot in the plurality; and

a plurality of keyboard bars each having a top and a bottom surface, each bar in said plurality having an exterior dimension adapted to fit within at least one of said first slots,



each bar having a bottom surface extension that fits into a second slot in said base unit.

4,536,161
ARTICULATOR
Urs Marty, Stötzlistrasse 62, 8707 Uetikon am See, Sehweiz, Switzerland
Filed Apr. 12, 1984, Ser. No. 599,410
Claims priority, application Switzerland, May 6, 1983, 2495/83
Int. Cl.[3] A61C *11/00*
U.S. Cl. 434—264 **9 Claims**



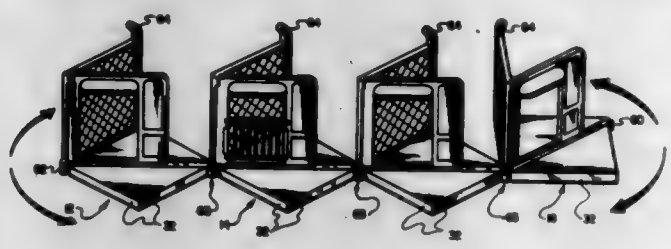
1. An improved articulator having a base including a support for a model of a lower jaw, said support carried by said base, having a support for a model of an upper jaw, which support is mounted to pivot around a lateral shaft extending within a fixture which is universally movable relative to said base, having further a pressing means including a spring and acting along an axis extending perpendicularly to said lateral shaft and operative to press said base and said fixture at their respective supporting surfaces together such that due to a form closed abutment of base and fixture of said supporting surfaces a defined relative position between base and fixture is reached, which said pivotable support for a model of an upper jaw is movably guided relative to said base by means of a cam and a cam follower, which said support for a model of an upper jaw is carried in a pivoting arm supported by means of said lateral shaft in a bearing pedestal, said bearing pedestal and said pivoting arm forming together said fixture;

in which said pivoting arm is guided movably relative to said bearing pedestal and laterally to said lateral shaft against the force of a second spring, and in which said cam and said cam follower are located between said pivoting arm and said base.

4,536,162
CHILD'S PLAYSET

Marshall E. Ace, Jr., deceased, late of Los Angeles, Calif. (by David L. Ramsey, executor); Ray W. Mattson, Venice, and Mark S. Wittenberg, Anaheim, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Apr. 5, 1983, Ser. No. 482,374
Int. Cl.³ A63H *33/08*
U.S. Cl. 446—102 8 Claims



1. A child's playset comprising:

a square base member including a generally horizontally extending floor having a front edge, a rear edge, a first side edge, and a second side edge, said base member also including an encompassing sidewall depending from said edges;

a first wall removably secured to said second side edge of said floor, said first wall including a handle member extending upwardly, away from said floor, whereby said playset may be picked up and transported;

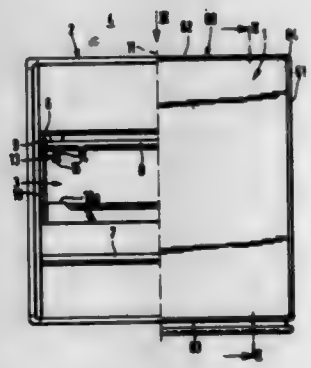
a second wall removably secured to said floor along a line extending diagonally at least partially across said floor from one corner of said rear edge to the diagonally opposite corner of said front edge; and

means affixed to diagonally opposite corners of said square base member to enable at least four playsets to be rotatably held together and rotated with respect to each other about axes perpendicular to said floors whereby said four playsets may be brought together to form an enlarged square.

4,536,163
MECHANISM FOR VERTICALLY MOVABLY SUPPORTING A BOARD MEMBER ON A WALL

Leo Schnirch, and Karl-Hermann Weyel, both of Haiger, Fed. Rep. of Germany, assignors to Weyel KG Visuelle Einrichtungen, Haiger, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,541
Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239502
Int. Cl.³ B43L *1/04*
U.S. Cl. 434—420 20 Claims

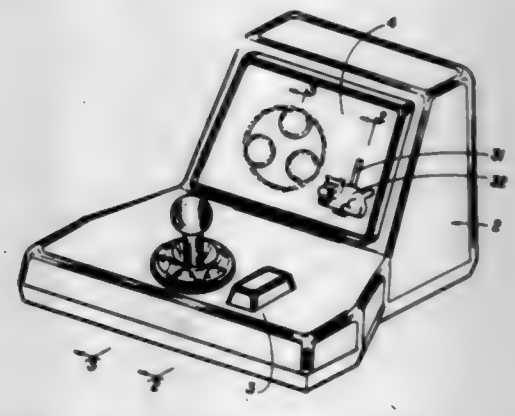


1. In a wall board, including a stationary board support which can be secured on a wall and a board member which can be moved vertically relative to said board support, said board member having thereon a surface, the improvement comprising vertical side walls connected to said board member, projecting rearwardly from a back side of said board member, and extending adjacent side edges of said board member, wherein on inner sides of said side walls there are guide rails which receive guide-slide pieces provided on said board support, and wherein said side walls cover said board support laterally and extend approximately to the wall.

4,536,164
TOY COMPUTER BUSY BOX ASSEMBLY

Ronald R. Klawitter, Hermann, Mo., assignor to Handi-Pac, Inc., Hermann, Mo.

Filed Jun. 15, 1984, Ser. No. 621,197
Int. Cl.³ A63H *33/30*
U.S. Cl. 446—143 5 Claims



1. A toy assembly simulating a computer comprising: a console housing including a keyboard section and a screen section; manual actuating means mounted on said keyboard section for manual manipulation by a child; image means moveably mounted on said screen for viewing; and mechanical linkage means disposed within said console housing connected at one end to said manual activating means on said keyboard section and at the other end to said image means moveably mounted on said screen section whereby movement of said actuating mean produces a visibly moveable image on said screen, said mechanical linkage means including a first lever arm pivotally mounted in said housing intermediate its extremities and engaged at one end of said manual actuating means on said keyboard; a second lever arm connected at one end to the other end of said first lever arm through a slot-and-pin coupling arrangement; a cradle member connected at the other end of said second lever arm; and a visual image mounted on said screen section and connected to said cradle member by an arm member passing through a lineal extending slot in said screen whereby said image on said screen section moves in a lineal direction upon movement of said actuating means.

4,536,165
BATHEABLE DOLL

Lienhard Maar, Rödental, Fed. Rep. of Germany, assignor to Firma Max Zapf, Rödental, Fed. Rep. of Germany

Continuation of Ser. No. 459,591, Jan. 20, 1983, abandoned. This application Nov. 19, 1984, Ser. No. 672,866
Claims priority, application Fed. Rep. of Germany, Feb. 2, 1982, 3203360; Nov. 13, 1982, 3242178
Int. Cl.³ A63H *23/00, 3/46*
U.S. Cl. 446—153 5 Claims

1. An immersible doll having a torso, and arms and legs joined to the torso comprising:

a water impermeable skin on said torso;

a hollow sleeve extension of flexible water impermeable material integral with said water impermeable skin at each shoulder and hip portion of said torso, each sleeve extension being closed at its outer end remote from said torso so that said sleeve extensions are watertight;

arm and leg members having hollow inner ends attachable to the outer ends of said extensions at the shoulder and hip portions, respectively;

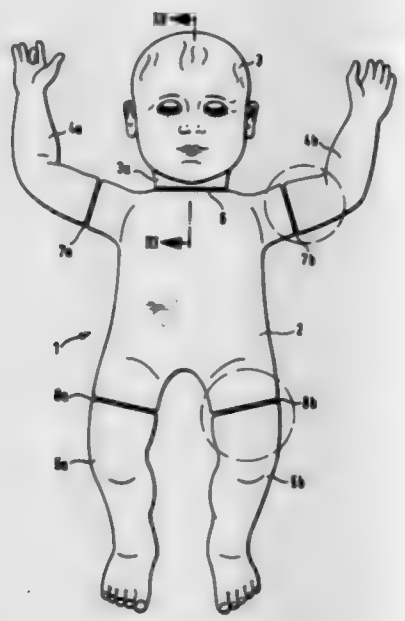
an inwardly directed flange on said hollow inner end of each arm and leg;

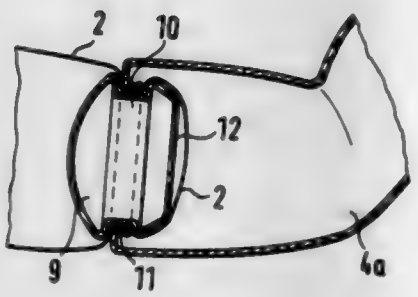
a laterally projecting flange extending from the inner edge of and at substantially 90° with respect to each inwardly

directed flange in the direction of the respective arm and leg;

a hollow coupling member having a peripheral portion with a substantially circular cross-section within the outer closed end of each sleeve extension for connecting respective arm and leg members thereto;

an inwardly directed annular groove in the peripheral portion of each coupling member formed by inwardly directed spaced flanges and a laterally directed circular cross-section cylindrical section connected to the inner edges of said spaced flanges and extending at substantially 90° with respect thereto, said annular groove and flanges on said arm and leg members having relative dimensions to tightly interfit respectively with each other with said closed end of a respective sleeve extension held therebetween in sealing engagement therewith to allow rotation of said arm and leg members relative to respective coupling members; and





a conically tapering section at the end of each coupling member insertable into said arms and legs, the larger diameter of which is adjacent said annular groove and larger in diameter than that of the respective laterally projecting flange, and the smaller diameter of which is less than the diameter of said respective laterally projecting flange, the largest diameter of the coupling member being at the outer edge of the inwardly directed flange adjacent the other end of said coupling member and being greater in diameter than the larger diameter of said conical section;

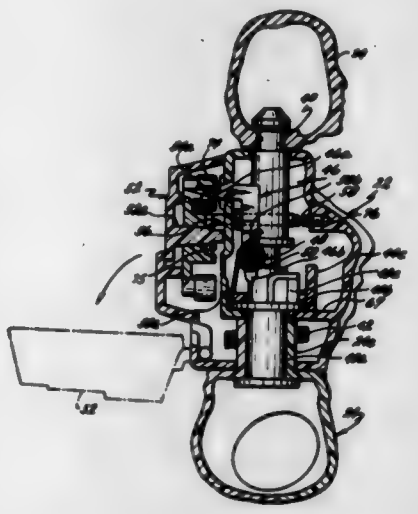
so that said conical sections and interfitting annular grooves and flanges facilitate insertion of a part of each coupling member into the inner end of respective arm and leg members with the outer end of the respective sleeve extension therebetween and retention of said arm and leg members on said sleeve extensions.

4,536,166

CAP FIRING ANIMATED FIGURE TOY

Larry H. Renger, Hawaiian Gardens, and Mike T. McKittrick, Torrance, both of Calif., assignors to Mattel, Inc., Hawthorne, Calif.

Filed Jan. 3, 1985, Ser. No. 688,931
Int. Cl.[3] A63H *3/28*
U.S. Cl. 446—298 **17 Claims**



1. In a cap-firing figure toy, the combination comprising:

an upper torso having at least one arm member pivotally coupled thereto;

a hammer member movably mounted in said upper torso;

means connected to said upper torso for positioning at least one cap for impact by said hammer member;

means in said upper torso biasing said hammer member in a direction toward said at least one cap;

a lower torso rotatably connected to said upper torso;

means operatively interconnecting said hammer member and said lower torso in a manner such that relative pivoting of said upper and lower torsos in a first direction moves said hammer member against the force of its bias and relative pivoting of said torsos in an opposite direction actuates said hammer under force of its bias into contact with said at least one cap, said interoperative interconnecting means including means for delaying actuation of said hammer member until the relative pvioting of said torsos in the opposite direction is substantially complete whereby with said at least one arm extended the firing of a cap at the end of pivoting simulates the sound of a punch.

4,536,167

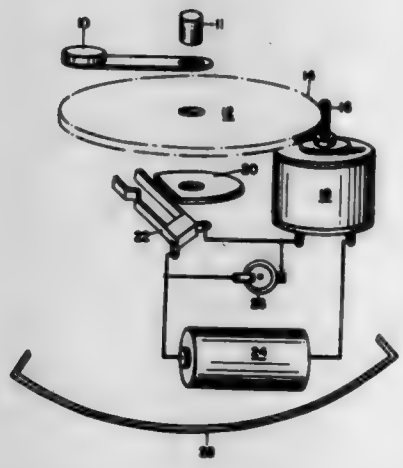
ROCKING MECHANISM

David C. Hughes, South Hadley, Mass., assignor to Milton Bradley Company, Springfield, Mass.

Filed Dec. 14, 1983, Ser. No. 560,893
Int. Cl.[3] A63H *11/02*
U.S. Cl. 446—396 **6 Claims**

1. A rocking mechanism comprising: an unbalancing weight mounted on a driven wheel driven by a motor, control means for effecting intermittent rotation of the wheel by the motor, all mounted in a frame which allows it to rock three-dimensionally, the relation of the control means to the weight and motor being such that when the whole system is in balance the motor is energized by said control means to rotate the wheel together with its weight to unbalance the system causing it to rock from the horizontal, with the motor continuing to drive the wheel until the weight has returned to its balanced position at which time, due to the inertia of the total system, the rocking

motion will continue for some time depending on friction, distribution of weight and restoring force.



4. A rocking mechanism according to claim 1, wherein the frame is a toy submarine and including a periscope loosely coupled to the wheel and revolvable as the wheel is rotated.

4,536,168

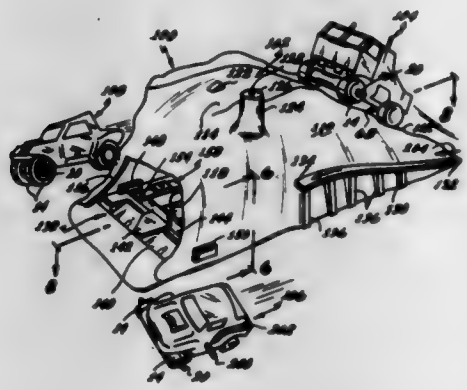
TOY VEHICLE PLAYSET

William F. Stephens, Hicksville, N.Y., assignor to Mattel, Inc., Hawthorne, Calif.

Continuation-in-part of Ser. No. 384,869, Jun. 4, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,783

Int. Cl.³ A63H *17/40*

U.S. Cl. 446—444 **7 Claims**



2. In combination with a vehicle stunt apparatus and a toy vehicle having a pair of front wheels, a pair of rear wheels and a motor for powering said vehicle, the improvement which comprises:

a first ramp member affixed to said stunt apparatus and having a first end at ground level and a second end elevated above ground level; and

a first protuberance extending outwardly from one of said front wheels for riding up said first ramp member, whereby said vehicle will be forced over into a side wheelie so that said vehicle will travel on one front wheel and one rear wheel.

4,536,169

QUICK RELEASE SPRING POWERED TOY VEHICLE

Ferenc Fekete, Huntington Beach, and James E. Spears, Hawthorne, both of Calif., assignors to Mattel, Inc., Racine, Wis.

Filed Oct. 24, 1983, Ser. No. 545,022

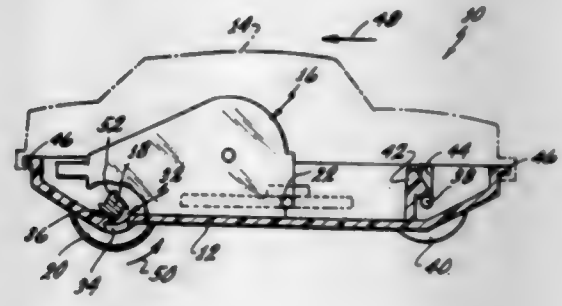
Int. Cl.³ A63H *29/24*

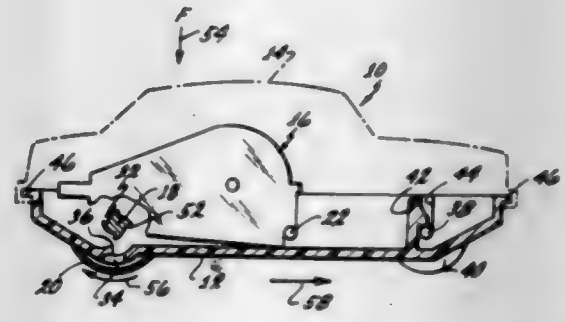
U.S. Cl. 446—461 **3 Claims**

1. A toy vehicle comprising a housing having a separate base and an upper body portion, the base and the upper body portion being removably held together and configured to simulate a toy vehicle;

a front surface engaging wheel assembly resiliently held to the base by means of an axle held between a pair of wheels; and

a unitary spring-powered motor and rear surface engaging driving wheel assembly pivotably mounted within the base of the housing by means of a pivot rod held to said motor and captured within said base; the rear assembly including an axle and a pair of rear drive wheels connected with a gear train held within the spring-powered motor assembly; and detent means, having a plurality of fingers thereon fixed to the rear axle for rotation therewith; the base including an opening formed therein in alignment with said detent means on the rear axle; an





integral arm formed on the base and extending into the opening to enable the arm to coact with the fingers of the detent means in one position to lock the spring-powered motor assembly in the wound position; whereby the spring-powered motor assembly may be unwound to accelerate the toy vehicle by the quick application and removal of a light force to the rear of the top portion of the vehicle to thereby rotate the base and top portion of the vehicle around said pivoted rod, in relation to the unitary spring-powered motor assembly, to a second position to thereby release the detent means from the integral arm.

4,536,170

ELASTOMERIC SHEAR SHAFT COUPLING

Holmes A. Downey, Simpsonville, S.C., assignor to Reliance Electric Company, Greenville, S.C.

Filed May 25, 1984, Ser. No. 613,820

Int. Cl.³ F16D *3/58*

U.S. Cl. 464—80 **14 Claims**

1. An elastomeric shear shaft coupling for connecting two rotatable shafts in end-to-end relationship, said coupling comprising:

a. annular coupling hubs for mounting on the adjacent ends of the shafts;

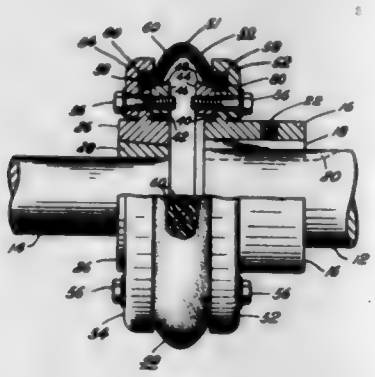
b. a generally circular flexible element of elastomeric material being of a substantially parabolic cross-sectional shape and extending between said hubs and having laterally extending right and left margins for contacting said hubs;

c. a bead of elastormeric material, with a higher durometer value than that of the body of said element, disposed within each of said margins;

d. a plurality of fabric plies interspersed within said elastomeric material for reinforcing said element, said plies

being concentrated near the centroid of said element and terminating at each side adjacent said beads;

e. clamping means for retaining said margins in place against said hubs; and



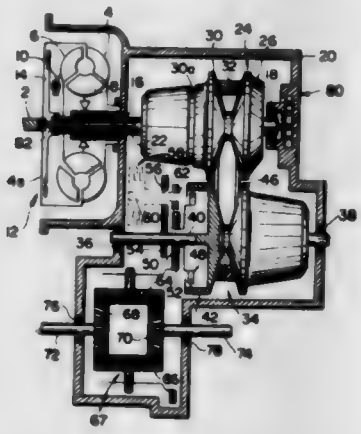
f. fastening means for securing said clamping means and said element to said hubs.

4,536,171

METHOD AND APPARATUS FOR CONTROLLING CONTINUOUSLY VARIABLE TRANSMISSION

Yoshikazu Tanaka, Yokohama; Keiju Abo; Hiroyuki Hirano, both of Yokosuka; Haruyoshi Kumura, Yokohama; Sigeaki Yamamuro, Zushi, and Yoshiro Morimoto, Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed May 13, 1983, Ser. No. 494,572
Claims priority, application Japan, May 14, 1982, 57-80023
Int. Cl.[3] F16H *11/06;* B60K *41/06*
U.S. Cl. 474—28 18 Claims



1. A method for controlling a continuously variable transmission of an automotive vehicle having an internal combustion engine, the transmissiion being shiftable between different reduction ratios and having a shift motor which is rotatable for effecting shifting between reduction ratios, the method comprising:

detecting a state wherein a rapid shifting between reduction ratios is needed and generating a rapid shifting need indicative signal;

rotating the shift motor at a first revolution speed in response to absence of said rapid shifting need indicative signal; and

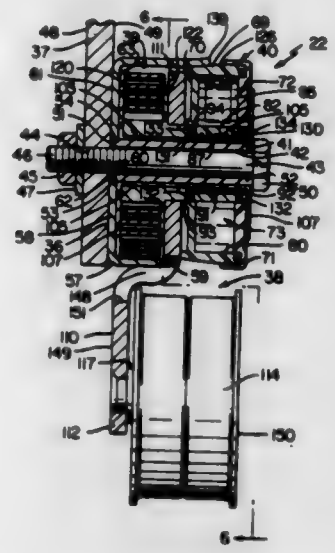
rotating the shift motor at a second revolution speed which is higher than said first revolution speed in response to presence of said rapid shifting need indicative signal thereby to shorten the time required for shifting between reduction ratios.

4,536,172

BELT TENSIONER AND METHOD OF MAKING THE SAME

Lee R. Burris, Porter Township, Dade County; Billy L. Speer, Springfield, and Melvin D. Gayer, Rock Prairie Township, Dade County, all of Mo., assignors to Dayco Corporation, Dayton, Ohio

Filed Feb. 21, 1984, Ser. No. 581,645
Int. Cl.[3] F16H *7/08*
U.S. Cl. 474—135 20 Claims



1. In a tensioner for a power transmission belt that is adapted to be operated in an endless path, said tensioner comprising a support means for being fixed relative to said belt, a belt engaging means carried by said support means and being movable relative thereto, mechanical spring means operatively associated with said support means and said belt engaging means for urging said belt engaging means relative to said support means and against said belt with a force to tension said belt, and fluid dampening means operatively associated with said support means and said belt engaging means to dampen the movement of said belt engaging means relative to said support means in at least one direction of movement thereof, said fluid dampening means comprising a rotary dampening means, said rotary dampening means and said spring means being coaxially aligned, said rotary dampening means comprising an outer ring member and an inner ring member disposed in said outer ring member, said members being arranged for relative rotational movement therebetween, said outer ring member being operatively interconnected to said support means, said inner ring member being operatively interconnected to said belt engaging means, said support means comprising a cup-shaped housing means containing said spring means therein and having a closed end means and an open end means, said housing means being operatively interconnected to said outer ring member, the improvement wherein part of said open end means of said housing means extends over said outer ring member and is secured thereto.

4,536,173

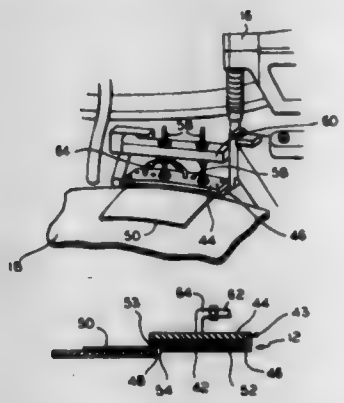
CUP MAKING APPARATUS WITH LUBRICATING MEANS

Craig Puls, Slinger, Wis., assignor to Holiday Cups, Inc., Menomonee Falls, Wis.

Filed Feb. 24, 1983, Ser. No. 469,217
Int. Cl.[3] B31B *49/02*
U.S. Cl. 493—149 5 Claims

1. An apparatus for making cups which includes means for forming blanks of a cup sidewall portion, means for forming the cup sidewall blank into a frusto-conical configuration by sealing the opposite edges and for applying a bottom portion, and means for curling and rolling the upper edge of the cup to form a rim, the improvement comprising a lubricant applicator disposed between the blank forming means and the cup form-

ing means and constructed and arranged for applying lubricant to the upper edge of the blank prior to formation of said cup to minimize frictional heating during the rim forming operation, said lubricant applicator including arcuate wick means and a carrier for said wick means, means mounted on said carrier for supplying lubricant to said wick means, said carrier being reciprocally mounted on said apparatus for moving the wick means into and out of engagement with the edge of successive cup sidewall blanks after the same have been formed by said blank forming means so that lubricant will be applied to the edge of said blanks.



4,536,174

STACK CONVEYOR FOR BAG-MAKING APPARATUS

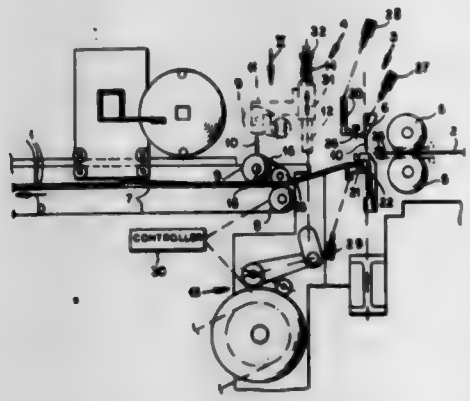
Karl Dreckmann, Hennef-Altenbödingen, Fed. Rep. of Germany, assignor to M. Lehmacher & Sohn GmbH Maschinenfabrik, Niederkassel-Mondorf, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,119

Claims priority, application Fed. Rep. of Germany, Dec. 30, 1981, 3151848

Int. Cl.³ B65H *5/02*

U.S. Cl. 493—194 **6 Claims**



1. An apparatus for making bags from a multilayer synthetic-resin strip workpiece, the apparatus comprising:

transport means for conveying the workpiece longitudinally in a transparent direction along a path;

an upper welding tool along the path;

a lower welding tool along the path beneath the upper tool;

means for heating at least one of the tools;

conveyor means extending along the path downstream of the tools and having a horizontal conveyor surface positioned to receive the workpiece after same is conveyed by the transport means past the welding tools;

holddown means including a movable holddown element displaceable vertically and at least partially displaceable horizontally above the conveyor surface; and

drive means connected to one of the welding tools and to the transport, conveyor, and holddown means for generally synchronously vertically and codirectionally displacing the one welding tool and the holddown element and for synchronously horizontally and codirectionally displacing the conveyor surface and holddown element, the holddown element being a vertically displaceable roller rotatable by the drive means at a peripheral speed equal to the displacement speed of the conveyor surface, said drive means including:

a rotatable drive wheel jointly vertically displaceable with the roller and operatively engageable with the conveyor surface, whereby when engaging the conveyor surface the drive wheel is rotated thereby; and

an endless drive member looped over the wheel and over the roller.

4,536,175

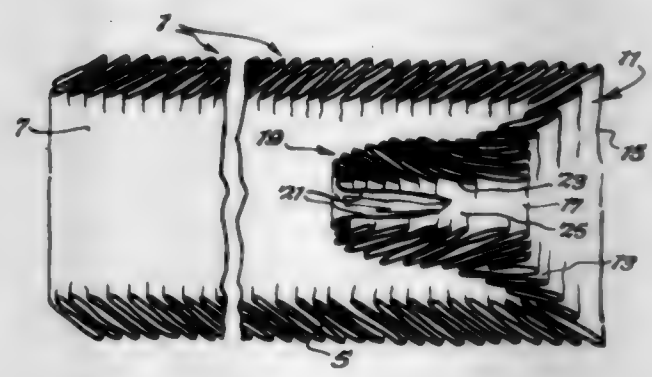
METHOD AND APPARATUS FOR MAKING IMPROVED END-CLOSURES FOR SHIRRED TUBULAR CASINGS

Lionel C. Arnold, Columbia, S.C., assignor to Teepak, Inc., Oak Brook, Ill.

Filed Jun. 6, 1983, Ser. No. 501,669

Int. Cl.³ A22C *13/00*

U.S. Cl. 493—308 **22 Claims**



1. A method of forming an end-closure inside the bore of a shirred strand of tubular casing, which comprises deshirring the terminal pleats of one end of the strand, inverting the deshirred casing into the bore of the strand, winding the deshirred casing inside the bore into an end-closure plug, and inverting shirred casing into the bore as the plug is formed wherein the walls of the inverted casing immediately adjacent to the end of the strand are tapered and remain substantially pleated.

4,536,176

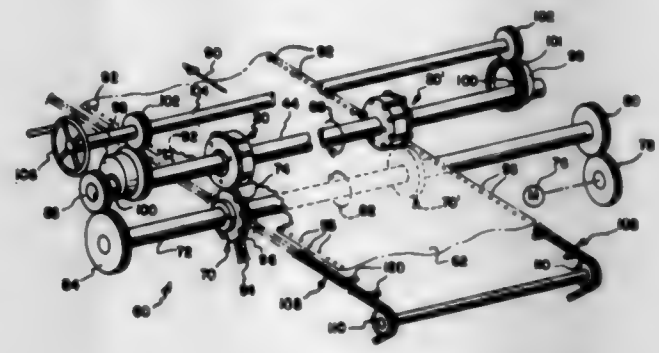
CRIMP BLADE HOLDER

Richard A. Gaspar, Dayton, Ohio, assignor to Harris Graphics Corporation, Melbourne, Fla.

Filed Sep. 21, 1983, Ser. No. 534,514

Int. Cl.³ B42B *2/00*

U.S. Cl. 493—365 **7 Claims**



3. A method of applying crimps to a moving web along a line parallel to the direction of movement of the web, comprising the steps of:

(a) applying a first crimp to the web;

(b) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 (5.08 cm) inches;

(c) applying a next crimp to the web at a spacing from the

preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(d) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(e) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(f) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(g) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(h) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 2.0 inches (5.08 cm);

(i) applying a next crimp to the web at a spacing from the preceding one of said crimps of substantially 3.0 inches (7.62 cm); and

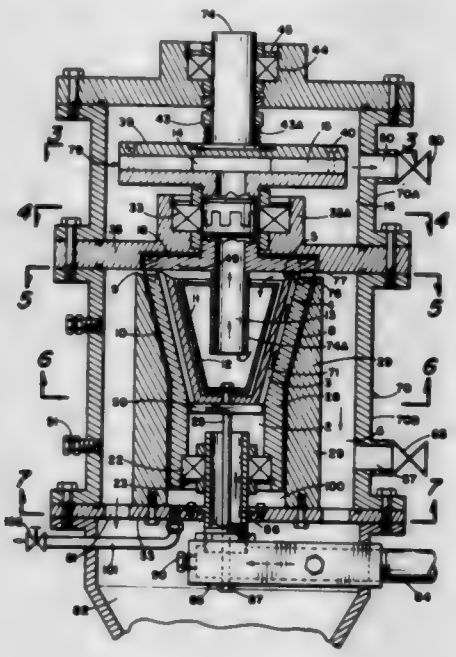
(j) repeating at least once steps (b) through (i).

4,536,177

SEPARATOR

Donald E. Boatright, Tulsa, Okla., assignor to Robert G. Green, Tulsa, Okla.

Filed Aug. 8, 1984, Ser. No. 639,671
Int. Cl.³ B04B *1/04*
U.S. Cl. 494—44 **16 Claims**



1. A centrifugal separator comprising:

a container;

a plurality of vortex centrifuge veins rotatably mounted within said container, said centrifuge veins defining truncated inverted right angle cone, each of said centrifuge veins flaring upwardly and outwardly with the cross-sectional area increasing as the cone gets larger;

outlet means connected to the upper end of said veins;

inlet means connected to the lower ends of said veins for admitting the fluid to be separated;

means to rotate said veins;

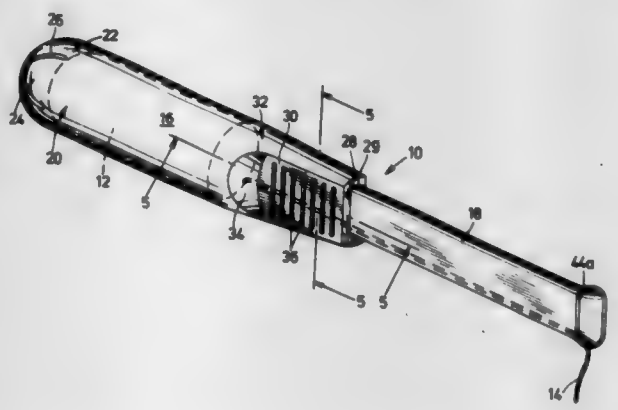
means connected to the outlet means of said veins for directing the denser material in one flow path and the less dense material in second flow path.

4,536,178

TAMPON APPLICATOR

Bernard Lichstein, Elizabeth, N.J., and Michael Handler, Norwalk, Conn., assignors to International Playtex, Inc., Stamford, Conn.

Filed Nov. 10, 1983, Ser. No. 550,678
Int. Cl.³ A61F *15/00*
U.S. Cl. 604—15 **14 Claims**



1. A tampon applicator comprising:

a tubular barrel adapted to house and carry a tampon therein and a slidable, tubular plunger telescopically engageable with said barrel and operable to push the innermost end of the tampon within the barrel out of the forward end of the barrel into a vagina;

said tubular barrel comprising:

(a) a cylindrical front portion adapted to house said tampon;

(b) a rearward portion adapted to partially house and engage said plunger, said rearward portion of said barrel comprising two diametrically opposed, substantially flattened surfaces; and

(c) a transitional section between said rearward portion and said front portion, said transitional section having a reduced diameter relative to said front portion of said barrel;

whereby said flattened surfaces and said transition section provide a finger and thumb hold enabling a user to comfortably eject and control the position of said tampon.

4,536,179

IMPLANTABLE CATHETERS WITH NON-ADHERENT CONTACTING POLYMER SURFACES

Michael H. Anderson; Christopher S. Lyons, both of St. Paul, and Bruce D. Wigness, Minneapolis, all of Minn., assignors to University of Minnesota, Minneapolis, Minn.

Filed Sep. 24, 1982, Ser. No. 422,758
Int. Cl.³ A61M *25/00*
U.S. Cl. 604—266 **8 Claims**

1. A catheter for long term implantation within a living body composed of concentric tubular elements of flexible inert nontoxic biocompatible polymeric material and having abutting surfaces between the concentric tubular elements in close face-to-face contact, said catheter characterized by the surface of at least one of said tubular elements having a thin film glow discharge plasma polymerized fluorocarbon coating to prevent adhesion to the contacting surface of the other concentric tubular element.

4,536,180

SURGICAL INSTRUMENT FOR SUCTION LIPOLYSIS

Gerald W. Johnson, 17070 Red Oak, #301, Houston, Tex. 77090

Filed Jul. 22, 1983, Ser. No. 516,038
Int. Cl.³ A61M *27/00*
U.S. Cl. 604—268 **11 Claims**

1. A surgical instrument for use in suction lipolysis on living human beings, comprising

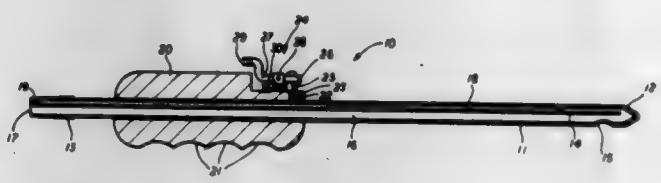
an elongated tube having one end with a tapered, substan-

tially pointed, closed end having a round tip of a size and shape for insertion under the skin, and another end open for connection to a vacuum source,

said tube having an opening on one side only at said one end a short distance from said pointed round tip closed end,

a handle surrounding and secured to the other end of said tube, with a sufficient amount of the tube behind the handle for connection to a vacuum source,

a passageway means having an open end adjacent to said handle and extending longitudinally of said tube, along the



side opposite to said side opening, adjacent to the passage therein and having an end opening into said tube adjacent to the inside of said pointed round tip closed end at a point beyond said tube side opening, and

valve means supported on said handle on the side opposite to said side opening, having a position normally closing said passageway means open end, and moveable to open and close said passageway means to control introduction of air to the closed end of said tube for clearing obstruction during use.

4,536,181

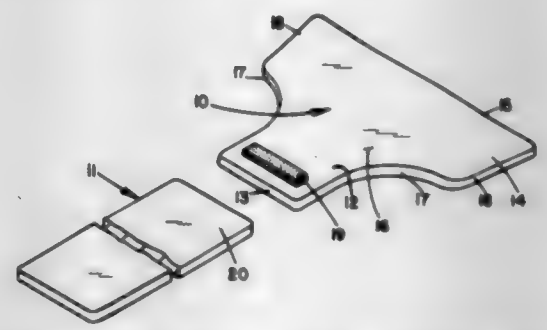
SANITARY NAPKIN WITH IMPROVED PROTECTION

Linda E. Cook, 4314 Lasalle Ave., Baltimore, Md. 21206

Filed Apr. 3, 1984, Ser. No. 596,318

Int. Cl.[3] A61F *13/16*

U.S. Cl. 604—387 8 Claims



1. A back panty shield for a sanitary napkin, comprising a disposable unitary member having a forward portion and a rearward portion, each of which has a respective end edge, the shield further having a main body portion intermediate its forward and rearward portions, the rearward portion having a substantially greater transverse width than the width of the forward portion, such that in plan outline the shield flares continuously from its forward portion to its rearward portion, means carried by the forward portion of the shield for removable attachment to the sanitary napkin, whereby the shield forms an optional continuation of the sanitary napkin and provides additional protection for the wearer such as during sleeping hours, and further means carried by the shield for removable attachment to an undergarment of the wearer.

CHEMICAL

4,536,182
BATH AND METHOD FOR THE SIMULTANEOUS DESIZING AND BLEACHING OF FABRICS

Gerárd Tatin, Creil, France, assignor to Atochem, Paris, France

Filed Mar. 7, 1984, Ser. No. 587,214
Claims priority, application France, Mar. 22, 1983, 83 04646
Int. Cl.[3] D06L *1/06, 3/02;* C11D *7/54*
U.S. Cl. 8—107 9 Claims

1. A bath for the simultaneous desizing and bleaching of fabrics comprising hydrogen peroxide, a sequestering agent, an amylase, a surfactant, and a buffer consisting essentially of sodium tetraborate decahydrate.

4,536,183
MANGANESE BLEACH ACTIVATORS

James S. Namnath, Bergenfield, N.J., assignor to Lever Brothers Company, New York, N.Y.

Filed Apr. 9, 1984, Ser. No. 597,971
Int. Cl.[3] C11D *3/39, 7/18*
U.S. Cl. 8—107 27 Claims

1. A catalyst for the controlled decomposition of peroxy compounds comprising a water-soluble manganese (II) salt adsorbed onto a solid inorganic silicon support material, wherein the ratio of manganese (II) to inorganic silicon support material ranges from 1:1000 to 1:10, the combination having been prepared at a pH from 7.0 to 11.1 and where the amount of manganese (II) does not exceed the adsorptive capacity of the inorganic silicon or alumina support material.

4,536,184
OVERPRINTING OF DYE COLORED POLY(VINYL CHLORIDE) RESINS

Thomas D. Ryan, Escondido, Calif., assignor to Formulabs Industrial Inks, Inc., Escondido, Calif.

Continuation-in-part of Ser. No. 559,893, Dec. 12, 1983. This application Nov. 14, 1983, Ser. No. 550,828
Int. Cl.[3] D06P *5/00*
U.S. Cl. 8—508 10 Claims

1. In the process of overprinting on poly(vinyl chloride) resin substrate colored by solvent soluble dye present within said poly(vinyl chloride) resin mass or deposited on the surface of said poly(vinyl chloride) resin, the improvement which comprises:

overprinting at least a part of the surface of said dye colored poly(vinyl chloride) resin substrate with a liquid, nonflammable coloring agent consisting essentially of

(i) liquid, nonflammable, halogenated hydrocarbon solvent having 1–4 carbon atoms, where halo is chloro, fluoro, or both;

(ii) pigment dispersed in said halohydrocarbon solvent; and

(iii) film former, dissolved in said halohydrocarbon solvent consisting essentially of

(a) a resin selected from the class consisting of acrylic resins, methacrylic resins, and resin copolymers or acrylates and methacrylates; or

(b) a combination of said resin defined in (a) above and isotactic chlorinated polypropylene, said combination having at least 50% by weight of said resin defined in (a) above;

for a time to color said substrate surface; and heat treating said overprinted substrate to adhere said pigment and said film former, in the overprinted area.

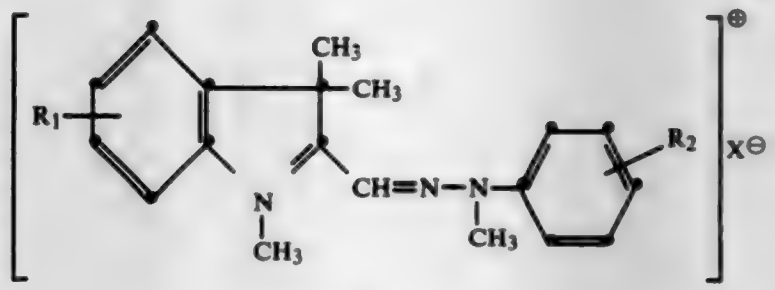
4,536,185
LIQUID PREPARATION OF CATIONIC DYE MIXTURE CONTAINING ALIPHATIC CARBOXYLIC ACID FOR BLACK DYEING

Arnulf R. Läpple, Aesch, and Alex Nicopoulos, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 23, 1983, Ser. No. 564,860
Claims priority, application Switzerland, Dec. 28, 1982, 7587/82
Int. Cl.[3] C09B *67/34;* D06P *1/41*
U.S. Cl. 8—527 7 Claims

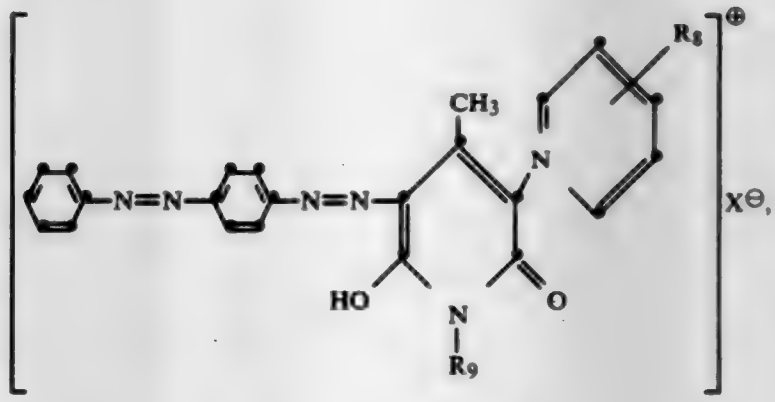
1. A black liquid dye preparation consisting essentially of a cationic yellow component of the formula

(I)



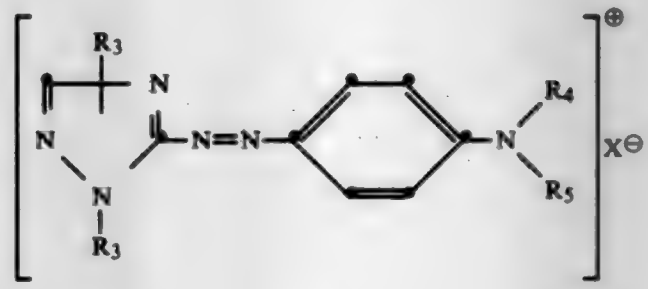
or

(Ia)



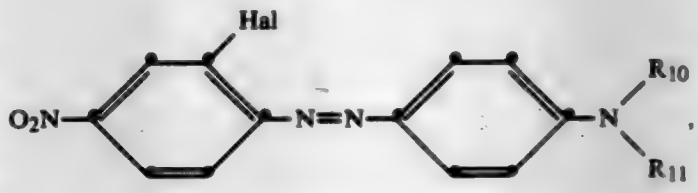
a cationic red component of the formula

(II)



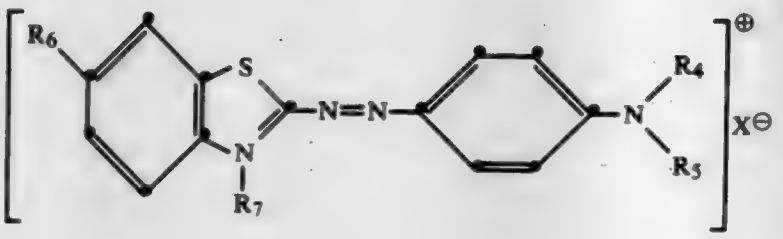
or

(IIa)



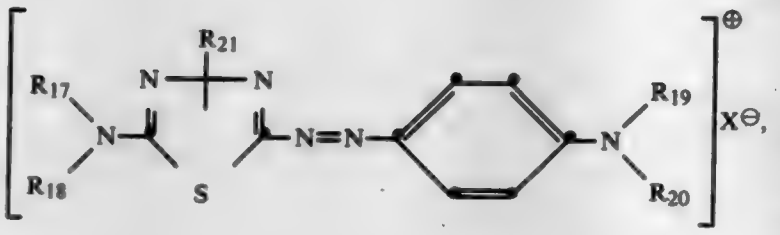
and a cationic blue component of the formula

(III)



or

(IIIb)



and an aliphatic mono- or di-carboxylic acid, wherein

R_1 and R_2 independently of one another are each hydrogen, halogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_3 is C_1–C_4-alkyl,

R_4 and R_5 independently of one another are each unsubstituted or substituted C_1–C_4-alkyl,

R_6 is C_1–C_4-alkoxy or acylamino,

R_7 is C_1–C_4-alkyl,

R_8 is hydrogen or methyl,

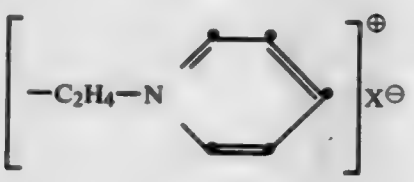
R_9 is hydrogen, unsubstituted or substituted C_1–C_6-alkyl, or is phenyl Or cyclohexyl,

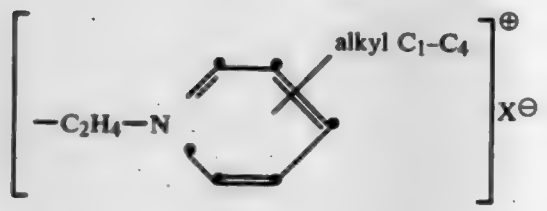
Hal is chlorine or bromine,

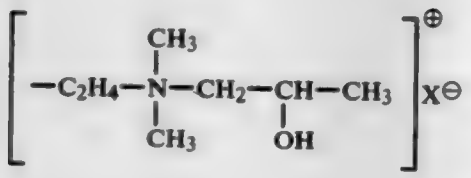
R_{10} is C_1–C_4-alkyl,

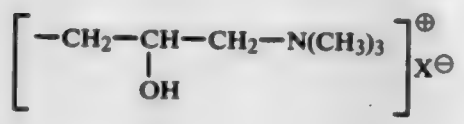
R_{11} is a radical of any one of the formulae

$[-C_2H_4N(CH_3)_3]^{\oplus}X^{\ominus}$









R_{12} is C_1–C_4-alkyl,

R_{13} is hydrogen, C_1–C_4-alkyl or C_1–C_4-alkoxy,

R_{14} is hydrogen, C_1–C_4-alkyl or Phenyl,

R_{15} is unsubstituted or substituted C_1–C_4-alkyl,

R_{16} is hydrogen or halogen,

R_{17}, R_{18}, R_{19} and R_{20} independently of one another are each unsubstituted or substituted C_1–C_6-alkyl, or R_{17} forms with R_{18}, with inclusion of the N atom and optically further hetero atoms, a heterocyclic 5- or 6-membered ring,

R_{21} is unsubstituted or substituted C_1–C_3-alkyl,

X is an anionic radical,

and optionally water, organic solvents and conventional additives.

4,536,186

USE OF POLY (DMDAAC) AS COAL FINE SLURRY VISCOSITY REDUCER

Paul A. Rey, Coraopolis, Pa., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed May 2, 1984, Ser. No. 606,046
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **2 Claims**

1. A method of reducing the viscosity of a 40%–60% coal fine/40–60% water slurry which comprises adding 1 to 10 lbs per ton of dry coal of poly(dimethyl diallyl ammonium chloride) to the slurry, wherein said coal fine slurry has been treated so as to substantially remove clay and impurities prior to addition of said poly(dimethyl diallyl ammonium chloride).

4,536,187

COMPOSITIONS COMPRISING COAL, WATER AND POLYELECTROLYTE

Bertil V. Hansen, Helsingborg; Sten S. Kelfve, Påarp, and Henri R. Mollberg, Helsingborg, all of Sweden, assignors to AB Carbogel, Helsingborg, Sweden

PCT No. PCT/SE82/00279, § 371 Date May 12, 1983, § 102(e) Date May 12, 1983, PCT Pub. No. WO83/01069, PCT Pub. Date Mar. 31, 1983
PCT Filed Sep. 13, 1982, Ser. No. 495,355
Claims priority, application Sweden, Sep. 22, 1981, 8105583
Int. Cl.³ C10L *1/32*
U.S. Cl. 44—51 **15 Claims**

1. A composition comprising finely divided coal, water, and at least one polyelectrolyte, wherein the concentration of water of the composition is in the range from 15 to 40 percent by weight of the composition, and the concentration of said polyelectrolyte is in the range from 0.01 to 5 percent by weight of the composition, and wherein said polyelectrolyte has an average molecular weight below 5×10^6 and is a water-soluble polyethylene substituted directly on the polyethylene chain with (a) hydroxysulfonyloxy groups, or (b) hydroxysulfonyloxy-lower alkyl groups, which are partly or completely in salt form, and wherein the amount of sulfur of the polyelectrolyte is 2 to 25 percent by weight being calculated when the acid-forming groups are present as free acids.

4,536,188

ALCOHOL COMPOSITIONS HAVING LUMINOUS FLAMES

Clinton J. de Witt, 610 Laurel Dr., Sacramento, Calif. 95825, and Ron Reese, 4957 Buftwood Way, Sacramento, Calif. 95841

Filed Jul. 31, 1984, Ser. No. 636,281
Int. Cl.³ C10L *1/30*; C12F *5/00*
U.S. Cl. 44—53 **2 Claims**

1. An alcohol composition intended as a fuel strictly for racing cars and comprising a major proportion of methanol and about 0.5 weight percent to about 10.0 weight percent of trimethyl borate that imparts a characteristic green colored flame when burned, thereby precluding a potentially hazardous situation from developing because of the otherwise virtually colorless flame associated with the burning of alcohol as a fuel in racing cars.

4,536,189

CORROSION INHIBITOR AND MOTOR FUEL COMPOSITION CONTAINING THE SAME

Rodney L. Sung, Fishkill, N.Y., assignor to Texaco Inc., White Plains, N.Y.

Filed Apr. 27, 1984, Ser. No. 604,768
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—56 7 Claims

1. A novel composition prepared by (a) reacting substantially equal molar amounts of maleic anhydride and a hydrocarbon-substituted mono primary amine or a hydrocarbon-substituted mono primary ether amine at a temperature ranging from 75 to 150 C. to produce a maleamic acid intermediate reaction product, and (b) reacting said intermediate product of (a) with a substantially equal molar amount of a heterocyclic compound selected from the group consisting of 5-amino-1,3,4,-thiadiazole-2-thiol and benzotriazole at an elevated temperature to produce said composition, said hydrocarbon-substituted mono primary amine being represented by a formula:

$$R—NH_2$$

in which R is a monovalent hydrocarbyl radical having from about 6 to about 20 carbon atoms or a hydrocarbyl aminoalkylene radical in which the hydrocarbyl group has from 6 to about 20 carbon atoms and in which the divalent alkylene group has from about 2 to 3 carbon atoms, and said hydrocarbon-substituted mono primary ether amine being represented by the formula:

$$R—[O(CH_2)_n]_x\left[OCH_2—\underset{\displaystyle CH_3}{\underset{|}{CH}}\right]_y—NH_2$$

in which R is a hydrocarbyl radical having from about 6 to about 20 carbon atoms and when y is 0, x is 1 and n is an integer from 1 to 4 and when x is 0, y has a value of 1 to 10.

4,536,190

CETANE IMPROVER COMPOSITION

Paul D. Seemuth, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Apr. 2, 1984, Ser. No. 596,043
Int. Cl.[3] C10L *1/08, 1/22*
U.S. Cl. 44—57 11 Claims

1. A desensitized cetane improver for use in diesel fuel, said cetane improver comprising a mixture of (a) at least one compound having a 50% explosion Drop Weight Rating of less than 20 Kg centimeters as measured by ASTM Method D-2540 and being capable of giving a greater cetane increase than an equal weight of any C_5 to C_{12} alkyl nitrate and (b) a nitric acid ester of a bicyclic or tricyclic alcohol containing a four-membered or five-membered ring in an amount sufficient to increase the ASTM D-2540 rating of the mixture to a value of at least 40 Kg cms.

4,536,191

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, , which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Jul. 2, 1984, Ser. No. 626,831
Int. Cl.[3] C10L *1/22*
U.S. Cl. 44—62 10 Claims

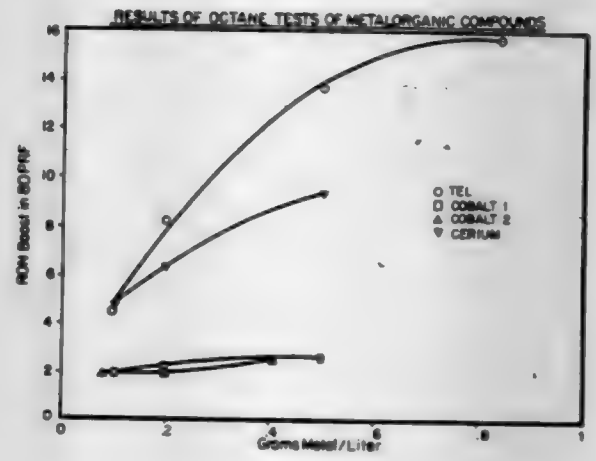
1. A fuel oil containing an effective pour point depressing amount of ester-containing halogpolyalkylene characterized by internal olefinic unsaturation, by being essentially free of crosslinking, by having a branch index of from about 2 to about 20 and by having a halogen content of from about 0.001 percent to less than about one percent by weight based on polyalkylene and, conversely, having an ester content of greater than about 99 percent.

4,536,192

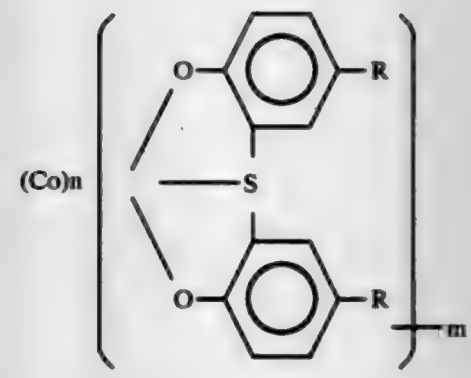
ADDITIVES FOR IMPROVING THE RESEARCH OCTANE NUMBER OF LIQUID HYDROCARBON FUELS

Milton Braid, Westmont, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 24, 1978, Ser. No. 899,682
Int. Cl.[3] C10L *1/30*
U.S. Cl. 44—68 2 Claims



1. A method of increasing the octane research number of liquid hydrocarbon fuels, selected from hydrocarbon fractions having an initial boiling point of at least about 75° F., and boiling substantially continuously throughout their distillation range, suitable for use in internal combustion engines comprising intimately admixing with said hydrocarbon base fuel an organosulfur-containing metal compound selected from a minor effective amount of a cobalt thiobis (C_1–C_{30} alkylphenate having the following general structure



where R is an alkyl group of from about 4 to 16 carbon atoms, m is 3 and n is 2.

4,536,193

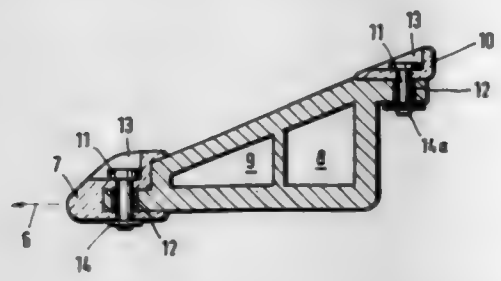
STIRRER OF A REACTOR FOR GASIFYING SOLID FUELS

Johannes Albrecht, Frankfurt am Main; Rudolf Jakobs, Bad Homburg; Osman Turna, Frankfurt am Main; Helmut Vierrath, Neu-Isenburg; Manfred Weil, Rockenberg, and Klaus Zapke, Maintal, all of Fed. Rep. of Germany, assignors to Metallgesellschaft Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Sep. 27, 1983, Ser. No. 536,147
Claims priority, application Fed. Rep. of Germany, Oct. 23, 1982, 3239320
Int. Cl.[3] C10J *3/30, 3/32*
U.S. Cl. 48—77 7 Claims

1. In a reactor for gasifying granular fuels, particularly coal, under a pressure of 5 to 150 bars by a treatment with gasifying

agents which contain free oxygen, steam and/or carbon dioxide, wherein the fuel forms in the reactor a descendable fixed bed, means for introducing the gasifying agents into the fixed bed from below, means for withdrawing the incombustible mineral constituents of the fuel below the fixed bed as solid ash or liquid slag, and at least one stirring arm in the fixed bed which is rotatable about a vertical axis and is approximately triangular in cross-section and has a knife edge penetrating through the fixed bed and a rear crushing edge, which is the top rear edge, the improvement wherein each of the knife edge and the crushing edge of the stirring arm is provided with a



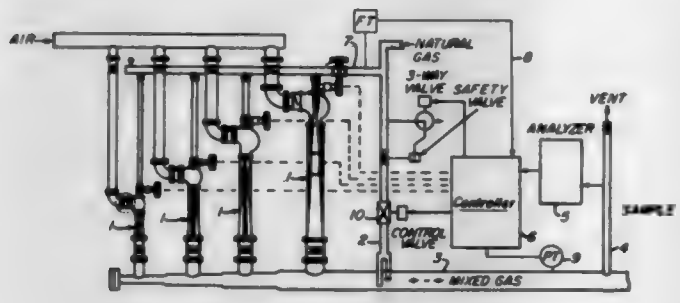
replaceable armoring, the armoring at the knife edge comprises a plurality of armoring elements, which are substantially V-shaped in cross-section and arranged one beside the other so as to define an expansion joint, and the armoring at the crushing edge comprises a plurality of wedge-shaped armoring plates arranged one beside the other, said armoring elements and said armoring plates being mounted on the stirring arm so as to be movable at ambient temperature and said armoring elements and said armoring plates having a width of 5 to 50 cm measured in the direction which is parallel to the radial extent of the arm.

4,536,194

SYSTEM FOR CONTROLLING THE COMPOSITION OF A FUEL GAS PRODUCED BY A JET COMPRESSOR SYSTEM

William E. Boggs, Murrysville, and Everett L. Keener, Monroeville, both of Pa., assignors to United States Steel Corporation, Pittsburgh, Pa.

Filed Dec. 12, 1983, Ser. No. 560,657
Int. Cl.³ B01F *3/02*
U.S. Cl. 48—180.1 **8 Claims**



1. Method of providing a mixture of lean gas and rich gas of a desired composition by means of a jet compressor system comprising two or more jet compressors, and wherein each such jet compressor operates by passing said rich gas at high pressure through a nozzle into the throat of a venturi section to thereby produce suction which draws said lean gas at a lower pressure into said venturi section to thereby dilute said rich gas to a predetermined composition, comprising:

(1) adjusting the jet compressor system being used to mix said lean gas and said rich gas to provide a leaner gas mixture than said desired composition;

(2) then adding a predetermined amount of said rich gas to said leaner gas mixture to attempt to obtain said desired composition; and

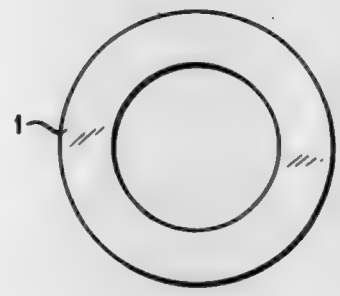
(3) adding a varying amount of said rich gas to said leaner gas mixture in response to measurements of the flow of said rich gas going into said jet compressor system and the pressure of the mixed gases after the addition of said rich gas to thereby obtain the gas mixture having said desired composition.

4,536,195

METHOD OF MAKING GRINDING STONES

Tadayuki Ishikawa, Hirakata, Japan, assignor to Kabushiki Kaisha Komatsu Seisakusho, Tokyo; Noritake Co., Ltd., Nagoya and Noritake Diamond Industries Co., Ltd., Ukiha, all of, Japan

Filed Oct. 1, 1984, Ser. No. 656,372
Claims priority, application Japan, Sep. 30, 1983, 58-180629; Apr. 12, 1984, 59-71722
Int. Cl.³ B24D *17/00*
U.S. Cl. 51—293 **41 Claims**



1. A method of making a grinding stone, which comprises:

forming on a surface of a binder sheet of a desired configuration a pattern of electrically conductive layers for selectively controlling sites on said surface to be bonded with abrasive grains;

immersing the sheet in an electrolytic bath containing metallic ions and having abrasive grains dispersed therein;

fixedly mounting on the pattern of electrically conductive layers the abrasive grains by means of metals deposited by electric paths flowing between said conductive layers and an opposite electrode in the bath;

piling in layers a plurality of the binder sheets mounted with the abrasive grains; and

warm or hot pressure-molding the layers into an integrate of the grinding stone.

4,536,196

COATED DIFFUSION MEMBRANE AND ITS USE

Jesse R. Harris, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Continuation of Ser. No. 185,712, Sep. 10, 1980, abandoned. This application Mar. 16, 1982, Ser. No. 358,570
Int. Cl.³ B01D *53/22*
U.S. Cl. 55—16 **9 Claims**

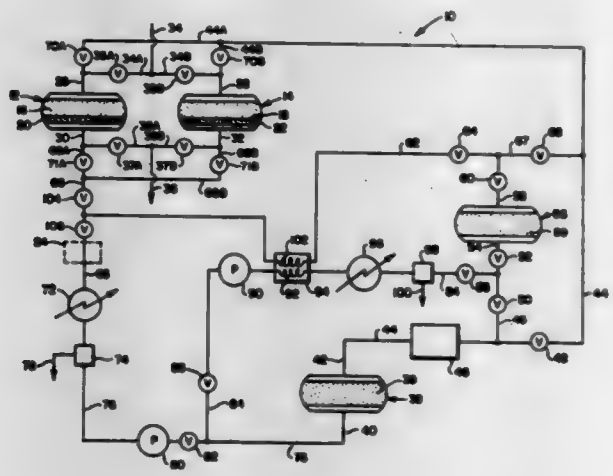
1. A process for the dehydrogenation of a hydrocarbon comprising effecting, in the presence of a membrane, said dehydrogenation of said hydrocarbon under dehydrogenation conditions and at a temperature in the range of about 800° to about 1300° F. to produce an unsaturated hydrocarbon and hydrogen in a reaction zone; wherein said membrane is selectively permeable to said hydrogen; wherein said hydrogen produced during said dehydrogenation is continuously removed from said reaction zone by diffusion through said membrane; wherein said membrane comprises (a) a member of the group consisting of palladium and palladium alloys, and (b) at least one metal selected from the group consisting of the transition metals of Group IVB, Group VB and Group VIB of the Periodic Table of Elements; and wherein the surface of (a) is coated with (b).

4,536,197

PROCESS AND APPARATUS FOR REMOVING ADSORBED MATERIAL FROM AN ADSORBER

Thomas E. Cook, 3570 Maize Rd., Columbus, Ohio 43224

Filed Sep. 16, 1983, Ser. No. 532,835
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—28 **15 Claims**



1. A process for removing adsorbed material from an adsorber comprising:

(a) passing a stream of non-condensible gas successively through a heat storage means, an auxiliary adsorber and in one direction through a main adsorber, thereby transferring heat from said heat storage means to said auxiliary adsorber and said adsorber, removing at least part of any adsorbed material from said auxiliary adsorber and at least part of said adsorbed material from said main adsorber, said gas leaving said main adsorber being passed through a condensing means to condence at least part of said adsorbed material carried by said gas;

(b) thereafter passing said stream of gas successively through said heat storage means, said main adsorber thereby continuing to transfer heat from said heat storage means to said main adsorber and to remove adsorbed material from said adsorber, while isolating said auxiliary adsorber from said stream of gas, thereby permitting said auxiliary adsorber to cool and

(c) passing said stream of desorption gas successively in the opposed direction through said main adsorber through said heat storage means and through said auxiliary adsorber, thereby transferring heat from said main adsorber to said heat storage means and adsorbing at least part of any of said adsorbed material removed from said main adsorber in said auxiliary adsorber.

8. An adsorption apparatus comprising:

(a) a main recycling circuit including:

a main adsorber having an inlet and an outlet;

an adsorber inlet duct for passing a stream of contaminated gas into said inlet of said adsorber;

an adsorber outlet duct for exhausting said stream of gas from said outlet of said adsorber;

a heat storage means having an inlet and an outlet;

an auxiliary adsorber having an inlet and an outlet;

a first desorption duct extending from said outlet of said heat storage means to said inlet of said auxiliary adsorber;

a second desorption duct extending from said outlet of said auxiliary adsorber to said inlet of said main adsorber;

a third desorption duct for passing gas from said outlet of said heat storage means to said inlet of said main adsorber without passing said gas through said auxiliary adsorber;

a first valve means for controlling the flow of gas through said first, second and third desorption ducts, said first valve means having a first position in which said third desorption duct is closed so that gas can only pass from said outlet of said heat storage means to said inlet of said main adsorber via said auxiliary adsorber, and a second position, in which said third desorption duct is open and at least one of said first and second desorption ducts are closed so that gas can pass from said outlet of said heat storage means to said inlet of said main adsorber, but cannot pass through said auxiliary adsorber;

a main condensing means, connected to said outlet of said main adsorber, for condensing condensible matter in gas leaving said outlet of said adsorber;

a second valve means for switching said main adsorber between adsorption and desorption phases; said second valve means having an adsorption position in which gas can flow through said adsorber from said adsorber inlet duct to said adsorber outlet duct but in which gas cannot flow into said adsorber from said second and third desorption duct nor can gas leave said adsorber via said main condensing means; and a desorption position, in which gas can enter said main adsorber from at least one of said second and third desorption ducts and can leave said adsorber via said main condensing means but in which gas cannot enter said adsorber via said adsorber inlet duct nor leave said adsorber via said adsorber outlet duct;

a main impeller means connected to said main condensing means and to said heat storage means to cause the gas to enter and leave the main adsorber when the second valve means is in its desorption position;

(b) an auxiliary recycle circuit between the heat storage inlet and the main adsorber outlet comprising;

a first reheating duct connecting said inlet of said heat storage means to said inlet of said auxiliary adsorber;

a second reheating duct connecting said outlet of said auxiliary adsorber to said outlet of said main adsorber; and

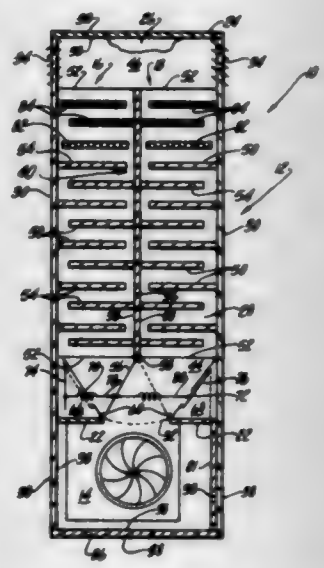
a third valve means for opening and closing said first and second reheating ducts.

4,536,198

MOISTURE CONTROL DEVICE

Don R. Strain, Clarkston, Mich., assignor to Hydro-Dri Systems, Inc., Southfield, Mich.

Continuation-in-part of Ser. No. 441,354, Nov. 15, 1982, , which is a continuation-in-part of Ser. No. 259,121, Apr. 30, 1981, Pat. No. 4,419,835. This application Dec. 12, 1983, Ser. No. 560,778
Int. Cl.³ B01D *53/04*
U.S. Cl. 55—33 **23 Claims**



1. A method of drying air for use with a dehumidifier or dehydrator, comprising the following steps:

(a) forcing ambient air at a low static pressure through an inlet into a housing;

(b) means directing said ambient air into one of a pair of opposed desiccant columns, contained within said housing;

(c) intermittently directing said ambient air into the other of said desiccant columns before said desiccant column approaches saturation and before said desiccant column loses the heat of adsorption contained therein;

(d) passing said ambient air both over the surfaces of a plurality of spaced laterally staggered baffles containing a desiccant, within said columns, and through said spaced baffles, drying said ambient air;

(e) creating a back pressure in a discharge plenum of said housing by directing dry air into said discharge plenum and a large portion thereof out through at least one restricted outlet;

(f) directing a portion of said dry air received in said discharge plenum into said other desiccant column;

(g) directing said portion of dry air both over the surfaces of said spaced desiccant baffles, within said other desiccant columns, and through said spaced baffles, within said other desiccant column, regenerating the desiccant in said baffles; and

(h) directing the air received from said opposed desiccant column of said housing.

9. A moisture control device comprising:

an enclosed housing including an inlet and at least one outlet;

opposed first and second desiccant columns on each side of said inlet and outlet;

a discharge plenum located between said outlet and said opposed desiccant columns;

said inlet and discharge plenum communicating through said desiccant columns;

a valve damper means supported within said housing having a portion directing air received from said inlet into one of said desiccant columns in a first position and into the other opposed desiccant column in a second position;

damper actuating means intermittently positioning said valve damper means between said first and second positions to alternately and intermittently direct air into one of said first and second desiccant columns;

blower means providing pressurized air through said inlet;

heater means, positioned within each of said desiccant columns in the air path therein, adapted for heating the dehydrated air passing through said column, rendering said dry air more hydroscopic for rapid regeneration of said desiccant columns;

at least one heat collecting baffle assembly of heat collecting material positioned within each column between said heater means and said discharge plenum preventing radiation of said heat to said dry air in said discharge plenum;

said desiccant columns each comprising baffles of desiccant material creating a low pressure drop through said desiccant column;

valve means in said housing for alternately directing air received from said discharge plenum through said other opposed desiccant column, out of said housing;

said valve damper means and damper actuating means alternately and intermittently directing said air into one of said desiccant columns, into said discharge plenum, and a large portion of said air out of said outlet;

said outlet a restricted opening creating a back pressure in said discharge plenum and directing a portion of the air received in said discharge plenum into said other opposed desiccant column; and

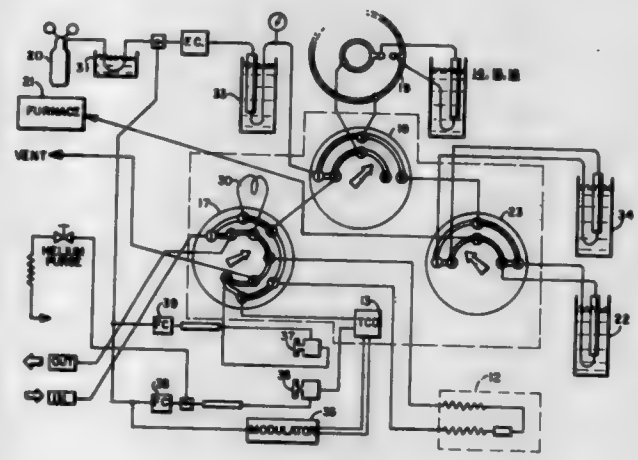
said valve means directing said portion of air received from said opposed desiccant column out of said housing.

4,536,199

GAS CHROMATOGRAPH FOR RESEPARATING A SAMPEL INTO PURE COMPONENTS

Michael B. Toon, De Soto, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 5, 1984, Ser. No. 568,462
Int. Cl.[3] B01D *15/08*
U.S. Cl. 55—67 **10 Claims**



1. A gas chromatograph for separating the components of a sample comprising:

a chromatographic column for separating said sample into its components;

a detector for measuring the properties of said components;

means for holding said sample and connecting it to said detector;

a plurality of traps for trapping the components of said sample;

a first valve selectively connecting said means for holding said sample to an external source of sample or to a component trapped in one of said traps and;

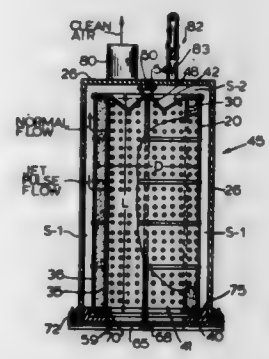
a second valve for selectively connecting said traps to supply a component trapped in one of said traps to said detector or to supply a component passing through said detector to one of said traps so that the trapped components can be reseparated.

4,536,200

GAS FILTER APPARATUS AND METHOD OF FILTERING

Parker C. Reist, 205 Glenhill La., Chapel Hill, N.C. 27514

Filed Oct. 3, 1983, Ser. No. 538,758
Int. Cl.[3] B01D *46/02, 50/00*
U.S. Cl. 55—96 **10 Claims**



1. A gas-filtering apparatus for filtering particulate-laden gas, comprising:

(a) a first clean air plenum to which filtered gas is admitted, a second scavenging gas plenum isolated from said first plenum for containing unfiltered scavenging gas and having a barrier between said plenums with apertures communicating said plenums for gas flow therebetween;

(b) a plurality of filters located for filtering said scavenging

gas, each of a standard cylindrical construction comprising a hollow cylinder of pleated porous filter paper including means serving to restrain movement of said paper and having one closed end and one open end;

(c) means mounting each said filter on said barrier such that the outer surface thereof communicates with said first plenum and the inner surface and open end thereof communicates with said second plenum through one of said apertures;

(d) means for exhausting air from said first plenum so that in normal flow gas flows through said apertures and through the open end of each said filter to the interior of each said filter and radially through each said filter such that particulates collect on the interior surfaces thereof; and

(e) reverse jet cleaning means for cleaning said filters, including:

(i) for each of said filters a cylindrical housing, each housing being mounted on said barrier and defining said first plenum and surrounding external surfaces of one of said filters in a predetermined spaced relation and being effective to seal off one of said filters from another;

(ii) a source of high pressure gas;

(iii) conduit means having a control valve and connecting the space surrounding a filter within each said housing to said source of high pressure gas; and

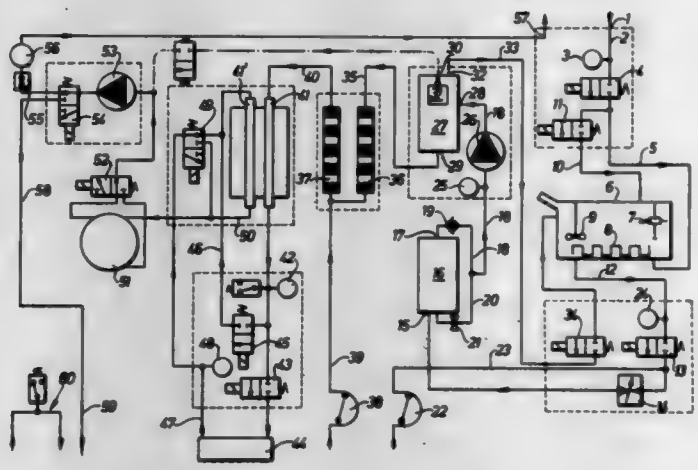
(iv) means for operating said control valve to produce a brief pulse of said high pressure gas for periodically removing particulate matter collected on the interior surfaces of each said filter within one of said housing and causing such removed particulate matter to drop through the open end thereof by directing a said brief pulse of high pressure gas into each said housing to cause such high pressure gas to flow radially inward through each said filter within each said housing in a direction and flow reverse to said normal flow.

4,536,201

SYSTEM FOR VENTING GASES IN FLUIDS PASSING THROUGH A CONDUIT

Fritz L. Brorsson, Flyinge; Bengt A. G. Dahlberg, Lund, and Bengt M. Holmberg, Bjarred, all of Sweden, assignors to Gambro Lundia AB, Sweden

Filed Apr. 24, 1984, Ser. No. 603,309
Claims priority, application Sweden, Nov. 29, 1983, 8306573
Int. Cl.³ B01D *19/00*
U.S. Cl. 55—189 **15 Claims**



1. An apparatus for the venting of gases contained in the fluid passing through a primary conduit in connection with medical treatments comprising:

throttling means interposed in said primary conduit;

pump means downstream of said throttling means for drawing said fluid through said primary conduit;

means for enhanced bubble formation in said fluid positioned between said throttling means and pump means in said primary conduit;

a shunt conduit in fluid communication with said means for enhanced bubble formation and said primary conduit; and

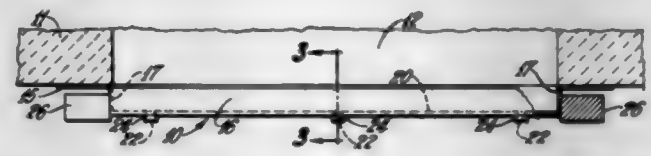
venting means disposed in said primary conduit downstream of said pump means, said venting means for removing gaseous bubbles from said fluid when said fluid is passed therethrough.

4,536,202

DRAIN BUSHING

Richard A. Perkins, Newark; William C. Brady, Granville, both of Ohio, and Paul W. Turner, Aiken, S.C., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed Dec. 6, 1983, Ser. No. 558,681
Int. Cl.³ C03B *37/00*
U.S. Cl. 65—1 **3 Claims**



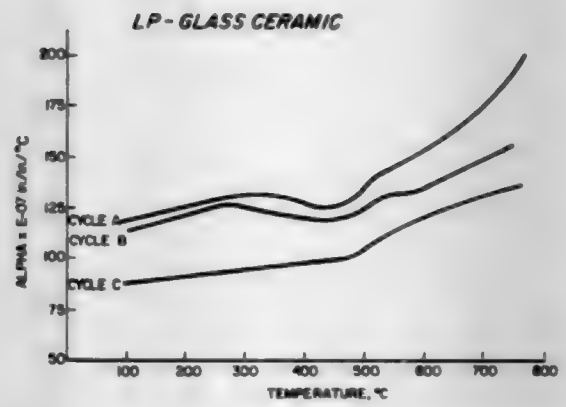
1. A drain bushing for use as a temporary replacement for a production bushing to drain molten glass from a glass melting apparatus including a lower bushing block having a bottom opening and formed of refractory material, the improvements wherein said drain bushing is machined from a single block of dispersion-strengthened, non-precious metal alloy, the machined bushing having (a) an integral upper outwardly-directed mounting flange for abutment with said bushing block to surround the bottom opening therein, (b) an integral central open-topped, convexo-concave well portion beneath said mounting flange for registry with the bushing block bottom opening and having a bottom wall provided with (c) integrally formed tips of rectangular exterior configuration having axial drain passage communicating with the well portion, and electrical contact ears of the same dispersion-strengthened alloy located exteriorally of said well portion and beneath said mounting flange.

4,536,203

PRESSURIZED HEAT TREATMENT OF GLASS-CERAMIC TO CONTROL THERMAL EXPANSION

Daniel P. Kramer, Dayton, Ohio, assignor to The United States of America as represented by the Department of Energy, Washington, D.C.

Filed Apr. 19, 1984, Ser. No. 602,035
Int. Cl.³ C03C *27/02*
U.S. Cl. 65—29 **4 Claims**



1. A method for producing a glass-ceramic having a specified thermal expansion value, comprising the steps of:

initially determining the correspondence between pressure during heat treatment of a parent glass and the thermal expansion values of the glass-ceramics that result from

said heat treatment carried out over a range of different pressure levels applied isostatically; and

isostatically pressurizing the parent glass during heat treatment to a preselected pressure level within said range in order to obtain in glass-ceramic having the thermal expansion value corresponding to said pressure level.

4,536,204

PROCESS FOR PRODUCING COATED FLAT GLASS

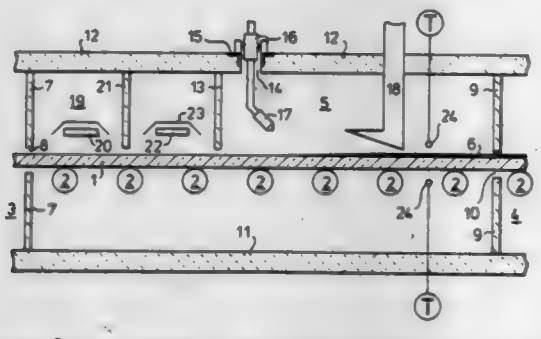
Robert Van Laethem, Loverval; Albert Van Cauter, Charleroi, and Robert Terneu, Thiméon, all of Belgium, assignors to Glaverbel, Brussels, Belgium

Filed May 9, 1984, Ser. No. 610,087

Claims priority, application United Kingdom, May 13, 1983, 8313283

Int. Cl.³ C03C *17/00*

U.S. Cl. 65—60.4 **8 Claims**



1. A process for producing flat glass coated on one side with a coating comprised of one of a metal and a metal compound, wherein the glass is formed in a flat glass forming installation and subsequently annealed in an annealing installation, said process comprising:

advancing a freshly formed ribbon of hot flat glass from the flat glass forming installation to the annealing installation;

passing the ribbon through a first thermal conditioning zone located downstream of the glass forming installation for reducing temperature gradients across the ribbon;

passing the ribbon through a second thermal conditioning zone located downstream of the first thermal conditioning zone for supplying heat substantially entirely to a surface layer of the glass at the one side to be coated;

contacting the one side of the advancing glass with a fluid medium which includes substances from which the coating is formed, said contacting step being performed at a coating station located between the second thermal conditioning zone and the annealing installation and having a cooling effect upon the advancing ribbon; and wherein

said step of passing the ribbon through the second thermal conditioning zone includes supplying the heat with the use of at least one radiant heater having a black body temperature below 1100° C. to compensate at least partially for the cooling effect of said contacting step, and

said process further comprises monitoring the temperature of the ribbon surface at the coated side after said contacting step; and controlling the at least one radiant heater so that the coated side complies with predetermined temperature conditions prior to entering the annealing installation.

4,536,205

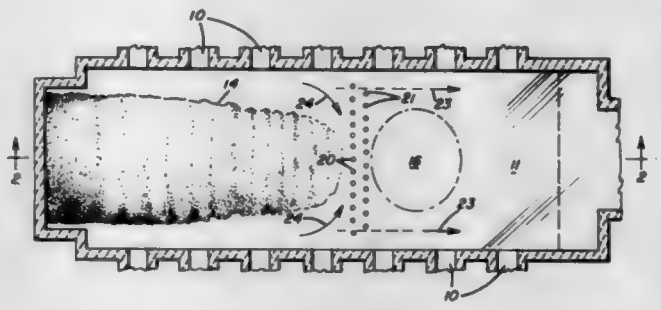
METHOD FOR CONTROLLING CURRENTS IN GLASS MELTER

John F. Krumwiede, Indiana Township, Allegheny County; William C. Harrell, Buffalo Township, Butler County; William G. Hilliard, Lower Burrell, all of Pa., and James E. Harris, Wichita Falls, Tex., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Division of Ser. No. 543,735, Oct. 20, 1983,. This application Jul. 23, 1984, Ser. No. 633,559

Int. Cl.³ C03B *5/18*

U.S. Cl. 65—135 **9 Claims**



1. A method of melting glass comprising feeding a layer of glass batch materials onto a pool of molten glass at an upstream end of a furnace, withdrawing molten glass at a downstream end of the furnace longitudinally spaced from the upstream end, providing heat to the furnace above the pool of molten glass so as to melt the glass, whereby a zone of rising glass currents is established in the pool between the downstream end of the batch layer and the downstream end of the furnace, on the upstream side of the zone of rising glass currents injecting gas into the molten glass at a plurality of locations extending transversely across the furnace so as to enhance the rising glass currents, the gas injection in at least one transverse side portion being sustained at a volume rate at least ten percent greater than the rate of gas injection in central portions of the furnace.

4,536,206

MITICIDAL COMPOSITION AND METHOD FOR CONTROLLING SPIDER MITES

Yoshiaki Kubo; Kaoru Takemura, both of Kagoshima, and Shuichiro Kouno, Omiya, all of Japan, assignors to Wako Pure Chemical Industries, Ltd., Osaka, Japan

Filed Oct. 14, 1983, Ser. No. 541,841

Claims priority, application Japan, Oct. 15, 1982, 57-180961

Int. Cl.³ A01N *25/00*

U.S. Cl. 71—3 **11 Claims**

1. A miticidal composition consisting essentially of a water-soluble acidic high molecular weight branched and crosslinked polymer having a plurality of carboxyl groups as active ingredient and an aqueous medium as inert carrier, wherein the concentration of the active ingredient is at most 3000 ppm.

4,536,207

NEMATOCIDALLY ACTIVE CHITIN-PROTEIN COMPLEX

Russell J. McCandliss, Germantown, Md.; Barbara J. Eastwood, Round Hill, Va., and Robert A. Milch, Baltimore, Md., assignors to IGI Biotechnology, Inc., Columbia, Md.

Filed Jul. 26, 1983, Ser. No. 517,312

Int. Cl.³ C07G *7/00*; E05B *65/48, 65/46*

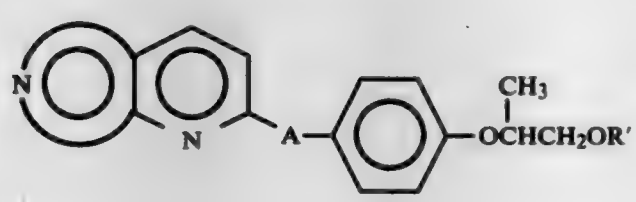
U.S. Cl. 71—88 **20 Claims**

1. A composition of matter comprising a nematocidally active chitin-protein complex derived from crustacean shell waste material and consisting essentially of a water-insoluble demineralized chitin component complexed with a water-insoluble protein component, said complex being essentially free of low molecular weight peptides, amino acids, and calcium chloride brine formed by acid hydrolysis of such waste material, said complex characterized by:

(a) a Lowry protein content of at least about 50% by weight, an ash content of not more than about 15% by weight, and a moisture content of less than about 10% by weight, based on the total composition;
(b) having solubility properties similar to those of chitin in being insoluble in neutral dilute acid solutions but solubilized with significant decomposition of the protein component in concentrated mineral salts;
(c) having an IR spectrum similar to that of chitin but with a characteristic extra adsorption band at 1738 cm^{-1};
(d) the water-insoluble, demineralized chitin component having an acetyl content substantially identical to that of chitin as shown by a characteristic infrared spectrum adsorption band at 1550 cm^{-1}, but which is substantially free of carbonates and contains not more than about 15% of the ash content of chitin;
(e) the water-insoluble protein component having an amino acid composition substantially identical to that of untreated crustacean shell waste material, a molecular weight primarily in the range of 10 to 50 kdal as determined by sodium dodecyl sulfate gel electrophoresis, and being essentially insoluble in common protein solvents; and
(f) said complex being in the form of dry particles having a diameter of less than about 0.5 mm.

4,536,208
CERTAIN NAPHTHYRIDINE DIETHER COMPOUNDS AND THEIR HERBICIDAL USE
James A. Turner, Pittsburg, Calif., assignor to The Dow Chemical Company, Midland, Mich.
Division of Ser. No. 395,415, Jul. 6, 1982, Pat. No. 4,472,193.
This application Sep. 17, 1984, Ser. No. 651,555
Int. Cl.[3] C07D *487/04;* A01N *43/40*
U.S. Cl. 71—94 17 Claims

1. A compound of the formula

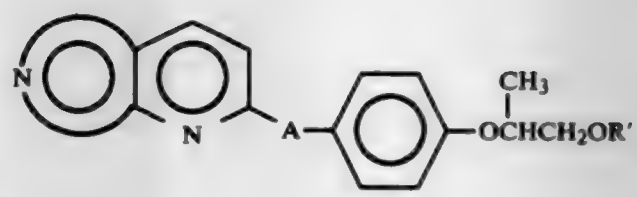

(II)

wherein



represents a fused six-membered nitrogen-containing aromatic ring which forms a 1,5-, 1,6-, 1,7- or 1,8- naphthyridinyl moiety with the adjoining pyridine ring, said naphthyridinyl moiety optionally being substituted at the 6-position of the naphthyridinyl moiety with a chloro, iodo, CF_3, bromo, or fluoro atom with the proviso that said substitution occurs only when the 6-position of said naphthyridinyl moiety is occupied by a carbon atom;
A represents O or S; and
R′ represents H or C_1–C_4alkyl.

14. A method of controlling undesired plant growth which comprises applying to the locus of said plants a herbicidally effective amount of an active compound of the formula


(II)

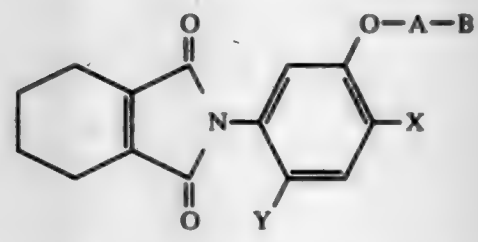
wherein



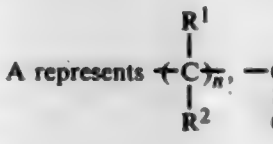
represents a fused six-membered nitrogen-containing aromatic ring which forms a 1,5-, 1,6-, 1,7- or 1,8-naphthyridinyl moiety with the adjoining pyridine ring, said naphthyridinyl moiety optionally being substituted at the 6-position of the naphthyridinyl moiety with a chloro, iodo, CF_3, bromo, or fluoro atom with the proviso that said substitution occurs only when the 6-position of said naphthyridinyl moiety is occupied by a carbon atom;
A represents O or S; and
R′ represents H or C_1–C_4alkyl.

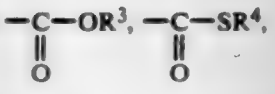
4,536,209
N-(3-SUBSTITUTED OXYPHENYL)TETRAHYDROPHTHALIMIDES AND HERBICIDAL COMPOSITION
Tetsuo Jikihara, Kawasaki; Masatsugu Oda, Yokohama; Bunji Natsume, Yokohama; Hisao Watanabe, Yokohama, and Seiichi Suzuki, Yokohama, all of Japan, assignors to Mitsubishi Chemical Industries Ltd., Tokyo, Japan
Filed Oct. 5, 1981, Ser. No. 308,825
Claims priority, application Japan, Oct. 7, 1980, 55-140076; Oct. 9, 1980, 55-141778; Oct. 9, 1980, 55-141776
Int. Cl.[3] C07D *209/48;* A01N *43/38*
U.S. Cl. 71—96 12 Claims

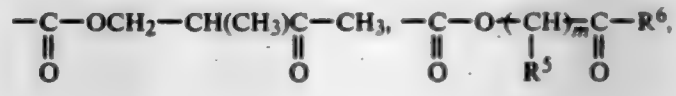
1. A method of controlling weeds in the cultivation of a crop plant by applying a herbicidally effective amount of an N-(3-substituted oxyphenyl)-3,4,5,6-tetrahydrophthalimide of the formula:


(I)

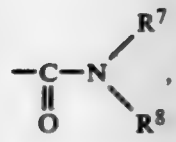
wherein X and Y each represent hydrogen or halogen;

A represents  , or $-CH_2CH{=}CH-$;

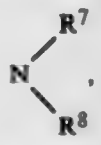
B represents  ,



-continued



or —CN; R^1 is hydrogen or C_{1-10} alkyl, phenyl chlorophenyl, bromophenyl, dichlorophenyl, methylchlorophenyl, methylphenyl or nitrophenyl; R^2 is hydrogen or C_{1-4} alkyl; R^3 is hydrogen or a C_{1-12} straight or branched alkyl, C_{2-5} alkenyl, C_{2-5} alkynyl, C_{1-5} haloalkyl, C_{3-4} haloalkenyl, C_{2-4} cyanoalkyl, C_{2-4} hydroxyalkyl, C_{3-6} alkoxyalkyl, C_{5-8} alkoxyalkoxyalkyl, C_{7-10} alkoxyalkoxyalkoxyalkyl, C_{3-8} alkylthioalkyl, C_{4-8} cycloalkyl, C_{7-9} aralkyl, chlorobenzyl, bromobenzyl, phenyl, γ-butyrolactone optionally substituted by methyl, an alkali metal cation, an alkaline earth metal cation, ammonium cation, or an ammonium cation having 1 to 4 alkyl substituents, wherein the total carbon atom content of the ammonium cation is 1 to 9 carbon atoms; R^4 is C_{1-12} alkyl, C_{3-6} alkoxycarbonylalkyl or benzyl; R^5 is hydrogen or methyl; R^6 is methyl or phenyl; R^7 and R^8 can be the same or different and each is hydrogen, C_{1-10} branched or straight chain alkyl, C_{2-5} alkenyl, C_{2-5} alkynyl, C_{2-6} haloalkyl, C_{2-6} hydroxyalkyl, alkoxyalkyl, aralkyl, phenyl, chlorophenyl, bromophenyl, methylphenyl, methoxyphenyl, pyrimidine, thiazole, pyridine, C_{1-6} alkoxy, C_{2-4} alkenyloxy, amino, methylamino, phenylamino, dimethylamino, C_{1-4} alkanesulfonyl, benzenesulfonyl, toluenesulfonyl, chlorobenzenesulfonyl, methoxybenzenesulfonyl or cyclohexyl; and



wherein R^7 and R^8 together form a piperidine, or optionally together with an oxygen form a morpholine, isoxazolidine, or tetrahydroisoxazine ring; and m and n each represent an integer of 1 to 3.

4,536,210

METHOD OF INCREASING THE RECOVERABLE SUGAR FROM SUGAR BEETS

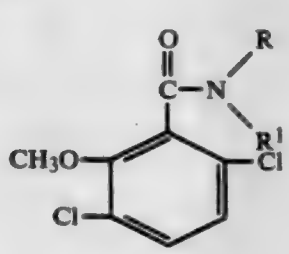
Leonard J. Stach, Riverside, Ill., assignor to Velsicol Chemical Corporation, Chicago, Ill.

Continuation-in-part of Ser. No. 346,687, Feb. 8, 1982, abandoned. This application May 9, 1983, Ser. No. 492,521

Int. Cl.³ A01N *37/20*

U.S. Cl. 71—118 **5 Claims**

1. A method for increasing the recoverable sugar from sugar beets which comprises contacting the sugar beet plants during the period of from about two to about ten weeks before harvest with an effective amount of a sugar ripener having the following structural formula:



wherein R is selected from the group consisting of hydrogen and lower alkyl and R^1 is lower alkyl.

4,536,211

WASTE GAS CIRCULATION METHOD AND SYSTEM FOR SINTERING APPARATUS

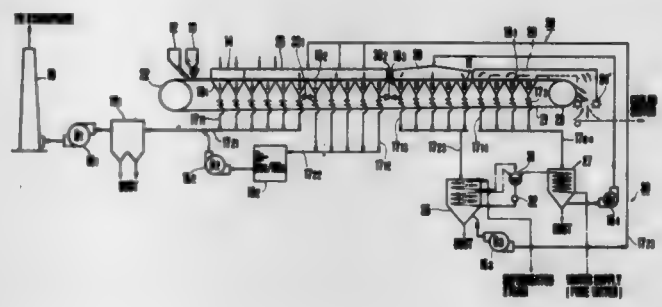
Takashi Futakuchi, Nishinomiya; Kiyofumi Nakamura, Kitakyushu; Yoshimasa Sato, Niihama; Toshio Tsukuda, Niihama, and Hiroyuki Shiraishi, Niihama, all of Japan, assignors to Sumitomo Metal Industries, Ltd., Osaka and Sumitomo Heavy Industries Ltd., Tokyo, both of, Japan

Filed May 17, 1983, Ser. No. 495,373

Claims priority, application Japan, May 18, 1982, 57-82421

Int. Cl.³ F27B *9/12*

U.S. Cl. 75—5 **9 Claims**



1. A method for recovering heat from the hot waste gas from a conveyor-type sintering apparatus in which a charge mixture of ore, solid fuel and flux is sintered, said sintering apparatus comprising a sintering zone through which said mixture is moved and is sintered therein and a cooling zone located downstream from said sintering zone and through which said mixture is moved and is cooled therein, said sintering zone having first, second and third groups of wind boxes for withdrawing heated waste gas from said sintering zone, said first, second and third groups of wind boxes being arranged in series in said sintering zone and being located, respectively, at the front stage, intermediate stage and final stage of said sintering zone, said cooling zone having fourth, fifth and sixth groups of wind boxes for withdrawing heated waste gas from said cooling zone, said fourth, fifth and sixth groups of wind boxes being arranged in series in said cooling zone and being located, respectively, at the front stage, intermediate stage and final stage of said cooling zone, the steps comprising:

a first heat exchange step of flowing a first stream of the heated waste gas from said fifth and sixth groups of wind boxes in indirect heat exchange with cold water whereby to extract heat from said first stream of heated waste gas and to heat and said cold water to transform it into hot water; and

a second heat exchange step of flowing the hot water obtained in said first step in indirect heat exchange with a second stream of heated waste gas from said third and fourth groups of wind boxes whereby to extract heat from said second stream of heated waste gas and to heat said hot water to transform it into steam, said second stream of heated waste gas containing sulfur oxides and being maintained, in said second step, at a relatively high temperature effective to prevent condensation of said sulfur oxides in the form of droplets of sulfuric acid.

4,536,212

PRODUCTION OF A PURIFIED ALUMINUM MONOCHLORIDE FROM ALUMINA, BAUXITES AND CLAYS AND THE SUBSEQUENT PRODUCTION OF ALUMINUM METAL

David Weston, 34 Parkwood Ave., Toronto, Canada M4V 2X1

Continuation-in-part of Ser. No. 426,971, Sep. 29, 1982, Pat. No. 4,437,887. This application Aug. 17, 1983, Ser. No. 523,873

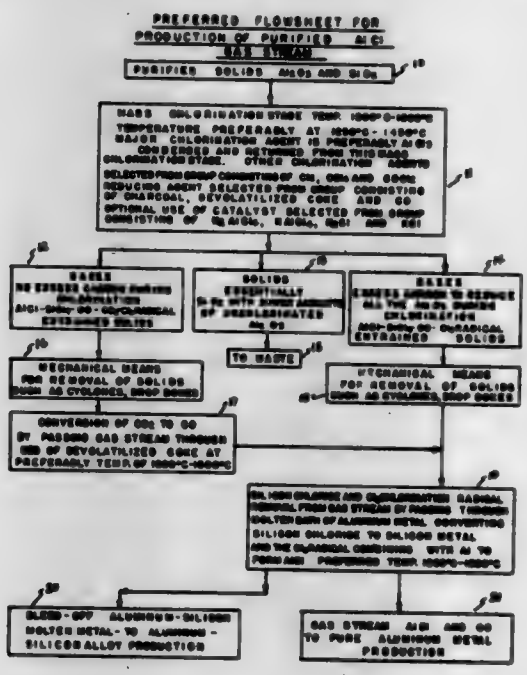
The portion of the term of this patent subsequent to Mar. 20, 2001, has been disclaimed.

Int. Cl.³ C22B *21/02*

U.S. Cl. 75—68 B **12 Claims**

1. The process steps for the production of aluminum metal

from the group of materials consisting of alumina, bauxites, bauxitic clays, clays and mixtures thereof and said materials containing at least Al_2O_3 minerals in the group consisting of $Al_2O_3xH_2O$ and $Al_2O_32SiO_2$ $2H_2O$ and said Al_2O_3 minerals containing chemically combined H_2O comprising: subjecting the said materials to calcination in the temperature range of about 625° C. to 1500° C. to produce a calcined product substantially free of said chemically combined H_2O; subsequently subjecting the said calcined product to at least a mass chlorination stage in the presence of chlorination agent containing at least Cl_2 radical and selected from the group consisting of Cl_2, $COCl_2$, CCl_4 and $AlCl_3$ and reducing agent selected from the group consisting of C and CO and in the temperature range of about 1200° C. to 1600° C. to produce a gas stream wherein the said Al_2O_3 has been coverted to gaseous AlCl and said gas



stream contains said AlCl, and at least CO_2 and Cl_2 radical; subsequently passing the said gas stream through at least one bed selected from the group consisting of charcoal and devolatilized coke and in the temperature range of about 1200° C. to 1600° C. to convert said CO_2 to CO to produce a first modified gas stream containing at least said AlCl and said CO; subsequently passing the said first modified gas stream through molten aluminum metal in the temperature range of about 1200° C. to 1600° C. to convert at least part of the said chlorination agent Cl_2 radical to AlCl to produce a second modified gas stream containing at least the said AlCl and CO; subsequently lowering the temperature of the said second modified gas stream to within the temperature range of about 670° C. to 1050° C. to produce molten aluminum metal and a third modified gas stream containing at least $AlCl_3$ and said CO.

4,536,213

REFORMING OF HIGHER HYDROCARBONS FOR METAL OXIDE REDUCTION

Charles W. Sanzenbacher, Charlotte, N.C., assignor to Mildrex International, B.V., Zurich, Switzerland

Filed Sep. 10, 1984, Ser. No. 648,564
Int. Cl.³ C21B *13/02*
U.S. Cl. 75—91 **6 Claims**

1. A process for reducing metallic oxide to metallized material utilizing process fuel gas containing higher hydrocarbons of pentane or higher, comprising:

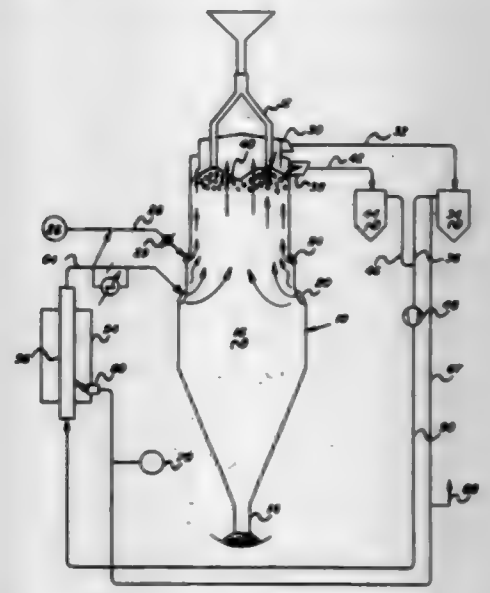
a. establishing a gravitational flow of particulate metallic oxide material through a generally vertical shaft furnace by charging such materials to the upper portion of said shaft furnace to establish a particulate burden therein having an upper stock line, and removing metallized product from the bottom of said furnace;

b. introducing a reducing gas mixture to said gravitational flow of material in said shaft furnace intermediate the ends of said furnace;

c. causing said reducing gas mixture to flow countercurrently through said gravitational flow of material, reducing the oxide material to metallized product and forming a reacted top gas;

d. removing said reacted top gas from the top of said furnace;

e. introducing process fuel gas containing higher hydrocarbons of pentane or higher to said furnace at an elevation above that of the reducing gas introduction;



f. causing said process fuel gas containing said higher hydrocarbons to flow upwardly through said burden;

g. removing a substantial portion of said process gas with said higher hydrocarbons at an elevation above the stock line but lower than the elevation at which reacted top gas is removed;

h. cleaning and scrubbing said top gas and said process gas;

i. combining said cleaned and scrubbed top gas and process gas and passing the mixture through a stoichiometric reformer to form a reformed gas; and

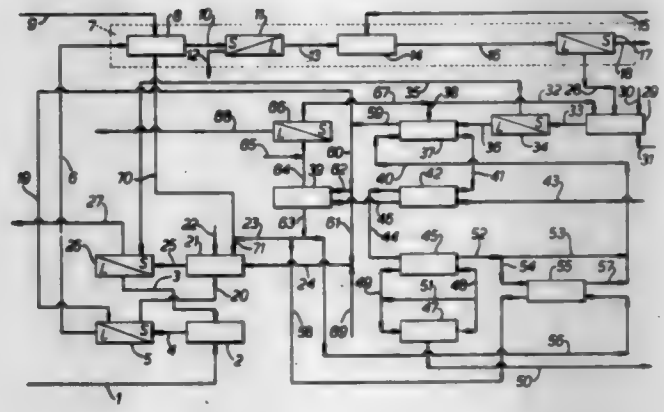
j. introducing said reformed gas to said shaft furnace through the bustle gas inlet.

4,536,214

METAL SULPHIDE EXTRACTION

Leonard R. Ochs; Archibald W. Fletcher, both of Tucson, Ariz.; Harald Weber, Isernhagen, Fed. Rep. of Germany, and David Naden, Stockton-on-Tees, England, assignors to Duval Corporation, Tucson, Ariz.

Filed Jul. 7, 1983, Ser. No. 511,464
Int. Cl.³ C01G *3/05, 9/04*; C22B *15/08, 15/12*
U.S. Cl. 75—101 R **23 Claims**



1. A process for recovering metal values from a zinc-containing complex sulphide material, which sulphide material further contains copper in sulphide form, comprising leaching the material in a first leaching stage under non-oxidative condi-

tions with a controlled amount of an aqueous chloride lixiviant solution containing cupric chloride in an amount which is selected so as to solubilize at least a part of the zinc in the material and to precipitate a quantity of cupric sulphide substantially equivalent on a molar basis to the zinc leached from the material, the lixiviant solution further containing sufficient of a source of chloride ions other than cupric chloride to ensure solubilization of metal chlorides present, recovering from the first leaching stage a zinc chloride-containing leach liquor, which further contains an amount of copper ions equivalent to the copper content of the zinc-containing complex sulphide material, recovering metal values from said leach liquor in a metal recovery section, treating solids containing copper in sulphide form from the first leaching stage under oxidizing conditions in a second leaching stage with a liquor containing (i) hydrochloric acid in an amount corresponding approximately to the stoichiometric quantity required for leaching the non-ferrous metal content of the copper sulphide-containing solids and (ii) metal chlorides thereby to solubilize substantially all the non-ferrous metal values in the solids, to precipitate iron values in the form of ferric hydroxide and jarosite and to regenerate cupric chloride-containing lixiviant solution for use in the first leaching stage, and recovering from the second leaching stage (a) a solids residue consisting essentially of (i) iron values in the form of ferric hydroxide and jarosite and (ii) sulphur, which solids residue is substantially free from non-ferrous metal values, and (b) a cupric chloride-containing lixiviant solution for recycle to the first leaching stage.

4,536,215

BORON ADDITION TO ALLOYS

Brian C. Coad, San Francisco, Calif., assignor to GTE Products Corporation, Stamford, Conn.

Filed Dec. 10, 1984, Ser. No. 680,106
Int. Cl.[3] C22B *23/00*
U.S. Cl. 75—129 **4 Claims**

1. A process for addition of boron to an iron or nickel base alloy, said process comprising:

(a) forming a melt of said alloy and a reactive metal selected from the group consisting of aluminum, titanium and zirconium,

(b) adding a charge of boric oxide to said melt to form a reactive mixture,

(c) maintaining said reactive mixture in the molten state thereby reacting at least a portion of said boric oxide with said reactive metal to convert at least a portion of said first charge of boric oxide to boron which dissolves in the resulting melt, and to convert at least a portion of said reactive metal to the reactive metal oxide essentially all of which oxide forms a separate slag phase,

(d) removing said slag phase from said resulting melt and,

(e) atomizing said resulting first melt into droplets and,

(f) cooling the atomized droplets to form a powder.

4,536,216

CEMENT FOR THE MANUFACTURE OF CORES AND MOULDS AND METHOD FOR PREPARING SAME

Nikolai A. Kaluzhsky, Leningrad; Khoren A. Badaliants, Leningradskaya; Ivan M. Kostin, Leningradskaya; Isaak A. Zatulovsky, Leningradskaya; Valentin I. Korneev; Vladimir V. Andreev, both of Leningrad; Boris A. Kuzmin, Leningradskaya; Viktor M. Sizyakov, Leningrad; Nikolai S. Shmorgunenko, Leningrad; Vladislav A. Krochevsky, Leningrad, and Alexei I. Alexeev, Leningrad, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti, Leningrad, U.S.S.R.

Filed May 5, 1983, Ser. No. 491,979
Int. Cl.[3] B28B *7/34*
U.S. Cl. 106—38.3 **4 Claims**

1. A cement for the manufacture of cores and moulds containing chemically combined oxides, with the following percent by weight: CaO, 50 to 60; Al_2O_3, 28 to 37; Fe_2O_3, 0.01 to 1; SiO_2, 0.1 to 8; Na_2O, 0.1 to 1; K_2O, 0.1 to 0.5; H_2O, 3 to 12; and having the following grain-size distribution: 85 to 99% by weight of a fraction with a particle size below 80 μm and 1 to 15% by weight of a fraction with a particle size of from 80 to 200 μm.

4,536,217

ABSORBING COVER FOR WOUNDS AND THE METHOD FOR MANUFACTURING THEREOF

Fritz Loth; Horst Dautzenberg, both of Tetlow, German Democratic Rep.; Jirí Stamberg; Jan Peska, both of Prague, Czechoslovakia; Dieter Bertram, and Herbert Lettau, both of Leipzig, German Democratic Rep., assignors to Ceskoslovenska akademie ved of Praha, Prague, Czechoslovakia and Akademie der Wissenschaften der DDR, Berlin, German Democratic Rep.

Continuation of Ser. No. 286,250, Jul. 23, 1981, abandoned. This application Sep. 28, 1983, Ser. No. 537,151
Claims priority, application Czechoslovakia, Jul. 30, 1980, 5332-80; Jul. 30, 1980, 5330-80
Int. Cl.[3] C08C *1/24*
U.S. Cl. 106—122 **13 Claims**

1. A powder dressing for wounds comprising spherical particles of water swollen regenerated cellulose beads wherein the water had first been replaced by an organic solvent, the solvent sequentially removed and the beads dried, said particles having a diameter of between 0.05 to 0.5 mm and a macroporous structure characterized by a porosity in the dry state corresponding to the cyclohexane regain of at least 0.2 ml/g of the dry material.

4,536,218

PROCESS AND COMPOSITIONS FOR LITHOGRAPHIC PRINTING IN MULTIPLE LAYERS

Eli A. Ganho, 112 Snidercroft Rd., Unit 8, Concord, Ontario, Canada L4K 2K1

Filed Feb. 8, 1984, Ser. No. 578,556
Claims priority, application Canada, Feb. 9, 1983, 421252
Int. Cl.[3] C04B *31/18*; C08K *3/08*; C09C *1/62*; C09D *5/10*
U.S. Cl. 106—290 **4 Claims**

1. A varnish composition suitable for lithographic application to a substrate to cover indicia printed thereon preparatory to hiding said indicia with an abrasively removable hiding coat, said composition including the following ingredients in the following approximate weight range:

Components	% Range
Magie oil (solvent)	30–35
Phenolic modified rosin ester	16–20
Hydrocarbon resin	13–17
Linseed-[isophtholic] isophthalic alkyd	10–13
Hydrocarbon plasticizer	7–10
Montan wax	3–6
Calcium perborate	1.5–3
Maganese octoate	1.5–2
Cobalt octoate	0.5–1
Gelling agent	0.5–0.7
Chinawood oil	0.3–0.5

4,536,219

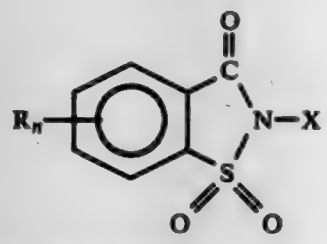
THERMOGRAPHIC RECORDING COMPOSITIONS

Claude R. Riou, Veyrier du lac, and Jean F. Fayard, St. Julien en Genevois, both of France, assignors to Societe Anonyme: Aussedat-Rey, France

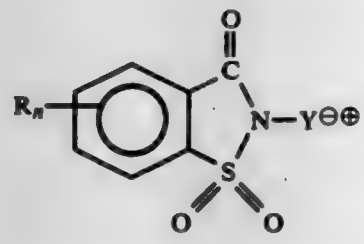
Filed Jul. 13, 1983, Ser. No. 513,304
Claims priority, application France, Jul. 16, 1982, 82 12845
Int. Cl.[3] C09D *11/00*
U.S. Cl. 106—21 **18 Claims**

10. A method for providing a thermographic color change, said method comprising the step of heating a thermographic

composition to a temperature sufficient to cause a color forming reaction between a color former and color developer therein, wherein said color developer comprises a compound to the formula:



wherein n is an integer of from 0 to 4; each R independently represents H, alkyl, NO_2, halogen, aryl, NH_2, OH, COOH, SO_3H, NR_1R_2, $COOR_3$, or OR_4; wherein R_1, R_2, R_3 and R_4 are alkyl or aryl; x represents H, a group possessing a labile H capable of forming a stable anion by loss of proton H^+, and their salts of the formula



in which Y represents X minus H and M^+ represents a metal cation.

4,536,220

FLUORAN DERIVATIVES AS NEW COMPOUNDS AND RECORDING SYSTEM UTILIZING THE SAME AS COLORLESS CHROMOGENIC MATERIAL

Mitsuru Kondo, Hyogo; Hiroshi Iwasaki, Kawanishi; Haruo Omura, Motomachi, and Nobuo Kanda, Osaka, all of Japan, assignors to Kanzaki Paper Manufacturing Co., Ltd., Tokyo, Japan

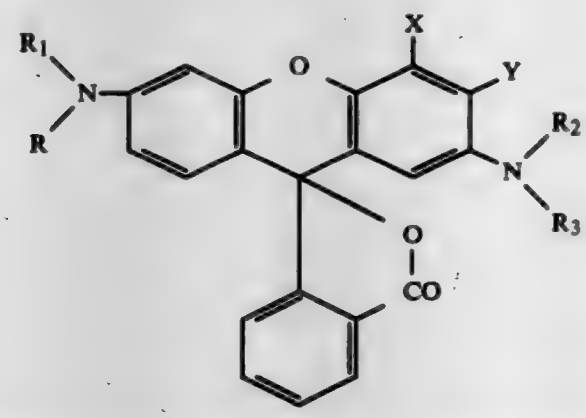
Filed Dec. 19, 1983, Ser. No. 562,738

Claims priority, application Japan, Dec. 27, 1982, 57-233077; Jan. 20, 1983, 58-8544; Aug. 10, 1983, 58-147057

Int. Cl.³ C09D *11/00*

U.S. Cl. 106—21 **8 Claims**

1. A fluoran derivative, as a new article of a compound, having the following formula:



wherein R is cyclopentyl, cycloheptyl, cyclohexylmethyl or cyclohexyl substituted by at least one alkyl and having 7 to 10 carbon atoms; R_1 is an alkyl having 1 to 8 carbon atoms, R_2 is hydrogen, R_3 is a phenyl which may be substituted by at least one substituent selected from the group consisting of alkyls having 1 to 4 carbon atoms, halogen atoms and halogen substituted methyls, X is hydrogen and Y is hydrogen or an alkyl having 1 to 4 carbon atoms.

4,536,221

PROCESS FOR PREPARING LACTULOSE FROM LACTOSE, IN THE FORM OF A SYRUP OR A CRYSTALLINE PRODUCT

Renato Carobbi, Pistoia; Sandro Miletti, Florence, and Vittorio Franci, San Piero a Sieve, all of Italy, assignors to SIRAC Spa, Milan, Italy

Filed Aug. 1, 1983, Ser. No. 518,846

Claims priority, application Italy, Dec. 17, 1982, 24814 A/82

Int. Cl.³ C13K *5/00*

U.S. Cl. 127—30 **8 Claims**

1. A process for preparing lactulose from lactose, comprising adding to an aqueous solution containing 60%–70% of lactose, a basic magnesium compound and sodium hydrosulphite in amounts corresponding to 0.05%–0.2% by weight of each of the added compounds with respect to the lactose and heating the solution to a temperature of from 90° C. to 100° C. to effect isomerization of the lactose to lactulose in the presence of the magnesium compound and the sodium hydrosulfite to produce a reaction solution containing the lactulose.

4,536,222

METHOD FOR REMOVING OR RETARDING PARAFFIN BUILDUP ON SURFACES IN CONTACT WITH NATURAL GAS

William J. Settineri, Midland, Mich.; John G. Charles, Westerville, Ohio; Jerald J. Hinkel, Houston, Tex., and Bradley P. Malone, Kalkaska, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Continuation-in-part of Ser. No. 518,896, Aug. 1, 1983, Pat. No. 4,455,175. This application May 11, 1984, Ser. No. 609,383

The portion of the term of this patent subsequent to Jun. 19, 2001, has been disclaimed.

Int. Cl.³ B08B *7/04*; E21B *37/06*

U.S. Cl. 134—5 **13 Claims**

1. A method for retarding deposition of paraffins on the surfaces of equipment in contact with natural gas containing such paraffins which comprises contacting the surface with a sulfur trioxide-containing fluid and thereafter rinsing the surface.

4,536,223

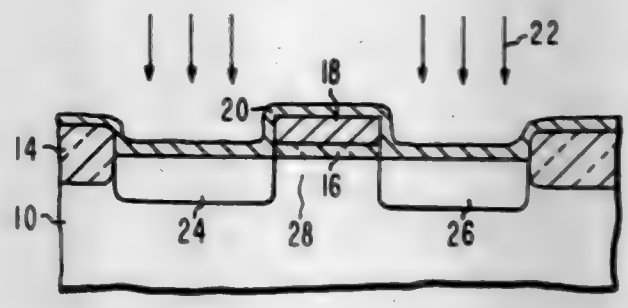
METHOD OF LOWERING CONTACT RESISTANCE OF IMPLANTED CONTACT REGIONS

Thomas J. Faith, Jr., Lawrenceville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Mar. 29, 1984, Ser. No. 594,825

Int. Cl.³ H01L *21/265*

U.S. Cl. 148—1.5 **6 Claims**



1. A method of making a low resistance contact to a body of semiconductor material which includes the step of

removing any oxide from at least a portion of a surface of a body of semiconductor material while said body is in a chamber from which substantially all oxygen is removed,

immediately depositing on said surface without exposing the surface to oxygen a layer of aluminum which is substantially free of oxygen and which is electrically innocuous in the material of the semiconductor body while said body is maintained in said oxygen free chamber,

then implanting into the semiconductor body through said layer ions of a desired conductivity type to form in said body a region of relatively high conductivity, and then annealing said body to activate said ions.

4,536,224

SALT BATH FOR THE CURRENTLESS PRODUCTION OF WEAR RESISTANT BORIDE LAYERS

Hans-Hermann Beyer, Kahl; Ulrich Baudis, Hanau; Peter Biberbach, Rodenbach, and Wolfgang Weber, Karlstein, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Jul. 12, 1984, Ser. No. 630,302

Claims priority, application Fed. Rep. of Germany, Jul. 26, 1983, 3326863

Int. Cl.³ C23C *9/40*

U.S. Cl. 148—6.11 **17 Claims**

1. A salt bath containing alkali metal halide, alkaline earth metal halide or a mixture of alkali metal and alkaline earth metal halide and suitable for the currentless production of a wear-resistant boride coating of Fe_2B on metallic workpieces, said bath also containing boron monofluoride in a gaseous state or a compound which under the conditions of the operation of the bath forms boron monofluoride intermediately by a reaction of $(BOF)_3$ with a boriding agent.

4,536,225

SURFACE TREATMENT OF METAL

Richard A. Cayless, Wandsworth, and Prem S. Thukral, Sunbury-on-Thames, both of England, assignors to The British Petroleum Company p.l.c., London, England

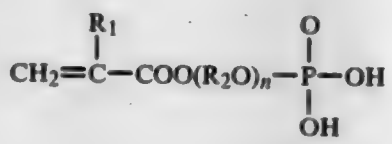
Filed Aug. 1, 1984, Ser. No. 636,599

Claims priority, application United Kingdom, Aug. 6, 1983, 8321253

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.15 R **16 Claims**

1. A method of inhibiting corrosion of a metal surface comprising applying to the metal surface an organic solvent in which is dissolved a phosphate monoester of a hydroxyalkyl acrylate or alkylacrylate which phosphate monoester has the general formula;



where

R_1 is hydrogen, a methyl group or an ethyl group

R_2 is an alkyl group having from 2 to 10 carbon atoms and n is a positive integer from 1 to 20.

4,536,226

METHOD OF MANUFACTURING A SHADOW MASK FOR A COLOR CATHODE RAY TUBE

Yasuhisa Ohtake; Hiroshi Tanaka, and Koichiro Oka, all of Saitama, Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 25, 1984, Ser. No. 603,867

Claims priority, application Japan, Apr. 27, 1983, 58-72935

Int. Cl.³ C21D *8/04*; C22C *38/08*

U.S. Cl. 148—12 C **11 Claims**

1. A method of manufacturing a shadow mask from a sheet having a polycrystalline structure of an alloy comprising iron and nickel, the sheet having a yield strength, said method comprising the steps of:

perforating the sheet;

annealing the perforated sheet at a first predetermined temperature effective to reduce the yield strength, the first predetermined temperature being between a recrystallization temperature and a melting temperature of the alloy; and

pressing the annealed sheet while maintaining the sheet at a second predetermined temperature effective to further reduce the yield strength, the second predetermined temperature being lower than the first predetermined temperature and being maintained during at least part of said step of pressing.

4,536,227

METHOD OF AND APPARATUS FOR PRODUCING A CONTROLLED UNSATURATED VAPOR PRESSURE OF A VOLATILE LIQUID IN A HEAT TREATMENT CHAMBER

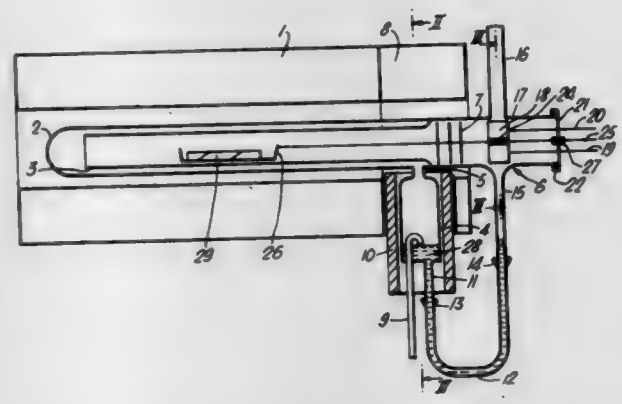
John C. Brice, Copthorne Bank, and Colin R. Brough, Blackburn, both of England, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Dec. 9, 1983, Ser. No. 560,046

Claims priority, application United Kingdom, Dec. 22, 1982, 8236059

Int. Cl.³ C22F *1/02*

U.S. Cl. 148—13.1 **10 Claims**



1. A method of producing a controlled unsaturated vapour pressure of a volatile liquid at a temperature T_t in a heat treatment chamber, said method comprising the steps of passing a stream of a carrier gas through a vapouriser containing the volatile liquid at a temperature T_s, passing the mixture of the carrier gas and the vapour of the volatile liquid through the heat treatment chamber which is at the temperature T_t, leading the mixture of the carrier gas and the vapour of the volatile liquid from the heat treatment chamber to a condenser from which the carrier gas is vented to waste and in which condenser the volatile liquid is condensed at a temperature T_c, that the condensate is recycled through the vapouriser, that $T_t > T_s > T_c$, and that the volatile liquid in a tube through which the condensate passes from the condenser to the vapouriser fills the cross-section of a length of the tube.

4,536,228

CORROSION INHIBITION IN SINTERED STAINLESS STEEL

Timothy J. Treharne, East Grinstead, United Kingdom, assignor to Pemberton Sintermatic S.A., Switzerland

PCT No. PCT/GB82/00172, § 371 Date Feb. 3, 1983, § 102(e) Date Feb. 3, 1983, PCT Pub. No. WO82/04444, PCT Pub. Date Dec. 23, 1982

PCT Filed Jun. 9, 1982, Ser. No. 467,130

Claims priority, application United Kingdom, Jun. 9, 1982, 8117814

Int. Cl.³ C23F *7/10*

U.S. Cl. 148—6.15 R **9 Claims**

1. A process for the treatment of a sintered stainless steel element to enhance its corrosion resistance, the element being porous having pores with interior surfaces and for use in an environment in which aqueous acetic acid solution will be passed through the element, said process comprising the steps of:

(a) passing a preliminary flow of an aqueous acetic acid solution through the element in an amount sufficient to at least partially activate the interior surfaces of pores in the elements,
(b) terminating the preliminary flow of acetic acid, then
(c) passing a flow of a phosphate containing solution through the element within a period of time short enough after terminating the flow of acid to prevent excessive accumulation of corrosion products within the pores to generate a corrosion resistant coating on the previously activated interior surfaces of the element, and
(d) terminating the flow of phosphate containing solution,
(e) said corrosion resistant coating being effective to resist corrosion by subsequent flows of aqueous acetic acid solution through the element.

4,536,229

FE-NI-MO MAGNET ALLOYS AND DEVICES

Sungho Jin, Millington, and Thomas H. Tiefel, Piscataway, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 8, 1983, Ser. No. 550,000
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—31.55 **9 Claims**

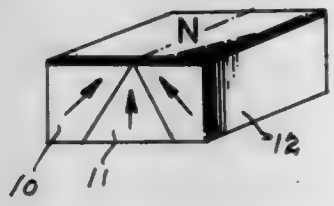
1. Device comprising a body of a magnetic alloy having a coercive force which is greater than or equal to 40 oersteds and a magnetic squareness which is greater than or equal to 0.6,
said device being characterized in that
said alloy comprises Fe, Ni, and Mo in a combined amount which is greater than or equal to 95 weight percent of said body,
Ni content of said alloy being in the range of 16–30 weight percent of said combined amount,
Mo content of said alloy in the range of from 3–10 weight percent of said combined amount, and
each of the elements Si, Al, Cu, V, Ti, Nb, Zr, Ta, Hf, and W being present in said alloy in an amount which is less than 0.5 weight percent of said combined amount.

4,536,230

ANISOTROPIC PERMANENT MAGNETS

Vaclav Landa, and Zdenek Blazek, both of Prague, Czechoslovakia, assignors to Stani vyzkumny ustav materialu, Prague, Czechoslovakia

Continuation-in-part of Ser. No. 129,428, Mar. 12, 1980, abandoned. This application Jun. 17, 1981, Ser. No. 274,413
Claims priority, application Czechoslovakia, Mar. 13, 1979, 1661-70
Int. Cl.³ H01F *1/04*
U.S. Cl. 148—31.57 **18 Claims**



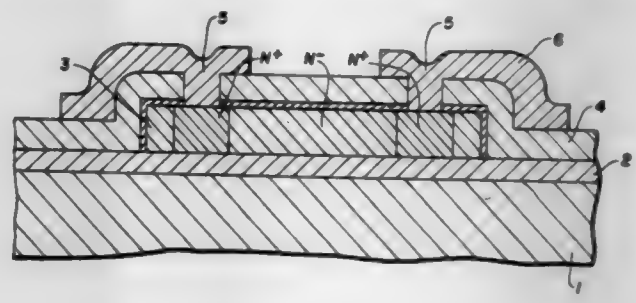
1. A rigid permanent magnet made of metallic or ceramic material without a plastic matrix, said magnet having within at least a part thereof an anisotropic magnetic structure, wherein the direction of the axes of easy magnetization have a convergent orientation, said orientation concentrating the magnetic flux in the surface region of the pole of the magnet into a smaller cross-section than that of the magnet, and the orientation lines extending from said pole point toward the pole of opposite polarity the area or the center of which are disposed at the opposite magnet side.

4,536,231

POLYSILICON THIN FILMS OF IMPROVED ELECTRICAL UNIFORMITY

Alan J. Kasten, Palm Bay, Fla., assignor to Harris Corporation, Melbourne, Fla.

Division of Ser. No. 435,221, Oct. 19, 1982, Pat. No. 4,466,179. This application May 22, 1984, Ser. No. 612,877
Int. Cl.³ H01L *21/265, 21/263*
U.S. Cl. 148—33.1 **5 Claims**



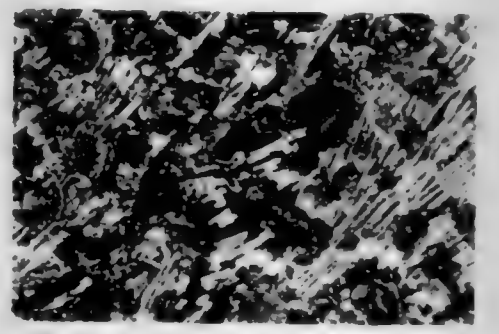
1. A polysilicon thin film semiconductor device precursor of reduced anisotropy, comprising:
a substrate with a polysilicon thin film deposited thereover which film has been scanned a first time by a laser beam in a first direction to produce relatively long, thin crystallites having a long axis oriented generally parallel to the direction of said first scan, and scanned a second time by a laser beam in a direction at a bias to said first direction, whereby the recrystallized crystallites of the polysilicon thin film are caused to grow in the direction of said second scanning.

4,536,232

EROSION AND CORROSION RESISTANT CAST IRON ALLOY CONTAINING CHROMIUM, NICKEL AND MOLYBDENUM

Igor Y. Khandros, Hoboken, and Hugo R. Larson, Mahwah, both of N.J., assignors to Abex Corporation, New York, N.Y.

Filed Nov. 10, 1983, Ser. No. 550,496
Int. Cl.³ C22C *38/42*
U.S. Cl. 148—35 **2 Claims**



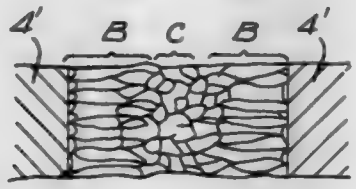
1. A cast iron alloy in percent by weight consisting essentially of about 1.2 to 2 carbon, 1–4 nickel, 1–4 molybdenum, 24–32 chromium, up to 1 copper, and up to about one percent of a microalloying element selected from the group consisting to titanium, zirconium, boron, niobium and rare earth elements, balance substantially iron, characterized by a matrix substantially entirely of tempered martensite balance, if any, austenite, in which matrix is dispersed both primary chromium-rich carbides and ferrite islands but substantially no secondary carbides.

4,536,233

COLUMNAR CRYSTAL PERMANENT MAGNET AND METHOD OF PREPARATION

Itaru Okonogi, and Tatsuya Shimoda, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Continuation-in-part of Ser. No. 330,977, Dec. 15, 1981, abandoned. This application Nov. 30, 1983, Ser. No. 556,751
Claims priority, application Japan, Dec. 16, 1980, 57-177892
Int. Cl.[3] H01F *1/02*
U.S. Cl. 148—101 25 Claims



1. A permanent magnet alloy ingot comprising an alloy of samarium (Sm) and cobalt (Co), copper (Cu), iron (Fe) and at least one element (M) selected from the group of elements consisting of zirconium (Zr), titanium (Ti), hafnium (Ha), tantalum (Ta), niobium (Nb) and vanadium (V), formed predominately of Sm_2Co_{17} crystals and having at least about 50 volume percent columnar crystals in the macrostructure of the alloy.

4,536,234

METHOD FOR REFINING MICROSTRUCTURES OF BLENDED ELEMENTAL POWDER METALLURGY TITANIUM ARTICLES

Daniel Eylon, Dayton, and Francis H. Froes, Xenia, both of Ohio, assignors to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jun. 5, 1984, Ser. No. 617,447
Int. Cl.[3] B22F *3/00*
U.S. Cl. 148—133 7 Claims





1. A method for improving the microstructure of an article made by powder metallurgy of blended elemental powder equivalent in bulk chemistry to a titanium alloy which comprises, in combination, the steps of:

a. beta-solution heat treating said article at a temperature approximately equal to the beta-transus temperature of the equivalent alloy;

b. cooling said article at a rate in excess of air cooling to room temperature;

c. annealing said article at a temperature in the approximate range of 10 to 20% below said beta-transus temperature for about 4 to 36 hours; and,

d. air cooling said article to room temperature.

4,536,235

COMBUSTION INHIBITORS ON A BASE OF OXYGENATED POLYURETHANE ELASTOMER WHICH CONTAINS FIBERS FOR THE DOUBLE BASE PROPELLANT

André Lelu; Bruno Gonthier, both of Saint-Medard en Jalles; Jean Grignon, Pessac, and Jean-Michel Tauzia, Blanquefort, all of France, assignors to Societe Nationale Des Poudres et Explosifs, Paris, France

Filed Dec. 20, 1983, Ser. No. 563,355
Claims priority, application France, Dec. 28, 1982, 82 21880
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.4 9 Claims

1. A gasifiable inhibitor for a double base propellant which comprises a polyurethane elastomer having in chemically combined form a product which is an aliphatic polyester polyol or an aliphatic polyether polyol, or a mixture thereof which product contains 2–6 hydroxyl groups per molecule, an aliphatic polyisocyanate, at least one organic gasifiable charge and an aliphatic plasticizer, and 0.1–10 parts by weight of mineral fibers or thermostable organic fibers of length between 0.1 mm and 15 mm per 100 parts inhibitor.

4,536,236

SELECTING HYDROXY-TERMINATED POLYBUTADIENE FOR HIGH STRAIN PROPELLANTS

Lawrence W. Haas, Sandy, Utah, assignor to Hercules Incorporated, Wilmington, Del.

Filed Apr. 6, 1983, Ser. No. 482,667
Int. Cl.[3] C06B *45/10*
U.S. Cl. 149—19.92 4 Claims

1. In selection of hydroxy-terminated polybutadiene from commercial lots thereof for manufacture of propellants for rocket motors with specified physical characterisitics wherein said manufacture includes crosslinking said hydroxy-terminated polybutadiene with an isocyanate crosslinking agent reactive therewith and said hydroxy-terminated polybutadiene is made with a catalyst such as hydrogen peroxide, an improved quality control procedure adapted to distinguish between hydroxy-terminated polybutadiene in commercial lots thereof that are otherwise like appearing, but sufficiently chemically different to yield propellants of diverse strain characteristics, said improved quality control procedure comprising:

selecting samples of said hydroxy-terminated polybutadiene from each of said commercial lots prior to manufacture of propellants therewith, said samples being of sufficient size to perform an NMR analysis on each;

performing said NMR analysis on each of said samples to determine whether there is more or less than about 3% of combined cis and trans epoxy groups based on the total of cis-, trans and vinyl-hydroxy groups and cis- and trans-epoxy groups in each of said samples;

using only hydroxy-terminated polybutadiene having less than about 3% of combined cis and trans epoxy for manufacture of high strain propellants.

4,536,237

ALUMINOTHERMIC REDUCTION REACTION MIXTURE

Robert H. Kachik, Washington Township, Westmoreland County, Pa., assignor to United States Steel Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1984, Ser. No. 572,110
Int. Cl.[3] C06B *35/00*
U.S. Cl. 149—37 6 Claims

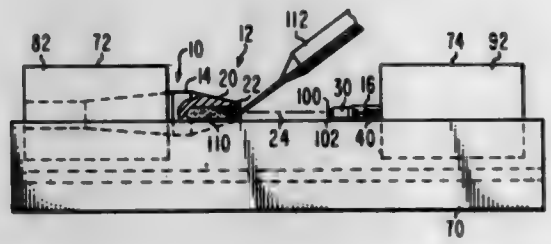
1. An aluminothermic reduction reaction mixture, which produces only a slag phase, consisting essentially of a particulate admixture of metallic aluminum, manganese dioxide and alumina having an aluminum to manganese dioxide ratio of approximately 0.21 and an alumina content of from 15 to 30 weight percent.

4,536,238

METHOD AND APPARATUS FOR ALIGNING A CHUCK FOR HOLDING AN INFORMATION CONTAINING DISC STYLUS

William A. Dischert, Springfield, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 29, 1984, Ser. No. 584,592
Int. Cl.[3] B25B *11/02*
U.S. Cl. 156—64 9 Claims



1. A chuck for holding a stylus comprising:
(a) a body having a shank associated therewith, said shank being adaptable to a machine tool for effecting movement of said body with respect to a datam;
(b) stylus holding means for holding said stylus in alignment with said datam, said stylus holding means having a gripping end for gripping and holding said stylus and a base end for attaching to said body at an end opposite said shank;
(c) filler means rigidly attaching said base end of said stylus holding means to said end of said body opposite said shank.

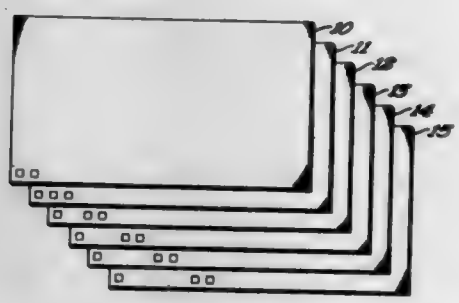
7. A method of assembling a stylus holding tube to a chuck body wherein said stylus holding tube includes an elongated tube having a first end for gripping a stylus and a second end opposite thereto and wherein said chuck body includes a shank formed with respect to an axis of rotation and a hole formed in said chuck body opposite said shank, comprising the steps of:
(a) aligning said stylus holding tube with respect to said axis of rotation of said chuck body;
(b) inserting said second end of said elongated tube into said hole of said chuck body while maintaining said alignment;
(c) inserting a matrix material into said hole of said chuck body; and
(d) causing said matrix material to flow around and to contact a portion of both of said chuck body and said second end of said stylus holding tube.

4,536,239

MULTI-LAYER CIRCUIT BOARD INSPECTION SYSTEM

Robert F. Benson, San Jose, Calif., assignor to Nicolet Instrument Corporation, Madison, Wis.

Filed Jul. 18, 1983, Ser. No. 514,624
Int. Cl.[3] G01B *15/00*
U.S. Cl. 156—64 8 Claims



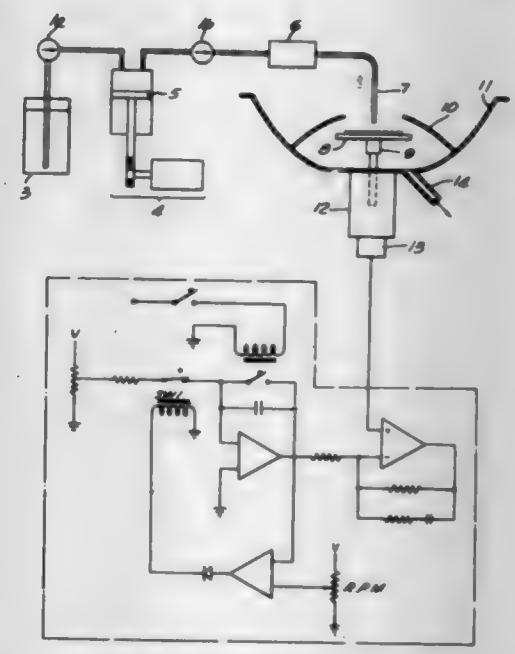
1. An inspection method for use in the fabrication of circuit boards of more than two, precisely registered layers comprising the steps of:
forming at least two targets on each layer to be precisely registered, each target corresponding in position to a target of at least one other layer and the targets of each layer defining a pattern that is unique to that layer;
viewing the registration of each target of a layer relative to a test target pattern via radiography techniques.

4,536,240

METHOD OF FORMING THIN OPTICAL MEMBRANES

Ray Winn, Studio City, Calif., assignor to Advanced Semiconductor Products, Inc., Santa Cruz, Calif.

Division of Ser. No. 326,489, Dec. 2, 1981, Pat. No. 4,378,953.
This application Feb. 22, 1983, Ser. No. 468,468
Int. Cl.[3] B29D *7/02*
U.S. Cl. 156—74 33 Claims



1. A method for reliably and reproducibly making an optical membrane capable of being edge-supported, and capable of being removed, substantially intact, from the rotatable surface on which said membrane is formed, and having a predetermined thickness in the range of about 0.5 about 10 micrometers, with a precision of plus or minus about 2%, edge-to-edge variations in said thickness of less than about 2% over a distance of at least about 2.5 centimeters, and a capacity to transmit an average of at least about 91% of incident light with less than about 2% combined absorption and diffraction losses of said incident light over a span of wavelengths of incident light in the range of about 260 to about 1,000 nanometers, said method comprising dispensing a polymer/solvent mixture onto a rotatable supporting surface; spinning said rotatable surface under conditions sufficient to form said membrane from said polymer, said conditions being selected from the following: the viscosity of said polymer/solvent mixture, the rate of rotational acceleration of said rotatable supporting surface, and the final speed of rotation of said surface; and removing said optical membrane, after formation, from said rotatable surface.

4,536,241

METHOD OF MAKING A TITANIUM DIOXIDE OXYGEN SENSOR ELEMENT WITH FAST TRANSIENT RESPONSE

Eleftherios M. Logothetis, Birmingham, and William J. Kaiser, Farmington Hills, both of Mich., assignors to Ford Motor Company, Dearborn, Mich.

Filed Apr. 27, 1984, Ser. No. 604,662
Int. Cl.[3] B05D *5/12*; G01N *27/12*
U.S. Cl. 156—89 5 Claims

1. A method of making a titanium dioxide element which can be used as an oxygen sensing element, which method comprises the steps of:
selecting at least a pair of electrically conductive leads, said leads being formed of a material which is resistant to thermal degradation at temperatures normally found in

exhaust gases from operation of an internal combustion engine;

placing said pair of leads in a position generally close to one another with a slurry bridgeable space therebetween;

applying to said pair of spaced leads a titanium dioxide containing slurry having the following characteristics: said slurry being formed on a volume basis of 10–50% titanium dioxide, 5–15% of an organic heat decomposable binder, and 85–35% of an organic solvent, and said titanium dioxide in said slurry consisting of particles of substantially rutile phase titanium dioxide having a size range from 0.5–10 micrometers and a surface area of 0.1–3 square meters per gram (m^2/g), whereby when a measured amount of said slurry is applied to the pair of spaced leads, the surface tension of said slurry draws said slurry into a compact, generally cylindrical shape about the pair of spaced leads;



drying said slurry applied to said pair of spaced leads so that said leads and remaining of said slurry attached thereto may be subjected to a heating and sintering operation;

heating and sintering said pair of spaced leads and remaining of said slurry attached thereto so that said titanium dioxide part les contained in said slurry sinter together to form a titanium dioxide oxygen sensing element bridging said bridgeable space between said pair of spaced leads, said titanium dioxide sensing elements having a thickness in a range of 20–200 micrometers and a density in a range of 60–80% of the theoretical value of density of titanium dioxide which is 4.26 grams per cubic centimeter, whereby said titanium dioxide oxygen sensing element is characterized as a fast responding element in sensing ambient changes from oxygen-rich to oxygen-lean conditions and vice-versa.

4,536,242

METHOD AND APPARATUS FOR RETREADING VEHICLE TIRES

Ninneh Gripenholt, Lidköping; Benny Berggren, Vällingby, and Göran Böling, Täby, all of Sweden, assignors to Q & Q Retreading System AB, Lipkoping, Sweden

Filed May 9, 1983, Ser. No. 492,734

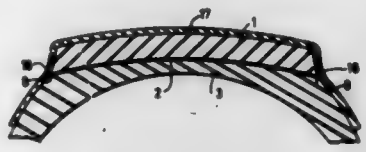
Claims priority, application Sweden, May 12, 1982, 8202979

Int. Cl.³ B29H *17/36*

U.S. Cl. 156—96 **3 Claims**

1. A method of retreading vehicle tires in a pressurized atmosphere at a generally ambient temperature in the absence of a prevulcanization step comprising the steps of, providing an assembly comprising an unvulcanized tie-gum layer between a prevulcanized tire carcass and a prevulcanized tread, locating a microwave applicator above the tread and emitting microwaves to the assembly and thereby to create heat energy in the assembly to cause the tie-gum layer to be vulcanized, and effecting localized heating of the longitudinal edges of the tie-gum layer by attaching material with a high dissipation factor at the outer portions of the assembly adjacent the longitudinal edges of the tie-gum layer to compensate for cooling losses from the edges of the tie-gum layer, which material is retained throughout the vulcanization of the tie-gum layer thereby assuring vulcanization of said tie-gum layer at the edges by compensating for cooling losses at the tie-gum edges





and assuring a generally flat vulcanizing temperature gradient from edge to edge of the tie-gum layer.

4,536,243

METHOD AND APPARATUS FOR MAKING A METAL CAN

Tsuneo Imatani, Yokosuka; Hisakazu Yasumuro; Michio Watanabe, both of Yokohama; Hideo Kurashima, Yokosuka, and Kazuhisa Ishibashi, Tokyo, all of Japan, assignors to Toyo Seikan Kaisha, Ltd., Tokyo, Japan

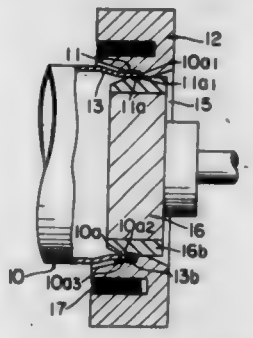
PCT No. PCT/JP83/00072, § 371 Date Nov. 2, 1983, § 102(e) Date Nov. 2, 1983, PCT Pub. No. WO83/03066, PCT Pub. Date Sep. 15, 1983

PCT Filed Mar. 8, 1983, Ser. No. 552,057

Claims priority, application Japan, Mar. 8, 1982, 57-35181; Mar. 19, 1982, 57-42521; Apr. 6, 1982, 57-56069

Int. Cl.³ B29C *19/04*

U.S. Cl. 156—274.6 **10 Claims**



1. A method of making a metal can having an annular seam formed by joining the open end portions of first and second can sections via an adhesive layer, said method comprising the steps of reducing the diameter of the open end portion of the first can section to provide a reduced diameter portion having an outside diameter substantially equal to the inside diameter of the open end portion of the second can section, heat bonding a piece of thermoplastic tape onto the outer surface of the reduced diameter portion of the first can section so as to leave a portion projecting therefrom, folding the projecting portion of the tape substantially radially inwardly of the first can section to cause part of the projecting tape portion to come into contact with the edge of the open end portion of the first can section, further folding the rest of the projecting tape portion into forced contact with the inner surface of the open end portion of the first can section by inserting a mandrel thereinto, causing thermal adhesion of the tape to the edge and inner surface of the open end portion of the first can section by heating the open end portion of the first can section to more than a temperature at which the tape is fusible, while part of

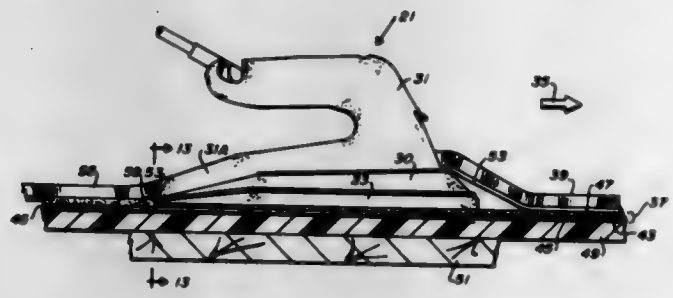
the tape is held pressed against the inner surface of the open end portion of the first can section, inserting the reduced diameter portion of the first can section into the open end portion of the second can section, and causing thermal adhesion of that part of the tape which overlies the outer surface of the reduced diameter portion of the first can section to the inner surface of the open end portion of the second can section to form the annular seam by heating at least the open end portion of the second can section.

4,536,244

METHODS AND APPARATUS FOR LOCKING THE FACING EDGES OF CARPET BACKINGS DIRECTLY TOGETHER AT THE SEAM DURING A FACE SEAMING OPERATION WITH A HOT MELT ADHESIVE TAPE

John J. Greci, Livermore, and Merle C. Hoopengardner, Lafayette, both of Calif., assignors to Orcon Corporation, Union City, Calif.

Filed Jul. 2, 1984, Ser. No. 626,658
Int. Cl.[3] B31F *5/06;* B65H *69/02;* D06F *75/08*
U.S. Cl. 156—304.4 **26 Claims**



1. A carpet seaming iron of the kind used for making a face seam between two pieces of carpet by heating a layer of hot melt adhesive on a carpet seaming tape positioned beneath the carpet backings at the seam and extending along the length of the seam, said iron comprising,

baseplate means having a lower surface engagable with the hot melt adhesive layer on the tape for heating the hot melt adhesive to a molten condition as the iron is moved along the tape,

handle means for manually moving the iron along the tape and beneath the carpet backings at the seam,

surface means on the upper surface of the iron and engagable with the undersides of the carpet backings for progressively lifting the backings from the tape at the front of the iron, as the iron is moved along the tape, and then lowering the backings onto the layer of molten adhesive at the back of the iron and,

groove means formed in the lower surface of the baseplate means and including a longitudinally extending, center groove having a length, depth, width, and alignment effective to form, in the layer of molten adhesive produced behind the moving iron, a raised center bead of a sufficient height and stiffness to coat the side edges of the carpet backings with hot melt adhesive as the undersides of the carpet backings are lowered onto the layer of molten adhesive and to thereby cause said side edges of the backings to be locked directly together through the adhesive interposed between said side edges.

17. A method of making a face seam between two pieces of carpet by heating a layer of hot melt adhesive on a carpet seaming tape which is positioned beneath the carpet backings at the seam and which extends along the length of the seam, said method comprising,

heating the hot melt adhesive to a molten condition,

simultaneously forming a raised center bead of molten adhesive of sufficient height and stiffness to coat the side edges of the carpet backings with the molten hot melt adhesive,

coating the side edges of the carpet backings with the molten adhesive from the raised center bead, and

completing the face seam by engaging the adhesively coated side edges of the carpet backings in contact with each other while engaging the undersides of the carpet backings with the layer of molten adhesive on the underlying tape and maintaining the engagement until the molten hot melt adhesive cools to a solid condition to thereby cause the side edges of the backings to be locked directly together through the adhesive interposed between said side edges.

4,536,245

LOW FORMALDEHYDE EMISSION UREA-FORMALDEHYDE RESINS CONTAINING A MELAMINE ADDITIVE

David W. Shiau, Louisville, Ky., and Eric Smith, New Albany, Ind., assignors to Borden, Inc., Columbus, Ohio

Filed Oct. 11, 1983, Ser. No. 540,305
Int. Cl.[3] C09J *5/02*
U.S. Cl. 156—307.3 **36 Claims**

1. A process for adhesively securing a first item to a second using a curable melamine-urea-formaldehyde base resin, comprising

disposing between a first item and a second item a binding amount upon curing of a curable melamine-urea-formaldehyde base resin comprising a melamine-urea-formaldehyde condensate that has a final molar ratio of formaldehyde to urea of 1.3:1 to 0.9:1, a final molar ratio of a formaldehyde to urea-equivalent of 1.3:1 to 0.7:1, and a melamine content of from 0.15% to 40% by weight of said condensate, dry solids basis, the melamine being incorporated in the resin, wherein said condensate is formed from an initial reaction mixture comprising urea and formaldehyde and having a molar ratio of formaldehyde to urea of from 3:1 to 1:1, that has undergone a methylolation reaction at an alkaline pH, been adjusted in pH to 6.0 to 8.3, had any remaining amount of urea and melamine added, then been condensed,

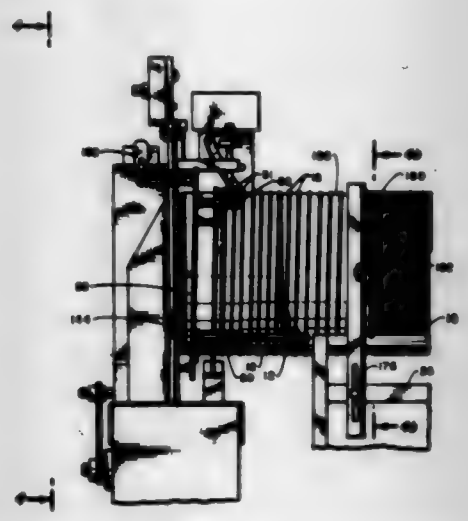
then curing said resin, said cured resin being characterized by a formaldehyde emission, as determined by the two hour desiccator procedure of the National Particleboard Association, not in excess of about 0.4 micrograms per ml.

4,536,246

FLEXIBLE DUCT FORMING APPARATUS

Hugh K. McGuire, 5220 Satsuma, North Hollywood, Calif. 91601

Continuation-in-part of Ser. No. 161,425, Jun. 20, 1980, Pat. No. 4,351,682. This application Sep. 27, 1982, Ser. No. 423,669
Int. Cl.[3] B65H *81/00*
U.S. Cl. 156—429 **27 Claims**



1. A flexible duct forming apparatus comprising:

a base;

a mandrel;

support means on said base for rotatably supporting said mandrel;

drive means for rotatably driving said mandrel; said drive means comprising;
a pinion gear mounted on said base,
a gear mounted on the rear of said mandrel;
motor means for driving said pinion gear;
said mandrel support means adapted to move said mandrel to bring said mandrel gear in engagement with said pinion gear;
flexible strip material feed means for feeding flexible strip material to said mandrel;
wrapping means for wrapping said flexible strip onto said mandrel in a helical path with adjacent wraps having overlapping edges;
wire feed means comprising;
wire deforming means for deforming said wire to produce a predetermined coil diameter,
wire guide means forming a substantially fixed helical path of constant pitch and diameter for guiding and holding said wire on said substantially fixed helical path from said wire deforming means to between the overlapping edges of said flexible strip material,
sealing means for sealing the overlapping edge of said flexible strip material to encapsulate said wire whereby flexible wire reinforced duct is continuously formed on said mandrel;
arcuate guide means for guiding completed duct off said mandrel;
said guide means constructed and arranged to ride in the depression between adjacent revolutions of the reinforcing wire to stretch completed duct as it is comes off the mandrel thereby testing the bond at the overlapping edges of said flexible material.

4,536,247

METHOD AND APPARATUS FOR FOIL-CAPPING BOTTLES

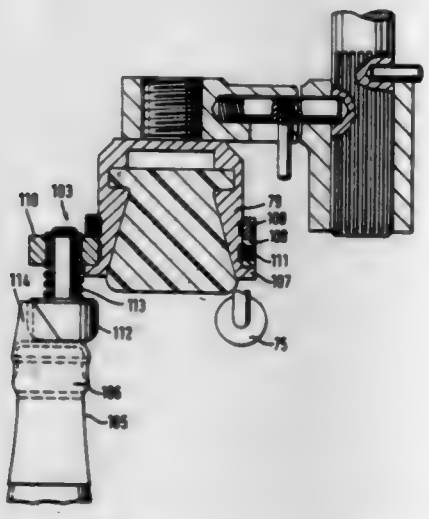
Rainer Buchholz, Düsseldorf; Josef Tomashauser, Tönisvorst; Rudolf Zodrow, Düsseldorf, and Hans-Werner Mohn, Kaarst, all of Fed. Rep. of Germany, assignors to Jagenberg AG, Duaseldorf, Fed. Rep. of Germany

Division of Ser. No. 314,335, Oct. 23, 1981, Pat. No. 4,414,056. This application Sep. 16, 1983, Ser. No. 533,385

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1980, 3046615; Feb. 11, 1981, 3104807

Int. Cl.³ B65C *3/20, 9/36*

U.S. Cl. 156—477.1 **2 Claims**



1. A method for the foil-capping of bottles with a patch of metal foil having an area projecting downwardly beyond the neck of the bottle and an adhesive back, comprising
(a) adhering each patch to the neck of a bottle by its central area with the upper area of the foil projecting above the bottle neck,
(b) applying the laterally projecting patch ends so that they overlap one another, the upwardly projecting area of the patch thereby constituting a collar-like upstanding patch portion,
(c) folding down the collar-like upstanding patch portion over the top of the bottle neck in two steps and from opposite sides,
(d) simultaneously pressing down and smoothing the folded down patch area onto the top side and all about the circumferential margin adjacent thereto.

4,536,248

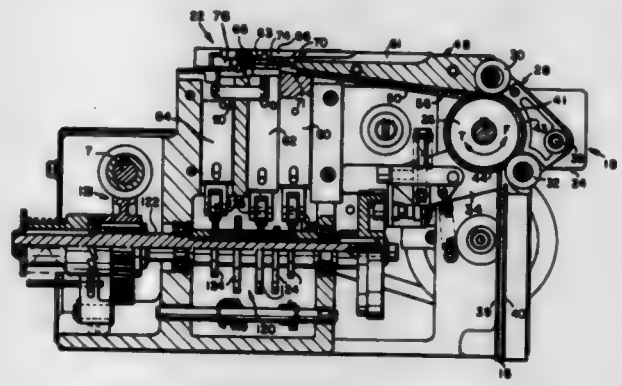
STRAPPING APPARATUS

Robert E. Bullington, Bear, Del., and James L. Discavage, Brookhaven, Pa., assignors to Cyklop International Emil Hoffman KG, Fed. Rep. of Germany

Filed Jul. 25, 1983, Ser. No. 516,928

Int. Cl.³ B26D *7/06*

U.S. Cl. 156—502 **12 Claims**



1. In a strapping apparatus, a front guide having a first passage therein and having its forward end pivotally connected to a rocker arm of a strap drive assembly; said rocker arm having feed and tension nips which cooperate with a feed wheel to propel the strap through said passage; whereby a substantially constant gap is provided between the region of exit of the strap from between said feed nip and said drive wheel and said front guide thereby minimizing jamming and abrading of the strap.

4,536,249

INTEGRATED CIRCUIT PROCESSING METHODS

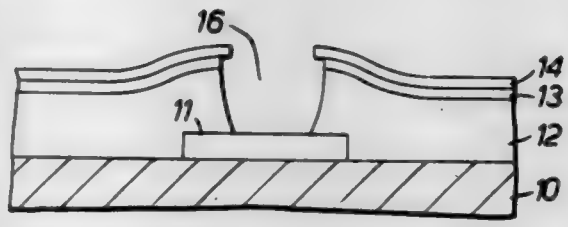
Stephen J. Rhodes, Northampton, England, assignor to Plessey Overseas Limited, Illford, England

Filed Apr. 6, 1984, Ser. No. 597,426

Claims priority, application United Kingdom, Apr. 6, 1983, 8309341

Int. Cl.³ B44C *1/22;* C03C *15/00, 25/06;* C23F *1/02*

U.S. Cl. 156—643 **11 Claims**



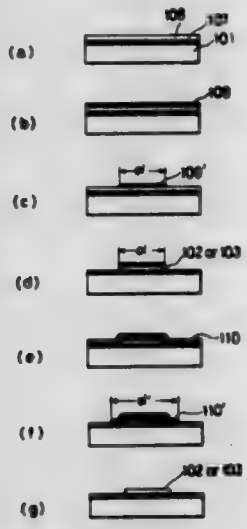
1. An integrated circuit processing method, comprising the steps of: providing on a substrate a first metallised conductor pattern, forming a layer of an insulating material over the first conductor pattern, coating the insulating layer with a parting layer of a material which is soluble in a solvent which does not damage the insulating layer or the conductor pattern, depositing over the parting layer a masking layer which is resistant to plasma etching, forming apertures in the masking layer at predetermined positions to define required via outlines, plasma etching through the masking layer to form vias in the insulating layer communicating with the first metallised conductor pattern, removing the masking layer by exposing the parting layer to the solvent, and forming onto the insulating layer a second level metallised conductor pattern to communicate with the first conductor pattern in the via.

4,536,250

METHOD OF MAKING LIQUID JET RECORDING HEAD

Masami Ikeda, Machida; Hiroto Matsuda, Ebina; Makoto Shibata, and Hiroto Takahashi, both of Hiratsuka, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 13, 1984, Ser. No. 600,150
Claims priority, application Japan, Apr. 20, 1983, 58-69586
Int. Cl.³ C23F *1/02*; B44C *1/22*; C03C *15/00, 25/06*
U.S. Cl. 156—651 4 Claims



1. A method of making a liquid jet recording head with a liquid discharge section, including orifice means for discharging liquid to form flying droplets thereof and liquid passage means communicating with said orifice means and having a thermally acting portion for causing thermal energy to act on the liquid to form said liquid droplets, said thermally acting portion including a heat generating resistive portion on a substrate between at least one pair of opposed electrodes electrically connected with said heat generating resistive portion, said method comprising the steps of:

performing a first etching process including providing a first photoresist pattern having a predetermined width to cover a portion of a layer on said substrate and forming at least one of said electrodes and said heat generating portion by etching the exposed portion of said layer; and

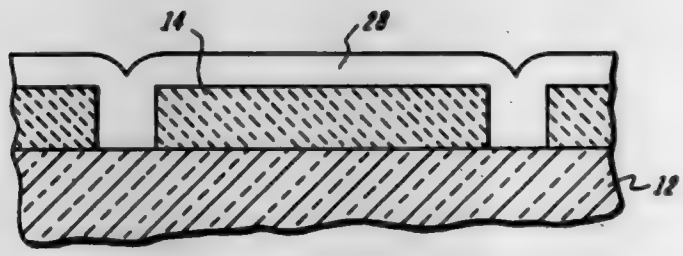
performing a second etching process including providing a second photoresist pattern having a width greater than the width of said first photoresist pattern to enable removal of remnants of said exposed portion of said layer not removed in said first etching process.

4,536,251

METHOD FOR ELIMINATING LASER-INDUCED SUBSTRATE FISSURES ASSOCIATED WITH CRYSTALLIZED SILICON AREAS

Anne Chiang, Cupertino, and William P. Meuli, Sunnyvale, both of Calif., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 4, 1984, Ser. No. 617,002
Int. Cl.³ B44C *1/22*; C03C *15/00, 25/06*; C30B *13/06*
U.S. Cl. 156—657 10 Claims



1. A method for eliminating laser induced substrate fissures associated with crystallized silicon areas comprising the steps of

providing a substrate,

depositing a layer of polycrystalline semiconductor material upon said substrate,

patterning said polycrystalline layer to form an array of areas,

depositing an encapsulating layer over said patterned polycrystalline layer,

applying thermal energy to said patterned polycrystalline layer for melting said areas and heating said substrate,

cooling said areas and said substrate to control resolidification of said areas into single crystals,

annealing said areas and said substrate in a heated oxidizing atmosphere, and

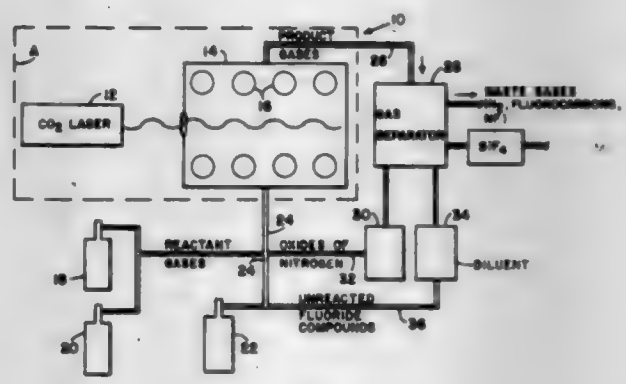
removing said encapsulating layer by etching.

4,536,252

LASER-INDUCED PRODUCTION OF NITROSYL FLUORIDE FOR ETCHING OF SEMICONDUCTOR SURFACES

Joseph K. McDonald, Athens, Ala., and James A. Merritt, Pulaski, Tenn., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Feb. 7, 1985, Ser. No. 699,283
Int. Cl.³ H01L *21/265*
U.S. Cl. 156—662 5 Claims



1. A method for laser-induced production of gaseous nitrosyl fluoride for the continuous etching of a semiconductor silicon wafer by gaseous nitrosyl fluoride, said method comprising:

(i) filling a laser reaction cell with a gaseous mixture of a catalyst compound of an oxide of nitrogen selected from the group of nitrogen oxide compounds consisting of NO, N_2O, and NO_2 and a fluoro compound selected from the group of fluoro compounds consisting of NF_3 and N_2F_4, said catalyst compound introduced into said laser reaction cell in a ratio of about 60 torr to about 45 torr of said fluoro compound,

(ii) irradiating said gaseous mixture with a power level from about 25 to about 150 watts of a cw CO_2 tunable laser, tuned to a radiation line that is resonant with an absorption band of said fluoro compound, said irradiating being carried out for a predetermined time period based on a predetermined power level of said laser to thereby achieve a continuous production of gaseous nitrosyl fluoride,

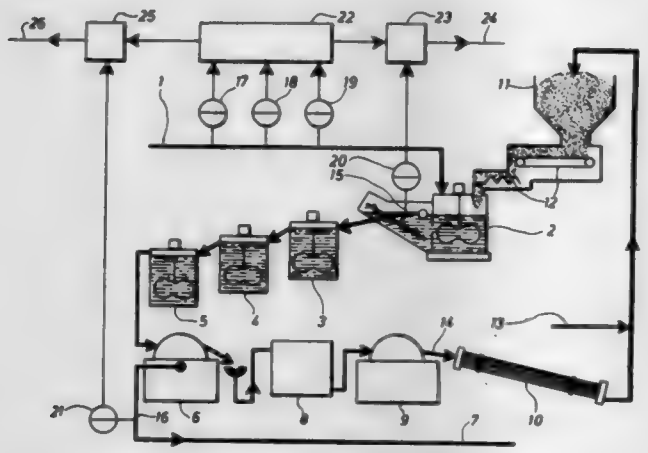
(iii) exposing a semiconductor silicon material to said gaseous nitrosyl fluoride to react said gaseous nitrosyl fluoride with the exposed semiconductor silicon material to achieve etching while producing SiF_4 and NO from said reacting; and,

(iv) recovering said etched semiconductor silicon material, said SiF_4, and said NO.

4,536,253
PROCESS FOR CONTROLLING THE PROPERTIES OF WHITE LIQUOR

Per M. Bertelsen, Allerod, Denmark, assignor to Kemotron A/S, Lyngby, Denmark

Filed Sep. 24, 1982, Ser. No. 423,254
Claims priority, application Denmark, Sep. 25, 1981, 4242/81
Int. Cl.[3] D21C *11/12*
U.S. Cl. 162—30.11 12 Claims



1. A method of controlling the causticizing process of green liquor in the sulphate process, which produces an alkaline white liquor for pulping of wood, comprising:

(a) measuring immediately after the causticizing process, the value of the electric conductivity of the white liquor formed thereby;

(b) measuring immediately before said causticizing process, the value of the conductivity of the green liquor being fed into said process;

(c) numerically correlating the conductivity of said white liquor and said green liquor to obtain the reaction of carbonate value for said causticizing process by means of the mathematical equation (I)

$$\text{Reaction of Carbonate} = \frac{K_{Hv} - K_{Gr}}{f_1(TTA)}$$

wherein

$$f_1(TTA) = 4.694 \times 10^{-5} \times TTA^2 - 2.652 \times 10^{-2} TTA + 7.335 \frac{\text{mS/cm}}{\text{g/l}};$$

K_{Hv} and K_{Gr} are the conductivities of the white liquor and the green liquor, respectively and TTA is the total titratable alkali of the green liquor; and

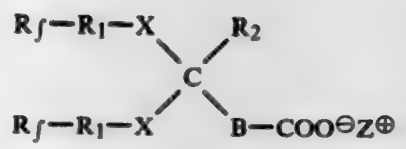
(d) adjusting the reaction of carbonate of said causticizing process based on the reaction of carbonate value obtained in step (c).

4,536,254
AMMONIUM AND AMINE SALTS OF DI-PERFLUOROALKYL GROUP CONTAINING ACIDS AND COMPOSITIONS AND USE THEREOF

Robert A. Falk, New York, and Istvan Borsodi, Yonkers, both of N.Y., assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Continuation of Ser. No. 515,755, Jul. 21, 1983, abandoned, which is a division of Ser. No. 292,326, Aug. 12, 1981, Pat. No. 4,419,298. This application Jul. 23, 1984, Ser. No. 632,686
Int. Cl.[3] D21H *3/08*
U.S. Cl. 162—135 16 Claims

1. An aqueous emulsion concentrate containing 5% to 40% by weight of a compound of the formula



wherein

R_f is perfluoroalkyl of 6 to 14 carbon atoms;

R_1 is straight or branched chain alkylene of 2 to 8 carbon atoms;

X is —S— or —SO_2—;

R_2 is hydrogen or alkyl of 1 to 4 carbon atoms;

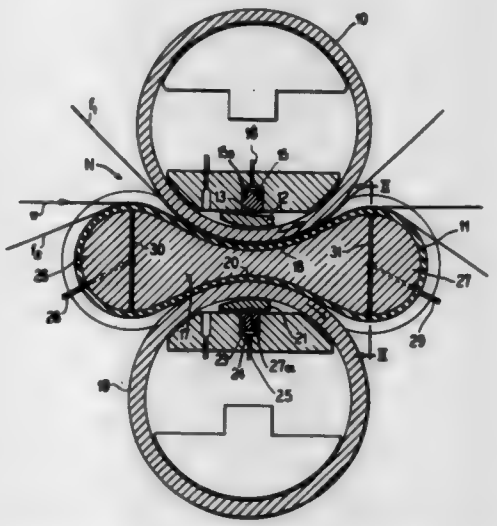
B is a covalent bond or alkylene of 1 to 6 carbon atoms; and

Z is the cation of mono-, di-, or tri-ethanolamine.

4,536,255
EXTENDED NIP PRESS

Edgar J. Justus, Beloit, Wis., assignor to Beloit Corporation, Beloit, Wis.

Filed Dec. 7, 1983, Ser. No. 558,837
Int. Cl.[3] D21F *3/00, 3/04, 3/08*
U.S. Cl. 162—358 3 Claims



1. A press mechanism for removing liquid from a traveling fibrous web comprising in combination:

a press nip formed between first and second members for receiving a traveling fibrous web therebetween;

the first of said members being a cylindrical press roll;

the second member being an endless belt wrapping a portion of the roll to form the nip;

a mandrel within the belt essentially of a size to fill the inside of the belt, said mandrel directly supporting the entire belt, and extending in a cross-machine direction and having a center portion with a first concave surface facing the nip and having a second concave surface opposite the first surface and having its ends thicker than the center portion;

means for providing lubricant between the mandrel and the belt;

means for receiving liquid pressed form the web in the nip;

a support roll in running engagement with the belt opposite the nip at said second concave surface with forces between the press roll and support roll providing pressing force within the nip;

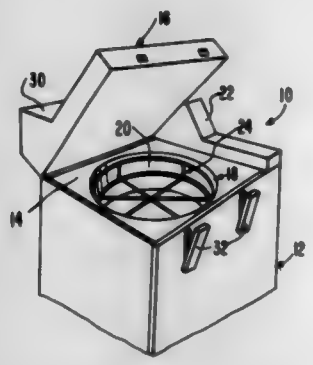
and means defining lubricant delivery passages extending through the mandrel and opening from the mandrel surface to provide said means for supplying lubricant between the mandrel and belt.

4,536,256

SOLVENT RECOVERY APPARATUS

Manuel G. Pastor, Berkeley, Calif., assignor to Recyclene Products, Inc., San Jose, Calif.

Filed Jul. 20, 1983, Ser. No. 516,008
Int. Cl.³ B01D *3/02*
U.S. Cl. 202—164 30 Claims



1. In a solvent recovery apparatus having means for providing a distilling mode and means for providing an emptying mode, including a tank, means for heating the interior of said tank, a plastic bag for placement within said tank interior such that the bag is designed, positioned and dimensioned for forming a substantially liquid tight barrier between contaminated solvent within said bag and said means for heating during said distilling mode and for enabling easy removal and disposal of said plastic bag with quantities of residue remaining in the bag from evaporation of said contaminated solvent during said emptying mode, the combination with said tank of:

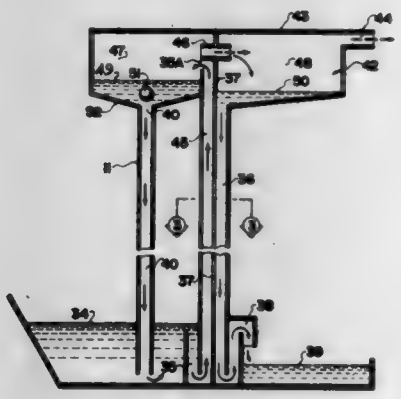
means for shaping the bag and for holding said bag against the inner surface of said tank during said distilling mode and for supporting said bag with said quantities of residue during said emptying mode.

4,536,257

DESALINATION SYSTEM

George Atwell, 891 St. Gabriel Ave., St. Norbert, Manitoba, Canada R3V 1E9

Filed May 3, 1982, Ser. No. 374,071
Claims priority, application United Kingdom, May 6, 1981, 8113804
Int. Cl.³ B01D *3/10*
U.S. Cl. 202—177 22 Claims



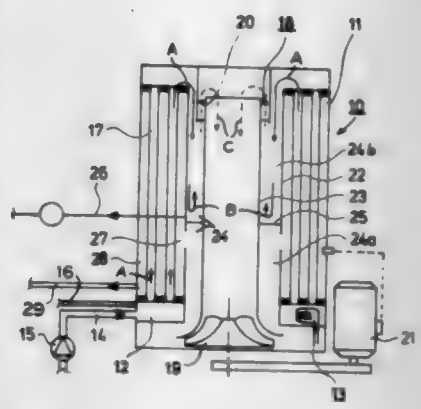
1. A desalination system comprising in combination a sealed evaporating chamber, intake and return means for connection to a supply of salt water for circulating salt water to said evaporating chamber for evaporation, a sealed condensing chamber, conduit means operatively extending between said evaporating chamber and said condensing chamber for transferring water vapour from said evaporating chamber to said condensing chamber, an external vacuum pump operatively connected to one of said evaporating and condensing chambers and designed so as in operation to maintain said chambers at a pressure closely approaching the vapour pressure of water at ambient temperature, fresh water outlet means operatively connected to said condensing chamber, and means for condensing said water vapour in said condensing chamber said condensing means consisting of fan means for transferring water vapour through said conduit means from said evaporating chamber to said condensing chamber whereby said water vapour condenses without contacting a cooling medium.

4,536,258

DISTILLING APPARATUS OPERATING ON THE THERMOCOMPRESSOR PRINCIPLE

Esko Huhta-Koivisto, Espoo, Finland, assignor to Oy Finn-Aqua Ltd., Finland

Filed May 18, 1984, Ser. No. 611,878
Claims priority, application Finland, May 20, 1983, 831797
The portion of the term of this patent subsequent to Dec. 20, 2000, has been disclaimed.
Int. Cl.³ B01D *1/06, 1/28, 3/04*
U.S. Cl. 202—180 16 Claims



1. In a distilling apparatus for operation according to the thermocompressor principle, including a housing, a boiling chamber at least partially defined by a wall situated within the housing and adapted to contain the liquid to be distilled, means for heating the liquid to be distilled contained in the boiling chamber to produce a vapor, feed line means for conducting liquid to be distilled into the boiling chamber, means for imparting additional energy to the vapor produced in the boiling chamber having an inlet side to which the vapor formed in the boiling chamber is directed and an outlet side from which the vapor is discharged at an increased temperature, distillate removal line means for withdrawing distillate from the distilling apparatus, at least one heat exchange tube provided within the housing of the distilling apparatus and arranged such that a fluid stream composed of at least one of liquid to be distilled and vapor flows therethrough, and droplet separation means provided within the housing,

the improvement comprising

tubular means disposed within the apparatus to define an inner conduit and an outer annular flow duct,

means for dividing said outer annular flow duct into an upper portion and a lower portion,

aperture means provided in one of said two portions of said annular flow duct, and

said energy imparting means being disposed within said housing such that after the fluid stream flows through the at least one heat exchange tube and through said inner conduit, vapor flows through said energy imparting means which conveys the same into one of said two portions of said annular flow duct, whereby the vapor discharges from the same to be condensed.

4,536,259

CATHODE HAVING HIGH DURABILITY AND LOW HYDROGEN OVERVOLTAGE AND PROCESS FOR THE PRODUCTION THEREOF

Yoshio Oda; Hiroshi Otouma, and Eiji Endoh, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo, Japan

Filed Jul. 8, 1983, Ser. No. 511,945
Claims priority, application Japan, Jul. 16, 1982, 57-122898
Int. Cl.³ C25D *15/00, 3/56*
U.S. Cl. 204—35.1 **12 Claims**



1. A cathode having high durability and low hydrogen overvoltage comprising an electrode substrate and an alloy layer formed thereon, characterized in that said alloy layer is made of an alloy comprising Component X selected from the group consisting of nickel, cobalt and a mixture thereof, Component Y selected from the group consisting of aluminum, zinc, magnesium and silicon, and Component Z selected from the group consisting of a noble metal and rhenium, and having a composition of Components X, Y and Z falling within the range defined by the following points A, B, C and D with reference to the diagram of FIG. 1:

A: X=99.6 wt. %, Y=0 wt. %, Z=0.4 wt. %
B: X=79.6 wt. %, Y=20 wt. %, Z=0.4 wt. %
C: X=10 wt. %, Y=20 wt. %, Z=70 wt. %
D: X=12.5 wt. %, Y=0 wt. %, Z=87.5 wt. %.

4,536,260

THIN FILM CADMIUM SELENIDE ELECTRODEPOSITED FROM SELENOSULPHITE SOLUTION

Michael Cocivera, Guelph, Canada, assignor to University of Guelph, Guelph, Canada

Filed May 14, 1984, Ser. No. 609,971
Int. Cl.³ C25D *5/50, 9/08*
U.S. Cl. 204—37.1 **15 Claims**

1. In a process for electrodepositing a thin layer of cadmium selenide on a suitable electrically conductive substrate comprising immersing a cathode of said substrate in association with an anode in an electrolyte bath having a pH ranging from 5 to 10 and having an aqueous solution of selenosulphite ions and cadmium ions complexed with a complexing agent where said pH range shifts the chemical equilibrium of complexing said cadmium ions towards associated complexed cadmium ions, applying a voltage across said cathode and anode to reduce said selenosulphite ions to produce selenide ions at said cathode of a sufficient concentration which reacts with the complexed cadmium ions to electrodeposit thereby cadmium selenide on said cathode and annealing said electrodeposited cadmium selenide, the improvement comprising the use of nitrilotriacetic acid as said complexing agent.

4,536,261

ALKALINE BATH FOR THE ELECTRODEPOSITION OF BRIGHT ZINC

Francine Popescu, 94490 Ormesson, France

Filed Aug. 7, 1984, Ser. No. 638,435
Int. Cl.³ C25D *3/22*
U.S. Cl. 204—55 R **21 Claims**

1. An aqueous alkaline electroplating bath for bright zinc electrodeposition, comprising:

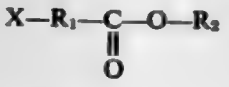
(a) an aqueous solution of an alkaline zincate, and

(b) a sufficient amount, effective to provide bright, ductile and uniform zinc electrodeposits, of a nitrogen-containing polymer, soluble in water, and obtained by the successive chemical reactions A, B and C, as follows:

Reaction A: A heterocyclic pentagonal or hexagonal compound, comprising at least two nitrogen atoms in the aromatic ring, is reacted with a cyclic carbonate comprising carbon, hydrogen and oxygen atoms;

Reaction B: The product of the reaction A is further reacted with an epihalohydrin or an alpha-dihalohydrin, in order to obtain an intermediary, water soluble, nitrogen-containing polymer;

Reaction C: The product of reaction B is further reacted with a compound of general formula (1):



wherein:

X represents a hydrogen atom or a phenyl radical;

R_1 represents an alkenylene, alkylene, haloalkenylene, hydroxyalkenylene or carboxy (hydroxy) alkenylene group; and

R_2 represents a hydrogen atom or an alkyl, hydroxyalkyl, haloalkyl or halohydroxyalkyl.

8. The bath as defined in claim 1 and containing additionally a secondary brightener in concentration of 0.05 to 10.0 g/l.

4,536,262

PREPARATION OF POLY(HETEROAROMATICS), AND FILMS OBTAINED BY THIS METHOD

Gerhard Wegner, Denzlingen, and Wolfgang Wernet, Freiburg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,348
Int. Cl.³ C25B *3/02*
U.S. Cl. 204—56 R **6 Claims**

1. In an electrochemical process for preparing a poly(-heteroaromatic) film wherein heteroaromatic compounds are polymerized by an anodic oxidation carried out in an electrolyte solvent in the presence of a conductive salt with the electrolyte solvent consisting essentially of a polar organic compound, and wherein the resulting polymer deposits in the form of a film on the surface of the anode, the improvement which comprises: dispersing said monomeric heteroaromatic compounds in an aqueous electrolyte solvent consisting of at least 80 percent by weight of water and to which has been added a water soluble dispersant selected from the group consisting of a neutral emulsifier, an anionic emulsifier or a mixture thereof together with the further addition of a conductive salt, with the proviso that a conductive salt need not be present when an anionic emulsifier is employed as the sole dispersant, introducing the resulting composition into an electrolytic cell and subjecting said monomeric compounds dispersed therein to an anodic oxidation to effect a polymerization thereof and deposition of the resulting polymer in the form of a film onto the anode surface of said electrolytic cell.

4,536,263

PROCESS FOR GENERATING HALOGEN USING NOVEL ELECTROLYSIS CELL

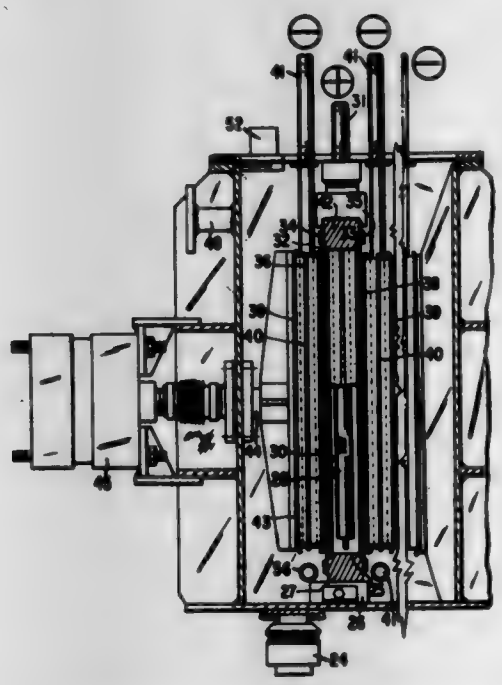
Oronzio deNora, Milan, Italy, and Placido M. Spaziante, Lugano, Switzerland, assignors to Oronzio deNora Impianti Elettrochimici S.p.A., Milan, Italy

Division of Ser. No. 382,670, May 27, 1982, , which is a division of Ser. No. 151,695, May 20, 1980, Pat. No. 4,341,604, which is a continuation-in-part of Ser. No. 57,255, Jul. 12, 1979, Pat. No. 4,343,689. This application Oct. 13, 1983, Ser. No. 541,554

Claims priority, application Italy, Jul. 27, 1978, 26171 A/78

Int. Cl.³ C25B *1/46*

U.S. Cl. 204—98 **2 Claims**



1. A method of generating halogen comprising electrolyzing an aqueous halide solution in an electrolytic cell having an anode compartment separated from a cathode compartment by an ion exchange diaphragm capable of transmitting cations therethrough but impermeable to the flow of electrolyte, a foraminous anode and a foraminous cathode being pressed against opposite sides of the diaphragm, at least one of said anode or cathode comprising at least two superimposed layers of different mesh size with the finer layer being between the diaphragm and the coarser layer, feeding aqueous alkali metal halide solution into the anode compartment and into contact with the anode, maintaining water in contact with the cathode and maintaining an electrolyzing potential between said anode and cathode.

4,536,264

METHOD FOR ELECTROLYTIC TREATMENT

Takanori Masuda; Tsutomu Kakei; Teruo Miyashita; Akira Morita, all of Shizuoka, and Masahiro Takahashi, Tokyo, all of Japan, assignors to Fuji Photo Film Co., Ltd. and Nippon Light Metal Company, Ltd., both of, Japan

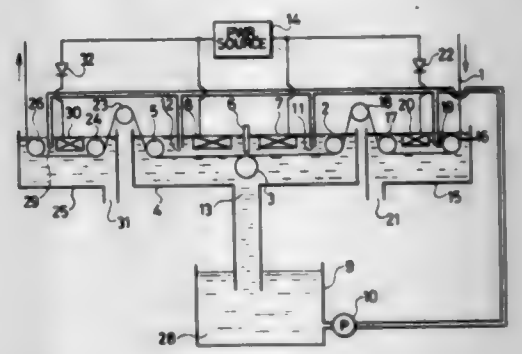
Filed Sep. 21, 1984, Ser. No. 652,996

Claims priority, application Japan, Sep. 21, 1983, 58-173148

Int. Cl.³ C25F *3/02, 3/04, 7/00*

U.S. Cl. 204—129.43 **6 Claims**

1. In a method for continuously electrolytically processing a metal web using graphite electodes and a symmetric alternating waveform current, the improvement wherein a part of a half cycle of said current is bypassed into at least one separately provided auxiliary anode through diode means so that the magnitude of a current contributing to a cathode reaction on surfaces of said graphite electrodes is larger than the magnitude of a current contributing to an anode reaction on said surfaces of said graphite electrodes.



4,536,265

SILOXANE POLYPHOTOINITIATORS OF THE SUBSTITUTED ACETOPHENONE TYPE

Louis F. Fabrizio, Hartford, Conn.; Samuel O. S. Lin, Edgewater, N.J., and Anthony F. Jacobine, Meriden, Conn., assignors to Loctite Corporation, Newington, Conn.

Filed Apr. 19, 1984, Ser. No. 601,881

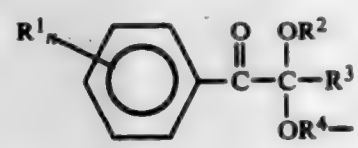
Int. Cl.³ C08F *2/46*

U.S. Cl. 204—159.13 **8 Claims**

1. An organopolysiloxane photoinitiator having an average of at least two siloxane units, of which at least an average of one siloxane units per organopolysiloxane molecule has the formula:

$$X_aR_bSiO_{(4-a-b)/2}$$

wherein a is an integer of 1–3, b is an integer of 0–2 and a plus b equals 1–3; R is C_1–C_{10} hydrocarbyl or halogen substituted C_1–C_{10} hydrocarbyl; and X is substituted acetophenone photomoiety of the formula:



where R^1 is any substituent which will not interfere with hydrosilation, n is an integer between 0 and 4; R^2 is organosilyl substituted alkyl or alkenyl; R^3 is H, alkyl or aryl; and R^4 is a divalent hydrocarbon group having between 2 and 10 carbon atoms.

4,536,266

PROCESS FOR THE FLUORINATION OF A SURFACE LAYER OF FORMED BODIES MADE OF PLASTICS

Claus Bliefert, Schöppingen; Hans-Michael Boldhaus, Bad Bentheim, and Manfred Hoffmann, Ochtrup, all of Fed. Rep. of Germany, assignors to Hewing GmbH & Co., Ochtrup, Fed. Rep. of Germany

Filed Dec. 7, 1983, Ser. No. 558,796

Claims priority, application Fed. Rep. of Germany, Dec. 11, 1982, 3245915

Int. Cl.³ C08F *8/22*

U.S. Cl. 204—159.18 **16 Claims**

1. Method for fluorinating surface layers of articles molded from macromolecular polymeric materials capable of being fluorinated which comprises exposure of at least a portion of said article to a fluorine-containing liquid consisting essentially of elemental fluorine dissolved in a solvent or solvent mixture which are essentially inert with respect to fluorine and said article and reacting said elemental fluorine with said surface layers.

4,536,267
PLASTIC LENS OF NEOPENTYL GLYCOL DIMETHACRYLATE COPOLYMERIZED WITH METHOXY DIETHYLENE GLYCOL METHACRYLATE OR DIETHYLENE GLYCOL DIMETHACRYLATE

Akio Ito, Katano; Shunsuke Matsuda, Osaka; Yoshinobu Murakami, Katano, and Tooru Tamura, Ikeda, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Osaka, Japan

Filed Apr. 1, 1983, Ser. No. 482,311
Int. Cl.³ C08F *120/10, 220/10*
U.S. Cl. 204—159.23 **3 Claims**

1. A plastic lens obtained by polymerizing neopentyl glycol dimethacrylate with methoxy diethylene glycol methacrylate or diethylene glycol dimethacrylate, said polymerization being performed in the presence of a photopolymerization initiator and a polymerization catalyst which is methyl ethyl ketone peroxide, the transmittivity of said lens being at least 75%.

4,536,268
PROCESS FOR THE REDUCTION OF THE VISCOSITY OF HIGH SOLIDS PIGMENT SLURRIES

Earl R. Lawhorne, Savannah, Ga., assignor to American Cyanamid Company, Stamford, Conn.

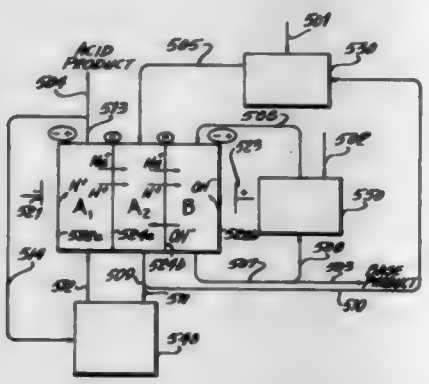
Filed Mar. 12, 1984, Ser. No. 588,264
Int. Cl.³ B01D *57/02*
U.S. Cl. 204—182.4 **4 Claims**

1. A method for reducing the viscosity of an aqueous pigment slurry which comprises
   (a) placing a high solids content TiO_2 pigment slurry into a cathode compartment separated from an anode compartment by a low porosity permeable membrane,
   (b) placing an ammonium or dilute acid anolyte solution in said anode compartment,
   (c) passing electric current through said cathode and anode compartments and
   (d) recovering the resultant pigment slurry, whereby said slurry is of a reduced viscosity.

4,536,269
MULTICHAMBER TWO-COMPARTMENT ELECTRODIALYTIC WATER SPLITTER AND METHOD OF USING SAME FOR ACIDIFICATION OF AQUEOUS SOLUBLE SALTS

Frederick P. Chlanda, Rockaway, and Krishnamurthy N. Mani, Denville, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed May 2, 1983, Ser. No. 490,946
Int. Cl.³ B01D *13/02*
U.S. Cl. 204—182.4 **18 Claims**

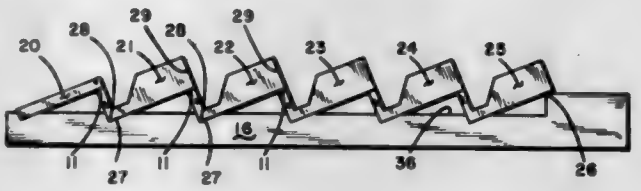


1. A method for generating an acidified solution and an aqueous base comprising the steps of:
   (a) providing an electrodialytic water splitter comprising at least one unit cell, said at least one unit cell having at least a first acid compartment, a second acid compartment and a base compartment arranged such that the base compartment and first acid compartment are defined in part by a common first membrane and such that the first acid compartment and the second acid compartment are defined in part by a common second membrane, disposed between an anode and a cathode;
   (b) introducing a liquid comprising water to the base compartment;
   (c) introducing a liquid comprising an aqueous soluble salt to the first acid compartment;
   (d) withdrawing liquid from the first acid compartment and transferring at least a portion of the liquid from the first acid compartment to the second acid compartment;
   (e) passing direct current through said electrodialytic water splitter to produce a liquid comprising aqueous base in said base compartment, a liquid comprising aqueous soluble salt and a first concentration of hydrogen ions in said first acid compartment, and a liquid comprising aqueous soluble salt and a second concentration of hydrogen ions in said second acid compartment, said second concentration of hydrogen ions being greater than said first concentration of hydrogen ions;
   (f) withdrawing a liquid comprising aqueous base from the base compartment; and
   (g) withdrawing the liquid comprising aqueous soluble salt and a second concentration of hydrogen ions from said second acid compartment.

4,536,270
APPARATUS AND METHOD FOR SHIELDING MAGNETIC HEADS DURING A SPUTTERING OPERATION

Robert A. Johnson, Minnetonka, Minn., assignor to Magnetic Peripherals, Minneapolis, Minn.

Filed Nov. 28, 1983, Ser. No. 555,851
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 R **6 Claims**



1. A manufacturing assembly for controlling the deposition of material in a sputtering chamber, comprising a plurality of ferrite bars of the type from which elements of ferrite transducer cores are cut, said ferrite bars each having on one side adjacent a first end and opposite a first corner partly defining the first end, a back gap face area, said back gap face area to be protected from deposition of material during a sputtering process; and a fixture having a plurality of upwardly facing parallel support grooves in each of which the first corner of a ferrite bar and the area surrounding it rests back gap face facing upward, said support grooves having a spatial arrangement supporting the ferrite bars with the ferrite bars in overlapping relationship with similar angular orientations, with each ferrite bar except one shielding and covering the back gap face of a neighbor, thereby preventing deposition of material on said shielded and covered back gap faces.

6. In a method for preparing for sputtering a material on a plurality of identical ferrite bars of the type from which elements of ferrite transducer cores are cut, said ferrite bars each having on one side adjacent a first end and opposite a first corner partly defining the first end a back gap face area, the steps of:
   (a) forming in a substantially flat surface of a fixture a plurality of parallel support grooves into each of which the first corner of one of the ferrite bars and the area surrounding it may be laid back gap face facing upward, said support grooves having a spatial arrangement allowing a ferrite bar first corner to be laid in each groove with the ferrite bars in overlapping relationship with each ferrite bar except one shielding and covering the back gap face of a neighbor;

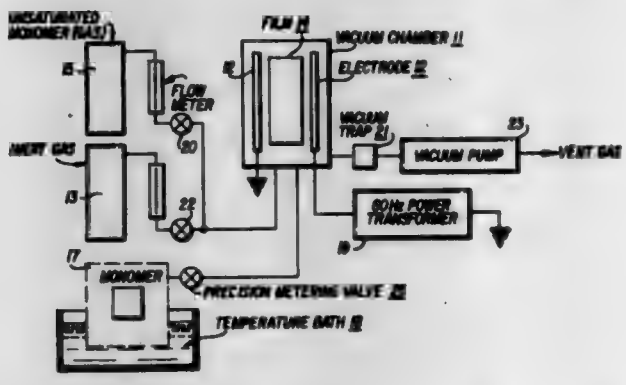
(b) orienting said fixture with its grooves facing generally upwards;
(c) placing a ferrite bar in each groove in overlapping relationship with each ferrite bar except one shielding and covering the back gap face of a neighbor; and
(d) placing the fixture with the ferrite bars laid on it in a sputtering chamber.

4,536,271

METHOD OF PLASMA TREATING A POLYMER FILM TO CHANGE ITS PROPERTIES

Gregory P. Collins, Fairport, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,724
Int. Cl.³ C23C *15/00*
U.S. Cl. 204—192 E **16 Claims**



1. A method of strengthening a polymer film comprising the steps of:
placing said film in a vacuum chamber containing a pair of electrodes;
filling said chamber with a treatment gas under a pressure of 0.2–0.7 Torr;
applying a voltage to said electrodes to initiate a discharge in and ionization of said treatment gas; and
exposing said film to said ionized treatment gas for a predetermined period of time and thereby etching away a surface layer of said film.

4,536,272

POROUS ELECTRODE

Alain P. O. Blanchart, Balen, and Ludovicus C. M. Adriaensen, Deerlijk, both of Belgium, assignors to Electrochemische Energieconversie N.V., Mol, Belgium

Filed May 16, 1984, Ser. No. 610,802
Claims priority, application Netherlands, May 19, 1983, 8301780
Int. Cl.³ C25B *11/04, 11/08*
U.S. Cl. 204—294 **18 Claims**

1. A porous electrode including a porous catalytic layer which comprises at least 3–30 parts by weight of moldable polymeric binder, 50–94 parts by weight of carbon particles, and 3–47 parts by weight of hard hydrophobic polymer particles.

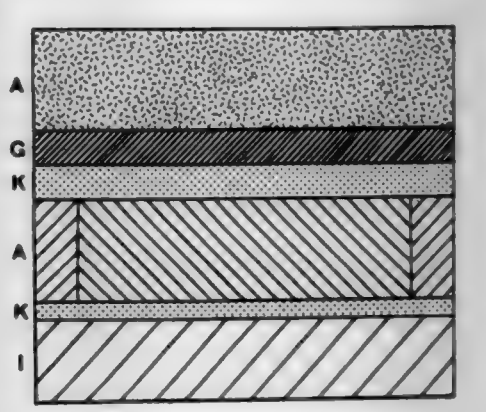
4,536,273

DIFFUSION BARRIER FOR ALUMINIUM ELECTROLYSIS FURNACES

Arne Seltveit, Trondheim, Norway, assignor to Sintef, Trondheim, Norway

PCT No. PCT/NO83/00007, § 371 Date Oct. 19, 1983, § 102(e) Date Oct. 19, 1983, PCT Pub. No. WO83/03106, PCT Pub. Date Sep. 15, 1983
PCT Filed Mar. 4, 1983, Ser. No. 556,237
Claims priority, application Norway, Mar. 5, 1982, 820694
Int. Cl.³ C25C *3/08;* C01B *33/26;* C04B *35/10, 35/16*
U.S. Cl. 204—243 R **4 Claims**

1. A diffusion barrier for an electrolysis furnace for the preparation of aluminium by electrolysis of alumina dissolved in a fluoride melt, which diffusion barrier comprises at least one material selected from the group consisting of calcium aluminium silicates and mixtures of a calcium silicate and



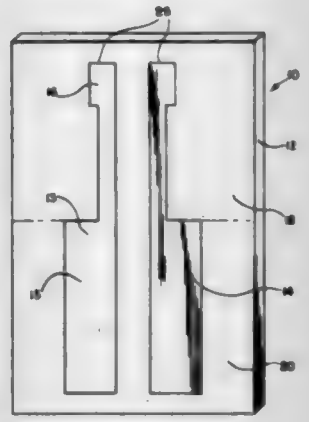
Al_2O_3 which do not absorb water and which react with sodium fluoride to form compounds which are solid at the operation temperature of the furnace.

4,536,274

PH AND CO_2 SENSING DEVICE AND METHOD OF MAKING THE SAME

Nicholas Papadakis, Concord, and Daniel G. Kalynchuk, University Heights, both of Ohio, assignors to Diamond Shamrock Chemicals Company, Dallas, Tex.

Filed Apr. 18, 1983, Ser. No. 486,024
Int. Cl.³ G01N *27/56*
U.S. Cl. 204—433 **13 Claims**



1. A CO_2 gas sensor comprising:
an electrically nonconductive substrate;
a metal/metal oxide junction type active electrode including an active electrode metal, the active electrode metal being applied to the substrate by one of thick film and thin film techniques, and the active metal being then subjected to electro-oxidizing conditions for a period of time sufficient to oxidize a portion of the applied active electrode metal, the applied active electrode metal being made cathodic prior to discontinuance of the electro-oxidizing conditions;
a silver/silver halide junction type reference electrode, adheringly applied to the substrate;
an insulating, dielectric coating applied over at least portions of the substrate and electrodes;
and a polymeric membrane comprising a laminate of a hydrophobic polymeric material atop a hydrophilic membrane material applied over at least those portions of the electrodes not having the insulating dielectric coating applied thereto, the polymeric membrane being capable of relatively rapidly transmitting CO_2 thereacross, and the polymeric material including a liquid electrolyte bound by the polymeric membrane.

7. A method for making a CO_2 gas sensor comprising the steps:

selecting an electrically nonconducting substrate formed from a material selected from a group consisting essentially of ceramics, refractories, thermoplastics, and thermosetting resins;

applying an active electrode metal to the substrate by one of thick and thin film techniques to form an electrode of desired physical configuration adhered to the substrate;

adheringly applying to the substrate a silver/silver halide junction type reference electrode;

applying to at least portions of the electrodes and the substrate an insulating dielectric coating;

oxidizing a portion of the active electrode metal by subjecting the active electrode metal to electro-oxidizing conditions for a period of time necessary to form a desired quantity of an oxide of the active electrode metal, the active electrode metal being made cathodic prior to terminating the electro-oxidizing conditions; and

applying to at least those portions of the resulting sensor not having an applied coating of an insulating dielectric a polymeric membrane comprising a laminate of a hydrophobic polymeric material atop a hydrophilic membrane material capable of binding a liquid electrolyte within the polymeric membrane, electro-oxidation being accomplished by making the active electrode metal anodic within a fused salt electrolyte consisting of $NaNO_3$ and LiCl salts under an impressed current of between about 0.1 milliamperes and 20.0 milliamperes per square centimeter of active electrode metal surface, followed by making the now active electrode cathodic prior to removing the active electrode from the fused salt electrolyte.

4,536,275

INTEGRATED TWO-STAGE COAL LIQUEFACTION PROCESS

James C. Bronfenbrenner; Ronald W. Skinner, both of Allentown, Pa., and Samuel Znaimer, Vancouver, Canada, assignors to International Coal Refining Company, Allentown, Pa.

Filed Mar. 7, 1984, Ser. No. 586,937
Int. Cl.³ C10G *1/06, 1/00*
U.S. Cl. 208—10 **7 Claims**

1. A process for solvent refining coal with increased distillate production by recycle of hydrotreated asphaltenes that are pentane insoluble, benzene soluble and heavy preasphaltenes that are benzene insoluble, pyridine soluble in the absence of ash, unconverted coal and very heavy preasphaltenes that are pyridine insoluble which comprises forming a first stage slurry of finely divided coal, hydrogenated process solvent recycle hereinafter more specifically defined and hydrogen-rich gas, heating said slurry, passing said heated slurry to a dissolver vessel, dissolving at least a portion of said coal within said dissolver vessel, adding fresh hydrogen to form a liquified coal slurry, passing said liquified coal slurry to a vapor-liquid separator, separating a vapor product stream and a condensed liquid product stream, passing said condensed liquid product stream to a first stage distillation system to form a residual bottoms product and a hydrocracker solvent stream, removing said residual bottoms product to a critical solvent deashing zone, wherein said residual bottoms product is mixed with a deashing solvent to form a deashing stage slurry, passing said deashing stage slurry into a deashing separator to form deashing separator effluents consisting essentially of:

(i) a light upper phase containing asphaltenes that are pentane insoluble, benzene soluble;

(ii) a heavy lower phase containing preasphaltenes that are benzene insoluble, pyridine soluble; and

(iii) a very heavy lower phase containing unconverted coal, ash concentrates and very heavy preasphaltenes that are pyridine insoluble;

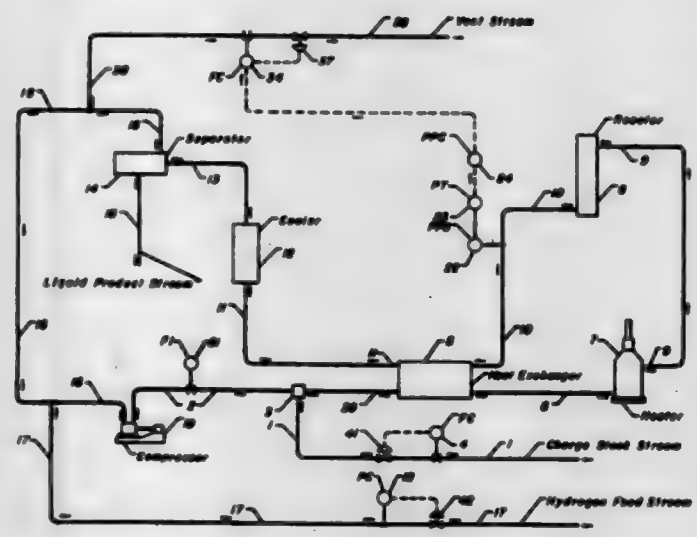
separating stream (iii) from the combination of streams (i) and (ii), passing said very heavy lower phase of stream (iii) to a gasification unit to generate hydrogen, mixing said light upper phase of stream (i) with said heavy lower phase of stream (ii) and passing said admixture with said hydrocracker solvent derived from said first distillation zone in combination therewith through a hydrocracker zone having a hydrocracker catalyst therein subject to deactivation, said hydrocracker zone being operated at a temperature of at least 700° F. (371° C.) and a pressure of at least 1500 psig (10375 kPa) to produce a hydrocracker effluent stream, passing said hydrocracker effluent stream to a hydrocracker flash unit to produce two streams, the first hydrocracker flash effluent stream containing 500° F.+ asphaltenes and preasphaltenes in the absence of ash, unconverted coal and very heavy preasphaltenes and the second stream containing 500° F.− as distillate product of said process, wherein substantially all of said first hydrocracker flash effluent stream containing said asphaltenes and preasphaltenes is passed as process solvent to slurry said coal and hydrogen to produce a greater quantity of distillates from said coal.

4,536,276

HYDROGEN CONSERVATION IN HYDROGEN RECYCLE HYDROCONVERSION PROCESSES

Don B. Carson, Mt. Prospect, Ill., assignor to UOP Inc., Des Plaines, Ill.

Division of Ser. No. 374,858, May 4, 1982, Pat. No. 4,476,094.
This application Jun. 28, 1984, Ser. No. 625,416
Int. Cl.³ C10G *47/36, 45/72*
U.S. Cl. 208—100 **8 Claims**



1. A control method for reducing the vent flow of hydrogen in hydrocarbon conversion apparatus, thereby reducing usage of hydrogen in said conversion apparatus, where said conversion apparatus comprises (1) a conduit for transporting a charge stock stream comprising hydrocarbons in communication with a conduit for transporting a recycle hydrogen-hydrocarbon stream to mix said hydrocarbon charge stock stream with said recycle hydrogen-hydrocarbon stream; (2) a hydrocarbon reaction zone in communication with said charge stock stream conduit for converting said hydrocarbons in said charge stock to a converted hydrocarbon product; (3) a cooling zone in communication with said reaction zone, via a reaction zone effluent conduit, to cool said reaction zone product to form a cooling zone effluent stream comprising a liquid product component and a vaporous hydrogen-hydrocarbon component; (4) a separation zone in communication with said cooling zone, via a cooling zone effluent conduit, to separate said cooling zone effluent stream into a liquid product stream, which is withdrawn from the process, and a vaporous hydrogen-hydrocarbon stream which flows in a separation zone vaporous effluent conduit, wherein said vaporous stream is divided into at least a portion of said recycle hydrogen-hydrocarbon stream and vent hydrogen-hydrocarbon stream; (5) a compressor means in interconnection with said separation zone, via said separation zone vaporous effluent conduit, and also in interconnection with said charge stock conduit via said recycle hydrogen-hydrocarbon stream conduit; (6) a vent conduit in communication with said separation zone vaporous

effluent conduit, having an automatically variable flow restriction device therein, for removal of a portion of said vaporous hydrogen-hydrocarbon stream from said process; and (7) a conduit for transporting a hydrogen-containing feed stream in communication with said separation zone vaporous effluent conduit downstream of said vent conduit; said control method consisting of:

(a) sensing the hydrogen concentration of the entire reaction zone product in said reaction zone effluent conduit before any separation of said liquid product component from said vaporous hydrogen-hydrocarbon component;

(b) comparing said sensed hydrogen concentration with a predetermined selected concentration of hydrogen and developing a signal correlating thereto; and

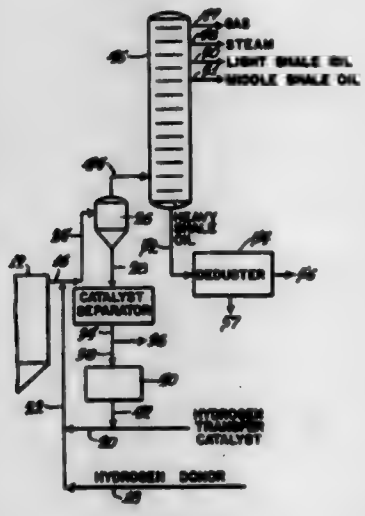
(c) transmitting said developed signal to said variable flow restriction device in said vent conduit to either: increase hydrogen concentration in said recycle stream when said sensed hydrogen of step (a) is smaller than said predetermined hydrogen concentration of step (b) by decreasing the degree of restriction of said variable flow restriction device in said vent conduit or decrease hydrogen concentration in said recycle stream when said sensed hydrogen of step (a) is larger than said predetermined hydrogen concentration of step (b) by increasing the degree of restriction of said variable flow restriction device in said vent conduit.

4,536,277

SHALE OIL STABILIZATION WITH A HYDROGEN DONOR QUENCH AND A HYDROGEN TRANSFER CATALYST

Thomas M. O'Grady, Naperville; David F. Tatterson, Downers Grove, and Ronald Coates, Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 24, 1984, Ser. No. 583,150
Int. Cl.³ C10G 1/00
U.S. Cl. 208—11 R **19 Claims**



1. A process for producing shale oil, comprising the steps of:

retorting raw oil shale in an aboveground retort by contacting said raw oil shale with heat carrier material at a retorting temperature to liberate an effluent dust-laden product stream comprising hydrocarbons and particulates of oil shale dust;

enhancing removal of said shale dust from said dust-laden product stream and stabilizing and limiting polymerization of said dust-laden product stream by contacting said dust-laden product stream comprising said hydrocarbons and said particulates of oil shale dust with a hydrogen donor quench in the presence of a hydrogen transfer catalyst at a pressure ranging from atmospheric pressure to about 50 psig;

separating a fraction of shale oil containing said hydrogen donor quench and from substantially greater than 1% to about 70% by weight oil shale dust from said hydrogen donor quenched product stream; and

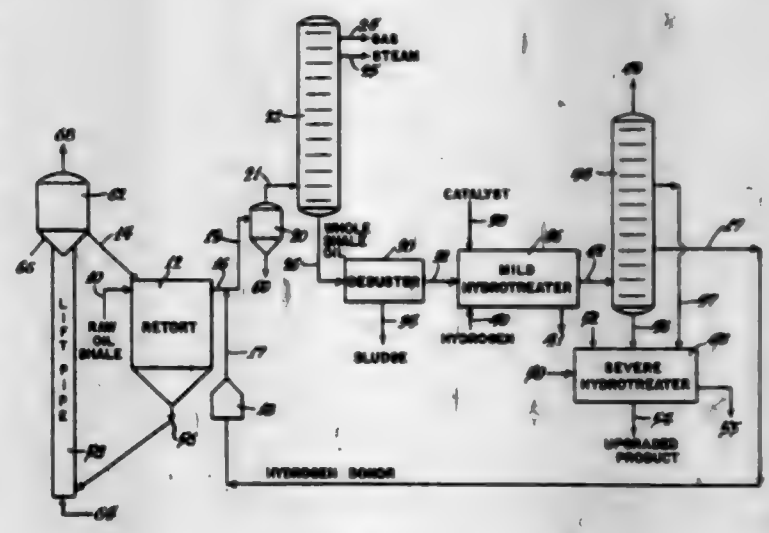
substantially removing said oil shale dust from said fraction.

4,536,278

SHALE OIL STABILIZATION WITH A HYDROGEN DONOR QUENCH

David F. Tatterson, Downers Grove; Thomas M. O'Grady, and Ronald Coates, both of Naperville, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Feb. 24, 1984, Ser. No. 583,321
Int. Cl.³ C10G 1/00
U.S. Cl. 208—11 R **22 Claims**



1. A process for producing shale oil, comprising the steps of:

retorting raw oil shale in an aboveground retort by contacting said raw oil shale with heat carrier material at a sufficient temperature in said retort to liberate an effluent dust-laden product stream comprising hydrocarbons and particulates of oil shale dust;

enhancing dedusting of said dust-laden stream and substantially stabilizing and limiting polymerization of said dust-laden product stream by injecting a hydrogen donor quench into said dust-laden product stream;

separating a fraction of shale oil containing said hydrogen donor quench and from substantially greater than 1% to about 70% by weight oil shale dust from said hydrogen donor quenched product stream; and

dedusting said fraction.

4,536,279

ENHANCED RECOVERY OF HYDROCARBONACEOUS FLUIDS FROM OIL SHALE

Costandi A. Audeh, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Jan. 19, 1984, Ser. No. 572,040
Int. Cl.³ C10G 1/00, 1/04
U.S. Cl. 208—11 R **21 Claims**

1. A method for recovering hydrocarbonaceous fluids from oil shale containing organic carbon material, which comprises:

(a) heating the oil shale in a retort vessel at ambient pressure to a temperature at which thermal decomposition of the organic carbons contained in said oil shale is initiated;

(b) introducing into the retort a sufficient quantity of oil, for enhancement of carbon conversion, which oil does not substantially distill at a temperature below said initial decomposition temperature or below the temperature for maximum organic carbon conversion of said oil shale, while heat is applied to the retort vessel to increase the temperature to about 410°–425° C. wherein the highest amount of organic carbon conversion to hydrocarbonaceous liquids is obtained;

(c) holding the temperature for a period of time sufficient to allow substantial conversion of organic carbon material; and

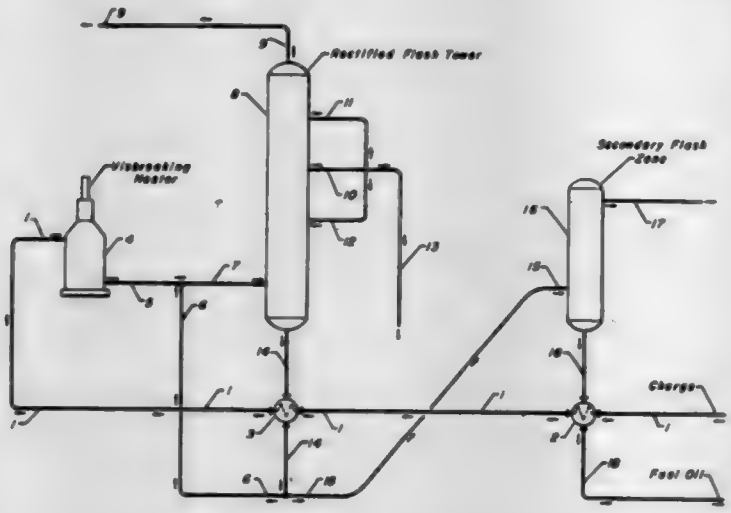
(d) increasing the temperature to retorting temperatures and recovering the resultant hydrocarbonaceous fluids including oil introduced in step (b).

4,536,280

VISBREAKING PROCESS

John B. White, Jr., Mt. Prospect; Robert E. McHarg, Arlington Hts., and Frank Stolfa, Park Ridge, all of Ill., assignors to UOP Inc., Des Plaines, Ill.

Filed Dec. 19, 1983, Ser. No. 563,327
Int. Cl.[3] C10G *9/00*
U.S. Cl. 208—106 **6 Claims**



1. A method of thermally processing a hydrocarbon stream which comprises the steps of:

(a) heating a feed stream, which comprises a mixture of hydrocarbons having boiling points above 600° F., by indirect heat exchange against a hereinafter characterized first bottoms stream;

(b) passing the feed stream through a visbreaking zone, and admixing a resultant visbreaking zone effluent stream with a relatively high temperature quench stream having a temperature of above 600° F. to form a first process stream wherein the flow rate of the quench stream is greater than the flow rate of the visbreaking effluent stream;

(c) separating the first processor stream in a first separation zone into the desired hydrocarbon fractions including the previously referred to first bottoms stream;

(d) employing the first bottoms stream in said indirect heat exchange and then dividing the first bottoms stream into at least said quench stream and a second process stream; and,

(e) passing the second process stream into a second separation zone, and recovering a product stream from the second separation zone.

4,536,281

LARGE PORE CATALYSTS FOR HEAVY HYDROCARBON CONVERSION

William P. Hettinger, Jr., Russell, Ky., and James E. Lewis, Dublin, Ohio, assignors to Ashland Oil, Inc., Ashland, Ky.

Division of Ser. No. 318,186, May 5, 1981, Pat. No. 4,431,749. This application Aug. 16, 1983, Ser. No. 523,811
Int. Cl.[3] C10G *11/02, 47/02*
U.S. Cl. 208—113 **5 Claims**

1. A process for the catalytic conversion of a hydrocarbon feedstock containing at least ten percent heavy hydrocarbon components boiling above 1025° F., said process comprising contacting said feedstock with a catalyst,

wherein said catalyst is characterized by an increased percentage of feeder pores having an average diameter in the size range of about 100 to 6000 Å which results from admixing carbon black composed of primary reticulated particles having a length of about 500 to 30,000 Å, a carbon black dispersant and a shapeable catalyst composition having hydrocarbon conversion characteristics, wherein during said admixing controlling the agglomeration of the primary reticulated carbon black particles by the amount and dispersing effectiveness of said dispersant, to provide increased percentages of feeder pores in the range of about 100 to 6,000 Å, shaping said catalyst composition into solid shapes of hydrocarbon conversion catalyst containing 1 to 35 weight percent of said carbon black, and heating said catalyst shapes in the presence of an oxygen-containing gas at combustion conditions sufficient to remove said carbon black particles and provide large feeder pores of 100 to 6,000 Å in said solid catalyst, in a reaction zone maintained under hydrocarbon conversion conditions providing hydrocarbon conversion products and depositing coke on said catalyst, stripping said hydrocarbon conversion products from said catalyst, regenerating said catalyst under oxidizing conditions sufficient to remove at least a portion of said deposit of coke from said catalyst, and returning said regenerated catalyst to said reaction zone.

4,536,282

UPGRADING HEAVY CRUDE OILS TO LIGHTER PRODUCTS WITH A DISPERSED ZEOLITE

Louis D. Rollmann, Princeton, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation of Ser. No. 509,829, Jun. 30, 1983, abandoned, which is a continuation-in-part of Ser. No. 378,143, May 14, 1982, abandoned. This application Jun. 4, 1984, Ser. No. 616,883
Int. Cl.[3] C10G *11/05*
U.S. Cl. 208—120 **5 Claims**

1. A process for catalytically upgrading a heavy waxy hydrocarbon oil feed without prior hydrodenitrogenation of said feed, which process comprises the following steps:

(a) separably dispersing in 100 parts by weight of said feed from about 0.02 up to about 10 parts by weight of a virgin particulate catalyst comprising crystalline zeolite having a silica to alumina ratio of at least 12 and a Constraint Index of 1 to 12;

(b) maintaining said dispersion in a reaction zone at a temperature of 550° F. to 1050° F. and a pressure of 0 to 75 psig for a time effective to convert at least about 10 wt% of said heavy feed to more volatile liquid hydrocarbons and removing said more volatile hydrocarbons from said reaction zone whereby forming a residue comprising partially deactivated catalyst separably dispersed in refractory oil;

(c) separating said partially deactivated catalyst from said refractory oil;

(d) repeating steps (a), (b) and (c) including adding in step (a) all of said separated catalyst from previous step (c) until said dispersion in said reaction zone contains about 35 parts by weight of partially deactivated catalyst; and then

(e) removing from said process sufficient separated catalyst to maintain a preselected activity or selectivity and a total catalyst content not exceeding about 35 parts per weight per hundred parts by weight of said feed in said reaction zone.

4,536,283

INTEGRATED PROCESS FOR DEASPHALTING HEAVY OILS USING A GASEOUS ANTISOLVENT

Thomas A. Davis, Annandale, N.J., assignor to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 20, 1984, Ser. No. 642,501
Int. Cl.[3] C10C *3/00, 3/08*
U.S. Cl. 208—309 **20 Claims**

1. A process for separating a liquid feedstream comprising a solvent selected from the group consisting of propane, butane, isobutane, pentane, isopentane, neopentane, hexane, 2-methyl pentane, 3-methyl pentane, 2-ethyl butane, heptane, 2-, 3-methyl hexane, or 3-ethyl pentane and a deasphalted oil containing aromatics and saturates comprising the steps of:

introducing a sufficient amount of a gaseous expansion gas into said liquid feedstream to cause it to form an upper liquid phase and a lower phase comprising aromatics,

separating the upper liquid phase from the lower liquid phase, and

flashing said separated upper liquid phase to produce an expansion gas phase, a second upper liquid phase comprising solvent, and a second lower liquid phase comprising saturates.

4,536,284

CLASSIFIER

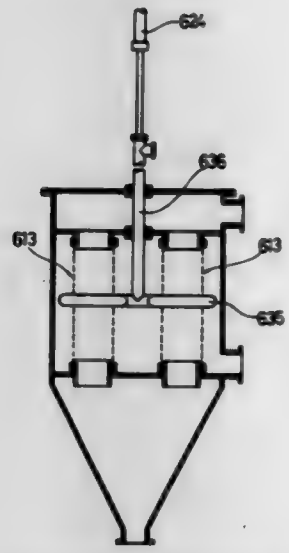
Toshio Furukawa, Chiba, Japan, assignor to Kikkoman Corporation, Chiba, Japan

Division of Ser. No. 358,371, Mar. 10, 1982, Pat. No. 4,461,702. This application Apr. 23, 1984, Ser. No. 603,163

Claims priority, application Japan, Mar. 16, 1981, 56-37615

Int. Cl.³ B07B *1/20*

U.S. Cl. 209—305 **8 Claims**



1. A classifier for separating particulate matter into relatively coarse and fine particles, comprising:

a casing adapted to permit said particulate matter to flow therein along a predetermined direction;

said casing including at least one inlet port, at least one course particle outlet port, and at least one fine particle outlet port, said ports being separated from each other;

at least one cylindrical screen assembly stationarily mounted in said casing, said cylindrical screen assembly including a cylindrical screen extending substantially axially along said predetermined direction so as to force the fine particles to traverse said cylindrical screen so as to be separated from the coarse particles;

said inlet port of said casing communicating with the interior of each said screen through an upper opening thereof, said coarse particle outlet port of said casing communicating with the interior of each said screen through a lower opening thereof, and said fine particle outlet port of said casing communicating with the interior of said screen through the mesh of said screen;

at least one air purge pipe disposed in said casing and connected to a source of compressed air, said air purge pipe having an opening facing the outer surface of said cylindrical screen assembly so as to blow particles off said screen assembly to prevent clogging thereof;

said air purge pipe being separated from said screen assembly such that said opening of said air purge pipe is spaced a predetermined distance from the surface of said cylindrical screen, said predetermined distance between said opening of said air purge pipe and said surface of said cylindrical screen being constant;

said air purge pipe being in the form of an annular tube; and

drive means for moving said air purge pipe along the length of said cylindrical screen so that the entire surface area of said screen may be exposed to said blowing by said air purge pipe.

4,536,285

ASSEMBLY COMPRISING A VORTEX FLUIDIC DEVICE FOR SEPARATING A MIXTURE OF A LIQUID PHASE AND A RELATIVELY HEAVY, SOLID PHASE

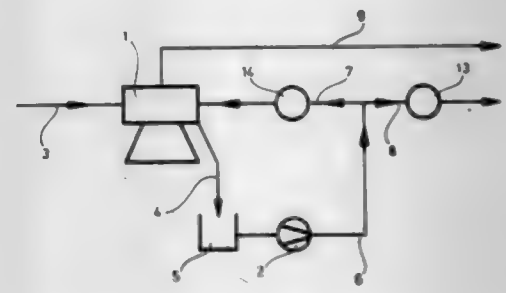
Per G. Karlsson, Stockholm, Sweden, assignor to Alfa-Laval Separation AB, Tumba, Sweden

Filed May 21, 1984, Ser. No. 612,374

Claims priority, application Sweden, May 27, 1983, 8302991

Int. Cl.³ B01D *43/00*; B04B *13/00*

U.S. Cl. 210—96.1 **3 Claims**



1. In an assembly comprising a centrifugal separator having an inlet for a mixture of a liquid phase and a relatively heavy phase, the separator having a first outlet for a separated liquid phase fraction and a second outlet for a separated heavy phase fraction, the assembly also comprising a recirculation line, means for returning to the centrifugal separator through said line at least part of the heavy phase fraction discharged from said second outlet, and a discharge line for heavy phase fraction discharged from said second outlet but not returned to the separator, the improvement which comprises a vortex fluidic device in said discharge line for controlling the flow therethrough, said vortex device having an inlet and an outlet for discharging all the heavy phase fraction entering said last inlet, said vortex device being of the type in which the flow rate therethrough increases with increasing viscosity of the flowing material and vice versa, said assembly being operable through said vortex device to reduce the return rate of heavy phase fraction to the separator in response to an increase in the viscosity of the separated heavy phase fraction from said second outlet of the separator and vice versa.

4,536,286

MOBILE WASTE WATER AND SLUDGE TREATMENT FOR HAZARDOUS AND NON-HAZARDOUS FLUIDS

James E. Nugent, Lafayette, La., assignor to Water & Industrial Waste Laboratories, Inc., Lafayette, La.

Continuation-in-part of Ser. No. 544,520, Oct. 24, 1983, which is a continuation of Ser. No. 357,789, Mar. 12, 1982, which is a continuation of Ser. No. 119,815, Feb. 8, 1980, abandoned. This application Dec. 9, 1983, Ser. No. 559,964

The portion of the term of this patent subsequent to Jul. 2, 2002, has been disclaimed.

Int. Cl.³ C02F *1/52*; B01D *21/08*

U.S. Cl. 210—202 **1 Claim**

1. A self-contained transportable waste treatment apparatus comprising:

a. an elongated, transportable, structural sled;

b. a pair of mixing tanks mounted at one end of the sled for mixing a liquid volume contained therein, at least one of the mixing tanks having a flow inlet discharging into the bottom thereof, a hollow tube disposed vertically within the tank and surrounding the inlet, and means for circulating fluid into the tube so that it discharges from the top of the tube and then circulates around the outside of the tube in a direction which returns the fluid into the bottom of the tube to an area adjacent said inlet;

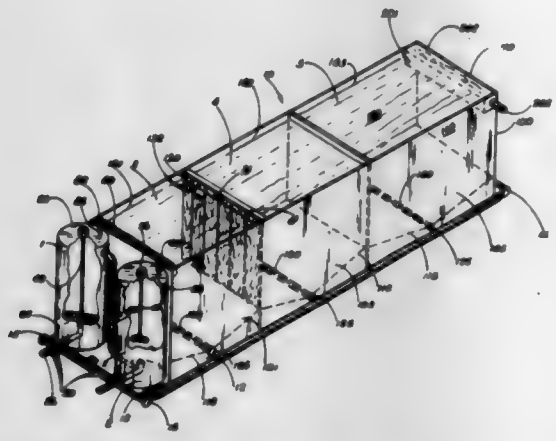
c. means for supplying a waste stream containing a chemical enhancing the formation of floc to the mixing tanks through said flow inlet;

d. a generally rectangular settling tank supported on the sled and defined by a plurality of walls extending up from the peripheral edge portion of the sled;

e. conduit means connecting the mixing tanks with the settling tank for supplying supernatant liquid from the mixing tanks to the settling tank;

f. means within the mixing tanks for recirculating fluid within the mixing tank;

g. a plurality of vertically disposed sections with small spaces therebetween forming a baffle structure extending from the top to the bottom of said settling tank that is placed interiorly of the settling tank and generally transversely placed to the direction of flow through the settling



tank and dividing the settling tank into at least primary and secondary sectors, said spaces allowing fluid flow therethrough and between the primary and secondary sectors to maintain a constant fluid level in said settling tank while enhancing floc size and solids deposition; and

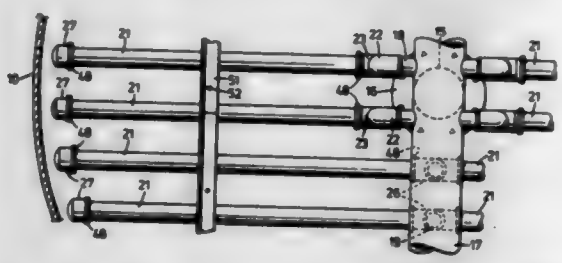
h. multiple sludge drawoff means supported by the sled and including multiple sections disposed at the lower portion of the settling tank respectively in the primary and secondary sectors thereof, each sector thereof being formed by two planar surfaces sloped toward the mid portion of each sector, and the upper portion of each planar surface intersecting respectively a side wall of that sector and a baffle, the lower portions of each planar surface communicating with a drain channel for removing settled solid material from the primary and from the secondary sectors of the settling basin in a lateral direction with respect to the direction of flow of fluid through the settling tank.

4,536,287

PIPING FOR USE IN LIQUID COLLECTION AND DISTRIBUTION

Alexander Himsley, Toronto, and John A. Bennett, Queensville, both of Canada, assignors to Himsley Engineering Limited, Toronto, Canada

Filed Apr. 18, 1984, Ser. No. 601,781
Int. Cl.³ B01D *23/20*
U.S. Cl. 210—293 **13 Claims**



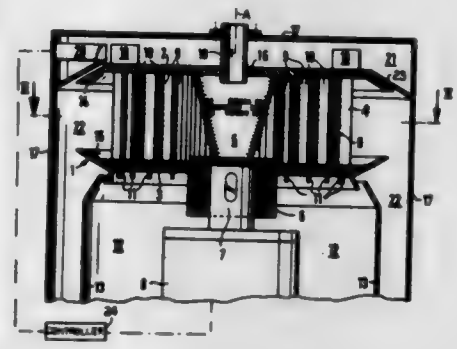
1. Piping for use in liquid collection and distribution comprising in combination an extruded pipe having in cross-section an interior opening and on one side a pair of outwardly projecting spaced arms each having a re-entrant lip adjacent its outer end, thereby forming a support channel with re-entrant sides extending along the pipe, and at least one channel-section strainer member adapted to be slid endwise longitudinally into the support channel with each side of the channel of the strainer member being received snugly between the lip of a respective support channel side and the outer surface of the pipe and the bottom of the channel-section strainer bridging between the support channel sides and being formed with strainer perforations.

4,536,288

POCKET CENTRIFUGE AND METHOD OF OPERATING SAME

Günther Hultsch, Oberschleissheim, Fed. Rep. of Germany, assignor to Krauss-Maffei AG, Munich, Fed. Rep. of Germany

Division of Ser. No. 126,359, Mar. 3, 1980, abandoned. This application Jul. 6, 1984, Ser. No. 628,325
Claims priority, application Fed. Rep. of Germany, Mar. 5, 1979, 2908455
Int. Cl.³ B01D *33/02*
U.S. Cl. 210—325 **5 Claims**



1. A pocket centrifuge for receiving a suspension and extracting a filtrate therefrom, comprising:

a rotor body formed with a plurality of sieve pockets distributed around an axis and adapted to receive said suspension means;

means for rotating said body about said axis to extract a filtrate from said suspension whereby sieve angles are formed between perforated surfaces of said pockets and solids retained on said surfaces which are less than the friction angle of said solids on said surfaces, said pockets being elongated and having innermost and outermost edges delimiting said surfaces;

means defining an eccentric axis for said body offset from the first-mentioned axis and located inwardly of the innermost edges of said pockets; and

means for orbiting said first-mentioned axis about said eccentric axis while continuing to rotate said body about said first-mentioned axis to cyclically increase the sieve angle of said solids on said surfaces to a magnitude greater than said friction angle whereby said solids are cast off from said surfaces only upon the orbiting of said first-mentioned axis about said offset axis and only from the radially outermost edges of said pockets.

4,536,289

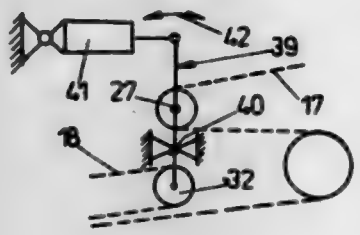
FILTER PRESS FOR DEWATERING OF MATERIALS

Robert Wolkenstein, Liezen, Austria, assignor to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed Oct. 17, 1983, Ser. No. 542,607
Claims priority, application Austria, Oct. 18, 1982, 3829/82
Int. Cl.³ B01D *33/04*
U.S. Cl. 210—401 **6 Claims**

1. Filter press for dewatering of materials, in which the material to be dewatered is passed between two water-permeable sieve belts or filter belts over dewatering drums and is subjected to pressure by the tension of the water-permeable belts, the material to be dewatered being supplied onto one of

said water-permeable belts, the dewatered material being dumped at a location located downstream the dewatering drums as seen in travel direction and said water-permeable belts being separately guided between the dumping location and a supply area, characterized in that each of the sieve belts is separately passed over a respective tensioning roll which is adjustable in transverse direction to its axis by being supported



in bearings which are mechanically coupled to each other and guided in the direction of adjusting movement, the adjusting movement of said tensioning rolls being effected by a lever arm mechanically connected at spaced-apart locations to said bearings and pivotally mounted at a location between said spaced-apart locations and a piston and cylinder unit acting on said lever arm.

4,536,290

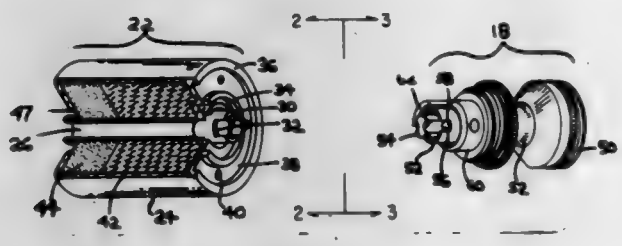
WATER FILTRATION DEVICE

Robert Bonazzo, 27 Bonazzo Dr., Trumbull, Conn. 06883

Filed Feb. 14, 1984, Ser. No. 579,984

Int. Cl.³ B01D *29/24*

U.S. Cl. 210—419 **6 Claims**



1. A water filtration device comprising:

first and second like hollow elongated members, each member having a small opening in one end and a large opening in the other end, the large openings in both members being adapted for detachable engagement with each other, said members when engaged defining an elongated housing having a cylindrically shaped central section and opposite upper and lower ends with small openings therein;

a single cylindrically shaped filter disposed removably in said central section, said filter having an axial bore aligned with the axis of said section, said housing end openings being centered on said axis, the ends of said filter disposed transversely to said axis having openings spaced from said bore;

first means secured to the opening in the upper housing end and detachably securable to the discharge port of a water faucet to secure said upper housing end in a rotationally pivotable manner to the port and to conduct water downwardly from the port into the housing; and

second means in the housing and connected between the first means and the bore, said second means having a first position with respect to said housing at which the conducted water flows downwardly through said bore and out of the lower end of the housing in unfiltered state and having a second position at which the water flows through the openings in the filter end adjacent the first means spaced from the bore, the filter, the openings in the opposite filter end spaced from the bore and out of the lower end of the housing in filtered state, the second means being placed in the first position when the housing is rotated in one direction about the first means and being placed in the second position when the housing is rotated in opposite direction about the first means.

4,536,291

TUBULAR FILTER ELEMENT WITH MATED END CAPS

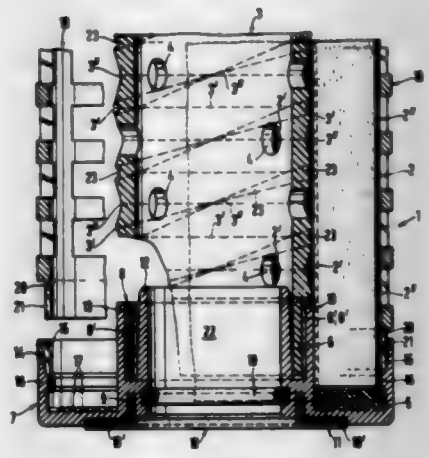
Jürgen Hoffmann, Diemarden; Günter Pradel, Göttingen, and Fritz Reulecke, Adelebsen, all of Fed. Rep. of Germany, assignors to Sartorius GmbH, Fed. Rep. of Germany

Filed May 17, 1984, Ser. No. 611,532

Claims priority, application Fed. Rep. of Germany, May 25, 1983, 3318940

Int. Cl.³ B01D *27/08, 29/14*

U.S. Cl. 210—457 **10 Claims**



1. A tubular filter means for filtration of a fluid, comprising: a filter sheet, wherein said sheet is folded and disposed into a cylindrical like-shape whereby the fold edges extend axially, a cylindrical support core having a plurality of perforations, the filter sheet is disposed outside of the cylindrical support core, at least one annular cap positioned at the end of the filter sheet and the cylindrical support core, the filter sheet is sealingly affixed to the cap, the cap is provided with two concentric inwardly axially extending spaced walls, the outer most concentric spaced wall is provided with inwardly extending axially oriented corrugations, the cylindrical support core is provided with an end portion which is embraced between the two concentric spaced walls and which is provided with outwardly extending axially oriented corrugations that mate with the inwardly extending corrugations of the outer concentric spaced wall, these corrugations preventing rotation of the cylindrical support core while also permitting axial expansion and contraction of the support core in relation to the annular cap.

4,536,292

CARBOXYLIC/SULFONIC/QUATERNARY AMMONIUM POLYMERS FOR USE AS SCALE AND CORROSION INHIBITORS

Gary F. Matz, Revere, Mass., assignor to Calgon Corporation, Pittsburgh, Pa.

Filed Mar. 26, 1984, Ser. No. 592,769

Int. Cl.³ C02F *5/12*

U.S. Cl. 210—701 **2 Claims**

1. A process for inhibiting the formation and deposition of scale in aqueous systems, said scale including calcium carbonate, calcium sulfate or calcium phosphate, and mistures thereof, comprising adding to the system at least 0.1 ppm of a water-soluble polymer having an intrinsic viscosity of 0.05 to 0.5 dl/g, prepared from:

(a) 60 to 75%, by weight, of an unsaturated carboxylic compound selected from the group consisting of acrylic acid, methacrylic acid and their salts;

(b) 5 to 25%, by weight, of an unsaturated sulfonic compound selected from the group consisting of 2-acrylamido-2-methylpropyl sulfonic acid, 2-methacrylamido-2-methylpropyl sulfonic acid and their salts; and

(c) 10 to 25%, by weight, of an unsaturated quaternary ammonium compound selected from the group consisting

of dimethyl diallyl ammonium chloride and diethyl diallyl ammonium chloride.

4,536,293

METHOD OF TREATING WASTE WATER

David Babineaux, III, P.O. Box 103, Payne, La. 70578

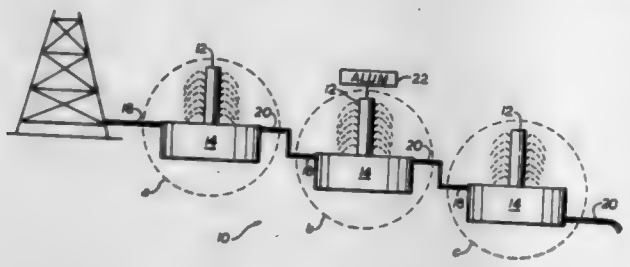
Continuation of Ser. No. 280,059, Jun. 30, 1981, abandoned, which is a continuation of Ser. No. 94,755, Nov. 15, 1979, abandoned, which is a continuation of Ser. No. 15,416, Feb. 26, 1979, abandoned. This application Nov. 19, 1981, Ser. No. 323,052

The portion of the term of this patent subsequent to May 8, 2001, has been disclaimed.

Int. Cl.³ C02F *1/52, 1/74*

U.S. Cl. 210—717

2 Claims



1. A method of purifying and treating waste water from oil and gas well drilling operations to improve the quality of the water sufficiently to allow the water to meet environmental standards, said waste water containing impurities comprising chlorides, suspended solids, dissolved solids, and oil or grease comprising the following steps:

(a) providing a sedimentation tank having an aerator feed pipe, a pump, a spray aerator, positioned in and above the tank, and a discharge pipe;

(b) pumping said waste water from oil and gas well drilling operations into said aerator feed pipe with said pump;

(c) adding an effective amount of a flocculent to said waste water from oil and gas well drilling operations ahead of said pump so that said flocculent is mixed and agitated along with said waste water, said flocculent reacting with minerals contained in said waste water to form a flocculent precipitate which aids in coagulating said impurities and settling out said impurities from said waste water after said waste water discharged from said pump;

(d) aerating and contacting said waste water containing said flocculent with air by spraying said waste water pumped from said aerator feed pipe through the atmosphere with said spray aerator, and permitting the aerated waste water to recollect in said sedimentation tank,

(e) collecting and holding said waste water for a time sufficient for said flocculent to react with minerals contained in said waste water to form said flocculent precipitate, and coagulating and settling out said impurities from said waste water, and (f) skimming clear waste water from the top of said sedimentation tank into said discharge pipe.

4,536,294

POLYMERIC FLOCCULANTS

James E. Guillet, 31 Sagebrush La., Don Mills, Ontario, M3A 1X4; Michael Heskins, 184 St. Germaine Ave., Toronto, Ontario, M5M 1W1, and D. Gary Murray, Apt. 304, 1325 York Mills Rd., Don Mills, Ontario, M3A 1Z6, all of Canada

Filed Mar. 23, 1983, Ser. No. 477,908

Claims priority, application Canada, Mar. 23, 1982, 399215

Int. Cl.³ C02F *1/56;* B01D *21/01*

U.S. Cl. 210—730

13 Claims

1. A process for accelerating the rate of settling of a suspended, finely divided solids material from aqueous suspension using a polymeric flocculant of molecular weight at least 0.5×10^6 g/mol and which has a critical flocculation temperature in the approximate range 0° C.–80° C., said critical flocculation temperature being the temperature below which the polymeric flocculant exhibits flocculating ability and above which the polymeric flocculant will not effect flocculation, which comprises adding to said suspension an effective amount of the polymeric flocculant at a temperature below the critical flocculation temperature of the flocculant, said flocculant comprising at least one water soluble polymer of at least 50 mol% of N-isopropylacrylamide or N-isopropylmethacrylamide, or methyl cellulose, separating the settled solids material from the aqueous liquid, then warming the liquid to a temperature above the critical flocculation temperature of the polymeric flocculant, to precipitate said polymeric flocculant, and separating the precipitated polymeric flocculant from said aqueous liquid.

4,536,295

METHOD FOR SEPARATING COARSE PARTICLES FROM A LIQUID

Bengt G. Janson, Djursholm, Sweden, assignor to AB Spray Technics S.T., Tranas, Sweden

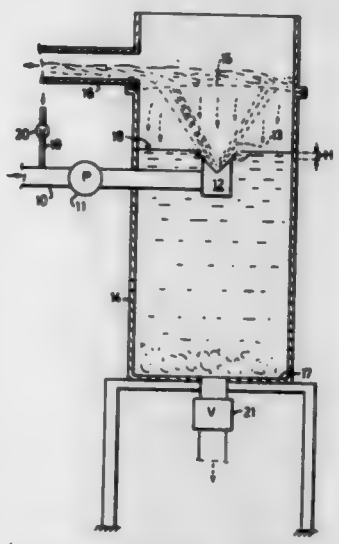
Filed Oct. 13, 1983, Ser. No. 541,736

Claims priority, application Sweden, Oct. 20, 1982, 8205961

Int. Cl.³ B07B *1/04*

U.S. Cl. 210—804

3 Claims



1. A method of separating coarse particles from a liquid by the liquid being pumped to a nozzle disposed in a vertical container, said nozzle spraying the liquid upwards in the form of a liquid cone against the underside of a horizontal screening means, such that the coarse particles fall back down into the container, while finer particles pass through the screening means together with the liquid and are taken off as a fine fraction, a liquid level in the container being caused to maintain a substantially constant level, characterized in that the whole of the liquid quantity supplied through the nozzle per time unit during continuous operation is led off through the screening means, and in that during continuous operation the liquid level in the container is caused to remain at a substantially constant height above an outlet orifice of the nozzle but below said screening means, such that a conical liquid jet is sprayed through a layer of the liquid in the container before reaching said screening means, the liquid in the vicinity of the nozzle being entrained in the liquid jet so that a larger amount of liquid is sprayed up toward the screening cloth than is supplied through the nozzle.

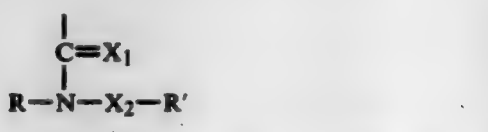
4,536,296

DRILLING AND COMPLETION MUDS USEFUL AT ELEVATED TEMPERATURES

Lino Vio, Pau, France, assignor to Societe Nationale Elf Aquitaine, Courbevoie, France

Continuation-in-part of Ser. No. 233,640, Feb. 12, 1981, abandoned. This application Mar. 10, 1983, Ser. No. 474,719
Claims priority, application France, Feb. 14, 1980, 80 03261; Jan. 16, 1981, 81 00767
Int. Cl.[3] C09K 7/02
U.S. Cl. 252—8.5 C 15 Claims

1. A clay based aqueous drilling or completion mud comprising clay, density increasing material, viscosity increasing agent, and from 1 to 10 grams per liter of a hydrosoluble polymeric material having pendant groups and a weight average molecular weight not higher than about 40,000, wherein from about 2 to 95% of the pendant groups are independently hydroxamic or thiohydroxamic groups of the formula:



wherein X_1 and X_2 are independently oxygen, or sulfur and R and R′ are independently hydrogen, alkyl or cycloalkyl having from 1 to about 18 carbon atoms, alkylene and cycloalkylene having from about 2 to 18 carbon atoms, aryl, alkylaryl, arylalkyl, alkoxyaryl, and alkoxyalkyl, having up to two conjugated rings, and having up to about 18 carbon atoms and wherein said polymeric material before the introduction of the hydroxamic or thiohydroxamic groups, is a homopolymer of acrylamide, methacrylamide, alkylacrylamide, thioacrylamide, alkylthioacrylamide, and hydroxyalkylacrylates, or copolymers of a monomer selected from acrylamide, methacrylamide, alklyacrylamide, thioacrylamide, alkylthioacrylamide, and hydroxyalkylacrylates and a monomer selected from acrylic acid, alkylacrylic acid, salts of acrylic acid and alkylacrylic acid, esters of acrylic acid and alkylacrylic acid, maleicanhydride, vinylacetate, vinyl pyrrolidone, butadiene, styrene and acrylonitrile.

4,536,297

WELL DRILLING AND COMPLETION FLUID COMPOSITION

Royal E. Loftin, and Adelina J. Son, both of Houston, Tex., assignors to Halliburton Company, Duncan, Okla.

Continuation-in-part of Ser. No. 343,620, Jan. 28, 1982, Pat. No. 4,440,649. This application Jan. 19, 1984, Ser. No. 572,103
The portion of the term of this patent subsequent to Apr. 3, 2001, has been disclaimed.
Int. Cl.[3] C09K 7/02
U.S. Cl. 252—8.5 C 2 Claims

1. A well drilling and completion fluid composition comprised of:

water;

sepiolite clay viscosity increasing agent present in said composition in an amount in the range of from about 1 to about 50 pounds per barrel of composition;

vinylamide-vinylsulfonate terpolymer fluid loss reducing and rheology stabilizing agent prepared by the reaction of 2-acrylamide-2 methyl-3-propyl sodium sulfonate, vinylacetamide and acrylamide monomers and mixtures thereof present in said composition in an amount in the range of from about 1 to about 30 pounds per barrel of composition;

sodium hydroxide present in said composition in an amount in the range of from about ¼ to about 2 pounds per barrel of composition; and

a clay stabilizing agent comprising at least one member selected from the group consisting of ammonium acetate, ammonium formate, and potassium formate present in said composition in an amount in the range of from about 1 to about 100 pounds per barrel of composition.

4,536,298

AQUEOUS FOAM FIRE EXTINGUISHER

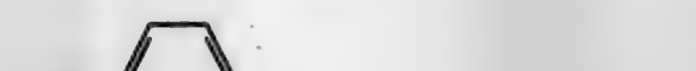
Masayuki Kamei, Urawa; Tomio Endo, Takasaki, and Yutaka Hashimoto, Urawa, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo and Kawamura Institute of Chemical Research, Saitama, both of, Japan

Filed Mar. 30, 1983, Ser. No. 480,213
Int. Cl.[3] A62D 1/04; A62C 1/12
U.S. Cl. 252—8.05 12 Claims

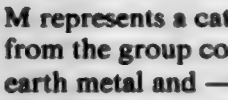
1. An aqueous foam fire extinguisher comprising (A) a fluorine-containing aminosulfonate-type surface-active agent of formula (A-2)

$$Rf—Z—Q_1—N(R)—Q_2SO_3M$$

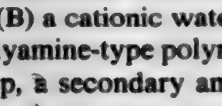
wherein Rf represents a fluorinated aliphatic group having 3 to 20 carbon atoms, Z is a divalent linking group selected from the group consisting of $—SO_2N(R_1)—$, $—CON(R_1)—$, $—(CH_2CH_2)_i—SO_2N(R_1)—$,



in which R_1 represents a hydrogen atom or an alkyl group having 1 to 12 carbon atoms, and i represents an integer of 1 to 10, Q_1 represents $(—CH_2)j$, in which j is an integer of 1 to 6 or



in which j is an integer of 1 to 6 or



in which R_2 represents an hydrogen atom or an alkyl group having 1 to 3 carbon atoms, R represents a hydrogen atom, an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, $—Q_2SO_3M$ or $—(CH_2)_kCOOM$, in which k represents an integer of 1 to 4, Q_2 represents $(—CH_2)_l—$ in which l represents an integer of 1 to 4,

in which R_3 represents a hydrogen atom or an alkyl group having 1 to 3 carbon atoms, or

M represents a cationic atom or atomic grouping selected from the group consisting of a hydrogen atom, an alkaline earth metal and $—N(H)_m(R_4)_n$, in which R_4 represents an alkyl or hydroxyalkyl group having 1 to 3 carbon atoms, and m and n are integers of 0 to 4 provided that $m+n=4$, and (B) a cationic water-soluble polymeric substance which is a polyamine-type polymeric substance having a primary amino group, a secondary amino group, a tertiary amino group, an ammonium group, a pyridinium group or a quaternary ammo-

nium group in the main chain or side chain, the weight ratio of the component (B) to the component (A), B/A, being from 0.05 to 50.

4,536,299

PERFUMING WITH A MACROCYCLIC CARBONATE

Wilhelmus J. Wiegers, Red Bank, N.J.; Augustinus G. Van Loveren, Rye, N.Y.; Marie R. Hanna, Hazlet, N.J.; Domenick Luccarelli, Jr., Neptune, N.J.; David R. Bowen, Red Bank, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 623,448, Jun. 22, 1984, , which is a division of Ser. No. 511,909, Jul. 8, 1983, Pat. No. 4,490,554. This application Nov. 14, 1984, Ser. No. 671,192

Int. Cl.[3] D06M *13/00;* C11D *3/50*

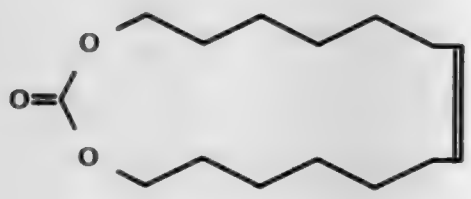
U.S. Cl. 252—8.6 3 Claims

1. A process for augmenting or enhancing the aroma of a musk perfumed article selected from the group consisting of:

(i) solid or liquid anionic, cationic, nonionic or zwitterionic detergents; and

(ii) fabric softener compositions or drier-added fabric softener articles

comprising the step of adding to said perfumed article an aroma augmenting or enhancing quantity of the compound having the structure:



4,536,300

MICELLAR SOLUTION FOR RECOVERING CRUDE OIL

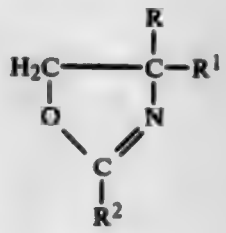
Robert B. Kayser, Evergreen, Colo., and Robert F. Purcell, Roselle, Ill., assignors to Angus Chemical Company, Northbrook, Ill.

Continuation-in-part of Ser. No. 284,766, Jul. 20, 1981, abandoned. This application Nov. 25, 1983, Ser. No. 555,284

Int. Cl.[3] E21B *43/22*

U.S. Cl. 252—8.55 D 7 Claims

1. In the process for recovering crude oil from a geological formation containing it using a micellar solution comprising a hydrocarbon, water, a petroleum sulfonate surfactant having an equivalent weight of about 350–500 and a co-surfactant, the improvement comprising using as the co-surfactant or portion thereof from 0.4 to 2.4% by weight of a substituted oxazoline represented by the formula



where R is ethyl or hydroxymethyl, R^1 is hydroxymethyl and the moiety R^2—C derives from oleic acid.

4,536,301

ENHANCED OIL RECOVERY

Thomas P. Malloy, Lake Zurich, and Raymond J. Swedo, Mount Prospect, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 297,910, Aug. 31, 1981, abandoned. This application Aug. 8, 1983, Ser. No. 521,282

Int. Cl.[3] C09K *3/00;* E21B *43/22*

U.S. Cl. 252—8.55 D 10 Claims

1. In a process for an enhanced oil recovery wherein an aqueous surfactant slug is introduced into a subterranean reservoir of oil to displace said oil from said reservoir, said slug being in a sufficient amount to lower the interfacial tension between said oil and water, the improvement which comprises utilizing as said surfactant slug an aqueous mixture comprising:

(a) from about 1 to about 10% of a sulfonate of a mixture of mono- and dialkyl-substituted aromatic hydrocarbons prepared by the alkylation of an aromatic hydrocarbon with a straight or branched chain olefinic hydrocarbon containing from about 6 to about 22 carbon atoms in the chain in the presence of hydrogen fluoride at alkylation conditions;

(b) from about 1 to about 10% of a lower alkyl alcohol containing from about 3 to about 6 carbon atoms; and

(c) from about 0.1 to about 2% of a nonionic ethoxylated normal alcohol containing from about 12 to about 15 carbon atoms.

4,536,302

CORROSION INHIBITION OF AQUEOUS BRINES

John J. Augsburger, 128 Pamellia, Bellaire, and R. Keith Darlington, 719 Oder La., Houston, both of Tex.

Filed Jun. 30, 1983, Ser. No. 509,717

Int. Cl.[3] E21B *41/02;* C09K *3/00;* C23F *11/04*

U.S. Cl. 252—8.55 R 14 Claims

1. A method of reducing the corrosive affect of aqueous brine or ferrous metal surfaces exposed to said brine comprising adding to the brine a corrosion inhibiting quantity of a mixture of (1) a sulfur compound wherein the oxidation state of the sulfur is zero or less, said sulfur compound being employed in an amount of at least about 1.0 grams per liter of brine, and (2) a reducing sugar, said reducing sugar being employed in an amount of at least 1.0 grams per liter of brine, said mixture being generally uniformly dispersed in said brine.

4,536,303

METHODS OF MINIMIZING FINES MIGRATION IN SUBTERRANEAN FORMATIONS

John K. Borchardt, Houston, Tex., assignor to Halliburton Company, Duncan, Okla.

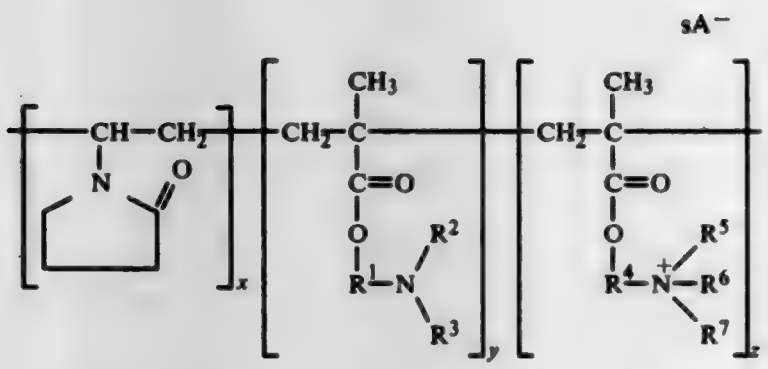
Filed Aug. 2, 1984, Ser. No. 636,942

Int. Cl.[3] E21B *43/12, 43/25, 43/27*

U.S. Cl. 252—8.55 R 19 Claims

1. A method of preventing or reducing the migration of fines in a permeable subterranean formation comprising:

contacting said fines in said permeable subterranean formation with an effective amount of an organic copolymer having recurring structural monomer units formed in a random fashion of the formula:



I II III

wherein

R^1 and R^4 are independently selected from the group consisting of an alkylene group having 1 to about 4 carbon atoms;

R^2, R^3, R^5, R^6, and R^7 are independently selected from the group consisting of methyl and ethyl;

A is selected from the group consisting of chloride, bromide, iodide, hydroxide, and methyl sulfate;

s is an integer equal to the number of said anions required to maintain electronic neutrality;

x, y, and z are integers, the sum of which equals the total number of monomer units in the copolymer required to give a molecular weight in the range of from about 100,000 to about 1,500,000; and

monomer unit I is present in the range of from about 80 to about 98 percent by weight of the copolymer;

monomer unit II is present in the range of from about 2 to about 20 percent by weight of the copolymer; and,

monomer unit III is present in the range of from about 0 to about 20 percent by weight of the copolymer.

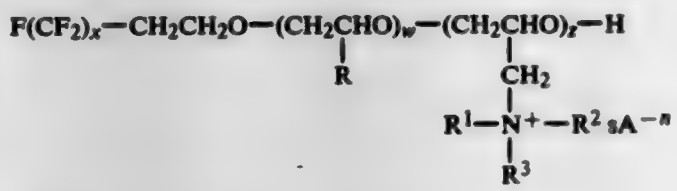
4,536,304

METHODS OF MINIMIZING FINES MIGRATION IN SUBTERRANEAN FORMATIONS

John K. Borchardt, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 21, 1984, Ser. No. 653,669
Int. Cl.³ E21B *43/12, 43/25*
U.S. Cl. 252—8.55 R **19 Claims**

1. A method of preventing or reducing the migration of silica fines in a permeable subterranean formation comprising: contacting said fines in said permeable subterranean formation with an effective amount of a nitrogen-containing cationic perfluorinated compound or mixtures of said compound represented by the formula



wherein

R is selected from the group consisting of hydrogen, methyl, ethyl, propyl, and mixtures thereof;

R^1, R^2, and R^3 are independently selected from the group consisting of methyl, ethyl, and mixtures thereof;

A is selected from the group consisting of chloride, bromide, iodide, sulfate, methyl sulfate, and mixtures thereof;

x is an integer in the range of from about 2 to about 12 or an integer or a fraction of an integer representing an average value of from about 2 to about 12;

w is an integer in the range of from about 2 to about 20 or an integer or a fraction of an integer representing an average value of from about 2 to about 20;

z is an integer in the range of from 1 to about 20 or an integer or a fraction of an integer representing an average value of from 1 to about 20;

n represents the valency of the anion represented by A; and,

s is an integer equal to the number of said anions required to maintain electronic neutrality.

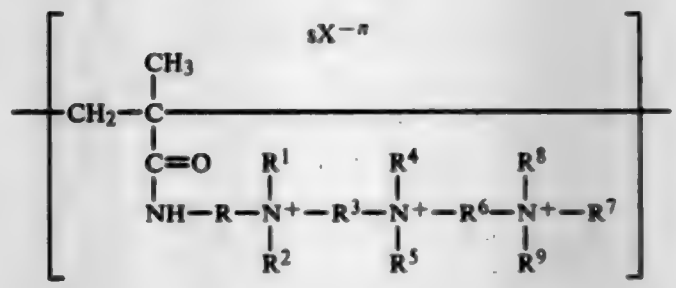
4,536,305

METHODS FOR STABILIZING SWELLING CLAYS OR MIGRATING FINES IN SUBTERRANEAN FORMATIONS

John K. Borchardt, and Bill M. Young, both of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Sep. 21, 1984, Ser. No. 653,668
Int. Cl.³ E21B *43/12, 43/25*
U.S. Cl. 252—8.55 R **19 Claims**

1. A method of preventing or reducing the migration of fines or the swelling of clays or combinations thereof in a permeable subterranean formation comprising: contacting said fines or swelling clays or combinations thereof with an effective amount of an organic polycationic polymer having a molecular weight in the range of from about 50,000 to about 300,000 and having monomer units of the formula:



wherein

R and R^3 are independently an alkylene group having from about 2 to about 4 carbon atoms;

R^1, R^2, R^4, R^5, R^7, R^8, and R^9 are independently selected from the group consisting of methyl and ethyl;

R^6 is selected from the group consisting of an unsubstituted alkylene group having from about 2 to about 4 carbon atoms and a substituted alkylene group having from about 2 to about 4 carbon atoms and containing a hydroxy group;

X is an anion selected from the group consisting of a halogen, methyl sulfate, sulfate, and nitrate;

n represents the valency of the anion represented by X; and,

a is an integer equal to the number of said anions required to maintain electronic neutrality.

4,536,306

BORATED PHOSPHORUS-CONTAINING COMPOUNDS AND LUBRICANT COMPOSITIONS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Phillip S. Landis, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 14, 1983, Ser. No. 561,410
Int. Cl.³ C10M *1/44, 1/54*
U.S. Cl. 252—32.7 E **27 Claims**

1. A product of reaction made by reacting a vicinal diol, a phosphorus oxyhalide and a boron compound, the vicinal diol being reacted with the phosphorus oxyhalide at a temperature between about 30° C. to about 220° C. in sufficient quantity so that about 5% to about 95% of the diol hydroxy functions are reacted, and the product thereby obtained being reacted with the boron compound at a temperature between about 80° C. and about 260° C. in sufficient quantity so that between about 5% and about 100% of the unreacted hydroxy functions are reacted, or the vicinal diol being reacted with the boron compound at a temperature between about 80° C. and about 260° C. in sufficient quantity so that about 5% to about 95% of the diol hydroxy functions are reacted, and the product thereby ob-

tained being reacted with the phosphorus oxyhalide at a temperature between about 30° C. and about 220° C. in sufficient quantity so that about 5% to about 100% of the unreacted hydroxy functions are reacted, all reactions being conducted at a pressure between about atmospheric and less than atmospheric pressure.

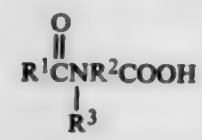
4,536,307

LUBRICANT COMPOSITION

Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 23, 1983, Ser. No. 535,139
Int. Cl.³ C10M *1/36*
U.S. Cl. 252—32.7 E **31 Claims**

1. A product of reaction made by reacting a boron compound with an acyl sarcosine of the formula



wherein R^1 is a hydrocarbyl group containing 1 to 20 carbon atoms, R^2 is a C_1 to C_6 hydrocarbylene group and R^3 is hydrogen or a C_1 to C_6 hydrocarbyl group, the reaction being carried out at from about 80°C. to about 260° c. using sufficient reactants to provide from about 0.02% to about 10% by weight of boron in the final product wherein the boron compound is boron oxide or has the formula

$$(RO)_x\ B(OH)_y$$

wherein R is a C_1 to C_6 alkyl group, x is 0 to 3 and y is 0 to 3, the sum of x and y being 3.

4,536,308

LITHIUM SOAP GREASE ADDITIVE

Rebecca C. C. Pehler; James R. Whiteman, both of Port Arthur, and Arnold C. Witte, Jr., Port Neches, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Oct. 1, 1984, Ser. No. 656,286
Int. Cl.³ C10M *1/48, 1/54*
U.S. Cl. 252—32.7 E **9 Claims**

1. A grease composition comprising a major portion of a mineral lubricating oil, a grease thickening amount of lithium 12-hydroxystearate and an effective amount of an additive composition, basis the grease composition said additive composition consisting of 4 to 8 wt % sulfurized sperm oil substitute, 0.5 to 2.0 wt % of the reaction product of coconut oil and diethanolamine, 2.4 to 5.0 wt % of zinc dialkyldithiophosphate, 0.5 to 2.0 wt % zinc diamyldithiocarbamate and 0.5 to 1.0 wt % aromatic amine phosphate.

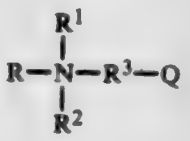
4,536,309

ZWITTERIONIC QUATERNARY AMMONIUM SULFONATES AND SULFATES AND LUBRICANTS CONTAINING SAME

Andrew G. Horodysky, Cherry Hill, and Joan M. Kaminski, Mullica Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Filed Jul. 29, 1982, Ser. No. 403,264
Int. Cl.³ C10M *1/32, 1/38*
U.S. Cl. 252—33 **27 Claims**

1. A composition of the formula



wherein

(1) R, R^1 and R^2 are hydrocarbyl groups selected from the group consisting of C_1 to C_{30} alkyl groups, C_6 to C_{30} alkenyl groups and any mixtures thereof,

(2) R^3 is a C_2 to C_6 alkylene group or a benzyl group and

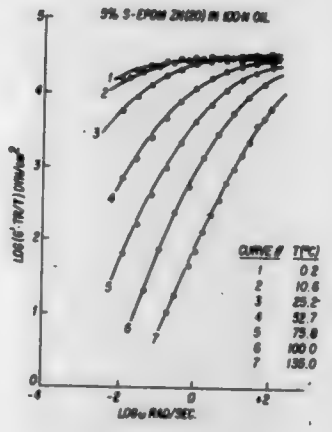
(3) Q is a sulfonate or a sulfate group.

4,536,310

HYDROCARBON BASED GELS AND SOLUTIONS OF BLENDS OF SULFONATE IONOMERS AND THEIR PRECURSORS EXTENDED OVER CRITICAL REGIONS

Pawan K. Agarwal, Westfield; Robert D. Lundberg, Bridgewater; William W. Graessley, Annandale, and Gay Ver Strate, Matawan, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 23, 1983, Ser. No. 565,157
Int. Cl.³ C10M *5/10, 5/22*
U.S. Cl. 252—33 **5 Claims**



1. A method for controlling the viscosity of hydrocarbon liquids havng a solubility parameter of less than about 9.5 and a viscosity of less than about 100 cps, said hydrocarbon liquid being selected from the group consisting of mineral oil, synthetic oil, lubricating oil, alkanes, cycloalkanes and aromatics and mixtures thereof, which comprises incorporating into said hydrocarbon liquid about 1 to about 15 grams/100 ml of said hydrocarbon liquid of a polymer blend, such polymer blend comprising a metal or amine neutralized sulfonated polymer and an unsulfonated polymer, said unsulfonated polymer comprising about 0.1 to about 35 weight percent of said polymer blend, such neutralized sulfonated polymer and said unsulfonated polymer each having the same polymeric backbone and said unsulfonated polymer being selected from the group consisting of EPDM terpolymers and polystyrene.

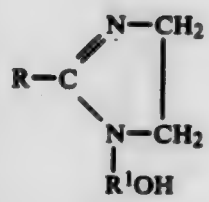
4,536,311

MULTIPURPOSE ANTIRUST AND FRICTION REDUCING ADDITIVES AND COMPOSITIONS THEREOF

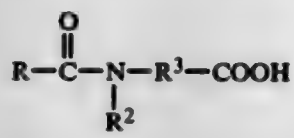
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,086
Int. Cl.³ C10M *1/32, 1/36*
U.S. Cl. 252—51.5 A **18 Claims**

1. A product of reaction obtained by reacting a hydrocarbyl hydroxyalkyl imidazoline and an acyl sarcosine at temperatures of from about 90° to about 250° C. and at atmospheric or higher pressure in a molar ratio of imidazoline to sarcosine of from about 1:1 to about 1:3 wherein said imidazoline has the general formula

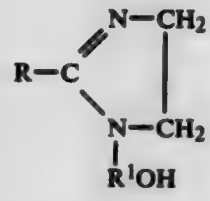


where R is C_8–C_{30} hydrocarbyl, and R^1 is C_2–C_4 hydrocarbylene and wherein said sarcosine has the general formula

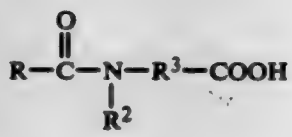


wherein R is as defined above, R^2 is C_1–C_6 hydrocarbyl or hydrogen and R^3 is C_1–C_6 hydrocarbylene.

7. A lubricant composition containing a major proportion of a lubricating oil or a grease prepared therefrom and a minor friction reducing or corrosion inhibiting amount of a product of reaction obtained by reacting a hydrocarbyl hydroxyalkyl imidazoline and an acyl sarcosine in a suitable solvent at temperatures of from about 90° to about 250° C. and at atmospheric or higher pressure in a molar ratio of imidazoline to sarcosine of from about 1:1 to about 1:3 and wherein said imidazoline has the general formula



where R is C_8–C_{30} hydrocarbyl and R^1 is C_2–C_4 hydrocarbylene, and wherein said sarcosine has the general formula



wherein R is as defined above, R^2 is C_1–C_6 hydrocarbyl or hydrogen and R^3 is C_1–C_6 hydrocarbylene.

4,536,312

SULFURIZED AMINE CONDENSATION PRODUCTS AND LUBRICANT COMPOSITIONS CONTAINING SAME

Gerassimos Frangatos, Haddonfield, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 366,953, Apr. 9, 1982, abandoned. This application Mar. 20, 1984, Ser. No. 591,648

Int. Cl.³ C10M *1/38*

U.S. Cl. 252—47.5 **12 Claims**

1. A sulfurized product obtained by the reaction of a hydrocarbyl amino substituted nitrogen heterocyclic compound with an unsaturated monocarboxylic acid of the formula:

RCOOH

wherein R is an alkenyl group, and alkedienyl group or an alketrienyl group containing from about 2 to about 50 carbon atoms in substantially stoichiometric amounts at a temperature of from about 150° to 275° C. to produce a product and thereafter sulfurizing said product with a substantially stoichiometric amount of elemental sulfur at a temperature of from about 150° to about 225° C.

10. A lubricant composition comprising a major proportion of a mineral lubricating oil, a synthetic lubricating oil or a grease from either of these, and a minor effective anti-rust amount of the product as defined in claim 1.

4,536,313

PEROXYGEN COMPOUND

Geoffrey J. Hignett, Lymm; Kenneth T. Rowbottom, and William R. Sanderson, both of Warrington, all of England, assignors to Interox Chemicals Limited, London, England

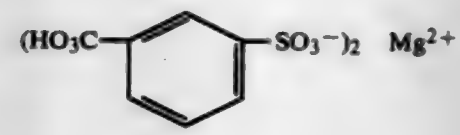
Filed Mar. 12, 1984, Ser. No. 588,817

Claims priority, application United Kingdom, Mar. 15, 1983, 8307037

Int. Cl.³ C11D *7/54, 3/395;* C07C *179/133, 133*

U.S. Cl. 252—100 **23 Claims**

1. In solid form, a salt, expressed in anhydrous form, having the general formula:



4,536,314

BLEACH COMPOSITIONS COMPRISING NON-LINEAR ALIPHATIC PEROXYCARBOXYLIC ACID PRECURSORS

Frederick E. Hardy, Newcastle upon Tyne, England; David J. Kitko, West Chester, and Cushman M. Cambre, Cincinnati, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Filed Feb. 22, 1984, Ser. No. 582,421

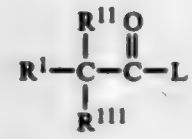
Claims priority, application United Kingdom, Feb. 23, 1983, 8304990

The portion of the term of this patent subsequent to Nov. 1, 2000, has been disclaimed.

Int. Cl.³ C11D *7/38, 7/54;* B32B *27/34*

U.S. Cl. 252—102 **39 Claims**

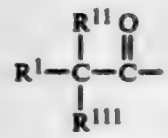
1. A non-linear aliphatic peroxycarboxylic acid precursor adapted to form a non linear aliphatic peroxy acid in aqueous alkaline hydrogen peroxide solution wherein the precursor has the general formula:



wherein the group:



is an organic moiety of non linear structural configuration R^{II} and R^{III} being independently selected from the group consisting of hydrogen and C_1–C_4 alkyl groups, the group:

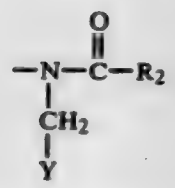


being the acyl moiety of a carboxylic acid having a log P_{oct} of from about 1.9 to about 4.1, wherein P_{oct} is the partition coefficient of the carboxylic acid between n-octanol and water at 21° C., and L is a leaving group selected from the group consisting of

(a)



(b)



wherein Z is selected from the group consisting of H, R_2 and halide, R_2 is an alkyl group containing from 1 to 4 carbon atoms, x is 0 or an integer from 1 to 4 and Y is selected from the group consisting of

$-SO_3M$
$-OSO_3M$
$-CO_2M$
$-N^+(R_2)_3Q^-$
$-N(R_2)_2\rightarrow O$

wherein M is selected from the group consisting of H, alkali metal, alkali earth meal, ammonium and substituted ammonium and Q is a halide or methosulphate.

4,536,315

PERFUME-CONTAINING CARRIER HAVING SURFACE-MODIFIED PARTICLES FOR LAUNDRY COMPOSITION

Pallassanna Ramachandran, Robbinsville, and Paul S. Grand, Highland Park, both of N.J., assignors to Colgate Palmolive Co., New York, N.Y.

Filed Jun. 1, 1983, Ser. No. 499,927
Int. Cl.³ C11D *17/06, 1/38, 9/44;* A61K *7/46*
U.S. Cl. 252—174.11 **28 Claims**

1. A perfume-containing carrier consisting essentially of (i) discrete particles containing at least 90%, by weight, of a smectite-type clay and/or a zeolite; (ii) a perfume, said perfume being absorbed and/or absorbed on said particles; and (iii) a fabric-adhesive agent comprising at least one of an anionic detergent compound, a nonionic detergent compound, or a cationic compound selected from the group consisting of primary, secondary and tertiary amines and their water-soluble salts, diamine and diammonium salts, and quaternary ammonium, phosphonium and sulfonium compounds, said fabric-adhesive agent being in contact with said particles and forming at least a partial coating upon the surface thereof, the perfume-containing carrier containing less than about 5%, by weight, of surface active detergent compounds other than cationic detergents.

4,536,316

FABRIC SOFTENING COMPOSITION CONTAINING SURFACE MODIFIED CLAY

Pallassanna Ramachandran, Robbinsville, N.J., assignor to Colgate-Palmolive Co., New York, N.Y.

Filed Jun. 1, 1983, Ser. No. 499,928
Int. Cl.³ C11D *17/06, 7/22, 3/02;* D06M *13/00*
U.S. Cl. 252—174.11 **29 Claims**

1. A fabric softening composition for use in admixture with a particulate laundry detergent composition comprising: (i) discrete softening particles containing at least about 90%, by weight, of a smectite-type clay, and less than about 5%, by weight, of detergent surface active agents selected from the group consisting of anionic, nonionic, ampholytic, and zwitterionic detergents; and (ii) a cationic compound selected from the group consisting of primary, secondary and tertiary amines and their water-soluble salts, diamine and diammonium salts, and quaternary ammonium, phosphonium and sulfonium compounds, substantially all of said cationic compound being adsorbed upon the surface of said particles, the weight ratio of softening particles to cationic compound being from about 500:1 to about 10:1.

4,536,317

FOAMING SURFACTANT COMPOSITIONS

Ramon A. Llenado, West Chester; Mark H. K. Mao, and Denzel A. Nicholson, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,696, Apr. 26, 1982, abandoned. This application Jul. 12, 1982, Ser. No. 397,330
The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.
Int. Cl.³ C11D *1/83*
U.S. Cl. 252—174.17 **3 Claims**

1. An agglomerated light-duty detergent granule composition comprising

(1) from about 5% to about 60% of an alkylpolysaccharide surfactant having the formula $RO(R^1O)_t(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms and wherein R is an alkyl, alkylphenyl, hydroxy alkylphenyl or hydroxyalkyl hydrophobic group or mixtures thereof in which said alkyl groups contain from about 8 to about 18 carbon atoms; R^1 contains from 2 to about 4 carbon atoms; t is from 0 to about 30; and x is a number from about 1.5 to about 10;

(2) from about 5% to about 60% of an alkyl benzene sulfonate cosurfactant in which the alkyl group contains from about 10 to about 13 carbon atoms, said alkyl benzene sulfonate neutralized with one or more cationic moieties;

(3) from about 5% to about 60% of an alkylpolyethoxylate sulfate cosurfactant in which the alkyl group contains from about 10 to about 16 carbon atoms and there are from about 1 to about 6 ethoxylate groups, said alkylpolyethoxylate sulfates neutralized with one or more cationic moieties;

(4) from about 5% to about 80% water soluble inorganic salt selected from the group consisting of sodium and potassium sulfates, chlorides, carbonates, phosphates, and mixtures thereof.

4,536,318

FOAMING SURFACTANT COMPOSITIONS

Thomas E. Cook, Cincinnati, and Ramon A. Llenado, West Chester, both of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio

Continuation-in-part of Ser. No. 371,694, Apr. 26, 1982, abandoned. This application Jul. 12, 1982, Ser. No. 396,999
The portion of the term of this patent subsequent to Aug. 20, 2002, has been disclaimed.
Int. Cl.³ C11D *1/74, 1/83*
U.S. Cl. 252—174.17 **7 Claims**

1. A foaming composition comprising from about 0.01% to about 95% of surfactants comprising

(1) an alkylpolysaccharide surfactant having the formula $RO(R^1O)_t(Z)_x$ where Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms and wherein R is an alkyl, alkylphenyl, hydroxy alkylphenyl or hydroxyalkyl hydrophobic group or mixtures thereof in which said alkyl groups contain from about 8 to about 18 carbon atoms; R^1 contains from 2 to about 4 carbon atoms; t is from 0 to about 30; and x is a number from about 1.5 to about 10;

(2) a mixture of anionic cosurfactants neutralized with one or more cationic moieties consisting essentially of:

(a) from about 1% to about 95% of a water soluble alkylbenzene sulfonate in which the alkyl group contains from about 10 to 13 carbon atoms, and

(b) from about 5% to about 99% of a cosurfactant selected from the group consisting of an alkyl glyceryl ether sulfonate in which the alkyl group contained from about 8 to about 18 carbon atoms, an alpha-olefin sulfonate in which the olefin group contains from about 10 to

about 18 carbon atoms, an alkyl polyethoxylate carboxylate in which the alkyl group contains from about 10 to about 18 carbon atoms, and the polyethoxylate chain contains from about 2 to about 6 ethoxylate groups, and mixtures thereof, the ratio of (1) to (2) being from about 1:10 to about 10:1.

4,536,319

COMPOSITIONS COMPRISING ALKYLPOLYSACCHARIDE DETERGENT SURFACTANT

Nicholas S. Payne, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Oct. 4, 1983, Ser. No. 538,855

The portion of the term of this patent subsequent to Aug. 2, 2000, has been disclaimed.

Int. Cl.³ C11D *1/72, 1/831*

U.S. Cl. 252—174.17 **20 Claims**

1. A homogeneous granular detergent composition comprising:

(1) from about 2% to about 30% of alkylpolysaccharide detergent surfactant having the formula $RO(R^1O)_tZ_x$ wherein R is an alkyl, alkylphenol, hydroxyalkyl, hydroxy alkylphenol, or mixtures thereof, and said alkyl groups contain from about 8 to about 18 carbon atoms; wherein each R^1 contains from 2 to about 4 carbon atoms; wherein t is from 0 to about 5; wherein Z is a moiety derived from a reducing saccharide containing from 5 to 6 carbon atoms; and wherein x is from about 1½ to about 5;

(2) from 0% to about 30% of detergent cosurfactant;

(3) from about 10% to about 75% of water-soluble neutral or alkaline salt; and

(4) from about 5% to about 20% water.

4,536,320

NEMATIC LIQUID CRYSTALLINE COMPOSITION

Tsutomu Nishizawa, Yokohama; Ryoichi Tukahara, Mobara; Ryoichi Morinaka, and Tuneo Hidaka, both of Ohmuta, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc., Tokyo, Japan

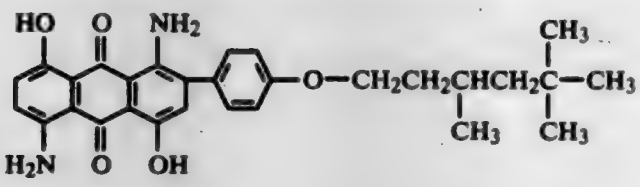
Continuation-in-part of Ser. No. 223,015, Jan. 6, 1981, abandoned. This application Oct. 5, 1983, Ser. No. 538,823

Claims priority, application Japan, Jan. 17, 1980, 80-3100[U]

Int. Cl.³ C09K *3/34*; G02F *1/13*

U.S. Cl. 252—299.1 **1 Claim**

1. Nematic liquid crystalline composition comprising (i) at least one nematic liquid crystalline material, and (ii) dissolved in (i), the anthraquinonic dye compound of the formula:



4,536,321

FLUOROBENZENE DERIVATIVES AND LIQUID CRYSTAL COMPOSITIONS CONTAINING THE SAME

Shigeru Sugimori, Fujisawashi; Tetsuhiko Kojima, Yokohamashi; Yasuyuki Goto, Yokohamashi; Toyoshiro Isoyama, Yokohamashi, and Kazunori Nigorikawa, Yokohamashi, all of Japan, assignors to Chisso Corporation, Osaka, Japan

Filed Feb. 16, 1984, Ser. No. 580,628

Claims priority, application Japan, Feb. 18, 1983, 58-25689; Mar. 15, 1983, 58-42992; Mar. 28, 1983, 58-52179; Apr. 18, 1983, 58-68188

Int. Cl.³ C09K *3/34*; G02F *1/13*; C07C *121/64, 49/807, 49/813*

U.S. Cl. 252—299.63 **8 Claims**

1. Fluorobenzene derivatives expressed by the general formula



(I)

wherein X represents CN or $COCH_3$ and n is 2 when X is CN and n is 1 or 2 when X is $COCH_3$, and R represents hydrogen atom or an alkyl group of 1–15 carbon atoms or an alkoxy group of 1 to 15 carbon atoms.

4,536,322

FLUORESCENT CORROSIVE FLUORIDE SOLUTION

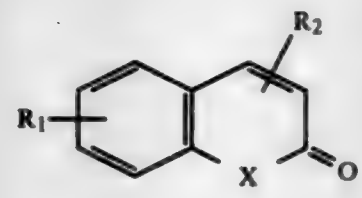
Gary A. Amstutz, and Kishor D. Mayekar, both of San Jose, Calif., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Oct. 28, 1983, Ser. No. 546,543

Int. Cl.³ C09K *11/06*

U.S. Cl. 252—301.16 **14 Claims**

1. An aqueous etchant solution comprising: a corrosive fluoride etchant component and a non-metallic, organic, normally colorless dye that fluoresces in the visible region when illuminated by ultra-violet light and which is non-reactive with the corrosive fluoride etchant component said dye being an organic dye having the general formula:



whose

$R_1 = NH_2$ or OH

$R_2 = C_1$–C_{18} alkyl or fluorosubstituted methyl

X = O or N.

4,536,323

NON-FLAMMABLE AEROSOL PROPELLANT MICROEMULSION SYSTEM

Howard R. Stopper, Cincinnati, Ohio, assignor to The Drackett Company, Cincinnati, Ohio

Filed Jun. 28, 1983, Ser. No. 508,643

Int. Cl.³ C09K *3/30*

U.S. Cl. 252—305 **21 Claims**

1. A propellant composition for aerosol dispensers capable of forming, at pressures suitable for delivering an aerosol from the aerosol dispenser, an oil-in-water microemulsion, said aerosol being characterized by its suppressed flammability, the composition comprising (a) a mixture comprising by weight of the total weight of the composition from about 23 to about 35% of a water-immiscible liquid which is a solvent for the propellant, from about 15 to about 25% water, and from about 3 to about 20% of a mixed surfactant system of at least one primary and at least one secondary surfactant, and (b) at least about 30% by weight of the total weight of the composition of at least one normally gaseous flammable aerosol propellant provided to pressurize the aerosol dispenser, the propellant being soluble in the water-immiscible liquid, said mixed surfactant system having a hydrophilic-lipophilic balance sufficient to cause the water-immiscible liquid in which the propellant is dissolved to disperse as micro-droplets in the water upon shaking of the aerosol dispenser, the micro-droplets being separated from the continuous water phase by the mixed surfactant system.

4,536,324

NONIONIC SURFACTANT TYPE VESICLE DISPERSION

Masami Fujiwara, Kawasaki; Hidenori Fukuda, Minami-ashigara, and Minako Tanaka, Yokohama, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Filed Jul. 18, 1983, Ser. No. 514,789
Claims priority, application Japan, Jul. 19, 1982, 57-125315
Int. Cl.[3] B01J *13/00*
U.S. Cl. 252—311 3 Claims

1. A nonionic surfactant type vesicle dispersion comprising vesicles, dispersed in an aqueous medium, composed of (A) 100 parts by weight of at least one ethoxylate selected from the group consisting of polyoxyethylene castor oil ethers and polyoxethylene hardened castor oil ethers having an average ethylene oxide addition mole number of 7 to 20 and (B) 3 to 30 parts by weight of sorbitan polyesters of long-chain fatty acids having 14 to 18 carbon atoms, and having the esterification degree of 2.5 to 3.5, wherein the total amount of components (A) and (B) is about 0.1% to 50% by weight based on the total weight of the dispersion.

4,536,325

PREPARATION OF STABLE OIL-IN-WATER EMULSIONS OF HIGH OIL CONTENT

Gerhard Borggrefe, Dusseldorf, and Christian Hase, Erkrath; both of Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jan. 24, 1984, Ser. No. 573,521
Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303174
Int. Cl.[3] B01J *13/00*
U.S. Cl. 252—314 2 Claims

1. A process for the preparation of stable oil-in-water emulsion containing from 70% to 95% of oily non-aqueous phase consisting of the steps of dissolving an emulsifier in the amount of water desired, adding the oily non-aqueous phase in one stage, mixing for one to two minutes in a high speed mixer and recovering the stable oil-in-water emulsion, employing from 0.1% to 3% by weight of the emulsion of at least one water-soluble salt of monoacyl cyanamide where said acyl is derived from fatty acids containing from 12 to 18 carbon atoms, as said emulsifier.

4,536,326

TREATMENT OF ACRYLAMIDE AND RELATED COMPOUNDS

Joseph M. Schmitt, Ridgefield, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Continuation of Ser. No. 362,351, Mar. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 258,235, Apr. 27, 1981, abandoned. This application Jan. 4, 1984, Ser. No. 570,403
Int. Cl.[3] C09K *15/32*; C08F *20/56, 20/06*
U.S. Cl. 252—400 R 12 Claims

1. A composition comprising:

(a) a monomer of inferior polymerizability selected from acrylamide, acrylic acid and mixtures thereof, said monomer being in the form of a 10 to 60 weight percent aqueous solution having a pH above 8.0, said monomer containing an amount of oxygen such that said monomer solution has a positive oxygen solubility, and

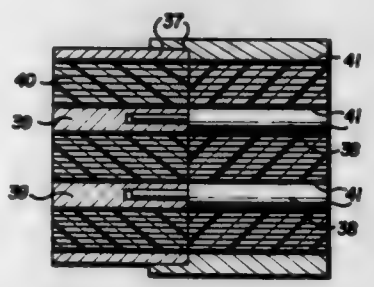
(b) a monomer-improving amount, insufficient to catalyze polymerization of said monomer, of an alkali metal borohydride.

4,536,327

COMPOSITION FOR PROTECTION AGAINST STRAY CURRENTS AND PROCESS FOR USING THE SAME

Yves D. Ramisse; Jean-Pierre C. Baboulet; Michel P. Vié, and Paul C. Malaval, all of Gramat, France, assignors to L'Etat Francais, France

Filed Jun. 8, 1981, Ser. No. 271,615
Claims priority, application France, Jun. 13, 1980, 80 13138
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—511 14 Claims



1. A composition for protecting electric cables, connectors, and connections, from parasitic currents, namely, noise currents from irradiation and X-ray photon pulses, comprising:

(a) a cold-curing silicone rubber of a viscosity of less than 10,000 centipoises;

(b) a filler of fine particles of carbon black of sizes of less than 1 micron in a percentage of 2 to 6% by weight, the fine filler carbon black particles having a specific surface of greater than 500 m^2/g; and

(c) a solvent for the silicone in a percentage of at least 40% by weight.

4,536,328

ELECTRICAL RESISTANCE COMPOSITIONS AND METHODS OF MAKING THE SAME

Dana L. Hankey, Exton, Pa., assignor to Heraeus Cermalloy, Inc., W. Conshohocken, Pa.

Filed May 30, 1984, Ser. No. 615,204
Int. Cl.[3] H01B *1/06*
U.S. Cl. 252—518 35 Claims

1. A composition for making electrical resistance elements comprising:

a. a conductive component which comprises a precious metal oxide of the formula $A'_{1-x}A''_xB'_{1-y}B''_yO_3$ wherein A′ is Sr or Ba, when A′ is Sr, A″ is selected from the group consisting of one or more of Ba, La, Y, Ca and Na, and when A′ is Ba, A″ is selected from the group consisting of one or more of Sr, La, Y, Ca and Na; B′ is Ru; B″ is selected from the group consisting of one or more of Ti, Cd, Zr, V and Co; $O<x<0.2$; and $O<y<0.2$;

b. a binder component which comprises

(i) between 40 weight percent and 75 weight percent C′, wherein C′ is SrO when A′ is Sr, C′ is BaO when A′ is Ba, and C′ is SrO+BaO when A′ is Sr and A″ is Ba and when A′ is Ba and A″ is Sr,

(ii) between 20 weight percent and 35 weight percent B_2O_3,

(iii) between 2 weight percent and 15 weight percent SiO_2, and

(iv) between 0.5 weight percent and 6.5 weight percent ZnO.

4,536,329

BOROSILICATE GLASS COMPOSITIONS

Jacob Hormadaly, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1983, Ser. No. 562,965
Int. Cl.[3] C03C *3/08, 3/10*; H01B *1/06*
U.S. Cl. 252—518 5 Claims

1. A glass which is suitable for use as a binder in high end

resistors, which is substantially free of Bi, Cd and Pb and on a molar basis consists essentially of:

A. 50–85% of glass forming materials consisting of 25–55% B_2O_3, 15–40% SiO_2; 0–10% ZrO_2 and 0–5% SnO_2, and

B. 50–15% of glass modifying materials consisting of 10–30% BaO, 1–10% CoO and 0–12% oxides of alkaline earth metals having atomic numbers 12–38, providing that

(1) the mole ratio $B_2O_3/SiO_2 = \geqq 0.8$; and

(2) $\Sigma (B_2O_3 + SiO_2) \geqq 50$.

4. A printable thick film resistor composition comprising a dispersion in organic medium of an admixture of finely divided particles of

(a) 95–55% wt. tin oxide pyrochlore-based conductive phase and

(b) 5–45% wt. of the glass of claim 1 or the composition of claim 3.

4,536,330

1-HYDROXYMETHYL-2-ACYL CYCLOPROPANE DERIVATIVES AND ESTERS AND CYCLIC CONDENSATION PRODUCTS THEREOF, ORGANOLEPTIC USES OF SAME AND PROCESSES FOR PREPARING SAME

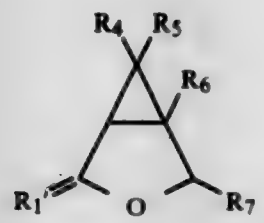
Richard M. Boden, Ocean; Marie R. Hanna, Hazlet, and Theodore J. Tyszkiewicz, Sayreville, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Division of Ser. No. 541,275, Oct. 12, 1983, Pat. No. 4,500,448, which is a division of Ser. No. 422,486, Sep. 23, 1982, Pat. No. 4,435,428. This application Mar. 14, 1984, Ser. No. 589,510

Int. Cl.³ C11B *9/00*

U.S. Cl. 252—522 R **2 Claims**

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1' represents C_1–C_{10} alkylidene; and wherein R_4, R_5, R_6 and R_7 represent hydrogen or C_1–C_3 lower alkyl.

4,536,331

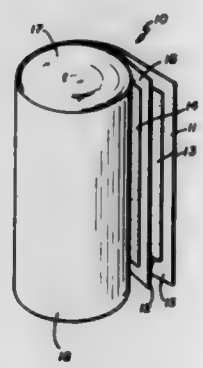
NON-TOXIC IMPREGNANT FOR ELECTRICAL CAPACITORS

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation of Ser. No. 385,669, Jun. 7, 1982, abandoned. This application Oct. 27, 1983, Ser. No. 545,989

Int. Cl.³ H01B *3/22, 3/20*

U.S. Cl. 252—579 **3 Claims**



1. A dielectricimpregnating fluid used in a capacitor, the dielectric fluid including a refined low acid soybean oil having a flash point of about 325° C. a first additive of butylated hydroxyanisole in an amount of from about 0.05% to 10% by weight of the total weight of said dielectric fluid, and a second additive of an olefin taken from the class consisting of decene, dodecene, tetradecene, hexadecene, in an amount of from 0.1% to 50% by volume of the total amount of dielectric fluid said second additive acting as a good gas absorber of peroxides and hydrogen.

4,536,332

TALL'OIL FATTY ACIDS-QUALITY IMPROVEMENT

Curry B. Davis, Panama City, Fla., and Americo G. P. Frade, Cherry Hill, N.J., assignors to Arizona Chemical Company, Fair Lawn, N.J.

Filed Nov. 7, 1983, Ser. No. 549,056

Int. Cl.³ B01J *19/12;* C02F *1/32;* C09F *1/02*

U.S. Cl. 260—97.6 **3 Claims**

1. A process comprising selective photolysis of trans-3,5-dimethoxystilbene to cis-3,5-dimethoxystilbene in distilled tall oil fatty acid by irradiation of the distilled tall oil fatty acid with artificially generated actinic radiation.

4,536,333

METHOD OF POLYMERIZING ROSIN

Jerome R. Olechowski, Lawrenceville, N.J., assignor to Union Camp Corporation, Wayne, N.J.

Filed Aug. 22, 1984, Ser. No. 643,248

Int. Cl.³ C08H *11/00;* C08F *1/00*

U.S. Cl. 260—99.5 **14 Claims**

1. A method for the polymerization of rosin, which comprises; mixing catalytic proportions of a catalyst consisting essentially of formic acid with the rosin; and heating the mixture.

4,536,334

PREPARATION OF β-LACTAM DERIVATIVES

Makoto Sunagawa; Haruki Matsumura, both of Osaka; Takaaki Inoue, Hyogo, and Toshiyuki Hirohashi, Osaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

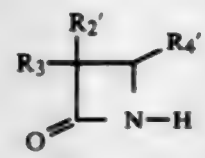
Filed Jun. 30, 1980, Ser. No. 164,396

Claims priority, application Japan, Jun. 28, 1979, 54-82411; Jul. 5, 1979, 54-85610

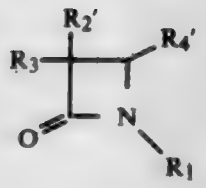
Int. Cl.³ C07D *205/08*

U.S. Cl. 260—239 A **4 Claims**

1. A process for preparing a β-lactam derivative of the formula:



wherein R_2' represents a hydrogen atom, an arylthio group, an arylsulfonyl group, an amino group, a lower alkoxycarbonylamino group, a haloalkoxycarbonylamino group or an amido group, R_3 represents a hydrogen atom or a lower alkyl group, and R_4' represents a carboxyl group; a lower alkoxycarbonyl group; an unsubstituted or substituted lower alkyl group wherein the substituent is a hydroxy group, an N-lower alkanoylamino group, a halogen atom, a cyano group, a nitro group, a lower alkoxycarbonyl group, a lower alkylcarbonyl group, an arylcarbonyl group or a gem-lower alkylenedioxy group or an unsubstituted or substituted lower alkenyl group wherein the substituent is a carboxyl group, a lower alkoxycarbonyl group, an aralkyloxycarbonyl group, a nitro group or an aryl group, which process comprises reacting a β-lactam derivative of the formula



wherein R_1 represents a mono- or diarylmethyl group and R_2', R_3 and R_4' are as defined above, with ceric ammonium nitrate having the formula $Ce(NO_3)_6(NH_4)_2$ to cleave the bond between the nitrogen atom on said β-lactam ring and the mono- or diarylmethyl group represented by R_1.

4,536,335

CARBAPENEM ANTIBIOTICS

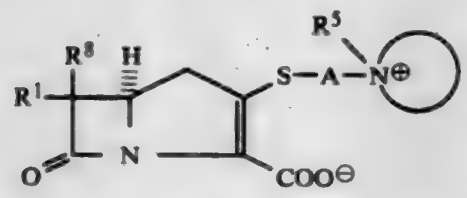
Choung U. Kim, Manlius, and Peter F. Micso, Jr., Syracuse, both of N.Y., assignors to Bristol-Myers Company, New York, N.Y.

Continuation-in-part of Ser. No. 389,652, Jun. 18, 1982, abandoned. This application Jun. 7, 1983, Ser. No. 499,690

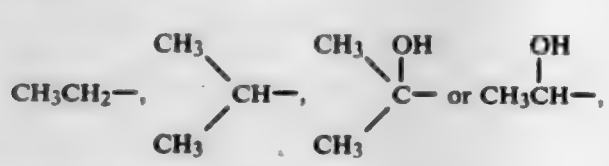
Int. Cl.³ C07D *487/04;* A61K *31/40*

U.S. Cl. 260—245.2 T **13 Claims**

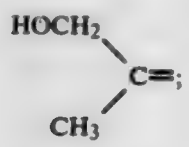
1. A compound of the formula



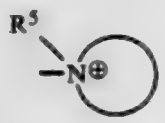
wherein R^8 is hydrogen and R^1 is hydrogen,



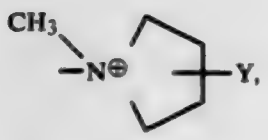
or R^1 and R^8 taken together represent



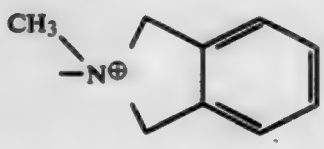
A is cyclopentylene, cyclohexylene or C_2–C_6 alkylene optionally substituted by one or more C_1–C_4 alkyl groups; and



represents



or



wherein Y is hydrogen, C_1–C_6 alkyl, hydroxy, —SC_1–C_6 alkyl, carboxyl, carbamoyl, chloro, bromo, iodo, fluoro or phenyl; or a pharmaceutically acceptable salt thereof or a benzhydryl, allyl, p-nitrobenzyl, 2-naphthylmethyl, benzyl, trichloroethyl, silyl, phenacyl, p-methoxybenzyl, acetonyl, o-nitrobenzyl, 4-pyridylmethyl, C_1–C_6 alkyl, pivaloyloxymethyl, acetoxymethyl, phthalidyl, indanyl or methoxymethyl ester.

4,536,336

NEW ANTHRACYCLINONES AND THEIR PRODUCTION

Yoshito Kishi, Belmond, Mass., assignor to Meiji Seika Kaisha, Ltd., Kyobashi, Japan

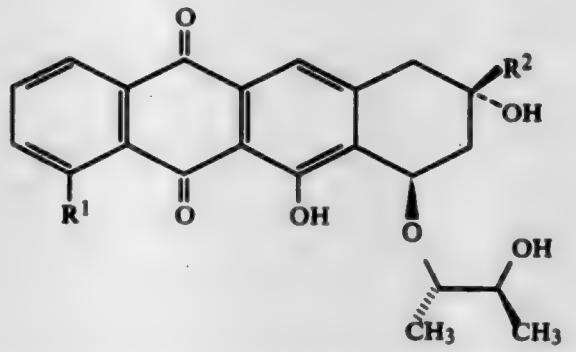
Filed Dec. 23, 1983, Ser. No. 565,216

Claims priority, application Japan, Dec. 23, 1982, 57-225089

Int. Cl.³ C07C *50/36, 49/76, 49/74*

U.S. Cl. 260—351.1 **14 Claims**

1. A compound of the formula



(I)

wherein R^1 denotes a hydrogen atom, a hydroxyl group or an alkoxyl group of 1–4 carbon atoms and R^2 denotes an ethyl group or an acetyl group.

4,536,337

PROCESS FOR THE PREPARATION OF QUINONES

Tatsuyoshi Komatsu, Kamakura; Shigeaki Numata, Yokohama; Toshihiko Sumino, Kawasaki; Katsumi Matsuzaki, Yokohama; Masao Narita, Yokohama, and Katsuhiko Hioki, Yokohama, all of Japan, assignors to Kawasaki Kasei Chemicals Ltd., Tokyo, Japan

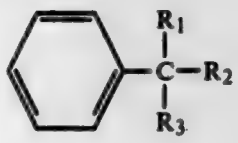
Filed Apr. 4, 1984, Ser. No. 596,695

Claims priority, application Japan, Apr. 11, 1983, 58-64315; Jan. 28, 1984, 59-14086

Int. Cl.³ C07C *50/02, 50/10, 50/16, 50/22*

U.S. Cl. 260—396 R **9 Claims**

1. A process for preparing a quinone, which comprises reacting a polynuclear aromatic hydrocarbon and a ceric salt in an aqueous acid solution in the presence of an organic solvent selected from the group consisting of chlorobenzene and an alkylbenzene represented by the general formula:



(I)

where each of R_1, R_2 and R_3 is an alkyl group and the total carbon number of the alkyl groups is from 3 to 6.

4,536,338
PROCESS FOR MANUFACTURE OF FATTY ACID ESTERS OF HYDROXY SULFONATES

Warren J. Urban, River Vale; Joseph Barillo, Glen Rock, and Jerry J. Krupa, Rockaway, all of N.J., assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 9, 1983, Ser. No. 550,274
Int. Cl.³ C07C *143/90*; C11D *1/28*
U.S. Cl. 260—400 11 Claims

1. A method is disclosed of preparing a compound of the formula $RCOOR'SO_3M$, wherein R is a C_5–C_{18} alkyl group, R' is selected from the group consisting of divalent C_2–C_4 alkylene, C_6–C_8 aryl and C_7–C_8 alkylaryl radicals and M is an alkali metal cation, the process comprising:

(a) heating at 200° to 260° C. a first mixture of C_5–C_{16} monocarboxylic acid with a hydroxy sulfonate of the formula $HOR'SO_3M$, in a mole ratio of 1.01:1 to 2:1, in the presence of a catalyst;

(b) removing liberated water of esterification from the reaction mass and when the desired conversion to $RCOOR'SO_3M$ is achieved;

(c) quenching the catalyst with an effective amount to neutralize the catalyst of an alkaline compound; and

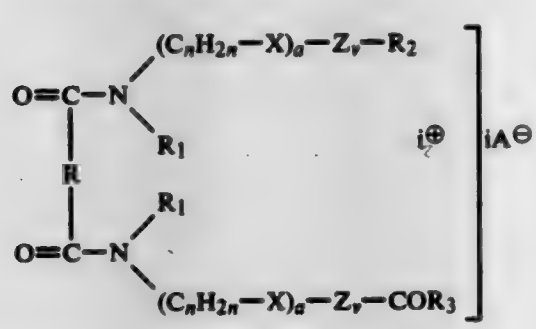
(d) adding a higher molecular weight C_{15}–C_{24} fatty acid to the reaction mixture subsequent or simultaneous with addition of alkaline catalyst quencher.

4,536,339
BISAMIDES, A PROCESS FOR THEIR PREPARATION AND THEIR USE

Werner Ritschel, Hofheim am Taunus; Helmut Diery, Kelkheim, and Martin Hille, Liederbach, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 2, 1982, Ser. No. 414,509
Claims priority, application Fed. Rep. of Germany, Sep. 10, 1981, 3135832
Int. Cl.³ C11C *3/00*
U.S. Cl. 260—404.5 5 Claims

1. A bisamide of the formula



I

wherein R denotes the alkyl skeleton of a dimerized fatty acid having 22 to 42, preferably 34, C atoms, R_1 denotes hydrogen or a group of the formula

$$-(C_nH_{2n}-X)_a-Z_v-R_2,$$

R_2 denotes hydrogen or a group $-COR_3$, R_3 denotes C_1–C_{22}-, preferably C_8–C_{22}-alkyl, X denotes an oxygen atom or a group of the formula $N-B_m$, B denotes hydrogen, methyl, ethyl, benzyl or a group of the formula $-Z_v-R_2$, n denotes a number from 2 to 6, a denotes a number from 0 to 5, v denotes a number from 0 to 100, but a and v are not both simultaneously zero, Z denotes a group of the formula $-C_2H_4X(C_3H_6X)_b$ or $CH_2-CHY\,OC_nH_{2n}$ or C_nH_{2n}, b denotes a number from 0 to 5, preferably 0, 1 or 2, i denotes a number from to to $2(a+b)+2$ and A denotes an anion, m denotes 1 or 2, and Y denotes hydrogen, methyl or ethyl.

4,536,340
PROCESS FOR THE PREPARATION OF ALKYL NONADIENOATE ESTERS

Ronnie M. Hanes, Milford, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation of Ser. No. 258,140, Apr. 27, 1981, abandoned. This application May 24, 1983, Ser. No. 497,769
Int. Cl.³ C07C *67/38, 69/587*
U.S. Cl. 260—410.9 R 14 Claims

1. A process for reacting a mixture of 1,3-butadiene, carbon monoxide and a monoalkanol of the general formula ROH in which R is a straight or branched chain alkyl group of from 1 to about 12 carbon atoms to provide alkyl nonadienoate employing as catalyst, a palladium-ligand complex comprising:

(a) a member selected from the group consisting of zerovalent palladium, a palladium-containing composition which can provide zerovalent palladium under reaction conditions and palladium (II) salt;

(b) a strong ligand selected from the group consisting of tertiary phosphine having a pKa in water of not greater than about 6, a phosphite of the general formula $(R^1O)(R^2O)(R^3O)P$ in which each of R^1, R^2 and R^3 is an alkyl group having at least 9 carbon atoms, an aryl group or an alkaryl group, an arsine of the general formula $R^1R^2R^3As$ in which each of R^1, R^2 and R^3 have the aforestated meanings and a stibine of the general formula $R^1R^2R^3Sb$ in which each of R^1, R^2 and R^3 have the aforestated meanings, the mole ratio of said strong ligand to palladium being from about 1:1 to about 3:1, and

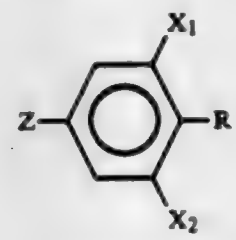
(c) a weak ligand selected from the group consisting of tertiary phosphine have a pKa in water of greater than about 6, a phosphite of the general formula $(R^4O)(R^5O)(R^6O)P$ in which each of R^4, R^5 and R^6 is an alkyl group having less than 9 carbon atoms, an arsine of the general formula $R^7R^8R^9As$ in which each of R^7, R^8 and R^9 is an alkyl group having less than 9 carbon atoms or an alkoxy group and a stibine of the general formula $R^7R^8R^9Sb$ in which each of R^7, R^8 and R^9 have the aforestated meanings, the mole ratio of said weak ligand to palladium being from about 4:1 to about 100:1.

4,536,341
SUBSTITUTED N-AROYL N'-PHENYL UREA COMPOUNDS

Raymond H. Rigterink, Midland, Mich., and Ronald J. Sbragia, Clayton, Calif., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 401,491, Jul. 26, 1982, Pat. No. 4,468,405. This application Aug. 3, 1983, Ser. No. 520,033
Int. Cl.³ C07C *157/09, 122/00, 127/19*
U.S. Cl. 260—453 AR 5 Claims

1. A compound having the formula



wherein X_1 and X_2 are halogen which may be the same or different, R is a C_1–C_4 halohaloweralkyl, halohaloweralkoxy or halohaloweralkylthio group and Z is NH_2, $-N{=}C{=}O$,

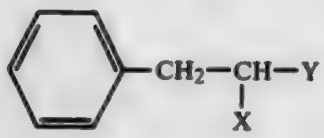
$$-NH-\overset{O}{\overset{\|}{C}}-NH_2,\ N{=}C{=}S \text{ or } -NH-\overset{S}{\overset{\|}{C}}-NH_2.$$

4,536,342
PROCESS FOR PRODUCING A HALOGEN-CONTAINING ETHYLBENZENE DERIVATIVE

Kiyotaka Oyama, Hikari, and Tuneo Harada, Shin-nanyo, both of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shin-nanyo, Japan

Filed Oct. 5, 1984, Ser. No. 658,047
Claims priority, application Japan, Oct. 5, 1983, 58-185023
Int. Cl.[3] C07C *121/66, 69/76, 53/134*
U.S. Cl. 260—465 G 5 Claims

1. A process for producing a halogen-containing ethylbenzene derivative represented by the general formula:



(I)

where X is a halogen atom, and Y is a nitrile group, a carboxyl group, a lower alkoxycarbonyl group or an amidocarbonyl group, which comprises reacting a vinyl compound represented by the general formula:

$$CH_2{=}CH{-}Y \qquad \text{(II)}$$

where Y is as defined above, with a benzenediazonium salt and halogen ions in a solvent mixture comprising a lower alcohol and/or an ether, and water, under an acidic condition with a mineral acid, in the presence of a monovalent copper compound as a catalyst.

4,536,343
PROCESS FOR PREPARING ALPHA-ARYLACRYLONITRILES

Venkataraman Ramachandran, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Nov. 29, 1984, Ser. No. 676,479
Int. Cl.[3] C07C *121/75, 121/62, 121/70*
U.S. Cl. 260—465 F 17 Claims

15. A process which comprises reacting a tetralone having a removable hydrogen alpha to the carbonyl group with an alkali metal cyanide and aluminum chloride in the presence of a catalytic amount of a tetraalkylammonium halide at a temperature of about 60°–120° C. so as to form a 1-cyano-3,4-dihydronaphthalene.

4,536,344
PROCESS FOR FORMYLATING ARYL HALIDES

Paul Fiedler, Cologne, and Rudolf Braden, Odenthal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Nov. 4, 1983, Ser. No. 549,339
Claims priority, application Fed. Rep. of Germany, Nov. 18, 1982, 3242582
Int. Cl.[3] C07C *45/49*
U.S. Cl. 260—465 R 10 Claims

1. In a process for formylating optionally substituted iodo-bromo- and/or chloro-aryl compound with carbon monoxide and hydrogen at a pressure from 20 to 400 bars and at a temperature in the range of 80° to 250° C. in the presence of a noble metal catalyst and a tertiary organic nitrogen compound, the improvement which comprises carrying out the formylation in the presence of a phosphane and/or phosphite, said phosphane and/or phosphite present in an amount of 10 to 1,000 times the molar amount of catalyst.

4,536,345
IMINO DERIVATIVES α-CYANO-3-PHENOXYBENZYL 2,2-DIMETHYL-3-FORMYL-CYCLOPROPANE-1-CARBOXYLATE

Jacques Martel, Bondy; Jean Tessier, Vincennes, and André Teche, Paris, all of France, assignors to Roussel Uclaf, Paris, France

Division of Ser. No. 307,690, Oct. 1, 1981, Pat. No. 4,434,294, which is a division of Ser. No. 212,566, Dec. 3, 1980, Pat. No. 4,312,817. This application Sep. 26, 1983, Ser. No. 535,878
Claims priority, application France, Dec. 17, 1979, 79 30843
Int. Cl.[3] C07C *121/46*
U.S. Cl. 260—465 D 2 Claims

1. All the stereoisomeric forms of (RS)α-cyano-3-phenoxybenzyl 2,2-dimethyl-3-formyl-cyclopropane-1-carboxylate.

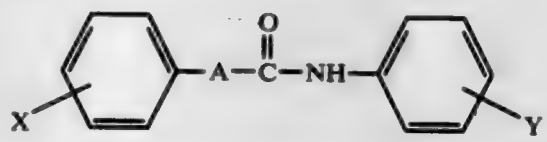
2. All the stereoisomeric forms of (S)α-cyano-3-phenoxybenzyl 2,2-dimethyl-3-formyl-cyclopropane-1-carboxylate.

4,536,346
ARALKANAMIDOPHENYL COMPOUNDS

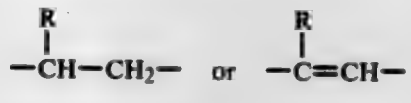
Robert G. Shepherd, Selbyville, Del., and Janis Upeslacis, Pomona, N.Y., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 6, 1983, Ser. No. 492,094
Int. Cl.[3] C07C *121/78, 101/44*
U.S. Cl. 260—465 D 49 Claims

1. A compound of the formula:



wherein A is a moiety of the formulae:



wherein R is alkyl (C_1–C_4) or phenyl substituted with one or more substituents selected independently of X from the group consisting of those from which X is selected; X represents one or more substituents independently selected from the group consisting of hydrogen, (C_1–C_4)alkyl, hydroxy, (C_1–C_4)alkoxy, halo, and nitro; Y represents one or more substituents independently selected from the group consisting of hydrogen, (C_1–C_4)alkyl, hydroxy, (C_1–C_4)alkoxy, halo, trifluoromethyl, nitro, amino, acetamido, acetyl, formyl, cyano, carboxy, (C_1–C_4)carboalkoxy, carboxamido, sulfonamido, $-CO_2CH-_2CO_2C_2H_5$, $-CO_2CH_2CO_2CH_3$, and $-CO_2CH_2CO_2H$; and the pharmaceutically acceptable salts thereof.

4,536,347
SELECTIVE HYDROGENATION OF UNSATURATED CARBONYL COMPOUNDS

Michael Horner, Neustadt, and Matthias Irgang, Heidelberg, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Division of Ser. No. 397,781, Jul. 13, 1982, Pat. No. 4,465,787. This application Mar. 19, 1984, Ser. No. 590,647
Claims priority, application Fed. Rep. of Germany, Aug. 4, 1981, 3130805
Int. Cl.[3] C07C *121/75, 29/14*
U.S. Cl. 260—465 F 4 Claims

1. A process for hydrogenating α,β-unsaturated carbonyl compounds to obtain the corresponding α,β-unsaturated alcohols in liquid phase with hydrogen in the presence of a tertiary amine and in the presence of a ruthenium-on-charcoal or ruthenium-on-carbon black catalyst prepared by a process comprising:

a. impregnating charcoal or carbon black catalyst with a ruthenium compound;
b. modifying the ruthenium-impregnated catalyst in the dried state by mixing the powder with an iron compound; and
c. reducing the iron impregnated catalyst with hydrogen with thorough mixing.

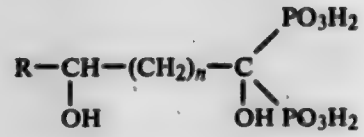
4,536,348

DIHYDROXYALKANE DIPHOSPHONIC ACIDS

Helmut Blüm, Duesseldorf, Fed. Rep. of Germany, assignor to Henkel Kommanditgesellschaft auf Aktien, Dusseldorf, Fed. Rep. of Germany

Filed Sep. 12, 1984, Ser. No. 649,868
Claims priority, application Fed. Rep. of Germany, Sep. 22, 1983, 3334211
Int. Cl.³ C07F *9/38;* A61K *31/66*
U.S. Cl. 260—502.4 P 4 Claims

1. An α,ω-dihydroxyalkane-α,α-diphosphonic acid of the formula:



(I)

in which R represents hydrogen, phenyl, or a substituted phenyl wherein the substituents on the substituted phenyl are at least one of halogen, C_1-C_6 alkyl, and hydroxyl, and n is an integer of from 1 to 9, or a water-soluble salt thereof.

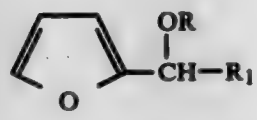
4,536,349

FURAN DERIVATIVES USEFUL AS AROMA COMPOUNDS

Eugene G. Harris, West Chester, Ohio, assignor to National Distillers and Chemical Corporation, New York, N.Y.

Filed Sep. 29, 1982, Ser. No. 426,527
Int. Cl.³ A61K *7/46;* C11B *9/00*
U.S. Cl. 252—522 R 2 Claims

1. A process for providing a composition with a fragrance comprising incorporating therein an odoriferous amount of a compound having the structure:



wherein R is an alkyl group having from 1 to about 6 carbon atoms or an alkenyl group having from about 3 to about 6 carbon atoms and R_1 is selected from the group consisting of alkyl, alkenyl, cycloalkyl, cycloalkenyl and aryl.

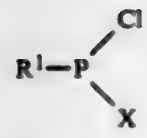
4,536,350

PROCESS FOR MAKING CHLOROPHOSPHANES, PHOSPHINIC ACID CHLORIDES OR THIOPHOSPHINIC ACID CHLORIDE, AND NOVEL ISOMERIC MIXTURE CONSISTING OF CHLORO-PHOSPHABICYCLONONANES

Norbert Weferling, Frechen, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

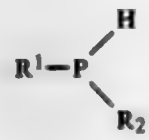
Filed Sep. 14, 1983, Ser. No. 532,273
Claims priority, application Fed. Rep. of Germany, Sep. 28, 1982, 3235787
Int. Cl.³ C07F *9/52, 9/53*
U.S. Cl. 260—543 P 7 Claims

1. A process for making chlorophosphanes of the general formula



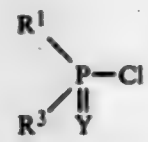
(I)

from primary or secondary phosphanes of the general formula



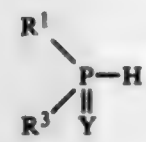
(II)

or phosphinic acid chlorides of thiophosphinic acid chlorides of the general formula



(III)

from secondary phosphane oxides or sulfides of the general formula



(IV)

in which formulae
R^1 stands for a linear or branched alkyl group, an aryl or cycloalkyl group having from 1 to 16 carbon atoms,
R^2 has one of the meanings given for R^1 or stands for hydrogen,
R^1 and R^2 are CH-bridge members of a bicyclic ring system which includes the P atom, the two said CH-bridge members, and an additional 4 to 6 carbon atoms,
R^3 has one of the meanings given for R^1,
X stands for R^1 or chlorine, and X can be R^2 when R^2 is not hydrogen, and
Y stands for sulfur or oxygen, which comprises reacting the respective starting materials with hexachloroethane at temperatures of 20° to 180° C.

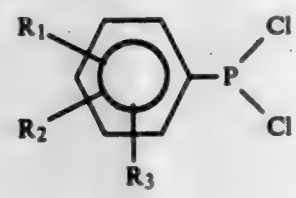
4,536,351

PROCESS FOR MAKING ARYLDICHLOROPHOSPHANES

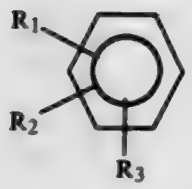
Hubert Neumaier, Brühl, Fed. Rep. of Germany, assignor to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,807
Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248483
Int. Cl.³ C07F *9/52*
U.S. Cl. 260—543 P 5 Claims

1. In a process for making aryl-dichlorophosphanes of the formula



in which R_1, R_2 and R_3 being identical or different each stand for a hydrogen atom, an alkyl group having from 1 to 8 carbon atoms, a halogen atom, an aryl group or an aryloxy group by reacting an arene of the formula



in which R_1, R_2 and R_3 have the meanings given above, with excess phosphorus(III)chloride in the presence of aluminum chloride by boiling the mixture over a period of several hours and subsequently precipitating the aluminum chloride by adding a complexing agent, filtering and distillatively working up the filtrate, the improvement which comprises: using 0.05 to 0.9 mol aluminum chloride per mol arene and 1-3 mols finely ground alkali metal chloride as the complexing agent per mol aluminum chloride.

4,536,352

PERFLUORO VINYL ETHERS

Kyoji Kimoto, Kanagawa; Hirotsugu Miyauchi, Tokyo; Jukichi Ohmura, Kanagawa; Mikio Ebisawa, Kanagawa, and Toshioki Hane, Kanagawa, all of Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 152,856, May 23, 1980, U.S. Pat. No. 4,329,435.

This application Dec. 14, 1981, Ser. No. 330,608

Claims priority, application Japan, May 31, 1979, 54-67889; Jul. 18, 1979, 54-90302; Dec. 21, 1979, 54-165675; Dec. 26, 1979, 54-168179; Dec. 28, 1979, 54-170315

Int. Cl.³ C07C *143/70*

U.S. Cl. 260—543 F **2 Claims**

1. A fluorinated vinyl ether compound represented by the formula:

$$FSO_2(CF_2)_{n+1}(OCFCF_2)_{p'}OCF{=}CF_2$$
$$\quad\quad\quad

R^5 is hydrogen or lower alkyl;
Q is CH;
Y is hydrogen or chloro;
Z is chloro or trifluoromethyl; and
R^2 is selected from group (1), (2) or (3);

(1) $-(CH)_{n'}-\overset{R^4}{\underset{|}{}}-\overset{O}{\underset{\|}{C}}-X_n^3-R^7$,

(3) $-(CH)_{n'}-\overset{R^4}{\underset{|}{}}-O-\overset{O}{\underset{\|}{C}}-R^3$, or

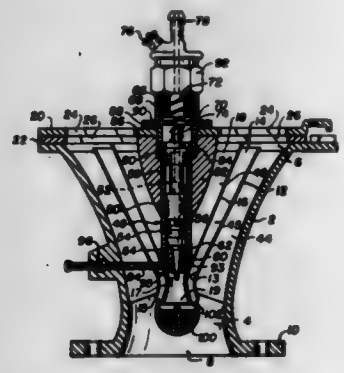
(3) hydrogen, metal cation, lower alkyl, lower haloalkyl, lower cyanoalkyl, cycloalkyl, cycloalkalkyl, heterocycloalkyl, heterocycloalkalkyl, lower alkenyl, lower haloalkenyl, lower alkynyl, lower haloalkynyl, lower alkoxyalkyl, lower alkylthioalkyl, lower dialkylaminoalkyl, or substituted or unsubstituted aryl;
R^3 is lower alkyl, lower haloalkyl, lower alkenyl, lower haloalkenyl, cycloalkyl, cycloalkalkyl, substituted or unsubstituted aryl or R^3 and R^4 taken together form an alkylene group of 2 to 4 carbon atoms;
R^4 is hydrogen or lower alkyl;
R^7 is selected from group (3) or R^2; and
X^3 is oxygen, sulfur or methylene.

4,536,356

CARBURETOR

Ching C. Li, 11231 Kingsbridge Dr., Richmond, British Columbia, Canada V7A 4T1

Filed Dec. 13, 1983, Ser. No. 560,980
Int. Cl.³ F02M *7/20*
U.S. Cl. 261—50 R **10 Claims**



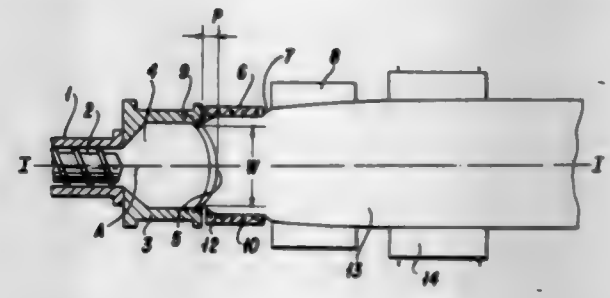
1. A carburetor for an internal combustion engine, the carburetor comprising:
an outer body defining a first venturi and having an inlet and an outlet;
a first inner body located in the outer body and defining a second venturi and having an inlet and an outlet;
a second inner body located within the first inner body;
a throttle valve to control air supply to the inlets of the inner and outer bodies;
means within the outer and first and second inner bodies to agitate air flowing through the bodies;
an injector nozzle positioned to feed fuel to the second venturi;
a valve to control fuel supply through the injector nozzle;
sensor means to effect movement of said valve; and
an idle jet to feed air to said second venturi downstream of the injector nozzle.

4,536,357

METHOD AND APPARATUS FOR PREPARING MULTI-CELLULAR FOAMED BOARD OF THERMOPLASTIC RESIN

Motoshige Hayashi; Toshirou Kobayashi; Motokazu Yoshii, all of Nara; Masahiro Tsuboue, Koga, and Mikio Ishikawa, Oyama, all of Japan, assignors to Sekisui Kaseihin Kogyo Kabushiki Kaisha, Nora, Japan

Filed Jan. 30, 1984, Ser. No. 575,127
Claims priority, application Japan, Jan. 28, 1983, 58-13406
Int. Cl.³ B29D *27/00*
U.S. Cl. 264—53 **14 Claims**



1. A method for preparing a multi-cellular foamed board of thermoplastic resin which comprises forming under pressure in a die a thermoplastic resin melt containing a foaming agent to give the resin melt a shape of a flat board having a broad width compared with a thickness thereof, extruding the resin melt from the die having the convex forward end with a middle portion in the width direction thereof protruding the greatest toward the extruding direction, introducing thus extruded resin melt immediately into a moulding passage having a concave end engaging with the said convex forward end of the die, allowing the resin melt to expand in the thickness direction at the portion adjacent to and extending along the concave end of the passage, and thereafter allowing the resin melt to expand in both the thicknes and width directions of the board in the passage.

4,536,358

PROCESS FOR THE PRODUCTION OF HIGH SURFACE AREA CATALYST SUPPORTS

Lawrence B. Welsh, Evanston, and Richard W. Leyerle, Arlington Heights, both of Ill., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 274,333, Jun. 17, 1982, abandoned. This application Jul. 1, 1983, Ser. No. 510,478
Int. Cl.³ B29J *1/00*
U.S. Cl. 264—81 **17 Claims**

1. A process for the production of a high surface area microporous metal carbide or metalloid carbide which possesses a physical configuration replicating that of a carbon-donor substrate consisting essentially of a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms and which itself replicates a highly porous refractory microporous inorganic oxide which comprises the steps of:
(a) polymerizing an organic pyrolyzable substance containing at least carbon and hydrogen on the surface of said highly porous high surface area inorganic oxide having an internal surface area in the range of from about 1 to about 2000 m^2/g in a reducing atmosphere at a temperature in the range of from about 400° to about 1200° C. to form said carbon-donor substrate consisting essentially of a carbonaceous pyropolymer possessing recurring units containing at least carbon and hydrogen atoms, said carbon-donor substrate replicating said highly porous surface of said refractory inorganic oxide;
(b) uniformly depositing a carbide-forming metal or metalloid on the internal pore surfaces of said carbon-donor substrate which replicates said highly porous refractory inorganic oxide in the vapor phase at a temperature in the range of from about 300° to about 450° C. to afford a

maximum uniform deposition of said metal or metalloid on the surfaces within the internal pore structure of said carbon-donor substrate;

(c) heating said carbide-forming metal or metalloid on said carbon-donor substrate at a temperature in the range of from about 1000° to about 1800° C. to permit formation of said high surface area microporous metal carbide or metalloid carbide by reaction of said carbide-forming metal or metalloid with said carbon in said carbon-donor substrate wherein the resultant high surface area microporous metal carbide or metalloid carbide possesses a pore structure and physical configuration replicating the shape and dimension as well as a substantial portion of the pore structure of said carbon-donor substrate, and

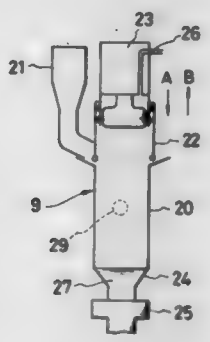
(d) recovering said high surface area metal carbide or metalloid carbide from said refractory inorganic oxide and said carbon-donor substrate.

4,536,359

METHOD OF MANUFACTURING CARBON ELECTRODE

Torata Tanaka, Itami, Japan, assignor to Nikku Industry Co., Ltd., Hyogo, Japan

Filed Oct. 11, 1983, Ser. No. 540,976
Int. Cl.³ B29B *1/04*
U.S. Cl. 264—102 **1 Claim**



1. A method of manufacturing carbon electrodes, which comprises the steps of: kneading 100 parts of regular coke with 25 to 50 parts of a binder selected from the group consisting of coal tar pitch, coal tar and a synthetic resin at a temperature of 140° to 170° C.,

dividing the resultant kneaded mixture into a plurality of portions,

compressing sequentially portion by portion the divided portions of the kneaded mixture at a pressure of 1500 to 3000 tons while being subjected to a vacuum below 300 Torr in a manner such that when a first divided portion is compressed, a second portion is supplied on top of the first compressed portion and compressed at the same pressure under the same vacuum,

extrusion-molding the compressed mixture as a whole, after the whole of the divided portions of the mixture is thus compressed,

baking the resultant extrudate,

filling the baked product with an impregnator, and

subjecting the resultant product to a secondary baking.

4,536,360

GLASS FIBER REINFORCED VINYL CHLORIDE POLYMER PRODUCTS AND PROCESS FOR THEIR PREPARATION

Douglas B. Rahrig, Brunswick, Ohio, assignor to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 13, 1984, Ser. No. 630,421
Int. Cl.³ C08K *9/00, 9/06*
U.S. Cl. 264—142 **18 Claims**

1. A thermoplastic composition of vinyl chloride resin and glass fibers particularly well-adapted to be thermoformed, comprising a mixture of,

(a) from about 50 percent to about 95 percent by weight (% by wt) based on the combined weight of glass fibers and vinyl chloride resin, of a vinyl chloride resin in which the vinyl chloride portion of each repeating unit contains from about 57% to about 72% by wt of chlorine,

(b) from about 5% to about 50% by wt of glass fibers having a diameter less than about 20 microns, wherein said glass fibers are coated with a size consisting essentially of

(i) an amino silane coupling agent having a reactive amine moiety which upon reaction with said resin results in a compound having a peak in a proton magnetic resonance spectra at 5.65 ppm, and

(ii) a film former consisting essentially of a polymer having a ring-opened lower alkylene oxide containing from about 1 to about 4 carbon atoms as an essential component in a repeating unit optionally containing another copolymerizable component, and,

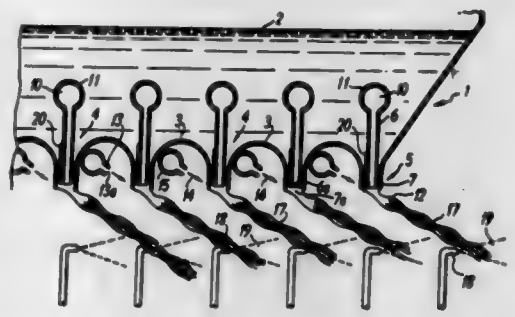
(c) a stabilizer for said homopolymer in an amount sufficient to provide desired stability of the composition during thermoforming.

4,536,361

METHOD FOR PRODUCING PLASTIC MICROFILAMENTS

Leonard B. Torobin, Materials Technology Corp., Tower Pl., Suite 1425, 3340 Peach Tree Rd., NE., Atlanta, Ga. 30326

Continuation-in-part of Ser. No. 428,923, Sep. 30, 1982, and Ser. No. 325,594, Nov. 27, 1981, Pat. No. 4,363,646, which is a continuation-in-part of Ser. No. 152,693, May 23, 1980, Pat. No. 4,303,431, which is a continuation of Ser. No. 59,297, Jul. 20, 1979, abandoned, said Ser. No. 428,923, is a continuation of Ser. No. 103,113, Dec. 13, 1979, abandoned, which is a division of Ser. No. 59,296, Jul. 20, 1979, abandoned, said Ser. No. 59,297, and Ser. No. 59,296, each is a continuation-in-part of Ser. No. 937,123, Aug. 28, 1978, abandoned, and Ser. No. 944,643, Sep. 21, 1978, abandoned. This application Nov. 16, 1982, Ser. No. 442,108
Int. Cl.³ D01D *5/04*
U.S. Cl. 264—167 **18 Claims**

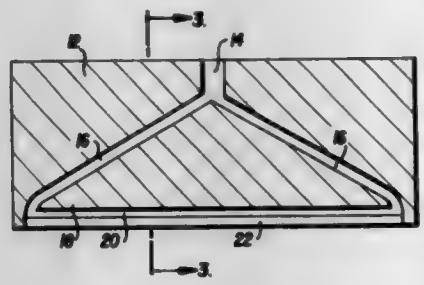


1. A method for making microfilaments from an organic film forming material which comprises forming a liquid film of said organic material across an orifice, applying a blowing gas at a positive pressure on the inner surface of the liquid organic film to blow the film and form an elongated hollow organic material tube or cylinder, forming a thinned wall or weakened portion of the elongated hollow tube or cylinder, subjecting the elongated hollow tube or cylinder during its formation to an external pulsating or fluctuating pressure field having periodic osciallations, said pulsating or fluctuating pressure field acting on said elongated hollow tube or cylinder to assist in its formation and to assist in the formation of a multiplicity of organic material microfilaments and in detaching the organic material microfilaments from said orifice.

4,536,362
METHOD FOR PRODUCING LONGITUDINALLY RIBBED PLASTIC FILM

Jack J. Donaldson, Rochester, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Oct. 6, 1983, Ser. No. 539,600
Int. Cl.[3] B29F *3/04*
U.S. Cl. 264—171 8 Claims



1. A process for extruding a plastic film, comprising: transporting molten resin to an extrusion die inlet;

flowing said resin under pressure from said inlet to a narrow outlet, comprising two spaced, substantially planar lips, said resin flowing in a given direction across said lips, one of said lips being interrupted by a plurality of substantially parallel slots, said slots running at an angle to the given direction, and being spaced so that resin flowing in said given direction across said slotted die lip passes across at least one of said slots;

drawing said extruded film from said outlet in a direction substantially the same as said given direction to produce an extruded film having ribs formed by said slots extending in the given direction.

4,536,363
PROCESS FOR PRODUCTION OF SET POLYACRYLONITRILE FILAMENTS AND FIBERS

Walter Fester, Königstein, and Bernd Huber, Wiesbaden, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Division of Ser. No. 359,233, Mar. 18, 1982, Pat. No. 4,446,206.
This application Dec. 7, 1983, Ser. No. 558,956
Claims priority, application Switzerland, Mar. 20, 1981, 1918/81
Int. Cl.[3] D01F *6/18*
U.S. Cl. 264—182 1 Claim

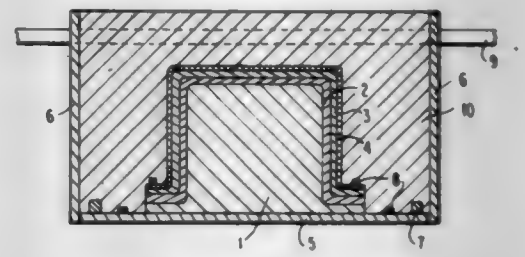
1. In a process for the production of filaments and fibers of acrylonitrile polymers, having a filament-forming substance which is composed of at least 98% by weight of acrylonitrile units, by a wet or dry spinning method, a multi-stage stretch and a setting of the resulting filaments, the improvement comprising wet-stretching a fiber-forming polymer having a relative viscosity between 2.5 and 6.0, said filaments being drawn from a jet before or after a wash, drying said filaments under tension on hot rolls, after-stretching said filaments at 140° to 200° C. under the action of dry heat, an after-stretch ratio being at least 1:1.5 with the total stretch ratio being at least 1:9; and subsequent to after-stretching, setting the filaments with shrink prevention at 170° to 280° C. by the action of dry heat.

4,536,364
MANUFACTURE OF TWO PART MOLD

Kjell J. Lindskog, Floravägen 27, S-931 00 Skellefteå, Sweden

PCT No. PCT/SE83/00171, § 371 Date Dec. 21, 1983, § 102(e) Date Dec. 21, 1983, PCT Pub. No. WO83/03792, PCT Pub. Date Nov. 10, 1983
PCT Filed Apr. 29, 1983, Ser. No. 574,098
Claims priority, application Sweden, Apr. 30, 1982, 8202745
Int. Cl.[3] B29C *1/02*; B28B *7/34*
U.S. Cl. 264—227 4 Claims

1. A method of manufacturing a set of moulds comprising a male mould and a female mould arranged to be brought together to form therebetween a mould cavity, in which objects can be moulded from a plastics material, wherein a model of the object to be moulded is first produced, said model having one at least partly convex surface whose shape corresponds to the shape of the outer surface of the object to be moulded, using said model for the manufacture of said female mould by forming at least one relatively thin layer of plastics material over the model, which plastics layer will serve as a removable mould shell in the female mould, whereafter a material in a shapeable condition which upon hardening can form a support part for said mould shell of said female mould is supplied to a mould encircling said mould shell, and using the female mould for the manufacture of the male mould, whereat a material

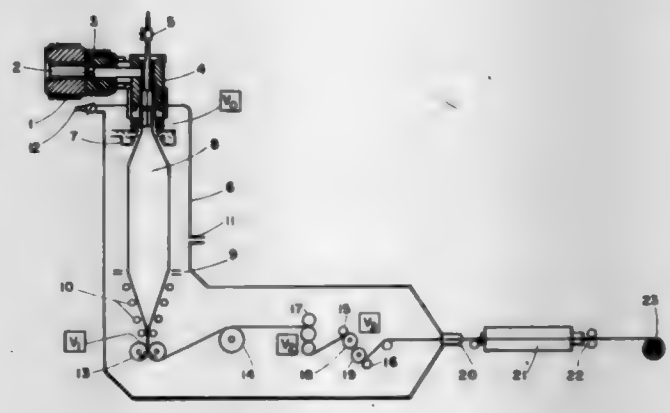


layer having a thickness corresponding to the thickness of the object to be moulded is first applied in the female mould to thereby define the dimensions of the mould cavity, said manufacture of the male mould being carried out by coating the layer in the female mould corresponding to the object to be moulded with at least one relatively thin layer of plastics material which plastics layer will serve as a removable mould shell on the male mould, whereafter a material in a shapeable condition which upon hardening can form a support part for said mould shell is supplied to a mould encircling said mould shell, and thereafter separating said female mould from said male mould, removing said material layer having a thickness corresponding to the thickness of the object to be moulded.

4,536,365
PROCESS FOR THE MANUFACTURE OF EQUALLY BIAXIALLY ORIENTED FILM

Maurice M. Zwick, Stamford, Conn., assignor to American Cyanamid Company, Stamford, Conn.

Filed Dec. 22, 1983, Ser. No. 564,456
Int. Cl.[3] D01F *11/00*
U.S. Cl. 264—558 3 Claims



1. A process for preparing an equally biaxially oriented barrier film which comprises preparing a liquified film-forming polymer, extruding said liquified film-forming polymer through an annular die directly into a pressurized solidification zone to form a tubular film, orienting said tubular film essentially in the radial direction only by introducing vapor under pressure into the interior of said tube while minimizing orientation in the longitudinal direction, orienting said radially oriented tubular film in the longitudinal direction, said radial and

longitudinal orientations being conducted within said pressurized solidification zone, said longitudinal orientation being less than said radial orientation and equal to the radial orientation remaining after the biaxially oriented tubular film undergoes radial shrinkage upon drying thereof in the absence of radial shrinkage control, drying said biaxially oriented film in the absence of radial shrinkage control and recovering the resultant equally biaxially oriented film.

4,536,366

SINTERING METHOD AND APPARATUS

Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Continuation of Ser. No. 225,988, Jan. 19, 1981, abandoned, which is a division of Ser. No. 27,662, Apr. 6, 1979, Pat. No. 4,273,581.

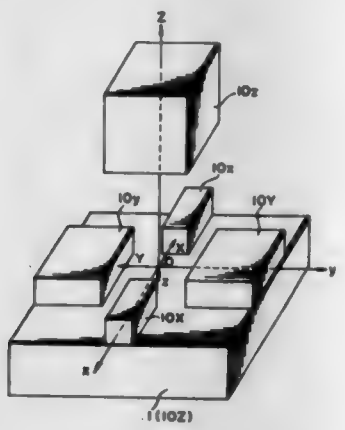
This application Jul. 26, 1983, Ser. No. 517,469

Claims priority, application Japan, Apr. 7, 1978, 53-40193; Apr. 24, 1978, 53-47902; Sep. 18, 1978, 53-113644; Oct. 4, 1978, 53-121466; Oct. 17, 1978, 53-128144

The portion of the term of this patent subsequent to Jun. 16, 1998, has been disclaimed.

Int. Cl.[3] B22F *3/16*

U.S. Cl. 419—11 **7 Claims**



1. A method of densifying a coherent mass of material having a density in the range between 60 and 90% of a maximum density of said material, said method comprising the steps of:

(a) loading said mass into a substantially closed three-dimensional space defined by a first, a second and a third pair of punches juxtaposed thereacross in a first, a second and a third direction, respectively;

(b) energizing said mass with the thermal energy while multi-axially compressing said mass by advancing relatively to one another of said punches of each of said first, second and third pairs in the respective one of said first, second and third directions across said mass so that the axes of action of pressures extend thereon by said respective pairs of punches intersect substantially at a point substantially constituting a center of said three-dimensional space; and

(c) successively modifying the pressures exerted on said mass by at least two of said first, second and third pairs of punches cyclically.

4,536,367

METHOD FOR SANITIZING TOILETS

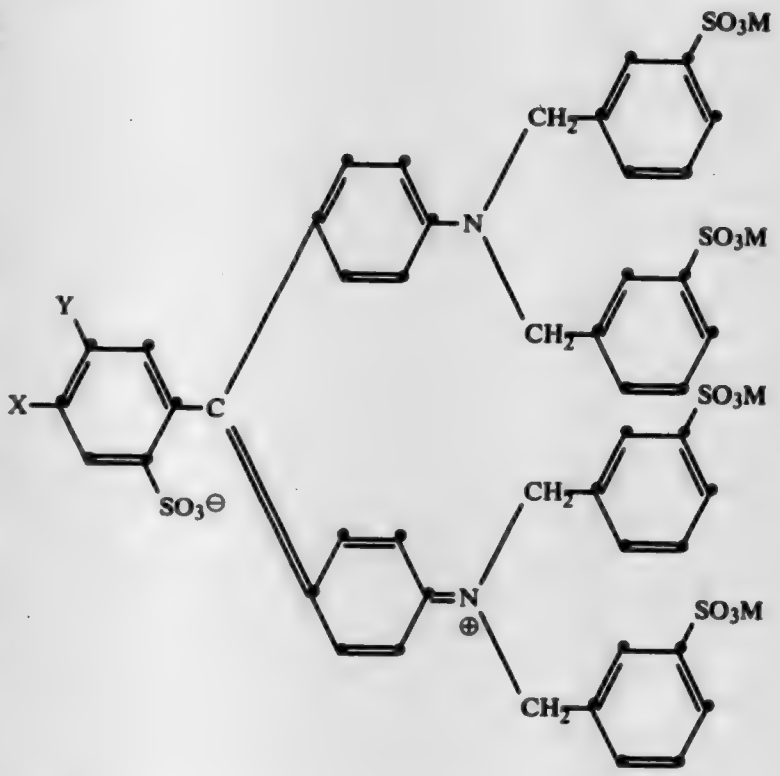
William M. Hung, Cincinnati, Ohio, and Patrick J. Jefferies, Fort Mitchell, Ky., assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Filed Dec. 9, 1983, Ser. No. 559,999

Int. Cl.[3] E03D *9/02*; A61L *2/16*

U.S. Cl. 422—37 **17 Claims**

1. A method of treating a flush toilet which comprises a flush tank and bowl, with a sanitizing agent each time the toilet is flushed, and providing a persistent color to the bowl water between flushes, said method comprising the step of dispensing into the flush water an aqueous solution which contains; (A) a sanitizing agent having oxidizing characteristics and (B) a triphenylmethane dyestuff selected from the group having the formula



in which

X represents hydrogen or the group SO_3M;

Y represents hydrogen or hydroxy; and

M represents an alkali metal cation, an ammonium cation or an alkaline earth metal cation.

4,536,368

METHOD FOR SANITIZING TOILETS

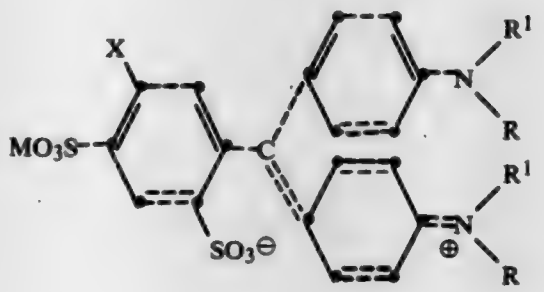
William M. Hung, and Jack M. Knox, both of Cincinnati, Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Filed Dec. 9, 1983, Ser. No. 560,000

Int. Cl.[3] E03D *9/02*; A61L *2/16*

U.S. Cl. 422—37 **11 Claims**

1. A method of treating a flush toilet which comprises a flush tank and bowl, with a sanitizing agent each time the toilet is flushed, and providing a persistent color to the bowl water between flushes, said method comprising the step of dispensing into the flush water an aqueous solution which contains (A) a sanitizing agent having oxidizing characteristics, and (B) a triphenylmethane dyestuff selected from the group having the formula



in which:

R represents benzyl substituted in the benzene ring by SO_3M in which M represents an alkali metal cation, an ammonium ion or an alkaline earth metal cation;

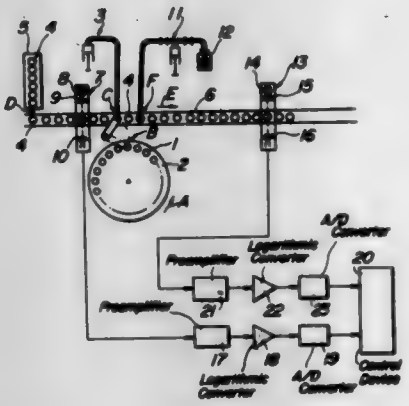
R^1 represents a non-tertiary C_1 to C_4 alkyl; and

X represents hydrogen or hydroxy.

4,536,369
AUTOMATIC ANALYZING APPARATUS

Masahiko Sakurada, Machida; Sugio Manabe, Kodaira; Hideaki Okamura, Kawasaki, and Nagahiro Gocho, Hachioji, all of Japan, assignors to Olympus Optical Company Limited, Tokyo, Japan

Filed Mar. 2, 1981, Ser. No. 246,055
Claims priority, application Japan, Mar. 21, 1980, 55-36480
Int. Cl.[3] G01N *35/02*
U.S. Cl. 422—65 4 Claims



1. An automatic analyzing apparatus comprising means for transferring a reaction vessel along a given traveling path in a stepwise manner pitch by pitch;

means arranged on the traveling path at a reagent distribution position for distributing a reagent corresponding to a measurement item to be tested into the reaction vessel transferred into the reagent distribution position;

means arranged on the traveling path at a sample distribution position which is downstream with respect to said reagent distribution position, said sample being distributed into the reaction vessel to form a reaction liquid;

a first photometric unit arranged on the traveling path at a position between the reagent distribution position and the sample distribution position for measuring an absorption degree of the reaction vessel and the reagent contained in the reaction vessel;

a second photometric unit arranged on the traveling path at a downstream position with respect to said sample distribution position for measuring an absorption degree of the reaction liquid through the reaction vessel;

means for correcting the absorption degree of the reaction liquid on the basis of the absorption degree of the reaction vessel and the reagent to derive a corrected absorption degree of the reaction liquid alone;

means arranged on the traveling path at an upstream position with respect to said reagent distribution position for supplying new reaction vessels onto the reaction vessel transferring means; and

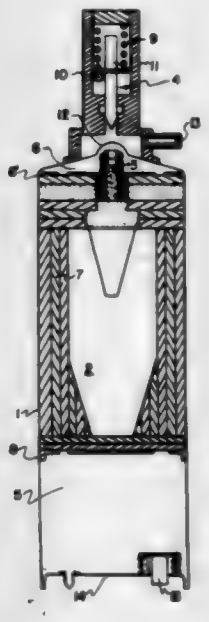
means arranged on the traveling path at a downstream position with respect to the second photometric unit for removing the reaction vessels containing the reaction liquids from the traveling path.

4,536,370
CHEMICAL OXYGEN GENERATOR

Rainer Hahn, Lubeck, Fed. Rep. of Germany, assignor to Dräger werk Aktiengesellschaft, Fed. Rep. of Germany

Filed Feb. 1, 1983, Ser. No. 462,762
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210959
Int. Cl.[3] B01J *7/00;* A62B *7/08*
U.S. Cl. 422—120 7 Claims

1. A chemical oxygen generator comprising a pressure vessel having an outlet, manually releasable starting means associated with said pressure vessel, an oxygen candle supported in said pressure vessel in a position leaving a lower empty space therebelow and an upper empty space thereabove as well as a free space around said oxygen candle, the empty spaces and said free spaces being in common open flow communication with each other and with said oxygen candle and being filled in a ready state with compressed oxygen which can flow out through said outlet, a severable membrane closing the spaces

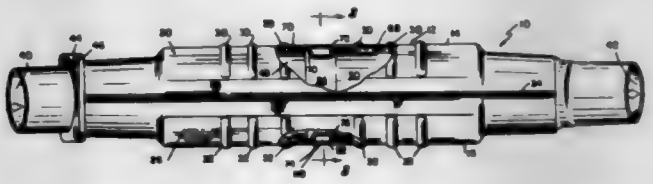


to said outlet, and starting means for starting the operation of said candle being movable to sever said membrane to permit flow out of said outlet.

4,536,371
CATALYTIC CONVERTER DIVIDER

Timothy Z. Thayer, Hope, and Frank W. Shaw, Columbus, both of Ind., assignors to Arvin Industries, Inc., Columbus, Ind.

Filed May 16, 1983, Ser. No. 494,618
Int. Cl.[3] B01D *50/00*
U.S. Cl. 422—171 10 Claims



1. A clam shell type catalytic converter comprising

a first shell half and a second shell half which are joined with a longitudinal perimetrical seam to form a body which defines a longitudinally extending body interior in which a first substrate and a second substate are disposed, an inlet disposed adjacent the first substrate, and an outlet disposed adjacent the second substrate, each shell half including an interior wall which defines an intermediate portion of the body having a generally constant transverse cross section,

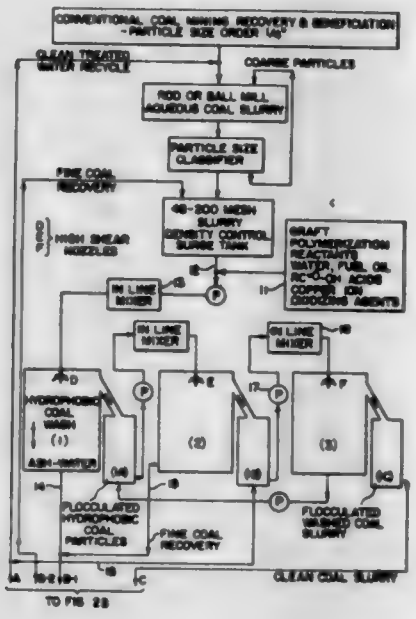
a ring-shaped divider comprising first and second C-shaped divider halves, each divider half including a pair of divider flanges extending comformably adjacent to the intermediate portion of the interior wall of one shell half, the divider flanges being disposed substantially parallel to the intermediate portion of the interior wall of one of the shell halves and including a portion between the flanges which is recessed inwardly from the interior wall of the one shell half,

wherein the divider flanges are selectively attached to the linear interior walls at one of a plurality of locations along the intermediate portion of the interior walls to position the divider for accommodating substrates of various sizes.

4,536,372
APPARATUS FOR BENEFICIATING COAL

Lester E. Burgess, Springfield; Karl M. Fox, Swarthmore; Phillip E. McGarry, Palmerton, and David E. Herman, Jim Thorpe, all of Pa., assignors to The Standard Oil Company, Cleveland, Ohio

Continuation of Ser. No. 339,351, Jan. 15, 1982, abandoned, which is a division of Ser. No. 114,357, Jan. 22, 1980, Pat. No. 4,332,593. This application Apr. 12, 1984, Ser. No. 599,204
Int. Cl.³ B01J 8/00; C10L 1/32
U.S. Cl. 422—187 4 Claims



1. Apparatus for beneficiating coal comprising:

means providing coal reduced to small particles of coal and small particles of ash in an aqueous carrier;

means introducing graft polymerization reactants and oil into said carrier upon discharge from said coal reducing means;

means providing and containing a supply of graft polymerization reactants, means connecting the polymerization reactant supply means to said introducing means, and means for conveying the polymerization agent from said supply means to the introducing means;

a plurality of serially connected wash cells, each having an inlet and an outlet thereto;

aqueous coal carrier conveying means conveying said carrier to a first of said serially connected wash cells;

conduit means for said carrier, connecting and communicating said coal reducing means to said inlet of said first wash cell, and each of subsequent serial wash cell inlets to the previous wash cell outlet, and having separate in line mixing means located in each conduit means, said mixing means mixing said carrier;

said wash cells each having a tank containing a body of wash water having an upper surface, a body of gas above said wash water upper surface, a nozzle at said inlet of each said wash cell atomizing said carrier into fine droplets and propelling said fine droplets through said body of gas against said wash water upper surface, means at said upper surface of said wash water removing said small particles of coal from said wash water and said tank;

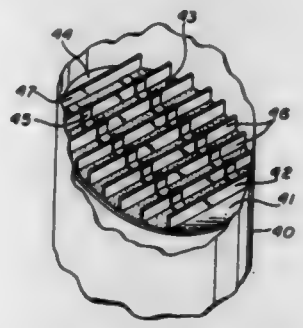
means introducing water into said removed small particles of coal after removal from each said cell, except said last serially connected wash cell, and means conveying said small particles of coal and water through said conduits to said next serially connected cell; and,

means conveying said coal particles from said last serially connected wash cell to mechanical drying means adapted to extract water from said coal particles collected at said last serially connected wash cell.

4,536,373
CONTACT STRUCTURE FOR USE IN CATALYTIC DISTILLATION

Edward M. Jones, Jr., Friendswood, Tex., assignor to Chemical Research & Licensing Company, South Houston, Tex.

Division of Ser. No. 390,395, Jun. 21, 1982,. This application Oct. 19, 1983, Ser. No. 543,440
Int. Cl.³ B01J 35/04
U.S. Cl. 422—211 5 Claims



1. In combination a distillation tray and a contact catalyst structure said tray having a bottom and sides defining a weir means for holding a liquid level on the bottom of said tray, said tray catalyst structure comprising a plurality of porous closed containers, containing therein solid particulate catalyst, and a plurality of clip means mounted on said bottom of said tray for holding and spacing said containers as a unit, each said clip means comprising at least one structure comprising a base member mounted on said bottom and a plurality of resilient pairs of members upwardly extending from said base member substantially perpendicular thereto for grasping and holding a said container above the bottom of said tray.

4,536,374
PROCESS USING CARBONATE REAGENT FOR RECOVERING VANADIUM FROM COKES AND ASHES DERIVED FROM HEAVY OILS

Lois L. McCorriston, Mississauga, Canada, assignor to Gulf Canada Limited, Toronto, Canada

Division of Ser. No. 516,629, Jul. 25, 1983, Pat. No. 4,472,360, which is a continuation-in-part of Ser. No. 334,103, Dec. 24, 1981, abandoned, which is a continuation of Ser. No. 198,501, Oct. 20, 1980, abandoned. This application May 8, 1984, Ser. No. 608,313
Int. Cl.³ C01G 31/00
U.S. Cl. 423—68 9 Claims

1. A process for the recovery of vanadium from a sulphur-containing material of the group consisting of coke derived from hydrocarbonaceous oil and ash obtained from said coke, wherein said hydrocarbonaceous oil is heavy oil, in-situ oil sands bitumen or mineable oil sands bitumen, comprising:

(a) mixing said material with an alkali metal carbonate reagent in a finely divided form,

(b) heating the mixture in the presence of an oxidizing atmosphere at an elevated temperature below the fusion point of the reagent,

(c) contacting the resulting solid residue and water to form a leach solution, and

(d) recovering the vanadium values from the leach solution, wherein said material comprises vitrified materials and the amount of said alkali metal carbonate is at least twice the combined stoichiometric amount sufficient both to convert the vanadium values present in said material into alkali metal vanadate and to react with the sulphur present in said material, and insufficient to cause the substantial carryover of said alkali metal carbonate into said leach solution.

4,536,375

PURIFICATION OF GASES

Andrew Holt, Enfield, and David W. White, Radlett, both of England, assignors to M.P. United Drug Company Limited, England

Filed Oct. 18, 1983, Ser. No. 543,075

Claims priority, application United Kingdom, Oct. 18, 1982, 8229655; Mar. 7, 1983, 8306168

Int. Cl.[3] B01D *53/36*

U.S. Cl. 423—247 9 Claims

1. A method of reducing the carbon monoxide content of a carbon monoxide-contaminated breathable gas by bringing the contaminated gas into contact with a bed of catalyst, whereby to oxidise carbon monoxide in the gas to carbon dioxide, in which method the catalyst comprises a promoted tin IV oxide-supported precious metal catalyst, the promoter being one or more metals of group 1b, 3b, 7b and 8 of the Periodic Table and the precious metal being platinum, palladium, rhodium, iridium or ruthenium.

4,536,376

METHOD OF PRODUCING POTASSIUM MAGNESIUM PHOSPHATE

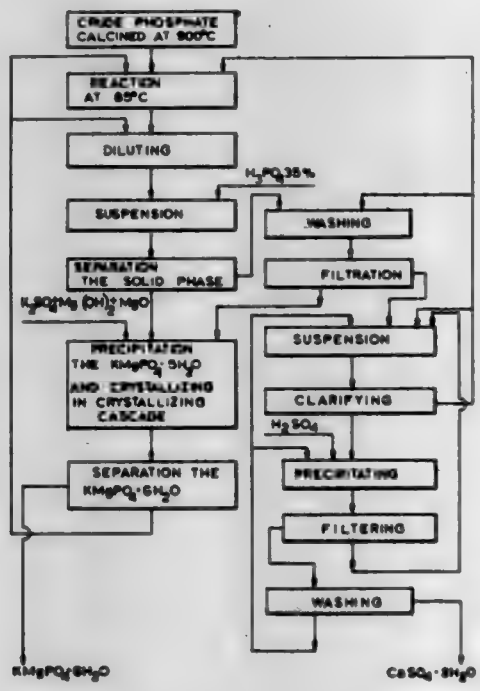
Karl-Richard Löblich, Barsinghausen, Fed. Rep. of Germany, assignor to Kali und Salz AG, Kassel, Fed. Rep. of Germany

Filed Jun. 13, 1983, Ser. No. 492,162

Claims priority, application Fed. Rep. of Germany, May 6, 1983, 3216973

Int. Cl.[3] C01B *25/26*

U.S. Cl. 423—306 13 Claims



1. Process for the production of potassium magnesium phosphate by reacting basic magnesium compound with phosphoric acid or phosphate in the presence of a potassium sulfate excess wherefrom the formed potassium magnesium phosphate is separated from the mother liquor, washed with water and dried, comprising stirring into said mother liquor containing magnesium sulfate and potassium sulfate a free calcium oxidic containing material in amounts corresponding to an equimolar ratio of free calcium oxidic and dissolved magnesium sulfate, thereby producing a turbidity, providing an acid pH in said turbidity, separating the solid phase, stirring in potassium sulfate for formation of potassium magnesium phosphate and for maintenance of in said mother liquor the potassium sulfate content, adjusting the pH- of said reaction mixture basic and separating any crystallizate falling out as product from said mother liquor from said reaction mixture, the said mother liquor is then recycled to the process start.

4,536,377

PROCESS FOR MAKING SODIUM TRIPOLYPHOSPHATE

Lawrence A. Shimp, Robbinsville, N.J., assignor to FMC Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 376,909, May 10, 1982, abandoned. This application Aug. 8, 1984, Ser. No. 639,280

Int. Cl.[3] C01B *25/30*

U.S. Cl. 423—315 4 Claims

1. A one step spray drying process for making high assay, 90% or greater, sodium tripolyphosphate having a high concentration, greater than 75%, of form I material consisting essentially of the steps of spraying an aqueous sodium orthophosphate feed liquor having an $Na_2O:P_2O_5$ ratio of 1.60 to 1.70 into a spray dryer, dehydrating the sprayed feed to a temperature above 250 and below 420° C. in a period of up to one minute to produce sodium tripolyphosphate, removing the product sodium tripolyphosphate, which has a temperature below 420° C., from the dryer and cooling the product to 150° C. or below in twenty minutes or less.

4,536,378

PHOSPHATE FERTILIZER PRODUCTION

Edward A. White, 2250 Greenfield Dr., Glenview, Ill. 60025

Filed Oct. 13, 1983, Ser. No. 541,512

Int. Cl.[3] C01B *25/16, 15/16;* B21B *45/02*

U.S. Cl. 423—321 R 14 Claims

1. A process for the preparation of phosphoric acid comprising:

providing a source stream of phosphoric acid comprising more than about 30% P_2O_5, said source stream having impurities;

removing from the source stream from about 1% to about 20% of said stream to form a treatment stream;

removing at least about 90% of the cationic, anionic and organic impurities in the treatment stream by solvent extraction; and

combining at least a portion of the treatment stream with the balance of the source stream in proportions sufficient to form an improved phosphoric acid stream having reduced post-precipitation when said improved stream is processed to produce merchant phosphoric acid.

4,536,379

PRODUCTION OF SILICON CARBIDE

Walter H. Carlson, Aurora; Gerald B. Zander, North Olmsted; George C. Hanna, Chagrin Falls, and Kevin L. Burmeister, Kent, all of Ohio, assignors to Graphite Sales, Inc., Chagrin Falls, Ohio

Filed Jun. 2, 1983, Ser. No. 500,522

Int. Cl.[3] C01B *31/36*

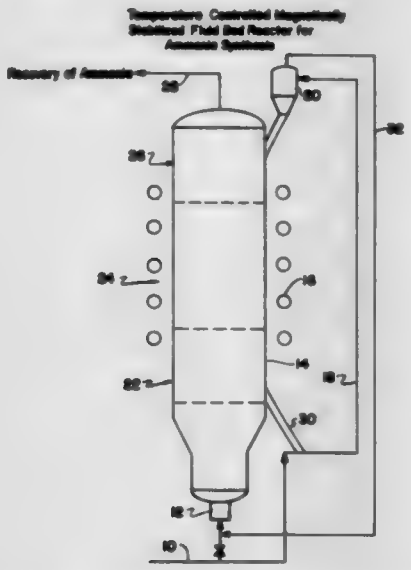
U.S. Cl. 423—345 19 Claims

1. A process for the production of silicon carbide crystals and whiskers comprising reacting at a temperature of between about 1,400° C. to about 2,100° C. and in the presence of an inert gas, a mined material of nature referred to herein as Black Diamond having as essential ingredients, carbon, silica, aluminum, iron oxide, potassium oxide, volatiles and moisture wherein a typical composition based on weight, comprises about 3% moisture, about 33% carbon, about 8% volatiles, and about 56% ash, said ash including, based on the weight of the ash, about 76.8% silica, about 12.9% alumina, about 4.6% iron oxide, and about 2.4 potassium oxide, and said typical composition providing a carbon to silicon ratio of about 1.57:1.

4,536,380
PROCESS FOR CONDUCTING REACTIONS USING A CIRCULATING MAGNETICALLY STABILIZED BED TO CONTROL REACTION TEMPERATURE PROFILE

James C. Pirkle, Jr., Lebanon; Angelo A. Montagna, Summit, and Philip A. Ruziska, Chester, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 15, 1982, Ser. No. 449,996
Int. Cl.[3] C01C *1/04*; C07D *301/22*
U.S. Cl. 423—359 16 Claims



1. A process for conducting an endothermic or exothermic chemical reaction in a reactor comprising:

(a) subjecting a flowable bed containing magnetizable particles to an applied magnetic field having a substantial component along the direction of the external force field within the bed;

(b) circulating a reaction fluid through the reactor in a plug-flow manner at a rate such that the fluid exerts pressure against and levitates the particles in the bed and under conditions such that an endothermic or exothermic reaction takes place in the presence of the bed;

(c) circulating the bed of particles through the reactor in a plug-flow manner, and after its exit from the reactor, recirculating the bed to the reactor, the circulating and recirculating of the bed being conducted at a rate such that the temperature profile of the bed and reaction fluid throughout the entire contact of the bed with the reaction fluid is at or about the temperature profile which results in maximization, at each position in the reactor, of at least one of the following: conversion, selectivity or product yield; and

(d) recovering one or more reaction products.

4,536,381
PROCESS FOR THE REMOVAL OF H_2S AND ADJUSTMENT OF THE H_2/CO RATIO IN GASEOUS STREAMS CONTAINING HYDROGEN SULFIDE, CARBON MONOXIDE, AND HYDROGEN

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

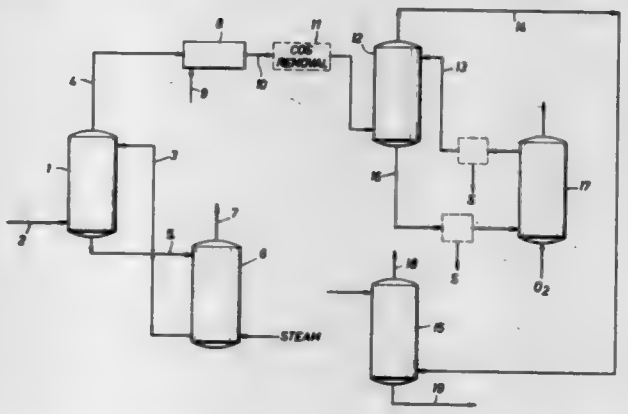
Filed Dec. 20, 1983, Ser. No. 563,478
Int. Cl.[3] C01B *31/20, 3/16*; B01D *53/34*
U.S. Cl. 423—437 7 Claims

1. A process comprising

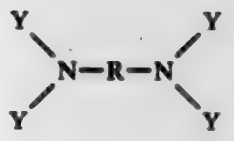
(a) contacting a gaseous stream containing H_2, CO, and H_2S with an H_2S-selective absorbent in an absorption zone and absorbing the bulk of the H_2S in said stream, producing a partially purified gas stream with water and containing a minor portion of H_2S;

(b) contacting at least a portion of the partially purified gas stream with a water shift catalyst under conditions to react CO and water in a conversion zone, and converting CO and water to H_2 and CO_2, and producing a modified gas stream having increased ratio of H_2 to CO and a minor portion of H_2S;

(c) passing modified gas stream to a contacting zone and



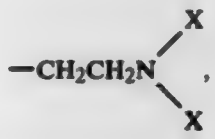
contacting modified gas stream with an aqueous reactant solution, the solution containing an effective amount of a reactant comprising oxidizing polyvalent metal ions or a polyvalent metal chelate of an acid having the formula



wherein

from two to four of the groups Y are selected from acetic and propionic acid groups;

from zero to two of the groups Y are selected from 2-hydroxy ethyl, 2-hydroxy propyl, and



wherein X is selected from acetic acid and propionic acid groups; and

R is ethylene, propylene or isopropylene or alternatively cyclohexane or benzene where the two hydrogen atoms replaced by nitrogen atoms are in the 1,2 position; and mixtures thereof, and converting H_2S in said modified gas stream to sulfur and recovering a substantially sulfur-free gas modified stream having an increased ratio of H_2 to CO.

4,536,382
PROCESS FOR THE CONVERSION OF H_2S AND ADJUSTMENT OF THE H_2/CO RATIO IN GASEOUS STREAMS CONTAINING HYDROGEN SULFIDE, HYDROGEN, AND CARBON MONOXIDE

George C. Blytas, Houston, Tex., assignor to Shell Oil Company, Houston, Tex.

Filed Dec. 20, 1983, Ser. No. 563,479
Int. Cl.[3] C01B *31/20, 3/16*; B01D *53/34*
U.S. Cl. 423—437 7 Claims

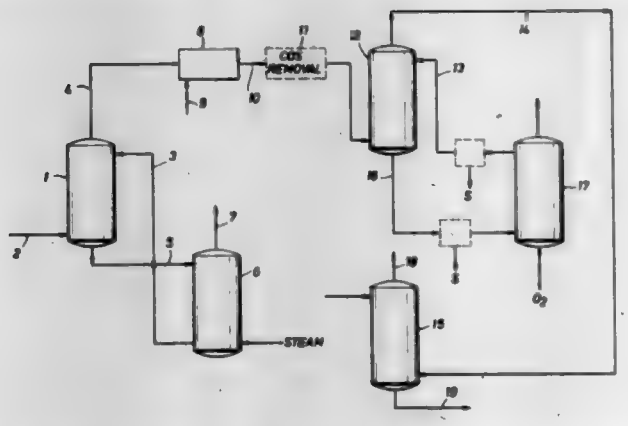
1. A process comprising

(a) contacting a gaseous stream containing H_2, CO, and H_2S with an H_2S-selective absorbent in an absorption zone and absorbing the bulk of the H_2S in said stream, producing a partially purified gas stream with water and;

(b) contacting at least a portion of the purified gas stream with a water shift catalyst under conditions to react CO and water in a conversion zone and converting CO and water to H_2 and CO_2, and producing a modified gas stream having increased ratio of H_2 to CO and a minor portion of H_2S;

(c) passing modified gas stream to a contacting zone, and contacting modified gas stream in the contacting zone with

an aqueous reactant solution, the solution containing an effective amount of an oxidizing polyvalent metal chelate of nitrilotriacetic acid, and mixtures thereof, and converting



H_2S in the modified gas stream in the contacting zone to sulfur and recovering a substantially sulfur-free gas modified stream having an increased ratio of H_2 to CO.

4,536,383

METHOD FOR PREPARATION OF ALKALI METAL SELENATES

Lothar Kaufmann, Hennef, and Klaus-Dieter Hellwig, Bad Honnef, both of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt, Fed. Rep. of Germany

Filed Oct. 3, 1984, Ser. No. 657,326

Claims priority, application Fed. Rep. of Germany, Oct. 27, 1983, 3338893

Int. Cl.³ C01B *19/00*

U.S. Cl. 423—508 **11 Claims**

1. The method for the preparation of alkali metal selenates comprising

providing 4 to 6 mols hydrogen peroxide per mol of selenium in the form of a 30 to 50 weight percent hydrogen peroxide solution as a reaction medium, heating said hydrogen peroxide to a temperature of 30° to 100° C., adding the selenium in a powdered form at such a dosing rate such that the selenim powder floats outwardly from the point of introduction on the quiet surface of said reaction medium in a reaction zone having a peripheral wall, dissolving the selenium powder in this area of the surface of the reaction medium before reaching said peripheral wall the complete dissolution of the last selenium particles, permitting the reaction medium to undergo further reaction until evolution of gas ceases

then after stirring adding alkali metal hydroxide or carbonate in an initial neutralization step added at a temperature of 80° to 100° C. until a pH of 0.5 to 5 is obtained,

elevating the temperature of the reaction medium to 30° to 100° C. with the addition of 0.5 to 1 mol hydrogen peroxide per mol of selenium in the form of a 30 to 50 weight percent hydrogen peroxide solution,

maintaining the temperature at 90° to 100° C. until cessation of gas evolution and

neutralizating the selenic acid,

and isolating the salt obtained thereby.

4,536,384

STABLE SOLUTIONS OF BASIC ALUMINIUM SULPHATE CONTAINING POLYNUCLEATE ALUMINIUM HYDROXIDE SULPHATE COMPLEXES

Gertrud M. Lindahl, Helsingborg, Sweden, assignor to Boliden Aktiebolag, Stockholm, Sweden

Filed Apr. 9, 1984, Ser. No. 598,365

Claims priority, application Sweden, Apr. 28, 1983, 8302386

Int. Cl.³ C01F *7/74, 7/02*

U.S. Cl. 423—556 **4 Claims**

1. A stable solution of basic aluminium sulphate containing polynucleate aluminium hydroxide sulphate complex and a stabilizing agent, characterized in that the stabilizing agent comprises an effective quantity of nitrilotriacetic acid, diethylene triaminopentaacetic acid or gallic acid.

4,536,385

METHOD AND APPARATUS FOR THE PRODUCTION OF INDUSTRIAL LEAD OXIDE

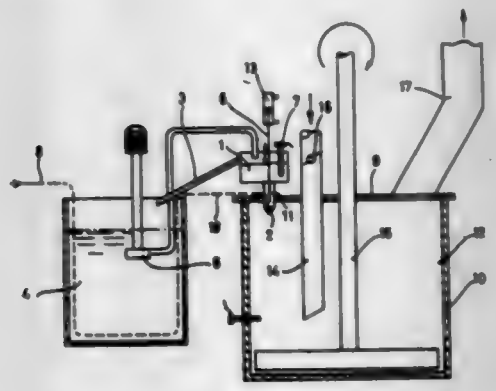
Rainer Heubach, Goslar; Reinhard Marx, Bad Harzburg; Peter Kunz, Goslar, and Dieter Hanke, Vienenburg, all of Fed. Rep. of Germany, assignors to Goslarer Farbenwerke Dr. Hans Heubach GmbH & Co. KG, Langelsheim, Fed. Rep. of Germany

Continuation of Ser. No. 258,013, Apr. 27, 1981, abandoned. This application Feb. 16, 1983, Ser. No. 467,090

Claims priority, application Fed. Rep. of Germany, May 2, 1980, 3016984

Int. Cl.³ C21C *7/00*

U.S. Cl. 423—621 **4 Claims**



1. A one-stage continuous method for the direct production of industrial lead oxide, wherein molten lead is continuously fed into a reactor and is stirred therein at a pre-determined reaction temperature greater than 500° C. up to 640° C., and the resulting reaction product is drawn off continuously, and wherein the product exhibits a PbO content of substantially more than 99%, comprising

feeding the lead flow in a constant and even manner by introducing the molten lead into the reactor at a temperature close to and not more than 50° C. lower than the pre-determined reaction temperature, via a nozzle from a vessel in which the molten lead level is held constant, and

maintaining the reaction temperature level within ±5° C. of the pre-determined reaction temperature, said reaction temperature level being maintained by maintaining a continuous flow of heated air to said reactor at a substantially constant rate and, when said temperature level varies, correcting said temperature by slightly varying only the air flow.

4,536,386

METHOD OF CONTROLLING EMESIS CAUSED BY CISPLATIN IN CANCER CHEMOTHERAPY

Robert E. Keenan, Richmond, Va., assignor to A. H. Robins Company, Inc., Richmond, Va.

Continuation-in-part of Ser. No. 352,728, Feb. 26, 1982, abandoned, which is a continuation-in-part of Ser. No. 228,514, Jan. 26, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 508,367

Int. Cl.³ A61K *33/24, 31/165*

U.S. Cl. 424—10 **7 Claims**

1. A method for alleviating emesis in human cancer patients caused by cisplatin chemotherapy which comprises administering about 5 to 18 mg of metoclopramide or a pharmaceutically acceptable salt thereof per kg of patient body weight over a period of time spanning about 30 minutes prior to cisplatin administration through the post administration period, said metoclopramide or the pharmaceutically acceptable salt

thereof being administered either continuously or as 4 to 7 individually spaced dosages about 1½ to 3 hours apart.

4,536,387

ANTI-CANCER DEVICE

Izumi Sakamoto, and Kunihiko Takagi, both of Kyoto, Japan, assignors to Unitika Ltd., Hyogo, Japan

Filed Feb. 14, 1983, Ser. No. 466,190

Claims priority, application Japan, Feb. 12, 1982, 57-21924; Nov. 8, 1982, 57-197147

Int. Cl.³ A61K *9/22, 9/26, 9/70;* A61L *15/03*

U.S. Cl. 424—14 **54 Claims**

1. A method of transcatheter arterial embolization and needle therapy comprising injecting a patient with composition useful for transcatheter arterial embolization and needle therapy comprising:

(a) a polymer, wherein said polymer has fixed thereto;

(b) an anti-cancer drug; and

(c) a blood coagulation factor, wherein said anti-cancer drug and said blood coagulation factor are fixed to said polymer so as to be capable of sustained release from the polymer at the site of injection.

4,536,388

PEST CONTROL DEVICE COMPRISING α-CYANO-3-PHENOXYBENZYL 2-(2-CHLORO-4-TRIFLUOROMETHYLANILINO)-3-METHYLBUTANOATE

Robert C. Pearce, III, Arlington, Tex., assignor to Zoecon Corporation, Palo Alto, Calif.

Filed Jul. 18, 1983, Ser. No. 514,738

Int. Cl.³ A61K *13/00;* A01N *37/34, 37/00, 43/36*

U.S. Cl. 424—28 **11 Claims**

1. A pest control device for attachment to an animal which comprises a plasticized polyvinyl halide resin matrix having dispersed therein a pesticidally effective amount of the compound α-cyano-3-phenoxybenzl 2-(2-chloro-4-trifluoromethylanilino)-3-methylbutanoate wherein the polyvinyl halide resin matrix is present in the amount from about 35% to about 75% by weight of the total composition, the plasticizer is present in the amount of from about 25% to about 45% by weight of the total composition and the pesticide is present in the amount of from about 1% to about 20% by weight of the total composition.

9. A method for controlling pests on animals which comprises attaching to said animal a pest control device of claim 1.

4,536,389

BACTERICIDAL TABLETTING COMPOSITION AND TABLETS FORMED THEREFROM

Christopher D. White, Richmond, and Alan A. Levy, Stanmore, both of England, assignors to Richardson-Vicks Ltd., Egham, England

Filed Sep. 19, 1983, Ser. No. 533,762

Claims priority, application European Pat. Off., Oct. 12, 1982, 82109431.5

Int. Cl.³ A61K *9/46*

U.S. Cl. 424—44 **4 Claims**

1. A tablet formed without a lubricant comprising:

dichloroisocyanuric acid or alkali metal salt thereof: 10–40% weight

carbonate as alkali metal bicarbonate or a mixture of alkali metal bicarbonate and carbonate: 20–50% weight

characterized in that the composition also has present 20 to 50% weight succinic acid powder having a particle size such that a maximum of 2% weight is retained on a 400 micron screen and no more than 25% weight passes through a 100 micron screen.

4,536,390

COLLAPSIBLE FOAM AEROSOL HAIR PRODUCT

Timothy J. Padden, Racine, Wis., assignor to S. C. Johnson & Son, Inc., Racine, Wis.

Filed Feb. 18, 1983, Ser. No. 467,725

Int. Cl.³ A61K *7/06, 9/12*

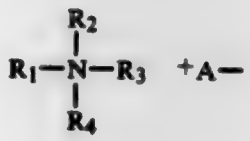
U.S. Cl. 424—47 **9 Claims**

1. A hair treating composition to be dispensed from a pressurized aerosol container as a stable, collapsible foam, said composition comprising:

A. from about 10 to 97% by weight of an aqueous intermediate comprising:

(i) from about 0.25 to 5% by weight of a high molecular weight polymer selected from the group consisting of cationic polymers, aminefunctional polymers and mixtures thereof;

(ii) from about 0.25 to 2% by weight of quaternaryamonium compound having the following formula:



Wherein R_1, is a alkyl group having from 8 to 16 carbon atoms, a mixture of alkyl groups having an average chain length of from 8 to 16 carbon atoms or tallow if R_2 is a group having the formula $[CH_2—CH_2—O]_nH$, R_2 is an alkyl group having from 8 to 16 carbon atoms, a mixture of alkyl groups having an average carbon atom chain length of from 8 to 16 carbon atoms, an alkyl group having from 1–4 carbon atoms, a group having the formula $[CH_2—CH_2—O]_nH$, wherein $_n$ is a number from 2 to 16 and mixtures thereof, R_3 is an alkyl group having from 1 to 4 carbon atoms, a group having the formula $[CH_2—CH_2—O]_n—H$, wherein $_n$ is a number from 2 to 16 and mixtures thereof, R_4 is an alkyl group having 1 to 4 carbon atoms, benzyl and mixtures thereof and A is an anion;

(iii)and the balance water; and

(B) from about 90 to 3% by weight of a propellant and

(C) less than 10% alcohol having 1–4 carbon atoms, whereby said composition is essentially alcohol free.

4,536,391

PROCESS FOR PREPARING UROKINASE COMPLEX

Wasei Miyazaki; Tsuneo Sato; Yasuo Nakayama, and Tadao Sato, all of Tokushima, Japan, assignors to Otsuka Pharmaceutical Co., Japan

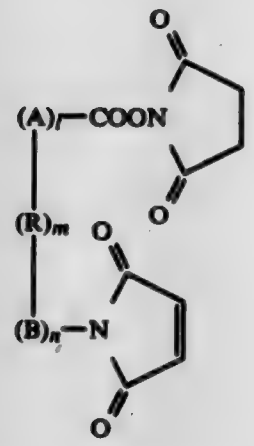
Filed Nov. 15, 1983, Ser. No. 551,841

Claims priority, application Japan, Nov. 17, 1982, 57-202359; Apr. 28, 1983, 58-75198

Int. Cl.³ A61K *37/48, 37/00;* C07G *7/00;* C12N *9/72*

U.S. Cl. 424—94 **17 Claims**

1. A plasmin heavy chain urokinase complex prepared by a process comprising reacting a plasmin heavy chain with urokinase in the presence of a protein coupling reagent represented by the formula



wherein R is phenylene or cycloalkylene, A is lower alkylene, B is lower alkylene which may optionally be substituted by lower alkylthio or phenyl-lower alkylthio, and l, and m and n are each 0 or 1 provided that l, m and n are not 0 at the same time.

17. A pharmaceutical composition for treating thrombosis containing the plasmin heavy chain-urokinase complex as defined in claim 1 in an amount effective for treating thrombosis in combination with a pharmaceutically acceptable, nontoxic carrier.

4,536,392

METHOD FOR CONTROLLING HEMOPHILIA IN MAMMALS

Alan R. Giles, Kingston, Canada, and Kenneth G. Mann, Rochester, Minn., assignors to Queen's University at Kingston, Kingston, Canada

Filed Jun. 27, 1983, Ser. No. 508,213
Int. Cl.³ A61K *35/16*
U.S. Cl. 424—101 **6 Claims**

1. A method for controlling hemophilia in mammals comprising administering intravenously to a hemophilic said mammal a synergistic mixture of phospholipid vesicles and mammalian blood factor Xa in relative proportion and in an amount just sufficient to arrest bleeding.

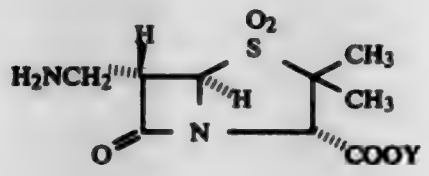
4,536,393

6-(AMINOMETHYL)PENICILLANIC ACID 1,1-DIOXIDE ESTERS AND INTERMEDIATES THEREFOR

Wayne E. Barth, East Lyme, Conn., assignor to Pfizer Inc., New York, N.Y.

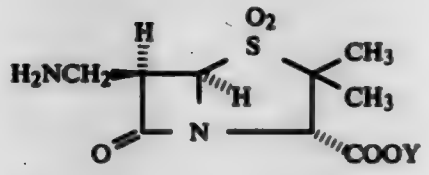
Continuation-in-part of Ser. No. 501,451, Jun. 6, 1983, abandoned. This application Feb. 6, 1984, Ser. No. 577,478
Int. Cl.³ C07D *499/00*; A61K *31/425*
U.S. Cl. 424—114 **17 Claims**

1. A beta-lactam ester of the formula

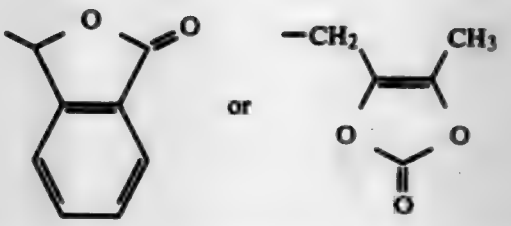


(I)

or



wherein Y is



or a pharmaceutically acceptable acid addition salt thereof.

4,536,394

ACTIVATED SILICON-CONTAINING ALUMINUM COMPLEX AND PROCESS OF PREPARATION AND USE

Fred B. Bernat, Cliffside Park, N.J., assignor to San-Mar Laboratories, Inc., Elmsford, N.Y.

Filed Apr. 26, 1983, Ser. No. 488,637
Int. Cl.³ A61K *33/06*
U.S. Cl. 424—154 **18 Claims**

1. A process for preparing a suspension of an activated silicon aluminum complex which is capable of releasing oxygen and hydrogen in the presence of a halogen compound, said process comprising:

(a) contacting aluminum metal having a purity of at least about 99.9% by weight and containing at least trace amounts of silicon, with a source of an acid of a type and concentration which will both remove and inhibit the formation of oxide on said metal;

(b) contacting said acid-treated aluminum metal with a source of mercury in an oxygen-containing atmosphere;

(c) partially immersing said mercury contacted aluminum in a hydrogen halide solution for sufficient time to begin the growth of a complex on said mercury-contacted aluminum;

(d) treating said complex with acid to increase the pH to such an extent that the halogen which is contained in said complex is neither chemically bound as a halide nor liberated as a halogen gas;

(e) adding a source of oxygen gas to said acid treated complex solution in an amount which depends upon the desired amount of oxygen gas to be released from the final activated silicon aluminum complex;

(f) drying said oxygenated and acid treated complex;

(g) at least partially redissolving said complex in a hydrogen halide acid solution to form a suspension;

(h) cooling said suspension; and

(i) increasing the pH of said suspension to from about 5.0 to about 5.8.

4,536,395

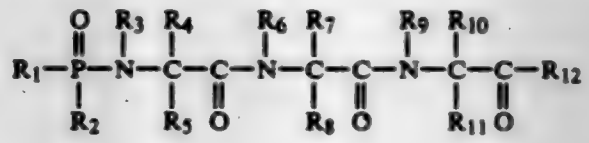
AMINO ACID DERIVATIVES AND ANTIHYPERTENSIVE DRUGS CONTAINING THEM

Shumpei Sakakibara, Suita; Yasumi Yugari, Kamakura, and Shigebumi Hashimoto, Yokohama, all of Japan, assignors to Ajinomoto Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 458,844, Jan. 18, 1983,. This application Jul. 14, 1983, Ser. No. 513,738
Claims priority, application Japan, Jan. 23, 1982, 57-9341; Aug. 16, 1982, 57-141831
The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—7 **14 Claims**

1. An amino acid derivative represented by the formula:

(II)



wherein:

R_1 and R_2 are the same or different from each other, and

each individually represents hydroxy, alkyloxy, aryloxy, aralkyoxy, alkyl, aryl, or aralkyl;

R_3, R_5, R_8, and R_{11}, at least two of which are the same, or all of which are different from one another, and each individually represents a hydrogen atom or lower alkyl;

R_4, R_7, and R_{10}, at least two of which are the same, or all of which are different from one another, and each individually represents a hydrogen atom, lower alkyl, lower aryl, or benzyl which may be further substituted by OH, COOH, amino, carbamoyl, guanidino, imidazolyl, indolyl, mercapto, or alkylthio;

R_6 and R_9 are the same or different from each other, and each individually represents hydrogen atom, lower alkyl, lower aryl, or benzyl;

R_{12} represents hyroxyl, alkyloxy, aryloxy, aralkyloxy, amino, mono- or di-alkyl-, aryl-, or aralkylamino; and

R_6 and R_7 combined together, and R_9 and R_{10} combined together, may independently form an alkylene bridge having 2 to 4 carbon atoms, which may further contain a double bond, or be further substituted by hydroxyl.

4,536,396

SYNERGISTIC SWEETENING COMPOSITIONS

Charles R. Stephens, Jr., Niantic, and Anibal Torres, Waterford, both of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,801

Int. Cl.³ A61K *37/02, 9/68;* **A23L** *1/236;* **A23G** *3/30*

U.S. Cl. 514—2 **22 Claims**

1. A method of masking the bitter taste and enhancing the sweet taste of 6-methyl-1,2,3-oxathiazin-4(3H)-one-2,2-dioxide, or an edible cationic salt thereof, in a composition for oral use which comprises combining in said composition 0.5 to 20 parts by weight of 3-(L-aspartyl-D-alanamido)-2,2,4,4-tetramethyl-thietane or an edible salt thereof for each 99.5 to 80 parts by weight of said oxathiazine or salt thereof, the sum of the parts by weight equalling 100, in total amounts which produce the desired sweetness in said composition.

4,536,397

ANTIBIOTICS, NEOVIRIDOGRISEINS, AND THEIR METHOD OF PRODUCTION

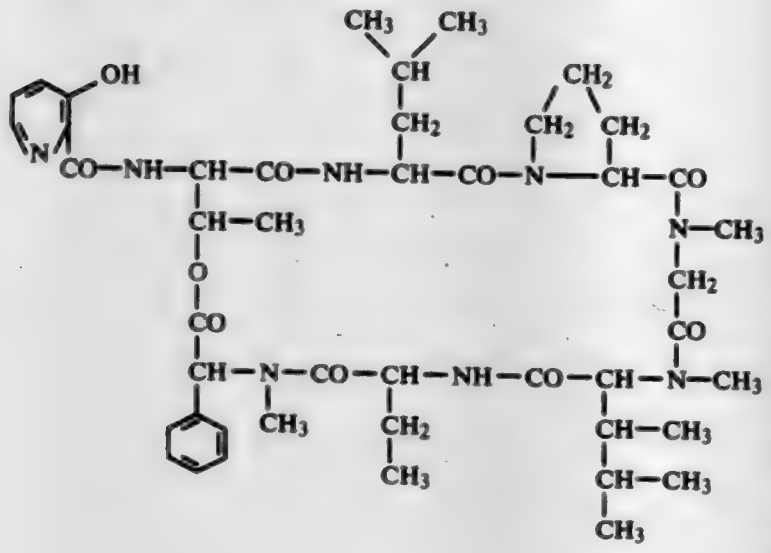
Yasushi Okumura; Kazuhiko Okamura; Yasuo Fugakawa; Tomoyuki Ishikura, all of Kanagawa; Kageaki Kouno, Tokyo, all of Japan, and Joseph Lein, Fayetteville, N.Y., assignors to Sanraku-Ocean Co., Ltd., Tokyo, Japan and Panlabe, Inc., Fayetteville, N.Y.

Division of Ser. No. 333,950, Dec. 23, 1981, Pat. No. 4,456,592, which is a division of Ser. No. 803,922, Jun. 6, 1977, Pat. No. 4,355,112. This application Oct. 31, 1983, Ser. No. 547,155

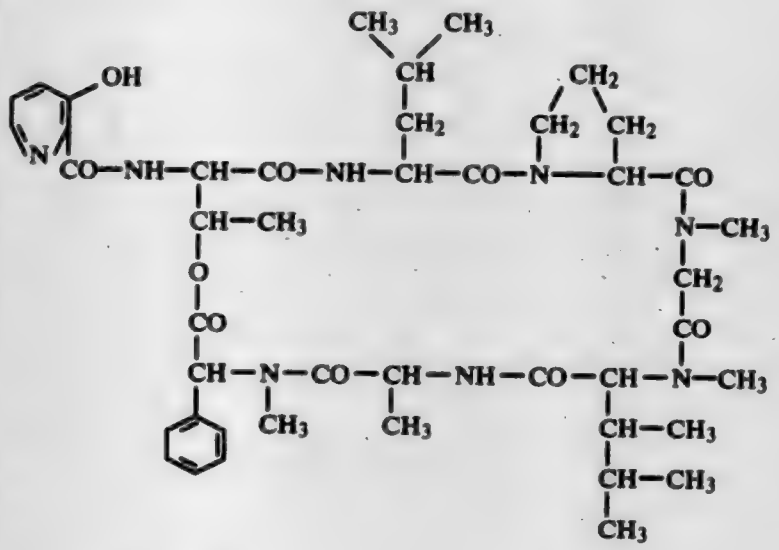
Int. Cl.³ A61K *37/00;* **C12P** *21/04*

U.S. Cl. 514—11 **5 Claims**

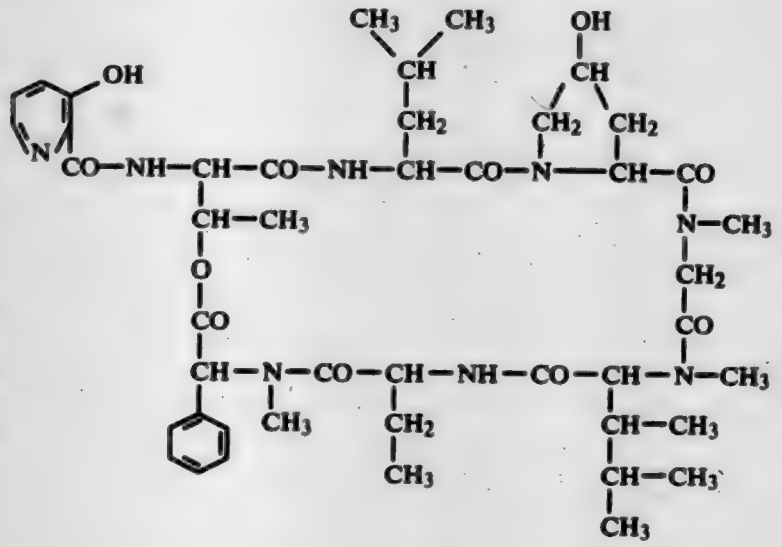
1. A process for preparing depsipeptide antibiotic neoviridogrisein I of the formula



depsipeptide antibiotic neoviridogrisein II of the formula



depsipeptide antibiotic neoviridogrisein III of the formula



which comprises cultivating Streptomyces sp. P 8648 (FERM-P3562; ATCC 31289) under aerobic conditions, at a temperature between 18° and 37° C., in an aqueous nutrient medium containing assimilable sources of carbon, assimilable sources of nitrogen, and essential mineral salts, at a pH between about 6 and about 9, until a substantial antibiotic activity is imparted to the medium, recovering the fermentation product from the medium and, optionally, isolating neoviridogrisein I, neoviridogrisein II and neoviridogrisein III as the single components.

4,536,398

ANTIVIRAL AGENTS

Tatsuo Ito, Isehara; Kazunori Oba, Yokohama; Harumi Fukuyasu, Yokosuka; Tomizo Niwa; Takashi Shomura, both of Yokohama, and Yuzo Kazuno, Hachioji, all of Japan, assignors to Meiji Seika Kaisha Ltd., Tokyo, Japan

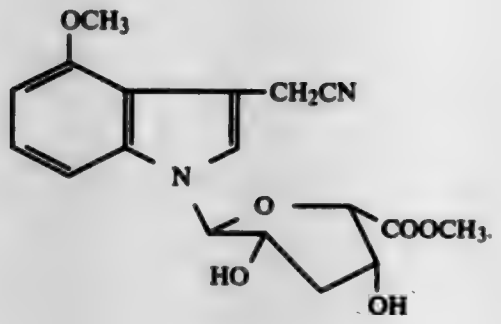
Continuation-in-part of Ser. No. 544,448, Oct. 21, 1983, abandoned. This application Jun. 25, 1984, Ser. No. 624,786

Claims priority, application Japan, Oct. 28, 1982, 57-188116

Int. Cl.³ A01N *31/00;* **A61K** *31/70*

U.S. Cl. 514—43 **2 Claims**

1. A method for treatment of viral diseases which comprises administering a pharmaceutically effective amount of a substance SF-2140 represented by the following formula:



4,536,399

USE OF FUMED SILICA FOR TREATING OILY SKIN AND ACNE

Robert G. Flynn; Courtney G. Pitkin, both of St. Louis, and Gregory A. Hileman, Hazelwood, all of Mo., assignors to Norcliff Thayer, Inc., Tarrytown, N.Y.

Continuation-in-part of Ser. No. 434,039, Oct. 13, 1982,. This application Feb. 9, 1984, Ser. No. 578,725

Int. Cl.³ A61K *31/60, 31/075, 31/695*

U.S. Cl. 514—63 **6 Claims**

1. A composition for application to oily skin consisting essentially of by weight:

1–10% fumed silica consisting of 99.8% silicone dioxide on an ignited weight basis and capable of absorbing about 4 gm of squalene oil per gm, in an oil-in-water emulsion carrier,

said carrier consisting of

1–4% of a thickening agent/emollient selected from the group consisting of cetyl alcohol, stearic acid and glycerol monostearate,

0.25–1.5% sodium lauryl sulfate emulsifier and water q.s. 100%.

4,536,400

PHOSPHONOFORMIC ACID ESTERS

Åke J. E. Helgstrand; Karl N. G. Johansson, both of Enhörna; Alfons Misiorny, Bandhagen; Jan O. Norén, Grödinge, and Göran B. Stening, Södertälje, all of Sweden, assignors to Astra Lakemedel Aktiebolag, Sodertalje, Sweden

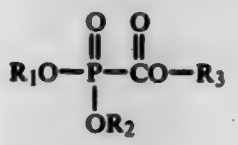
Division of Ser. No. 93,166, Nov. 13, 1979, Pat. No. 4,372,894, which is a continuation-in-part of Ser. No. 971,689, Dec. 21, 1978, abandoned. This application Sep. 10, 1982, Ser. No. 416,632

Claims priority, application United Kingdom, Dec. 22, 1977, 53580; Dec. 22, 1977, 53581; Dec. 22, 1977, 53582; Dec. 22, 1977, 53583; Jul. 3, 1978, 28548; Jul. 3, 1978, 28552; Jul. 3, 1978, 28553; Jul. 3, 1978, 28555

Int. Cl.³ A61K *31/66, 31/685*

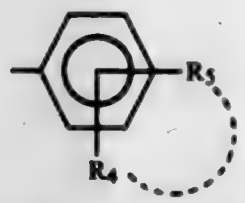
U.S. Cl. 514—120 **44 Claims**

1. A pharmaceutical preparation for the treatment of viral infections in animals including man comprising a pharmaceutically acceptable carrier and a therapeutically effective amount of the active ingredient a compound of the formula



(I)

wherein one of R_1 and R_2 is H and the other of R_1 and R_2 is a phenyl group of the formula



(II)

wherein R_4 and R_5 are the same or different and each is selected from the group consisting of hydrogen, halogen, alkyl having 1, 2, or 3 carbon atoms, alkoxy having 1, 2, or 3 carbon atoms, alkoxycarbonyl having 2–7 carbon atoms; and alkylcarbonyl groups having 2–7 carbon atoms; or R_4 and R_5 together form a straight saturated alkylene chain having 3 or 4 carbon atoms and being bound to adjacent positions, i.e. 2,3⁻ or 3,4⁻ in the phenyl ring and R_3 is H; and physiologically acceptable salts and optical isomers thereof.

4,536,401

11β-ARYL ESTRADIENES, PROCESSES FOR THEIR PRODUCTION AND PHARMACEUTICAL PREPARATIONS CONTAINING THEM

Guenter Neef; Gerhard Sauer; Rudolf Wiechert; Helmut Hofmeister; Ralph Rohde; Klaus Annen; Henry Laurent; Sybille Beier; Wolfgang Losert; Walter Elger, and David Henderson, all of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

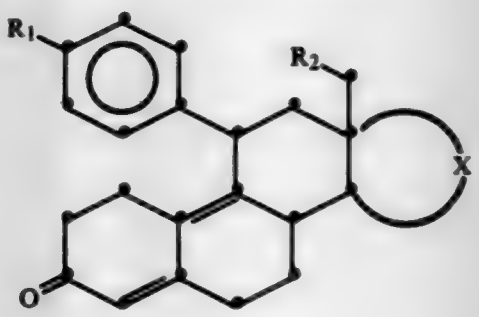
Filed Feb. 21, 1984, Ser. No. 581,853

Claims priority, application Fed. Rep. of Germany, Feb. 18, 1983, 3306121; Feb. 18, 1983, 3306124

Int. Cl.³ A61K *31/58*

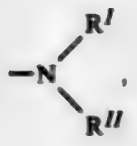
U.S. Cl. 514—173 **26 Claims**

1. An 11β-aryl estradiene of Formula I

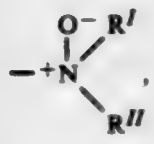


(I)

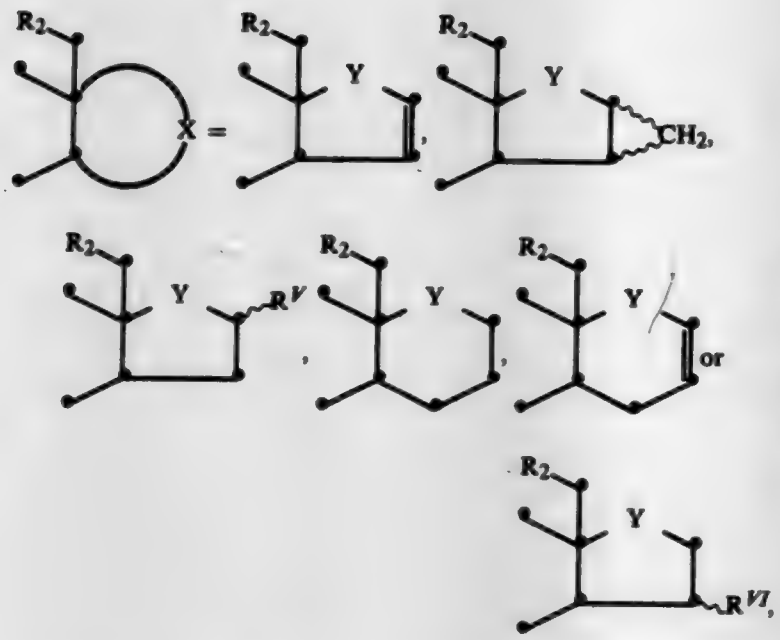
wherein R_1 is



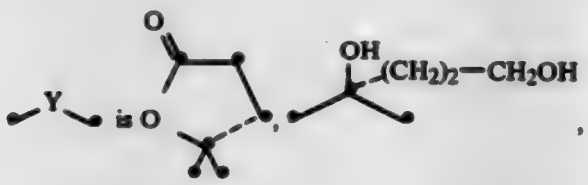
wherein R^I and R^{II} each independently is alkyl of 1–4 carbon atoms, or R^I and R^{II} together with the connecting N-atom form a 5- or 6-membered hererocyclic ring whose remaining atoms are all C-atoms, or which also includes an additional N-atom, an additional O or S atom or a combination thereof;

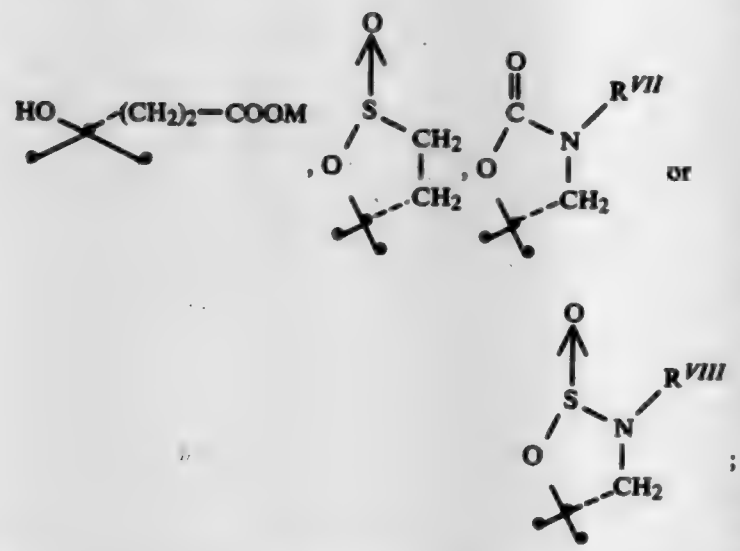


wherein R^I and R^{II} are as defined above; —SR^{III}, wherein R^{III} is methyl, ethyl or phenyl; or —OR^{IV}, wherein R^{IV} is methyl, ethyl, propyl, methoxymethyl, allyl, or β-dimethylaminoethyl; R_2 is hydrogen, methyl, or ethyl;



wherein the wavy lines ~~~~ mean that the substituent is in the α- or β-position, and





M is Na, K or Li; and R^V, R^{VI}, R^{VII} and R^{VIII} each independently is alkyl of 1–4 carbon atoms.

23. A pharmaceutical composition comprising an amount of a compound of claim 1 effective to cause an abortion and a pharmaceutically acceptable carrier.

4,536,402

VINYLOGOUS CARBOXAMIDES

Wolfhard Engel; Eckhart Bauer, both of Biberach; Günter Trummlitz, Warthausen; Peter Danneberg, Ockenheim, and Joachim Kähling, Biberach, all of Fed. Rep. of Germany, assignors to Dr. Karl Thomae Gesellschaft mit beschränter Haftung, Biberach, Fed. Rep. of Germany

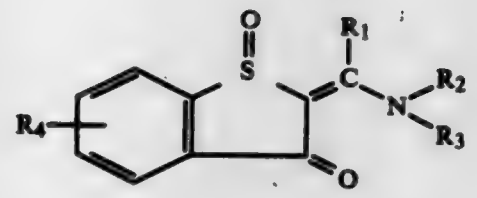
Continuation-in-part of Ser. No. 478,673, Mar. 25, 1983,. This application Nov. 29, 1984, Ser. No. 676,067

Claims priority, application Fed. Rep. of Germany, Apr. 6, 1982, 3212752

Int. Cl.[3] A61K *31/44, 31/38;* C07D *333/52*

U.S. Cl. 514—443 8 Claims

1. A compound of the formula



wherein

R_1 is phenyl, halo-substituted phenyl, methyl-substituted phenyl, halo- and methyl-substituted phenyl or pyridinyl;

R_2 is hydrogen, straight or branched alkyl of 1 to 4 carbon atoms, 2- or 3-hydroxy-(alkyl of 2 to 3 carbon atoms) or 2- or 3-dimethylamino-(alkyl of 2 to 3 carbon atoms);

R_3 is hydrogen or alkyl of 1 to 3 carbon atoms; and

R_4 is hydrogen, chlorine or methyl.

4,536,403

METHOD FOR TREATING NEUROLEPTIC INDUCED TARDIVE DYSKINESIA

J. F. Girard Rooks, 3181 Prairie St., P.O. Box 303, Grandville, Mich. 49418

Filed Jun. 6, 1984, Ser. No. 617,774

Int. Cl.[3] A61U *31/27*

U.S. Cl. 514—483 6 Claims

1. A method of treating tardive dyskinesia induced by treatments with a neuroleptic drug, which comprises orally administering internally to a human patient suffering from tardive dyskinesia a therapeutically effective amount of carisoprodol.

4,536,404

METHOD AND COMPOSITION FOR TREATING POST-HERPETIC NEURALGIA

Joel E. Bernstein, Deerfield, Ill., assignor to Dermatological Enterprises, Ltd., Northbrook, Ill.

Filed Jun. 16, 1983, Ser. No. 504,963

Int. Cl.[3] A61K *31/165, 35/78*

U.S. Cl. 416—627 7 Claims

1. A method of treating post-herpetic neuralgia due to herpes zoster in a patient having herpes zoster comprising topically applying an effective amount of capsaicin in a pharmaceutically acceptable carrier to the area affected with herpes zoster for a time sufficient to relieve the symptoms of post-herpetic neuralgia due thereto.

4,536,405

MAKE-UP COSMETICS COMPOSITION

Michiko Nara, Tokyo; Kazunori Yamazaki, Kanagawa, and Yasuko Akiyama, Tokyo, all of Japan, assignors to Shiseido Company Ltd., Tokyo, Japan

Continuation of Ser. No. 891,778, Sep. 17, 1979, abandoned. This application Sep. 17, 1979, Ser. No. 75,762

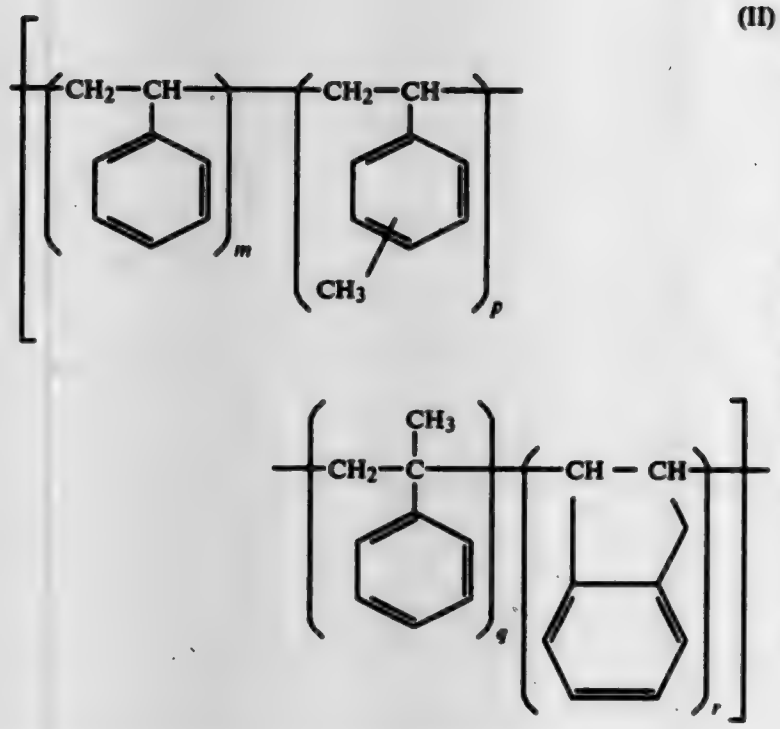
Claims priority, application Japan, Aug. 26, 1977, 52-102213

Int. Cl.[3] A61K *7/025, 7/027, 7/032, 47/00*

U.S. Cl. 514—781 11 Claims

1. A make-up cosmetic composition containing one or more volatile liquid oils, waxes and pigments and further at least one of (a) an organo-soluble ethyl hydroxyethyl cellulose having a hydroxy ethoxyl degree of substitution of about 0.3 to 0.9 and an ethoxyl degree of substitution of about 2.6 to 2.9, and (b) an aromatic hydrocarbon resin having a softening point of at least about 120° C. said aromatic hydrocarbon resin being represented by the following formula (II)

(II)



wherein m, p, q and r are positive integers.

4,536,406

RED COLORED MEAT ANALOG

Rita W. Brander, New Rochelle, N.Y.; John E. Hammond, Glen Rock, N.J., and John H. Pasch, Putnam Valley, N.Y., assignors to General Foods Corporation, White Plains, N.Y.

Filed Mar. 8, 1984, Ser. No. 587,478
Int. Cl.[3] A23J *3/00;* A23L *1/275*
U.S. Cl. 426—104 14 Claims

1. A meat analog comprising soy isolate and coloring amounts of laccaic acid and paprika, wherein said paprika is present in amounts effective to render said soy isolate non-reactive to the laccaic acid.

4,536,407

FUNCTIONAL PROTEIN PRODUCTS

Lucas K. Shay, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 29, 1983, Ser. No. 518,593
Int. Cl.[3] A23D *5/00;* A23J *3/00;* A23L *1/27*
U.S. Cl. 426—250 31 Claims

17. The process of preparing a functional protein product by the steps comprising:

(a) base-treating nucleic acid-containing microbial yeast cells as an aqueous suspension of about 10 to 25 weight percent cells with ammonium or alkali metal hydroxide at a pH of about 9 to 9.5, a temperature of about 90° to 95° C., for a time of about 20 to 40 minutes,

(b) water-washing the base-treated cells,

(c) acid-treating the washed base-treated cells as an aqueous suspension of about 10 to 25 weight percent cells with sulfuric acid at a pH of about 3 to 5 for about 20 to 50 minutes at a temperature of about 80° to 95° C.,

(d) water-washing the acid-treated base-treated cells,

(e) creaming the acid-treated base-treated microbial yeast cells by admixing with sufficient water to prepare a cream containing about 10 to 25 weight percent cells, and

thereby preparing a functional protein product.

4,536,408

LOW FAT SPREAD

Alpha L. Morehouse, and Charles J. Lewis, both of Muscatine, Iowa, assignors to Grain Processing Corporation, Muscatine, Iowa

Filed Sep. 12, 1983, Ser. No. 531,752
Int. Cl.[3] A23D *3/00, 3/02;* A23L *1/27*
U.S. Cl. 426—250 19 Claims

1. A low fat spread comprising a blend of an edible fat suitable for butter substitutes, a non-gelled starch hydrolyzate having a D.E. of about 4 and not more than 25 and water, such blend being a water-in-oil emulsion and having the approximate consistency of natural butter at room temperature wherein the edible fat is employed in an amount of from about 15 to 35% by weight of the spread and the starch hydrolyzate is employed in an amount of from about 15 to 35% by weight of the spread.

4,536,409

OXYGEN SCAVENGER

Christopher J. Farrell, Arlington Heights, and Boh C. Tsai, Rolling Meadows, both of Ill., assignors to American Can Company, Greenwich, Conn.

Filed Jan. 23, 1981, Ser. No. 228,089
Int. Cl.[3] A23B *00/00;* B32B *27/08*
U.S. Cl. 426—398 125 Claims

1. A polymeric laminate having only solid layers which comprises:

a. at least one polymeric protective layer in protective relation to an oxygen scavenger material in another layer of the laminate, and

b. a polymeric layer having incorporated therein a dry oxygen scavenger material, the material being capable of a passive state for prolonged periods of time during which the oxygen scavenger will not directly react with oxygen, and triggerable to an active state when wetted with water which has selectively permeated the protective layer from outside the laminate, whereupon the oxygen scavenger will directly react with oxygen,

wherein said protective layer is substantially resistant to permeation by water at ambient temperature and has enhanced transmission of water at elevated temperatures and therefore is selectively capable of permeation by water at an elevated temperature to thereby selectively permit the water to contact said oxygen scavenger material to convert it from the passive to the active state.

4,536,410

DIPEPTIDE SWEETENER COMPOSITION

Nancy J. Vaccaro, Putnam Valley; John R. Frost, Beacon, both of N.Y.; Alfred C. Glatz, Stamford, Conn., and Timothy W. Schenz, Haworth, N.J., assignors to General Foods Corporation, White Plains, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,525
Int. Cl.[3] A23L *1/22*
U.S. Cl. 426—548 31 Claims

1. A dipeptide sweetener-lipid gel composition consisting essentially of, by weight;

(a) one part hydrated, crystalline, dipeptide sweetener containing water of crystallization, wherein said hydrated dipeptide sweetener comprises between about 0.02 and about 1.0 parts water per part dipeptide sweetener; and

(b) about 1 to about 100 parts lipid per part dipeptide sweetener wherein said lipid is selected from the group consisting of aliphatic acids, aliphatic acid esters and combinations thereof and said dipeptide sweetener-lipid composition is effective to form a gel which is thermally irreversible.

18. A process for producing a thermally sible, aspartamelipid gel comprising the steps of:

(a) combining ingredients consisting essentially of 1 part hydrated, crystalline aspartame containing water of crys-

tallization, wherein said aspartame sweetener comprises between about 0.02 and about 1 part water per part aspartame, with between about 1 and about 100 parts lipid; and

(b) heating the aspartame-lipid admixture to a temperature between about 25° C. and the temperature at which the lipid decomposes for a time effective to produce a viscosity increase of at least about 100%.

4,536,411

SPREAD HAVING BUTTER-LIKE PROPERTIES

Douglas C. Kirton, Nutley nr Uckfield; Avril B. MacNeill, Gravesend, both of England, and Laurentius A. M. Verhagen, Vlaardingen, Netherlands, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 21, 1983, Ser. No. 553,916

Claims priority, application United Kingdom, Nov. 22, 1982, 8233217

Int. Cl.³ A23D *5/02*

U.S. Cl. 426—603 **15 Claims**

1. A process for the preparation of a fat-continuous spread, comprising:

(a) producing a proteinaceous oil-in-water emulsion cream comprising from 10 to 40% by weight of a dispersed fatty phase containing a primary fat selected from the group consisting of hydrogenated palmkernel-, coconut-, babassu-, ouricurum-, murumuru-, tucum oil, palm oil and oils hydrogenated under conditions promoting isomerism and forming of triglycerides in the trans-configuration and having a melting point from 30° to 70° C., wherein said dispersed fatty phase constitutes less than 20% by weight of the total amount of fat present in the spread;

(b) emulsifying said cream with a secondary fat constituting the continuous phase of said spread and having a melting point equal to or less than the melting point of said primary fat;

(c) subjecting the emulsion obtained in (b) to a texturizing treatment involving cooling and working;

(d) heating at least part of the texturized emulsion to a temperature of from 40° to 70° C. mixing said heated texturized emulsion with fresh emulsion obtained in (b) and subjecting the resulting emulsion mixture to the texturizing treatment of step (c) to obtain a fat-continuous spread.

4,536,412

METHOD OF PRODUCING PROTEIN-RICH FORAGE OR NITROGENOUS FERTILIZER FROM FOWL DROPPINGS, SWINE DUNG, COW DUNG AND THE LIKE

Shuzo Nakazono, 5-9-901, 2 chome Arato, Chuo-ku, Fukuoka, Japan

Filed Jan. 5, 1982, Ser. No. 337,123

Int. Cl.³ A23L *1/01*

U.S. Cl. 426—641 **4 Claims**

1. A method of producing protein-rich forage or nitrogenous fertilizer from a water containing ordure sludge of fowl droppings, swine dung, cow dung, or the like which comprises, charging a batch of said water containing ordure into a cooker containing an animal, fish or vegetable oil preheated to a temperature above 90° C. at which gelatinous substances and proteins in the ordure are not dissolved in the oil but are thermally coagulated, heating and stirring the mixture in said cooker while reducing the pressure in the cooker to a first reduced pressure of 10–20 mmHg for a period of about 30 minutes after charging to perform a first stage of dehydration and to thermally coagulate the gelatinous substances and proteins of the ordure, then further reducing the pressure in the cooker to a second reduced pressure while heating and stirring to cause the density of moisture in the mixture to become lower than the density of the oil to further remove moisture from ordure solids and the oil, then removing the thus treated material from the cooker and compressing the material to separate the oil from the solids.

4,536,413

LEATHER COVERING GRIP ENHANCEMENT

Philip R. Powell, 408 S. 7th, Ponca City, Okla. 74601

Filed May 14, 1984, Ser. No. 609,639

Int. Cl.³ B05D *1/00*

U.S. Cl. 427—11 **12 Claims**

1. A method for enhancing the tactile characteristics of a leather covering comprising:

applying a quantity of a composition to the leather covering, the composition comprising:

between about 10 volume percent and about 99.9 volume percent nonionic polymeric ethoxylate surfactant;

at least about 0.1 weight percent antiperspirant inorganic compound; and

up to about 89.9 volume percent dermatologically acceptable volatile solvent; and

rubbing the applied composition into the leather covering.

4,536,414

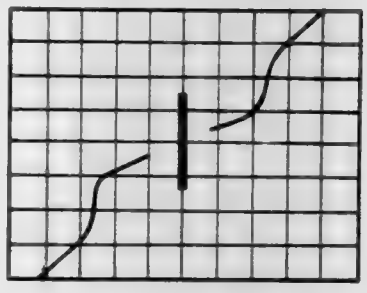
SUPERCONDUCTIVE TUNNEL JUNCTION DEVICE WITH ENHANCED CHARACTERISTICS AND METHOD OF MANUFACTURE

Harry Kroger, Sudbury; Don W. Jillie, Arlington, and Lawrence N. Smith, Lexington, all of Mass., assignors to Sperry Corporation, New York, N.Y.

Filed Jan. 17, 1983, Ser. No. 458,241

Int. Cl.³ H01L *39/22*

U.S. Cl. 427—38 **4 Claims**



1. A method of manufacturing a superconductive tunnel junction device in a vacuum chamber comprising the steps of

pumping the vacuum system down to vacuum,

depositing a first layer of superconductive material on a substrate,

bombarding said first layer of superconductive material with inert gas ions, providing a bombarded first superconductive layer,

forming a barrier layer on said bombarded first superconductive layer,

said bombarding step being performed prior to forming said barrier layer,

said aforementioned steps being performed without breaking the vacuum system, and

completing said superconductive tunnel junction device.

4,536,415

METHOD OF MANUFACTURING AN OPTICALLY READABLE INFORMATION DISC

Theodorus H. G. Martens, and Franciscus H. M. Sanders, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 30, 1983, Ser. No. 480,196

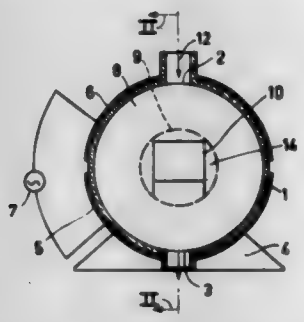
Claims priority, application Netherlands, Feb. 4, 1983, 8300422

Int. Cl.³ B05D *3/14*

U.S. Cl. 427—40 **3 Claims**

1. A method of manufacturing an optically readable information disc which comprises a disc-shaped substrate manufactured from a synthetic resin or comprising a coating layer of a synthetic resin and having on at least one surface thereof an optically readable structure of information areas situated alternatively at a higher level and at a lower level, characterized in that the substrate, on the surface having the optical structure,

is treated with an ion free, low-pressure high-frequency plasma of an oxidizing gas containing a halogen compound and the



thus treated surface is then provided with a non-electrolytic deposited metal reflection layer.

4,536,416

MATRIX AND METHOD OF MANUFACTURING ARTICLES OF A SYNTHETIC RESIN BY THE MATRIX

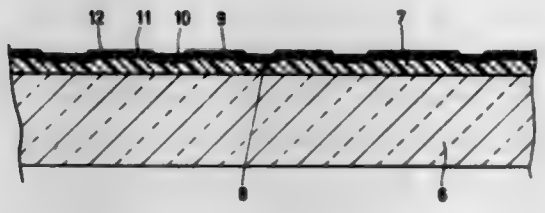
Johannes J. Ponjee, and Frederik B. Melgert, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 16, 1983, Ser. No. 505,003

Claims priority, application Netherlands, Mar. 28, 1983, 8301070

Int. Cl.³ B32B *3/02*

U.S. Cl. 427—131 **5 Claims**



1. A method of improving the removability of a body comprising a pattern-bearing synthetic resin surface from a matrix comprising a metal surface bearing the negative of said pattern and contacting said synthetic resin surface during formation of said pattern on said synthetic resin surface, said method comprising coating said metal surface with a monolayer of a releasing agent selected from the group consisting of alkylmercaptans and fluoroalkylmercaptans prior to contacting said metal surface with said synthetic resin surface.

4,536,417

METHOD FOR REPAIRING AND RESTORING DETERIORATED CEMENT-CONTAINING INORGANIC MATERIAL

Toshihiko Shimizu, Narashino, Japan, assignor to Onoda Construction Materials Co., Ltd., Tokyo, Japan

Filed Dec. 9, 1983, Ser. No. 560,014

Int. Cl.³ B32B *35/00*

U.S. Cl. 427—140 **4 Claims**

1. A method for repairing and restoring a deteriorated reinforced concrete, comprising the first step in which a solution of lithium silicate is applied to the surface of said reinforced concrete to infiltrate said solution into the body of said reinforced concrete, the second step in which the surface of the reinforced concrete which has undergone said first step treatment is topcoated with cement paste of the following composition (A), and the third step in which the surface of the cement paste coating formed in the second step is further coated with mortar of the following composition (B):

compositon (A):

(a) cement: 40–60 parts

(b) aggregate smaller than 0.3 mm in size: 60–40 parts

(c) anion-polymerized styrene/butadiene rubber latex (solid content): 2–8 parts

compositon (B):

(a) cement: 20–40 parts

(b) aggregate smaller than 1.2 mm in size: 80–60 parts

(c) anion-polymerized styrene/butadiene rubber latex (solid content): 2–8 parts.

4,536,418

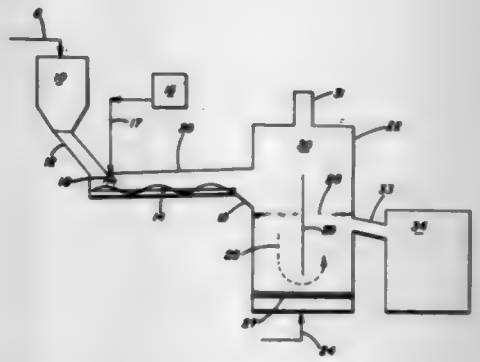
METHOD FOR TREATING POTASH WITH ANTICAKING AGENT

Elmar L. Goldsmith, Regina, Canada, assignor to PPG Industries Canada, Ltd., Regina, Canada

Filed Apr. 22, 1982, Ser. No. 370,767

Int. Cl.³ B05D *7/00*

U.S. Cl. 427—213 **18 Claims**



1. A method for uniformly distributing liquid anticaking agent onto the surface of particulate, hygroscopic material, which comprises applying an anticaking amount of an aqueous dispersion of anticaking agent to a stream of said particulate material while agitating said material, said agitation providing an initial distribution of anticaking agent on the particulate material, passing directly particulate material treated with anticaking agent through a fluidized bed of said treated particulate material, and removing from the fluidized bed particulate hygroscopic material having anticaking agent distributed substantially uniformly over the surface of the particles of the particulate material.

4,536,419

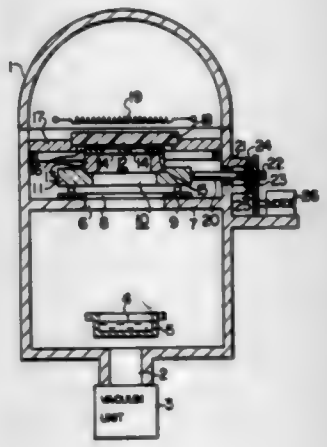
METHOD FOR FORMING TAPERED FILMS

Hitoshi Kubota, Fujisawa; Minoru Tanaka, and Susumu Aiuchi, both of Yokohama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 10, 1983, Ser. No. 474,032

Int. Cl.³ C23C *11/00, 13/00*

U.S. Cl. 427—255.5 **14 Claims**



1. A method for producing multiple layers, including a tapered thin film as a lower layer thereof, on a substrate by dry process comprising:

using a mask having a pattern with a smaller dimension by a pattern difference than a desired pattern of the thin film,

said pattern having the smaller dimension at least in the direction of the taper to be formed;

carrying out a relative motion between said substrate and said mask disposed close to the substrate within the range of said desired pattern, in the direction of said taper to be formed;

forming a thin film on said substrate by vapor deposition in association with said relative motion to thereby produce a substantially-tapered, vapor-deposited thin film; and

forming at least one layer on said substantially-tapered, vapor-deposited thin film.

4,536,420

PROCESS AND COMPOSITION FOR PRODUCING PERMANENTLY WATER WETTABLE SURFACES

Milton E. Rickert, Jr., Louisville, Ky., assignor to General Electric Company, Louisville, Ky.

Filed Dec. 5, 1983, Ser. No. 558,306
Int. Cl.³ B05D *5/00, 3/02*
U.S. Cl. 427—257 **36 Claims**

1. A process for producing a permanently water wettable, abrasion-resistant film on a non-water-absorbing surface, consisting essentially of:

(a) coating the surface with a film of a mixture of an aqueous colloidal dispersion of carboxylic acid functional polymer which is curable to water insolubility, and an aqueous colloidal dispersion of surface hydroxylated silica, the silica solids being present in an amount sufficient to cause the formation of canals in the hardened film when the mixture is applied to the surface at a suitable thickness; and

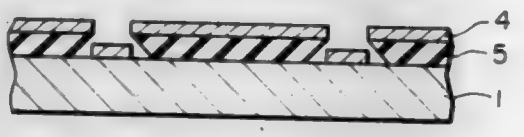
(b) hardening the film to provide a water insoluble polymer.

4,536,421

METHOD OF FORMING A MICROSCOPIC PATTERN

Toshiharu Matsuzawa, Higashimurayama; Kikuo Douta, Hachioji; Takao Iwayanagi, and Hiroshi Yanazawa, both of Tokyo, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1981, Ser. No. 288,481
Claims priority, application Japan, Aug. 1, 1980, 55-104990
Int. Cl.³ B05D *1/32*; C23F *13/00*
U.S. Cl. 427—282 **17 Claims**



1. A method of forming a microscopic pattern, including:

(1) the step of depositing a film of a negative photoresist, said photoresist including a polymer having benzene rings, said film being a single layer, on a surface on which the microscopic pattern is to be formed, to form a photoresist film of said single layer,

(2) the step of irradiating a desired part of said photoresist film with short-wavelength ultraviolet radiation, to lower a solubility of the irradiated part,

(3) the step of developing said photoresist film, to remove an unirradiated part thereof and to form a photoresist pattern from said photoresist film whose sectional shape is an inverted trapezoid,

(4) the step of depositing a film of a material which is to form said microscopic pattern on the portion of said surface that is exposed by removal of said unirradiated part and on said photoresist pattern, and

(5) the step of removing said photoresist pattern along with the film of the material deposited thereon.

4,536,422

PROCESS TO IMPART SMOOTH-DRY AND FLAME RETARDANT PROPERTIES TO CELLULOSIC FABRIC

Robert J. Harper, Jr., Metairie, La., assignor to The United States of America as represented by the Secretary of Agriculture, Washington, D.C.

Filed Mar. 6, 1984, Ser. No. 586,617
Int. Cl.³ B05D *3/02*; D06M *13/34*
U.S. Cl. 427—381 **14 Claims**

1. A process for imparting smooth-dry and flame retardant properties to cellulosic fabrics comprising:

(a) padding a cellulosic fabric with a solution comprising sufficient amounts of: N-methylol crosslinking agent, an acid catalyst, a halogen containing alcohol, and antimony oxide to produce smooth-dry flame retardant properties in the fabric;

(b) drying said cellulosic fabric for sufficient time and at sufficient temperature to drive off the moisture; and then,

(c) curing said cellulosic fabric for sufficient time and temperature to impart smooth-dry flame retardant properties to said fabric.

4,536,423

WALL ORNAMENT FOR SHOWER AND BATHTUB ENCLOSURES

E. Clayton Travis, 4235 Island View Dr., Linden, Mich. 48451

Filed Aug. 16, 1984, Ser. No. 641,272
Int. Cl.³ B44C *5/04*
U.S. Cl. 428—14 **2 Claims**



1. As an article of manufacture, a waterproof ornamental poster for attachment to a vertical wall of a tub or shower enclosure, comprising:

an enlarged photograph of a person or other image;

the contours of said image being die cut generally along its periphery, defining a contoured outer peripheral edge;

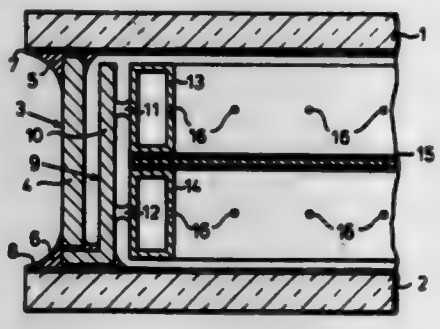
an envelope of thin transparent plastic waterproof material enclosing said die cut image, including a first layer overlying the image face and a second layer overlying the image obverse face, and said envelope having a contoured peripheral portion enclosing said die cut image peripheral edge in sealed watertight relation; and

a plurality of spaced strips of pressure sensitive adhesive mounted on and overlying said second envelope layer in spaced relation generally along its vertical length for engagement with said vertical tub or shower enclosure wall, retaining said waterproof ornamental poster in snug supported relation along its length.

4,536,424
GLAZING UNITS

Michel Laurent, Nivelles, Belgium, assignor to Glaverbel, Brussels, Belgium

Filed Jan. 31, 1984, Ser. No. 575,534
Claims priority, application United Kingdom, Feb. 4, 1983, 8303069
Int. Cl.³ E06B *3/24*
U.S. Cl. 428—34 13 Claims



1. A hollow glazing unit comprising vitreous sheets having metallized margins held in spaced relationship by marginal spacing means, wherein a plastic foil is held taut between and in spaced relationship to said vitreous sheets by foil holding means located between said vitreous sheets, said spacing means comprises one or more metal strips forming a spacing web which is located outwardly of the periphery of said foil, said metal strips are connected to the vitreous sheets at their margins by soldered joints and said foil holding means comprises one or more components distinct from the spacing web, whereby the spacing web is capable of being angularly deflected without moving said foil holding means.

4,536,425
METHOD FOR PREPARING POLAR THERMOPLASTIC RESIN COMPOSITIONS HAVING IMPROVED GAS BARRIER PROPERTIES

Ihab M. Hekal, Stamford, Conn., assignor to Continental Can Company, Stamford, Conn.

Filed Jan. 8, 1984, Ser. No. 618,699
Int. Cl.³ B65D *81/00*; C08L *67/02*
U.S. Cl. 428—35 27 Claims

1. A method of preparing a polar thermoplastic resin having increased resistance to gas permeability which comprises providing a blend of the resin and mica flakes having a plurality of platelets, the flakes having a particle size less than about 100 mesh before blending and then admixing the mica flakes and resin at a temperature at which the resin is molten, the admixing imparting a shear force which effects delamination of the mica platelets and a substantial increase in the aspect ratio whereby improved gas barrier and heat stability properties are achieved.

4,536,426
SELF ADHESIVE NAIL OVERLAY OR WRAP

Becky L. Massey, 25799 N. Player Dr., Valencia, Calif. 91355

Filed Nov. 9, 1983, Ser. No. 549,964
Int. Cl.³ A45D *31/00*
U.S. Cl. 428—42 3 Claims

1. The process of strengthening and protecting human nails with a permeable nail overlay having one side coated with a pressure sensitive adhesive of non-permanent bonding material and secured to release backing paper-comprising the sequential steps of:

(a) shaping the nail overlay to a human nail to be strengthened;

(b) simultaneously cutting the nail overlay and release backing paper to the general outline of the human nail;

(c) separating the release backing paper from the nail overlay;

(d) adhering the nail overlay to the human nail with non-permanent bonding material; and,

(e) applying a coat of glue to the top of the nail overlay and permanently bonding the nail overlay to the human nail.

4,536,427
SCRIMLESS CONTOURABLE CORE FOR USE IN LAMINATED CONTOURED STRUCTURES

Henri-Armand Kohn, Northvale, N.J., assignor to Baltek Corp., Northvale, N.J.

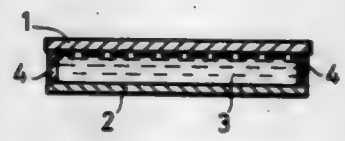
Filed Mar. 26, 1984, Ser. No. 593,130
Int. Cl.³ B32B *3/10, 7/08, 31/00*
U.S. Cl. 428—44 8 Claims

1. A scrimless contourable core for inclusion in laminated structures, said core comprising a planar array of four-sided identical rectangular modules formed of end-grain balsa wood, all of whose adjacent sides are held together by flexible joints of taffy-like adhesive that has a short elastic limit, such that when the outer face of the planar core is pressed against a contoured surface for lamination of the inner face thereto, the resultant stresses cause adjacent modules of the core to pull apart and to cause the joints therebetween to stretch beyond their elastic limit to an extent necessary to conform the pulled-apart modules to this surface without spring-back when the stresses are relieved.

4,536,428
MAGNETIC DISPLAY PANEL

Yasuzo Murata, and Hiroshi Sato, both of Kanagawa, Japan, assignors to Pilot Man-Nen-Hitsu Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 18, 1980, Ser. No. 160,700
Claims priority, application Japan, Jun. 20, 1979, 54-77646
Int. Cl.³ B43L *1/12*
U.S. Cl. 428—117 35 Claims



1. A magnetic display panel comprising:

a liquid containing panel having a front substrate formed of a material selected from the group consisting of transparent and translucent materials and a rear substrate disposed opposite to said substrate and bonded thereto by an adhesive comprising a polyester adhesive, a liquid sealing space being formed between said substrates; and

a dispersing liquid having a yield value of at least 5 dyne/cm^2 sealed in said space, said dispersing liquid comprising, a fine particulate thickener selected from the group consisting of an olefinic polymer, olefinic copolymer, metal soap, fatty acid amide, wax and dextrin fatty acid ester; fine magnetic particles, a colorant and a dispersion medium, an image being recordable on said panel by a movable marking device having an oriented magnetic field.

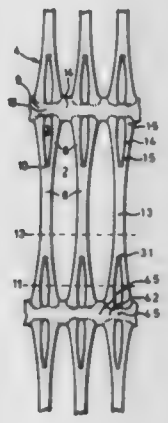
4,536,429
PLASTICS MATERIAL MESH STRUCTURE

Frank B. Mercer, Blackburn, England, assignor to P.L.G. Research Limited, Blackburn, England

Continuation of Ser. No. 568,932, Jan. 10, 1984, abandoned, which is a continuation of Ser. No. 429,609, Sep. 30, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 652,885
Claims priority, application United Kingdom, Oct. 5, 1981, 8130021
Int. Cl.³ B32B *3/10*
U.S. Cl. 428—136 17 Claims

1. An integral plastics material mesh structure which has been uniaxially stretched, and comprises a subtantial number

of spaced parallel parts which run substantially right across the structure substantially at right angles to the direction of stretch, said parts comprising at least zones regularly spaced along their lengths which are unorientated or orientated only to a low degree, and said parts either being continuous or being discontinuous and interrupted by regularly-spaced mesh openings, each discontinuous length so formed being connected to the adjacent discontinuous length of the same said part by at least two highly orientated strands whose axes are inclined to each other but which extend generally in the direction of stretch, and each of which highly-orientated strands has one end connected to a respective said discontinuous length and the other end connected to the other highly orientated strand at a junction; said continuous parts being connected to adjacent



said continuous parts, or said junctions of said discontinuous parts being connected to said junctions of adjacent said discontinuous parts, by highly orientated interconnecting strands extending generally in the direction of stretch, said interconnecting strands comprising generally-parallel, spaced, side-by-side strands, an end of each of which side-by-side strands forks into only two further generally parallel said interconnecting strands, whereby there are two notional lines across said structure, said two notional lines lying between two adjacent said continuous parts or between said junctions of two adjacent said discontinuous parts, and extending substantially at right angles to the direction of stretch, such that a first said notional line crosses substantially more said interconnecting strands than the second said notional line.

4,536,430

PROCESS FOR THE PRODUCTION OF LEATHER BASE MATERIAL

Edmond D. Krecke, 72 Boulevard de la Pétrusse, LU-Luxemburg Stadt, Luxembourg

Filed May 26, 1982, Ser. No. 382,085
Int. Cl.³ C08J *9/00*; C08L *89/06*
U.S. Cl. 428—151 **37 Claims**

1. A process for the production of leather base material comprising:

(a) dividing leather waste into pieces;

(b) subjecting the pieces to mechanical working to cause the pieces to break up into fine material and individual fibers, said fibers being generally in the range from 2 to 14 mm in length;

(c) separating the fibers from the fine material; and

(d) incorporating said fibers into a leather base material.

4,536,431

METHOD OF TEXTURING A SURFACE AND ARTICLES TEXTURED BY THE METHOD

Robert L. Wyckoff, 136 Oran Ct., Napa, Calif. 94558

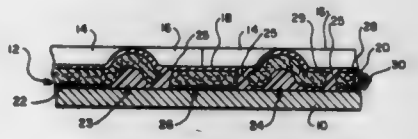
Filed Aug. 5, 1983, Ser. No. 520,586
Int. Cl.³ B32B *3/26*
U.S. Cl. 428—162 **25 Claims**

1. Method of producing a textured finish on a given area of a smooth support member, comprising the steps of:

(a) conforming a porous sheet material (20) to said area of the support member, said porous sheet material having an exterior surface with contours according to a desired three-dimensional pattern;

(b) applying a coating of a hardenable liquid (22) having adhesive properties relative to said support member, said liquid being applied to said porous sheet material at a volume rate per unit of said area sufficient for substantial saturation of said porous sheet material and penetration therethrough to said support member for sealing the pores of said sheet material but insufficient to provide a smooth exterior surface unaffected by said pattern of the material; and

(c) hardening said liquid to form a hard coating on said exterior surface replicating said contours of the material, said hardened liquid being the sole means adhering the material to said support member.



24. An article textured by the method of claim 1, said article consisting of:

(a) a smooth surface to be textured,

(b) a single, thin layer of sheet material having a particular texture and including a plurality of pores, said sheet material overlying said surface with an interior side of said layer adjacent thereto and an exterior side spaced therefrom;

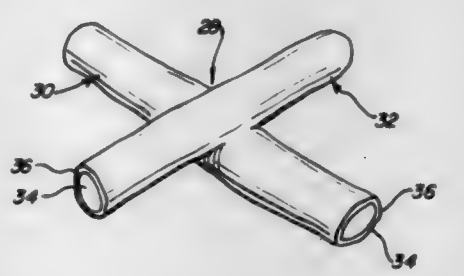
(c) a hard coating having a first portion in direct, adherent relation to said surface, a second portion adjacent said exterior side and enveloping said sheet material in fashion replicating said particular texture, and a third portion penetrating said pores and linking said first and second portions.

4,536,432

STABILIZED ABSORBENT STRUCTURE AND METHOD OF MAKING SAME

Dennis C. Holtman, Flemington, N.J., assignor to Personal Products Co., Milltown, N.J.

Filed Apr. 18, 1984, Ser. No. 601,755
Int. Cl.³ D21C *3/20*; C07D *5/22*
U.S. Cl. 428—171 **10 Claims**



1. The method of forming an absorbent batt comprising the steps of: providing an assemblage of non-delignified wood pulp fibers, applying a solvent to said assemblage of non-delignified wood pulp fibers to soften at least 10 percent of the lignin of said fibers; compressing said assemblage of non-delignified wood pulp fibers to cause softened portions of the lignin to form lignin-to-lignin interfiber bonds at fiber intersections; and

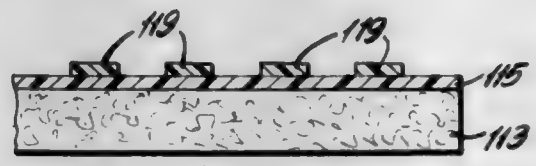
removing the solvent from said assemblage of non-delignified wood pulp fibers.

4,536,433

SLIP RESISTANT ABSORBENT PAD

Zaigmond L. Sagi, 25 Arden Rd., Deaville, and Craig R. Hof, 112 Santa Fe Trail, Hopatcong, both of N.J. 07834

Filed Sep. 16, 1983, Ser. No. 532,796
Int. Cl.[3] B32B *27/06, 3/10*
U.S. Cl. 428—195 4 Claims



1. A slip resistant article comprising a layer of moisture-absorbent material, water-impervious layer overlying said moisture-absorbent layer and a layer of a wax having a needle penetration value of from about 5 to about 70 and a melting point of from about 150° F. to about 200° F. on said water-impervious layer.

4,536,434

HEAT TRANSFER LAMINATE

Frank A. Magnotta, Framingham, Mass., assignor to Dennison Manufacturing Co., Framingham, Mass.

Filed Oct. 20, 1983, Ser. No. 544,024
Int. Cl.[3] B32B *7/06, 7/10;* C09J *7/02*
U.S. Cl. 428—200 20 Claims



1. In a heat transferable laminate of the type including a carrier support and a heat transferable substrate comprising a release layer in contact with the carrier support, and an ink design layer, said substrate being transferable from the carrier support to a receiving article upon application of heat to the carrier while said receiving article contacts the transferable substrate, an improved release layer, comprising:

a wax component; and

a binder resin comprising a thermoplastic acrylic-based terpolymer resin selected from the group consisting of a monoolefin/vinyl acetate/acrylic acid terpolymer and a monoolefin/allyl acetate/acrylic acid terpolymer, the improved release having a drop melting point between about 85° C. to 135° C., permitting transfer at between about 300° F. and 600° F. in less than 2 seconds and resolidifying after transfer to provide a transparent, matte, nonglossy, protective coating.

4,536,435

MULTILAYER SUBSTRATE INCLUDING LAYERS OF AN ALUMINA AND BOROSILICATE-LEAD-GLASS CERAMIC MATERIAL

Kazuaki Utsumi; Yuzo Shimada; Masanori Suzuki, and Hideo Takamizawa, all of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Oct. 14, 1982, Ser. No. 434,238
Claims priority, application Japan, Oct. 14, 1981, 56-164017
Int. Cl.[3] B32B *3/00*
U.S. Cl. 428—209 5 Claims

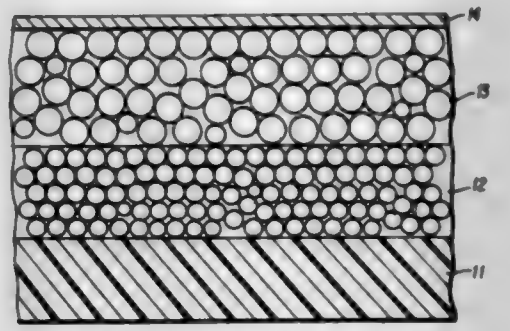
1. A multilayer substrate comprising a plurality of glass-ceramic insulator layers with interposed circuit patterns, wherein each glass-ceramic insulator layer has a composition consisting essentially of, when components of said composition are expressed as oxides, 40 through 60 percent by weight of aluminum oxide, 1 through 40 percent by weight of lead oxide, 1 through 30 percent by weight of boron oxide, 2 through 40 percent by weight of silicon dioxide, 0.01 through 25 percent by weight of at least one oxide selected from oxides of chemical elements of magnesium, calcium, strontium, barium and zinc, and 0.01 through 10 percent by weight of at least one oxide selected from oxides of chemical element of zirconium, titanium, germanium, and tin.

4,536,436

RADIOGRAPHIC IMAGE CONVERSION SCREENS

Hidehiko Maeoka, Takaido-Higashi; Etsuo Shimizu, Higashi-Nakano; Yujiro Suzuki, Odawara; Keiji Shimiya, Hiratsuka, and Norio Miura, Isehara, all of Japan, assignors to Kasei Optonix, Ltd., Tokyo, Japan

Continuation of Ser. No. 376,020, May 7, 1982, abandoned. This application May 21, 1984, Ser. No. 612,317
Claims priority, application Japan, Mar. 15, 1982, 57-39310
Int. Cl.[3] B32B *7/02*
U.S. Cl. 428—212 8 Claims



1. A radiographic image conversion screen, having a speed and/or an image quality at least equal to that of a conventional radiographic image conversion screen which has only a green emitting rare earth phosphor layer, consisting essentially of: (a) a support; (b) a first fluorescent layer formed on said support and consisting essentially of a blue emitting phosphor which is selected from the group consisting of:

(I) a yttrium or yttrium-gadolinium oxysulfide phosphor represented by the formula:

$$(Y_{1-c-d-e}, Gd_c, Tb_d, Tm_e)_2O_2S$$

where c, d and e are numbers within the ranges of $0 \leqq c \leqq 0.60$, $0.0005 \leqq d \leqq 0.02$ and $0 \leqq e \leqq 0.01$, respectively; and

(II) a rare earth oxyhalide phosphor represented by the formula:

$$(Ln'_{1-x-y-z}, Tb_x, Tm_y, Yb_z)OX$$

where Ln' is at least one element selected from the group consisting of lanthanum and gadolinium, X is at least one element selected from the group consisting of chlorine and bromine, and x, y and z are numbers within the ranges of $0 \leqq x \leqq 0.01$, $0 \leqq y \leqq 0.01$, $0 \leqq z \leqq 0.005$ and $0 \leqq x+y$; and (c) a second fluorescent layer formed on said first fluorescent layer and consisting essentially of a green emitting rare earth oxysulfide phosphor represented by the formula:

$$(Ln_{1-a-b}, Tb_a, Tm_b)_2O_2S$$

where Ln is at least one element selected from the group consisting of lanthanum, gadolinium and lutetium, and a and b are numbers within the ranges of $0.0005 \leqq a \leqq 0.09$ and $0 \leqq b \leqq 0.01$, respectively, or the formula:

$(Y_{1-i-a-b}, Ln_i, Tb_a, Tm_b)_2O_2S$

where Ln is at least one element selected from the group consisting of lanthanum, gadolinium and lutetium, and i, a and b are numbers within the ranges of $0.65 \leqq i \leqq 0.95$, $0.0005 \leqq a \leqq 0.09$ and $0 \leqq b \leqq 0.01$, respectively.

4,536,437

ELECTROTHERMIC NON-IMPACT RECORDING MATERIAL

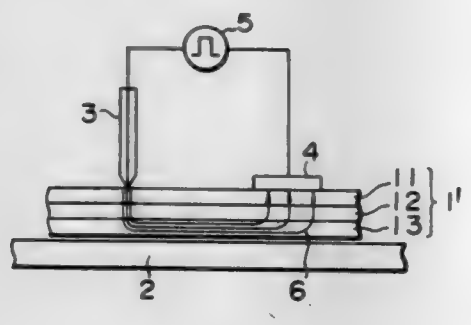
Toshiyuki Kawanishi, and Yukio Tabata, both of Numazu, Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Dec. 28, 1983, Ser. No. 566,234

Claims priority, application Japan, Dec. 28, 1982, 57-229215; Dec. 28, 1982, 57-229216

Int. Cl.³ B41M *5/26*

U.S. Cl. 428—212 **21 Claims**



1. In an electrothermic non-impact image transfer recording material for use in an electrothermic non-impact recording method in which the electrothermic non-impact image transfer recording material is superimposed on a recording sheet, a recording electrode with multiple recording styli and a return electrode are placed in contact with the recording material, and image-delineating signal voltage is applied across the recording material through the recording electrode and the return electrode, so that an ink is transferred imagewise from the recording material to the recording sheet, the improvement wherein said electrothermic non-impact image transfer recording material comprises at least a base layer and an ink layer, the base layer comprises as the main components a polyamide resin binder and carbon black, said polyamide resin binder is selected from the group consisting of aromatic polyamides and nylons, and said ink layer comprises a coloring component and a resin.

4,536,438

FIBRE REINFORCED COMPOSITES

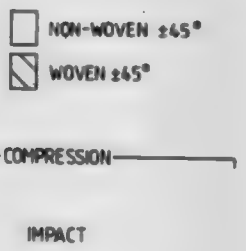
Sarah M. Bishop, and Paul T. Curtis, both of Farnborough, England, assignors to The Secretary of State for Defence in Her Brittanic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Mar. 9, 1984, Ser. No. 588,107

Claims priority, application United Kingdom, Mar. 10, 1983, 8306653

Int. Cl.³ B32B *7/00*

U.S. Cl. 428—246 **7 Claims**



1. A fibre reinforced composite comprising one or more layers of unidirectional non-woven fibres alternated with one or more layers of woven fibres having a pattern of weave which is a five or more shaft satin weave, all said fibres embedded in a plastic matrix, the outermost layers at the surface of the composite being of the woven satin fibres.

4,536,439

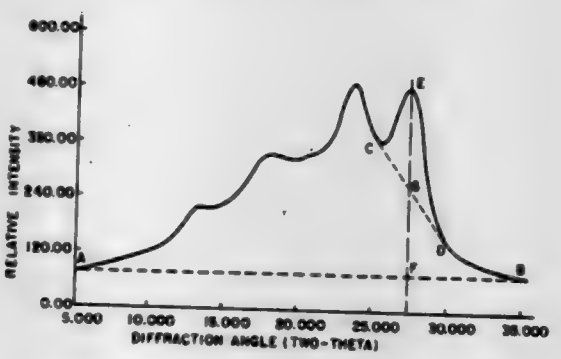
LIGHT WEIGHT FILTER FELT

Herman H. Forsten, Hockessin, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Jan. 7, 1985, Ser. No. 689,164

Int. Cl.³ D04H *1/08*

U.S. Cl. 428—280 **3 Claims**



1. A fabric consisting essentially of entangled staple fibers of poly(m-phenylene isophthalamide), said staple fibers having a length of 1 to 5 cm, the fibers having a crystallinity index of at least about 0.50, the fabric having a basis weight of between 200 and 350 g/m^2, an air permeability of 12 to 30 $m^3/min/m^2$, a cross-machine-direction modulus of greater than 40 Kg/cm^2 and an abrasion resistance such that it will go through at least 500 cycles before failure in the Taber abrasion test.

4,536,440

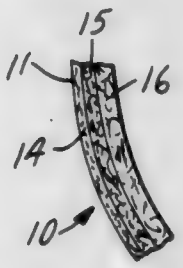
MOLDED FIBROUS FILTRATION PRODUCTS

Harvey J. Berg, St. Paul, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Mar. 27, 1984, Ser. No. 593,937

Int. Cl.³ B32B *5/06*

U.S. Cl. 428—284 **15 Claims**



1. A molded filtration product comprising at least two fibrous layers which have been subjected to heat and molding pressure while assembled in face-to-face contact with one another, one or more of the layers being a shaping layer that (a) in total have a basis weight no greater than 150 pounds per ream, (b) in total contribute no more than about 20 percent of the pressure drop through the finished filtration product, and (c) at least one of which comprises fibers bound together at points of fiber intersection by coalescence of binder material on the fibers; and another of the layers being a fibrous filtration layer which removes particulates from a gaseous stream passed through the filtration product in a higher percentage than the shaping layer removes them; any shaping layer upstream of the filtration layer having a basis weight of no greater than about 50 pounds per ream; the filtration layer being attached to the shaping layer or layers by at least fiber entanglement, and being conformed into contact with the shaping layer or layers over the full interface between the layers.

4,536,441
ADHESIVE TAPE

Gert Schmeer, Bergen; Eberhard Engelmann, and Karl Schäfer, both of Hamburg, all of Fed. Rep. of Germany, assignors to Beiersdorf Aktiengesellschaft, Hamburg, Fed. Rep. of Germany

Filed Jun. 11, 1984, Ser. No. 618,990
Claims priority, application Fed. Rep. of Germany, Jun. 25, 1983, 3323018
Int. Cl.³ B32B 7/12; C09J 7/02
U.S. Cl. 428—317.3 12 Claims



1. Adhesive tape having a base material which is stretched more highly at right angles to the web direction than in the web direction, contains polypropylene as the main component, and is provided with at least one pressure-sensitive or heat-sealable adhesive layer, characterised in that the base material is foamed and that the stretch ratio in the web direction is 1:1 to 1:4 and at right angles to the web direction is 1:3 to 1:8, the stretch ratio at right angles to the web direction being greater than the stretch ratio in the web direction.

4,536,442
PROCESS FOR MAKING DIAMOND AND CUBIC BORON NITRIDE COMPACTS

Harold P. Bovenkerk; Paul D. Gigl, both of Worthington, and Francis R. Corrigan, Westerville, all of Ohio, assignors to General Electric Company, Worthington, Ohio

Continuation of Ser. No. 69,204, Aug. 23, 1979, abandoned. This application May 2, 1983, Ser. No. 488,003
Int. Cl.³ B32B 5/16
U.S. Cl. 428—323 2 Claims



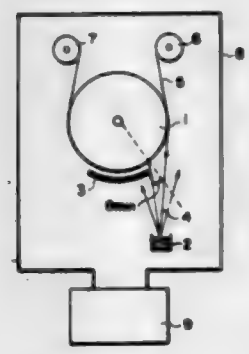
1. An improved optical window for adverse environments wherein the improvement comprises a window consisting essentially of a single layer of large diamond crystals from 425 to 1700 microns in largest dimension bonded in a polycrystalline matrix made of the same material as the large crystals, said window having a light transmittance of at least 20% for infrared light at wave lengths of up to 50 microns.

4,536,443
MAGNETIC RECORDING MEDIUM

Makoto Nagao, and Akira Nahara, both of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Sep. 26, 1983, Ser. No. 536,049
Claims priority, application Japan, Sep. 29, 1982, 57-170649
Int. Cl.³ G11B 5/64
U.S. Cl. 428—336 4 Claims

1. A magnetic recording medium comprising a non-magnetic substrate and at least one layer of obliquely deposited magnetic crystals having a curved columnar structure which contains, as a main constituent, Co or a Co—Ni based alloy containing Cr in an amount within the range of 2 to 8 atom % and has a



density of 5.0 g/cm³ or more, said layer being formed on said non-magnetic substrate.

4,536,444
MAGNETIC RECORDING MEDIUM

Kenji Sumiya, Suita; Fumio Togawa, Ohtsu, and Osamu Saito, Takatsuki, all of Japan, assignors to Hitachi Maxell, Ltd., Osaka, Japan

Filed Nov. 16, 1984, Ser. No. 671,960
Claims priority, application Japan, Nov. 17, 1983, 58-217274
Int. Cl.³ G11B 5/72
U.S. Cl. 428—340 11 Claims

1. A magnetic recording medium comprising a substrate, a magnetic layer formed on the substrate and comprising a metallic magnetic material as a recording element and a protective layer formed on the magnetic layer and comprising a perfluroalkyl polyether derivative having a phosphate terminal group.

4,536,445
ELASTOMER BASED ADHESIVE COMPOSITIONS

Lester T. Toy, Fremont, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Division of Ser. No. 586,638, Mar. 6, 1984, Pat. No. 4,497,926. This application Nov. 16, 1984, Ser. No. 672,446
Int. Cl.³ B32B 1/08, 25/04, 31/26
U.S. Cl. 428—349 17 Claims

1. A dimensionally recoverable article comprising:

(a) an expanded elastomeric sheet maintained in the expanded state;

(b) a restraining means for maintaining said elastomeric sheet in the expanded state; and

(c) a layer of adhesive composition on the surface of said elastomeric sheet which is in the direction of dimensional recovery of the sheet, said adhesive composition consisting essentially of:

(i) 100 parts of an elastomer selected from the group consisting of polar elastomers and unsaturated elastomers which have at least 5 mole percent unsaturation, said elastomer being a non-crystalline elastomer or an elastomer which has a slow rate of crystallization such that after a time period of at least 100 hours has elapsed following subjecting the elastomer to a temperature of 70° C. for 30 minutes, the elastomer has a room temperature Shore A hardness of less than 60;

(ii) 5 to 200 parts of a tackifier;

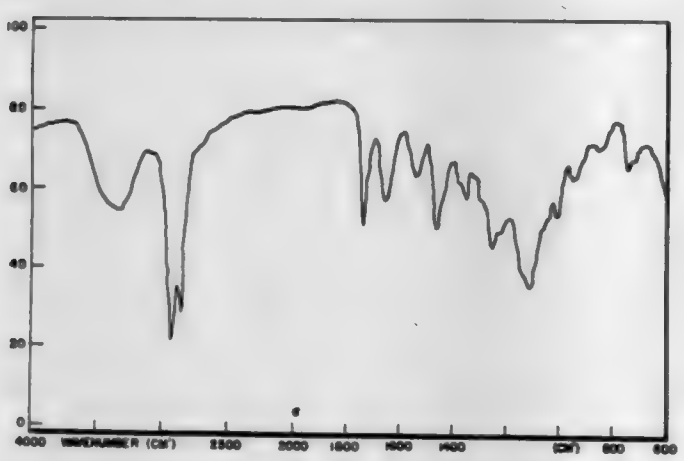
(iii) 0.5–20 parts of an oxide of a metal of Group Ia, IIa, IIb, IVa, or VIIb of the Periodic table; and

(iv) 0–100 parts of a plasticizer; said adhesive composition exhibiting a flow of at least 30% at 97° C. under a compressive load of 50 grams.

4,536,446
TREATED GLASS FIBERS AND NONWOVEN SHEET-LIKE MAT AND METHOD

Edward C. Hsu, Pittsburgh, and Chester S. Temple, McKees Rocks, both of Pa., assignors to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1982, Ser. No. 422,617
Int. Cl.[3] B32B *27/00;* D02G *3/00*
U.S. Cl. 428—392 20 Claims



1. Chopped glass fibers treated during their formation with a chemical treating composition so that the glass fibers have good water solubility and result in improved strength properties of products incorporating the chopped glass fibers, wherein the composition consists essentially of:

a. nonionic surfactant,

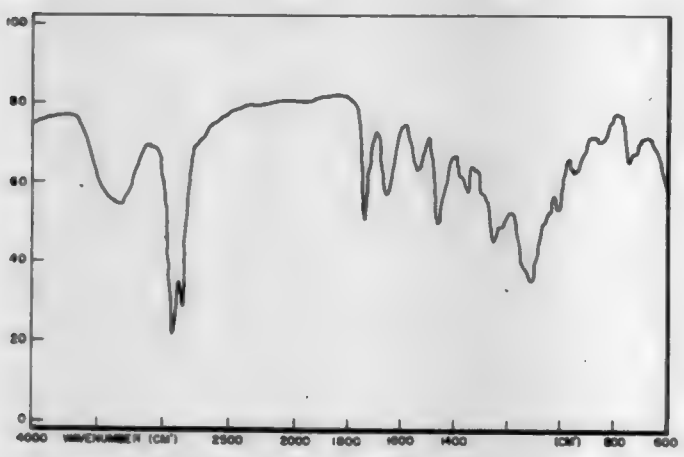
b. cationic quaternary ammonium salt surfactant, wherein the ratio of the nonionic to cationic surfactants is about 1 to about 99 to about 99 to 1, and

c. a major amount of water to give an effective total solids content for the composition for treating the glass fibers during their formation.

4,536,447
TREATED GLASS FIBERS AND AQUEOUS DISPERSION AND NONWOVEN MAT OF GLASS FIBERS

Ed C. Hsu, Pittsburgh, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Sep. 24, 1982, Ser. No. 422,771
Int. Cl.[3] B32B *27/00;* D02G *3/00*
U.S. Cl. 428—392 18 Claims



1. Chopped glass fibers having an aqueous chemical treating composition consisting essentially of:

a nonionic surfactant,

b. cationic quaternary ammonium salt surfactant, where the ratio of the nonionic to cationic surfactants is about 1 to about 99 to about 99 to 1,

c. polar functional coupling agent selected from the group consisting of organo metallic and organo-silane coupling agents having polar organic functionalities, and

d. water in an amount to give a total solids content that is effective for applying the composition to glass fibers.

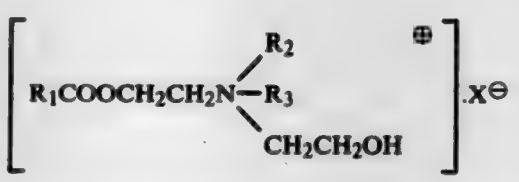
4,536,448
PREOXIDIZED FIBER AND PROCESS FOR PRODUCING THE SAME

Hiroyasu Ogawa, No. 16-10, Hatsunedai, Mishima-shi; Tetsuro Shigei, No. 234 Minami Isshiki, Nagaizumi-cho, Sunto-gun, Shizuoka; Hayashi Takahashi, No. 66-5, Minami Isshiki, Nagaizumi-cho, Sunto-gun, Shizuoka; Tetuya Okabe, No. 3-2, Mizukubo, Susono-shi, Shizuoka, and Fumio Miyatake, No. 234, Minami Isshiki, Nagaizumi-cuo, Sunto-gun, Shizuoka, all of Japan

Continuation-in-part of Ser. No. 333,959, Dec. 23, 1981, abandoned. This application Sep. 8, 1983, Ser. No. 530,326
Claims priority, application Japan, Dec. 27, 1980, 55-185528
Int. Cl.[3] C01B *31/07;* D02G *3/00*
U.S. Cl. 428—394 20 Claims



1. A process for producing a preoxidized fiber, comprising contacting an acrylic fiber with a solution or dispersion of an ammonium salt of a fatty ester at a temperature of from 20° to 70° C., which solution or dispersion is at a pH of 4 or less, which solution or dispersion contains said ammonium salt of a fatty ester in an amount sufficient to provide from 0.01 to 0.5%, based on the weight of the fiber, of said ammonium salt of a fatty ester on said fiber, said ammonium salt of a fatty ester being represented by formula [A]



wherein R_1 is an aliphatic hydrocarbon group having from 11 to 17 carbon atoms; R_2 and R_3 can each be hydrogen, a lower alkyl group, a hydroxyethyl group, or an hydroxyisopropyl group; and $X^{\ominus}$ is an anion, drying said fiber, and thereafter preoxidizing said fiber.

4,536,449
REACTION BONDED SILICON CARBIDE ARTEFACTS

Peter Kennedy, Preston, and Kenneth Parkinson, Liverpool, both of England, assignors to United Kingdom Atomic Energy Authority, London, England

Filed Aug. 27, 1984, Ser. No. 644,359
Claims priority, application United Kingdom, Sep. 7, 1983, 8323994
Int. Cl.[3] B32B *9/00;* C04B *33/34*
U.S. Cl. 428—408 9 Claims

1. A silicon carbide-silicon matrix composite incorporating unreacted coarse carbon particles dispersed throughout the composite.

4,536,450

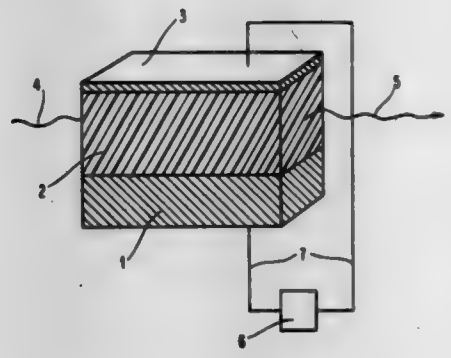
NONLINEAR OPTICAL MATERIALS AND PROCESSES EMPLOYING DIACETYLENES

Anthony F. Garito, Radnor, Pa., assignor to University Patents, Inc., Norwalk, Conn.

Division of Ser. No. 129,560, Mar. 12, 1980, Pat. No. 4,431,263, which is a continuation-in-part of Ser. No. 52,007, Jun. 25, 1979, abandoned. This application Nov. 21, 1983, Ser. No. 554,196

Int. Cl.[3] B32B *9/04*

U.S. Cl. 428—411.1 7 Claims



1. An article comprising:

a substrate; and

at least one layer on said substrate of at least one substantially polymerized diacetylene, said diacetylene being crystallizable into a crystal having a non-centrosymmetric unit cell, said article exhibiting sensible non-linear optical, piezoelectric or pyroelectric effects.

4,536,451

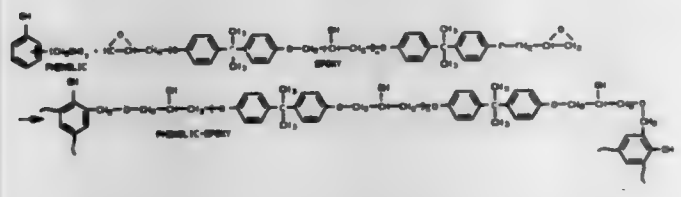
RIGID MAGNETIC RECORDING MEDIA COATING COMPOSITION

John C. S. Shen, Rochester, Minn., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 27, 1983, Ser. No. 566,070

Int. Cl.[3] G11B *5/70*

U.S. Cl. 428—418 7 Claims



1. A rigid magnetic recording medium having finely divided magnetic particles dispersed in a mixture of phenolic-styrene allylalcohol/phenolic-epoxy thermosetting resin binder composition applied as a thin film, having a thickness of less than 40 microinches, closely adhered to a rigid non-magnetic substrate wherein the coating composition includes 50 to 80 percent by weight of magnetic particles, 20 to 50 percent by weight of binder and comprises:

10 to 45 parts by weight of a hard thermoset phenolic-styrene allkyalcohol resin,

55 to 90 parts by weight of a tough thermoset phenolic-epoxy resin,

and additives, including a blocked acid catalyst, not exceeding 10 parts by weight.

4,536,452

SPONTANEOUSLY-FORMED MACHINABLE GLASS-CERAMICS

John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, both of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Oct. 24, 1983, Ser. No. 544,841

Int. Cl.[3] B32B *15/04*

U.S. Cl. 428—433 2 Claims

1. A machinable glass-ceramic article having a crystal content greater than 50% by volume and being essentially free from any mica phase consisting essentially, in weight percent on the oxide basis (fluorine being reported as fluoride), of:

SiO_2: 24–48
Al_2O_3: 9–20
MgO: 12–28
SrO: 8.7–11
BaO: 1.9–14
CuO: 0–5
Ag_2O: 0–3.5
NiO: 0–1.5
Cr_2O_3: 0.5–6.5
F: 2–9.

4,536,453

COATED POLYOLEFINIC FILMS HAVING LOW ADHESION TO THE WELDING BARS

Luigi Mauri, and Rino Cardaio, both of Terni, Italy, assignors to Moplefan S.p.A., Milan, Italy

Filed Apr. 25, 1983, Ser. No. 488,591

Claims priority, application Italy, Apr. 26, 1982, 20935 A/82

Int. Cl.[3] B32B *5/16, 27/08*

U.S. Cl. 428—484 9 Claims

1. A polyolefinic film having low adhesion to welding bars, coated on one or both sides with a coating agent consisting of a mixture of:

from 50% to 90% by weight of a copolymer consisting of from 95% to 85% by weight of a vinyl ester and of from 5% to 15% by weight of an unsaturated acid;

from 49.5% to 9.5% by weight of a terpolymer consisting of from 25% to 40% by weight of at least one alkyl-acrylate, from 70% to 40% be weight of at least one alkyl-methacrylate and from 5% to 20% by weight of an unsaturated acid; and

from 0.5% to 1.5% by weight of a C_1–C_4 polyalkylene-imine having a cross-linking action.

4,536,454

FLEXIBLE COATING COMPOSITION AND METHOD OF APPLYING SAME

Robert J. Haasl, St. Paul, Minn., assignor to PDI, Inc., St. Paul, Minn.

Filed Aug. 26, 1983, Ser. No. 526,646

Int. Cl.[3] B32B *27/08;* B05D *3/02*

U.S. Cl. 428—516 6 Claims

3. A substrate including a composite having cohesive and adhesive protective films thereon, and wherein the protective films comprise:

Component	Weight Percent
(a) a primer coating having the following formulation:	
Thermoplastic resin consisting of methylmethacrylate copolymer	86.7
Silicon dioxide filler	11.7
A thermoplastic rubber consisting of styrene/ethylene/butylene/styrene block copolymer	1.6
(b) a top coating having the following formulation:	
A thermoplastic rubber consisting essentially of a styrene/ethylene/butylene/styrene block copolymer	56.6

-continued

Component	Weight Percent
Silicon dioxide filler	6.1
Calcium Carbonate	15.5

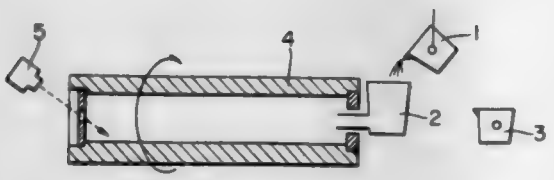
and wherein the composite coatings are permitted to air-dry until the solvent has been substantially removed.

4,536,455

CENTRIFUGALLY CAST DOUBLE-LAYER TUBE WITH RESISTANCE TO CARBON DEPOSITION

Keikichi Maeda; Takahiro Iijima, both of Yokohama, and Eiichi Sato, Atsugi, all of Japan, assignors to JGC Corporation, Tokyo and Taihei Kinzoku Kogyo Co., Ltd., Yamato, both of, Japan

Filed Jul. 26, 1983, Ser. No. 517,292
Claims priority, application Japan, Jul. 26, 1982, 57-129980
Int. Cl.[3] B32B *15/00*
U.S. Cl. 428—629 7 Claims



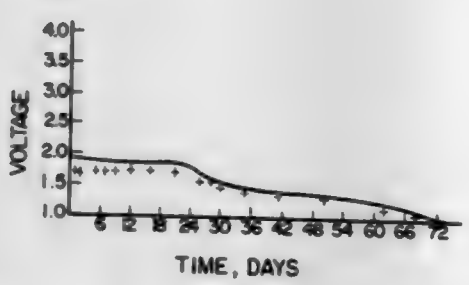
1. A centrifugally cast double-layer tube which exhibits improved resistance to carbon deposition on the inner surface thereof caused by treating a fluid containing hydrocarbons, derivatives of hydrocarbons or carbon monoxide at an elevated temperature within said tube, said tube comprising an outer annular layer of a first, heat-resistant metal and an inner annular layer bonded directly to said outer layer, said inner layer being made of a second metal containing from 1 to 10 wt. % of aluminum and the balance is selected from the group consisting of austenitic steel, ferritic steel, austenite-ferrite duplex-phase steel, low-alloy steel, Ni alloy, Ni-Cr alloy, Co alloy and Co-Cr alloy.

4,536,456

TELLURIUM-CONTAINING CATHODES FOR NONAQUEOUS CELLS

William P. Evans, Rocky River, Ohio, assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 29, 1983, Ser. No. 509,023
Int. Cl.[3] H01M *4/02, 10/40*
U.S. Cl. 429—194 8 Claims



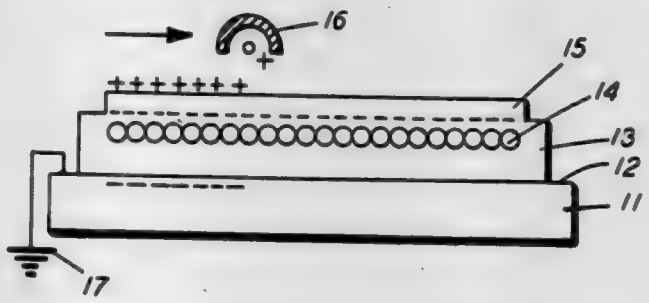
1. A solid cathode material for nonaqueous cells comprising a fused material selected from the group consisting of Te_2-MoO_7, $TeO_2 \cdot xBi_2O_3$ wherein x is from greater than 0 to about 8, Sb_2TeO_5 and Sb_2TeO_7.

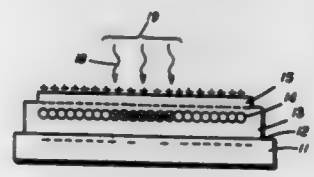
4,536,457

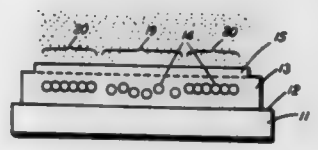
MIGRATION IMAGING PROCESS

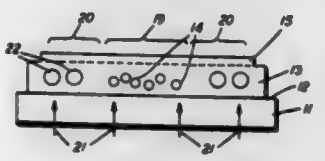
Man C. Tam, Mississauga, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1984, Ser. No. 568,001
Int. Cl.[3] G03G *13/22*
U.S. Cl. 430—41 15 Claims









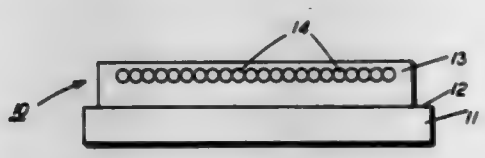
1. An imaging method comprising providing a migration imaging member comprising a substrate and an electrically insulating softenable layer on said substrate, said softenable layer comprising a charge transport molecule and a fracturable layer of electrically photosensitive migration marking material located substantially at or near the surface of said softenable layer spaced from said substrate, said charge transport molecule being predominantly nonabsorbing in the spectral region at which said electrically photosensitive migration marking material photogenerates charge carriers, being capable of increasing charge injection from said electrically photosensitive migration marking material to said softenable layer and being dissolved or molecularly dispersed in said softenable layer, electrostatically charging said member, exposing said member to activating radiation in an imagewise pattern whereby said electrically photosensitive migration marking material stuck by said activating radiation photogenerates charge carriers, decreasing the resistance to migration of migration marking marking material in said softenable layer sufficiently by exposure to solvent vapor to allow slight migration in depth of migration marking material towards said substrate in image configuration, and further decreasing the resistance to migration of marking material in said softenable layer sufficiently by heating to allow nonmigrated marking material to agglomerate.

4,536,458

MIGRATION IMAGING SYSTEM

Dominic S. Ng, Toronto, Canada, assignor to Xerox Corporation, Stamford, Conn.

Filed Jan. 3, 1984, Ser. No. 567,838
Int. Cl.³ G03G 5/04, 13/22
U.S. Cl. 430—41 14 Claims



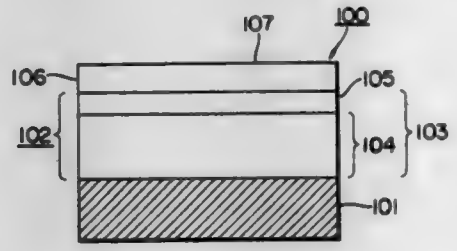
1. A migration imaging member comprising a substrate and an electrically insulating softenable layer on said substrate, said softenable layer comprising a charge transport molecule and a fracturable particulate layer of electrically photosensitive migration marking material located substantially at or near the surface of said softenable layer spaced from said substrate, said charge transport molecule being predominantly nonabsorbing in the spectral region at which said electrically photosensitive migration marking material photogenerates charge carriers, being capable of increasing charge injection from said electrically photosensitive migration marking material to said softenable layer and being dissolved or molecularly dispersed in said softenable layer.

4,536,459

PHOTOCONDUCTIVE MEMBER HAVING MULTIPLE AMORPHOUS LAYERS

Teruo Misumi, Kawasaki; Kyosuke Ogawa, Tokyo; Junichiro Kanbe, Yokohama; Keishi Saitoh, Tokyo; Yoichi Osato, Yokohama, and Shigeru Shirai, Yamato, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 11, 1983, Ser. No. 474,311
Claims priority, application Japan, Mar. 12, 1982, 57-39837; Mar. 12, 1982, 57-39838; Mar. 12, 1982, 57-39839
Int. Cl.³ G03G 5/082, 5/14
U.S. Cl. 430—57 21 Claims



1. A photoconductive member which comprises a support for a photoconductive member, a first amorphous layer exhibiting photoconductivity comprising an amorphous material containing silicon atoms as a matrix, said first amorphous layer having a first layer region containing oxygen atoms in a distribution which is continuous and nonuniform in the direction of layer thickness and a second layer region containing atoms belonging to the group III of the periodic table as constituent atoms in a distribution which is continuous and nonuniform in the direction of layer thickness, and a second amorphous layer comprising an amorphous material represented by any of the following formulae:

$$Si_aC_{1-a}(0.4<a<1) \quad (1)$$

$$(Si_bC_{1-b})_cH_{1-c}(0.5<b<1,\ 0.6\leqq c<1) \quad (2)$$

$$(Si_dC_{1-d})_eX_{1-e}(0.47<d<1,\ 0.8\leqq e<1) \quad (3)$$

$$(Si_fC_{1-f})_g(H+X)_{1-g}(0.47<f<1,\ 0.8\leqq g<1) \quad (4)$$

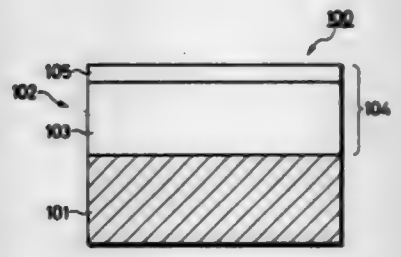
wherein X represents a halogen atom.

4,536,460

PHOTOCONDUCTIVE MEMBER

Junichiro Kanbe, Yokohama; Shigeru Shirai, Yamato; Teruo Misumi, Kawasaki; Keishi Saitoh, Tokyo, and Yoichi Osato, Yokohama, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Oct. 28, 1982, Ser. No. 437,282
Claims priority, application Japan, Nov. 9, 1981, 56-179434; Nov. 13, 1981, 56-182655; Nov. 13, 1981, 56-182656
Int. Cl.³ G03G 5/082
U.S. Cl. 430—57 41 Claims



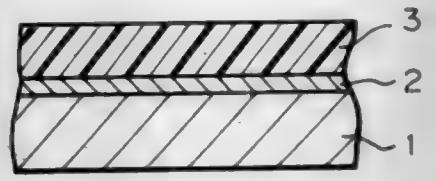
1. A photoconductive member comprising a support for a photoconductive member and an amorphous layer having photoconductivity constituted of an amorphous material comprising silicon atoms as a matrix, characterized in that said amorphous layer has a first layer region containing at least one kind of atoms selected from the group consisting of oxygen atoms, nitrogen atoms and carbon atoms as constituent atoms and a second layer region containing atoms of an element belonging to the group III of the periodic table as constituent atoms, said first layer region existing internally within said amorphous layer below the surface of said amorphous layer wherein the amorphous layer contains at least one of hydrogen atoms and halogen atoms as constituent atoms.

4,536,461

LAMINATED PHOTOSENSITIVE MATERIAL AND PROCESS FOR PRODUCTION THEREOF

Kaname Nakatani, Kawasaki; Junichi Hanna, Yokohama, and Hiroshi Kokado, Tokyo, all of Japan, assignors to Mita Industrial Co., Ltd., Osaka, Japan

Filed Jun. 15, 1984, Ser. No. 620,967
Claims priority, application Japan, Jun. 15, 1983, 58-105938
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—58 2 Claims



1. A laminated photosensitive material for the electrophotography, which comprises an electroconductive substrate, a charge-generating layer composed of a vacuum deposition film of metal-free phthalocyanine formed on the substrate and a charge-transporting layer formed on the charge-generating layer, wherein the metal-free phthalocyanine film is a metal-free phthalocyanine particle layer composed mainly of α-type fine crystals having a crystal particle size of 100 to 2000 Å and the vacuum deposition film has a thickness of 500 to 3000 Å and a dark electroconductivity lower than 10^{-10} $(\Omega\text{-cm})^{-1}$.

4,536,462
ENCAPSULATED PARTICULATE MAGNETIC DEVELOPMENT POWDERS CONTAINING A SUBLIMABLE DYESTUFF

Wolfgang Mehl, Geneva, Switzerland, assignor to International Toner Specialties, Ogden, Utah

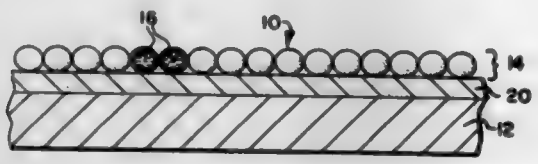
Filed Nov. 22, 1983, Ser. No. 554,273
Int. Cl.[3] G03G *9/08*
U.S. Cl. 430—106 10 Claims

1. Dry and free flowing electro-photographic development or toner powder of essentially spherical particles which have a diameter between about 5μ and about 50μ, said particles comprising an organic binder, ferromagnetic material, highly conducting carbon particles, a surface active compound, and a dyestuff which is adapted to evaporate from said particles in one minute at atmospheric pressure and a temperature between about 140 degrees C. and about 220 degrees C., wherein said dyestuff is present in an amount of at least 5% by weight of said powder and said surfactant is present in an amount of at least 4% by weight of said powder, and further wherein substantially each of said particles of said powder consists of two different solid phases in which the inner nucleus phase is surrounded by an outside shell phase, said inner nucleus phase comprising a first organic binder which is essentially void of ferromagnetic material, with 10% to 75% by weight of said inner nucleus phase consisting of said dyestuff and 4% to 20% by weight of said inner nucleus phase consisting of said surfactant, said outer shell phase, which is essentially void of dyestuff, comprising a second organic binder, with 30% to 80% by weight of said outer shell phase consisting of small particles of said ferromagnetic material and 2% to 20% by weight of said outer shell phase consisting of small particles of said highly conducting carbon.

4,536,463
IMAGING SYSTEM

Frederick W. Sanders, Chillicothe, Ohio, assignor to The Mead Corporation, Dayton, Ohio

Continuation of Ser. No. 320,643, Nov. 12, 1981, Pat. No. 4,440,846. This application Dec. 16, 1983, Ser. No. 562,308
Int. Cl.[3] G03C *1/72, 5/54, 5/16*
U.S. Cl. 430—138 22 Claims



1. A photosensitive imaging system in which images are formed by image-wise reaction of one or more chromogenic materials and a developer, said system comprising:
a substrate having front and back surfaces,
a chromogenic material,
a composition which undergoes a decrease in viscosity upon exposure to actinic radiation,
a coating containing said chromogenic material and said composition on one of said front and back surfaces, and
a developer material capable of reacting with said chromogenic material to form a visible image,
said composition being encapsulated in rupturable capsules as an internal phase,
wherein images are formed by image-wise exposing said coating to actinic radiation and rupturing said capsules in the exposed areas such that said internal phase is released from capsules in the exposed areas and said chromogenic material and said developer react pattern-wise to form an image.

10. A self-contained imaging sheet in which images are formed by image-wise reaction of one or more chromogenic materials and a developer material, said sheet comprising:
a substrate having front and back surfaces,
a chromogenic material,
a composition which undergoes a decrease in viscosity upon exposure to actinic radiation,
a coating containing said chromogenic material and said composition on one of said front and back surfaces, and
a developer material capable of reacting with said chromogenic material to form a visible image co-deposited on said substrate with said coating containing said chromogenic material,
said composition being encapsulated in rupturable capsules as an internal phase,
wherein images are formed by image-wise exposing said coated substrate to actinic radiation and rupturing said capsules in the exposed areas such that said internal phase is released from said capsules in the exposed areas and said chromogenic material pattern-wise reacts with said developer material to form an image.

19. An imaging process which comprises:
image-wise exposing to actinic radiation an imaging sheet comprising a substrate and a coating comprising a substantially colorless chromogenic material and rupturable capsules containing a photosensitive composition which undergoes a decrease in viscosity upon exposure to actinic radiation, and
rupturing said capsules in the exposed areas in the presence of a developer material such that there is a patterned reaction between said chromogenic material and said developer material which produces a negative image corresponding to said exposure.

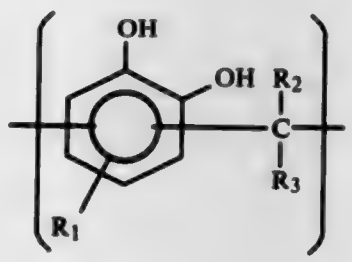
4,536,464
PHOTOSENSITIVE COMPOSITION WITH O-QUINONEDIAZIDE COMPOUND AND CONDENSATE OF DIHYDRIC PHENOL AND ALDEHYDE OR KETONE

Akira Nagashima; Akira Hasegawa, both of Shizuoka; Toshiaki Aosi, and Teruo Nagano, both of Kanagawa, all of Japan, assignors to Fuji Photo Film Company Limited, Igara, Japan

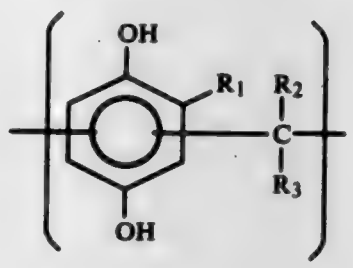
Filed Nov. 10, 1983, Ser. No. 550,420
Claims priority, application Japan, Nov. 10, 1982, 57-196108
Int. Cl.[3] G03C *1/60, 1/54;* G03F *7/08*
U.S. Cl. 430—192 7 Claims

1. A photosensitive composition comprising in admixture, a high molecular compound having the structure shown by following general Formula I or II and an o-naphthoquinonediazide as a photosensitive compound;

I



II



wherein R_1 represents an ethyl group, a n-propyl group, a n-butyl group, a t-butyl group or a n-pentyl group and R_2 and R_3 each represents a hydrogen atom or an alkyl group having 1 to 4 carbon atoms, wherein the proportion of the high molecular compound in the photosensitive composition is 2 to 90% by weight and wherein the o-naphthoquinonediazide com-

pound is present in the composition in an amount in the range of 10% to 50% by weight.

4,536,465

POSITIVE-WORKING PHOTOSENSITIVE COMPOSITION WITH O-QUINONE DIAZIDE AND ADMIXTURE OF RESINS

Masafumi Uehara, Koganei; Atsuo Yamazaki, Hinode, and Kazuhiro Shimura, Hachioji, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Japan

Filed Jan. 7, 1983, Ser. No. 456,442
Claims priority, application Japan, Jan. 8, 1982, 57-1958
Int. Cl.³ G03C *1/60*
U.S. Cl. 430—192 11 Claims

1. A positive-working photosensitive composition comprising in admixture (a) 10 to 50% by weight of an o-quinonediazide compound; (b) 1 to 80% by weight of a condensed resin containing a condensation unit composed of an aromatic compound having a carboxyl group and a phenolic hydroxyl group, and an aldehyde or ketone; and (c) 45 to 80% by weight of a novolak resin.

9. A photosensitive lithographic printing plate material including a support having thereon a positive-working photosensitive composition comprising in admixture (a) 10 to 50% by weight of an o-quinone diazide compound (b) 1 to 80% by weight of a condensed resin containing a condensation unit composed of an aromatic compound having a carboxyl group and a phenolic hydroxyl group, and an aldehyde or ketone and (c) 45 to 80% by weight of a novolak resin.

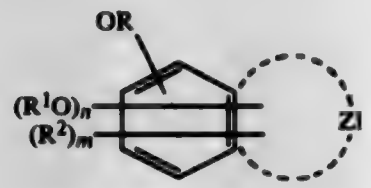
4,536,466

HEAT DEVELOPABLE ELEMENT WITH STABILIZER

Yukihiko Sakaguchi; Toshiaki Aono, and Shinsaku Fujita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 29, 1984, Ser. No. 594,511
Claims priority, application Japan, Mar. 30, 1983, 58-54166
Int. Cl.³ G03C *1/40, 5/54, 1/34*
U.S. Cl. 430—203 25 Claims

1. A method of forming an image comprising heating a light-sensitive material having at least a light-sensitive silver halide, a binder and a dye releasing redox compound which is capable of reducing the light-sensitive silver halide and is capable of reacting with the light-sensitive silver halide by heating to release a hydrophilic dye on a support, under the condition substantially free from water after or simultaneously with imagewise exposure, in the presence of a compound represented by the general formula (A) described below to form imagewise a mobile dye



(A)

wherein R represents an alkyl group, a cycloalkyl group, an aryl group or an aralkyl group; R^1 represents an alkyl group, a cycloalkyl group, an aryl group or an aralkyl group; R^2 represents an alkyl group, an aryl group, an aralkyl group, a halogen atom or a group of R^1NH; Z represents an atomic group necessary to form a carbon ring condensed to the benzene ring; n represents 0, 1 or 2; m represents 0 or an integer from 1 to 7 and m+n is not more than 7; l represents 0 or 1; and each of R^1 and R^2 may be the same or different when m or n represents 2 or more, respectively.

14. A method of forming an image as claimed in claim 1, wherein the compound represented by the general formula (A) is present in a dye fixing material.

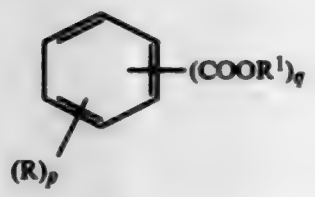
4,536,467

HEAT DEVELOPMENT OF SILVER HALIDE ELEMENT WITH REDOX DYE RELEASER AND STABILIZER

Yukihiko Sakaguchi; Toshiaki Aono, and Shinsaku Fujita, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Mar. 29, 1984, Ser. No. 594,632
Claims priority, application Japan, Mar. 30, 1983, 58-54164
Int. Cl.³ G03C *5/54, 1/40, 1/34*
U.S. Cl. 430—203 36 Claims

30. A process for forming an image comprising heating a light-sensitive material in a substantially water-free condition to form a mobile dye in an image pattern, said material having a support bearing thereon light-sensitive silver halide, a binder and a dye-releasing redox compound capable of imagewise reducing the silver halide and releasing a hydrophilic dye on reaction with said silver halide when heated, after or simultaneously with imagewise exposure, in the presence of a compound having a melting point below 60° C. represented by formula (A)



(A)

wherein p is an integer of 1 to 5 and q is an integer of 1 to 4, provided that p+q is 6 or less; R represents a hydrogen atom, an alkyl group, a cycloalkyl group, an alkenyl group, an aryl group, an alkoxy group, an aryloxy group, an aralkyl group, an acyl group, an acylamino group, an alkylsulfonylamino group, an arylsulfonylamino group, an alkoxyalkyl group, an aryloxyalkyl group, an acyloxy group, an acyloxyalkyl group, a carbamoyl group, an N-substituted carbamoyl group, a ureido group, an N-substituted ureido group, an alkylamino group, a dialkylamino group, an arylamino group, a halogen atom, a hydroxy group, a carboxy group, a nitro group, a cyano group, an alkoxycarbonyl group, an aryloxycarbonyl group, or a cycloalkyloxycarbonyl group; and R^1 represents an alkyl group, an alkenyl group, a cycloalkyl group or an aryl group.

4,536,468

METHOD OF FORMING RESIST PATTERN

Toshihiko Yasui, Iruma; Tetsuo Matsumoto, Tokyo, and Akihiko Akaike, Ageo, all of Japan, assignors to Dainippon Ink and Chemicals, Inc., Tokyo, Japan

Filed May 3, 1984, Ser. No. 606,609
Claims priority, application Japan, May 6, 1983, 58-78241
Int. Cl.³ G03C *5/00*
U.S. Cl. 430—296 26 Claims

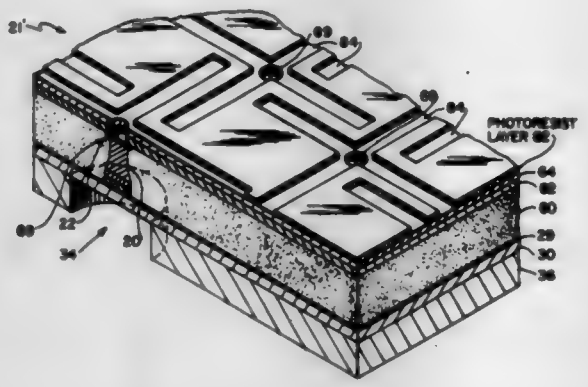
1. A method of forming a resist pattern, which comprises printing a predetermined pattern on a substrate by a lithographic technique using a resist ink curable by irradiation of an active energy ray and/or heating, said ink consisting essentially of (1) 100 parts by weight of a metal chelate resin obtained by reacting (a) 100 parts by weight of at least one resin having an acid value of 5 to 300 selected from the group consisting of alkyd resins, modified alkyd resins, fatty acid-modified epoxy resins, urethanized oils and maleinized oils and (b) 0.1 to 10 parts by weight of at least one metal compound selected from the group consisting of long chain fatty acid metal salts, metal alcoholates and intramolecular metal complex compounds and (2) 3 to 300 parts by weight of a polymerizable compound containing at least two ethylenically unsaturated bonds per molecule; and curing the printed pattern by irradiating with an acitve energy ray and/or by heating.

4,536,469

SEMICONDUCTOR STRUCTURES AND MANUFACTURING METHODS

Michael G. Adlerstein, Wellesley, Mass., assignor to Raytheon Company, Lexington, Mass.

Filed Nov. 23, 1981, Ser. No. 323,781
Int. Cl.[3] G03C *5/00*; H01L *29/06*
U.S. Cl. 430—314 13 Claims



1. A method for forming a semiconductor device comprising the steps of:

providing, to a first predetermined thickness, a layer of a thermally conductive material onto a semiconductor;

providing a mask over the thermally conductive material providing exposed portions and at least one masked portion of the thermally conductive material;

providing, to a second predetermined thickness, a layer of a support material over the exposed portions of the thermally conductive material, the thickness of said support layer being substantially greater than the thickness of the conductive layer;

forming at least one semiconductor element from the semiconductor over the masked portion of the thermally conductive material; and

separating the semiconductor element from the support material to provide the semiconductor device having an electrical contact with a thickness equal to the thickness of the thermally conductive layer.

4,536,470

METHOD AND APPARATUS FOR MAKING A MASK CONFORMING TO A CERAMIC SUBSTRATE METALLIZATION PATTERN

Albert Amendola, Hopewell Junction; Richard G. Christensen, Wingdale, and John G. Yereance, Jr., Fishkill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 415,051, Sep. 7, 1982, Pat. No. 4,474,465. This application Dec. 12, 1983, Ser. No. 560,703
Int. Cl.[3] G03F *7/02, 9/00*
U.S. Cl. 430—314 6 Claims

1. A method of forming a metallization pattern in conformity with an original metallization pattern on a cured multilayer ceramic substrate, said method comprising:

providing a cured multilayer ceramic substrate having an original metallization pattern on at least one principal surface thereof;

forming a rigid custom tailored negative photographic mask bearing the image of the cured multilayer ceramic substrate and the original metallization pattern thereon;

forming a blanket metal layer on said cured substrate including said original metallization pattern;

providing a radiation sensitive film on said blanket metal layer;

aligning the custom mask with the cured substrate having the blanket metal layer and radiation sensitive film thereon such that the mask image pattern is in exact alignment with the original metallization pattern;

exposing the radiation sensitive film through said custom mask to transfer the mask image pattern to the film;

developing said radiation sensitive film to form a patterned mask of said film on said metal layer in complete and exact correspondence with said original metallization pattern; and

etching said metal layer in accordance with said patterned mask.

4,536,471

OPTICAL INFORMATION RECORDING MEDIUM

Shinichi Nishi, Hino; Taxey Satoh, Hachioji; Fumio Shimada, Hamura, and Toshiaki Takahashi, Musashimurayama, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 15, 1984, Ser. No. 590,000
Claims priority, application Japan, Mar. 16, 1983, 58-42202
Int. Cl.[3] G03C *1/00*
U.S. Cl. 430—495 16 Claims

1. An optical information recording medium for recording and reproducing information by way of applying high density energy beams to a reflective recording layer on a support, wherein said reflective recording layer comprises a hydrophilic colloid; a compound capable of producing a water-insoluble copper complex; and reflective fine particles consisting essentially of copper.

4,536,472

SILVER HALIDE COLOR PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Hirohiko Kato; Seiji Ichijima; Keiichi Adachi, and Toshiyuki Watanabe, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Jan. 19, 1984, Ser. No. 572,049
Claims priority, application Japan, Jan. 19, 1983, 58-7152
Int. Cl.[3] G03C *1/46*
U.S. Cl. 430—505 14 Claims

1. A silver halide color photographic light-sensitive material exhibiting improved RMS granularity and an improved visual sensation of graininess comprising a support having thereon a blue-sensitive silver halide emulsion layer, a green-sensitive silver halide emulsion layer and a red-sensitive silver halide emulsion layer at least one of these silver halide emulsion layers containing a non-diffusible coupler which forms a properly smearing diffusible dye upon reaction with the oxidation product of a color developing agent together with a monodispersed silver halide emulsion having an average grain size of from 0.1 micron to 3 microns and wherein the monodispersed silver halide emulsion is a silver iodobromide emulsion containing 2% by mole or more of silver iodide.

4,536,473

SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Yuji Mihara, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Oct. 11, 1984, Ser. No. 659,935
Claims priority, application Japan, Oct. 11, 1983, 58-189554
Int. Cl.[3] G03C *1/02*
U.S. Cl. 430—575 32 Claims

1. A silver halide photographic light-sensitive material comprising a support having thereon a silver halide emulsion layer which comprises silver halide grains containing at least silver chloride and spectrally sensitized to infrared rays with at least one dye selected from a tricarbocyanine dye and a dicarbocyanine dye having a 4-quinoline nucleus, wherein the silver halide emulsion layer contains from 0.0003 mol to 0.01 mol per mol of silver of a water-soluble bromide.

4,536,474

TISSUE CULTURE OF LICHENS

Yoshikazu Yamamoto; Ryuzo Mizuguchi, both of Neyagawa, and Yasuyuki Yamada, Uji, all of Japan, assignors to Nippon Paint Co., Ltd., Osaka, Japan

Filed Sep. 30, 1982, Ser. No. 431,096

Claims priority, application Japan, Sep. 30, 1981, 56-156765; Oct. 27, 1981, 56-172605; Oct. 27, 1981, 56-172606

Int. Cl.³ C12P *39/00, 19/04, 17/18, 17/02, 7/62, 7/40, 7/44, 7/42, 7/26, 7/22, 17/08, 17/06, 17/04, 7/64;* C12N *5/00;* C12R *1/645, 1/89;* A01G *7/00;* A01H *13/00;* A01B *79/00;* A01C *1/00*

U.S. Cl. 435—42 9 Claims

1. A process for preparing aromatic lichenous substances which consists essentially of culturing an undifferentiated symbiotic combination of alga and fungus cells obtained directly from a lichen explant in a culture media under appropriate conditions and for a sufficient period of time to allow production of at least one of the said lichenous substances and recovering at least one of said lichenous substances from said media.

4,536,475

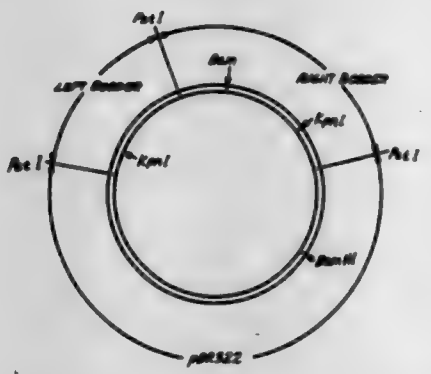
PLANT VECTOR

David M. Anderson, Duarte, Calif., assignor to Phytogen, Pasadena, Calif.

Filed Oct. 5, 1982, Ser. No. 432,842

Int. Cl.³ C12N *15/00, 1/00*

U.S. Cl. 435—172.3 7 Claims



1. A vector precursor comprising the Pst I cleaved left and right border fragments of the T region of the Ti plasmid *Agrobacterium tumefaciens* strain of C58 interligated and ligated into the Pst I site of plasmid pBR322.

4,536,476

STABLE EPIMERASE REAGENT, CYCLASE REAGENT AND RING EXPANSION REAGENT FOR CELL-FREE PRODUCTION OF CEPHALOSPORINS

Saul Wolfe, Kingston; Donald Westlake, and Susan Jensen, both of Edmonton, all of Canada, assignors to Queen's University at Kingston, Kingston, Canada

Continuation-in-part of Ser. No. 410,302, Aug. 23, 1982, Pat. No. 4,510,246. This application Jun. 27, 1983, Ser. No. 507,852

Int. Cl.³ C12N *9/00, 9/06;* C12P *37/00, 35/00*

U.S. Cl. 435—183 9 Claims

1. A stable epimerase reagent containing epimerase having a molecular weight of about 60,000 capable of epimerizing isopenicillin N and analogs thereof to penicillin N and analogs thereof, derived from a cell free extract of a prokaryotic beta-lactam producing organism, said epimerase being separated from cyclase having a molecular weight of about 36,500 capable of cyclizing L-aminoadipyl-L-cysteinyl-D-valine and analogs thereof to isopenicillin and analogs thereof, and from a ring expansion enzyme having a molecular weight of about 29,000 and capable of ring expanding penicillin N and analogs thereof to desacetoxycephalosporin and analogs thereof.

4. A stable cyclase reagent containing cyclase having a molecular weight of about 36,500 capable of cyclizing L-aminoadipyl-L-cysteinyl-D-valine and analogs thereof to isopenicillin N and analogs thereof, derived from a cell free extract of a prokaryotic beta-lactam producing organism, said cyclase being separated from epimerase having a molecular weight of about 60,000 capable of epimerizing isopenicillin N and analogs thereof to penicillin N and analogs thereof, and from a ring expansion enzyme having a molecular weight of about 29,000 and capable of ring expanding penicillin N and analogs thereof to desacetoxycephalosporin and analogs thereof.

7. A stable ring expansion enzyme reagent containing a ring expansion enzyme having a molecular weight of about 29,000 and capable of ring expanding penicillin N and analogs thereof to desacetoxycephalosporin and analogs thereof, derived from a cell free extract of a prokaryotic beta-lactam producing organism, said epimerase being separated from cyclase having a molecular weight of about 36,500 capable of cyclizing L-aminoadipyl-L-cysteinyl-D-valine and analogs thereof to isopenicillin and analogs thereof and epimerase having a molecular weight of about 60,000 capable of epimerizing isopenicillin N and analogs thereof to penicillin N and analogs thereof.

4,536,477

THERMOSTABLE GLUCOAMYLASE AND METHOD FOR ITS PRODUCTION

Dennis M. Katkocin, Danbury, Conn.; Nancy S. Word, Woodridge, and Shiow-Shong Yang, Downers Grove, both of Ill., assignors to CPC International Inc., Englewood Cliffs, N.J.

Filed Aug. 17, 1983, Ser. No. 524,070

Int. Cl.³ C12N *9/34;* C12P *19/20;* C12R *1/145*

U.S. Cl. 435—205 9 Claims

1. A glucoamylase enzyme derived from a *Clostridium thermoamylolyticum* microorganism, said enzyme having a molecular weight of about 75,000±3,000 as determined by SDS-polyacrylamide gel electrophoresis, having a half-life of greater than 3 hours at pH 6 and 70° C., having a maximum glucoamylase activity at a pH of about 5.0, and having a maximum glucoamylase activity at pH 5 at a temperature of about 70°–75° C.

4,536,478

METHOD FOR REDUCING NON-SPECIFIC INTERFERENCES IN AGGLUTINATION IMMUNOASSAYS

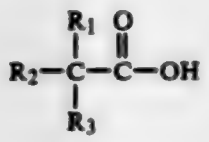
Roger L. Sokoloff, Indianapolis, and John M. Reno, Zionsville, both of Ind., assignors to Seragan Diagnostics, Inc., Indianapolis, Ind.

Filed Apr. 5, 1984, Ser. No. 597,129

Int. Cl.³ G01N *33/54, 33/76*

U.S. Cl. 436—533 5 Claims

1. In an agglutination immunoassay for an analyte in a fluid sample which is combined with a reagent which includes sensitized latex particles and binding partner as required, whereby the degree of agglutination of the particles is a measure of the analyte in the sample, the improvement comprising the step of adding to the reaction mixture an additive to decrease non-specific interferences of the agglutination of the particles, where such additives comprise at least one halogen substituted carboxylic acid or water soluble salt thereof wherein the acid has the formula:



and wherein R_1 is Cl, Br or I and R_2 is H, Cl, Br or I and R_3 is H, CH_3—, CH_3CH_2—, Cl, Br or I.

4,536,479
USE OF ANTI-IDIOTYPE ANTIBODIES IN IMMUNOASSAYS

Ronald Vander-Mallie, Nashua, N.H., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Mar. 22, 1983, Ser. No. 477,611
Int. Cl.³ G01N *33/54, 33/52*
U.S. Cl. 436—537 **4 Claims**

1. A homogeneous immunoassay for the detection of a nonimmunoglobulin analyte in a test sample, comprising:

(1) contacting the test sample with reagents comprising:

(a) a first covalent conjugate comprising a first enzyme and an idiotypic anti-analyte antibody;

(b) a second covalent conjugate comprising a second enzyme and an anti-idiotypic antibody capable of competing with the analyte for the idiotypic anti-analyte antibody;

(c) a substrate for the first and or second enzyme wherein one of the enzymes and the substrate are capable of reacting to produce a first product, which product is a substrate for the other enzyme, which is capable of reacting with the first product to produce a second, detectable product; and

(2) measuring the amount of second product which is inversely related to the amount of analyte initially present in the test sample.

3. A homogeneous immunoassay for the detection of a nonimmunoglobulin analyte in a test sample comprising:

(1) forming a reaction mixture by contacting the test sample with reagents, comprising:

(a) a first covalent conjugate comprising a first fluorophore and an idiotypic anti-analyte antibody; and

(b) a second covalent conjugate comprising a second fluorophore and an anti-idiotypic antibody capable of competing with the analyte for the idiotypic anti-analyte antibody;

wherein one of the fluorophores is capable of absorbing incident light at a wavelength λ_{inc} to produce light emission at wavelength λ_{em1} which can be absorbed by the other fluorophore to produce emission at wavelength λ_{em2};

(2) irradiating the reaction mixture with light of wavelength λ_{inc}; and

(3) measuring the intensity of light of wavelength λ_{em1} or λ_{em2}, which intensity is related to the amount of analyte initially present in the test sample.

4,536,480
OPAL GLASSES HAVING AN APATITE OPACIFYING PHASE

James E. Flannery, Corning; John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,929
Int. Cl.³ C03C *3/08, 3/30*
U.S. Cl. 501—32 **3 Claims**

1. A white spontaneous opal glass exhibiting a softening point of at least 710° C., excellent chemical durability, a temperature interval between the high temperature crystallization liquidus and the emulsion liquidus of at least 50° C., and containing as the predominant crystal phase at least one apatite-type crystal selected from the group of $Ca_5F(PO_4)_3$, $Sr_5F(PO_4)_3$, $Ba_5F(PO_4)_3$, $(Ca_{5-x}Ba_x)F(PO_4)_3$ solid solution, $(Sr_{5-x}Ba_x)F(PO_4)_3$ solid solution, $(Ca_{5-x}Sr_x)F(PO_4)_3$ solid solution, $(Sr_{5-x}Ca_x)F(PO_4)_3$ solid solution, $(Ba_{5-x}Ca_x)F(PO_4)_3$ solid solution, and $(Ba_{5-x}Sr_x)F(PO_4)_3$ solid solution, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of

	Na_2O	7.5–11	B_2O_3	2–4.5
	K_2O	0–5	SiO_2	57–65
Na_2O +	K_2O	≦13	P_2O_5	2–5.5
	BaO	0–9.5	F	1.5–4
	CaO	0–3	SrO	0–5
	ZnO	0.4–5	MgO	0–2.5
	Al_2O_3	8–13	SrO + MgO	0–5

CaO and/or SrO and/or BaO at least 2.5 mole %.

4,536,481
OPAL GLASSES HAVING AN APATITE OPACIFYING PHASE

James E. Flannery, Corning; John L. Stempin, Beaver Dams, and Dale R. Wexell, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Filed Mar. 23, 1984, Ser. No. 592,960
Int. Cl.³ C03C *3/08, 3/10, 3/30*
U.S. Cl. 501—32 **3 Claims**

1. A spontaneous opal glass exhibiting a dense white appearance, a softening point of at least 740° C., excellent chemical durability, a temperature interval between the high temperature crystallization liquidus and the emulsion liquids greater than 50° C., and containing as the predominant crystal phase a member selected from the group of $Ca_5F(PO_4)_3$, $Sr_5F(PO_4)_3$, $Ba_5F(PO_4)_3$, $(Ca_{5-x}Ba_x)F(PO_4)_3$ solid solution, $(Sr_{5-x}Ba_x)F(PO_4)_3$ solid solution, $(Ca_{5-x}Sr_x)F(PO_4)_3$ solid solution, $(Sr_{5-x}Ca_x)F(PO_4)_3$ solid solution, $(Ba_{5-x}Ca_x)F(PO_4)_3$ solid solution, and $(Ba_{5-x}Sr_x)F(PO_4)_3$ solid solution, said glass consisting essentially, expressed in terms of weight percent on the oxide basis, of

SiO_2	50–63	Na_2O	5.5–10
Al_2O_3	10–14	K_2O	0–10
P_2O_5	3.5–7	BaO	0–10
PbO	2–12	CaO	0–2.5
B_2O_3	1–4	SrO	0–8
F	1.5–4	BaO + CaO + SrO	At Least 3 mole %

4,536,482
CATALYST COMPOSITION

Peter F. Carcia, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation of Ser. No. 475,031, Mar. 14, 1983, abandoned. This application Oct. 31, 1984, Ser. No. 667,057
Int. Cl.³ B01J *35/10, 37/02*
U.S. Cl. 502—5 **8 Claims**

1. A composite catalyst comprising a particulate support having a surface area of less than 10 m^2/g and a particle size of greater than 100 μm having sputtered on the surface thereof and intimately adhered thereto from 0.01 to 5.0 weight percent as based on the total catalyst of a catalytically active metal and a cosputtered support material in such amount that the catalytically active metal comprises from 3–80 volume percent of the sputtered material.

4,536,483
PROCESS FOR REGENERATION OF IRON-ANTIMONY METALLIC OXIDE CATALYSTS

Yutaka Sasaki; Yutaka Kiyomiya; Toshio Nakamura; Yoshimi Nakamura, and Masanori Yamaguchi, all of Kanagawa, Japan, assignors to Nitto Chemical Industry Co., Ltd., Tokyo, Japan

Filed Oct. 26, 1983, Ser. No. 545,713
Claims priority, application Japan, Oct. 26, 1982, 57-186745
Int. Cl.³ B01J *27/30, 23/94*; C07C *121/32, 120/14*
U.S. Cl. 502—20 **9 Claims**

1. A process for regenerating an iron-antimony metallic oxide catalyst containing as essential components (I) Fe, (II) Sb, (III) at least one element selected from the group consisting of V, Mo, and W and (IV) Te, which has become deactivated after being used for the production of nitriles through ammoxi-

dation or hydrocarbons or alcohols in fluidized-bed reactors, said process comprising adding to said catalyst dry solid molybdenum or a dry solid molybdenum compound which is volatile or capable of forming a volatile compound under reaction conditions in such an amount that the apparent content of molybdenum in the catalyst increases by 0.1 to 2 wt%, and performing the ammoxidation in the presence of the mixture of said deactivated catalyst and said solid molybdenum or molybdenum compound, wherein said molybdenum or solid molybdenum compound is not supported on an inert carrier, wherein said solid molybdenum compound is selected from the group consisting of molybdenum dioxide, molybdenum trioxide, molybdic acid, ammonium molybdate, ammonium paramolybdate, phosphomolybdic acid, ammonium phosphomolybdate, heteropoly acids or molybdenum and salts thereof, molybdenum disulfide, molybdenum trisulfide, molybdenum dichloride, molybdenum trichloride, molybdenum pentachloride, and organic molybdenum compounds which are solid at ordinary temperature, wherein the catalyst is in the form of particles having a diameter of 1 to 500 microns, the solid dry molybdenum or solid dry molybdenum compound is in the form of particles having a diameter of 0.1 to 5,000 microns, and the catalyst is mixed with the solid dry molybdenum or solid dry molybdenum compound when the catalyst is in a fluidized state.

2. The process according to claim 1, wherein the iron-antimony metallic oxide catalyst is a metal oxide catalyst containing, in addition to said components (I) to (IV), (V) at least one element selected from the group consisting of lithium, sodium, potassium, rubidium, cesium, beryllium, magnesium, calcium, strontium, barium, yttrium, lanthanum, cerium, thorium, uranium, titanium, zirconium, hafnium, niobium, tatalum, chromium, manganese, rhenium, ruthenium, osmium, cobalt, rhodium, iridium, nickel, palladium, platinum, copper, silver, zinc, cadmium, boron, aluminum, gallium, indium, thallium, germanium, tin, lead, phosphorus, arsenic, bismuth, sulfur, and selenium.

3. The process of claim 1 wherein the catalyst prior to deactivation has the empirical formula:

$$Fe_{10}Sb_aMe_bTe_cQ_dO_3(SiO_2)_f$$

where,

Me is at least one element selected from the group consisting of V, Mo, and W;

Q is at least one element selected from the group consisting of Li, Na, K, Rb, Cs, Be, Mg, Ca, Sr, Ba, Y, La, Ce, Th, U, Ti, Zr, Hf, Nb, Ta, Cr, Mn, Re, Ru, Os, Co, Rh, Ir, Ni, Pd, Pt, Cu, Ag, Zn, Cd, B, Al, Ga, In, Tl, Ge, Sn, Pb, P, As, Bi, S, and Se;

a is 2 to 100,

b is 0.01 to 20,

c is 0.05 to 10,

d is 0 to 20,

e is the number of oxygen atoms corresponding to the oxides formed by the above components, and

f is 0 to 200.

4,536,484

PROCESS FOR PREPARATION OF A TRANSITION METAL COMPONENT FOR A CATALYTIC SYSTEM OF POLYMERIZATION OF OLEFINS

Jean-Loup Lacombe, Pau, and Claude Brun, Idron Bizanos, both of France, assignors to Atochem, Courbevoie, France

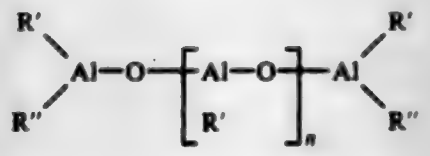
Filed May 25, 1984, Ser. No. 614,279

Claims priority, application France, May 25, 1983, 83 08603

Int. Cl.³ C08F *4/62, 4/64, 4/68*

U.S. Cl. 502—62 **36 Claims**

1. A process for the preparation of a transition metal component for a catalytic system for the polymerization of olefins, wherein an organo-magnesium-aluminum reaction product is formed in a liquid medium of a halogenated alkylated magnesium compound or an alkylated magnesium compound with an organoaluminum compound, the reaction product being then subjected to a chlorination and to a treatment with a transition metal component selected from the group consisting of Ti, V, Zr and Cr, characterized by using as an organo-aluminum compound, at least one aluminoxane compound of the formula



wherein R′ designates an alkyl radical of from C_1 to C_{16}, the R″s form together a bivalent —O— radical or designate each an R′ radical and n is an integer from 0 to 20.

11. A process according to claim 1, characterized in that the reaction between said magnesium compound and said aluminoxane compound is carried out at a temperature going from about −30° C. to the boiling temperature under atmospheric pressure of the reaction liquid medium.

12. A process according to claim 11, characterized in that the reaction product between the magnesium compound and the aluminoxane compound is subjected to a chlorination and the product resulting from said chlorination is then treated with the transition metal compound.

14. A process according to claim 12, characterized in that an adjuvant consisting of an inorganic or organic porous carrier is incorporated into the reaction product between the magnesium compound and the aluminoxane compound, said incorporation being effected either during the formation of the reaction medium between said components or during the reaction, or even when the reaction is finished.

19. A process according to claim 14, characterized in that the adjuvant is selected from the group consisting of SiO_2, TiO_2, Al_2O_3, ZrO_2, the zeolites and the mixed oxides containing SiO_2 and one or more metal oxides of the group consisting of ZrO_2, TiO_2 MgO and Al_2O_3.

4,536,485

PROCESS FOR THE PREPARATION OF CATALYSTS FOR USE IN ETHER SYNTHESIS

Jorgen Topp-Jorgensen, Hvidovre, Denmark, assignor to Haldor Topsoe A/S, Denmark

Filed Jan. 10, 1985, Ser. No. 690,335

Claims priority, application Denmark, Jan. 10, 1984, 95/84

Int. Cl.³ B01J *29/08, 29/28, 21/16*

U.S. Cl. 502—62 **13 Claims**

1. A process for the preparation of an aluminosilicate catalyst for use in the catalytic dehydration of alcohols into ethers, wherein the improvement consists in the steps of

(a) contacting a crystalline aluminosilicate at a temperature below 800° C. with at least one nitrogen-containing base and carrying out this treatment until no more of such base is absorbed, and then

(b) subjecting the crystalline aluminosilicate thus treated to an after-treatment consisting in passing a stream of an inert gas over it at a temperature of 320°–800° C. to desorb part of any nitrogen-containing base absorbed, this after-treatment being carried out until desorption no longer takes place.

2. The process claimed in claim 1, wherein the nitrogen-containing base employed is ammonia.

3. The process claimed in claim 1, wherein the nitrogen-containing base employed is at least one lower alkyl amine.

5. The process claimed in claim 1, wherein the crystalline aluminosilicate is a zeolite.

7. The process claimed in claim 5, wherein the zeolite is Y-zeolite.

4,536,486

PROCESS FOR DEWAXING WITH MORDENITE

Paul H. Lewis, Groves, Tex., assignor to Texaco Inc., White Plains, N.Y.

Filed Mar. 31, 1983, Ser. No. 480,640
Int. Cl.[3] B01J *29/22*
U.S. Cl. 502—74 11 Claims

1. The method which comprises

loading a hydrogen mordenite having a silica-to-alumina mole ratio of 10–50:1, with a metal of the platinum-palladium group thereby forming a loaded hydrogen mordenite;

calcining said loaded hydrogen mordenite at 1300° F.–1500° F., after the catalyst has been exposed to water for the last time, thereby forming a calcined loaded hydrogen mordenite containing activated sites; and

recovering said calcined loaded hydrogen mordenite containing activated sites.

4,536,487

INTERMETALLIC COMPOUNDS OF POLYMERIC TRANSITION METAL OXIDE ALKOXIDES AND CATALYTIC USE THEREOF

Anthony N. Speca, Kingwood, Tex., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 209,223, Nov. 24, 1980, abandoned, Ser. No. 209,224, Nov. 24, 1980, abandoned, Ser. No. 209,225, Nov. 24, 1980, abandoned, Ser. No. 209,226, Nov. 24, 1980, abandoned, Ser. No. 209,227, Nov. 24, 1980, abandoned, Ser. No. 209,228, Nov. 24, 1980, abandoned, Ser. No. 209,229, Nov. 24, 1980, abandoned, Ser. No. 228,831, Jan. 27, 1981, abandoned, and Ser. No. 483,054, Apr. 7, 1983, Pat. No. 4,513,095. This application Feb. 8, 1984, Ser. No. 578,243
Int. Cl.[3] C08F *4/64*
U.S. Cl. 502—119 21 Claims

1. An intermetallic compound comprising the reaction product of a transition metal and a reducing metal of a higher oxidation potential than the transition metal obtained by the reaction at elevated temperature of a polymeric transition metal oxide alkoxide and the reducing metal in the presence of a mono- or dialkyl phosphate or mixtures thereof in which each alkyl contains up to 10 carbon atoms.

11. A catalyst component for polymerization of alpha olefins comprising the intermetallic compound of any of claims 1–6 further reacted with a halide activator selected from the group consisting of alkyl aluminum halides, silicon halides, alkyl silicon halides titanium halides, boron halides and alkyl boron halides.

13. A catalyst system for the polymerization of alpha olefins comprising the catalyst component of claim 11 and an organo aluminum compound.

4,536,488

METHOD OF MANUFACTURING A CRYSTALLINE SILICA/PLATINUM CATALYST STRUCTURE

Sieghard E. Wanke; Huseni A. Rangwala; Fred D. Otto; Ivo G. Dalla Lana, all of Edmonton; Linda M. Paterson, Petawawa, and John H. Rolston, Deep River, all of Canada, assignors to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Jun. 14, 1984, Ser. No. 620,572
Claims priority, application Canada, Oct. 24, 1983, 439528
Int. Cl.[3] B01J *31/06, 23/42;* B01D *5/02*
U.S. Cl. 502—159 4 Claims

1. A method of manufacturing a crystalline silica/platinum catalyst structure comprising:

(a) soaking a hydrophobic, porous, high surface area, crystalline silica (SiO_2) lattice essentially free of aluminum in the SiO_2 lattice, in an aqueous solution of $Pt(NH_3)_4\ Cl_2$ with added volatile amine in an amount sufficient to bring the pH of said solution to at least 9.5; the crystalline silica being a silica polymorph consisting of crystalline silica which, after calcination in air at 600° C. for one hour, has a mean refractive index of 1.39±0.01 and a specific gravity at 25° C. of 1.70±0.05 g/cc, then

(b) drying the soaked, hydrophobic, porous, high surface area, crystalline silica to leave catalyst crystallites of platinum from the aqueous solution of $Pt(NH_3)_4Cl_2$ on the crystalline silica and in the pores thereof, then

(c) reducing the catalyst crystallites by heating them in an atmosphere of hydrogen gas, then

(d) cooling the crystallites to room temperature in an inert atmosphere, then

(e) coating the crystalline silica, with the catalyst crystallites thereon and in the pores thereof, with high molecular weight, organic polytetrafluoroethylene polymeric material to provide an outer, porous membrane coating thereon which is inherently hydrophobic, to substantially inhibit the passage of water therethrough, and which is water vapour and gas permeable so that water vapour may pass therethrough.

2. A method according to claim 1 wherein sufficient volatile amine is added to the aqueous solution to bring the pH thereof in the range of 10.5 to 11.0.

4. A method according to claim 1, wherein the crystalline silica, with the catalyst crystallites on and in the pores thereof, is slurried with a fluid suspension of the high molecular weight, polytetrafluoroethylene organic, polymeric material, a ceramic support is coated with the slurry, and then the slurry coating is dried to leave a coating on the ceramic support comprising the crystalline silica, with the catalyst crystallites thereon and in the pores thereof, and coated with the high molecular weight, organic, polytetrafluoroethylene polymeric material.

4,536,489

HIGH PORE VOLUME, HIGH PURITY ALUMINA GELS CONTAINING A CHROMIUM CATALYST

Anthony N. Speca, Kingwood, Tex., and Roger D. Laib, Cincinnati, Ohio, assignors to National Petro Chemicals Corporation, New York, N.Y.

Filed Sep. 12, 1983, Ser. No. 531,096
Int. Cl.[3] B01J *21/04, 23/26, 31/12*
U.S. Cl. 502—162 3 Claims

1. A catalyst system useful for the preparation of low molecular weight polyolefins comprising an alumina gel support material having an interparticle nitrogen pore volume of at least 1.4 to 1.8 cc/g and a surface area of 428 to 496 m^2/g and a chromium containing compound deposited on said alumina gel support, said alumina gel support material being prepared by a process comprising the steps of:

(i) hydrolyzing an aluminum alcoholate in a hydrolyzing medium comprised of a mixture of water and acetone having an H_2O/Al ratio of from about 15:1 to about 26:1;

(ii) aging the product of step (i) for about 4 hours to about 24 hours;

(iii) washing the resultant aged product from step (ii) with acetone; and

(iv) drying the product from step (iii).

4,536,490

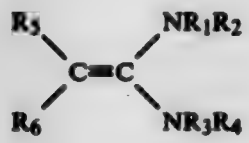
CATALYST COMPOSITIONS FOR TRIMERIZING ORGANIC ISOCYANATES

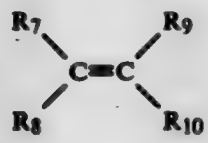
Dale F. Regelman, Wallingford, Conn., assignor to The Upjohn Company, Kalamazoo, Mich.

Filed Mar. 8, 1984, Ser. No. 587,429
Int. Cl.[3] C07D *251/34;* C08G *18/18;* B01J *31/02*
U.S. Cl. 502—167 17 Claims

1. A composition capable of catalytically trimerizing an organic isocyanate said composition comprising a solution of the product obtained by reacting at ambient room temperature, in an inert solvent selected from the group consisting of polar aromatic solvents, halogenated aliphatic solvents, dipolar aprotic solvents, aliphatic alcohols, cycloaliphatic alcohols and organic polyols having a molecular weight from about 60 to

about 4000, substantially equimolar proportions of a ketene-aminal and an olefin having the respective formulae (I) and (II)


(I)


(II)

wherein R_1, R_2, R_3, and R_4 when taken separately are independently selected from the group consisting of lower-alkyl, aralkyl, cycloalkyl, and, when taken together as R_1 with R_2 and R_3 with R_4 with the respective nitrogen atoms to which they are attached represent independently heterocyclic groups having 6 or 7 ring atoms, R_5 and R_6 are independently selected from the group consisting of hydrogen, lower-alkyl, aryl, aralkyl, and cycloalkyl, R_7 and R_8 when taken separately are independently selected from the group consisting of hydrogen, lower-alkyl, aryl, aralkyl, and cycloalkyl, provided that R_7 and R_8 are not both hydrogen at the same time, and, R_7 and R_8, when taken together with the carbon atom to which they are attached represent a cyclic hydrocarbon group having 5 or 6 carbon atoms in the ring, and R_9 and R_{10} represent the same or different electron withdrawing groups and wherein the combined weight of said (I) and said (II) is from about 5 to about 95 percent by weight in said solvent.

10. A composition according to claim 1 comprising a solution of the product obtained by reacting 1,1-bisacetyl-2-phenylethylene with 1,1-bis(N-piperidinyl)ethylene in an organic polyol.

17. A composition according to claim 1 comprising a solution of the product obtained by reacting benzylidene malononitrile with 1,1-bis(N-piperidinyl)-2-methylethylene in an organic polyol.

4,536,491

AGGLOMERATES OF MALACHITE CRYSTALS AND METHOD FOR THEIR PREPARATION

Joseph M. Fremont, Glen Mills, Pa., assignor to E. I. DuPont de Nemours and Company, Wilmington, Del.

Filed Jun. 4, 1984, Ser. No. 617,072

Int. Cl.³ B01J *21/20*; C07C *33/046*

U.S. Cl. 502—174 **5 Claims**

1. An agglomerate of spheroidal masses of malachite crystals, which crystals comprise 1–7% by weight, of bismuth oxycarbonate and 0.5–3.5%, by weight (calculated as SiO_2) of silicic acid.

2. A mass of agglomerates of claim 1, the agglomerates having an average longest dimension of about 15 microns, with at least about 95% of the agglomerates having a longest dimension of 14 18 microns, and the spherodial masses of malachite crystals having an average longest dimension of about 5 microns, with at least about 95% of the masses having a longest dimension of 3–8 microns.

3. A process for preparing agglomerates of spheroidal masses of malachite crystals, which crystals comprise 1–7%, by weight, of bismuth oxycarbonate and 0.5–3.5%, by weight (calculated as SiO_2), of silicic acid from a copper salt, a bismuth salt and silicic acid, the process comprising

(a) forming amorphous gel-like hydrated copper carbonate by bringing together, in aqueous solution, with agitation, at a temperature of about 45°–55° C., and at a pH of 5.5–7.5, maintained with an alkali metal carbonate or an alkali metal bicarbonate, about 30–60% by volume of the total amounts of the copper salt, the bismuth salt and the silicic acid required to form the malachite and to provide the specified amounts of bismuth oxycarbonate and silicic acid;

(b) holding the mass of (a), without agitation, at a temperature of about 45°–55° C. until masses of malachite crystals form;

(c) and then maintaining the resulting slurry at a temperature of 45°–55° C., and a pH of 5.5–7.5 with an alkali metal carbonate or an alkali metal bicarbonate, while adding, with agitation, the remainder of the required amount of copper salt, bismuth salt and silicic acid,

to form the agglomerates.

4,536,492

CATALYST FOR THE PREPARATION OF METHYL MERCAPTAN FROM CARBON OXIDES

Paul G. Haines, Lafayette Hill, Pa., assignor to Pennwalt Corporation, Philadelphia, Pa.

Division of Ser. No. 431,858, Sep. 29, 1982, Pat. No. 4,449,006. This application Feb. 29, 1984, Ser. No. 584,860

Int. Cl.³ B01J *27/02*

U.S. Cl. 502—216 **4 Claims**

1. A composition of matter comprising a solid catalyst system of from 10 to about 90%, based on the weight of said system, of a support comprising alumina upon which is deposited from about 90 to about 10%, based on the weight of said system, of a mixture of:

(a) from 2 to 95%, based on the weight of said mixture, of the sulfide of manganese,

(b) from 0 to 90% of at least one sulfide selected from the group consisting of sulfides of iron, nickel, zinc and chromium, and

(c) from 5 to 80%, based on the weight of said mixture, of an alkali metal sulfide, the total of (a), (b) and (c) equaling 100%.

4,536,493

SATURATED AMINOCYCLITOL DERIVATIVES, THEIR PREPARATION AND MEDICAMENTS CONTAINING THESE COMPOUNDS

Bodo Junge, Wuppertal, Fed. Rep. of Germany, and Lutz Müller, Elkhart, Ind., assignors to Baker Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

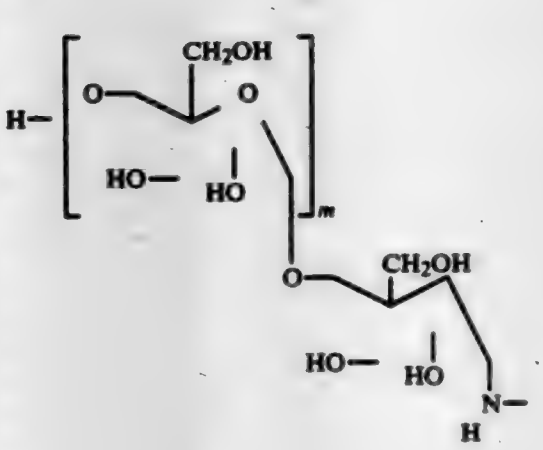
Filed Jun. 4, 1982, Ser. No. 385,222

Claims priority, application Fed. Rep. of Germany, Jun. 13, 1981, 3123520

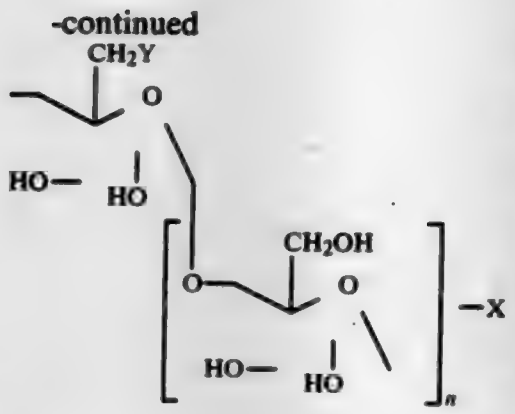
Int. Cl. A61K *31/70*; C07G *11/00*

U.S. Cl. 514—25 **15 Claims**

1. A compound which is a saturated aminocyclitol derivative of the formula


(I)

-continued

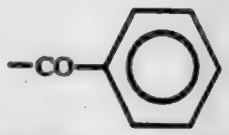


in which

m and n independently of each other denote 0 or an integer from 1 to 8 and the sum of m+n has a value from 0 to 8,

X represents OH, OR, SH, SR, NH_2, NHR or NRR_1, and

R and R_1 independently represent a straight chain or branched, saturated or unsaturated alkyl radical with 1 to 8 carbon atoms; a saturated or unsaturated carbocyclic radical with 3 to 6 carbon atoms; an aralkyl radical consisting of an alkylen- or -alkenylen-chain having 1 to 3 carbon atoms and an optionally substituted phenyl ring with one or two substituents selected from OH, NH_2, Cl, CH_3, NO_2, COOH; an optionally substituted pheny ring with one or two substituents selected from -OH, -Cl, $-CH_3$, -NO2, -COOH or



together with the nitrogen atom to which they are bonded form a heterocyclic five- or six membered ring, selected from pyrrolidine, piperidine, piperazine, hexamethyleneimine, morpholine and N-methylpiperazine.

10. A pharmaceutical composition for inhibiting alpha-glycoside hydrolase, containing as an active ingredient in amount of a compound according to claim 1 effective for inhibiting α-glucoside hydrolase in admixture with an inert pharmaceutical carrier.

14. A method of inhibiting α-glycoside hydrolases in warm-blooded animals which comprises administering to the said animals in amount of an active compound according to claim 1 effective for inhibiting α-glycoside hydrolase either alone or in admixture with a diluent or in the form of a medicament.

4,536,494

ANIMAL FEED METHOD EMPLOYING NATAMYCIN

A. Franklin Carter, 705 E. Highpoint, Springfield, Mo. 65807

Continuation-in-part of Ser. No. 552,771, Nov. 17, 1983, abandoned. This application May 10, 1984, Ser. No. 608,796

Int. Cl.³ A61K *31/71*; C07H *17/08*

U.S. Cl. 514—31 **9 Claims**

1. A method for improving the use of animal feed by an animal which comprises incorporating about 0.000055 to 0.011 weight percent of natamycin into the animal feed as a feed efficiency agent.

4,536,495

NOVEL PHARMACEUTICAL COMPOSITION

Carl-Aage Bergwitz-Larsen, Vällingby, and Rolf G. L. Österlund, Vallentuna, both of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden

Filed Mar. 4, 1983, Ser. No. 472,295

Claims priority, application Sweden, Mar. 12, 1982, 8201556

Int. Cl.³ A61K *31/70, 31/14*

U.S. Cl. 514—54 **16 Claims**

1. A complex of carrageenan and 10–70% by weight of said complex of emepronium, calculated as emepronium bromide.

4,536,496

POLYSACCHARIDES N9GI, THEIR PREPARATION AND THERAPEUTIC COMPOSITIONS CONTAINING THEM

Masaki Shimizu, Tokyo, and Takeo Nomura, Hino, both of Japan, assignors to Terumo Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 15, 1983, Ser. No. 466,553

Claims priority, application Japan, Feb. 19, 1982, 57-25440; Feb. 19, 1982, 57-25441; Dec. 4, 1982, 57-212104

Int. Cl.³ C08B *37/00*; C07H *1/00*

U.S. Cl. 514—54 **20 Claims**

1. Polysaccharide N9GI obtained from the bark of *Melia azadirachta L.* which has the following characteristics:

the freeze dried product of said polysaccharide N9GI is a white or pale yellowish brown powder;

said polysaccharide N9GI;

has an infrared absorption spectrum as shown in FIG. 1, wherein IR$\nu_{max.}^{KBr}$cm.$^{-1}$: 3400, 1630, 1030;

has an ultraviolet absorption spectrum which shows no absorption maximum with end absorption only when measured in an aqueous solution;

is soluble in water and insoluble in organic solvents selected from methanol, ethanol, acetone, ether, chloroform, ethyl acetate, benzene, and hexane;

reacts with phenol sulfate and anthrone sulfate; and

turns greenish blue by reaction with iodine;

said polysaccharide N9GI is a mixture of polysaccharide N9GIa and of polysaccharide N9GIb;

said polysaccharide N9GIa;

is a neutral polysaccharide which contains as the main chain thereof an α-(1→4)-glucan connected to arabinose by an α-(1→6) bond and is composed of glucose and arabinose at a ratio of about 5:1;

is soluble in water and insoluble in organic solvents selected from methanol, ethanol, acetone, ether, chloroform, ethyl acetate, benzene and hexane;

reacts with phenol sulfate and anthrone sulfate;

turns to greenish blue by reaction with iodine;

when analyzed by column gel chromatography using dextran gel with a fractionation range molecular weight of 1×10^3–2×10^5 gives a single peak with a molecular weight of about 94,000;

has a specific rotation of $(\alpha)_D^{22}$: −35° (c=0.4, H_2O);

has an infrared absorption spectrum as shown in FIG. 2, wherein IR$\nu_{max.}^{KBr}$cm.$^{-1}$: 3400, 2930, 1620;

has an ultraviolet absorption spectrum which shows no absorption maximum with end absorption only when measured in an aqueous solution; and

has a 100 MHz ^{13}C nuclear magnetic resonance spectrum measured in deuterium oxide using TMS (tetramethylsilane) as the external standard as shown in FIG. 4; and

said polysaccharide N9GIb;

is a neutral polysaccharide which contains as the main chain thereof an α-(1→4)-glucan interspersed with β-(1→3)-fucose and branched with α-(1→6)-arabinose and is composed of glucose, arabinose and fucose at a ratio of about 5:2:1;

is soluble in water and insoluble in organic solvents selected from methanol, ethanol, acetone, ether, chloroform, ethyl acetate, benzene, and hexane;

reacts with phenol sulfate and anthrone sulfate;

turns greenish blue by reaction with iodine;

when analyzed by column gel chromatography using dextran gel with a fractionation range molecular weight of 1×10^3–2×10^5 gives a single peak with a molecular weight of about 21,000;

has a specific rotation of $(\alpha)_D^{22}$: −46° C. (c=0.28, H_2O);

has an infrared absorption spectrum as shown in FIG. 4, wherein IR$\nu_{max.}^{KBr}$cm.$^{-1}$: 3400, 2930, 1630;

has an ultraviolet absorption spectrum which shows no absorption maximum with end absorption only when measured in an aqueous solution;

has a 100 MHz ^{13}C nuclear magnetic resonance spectrum measured in deuterium oxide using TMS (tetramethylsilane) as the external standard as shown in FIG. 5.

2. A therapeutic composition characterized by inhibiting the growth of Sarcoma 180 transplanted tumor tissue in mice comprising an effective amount of the polysaccharide according to claim 1 and a pharmaceutical diluent.

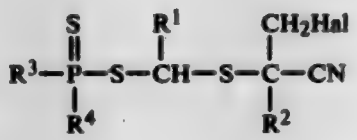
4,536,497

S-(1-(1-CYANO-1-(HALOMETHYL)ALKYLTHIO)ALKYL) PHOSPHOROTHIOIC COMPOUNDS AS PESTICIDES

James R. Sanborn, Modesto, Calif., assignor to Shell Oil Company, Houston, Tex.

Filed Aug. 5, 1983, Ser. No. 520,883
Int. Cl.[3] A01N *57/12;* C07F *9/165*
U.S. Cl. 514—112 9 Claims

1. A compound of the formula I



I

wherein R^1 and R^2 each independently is a methyl group or an ethyl group; R^3 and R^4 each independently is an alkoxy group containing from 1 to 4 carbon atoms and Hal is a chlorine or bromine atom.

7. A method for combating pests at a locus, which comprises applying to the locus or the pests, a pesticidally-effective amount of a compound according to claim 1.

4,536,498

FUNGICIDAL COMPOSITION

Manabu Tagami, Nishinomiya; Kenzi Urayama; Tadashi Ooishi, both of Toyonaka; Yukikazu Okamoto, Ikeda, and Kozo Tsuji, Nara, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Dec. 7, 1983, Ser. No. 558,829
Claims priority, application Japan, Dec. 15, 1982, 57-220966
Int. Cl.[3] A01N *57/02*
U.S. Cl. 514—147 2 Claims

1. A fungicidal composition which comprises 1–70 parts of tolchlofos-methyl as an active ingredient, 5–40 parts of polypropylene glycol having a molecular weight from 400 to 6,000 as a stabilizer, and as the sole carrier the remainder of the composition being attapulgite clay, wherein the amount of said polypropylene glycol is from 10 to 60% by weight of the amount of attapulgite clay.

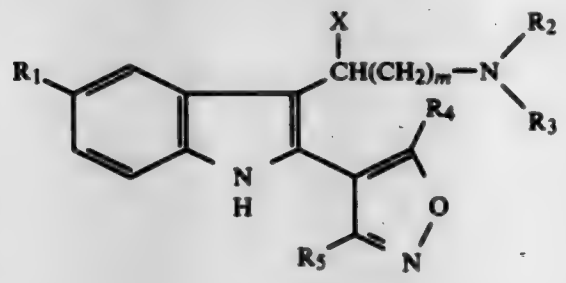
4,536,499

ISOXAZOLYL INDOLAMINES HAVING ANTI-DIABETIC ACTIVITY

Leonard J. Brand, Randolph, and Jeffrey Nadelson, Denville, both of N.J., assignors to Sandoz, Inc., E. Hanover, N.J.

Continuation-in-part of Ser. No. 367,938, Apr. 13, 1982, abandoned. This application Apr. 1, 1983, Ser. No. 481,373
The portion of the term of this patent subsequent to Jun. 22, 1999, has been disclaimed.
Int. Cl.[3] C07D *413/04, 413/14;* A61K *31/40*
U.S. Cl. 514—212 20 Claims

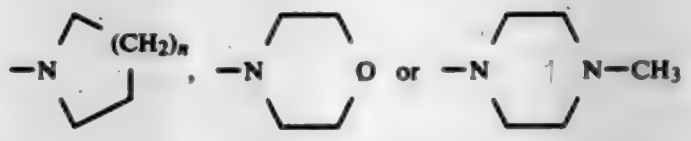
1. A compound of the formula



(I)

where

m is 2, 3, or 4,
X is hydrogen or hydroxy,
R_1 represents hydrogen, fluoro, chloro, lower alkyl having 1 to 4 carbon atoms, or lower alkoxy having 1 to 4 carbon atoms, and
R_2 and R_3 each independently represent lower alkyl having 1 to 4 carbon atoms, or
R_2 and R_3 together with N represent



wherein
n is 1, 2 or 3, and
R_4 represents hydrogen or lower alkyl having 1 to 4 carbon atoms, and
R_5 represents hydrogen, lower alkyl, phenyl or phenyl substituted with fluoro, chloro, lower alkyl having 1 to 4 carbon atoms or lower alkoxy having 1 to 4 carbon atoms with the proviso that when X is hydroxy, m is 3 or 4, or a pharmaceutically acceptable acid addition salt thereof.

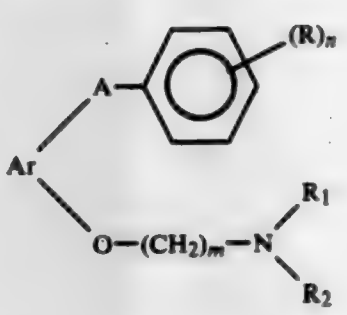
4,536,500

AROMATIC DERIVATIVES COMPRISING AN AMINOALKOXY CHAIN AND PHARMACEUTICAL COMPOSITIONS THEREOF

Guy R. Bourgery, Colombes; Alain P. Lacour, La Varenne; Bernard M. Pourrias, Meudon La Foret, and Raphaël Santamaria, Paris, all of France, assignors to Delalande S.A., France

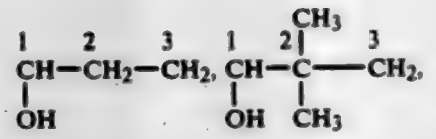
Filed Dec. 21, 1982, Ser. No. 451,537
Claims priority, application France, Dec. 24, 1981, 81 24244; Dec. 15, 1982, 82 21053
Int. Cl.[3] C07D *295/08, 413/12;* A61K *31/445, 31/535*
U.S. Cl. 514—212 6 Claims

1. New aminoalkoxy aromatics, corresponding to the general formula:

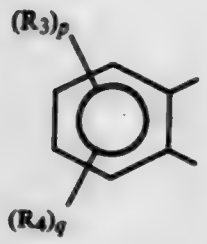


(I)

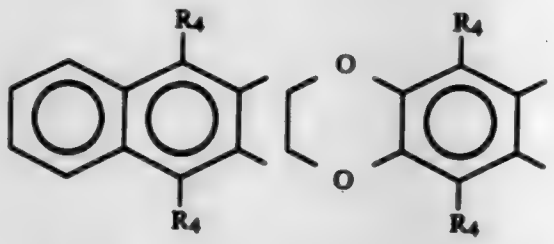
in which:
R represents hydroxyl;
n takes the value 1 or 2 when R is different from H;
m takes the value 2 or 3;
A represents a chain having any one of the following structures:



the aromatic group Ar being linked to position 1 of this chain,
R_1 and R_2 form in conjunction with the nitrogen atom to which they are linked a radical chosen from the following: pyrrolidino, piperidino, hexamathyleneimino, morpholino; and
Ar represents:
either a benzene group of structure:



in which R_3 represents a halogen atom or a nitro or methyl group, R_4=alkoxy with 1 to 4 carbon atoms, p=0, 1 or 2; q=1, 2, 3, 4; p+q≦4 or a naphthalene or benzodioxannic group respectively of structure:



where R_4 has the same meanings as previously, as well as their mineral or organic acid addition salts.

6. A pharmaceutical composition having an activity antagonistic to calcium comprising a therapeutically effective amount of a compound as claimed in claim 1 in combination with a pharmaceutically acceptable carrier.

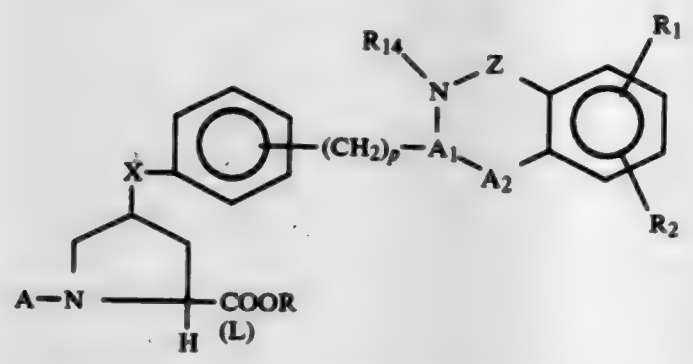
4,536,501

SUBSTITUTED 4-PHENOXY OR 4-PHENYLTHIO PROLINES

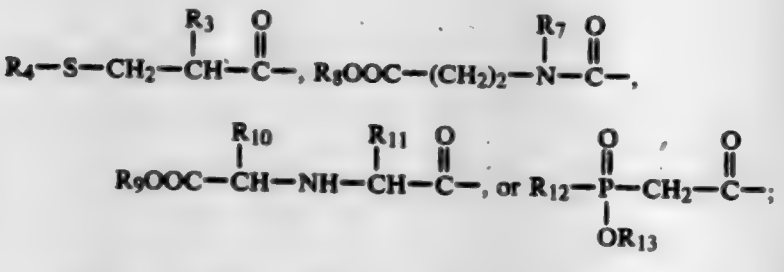
Joseph E. Sundeen, Yardley, Pa.; Rudiger D. Haugwitz, Titusville, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 30, 1984, Ser. No. 595,219
Int. Cl.[3] C07D *417/12*; A61K *31/54*
U.S. Cl. 514—225 21 Claims

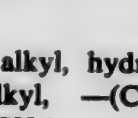
1. A compound of the formula



and a pharmaceutically acceptable salt thereof
wherein
X is oxygen or sulfur;
$-A_1-A_2-$ is —CH—NH— or —C=N—;
A is

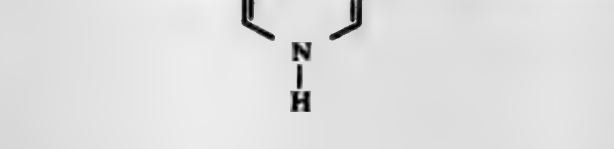


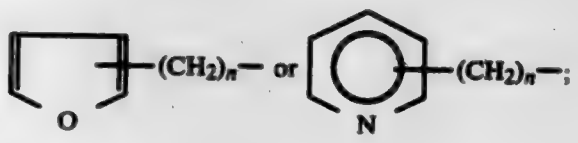
p is one, two, three or four;
R, R_8 and R_9 are independently selected from the group consisting of hydrogen, lower alkyl, benzyl, benzhydryl, and salt forming ion;
R_1 and R_2 are independently selected from the group consisting of hydrogen, halogen, lower alkyl, lower alkoxy, halo substituted lower alkyl, nitro, and $-SO_2NH_2$;
Z is



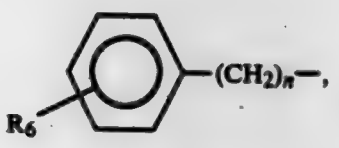
R_3 is hydrogen, lower alkyl, halo substituted lower alkyl, phenyl, benzyl, phenethyl or cycloalkyl;
R_4 is hydrogen or

R_5 is lower alkyl,

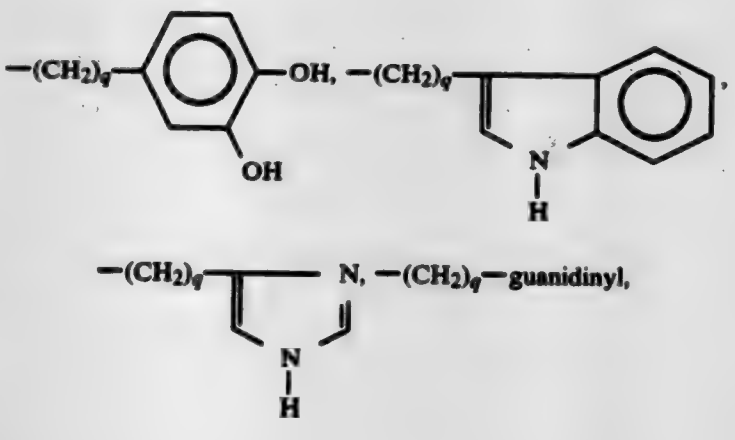




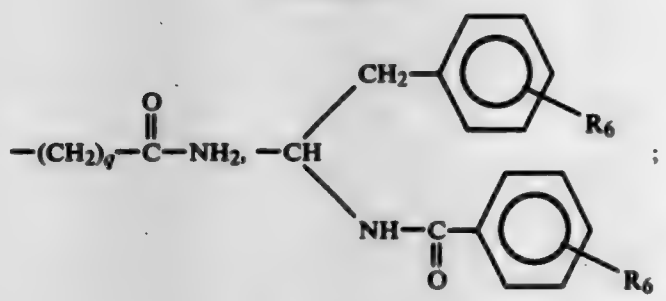
n is zero, one, two, three or four;
R_6 is hydrogen, lower alkyl, lower alkoxy, halogen, or hydroxy;
R_7 is lower alkyl or cycloalkyl;
R_{10} is hydrogen, lower alkyl,



halo substituted lower alkyl, hydroxy substituted lower alkyl, $-(CH_2)_q$-cycloalkyl, $-(CH_2)_q$-N(lower alkyl)$_2$, $-(CH_2)_q-NH_2$, $-(CH_2)_q$-carboxy, $-(CH_2)_q-SH$, $-(CH_2)_q$-S-lower alkyl,

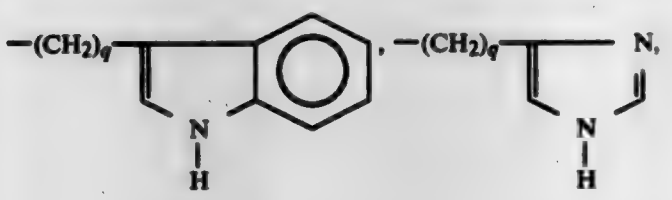


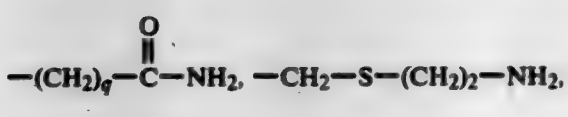
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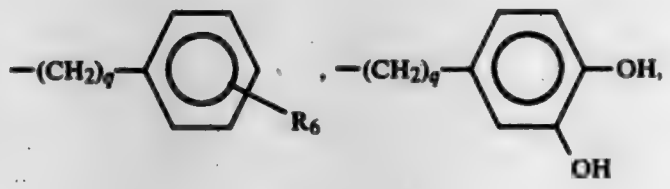


q is one, two, three or four;

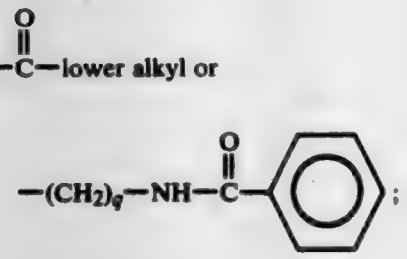
R_{11} is hydrogen, lower alkyl, halo substituted lower alkyl, hydroxy substituted lower alkyl, $-(CH_2)_q-NH_2$, $-(CH_2)_q$-N(lower alkyl)$_2$, $-(CH_2)_q$-quanidinyl,



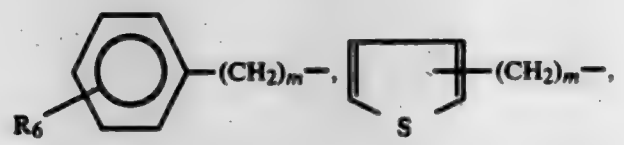


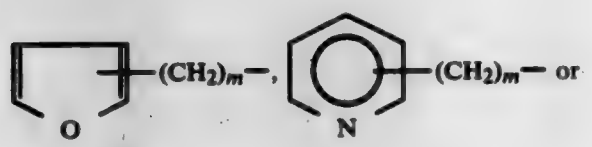


$-(CH_2)_q-NH-C(=O)-$lower alkyl or



R_{12} is alkyl of 1 to 10 carbons,

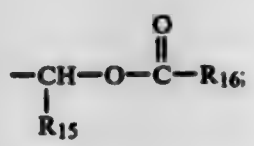




cycloalkyl—$(CH_2)_m$—;

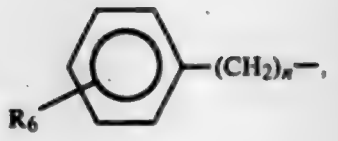
m is zero or an integer from 1 to 7;

R_{13} is hydrogen, lower alkyl, benzyl, benzhydryl, salt forming ion or



R_{15} is hydrogen, lower alkyl, cycloalkyl or phenyl; p0 R_{16} is hydrogen, lower alkyl, lower alkoxy, cycloalkyl, phenyl, benzyl, or phenethyl; and

R_{14} is hydrogen, lower alkyl, cycloalkyl-$(CH_2)_n$—,



halo substituted lower alkyl, hydroxy substituted lower alkyl, $-(CH_2)_q-N$(lower alkyl)$_2$, or $-(CH_2)_q-NH_2$.

4,536,502

FUNGICIDAL 2-CYANOBENZIMIDAZOLE DERIVATIVES, COMPOSITIONS, AND METHOD OF USE

Raymond Giraudon, Lesigny, and Georges Santini, Thiais, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

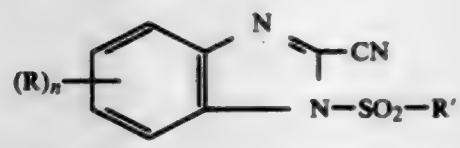
Filed Feb. 1, 1983, Ser. No. 463,055

Claims priority, application France, Feb. 9, 1982, 82 02281

Int. Cl.[3] **A01N** *43/32, 43/52;* **C07D** *413/02, 235/04*

U.S. Cl. 514—227 **6 Claims**

1. A 2-cyanobenzimidazole derivative of the general formula:



in which

n represents an integer equal to 0, 1, 2 or 3;

R represents a halogen atom or a lower alkyl radical optionally substituted by one or more halogen atoms; a lower alkoxy radical optionally substituted by one or more halogen atoms or by the phenyl radical; a lower alkylthio radical optionally substituted by one or more halogen atoms; a lower alkenyl radical; a lower alkynyl radical; an amino radical optionally substituted by one or two identical or different lower alkyl radicals; a nitro radical; a cyano radical; a cyanato radical; a thiocyanato radical; an isothiocyanato radical; a lower alkylsulphonyl radical; a sulphamoyl radical optionally substituted by one or two identical or different lower alkyl radicals; a lower alkylsulphinyl radical; a lower alkanoyl radical optionally halogen substituted or a benzoyl radical optionally halogen substituted; or an alkoxycarbonyl radical containing from 2 to 5 carbon atoms, it being understood that if n is greater than or equal to 2, the substituents R can be either identical or different; and

R′ represents a lower alkyl or cycloalkyl radical optionally substituted by one or more halogen atoms; an amino radical optionally substituted by one or two identical or different lower alkyl radicals which are themselves optionally substituted; or a morpholino radical, or pyrrolidino radical, it being understood that, in the above, the adjective "lower" applied to an organic radical means that this radical contains at most 6 carbon atoms.

4,536,503

NAPHTHOXYALKYLAMINES AND RELATED COMPOUNDS AS ANTIINFLAMMATORY AGENTS

Peter H. Nelson, Los Altos; Howard J. Ringold, Woodside; Stefan H. Unger, and Thomas R. Thieme, both of Palo Alto, all of Calif., assignors to Syntex (U.S.A.) Inc., Palo Alto, Calif.

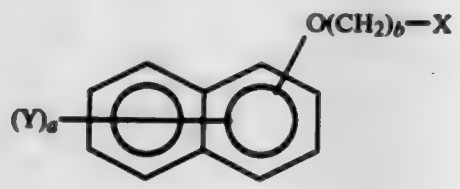
Division of Ser. No. 330,114, Dec. 14, 1981, abandoned. This application Jan. 9, 1984, Ser. No. 569,011

Int. Cl.[3] **A61K** *31/40, 31/445, 31/495*

U.S. Cl. 514—255 **2 Claims**

1. A method for inhibiting, preventing, or reducing inflammation, which method comprises administering to a subject in

need of such treatment a therapeutically effective amount of a compound of the formula:



(I)

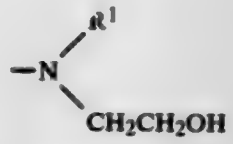
wherein;

Y is halo, alkoxy containing 1–8 carbon atoms, alkyl containing 1–8 carbon atoms, or dialkylamino in which each alkyl group contains 1–8 carbon atoms;

a is 0, 1 or 2;

b is an integer from 2–12 with the proviso that if b is 2 or 3 a cannot be 0; and

X is selected from the group consisting of: $—NH_2$, $—NHR^1$, NR_2^1, and



in which each R^1 is independently alkyl containing 1–8 carbon atoms, cycloalkyl containing 5–7 carbon atoms, or in $—NR_2^1$, both R^1 together form a or pyrrolidine, piperidine or piperazine ring, said piperazine ring being optionally substituted at the ring N by alkyl containing 1–8 carbon atoms, or $—CH_2CH_2OH$

or a pharmaceutically acceptable acid addition salt thereof.

4,536,504

HEXAHYDRODIOXOPYRIMIDINES, THEIR PRODUCTION AND USE

Tetsuya Okutani, Osaka, Japan, assignor to Takeda Chemical Industries, Ltd., Doshomachi, Japan

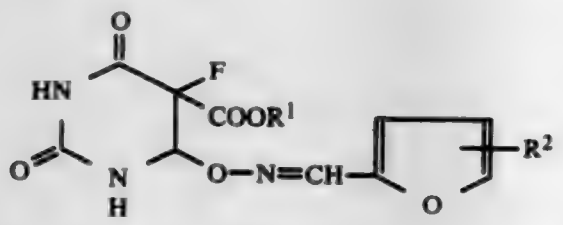
Filed Jul. 13, 1983, Ser. No. 513,339

Claims priority, application Japan, Jul. 13, 1982, 57-122535

Int. Cl.³ A61K *31/515*; C07D *239/20*

U.S. Cl. 514—270 **15 Claims**

15. A pharmaceutical composition for inhibiting the growth of tumorous cells which comprises an effective amount of a compound of the formula



wherein R^1 is lower alkyl; R^2 is hydrogen or lower alkyl and a pharmacologically acceptable carrier.

4,536,505

CERTAIN N-(PYRIDYL) INDOLES

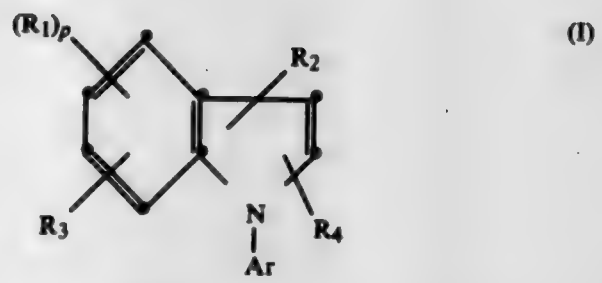
Leslie J. Browne, Morris Plains, N.J., assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 17, 1983, Ser. No. 495,370

Int. Cl.³ A61K *31/44*; C07D *401/04*

U.S. Cl. 514—339 **17 Claims**

1. A compound of the formula



(I)

wherein Ar is 3- or 4-pyridyl or 3- or 4-pyridyl substituted by lower alkyl; R_1 is hydrogen, halogen, trifluoromethyl, lower alkyl, hydroxy, acylated or etherified hydroxy, lower alkyl-(thio, sulfinyl or sulfonyl), or two of R_1 on adjacent carbon atoms represent alkylenedioxy; p is 1 or 2; R_2 represents hydrogen or lower alkyl; one of R_3 and R_4 represents hydrogen and the other of R_3 and R_4 represents the group A–B in which A represents alkylene of 1 to 12 carbon atoms, alkynylene or alkenylene of 2 to 12 carbon atoms each, lower alkylene-phenylene, lower alkylene-(thio or oxy)-lower alkylene, lower alkylene-(thio or oxy)-phenylene, lower alkylenephenylene-lower (alkylene or alkenylene), or alkadienylene of 4 to 12 carbon atoms; and B represents carboxy, carboxy esterified as a pharmaceutically acceptable ester, carbamoyl, mono- or di-lower alkylcarbamoyl, cyano, hydroxycarbamoyl, or 5-tertrazolyl; a pyridyl-N-oxide thereof; or a pharmaceutically acceptable salt thereof; and wherein within the above definitions acylated hydroxy represents lower alkanoyloxy, benzoyloxy, benzoyloxy substituted on the phenyl ring by lower alkyl, halogen or lower alkoxy, or nicotinoyloxy; etherified hydroxy represents lower alkoxy, benzyloxy, benzyloxy substituted on the phenyl ring by lower alkyl, halogen or lower alkoxy, or pyridylmethoxy.

4,536,506

INSECTICIDAL AND ACARICIDAL COMBINATION CONTAINING A PYRETHROID

Bernard Marcoux, St. Etienne, and Jean-Noël Bridon, Trevous, both of France, assignors to Rhone-Poulenc Agrochimie, Lyons, France

Filed Nov. 22, 1982, Ser. No. 443,557

Claims priority, application France, Dec. 1, 1981, 81 22611

Int. Cl.³ A01N *43/40*

U.S. Cl. 514—342 **5 Claims**

1. An insecticidal composition effective against aleurodes comprising a combination of N,N,4-trimethyl-2-(pyrid-3-yl)-thiazole-5-carboxamide and cypermethrin, said cypermethrin being present in an amount ranging from about 0.1 to about 1 parts by weight per 100 parts by weight of said combination.

4,536,507

PROSTAGLANDIN ANTAGONISTS

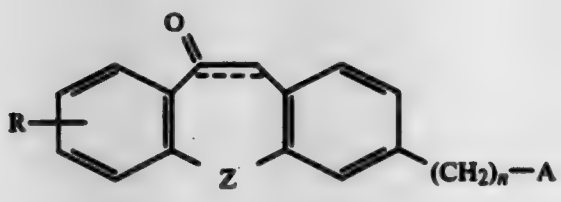
Joshua Rokach, Chomedy-Laval, Canada; Clarence S. Rooney, Worcester, and Edward J. Cragoe, Jr., Lansdale, both of Pa., assignors to Merck & Co., Inc., Rahway, N.J. and Merck Frosst Canada, Inc., Kirkland, Canada

Continuation-in-part of Ser. No. 210,082, Nov. 24, 1980, abandoned, which is a continuation-in-part of Ser. No. 155,323, Jun. 2, 1980, abandoned, which is a continuation-in-part of Ser. No. 44,445, Jun. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 44,444, Jun. 1, 1979, abandoned, and a continuation-in-part of Ser. No. 917,212, Jun. 23, 1978, abandoned, which is a continuation-in-part of Ser. No. 819,199, Jul. 26, 1977, abandoned. This application Jul. 8, 1982, Ser. No. 396,452

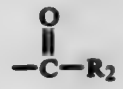
Int. Cl.³ A61K *31/38*; C07D *337/14*

U.S. Cl. 514—362 **26 Claims**

1. A compound of the formula:

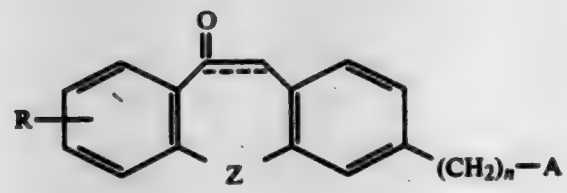


wherein
n is 0;
Z is thio, sulfinyl, or sulfonyl;
R is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino, C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 to C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfonyl, trifluoromethyl, trifluoromethylthio, cyano, carboxy, nitro and C_1 to C_4 alkyl or dialkylamino;
A is 5-tetrazolyl, 3-hydroxy-1,2,5-thiadiazol-4-yl, 4-hydroxy-Δ^3-pyrroline-3-yl-2,5-dione or

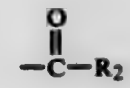


wherein R_2 is hydroxy, lower alkoxy, N,N-diloweralkylaminoloweralkoxy, hydroxyloweralkoxy, carboxyloweralkoxy, amino, N-loweralkylamino, N,N-diloweralkylamino, loweralkylsulfonylamino, carboxyloweralkylamino, carboxamidoloweralkylamino and 2-imino-3-methylthioazolidine; and the dotted line indicates either an olefinic bond or saturation at the 10,11-position; and the broken double bonds indicating that a 10-oxo substituent can be present when the 10,11-position is saturated.

26. A composition for treating undesirable contractile activity of prostaglandins consisting essentially of a pharmaceutically acceptable carrier and a therapeutically effective amount of a compound of the formula



wherein
n is 0;
Z is thio, sulfinyl, or sulfonyl;
R is hydrogen, halogen including chloro, bromo, fluoro and iodo, amino C_1 to C_4 alkyl, C_1 to C_4 alkanoyl, hydroxyl, C_1 C_4 alkoxy, thiol, C_1 to C_4 alkylthio, C_1 to C_4 alkylsulfinyl, C_1 to C_4 alkylsulfinyl, trifluoromethyl, trifluoromethylthio, cyano, carboxy, nitro and C_1 to C_4 alkyl or dialkylamino;
A is 5-tetrazolyl, 3-hydroxy-1,2,5-thiadiazol-4-yl, 4-hydroxy-Δ^3-pyrroline-3-yl-2,5-dione or



wherein R_2 is hydroxy, lower alkoxy, N,N-diloweralkylaminoloweralkoxy, hydroxyloweralkoxy, carboxyloweralkoxy, amino, N-loweralkylamino, N,N-diloweralkylamino, loweralkylsulfonylamino, carboxyloweralkylamino, carboxamidoloweralkylamino and 2-imino-3-methylthiazolidine; and the dotted line indicates either an olefinic except (+) (7 or 8) fluorodibenzo[b,f]thiepin-3-carboxylic acid-5-oxides; bond or saturation at the 10-, 11-position; and the pharmaceutically acceptable salts thereof.

4,536,508

TRIAZOLEAMINE DERIVATIVES HAVING HISTAMINE H_2-ANTAGONIST PROPERTIES

John W. Clitherow, Sawbridgeworth; Barry J. Price, Hertford; John Bradshaw; Michael Martin-Smith, both of Ware; John W. M. Mackinnon, Royston; Duncan B. Judd, Ware, and Roger Hayes, Welwyn, all of England, assignors to Glaxo Group Limited, London, England

Continuation of Ser. No. 125,848, Feb. 29, 1980, abandoned. This application Feb. 18, 1983, Ser. No. 467,896
Claims priority, application United Kingdom, Mar. 2, 1979, 7907423
Int. Cl.[3] A61K *31/41*; C07D *249/14*, *401/10*, *413/10*
U.S. Cl. 514—383 25 Claims

1. Compounds of the general formula (I)



(I)

and physiologically acceptable salts, hydrates; and tautomers thereof, in which
R_1 and R_2, which may be the same or different, each represent hydrogen, C_{1-10} alkyl, C_{3-8} cycloalkyl, C_{3-6} alkenyl, aralkyl in which the alkyl moiety contains 1 to 6 carbon atoms; trifluoro C_{1-6} alkyl, or C_{1-6} alkyl substituted by hydroxy, C_{1-6} alkoxy, amino, C_{1-6} alkylamino or di C_{1-6} alkylamino or R_1 and R_2 may together with the nitrogen atom to which they are attached form a heterocyclic ring which is pyrrolidine, piperidine optionally substituted in the 4-position by C_{1-3} alkyl or hydroxy; tetrahydropyridine, morpholine, 2,6-di C_{1-6} alkylmorpholine, hexamethyleneimine or heptamethylenimine;
Alk represents a straight or branched alkylene chain of 1 to 6 carbon atoms;
Q represents a furan or thiophene ring in which incorporation into the rest of the molecule is through bonds at the 2- and 5-positions, the furan ring optionally bearing a further substituent R_6 adjacent to the group R_1R_2N—Alk—, or Q represents a benzene ring in which incorporation into the rest of the molecule is through bonds at the 1- and 3- or 1- and 4-positions;
R_6 represents halogen or C_{1-4} alkyl which may be substituted by hydroxy or C_{1-4} alkoxy;
X represents —CH_2—, —O—, —S— or



where R_5 represents hydrogen or methyl;
n represents zero, 1 or 2;
m represents 2, 3 or 4;
R_3 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, ar C_{1-6} alkyl, hydroxy C_{2-6} alkyl, C_{1-6} alkoxy C_{1-6} alkyl or phenyl optionally substituted by one or more C_{1-3} alkyl or alkoxy groups or halogen atoms; and
R_4 represents hydrogen, C_{1-6} alkyl, C_{3-6} alkenyl, phenyl optionally substituted by one or more C_{1-3} alkyl or alkoxy groups or halogen atoms; aralkyl in which the alkyl moiety contains 1 to 6 carbon atoms; hydroxy C_{1-6} alkyl, acyloxy C_{1-6} alkyl in which the acyl portion is C_{1-6} alkanoyl, benzoyl optionally substituted by 1 or more C_{1-3} alkyl or alkoxy groups or halogen atoms, or aralkanoyl in which the alkyl moiety contains 1 to 6 carbon atoms; C_{1-6} alkoxy C_{1-6} alkyl, aryloxy C_{1-6} alkyl, ar C_{1-6} alkyloxy C_{1-6} alkyl; amino C_{1-6} alkyl, C_{1-6} alkyl-amino C_{1-6} alkyl, di C_{1-6} alkylamino C_{1-6} alkyl, hydroxy, C_{1-6} alkoxy, C_{1-6} alkythio or halogen and wherein aryl or as a group or part of a group is phenyl

optionally substituted by one or more C_{1-3} alkyl or alkoxy groups or halogen atoms.

22. A pharmaceutical composition comprising an effective amount of a compound for the treatment of conditions mediated through H_2 receptors wherein said compound is as claimed in any of claims 1, 2, 15, 16 or 17 together with at least one pharmaceutically acceptable carrier or diluent, and optionally one or more further active ingredients.

4,536,509

1,1-DIARYL-2-AZOLYLETHANES AND PREPARATIONS CONTAINING THESE COMPOUNDS

Ulrich Hertenstein, Leitershofen; Hilmar Mildenberger, Kelkheim; Burkhard Sachse, Kelkheim, and Peter Hartz, Kelkheim, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

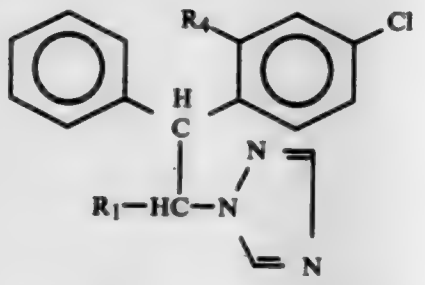
Continuation of Ser. No. 381,837, May 25, 1982, abandoned. This application Mar. 7, 1984, Ser. No. 585,621

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1981, 3121676

Int. Cl.³ A01N *43/64, 43/50;* C07D *249/08*

U.S. Cl. 514—383 **11 Claims**

1. A compound of the formula



wherein R_1 is hydrogen or methyl, and R_4 is hydrogen or a chlorine atom.

10. A method of combatting fungi damaging crop plants which comprises treating the plants or the infected area thereof with a compound of claim 1.

4,536,510

METHOD OF ANTAGONIZING THE EFFECTS OF THROMBOXANE

Martin A. Wasserman, Ambler, Pa., and Barry M. Weichman, Voorhees, N.J., assignors to Smith Kline Beckman Corporation, Philadelphia, Pa.

Filed Jul. 22, 1983, Ser. No. 516,221

Int. Cl.³ A61K *31/47*

U.S. Cl. 514—308 **8 Claims**

1. A method of antagonizing the effects of thromboxane A_2 in the circulatory system of an animal which comprises administering to an animal in need of said antagonism a nontoxic effective amount of the active ingredient, N,N'-bis[7-(3-chlorobenzeneaminosulfonyl)-1,2,3,4-tetrahydroisoquinolyl]-disulfonylimide or a pharmaceutically acceptable salt thereof.

4,536,511

MEDICAMENTS CONTAINING MUZOLIMINE, THEIR USE AND PROCESSES FOR THEIR PRODUCTION

Wolfgang Fischer, Bergisch-Gladbach, and Felix Leiblein, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 6, 1984, Ser. No. 577,447

Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306366

Int. Cl.³ A61K *31/415*

U.S. Cl. 514—404 **8 Claims**

1. A muzolimine-containing composition in the form of a compressed tablet and comprising by weight about

(a) 100 parts of muzolimine

(b) 40–500 parts of starch

(c) 20–100 parts of microcrystalline cellulose

(d) 0.2–5 parts of colloidal silica, and

(e) 0.1–3 parts of at least one of stearic acid, Ca stearate, Mg stearate and talc.

4,536,512

5-(2,3-DIHYDRO-1H-PYRROLIZIN-5-OYL)-2,3-DIHYDRO-1H-PYRROLIZINE-1-ALKANOIC OR CARBOXYLIC ACIDS AND USE THEREOF AS ANTI-INFLAMMATORY AND ANALGESIC AGENTS

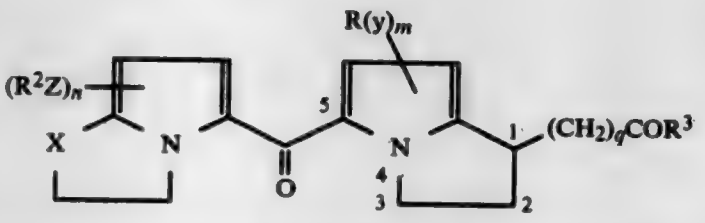
Tesfaye Biftu; Bruce E. Witzel, and Peter L. Barker, all of Westfield, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 8, 1982, Ser. No. 433,339

Int. Cl.³ A61K *31/40;* C07D *487/06*

U.S. Cl. 514—413 **7 Claims**

1. A compound of formula



(I)

or a pharmaceutically acceptable salt thereof wherein:

R is

(a) H or C_{1-6} alkyl;

(b) C_{2-4} alkenyl;

(c) halo-C_{1-6} alkyl; or

(d) phenyl-C_{1-3} alkyl;

m is 0 or 1;

R^2Z can be at any available position and R^2 is R;

q is 0 to 2;

n is 0 to 1;

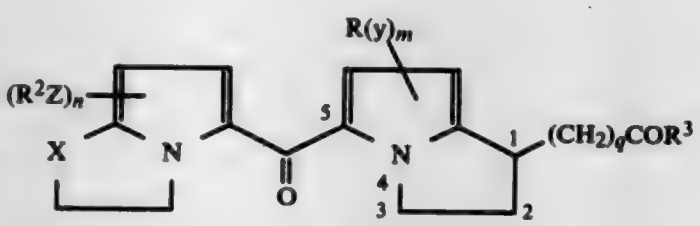
R^3 is hydroxy, C_{1-6} alkoxy or C_{1-6} (alkanoylaminoalkoxy);

X is $—CHR^4—$;

Y is —O—, —S—, Ch_2— or H with the proviso that when Y is H, R is absent; and

Z is —S—, $—CH_2—$ or halo with the proviso that when Z is halo, R^2 is absent, R^4 is hydrogen or C_{1-6} alkyl.

6. A method of treatment of inflammatory conditions, fever and pain which comprises the administration to a mammmalian species in need of such treatment an effective amount of a compound of formula



(I)

or a pharmaceutically acceptable salt thereof wherein:

R is

(a) H or C_{1-6} alkyl;

(b) C_{2-4} alkenyl;

(c) halo-C_{1-6} alkyl; or

(d) phenyl-C_{1-3} alkyl;

m is 0 or 1;

R^2Z can be at any available position and R^2 is R;

q is 0 to 2;

n is 0 to 1;

R^3 is hydroxy, C_{1-6} alkoxy or C_{1-6} (alkanoylaminoalkoxy);

X is $—CHR^4—$;

Y is —O—, —S—, CH_2— or H with the proviso that when Y is H, R is absent; and

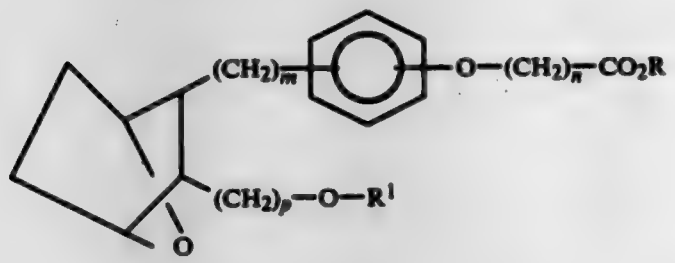
Z is —S—, $—CH_2—$ or halo with the proviso that when Z is halo, R^2 is absent, R^4 is hydrogen or C_{1-6} alkyl.

4,536,513
7-OXABICYCLOHEPTANE SUBSTITUTED PROSTAGLANDIN INTERPHENYLENE ANALOGS USEFUL IN THE TREATMENT OF THROMBOLYTIC DISEASE

Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Mar. 14, 1984, Ser. No. 589,384
Int. Cl.[3] A61K *31/34, 31/557;* C07D *307/00*
U.S. Cl. 514—469 11 Claims

1. A compound having the structural formula



and including all stereoisomers thereof;

wherein m is 1 to 4; n is 1 to 8; p is 1 to 4; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl or lower alkenyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with 1 or 2 lower alkyl groups 1 or 2 halogen groups and/or 1 or 2 lower alkoxy groups;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups;

the term lower alkenyl by itself or as part of another group contains 2 to 12 carbons;

the terms $(CH_2)_m$ and $(CH_2)_p$ include 1 to 4 carbons in the normal chain and the term $(CH_2)_n$ includes 1 to 8 carbons in the normal chain;

and the terms $(CH_2)_m$ $(CH_2)_n$ and $(CH_2)_p$ may be unsubstituted or include one or more lower alkyl substituents.

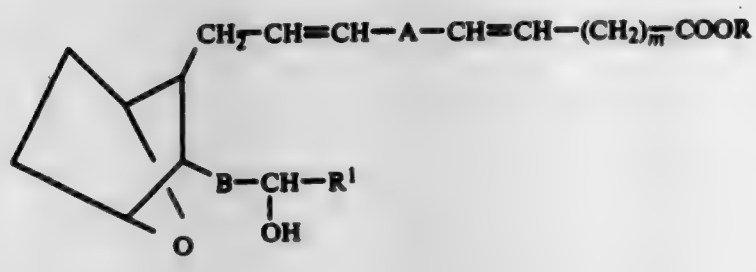
7. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,536,514
7-OXABICYCLOHEPTANE SUBSTITUTED PROSTAGLANDIN ANALOGS USEFUL IN THE TREATMENT OF THROMBOLYTIC DISEASE

Jagabandhu Das, Plainsboro, and Martin F. Haslanger, Lambertville, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Apr. 6, 1984, Ser. No. 597,324
Int. Cl.[3] A61K *31/34, 31/557;* C07D *307/00*
U.S. Cl. 514—469 12 Claims

1. A compound having the structural formula



and including all stereoisomers thereof;

wherein

A is a single bond or $—CH_2—$; m is 0 when A is $—CH_2—$ and m is 1 when A is a single bond; B is $—CH=CH—$ or $(CH_2)_2$; R is H, lower alkyl or alkali metal; and R^1 is lower alkyl, aryl, aralkyl, cycloalkyl, cycloalkylalkyl or lower alkenyl, wherein the term lower alkyl or alkyl by itself or as part of another group contains 1 to 12 carbons and is unsubstituted or substituted with halo, trifluoromethyl, alkoxy, aryl, alkyl-aryl, haloaryl, cycloalkyl or alkylcycloalkyl;

the term aryl by itself or as part of another group contains 6 to 10 carbons and is unsubstituted or substituted with 1 or 2 lower alkyl groups, 1 or 2 halogens and/or 1 or 2 lower alkoxy groups;

the term cycloalkyl by itself or as part of another group contains 3 to 12 carbons and is unsubstituted or substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups and/or 1 or 2 lower alkoxy groups; and

the term lower alkenyl by itself or as part of another group contains 2 to 12 carbons.

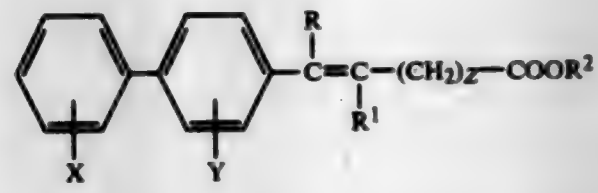
8. A method of inhibiting arachidonic acid-induced platelet aggregation and bronchoconstriction, which comprises administering to the circulatory system of a mammalian host an effective amount of a compound as defined in claim 1 or a pharmaceutically acceptable salt thereof.

4,536,515
SUBSTITUTED PHENYLALKENOIC ACIDS AND ESTERS

Patrice C. Belanger, Dollard des Ormeaux, and John W. Gillard, Pointe Claire, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Dec. 6, 1982, Ser. No. 446,908
Int. Cl.[3] C07L *69/76;* A01N *37/00*
U.S. Cl. 514—532 11 Claims

1. A pharmaceutical composition useful for treating asthma, or treating or inhibiting blood platelet aggregation in humans containing an effective amount of a compound having the formula



I

wherein

R is H or C_1–C_4 alkyl, C_1–C_4 alkoxy or hydroxy,

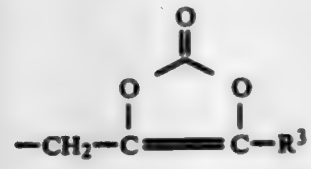
R^1 is H or C_1–C_4 alkyl, C_1–C_4 alkoxy or hydroxy,

R^2 is

(i) hydrogen,

(ii) C_1–C_6 alkyl,

(iii)

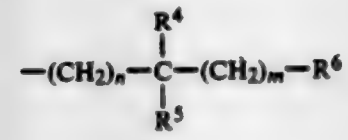


II

wherein

R^3 is C_1–C_6 alkyl or aryl or

(iv)



III

wherein
n is 0, 1, 2, or 3;
m is 0, 1, 2, or 3;
R^4 and R^5 are individually H or alkyl of 1 to 3 carbon atoms and;
R^6 is selected from the group consisting of
(A) a monocyclic or bicyclic heterocyclic radical containing from 3 to 12 nuclear carbon atoms and 1 or 2 nuclear hetero atoms selected from N and S with at least one being N, and with each ring in the said heterocyclic radical containing 5 to 6 members and
(B) the radical $X^1—R^7$ wherein X^1 is —O—, —S—, or —NH— and R^7 contains up to 21 carbon atoms and is (1) hydrocarbon radical or (2) an acyl radical of an organic acyclic or monocyclic carboxylic acid containing not more than 1 hetero atom in the ring,
Y is H, halo, hydroxy, C_1-C_4 alkoxy or azide,
X is H, halo, hydroxy, C_1-C_4 alkoxy or azide, and
Z is 3, 5, or 7,
and pharmaceutically acceptable salts thereof.

4,536,516

ALKENE DERIVATIVES

Michael J. K. Harper, Ferney-Voltaire, France; Dora N. Richardson, and Arthur L. Walpole, deceased, both of Macclesfield, England, assignors to Imperial Chemical Industries PLC, London, England

Continuation of Ser. No. 486,913, Jul. 9, 1974, abandoned, and a continuation of Ser. No. 359,297, Mar. 18, 1982, abandoned, which is a continuation of Ser. No. 918,267, Jun. 22, 1978, abandoned, which is a continuation of Ser. No. 486,774, Jul. 9, 1974, abandoned, which is a continuation-in-part of Ser. No. 262,939, Jun. 15, 1972, abandoned, which is a continuation of Ser. No. 868,667, Oct. 13, 1969, abandoned, which is a continuation of Ser. No. 632,536, Apr. 21, 1967, abandoned, which is a continuation-in-part of Ser. No. 532,891, Mar. 9, 1966, abandoned, and Ser. No. 304,652, Aug. 26, 1973, abandoned, said Ser. No. 486,913, is a continuation-in-part of Ser. No. 262,939,

This application Apr. 17, 1984, Ser. No. 600,224

Claims priority, application United Kingdom, Sep. 13, 1962, 34989/62; Jul. 20, 1965, 30755/65

Int. Cl.³ A61K *31/135, 31/205*

U.S. Cl. 514—514 **6 Claims**

1. The geometric isomer of 1-(p-β-dimethylaminoethoxyphenyl)-1,2-diphenylbut-1ene, and the pharmaceutically acceptable, acid addition salts thereof, which is identified by its citrate having a melting point of 140°–142° C.

4. In a process for the treatment of hormone dependent tumors, the improvement which comprises treating said tumors with an effective amount of a member of the group consisting of the geometric isomer of 1-(p-β-dimethylaminoethoxyphenyl)-1,2-diphenylbut-1-ene, and the pharmaceutically acceptable, acid addition salts thereof, which isomer is identified by its citrate having a melting point of 140°–142° C.

4,536,517

METHOD OF TREATING DIABETES MELLITUS USING ARYLGLYOXALS

Middleton B. Floyd, Jr., Suffern, and Jo A. Goidl, Spring Valley, both of N.Y., assignors to American Cyanamid Company, Me.

Filed Apr. 25, 1983, Ser. No. 488,237

Int. Cl.³ A61K *31/185*

U.S. Cl. 514—576 **2 Claims**

1. The method of treating diabetes mellitus in a mammal in need of such treatment which comprises administering to said mammal an effective antidiabetic amount of α-hydroxy-β-oxo-3-biphenylethanesulfonic acid, sodium salt.

4,536,518

ANTIDEPRESSANT DERIVATIVES OF CIS-4-PHENYL-1,2,3,4-TETRAHYDRO-1-NAPHTHALENAMINE

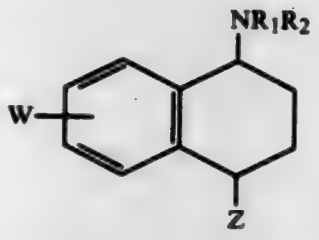
Willard M. Welch, Jr., Mystic; Charles A. Harbert, Waterford; B. Kenneth Koe, Gales Ferry, and Allen R. Kraska, East Lyme, all of Conn., assignors to Pfizer Inc., New York, N.Y.

Filed Nov. 1, 1979, Ser. No. 90,240

Int. Cl.³ A01N *33/02*; C07C *87/64*

U.S. Cl. 514—647 **22 Claims**

1. A compound selected from the group consisting of cis-isomeric bases of the formula



and the pharmaceutically acceptable acid addition salts thereof, wherein
R_1 is selected from the group consisting of hydrogen and methyl,
R_2 is methyl,
Z is selected from the group consisting of 3-chlorophenyl, 4-chlorophenyl, 4-methoxyphenyl, 3-trifluoromethyl-phenyl, 4-trifluoromethyl-phenyl, 3,4-dichlorophenyl, 3-bromophenyl, 4-bromophenyl and 3-trifluoromethyl-4-chloro-phenyl, and
W is selected from the group consisting of hydrogen, fluoro, chloro, bromo, trifluoromethyl and alkoxy of from 1 to 3 carbon atoms,
with said compound being either the (1S)-enantiomer or the racemic mixture of the (1S)-enantiomer with the corresponding (1R)-enantiomer.

19. A method for combatting mental depression in a mentally-depressed subject which comprises administering to said subject an effective amount of a compound of claim 1.

4,536,519

EMULSIFYING AGENT AND EMULSIFIED COSMETICS

Toshiyuki Suzuki, Sakura; Tohru Nakamura, Funabashi, and Hisao Tsutsumi, Miyashiro, all of Japan, assignors to Kao Soap Co., Ltd., Tokyo, Japan

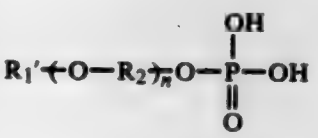
Filed Jun. 9, 1982, Ser. No. 386,521

Claims priority, application Japan, Jun. 15, 1981, 56-92007; Jul. 9, 1981, 56-107339

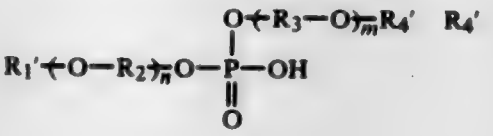
Int. Cl.³ A61K *31/66, 47/00*

U.S. Cl. 514—785 **10 Claims**

1. An emulsified cosmetic, consisting essentially of the following components (a) to (d):
(a) 0.1 to 5 wt% of a neutralized product of a phosphoric acid ester which is neutralized with 0.2 to 1.8 times on a molar basis of a basic substance selected from the group consisting of an alkali metal hydroxide, a basic amino acid and an alkanolamine, said phosphoric acid ester containing a phosphoric acid monoester represented by formula (Ia) and a phosphoric acid diester represented by formula (IIa) in a molar ratio ranging from 100:0 to 70:30:



(Ia)



(IIa)

wherein R_1' and R_4' each represent a linear alkyl group or a linear alkenyl group of 10 to 22 carbon atoms, R_2 and R_3 each represent an ethylene group or a propylene group and m and n are each a number of 0 to 30;

(b) 0.1 to 20 times by weight the amount of component (a) of a nonionic surfactant with an HLB value of up to 6, said nonionic surfactant being selected from the group consisting of polyoxyalkylene alkyl ether, polyoxyalkylene alkenyl ether, polyoxyalkylene alkylphenyl ether, polyoxyalkylene fatty acid ester, polyoxyalkylene glycerin fatty acid ester, polyoxyalkylene sorbitan fatty acid ester, polyoxyalkylene hardened castor oil, polyoxyalkylene alkyl amide, glycerin fatty acid ester, sorbitan fatty acid ester, sucrose fatty acid ester, polyglycerin fatty acid ester, ethylene or propylene glycol fatty acid ester, and fatty acid alkanolamide;

(c) 1 to 60 wt% of an oily substrate selected from the group consisting of hydrocarbons, wax, natural oil and fat of animal and vegetable origin, silicone oil, fatty acid, higher alchol, and ester reaction products of said higher alcohol and said fatty acid; and

(d) 25 to 95 wt% of water.

4,536,520

POLYPHOSPHAZENE FOAM PROCESS

Warren B. Mueller, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Jun. 11, 1984, Ser. No. 619,518

Int. Cl.³ C08J 9/10

U.S. Cl. 521—89 **23 Claims**

1. A process for making a polyphosphazene foam having consistent appearance and physical properties, said process comprising:

(A) forming a composition comprising a substantially linear high molecular weight polyphosphazene gum, a curing agent, a blowing agent and optionally a plasticizer, an inorganic filler, an accelerator and processing aids,

(B) masticating said composition to form a substantially homogenous blend while measuring the temperature of said composition undergoing mastication and continuing said masticating until said temperature rises to a pre-determined level up to about 71° C. and then stopping said masticating,

(C) forming the resultant masticated composition into a shaped composition and

(D) heating said shaped composition in an unconfined environment to a temperature which activates said blowing agent causing said shaped composition to expand into a foamed composition and completes curing of said foamed composition.

4,536,521

POROUS CROSS-LINKED ABSORBENT POLYMERIC MATERIALS

Zia Haq, Merseyside, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Sep. 7, 1983, Ser. No. 530,167

Claims priority, application United Kingdom, Sep. 7, 1982, 8225415

Int. Cl.³ C08J 9/28

U.S. Cl. 521—146 **7 Claims**

1. A sulphonated, porous, cross-linked polymeric material prepared from a process comprising polymerization of vinyl monomers in a water-in-oil high internal phase emulsion, at least about 90% by weight of the emulsion being water, the resultant polymeric structure having a pore volume in the range from 8 cc/g up to 99.5 cc/g, which polymer is then sulphonated, the sulphonated material having an absorbency for 10% aqueous chloride of at least 3 g/g of dry sulphonated material or salt thereof.

4,536,522

MANUFACTURE OF POLYOLS AND RIGID POLYURETHANE FOAM USING THIODIALKYLENE GLYCOLS

Robert A. Grigsby, Jr., Georgetown; George P. Speranza, Austin; Michael E. Brennan, Austin, and Ernest L. Yeakey, Austin, all of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Jul. 18, 1984, Ser. No. 632,167

Int. Cl.³ C08G 18/14, 18/42; C09K 3/00

U.S. Cl. 521—172 **21 Claims**

1. A process for the preparation of a polyol which comprises the steps of digesting a polyalkylene terephthalate with from about 0.8 to about 2 molecular equivalents, based on the alkylene terephthalate groups in the polyalkylene terephthalate, of a polyol having a molecular weight of about 500 or less at a temperature within the range of about 190° to about 280° C. and a pressure within the range of about 1 to about 40 atmospheres for a period of time within the range of about 0.5 to 5 hours while removing from the reaction product volatile condensation by-products including ethylene glycol and derivatives thereof until at least about 10 wt. % of the charge has been removed overhead, cooling the reaction mixture to a temperature within the range of about 150°–190° C., adding from about 10 to about 90 mole percent, based on the low molecular weight diol, of a thiodialkylene glycol and thereafter maintaining said reaction mixture within said temperature range for a period of time within the range of about 0.5 to about 5 hours to thereby provide a thiodialkylene glycol modified polyester polyol condensation product.

9. A process for the preparation of a rigid polyurethane foam which comprises reacting an excess of an aromatic polyisocyanate with a polyol component in the presence of a blowing agent, a catalyst, and a foam stabilizing agent,

said polyol component comprising a thiodialkylene glycol modified polyester polyol condensation product of a polyalkylene terephthalate with a polyol having a molecular weight of about 500 or less, said condensation product having been prepared by digesting a polyalkylene terephthalate with from about 0.8 to about 2 molecular equivalents, based on the ethylene terephthalate groups in the polyethylene terephthalate, of a polyol having a molecular weight of about 500 or less at a temperature within the range of about 190° to about 280° C. and a pressure within the range of about 1 to about 40 atmospheres for a period of time within the range of about 0.5 to 5 hours while removing from the reaction product volatile condensation by-products including ethylene glycol and derivatives thereof until at least about 10 wt. % of the charge has been removed overhead, cooling the reaction mixture to a temperature within the range of about 150°–190° C., adding from about 20 to about 50 mole percent, based on the low molecular weight diol, of a thiodialkylene glycol and thereafter maintaining said reaction mixture within said temperature range for a period of time within the range of about 0.5 to about 5 hours to thereby provide said thiodialkylene glycol modified polyester polyol condensation product.

4,536,523

DENTAL COMPOSITE FORMULATION FROM ACRYLATE MONOMER AND POLYTHIOL ACCELERATOR

Joseph M. Antonucci, Kensington, Md., assignor to The United States of America as represented by the Secretary of the Department of Health & Human Services, Washington, D.C.

Filed Dec. 23, 1983, Ser. No. 565,212

Int. Cl.³ C08L 33/08

U.S. Cl. 523—115 **10 Claims**

1. The reaction product of admixing two pastes of a two paste dental composite formulation, said formulation comprising: an initiator paste and an accelerator paste; said initiator paste including a first polymerizable acrylate monomer and an organic hydroperoxide initiator having a 10-hour half-life temperature in excess of about 100° C.; said accelerator paste including a second polymerizable acrylate monomer, which is

the same or different from said first polymerizable acrylate monomer, and an accelerating amount of polythiol accelerator, selected from the group consisting of pentaerythritol tetra-(3-mercaptopropionate); pentaerythritol tetra(thioglycolate); trimethylolethane tris-(3-mercaptopropionate); trimethylolpropane tris-(3-mercaptopropionate); dipentaerythritol hexa-(3-mercaptopropionate); dipentaerythritol hexa(thioglycolate); polyethyleneglycol- and polypropylene glycol di-(3-mercaptopropionate); oligomeric multi-functional mercaptans containing terminal and grafted thiol groups, polymeric multi-functional mercaptans containing terminal and grafted thiol groups; polyesters of 3-mercaptopropionic acid; glycol dimercaptopropionate; said formulation being polymerizable at ambient temperatures upon admixture of said initiator paste and said accelerator paste.

4,536,524

MICROENCAPSULATED EPOXY ADHESIVE SYSTEM

Ronald L. Hart, Xenia; Dale E. Work, London, both of Ohio, and Colin E. Davis, Portage, Mich., assignors to Capsulated Systems, Inc., Dayton, Ohio

Continuation-in-part of Ser. No. 256,219, Apr. 21, 1981, abandoned. This application Jun. 15, 1982, Ser. No. 388,564

Int. Cl.³ C09J *3/14, 3/16*

U.S. Cl. 523—176 **1 Claim**

1. An aqueous based epoxy adhesive system, comprising:

a coacervate of polyvinyl alcohol; a solution of methylene dianiline; and microcapsules containing an epoxy resin; said polyvinyl alcohol coacervate comprising a continuous phase in which said methylene dianiline solution and said epoxy microcapsules are dispersed.

4,536,525

AQUEOUS COATING COMPOSITION BASED ON A CATIONIC AMINO UREA RESIN, PROCESS FOR APPLYING AND BAKING THE COMPOSITION AND THE COATED SUBSTRATE THUS OBTAINED

Karl-Heinz Freese, Stuttgart, and Hans-Jürgen Münch, Sachsenheim, both of Fed. Rep. of Germany, assignors to Akzo N.V., Arnhem, Netherlands

Filed Jul. 11, 1984, Ser. No. 629,574

Claims priority, application Netherlands, Jul. 18, 1983, 8302557

Int. Cl.³ C08L *63/00, 67/00*

U.S. Cl. 523—414 **21 Claims**

1. An aqueous coating composition based on a cationic amino urea resin having an amine number of 3–250 and obtained by reacting

(A) an organic isocyanate having 1–4 isocyanate groups and 2–48 carbon atoms with

(B) a polyamino amide having an amine number of 40–500 built up from

1. at least one of a mono- and dicarboxylic acid having 2–40 carbon atoms and
2. a polyamine having 2–8 amino groups selected from primary and secondary amino groups and 2–20 carbon atoms,

and neutralization of at least part of the amino groups, characterized in that the coating composition also contains 5–1000 parts by weight (calculated on 100 parts by weight of the cationic binder as solid matter) of at least one solid compound selected from a solid epoxy group-containing compound having a number average molecular weight of at least 900 and an epoxy equivalent weight in the range of from 450 to 7500 and a solid polyester compound, the solid compound having a melting point of at least 40° C. and an average particle size in the range of from 0,5, to 35 μm .

4,536,526

METHOD OF MANUFACTURING POLYESTER FIBERS WITH GOOD ADHESION TO RUBBER

Shigemitsu Murase, Joyo, Japan, assignor to Unitika Ltd., Osaka, Japan

Filed Nov. 2, 1981, Ser. No. 317,667

Claims priority, application Japan, Nov. 26, 1980, 55-167173

Int. Cl.³ C08G *59/06*

U.S. Cl. 523—433 **16 Claims**

1. A finish composition for polyester fiber to improve adhesion to rubber comprising

(a) about 20 to 70 weight percent of a lubricant which comprises at least 80 weight percent of an ester of thiodicarboxylic acid,

(b) about 5 to 40 weight percent of an epoxy compound, and

(c) about 10 to 50 weight percent of a surfactant.

4,536,527

POLY(BUTYLENE TEREPHTHALATE) BASED MOLDING RESINS

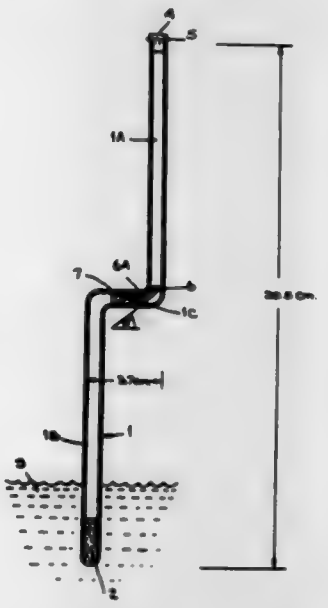
Wilfred L. Shearer, Mountainside; Stephen M. Sinker, Lebanon, and Richard A. Wolf, Plainfield, all of N.J., assignors to Celanese Corporation, New York, N.Y.

Division of Ser. No. 493,455, May 11, 1983, Pat. No. 4,469,834. This application May 7, 1984, Ser. No. 607,833

The portion of the term of this patent subsequent to Sep. 4, 2001, has been disclaimed.

Int. Cl.³ C08K *5/13, 5/24;* C08L *67/02*

U.S. Cl. 524—193 **11 Claims**



1. A flame retardant molding resin capable of being molded into an article exhibiting reduced tendency to corrode a copper surface when the molded resin and the copper surface are placed in spaced relationship in a common unventilated atmosphere at elevated temperatures, as measured by the Bell Telephone Laboratories Copper Corrosion Test at temperatures within the range of from 150° to 175° C., wherein the molding resin comprises the combination of (a) a butylene terephthalate polyester comprising a brominated copolyester as a polymeric flame retardant comprising aromatic halogen groups in a flame retardant amount, and (b) an alkylhydroxyphenylalkanoylhydrazine in an amount that is within the range of from 0.05 to 0.3% by weight, based on the weight of the molding resin, and wherein the molding resin does not contain any phenolic antioxidant that is free of nitrogen and the molding resin has a life of at least 60 hours at 175° C. as measured by the Bell Test based on 3 samples.

4,536,528

STABLE MINERAL SPIRIT DISPERSIONS OF CARBOXYL-CONTAINING POLYMERS

Thomas R. George, Jr., Wooster, and Robert Y. Lochhead, Jr., Avon Lake, both of Ohio, assignors to The B. F. Goodrich Company, Akron, Ohio

Filed Jul. 9, 1984, Ser. No. 629,040
Int. Cl.[3] C08K 5/10; C08L 33/02, 53/00
U.S. Cl. 524—313 15 Claims

1. Stable slurries of polymers of olefinically unsaturated carboxylic acids containing at least one activated carbon-to-carbon olefinic double bond and at least one carboxyl group in mineral spirits in concentrations from about 15 to 70 weight percent polymer containing stabilizing amounts of at least one block copolymer and at least one glyceryl tris-12-hydroxystearate and/or mixed saturated C_{18}–C_{36} fatty acid triglycerides, said block copolymer is selected from block copolymers of propylene oxide and ethylene oxide having molecular weight in the range of about 1,000 to 20,000 and containing about 10 to 80% by weight of polyoxyethylene units.

4,536,529

FLAME RETARDANT THERMOPLASTIC COMPOSITIONS

Robert B. Frye, Albany, N.Y., and Michio Zembayashi, Ohta, Japan, assignors to General Electric Company, Waterford, N.Y.

Filed Dec. 20, 1983, Ser. No. 563,354
Int. Cl.[3] C08K 5/09; C08L 23/06, 23/12, 25/06
U.S. Cl. 524—284 20 Claims

1. A flame retardant composition comprising:

(A) 30% to 98% by weight of thermoplastic;

(B) 1% to 40% by weight of a silicone fluid comprised of RR'SiO units, where R and R' represent, independently, substituted or unsubstituted monovalent organic radicals of 1 to 20 carbon atoms, and having a viscosity of about 600 to 300,000,000 cps at 25° C.;

(C) 1% to 20% by weight of metal soap precursors comprising:

(i) 50% to 100% by weight of a carboxylic acid or related carboxylic compound containing at least 6 carbon atoms, and

(ii) 0% to 50% of a reactive Group IIA metal compound,

(D) 1% to 20% of a silicone resin.

4,536,530

WATER TREE RESISTANT COMPOUNDS AND POLYMER COMPOSITIONS CONTAINING THE SAME

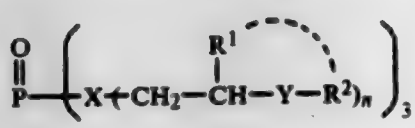
Anthony Barlow, and Melvin F. Maringer, both of Cincinnati, Ohio, assignors to National Distillers and Chemical Corporation, New York, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,974
Int. Cl.[3] C08K 5/51, 5/52
U.S. Cl. 524—109 20 Claims

1. A polymeric composition having enhanced resistance to water treeing and being devoid of anti-tracking additive and inorganic peroxide and comprising an intimate admixture of:

a polymeric component and

an effective water treeing inhibiting amount of about 0.1 to 5% by weight, based on the weight of said polymeric component, of, as the sole antitreeing agent, a compound having the general formula:



wherein X is selected from the group consisting of O, S, N and NR^3, Y is selected from the group consisting of O, S, and NR^3, R^1 and R^2 are independently selected from the group consisting of hydrogen, alkyl, cycloalkyl, alkenyl, cycloalkenyl, and phenyl, R^3 is hydrogen or alkyl of from 1 to 6 carbon atoms and wherein R^1 and R^2 may be taken with the carbon atom and Y substituent to which they are respectively bonded to form a ring, and

with a first proviso that when X is O, S or NR_3, n is 1, and when X is N, n is 2, and

with a second proviso that said polymeric component is other than a polyurethane, and

with a third proviso that said composition contains about 20 to 30% by weight of filler when said polymeric component is ethylene-propylene rubber or ethylene-propylene-diene monomer copolymer and said composition contains 0 to less than 10% by weight of filler when said polymeric component is other than said rubber or said copolymer.

4,536,531

POLYESTER RESIN COMPOSITION

Yoshinari Ogawa, and Noriyuki Akagi, both of Sagamihara, Japan, assignors to Teijin Limited, Osaka, Japan

Continuation-in-part of Ser. No. 343,456, Jan. 28, 1982, abandoned. This application May 19, 1983, Ser. No. 496,059
Claims priority, application Japan, Jan. 30, 1981, 56-11549; May 8, 1981, 56-68106; Jul. 17, 1981, 56-110804
Int. Cl.[3] C08L 67/02, 67/04
U.S. Cl. 524—135 9 Claims

1. A polyethylene terephthalate resin composition comprising:

(A) per 100 parts by weight of said polyethylene terephthalate resin, 0.1 to 30 parts by weight of a polycaprolactone having a number average molecular weight of from 200 to 2000 and 50% or more of its entire number of terminal radicals modified to be non-reactive and

wherein said polyethylene terephthalate resin has an intrinsic viscosity of from 0.35 or more determined in orthochlorophenol at a temperature of 35° C.;

(B) 0.01 to 10 parts by weight of a crystal nucleating agent for said polyethylene terephthalate resin, per 100 parts by weight of said resin; and

(C) 5 to 200 parts by weight of an inorganic filler, per 100 parts by weight of said polyethylene terephthalate resin.

4,536,532

PLASTICIZED POLYVINYL ALCOHOL COMPOSITIONS, FORMING PROCESS AND FORMED ARTICLES

Gerald W. Miller, P.O. Box 30041, Cincinnati, Ohio 45230, and H. Harald Lutzmann, 2241 Briarwood Rd., Cleveland, Ohio 44118

Continuation-in-part of Ser. No. 382,481, May 27, 1982, abandoned. This application Jan. 9, 1984, Ser. No. 568,940
Int. Cl.[3] C08K 5/52
U.S. Cl. 524—141 12 Claims

1. A process for the manufacture of a formed article of polyvinyl alcohol, said article having an oxygen permeability no greater than about 1 cc. mil/100 in.[2] day atm. at 25° C. and 80% relative humidity, consisting essentially of:

1. mixing

a. A polyvinyl alcohol homopolymer having a vinyl alcohol content in excess of 95%; or

b. a blend of (a) with a polyvinyl alcohol/C_{2-4} olefin copolymer wherein (a) is at least 25% by weight of the mixture and the olefin moiety in the copolymer is not more than about 45% by weight of the copolymer; with

c. a plasticizer selected from the group consisting of N-substituted C fatty acid amides; aryl, alkaryl, N-aryl aryl, N-alkaryl aryl and N-alkyl alkaryl sulfonamides and alkaryl sulfonamides; N-alkyl pyrrolidones; sulfonated alkyl phenols; aryl and alkaryl phosphates and phosphites; alkylene carbonates and selected mixtures thereof;

2. removing the water from the mixture so that it is essentially anhydrous and forming the dry mixture into an article;

3. heating the article to a temperature of at least about 200° C., either concurrently with or after the forming step 2; and
4. slowly cooling the resulting article.

4,536,533

PRODUCT

Augustin T. Chen; David J. Goldwasser, both of Cheshire, and Kemal Onder, North Haven, all of Conn., assignors to The Upjohn Company, Kalamazoo, Mich.

Division of Ser. No. 558,148, Dec. 5, 1983, Pat. No. 4,501,844. This application Dec. 10, 1984, Ser. No. 680,039

Int. Cl.³ C08L *77/00*; C08K *5/04*

U.S. Cl. 524—161 **14 Claims**

1. A composition comprising a blend of,

A. a linear polyamide selected from the group consisting of poly(4,4'-methylenediphenylene azelamide), poly(4,4'-methylenediphenylene sebacamide), poly(4,4'-methylenediphenylene undecanediamide), poly(4,4'-methylenediphenylene dodecanediamide), and mixtures thereof, said polyamide characterized in that it has been prepared by the reaction of 4,4'-methylenebis(phenyl isocyanate) and the corresponding dicarboxylic acid or by the reaction of 4,4'-methylenebis(aniline) and the corresponding dicarboxylic acid dihalide, said polyamide being further characterized by an inherent viscosity of from about 0.5 to about 1.5 determined as a 0.5 percent by weight solution in N-methylpyrrolidone containing about 4 percent by weight lithium chloride at 30° C.; and

B. at least one material selected from the group consisting of,
(i) sodium benzenesulfonate,
(ii) polyethylene ionomers,
(iii) methacrylated butadiene-styrene polymers, and
(iv) multi-phase composite interpolymers comprising:
(a) about 25 to 95 weight percent of a first elastomeric phase polymerized from a monomer system comprising about 90 to 99.8 percent by weight of a C_1 to C_6 alkyl acrylate, 0.1 to 5 weight percent of a crosslinking monomer, 0.1 to 5 weight percent of a graftlinking monomer, said crosslinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups all of which polymerize at substantially the same rate of reaction, and said graftlinking monomer being a polyethylenically unsaturated monomer having a plurality of addition polymerizable reactive groups, at least one of which polymerizes at a substantially different rate of polymerization from at least one other of said reactive groups; and
(b) about 75 to 5 weight percent of a final, rigid thermoplastic phase which is polymerized in the presence of said elastomeric phase and which is free of epoxy groups

said material (B) being present in an amount at least sufficient to promote the crystallization of said linear polyamide (A).

4,536,534

ALKALINE RESISTANT PRIMER AND THE USE THEREOF

Robert Singer; Richard Goetze; Karl Maier, and Maximilian Kerbl, all of Burghausen, Fed. Rep. of Germany, assignors to Wacker-Chemie GmbH, Fed. Rep. of Germany

Filed Dec. 29, 1983, Ser. No. 566,522

Claims priority, application Fed. Rep. of Germany, Jan. 27, 1983, 3302767

Int. Cl.³ B05D *3/02*

U.S. Cl. 524—262 **14 Claims**

9. A method of coating strongly alkaline mineral substrates which comprises applying to a strongly alkaline mineral substrate a primer consisting essentially in that 100 parts by weight of the primer contains, in addition to water,

from 4 to 15 parts by weight of an alkali-soluble acrylic resin comprising from 86% to 94% by weight of monomer units derived from C_1 to C_8-alkyl esters of unsaturated acids selected from the group consisting of acrylic acid, methacrylic acid and mixtures thereof, and from 6% to 14% by weight of monomer units derived from unsaturated acids selected from the group consisting of acrylic acid, methacrylic acid, itaconic acid, crotonic acid, maleic acid, fumaric acid and mixtures thereof, and having a K-value according to Fikentscher of not more than 50,

from 4 to 40 parts by weight of organic solvents that are water-soluble in the context of the present composition and are selected from the group consisting of compounds containing hydroxy groups, carbonyl groups and mixtures of hydroxy and carbonyl groups

from 0.1 to 1.5 parts by weight of alkali metal organosiliconates, and an alkalinizing agent selected from the group consisting of ammonia, organic amines and mixtures thereof in sufficient quantities that the pH of the primer is at least 8

and from 0 to 1 part by weight of at least one compatible anti-faming agent.

4,536,535

CASTABLE CERAMIC COMPOSITIONS

Hugo R. Usala, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 501,978, Jun. 7, 1983, abandoned. This application Mar. 29, 1984, Ser. No. 594,701

Int. Cl.³ C08K *3/10*

U.S. Cl. 524—403 **13 Claims**

1. A ceramic composition consisting essentially of a dispersion of:

(a) finely divided particles of ceramic solids in a solution of
(b) a mixture of compatible polymers prepared by solution polymerization of 0–100% wt. C_{1-8} alkyl methacrylate, 100–0% wt. C_{1-8} alkyl acrylate and 0–5% wt. ethylenically unsaturated carboxylic acid or amine dissolved in
(c) a nonaqueous organic solvent, the polymers being further characterized as having a number average molecular weight (M_n) of 50,000 to 100,000, a weight average molecular weight (M_w) of 150,000 to 350,000, the ratio of M_w to M_n being no greater than 5.5, the total amount of unsaturated carboxylic acid or amine in the multipolymer mixture is 0.2–2.0% wt. and the glass transition temperature of the polymer and plasticizer therein, if any, is −30° to +45° C.

4,536,536

HIGH TENACITY, HIGH MODULUS POLYETHYLENE AND POLYPROPYLENE FIBERS AND INTERMEDIATES THEREFORE

Sheldon Kavesh, Whippany, and Dusan C. Prevorsek, Morristown, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Division of Ser. No. 359,019, Mar. 19, 1982, Pat. No. 4,413,110, which is a continuation-in-part of Ser. No. 259,266, Apr. 30, 1981, abandoned. This application Oct. 3, 1983, Ser. No. 523,503

Int. Cl.³ C08K *5/02*

U.S. Cl. 524—462 **9 Claims**

1. A polyolefin gel fiber of substantially indefinite length comprising between about 4 and about 20 weight % solid polyethylene of weight average molecular weight at least about 500,000 or solid polypropylene of weight average molecular weight at least about 750,000, and between about 80 and about 96 weight % of a swelling solvent miscible with a high boiling hydrocarbon and having an atmospheric boiling point less than about 50° C.

4,536,537

RUBBERLESS HIGH IMPACT POLYPROPYLENE

G. Bruce Klingensmith; Richard O. Whitehead, both of Houston, Tex., and Thair L. Higgins, El Cerrito, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Jun. 21, 1984, Ser. No. 623,049
Int. Cl.[3] C08K 5/01
U.S. Cl. 524—481 8 Claims

1. A polymeric composition having a high level of low temperature impact strength, said composition comprising the blend of:

(a) 78 to 65 percent by weight of a propylene homopolymer;

(b) 18 to 25 percent by weight of a linear low density ethylene copolymer; and

(c) 4 to 10 percent by weight of a hydrocarbon plasticizer, said plasticizer being a hydrogenated, highly-branched, dimer of an alpha-olefin containing about 8–12 carbon atoms, and having a viscosity in the range of about 40 to 6.5 centistokes at 38° C.

4,536,538

IMPACT MODIFIED POLYCARBONATE COMPOSITION

Ping Y. Liu, Naperville, Ill., assignor to General Electric Company, Mt. Vernon, Ind.

Filed Dec. 19, 1983, Ser. No. 563,183
Int. Cl.[3] C08L 69/00
U.S. Cl. 524—508 16 Claims

1. A composition comprising

a. a major amount of an aromatic polycarbonate;

b. a minor amount of an impact modifier comprising

(i) an amorphous polyester comprising units derived from 1,4-cyclohexane dimethanol and aromatic dicarboxylic acid or ester forming derivative thereof and

(ii) an olefin-acrylate copolymeric resin, the components b(i) and b(ii) in such quantities that the said composition has the foll owing properties

(a) thick section notched Izod impact resistance or ductility at break higher than a,

(b) double gate Izod impact resistance or ductility at break of a weld line higher than a+b(i) or a+b(ii),

(c) higher resistance against basic organic solution than a+b(i) as measured by notched Izod impact resistance or ductility at break in thin section.

4,536,539

DILATANT BEHAVIOR OF INTERPOLYMER COMPLEXES IN AQUEOUS SOLUTION

Robert D. Lundberg, Bridgewater; Dennis G. Peiffer, East Brunswick, and Ilan Duvdevani, Leonia, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 560,519, Dec. 12, 1983, abandoned. This application Dec. 13, 1984, Ser. No. 681,389
Int. Cl.[3] C08L 33/00, 33/06, 41/00
U.S. Cl. 524—521 6 Claims

1. A polymer complex in water which comprises the complexation in said water of:

(a) a copolymer of a first water soluble polymer backbone and an anionic comonomer, said anionic comonomer is selected from the group consisting of styrene sulfonate, vinyl sulfonate, allyl sulfonate, acrylate and acrylamidopropyl sulfonate/2-acrylamido-2-methylpropane sulfonic acid, sodium styrene sulfonate, (meth)acrylic acid and 2-sulfoethylmethacrylate; and

(b) a copolymer of a second water soluble polymer backbone and a cationic comonomer, wherein said cationic comonomer is selected from the group consisting of N,N,N-trimethylammoniumpropylmethacrylamide, vinyl pyridine/-methacrylamidopropyltrimethylammonium chloride, dimethyldiallylammoniun chloride, diethyldiallylammonium chloride, 2-methacryloxy-2-ethyltrimethylammonium chloride, trimethylmethacryloxyethylammonium methsulfate, 2-acrylamido-2-methylpropyltrimethylammonium chloride and vinylbenzyltrimethylammonium chloride; wherein said first and said second nonionic water soluble polymer backbones are selected from the group consisting of acrylamide, vinyl pyrolidone, ethylene oxide, vinyl alcohol methacrylamide, alkyl substituted acrylamides, n-vinyllactones, methacrylates and N,N-dimethylacrylamide, wherein the molar ratio of the cationic comonomer in the first polymer to the anionic monomer in the second polymer is 20/1 to 1.1/1 or 0.9/1 to 1/20.

6. A process for increasing the viscosity of water under increasing shear rates which comprises the step of adding to said water about 0.01 to about 10 grams of a polymer complex per 100 ml of said water, said polymer complex comprising:

(a) a copolymer of a first water soluble polymer backbone and an anionic comonomer, said anionic comonomer is selected from the group consisting of styrene sulfonate, vinyl sulfonate, allyl sulfonate, acrylate and acrylamidopropyl sulfonate/2-acrylamido-2-methylpropane sulfonic acid, sodium styrene sulfonate, (meth)acrylic acid and 2-sulfoethylmethacrylate; and

(b) a copolymer of a second water soluble polymer backbone and a cationic comonomer, wherein said cationic comonomer is selected from the group consisting of N,N,N-trimethylammoniumpropylmethacrylamide, vinyl pyridine/-methacrylamidopropyltrimethylammonium chloride, dimethyldiallylammonium chloride, diethyldiallylammonium chloride, 2-methacryloxy-2-ethyltrimethylammonium chloride, trimethylmethacryloxyethylammonium methsulfate, 2-acrylamido-2-methylpropyltrimethylammonium chloride and vinylbenzyltrimethylammonium chloride; wherein said first and said second nonionic water soluble polymer backbones are selected from the group consisting of acrylamide, vinyl pyrolidone, ethylene oxide, vinyl alcohol methacrylamide, alkyl substituted acrylamides, n-vinyllactones, methacrylates and N,N-dimethylacrylamide, wherein the molar ratio of the cationic comonomer in the first polymer to the anionic monomer in the second polymer is 20/1 to 1.1/1 or 0.9/1 to 1/20.

4,536,540

SCAVENGERS FOR AMMONIA IN RTV COMPOSITIONS

John J. Dziark, Ballston Spa, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 519,621, Aug. 2, 1983, abandoned. This application Jul. 9, 1984, Ser. No. 628,121
Int. Cl.[3] C08K 3/02
U.S. Cl. 524—701 40 Claims

1. A stable, one-package, substantially anhydrous and substantially acid-free, room temperature vulcanizable organopolysiloxane composition stable under ambient conditions in the substantial absence of moisture over an extended period of time and convertible to a tack-free elastomer, comprising:

(A) an organopolysiloxane wherein the silicon atom at each chain end is terminated with at least two alkoxy radicals;

(B) an effective amount of condensation catalyst;

(C) a stabilizing amount of a silicon-nitrogen compound for scavenging hydroxy radicals, said silicon-nitrogen compound releasing ammonia as a by-product of the hydroxy-scavenging reaction; and

(D) an effective amount of a scavenger for said ammonia by-product selected from the group consisting of molecular sieves and acids and mixtues thereof.

4,536,541

HIGH IMPACT RESISTANT POLYAMIDE

Roger A. Latham, Parkersburg, W. Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Feb. 27, 1984, Ser. No. 584,277
Int. Cl.[3] C08L *51/00, 77/00*
U.S. Cl. 525—66 8 Claims

1. A thermoplastic composition having high impact resistance at low temperatures, said composition consisting essentially of an amorphous polyamide matrix resin, said polyamide having an apparent melt viscosity of 3000 poise or more, as measured at 280° C. and a shear rate of 100 sec.$^{-1}$, said amorphous polyamide being present in the composition in the amount of about 75 to 85% by weight of the composition, and copolymer particles that are dispersed in said amorphous polyamide said copolymer particles having a particle size, as determined by small angle X-ray scattering, of less than about 360 nm, said copolymer particles being selected from the class consisting of (a) copolymer having a Mooney viscosity of 40 to 60, containing 66 to 70% by weight ethylene, 24 to 28% by weight propylene, 5.9 to 6.4% by weight hexadiene, and 0.1 to 0.16% by weight norbornadiene, grafted with succinic anhydride groups in the amount of 0.25 to 2.25% by weight of the copolymer and (b) mixtures of (a) with the ungrafted copolymers of (a), such mixtures containing at least about 35% by weight of (a), said copolymer particles being present in an amount of at least 15% by weight the composition.

4,536,542

METHOD FOR ALTERING THE SURFACE OF THERMOPLASTIC POLYMERS

Richard B. Allen, Dalton, Mass., assignor to General Electric Company, Pittsfield, Mass.

Filed Nov. 18, 1983, Ser. No. 553,173
Int. Cl.[3] C08L *69/00*
U.S. Cl. 525—67 8 Claims

1. A method for flatting the surface of an extrudable, moldable or heat formable thermoplastic polymer composition selected from

(a) an aromatic polycarbonate, an aromatic polyester carbonate, an aromatic dihydric phenol sulfone carbonate, or a mixture of any of the foregoing, alone, or in combination with

(b)

(i) a polyester resin comprising units of an aliphatic diol, a cycloaliphatic diol, or a mixture of such diols, and an aromatic diacid,

(ii) a vinyl aromatic polymer, copolymer or terpolymer, or

(iii) a mixture of (i) and (ii), said method comprising

A. blending with said polymer composition before or during processing,

(c) a copolymer comprising, by weight

(i) 40–80% ethylene,

(ii) 3–30% carbon monoxide, and

(iii) 5–60% of one or more termonomers copolymerizable therewith to produce solid terpolymers, in an amount from about 0.2 to about 15 parts by weight per 100 parts by weight of the total blend; and, thereafter,

B. extruding, molding or heat forming the blend into an article having a flatted surface and high strength.

4,536,543

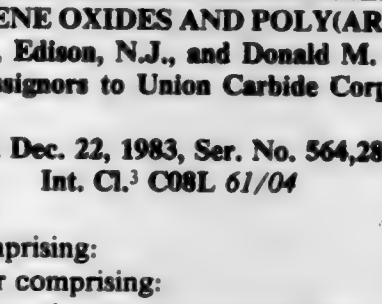
COPOLYMERS OF POLYPHENYLENE OXIDES AND POLY(ARYL ETHER)S

Markus Matzner, Edison, N.J., and Donald M. Papuga, Danbury, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

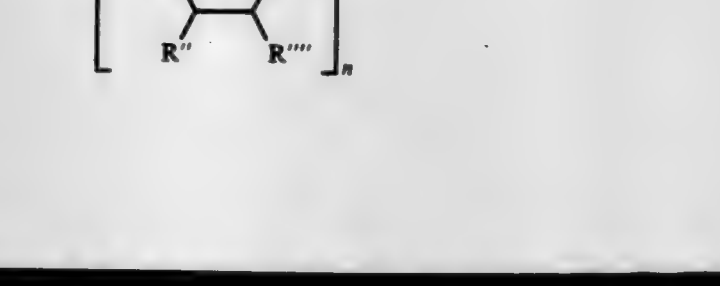
Filed Sep. 30, 1983, Ser. No. 537,849
Int. Cl.[3] C08L *61/04*
U.S. Cl. 525—68 8 Claims

1. A copolymer comprising:

(a) A polyphenylene oxide selected from the group consisting of the formula:



wherein n is at least equal to 10, R′, R″, R‴, and R⁗ are independently hydrogen, a hydrocarbon radical, a halohydrogen radical having at least 2 carbon atoms between the halogen atoms and phenol nucleus, a hydroxycarbonoxy radical, or a halohydrocarbonoxy radical having at least two carbon atoms between the halogen atoms and phenol nucleus,



wherein independently each —OZO— is a divalent quinone residue, Z is a divalent arylene radical, a and b are at least equal to 1, the sum of the a and b is at least equal to 10, and R′, R″, R‴ and R⁗ are as heretofore defined, and mixtures thereof and

(b) a thermoplastic poly(aryl ether) having recurring units of the formula:

O—E—O—E′

wherein E is the residuum of a dihydric phenol and E′ is the residuum of a dihydric benzenoid compound having an inert electron withdrawing group in at least one of the positions ortho and para to the valence bonds, both of the residuum being valently bonded to the ether oxygens through aromatic carbon atoms.

4,536,544

BLENDS CONTAINING COPOLYMERS OF POLYPHENYLENE OXIDES AND POLY(ARYL ETHER)S

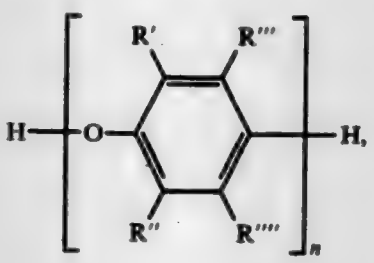
Markus Matzner, Edison, N.J., and Donald M. Papuga, Danbury, Conn., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Dec. 22, 1983, Ser. No. 564,281
Int. Cl.[3] C08L *61/04*
U.S. Cl. 525—68 21 Claims

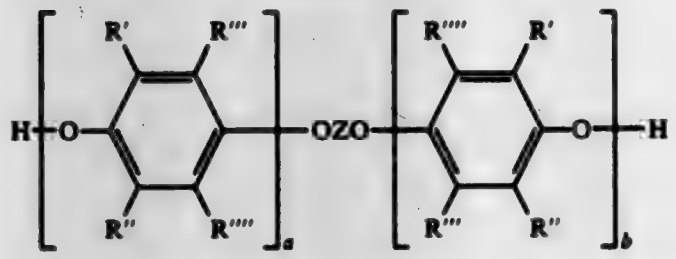
1. A blend comprising:

(I) a copolymer comprising:

(a) A polyphenylene oxide selected from the following formulae:



-continued



or combinations thereof, wherein n is at least equal to 10, R', R'', R''', and R'''' are independently hydrogen, a hydrocarbon radical, a halohydrocarbon radical having at least 2 carbon atoms between the halogen atoms and phenol nucleus, a hydrocarbonoxy radical, or a halohydrocarbonoxy radical having at least two carbon atoms between the halogen atoms and phenol nucleus, each —OZO— is independently a divalent aromatic residue derived from a quinone residue, Z is a divalent arylene radical, a and b are at least equal to 1, the sum of a plus b is at least equal to 10,

(b) a thermoplastic poly(aryl ether) polymer having recurring units of the formula:

O—E—O—E'

wherein E is the residuum of a dihydric phenol, and E' is the residuum of a benzenoid compound having an inert election withdrawing group in at least one of the positions ortho and para to the valence bonds, both of said residuum are valently bonded to the ether oxygens through aromatic carbon atoms;

(II) a styrene based polymer and copolymer; and

(III) a poly(aryl ether) selected from the group consisting of a poly(aryl ether sulfone), a poly(aryl ether ketone), a polyphenylene oxide, and combinations thereof.

4,536,545

GRAFT POLYMERS OF POLYMERIZABLE MONOMERS AND OLEFIN POLYMERS

Joel L. Olener, Yardley, Pa., and Leigh E. Walker, Lewiston, N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,225

Int. Cl.³ C08L *51/04, 51/06*

U.S. Cl. 525—75 **7 Claims**

1. A process for concurrently producing a polyolefin graft copolymer and a homopolymer or copolymer, which comprises:

(1) mixing a monomer comprising an ethylenically unsaturated polymerizable monomer in the liquid state, with a solid polymer of an aliphatic hydrocarbon monolefin of 2 to about 8 carbon atoms, wherein the olefin polymer is substantially insoluble in the monomer, but absorbs a substantial amount of the monomer, and wherein the proportion of olefin polymer is in the range of about 0.1 to about 5 percent by weight based on the weight of ethylenically unsaturated monomer, and an initiator, and

(2) heating the resulting mixture at an elevated temperature to polymerize the components to produce a mixture of solid discrete particles of the polyolefin graft copolymer and finely divided powder of the homopolymer or copolymer.

4,536,546

(METH)ACRYLATE-BASED COMPOSITIONS

Paul C. Briggs, Danvers, Mass., assignor to Illinois Tool Works Inc., Chicago, Ill.

Filed Sep. 22, 1983, Ser. No. 534,918

Int. Cl.³ C08L *55/02, 51/04, 23/34*

U.S. Cl. 525—83 **24 Claims**

1. An adhesive composition consisting of: an ester monomer wherein said monomer is an acrylate ester monomer or a methacrylate ester monomer; a catalyst; and respective effective amounts of a mixture of (1) chlorinated polyethylene polymer resin and sulfonyl chloride or (2) chlorosulfonated polyethylene polymer resin and (3) a graft co-polymer resin for providing said composition with enhanced overall adhesive physical properties, said graft co-polymer resin having a backbone polymer with a glass transition temperature substantially below ambient temeprature and a grafted polymer resin having a glass transition temperature substantially above ambient temperature, with ambient being defined as the environment range within which the adhesive is being used.

4,536,547

POLYMER COMPLEXES OF A NEUTRALIZED IONIC POLYMER AND A POLYCAPROLACTONE POLYMER

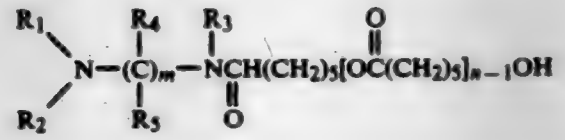
Robert D. Lundberg, Bridgewater, and Robert R. Phillips, Spring Lake Heights, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 28, 1983, Ser. No. 566,347

Int. Cl.³ C08L *51/04, 51/08, 51/00*

U.S. Cl. 525—186 **17 Claims**

1. A polymer complex of a metal neutralized sulfonated polymer and a polycaprolactone polymer said metal neutralized sulfonated polymer having about 3 to about 200 meq of metal neutralized sulfonate groups per 100 grams of said metal neutralized sulfonated polymer, said sulfonate groups being neutralized with a metal counterion selected from the Group consisting of Groups IA, IB, IIA, and IIB of the Periodic Table of Elements, said metal neutralized sulfonate groups being complexed with a polycaprolactone polymer having the formula:



wherein R_1 or R_2 is an alkyl, cycloalkyl, heterocyclic or aryl group, R_3, R_4 and R_5 are a hydrogen or alkyl, cycloalkyl, or aryl groups, m equals 1 to 20 and n equals about 1 to about 500.

4,536,548

HIGHLY TRANSPARENT, IMPACT-RESISTANT MODIFIED POLYVINYL CHLORIDE MOLDING COMPOSITIONS

Bernhard Stützel, Marl, Fed. Rep. of Germany, assignor to Chemische Werke Huels, A.G., Marl, Fed. Rep. of Germany

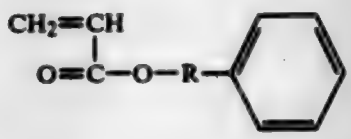
Filed May 5, 1983, Ser. No. 491,698

Claims priority, application Fed. Rep. of Germany, May 6, 1982, 3216989

Int. Cl.³ C08L *27/06, 33/08;* C08F *265/04*

U.S. Cl. 525—227 **16 Claims**

1. A modified polyvinyl chloride molding composition, comprising (1) a major proportion of polyvinyl chloride or a copolymer comprising at least 70% by weight of vinyl chloride units; and (2) an amount effective to impart impact resistance and high transparency of (a) at least one homopolymer of an acrylate monomer having the formula



wherein R is a straight-chain or branched alkylene residue of 3–8 carbon atoms, optionally interrupted by 1–2 ether oxygen atoms, wherein the straight-chain portion of said alkylene residue contains at least 3 carbon atoms; or (b) a copylymer of said acrylate monomer and up to 30% by weight of at least one acrylate ester of a C_{4-12} aliphatic alcohol.

4,536,549

HEAT-STERILIZABLE POLYOLEFIN COMPOSITIONS AND ARTICLES MANUFACTURED THEREFROM

Kiyoshi Hattori, Franklin Lakes, N.J., and John H. Myers, Swarthmore, Pa., assignors to El Paso Polyolefins Company, Odessa, Tex.

Continuation-in-part of Ser. No. 469,882, Mar. 3, 1982, abandoned, which is a continuation-in-part of Ser. No. 450,948, Dec. 20, 1982, abandoned. This application Aug. 18, 1983, Ser. No. 524,114

Int. Cl.[3] C08L *23/16, 23/08, 23/06, 23/18*

U.S. Cl. 525—240 9 Claims

1. A resin composition for use in the manufacture of sterilizable, heat sealable, collapsible film bags, which resin composition consists essentially of a blend of:

(a) from about 10 to about 60 wt. % of a random copolymer of from about 1 to about 6 wt. % ethylene and of from about 94 to about 99 wt. % propylene;

(b) from about 40 to about 90 wt. % of a linear low density polyethylene produced by copolymerization of ethylene with at least one C_4–C_{18} alpha-olefin comonomer and having a density between about 0.915 and about 0.940 gm/cc.

4,536,550

POLYETHYLENE COMPOSITION

Kisoo Moriguchi, and Tadashi Ikegami, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Filed Apr. 12, 1984, Ser. No. 599,401

Claims priority, application Japan, Apr. 21, 1983, 58-69195; Apr. 21, 1983, 58-69196; Aug. 9, 1983, 58-144385; Aug. 9, 1983, 58-144386

Int. Cl.[3] C08L *23/06*

U.S. Cl. 525—240 8 Claims

1. A polyethylene composition comprising three types of polyethylene (A), (B) and (C) selected from the group consisting of homopolymers of ehtylene and copolymers of ethylene and an α-olefin, wherein

(i) the polyethylene (A) has a molecular weight of from 5,000 to 90,000, the polyethylene (C) having a molecular weight of from 100,000 to 1,500,000 and the ratio of the molecular weight of the polyethylene (C)/ the molecular weight of polyethylene (A) being between 4 and 200, and the polyethylene (A) and the polyethylene (C) are produced by a polymerization using a magnesium-containing Ziegler type catalyst,

(ii) the polyethylene (B) has a molecular weight of from 50,000 to 500,000 produced by a polymerization using a chromium compound supported type catalyst capable of producing a homopolymer of ethylene in a single stage polymerization having a flow ratio of from 40 to 150 and a die swell of from 40 to 100 g/20 cm measured at the condition in which the said homopolymer exhibits a melt index of 1 g/10 min.,

(iii) the ratio of the polyethylene (A) and the polyethylene (C) by weight is from 70 to 30 to 30 to 70, and the amount of the polyethylene (B) in the composition ranges from 10% by weight to 75% by weight, and

(iv) the melt index of the composition is not less than 0.001 g/10 min., and not more than 10 g/100 min.

4,536,551

ESTER-CONTAINING HALOPOLYALKYLENES

Michael I. Naiman, St. Louis, and John A. Schield, Chesterfield, both of Mo., assignors to Petrolite Corporation, St. Louis, Mo.

Continuation-in-part of Ser. No. 432,494, Oct. 4, 1982, , which is a continuation-in-part of Ser. No. 356,994, Mar. 11, 1982, Pat. No. 4,471,098. This application Jul. 2, 1984, Ser. No. 626,829

Int. Cl.[3] C08F *8/22*

U.S. Cl. 525—334.1 13 Claims

1. An ester-containing halogenated polyalkylene characterized by internal olefinic unsaturation, by being essentially free of crosslinking, by having a branch index of from about 2 to about 20 and by having a halogen content of from about 0.001 percent to less than about one percent by weight based on polyalkylene and, conversely, having an ester content of greater than about 99 percent.

4,536,552

POLYAMIDOAMINE CONTAINING PENDANT AMMONIUM MOIETY HAVING CROSSLINKING FUNCTIONALITY

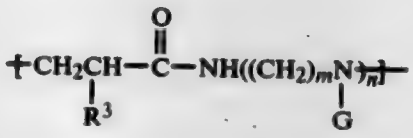
George R. Killat, and Larry R. Wilson, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 336,538, Jan. 4, 1982, Pat. No. 4,416,729. This application Sep. 29, 1983, Ser. No. 537,192

Int. Cl.[3] C08G *69/46*

U.S. Cl. 525—451 7 Claims

1. A water soluble polyamidoamine containing a repeating unit represented by the formula:



wherein G is a pendant ammonium moiety having a cross-linking functionality, each R^3 is independently hydrogen or lower alkyl, each m is a whole number from 2 to 6, and n is a whole number from 1 to 3.

4,536,553

MODIFIED SILICON ELASTOMERS HAVING IMPROVED FLEX LIFE AND METHOD THEREFOR

Rosalyn J. Rufer, Greenbush, and Walter H. Filbert, Clifton Park, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Filed Sep. 6, 1983, Ser. No. 529,422

Int. Cl.[3] C08L *83/06, 83/10*

U.S. Cl. 525—106 24 Claims

1. A method of improving the flex life of silicone elastomers having olefinic unsaturation, comprising:

I. mixing

(a) from about 2% to about 10% by weight vinylacetate ethylene copolymer based on the weight of (b), and

(b) a silicone elastomer having olefinic unsaturation in the presence of

(c) a free radical catalyst;

II. heating the mixture of step I at an elevated temperature to cure or crosslink the mixture and

III. cooling the mixture.

21. A silicone elastomer having improved flex life comprising a silicone elastomer having olefinic unsaturation and about 2.0% to about 10.0% by weight vinyl acetate ethylene copolymer crosslinked in the presence of a free radical catalyst.

4,536,554

HYDROPHILIC POLYMERS AND CONTACT LENSES MADE THEREFROM

Drahoslav Lim; Chidambar L. Kulkarni, and Dennis A. Repella, all of San Diego, Calif., assignors to Barnes-Hind, Inc., Sunnyvale, Calif.

Filed Feb. 22, 1984, Ser. No. 582,362

Int. Cl.[3] C08F *226/10;* G03B *21/46*

U.S. Cl. 526—264 6 Claims

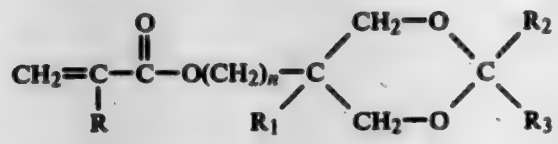
1. A contact lens comprised of an interpenetrating network polymer comprising

(a) hydrophilic vinyl pyrrolidone, 50–80% by weight;

(b) a first crosslinking agent having an affinity for hydrophilic vinyl pyrrolidone, 0.1–1.0% by weight; said first crosslinking agent being 3,3'-ethylidine-bis (N-vinyl-2-pyrrolidone), diallyl itaconate, diallyl maleate, diallyl fumarate, dimethallyl fumarate, dimethallyl maleate, dial-

lyl diglycollate, diethylene glycol bis (allyl carbonate), diallyl oxalate, diallyl adipate, diallyl succinate, diallyl azelate, divinyl benzene, divinyl adipate, or divinylethers;

(c) (5-alkylene-m-dioxanyl)acrylic ester, 10–45% by weight, having the formula



wherein

R and R_1 are independently H or C_1–C_4 alkyl,

R_2 and R_3 are independently H, C_1–C_4 alkyl, or phenyl, and

n is an integer from 1–4;

(d) hydroxyalkyl acrylic ester, 0–20% by weight;

(e) a second crosslinking agent having an affinity for acrylic esters of (c) and (d), 0.1–2% by weight, said agent being neopentyl glycol dimethacrylate, ethylene glycol dimethacrylate, polyethylene glycol dimethacrylate, 1,6-hexane diol dimethacrylate, glycerol trimethacrylate, pentaerythritol trimethacrylate, pentaerythritol tetramethacrylate, trimethylol propane trimethyacrylate, allylmethacrylate, or corresponding acrylates.

4,536,555

PREPARATION OF AROMATIC POLYMERS FROM CYCLOHEXA-3,5-DIENE POLYMERS

Denis G. H. Ballard, Littleton; Andrew Courtis, Hightown, and Ian M. Shirley, Barnton, all of England, assignors to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 433,097, Oct. 6, 1982, Pat. No. 4,476,296. This application Aug. 8, 1984, Ser. No. 638,696

Claims priority, application United Kingdom, Oct. 6, 1981, 8130114; Oct. 6, 1981, 8130115; Oct. 6, 1981, 8130116

Int. Cl.³ C08F *32/06*

U.S. Cl. 526—295 **4 Claims**

1. A process for the preparation of polymeric compositions comprising a cyclohexadiene homo- or copolymer which process comprises treating a polymerisable composition which comprises a 1,2-disubstituted-cyclohexa-3,5-diene or homologue or analogue thereof under polymerisation conditions for the polymerisable composition, which 1,2-substituents, which may be the same or different and are selected from the group consisting of acyloxy, carbonate, alkoxy, amide, halide, thioester, urethane and xanthate.

4,536,556

PROCESS FOR THE PREPARATION OF A COPOLYMER COMPRISING ALPHA-METHYLSTYRENE AND ACRYLONITRILE

Jan Tijssen, Spaubeek, and Jozef L. M. van der Loos, Sittard, both of Netherlands, assignors to Stamicarbon B.V., Geleen, Netherlands

Continuation-in-part of Ser. No. 427,276, Sep. 29, 1982, abandoned, which is a continuation of Ser. No. 276,639, Jun. 23, 1981, abandoned. This application Nov. 4, 1983, Ser. No. 548,769

Claims priority, application Netherlands, Jul. 1, 1980, 8003798; May 16, 1981, 8102415

Int. Cl.³ C08F *212/10, 212/12*

U.S. Cl. 526—342 **3 Claims**

1. In a process for the copolymerization of alpha-methylstyrene and acrylonitrile wherein said monomers are co-polymerized

(a) in aqueous emulsion, and

(b) in the presence of a free-radical-supplying compound and a chain-transfer agent, and

(c) wherein the polymerization reaction is insufficiently cooled to remove all of the released reaction heat,

the improvement in combination therewith consisting essentially in conducting said polymerization at a temperature of the aqueous emulsion maintained at a level of at most 110° C. and while further maintaining the mean rate of temperature increase per hour, v, at a value in the range of between 5° and 60° C. per hour, wherein v is determined by the formula:

$$v = \frac{T_m - T_o}{t_m - t_o}$$

in which:

T_m = maximum temperature of the aqueous emulsion (°C.),

T_o = temperature of the aqueous emulsion at the start of the polymerization (°C.)

t_m = time in hours at which T_m is reached, and

t_o = time in hours at which the polymerization is started,

whereby the rate of monomer conversion is maximized, and whereby a heat resistant copolymer is obtained.

4,536,557

POLYMER DISPERSIONS AND THEIR USES

Duane A. Heyman, Monroe, Mich., assignor to BASF Wyandotte Corporation, Wyandotte, Mich.

Division of Ser. No. 600,885, Apr. 16, 1984, Pat. No. 4,503,193. This application Dec. 14, 1984, Ser. No. 681,643

Int. Cl.³ C08G *18/08, 18/16, 18/18*

U.S. Cl. 528—52 **6 Claims**

1. A process for preparing a polyurethane elastomer comprising reacting a mixture of (a) a polymer dispersion prepared by the in situ polymerization of about 10 percent to about 70 percent by weight based upon the total weight of the dispersion of an ethylenically unsaturated monomer or mixture of monomers in a chain extender of a molecular weight of 62 to less than 400 selected from the group consisting of aliphatic and/or araliphatic diols having 2 to 14 carbon atoms in the presence of a free radical polymerization initiator and a polyamide stabilizer having a pendent amide group said polyamide having an average molecular weight of from about 5,000 to about 1,000,000, wherein the weight ratio of the monomer to the polyamide is from about 2:1 to about 100:1; and (b) a compound containing two or more active hydrogen atoms as determined by the Zerewitinoff method with a molecular weight of 1000 to 8000 with an organic polyisocyanate.

4,536,558

CHAIN EXTENDED EPOXY-ESTER POLYMERIC COMPOSITIONS FOR CATIONIC ELECTRODEPOSITION

Panagiotis I. Kordomenos, Mt. Clemens, Mich., assignor to Ford Motor Company, Dearborn, Mich.

PCT No. PCT/US83/02034, § 371 Date Dec. 27, 1983, § 102(e) Date Dec. 27, 1983

PCT Filed Dec. 27, 1983, Ser. No. 598,553

Int. Cl.³ C08G *59/24;* C25D *13/06*

U.S. Cl. 528—100 **14 Claims**

1. A water dispersible, cathodically electrodepositable resin characterized in that said resin comprises the reaction product of:

(A) epoxide functional esters formed by chain extending

(a) polyepoxide having, on average, at least two epoxide group per molecule and a molecular weight of at least 350; with

(b) polycarboxylic acid bearing at least two carboxyl groups per molecule, wherein said polyepoxide and said polycarboxylic acid are reacted in amounts which provide between about 0.1 and about 0.8 acid groups per epoxide group; and

(B) secondary amines, wherein said ester and said amines are reacted in amounts sufficient to react essentially all of said epoxide groups of said ester with said amines,

said reaction product being dispersible in water with the aid of water soluble acid to provide cationic groups in said resin.

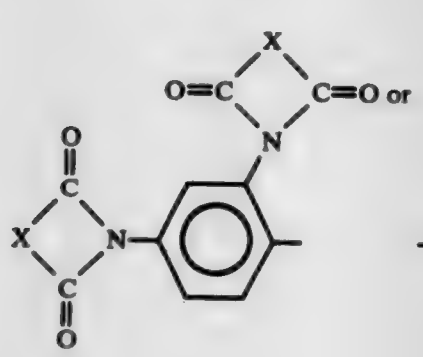
4,536,559

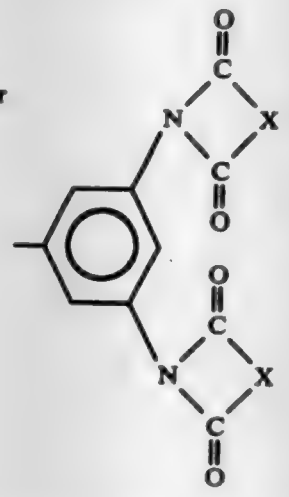
THERMALLY STABLE POLYIMIDE POLYSULFONE COMPOSITIONS FOR COMPOSITE STRUCTURES

Hyman R. Lubowitz, Rolling Hills Estates, Calif., and Clyde H. Sheppard, Bellevue, Wash., assignors to The Boeing Company, Seattle, Wash.

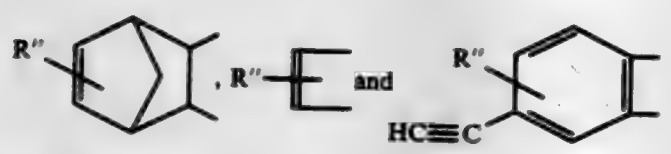
Filed Jun. 17, 1983, Ser. No. 505,348
Int. Cl.³ C08G 73/10, 73/12
U.S. Cl. 528—170 11 Claims

1. A cross-linkable polymer formed by reacting:
(1) 2 moles of A—OH
(2) n+1 moles of Z—R—Z and
(3) n moles of OH—R'—OH,
wherein A is selected from the group consisting of





or mixtures thereof wherein X is selected from the group consisting of



wherein R'' is hydrogen or a lower alkyl, wherein Z is selected from the group consisting of fluorine, chlorine, and bromine, wherein R is an aromatic radical, wherein R' is an aromatic radical, and wherein n is selected so that said polymer has a molecular weight between about 1,000 and about 40,000.

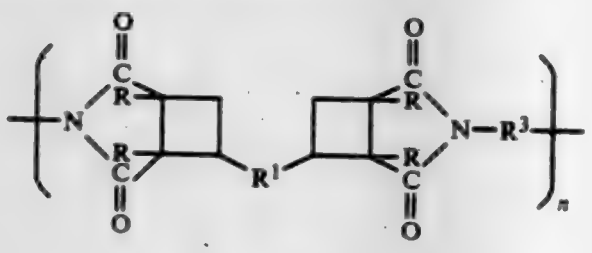
4,536,560

POLYIMIDES PREPARED FROM CYCLIC DIANHYDRIDES

Mark L. Winzenburg, Naperville; Ellis K. Fields, River Forest, and Benjamin L. Shneider, Glen Ellyn, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

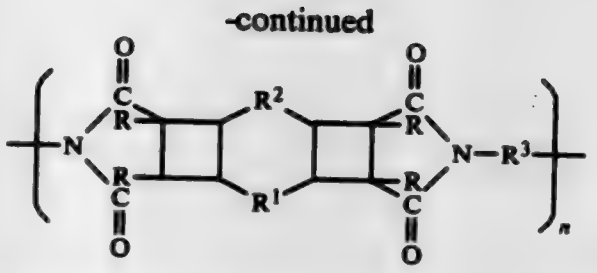
Division of Ser. No. 524,937, Aug. 22, 1983, Pat. No. 4,490,545.
This application May 29, 1984, Ser. No. 645,333
Int. Cl.³ C08G 73/10
U.S. Cl. 528—188 20 Claims

1. As a composition of matter, a polyimide of the structure selected from the group consisting of

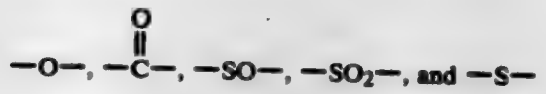


and

-continued



wherein R is selected from the group consisting of alkyl groups of 1 to 10 carbon atoms and alkylene groups of from 2 to 20 carbon atoms linked together to form a ring, R^1 and R^2 are individually selected from the group consisting of alkylene groups of 1 to 10 carbon atoms and aralkylene groups of from 8 to 20 carbon atoms, R^3 is selected from the group consisting of alkylene groups of from 2 to 10 carbon atoms, arylene and aralkylene groups of 8 to 20 carbon atoms with a provision that hydrocarbon moieties of said groups of R, R^1, R^2 and R^3 can contain stable linkages consisting of



radicals, and n is a whole number from 1 to 1000.

4,536,561

THERMOTROPIC, WHOLLY AROMATIC POLYESTERS

Manfred Schmidt, and Hans-Rudolf Dicke, both of Krefeld, Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,972
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1983, 3325787
Int. Cl.³ C08G 63/60
U.S. Cl. 528—191 3 Claims

1. A thermotropic, wholly aromatic polyester comprising condensed residues of monomeric units (a) through (e) wherein:
(a) is p-hydroxyl-benzoic acid or p-hydroxyl-benzoic acid substituted in the nucleus by one or two C_1–C_4 alkyl, C_1–C_4 alkoxy C_6–C_{10} aryl or C_7–C_{12} alkylaryl groups,
(b) is 3-chloro-4-hydroxy-benzoic acid,
(c) is isophthalic acid,
(d) is hydroquinone and
(e) is selected from 3,4'-dihydroxy-diphenyl, 4,4'-dihydroxydiphenyl, 3,4'-dihydroxy-diphenyl ether, 4,4'-dihydroxydiphenyl sulphide, and mixtures thereof, wherein said polyester contains the condensed residues of
(a) at a concentration of from 25 to 65 mol %,
(b) at a concentration of from 5 to 40 mol %,
(c) at a concentration of from 30 to 50 mol %, and
(d) at a concentration of from 1 to 10 mol %,
each based on the sum of the condensed residues (a), (b) and (c), with the proviso that the sum of concentrations of (a) and (b) amounts to a minimum of 50 mol % and a maximum of 70 mol % and that the molar ratio of the condensed residues c/(d+e) is from 0.95 to 1.05.

4,536,562

LIQUID CRYSTALLINE POLYESTERS

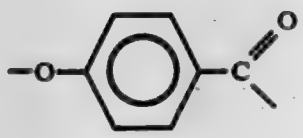
Oliver D. Deex, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Jan. 4, 1985, Ser. No. 688,832
Int. Cl.³ C08G 63/60
U.S. Cl. 528—193 13 Claims

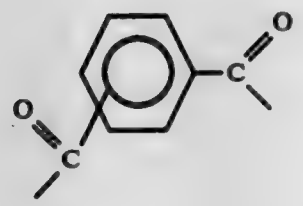
1. A copolyester capable of forming a thermotropic melt phase and having an inherent viscosity of at least about 0.3 measured at 30° C. with a solution of 0.5 gm of copolyester per 100 m/ of a solvent composed of 60 weight % phenol and 40%

tetrachloroethane, consisting essentially of the following divalent radicals:

(A)



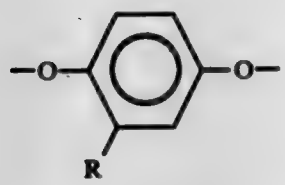
(B)



(C)



(D)



wherein the placements of the carbonyl groups of the B radicals are meta or para or a mixture of meta and para; wherein R is selected from the group consisting of alkyls of 1 to 6 carbon atoms, phenyl and phenyl substituted with an alkyl of 1 to 6 carbon atoms, chloro, bromo, cyano, formyl, acetyl, and trifluoromethyl; wherein the amount of radical A is in the range from about 10 mole % to about 60 mole % of the copolyester and wherein the amount of radical D is selected in the range from about 1 mole % up to about 50 mole % of the total amount of radicals C and D to provide a ratio of storage moduli of said copolyester determined at $T_g-50°$ C. and $T_g+50°$ C. less than the ratio of the storage moduli determined at $T_g-50°$ C. and $T_g+50°$ C. of a copolyester of identical composition except that the D radicals are replaced with C radicals.

4,536,563

PROCESS FOR MANUFACTURING POLYETHERESTERAMIDE

Kiyoshi Okitsu, and Hiroyouki Go, both of Otake, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai, Japan

Filed Nov. 5, 1984, Ser. No. 668,240

Claims priority, application Japan, Nov. 18, 1983, 58-217610; Feb. 22, 1984, 59-32228

Int. Cl.³ C08G *63/04, 63/34*

U.S. Cl. 528—279 **3 Claims**

1. A process for manufacturing a polyetheresteramide, which comprises the step of reacting (A) a polyamide-forming compound selected from aminocarboxylic acids and lactams each having at least 10 carbon atoms, (B) a dicarboxylic acid having from 4 to 20 carbon atoms and (D) a polyoxyalkylene glycol having an average molecular weight of from 300 to 6,000, in the molten state, in the presence of 0.0001 to 0.00999 percent by weight, based on the total weight of the above mentioned reactants, of a tetraalkyl titanate having a straight or branched alkyl having 1 to 24 carbon atoms, at a pressure of at the highest 5 mm Hg at a temperature of 200° to 300° C.

4,536,564

POLYAMIDE FROM BIS-CARBOXY CONTAINING 3,5,3',5'-TETRAOXO-1,2-DIPIPERAZINE COMPOUND AND DIAMINE

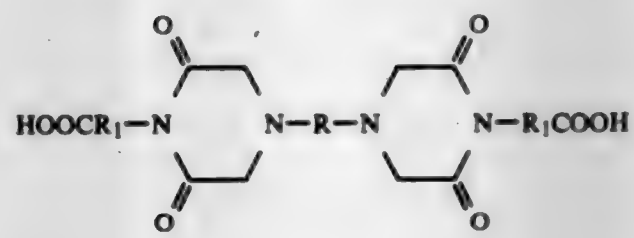
Edmund P. Woo, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Dec. 9, 1983, Ser. No. 560,034

Int. Cl.³ C08G *69/26*

U.S. Cl. 528—341 **8 Claims**

1. A compound corresponding to the formula



(I)

wherein

R is a C_{1-20} alkylene group, phenylene group, arylalkylene group, cycloalkylene group, diphenylene group, or $—R_2—X—R_2—$;

X is O, S or SO_2;

R_2 is a C_{1-10} alkylene group, phenylene group, arylalkylene group or a cycloalkylene group; and

R_1 is a C_{1-20} alkylene group, phenylene group, arylalkylene group or a cycloalkylene group.

4,536,565

FIRE-RESISTANT PHOSPHORUS CONTAINING POLYIMIDES AND COPOLYIMIDES

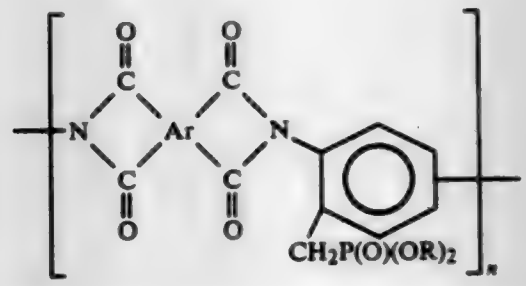
John A. Mikroyannidis, Patras, Greece, assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 522,629, Aug. 12, 1983,. This application Aug. 16, 1984, Ser. No. 641,143

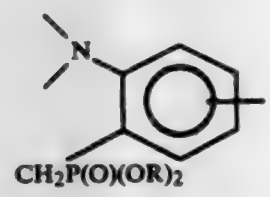
Int. Cl.³ C08G *73/10*

U.S. Cl. 528—352 **35 Claims**

1. A polymer having the formula:



wherein Ar is a tetravalent aromatic group containing from 6 to 20 carbon atoms selected from among phenyls, naphthalenes, phenanthrenes, benzophenones and benzosulfones, R is an alkyl, haloalkyl or aryl group, n is a positive integer, and the linkage of the group:



is in a 4-position or a 6-position relative to the (phosphonyl)-methyl group.

4,536,566

PROCESS FOR PREPARING SUBSTANTIALLY LINEAR POLYAMIDES FROM ACRYLAMIDE AND AQUEOUS AMMONIA

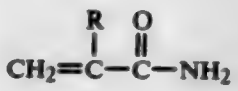
Gerald P. Coffey, Lyndhurst, Ohio, assignor to The Standard Oil Company, Cleveland, Ohio

Filed May 4, 1981, Ser. No. 260,502

Int. Cl.³ C08G *69/00*

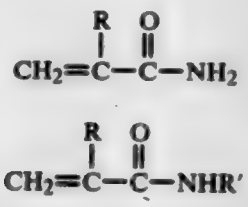
U.S. Cl. 528—363 **9 Claims**

1. A process for preparing a substantially linear polyamide, the process comprising contacting a first monomer of the formula



(I)

with a second monomer selected from the group consisting of:



(I)

where

R is a hydrogen or methyl radical, and

R′ is a C_1–C_{12} alkyl radical,

in a molar ratio of about 1:1 to about 9:1 in the presence of at least a stoichiometric amount, based on the combined moles of the monomers, of aqueous ammonia at a temperature of at least about 190° C. and autogenous pressure.

4,536,567

REMOVAL OF THE CATALYST FROM POLYPHENYLENE ETHERS

Juergen Hambrecht, Heidelberg; Rudi W. Reffert, Beindersheim; Peter Minges, and Johann Swoboda, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

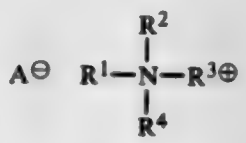
Filed Jul. 18, 1984, Ser. No. 631,948

Claims priority, application Fed. Rep. of Germany, Jul. 19, 1983, 3325894

Int. Cl.³ C08G *65/44*

U.S. Cl. 528—486 **5 Claims**

1. A process for the preparation of a high molecular weight polyphenylene ether from a monohydric phenol, which is alkyl-substituted at the two ortho-positions but not at the para-position and may or may not be alkyl-substituted at the meta-position, by an oxidative coupling reaction with oxygen at from 10° to 50° C. in the presence of a catalyst complex obtained from a copper salt and an organic amine, in the presence of from 1 to 20 parts by weight of a solvent per part by weight of the monomeric phenol, and in the presence or absence of an activator, wherein the metal component of the catalyst is removed after the polymerization by adding one or more organic ammonium salts of the formula



where $A^{\ominus}$ is an anion or polyanion of, a polycarboxylic acid, polyalkylenepolycarboxylic acid, aminocarboxylic acid, aminopolycarboxylic acid, polyaminocarboxylic acid, polyphosphonic acid or polyaminophosphonic acid, R^1 is hydrogen, R^2 and R^3 are each hydrogen, alkyl of 1 to 18 carbon atoms or aryl and R^4 is alkyl of 1 to 18 carbon atoms or aryl, and wherein the ammonium salt or salts are formed from monoalkylamines, dialkylamines, trialkylamines, arylamines or alkylarylamines.

4,536,568

EMULSION POLYMER RECOVERY BY COAGULATION

Richard H. Wunder, Corunna, Canada, assignor to Polysar Limited, Sarnia, Canada

Division of Ser. No. 197,627, Oct. 16, 1980, Pat. No. 4,345,067. This application Feb. 3, 1982, Ser. No. 345,388

Claims priority, application Canada, Nov. 26, 1979, 340590

Int. Cl.³ C08F *6/22*

U.S. Cl. 528—487 **8 Claims**

1. An improved process for the coagulation of a butadiene-styrene or a butadiene-acrylonitrile polymer prepared by aqueous emulsion free radical polymerization, the process being characterized in that the emulsion of said polymer is coagulated by mixing (i) with aqueous inorganic coagulant and (ii) with an aqueous solution or suspension of an additive of polysaccharide material selected from the group consisting of cereal grain flour and starch or vegetable derived proteinaceous material selected from the group consisting of cottonseed, linseed, safflower seed, sunflower seed, sesame seed, castor seed, rapeseed, soyabean and peanut, the amount of said additive being from about 0.5 to about 2.5 parts by weight per 100 parts by weight of said polymer, the coagulant for the butadiene-styrene polymer being selected from the group consisting of sulphuric acid or sulphuric acid plus sodium chloride and for the butadiene-acrylonitrile polymer being selected from the group consisting of sulphuric acid or sulphuric acid plus calcium chloride, the sulphuric acid being in sufficient quantity to maintain the pH during coagulation at below about 4.5.

4,536,569

2-CYANO-4-NITRO-6-CHLOROPHENYLAZO 3-ACETYL-OR PROPIONYLAMINO-N,N-DI-N-PENTYL OR HEXYLANILINES

Kiyoyasu Hashimoto, Ibaraki; Kenji Yoshinaga; Yoshio Mori, both of Toyonaka; Junzaburo Seino, Kishiwada; Hirohito Kenmochi, Takatsuki, and Katsunobu Sato, Toyonaka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

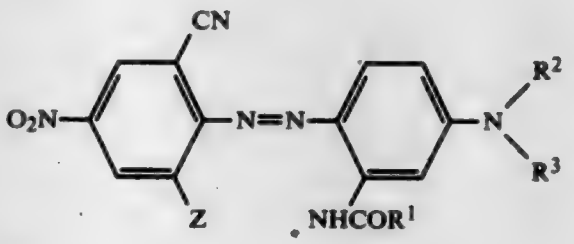
Continuation of Ser. No. 58,158, Jul. 17, 1979, abandoned. This application Mar. 26, 1981, Ser. No. 247,869

Claims priority, application Japan, Jul. 21, 1978, 53-89716; Jul. 28, 1978, 53-92879; Sep. 22, 1978, 53-117108; Oct. 26, 1978, 53-132209; May 10, 1979, 54-57878

Int. Cl.³ C09B *29/01, 29/12, 46/00;* D06P *1/18*

U.S. Cl. 534—575 **2 Claims**

1. A compound of the formula,



wherein R^1 is methyl or ethyl, and R^2 and R^3 are each straight C_5— or C_6—alkyl, and Z is chlorine.

4,536,570

N-AMINOALKYLENESULFONAMIDO SUBSTITUTED DISAZO COLORANTS

Nathan N. Crounse, Myrtle Beach, S.C., assignor to The Hilton-Davis Chemical Co., Cincinnati, Ohio

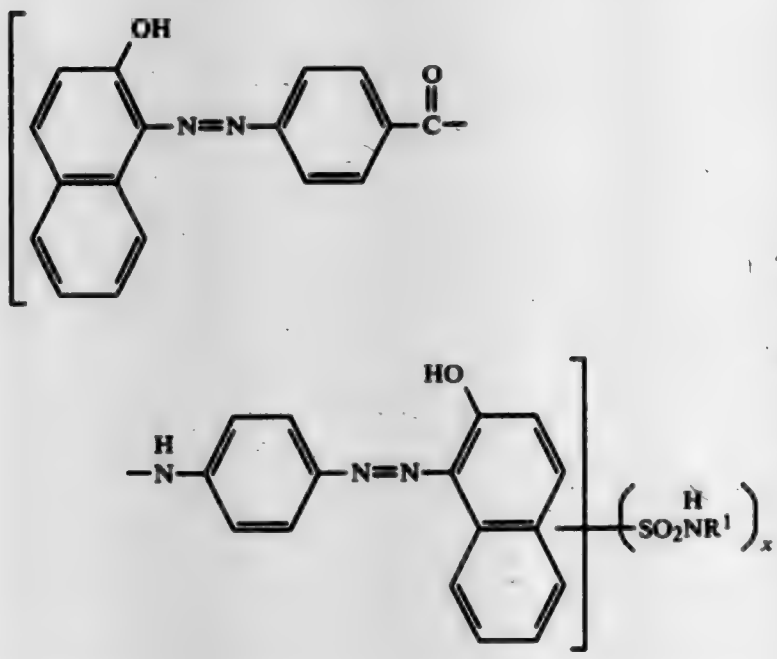
Division of Ser. No. 195,118, Oct. 8, 1980, Pat. No. 4,379,089. This application Oct. 25, 1982, Ser. No. 436,509

Int. Cl.³ C09B *33/02, 35/30;* D06P *1/02;* D21H *1/46*

U.S. Cl. 534—819 **2 Claims**

1. A mixture consisting essentially of a disazo compound

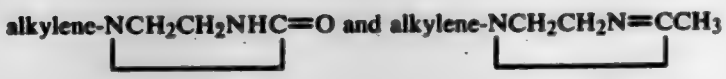
which is substituted with an average of x (N-substituted sulfonamido) groups per molecule wherein said disazo compound is of the formula



in which

x represents a number from 1 to 4, and

R^1 represents a moiety selected from the group consisting of alkylene-NH-alkylene-NH_2, alkylene-N-(non-tertiary C_1 to C_4 alkyl)$_2$,



in which alkylene represents $-CH_2CH_2-$ and $-CH_2CH_2CH_2-$; or

the acid-addition salt forms of said disazo compounds.

4,536,571

SELENIUM-CONTAINING PLATINUM COMPOUND

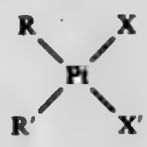
Richard F. Stockel, 475 Rolling Hills Rd., Bridgewater, N.J. 08807, and Philip E. Dumas, 137 Louise Dr., Morrisville, Pa. 19067

Continuation-in-part of Ser. No. 312,300, Oct. 16, 1981, abandoned. This application Apr. 14, 1983, Ser. No. 484,874

Int. Cl.³ C07H *17/00*; C07F *15/00*

U.S. Cl. 536—23 **23 Claims**

1. A selenium-containing platinum compound having the general formula(1)



(1)

wherein

R and R′ each independently stand for

a selenoalkylmonoamine,

a selenoamino acid having one amino group,

an unsubstituted or substituted selenoglucose radical,

an unsubstituted or substituted selenogalactose radical, or

an unsubstituted or substituted selenomannose radical; or

R and R′ together stand for

a selenoalkyldiamine,

a selenoaralkyldiamine,

a selenoamino acid having two amino groups,

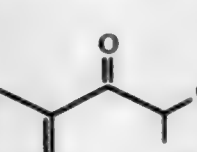
a selenonucleic acid base radical,

a selenoribosylnucleic acid base radical, or

an unsubstituted or substituted selenosemicarbazide; and

X and X′ each independently stand for Cl, No_2, or NO_3, or

X and X′ together stand for $>SO_3$, $>SO_4$ or



4,536,572

AMIDO-PHENYL-α-D-GLUCOPYRANOSIDE DERIVATIVES

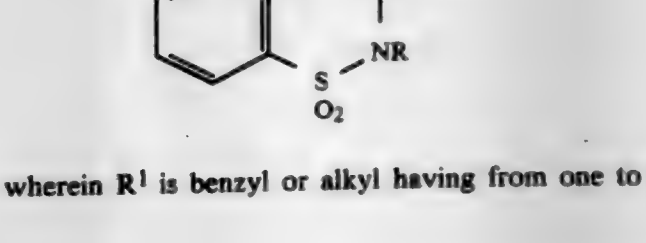
Wan S. Kim; Seo Y. Jeong, and James C. McRea, all of Salt Lake City, Utah, assignors to University of Utah, Salt Lake City, Utah

Division of Ser. No. 442,362, Nov. 17, 1982, Pat. No. 4,444,683. This application Nov. 2, 1983, Ser. No. 532,676

Int. Cl.³ C07H *15/18*

U.S. Cl. 536—179 **7 Claims**

1. A compound of the formula



wherein X and Z are different and are selected from the group consisting of —H and —OH and n is an integer of 2 to 6.

4,536,573

PROCESS AND INTERMEDIATES FOR PRODUCTION OF BENZOTHIAZINE CARBOXAMIDES

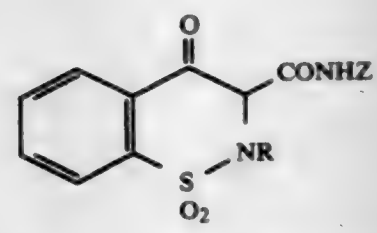
Joseph A. Kardys, Groton, Conn., assignor to Pfizer Inc., New York, N.Y.

Division of Ser. No. 488,208, Apr. 25, 1983, Pat. No. 4,469,866, which is a continuation-in-part of Ser. No. 389,119, Jun. 17, 1982, abandoned, which is a continuation-in-part of Ser. No. 289,390, Aug. 3, 1981, abandoned. This application May 11, 1984, Ser. No. 609,126

Int. Cl.³ C07D *401/12, 413/12, 417/12*

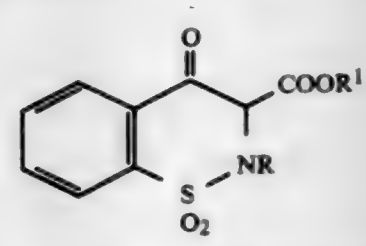
U.S. Cl. 544—49 **11 Claims**

1. A process for production of a 3,4-dihydro-2H-1,2-benzothiazine-3-carboxamide-1,1-dioxide of the formula



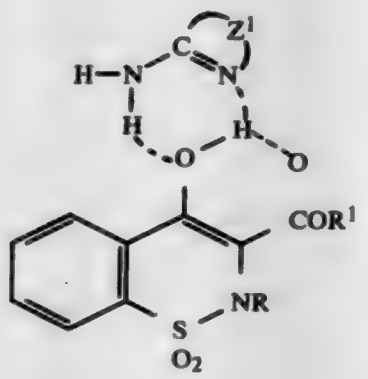
wherein R is hydrogen, benzyl or alkyl having from one to three carbon atoms; and Z is 2-pyridyl, alkyl substituted-2-pyridyl, 2-thiazolyl, 2-thiazolyl substituted by one or two alkyl groups, or 5-alkyl-3-isoxazolyl, each alkyl having from one to four carbon atoms; which comprises the steps of:

(a) contacting an ester of the formula



wherein R^1 is benzyl or alkyl having from one to four

carbon atoms, with an amine of the formula ZNH_2 in the presence of reaction inert organic solvent at a temperature of from about 50°–110° C., to provide an intermediate compound of the formula



(b) isolating the intermediate compound and heating said intermediate in the presence of reaction inert organic solvent at a temperature of from about 120°–200° C.

4,536,574

PREPARATION OF 2-ALKYLTHIOMETHYL-4-HYDROXYPYRIMIDINES

Fritz Maurer, Wuppertal, Fed. Rep. of Germany, assignor to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

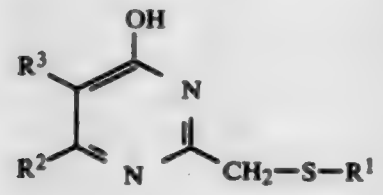
Filed Dec. 7, 1983, Ser. No. 559,147

Claims priority, application Fed. Rep. of Germany, Dec. 24, 1982, 3247926

Int. Cl.³ C07D *239/36, 239/70*

U.S. Cl. 544—253 **7 Claims**

1. A process for the preparation of a 2-alkylthiomethyl-4-hydroxypyrimidine of the formula



(I)

in which

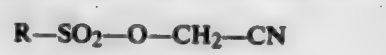
R^1 is alkyl,

R^2 is hydrogen or alkyl, and

R^3 is hydrogen, alkyl or alkoxy, or

R^2 and R^3 together represent a divalent alkylene radical,

comprising reacting a sulphonyloxyacetonitrile of the formula



(II)

in which

R is alkyl, halogenoalkyl or optionally substituted aryl,

with methanol or ethanol, reacting the reaction mixture formed with ammonium chloride, reacting the reaction mixture formed with an alkali metal thiolate of the formula

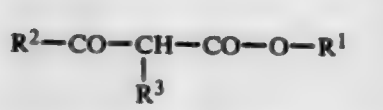


(III)

in which

Me^+ is an alkali metal cation,

and, in the presence of a base, with a β-ketocarboxylic acid ester of the formula



(IV)

at a temperature between about −20° and +100° C.

4,536,575

2-AMINO-4(3H)-OXOPYRIDO[2,3-d]PYRIMIDINO

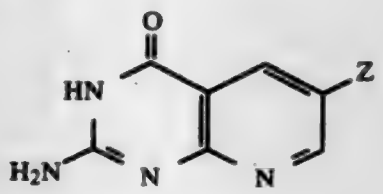
Carroll G. Temple; John A. Montgomery, and Robert D. Elliott, all of Birmingham, Ala., assignors to Southern Research Institute, Birmingham, Ala.

Division of Ser. No. 413,501, Aug. 31, 1982, , which is a continuation-in-part of Ser. No. 338,542, Jan. 11, 1982, Pat. No. 4,431,805, which is a continuation-in-part of Ser. No. 305,907, Sep. 25, 1981, abandoned. This application Nov. 20, 1984, Ser. No. 673,283

Int. Cl.³ C07D *471/04*

U.S. Cl. 544—279 **1 Claim**

1. Intermediates useful in the production of 5-deaza analogs of folic acid, N^{10}-substituted folic acid, aminopterin, and N^{10}-substituted aminopterin consisting of compounds having the structures:



wherein Z is CH_2OH or CH_2Br.

4,536,576

AGRICULTURAL SULFONAMIDES

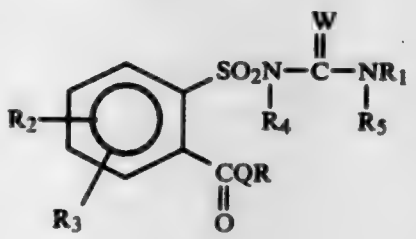
George Levitt, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 452,106, Dec. 22, 1982, , which is a division of Ser. No. 98,781, Nov. 30, 1979, Pat. No. 4,394,506, which is a continuation-in-part of Ser. No. 29,281, Apr. 13, 1979, abandoned, which is a continuation-in-part of Ser. No. 15,341, Mar. 1, 1979, abandoned, which is a continuation-in-part of Ser. No. 965,070, Nov. 30, 1978, abandoned, which is a continuation-in-part of Ser. No. 910,965, May 30, 1978, abandoned. This application Aug. 15, 1983, Ser. No. 523,351

Int. Cl.³ C07D *239/42;* A01N *47/36*

U.S. Cl. 544—321 **15 Claims**

1. A compound of the formula



wherein

Q is S;

R is C_1–C_{12} alkyl; C_3–C_{10} alkenyl; C_3–C_{10} alkynyl; C_2–C_6 alkyl substituted with 1–4 substituents selected from (a) 0–3 atoms of F, Cl or Br, (b) 0–2 OCH_3 groups or (c) 0–1 cyano groups;

R is also CH_2CN; $CH(R_7')CO_2CH_3$; $CH(R_7')CO_2C_2H_5$; C_3–C_6 alkenyl substituted with 1–3 atoms of F, Cl or Br;

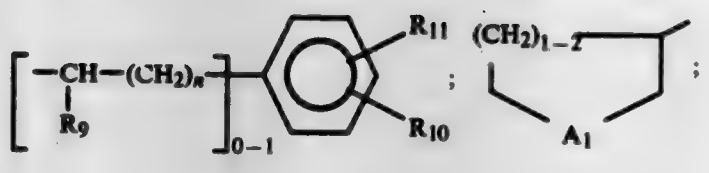
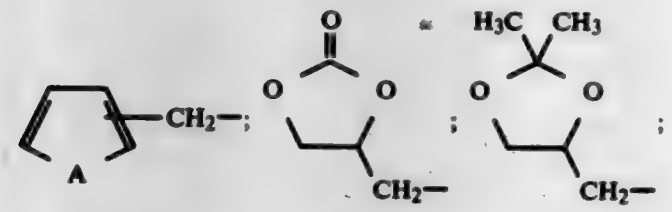
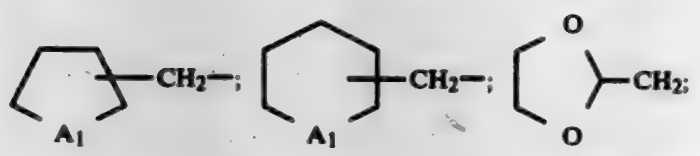
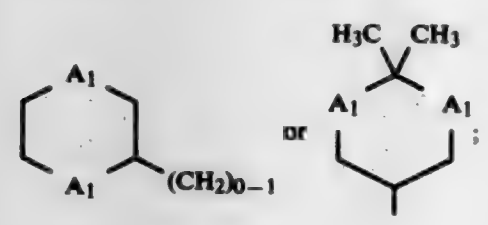
R is also C_3–C_6 alkynyl substituted with one of F, Cl or Br;

R is also C_5–C_8 cycloalkyl; C_5–C_8 cycloalkenyl; C_5–C_6 cycloalkyl substituted with (a) OCH_3, (b) C_2–C_4 alkyl, (c) F, Cl or Br or (d) 1–4 CH_3 groups;

R is also C_4–C_{10} cycloalkylalkyl; C_4–C_8 cycloalkylalkyl substituted with 1–2 CH_3 groups;

R is also C_7–C_{10} bicycloalkyl; C_7–C_{10} bicycloalkenyl; C_{10} tricycloalkyl; C_{10} tricycloalkenyl;

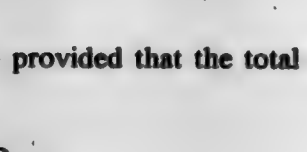
R is also

R_7' is H or CH_3;

R_9 is H or C_1–C_3 alkyl;

R_{10} and R_{11} are independently H, C_1–C_3 alkyl, Cl, Br, OCH_3, OC_2H_5 or R_{10} and R_{11} may be taken together to form a 5- or 6-member ring such as

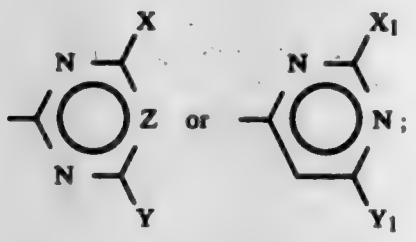


n is 0, 1, 2 or 3 provided that the total number of carbon atoms is ≦12;

A is O or S;

A_1 is O, S or SO_2;

R_1 is



R_2 is H, Cl, Br, F, C_1–C_3 alkyl, NO_2, SO_2CH_3, OCH_3, SCH_3, CF_3, $N(CH_3)_2$, NH_2 or CN;

R_3 is H, Cl, Br, F or CH_3;

R_4 is H or CH_3;

R_5 is H, CH_3 or OCH_3;

W is O or S;

X is H, Cl, CH_3, OCH_3, OCH_2CH_3 or $OCH_2CH_2OCH_3$;

Y is H; F; Cl; Br; C_1–C_4 alkyl; C(O)L; C_1–C_4 alkyl substituted with (a) OCH_3, (b) OC_2H_5, (c) CN, (d) C(O)L or (e) 1–3 atoms of F, Cl or Br;

Y is also C_3–C_4 alkenyl; $CH_2C{=}CR_{13}$; $A(CH_2)_{n'}A_1(C_1$–C_3 alkyl); $ACH_2C(O)L$; $ACH(CH_3)C(O)L$; ACH_2CH_2-C(O)L; SCN; N_3; $NR_{16}R_{17}$; OR_{14} or SR_{15};

L is NH_2, OH, $N(OCH_3)CH_3$, $NH(C_1$–C_4 alkyl), $N(C_1$–C_4 alkyl)$_2$ or C_1–C_6 alkoxy;

R_{13} is H, CH_3 or CH_2Cl;

n′ is 2 or 3; A is O or S and A_1 is O, S or SO_2;

R_{16} is H or CH_3;

R_{17} is H, OCH_3, C_1–C_6 alkyl, C_1–C_4 alkyl substituted with CN;

R_{17} is also C_3–C_4 alkenyl, C_3–C_6 cycloalkyl or C_2–C_3 alkyl substituted with (a) OCH_3 or (b) OC_2H_5;

R_{14} is C_1–C_4 alkyl; C_2–C_4 alkyl substituted with 1–3 atoms or F, Cl or Br; C_1–C_4 alkyl substituted with CN; C_3–C_4 alkenyl; $CH_2C{=}CR_{13}$; or CH_2—;

R_{15} is C_1–C_4 alkyl, allyl, propargyl or C_1–C_2 alkyl substituted with CN;

Y_1 is H, OCH_3 or CH_3;

X_1 is H, Cl, OCH_3, OCH_2CH_3 or CH_3; and

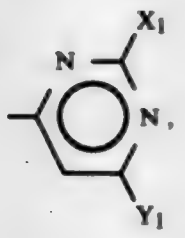
Z is CH; provided that

(a) when Y is greater than or equal to 4 carbon atoms, then R is less than or equal to 4 carbon atoms;

(b) when X is Cl, then Y is Cl and when X and Y are both H, then R is less than or equal to 4 carbon atoms;

(c) X_1 and Y_1 are not both H; and

(d) when R_1 is



then R_4 and R_5 are both H and R is ≦5 carbon atoms.

4,536,577

PROCESS FOR PREPARING 2-ALKYL-4-AMINO-5-AMINOMETHYLPYRIMIDINE

Hiroshi Yoshida, and Sadao Niida, both of Ube, Japan, assignors to Ube Industries, Ltd., Ube, Japan

Filed Mar. 26, 1984, Ser. No. 593,631
Claims priority, application Japan, Apr. 7, 1983, 58-59960
Int. Cl.[3] C07D *239/02*
U.S. Cl. 544—326 16 Claims

1. A process for preparing 2-alkyl-4-amino-5-aminomethylpyrimidine comprising;

(i) a first step of reacting 2-alkyl-4-amino-5-formylpyrimidine with ammonia in an inert solvent in the presence of at least one compound selected from heteropolyacids, isopolyacids, oxyacids and salts thereof containing molybdenum or tungsten, and

(ii) a second step of reacting the reaction product in the first step catalytically with ammonia and hydrogen in an inert solvent in the presence of a reducing catalyst.

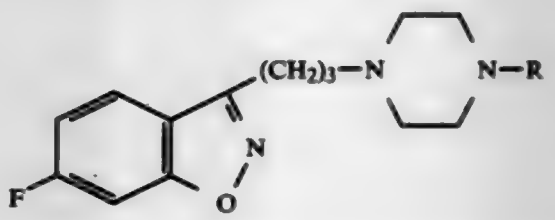
4,536,578

1-[3-(6-FLUORO-1,2-BENZISOXAZOL-3-YL)PROPYL]-4-(SUBSTITUTED)PIPERAZINES

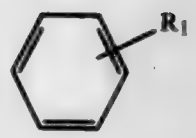
Larry Davis, Sergeantsville, and Joseph T. Klein, Somerville, both of N.J., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Filed Apr. 9, 1982, Ser. No. 366,248
Int. Cl.[3] C07D *401/04, 413/06;* A61K *31/495*
U.S. Cl. 544—360 19 Claims

1. A compound of the formula



wherein R is loweralkyl, benzyl, 2-hydroxyethyl, pyridyl or a group of the formula



wherein R_1 is hydrogen, loweralkyl, loweralkoxy, halogen or trifluoromethyl; the optical antipodes thereof; or pharmaceutically acceptable acid addition salts thereof.

4,536,579

PYRIMIDINES SUBSTITUTED BY NITROGEN-CONTAINING HETEROCYCLIC RINGS AS INTERMEDIATES

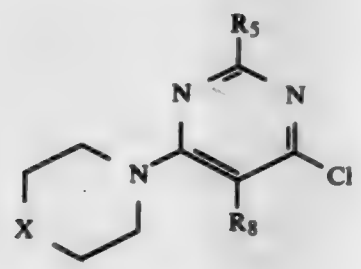
James J. Wade, Oakdale, Minn., assignor to Riker Laboratories, Inc., St. Paul, Minn.

Continuation-in-part of Ser. No. 471,837, Mar. 3, 1983, Pat. No. 4,477,450. This application Feb. 24, 1984, Ser. No. 583,387

Int. Cl.³ C07D *405/04, 413/04, 417/04*

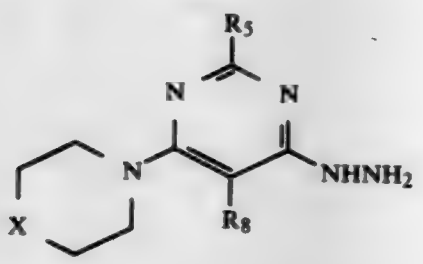
U.S. Cl. 544—58.2 **2 Claims**

1. A compound of the formula



wherein R_5 is hydrogen, lower alkyl, phenyl or lower alkylthio; R_8 is hydrogen, phenyl or lower alkyl; and X is oxygen, sulfur, sulfinyl, sulfonyl, methylene, imido or N-lower alkylimido.

2. A compound of the formula



wherein R_5 is hydrogen, lower alkyl, phenyl or lower alkylthio; R_8 is hydrogen, phenyl or lower alkyl; and X is oxygen, sulfur, sulfinyl, sulfonyl, methylene, imido or N-lower alkylimido.

4,536,580

4-AMINO-5-BROMO-2-METHOXY-N-[8-(BENZYL)]-8-AZABICYCLO[3.2.1]-3-YL-BENZAMIDE OR A PHARMACOLOGICALLY ACCEPTABLE ACID ADDITION SALT THEREOF

Philippe L. Dostert, Paris; Thierry F. Imbert, Noisy le Roi, and Bernard P. Bucher, Marnes la Coquette, all of France, assignors to Delalande S.A., Courbevoie, France

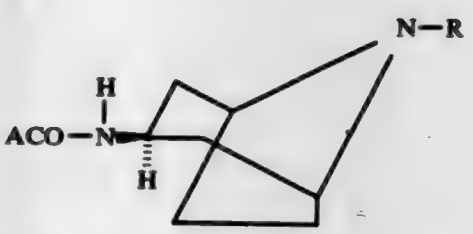
Division of Ser. No. 110,067, Jan. 7, 1980, Pat. No. 4,471,120. This application Jul. 19, 1982, Ser. No. 399,392

Claims priority, application France, Jan. 16, 1979, 79 00971; Dec. 26, 1979, 79 31656

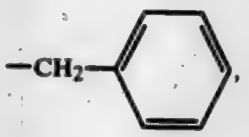
Int. Cl.³ C07D *451/04*

U.S. Cl. 546—124 **1 Claim**

1. A compound having the formula



wherein (I) ACO is 2-methoxy-4-amino-5-bromo benzoyl and R is



or a pharmacologically acceptable acid addition salt thereof.

4,536,581

PROCESS FOR PREPARING 2,2,6,6-TETRAMETHYL-4-PIPERIDONE

Giuseppe Cantatore, Casalecchio di Reno, and Paolo Cassandrini, Bologna, both of Italy, assignors to Ciba-Geigy S.p.A., Origgo, Italy

Continuation-in-part of Ser. No. 159,169, Jun. 13, 1980, abandoned, which is a continuation of Ser. No. 21,194, Mar. 16, 1979, abandoned. This application May 18, 1983, Ser. No. 495,713

Claims priority, application Italy, Mar. 31, 1978, 21858 A/78

Int. Cl.³ C07D *211/74*

U.S. Cl. 546—242 **2 Claims**

1. In a process for preparing 2,2,6,6-tetramethyl-4-piperidone from ammonia and acetone, in a single stage for a time of 2 to 8 hours, at a temperature of 50° to 120° C. and at a pressure of 1 to 50 atmospheres, in the presence of 0.001–0.1 moles of acid catalysts per mole of acetone, the improvement consisting in reacting the acetone and ammonia in a molar ratio of 20:1 to 4:1.

4,536,582

HEAT CURABLE SOLVENTLESS LIQUID PREPOLYMER AND NOVEL MONOMER PREPARED FROM N-(2-HYDROXYALKYL)PHTHALIMIDE

Richard A. Markle, Columbus, Ohio, assignor to Eagle-Picher Industries, Inc., Cincinnati, Ohio

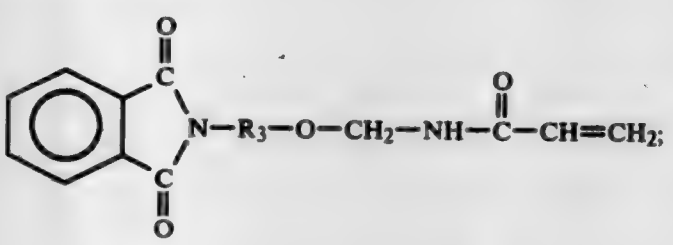
Filed Jan. 21, 1983, Ser. No. 459,778

Int. Cl.³ C07D *209/48*

U.S. Cl. 548—477 **5 Claims**

1. A liquid heat curable prepolymer comprising the reaction product of,

from about 4 to about 10% of an acrylamide having the following formula:



wherein R_3 represents C_1 to about C_{10} alkyl; from about 65% to about 75% of a rubber formable monomer selected from the group consisting essentially of conjugated dienes, alkyl esters of acrylic acid and alkyl esters of methacrylic acid; and

from about 20 to about 30% of a nitrile monomer selected from the group consisting essentially of acrylonitrile and methacrylonitrile.

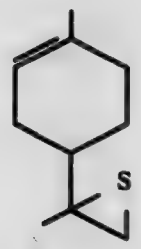
4,536,583

PROCESS FOR PREPARING MIXTURES CONTAINING 8,9-EPITHIO-1-P-MENTHENE

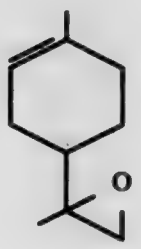
Braja D. Mookherjee, Holmdel, N.J.; Bernard J. Chant, Rye, N.Y.; William J. Evers, Locust, N.J.; Richard A. Wilson, Westfield, N.J.; Michael J. Zampino, North Bergen, N.J., and Manfred H. Vock, Locust, N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Aug. 1, 1983, Ser. No. 519,371
Int. Cl.[3] C07D *331/02*; A61K *7/46*
U.S. Cl. 549—1 1 Claim

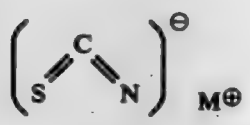
1. A process for preparing a composition of matter including as a major proportion the compound defined according to the structure:



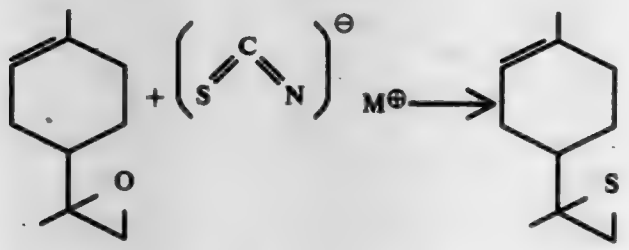
comprising the step of reacting the compound having the structure:



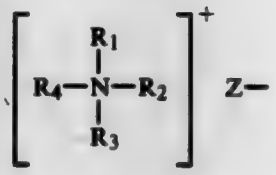
with an alkali metal thiocyanate having the structure:



according to the reaction:



wherein M represents alkali metal in the presence of a phase transfer catalyst, said phase transfer catalyst having the general formula:



wherein at least one of R_1, R_2, R_3 and R_4 is C_6–C_{14} aryl, C_6–C_{10} aralkyl, C_6–C_{20} alkyl, C_6–C_{14} alkaryl and C_6–C_{20} alkenyl and the other of R_2, R_3 and R_4 is alkyl selected from the group consisting of methyl, ethyl, n-propyl, i-propyl, 1-butyl, 2-butyl, 1-methyl-2-propyl, 1-pentyl and 1-octyl and Z^- is an anion selected from the group consisting of chloride, bromide and hydroxide, the reaction temperature varying from about 45° C. up to about 85° C.; the pressure of reaction varying from one atmosphere up to 10 atmospheres; the mole ratio of alkali metal thiocyanate:epoxide varying from about 8:1 down to about 1:1; the said alkali metal thiocyanate being dissolved in water with the alkali metal thiocyanate being in a concentration of between 10% and 50% in said water.

4,536,584

PROCESS FOR THE THERMOCHEMICAL CONVERSION OF BIOMASS

Abolghassem Eskamani, Aurora, and Warren H. Krause, Cleveland, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Oct. 3, 1983, Ser. No. 538,245
Int. Cl.[3] C07C *31/00, 45/00*
U.S. Cl. 549—429 10 Claims

1. A process for the thermochemical conversion of plant-derived biomass having a conversion rate of at least 90 percent and wherein at least 3 percent of the converted biomass, based on the total weight of the biomass, are C1–C5 alcohols, aldehydes and ketones, which process comprises contacting said biomass with a ruthenium-bearing catalyst under reducing conditions at a temperature of at least 100° C. and at pressure of at least 40 atmospheres.

4,536,585

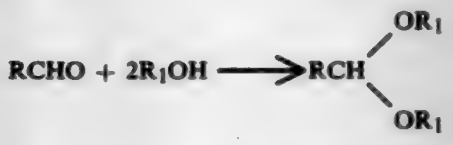
METHOD OF MAKING ACETALS BY CATALYTIC REACTION OF ALDEHYDES WITH HYDROXYALKANES

Christos Paparizos, Willowick; Robert S. Shout, Bedford Heights, and Wilfrid G. Shaw, Lyndhurst, all of Ohio, assignors to The Standard Oil Company, Cleveland, Ohio

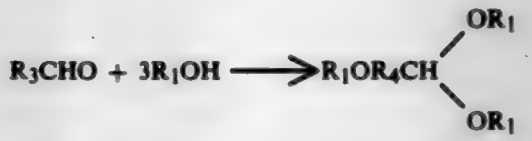
Filed Dec. 5, 1983, Ser. No. 557,775
Int. Cl.[3] C07D *317/00*
U.S. Cl. 549—453 6 Claims

1. A process which comprises reacting a C_1 to C_{12} saturated aldehyde or a C_3 to C_{12} unsaturated aldehyde with

(1) a C_1 to C_{12}, monohydroxyalkane, to produce an acetal, as follows:

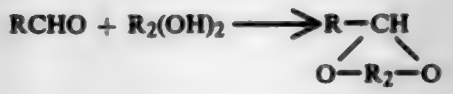


in the case of a saturated aldehyde, or to produce an acetalic ether, as follows:

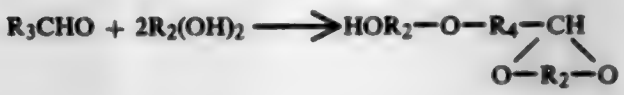


in the case of an unsaturated aldehyde, or with

(2) a C_2 to C_3 dihydroxyalkane, to produce a closed ring acetal, as follows:



in the case of a saturated aldehyde, or to produce a closed ring acetalic ether, as follows:



in the case of an unsaturated aldehyde,

said reacting being effected by intimately contacting a mixture of the reactants with a particulate solid metallic catalyst comprising an alloy of palladium and thallium,

wherein

R is alkyl having 1–12 carbon atoms,

R_1 is alkyl having 1–12 carbon atoms,

R_2 is selected from $—CH_2CH_2—$, $—CH_2CH_2CH_2—$ and $—CH(CH_3)CH_2—$,

R_3 is alkenyl having 2–12 carbon atoms, and

R_4 is the hydrocarbon residue of the group resulting from the addition of a hydroxyl group in ROH or $R_2(OH)_2$, across the double bond of R_3.

4,536,586

TRIMETHYL 6-OXABICYCLO[3.2.1]OCTAN-4-OLS AND 4-ONES

James E. Powell, Ripon, Calif., assignor to Shell Development Company, Houston, Tex.

Division of Ser. No. 487,326, Apr. 21, 1983, Pat. No. 4,486,219. This application Jun. 11, 1984, Ser. No. 619,419

Int. Cl.³ C07D *307/00*

U.S. Cl. 549—463 **2 Claims**

1. A compound of the formula



wherein each R is a methyl group and X is —OH or =O.

4,536,587

COMBATING PESTS WITH SUBSTITUTED BENZOYL-(THIO)UREAS

Wilhelm Sirrenberg, Sprockhoevel; Albrecht Marhold, Leverkusen; Ingeborg Hammann, Cologne; Ingomar Krehan, Cologne, and Wilhelm Stendel, Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

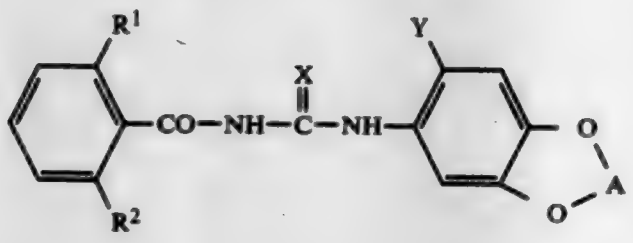
Continuation of Ser. No. 268,961, Jun. 1, 1981, abandoned. This application May 12, 1983, Ser. No. 493,910

Claims priority, application Fed. Rep. of Germany, Jun. 21, 1980, 3023328

Int. Cl.³ C07D *319/14, 317/44*

U.S. Cl. 549—366 **15 Claims**

1. A compound of the formula



in which

R^1 represents a hydrogen or halogen atom or an alkyl radical,

R^2 represents a hydrogen or halogen atom,

X represents an oxygen or sulphur atom,

Y represents a hydrogen or halogen atom or an alkyl or halogenoalkyl radical and

A represents a C_{1-2}-alkylene radical which is substituted by fluorine and optionally additionally substituted by chlorine, with the proviso that when A is ethylene at least one of R^1 and R^2 must be halogen.

13. The method according to claim 12, wherein said compound is

N-2,6-difluorobenzoyl-N'-(2,2,3-trifluoro-3-chloro-1,4-benzodioxin-6-yl)-urea,

N-(2-chloro-6-fluoro-benzoyl)-N'-(2,2,3-trifluoro-1,4-benzodioxin-6-yl)-urea,

N-2,6-difluorobenzoyl-N'-(2,2-difluoro-benzodioxol-5-yl)urea,

N-2,6-difluorobenzoyl-N'-(2,3,3-trifluoro-7-chloro-1,4-benzodioxin-6-yl)-urea,

N-(2-chloro-6-flubro-benzoyl)-N'-(2,2,3-trifluoro-3-chloro-1,4-benzodioxin-6-yl)-thiourea,

N-2,6-difluorobenzoyl-N'-(2,2,3-trifluoro-3-chloro-1,4-benzodioxin-6-yl)-thiourea or

N-(2-fluorobenzoyl)-N'-(2,2,3,3-tetrafluoro-1,4-benzodioxin-6-yl)-thiourea.

4,536,588

ACETAL GLYCOL DIACRYLATES AND PROCESS FOR PRODUCING THEM

Minoru Yokoshima, Yamaguchi; Kazuyoshi Nawata, Onoda; Tetsuo Ohkubo, Ube, and Hideaki Hattori, Yamaguchi, all of Japan, assignors to Nippon Kayaku Kabushiki Kaisha, Tokyo, Japan

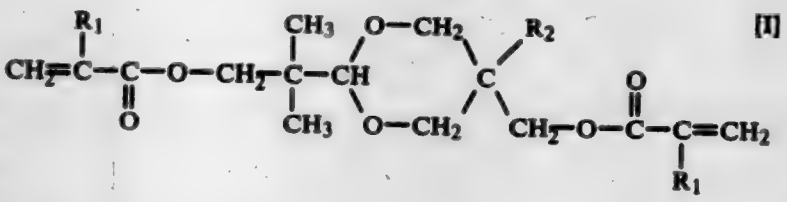
Filed Jun. 13, 1983, Ser. No. 503,572

Claims priority, application Japan, Jun. 24, 1982, 57-107575

Int. Cl.³ C07D *319/06*

U.S. Cl. 549—374 **4 Claims**

1. Acetal glycol diacrylates represented by the following general formula [I]:



[I]

wherein R_1 represents H or CH_3 and R_2 represents CH_3, C_2H_5 or C_3H_7.

4,536,589

POLYMERS OF FERROCENE

Jere D. Fellmann, Ashland; Philip E. Garrou, Holliston, both of Mass.; Howard P. Withers, Jr., Reading, Pa., and Dietmar Seyferth, Lexington, Mass., assignors to The Dow Chemical Company, Midland, Mich.

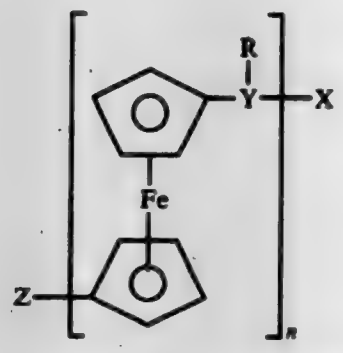
Filed Nov. 9, 1981, Ser. No. 319,827

Int. Cl.³ C07F *9/66, 9/90, 17/02*

U.S. Cl. 556—14 **8 Claims**

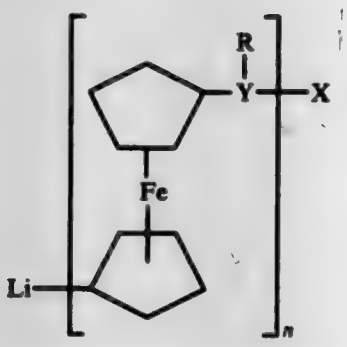
1. A linear polymer of ferrocene substantially free from

heteroannular moieties having an absolute molecular weight from about 8.000 to about 160,000 amu having the formula:



where R is a hydrocarbyl or an oxy containing hydrocarbyl radical of up to about 10 carbons selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, alkenyl, aralkenyl, alkoxy, aryloxy and alkoxyaryl radicals; Y is triavalent phosphorus, arsenic or antimony; X is halo, hydroxy, R, or an ester group of up to about 10 carbons; Z is lithium, hydrogen or a group of the formula $Y(R)_2$ where Y and R are as previously defined; and n is an integer greater than 2.

2. A process for producing linear polymers of ferrocene corresponding to the formula



where R is a hydrocarbyl or hydrocarboxyl radical of up to about 10 carbons selected from the group consisting of alkyl, aryl, alkaryl, aralkyl, alkenyl, aralkenyl, alkoxy, aryloxy and alkoxyaryl radicals; Y is trivalent phosphorus, arsenic or antimony; X is halo; and n is an integer greater than 2, comprising reacting 1,1′-dilithioferrocene with a reactive compound of formula X_2YR where X, Y and R are as previously defined, by controllably adding the reactive compound to the 1,1′-dilithioferrocene at a rate such that formation of dimer by-products is substantially avoided.

4,536,590

PHENYL-CONTAINING ORGANOPOLYSILOXANES

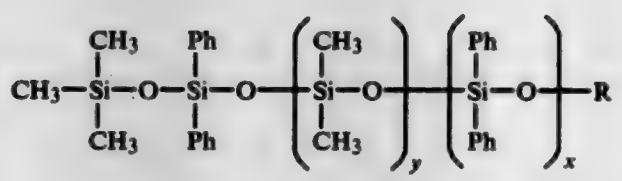
Edgar D. Brown, Jr., Schenectady, N.Y., assignor to General Electric Company, Waterford, N.Y.

Continuation of Ser. No. 893,687, Apr. 5, 1978, abandoned, which is a continuation of Ser. No. 506,007, Sep. 16, 1974, abandoned. This application May 25, 1979, Ser. No. 42,349

Int. Cl.³ C07F *7/04, 7/18*

U.S. Cl. 556—453 **5 Claims**

1. A phenyl-containing organopolysiloxane fluid consisting essentially of a polymer of the general formula



wherein Ph is phenyl, R is selected from the group consisting of hydrogen, trimethylsilyl and mixtures thereof, and wherein x and y have a combined value sufficient to provide a phenyl content of from about 7 weight percent to about 80 weight percent.

4,536,591

INSECTICIDAL [1,1′-BIPHENYL]-3-YLMETHYL ESTERS

Ernest L. Plummer, Yardley, Pa., assignor to FMC Corporation, Philadelphia, Pa.

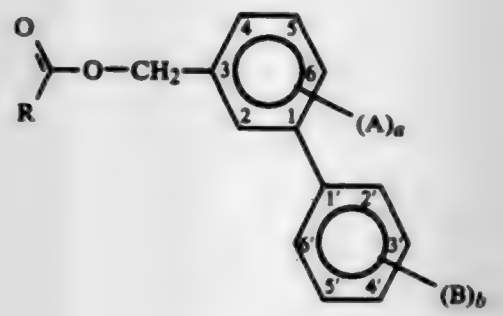
Continuation of Ser. No. 265,940, May 21, 1981, Pat. No. 4,402,973, which is a continuation-in-part of Ser. No. 193,056, Oct. 2, 1980, Pat. No. 4,329,518, which is a continuation-in-part of Ser. No. 76,636, Sep. 18, 1979, abandoned, which is a division of Ser. No. 966,405, Dec. 4, 1978, Pat. No. 4,214,004. This application Feb. 7, 1983, Ser. No. 464,242

The portion of the term of this patent subsequent to Jul. 22, 1997, has been disclaimed.

Int. Cl.³ C07C *69/743, 69/747;* A01N *53/00*

U.S. Cl. 560—8 **3 Claims**

1. A compound of the formula



wherein

(1) b is 0, a is 3 or 4, and R is selected from 2,2,3,3-tetramethylcyclopropyl, 2,2-dichloro-3,3-dimethylcyclopropyl, 3-cyclopentylidenemethyl-2,2-dimethylcyclopropyl, 3-(2-methyl-1-propenyl)-2,2-dimethylcyclopropyl, and 3-(1,2-dibromo-2,2-dichloroethyl)-2,2-dimethylcyclopropyl, and when a is 3,

A is fluoro, or A is 2-chloro, 2-bromo, 2-methyl, or 2-ethyl with two additional fluoro groups, or A is 2- and 4-substituents independently selected from fluoro, chloro and methyl with one additional fluoro group, and

when a is 4,

A is fluoro, or A is 2- and 4-substituents independently selected from fluoro, chloro and methyl with two additional fluoro groups; or

R is selected from 3-[(2-chloro-2-phenyl)ethenyl]-2,2-dimethylcyclopropyl, 1-(4-chlorophenyl)-2-methylpropyl, 2,2-dichloro-1-(4-ethoxyphenyl)cyclopropyl, and 1-(2-chloro-4-trifluoromethylphenylamino)-2-methylpropyl, a is 3 or 4, and A is fluoro; or

(2) a is 3 or 4, b is 4, R is selected from 3-(2,2-dichloroethenyl)-2,2-dimethylcyclopropyl and 3-(2,2-dibromoethenyl)-2,2-dimethylcyclopropyl, and

A is fluoro or a 2-substituent selected from chloro, bromo, and lower alkyl with 2 or 3 fluoro groups, and B is fluoro or a 2′-substituent selected from chloro and methyl with 3 fluoro groups.

2. An insecticidal or acaricidal composition comprising an insecticidally or acaricidally effective amount of at least one compound of claim 1 in admixture with an agriculturally acceptable carrier.

4,536,592

2-SUBSTITUTED PROSTAGLANDINS

Paul W. Collins, Deerfield; Alan F. Gasiecki, Vernon Hills, and Richard M. Weier, Lake Bluff, all of Ill., assignors to G. D. Searle & Co., Skokie, Ill.

Filed Feb. 16, 1984, Ser. No. 580,966

Int. Cl.³ C07C *177/00*

U.S. Cl. 560—53 **6 Claims**

1. A compound which is methyl 7-[3α-hydroxy-2β-4(RS)-4-

hydroxy-4-methyl-1-trans-octenyl)-5-oxocyclopentane]-1α-2-allyl heptanoate.

2. A compound which is methyl 7-[3α-hydroxy-2β-4(RS)-4-hydroxy-4-methyl-1-trans-octenyl)-5-oxocyclopentane]-1α-2-benzyl-heptanoate.

3. A compound which is methyl 7-[3α-hydroxy-2β-4(RS)-4-hydroxy-4-methyl-1-trans-octenyl)-5-oxocyclopentane]-1α-2-cyclopentyl heptanoate.

4. A compound which is methyl 7-[3α-hydroxy-2β-4(RS)-4-hydroxy-4-methyl-1-trans-octenyl)-5-oxocyclopentane]-1α-2-iodo-heptanoate.

5. A compound which is ethyl 7-[3α-hydroxy-2β-4(RS)-4-hydroxy-4-methyl-1-trans-octenyl)-5-oxocyclopentane]-1α-2-fluoro-heptanoate.

4,536,593

PROCESS FOR THE PREPARATION OF STERICALLY HINDERED HYDROXPHENYLCARBOXYLIC ACID ESTERS

Ivan Orban, and Eduard Troxler, both of Basel, Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

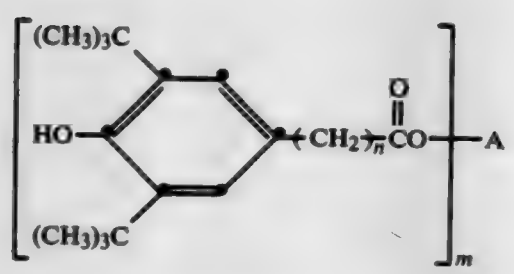
Filed Jul. 5, 1983, Ser. No. 510,705

Claims priority, application Switzerland, Jul. 13, 1982, 4264/82

Int. Cl.³ C07C *69/88, 69/76*

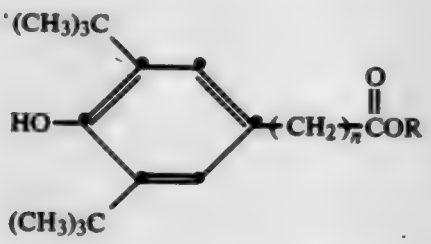
U.S. Cl. 560—75 8 Claims

1. A process for the preparation of a compound of formula I



(I)

in which n is a number from 0 to 2, m is a number from 1 to 4 and A is a radical which has 2 to 18 carbon atoms and is derived from an m-hydric aliphatic alcohol, by transesterifying about m mols of an ester of formula (II)

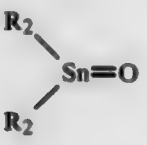


(II)

in which R is methyl or ethyl, with an alcohol of formula III

$$A—(OH)_m \qquad \text{(III)}$$

which comprises catalysing the transesterification by successive treatment under atmospheric pressure in the presence of an inert solvent with a catalytic amount of (a) a tin compound of formula V



(V)

in which R_2 is C_4-C_{18}-alkyl, and (b) an acid earth.

4,536,594

PROCESS FOR THE PREPARATION OF BETA-DISUBSTITUTED MONOCARBOXYLIC ACIDS

Patrice P. M. Deschamps, Aix en Provence; Roger Gallo, Bouc Bel Air, and Henri Grangette, Lyons, all of France, assignors to Elf France, Paris, France

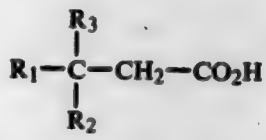
Filed Oct. 7, 1983, Ser. No. 540,118

Claims priority, application France, Oct. 8, 1982, 82 16907

Int. Cl.³ C07C *51/00, 53/126, 53/132, 53/134*

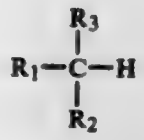
U.S. Cl. 562—400 13 Claims

1. A process for the preparation of a beta-disubstituted monocarboxylic acid of the formula



(I)

wherein R_1, R_2, and R_3 are identical or different and each represents a saturated or unsaturated monovalent hydrocarbon radical containing from 1 to 22 carbon atoms or R_1 and R_2 are interbonded to form with the carbon atoms to which they are attached a monocyclic or bicyclic structure comprising from 5 to 22 carbon atoms which comprises reacting a hydrocarbon of the formula



(II)

wherein R_1, R_2 and R_3 have the above meaning, with vinylidene chloride, and a functional compound wherein the molecule contains a tertiary carbon atom bonded to the heteroatom of a functional group or an alkene in the presence of a concentrated protonic acid.

4,536,595

PROCESS FOR THE PREPARATION OF ALPHA-ARYL-PROPIONIC ACIDS AND ALKALINE SALTS THEREOF

Andrea Gardano, Trino Vercellese; Franco Francalcanci, and Marco Foà, both of Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

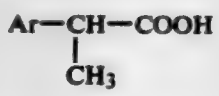
Filed Sep. 17, 1982, Ser. No. 419,616

Claims priority, application Italy, Sep. 21, 1981, 24054 A/81

Int. Cl.³ C07C *51/10*

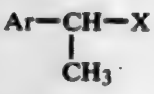
U.S. Cl. 562—406 16 Claims

1. A process for the preparation of alkaline salts of alpha-arylpropionic acids having formula (I):



(I)

wherein Ar represents an aromatic or heteroaromatic group containing one or more rings, however linked to each other, having in total up to 20 carbon atoms, by reaction with carbon monoxide, of the corresponding secondary haildes of formula (II):



(II)

wherein Ar has the same meaning as in formula (I) and where X is a halogen selected from Cl and Br, characterized in that the reaction is conducted in an anhydrous alcoholic solvent medium consisting of alkanols having up to 4 carbon atoms, in the presence of alkaline hydroxides, and in presence, as cata-

lyst, of a salt of cobalt hydrocarbonyl, at a temperature comprised between 0° C. and 50° C. and at substantially atmospheric pressure.

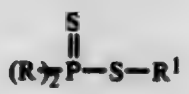
4,536,596

EXTRACTION OF AMINO ACIDS FROM AQUEOUS SOLUTION WITH DITHIOPHOSPHINATES

Christos Savides, Fairfield, and John H. Bright, Norwalk, both of Conn., assignors to American Cyanamid Company, Stamford, Conn.

Filed May 14, 1984, Ser. No. 609,947
Int. Cl.³ C07C 99/12
U.S. Cl. 562—443 12 Claims

1. A method for recovering monocarboxylic amino acids free of hydroxy groups from aqueous solutions thereof which comprises contacting such a solution with a sufficient amount of a dithiophosphinate having the formula:



wherein each R, individually, is an alkyl or cycloalkyl radical of 4–18 carbon atoms, inclusive, an aryl radical of 6–18 carbon atoms, inclusive, an aralkyl radical of 7–20 carbon atoms, inclusive, or both Rs, together with the phosphine atoms, form either a 5 or 6 membered ring which may contain oxygen, or a bicyclic radical, and R^1 is hydrogen or a cation, in the presence of an organic diluent which forms a substantially water-insoluble liquid when in contact with the dithiophosphinate under extraction conditions to extract said amino acid and separating the extracted solution from said dithiophosphinate.

4,536,597

SELECTIVE HYDROCARBOXYLATION OF PROPYLENE TO ISOBUTYRIC ACID

Frederick A. Pesa, Aurora, and Thomas A. Haase, University, both of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Dec. 31, 1979, Ser. No. 108,435
Int. Cl.³ C07C 51/14, 53/124
U.S. Cl. 562—522 36 Claims

1. A process for the selective hydrocarboxylation of propylene to produce butyric acid in the liquid phase at a temperature of about 75° C. to about 150° C. and a pressure of about 250 psi to about 5000 psi, wherein the isobutyric acid isomer product predominates, comprising forming a reaction mixture of propylene, carbon monoxide and water in the presence of a carboxylic acid-containing solvent and a catalyst comprising (i) a coordinating palladium compound, (ii) an organoarsine ligand and (iii) a complexing hydrogen halide; and maintaining a water to propylene ratio of from about 0.01 to a value less than 1.0.

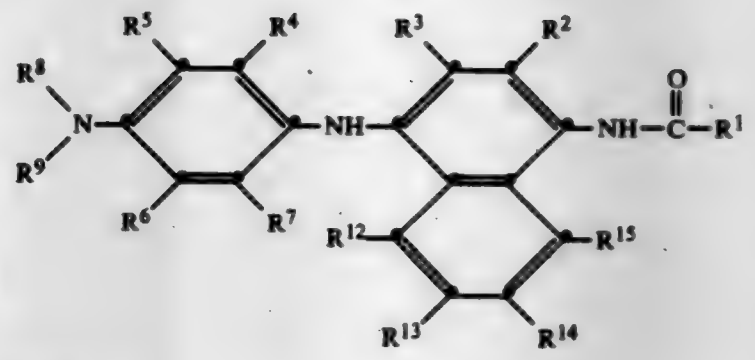
4,536,598

COLOR-FORMING CARBOXAMIDONAPHTHALENE DYE PRECURSOR AND CARBOXIMIDE DYE IN PHOTOGRAPHIC MATERIAL AND PROCESS

James E. Klijanowicz, Pittsford, and Csaba A. Kovacs, Rochester, both of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

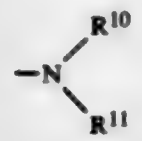
Division of Ser. No. 382,546, May 27, 1982, Pat. No. 4,423,126. This application Mar. 10, 1983, Ser. No. 473,925
Int. Cl.³ C07C 127/19, 103/44, 103/82
U.S. Cl. 564—49 15 Claims

1. A color-forming compound represented by the formula:



wherein:

R^1 is alkyl containing 1 to 25 carbon atoms, cycloalkyl containing 5 to 8 carbon atoms, aryl containing 6 to 25 carbon atoms, alkoxy containing 1 to 25 carbon atoms, aryloxy containing 6 to 25 carbon atoms,



or a 5 or 6 member heterocyclic group;

R^2, R^3, R^4, R^5, R^6, and R^7 are individually hydrogen, alkyl containing 1 to 25 carbon atoms, aryl containing 6 to 25 carbon atoms, alkoxy containing 1 to 25 carbon atoms, arylsulfonyl containing 6 to 25 carbon atoms, chlorine, bromine, carbamoyl, sulfamoyl, carboxy, sulfonamido; and carboxamido;

R^8 is hydrogen, alkyl containing 1 to 25 carbon atoms, aryl containing 6 to 25 carbon atoms, acyl containing 2 to 25 carbon atoms, or carbamoyl containing 2 to 25 carbon atoms;

R^9 is alkyl containing 1 to 25 carbon atoms, aryl containing 6 to 25 carbon atoms, acyl containing 2 to 25 carbon atoms, or carbamoyl;

R^{10} and R^{11} are individually hydrogen, alkyl containing 1 to 25 carbon atoms, aryl containing 6 to 25 carbon atoms, a carbocyclic group containing 6 to 8 carbon atoms, or taken together represent the atoms necessary to complete a 5 or 6 member heterocyclic ring;

R^{12}, R^{13}, R^{14}, and R^{15} are individually hydrogen, alkyl containing 1 to 25 carbon atoms, cyano, sulfamoyl, chlorine, carboxamido, sulfonamido, bromine and alkoxy containing 1 to 25 carbon atoms.

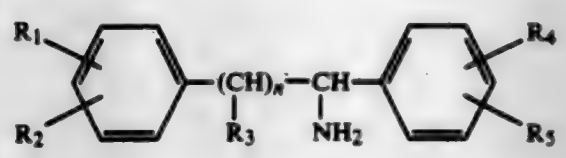
4,536,599

SYNTHESIS OF AMINE DERIVATIVES

Fujio Masuko, Ohita, and Tadashi Katsura, Itami, both of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation-in-part of Ser. No. 65,429, Aug. 10, 1979, abandoned. This application Nov. 1, 1979, Ser. No. 90,479
Claims priority, application Japan, Aug. 22, 1978, 53-102614; Aug. 30, 1978, 53-106541
Int. Cl.³ C07C 102/00, 87/28
U.S. Cl. 564—124 2 Claims

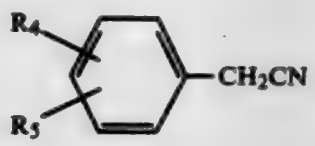
1. A process for preparing an amine derivative of the formula (1),



(1)

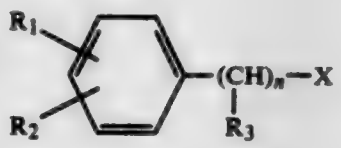
wherein R_1, R_2, R_3, R_4, and R_5 are independently hydrogen atom, a halogen atom, a hydroxy, trihalogenomethyl, phenyl, phenoxy or phenylthio group, or a straight or branched C_1–C_6

alkyl, alkenyl, alkoxyl, alkylthio, dialkylamino or alkylsulfonyl group, n is an integer of 1 to 3, provided that R_3s may be the same or different when n is 2 or 3, and either R_1 and R_2 or R_4 and R_5 may be bonded through the same or different atom, which comprises condensing an acetonitrile compound of the formula (4),



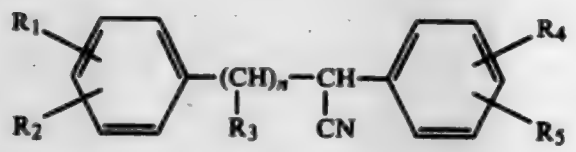
(4)

wherein R_4 and R_5 are as defined above, with a halide compound of the formula (5),



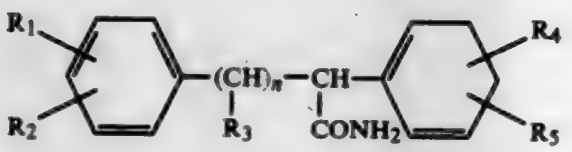
(5)

wherein R_1, R_2, R_3 and n are as defined above and X is a halogen atom, in the presence of a base to produce a nitrile compound of the formula (3),



(3)

wherein R_1, R_2, R_3, R_4, R_5, and n are as defined above, hydrolyzing said compound of the formula (3) using as a catalyst an organic quaternary ammonium salt and/or tertiary amine in the presence of a base and hydrogen peroxide to produce an amide compound of the formula (2),



(2)

wherein R_1, R_2, R_3, R_4, R_5 and n are as defined above, and contacting said amide compound of the formula (2) with a halogen, an alkali metal hypohalite or an alkaline earth metal hypohalite in the presence of a base.

2. A process for preparing an amide derivative represented by the general formula (I),

$$R—CONH_2 \quad (I)$$

wherein R represents a straight or branched C_1–C_6 alkyl or alkenyl group, or a phenyl or aralkyl group, provided that said alkyl or alkenyl group may further have a halogen atom, or an alkoxyl, alkylthio, dialkylamino, alkylsulfonyl, phenyl, phenoxy, phenylthio or hydroxy group, and said phenyl or aralkyl group may further have an alkyl, alkenyl, alkoxyl, alkylthio, dialkylamino, alkylsulfonyl, phenyl, phenoxy, phenylthio or hydroxy group, or a halogen atom, which comprises hydrolyzing a nitrile derivative of the formula (II),

$$R—CN \quad (II)$$

wherein R is as defined above, in the presence of a base and hydrogen peroxide by using an organic quaternary ammonium salt and/or a tertiary amine as a catalyst.

4,536,600

POLYOXYALKYLENEPOLYACRYLAMIDES AND THE PREPARATION THEREOF

Ernest L. Yeakey, and Lewis W. Watts, Jr., both of Austin, Tex., assignors to Texaco Inc., White Plains, N.Y.

Continuation-in-part of Ser. No. 279,906, Jul. 2, 1981, Pat. No. 4,393,237. This application May 25, 1983, Ser. No. 497,948

The portion of the term of this patent subsequent to Jul. 12, 2000, has been disclaimed.

Int. Cl.³ C07C *103/153*

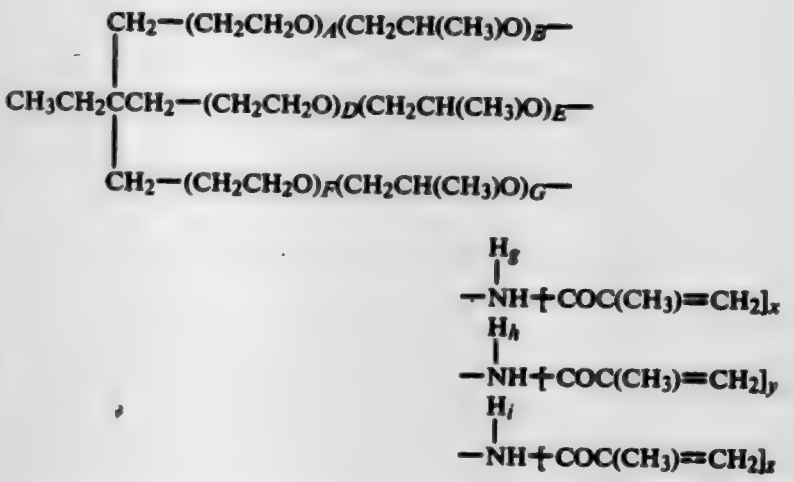
U.S. Cl. 564—153 **4 Claims**

1. A compound of the formula

$$O[(CH_2CH_2O)_A(CH_2CH(CH_3)O)_BCH_2CH(CH_3)NH(COC(CH_3)=CH_2)]_2$$

wherein A+B has an average value of about 2 to about 45.

2. A mixture of compounds of the formula



wherein (A+B+D+E+F+G) has an average value of about 6 to about 35; A, B, D, E, F, G are all greater than or equal to 1; x, y, z are 0 or 1; provided if x=0, g is 1 and conversely g is 0 if x=1; if y=0, h is 1 and conversely h is 0 if y=1; if z=0, i is 1 and conversely i is 0 if z=1; provided further, at least one of x, y, z must be 1.

4,536,601

OPTICALLY ACTIVE N-SUBSTITUTED PHENYLALANINOLS AND USE THEREOF

Masatoshi Tukamoto, Settsu, and Tadahiro Sawayama, Kawanishi, both of Japan, assignors to Dainippon Pharmaceutical Co., Ltd., Osaka, Japan

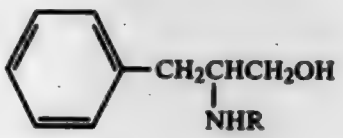
Filed Sep. 23, 1983, Ser. No. 535,284

Claims priority, application Japan, Sep. 28, 1982, 57-172179; Sep. 28, 1982, 57-172180

Int. Cl.³ C07C *91/02*; C07D *317/44*

U.S. Cl. 564—355 **3 Claims**

1. An optically active N-substituted phenylalaninol of the formula:



wherein R is isopropyl, 1-ethylpropyl, cyclopentyl, cyclohexyl, cycloheptyl, 4-methylbenzyl, 4-methoxybenzyl, or 3,4-methylenedioxybenzyl, or an acid addition salt thereof.

2. The optically active N-substituted phenylalaninol of claim 1 wherein R is isopropyl.

4,536,602

AMINATION OF OLEFINS USING ORGANIC ACID CATALYSTS

Michael Deeba, Allentown, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Jun. 1, 1984, Ser. No. 616,359
Int. Cl.[3] C07C *85/02, 85/18*
U.S. Cl. 564—485 11 Claims

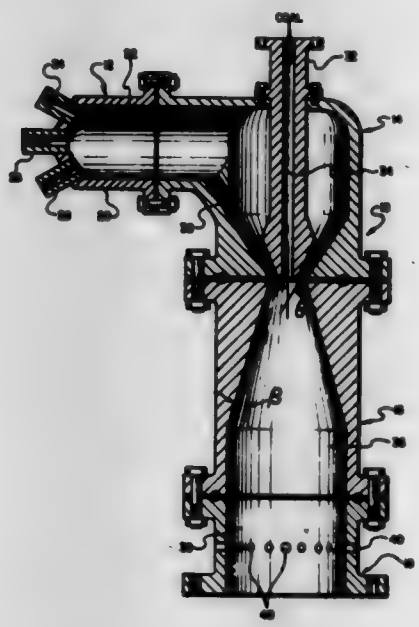
1. A process for forming an amine which comprises: reacting ammonia, a primary amine, or a secondary amine with an olefin, under conditions effective for forming said amine, in the presence of an effective amount of an organic acid catalyst wherein said organic acid catalyst is perfluorinated and has a Hammett acidity value no greater than about −10.

4,536,603

PRODUCTION OF ACETYLENE FROM COAL BY CONTACT WITH A COMBUSTION GAS

Kenneth M. Sprouse, Northridge; Merlin D. Schuman, Canoga Park, and L. Paul Combs, Woodland Hills, all of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Filed Dec. 22, 1983, Ser. No. 564,643
Int. Cl.[3] C10B *49/02, 49/08;* C10G *1/00*
U.S. Cl. 585—539 25 Claims



1. A process for producing acetylene from coal comprising the sequential steps of:

(a) introducing carbonaceous a fuel, oxygen and steam into a hot gas generation zone, the oxygen being introduced in an amount less than the stoichiometric amount required to react with all of the fuel;

(b) reacting the fuel, oxygen and steam within the hot gas generation zone at a superatmospheric pressure and a temperature within the range of from about 3000° to 4500° F. (1920° to 2760° K.) to produce a hot gas stream principally comprising hydrogen, carbon monoxide and steam along with minor amounts of carbon dioxide, and controlling the temperature within said range such that the hot gas stream is essentially free of O, OH and O_2;

(c) accelerating the hot gas stream to a velocity within the range of from about 500 to 4,000 feet per second (150 to 1220 meters per second) and introducing it into a coal reaction zone;

(d) introducing a stream of particulate coal into said coal reaction zone, said coal being selected from the group consisting of bituminous and subbituminous coals, and having a median particle size of less than about 100 microns;

(e) impinging said particulate coal and hot gas stream upon one another to cause intimate mixing and rapid reaction of said stream of particulate coal with said hot gas stream to form an entrained flow of particulate coal in said hot gas, decelerating said flow to a velocity of from about 150 to 300 ft/sec (46 to 92 meters per second), and controlling the amounts of said stream of particulate coal and said hot gas stream to produce in said reaction zone a pressure in the range of from about 10 to 100 psia (0.7 to 6.8 atm.) and a temperature of from about 1800° to 3000° F. (1260° to 1920° K.);

(f) maintaining the mixture of coal and hot gas at said pressure and temperature for a time of from about 2 to 30 milliseconds to produce a product stream, said product stream including enhanced yields of acetylene along with other reaction products and char;

(g) reducing the temperature of said product stream to less than about 900° F. (750° K.) in a time of less than about 2 milliseconds to substantially arrest any further reactions;

(h) separately recovering said acetylene and char; and

(i) utilizing said char as the source of at least a part of the fuel introduced into said hot gas generation zone.

4,536,604

BUTADIENE REDUCTIVE DIMERIZATION USING A PLATINUM CATALYST AND POLYMERIC AMINE PROMOTER

Jiang-Jen Lin, Round Rock, and David C. Alexander, Austin, both of Tex., assignors to Texaco Inc., White Plains, N.Y.

Filed Mar. 15, 1984, Ser. No. 589,805
Int. Cl.[3] C07C *2/76, 11/00*
U.S. Cl. 585—601 18 Claims

1. A method for the preparation of 1,6-octadiene comprising reacting 1,3-butadiene with formic acid in the presence of a platinum(II) catalyst and a polymeric tertiary amine promoter.

4,536,605

PROCESS FOR THE PRODUCTION OF TERTIARY OLEFIN

Koichi Kida, Toyosaka; Yoshio Kawai, Niigata; Yutaka Tamura, Niigata, and Yoshiharu Suzuki, Niigata, all of Japan, assignors to Mitsubishi Gas Chemical Co., Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 280,071, Jul. 2, 1981, Pat. No. 4,343,959. This application Apr. 23, 1982, Ser. No. 371,424
Claims priority, application Japan, Jul. 25, 1980, 55-102074; Jan. 14, 1982, 57-4325
Int. Cl.[3] C07C *1/00*
U.S. Cl. 585—640 14 Claims

1. A process for producing the corresponding tertiary olefin from a tertiary ether which comprises contacting in the presence of steam a gaseous tertiary ether with a catalyst obtained by calcining a silica-alumina compound at 700°–1100° C., the molar ratio of steam to tertiary ether being from 0.3 to 50.

4,536,606

CONTROL OF A CRACKING FURNACE

James W. Hobbs, Sweeny, Tex., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Mar. 10, 1981, Ser. No. 242,491
Int. Cl.[3] C07C *4/02;* G01N *31/00;* G06F *7/58*
U.S. Cl. 585—650 11 Claims

1. A method for controlling a cracking furnace in which a feed stream is cracked to produce a gaseous mixture which contains both components which were originally in said feed stream and components which are produced by the cracking of the original components in said feed stream, said method comprising the steps of:

(a) analyzing said feed stream to determine the concentration (X2) of a first component in said feed stream;

(b) analyzing said gaseous mixture to determine the concentration (Z2) of said first component in said gaseous mixture;

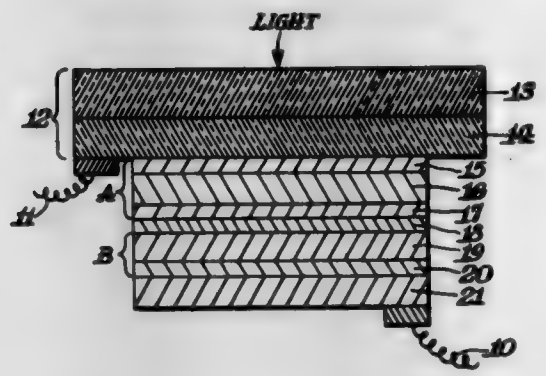
(c) estimating the conversion (Y2) of said first component in said cracking furnace;
(d) calculating the expansion (A2) of said first component in said cracking furnace based on the value of Y2 and expansion versus conversion data
(e) calculating the expansion (A) of said feed stream in said cracking furnace based on the value of X2 and A2;
(f) calculating the conversion (Y2E) of said first component based on the value of A, X2 and Z2;
(g) calculating a new estimated conversion of said first component based on the value of Y2 and Y2E and establishing a first signal representative of the new estimated conversion;
(h) establishing a second signal representative of the desired conversion of said first component;
(i) comparing said first signal and said second signal and establishing a third signal which is responsive to the difference between said first signal and said second signal; and
(j) manipulating the heat supplied to said cracking furnace in response to said third signal to thereby maintain said first signal substantially equal to said second signal.

4,536,607

PHOTOVOLTAIC TANDEM CELL

Harold J. Wiesmann, 1662 Roland Ave., Wantagh, N.Y. 11793

Filed Mar. 1, 1984, Ser. No. 585,159
Int. Cl.³ H01L *31/06*
U.S. Cl. 136—249 38 Claims



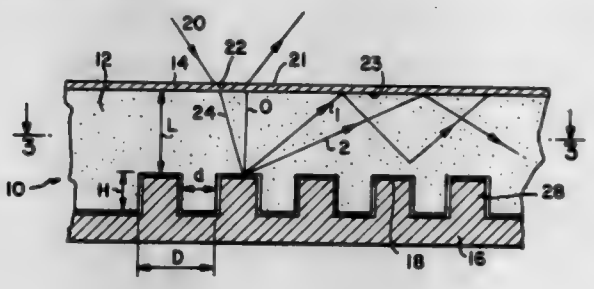
1. A photovoltaic tandem cell wherein the cells are electrically in series with each other comprising, from top to bottom:
an electrically conducting superstrate;
a first cell comprising layers (a), (b), and (c), wherein:
(a) is a first doped amorphous semiconductor layer of a first conductivity type underlying and in contact with said superstrate,
(b) is an intrinsic amorphous semiconductor layer underlying said first doped layer, and
(c) is a second doped amorphous semiconductor layer of said second conductivity type underlying said intrinsic layer;
a non-opaque, high conductivity layer underlying and in contact with said second doped amorphous semiconductor layer;
a second cell underlying and in contact with said non-opaque, high conductivity layer, comprising layers (d) and (e), wherein:
(d) is a first polycrystalline semiconductor layer of a first conductivity type underlying and in contact with said non-opaque high conductivity layer, and
(e) is a second polycrystalline semiconductor layer of a second conductivity type underlying said first polycrystalline layer and forming a p-n heterojunction therewith; and
an electrical contact layer underlying and in contact with said second polycrystalline semiconductor layer.

4,536,608

SOLAR CELL WITH TWO-DIMENSIONAL HEXAGONAL REFLECTING DIFFRACTION GRATING

Ping Sheng, Skillman, and Aaron N. Bloch, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Apr. 25, 1983, Ser. No. 488,436
Int. Cl.³ H01L *31/04*
U.S. Cl. 136—259 7 Claims



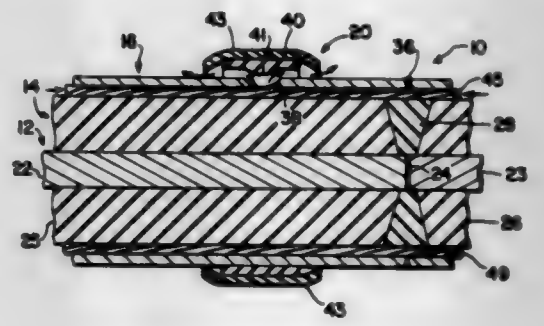
1. A solar cell comprising:
(a) an active layer of semiconductor material having a pair of opposed surfaces,
(b) a two dimensional diffraction grating fixed to one of said surfaces of said active layer and coated with a layer of reflecting material at the interface between said grating and said active material, said grating being a hexagonal array of a plurality of protrusions or depressions wherein said protrusions or depressions are of cylindrical shape such that the distance between the circular cross-sectional centers of said cylindrical shapes is the same between any two adjacent cylindrical shapes.

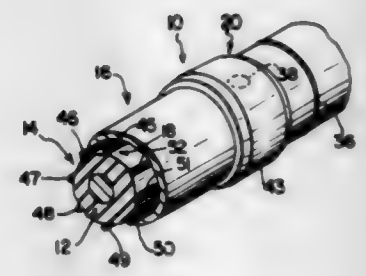
4,536,609

OIL WELL ELECTRICAL CABLE WITH GAS CONDUCTING CHANNEL AND VENT

David H. Neuroth, Bethany, Conn., assignor to Harvey Hubbell Incorporated, Orange, Conn.

Filed Jul. 6, 1983, Ser. No. 511,143
Int. Cl.³ H01B *7/18*
U.S. Cl. 174—11 R 21 Claims





10. An oil well electrical cable comprising:
a conductor;
a layer of gas-permeable insulation surrounding the conductor;
a low gas-permeable sheath surrounding the insulation;
channel means, extending longitudinally of the cable inside the sheath, for defining a gas-permeable channel to conduct, longitudinally of the cable, gases located in the insulation;
said channel means comprising an elongated member having a greater gas permeability than said insulation; and
vent means, in communication with said channel means, for venting gases conducted along said channel means through the sheath to the exterior thereof.

4,536,610

OIL-FILLED, MULTI-CORE CABLE WITH AT LEAST ONE CONDUCTOR DIFFERING FROM OTHERS

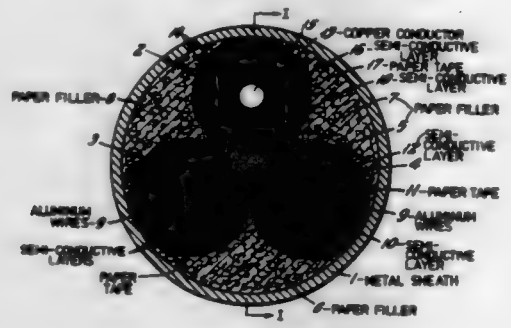
Alberto Giussani, Milan, Italy, assignor to Societa' Cavi Pirelli, S.p.A., Milan, Italy

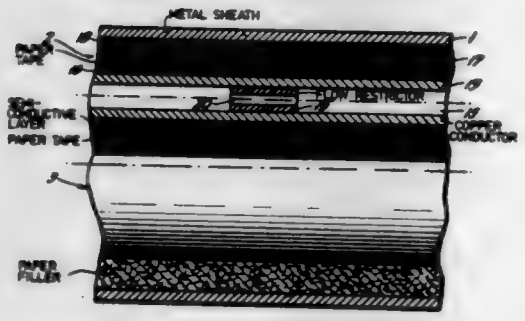
Filed Jun. 18, 1984, Ser. No. 621,442
Claims priority, application Italy, Jun. 21, 1983, 21700 A/83
Int. Cl.³ H01B *9/06*
U.S. Cl. 174—26 R 10 Claims

1. An oil-filled, multi-core, electric cable comprising a metal sheath surrounding a plurality of cores, each of said cores comprising a metal conductor covered with oil-permeable insulation impregnated with a fluid, insulating oil, the conductor of at least one, but less than all, of said cores being made of a metal having an electrical conductivity higher than the elec-

479-974 O.G.–85–13

trical conductivity of the metal of the conductor of at least one other of said cores, each conductor made of a metal of higher conductivity having a longitudinal duct therein for the move-





ment of said fluid, insulating oil along the duct and each conductor made of a metal of a lower conductivity being a compact strand of metal wires which substantially fill the space within a circle containing the periphery of said strand.

4,536,611

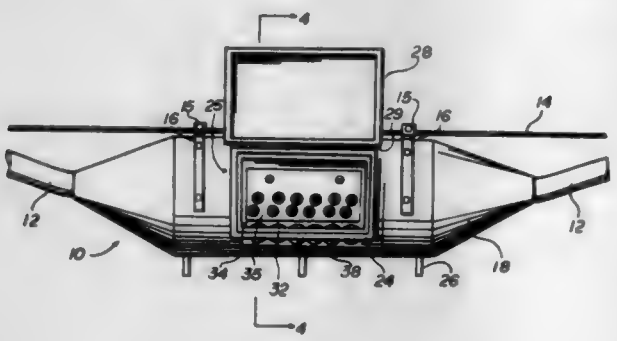
UNITARY TELEPHONE CABLE CLOSURE

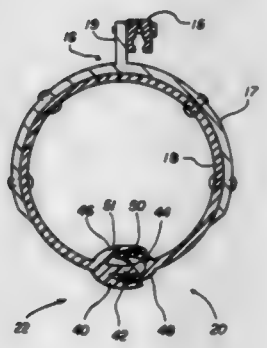
David O. Butler, 1306 Vermont Ave., Tarpon Springs, Fla. 33589

Continuation-in-part of Ser. No. 623,495, Jun. 22, 1984,. This application Feb. 28, 1985, Ser. No. 706,860

Int. Cl.[3] **H02G** *15/113, 7/08;* **H01R** *9/00*

U.S. Cl. 174—41 **10 Claims**





1. A unitary telephone cable closure for enclosing a communications cable suspended from a support strand, comprising:

a hollow, flexible wall, tubular housing having a pair of longitudinal mating edges separated by a longitudinal access slot, said edges being fastenable together in mating engagement after passing a cable through said slot;

a metal hanger bracket having a lower flexible portion fastened to the outside upper circumferential surface of said tubular housing and a vertical portion projecting upwardly, for fastening to a support strand;

a second metal hanger bracket having a lower flexible portion fastened to the outside upper circumferential surface of said tubular housing and a vertical portion projecting upwardly, for fastening to a support strand;

a first longitudinal edge of said pair including a first hook portion projecting circumferentially from said wall and having an upwardly projecting barb, an upper guard portion projecting from said wall and extending above said barb of said hook portion, and a first lower guard portion projecting from said wall and extending below said hook portion;

a second longitudinal edge of said pair including a second hook portion projecting circumferentially from said wall and having a downwardly projecting barb and a second lower guard portion projecting from said wall and extending below said second hook portion;

said second hook portion of said second edge disposed for mating engagement between said upper guard portion and said first hook portion of said first edge, and said second lower guard portion of said second edge disposed for mating engagement between said first hook portion and said first lower guard portion of said first edge;

whereby said first and second hook portions are protected by both said first and said second lower guard portions;

whereby said closure can be fastened about a cable.

6. A unitary telephone cable closure for enclosing a communications cable suspended from a support strand, comprising:

a hollow, flexible wall, tubular housing having a pair of longitudinal mating edges separated by a longitudinal access slot, said edges being fastenable together in mating engagement after passing a cable through said slot;

a metal hanger bracket having a lower flexible portion fastened to the outside upper circumferential surface of said tubular housing and a vertical portion projecting upwardly, for fastening to a support strand;

a second metal hanger bracket having a lower flexible portion fastened to the outside upper circumferential surface of said tubular housing and a vertical portion projecting upwardly, for fastening to a support strand;

a rectangular frame formed about a rectangular opening in one side of said tubular housing between said first and said second metal brackets;

a terminal block panel assembly attached within said rectangular frame and being comprised of a terminal block panel on which a terminal block is mounted;

a hinge mounted horizontally on a top side of said frame;

a rectangular lid pivotally mounted on said hinge, for providing access to said terminal block;

whereby said closure can be fastened about a cable and access can be had to terminate portions of a cable through said rectangular opening.

4,536,612

BOX FOR RAISED FLOORS

Charles N. Domigan, Coolville, Ohio, assignor to Butler Manufacturing Company, Kansas City, Mo.

Filed Jun. 3, 1983, Ser. No. 500,620

Int. Cl.[3] **H02G** *3/08*

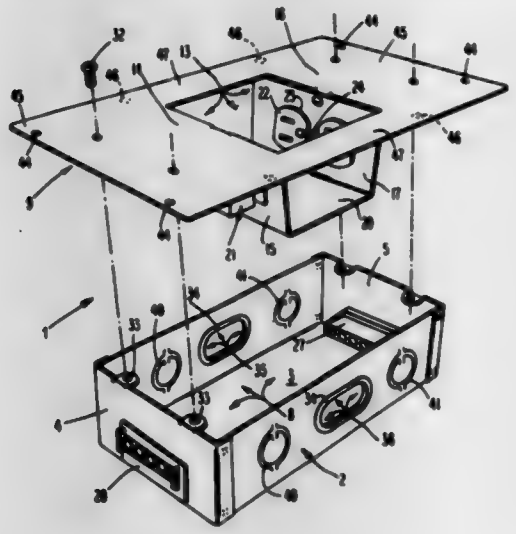
U.S. Cl. 174—48 **8 Claims**

6. A floor box comprising:

a hollow housing having a top opening; and

divider means connected with said housing and forming, in conjunction with the housing, a pair of spaced apart power sections with each section having a receptacle bracket, a communication section partially formed by said

receptacle brackets and being open to said top opening, and a passageway underneath the communication section



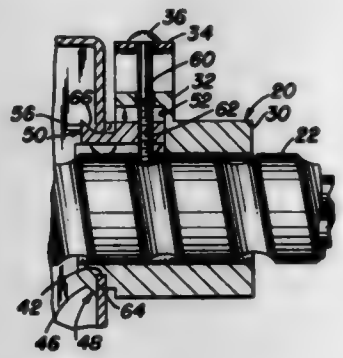
and providing space for conductors to extend between the power sections.

4,536,613

CLAMP BUSHING FOR SECURING AN ELECTRICAL CABLE TO AN ELECTRICAL OUTLET BOX

Gunter A. Gallas, New Hyde Park, N.Y., assignor to Slater Electric Inc., Glen Cove, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,475
Int. Cl.³ H05K 5/02
U.S. Cl. 174—65 R 10 Claims



1. A clamp for securing an electrical distribution member such as an electrical power cable, electrical metallic tubing and the like to a junction box, comprising:

a bushing member adapted to receive the distribution member to be secured to the box;

a pair of jaws extending from said bushing, said jaws adapted to be inserted within a cable entry port in a wall of the box, one of said jaws being formed on an arm which is movable relative to said bushing member, and the other jaw being fixed to said bushing member;

guide means for guiding said arm during movement along a path transverse to the cable;

actuation means both for moving said jaws relative to each other to permit said jaws to grip the cable entry port along generally opposite rim portions thereof and for securing the distribution member to said bushing member, said actuating means including a threaded fastener threadably engaging said arm for moving said arm along said transverse path when said threaded fastener is turned, said threaded fastener having a head and a threaded shank; and

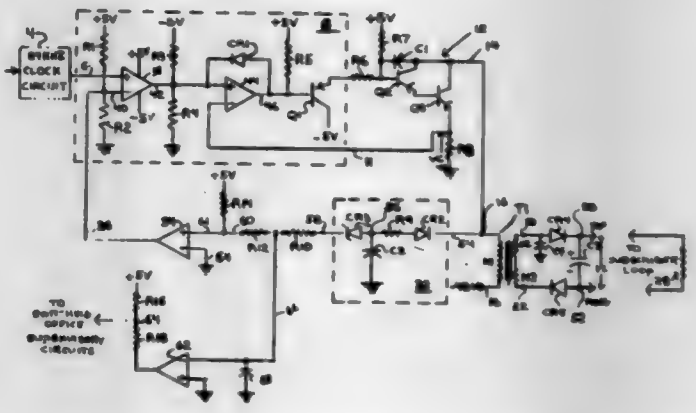
biasing means associated with said bushing, said biasing means adapted to urge said movable arm away from said fixed jaw.

4,536,614

SUPERVISION AND DIAL PULSE DETECTION CIRCUIT FOR A TELEPHONE SUBSCRIBER LINE

Constantine V. Skidanenko, Menlo Park, and Gregor D. McGibbon, San Carlos, both of Calif., assignors to GTE Communication Systems Corporation, Phoenix, Ariz.

Filed Dec. 13, 1982, Ser. No. 449,030
Int. Cl.³ H04M 3/22
U.S. Cl. 179—18 FA 3 Claims



1. In a floating battery feed circuit for providing a controlled current to a telephone station set of a subscriber loop, supervisory and dial pulse detection apparatus comprising:

a primary dc power source having positive and negative output terminals, said positive output terminal being connected to ground;

a transformer having a primary and a secondary winding, one terminal end of said primary winding being connected to said negative output terminal of said primary dc power source;

a rectifier circuit, including a first storage capacitor, connected between first and second terminals of said secondary winding, the output of said rectifier circuit being adapted for connection to the tip and ring leads of said subscriber loop;

a clock source providing clock signals at predetermined time intevals at an output;

a pulse width control circuit having a first input receiving said clock signal and in response thereto providing a drive signal at an output thereof, and having a second input adapted to receive a feedback control signal;

a transistor circuit configuration having a first input connected to the other terminal end of said primary winding, and having a second input receiving said drive signal and in response thereto switching from an off to a saturation condition, and providing said feedback control signal to the second input of said pulse width control circuit so as to turn off the drive signal when the amplitude of said feedback control signal reaches a predetermined value, whereby energy is transferred from the primary of said transformer to the secondary, and reflected energy is transferred from the secondary winding to said primary winding; and

means responsive to the reflected voltage from said secondary winding for identifying the telephone station set that is on-hook or off-hook;

said identifying means comprising means for establishing a threshold voltage level above which an on-hook condition is identified and below which an off-hook condition is identified; and comparing means responsive to the output of said threshold level means whereby status of the subscriber loop is supplied to a local switching office; and

said means for establishing a threshold voltage level comprising a peak detector having one input terminal connected to the other terminal end of said primary winding and including a second storage capacitor for storing the reflected voltage; and a voltage breakdown diode having an anode which is connected to one terminal end of said second storage capacitor to provide the desired threshold

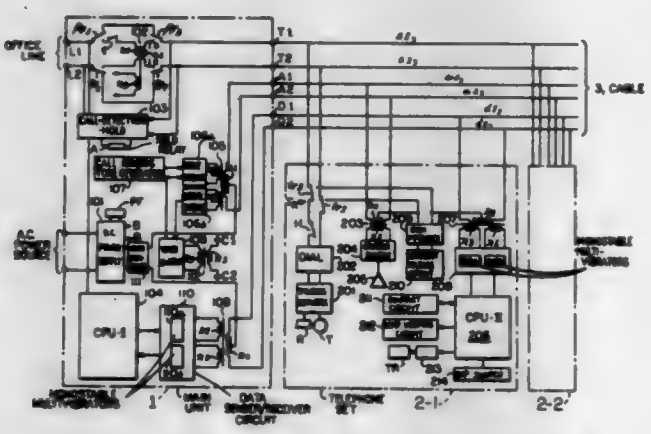
level and thus establish the identification of on-hook or off-hook states, which results from the different voltage levels being reflected from the secondary winding to the primary winding.

4,536,615

KEY TELEPHONE EQUIPMENT AND ASSOCIATED METHOD

Norio Kimijima, Nagatsuta, and Yuzuru Kawazoe, Kawasaki, both of Japan, assignors to Nitsuko Limited, Kawasaki, Japan

Filed Jan. 3, 1983, Ser. No. 455,264
Claims priority, application Japan, Jun. 5, 1982, 57-95605
Int. Cl.³ H04M *1/60, 9/06*
U.S. Cl. 179—81 B **17 Claims**



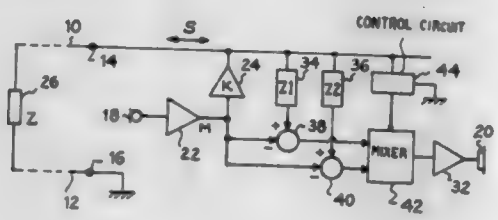
16. A method of connecting a main unit of telephone equipment to a plurality of telephone sets for connection of the telephone sets to an external office line and for extension line calling, said method comprising operatively connecting the main unit to an external office line, operatively connecting the plurality of telephone sets to the main unit in parallel via three pairs of wires constituted by a first pair of line wires, a second pair of audio signal wires and a third pair of data signal wires, and supplying electrical voltage from an external source through the main unit to each of the telephone sets via the pairs of data wires and audio wires enabling extension line calling to be completed through said pair of audio signal wires and said pair of data signal wires whereas outside calling through the external office line is effected through the the line wires and the main unit.

4,536,616

MICROPHONE OR MOUTHPIECE SIGNAL SUPPRESSION CIRCUIT

Jean C. Kaire, St. Egreve, France, assignor to Thomson-CSF, Paris, France

Filed Dec. 28, 1983, Ser. No. 566,434
Claims priority, application France, Dec. 28, 1982, 82 21865
Int. Cl.³ H04M *1/58*
U.S. Cl. 179—81 A **8 Claims**



1. A mouthpiece signal suppression circuit for a telephone set, which telephone set includes a mouthpiece amplifier supplying a mouthpiece signal to a line amplifier, which transmits this mouthpiece signal on a telephone line, a receiver amplifier supplying a signal to a receiver with the mouthpiece signal suppression circuit receiving on the one hand the mouthpiece signal and on the other hand a composite signal from the line, in order to supply the telephone receiver with a signal essentially corresponding to the composite signal, from which has been subtracted the mouthpiece signal, wherein said suppression circuit comprises:

two different compensation impedances, one of which provides an impedance matching for a short telephone line and the other an impedance matching for a long telephone line,

a signal mixer for mixing signals modified by said two impedances with controlled variable proportions,

a control circuit receiving a signal representing the impedance of said telephone line and controlling said signal mixer in order to check the proportions of the mixture of said mixing signal as a function of the impedance of said line, and

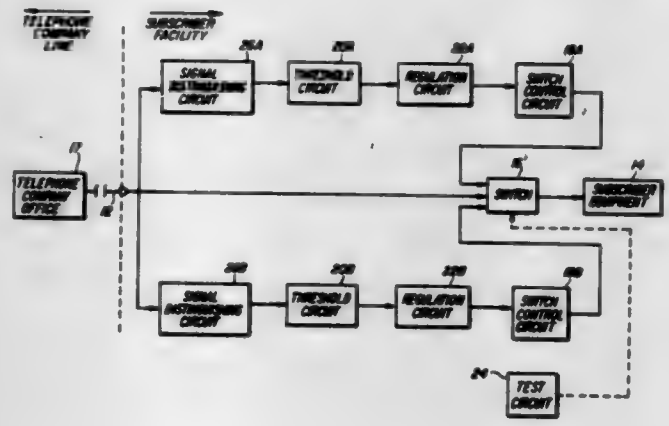
a signed addition function means receiving the composite line signal and the mouthpiece signal wherein at least one of said composite line signal and said mouthpiece signal is modified by said compensation impedances.

4,536,617

REMOTELY-ACTIVATED SWITCHING APPARATUS

Steven B. Perry, Highlands, N.J., assignor to Keptel, Inc., Ocean, N.J.

Filed Aug. 1, 1983, Ser. No. 519,411
Int. Cl.³ H04B *3/46*
U.S. Cl. 179—81 R **30 Claims**



27. A switching deivce adapted to be coupled to a line such as a telephone line and the like to connect or disconnect equipment connected to the line in response to a first signal transmitted on the line from a location remote from the location at which the device is located and reconnect the equipment in response to a second signal transmitted on said telephone line from said remote location, the device comprising switch means coupled to the line and to the equipment so as to connect and disconnect the line and the equipment in respective switching states of the switch means, first means coupled to the line and to the switch means responsive to the first signal when on the line to cause the switch means to switch from a first state connecting the equipment to a second state disconnecting the equipment from the line, second means substantially the same as and separate from the first means responsive to the second signal when on the line and coupled to the switch means for causing the switch means to switch from the second state to the first state, said first means comprising a first voltage threshold means which provides an output voltage causing the switch means to switch only when the voltage at the input of the first voltage threshold means exceeds a predetermined value, said second means comprising a second voltage threshold means which provides an output voltage causing the switch means to switch only when the voltage at the input of the second voltage threshold means exceeds a predetermined voltage of a polarity opposite to the polarity of the voltage at the input to the first voltage threshold means which is effective to cause switching, said first means further including a first voltage regulator coupled to the first voltage threshold means and said second means comprising a second voltage regulator coupled

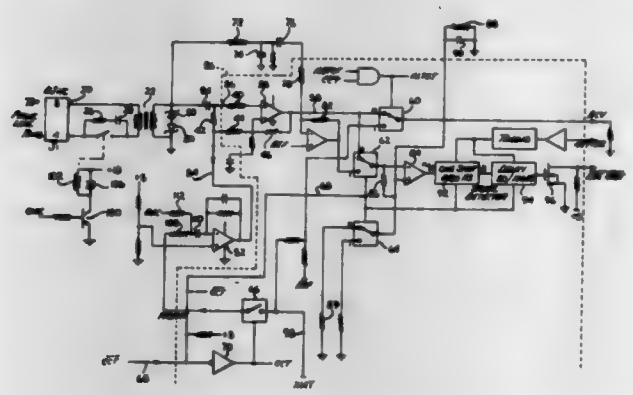
to the second voltage threshold means, said device further including first chargeable means coupled to the output of the first voltage regulator adapted to charge when there is a voltage present at the output of the first voltage regulator, second chargeable means coupled to the output of the second voltage regulator adapted to charge when there is a voltage present at the output of the second voltage regulator, first discharge means coupled to the first chargeable means for discharging the first chargeable means when the magnitude of the voltage at the first chargeable means exceeds the magnitude of the voltage at the output of the first voltage regulator, second discharge means coupled to the second chargeable means for discharging the second chargeable means when the magnitude of the voltage at the second chargeable means exceeds the magnitude of the voltage at the output of the second voltage regulator, the first discharge means being coupled to the switch means and controlling switching of the switch means from the first state to the second state when the first discharge means id discharging, the second discharge means being coupled to the switch means and controlling switching of the switch means from the second state to the first state when the second discharge means is discharging.

4,536,618

TELEPHONE LINE INTERFACE

Arthur L. Serrano, Canoga Park, Calif., assignor to Novation, Inc., Chatsworth, Calif.

Filed Oct. 14, 1983, Ser. No. 541,986
Int. Cl.³ H04M *1/72*
U.S. Cl. 179—84 R **8 Claims**



1. Apparatus for detecting the ring signal on first and second telephone lines comprising;

a coupling transformer having a primary winding and a secondary winding, each having at least two leads thereon,

a switch means for controllably changing between open and closed conditions to provide electrical conduction between first and second switch contact means when in said closed condition, said first switch contact means being a means for connection to the first telephone line, said second switch contact means being coupled to said first primary lead for said coupling transformer, said second primary lead of said coupling transformer including means for coupling to the second telephone line,

open line load means coupled between said first and second switch contact means for providing a predetermined linear load on the phone lines when said switch means is open, and

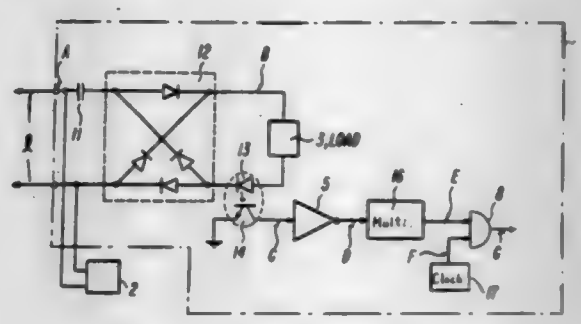
ring signal sensing means coupled to said first and second secondary leads of said coupling transformer for sensing the presence of a ring signal on the telephone lines when said switch means is open, said ring signal sensing means including filter means for attenuating signals not within the predetermined frequency range of the ring signal, and sensing means coupled to said filter means for sensing the presence of an output of said filter means within the predetermined frequency range of the ring signal and providing a ring detect output signal in response thereto.

4,536,619

RINGING SIGNAL DETECTION CIRCUIT

Fumikazu Hamatani, and Kouichi Funabasama, both of Kawasaki, Japan, assignors to Nitsuko Limited, Kawasaki, Japan

Filed Dec. 27, 1983, Ser. No. 565,629
Claims priority, application Japan, Dec. 28, 1982, 57-227728
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—84 R **8 Claims**



1. A ringing signal detection circuit for a subscriber's apparatus connected to a telephone office line together with a telephone set having a rotary dialling device for sending out a dial pulse signal, which comprises;

first means receiving an incoming signal on the telephone office line and producing a pulse signal with a repetition frequency twice that of the incoming signal:

second means coupled to an output of said first means and providing a high level signal at an output thereof in response to each pulse from said first means, said second means maintaining the high level signal continuously during a time period when pulses are applied thereto with a pulse interval smaller than a predetermined break period in the dial pulse signal; and

third means for detecting a time period during which the output of said second means is maintained at a high level, said third means providing a ringing signal detection output at a time when the detected time period is equal to a predetermined time period in relation to the ringing signal,

said third means comprising:

clock pulse generator means for generating clock pulses at a predetermined repetition frequency higher than the dial pulse signal;

fourth means coupled with the output of said second means and said clock pulse generator means for permitting the clock pulses to pass therethrough during a time period when the output signal from said second means is maintained at the high level; and

counter means coupled with an output of said third means and counting up the clock pulses passing through said fourth means, said counter means providing the ringing signal detection output at a time when a counter number in said counter means is equal to a value predetermined in relation to the ringing signal.

4,536,620

MASTER UNLOCK CIRCUIT FOR AN ELECTRONIC TELEPHONE

John G. Wagoner, Vienna, Va., and Louis W. Smith, St. Petersburg, Fla., assignors to GTE Business Communication Systems Inc., Northlake, Ill.

Filed Dec. 12, 1983, Ser. No. 560,694
Int. Cl.³ H04M *1/26*
U.S. Cl. 179—90 D **9 Claims**

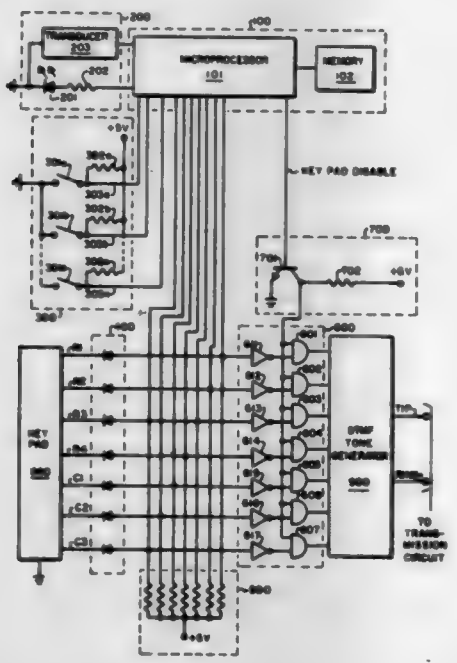
1. A master unlock circuit for use in a telephone station which includes a keypad operative to provide a plurality of pairs of row and column signals, a tone generator operative to provide a plurality of pairs of tones, and a station lock switch operative to provide a station lock switch signal, said master unlock circuit comprising:

storage means operative to provide a stored lock status

signal, a stored unlock status signal and a stored master unlock code signal, each in response to a lock status signal, unlock status signal or master unlock code signal, respectively, being stored in said storage means;

a microprocessor connected to said station lock switch, said keypad and said storage means and operative in response to said station lock switch signal and said stored unlock status signal to provide disable and first sensible control signals and to store a lock status signal in said storage means;

said microprocessor being further operative in response to said station lock switch signal, said stored lock status signal and a plurality of pairs of row and column signals representative of said stored master unlock code signal to provide enable and second sensible control signals and to store an unlock status signal in said storage means;



gating means coupled between said microprocessor and said tone generator and further coupled between said keypad and said tone generator, said gating means being operative in response to said enable signal and said pairs of row and column signals to provide gate signals representative of said pairs of row and column signals, and further operative in response to said disable signal to inhibit said gate signals;

said tone generator being operative in response to said gate signals to provide an associated pair of tones; and

first sensible indication means connected to said microprocessor and operative in response to said first sensible control signal to provide a first sensible signal, and further operative in response to said second sensible control signal to provide a second sensible signal.

4,536,621

DUAL TALK PATH KEY TELEPHONE

Henry M. Bergen, Floral Park; Sedat Zaimi, New York; Vincenzo Castellano, Brooklyn, and Irwin Schildkraut, New York, all of N.Y., assignors to IPC Communications, Ltd., Greenwich, Conn.

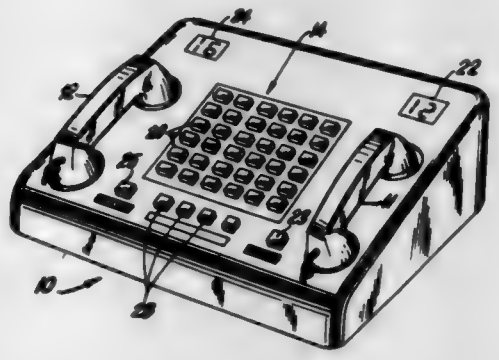
Filed May 8, 1984, Ser. No. 608,239
Int. Cl.³ H04M *1/02, 1/72*
U.S. Cl. 179—99 R **3 Claims**

1. In a multi-line key telephone system the combination of:

a key field including a plurality of non-locking pushbutton keys for selected line connections;

at least two independent audio terminations;

means for coupling said key field to control line selection for a particular audio termination only for a predetermined interval after a new line request therefor; and



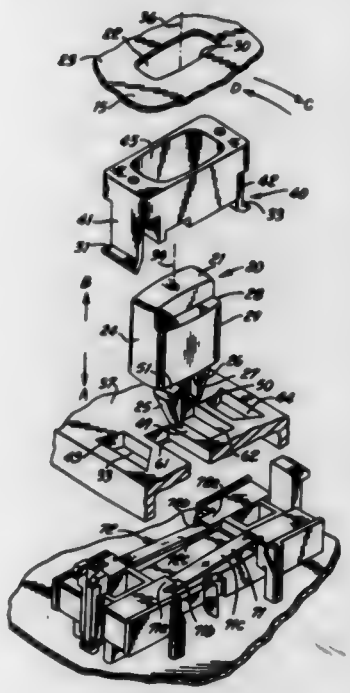
switching means for coupling said audio terminations to a selected line if selected during said predetermined interval following a new line request.

4,536,622

REMOTE TELEPHONE ON-HOOK, OFF-HOOK CONTROL AND INDICATION CIRCUIT

Richard F. Rieman, Lawrence Township, Marion County, Ind., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Sep. 29, 1982, Ser. No. 426,359
Int. Cl.³ H01H *9/22*; H04M *1/03*
U.S. Cl. 179—103 **1 Claim**



1. A telephone handset comprising: a handset housing containing a transmitter and a receiver and having a dial mounted on its front side on a front enclosure wall for said housing, said wall having formed therein an aperture communicating with the interior of said housing and having an aperture axis passing through said aperture transverse to said wall, a chassis disposed in said housing in fixed relation therewith so as to be beneath and spaced from said aperture, said chassis having formed therein a pair of slots, a frame disposed in said housing between said aperture and chassis and having formed therein a guideway extending in the direction of the aperture-chassis spacing, a pair of clips joined to said frame and extending from said frame through said slots, said clips terminating away from said frame in respective tabs facing toward the side of said chassis away from said frame and each adapted to make engagement with such side, and said clips being dimensioned and unlocked in said slots to allow said frame to be angularly rockable relative to said chassis and housing in the direction towards and away from said transmitter, a push button received in said aperture so that the front and back ends of said

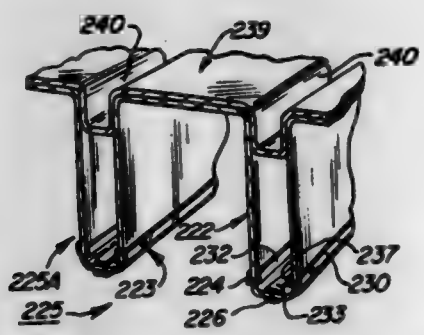
button are, respectively, outside and inside said housing, said button having a button axis extending between said ends and a body portion disposed intermediate said ends and received with a sliding fit in said guideway, and said button having formed in its front end and on a side thereof in the direction towards or away from said transmitter a recessed knee of "L" shape in cross-section in such direction so as to be bounded by first and second button surfaces substantially normal to each other, and of which said first surface extends inward from said side to form a lip on said button, and said second surface extends from the inner edge of said first surface in the axial direction of said button to the top of said button at its front end, a compression spring interposed between said chassis and a rearward part of said push button so as to urge said button outwardly, a stop formed on said button and adapted by engagement with said frame to communicate thereto such urging of said spring, said button and frame being adapted by manipulation of said button to be movable together between a reference angular position at which said button and aperture axes are parallel and said button is slidably movable in said frame between innerpost and outermost operating positions and, on the other hand, a displaced angular position at which said button and aperture axis are at an acute angle and said lip is beneath a portion of said wall adjacent said aperture, said spring being adapted when said button and frame are at such displaced angular position to displace such button translationally outward so as to bring said lip into friction contact with such wall portion and, thereafter and by such friction contact, to yieldably maintain said button and frame in said displaced angular position against the bias of a resilient force produced by said spring, said spring button and frame being further adapted, when said button and frame are at said reference angular position, to operate so that said frame and chips are driven outward by said urging to bring said tabs into said engagement with said chassis side to thereby stabilize said frame to yieldably maintain said button and frame at said reference angular position while permitting angular displacement of said button and frame away from such position against the bias of said resilient force produced by said spring; said handset further comprising, switch means disposed in said housing adjacent the back end of said button and adapted when, respectively, said button is in either of said innermost operating and displaced angular positions and, alternatively, said button is in said outermost operating position, to be actuated by said back end of said button to assume, respectively, a first open condition corresponding to an ON-HOOK condition for said handset, and a second close condition corresponding to an OFF-HOOK condition for said handset.

4,536,623

ELECTRO-ACOUSTIC TRANSDUCER WITH DIAPHRAGM AND BLANK THEREFOR

David A. Larson, 2460 Wisconsin Ave., Downers Grove, Ill. 60515

Division of Ser. No. 389,423, Jun. 16, 1983,. This application Oct. 13, 1983, Ser. No. 503,947
Int. Cl.³ H04R *9/00, 7/14*
U.S. Cl. 179—115 R 10 Claims



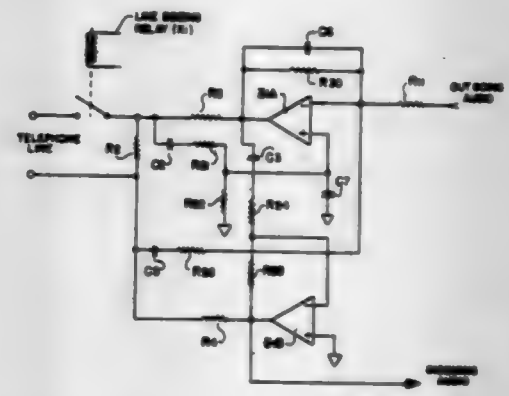
1. In an electro-acoustic transducer having spaced-apart magnet means, a diaphragm comprising a folded sheet of film material having a front surface and having a plurality of spaced-apart elongated projections extending from the back side thereof and being channel-shaped throughout their lengths, each one of said projections having conductor means disposed thereon and extending substantially in alignment with said magnet means to coact electromagnetically therewith; a substantially flat, thin sheet secured in overlying relationship with said front surface; and wherein a series of pairs of inward extending gussets are formed in said leg portions and contact one another.

4,536,624

TELEPHONE ANSWERING MACHINE INTERFACE CIRCUIT

Stephen V. Lyle, San Pedro, Calif., assignor to T.A.D. Avanti, Inc., Compton, Calif.

Filed Jan. 13, 1983, Ser. No. 457,663
Int. Cl.³ H04M *1/00*
U.S. Cl. 179—170 NC 5 Claims



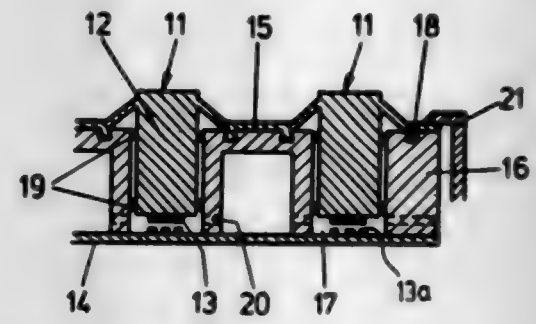
1. A circuit for interfacing a telephone answering machine to a telephone line, including: a transmit amplifier circuit for audio signals to be introduced to the telephone line and including first and second differential amplifiers; circuitry for connecting the output of said amplifier circuit to the telephone line including an output circuit connected to said differential amplifiers to provide a balanced output between the outputs of said differential amplifiers; a resistor of a selected resistance value included in said circuitry adapted to be connected across said telephone line to provide a direct current terminating impedance for the telephone line; and a positive feedback circuit connected to said transmit amplifier circuit to enable said transmit amplifier circuit to increase the effective impedance of said resistor to an increased apparent alternating current impedance in the presence of audio signals.

4,536,625

KEYBOARD DESIGN

Alain M. Bebie, Germaniastr. 51, 8006, Zurich, Switzerland

Filed Apr. 13, 1984, Ser. No. 599,801
Claims priority, application Switzerland, Apr. 20, 1983, 2105/83; Oct. 11, 1983, 5521/83; Nov. 14, 1983, 6100/83
Int. Cl.³ H01H *13/70*
U.S. Cl. 200—5 A 24 Claims



1. An electrical switch keyboard comprising:

a frame defining an upper surface plane,
a one-piece mat made of resilient material laid in sealing engagement upon said frame, said mat being an upper layer of the keyboard with portions thereof positioned above said plane,
key portions formed integrally in said mat structured to move relative to said frame along a designated axis angled relative to said upper surface plane,
means in part integrally depending below said mat from said key portions to guide said key portions in said relative movement to said frame so that they can not appreciably tilt sidewise of said designated axis upon actuation by an operator for movement along said designated axis, and
switching elements positioned within said frame to operate in conjunction with said key portions,
each of said key portions having an operation element to function with said switching elements to produce switching currents upon depression of the respective key portion.

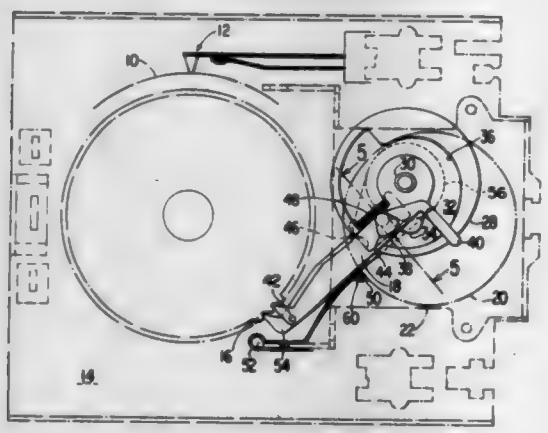
2. An electrical switch keyboard comprising:
a frame defining an upper surface plane,
a one-piece mat made of resilient material laid in sealing engagement upon said frame, said mat being an upper layer of the keyboard with portions thereof positioned above said plane,
key portions formed integrally in said mat structured to move relative to said frame along an axis substantially perpendicular to said upper surface plane,
means to guide said key portions in said relative movement so that they can not tilt sidewise of said axis upon actuation by an operator,
said guidance means comprising
a piston-like element depending from each key portion and
a structure in said frame which provides a slide track for said piston-like element to a switching position,
switching elements positioned within said frame to operate in conjunction with said key portions,
each said piston element having an operation member depending therefrom to function with said switching elements to produce switching currents upon depression of the respective key portion.

4,536,626

TIMER DRIVE MECHANISM

Guy A. Wojtanek, Franklin Park, Ill., assignor to The Singer Company, Stamford, Conn.

Filed Jun. 1, 1984, Ser. No. 616,092
Int. Cl.³ H01H *43/00*; G04F *8/00*
U.S. Cl. 200—35 R **9 Claims**



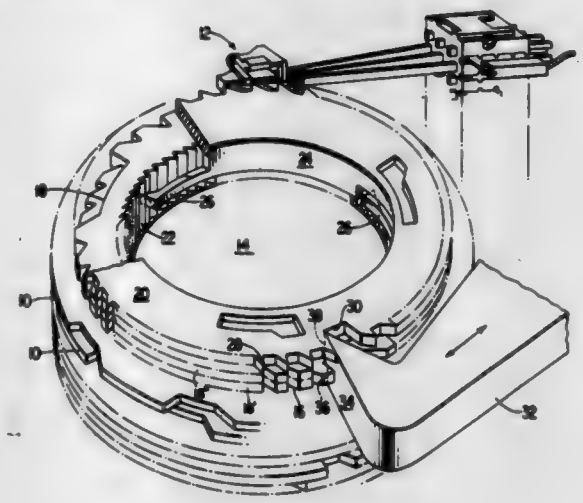
1. A mechanism for driving a switching device in a timer or the like in a step-by-step manner, comprising:
a ratchet track on said switching device;
a motor;
a drive cam coupled to said motor for continuous rotation therewith, said drive cam having opposed first and second camming surfaces thereon;
a drive pawl operatively associated with said ratchet track;
a cam follower mounted on said drive pawl and trapped between said first and second camming surfaces;
means for yieldably biasing said drive pawl against said ratchet track; and
guide means for limiting the motion of said drive pawl to substantially linear reciprocation tangential to said ratchet track.

4,536,627

EXPANDED INTERVAL TIMER DRIVE MECHANISM

John P. Duve, Brookfield, Ill., assignor to The Singer Company, Conn.

Filed Jun. 1, 1984, Ser. No. 616,032
Int. Cl.³ H01H *43/00*
U.S. Cl. 200—38 R **9 Claims**



1. A program timer having a plurality of timing cams located on a rotating member and controlling the operation of switches in a predetermined program characterized by:
a first ratchet ring mounted on said rotating member for movement therewith, said first ratchet ring having a first band of ratchet teeth over a first portion of its width and a second band of ratchet teeth over the remainder of its width, the ratchet teeth of said first band having uniform root and tip levels, said second band having at least one region with no ratchet teeth and being at a level below the root level of the ratchet teeth of said first band, the remainder of said second band having ratchet teeth which are coextensive with the ratchet teeth of said first band;
a second ratchet ring arranged for free relative rotational movement in a first direction with respect to said rotating member, said second ratchet ring being in axial alignment with said first ratchet ring, the ratchet teeth of said second ratchet ring having uniform tip and root levels, said second ratchet ring being formed with at least one notch at a level below the root level of the second ratchet ring teeth and substantially the same as the level of the toothless region of said second band of said first ratchet ring; and
a drive pawl selectively engaging said first and second ratchet rings to selectively drive same in said first direction, said drive pawl engaging said first ratchet ring in the arc length corresponding to said toothless region only when said drive pawl engages said notch of said second ratchet ring.

4,536,628

PUSHBUTTON SWITCH ASSEMBLY WITH INTEGRATED LOCK-DOWN SWITCH

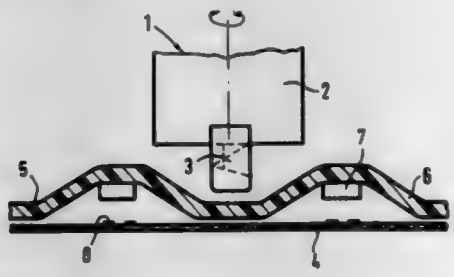
Werner Willhaus, Stuttgart, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 11, 1984, Ser. No. 598,947

Claims priority, application Fed. Rep. of Germany, Apr. 23, 1983, 3314772

Int. Cl.[3] H01H *9/28*

U.S. Cl. 200—43.08 4 Claims



1. A pushbutton switch assembly, comprising a printed circuit provided with contacts and conductors and a switching mat of elastic material placed thereover, which comprises domes associated with pushbutton keys, and in the cavities of which the moving contacts are accommodated, wherein a lock-down switch, whose lock cylinder comprises a rotatable trip cam, is integrated into said pushbutton switch assembly and is disposed in such a way above the switching mat that a dome becomes operable upon rotation of the trip cam.

4,536,629

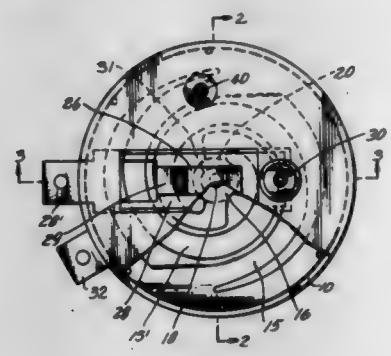
GAS DAMPED ACCELERATION SWITCH

Robert W. Diller, Pasadena, Calif., assignor to Technar, Incorporated, Arcadia, Calif.

Filed Nov. 3, 1983, Ser. No. 548,337

Int. Cl.[3] H01H *35/14*

U.S. Cl. 200—61.45 R 14 Claims



1. An acceleration sensing apparatus comprising: a base, a movable mass, means supporting the mass from the base for movement along an axis, a force generating means urging the mass in one direction along said axis, damping means controlling movement of the mass against the urging of the force generating means, the damping means including a first member secured to the base and a second member secured to the mass, the two members having broad mating surfaces which are normally held in contact by the force generating means, the mating surfaces being moved apart by movement of the mass relative to the base along said axis, the second member comprising a thin plate having an outer periphery out of contact with any surrounding structure, one side of the plate forming said mating surface with the first member, the plate being moved by the mass free of any restraining forces other than viscous damping of any surrounding air.

4,536,630

LIMITING SWITCH

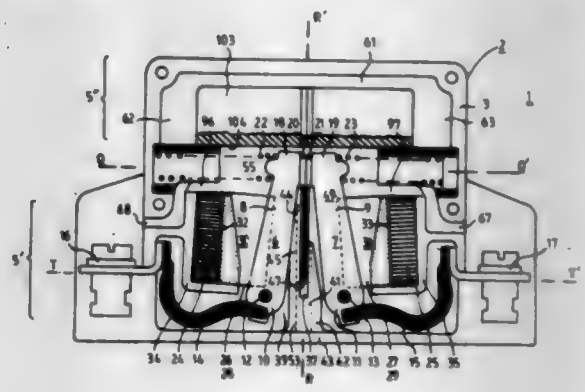
Elie Belbel, Epinay; Christian Blanchard, Nanterre; Louis Fechant, Le Vesinet; André Haury, Le Raincy, and Michel Lauraire, Courbevoie, all of France, assignors to La Telemecanique Electrique, Nanterre, France

Filed Feb. 3, 1984, Ser. No. 576,847

Claims priority, application France, Feb. 4, 1983, 83 01750

Int. Cl.[3] H01H *33/06*

U.S. Cl. 200—151 10 Claims



1. In a current limiting switch comprising, in a case: at least one mobile lever subject to the action of a resilient member which applies one against the other separable contact pieces directly placed at the respective ends of the lever arm carrying the mobile contact and a contact support roughly parallel to said arm; a thin electrically insulating screen which is placed between the lever arm and the support so that its edge is inserted between the contact pieces, while maintaining the insulation between the lever and the support, when these latter move away from each other following short circuit currents flowing in the switch, the ends of said contact supports, where said contact pieces are located in the immediate vicinity of an insulating surface of the case, so that the path of the arc is essentially tangential with respect to the movement of the mobile contact, the movement of said edge towards and against this insulating surface causing first of all shearing of the arc and then establishing complete and sealed electric insulation between two opposite chambers which the screen separates within the internal volume of the case.

4,536,631

INDUCTION HEATING COOKING APPARATUS

Yoshihisa Tazima; Masayuki Morishima, both of Kiryu; Hiroshi Okumura, and Shin-ichi Kasahara, both of Ashikaga, all of Japan, assignors to Sanyo Electric Co., Ltd. and Tokyo Sanyo Electric Co., Ltd., both of, Japan

Division of Ser. No. 163,088, Jun. 26, 1980, Pat. No. 4,438,311. This application Nov. 3, 1983, Ser. No. 548,289

Claims priority, application Japan, Jul. 5, 1979, 54-85638; Jul. 5, 1979, 54-85639; Jul. 5, 1979, 54-85640

Int. Cl.[3] H05B *6/06*

U.S. Cl. 219—10.77 13 Claims

1. An induction heating cooking apparatus comprising:

low frequency voltage source power supply means for supplying a low frequency ripple voltage for electric power,

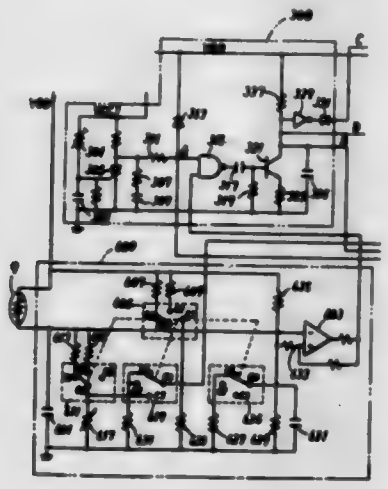
intermittent high frequency oscillating means being supplied with said electric power for causing intermittent high frequency oscillation at predetermined intervals, said high frequency oscillation being caused during an oscillation period and being stopped during a non-oscillation period,

induction heating coil means for receiving a high frequency current from said intermittent high frequency oscillating means for generating a high frequency alternating magnetic field for induction heating a load by said alternating magnetic field,

oscillation detecting means for detecting the output of said intermittent high frequency oscillating means during a period corresponding to said non-oscillation period,

oscillation stopping means responsive to said oscillation detected output from said oscillation detecting means for stopping said high frequency oscillation by said intermittent high frequency oscillating means,

said intermittent high frequency oscillating means comprises self-excited oscillating circuit means responsive to said start signal from said start signal generating means for



starting oscillation for maintaining said oscillation responsive to the oscillation output and for stopping said oscillation in the vicinity of the trailing end of said low frequency ripple voltage, and

attenuating oscillation detecting means responsive to said start signal from said start signal generating means for detecting the presence/absence of attenuating oscillation of said self-excited oscillation circuit means.

4,536,632

WIRE-CUT ELECTROEROSION METHOD AND APPARATUS UTILIZING WIRE-CLEANING MEANS

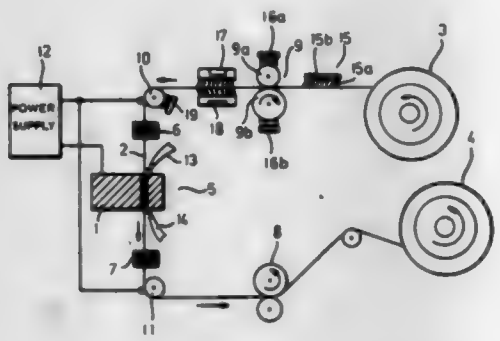
Kiyoshi Inoue, Tokyo, Japan, assignor to Inoue-Japax Research Incorporated, Yokohama, Japan

Filed Jun. 3, 1983, Ser. No. 500,860

Claims priority, application Japan, Jun. 3, 1982, 57-95717

Int. Cl.³ B23P *1/08*

U.S. Cl. 219—69 W **10 Claims**



1. A method of electroerosively cutting an electrically conductive workpiece by means of a traveling electrode, comprising the steps of:

(a) dispensing an unused, thin, continuous electrically conductive wire from a wire storage reel in an air space to advance the dispensed unused wire while in contact with air along a wire feed path;

(b) guiding the advancing wire by means of a pair of spaced-apart wire guide members across the workpiece to constitute said traveling electrode moving while in contact with a liquid machining medium along a single, straight-line cutting path established by said members penetrating the workpiece in a cutting zone downstream of said wire feed path, the wire electrode being taken up downstream of said cutting path for disposal;

(c) applying to said wire traveling between said guide members a sufficient tension to maintain it tensely stretched therebetween, and moving substantially in alignment with said single, straight-line cutting path and spacedly juxtaposed with the workpiece in the cutting zone;

(d) effecting a succession of erosive electrical discharges between said tensely stretched traveling electrode wire and the workpiece through the liquid machining medium while translationally displacing said straight-line cutting path in the workpiece along a programmed contouring path to electroerosively form a cut therein with a contour corresponding to said programmed path; and

(e) removing entrained air and contaminants from said thin, tensely stretched traveling electrode wire by cleaning said unused wire advancing along said wire feed path between a pair of rollers enaging opposite sides of said wire prior to its entry into said straight-line path and brushing each of said rollers continuously with respective brushes to an extent sufficient to reduce to a minimum air-bubbling from said electrode wire moving in contact with said liquid machining medium in said cutting zone and so that said cleaning occurs before said wire ever enters said zone, thereby preventing said wire from breaking in said cutting zone.

4,536,633

DIELECTRIC FLUID FOR ELECTRICAL DISCHARGE MACHINING

Masahiro Onizuka, Aichi, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 233,368, Feb. 11, 1981, abandoned. This application Dec. 7, 1983, Ser. No. 558,708

Claims priority, application Japan, Feb. 18, 1980, 55-18659; Feb. 18, 1980, 55-18660; Feb. 18, 1980, 55-18661

Int. Cl.³ B23P *1/16*

U.S. Cl. 219—69 D **28 Claims**

1. A dielectric fluid comprising a non-combustible aqueous solution of an ester having a high flash point used as a dielectric fluid in electrical discharge machining, wherein said ester is selected from the group consisting of acetate ester, carbonate ester and phosphate ester of the formula $PO(OR)_3$ wherein R is an alkyl group of 1 to 8 carbon atoms or an aryl group, and wherein said dielectric fluid has a machining electrode immersed therein.

4,536,634

HOT WIRE ARC WELDING TORCH ASSEMBLY

Akiyoshi Nawa, and Yoshiaki Kato, both of Nagoya, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 27, 1982, Ser. No. 453,570

Claims priority, application Japan, Jan. 8, 1982, 57-1110[U]

Int. Cl.³ B23K *9/28*

U.S. Cl. 219—74 **3 Claims**

1. A hot wire arc welding torch assembly, comprising:

(a) a non-consumable metal electrode (12),

(b) a filler metal (6) electrically connected in series with and energized by a power source (8),

(c) means (4) for heating said filler metal to feed a weld puddle (11) formed by an arc (10) between said electrode and a workpiece (7),

(d) a collet body (15) for holding said electrode,

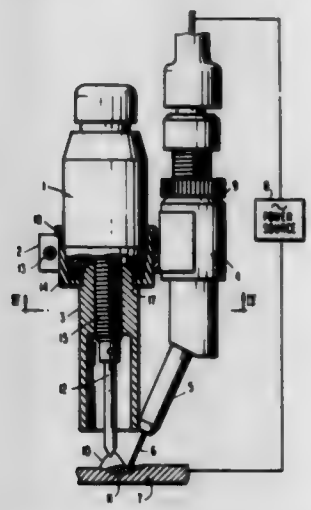
(e) a shielding gas nozzle (3) surrounding said collet body,

(f) a torch body (1) molded from a synthetic resin interiorly and centrally axially mounting said collet body and shielding gas nozzle, said torch body having an inwardly tapered outer suface at a lower end thereof,

(g) an insulating bushing (14) having heat-proof and high insulation resistance characteristics, said bushing having an inner surface complementary to and surrounding the tapered outer surface of said torch body, and

(h) a clamping holder (2) securely coupling said filler metal heating means with said torch body through said insulat-

ing bushing, wherein the outer surface of said insulating bushing engaged by said clamping holder has a straight cylindrical configuration, wherein said insulating bushing includes stop means (18) for engaging and fixing the position of said holder, and wherein said insulating bushing



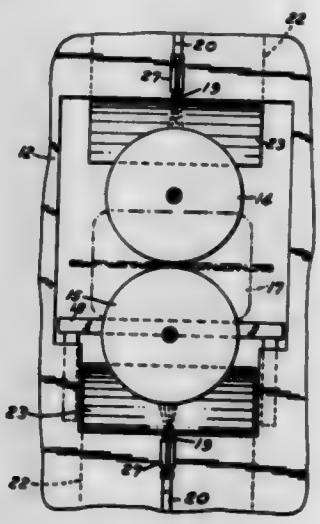
has a central lower aperture of a smaller diameter than the maximum outside diameter of said shielding gas nozzle, said central aperture being defined by an inwardly projecting flange of said bushing which engages and seats against a shoulder (17) of said nozzle.

4,536,635

METHOD AND APPARATUS FOR CLEANING WELDING ELECTRODE WHEELS WITH HIGH PRESSURE WATER

Forrest A. Shook, Fenton, Mich., assignor to NLB Corp., Wixom, Mich.

Filed Sep. 12, 1983, Ser. No. 531,053
Int. Cl.³ B23K *11/36*
U.S. Cl. 219—83 **8 Claims**



8. A method of cleaning wheel electrodes on a plurality of welding machines being connected to a tank and a pump comprising the steps of:

welding workpieces at each welding machine;

interrupting the welding step selectively and independently at each welding machine;

pumping fluid continuously at high pressure from the tank into a manifold;

spraying the fluid from the manifold through adjustably located nozzles in a controlled spray pattern upon the wheel electrodes during said welding step at each welding machine;

diverting the fluid from the wheel electrodes to a discharge means during the interrupting step independently on each welding machine, whereby the quantity of fluid delivered by the manifold remains substantially constant regardless of the operation of the welding machines; and

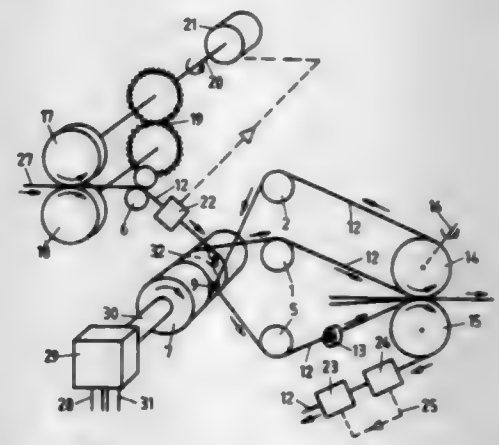
returning the fluid from the wheel electrodes and the discharge means to the tank.

4,536,636

METHOD AND MACHINE FOR ELECTRICAL RESISTANCE ROLL SEAM WELDING WITH A SINGLE ELECTRODE-WIRE

Paul Opprecht, Herrenbergstrasse 10, CH-8962 Bergdietikon, Switzerland; Wolfgang Weil, Heitersheim, Fed. Rep. of Germany, and Martin Kaul, Bellikon, Switzerland, assignors to Paul Opprecht, Bergdietikon, Switzerland

Filed Jan. 25, 1984, Ser. No. 573,666
Claims priority, application Switzerland, Jan. 27, 1983, 444/83
Int. Cl.³ B23K *11/06*
U.S. Cl. 219—83 **21 Claims**



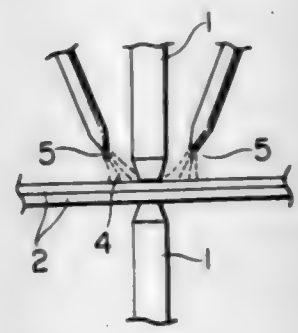
1. In a method of electrical resistance roll seam welding with a single electrode wire comprising the steps of passing said wire through a rolling out stage to roll out the same and thereby increase its strength, and passing the rolled-out electrode wire in a given path over a first and then over a second electrode carrier roll while said first and second carrier rolls are urged against one another, the improvement comprising the step of positively cooling said electrode wire in at least one of a) a stretch of said wire path between said rolling-out stage and said first carrier roll or b) a stretch of said path between the first and second carrier rolls, by passing the wire in each such stretch through a cooling station to reduce the wire temperature a sufficient amount to increase its elastic limit above its elongation point under substantially a given set of welding conditions.

4,536,637

METHOD FOR PREVENTING THE DISCOLORATION OF AREAS AROUND INDENTATION IN SPOT WELDING

Hajimu Horiuchi, and Akira Sakaguchi, both of Kobe, Japan, assignors to Kawasaki Jukogyo Kabushiki Kaisha, Japan

Filed Mar. 30, 1984, Ser. No. 595,478
Claims priority, application Japan, Apr. 4, 1983, 58-59795
Int. Cl.³ B23K *11/16*
U.S. Cl. 219—117.1 **10 Claims**



1. A method for preventing the discoloration of an area

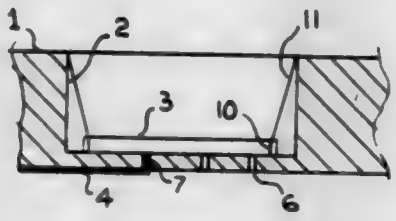
around an indentation formed in spot welding stainless steel, comprising masking a weld zone and its surrounding area from ambient atmospheric air with non-oxidizing gas, conducting spot welding in an atmoshpere of said non-oxidizing gas to thereby prevent the discoloration from occuring on the welded metal surface under the influence of heat during spot welding.

4,536,638

CHIP ASSEMBLY

Witold Krynicki, 321 W. Leroy Ave., Arcadia, Calif. 91006

Filed Sep. 30, 1982, Ser. No. 429,845
Int. Cl.³ B23K *26/00*
U.S. Cl. 219—121 LC **9 Claims**



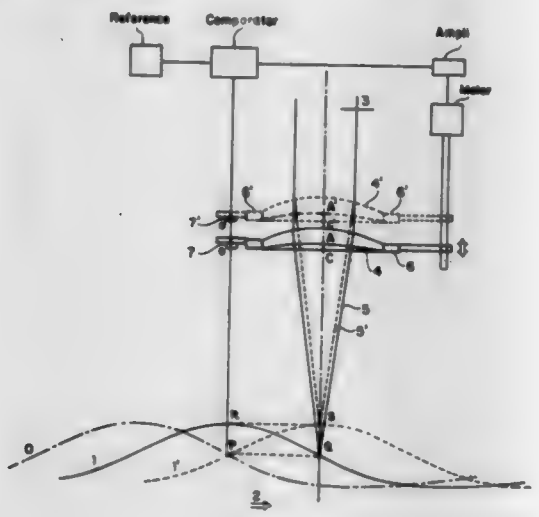
1. An integrated circuit chip carrier assembly comprising: a molded chip carrier substrate including a cavity portion molded-in chip registration elements in the cavity portion molded on said substrate and on one first side of said cavity portion; at least one chip comprising terminal pads and positioned within said registration elements with the side containing terminal pads facing said substrate; said molded substrate containing interconnecting through-holes corresponding to said terminal pads on said chip; a printed circuit on the second opposite side of said molded chip carrier substrate and printed through said through-holes and in electrical contact with said terminal pads on said chip.

4,536,639

REGULATING SURFACE TREATMENT BY LASER BEAM

Jean R. Crahay, Francorchamps, Belgium, assignor to Centre de Recherches Metallurgiques Centrum Voor, Brussels, Belgium

Filed Feb. 15, 1983, Ser. No. 466,614
Claims priority, application Belgium, Feb. 17, 1982, 892184
Int. Cl.³ B23K *26/02*
U.S. Cl. 219—121 LU **11 Claims**



1. A method for regulating the position of a focusing element with respect to the surface of the moving part to be treated by a laser beam, wherein the laser beam is focused by said focusing element as a cone having an apex to be located on the surface of said moving part, the method comprising the steps of:

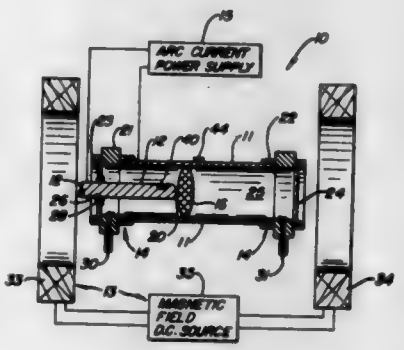
initially positioning said focusing element so as to locate said apex at a first point of said surface;
choosing a point of the focusing element;
determining the distance between said first point of the surface and said point of the focusing element, said distance being taken as a reference distance;
measuring the actual distance between said point of the focusing element and another point of the surface of said moving part;
comparing said actual distance and said reference distance;
determining the difference between said actual distance and said reference distance; and
displacing said focusing elements to take up any difference between the said difference between said actual distance and said reference distance.

4,536,640

HIGH PRESSURE, NON-LOGICAL THERMAL EQUILIBRIUM ARC PLASMA GENERATING APPARATUS FOR DEPOSITION OF COATINGS UPON SUBSTRATES

Vladimir Vukanovic, Rochester, N.Y., assignor to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Jul. 14, 1981, Ser. No. 398,151
Int. Cl.³ B23K *9/00*; B05D *1/08*
U.S. Cl. 219—121 PR **11 Claims**



1. An apparatus for depositing a material on a substrate from an arc plasma, said apparatus comprising:
a chamber within which a plasma arc may be struck and maintained;
a tubular first electrode having a first central axis, opposing ends and defining a wall of said chamber;
end plates closing said ends of said first electrode to define said chamber;
a housing for mounting said end plates on said first electrode including a port in communication with the interior of said chamber for passage of a preselected gas into said chamber;
a second electrode coaxial with said first electrode, said second electrode having a tip for supporting said arc, said second electrode extending into said chamber through one of said end plates;
magnet means for establishing a magnetic field proximate said tip for inducing rotation of said plasma around said central axis of said first electrode;
means for introducing into said plasma a material to be deposited on a substrate; and
an orifice in said first electrode having a second central axis transverse to said first central axis and proximate said tip for passage out of said chamber of a tangential portion of said rotating plasma bearing said material to deposited to a substrate.

4,536,641

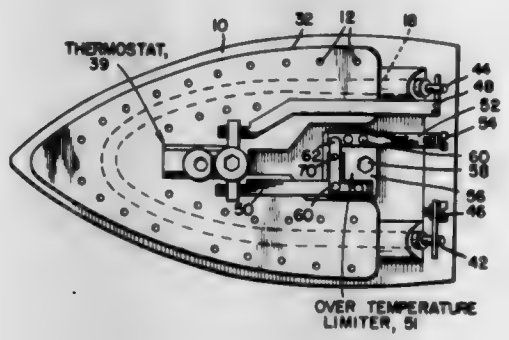
IRON WITH OVERTEMPERATURE PROTECTION MEANS

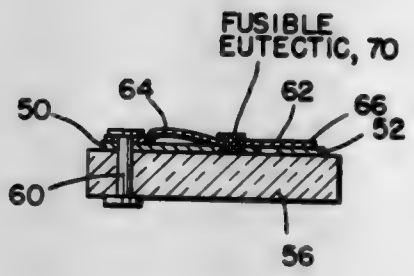
Ven L. Chan, Singapore, Singapore, assignor to Black & Decker, Inc., Newark, Del.

Filed Jan. 26, 1984, Ser. No. 574,295

Int. Cl.³ D06F *75/26*; H05B *1/02*; H01H *37/76*

U.S. Cl. 219—253 **7 Claims**





1. In an electric flatiron having a heater circuit of sufficient wattage to achieve abnormally high soleplate temperatures on continuous heater operation, a thermostat controlling the soleplate temperature to a normal selected operating temperature, an overtemperature protection assembly to open the heater circuit before high soleplate temperature occurs on thermostat failure, an improvement in said assembly including,

first and second circuit members in said heater circuit and electrically isolated from the soleplate and each other,

a third spring-biased circuit member bridging and contacting each of said first and second members,

a fusible joint including a slug of eutectic alloy directly bonding the third member to one of the first and second members, said alloy slug holding said third member against said bias in contact with said first and second members completing a circuit through said members, said fusible joint having a melting point above the maximum normal operating temperature of the iron, but less than the abnormally high temperature,

said joint disposed intermediate ends of the third member and out of said circuit so, on melting, the third spring-biased member is snapped out of contact to open the circuit.

4,536,642

DEVICE FOR TREATING GASES AT HIGH TEMPERATURES

Helmüt Hamster, Burghausen, and Franz Köppl, Altötting, both of Fed. Rep. of Germany, assignors to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe m.b.H., Burghausen, Fed. Rep. of Germany

Continuation of Ser. No. 268,967, Jun. 1, 1981,. This application Jul. 13, 1983, Ser. No. 513,298

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1980, 3024320

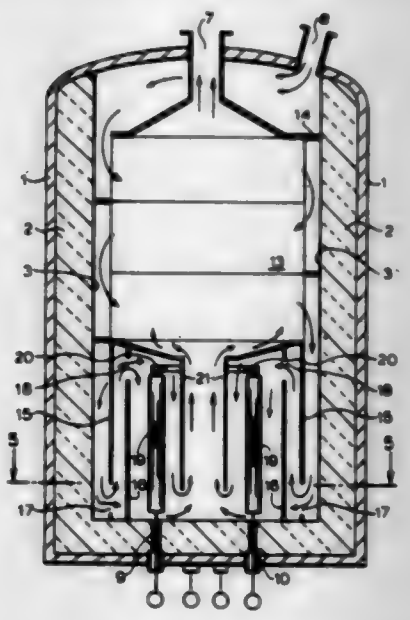
Int. Cl.³ F24H *3/00*; H05B *3/02*

U.S. Cl. 219—374 **3 Claims**

1. A device for treating silicon-containing gases at high temperatures, comprising:

a heat-insulated, generally hollow housing having a top wall, a sidewall, and a bottom plate defining a reaction chamber and gas-inlet and gas-outlet openings respectively leading into and from said housing; and

a plurality of inert resistance heaters which are heatable by the direct passage of an electric current therethrough and which are arranged in a standing, generally upright manner in said housing spaced from said top wall and bottom plate thereof such that they are arranged between said top wall and bottom plate in the general path of gases flowing



between said openings so as to have direct contact therewith said gases, said standing resistance heaters terminating at their upper ends in an electrically conductive interconnection and each having at its lower end a separate lead leaving said housing through separate insulated openings in said bottom plate and terminating outside said reaction chamber and being star-connected in a balanced multiple-phase alternating current system.

4,536,643

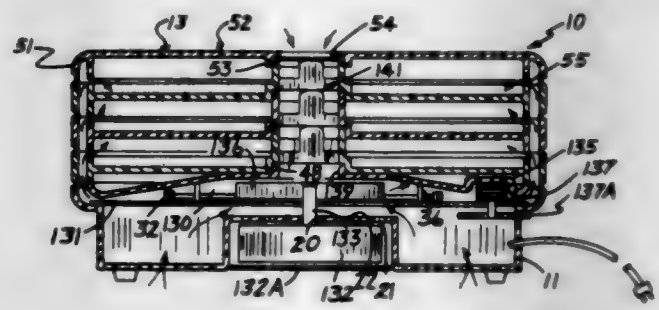
FOOD DEHYDRATOR

Chad S. Erickson, Maple Grove, Minn., assignor to Alternative Pioneering Systems Inc., Minneapolis, Minn.

Filed Apr. 20, 1983, Ser. No. 486,815

Int. Cl.³ F26B *23/06*

U.S. Cl. 219—400 **7 Claims**



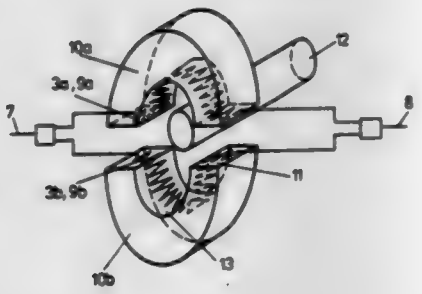
2. A dehydrator comprising:

a heat generating base unit, a plurality of trays stacked on said base unit, a convection heating unit, a forced air heating unit and a top member superimposed on said stacked trays, said base unit including a first chamber and a second chamber, said first chamber being adapted to contain said convection heating unit, said second chamber being adapted to contain said forced air heating unit, said dehydrator being convertible between a convection heating mode and a forced air heating mode by selectively mounting said convection heating unit and said forced air heating unit in their respective chamber.

4,536,644
ARRANGEMENT FOR WELDING TOGETHER THERMOPLASTIC MOLDED MEMBERS

Alfred Thalmann, Uhwiesen, Switzerland, assignor to Georg Fischer Aktiengesellschaft, Schaffhausen, Switzerland

Filed Dec. 11, 1984, Ser. No. 680,389
Claims priority, application Switzerland, Dec. 19, 1983, 6737/83
Int. Cl.[3] H05B *3/58*
U.S. Cl. 219—535 6 Claims

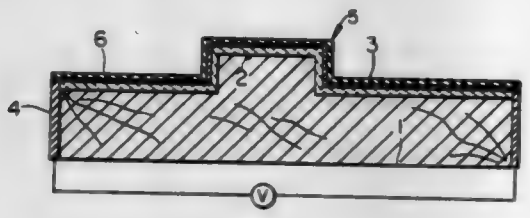


1. In an arrangement for welding together molded members consisting essentially of thermoplastic material, said molded members being shaped to define abutting surfaces extending generally parallel to each other at which a welding connection is made by means of electrical heat conductors located at said abutting surfaces, said heat conductors being adapted to be electrically activated to effect a welding operation, the improvement comprising that at least a plurality of said electrical heat conductors are connected in parallel with each other and are located between said abutting surfaces.

4,536,645
SOLID-BODY HEATING UNIT

Mitsushi Mio, Sumoto, Japan, and Hisao Negita, 11-31-202, Hikarigaoka, Hiroshima City, Hiroshima Prefecture, Japan, assignors to Awaji Sangyo Kabushiki Kaisha, Sumitomo and Hisao Negita, Hiroshima, both of, Japan

Filed Apr. 13, 1984, Ser. No. 599,829
Claims priority, application Japan, Apr. 15, 1983, 58-65217
Int. Cl.[3] H05B *3/16*
U.S. Cl. 219—543 2 Claims

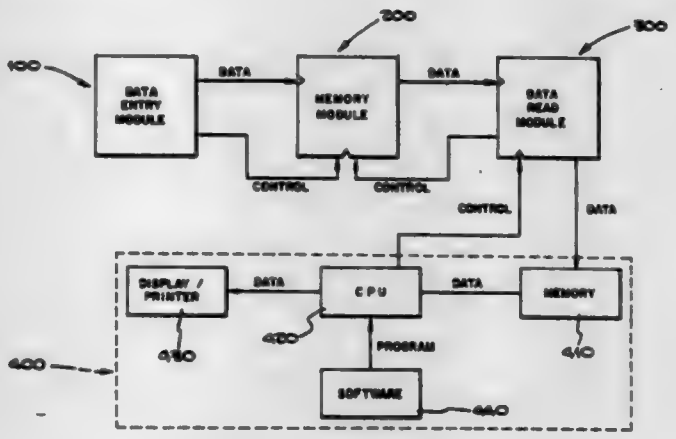


1. A mold pattern for casting metal, comprising:
a refractory mold pattern base having the pattern to be molded on the face thereof;
an electroconductive layer on said face and conforming to the shape of said pattern, said layer being 15–1000μ thick and being of an electroconductive material selected from the group consisting of Mo-Si alloy, Ti-Si alloy, Ni-Cr alloy, Fe-Cr-Al alloy, and reformed carbon, said material having a resistivity of 30–30,000 $\mu\Omega$cm; the layer having a larger thickness at portions at which a higher temperature is desired and having a smaller thickness at portions at which a lower temperature is desired; and
terminal means connected to said layer for passing electric current through said layer, whereby the heating temperature produced by said layer can be made different in different regions of the face of the pattern.

4,536,646
TIME ACCOUNTING SYSTEM

C. Harris Adams, Culver City, and Robert P. Farnsworth, Los Angeles, both of Calif., assignors to Celedata Corporation, Culver City, Calif.

Filed Jun. 16, 1983, Ser. No. 505,087
Int. Cl.[3] G06K *7/10*
U.S. Cl. 235—377 12 Claims



1. A system for generating data for input to a computer representing the length of time a worker has spent at a workstation performing a task, comprising:
portable memory circuit means for storing preselected and non-changing data relating to said task;
data entry circuit means, located at said workstation and adapted to electrically connect to said memory circuit means, for automatically and periodically writing into said memory circuit means data programmed into said entry circuit means relating to said task at said workstation; and
data reading circuit means, electrically connected to said computer and adapted to electrically connect to said memory circuit means, for transferring into said computer said data written into said memory circuit means by said entry circuit means,
whereby said memory circuit means is connected to said entry circuit means while said worker is at said workstation, said entry circuit means periodically and automatically writing said data into said memory circuit means, the number of times said data is written into said memory circuit means corresponding to the duration of time said worker has spent at said workstation, said memory circuit means thereafter being connected to said reading circuit means, whereupon all of said data in said memory circuit means is transferred into said computer system to indicate the length of time said worker has spent at said workstation.

4,536,647
POCKET BANKING TERMINAL, METHOD AND SYSTEM

Martin M. Atalla, Atherton, and Ralph R. Bestock, Los Altos, both of Calif., assignors to Atalla Corporation, San Jose, Calif.

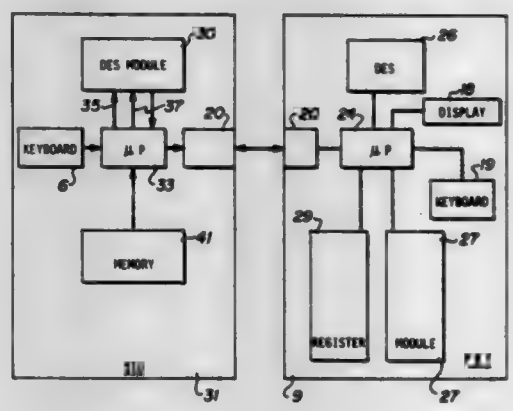
Filed Jul. 15, 1983, Ser. No. 514,011
Int. Cl.[3] G06F *15/30*
U.S. Cl. 235—379 15 Claims

1. The method of securing communications concerning selected data between an entity which has a master key code and a portable terminal which stores a plural number of codes that are unique to the entity and the terminal for operation by an authorized user having a Personal Identification Number, the method comprising:
encrypting in accordance with a first logical combination of the user's Personal Identification Number and the entity and terminal codes to produce a Personal Verification Number;
comparing the Personal Verification Number produced by encryption with a Personal Verification Number previ-

ously established for an authorized user and stored in the terminal to activate, upon favorable comparison thereof, the generation of random numbers at the entity and at the terminal;

transmitting the random number generated at the entity to the terminal and the random number generated at the terminal to the entity;

encrypting at the entity and at the terminal in accordance with a second logical combination the random numbers generated at the entity and at the terminal with a Key-Exchange Key at the entity and at the terminal to produce a Session Key at the entity and at the terminal;



encrypting at the terminal as a third logical combination the selected data and the Session Key to produce an encrypted message for transmission to the entity;

decrypting the encrypted message at the entity in accordance with the third logical combination to yield the selected data;

altering portions of the decrypted selected data at the entity and encrypting the same according to the third logical combination with the Session Key to produce a return encrypted message for transmission to the terminal; and

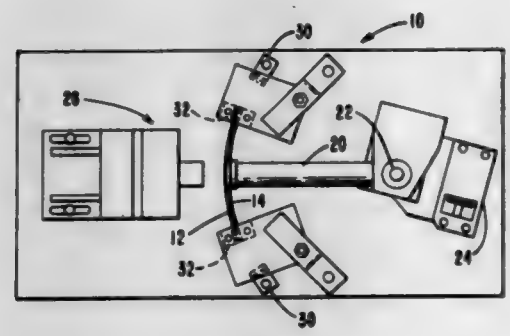
decrypting the return encrypted message at the terminal in accordance with the third logical combination to yield the altered data for operation thereon at the terminal.

4,536,648

OPTICAL CARD READ/WRITE SCANNING SYSTEM

Richard M. Kruse; David J. Moffett; Madhu C. Patel, and Ronald L. Barnes, all of Wichita, Kans., assignors to NCR Corporation, Dayton, Ohio

Filed Jul. 30, 1984, Ser. No. 635,690
Int. Cl.³ G06K *7/10*
U.S. Cl. 235—454 **10 Claims**



1. Apparatus for optically reading a document having a transversely positioned data field thereon comprising

means supporting the document in arcuate manner,

means positioned opposite the data field on the document and movable in the Y direction for reading the extent of the data field, and

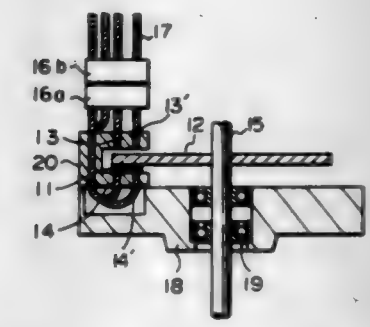
means responsive to a coil signal and operably associated with the document supporting means for swinging thereof a limited manner in the X direction.

4,536,649

PHOTOELECTRIC CONVERTER-TYPE PULSE ENCODER

Yoshinori Kozai, Hino; Yoichi Amemiya, Hachioji, and Sunao Asahara, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

PCT No. PCT/JP82/00042, § 371 Date Oct. 18, 1982, § 102(e) Date Oct. 18, 1982, PCT Pub. No. WO82/02945, PCT Pub. Date Sep. 2, 1982
PCT Filed Feb. 16, 1982, Ser. No. 438,846
Claims priority, application Japan, Feb. 16, 1981, 56-20180
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **2 Claims**



1. In a photoelectric converter-type pulse encoder comprising a light-entrance portion having a plurality of light emitting elements, a rotating slit plate having an encoding lattice formed thereon, a fixed slit plate having a lattice formed thereon and arranged to face said lattice of said rotating slit plate, and a light-receiving portion having a plurality of light receiving elements corresponding to said light emitting elements, the improvement comprising:

a light fixing member consisting of a unitary member positionable with respect to said slit plates and formed with two legs extending parallel to each other on opposite sides of said slit plates, said legs having a plurality of pairs of holes formed therein to provide corresponding light-entrance and light-receiving portions aligned respectively with each other so that the axes of respective holes in said light-entrance portion and light-receiving portion coincide; and

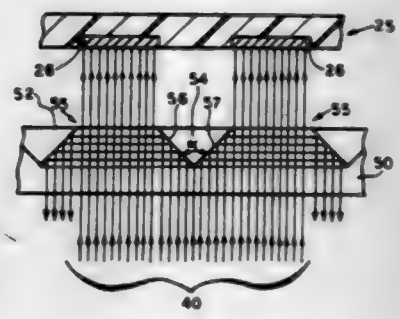
pairs of light fibers extending through said holes and fixed in said light fixing member to provide respectively light emitting elements at said light-entrance portion and light receiving elements at said light-receiving portion, said pairs of light fibers having end surfaces respectively in facing relationship whereby respective light emitting and light receiving elements are fixed permanently in alignment.

4,536,650

OPTICAL TRANSDUCER WITH A TRANSPARENT SHUTTER DISK

Ugo Carena, Ivrea, and Paolo Rivera, Strambino, both of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Jan. 26, 1983, Ser. No. 461,137
Int. Cl.³ G01D *5/34*
U.S. Cl. 250—231 SE **6 Claims**



1. An optical transducer for detecting the position of a movable member with respect to a fixed structure comprising a

light source for generating a light beam, a photodetector for receiving said light beam, and a shutter member disposed between said light source and said photodetector, said shutter member having two faces which are parallel to each other, at least one of said two faces being provided with a plurality of light interrupting means for interrupting said light beam, separated by a plurality of light transmitting means which selectively transmit said light beam to said photodetector in response to the movement of said movable member, each one of said light transmitting means having a predetermined light transmitting area, wherein said photodetector comprises a plurality of photosensitive elements each one having a photosensitive area which is smaller than the light transmitting area of each one of said transmitting means, wherein said photosensitive elements are diffusely distributed over the region illuminated by said light beam which passes through said transmitting means, and wherein said interrupting means comprises a plurality of V-shaped elements provided on said at least one face of said shutter element and capable of totally deflecting the light incident thereon.

4,536,651

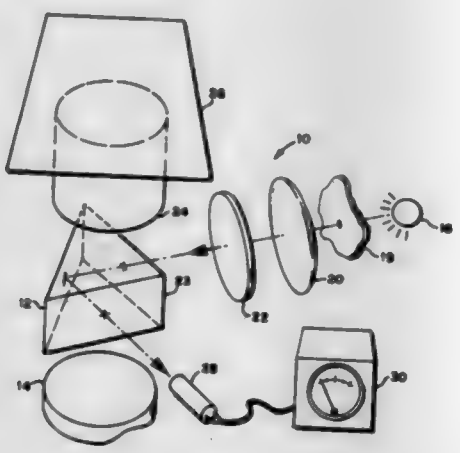
OPTICAL WEIGHING SCALE UTILIZING A PRISM

Thomas W. Bosse, New Milford, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Mar. 14, 1983, Ser. No. 474,852

Int. Cl.³ G01L *1/24*

U.S. Cl. 250—231 R **7 Claims**



1. An optical transducer comprising:

an optical prism, means for supporting said prism, means for selectively applying a load to said prism parallel to said support means, means for directing light to said prism substantially normal to the direction said load is applied and means for determining the magnitude of said load by measuring the intensity of light internally reflected from said prism.

4,536,652

HYBRID MASS SPECTROMETER

Graham Cooks, West Lafayette, Ind.; Michael S. Story, Los Gatos, Calif.; Gerhard Jung, Delmenhorst, and Peter Dobberstein, Bremen, both of Fed. Rep. of Germany, assignors to Finnigan Mat GmbH, Fed. Rep. of Germany

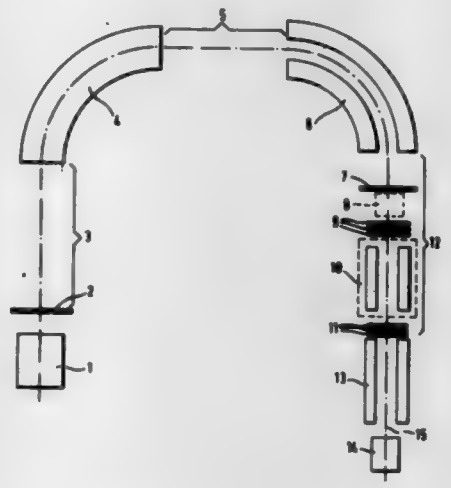
Filed Oct. 14, 1983, Ser. No. 542,117

Claims priority, application Fed. Rep. of Germany, Oct. 16, 1982, 3238474

Int. Cl.³ H01J *49/26*

U.S. Cl. 250—281 **11 Claims**

1. A hybrid mass spectrometer for the mass analysis of daughter ions, comprising an ion source, a first electric and/or magnetic stage, a device for breaking the ions into daughter ions, a lens arrangement and a second stage with at least one analyzer, wherein a high-energy collision chamber (8) is provided, the high-energy collision chamber (8) is located in a field-free region (12) which, in the direction of travel of the ions, is located after the first stage (4, 6), and wherein the lens



arrangement (9) is used for decelerating daughter ions of different energies to a fixed energy.

4,536,653

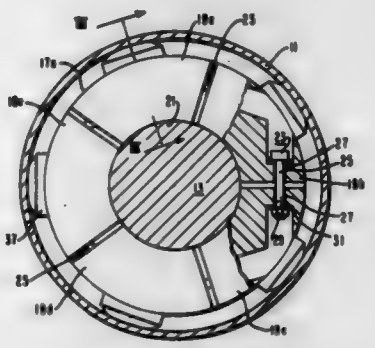
SEISMIC RESTRAINT MEANS

Norman C. Thurlow, Horseheads; Walter R. Hayter, Elmira, and Richard C. Schockner, Big Flats, all of N.Y., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 28, 1983, Ser. No. 461,790

Int. Cl.³ G01T *3/00*

U.S. Cl. 250—390 **8 Claims**



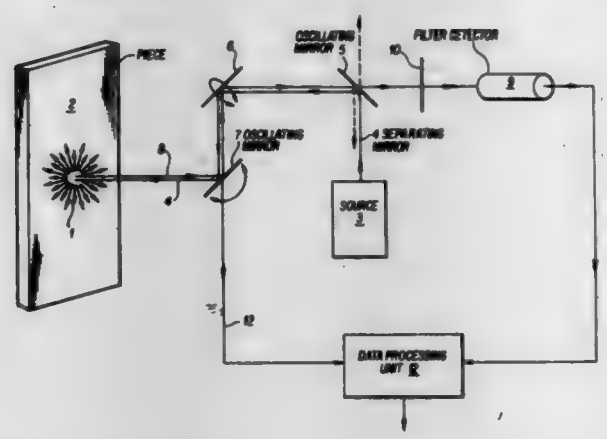
8. In combination, a generally cylindrical nuclear radiatic detector, a tubular thimble on which said detector is disposed and at least two spaced apart seismic restraint means for supporting said detector within said thimble, each of said restraint means comprising at least two housing segments having interconnecting means associated therewith for attaching one said housing segment to another said housing segment in order to form a clamp-like ring which is securably connectable about the generally cylindrical detector, each said housing segment having at least one radially aligned bore therein and energy absorbing means operably associated with and extending from each of said housing segment bores for generally radial displacement relative to said detector such that the tubular thimble is contacted thereby, said energy absorbing means including a motion damping means consisting of a resilient material which is non-resonant disposed in said bore and a plunger means having an electrically non-conductive thimble contacting means secured thereon, said bore being dimensional to receive said plunger therein, in contact with said motion damping means, such that radial displacement of said plunger means is effected through the compression and expansion of said motion damping means disposed within said bore.

4,536,654

DEVICE FOR DETECTING FLAWS ON A PIECE

Jean F. Vaerman, Vert St Denis, France, assignor to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation, Paris, France

Filed Apr. 21, 1983, Ser. No. 487,108
Claims priority, application France, Apr. 27, 1982, 82 07202
Int. Cl.³ G01N *21/27*
U.S. Cl. 250—458.1 **7 Claims**



1. In a device for detecting flaws on a piece by the automatic reading of indications representative of the flaws to be detected which indications are given by a liquid which, under the action of a light of a first wavelength, emits a radiation of light of a second wavelength, said device being of the type having a source which emits a beam of light of the first wavelength which illuminates the piece to be studied, after said first wavelength beam is reflected by a separating mirror which separating mirror reflects said light of the first wavelength and passes said light of the second wavelength, and with a portion of the light of said second wavelength emitted by said liquid forming a beam which is parallel to and in the opposite direction from said beam of light of the first wavelength reflected by said separating mirror and with said second wavelength beam being detected by a detector, the improvement comprising:

said source emitting a focused beam; and

first and second oscillating mirrors placed between said separating mirror and said piece to simultaneously assure on the one hand the sweeping of the piece along two coordinate axes by the first wavelength beam and on the other hand the directing onto the detector of said second wavelength beam emitted by said liquid parallel to and in the opposite direction from said first wavelength beam.

4,536,655

FLUOROMETER HAVING AN IMPROVED OPTICAL SYSTEM

Clarence W. Barnes, San Francisco, Calif., assignor to Axonics, Inc., Mt. View, Calif.

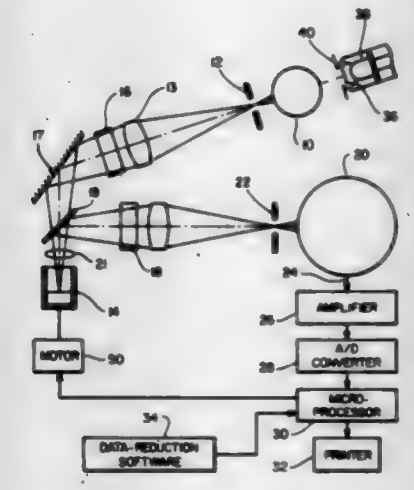
Filed Aug. 29, 1983, Ser. No. 527,366
Int. Cl.³ G01L *1/20*
U.S. Cl. 250—461.1 **17 Claims**

1. A low profile optical sensing system for an ultraviolet energized fluorescent light responsive device wherein ultraviolet light is imaged on a selected one of a plurality of samples carried in sample wells, the wells defining a sample plane, the ultraviolet light passing along a first light path, wherein fluorescent light emanating from said selected sample is detected along a second lignt path which in part is in common with said first light path, the sensing system comprising:

an ultraviolet tube located to the side of said common light path above said sample plane,

a fluorescence detector located on the same side of said light path and between the ultraviolet tube and the sample plane, and

means defining one end of said common path for passing ultraviolet rays from a source of said ultraviolet light to said sample along said common path,



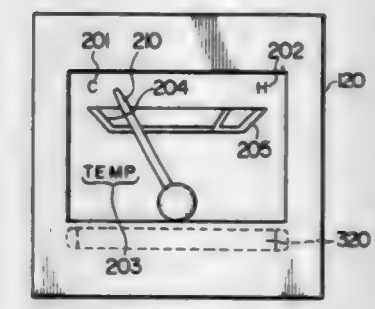
and means reflecting said fluorescent light to said fluorescence responsive device.

4,536,656

PHOSPHOR INDICATION DEVICE

Kunihiro Sowa, Okazaki, Japan, assignor to Nippon Soken, Inc., Nishio, Japan

Filed Mar. 7, 1983, Ser. No. 472,990
Claims priority, application Japan, Apr. 2, 1982, 57-55703
Int. Cl.³ G09F *13/20*
U.S. Cl. 250—463.1 **8 Claims**



1. A phosphor indication device of a meter comprising:

an indication section formed on an indicator panel and showing a pattern and characters printed on it with a phosphor-containing paint; and

a light source for irradiating the phosphor-containing paint to excite a phosphor to emit light to thereby indicate the pattern and characters in fluorescence;

the indicator panel and light source are accommodated in a meter casing;

wherein the pattern and characters on the indicator panel are of at least one phosphor-containing paint which differs in color when it is exposed to light capable of exciting the phosphor to emit light from when it is exposed to ordinary light unable to excite the phosphor to emit light.

4,536,657

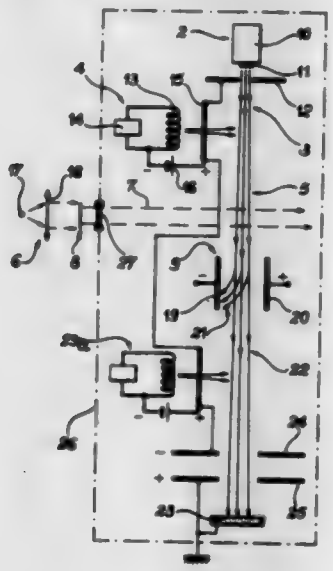
PROCESS AND APPARATUS FOR OBTAINING BEAMS OF PARTICLES WITH A SPATIALLY MODULATED DENSITY

Michel Bruel, Veurey-Voroize, France, assignor to Commissariat a l'Energie Atomique, Paris, France

Filed Dec. 7, 1983, Ser. No. 558,950
Claims priority, application France, Dec. 8, 1982, 82 20564
Int. Cl.³ H01J *37/302, 37/317, 27/24;* G21K *1/00*
U.S. Cl. 250—492.2 **17 Claims**

1. A process for obtaining beams of particles having a spatially modulated density, wherein it comprises passing the

particles of a primary beam of particles in a first high-energy state E_1, so as to form the beam of particles in said first high-energy state E_1, selectively passing the particles in the first high-energy state E_1 to a second high-energy state E_2 with the aid of a light flux having a spatially modulated intensity, directed onto the beam of particles in said first high-energy state E_1, and separating the particles in the second high-energy state E_2 from



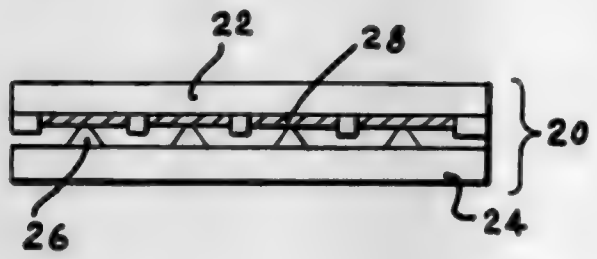
particles in the first high-energy state E_1, so as to obtain a beam formed by particles in the first high-energy state E_1 and a beam formed from particles in the second high-energy state E_2, said beams being separate and having a spatially modulated density, wherein one of the said first and second high-energy states E_1 and E_2 is a long life high-energy state and wherein the other high-energy state is an ionized state, whose ionization state differs from that of the long life high-energy state.

4,536,658

HYBRID SCHOTTKY INFRARED FOCAL PLANE ARRAY

Charlotte E. Ludington, Sherborn, Mass., assignor to The United States of America as represented by the Secretary of the Air Force, Washington, D.C.

Filed Jan. 5, 1983, Ser. No. 455,715
Int. Cl.³ H01J *40/14*
U.S. Cl. 250—578 **1 Claim**



1. A hybrid Schottky infrared internal photoemission focal plane array comprising:

a first semiconductor substrate having a first surface and an opposed second surface, said first semiconductor substrate being formed of silicon material;

a plurality of infrared sensitive metallic photodiodes arranged in a two-dimensional mosaic pattern on said first surface of said first semiconductor substrate;

each of said plurality of infrared sensitive metallic photodiodes comprising platinum silicide material formed at said first surface of said first semiconductor substrate to establish a Schottky potential barrier at the interface of said platinum silicide material and said silicon material of said first semiconductor substrate;

each of said plurality of infrared sensitive metallic photodiodes having a metallic bonding pad formed on said platinum silicide material for deriving an output signal therefrom;

each of said plurality of infrared sensitive metallic photodiodes being surrounded by a guard ring having a width of two to eight micrometers;

a channel stop having a width of one to five micrometers disposed between each said guard ring; and

a second semiconductor substrate having a first surface and an opposed second surface, said second semiconductor substrate being formed of silicon material;

said second semiconductor substrate having multiplexing circuitry including a two-dimensional matrix of metallic signal input terminals formed on said first surface thereof for receiving and multiplexing input signals;

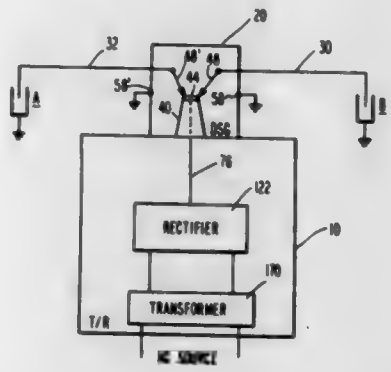
said metallic bonding pad of each of said plurality of infrared sensitive metallic photodiodes being directly and conductively bonded to a different one of said matrix of metallic signal input terminals of said second semiconductor substrate, whereby signals derived from each of said plurality of infrared sensitive metallic photodiodes are directly coupled to said multiplexing circuitry of said second semiconductor substrate.

4,536,659

VISIBLE DISCONNECT/GROUND SWITCH

James P. Seitz, Burlington, and Michael Helmers, Hopewell, both of N.J., assignors to NWL Transformers, Bordentown, N.J.

Filed Sep. 20, 1983, Ser. No. 533,862
Int. Cl.³ H02J *3/14*; H01H *33/54*
U.S. Cl. 307—41 **12 Claims**



12. For use in a high voltage rectified power distribution system including at least two loads to be powered, conductors to carry power to the loads, a transformer for providing a source of alternating high voltage, a rectifier coupled to the transformer for rectifying the voltage, and a transformer/rectifier housing, an improved disconnect/ground switching mechanism comprising:

bushing means having a longitudinal opening therethrough, a supporting end, and a mounting end for mounting to the transformer/rectifier housing;

power conductor means disposed through said longitudinal opening in said bushing means having a first connection end and a second end for coupling to the rectifier;

switch mechanism housing means for mounting to the transformer/rectifier housing and having a first aperture for receiving said bushing means, first and second opposed side wall members, respectively having second and third apertures, flange means around at least a portion of the periphery of said second and third apertures, a supporting top member, a front wall member having a viewing aperture therethrough;

first electrical contact means supported by and physically mounted on said supporting end of said bushing means in electrical contact with said connection end of said power conductor means;

second and third electrical contact means mounted in said switch mechanism housing means, each for providing a source of ground potential;

roller means rotatably mounted on each of said first, second, and third electrical contact means;

first and second switch contact means, each having an electrically conductive elongated body having a mounting end and an oppositely disposed contact portion, where said contact portion includes a curved surface for engaging the associated ones of said first, second, and third electrical contact means and said roller means supported thereon;

electrically insulating stand-off means mounted intermediate said supporting top member and said first and second switch contact means for providing rotatable support of said first and second switch contact means and for insulating said first and second switch contact means from said switch mechanism housing means, said stand-off means including first electrically conductive support means for rotatably coupling to said mounting end of each of said switch contact means, and second electrically conductive support means for supporting and electrically coupling each of said switch contact means to an associated one of the conductors; and

switch actuator means coupled to said mounting end of each of said first and second switch contact means for selectively actuating said first and second switch contact means to make electrical contact with the selected ones of said first, second, and third electrical contact means.

4,536,660

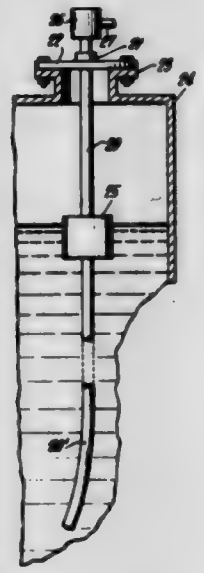
FLEXIBLE MEANS FOR MEASURING LIQUID LEVEL

Roland G. Tetro, Bristol, Conn., assignor to Delaval Turbine Inc., Princeton, N.J.

Continuation of Ser. No. 417,455, Sep. 13, 1982, abandoned, which is a continuation of Ser. No. 93,181, Nov. 13, 1979, , which is a division of Ser. No. 912,218, Jun. 5, 1978,. This application Aug. 15, 1983, Ser. No. 523,031

Int. Cl.³ H01H *35/18*

U.S. Cl. 307—118 **10 Claims**



1. A tank-level measuring system, comprising an assembly of an elongate flexibly bendable tubular housing closed at its lower end, a magnet carrying float element encircling and guided by said housing for travel therealong as a function of the level of the fluid being measured, a flexibly bendable interconnected array of a plurality of magnetically-sensitive electrical switch units in uniformly spaced and electrically interconnected successive longitudinal array within and along the length of said tubular housing, said array being free for withdrawal lengthwise from said housing and reinsertable at will, and electrical-connection means connected to the upperunit end of said array; said assembly of housing and interconnected array being non-destructively bendable by virtue of its mechanical flexibility without interfering with movement of said float.

4,536,661

POSITION-SENSING APPARATUS

David R. McMurtry, Wotton-Under-Edge, England, assignor to Renishaw plc, Wotton-Under-Edge, England

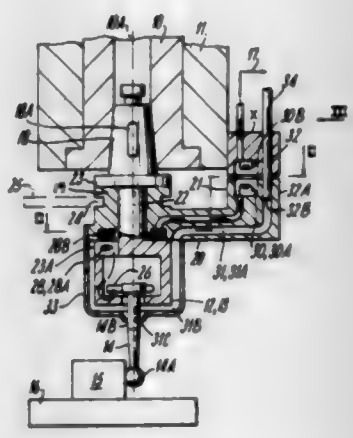
PCT No. PCT/GB83/00263, § 371 Date Jun. 8, 1984, § 102(e) Date Jun. 8, 1984, PCT Pub. No. WO84/01621, PCT Pub. Date Apr. 26, 1984

PCT Filed Oct. 17, 1983, Ser. No. 619,157

Claims priority, application United Kingdom, Oct. 15, 1982, 8229594

Int. Cl.³ G01B *7/02, 7/12*

U.S. Cl. 307—119 **7 Claims**



1. Position-sensing apparatus comprising a spindle (10) having an axis of rotation (10A), a support structure (11) supporting the spindle (10) for rotation, a probe (12) having a body (13) releasably secured to the spindle (10) for rotation therewith, the probe (12) further having means (14) for sensing an object (15), means (26) for generating a signal (17) responsive to such sensing, and external transmission means (30) for transmitting the signal (17) from said body (13) to a locaton (X) provided on said support structure (11) at a given angular position about said axis (10A), characterised by a sleeve (19) supported on said body (13) for relative rotation therebetween about said axis but against relative axial movement, connector means (21) connecting said sleeve (19) to said support structure (11) against rotation relative thereto but allowing axial release therefrom together with release of said body (13) from said spindle (10), internal transmission means (28) for transmission of said signal (17) between said body (13) and said sleeve (19) while accommodating relative rotation therebetween, and wherein said external transmission means (30) is arranged for transmission of said signal (17) between said sleeve (19) and said location (X).

4,536,662

BIDIRECTIONAL CONSTANT CURRENT DRIVING CIRCUIT

Akira Fujii, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,477

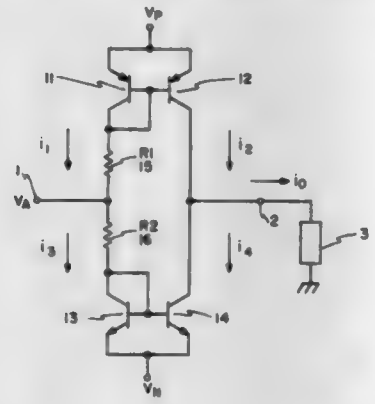
Claims priority, application Japan, Nov. 15, 1982, 57-200115

Int. Cl.³ H03K *3/26*

U.S. Cl. 307—270 **6 Claims**

1. A bidirectional constant current driving circuit having an input terminal, an output terminal and first and second power supply terminals, for driving a load coupled to said output terminal in response to an input signal applied to said input terminal, said driving circuit comprising: first transistor means having a first electrode connected to said first power supply terminal; second transistor means having a first electrode connected to said first power supply terminal, and second and third electrodes connected to a second electrode of said first transistor means; third transistor means having a first electrode connected to said second power supply terminal; fourth transistor means having a first electrode connected to said second power supply terminal, and second and third electrodes connected to a second electrode of said third transistor means; first

and second resistor means serially connected between the third electrode of said second transistor means and the third electrode of said fourth transistor means, the junction of said first



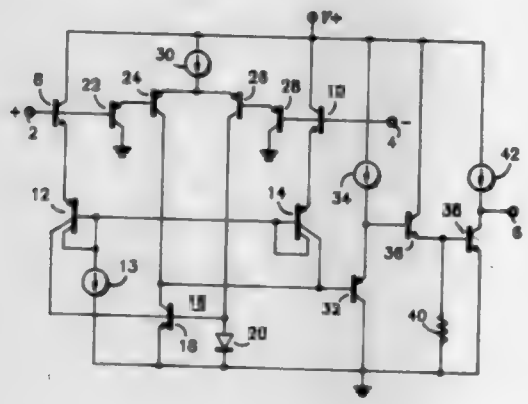
and second resistor means being connected to said input terminal; and means for coupling third electrodes of said first and third transistor means to said output terminal.

4,536,663

COMPARATOR CIRCUIT HAVING FULL SUPPLY COMMON MODE INPUT

Ira Miller, Tempe; Robert C. Rumbaugh, Phoenix, and John J. Price, Jr., Mesa, all of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jul. 1, 1983, Ser. No. 510,006
Int. Cl.³ H03K *3/02*
U.S. Cl. 307—355 **8 Claims**



1. A circuit for comparing first and second input voltages which may vary between a first supply voltage and a second lower supply voltage, said circuit characterized by being powered by said first and second supply voltages and comprising:

current mirror means coupled to an output of said circuit;

first transistor means coupled to said current mirror means and to said output for supplying a mirrorable current to said current mirror means to reduce the voltage at said output when said first input voltage is slightly less than said second input voltage, and said second input voltage is slightly less than or substantially equal to said first supply voltage, and for supplying current to said output to increase the voltage at said output when said second input voltage is slightly less than said first input voltage, and said first input voltage is slightly less than or substantially equal to said first supply voltage; and

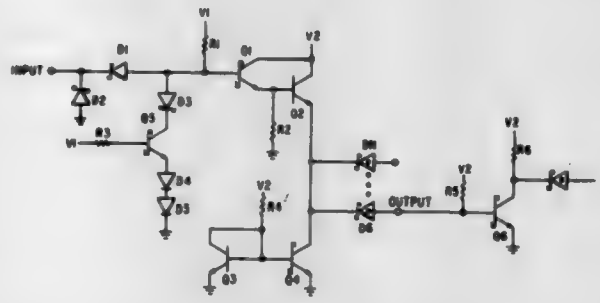
second transistor means coupled to said current mirror means and to said output for supplying a mirrorable current to said current mirror means to reduce the voltage at said output when said first input voltage is slightly less than said second input voltage, and said first input voltage is slightly greater than or substantially equal to said second supply voltage, and for supplying current to said output to increase the voltage at said output when said second input voltage is slightly less than said first input voltage and said second input voltage is slightly greater than or substantially equal to said second supply voltage.

4,536,664

A HIGH SPEED, NON-INVERTING CIRCUIT FOR PROVIDING AN INTERFACE BETWEEN TTL LOGIC GATES AND SCHOTTKY TRANSISTOR LOGIC GATES

Robert C. Martin, Dallas, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 16, 1983, Ser. No. 467,105
Int. Cl.³ H03K *19/092, 19/084, 19/013*
U.S. Cl. 307—475 **7 Claims**



1. A circuit for translating a first logic voltage to a second logic voltage for operative connection to a source of potential, comprising:

a first high barrier Schottky diode having a cathode to serve as the circuit input,

an emitter-follower transistor circuit having an input coupled to the anode of said input Schottky diode,

a second high barrier Schottky diode having an anode coupled to the input of said emitter-follower transistor circuit, and

a plurality of series-connected diodes, the first of said series-connected diodes having an anode coupled to the cathode of said high barrier Schottky diode and the last of said series-connected diodes having a cathode coupled to ground wherein said input of said emitter-follower transistor circuit is clamped to a voltage level substantially equal to the difference between said first logic voltage and the voltage across said first Schottky diode by said series-connected diodes and said second Schottky diode;

a low barrier Schottky diode coupled to receive an output from said emitter follower transistor to serve as an output for the circuit; and

a constant current source coupled to said low barrier Schottky to sink the current therethrough.

4,536,665

CIRCUIT FOR CONVERTING TWO BALANCED ECL LEVEL SIGNALS INTO AN INVERTED TTL LEVEL SIGNAL

Birney D. Dayton, Nevada City, Calif., assignor to The Grass Valley Group, Inc., Grass Valley, Calif.

Filed Dec. 27, 1982, Ser. No. 453,032
Int. Cl.³ H03K *19/092, 19/086, 19/003, 3/33*
U.S. Cl. 307—475 **12 Claims**

1. A circuit for receiving, at first and second input terminals respectively, a first input logical signal having one of two possible negative potential levels, relative to a ground reference potential level, and a second input logical signal having the other of the two possible negative potential levels, and converting said input logical signals into a logical output signal, having one of two possible positive potential levels, at an output terminal, said circuit comprising:

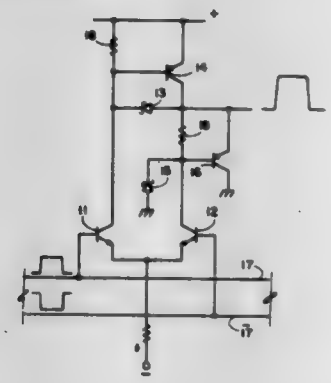
a switch device defining two current paths which are connectable to a reference potential level that is more negative than either of said two possible negative potential levels, said switch device having a first condition, in which one current path is open and the other is closed, and a second condition, in which said one current path is

closed and said other path is open, and being in said first condition when the first input terminal is at the more negative of said two possible negative potential levels and in said second condition when the second input terminal is at the more negative of said two possible negative potential levels;

a first transistor having its base connected to said one current path, the emitter of said first transistor being connectable to a reference potential level that is more positive than either of said two possible positive potential levels;

a first resistor connected between the base and the emitter of said first transistor;

a first diode connected between the base and the collector of said first transistor;



a second transistor having its base connected to said other current path and its emitter connected to said output terminal and to the collector of said first transistor, the collector of said second transistor being connectable to a reference potential level intermediate the less negative of the two possible negative potential levels and the less positive of the two possible positive potential levels;

a second resistor connected between the base of said second transistor and the collector of said first transistor; and

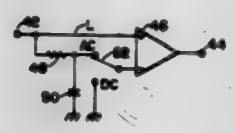
a second diode having one terminal connected to the base of said second transistor and having its other terminal connectable to a reference potential level intermediate the less negative of the two possible negative potentials levels and the less positive of the two possible positive potential levels.

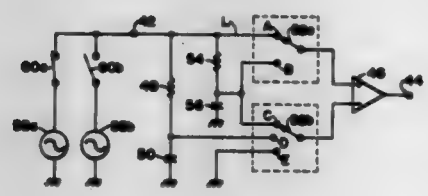
4,536,666

TRIGGER COUPLING CIRCUIT FOR PROVIDING A PLURALITY OF COUPLING MODES

Arthur J. Metz, Gervais, and Kenneth G. Schlotzhauer, Beaverton, both of Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Nov. 26, 1982, Ser. No. 444,765
Int. Cl.³ H03K *17/04, 5/07, 3/023*
U.S. Cl. 307—494 **15 Claims**





1. A trigger coupling circuit for providing a plurality of coupling modes, comprising:

an input terminal for receiving a wideband electrical signal;

a high-frequency signal path coupled to said input terminal;

a low-pass filter coupled to said input terminal;

a subtraction circuit having a first and a second input, said first input coupled to said high-frequency signal path; and

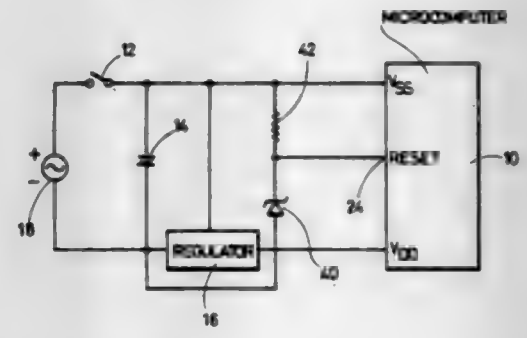
switch means coupled to said second input of said subtraction circuit, said switch means for selectively connecting one of an output from said low pass filter and a reference potential to said second input.

4,536,667

RESET PULSE GENERATOR

Sinichi Masuda, Yao, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Oct. 25, 1982, Ser. No. 436,518
Claims priority, application Japan, Oct. 30, 1981, 56-162881[U]
Int. Cl.³ H03K *17/22, 17/20, 17/06*
U.S. Cl. 307—592 **3 Claims**



1. In a reset pulse generator circuit in a power supply circuit for developing an initial reset pulse to be applied to the reset terminal of a logic circuit, said power supply including a source of electrical power, a regulator circuit having an input side connected to said source of electrical power and an output side for supplying a regulated voltage to said logic circuit, the improvement comprising:

a series circuit including a Zener diode and a resistor joined by a common node; said node being directly connected to the reset terminal of said logic circuit, one end of said resistor and one terminal of said Zener diode; the other end of said resistor being connected to one side of said source of electrical power; and the other terminal of said Zener diode being connected to the input side of said voltage regulator and the opposite side of said source of electrical power, said Zener diode being reverse biased to preclude the conduction thereof during steady state operation of said power supply circuit; and trigger means for forward biasing said Zener diode to generate said initial reset pulse at said node when said power supply suddenly goes fron an OFF to an ON state.

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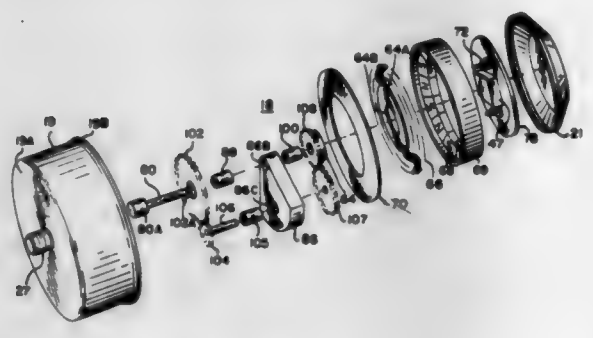
VEHICLE MOUNTABLE ELECTRICAL GENERATING SYSTEM

Robert E. Boyer, 2650 Davisson St., River Grove, Ill. 60171

Filed Sep. 13, 1982, Ser. No. 417,473
Int. Cl.³ H02K *7/10*
U.S. Cl. 310—75 R **17 Claims**

1. A vehicle-mountable electrical power generating system for a wheeled vehicle, comprising, in combination, a housing, first mounting means for mounting said housing along the axis of rotation of a wheel for rotation with said wheel, second mounting means in said housing extending along the axis of rotation of said wheel, pendulum means suspended from said second mounting means, a rotatable electrical potential generating means including a generator shaft means, said generating means mounted with said pendulum means in para-axial relation to the axis of rotation of said wheel, drive means mounted for rotation with said housing and connected to rotate said generator shaft means of said generating means, said drive

means having a substantially different diameter than said generator shaft means whereby rotation of said wheel causes said



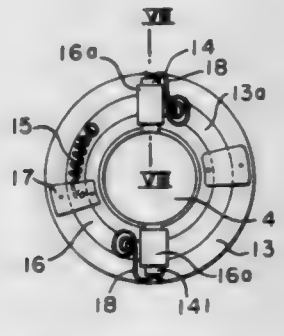
drive means to rotate said generator shaft means of said generating means at a selected rate higher than the rate of rotation of said wheel thereby generate electrical power.

4,536,669

DIRECT CURRENT MOTOR

Akira Morishita, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 13, 1984, Ser. No. 620,175
Claims priority, application Japan, Jul. 20, 1983, 58-133917
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—241 **5 Claims**



1. A d.c. motor which comprises:
a cylindrical yoke;
at least one set of field magnets consisting of permanent magnets fixed to the inner peripheral surface of said yoke, said permanent magnets having a magnetic flux which varies with temperature, the magnetic neutral point of said field magnets being deflected when said magnetic flux varies;
an armature wound with armature windings so as to be surrounded by said field magnets;
a commutator firmly mounted on a rotary shaft of said armature;
a set of brushes being in slide-contact with said commutator;
said brushes being mounted on a brush holder which is in sliding relation with said yoke; and
a displacing means for shifting the position at which said brushes are made in slide-contact with said commutator by slidingly rotating said brush holder in the counter direction of the rotation of said armature so as to compensate for said deflection of said magnetic neutral point;
said displacing means being actuated by a rise in temperature of said d.c. motor.

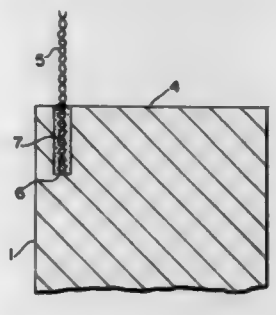
4,536,670

ELECTRICAL BRUSHES WITH WEAR SENSORS

Leonard C. Mayer, Dunn, N.C., assignor to Morganite Incorporated, Dunn, N.C.

Filed Dec. 14, 1981, Ser. No. 330,723
Int. Cl.³ H02K *13/00*
U.S. Cl. 310—249 **7 Claims**

1. An electrical brush comprising a brush wear sensor, including a brush body having a wear surface, a passageway in said brush body extending from a surface remote from said wear surface at least to the point at which brush wear is to be sensed, a length of insulated electrical conductor doubled back onto itself intermediate its ends to form a looped portion and located in said passageway such that the doubled back looped portion extends to said point at which brush wear is to be



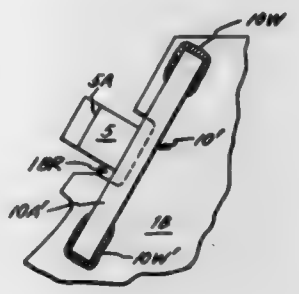
sensed and said ends extend from the brush body for connection of at least one of the ends to an electrical sensor means, at least part of said doubled back insulated conductor in said passageway being twisted such that each insulated conductor is twisted about the other, and a cement retaining said doubled and twisted insulated electrical conductor in said passageway.

4,536,671

DYNAMOELECTRIC MACHINE STATOR MOUNTING MEANS AND METHOD OF MAKING SAME

William H. Miller, Albany, N.Y., assignor to General Electric Company, Fort Wayne, Ind.

Filed Apr. 25, 1983, Ser. No. 487,964
Int. Cl.³ H02K *1/12*
U.S. Cl. 310—258 **17 Claims**



1. A stator support structure comprising: a housing having a plurality of axially spaced ribs defining a bore for receiving a stator therein, each of at least two of said ribs having areas of high radial rigidity in an outward direction and separate areas of lower radial rigidity in an outward direction, the areas of lower rigidity being spaced a substantial arcuate distance from the areas of high rigidity; and a plurality of stress relief means mounted respectively at predetermined spaced points on said two of said ribs adjacent their areas of high radial rigidity for applying predetermined compressive forces to a stator received in said bore, said stress relief means each comprising a bar and mounting means for mounting opposite end portions of the bar to the rib to which it is mounted and positioning a central portion of the bar in spatial relation to the respective rib to permit radial outward flexing of the bar without moving into abutting engagement with the rib, said mounting means comprising a pivot means at each end portion of said bar for pivotably connecting the end portions of the bar to the rib to which it is mounted enabling substantial unopposed pivoting of the end portions of the bar relative to the respective rib.

4,536,672

FLAT TYPE ROTARY ELECTRIC MACHINE

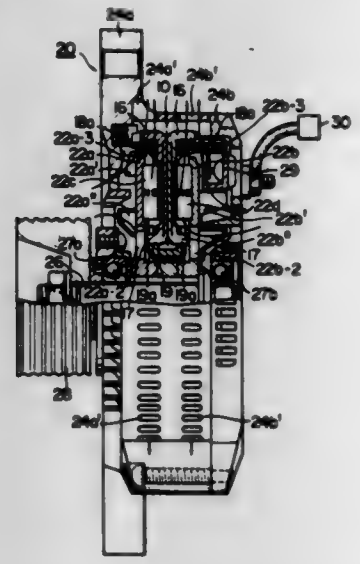
Kenji Kanayama, Kariya, and Shuzo Kinkori, Okazaki, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Aug. 6, 1984, Ser. No. 637,881

Claims priority, application Japan, Aug. 12, 1983, 58-159940; Aug. 31, 1983, 58-159940

Int. Cl.³ H02K *1/22*

U.S. Cl. 310—268 4 Claims



1. A flat type rotary electric machine including:
a generally annular and flat stator armature coil defining therein a central opening;
a shaft rotatably extending through said central opening; and
a pair of rotors mounted on said shaft for rotation therewith and disposed on the opposite sides of said armature coil;
said rotors having permanent magnet means disposed in opposite relationship to the annular faces of said armature coil;
said armature coil comprising:
an annular carrier member of an electrically insulating material and windings carried by said carrier member;
said windings being formed by a plurality of layers of annular rows of generally radially extending and axially thin conductors each having radially inner and outer end sections and an intermediate effective section;
the axial thickness of at least the effective section of each of the conductors of the outermost layers being smaller than the axial thickness of the effective section of each of the conductors of inner layers.

4,536,673

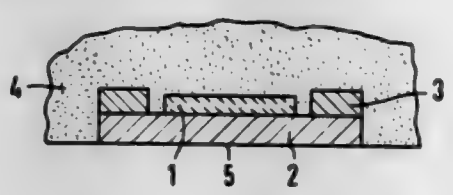
PIEZOELECTRIC ULTRASONIC CONVERTER WITH POLYURETHANE FOAM DAMPER

Alfred Forster, Schwandorf, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 9, 1984, Ser. No. 569,132

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—327 3 Claims



1. In an ultrasonic converter with a disk-shaped ceramic oscillator, to which metal electrodes are fastened, having one face of said disk-shaped ceramic oscillator provided with a plastic adaption layer which is one quarter wavelength, $\lambda/4$, thick relative to the converter frequency and the characteristic sound propagation velocity of the adaption layer plastic material, and said disk-shaped ceramic oscillator being surrounded by a weight ring, the improvement comprising, providing the entire ultrasonic converter, except for said adaption layer facing the medium to be insonated, with a foam covering of polyurethane foam.

4,536,674

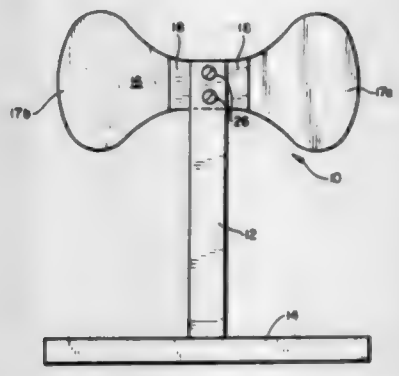
PIEZOELECTRIC WIND GENERATOR

V. Hugo Schmidt, 1221 S. Cedarview Dr., Bozeman, Mont. 59715

Filed Jun. 22, 1984, Ser. No. 623,104

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—330 5 Claims



1. An improved electrical power generating apparatus utilizing a piezoelectric material for converting mechanical energy of fluid flow to electrical energy comprising:
an elongate resilient support member;
the support member being mounted to a base;
a resilient blade member having a surface of maximum extent positioned generally facing the direction of fluid flow and mounted to the support member in spaced apart relation from the base;
the blade member and support member being adapted to flex independently when the blade member is subjected to force of the fluid flow; and
a piezoelectric element being mounted to the blade member which element flexes when the blade flexes.

4,536,675

ELECTRODELESS GAS DISCHARGE LAMP HAVING HEAT CONDUCTOR DISPOSED WITHIN MAGNETIC CORE

Pieter Postma, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Aug. 18, 1982, Ser. No. 409,205

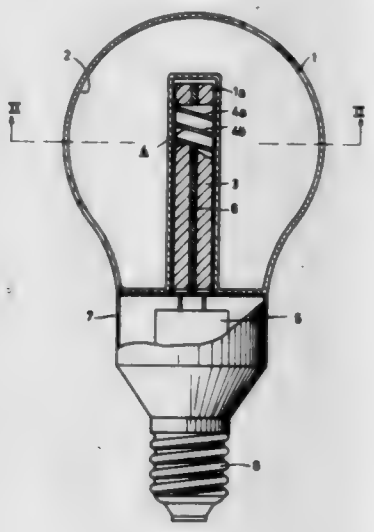
Claims priority, application Netherlands, Sep. 14, 1981, 8104223

Int. Cl.³ H01J *1/50, 7/24, 61/52*

U.S. Cl. 313—46 6 Claims

1. An electrodeless gas discharge lamp having a lamp vessel which is closed in a vacuum-tight manner and is filled with a metal vapor and a rare gas, the lamp comprising a core of a magnetic material in which a radio frequency magnetic field is induceable by means of an electric power supply unit, an electric field being generated in the lamp vessel, the magnetic material core incorporating a member which is disposed within and is in contact with the core and consists of a heat-conducting material for discharging the heat generated during opera-

tion of the lamp to the environment of the lamp, characterized in that the core is in the form of a rod, the member extending



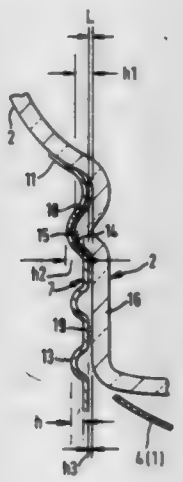
along at least the major portion of the core length at least at or near the longitudinal axis of the core.

4,536,676

LAMP ASSEMBLY

Jisaburou Maruyama, Yokosuka; Sumio Fukayama, Yokohama; Masanobu Miyake, Yokosuka; Yoshimi Watanabe, Yokohama, and Yoshinori Eguchi, Kawasaki, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Sep. 28, 1983, Ser. No. 536,732
Claims priority, application Japan, Sep. 30, 1982, 57-171812
Int. Cl.³ A47B *88/00*
U.S. Cl. 313—318 **6 Claims**



1. A lamp assembly including a light generating source to be connected directly to a power outlet, said lamp assembly comprising:

(a) a vitreous envelope including a generallly cylindrical neck at one end thereof, said generally cylindrical neck having,

a circular outwardly protruded ring extending about the entire periphery of said neck, and an outwardly expanding circumferential skirt which adjoins said circular protruded ring;

(b) a stem mount integrally connected with said envelope and provided inside thereof with a pair of lead-in wires for supporting said light generating source and for supplying electric power thereto, said wires extending across and outwardly from said stem mount;

(c) a screw-in base adapted to be assembled to said vitreous envelope for connection to an external lighting fixture for electric power supply, said stem including

a generally cylindrical shaped screwshell provided with a concave annular channel formed inside said screwshell and extending along the entire internal surface thereof, and

a flared rim disposed next to said concave channel and expanding outwardly in the direction of said envelope, said rim defining an edge of said screwshell; and

(d) adhesive filling means provided in a space defined by said generally cylindrical neck and said screwshell for fixedly combining said two elements,

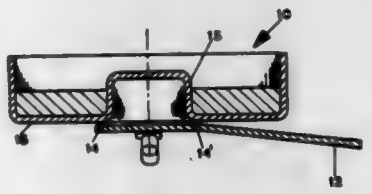
whereby said circular protruded ring and said outwardly expanding skirt are respectively engaged with said concave channel and said flared rim, and further wherein one of said lead-in wires is securely held in a space defined by an external surface of said generally cylindrical neck of said envelope and an internal surface of said screwshell for providing firm electrical contact.

4,536,677

GETTER ASSEMBLY WITH AN IMPROVED MEANS OF CONNECTING THE ANTENNA MOUNT TO THE GETTER MATERIAL CONTAINER

Franco Pirota, Milan, Italy, assignor to Saes Getters S.p.A., Milan, Italy

Filed Nov. 7, 1983, Ser. No. 549,407
Claims priority, application Italy, Nov. 11, 1982, 24194 A/82
Int. Cl.³ H01J *29/94*
U.S. Cl. 313—481 **5 Claims**



1. A getter assembly for a cathode ray tube comprising a getter material container having an external sidewall, an internal sidewall and a bottom wall connecting said external sidewall to said internal sidewall, so as to define an annular channel containing powdered getter material, the upper edge of said internal sidewall being integrally formed round a substantially disc-shaped element so as to define an upraised bottom portion as well as an antenna mount in the form of a small bar coincident with a diameter of said container and having a support means lying in a plane perpendicular to said antenna mount, the antenna mount touching said bottom wall and welded thereto only in zones very close to said internal sidewall.

4,536,678

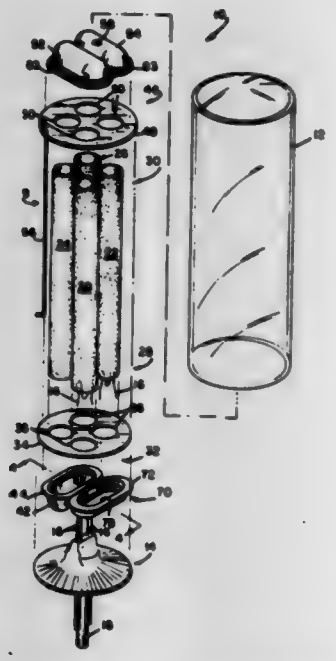
GLASS COATED METAL ARC DIRECTOR FOR COMPACT FLUORESCENT LAMP

Andre C. Bouchard, Peabody; Jakob Maya, Brookline, and Thomas Sentementes, Wakefield, all of Mass., assignors to GTE Products Corporation, Stamford, Conn.

Filed Apr. 1, 1983, Ser. No. 481,203
Int. Cl.³ H01J *5/12, 61/30*
U.S. Cl. 313—493 **4 Claims**

1. In a fluorescent lamp having an hermetically sealed outer envelope containing an arc generating and sustaining medium; an assembly positioned within said envelope, said assembly

comprising a plurality of elongated glass tubes each having first and second ends, said tubes being coated on their interior surface with a phosphor, all of said interior surfaces being open to said medium; at least one arc directing means operatively associated with said first ends of said tubes, said arc directing means forming a part of the arc path through said tubes; an electrode at either end of said arc path; and means for making electrical connection to said electrodes, the improvement



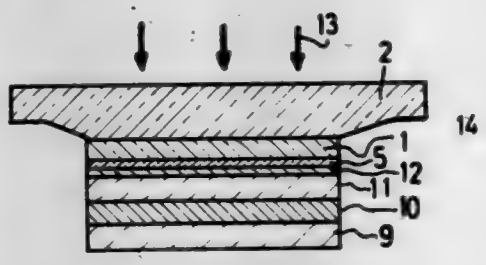
wherein: said arc directing means comprises a relatively thick, rigid, electrically conductive base member having a plurality of apertures therein, some of the apertures including means formed to receive said electrodes and other of said apertures including means formed to receive the first ends of tubes that do not contain electrodes; and an arc director associated with said other apertures, said arc director having an inside surface in communication with the arc when said lamp is operating, said inside surface having a layer of glass fused thereto.

4,536,679

PHOTOCATHODE

Pierre Guittard, Montlhery Longpont; Bernard Guillemet, Vitry-sur-Seine, and Claude Piaget, Montgeron, all of France, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Nov. 4, 1982, Ser. No. 439,145
Claims priority, application France, Nov. 4, 1981, 81 20675
Int. Cl.³ H01J *40/16, 40/06*
U.S. Cl. 313—541 **2 Claims**



1. A photocathode comprising a transparent support bonded by a glass bonding layer to a semiconductor structure comprising a chemical passivating layer on an optical adaptation layer on an electrical passivating layer on a photoemissive layer, the transparent support acting as the window of a tube envelope, wherein the improvement comprises the support being in two parts bonded together as follows:

a first part connected to the glass bonding layer and thereby to the chemical passivating layer of the semiconductor structure, this first part comprising a glass having softening and transition temperatures which are higher than those of the glass bonding layer, and

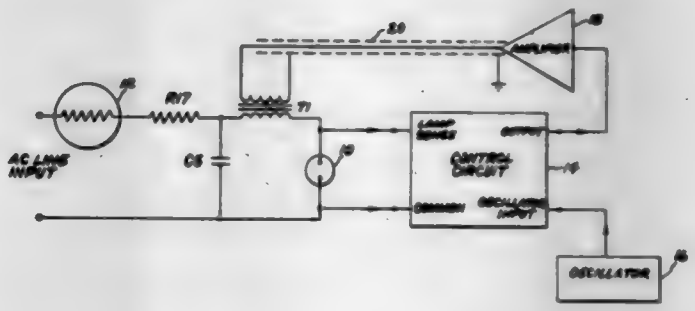
a second part for connection to the tube envelope, said second part comprising a glass having softening and transition temperatures and properties of thermal expansion substantially equal to those of the glass bonding layer.

4,536,680

RESISTIVE LAMP BALLAST WITH RE-IGNITION CIRCUIT

Victor D. Roberts, Burnt Hills, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Continuation of Ser. No. 401,506, Jul. 26, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 652,249
Int. Cl.³ H01J *7/44;* H05B *37/02*
U.S. Cl. 315—49 **2 Claims**



1. A re-ignition circuit adapted to be connected to a discharge lamp, said discharge lamp being connected in series with a resistive element and being adapted to be coupled to an AC source, said re-ignition circuit comprising:

sensing means for sensing voltage across said lamp;

an oscillator coupled to said sensing means for supplying re-ignition energy across the electrodes of said lamp upon the condition during any half cycle of said AC source that said sensing means indicates that lamp voltage exceeds a predetermined value;

a transformer having one winding connected between said resistive element and said lamp and having its other winding connected to the output of said oscillator; and

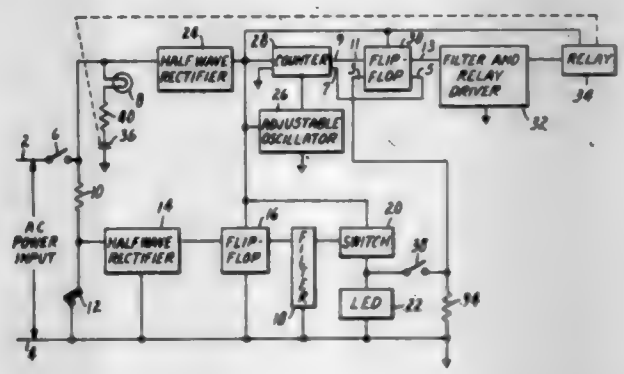
a high frequency bypass capacitor connected across the series combination of said one winding and said lamp.

4,536,681

TEMPERATURE COMPENSATED TIME EXPOSURE CONTROL CIRCUIT

Farrel M. Maki, Fridley, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Jul. 19, 1983, Ser. No. 515,297
Int. Cl.³ H05B *39/04*
U.S. Cl. 315—309 **6 Claims**



1. Control circuitry usable with a machine "ready" circuit portion for controlling the output of a light source including:

a time adjustable control circuit portion operatively connected to the machine "ready" circuit portion and to the light source, said time control circuit portion operable after the machine "ready" circuit portion presents a machine "ready" condition for providing a timed period during which the light source is energized, said time ad-

justable control circuit portion including a temperature sensitive element for shortening said timed period as the temperature sensed by said temperature sensitive element increases and lengthening said timed period as the temperature sensed decreases.

4,536,682

CIRCUIT FOR GENERATING A DEFLECTION CURRENT THROUGH THE FIELD DEFLECTION COIL OF A PICTURE DISPLAY DEVICE

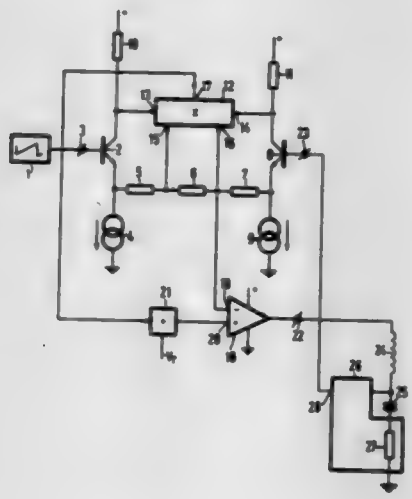
Hendrik ten Pierick, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1984, Ser. No. 575,427

Claims priority, application Netherlands, Feb. 2, 1983, 8300384

Int. Cl.³ H01J *29/70, 29/72*

U.S. Cl. 315—387 **10 Claims**



1. In a circuit for generating a deflection current through the field deflection coil of a picture display device, comprising an amplifier and a sawtooth generator for supplying a sawtooth-shaped signal to the amplifier, said amplifier having an output terminal to which a series arrangement of the deflection coil and a separating capacitor is coupled, and further comprising a feedback network included in a feedback path arranged between the said series arrangement and a feedback input terminal of the amplifier, and also means for deriving from the sawtooth-shaped signal a parabolic signal for application to a signal input terminal of the amplifier, the improvement wherein the means for generating a parabolic signal comprises a multiplying circuit and the feedback path also comprises a combining stage having a first input terminal connected to the sawtooth generator and a second input terminal connected to the feedback network, said combining stage being adapted to apply first and second signals to the multiplying circuit and a third signal to the feedbck input terminal of the amplifier; the first, second and third signals being derived by the combining stage by linear combinations of fractional proporations of the signals at the first and second input terminals thereof, and an output terminal of the multiplying circuit being coupled to the signal input terminal of the amplifier for applying the parabolic signal thereto.

4,536,683

HORIZONTAL PHASE SHIFTER

Leroy A. Sutton, Wheeling, Ill., assignor to Zenith Electronics Corporation, Glenview, Ill.

Filed Jun. 23, 1983, Ser. No. 507,704

Int. Cl.³ H01J *29/70, 29/76*

U.S. Cl. 315—401 **6 Claims**

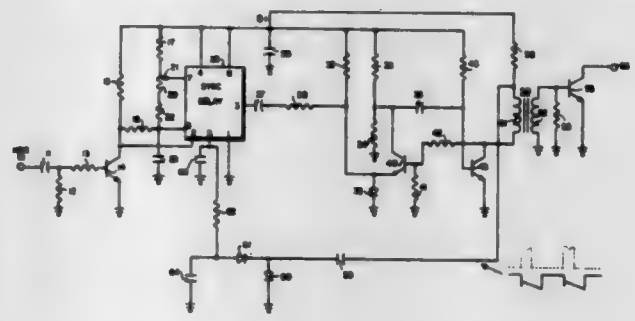
1. A horizontal deflection circuit for use with a cathode ray tube display comprising:

an output stage including a transistor having a base-emitter junction;

oscillation means including a horizontal oscillator transistor and a horizontal driver transistor;

a transformer having a primary winding coupled to said horizontal driver transistor and a secondary winding coupled to said horizontal output transistor, said transformer having a primary to secondary turns ratio greater than unity;

synchronizing means including a delay circuit generating a



synchronizing signal for controlling initiation of said horizontal oscillator;

sensing means in circuit with said primary winding for developing a voltage representative of the load reflected back to said primary winding by the emitter-base junction resistance of said horizontal output transistor; and

peak detector means coupled to said sensing means for supplying a DC control potential to said delay circuit for controlling the phase of said synchronizing signal.

4,536,684

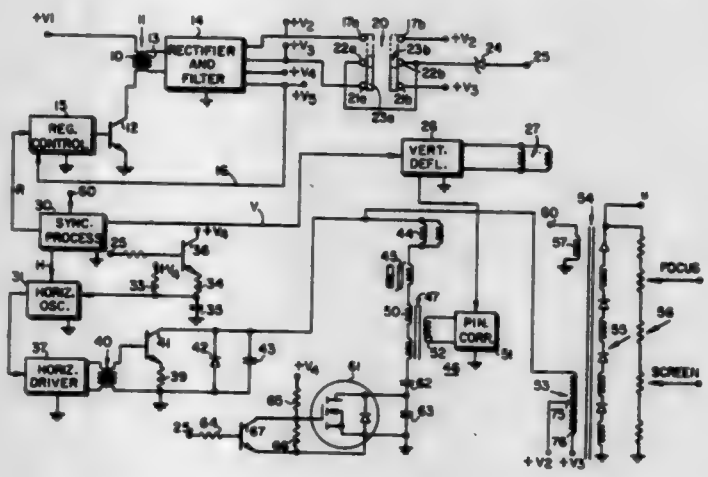
MULTIPLE SCAN RATE DEFLECTION CIRCUIT INCORPORATING SCAN COMPENSATION

William E. Babcock, Warren, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed May 25, 1983, Ser. No. 497,953

Int. Cl.³ H01J *29/70*

U.S. Cl. 315—411 **3 Claims**



1. A power supply and deflection circuit for use in a video display system comprising:

means for selecting one of a plurality of horizontal deflection rates;

horizontal deflection means coupled to said selecting means for operating at said selected horizontal deflection rate, incorporating means for producing horizontal retrace pulses having amplitudes dependent upon said selected horizontal deflection rate;

a voltage source providing a plurality of predetermined different voltage levels;

means for selecting one of said voltage levels in response to said selected horizontal deflection rate;

transformer means comprising:

a transformer winding comprising a plurality of winding turns having a first terminal coupled to said means for

producing horizontal retrace pulses, and having a plurality of taps, each of said taps forming, with said first terminal, a transformer primary winding having a different number of winding turns dependent on the tap selected; and

a transformer secondary winding magnetically coupled to said primary winding for producing a secondary winding voltage in response to said retrace pulses on said primary winding; and

means for applying said selected voltage level to one of said taps in response to said selected horizontal deflection rate, said tap selected such that said secondary winding voltage remains substantially constant during retrace in response to retrace pulses of different amplitudes.

4,536,685

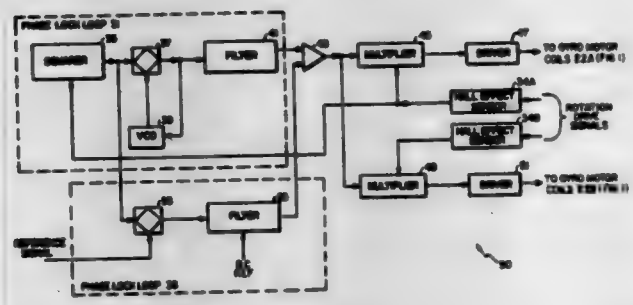
CONTROL FOR GIMBALLED MONOPULSE ANTENNA ARRANGEMENT

Jean A. Fattal, and Michael L. Roesler, both of Lexington, Mass., assignors to Raytheon Company, Lexington, Mass.

Filed Mar. 3, 1982, Ser. No. 356,699

Int. Cl.³ H02K *23/00*; H02P *1/18, 3/08, 5/06*

U.S. Cl. 318—254 **1 Claim**



1. In a gyroscopically stabilized arrangement wherein a rotor of an electric motor serves as a gyroscopic mass when such rotor is rotated to follow a rotating magnetic field corresponding to a similarly rotating electric field in a stator of such motor, control apparatus for determining the rotational position of such rotor, such apparatus comprising:

(a) at least one Hall effect sensor including a pair of orthogonally disposed Hall effect crystals immersed in a rotating magnetic field corresponding to the rotating electric field of the stator;

(b) first phase detector means, responsive to the output signal of the Hall effect sensor and to the output signal of a voltage-controlled oscillator, to produce a first bipolar D.C. signal representative of the difference in frequency between such output signals;

(c) second phase detector means, responsive to the output signal of the Hall effect sensor and to a reference signal having a fixed frequency, to produce a second bipolar D.C. signal representative of the difference in frequency between such output and reference signals;

(d) means for summing the first and second bipolar D.C. signals to produce a correction signal; and

(e) means, responsive to the correction signal, to change the frequency of the rotating electric field of the stator to null the correction signal, ultimately to synchronize the rotating magnetic field with the reference signal.

4,536,686

ELECTRIC MOTOR FAULT AND DYNAMIC BRAKING PROTECTION SYSTEM

Joseph J. Gartner, 335 W. Shore Dr., Wycoff, N.J. 07481

Filed Jul. 26, 1984, Ser. No. 634,561

Int. Cl.³ H02K *23/66*

U.S. Cl. 318—434 **11 Claims**

1. An electric motor fault and dynamic braking protection system for electric motor circuits having a normal operating mode in which the motor circuit input and output carry total motor current and a dynamic braking operating mode in which motors are opposed to dissipate energy comprising

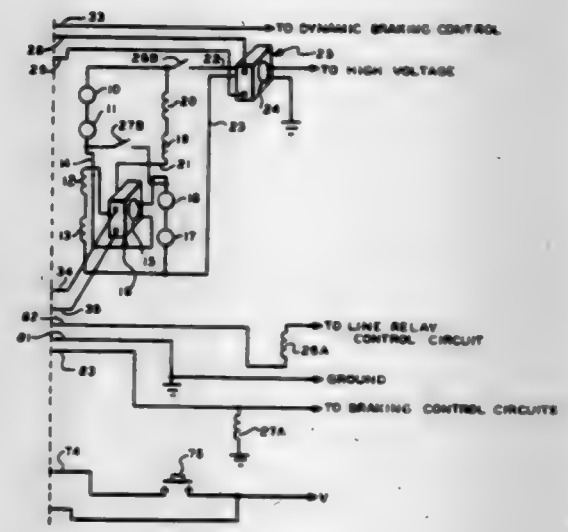
first saturable reactor means for sensing current imbalance between the motor circuit input and output in the normal mode;

second saturable reactor means for sensing current imbalance between opposing motors in the dynamic braking mode;

detector means coupled to said first and second saturable reactor means for producing fault signals when the reactor means sense a current imbalance of a predetermined magnitude in the operating modes;

bistable control means having first and second operating states selectively coupled to said detector means to receive the fault signals therefrom, said control means being operable in the first state thereof to energize the motor circuit and permit dynamic braking and operable in the second state thereof to deenergize the motor circuit and prevent dynamic braking, the operating states of said control means being shiftable from said first state to said second state in response to said fault signals and from said second state to said first state in response to either a first reset signal or a second reset signal;

first manually operable reset signal producing means for producing said first reset signal;



second manually operable reset signal producing means for producing a second reset signal;

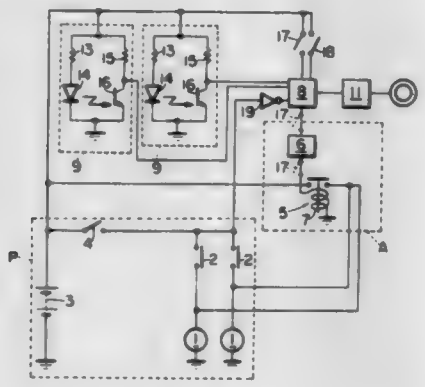
counting means having first and second operating conditions selectively coupled to said detector means and said first reset signal producing means, said counting means being operable in the first condition thereof to couple said first reset signal producing means to said control means so that said control means may be shifted from said second operating state to said first operating state in response to said first reset signal and operable in the second condition thereof to decouple said first reset signal producing means and said control means to thereby prevent shifting of said control means from said second state to said first state in response to said first reset signal, the operating conditions of said counting means being shiftable from said first condition to said second condition after receipt of a predetermined number of said fault signals and from said second operating condition to said first operating condition upon receipt of said second reset signal; and

motor circuit mode responsive switching means for selectively coupling said first and second saturable reactor means and the detector means associated therewith to said control means and counter means.

4,536,687
APPARATUS FOR CONTROLLING POWER WINDOW OF VEHICLE

Norimitsu Kurihara, Wako, and Takeshi Imai, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 23, 1983, Ser. No. 564,803
Claims priority, application Japan, Dec. 23, 1982, 57-231568; Dec. 23, 1982, 57-231570; Dec. 23, 1982, 57-198923[U]
Int. Cl.³ H02H *7/08*
U.S. Cl. 318—480 7 Claims

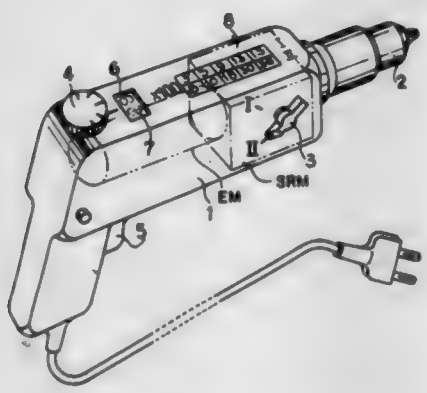


1. In a power window of a vehicle having a window motor adapted for opening and closing a window of the vehicle, said motor being connected to a power source through a main switch and a window switch for closing the window, said main switch being opened and closed with the opening and closing of an ignition switch for an engine of the vehicle, an apparatus for controlling said power window of the vehicle comprising: a window sensor means for detecting whether said window is open or closed and generating an output signal when said window is open; a detection circuit means for generating an output signal when said window sensor means generates the output signal and when said main switch is open; and an auto-close circuit means actuated by the output signal from said detection circuit means for controlling the operation of said window motor in a direction to close said open window.

4,536,688
ELECTRIC DRILLING MACHINE

Jean Roger, Conflans Sainte Honorine, France, assignor to Peugeot Outillage Electrique, Nanterre, France

Continuation of Ser. No. 426,444, Sep. 29, 1982, abandoned. This application Jan. 28, 1985, Ser. No. 694,918
Claims priority, application France, Dec. 15, 1981, 81 23386
Int. Cl.³ G01R *31/02*
U.S. Cl. 318—490 13 Claims

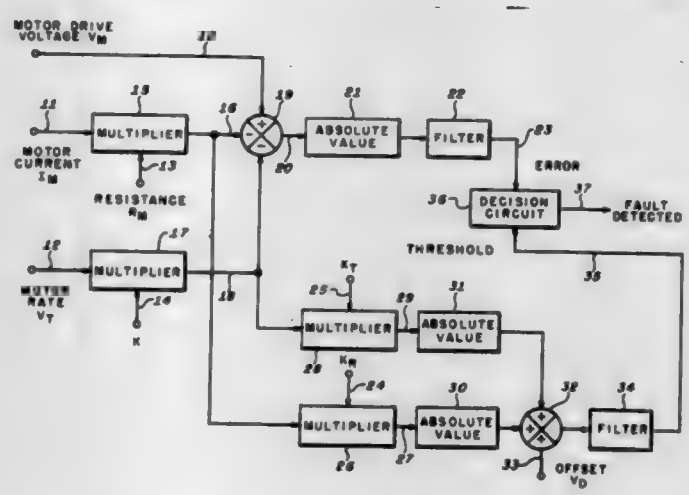


1. A machine, in particular an electric drilling machine, comprising a chuck, an electric driving motor having an output shaft, a speed reducer providing at least two mechanical ratios and coupled to the output shaft of the motor and to said chuck for driving the latter, changing means associated with the speed reducer for changing the mechanical ratio thereof, an electronic speed variator associated with the motor for varying the speed of the motor, control means operatively connected to said electronic speed variator for allowing selection of a plurality of predetermined discrete settings of said electronic speed variator, and display means connected to said changing means and said control means, said display means comprising means for displaying only those numbers corresponding to speeds within a range of discrete speed numbers, each of said discrete speed numbers being determined by a combination of particular settings of said mechanical ratio changing means and said control means, and being constant during operation of the machine.

4,536,689
SERVOMOTOR FEEDBACK FAULT DETECTOR

Dale D. Davidson, Glendale, Ariz., assignor to Sperry Corporation, New York, N.Y.

Filed May 17, 1984, Ser. No. 611,305
Int. Cl.³ G05B *23/02*
U.S. Cl. 318—565 9 Claims



1. A feedback fault detector for a servomotor, said motor being responsive to a drive voltage applied thereto and having an electrical resistance value associated therewith and having tachometer means coupled thereto for providing a tachometer signal proportional to the rate of rotation of said motor, comprising

first combining means responsive to said drive voltage, to the current flowing through said motor as a result of said drive voltage applied thereto and to said tachometer signal for providing a combined signal in accordance with a linear combination thereof,

second combining means responsive to said current and to said tachometer signal for providing a threshold signal in accordance with a linear combination thereof, and

decision means responsive to said combined signal and to said threshold signal for providing a fault detected signal when said combined signal exceeds said threshold signal.

4,536,690
TOOL-SUPPORTING SELF-PROPELLED ROBOT PLATFORM

Charles A. Belsterling, Norristown, and Robert K. Soberman, Philadelphia, both of Pa., assignors to Calspan Corporation, Buffalo, N.Y.

Filed Oct. 19, 1982, Ser. No. 435,212
Int. Cl.³ G05B *19/40*
U.S. Cl. 318—687 23 Claims

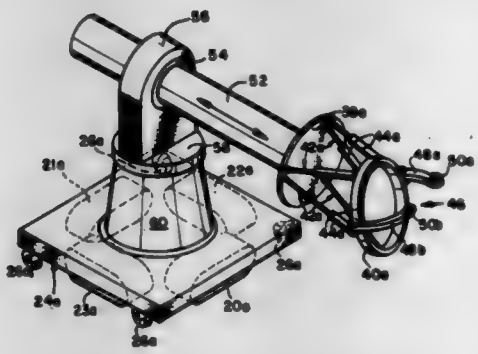
1. A self-propelled robot platform for cooperative use in connection with a support surface permitting magnetic interaction between the platform and the support structure comprising:

a frame;

a plurality of frame support members supported on the frame, adapted to cooperate with the support surface to support and space the frame from the surface and permit-

ting movement over the support surface in any selected direction;

at least two linear motor means fixed to the frame transversely to one another and generally parallel to the support surface in position to magnetically link the support surface or means generally conforming to the support surface such that, by a combination of signals to the respective transversely positioned motor means, the motor means can drive the platform in a variety of selected directions and along a selected path or pattern; and



tool support means including articulation structure permitting tool position adjustment, whereby a tool supported by the tool support means may do predetermined work at predetermined locations of the platform.

4,536,691

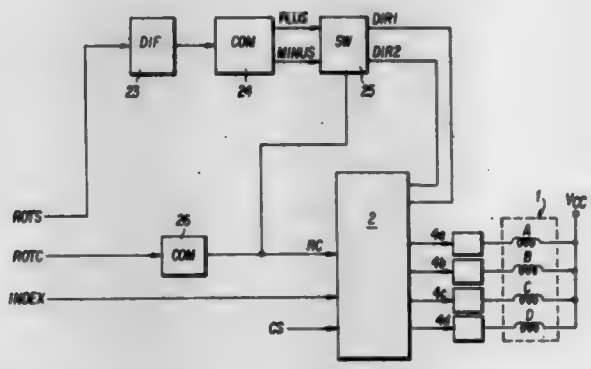
METHOD OF CONTROLLING A STEPPING MOTOR

Kenji Sakakibara, Nagoya, Japan, assignor to Brother Kogyo Kabushiki Kaisha, Nagoya, Japan

Continuation-in-part of Ser. No. 285,356, Jul. 20, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 535,948

Int. Cl.³ H02K *29/04*

U.S. Cl. 318—696 **12 Claims**



1. In a system including a stepping motor having a plurality of phase windings and a rotor which is held in one of a plurality of stable stopping positions provided at intervals of one step, each of said stable stopping positions being defined by one of said phase windings, and means for driving said rotor responsive to the current rotational position of said rotor and the rotational speed of said rotor, a method comprising the steps of

sequentially energizing two selected phase windings which produce a magnetic field within a first rotational range relating to the current rotational position of said rotor, whereby said rotor is accelerated until it passes through the substantially middle point in the entire distance between a start position and a desired position,

sequentially energizing two selected phase windings which produce a magnetic field within a second rotational range relating to the current rotational position of said rotor, whereby said rotor is decelerated from a predetermined first position beyond said middle point to a second position where the rotational speed of said rotor drops to a predetermined value,

sequentially energizing a selected phase winding which produces a magnetic field within a third rotational range relating to the current rotational position of said rotor, whereby the rotational speed of said rotor is kept at substantially said predetermined value until said rotor arrives at a predetermined third position, in several steps, before said desired position,

selectively energizing two selected phase windings for a period determined by the rotational speed of said rotor in order to brake said rotor approaching said desired position, and

supplying a final drive signal to only one phase winding corresponding to said desired position in order to stop and hold said rotor at said desired position.

4,536,692

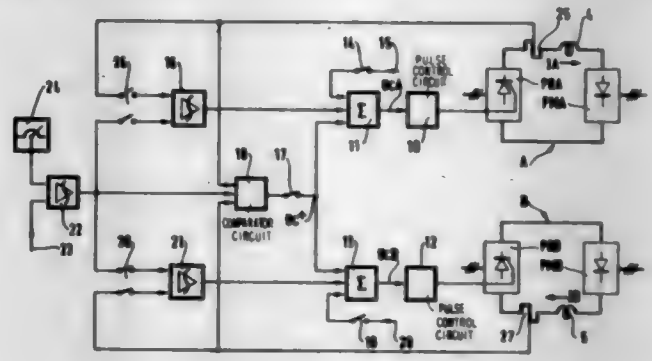
CIRCUIT FOR ENERGIZING AND CONTROLLING A SYNCHRONOUS ROTARY MACHINE OPERATING AT VARIABLE SPEED

Henri Godfroid, Valdoie, France, assignor to CGEE Alsthom, France

Continuation of Ser. No. 468,623, Feb. 22, 1983, abandoned. This application Jun. 21, 1984, Ser. No. 622,400

Int. Cl.³ H02P *5/40*

U.S. Cl. 318—723 **5 Claims**



1. A circuit for energizing and controlling a synchronous rotary machine which operates at variable speed, said machine having a stator with a plurality of n polyphase windings wherein n is at least equal to two, said circuit comprising:

a polyphase AC source of n phases corresponding in number of the n polyphase windings of said machine,

controlled static switches comprising a static AC-AC converter for feeding each polyphase winding, each said converter constituting an autosynchronous inverter comprising a polyphase mains bridge and a polyphase machine bridge connected to each other by first and second DC conductors forming a continuous current loop such that one of said bridges operates as a rectifier and the other bridge operates as an inverter, each of said bridges having n parallel paths with paired thyristors within each of said parallel paths,

and wherein said polyphase AC source is connected to said polyphase mains bridge at points between said paired thyristors for respective phases, and said n polyphase windings of said machine stator are connected to respective paths of said polyphase machine bridge at points between said paired thyristors for respective phases thereof,

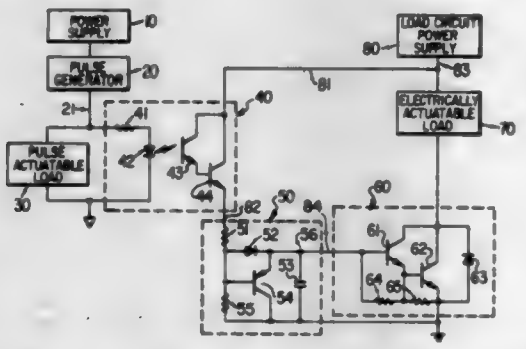
and wherein the circuit includes monitoring means for monitoring the sum of the currents flowing in each loop, and control means for controlling the mains bridge of each converter such that the sum of the DC currents in said conductors of all the converters is proportional to a reference average current value.

4,536,693

HIGH-SPEED CAPACITOR DISCHARGE CIRCUIT SUITABLE FOR THE PROTECTION OF DETONATION DEVICES

Albert J. Marek, Dallas, Tex., assignor to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Sep. 2, 1982, Ser. No. 414,105
Int. Cl.[3] H02J *15/00*
U.S. Cl. 320—1 15 Claims



5. A circuit for storing electrical charge in response to a command signal from a current source, and for rapidly dissipating electrical charge upon termination of the command signal, comprising:

first, capacitive storage means for receiving and storing electrical energy from the command signal source;

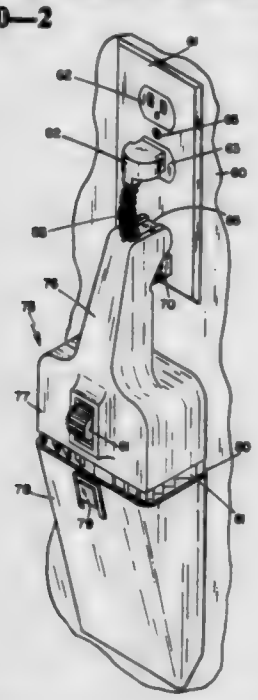
second means, connected in parallel with the first means, for preventing discharge of the capacitive storage means during reception of a signal from the command signal source and for effecting discharge of the capacitive storage means upon termination of the command signal, the first means comprising means for storing power for actuating the second means upon termination of the command signal.

4,536,694

BATTERY-OPERATED DEVICE WITH WALL-MOUNTED SUPPORT

George W. McCarty, Lutherville; Jerome I. Rebold, Burtonsville, and Somers H. Smith, III, Columbia, all of Md., assignors to Solid State Chargers Research and Development, Lutherville, Md.

Filed Feb. 21, 1984, Ser. No. 581,774
Int. Cl.[3] H02J *7/00;* H05K *7/20;* H01M *45/04*
U.S. Cl. 320—2 39 Claims



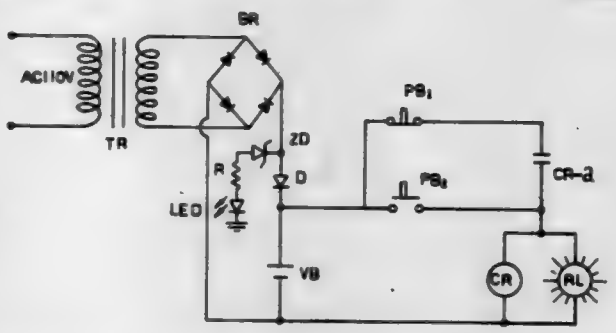
1. In a battery-operated device having a passive mode when the device is being charged and an active mode when the device is being discharged in use, the combination of a plate means, means for mounting the plate means on a wall, electrical outlet receptacle means associated with the plate means, means on the plate means for removably supporting the battery-operated device on the wall, charging means including a heat-producing solid state charger within the battery-operated device, the battery-operated device including an electrical cord connected to the charging means, and a plug on the end of the cord and having a pair of metal prongs for cooperation with the receptacle means in the charging mode of the battery-operated device, said solid state charger being within said plug and having heat sink means in effective thermal communication with at least one of said prongs for transferring and dissipating heat produced by the solid state charger.

4,536,695

DISCHARGING PROTECTION DEVICE FOR BATTERY-OPERATED PORTABLE ELECTRIC LIGHT

Ming-Hsin Lin, 4, La. 110, Shui-Nan Rd., Pei-Tou District, Taichung City, Taiwan

Filed Dec. 12, 1983, Ser. No. 560,532
Int. Cl.[3] H02H *7/18;* H02J *7/00*
U.S. Cl. 320—2 7 Claims



1. A discharging protection device for battery-operated portable electric light having a charging circuit combined with a transformer, a bridge rectifier and a zener diode circuit coupled with a rechargeable battery set thereof, comprising:

a relay circuit having a relay coil in parallel with the light bulb of the electric light and a normally-open relay contact connected to said light bulb;

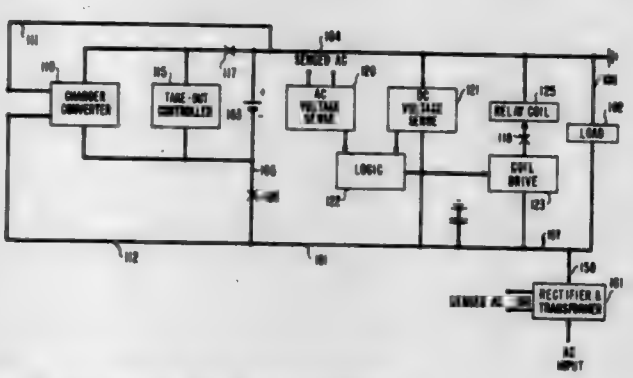
a first switch connected between the positive terminal of the rechargeable battery set and a movable part of said normally-open contact of said relay circuit; and a second switch coupled between the positive terminal of the rechargeable battery set and a stationary part of said normally-open contact of said relay circuit with respect to the light bulb of the electric light.

4,536,696

BUCK-BOOST CONVERTER WITH DUAL-MODE CONTROL FOR BATTERY CHARGING

Richard C. Ray, Randolph Township, Morris County, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 14, 1983, Ser. No. 513,775
Int. Cl.[3] H02J *7/10;* H02M *7/00*
U.S. Cl. 320—21 11 Claims



1. A battery charging circuit comprising

a flyback converter circuit including input means for accepting a source of energy and output means for accepting a battery to be charged,

charging control means for regulating charging of the battery including

a high-rate charge control providing a constant current for charging the battery and regulated by sensing a first current in a power switching device of the converter circuit,

a low-rate charge control providing a second current lower in value than the first current and which is controlled by a voltage responsive to a voltage level at the output means, and

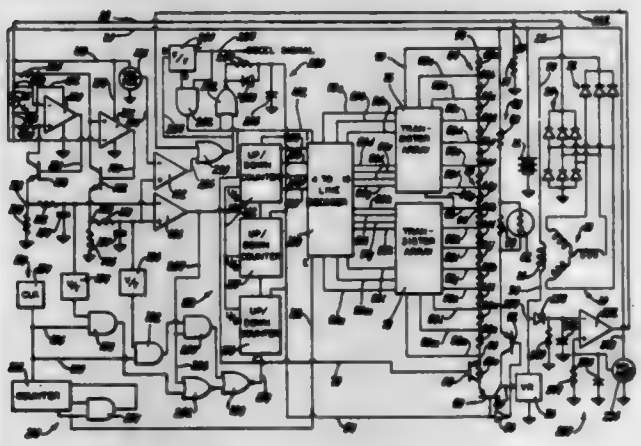
means for selecting when the low-rate charge control is active in response to a voltage level at the output means.

4,536,697

VEHICLE ELECTRICAL ENERGY MANAGEMENT SYSTEM

Ralph H. Johnston, Anderson; Curtis D. Munden, Carmel, and Leonard J. Sheldrake, Noblesville, all of Ind., assignors to General Motors Corporation, Detroit, Mich.

Filed Sep. 9, 1983, Ser. No. 530,723
Int. Cl.[3] F02B 67/04; H02J 7/14
U.S. Cl. 322—14 4 Claims



1. In a vehicle electrical system including a battery adapted to supply power to vehicle electrical loads and to be charged by an engine-driven generator, a regulator mechanism for controlling the output voltage of said generator, control means connected to the regulator mechanism effective in a charge mode of operation to control the generator output voltage as a function of the battery voltage and temperature, and float means effective when the charging current supplied to the battery during the charge mode of operation of said control means falls to a predetermined value indicative of a satisfactory state of battery charge to interrupt the charge mode of operation and to initiate a float mode of operation wherein the generator output voltage is reduced to a float value substantially equal to the nominal open circuit terminal voltage of said battery to avoid the energy consumption associated with continued charging of the battery from the engine-driven generator after a satisfactory state of battery charge has been reached, the improvement comprising:

engine deceleration responsive means connected to the regulator mechanism and effective during engine deceleration in excess of a reference amount for increasing the generator output voltage to a fixed, relatively high value to produce relatively high battery charging current to thereby recoup kinetic energy from the vehicle during deceleration;

current integrating means for measuring and indicating the net current into and out of the battery; and

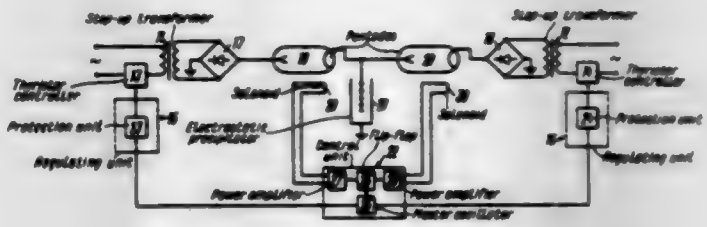
generator control means effective at the initiation of said float mode of operation for resetting said current integrating means and thereafter for adjusting the generator output voltage in relation to said float value in accordance with the net current measurement of said current integrating means such that the voltage is increased above said float value if the current integrating means indicates a net current out of the battery and decreased below said float value if the current integrating means indicates a net current into the battery, to thereby maintain the satisfactory state of battery charge existing at the initiation of said float mode of operation despite variable electrical loading and variable battery charging occasioned by engine deceleration.

4,536,698

METHOD AND APPARATUS FOR SUPPLYING VOLTAGE TO HIGH-OHMIC DUST ELECTROSTATIC PRECIPITATOR

Ilya S. Shevalenko; Anatoly V. Ilchenko; Vladimir I. Trush, all of Kharkov; Mikhail L. Vulis, Moscow; Anatoly I. Baryshnikov, Moscow; Igor P. Vereschagin, Moscow; Leonid M. Makalsky, Moscow; Garri Z. Mirzabekian, Moscow; Vladimir A. Smirnov, Moscow; Viktor P. Dzigan, Kharkov; Vladimir E. Ginzburg, Moscow; Vladimir I. Miroshnik, Moscow; Alexandr S. Minaev, Moscow; Alexandr V. Orlov, Moscow, and Sergei P. Teljupa, Kharkov, all of U.S.S.R., assignors to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Po Ochikh Tke Tekhnologichesky Gazov, Stochnykh Vod I Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii Vnipichermetenergoochist Ka, Kharkov, U.S.S.R.

Filed Aug. 25, 1983, Ser. No. 526,481
Int. Cl.[3] B03C 3/68
U.S. Cl. 323—237 11 Claims



5. An apparatus for supplying voltage to a high-ohmic dust electrostatic precipitator having corona-forming and precipitation electrodes, comprising:

a step-up transformer having a primary winding connected to a supply line, and a secondary winding having one output terminal grounded;

a thyristor controller placed in series in the primary winding circuit of said step-up transformer, and having an input;

a switching device including:

a first transit pentode having a cathode lead and an anode lead, and a control solenoid whose axis is perpendicular to the axis of this transit pentode;

a second transit pentode having a cathode lead and an anode lead, said cathode lead of said second transit pentode being connected to the anode lead of said first transit pentode and a second terminal of the secondary winding of said transformer, and the anode lead of said second transit pentode being connected to the cathode lead of said first transit pentode, the common lead of said transit pentodes being connected to said corona-forming electrode of said electrostatic precipitator, and said second transit pentode having a control solenoid whose axis is perpendicular to the axis of this transit pentode;

a regulating unit incorporating a protection unit provided with a thyristor key and having a control electrode and a lead connected to said input of said thyristor controller; and

a control unit including:

a master oscillator having two outputs, one of said outputs being connected to said control electrode of said thyristor key of said protection unit in said control unit;

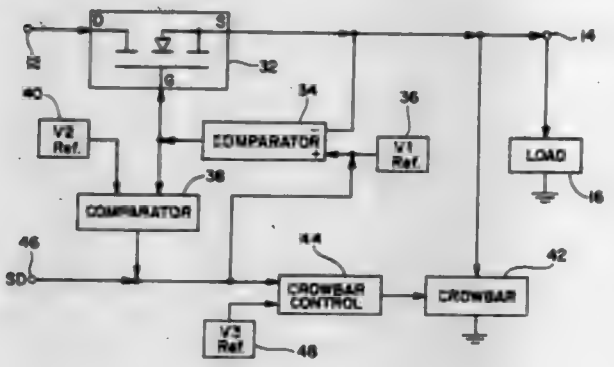
a flip-flop having an input connected to a second of the outputs of said master oscillator, and output; and

two power amplifiers, each having an input connected to one of the outputs of said flip-flop, and two outputs connected to a corresponding control solenoid of a respective pentode.

4,536,699
FIELD EFFECT REGULATOR WITH STABLE FEEDBACK LOOP

Richard H. Baker, Bedford, Mass., assignor to Gould, Inc., Rolling Meadows, Ill.

Filed Jan. 16, 1984, Ser. No. 571,033
Int. Cl.³ G05F *1/58*
U.S. Cl. 323—276 **2 Claims**



1. A low loss regulator having an input terminal for receiving a predetermined input voltage and an output terminal operatively connected to a load, said regulator comprising:

at least one field effect transistor in a source follower configuration having its drain operatively connected to the input terminal, its source operatively connected to the output terminal, providing an output voltage across the load, and a gate;

means for comparing said output voltage to a first reference voltage and supplying a control voltage indiciative thereof to said gate, such that a change in current drawn by the load causes said means for comparing to produce a control voltage on said gate which keeps said output voltage substantially constant, said means for comparing comprises amplifier means for providing a high gain having a negative input operatively connected to the output terminal and a positive input operatively connected to said first reference voltage and an output operatively connected to said gate; and

means for clamping the output current drawn by the load to a predetermined value, said means for clamping operatively connected between said output of said high gain amplifier means and said positive input of said high gain amplifier means such that when said control voltage reaches a predetermined level said means for clamping outputs a voltage which modifies said first reference voltage and thereby prevents the load from drawing current more than said predetermined value.

4,536,700
BOOST FEEDFORWARD PULSE WIDTH MODULATION REGULATOR

Vincent G. Bello, and Charles W. Sweeting, both of Norwalk, Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Mar. 28, 1984, Ser. No. 594,137
Int. Cl.³ G05F *1/46*
U.S. Cl. 323—285 **7 Claims**

1. A feedforward circuit including a circuit input and an output in a pulse width modulated power supply, comprising:

switching means including input, output and control sides, for passing power in successive on and off states;

inductive means including input and output sides, for maintaining a current throughout between said circuit input and output;

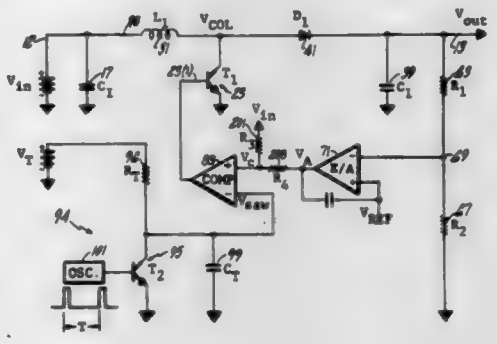
diode means for transferring current with respect to said inductive means, said diode and inductive means being electrically connected in series, and said diode means being reverse biased during the on states of said switching means;

capacitor means for storing charge, including respective output and grounded sides, the output side of said inductor and capacitor means being electrically connected at the circuit output;

sampling means for sampling a selected portion of the output voltage at said circuit output;

error means including an error output for establishing an error difference between said selected portion of said output voltage and a selected reference voltage;

sawtooth means for establising a sawtooth waveform of characteristic slope and peak amplitude;



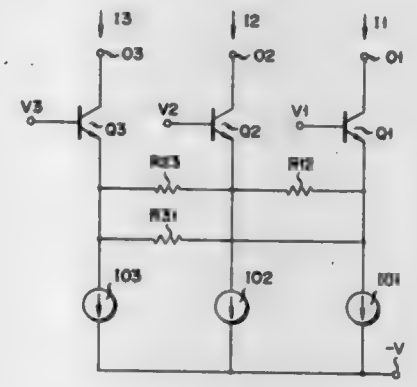
comparator means including sawtooth and error inputs and an output, for establishing the on and off times of said switching means with respect to the difference between the respective levels of said sawtooth and error inputs; and

feedforward means for modifying the level of said error output in terms of changes in the level at said circuit input, whereby said feedforward means is effective for modifying the duty cycle of said switching means without affecting the slope and peak amplitude of said sawtooth waveform.

4,536,701
VOLTAGE-CURRENT CONVERTING CIRCUIT

Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 3, 1982, Ser. No. 446,790
Claims priority, application Japan, Dec. 11, 1981, 56-199765
Int. Cl.³ G05F *3/20*
U.S. Cl. 323—315 **6 Claims**



1. A voltage-current converting circuit comprising:

at least three input transistors, the bases of said transistors receiving a multiphase voltage, the collectors of said transistors being connected to respective output terminals, and the emitters of said transistors being respectively connected to their own bases through voltage follower circuits;

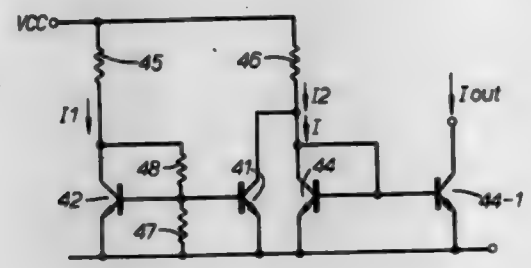
voltage-current converting means including a plurality of Δ-connection resistors, each of said resistors being connected between the emitters of two adjacent input transistors; and

current sources of the same number as said input transistors and connected to the emitters of said input transistors, respectively.

4,536,702
CONSTANT CURRENT SOURCE OR VOLTAGE SOURCE TRANSISTOR CIRCUIT

Katsumi Nagano, Shimonoseki, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Apr. 5, 1983, Ser. No. 482,162
Claims priority, application Japan, Apr. 5, 1982, 57-55303
Int. Cl.³ G05F 3/20
U.S. Cl. 323—316 4 Claims



1. A transistor circuit having first and second terminals driven by a power supply voltage applied across the terminals comprising:

first and second circuit portions connected in parallel between said first and second terminals, said first and second circuit portions responsive to said power supply voltage to cause respective first and second currents proportional to said power supply voltage when said power supply voltage exceeds respective first and second predetermined voltage levels wherein

said first circuit portion includes first, second and third resistor means connected in series between said first and said second terminal,

first transistor means having an emitter electrode connected to said second terminal, a base electrode connected between said second and third resistor means, and a collector electrode connected between said first and second resistor means,

said second circuit portion comprises

fourth resistor means having first and second ends, said first end being connected to said first terminal,

diode means connected in series between said second end of said fourth resistor means and said second terminal; and

circuit means connected to said first and second circuit portions for producing a differential current of said first and second currents, said circuit means including second transistor means having an emitter electrode connected to said second terminal, a base electrode connected to said base electrode of said first transistor means, and a collector electrode connected to said second end of said fourth resistor means.

4,536,703
METHOD AND APPARATUS FOR TESTING CABLE WIRE CONNECTED TO TERMINALS AT A REMOTE LOCATION

Ali N. Jabiway, Mt. Prospect, Ill., and Alexander M. Mitchell, Joppa, Md., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 27, 1982, Ser. No. 382,749
Int. Cl.³ G01R 19/00, 31/02, 15/12
U.S. Cl. 324—52 7 Claims

1. A test system for ascertaining shorts between wires forming a cable, which comprises:

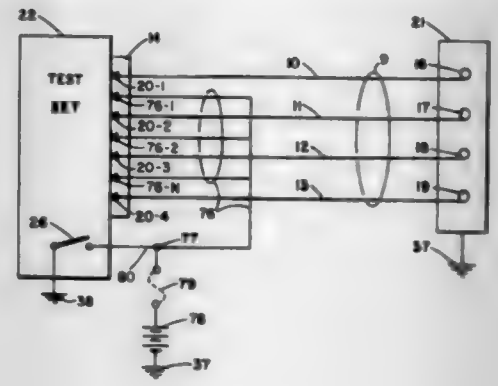
selector means for sequentially applying a ground condition on first ends of the wires;

means rendered effective upon application of a ground condition on a wire for sequentially testing said first ends of the wires for the presence of a ground condition and generating a ground presence signal;

means responsive to said ground presence signal for generating an inhibit signal upon said testing means ascertaining a ground condition at one of the first ends of the wires;

means responsive to said inhibit signal for interrupting further operation of said sequential testing means;

means operative upon said test means ascertaining the application of a ground signal to the same wire that the selector means applies a ground condition for generating a blocking signal; and

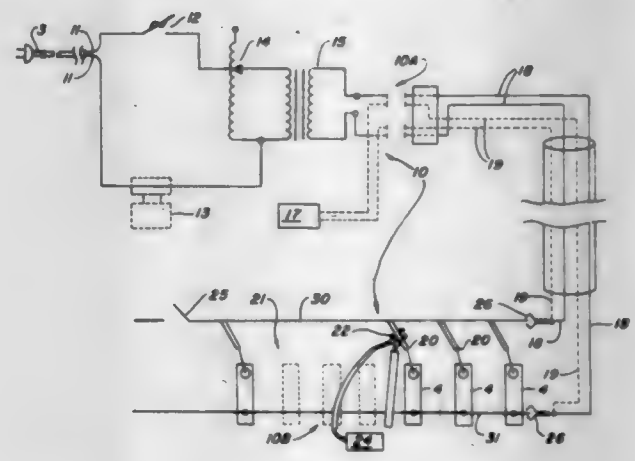


decision means rendered effective by said blocking signal for precluding generation of an inhibit signal by said inhibit signal generation means.

4,536,704
APPARATUS FOR IDENTIFYING DEFECTIVE SUBSTATION CAPACITORS

Merlin E. Burkum, Elmhurst, and Timothy M. O'Regan, Chicago, both of Ill., assignors to Commonwealth Edison Company, Chicago, Ill.

Filed Jan. 3, 1984, Ser. No. 567,780
The portion of the term of this patent subsequent to Jan. 10, 2001, has been disclaimed.
Int. Cl.³ G01R 31/02
U.S. Cl. 324—52 13 Claims



1. A method for testing an individual capacitor, which is part of a capacitor bank in a substation, for detecting faults in the capacitor without disconnecting the capacitor from the capacitor bank comprising the steps of:

a. applying an alternating voltage variable from 0 to 480 volts at 50/60 hertz of a predetermined magnitude to a capacitor bank, wherein the magnitude of the predetermined voltage is measured at the terminals of the capacitor bank;

b. measuring the value of the portion of total charging current entering the capacitor bank which enters the individual capacitor without disconnecting the individual capacitor from the capacitor bank by means of a split magnetic core probe having a distributed winding around the case and having an accuracy of about 3 percent of the true measured value; and

c. comparing the measured value of the charging current

through the individual capacitor with the known allowable values for the individual capacitor reactive power rating for applied predetermined alternating voltage, thereby detecting an incipient fault in the capacitor tested when the measured charging current is outside the range of the known allowable value.

4,536,705

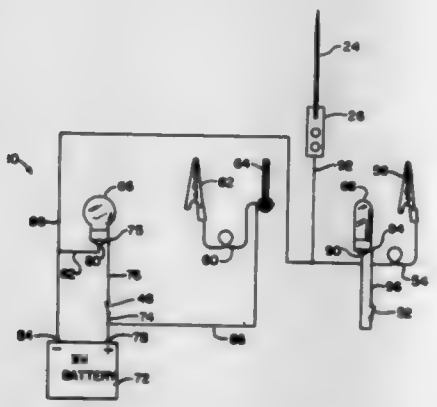
PROBE SEARCH TEST LIGHT AND CONTINUITY TESTER

John C. Hayes, 8316 Lages La., Baltimore, Md. 21206

Filed Mar. 27, 1984, Ser. No. 593,940

Int. Cl.³ G01R *31/00*

U.S. Cl. 324—53 **9 Claims**



1. A system for continuity testing having: a housing, a battery with first and second electrodes in the housing, a first lamp with first and second terminals, first means for switching, means connecting the first lamp first terminal through the first means for switching to the battery first electrode, a second lamp with first and second terminals, a probe assembly, including a probe; means connecting the probe between the battery second electrode and the second lamp second terminal **90**, a shunt circuit between said second lamp first and second terminals, second means for switching, connected in series with said shunt circuit; first and second leads with respective contacts, the second lead connected with the first electrode, and the first lead connected with the first terminal of the second lamp.

4,536,706

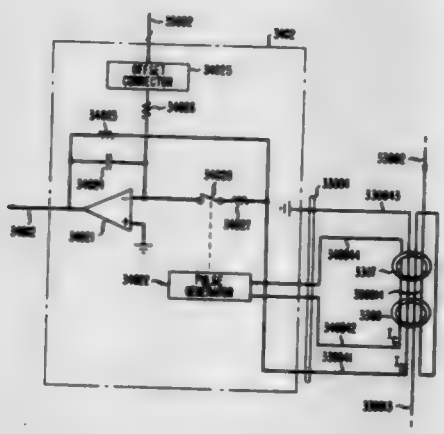
MAGNETIC CURRENT SENSOR

Kyran B. Kemper, Mendham, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Jul. 16, 1982, Ser. No. 399,182

Int. Cl.³ G01R *19/00, 1/02;* H04M *3/26*

U.S. Cl. 324—117 R **10 Claims**



1. Circuitry for measuring a path current comprising

two magnetic structures (e.g., **3307,3308**) with substantially identical hysteresis characteristics each having a line winding, a control winding and a sense winding,

means (**34022**) for providing control current pulses and for supplying said pulses to each said control winding to produce magnetic fields of opposite orientations in said structures,

means (**330013**) for coupling said path current to each said line winding,

said line winding and said control winding arranged on said structures to produce series-aiding field intensities in one of said structures and series-opposing intensities in the other of said structures in response to said path current and said control current, respectively,

means (**34021,34024**) for cumulatively integrating voltage induced in each said sense winding in the interval between each of said pulses to produce an output voltage,

means (**34027,34028**) for supplying a sense current, in proportion to said output voltage, to each said sense winding during each of said pulses, each said sense winding arranged to produce field intensities, in response to said sense current, to oppose said line winding induced field intensities, and

means (**34025**), coupled to said means for supplying, for reducing said output voltage to zero whenever said path is open-circuited to compensate for differences in said hysteresis characteristics.

4,536,707

METHOD AND APPARATUS FOR DISPLAYING ONE OR MORE MEASUREMENT VALUES OF ARBITRARY MEASUREMENT VARIABLES ON A SCREEN

Arnulf Herweg, Grillenweg 44, D-8501 Feucht, Fed. Rep. of Germany

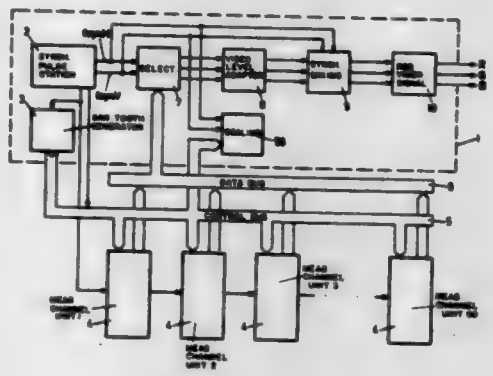
PCT No. PCT/DE82/00010, § 371 Date Sep. 14, 1982, § 102(e) Date Sep. 14, 1982, PCT Pub. No. WO82/02431, PCT Pub. Date Jul. 22, 1982

PCT Filed Jan. 14, 1982, Ser. No. 420,247

Claims priority, application Fed. Rep. of Germany, Jan. 15, 1981, 3100986

Int. Cl.³ G01R *13/20*

U.S. Cl. 324—121 R **36 Claims**



1. A method for displaying one or more measurement values of arbitrary measurement variables on the screen of a video display terminal (VDT) operating by the line-scanning process, in particular a color VDT, in which line-frequency pulses and frame-frequency pulses are generated in a synchronizing pulse generator, the method comprising:

generating a measurement voltage (Ux) corresponding to a measurement variable;

standardizing said measurement voltage in a measurement voltage amplifier;

simultaneously supplying said standardized measurement voltage and a sawtooth voltage to an adding amplifier;

synchronizing the sawtooth voltage (Us) by the frame-frequency or line-frequency pulses;

supplying the output voltage of the adding amplifier to a threshold switch;

causing said switch to emit a time-proportional signal if the threshold value is exceeded by the summed voltage;

sending the resulting signal proportional to the measurement voltage to a subsequent gate circuit synchronized with the line-frequency or frame-frequency pulses; and

sending said proportional signal, after level adaptation and synchronizing pulse mixing, to the VDT as a video signal.

4,536,708

APPARATUS FOR OBTAINING AN INFORMATION ON THE MOTION OF A MOVING ELEMENT, PREFERABLY FOR ROTATIONAL SPEED OF A ROTATING ELEMENT IN AN AUTOMOBILE

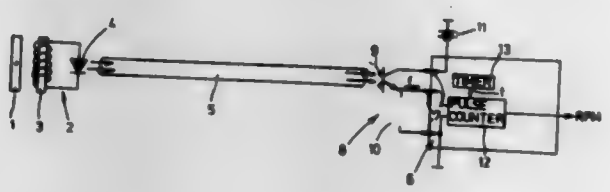
Arthur Schneider, Braunschweig, Fed. Rep. of Germany, assignor to Volkswagenwerk Aktiengesellschaft, Wolfsburg, Fed. Rep. of Germany

Continuation of Ser. No. 380,247, May 20, 1982, abandoned. This application Aug. 10, 1984, Ser. No. 640,203

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1981, 3126023

Int. Cl.[3] G01P *3/48*

U.S. Cl. 324—174 1 Claim



1. Apparatus for determining accurately the speed of a moving element at a remote location over a broad range of speeds without interference from electrical noise signals comprising permanent magnet means rigidly attached to the element, Wiegand sensor means positioned adjacent to the moving element and responsive to passage of the permanent magnet means during motion thereof in the absence of an electrical energy source to generate an electrical pulse having a width which is independent of the speed of the element so as to provide a series of signals having a frequency directly proportional to the speed of the element;

light emitting diode means for converting individual electrical pulse signals produced by the sensor means into corresponding light pulse signals;

a fiber-optical light guide arranged to transmit said light pulse signals through a region subjected to electrical noise signals to a remote detector means;

detector means responsive to individual light pulse signals from said fiber-optical light guide to provide corresponding individual electrical pulse signals; and

signal evaluation means for determining the frequency at which the individual electrical pulse signals are produced by the detector means and thereby determining the speed of the element.

4,536,709

DETECTING DEVICE HAVING SPACED TRANSMITTING AND RECEIVING COILS FOR DETECTING A METAL STRIP EMBEDDED IN PAPER MONEY

Tsuyoshi Ishida, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kanagawa, Japan

Continuation of Ser. No. 326,340, Dec. 1, 1981, abandoned. This application Aug. 29, 1984, Ser. No. 645,533

Claims priority, application Japan, Jan. 12, 1981, 56-2043; Apr. 2, 1981, 56-48400; Jun. 29, 1981, 56-99620

Int. Cl.[3] G01N *27/72;* G01R *33/12;* G06K *7/08*

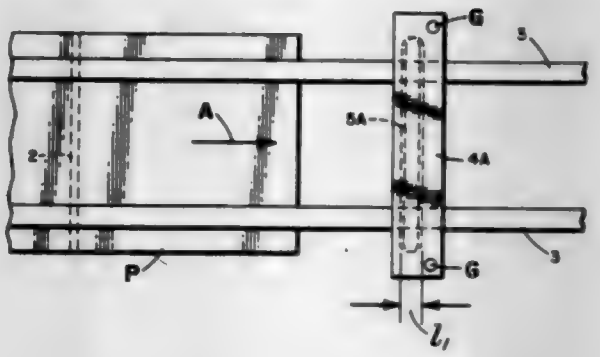
U.S. Cl. 324—239 13 Claims

1. A detecting device for detecting a sheet of genuine paper money having a longer dimension and a shorter dimension, the sheet including an embedded metal strip having a length substantially equal to the shorter dimension of the sheet and a predetermined width, the strip being oriented within the sheet so that its length is substantially parallel to the shorter dimension of the sheet, said detecting device comprising:

transporting means for rapidly transporting the sheet in the direction of its longer dimension along a transportation path;

an electric transmitting coil adjacent one side of the transportation path having a long and narrow shaped plane and having a width larger than the predetermined width of the strip, the long dimension of said long and narrow shaped plane being oriented substantially parallel to the shorter dimension of the sheet as the sheet is transported along the transportation path;

an electric receiving coil adjacent the transportation path directly opposite said transmitting coil having a long and narrow shaped plane and positioned in spaced parallel relationship to said transmitting coil along the transportation path, said receiving coil having a width larger than the predetermined width of the strip, wherein the sheet is transported between said transmitting coil and said receiving coil with the surface of the sheet being parallel to the shaped planes of said coils;



AC current supply means for supplying AC current to said electric transmitting coil to generate a magnetic field;

a capacitor connected to said electric receiving coil in a resonance circuit which generates a resonance signal; and

detecting means connected to said resonance circuit for detecting variations in the resonance signal of said resonance circuit caused by eddy current losses in said metal strip when said metal strip passes between said transmitting and receiving coils.

4,536,710

MAGNETIC DETECTOR INSTRUMENT WITH BOARD-MOUNTED SENSOR ASSEMBLY

Warren D. Dunham, McLean, Va., assignor to Schonstedt Instrument Company, Reston, Va.

Filed Aug. 10, 1982, Ser. No. 406,887

Int. Cl.[3] G01R *33/02;* H05K *7/08;* H01F *15/02*

U.S. Cl. 324—244 6 Claims

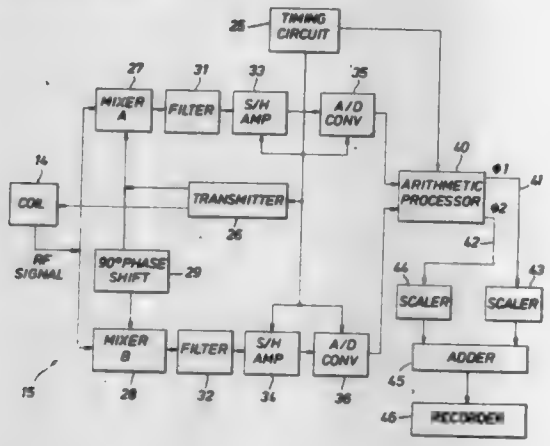


1. A magnetic detector instrument comprising a substantially planar elongate circuit board supporting electronic components of the instrument and constituting a sensor support, an elongate magnetic sensor assembly having a magnetic axis along its length, and means mounting the sensor assembly on the support including a slot having an open end at one end of the support and a pair of opposed longitudinally extending external grooves formed in the sensor assembly, said sensor assembly fitting longitudinally into said slot through its open end, with the magnetic axis along the length of said circuit board and with slot-defining edge portions of the support received in the respective grooves whereby the sensor assembly is retained in the slot.

4,536,711
METHOD AND APPARATUS FOR MEASURING FLOW IN A PIPE OR CONDUIT

James D. King, and Erroll S. Riewerts, both of San Antonio, Tex., assignors to Southwest Research Institute, San Antonio, Tex.

Filed May 5, 1983, Ser. No. 491,868
Int. Cl.[3] G01R *33/08*
U.S. Cl. 324—306 39 Claims



1. An apparatus for measuring the velocity of flow in a pipe of a material having an adequate population of a selected element comprising:

(a) magnet means for forming a magnetic field perpendicular to the flow of the element of interest in the pipe, the field having a gradient in the direction of flow;

(b) coil means forming a field at right angles to the magnetic field formed by said magnet means;

(c) transmitter means connected to said coil, said transmitter means being adapted to form and apply to said coil means a signal having a frequency related to a first magnetic field intensity to accomplish a resonant relationship between the magnetic field transmitted signal, and the element of interest;

(d) receiver means for detecting magnetic resonance signals from the element of interest flowing through said coil means, said receiver means forming an output signal of detected signals;

(e) detector means connected to said receiver means for measuring the change in the detected signals from said receiver means and indicating flow velocity of the element of interest as indicated by the change in the detected signals; and

(f) timer means for operating said transmitter means to form a pair of spaced transmitted pulses, and wherein said receiver means receives echoes from the element of interest.

4,536,712
METHOD AND APPARATUS FOR EXAMINATION BY NUCLEAR MAGNETIC RESONANCE

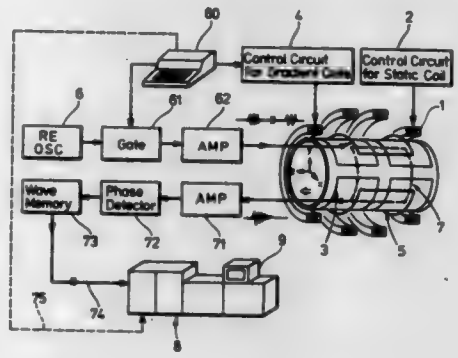
Hideto Iwaoka; Kenji Fujino; Tadashi Sugiyama, and Hiroyuki Matsuura, all of Musashino, Japan, assignors to Yokogawa Hokushin Electric Corporation, Tokyo, Japan

Filed Sep. 1, 1983, Ser. No. 528,599
Claims priority, application Japan, Sep. 9, 1982, 57-157274
Int. Cl.[3] G01R *33/08*
U.S. Cl. 324—309 7 Claims

1. An examination method utilizing a nuclear magnetic resonance technique in which the body of a subject to be examined is placed in an uniform static magnetic field and subjected to an electromagnetic wave having a frequency which induces nuclear magnetic resonance, a magnetic field is also applied to the subject body to specify an area of the body from which nuclear magnetic resonance (NMR) signals are radiated, and such nuclear magnetic resonance signals from the specified body area are received, the method comprising the steps of:

applying a first 90° pulse as the electromagnetic wave to the body to excite the same;

then applying a 180° pulse to the body to produce an echo signal;



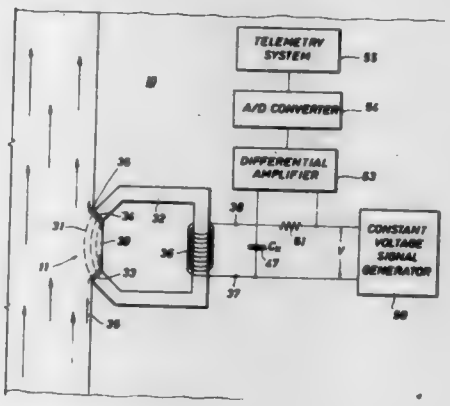
applying a second 90° pulse to the body when said echo signal is maximum to thereby allow a magnetization to return to a state of thermal equilibrium; and

thereafter repeating the foregoing sequence of the steps at prescribed intervals.

4,536,713
ELECTRICAL RESISTIVITY MEASUREMENT OF A FLOWING DRILLING FLUID USING EDDY CURRENTS GENERATED THEREIN

Mark H. Davis; Richard A. Meador, both of Spring, Tex., and Macmillan M. Wisler, Lafayette, La., assignors to NL Industries, Inc., New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 471,879
Int. Cl.[3] G01V *3/26;* G01N *27/74;* E21B *49/00*
U.S. Cl. 324—324 25 Claims



1. Apparatus for measuring the electrical resistivity of fluid within a borehole comprising:

a. a housing disposable along a pipe string in such a borehole;

b. said housing being formed with a sensor region in the outer surface thereof, said sensor region having a pair of generally opposed wall end portions and being adapted to be substantially and continuously filled by fluid flowing along the outer surface of the housing;

c. a high permeability magnetic core having a pair of opposed ends forming a gap region therebetween, said core being positioned within said housing and having its respective ends positioned adjacent to said opposed wall portions of said sensor region to position said sensor region within said gap of said core;

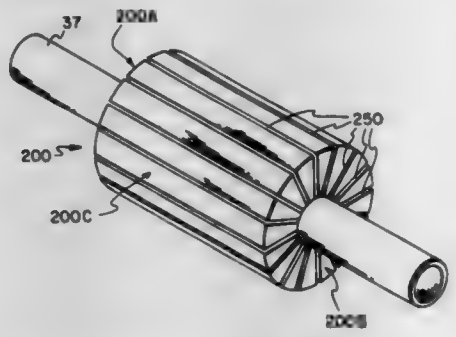
d. means for producing an alternating, electromagnetic flux field of a substantially constant magnitude in said core and said gap region to induce eddy currents in fluid in said sensor region; and

e. means for generating a signal corresponding to fluctuations in the electromagnetic flux field in said core to measure the electrical resistivity of fluid flowing along the outer surface of said housing.

4,536,714
SHIELDS FOR ANTENNAS OF BOREHOLE LOGGING DEVICES

Brian Clark, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Apr. 16, 1982, Ser. No. 368,922
Int. Cl.[3] G01V *3/30;* H01Q *1/52*
U.S. Cl. 324—338 32 Claims



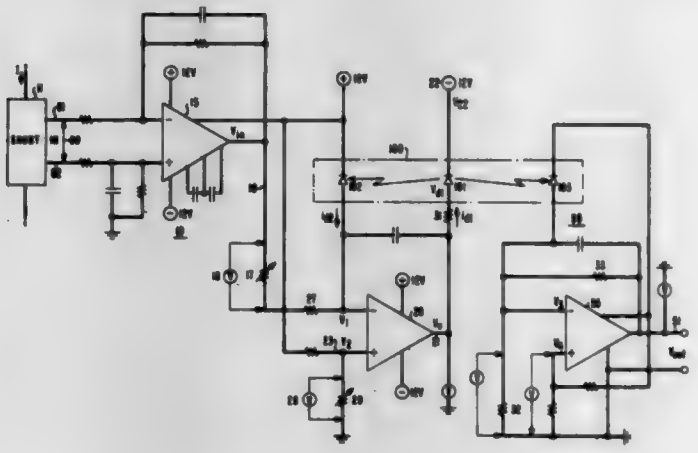
1. For use in conjunction with a borehole logging device wherein transmitting and receiving antennas, which transmit or receive electromagnetic energy having transverse magnetic components and transverse electric components, are mounted on a support means which includes a central electrically conductive pipe; a shield for an antenna of said device, comprising:

a hollow closed-ended body joined at its ends to the electrically conductive pipe of said support means and surrounding said antenna, said body being formed of an electrically conductive material generally in the shape of a surface of revolution and having a series of substantially equally spaced slots therein, each slot extending radially outward from said support means along a plane which passes substantially through the axis of said support means, so as to divide said body into a number of conductive sections each of which forms a closed conductive path with said conductive pipe, whereby said conductive paths are operative to prevent passage of transverse magnetic components through said shield, but to allow transverse electric components through the slots of said shield.

4,536,715
LINEAR DUAL DETECTOR OPTO-ISOLATOR CIRCUIT

Brian A. Basarath, Parsippany, and Robert J. Kakalec, Madison, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Dec. 5, 1983, Ser. No. 558,286
Int. Cl.[3] H03F *17/00*
U.S. Cl. 330—2 8 Claims



1. In an amplifier circuit arrangement having at least an input amplifier, an output amplifier each having inverting and noninverting inputs and a dual detector opto-isolator including a light-emitting diode and first and second light detecting diodes and providing ground isolation between the input and output amplifier, the input amplifier circuit having an amplification gain operative for compensating for different current transfer and contrast ratios in the opto-isolator, calibration to set the amplification gain comprising the steps of

(1) setting a voltage at an inverting input of the input amplifier to a zero value,

(2) measuring a voltage at the noninverting input of the output amplifier,

(3) adjusting a voltage at the noninverting input of the input amplifier according to the relation

$$V_2 = KV_4 - 1$$

where K is one half an inverse of a ratio of an output voltage of the output amplifier to a voltage at its inverting input, and

V_2 is a voltage at a noninverting input of the input amplifier, and

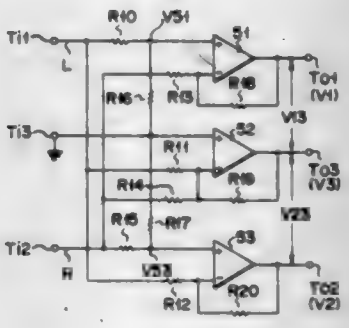
V_4 is a voltage at a noninverting input of the output amplifier, and

(4) adjusting the voltage at the inverting input of the input amplifier until an output voltage of the output amplifier equals a preselected fixed value.

4,536,716
STEREO AMPLIFIER CIRCUIT FOR BICHANNEL SIGNALS

Yoshihiro Yoshida, Yokohama, and Hidehiko Aoki, Fujisawa, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 12, 1983, Ser. No. 560,114
Claims priority, application Japan, Dec. 13, 1982, 57-218059
Int. Cl.[3] H03F *3/45*
U.S. Cl. 330—69 17 Claims



1. A stereo amplifier circuit comprising:

first circuit means responsive to a first input signal and to a second input signal, for generating a first output signal which corresponds to the potential difference between said first input signal and said second input signal;

second circuit means responsive to said first and second input signals, for generating a second output signal which corresponds to the potential difference between said second input signal and said first input signal;

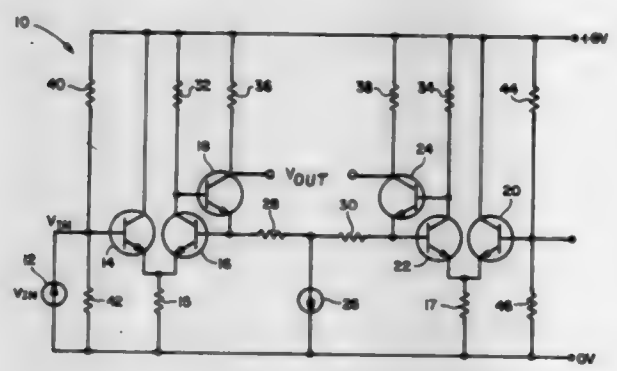
third circuit means responsive to said first and second input signals, for generating a third output signal which corresponds to the sum of said first and second input signals, said third output signal containing signal components being antiphase to said first and second input signals; and

output circuit means coupled to said first to third circuit means, for providing a first differential output signal corresponding to the potential difference between said first and third output signals, and providing a second differential output signal corresponding to the potential difference between said second and third output signals.

4,536,717
COMPENSATED INVERTING/NONINVERTING DIFFERENTIAL AMPLIFIER

Raymond C. Hauge, Fox River Grove, and Victor G. Mycynek, Des Plaines, both of Ill., assignors to Zenith Electronics Corporation, Glenview, Ill.

Filed Oct. 3, 1983, Ser. No. 538,291
Int. Cl.³ H03F *3/45*
U.S. Cl. 330—254 4 Claims



1. An inverting/noninverting differential amplifier comprising:

first and second matched transistor pairs each including an interconnected common terminal, an output terminal, and an input terminal to which are provided respective input signals with the input signal provided to the second matched transistor pair being maintained at a constant reference voltage, and wherein said input signals are amplified and provided to respective output terminals;

third and fourth transistors respectively coupled to said first and second matched transistor pairs and responsive to the amplified input signals produced therein for respectively generating inverted and non-inverted output signals proportional to the difference between said respective input signals, said third and fourth transistors each including a base element coupled to a respective output terminal of said first and second matched transistor pairs, a collector element from which said inverted and non-inverted output signals are derived, and an emitter element coupled in a feedback arrangement to the common terminal of a respective first and second matched transistor pair;

a resistive network coupling the common terminals of said first and second matched transistor pairs;

a common output load;

first and second switch means coupled respectively to said third and fourth transistors and responsive to a switching signal for coupling either the inverted or non-inverted output signal to said common load; and

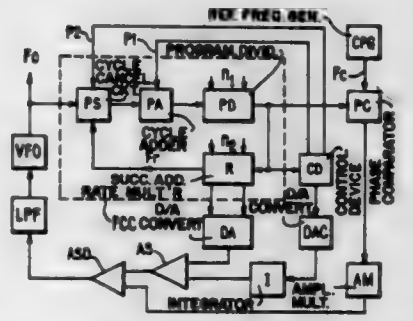
a coupling capacitor connecting said first matched transistor pair and said fourth transistor for phase compensating said inverted and non-inverted output signals coupled to said common load by varying the phase of said non-inverted output signal to match that of said inverted output signal.

4,536,718
JITTER REDUCTION CIRCUIT FOR FREQUENCY SYNTHESIZER

Michael J. Underhill, Faygate, England, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Jan. 31, 1983, Ser. No. 462,660
Claims priority, application United Kingdom, Mar. 15, 1982, 8208095
Int. Cl.³ H03L *7/18*
U.S. Cl. 331—16 10 Claims

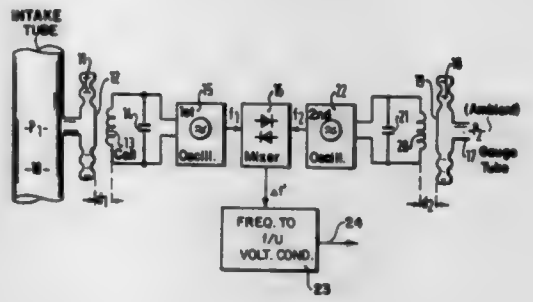
1. A frequency synthesizer comprising a reference frequency generator, a frequency control circuit which includes programmable frequency reduction means comprising a cycle cancellation circuit arranged to cancel a cycle of a frequency to be reduced by the frequency reduction means for each input pulse to said cancellation circuit from a pulse source, and a jitter compensation signal circuit connected to the frequency control circuit, the output signal of the jitter compensation signal circuit being arranged to compensate, at least partly, for any jitter in the period of the output frequency of the synthesizer that would otherwise be caused as a result of each cancelled cycle, characterised in that the synthesizer further includes a control device the control signal output of which is arranged to cause the frequency control circuit to cancel cycles from, and also to add cycles to, the frequency to be reduced at a given combined rate, and a control signal compensation circuit connected to the control device and arranged to produce an output signal which is a function of the control signal, the output of the control signal compensation circuit being so connected in the synthesizer circuit as to compensate for any jitter in the output frequency of the synthesizer that would otherwise be caused by the control signal.



4,536,719
INDUCTIVE PRESSURE SENSOR USING TWO OSCILLATORS

Helmut Baum, Stuttgart; Heinz Pfizenmaier, Leonberg; Ewald Schmidt, Ludwigsburg, and Franz Strauss, Stuttgart, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

PCT No. PCT/EP81/00073, § 371 Date Jan. 28, 1982, § 102(e) Date Jan. 28, 1982, PCT Pub. No. WO82/01067, PCT Pub. Date Apr. 1, 1982
PCT Filed Jun. 12, 1981, Ser. No. 346,047
Claims priority, application Fed. Rep. of Germany, Sep. 18, 1980, 3035186
Int. Cl.³ H03B *21/00*
U.S. Cl. 331—37 11 Claims



1. A compact, temperature-compensated inductive pressure sensor having

first (15) and second (22) substantially identical, thermally coupled but otherwise independent oscillator circuits, each including an inductance coil (13,20), and each producing an output signal (f1,f2);

a mixer (23) connected to said oscillator circuits for producing a frequency difference signal which is a predetermined function of the output signals of said oscillator circuits;

wherein, in accordance with the invention,

said first oscillator (15) includes a variable inductance electromagnetically responsive to the position of a diaphragm, said diaphragm forming a part of a pressure measurement chamber (11);

said second oscillator (22) includes a variable inductance electromagnetically responsive to the position of a dia-

phragm, said diaphragm forming a part of a reference pressure chamber (18);

said coils (13,20), forming a part of said oscillator circuits (15,22), are formed as flat films, and

at least one (13) of said inductance coils is a variable inductance, said compact pressure sensor including

a diaphragm (12) disposed at a variable distance (d1) from said one coil (13),

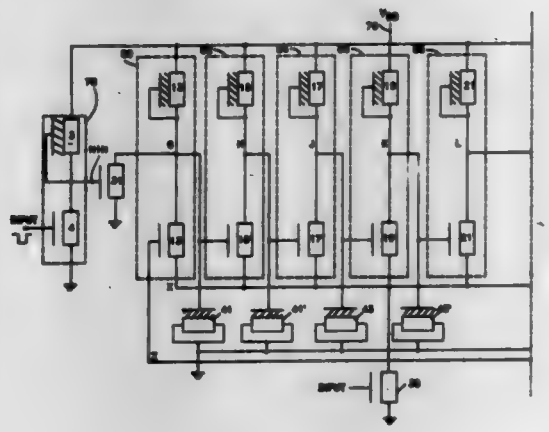
said diaphragm (12) being deflectable in accordance with the pressure (p1) to be sensed and having a layer of material (12) thereon which affects the inductance of the coil (13), and whose deflection thereby affects the frequency of the output signal (f1) of the oscillator circuit (15) of which it forms a part.

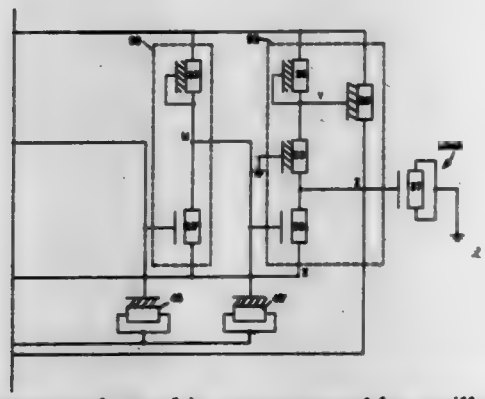
4,536,720

PROGRAMMABLE OSCILLATOR WITH POWER DOWN FEATURE AND FREQUENCY ADJUSTMENT

Hayden C. Cranford, Jr., Apex, and Stacy J. Garvin, Durham, both of N.C., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,451
Int. Cl.³ H03K *3/354*
U.S. Cl. 331—57 **4 Claims**





1. An improved on-chip programmable oscillator comprising:

an input node;

an output node operable for attaching to a load;

a first means coupled between the input and output node and operable for setting the circuit delay and the frequency of oscillation;

a second means connected to the input node and operable for causing instability at the input node so as to initiate oscillation;

a third means responsive to an enabling signal and operable for supplying a control signal to the second means;

a feedback path interconnecting the output node to the first means and operable for ensuring the continuity of the oscillation;

a fourth means operable to form a single conductive path between the first means and ground; said fourth means being responsive to an enabling signal and operable for disrupting the conductive path periodically; and

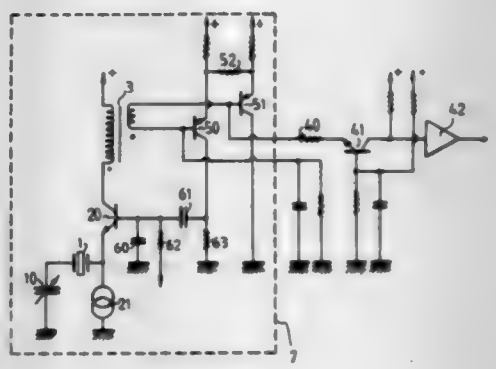
a load means coupled to the output node and operable for providing the largest proportion of the circuit delay thereby enabling the frequency of said oscillator to track the switching speed of said load.

4,536,721

LOW NOISE CRYSTAL OSCILLATOR

Roger Charbonnier, Meudon Bellevue, France, assignor to Adret Electronique, France

Filed Apr. 9, 1984, Ser. No. 597,879
Claims priority, application France, Apr. 20, 1983, 83 06782
Int. Cl.³ H03B *5/36*
U.S. Cl. 331—116 R **4 Claims**



1. An oscillator comprising:

a crystal resonator;

active coupling circuit means having first and second inputs and an output, the first input being connected to the crystal resonator;

a current booster transformer having primary and secondary windings, the primary winding being connected to the output of the coupling circuit means;

output amplifier means connected in series with the secondary winding;

amplitude limiting amplifier means connected in parallel across the secondary winding said amplitude limiting amplifier means having an output; and

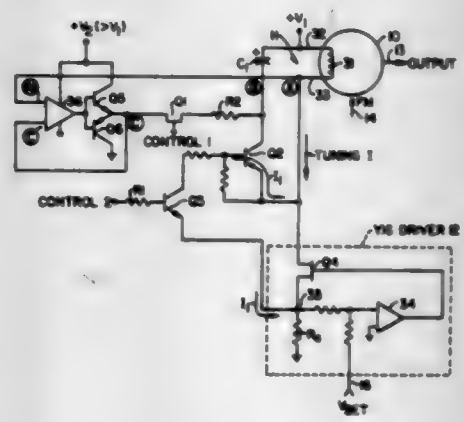
band-pass filter means connecting the output of said amplitude limiting amplifier means to the said second input.

4,536,722

APPARATUS FOR RAPIDLY SWITCHING A CONTROLLED SIGNAL SOURCE AND METHOD THEREFOR

Lawrence A. Kaye, Walnut Creek, and Robert Mayer, Oakland, both of Calif., assignors to Giga-Tronics, Inc., Pleasant Hill, Calif.

Filed Jun. 23, 1982, Ser. No. 391,229
Int. Cl.³ H03L *7/00*
U.S. Cl. 331—117 D **7 Claims**



1. In a microwave frequency signal generator having an oscillator which requires capacitive filtering means to reduce noise, said oscillator being driven and tuned by a constant current source so that the output frequency of said oscillator is

proportional to the current from said constant current source:

a pair of current inputs for said oscillator connected to said constant current source;

means included in said current source for changing the magnitude of said current and therefore the output frequency of said oscillator;

switching means for selectively connecting said filtering means across said input pair and disconnecting said filtering means during a said frequency change; and

comparator means for sensing the voltage across said oscillator input pair, comparing the oscillator input voltage with the voltage across said filtering means, and charging or discharging said filtering means to substantially match said oscillator input voltage.

4,536,723

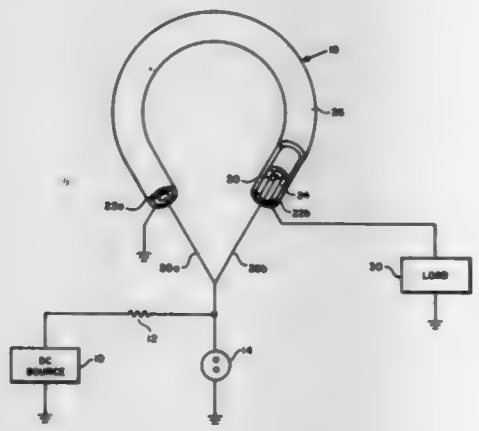
HIGH-POWER PULSE GENERATOR USING TRANSMISSION LINE WITH SPARK DISCHARGE DEVICE

Stephen C. Lang, Merrimack, and Paul E. Gili, Brookline, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Nov. 25, 1983, Ser. No. 555,095

Int. Cl.³ H03K *3/02*

U.S. Cl. 331—127 **4 Claims**



1. A pulse generator comprising:

A. a transmission line having first and second conductors, each of which has first and second ends,

B. a spark discharge device having first and second terminals, the first terminal of said discharge device being connected to said first end of said second transmission line conductor and said second terminal of said discharge device being connected to said first and second ends of said first transmission line conductor,

C. a voltage source connected to apply a charging voltage to said first and second conductors to charge the capacitance between said conductors, whereby said capacitance repetitively charges to the ignition point of said discharge device and said discharge device then discharges to provide an output pulse at said second end of said second transmission line conductor.

4,536,724

VOLTAGE-CONTROLLED OSCILLATOR HAVING THREE OR MORE VARACTOR DIODES

Makoto Hasegawa, Kawasaki; Mitsuo Makimoto, Yokohama; Sadahiko Yamashita, Sagamihara, and Yoshio Katayama, Yokohama, all of Japan, assignors to Matsushita Electric Industrial Company Limited, Kadoma, Japan

Filed Dec. 21, 1982, Ser. No. 451,838

Claims priority, application Japan, Dec. 21, 1981, 56-207662

Int. Cl.³ H03B *5/08*

U.S. Cl. 331—177 V **11 Claims**

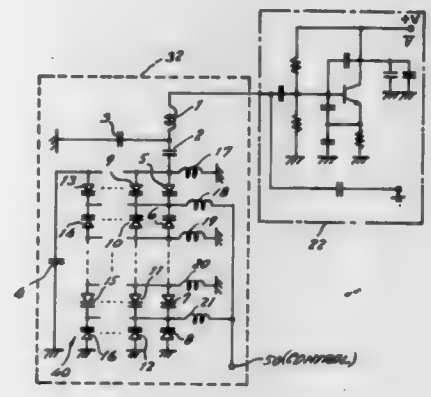
1. A voltage-controlled oscillator having a non-switching continuous frequency band, comprising:

(a) an oscillating circuit;

(b) a series circuit of a coupling capacitor and a resonant circuit coil, connected to said oscillating circuit;

(c) a series circuit of three or more varactors, which series circuit is connected via said series circuit of said coupling capacitor and said resonant circuit coil to said oscillating circuit so far as to form a series resonant circuit; and

(d) means for supplying a D.C. bias voltage to each of said varactors.



4,536,725

STRIPLINE FILTER

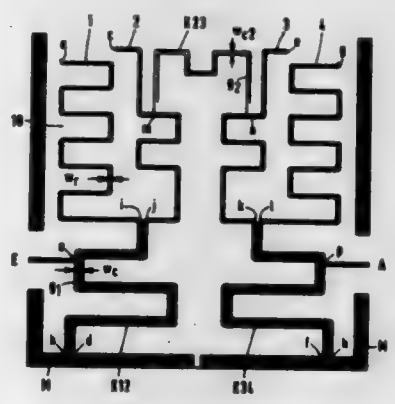
Bodo-Hagen Hübler, Backnang, Fed. Rep. of Germany, assignor to Licentia Patent-Verwaltungs-G.m.b.H., Frankfurt am Main, Fed. Rep. of Germany

Filed Oct. 22, 1982, Ser. No. 436,038

Claims priority, application Fed. Rep. of Germany, Nov. 27, 1981, 3147055; Nov. 27, 1981, 8134636[U]

Int. Cl.³ H01P *1/203, 7/08, 3/08, 5/18*

U.S. Cl. 333—204 **16 Claims**



1. A stripline filter for operation at a predetermined frequency and having a predetermined bandwidth, comprising:

an insulating substrate having a ground conductor affixed thereto;

at least first and second tuned stripline resonators secured to a surface of said substrate and electrically connected to said ground conductor, each of said tuned stripline resonators comprising a conductor resonating at one-quarter of the wave length corresponding to said predetermined frequency; and

a directional stripline coupler having first and second spaced conductors, at least the first conductor of said directional stripline coupler being formed of a part of said first tuned stripline resonator conductor and having an electrical length which is substantially less than the total length of said first tuned resonator.

4,536,726

CIRCUIT BREAKER

Hisamoto Hideo, Owariasahi, Japan, assignor to Matsushita Electric Works, Ltd., Osaka, Japan

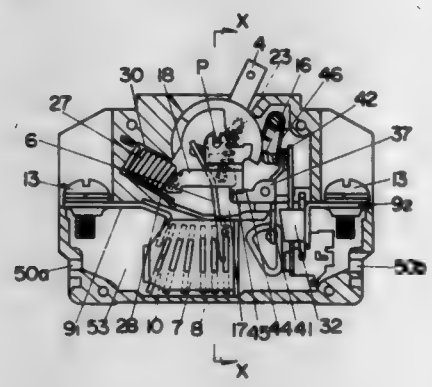
PCT No. PCT/JP83/00025, § 371 Date Sep. 29, 1983, § 102(e) Date Sep. 29, 1983, PCT Pub. No. WO83/02679, PCT Pub. Date Aug. 4, 1983

PCT Filed Jan. 29, 1983, Ser. No. 551,991

Claims priority, application Japan, Jan. 30, 1982, 57-13625

Int. Cl.³ H01H *75/12*

U.S. Cl. 335—23 **3 Claims**



1. A circuit breaker comprising:
a housing having two external terminals;
a handle projecting from and pivotally connected to said housing;
a movable contactor pivotally connected to said handle through a first spring means, and electrically connected to one of said external terminals and carrying a movable contact;
a stationary contactor electrically connected to the other said external terminal and having a stationary contact with which or from which said movable contact is brought into contact or disconnected;
a movable frame which is disposed movably within said housing and a latch member capable of interlocking said movable frame with said movable contactor, said latch member being disposed movably within said housing;
a second spring means normally subjecting the latch member to a spring load so as to engage said movable frame, thereby fixing said movable frame in an operable position;
an abnormality detection mechanism positioned within said housing with respect to said latch member to release said latch member and said movable frame upon detection of an abnormality; and
a third spring means normally biased against said movable frame and positioned to separate said latch member from said movable frame and to apply a spring load with respect to said movable frame to cause disconnecting of said movable contactor from said stationary contactor by moving in the same direction as the usual opening thereof following movement of said movable frame from said operable position.

4,536,727

MULTIPLE POLE MERCURY SWITCH PARTICULARLY ADAPTED FOR THERMOSTAT APPLICATIONS

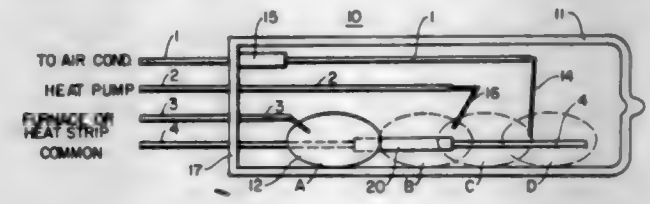
Robert P. Romano, Glen Ridge, N.J., assignor to Comus International Corp., Nutley, N.J.

Filed Jun. 4, 1984, Ser. No. 616,653

Int. Cl.³ H01H *29/22*

U.S. Cl. 335—54 **20 Claims**

1. A mercury switch comprising a hollow housing of a longitudinal tubular configuration and when positioned in the horizontal plane having a first closed end and a base end with a first long electrode disposed in said housing relatively parallel to said horizontal plane with said electrode extending from said base, a second shorter electrode positioned above said first electrode, within said housing and extending from said base, a third electrode above said second of a length longer than said second and shorter than said first positioned in said housing and extending from said base, and a fourth electrode positioned above said third electrode and extending from said base, with a charge of mercury in said housing hollow such that when said switch is tilted with respect to said plane, said mercury can



alternately make contact in four distinct modes, where in a first mode contact is made between said first and second electrodes, in a second mode contact is made between said first and third electrodes, in a third mode contact is made between said first, third and fourth electrodes and in a fourth mode contact is made between said first and fourth electrodes.

4,536,728

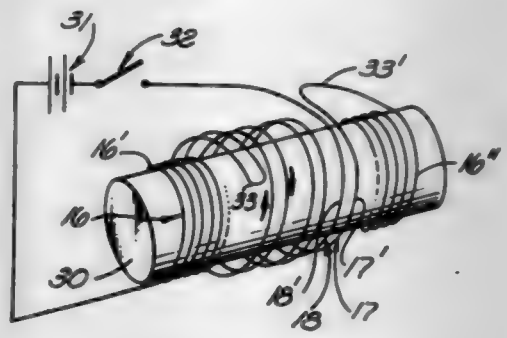
VALVE SOLENOID WINDINGS

Luc P. Cyrot, Mission Viejo, Calif., assignor to International Telephone & Telegraph Corp., New York, N.Y.

Filed Oct. 3, 1983, Ser. No. 538,236

Int. Cl.³ H01H *9/00*

U.S. Cl. 335—182 **4 Claims**

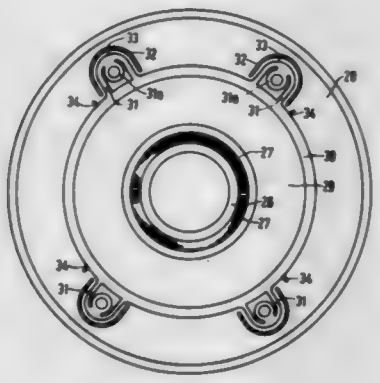


1. A solenoid comprising:
a first winding in an inner first layer;
a second winding in an outer second layer partially surrounding said first winding in said inner first layer;
a third winding in one of said first and second layers wherein said third winding having an equal number of turns as said second winding and a fewer number of turns than said first winding, at least one of said second winding and said third winding being wound reverse of said first winding for effectively cancelling an equivalent layer of said first winding and for reducing the number of active coils of said first winding, said second winding and said third winding being joined by a bifilar winding; and
means actuable to energize all three of said windings in a manner to cause a magnetic field produced by one of said first and second and third windings to cancel at least a portion of a magnetic field produced by another of said first and second and third windings and wherein said bifilar winding being comprised of a wound length of wire folded in a loop beyond said active turns of said first winding wherein said magnetic field produced by each wire of said second and third windings will cancel said magnetic field produced by each adjacent wire of each of said first and second layers, each of said first winding and said second winding and said third winding being electrically connected in series.

4,536,729
ELECTROMAGNETIC DEFLECTION UNIT AND PICTURE TUBE PROVIDED WITH SUCH A UNIT

Halbe Osinga, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 18, 1984, Ser. No. 651,750
Claims priority, application Netherlands, Sep. 23, 1983, 8303267
Int. Cl.³ H01F 7/00
U.S. Cl. 335—210
11 Claims

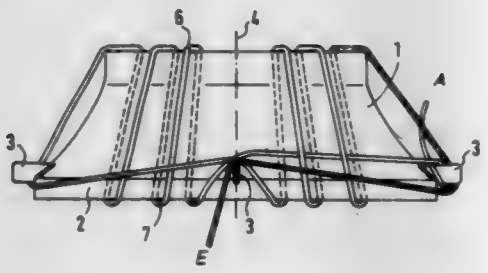


1. In an electromagnetic deflection unit for a picture tube, said deflection unit having deflection coils which are carried by a conical coil holder of synthetic material, a conical ring of soft magnetic material cooperating with the coils, and the coil holder having a flange at its wide end and the conical ring being secured at its wide end to the flange of the coil holder, the improvement wherein the conical ring is enclosed at its wide end in a moulded-on ring of synthetic material which has laterally extending projections which are distributed along its circumference, and in that on these projections the conical ring is secured to the flange of the coil holder.

4,536,730
DEFLECTION UNIT FOR PICTURE TUBES

Ulrich Hafner, Möckmühl, Fed. Rep. of Germany, assignor to International Standard Electric Corporation, New York, N.Y.

Filed Feb. 15, 1984, Ser. No. 580,455
Claims priority, application Fed. Rep. of Germany, Feb. 24, 1983, 3306385
Int. Cl.³ H01F 5/00
U.S. Cl. 335—213
2 Claims



1. A deflection yoke comprising:

a toroidal core comprising two symmetrical halves of soft magnetic material, each core halve having at least three projections for forming redirecting points for a winding wound thereon;

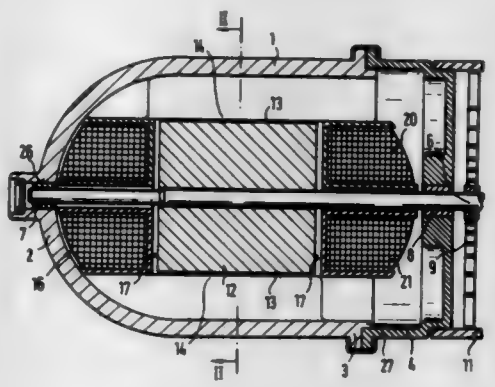
a winding on each of said core halves;

each said winding comprising two winding halves, said two winding halves being arranged such that they do not overlap and are symetrically positioned relative to an imaginary plane which bisects both said core halves, said imaginary plane lying in the longitudinal axis of said toroidal core, said two winding halves being both wound from the center of the core half toward the respective ends of said core half.

4,536,731
ELECTRIC CONTROL MOTOR

Hans Kubach, Korntal-Münchingen; Ulrich Kemmner, Stuttgart, and Gerold Grimm, Leonberg, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 423,920
Claims priority, application Fed. Rep. of Germany, Jun. 24, 1982, 3223557
Int. Cl.³ H01F 7/08
U.S. Cl. 335—272
2 Claims

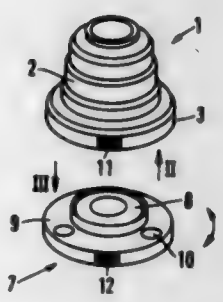


1. An electric control motor comprising a housing of ferromagnetic material, said housing being provided with an electromagnetic coil and an armature, said armature being associated with poles provided in said housing and further being rotatable in opposition to a return force, said housing further comprising a cup-shaped housing bottom, having an open end and a cap for sealing said open end, said electromagnetic coils include at least two interconnected, oppositely disposed coil portions which are mounted in coil retainers which can be interlocked together within said housing so as to confront extremities of said armature and axially disposed within said housing with respect to said armature, said armature being disposed on a shaft axially of said housing and further that said shaft is supported in said cap and said housing bottom, said chamber being defined by said poles, an inner wall of said housing and said electromagnetic coil.

4,536,732
MAGNETIC COUPLING FOR PARTS OF AN OPTICAL INSTRUMENT

Klaus Schindl, and Georg Nyman, both of Vienna, Austria, assignors to C. Reichert Optische Werke AG, Vienna, Austria

Filed May 21, 1984, Ser. No. 612,156
Claims priority, application Fed. Rep. of Germany, May 28, 1983, 3319466
Int. Cl.³ H01F 7/20
U.S. Cl. 335—285
9 Claims



1. A magnetic coupling for an optical instrument comprising (1) a first member, at least one magnetized body in said first member; (2) a second member, at least one magnetizable body in said second member; said members being movable between a first magnetically uncoupled position in which bodies of the respective members are displaced from one another, and a

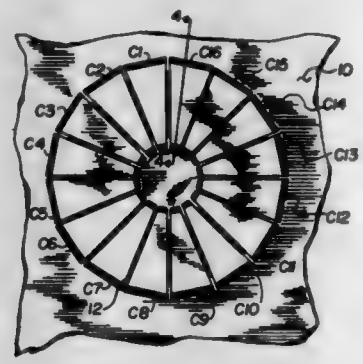
second magnetically coupled position in which the bodies of the respective members are adjacent to one another; and (3) means for aligning the respective members in the first magnetically uncoupled position, wherein the members are movable between the first and second positions in a manner such that respective surfaces of the members slide over one another.

4,536,733

HIGH FREQUENCY INVERTER TRANSFORMER FOR POWER SUPPLIES

Randolph D. Shelly, Rosemere, Canada, assignor to Sperry Corporation, New York, N.Y.

Filed Sep. 30, 1982, Ser. No. 430,534
Int. Cl.³ H01F *27/30*
U.S. Cl. 336—182 **12 Claims**



1. In a low leakage inductance high frequency transformer of the type having a toroidal core about a central axis normal to the plane thereof, with a first winding distributed thereon, the toroidal core supported by a printed circuit board having a pattern of holes drilled therein and predetermined patterns of electrical interconnection between said holes for forming a second winding with a predetermined turns ratio about the toroidal core, the improvement wherein said second winding comprises:

a plurality of independently formed conductive clips for interconnecting predetermined ones of said holes, each of said clips including a substantially planar wedge-shaped electrically conductive body of a length sufficient to span a portion of said toroidal core and a portion of said first winding, each of said clips having first and second ends extending at predetermined angles to said body, said first and second ends having pins extending therefrom for permitting interconnection to said predetermined patterns of electrical interconnection on said supporting printed circuit board,

said first ends, second ends, and body of pairs of said chips respectively disposed in abutting relationship;

said clips further radially disposed with respect to said central axis.

4,536,734

TRANSFORMER WINDING SHEET INSULATOR WITH SPACER MEMBER

Sadaaki Mabuchi, Aichi, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 29, 1983, Ser. No. 566,897
Claims priority, application Japan, Jun. 10, 1983, 58-88600[U]
Int. Cl.³ H01F *27/26, 27/30*
U.S. Cl. 336—196 **6 Claims**

1. A transformer comprising:

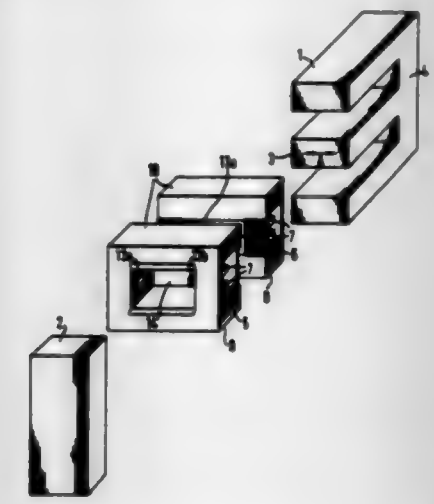
an E-shaped magnetic core having three parallel legs including an inner leg and a transversely extending heel member joining each of said legs at one end thereof;

an I-shaped magnetic core disposed in parallel with said heel member at the opposite end of each leg;

a primary coil wound around said inner leg of said E-shaped magnetic core;

a secondary coil wound around said inner leg and disposed adjacent said primary coil;

sheet insulators, made from insulating material, covering each of said primary and secondary coils so that the coils are each insulated from the magnetic cores; and



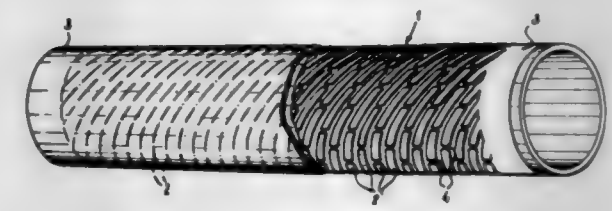
spacer members, each of one-piece construction with each of said sheet insulators and disposed between said coils and said inner leg, for maintaining a desired distance between said coils and said inner leg, each of said spacer members having a portion thereof folded over itself in an accordion-like fashion to provide a bias between the coils and said inner leg.

4,536,735

CURRENT LIMITING HIGH VOLTAGE FUSE ASSEMBLY

Derk van der Scheer, Goor, Netherlands, assignor to Hazemeijer B.V., Hengelo, Netherlands

Filed Feb. 15, 1984, Ser. No. 580,352
Claims priority, application Netherlands, Feb. 16, 1983, 8300581
Int. Cl.³ H01H *85/04*
U.S. Cl. 337—159 **11 Claims**



1. An assembly for use in a current limiting high voltage fuse, said assembly comprising

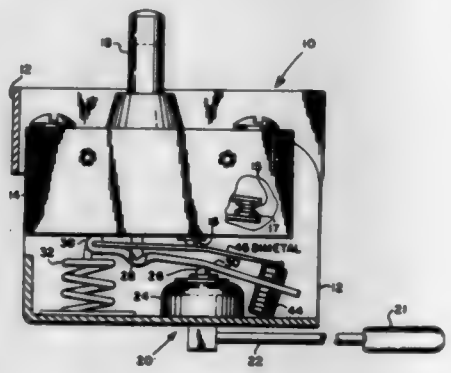
an elongated support body composed of quartz glass, and

a plurality of elongated fusible conductors attached over their entire lengths to said elongated support body so as to be parallel to one another, each said elongated fusible conductor including a plurality of elongated first sections having a first width and a plurality of regularly spaced-apart second sections having a second width, said second width being less than said first width, each of said first and second sections having the same predetermined thickness, said first width being between 0.5 and 1 mm and said predetermined thickness being up to 50 μm, said elongated fusible conductors being spaced apart a distance equal to at least twice their first widths.

4,536,736
THERMOSTAT

Louis F. Aschenbach, Aloha, Oreg., assignor to Eaton Corporation, Cleveland, Ohio

Filed May 8, 1984, Ser. No. 608,320
Int. Cl.[3] H01H *37/36*
U.S. Cl. 337—317 8 Claims



1. A thermostat comprising:
(a) base means;
(b) electrical switch means mounted on said base means having a moveable actuator member for effecting snap-action of a set of contacts;
(c) thermally responsive means operable to provide movement of a force member at a predetermined temperature;
(d) lever means pivotally mounted on said base means and operative upon pivotal movement to effect movement of said switch actuator member, said lever means including;
(i) an elongated rigid lever member having said pivotal mount disposed adjacent one end thereof;
(ii) an elongated bimetal spring member having one end thereof attached to said lever in the vicinity of said one end and extending therefrom in cantilever arrangement,
(iii) adjustable means mounted on and carried with said lever member for adjusting the position of the free end of said bimetal member with respect to said lever member, wherein said lever means is disposed such that said force member contacts said elongated member for applying a force thereto effecting pivotal movement thereof and said bimetal member contacts said moveable actuator member for transmitting said force to effect switch snap-action, wherein after switch snap-action said bimetal member is resiliently deflected to absorb over travel of said lever member.

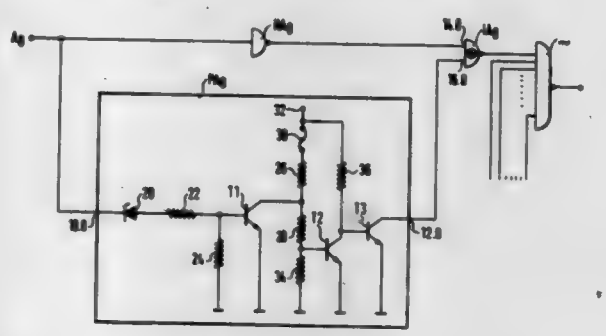
4,536,737
Patent Not Issued For This Number

4,536,738
PROGRAMMABLE CIRCUIT ARRANGEMENT

Horst Huse, Langenpreising, and Werner Elmer, Freising, both of Fed. Rep. of Germany, assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 24, 1983, Ser. No. 460,501
Claims priority, application Fed. Rep. of Germany, Jan. 27, 1982, 3202543; European Pat. Off., Jan. 18, 1983, 83100394.2
Int. Cl.[3] G06F *7/04*
U.S. Cl. 340—146.2 5 Claims

1. A circuit which can be programmed by applying a programming voltage so that the circuit delivers a signal at its output having a predetermined binary value, comprising:
input means responsive to the programming voltage, including, threshold switching means connected to an input terminal and having a threshold less than said programming voltage and first switching means having a controlled terminal connected to said threshold switching means, wherein upon application of said programming voltage to said input terminal said threshold switching means switches to a conductive state and renders the first switching means conducting,
a fuse link connected to said first switching means, said fuse link being changable from a conductive state to a non-conductive state when the current flowing therethrough exceeds a predetermined value, upon application of said programming voltage to said input means; and

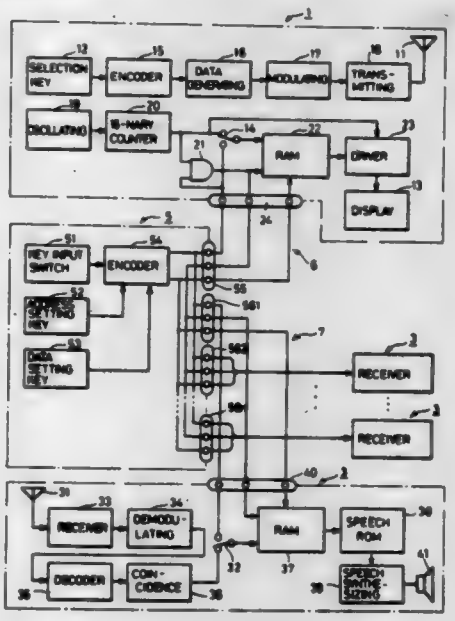


output means connected to said fuse link for delivering a signal having one binary value in the conductive state of said fuse link and the other binary value in the non-conductive state of the fuse link.

4,536,739
APPARATUS FOR COMMUNICATION OF INSTRUCTING INFORMATION

Yoshiji Nobuta, Nara, Japan, assignor to Mizuno Corporation and Sharp Kabushiki Kaisha, both of Osaka, Japan

Filed Jun. 7, 1982, Ser. No. 385,729
Claims priority, application Japan, Jun. 15, 1981, 56-93564
Int. Cl.[3] A63B *71/06*
U.S. Cl. 340—323 R 16 Claims



1. An apparatus for communication of instructing information, including a transmitter for transmitting a selected one of a plurality of pieces of instructing information having different meanings, and a receiver for receiving the transmitted selected one of a plurality of pieces of instructing information;
said transmitter including:
first storage means having a plurality of addresses for storing, in respective addresses, a plurality of pieces of instructing data corresponding to said plurality of pieces of instructing information,
display means, including displaying regions respectively capable of displaying said plurality of pieces of instructing information, for reading out the plurality of pieces of instructing data stored in said first storage means and for correspondingly displaying the plurality of pieces of instructing information in respective displaying regions,
selecting means comprising selectors, one for each of said displaying regions in said display means, for selecting any of said plurality of pieces of instructing information being displayed in a corresponding respective displaying region, and

transmitting means responsive to selection of any of the plurality of pieces of instructing information by said selecting means for transmitting a corresponding address signal corresponding to each said piece of instructing information selected by said selecting means; and

said receiver including:

receiving means for receiving each corresponding address signal transmitted by said transmitting means,

second storage means, having corresponding addresses corresponding to said respective addresses of said first storage means, for storage in the corresponding addresses corresponding data corresponding to said plurality of pieces of instructing data stored in said first storage means,

output means responsive to each corresponding address signal received by said receiving means for reading out data from the corresponding addresses of said second storage means based on each corresponding address signal received, and for providing the data thus read out as instructing data corresponding to each said piece of instructing information selected by said selecting means in said transmitter;

said apparatus for communication further comprising:

data changing means for changing any piece of instructing data stored in a respective address in said first storage means and for changing said corresponding data stored in said corresponding address in said second storage means while establishing, in a consistent manner, both a corresponding relation between said piece of instructing information selected by said selecting means and said corresponding address signal transmitted by said transmitting means in said transmitter, and a corresponding relation between said corresponding address signal received by said receiving means and said instructing information corresponding to said instructing data provided by said output means in said receiver.

4,536,740

DOUBLET DETECTOR FOR DATA RECORDING OR TRANSMISSION

Jorgen P. Vinding, Monte Sereno, Calif., assignor to Magnetic Peripherals, Minneapolis, Minn.

Filed Feb. 24, 1984, Ser. No. 583,476

Int. Cl.³ H03K *17/00*

U.S. Cl. 340—347 DD **4 Claims**

1. In a data recording/transmission system wherein information is encoded in an equalized data signal comprising at least partly doublet pulses, each valid doublet pulse comprising two adjacent opposite polarity pulses, an improved circuit for distinguishing individual doublets from noise in the equalized data signal, said circuit receiving the equalized data signal, and responsive thereto supplying a doublet identification signal identifying individual portions of the equalized data signal as constituting doublets, and comprising:

(a) a differentiator receiving the equalized data signal and providing a signal having a waveform following the time derivative of the equalized data signal, and having a predetermined delay time;

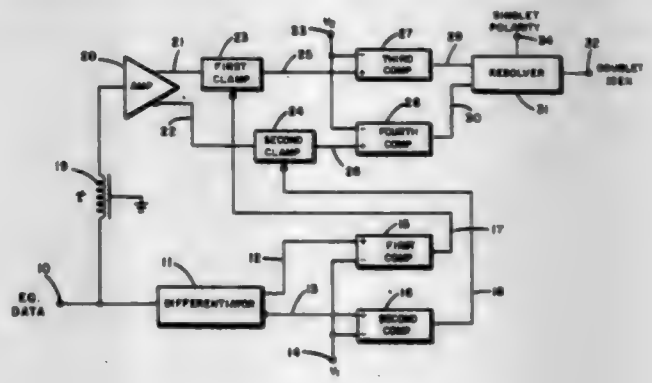
(b) first comparator means receiving the differentiator output for providing as an output a logic level signal having first, second, and third instantaneous states indicating that the differentiator output signal is respectively less than, within, or greater than a first predetermined signal range whose minimum corresponds to an equalized data signal slope smaller than a first predetermined negative slope, and whose maximum corresponds to a slope greater than a second predetermined positive slope;

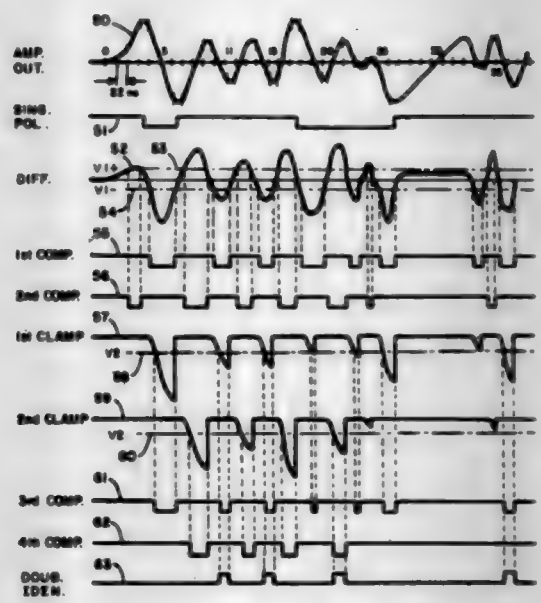
(c) an amplifier receiving a delayed equalized data signal and supplying an amplified output signal having a waveform following the equalized data signal and delayed by a predetermined delay time therefrom;

(d) a delay element receiving the equalized data signal, and supplying the delayed equalized data signal to the amplifier;

(e) analog gate means receiving the amplifier and first comparator means outputs for supplying an output signal including a first portion following the amplifier signal while the first comparator means output signal has exclusively its first state and a second portion following the amplifier signal while the first comparator means output signal has exclusively its third state, each portion having a predetermined level otherwise; and

(f) second comparator means receiving the output of the analog gate means for producing responsive thereto, a logic signal having first, second, and third instantaneous states, said first state and said third state of the second comparator means indicating, respectively, that the first





portion and the second portion of the analog gate means output are outside a second predetermined signal range, and said second state of the second comparator means indicating that both first and second portions of the analog gate means output are within the second predetermined range, said second predetermined signal range substantially corresponding to the minimum excursion of the equalized data signal between points (i) having slopes corresponding to the first and second predetermined slopes and (ii) between peaks of a valid doublet pulse, the output of said second comparator means comprising the doublet identification signal.

4,536,741

DIGITAL QUANTIZER

Robert L. Farah, Brooklyn, N.Y., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Nov. 16, 1983, Ser. No. 552,430

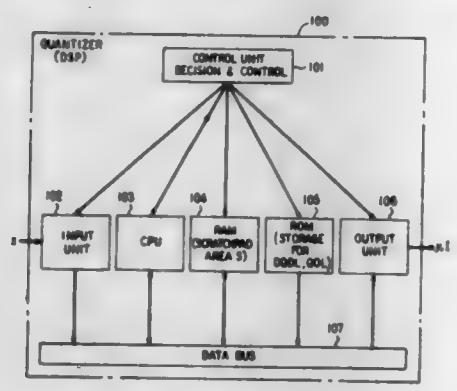
Int. Cl.³ H03K *13/01*

U.S. Cl. 340—347 DD **23 Claims**

1. Apparatus for converting a digital input signal from a first digital code to a second digital code, characterized by,

means for storing an array of differential quantizer decision levels,

means for combining the digital input signal with said stored differential quantizer decision levels to obtain an array of partial sum signal values, said partial sum signal values having either positive or negative value signs,



means for algebraically combining the signs of said partial sum signal values, and

means for utilizing the result of said algebraic combination of said signs to obtain a second code digital representation of said digital input signal.

4,536,742

METHOD OF ENCODING A STREAM OF DATA BITS, DEVICE FOR CARRING OUT THE METHOD, AND DEVICE FOR DECODING A STREAM OF DATA BITS

Kornelis A. Schouhamer Immink, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

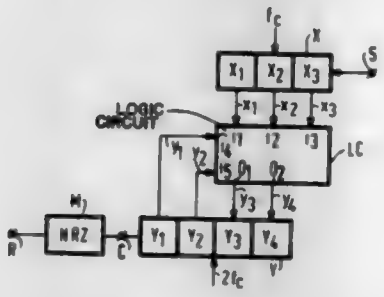
Filed Nov. 15, 1982, Ser. No. 441,972

Claim priority, application Netherlands, Sep. 15, 1982, 8203575

Int. Cl.[3] H03K *13/24*

U.S. Cl. 340—347 DD

3 Claims



1. A method of encoding a stream of data bits of a binary source signal into a stream of data bits of a binary channel signal in a transmission system, comprising the steps of dividing the bit stream of the source signal into a contiguous sequence of a limited number of permissible source words of variable length wherein the permissible source words are specified in the following table;

converting said source words into corresponding channel words, each data bit of a source word resulting in two channel bits of the channel word, wherein said channel words are also specified in said table, and

utilizing the following table in said translation:

	Source Word	Channel Word
W_1	0 0 0	1 0 0 1 0 0
W_2	0 0(1)	0 0 0 0
W_3	0(1)	0 0
W_4	1 0	0 1 0 0
W_5	1 1	1 0 0 0.

4,536,743

METHOD OF CONVERTING A DIGITAL SIGNAL INTO AN ANALOG SIGNAL AND A DIGITAL-TO-ANALOG CONVERTER THEREFOR

Gohji Uchikoshi, Higashimurayama, Japan, assignor to Nakamichi Corporation, Tokyo, Japan

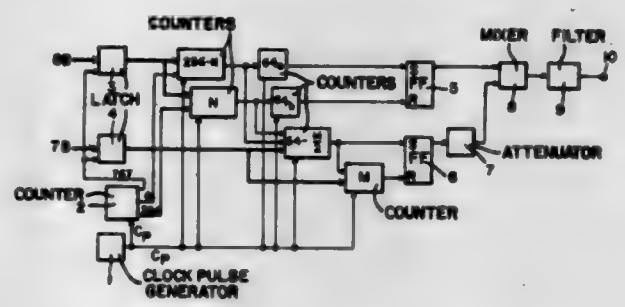
Filed Aug. 9, 1982, Ser. No. 406,214

Claims priority, application Japan, Aug. 14, 1981, 56-127457[U]

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 DA

3 Claims



1. A method of converting a digital signal into an analog signal, said digital signal consisting of upper and lower bit signals having a predetermined weight ratio, comprising the steps of:

converting said upper and lower bit signals into upper and lower pulse width signals, said upper pulse width signal varying in its pulse width corresponding to a data value of said upper bit signal relative to the center of the pulse width being at a fixed time position within a sampling period, while said lower pulse width signal varies in its pulse width corresponding to a data value of said lower bit signal and the centers of each pulse width being at each pulse edge of said upper pulse width signal;

mixing said upper and lower pulse width signals corresponding to said weight ratio to form a composite signal;

and thereafter passing and composite signal through a smoothing filter to demodulate said digital signal into said analog signal.

4,536,744

ANALOG TO DIGITAL CONVERTER FOR PRECISION MEASUREMENTS OF A.C. SIGNALS

Neil L. Brown, Falmouth, Mass., assignor to Neil Brown Instrument Systems, Inc., Cataumet, Mass.

Continuation of Ser. No. 147,220, May 6, 1980, abandoned. This application Jun. 28, 1983, Ser. No. 508,582

Int. Cl.[3] H03K *13/02*

U.S. Cl. 340—347 AD

19 Claims

1. An analog-to-digital converter circuit for providing a digital output signal representative of the voltage amplitude of an A.C. input signal, comprising:

a digital-to-analog converter circuit, including:

a multiple widing transformer having one input winding and a plurality of output windings;

means for applying an AC reference signal to the transformer input winding;

a plurality of switching means, responsive to a plurality of first digital signals, for connecting selected ones of the plurality of output windings in series for providing an A.C. transformer output signal having an amplitude which is determined by the plurality of first digital signals applied thereto;

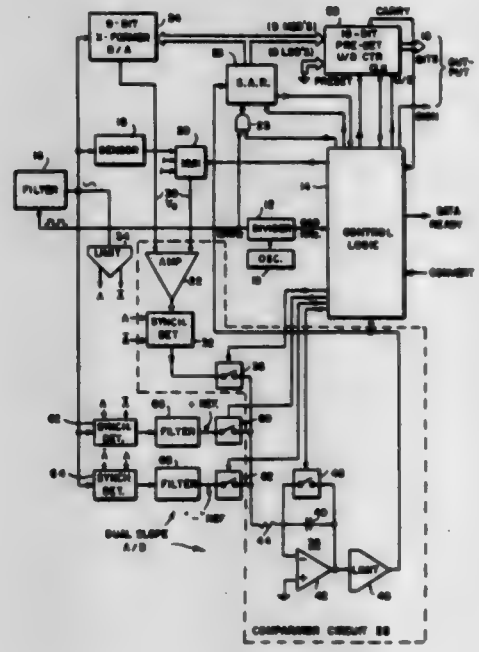
means for connecting the A.C. input signal in series with the A.C. transformer output signal to provide a difference signal representative of the difference therebetween, including means for assuring that the A.C. reference signal is in phase with the AC input signal;

comparator means responsive to the difference signal for providing a comparator output signal representative of

which of the A.C. input signal and the transformer output signal is larger;

means, responsive to the comparator output signal, for providing during a first time interval the plurality of first digital signals to the digital-to-analog converter circuit so as to produce a transformer output signal whose amplitude approximates the amplitude of the input signal;

means for integrating the difference signal during a second time interval which follows the first time interval and for providing a first integrator output signal representative of the integral of the difference signal over the second time interval;



means for integrating a reference signal during over a variable third time interval which follows the second time interval until the magnitude of the integrated reference signal is equal to the first integrator output signal; and

means for determining the duration of the variable third time interval and for providing a plurality of second digital signals representative of the duration of the second time interval;

the first digital signals and the second digital signals respectively representing the most significant bits and the least significant bits of said digital output signal.

4,536,745

SAMPLING FREQUENCY CONVERSION DEVICE

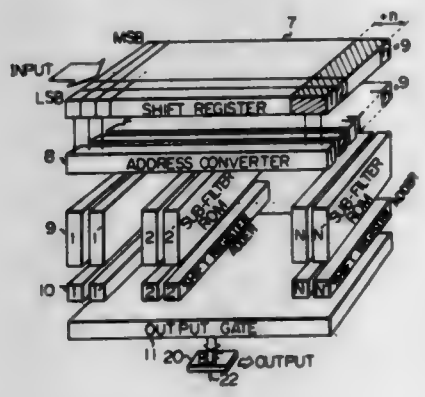
Hirohisa Yamaguchi, Tanashi; Kazuo Yamada, Tokyo, and Tsutomu Miyasato, Tanashi, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,508

Claims priority, application Japan, Jun. 15, 1982, 57-101367

Int. Cl.³ H04L *3/00*

U.S. Cl. 340—347 DD **2 Claims**



1. A sampling frequency conversion device for converting an input digital signal with a sampling frequency (M samples/-second) and each sample having n quantization bits, to an output digital signal with sampling frequency (N samples/-second) and each sample having n quantization bits, where M and N are prime numbers, comprising;

(a) parallel shift registers each having bit length P+n, where P is an odd number equal to or larger than M, for accepting an input signal which has n bits, according to a timing of an input signal;

(b) an address converter for providing P bits of output signal for each of said parallel shift registers for every shift operation of said shift registers;

(c) N groups of ROMs storing

$$\sum_{m=1}^{m} a_i^{(k-m)} h'_m (1 \leq i \leq N)$$

at an address designated by the output of said address converter, each group of said ROMs having [n/N]+1 number of ROMs, where K is an integer designating a sampling point, m is an integer designating a filter coefficient, h_m is a coefficient of a filter, a_i is a possible combination of addresses provided by P bits, and [ ] is a Gauss' symbol;

(d) a shift register adder with the bit length 2n for providing an accumulation of the output of said ROMs with shift operation; and

(e) an output gate coupled with an output of said shift register adder for providing a converted output signal;

(f) a buffer memory for storing output of said output gate and providing converted sampled pulses with desired repetition frequency.

4,536,746

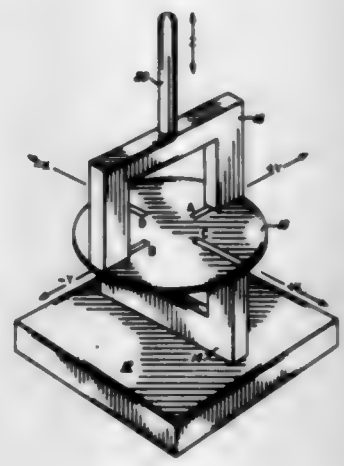
TRANSDUCER FOR CONVERTING THREE DIMENSIONAL MECHANICAL INPUT DISPLACEMENTS INTO A CORRESPONDING ELECTRICAL OUTPUT SIGNAL

Garth W. Gobeli, Albuquerque, N. Mex., assignor to The Mercado Venture, Edgewood, N. Mex.

Filed Sep. 30, 1982, Ser. No. 428,781

Int. Cl.³ G08C *9/00*

U.S. Cl. 340—365 A **21 Claims**



1. Apparatus for converting mechanical input displacements into an electrical output signal representative of said displacements comprising:

a. a flexible web including a first deflection zone extending between first and second spaced apart points on said web and a second deflection zone extending between third and fourth spaced apart points on said web, said first and second deflection zones intersecting to divide each of said zones into first and second sections;

b. a first fixed yoke coupled to the first and second points on said web;

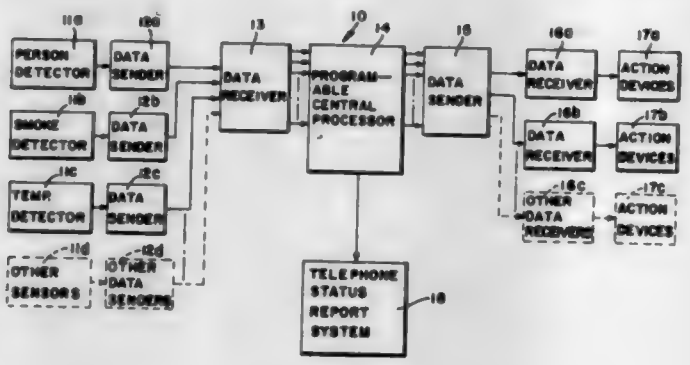
c. a second floating yoke coupled to the third and fourth points on said web;
d. web deflection means coupled to said second yoke for transmitting the mechanical input displacements to said web;
e. sensor means coupled to the first and second deflection zones of said web for generating the electrical output signal representative of the mechanical input displacements, wherein said sensor means includes
i. first means coupled to said first deflection zone for generating an electrical output signal representative of the displacement of the section of said web lying within said first deflection zone; and
ii. second means coupled to said second deflection zone for generating an electrical output signal representative of the displacement of the section of said web lying within said second deflection zone.

4,536,747

COMPREHENSIVE INTRUDER-ENVIRONMENTAL HAZARD DETECTION, CONTROL, AND ACTION SYSTEM

Garold K. Jensen, 1024 Falcon Dr., River Falls, Wis. 54022

Filed Feb. 11, 1982, Ser. No. 347,952
Int. Cl.³ G08B *23/00, 19/00*
U.S. Cl. 340—502 **12 Claims**



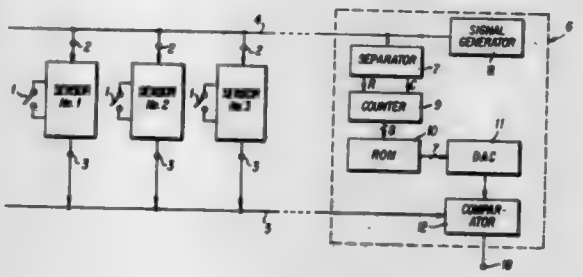
1. A comprehensive security system comprising:
detector means located at a plurality of locations for detecting conditions at said locations, said detector means providing output in response to said detected conditions, said detector means including go, no-go decision processor means for receiving and subjecting said outputs to a go, no-go decision process by comparing said outputs to a predetermined criteria so as to determine whether a valid detection has been made, as opposed to a spurious detection, whereby a very low false alarm rate is assured, said go, no-go decision processor means providing an output upon determination of a valid detection by said detector means, said go, no-go decision processor means requiring multiple detections by said detector means before a detection is determined as being valid;
first signal generator and transmitter means located at said locations and operatively interconnected to said go, no-go decision processor means for generating and transmitting on a RF transmission path signals responsive to the output of said go, no-go decision processor means, said first signal generator and transmitter means providing said signals with a wave form configured to maximize differentiation of the wave form from noise and interference on the RF transmission path, whereby said signals can be readily discriminated from noise and interference;
first data receiver means remote from said first signal generator and transmission means for receiving said signals from a plurality of said first signal generator and transmitter means, said first data receiver means including wave form recognition means for recognizing the wave form of the signals from said first signal generator and transmission means, whereby said first data receiver means is highly selective of the desired wave forms and highly rejective of noise or interference, said first data receiver means including means for outputting a signal, indicative of a specific detected condition, when a signal from said first signal generator and transmitter means is recognized;
reprogrammable central processor means for providing action outputs representative of one or more actions to be taken in response to one or more signals received from said first data receiver means, said reprogrammable central processor means comprising:
i. reprogrammable logic means including manually reprogrammable means for determining one or more actions selected from more than one type of action to be taken by the comprehensive security system in response to a specific detected condition as indicated by the signal received from said first data receiver means, said reprogrammable logic means further being responsive to various preselected groupings of said detected conditions, whereby the comprehensive security system provides for differing forcefulness of actions taken in response to varying types and levels of hazards and danger detected by the comprehensive security system; and
ii. reprogrammable logic means including manually reprogrammable means for selecting a false alarm rate from a selected grouping of different false alarm rates based on the action to be taken in response to the signals received from said first data receiver means;
second signal generator and transmitter means operatively interconnected to said reprogrammable central processor means for generating and transmitting signals on a RF transmission path in response to said action outputs received from said reprogrammable central processor means, said second signal generator and transmitter means providing said signals with a wave form configured to maximize differentiation of the wave form from noise and interference on the RF transmission path, whereby said signals can be readily discriminated from noise and interference; and
a plurality of second data receiver means remote from said second signal generator and transmitter means for receiving said signals from said second signal generator and transmitter means, said second data receiver means including wave form recognition means recognizing the wave form of the signals from said second signal generator and transmitter means, said second data receiver means being operatively interconnected to action devices for activating said action devices in response to said signals received from said second signal generator and transmitter means.

4,536,748

PROCESS FOR PROTECTING A REMOTE MONITORING SYSTEM AGAINST SABOTAGE AND A SYSTEM USING THIS PROCESS

Marc Tonello, Chatou, France, assignor to Compagnie Europeenne de Teletransmission C.E.T.T., Chatou, France

Filed Apr. 28, 1983, Ser. No. 489,355
Claims priority, application France, Apr. 30, 1982, 82 07523
Int. Cl.³ G08B *29/00, 26/00*
U.S. Cl. 340—506 **3 Claims**



1. A remote monitoring system comprising a central station and a plurality of sensors wherein each sensor comprises:
an alarm input terminal;
a synchronizing signal and clock signal separator having one

input connected to the central station and having a first and a second output supplying respectively said synchronizing and said clock signal;

a counter having a reset input and a clock input connected respectively to the first and to the second output of the separator and having outputs;

a read only memory having address inputs connected respectively to the outputs of the counter, and having outputs, for supplying data for synthesizing a waveform;

a digital-analog converter having inputs connected respectively to the outputs of the read only memory and having an ouput, for supplying a variable amplitude signal;

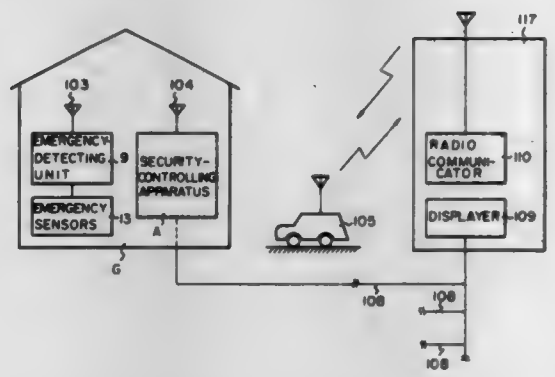
an analog gate having an input connected to the output of the converter, a first control input connected to an output of the memory, a second control input connected to the alarm input terminal and having an output connected to the central station for transmitting the variable amplitude signal to the central station when the sensor is interrogated and when there is no alarm to be transmitted.

4,536,749

SECURITY-ENSURING APPARATUS HAVING AN OPERATIONAL GUIDANCE FUNCTION

Shiro Shirai, Tachikawa; Shunji Ogahara, Musashino, and Miyuki Kubo, Tokyo, all of Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Filed Jun. 13, 1983, Ser. No. 503,739
Claims priority, application Japan, Jun. 14, 1982, 57-100749
Int. Cl.³ G08B *25/00*
U.S. Cl. 340—525 **11 Claims**



1. A security-ensuring apparatus which is capable of displaying information and which is incorporated in an alarm system having emergency sensors, comprising:

an actuating means for generating an actuation signal for said apparatus upon being operated by the use of a predetermined medium;

a memory means for storing therein display information including at least information on various types of alarm modes, information on operating procedures, and information on the location of said emergency sensors;

a display means coupled to said memory means for displaying said display information supplied from said memory means;

a drive means coupled to said display means and said actuating means for directing the supply of said display information from said memory means to said display means upon the receipt of said actuation signal from said actuating means;

a selector means for selecting a desired alarm mode to be set in said security-ensuring apparatus when said display means displays said display information;

a selection-controlling means having an input coupled to said selector means and an output coupled to said drive means for controlling said display means through said drive means and said memory means, such that said display means displays an alarm mode selected by said selector means;

a first discriminating means operatively coupled to said selection controlling means for discriminating the appropriateness of said selected mode by said selector means; and

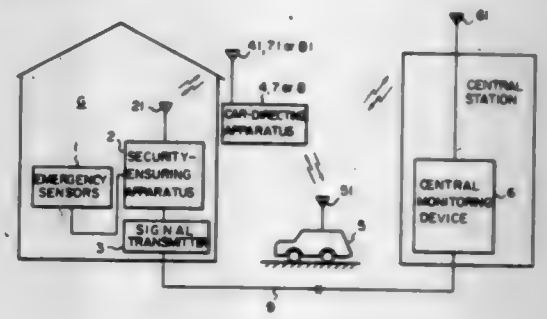
a setting means connected to said memory means, said drive means, and said first discriminating means for registering said selected alarm mode in said memory means upon the receipt of a signal indicating appropriate selection from said first discriminating means.

4,536,750

CAR-DIRECTING APPARATUS FOR AN ALARM SYSTEM

Shigeto Ebihara, Tokyo; Atsuo Ohta, Yokohama, and Kunikazu Kuwabara, Tokyo, all of Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,235
Claims priority, application Japan, Jun. 30, 1982, 57-111443
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—539 **6 Claims**



1. A car-directing apparatus incorporated into an alarm system which includes emergency sensors for sensing an emergency and/or abnormality occurring in a predetermined protected area, a security-ensuring apparatus arranged in the predetermined protected area and capable of transmitting an emergency-information signal in the form of a modulated coded signal, and a dispatch car in which dispatched engineers are transported to the predetermined protected area when an emergency and/or abnormality occurs, comprising:

a signal-receiving circuit for receiving said emergency-information signal transmitted from said security-ensuring apparatus and a confirmation signal in the form of a radio transmission signal transmitted by said dispatched engineers;

a demodulating circuit connected to said signal-receiving circuit and demodulating said emergency-information signal and said confirmation signal into a coded emergency- information signal and a coded confirmation signal, respectively;

a memory unit arranged so as to store therein predetermined codes, including at least type-of-emergency discriminating codes and a confirmation signal code;

a discriminating unit arranged so as to be connected to said demodulating circuit and said memory unit and discriminating whether said emergency-information signal or said confirmation signal is input thereinto upon the receipt of each signal from said demodulating circuit, said discriminating unit issuing a signal on the basis of the discrimination thereof;

a first emergency-discriminating circuit connected to said discriminating unit so as to respond to said emergency-information signal transmitted from said security-ensuring apparatus;

a second emergency-discriminating circuit connected to said discriminating unit so as to respond to said confirmation signal transmitted by said dispatched engineers;

a car-directing signal-generating unit for generating a signal to direct said dispatched engineers in said dispatch car to said predetermined protected area when said first emergency-discriminating circuit responds to said emergency-information signal;

an AND gate circuit having input terminals connected to

said first and second emergency-discriminating circuits, said AND gate circuit issuing an output signal upon the receipt of signals from both said first and second emergency-discriminating circuits;

a priority circuit arranged so as to be connected to said AND gate circuit for generating a prior emergency signal upon the receipt of said output signal from said AND gate circuit;

a display unit connected to said first emergency-discriminating circuit for displaying an emergency-information signal in response to a signal from said first emergency-discriminating circuit;

a signal-modulating circuit for modulating said prior emergency signal from said priority circuit;

a signal-emitting circuit for emitting said modulated prior emergency signal from said signal-modulating circuit; and

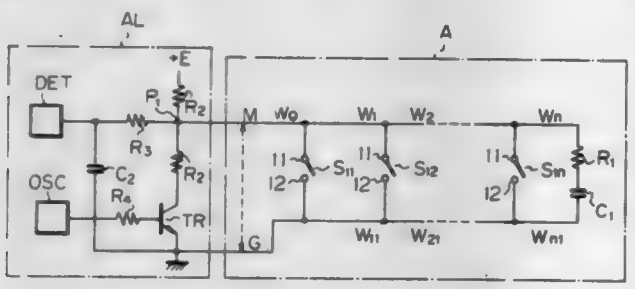
a built-in electric power unit for electrically powering said aforementioned circuits and units of said car-directing apparatus, said electric power unit comprising a battery means.

4,536,751

SYSTEM FOR DETECTING AN ALARM

Mineo Shigemitsu, Tokyo; Ichiyo Maruyama, Chofu, and Shigeru Niimura, Mitaka, all of Japan, assignors to Secom Co., Ltd., Tokyo, Japan

Filed Jun. 23, 1983, Ser. No. 507,096
Claims priority, application Japan, Jun. 30, 1982, 57-111441
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—545 **3 Claims**



1. A system for detecting an alarm for emergency situations in a predetermined guard area of a building or house, comprising:

an alarm circuit including at least one or more alarm switch units for detecting the emergencies and a resistor and a capacitor connected between first contacts and second contacts of said alarm switch units; and

an alarm device including a detecting circuit for detecting voltage changes of a predetermined measuring point, a pulse oscillator for generating a pulsating voltage, and a transistor for repeatedly turning on and off the current in response to the pulsating voltage applied from said pulse oscillator;

wherein no current flows in said alarm circuit after said capacitor is charged up, and a small amount of discharge current flows when said pulsating voltage is applied to the base of said transistor, then, such states are repeated under an ordinary condition of said predetermined guard area, current flows in said alarm circuit under emergencies, and the voltage change is detected at said measuring point of said alarm device.

4,536,752

INTRUSION DETECTION SYSTEM AND METHOD

James Cheal, and James R. Fitzsimons, both of Tempe, Ariz., assignors to Southwest Microwave, Tempe, Ariz.

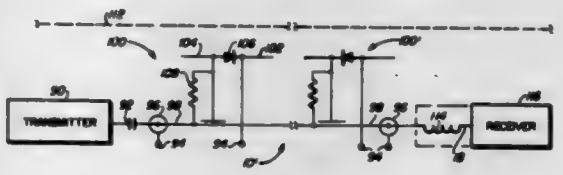
Filed Dec. 29, 1982, Ser. No. 454,444
Int. Cl.³ G08B *13/18*
U.S. Cl. 340—554 **18 Claims**

1. A method for detecting intrusions into a protected region, said method comprising the steps of:

(a) transmitting a microwave signal along a cable bounding said protected region;

(b) coupling relatively small portions of said microwave signal into each of a plurality antennas to effect radiating microwave energy from said antennas into said protected regions;

(c) periodically causing interrupting of microwave energy that is received by radiating elements of each of said respective antennas at a frequency that is greatly lower than the frequency of said microwave signal in order to produce a first signal which is a chopped microwave signal on said cable, said cable also conducting a noise



signal that is within the doppler frequency range of a moving target in said protected area;

(d) filtering microwave frequencies from said first signal and mixing said filtered first signal with said noise signal to produce a second signal, said second signal including a sequence of pulses that represent said first signal and are superimposed on said noise signal;

(e) producing a signal representative of the amplitudes of said pulses of said sequence by comparing the potentials of said second signal before and during a plurality of said pulses, respectively; and

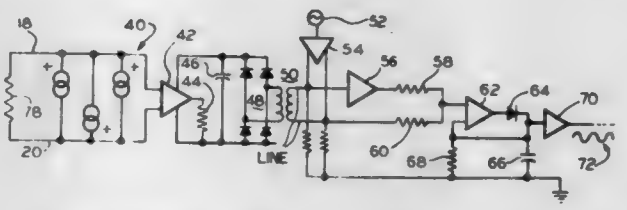
(f) producing an alarm signal.

4,536,753

SELF MONITORING INTRUDER DETECTING SYSTEM OF NOISE-CANCELLING VIBRATION DETECTORS

William H. Parker, Hurst, Tex., assignor to Del Norte Technology, Inc., Euless, Tex.

Filed Aug. 2, 1982, Ser. No. 404,406
Int. Cl.³ G08B *13/10*
U.S. Cl. 340—566 **8 Claims**



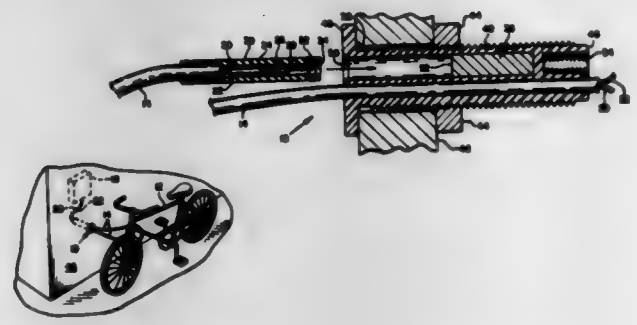
1. A self monitoring noise-cancelling intruder detection system comprising an array of vibration detectors interconnected by a two-wire line into a configuration for cancelling wide area noise, means for processing signals originating in said array, transformer means coupled between said array and said signal processing means, means for completing a low level current leakage path across said line to enable said means for processing signals to detect a presence, absence, or significant change in said low level current, and means responsive to signals transmitted from the array through said transformer means to said processor means for signaling alarm conditions in said array.

4,536,754

MAGNETICALLY RETAINED CONNECTING CABLE INCORPORATING MAGNETICALLY OPERATED SWITCH

Thomas J. Holce, Portland, and Charles M. Huckins, Tigard, both of Oreg., assignors to Sentrol, Inc., Portland, Oreg.

Filed May 13, 1983, Ser. No. 494,345
Int. Cl.[3] G08B *13/14*
U.S. Cl. 340—568 19 Claims



1. A device for incorporation in a physical security alarm system for detecting removal of an object from a predetermined location, comprising:

(a) electrical switch means responsive to a magnetic field for changing state between a first state and a second state in response to the presence of a predetermined magnetic field strength;

(b) a quantity of ferromagnetic material associated with said switch means and fixedly located with respect to said switch means, at a predetermined distance therefrom;

(c) an actuating magnet selectively located with respect to an object present in said predetermined location, whose removal it is desired to detect, said actuating magnet having sufficient field strength to hold said quantity of ferromagnetic material and said switch means in a predetermined position relative to said actuating magnet and to provide said predetermined magnetic field strength to said switch means when said ferromagnetic material and said switch means are in said predetermined position;

(d) electrical conductor means electrically connected with said switch means for connecting said switch means electrically to an alarm system circuit to make possible electrical detection of the state of said switch means; and

(e) connecting means interconnecting said switch means with said predetermined location, for separating said switch means and said quantity of ferromagnetic material from said predetermined position upon removal of said object from said predetermined location.

4,536,755

APPARATUS FOR DETECTING UNAUTHORIZED EGRESS BY PATIENT FROM POSITION OF CONFINEMENT

Curtis R. Holzgang, Beaverton; Mark K. Leavitt, Portland; Alfred D. Doney, Oregon City, and James Kuehn, Gladstone, all of Oreg., assignors to Rigi Systems, Inc., Beaverton, Oreg.

Filed Mar. 7, 1983, Ser. No. 473,000
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—573 5 Claims

1. An apparatus for monitoring the activity of a patient, comprising:

switch means actuable in response to an amount of gravitational force corresponding to a preselected amount of downwardly directed inclination of the switch means;

means to position the switch means on the patient's leg so that the switch means is actuated whenever the downwardly directed inclination of the femur portion of the leg proximal the knee exceeds the preselected amount;

alarm means responsive to the actuation of the switch means to indicate that the patient is in an ambulatory enabling position; and



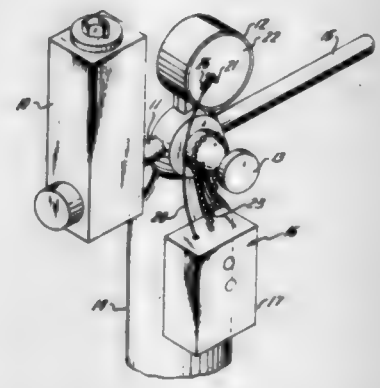
means to detect an unauthorized removal of the switch means from the patient's leg.

4,536,756

PRESSURE INDICATOR AND ALARM

Michael DePasquale, 779 Tiffany Ave., River Vale, N.J. 07675, and William S. Adam, 43 W. Fairmount Ave., Maywood, N.J. 07607

Filed Dec. 5, 1983, Ser. No. 558,048
Int. Cl.[3] G08B *21/00*
U.S. Cl. 340—626 7 Claims



1. A pressure indicator and alarm system used in conjunction with gas cylinders which will sound a warning and flash a light when the gas supply is running low and the cylinder is in need of replacement and wherein the gas cylinder further comprises a regulator, valve, and pressure gauge wherein the pressure indicator and alarm device comprises;

a housing to be attached to a metal portion of the regulator-valve system wherein the housing contains a battery, a piezo alert audible warning device, a light source, electrical lead lines connecting the said battery to said piezo alert audible warning device and said light source, an electrical lead line connecting to a means for attaching said housing to said regulator-valve system and, an electrical lead line for connecting said battery to a pin inserted through a lens of said guage into the path of a rotating indicator arm wherein when the rotating indicator arm associated with said gauge makes

contact with said pin inserted through said lens an electrical circuit will be completed and the piezo alert audible warning device will sound and the light source will be illuminated.

4,536,757

DEVICE FOR SIGNALLING A SPECIFIC CHARGE CONDITION OF AN ACCUMULATOR BATTERY

Johannes Ijntema, Drachten, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

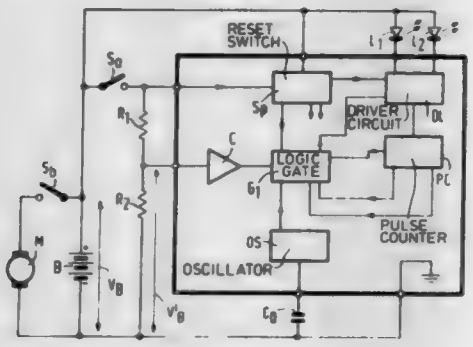
Filed Nov. 23, 1983, Ser. No. 554,744

Claims priority, application Netherlands, Nov. 30, 1982, 8204628

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—636

15 Claims



1. A device for signalling a specific charge condition of an accumulator battery incorporated in a battery-powered apparatus, which device comprises a comparator circuit for comparing the battery voltage with a reference voltage, a switching circuit controlled by the comparator circuit into a first state when the battery voltage drops below a given voltage level, an indicator controlled by the switching circuit, and a memory circuit coupled to the switching circuit, said memory circuit including time delay means for maintaining the indicator energized for a specific time interval after the apparatus has been switched off provided the switching circuit is in the first state when the apparatus is switched off.

4,536,758

FAULT INDICATOR WITH PUSH BUTTON RESET

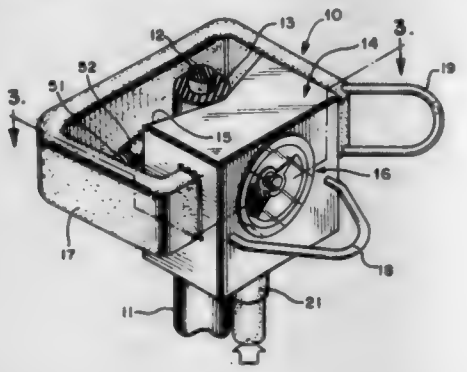
Edmund O. Schweitzer, Jr., 1002 Dundee Rd., Northbrook, Ill. 60118

Filed Mar. 10, 1983, Ser. No. 474,132

Int. Cl.[3] G08B *21/00*

U.S. Cl. 340—664

23 Claims



1. A fault indicator for indicating the occurrence of a fault current in an electrical conductor, comprising:

a housing;

indicator means in said housing having fault and reset indicating states in response to an applied magnetic field for indicating the occurrence of fault and reset conditions in the conductor;

flux concentrating means in magnetic communication with said conductor for applying a first magnetic field to said indicator means to condition said indicator means to a fault state upon the occurrence of a fault current in the conductor; and

user-actuable reset means including a permanent reset magnet mounted for reciprocation within said housing for applying a second magnetic field to said indicator means upon reciprocation of said permanent magnet to condition said indicator means to a reset state.

4,536,759

MULTI-FORMAT DATA DISPLAY

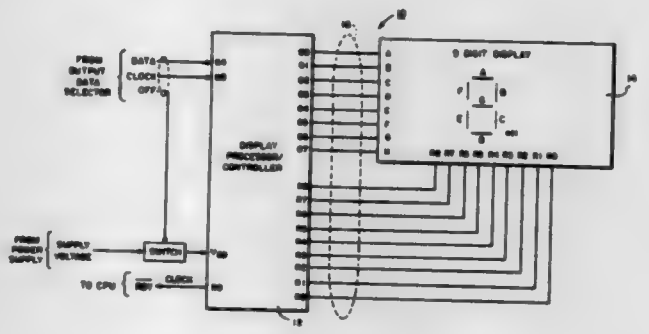
Donald V. DiMassimo; John B. May, both of Liverpool, and Michael D. Lemmon, Syracuse, all of N.Y., assignors to General Electric Company, Somersworth, N.H.

Continuation of Ser. No. 238,477, Feb. 26, 1981, abandoned. This application Jul. 14, 1983, Ser. No. 513,262

Int. Cl.[3] G09G *3/14*

U.S. Cl. 340—706

14 Claims



1. A multi-format display apparatus for receiving data words from a data source and displaying data contained in the data words in a plurality of different formats, said multi-format display apparatus comprising:

a. display means for displaying data;

b. a display processor under programmed control interconnected between said data source and said display means for formatting the data contained within the data words and transferring the formatted data to said display means for display thereon, the data words provided by said data source having a predetermined format and being in the form of a series of asynchronous digital data bits, each data word including a sync code portion comprising a predetermined pattern of serial data bits and a message portion comprised of at least a decodable format code segment and a data segment, said display processor comprising,

(i) means for receiving the asynchronous digital data bits from said data source, including means for recognizing the predetermined sync code pattern in the sync code portion of each data word received and indicating when each received data word has been stored in said display processor,

(ii) first register means for sequentially storing the message portion of each data word received by said means for receiving after recognition of the predetermined sync code pattern of each received data word by said means for recognizing,

(iii) means for decoding the contents of the format code segment of the message portion of each data word after storage in said first register means as indicated to said means for decoding by said means for recognizing, and for selectively directing subsequent operations of said display processor by indicating which of several operations is to be performed as indicated by the resultant decoding of the format code segment of each data word stored in said first register means,

(iv) second register means for storing preselected constants contained in the data segment of the message portion of a first data word stored in said first register means as directed by said means for decoding of the format code segment of said first data word,

(v) third register means for storing data to be displayed,

(vi) means for selectively formatting data contained in the data segment of the message portion of a second data word stored in said first register means, including means for selectively modifying specified ones of the preselected constants stored in said second register means and selectively storing the formatted data and selected ones of the preselected constants in said third register means as directed by said means for decoding of the format code segment of said second data word and,

subsequent to the storage of the formatted data and the preselected constants in said third register means, indicating that the contents of said third register means are to be transferred to said display means, and

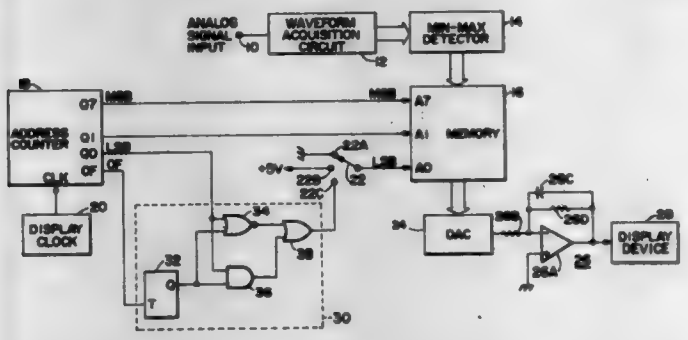
(vii) means for selectively transferring the formatted data and certain ones of the preselected constants from said third register means to said display means for display thereon when indicated by said means for selectively formatting.

4,536,760

SIGNAL-ENVELOPE DISPLAY SYSTEM FOR A DIGITAL OSCILLOSCOPE

Luis J. Navarro; Joseph R. Peter, and Bruce W. Blair, all of Beaverton, Oreg., assignors to Tektronix, Inc., Beaverton, Oreg.

Filed Oct. 15, 1982, Ser. No. 434,459
Int. Cl.³ G09G *1/00, 3/00*
U.S. Cl. 340—722 **5 Claims**



1. A display system for a digital oscilloscope in which for each spaced interval along a signal waveform a maximum and a minimum amplitude value are obtained to provide a sequence of max-min value pairs, comprising:

memory means for storing ordered pairs of said maximum and minimum amplitude values such that said max-min pairs are stored in adjacent addressable storage locations;

address counter means for providing a binary address count signal consisting of binary bits to address said memory means sequentially to retrieve said maximum and minimum values;

control circuit means for selectively inverting the least significant bit of the address count signal thereby transposing the order of maximum and minimum values in each max-min value pair being retrieved from said memory means;

means responsive to the retrieved sequence of max-min value pairs for generating a display signal therefrom.

4,536,761

RADIO PAGING RECEIVER HAVING DISPLAY CONTROL MEANS

Kazuyuki Tsunoda, and Yoshio Ichikawa, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Feb. 10, 1983, Ser. No. 466,383
Claims priority, application Japan, Feb. 12, 1982, 57-19764
Int. Cl.³ H04B *5/04;* **H04Q** *9/00*
U.S. Cl. 340—825.44 **6 Claims**

1. A radio paging receiver having a display means and a switch which can be selectively activated and released, said receiver comprising:

a first means for detecting a selective calling signal assigned to said receiver;

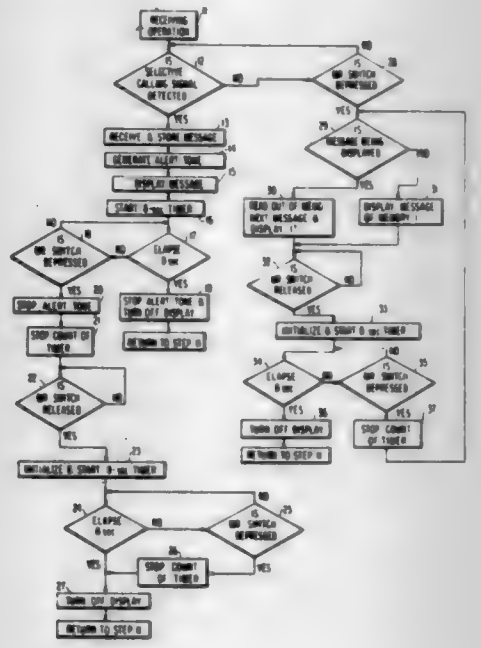
a second means for receiving and storing a message transmitted subsequently to said selective calling signal;

a third means for generating an alert tone in response to the detection of said selective calling signal;

a fourth means for displaying the message stored in said second means on said display means in response to the reception of said message;

a fifth means for stopping the generation of said alert tone and the display of said message after a first predetermined period of time has elapsed;

a sixth means for stopping the generation of said alert tone when said switch is activated within said first predetermined period of time;



a seventh means for stopping the display of said message after a second predetermined period of time that starts from the release of the activated switch; and

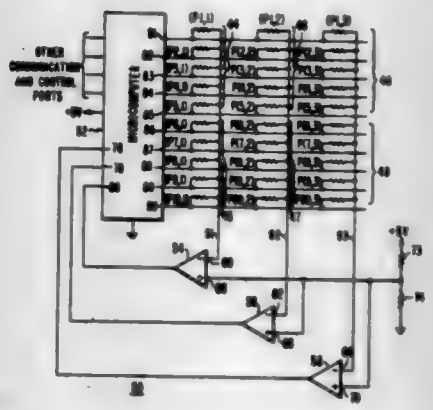
an eighth means for stopping the display of said message when said switch is activated within said second predetermined period of time.

4,536,762

MATRIX ENCODER FOR SENSOR ARRAYS

Roger D. Moates, Raleigh, N.C., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 17, 1982, Ser. No. 378,536
Int. Cl.³ G08C *19/00, 19/36, 19/04*
U.S. Cl. 340—870.02 **8 Claims**



1. Encoder apparatus comprising:

means for selectively supplying a sensed condition in response to an input condition,

a set of resistive sensors coupled to said supply means and operable between a first resistive state in the absence of said sensed condition and a second resistive state in the presence of said sensed condition,

means for sequentially selecting a subset of said sensor set and for generating a test signal responsive to said sensed condition,

reference means for deriving a first reference signal from the non-selected sensors of said set,

means for providing a second reference signal, said second reference signal having a preselected known magnitude,

comparator means connected to said selected subset and to

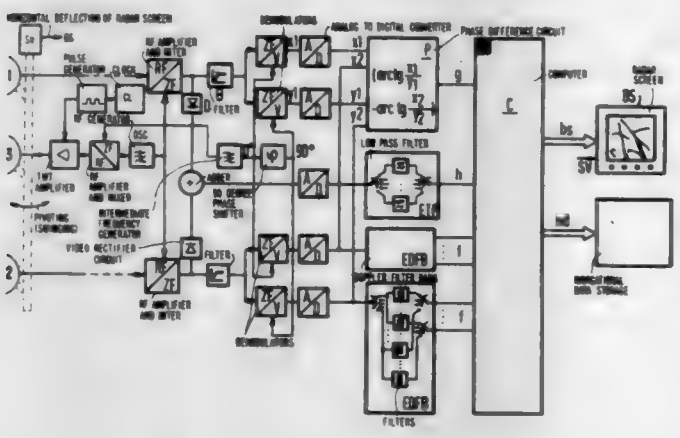
the non-selected sensors of said set for processing said test signal and also connected to said second reference signal and for generating an output signal representative of the resistive state of said selected sensors from the relative values of said test signal and said first reference signal, said comparator means being connected to said reference means.

4,536,763

ON-BOARD ORIENTATION DEVICE FOR AIRCRAFT

Klaus von Pieverling, Wolfratshausen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Nov. 9, 1981, Ser. No. 319,705
Int. Cl.³ G01S *13/60*
U.S. Cl. 343—9 R **2 Claims**



1. A device for on-board orientation in vehicles, such as aircraft which move relative to the ground, comprising a beam antenna which is sharply angularly focused in azimuth and less sharply focused in elevation and which scans the terrain in azimuth by swinging the radiating energy from said antenna, a receiver receiving from said antenna at each azimuth angle from the terrain at the angular range illuminated by the vertical antenna pattern a mixture of echo signals having different transit times which are respectively, proportional to the range of the respectively reflecting terrain elements and have different Doppler frequencies f_d according to the relationship $f_s = f_{dmax\alpha} \cdot \cos = (2v_{Ha}/\lambda) \cdot \cos \epsilon$, wherein v_{Ha} is the aircraft velocity in the direction of the azimuth angle, λ is the radar wavelength and ϵ is the aspect angle of the appertaining terrain element, an image display device connected to said receiver for displaying a vertical image display of each azimuth angle which is illuminated by a plurality of radar wave trains, and the echo signals respectively received during successive time windows range gates and, thus, from successive distance range gate ranges and which are analyzed as to their Doppler frequencies, and said display device having a light spot for display on its picture screen which is vertically deflected proportional to the respective aspect angle, so that, in response to an echo received at a specific aspect angle and with a specific amplitude, the image spot is reproduced from such echo with a corresponding brightness and deflection which is proportional to the aspect angle, characterized in that the antenna is formed of at least two reception antenna rods (1 and 2) to form a direction-finding antenna and said antenna rods (1, 2) are mounted parallel to each other with a spacing of a few wavelengths, and the path difference (G) between echo signals received at the two reception antenna rods (1, 2) from the same terrain element (R) is determined by phase angle subtraction of the phase angles individually related to the range gate and is stored in a storing means, and the Doppler frequency is determined for each range gate, and the reference frequency

$$f_{dmax\alpha} = \frac{\sqrt{f_{di}^2 + f_{dj}^2 - 2 \cdot f_{di} \cdot f_{dj} \cdot \cos((G_i - G_j)/s}}{\sin((G_i - G_j)/s}$$

is determined from the path differences and Doppler frequencies of at least two range gate ranges, wherein f_{di} and f_{dj} are the Doppler frequencies determined in the range gate ranges, G_i and G_j are the path differences determined in the appertaining range gate ranges, and s is the path difference steepness dependent on the respective aspect angle ϵ^*, and for terrain representation on the radar screen, the light spot in at least one range (II) of mean aspect angles is vertically deflected approximately proportional to the magnitude

$$\epsilon_{II} = \text{arc cos} \frac{f_d \cdot \sin((G_i - G_j)/s)}{\sqrt{f_{di}^2 + f_{dj}^2 - 2 \cdot f_{di} \cdot f_{dj} \cdot \cos((G_i - G_j)/s)}}$$

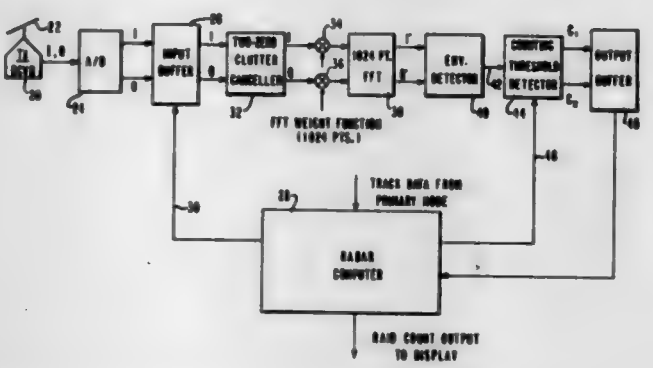
wherein f_d is the Doppler frequency which has been determined.

4,536,764

METHOD OF COUNTING MULTIPLE TARGETS IN THE POST DETECTION PROCESSING OF A RADAR

Robert D. Freeman, Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Sep. 29, 1982, Ser. No. 427,332
Int. Cl.³ G01S *13/52, 7/28*
U.S. Cl. 343—5 SA **12 Claims**



1. In the post detection processing of a radar, a method of counting multiple targets moving in close proximity to one another comprising the steps of:

(a) selecting a set of contiguous doppler frequency signals from a plurality of doppler frequency signals computed from the received echo signal information in a range gate of a radar look;

(b) identifying a first doppler frequency from said selected set in accordance with the amplitude of the signal associated therewith;

(c) selecting a first contiguous subset of doppler frequencies of said set positioned about said first doppler frequency;

(d) deriving a first threshold level based on the amplitude of said first doppler frequency signal;

(e) counting the doppler frequency signal amplitudes in said first contiguous subset which exceed said first threshold signal to establish a first count;

(f) thereafter, identifying a second doppler frequency from said selected set in accordance with the amplitude of the signal associated therewith;

(g) selecting a second contiguous subset of doppler frequencies of said set positioned about said second doppler frequency;

(h) deriving a second threshold level based on the amplitude of said second doppler frequency signal and said established first count;

(i) counting the doppler frequency signal amplitudes in said

second contiguous subset which exceed said second threshold level to establish a second count; and

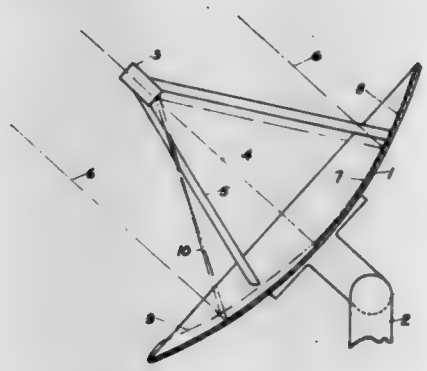
(j) deriving a final count from said first and second counts in accordance with a predetermined count algorithm, whereby said final count is representative of the multi-target count for the range gate being processed.

4,536,765

METHOD FOR REDUCING ICE AND SNOW BUILD-UP ON THE REFLECTING SURFACES OF DISH ANTENNAS

Elton G. Kaminski, Sidney, Ohio, assignor to The Stolle Corporation, Sidney, Ohio

Filed Aug. 16, 1982, Ser. No. 408,158
Int. Cl.³ H01Q *1/02*
U.S. Cl. 343—704 **10 Claims**



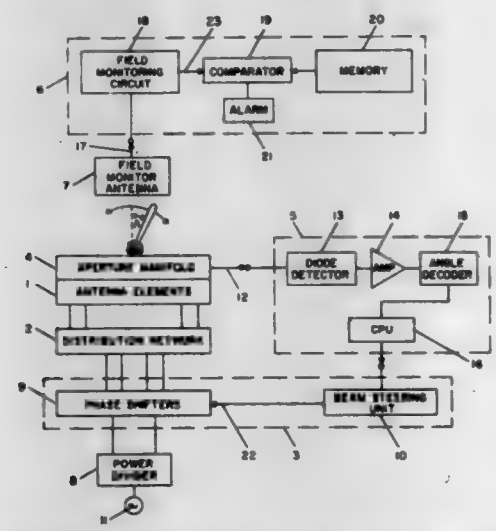
1. A method for preventing the build-up of ice and snow on the inclined reflecting surface of a dish antenna, which receives signals from a satellite, comprising coating the reflecting face of the antenna with a thin layer of weather-resistant material having a low coefficient of friction with respect to ice or snow of less than about 0.4 to produce a non-wettable outer surface operable to shed ice and snow, said coating having a textured pattern including minute hills and valleys to reduce solar radiation reflectivity to about 10% or less, yet avoid capillary retention of ice and snow.

4,536,766

SCANNING ANTENNA WITH AUTOMATIC BEAM STABILIZATION

Richard F. Frazita, St. James, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Filed Sep. 7, 1982, Ser. No. 415,057
Int. Cl.³ H01Q *3/22, 3/24, 3/26*
U.S. Cl. 343—372 **2 Claims**



1. In an antenna system for radiating wave energy signals into a selected region of space and in a desired radiation pattern comprising:

(a) an aperture comprising an array of antenna elements;

(b) first means for coupling supplied wave energy signals to the antenna elements; and

(c) second means for scanning a beam radiated by the array in accordance with a predetermined pattern, said beam resulting from the supplied wave energy signals coupled to the antenna elements;

the improvement comprising:

a manifold directly coupled to said aperture and providing an output representative of the beaming pointing angle of a beam radiated by said aperture;

detecting means for detecting the output of the manifold;

decoding means associated with said detecting means for providing an output corresponding to the beam pointing angle represented by the detected output of the manifold; and

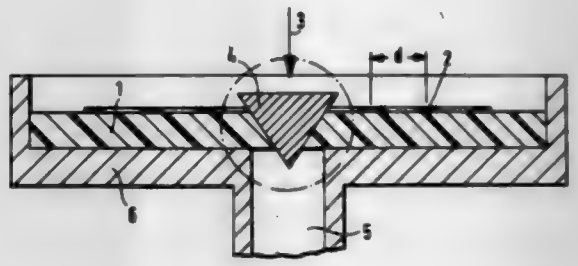
controlling means for adjusting the start/stop time of the scanning of said beam whereby the predetermined pattern is not modified.

4,536,767

MICROWAVE DIRECTIONAL ANTENNA EMPLOYING SURFACE WAVE MODE

Bernhard Rembold, Neu-Ulm, and Klaus Solbach, Ulm, both of Fed. Rep. of Germany, assignors to Licentia Patent-Verwaltungs-GmbH, Fed. Rep. of Germany

Filed Mar. 17, 1983, Ser. No. 476,354
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 3210895; Aug. 5, 1982, 3217437
Int. Cl.³ H01Q *13/28*
U.S. Cl. 343—785 **9 Claims**



1. A microwave directional antenna, comprising:

a flat circular metallic ground plate (6) having a flat surface with a central circular opening therein, said ground plate having a circular outer wall extending axially outwardly from said flat surface,

a flat circular disc (1) of dielectric material lying over and in contact with said flat surface of said ground plate, said disc covering said central opening and having an outer flat surface facing away from said flat surface of said ground plate, said disc covering said opening and extending to said wall of said ground plate;

a hollow circular waveguide (5) made of metal and connected to said ground plate, said hollow waveguide having a central passage communicating with said opening of said ground plate for supplying microwave radiation to said disc;

a metal transition member (4) connected to said disc at a center of said disc and overlying said opening of said ground plate for changing a mode of propagation of microwave radiation from said waveguide to said disc; and

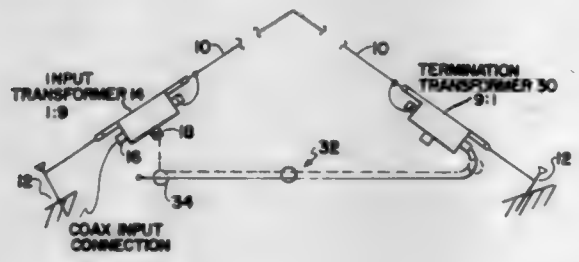
a plurality of line discontinuities (2) at least at said outer flat surface of said disc, said discontinuities lying in a plurality of concentric radially spaced rings in said outer flat surface of said disc, said rings being radially spaced by an equal selected spacing (d) to effect a radiation characteristic for microwave radiation propagating radially through said disc whereby microwave radiation propagating radially through said disc is deflected to radiate axially from said disc upon approaching said discontinuities.

4,536,768

COAXIAL POWER DISSIPATION LINE

Palemon W. Dubowicz, Eatontown, N.J., assignor to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Apr. 29, 1983, Ser. No. 489,993
Int. Cl.[3] H01Q *11/06*
U.S. Cl. 343—736 6 Claims



1. Power dissipation termination apparatus for an inverted-V antenna of the type utilizing an impedance matching input transformer at one end of the antenna for signal radiation in ground-to-ground communication systems, comprising:

a coaxial cable having an inner conductor and a surrounding shield;

a termination transformer at the other end of the antenna coupled to match the characteristic impedance of said coaxial cable with the characteristic impedance of said antenna, said termination transformer having the input thereof coupled to said antenna and the output thereof coupled to said inner conductor of said coaxial cable at one end of said cable;

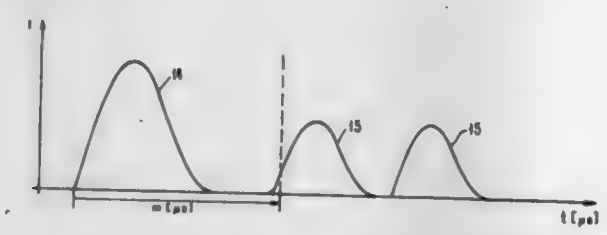
and wherein said cable is physically extended beneath said antenna in a direction from said termination transformer towards said input transformer, and with its said surrounding shield being coupled to a point of electrical ground.

4,536,769

METHOD OF RECORDING INFORMATION ON AN ELECTROSENSITIVE RECORD CARRIER

Dietrich J. Bahr; Karl-Heinz Burckardt, both of Herrenberg; Gottfried Goldrian, Boblingen; Volker Rudolph, Aidlingen, and Wilhelm G. Spruth, Boblingen, all of Fed. Rep. of Germany, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,558
Claims priority, application European Pat. Off., Mar. 25, 1982, 82102517
Int. Cl.[3] G01D *15/08*
U.S. Cl. 346—1.1 5 Claims



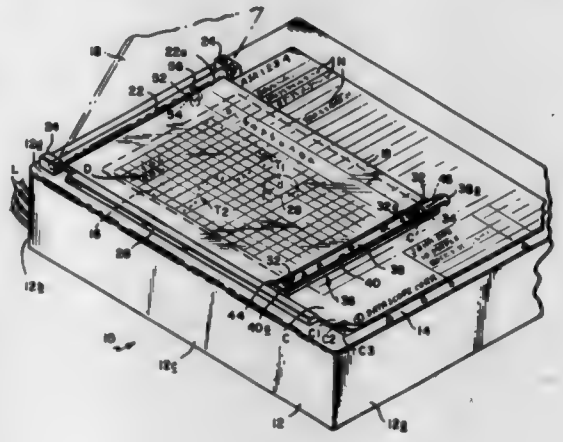
4. A method of using a print electrode for recording on an electrosensitive record carrier by supplying printing current pulses to the print electrode including the step of selecting the duration and amplitude of each print current pulse so that the print process of the print electrode initiated by the print pulse is completed by the time the print pulse terminates.

4,536,770

REVERSE SIDE MARKING PLOTTER/PRINTER PAD

Richard M. Allen, Andover, Mass.; Jeffrey M. Arnold, Ridgewood, N.J.; Joseph J. Field, Hudson, N.H., and Terry E. Spraker, Middleton, Wis., assignors to Allen Datagraph Incorporated and Datascope Corporation

Filed Oct. 3, 1983, Ser. No. 538,321
Int. Cl.[3] G01D *9/00, 15/34*
U.S. Cl. 346—29 17 Claims



1. Plotting and printing apparatus comprising

A. means defining a writing surface for supporting a printing medium,

B. means defining an opening in said surface for exposing the underside of said medium,

C. a transparent plate dimensioned to cover said opening, but to leave uncovered at least a portion of said surface,

D. means for mounting said plate to said surface defining means so as to permit the placement on said surface of a printing medium whose area is larger than that of the plate so that a first portion of the medium extends across the opening underneath the plate and a second portion of the medium extends beyond the plate and is supported by said supporting surface portion so tnat it can be written on from above said surface, and

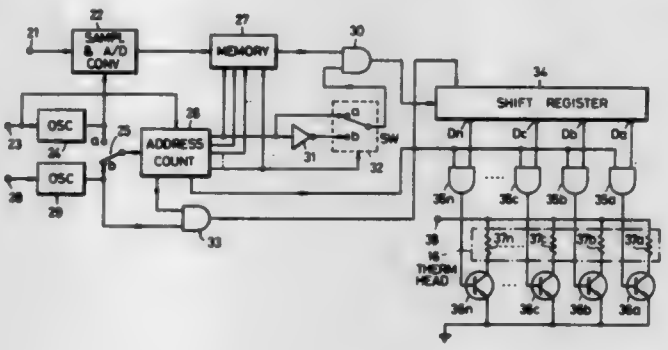
E. printing means including a print head mounted to said surface defining means so that the print head is disposed opposite said opening and can print on the underside of the first medium portion exposed in said opening.

4,536,771

HEATING CONTROL DEVICE FOR A THERMAL INK-TRANSFER TYPE PRINTING APPARATUS

Hideshi Tanaka, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Mar. 10, 1983, Ser. No. 474,194
Claims priority, application Japan, Mar. 16, 1982, 57-41192
Int. Cl.[3] G01D *15/10*
U.S. Cl. 346—76 PH 7 Claims



1. A heating control device in a thermal ink-transfer type printing apparatus comprising a thermal printing head having n head elements with respect to one printing line, where n is an integer, each of said n head elements comprising a heating

resistor for heating a transfer sheet having a kind of ink which melts due to heat and for transferring melted ink onto a recording sheet which makes contact with said transfer sheet to print images such as characters and figures, the heating resistors being physically isolated from each other, said heating control device comprising:

converting means for sampling an input analog signal indicating tone of printing of an image to be printed on said recording sheet in accordance with the number n of said head elements and for converting said input analog signal into a digital signal;

memory means for storing the output digital signal of said converting means and for reading out the stored digital signal from n addresses corresponding to each of said n head elements; and

control means for obtaining during a first time period first signals read out from first n/2 addresses which are not adjacent to each other from among the signals read out from said n addresses in said memory means, for simultaneously driving during a second time period n/2 head elements corresponding to said first n/2 addresses so as to heat selected heating resistors from an initial temperature up to a predetermined temperature, for obtaining during a third time period second signals read out from remaining n/2 addresses which are not adjacent to each other from among the signals read out from said n addresses in said memory means, and for simultaneously driving during a fourth time period remaining n/2 head elements corresponding to said remaining n/2 addresses so as to heat selected heating resistors from the initial temperature up to the predetermined temperature,

said first through fourth time periods being consecutive time periods,

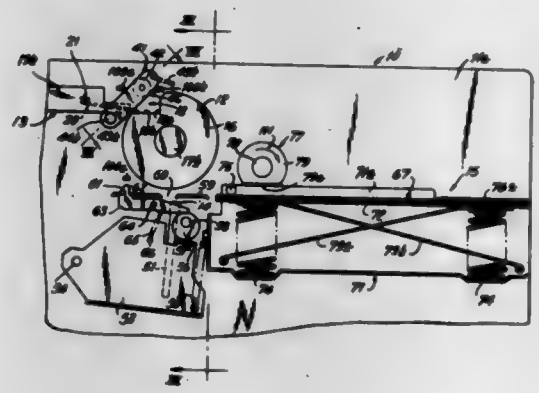
said second and fourth time periods being sufficiently long time periods so that heated heating resistors cool down approximately to the initial temperature from the predetermined temperature within said second and fourth time periods.

4,536,772

THERMAL TRANSFER PRINTING APPARATUS

Mitsuhiro Isogai, Tokyo, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Feb. 23, 1983, Ser. No. 468,944
Claims priority, application Japan, Feb. 24, 1982, 57-27516
Int. Cl.³ B41J *3/70*
U.S. Cl. 346—76 PH **17 Claims**



1. A thermal transfer printing apparatus for printing an image on a sheet of printing paper comprising:

a rotatable platen roller having a surface for backing-up said sheet of printing paper;

means for wrapping said sheet of printing paper about said surface of the roller;

a thermal head having a plurality of selectively energizable heating elements confronting said surface of the platen roller and arranged substantially along a straight line parallel with the axis of rotation of said roller;

ink carrying means for positioning thermally transferable dye material between said heating elements and said printing paper backed-up by said surface of the roller;

means for pressing said thermal head toward said roller with said ink carrying means and the sheet of printing paper therebetween for the selective transfer of said dye material to said printing paper in dependence on the selective energization of said heating elements;

first shifting means for rotating said roller and thereby moving said thermal head and said printing paper relative to each other in a direction extending transversely in respect to said straight line;

means for operating said ink carrying means, said means for pressing and said thermal head synchronously with said first shifting means so as to print said image on said sheet of printing paper wrapped about said surface of the roller in the course of a plurality of complete revolutions of the roller;

second shifting means for moving said thermal head and said sheet of printing paper relative to each other in a direction along said straight line; and

means for actuating said second shifting means to relatively move said thermal head and said sheet of printing paper in an interval between said complete revolutions of the roller required for the printing of said image on said sheet of printing paper.

4,536,773

MAGNETIC RECORDING APPARATUS WITH ADJUSTABLE LINE DENSITY

Norio Kokaji, Hino, and Kunio Kinoshita, Hachioji, both of Japan, assignors to Iwatsu Electric Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 370,128, Apr. 20, 1982, abandoned.
This application Aug. 6, 1984, Ser. No. 637,346
Claims priority, application Japan, Apr. 21, 1981, 56-60317
Int. Cl.³ G01D *15/12*
U.S. Cl. 346—74.2 **8 Claims**



1. Apparatus for forming latent images in a magnetic printing apparatus comprising:

a. A recording head having therein a plurality of channels of different widths as measured in the main scanning direction, wherein the tracking locus of each of said different width channels corresponds to a different number of lines in the sub-scanning direction;

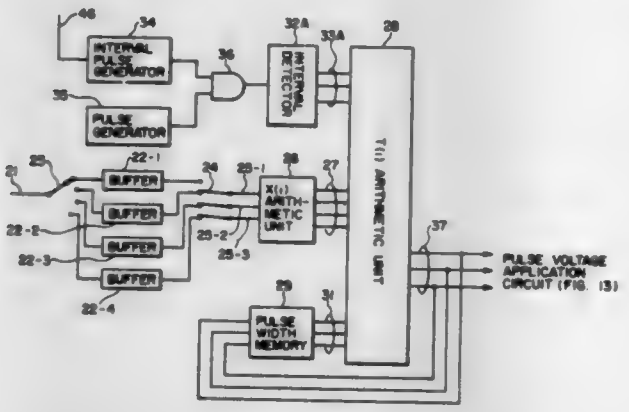
b. Recording head control means for selecting and driving at least two channels of different widths such that the line-recorded altent images of a wider track are reduced in width by a subsequently recorded latent images of a succeeding narrower channel which overlaps an edge portion of said wider channel, thereby to provide data tracks in the sub-scanning direction which are of substantially equal width as measured in the main scanning direction, and without unrecorded line space therebetween.

4,536,774

THERMAL HEAD DRIVE CIRCUIT

Toshiharu Inui, and Haruhiko Moriguchi, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 591,859
Claims priority, application Japan, Apr. 1, 1983, 58-55266; Apr. 30, 1983, 58-74900
Int. Cl.³ G01D *15/10*
U.S. Cl. 346—76 PH 20 Claims



11. A thermal head drive circuit with an input connected to a source of printing data, and an output connected to a thermal head including individually actuatable and heatable heater elements, for printing successive lines comprising:

a. a pulse-applying circuit having an input and an output, the output of said pulse-applying circuit being connected to the input of said thermal head, and the input of said pulse-applying circuit receiving pulse energy signals for applying printing pulse energy data to said thermal head;

b. storage means having an input and an output, the printing data from said printing data source being successively read line by line into the input of said storage means;

c. an arithmetic heat accumulation state operator having an input and an output, the input of said operator being connected to the output of said storage means;

d. a temperature detector having an input and an output for detecting an internal temperature in said thermal head;

e. a memory having an input and an output for storing the pulse energy signals used in printing the line immediately previously printed; and

f. pulse energy operator means having inputs and an output for determining the pulse energy signals to be applied to each of said heater elements for said line next to be printed, the inputs of said pulse energy operator means being connected to the outputs of said arithmetic heat accumulation state operator, said memory and said temperature detector, and the output of said pulse energy operator means being connected to the input of said pulse-applying circuit.

4,536,775

THERMAL PRINTING APPARATUS

Trevor A. Calnek, Waterloo, and John E. Bray, Guelph, both of Canada, assignors to NCR Canada Ltd - NCR Canada Ltee, Mississauga, Canada

Filed Dec. 14, 1983, Ser. No. 561,489
Int. Cl.³ H05B *5/08*
U.S. Cl. 346—76 PH 3 Claims

1. Printing apparatus comprising

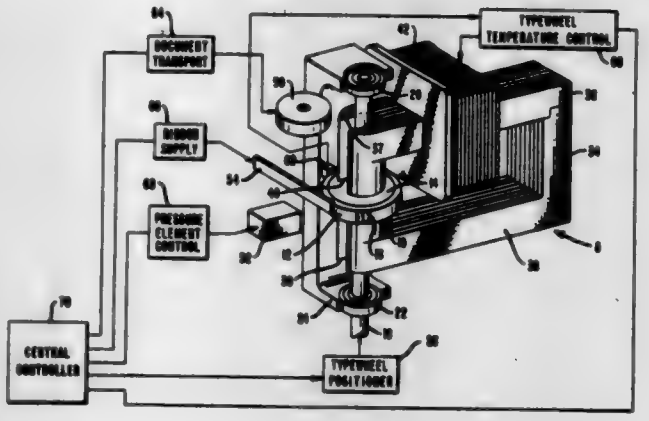
support means;

a magnetic core having a gap therein and having a slot in said core which extends through the gap, and mounted on said support means;

a coil mounted on said core and capable of generating a magnetic field in said core which extends through said gap;

a rotatable cylindrical thermal print head including an annular element of high conductivity material having a plurality of print characters arranged on the periphery thereof and fixed to a central hub of nonconductive material, said print head being located at least partially within the gap of said magnetic core;

shaft means disposed within the slot in said magnetic core for rotatably mounting said print head on said support means in operative relation to the gap of said magnetic core;



motor means mounted on said support means and operatively coupled to said shaft means for moving said print head to position a selected character for printing; and

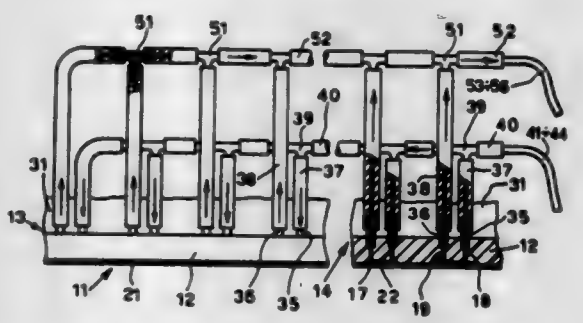
means to energize said coil to generate an electromagnetic field in said magnetic core, said electromagnetic field generating circulating currents in said annular element to heat said print head to a temperature suitable for thermal printing.

4,536,776

INK-JET PRINTING DEVICE

Franco Knirsch, Banchette; Giovanni Gianolini, Lozza; Gian D. Dagna, Ivrea, and Mario Buat, Carema, all of Italy, assignors to Ing. C. Olivetti & C., S.p.A., Ivrea, Italy

Filed Sep. 30, 1982, Ser. No. 431,279
Claims priority, application Italy, Oct. 5, 1981, 68285 A/81
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 R 12 Claims



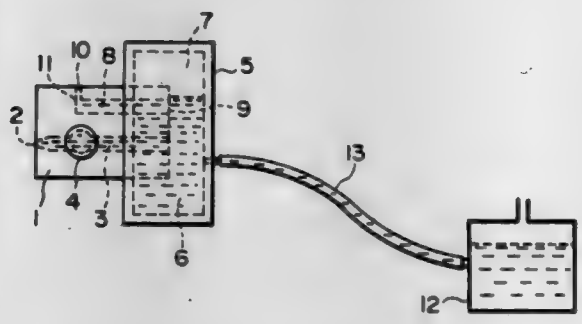
1. An ink jet printing device for dot printing alphanumeric characters and/or facsimile type graphics, comprising a plurality of containers for ink, a plurality of nozzles arranged on a common plate made of insulating material and closing said containers, each one of said nozzles being connected to a corresponding one of said containers and having an inner diameter of a few hundredths of millimeter, the ink having an electrical resistivity comprised between 15 and 50 ohm.cm and being in contact with a corresponding electrode, and a plurality of counterelectrodes each one located on said plate adjacent one of said nozzles and selectively energizable by a voltage pulse such as to produce both an ion discharge between the counter electrode and the meniscus of ink in the respective nozzle and a resistive current in the ink of the nozzle as to cause the expulsion of ink particles through the nozzle, said nozzles being disposed in said plate as to print in parallel in different zones of the paper.

4,536,777

LIQUID JET RECORDING APPARATUS

Haruyuki Matsumoto, Tokyo, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 18, 1984, Ser. No. 601,357
Claims priority, application Japan, Apr. 21, 1983, 58-70823
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—140 PD 5 Claims



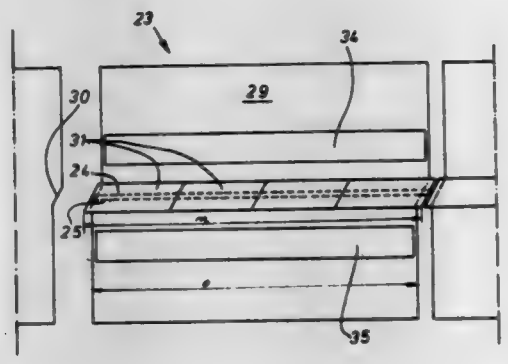
1. A liquid jet recording apparatus comprising a liquid jet section including orifice means for discharging a liquid to form flying droplets and liquid path means communicating with said orifice means and having as a part an energy acting portion for causing the energy to act on the liquid to form said flying droplets, and a liquid chamber communicating with said liquid path means and containing the liquid supplied to said liquid path means, characterized by an air vent path formed in a member defining said liquid jet section and used to extract air from said liquid chamber, said air vent path having an inlet opened to said liquid chamber and an outlet formed on said liquid jet section, and said air vent path being defined by a groove formed on a plate by etching, on which plate groove means defining said liquid path means is similarly formed.

4,536,778

RECORDING APPARATUS WITH MODULAR LED ARRAY OF HIGHER PRODUCTION YIELD

Lucien A. De Schamphelaere; Etienne M. De Cock, both of Edegem; Werner E. De Bondt, Temse; Freddy M. Librecht, Boechout; Gerard J. Boeve, Edegem, and Willy F. Van Peteghem, Berchem, all of Belgium, assignors to AGFA-Gevaert N.V., Mortsel, Belgium

Filed Oct. 26, 1982, Ser. No. 436,671
Claims priority, application United Kingdom, Feb. 19, 1982, 8205024
Int. Cl.³ G01D *15/14*
U.S. Cl. 346—160 8 Claims



1. In a recording apparatus for linewise recording information on a photoreceptor moving along a fixed path, said apparatus comprising a recording head carrying a multiplicity of addressable and energisable pointlike radiation emitters arranged in at least one row having its length extending transversely of the path of the photoreceptor, said row being composed by the assembly in generally a line of a plurality of chip means each carrying a plurality of radiation emitters disposed in uniformly spaced apart relation in at least one row, and electrical control means for said radiation emitters, the improvement wherein said recording head comprises an elongated metal bar onto which a plurality of modules are fitted in good heat-conductive relationship, each such module comprises an electrically conductive base plate onto which a plurality of said emitter chip means is mounted generally in said line in generally abutting relation in good electrical and heat-conductive relationship, with the emitters thereof aligned in at least one extended row, the length (o) of each base plate parallel to the axis of the emitter row thereon being smaller than the aggregate length (n) of the chip means thereon so that on both ends of the base plate an end of a terminal chip means in said line extends beyond the boundary of the base plate, the spacing of the end edges of each chip means from the outermost radiation emitter thereon and the spacing of adjacent modules carrying said chip means being sufficiently close that at least one uninterrupted overall row of equally spaced radiation emitters is formed from the emitters of said modules along the length of the recording head, and said electrical control means is in the form of at least one elongated control chip mounted on each such module in common to each such extended row of emitters thereon, said control chip running parallel with its associated extended row of radiation emitters and being provided with a plurality of output terminals that are each connected by wire bonding to a corresponding radiation emitter, said control chip comprising integrated shift register means, latch register means and drivers, and also an input terminal for the serial-in loading of the shift register means and an output terminal for connection of the shift register means to the input terminal of the shift register means of the control chip of the next module.

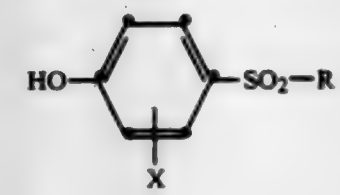
4,536,779

HEAT-SENSITIVE RECORDING MATERIAL

Hermann Nachbur, Reinach, and Christel Tempel, Riehen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Dec. 1, 1983, Ser. No. 557,013
Claims priority, application Switzerland, Dec. 10, 1982, 7215/82
Int. Cl.³ B41M *5/18, 5/22*
U.S. Cl. 346—212 10 Claims

1. A heat-sensitive recording material which comprises in its color reactant system, as developer for the color former, at least one aluminum or zinc salt of a phenolsulfonyl compound of the formula



(1)

wherein

R is C_1–C_{12}alkyl, cycloalkyl, phenyl, benzyl, or phenyl which is substituted by halogen, lower alkyl, lower alkoxy, nitro or methylenedioxy, and

X is hydrogen, halogen, lower alkyl or lower alkoxy.

4,536,780

SUPERCONDUCTIVE TUNNELING JUNCTION RESISTOR AND METHOD OF FABRICATION

Lawrence N. Smith, Lexington, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,603
Int. Cl.³ H01L *39/22, 39/12*
U.S. Cl. 357—5 21 Claims

1. A junction device comprising:

(a) a substrate,

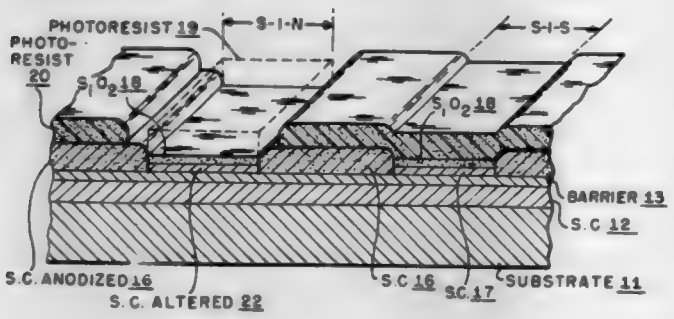
(b) a base layer of non-superconductive material,

(c) a first layer of superconductive material, characterized by a superconducting transition temperature and having a

thickness substantially less than the coherence length of said material,

(d) a second layer of superconductive material, superposed with respect to said first layer, and also characterized by a superconducting transition temperature, and

(e) a barrier between said first and second layers for conducting tunneling current therebetween,



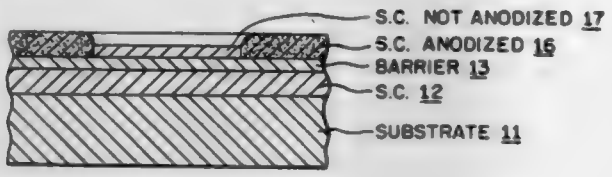
(f) said base layer deposited in at least one limited region so that said region remains in a substantially normal state and said junction device has a predetermined resistance when cooled to said superconducting transition temperature of said superconductive layer.

4,536,781

FABRICATION OF SUPERCONDUCTIVE TUNNELING JUNCTION RESISTORS AND SHORT CIRCUITS BY ION IMPLANTATION

Harry Kroger, Sudbury, Mass., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 22, 1983, Ser. No. 468,604
Int. Cl.³ H01L *39/22, 39/12*
U.S. Cl. 357—5 **13 Claims**



1. In a junction device including:

a first layer of superconductive material, characterized by a superconducting transition temperature; a second layer of conductive material, superposed with respect to said first layer; a barrier layer between said first and second layers for conducting tunneling current therebetween; and means for providing at least one limited region wherein said junction device has a predetermined ohmic resistance when cooled to said superconducting transition temperature; said means comprising:

chemical impurities implanted into at least a portion of said barrier layer.

4,536,782

FIELD EFFECT SEMICONDUCTOR DEVICES AND METHOD OF MAKING SAME

Dale M. Brown, Schenectady, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 22, 1983, Ser. No. 534,898
Int. Cl.³ H01L *29/78*
U.S. Cl. 357—23.1 **8 Claims**

1. A field effect transistor comprising:

a substrate of semiconductor material of one conductivity type having a planar surface,

a recess in said planar surface of said substrate, said recess having first and second sides and a base therebetween,

a first insulating spacer including a first side, a second side, a bottom base and a top base,

the first side of said first spacer having a height equal to the height of the first side of said recess and contiguous therewith,

the bottom base of said first spacer having a length less than one-half of the length of the base of said recess and contiguous therewith,

the top base of said first spacer being substantially coplanar with said planar surface,

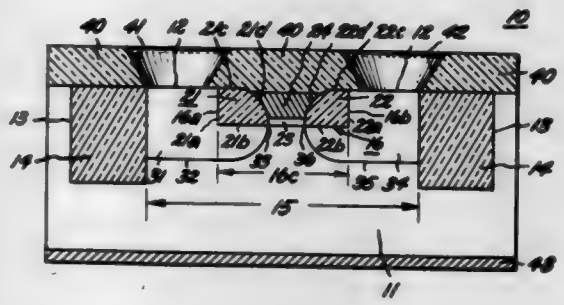
a second insulating spacer including a first side, a second side, a bottom base, and a top base,

the first side of said second spacer having a height equal to the height of the second side of said recess and contiguous therewith,

the bottom base of said second spacer having a length less than one-half the length of the base of said recess and contiguous therewith,

the top base of said second spacer being substantially coplanar with said planar surface,

a thin insulating member having a bottom surface contiguous with the base of said recess between said first and second insulating spacers, a pair of sides, each contiguous with a respective one of said second sides of said first and second insulating spacers,



a conductive member having a bottom base contiguous with the top surface of said thin insulating member, a top base extending between the second sides of said first and second insulating spacers, a first side contiguous with the second side of said first insulating spacer and a second side contiguous with the second side of said second insulating spacer,

a first region of opposite conductivity type in said substrate adjacent said planar surface and said first insulating spacer, said first region forming a first PN junction with said substrate, said first PN junction having an edge in the base of said recess and adjacent the bottom surface of said thin insulating member and the bottom base of said first insulating spacer,

a second region of opposite conductivity type in said substrate adjacent said planar surface and said second insulating spacer, said second region forming a second PN junction with said substrate, said second PN junction having an edge in the base of said recess and adjacent the bottom surface of said thin insulating member and the bottom base of said second insulating spacer.

4,536,783

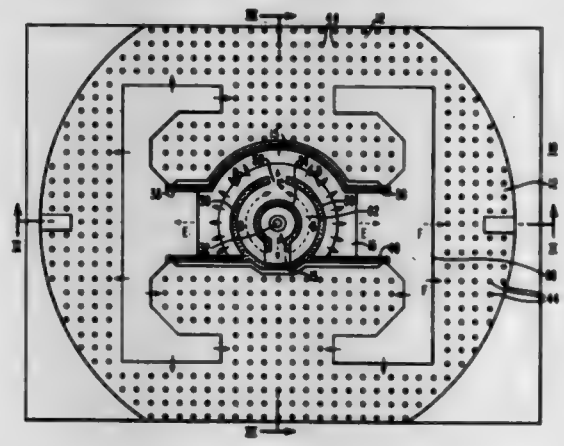
HIGH DI/DT, LIGHT-TRIGGERED THYRISTOR WITH ETCHED MOAT CURRENT LIMITING RESISTORS

Donald L. Miller, Penn Township, Westmoreland County, and John X. Przybysz, Penn Hills Township, Allegheny County, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 14, 1983, Ser. No. 550,849
Int. Cl.³ H01L *29/74*
U.S. Cl. 357—38 **8 Claims**

1. A light-triggered thyristor having a top surface, a bottom surface and an end portion extending therebetween, the thyristor being comprised of a first auxiliary cathode emitter region, a second auxiliary cathode emitter region, a main cathode emitter region, a cathode base region, an anode base region and an anode emitter region, a p-n junction between adjacent

regions, an optical well disposed in a central portion of the top surface of the thyristor and extending into only said cathode base region, three moats disposed in the top surface of the



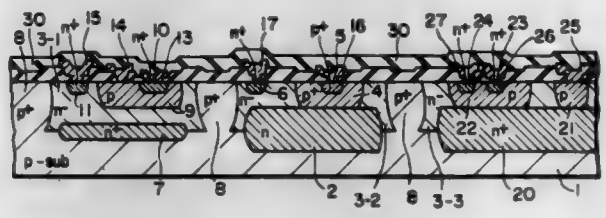
thyristor disposed about and spaced apart from said optical well, said moats each extending only into said cathode base region, said moats defining, within said cathode base region two current limiting resistors.

4,536,784

SEMICONDUCTOR DEVICE HAVING A JUNCTION CAPACITANCE, AN INTEGRATED INJECTION LOGIC CIRCUIT AND A TRANSISTOR IN A SEMICONDUCTOR BODY

Shuzo Nagumo, Koganei; Setsuo Ogura, Kodaira, and Yukinori Kitamura, Mitaka, all of Japan, assignors to Hitachi, Ltd. and Hitachi Microcomputer Engineering Ltd., both of Tokyo, Japan

Continuation of Ser. No. 210,813, Nov. 26, 1980, abandoned.
This application Oct. 13, 1983, Ser. No. 541,445
Claims priority, application Japan, Nov. 28, 1979, 54-152925
Int. Cl.[3] H01L *27/04, 27/02, 29/92*
U.S. Cl. 357—48 **2 Claims**



1. A semiconductor device having a junction capacitance, an integrated injection logic circuit and a transistor in a semiconductor body, comprising:

a semiconductor layer of a first conductivity type which is formed on a semiconductor substrate of a second conductivity type opposite to said first conductivity type,

an isolation region which extends from a surface of said semiconductor layer to said substrate and which isolates said semiconductor layer into a first island region, a second island region, and a third island region,

a first semiconductor buried layer of said first conductivity type which is located between said first island region and said substrate, said first semiconductor buried layer having a higher impurity concentration than said first island region,

a second semiconductor buried layer of said first conductivity type which is located between said second island region and said substrate and which has an impurity concentration lower than that of said first semiconductor buried layer, said second semiconductor buried layer having a thickness greater than that of said first semiconductor buried layer,

a third semiconductor buried layer of said first conductivity type which is located between said third island region and said substrate, and which has an impurity concentration higher than that of said first buried layer,

a first semiconductor region of a second conductivity type which is selectively formed in said second island region and is contacted with said second semiconductor buried layer,

second and third semiconductor regions of said second conductivity type which are formed in said third island region in a manner to be spaced from each other,

a fourth semiconductor region of said first conductivity type which is formed in said second semiconductor region,

a fifth semiconductor region of said second conductivity type which extends from a surface of said first island region toward but is separated from said first buried layer, and

a sixth semiconductor region of said first conductivity type which is formed in said fifth semiconductor region,

a junction capacitance being formed by a PN junction between said first semiconductor region and said second semiconductor buried layer,

an integrated injection logic circuit being constructed of said third semiconductor buried layer, said third island region, said second semiconductor region, said third semiconductor region and said fourth semiconductor region,

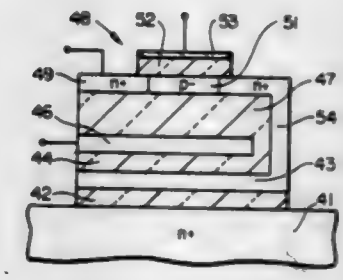
a transistor being constructed of said first island region, said fifth semiconductor region and said sixth semiconductor region, and wherein said first semiconductor buried layer contains a first impurity for defining said first conductivity type, said second semiconductor buried layer contains a second impurity for defining said first conductivity type and said third semiconductor buried layer contains said first and second impurities.

4,536,785

ONE TRANSISTOR DYNAMIC RANDOM ACCESS MEMORY

James F. Gibbons, 320 Tennyson Ave., Palo Alto, Calif. 94301

Filed Aug. 26, 1983, Ser. No. 526,912
Int. Cl.[3] H01L *29/34*
U.S. Cl. 357—54 **6 Claims**



1. A dynamic random access memory cell comprising

a substrate;

a first insulating high dielectric layer having one surface on one surface of said substrate;

a conductive storage electrode on the other surface of said first insulating layer;

a second insulating layer having one surface on said storage electrode;

a capacitory plate on the other surface of said second insulating layer opposite and spaced from said storage electrode whereby said capacitor plate, storage electrode, substrate and insulating plates form a storage capacitor;

an oxide layer having one surface on said plate;

an access transistor including a thin layer of semiconductor material including spaced regions of one conductivity type separated by a region of opposite conductivity type and means for inducing in inversion layer in said region of opposite conductivity type, said transistor carried by the other surface of said oxide layer opposite the capacitor plate; and,

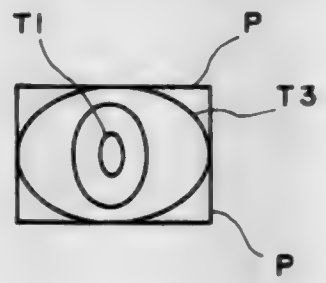
means for electrically connecting said transistor to said storage electrode.

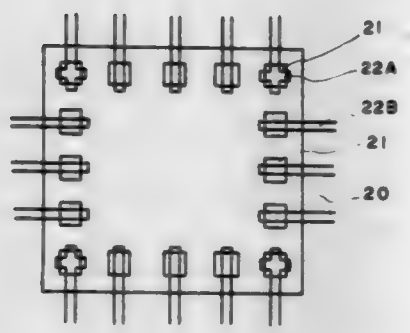
4,536,786

LEAD ELECTRODE CONNECTION IN A SEMICONDUCTOR DEVICE

Masao Hayakawa, Kyoto; Takamichi Maeda, and Masao Kumura, both of Nara, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 826,635, Aug. 22, 1977, abandoned.
This application May 17, 1979, Ser. No. 39,820
Claims priority, application Japan, Aug. 23, 1976, 51-113137[U]
Int. Cl.³ H01L *23/48, 29/44, 29/52*
U.S. Cl. 357—68 **9 Claims**





1. A semiconductor device comprising a plurality of external leads to be bonded to a plurality of contacts by the application of a heat-bonding tool thereto, said heat-bonding tool exhibiting a nonuniform heat distribution, gradient when applied to said plurality of contacts and said plurality of external leads to be heat-bonded thereto, said plurality of contacts and external leads selectively having varying sizes and areas for varying the bonding area therebetween, thereby achieving effective bonding despite said nonuniform heat distribution of said heat-bonding tool, said variation in the bonding area between the contacts and external leads compensating for the variations in said heat distribution thereby establishing a substantially uniform bonding strength between said contacts and said external leads.

4,536,787

DEMODULATED CHROMINANCE SIGNAL FILTER WITH PEAKED RESPONSE

Wesley W. Murphy, III, and Saiprasad V. Naimpally, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Apr. 28, 1983, Ser. No. 489,302
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—38 **20 Claims**

13. In a system for processing a color television signal including a chrominance information component exhibiting a first amplitude level over a first frequency range and a second amplitude level lower than said first amplitude level over a second frequency range, frequency selective apparatus for imparting to said chrominance component a given amplitude-versus-frequency response including a peaked amplitude response over said second frequency range, comprising:

a first resonant section comprising an inductance and capacitance;

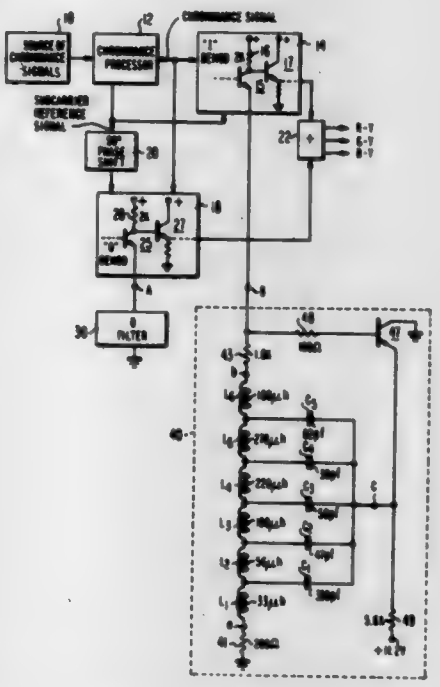
a second resonant section arranged in cascade with said first section and comprising an inductance and capacitance;

an intermediate resonant section coupled between and arranged in cascade with said first and second sections and comprising an inductance and capacitance;

a first resistor for terminating said first section;

a second resistor for terminating said second section; wherein

said first and second terminating resistors exhibit substantially different values;



said first resonant section presents to said first resistor an impedance which approximates the value of said first resistor, at a frequency within said second frequency range;

said second resonant section presents to said second resistor an impedance which approximates the value of said second resistor, at a frequency within said second frequency range; and

said frequency selective apparatus presents a DC impedance to said signal path primarily determined by the values of said first and second terminating resistors.

4,536,788

DEMODULATED CHROMINANCE SIGNAL FILTER USING IMPEDANCE MISMATCHED SECTIONS

Saiprasad V. Naimpally, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Apr. 26, 1983, Ser. No. 488,813
Int. Cl.³ H04N *9/535*
U.S. Cl. 358—38 **23 Claims**

1. In a video signal processing system including a signal path for conveying video signals, frequency selective apparatus coupled to said signal path for translating signals conveyed by said signal path, comprising:

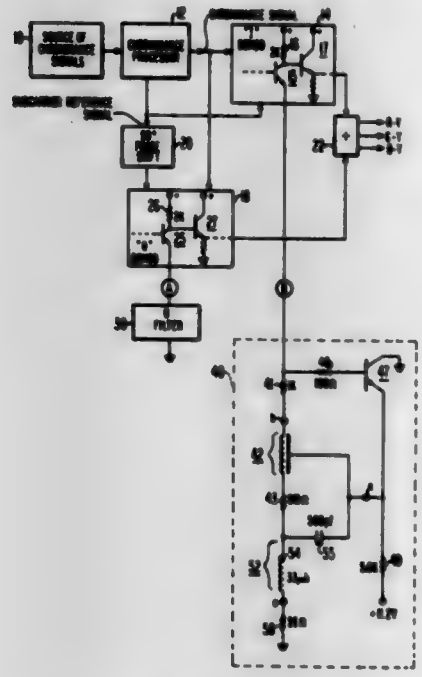
a first frequency selective section including parameters determinative of the frequency response of said first section;

a second frequency selective section including parameters determinative of the frequency response of said second section;

resistance means for passively connecting said first section to said second section, said resistance means being of a value to substantially preclude mutual interaction between the parameters of said first and second sections over a given range of signal frequencies within the passband of signals to be translated; and

means for exciting said first and second sections with signals

from said signal path to modify the amplitude-versus-frequency response of signals conveyed by said signal path,



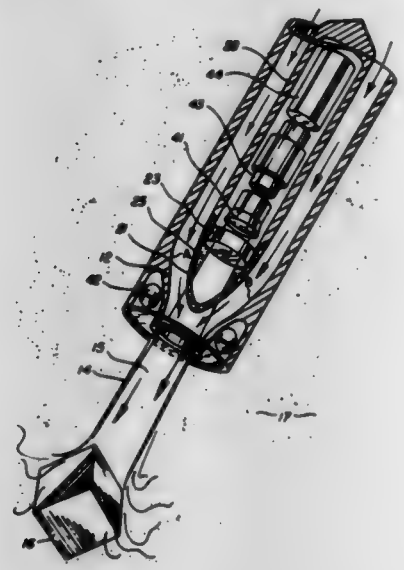
in accordance with the amplitude-versus-frequency responses of said first and second sections.

4,536,789

APPARATUS FOR OBSERVATION IN A HIGH VELOCITY LIQUID STREAM

Paul C. Bains, 1075 Goldstream Ave., Victoria, British Columbia, Canada (V9B 2Y7)

Filed Aug. 8, 1983, Ser. No. 521,364
Claims priority, application Switzerland, Mar. 3, 1983, 422791
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—99 **28 Claims**



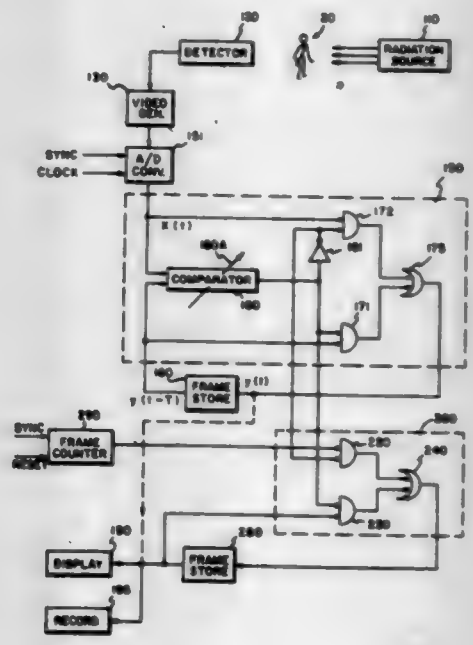
1. An apparatus comprising radiation receiving means for observing an object when the radiation receiving means is in a clear liquid stream flowing towards the object, the radiation receiving means comprising an observation window and cavitation prevention means disposed adjacent the observation window downstream thereof, the cavitation prevention means substantially assuming the shape of a zone of cavitational probability of a downstream end of the radiation receiving means when in a liquid stream of a selected velocity at which cavitation is possible, said cavitation prevention means thereby preventing cavitation when the liquid stream passes said downstream end of the radiation receiving means at or below the selected velocity.

4,536,790

APPARATUS AND METHOD FOR FLUOROSCOPIC IMAGING OF A BODY

Robert A. Kruger, Sandy, Utah, and Wayne Bateman, Sunnyvale, Calif., assignors to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Nov. 26, 1982, Ser. No. 444,614
Int. Cl.³ H04N *7/18*
U.S. Cl. 358—111 **17 Claims**



1. A method for generating a processed video image of a fluid-carrying vessel in a body, comprising the steps of:

injecting a contrast medium to pass into the vessel;

irradiating the body;

detecting radiation which passes through the body and generating a series of frames of electronic video signals that represent an image of the radiation transmission characteristics of the body at a series of successive times, each frame including an array of pixels, the video signal level at each pixel being determined by the radiation transmissivity of an elemental region of the body;

determining the time at which the video signal level at each pixel is indicative of maximum opacification of the elemental body region corresponding to the pixel;

storing, for each pixel, a time-representative value which depends on the determined time; and

displaying a processed video image which has a video parameter that depends, at each pixel, on the time-representative value for the pixel.

4,536,791

ADDRESSABLE CABLE TELEVISION CONTROL SYSTEM WITH VIDEO FORMAT DATA TRANSMISSION

John G. Campbell, Irving; Carl F. Schoeneberger; Allan B. Bundens, both of Carrollton; Richard M. Fogle, Bedford, and John R. Lemburg, Richardson, all of Tex., assignors to Tocom, Inc., Dallas, Tex.

PCT No. PCT/US81/00414, § 371 Date Nov. 27, 1981, § 102(e) Date Nov. 27, 1981, PCT Pub. No. WO81/02961, PCT Pub. Date Oct. 15, 1981
Continuation of Ser. No. 348,937, Nov. 27, 1981, abandoned, which is a continuation-in-part of Ser. No. 135,987, Mar. 31, 1980, abandoned. This PCT application Mar. 31, 1981, Ser. No. 617,137
Int. Cl.³ H04N *7/16*; H04K *1/04*
U.S. Cl. 358—122 **8 Claims**

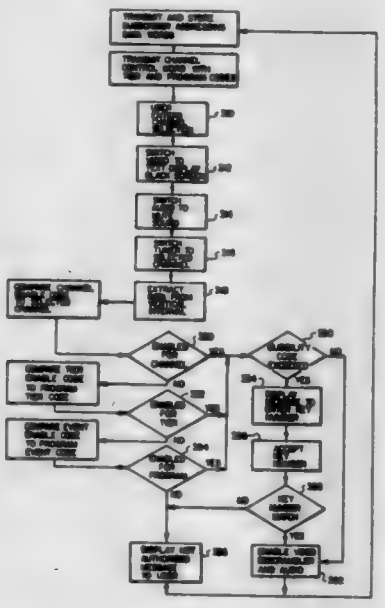
1. In a television communications system having a central station for transmitting a plurality of television signals at different frequency channels to a plurality of user stations remote from said central stations, each having a tuner for selecting one of said television signals, a method of utilizing said central

station to limit access of said user stations to only certain ones of said television signals, comprising:

generating a plurality of category codes at said central station to limit user access to predetermined categories of said television signals, one of said category codes being generated for each user station, each said category code including predetermined enabling data required by the central station for said user station to access said predetermined categories of television signals;

transmitting each of said category codes from the central station to its respective user station to precondition each user station by authorization from the central station to selectively access said predetermined categories of television signals;

generating a plurality of program codes at said central station to limit user access to said predetermined categories



of television signals, one of said program codes being generated for each television signal, each of said program codes including predetermined control data for enabling access to one of said television signals;

transmitting one of said program codes with each of said television signals to each of said user stations being tuned to receive one of said television signals;

comparing the control data of said program code to the enabling data of the category code provided by the central station to each user station; and

enabling only each user station which has a category code with enabling data corresponding to the control data of said program code, whereby said enabled user station can receive and process any said tuned television signal within a predetermined category of said television signals corresponding to said category code.

4,536,792

METHOD AND APPARATUS FOR TESTING A CRT DISPLAY UNDER BEAM DUTY CYCLE VARIATION

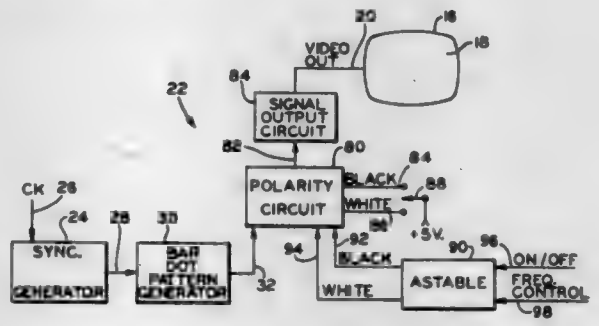
John H. Harshbarger, Xenia, Ohio, assignor to Visual Information Institute, Inc., Xenia, Ohio

Filed Nov. 23, 1983, Ser. No. 554,843
Int. Cl.³ H04N *7/02*
U.S. Cl. 358—139 **23 Claims**

1. A method of testing the geometry of a raster scan under beam duty cycle variation comprising:

generating by the electron beam of a cathode ray tube on the display screen thereof a pattern comprising a plurality of graphic elements defining a plurality of reference points on the screen, said graphic elements being one of a high intensity or low intensity level on a screen background of the other of a high intensity or low intensity level and wherein the graphic elements occupy a very low percentage of the scanned screen area and the background occupies a very high percentage of the scanned screen area,

reversing the polarity of the graphic elements and screen background to cause the background to be said one of the high intensity and low intensity levels and the graphic elements to be said the other of the high intensity and low intensity levels, and



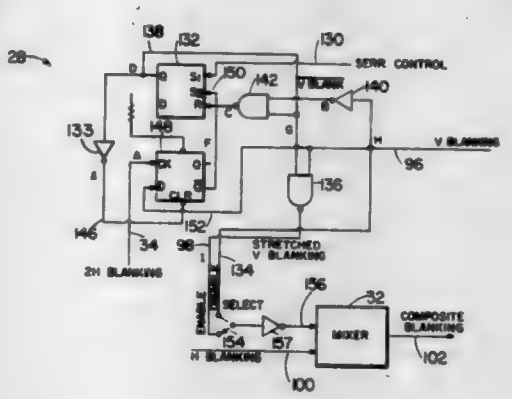
measuring the distance between the position on the screen of one of the reference points before polarity reversal and the position on the screen of said one reference point with the polarity reversed to determine the amount of deviation in display location caused by polarity reversal.

4,536,793

PULSE STRETCHING CIRCUIT FOR A RASTER DISPLAY

John H. Harshbarger, Xenia, and William M. Shores, Dayton, both of Ohio, assignors to Visual Information Institute, Inc., Xenia, Ohio

Filed Jan. 10, 1983, Ser. No. 456,851
Int. Cl.³ H04N *5/06*
U.S. Cl. 358—150 **16 Claims**

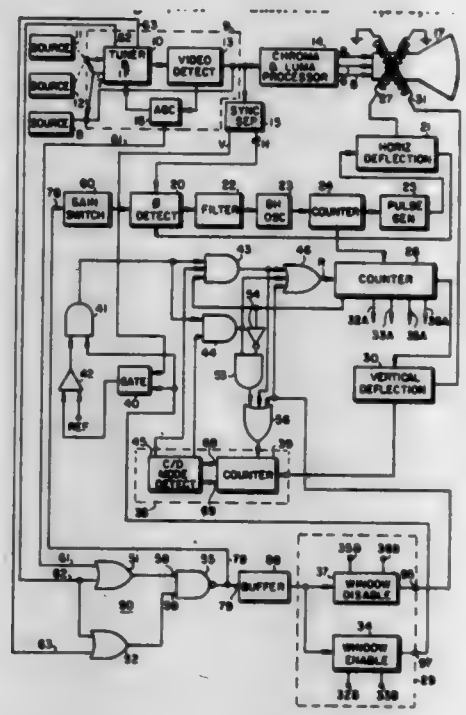


1. A system for controlling a raster beam generating one set of scan fields and another set of scan fields alternately time interleaved with the first set of fields, the system comprising: means for developing a plurality of time sequential horizontal rate control pulses synchronized with the horizontal sweep of the beam and occurring at a frequency at least as high as the frequency of the horizontal sweep, means for developing a plurality of time sequential vertical rate control pulses occurring at the same rate as the sets of scan fields, the vertical rate pulses having a lower frequency than the horizontal rate pulses, the vertical rate pulses normally having a shorter duration in one set of fields than the vertical rate pulses in the other set of fields, and pulse stretching means responsive to the horizontal and vertical rate pulses for increasing the duration of the shorter duration vertical rate pulses in the one set of fields to equal the duration of the vertical rate pulses in the other set of fields.

4,536,794
TELEVISION RECEIVER HAVING DIFFERENT RECEIVER SYNCHRONIZING CHARACTERISTICS IN RESPONSE TO TELEVISION SIGNAL

Ronald E. Fernsler, and Sanjay R. Vinekar, both of Indianapolis, Ind., assignors to RCA Corporation, Princeton, N.J.

Filed Jun. 30, 1982, Ser. No. 394,038
Int. Cl.³ H04N 5/04, 3/18
U.S. Cl. 358—158 16 Claims



1. A television receiver comprising:

means for receiving picture information signals from first and second different signal source types incorporating means responsive to tuner operation for producing a plurality of signals representative of respective features associated with said signal source types;

logic means responsive to said plurality of signals for identifying the signal source type providing said picture information signals;

a receiver deflection system; and

receiver synchronizing means coupled to said receiving means and said deflection system for synchronizing operation of said deflection system with respect to said picture information signals, said receiver synchronizing means coupled to said logic means and operating in a first mode in response to identification of said first signal source type and operating in a second mode in response to identification of said second signal source type.

4,536,795
VIDEO MEMORY DEVICE

Akira Hirota, Chigasaki; Hiroyuki Miyahara, Yokohama, and Yoshiteru Kosaka, Zushi, all of Japan, assignors to Victor Company of Japan, Ltd., Japan

Filed Feb. 4, 1983, Ser. No. 463,934
Claims priority, application Japan, Feb. 4, 1982, 57-16647; Feb. 4, 1982, 57-16648; Feb. 4, 1982, 57-16649; Feb. 4, 1982, 57-16650
Int. Cl.³ H04N 5/14, 3/14
U.S. Cl. 358—160 8 Claims

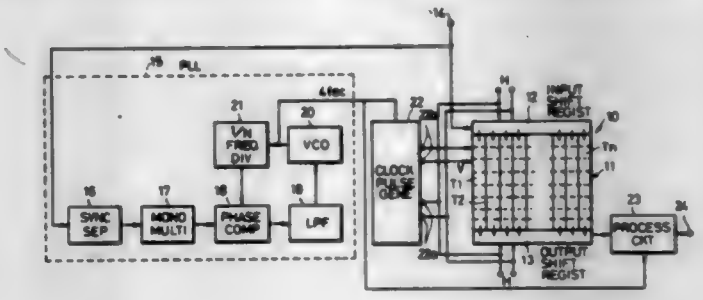
1. A video memory device comprising:

an analog memory part in which memory elements are arranged in a matrix form with a plurality of rows and a plurality of columns for storing an input analog video signal including a time base fluctuation component, the memory elements of said analog memory part comprising transfer elements for simultaneously transferring signals in each column to a succeeding row in parallel for each of the rows;

an input circuit for applying the input analog video signal to the analog memory part and for causing the analog memory part to store the input analog video signal, said input circuit comprising an input shift register for simultaneously transferring signals in each column to said analog memory part in parallel after serially transferring the input analog video signal for each of said columns;

an output circuit for obtaining an analog video signal delayed by a predetermined delay time from said analog memory part, said output circuit comprising an output shift register for serially transferring signals in each column transferred in parallel from said analog memory part and producing the analog video signal delayed by said predetermined delay time;

a clock pulse generator for generating and applying a clock pulse for horizontal transfer to said input shift register and



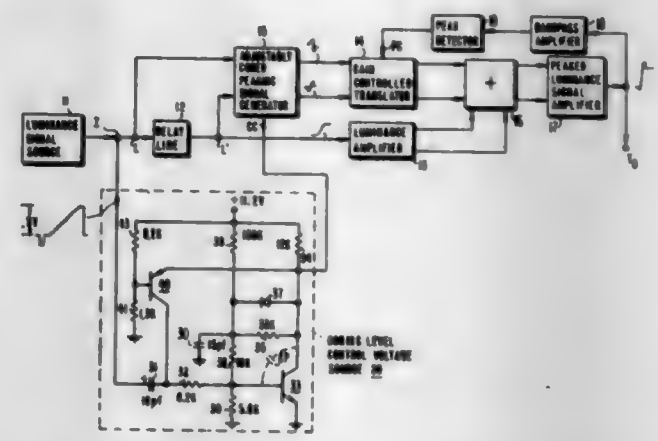
said output shift register, and for generating and applying a clock pulse for vertical transfer to said analog memory part; and

a phase locked loop including separating means for separating a horizontal synchronizing signal from said input analog video signal, a phase comparator supplied with the separated horizontal synchronizing signal, and a voltage controlled oscillator variably controlled of its oscillation frequency by an output error signal of said phase comparator for supplying an oscillation output to said phase comparator, said output of said voltage controlled oscillator being also supplied to said clock pulse generator to cause said clock pulse generator to generate said clock pulses.

4,536,796
NON-LINEAR DYNAMIC CORING CIRCUIT FOR VIDEO SIGNALS

Wayne E. Harlan, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Aug. 23, 1983, Ser. No. 525,682
Int. Cl.³ H04N 5/14, 5/21
U.S. Cl. 358—166 6 Claims



1. In a video signal processing system including a source of video signals representative of image content between dark and bright extremes, a dynamic signal coring circuit comprising:

means, coupled to said source, for developing a cored version of a signal representative of the high frequency content of said video signals in response to a coring control

signal applied to a control input of said developing means; and

control means, with an input coupled to said source and an output coupled to said control input of said developing means, for providing to said control input a control signal in accordance with the magnitude of video signals from said source, said control signal exhibiting a sense for causing said developing means to produce a greater amount of coring for video signals representative of dark image content than for video signals representative of bright image content; wherein said control means comprises

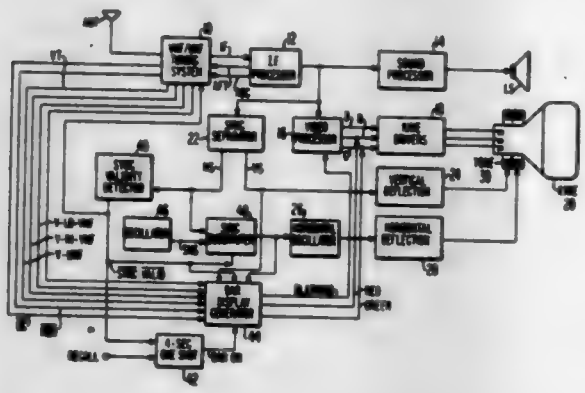
signal translating means responsive to video signals from said source and exhibiting a non-linear control characteristic for producing at an output thereof said control signal with one control characteristic over a first range of video signal levels betwen a bright image extreme and a threshold level in the direction of a dark image extreme, and a different control characteristic over a second range of video signal levels between said threshold level and said dark image extreme for restricting the amount of coring produced as said dark image extreme is approached.

4,536,797

TELEVISION RECEIVER WITH AUXILIARY ON-SCREEN DISPLAY

Robert J. Maturo, Brick; Danny Chin, Plainsboro, and John G. N. Henderson, Princeton, all of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Oct. 12, 1983, Ser. No. 541,075
Int. Cl.[3] H04N *5/44, 5/22*
U.S. Cl. 358—192.1 4 Claims



1. In a television receiver including tuning means comprising a channel selector operable for selectably tuning said receiver from channel to channel; video signal processing means for processing video signals received from said tuning means; and image display means for reproducing on a viewing screen thereof an image in response to signals, including video signals from said video processing means, applied thereto, apparatus comprising:

a source of auxiliary signal representative of character information for display by said image display means;

means coupled to said display means and to said tuning means for selectively blanking said display means to produce a uniformly blanked screen display when said receiver is not tuned to a channel containing a predetermined amount of video information as said receiver is being tuned through a number of channels; and

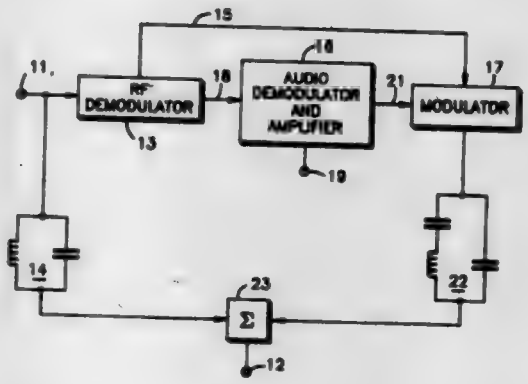
means for coupling said auxiliary signal to said display means for enabling said character information to be superimposed on said blanked screen display.

4,536,798

VOLUME CONTROL FOR CATV AND METHOD THEREFOR

Sydney J. Reid, Jr., Tempe, and Fredrick Zlotnick, Scottsdale, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Jun. 20, 1983, Ser. No. 506,152
Int. Cl.[3] H04N *5/62, 7/16*
U.S. Cl. 358—197 4 Claims



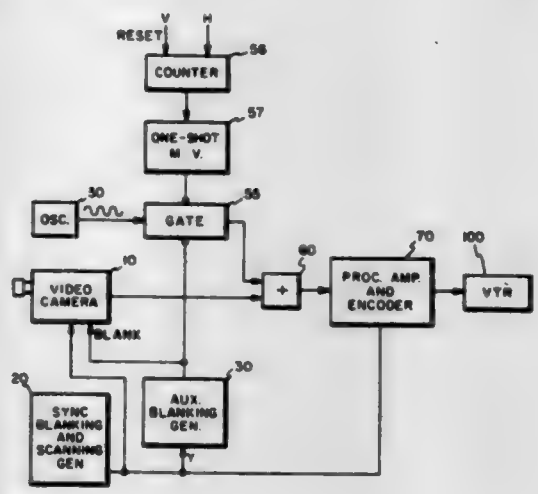
1. Volume control for a television pre-selector tuning system having an input terminal and an output terminal, comprising: a sound carrier demodulator coupled to the input terminal for demodulating an intercarrier sound signal from an RF input signal, the sound carrier demodulator providing an intercarrier sound signal output and an RF reference output; an audio demodulator coupled to the sound carrier demodulator for receiving the intercarrier sound signal and for providing a detected audio output; means for controlling amplitude coupled to the audio demodulator for receiving the detected audio and for controlling amplitude of the detected audio; a modulator coupled to the means for controlling amplitude and coupled to the RF reference output for remodulating the detected audio with the RF reference output and providing a remodulated output; and a means for summing coupled to the remodulating output and the input terminal for summing the remodulated output, which contains the amplitude controlled audio, with a video portion of the RF input.

4,536,799

TELEVISION METHOD AND APPARATUS

Renville H. McMann, Jr., New Canaan, Conn., assignor to Thomson-CSF Broadcast, Inc., Stamford, Conn.

Filed Sep. 29, 1982, Ser. No. 427,899
Int. Cl.[3] H01N *5/38*
U.S. Cl. 358—219 16 Claims



1. A television system, comprising:

a television camera;

means for generating periodic field scanning signals;

means for applying said field scanning signals to said television camera;

means for disabling the scanning beam of said television camera during a predetermined non-unity fraction of a series of field times so that in the output of said camera a regular video field is followed by at least one blanked-out video field;

means responsive to said disabling means for inserting an identifying signal in each blanked-out field;

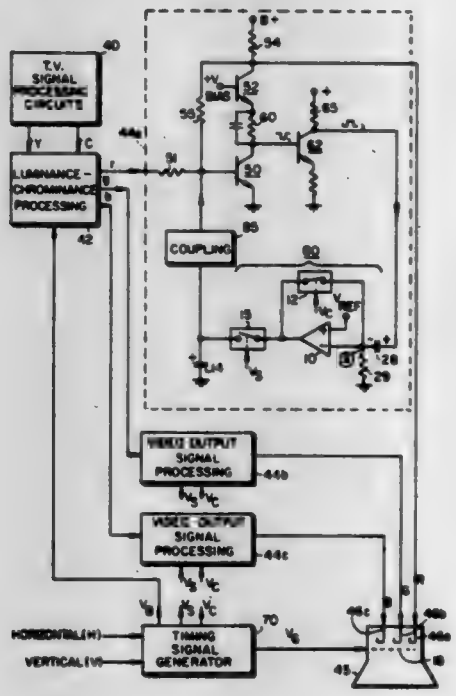
means for generating, during occurrence of each blanked-out field, a substitute video field derived from a previously occurring regular video field.

4,536,800

ADDITIVE PULSE SAMPLING CIRCUIT

Robert P. Parker, Indianapolis, Ind., assignor to RCA Corporation, Princeton, N.J.

Filed Nov. 30, 1982, Ser. No. 445,513
Int. Cl.³ H04N *5/68, 9/16*
U.S. Cl. 358—243 **19 Claims**



1. In a signal processing system, apparatus operative during a reference interval and a subsequent sampling interval for sampling the magnitude of an input signal, comprising:

sampling means for providing an output signal in accordance with the magnitude of input signals supplied thereto;

input circuit means for coupling said input signal to an input of said sampling means;

means for selectively coupling a bias current derived from a reference source to said input circuit means via a reference path during said reference interval to establish a sampling reference bias condition, and for decoupling said reference path at the end of said reference interval; and

passive network means associated with said input circuit means for self-generating an auxiliary reference signal at said input of said sampling means in response to said reference path being decoupled at the end of said reference interval, said auxiliary reference signal exhibiting a magnitude and sense for substantially negating the response of said sampling means to said input signal when the magnitudes of said input signal and said auxiliary reference signal exhibit a prescribed mutual relationship.

4,536,801

VIDEO DATA COMPRESSION SYSTEM AND METHOD

John Torkelson, Dallas, and Weldon A. Sanders, Jr., Seagoville, both of Tex., assignors to BancTec, Inc., Dallas, Tex.

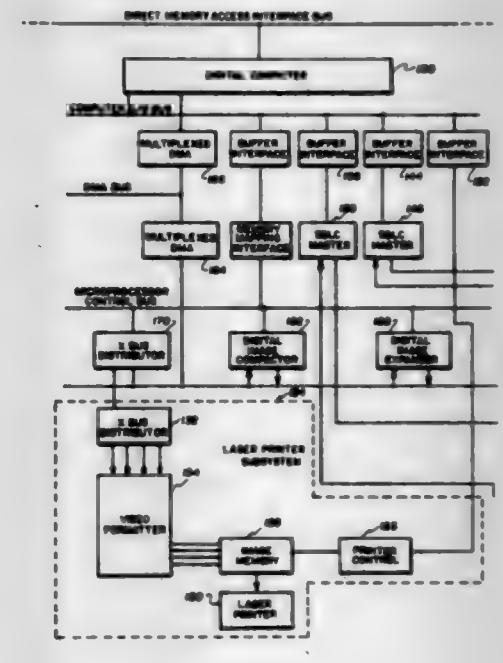
Filed Oct. 1, 1981, Ser. No. 307,686
Int. Cl.³ H04N *1/05*
U.S. Cl. 358—280 **3 Claims**

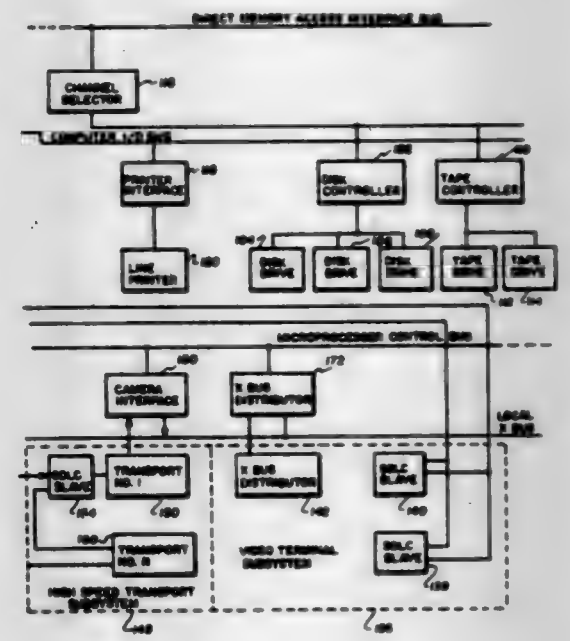
1. A video data compression system for data compression of signals representative of the video image of a document, said system comprising:

(a) means for continuously transporting said document along a first directional path;

(b) means for video scanning said document during said continuous transporting and in a direction transverse to said first directional path, said video scanning means producing coded signals respectively representative of black and white sections of the image of said document;

(c) said video scanning means further comprising means for producing a plurality of consecutive scans in said transverse direction;





(d) means for comparing the coded signals of one scan with the coded signals of a prior scan to compare the nature of adjacent ones of said sections in an axis parallel to said first directional path;

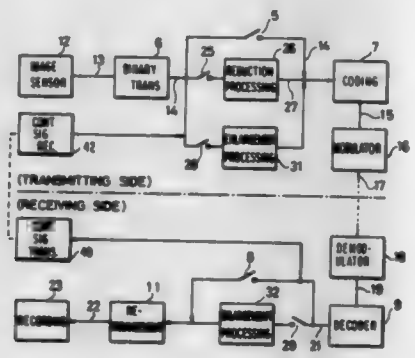
(e) means for generating unique redundancy codes indicative of unique relationships resulting from said comparison of adjacent sections; and

(f) means for deleting from memory those coded signals indicative of the sections having the said unique relationships and replacing said deleted signals with said unique redundancy codes.

4,536,802
FACSIMILE APPARATUS

Masami Kurata, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jan. 4, 1983, Ser. No. 455,459
Claims priority, application Japan, Jan. 8, 1982, 57-920
Int. Cl.[3] H04N *1/04*
U.S. Cl. 358—287 13 Claims



1. A facsimile apparatus in which a image of an original document is transmitted and recorded, comprising:

a transmitting unit, said unit performing a sequential scanning operation in a main scanning direction on said document to produce an analog picture signal indicative of the document image;

means to convert said analog picture signal into a digital picture signal;

a receiving unit, said unit receiving said digital picture signal and recording said image of said document,

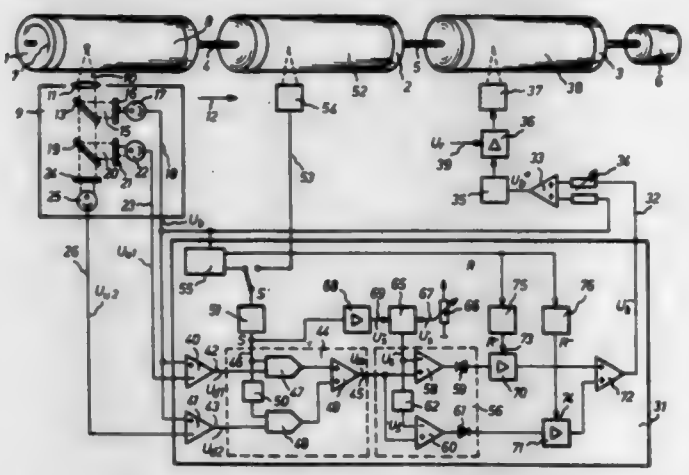
said receiving unit producing a first control signal when said recorded image is to be expanded with respect to said document image and a second control signal when said recorded image is to be reduced with respect to said document image;

wherein said receiving unit is set to digitally expand at least a portion of said picture signal upon generation of said first control signal, and said transmitting unit is set to digitally reduce said picture signal upon reception of said second control signal.

4,536,803
METHOD AND APPARATUS FOR INTENSIFYING CONTRAST IN PRINTING FORMATS

Eberhard Hennig, Ascheberg, Fed. Rep. of Germany, assignor to Dr. -Ing. Rudolf Hell GmbH, Fed. Rep. of Germany

Filed Jun. 24, 1983, Ser. No. 507,471
Claims priority, application European Pat. Off., Jul. 9, 1982, 82105964.9
Int. Cl.[3] H04N *1/40*
U.S. Cl. 358—299 19 Claims



1. A method for intensifying contrast during the recording of masters, wherein a master is opto-electronically scanned image-point-by-image-point and line-by-line in order to generate an image signal and a correction signal which is superimposed on the image signal for intensifying contrast, comprising the steps of

(a) generating a first unsharp masking signal (U_{u1}) by means of identifying the mean brightness of a first unsharp masking area (28) surrounding the respective image point on said master;

(b) generating a second unsharp masking signal (U_{u2}) by means of identifying the mean brightness of a second unsharp masking area (29) surrounding said respective image point and which is larger than said first unsharp masking area (28);

(c) forming a first differential signal (U_{d1}) from the image signal (U_b) and the first unsharp masking signal (U_{u1});

(d) forming a second differential signal (U_{d2}) from the image signal (U_b) and the second unsharp masking signal (U_{u2});

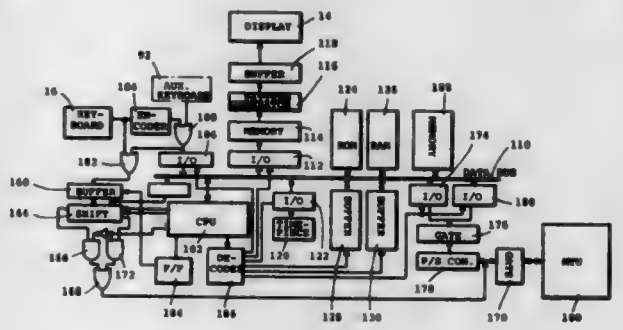
(e) mixing multiples of the first and second differential signals (U_{d1}; U_{d2}) with each other in a selectable ratio to obtain a mixed signal (U_m); and

(f) generating the correction signal (U_k) from said mixed signal (U_m).

4,536,804
DATA CONTROL SYSTEM FOR STORING DIGITAL AND AUDIO INFORMATION ON A MAGNETIC TAPE

Takeshi Kasubuchi, Nara; Takeo Hara, Ikoma, and Kaoru Ozawa, Yamatokoriyama, all of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Division of Ser. No. 218,361, Dec. 19, 1980, which is a continuation of Ser. No. 806,483, Jun. 14, 1977. This application Sep. 1, 1982, Ser. No. 413,882
Claims priority, application Japan, Jun. 14, 1976, 51-70017; Jun. 14, 1976, 51-70018; Sep. 10, 1976, 51-109012
Int. Cl.[3] G11B *5/00*
U.S. Cl. 360—4 2 Claims



1. An electronic information processing apparatus capable of operating in at least a data processing mode or calculator operation mode comprising:

keyboard means for introducing digital or calculator information into said information processing apparatus;

means for converting said digital information into analog information;

magnetic tape recorder means for recording said analog information received from said keyboard means onto a magnetic tape, said tape recorder means being capable of operating in a normal record mode, a playback mode, a fast forward and a fast rewind mode;

control circuit means for controlling the recordation of said analog information onto said magnetic tape in a predetermined format wherein said format includes,

a plurality of individual data sections having said information recorded therein, each of said data sections being separated from one another by a certain distance on said magnetic tape, and

a plurality of block number codes corresponding, respectively, to said plurality of data sections, said block number codes being indicative of the modes of operation of said information processing apparatus and the type of information recorded on said magnetic tape, each of said block

number codes including a first section, used in the normal record modes and the playback mode of said tape recorder means and a second section, directly adjacent said first section, used in the fast forward and fast rewind modes of said tape recorder means,

wherein said first section and said second section of said block number codes each include,

a first plurality of bits, and

a second plurality of bits directly adjacent to said first plurality of bits, said second plurality of bits being the same bits and containing the same information as said first plurality of bits,

whereby said block number codes on said magnetic tape are detectable by said magnetic tape recorder means when said magnetic tape is driven to travel in a forward direction and in a reverse direction,

wherein said first and second plurality of bits each include,

a bit for determining the type of said information being recorded on said magnetic tape, and

a bit to distinguish between a data write-in mode and a data read out mode of said electronic information processing apparatus; and

display means positioned behind said keys on said keyboard means for displaying indicia indicative of numeral keys and function keys required for introducing calculator information into said electronic information processing apparatus when said apparatus is operating in a calculator operation mode, and for displaying indicia indicative of numerals and characters required for introducing digital information into said apparatus when said information processing apparatus is operating in a data processing mode.

4,536,805

IMAGE SIGNAL RECORDING-REPRODUCING DEVICE

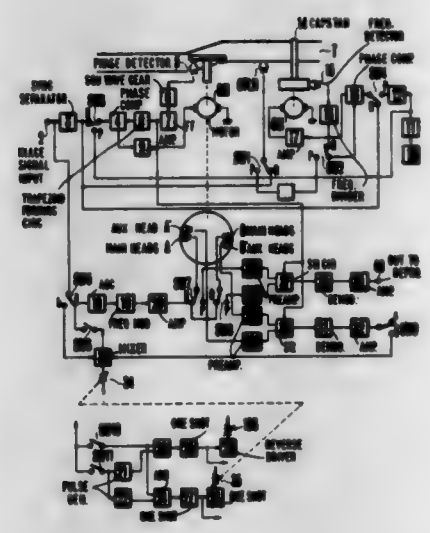
Masaya Maeda, Kanagawa, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Jul. 8, 1982, Ser. No. 396,317

Claims priority, application Japan, Jul. 15, 1981, 56-110518; Jul. 15, 1981, 56-110519; Jul. 15, 1981, 56-110520

Int. Cl.³ H04N *5/782*; G11B *27/00*

U.S. Cl. 360—14.1 **12 Claims**



1. A video signal recording and reproducing apparatus, comprising:

(a) a recording head for recording a first video signal on a recording medium;

(b) a reproducing means for tracing a track traced by the recording head after an elapse of a predetermined period of time and reproducing the first video signal;

(c) applying means for applying a second video signal;

(d) mixing means for mixing the first video signal with the second video signal to form a third video signal and for supplying the third video signal to the recording head.

4,536,806

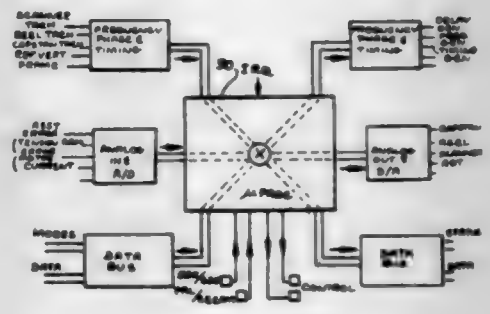
MICROPROCESSOR CONTROLLED MULTIPLE SERVO SYSTEM FOR A RECORDING AND/OR REPRODUCING APPARATUS

Kenneth Louth, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Filed Apr. 2, 1982, Ser. No. 364,725

Int. Cl.³ G11B *5/52, 15/46, 21/04*

U.S. Cl. 360—69 **16 Claims**



1. A microprocessor-controlled multiple servo system for an apparatus having a head which is rotated relative to a magnetic tape that is moved past the head to record and reproduce video information on the tape in discrete tracks, comprising:

a transducing head for recording and/or reproducing video information on a magnetic tape;

a head scanner servo system for rotating said transducing head during recording and/or reproducing of video information on the tape, said head scanner servo system including means for producing output pulses indicative of the rotational position and velocity of said head;

a servo system for controlling the longitudinal velocity of magnetic tape being transported past said head, said servo system including means for producing a signal indicative of the longitudinal tape velocity; and

a microprocessor which forms a component part of each of said servo systems, said microprocessor receiving said scanner servo system output pulses as timing signals and, in response thereto, determining the rotational position and velocity of said head and producing a control signal to regulate the position and velocity of said head, said microprocessor also being responsive to said timing signals to sample said signal from said longitudinal velocity controlling system and produce an additional control signal to regulate longitudinal tape velocity.

4,536,807

DISPLAY DEVICE FOR A MAGNETIC TAPE RECORDING AND/OR REPRODUCING APPARATUS

Hiroshi Kato, Chigasaki, and Hiromitsu Kubota, Kawasaki, both of Japan, assignors to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Oct. 26, 1983, Ser. No. 545,759

Claims priority, application Japan, Nov. 1, 1982, 57-192258; Nov. 1, 1982, 57-192260

Int. Cl.³ G11B *27/14*

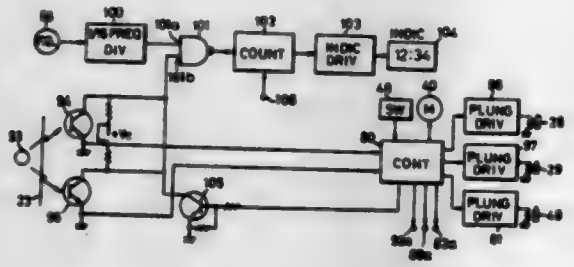
U.S. Cl. 360—72.3 **8 Claims**

1. A display device for a magnetic tape recording and/or reproducing apparatus, said recording and/or reproducing apparatus having a pinch roller and a capstan to receive and drive a magnetic tape, said display device comprising:

pulse generating means for generating pulse signals having a frequency which corresponds to a rotatinal speed of said capstan;

counter means responsive to said pulse generating means for counting the pulse signals from said pulse generating means to give a real-time readout;

indicator means responsive to said counter means for displaying a real-time display corresponding to the counted result; and



interrupting means responsive to a stopping of tape travel for interrupting said counter means to stop the counting of the pulse signals from said pulse generating means;

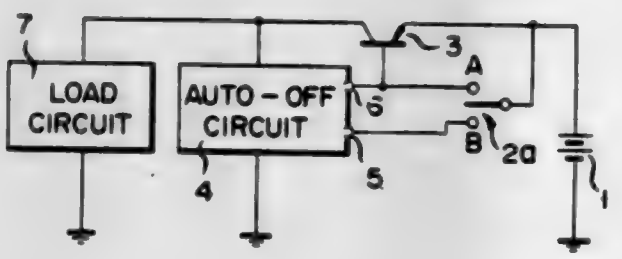
said indicator means displaying in real-time, a quantity of tape travel as said magnetic tape is driven responsive to said capstan.

4,536,808

TAPE RECORDER DEVICE HAVING AN AUTOMATIC SHUT-OFF CIRCUIT

Kenji Fujibayashi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Mar. 23, 1983, Ser. No. 478,072
Claims priority, application Japan, Apr. 2, 1982, 57-47817[U]
Int. Cl.³ G11B *15/48, 15/18*
U.S. Cl. 360—74.2 1 Claim



1. A tape recorder control device comprising:

a control transistor having a collector-emitter path which is connected between a power source and load circuit;

an automatic shut-off circuit connected in parallel with the load circuit on the output side of said control transistor and having a voltage-detecting terminal and an output terminal, said output terminal being connected to a base of said control transistor, said automatic shut-off circuit including:

means responsive to a voltage suddenly impressed on said voltage-detecting terminal for rendering said control transistor conductive through said output terminal; and

means responsive to the stopping of rotation of a reel of the tape recorder for rendering said control transistor nonconductive through said output terminal; and

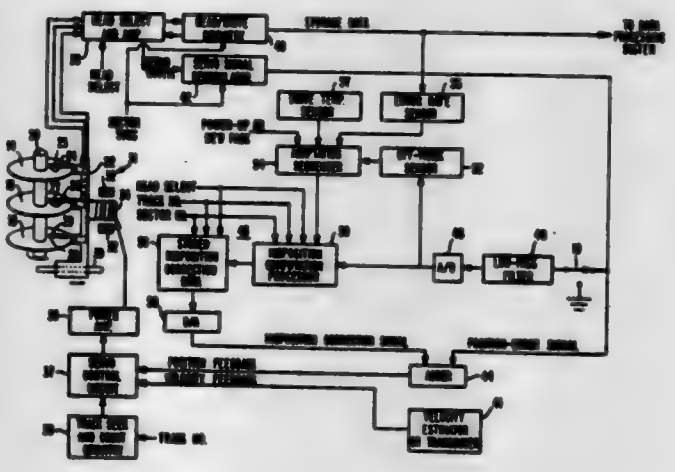
a switch having a first stationary contact connected to said voltage-detecting terminal of said automatic shut-off circuit, a second stationary contact connected to the base of said control transistor, and a common contact connected to the power source, said common contact being selectively contactable with one or the other of said first and second stationary contacts.

4,536,809

ADAPTIVE MISPOSITION CORRECTING METHOD AND APPARATUS FOR MAGNETIC DISK SERVO SYSTEM

Michael Sidman, Colorado Springs, Colo., assignor to Digital Equipment Corporation, Maynard, Mass.

Filed May 10, 1982, Ser. No. 376,972
Int. Cl.³ G11B *21/10*
U.S. Cl. 360—77 19 Claims



9. In a transducer position system of a magnetic disk storage device including a disk medium for storing data, said disk medium including a plurality of data tracks located on concentric data track centerlines on a surface of the disk medium, at least one data track including embedded servo information from which track offsets can be measured, drive means for rotating said disk medium, transducer means for transferring data with said disk medium, movable carriage means supporting said transducer means for moving said transducer means over a selectable data track centerline of said disk medium, and servo control means responsive to a servo positioning-error signal and a misposition correction signal E for controlling said carriage means thereby to maintain said transducer means over a selectable data track centerline, said control means comprising:

A. servo positioning means responsive to the difference between the position of said transducer means and the transducing position of said transducer means with respect to a selected data track centerline for producing said servo position-error signal, and

B. misposition correction means for producing a misposition correction signal E including

i. misposition measuring means for producing a misposition error signal X indicative of the misalignment when said transducer is positioned over the data track centerline which includes said servo information,

ii. means for selectively removing harmonic components of the fundamental frequency of the position-error signal X,

iii. means for digitizing the position-error signal X at a plurality of discrete circumferential locations N about said position reference or measurement track thereby to produce an array X[n] of digital position-error samples X_n, and

iv. transformation means having an impulse response h(n) for transforming the position-error samples X[n] by a digital filter whose transfer function h(n) includes an adjustable fundamental-frequency gain term A_{FF}, an adjustable offset gain term A_{DC}, or an adjustable phase lead term ϕ_h thereby to produce a misposition correction signal E that matches the response characteristics of the servo positioning system and the position-error measurement apparatus.

4,536,810

ADAPTER FOR A MINIATURE TYPE TAPE CASSETTE

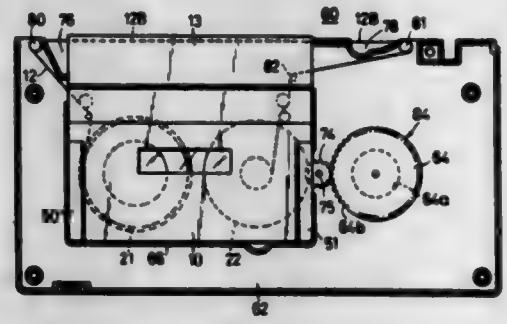
Hiroyuki Umeda, Yokohama, Japan, assignor to Victor Company of Japan, Ltd., Yokohama, Japan

Filed Nov. 19, 1981, Ser. No. 322,767

Claims priority, application Japan, Nov. 25, 1980, 55-164705; Nov. 25, 1980, 55-167532[U]; Aug. 13, 1981, 56-119403[U]

Int. Cl.³ G11B *23/04*

U.S. Cl. 360—94 15 Claims



1. An adapter for a miniature type tape cassette which comprises a cassette case, supply side and take-up side reels and a tape accommodated within said cassette case, said cassette case having an external form and size which is smaller than the external form and size of a standard type tape cassette, axes of said supply side and take-up side reels being separated by a distance which is shorter than a distance between axes of two reels of said standard type tape cassette, said miniature type tape cassette also being used independently of said adapter when used with a recording and/or reproducing apparatus of a type which is different from a standard type recording and/or reproducing apparatus, said adapter comprising:

an adapter case having an external form and size which is substantially equal to the external form and size of said standard type tape cassette so that the adapter may be loaded into said standard type recording and/or reproducing apparatus;

an accommodating part in said adapter for accommodating said miniature type tape cassette; and

stationary tape guide pole means fixed on said adapter case for guiding the tape after it has been manually drawn out of the miniature type tape cassette accommodated within the adapter case and threaded over said guide pole means, said stationary guide pole means supporting said tape along a predetermined tape path within said adapter case which corresponds to a tape path in said standard type tape cassette.

4,536,811

CASSETTE TAPE PLAYER HAVING SUPPLY AND TAKE-UP MOTORS POSITIONED VERTICALLY ABOVE A CASSETTE RECEIVING MECHANISM

Teturo Kanimura; Masahiro Komatsubara; Shizuo Ando, and Takugi Inanaga, all of Kawagoe, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 151,980, May 21, 1980, abandoned. This application Apr. 5, 1982, Ser. No. 365,564

Claims priority, application Japan, May 22, 1979, 54-067722

Int. Cl.³ G11B *15/00*

U.S. Cl. 360—96.6 1 Claim

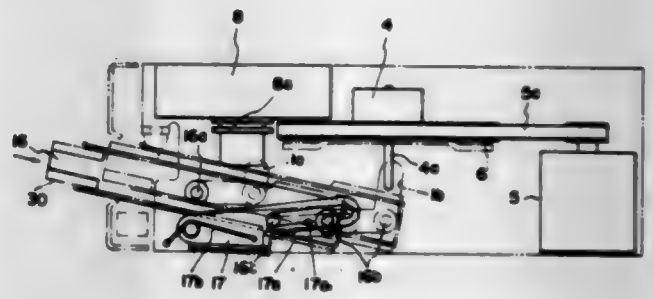
1. A motor arrangement for a slot-in type cassette type player for an automobile audio set, said cassette tape player comprising:

a player chassis extending generally horizontally;

a vertical front panel connected to said chassis to form a player structure, said front panel having a cassette insertion aperture therein;

receiving means, inclined with respect to horizontal and having its upper most inclined portion oriented at said insertion aperture, for receiving a cassette having a supply reel hub and a take-up reel hub from outside said player structure, said receiving means being pivotable to pivot said cassette to load it in a substantially horizontal position;

cassette drive means positioned vertically above said cassette receiving means, said drive means including a supply reel motor and a take-up reel motor, each positioned over a respective hub of the cassette when loaded in said horizontal position; and



gearing means for providing direct drive between said motors and said cassette, including a supply reel shaft and a take-up reel shaft extending vertically downward from said supply reel motor and said take-up reel motor into said supply reel hub and said take-up reel hub, respectively, of the cassette loaded in said substantially horizontal position.

4,536,812

MAGNETIC DISK CARTRIDGE

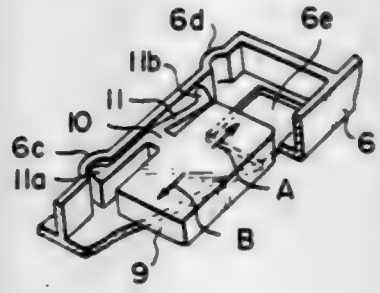
Kengo Oishi, and Osamu Suzuki, both of Odawara, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed Apr. 19, 1984, Ser. No. 602,119

Claims priority, application Japan, Apr. 22, 1983, 58-60449[U]

Int. Cl.³ G11B *23/02, 15/04, 19/04*

U.S. Cl. 360—133 5 Claims



1. A magnetic disk cartridge having a case and a magnetic disk rotatably housed in the case, the magnetic disk cartridge comprising:

(i) a slide valve for prevention of erroneous erasure, which is supported in said case in a manner slidable in the direction normal to the thickness of said magnetic disk,

(ii) a detection hole positioned at one part of said case, said detection hole being closed by said slide valve when said slide valve is positioned at a predetermined sliding position, and

(iii) an engagement means comprising a lock arm which is positioned on a side face of said slide valve integrally therewith extending in parallel therewith and which exhibits resiliency in the direction normal to the body of said slide valve, a pair of projections positioned one at either end of said lock arm, and a pair of recess portions positioned integrally with said case for receiving and retaining said projections of said lock arm, whereby one of said pair of projections is retained and stopped in one of said pair of recess portions when said slide valve is at the sliding position for closing said detection hole and the other of said pair of projections is retained and stopped in the other

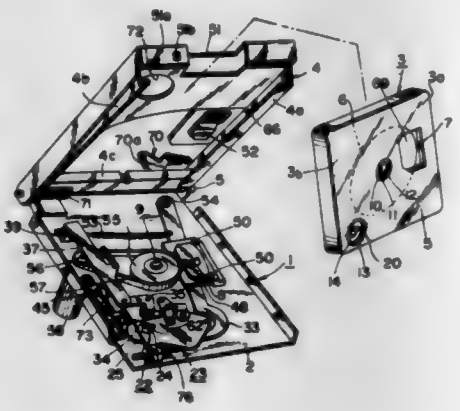
of said recess portions when said slide valve is at the sliding position for opening said detection hole.

4,536,813

MAGNETIC DISC RECORDING AND/OR REPRODUCING APPARATUS

Etsuro Saito, Ayase, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Jun. 17, 1982, Ser. No. 389,277
Claims priority, application Japan, Jun. 17, 1981, 56-93215
Int. Cl.[3] G11B *23/02, 5/012, 17/00*
U.S. Cl. 360—137
7 Claims



1. Apparatus for recording and/or reproducing information signals on a rotatable magnetic disc contained in a jacket provided with indicator means; said apparatus comprising:

transducer means mounted for cooperation with said disc;

drive means engageable with said disc for rotating said disc at a first average speed to effect movement of said disc with respect to said transducer means in a direction substantially parallel to the circumferential direction of said disc; and

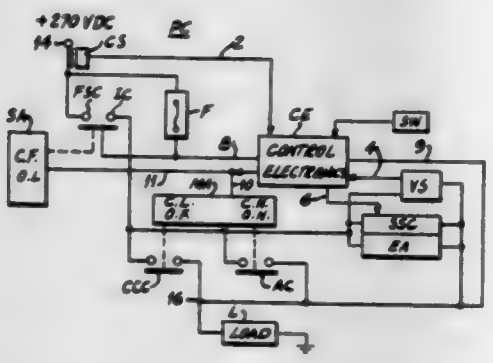
indexing means connected to said transducer means and engageable with said indicator means; said indexing means translating said transducer means at a second average speed to effect movement of said transducer means with respect to said disc in a direction substantially parallel to the radial direction of said disc, said first average speed substantially exceeding said second average speed, whereby said transducer means records and/or reproduces information signals in a plurality of substantially circular tracks on said disc; and said indexing means driving said indicator means to provide an indication related to the position of said transducer means with respect to said disc.

4,536,814

D. C. POWER CONTROLLER WITH FUSE PROTECTION

Peter J. Theisen, West Bend, and C. Gregory Chen, Brown Deer, both of Wis., assignors to Eaton Corporation, Cleveland, Ohio

Filed Mar. 26, 1984, Ser. No. 593,324
Int. Cl.[3] H01H *33/14*
U.S. Cl. 361—7
5 Claims



1. A D.C. power controller for effectively interrupting a high voltage high current D.C. power line supplying a load from a D.C. power supply source comprising:

power contacts in said power line;

actuator means for closing and opening said power contacts;

arc extinguishing means associated with said power contacts;

means for initiating "close" and "open" commands;

arc-shunting solid state elements in parallel with said power contacts and controllable to receive the arching current from said power contacts and to interrupt the same;

and control means comprising:

electronic control means responsive to said close and open commands and to voltage and current levels in the power line for controlling said actuator means and said solid state elements to interrupt said power line;

protective means for controlling interruption of said power line in the event either said power contacts or said solid state elements fail to do so comprising:

a fuse and fuse shunt contacts in parallel in said power line;

said actuator means comprising means for closing and opening said fuse shunt contacts;

said electronic control means also comprising means for controlling said actuator means to close first and open last said fuse shunt contacts with respect to said power contacts such that said fuse will blow to interrupt the power line in the event either said power contacts or said solid state elements fail to do so;

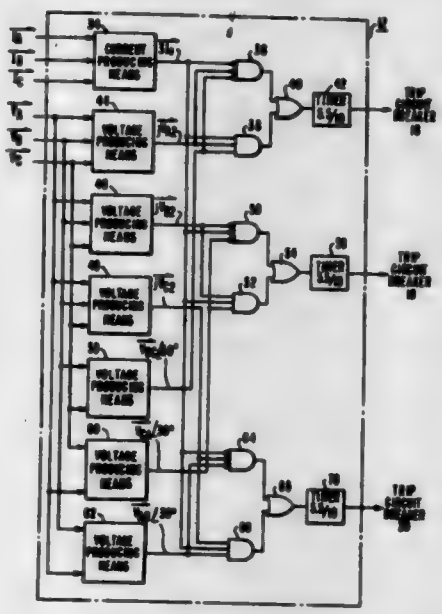
and means supplying operating power to said electronic control means from said D.C. power supply through said fuse so that in the event said fuse blows said electronic control means becomes inoperative and cannot be used to reclose said power contacts to be left unprotected.

4,536,815

PROTECTIVE RELAY APPARATUS AND METHOD FOR PROVIDING SINGLE-POLE TRIPPING

Hung J. Li, and Leonid Husak, both of Coral Springs, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Aug. 29, 1983, Ser. No. 527,602
Int. Cl.[3] H02H *3/16*
U.S. Cl. 361—47
11 Claims



1. Protective relay apparatus for detecting a single-phase-to-ground fault in a three-phase electrical power system and for identifying the faulted phase conductor, said protective relay apparatus comprising:

means for providing a first phasor signal representative of unbalanced current in the three-phase electrical power system,

means for providing a second phasor signal for each phase conductor representative of a negative sequence component of an electrical quantity for each phase conductor;

means for providing a third phasor signal for each phase conductor representative of a quadrature voltage for each phase conductor advanced by a predetermined number of electrical degrees;

coincidence means for determining the coincidence of said first, second, and third phasor signals for each phase conductor;

said coincidence means providing a signal indicating the occurrence of a single-phase-to-ground fault on an identified phase conductor when the phase angles of said first, second, and third phasor signals for the identified phase conductor have a predetermined relationship.

4,536,816

THYRISTOR APPARATUS EMPLOYING LIGHT-TRIGGERED THYRISTORS

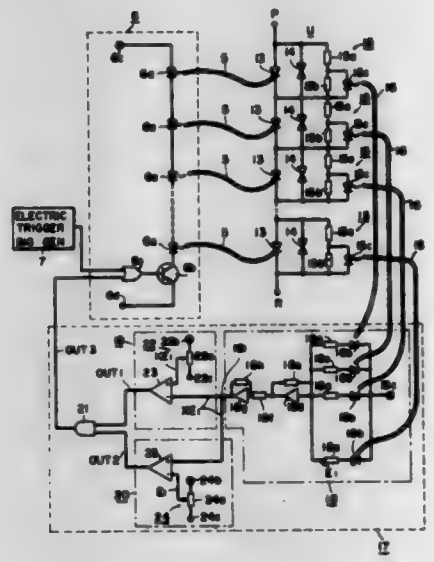
Susumu Matsumura, Osaka; Masao Yano; Nobuo Sashida, both of Kobe, and Yoshihiko Yamamoto, Amagasaki, all of Japan, assignors to Susumu Jatsumura, Osaka and Mitsubishi Denki Kabushiki Kaisha, Tokyo, both of, Japan

Filed May 24, 1983, Ser. No. 497,495

Claims priority, application Japan, Jul. 12, 1982, 57-120835

Int. Cl.³ H02H *7/10*

U.S. Cl. 361—91 **8 Claims**



1. A thyristor apparatus employing light-triggered thyristors, comprising:

a plurality of light-triggered thyristors (13) connected in series and responsive to light trigger signals to be turned on,

light trigger signal generating means (6) optically connected to said light-triggered thyristors for providing light trigger signals for said light-triggered thyristors,

a plurality of overvoltage suppressing means (14) connected in parallel with said light-triggered thyristors, respectively, for suppressing overvoltages to be impressed on said light-triggered thyristors,

a forward voltage detector comprising a plurality of forward voltage detecting means (15) connected in parallel with said light-triggered thyristors, respectively, for detecting forward voltages applied to said light-triggered thyristors and for generating detected signals, and

thyristor number detecting means (17) connected to said light trigger signal generating means and to said forward voltage detector and responsive to said detected signals for activating said light trigger signal generating means when the number of light-triggered thyristors to which forward voltages are applied is one or more but not more than a predetermined number (K),

said thyristor number detecting means (17) comprising;

first voltage generating means (18) connected to said forward voltage detector, responsive to said detected signals, for generating a first voltage (XE_1) corresponding to the number of light-triggered thyristors to which the forward voltages are applied,

first comparison means (19) connected to said first voltage generating means for comparing said first voltage (XE_1) with a second voltage (KE_1) which corresponds to a state wherein the number of light-triggered thyristors to which the forward voltages are applied is equal to said predetermined number and for generating a first output signal (OUT1) when the number of thyristors to which the forward voltages are applied is not more than the predetermined number,

second comparison means (20) connected to said first voltage generating means for comparing said first voltage (XE_1) with a third voltage (E_1) which corresponds to a state wherein the number of light-triggered thyristors to which the forward voltage is applied is one and for generating a second output signal (OUT2) in the case when the number of thyristors to which the forward voltages are applied is not less than one, and

logical product evaluating means (21) connected to said first and second comparison means and to said light trigger signal generating means for evaluating a logical product of said first and second output signals and for generating a third output signal (OUT3) to activate said light trigger signal generating means.

4,536,817

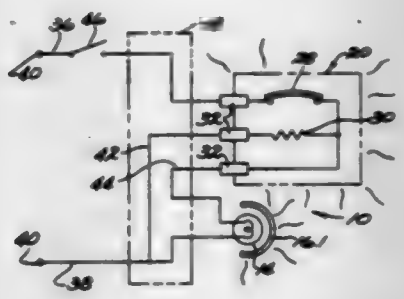
RECESSED LIGHTING FIXTURE AND AN INSULATION DETECTING PROTECTOR DEVICE THEREFOR

Radi Pejouhy, Marshfield, Mass., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Mar. 10, 1983, Ser. No. 473,848

Int. Cl.³ H02H *5/04*

U.S. Cl. 361—105 **7 Claims**



1. A recessed electrical lighting fixture comprising

lamp means of selected rating,

means adapted to engage a support for mounting the fixture on the support,

means for energizing the lamp means, and

an insulation-detecting thermally responsive protector device comprising

thermally responsive switch means actuatable in response to heating to a selected switch actuation temperature for interrupting energizing of the lamp means, the switch means being thermally associated with the means for mounting the fixture,

and electrical resistance heater means thermally coupled to the switch means for actuating the switch means in a selected period of time if selected thermal insulation conditions should occur around the fixture and block dissipation of heat from the fixture to permit temperature of any portion of the mounting means to be in contact with the support to increase to 90° C., the heater and thermal responsive switch means having electrically conductive lead means extending therefrom to electrically connect the heater and switch means to electrical circuitry for energizing the heater means at a selected voltage and for regulating energizing of the lamp means,

characterized in that

the heater means is proportioned to operate at a power level not greater than about 1 watt and to permit a maximum

outer temperature of not more than 160° C. at a location exposed to said thermal insulation condition during interruption of energizing of said lamp means, the switch means has an actuating means adapted to move at a temperature of 120° C. plus or minus 5° C. for actuating the switch means, and,

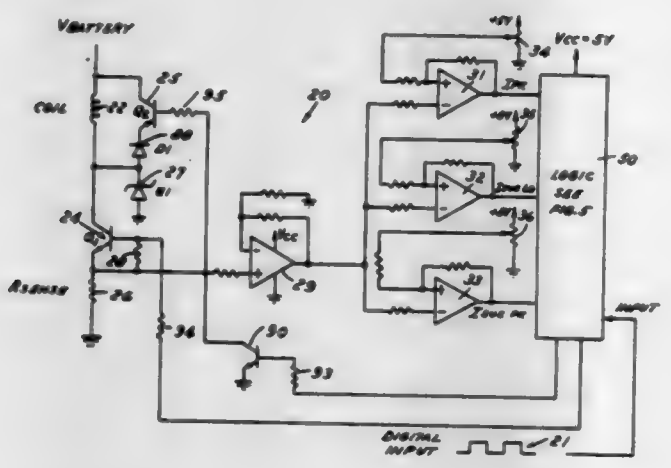
said electrical lead means are provided with selected, relatively low heat-transfer properties and are arranged to limit heat transfer from the heater means away from the heater and switch means through said lead means to a minor proportion of the heat generated by the heater means to assure desired interruption of lamp energizing when said selected thermal insulation conditions occur while avoiding nuisance interruptions of said lamp energizing during variation of said applied heater voltage in the range of about 107 to 127 volts a.c. and during variation in ambient temperature in the range from 12° to 40° C.

4,536,818

SOLENOID DRIVER WITH SWITCHING DURING CURRENT DECAY FROM INITIAL PEAK CURRENT

Arnold D. Nielsen, Wayne, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Mar. 2, 1984, Ser. No. 585,715
Int. Cl.³ H01H 47/32
U.S. Cl. 361—154 **6 Claims**



1. A solenoid driver circuit for controlling application of current to a solenoid and reducing total power dissipation, said solenoid driver circuit including:

a first transistor means for completing one series current path through the solenoid;

a second transistor means coupled in series with said first transistor means for providing a current path parallel to the solenoid;

a sense resistor coupled in series with said first transistor means for sensing current in the solenoid;

a Zener diode coupled in parallel with the series combination of said first transistor means and said sense resistor to provide a current path from the solenoid parallel to said sense resistor;

a first comparator means coupled to said sense resistor to compare the sensed current in said sense resistor to a first control current representative of a desired initial peak current in the solenoid;

a second comparator means coupled to said sense resistor to compare the sensed current in said sense resistor to a second control current representative of a desired low sustaining current in the solenoid;

a third comparator means coupled to said sense resistor to compare the sensed current in said sense resistor to a third control current representative of a desired sustaining peak current in the solenoid, said sustaining peak current being larger in magnitude than said low sustaining current and smaller in magnitude than said initial peak current; and

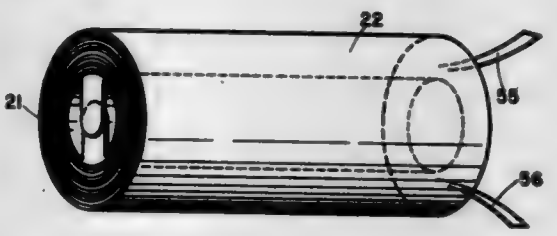
logic means coupled to said first, second and third comparator means so as to receive input signals which are a function of the sense resistor current and the first, second and third control currents, for switching said first and second transistor means on and off as a function of the output of said first, second and third comparator means so that said initial peak current is applied to the solenoid and the current decay from the initial peak current to said sustaining peak current is interrupted by periodic current increases so as to produce an oscillatory function with a decaying average value, said second transistor switching from off to on at the end of an initial solenoid current decay from said initial peak current and said first transistor being off when solenoid current is decaying and on when solenoid current is rising.

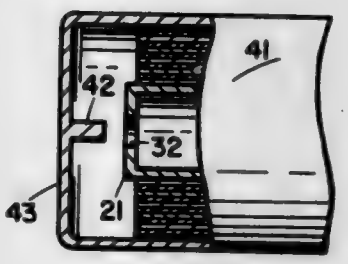
4,536,819

CAPACITOR WITH A HEAT SINK CORE

Emory Deutsch, Columbia, S.C., assignor to North American Philips Corporation, New York, N.Y.

Filed Jan. 10, 1983, Ser. No. 456,949
Int. Cl.³ H01G 9/00, 1/08, 7/00
U.S. Cl. 361—274 **4 Claims**





1. A capacitor comprising:

an inner can having an end portion;

a capacitor roll wound upon said inner can;

an outer can having a closed end;

said inner can and said capacitor roll received within said outer can, the end portion of said inner can being adjacent the closed end of said outer can; and

fastening means for fastening said inner can in good heat conducting relationship to said outer can.

4,536,820

ELECTRICAL FEEDTHROUGH MEANS FOR PRESSURE TRANSDUCER

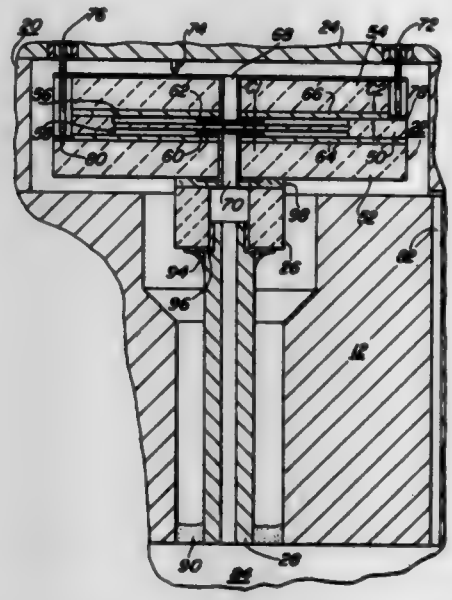
Paul B. Binder, North Wales, and Paul M. Kroninger, Jr., Harleysville, both of Pa., assignors to General Signal Corporation, Stamford, Conn.

Filed Mar. 29, 1984, Ser. No. 594,585
Int. Cl.³ H01G 7/00
U.S. Cl. 361—283 **5 Claims**

4. An electrical connecting means for connecting a pressure transducer to an associated circuit through a bulkhead welded in the pressure receiving body of the assembly containing said transducer, comprising:

a rod mounted in a hole in said bulkhead to conduct electrical current therethrough, said rod being sealed to the periphery of said hole to form a pressure seal;

a hole formed in the end of said rod facing said transducer; and



a spring loaded plunger type contact inserted in said hole so that its contact protrudes to connect to said transducer upon assembly of the feedthrough and transducer.

4,536,821

CERAMIC CAPACITORS AND DIELECTRIC COMPOSITIONS

Jennifer M. Wheeler, Loughton, and Dawn A. Jackson, Old Harlow, both of England, assignors to Standard Telephones and Cables, plc, London, England

Filed Feb. 28, 1984, Ser. No. 584,343

Claims priority, application United Kingdom, Mar. 10, 1983, 8306659

Int. Cl.³ H01G *4/10, 7/00;* H01B *3/12*

U.S. Cl. 361—321 22 Claims

15. A multilayer ceramic capacitor including a plurality of layers of dielectric and a plurality of high silver content electrodes arranged between the dielectric layers, which dielectric layers consist essentially of non-stoichiometric lead magnesium niobate and of lead zinc niobate.

4,536,822

ELECTRIC CIRCUIT INTERRUPTER AND ASSOCIATED MOUNTING

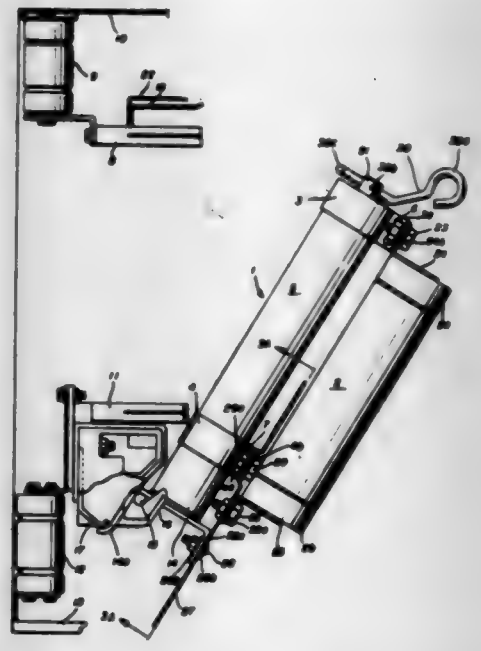
Anthony Osborne, Duluth, Ga., assignor to Kearney-National, Inc., Atlanta, Ga.

Continuation of Ser. No. 603,623, Apr. 25, 1984, abandoned. This application Mar. 1, 1985, Ser. No. 706,911

Int. Cl.³ H02B *1/18*

U.S. Cl. 361—340 7 Claims

1. An electric circuit interrupter and associated mounting comprising an elongated support element of insulating material pivotally mounted about a fixed pivot, a pair of movable contacts mounted on said elongated support element in spaced relation to each other and arranged to engage and to disengage a pair of fixedly mounted contacts respectively, a circuit interrupter mounted on and movable with said elongated support element and having a pair of spaced apart terminals one of which is directly connected with one of said movable contacts and wherein the improvement includes an elongated specially constructed bus of conducting material disposed in generally parallel relation to said elongated support element and electrically connected with the other of said movable contacts and having a plurality of points of connection each including an aperture, said points of connection being spaced along the length of the bus for selectively cooperating with the other terminal of said circuit interrupter whereby circuit interrupters



of different electrical ratings and physical dimensions may be mounted on said elongated support element.

4,536,823

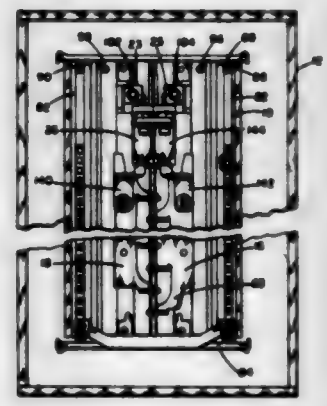
ELECTRIC PANEL BOARD HAVING AN IMPROVED EXTRUDED BASE PAN CONFIGURATION

Wayne A. Ingram, Stone Mountain; Stephen L. Johnson, Cumming, and Thomas E. Coleman, Decatur, all of Ga., assignors to Siemens-Allis, Inc., Atlanta, Ga.

Filed Oct. 27, 1981, Ser. No. 315,565

Int. Cl.³ H02B *1/04*

U.S. Cl. 361—355 12 Claims



1. An insulative base pan for a circuit breaker panelboard comprising:

a centrally disposed rail extending the length of said pan, said rail having an inverted-T opening throughout the length thereof, said rail including a pair of outer lips extending the length thereof for slidably engaging respective bus bars;

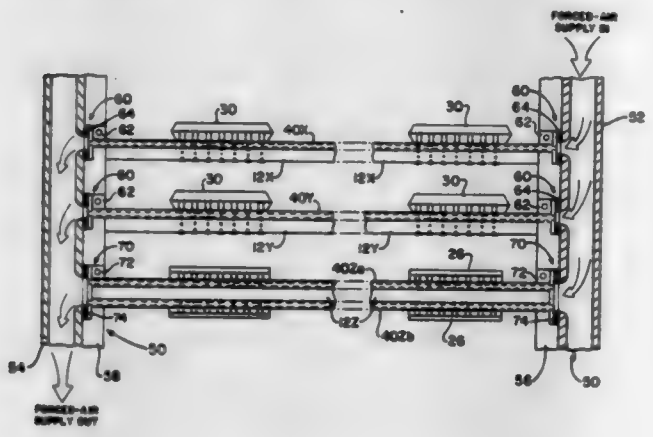
a first pair of channels extending the length of said base pan, each channel being disposed in a parallel relationship on either side of said rail for slidably receiving a pair of main-line lugs; and

a second pair of channels extending the length of said base pan, each channel being disposed parallel to said rail and along the outer edge of said base pan for slidably receiving elongated neutral elements thereon.

4,536,824
INDIRECT COOLING OF ELECTRONIC CIRCUITS

Howard W. Barrett, and Paul F. Fledderjohann, both of Akron, Ohio, assignors to Goodyear Aerospace Corporation, Akron, Ohio

Filed Mar. 28, 1983, Ser. No. 479,222
Int. Cl.[3] H05N 7/20
U.S. Cl. 361—384 4 Claims



1. Apparatus for indirect cooling of electronic IC components comprising in combinaton:

a printed circuit board;

a plurality of IC components mounted to the printed circuit board by lead wires connected into said board, said IC components oriented in a plurality of parallel rows on the printed circuit board;

a source of forced air;

a plate positioned between the printed circuit board and the IC components, said plate comprising a low thermal resistance, high heat conduction material defining parallel channel passages between the rows of IC components and in intimate contact beneath the IC components to provide conduction heat transfer from the ICs during operation; and

means mounted at each end of the printed circuit board to hold the board in a predetermined orientation and defining an input channel passage at one end of the board and an output channel passage at the opposite end thereof, the input channel passage being connected to the source of forced air and each of said channel passages being interconnected between the input and output channel passages such that forced air passing through the passages provides increased heat transfer by convection within the channel passages.

4,536,825
LEADFRAME HAVING SEVERABLE FINGERS FOR ALIGNING ONE OR MORE ELECTRONIC CIRCUIT DEVICE COMPONENTS

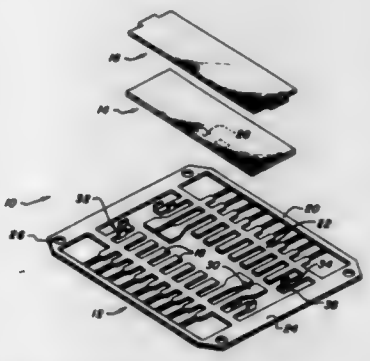
Herman F. van Dyk Soerewyn, Peabody, Mass., assignor to Unitrode Corporation, Lexington, Mass.

Filed Mar. 29, 1984, Ser. No. 594,745
Int. Cl.[3] H05K 7/20
U.S. Cl. 361—386 9 Claims

1. Leadframe apparatus selectively aligning an electronic circuit device component having four corners positioned on the leadframe apparatus, comprising:

four elongated fingers having free ends that are each integrally formed in spaced-apart relation on, and individually severable from, the leadframe apparatus at points remote from their free ends and individually proximate a corresponding corner of the electronic circuit device component positioned on the leadframe apparatus; and

two upstanding positioning tabs integrally formed with each of said elongated and severable fingers at a point thereon proximate the corresponding free end thereof and individually abutting the corresponding confronting corner surface of the electronic circuit device component positioned on the leadframe apparatus with one of said tabs providing longitudinal alignment of and with the other of said tabs

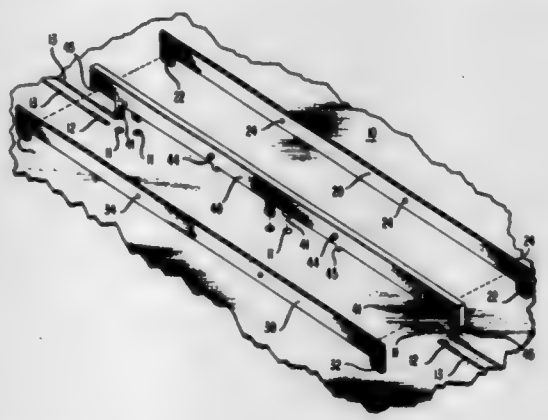


providing lateral alignment of the electronic circuit device component positioned on the leadframe apparatus.

4,536,826
SNAP-IN BUS BAR

Serhat M. Ahiskali, Randolph, N.J., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 10, 1984, Ser. No. 649,197
Int. Cl.[3] H01R 9/03; H02G 5/00
U.S. Cl. 361—407 15 Claims



1. In combination:

a circuit board,

a bus bar assembly mounted on the circuit board comprising:

a support member having electrical insulation properties, and first and second conducting members affixed to opposite sides of the support member respectively,

the circuit board including receptacle means and the support member including connecting members for engaging the receptacle means and mechanically affixing the support member to the circuit board, and

the first and second conducting members each including conducting connecting means for coupling the first and second conducting members to conducting paths in the circuit board.

2. The combination as defined in claim 1 wherein the support member further includes a plurality of support elements for maintaining the support member at a fixed distance above a surface of the circuit board.

3. The combination as defined in claim 2 wherein the connecting members comprise a plurality of fingers extending from the support member in register with the receptacle means which comprise holes in the circuit board, the fingers having securing means which comprise a catch means on its free end with a flat catch surface perpendicular to the finger to catch an underside of the circuit board and secure the support member to the circuit board and cylindrical surface ramp means below the flat catch surface to facilitate entry of the finger into the holes in the circuit board.

4. The combination as defined in claim 3 wherein the support member includes a plurality of pins extending from both sides of the support member and the first and second conducting

members include a plurality of pin holes in register with the pins and the first and second conducting members being secured to opposite sides of the support member by placing pin holes of the first and second conducting members over the pins so they penetrate the pin holes and flattening a shank end of the pins to form a head to secure the first and second conducting members to the support member.

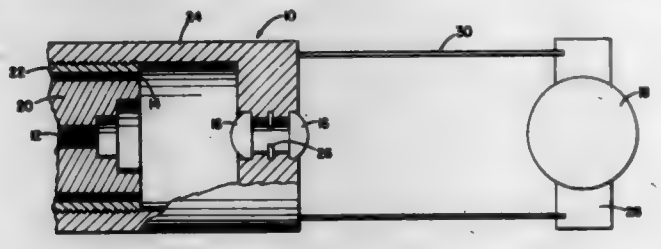
5. The combination as defined in claim 4 wherein the conducting connecting means of the first and second conducting members include conducting tabs at their respective ends and the circuit board includes precut slots connected to printed circuit paths for accepting the tabs.

4,536,827

IMAGE COLLECTION AND OBJECT ILLUMINATION

John W. Berthold, III, Salem, Ohio, and Charles S. Fitzgerald, Brookfield, Conn., assignors to The Babcock & Wilcox Company, New Orleans, La.

Filed Jan. 30, 1984, Ser. No. 575,259
Int. Cl.[3] F21V 7/04
U.S. Cl. 362—32 17 Claims



1. A device for remotely inspecting the inner surface of a tubular object comprising means for transmitting a beam of light into the tubular object, a target to reflect said light beam onto the inner surface of the tubular object producing a circumferential band of illumination on the inner surface of the tubular object, and annular means for intercepting the light emanating from said circumferential illumination band to provide a remote display of the inner surface of the tubular object.

4,536,828

LIGHTING DEVICE

Kei Mori, 3-16-3-501, Kaminoge, Setagaya-ku, Tokyo, Japan

Continuation of Ser. No. 275,782, Jun. 22, 1981, abandoned.
This application Feb. 2, 1984, Ser. No. 576,765
Claims priority, application Japan, Jun. 27, 1980, 55-87280
Int. Cl.[3] F21V 7/04
U.S. Cl. 362—32 8 Claims

1. A room illuminating device for diffusing beams of light rays propagating through and emitting from an optical wave guide, which comprises:

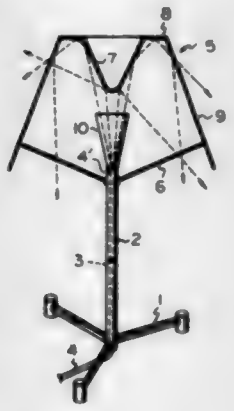
a base,

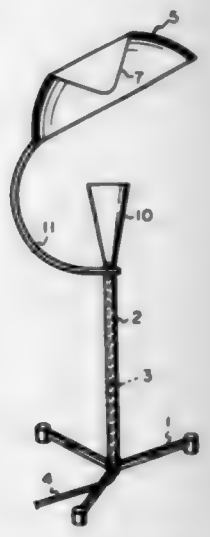
a support mounted on said base and having an elongated cavity for receiving therein at least one optical wave guide, said cavity being open at least at the top to ensure that the light rays can be emitted upwardly,

a light ray transmitting optical wave guide passing through said cavity,

a frusto conical hood affixed over said open top of said elongated cavity,

means for reflecting the light rays issuing from the optical wave guide, said means including, (a) a substantially conical central convex portion projecting downwardly, (b) a partially cut away disc shaped flat portion continuous to said central portion conformed so that a majority of those light rays which are directed upwardly by said central portion are thrown toward the ceiling, and (c) a generally conical downwardly slanted peripheral portion, and





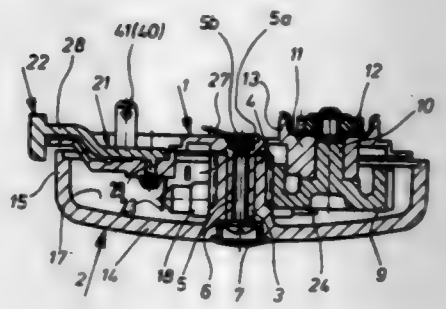
means for connecting said reflecting means to said support in such a manner that said central convex portion faces the top end of said support.

4,536,829

HAND ACTUATING ELEMENT FOR ADJUSTMENT DRIVES ON AUTOMOBILES

Rainer Grimm, Wetzlar, and Adolf Elfen, Bingen-Bingerbrück, both of Fed. Rep. of Germany, assignors to Rockwell-Golde G.m.b.H. and Franz Kirsten Electrotechnische Spezialfabrik, both of, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,857
Claims priority, application Fed. Rep. of Germany, Dec. 18, 1982, 3246985
Int. Cl.[3] B60Q 3/02
U.S. Cl. 362—74 16 Claims



1. Rotatable hand actuating element for adjustment drives in automobiles, especially handwheel assembly for the actuation of sliding roofs, consisting of a shell-like handwheel equipped with a peripheral rim and an internally mounted, central bearing sleeve and of a mounting plate, towards which the open side of the handwheel faces and which rotatable journals the handwheel by means of a bearing journal extending into the

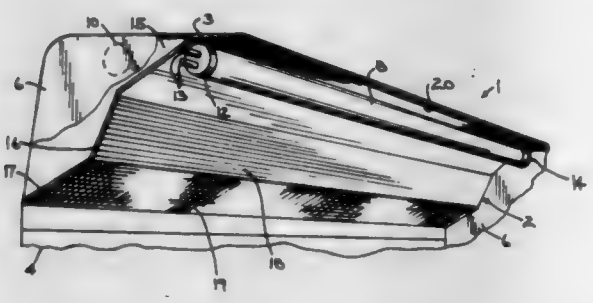
bearing sleeve, an external set of teeth on the bearing sleeve being in engagement with a gearwheel rotatably mounted on the mounting plate, which is connected in rotationally locked manner with a drive pinion for drive elements transmitting the adjustment movement, wherein the handwheel possesses at least one wall surface translucent to light, opposite to which at least one incandescent lamp mounted between handwheel and mounting plate in the internal space of the handwheel is situated.

4,536,830

REFLECTOR ASSEMBLY FOR LAMP FIXTURES

Gregory G. Wisniewski, 4737 N. Marlborough Ave., Whitefish Bay, Wis. 53211

Filed Jul. 26, 1984, Ser. No. 634,596
Int. Cl.³ F21S *3/00*
U.S. Cl. 362—223 **11 Claims**



1. A releasably mounted insert for interconnection with a multi-lamp fluorescent lighting fixture having a top wall and oppositely disposed end and side walls enclosed by a diffuser plate, and an elongated fluorescent source lamp secured in said fixture between said end walls, said insert replacing a second fluorescent lamp from said fixture and comprising:

a reflector member dimensioned to have a length substantially corresponding to the length of a side wall of a fixture and a width sufficient to extend between a top and side wall of a fixture, said reflector member including a first portion extending downwardly from said top wall and a second portion extending between said first portion and said side wall, said first portion disposed at an acute angle with respect to said top wall, and said first and second portions disposed at an obtuse angle with respect to one another; and

attaching means for releasably attaching said reflector member to said fixture to reflect the illumination provided by the fluorescent source lamp so that the illumination provided by the source lamp is substantially equivalent to the illumination provided by the source lamp and the removed second lamp.

4,536,831

REPLACEMENT LAMP WITH MEANS FOR SPACING

George English, Reading, and Stephen J. Leadvaro, Salem, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.

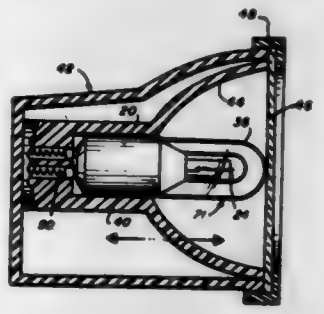
Filed Jul. 9, 1984, Ser. No. 629,133
Int. Cl.³ F21V *15/00*
U.S. Cl. 362—263 **18 Claims**

1. A lamp member adapted for use in a lighting unit having a light-transmitting cover, said lamp member comprising:

a base shell member;

a tungsten-halogen capsule having a wedge base portion secured to said base shell member, said capsule including a first envelope with an inert gas fill and halogen disposed therein, a filament structure axially located within said first envelope and supported by said wedge base portion; and

spacer means for maintaining said first envelope and said light-transmitting cover in a spaced-apart relationship,



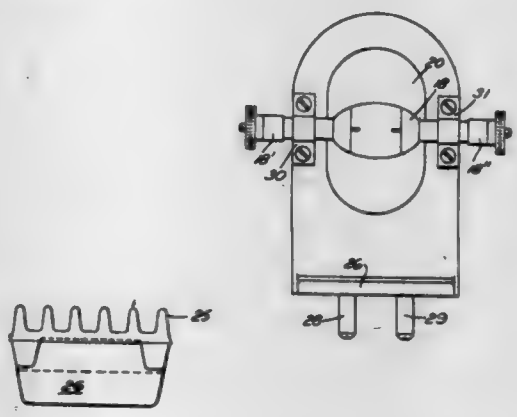
said spacer means in operative contact with said cover and located between said first envelope and said cover.

4,536,832

REPLACEABLE LIGHT SOURCE ASSEMBLY

Thomas M. Lemons, Marblehead, Mass., assignor to Altman Stage Lighting Co., Inc., Yonkers, N.Y.

Continuation of Ser. No. 394,277, Jul. 1, 1982, abandoned. This application May 9, 1984, Ser. No. 608,390
Int. Cl.³ F21P *5/02*; F21M *7/00*
U.S. Cl. 362—264 **1 Claim**

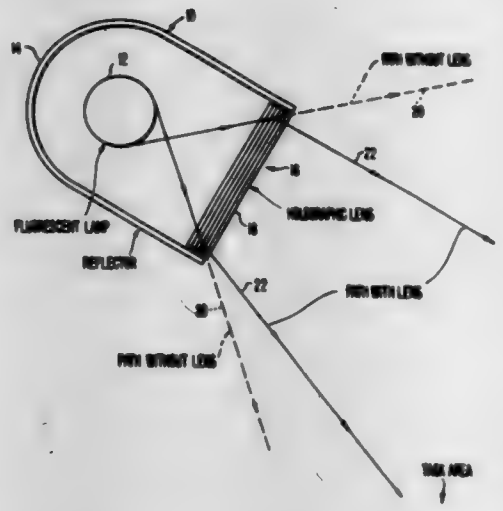


1. A replaceable light source assembly for a spotlight having a housing, lens and lamp socket comprising a quartz envelope with reduced diameter tubular portions protruding from opposite ends thereof, said envelope having two arc electrodes therein comprising an arc light source, said tubular portions containing electrical leads of a length greater than the tubular portions, said leads extending away from the arc electrodes and sealed within said tubular portions, said electrical leads having connection portions extending exterior to the envelope, a heat sink structure having an L-shaped base portion provided with mounting means for engaging an existing lamp socket and a body extending vertically therefrom with a rear face and a front face, a plurality of heat radiating fins on the rear face, a substantially flat continuous mirror affixed to said front face of said heat sink structure, clamps fastening said quartz envelope to said heat sink structure on the front face in front of the mirror so that the light source is spaced from the mirror substantially the length of the source, said clamps engaging the tubular portions of the quartz envelope so as to create a heat conductive path and dissipate heat from the tubular portions, said mirror having a vertical length longer than the horizontal length to define an elongated shape the vertical length being transverse to the axis between the arc electrodes, said source being positioned by said clamps midway of the vertical length of the mirror and being imaged in said mirror to produce an effect of at least two sources, said elongated mirror producing substantially a circular beam.

4,536,833
LIGHTING FIXTURE UTILIZING A MULTI-LAYERED HOLOGRAM AS A LENS ELEMENT

Charles S. Davis, New York, N.Y., assignor to Knoll International, Inc., New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,469
Int. Cl.³ F21V 9/00
U.S. Cl. 362—293 3 Claims

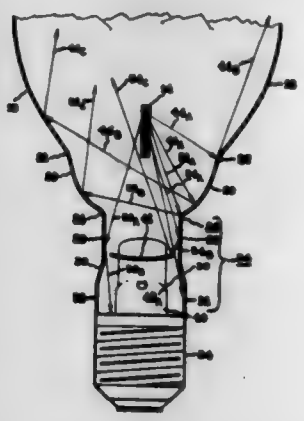


1. A lighting fixture comprising a spatially fixed light source, and a multi-layered holographic lens element receiving light from said source and directing said light to a task area, the layers of said lens element being responsive to light of one or more wavelengths of interest and varying angles of incident radiation to diffract light from said source toward said task area.

4,536,834
R LAMP HAVING AN IMPROVED NECK SECTION FOR INCREASING THE USEFUL LIGHT OUTPUT

Robert W. Sands, Hudson, and Daniel M. Bloom, Euclid, both of Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed May 22, 1984, Ser. No. 612,778
Int. Cl.³ F21V 7/09
U.S. Cl. 362—303 13 Claims



1. A reflector lamp comprising an electrically conductive base, a concave reflector, and a finite light source having its geometric center located approximately at the focal point of the concave reflector and rigidly affixed to an electrically insulative stem;

said concave reflector comprising:

(a) a primary reflective section having a parabolic shape and a focal point;

(b) one or more intermediate reflective section each having a parabolic shape substantially confocal with said primary reflective section and each respectively joined by one or more transitional sections and;

(c) a neck section effective in advantageously reflecting light rays impinging onto its surface back into the useful beam pattern of the reflector lamp and comprising;

(c_i) a reducing section;

(c_{ii}) a first substantially straight cylindrical section;

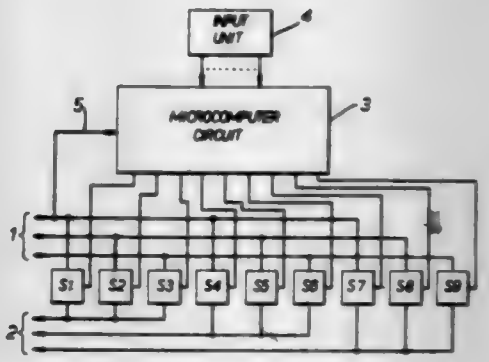
(c_{iii}) an expanding section, and;

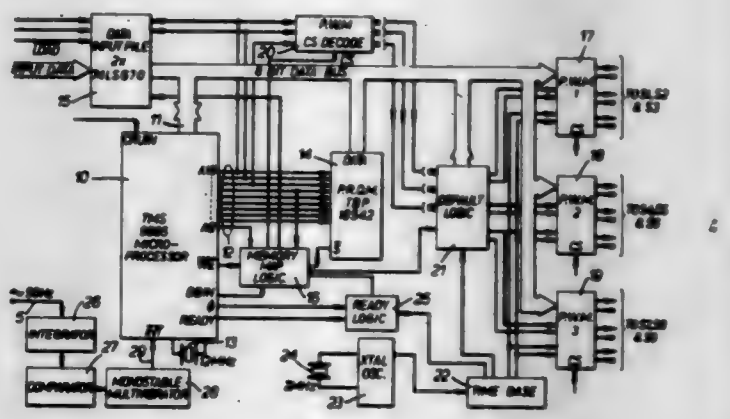
(c_{iiii}) a second substantially straight cylindrical section for mating with the electrically conductive base.

4,536,835
DIRECT A.C. TO A.C. CONVERTER CONTROLLED BY A DATA PROCESSOR

Peter J. Andrews, Northants, United Kingdom, assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Jan. 7, 1983, Ser. No. 456,211
Claims priority, application United Kingdom, Jan. 13, 1982, 8200897
Int. Cl.³ H02M 5/293
U.S. Cl. 363—163 20 Claims





1. A direct A.C. to A.C. supply Converter having: input conductors for a balanced polyphase A.C. input supply system;

output conductors for an A.C. supply system;

a plurality of bidirectional switches for individually connecting each input conductor to each output conductor; and a control means connected to operate the switches, said control means including: a data processor means programmed to produce numerical value signals representing widths of width modulated pulses; circuit means for deriving timing signals from the input supply system and applying them to the data processor means for determining the timing of said width modulated pulses; and pulse generator means for receiving and responding to said numerical value signals to operate said switches by generating a repeating sequence of abutting pulses width modulated according to said numerical values and having durations shorter than the periods of the A.C. input and output supply systems; said data processor means applying said numerical value signals to said pulse generator means so that (1) for each output conductor the switches connected to that output conductor are rendered conducting in a repeating sequence by and for the durations of the width modulated pulses applied thereto; (2) each phase of the input supply system is connected in turn to each output phase of the output system; and (3) at any instant only one

of said switches connected to each of the output conductors is conductive.

4,536,836

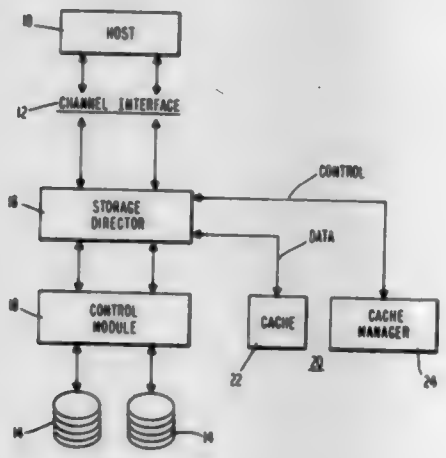
DETECTION OF SEQUENTIAL DATA STREAM

P. David Dodd; Ronald L. Blickenstaff, both of Boulder, Colo.; Richard L. Coulson, Stanford, Calif.; Robert J. Moreno, Boulder, and Brian E. Trede, Lafayette, both of Colo., assignors to Storage Technology Corporation, Louisville, Colo.

Continuation-in-part of Ser. No. 325,350, Nov. 27, 1981, Pat. No. 4,468,730. This application Nov. 15, 1982, Ser. No. 441,901

Int. Cl.[3] G06F *9/00*

U.S. Cl. 364—200 11 Claims



1. Method for improving efficiency of a data processing system of the type comprising a host computer connected via channel means to long-term data storage means, said host being adapted to issue commands calling for specific data records stored on said long-term data storage means, said commands not including explicit indication of sequentiality of requets, comprising the steps of:

examining such individual host originated command seeking a particular data record to determine whether the data thus called for is stored in solid-state memory means external to said channel, and if said data is stored in said solid-state memory means, transmitting said data to said host;

if said data is not stored in said solid-state memory means, accessing said data on said long-term data storage means and passing it over said channel means to said host, and examining the commands by which a given record is passed from said long-term data storage means to said host in order to determine whether said record is one of a sequence of such records; and

if said determination indicates that said record is one of such a sequence, reading the next record in said sequence from said long-term storage means into said solid-state memory means in anticipation of its being called for by said host;

wherein the indication that a given record is one of a sequence is derived by examination of said commands for indicators signaling that said data is not part of such a sequence, in response to absence of such indicators.

4,536,837

IMPROVED DISK FILE ALLOCATION AND MAPPING SYSTEM UTILIZING CYLINDER CONTROL BLOCKS AND FILE MAP HAVING UNBALANCED TREE STRUCTURE

Robert A. Olson, Los Altos, and Patrick D. Ross, Sunnyvale, both of Calif., assignors to Elxsi, San Jose, Calif.

Filed May 25, 1982, Ser. No. 381,991

Int. Cl.[3] G06F *7/00, 13/04*

U.S. Cl. 364—200 11 Claims

1. A data processing system having a disk subsystem that includes at least one disk drive for mass storage wherein:

the disk subsystem defines a disk space that consists of a plurality of cylinders, each of which includes a plurality of disk pages;

each of said cylinders has an associated cylinder control block;

each disk page in said disk space is characterized by a physical disk address corresponding to the location of that page in said disk space;

information stored in said disk space is organized on the basis of at least one file;

a given file has M pages allocated thereto;

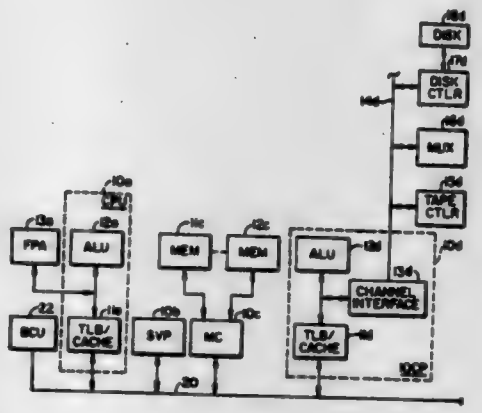
each of said M pages is characterized by a logical address corresponding to the logical position of that page in said given file;

said M pages are logically contiguous within said given file, having logical addresses 0 through (M−1);

said given file has an associated file map that includes M file map entries corresponding to said M pages on a one-to-one basis;

for each of said M pages, the corresponding file map entry is located in whichever cylinder control block is associated with the cylinder in which that page is located;

for each of said M pages, the corresponding file map entry contains two pointer fields, each sized to specify a pointer



representative of the physical address of a page in said disk space, thereby defining a set of 2M pointer fields;

of said M pages, for each page having a logical address greater than 0, a pointer representative of the physical address of that page is contained in one of the pointer fields of the file map entry corresponding to another of said M pages having a lower logical address, whereupon said 2M pointer fields collectively contain a set of (M−1) pointers; and

the locations of said (M−1) pointers within said 2M pointer fields define an unbalanced binary tree structure wherein said file map consists of L sub-trees where L is the integer portion of $\log_2(M+1)$,

each of said L sub-trees is uniquely characterized by an integer index in the range of 1 to L inclusive,

for each value of an integer i in the range of 1 to (L−1) inclusive, the sub-tree characterized by an index equal to i has 2^i file map entries corresponding to a subset of 2^i logically contiguous pages having logical addresses between (2^i-2) and $(2^{i+1}-3)$ inclusive, and

the sub-tree characterized by an index equal to L has $(M-2^L+2)$ file map entries corresponding to a subset of $(M-2^L+2)$ logically contiguous pages having logical addresses between (2^L-2) and (M−1) inclusive.

4,536,838

MULTI-PROCESSOR SYSTEM WITH COMMUNICATION CONTROLLER USING POLL FLAGS FOR NON-CONTENTIOUS SLOT RESERVATION

Gerhard Ringel, and Gabor Fencsik, both of Berkeley, Calif., assignors to MDS Qantel, Inc., Hayward, Calif.

Filed Mar. 24, 1983, Ser. No. 478,604

Int. Cl.[3] G06F *3/04, 15/16*

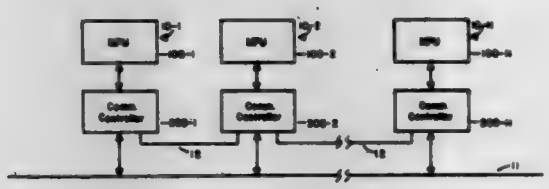
U.S. Cl. 364—200 4 Claims

1. In a multiple data processing station system wherein mes-

sages are exchanged among the stations over a communication channel in sequential time slots, wherein the stations contend with one another for use of the channel, and wherein each such message includes fields identifying the addresses fo the sending station and of the receiving station and a poll flag, each such station having an improved communication controller which comprises:

a processing unit, a memory means and a channel interface unit interconnected with one another and with said channel;

control means including a program stored in the memory means for operating the processing unit in response to the end of a message to issue to its associated channel interface



unit a command for contention of the channel (a) only after a predetermined slot reservation interval if such message is either addressed to another station or though addressed to the associated station has a non-asserted poll flag and (b) immediately if such message is addressed to the associated data processing station and has its poll flag asserted, whereby a station to which an inbound message is addressed with an asserted poll flag will be the sole contender for and winner of control of the channel for the next succeeding time slot; and

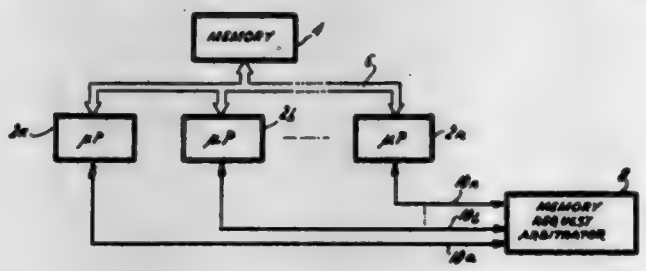
said channel interface unit being operable to transmit and receive such messages and to contend for the channel in response to said commands.

4,536,839

MEMORY REQUEST ARBITRATOR

Hemen V. Shah, Carritos; Victor Mashikian, Santa Ana; John Seaton, San Jose, and Gordon Keller, Danville, all of Calif., assignors to MAI Basic Four, Inc., Tustin, Calif.

Filed Mar. 30, 1982, Ser. No. 363,589
Int. Cl.³ G06F *13/00*
U.S. Cl. 364—200 **4 Claims**



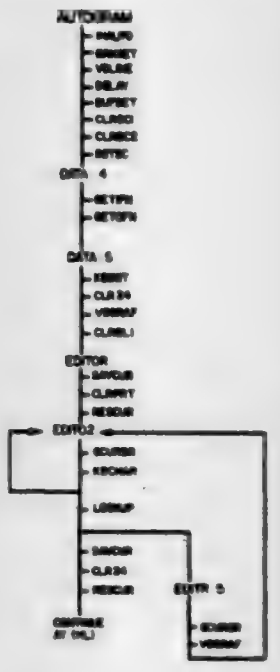
1. In a system comprising a plurality of requestors for making simultaneous access requests to a common memory, a memory request arbitrator comprising: means for receiving a plurality of simultaneous access requests; means for generating a signal to assign relative priorities to each of such requests; means for selecting the request with the highest priority level; means cooperating with said means for selecting for overriding said priority selection in response to super priority requests; and, means for changing the relative priority of each requestor, said means for changing being responsive to a periodically generated signal to rotate the highest priority so that each requestor is assigned the highest priority over a given period of time.

4,536,840

AUTOGRAMMER

Ronald Borta, 252 Henry La., Barrington, Ill. 60010

Filed Sep. 30, 1982, Ser. No. 432,135
Int. Cl.³ G06F *9/00*
U.S. Cl. 364—300 **17 Claims**



1. A method of generating program for manipulating data on a computer comprising:

using field delimiters inputted by a user through an input-output unit connected to a computer to delineate a field;

using a program code of said computer to create a data base descriptor file, said descriptor file adapted to receive and store said delimiter;

using said program code to create a data base file in a separate location, said data base file adapted to receive and store inputted data;

using said program code to create a data base key file in a separate location, said key file adapted to identify said stored data; and

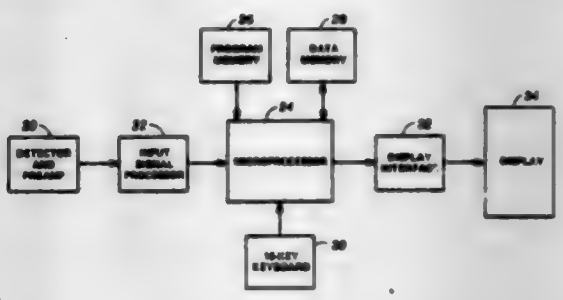
using said program code to manipulate and transfer data between said field, said data base descriptor file, said data base file and said data base key file to generate an application program.

4,536,841

PORTABLE NEUTRON SPECTROMETER AND DOSIMETER

David A. Waechter; Bruce H. Erkkila, and Dennis G. Vasilik, all of Los Alamos, N. Mex., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 8, 1983, Ser. No. 464,841
Int. Cl.³ G06F *15/42*
U.S. Cl. 364—414 **3 Claims**



1. A portable neutron spectrometer and dosimeter apparatus comprising:

detector means including a Linear Energy Transfer proportional counter for detecting neutrons within a preselected

energy range, said detector means further including means for generating pulses in accordance with energy levels of received neutrons and pulse height analyzer means for counting said generated pulses and for producing a spectral representation as an output thereof;

microprocessor means for receiving the output of said detector means and for computing accumulated dose and dose rate for detected neutrons of various energy levels within the preselected energy range, said microprocessor means including a low power CMOS microprocessor, an 8k byte CMOS program memory and an 8k byte CMOS data memory;

display means including an approximately 80 by 28 dot matrix liquid crystal display operably connected to said microprocessor means for displaying said accumulated dose and dose rate for said detected neutrons; and

internal calibration means for calibrating said apparatus, said calibration means including a Cm244 alpha source behind a shutter and means for opening and closing said shutter.

4,536,842

SYSTEM FOR MEASURING INTERFLOOR TRAFFIC FOR GROUP CONTROL OF ELEVATOR CARS

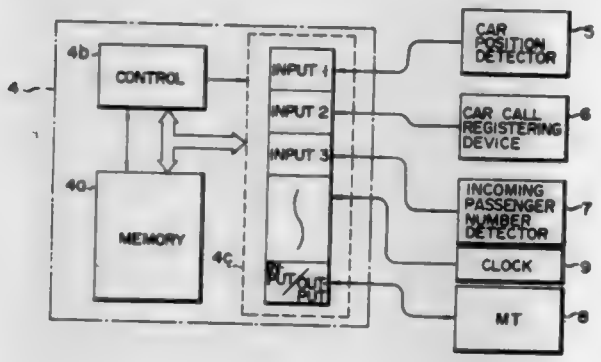
Kiyoshi Yoneda; Hiroshi Takeuchi, both of Tokyo; Tetsuo Yamatani, Yokkaichi; Toyoto Hijiya, Yokosuka; Hideo Takeda, Inagi; Koji Shibuya, Ashiya, and Kiichiro Tanaka, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Mar. 29, 1983, Ser. No. 479,899

Claims priority, application Japan, Mar. 31, 1982, 57-53469; Mar. 31, 1982, 57-53471; Jun. 25, 1982, 57-109529

Int. Cl.³ G06F *15/46*; B66B *1/18*

U.S. Cl. 364—424 **11 Claims**



3. A system for recording interfloor traffic of passengers utilizing an elevator car comprising:

position detecting means for detecting a position of said elevator car;

passenger number detecting means for detecting an outgoing passenger number and an incoming passenger number at each of floors at which said elevator car stops;

car call registering means for registering car calls for destination floors which are made by incoming passengers at each of the floors at which said elevator car stops;

a clock device; and

recording means, responsive to said position detecting means, said car call registering means, said passenger number detecting means, and said clock device, for measuring the interfloor traffic of passengers and for recording the measured interfloor traffic for each of origin-destination floor pairs and for each of predetermined time conditions.

4,536,843

TOTAL ENERGY BASED FLIGHT CONTROL SYSTEM

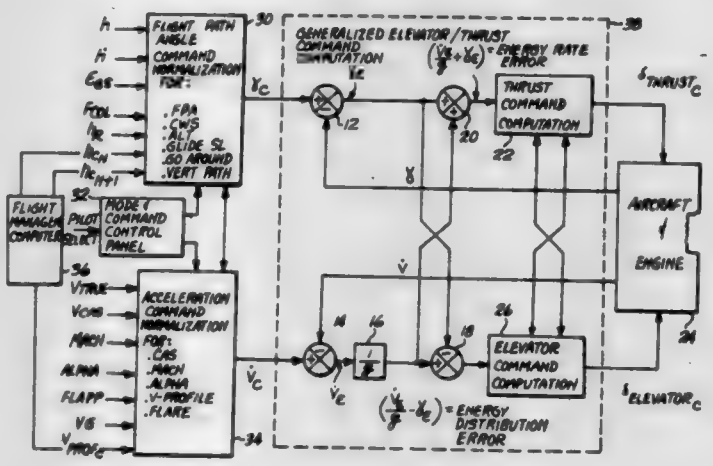
Antonius A. Lambregts, Issaquah, Wash., assignor to The Boeing Company, Seattle, Wash.

PCT No. PCT/US82/01388, § 371 Date Sep. 30, 1982, § 102(e) Date Sep. 30, 1982, PCT Pub. No. WO84/01345, PCT Pub. Date Apr. 12, 1984

PCT Filed Sep. 30, 1982, Ser. No. 454,205

Int. Cl.³ B64C *13/00*

U.S. Cl. 364—434 **52 Claims**



1. An aircraft longitudinal flight control system for automatically controlling the aircraft's flight path and speed, using engine thrust and elevator control surface position, comprising:

means for developing an incremental net thrust command signal ΔT_c which is a linear combination of a signal representative of the aircraft's total energy error with respect to the flight path and speed command targets and a signal representative of the rate of change of the aircraft's total energy;

thrust control means for automatically controlling the incremental net thrust of the engines to said incremental net thrust command signal ΔT_c, such that said total energy error is reduced to zero;

means for developing an incremental elevator position command $\Delta\delta_{ec}$ for controlling the deviation of the aircraft from a commanded flight path; and

elevator position control means for automatically positioning the elevator to said incremental elevator command signal $\Delta\delta_{ec}$ such that said deviation of the aircraft from the commanded flight path is reduced to zero.

4,536,844

METHOD AND APPARATUS FOR SIMULATING AURAL RESPONSE INFORMATION

Richard F. Lyon, Palo Alto, Calif., assignor to Fairchild Camera and Instrument Corporation, Mountain View, Calif.

Filed Apr. 26, 1983, Ser. No. 488,886

Int. Cl.³ A61N *1/36*

U.S. Cl. 364—487 **19 Claims**

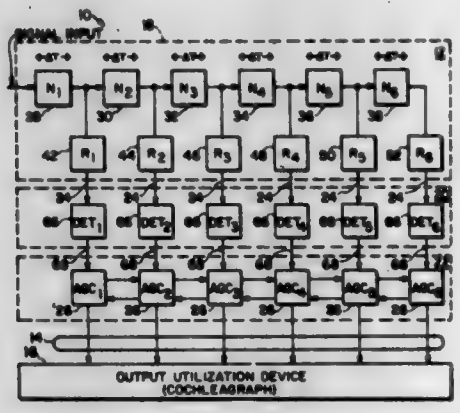
1. A method for simulating neural response of an ear comprising:

filtering an input signal representative of sound stimuli through a first filtering means, said first filtering means producing first response characteristics to said stimuli, said first response characteristics being divided into a plurality of channels as channelized frequency band limited signals; thereafter

half-wave detecting each one of said channelized frequency band limited signals representative of said first response characteristics over a relatively broad band to produce a plurality of frequency channelized detected signals;

compressing said frequency channelized detected signals in each said channel as a function of amplitude of frequency

channelized detected signals in other channels to produce output electronic signals; and



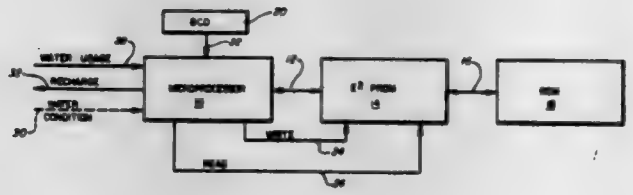
providing said electronic output signals to an output utilization means.

4,536,845

SELF-PROGRAMMABLE CONTROLLER FOR WATER CONDITIONER RECHARGING

Donald P. DeVale, Sycamore, and Stanley F. Rak, Mundelein, both of Ill., assignors to Culligan International Company, Northbrook, Ill.

Filed Aug. 31, 1983, Ser. No. 528,242
Int. Cl.³ G06F *15/46*; B01D *21/24*
U.S. Cl. 364—500 **19 Claims**



1. A process for controlling the recharging of a water conditioner, which comprises the steps of:

sensing if water is being used during selected fractions of a predetermined period of time;

storing information signifying water usage during said selected fractions;

automatically determining a time fraction, based on the stored information, when water is unlikely to be used;

sensing a selected parameter to determine if recharging is required; and

recharging the water conditioner during said determined time fraction if said selected parameter indicates that recharging is required.

4,536,846

DISTORTION REDUCER FOR COMPANDED ANALOG SYSTEMS

Dipankar Raychaudhuri, Kendall Park, and Leonard N. Schiff, Lawrenceville, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 20, 1982, Ser. No. 420,506
Int. Cl.³ H04B *1/64*
U.S. Cl. 364—514 **5 Claims**

1. In an analog communication system comprising a transmitter, a transmission path of bandwidth B_2, and a receiver, a method of recovering components of a signal m(t) of bandwidth B_1 which are cutoff in the transmission of such signal over said transmission path, where $B_2 \geqq B_1$, and comprising the steps of:

compressing the signal at the transmitter;

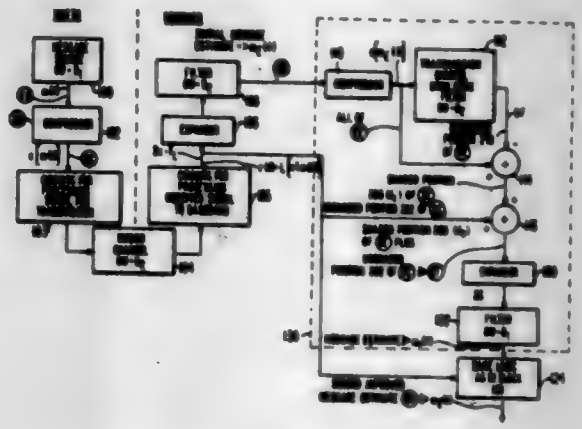
transmitting the signal over said transmission path;

demodulating the transmitted signal at the receiver to produce a signal r(t);

expanding and filtering the signal r(t) to produce an initial reconstructed signal $m_E(t)$;

compressing said signal $m_E(t)$ to produce a signal $C[m_E(t)]$ with frequency components f_c extending above the frequency bandwidth B_2;

filtering said signal $C[m_E(t)]$ through a filter of bandwidth



B_2 to produce a signal S_F corresponding to $C[m_E(t)]$ but with the frequency components f_c extending above B_2 being cutoff;

subtracting S_F from $C[m_E(t)]$ to produce the frequency components f_c; and

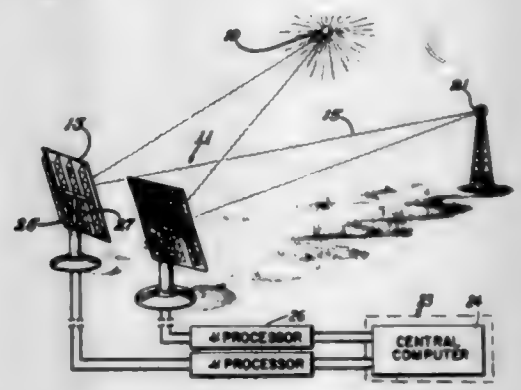
adding frequency components f_c to r(t) to produce a first order of correction of the received signal r(t).

4,536,847

HELIOSTAT CONTROL EMPLOYING DIRECT CURRENT MOTOR

Mark R. Erickson, Northglenn, and James A. Kaehler, Littleton, both of Colo., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Filed Dec. 30, 1982, Ser. No. 454,590
Int. Cl.³ G06F *15/46*; G05D *1/12*; F24J *3/02*
U.S. Cl. 364—516 **8 Claims**



8. In a method of positioning the body so so as to achieve a particular orientation by movement about two axes, the improvement comprising:

a. calculating a commanded position for the body to be at a particular time of day in terms of numbers of counts for respective Hall Effect Devices connected with respective direct current electric motors serving as the respective elevation and azimuth motors;

b. initializing and powering up at a predetermined position and monitoring the position by counting means thereafter;

c. accumulating the number of steps in azimuth and elevation by respective Hall Effect Devices on said motors to get to said commanded position from said predetermined position each time said body is to be moved; energizing respective said azimuth and elevation direct current motors where any movement in azimuth and elevation are desired; counting the number of signals from respective said Hall Effect Devices connected with respective said

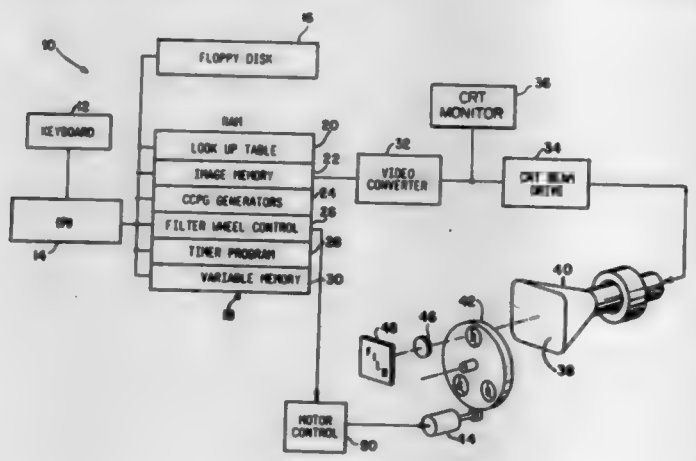
azimuth and elevation motors and comparing number of positions moved with the numbers to be moved to achieve respective commanded positions and doing this repetitively throughout the chronology of a day.

4,536,848

METHOD AND APPARATUS FOR COLORED COMPUTER GRAPHIC PHOTOGRAPHY

Alice M. d'Entremont, Boston, and William T. Freeman, Cambridge, both of Mass., assignors to Polaroid Corporation, Cambridge, Mass.

Continuation of Ser. No. 368,711, Apr. 15, 1982, abandoned. This application Apr. 2, 1984, Ser. No. 595,675
Int. Cl.³ G09G *1/28*; H04N *1/46*
U.S. Cl. 364—526 **13 Claims**



7. A system for defining and displaying an image for photographic reproduction comprising:

video display means for visually displaying the image to be photographed; and

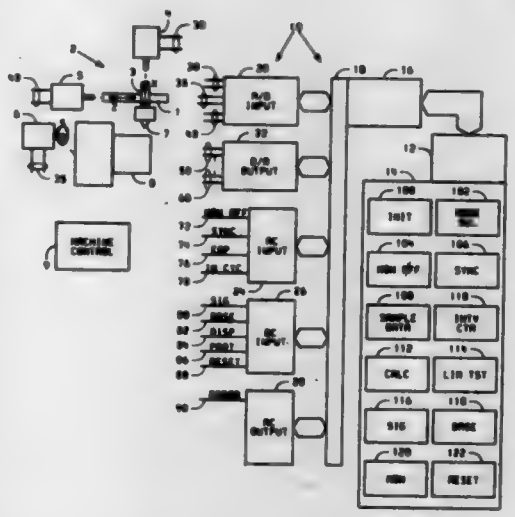
computer means responsive to user controlled input signals and a preselected program for defining and storing within a computer memory the image to be photographed as a plurality of constant color pixel groups; for thereafter determining the time during which a selected photosensitive material must be exposed to a selected light color and intensity for each of said constant color pixel groups; for thereafter ordering said determined exposure times for each of said constant color pixel groups into either a progressively increasing or decreasing sequence; and for finally providing a video image signal to said video display means in order to display at said selected light color and intensity each of said constant color pixel groups for its said determined exposure time to the photosensitive material, said computer means starting said video image signal either with the first of said constant color pixel groups in said ordered sequence and thereafter adding succeeding constant color pixel groups in said ordered sequence to said video image signal so as to finally simultaneously include in said video image signal all of said constant color pixel groups in said ordered sequence when said ordered sequence comprises progressively decreasing exposure times or, alternatively, with all of said constant color pixel groups in said ordered sequence and thereafter eliminating from said video image signal succeeding constant color pixel groups in said ordered sequence so as to finally include in said video image signal only the last of said constant color pixel groups in said ordered sequence when said ordered sequence comprises progressively increasing exposure times.

4,536,849

MACHINE OPERATION MONITOR

Donald J. Borisch, Cincinnati; Gary V. Hanrahan, Mason, and Herbert E. Merritt, Cincinnati, all of Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Sep. 8, 1982, Ser. No. 415,811
Int. Cl.³ G06F *15/46*
U.S. Cl. 364—550 **10 Claims**



1. Apparatus for detecting a malfunction during an execution of a machine cycle of operation, the machine having at least one movable member driven by driving means for effecting relative motion between a workpiece and a tool, the apparatus comprising:

(a) means for periodically producing load level signals during an execution of the machine cycle of operation, each load level signal representing a driving means load level;

(b) means for storing signature load level signals produced during a first execution of the machine cycle of operation when a workpiece is present;

(c) means for storing base load level signals produced during a second execution of the machine cycle of operation when a workpiece is not present;

(d) means responsive to the signature load level signals and the base load level signals for producing limit signals, each limit signal representing a load level defining an acceptable maximum driving means load for a predetermined interval occuring during an execution of the machine cycle of operation;

(e) means for comparing load level signals produced during subsequent executions of the machine cycle of operation to the limit signals; and

(f) means responsive to the comparing means for producing an error output signal when a load level signal exceeds a limit signal.

4,536,850

MONITORING THE STATUS OF THE TRIP CYCLE IN AN ELECTRONIC POSTAGE METER

Edward C. Duwel, Trumbull, Conn., assignor to Pitney Bowes Inc., Stamford, Conn.

Filed Dec. 8, 1982, Ser. No. 447,915
Int. Cl.³ G06F *15/20*
U.S. Cl. 364—550 **26 Claims**

1. A method for monitoring the trip status of the trip cycle in an electronic postage meter, comprising the steps of:

reading the state of a bistable member having at Home and In Cycle states;

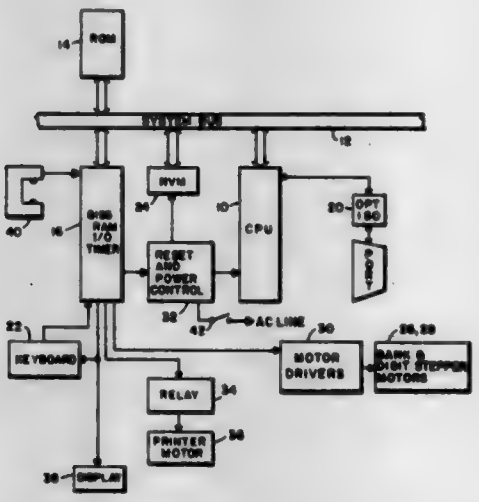
setting a plurality of bits if the bistable member is Home;

re-reading the state of the bistable member after a predetermined period of time has elapsed;

storing a fatal error bit if the bistable member is in the Home state after the re-reading and attempting to complete the trip cycle;

further re-reading the state of the bistable member after a

predetermined period of time has elapsed if the re-reading of the state of the bistable member dislcoses that the bistable member is In Cycle;



resetting certain of the set bits if the further reading of the bistable member discloses that it is Home; and

ending the trip cycle.

4,536,851

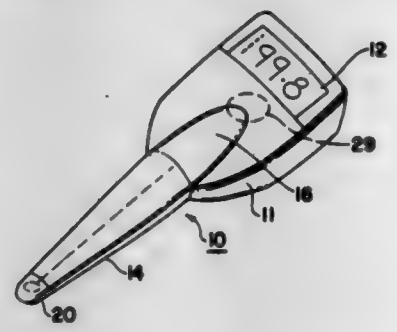
ELECTRONIC THERMOMETER AND ASSOCIATED APPARATUS

Damon Germanton, 7 Alberta Dr., Kinnelon, N.J. 07405; Charles Germanton, 38 Mountain Ave., Summit, N.J. 07901, and Donald Weiss, 200 Cliffside Park, Winston Towers, Englewood, N.J. 07631

Filed Oct. 22, 1982, Ser. No. 436,022

Int. Cl.³ G01K *1/08, 7/20*

U.S. Cl. 364—557 **20 Claims**



1. An electronic thermometer apparatus for performing temperature measurements over a given range, comprising:

(a) a first sensing resistor exhibiting a relatively linear resistance variation over said range, a second reference resistor exhibiting a relatively constant resistance characteristic over said range, with said first and second resistors arranged in a series path,

(b) a switching circuit coupled to said first and second resistors in said series path and operative when activated to select said first resistor in a first mode and said second resistor in a second mode,

(c) an analog to digital converter coupled to said resistors via said switching circuit and responsive to provide a first output during said first mode and a second output during said second mode,

(d) first storage means for storing therein at least one value indicative of the characteristic of said second resistor at a given temperature,

(e) logic means responsive to said first resistor achieving a resistance value over said temperature range to thereby cause said switching means to select said second resistor and to compare the value of said second resistor with said stored value commencing when said first resistor achieves said value to respond to any excess over said stored value, and

(f) means for converting said excess to the actual temperature within said range.

4,536,852

METHOD AND APPARATUS FOR DETERMINING THE HEIGHT OF TEXTILE FIBER BALES

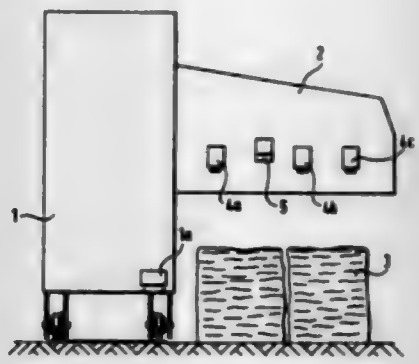
Fritz Höcel, Monchen-Gladbach, Fed. Rep. of Germany, assignor to Trützschler GmbH & Co. KG, Monchen-Gladbach, Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,948

Claims priority, application Fed. Rep. of Germany, Sep. 5, 1981, 3135272

Int. Cl.³ G06F *15/20;* D01G *7/08*

U.S. Cl. 364—562 **9 Claims**



1. Method for determining the height of textile fiber bales disposed in successive groups in the operative range of a bale opener which is arranged to move horizontally adjacent the bale groups, each bale group containing at least one bale of fibers of a selected type and the opener being provided with a detacher disposed above the bales, carrying a measuring device for measuring the height of each bale group, and movable vertically toward the bales for effecting such height measurement, comprising: effecting a plurality of measurements of the height of each bale of each group at a succession of horizontally spaced measuring locations by advancing the bale opener horizontally after each measurement; and forming an average of the measurements made on each bale group.

4,536,853

MULTIPLE WAVE GENERATOR

Kinji Kawamoto, Yahata; Masao Tsukamoto, Katano; Kazuhiro Murase, Hirakata; Tetsuhiko Kaneaki, Ashiya, and Masataka Nikaido, Takatsuki, all of Japan, assignors to Matsushita Electric Industrial Co. Ltd., Kadoma, Japan

Filed Oct. 15, 1982, Ser. No. 434,709

Claims priority, application Japan, Oct. 15, 1981, 56-165189

Int. Cl.³ G06F *1/02, 7/38;* G01H *1/00*

U.S. Cl. 364—718 **9 Claims**

1. A multiple wave generator comprising:

a wave data memory for storing plural data samples of a wave shape;

a wave address register storing wave address data for partially designating said sampled data in said wave data memory;

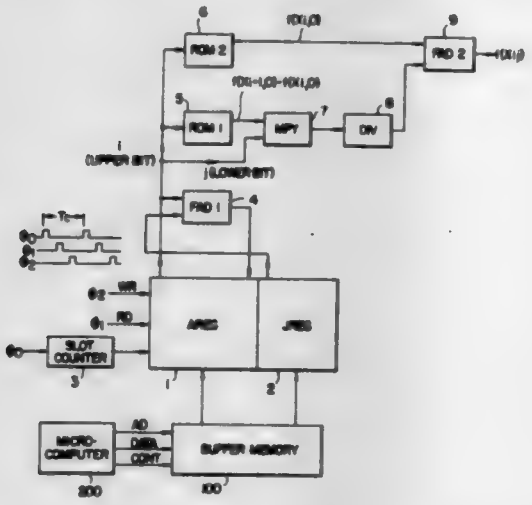
a difference address register for storing difference address data which are incremental address data;

a wave address calculator for adding said wave address data to said difference address data and for writing summed data into said wave address register, and for producing a set of new wave memory data and partial address data from said summed data; and

a wave calculator,

wherein said wave address data are composed of wave memory address data for addressing said wave data memory and partial address data which designate the interpolated position of said wave memory address, and wherein

said wave memory address data are applied to said wave data memory for reading out one of said plural data samples, and wherein said read out data samples and said



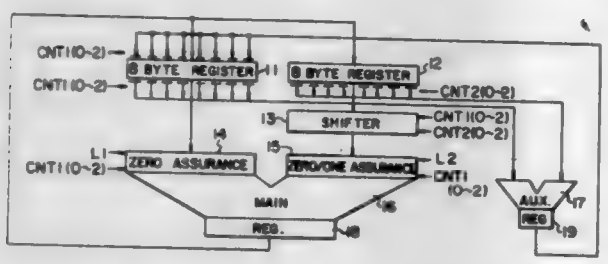
partial address data are applied to said wave calculator which calculates interpolated wave data samples corresponding to said wave memory address and said partial address.

4,536,854

DECIMAL ARITHMETIC UNIT

Tomoatsu Yanagita, Isehara, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,330
Claims priority, application Japan, Aug. 12, 1981, 56-125179
Int. Cl.³ G06F *7/38*
U.S. Cl. 364—749 **10 Claims**



1. A decimal arithmetic unit for carrying out a decimal arithmetic operation for first and second operands each having a sign digit and numeric data, comprising:

arithmetic means for carrying out the decimal arithmetic operation;

sign processing means for processing the sign digits;

first circuit means for supplying the numeric data of said first and second operands excluding the sign digits to said arithmetic means;

second circuit means for supplying the sign digits of said first and second operands to said sign processing means; and

means for merging an output of said arithmetic means and an output of said sign processing means to produce an operation result;

wherein said first circuit means comprises:

zero assurance means connected to receive said first operand for changing the part of said first operand which is not numeric data to zero in accordance with the operand addresses and the operand length of the first operand and for applying the thus changed first operand to said arithmetic means:

aligning means for aligning the right end position of said second operand to the right end position of said first operand in accordance wthi the operand addresses of said first and second operands; and

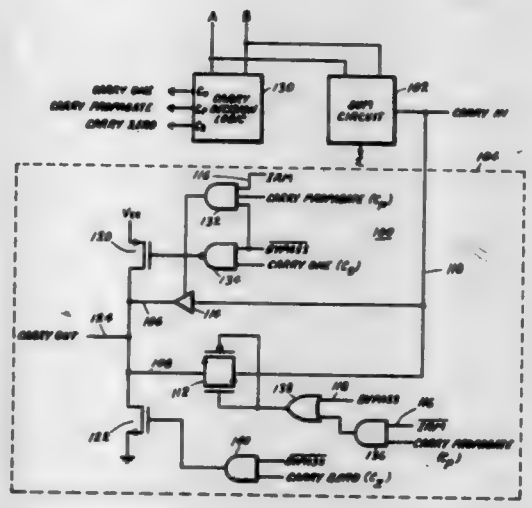
zero/one assurance means connected to receive said second operand for changing the part of said second operand which is not numeric data to zero or one depending on the arithmetic operation to be performed by sadi arithmetio means and for applying the thus changed second operand to said arithmetic means.

4,536,855

IMPEDANCE RESTORATION FOR FAST CARRY PROPAGATION

Steven G. Morton, Oxford, Conn., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Dec. 23, 1982, Ser. No. 452,596
Int. Cl.³ G05F *7/50*
U.S. Cl. 364—786 **15 Claims**



1. An arithmetic adder including:

sum circuit means having first and second data inputs, a carry input and a summation output;

carry circuit means responsive to said carry input of said sum circuit means for providing a carry signal path having a selectable propagation delay time means for selecting a propagation delay time in accordance with configuration dependent information and fault location information; and

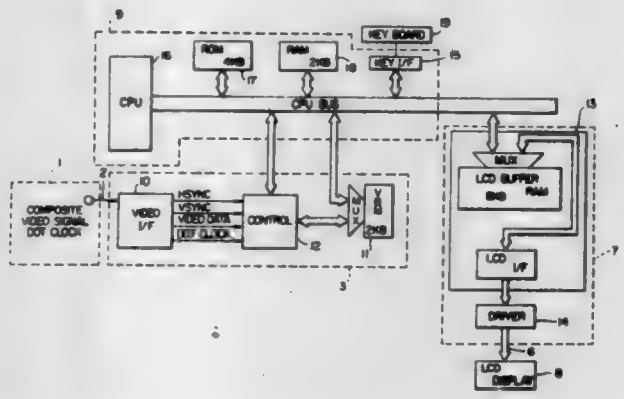
carry decision logic circuit means coupled to said carry circuit means and responsive to said first and second data inputs for connecting carry instructions to said carry circuit.

4,536,856

METHOD OF AND APPARATUS FOR CONTROLLING THE DISPLAY OF VIDEO SIGNAL INFORMATION

Akihiko Hiroishi, Tokyo, Japan, assignor to Sord Computer Systems, Inc., Tokyo, Japan

Continuation-in-part of Ser. No. 385,856, Jun. 7, 1982, abandoned. This application Sep. 20, 1984, Ser. No. 656,401
Int. Cl.³ G06F *3/14*
U.S. Cl. 364—900 **8 Claims**



1. A method of displaying video signal information from the external microcomputer or other control system on LCD or other similar display devices, comprising the steps of:

supplying output video signals from the external microcom-

puter to input section including video interface means and display control means;

separating said output video signal through said video interface means into signal components including HSYNC, VSYNC, video data and data clock signals which are to be fed into said display control means;

storing count control data from a central processor (CPU) connected to said display control means through CPU control bus;

counting the number of occurrences of HSYNC and VSYNC signals until the number to be determined by said count control data, and then generating and providing the respective horizontal and vertical addresses to a video buffer memory;

counting the number of dot clock signals until the number to be determined by said count control data is reached, and then generating and providing a write pulse to said video buffer memory;

converting serial bit video data to parallel bit video data in accordance with the dot clock signals through a delay circuit means and providing said parallel video data to latch circuit means under control of clock signals;

transferring said video data to the video buffer memory and storing the same at the horizontal and vertical addresses therein in response to the write pulse; and

retrieving any desired portion of the video data from said video buffer memory and transferring it to the LCD display device through LCD buffer RAM.

4,536,857

DEVICE FOR THE SERIAL MERGING OF TWO ORDERED LISTS IN ORDER TO FORM A SINGLE ORDERED LIST

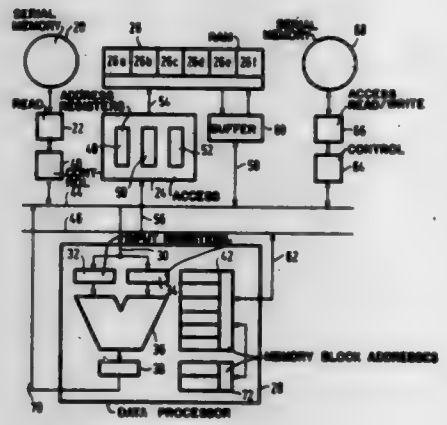
Wijnand J. Schoenmakers, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 4, 1983, Ser. No. 471,974

Claims priority, application Netherlands, Mar. 15, 1982, 8201057

Int. Cl.³ G06F *7/06, 13/06, 7/16, 7/36*

U.S. Cl. 364—900 **6 Claims**



1. A device for the merging of a first list A(i) of first elements which is ordered according to a first linear ordering criterion with a second list B(f) of second elements which is ordered according to a second linear ordering criterion in order to form a result list Z(t) of third elements which is ordered according to a third linear ordering criterion, so that each first element and each second element is represented by a third element, characterized in that said device comprises:

(a) a random access read/write memory M(j) (**26**) which contains a number (kmax)>2 of memory blocks (**26*a*. . . 26*f***), the (kmax−2) non-largest blocks thereof having a capacity which is sufficient for the storage of the second list;

(b) a serial memory input/output (**22, 66**) for receiving said first elements and outputting said third elements, said receiving and outputting having equal rates;

(c) a control device (**28**) for the merging operation, comprising:

(c1) a storage control device for successively storing said second elements in said (kmax−2) memory blocks;

(c2) indicator means for updating, when said serial memory input/output is activated, a first running write address (**48**) for the writing of said first elements, for updating a first running read address (**50**) for the first elements stored in the read/write memory, and for updating a second running read address (**52**) for the second elements stored in the read/write memory;

(c3) comparison means (**36**) for comparing, in a first state of said comparison means and according to the third linear ordering criterion, the first and second elements stored at said first and second running read addresses and indicated by the indicator means, and for making one element thereof available for supply to the serial memory input/output on the basis of the comparison;

(c4) a first block list updating device (**42**) for the updating of a series of start addresses of memory blocks used for the storage of said first elements;

(c5) a second block list updating device (**72**) for indicating the start addresses of at least two memory blocks and, under the control of the passing of a memory block end by the first or second running read address, for indicating the start address of the memory block thus vacated and, under the control of the passing of a memory block end by the first running write address, for making a start address of a memory block thus far indicated available to the indicator means as a new first write address for the storage of said first elements, and for deactivating the latter indication within the second block list updating device, at least two memory blocks outside said (kmax−2) memory blocks being indicated in an initial state;

(c6) vacating means for presenting, after the reception of the last one of said first elements on the serial memory connection, further first and/or second elements stored in the read/write memory to the serial memory connection in cooperation with said comparison means.

4,536,858

JUNCTION SHORT-CIRCUITING-TYPE PROGRAMMABLE READ-ONLY MEMORY DEVICE

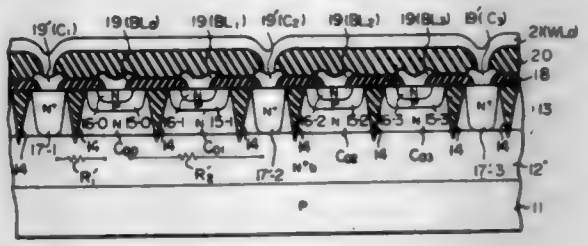
Kouji Ueno, Kawasaki, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Aug. 6, 1982, Ser. No. 406,096

Claims priority, application Japan, Aug. 8, 1981, 56-124852

Int. Cl.³ G11C *11/40*

U.S. Cl. 365—104 **6 Claims**



5. A junction short-circuiting-type programmable read-only memory (PROM) device having a plurality of word lines and bit lines, and formed on a semiconductor substrate of a first conductivity type, the device comprising:

a striped buried layer of a second conductivity type opposite that of the first conductivity type, formed on the semiconductor substrate, for forming a common collector region;

a striped epitaxial layer of the second conductivity type, formed on said striped buried layer, for forming striped collector regions;

base regions of the first conductivity type formed in said striped epitaxial layer;

emitter regions of the second conductivity type respectively formed in said base regions and, respectively, operatively connected to the plurality of bit lines; and

word line contact regions of the second conductivity type, having a high concentration of impurities, formed in said epitaxial layer, said word line contact regions respectively disposed between sets of two of said base regions and respectively, operatively connected to the plurality of word lines.

4,536,859

CROSS-COUPLED INVERTERS STATIC RANDOM ACCESS MEMORY

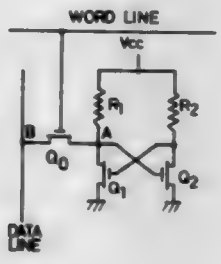
Setsufumi Kamuro, Yamatokoriyama, Japan, assignor to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Aug. 27, 1982, Ser. No. 412,378

Claims priority, application Japan, Aug. 31, 1981, 56-137923; Aug. 31, 1981, 56-137924; Jun. 7, 1982, 57-98181

Int. Cl.³ G11C *13/00*

U.S. Cl. 365—154 **15 Claims**



1. A circuit for driving a MOS transistor circuit by generating an output signal having a voltage higher than the voltage of a power source with a boosting operation of a condenser, comprising:

the power source;

an output terminal;

a first enhancement-type MOS transistor connected between the power source and the output terminal;

a first condenser connected to the gate of the enhancement-type MOS transistor;

a second enhancement-type MOS transistor connected such that the source and the drain of the second enhancement MOS transistor are coupled to the power source and the gate of the first enhancement-type MOS transistor, and the gate of the second enhancement-type MOS transistor is coupled to the gate of the first enhancement-type MOS transistor; and

a second condenser connected to the output terminal.

4,536,860

RANDOM ACCESS MEMORY DEVICE

Kazuhiro Toyoda, Yokohama, and Haruo Shimada, Hino, both of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 249,695, Mar. 31, 1981, abandoned.

This application Jan. 6, 1984, Ser. No. 568,952

Claims priority, application Japan, Apr. 1, 1980, 55-42489

Int. Cl.³ G11C *7/00*

U.S. Cl. 365—190 **16 Claims**

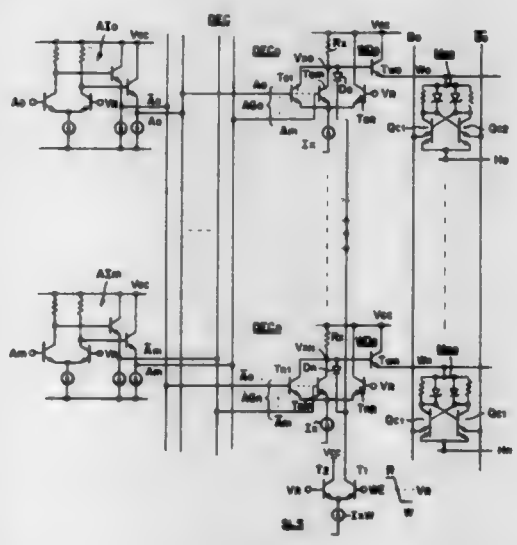
1. A random access memory device, operatively connected to receive first and second power supply voltages from first and second power supply lines, respectively, for performing read and write operations, said device comprising:

a plurality of memory cells arranged in a matrix form, each cell comprising a cross-connection transistor flip-flop circuit;

a plurality of word lines each having a selected potential and a non-selected potential, said word lines respectively connected to corresponding ones of said memory cells;

word drivers, each having selected and non-selected states, respectively operatively connected to said plurality of word lines, each having an input terminal for receiving selection signals, said word drivers providing said selected potential higher than said non-selected potential in accordance with the selection signals;

word decoders, each having an output terminal respectively connected to an input terminal at a corresponding one of said word drivers, for supplying the selection signals to said word drivers, each of said word decoders including resistor means, operatively connected between the first power supply line and a respective output terminal, for generating the selection signals, having a higher or lower potential in accordance with said selected and non-selected states of said word drivers, respectively; and



a selected word line level switching circuit, operatively connected to receive a read and write operation signal, and operatively connected to said plurality of word drivers, said selected word line level switching circuit comprising:

a current source; and

switching means, each of said switching means operatively connected to the input terminal of respective word drivers, and operatively connected to said current source, for selectively connecting said current source to said resistor means of only one of said selected word decoders during the read operation, and for making the selected potential of the selected word line during the read operation lower than the selected potential of the selected word line during the write operation.

4,536,861

OPTICAL FIBRE HYDROPHONE

Philippe Graindorge, Magny les Hameaux, and Hervé Arditty, Marly le Roy, both of France, assignors to Thomson-CSF, Paris, France

Filed Feb. 27, 1984, Ser. No. 583,644

Claims priority, application France, Feb. 25, 1983, 83 03130

Int. Cl.³ H04R *17/00*

U.S. Cl. 367—149 **15 Claims**

1. An optical fibre hydrophone for detecting sound waves in a medium, comprising:

means for transmitting and detecting radiation;

a measuring head immersed in said medium; and

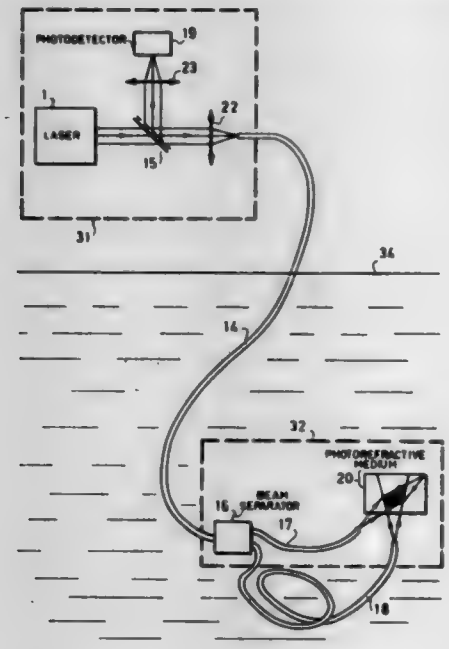
a monomodal waveguide element connecting said measuring head and said means for transmitting and detecting radiation;

said means for transmitting and detecting radiation including a monochromatic radiation source, means for detecting radiation and a first splitting means, said source and said means for detecting each being connected to said splitting means, said means for transmitting and detecting radiation introducing radiation into said waveguide element;

said measuring head including a second splitting means, a

monomodal optical waveguide element forming a reference arm, a photorefractive medium and a monomodal optical fibre forming a measuring arm, said measuring arm being immersed in said medium so as to contact said sound waves, while said reference arm, photorefractive medium and splitting means are protected from said medium and not in contact with said sound waves;

wherein said splitting means distributes a first and second fraction of said radiation to said measuring arm and said reference arm respectively, said second fraction being directed from said reference arm to a crystal angle of said



photorefractive medium and said first fraction being directed from said measuring arm in a different direction from said crystal angle, so as to intersect in said photorefractive medium and reenter said measuring arm and said reference arm;

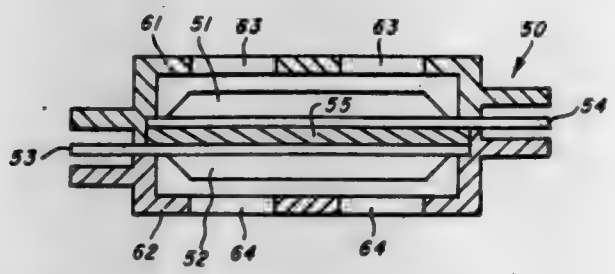
said second splitting means then recombining the radiation from said measuring arm and said reference arm, said radiation traveling through said waveguide element to said means for transmitting and distributing radiation, said first splitting means directing said radiation to said detecting means.

4,536,862

SEISMIC CABLE ASSEMBLY HAVING IMPROVED TRANSDUCERS

Lawrence B. Sullivan, Plano, and Charng-Wen M. Lo, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 24, 1982, Ser. No. 381,102
Int. Cl.³ G01V *1/38*; H04R *17/00*
U.S. Cl. 367—153 **20 Claims**



1. A seismic exploration system comprising:

(a) a seismic cable assembly having an acoustically transparent tubular enclosure;

(b) at least one pressure transducer electrically connected and positioned within the cable assembly enclosure including:

(1) an elastic, deformable, electrically-conductive housing arranged in at least two sections, the sections servicing as terminals for an electrical output to the cable assembly;

(2) insulating means positioned between the housing sections to electrically insulate the sections from each other and to form a fluid seal to provide a sealed chamber defined by the inside surfaces of the housing sections, the sealed chamber being filled with a non-pressurized, non-conductive gas; and

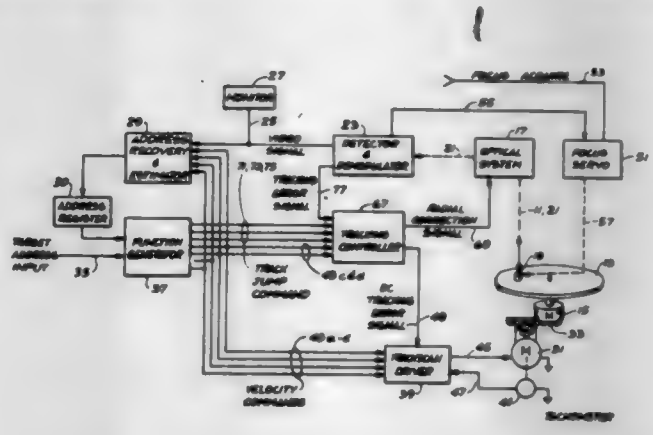
(3) at least two pressure-to-electrical devices electrically interconnected within the sealed chamber, mechanically and electrically connected to the inside surfaces of the two housing sections, respectively, within the sealed chamber so that the devices flex when pressure is applied to the enclosure causing the housing sections to deform providing an electrical output through the housing sections.

4,536,863

METHOD AND APPARATUS FOR RECOVERING INFORMATION FROM A VIDEODISC

Gary M. Giddings, Laguna Hills, Calif., assignor to Discovision Associates, Costa Mesa, Calif.

Filed Apr. 15, 1982, Ser. No. 368,792
Int. Cl.³ G11B *21/08*
U.S. Cl. 369—43 **10 Claims**



1. A method for manipulating a track reader for recovering information from a selected target track of a plurality of spiralling and substantially circular information tracks or concentric circular information tracks on a record disc, each said track containing at least in part a unique track identifying code, said method comprising the steps of:

(a) generating a target track identifying code that matches the track identifying code of said target track;

(b) rotating the disc in a prescribed fashion;

(c) scanning the disc with the track reader at a prescribed radial velocity relative to the disc, toward the target track to recover information recorded thereon including track identifying codes;

(d) comparing recovered track identifying codes with said target track identifying code and detecting the difference therebetween;

(e) scanning continuously toward said target track until said comparing and detecting step indicates that the recovered track identifying code is within a fixed range of the target track identified code;

(f) thereafter moving the track reader incrementally within said range relative to said disc across a prescribed number of tracks during each revolution of the disc, toward the target track;

(g) upon passing the target track by detection in said comparing and detection step, that the difference between the recovered track identifying code and the target track identifying code is increasing, reversing the radial scanning direction;

(h) continuing said incremental scanning while continuing to detect the difference between the recovered track identi-

fying code and the target track identifying code, and continuing to reverse the radial direction of movement upon each detection of an increasing difference between the recovered track identifying code and the target track identifying code until a match is made therebetween, and in the absence of a match in a first prescribed period of time, incrementing the target track identifying code by a fixed value;

(i) continuing said incremental scanning toward said target track until a match between the recovered track identifying code and the incremented target track identifying code is found; and

(j) after a match is found, ceasing the relative radial movement across the disc and recovering the information from the arrived at track.

4,536,864

APPARATUS FOR READING AN OPTICALLY CODED DISC-SHAPED RECORD CARRIER

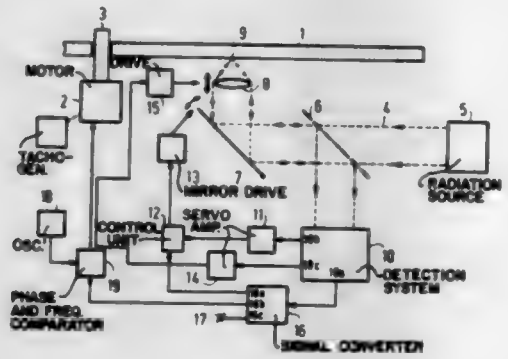
Gerard E. Van Rosmalen, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 28, 1983, Ser. No. 489,284

Claims priority, application Netherlands, Mar. 9, 1983, 8300844

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—44 **7 Claims**



1. An apparatus for reading a disc-shaped record carrier with a multi-turn spiral information track provided with optically readable digitally coded information, said digital information being recorded in the information track as a stream of data bits of constant spatial bit frequency independently of the diameter of the track turn and comprising a sequence of detectable information blocks with a fixed number of data bits, said apparatus comprising a radiation source for emitting a read beam, an optical system for projecting said read beam as a read spot on the record carrier, a detection system for detecting the information contained in the read beam after cooperation with the record carrier, means for converting said information into an electric information signal, means for rotating the record carrier at a speed such that the read spot scans the information track at a scanning speed which is n times higher than the scanning speed which would result in said electric information signal having a desired bit frequency, a positioning system for controlling the radial position of the read spot on the record carrier, and a servo-system for controlling said scanning speed so that said electric information signal has a constant first bit frequency which is a factor n higher than the ultimately desired bit frequency independently of the radial position of the read spot on the record carrier, said converting means comprising a memory device for storing, with the first bit frequency, the data bits of an information block being read and for subsequently supplying said data bits with the desired bit frequency, to thereby reduce the susceptability of said apparatus to disturbances caused by shocks, vibrations and the like during read-out of the information, said apparatus further comprising a control unit which is coupled to the positioning system for effecting a jump-back of the scanning spot by one track pitch at instants which are determined by said control unit, said control unit also being coupled to the memory device for determining the periods during which said data bits are read into the memory device such that as a result of the scanning pattern of the information track and the read-in periods, consecutive information blocks are read into the memory device in accordance with a cycle which is determined by the control unit and are subsequently supplied by said memory device as a continuous sequence of information blocks.

4,536,865

BOOKSHELF TYPE RECORD PLAYER

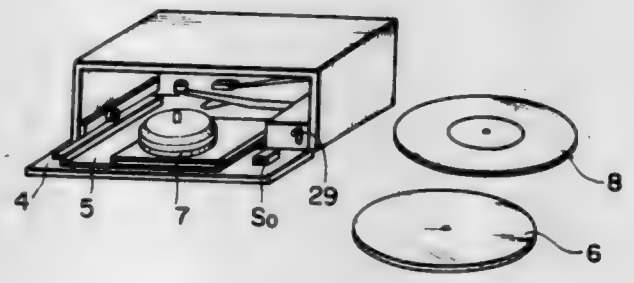
Isami Kenmostu, and Nobuyuki Isobe, both of Saitama, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Continuation of Ser. No. 250,330, Apr. 2, 1981, abandoned. This application Dec. 2, 1983, Ser. No. 557,396

Claims priority, application Japan, Apr. 4, 1980, 55-44241

Int. Cl.³ G11B *1/00, 3/08*

U.S. Cl. 369—75.2 **19 Claims**



1. A bookshelf type record player comprising:

a player cabinet having a depth dimension smaller than the diameter of a standard record disk;

a tone arm;

a turntable;

means for mounting said tone arm at a position adjacent a rear side of said player cabinet said tone arm being rotatable so as to normally extend substantially parallel to said rear side of said player cabinet when said record player is not in a play mode;

a turntable support member; and

means for movably mounting said turntable support member in said cabinet so that said turntable support member is movable between a play position and a record disc changing position, said record disc changing position being located further from said rear side of said player cabinet than said play position, and constituting a turntable attachment removal position,

said movable mounting means also being capable of moving said turntable support member in said player cabinet between a retracted position and said play position, said play position being located further from said rear side of said cabinet than said retracted position, said turntable being removed from said turntable support member prior to movement of the same to said retracted position.

4,536,866

INFORMATION RETRIEVAL SYSTEM AND APPARATUS

Jonathan A. Jerome, Palo Alto; Frank D. Neu, Castro Valley, and Peter G. Wohlmut, Palo Alto, all of Calif., assignors to Videonics of Hawaii, Inc., Honolulu, Hi.

Continuation of Ser. No. 964,977, Nov. 30, 1978, abandoned, which is a continuation of Ser. No. 797,485, May 16, 1977,. This application Jan. 3, 1983, Ser. No. 455,307

Int. Cl.³ G11B *7/00*

U.S. Cl. 369—112 **46 Claims**

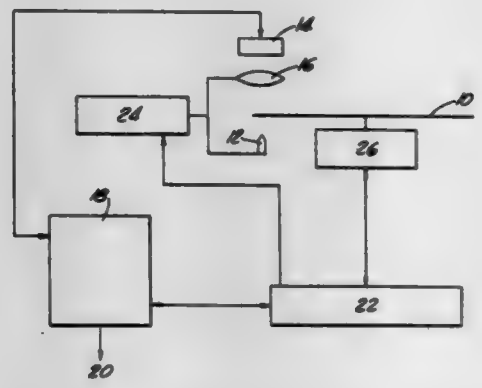
1. An electro-optical data retrieval system for retrieving data from a storage medium and of the type wherein relative motion is imparted between the recording medium and pickup means for causing said data to be scanned for retrieval thereof, comprising:

means for receiving a data-bearing storage medium having a relatively high density of data tracks thereon,

illuminance means for illuminating an area of said storage medium,

detector means including a matrix array of photosensitive elements, said array having predetermined dimensions,

focusing means for focusing an image of an area of interest within said illuminate area of said storage medium onto said detector means, the image of a data track being no smaller than a single photosensitive element, said array being dimensioned such that the area of interest does not extend beyond said array despite variations in the position of the area of interest with respect to the array due to variations in the location of the data relative to the detector means,



select circuit means including means for selecting at least one of said photosensitive elements of said array to provide an output signal of the system, said means for selecting including register means for selecting at least one of said photosensitive elements,

velocity detection means including external clock means responsive to signals from at least one of said photosensitive elements for determining increases and decreases in the rotational velocity of said storage medium, and

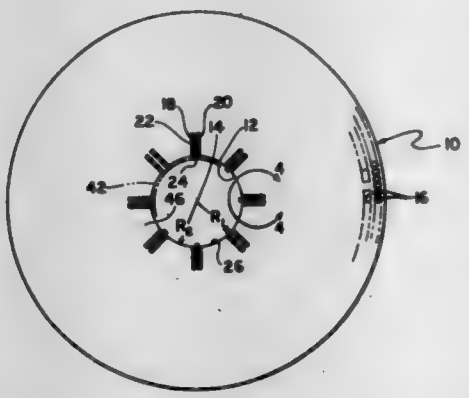
switching means responsive to said velocity detection means for selecting from said photosensitive elements at least one of said elements positioned so that the information to be retrieved is present at that element at the proper time as determined by said velocity detection means.

4,536,867

SELF-CENTERING DISC

Joseph B. Robinson, Scotts Valley, Calif., assignor to Qume Corporation, San Jose, Calif.

Filed Apr. 16, 1984, Ser. No. 600,724
Int. Cl.[3] G11B *3/70, 7/24*
U.S. Cl. 369—282 5 Claims



1. A self-centering shaft-engaging disc, comprising:

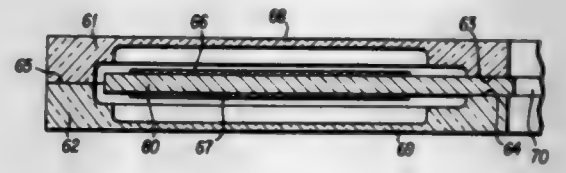
a disc formed of a single sheet of material defining a hole centered on the axis thereof, said disc having a plurality of slots extending into the walls surrounding said hole to form a plurality of fingers, including first and second groups of fingers with the fingers of said groups interspersed, at least three of said first fingers having radially inner ends lying on a first circle concentric with said disc axis, and said second fingers having radially inner ends lying on a second circle of greater diameter and concentric with said disc axis than the radius of said first circle, whereby when a shaft having a radius greater than the radius of said first circle is inserted through said central hole, the first group of fingers engage the shaft and center it on the axis of the disc.

4,536,868

PROTECTED OPTICAL DISK WITH A FREE LAYER HOLDER

Francois Langé , and Jean Cornet, both of Paris, France, assignors to Thomson-CSF, Paris, France

Filed Jun. 6, 1983, Ser. No. 501,190
Claims priority, application France, Jun. 8, 1982, 82 09959
Int. Cl.[3] G01D *15/32*
U.S. Cl. 369—284 11 Claims



1. An information optical storage device comprising:

a disc-shaped base member;

first and second confronting disc shaped protective members arranged one on each side of said disc-shaped base member, at least one of said protective members having an annular recess in confronting relationship with said base member;

a radiant-energy responsive recording medium disposed between said base member and one of said protective members within said annular information storage region, said storage region having a radially inner end with a radius greater than an inner radius of said annular recess and a radially outer end with a radius less than an outer radius of said annular recess, said base member being closely embraced between respective raised annular edges of said first and second protective members located only at one radial end of said storage region;

means for fastening said raised annular edges to lateral faces of said base member, at least one of said protective members having a further raised annular edge at a second radial end of said storage region, means for fastening said first and second protective members to one another along said further raised annular edges,

whereby said information storage region is exposed to an atmosphere enclosed by the combination of said protective members, the embraced portion of said base member and said fastening means and said base member having a free circumferential edge sufficiently spaced from said combination to prevent any contact therebetween as a result of relative radial and axial movements between said base member and said protective members.

4,536,869

OPTICAL DISK ASSEMBLY

Jasper S. Chandler, and Frederick F. Geyer, both of Rochester, N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

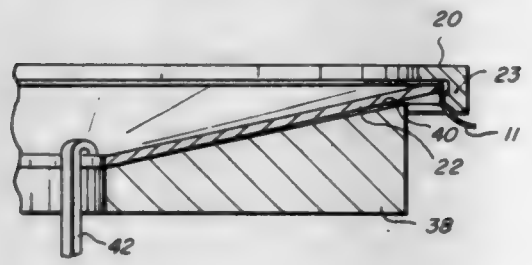
Filed Jan. 17, 1983, Ser. No. 458,494
Int. Cl.[3] G01D *15/32*
U.S. Cl. 369—287 7 Claims

1. An optical disk assembly comprising:

a flexible, disk-shaped support carrying a record layer, said support having an information storage region and an annular peripheral region radially outward of said storage region; and

an annular retaining ring engaging said peripheral region of said support, said retaining ring comprising outer and

inner ring members on radially opposed sides of said support, and said inner ring member being resiliently



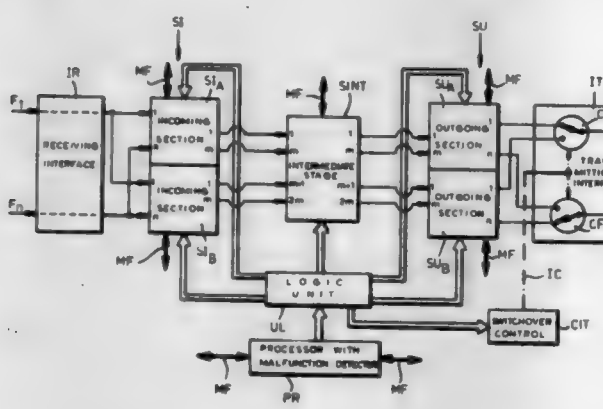
inwardly deformed to reduce its outer diameter so as to be urged toward said outer ring member to capture said support therebetween.

4,536,870

PCM SWITCHING NETWORK WITH SURPLUS CAPACITY

Amilcare Bovo, and Luigi Canato, both of Milan, Italy, assignors to Italtel Societa Italiana Telecomunicazioni, Milan, Italy

Filed Sep. 1, 1983, Ser. No. 528,535
Claims priority, application Italy, Sep. 1, 1982, 23078 A/82
Int. Cl.³ H04J *1/16, 3/14*
U.S. Cl. 370—16 **4 Claims**



1. A switching network for selectively interconnecting channels from an incoming PCM links to channels of n outgoing PCM links, comprising:

a receiving-side stage formed by a pair of mutually identical first sections each having a multiplicity of switching units with a total of n first input terminals and m first output terminals, m being not more than n nor less than n/2, each incoming PCM link being connected in parallel to a respective pair of homologous input terminals of said first sections;

a transmitting-side stage formed by a pair of mutually identical second sections each having a multiplicity of switching units with a total of m second input terminals and n second output terminals;

a single intermediate stage having a multiplicity of switching units with a total of $2m$ third input terminals connected to respective first output terminals and $2m$ third output terminals connected to respective second input terminals, the switching units of said intermediate stage establishing a plurality of alternative signal paths between any switching unit of said receiving-side stage and any switching unit of said transmitting-side stage;

switchover means for connecting each outgoing PCM link to either one of a respective pair of homologous output terminals of said second sections; and

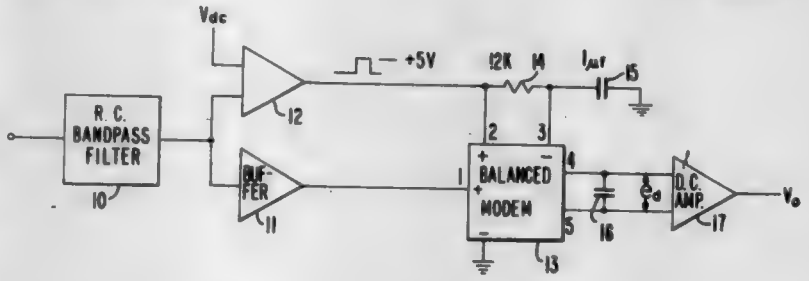
logic means responsive to instructions from a processor for controlling said stages to route, by way of switching units of said intermediate stage, traffic from some incoming links exclusively through switching units of one of said first sections and switching units of one of said second sections and traffic from other incoming links exclusively through switching units of the other of said first sections and switching units of the other of said second sections, with setting of said switchover means to extend the signals paths from said second sections to selected outgoing PCM links, said logic means being responsive to commands from said processor upon detection of a malfunctioning switching unit to reroute traffic from the malfunctioning switching unit to an available switching unit of the same stage for passage over an alternative path.

4,536,871

SIGNAL DETECTOR APPARATUS

Tom L. Blackburn, San Jose, Calif., assignor to GTE Communications Products Corporation, Phoenix, Ariz.

Filed Jul. 26, 1983, Ser. No. 517,310
Int. Cl.³ H04B *1/14*
U.S. Cl. 370—74 **10 Claims**



1. A carrier level detection circuit comprising:

first filter means having an input and an output for selecting a desired carrier signal;

a switching means connected to said filter means output and converting said carrier signal to a square-wave signal having a repetition rate corresponding to the frequency of said carrier signal; and

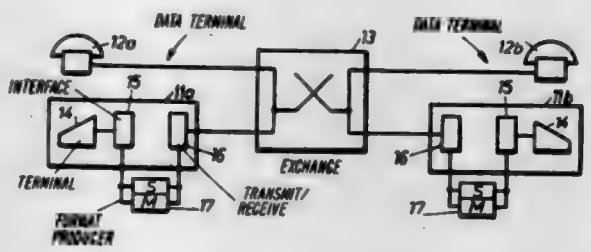
a balanced modem having a first signal input, a switched signal input and an output, said switched signal input receiving said square-wave signal, said first signal input receiving said carrier signal, said balanced modem producing an output signal equal to the product of the input signals applied thereto and said output signal having a DC magnitude proportional to the magnitude of said carrier signal.

4,536,872

TELECOMMUNICATION SYSTEM FOR TRANSMITTING DATA INFORMATION BY MEANS OF A DIGITAL EXCHANGE

Mauritz J. B. Lahti, Huddinge, Sweden, assignor to Telefonaktiebolaget LM Ericsson, Stockholm, Sweden

PCT No. PCT/SE83/00055, § 371 Date Oct. 13, 1983, § 102(e) Date Oct. 13, 1983, PCT Pub. No. WO83/03036, PCT Pub. Date Sep. 1, 1983
PCT Filed Feb. 21, 1983, Ser. No. 552,045
Claims priority, application Sweden, Feb. 24, 1982, 8201154
Int. Cl.³ H04J *3/16*
U.S. Cl. 370—82 **3 Claims**



1. In a telecommunication system including a telecommunication exchange for handling digital information and at least two data terminals, apparatus for transmitting data information between the data terminals via the telecommunication exchange comprising:

first means for connecting one of the two data terminals to the telecommunication exchange, said first means comprising at least, word forming means connected to the data terminal for subdividing the data flow into data words of given length, buffer means for storing a variable plurality of the words of given length received from said word forming means, frame forming means for generating a heading word for a frame, said heading wording including a frame locking word for synchronization and a frame length word for indicating the number of data words in a frame, counting means for counting the number of data words in said buffer means, transmission means for transmitting frames of words to the telecommunication exchange, and control means for controlling the switching of words from said frame forming means and from said buffer means to said transmission means, said control means further controlling the insertion of the count of the data words counted by said counting measn into the heading word prior to the transmission thereof; and

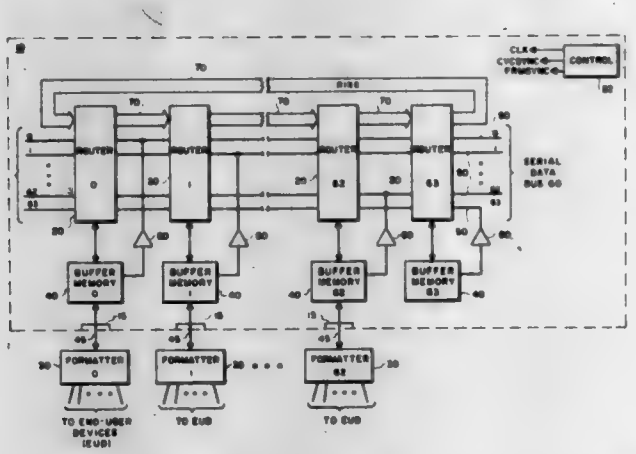
second means of connecting the other of the two data terminals to the telecommunication exchange, said second means comprising at least, receiver means connected to said telecommunication exchange for receiving frames of words, frame locking means for determining the beginning of frames by locating heading words in the received frames, filter means responsive to said receiver means and said frame locking means for separating the data words of the frames from the heading words, and forwarding means for sending the separated data words to said other data terminal.

4,536,873

DATA TRANSMISSION SYSTEM

Tom G. Leete, Plano, Tex., assignor to Honeywell Inc., Phoenix, Ariz.

Filed Mar. 19, 1984, Ser. No. 591,292
Int. Cl.[3] H04J 3/02
U.S. Cl. 370—85 **9 Claims**



1. A central station, having a plurality of input/output formatters operatively connected to said central station, each input/output formatter having a plurality of devices coupled thereto, for exchanging data from a first of said plurality of input/output formatters to a second of said plurality of input-/output formatters, said central station comprising:

(a) a plurality of router means, each of said router means operatively connected to a serial data bus, wherein said serial data bus includes a plurality of serial data bus lines, and each of said router means operatively connected to a next adjacent router means via a plurality of parallel lines thereby forming a ring, each of said router means for controlling the exchange of said data in response to a corresponding control message transmitted by each of said router means via said ring during a first cycle to indicate transmission of said data from the first of said plurality of input/output formatters on its corresponding serial data bus lines during a next sequential cycle; and

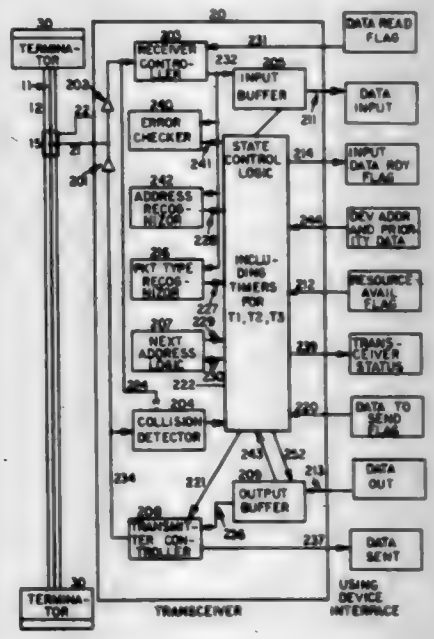
(b) a plurality of buffer memory means, each buffer memory means operatively connected to a corresponding router means and operatively connected to a corresponding input/output formatter, and further operatively connected to the corresponding serial data bus line of said serial data bus, for interfacing with the corresponding router means to cause said data to be operatively coupled to and from the serial data bus in response to said control message.

4,536,874

BANDWIDTH EFFICIENT MULTIPOINT DATA COMMUNICATION SYSTEM

James C. Stoffel, 368 Council Rock Ave., Rochester, N.Y. 14610, and Chander B. Ramchandani, 1107 Bettstrail Way, Potomac, Md. 20854

Filed Jul. 21, 1983, Ser. No. 515,696
Int. Cl.[3] H04J 3/02
U.S. Cl. 370—85 **21 Claims**



1. A data communication system comprising:

a communication medium including a plurality of taps for making connection therewith, said medium providing for the coupling of signals along said taps;

a plurality of transceivers connected by respective ones of said taps to said medium, each of said transceivers including means for transmitting a signal into said medium and means for receiving a signal communicated via said medium, said transceivers and said medium constituting a communication network;

interface means coupled to respective ones of said transceivers for interfacing said transceivers with utilization devices;

each of said transceivers including permit means comprising circuitry for generating a network-access permit in the form of a digital signal, and means for passing the permit via said transmitting means and said medium from one of said transceivers to another of said transceivers;

each of said transceivers further comprising permit-checking means for enabling transmission by said transmission means, in any one of said transceivers said enabling of said transmission being in response to the presence of said permit at said one transceiver;

each of said transceivers further comprising means for detecting errors when more than one transceiver attempts to utilize said medium at the same time, said error detecting means signaling when a transceiver assumes ownership of the permit, and logic means including means to reestablish error free network communication;

said logic means in each of said transceivers designating a sequence of communication among the transceivers while permitting an addition and a deletion of transceivers to the

network without need to reinitialize other ones of the transceivers in the network

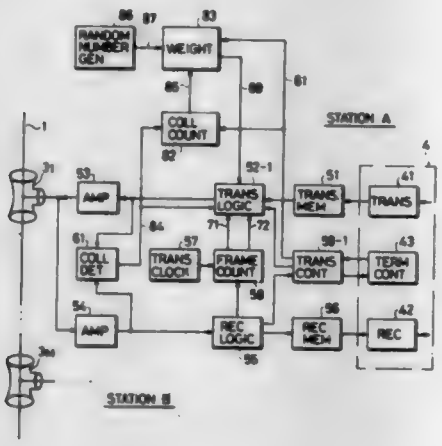
whereby any one of said transceivers is enabled to transmit a message to another of said transceivers only upon the presence of said permit at said one transceiver so as to prevent a concurrent transmission of messages by more than one receiver.

4,536,875

RETRANSMISSION CONTROL SYSTEM

Hiroshi Kume, and Yoichi Tan, both of Kanagawa, Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,006
Claims priority, application Japan, Jun. 29, 1982, 57-110592
Int. Cl.³ H04J *3/02, 6/00*
U.S. Cl. 370—85 **18 Claims**



1. A multi-station communications network of the type wherein a plurality of stations communicate with one another over a communication medium and wherein data signals on said medium are grouped into frames periodically occurring on a time axis, with each frame comprising a plurality of successively occurring blocks, each station including means for transmitting packet signals onto said medium to occupy a previously unoccupied block, whereby multiplexed digital signals are transmitted on said medium in a time division manner, said network including a retransmission control system for determining a retransmission time interval after which a particular station will retransmit its signals after a collision has occurred in one block between the signals of at least two different stations, the improvement characterized in that said retransmission control system determines said retransmission time interval of said particular station in accordance with at least one of a degree of congestion in the frame in which a collision has occurred and the type of data being transmitted in the packet signal of said particular station.

4,536,876

SELF INITIALIZING PHASE LOCKED LOOP RING COMMUNICATIONS SYSTEM

Richard G. Bahr, Framingham, and Thomas C. Hogan, Natick, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

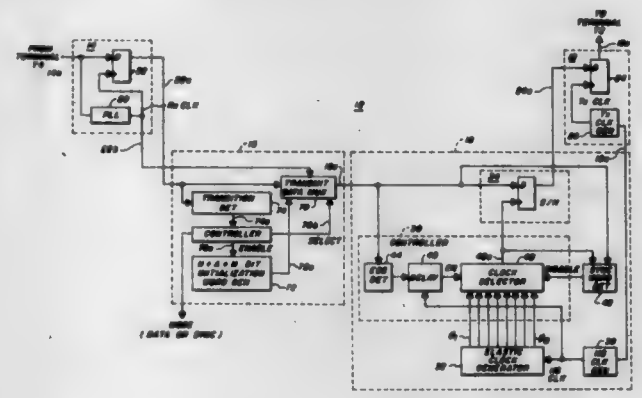
Filed Feb. 10, 1984, Ser. No. 579,088
Int. Cl.³ H04J *3/00, 3/06*
U.S. Cl. 370—86 **9 Claims**

1. A ring communications system comprising a plurality of terminals coupled together to provide a unidirectional communications ring, each of said terminals comprising:

A. means for transmitting digital signals at a transmit data rate (1/T) associated with said terminal to the next downstream terminal, said transmitting means being operative in a first state to transmit run length limited digital signals having fewer than N consecutive bits having the same value, and operative in a second state to transmit digital signals having N+A consecutive bits having the same binary value, followed by at least one bit having the other binary value,

B. means for receiving digital signals from the next upstream terminal, said receiving means including:

i. a phase locked loop (PLL) means for generating a receive (Rx) clock signal from said received digital signal, said PLL means including a phase locked loop having a characteristic hold time (H) exceeding its characteristic lock time (L) and where (N+A)×T is less than H,



ii. shift register means for re-clocking said received digital signals in response to said Rx clock signal

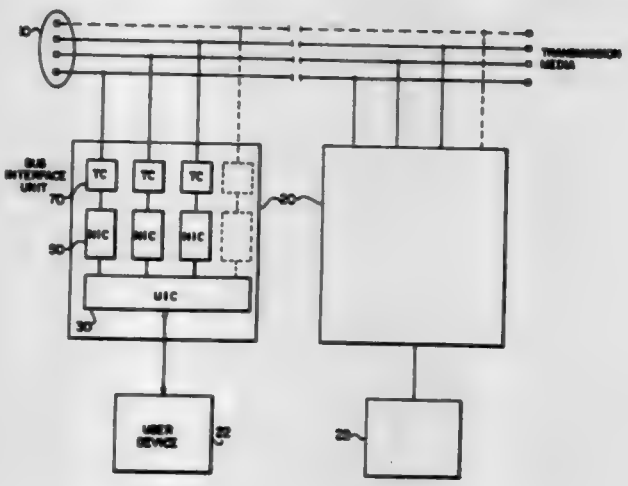
C. control means for detecting signal level transitions in said re-clocked digital signals, and means operative when N consecutive bits of said re-clocked digital signals have the same value, for controlling said transmitting means to be in its second state for a period equal to (N+A+M)×T, where M is greater than or equal to 1, and A is greater than or equal to 0, and for controlling said transmitting means to be in its first state otherwise.

4,536,877

TACK-ON ACKNOWLEDGMENT IN COMPUTER NETWORKS

William D. Livingston, Falls Church, and Eugene E. Jacob, Vienna, both of Va., assignors to E-Systems, Inc., Dallas, Tex.

Filed Jan. 21, 1983, Ser. No. 459,897
Int. Cl.³ H04J *3/00, 6/00, 3/02*
U.S. Cl. 370—94 **4 Claims**



1. A method of communicating data, comprising the steps of:

(a) transmitting data;

(b) receiving and storing without acceptance the transmitted data;

(c) evaluating the stored data for validity;

(d) acknowledging receipt of the data if evaluated to be valid;

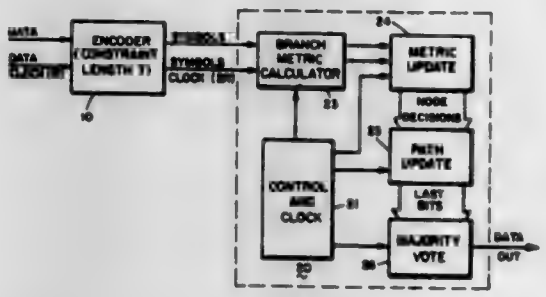
(e) transmitting an abort message when no valid acknowledgement is received within a first, predetermined time period; and

(f) accepting the stored data if not aborted within a second, predetermined time period.

4,536,878
BIT SERIAL CONVOLUTIONAL DECODER FOR VLSI IMPLEMENTATION

Glen D. Rattlingourd; Robert J. Currie, both of Salt Lake City, and Stanley D. Moss, Kaysville, all of Utah, assignors to Sperry Corporation, New York, N.Y.

Filed Sep. 20, 1982, Ser. No. 429,315
Int. Cl.[3] G06F *11/10*
U.S. Cl. 371—43 14 Claims



1. A decoder circuit comprising,

calculator means (23) for receiving coded symbol signals and producing calculator output signals representative of said symbol signals,

said calculator means includes serial-to-parallel converter means for converting said symbol signals to parallel output signals,

full adder means connected to said serial-to-parallel converter to receive said parallel output signals and produce said calculator output signals which are representative of said symbol signals,

evaluator means (24) for receiving said calculator output signals from said calculator means and producing evaluator output signals which indicate a minimum value of said calculator output signals and are used in establishing the output signals to be produced by the decoder circuit,

convergence means (25) for receiving said evaluator output signals from said evaluator means and producing convergence output signals representative of the most probable signal conditions,

said convergence means includes multiplexer means connected to receive said evaluator output signals and shift register means connected to receive output signals from said multiplexer means,

said shift register means comprises a plurality of shift registers and a plurality of multiplexer devices,

one input of each multiplexer device connected to an output of said multiplexer means,

another input of each multiplexer device connected to an output the preceding shift register,

the output of each multiplexer device connected to an input of the succeeding shift register, and

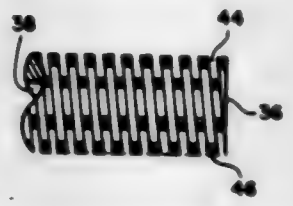
valuation means (26) for receiving said convergence output signals from said convergence means and producing a decoder output signal representative of the coded symbol signals supplied to said calculator means.

4,536,879
PYROTECHNIC LAMP

Cathy J. Reed, Nashua, and Thomas M. Pollak, Amherst, both of N.H., assignors to Sanders Associates, Inc., Nashua, N.H.

Filed Aug. 19, 1983, Ser. No. 524,804
Int. Cl.[3] H01S *3/091*
U.S. Cl. 372—77 14 Claims

1. In a pyrotechnic lamp including a metal whose combustion in oxygen occurs at sufficiently high temperatures to produce optical radiation, a source of oxygen which will maintain combustion of the metal, means for providing a sustained flow of the oxygen past the metal, and, a rod for supporting and igniting the metal, the improvement for providing extended burn duration, uniform heating and ignition, and reproduceable optical radiation comprising:

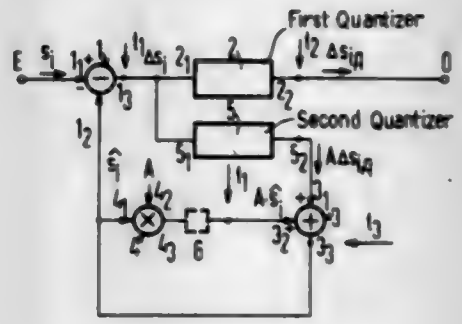


the metal is a symmetrical member having a centered longitudinal bore adapted to receive the rod therein and having the outer surface thereof finned.

4,536,880
DIGITAL DPCM-CODER HAVING A HIGH PROCESSING SPEED

Hans-Joachim Grallert, Groebenzell, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Aug. 16, 1983, Ser. No. 523,561
Claims priority, application Fed. Rep. of Germany, Sep. 1, 1982, 3232558
Int. Cl.[3] H04B *12/04*; H03K *13/22*
U.S. Cl. 375—30 3 Claims



1. A digital DPCM-coder having a high processing speed with fewer calculating operations, comprising:

an adder having first and second inputs and an output;

a subtractor having first and second inputs and an output;

a multiplier means having an input and an output;

a first quantizer means having an input and output;

a second quantizer means having an input and output;

a PCM signal input connecting to the first input of the subtractor;

the output of the subtractor being connected to the input of the first quantizer means, said first quantizer means outputting quantized DPCM-signals;

a calculating loop means connected between the output of the subtractor and the second input of the subtractor, said calculating loop means determining an estimated value which is fed to said subtractor second input; and

said calculator loop means comprising the second quantizer means whose output is connected to the first input of the adder, the output of the adder connecting to the input of the multiplier means which multiplies with a prediciton factor A, the output of the multiplier means connecting to the second input of the adder, and the output of the adder connecting to the second input of the subtractor.

4,536,881
INTEGRATED LOGIC CIRCUIT ADAPTED TO PERFORMANCE TESTS

Yoshihiro Kasuya, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Japan

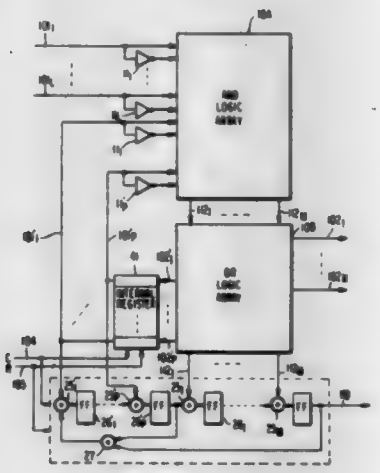
Continuation of Ser. No. 409,787, Aug. 20, 1982, abandoned, which is a division of Ser. No. 130,687, Mar. 17, 1980, Pat. No. 4,366,393. This application Oct. 27, 1983, Ser. No. 545,608

Claims priority, application Japan, Mar. 15, 1979, 54-30243; Mar. 15, 1979, 54-30253; Mar. 15, 1979, 54-30254; Mar. 15, 1979, 54-30256

Int. Cl.[3] G11C *19/00*

U.S. Cl. 377—70

5 Claims



1. An easily testable integrated logic circuit, comprising:

a combinational logic circuit receiving a plurality of first inputs and a plurality of second inputs for providing logic outputs;

a feedback shift register having an output and including a plurality of first through n-th series-connected flip-flops each having an input and an output, said flip-flops receiving in parallel at least a portion of said logic outputs from said combinational logic circuit and advancing said outputs in series through said first through n-th flip-flops while feeding an output from at least one of said flip-flops back to the input of another of said flip-flops to thereby compress a signal sequence in said logic outputs, the output of any one of said flip-flops constituting the output of said feedback shift register; and

means for selectively disconnecting the series connection of said flip-flops whereby each of said flip-flops receives and stores a respective one of said portion of said logic outputs received in parallel from said combinational logic circuit, at least a portion of said outputs of said flip-flops being fed back in parallel as said second inputs to said combinational logic circuit when said series connection of said flip-flops is disconnected.

4,536,882
EMBEDDED ABSORBER X-RAY MASK AND METHOD FOR MAKING SAME

Addison B. Jones, Yorba Linda, and Siegfried G. Plonski, Santa Ana, both of Calif., assignors to Rockwell International Corporation, El Segundo, Calif.

Division of Ser. No. 3,062, Jan. 12, 1979, abandoned. This application Feb. 7, 1980, Ser. No. 119,331

Int. Cl.[3] G21C *11/00;* G02B *5/00;* G03F *11/00;* B05B *5/00*

U.S. Cl. 378—35

9 Claims

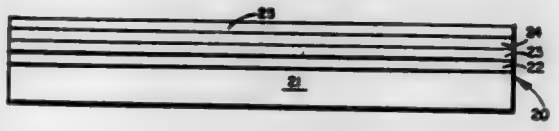
1. A method of making an X-ray mask for X-ray lithography comprising the steps of:

providing a substrate for supporting the mask membrane of the X-ray mask during fabrication thereof;

depositing a thin layer of material which is opaque to X-ray or charged particle radiation on said substrate, said thin layer having a thickness less than that of said substrate;

patterning said thin layer to form a mask pattern;

applying a mask membrane layer of a high X-ray transmissive material over said patterned thin layer; and



removing at least a portion of the substrate to form an X-ray mask.

4,536,883
METHOD AND APPARATUS FOR MOLECULAR IMAGING USING X-RAYS AT RESONANCE WAVELENGTHS

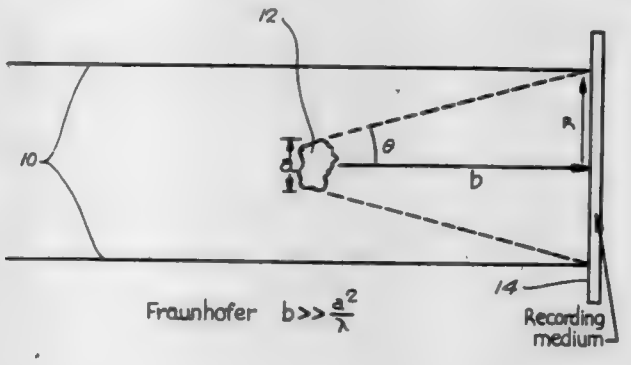
George F. Chapline, Jr., Alamo, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,596

Int. Cl.[3] G03B *41/16*

U.S. Cl. 378—36

9 Claims



1. A method of producing images representing the molecular structure of an object, comprising the steps of directing a beam of coherent X-rays upon the object to produce scattering of the X-rays by the object, producing interference on a recording surface between the scattered X-rays from the object and unscattered coherent X-rays such that holograms are produced on said recording surface, and establishing the wavelength of the X-rays to correspond with a spectral resonance of a constituent of said object so as to improve the quality of the holograms as representations of molecular structures involving such constituent.

4,536,884
PLASMA PINCH X-RAY APPARATUS

Arnold Weiss, Minneapolis, Minn.; Herman P. Schutten; Louis Cartz, both of Milwaukee, Wis.; Gordon B. Spellman, Mequon, Wis.; Stanley V. Jaskolski, Sussex, Wis., and Peter H. Wackman, deceased, late of Wauwatosa, Wis. (by Connie M. Wackman, personal representative), assignors to Eaton Corporation, Cleveland, Ohio

Filed Sep. 20, 1982, Ser. No. 420,558

Int. Cl.[3] H01J *35/00;* H05B *31/22*

U.S. Cl. 378—119

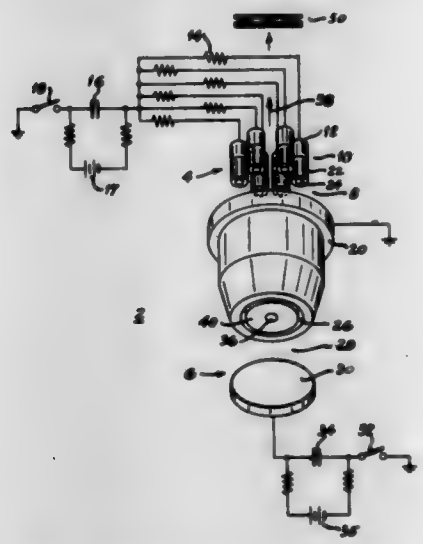
23 Claims

1. Apparatus for producing X-rays, comprising:

means for repeatably generating vapor directly from the same piece or pieces of solid material; and

means including axially spaced electrodes for generating X-rays by passing a high current axially between said axially spaced electrodes through said vapor causing

magnetic field plasma pinching radially inwardly perpendicularly to the axial current flow,



wherein said vapor generating means includes means for repeatably generating plasma vapor by passing high current along solid material means.

4,536,885

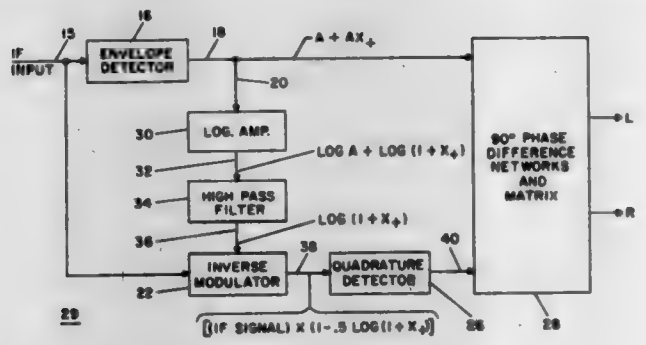
DISTORTION CORRECTING AM STEREO RECEIVER WITH NON-FLAT AGC

Bernard D. Loughlin, Centerport, N.Y., assignor to Hazeltine Corporation, Commack, N.Y.

Division of Ser. No. 354,332, Mar. 3, 1983,. This application Dec. 27, 1983, Ser. No. 565,303

Int. Cl.³ H04H *5/00*

U.S. Cl. 381—15 **3 Claims**



1. An inverse amplitude modulator having a modulation characteristic of the form

$$\frac{A}{1 + .5B}$$

with respect to a supplied modulating signal (B) and a supplied signal (A) which is to be inversely modulated, comprising:

means for supplying a first signal, comprising said modulating signal (B) and a DC component, in the form (1+B);

means for supplying a second signal comprising said signal to be modulated (A);

means for logarithmically amplifying said first signal and for developing a third signal (C) comprising substantially only the AC components of said logarithmically amplified signal;

and means, having a modulation characteristic of the form A(1−0.5C), for inversely modulating said second signal (A) by said third signal (C);

whereby with respect to the supplied signals (A) and (B), said combination exhibits a modulation characteristic substantially of the desired form

$$\frac{A}{1 + .5B}$$

4,536,886

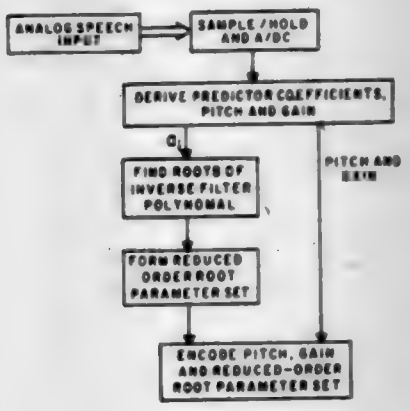
LPC POLE ENCODING USING REDUCED SPECTRAL SHAPING POLYNOMIAL

Panos E. Papamichalis, and George R. Doddington, both of Richardson, Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed May 3, 1982, Ser. No. 373,959

Int. Cl.³ G10L *1/00*

U.S. Cl. 381—41 **11 Claims**



1. A method for encoding a speech input signal, comprising the steps of:

sampling a speech signal;

defining an inverse filter polynomial corresponding to said speech signal;

finding the roots of said inverse filter polynomial;

encoding all of said roots of said inverse filter polynomial which have bandwidth greater than a threshold bandwidth to provide a first output signal;

multiplying together roots of said inverse filter polynomial which do not have a bandwidth greater than said threshold bandwidth, to produce a residual polynomial;

defining reflection coefficients corresponding to said residual polynomial;

encoding parameters corresponding to a truncated set of said reflection coefficients of said residual polynomial to provide a second output signal; and

storing or transmitting said first and second output signals.

4,536,887

MICROPHONE-ARRAY APPARATUS AND METHOD FOR EXTRACTING DESIRED SIGNAL

Yutaka Kaneda, Tanashi, and Juro Ohga, Kamakura, both of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Oct. 7, 1983, Ser. No. 539,891

Claims priority, application Japan, Oct. 18, 1982, 57-182355; Aug. 15, 1983, 58-149500

Int. Cl.³ H04R *1/22*

U.S. Cl. 381—92 **29 Claims**

1. A microphone-array apparatus comprising:

a plurality of microphone elements for receiving acoustic signals;

first delay means connected to the microphone elements, for delaying their output signals for different periods of time to output a plurality of delayed signals;

first weighted summation means connected to the first delay means, for weighting and summing up the plurality of delayed output signals to extract desired signals from the signals produced by the microphone elements while at the

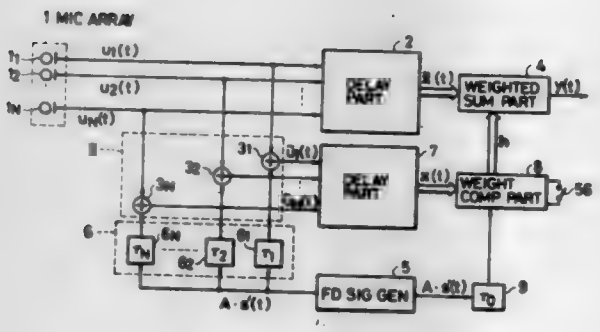
same time reducing unnecessary signals contained in the received acoustic signals;

fictitious desired signal generating means for electrically generating a fictitious desired signal;

first adding means for adding the fictitious desired signal from the fictitious desired signal generating means and the output signal of each of the microphone elements;

second delay means connected to the first adding means, for delaying the added signals therefrom in the same manner as in the first delay means; and

weighting value determining means connected to the second delay means and the fictitious desired signal generating means, for computing weighting values of the first weighted summation means in a manner to minimize a predetermined measure through using the plurality of delayed output signals from the second delay means and the fictitious desired signal.

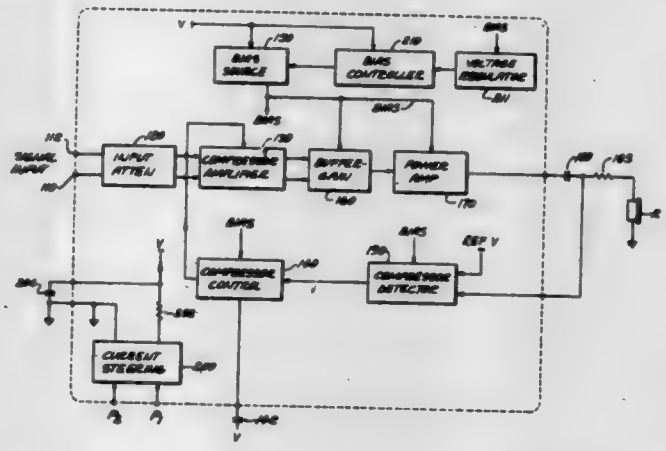


4,536,888

VOICE COMMUNICATION INSTRUMENT SYSTEM WITH LINE-POWERED RECEIVER CONDITIONING CIRCUIT

Donald R. Wilson, Santa Cruz, Calif., assignor to Plantronics, Inc., Santa Cruz, Calif.

Filed Aug. 21, 1981, Ser. No. 295,220
Int. Cl.[3] H03G *7/00*; H04M *1/60*
U.S. Cl. 381—106
11 Claims



1. A receiver conditioning circuit for providing conditioned receiver audio signals comprising:

input circuit means, for attenuating incoming electrical voice signals;

means for linearly applying compression to attenuated incoming electrical voice signals in response to a compression control signal, to limit said signals to specific maximum level;

means coupled to said signal compression means, for providing signal gain to compressed signals, and for generating a signal to drive a receiver transducer receiver audio signals;

a compression detector coupled to said gain means for comparing the amplitude of the receiver transducer driving signal with a reference level and producing the compression control signal; and

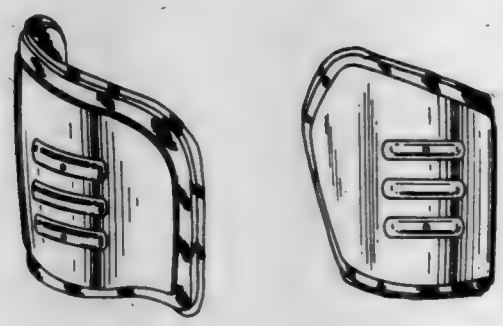
means for supplying operating bias current to said compression means;

said bias current supply means receiving the compression control signal and in response supplying operating current to said compression means that establishes the effective amplification of attenuated incoming electrical voice signals.

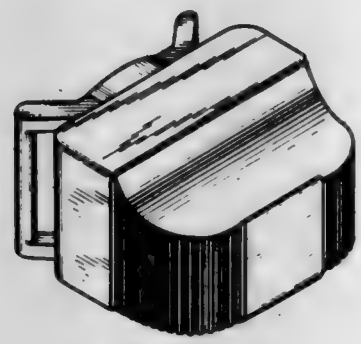
DESIGNS

AUGUST 20, 1985

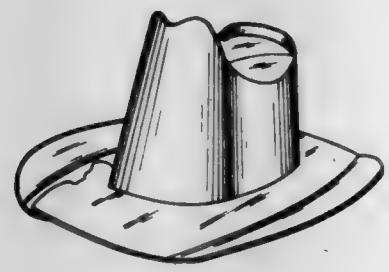
280,145
THIGH PROTECTOR
Eugene J. Vacanti, Edina, Minn., assignor to Sports Marketing, Inc., Eden Prairie, Minn.
Filed Aug. 17, 1982, Ser. No. 408,856
Term of patent 14 years
U.S. Cl. D2—27



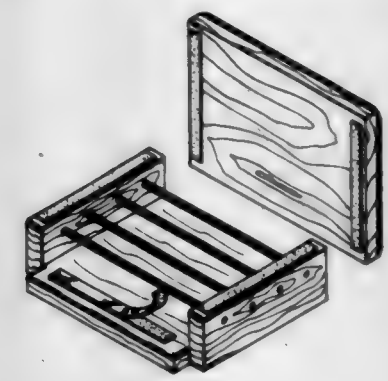
280,146
BELT HOLDER FOR A PORTABLE RADIO OR THE LIKE
James P. Liautaud, River and Bluff Rds., Trout Valley, Cary, Ill. 60013; Peter F. Stultz, Elgin, and David L. Maloney, Barrington, both of Ill., assignors to James P. Liautaud, Cary, Ill.
Filed Sep. 6, 1983, Ser. No. 529,955
Term of patent 14 years
U.S. Cl. D2—400



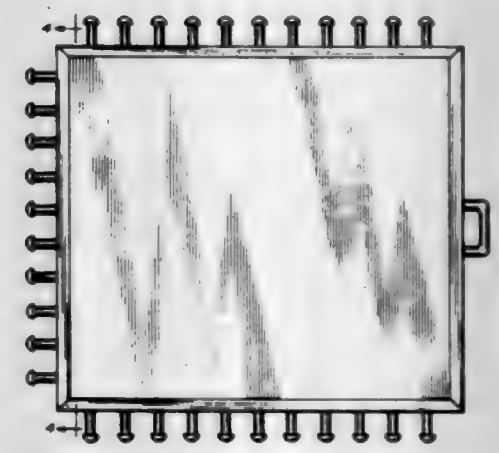
280,147
COWBOY HAT
Natalie A. Wolff, Arlington, Tex., assignor to Container Corporation of America, Chicago, Ill.
Filed Jun. 21, 1982, Ser. No. 390,273
Term of patent 14 years
U.S. Cl. D2—258



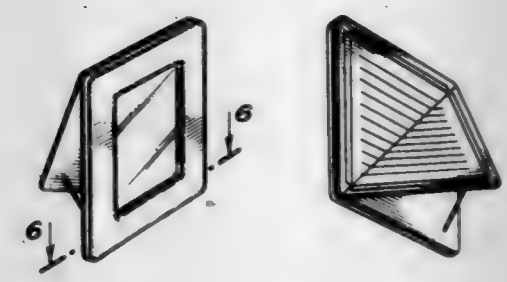
280,148
THREAD DISPENSER/PLEATER PLATFORM
Bettye G. Rodgers, 2903 Bannockburn Rd., Memphis, Tenn. 38128
Filed Jun. 8, 1983, Ser. No. 502,190
Term of patent 14 years
U.S. Cl. D3—25



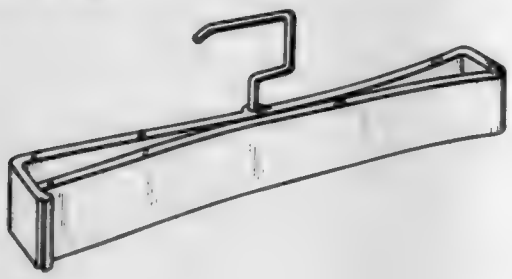
280,149
HOBBY BOARD FOR SEWING AND THE LIKE
Velma De Jiacomo, 14231 E. Marina Dr., Aurora, Colo. 80014
Filed Jul. 18, 1983, Ser. No. 514,635
Term of patent 14 years
U.S. Cl. D3—26



280,150
COMBINED CERAMIC GREETING CARD AND PHOTOGRAPHIC MOUNTING APPARATUS
Steven R. Pargman, Los Angeles, Calif., assignor to Terragrafics, Inc., Los Angeles, Calif.
Filed Mar. 25, 1983, Ser. No. 478,736
Term of patent 14 years
U.S. Cl. D6—311



280,151
CLOTHES HANGER FOR SKIRTS, TROUSERS AND THE LIKE
Michael H. Tooke, Woodland Hills, Calif., assignor to Allen Mansfield, Pacific Palisades, Calif.
Filed Dec. 20, 1982, Ser. No. 456,719
Term of patent 14 years
U.S. Cl. D6—326



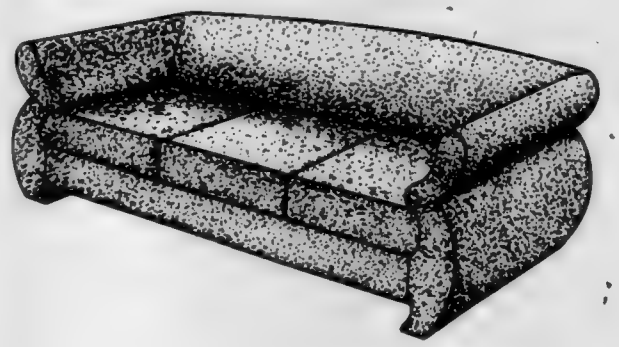
280,152
SEAT
Gianbattista Giudici, Seveso, Italy, assignor to Altera Salotti S.R.L., Como, Italy
Filed Sep. 15, 1982, Ser. No. 418,304
Term of patent 14 years
U.S. Cl. D6—370



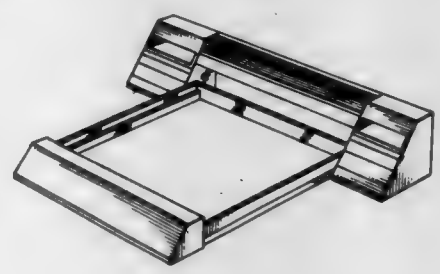
280,153
SEAT
Hans Hopfer, Paris, France, assignor to Alex Synn AG, Cham, Switzerland
Filed Dec. 28, 1982, Ser. No. 454,101
Term of patent 14 years
U.S. Cl. D6—378



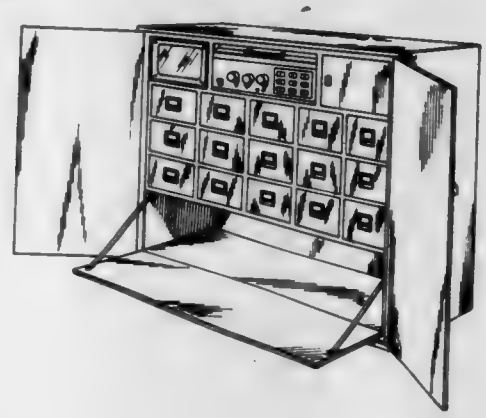
280,154
SOFA
Alessandro, 45 E. 89 St., Suite 10A, New York, N.Y. 10028
Filed Oct. 22, 1982, Ser. No. 436,135
Term of patent 14 years
U.S. Cl. D6—381



280,155
COMBINED BED AND HEADBOARD LAMP
Jan H. Matthias, Beverly Hills, Calif., assignor to Casa Bella Imports, Inc., Miami, Fla.
Filed Jul. 2, 1982, Ser. No. 394,655
Term of patent 14 years
U.S. Cl. D6—383



280,156
EMERGENCY MEDICAL CABINET
Richard T. Allen, Easton, Md., and David A. Hammond, 18347 Loft Knife Cir., Gaithersburg, Md. 20879, assignors to David H. Hammond, Gaithersburg, Md.
Filed Oct. 26, 1982, Ser. No. 436,880
Term of patent 14 years
U.S. Cl. D6—432



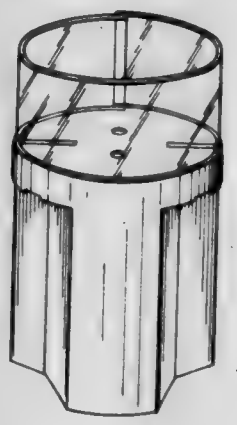
280,157
ETAGERE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Mar. 3, 1983, Ser. No. 471,810
Term of patent 14 years
U.S. Cl. D6—474



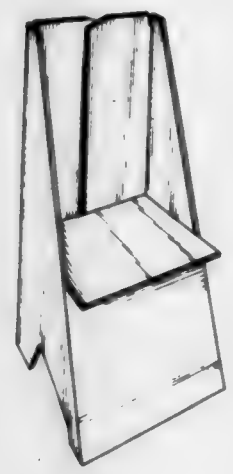
280,158
ETAGERE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Mar. 3, 1983, Ser. No. 471,812
Term of patent 14 years
U.S. Cl. D6—474



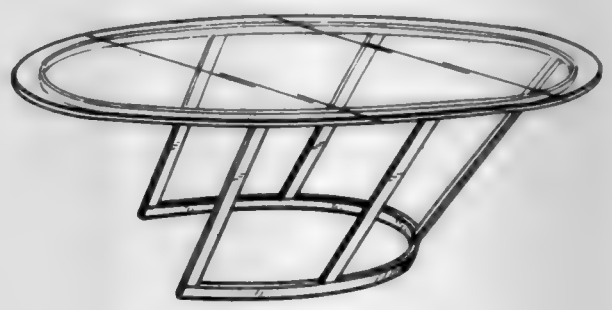
280,159
COLLAPSIBLE DISPLAY UNIT
William V. Silver, New York County, N.Y., assignor to Thomson-Leeds Company Inc., New York, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,566
Term of patent 14 years
U.S. Cl. D6—475



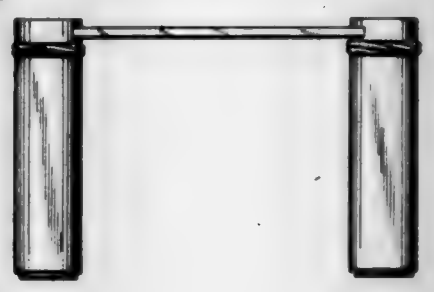
280,160
COLLAPSIBLE DISPLAY UNIT
William V. Silver, New York, N.Y., assignor to Thomson-Leeds Company, Inc., New York, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,568
Term of patent 14 years
U.S. Cl. D6—475



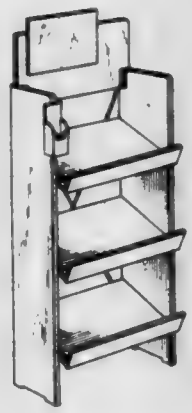
280,161
TABLE
Alessandro, 45 E. 89 St. Suite 10A, New York, N.Y. 10028
Filed Oct. 22, 1982, Ser. No. 436,148
Term of patent 14 years
U.S. Cl. D6—480



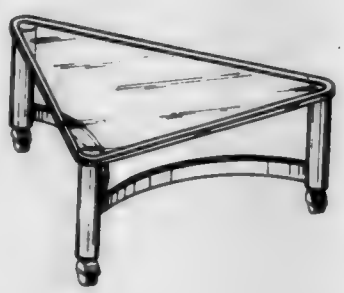
280,162
TABLE
R. Scott Bromley, New York, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed Oct. 7, 1982, Ser. No. 433,353
Term of patent 14 years
U.S. Cl. D6—484



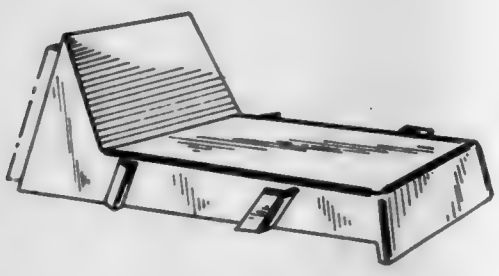
280,163
WINE DISPLAY RACK OR SIMILAR ARTICLE
Daniel W. Leo, Sr., New York, N.Y., assignor to Ledan, Inc., New York, N.Y.
Filed Jun. 3, 1983, Ser. No. 500,889
Term of patent 14 years
U.S. Cl. D6—473



280,164
TABLE
Richard D. Berry, Jr., Hickory, N.C., assignor to Design Institute America, Inc., Montpelier, Ohio
Filed Mar. 3, 1983, Ser. No. 471,800
Term of patent 14 years
U.S. Cl. D6—489



280,165
SEPARATOR FOR CIGARETTE PACKS
William V. Silver, New York, N.Y., assignor to Thomson-Leeds Company Inc., New York, N.Y.
Filed Aug. 30, 1982, Ser. No. 412,565
Term of patent 14 years
U.S. Cl. D6—509

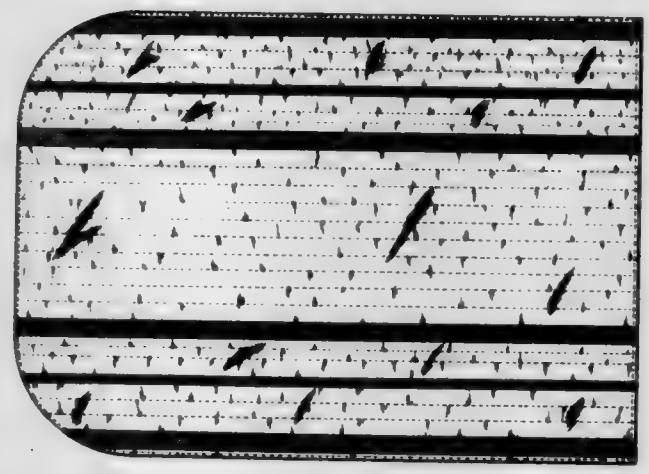


280,166
FURNITURE SHELF
R. Scott Bromley, New York, N.Y., assignor to Cartier, Inc., New York, N.Y.
Filed Oct. 7, 1982, Ser. No. 433,355
Term of patent 14 years
U.S. Cl. D6—511

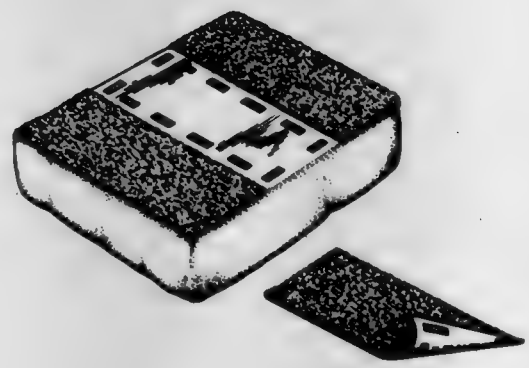


280,167
SOAP DISPENSER
Henry C. Keck, South Pasadena, Calif., assignor to Bobrick Washroom Equipment Corporation, North Hollywood, Calif.
Filed Apr. 1, 1983, Ser. No. 432,304
Term of patent 14 years
U.S. Cl. D6—545

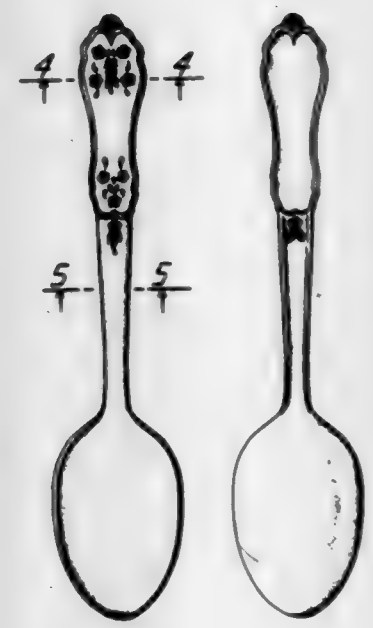
280,168
BEDSPREAD
Louis Hornick, II, and Morton Hornick, both of New York, N.Y., assignors to Louis Hornick & Co., Inc., New York, N.Y.
Filed Jan. 13, 1983, Ser. No. 457,719
Term of patent 14 years
U.S. Cl. D6—603



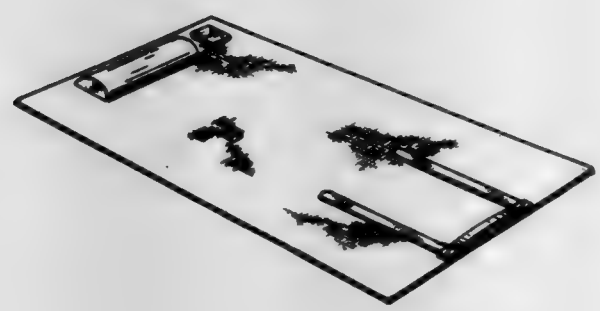
280,169
MATTRESS COVER
Robert T. Henry, 44 Clarendon Dr., Durban North 4051, South Africa
Filed Sep. 6, 1983, Ser. No. 529,887
Claims priority, application South Africa, Mar. 25, 1983, 830268
Term of patent 14 years
U.S. Cl. D6—603



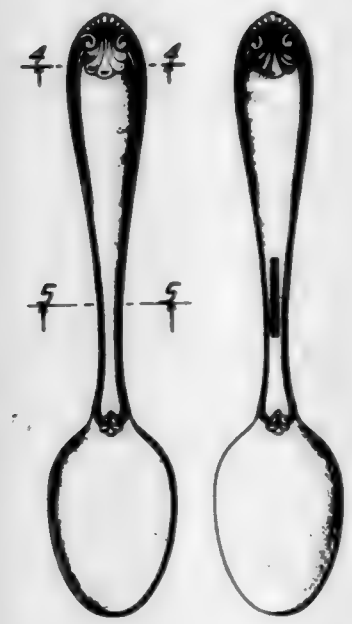
280,171
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed Apr. 11, 1983, Ser. No. 483,864
Term of patent 14 years
U.S. Cl. D7—137



280,170
COMBINED BEACH TOWEL AND PILLOW
Donald G. Short, 5455 Third Ave., Fort Myers, Fla. 33907
Filed Aug. 5, 1982, Ser. No. 405,620
Term of patent 14 years
U.S. Cl. D6—608



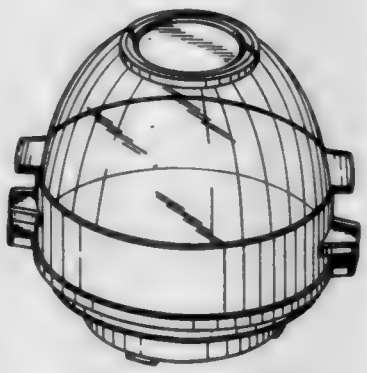
280,172
SPOON OR SIMILAR ARTICLE
Colin B. Richmond, II, Oneida, N.Y., assignor to Oneida Ltd., Oneida, N.Y.
Filed May 20, 1983, Ser. No. 496,417
Term of patent 14 years
U.S. Cl. D7—137



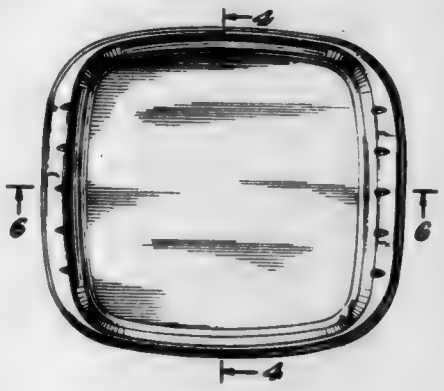
280,173
HANDLE FOR A KNIFE
Robert R. Welch, Chipping Campden, England, assignor to Wilkinson Sword Limited, High Wycombe, England
Filed Nov. 12, 1981, Ser. No. 320,649
Claims priority, application United Kingdom, May 16, 1981, 1000520
Term of patent 14 years
U.S. Cl. D7—152



280,174
APPARATUS FOR POPPING CORN
William C. Cesaroni, Glenview, Ill., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Mar. 8, 1983, Ser. No. 473,297
Term of patent 14 years
U.S. Cl. D7—325

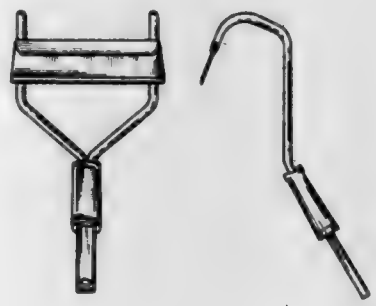


280,175
CASSEROLE
Howard D. Bassett, Downers Grove, Ill., assignor to Union Carbide Corporation, Danbury, Conn.
Filed Mar. 31, 1983, Ser. No. 483,003
Term of patent 14 years
U.S. Cl. D7—354

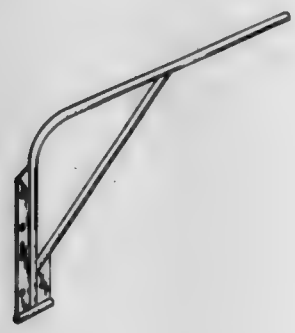




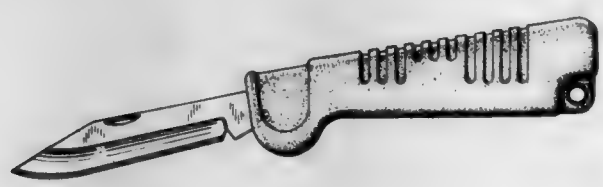
280,176
GARDENING IMPLEMENT
Walter Kolb, Betzdorf, Fed. Rep. of Germany, assignor to Wolf-Gerate GmbH, Fed. Rep. of Germany
Division of Ser. No. 383,155, May 28, 1982, Pat. No. Des. 276,974. This application Oct. 18, 1984, Ser. No. 663,461
Term of patent 14 years
U.S. Cl. D8—11



280,177
VEHICLE BODY REPAIR BAR
Kenneth P. Johnson, Rte. 12, Box 24, Frenchtown, N.J. 08825
Filed May 3, 1982, Ser. No. 373,855
Term of patent 14 years
U.S. Cl. D8—88



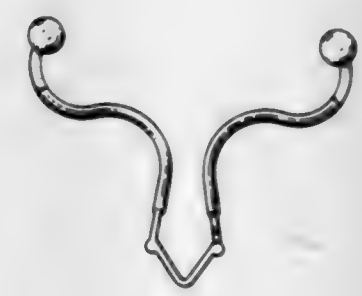
280,178
POCKET KNIFE
Manfred Lang, Wuppertal, Fed. Rep. of Germany, assignor to Wilkinson Sword GmbH, Solingen, Fed. Rep. of Germany
Filed Sep. 26, 1983, Ser. No. 535,970
Claims priority, application Fed. Rep. of Germany, Mar. 24, 1983, 5 MR 9354
Term of patent 14 years
U.S. Cl. D8—99



280,179
FOLDING KNIFE
Philip V. Miceli, 1900 Shanklin Ave., Baltimore, Md. 21204
Filed Apr. 11, 1984, Ser. No. 598,961
Term of patent 14 years
U.S. Cl. D8—99

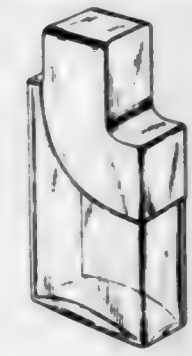


280,180
TWISTING FASTENER
David A. Burt, Wokingham, England, assignor to ITW Limited, Windsor, England
Filed Oct. 21, 1983, Ser. No. 544,292
Claims priority, application United Kingdom, Apr. 26, 1983, 1012696
Term of patent 14 years
U.S. Cl. D8—394

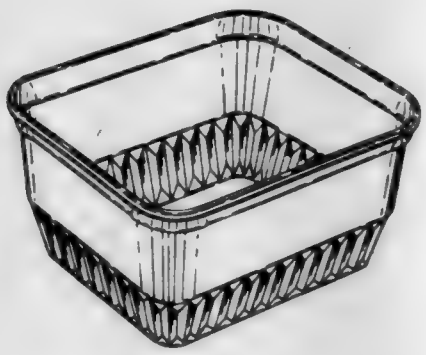




280,181
BOTTLE
Jean P. Vitrac, Paris, France, assignor to Hanorah Italiana S.p.A., Milan, Italy
Filed Mar. 29, 1983, Ser. No. 466,211
Term of patent 14 years
U.S. Cl. D9—375

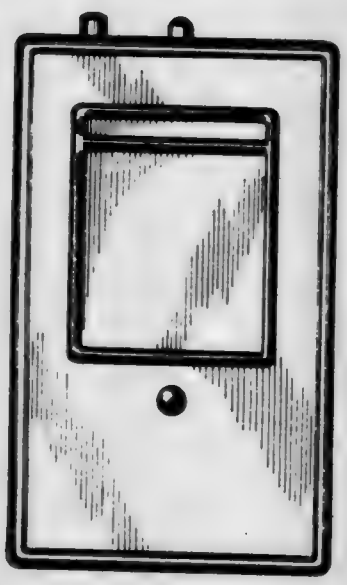


280,182
PACKAGING CONTAINER
Frank S. Tyler, Kent, England, assignor to Lever Brothers Company, New York, N.Y.
Filed Jan. 11, 1983, Ser. No. 457,306
Claims priority, application United Kingdom, Jul. 16, 1982, 1007780
Term of patent 14 years
U.S. Cl. D9—425



280,183
MINI-GEIGER-COUNTER
Claus J. Braun, Feldbergstrasse 8, 6056 Heusenstamm, Fed. Rep. of Germany
Filed Sep. 23, 1982, Ser. No. 422,326
Term of patent 14 years
U.S. Cl. D10—46





280,184
THERMOMETER
Walter Henkels, Holunderweg 1, D-5142 Hückelhoven, Fed. Rep. of Germany
Filed May 4, 1983, Ser. No. 491,457
Claims priority, application Hague, Jan. 10, 1983, DM/002126
Term of patent 14 years
U.S. Cl. D10—58



280,185
LEVEL
Randall J. Wright, 2000 Moraine End, Delafield, Wis. 53018
Filed Jan. 31, 1983, Ser. No. 462,529
Term of patent 14 years
U.S. Cl. D10—69



280,186
LEVELING GAGE
Gregory L. Cross, and Wendell C. Cross, both of 11413 W. 48th Ave., Wheatridge, Colo. 80033
Filed Apr. 18, 1983, Ser. No. 485,722
Term of patent 14 years
U.S. Cl. D10—69



280,187
ATTITUDE-DIRECTOR INDICATOR
Lennart K. Nordström, Linköping, Sweden, assignor to Saab-Scania Aktiebolag, Linkoping, Sweden
Filed Jun. 30, 1983, Ser. No. 509,364
Claims priority, application Sweden, Jan. 7, 1983, 83-0047
Term of patent 14 years
U.S. Cl. D10—74



280,188
STAR JEWELRY ORNAMENT OR THE LIKE
Alan Y. T. Lee, 24 Ferncliff Rd., Coscob, Conn. 06807
Filed Mar. 11, 1983, Ser. No. 474,706
Term of patent 14 years
U.S. Cl. D11—70



280,189
PENDANT CONTAINING TEMPERATURE SENSITIVE MATTER
Paul J. Moses, and Paula B. Moses, both of Midland, Mich., assignors to The Dow Chemical Company, Midland, Mich.
Filed May 13, 1983, Ser. No. 494,472
Term of patent 14 years
U.S. Cl. D11—79



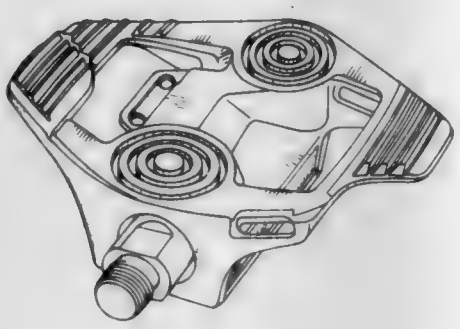
280,190
FIGURINE OF A BABY ORCA
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Jan. 17, 1983, Ser. No. 458,296
Term of patent 14 years
U.S. Cl. D11—158



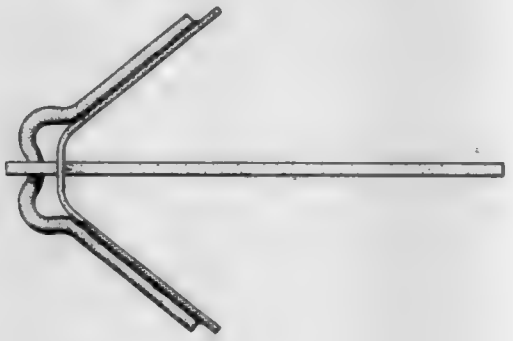
280,191
FIGURINE OF A RISING UNICORN
Jesus A. Carbajales Santa-Eulalia, and Javier B. Carbajales Santa-Eulalia, both of Montevideo, Uruguay, assignors to John J. Madison Company, Inc., Laguna Hills, Calif.
Filed Sep. 15, 1983, Ser. No. 532,459
Term of patent 14 years
U.S. Cl. D11—159



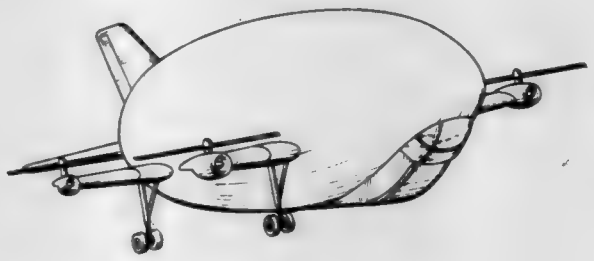
280,192
PEDAL FOR A BICYCLE
Satoshi Watanabe, Sakai, Japan, assignor to Shimano Industrial Company Limited, Osaka, Japan
Filed May 4, 1982, Ser. No. 374,745
Claims priority, application Japan, Nov. 16, 1981, 56-51076
Term of patent 14 years
U.S. Cl. D12—125



280,193
BOAT ANCHOR
William F. Spanner, Retriever Lodge, Tudor Close, Seaford, E. Sussex BN25 2LU, England
Filed May 27, 1983, Ser. No. 498,703
Term of patent 14 years
U.S. Cl. D12—215



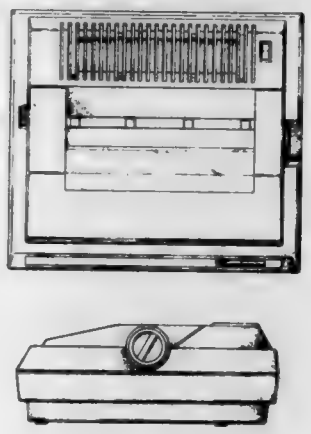
280,194
AIRCRAFT
Hans J. Bothe, 14 Erdelsweiher, 5475 Burgbrohl, Fed. Rep. of Germany
Filed Feb. 28, 1983, Ser. No. 470,314
Term of patent 14 years
U.S. Cl. D12—323



280,195
DIMMER SWITCH FOR A LAMP OR SIMILAR ARTICLE
Lynn Roszel, Richardson, Tex., assignor to Prescolite, San Leandro, Calif.
Filed Feb. 16, 1983, Ser. No. 466,917
Term of patent 14 years
U.S. Cl. D13—32



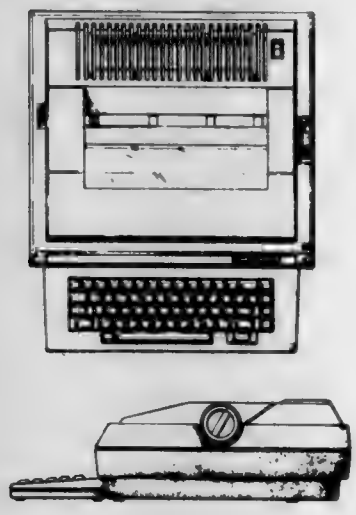
280,196
TELEPRINTER CABINET
Donald M. Genaro, Haworth; Alvin R. Tilley, Red Bank, both of N.J.; Alfred Z. Purzycki, Arlington Heights, Ill.; Raymond R. Seidlitz, Lincolnshire, Ill., and Eugene K. Sokolowski, Chicago, Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.
Filed May 20, 1983, Ser. No. 496,361
Term of patent 14 years
U.S. Cl. D14—93



280,197
COMBINED TELEPRINTER CABINET AND STAND-ALONE KEYBOARD ENCLOSURE

Donald M. Genaro, Haworth; Alvin R. Tilley, Red Bank, both of N.J.; Alfred Z. Purzycki, Arlington Heights, Ill.; Raymond R. Seidlitz, Lincolnshire, Ill., and Eugene K. Sokolowski, Chicago, Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

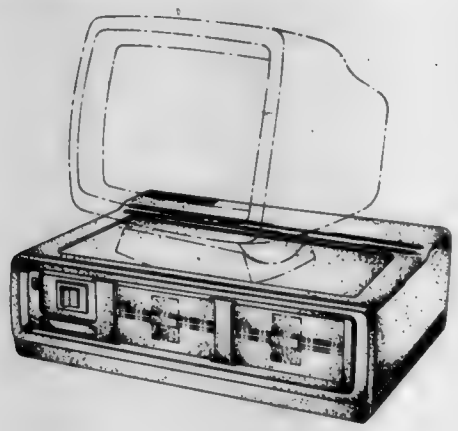
Filed May 20, 1983, Ser. No. 496,362
Term of patent 14 years
U.S. Cl. D14—93



280,198
DESKTOP COMPUTER SYSTEM

Richard R. Dillon, Wellesley; David G. Kmetz, Newton, and Edward J. Cesarczyk, Waltham, all of Mass., assignors to Honeywell Information Systems Inc., Waltham, Mass.

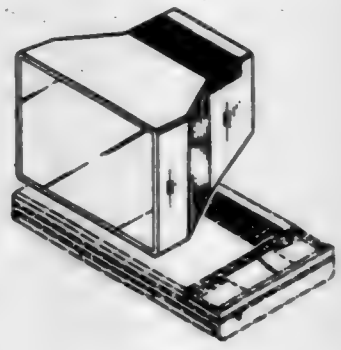
Filed Feb. 23, 1983, Ser. No. 468,915
Term of patent 14 years
U.S. Cl. D14—100



280,199
DISPLAY TERMINAL

Desmond J. Ryan, Ottawa, Canada, assignor to Northern Telecom Limited, Quebec, Canada

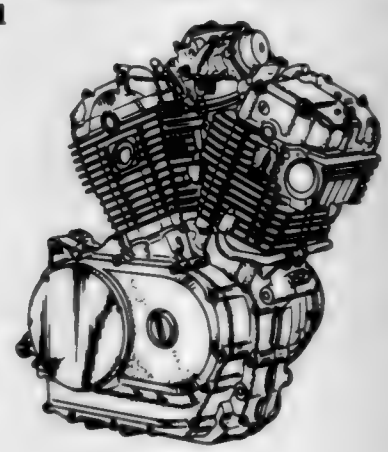
Filed Feb. 8, 1983, Ser. No. 465,003
Claims priority, application Canada, Oct. 29, 1982, 29-10-82-6
Term of patent 14 years
U.S. Cl. D14—113



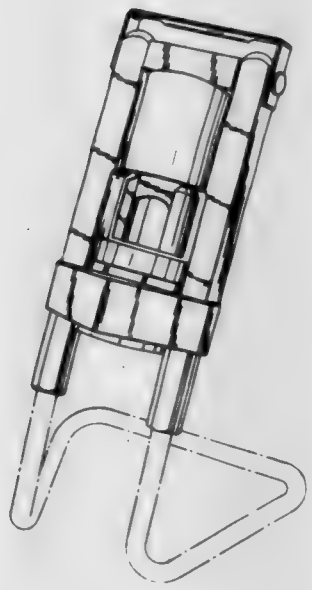
280,200
ENGINE FOR MOTORCYCLE

Masato Iwakura, Asaka; Mutsuo Hirose, and Yoshiyuki Yamada, both of Niiza, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

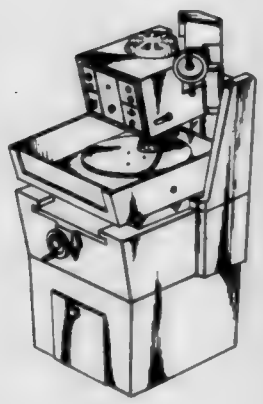
Filed Dec. 17, 1982, Ser. No. 450,730
Claims priority, application Japan, Jun. 22, 1982, 57-28098
Term of patent 14 years
U.S. Cl. D15—1



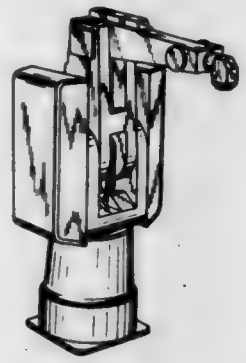
280,201
HOSE ASSEMBLY CRIMPING MACHINE
Luis Moreiras, Mentor, and George C. Burrington, Eastlake, both of Ohio, assignors to Parker-Hannifin Corporation, Cleveland, Ohio
Filed Dec. 21, 1983, Ser. No. 564,109
Term of patent 14 years
U.S. Cl. D15—123



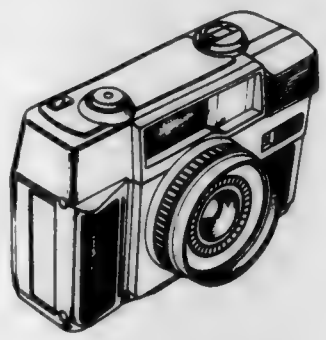
280,202
GRINDING MACHINE
Rufus W. Aldridge, Jr., Huntsville, Ala., assignor to Spencer Wright Industries, Inc., Chattanooga, Tenn.
Filed Dec. 22, 1983, Ser. No. 564,505
Term of patent 14 years
U.S. Cl. D15—124



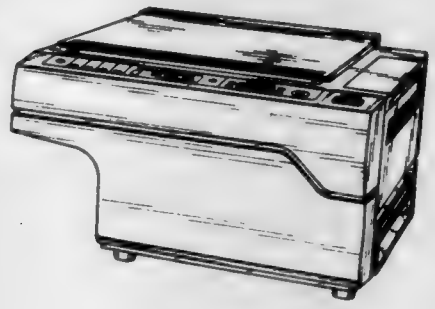
280,203
INDUSTRIAL ROBOT
Masato Shibayama, Sayama; Takeshi Abe; Kiyohide Koizumi, both of Tokyo; Kouichi Sugimoto, Hiratsuka; Hitoshi Kusakawa, Funabashi, and Tatenori Jinriki, Narashino, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan
Filed Apr. 5, 1983, Ser. No. 482,189
Claims priority, application Japan, Oct. 15, 1982, 57-46555
Term of patent 14 years
U.S. Cl. D15—199



280,204
CAMERA
Koichi Soda, Tokyo, Japan, assignor to Ricoh Company Ltd., Japan
Filed Jun. 27, 1983, Ser. No. 508,461
Claims priority, application Japan, Dec. 28, 1982, 57-059366
Term of patent 14 years
U.S. Cl. D16—8



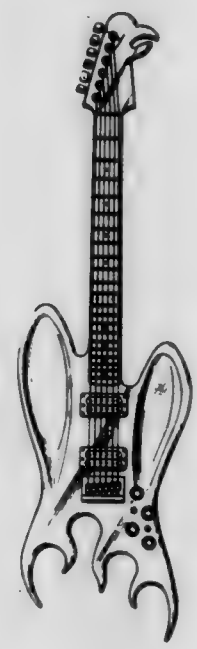
280,205
ELECTRONIC COPYING MACHINE
Tooru Okuyama, Isehara; Kunio Hara, Chiba, and Kiyoshi Fujii, Yokohama, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan
Filed Jul. 1, 1983, Ser. No. 510,246
Claims priority, application Japan, Jan. 20, 1983, 58-1527
Term of patent 14 years
U.S. Cl. D16—31



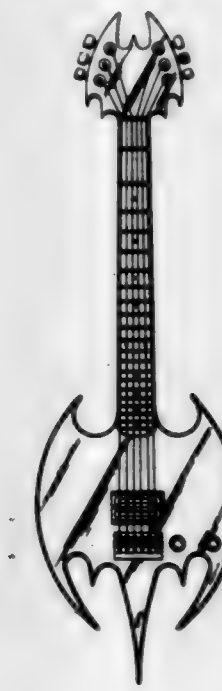
280,206
CONNECTOR FOR ENDOSCOPE
Fumiaki Ishii, Hachioji, Japan, assignor to Olympus Optical Company, Ltd., Japan
Filed Oct. 8, 1982, Ser. No. 433,517
Claims priority, application Japan, Apr. 14, 1982, SHO/57-16276
Term of patent 14 years
U.S. Cl. D16—134



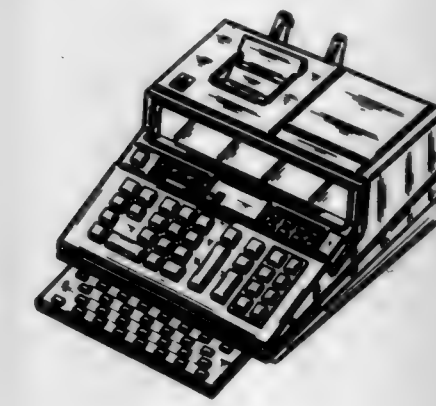
280,207
GUITAR
William H. Edwards, 8890 56th St., Temple Terrace, Fla. 33617
Filed Apr. 19, 1983, Ser. No. 486,558
Term of patent 14 years
U.S. Cl. D17—18



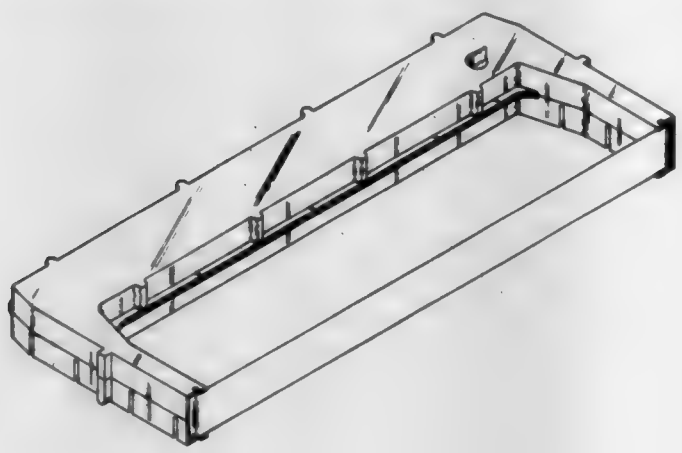
280,208
GUITAR
William H. Edwards, 8890 56th St., Temple Terrace, Fla. 33617
Filed Apr. 19, 1983, Ser. No. 486,557
Term of patent 14 years
U.S. Cl. D17—19



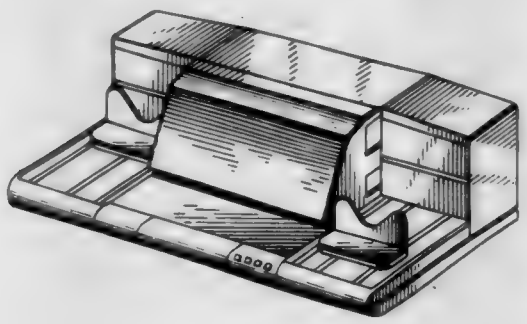
280,209
ELECTRONIC PRINTING CALCULATOR
Masaji Sawada; Shigeaki Hayashi; Hiroshi Sakaguchi, and Kazuo Yamada, all of Osaka, Japan, assignors to Sharp Corporation, Osaka, Japan
Filed Dec. 23, 1982, Ser. No. 452,430
Claims priority, application Japan, Jul. 5, 1982, 57-30408
Term of patent 14 years
U.S. Cl. D18—7



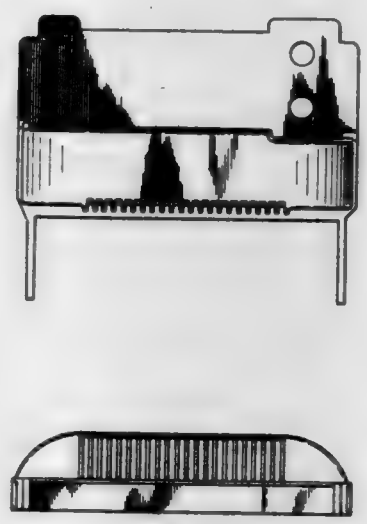
280,210
INK RIBBON CARTRIDGE
Gilbert A. Ledoux, East Taunton, Mass., assignor to Litton Systems, Inc., Fall River, Mass.
Filed Jun. 13, 1983, Ser. No. 503,444
Term of patent 14 years
U.S. Cl. D18—12



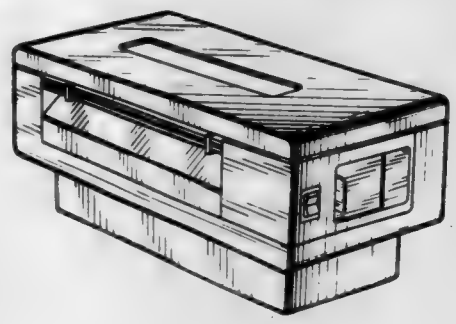
280,211
ADDRESSING PRINTING SYSTEM OR SIMILAR ARTICLE
John W. Overman, Phoenix, Ariz., and Jerry J. Kosner, La Grange, Ill., assignors to Bell & Howell Company, Chicago, Ill.
Filed Jun. 1, 1983, Ser. No. 500,056
Term of patent 14 years
U.S. Cl. D18—13



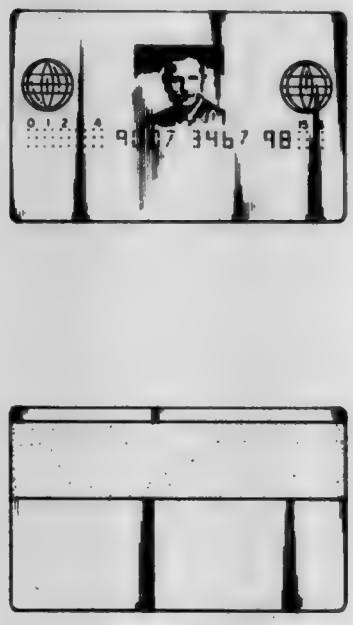
280,212
RIBBON CASSETTE OR SIMILAR ARTICLE
Thomas J. Bossack; Louis E. Shipos, and Frederick M. Brown, all of Ithaca, N.Y., assignors to NCR Corporation, Dayton, Ohio
Filed May 9, 1983, Ser. No. 492,525
Term of patent 14 years
U.S. Cl. D18—22



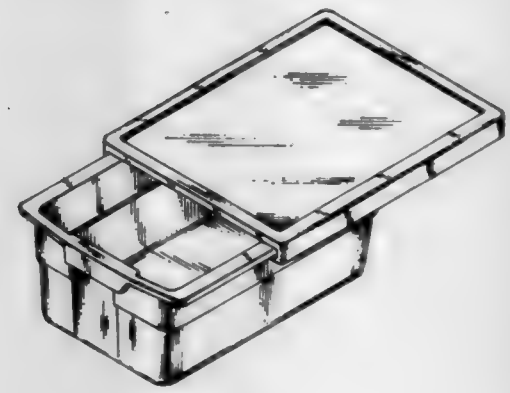
280,213
BURSTER OR SIMILAR ARTICLE
Andrew L. Alger, Wilmette, Ill., assignor to Goldsmith, Yamasaki, Specht Inc., Chicago and Uarco Incorporated, Barrington, both of, Ill.
Filed Feb. 3, 1983, Ser. No. 463,530
Term of patent 14 years
U.S. Cl. D18—34



280,214
CREDIT CARD
George E. Opel, 4031 Kottler Dr., Lafayette Hill, Pa. 19444
Filed Apr. 7, 1983, Ser. No. 482,787
Term of patent 14 years
U.S. Cl. D19—10



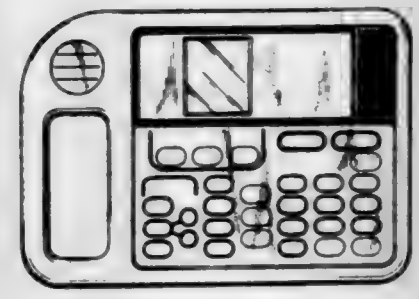
280,216
CHILD'S LAP DESK AND BLACKBOARD
Carl J. Boklund, Concord, N.H., assignor to James Wilcoxen, Concord, N.H.
Filed Feb. 25, 1983, Ser. No. 469,639
Term of patent 14 years
U.S. Cl. D19—52



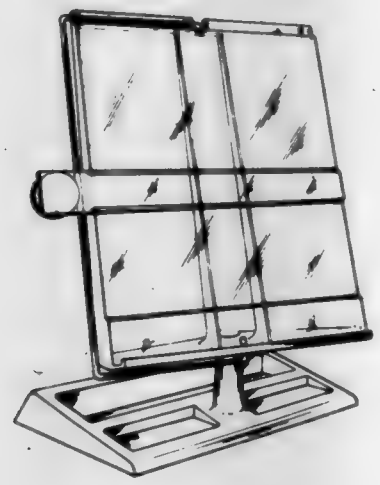
280,215
COMBINED PEN, WATCH AND TIRE PRESSURE GAUGE
Tien Tsai Huang, No. 4, 30 La., Wu-Chuan St., Pan-Chiao City, Taipei, Taiwan
Filed Feb. 16, 1983, Ser. No. 466,929
Term of patent 14 years
U.S. Cl. D19—36



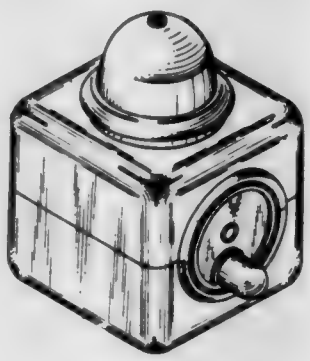
280,217
TALKING MATHEMATICS TRAINER
Hisashi Tomozawa; Yoshihiko Nagao, and Shigeru Saito, all of Kanagawa, Japan, assignors to Nitsubishi Denki Kabushiki Kaisha, Tokyo, Japan
Filed Mar. 4, 1983, Ser. No. 472,343
Claims priority, application Japan, Oct. 8, 1982, 57-45924
Term of patent 14 years
U.S. Cl. D19—60



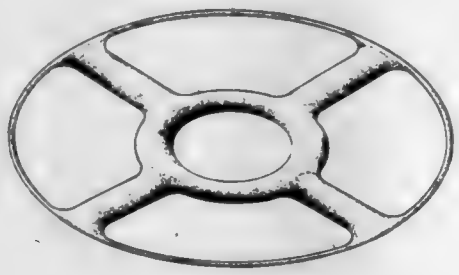
280,218
TYPIST'S COPY STAND
Michael J. Szablak, and Glen E. Tomblin, both of Winchester, Va., assignors to Rubbermaid Commercial Products, Inc., Winchester, Va.
Filed Jul. 12, 1982, Ser. No. 397,513
Term of patent 14 years
U.S. Cl. D19—91



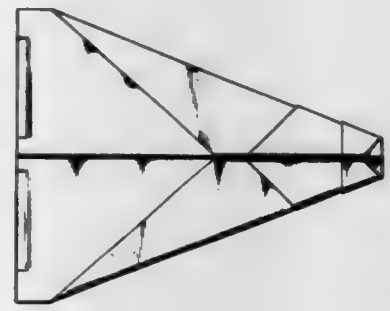
280,219
TOY JACK IN THE BOX
Ikuo Suzuki, Urawa, Japan, assignor to Tomy Kogyo Company, Incorporated, Japan
Filed May 24, 1982, Ser. No. 381,041
Claims priority, application Japan, Nov. 5, 1981, 56-48983
Term of patent 14 years
U.S. Cl. D21—59



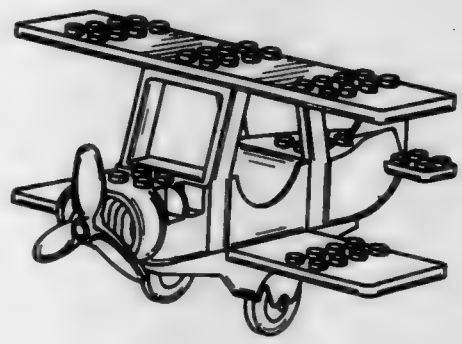
280,220
BOOMERANG
Marshall R. Blight, Nedlands, Australia, assignor to Emeraldine Limited, London, England
Filed Oct. 28, 1982, Ser. No. 437,320
Claims priority, application Australia, Apr. 29, 1982, 0242/82
Term of patent 14 years
U.S. Cl. D21—85



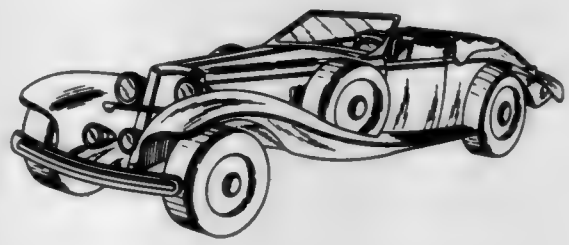
280,221
TOY AIRPLANE
Robert J. Hoge, IV, Rte. 1, Box 198B, Jasper, Tenn. 37347
Filed Jun. 10, 1983, Ser. No. 503,362
Term of patent 14 years
U.S. Cl. D21—89



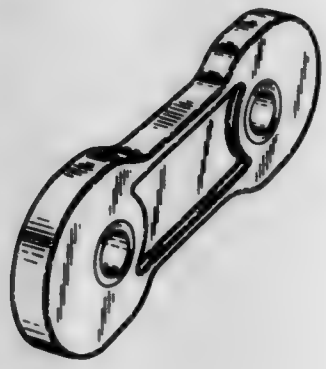
280,222
TOY AIR PLANE
Erik P. Tapdrup, Virum, and Gert P. Olsen, Lyngby, both of Denmark, assignors to Interlego AG, Switzerland
Filed Dec. 15, 1983, Ser. No. 561,666
Term of patent 14 years
U.S. Cl. D21—90



280,223
EXTENDABLE TOY CAR OR SIMILAR ARTICLE
Michael W. Barbato, Hermosa Beach; Ray W. Mattson, Venice, and Michael R. Nordgren, Huntington Beach, all of Calif., assignors to Mattel, Inc., Racine, Wis.
Filed Mar. 10, 1983, Ser. No. 474,063
Term of patent 14 years
U.S. Cl. D21—136



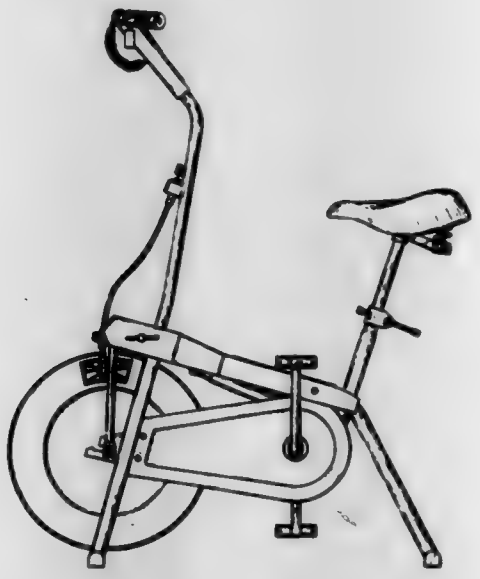
280,224
VARIABLE RESISTANCE STRAP FOR EXERCISE APPARATUS
Jerry L. Wilson, Beaverton, Oreg., assignor to Soloflex, Inc., Hillsboro, Oreg.
Filed Feb. 15, 1983, Ser. No. 466,439
Term of patent 14 years
U.S. Cl. D21—191



280,225
BICYCLE EXERCISE SUPPORT
James P. Eagle, 4716 Lillie, Fort Wayne, Ind. 46806
Filed Mar. 9, 1983, Ser. No. 473,728
Term of patent 14 years
U.S. Cl. D21—191



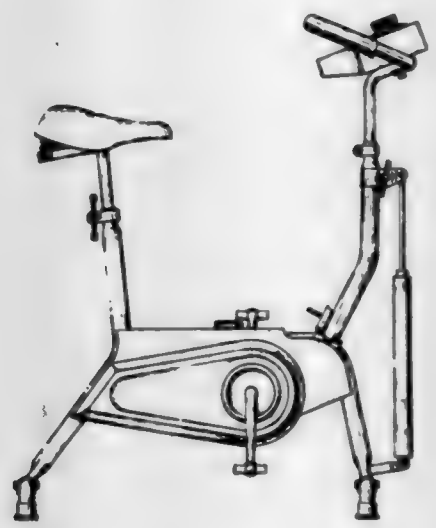
280,226
EXERCISE CYCLE
John A. Kasuba, Germantown; John T. Kanne; Sajjan S. Dhaliwal, both of Memphis, all of Tenn.; Norman Gold, Brooklyn, N.Y., and John Weiss, St. Louis, Mo., assignors to Allegheny International Exercise Co., Lincolnton, N.C.
Filed Jan. 28, 1983, Ser. No. 461,908
Term of patent 14 years
U.S. Cl. D21—194



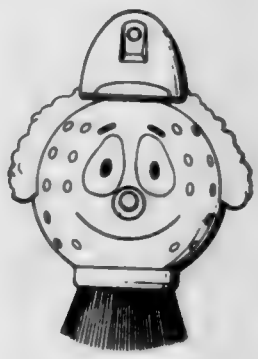
280,227
EXERCISE CYCLE
Robert D. LaMarsh, Alton, Ill., and John Weiss, St. Louis, Mo., assignors to Perfection Manufacturing Company, St. Louis, Mo.
Filed Apr. 28, 1983, Ser. No. 490,068
Term of patent 14 years
U.S. Cl. D21—194



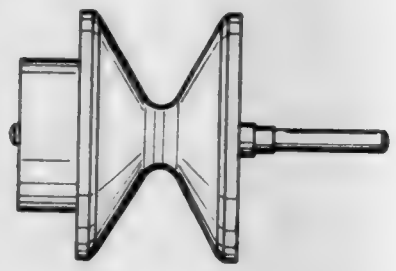
280,228
EXERCISE CYCLE
Norman Gold, Brooklyn, N.Y., assignor to Allegheny International Exercise Co., Lincolnton, N.C.
Filed Aug. 9, 1983, Ser. No. 521,520
Term of patent 14 years
U.S. Cl. D21—194



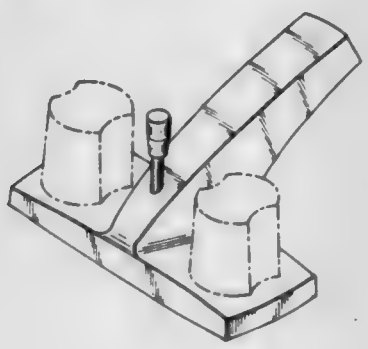
280,229
CLEANER FOR A GOLF CLUB HEAD
Donald G. Parent, 3416 Brace, Burbank, Calif. 91504
Filed Apr. 12, 1983, Ser. No. 484,200
Term of patent 14 years
U.S. Cl. D21—234



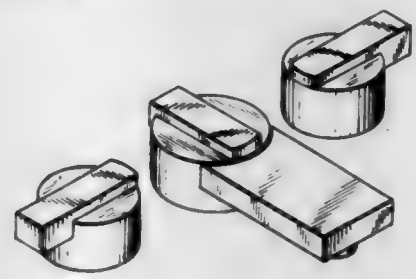
280,230
SPOOL FOR A FISHING REEL
Yoshiyuki Matsui, Tokyo, Japan, assignor to Daiwa Seiko, Inc., Tokyo, Japan
Filed Feb. 10, 1983, Ser. No. 465,413
Term of patent 14 years
U.S. Cl. D22—25



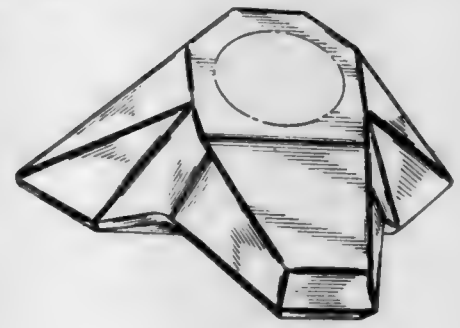
280,231
SANITARY FAUCET
James E. Niemann, Louisville, Ky., assignor to American Standard Inc., New York, N.Y.
Division of Ser. No. 169,538, Jul. 17, 1980,. This application Feb. 7, 1983, Ser. No. 464,535
Term of patent 14 years
U.S. Cl. D23—25



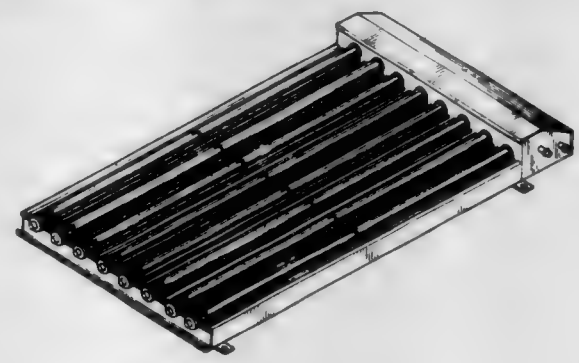
280,232
FAUCET SET
Stanley M. Paul, Rye, N.Y., assignor to Paul Associates, Inc., Long Island City, N.Y.
Filed Apr. 25, 1983, Ser. No. 488,577
Term of patent 14 years
U.S. Cl. D23—25



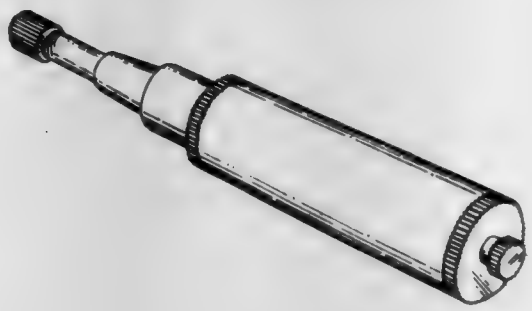
280,233
LAVATORY FAUCET SHELL
Gary A. Fleischmann, Sheboygan, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Nov. 16, 1983, Ser. No. 552,311
Term of patent 14 years
U.S. Cl. D23—32



280,234
SOLAR ENERGY COLLECTOR OR THE LIKE
Hirosato Takeuchi, and Toshio Mikiya, both of Tokyo, Japan, assignors to Nitto Kohiki Co., Ltd., Tokyo, Japan
Filed Nov. 22, 1982, Ser. No. 443,651
Claims priority, application Japan, Mar. 24, 1982, 57-22317
Term of patent 14 years
U.S. Cl. D23—72



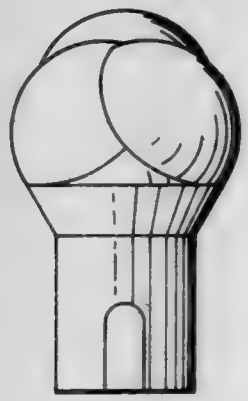
280,235
FLASK-SUPPORTABLE STIRRER DRIVE UNIT
Lawrence M. Street, Morley, England, assignor to Hy-Per-Graph Limited, Park Field Mills, England
Filed Jul. 9, 1982, Ser. No. 396,957
Claims priority, application United Kingdom, Apr. 23, 1982, 1006352
Term of patent 14 years
U.S. Cl. D24—8



280,236
EYE FOR TAXIDERMY
John W. Crossley, Box 434, Geigel Hill Rd., Upper Black Eddy, Pa. 18972
Filed Mar. 28, 1983, Ser. No. 479,353
Term of patent 14 years
U.S. Cl. D24—33



280,237
BUILDING FOR THE SELLING OF ICE CREAM
Michael B. Gaumer, 381 Getchell Ave., Grayslake, Ill. 60030
Filed Jan. 31, 1983, Ser. No. 463,401
Term of patent 14 years
U.S. Cl. D25—10

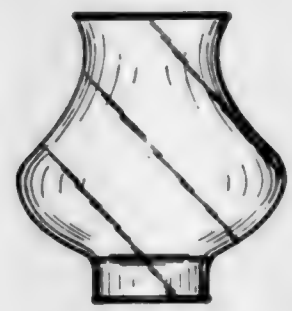


280,238
MINIATURE LIGHT BULB
Merril Herinanson, Palm Beach, Fla., assignor to Mr. Christmas Incorporated, New York, N.Y.
Filed May 18, 1983, Ser. No. 495,710
Term of patent 14 years
U.S. Cl. D26—2

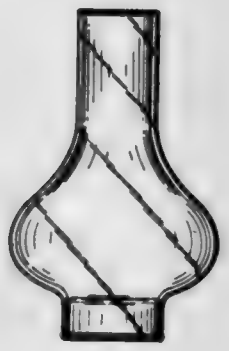


280,239
SHADE FOR LIGHT FIXTURES
Kenneth A. Burket, Horseheads, and Gerhard F. Koenig, Corning both of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 20, 1983, Ser. No. 505,692
Term of patent 14 years
U.S. Cl. D26—132

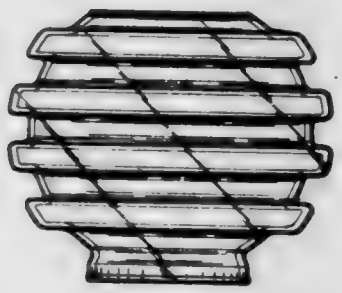
280,240
SHADE FOR LIGHT FIXTURES
Kenneth A. Burket, Horseheads; Gerhard F. Koenig, Corning both of N.Y., and Richard L. Maxwell, Sr., Nutley, N.J., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 20, 1983, Ser. No. 505,694
Term of patent 14 years
U.S. Cl. D26—132



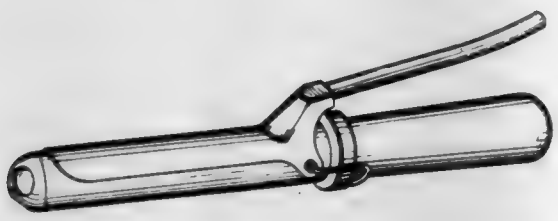
280,241
CHIMNEY FOR LIGHT FIXTURES OR THE LIKE
Kenneth A. Burket, Horseheads; Gerhard F. Koenig, Corning, and Jay Moss, Cedarhurst, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Jun. 20, 1983, Ser. No. 505,695
Term of patent 14 years
U.S. Cl. D26—132



280,242
GLOBE OR THE LIKE
Kenneth A. Burket, Horseheads; Gerhard F. Koenig, Corning, and Jay Moss, Cedarhurst, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.
Filed Apr. 13, 1983, Ser. No. 484,498
Term of patent 14 years
U.S. Cl. D26—134



280,243
CURLER/STYLER
Farees U. Khaja, Chicago, Ill., assignor to John Zink Company, Tulsa, Okla.
Filed Jun. 23, 1983, Ser. No. 507,195
Term of patent 14 years
U.S. Cl. D28—35

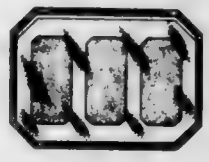


280,244
DUAL PRESSED POWDER COMPACT
Marcel Buchet, Paris, France, assignor to L'Oreal, S.A., Paris, France
Filed Mar. 24, 1983, Ser. No. 478,277
Term of patent 14 years
U.S. Cl. D28—78



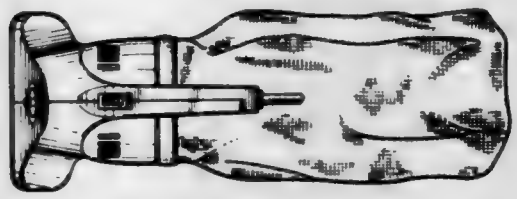


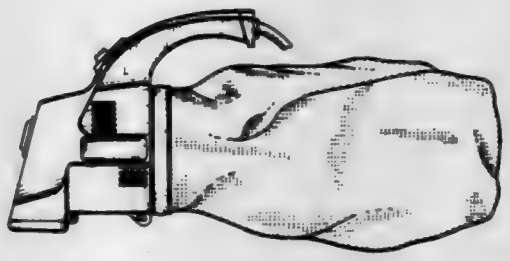
280,245
TRIO PRESSED POWDER COMPACT
Marcel Buchet, Paris, France, assignor to L'Oreal, S.A., Paris, France
Filed Mar. 24, 1983, Ser. No. 478,278
Term of patent 14 years
U.S. Cl. D28—78



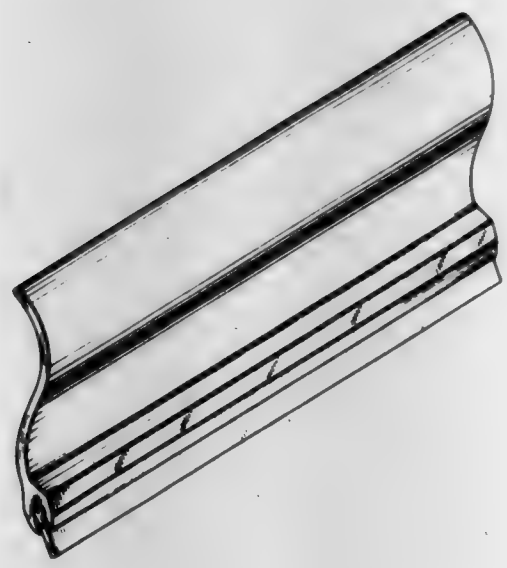


280,246
HAND VACUUM
Robert M. Smith, Copley, Ohio, assignor to Royal Appliance Mfg. Co., Highland Hts, Ohio
Filed Aug. 26, 1983, Ser. No. 526,686
Term of patent 14 years
U.S. Cl. D32—18

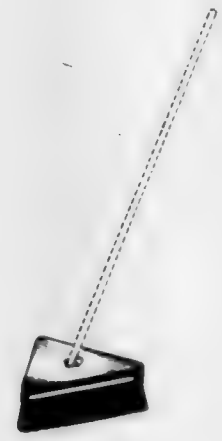




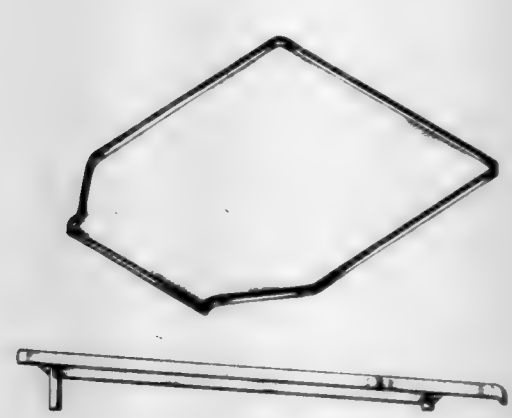
280,247
SQUEEGEE
David A. Jones, Kettering, Ohio, assignor to The Drackett Company, Del.
Filed Jan. 10, 1983, Ser. No. 457,320
Term of patent 14 years
U.S. Cl. D32—41



280,248
BRUSH
Harold W. Hanson, Jr., Newport Beach, Calif., assignor to An-Teak-Qua Company, Newport Beach, Calif.
Filed Aug. 1, 1983, Ser. No. 518,819
Term of patent 14 years
U.S. Cl. D32—50



280,249
DRAINBOARD
William P. Martin, Rte. 2, Box 202D, York, S.C. 29745
Filed Jun. 4, 1982, Ser. No. 384,932
Term of patent 14 years
U.S. Cl. D32—56



LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Keenan, Robert E., 4,536,386, Cl. 424-10.000.

A. T. Newell Co. Inc.: *See—*
Newell, Alfred T., Jr.; and Newell, Alfred T., III, 4,535,601, Cl. 62-171.000.

AB Carbogel: *See—*
Hansen, Bertil V.; Kelfve, Sten S.; and Mollberg, Henri R., 4,536,187, Cl. 44-51.000.

AB Spray Technics S.T.: *See—*
Janson, Bengt G., 4,536,295, Cl. 210-804.000.

Ab Thoreb: *See—*
Brynielsson, Thore; Tomasson, Tom; Ahlberg, Leif; and Johansson, Magnus, 4,536,004, Cl. 280-166.000.

Abex Corporation: *See—*
Khandros, Igor Y.; and Larson, Hugo R., 4,536,232, Cl. 148-35.000.

Abo, Keiju: *See—*
Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; Kumura, Haruyoshi; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,536,171, Cl. 474-28.000.

Abu Aktiebolag: *See—*
Carlsson, Lars-Olof, 4,535,952, Cl. 242-84.20G.

Accupac, Inc.: *See—*
Powers, Richard, 4,535,823, Cl. 141-5.000.

Ace Glass Incorporated: *See—*
Riley, Larry T., 4,535,969, Cl. 251-215.000.

Ace, Marshall E., Jr., deceased (by Ramsey, David L., executor); Mattson, Ray W.; and Wittenberg, Mark S., to Mattel, Inc. Child's playset. 4,536,162, Cl. 446-102.000.

Aceto, Roger, to Union Carbide Corporation. Expandable casing sizing mechanism and method. 4,535,508, Cl. 17-49.000.

Adachi, Keiichi: *See—*
Kato, Hirohiko; Ichijima, Seiji; Adachi, Keiichi; and Watanabe, Toshiyuki, 4,536,472, Cl. 430-505.000.

Adam, William S.: *See—*
DePasquale, Michael; and Adam, William S., 4,536,756, Cl. 340-626.000.

Adams, C. Harris; and Farnsworth, Robert P., to Celedata Corporation. Time accounting system. 4,536,646, Cl. 235-377.000.

Adelaide & Wallaroo Fertilizers Ltd.: *See—*
Walter, Karl H., 4,535,550, Cl. 34-33.000.

Adlerstein, Michael G., to Raytheon Company. Semiconductor structures and manufacturing methods. 4,536,469, Cl. 430-314.000.

Adret Electronique: *See—*
Charbonnier, Roger, 4,536,721, Cl. 331-116.00R.

Adriaensen, Ludovicus C. M.: *See—*
Blanchart, Alain P. O.; and Adriaensen, Ludovicus C. M., 4,536,272, Cl. 204-294.000.

Advanced Semiconductor Products, Inc.: *See—*
Winn, Ray, 4,536,240, Cl. 156-74.000.

AE PLC: *See—*
Collyear, John G.; and Parker, David A., 4,535,682, Cl. 92-153.000.

Aeroquip Corporation: *See—*
VerPlanck, James A., 4,535,521, Cl. 29-235.000.

Agarwal, Pawan K.; Lundberg, Robert D.; Graessley, William W.; and Ver Strate, Gay, to Exxon Research and Engineering Co. Hydrocarbon based gels and solutions of blends of sulfonate ionomers and their precursors extended over critical regions. 4,536,310, Cl. 252-33.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Kirstein, Fritz, 4,536,015, Cl. 283-91.000.

AGFA-Gevaert N.V.: *See—*
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.

Ahiskali, Serhat M., to AT&T Bell Laboratories. Snap-in bus bar. 4,536,826, Cl. 361-407.000.

Ahlberg, Leif: *See—*
Brynielsson, Thore; Tomasson, Tom; Ahlberg, Leif; and Johansson, Magnus, 4,536,004, Cl. 280-166.000.

Ahola, Clifford J.: *See—*
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.

Aida, Hiroyuki: *See—*
Narita, Ryuhei; Aida, Hiroyuki; and Kamiya, Yoshinori, 4,535,503, Cl. 16-382.000.

Air Products and Chemicals, Inc.: *See—*
Allam, Rodney J.; and Prentice, Alan L., 4,535,594, Cl. 60-654.000.
Deeba, Michael, 4,536,602, Cl. 564-485.000.

Airheart, Franklin B., to Alston Industries, Inc. Compact high performance disc brake. 4,535,873, Cl. 188-72.400.

Aisin Seiki Kabushiki Kaisha: *See—*
Kodama, Hisashi; Hamamoto, Tooru; Tamura, Tetsuomi; Sato, Katsujiro; and Yamada, Kazuharu, 4,535,734, Cl. 123-90.580.
Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, 4,535,815, Cl. 137-625.480.

Aiuchi, Susumu: *See—*
Kubota, Hitoshi; Tanaka, Minoru; and Aiuchi, Susumu, 4,536,419, Cl. 427-255.500.

Ajinomoto Co., Inc.: *See—*
Sakakibara, Shumpei; Yugari, Yasumi; and Hashimoto, Shigebumi, 4,536,395, Cl. 514-7.000.

Akademie der Wissenschaften der DDR: *See—*
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.

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Ogawa, Yoshinari; and Akagi, Noriyuki, 4,536,531, Cl. 524-135.000.

Akaike, Akihiko: *See—*
Yasui, Toshihiko; Matsumoto, Tetsuo; and Akaike, Akihiko, 4,536,468, Cl. 430-296.000.

Akiyama, Yasuko: *See—*
Nara, Michiko; Yamazaki, Kazunori; and Akiyama, Yasuko, 4,536,405, Cl. 514-781.000.

Aktiebolaget Electrolux: *See—*
Berglund, Lars G.; Bjorklund, Sven-Erik B.; and Linde, Lars H., 4,536,043, Cl. 312-222.000.

Aktiebolaget SKF: *See—*
Lachonius, Leif, 4,535,963, Cl. 248-251.000.

Aktiengesellschaft Adolph Saurer: *See—*
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,535,709, Cl. 112-83.000.

Akzo N.V.: *See—*
Freese, Karl-Heinz; and Munch, Hans-Jurgen, 4,536,525, Cl. 523-414.000.

Albrecht, Johannes; Jakobs, Rudolf; Turna, Osman; Vierrath, Helmut; Weil, Manfred; and Zapke, Klaus, to Metallgesellschaft Aktiengesellschaft. Stirrer of a reactor for gasifying solid fuels. 4,536,193, Cl. 48-77.000.

Albright, Larry E.: *See—*
Mather, Joseph M.; and Albright, Larry E., 4,535,868, Cl. 180-297.000.

Alexander, David C.: *See—*
Lin, Jiang-Jen; and Alexander, David C., 4,536,604, Cl. 585-601.000.

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Alexeev, Alexei I.: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.

Alfa-Laval Separation AB: *See—*
Karlsson, Per G., 4,536,285, Cl. 210-96.100.

Alfa Romeo Auto S.p.A.: *See—*
Banfi, Ambrogio, 4,535,731, Cl. 123-90.150.

Alfing Kessler Sondermaschinen GmbH: *See—*
Fischer, Peter; and Schubert, Paul, 4,535,527, Cl. 29-568.000.

Allam, Rodney J.; and Prentice, Alan L., to Air Products and Chemicals, Inc. Method and apparatus for generating power and low pressure saturated or near saturated steam. 4,535,594, Cl. 60-654.000.

Allen Datagraph Incorporated: *See—*
Allen, Richard M.; Arnold, Jeffrey M.; Field, Joseph J.; and Spraker, Terry E., 4,536,770, Cl. 346-29.000.

Allen, Dillis V. Rocker engine. 4,535,730, Cl. 123-78.00F.

Allen Manufacturing Company: *See—*
Molinari, Paul J., 4,535,658, Cl. 81-177.850.

Allen, Richard B., to General Electric Company. Method for altering the surface of thermoplastic polymers. 4,536,542, Cl. 525-67.000.

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Allen, Webster F. Trash storing apparatus. 4,536,033, Cl. 298-2.000.

Allied Corporation: *See—*
Averill, John A., 4,535,522, Cl. 29-280.000.
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,536,269, Cl. 204-182.400.
Kavesh, Sheldon; and Prevorsek, Dusan C., 4,536,536, Cl. 524-462.000.
Reichardt, Manfred; and Schutzle, Gunter, 4,536,045, Cl. 339-14.00P.

Schildkraut, Alan L.; and MacAvoy, David W., 4,536,048, Cl. 339-89.00M.
Shealy, James B., 4,535,663, Cl. 83-100.000.

Allington, Robert W., to ISCO, Inc. Absorbance monitor. 4,536,091, Cl. 356-435.000.

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Alsthom-Atlantique: *See—*
Romand-Monnier, Jacques; and Lejeune, Jean-Pierre, 4,536,138, Cl. 417-422.000.

Alston Industries, Inc.: *See—*
Airheart, Franklin B., 4,535,873, Cl. 188-72.400.

Alternative Pioneering Systems Inc.: *See—*
Erickson, Chad S., 4,536,643, Cl. 219-400.000.

Altman Stage Lighting Co., Inc.: *See—*
Lemons, Thomas M., 4,536,832, Cl. 362-264.000.

Amco Corporation: *See—*
Bentson, Wade A., 4,535,688, Cl. 99-353.000.

Amemiya, Yoichi: *See—*
Kozai, Yoshinori; Amemiya, Yoichi; and Asahara, Sunao, 4,536,649, Cl. 250-231.0SE.

Amendola, Albert; Christensen, Richard G.; and Yereance, John G., Jr., to International Business Machines Corporation. Method and apparatus for making a mask conforming to a ceramic substrate metallization pattern. 4,536,470, Cl. 430-314.000.

American Can Company: *See—*
Ebben, Gerald J., 4,535,615, Cl. 72-39.000.
Farrell, Christopher J.; and Tsai, Boh C., 4,536,409, Cl. 426-398.000.

American Cyanamid Company: *See—*
Floyd, Middleton B., Jr.; and Goidl, Jo A., 4,536,517, Cl. 514-576.000.
Lawhorne, Earl R., 4,536,268, Cl. 204-182.400.
Savides, Christos; and Bright, John H., 4,536,596, Cl. 562-443.000.
Schmitt, Joseph M., 4,536,326, Cl. 252-400.00R.
Shepherd, Robert G.; and Upeslacis, Janis, 4,536,346, Cl. 260-465.00D.
Zoltan, Bart J., 4,535,782, Cl. 128-665.000.
Zwick, Maurice M., 4,536,365, Cl. 264-558.000.

American Orthodontics Corporation: *See—*
Garton, Robert E., Jr.; and Viglietti, John E., 4,536,154, Cl. 433-8.000.

American Screen Printing Equipment Company: *See—*
Lala, Louis A.; and Frenchy, James H., 4,535,549, Cl. 34-4.000.

American Standard Inc.: *See—*
Gerken, Carl F., 4,535,578, Cl. 52-243.100.
Gilcher, Heinz, 4,535,959, Cl. 246-34.00R.
Gray, David A.; and Webb, Donald O., 4,535,838, Cl. 165-134.00R.

AMP Incorporated: *See—*
Kandybowski, Steven J.; and Sucheski, Matthew M., 4,536,055, Cl. 339-258.00R.

Ampex Corporation: *See—*
Louth, Kenneth, 4,536,806, Cl. 360-69.000.

Amstutz, Gary A.; and Mayekar, Kishor D., to Union Carbide Corporation. Fluorescent corrosive fluoride solution. 4,536,322, Cl. 252-301.160.

Ancet Corporation: *See—*
Kitrilakis, Sotiris; and Johnson, Theodore R., 4,535,778, Cl. 128-635.000.

Andersen, Hans: *See—*
Strandberg, Hans G.; and Andersen, Hans, 4,535,776, Cl. 128-419.0PG.

Anderson, David M., to Phytogen. Plant vector. 4,536,475, Cl. 435-172.300.

Anderson, John. Three way valve. 4,535,821, Cl. 137-884.000.

Anderson, Michael H.; Lyons, Christopher S.; and Wigness, Bruce D., to University of Minnesota. Implantable catheters with non-adherent contacting polymer surfaces. 4,536,179, Cl. 604-266.000.

Anderson Strathclyde Plc: *See—*
Hogg, Thomas M., 4,536,036, Cl. 299-43.000.

Andersson, Bo. Hydraulic valve means. 4,535,809, Cl. 137-596.140.

Ando, Fumitaka: *See—*
Kijima, Takao; Maebayashi, Jiro; and Ando, Fumitaka, 4,536,007, Cl. 280-701.000.

Ando, Hiromi: *See—*
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, 4,535,680, Cl. 91-376.00R.

Ando, Shizuo: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,536,811, Cl. 360-96.600.

Andreev, Vladimir V.: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.

Andrews, Peter J., to Texas Instruments Incorporated. Direct A.C. to A.C. converter controlled by a data processor. 4,536,835, Cl. 363-163.000.

Angus Chemical Company: *See—*
Kayser, Robert B.; and Purcell, Robert F., 4,536,300, Cl. 252-8.55D.

Annen, Klaus: *See—*
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Ansted, Roger C.: *See—*
Alsenz, Richard H.; and Ansted, Roger C., 4,535,602, Cl. 62-175.000.

Anthony, Frank H. Refractory shelf for home hobbyist kiln and method of making kiln. 4,536,153, Cl. 432-258.000.

Antonucci, Joseph M., to United States of America, Health & Human Services. Dental composite formulation from acrylate monomer and polythiol accelerator. 4,536,523, Cl. 523-115.000.

Antpohler, Heinz-Josef. Device for the manufacture and processing of biscuit mixture shapes. 4,535,687, Cl. 99-334.000.

Aoai, Toshiaki: *See—*
Nagashima, Akira; Hasegawa, Akira; Aoai, Toshiaki; and Nagano, Teruo, 4,536,464, Cl. 430-192.000.

Aoki, Hidehiko: *See—*
Yoshida, Yoshihiro; and Aoki, Hidehiko, 4,536,716, Cl. 330-69.000.

Aoki, Takashi: *See—*
Nishikawa, Masao; and Aoki, Takashi, 4,535,652, Cl. 74-733.000.

Aono, Toshiaki: *See—*
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,466, Cl. 430-203.000.
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,467, Cl. 430-203.000.

Appel, Hans; and Heidenescher, Hermann, to Zundwarenfabrik Stracke GmbH & Co. Lateral-traction roller shade. 4,535,830, Cl. 160-299.000.

Ardit, Giuseppe: *See—*
Besson, Duilio; De Marco, Claudio; Peruzzo, Roberto; and Ardit, Giuseppe, 4,535,599, Cl. 62-154.000.

Arditty, Herve : *See—*
Graindorge, Philippe; and Arditty, Herve , 4,536,861, Cl. 367-149.000.

Arizona Chemical Company: *See—*
Davis, Curry B.; and Frade, Americo G. P., 4,536,332, Cl. 260-97.600.

Arnell Inc.: *See—*
Rabinowitz, Lewis, 4,535,761, Cl. 128-62.00A.

Arnold, Jeffrey M.: *See—*
Allen, Richard M.; Arnold, Jeffrey M.; Field, Joseph J.; and Spraker, Terry E., 4,536,770, Cl. 346-29.000.

Arnold, Lionel C., to Teepak, Inc. Method and apparatus for making improved end-closures for shirred tubular casings. 4,536,175, Cl. 493-308.000.

Artusi, Aldo, to Medipack AG. Container which is a form of packaging in particular for medicaments and the like and process for its manufacture. 4,535,890, Cl. 206-530.000.

Arvin Industries, Inc.: *See—*
Thayer, Timothy Z.; and Shaw, Frank W., 4,536,371, Cl. 422-171.000.

Asahara, Sunao: *See—*
Kozai, Yoshinori; Amemiya, Yoichi; and Asahara, Sunao, 4,536,649, Cl. 250-231.0SE.

Asahi Glass Company Ltd.: *See—*
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,536,259, Cl. 204-35.100.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,536,352, Cl. 260-543.00F.
Moriguchi, Kisoo; and Ikegami, Tadashi, 4,536,550, Cl. 525-240.000.

Asahi Kogaku Kogyo Kabushiki Kaisha: *See—*
Shono, Tetsuji, 4,536,070, Cl. 354-402.000.

ASARCO Incorporated: *See—*
Little, Victor, Jr.; and Thomas, Charles L., 4,536,152, Cl. 431-159.000.

Aschenbach, Louis F., to Eaton Corporation. Thermostat. 4,536,736, Cl. 337-317.000.

ASEA Aktiebolag: *See—*
Olsson, Ingemar, 4,535,949, Cl. 242-57.000.

Ashland Oil, Inc.: *See—*
Hettinger, William P., Jr.; and Lewis, James E., 4,536,281, Cl. 208-113.000.

Ashman, Arthur; and Bruins, Paul F., to Medical Biological Sciences, Inc. Polymeric acrylic prothesis. 4,535,485, Cl. 623-16.000.

Ashman, Arthur: *See—*
Bruins, Paul F.; and Ashman, Arthur, 4,536,158, Cl. 433-201.100.

Ashworth, Denis H., to Simon Engineering Dudley Limited. Vehicle stabilizing system. 4,536,009, Cl. 280-755.000.

Astra Lakemedel Aktiebolag: *See—*
Helgstrand, Åke J. E.; Johansson, Karl N. G.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,536,400, Cl. 514-120.000.

AT&T Bell Laboratories: *See—*
Ahiskali, Serhat M., 4,536,826, Cl. 361-407.000.
Basarath, Brian A.; and Kakalec, Robert J., 4,536,715, Cl. 330-2.000.
Farah, Robert L., 4,536,741, Cl. 340-347.0DD.
Jin, Sungho; and Tiefel, Thomas H., 4,536,229, Cl. 148-31.550.
Kemper, Kyran B., 4,536,706, Cl. 324-117.00R.
Lancaster, Loren T., 4,535,532, Cl. 29-576.00B.
Ray, Richard C., 4,536,696, Cl. 320-21.000.

AT&T Information Systems: *See—*
Baker, Donn; Clarke, John E.; and Johnson, Chris G., 4,536,052, Cl. 339-126.00R.

AT&T Technologies, Inc.: *See—*
Dines, David R.; Svoboda, George; and Workman, Robert G., 4,535,535, Cl. 29-845.000.
Jablway, Ali N.; and Mitchell, Alexander M., 4,536,703, Cl. 324-52.000.
Rieman, Richard F., 4,536,622, Cl. 179-103.000.

Atalla Corporation: *See—*
Atalla, Martin M.; and Bestock, Ralph R., 4,536,647, Cl. 235-379.000.

Atalla, Martin M.; and Bestock, Ralph R., to Atalla Corporation. Pocket banking terminal, method and system. 4,536,647, Cl. 235-379.000.

Ateliers de Constructions Mecaniques de Vevey S.A.: *See—*
Hess, Fritz; and Dalliard, Fernand, 4,535,702, Cl. 105-4.00R.

Atkinson, Gordon E.; and Kubina, Stephen J., to Vernay Laboratories, Inc. Valve assembly. 4,535,819, Cl. 137-846.000.

Atlantic Richfield Company: *See—*
Erickson, Mark R.; and Kaehler, James A., 4,536,847, Cl. 364-516.000.

Atochem: *See—*
Lacombe, Jean-Loup; and Brun, Claude, 4,536,484, Cl. 502-62.000.
Tatin, Gerard, 4,536,182, Cl. 8-107.000.

Atomic Energy of Canada Limited: *See—*
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.

Atwell, George. Desalination system. 4,536,257, Cl. 202-177.000.

Audeh, Costandi A., to Mobil Oil Corporation. Enhanced recovery of hydrocarbonaceous fluids from oil shale. 4,536,279, Cl. 208-11.00R.

Augat Inc.: *See—*
Wyss, Robert P., 4,535,536, Cl. 29-845.000.

Augsburger, John J.; and Darlington, R. Keith. Corrosion inhibition of aqueous brines. 4,536,302, Cl. 252-8.55R.

Autoflow Engineering Limited: *See—*
Soper, Peter H. H.; and Cammack, Andrew S., 4,535,566, Cl. 51-124.00L.

Automated Container Corporation: *See—*
Zysset, Edgar H., 4,535,909, Cl. 220-273.000.

Averill, John A., to Allied Corporation. Analyzer maintenance. 4,535,522, Cl. 29-280.000.

Avery, Robert C. Engine turning tool bracket. 4,535,655, Cl. 81-484.000.

Awaji Sangyo Kabushiki Kaisha: *See—*
Mio, Mitsushi; and Negita, Hisao, 4,536,645, Cl. 219-543.000.

Axonics, Inc.: *See—*
Barnes, Clarence W., 4,536,655, Cl. 250-461.100.

B.A.T. Cigaretten-Fabriken GmbH: *See—*
Grell, Karl-Heinz; and Krappitz, Heinz, 4,535,885, Cl. 198-695.000.

B. F. Goodrich Company, The: *See—*
George, Thomas R., Jr.; and Lochhead, Robert Y., Jr., 4,536,528, Cl. 524-313.000.
Rahrig, Douglas B., 4,536,360, Cl. 264-142.000.
Wright, Robert B., 4,535,490, Cl. 4-585.000.

B.W.B. Controls, Inc. (Louisiana): *See—*
Bergeron, Ned A., 4,535,899, Cl. 212-153.000.

Baba, Kiyokazu, to Kabushiki Kaisha Komatsu Seisakusho. Apparatus for palletizing pressings. 4,536,118, Cl. 414-43.000.

Babbitt, Brett A.; Le, Tri C.; and Noble, Bruce P., to Joy Manufacturing Company. Expanding gate valve with fluid-powered actuator. 4,535,967, Cl. 251-54.000.

Babcock & Wilcox Company, The: *See—*
Berthold, John W., III; and Fitzgerald, Charles S., 4,536,827, Cl. 362-32.000.

Babcock, William E., to RCA Corporation. Multiple scan rate deflection circuit incorporating scan compensation. 4,536,684, Cl. 315-411.000.

Babineaux, David, III. Method of treating waste water. 4,536,293, Cl. 210-717.000.

Baboulet, Jean-Pierre C.: *See—*
Ramisse, Yves D.; Baboulet, Jean-Pierre C.; Vie, Michel P.; and Malaval, Paul C., 4,536,327, Cl. 252-511.000.

Backus, Alan L.: *See—*
Bartok, Stephen; Stansbury, Benjamin H., Jr.; and Backus, Alan L., 4,535,931, Cl. 236-20.00R.

Badaliants, Khoren A.: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.

Baertschi, Peter; Wetter, Kurt; and Graf, Felix, to Rieter Machine Works, Ltd. Draw-roll assembly. 4,535,515, Cl. 28-245.000.

Bahr, Dietrich J.; Burckardt, Karl-Heinz; Goldrian, Gottfried; Rudolph, Volker; and Spruth, Wilhelm G., to International Business Machines Corporation. Method of recording information on an electrosensitive record carrier. 4,536,769, Cl. 346-1.100.

Bahr, Richard G.; and Hogan, Thomas C., to Prime Computer, Inc. Self initializing phase locked loop ring communications system. 4,536,876, Cl. 370-86.000.

Bains, Paul C. Apparatus for observation in a high velocity liquid stream. 4,536,789, Cl. 358-99.000.

Baker Aktiengesellschaft: *See—*
Junge, Bodo; and Muller, Lutz, 4,536,493, Cl. 514-25.000.

Baker, Donn; Clarke, John E.; and Johnson, Chris G., to AT&T Information Systems. Modular cross-connect panel. 4,536,052, Cl. 339-126.00R.

Baker Oil Tools, Inc.: *See—*
Ross, Richard J., 4,535,842, Cl. 166-63.000.

Baker, Richard H., to Gould, Inc. Field effect regulator with stable feedback loop. 4,536,699, Cl. 323-276.000.

Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., to Imperial Chemical Industries Limited. Preparation of aromatic polymers from cyclohexa-3,5-diene polymers. 4,536,555, Cl. 526-295.000.

Baltek Corp.: *See—*
Kohn, Henri-Armand, 4,536,427, Cl. 428-44.000.

BancTec, Inc.: *See—*
Torkelson, John; and Sanders, Weldon A., Jr., 4,536,801, Cl. 358-280.000.

Banfi, Ambrogio, to Alfa Romeo Auto S.p.A. Device for automatically varying the timing of a camshaft. 4,535,731, Cl. 123-90.150.

Barberis, Dario, to WABCO Westinghouse Compagnia Freni S.p.A. Vehicle braking apparatus and method. 4,536,039, Cl. 303-16.000.

Barillo, Joseph: *See—*
Urban, Warren J.; Barillo, Joseph; and Krupa, Jerry J., 4,536,338, Cl. 260-400.000.

Barker, Peter L.: *See—*
Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., 4,536,512, Cl. 514-413.000.

Barlow, Anthony; and Maringer, Melvin F., to National Distillers and Chemical Corporation. Water tree resistant compounds and polymer compositions containing the same. 4,536,530, Cl. 524-109.000.

Barmag Barmer Maschinenfabrik Aktiengesellschaft: *See—*
Post, Karl-Heinz; and Eich, Otwin, 4,535,966, Cl. 251-31.000.

Barnes, Clarence W., to Axonics, Inc. Fluorometer having an improved optical system. 4,536,655, Cl. 250-461.100.

Barnes-Hind, Inc.: *See—*
Lim, Drahoslav; Kulkarni, Chidambar L.; and Repella, Dennis A., 4,536,554, Cl. 526-264.000.

Barnes, Ronald L.: *See—*
Kruse, Richard M.; Moffett, David J.; Patel, Madhu C.; and Barnes, Ronald L., 4,536,648, Cl. 235-454.000.

Barrett, Howard W.; and Fledderjohann, Paul F., to Goodyear Aerospace Corporation. Indirect cooling of electronic circuits. 4,536,824, Cl. 361-384.000.

Barth, Wayne E., to Pfizer Inc. 6-(Aminomethyl)penicillanic acid 1,1-dioxide esters and intermediates therefor. 4,536,393, Cl. 424-114.000.

Bartok, Stephen; Stansbury, Benjamin H., Jr.; and Backus, Alan L., to Scott, Kenneth W. Energy conserving water heater control system. 4,535,931, Cl. 236-20.00R.

Bartsch, Kenneth E.: *See—*
Gard, Eric A.; Kautter, William J., Jr.; and Bartsch, Kenneth E., 4,535,854, Cl. 177-1.000.

Baryshnikov, Anatoly I.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Basarath, Brian A.; and Kakalec, Robert J., to AT&T Bell Laboratories. Linear dual detector opto-isolator circuit. 4,536,715, Cl. 330-2.000.

BASF Aktiengesellschaft: *See—*
Hambrecht, Juergen; Reffert, Rudi W.; Minges, Peter; and Swoboda, Johann, 4,536,567, Cl. 528-486.000.
Horner, Michael; and Irgang, Matthias, 4,536,347, Cl. 260-465.00F.
Wegner, Gerhard; and Wernet, Wolfgang, 4,536,262, Cl. 204-56.00R.

BASF Wyandotte Corporation: *See—*
Heyman, Duane A., 4,536,557, Cl. 528-52.000.

Batchelor, William H., to Propane Carburetion Systems, Inc. Fuel feed control system and control valve for dual fuel operation of an internal combustion engine. 4,535,728, Cl. 123-27.0GE.

Bateman, Wayne: *See—*
Kruger, Robert A.; and Bateman, Wayne, 4,536,790, Cl. 358-111.000.

Battelle Memorial Institute: *See—*
Prost, Jean-Louis; and Gross, Daniel, 4,535,627, Cl. 73-290.00B.

Baudis, Ulrich: *See—*
Beyer, Hans-Hermann; Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, 4,536,224, Cl. 148-6.110.

Bauer, Eckhart: *See—*
Engel, Wolfhard; Bauer, Eckhart; Trummlitz, Gunter; Danneberg, Peter; and Kahling, Joachim, 4,536,402, Cl. 514-443.000.

Bauer, Fritz. Adjustable mountings for a movie camera. 4,536,066, Cl. 352-35.000.

Baum, Helmut; Pfizenmaier, Heinz; Schmidt, Ewald; and Strauss, Franz, to Robert Bosch GmbH. Inductive pressure sensor using two oscillators. 4,536,719, Cl. 331-37.000.

Baum, Marcel, to Dragerwerk Aktiengesellschaft. Method and apparatus for monitoring a respirator usable with an endotracheal tube. 4,535,766, Cl. 128-204.230.

Bauscher, Billy J.: *See—*
Sandy, Julius W.; Riebock, William D.; and Bauscher, Billy J., 4,536,107, Cl. 408-214.000.

Bayer Aktiengesellschaft: *See—*
Fiedler, Paul; and Braden, Rudolf, 4,536,344, Cl. 260-465.00R.
Fischer, Wolfgang; and Leiblein, Felix, 4,536,511, Cl. 514-404.000.
Kranz, Eckart; and Findeisen, Kurt, 4,536,353, Cl. 260-545.00R.
Maurer, Fritz, 4,536,574, Cl. 544-253.000.
Schmidt, Manfred; and Dicke, Hans-Rudolf, 4,536,561, Cl. 528-191.000.

Sirrenberg, Wilhelm; Marhold, Albrecht; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,536,587, Cl. 549-366.000.

Bebie, Alain M. Keyboard design. 4,536,625, Cl. 200-5.00A.

Becker, John R. Battery security and hold-down device. 4,535,863, Cl. 180-68.500.

Becker, Wilfried: *See*—
Panhke, Klaus-Dieter; and Becker, Wilfried, 4,535,677, Cl. 89-46.000.

Becnel, Larry H., to General Dynamics, Pomona Division. Inspection device and method for cylindrical work pieces. 4,535,545, Cl. 33-550.000.

Becton, Dickinson and Company: *See*—
Burns, James A., 4,535,769, Cl. 128-314.000.

Bedard, Jean T.: *See*—
Provost, Pierre; and Bedard, Jean T., 4,535,858, Cl. 177-134.000.

Behrens, Henry: *See*—
Kiricoples, Charles P.; Behrens, Henry; and Brown, Robert L., 4,536,099, Cl. 401-209.000.

Beier, Sybille: *See*—
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Beiersdorf Aktiengesellschaft: *See*—
Schmeer, Gert; Engelmann, Eberhard; and Schafer, Karl, 4,536,441, Cl. 428-317.300.

Beijen, James H.: *See*—
Ramey, Carl; Hill, Royce W.; and Beijen, James H., 4,535,925, Cl. 227-55.000.

Belanger, Patrice C.; and Gillard, John W., to Merck Frosst Canada, Inc. Substituted phenylalkenoic acids and esters. 4,536,515, Cl. 514-532.000.

Belbel, Elie; Blanchard, Christian; Fechant, Louis; Haury, Andre ; and Lauraire, Michel, to La Telemecanique Electrique. Limiting switch. 4,536,630, Cl. 200-151.000.

Belew, Robert R., to United States of America, National Aeronautics and Space Administration. Variable length strut with longitudinal compliance and locking capability. 4,536,114, Cl. 410-156.000.

Bell, David J.: *See*—
Jones, Harold; and Bell, David J., 4,535,898, Cl. 211-153.000.

Bell, Edward D. Apparatus for rapid refueling of armored fighting vehicles. 4,535,826, Cl. 141-231.000.

Bellis, Robert D.; Tod, Timothy W.; and Tod, Roger J., to Coin Controls Limited. Machine having a coin or token payout mechanism. 4,535,794, Cl. 133-8.00E.

Bello, Vincent G.; and Sweeting, Charles W., to United Technologies Corporation. Boost feedforward pulse width modulation regulator. 4,536,700, Cl. 323-285.000.

Beloit Corporation: *See*—
Justus, Edgar J., 4,536,255, Cl. 162-358.000.

Belsterling, Charles A.; and Soberman, Robert K., to Calspan Corporation. Tool-supporting self-propelled robot platform. 4,536,690, Cl. 318-687.000.

Belvederi, Bruno, to G.D. Societa per Azioni. Device for dispensing viscous materials. 4,535,693, Cl. 101-366.000.

Ben Clements & Sons, Inc.: *See*—
Furutsu, Akira, 4,535,926, Cl. 227-67.000.

Bendix Corporation, The: *See*—
Kytta, Oswald O., 4,535,679, Cl. 91-376.00R.

Benesh, Vladimir. Cartridge holder. 4,535,558, Cl. 42-89.000.

Bennett, John A.: *See*—
Himsley, Alexander; and Bennett, John A., 4,536,287, Cl. 210-293.000.

Benson, Robert F., to Nicolet Instrument Corporation. Multi-layer circuit board inspection system. 4,536,239, Cl. 156-64.000.

Bentson, Wade A., to Amco Corporation. Tortilla basket fryer. 4,535,688, Cl. 99-353.000.

Berbalk, Hermann, to Oerlikon-Boehringer GmbH. Power-driven steady rest for lathes. 4,535,661, Cl. 82-40.00R.

Berg, Harvey J., to Minnesota Mining and Manufacturing Company. Molded fibrous filtration products. 4,536,440, Cl. 428-284.000.

Bergen, Henry M.; Zaimi, Sedat; Castellano, Vincenzo; and Schildkraut, Irwin, to IPC Communications, Ltd. Dual talk path key telephone. 4,536,621, Cl. 179-99.00R.

Bergeron, Ned A., to B.W.B. Controls, Inc. (Louisiana). Boom warning actuator. 4,535,899, Cl. 212-153.000.

Berggren, Benny: *See*—
Gripenholt, Ninneh; Berggren, Benny; and Boling, Goran, 4,536,242, Cl. 156-96.000.

Bergh, Ralph A.: *See*—
Shaw, Herbert J.; and Bergh, Ralph A., 4,536,058, Cl. 350-320.000.

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Beyer, Hans-Hermann; Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, to Degussa Aktiengesellschaft. Salt bath for the currentless production of wear resistant boride layers. 4,536,224, Cl. 148-6.110.

Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., to International Business Machines Corporation. Method and resulting structure for selective multiple base width transistor structures. 4,535,531, Cl. 29-577.00C.

Bianchini, Gregory M.; and McRae, Thomas G., to United States of America, Energy. Vapor spill monitoring method. 4,535,639, Cl. 73-863.110.

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Bick, David E.; Flippance, Christopher F.; and Parry, Ian C., to Dowty Hydraulic Units Limited. Retarders suitable for wagon speed control and having means for holding them in their operative condition. 4,535,872, Cl. 188-62.000.

Bickerstaff, Alan E.; Cotton, Austin H.; Ladell, Michael G.; and Neale, David M., to Xerox Corporation. Apparatus for supplying a liquid to a heated surface. 4,536,076, Cl. 355-3.0FU.

Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., to Merck & Co., Inc. 5-(2,3-Dihydro-1H-pyrrolizin-5-oyl)-2,3-dihydro-1H-pyrrolizine-1-alkanoic or carboxylic acids and use thereof as anti-inflammatory and analgesic agents. 4,536,512, Cl. 514-413.000.

Binder, Paul B.; and Kroninger, Paul M., Jr., to General Signal Corporation. Electrical feedthrough means for pressure transducer. 4,536,820, Cl. 361-283.000.

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Brighton, Carl T.; and Pollack, Solomon R., 4,535,775, Cl. 128-419.00F.

Biomatics Inc.: *See*—
Gardos, Ivan, 4,535,585, Cl. 53-247.000.

Bischoff, Andrea L.; and Chin, Robert W., to Goodyear Aerospace Corporation. Safety device for venting aircraft tires. 4,535,957, Cl. 244-103.00R.

Bishop, Sarah M.; and Curtis, Paul T., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the. Fibre reinforced composites. 4,536,438, Cl. 428-246.000.

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Black Clawson Company, The: *See*—
Couture, Joseph W., 4,535,943, Cl. 241-46.020.

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Chan, Ven L., 4,536,641, Cl. 219-253.000.

Blackburn, Linda B.; and Ellingsworth, John R., to United States of America, National Aeronautics and Space Administration. Tensile testing apparatus. 4,535,636, Cl. 73-831.000.

Blackburn, Tom L., to GTE Communications Products Corporation. Signal detector apparatus. 4,536,871, Cl. 370-74.000.

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Navarro, Luis J.; Peter, Joseph R.; and Blair, Bruce W., 4,536,760, Cl. 340-722.000.

Blanc, Guy-Francois; and Loehrer, Fritz, to Maag Gear-Wheel and Machine Company. Arrangement for starting-up a position regulator of a grinding wheel support. 4,535,569, Cl. 51-165.900.

Blanchard, Christian: *See*—
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Blanchart, Alain P. O.; and Adriaensen, Ludovicus C. M., to Electrochemische Energieconversie N.V. Porous electrode. 4,536,272, Cl. 204-294.000.

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Hebert, Philip J.; and Blanchette, Leon G., 4,535,750, Cl. 126-41.00B.

Blandino, Silvano: *See*—
Greco, Claudio; and Blandino, Silvano, 4,536,139, Cl. 417-471.000.

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Landa, Vaclav; and Blazek, Zdenek, 4,536,230, Cl. 148-31.570.

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Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., 4,536,836, Cl. 364-200.000.

Bliefert, Claus; Boldhaus, Hans-Michael; and Hoffmann, Manfred, to Hewing GmbH & Co. Process for the fluorination of a surface layer of formed bodies made of plastics. 4,536,266, Cl. 204-159.180.

Bloch, Aaron N.: *See*—
Sheng, Ping; and Bloch, Aaron N., 4,536,608, Cl. 136-259.000.

Bloom, Daniel M.: *See—*
Sands, Robert W.; and Bloom, Daniel M., 4,536,834, Cl. 362-303.000.

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Blytas, George C., to Shell Oil Company. Process for the removal of H_2S and adjustment of the H_2/CO ratio in gaseous streams containing hydrogen sulfide, carbon monoxide, and hydrogen. 4,536,381, Cl. 423-437.000.

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Boatright, Edward. Isometric golf trainer device and method. 4,535,991, Cl. 273-193.00A.

BOC Group, Inc., The: *See—*
Miller, Elwood O., 4,535,812, Cl. 137-624.110.

Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., to International Flavors & Fragrances Inc. 1-Hydroxymethyl-2-acyl cyclopropane derivatives and esters and cyclic condensation products thereof, organoleptic uses of same and processes for preparing same. 4,536,330, Cl. 252-522.00R.

Boeing Company, The: *See—*
Bryan, Darold R.; and Porter, George Z., 4,535,717, Cl. 114-230.000.
Lambregts, Antonius A., 4,536,843, Cl. 364-434.000.
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,536,559, Cl. 528-170.000.

Boeve, Gerard J.: *See—*
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.

Boggs, William E.; and Keener, Everett L., to United States Steel Corporation. System for controlling the composition of a fuel gas produced by a jet compressor system. 4,536,194, Cl. 48-180.100.

Boldhaus, Hans-Michael: *See—*
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Boley, Robert E. Automatic liquid shut-off valve. 4,535,799, Cl. 137-174.000.

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Lindahl, Gertrud M., 4,536,384, Cl. 423-556.000.

Boling, Goran: *See—*
Gripenholt, Ninneh; Berggren, Benny; and Boling, Goran, 4,536,242, Cl. 156-96.000.

Boltrek, Henry, to Westinghouse Electric Corp. Escalator. 4,535,880, Cl. 198-330.000.

Boltswitch, Inc.: *See—*
Erickson, John W., 4,536,046, Cl. 339-31.00M.

Bonazzo, Robert. Water filtration device. 4,536,290, Cl. 210-419.000.

Bonk, Joseph P., to Colgate-Palmolive Company. Pre-moistened towelette dispenser. 4,535,912, Cl. 221-46.000.

Bonney, Robert D.: *See—*
Price, Michael G.; Zehl, Otis G.; and Bonney, Robert D., 4,536,062, Cl. 350-358.000.

Bookout, Russell J.; Pearson, Bernard A.; and Jacobs, John W., to TRW Inc. Submergible pumping apparatus. 4,536,137, Cl. 417-390.000.

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Borchardt, John K.; and Young, Bill M., to Halliburton Company. Methods for stabilizing swelling clays or migrating fines in subterranean formations. 4,536,305, Cl. 252-8.55R.

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Shiau, David W.; and Smith, Eric, 4,536,245, Cl. 156-307.300.

Borg-Warner Corporation: *See—*
Sturges, Fred D., 4,535,879, Cl. 192-52.000.

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Borisch, Donald J.; Hanrahan, Gary V.; and Merritt, Herbert E., to Cincinnati Milacron Inc. Machine operation monitor. 4,536,849, Cl. 364-550.000.

Borisoff, David J. String bender attachment construction. 4,535,670, Cl. 84-312.00R.

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Falk, Robert A.; and Borsodi, Istvan, 4,536,254, Cl. 162-135.000.

Borta, Ronald. Autogrammer. 4,536,840, Cl. 364-300.000.

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Wildi, Edwin; Bossart, Erwin; and Hasler, Hans, 4,535,956, Cl. 242-151.000.

Bosse, Thomas W., to Pitney Bowes Inc. Optical weighing scale utilizing a prism. 4,536,651, Cl. 250-231.00R.

Botar, Bela. Vertically inclined engine low floor bus. 4,535,867, Cl. 180-294.000.

Bouchard, Andre C.; Maya, Jakob; and Sentementes, Thomas, to GTE Products Corporation. Glass coated metal arc director for compact fluorescent lamp. 4,536,678, Cl. 313-493.000.

Bourgeois, Jean-Louis, to Foyer d'Aciernergie Inc. Heat recuperator for fireplace. 4,535,751, Cl. 126-121.000.

Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Santamaria, Raphael, to Delalande S.A. Aromatic derivatives comprising an aminoalkoxy chain and pharmaceutical compositions thereof. 4,536,500, Cl. 514-212.000.

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Boutaleb, Lucy A.; Boutaleb, Aboubekr; and Kerekess, Tibor T., 4,536,014, Cl. 283-83.000.

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Bovenkerk, Harold P.; Gigl, Paul D.; and Corrigan, Francis R., to General Electric Company. Process for making diamond and cubic boron nitride compacts. 4,536,442, Cl. 428-323.000.

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Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,536,299, Cl. 252-8.600.

Boyadjieff, George I.; and Krasnov, Igor, to Varco International, Inc. Drill string valve actuator. 4,535,852, Cl. 175-170.000.

Boyer, Robert E. Vehicle mountable electrical generating system. 4,536,668, Cl. 310-75.00R.

Boyle, Frederick P.: *See—*
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.

Braden, Rudolf: *See—*
Fiedler, Paul; and Braden, Rudolf, 4,536,344, Cl. 260-465.00R.

Bradshaw, John: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

Brady, William C.: *See—*
Perkins, Richard A.; Brady, William C.; and Turner, Paul W., 4,536,202, Cl. 65-1.000.

Braid, Milton; and Landis, Phillip S., to Mobil Oil Corporation. Additives for improving the research octane number of liquid hydrocarbon fuels. 4,536,192, Cl. 44-68.000.

Brand, Leonard J.; and Nadelson, Jeffrey, to Sandoz, Inc. Isoxazolyl indolamines having anti-diabetic activity. 4,536,499, Cl. 514-212.000.

Brander, Rita W.; Hammond, John E.; and Pasch, John H., to General Foods Corporation. Red colored meat analog. 4,536,406, Cl. 426-104.000.

Branson, Terry L. Print head carriage mechanism including a drive belt. 4,536,096, Cl. 400-120.000.

Bray, John E.: *See—*
Calnek, Trevor A.; and Bray, John E., 4,536,775, Cl. 346-76.0PH.

Brennan, Edward J., to PTC Aerospace Inc. Convertible seating unit. 4,536,027, Cl. 297-124.000.

Brennan, Michael E.: *See—*
Grigsby, Robert A., Jr.; Speranza, George P.; Brennan, Michael E.; and Yeakey, Ernest L., 4,536,522, Cl. 521-172.000.

Brett, Robert A.: *See—*
Solomon, David H.; Ross, John B.; Girolamo, Mario; and Brett, Robert A., 4,536,016, Cl. 283-111.000.

Brice, John C.; Page, John L.; and Whiffin, Peter A. C., to U.S. Philips Corporation. Liquid phase epitaxy apparatus. 4,535,720, Cl. 118-415.000.

Brice, John C.; and Brough, Colin R., to U.S. Philips Corporation. Method of and apparatus for producing a controlled unsaturated vapor pressure of a volatile liquid in a heat treatment chamber. 4,536,227, Cl. 148-13.100.

Bridgestone Tire Co., Ltd.: *See—*
Dan, Takuya; and Fujita, Akio, 4,535,976, Cl. 267-8.00R.

Bridon, Jean-Noel: *See—*
Marcoux, Bernard; and Bridon, Jean-Noel, 4,536,506, Cl. 514-342.000.

Briggs, Paul C., to Illinois Tool Works Inc. (Meth)acrylate-based compositions. 4,536,546, Cl. 525-83.000.

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Brighton, Carl T.; and Pollack, Solomon R., to Biolectron, Inc. Method for treatment of non-union bone fractures by non-invasive electrical stimulation. 4,535,775, Cl. 128-419.00F.

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Kim, Choung U.; and Micso, Peter F., Jr., 4,536,335, Cl. 260-245.20T.

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Cayless, Richard A.; and Thukral, Prem S., 4,536,225, Cl. 148-6.15R.

Brockhaus, Peter B. Window insulator. 4,535,828, Cl. 160-84.00R.

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Gram, Klaus, 4,535,605, Cl. 62-345.000.

Bronfenbrenner, James C.; Skinner, Ronald W.; and Znaimer, Samuel, to International Coal Refining Company. Integrated two-stage coal liquefaction process. 4,536,275, Cl. 208-10.000.

Brorsson, Fritz L.; Dahlberg, Bengt A. G.; and Holmberg, Bengt M., to Gambro Lundia AB. System for venting gases in fluids passing through a conduit. 4,536,201, Cl. 55-189.000.

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Sakakibara, Kenji, 4,536,691, Cl. 318-696.000.

Brough, Colin R.: *See—*
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Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, to Texaco Inc. Method for producing viscous hydrocarbons from discrete segments of a subterranean layer. 4,535,845, Cl. 166-272.000.
Brown, Dale M., to General Electric Company. Field effect semiconductor devices and method of making same. 4,536,782, Cl. 357-23.100.
Brown, Edgar D., Jr., to General Electric Company. Phenyl-containing organopolysiloxanes. 4,536,590, Cl. 556-453.000.
Brown, Milton F., Jr. Vehicle safety restraint device. 4,536,008, Cl. 280-730.000.
Brown, Neil L., to Neil Brown Instrument Systems, Inc. Analog to digital converter for precision measurements of A.C. signals. 4,536,744, Cl. 340-347.0AD.
Brown, Robert L.: *See—*
Kiricoples, Charles P.; Behrens, Henry; and Brown, Robert L., 4,536,099, Cl. 401-209.000.
Brown & Williamson Tobacco Corporation: *See—*
Luke, John A., 4,535,793, Cl. 131-336.000.
Naslund, Erik I.; and Reed, Steven P., 4,536,149, Cl. 425-394.000.
Browne, Leslie J., to Ciba-Geigy Corporation. Certain N-(pyridyl) indoles. 4,536,505, Cl. 514-339.000.
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., to Goodyear Tire & Rubber Company, The. Method of comminuting elastomeric pellets. 4,535,941, Cl. 241-21.000.
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Bruins, Paul F.: *See—*
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Keller, Tony W.; and Muller, Wolfgang, 4,535,595, Cl. 62-3.000.
Brun, Claude: *See—*
Lacombe, Jean-Loup; and Brun, Claude, 4,536,484, Cl. 502-62.000.
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Brust, John E. Sealing system. 4,535,997, Cl. 277-102.000.
Bryan, Darold R.; and Porter, George Z., to Boeing Company, The. Marine surface debris deflector. 4,535,717, Cl. 114-230.000.
Brynielsson, Thore; Tomasson, Tom; Ahlberg, Leif; and Johansson, Magnus, to Ab Thoreb. Movable foot-step for a vehicle. 4,536,004, Cl. 280-166.000.
Buat, Mario: *See—*
Knirsch, Franco; Gianolini, Giovanni; Dagna, Gian D.; and Buat, Mario, 4,536,776, Cl. 346-140.00R.
Buchanan, John: *See—*
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Buchholz, Rainer; Tomashauser, Josef; Zodrow, Rudolf; and Mohn, Hans-Werner, to Jagenberg AG. Method and apparatus for foil-capping bottles. 4,536,247, Cl. 156-477.100.
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Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.
Buhler, Fritz, to Les Fils D'Auguste Scheuchzer S.A. Device for controlling a railroad track making or repairing machine. 4,535,699, Cl. 104-7.00B.
Buhren, Heinz, to W. Schlafhorst & Co. Spool separating device. 4,535,893, Cl. 209-628.000.
Buhrmann, Gerardus P.; and Steen, Adam, to Hoogovens Groep B.V. Gas-transmitting wall element for a metallurgical vessel, a metallurgical vessel having such a wall element, and a method of producing steel. 4,535,975, Cl. 266-220.000.
Bull, Jeffrey F.; and Winiasz, Michael E., to Karg, James F. Apparatus for mounting components for rotation of carriers for strand supply bobbins and for timing strand movement relative to rotation. 4,535,672, Cl. 87-29.000.
Bull, Jeffrey F.; Johnson, Harlan; Karg, James F.; and Winiasz, Michael E., to Karg, James F. Apparatus for control of moving strands from rotating strand supply bobbins. 4,535,674, Cl. 87-29.000.
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Bullington, Robert E.; and Discavage, James L., to Cyklop International Emil Hoffman KG. Strapping apparatus. 4,536,248, Cl. 156-502.000.
Bullock, Kenneth W.; and Story, Robert J., to Smith Berger Marine, Inc. Fish-cleaning machine finishing spray accessory. 4,535,509, Cl. 17-58.000.
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., to Redicon Corporation. System, method for forming containers. 4,535,618, Cl. 72-349.000.
Bundens, Allan B.: *See—*
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., 4,536,791, Cl. 358-122.000.
Bungert, Theodor, to Hoechst Aktiengesellschaft. Pipe divider for pipes conveying solids. 4,536,104, Cl. 406-183.000.
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Burkum, Merlin E.; and O'Regan, Timothy M., to Commonwealth Edison Company. Apparatus for identifying defective substation capacitors. 4,536,704, Cl. 324-52.000.
Burmeister, Kevin L.: *See—*
Carlson, Walter H.; Zander, Gerald B.; Hanna, George C.; and Burmeister, Kevin L., 4,536,379, Cl. 423-345.000.
Burns, James A., to Becton, Dickinson and Company. Automatic retractable lancet assembly. 4,535,769, Cl. 128-314.000.
Burris, Lee R.; Speer, Billy L.; and Gayer, Melvin D., to Dayco Corporation. Belt tensioner and method of making the same. 4,536,172, Cl. 474-135.000.
Burron Medical Inc.: *See—*
Raines, Kenneth C., 4,535,820, Cl. 137-854.000.
Butler, David O. Unitary telephone cable closure. 4,536,611, Cl. 174-41.000.
Butler Manufacturing Company: *See—*
Domigan, Charles N., 4,536,612, Cl. 174-48.000.
Byrne, David S.: *See—*
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C. A. Weidmuller GmbH & Co.: *See—*
Wilmes, Manfred, 4,536,049, Cl. 339-97.00R.
C. Reichert Optische Werke AG: *See—*
Schindl, Klaus; and Nyman, Georg, 4,536,732, Cl. 335-285.000.
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Cagle, Bunyan B. Fireplace cross-circulating air heater. 4,535,752, Cl. 126-121.000.
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Matz, Gary F., 4,536,292, Cl. 210-701.000.
Rey, Paul A., 4,536,186, Cl. 44-51.000.
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Yakura, John, 4,535,721, Cl. 118-503.000.
Calnek, Trevor A.; and Bray, John E., to NCR Canada Ltd - NCR Canada Ltee. Thermal printing apparatus. 4,536,775, Cl. 346-76.0PH.
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Belsterling, Charles A.; and Soberman, Robert K., 4,536,690, Cl. 318-687.000.
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Cammack, Andrew S.: *See—*
Soper, Peter H. H.; and Cammack, Andrew S., 4,535,566, Cl. 51-124.00L.
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., to Tocom, Inc. Addressable cable television control system with video format data transmission. 4,536,791, Cl. 358-122.000.
Canato, Luigi: *See—*
Bovo, Amilcare; and Canato, Luigi, 4,536,870, Cl. 370-16.000.
Canon Kabushiki Kaisha: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,536,250, Cl. 156-651.000.
Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, 4,536,460, Cl. 430-57.000.
Kitagishi, Nozomu; Suzuki, Kenji; and Sakai, Shinji, 4,536,073, Cl. 354-406.000.
Kodaira, Takanori, 4,536,068, Cl. 354-195.120.
Maeda, Masaya, 4,536,805, Cl. 360-14.100.
Matsumoto, Haruyuki, 4,536,777, Cl. 346-140.0PD.
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,536,459, Cl. 430-57.000.
Nishimura, Yukuo, 4,536,061, Cl. 350-354.000.
Someya, Hiromi; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,536,074, Cl. 354-442.000.
Sumi, Akiyasu; and Kawai, Tohru, 4,536,057, Cl. 350-318.000.
Tokuhara, Mitsuhiro, 4,536,084, Cl. 355-55.000.
Canron Inc.: *See—*
von Beckmann, Helmuth, 4,535,700, Cl. 104-12.000.
Cantatore, Giuseppe; and Cassandrini, Paolo, to Ciba-Geigy S.p.A. Process for preparing 2,2,6,6-tetramethyl-4-piperidone. 4,536,581, Cl. 546-242.000.
Capo, James L., to International Paper Company. Dual purpose carton. 4,535,928, Cl. 229-16.00R.
Capsulated Systems, Inc.: *See—*
Hart, Ronald L.; Work, Dale E.; and Davis, Colin E., 4,536,524, Cl. 523-176.000.
Carcia, Peter F., to Du Pont de Nemours, E. I., and Company. Catalyst composition. 4,536,482, Cl. 502-5.000.
Cardaio, Rino: *See—*
Mauri, Luigi; and Cardaio, Rino, 4,536,453, Cl. 428-484.000.

Cardis, James C.; and Inciong, Josefino T., to Felt Products Mfg. Co. Gasket assembly for oil pans and the like and method of making same. 4,535,996, Cl. 277-1.000.

Carena, Ugo; and Rivera, Paolo, to Ing. C. Olivetti & C., S.p.A. Optical transducer with a transparent shutter disk. 4,536,650, Cl. 250-231.0SE.

Carlson, Walter H.; Zander, Gerald B.; Hanna, George C.; and Burmeister, Kevin L., to Graphite Sales, Inc. Production of silicon carbide. 4,536,379, Cl. 423-345.000.

Carlsson, Lars-Olof, to Abu Aktiebolag. Bail operating mechanism for fishing reels. 4,535,952, Cl. 242-84.20G.

Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, to SIRAC Spa. Process for preparing lactulose from lactose, in the form of a syrup or a crystalline product. 4,536,221, Cl. 127-30.000.

Carrier Corporation: *See*—
Herb, Carl C., 4,535,932, Cl. 236-49.000.
Mount, Gordon L., 4,535,598, Cl. 62-126.000.
Mount, Gordon L., 4,535,607, Cl. 62-201.000.

Carson, Don B., to UOP Inc. Hydrogen conservation in hydrogen recycle hydroconversion processes. 4,536,276, Cl. 208-100.000.

Carter, A. Franklin. Animal feed method employing natamycin. 4,536,494, Cl. 514-31.000.

Cartz, Louis: *See*—
Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,536,884, Cl. 378-119.000.

Case, Robert F.: *See*—
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,535,892, Cl. 209-3.300.

Casio Computer Co., Ltd.: *See*—
Kaneko, Youji, 4,535,669, Cl. 84-1.260.

Cassandrini, Paolo: *See*—
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,536,581, Cl. 546-242.000.

Castel, John C., to Physio Technology, Inc. Method of providing electrical stimulation of tissue. 4,535,777, Cl. 128-421.000.

Castellano, Vincenzo: *See*—
Bergen, Henry M.; Zaimi, Sedat; Castellano, Vincenzo; and Schildkraut, Irwin, 4,536,621, Cl. 179-99.00R.

Caterpillar Tractor Co.: *See*—
Chambers, Robert O., 4,535,651, Cl. 74-711.000.
Kohler, Ramon C., 4,535,646, Cl. 74-501.00R.

Cattin, Francois, to Fluckiger & Huguenin S.A. Instrument for the treatment of dental canals. 4,536,156, Cl. 433-102.000.

Cauthron, Grover L.; and Veatch, Michael W. Animal spraying apparatus. 4,535,726, Cl. 119-159.000.

Cavalli, Alfredo. Steam ironing apparatus with a separate water reservoir. 4,535,556, Cl. 38-77.600.

Cavalli, Alfredo. Machine for making ice cream and similar cold products, hacing a removable ice cream-making vessel. 4,535,604, Cl. 62-342.000.

Cayless, Richard A.; and Thukral, Prem S., to British Petroleum Company p.l.c., The. Surface treatment of metal. 4,536,225, Cl. 148-6.15R.

Celanese Corporation: *See*—
Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., 4,536,527, Cl. 524-193.000.

Celedata Corporation: *See*—
Adams, C. Harris; and Farnsworth, Robert P., 4,536,646, Cl. 235-377.000.

Centre de Recherches Metallurgiques Centrum Voor: *See*—
Crahay, Jean R., 4,536,639, Cl. 219-121.0LU.

Cerf, Olivier: *See*—
Gervais, Alain; Vermeire, Daniel; Cerf, Olivier; and Toux, Jacques, 4,535,621, Cl. 73-59.000.

Cerimon: *See*—
Petraud, Gilles, 4,535,555, Cl. 37-94.000.

Ceskoslovenska akademie ved: *See*—
Rohlicek, Vojtech; Hruby, Jaroslav; Nohavica, Dusan; Hrdlicka, Jan; Vykouk, Vlastimil; and Kubec, Frantisek, 4,535,784, Cl. 128-735.000.

Ceskoslovenska akademie ved of Praha: *See*—
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.

CGEE Alsthom: *See*—
Godfroid, Henri, 4,536,692, Cl. 318-723.000.

Chamberlain Manufacturing Corporation: *See*—
Prine, David W., 4,535,629, Cl. 73-587.000.

Chambers, Robert O., to Caterpillar Tractor Co. Torque proportioning differential. 4,535,651, Cl. 74-711.000.

Champion Spark Plug S.A.: *See*—
Verton, Jose ; and Henrion, Alain, 4,535,500, Cl. 15-250.230.

Chan, David M. F.; and Chan, Michael L. F. Object holding device for decorative structure. 4,535,962, Cl. 248-214.000.

Chan, Michael L. F.: *See*—
Chan, David M. F.; and Chan, Michael L. F., 4,535,962, Cl. 248-214.000.

Chan, Ven L., to Black & Decker, Inc. Iron with overtemperature protection means. 4,536,641, Cl. 219-253.000.

Chandler, Jasper S.; and Geyer, Frederick F., to Eastman Kodak Company. Optical disk assembly. 4,536,869, Cl. 369-287.000.

Chant, Bernard J.: *See*—
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,536,583, Cl. 549-1.000.

Chapline, George F., Jr., to United States of America, Energy. Method and apparatus for molecular imaging using X-rays at resonance wavelengths. 4,536,883, Cl. 378-36.000.

Charbonnages de France: *See*—
Ippolito, Serge; and Cagnioncle, Georges A., 4,535,853, Cl. 175-404.000.

Charbonnier, Roger, to Adret Electronique. Low noise crystal oscillator. 4,536,721, Cl. 331-116.00R.

Charles C. Worth Corporation: *See*—
Worth, Charles C.; and Young, John N., 4,535,954, Cl. 242-84.52B.

Charles, John G.: *See*—
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,536,222, Cl. 134-5.000.

Chauviere, Henri, to Etudes Techniques et Representations Industrielles E.T.R.I. Part to be assembled and sub-assembly comprising said part and a nut. 4,536,100, Cl. 403-12.000.

Cheal, James; and Fitzsimons, James R., to Southwest Microwave. Intrusion detection system and method. 4,536,752, Cl. 340-554.000.

Chemical Research & Licensing Company: *See*—
Jones, Edward M., Jr., 4,536,373, Cl. 422-211.000.

Chemische Werke Huels, A.G.: *See*—
Stutzel, Bernhard, 4,536,548, Cl. 525-227.000.

Chen, Augustin T.; Goldwasser, David J.; and Onder, Kemal, to Upjohn Company, The. Product. 4,536,533, Cl. 524-161.000.

Chen, C. Gregory: *See*—
Theisen, Peter J.; and Chen, C. Gregory, 4,536,814, Cl. 361-7.000.

Chen, Devereaux C.; and Fu, Horng-Sen, to Hewlett-Packard Company. Method for improving reflow of phosphosilicate glass by arsenic implantation. 4,535,528, Cl. 29-571.000.

Chiang, Anne; and Meuli, William P., to Xerox Corporation. Method for eliminating laser-induced substrate fissures associated with crystallized silicon areas. 4,536,251, Cl. 156-657.000.

Chin, Danny: *See*—
Maturo, Robert J.; Chin, Danny; and Henderson, John G. N., 4,536,797, Cl. 358-192.100.

Chin, Robert W.: *See*—
Bischoff, Andrea L.; and Chin, Robert W., 4,535,957, Cl. 244-103.00R.

Chisso Corporation: *See*—
Sugimori, Shigeru; Kojima, Tetsuhiko; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,536,321, Cl. 252-299.630.

Chlanda, Frederick P.; and Mani, Krishnamurthy N., to Allied Corporation. Multichamber two-compartment electrodialytic water splitter and method of using same for acidification of aqueous soluble salts. 4,536,269, Cl. 204-182.400.

Cho, Chun S. Shoe polishing device and servo-applicator means for use therein. 4,535,499, Cl. 15-24.000.

Christensen, Richard G.: *See*—
Amendola, Albert; Christensen, Richard G.; and Yereance, John G., Jr., 4,536,470, Cl. 430-314.000.

Christensen, Thorkild: *See*—
Thomsen, Svend E.; and Christensen, Thorkild, 4,535,678, Cl. 91-29.000.

Ciba-Geigy Corporation: *See*—
Browne, Leslie J., 4,536,505, Cl. 514-339.000.
Falk, Robert A.; and Borsodi, Istvan, 4,536,254, Cl. 162-135.000.
Lapple, Arnulf R.; and Nicopoulos, Alex, 4,536,185, Cl. 8-527.000.
Nachbur, Hermann; and Tempel, Christel, 4,536,779, Cl. 346-212.000.
Orban, Ivan; and Troxler, Eduard, 4,536,593, Cl. 560-75.000.

Ciba-Geigy S.p.A.: *See*—
Cantatore, Giuseppe; and Cassandrini, Paolo, 4,536,581, Cl. 546-242.000.

Cincinnati Milacron Inc.: *See*—
Borisch, Donald J.; Hanrahan, Gary V.; and Merritt, Herbert E., 4,536,849, Cl. 364-550.000.
Smith, Roger D., 4,536,150, Cl. 425-526.000.

Citizen Watch Company Limited: *See*—
Yoshida, Masaru, 4,536,093, Cl. 368-187.000.

Claren, Jan S.; Jeppsson, Jan-Bertil; and Staehr, Peter R., to Gambro Lundia AB. Pressure measuring system. 4,535,635, Cl. 73-756.000.

Clark, Brian, to Schlumberger Technology Corporation. Shields for antennas of borehole logging devices. 4,536,714, Cl. 324-338.000.

Clark Equipment Company: *See*—
Mather, Joseph M.; and Albright, Larry E., 4,535,868, Cl. 180-297.000.

Clark, Richard E., to Continental Packaging Company, Inc. Intermediate article of manufacture for a plastic container. 4,535,902, Cl. 215-1.00C.

Clarke, John E.: *See*—
Baker, Donn; Clarke, John E.; and Johnson, Chris G., 4,536,052, Cl. 339-126.00R.

Cleveland, William C., Jr.: *See*—
Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., 4,535,961, Cl. 248-183.000.

Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, to Glaxo Group Limited. Triazoleamine derivatives having histamine H_2-antagonist properties. 4,536,508, Cl. 514-383.000.

Coad, Brian C., to GTE Products Corporation. Boron addition to alloys. 4,536,215, Cl. 75-129.000.

Coates, Ronald: *See*—
O'Grady, Thomas M.; Tatterson, David F.; and Coates, Ronald, 4,536,277, Cl. 208-11.00R.

Tatterson, David F.; O'Grady, Thomas M.; and Coates, Ronald, 4,536,278, Cl. 208-11.00R.

Coburn, Brian. Ratio speed adaptor. 4,535,653, Cl. 74-765.000.

Cocentall - Ateliers de Carspach: *See—*
Ippolito, Serge; and Cagnioncle, Georges A., 4,535,853, Cl. 175-404.000.

Cocivera, Michael, to University of Guelph. Thin film cadmium selenide electrodeposited from selenosulphite solution. 4,536,260, Cl. 204-37.100.

Coffey, Gerald P., to Standard Oil Company, The. Process for preparing substantially linear polyamides from acrylamide and aqueous ammonia. 4,536,566, Cl. 528-363.000.

Coin Controls Limited: *See—*
Bellis, Robert D.; Tod, Timothy W.; and Tod, Roger J., 4,535,794, Cl. 133-8.00E.

Cole National Corporation: *See—*
Sorrells, Frank D., 4,535,575, Cl. 51-216.0LP.

Coleman, Thomas E.: *See—*
Ingram, Wayne A.; Johnson, Stephen L.; and Coleman, Thomas E., 4,536,823, Cl. 361-355.000.

Colgate-Palmolive Company: *See—*
Bonk, Joseph P., 4,535,912, Cl. 221-46.000.
Ramachandran, Pallassanna; and Grand, Paul S., 4,536,315, Cl. 252-174.110.
Ramachandran, Pallassanna, 4,536,316, Cl. 252-174.110.

Collins, Gregory P., to Mobil Oil Corporation. Method of plasma treating a polymer film to change its properties. 4,536,271, Cl. 204-192.00E.

Collins, Paul W.; Gasiecki, Alan F.; and Weier, Richard M., to G. D. Searle & Co. 2-Substituted prostaglandins. 4,536,592, Cl. 560-53.000.

Collyear, John G.; and Parker, David A., to AE PLC. Pistons. 4,535,682, Cl. 92-153.000.

Colorado School of Mines: *See—*
Penning, Francis A., 4,535,541, Cl. 33-1.00H.

Combs, L. Paul: *See—*
Sprouse, Kenneth M.; Schuman, Merlin D.; and Combs, L. Paul, 4,536,603, Cl. 585-539.000.

Commissariat a l'Energie Atomique: *See—*
Bruel, Michel, 4,536,657, Cl. 250-492.200.
Fiori, Robert; Seyfried, Philippe; and Symard, Jose , 4,535,666, Cl. 83-795.000.
Leclercq, Joseph, 4,535,523, Cl. 29-402.080.

Commonwealth Edison Company: *See—*
Burkum, Merlin E.; and O'Regan, Timothy M., 4,536,704, Cl. 324-52.000.

Commonwealth of Australia, The: *See—*
Hill, John W., 4,535,716, Cl. 114-221.00R.

Compagnie Europeenne de Teletransmission C.E.T.T.: *See—*
Tonello, Marc, 4,536,748, Cl. 340-506.000.

Compagnie Francaise d'Enterprises Metalliques: *See—*
Laplante, Gilbert, 4,535,971, Cl. 254-108.000.

Computer Services Corporation: *See—*
Takiguchi, Kiyoaki; and Takano, Seigo, 4,535,895, Cl. 209-683.000.

Comus International Corp.: *See—*
Romano, Robert P., 4,536,727, Cl. 335-54.000.

Conde, Henry. Impact absorbing parking space barrier. 4,535,974, Cl. 256-1.000.

Continental Can Company: *See—*
Hekal, Ihab M., 4,536,425, Cl. 428-35.000.

Continental Packaging Company, Inc.: *See—*
Clark, Richard E., 4,535,902, Cl. 215-1.00C.

Cook, Linda E. Sanitary napkin with improved protection. 4,536,181, Cl. 604-387.000.

Cook, Thomas E. Process and apparatus for removing adsorbed material from an adsorber. 4,536,197, Cl. 55-28.000.

Cook, Thomas E.; and Llenado, Ramon A., to Procter & Gamble Company, The. Foaming surfactant compositions. 4,536,318, Cl. 252-174.170.

Cooks, Graham; Story, Michael S.; Jung, Gerhard; and Dobberstein, Peter, to Finnigan Mat GmbH. Hybrid mass spectrometer. 4,536,652, Cl. 250-281.000.

Cooper Industries, Inc.: *See—*
Maros, Ronald R., 4,536,053, Cl. 339-143.00R.

Cornell, Howell N., to Keller Industries, Inc. Folding chair. 4,536,026, Cl. 297-39.000.

Cornet, Jean: *See—*
Lange , Francois; and Cornet, Jean, 4,536,868, Cl. 369-284.000.

Corning Glass Works: *See—*
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,536,480, Cl. 501-32.000.
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,536,481, Cl. 501-32.000.
Stempin, John L.; and Wexell, Dale R., 4,536,452, Cl. 428-433.000.

Corral, Allan B.: *See—*
Duder, Richard A.; and Corral, Allan B., 4,535,810, Cl. 137-596.170.

Corrigan, Francis R.: *See—*
Bovenkerk, Harold P.; Gigl, Paul D.; and Corrigan, Francis R., 4,536,442, Cl. 428-323.000.

Cosden Technology, Inc.: *See—*
Murley, Jackie D.; and Johnson, Marion, 4,536,148, Cl. 425-387.100.

Cotton, Austin H.: *See—*
Bickerstaff, Alan E.; Cotton, Austin H.; Ladell, Michael G.; and Neale, David M., 4,536,076, Cl. 355-3.0FU.

Coty, Raymond J. A. Automatic larvicide dispenser. 4,535,914, Cl. 222-52.000.

Coue, Maurice E. L., to Huret et ses Fils. Lever unit in particular for a cycle. 4,535,644, Cl. 74-489.000.

Coulson, Richard L.: *See—*
Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., 4,536,836, Cl. 364-200.000.

Courtis, Andrew: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,536,555, Cl. 526-295.000.

Couture, Joseph W., to Black Clawson Company, The. Pulping apparatus including a rotor and helical screw flights extending upwardly from the rotor. 4,535,943, Cl. 241-46.020.

Cowan, William P. Board game apparatus. 4,535,994, Cl. 273-256.000.

CPC International Inc.: *See—*
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,536,477, Cl. 435-205.000.

Cragoe, Edward J., Jr.: *See—*
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,536,507, Cl. 514-362.000.

Crahay, Jean R., to Centre de Recherches Metallurgiques Centrum Voor. Regulating surface treatment by laser beam. 4,536,639, Cl. 219-121.0LU.

Cranford, Hayden C., Jr.; and Garvin, Stacy J., to International Business Machines Corporation. Programmable oscillator with power down feature and frequency adjustment. 4,536,720, Cl. 331-57.000.

Crepaco, Inc.: *See—*
Thomas, Edward B.; and Peters, Mark C., 4,535,836, Cl. 165-86.000.

Creusot-Loire: *See—*
Katz, Maurice, 4,535,998, Cl. 277-212.0FB.

Cromie, Harry W.: *See—*
Klawitter, Jerome J.; and Cromie, Harry W., 4,535,483, Cl. 623-2.000.

Crounse, Nathan N., to Hilton-Davis Chemical Co., The. N-Aminoalkylenesulfonamido substituted disazo colorants. 4,536,570, Cl. 534-819.000.

Crown Metal Mfg. Company: *See—*
Varon, David; Dorner, Steven C.; and Siegal, Burton L., 4,535,525, Cl. 29-463.000.

Cubic Western Data: *See—*
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,535,892, Cl. 209-3.300.

Culligan International Company: *See—*
DeVale, Donald P.; and Rak, Stanley F., 4,536,845, Cl. 364-500.000.

Cunningham, Richard D., to InterNorth, Inc. Method for automatically measuring the amount of water in a natural gas pipeline with the aid of a computer controlled gas chromatograph. 4,535,620, Cl. 73-23.100.

Currie, Robert J.: *See—*
Rattlingourd, Glen D.; Currie, Robert J.; and Moss, Stanley D., 4,536,878, Cl. 371-43.000.

Curtis, Paul T.: *See—*
Bishop, Sarah M.; and Curtis, Paul T., 4,536,438, Cl. 428-246.000.

Custer, Donald J., to Morgan Construction Company. Means for sensing an undesirable approach angle in a level wind coiler. 4,535,955, Cl. 242-158.00R.

Cyklop International Emil Hoffman KG: *See—*
Bullington, Robert E.; and Discavage, James L., 4,536,248, Cl. 156-502.000.

Cyrot, Luc P., to International Telephone & Telegraph Corp. Valve solenoid windings. 4,536,728, Cl. 335-182.000.

D&M Investments: *See—*
Darr, Harry W., 4,535,754, Cl. 126-419.000.

Dabich, Robert M. Double hinge counter-weight cover assembly. 4,535,908, Cl. 220-18.000.

Daddona, Anthony D.: *See—*
Wuthrich, Paul; Daigle, Lyman R.; and Daddona, Anthony D., 4,536,095, Cl. 368-321.000.

Dagna, Gian D.: *See—*
Knirsch, Franco; Gianolini, Giovanni; Dagna, Gian D.; and Buat, Mario, 4,536,776, Cl. 346-140.00R.

Dahlberg, Bengt A. G.: *See—*
Brorsson, Fritz L.; Dahlberg, Bengt A. G.; and Holmberg, Bengt M., 4,536,201, Cl. 55-189.000.

Daicel Chemical Industries, Ltd.: *See—*
Okitsu, Kiyoshi; and Go, Hiroyouki, 4,536,563, Cl. 528-279.000.

Daido Metal Company Ltd.: *See—*
Iijima, Yoshio, 4,535,517, Cl. 29-156.50A.

Daigle, Lyman R.: *See—*
Wuthrich, Paul; Daigle, Lyman R.; and Daddona, Anthony D., 4,536,095, Cl. 368-321.000.

Dainippon Ink and Chemicals, Inc.: *See—*
Kamei, Masayuki; Endo, Tomio; and Hashimoto, Yutaka, 4,536,298, Cl. 252-8.050.
Yasui, Toshihiko; Matsumoto, Tetsuo; and Akaike, Akihiko, 4,536,468, Cl. 430-296.000.

Dainippon Pharmaceutical Co., Ltd.: *See—*
Tukamoto, Masatoshi; and Sawayama, Tadahiro, 4,536,601, Cl. 564-355.000.

Daiwa Golf Co., Ltd.: *See—*
Yamada, Magoichi, 4,535,990, Cl. 273-173.000.

Daldosch, Johannes: *See—*
Hooie, David W.; and Daldosch, Johannes, 4,535,913, Cl. 221-251.000.

Dalla Lana, Ivo G.: *See—*
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.

Dalliard, Fernand: *See—*
Hess, Fritz; and Dalliard, Fernand, 4,535,702, Cl. 105-4.00R.

Dam, Poul S.: *See—*
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,535,590, Cl. 60-531.000.

Dan, Takuya; and Fujita, Akio, to Bridgestone Tire Co., Ltd. Rubber vibration isolators. 4,535,976, Cl. 267-8.00R.

Danfoss A/S: *See—*
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,535,590, Cl. 60-531.000.
Thomsen, Svend E.; and Christensen, Thorkild, 4,535,678, Cl. 91-29.000.

Daniell, Alan F., to Fluor Corporation. Transfer apparatus and method. 4,535,900, Cl. 212-193.000.

Danneberg, Peter: *See—*
Engel, Wolfhard; Bauer, Eckhart; Trummlitz, Gunter; Danneberg, Peter; and Kahling, Joachim, 4,536,402, Cl. 514-443.000.

Darlington, R. Keith: *See—*
Augsburger, John J.; and Darlington, R. Keith, 4,536,302, Cl. 252-8.55R.

Darr, Harry W., to D&M Investments. Manufactured fuel assisted solar heat exchanger. 4,535,754, Cl. 126-419.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted prostaglandin interphenylene analogs useful in the treatment of thrombolytic disease. 4,536,513, Cl. 514-469.000.

Das, Jagabandhu; and Haslanger, Martin F., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane substituted prostaglandin analogs useful in the treatment of thrombolytic disease. 4,536,514, Cl. 514-469.000.

Datascope Corporation: *See—*
Allen, Richard M.; Arnold, Jeffrey M.; Field, Joseph J.; and Spraker, Terry E., 4,536,770, Cl. 346-29.000.

Dautzenberg, Horst: *See—*
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.

David, Constant V. Training and care apparatus for horses. 4,535,724, Cl. 119-29.000.

Davidson, Dale D., to Sperry Corporation. Servomotor feedback fault detector. 4,536,689, Cl. 318-565.000.

Davis, Charles S., to Knoll International, Inc. Lighting fixture utilizing a multi-layered hologram as a lens element. 4,536,833, Cl. 362-293.000.

Davis, Colin E.: *See—*
Hart, Ronald L.; Work, Dale E.; and Davis, Colin E., 4,536,524, Cl. 523-176.000.

Davis, Curry B.; and Frade, Americo G. P., to Arizona Chemical Company. Tall'oil fatty acids-quality improvement. 4,536,332, Cl. 260-97.600.

Davis, Larry; and Klein, Joseph T., to Hoechst-Roussel Pharmaceuticals Inc. 1-[3-(6-Fluoro-1,2-benzisoxazol-3-yl)propyl]-4-(substituted)-piperazines. 4,536,578, Cl. 544-360.000.

Davis, Mark H.; Meador, Richard A.; and Wisler, Macmillan M., to NL Industries, Inc. Electrical resistivity measurement of a flowing drilling fluid using eddy currents generated therein. 4,536,713, Cl. 324-324.000.

Davis, Thomas A., to Exxon Research and Engineering Co. Integrated process for deasphalting heavy oils using a gaseous antisolvent. 4,536,283, Cl. 208-309.000.

Dayco Corporation: *See—*
Burris, Lee R.; Speer, Billy L.; and Gayer, Melvin D., 4,536,172, Cl. 474-135.000.

Dayton, Birney D., to Grass Valley Group, Inc., The. Circuit for converting two balanced ECL level signals into an inverted TTL level signal. 4,536,665, Cl. 307-475.000.

De-La-Concha-Caceres, Alfonso, to Free Motion Designs Corporation. Recreational device for producing the thrill of a free fall. 4,535,983, Cl. 272-6.000.

De Bisschop, James; Neri, Anthony A.; and Williams, Thomas J., to Torrington Company, The. Vehicle steering sub-assembly. 4,535,645, Cl. 74-492.000.

De Bondt, Werner E.: *See—*
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.

De Cock, Etienne M.: *See—*
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.

Deeba, Michael, to Air Products and Chemicals, Inc. Amination of olefins using organic acid catalysts. 4,536,602, Cl. 564-485.000.

Deere & Company: *See—*
Faylor, Lawrence E., 4,535,729, Cl. 123-41.100.
Waggoner, Van E., 4,535,860, Cl. 180-24.050.

Deex, Oliver D., to Monsanto Company. Liquid crystalline polyesters. 4,536,562, Cl. 528-193.000.

Degussa Aktiengesellschaft: *See—*
Beyer, Hans-Hermann; Baudis, Ulrich; Biberbach, Peter; and Weber, Wolfgang, 4,536,224, Cl. 148-6.110.
Kaufmann, Lothar; and Hellwig, Klaus-Dieter, 4,536,383, Cl. 423-508.000.

Del Norte Technology, Inc.: *See—*
Parker, William H., 4,536,753, Cl. 340-566.000.

Delalande S.A.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Santamaria, Raphael, 4,536,500, Cl. 514-212.000.
Dostert, Philippe L.; Imbert, Thierry F.; and Bucher, Bernard P., 4,536,580, Cl. 546-124.000.

Delaval Turbine Inc.: *See—*
Tetro, Roland G., 4,536,660, Cl. 307-118.000.

De Marco, Claudio: *See—*
Besson, Duilio; De Marco, Claudio; Peruzzo, Roberto; and Ardit, Giuseppe, 4,535,599, Cl. 62-154.000.

Deming, Chandler R.: *See—*
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,535,892, Cl. 209-3.300.

Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, to Mitsubishi Denki Kabushiki Kaisha. Process for manufacturing a semiconductor memory device. 4,535,530, Cl. 29-571.000.

Dennison Manufacturing Co.: *See—*
Magnotta, Frank A., 4,536,434, Cl. 428-200.000.

deNora, Oronzio; and Spaziante, Placido M., to Oronzio deNora Impianti Elettrochimici S.p.A. Process for generating halogen using novel electrolysis cell. 4,536,263, Cl. 204-98.000.

d'Entremont, Alice M.; and Freeman, William T., to Polaroid Corporation. Method and apparatus for colored computer graphic photography. 4,536,848, Cl. 364-526.000.

De Obaldia B., Marcos G. Molded footwear. 4,535,554, Cl. 36-113.000.

DePasquale, Michael; and Adam, William S. Pressure indicator and alarm. 4,536,756, Cl. 340-626.000.

Derderian, Thomas; Frederick, Edward C.; and Gross, Alexander L., to Nike, Inc. Shock absorbing sole layer. 4,535,553, Cl. 36-28.000.

Dermatological Enterprises, Ltd.: *See—*
Bernstein, Joel E., 4,536,404, Cl. 424-324.000.

De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., to AGFA-Gevaert N.V. Recording apparatus with modular LED array of higher production yield. 4,536,778, Cl. 346-160.000.

Deschamps, Patrice P. M.; Gallo, Roger; and Grangette, Henri, to Elf France. Process for the preparation of beta-disubstituted monocarboxylic acids. 4,536,594, Cl. 562-400.000.

Dettelbach, Alfred; and Gresser, Gerhard, to REICH Spezialmaschinen GmbH. Sanding tool and method of making such tool. 4,535,574, Cl. 51-204.000.

Dettelbach, Alfred; Gresser, Gerhard; and Einsele, Gerhard, to Reich Spezialmaschinen GmbH. Apparatus for molding a profiled body. 4,535,965, Cl. 249-83.000.

Deutsch, Emory, to North American Philips Corporation. Capacitor with a heat sink core. 4,536,819, Cl. 361-274.000.

DeVale, Donald P.; and Rak, Stanley F., to Culligan International Company. Self-programmable controller for water conditioner recharging. 4,536,845, Cl. 364-500.000.

de Witt, Clinton J.; and Reese, Ron. Alcohol compositions having luminous flames. 4,536,188, Cl. 44-53.000.

Diamond Shamrock Chemicals Company: *See—*
Papadakis, Nicholas; and Kalynchuk, Daniel G., 4,536,274, Cl. 204-433.000.

Diamonstein, Arthur, to Paramount Industrial Companies, Inc. Slat type mattress foundation. 4,535,494, Cl. 5-400.000.

Dicke, Hans-Rudolf: *See—*
Schmidt, Manfred; and Dicke, Hans-Rudolf, 4,536,561, Cl. 528-191.000.

Dicken Manufacturing Company: *See—*
Johanson, Leonard T.; and Forrester, Harry L., 4,535,808, Cl. 137-543.000.

Diehl GmbH & Co.: *See—*
Politzer, Anton; and Bertiller, Roland, 4,535,676, Cl. 89-14.100.

Diehl, Werner K.: *See—*
Farrell, W. James; and Diehl, Werner K., 4,536,110, Cl. 409-11.000.

Diery, Helmut: *See—*
Ritschel, Werner; Diery, Helmut; and Hille, Martin, 4,536,339, Cl. 260-404.500.

Dietrich, William J., Sr., to DMI, Inc. Implement with horizontal linkage depth control. 4,535,849, Cl. 172-468.000.

Digital Equipment Corporation: *See—*
Sidman, Michael, 4,536,809, Cl. 360-77.000.

Dikoff, Joseph K. Golf tool. 4,535,987, Cl. 273-32.00B.

Diller, Robert W., to Technar, Incorporated. Gas damped acceleration switch. 4,536,629, Cl. 200-61.45R.

DiMassimo, Donald V.; May, John B.; and Lemmon, Michael D., to General Electric Company. Multi-format data display. 4,536,759, Cl. 340-706.000.

Dines, David R.; Svoboda, George; and Workman, Robert G., to AT&T Technologies, Inc. Methods and apparatus for assembling permutations of elements into or onto articles. 4,535,535, Cl. 29-845.000.

Discavage, James L.: *See—*
Bullington, Robert E.; and Discavage, James L., 4,536,248, Cl. 156-502.000.

Dischert, William A., to RCA Corporation. Method and apparatus for aligning a chuck for holding an information containing disc stylus. 4,536,238, Cl. 156-64.000.

Discovery Concepts, Inc.: *See—*
Ziegelheim, Irwin I.; and Lerner, Lawrence, 4,536,044, Cl. 312-257.00R.

Discovision Associates: *See—*
Giddings, Gary M., 4,536,863, Cl. 369-43.000.
Hyde, James L., 4,535,548, Cl. 34-4.000.

DMI, Inc.: *See—*
Dietrich, William J., Sr., 4,535,849, Cl. 172-468.000.
Dobberstein, Peter: *See—*
Cooks, Graham; Story, Michael S.; Jung, Gerhard; and Dobberstein, Peter, 4,536,652, Cl. 250-281.000.
Dr. Ing. h.c.F. Porsche A.G.: *See—*
Schutz, Matthias; Sivers, Rolf V.; Roesems, Dirk; and Rebmann, Rolf, 4,535,964, Cl. 248-607.000.
Dr. -Ing. Rudolf Hell GmbH: *See—*
Hennig, Eberhard, 4,536,803, Cl. 358-299.000.
Dr. Karl Thomae Gesellschaft mit beschranter Haftung: *See—*
Engel, Wolfhard; Bauer, Eckhart; Trummlitz, Gunter; Danneberg, Peter; and Kahling, Joachim, 4,536,402, Cl. 514-443.000.
Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., to Storage Technology Corporation. Detection of sequential data stream. 4,536,836, Cl. 364-200.000.
Doddington, George R.: *See—*
Papamichalis, Panos E.; and Doddington, George R., 4,536,886, Cl. 381-41.000.
Domigan, Charles N., to Butler Manufacturing Company. Box for raised floors. 4,536,612, Cl. 174-48.000.
Donaldson, Jack J., to Mobil Oil Corporation. Method for producing longitudinally ribbed plastic film. 4,536,362, Cl. 264-171.000.
Doney, Alfred D.: *See—*
Holzgang, Curtis R.; Leavitt, Mark K.; Doney, Alfred D.; and Kuehn, James, 4,536,755, Cl. 340-573.000.
Donn Incorporated: *See—*
Shirey, Richard, 4,535,580, Cl. 52-484.000.
Donner, Meinrad: *See—*
Mesey, Milton; Shcwaighofer, Roman; and Donner, Meinrad, 4,535,573, Cl. 51-165.870.
Dorler, Jack A.: *See—*
Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.
Dorner, Steven C.: *See—*
Varon, David; Dorner, Steven C.; and Siegal, Burton L., 4,535,525, Cl. 29-463.000.
Dorr, William C.; Hybarger, Kenneth C.; and Yurkinas, James A., to Kent Products, Inc. Vehicle tire carrier. 4,535,973, Cl. 254-323.000.
Dostert, Philippe L.; Imbert, Thierry F.; and Bucher, Bernard P., to Delalande S.A. 4-Amino-5-bromo-2-methoxy-N-[8-(benzyl)]-8-azabicyclo[3.2.1]-3-YL-benzamide or a pharmacologically acceptable acid addition salt thereof. 4,536,580, Cl. 546-124.000.
Douglas, Ellwood S.: *See—*
Mosher, Oren A.; and Douglas, Ellwood S., 4,535,856, Cl. 177-1.000.
Douta, Kikuo: *See—*
Matsuzawa, Toshiharu; Douta, Kikuo; Iwayanagi, Takao; and Yanazawa, Hiroshi, 4,536,421, Cl. 427-282.000.
Dow Chemical Company, The: *See—*
Fellmann, Jere D.; Garrou, Philip E.; Withers, Howard P., Jr.; and Seyferth, Dietmar, 4,536,589, Cl. 556-14.000.
Killat, George R.; and Wilson, Larry R., 4,536,552, Cl. 525-451.000.
Price, Robert W., 4,535,803, Cl. 137-375.000.
Rigterink, Raymond H.; and Sbragia, Ronald J., 4,536,341, Cl. 260-453.0AR.
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,536,222, Cl. 134-5.000.
Turner, James A., 4,536,208, Cl. 71-94.000.
Woo, Edmund P., 4,536,564, Cl. 528-341.000.
Dowley Manufacturing, Inc.: *See—*
Eason, Lloyd R., 4,535,616, Cl. 72-116.000.
Downey, Holmes A., to Reliance Electric Company. Elastomeric shear shaft coupling. 4,536,170, Cl. 464-80.000.
Downing, Gerald T.; and Gyllstrom, Gregory W., to W. H. Brady Co. Cable clamp with alignment means. 4,535,960, Cl. 248-74.500.
Dowty Hydraulic Units Limited: *See—*
Bick, David E.; Flippance, Christopher F.; and Parry, Ian C., 4,535,872, Cl. 188-62.000.
Doyle, Patrick. Bar or rod or tube frame multi-position assembly clamp. 4,536,102, Cl. 403-390.000.
Doyle, Stephen D.: *See—*
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,535,618, Cl. 72-349.000.
Drackett Company, The: *See—*
Rowekamp, Patricia A., 4,535,906, Cl. 215-329.000.
Stopper, Howard R., 4,536,323, Cl. 252-305.000.
Drag Specialties, Inc.: *See—*
Stahel, Alwin J., 4,535,649, Cl. 74-551.900.
Dragerwerk Aktiengesellschaft: *See—*
Baum, Marcel, 4,535,766, Cl. 128-204.230.
Hahn, Rainer, 4,536,370, Cl. 422-120.000.
Schmidt, Martin; and Hattendorff, Horst D., 4,536,090, Cl. 356-414.000.
Dreckmann, Karl, to M. Lehmacher & Sohn GmbH Maschinenfabrik. Stack conveyor for bag-making apparatus. 4,536,174, Cl. 493-194.000.
Drent, Eit, to Shell Oil Company. Process for the preparation of carboxylic anhydrides. 4,536,354, Cl. 260-549.000.
Dubowicz, Palemon W., to United States of America, Army. Coaxial power dissipation line. 4,536,768, Cl. 343-736.000.
Duder, Richard A.; and Corral, Allan B., to Dynamic Valves, Inc. Electrically controlled valves. 4,535,810, Cl. 137-596.170.
Dumas, Philip E.: *See—*
Stockel, Richard F.; and Dumas, Philip E., 4,536,571, Cl. 536-23.000.
Duncan, Richard K.; and Russell, Norton A., to Vernay Laboratories, Inc. Valve assembly. 4,535,818, Cl. 137-846.000.
Dunham-Bush, Inc.: *See—*
Orlando, Salvatore; and Martin, David R., 4,536,130, Cl. 417-63.000.
Dunham, Warren D., to Schonstedt Instrument Company. Magnetic detector instrument with board-mounted sensor assembly. 4,536,710, Cl. 324-244.000.
Du Pont de Nemours, E. I., and Company: *See—*
Carcia, Peter F., 4,536,482, Cl. 502-5.000.
Forsten, Herman H., 4,536,439, Cl. 428-280.000.
Fremont, Joseph M., 4,536,491, Cl. 502-174.000.
Hormadaly, Jacob, 4,536,329, Cl. 252-518.000.
Latham, Roger A., 4,536,541, Cl. 525-66.000.
Levitt, George, 4,536,576, Cl. 544-321.000.
Usala, Hugo R., 4,536,535, Cl. 524-403.000.
Vander-Mallie, Ronald, 4,536,479, Cl. 436-537.000.
Duval Corporation: *See—*
Ochs, Leonard R.; Fletcher, Archibald W.; Weber, Harald; and Naden, David, 4,536,214, Cl. 75-101.00R.
Duvdevani, Ilan: *See—*
Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, 4,536,539, Cl. 524-521.000.
Duve, John P., to Singer Company, The. Expanded interval timer drive mechanism. 4,536,627, Cl. 200-38.00R.
Duwel, Edward C., to Pitney Bowes Inc. Monitoring the status of the trip cycle in an electronic postage meter. 4,536,850, Cl. 364-550.000.
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, to Feldmuhle Aktiengesellschaft. Piston with a member made of partially stabilized zirconium oxide. 4,535,683, Cl. 92-224.000.
Dynamic Valves, Inc.: *See—*
Duder, Richard A.; and Corral, Allan B., 4,535,810, Cl. 137-596.170.
Dynatech Frontier Corporation: *See—*
Troutman, Samuel J., Jr.; and Hixenbaugh, D. Wayne, 4,535,634, Cl. 73-747.000.
Dziark, John J., to General Electric Company. Scavengers for ammonia in RTV compositions. 4,536,540, Cl. 524-701.000.
Dzigan, Viktor P.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Dziuba, Peter: *See—*
Maurer, Dieter; Rauter, Jurgen; and Dziuba, Peter, 4,536,003, Cl. 280-95.00R.
E. R. Squibb & Sons, Inc.: *See—*
Das, Jagabandhu; and Haslanger, Martin F., 4,536,513, Cl. 514-469.000.
Das, Jagabandhu; and Haslanger, Martin F., 4,536,514, Cl. 514-469.000.
Sundeen, Joseph E.; Haugwitz, Rudiger D.; and Sprague, Peter W., 4,536,501, Cl. 514-225.000.
E-Systems, Inc.: *See—*
Livingston, William D.; and Jacob, Eugene E., 4,536,877, Cl. 370-94.000.
E-Z P.A.C., Inc.: *See—*
Sherman, Ralph A., II; and Watson, Calvin R., 4,535,929, Cl. 229-39.00R.
Eagle-Picher Industries, Inc.: *See—*
Markle, Richard A., 4,536,582, Cl. 548-477.000.
Eason, Lloyd R., to Dowley Manufacturing, Inc. Flaring tool. 4,535,616, Cl. 72-116.000.
Eastman Kodak Company: *See—*
Chandler, Jasper S.; and Geyer, Frederick F., 4,536,869, Cl. 369-287.000.
Klijanowicz, James E.; and Kovacs, Csaba A., 4,536,598, Cl. 564-49.000.
Eastwood, Barbara J.: *See—*
McCandliss, Russell J.; Eastwood, Barbara J.; and Milch, Robert A., 4,536,207, Cl. 71-88.000.
Easy Ride, Inc.: *See—*
Oldfield, Peter M., 4,535,495, Cl. 5-432.000.
Eaton Corporation: *See—*
Aschenbach, Louis F., 4,536,736, Cl. 337-317.000.
Theisen, Peter J.; and Chen, C. Gregory, 4,536,814, Cl. 361-7.000.
Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,536,884, Cl. 378-119.000.
Ebben, Gerald J., to American Can Company. Process and apparatus using ultra-filtration in the production of can shells. 4,535,615, Cl. 72-39.000.
Eberle, John W., to Hawkeye Container Company. Method of containing, storing, and transporting agricultural products in a high moisture condition. 4,535,586, Cl. 53-432.000.
Ebert, Edward A., to Tayco Developments, Inc. Surgical bone tie. 4,535,764, Cl. 128-92.00B.
Ebihara, Shigeto; Ohta, Atsuo; and Kuwabara, Kunikazu, to Secom Co., Ltd. Car-directing apparatus for an alarm system. 4,536,750, Cl. 340-539.000.
Ebisawa, Mikio: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,536,352, Cl. 260-543.00F.

Eder, Herbert, to Knorr-Bremse GmbH. Service brake accelerator for indirect compressed-air brakes on railway vehicles. 4,536,040, Cl. 303-37.000.

EerNisse, Errol P.; and Ward, Roger W., to Quartztronics, Inc. Resonator transducer system with temperature compensation. 4,535,638, Cl. 73-862.590.

Egawa, Takeshi: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, 4,536,072, Cl. 354-403.000.

Egawa, Yoshinori, to Yamaichi Electric Mfg. Co., Ltd. IC Package carrier. 4,535,887, Cl. 206-328.000.

Egbers, Gerhard; and Weinsdorfer, Helmut, to Maschinenfabrik Rieter AG. Apparatus for the production of fixed point multifilament yarns. 4,535,516, Cl. 28-272.000.

Eguchi, Yoshinori: *See—*
Maruyama, Jisaburou; Fukayama, Sumio; Miyake, Masanobu; Watanabe, Yoshimi; and Eguchi, Yoshinori, 4,536,676, Cl. 313-318.000.

Eich, Otwin: *See—*
Post, Karl-Heinz; and Eich, Otwin, 4,535,966, Cl. 251-31.000.

Einsele, Gerhard: *See—*
Dettelbach, Alfred; Gresser, Gerhard; and Einsele, Gerhard, 4,535,965, Cl. 249-83.000.

El Paso Polyolefins Company: *See—*
Hattori, Kiyoshi; and Myers, John H., 4,536,549, Cl. 525-240.000.

Eldon Industries, Inc.: *See—*
Evenson, Mel, 4,535,896, Cl. 211-41.000.
Soulakis, George, 4,535,705, Cl. 108-152.000.

Electrochemische Energieconversie N.V.: *See—*
Blanchart, Alain P. O.; and Adriaensen, Ludovicus C. M., 4,536,272, Cl. 204-294.000.

Elf France: *See—*
Deschamps, Patrice P. M.; Gallo, Roger; and Grangette, Henri, 4,536,594, Cl. 562-400.000.

Elfen, Adolf: *See—*
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Elger, Walter: *See—*
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Elkins, Carol M. Decorative bathtub. 4,535,489, Cl. 4-546.000.

Ellingsworth, John R.: *See—*
Blackburn, Linda B.; and Ellingsworth, John R., 4,535,636, Cl. 73-831.000.

Elliott, Robert D.: *See—*
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,536,575, Cl. 544-279.000.

Elmer, Werner: *See—*
Huse, Horst; and Elmer, Werner, 4,536,738, Cl. 340-146.200.

Elxsi: *See—*
Olson, Robert A.; and Ross, Patrick D., 4,536,837, Cl. 364-200.000.

Emerson Electric Co.: *See—*
Mertz, Denny W., 4,535,805, Cl. 137-489.000.

Emhart Industries, Inc.: *See—*
Shedigian, Vandos, 4,536,331, Cl. 252-579.000.
Willitts, Benjamin R.; and Klossman, Charles W., 4,535,603, Cl. 62-196.400.

EMPI, Inc.: *See—*
Ober, Stephen H., 4,535,779, Cl. 128-644.000.

Endo, Tomio: *See—*
Kamei, Masayuki; Endo, Tomio; and Hashimoto, Yutaka, 4,536,298, Cl. 252-8.050.

Endoh, Eiji: *See—*
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,536,259, Cl. 204-35.100.

Endou, Mitsuhiro: *See—*
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, 4,535,680, Cl. 91-376.00R.

Energy-Adaptive Grinding, Inc.: *See—*
Smith, Roderick L., 4,535,571, Cl. 51-165.870.
Smith, Roderick L., 4,535,572, Cl. 51-165.870.

Engel, Wolfhard; Bauer, Eckhart; Trummlitz, Gunter; Danneberg, Peter; and Kahling, Joachim, to Dr. Karl Thomae Gesellschaft mit beschranter Haftung. Vinylogous carboxamides. 4,536,402, Cl. 514-443.000.

Engelmann, Eberhard: *See—*
Schmeer, Gert; Engelmann, Eberhard; and Schafer, Karl, 4,536,441, Cl. 428-317.300.

Engen, Byron W.: *See—*
Rinehart, James W.; Gilleland, Frank W.; and Engen, Byron W., 4,535,756, Cl. 126-450.000.

England, Michael J.: *See—*
Ingram, Brian; and England, Michael J., 4,535,875, Cl. 188-106.00F.

English, George; and Leadvaro, Stephen J., to GTE Products Corporation. Replacement lamp with means for spacing. 4,536,831, Cl. 362-263.000.

Erickson, Chad S., to Alternative Pioneering Systems Inc. Food dehydrator. 4,536,643, Cl. 219-400.000.

Erickson, John W., to Boltswitch, Inc. Pull out fusible switches. 4,536,046, Cl. 339-31.00M.

Erickson, Lloyd A., to Illinois Tool Works Inc. Gasket fastener arrangement. 4,535,565, Cl. 49-493.000.

Erickson, Mark R.; and Kaehler, James A., to Atlantic Richfield Company. Heliostat control employing direct current motor. 4,536,847, Cl. 364-516.000.

Ericson, Kurt S. B. Automatic air valve device for ducts. 4,535,807, Cl. 137-533.310.

Erkkila, Bruce H.: *See—*
Waechter, David A.; Erkkila, Bruce H.; and Vasilik, Dennis G., 4,536,841, Cl. 364-414.000.

Eskamani, Abolghassem; and Krause, Warren H., to Standard Oil Company (Ohio), The. Process for the thermochemical conversion of biomass. 4,536,584, Cl. 549-429.000.

Esper, Friedrich J.; and Gohl, Walter, to Robert Bosch GmbH. Endoprosthesis shaft. 4,535,487, Cl. 623-22.000.

Etablissements Mesnel: *See—*
Mesnel, Francois, 4,535,563, Cl. 49-478.000.

Ethyl Corporation: *See—*
Mueller, Warren B., 4,536,520, Cl. 521-89.000.
Ramachandran, Venkataraman, 4,536,343, Cl. 260-465.00F.
Seemuth, Paul D., 4,536,190, Cl. 44-57.000.

Etudes Techniques et Representations Industrielles E.T.R.I.: *See—*
Chauviere, Henri, 4,536,100, Cl. 403-12.000.

Evans, William P., to Union Carbide Corporation. Tellurium-containing cathodes for nonaqueous cells. 4,536,456, Cl. 429-194.000.

Evenson, Mel, to Eldon Industries, Inc. Folding, extensible holder. 4,535,896, Cl. 211-41.000.

Evers, William J.: *See—*
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,536,583, Cl. 549-1.000.

Ex-Cell-O Corporation: *See—*
Sandy, Julius W.; Riebock, William D.; and Bauscher, Billy J., 4,536,107, Cl. 408-214.000.

Exxon Research and Engineering Co.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Graesley, William W.; and Ver Strate, Gay, 4,536,310, Cl. 252-33.000.
Davis, Thomas A., 4,536,283, Cl. 208-309.000.
Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, 4,536,539, Cl. 524-521.000.
Lundberg, Robert D.; and Phillips, Robert R., 4,536,547, Cl. 525-186.000.
Pirkle, James C., Jr.; Montagna, Angelo A.; and Ruziska, Philip A., 4,536,380, Cl. 423-359.000.
Sheng, Ping; and Bloch, Aaron N., 4,536,608, Cl. 136-259.000.

Eylon, Daniel; and Froes, Francis H., to United States of America, Air Force. Method for refining microstructures of blended elemental powder metallurgy titanium articles. 4,536,234, Cl. 148-133.000.

Fabrizio, Louis F.; Lin, Samuel O. S.; and Jacobine, Anthony F., to Loctite Corporation. Siloxane polyphotoinitiators of the substituted acetophenone type. 4,536,265, Cl. 204-159.130.

Fagan, Joseph H.; and Pristo, Paul J. Graded actuation of hydraulically actuated pool cleaning heads. 4,535,937, Cl. 239-206.000.

Fairchild Camera and Instrument Corporation: *See—*
Lyon, Richard F., 4,536,844, Cl. 364-487.000.

Faith, Thomas J., Jr., to RCA Corporation. Method of lowering contact resistance of implanted contact regions. 4,536,223, Cl. 148-1.500.

Falconer, David G. Pivot bearing. 4,536,042, Cl. 308-2.00A.

Falk, Richard A. Ceramic fiber molten metal sampler. 4,535,640, Cl. 73-864.550.

Falk, Robert A.; and Borsodi, Istvan, to Ciba-Geigy Corporation. Ammonium and amine salts of di-perfluoroalkyl group containing acids and compositions and use thereof. 4,536,254, Cl. 162-135.000.

Fanuc Ltd.: *See—*
Kozai, Yoshinori; Amemiya, Yoichi; and Asahara, Sunao, 4,536,649, Cl. 250-231.0SE.

Farah, Robert L., to AT&T Bell Laboratories. Digital quantizer. 4,536,741, Cl. 340-347.0DD.

Farnsworth, Robert P.: *See—*
Adams, C. Harris; and Farnsworth, Robert P., 4,536,646, Cl. 235-377.000.

Farrell, Christopher J.; and Tsai, Boh C., to American Can Company. Oxygen scavenger. 4,536,409, Cl. 426-398.000.

Farrell, W. James; and Diehl, Werner K., to Illinois Tool Works Inc. Self centering quick-change cutting tool assembly. 4,536,110, Cl. 409-11.000.

Farris, Eugene A. Socket wrench having automatic nut-ejecting capability. 4,535,657, Cl. 81-124.100.

Fattal, Jean A.; and Roesler, Michael L., to Raytheon Company. Control for gimballed monopulse antenna arrangement. 4,536,685, Cl. 318-254.000.

Fayard, Jean F.: *See—*
Riou, Claude R.; and Fayard, Jean F., 4,536,219, Cl. 106-21.000.

Faylor, Lawrence E., to Deere & Company. Vehicle cooling system utilizing one radiator. 4,535,729, Cl. 123-41.100.

Fazis, Harald, to Ludwig Boschert GmbH & Co., KG. Notching machine. 4,535,665, Cl. 83-556.000.

Fechant, Louis: *See—*
Belbel, Elie; Blanchard, Christian; Fechant, Louis; Haury, Andre ; and Lauraire, Michel, 4,536,630, Cl. 200-151.000.

Feder, Meinrad; and Stegmaier, Alwain, to Robert Bosch GmbH. Pressure controller. 4,535,816, Cl. 137-625.650.

Federal-Mogul Corporation: *See—*
Saxton, Robert W.; Hewitt, William R.; and Nelligan, Jerome M., 4,536,108, Cl. 408-230.000.

Feecon Corporation: *See—*
Gagliardo, John P.; Morse, Donald K.; and Pruneau, Albert, Jr., 4,535,846, Cl. 169-25.000.

Fekete, Ferenc; and Spears, James E., to Mattel, Inc. Quick release spring powered toy vehicle. 4,536,169, Cl. 446-461.000.

Feldle, Gunter; and Fischer, Klaus, to Klein, Schanzlin & Becker Aktiengesellschaft. Barrel housing for centrifugal fluid machines. 4,536,128, Cl. 415-219.00C.
Feldmuhle Aktiengesellschaft: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,535,683, Cl. 92-224.000.
Feller, Murray F., to Wilgood Corporation. Flow detection apparatus. 4,535,637, Cl. 73-861.770.
Fellmann, Jere D.; Garrou, Philip E.; Withers, Howard P., Jr.; and Seyferth, Dietmar, to Dow Chemical Company, The. Polymers of ferrocene. 4,536,589, Cl. 556-14.000.
Felt Products Mfg. Co.: *See—*
Cardis, James C.; and Inciong, Josefino T., 4,535,996, Cl. 277-1.000.
Locacius, Robert F., 4,535,999, Cl. 277-235.00B.
Fencsik, Gabor: *See—*
Ringel, Gerhard; and Fencsik, Gabor, 4,536,838, Cl. 364-200.000.
Fennesz, Frank, Jr.: *See—*
Szostak, Jan; and Fennesz, Frank, Jr., 4,535,710, Cl. 112-459.000.
Fernsler, Ronald E.; and Vinekar, Sanjay R., to RCA Corporation. Television receiver having different receiver synchronizing characteristics in response to television signal. 4,536,794, Cl. 358-158.000.
Ferraro, Frank A.; and Byrne, David S., to Warner-Lambert Company. Disposable plastic razor. 4,535,537, Cl. 30-32.000.
Fester, Walter; and Huber, Bernd, to Hoechst Aktiengesellschaft. Process for production of set polyacrylonitrile filaments and fibers. 4,536,363, Cl. 264-182.000.
Fey, Robert M.; Woehler, Harold L.; and Manthei, Philip J., to Speed Queen Company. Apparatus and control for tilt-out washer. 4,535,610, Cl. 68-3.00R.
Fiedler, Paul; and Braden, Rudolf, to Bayer Aktiengesellschaft. Process for formylating aryl halides. 4,536,344, Cl. 260-465.00R.
Field, Joseph J.: *See—*
Allen, Richard M.; Arnold, Jeffrey M.; Field, Joseph J.; and Spraker, Terry E., 4,536,770, Cl. 346-29.000.
Fields, Ellis K.: *See—*
Winzenburg, Mark L.; Fields, Ellis K.; and Shneider, Benjamin L., 4,536,560, Cl. 528-188.000.
Filbert, Walter H.: *See—*
Rufer, Rosalyn J.; and Filbert, Walter H., 4,536,553, Cl. 525-106.000.
Findeisen, Kurt: *See—*
Kranz, Eckart; and Findeisen, Kurt, 4,536,353, Cl. 260-545.00R.
Fingerle, Dieter: *See—*
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,535,683, Cl. 92-224.000.
Finn, Albert E.: *See—*
Ginns, Haskell; and Finn, Albert E., 4,535,624, Cl. 73-119.00R.
Finnigan Mat GmbH: *See—*
Cooks, Graham; Story, Michael S.; Jung, Gerhard; and Dobberstein, Peter, 4,536,652, Cl. 250-281.000.
Fiori, Robert; Seyfried, Philippe; and Symard, Jose , to Commissariat a l'Energie Atomique. Band saw. 4,535,666, Cl. 83-795.000.
Fischer, Klaus: *See—*
Feldle, Gunter; and Fischer, Klaus, 4,536,128, Cl. 415-219.00C.
Fischer, Peter; and Schubert, Paul, to Alfing Kessler Sondermaschinen GmbH. Tool exchanging device for a multi-spindle machine tool. 4,535,527, Cl. 29-568.000.
Fischer, Wolfgang; and Leiblein, Felix, to Bayer Aktiengesellschaft. Medicaments containing muzolimine, their use and processes for their production. 4,536,511, Cl. 514-404.000.
Fisher, Stanton E. Hair-containing rawhide toys. 4,535,725, Cl. 119-29.000.
Fitzgerald, Charles S.: *See—*
Berthold, John W., III; and Fitzgerald, Charles S., 4,536,827, Cl. 362-32.000.
Fitzsimons, James R.: *See—*
Cheal, James; and Fitzsimons, James R., 4,536,752, Cl. 340-554.000.
Flanders Filters, Inc.: *See—*
Wood, Joseph A.; and Peebles, William C., Jr., 4,535,811, Cl. 137-601.000.
Flannery, Ja es E.; Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Opal glasses having an apatite opacifying phase. 4,536,480, Cl. 501-32.000.
Flannery, James E.; Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Opal glasses having an apatite opacifying phase. 4,536,481, Cl. 501-32.000.
Fledderjohann, Paul F.: *See—*
Barrett, Howard W.; and Fledderjohann, Paul F., 4,536,824, Cl. 361-384.000.
Fletcher, Archibald W.: *See—*
Ochs, Leonard R.; Fletcher, Archibald W.; Weber, Harald; and Naden, David, 4,536,214, Cl. 75-101.00R.
Flippance, Christopher F.: *See—*
Bick, David E.; Flippance, Christopher F.; and Parry, Ian C., 4,535,872, Cl. 188-62.000.
Flow Industries, Inc.: *See—*
Olsen, John H.; and Mordre, Sigurd C., 4,536,135, Cl. 417-383.000.
Floyd, Middleton B., Jr.; and Goidl, Jo A., to American Cyanamid Company. Method of treating diabetes mellitus using arylglyoxals. 4,536,517, Cl. 514-576.000.
Fluckiger & Huguenin S.A.: *See—*
Cattin, Francois, 4,536,156, Cl. 433-102.000.
Fluor Corporation: *See—*
Daniell, Alan F., 4,535,900, Cl. 212-193.000.
Flynn, Robert G.; Pitkin, Courtney G.; and Hileman, Gregory A., to Norcliff Thayer, Inc. Use of fumed silica for treating oily skin and acne. 4,536,399, Cl. 514-63.000.
FMC Corporation: *See—*
Plummer, Ernest L., 4,536,591, Cl. 560-8.000.
Shimp, Lawrence A., 4,536,377, Cl. 423-315.000.
Foa, Marco: *See—*
Gardano, Andrea; Francalcanci, Franco; and Foa, Marco, 4,536,595, Cl. 562-406.000.
Fogle, Richard M.: *See—*
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., 4,536,791, Cl. 358-122.000.
Fohl, Michael W.: *See—*
Sawyer, Robert D.; and Fohl, Michael W., 4,536,145, Cl. 425-289.000.
Foley, Norman G. Football goal post with explosive-type souvenir projector. 4,535,988, Cl. 273-55.00D.
Fontaine, Paul. Blast nozzle for blowing off liquids from surfaces. 4,535,936, Cl. 239-117.000.
Foolish Fantasies B.V.: *See—*
Kuiper, Johnny, 4,535,933, Cl. 237-12.30A.
Ford Aerospace & Communications Corporation: *See—*
Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., 4,535,961, Cl. 248-183.000.
Ford Motor Company: *See—*
Kordomenos, Panagiotis I., 4,536,558, Cl. 528-100.000.
Logothetis, Eleftherios M.; and Kaiser, William J., 4,536,241, Cl. 156-89.000.
Ma, Thomas T., 4,535,738, Cl. 123-425.000.
Ma, Thomas T., 4,535,740, Cl. 123-435.000.
Nielsen, Arnold D., 4,536,818, Cl. 361-154.000.
Formulabs Industrial Inks, Inc.: *See—*
Ryan, Thomas D., 4,536,184, Cl. 8-508.000.
Forrester, Harry L.: *See—*
Johanson, Leonard T.; and Forrester, Harry L., 4,535,808, Cl. 137-543.000.
Forsten, Herman H., to Du Pont de Nemours, E. I., and Company. Light weight filter felt. 4,536,439, Cl. 428-280.000.
Forster, Alfred, to Siemens Aktiengesellschaft. Piezoelectric ultrasonic converter with polyurethane foam damper. 4,536,673, Cl. 310-327.000.
Forster-Willi Corporation: *See—*
Ochsner, Arnold, deceased, 4,535,617, Cl. 72-307.000.
Foster Wheeler Energy Corporation: *See—*
Neale, Thomas J., 4,535,801, Cl. 137-240.000.
Stewart, Robert D.; and Gamble, Robert L., 4,536,121, Cl. 414-219.000.
Fox, Karl M.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,536,372, Cl. 422-187.000.
Foyer d'Aciernergie Inc.: *See—*
Bourgeois, Jean-Louis, 4,535,751, Cl. 126-121.000.
Frade, Americo G. P.: *See—*
Davis, Curry B.; and Frade, Americo G. P., 4,536,332, Cl. 260-97.600.
Framatome: *See—*
Leclercq, Joseph, 4,535,523, Cl. 29-402.080.
Francalcanci, Franco: *See—*
Gardano, Andrea; Francalcanci, Franco; and Foa, Marco, 4,536,595, Cl. 562-406.000.
Franchi, Roberto D. Child proof medicine vial. 4,535,903, Cl. 215-213.000.
Franci, Vittorio: *See—*
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,536,221, Cl. 127-30.000.
Frangatos, Gerassimos, to Mobil Oil Corporation. Sulfurized amine condensation products and lubricant compositions containing same. 4,536,312, Cl. 252-47.500.
Franz Kirsten Electrotechnische Spezialfabrik: *See—*
Grimm, Rainer; and Elfen, Adolf, 4,536,829, Cl. 362-74.000.
Frazita, Richard F., to Hazeltine Corporation. Scanning antenna with automatic beam stabilization. 4,536,766, Cl. 343-372.000.
Frederick, Edward C.: *See—*
Derderian, Thomas; Frederick, Edward C.; and Gross, Alexander L., 4,535,553, Cl. 36-28.000.
Free Motion Designs Corporation: *See—*
De-La-Concha-Caceres, Alfonso, 4,535,983, Cl. 272-6.000.
Freeman, Robert D., to Westinghouse Electric Corp. Method of counting multiple targets in the post detection processing of a radar. 4,536,764, Cl. 343-5.0SA.
Freeman, William T.: *See—*
d'Entremont, Alice M.; and Freeman, William T., 4,536,848, Cl. 364-526.000.
Freese, Karl-Heinz; and Munch, Hans-Jurgen, to Akzo N.V. Aqueous coating composition based on a cationic amino urea resin, process for applying and baking the composition and the coated substrate thus obtained. 4,536,525, Cl. 523-414.000.
Fremont, Joseph M., to Du Pont de Nemours, E. I., and Company. Agglomerates of malachite crystals and method for their preparation. 4,536,491, Cl. 502-174.000.
Frenchy, James H.: *See—*
Lala, Louis A.; and Frenchy, James H., 4,535,549, Cl. 34-4.000.
Friedl, Andreas. Hot bulb ignition head for a device for firing rough ceramics, particularly bricks. 4,535,708, Cl. 110-265.000.

Friedman, Harry; Sengoku, Isao; Hattori, Yukiro; and Isikawa, Minoru, to Jet AER Corporation. Folding knife with safety locking feature. 4,535,539, Cl. 30-161.000.

Friedrich Grohe Armaturenfabrick GmbH & Co.: *See*—
Pawelzik, Manfred; Herring, William P.; and Kostorz, Jan R., 4,535,814, Cl. 137-625.170.

Fritsch, Joseph E.: *See*—
Stelzer, Jack C.; and Fritsch, Joseph E., 4,535,648, Cl. 74-544.000.

Fritz Eichenauer: *See*—
Macherle, Gunter; and Lieber, Ludwig, 4,535,916, Cl. 222-113.000.

Froes, Francis H.: *See*—
Eylon, Daniel; and Froes, Francis H., 4,536,234, Cl. 148-133.000.

Frost, John R.: *See*—
Vaccaro, Nancy J.; Frost, John R.; Glatz, Alfred C.; and Schenz, Timothy W., 4,536,410, Cl. 426-548.000.

Fry, Jewell C. Device for attaching a hooked item for catching fish or the like to a line with a knot therein. 4,535,562, Cl. 43-44.950.

Frye, Robert B.; and Zembayashi, Michio, to General Electric Company. Flame retardant thermoplastic compositions. 4,536,529, Cl. 524-284.000.

Fu, Horng-Sen: *See*—
Chen, Devereaux C.; and Fu, Horng-Sen, 4,535,528, Cl. 29-571.000.

Fugakawa, Yasuo: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.

Fuji Jukogyo Kabushiki Kaisha: *See*—
Kodama, Masayuki; and Kobayashi, Toshio, 4,535,650, Cl. 74-665.0GA.
Kudo, Ichiro; Kasai, Yoshiaki; and Yuasa, Masaharu, 4,535,739, Cl. 123-425.000.

Fuji Kogyo Co., Ltd.: *See*—
Ohmura, Ryuichi, 4,535,642, Cl. 74-58.000.

Fuji Photo Film Co., Ltd.: *See*—
Hara, Yoshio; and Sugimoto, Yukihiro, 4,536,067, Cl. 354-180.000.
Kato, Hirohiko; Ichijima, Seiji; Adachi, Keiichi; and Watanabe, Toshiyuki, 4,536,472, Cl. 430-505.000.
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.
Mihara, Yuji, 4,536,473, Cl. 430-575.000.
Nagao, Makoto; and Nahara, Akira, 4,536,443, Cl. 428-336.000.
Nagashima, Akira; Hasegawa, Akira; Aoai, Toshiaki; and Nagano, Teruo, 4,536,464, Cl. 430-192.000.
Oishi, Kengo; and Suzuki, Osamu, 4,536,812, Cl. 360-133.000.
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,466, Cl. 430-203.000.
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,467, Cl. 430-203.000.

Fuji Xerox Co., Ltd.: *See*—
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,536,774, Cl. 346-76.0PH.
Kume, Hiroshi; and Tan, Yoichi, 4,536,875, Cl. 370-85.000.
Kurata, Masami, 4,536,802, Cl. 358-287.000.

Fujibayashi, Kenji, to Olympus Optical Co., Ltd. Tape recorder device having an automatic shut-off circuit. 4,536,808, Cl. 360-74.200.

Fujii, Akira, to NEC Corporation. Bidirectional constant current driving circuit. 4,536,662, Cl. 307-270.000.

Fujiki, Toshiaki; and Kano, Hikaru, to Mitsuboshi Belting Ltd. Method of heat-insulating and water-proof construction utilizing a roll having a web portion and a flap portion. 4,535,581, Cl. 52-746.000.

Fujino, Kenji: *See*—
Iwaoka, Hideto; Fujino, Kenji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, 4,536,712, Cl. 324-309.000.

Fujita, Akio: *See*—
Dan, Takuya; and Fujita, Akio, 4,535,976, Cl. 267-8.00R.

Fujita, Shinsaku: *See*—
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,466, Cl. 430-203.000.
Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, 4,536,467, Cl. 430-203.000.

Fujitsu Limited: *See*—
Toyoda, Kazuhiro; and Shimada, Haruo, 4,536,860, Cl. 365-190.000.
Ueno, Kouji, 4,536,858, Cl. 365-104.000.

Fujitsu Ten Limited: *See*—
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,865, Cl. 180-177.000.

Fujiwara, Masami; Fukuda, Hidenori; and Tanaka, Minako, to Lion Corporation. Nonionic surfactant type vesicle dispersion. 4,536,324, Cl. 252-311.000.

Fujiwara, Michiaki: *See*—
Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, 4,535,944, Cl. 242-35.50A.

Fukayama, Sumio: *See*—
Maruyama, Jisaburou; Fukayama, Sumio; Miyake, Masanobu; Watanabe, Yoshimi; and Eguchi, Yoshinori, 4,536,676, Cl. 313-318.000.

Fukuchi, Shigeki, to Metako Kigyo Co., Ltd. Brake apparatus for winding a roll-screen. 4,535,829, Cl. 160-291.000.

Fukuda, Hidenori: *See*—
Fujiwara, Masami; Fukuda, Hidenori; and Tanaka, Minako, 4,536,324, Cl. 252-311.000.

Fukuda, Manabu. Looped, elongate letterpieces printing plate for use on rotary presses, and method of preparation. 4,535,694, Cl. 101-395.000.

Fukumoto, Fumio: *See*—
Watanabe, Yutaka; and Fukumoto, Fumio, 4,535,981, Cl. 271-121.000.

Fukuyasu, Harumi: *See*—
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.

Funabasama, Kouichi: *See*—
Hamatani, Fumikazu; and Funabasama, Kouichi, 4,536,619, Cl. 179-84.00R.

Funada, Fumiaki: *See*—
Takamatsu, Toshiaki; Funada, Fumiaki; Ishii, Yutaka; and Wada, Tomio, 4,536,060, Cl. 350-343.000.

Furukawa, Toshio, to Kikkoman Corporation. Classifier. 4,536,284, Cl. 209-305.000.

Furutsu, Akira, to Japan Bano'k Co., Ltd.; and Ben Clements & Sons, Inc. Fastener dispensing device. 4,535,926, Cl. 227-67.000.

Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, to Sumitomo Metal Industries, Ltd.; and Sumitomo Heavy Industries Ltd. Waste gas circulation method and system for sintering apparatus. 4,536,211, Cl. 75-5.000.

G. D. Searle & Co.: *See*—
Collins, Paul W.; Gasiecki, Alan F.; and Weier, Richard M., 4,536,592, Cl. 560-53.000.

G.D. Societa per Azioni: *See*—
Belvederi, Bruno, 4,535,693, Cl. 101-366.000.

Gabriel, Edwin Z. Techniques for safely unloading cargo. 4,536,024, Cl. 294-82.240.

Gagliardo, John P.; Morse, Donald K.; and Pruneau, Albert, Jr., to Feecon Corporation. Fire fighting turret. 4,535,846, Cl. 169-25.000.

Gallas, Gunter A., to Slater Electric Inc. Clamp bushing for securing an electrical cable to an electrical outlet box. 4,536,613, Cl. 174-65.00R.

Gallo, Roger: *See*—
Deschamps, Patrice P. M.; Gallo, Roger; and Grangette, Henri, 4,536,594, Cl. 562-400.000.

Gamble, Robert L.: *See*—
Stewart, Robert D.; and Gamble, Robert L., 4,536,121, Cl. 414-219.000.

Gambro Lundia AB: *See*—
Brorsson, Fritz L.; Dahlberg, Bengt A. G.; and Holmberg, Bengt M., 4,536,201, Cl. 55-189.000.
Claren, Jan S.; Jeppsson, Jan-Bertil; and Staehr, Peter R., 4,535,635, Cl. 73-756.000.

Ganho, Eli A. Process and compositions for lithographic printing in multiple layers. 4,536,218, Cl. 106-290.000.

Gano, John C.; and Kohn, Gary A., to Otis Engineering Corporation. Valve. 4,535,968, Cl. 251-58.000.

GAO Gesellschaft fur Automation und Organisation: *See*—
Haghiri-Therani, Yaya; and Gauch, Wolfgang, 4,536,013, Cl. 283-77.000.

Gard, Eric A.; Kautter, William J., Jr.; and Bartsch, Kenneth E., to Pennsylvania Scale Company. Calibration method and apparatus for an electronic weight indicator. 4,535,854, Cl. 177-1.000.

Gardano, Andrea; Francalcanci, Franco; and Foa, Marco, to Montedison S.p.A. Process for the preparation of alpha-aryl-propionic acids and alkaline salts thereof. 4,536,595, Cl. 562-406.000.

Gardos, Ivan, to Biomatics Inc. Cap removal device for a cellular sample treatment apparatus. 4,535,585, Cl. 53-247.000.

Gargrave, Robert J. Rotary bending, particularly for press brakes. 4,535,619, Cl. 72-481.000.

Garito, Anthony F., to University Patents, Inc. Nonlinear optical materials and processes employing diacetylenes. 4,536,450, Cl. 428-411.100.

Garrou, Philip E.: *See*—
Fellmann, Jere D.; Garrou, Philip E.; Withers, Howard P., Jr.; and Seyferth, Dietmar, 4,536,589, Cl. 556-14.000.

Gartner, Joseph J. Electric motor fault and dynamic braking protection system. 4,536,686, Cl. 318-434.000.

Gartner, Karl, to Yoshida Kogyo K. K. Vertical mullion having heat transfer medium flow passage. 4,535,833, Cl. 165-53.000.

Garton, Robert E., Jr.; and Viglietti, John E., to American Orthodontics Corporation. Edgewise bracket. 4,536,154, Cl. 433-8.000.

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Cranford, Hayden C., Jr.; and Garvin, Stacy J., 4,536,720, Cl. 331-57.000.

Gasiecki, Alan F.: *See*—
Collins, Paul W.; Gasiecki, Alan F.; and Weier, Richard M., 4,536,592, Cl. 560-53.000.

Gaspar, Richard A., to Harris Graphics Corporation. Crimp blade holder. 4,536,176, Cl. 493-365.000.

Gateway Industries, Inc.: *See*—
Grabowski, Richard M., 4,535,514, Cl. 24-633.000.

Gauch, Wolfgang: *See*—
Haghiri-Therani, Yaya; and Gauch, Wolfgang, 4,536,013, Cl. 283-77.000.

Gault, Roger T., to Ingersoll Equipment Co., Inc. Control handle arrangement for power takeoff valve. 4,535,647, Cl. 74-543.000.

Gaur, Santosh P.: *See*—
Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.

Gayer, Melvin D.: *See*—
Burris, Lee R.; Speer, Billy L.; and Gayer, Melvin D., 4,536,172, Cl. 474-135.000.

Gealy, Elizabeth L. Animal handling and processing facility. 4,535,723, Cl. 119-20.000.
Gebruder Junghans GmbH: *See*—
Winterhalter, Walter, 4,535,695, Cl. 102-240.000.
Gelbard, Robert B., to General Electric Company. Temperature control for a cycle defrost refrigerator incorporating a roll-bonded evaporator. 4,535,600, Cl. 62-156.000.
Gell, Harold A. Data copy system. 4,536,081, Cl. 355-20.000.
Gem Industries, Inc.: *See*—
Guillot, Edmond P., 4,535,493, Cl. 5-100.000.
General Dynamics, Pomona Division: *See*—
Becnel, Larry H., 4,535,545, Cl. 33-550.000.
General Electric Company: *See*—
Allen, Richard B., 4,536,542, Cl. 525-67.000.
Bovenkerk, Harold P.; Gigl, Paul D.; and Corrigan, Francis R., 4,536,442, Cl. 428-323.000.
Brown, Dale M., 4,536,782, Cl. 357-23.100.
Brown, Edgar D., Jr., 4,536,590, Cl. 556-453.000.
DiMassimo, Donald V.; May, John B.; and Lemmon, Michael D., 4,536,759, Cl. 340-706.000.
Dziark, John J., 4,536,540, Cl. 524-701.000.
Frye, Robert B.; and Zembayashi, Michio, 4,536,529, Cl. 524-284.000.
Gelbard, Robert B., 4,535,600, Cl. 62-156.000.
Gur, David; Herron, John M.; and Pedersen, Robert H., 4,535,780, Cl. 128-659.000.
Jenkins, Thomas E., 4,535,524, Cl. 29-453.000.
Laskaris, Evangelos T., 4,535,596, Cl. 62-45.000.
Lindsay, Paul H., 4,535,870, Cl. 181-141.000.
Liu, Ping Y., 4,536,538, Cl. 524-508.000.
Miller, William H., 4,536,671, Cl. 310-258.000.
Rickert, Milton E., Jr., 4,536,420, Cl. 427-257.000.
Roberts, Victor D., 4,536,680, Cl. 315-49.000.
Rufer, Rosalyn J.; and Filbert, Walter H., 4,536,553, Cl. 525-106.000.
Sands, Robert W.; and Bloom, Daniel M., 4,536,834, Cl. 362-303.000.
General Foods Corporation: *See*—
Brander, Rita W.; Hammond, John E.; and Pasch, John H., 4,536,406, Cl. 426-104.000.
Vaccaro, Nancy J.; Frost, John R.; Glatz, Alfred C.; and Schenz, Timothy W., 4,536,410, Cl. 426-548.000.
General Motors Corporation: *See*—
Johnston, Ralph H.; Munden, Curtis D.; and Sheldrake, Leonard J., 4,536,697, Cl. 322-14.000.
Sacca, Demetrio B., 4,535,839, Cl. 165-153.000.
General Signal Corporation: *See*—
Binder, Paul B.; and Kroninger, Paul M., Jr., 4,536,820, Cl. 361-283.000.
Geng, Hans, to Plastik-Maschinenbau GmbH & Co., KG. Method of replastifying thermoplastic strips, foils or webs. 4,535,940, Cl. 241-3.000.
Georg Fischer Aktiengesellschaft: *See*—
Thalmann, Alfred, 4,536,644, Cl. 219-535.000.
George, Thomas R., Jr.; and Lochhead, Robert Y., Jr., to B. F. Goodrich Company, The. Stable mineral spirit dispersions of carboxyl-containing polymers. 4,536,528, Cl. 524-313.000.
Gerken, Carl F., to American Standard Inc. Seal-actuating mechanism for a wall panel. 4,535,578, Cl. 52-243.100.
Germanton, Charles: *See*—
Germanton, Damon; Germanton, Charles; and Weiss, Donald, 4,536,851, Cl. 364-557.000.
Germanton, Damon; Germanton, Charles; and Weiss, Donald. Electronic thermometer and associated apparatus. 4,536,851, Cl. 364-557.000.
Gervais, Alain; Vermeire, Daniel; Cerf, Olivier; and Toux, Jacques, to Institut National de la Recherche Agronomique. Process and apparatus for measuring rheological properties of semi-solid bodies by harmonic shear in rotation. 4,535,621, Cl. 73-59.000.
Gestetner, Jonathan; Green, Cyril; and Hanrahan, Thomas, to Gestetner Manufacturing Limited. Duplicating stencil. 4,535,690, Cl. 101-127.000.
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Gestetner, Jonathan; Green, Cyril; and Hanrahan, Thomas, 4,535,690, Cl. 101-127.000.
Gewerkschaft Eisenhutte Westfalia: *See*—
Weirich, Walter; and Peters, Bernd, 4,536,017, Cl. 285-26.000.
Geyer, Frederick F.: *See*—
Chandler, Jasper S.; and Geyer, Frederick F., 4,536,869, Cl. 369-287.000.
Gianolini, Giovanni: *See*—
Knirsch, Franco; Gianolini, Giovanni; Dagna, Gian D.; and Buat, Mario, 4,536,776, Cl. 346-140.00R.
Gibbons, James F. One transistor dynamic random access memory. 4,536,785, Cl. 357-54.000.
Gibson, Duane M.; and Scott, Lewis A., to Omark Industries, Inc. Saw chain. 4,535,667, Cl. 83-830.000.
Giddings, Gary M., to Discovision Associates. Method and apparatus for recovering information from a videodisc. 4,536,863, Cl. 369-43.000.
Giga-Tronics, Inc.: *See*—
Kaye, Lawrence A.; and Mayer, Robert, 4,536,722, Cl. 331-117.00D.
Gigl, Paul D.: *See*—
Bovenkerk, Harold P.; Gigl, Paul D.; and Corrigan, Francis R., 4,536,442, Cl. 428-323.000.
Gilberto, Paul. Material hardness testing apparatus. 4,535,623, Cl. 73-81.000.
Gilcher, Heinz, to American Standard Inc. Vital solid state relay for railroad alternating current track circuits. 4,535,959, Cl. 246-34.00R.
Giles, Alan R.; and Mann, Kenneth G., to Queen's University at Kingston. Method for controlling hemophilia in mammals. 4,536,392, Cl. 424-101.000.
Gili, Paul E.: *See*—
Lang, Stephen C.; and Gili, Paul E., 4,536,723, Cl. 331-127.000.
Gillard, John W.: *See*—
Belanger, Patrice C.; and Gillard, John W., 4,536,515, Cl. 514-532.000.
Gilleland, Frank W.: *See*—
Rinehart, James W.; Gilleland, Frank W.; and Engen, Byron W., 4,535,756, Cl. 126-450.000.
Gillen, Mark. Dispenser. 4,535,948, Cl. 242-55.200.
Gillette Company, The: *See*—
Kiricoples, Charles P.; Behrens, Henry; and Brown, Robert L., 4,536,099, Cl. 401-209.000.
Ginns, Haskell; and Finn, Albert E., to Indikon Company, Inc., The. Engine monitoring system. 4,535,624, Cl. 73-119.00R.
Ginzburg, Vladimir E.: *See*—
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Giordano, Joseph F. Partially secure latch and lock device. 4,536,022, Cl. 292-228.000.
Giraudon, Raymond; and Santini, Georges, to Rhone-Poulenc Agrochimie. Fungicidal 2-cyanobenzimidazole derivatives, compositions, and method of use. 4,536,502, Cl. 514-227.000.
Girolamo, Mario: *See*—
Solomon, David H.; Ross, John B.; Girolamo, Mario; and Brett, Robert A., 4,536,016, Cl. 283-111.000.
Giussani, Alberto, to Societa' Cavi Pirelli, S.p.A. Oil-filled, multi-core cable with at least one conductor differing from others. 4,536,610, Cl. 174-26.00R.
Glatz, Alfred C.: *See*—
Vaccaro, Nancy J.; Frost, John R.; Glatz, Alfred C.; and Schenz, Timothy W., 4,536,410, Cl. 426-548.000.
Glaverbel: *See*—
Laurent, Michel, 4,536,424, Cl. 428-34.000.
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,536,204, Cl. 65-60.400.
Glaxo Group Limited: *See*—
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.
Glazener, Carey A., to Platt Saco Lowell Corporation. Method and means for providing assemblages of opened fibers for intimate blends. 4,535,512, Cl. 19-229.000.
Global Upholstery Company Limited: *See*—
Tenser, Adrian; Prizlow, Alfred J.; and Peters, Gerald I., 4,535,577, Cl. 52-221.000.
Go, Hiroyouki: *See*—
Okitsu, Kiyoshi; and Go, Hiroyouki, 4,536,563, Cl. 528-279.000.
Gobeli, Garth W., to Mercado Venture, The. Transducer for converting three dimensional mechanical input displacements into a corresponding electrical output signal. 4,536,746, Cl. 340-365.00A.
Gocho, Nagahiro: *See*—
Sakurada, Masahiko; Manabe, Sugio; Okamura, Hideaki; and Gocho, Nagahiro, 4,536,369, Cl. 422-65.000.
Godfroid, Henri, to CGEE Alsthom. Circuit for energizing and controlling a synchronous rotary machine operating at variable speed. 4,536,692, Cl. 318-723.000.
Goetze, Richard: *See*—
Singer, Robert; Goetze, Richard; Maier, Karl; and Kerbl, Maximilian, 4,536,534, Cl. 524-262.000.
Gohl, Walter: *See*—
Esper, Friedrich J.; and Gohl, Walter, 4,535,487, Cl. 623-22.000.
Goidl, Jo A.: *See*—
Floyd, Middleton B., Jr.; and Goidl, Jo A., 4,536,517, Cl. 514-576.000.
Goldrian, Gottfried: *See*—
Bahr, Dietrich J.; Burckardt, Karl-Heinz; Goldrian, Gottfried; Rudolph, Volker; and Spruth, Wilhelm G., 4,536,769, Cl. 346-1.100.
Goldsmith, Elmar L., to PPG Industries Canada, Ltd. Method for treating potash with anticaking agent. 4,536,418, Cl. 427-213.000.
Goldwasser, David J.: *See*—
Chen, Augustin T.; Goldwasser, David J.; and Onder, Kemal, 4,536,533, Cl. 524-161.000.
Goller, Ernst; and Walker, Fritz, to H. Stoll GmbH & Company. Yarn tension device for a flat knitting machine. 4,535,609, Cl. 66-146.000.
Gonthier, Bruno: *See*—
Lelu, Andre ; Gonthier, Bruno; Grignon, Jean; and Tauzia, Jean-Michel, 4,536,235, Cl. 149-19.400.
Gonzalez, Jorge E.: *See*—
Hernandez, Luis A.; and Gonzalez, Jorge E., 4,536,146, Cl. 425-297.000.
Goodyear Aerospace Corporation: *See*—
Barrett, Howard W.; and Fledderjohann, Paul F., 4,536,824, Cl. 361-384.000.

Bischoff, Andrea L.; and Chin, Robert W., 4,535,957, Cl. 244-103.00R.

Goodyear Tire & Rubber Company, The: *See—*
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.

Goslarer Farbenwerke Dr. Hans Heubach GmbH & Co. KG: *See—*
Heubach, Rainer; Marx, Reinhard; Kunz, Peter; and Hauke, Dieter, 4,536,385, Cl. 423-621.000.

Goto, Akira: *See—*
Tsutsumikoshi, Shinobu; Goto, Akira; Murakami, Tsuyoshi; Takasaka, Masao; and Shinohara, Yoshiki, 4,535,869, Cl. 180-311.000.

Goto, Yasuyuki: *See—*
Sugimori, Shigeru; Kojima, Tetsuhiko; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,536,321, Cl. 252-299.630.

Gouilloud, Michel: *See—*
Sinha, Bikash K.; and Gouilloud, Michel, 4,535,631, Cl. 73-703.000.
Sinha, Bikash K.; and Gouilloud, Michel, 4,535,632, Cl. 73-703.000.

Gould, Inc.: *See—*
Baker, Richard H., 4,536,699, Cl. 323-276.000.

Goulter, Victor H., to Pressman, David, a part interest. Trash container attachments for supporting plastic bags. 4,535,911, Cl. 220-404.000.

Grabowski, Richard M., to Gateway Industries, Inc. Seat belt with plastic cover. 4,535,514, Cl. 24-633.000.

Graessley, William W.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Graessley, William W.; and Ver Strate, Gay, 4,536,310, Cl. 252-33.000.

Graf, Felix: *See—*
Baertschi, Peter; Wetter, Kurt; and Graf, Felix, 4,535,515, Cl. 28-245.000.

Grahl, Norma S. Pillow-tote bag device. 4,535,878, Cl. 190-1.000.

Grain Processing Corporation: *See—*
Morehouse, Alpha L.; and Lewis, Charles J., 4,536,408, Cl. 426-250.000.

Graindorge, Philippe; and Arditty, Herve , to Thomson-CSF. Optical fibre hydrophone. 4,536,861, Cl. 367-149.000.

Grallert, Hans-Joachim, to Siemens Aktiengesellschaft. Digital DPCM-coder having a high processing speed. 4,536,880, Cl. 375-30.000.

Gram, Klaus, to Brodrene Gram A/S. Apparatus for extraction of articles frozen in moulds in a freezing machine. 4,535,605, Cl. 62-345.000.

Grammas, James J.; Moskal, Walter J.; and Witt, Craig J., to GTE Automatic Electric Incorporated. Cable connector seating tool. 4,535,533, Cl. 29-749.000.

Grand, Paul S.: *See—*
Ramachandran, Pallassanna; and Grand, Paul S., 4,536,315, Cl. 252-174.110.

Grangette, Henri: *See—*
Deschamps, Patrice P. M.; Gallo, Roger; and Grangette, Henri, 4,536,594, Cl. 562-400.000.

Graphite Sales, Inc.: *See—*
Carlson, Walter H.; Zander, Gerald B.; Hanna, George C.; and Burmeister, Kevin L., 4,536,379, Cl. 423-345.000.

Grass, Alfred. Method of fabricating a base plate for a metal fitting, and stamping utilized in forming the base plate. 4,535,502, Cl. 16-382.000.

Grass Valley Group, Inc., The: *See—*
Dayton, Birney D., 4,536,665, Cl. 307-475.000.

Gray, David A.; and Webb, Donald O., to American Standard Inc. Heat exchange coil and method of making. 4,535,838, Cl. 165-134.00R.

Gray, Steven G.: *See—*
Morgan, Michael J.; and Gray, Steven G., 4,535,540, Cl. 30-358.000.

Greci, John J.; and Hoopengardner, Merle C., to Orcon Corporation. Methods and apparatus for locking the facing edges of carpet backings directly together at the seam during a face seaming operation with a hot melt adhesive tape. 4,536,244, Cl. 156-304.400.

Greco, Claudio; and Blandino, Silvano, to Societa' Impianti Elettrici Telefonici Telegrafici E Costruzioni Edili. Diaphragm pump. 4,536,139, Cl. 417-471.000.

Green, Cyril: *See—*
Gestetner, Jonathan; Green, Cyril; and Hanrahan, Thomas, 4,535,690, Cl. 101-127.000.

Green, Robert G.: *See—*
Boatright, Donald E., 4,536,177, Cl. 494-44.000.

Grell, Karl-Heinz; and Krappitz, Heinz, to B.A.T. Cigaretten-Fabriken GmbH. Pneumatic sealing apparatus. 4,535,885, Cl. 198-695.000.

Gresser, Gerhard: *See—*
Dettelbach, Alfred; and Gresser, Gerhard, 4,535,574, Cl. 51-204.000.
Dettelbach, Alfred; Gresser, Gerhard; and Einsele, Gerhard, 4,535,965, Cl. 249-83.000.

Gretag Aktiengesellschaft: *See—*
Luscher, Rene , 4,536,083, Cl. 355-40.000.

Grignon, Jean: *See—*
Lelu, Andre ; Gonthier, Bruno; Grignon, Jean; and Tauzia, Jean-Michel, 4,536,235, Cl. 149-19.400.

Grigsby, Robert A., Jr.; Speranza, George P.; Brennan, Michael E.; and Yeakey, Ernest L., to Texaco Inc. Manufacture of polyols and rigid polyurethane foam using thiodialkylene glycols. 4,536,522, Cl. 521-172.000.

Grimm, Gerold: *See—*
Kubach, Hans; Kemmner, Ulrich; and Grimm, Gerold, 4,536,731, Cl. 335-272.000.

Grimm, Rainer; and Elfen, Adolf, to Rockwell-Golde G.m.b.H.; and Franz Kirsten Electrotechnische Spezialfabrik. Hand actuating element for adjustment drives on automobiles. 4,536,829, Cl. 362-74.000.

Gripenholt, Ninneh; Berggren, Benny; and Boling, Goran, to Q & Q Retreading System AB. Method and apparatus for retreading vehicle tires. 4,536,242, Cl. 156-96.000.

Groeneveld, Michiel J.; Verver, Albert B.; and Van Swaaij, Willibrordus P. M., to James Howden & Company. Transfer apparatus. 4,535,551, Cl. 34-170.000.

Groff, Edwin T. Food processing apparatus. 4,536,147, Cl. 425-323.000.

Gross, Alexander L.: *See—*
Derderian, Thomas; Frederick, Edward C.; and Gross, Alexander L., 4,535,553, Cl. 36-28.000.

Gross, Daniel: *See—*
Prost, Jean-Louis; and Gross, Daniel, 4,535,627, Cl. 73-290.00B.

GTE Automatic Electric Incorporated: *See—*
Grammas, James J.; Moskal, Walter J.; and Witt, Craig J., 4,535,533, Cl. 29-749.000.

GTE Business Communication Systems Inc.: *See—*
Wagoner, John G.; and Smith, Louis W., 4,536,620, Cl. 179-90.00D.

GTE Communication Systems Corporation: *See—*
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,536,614, Cl. 179-18.0FA.

GTE Communications Products Corporation: *See—*
Blackburn, Tom L., 4,536,871, Cl. 370-74.000.

GTE Products Corporation: *See—*
Bouchard, Andre C.; Maya, Jakob; and Sentementes, Thomas, 4,536,678, Cl. 313-493.000.
Coad, Brian C., 4,536,215, Cl. 75-129.000.
English, George; and Leadvaro, Stephen J., 4,536,831, Cl. 362-263.000.

Guillemet, Bernard: *See—*
Guittard, Pierre; Guillemet, Bernard; and Piaget, Claude, 4,536,679, Cl. 313-541.000.

Guillet, James E.; Heskins, Michael; and Murray, D. Gary. Polymeric flocculants. 4,536,294, Cl. 210-730.000.

Guillot, Edmond P., to Gem Industries, Inc. Crib drop side latch. 4,535,493, Cl. 5-100.000.

Guittard, Pierre; Guillemet, Bernard; and Piaget, Claude, to U.S. Philips Corporation. Photocathode. 4,536,679, Cl. 313-541.000.

Gulf Canada Limited: *See—*
McCorriston, Lois L., 4,536,374, Cl. 423-68.000.

Gur, David; Herron, John M.; and Pedersen, Robert H., to General Electric Company. Apparatus for measuring xenon concentration in xenon cerebral blood-flow studies. 4,535,780, Cl. 128-659.000.

Guthrie, Roger T., to M&T Chemicals Inc. Pump apparatus and system for containing and metering uniform pulses of a small amount of a hazardous liquid. 4,536,140, Cl. 417-500.000.

Gyllstrom, Gregory W.: *See—*
Downing, Gerald T.; and Gyllstrom, Gregory W., 4,535,960, Cl. 248-74.500.

H. B. Fuller Company: *See—*
Hume, Robert M., III, 4,536,012, Cl. 281-21.00R.

H. Stoll GmbH & Company: *See—*
Goller, Ernst; and Walker, Fritz, 4,535,609, Cl. 66-146.000.

Haas, Lawrence W., to Hercules Incorporated. Selecting hydroxy-terminated polybutadiene for high strain propellants. 4,536,236, Cl. 149-19.920.

Haase, Thomas A.: *See—*
Pesa, Frederick A.; and Haase, Thomas A., 4,536,597, Cl. 562-522.000.

Haase, William H.: *See—*
Murdick, Brian K.; and Haase, William H., 4,535,891, Cl. 206-564.000.

Haasl, Robert J., to PDI, Inc. Flexible coating composition and method of applying same. 4,536,454, Cl. 428-516.000.

Hackney, John. Sail batten improvements. 4,535,825, Cl. 114-103.000.

Haddad, Heskel M. Anterior-posterior chamber intraocular lens. 4,535,488, Cl. 623-6.000.

Hafner, Ulrich, to International Standard Electric Corporation. Deflection unit for picture tubes. 4,536,730, Cl. 335-213.000.

Haghiri-Therani, Yaya; and Gauch, Wolfgang, to GAO Gesellschaft fur Automation und Organisation. Multilayered indentification card. 4,536,013, Cl. 283-77.000.

Hahn, Rainer, to Dragerwerk Aktiengesellschaft. Chemical oxygen generator. 4,536,370, Cl. 422-120.000.

Haines, Paul G., to Pennwalt Corporation. Catalyst for the preparation of methyl mercaptan from carbon oxides. 4,536,492, Cl. 502-216.000.

Haldemann A.G.: *See—*
Haldemann, Gaston; and Wirz, Francois, 4,536,006, Cl. 280-613.000.

Haldemann, Gaston; and Wirz, Francois, to Haldemann A.G. Safety binding of a boot on a ski. 4,536,006, Cl. 280-613.000.

Haldor Topsoe A/S: *See—*
Topp-Jorgensen, Jorgen, 4,536,485, Cl. 502-62.000.

Hall, Michael F. Portable shooting bench. 4,535,559, Cl. 42-94.000.

Halliburton Company: *See—*
Borchardt, John K., 4,536,303, Cl. 252-8.55R.
Borchardt, John K., 4,536,304, Cl. 252-8.55R.
Borchardt, John K.; and Young, Bill M., 4,536,305, Cl. 252-8.55R.
Loftin, Royal E.; and Son, Adelina J., 4,536,297, Cl. 252-8.50C.

Hama, Yoshihisa: *See—*
Okudaira, Tadashi; Tsuboi, Akio; Hama, Yoshihisa; and Hara, Mamoru, 4,535,901, Cl. 215-1.00C.

Hamabe, Takafumi: *See*—
Ikeda, Shigayuki; and Hamabe, Takafumi, 4,535,760, Cl. 128-33.000.

Hamamoto, Tooru: *See*—
Kodama, Hisashi; Hamamoto, Tooru; Tamura, Tetsuomi; Sato, Katsujiro; and Yamada, Kazuharu, 4,535,734, Cl. 123-90.580.

Hamatani, Fumikazu; and Funabasama, Kouichi, to Nitsuko Limited. Ringing signal detection circuit. 4,536,619, Cl. 179-84.00R.

Hambrecht, Juergen; Reffert, Rudi W.; Minges, Peter; and Swoboda, Johann, to BASF Aktiengesellschaft. Removal of the catalyst from polyphenylene ethers. 4,536,567, Cl. 528-486.000.

Hammann, Ingeborg: *See*—
Sirrenberg, Wilhelm; Marhold, Albrecht; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,536,587, Cl. 549-366.000.

Hammond, John E.: *See*—
Brander, Rita W.; Hammond, John E.; and Pasch, John H., 4,536,406, Cl. 426-104.000.

Hamster, Helmut; and Koppl, Franz, to Wacker-Chemitronic Gesellschaft fur Elektronik-Grundstoffe m.b.H. Device for treating gases at high temperatures. 4,536,642, Cl. 219-374.000.

Handi-Pac, Inc.: *See*—
Klawitter, Ronald R., 4,536,164, Cl. 446-143.000.

Handler, Michael: *See*—
Lichstein, Bernard; and Handler, Michael, 4,536,178, Cl. 604-15.000.

Hane, Toshioki: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,536,352, Cl. 260-543.00F.

Hanes, Ronnie M., to National Distillers and Chemical Corporation. Process for the preparation of alkyl nonadienoate esters. 4,536,340, Cl. 260-410.90R.

Hankey, Dana L., to Heraeus Cermalloy, Inc. Electrical resistance compositions and methods of making the same. 4,536,328, Cl. 252-518.000.

Hann, George W.: *See*—
O'Connor, Michael C.; and Hann, George W., 4,535,904, Cl. 215-215.000.

Hanna, George C.: *See*—
Carlson, Walter H.; Zander, Gerald B.; Hanna, George C.; and Burmeister, Kevin L., 4,536,379, Cl. 423-345.000.

Hanna, Junichi: *See*—
Nakatani, Kaname; Hanna, Junichi; and Kokado, Hiroshi, 4,536,461, Cl. 430-58.000.

Hanna, Marie R.: *See*—
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,536,330, Cl. 252-522.00R.
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,536,299, Cl. 252-8.600.

Hanrahan, Gary V.: *See*—
Borisch, Donald J.; Hanrahan, Gary V.; and Merritt, Herbert E., 4,536,849, Cl. 364-550.000.

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Gestetner, Jonathan; Green, Cyril; and Hanrahan, Thomas, 4,535,690, Cl. 101-127.000.

Hansen, Bertil V.; Kelfve, Sten S.; and Mollberg, Henri R., to AB Carbogel. Compositions comprising coal, water and polyelectrolyte. 4,536,187, Cl. 44-51.000.

Haq, Zia, to Lever Brothers Company. Porous cross-linked absorbent polymeric materials. 4,536,521, Cl. 521-146.000.

Hara, Mamoru: *See*—
Okudaira, Tadashi; Tsuboi, Akio; Hama, Yoshihisa; and Hara, Mamoru, 4,535,901, Cl. 215-1.00C.

Hara, Takeo: *See*—
Kasubuchi, Takeshi; Hara, Takeo; and Ozawa, Kaoru, 4,536,804, Cl. 360-4.000.

Hara, Yoshio; and Sugimoto, Yukihiro, to Fuji Photo Film Co., Ltd. Film pack. 4,536,067, Cl. 354-180.000.

Harada, Tuneo: *See*—
Oyama, Kiyotaka; and Harada, Tuneo, 4,536,342, Cl. 260-465.00G.

Harbert, Charles A.: *See*—
Welch, Willard M., Jr.; Harbert, Charles A.; Koe, B. Kenneth; and Kraska, Allen R., 4,536,518, Cl. 514-647.000.

Hardy, Frederick E.; Kitko, David J.; and Cambre, Cushman M., to Procter & Gamble Company, The. Bleach compositions comprising non-linear aliphatic peroxycarboxylic acid precursors. 4,536,314, Cl. 252-102.000.

Harlan, Wayne E., to RCA Corporation. Non-linear dynamic coring circuit for video signals. 4,536,796, Cl. 358-166.000.

Harper, Michael J. K.; Richardson, Dora N.; and Walpole, Arthur L., deceased, to Imperial Chemical Industries PLC. Alkene derivatives. 4,536,516, Cl. 514-514.000.

Harper, Robert J., Jr., to United States of America, Agriculture. Process to impart smooth-dry and flame retardant properties to cellulosic fabric. 4,536,422, Cl. 427-381.000.

Harrell, William C.: *See*—
Krumwiede, John F.; Harrell, William C.; Hilliard, William G.; and Harris, James E., 4,536,205, Cl. 65-135.000.

Harris Corporation: *See*—
Kasten, Alan J., 4,536,231, Cl. 148-33.100.
Miaskoff, Leonard, 4,536,119, Cl. 414-100.000.

Harris, Eugene G., to National Distillers and Chemical Corporation. Furan derivatives useful as aroma compounds. 4,536,349, Cl. 252-522.00R.

Harris Graphics Corporation: *See*—
Gaspar, Richard A., 4,536,176, Cl. 493-365.000.

Harris, James E.: *See*—
Krumwiede, John F.; Harrell, William C.; Hilliard, William G.; and Harris, James E., 4,536,205, Cl. 65-135.000.

Harris, Jesse R., to Phillips Petroleum Company. Coated diffusion membrane and its use. 4,536,196, Cl. 55-16.000.

Harris, Kenneth M.: *See*—
Kriz, Miroslav; and Harris, Kenneth M., 4,535,641, Cl. 74-53.000.

Harshbarger, John H., to Visual Information Institute, Inc. Method and apparatus for testing a CRT display under beam duty cycle variation. 4,536,792, Cl. 358-139.000.

Harshbarger, John H.; and Shores, William M., to Visual Information Institute, Inc. Pulse stretching circuit for a raster display. 4,536,793, Cl. 358-150.000.

Hart, Ronald L.; Work, Dale E.; and Davis, Colin E., to Capsulated Systems, Inc. Microencapsulated epoxy adhesive system. 4,536,524, Cl. 523-176.000.

Hartz, Peter: *See*—
Hertenstein, Ulrich; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,536,509, Cl. 514-383.000.

Harvey Hubbell Incorporated: *See*—
Neuroth, David H., 4,536,609, Cl. 174-11.00R.

Hase, Christian: *See*—
Borggrefe, Gerhard; and Hase, Christian, 4,536,325, Cl. 252-314.000.

Hasegawa, Akira: *See*—
Nagashima, Akira; Hasegawa, Akira; Aoai, Toshiaki; and Nagano, Teruo, 4,536,464, Cl. 430-192.000.

Hasegawa, Makoto; Makimoto, Mitsuo; Yamashita, Sadahiko; and Katayama, Yoshio, to Matsushita Electric Industrial Company Limited. Voltage-controlled oscillator having three or more varactor diodes. 4,536,724, Cl. 331-177.00V.

Hasegawa, Shigekazu; Okita, Naoki; and Machida, Satoshi, to Kubota, Ltd. Tractor with three-point linkage connecting scraper thereto and automatic tilt control. 4,535,847, Cl. 172-2.000.

Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, to Sumitomo Chemical Company, Limited. 2-Cyano-4-nitro-6-chlorophenylazo 3-acetyl-or propionylamino-N,N-di-n-pentyl or hexylanilines. 4,536,569, Cl. 534-575.000.

Hashimoto, Shigebumi: *See*—
Sakakibara, Shumpei; Yugari, Yasumi; and Hashimoto, Shigebumi, 4,536,395, Cl. 514-7.000.

Hashimoto, Yutaka: *See*—
Kamei, Masayuki; Endo, Tomio; and Hashimoto, Yutaka, 4,536,298, Cl. 252-8.050.

Haslanger, Martin F.: *See*—
Das, Jagabandhu; and Haslanger, Martin F., 4,536,513, Cl. 514-469.000.
Das, Jagabandhu; and Haslanger, Martin F., 4,536,514, Cl. 514-469.000.

Hasler, Hans: *See*—
Wildi, Edwin; Bossart, Erwin; and Hasler, Hans, 4,535,956, Cl. 242-151.000.

Hatfield, Jim J. Automatic jaw control for reversible power tool. 4,536,113, Cl. 409-234.000.

Hatfield, John F. Computer keyboard educational toy. 4,536,160, Cl. 434-227.000.

Hattendorff, Horst D.: *See*—
Schmidt, Martin; and Hattendorff, Horst D., 4,536,090, Cl. 356-414.000.

Hattori, Hideaki: *See*—
Yokoshima, Minoru; Nawata, Kazuyoshi; Ohkubo, Tetsuo; and Hattori, Hideaki, 4,536,588, Cl. 549-374.000.

Hattori, Kiyoshi; and Myers, John H., to El Paso Polyolefins Company. Heat-sterilizable polyolefin compositions and articles manufactured therefrom. 4,536,549, Cl. 525-240.000.

Hattori, Kyo: *See*—
Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, 4,535,815, Cl. 137-625.480.

Hattori, Yukiro: *See*—
Friedman, Harry; Sengoku, Isao; Hattori, Yukiro; and Isikawa, Minoru, 4,535,539, Cl. 30-161.000.

Hauge, Raymond C.; and Mycynek, Victor G., to Zenith Electronics Corporation. Compensated inverting/noninverting differential amplifier. 4,536,717, Cl. 330-254.000.

Haugwitz, Rudiger D.: *See*—
Sundeen, Joseph E.; Haugwitz, Rudiger D.; and Sprague, Peter W., 4,536,501, Cl. 514-225.000.

Hauke, Dieter: *See*—
Heubach, Rainer; Marx, Reinhard; Kunz, Peter; and Hauke, Dieter, 4,536,385, Cl. 423-621.000.

Hauni-Werke Korber & Co. KG.: *See*—
Lindemann, Rolf, 4,535,792, Cl. 131-281.000.

Hauptman, Murray L. Threadless feed screw. 4,535,643, Cl. 74-89.000.

Haury, Andre : *See*—
Belbel, Elie; Blanchard, Christian; Fechant, Louis; Haury, Andre ; and Lauraire, Michel, 4,536,630, Cl. 200-151.000.

Hauser, Oscar G.; Lysy, Dusan G.; and Koehler, Richard F., Jr., to Xerox Corporation. Developer material end of life sensing. 4,536,080, Cl. 355-14.00D.

Hawkeye Container Company: *See*—
Eberle, John W., 4,535,586, Cl. 53-432.000.

Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, to Sharp Kabushiki Kaisha. Lead electrode connection in a semiconductor device. 4,536,786, Cl. 357-68.000.

Hayashi, Kazuhiko: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,865, Cl. 180-177.000.

Hayashi, Motoshige; Kobayashi, Toshirou; Yoshii, Motokazu; Tsubone, Masahiro; and Ishikawa, Mikio, to Sekisui Kaseihin Kogyo Kabushiki Kaisha. Method and apparatus for preparing multi-cellular foamed board of thermoplastic resin. 4,536,357, Cl. 264-53.000.

Hayashi, Takeshi, to Kyoeizoki Co., Ltd. Apparatus for containing easily solidifying powder and particles. 4,535,942, Cl. 241-36.000.

Hayes, John C. Probe search test light and continuity tester. 4,536,705, Cl. 324-53.000.

Hayes, Roger: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

Hayter, Walter R.: *See—*
Thurlow, Norman C.; Hayter, Walter R.; and Schockner, Richard C., 4,536,653, Cl. 250-390.000.

Haze, Setsuo, to Kabushiki Kaisha Ishida Koki Seisakusho. Span adjusting method and apparatus. 4,535,857, Cl. 177-50.000.

Hazeltine Corporation: *See—*
Frazita, Richard F., 4,536,766, Cl. 343-372.000.
Loughlin, Bernard D., 4,536,885, Cl. 381-15.000.

Hazemeijer B.V.: *See—*
van der Scheer, Derk, 4,536,735, Cl. 337-159.000.

Hebert, Philip J.; and Blanchette, Leon G., to LeBlanco Limited. Broiler oven. 4,535,750, Cl. 126-41.00B.

Hehl, Karl. Reversing mechanism for safety gate of injection molding machine. 4,536,144, Cl. 425-154.000.

Heidenescher, Hermann: *See—*
Appel, Hans; and Heidenescher, Hermann, 4,535,830, Cl. 160-299.000.

Heiligman, Randy B.; and Keller, Paul. Dispenser with squeeze-bulb actuator. 4,535,918, Cl. 222-185.000.

Hekal, Ihab M., to Continental Can Company. Method for preparing polar thermoplastic resin compositions having improved gas barrier properties. 4,536,425, Cl. 428-35.000.

Helderman, J. Frank. Anchor apparatus for insertion into a pre-formed hole. 4,536,115, Cl. 411-17.000.

Helgstrand, Åke J. E.; Johansson, Karl N. G.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., to Astra Lakemedel Aktiebolag. Phosphonoformic acid esters. 4,536,400, Cl. 514-120.000.

Hellwig, Klaus-Dieter: *See—*
Kaufmann, Lothar; and Hellwig, Klaus-Dieter, 4,536,383, Cl. 423-508.000.

Helmers, Michael: *See—*
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Hemex, Inc.: *See—*
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Henderson, David: *See—*
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Henderson, John G. N.: *See—*
Maturo, Robert J.; Chin, Danny; and Henderson, John G. N., 4,536,797, Cl. 358-192.100.

Hendriks, Ivo G. M.; and Stals, Theo, to Teepak, Inc. Method and device for everting flexible tubular member. 4,535,506, Cl. 17-45.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Blum, Helmut, 4,536,348, Cl. 260-502.40P.
Borggrefe, Gerhard; and Hase, Christian, 4,536,325, Cl. 252-314.000.

Hennig, Eberhard, to Dr. -Ing. Rudolf Hell GmbH. Method and apparatus for intensifying contrast in printing formats. 4,536,803, Cl. 358-299.000.

Henrick, Clive A.: *See—*
Lee, Shy-Fuh; and Henrick, Clive A., 4,536,355, Cl. 260-944.000.

Henrion, Alain: *See—*
Verton, Jose ; and Henrion, Alain, 4,535,500, Cl. 15-250.230.

Henriott, Jay M.; and Hostetter, David L., to Kimball International, Inc. Wire or line manager. 4,535,703, Cl. 108-50.000.

Heraeus Cermalloy, Inc.: *See—*
Hankey, Dana L., 4,536,328, Cl. 252-518.000.

Herb, Carl C., to Carrier Corporation. Actuator for a heating/cooling diffuser. 4,535,932, Cl. 236-49.000.

Hercules Incorporated: *See—*
Haas, Lawrence W., 4,536,236, Cl. 149-19.920.

Herman, David E.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,536,372, Cl. 422-187.000.

Herman, George R.; and Martin, William A., to Herman, George R. Wind lift generator. 4,536,125, Cl. 415-5.000.

Hernandez, Luis A.; and Gonzalez, Jorge E. Croquette machine. 4,536,146, Cl. 425-297.000.

Herring, William P.: *See—*
Pawelzik, Manfred; Herring, William P.; and Kostorz, Jan R., 4,535,814, Cl. 137-625.170.

Herrmann, John M.; and Voisin, Suzanne M., to Trilogy Computer Development Partners, Ltd. Wafer transfer device. 4,536,122, Cl. 414-404.000.

Herron, John M.: *See—*
Gur, David; Herron, John M.; and Pedersen, Robert H., 4,535,780, Cl. 128-659.000.

Hertenstein, Ulrich; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, to Hoechst Aktiengesellschaft. 1,1-Diaryl-2-azolylethanes and preparations containing these compounds. 4,536,509, Cl. 514-383.000.

Hertz, C. Hellmuth: *See—*
Hertz, Carl H., 4,535,741, Cl. 123-444.000.

Hertz, Carl H., to Hertz, C. Hellmuth. Fuel metering method and device. 4,535,741, Cl. 123-444.000.

Herweg, Arnulf. Method and apparatus for displaying one or more measurement values of arbitrary measurement variables on a screen. 4,536,707, Cl. 324-121.00R.

Heskins, Michael: *See—*
Guillet, James E.; Heskins, Michael; and Murray, D. Gary, 4,536,294, Cl. 210-730.000.

Hess, Fritz; and Dalliard, Fernand, to Ateliers de Constructions Mecaniques de Vevey S.A. Articulated railway vehicle. 4,535,702, Cl. 105-4.00R.

Hettinger, William P., Jr.; and Lewis, James E., to Ashland Oil, Inc. Large pore catalysts for heavy hydrocarbon conversion. 4,536,281, Cl. 208-113.000.

Hetz, Walter, to Siemens Aktiengesellschaft. Manually operated ultrasound applicator. 4,535,781, Cl. 128-660.000.

Heubach, Rainer; Marx, Reinhard; Kunz, Peter; and Hauke, Dieter, to Goslarer Farbenwerke Dr. Hans Heubach GmbH & Co. KG. Method and apparatus for the production of industrial lead oxide. 4,536,385, Cl. 423-621.000.

Hewing GmbH & Co.: *See—*
Bliefert, Claus; Boldhaus, Hans-Michael; and Hoffmann, Manfred, 4,536,266, Cl. 204-159.180.

Hewitt, William R.: *See—*
Saxton, Robert W.; Hewitt, William R.; and Nelligan, Jerome M., 4,536,108, Cl. 408-230.000.

Hewlett-Packard Company: *See—*
Chen, Devereaux C.; and Fu, Horng-Sen, 4,535,528, Cl. 29-571.000.

Heyman, Duane A., to BASF Wyandotte Corporation. Polymer dispersions and their uses. 4,536,557, Cl. 528-52.000.

Hi-Tech Engineering, Inc.: *See—*
Huiber, Otto A., 4,536,134, Cl. 417-360.000.

Hidaka, Tuneo: *See—*
Nishizawa, Tsutomu; Tukahara, Ryoichi; Morinaka, Ryoichi; and Hidaka, Tuneo, 4,536,320, Cl. 252-299.100.

Hideo, Hisamoto, to Matsushita Electric Works, Ltd. Circuit breaker. 4,536,726, Cl. 335-23.000.

Hidle, Jerry, to Pandhandle Industries, Inc. Paper towel insert and dispenser. 4,535,947, Cl. 242-55.200.

Higashino, Takashi: *See—*
Sato, Kan-ichi; Yamanishi, Akio; and Higashino, Takashi, 4,535,831, Cl. 164-33.000.

Higgins, Edward, Jr.: *See—*
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Higgins, Thair L.: *See—*
Klingensmith, G. Bruce; Whitehead, Richard O.; and Higgins, Thair L., 4,536,537, Cl. 524-481.000.

Highberger, Samuel M. Body support. 4,536,032, Cl. 297-439.000.

Highlight Industries, Inc.: *See—*
Riemenschneider, Paul K., III, 4,535,951, Cl. 242-754.000.

Hignett, Geoffrey J.; Rowbottom, Kenneth T.; and Sanderson, William R., to Interox Chemicals Limited. Peroxygen compound. 4,536,313, Cl. 252-100.000.

Hijiya, Toyoto: *See—*
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.

Hileman, Gregory A.: *See—*
Flynn, Robert G.; Pitkin, Courtney G.; and Hileman, Gregory A., 4,536,399, Cl. 514-63.000.

Hill, John W., to Commonwealth of Australia, The. Minesweeping. 4,535,716, Cl. 114-221.00R.

Hill, Royce W.: *See—*
Ramey, Carl; Hill, Royce W.; and Beijen, James H., 4,535,925, Cl. 227-55.000.

Hille, Martin: *See—*
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Hilliard, William G.: *See—*
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Hilton-Davis Chemical Co., The: *See—*
Crounse, Nathan N., 4,536,570, Cl. 534-819.000.
Hung, William M.; and Jefferies, Patrick J., 4,536,367, Cl. 422-37.000.
Hung, William M.; and Knox, Jack M., 4,536,368, Cl. 422-37.000.

Himsley, Alexander; and Bennett, John A., to Himsley Engineering Limited. Piping for use in liquid collection and distribution. 4,536,287, Cl. 210-293.000.

Himsley Engineering Limited: *See—*
Himsley, Alexander; and Bennett, John A., 4,536,287, Cl. 210-293.000.

Hinkel, Jerald J.: *See—*
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,536,222, Cl. 134-5.000.
Hinomaru Seni Co., Ltd.: *See—*
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Hioki, Katsuhiko: *See—*
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Hirohashi, Toshiyuki: *See—*
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Hiroishi, Akihiko, to Sord Computer Systems, Inc. Method of and apparatus for controlling the display of video signal information. 4,536,856, Cl. 364-900.000.
Hirota, Akira; Miyahara, Hiroyuki; and Kosaka, Yoshiteru, to Victor Company of Japan, Ltd. Video memory device. 4,536,795, Cl. 358-160.000.
Hisadomi, Masaru: *See—*
Kurihara, Norimitsu; Suzuki, Toshiyasu; Iwanaga, Takashi; and Hisadomi, Masaru, 4,535,547, Cl. 33-356.000.
Hisey, Durward A., to Hy-C Company, Inc. Chimney cap. 4,535,686, Cl. 98-67.000.
Hitachi, Ltd.: *See—*
Kubota, Hitoshi; Tanaka, Minoru; and Aiuchi, Susumu, 4,536,419, Cl. 427-255.500.
Matsuzawa, Toshiharu; Douta, Kikuo; Iwayanagi, Takao; and Yanazawa, Hiroshi, 4,536,421, Cl. 427-282.000.
Nagumo, Shuzo; Ogura, Setsuo; and Kitamura, Yukinori, 4,536,784, Cl. 357-48.000.
Oguino, Masanori, 4,536,056, Cl. 350-128.000.
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Yanagita, Tomoatsu, 4,536,854, Cl. 364-749.000.
Hitachi Maxell, Ltd.: *See—*
Sumiya, Kenji; Togawa, Fumio; and Saito, Osamu, 4,536,444, Cl. 428-340.000.
Hitachi Microcomputer Engineering Ltd.: *See—*
Nagumo, Shuzo; Ogura, Setsuo; and Kitamura, Yukinori, 4,536,784, Cl. 357-48.000.
Hixenbaugh, D. Wayne: *See—*
Troutman, Samuel J., Jr.; and Hixenbaugh, D. Wayne, 4,535,634, Cl. 73-747.000.
Hlava, Lorens G., to Brunswick Corporation. Two piece molded adjustable rod handle. 4,535,561, Cl. 43-22.000.
Hliboki, Joseph G.; and Staudenmaier, Paul, to Teaneck Graphics Corp. Multiple vacuum frame unit. 4,536,085, Cl. 355-93.000.
Hobbs, James W., to Phillips Petroleum Company. Control of a cracking furnace. 4,536,606, Cl. 585-650.000.
Hoechst Aktiengesellschaft: *See—*
Bungert, Theodor, 4,536,104, Cl. 406-183.000.
Bungert, Theodor, 4,536,105, Cl. 406-183.000.
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Ritschel, Werner; Diery, Helmut; and Hille, Martin, 4,536,339, Cl. 260-404.500.
Weferling, Norbert, 4,536,350, Cl. 260-543.00P.
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Hoechst-Roussel Pharmaceuticals Inc.: *See—*
Davis, Larry; and Klein, Joseph T., 4,536,578, Cl. 544-360.000.
Hof, Craig R.: *See—*
Sagi, Zsigmond L.; and Hof, Craig R., 4,536,433, Cl. 428-195.000.
Hoffman, Lionel B., to Tetras S.A. Brush toning means for electrophotographic copier apparatus. 4,536,075, Cl. 355-3.0DD.
Hoffmann, Jurgen; Pradel, Gunter; and Reulecke, Fritz, to Sartorius GmbH. Tubular filter element with mated end caps. 4,536,291, Cl. 210-457.000.
Hoffmann, Manfred: *See—*
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Hofmeister, Helmut: *See—*
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Hogan, Thomas C.: *See—*
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Hogg, Thomas M., to Anderson Strathclyde Plc. Pinless haulage drive chain and rack-form link for use seriatim in forming same. 4,536,036, Cl. 299-43.000.
Holce, Thomas J.; and Huckins, Charles M., to Sentrol, Inc. Magnetically retained connecting cable incorporating magnetically operated switch. 4,536,754, Cl. 340-568.000.
Holden, Scott C., to Varian Associates, Inc. Optimum surface contour for conductive heat transfer with a thin flexible workpiece. 4,535,835, Cl. 165-80.00R.
Holiday Cups, Inc.: *See—*
Puls, Craig, 4,536,173, Cl. 493-149.000.
Hollenstein, Peter: *See—*
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Hollowell, John F.: *See—*
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Hollowell, John R.; and Hollowell, John F. Battery powered vacuum trash collector. 4,535,501, Cl. 15-339.000.
Holly, Harry H.; and Holly, James A., to Holly Systems, Inc. Method and apparatus for forming a patty to accommodate tissue fiber flow. 4,535,505, Cl. 17-45.000.
Holly, James A.: *See—*
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Nishikawa, Masao; and Aoki, Takashi, 4,535,652, Cl. 74-733.000.
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Shiga, Mitsuo, 4,535,866, Cl. 180-215.000.
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Leete, Tom G., 4,536,873, Cl. 370-85.000.
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Buhrmann, Gerardus P.; and Steen, Adam, 4,535,975, Cl. 266-220.000.
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Henriott, Jay M.; and Hostetter, David L., 4,535,703, Cl. 108-50.000.
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Fester, Walter; and Huber, Bernd, 4,536,363, Cl. 264-182.000.
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Huiber, Otto A., to Hi-Tech Engineering, Inc. Piston seal access apparatus. 4,536,134, Cl. 417-360.000.
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Hung, Peter, to Porta Systems Corp. Telephone modular wall jack. 4,536,050, Cl. 339-99.00R.
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Coue, Maurice E. L., 4,535,644, Cl. 74-489.000.
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Rink, Richard H., 4,536,037, Cl. 299-92.000.
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Li, Hung J.; and Husak, Leonid, 4,536,815, Cl. 361-47.000.
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Hutchison, Gary A. Aluminum composite spar wing structure and method of assembly. 4,535,958, Cl. 244-123.000.
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Hisey, Durward A., 4,535,686, Cl. 98-67.000.
Hybarger, Kenneth C.: *See—*
Dorr, William C.; Hybarger, Kenneth C.; and Yurkinas, James A., 4,535,973, Cl. 254-323.000.
Hyde, James L., to Discovision Associates. Method and means for drying coatings on heat sensitive materials. 4,535,548, Cl. 34-4.000.
Hydro-Dri Systems, Inc.: *See—*
Strain, Don R., 4,536,198, Cl. 55-33.000.
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Kato, Hirohiko; Ichijima, Seiji; Adachi, Keiichi; and Watanabe, Toshiyuki, 4,536,472, Cl. 430-505.000.
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McCandliss, Russell J.; Eastwood, Barbara J.; and Milch, Robert A., 4,536,207, Cl. 71-88.000.
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Iijima, Yoshio, to Daido Metal Company Ltd. Method for producing a connecting rod for a radial piston motor. 4,535,517, Cl. 29-156.50A.
Ijntema, Johannes, to U.S. Philips Corporation. Device for signalling a specific charge condition of an accumulator battery. 4,536,757, Cl. 340-636.000.
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Moriguchi, Kisoo; and Ikegami, Tadashi, 4,536,550, Cl. 525-240.000.
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Illinois Tool Works Inc.: *See—*
Briggs, Paul C., 4,536,546, Cl. 525-83.000.
Erickson, Lloyd A., 4,535,565, Cl. 49-493.000.
Farrell, W. James; and Diehl, Werner K., 4,536,110, Cl. 409-11.000.
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Dostert, Philippe L.; Imbert, Thierry F.; and Bucher, Bernard P., 4,536,580, Cl. 546-124.000.
Imperial Chemical Industries Limited: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,536,555, Cl. 526-295.000.
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Harper, Michael J. K.; Richardson, Dora N.; and Walpole, Arthur L., deceased, 4,536,516, Cl. 514-514.000.
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Inciong, Josefino T.: *See—*
Cardis, James C.; and Inciong, Josefino T., 4,535,996, Cl. 277-1.000.
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Ginns, Haskell; and Finn, Albert E., 4,535,624, Cl. 73-119.00R.
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Besson, Duilio; De Marco, Claudio; Peruzzo, Roberto; and Ardit, Giuseppe, 4,535,599, Cl. 62-154.000.
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Carena, Ugo; and Rivera, Paolo, 4,536,650, Cl. 250-231.0SE.
Knirsch, Franco; Gianolini, Giovanni; Dagna, Gian D.; and Buat, Mario, 4,536,776, Cl. 346-140.00R.
Ingersoll Equipment Co., Inc.: *See—*
Gault, Roger T., 4,535,647, Cl. 74-543.000.
Ingram, Brian; and England, Michael J., to Lucas Industries, Public Limited Company. Actuator for an internal shoe drum brake. 4,535,875, Cl. 188-106.00F.
Ingram, Wayne A.; Johnson, Stephen L.; and Coleman, Thomas E., to Siemens-Allis, Inc. Electric panel board having an improved extruded base pan configuration. 4,536,823, Cl. 361-355.000.
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Prosenbauer, Otto, 4,535,504, Cl. 17-1.00G.
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Inoue, Kiyoshi, 4,536,366, Cl. 419-11.000.
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Sunagawa, Makoto; Matsumura, Haruki; Inoue, Takaaki; and Hirohashi, Toshiyuki, 4,536,334, Cl. 260-239.00A.
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Gervais, Alain; Vermeire, Daniel; Cerf, Olivier; and Toux, Jacques, 4,535,621, Cl. 73-59.000.
International Business Machines Corporation: *See—*
Amendola, Albert; Christensen, Richard G.; and Yereance, John G., Jr., 4,536,470, Cl. 430-314.000.
Bahr, Dietrich J.; Burckardt, Karl-Heinz; Goldrian, Gottfried; Rudolph, Volker; and Spruth, Wilhelm G., 4,536,769, Cl. 346-1.100.
Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.
Cranford, Hayden C., Jr.; and Garvin, Stacy J., 4,536,720, Cl. 331-57.000.
Kok, Paul, 4,535,841, Cl. 165-185.000.
Shen, John C. S., 4,536,451, Cl. 428-418.000.
International Coal Refining Company: *See—*
Bronfenbrenner, James C.; Skinner, Ronald W.; and Znaimer, Samuel, 4,536,275, Cl. 208-10.000.
International Flavors & Fragrances Inc.: *See—*
Boden, Richard M.; Hanna, Marie R.; and Tyszkiewicz, Theodore J., 4,536,330, Cl. 252-522.00R.
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,536,583, Cl. 549-1.000.
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International Paper Company: *See—*
Capo, James L., 4,535,928, Cl. 229-16.00R.
Lisnyansky, Khaim, 4,535,950, Cl. 242-66.000.
Murdick, Brian K.; and Haase, William H., 4,535,891, Cl. 206-564.000.
International Playtex, Inc.: *See—*
Lichstein, Bernard; and Handler, Michael, 4,536,178, Cl. 604-15.000.
International Standard Electric Corporation: *See—*
Hafner, Ulrich, 4,536,730, Cl. 335-213.000.
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International Telephone & Telegraph Corp.: *See—*
Cyrot, Luc P., 4,536,728, Cl. 335-182.000.
Morton, Steven G., 4,536,855, Cl. 364-786.000.
International Toner Specialties: *See—*
Mehl, Wolfgang, 4,536,462, Cl. 430-106.000.
InterNorth, Inc.: *See—*
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Hignett, Geoffrey J.; Rowbottom, Kenneth T.; and Sanderson, William R., 4,536,313, Cl. 252-100.000.
Inui, Toshiharu; and Moriguchi, Haruhiko, to Fuji Xerox Co., Ltd. Thermal head drive circuit. 4,536,774, Cl. 346-76.0PH.
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Bergen, Henry M.; Zaimi, Sedat; Castellano, Vincenzo; and Schildkraut, Irwin, 4,536,621, Cl. 179-99.00R.
Ippolito, Serge; and Cagnioncle, Georges A., to Charbonnages de France; and Cocentall - Ateliers de Carspach. Drill bit for jet assisted rotary drilling. 4,535,853, Cl. 175-404.000.
Ireland, Edward J. Dental matrix band. 4,536,155, Cl. 433-39.000.
Irgang, Matthias: *See—*
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Irving, Christopher L.; and Osmalov, Jerome S., to Philip Morris, Inc. Tobacco rod firmness sensor. 4,535,789, Cl. 131-84.100.
ISCO, Inc.: *See—*
Allington, Robert W., 4,536,091, Cl. 356-435.000.
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Takamatsu, Toshiaki; Funada, Fumiaki; Ishii, Yutaka; and Wada, Tomio, 4,536,060, Cl. 350-343.000.
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Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.
Isikawa, Minoru: *See—*
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Isobe, Nobuyuki: *See—*
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Isogai, Mitsuhiro, to Sony Corporation. Thermal transfer printing apparatus. 4,536,772, Cl. 346-76.0PH.
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Italtel Societa Italiana Telecomunicazioni: *See—*
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Itek Corporation: *See—*
Kunica, Serge, 4,536,069, Cl. 354-265.000.
Ito, Akio; Matsuda, Shunsuke; Murakami, Yoshinobu; and Tamura, Tooru, to Matsushita Electric Industrial Co., Ltd. Plastic lens of neopentyl glycol dimethacrylate copolymerized with methoxy diethylene glycol methacrylate or diethylene glycol dimethacrylate. 4,536,267, Cl. 204-159.230.
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, to Meiji Seika Kaisha Ltd. Antiviral agents. 4,536,398, Cl. 514-43.000.
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Iwaoka, Hideto; Fujino, Kenji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, to Yokogawa Hokushin Electric Corporation. Method and apparatus for examination by nuclear magnetic resonance. 4,536,712, Cl. 324-309.000.
Iwasaki, Hiroshi: *See—*
Kondo, Mitsuru; Iwasaki, Hiroshi; Omura, Haruo; and Kanda, Nobuo, 4,536,220, Cl. 106-21.000.
Iwatsu Electric Co., Ltd.: *See—*
Kokaji, Norio; and Kinoshita, Kunio, 4,536,773, Cl. 346-74.200.
Iwayanagi, Takao: *See—*
Matsuzawa, Toshiharu; Douta, Kikuo; Iwayanagi, Takao; and Yanazawa, Hiroshi, 4,536,421, Cl. 427-282.000.
Izumi, Asashiro; Mikami, Yoshiharu; and Yamada, Seiji, to Kabushiki Kaisha Ishida Koki Seisakusho. Article discharge apparatus and method in automatic weighing system. 4,535,855, Cl. 177-1.000.
J. Eberspacher: *See—*
Langen, Herbert; Reiser, Peter; and Kenner, Erich, 4,536,151, Cl. 431-1.000.
Jablway, Ali N.; and Mitchell, Alexander M., to AT&T Technologies, Inc. Method and apparatus for testing cable wire connected to terminals at a remote location. 4,536,703, Cl. 324-52.000.
Jackson, Dawn A.: *See—*
Wheeler, Jennifer M.; and Jackson, Dawn A., 4,536,821, Cl. 361-321.000.
Jacob, Eugene E.: *See—*
Livingston, William D.; and Jacob, Eugene E., 4,536,877, Cl. 370-94.000.
Jacobine, Anthony F.: *See—*
Fabrizio, Louis F.; Lin, Samuel O. S.; and Jacobine, Anthony F., 4,536,265, Cl. 204-159.130.
Jacobs, John W.: *See—*
Bookout, Russell J.; Pearson, Bernard A.; and Jacobs, John W., 4,536,137, Cl. 417-390.000.
Jacobsen, Finn, to Kamyr AB. Method for treatment of suspensions in movement. 4,535,497, Cl. 8-156.000.
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., to Danfoss A/S. Thermal servo-motor, particularly for valves. 4,535,590, Cl. 60-531.000.
Jageler, Alfred H., to Standard Oil Company (Indiana). Method and apparatus for obtaining selected samples of formation fluids. 4,535,843, Cl. 166-250.000.
Jagenberg AG: *See—*
Buchholz, Rainer; Tomashauser, Josef; Zodrow, Rudolf; and Mohn, Hans-Werner, 4,536,247, Cl. 156-477.100.
Jakobs, Rudolf: *See—*
Albrecht, Johannes; Jakobs, Rudolf; Turna, Osman; Vierrath, Helmut; Weil, Manfred; and Zapke, Klaus, 4,536,193, Cl. 48-77.000.
James Howden & Company: *See—*
Groeneveld, Michiel J.; Verver, Albert B.; and Van Swaaij, Willibrordus P. M., 4,535,551, Cl. 34-170.000.
Jameson, Calvin R., to Nordson Corporation. Hot melt adhesive system. 4,535,919, Cl. 222-190.000.
Jankot, Alan L., to United Technologies Corporation. Turbine blade with disk rim shield. 4,536,129, Cl. 416-95.000.
Janson, Bengt G., to AB Spray Technics S.T. Method for separating coarse particles from a liquid. 4,536,295, Cl. 210-804.000.
Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 4,535,926, Cl. 227-67.000.
Jaqua, Vance W., to Rockwell International Corporation. Method of forming small-diameter channel within an object. 4,535,518, Cl. 29-157.00C.
Jaquet, Henri, to Jaquet Orthopedic S.A. External bone-anchoring element. 4,535,763, Cl. 128-92.00A.
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Jaquet, Henri, 4,535,763, Cl. 128-92.00A.
Jaskolski, Stanley V.: *See—*
Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,536,884, Cl. 378-119.000.
Jastram-Werke GmbH KG, Firma: *See—*
Petersen, Fred, 4,535,714, Cl. 114-162.000.
Jefferies, Patrick J.: *See—*
Hung, William M.; and Jefferies, Patrick J., 4,536,367, Cl. 422-37.000.
Jenkins, Thomas E., to General Electric Company. Method of assembling a rack-supporting channel and stop. 4,535,524, Cl. 29-453.000.
Jenner, Frank H.: *See—*
Smith, John L.; and Jenner, Frank H., 4,536,051, Cl. 339-117.00P.
Jensen, Garold K. Comprehensive intruder-environmental hazard detection, control, and action system. 4,536,747, Cl. 340-502.000.
Jensen, Susan: *See—*
Wolfe, Saul; Westlake, Donald; and Jensen, Susan, 4,536,476, Cl. 435-183.000.
Jeong, Seo Y.: *See—*
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,536,572, Cl. 536-179.000.
Jeppsson, Jan-Bertil: *See—*
Claren, Jan S.; Jeppsson, Jan-Bertil; and Staehr, Peter R., 4,535,635, Cl. 73-756.000.
Jerome, Jonathan A.; Neu, Frank D.; and Wohlmut, Peter G., to Videonics of Hawaii, Inc. Information retrieval system and apparatus. 4,536,866, Cl. 369-112.000.
Jet AER Corporation: *See—*
Friedman, Harry; Sengoku, Isao; Hattori, Yukiro; and Isikawa, Minoru, 4,535,539, Cl. 30-161.000.
JGC Corporation: *See—*
Maeda, Keikichi; Iijima, Takahiro; and Sato, Eiichi, 4,536,455, Cl. 428-629.000.
Jidosha Kiki Co., Ltd.: *See—*
Kajikawa, Hiromi; and Sugita, Masao, 4,535,519, Cl. 26-157.10R.
Kobayashi, Michio, 4,535,591, Cl. 60-554.000.
Jikihara, Tetsuo; Oda, Masatsugu; Natsume, Bunji; Watanabe, Hisao; and Suzuki, Seiichi, to Mitsubishi Chemical Industries Ltd. N-(3-substituted oxyphenyl)tetrahydrophthalimides and herbicidal composition. 4,536,209, Cl. 71-96.000.
Jillie, Don W.: *See—*
Kroger, Harry; Jillie, Don W.; and Smith, Lawrence N., 4,536,414, Cl. 427-38.000.
Jin, Sungho; and Tiefel, Thomas H., to AT&T Bell Laboratories. Fe-Ni-Mo magnet alloys and devices. 4,536,229, Cl. 148-31.550.

Jochems, Pieter J. W., to U.S. Philips Corporation. Method of making semiconductor devices by forming an impurity adjusted epitaxial layer over out diffused buried layers having different lateral conductivity types. 4,535,529, Cl. 29-571.000.

Johanson, Leonard T.; and Forrester, Harry L., to Dicken Manufacturing Company. Check valve. 4,535,808, Cl. 137-543.000.

Johansson, Karl N. G.: *See*—
Helgstrand, Åke J. E.; Johansson, Karl N. G.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,536,400, Cl. 514-120.000.

Johansson, Magnus: *See*—
Brynielsson, Thore; Tomasson, Tom; Ahlberg, Leif; and Johansson, Magnus, 4,536,004, Cl. 280-166.000.

Johnson, Chris G.: *See*—
Baker, Donn; Clarke, John E.; and Johnson, Chris G., 4,536,052, Cl. 339-126.00R.

Johnson, Gerald W. Surgical instrument for suction lipolysis. 4,536,180, Cl. 604-268.000.

Johnson, Harlan: *See*—
Bull, Jeffrey F.; Johnson, Harlan; Karg, James F.; and Winiasz, Michael E., 4,535,674, Cl. 87-29.000.

Johnson, Marion: *See*—
Murley, Jackie D.; and Johnson, Marion, 4,536,148, Cl. 425-387.100.

Johnson, Robert A., to Magnetic Peripherals. Apparatus and method for shielding magnetic heads during a sputtering operation. 4,536,270, Cl. 204-192.00R.

Johnson, Robert L.: *See*—
Roberts, Jack; and Johnson, Robert L., 4,535,486, Cl. 623-22.000.

Johnson, Stephen L.: *See*—
Ingram, Wayne A.; Johnson, Stephen L.; and Coleman, Thomas E., 4,536,823, Cl. 361-355.000.

Johnson, Theodore R.: *See*—
Kitrilakis, Sotiris; and Johnson, Theodore R., 4,535,778, Cl. 128-635.000.

Johnston, Ralph H.; Munden, Curtis D.; and Sheldrake, Leonard J., to General Motors Corporation. Vehicle electrical energy management system. 4,536,697, Cl. 322-14.000.

Jones, Addison B.; and Plonski, Siegfried G., to Rockwell International Corporation. Embedded absorber X-ray mask and method for making same. 4,536,882, Cl. 378-35.000.

Jones, Dixon J. Connector device. 4,536,101, Cl. 403-389.000.

Jones, Edward M., Jr., to Chemical Research & Licensing Company. Contact structure for use in catalytic distillation. 4,536,373, Cl. 422-211.000.

Jones, Harold; and Bell, David J., to Link 51 Limited. Shelving. 4,535,898, Cl. 211-153.000.

Jones, Mary A.; and Tucker, Donna L. Fitted sheet for lounge chair. 4,536,028, Cl. 297-224.000.

Jones, Stephen H., to Nordson Corporation. Skin packaging machine having microprocessor-based control. 4,535,582, Cl. 53-52.000.

Jones, Thomas F.; and Morehead, Jesse L. Sighting apparatus. 4,535,544, Cl. 33-265.000.

Jordan, Ross W. Log holder for use in splitting logs. 4,535,980, Cl. 269-102.000.

Joy Manufacturing Company: *See*—
Babbitt, Brett A.; Le, Tri C.; and Noble, Bruce P., 4,535,967, Cl. 251-54.000.

Judd, Duncan B.: *See*—
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

Jung, Gerhard: *See*—
Cooks, Graham; Story, Michael S.; Jung, Gerhard; and Dobberstein, Peter, 4,536,652, Cl. 250-281.000.

Junge, Bodo; and Muller, Lutz, to Baker Aktiengesellschaft. Saturated aminocyclitol derivatives, their preparation and medicaments containing these compounds. 4,536,493, Cl. 514-25.000.

Justus, Edgar J., to Beloit Corporation. Extended nip press. 4,536,255, Cl. 162-358.000.

KabiVitrum AB: *See*—
Bergwitz-Larsen, Carl-Aage; and Osterlund, Rolf G. L., 4,536,495, Cl. 514-54.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See*—
Haze, Setsuo, 4,535,857, Cl. 177-50.000.
Izumi, Asashiro; Mikami, Yoshiharu; and Yamada, Seiji, 4,535,855, Cl. 177-1.000.

Kabushiki Kaisha Komatsu Seisakusho: *See*—
Baba, Kiyokazu, 4,536,118, Cl. 414-43.000.
Ishikawa, Tadayuki, 4,536,195, Cl. 51-293.000.
Nakamura, Masaru; and Kuse, Takashi, 4,535,681, Cl. 91-527.000.
Sato, Kan-ichi; Yamanishi, Akio; and Higashino, Takashi, 4,535,831, Cl. 164-33.000.

Kabushiki Kaisha Masuda Seisakusho: *See*—
Masuda, Masao, 4,535,611, Cl. 68-202.000.

Kabushiki Kaisha Ohmori Seisakusho: *See*—
Omori, Hatsutaro, 4,535,953, Cl. 242-84.21R.

Kabushiki Kaisha Suwa Seikosha: *See*—
Okonogi, Itaru; and Shimoda, Tatsuya, 4,536,233, Cl. 148-101.000.

Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho: *See*—
Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, 4,536,010, Cl. 280-802.000.

Kabushiki Kaisha Toshiba: *See*—
Ohtake, Yasuhisa; Tanaka, Hiroshi; and Oka, Koichiro, 4,536,226, Cl. 148-12.00C.

Kachik, Robert H., to United States Steel Corporation. Aluminothermic reduction reaction mixture. 4,536,237, Cl. 149-37.000.

Kaehler, James A.: *See*—
Erickson, Mark R.; and Kaehler, James A., 4,536,847, Cl. 364-516.000.

Kahling, Joachim: *See*—
Engel, Wolfhard; Bauer, Eckhart; Trummlitz, Gunter; Danneberg, Peter; and Kahling, Joachim, 4,536,402, Cl. 514-443.000.

Kaire, Jean C., to Thomson-CSF. Microphone or mouthpiece signal suppression circuit. 4,536,616, Cl. 179-81.00A.

Kaiser, William J.: *See*—
Logothetis, Eleftherios M.; and Kaiser, William J., 4,536,241, Cl. 156-89.000.

Kajikawa, Hiromi; and Sugita, Masao, to Jidosha Kiki Co., Ltd. Method of manufacturing a valve sleeve. 4,535,519, Cl. 26-157.10R.

Kakalec, Robert J.: *See*—
Basarath, Brian A.; and Kakalec, Robert J., 4,536,715, Cl. 330-2.000.

Kakei, Tsutomu: *See*—
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.

Kali und Salz AG: *See*—
Loblich, Karl-Richard, 4,536,376, Cl. 423-306.000.

Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti. Cement for the manufacture of cores and moulds and method for preparing same. 4,536,216, Cl. 106-38.300.

Kalynchuk, Daniel G.: *See*—
Papadakis, Nicholas; and Kalynchuk, Daniel G., 4,536,274, Cl. 204-433.000.

Kamei, Masayuki; Endo, Tomio; and Hashimoto, Yutaka, to Dainippon Ink and Chemicals, Inc.; and Kawamura Institute of Chemical Research. Aqueous foam fire extinguisher. 4,536,298, Cl. 252-8.050.

Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, to Pioneer Electronic Corporation. Cassette tape player having supply and take-up motors positioned vertically above a cassette receiving mechanism. 4,536,811, Cl. 360-96.600.

Kamino, Yukishige: *See*—
Saito, Makoto; Sakamoto, Masakatsu; Uchida, Kenji; and Kamino, Yukishige, 4,536,131, Cl. 417-102.000.

Kaminski, Elton G., to Stolle Corporation, The. Method for reducing ice and snow build-up on the reflecting surfaces of dish antennas. 4,536,765, Cl. 343-704.000.

Kaminski, Joan M.: *See*—
Horodysky, Andrew G.; and Kaminski, Joan M., 4,536,309, Cl. 252-33.000.

Kamiya, Yoshinori: *See*—
Narita, Ryuhei; Aida, Hiroyuki; and Kamiya, Yoshinori, 4,535,503, Cl. 16-382.000.

Kamp, Heinz: *See*—
Rohner, Joachim; and Kamp, Heinz, 4,535,945, Cl. 242-35.60R.

Kamuro, Setsufumi, to Sharp Kabushiki Kaisha. Cross-coupled inverters static random access memory. 4,536,859, Cl. 365-154.000.

Kamyr AB: *See*—
Jacobsen, Finn, 4,535,497, Cl. 8-156.000.

Kanayama, Kenji; and Kinkori, Shuzo, to Nippondenso Co., Ltd. Flat type rotary electric machine. 4,536,672, Cl. 310-268.000.

Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, to Canon Kabushiki Kaisha. Photoconductive member. 4,536,460, Cl. 430-57.000.

Kanbe, Junichiro: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,536,459, Cl. 430-57.000.

Kanda, Nobuo: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Omura, Haruo; and Kanda, Nobuo, 4,536,220, Cl. 106-21.000.

Kandybowski, Steven J.; and Sucheski, Matthew M., to AMP Incorporated. Stamped and formed stacking device for circuit boards and a method for making. 4,536,055, Cl. 339-258.00R.

Kaneaki, Tetsuhiko: *See*—
Kawamoto, Kinji; Tsukamoto, Masao; Murase, Kazuhiro; Kaneaki, Tetsuhiko; and Nikaido, Masataka, 4,536,853, Cl. 364-718.000.

Kaneda, Yutaka; and Ohga, Juro, to Nippon Telegraph & Telephone Public Corporation. Microphone-array apparatus and method for extracting desired signal. 4,536,887, Cl. 381-92.000.

Kaneko, Youji, to Casio Computer Co., Ltd. Touch response apparatus for electronic musical apparatus. 4,535,669, Cl. 84-1.260.

Kano, Hikaru: *See*—
Fujiki, Toshiaki; and Kano, Hikaru, 4,535,581, Cl. 52-746.000.

Kanzaki Paper Manufacturing Co., Ltd.: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Omura, Haruo; and Kanda, Nobuo, 4,536,220, Cl. 106-21.000.

Kao Soap Co., Ltd.: *See*—
Suzuki, Toshiyuki; Nakamura, Tohru; and Tsutsumi, Hisao, 4,536,519, Cl. 514-785.000.

Kardys, Joseph A., to Pfizer Inc. Process and intermediates for production of benzothiazine carboxamides. 4,536,573, Cl. 544-49.000.

Karg, Daniel W.: *See*—
Bull, Jeffrey F.; Karg, Daniel W.; and Winiasz, Michael E., 4,535,675, Cl. 87-29.000.

Karg, James F.: *See*—
Bull, Jeffrey F.; and Winiasz, Michael E., 4,535,672, Cl. 87-29.000.
Bull, Jeffrey F.; Johnson, Harlan; Karg, James F.; and Winiasz, Michael E., 4,535,674, Cl. 87-29.000.

Bull, Jeffrey F.; Karg, Daniel W.; and Winiasz, Michael E., 4,535,675, Cl. 87-29.000.
Winiasz, Michael E., 4,535,673, Cl. 87-29.000.

Karlsson, Per G., to Alfa-Laval Separation AB. Assembly comprising a vortex fluidic device for separating a mixture of a liquid phase and a relatively heavy, solid phase. 4,536,285, Cl. 210-96.100.

Kasahara, Shin-ichi: *See*—
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,536,631, Cl. 219-10.770.

Kasai, Yoshiaki: *See*—
Kudo, Ichiro; Kasai, Yoshiaki; and Yuasa, Masaharu, 4,535,739, Cl. 123-425.000.

Kasei Optonix, Ltd.: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,536,436, Cl. 428-212.000.

Kasten, Alan J., to Harris Corporation. Polysilicon thin films of improved electrical uniformity. 4,536,231, Cl. 148-33.100.

Kasubuchi, Takeshi; Hara, Takeo; and Ozawa, Kaoru, to Sharp Kabushiki Kaisha. Data control system for storing digital and audio information on a magnetic tape. 4,536,804, Cl. 360-4.000.

Kasuya, Yoshihiro, to Nippon Electric Co., Ltd. Integrated logic circuit adapted to performance tests. 4,536,881, Cl. 377-70.000.

Katayama, Yoshio: *See*—
Hasegawa, Makoto; Makimoto, Mitsuo; Yamashita, Sadahiko; and Katayama, Yoshio, 4,536,724, Cl. 331-177.00V.

Kater, John A. R. Measurement of body fluid chemistry. 4,535,786, Cl. 128-760.000.

Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, to CPC International Inc. Thermostable glucoamylase and method for its production. 4,536,477, Cl. 435-205.000.

Kato, Hirohiko; Ichijima, Seiji; Adachi, Keiichi; and Watanabe, Toshiyuki, to Fuji Photo Film Co., Ltd. Silver halide color photographic light-sensitive material. 4,536,472, Cl. 430-505.000.

Kato, Hiroshi; and Kubota, Hiromitsu, to Victor Company of Japan, Ltd. Display device for a magnetic tape recording and/or reproducing apparatus. 4,536,807, Cl. 360-72.300.

Kato, Yoshiaki: *See*—
Nawa, Akiyoshi; and Kato, Yoshiaki, 4,536,634, Cl. 219-74.000.

Katsura, Tadashi: *See*—
Masuko, Fujio; and Katsura, Tadashi, 4,536,599, Cl. 564-124.000.

Katz, Maurice, to Creusot-Loire. Sealing device for hydraulic energy dissipator of the telescopic type. 4,535,998, Cl. 277-212.0FB.

Kaufmann, Lothar; and Hellwig, Klaus-Dieter, to Degussa Aktiengesellschaft. Method for preparation of alkali metal selenates. 4,536,383, Cl. 423-508.000.

Kaul, Martin: *See*—
Opprecht, Paul; Weil, Wolfgang; and Kaul, Martin, 4,536,636, Cl. 219-83.000.

Kautter, William J., Jr.: *See*—
Gard, Eric A.; Kautter, William J., Jr.; and Bartsch, Kenneth E., 4,535,854, Cl. 177-1.000.

Kavesh, Sheldon; and Prevorsek, Dusan C., to Allied Corporation. High tenacity, high modulus polyethylene and polypropylene fibers and intermediates therefore. 4,536,536, Cl. 524-462.000.

Kawai, Hisasi: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, 4,535,735, Cl. 123-310.000.

Kawai, Tohru: *See*—
Sumi, Akiyasu; and Kawai, Tohru, 4,536,057, Cl. 350-318.000.

Kawai, Yoshio: *See*—
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,536,605, Cl. 585-640.000.

Kawamoto, Kinji; Tsukamoto, Masao; Murase, Kazuhiro; Kaneaki, Tetsuhiko; and Nikaido, Masataka, to Matsushita Electric Industrial Co. Ltd. Multiple wave generator. 4,536,853, Cl. 364-718.000.

Kawamura Institute of Chemical Research: *See*—
Kamei, Masayuki; Endo, Tomio; and Hashimoto, Yutaka, 4,536,298, Cl. 252-8.050.

Kawanishi, Toshiyuki; and Tabata, Yukio, to Ricoh Company, Ltd. Electrothermic non-impact recording material. 4,536,437, Cl. 428-212.000.

Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Horiuchi, Hajimu; and Sakaguchi, Akira, 4,536,637, Cl. 219-117.100.

Kawasaki Kasei Chemicals Ltd.: *See*—
Komatsu, Tatsuyoshi; Numata, Shigeaki; Sumino, Toshihiko; Matsuzaki, Katsumi; Narita, Masao; and Hioki, Katsuhiko, 4,536,337, Cl. 260-396.00R.

Kawazoe, Yuzuru: *See*—
Kimijima, Norio; and Kawazoe, Yuzuru, 4,536,615, Cl. 179-81.00B.

Kay, Duncan A.: *See*—
Musto, Franklyn K.; Bourn, Hugh E.; Buchanan, John; and Kay, Duncan A., 4,535,477, Cl. 2-2.10R.

Kaye, Lawrence A.; and Mayer, Robert, to Giga-Tronics, Inc. Apparatus for rapidly switching a controlled signal source and method therefor. 4,536,722, Cl. 331-117.00D.

Kayser, Robert B.; and Purcell, Robert F., to Angus Chemical Company. Micellar solution for recovering crude oil. 4,536,300, Cl. 252-8.55D.

Kazuno, Yuzo: *See*—
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.

Kearney-National, Inc.: *See*—
Osborne, Anthony, 4,536,822, Cl. 361-340.000.

Kearney & Trecker Corporation: *See*—
Kielma, Ervin J., 4,536,111, Cl. 409-80.000.

Kedem, Abraham. Mixing device. 4,536,092, Cl. 366-265.000.

Keenan, Robert E., to A. H. Robins Company, Inc. Method of controlling emesis caused by cisplatin in cancer chemotherapy. 4,536,386, Cl. 424-10.000.

Keener, Everett L.: *See*—
Boggs, William E.; and Keener, Everett L., 4,536,194, Cl. 48-180.100.

Kelfve, Sten S.: *See*—
Hansen, Bertil V.; Kelfve, Sten S.; and Mollberg, Henri R., 4,536,187, Cl. 44-51.000.

Keller, Gordon: *See*—
Shah, Hemen V.; Mashikian, Victor; Seaton, John; and Keller, Gordon, 4,536,839, Cl. 364-200.000.

Keller Industries, Inc.: *See*—
Cornell, Howell N., 4,536,026, Cl. 297-39.000.

Keller, Paul: *See*—
Heiligman, Randy B.; and Keller, Paul, 4,535,918, Cl. 222-185.000.

Keller, Tony W.; and Muller, Wolfgang, to Bruker Analytische MeBtechnik GmbH. Cooling device for a low temperature magnet system. 4,535,595, Cl. 62-3.000.

Kells Medical, Incorporated: *See*—
Sheehan, Joseph C. M., 4,535,772, Cl. 128-337.000.

Kelly, Guy M.: *See*—
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., 4,535,892, Cl. 209-3.300.

Kemmner, Ulrich: *See*—
Kubach, Hans; Kemmner, Ulrich; and Grimm, Gerold, 4,536,731, Cl. 335-272.000.

Kemotron A/S: *See*—
Bertelsen, Per M., 4,536,253, Cl. 162-30.110.

Kemper, Kyran B., to AT&T Bell Laboratories. Magnetic current sensor. 4,536,706, Cl. 324-117.00R.

Kenmochi, Hirohito: *See*—
Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.

Kenmostu, Isami; and Isobe, Nobuyuki, to Pioneer Electronic Corporation. Bookshelf type record player. 4,536,865, Cl. 369-75.200.

Kennard, Walter E.: *See*—
Terrones, Johnny; and Kennard, Walter E., 4,535,796, Cl. 137-45.000.

Kennecott Corporation: *See*—
Patarcity, Adam J., 4,536,018, Cl. 285-229.000.

Kennedy, Peter; and Parkinson, Kenneth, to United Kingdom Atomic Energy Authority. Reaction bonded silicon carbide artefacts. 4,536,449, Cl. 428-408.000.

Kenner, Erich: *See*—
Langen, Herbert; Reiser, Peter; and Kenner, Erich, 4,536,151, Cl. 431-1.000.

Kent Products, Inc.: *See*—
Dorr, William C.; Hybarger, Kenneth C.; and Yurkinas, James A., 4,535,973, Cl. 254-323.000.

Keptel, Inc.: *See*—
Perry, Steven B., 4,536,617, Cl. 179-81.00R.

Kerber, Heinz; and Kerber, Hella, to Kerber, Hella. Method and apparatus for the manufacture of wire link bands. 4,535,824, Cl. 140-111.000.

Kerber, Hella: *See*—
Kerber, Heinz; and Kerber, Hella, 4,535,824, Cl. 140-111.000.

Kerbl, Maximilian: *See*—
Singer, Robert; Goetze, Richard; Maier, Karl; and Kerbl, Maximilian, 4,536,534, Cl. 524-262.000.

Kerekess, Tibor T.: *See*—
Boutaleb, Lucy A.; Boutaleb, Aboubekr; and Kerekess, Tibor T., 4,536,014, Cl. 283-83.000.

Kerr, James F., to Material Control, Inc. Shock mount telescoping conveyor belt cleaner. 4,535,883, Cl. 198-499.000.

Ketterer, Stanley J., to Singer Company, The. Looper-cam shifting arrangement for a sewing machine. 4,535,711, Cl. 112-199.000.

Khandros, Igor Y.; and Larson, Hugo R., to Abex Corporation. Erosion and corrosion resistant cast iron alloy containing chromium, nickel and molybdenum. 4,536,232, Cl. 148-35.000.

Kida, Kenji, to Komori Printing. Gripper opening/closing apparatus of sheet-fed rotary press. 4,535,691, Cl. 101-230.000.

Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, to Mitsubishi Gas Chemical Co., Inc. Process for the production of tertiary olefin. 4,536,605, Cl. 585-640.000.

Kielma, Ervin J., to Kearney & Trecker Corporation. Machine tool having numerically controlled adjustable arbor set up for straddle milling. 4,536,111, Cl. 409-80.000.

Kijima, Takao; Maebayashi, Jiro; and Ando, Fumitaka, to Mazda Motor Corporation. Vehicle rear suspension mechanism. 4,536,007, Cl. 280-701.000.

Kikkoman Corporation: *See*—
Furukawa, Toshio, 4,536,284, Cl. 209-305.000.

Killat, George R.; and Wilson, Larry R., to Dow Chemical Company, The. Polyamidoamine containing pendant ammonium moiety having crosslinking functionality. 4,536,552, Cl. 525-451.000.

Kim, Choung U.; and Micso, Peter F., Jr., to Bristol-Myers Company. Carbapenem antibiotics. 4,536,335, Cl. 260-245.20T.

Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., to University of Utah. Amido-phenyl-α-D-glucopyranoside derivatives. 4,536,572, Cl. 536-179.000.

Kimball International, Inc.: *See*—
Henriott, Jay M.; and Hostetter, David L., 4,535,703, Cl. 108-50.000.

Kimberly-Clark Corporation: *See—*
Ruth-Larson, Dawn; and Nels, James S., 4,535,481, Cl. 2-114.000.

Kimijima, Norio; and Kawazoe, Yuzuru, to Nitsuko Limited. Key telephone equipment and associated method. 4,536,615, Cl. 179-81.00B.

Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, to Asahi Kasei Kogyo Kabushiki Kaisha. Perfluoro vinyl ethers. 4,536,352, Cl. 260-543.00F.

King, James D.; and Riewerts, Erroll S., to Southwest Research Institute. Method and apparatus for measuring flow in a pipe or conduit. 4,536,711, Cl. 324-306.000.

Kinkori, Shuzo: *See—*
Kanayama, Kenji; and Kinkori, Shuzo, 4,536,672, Cl. 310-268.000.

Kinoshita, Kunio: *See—*
Kokaji, Norio; and Kinoshita, Kunio, 4,536,773, Cl. 346-74.200.

Kinoshita, Shigeji: *See—*
Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, 4,535,530, Cl. 29-571.000.

Kioritz Corporation: *See—*
Nagashima, Akira, 4,535,910, Cl. 220-377.000.

Kiricoples, Charles P.; Behrens, Henry; and Brown, Robert L., to Gillette Company, The. Writing instrument with ball point and two reservoirs. 4,536,099, Cl. 401-209.000.

Kirkpatrick, Lloyd V.; and McGee, John R., to Kirkpatrick-McGee, Inc. Fluid flow measurement system. 4,535,851, Cl. 175-38.000.

Kirkpatrick-McGee, Inc.: *See—*
Kirkpatrick, Lloyd V.; and McGee, John R., 4,535,851, Cl. 175-38.000.

Kirstein, Fritz, to Agfa-Gevaert Aktiengesellschaft. Forgery-proof information carrier. 4,536,015, Cl. 283-91.000.

Kirton, Douglas C.; MacNeill, Avril B.; and Verhagen, Laurentius A. M., to Lever Brothers Company. Spread having butter-like properties. 4,536,411, Cl. 426-603.000.

Kishi, Yoshito, to Meiji Seika Kaisha, Ltd. New anthracyclinones and their production. 4,536,336, Cl. 260-351.100.

Kitagishi, Nozomu; Suzuki, Kenji; and Sakai, Shinji, to Canon Kabushiki Kaisha. Apparatus for detecting a condition of sharpest focus. 4,536,073, Cl. 354-406.000.

Kitamura, Yukinori: *See—*
Nagumo, Shuzo; Ogura, Setsuo; and Kitamura, Yukinori, 4,536,784, Cl. 357-48.000.

Kitko, David J.: *See—*
Hardy, Frederick E.; Kitko, David J.; and Cambre, Cushman M., 4,536,314, Cl. 252-102.000.

Kitrilakis, Sotiris; and Johnson, Theodore R., to Ancet Corporation. Method and apparatus for detecting blood gas. 4,535,778, Cl. 128-635.000.

Kiyomiya, Yutaka: *See—*
Sasaki, Yutaka; Kiyomiya, Yutaka; Nakamura, Toshio; Nakamura, Yoshimi; and Yamaguchi, Masanori, 4,536,483, Cl. 502-20.000.

Klaschka, John T., to Sodic Societe Anonyme. Fluidised beds. 4,535,706, Cl. 110-245.000.

Klawitter, Jerome J.; and Cromie, Harry W., to Hemex, Inc. Suture rings for heart valves. 4,535,483, Cl. 623-2.000.

Klawitter, Ronald R., to Handi-Pac, Inc. Toy computer busy box assembly. 4,536,164, Cl. 446-143.000.

Klein, Joseph T.: *See—*
Davis, Larry; and Klein, Joseph T., 4,536,578, Cl. 544-360.000.

Klein, Schanzlin & Becker Aktiengesellschaft: *See—*
Feldle, Gunter; and Fischer, Klaus, 4,536,128, Cl. 415-219.00C.

Klijanowicz, James E.; and Kovacs, Csaba A., to Eastman Kodak Company. Color-forming carboxamidonaphthalene dye precursor and carboximide dye in photographic material and process. 4,536,598, Cl. 564-49.000.

Klingensmith, G. Bruce; Whitehead, Richard O.; and Higgins, Thair L., to Shell Oil Company. Rubberless high impact polypropylene. 4,536,537, Cl. 524-481.000.

Klinger, Dieter: *See—*
Plath, Ernst-Dieter; and Klinger, Dieter, 4,535,608, Cl. 66-9.00R.

Klossman, Charles W.: *See—*
Willitts, Benjamin R.; and Klossman, Charles W., 4,535,603, Cl. 62-196.400.

Klubitschko, Gerd, to Marker International Company. Indicator for safety ski binding. 4,535,718, Cl. 116-212.000.

Knirsch, Franco; Gianolini, Giovanni; Dagna, Gian D.; and Buat, Mario, to Ing. C. Olivetti & C., S.p.A. Ink-jet printing device. 4,536,776, Cl. 346-140.00R.

Knoke, Gerald S.: *See—*
Huffman, Lester H.; and Knoke, Gerald S., 4,536,035, Cl. 299-17.000.

Knoll International, Inc.: *See—*
Davis, Charles S., 4,536,833, Cl. 362-293.000.
Latone, Thomas L., 4,536,031, Cl. 297-353.000.

Knorr-Bremse GmbH: *See—*
Eder, Herbert, 4,536,040, Cl. 303-37.000.
Pollinger, Hans; Saumweber, Eckart; Schorwerth, Mathias; and Wirth, Xaver, 4,535,874, Cl. 188-73.100.

Knox, Jack M.: *See—*
Hung, William M.; and Knox, Jack M., 4,536,368, Cl. 422-37.000.

Kobayashi, Michio, to Jidosha Kiki Co., Ltd. Reaction force mechanism for brake power servo booster. 4,535,591, Cl. 60-554.000.

Kobayashi, Toshio: *See—*
Kodama, Masayuki; and Kobayashi, Toshio, 4,535,650, Cl. 74-665.0GA.

Kobayashi, Toshirou: *See—*
Hayashi, Motoshige; Kobayashi, Toshirou; Yoshii, Motokazu; Tsubone, Masahiro; and Ishikawa, Mikio, 4,536,357, Cl. 264-53.000.

Kobler, Armin: *See—*
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,535,709, Cl. 112-83.000.

Kodaira, Takanori, to Canon Kabushiki Kaisha. Focal length changeable camera. 4,536,068, Cl. 354-195.120.

Kodama, Hisashi; Hamamoto, Tooru; Tamura, Tetsuomi; Sato, Katsujiro; and Yamada, Kazuharu, to Aisin Seiki Kabushiki Kaisha. Self-contained hydraulic lash adjuster. 4,535,734, Cl. 123-90.580.

Kodama, Masayuki; and Kobayashi, Toshio, to Fuji Jukogyo Kabushiki Kaisha. Four-wheel driving apparatus with an automatic transmission. 4,535,650, Cl. 74-665.0GA.

Koe, B. Kenneth: *See—*
Welch, Willard M., Jr.; Harbert, Charles A.; Koe, B. Kenneth; and Kraska, Allen R., 4,536,518, Cl. 514-647.000.

Koehler, Richard F., Jr.: *See—*
Hauser, Oscar G.; Lysy, Dusan G.; and Koehler, Richard F., Jr., 4,536,080, Cl. 355-14.00D.

Kohler, Ramon C., to Caterpillar Tractor Co. Throttle linkage structure and method for its assembly and disassembly. 4,535,646, Cl. 74-501.00R.

Kohn, Gary A.: *See—*
Gano, John C.; and Kohn, Gary A., 4,535,968, Cl. 251-58.000.

Kohn, Henri-Armand, to Baltek Corp. Scrimless contourable core for use in laminated contoured structures. 4,536,427, Cl. 428-44.000.

Kojima, Tetsuhiko: *See—*
Sugimori, Shigeru; Kojima, Tetsuhiko; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,536,321, Cl. 252-299.630.

Kok, Paul, to International Business Machines Corporation. High power chip cooling device and method of manufacturing same. 4,535,841, Cl. 165-185.000.

Kokado, Hiroshi: *See—*
Nakatani, Kaname; Hanna, Junichi; and Kokado, Hiroshi, 4,536,461, Cl. 430-58.000.

Kokaji, Norio; and Kinoshita, Kunio, to Iwatsu Electric Co., Ltd. Magnetic recording apparatus with adjustable line density. 4,536,773, Cl. 346-74.200.

Kokusai Denshin Denwa Co., Ltd.: *See—*
Yamaguchi, Hirohisa; Yamada, Kazuo; and Miyasato, Tsutomu, 4,536,745, Cl. 340-347.0DD.

Komarov, Jury Y.: *See—*
Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev, Jury A., 4,536,041, Cl. 303-119.000.

Komatsu, Tatsuyoshi; Numata, Shigeaki; Sumino, Toshihiko; Matsuzaki, Katsumi; Narita, Masao; and Hioki, Katsuhiko, to Kawasaki Kasei Chemicals Ltd. Process for the preparation of quinones. 4,536,337, Cl. 260-396.00R.

Komatsubara, Masahiro: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,536,811, Cl. 360-96.600.

Komori Printing: *See—*
Kida, Kenji, 4,535,691, Cl. 101-230.000.

Kondo, Kenshi, to Nihon Den-Netsu Keiki Co., Ltd. Apparatus for applying molten wax onto printed circuit board. 4,535,722, Cl. 118-692.000.

Kondo, Mitsuru; Iwasaki, Hiroshi; Omura, Haruo; and Kanda, Nobuo, to Kanzaki Paper Manufacturing Co., Ltd. Fluoran derivatives as new compounds and recording system utilizing the same as colorless chromogenic material. 4,536,220, Cl. 106-21.000.

Kondrashkin, Alexandr S.: *See—*
Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev, Jury A., 4,536,041, Cl. 303-119.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Motohashi, Mitsuo; Nemoto, Mitsugu; and Tamura, Akihiko, 4,536,082, Cl. 355-3.0SH.
Nishi, Shinichi; Satoh, Taxey; Shimada, Fumio; and Takahashi, Toshiaki, 4,536,471, Cl. 430-495.000.
Uehara, Masafumi; Yamazaki, Atsuo; and Shimura, Kazuhiro, 4,536,465, Cl. 430-192.000.

Kontron Holding A.G.: *See—*
Marangoni, Daniele, 4,535,783, Cl. 128-711.000.

Koppl, Franz: *See—*
Hamster, Helmut; and Koppl, Franz, 4,536,642, Cl. 219-374.000.

Kordomenos, Panagiotis I., to Ford Motor Company. Chain extended epoxy-ester polymeric compositions for cationic electrodeposition. 4,536,558, Cl. 528-100.000.

Korenberg, Jakob, to York-Shipley, Inc. High turndown ratio fluidized bed reactor and method of operating the reactor. 4,535,707, Cl. 110-245.000.

Korneev, Valentin I.: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.

Kosaka, Yoshiteru: *See—*
Hirota, Akira; Miyahara, Hiroyuki; and Kosaka, Yoshiteru, 4,536,795, Cl. 358-160.000.

Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev,

Jury A., to Znameni Politekhnichesky Institut. Anti-lock brake system of a motor vehicle. 4,536,041, Cl. 303-119.000.
Kostin, Ivan M.: *See*—
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.
Kostorz, Jan R.: *See*—
Pawelzik, Manfred; Herring, William P.; and Kostorz, Jan R., 4,535,814, Cl. 137-625.170.
Kouno, Kageaki: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.
Kouno, Shuichiro: *See*—
Kubo, Yoshiaki; Takemura, Kaoru; and Kouno, Shuichiro, 4,536,206, Cl. 71-3.000.
Kovacs, Csaba A.: *See*—
Klijanowicz, James E.; and Kovacs, Csaba A., 4,536,598, Cl. 564-49.000.
Koyo Auto-Mech. Co., Ltd.: *See*—
Sano, Osamu, 4,535,798, Cl. 137-625.210.
Kozai, Yoshinori; Amemiya, Yoichi; and Asahara, Sunao, to Fanuc Ltd. Photoelectric converter-type pulse encoder. 4,536,649, Cl. 250-231.0SE.
Kramer, Daniel P., to United States of America, Energy. Pressurized heat treatment of glass-ceramic to control thermal expansion. 4,536,203, Cl. 65-29.000.
Kranz, Eckart; and Findeisen, Kurt, to Bayer Aktiengesellschaft. Process for preparing α-ketonitriles. 4,536,353, Cl. 260-545.00R.
Krappitz, Heinz: *See*—
Grell, Karl-Heinz; and Krappitz, Heinz, 4,535,885, Cl. 198-695.000.
Kraska, Allen R.: *See*—
Welch, Willard M., Jr.; Harbert, Charles A.; Koe, B. Kenneth; and Kraska, Allen R., 4,536,518, Cl. 514-647.000.
Krasnov, Igor: *See*—
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Krause Plow Corporation: *See*—
Pfenninger, Billy J.; and Stansel, F. Harrison, 4,535,848, Cl. 172-311.000.
Krause, Warren H.: *See*—
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Krauss-Maffei AG: *See*—
Hultsch, Gunther, 4,536,288, Cl. 210-325.000.
Krecke, Edmond D. Process for the production of leather base material. 4,536,430, Cl. 428-151.000.
Krehan, Ingomar: *See*—
Sirrenberg, Wilhelm; Marhold, Albrecht; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,536,587, Cl. 549-366.000.
Kriz, Miroslav; and Harris, Kenneth M., to Lucas Industries plc. Reciprocating plunger fuel injection pump. 4,535,641, Cl. 74-53.000.
Krochevsky, Vladislav A.: *See*—
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.
Kroger, Harry; Jillie, Don W.; and Smith, Lawrence N., to Sperry Corporation. Superconductive tunnel junction device with enhanced characteristics and method of manufacture. 4,536,414, Cl. 427-38.000.
Kroger, Harry, to Sperry Corporation. Fabrication of superconductive tunneling junction resistors and short circuits by ion implantation. 4,536,781, Cl. 357-5.000.
Krohn, Ulrich: *See*—
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,535,683, Cl. 92-224.000.
Kroninger, Paul M., Jr.: *See*—
Binder, Paul B.; and Kroninger, Paul M., Jr., 4,536,820, Cl. 361-283.000.
Krude, Werner, to Uni-Cardan Aktiengesellschaft. Wheel hub assembly for a motor vehicle. 4,536,038, Cl. 301-124.00R.
Kruger, Robert A.; and Bateman, Wayne, to Thomson-CSF Broadcast, Inc. Apparatus and method for fluoroscopic imaging of a body. 4,536,790, Cl. 358-111.000.
Krumwiede, John F.; Harrell, William C.; Hilliard, William G.; and Harris, James E., to PPG Industries, Inc. Method for controlling currents in glass melter. 4,536,205, Cl. 65-135.000.
Krupa, Jerry J.: *See*—
Urban, Warren J.; Barillo, Joseph; and Krupa, Jerry J., 4,536,338, Cl. 260-400.000.
Kruse, Richard M.; Moffett, David J.; Patel, Madhu C.; and Barnes, Ronald L., to NCR Corporation. Optical card read/write scanning system. 4,536,648, Cl. 235-454.000.
Krynicki, Witold. Chip assembly. 4,536,638, Cl. 219-121.0LC.
Kubach, Hans; Kemmner, Ulrich; and Grimm, Gerold, to Robert Bosch GmbH. Electric control motor. 4,536,731, Cl. 335-272.000.
Kubec, Frantisek: *See*—
Rohlicek, Vojtech; Hruby, Jaroslav; Nohavica, Dusan; Hrdlicka, Jan; Vykouk, Vlastimil; and Kubec, Frantisek, 4,535,784, Cl. 128-735.000.
Kubina, Stephen J.: *See*—
Atkinson, Gordon E.; and Kubina, Stephen J., 4,535,819, Cl. 137-846.000.
Kubo, Miyuki: *See*—
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,536,749, Cl. 340-525.000.
Kubo, Yoshiaki; Takemura, Kaoru; and Kouno, Shuichiro, to Wako Pure Chemical Industries, Ltd. Miticidal composition and method for controlling spider mites. 4,536,206, Cl. 71-3.000.
Kubota, Hiromitsu: *See*—
Kato, Hiroshi; and Kubota, Hiromitsu, 4,536,807, Cl. 360-72.300.
Kubota, Hitoshi; Tanaka, Minoru; and Aiuchi, Susumu, to Hitachi, Ltd. Method for forming tapered films. 4,536,419, Cl. 427-255.500.
Kubota, Ltd.: *See*—
Hasegawa, Shigekazu; Okita, Naoki; and Machida, Satoshi, 4,535,847, Cl. 172-2.000.
Kubota, Nobunori: *See*—
Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, 4,535,944, Cl. 242-35.50A.
Kubota, Tatsushi: *See*—
Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, 4,536,010, Cl. 280-802.000.
Kudlacek, Donald S. Bowsight for compound archery bows. 4,535,747, Cl. 124-87.000.
Kudo, Ichiro; Kasai, Yoshiaki; and Yuasa, Masaharu, to Fuji Jukogyo Kabushiki Kaisha. System for preventing knocking in a combustion engine. 4,535,739, Cl. 123-425.000.
Kuehn, James: *See*—
Holzgang, Curtis R.; Leavitt, Mark K.; Doney, Alfred D.; and Kuehn, James, 4,536,755, Cl. 340-573.000.
Kuhn, Siegfried: *See*—
Horsky, Anton; Kuhn, Siegfried; and Voss, Wolf-Dietrich, 4,536,112, Cl. 409-134.000.
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, to Aktiengesellschaft Adolph Saurer. Switchable braking mechanism, especially for the individual threads of an embroidery machine. 4,535,709, Cl. 112-83.000.
Kuiper, Johnny, to Foolish Fantasies B.V. Vehicle with tiltable side walls. 4,535,933, Cl. 237-12.30A.
Kulkarni, Chidambar L.: *See*—
Lim, Drahoslav; Kulkarni, Chidambar L.; and Repella, Dennis A., 4,536,554, Cl. 526-264.000.
Kume, Hiroshi; and Tan, Yoichi, to Fuji Xerox Co., Ltd. Retransmission control system. 4,536,875, Cl. 370-85.000.
Kumura, Haruyoshi: *See*—
Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; Kumura, Haruyoshi; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,536,171, Cl. 474-28.000.
Kumura, Masao: *See*—
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,536,786, Cl. 357-68.000.
Kunica, Serge, to Itek Corporation. Two rotary blade camera shutter. 4,536,069, Cl. 354-265.000.
Kunieda, Hirohiko, to Hinomaru Seni Co., Ltd. One-piece garment. 4,535,480, Cl. 2-079.000.
Kunz, Peter: *See*—
Heubach, Rainer; Marx, Reinhard; Kunz, Peter; and Hauke, Dieter, 4,536,385, Cl. 423-621.000.
Kurahashi, Yasuo: *See*—
Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, 4,535,815, Cl. 137-625.480.
Kurashima, Hideo: *See*—
Imatani, Tsuneo; Yasumuro, Hisakazu; Watanabe, Michio; Kurashima, Hideo; and Ishibashi, Kazuhisa, 4,536,243, Cl. 156-274.600.
Kurata, Masami, to Fuji Xerox Co., Ltd. Facsimile apparatus. 4,536,802, Cl. 358-287.000.
Kurihara, Norimitsu; Suzuki, Toshiyasu; Iwanaga, Takashi; and Hisadomi, Masaru, to Honda Giken Kogyo Kabushiki Kaisha. Mount for an earth magnetism sensor for use in an automotive vehicle. 4,535,547, Cl. 33-356.000.
Kurihara, Norimitsu; and Imai, Takeshi, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for controlling power window of vehicle. 4,536,687, Cl. 318-480.000.
Kuse, Takashi: *See*—
Nakamura, Masaru; and Kuse, Takashi, 4,535,681, Cl. 91-527.000.
Kusuhara, Masakazu: *See*—
Yamawaki, Takesi, deceased; Kusuhara, Masakazu; and Saitou, Tatuya, 4,536,025, Cl. 296-37.160.
Kuwabara, Kunikazu: *See*—
Ebihara, Shigeto; Ohta, Atsuo; and Kuwabara, Kunikazu, 4,536,750, Cl. 340-539.000.
Kuzmin, Boris A.: *See*—
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.
Kylmanen, Pasi; and Takalo, Pasi, to Saastamoinen Oy. Feeding means for feeding solid fuel from a storage silo or equivalent into a solid fuel heating boiler. 4,536,120, Cl. 414-173.000.
Kyoeizoki Co., Ltd.: *See*—
Hayashi, Takeshi, 4,535,942, Cl. 241-36.000.
Kytta, Oswald O., to Bendix Corporation, The. Control valve for a brake booster. 4,535,679, Cl. 91-376.00R.

La Telemecanique Electrique: *See*—
Belbel, Elie; Blanchard, Christian; Fechant, Louis; Haury, Andre ; and Lauraire, Michel, 4,536,630, Cl. 200-151.000.
Lachonius, Leif, to Aktiebolaget SKF. Holder for railings, lists and the like. 4,535,963, Cl. 248-251.000.
Lacombe, Jean-Loup; and Brun, Claude, to Atochem. Process for preparation of a transition metal component for a catalytic system of polymerization of olefins. 4,536,484, Cl. 502-62.000.
Lacour, Alain P.: *See*—
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Santamaria, Raphael, 4,536,500, Cl. 514-212.000.
Ladell, Michael G.: *See*—
Bickerstaff, Alan E.; Cotton, Austin H.; Ladell, Michael G.; and Neale, David M., 4,536,076, Cl. 355-3.0FU.
LaFave, Charles H. Belt sander. 4,535,568, Cl. 51-148.000.
Lahti, Mauritz J. B., to Telefonaktiebolaget LM Ericsson. Telecommunication system for transmitting data information by means of a digital exchange. 4,536,872, Cl. 370-82.000.
Laib, Roger D.: *See*—
Speca, Anthony N.; and Laib, Roger D., 4,536,489, Cl. 502-162.000.
Laitram Corporation, The: *See*—
Lapeyre, James M., 4,535,871, Cl. 182-93.000.
Lala, Louis A.; and Frenchy, James H., to American Screen Printing Equipment Company. Curing apparatus. 4,535,549, Cl. 34-4.000.
Lambregts, Antonius A., to Boeing Company, The. Total energy based flight control system. 4,536,843, Cl. 364-434.000.
Lan, Yung-Huei. Film-made pump driven by the filling effect of a fluid on filling into a chamber made of film. 4,536,136, Cl. 417-389.000.
Lancaster, Loren T., to AT&T Bell Laboratories. Integrated circuit contact technique. 4,535,532, Cl. 29-576.00B.
Landa, Vaclav; and Blazek, Zdenek, to Stani vyzkumny ustav materialu. Anisotropic permanent magnets. 4,536,230, Cl. 148-31.570.
Landis, Phillip S.: *See*—
Braid, Milton; and Landis, Phillip S., 4,536,192, Cl. 44-68.000.
Horodysky, Andrew G.; and Landis, Phillip S., 4,536,306, Cl. 252-32.70E.
Landstrom, Sven. Device for underwater missiles for use against submerged submarines. 4,535,696, Cl. 102-380.000.
Landsverk, James B. Support apparatus. 4,535,984, Cl. 272-78.000.
Lang, Stephen C.; and Gili, Paul E., to Sanders Associates, Inc. High-power pulse generator using transmission line with spark discharge device. 4,536,723, Cl. 331-127.000.
Lange , Francois; and Cornet, Jean, to Thomson-CSF. Protected optical disk with a free layer holder. 4,536,868, Cl. 369-284.000.
Langen, Herbert; Reiser, Peter; and Kenner, Erich, to J. Eberspacher. Mixture preparation for engine-independent heaters. 4,536,151, Cl. 431-1.000.
Lapeyre, James M., to Laitram Corporation, The. Unitary stairway. 4,535,871, Cl. 182-93.000.
Laplante, Gilbert, to Compagnie Francaise d'Enterprises Metalliques. Propulsive-force jack installation for producing the continuous movement of an oblong object in the direction of its axis, and/or for moving an element along said object. 4,535,971, Cl. 254-108.000.
Lapple, Arnulf R.; and Nicopoulos, Alex, to Ciba-Geigy Corporation. Liquid preparation of cationic dye mixture containing aliphatic carboxylic acid for black dyeing. 4,536,185, Cl. 8-527.000.
Larson, David A. Electro-acoustic transducer with diaphragm and blank therefor. 4,536,623, Cl. 179-115.00R.
Larson, Hugo R.: *See*—
Khandros, Igor Y.; and Larson, Hugo R., 4,536,232, Cl. 148-35.000.
Laskaris, Evangelos T., to General Electric Company. Plug for horizontal cryostat penetration. 4,535,596, Cl. 62-45.000.
Latham, Roger A., to Du Pont de Nemours, E. I., and Company. High impact resistant polyamide. 4,536,541, Cl. 525-66.000.
Latone, Thomas L., to Knoll International, Inc. Back support control mechanism for a chair or the like. 4,536,031, Cl. 297-353.000.
Laufer, Helmut; Pfeifle, Helmut; and Straubel, Max, to Robert Bosch GmbH. Fuel injection pump for internal combustion engines. 4,535,742, Cl. 123-447.000.
Lauraire, Michel: *See*—
Belbel, Elie; Blanchard, Christian; Fechant, Louis; Haury, Andre ; and Lauraire, Michel, 4,536,630, Cl. 200-151.000.
Laurent, Henry: *See*—
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.
Laurent, Michel, to Glaverbel. Glazing units. 4,536,424, Cl. 428-34.000.
Lawhorne, Earl R., to American Cyanamid Company. Process for the reduction of the viscosity of high solids pigment slurries. 4,536,268, Cl. 204-182.400.
Le, Tri C.: *See*—
Babbitt, Brett A.; Le, Tri C.; and Noble, Bruce P., 4,535,967, Cl. 251-54.000.
Leadvaro, Stephen J.: *See*—
English, George; and Leadvaro, Stephen J., 4,536,831, Cl. 362-263.000.
Leavitt, Mark K.: *See*—
Holzgang, Curtis R.; Leavitt, Mark K.; Doney, Alfred D.; and Kuehn, James, 4,536,755, Cl. 340-573.000.
LeBlanc, James C. Engine cooling system for vehicles. 4,535,862, Cl. 180-68.100.
LeBlanco Limited: *See*—
Hebert, Philip J.; and Blanchette, Leon G., 4,535,750, Cl. 126-41.00B.
Lechaton, John S.: *See*—
Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.
Leclercq, Joseph, to Commissariat a l'Energie Atomique; and Framatome. Fuel assemblies for nuclear reactors. 4,535,523, Cl. 29-402.080.
Lee, Shy-Fuh; and Henrick, Clive A., to Zoecon Corporation. Phenoxyphenylaminoalkylphosphinates useful in weed control. 4,536,355, Cl. 260-944.000.
Leech, Edward H. Valve system for vacuum sewage collection system. 4,535,800, Cl. 137-205.000.
Leete, Tom G., to Honeywell Inc. Data transmission system. 4,536,873, Cl. 370-85.000.
Leiblein, Felix: *See*—
Fischer, Wolfgang; and Leiblein, Felix, 4,536,511, Cl. 514-404.000.
Leifeld, Ferdinand; and Hosel, Fritz, to Trutzschler GmbH & Co. KG. Method and apparatus for controlling and regulating machines of a textile fiber processing line. 4,535,511, Cl. 19-105.000.
Lein, Joseph: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.
Lejeune, Jean-Pierre: *See*—
Romand-Monnier, Jacques; and Lejeune, Jean-Pierre, 4,536,138, Cl. 417-422.000.
Leland Stanford Junior University, The Board of Trustees of The: *See*—
Shaw, Herbert J.; and Bergh, Ralph A., 4,536,058, Cl. 350-320.000.
Lelu, Andre ; Gonthier, Bruno; Grignon, Jean; and Tauzia, Jean-Michel, to Societe Nationale Des Poudres et Explosifs. Combustion inhibitors on a base of oxygenated polyurethane elastomer which contains fibers for the double base propellant. 4,536,235, Cl. 149-19.400.
Lemburg, John R.: *See*—
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., 4,536,791, Cl. 358-122.000.
Lemmon, Michael D.: *See*—
DiMassimo, Donald V.; May, John B.; and Lemmon, Michael D., 4,536,759, Cl. 340-706.000.
Lemole, Gerald M. Cardiovascular tourniquet. 4,535,770, Cl. 128-327.000.
Lemons, Thomas M., to Altman Stage Lighting Co., Inc. Replaceable light source assembly. 4,536,832, Cl. 362-264.000.
Lerner, Lawrence: *See*—
Ziegelheim, Irwin I.; and Lerner, Lawrence, 4,536,044, Cl. 312-257.00R.
Les Fils D'Auguste Scheuchzer S.A.: *See*—
Buhler, Fritz, 4,535,699, Cl. 104-7.00B.
L'Etat Francais: *See*—
Ramisse, Yves D.; Baboulet, Jean-Pierre C.; Vie, Michel P.; and Malaval, Paul C., 4,536,327, Cl. 252-511.000.
Lettau, Herbert: *See*—
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.
Lever Brothers Company: *See*—
Haq, Zia, 4,536,521, Cl. 521-146.000.
Kirton, Douglas C.; MacNeill, Avril B.; and Verhagen, Laurentius A. M., 4,536,411, Cl. 426-603.000.
Namnath, James S., 4,536,183, Cl. 8-107.000.
Urban, Warren J.; Barillo, Joseph; and Krupa, Jerry J., 4,536,338, Cl. 260-400.000.
Levitt, George, to Du Pont de Nemours, E. I., and Company. Agricultural sulfonamides. 4,536,576, Cl. 544-321.000.
Levy, Alan A.: *See*—
White, Christopher D.; and Levy, Alan A., 4,536,389, Cl. 424-44.000.
Lewis, Charles J.: *See*—
Morehouse, Alpha L.; and Lewis, Charles J., 4,536,408, Cl. 426-250.000.
Lewis, James E.: *See*—
Hettinger, William P., Jr.; and Lewis, James E., 4,536,281, Cl. 208-113.000.
Lewis, Paul H., to Texaco Inc. Process for dewaxing with mordenite. 4,536,486, Cl. 502-74.000.
Leyerle, Richard W.: *See*—
Welsh, Lawrence B.; and Leyerle, Richard W., 4,536,358, Cl. 264-81.000.
Li, Ching C. Carburetor. 4,536,356, Cl. 261-50.00R.
Li, Hung J.; and Husak, Leonid, to Westinghouse Electric Corp. Protective relay apparatus and method for providing single-pole tripping. 4,536,815, Cl. 361-47.000.
Librecht, Freddy M.: *See*—
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.
Licentia Patent-Verwaltungs-G.m.b.H.: *See*—
Hubler, Bodo-Hagen, 4,536,725, Cl. 333-204.000.
Rembold, Bernhard; and Solbach, Klaus, 4,536,767, Cl. 343-785.000.
Lichstein, Bernard; and Handler, Michael, to International Playtex, Inc. Tampon applicator. 4,536,178, Cl. 604-15.000.
Lieber, Ludwig: *See*—
Macherle, Gunter; and Lieber, Ludwig, 4,535,916, Cl. 222-113.000.

Lim, Drahoslav; Kulkarni, Chidambar L.; and Repella, Dennis A., to Barnes-Hind, Inc. Hydrophilic polymers and contact lenses made therefrom. 4,536,554, Cl. 526-264.000.

Lin, Jiang-Jen; and Alexander, David C., to Texaco Inc. Butadiene reductive dimerization using a platinum catalyst and polymeric amine promoter. 4,536,604, Cl. 585-601.000.

Lin, Ming-Hsin. Discharging protection device for battery-operated portable electric light. 4,536,695, Cl. 320-2.000.

Lin, Samuel O. S.: *See—*
Fabrizio, Louis F.; Lin, Samuel O. S.; and Jacobine, Anthony F., 4,536,265, Cl. 204-159.130.

Lindabury, Tryon S., Sr. Fluid tight joint and system of distributing fluids. 4,535,938, Cl. 239-269.000.

Lindahl, Gertrud M., to Boliden Aktiebolag. Stable solutions of basic aluminium sulphate containing polynucleate aluminium hydroxide sulphate complexes. 4,536,384, Cl. 423-556.000.

Linde, Lars H.: *See—*
Berglund, Lars G.; Bjorklund, Sven-Erik B.; and Linde, Lars H., 4,536,043, Cl. 312-222.000.

Lindemann, Rolf, to Hauni-Werke Korber & Co. KG. Apparatus for treating perforated webs of tipping paper or the like. 4,535,792, Cl. 131-281.000.

Linder, Kurt, to Mauser-Werke Oberndorf GmbH. Dynamic feeler head. 4,535,543, Cl. 33-169.00R.

Lindsay, Paul H., to General Electric Company. Quick attach-detach mechanism for audio components. 4,535,870, Cl. 181-141.000.

Lindskog, Kjell J. Manufacture of two part mold. 4,536,364, Cl. 264-227.000.

Link 51 Limited: *See—*
Jones, Harold; and Bell, David J., 4,535,898, Cl. 211-153.000.

Lion Corporation: *See—*
Fujiwara, Masami; Fukuda, Hidenori; and Tanaka, Minako, 4,536,324, Cl. 252-311.000.

Lippolis, Craig S.; and Nguyen, Tuan A., to Xerox Corporation. Servicing system for reproduction machines. 4,536,079, Cl. 355-14.00R.

Lisnyansky, Khaim, to International Paper Company. Method and apparatus for roll winding measurement. 4,535,950, Cl. 242-66.000.

Little, Victor, Jr.; and Thomas, Charles L., to ASARCO Incorporated. High-velocity gas burners. 4,536,152, Cl. 431-159.000.

Litton Systems, Inc.: *See—*
Price, Michael G.; Zehl, Otis G.; and Bonney, Robert D., 4,536,062, Cl. 350-358.000.

Liu, Bao-Horng: *See—*
Liu, Bao-Shen; and Liu, Bao-Horng, 4,535,542, Cl. 33-148.00E.

Liu, Bao-Shen; and Liu, Bao-Horng. Vernier gauge. 4,535,542, Cl. 33-148.00E.

Liu, Ping Y., to General Electric Company. Impact modified polycarbonate composition. 4,536,538, Cl. 524-508.000.

Livingston, William D.; and Jacob, Eugene E., to E-Systems, Inc. Tack-on acknowledgment in computer networks. 4,536,877, Cl. 370-94.000.

Llenado, Ramon A.; Mao, Mark H. K.; and Nicholson, Denzel A., to Procter & Gamble Company, The. Foaming surfactant compositions. 4,536,317, Cl. 252-174.170.

Llenado, Ramon A.: *See—*
Cook, Thomas E.; and Llenado, Ramon A., 4,536,318, Cl. 252-174.170.

Lo, Charng-Wen M.: *See—*
Sullivan, Lawrence B.; and Lo, Charng-Wen M., 4,536,862, Cl. 367-153.000.

Loblich, Karl-Richard, to Kali und Salz AG. Method of producing potassium magnesium phosphate. 4,536,376, Cl. 423-306.000.

Locacius, Robert F., to Felt Products Mfg. Co. Gasket assembly having a sealing member suspended in a clear-through opening and method of making same. 4,535,999, Cl. 277-235.00B.

Lochhead, Robert Y., Jr.: *See—*
George, Thomas R., Jr.; and Lochhead, Robert Y., Jr., 4,536,528, Cl. 524-313.000.

Loctite Corporation: *See—*
Fabrizio, Louis F.; Lin, Samuel O. S.; and Jacobine, Anthony F., 4,536,265, Cl. 204-159.130.

Loehrer, Fritz: *See—*
Blanc, Guy-Francois; and Loehrer, Fritz, 4,535,569, Cl. 51-165.900.

Loftin, Royal E.; and Son, Adelina J., to Halliburton Company. Well drilling and completion fluid composition. 4,536,297, Cl. 252-8.50C.

Logothetis, Eleftherios M.; and Kaiser, William J., to Ford Motor Company. Method of making a titanium dioxide oxygen sensor element with fast transient response. 4,536,241, Cl. 156-89.000.

London Fog, Inc.: *See—*
Tenney, William L., 4,536,132, Cl. 417-237.000.

Longacre, Andrew, Jr., to Welch Allyn Inc. Signal level control for video system. 4,535,758, Cl. 128-6.000.

Losert, Wolfgang: *See—*
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, to Ceskoslovenska akademie ved of Praha; and Akademie der Wissenschaften der DDR. Absorbing cover for wounds and the method for manufacturing thereof. 4,536,217, Cl. 106-122.000.

Loughlin, Bernard D., to Hazeltine Corporation. Distortion correcting AM stereo receiver with non-flat AGC. 4,536,885, Cl. 381-15.000.

Louth, Kenneth, to Ampex Corporation. Microprocessor controlled multiple servo system for a recording and/or reproducing apparatus. 4,536,806, Cl. 360-69.000.

Lovin, Arthur. Sand trap practice device. 4,535,989, Cl. 273-176.0FB.

LTV Aerospace and Defense Company: *See—*
Marek, Albert J., 4,536,693, Cl. 320-1.000.

Lubowitz, Hyman R.; and Sheppard, Clyde H., to Boeing Company, The. Thermally stable polyimide polysulfone compositions for composite structures. 4,536,559, Cl. 528-170.000.

Lucas Industries plc: *See—*
Kriz, Miroslav; and Harris, Kenneth M., 4,535,641, Cl. 74-53.000.

Lucas Industries, Public Limited Company: *See—*
Ingram, Brian; and England, Michael J., 4,535,875, Cl. 188-106.00F.
Skinner, Robert T. J., 4,535,939, Cl. 239-533.300.

Luccarelli, Domenick, Jr.: *See—*
Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., 4,536,299, Cl. 252-8.600.

Ludington, Charlotte E., to United States of America, Air Force. Hybrid Schottky infrared focal plane array. 4,536,658, Cl. 250-578.000.

Ludwig Boschert GmbH & Co., KG: *See—*
Fazis, Harald, 4,535,665, Cl. 83-556.000.

Luetzelschwab, Wayne E., to Marathon Oil Company. Method of using polymer flow control apparatus. 4,535,844, Cl. 166-252.000.

Luke, John A., to Brown & Williamson Tobacco Corporation. Smoking article filters. 4,535,793, Cl. 131-336.000.

Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, to Exxon Research and Engineering Co. Dilatant behavior of interpolymer complexes in aqueous solution. 4,536,539, Cl. 524-521.000.

Lundberg, Robert D.; and Phillips, Robert R., to Exxon Research and Engineering Co. Polymer complexes of a neutralized ionic polymer and a polycaprolactone polymer. 4,536,547, Cl. 525-186.000.

Lundberg, Robert D.: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Graessley, William W.; and Ver Strate, Gay, 4,536,310, Cl. 252-33.000.

Luoma, Van A.: *See—*
Stromberg, Paul C.; and Luoma, Van A., 4,535,671, Cl. 84-422.00S.

Luscher, Rene , to Gretag Aktiengesellschaft. Process and apparatus for the production of photographic prints from disk shaped masters. 4,536,083, Cl. 355-40.000.

Lutzmann, H. Harald: *See—*
Miller, Gerald W.; and Lutzmann, H. Harald, 4,536,532, Cl. 524-141.000.

Lyle, Stephen V., to T.A.D. Avanti, Inc. Telephone answering machine interface circuit. 4,536,624, Cl. 179-170.0NC.

Lyle, W. D., Jr., to Mobil Oil Corporation. Method of increasing the vertical resolution of well log data. 4,535,625, Cl. 73-152.000.

Lynn, Homer S. Method and apparatus for gathering beverage straws and the like. 4,535,662, Cl. 83-23.000.

Lyon, Richard F., to Fairchild Camera and Instrument Corporation. Method and apparatus for simulating aural response information. 4,536,844, Cl. 364-487.000.

Lyons, Christopher S.: *See—*
Anderson, Michael H.; Lyons, Christopher S.; and Wigness, Bruce D., 4,536,179, Cl. 604-266.000.

Lysy, Dusan G.: *See—*
Hauser, Oscar G.; Lysy, Dusan G.; and Koehler, Richard F., Jr., 4,536,080, Cl. 355-14.00D.

M.A.N. Maschinenfabrik: *See—*
Suppan, Anton, 4,535,884, Cl. 198-626.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See—*
Schubert, Johannes, 4,535,692, Cl. 101-337.000.

M. Lehmacher & Sohn GmbH Maschinenfabrik: *See—*
Dreckmann, Karl, 4,536,174, Cl. 493-194.000.

M.P. United Drug Company Limited: *See—*
Holt, Andrew; and White, David W., 4,536,375, Cl. 423-247.000.

M&T Chemicals Inc.: *See—*
Guthrie, Roger T., 4,536,140, Cl. 417-500.000.

Ma, Thomas T., to Ford Motor Company. Engine control systems. 4,535,738, Cl. 123-425.000.

Ma, Thomas T., to Ford Motor Company. Engine control system. 4,535,740, Cl. 123-435.000.

Maag Gear-Wheel and Machine Company: *See—*
Blanc, Guy-Francois; and Loehrer, Fritz, 4,535,569, Cl. 51-165.900.

Maag Gear-Wheel & Machine Company Limited: *See—*
Mesey, Milton; Shcwaighofer, Roman; and Donner, Meinrad, 4,535,573, Cl. 51-165.870.

Maar, Lienhard, to Max Zapf, Firma. Batheable doll. 4,536,165, Cl. 446-153.000.

Mabuchi, Sadaaki, to Tokyo Shibaura Denki Kabushiki Kaisha. Transformer winding sheet insulator with spacer member. 4,536,734, Cl. 336-196.000.

MacAfee, Jerry D., to Quamco, Inc. Top entry ball valve. 4,535,970, Cl. 251-315.000.

MacAvoy, David W.: *See—*
Schildkraut, Alan L.; and MacAvoy, David W., 4,536,048, Cl. 339-89.00M.

Macherle, Gunter; and Lieber, Ludwig, to Fritz Eichenauer. Glue gun. 4,535,916, Cl. 222-113.000.

Machida, Satoshi: *See—*
Hasegawa, Shigekazu; Okita, Naoki; and Machida, Satoshi, 4,535,847, Cl. 172-2.000.

Mackinnon, John W. M.: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

MacLean-Fogg Company: *See—*
Murray, Pierre C., 4,536,116, Cl. 411-82.000.

MacNeill, Avril B.: *See—*
Kirton, Douglas C.; MacNeill, Avril B.; and Verhagen, Laurentius A. M., 4,536,411, Cl. 426-603.000.

Maebayashi, Jiro: *See—*
Kijima, Takao; Maebayashi, Jiro; and Ando, Fumitaka, 4,536,007, Cl. 280-701.000.

Maeda, Keikichi; Iijima, Takahiro; and Sato, Eiichi, to JGC Corporation; and Taihei Kinzoku Kogyo Co., Ltd. Centrifugally cast double-layer tube with resistance to carbon deposition. 4,536,455, Cl. 428-629.000.

Maeda, Masaya, to Canon Kabushiki Kaisha. Image signal recording-reproducing device. 4,536,805, Cl. 360-14.100.

Maeda, Takamichi: *See—*
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,536,786, Cl. 357-68.000.

Maekawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake. Mount arrangement and interchangeable lens unit for photographic camera. 4,536,071, Cl. 354-400.000.

Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, to Kasei Optonix, Ltd. Radiographic image conversion screens. 4,536,436, Cl. 428-212.000.

Magnetic Peripherals: *See—*
Johnson, Robert A., 4,536,270, Cl. 204-192.00R.
Vinding, Jorgen P., 4,536,740, Cl. 340-347.0DD.

Magnotta, Frank A., to Dennison Manufacturing Co. Heat transfer laminate. 4,536,434, Cl. 428-200.000.

MAI Basic Four, Inc.: *See—*
Shah, Hemen V.; Mashikian, Victor; Seaton, John; and Keller, Gordon, 4,536,839, Cl. 364-200.000.

Maier, Karl: *See—*
Singer, Robert; Goetze, Richard; Maier, Karl; and Kerbl, Maximilian, 4,536,534, Cl. 524-262.000.

Maizenberg, Leonid I., to Sybron Corporation. Lever actuated chuck mechanism for dental handpiece. 4,536,157, Cl. 433-129.000.

Makalsky, Leonid M.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Maki, Farrel M., to Minnesota Mining and Manufacturing Company. Temperature compensated time exposure control circuit. 4,536,681, Cl. 315-309.000.

Makimoto, Mitsuo: *See—*
Hasegawa, Makoto; Makimoto, Mitsuo; Yamashita, Sadahiko; and Katayama, Yoshio, 4,536,724, Cl. 331-177.00V.

Malaval, Paul C.: *See—*
Ramisse, Yves D.; Baboulet, Jean-Pierre C.; Vie, Michel P.; and Malaval, Paul C., 4,536,327, Cl. 252-511.000.

Malivoir, Roger; and Mayer, Gilbert, to Pont-a-Mousson S.A. Method and apparatus for arranging cast-iron pipes in odd number stacks. 4,535,882, Cl. 198-425.000.

Malloy, Thomas P.; and Swedo, Raymond J., to UOP Inc. Enhanced oil recovery. 4,536,301, Cl. 252-8.55D.

Malone, Bradley P.: *See—*
Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., 4,536,222, Cl. 134-5.000.

Manabe, Sugio: *See—*
Sakurada, Masahiko; Manabe, Sugio; Okamura, Hideaki; and Gocho, Nagahiro, 4,536,369, Cl. 422-65.000.

Mani, Krishnamurthy N.: *See—*
Chlanda, Frederick P.; and Mani, Krishnamurthy N., 4,536,269, Cl. 204-182.400.

Manke, James E. Automobile beverage holding device. 4,535,923, Cl. 224-273.000.

Mann, Kenneth G.: *See—*
Giles, Alan R.; and Mann, Kenneth G., 4,536,392, Cl. 424-101.000.

Manthei, Philip J.: *See—*
Fey, Robert M.; Woehler, Harold L.; and Manthei, Philip J., 4,535,610, Cl. 68-3.00R.

Mao, Mark H. K.: *See—*
Llenado, Ramon A.; Mao, Mark H. K.; and Nicholson, Denzel A., 4,536,317, Cl. 252-174.170.

Marangoni, Daniele, to Kontron Holding A.G. Personal electrocardiology recorder. 4,535,783, Cl. 128-711.000.

Marathon Oil Company: *See—*
Luetzelschwab, Wayne E., 4,535,844, Cl. 166-252.000.

Marconi Instruments Limited: *See—*
Smith, John L.; and Jenner, Frank H., 4,536,051, Cl. 339-117.00P.

Marconi, Walter. Cardiac valvular prosthesis of mechanical type provided with two freely moving leaflets. 4,535,484, Cl. 623-2.000.

Marcoux, Bernard; and Bridon, Jean-Noel, to Rhone-Poulenc Agrochimie. Insecticidal and acaricidal combination containing a pyrethroid. 4,536,506, Cl. 514-342.000.

Marek, Albert J., to LTV Aerospace and Defense Company. High-speed capacitor discharge circuit suitable for the protection of detonation devices. 4,536,693, Cl. 320-1.000.

Marhold, Albrecht: *See—*
Sirrenberg, Wilhelm; Marhold, Albrecht; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, 4,536,587, Cl. 549-366.000.

Marin Tek, Inc.: *See—*
Missimer, Dale J.; and St. Pierre, Michael R., 4,535,597, Cl. 62-55.500.

Maringer, Melvin F.: *See—*
Barlow, Anthony; and Maringer, Melvin F., 4,536,530, Cl. 524-109.000.

Marker International Company: *See—*
Klubitschko, Gerd, 4,535,718, Cl. 116-212.000.

Markle, Richard A., to Eagle-Picher Industries, Inc. Heat curable solventless liquid prepolymer and novel monomer prepared from N-(2-hydroxyalkyl)phthalimide. 4,536,582, Cl. 548-477.000.

Maros, Ronald R., to Cooper Industries, Inc. Connector assembly having grounding strap. 4,536,053, Cl. 339-143.00R.

Martel, Jacques; Tessier, Jean; and Teche, Andre , to Roussel Uclaf. Imino derivatives α-cyano-3-phenoxybenzyl 2,2-dimethyl-3-formyl-cyclopropane-1-carboxylate. 4,536,345, Cl. 260-465.00D.

Martens, Theodorus H. G.; and Sanders, Franciscus H. M., to U.S. Philips Corporation. Method of manufacturing an optically readable information disc. 4,536,415, Cl. 427-40.000.

Martin, David R.: *See—*
Orlando, Salvatore; and Martin, David R., 4,536,130, Cl. 417-63.000.

Martin, Robert C., to Texas Instruments Incorporated. A high speed, non-inverting circuit for providing an interface between TTL logic gates and Schottky transistor logic gates. 4,536,664, Cl. 307-475.000.

Martin-Smith, Michael: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

Martin, William A.: *See—*
Herman, George R.; and Martin, William A., 4,536,125, Cl. 415-5.000.

Marty, Urs. Articulator. 4,536,161, Cl. 434-264.000.

Maruyama, Ichiyo: *See—*
Shigemitsu, Mineo; Maruyama, Ichiyo; and Niimura, Shigeru, 4,536,751, Cl. 340-545.000.

Maruyama, Jisaburou; Fukayama, Sumio; Miyake, Masanobu; Watanabe, Yoshimi; and Eguchi, Yoshinori, to Tokyo Shibaura Denki Kabushiki Kaisha. Lamp assembly. 4,536,676, Cl. 313-318.000.

Maruyama, Teruo, to Matsushita Electric Industrial Co., Ltd. Rotary vane compressor with suction passage changing in two steps. 4,536,141, Cl. 418-150.000.

Marx, Reinhard: *See—*
Heubach, Rainer; Marx, Reinhard; Kunz, Peter; and Hauke, Dieter, 4,536,385, Cl. 423-621.000.

Maschinenfabrik Benninger AG: *See—*
Wildi, Edwin; Bossart, Erwin; and Hasler, Hans, 4,535,956, Cl. 242-151.000.

Maschinenfabrik Rieter AG: *See—*
Egbers, Gerhard; and Weinsdorfer, Helmut, 4,535,516, Cl. 28-272.000.

Mashikian, Victor: *See—*
Shah, Hemen V.; Mashikian, Victor; Seaton, John; and Keller, Gordon, 4,536,839, Cl. 364-200.000.

Mask, Ernest D. Power hip, hack squat and leg exercise sled. 4,535,985, Cl. 272-134.000.

Massey, Becky L. Self adhesive nail overlay or wrap. 4,536,426, Cl. 428-42.000.

Mastromatteo, Frank J. T-top lock-handle. 4,535,613, Cl. 70-221.000.

Masuda, Jiro: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,865, Cl. 180-177.000.

Masuda, Masao, to Kabushiki Kaisha Masuda Seisakusho. Treating textile material with non woven fabric rolls. 4,535,611, Cl. 68-202.000.

Masuda, Sinichi, to Sharp Kabushiki Kaisha. Reset pulse generator. 4,536,667, Cl. 307-592.000.

Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, to Fuji Photo Film Co., Ltd.; and Nippon Light Metal Company, Ltd. Method for electrolytic treatment. 4,536,264, Cl. 204-129.430.

Masuko, Fujio; and Katsura, Tadashi, to Sumitomo Chemical Company, Limited. Synthesis of amine derivatives. 4,536,599, Cl. 564-124.000.

Material Control, Inc.: *See—*
Kerr, James F., 4,535,883, Cl. 198-499.000.

Mather, Joseph M.; and Albright, Larry E., to Clark Equipment Company. Transverse engine mounting. 4,535,868, Cl. 180-297.000.

Matsubara, Soichi; Morita, Hirobumi; and Watanabe, Shinpei, to Honda Giken Kogyo Kabushiki Kaisha. Workpiece preset jig arrangement in a welding apparatus. 4,535,927, Cl. 228-6.100.

Matsuda, Hiroto: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,536,250, Cl. 156-651.000.

Matsuda, Shunsuke: *See—*
Ito, Akio; Matsuda, Shunsuke; Murakami, Yoshinobu; and Tamura, Tooru, 4,536,267, Cl. 204-159.230.

Matsumoto, Haruyuki, to Canon Kabushiki Kaisha. Liquid jet recording apparatus. 4,536,777, Cl. 346-140.0PD.

Matsumoto, Tetsuo: *See—*
Yasui, Toshihiko; Matsumoto, Tetsuo; and Akaike, Akihiko, 4,536,468, Cl. 430-296.000.

Matsumura, Haruki: *See—*
Sunagawa, Makoto; Matsumura, Haruki; Inoue, Takaaki; and Hirohashi, Toshiyuki, 4,536,334, Cl. 260-239.00A.

Matsumura, Ryouichi, to Nissan Motor Company, Limited. Fuel cut-supply control system for multiple-cylinder internal combustion engine. 4,535,744, Cl. 123-493.000.

Matsumura, Susumu; Yano, Masao; Sashida, Nobuo; and Yamamoto, Yoshihiko, to Susumu Jatsumura; and Mitsubishi Denki Kabushiki Kaisha. Thyristor apparatus employing light-triggered thyristors. 4,536,816, Cl. 361-91.000.

Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Kabushiki Kaisha Tokai-Rika-Denki-Seisakusho. Automatic seatbelt system. 4,536,010, Cl. 280-802.000.

Matsushita Electric Industrial Company Limited: *See—*
Hasegawa, Makoto; Makimoto, Mitsuo; Yamashita, Sadahiko; and Katayama, Yoshio, 4,536,724, Cl. 331-177.00V.
Ishii, Takahito; Yamashita, Kazuo; and Uno, Hiroshi, 4,535,837, Cl. 165-104.170.
Ito, Akio; Matsuda, Shunsuke; Murakami, Yoshinobu; and Tamura, Tooru, 4,536,267, Cl. 204-159.230.
Kawamoto, Kinji; Tsukamoto, Masao; Murase, Kazuhiro; Kaneaki, Tetsuhiko; and Nikaido, Masataka, 4,536,853, Cl. 364-718.000.
Maruyama, Teruo, 4,536,141, Cl. 418-150.000.

Matsushita Electric Works, Ltd.: *See—*
Hideo, Hisamoto, 4,536,726, Cl. 335-23.000.
Ikeda, Shigayuki; and Hamabe, Takafumi, 4,535,760, Cl. 128-33.000.

Matsuura, Hiroyuki: *See—*
Iwaoka, Hideto; Fujino, Kenji; Sugiyama, Tadashi; and Matsuura, Hiroyuki, 4,536,712, Cl. 324-309.000.

Matsuura, Masaaki: *See—*
Nakano, Yoshikatsu; and Matsuura, Masaaki, 4,535,732, Cl. 123-90.160.

Matsuzaki, Katsumi: *See—*
Komatsu, Tatsuyoshi; Numata, Shigeaki; Sumino, Toshihiko; Matsuzaki, Katsumi; Narita, Masao; and Hioki, Katsuhiko, 4,536,337, Cl. 260-396.00R.

Matsuzawa, Toshiharu; Douta, Kikuo; Iwayanagi, Takao; and Yanazawa, Hiroshi, to Hitachi, Ltd. Method of forming a microscopic pattern. 4,536,421, Cl. 427-282.000.

Mattel, Inc.: *See—*
Ace, Marshall E., Jr., deceased; Mattson, Ray W.; and Wittenberg, Mark S., 4,536,162, Cl. 446-102.000.
Fekete, Ferenc; and Spears, James E., 4,536,169, Cl. 446-461.000.
Renger, Larry H.; and McKittrick, Mike T., 4,536,166, Cl. 446-298.000.
Stephens, William F., 4,536,168, Cl. 446-444.000.

Matthews, Leslie N. Variable air cushion mode vehicle. 4,535,712, Cl. 114-61.000.

Mattson, Ray W.: *See—*
Ace, Marshall E., Jr., deceased; Mattson, Ray W.; and Wittenberg, Mark S., 4,536,162, Cl. 446-102.000.

Maturo, Robert J.; Chin, Danny; and Henderson, John G. N., to RCA Corporation. Television receiver with auxiliary on-screen display. 4,536,797, Cl. 358-192.100.

Matz, Gary F., to Calgon Corporation. Carboxylic/sulfonic/quaternary ammonium polymers for use as scale and corrosion inhibitors. 4,536,292, Cl. 210-701.000.

Matzner, Markus; and Papuga, Donald M., to Union Carbide Corporation. Copolymers of polyphenylene oxides and poly(aryl ether)s. 4,536,543, Cl. 525-68.000.

Matzner, Markus; and Papuga, Donald M., to Union Carbide Corporation. Blends containing copolymers of polyphenylene oxides and poly(aryl ether)s. 4,536,544, Cl. 525-68.000.

Maurer, Dieter; Rauter, Jurgen; and Dziuba, Peter, to Zahnradfabrik Friedrichshafen AG. Pivot limiter for steered wheels. 4,536,003, Cl. 280-95.00R.

Maurer, Fritz, to Bayer Aktiengesellschaft. Preparation of 2-alkylthiomethyl-4-hydroxypyrimidines. 4,536,574, Cl. 544-253.000.

Mauri, Luigi; and Cardaio, Rino, to Moplefan S.p.A. Coated polyolefinic films having low adhesion to the welding bars. 4,536,453, Cl. 428-484.000.

Maurmann Ingenieurburo GmbH: *See—*
Reuter, Rolf, 4,535,685, Cl. 98-40.120.

Mauser-Werke Oberndorf GmbH: *See—*
Linder, Kurt, 4,535,543, Cl. 33-169.00R.

Max Zapf, Firma: *See—*
Maar, Lienhard, 4,536,165, Cl. 446-153.000.

May, John B.: *See—*
DiMassimo, Donald V.; May, John B.; and Lemmon, Michael D., 4,536,759, Cl. 340-706.000.

Maya, Jakob: *See—*
Bouchard, Andre C.; Maya, Jakob; and Sententes, Thomas, 4,536,678, Cl. 313-493.000.

Mayekar, Kishor D.: *See—*
Amstutz, Gary A.; and Mayekar, Kishor D., 4,536,322, Cl. 252-301.160.

Mayer, Gilbert: *See—*
Malivoir, Roger; and Mayer, Gilbert, 4,535,882, Cl. 198-425.000.

Mayer, Leonard C., to Morganite Incorporated. Electrical brushes with wear sensors. 4,536,670, Cl. 310-249.000.

Mayer, Robert: *See—*
Kaye, Lawrence A.; and Mayer, Robert, 4,536,722, Cl. 331-117.00D.

Mazda Motor Corporation: *See—*
Kijima, Takao; Maebayashi, Jiro; and Ando, Fumitaka, 4,536,007, Cl. 280-701.000.

McCandliss, Russell J.; Eastwood, Barbara J.; and Milch, Robert A., to IGI Biotechnology, Inc. Nematocidally active chitin-protein complex. 4,536,207, Cl. 71-88.000.

McCarty, George W.; Rebold, Jerome I.; and Smith, Somers H., III, to Solid State Chargers Research and Development. Battery-operated device with wall-mounted support. 4,536,694, Cl. 320-2.000.

McClung, James A.: *See—*
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,535,618, Cl. 72-349.000.

McCorriston, Lois L., to Gulf Canada Limited. Process using carbonate reagent for recovering vanadium from cokes and ashes derived from heavy oils. 4,536,374, Cl. 423-68.000.

McDonald, Joseph K.; and Merritt, James A., to United States of America, Army. Laser-induced production of nitrosyl fluoride for etching of semiconductor surfaces. 4,536,252, Cl. 156-662.000.

McGarry, Phillip E.: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,536,372, Cl. 422-187.000.

McGee, John R.: *See—*
Kirkpatrick, Lloyd V.; and McGee, John R., 4,535,851, Cl. 175-38.000.

McGibbon, Gregor D.: *See—*
Skidanenko, Constantine V.; and McGibbon, Gregor D., 4,536,614, Cl. 179-18.0FA.

McGuire, Hugh K. Flexible duct forming apparatus. 4,536,246, Cl. 156-429.000.

McHarg, Robert E.: *See—*
White, John B., Jr.; McHarg, Robert E.; and Stolfa, Frank, 4,536,280, Cl. 208-106.000.

McIntosh, Ian A. Air vent. 4,535,715, Cl. 114-211.000.

McKittrick, Mike T.: *See—*
Renger, Larry H.; and McKittrick, Mike T., 4,536,166, Cl. 446-298.000.

McMann, Renville H., Jr., to Thomson-CSF Broadcast, Inc. Television method and apparatus. 4,536,799, Cl. 358-219.000.

McManus, Gregory K.; and Otani, Masato, to Microdry Corporation. Spaghetti dryer. 4,535,552, Cl. 34-236.000.

McMurtry, David R., to Renishaw plc. Position-sensing apparatus. 4,536,661, Cl. 307-119.000.

McRae, Thomas G.: *See—*
Bianchini, Gregory M.; and McRae, Thomas G., 4,535,639, Cl. 73-863.110.

McRea, James C.: *See—*
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,536,572, Cl. 536-179.000.

MDS Qantel, Inc.: *See—*
Ringel, Gerhard; and Fencsik, Gabor, 4,536,838, Cl. 364-200.000.

Mead Corporation, The: *See—*
Sanders, Frederick W., 4,536,463, Cl. 430-138.000.
Suttles, James M., 4,535,704, Cl. 108-108.000.

Meador, Richard A.: *See—*
Davis, Mark H.; Meador, Richard A.; and Wisler, Macmillan M., 4,536,713, Cl. 324-324.000.

Medical Biological Sciences, Inc.: *See—*
Ashman, Arthur; and Bruins, Paul F., 4,535,485, Cl. 623-16.000.
Bruins, Paul F.; and Ashman, Arthur, 4,536,158, Cl. 433-201.100.

Medipack AG: *See—*
Artusi, Aldo, 4,535,890, Cl. 206-530.000.

Medtronic, Inc.: *See—*
Olson, Walter H., 4,535,774, Cl. 128-419.0PG.

Mehl, Wolfgang, to International Toner Specialties. Encapsulated particulate magnetic development powders containing a sublimable dyestuff. 4,536,462, Cl. 430-106.000.

Meiji Seika Kaisha Ltd.: *See—*
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.
Kishi, Yoshito, 4,536,336, Cl. 260-351.100.

Melgert, Frederik B.: *See—*
Ponjee, Johannes J.; and Melgert, Frederik B., 4,536,416, Cl. 427-131.000.

Mercado Venture, The: *See—*
Gobeli, Garth W., 4,536,746, Cl. 340-365.00A.

Mercer, Frank B., to P.L.G. Research Limited. Plastics material mesh structure. 4,536,429, Cl. 428-136.000.

Merck & Co., Inc.: *See—*
Biftu, Tesfaye; Witzel, Bruce E.; and Barker, Peter L., 4,536,512, Cl. 514-413.000.
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,536,507, Cl. 514-362.000.

Merck Frosst Canada, Inc.: *See—*
Belanger, Patrice C.; and Gillard, John W., 4,536,515, Cl. 514-532.000.
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,536,507, Cl. 514-362.000.

Merritt, Herbert E.: *See—*
Borisch, Donald J.; Hanrahan, Gary V.; and Merritt, Herbert E., 4,536,849, Cl. 364-550.000.

Merritt, James A.: *See—*
McDonald, Joseph K.; and Merritt, James A., 4,536,252, Cl. 156-662.000.

Mertz, Denny W., to Emerson Electric Co. Pilot operated valve with pressure relief. 4,535,805, Cl. 137-489.000.

Merz, Herbert: *See—*
Rossmann, Axel; and Merz, Herbert, 4,536,127, Cl. 415-174.000.

Mesey, Milton; Shcwaighofer, Roman; and Donner, Meinrad, to Maag Gear-Wheel & Machine Company Limited. Profiling apparatus for a grinding wheel in a gear grinding machine. 4,535,573, Cl. 51-165.870.

Mesnel, Francois, to Etablissements Mesnel. Window seal. 4,535,563, Cl. 49-478.000.

Metabi, Tsuneyo: *See—*
Maekawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake, 4,536,071, Cl. 354-400.000.

Metako Kigyo Co., Ltd.: *See—*
Fukuchi, Shigeki, 4,535,829, Cl. 160-291.000.

Metallgesellschaft Aktiengesellschaft: *See—*
Albrecht, Johannes; Jakobs, Rudolf; Turna, Osman; Vierrath, Helmut; Weil, Manfred; and Zapke, Klaus, 4,536,193, Cl. 48-77.000.

Metz, Arthur J.; and Schlotzhauer, Kenneth G., to Tektronix, Inc. Trigger coupling circuit for providing a plurality of coupling modes. 4,536,666, Cl. 307-494.000.

Meuli, William P.: *See—*
Chiang, Anne; and Meuli, William P., 4,536,251, Cl. 156-657.000.

Miaskoff, Leonard, to Harris Corporation. Palletizing apparatus with layer level detecting means. 4,536,119, Cl. 414-100.000.

Micro Plastics, Inc.: *See—*
Ramey, Carl; Hill, Royce W.; and Beijen, James H., 4,535,925, Cl. 227-55.000.

Microdry Corporation: *See—*
McManus, Gregory K.; and Otani, Masato, 4,535,552, Cl. 34-236.000.

Micso, Peter F., Jr.: *See—*
Kim, Choung U.; and Micso, Peter F., Jr., 4,536,335, Cl. 260-245.20T.

Mid-Continent Screw Products Company: *See—*
Yamashiro, Ernest, 4,536,117, Cl. 411-411.000.

Mihara, Yuji, to Fuji Photo Film Co., Ltd. Silver halide photographic light-sensitive material. 4,536,473, Cl. 430-575.000.

Mikami, Yoshiharu: *See—*
Izumi, Asashiro; Mikami, Yoshiharu; and Yamada, Seiji, 4,535,855, Cl. 177-1.000.

Mikroyannidis, John A., to United States of America, National Aeronautics and Space Administration. Fire-resistant phosphorus containing polyimides and copolyimides. 4,536,565, Cl. 528-352.000.

Milch, Robert A.: *See—*
McCandliss, Russell J.; Eastwood, Barbara J.; and Milch, Robert A., 4,536,207, Cl. 71-88.000.

Mildenberger, Hilmar: *See—*
Hertenstein, Ulrich; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,536,509, Cl. 514-383.000.

Mildrex International, B.V.: *See—*
Sanzenbacher, Charles W., 4,536,213, Cl. 75-91.000.

Miletti, Sandro: *See—*
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,536,221, Cl. 127-30.000.

Miller, Donald L.; and Przybysz, John X., to Westinghouse Electric Corp. High di/dt, light-triggered thyristor with etched moat current limiting resistors. 4,536,783, Cl. 357-38.000.

Miller, Elwood O., to BOC Group, Inc., The. Time controlled gas flows. 4,535,812, Cl. 137-624.110.

Miller, Gerald W.; and Lutzmann, H. Harald. Plasticized polyvinyl alcohol compositions, forming process and formed articles. 4,536,532, Cl. 524-141.000.

Miller, Ira; Rumbaugh, Robert C.; and Price, John J., Jr., to Motorola, Inc. Comparator circuit having full supply common mode input. 4,536,663, Cl. 307-355.000.

Miller, William H., to General Electric Company. Dynamoelectric machine stator mounting means and method of making same. 4,536,671, Cl. 310-258.000.

Millheim, Keith K.; and Warren, Tom M., to Standard Oil Co. (Indiana). System to control the vertical movement of a drillstring. 4,535,972, Cl. 254-277.000.

Milton Bradley Company: *See—*
Hughes, David C., 4,536,167, Cl. 446-396.000.

Mims, Herman. Sorting apparatus for food items. 4,535,881, Cl. 198-420.000.

Minaev, Alexandr S.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Minges, Peter: *See—*
Hambrecht, Juergen; Reffert, Rudi W.; Minges, Peter; and Swoboda, Johann, 4,536,567, Cl. 528-486.000.

Minnesota Mining and Manufacturing Company: *See—*
Berg, Harvey J., 4,536,440, Cl. 428-284.000.
Maki, Farrel M., 4,536,681, Cl. 315-309.000.
van den Honert, Christopher; and Stypulkowski, Paul H., 4,535,785, Cl. 128-746.000.

Minolta Camera Kabushiki Kaisha: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, 4,536,072, Cl. 354-403.000.
Watanabe, Yutaka; and Fukumoto, Fumio, 4,535,981, Cl. 271-121.000.

Mio, Mitsushi; and Negita, Hisao, to Awaji Sangyo Kabushiki Kaisha; and Negita, Hisao. Solid-body heating unit. 4,536,645, Cl. 219-543.000.

Miroshnik, Vladimir I.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Mirzabekian, Garri Z.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Misiorny, Alfons: *See—*
Helgstrand, Åke J. E.; Johansson, Karl N. G.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,536,400, Cl. 514-120.000.

Missimer, Dale J.; and St. Pierre, Michael R., to Marin Tek, Inc. Fast cycle water vapor cryopump. 4,535,597, Cl. 62-55.500.

Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, to Canon Kabushiki Kaisha. Photoconductive member having multiple amorphous layers. 4,536,459, Cl. 430-57.000.

Misumi, Teruo: *See—*
Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, 4,536,460, Cl. 430-57.000.

Mita Industrial Co., Ltd.: *See—*
Nakatani, Kaname; Hanna, Junichi; and Kokado, Hiroshi, 4,536,461, Cl. 430-58.000.

Mitchell, Alexander M.: *See—*
Jablway, Ali N.; and Mitchell, Alexander M., 4,536,703, Cl. 324-52.000.

Mitsubishi Chemical Industries Ltd.: *See—*
Jikihara, Tetsuo; Oda, Masatsugu; Natsume, Bunji; Watanabe, Hisao; and Suzuki, Seiichi, 4,536,209, Cl. 71-96.000.

Mitsubishi Denki Kabushiki Kaisha: *See—*
Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, 4,535,530, Cl. 29-571.000.
Matsumura, Susumu; Yano, Masao; Sashida, Nobuo; and Yamamoto, Yoshihiko, 4,536,816, Cl. 361-91.000.
Morishita, Akira, 4,536,669, Cl. 310-241.000.
Nawa, Akiyoshi; and Kato, Yoshiaki, 4,536,634, Cl. 219-74.000.
Onizuka, Masahiro, 4,536,633, Cl. 219-69.00D.
Takami, Akira, 4,535,737, Cl. 123-420.000.

Mitsubishi Gas Chemical Co., Inc.: *See—*
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,536,605, Cl. 585-640.000.

Mitsuboshi Belting Ltd.: *See—*
Fujiki, Toshiaki; and Kano, Hikaru, 4,535,581, Cl. 52-746.000.

Mitsui Toatsu Chemicals, Inc.: *See—*
Nishizawa, Tsutomu; Tukahara, Ryoichi; Morinaka, Ryoichi; and Hidaka, Tuneo, 4,536,320, Cl. 252-299.100.

Miura, Norio: *See—*
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,536,436, Cl. 428-212.000.

Miura, Takeo: *See—*
Tanaka, Norio; Miura, Takeo; and Miyata, Jiro, 4,536,005, Cl. 280-289.00S.

Miyahara, Hiroyuki: *See—*
Hirota, Akira; Miyahara, Hiroyuki; and Kosaka, Yoshiteru, 4,536,795, Cl. 358-160.000.

Miyake, Masanobu: *See—*
Maruyama, Jisaburou; Fukayama, Sumio; Miyake, Masanobu; Watanabe, Yoshimi; and Eguchi, Yoshinori, 4,536,676, Cl. 313-318.000.

Miyasato, Tsutomu: *See—*
Yamaguchi, Hirohisa; Yamada, Kazuo; and Miyasato, Tsutomu, 4,536,745, Cl. 340-347.0DD.

Miyashita, Teruo: *See—*
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.

Miyata, Jiro: *See—*
Tanaka, Norio; Miura, Takeo; and Miyata, Jiro, 4,536,005, Cl. 280-289.00S.

Miyatake, Fumio: *See—*
Ogawa, Hiroyasu; Shigei, Tetsuro; Takahashi, Hayashi; Okabe, Tetuya; and Miyatake, Fumio, 4,536,448, Cl. 428-394.000.

Miyauchi, Hirotsugu: *See—*
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,536,352, Cl. 260-543.00F.

Miyazaki, Wasei; Sato, Tsuneo; Nakayama, Yasuo; and Sato, Tadao, to Otsuka Pharmaceutical Co. Process for preparing urokinase complex. 4,536,391, Cl. 424-94.000.

Mizogui, Toyokazu: *See—*
Someya, Hiromi; Suzuki, Nobuyuki; and Mizogui, Toyokazu, 4,536,074, Cl. 354-442.000.

Mizuguchi, Ryuzo: *See—*
Yamamoto, Yoshikazu; Mizuguchi, Ryuzo; and Yamada, Yasuyuki, 4,536,474, Cl. 435-42.000.

Mizuno Corporation: *See—*
Nobuta, Yoshiji, 4,536,739, Cl. 340-323.00R.

Mizuno, Toshiaki: *See—*
Taura, Mitsuharu; and Mizuno, Toshiaki, 4,535,736, Cl. 123-344.000.
Moates, Roger D., to Westinghouse Electric Corp. Matrix encoder for sensor arrays. 4,536,762, Cl. 340-870.020.
Mobil Oil Corporation: *See—*
Audeh, Costandi A., 4,536,279, Cl. 208-11.00R.
Braid, Milton; and Landis, Phillip S., 4,536,192, Cl. 44-68.000.
Collins, Gregory P., 4,536,271, Cl. 204-192.00E.
Donaldson, Jack J., 4,536,362, Cl. 264-171.000.
Frangatos, Gerassimos, 4,536,312, Cl. 252-47.500.
Horodysky, Andrew G.; and Landis, Phillip S., 4,536,306, Cl. 252-32.70E.
Horodysky, Andrew G., 4,536,307, Cl. 252-32.70E.
Horodysky, Andrew G.; and Kaminski, Joan M., 4,536,309, Cl. 252-33.000.
Horodysky, Andrew G., 4,536,311, Cl. 252-51.50A.
Lyle, W. D., Jr., 4,535,625, Cl. 73-152.000.
Otto, John B., Jr.; and Paul, James M., 4,536,034, Cl. 299-5.000.
Rollmann, Louis D., 4,536,282, Cl. 208-120.000.
Toon, Michael B., 4,536,199, Cl. 55-67.000.
Mochida, Haruo, to Nissan Motor Co., Ltd. Emergency unlocking mechanism for door of automobile. 4,536,021, Cl. 292-201.000.
Mochimaru, Hideaki, to Ricoh Company, Ltd. Sheet feeding cassette latching system. 4,535,982, Cl. 271-127.000.
Moertel, George B., to Talon, Inc. Apparatus for continuously molding of articles with plural band-like members. 4,536,143, Cl. 425-115.000.
Moffett, David J.: *See—*
Kruse, Richard M.; Moffett, David J.; Patel, Madhu C.; and Barnes, Ronald L., 4,536,648, Cl. 235-454.000.
Mohn, Hans-Werner: *See—*
Buchholz, [illegible]ner; Tomashauser, Josef; Zodrow, Rudolf; and Mohn, Hans-Werner, 4,536,247, Cl. 156-477.100.
Molbaek, Jens J.: *See—*
Jacobsen, Finn; Molbaek, Jens J.; Zangenberg, Jan; and Dam, Poul S., 4,535,590, Cl. 60-531.000.
Molinari, Paul J., to Allen Manufacturing Company. Socket bit holder. 4,535,658, Cl. 81-177.850.
Mollberg, Henri R.: *See—*
Hansen, Bertil V.; Kelfve, Sten S.; and Mollberg, Henri R., 4,536,187, Cl. 44-51.000.
Monsanto Company: *See—*
Deex, Oliver D., 4,536,562, Cl. 528-193.000.
Montagna, Angelo A.: *See—*
Pirkle, James C., Jr.; Montagna, Angelo A.; and Ruziska, Philip A., 4,536,380, Cl. 423-359.000.
Montedison S.p.A.: *See—*
Gardano, Andrea; Francalcanci, Franco; and Foa, Marco, 4,536,595, Cl. 562-406.000.
Montgomery, John A.: *See—*
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,536,575, Cl. 544-279.000.
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Process for preparing mixtures containing 8,9-epithio-1-p-menthene. 4,536,583, Cl. 549-1.000.
Moplefan S.p.A.: *See—*
Mauri, Luigi; and Cardaio, Rino, 4,536,453, Cl. 428-484.000.
Mordre, Sigurd C.: *See—*
Olsen, John H.; and Mordre, Sigurd C., 4,536,135, Cl. 417-383.000.
Morehead, Jesse L.: *See—*
Jones, Thomas F.; and Morehead, Jesse L., 4,535,544, Cl. 33-265.000.
Morehouse, Alpha L.; and Lewis, Charles J., to Grain Processing Corporation. Low fat spread. 4,536,408, Cl. 426-250.000.
Moreno, Robert J.: *See—*
Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., 4,536,836, Cl. 364-200.000.
Morgan Construction Company: *See—*
Custer, Donald J., 4,535,955, Cl. 242-158.00R.
Morgan, Michael J.; and Gray, Steven G. "Hole-in-one" metal punch drive unit. 4,535,540, Cl. 30-358.000.
Morganite Incorporated: *See—*
Mayer, Leonard C., 4,536,670, Cl. 310-249.000.
Mori, Kei. Lighting device. 4,536,828, Cl. 362-32.000.
Mori, Yoshio: *See—*
Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.
Moriguchi, Haruhiko: *See—*
Inui, Toshiharu; and Moriguchi, Haruhiko, 4,536,774, Cl. 346-76.0PH.
Moriguchi, Kisoo; and Ikegami, Tadashi, to Asahi Kasei Kogyo Kabushiki Kaisha. Polyethylene composition. 4,536,550, Cl. 525-240.000.
Morimoto, Yoshiro: *See—*
Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; Kumura, Haruyoshi; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,536,171, Cl. 474-28.000.
Morinaka, Ryoichi: *See—*
Nishizawa, Tsutomu; Tukahara, Ryoichi; Morinaka, Ryoichi; and Hidaka, Tuneo, 4,536,320, Cl. 252-299.100.
Morino, Seiji: *See—*
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, 4,535,735, Cl. 123-310.000.
Morishima, Masayuki: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,536,631, Cl. 219-10.770.
Morishita, Akira, to Mitsubishi Denki Kabushiki Kaisha. Direct current motor. 4,536,669, Cl. 310-241.000.
Morita, Akira: *See—*
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.
Morita, Hirobumi: *See—*
Matsubara, Soichi; Morita, Hirobumi; and Watanabe, Shinpei, 4,535,927, Cl. 228-6.100.
Morrin, James F.: *See—*
Polk, Todd J.; and Morrin, James F., 4,535,759, Cl. 128-24.00A.
Morse, Donald K.: *See—*
Gagliardo, John P.; Morse, Donald K.; and Pruneau, Albert, Jr., 4,535,846, Cl. 169-25.000.
Morton, Steven G., to International Telephone and Telegraph Corporation. Impedance restoration for fast carry propagation. 4,536,855, Cl. 364-786.000.
Moser, Franz; and Steinemann, Max, to Werkzeugmaschinenfabrik Oerlikon-Buhrle AG. Cartridge case and apparatus for producing the same. 4,535,697, Cl. 102-468.000.
Mosher, Oren A.; and Douglas, Ellwood S., to Package Machinery Co. Combination weighing machine having short search. 4,535,856, Cl. 177-1.000.
Moskal, Walter J.: *See—*
Grammas, James J.; Moskal, Walter J.; and Witt, Craig J., 4,535,533, Cl. 29-749.000.
Mosley, Joseph M.: *See—*
Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.
Moss, Stanley D.: *See—*
Rattlingourd, Glen D.; Currie, Robert J.; and Moss, Stanley D., 4,536,878, Cl. 371-43.000.
Motohashi, Mitsuo; Nemoto, Mitsugu; and Tamura, Akihiko, to Konishiroku Photo Industry Co., Ltd. Transfer type electrostatic reproducing apparatus. 4,536,082, Cl. 355-3.0SH.
Motoren-Und Turbinen-Union: *See—*
Rossmann, Axel; and Merz, Herbert, 4,536,127, Cl. 415-174.000.
Motorola, Inc.: *See—*
Miller, Ira; Rumbaugh, Robert C.; and Price, John J., Jr., 4,536,663, Cl. 307-355.000.
Reid, Sydney J., Jr.; and Zlotnick, Fredrick, 4,536,798, Cl. 358-197.000.
Mouche , Richard J.: *See—*
Yeoman, Alan M.; and Mouche , Richard J., 4,535,622, Cl. 73-61.200.
Mount, Gordon L., to Carrier Corporation. Method and control system for verifying sensor operation in a refrigeration system. 4,535,598, Cl. 62-126.000.
Mount, Gordon L., to Carrier Corporation. Method and control system for limiting the load placed on a refrigeration system upon a recycle start. 4,535,607, Cl. 62-201.000.
Mueller, Warren B., to Ethyl Corporation. Polyphosphazene foam process. 4,536,520, Cl. 521-89.000.
Muller, Lutz: *See—*
Junge, Bodo; and Muller, Lutz, 4,536,493, Cl. 514-25.000.
Muller, Wolfgang: *See—*
Keller, Tony W.; and Muller, Wolfgang, 4,535,595, Cl. 62-3.000.
Multiplex Company, Inc.: *See—*
Trewhella, Joseph M., 4,535,917, Cl. 222-129.100.
Munch, Hans-Jurgen: *See—*
Freese, Karl-Heinz; and Munch, Hans-Jurgen, 4,536,525, Cl. 523-414.000.
Munden, Curtis D.: *See—*
Johnston, Ralph H.; Munden, Curtis D.; and Sheldrake, Leonard J., 4,536,697, Cl. 322-14.000.
Murakami, Tsuyoshi: *See—*
Tsutsumikoshi, Shinobu; Goto, Akira; Murakami, Tsuyoshi; Takasaka, Masao; and Shinohara, Yoshiki, 4,535,869, Cl. 180-311.000.
Murakami, Yoshinobu: *See—*
Ito, Akio; Matsuda, Shunsuke; Murakami, Yoshinobu; and Tamura, Tooru, 4,536,267, Cl. 204-159.230.
Muranaka, Shiaru: *See—*
Tanaka, Hideo; and Muranaka, Shiaru, 4,535,583, Cl. 53-75.000.
Murase, Kazuhiro: *See—*
Kawamoto, Kinji; Tsukamoto, Masao; Murase, Kazuhiro; Kaneaki, Tetsuhiko; and Nikaido, Masataka, 4,536,853, Cl. 364-718.000.
Murase, Shigemitsu, to Unitika Ltd. Method of manufacturing polyester fibers with good adhesion to rubber. 4,536,526, Cl. 523-433.000.
Murata Kikai Kabushiki Kaisha: *See—*
Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, 4,535,944, Cl. 242-35.50A.
Murata, Yasuzo; and Sato, Hiroshi, to Pilot Man-Nen-Hitsu Kabushiki Kaisha. Magnetic display panel. 4,536,428, Cl. 428-117.000.
Murdick, Brian K.; and Haase, William H., to International Paper Company. Taco tray. 4,535,891, Cl. 206-564.000.
Murley, Jackie D.; and Johnson, Marion, to Cosden Technology, Inc. Apparatus for making a thin walled container from a plastic resin. 4,536,148, Cl. 425-387.100.
Murphy, Wesley W., III; and Naimpally, Saiprasad V., to RCA Corporation. Demodulated chrominance signal filter with peaked response. 4,536,787, Cl. 358-38.000.

Murray, D. Gary: *See*—
Guillet, James E.; Heskins, Michael; and Murray, D. Gary, 4,536,294, Cl. 210-730.000.

Murray, Pierre C., to MacLean-Fogg Company. Composite molded plastic article. 4,536,116, Cl. 411-82.000.

Musto, Franklyn K.; Bourn, Hugh E.; Buchanan, John; and Kay, Duncan A., to Musto & Hyde Accessories Ltd. Dry suit. 4,535,477, Cl. 2-2.10R.

Musto & Hyde Accessories Ltd.: *See*—
Musto, Franklyn K.; Bourn, Hugh E.; Buchanan, John; and Kay, Duncan A., 4,535,477, Cl. 2-2.10R.

Mycynek, Victor G.: *See*—
Hauge, Raymond C.; and Mycynek, Victor G., 4,536,717, Cl. 330-254.000.

Myers, John H.: *See*—
Hattori, Kiyoshi; and Myers, John H., 4,536,549, Cl. 525-240.000.

Nachbur, Hermann; and Tempel, Christel, to Ciba-Geigy Corporation. Heat-sensitive recording material. 4,536,779, Cl. 346-212.000.

Nadelson, Jeffrey: *See*—
Brand, Leonard J.; and Nadelson, Jeffrey, 4,536,499, Cl. 514-212.000.

Naden, David: *See*—
Ochs, Leonard R.; Fletcher, Archibald W.; Weber, Harald; and Naden, David, 4,536,214, Cl. 75-101.00R.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Voltage-current converting circuit. 4,536,701, Cl. 323-315.000.

Nagano, Katsumi, to Tokyo Shibaura Denki Kabushiki Kaisha. Constant current source or voltage source transistor circuit. 4,536,702, Cl. 323-316.000.

Nagano, Teruo: *See*—
Nagashima, Akira; Hasegawa, Akira; Aoai, Toshiaki; and Nagano, Teruo, 4,536,464, Cl. 430-192.000.

Nagao, Makoto; and Nahara, Akira, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,536,443, Cl. 428-336.000.

Nagashima, Akira, to Kioritz Corporation. Tank cap for powered machine. 4,535,910, Cl. 220-377.000.

Nagashima, Akira; Hasegawa, Akira; Aoai, Toshiaki; and Nagano, Teruo, to Fuji Photo Film Company Limited. Photosensitive composition with o-quinonediazide compound and condensate of dihydric phenol and aldehyde or ketone. 4,536,464, Cl. 430-192.000.

Nagumo, Shuzo; Ogura, Setsuo; and Kitamura, Yukinori, to Hitachi, Ltd.; and Hitachi Microcomputer Engineering Ltd. Semiconductor device having a junction capacitance, an integrated injection logic circuit and a transistor in a semiconductor body. 4,536,784, Cl. 357-48.000.

Nagura, Keisuke. Belt buckle. 4,536,094, Cl. 368-278.000.

Nagy, Janos Power source from generating caused by braking electric powered vehicles. 4,535,861, Cl. 180-53.500.

Nahara, Akira: *See*—
Nagao, Makoto; and Nahara, Akira, 4,536,443, Cl. 428-336.000.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,536,191, Cl. 44-62.000.

Naiman, Michael I.; and Schield, John A., to Petrolite Corporation. Ester-containing halopolyalkylenes. 4,536,551, Cl. 525-334.100.

Naimpally, Saiprasad V., to RCA Corporation. Demodulated chrominance signal filter using impedance mismatched sections. 4,536,788, Cl. 358-38.000.

Naimpally, Saiprasad V.: *See*—
Murphy, Wesley W., III; and Naimpally, Saiprasad V., 4,536,787, Cl. 358-38.000.

Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, to Murata Kikai Kabushiki Kaisha. Spinning machine with a doffing apparatus. 4,535,944, Cl. 242-35.50A.

Nakamichi Corporation: *See*—
Uchikoshi, Gohji, 4,536,743, Cl. 340-347.0DA.

Nakamura, Kazumasa: *See*—
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,865, Cl. 180-177.000.

Nakamura, Kiyofumi: *See*—
Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, 4,536,211, Cl. 75-5.000.

Nakamura, Masaru; and Kuse, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Fluid operated transmission control system. 4,535,681, Cl. 91-527.000.

Nakamura, Michio: *See*—
Tokita, Kiyoshi; Sone, Toshinao; and Nakamura, Michio, 4,535,907, Cl. 220-2.10A.

Nakamura, Norihiko: *See*—
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, 4,535,735, Cl. 123-310.000.

Nakamura, Tohru: *See*—
Suzuki, Toshiyuki; Nakamura, Tohru; and Tsutsumi, Hisao, 4,536,519, Cl. 514-785.000.

Nakamura, Toshio: *See*—
Sasaki, Yutaka; Kiyomiya, Yutaka; Nakamura, Toshio; Nakamura, Yoshimi; and Yamaguchi, Masanori, 4,536,483, Cl. 502-20.000.

Nakamura, Yoshimi: *See*—
Sasaki, Yutaka; Kiyomiya, Yutaka; Nakamura, Toshio; Nakamura, Yoshimi; and Yamaguchi, Masanori, 4,536,483, Cl. 502-20.000.

Nakano, Yoshikatsu; and Matsuura, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve disabling device for internal combustion engines. 4,535,732, Cl. 123-90.160.

Nakatani, Kaname; Hanna, Junichi; and Kokado, Hiroshi, to Mita Industrial Co., Ltd. Laminated photosensitive material and process for production thereof. 4,536,461, Cl. 430-58.000.

Nakayama, Yasuo: *See*—
Miyazaki, Wasei; Sato, Tsuneo; Nakayama, Yasuo; and Sato, Tadao, 4,536,391, Cl. 424-94.000.

Nakazono, Shuzo. Method of producing protein-rich forage or nitrogenous fertilizer from fowl droppings, swine dung, cow dung and the like. 4,536,412, Cl. 426-641.000.

Nalco Chemical Company: *See*—
Yeoman, Alan M.; and Mouche , Richard J., 4,535,622, Cl. 73-61.200.

Namnath, James S., to Lever Brothers Company. Manganese bleach activators. 4,536,183, Cl. 8-107.000.

Nara, Michiko; Yamazaki, Kazunori; and Akiyama, Yasuko, to Shiseido Company Ltd. Make-up cosmetics composition. 4,536,405, Cl. 514-781.000.

Narita, Masao: *See*—
Komatsu, Tatsuyoshi; Numata, Shigeaki; Sumino, Toshihiko; Matsuzaki, Katsumi; Narita, Masao; and Hioki, Katsuhiko, 4,536,337, Cl. 260-396.00R.

Narita, Ryuhei; Aida, Hiroyuki; and Kamiya, Yoshinori, to Nissan Motor Company, Limited. Door glass hinge having a spacer ring. 4,535,503, Cl. 16-382.000.

Naslund, Erik I.; and Reed, Steven P., to Brown & Williamson Tobacco Corporation. Apparatus for making grooves in cigarette filters. 4,536,149, Cl. 425-394.000.

Natchev, Emil J. Mechanical bio-feed-back auto-traction bench. 4,535,762, Cl. 128-71.000.

National Distillers and Chemical Corporation: *See*—
Barlow, Anthony; and Maringer, Melvin F., 4,536,530, Cl. 524-109.000.
Hanes, Ronnie M., 4,536,340, Cl. 260-410.90R.
Harris, Eugene G., 4,536,349, Cl. 252-522.00R.
Speca, Anthony N., 4,536,487, Cl. 502-119.000.

National Petro Chemicals Corporation: *See*—
Speca, Anthony N.; and Laib, Roger D., 4,536,489, Cl. 502-162.000.

Natsume, Bunji: *See*—
Jikihara, Tetsuo; Oda, Masatsugu; Natsume, Bunji; Watanabe, Hisao; and Suzuki, Seiichi, 4,536,209, Cl. 71-96.000.

Navarro, Luis J.; Peter, Joseph R.; and Blair, Bruce W., to Tektronix, Inc. Signal-envelope display system for a digital oscilloscope. 4,536,760, Cl. 340-722.000.

Nawa, Akiyoshi; and Kato, Yoshiaki, to Mitsubishi Denki Kabushiki Kaisha. Hot wire arc welding torch assembly. 4,536,634, Cl. 219-74.000.

Nawata, Kazuyoshi: *See*—
Yokoshima, Minoru; Nawata, Kazuyoshi; Ohkubo, Tetsuo; and Hattori, Hideaki, 4,536,588, Cl. 549-374.000.

NCR Canada Ltd - NCR Canada Ltee: *See*—
Calnek, Trevor A.; and Bray, John E., 4,536,775, Cl. 346-76.0PH.

NCR Corporation: *See*—
Kruse, Richard M.; Moffett, David J.; Patel, Madhu C.; and Barnes, Ronald L., 4,536,648, Cl. 235-454.000.
Sheehan, Bernard P.; and Werwick, Volker, 4,536,098, Cl. 400-196.100.

Neale, David M.: *See*—
Bickerstaff, Alan E.; Cotton, Austin H.; Ladell, Michael G.; and Neale, David M., 4,536,076, Cl. 355-3.0FU.

Neale, Thomas J., to Foster Wheeler Energy Corporation. Multi-purge gate valve for particulate solids flow. 4,535,801, Cl. 137-240.000.

NEC Corporation: *See*—
Fujii, Akira, 4,536,662, Cl. 307-270.000.

Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Loeert, Wolfgang; Elger, Walter; and Henderson, David, to Schering Aktiengesellschaft. 11β-aryl estradienes, processes for their production and pharmaceutical preparations containing them. 4,536,401, Cl. 514-173.000.

Negita, Hisao: *See*—
Mio, Mitsushi; and Negita, Hisao, 4,536,645, Cl. 219-543.000.

Neil Brown Instrument Systems, Inc.: *See*—
Brown, Neil L., 4,536,744, Cl. 340-347.0AD.

Nekoosa Envelopes, Inc.: *See*—
Ward, James O., 4,535,930, Cl. 229-71.000.

Nelligan, Jerome M.: *See*—
Saxton, Robert W.; Hewitt, William R.; and Nelligan, Jerome M., 4,536,108, Cl. 408-230.000.

Nels, James S.: *See*—
Ruth-Larson, Dawn; and Nels, James S., 4,535,481, Cl. 2-114.000.

Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., to Syntex (U.S.A.) Inc. Naphthoxyalkylamines and related compounds as antiinflammatory agents. 4,536,503, Cl. 514-255.000.

Nelson, Shelby W. Combination non-disposable table utensil. 4,535,538, Cl. 30-147.000.

Nemoto, Mitsugu: *See*—
Motohashi, Mitsuo; Nemoto, Mitsugu; and Tamura, Akihiko, 4,536,082, Cl. 355-3.0SH.

Neri, Anthony A.: *See*—
De Bisschop, James; Neri, Anthony A.; and Williams, Thomas J., 4,535,645, Cl. 74-492.000.

Neu, Frank D.: *See*—
Jerome, Jonathan A.; Neu, Frank D.; and Wohlmut, Peter G., 4,536,866, Cl. 369-112.000.

Neumaier, Anton: *See—*
Hunger, Josef; and Neumaier, Anton, 4,536,109, Cl. 408-240.000.
Neumaier, Hubert, to Hoechst Aktiengesellschaft. Process for making aryldichlorophosphanes. 4,536,351, Cl. 260-543.00P.
Neuroth, David H., to Harvey Hubbell Incorporated. Oil well electrical cable with gas conducting channel and vent. 4,536,609, Cl. 174-11.00R.
Newell, Alfred T., Jr.; and Newell, Alfred T., III, to A. T. Newell Co. Inc. Environmental control system. 4,535,601, Cl. 62-171.000.
Newell, Alfred T., III: *See—*
Newell, Alfred T., Jr.; and Newell, Alfred T., III, 4,535,601, Cl. 62-171.000.
Ng, Dominic S., to Xerox Corporation. Migration imaging system. 4,536,458, Cl. 430-41.000.
Nguyen, Tuan A.: *See—*
Lippolis, Craig S.; and Nguyen, Tuan A., 4,536,079, Cl. 355-14.00R.
Nicholson, Denzel A.: *See—*
Llenado, Ramon A.; Mao, Mark H. K.; and Nicholson, Denzel A., 4,536,317, Cl. 252-174.170.
Nicolet Instrument Corporation: *See—*
Benson, Robert F., 4,536,239, Cl. 156-64.000.
Nicopoulos, Alex: *See—*
Lapple, Arnulf R.; and Nicopoulos, Alex, 4,536,185, Cl. 8-527.000.
Nielsen, Arnold D., to Ford Motor Company. Solenoid driver with switching during current decay from initial peak current. 4,536,818, Cl. 361-154.000.
Nigorikawa, Kazunori: *See—*
Sugimori, Shigeru; Kojima, Tetsuhiko; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, 4,536,321, Cl. 252-299.630.
Nihon Den-Netsu Keiki Co., Ltd.: *See—*
Kondo, Kenshi, 4,535,722, Cl. 118-692.000.
Nihon Kaiheiki Kogyo Kabushiki Kaisha: *See—*
Ohashi, Shigeo; and Suga, Hiroyuki, 4,535,534, Cl. 29-832.000.
Niida, Sadao: *See—*
Yoshida, Hiroshi; and Niida, Sadao, 4,536,577, Cl. 544-326.000.
Niimura, Shigeru: *See—*
Shigemitsu, Mineo; Maruyama, Ichiyo; and Niimura, Shigeru, 4,536,751, Cl. 340-545.000.
Nikaido, Masataka: *See—*
Kawamoto, Kinji; Tsukamoto, Masao; Murase, Kazuhiro; Kaneaki, Tetsuhiko; and Nikaido, Masataka, 4,536,853, Cl. 364-718.000.
Nike, Inc.: *See—*
Derderian, Thomas; Frederick, Edward C.; and Gross, Alexander L., 4,535,553, Cl. 36-28.000.
Nikku Industry Co., Ltd.: *See—*
Tanaka, Torata, 4,536,359, Cl. 264-102.000.
Nilsson, Kenth, to Siemens Aktiengesellschaft. Piezoelectrically operated print head with channel matrix and method of manufacture. 4,536,097, Cl. 400-126.000.
Nippon Electric Co., Ltd.: *See—*
Kasuya, Yoshihiro, 4,536,881, Cl. 377-70.000.
Tsunoda, Kazuyuki; and Ichikawa, Yoshio, 4,536,761, Cl. 340-825.440.
Utsumi, Kazuaki; Shimada, Yuzo; Suzuki, Masanori; and Takamizawa, Hideo, 4,536,435, Cl. 428-209.000.
Nippon Eurotec Co., Ltd.: *See—*
Wakayama, Toshibumi, 4,535,626, Cl. 73-187.000.
Nippon Kayaku Kabushiki Kaisha: *See—*
Yokoshima, Minoru; Nawata, Kazuyoshi; Ohkubo, Tetsuo; and Hattori, Hideaki, 4,536,588, Cl. 549-374.000.
Nippon Light Metal Company, Ltd.: *See—*
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.
Nippon Paint Co., Ltd.: *See—*
Yamamoto, Yoshikazu; Mizuguchi, Ryuzo; and Yamada, Yasuyuki, 4,536,474, Cl. 435-42.000.
Nippon Soken, Inc.: *See—*
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,535,743, Cl. 123-472.000.
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,535,588, Cl. 60-286.000.
Sowa, Kunihiro, 4,536,656, Cl. 250-463.100.
Yoshida, Hitoshi; Tomita, Masahiro; and Takagi, Shigeru, 4,535,589, Cl. 60-303.000.
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, 4,535,735, Cl. 123-310.000.
Nippon Steel Corporation: *See—*
Oka, Toshihiro, 4,535,614, Cl. 72-16.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
Kaneda, Yutaka; and Ohga, Juro, 4,536,887, Cl. 381-92.000.
Nippondenso Co., Ltd.: *See—*
Kanayama, Kenji; and Kinkori, Shuzo, 4,536,672, Cl. 310-268.000.
Nishi, Shinichi; Satoh, Taxey; Shimada, Fumio; and Takahashi, Toshiaki, to Konishiroku Photo Industry Co., Ltd. Optical information recording medium. 4,536,471, Cl. 430-495.000.
Nishikawa, Masao; and Aoki, Takashi, to Honda Giken Kogyo Kabushiki Kaisha. Automatic transmission and direct coupling clutch for vehicle. 4,535,652, Cl. 74-733.000.
Nishimura, Yukuo, to Canon Kabushiki Kaisha. Display element. 4,536,061, Cl. 350-354.000.
Nishino, Takaichi: *See—*
Sakurada, Kenichi; and Nishino, Takaichi, 4,536,030, Cl. 297-284.000.
Nishizawa, Tsutomu; Tukahara, Ryoichi; Morinaka, Ryoichi; and Hidaka, Tuneo, to Mitsui Toatsu Chemicals, Inc. Nematic liquid crystalline composition. 4,536,320, Cl. 252-299.100.
Nissan Motor Company, Limited: *See—*
Matsumura, Ryouichi, 4,535,744, Cl. 123-493.000.
Mochida, Haruo, 4,536,021, Cl. 292-201.000.
Narita, Ryuhei; Aida, Hiroyuki; and Kamiya, Yoshinori, 4,535,503, Cl. 16-382.000.
Sakurada, Kenichi; and Nishino, Takaichi, 4,536,030, Cl. 297-284.000.
Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; Kumura, Haruyoshi; Yamamuro, Sigeaki; and Morimoto, Yoshiro, 4,536,171, Cl. 474-28.000.
Nitsuko Limited: *See—*
Hamatani, Fumikazu; and Funabasama, Kouichi, 4,536,619, Cl. 179-84.00R.
Kimijima, Norio; and Kawazoe, Yuzuru, 4,536,615, Cl. 179-81.00B.
Nitto Chemical Industry Co., Ltd.: *See—*
Sasaki, Yutaka; Kiyomiya, Yutaka; Nakamura, Toshio; Nakamura, Yoshimi; and Yamaguchi, Masanori, 4,536,483, Cl. 502-20.000.
Niwa, Masatake: *See—*
Maekawa, Yukio; Metabi, Tsuneyo; and Niwa, Masatake, 4,536,071, Cl. 354-400.000.
Niwa, Tomizo: *See—*
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.
NL Industries, Inc.: *See—*
Davis, Mark H.; Meador, Richard A.; and Wisler, Macmillan M., 4,536,713, Cl. 324-324.000.
NLB Corp.: *See—*
Shook, Forrest A., 4,536,635, Cl. 219-83.000.
Noble, Bruce P.: *See—*
Babbitt, Brett A.; Le, Tri C.; and Noble, Bruce P., 4,535,967, Cl. 251-54.000.
Nobuta, Yoshiji, to Mizuno Corporation; and Sharp Kabushiki Kaisha. Apparatus for communication of instructing information. 4,536,739, Cl. 340-323.00R.
Noda, Koshi: *See—*
Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, 4,535,944, Cl. 242-35.50A.
Nohavica, Dusan: *See—*
Rohlicek, Vojtech; Hruby, Jaroslav; Nohavica, Dusan; Hrdlicka, Jan; Vykouk, Vlastimil; and Kubec, Frantisek, 4,535,784, Cl. 128-735.000.
Nomura, Takeo: *See—*
Shimizu, Masaki; and Nomura, Takeo, 4,536,496, Cl. 514-54.000.
Norcliff Thayer, Inc.: *See—*
Flynn, Robert G.; Pitkin, Courtney G.; and Hileman, Gregory A., 4,536,399, Cl. 514-63.000.
Nordson Corporation: *See—*
Jameson, Calvin R., 4,535,919, Cl. 222-190.000.
Jones, Stephen H., 4,535,582, Cl. 53-52.000.
Regan, Donald J., deceased, 4,535,719, Cl. 118-410.000.
Noren, Jan O.: *See—*
Helgstrand, Åke J. E.; Johansson, Karl N. G.; Misiorny, Alfons; Noren, Jan O.; and Stening, Goran B., 4,536,400, Cl. 514-120.000.
Noritake Co., Ltd.: *See—*
Ishikawa, Tadayuki, 4,536,195, Cl. 51-293.000.
Noritake Diamond Industries Co., Ltd.: *See—*
Ishikawa, Tadayuki, 4,536,195, Cl. 51-293.000.
North American Philips Corporation: *See—*
Deutsch, Emory, 4,536,819, Cl. 361-274.000.
Novation, Inc.: *See—*
Serrano, Arthur L., 4,536,618, Cl. 179-84.00R.
Novopac S.n.c. dei F.lli Salem E. & O.: *See—*
Salem, Emilio, 4,535,886, Cl. 206-205.000.
NSK-Warner K. K.: *See—*
Ono, Katsuyasu, 4,536,011, Cl. 280-808.000.
Nugent, James E., to Water & Industrial Waste Laboratories, Inc. Mobile waste water and sludge treatment for hazardous and non-hazardous fluids. 4,536,286, Cl. 210-202.000.
Numata, Shigeaki: *See—*
Komatsu, Tatsuyoshi; Numata, Shigeaki; Sumino, Toshihiko; Matsuzaki, Katsumi; Narita, Masao; and Hioki, Katsuhiko, 4,536,337, Cl. 260-396.00R.
Nusselder, Frederik B., to Polygram GmbH. Storage cassette for two or more disk-shaped high memory density information carriers. 4,535,888, Cl. 206-444.000.
NWL Transformers: *See—*
Seitz, James P.; and Helmers, Michael, 4,536,659, Cl. 307-41.000.
Nyman, Georg: *See—*
Schindl, Klaus; and Nyman, Georg, 4,536,732, Cl. 335-285.000.
Oba, Kazunori: *See—*
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.
Ober, Stephen H., to EMPI, Inc. Transcutaneous electrode device for cast-covered sites. 4,535,779, Cl. 128-644.000.
Occidental Chemical Corporation: *See—*
Olener, Joel L.; and Walker, Leigh E., 4,536,545, Cl. 525-75.000.
Ochiai, Nobuo; and Tsumagari, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Machine for beveling. 4,535,570, Cl. 51-165.770.
Ochs, Leonard R.; Fletcher, Archibald W.; Weber, Harald; and Naden, David, to Duval Corporation. Metal sulphide extraction. 4,536,214, Cl. 75-101.00R.

Ochsner, Arnold, deceased (by Ochsner, Edith, Administratrix), to Forster-Willi Corporation. Stamping machine. 4,535,617, Cl. 72-307.000.

Ochsner, Edith, Administratrix: *See*—
Ochsner, Arnold, deceased, 4,535,617, Cl. 72-307.000.

O'Connor, Michael C.; and Hann, George W., to Union Carbide Corporation. Tool removable tamper indicating closure. 4,535,904, Cl. 215-215.000.

Oda, Masatsugu: *See*—
Jikihara, Tetsuo; Oda, Masatsugu; Natsume, Bunji; Watanabe, Hisao; and Suzuki, Seiichi, 4,536,209, Cl. 71-96.000.

Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, to Asahi Glass Company Ltd. Cathode having high durability and low hydrogen overvoltage and process for the production thereof. 4,536,259, Cl. 204-35.100.

Oerlikon-Boehringer GmbH: *See*—
Berbalk, Hermann, 4,535,661, Cl. 82-40.00R.
Horsky, Anton; Kuhn, Siegfried; and Voss, Wolf-Dietrich, 4,536,112, Cl. 409-134.000.

Ogahara, Shunji: *See*—
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,536,749, Cl. 340-525.000.

Ogawa, Hiroyasu; Shigei, Tetsuro; Takahashi, Hayashi; Okabe, Tetuya; and Miyatake, Fumio. Preoxidized fiber and process for producing the same. 4,536,448, Cl. 428-394.000.

Ogawa, Hisashi: *See*—
Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, 4,536,010, Cl. 280-802.000.

Ogawa, Kyosuke: *See*—
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,536,459, Cl. 430-57.000.

Ogawa, Yoshinari; and Akagi, Noriyuki, to Teijin Limited. Polyester resin composition. 4,536,531, Cl. 524-135.000.

O'Grady, Thomas M.; Tatterson, David F.; and Coates, Ronald, to Standard Oil Company (Indiana). Shale oil stabilization with a hydrogen donor quench and a hydrogen transfer catalyst. 4,536,277, Cl. 208-11.00R.

O'Grady, Thomas M.: *See*—
Tatterson, David F.; O'Grady, Thomas M.; and Coates, Ronald, 4,536,278, Cl. 208-11.00R.

Oguino, Masanori, to Hitachi, Ltd. Rear projection apparatus. 4,536,056, Cl. 350-128.000.

Ogura, Setsuo: *See*—
Nagumo, Shuzo; Ogura, Setsuo; and Kitamura, Yukinori, 4,536,784, Cl. 357-48.000.

Ohashi, Shigeo; and Suga, Hiroyuki, to Nihon Kaiheiki Kogyo Kabushiki Kaisha. Method of mounting a switch body on a printing wiring board or panel. 4,535,534, Cl. 29-832.000.

Ohbayashi, Yoshikazu: *See*—
Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, 4,535,530, Cl. 29-571.000.

Ohga, Juro: *See*—
Kaneda, Yutaka; and Ohga, Juro, 4,536,887, Cl. 381-92.000.

Ohkubo, Tetsuo: *See*—
Yokoshima, Minoru; Nawata, Kazuyoshi; Ohkubo, Tetsuo; and Hattori, Hideaki, 4,536,588, Cl. 549-374.000.

Ohmura, Jukichi: *See*—
Kimoto, Kyoji; Miyauchi, Hirotsugu; Ohmura, Jukichi; Ebisawa, Mikio; and Hane, Toshioki, 4,536,352, Cl. 260-543.00F.

Ohmura, Ryuichi, to Fuji Kogyo Co., Ltd. Traversing mechanism. 4,535,642, Cl. 74-58.000.

Ohta, Atsuo: *See*—
Ebihara, Shigeto; Ohta, Atsuo; and Kuwabara, Kunikazu, 4,536,750, Cl. 340-539.000.

Ohtake, Yasuhisa; Tanaka, Hiroshi; and Oka, Koichiro, to Kabushiki Kaisha Toshiba. Method of manufacturing a shadow mask for a color cathode ray tube. 4,536,226, Cl. 148-12.00C.

Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, to Toyota Jidosha Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Electromagnetic solenoid type flow control valve. 4,535,815, Cl. 137-625.480.

Oishi, Kengo; and Suzuki, Osamu, to Fuji Photo Film Co., Ltd. Magnetic disk cartridge. 4,536,812, Cl. 360-133.000.

Oka, Koichiro: *See*—
Ohtake, Yasuhisa; Tanaka, Hiroshi; and Oka, Koichiro, 4,536,226, Cl. 148-12.00C.

Oka, Toshihiro, to Nippon Steel Corporation. Method of gauging and controlling workpiece profile in a rolling mill. 4,535,614, Cl. 72-16.000.

Okabe, Tetuya: *See*—
Ogawa, Hiroyasu; Shigei, Tetsuro; Takahashi, Hayashi; Okabe, Tetuya; and Miyatake, Fumio, 4,536,448, Cl. 428-394.000.

Okamoto, Yukikazu: *See*—
Tagami, Manabu; Urayama, Kenzi; Ooishi, Tadashi; Okamoto, Yukikazu; and Tsuji, Kozo, 4,536,498, Cl. 514-147.000.

Okamura, Hideaki: *See*—
Sakurada, Masahiko; Manabe, Sugio; Okamura, Hideaki; and Gocho, Nagahiro, 4,536,369, Cl. 422-65.000.

Okamura, Kazuhiko: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.

Okita, Naoki: *See*—
Hasegawa, Shigekazu; Okita, Naoki; and Machida, Satoshi, 4,535,847, Cl. 172-2.000.

Okitsu, Kiyoshi; and Go, Hiroyouki, to Daicel Chemical Industries, Ltd. Process for manufacturing polyetheresteramide. 4,536,563, Cl. 528-279.000.

Okonogi, Itaru; and Shimoda, Tatsuya, to Kabushiki Kaisha Suwa Seikosha. Columnar crystal permanent magnet and method of preparation. 4,536,233, Cl. 148-101.000.

Okudaira, Tadashi; Tsuboi, Akio; Hama, Yoshihisa; and Hara, Mamoru, to Toyo Boseki Kabushiki Kaisha. Blow-molded multi-ply vessel. 4,535,901, Cl. 215-1.00C.

Okumura, Hiroshi: *See*—
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,536,631, Cl. 219-10.770.

Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, to Sanraku-Ocean Co., Ltd.; and Panlabs, Inc. Antibiotics, neoviridogriseins, and their method of production. 4,536,397, Cl. 514-11.000.

Okutani, Tetsuya, to Takeda Chemical Industries, Ltd. Hexahydrodioxopyrimidines, their production and use. 4,536,504, Cl. 514-270.000.

Olapinski, Hans: *See*—
Dworak, Ulf; Olapinski, Hans; Fingerle, Dieter; and Krohn, Ulrich, 4,535,683, Cl. 92-224.000.

Oldfield, Peter M., to Easy Ride, Inc. Back rest cushion. 4,535,495, Cl. 5-432.000.

Olechowski, Jerome R., to Union Camp Corporation. Method of polymerizing rosin. 4,536,333, Cl. 260-99.500.

Olener, Joel L.; and Walker, Leigh E., to Occidental Chemical Corporation. Graft polymers of polymerizable monomers and olefin polymers. 4,536,545, Cl. 525-75.000.

Olsen, John H.; and Mordre, Sigurd C., to Flow Industries, Inc. High pressure liquid piston pump. 4,536,135, Cl. 417-383.000.

Olson, Robert A.; and Ross, Patrick D., to Elxsi. Improved disk file allocation and mapping system utilizing cylinder control blocks and file map having unbalanced tree structure. 4,536,837, Cl. 364-200.000.

Olson, Walter H., to Medtronic, Inc. Stroke volume controlled pacer. 4,535,774, Cl. 128-419.0PG.

Olsson, Ingemar, to ASEA Aktiebolag. Length measuring during rolling up of thin material. 4,535,949, Cl. 242-57.000.

Olympus Optical Co., Ltd.: *See*—
Fujibayashi, Kenji, 4,536,808, Cl. 360-74.200.
Sakurada, Masahiko; Manabe, Sugio; Okamura, Hideaki; and Gocho, Nagahiro, 4,536,369, Cl. 422-65.000.
Takayama, Syuichi, 4,535,771, Cl. 128-328.000.

Omark Industries, Inc.: *See*—
Gibson, Duane M.; and Scott, Lewis A., 4,535,667, Cl. 83-830.000.

Omori, Hatsutaro, to Kabushiki Kaisha Ohmori Seisakusho. Spinning type fishing reel with axially adjustable spool. 4,535,953, Cl. 242-84.21R.

Omura, Haruo: *See*—
Kondo, Mitsuru; Iwasaki, Hiroshi; Omura, Haruo; and Kanda, Nobuo, 4,536,220, Cl. 106-21.000.

Onder, Kemal: *See*—
Chen, Augustin T.; Goldwasser, David J.; and Onder, Kemal, 4,536,533, Cl. 524-161.000.

O'Neil, Jack, to Roy & Kiesel. Duck decoy movement apparatus. 4,535,560, Cl. 43-3.000.

Onizuka, Masahiro, to Mitsubishi Denki Kabushiki Kaisha. Dielectric fluid for electrical discharge machining. 4,536,633, Cl. 219-69.00D.

Ono, Katsuyasu, to NSK-Warner K. K. Position adjuster for seat belt. 4,536,011, Cl. 280-808.000.

Onoda Construction Materials Co., Ltd.: *See*—
Shimizu, Toshihiko, 4,536,417, Cl. 427-140.000.

Ooishi, Tadashi: *See*—
Tagami, Manabu; Urayama, Kenzi; Ooishi, Tadashi; Okamoto, Yukikazu; and Tsuji, Kozo, 4,536,498, Cl. 514-147.000.

Opprecht, Paul; Weil, Wolfgang; and Kaul, Martin, to Opprecht, Paul. Method and machine for electrical resistance roll seam welding with a single electrode-wire. 4,536,636, Cl. 219-83.000.

Orban, Ivan; and Troxler, Eduard, to Ciba-Geigy Corporation. Process for the preparation of sterically hindered hydroxphenylcarboxylic acid esters. 4,536,593, Cl. 560-75.000.

Orban, Joseph N. Integral tensioner assembly for tensioning, inserting and removing a stud. 4,535,656, Cl. 81-57.380.

Orcon Corporation: *See*—
Greci, John J.; and Hoopengardner, Merle C., 4,536,244, Cl. 156-304.400.

O'Regan, Timothy M.: *See*—
Burkum, Merlin E.; and O'Regan, Timothy M., 4,536,704, Cl. 324-52.000.

Orlando, Salvatore; and Martin, David R., to Dunham-Bush, Inc. Simplified unloader indicator for helical screw rotary compressor. 4,536,130, Cl. 417-63.000.

Orlov, Alexandr V.: *See*—
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

Oronzio deNora Impianti Elettrochimici S.p.A.: *See*—
deNora, Oronzio; and Spaziante, Placido M., 4,536,263, Cl. 204-98.000.

Osato, Yoichi: *See*—
Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, 4,536,460, Cl. 430-57.000.
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,536,459, Cl. 430-57.000.

Osborn, Harley G. Gauge wheel apparatus for a banding sprayer. 4,536,002, Cl. 280-43.180.
Osborne, Anthony, to Kearney-National, Inc. Electric circuit interrupter and associated mounting. 4,536,822, Cl. 361-340.000.
Osinga, Halbe, to U.S. Philips Corporation. Electromagnetic deflection unit and picture tube provided with such a unit. 4,536,729, Cl. 335-210.000.
Osmalov, Jerome S.: *See*—
Irving, Christopher L.; and Osmalov, Jerome S., 4,535,789, Cl. 131-84.100.
Osterlund, Rolf G. L.: *See*—
Bergwitz-Larsen, Carl-Aage; and Osterlund, Rolf G. L., 4,536,495, Cl. 514-54.000.
Osterman, Daniel E., to Pesiri Enterprises, Inc. Lathe tailstock drive attachment. 4,535,660, Cl. 82-31.000.
Otani, Junji; and Hirano, Makoto, to Honda Giken Kogyo Kabushiki Kaisha. Intake air heating device for internal combustion engine for motorcycles. 4,535,746, Cl. 123-556.000.
Otani, Masato: *See*—
McManus, Gregory K.; and Otani, Masato, 4,535,552, Cl. 34-236.000.
Otis Engineering Corporation: *See*—
Gano, John C.; and Kohn, Gary A., 4,535,968, Cl. 251-58.000.
Otouma, Hiroshi: *See*—
Oda, Yoshio; Otouma, Hiroshi; and Endoh, Eiji, 4,536,259, Cl. 204-35.100.
Otsap, Ben A.: *See*—
Tiep, Brian L.; Phillips, Robert E.; and Otsap, Ben A., 4,535,767, Cl. 128-207.180.
Otsuka Pharmaceutical Co.: *See*—
Miyazaki, Wasei; Sato, Tsuneo; Nakayama, Yasuo; and Sato, Tadao, 4,536,391, Cl. 424-94.000.
Otto, Fred D.: *See*—
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.
Otto, John B., Jr.; and Paul, James M., to Mobil Oil Corporation. Method for immobilizing contaminants in previously leached ores. 4,536,034, Cl. 299-5.000.
Ottung, Kaj. Valve assembly for the supply of a pressurized gaseous fluid to closed containers. 4,535,806, Cl. 137-493.600.
Owens-Corning Fiberglas Corporation: *See*—
Perkins, Richard A.; Brady, William C.; and Turner, Paul W., 4,536,202, Cl. 65-1.000.
Rinehart, James W.; Gilleland, Frank W.; and Engen, Byron W., 4,535,756, Cl. 126-450.000.
Oy Finn-Aqua Ltd.: *See*—
Huhta-Koivisto, Esko, 4,536,258, Cl. 202-180.000.
Oyama, Kiyotaka; and Harada, Tuneo, to Toyo Soda Manufacturing Co., Ltd. Process for producing a halogen-containing ethylbenzene derivative. 4,536,342, Cl. 260-465.00G.
Ozawa, Kaoru: *See*—
Kasubuchi, Takeshi; Hara, Takeo; and Ozawa, Kaoru, 4,536,804, Cl. 360-4.000.
P.L.G. Research Limited: *See*—
Mercer, Frank B., 4,536,429, Cl. 428-136.000.
Paarmann, James. Alignment tool for piece work. 4,535,979, Cl. 269-45.000.
Paccar Inc.: *See*—
Strong, John R., 4,535,977, Cl. 267-64.150.
Package Machinery Co.: *See*—
Mosher, Oren A.; and Douglas, Ellwood S., 4,535,856, Cl. 177-1.000.
Padden, Timothy J., to S. C. Johnson & Son, Inc. Collapsible foam aerosol hair product. 4,536,390, Cl. 424-47.000.
Page, John L.: *See*—
Brice, John C.; Page, John L.; and Whiffin, Peter A. C., 4,535,720, Cl. 118-415.000.
Palmgren, Karl S., to Regioninvest I Norr AB. Conduit-break valve for a pressure conduit or hose with a surrounding protective conduit or hose. 4,535,804, Cl. 137-458.000.
Pandhandle Industries, Inc.: *See*—
Hidle, Jerry, 4,535,947, Cl. 242-55.200.
Panhke, Klaus-Dieter; and Becker, Wilfried, to Rheinmetall GmbH. Drum magazine for large-caliber ammunition. 4,535,677, Cl. 89-46.000.
Panlabs, Inc.: *See*—
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.
Paoluccio, John A.; and Paoluccio, Robert, to Paoluccio, John A. Lifesaving device. 4,535,765, Cl. 128-203.110.
Paoluccio, Robert: *See*—
Paoluccio, John A.; and Paoluccio, Robert, 4,535,765, Cl. 128-203.110.
Papadakis, Nicholas; and Kalynchuk, Daniel G., to Diamond Shamrock Chemicals Company. pH and CO_2 sensing device and method of making the same. 4,536,274, Cl. 204-433.000.
Papamichalis, Panos E.; and Doddington, George R., to Texas Instruments Incorporated. LPC pole encoding using reduced spectral shaping polynomial. 4,536,886, Cl. 381-41.000.
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., to Standard Oil Company, The. Method of making acetals by catalytic reaction of aldehydes with hydroxyalkanes. 4,536,585, Cl. 549-453.000.
Papuga, Donald M.: *See*—
Matzner, Markus; and Papuga, Donald M., 4,536,543, Cl. 525-68.000.
Matzner, Markus; and Papuga, Donald M., 4,536,544, Cl. 525-68.000.
Paramount Industrial Companies, Inc.: *See*—
Diamonstein, Arthur, 4,535,494, Cl. 5-400.000.
Parker, David A.: *See*—
Collyear, John G.; and Parker, David A., 4,535,682, Cl. 92-153.000.
Parker, Dennis D. Water bed bar. 4,535,496, Cl. 5-451.000.
Parker, Robert P., to RCA Corporation. Additive pulse sampling circuit. 4,536,800, Cl. 358-243.000.
Parker, William H., to Del Norte Technology, Inc. Self monitoring intruder detecting system of noise-cancelling vibration detectors. 4,536,753, Cl. 340-566.000.
Parkinson, Kenneth: *See*—
Kennedy, Peter; and Parkinson, Kenneth, 4,536,449, Cl. 428-408.000.
Parkinson, Truman D.: *See*—
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.
Parma Corporation: *See*—
Rogers, Walter C., Jr., 4,536,029, Cl. 297-281.000.
Parry, Ian C.: *See*—
Bick, David E.; Flippance, Christopher F.; and Parry, Ian C., 4,535,872, Cl. 188-62.000.
Pasch, John H.: *See*—
Brander, Rita W.; Hammond, John E.; and Pasch, John H., 4,536,406, Cl. 426-104.000.
Pastor, Manuel G., to Recyclene Products, Inc. Solvent recovery apparatus. 4,536,256, Cl. 202-164.000.
Patarcity, Adam J., to Kennecott Corporation. Rubber-backed expansion joint. 4,536,018, Cl. 285-229.000.
Patel, Madhu C.: *See*—
Kruse, Richard M.; Moffett, David J.; Patel, Madhu C.; and Barnes, Ronald L., 4,536,648, Cl. 235-454.000.
Paterson, Linda M.: *See*—
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.
Paul, James M.: *See*—
Otto, John B., Jr.; and Paul, James M., 4,536,034, Cl. 299-5.000.
Paula, M. Fatima M. Two person garment. 4,535,479, Cl. 2-69.500.
Pawelzik, Manfred; Herring, William P.; and Kostorz, Jan R., to Friedrich Grohe Armaturenfabrick GmbH & Co. Lever head for single-lever mixing valves. 4,535,814, Cl. 137-625.170.
Payne, Nicholas S., to Procter & Gamble Company, The. Compositions comprising alkylpolysaccharide detergent surfactant. 4,536,319, Cl. 252-174.170.
PDI, Inc.: *See*—
Haasl, Robert J., 4,536,454, Cl. 428-516.000.
Pearce, Robert C., III, to Zoecon Corporation. Pest control device comprising α-cyano-3-phenoxybenzyl 2-(2-chloro-4-trifluoromethylanilino)-3-methylbutanoate. 4,536,388, Cl. 424-28.000.
Pearson, Bernard A.: *See*—
Bookout, Russell J.; Pearson, Bernard A.; and Jacobs, John W., 4,536,137, Cl. 417-390.000.
Pedersen, Robert H.: *See*—
Gur, David; Herron, John M.; and Pedersen, Robert H., 4,535,780, Cl. 128-659.000.
Peebles, William C., Jr.: *See*—
Wood, Joseph A.; and Peebles, William C., Jr., 4,535,811, Cl. 137-601.000.
Pehler, Rebecca C. C.; Whiteman, James R.; and Witte, Arnold C., Jr., to Texaco Inc. Lithium soap grease additive. 4,536,308, Cl. 252-32.70E.
Peiffer, Dennis G.: *See*—
Lundberg, Robert D.; Peiffer, Dennis G.; and Duvdevani, Ilan, 4,536,539, Cl. 524-521.000.
Pejouhy, Radi, to Texas Instruments Incorporated. Recessed lighting fixture and an insulation detecting protector device therefor. 4,536,817, Cl. 361-105.000.
Pemberton Sintermatic S.A.: *See*—
Treharne, Timothy J., 4,536,228, Cl. 148-6.15R.
Penning, Francis A., to Colorado School of Mines. Device for measuring guide alignment for mine shafts and the like. 4,535,541, Cl. 33-1.00H.
Pennsylvania Scale Company: *See*—
Gard, Eric A.; Kautter, William J., Jr.; and Bartsch, Kenneth E., 4,535,854, Cl. 177-1.000.
Pennwalt Corporation: *See*—
Haines, Paul G., 4,536,492, Cl. 502-216.000.
Shukla, Rahul B.; and Shipman, Douglas L., 4,535,576, Cl. 51-413.000.
Perkin-Elmer Corporation, The: *See*—
Shemwell, David M., 4,536,086, Cl. 356-348.000.
Siebert, Edward T., 4,536,089, Cl. 356-352.000.
Perkins, Richard A.; Brady, William C.; and Turner, Paul W., to Owens-Corning Fiberglas Corporation. Drain bushing. 4,536,202, Cl. 65-1.000.
Perng, Guu. Ventilation system for an enclosed space. 4,535,684, Cl. 98-31.000.
Perry, Steven B., to Keptel, Inc. Remotely-activated switching apparatus. 4,536,617, Cl. 179-81.00R.

Personal Products Co.: *See—*
Holtman, Dennis C., 4,536,432, Cl. 428-171.000.
Peruzzo, Roberto: *See—*
Besson, Duilio; De Marco, Claudio; Peruzzo, Roberto; and Ardit, Giuseppe, 4,535,599, Cl. 62-154.000.
Pesa, Frederick A.; and Haase, Thomas A., to Standard Oil Company (Ohio), The. Selective hydrocarboxylation of propylene to isobutyric acid. 4,536,597, Cl. 562-522.000.
Pesiri Enterprises, Inc.: *See—*
Osterman, Daniel E., 4,535,660, Cl. 82-31.000.
Peska, Jan: *See—*
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.
Peter, Joseph R.: *See—*
Navarro, Luis J.; Peter, Joseph R.; and Blair, Bruce W., 4,536,760, Cl. 340-722.000.
Peters, Bernd: *See—*
Weirich, Walter; and Peters, Bernd, 4,536,017, Cl. 285-26.000.
Peters, Gerald I.: *See—*
Tenser, Adrian; Prizlow, Alfred J.; and Peters, Gerald I., 4,535,577, Cl. 52-221.000.
Peters, Mark C.: *See—*
Thomas, Edward B.; and Peters, Mark C., 4,535,836, Cl. 165-86.000.
Petersen, Fred, to Jastram-Werke GmbH KG, Firma. Rudder rotor for watercraft and floating equipment. 4,535,714, Cl. 114-162.000.
Petraud, Gilles, to Cerimon. Trencher with plural digging wheels having adjustable inclination. 4,535,555, Cl. 37-94.000.
Petrolite Corporation: *See—*
Naiman, Michael I.; and Schield, John A., 4,536,191, Cl. 44-62.000.
Naiman, Michael I.; and Schield, John A., 4,536,551, Cl. 525-334.100.
Petuchowski, Samuel J.: *See—*
Rashleigh, Scott C.; and Petuchowski, Samuel J., 4,536,088, Cl. 356-351.000.
Peugeot Outillage Electrique: *See—*
Roger, Jean, 4,536,688, Cl. 318-490.000.
Pfeifle, Helmut: *See—*
Laufer, Helmut; Pfeifle, Helmut; and Straubel, Max, 4,535,742, Cl. 123-447.000.
Pfenninger, Billy J.; and Stansel, F. Harrison, to Krause Plow Corporation. Wing lift for foldable implements. 4,535,848, Cl. 172-311.000.
Pfizenmaier, Heinz: *See—*
Baum, Helmut; Pfizenmaier, Heinz; Schmidt, Ewald; and Strauss, Franz, 4,536,719, Cl. 331-37.000.
Pfizer Inc.: *See—*
Barth, Wayne E., 4,536,393, Cl. 424-114.000.
Kardys, Joseph A., 4,536,573, Cl. 544-49.000.
Stephens, Charles R., Jr.; and Torres, Anibal, 4,536,396, Cl. 514-2.000.
Welch, Willard M., Jr.; Harbert, Charles A.; Koe, B. Kenneth; and Kraska, Allen R., 4,536,518, Cl. 514-647.000.
Phalen, Thomas E., Jr.: *See—*
Burgoyne, John V.; and Phalen, Thomas E., Jr., 4,535,579, Cl. 52-408.000.
Philip Morris, Inc.: *See—*
Irving, Christopher L.; and Osmalov, Jerome S., 4,535,789, Cl. 131-84.100.
Wheless, Jack C., 4,535,790, Cl. 131-94.000.
Williams, David L.; Southwick, Everett W.; and Houminer, Yoram, 4,535,791, Cl. 131-278.000.
Phillips Petroleum Company: *See—*
Harris, Jesse R., 4,536,196, Cl. 55-16.000.
Hobbs, James W., 4,536,606, Cl. 585-650.000.
Shay, Lucas K., 4,536,407, Cl. 426-250.000.
Phillips, Robert E.: *See—*
Tiep, Brian L.; Phillips, Robert E.; and Otsap, Ben A., 4,535,767, Cl. 128-207.180.
Phillips, Robert R.: *See—*
Lundberg, Robert D.; and Phillips, Robert R., 4,536,547, Cl. 525-186.000.
Physio Technology, Inc.: *See—*
Castel, John C., 4,535,777, Cl. 128-421.000.
Phytogen: *See—*
Anderson, David M., 4,536,475, Cl. 435-172.300.
Piaget, Claude: *See—*
Guittard, Pierre; Guillemet, Bernard; and Piaget, Claude, 4,536,679, Cl. 313-541.000.
Pilot Man-Nen-Hitsu Kabushiki Kaisha: *See—*
Murata, Yasuzo; and Sato, Hiroshi, 4,536,428, Cl. 428-117.000.
Pioneer Electronic Corporation: *See—*
Kamimura, Teturo; Komatsubara, Masahiro; Ando, Shizuo; and Inanaga, Takugi, 4,536,811, Cl. 360-96.600.
Kenmostu, Isami; and Isobe, Nobuyuki, 4,536,865, Cl. 369-75.200.
Pipe Line Development Company, The: *See—*
Rogers, Elmer V., Jr., 4,535,822, Cl. 138-99.000.
Pirkle, James C., Jr.; Montagna, Angelo A.; and Ruziska, Philip A., to Exxon Research and Engineering Co. Process for conducting reactions using a circulating magnetically stabilized bed to control reaction temperature profile. 4,536,380, Cl. 423-359.000.
Pirota, Franco, to Saes Getters S.p.A. Getter assembly with an improved means of connecting the antenna mount to the getter material container. 4,536,677, Cl. 313-481.000.
Pitkin, Courtney G.: *See—*
Flynn, Robert G.; Pitkin, Courtney G.; and Hileman, Gregory A., 4,536,399, Cl. 514-63.000.
Pitney Bowes Inc.: *See—*
Bosse, Thomas W., 4,536,651, Cl. 250-231.00R.
Duwel, Edward C., 4,536,850, Cl. 364-550.000.
Plantronics, Inc.: *See—*
Wilson, Donald R., 4,536,888, Cl. 381-106.000.
Plastik-Maschinenbau GmbH & Co., KG: *See—*
Geng, Hans, 4,535,940, Cl. 241-3.000.
Plath, Ernst-Dieter; and Klinger, Dieter, to Sipra Patententwicklungs- und Beteiligungsgesellschaft mbH. Circular knitting machine for producing one-face plush webs. 4,535,608, Cl. 66-9.00R.
Platt Saco Lowell Corporation: *See—*
Glazener, Carey A., 4,535,512, Cl. 19-229.000.
Plessey Overseas Limited: *See—*
Rhodes, Stephen J., 4,536,249, Cl. 156-643.000.
Plonski, Siegfried G.: *See—*
Jones, Addison B.; and Plonski, Siegfried G., 4,536,882, Cl. 378-35.000.
Plummer, Ernest L., to FMC Corporation. Insecticidal [1,1'-biphenyl]-3-ylmethyl esters. 4,536,591, Cl. 560-8.000.
Polaroid Corporation: *See—*
d'Entremont, Alice M.; and Freeman, William T., 4,536,848, Cl. 364-526.000.
Politzer, Anton; and Bertiller, Roland, to Diehl GmbH & Co. Cooling arrangement for the gun barrels of firearms. 4,535,676, Cl. 89-14.100.
Polk, Todd J.; and Morrin, James F., to Cabot Medical Corporation. Ultrasonic medical instrument. 4,535,759, Cl. 128-24.00A.
Pollack, Solomon R.: *See—*
Brighton, Carl T.; and Pollack, Solomon R., 4,535,775, Cl. 128-419.00F.
Pollak, Thomas M.: *See—*
Reed, Cathy J.; and Pollak, Thomas M., 4,536,879, Cl. 372-77.000.
Pollinger, Hans; Saumweber, Eckart; Schorwerth, Mathias; and Wirth, Xaver, to Knorr-Bremse GmbH. Carrier for brake linings for disk brakes having divided lining elements. 4,535,874, Cl. 188-73.100.
Polygram GmbH: *See—*
Nusselder, Frederik B., 4,535,888, Cl. 206-444.000.
Polysar Limited: *See—*
Wunder, Richard H., 4,536,568, Cl. 528-487.000.
Ponjee, Johannes J.; and Melgert, Frederik B., to U.S. Philips Corporation. Matrix and method of manufacturing articles of a synthetic resin by the matrix. 4,536,416, Cl. 427-131.000.
Pons, Robert L.: *See—*
Sobczak, Isidore F.; Cleveland, William C., Jr.; and Pons, Robert L., 4,535,961, Cl. 248-183.000.
Pont-a-Mousson S.A.: *See—*
Malivoir, Roger; and Mayer, Gilbert, 4,535,882, Cl. 198-425.000.
Popescu, Francine. Alkaline bath for the electrodeposition of bright zinc. 4,536,261, Cl. 204-55.00R.
Porcher, Alain, to Societe Nouvelle Rockall France S.A. Label for the identification of objects and apparatus for using said label. 4,535,557, Cl. 40-300.000.
Porta Systems Corp.: *See—*
Hung, Peter, 4,536,050, Cl. 339-99.00R.
Porter, George Z.: *See—*
Bryan, Darold R.; and Porter, George Z., 4,535,717, Cl. 114-230.000.
Post, Karl-Heinz; and Eich, Otwin, to Barmag Barmer Maschinenfabrik Aktiengesellschaft. Throttle valve. 4,535,966, Cl. 251-31.000.
Postma, Pieter, to U.S. Philips Corporation. Electrodeless gas discharge lamp having heat conductor disposed within magnetic core. 4,536,675, Cl. 313-46.000.
Pourrias, Bernard M.: *See—*
Bourgery, Guy R.; Lacour, Alain P.; Pourrias, Bernard M.; and Santamaria, Raphael, 4,536,500, Cl. 514-212.000.
Powell, James E., to Shell Development Company. Trimethyl 6-oxabicyclo[3.2.1]octan-4-ols and 4-ones. 4,536,586, Cl. 549-463.000.
Powell, Philip R. Leather covering grip enhancement. 4,536,413, Cl. 427-11.000.
Powers, Richard, to Accupac, Inc. Method of filling containers with a viscous substance. 4,535,823, Cl. 141-5.000.
PPG Industries Canada, Ltd.: *See—*
Goldsmith, Elmar L., 4,536,418, Cl. 427-213.000.
PPG Industries, Inc.: *See—*
Hsu, Ed C., 4,536,447, Cl. 428-392.000.
Hsu, Edward C.; and Temple, Chester S., 4,536,446, Cl. 428-392.000.
Krumwiede, John F.; Harrell, William C.; Hilliard, William G.; and Harris, James E., 4,536,205, Cl. 65-135.000.
Pradel, Gunter: *See—*
Hoffmann, Jurgen; Pradel, Gunter; and Reulecke, Fritz, 4,536,291, Cl. 210-457.000.
Prentice, Alan L.: *See—*
Allam, Rodney J.; and Prentice, Alan L., 4,535,594, Cl. 60-654.000.
Prescott, Everett J. Adjustable manhole frame and method of construction and installation. 4,536,103, Cl. 404-26.000.
Pressman, David: *See—*
Goulter, Victor H., 4,535,911, Cl. 220-404.000.
Prevorsek, Dusan C.: *See—*
Kavesh, Sheldon; and Prevorsek, Dusan C., 4,536,536, Cl. 524-462.000.
Price, Barry J.: *See—*
Clitherow, John W.; Price, Barry J.; Bradshaw, John; Martin-Smith, Michael; Mackinnon, John W. M.; Judd, Duncan B.; and Hayes, Roger, 4,536,508, Cl. 514-383.000.

Price, John J., Jr.: *See—*
Miller, Ira; Rumbaugh, Robert C.; and Price, John J., Jr., 4,536,663, Cl. 307-355.000.

Price, Michael G.; Zehl, Otis G.; and Bonney, Robert D., to Litton Systems, Inc. Thermal stabilization for an acousto-optic device. 4,536,062, Cl. 350-358.000.

Price, Robert W., to Dow Chemical Company, The. Plug valve. 4,535,803, Cl. 137-375.000.

Prime Computer, Inc.: *See—*
Bahr, Richard G.; and Hogan, Thomas C., 4,536,876, Cl. 370-86.000.

Prine, David W., to Chamberlain Manufacturing Corporation. Method and apparatus for structural monitoring with acoustic emission and using pattern recognition. 4,535,629, Cl. 73-587.000.

Prioretti, Guy. Device for slowing down and stopping machines rolling on rails. 4,535,701, Cl. 104-258.000.

Pristo, Paul J.: *See—*
Fagan, Joseph H.; and Pristo, Paul J., 4,535,937, Cl. 239-206.000.

Prizlow, Alfred J.: *See—*
Tenser, Adrian; Prizlow, Alfred J.; and Peters, Gerald I., 4,535,577, Cl. 52-221.000.

Probe Adventures, Inc.: *See—*
Underwood, Mark R., 4,535,787, Cl. 130-27.00T.

Procter & Gamble Company, The: *See—*
Cook, Thomas E.; and Llenado, Ramon A., 4,536,318, Cl. 252-174.170.
Hardy, Frederick E.; Kitko, David J.; and Cambre, Cushman M., 4,536,314, Cl. 252-102.000.
Llenado, Ramon A.; Mao, Mark H. K.; and Nicholson, Denzel A., 4,536,317, Cl. 252-174.170.
Payne, Nicholas S., 4,536,319, Cl. 252-174.170.

Propane Carburetion Systems, Inc.: *See—*
Batchelor, William H., 4,535,728, Cl. 123-27.0GE.

Prosenbauer, Otto, to Inject Star Pokelmaschinen Gesellschaft m.b.H. Device for severing the meat adhering to bones from these bones. 4,535,504, Cl. 17-1.00G.

Prost, Jean-Louis; and Gross, Daniel, to Battelle Memorial Institute. Method of and apparatus for determining the level of liquid in a vessel. 4,535,627, Cl. 73-290.00B.

Provost, Pierre; and Bedard, Jean T., to Vaqua Pneumatique. Weighing scale for individual wheels of a tandem set of wheels. 4,535,858, Cl. 177-134.000.

Pruneau, Albert, Jr.: *See—*
Gagliardo, John P.; Morse, Donald K.; and Pruneau, Albert, Jr., 4,535,846, Cl. 169-25.000.

Przybysz, John X.: *See—*
Miller, Donald L.; and Przybysz, John X., 4,536,783, Cl. 357-38.000.

PTC Aerospace Inc.: *See—*
Brennan, Edward J., 4,536,027, Cl. 297-124.000.

Puls, Craig, to Holiday Cups, Inc. Cup making apparatus with lubricating means. 4,536,173, Cl. 493-149.000.

Purcell, Robert F.: *See—*
Kayser, Robert B.; and Purcell, Robert F., 4,536,300, Cl. 252-8.55D.

Putkowski, Ladislao W. Press with wedge. 4,535,689, Cl. 100-214.000.

Q & Q Retreading System AB: *See—*
Gripenholt, Ninneh; Berggren, Benny; and Boling, Goran, 4,536,242, Cl. 156-96.000.

Quamco, Inc.: *See—*
MacAfee, Jerry D., 4,535,970, Cl. 251-315.000.

Quaranta, Cosimo, to Tubiflex, S.p.a. Fluid conduit system. 4,536,019, Cl. 285-322.000.

Quartztronics, Inc.: *See—*
EerNisse, Errol P.; and Ward, Roger W., 4,535,638, Cl. 73-862.590.

Queen's University at Kingston: *See—*
Giles, Alan R.; and Mann, Kenneth G., 4,536,392, Cl. 424-101.000.
Wolfe, Saul; Westlake, Donald; and Jensen, Susan, 4,536,476, Cl. 435-183.000.

Quinn, Harold F. Apparatus for supporting a pipe and pipe snapping tool. 4,535,924, Cl. 225-104.000.

Qume Corporation: *See—*
Robinson, Joseph B., 4,536,867, Cl. 369-282.000.

Rabinowitz, Lewis, to Arnell Inc. Gum massager. 4,535,761, Cl. 128-62.00A.

Rahrig, Douglas B., to B. F. Goodrich Company, The. Glass fiber reinforced vinyl chloride polymer products and process for their preparation. 4,536,360, Cl. 264-142.000.

Raines, Kenneth C., to Burron Medical Inc. Normally closed check valve. 4,535,820, Cl. 137-854.000.

Rak, Stanley F.: *See—*
DeVale, Donald P.; and Rak, Stanley F., 4,536,845, Cl. 364-500.000.

Ramachandran, Pallassanna; and Grand, Paul S., to Colgate Palmolive Co. Perfume-containing carrier having surface-modified particles for laundry composition. 4,536,315, Cl. 252-174.110.

Ramachandran, Pallassanna, to Colgate-Palmolive Co. Fabric softening composition containing surface modified clay. 4,536,316, Cl. 252-174.110.

Ramachandran, Venkataraman, to Ethyl Corporation. Process for preparing alpha-arylacrylonitriles. 4,536,343, Cl. 260-465.00F.

Ramchandani, Chander B.: *See—*
Stoffel, James C.; and Ramchandani, Chander B., 4,536,874, Cl. 370-85.000.

Ramey, Carl; Hill, Royce W.; and Beijen, James H., to Micro Plastics, Inc. Semi-automatic pneumatic expansion rivet gun. 4,535,925, Cl. 227-55.000.

Ramisse, Yves D.; Baboulet, Jean-Pierre C.; Vie, Michel P.; and Malaval, Paul C., to L'Etat Francais. Composition for protection against stray currents and process for using the same. 4,536,327, Cl. 252-511.000.

Ramsey, David L., executor: *See—*
Ace, Marshall E., Jr., deceased; Mattson, Ray W.; and Wittenberg, Mark S., 4,536,162, Cl. 446-102.000.

Rangwala, Huseni A.: *See—*
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.

Rannenberg, George C., to United Technologies Corporation. High efficiency air cycle air conditioning system. 4,535,606, Cl. 62-402.000.

Rashleigh, Scott C.; and Petuchowski, Samuel J. Polarimetric Fabry-Perot sensor. 4,536,088, Cl. 356-351.000.

Rattlingourd, Glen D.; Currie, Robert J.; and Moss, Stanley D., to Sperry Corporation. Bit serial convolutional decoder for VLSI implementation. 4,536,878, Cl. 371-43.000.

Rauter, Jurgen: *See—*
Maurer, Dieter; Rauter, Jurgen; and Dziuba, Peter, 4,536,003, Cl. 280-95.00R.

Ray, Richard C., to AT&T Bell Laboratories. Buck-boost converter with dual-mode control for battery charging. 4,536,696, Cl. 320-21.000.

Raychaudhuri, Dipankar; and Schiff, Leonard N., to RCA Corporation. Distortion reducer for companded analog systems. 4,536,846, Cl. 364-514.000.

Raychem Corporation: *See—*
Toy, Lester T., 4,536,445, Cl. 428-349.000.

Raymond, Gary E. Dispenser means for rolled sheet materials. 4,535,664, Cl. 83-162.000.

Raytheon Company: *See—*
Adlerstein, Michael G., 4,536,469, Cl. 430-314.000.
Fattal, Jean A.; and Roesler, Michael L., 4,536,685, Cl. 318-254.000.

RCA Corporation: *See—*
Babcock, William E., 4,536,684, Cl. 315-411.000.
Dischert, William A., 4,536,238, Cl. 156-64.000.
Faith, Thomas J., Jr., 4,536,223, Cl. 148-1.500.
Fernsler, Ronald E.; and Vinekar, Sanjay R., 4,536,794, Cl. 358-158.000.
Harlan, Wayne E., 4,536,796, Cl. 358-166.000.
Maturo, Robert J.; Chin, Danny; and Henderson, John G. N., 4,536,797, Cl. 358-192.100.
Murphy, Wesley W., III; and Naimpally, Saiprasad V., 4,536,787, Cl. 358-38.000.
Naimpally, Saiprasad V., 4,536,788, Cl. 358-38.000.
Parker, Robert P., 4,536,800, Cl. 358-243.000.
Raychaudhuri, Dipankar; and Schiff, Leonard N., 4,536,846, Cl. 364-514.000.

Rebmann, Rolf: *See—*
Schutz, Matthias; Sivers, Rolf V.; Roesems, Dirk; and Rebmann, Rolf, 4,535,964, Cl. 248-607.000.

Rebold, Jerome I.: *See—*
McCarty, George W.; Rebold, Jerome I.; and Smith, Somers H., III, 4,536,694, Cl. 320-2.000.

Recyclene Products, Inc.: *See—*
Pastor, Manuel G., 4,536,256, Cl. 202-164.000.

Redicon Corporation: *See—*
Bulso, Joseph D., Jr.; Doyle, Stephen D.; and McClung, James A., 4,535,618, Cl. 72-349.000.

Reed, Cathy J.; and Pollak, Thomas M., to Sanders Associates, Inc. Pyrotechnic lamp. 4,536,879, Cl. 372-77.000.

Reed, Steven P.: *See—*
Naslund, Erik I.; and Reed, Steven P., 4,536,149, Cl. 425-394.000.

Reese, Ron: *See—*
de Witt, Clinton J.; and Reese, Ron, 4,536,188, Cl. 44-53.000.

Reffert, Rudi W.: *See—*
Hambrecht, Juergen; Reffert, Rudi W.; Minges, Peter; and Swoboda, Johann, 4,536,567, Cl. 528-486.000.

Regan, Donald J., deceased (by Regan, Joyce H., heir), to Nordson Corporation. Liquid dispensing gun with substrate separator. 4,535,719, Cl. 118-410.000.

Regan, Joyce H., heir: *See—*
Regan, Donald J., deceased, 4,535,719, Cl. 118-410.000.

Regelman, Dale F., to Upjohn Company, The. Catalyst compositions for trimerizing organic isocyanates. 4,536,490, Cl. 502-167.000.

Regioninvest I Norr AB: *See—*
Palmgren, Karl S., 4,535,804, Cl. 137-458.000.

REICH Spezialmaschinen GmbH: *See—*
Dettelbach, Alfred; and Gresser, Gerhard, 4,535,574, Cl. 51-204.000.
Dettelbach, Alfred; Gresser, Gerhard; and Einsele, Gerhard, 4,535,965, Cl. 249-83.000.

Reichardt, Manfred; and Schutzle, Gunter, to Allied Corporation. Plug connection. 4,536,045, Cl. 339-14.00P.

Reid, Sydney J., Jr.; and Zlotnick, Fredrick, to Motorola, Inc. Volume control for CATV and method therefor. 4,536,798, Cl. 358-197.000.

Reinke, Theodore S., to Sea Savory, Inc. Method and apparatus for removing lump meat from a Chesapeake Bay blue crab. 4,535,507, Cl. 17-48.000.

Reiser, Peter: *See—*
Langen, Herbert; Reiser, Peter; and Kenner, Erich, 4,536,151, Cl. 431-1.000.

Reist, Parker C. Gas filter apparatus and method of filtering. 4,536,200, Cl. 55-96.000.

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Downey, Holmes A., 4,536,170, Cl. 464-80.000.
Rembold, Bernhard; and Solbach, Klaus, to Licentia Patent-Verwaltungs-GmbH. Microwave directional antenna employing surface wave mode. 4,536,767, Cl. 343-785.000.
Remington, John L.; and Seidel, Harry W., to Stanley Works, The. Tool handling and transportation system. 4,535,897, Cl. 211-70.600.
Renger, Larry H.; and McKittrick, Mike T., to Mattel, Inc. Cap firing animated figure toy. 4,536,166, Cl. 446-298.000.
Renishaw plc: *See*—
McMurtry, David R., 4,536,661, Cl. 307-119.000.
Reno, John M.: *See*—
Sokoloff, Roger L.; and Reno, John M., 4,536,478, Cl. 436-533.000.
Rensselaer Polytechnic Institute: *See*—
Roberts, Jack; and Johnson, Robert L., 4,535,486, Cl. 623-22.000.
Repella, Dennis A.: *See*—
Lim, Drahoslav; Kulkarni, Chidambar L.; and Repella, Dennis A., 4,536,554, Cl. 526-264.000.
Reulecke, Fritz: *See*—
Hoffmann, Jurgen; Pradel, Gunter; and Reulecke, Fritz, 4,536,291, Cl. 210-457.000.
Reuter, Rolf, to Maurmann Ingenieurburo GmbH. Air outlet for air conditioning systems. 4,535,685, Cl. 98-40.120.
Reuther, John F., to Westinghouse Electric Corp. System and method employing a digital computer for automatically synchronizing a gas turbine or other electric power plant generator with a power system. 4,536,126, Cl. 290-40.00R.
Revin, Alexandr A.: *See*—
Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev, Jury A., 4,536,041, Cl. 303-119.000.
Rey, Paul A., to Calgon Corporation. Use of poly (DMDAAC) as coal fine slurry viscosity reducer. 4,536,186, Cl. 44-51.000.
Rheinmetall GmbH: *See*—
Panhke, Klaus-Dieter; and Becker, Wilfried, 4,535,677, Cl. 89-46.000.
Rhodes, Stephen J., to Plessey Overseas Limited. Integrated circuit processing methods. 4,536,249, Cl. 156-643.000.
Rhone-Poulenc Agrochimie: *See*—
Giraudon, Raymond; and Santini, Georges, 4,536,502, Cl. 514-227.000.
Marcoux, Bernard; and Bridon, Jean-Noel, 4,536,506, Cl. 514-342.000.
Rias, Jean-Claude, to Isover Saint-Gobain. Multi-roll package of compressible materials. 4,535,587, Cl. 53-436.000.
Richards, Camille. Inclination signaling device on a tennis racquet. 4,535,986, Cl. 273-29.00A.
Richardson, Dora N.: *See*—
Harper, Michael J. K.; Richardson, Dora N.; and Walpole, Arthur L., deceased, 4,536,516, Cl. 514-514.000.
Richardson-Vicks Ltd.: *See*—
White, Christopher D.; and Levy, Alan A., 4,536,389, Cl. 424-44.000.
Rickert, Milton E., Jr., to General Electric Company. Process and composition for producing permanently water wettable surfaces. 4,536,420, Cl. 427-257.000.
Ricoh Company, Ltd.: *See*—
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,536,437, Cl. 428-212.000.
Mochimaru, Hideaki, 4,535,982, Cl. 271-127.000.
Riebock, William D.: *See*—
Sandy, Julius W.; Riebock, William D.; and Bauscher, Billy J., 4,536,107, Cl. 408-214.000.
Rieman, Richard F., to AT&T Technologies, Inc. Remote telephone on-hook, off-hook control and indication circuit. 4,536,622, Cl. 179-103.000.
Riemenschneider, Paul K., III, to Highlight Industries, Inc. Stretch film wrapping device. 4,535,951, Cl. 242-754.000.
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Baertschi, Peter; Wetter, Kurt; and Graf, Felix, 4,535,515, Cl. 28-245.000.
Riewerts, Erroll S.: *See*—
King, James D.; and Riewerts, Erroll S., 4,536,711, Cl. 324-306.000.
Rigi Systems, Inc.: *See*—
Holzgang, Curtis R.; Leavitt, Mark K.; Doney, Alfred D.; and Kuehn, James, 4,536,755, Cl. 340-573.000.
Rigterink, Raymond H.; and Sbragia, Ronald J., to Dow Chemical Company, The. Substituted N-aroyl N'-phenyl urea compounds. 4,536,341, Cl. 260-453.0AR.
Riker Laboratories, Inc.: *See*—
Wade, James J., 4,536,579, Cl. 544-58.200.
Riley, Larry T., to Ace Glass Incorporated. Valve structures. 4,535,969, Cl. 251-215.000.
Rine, James C.: *See*—
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.
Rinehart, James W.; Gilleland, Frank W.; and Engen, Byron W., to Owens-Corning Fiberglas Corporation. Solar collectors. 4,535,756, Cl. 126-450.000.
Ringel, Gerhard; and Fencsik, Gabor, to MDS Qantel, Inc. Multiprocessor system with communication controller using poll flags for non-contentious slot reservation. 4,536,838, Cl. 364-200.000.
Ringold, Howard J.: *See*—
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,536,503, Cl. 514-255.000.
Rink, Richard H., to Huron Manufacturing Corporation. Cutting tooth for strip mining apparatus. 4,536,037, Cl. 299-92.000.
Riou, Claude R.; and Fayard, Jean F., to Societe Anonyme: Aussedat-Rey. Thermographic recording compositions. 4,536,219, Cl. 106-21.000.
Ritschel, Werner; Diery, Helmut; and Hille, Martin, to Hoechst Aktiengesellschaft. Bisamides, a process for their preparation and their use. 4,536,339, Cl. 260-404.500.
Rivera, Paolo: *See*—
Carena, Ugo; and Rivera, Paolo, 4,536,650, Cl. 250-231.0SE.
Roane, James B. Endodontic instrument. 4,536,159, Cl. 433-224.000.
Robert Bosch GmbH: *See*—
Baum, Helmut; Pfizenmaier, Heinz; Schmidt, Ewald; and Strauss, Franz, 4,536,719, Cl. 331-37.000.
Esper, Friedrich J.; and Gohl, Walter, 4,535,487, Cl. 623-22.000.
Feder, Meinrad; and Stegmaier, Alwain, 4,535,816, Cl. 137-625.650.
Kubach, Hans; Kemmner, Ulrich; and Grimm, Gerold, 4,536,731, Cl. 335-272.000.
Laufer, Helmut; Pfeifle, Helmut; and Straubel, Max, 4,535,742, Cl. 123-447.000.
Roberts, Griffith T. Solar energy collector. 4,535,755, Cl. 126-443.000.
Roberts, Jack; and Johnson, Robert L., to Rensselaer Polytechnic Institute. Low friction bearing surfaces and structures particularly for artificial prosthetic joints. 4,535,486, Cl. 623-22.000.
Roberts, Victor D., to General Electric Company. Resistive lamp ballast with re-ignition circuit. 4,536,680, Cl. 315-49.000.
Robertson, James D. Twist-cam refrigerant dispensing valve. 4,535,802, Cl. 137-322.000.
Robinson, Joseph B., to Qume Corporation. Self-centering disc. 4,536,867, Cl. 369-282.000.
Roca Nierga, Manuel, to SPICA S.p.A. Advance variator for a fuel injection pump. 4,535,745, Cl. 123-502.000.
Rockwell International Corporation: *See*—
Alexander, Robert H., 4,535,850, Cl. 173-12.000.
Jaqua, Vance W., 4,535,518, Cl. 29-157.00C.
Jones, Addison B.; and Plonski, Siegfried G., 4,536,882, Cl. 378-35.000.
Rosman, Irwin E.; and Wagner, William R., 4,535,840, Cl. 165-167.000.
Southwell, William H., 4,536,063, Cl. 350-395.000.
Sprouse, Kenneth M.; Schuman, Merlin D.; and Combs, L. Paul, 4,536,603, Cl. 585-539.000.
Rockwell-Golde G.m.b.H.: *See*—
Grimm, Rainer; and Elfen, Adolf, 4,536,829, Cl. 362-74.000.
Rodd, Derek E. Hot water heat distributor. 4,535,934, Cl. 237-70.000.
Roes, John B.; Kelly, Guy M.; Case, Robert F.; and Deming, Chandler R., to Cubic Western Data. Modularized ticket handling system for use in automatic ticket preparation system. 4,535,892, Cl. 209-3.300.
Roesems, Dirk: *See*—
Schutz, Matthias; Sivers, Rolf V.; Roesems, Dirk; and Rebmann, Rolf, 4,535,964, Cl. 248-607.000.
Roesler, Michael L.: *See*—
Fattal, Jean A.; and Roesler, Michael L., 4,536,685, Cl. 318-254.000.
Roger, Jean, to Peugeot Outillage Electrique. Electric drilling machine. 4,536,688, Cl. 318-490.000.
Rogers, Elmer V., Jr., to Pipe Line Development Company, The. Fitting installation device. 4,535,822, Cl. 138-99.000.
Rogers, Walter C., Jr., to Parma Corporation. Rocking chair. 4,536,029, Cl. 297-281.000.
Rohde, Ralph: *See*—
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.
Rohlicek, Vojtech; Hruby, Jaroslav; Nohavica, Dusan; Hrdlicka, Jan; Vykouk, Vlastimil; and Kubec, Frantisek, to Ceskoslovenska akademie ved. Apparatus for stimulating acupuncture points by light radiation. 4,535,784, Cl. 128-735.000.
Rohm, Gunter H. Jaw position and/or force detector for power chuck. 4,536,000, Cl. 279-1.00R.
Rohner, Joachim; and Kamp, Heinz, to W. Schlafhorst & Co. Method and device for locating and holding a thread end. 4,535,945, Cl. 242-35.60R.
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., to Merck & Co., Inc.; and Merck Frosst Canada, Inc. Prostaglandin antagonists. 4,536,507, Cl. 514-362.000.
Rollmann, Louis D., to Mobil Oil Corporation. Upgrading heavy crude oils to lighter products with a dispersed zeolite. 4,536,282, Cl. 208-120.000.
Rolston, John H.: *See*—
Wanke, Sieghard E.; Rangwala, Huseni A.; Otto, Fred D.; Dalla Lana, Ivo G.; Paterson, Linda M.; and Rolston, John H., 4,536,488, Cl. 502-159.000.
Romand-Monnier, Jacques; and Lejeune, Jean-Pierre, to Alsthom-Atlantique. Motor-driven pump assembly which can be used under water. 4,536,138, Cl. 417-422.000.
Romano, Robert P., to Comus International Corp. Multiple pole mercury switch particularly adapted for thermostat applications. 4,536,727, Cl. 335-54.000.
Roofblok Limited: *See*—
Burgoyne, John V.; and Phalen, Thomas E., Jr., 4,535,579, Cl. 52-408.000.
Rooks, J. F. Girard. Method for treating neuroleptic induced tardive dyskinesia. 4,536,403, Cl. 514-483.000.

Rooney, Clarence S.: *See—*
Rokach, Joshua; Rooney, Clarence S.; and Cragoe, Edward J., Jr., 4,536,507, Cl. 514-362.000.

Rosaen, Nils O. Automatic shut off valve. 4,535,797, Cl. 137-87.000.

Rosman, Irwin E.; and Wagner, William R., to Rockwell International Corporation. Internally manifolded unibody plate for a plate/fin-type heat exchanger. 4,535,840, Cl. 165-167.000.

Ross, John B.: *See—*
Solomon, David H.; Ross, John B.; Girolamo, Mario; and Brett, Robert A., 4,536,016, Cl. 283-111.000.

Ross, Patrick D.: *See—*
Olson, Robert A.; and Ross, Patrick D., 4,536,837, Cl. 364-200.000.

Ross, Richard J., to Baker Oil Tools, Inc. Well tool setting assembly. 4,535,842, Cl. 166-63.000.

Rossmann, Axel; and Merz, Herbert, to Motoren-Und Turbinen-Union. Turbocompressor provided with an abradable coating. 4,536,127, Cl. 415-174.000.

Roussel Uclaf: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,536,345, Cl. 260-465.00D.

Rowbottom, Kenneth T.: *See—*
Hignett, Geoffrey J.; Rowbottom, Kenneth T.; and Sanderson, William R., 4,536,313, Cl. 252-100.000.

Rowekamp, Patricia A., to Drackett Company, The. Bottle. 4,535,906, Cl. 215-329.000.

Rowland-Hill, E. William; and Sheehan, Ronald T., to Sperry Corporation. Lateral leveling mechanism for combine cleaning apparatus. 4,535,788, Cl. 130-27.0AE.

Roy & Kiesel: *See—*
O'Neil, Jack, 4,535,560, Cl. 43-3.000.

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Bahr, Dietrich J.; Burckardt, Karl-Heinz; Goldrian, Gottfried; Rudolph, Volker; and Spruth, Wilhelm G., 4,536,769, Cl. 346-1.100.

Rufer, Rosalyn J.; and Filbert, Walter H., to General Electric Company. Modified silicon elastomers having improved flex life and method therefor. 4,536,553, Cl. 525-106.000.

Rumbaugh, Robert C.: *See—*
Miller, Ira; Rumbaugh, Robert C.; and Price, John J., Jr., 4,536,663, Cl. 307-355.000.

Russell, Norton A.: *See—*
Duncan, Richard K.; and Russell, Norton A., 4,535,818, Cl. 137-846.000.

Ruth-Larson, Dawn; and Nels, James S., to Kimberly-Clark Corporation. Surgical gown for high fluid procedures. 4,535,481, Cl. 2-114.000.

Ruziska, Philip A.: *See—*
Pirkle, James C., Jr.; Montagna, Angelo A.; and Ruziska, Philip A., 4,536,380, Cl. 423-359.000.

Ryan, Thomas D., to Formulabs Industrial Inks, Inc. Overprinting of dye colored poly(vinyl chloride) resins. 4,536,184, Cl. 8-508.000.

S. C. Johnson & Son, Inc.: *See—*
Padden, Timothy J., 4,536,390, Cl. 424-47.000.

Saastamoinen Oy: *See—*
Kylmanen, Pasi; and Takalo, Pasi, 4,536,120, Cl. 414-173.000.

Sacca, Demetrio B., to General Motors Corporation. Heat exchanger with convoluted air center strip. 4,535,839, Cl. 165-153.000.

Sachse, Burkhard: *See—*
Hertenstein, Ulrich; Mildenberger, Hilmar; Sachse, Burkhard; and Hartz, Peter, 4,536,509, Cl. 514-383.000.

Saes Getters S.p.A.: *See—*
Pirota, Franco, 4,536,677, Cl. 313-481.000.

Sagi, Zsigmond L.; and Hof, Craig R. Slip resistant absorbent pad. 4,536,433, Cl. 428-195.000.

St. Pierre, Michael R.: *See—*
Missimer, Dale J.; and St. Pierre, Michael R., 4,535,597, Cl. 62-55.500.

Saito, Etsuro, to Sony Corporation. Magnetic disc recording and/or reproducing apparatus. 4,536,813, Cl. 360-137.000.

Saito, Makoto; Sakamoto, Masakatsu; Uchida, Kenji; and Kamino, Yukishige, to Hitachi, Ltd. Apparatus for continuous pressure feeding of slurry. 4,536,131, Cl. 417-102.000.

Saito, Osamu: *See—*
Sumiya, Kenji; Togawa, Fumio; and Saito, Osamu, 4,536,444, Cl. 428-340.000.

Saitoh, Keishi: *See—*
Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, 4,536,460, Cl. 430-57.000.
Misumi, Teruo; Ogawa, Kyosuke; Kanbe, Junichiro; Saitoh, Keishi; Osato, Yoichi; and Shirai, Shigeru, 4,536,459, Cl. 430-57.000.

Saitou, Tatuya: *See—*
Yamawaki, Takesi, deceased; Kusuhara, Masakazu; and Saitou, Tatuya, 4,536,025, Cl. 296-37.160.

Sakaguchi, Akira: *See—*
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Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Heat developable element with stabilizer. 4,536,466, Cl. 430-203.000.

Sakaguchi, Yukihiko; Aono, Toshiaki; and Fujita, Shinsaku, to Fuji Photo Film Co., Ltd. Heat development of silver halide element with redox dye releaser and stabilizer. 4,536,467, Cl. 430-203.000.

Sakai, Shinji: *See—*
Kitagishi, Nozomu; Suzuki, Kenji; and Sakai, Shinji, 4,536,073, Cl. 354-406.000.

Sakai, Shoji: *See—*
Nakahara, Teiji; Sakai, Shoji; Noda, Koshi; Fujiwara, Michiaki; and Kubota, Nobunori, 4,535,944, Cl. 242-35.50A.

Sakakibara, Kenji, to Brother Kogyo Kabushiki Kaisha. Method of controlling a stepping motor. 4,536,691, Cl. 318-696.000.

Sakakibara, Shumpei; Yugari, Yasumi; and Hashimoto, Shigebumi, to Ajinomoto Co., Inc. Amino acid derivatives and antihypertensive drugs containing them. 4,536,395, Cl. 514-7.000.

Sakakibara, Yasuyuki: *See—*
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,535,743, Cl. 123-472.000.

Sakamoto, Izumi; and Takagi, Kunihiko, to Unitika Ltd. Anti-cancer device. 4,536,387, Cl. 424-14.000.

Sakamoto, Masakatsu: *See—*
Saito, Makoto; Sakamoto, Masakatsu; Uchida, Kenji; and Kamino, Yukishige, 4,536,131, Cl. 417-102.000.

Sakka, Kenji, to Hitachi, Ltd. Method of and apparatus for warming high-pressure feed water heaters for power plants. 4,535,593, Cl. 60-646.000.

Sakurada, Kenichi; and Nishino, Takaichi, to Nissan Motor Co., Ltd.; and Tachikawa Spring Company, Limited. Seat with adjustable side support device. 4,536,030, Cl. 297-284.000.

Sakurada, Masahiko; Manabe, Sugio; Okamura, Hideaki; and Gocho, Nagahiro, to Olympus Optical Company Limited. Automatic analyzing apparatus. 4,536,369, Cl. 422-65.000.

Sakurai, Kazuhiro: *See—*
Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, 4,535,815, Cl. 137-625.480.

Salem, Emilio, to Novopac S.n.c. dei F.lli Salem E. & O. Flat packs for incoherent products with anti-crushing device. 4,535,886, Cl. 206-205.000.

Samodovitz, Arthur J. Multiple curved transducers providing extended depth of field. 4,535,630, Cl. 73-642.000.

San-Mar Laboratories, Inc.: *See—*
Bernat, Fred B., 4,536,394, Cl. 424-154.000.

Sanborn, James R., to Shell Oil Company. S-(1-(1-cyano-1-(halomethyl-)alkylthio)alkyl) phosphorothioic compounds as pesticides. 4,536,497, Cl. 514-112.000.

Sanders Associates, Inc.: *See—*
Lang, Stephen C.; and Gili, Paul E., 4,536,723, Cl. 331-127.000.
Reed, Cathy J.; and Pollak, Thomas M., 4,536,879, Cl. 372-77.000.

Sanders, Franciscus H. M.: *See—*
Martens, Theodorus H. G.; and Sanders, Franciscus H. M., 4,536,415, Cl. 427-40.000.

Sanders, Frederick W., to Mead Corporation, The. Imaging system. 4,536,463, Cl. 430-138.000.

Sanders, Mildred P. Ironing board caddy. 4,535,921, Cl. 223-106.000.

Sanders, Weldon A., Jr.: *See—*
Torkelson, John; and Sanders, Weldon A., Jr., 4,536,801, Cl. 358-280.000.

Sanderson, William R.: *See—*
Hignett, Geoffrey J.; Rowbottom, Kenneth T.; and Sanderson, William R., 4,536,313, Cl. 252-100.000.

Sandhaus, Jeffrey. Closure. 4,535,905, Cl. 215-218.000.

Sandoz, Inc.: *See—*
Brand, Leonard J.; and Nadelson, Jeffrey, 4,536,499, Cl. 514-212.000.

Sands, Robert W.; and Bloom, Daniel M., to General Electric Company. R lamp having an improved neck section for increasing the useful light output. 4,536,834, Cl. 362-303.000.

Sandy, Julius W.; Riebock, William D.; and Bauscher, Billy J., to Ex-Cell-O Corporation. Drill bit. 4,536,107, Cl. 408-214.000.

Sano, Osamu, to Koyo Auto-Mech. Co., Ltd. Rotation control valve of power steering system. 4,535,798, Cl. 137-625.210.

Sanraku-Ocean Co., Ltd.: *See—*
Okumura, Yasushi; Okamura, Kazuhiko; Fugakawa, Yasuo; Ishikura, Tomoyuki; Kouno, Kageaki; and Lein, Joseph, 4,536,397, Cl. 514-11.000.

Santamaria, Raphael: *See—*
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Santini, Georges: *See—*
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Sanyo Electric Co., Ltd.: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,536,631, Cl. 219-10.770.

Sanzenbacher, Charles W., to Mildrex International, B.V. Reforming of higher hydrocarbons for metal oxide reduction. 4,536,213, Cl. 75-91.000.

Sartorius GmbH: *See—*
Hoffmann, Jurgen; Pradel, Gunter; and Reulecke, Fritz, 4,536,291, Cl. 210-457.000.

Sasaki, Yutaka; Kiyomiya, Yutaka; Nakamura, Toshio; Nakamura, Yoshimi; and Yamaguchi, Masanori, to Nitto Chemical Industry Co., Ltd. Process for regeneration of iron-antimony metallic oxide catalysts. 4,536,483, Cl. 502-20.000.

Sashida, Nobuo: *See—*
Matsumura, Susumu; Yano, Masao; Sashida, Nobuo; and Yamamoto, Yoshihiko, 4,536,816, Cl. 361-91.000.

Sato, Eiichi: *See—*
Maeda, Keikichi; Iijima, Takahiro; and Sato, Eiichi, 4,536,455, Cl. 428-629.000.

Sato, Hiroshi: *See—*
Murata, Yasuzo; and Sato, Hiroshi, 4,536,428, Cl. 428-117.000.

Sato, Kan-ichi; Yamanishi, Akio; and Higashino, Takashi, to Kabushiki Kaisha Komatsu Seisakusho. Pattern for producing a mold and method for manufacture of the pattern. 4,535,831, Cl. 164-33.000.

Sato, Katsujiro: *See*—
Kodama, Hisashi; Hamamoto, Tooru; Tamura, Tetsuomi; Sato, Katsujiro; and Yamada, Kazuharu, 4,535,734, Cl. 123-90.580.

Sato, Katsunobu: *See*—
Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.

Sato, Shinichi: *See*—
Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, 4,535,530, Cl. 29-571.000.

Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, to Nippon Soken, Inc. Carbon particulates cleaning device for diesel engine. 4,535,588, Cl. 60-286.000.

Sato, Tadao: *See*—
Miyazaki, Wasei; Sato, Tsuneo; Nakayama, Yasuo; and Sato, Tadao, 4,536,391, Cl. 424-94.000.

Sato, Tsuneo: *See*—
Miyazaki, Wasei; Sato, Tsuneo; Nakayama, Yasuo; and Sato, Tadao, 4,536,391, Cl. 424-94.000.

Sato, Yoshimasa: *See*—
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Satoh, Taxey: *See*—
Nishi, Shinichi; Satoh, Taxey; Shimada, Fumio; and Takahashi, Toshiaki, 4,536,471, Cl. 430-495.000.

Sattler, Roland: *See*—
Sterle, Vinko, 4,535,513, Cl. 24-346.000.

Sauer, Gerhard: *See*—
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Saumweber, Eckart: *See*—
Pollinger, Hans; Saumweber, Eckart; Schorwerth, Mathias; and Wirth, Xaver, 4,535,874, Cl. 188-73.100.

Savides, Christos; and Bright, John H., to American Cyanamid Company. Extraction of amino acids from aqueous solution with dithiophosphinates. 4,536,596, Cl. 562-443.000.

Sawayama, Tadahiro: *See*—
Tukamoto, Masatoshi; and Sawayama, Tadahiro, 4,536,601, Cl. 564-355.000.

Sawyer, Robert D.; and Fohl, Michael W., to Tom Sawyer Supply & Equipment. Apparatus for forming an expanded foam form liner including a contoured surface. 4,536,145, Cl. 425-289.000.

Saxton, Robert W.; Hewitt, William R.; and Nelligan, Jerome M., to Federal-Mogul Corporation. Flexible microdrill. 4,536,108, Cl. 408-230.000.

Sbragia, Ronald J.: *See*—
Rigterink, Raymond H.; and Sbragia, Ronald J., 4,536,341, Cl. 260-453.0AR.

Schafer, Karl: *See*—
Schmeer, Gert; Engelmann, Eberhard; and Schafer, Karl, 4,536,441, Cl. 428-317.300.

Schaller, Helmut F. K. Magnetic pickup for stringed instruments. 4,535,668, Cl. 84-1.150.

Schenz, Timothy W.: *See*—
Vaccaro, Nancy J.; Frost, John R.; Glatz, Alfred C.; and Schenz, Timothy W., 4,536,410, Cl. 426-548.000.

Scherer, John R. Device for facilitating removal and insertion of plugs in gas jets in core molding operations. 4,535,520, Cl. 29-235.000.

Schering Aktiengesellschaft: *See*—
Neef, Guenter; Sauer, Gerhard; Wiechert, Rudolf; Hofmeister, Helmut; Rohde, Ralph; Annen, Klaus; Laurent, Henry; Beier, Sybille; Losert, Wolfgang; Elger, Walter; and Henderson, David, 4,536,401, Cl. 514-173.000.

Schield, John A.: *See*—
Naiman, Michael I.; and Schield, John A., 4,536,191, Cl. 44-62.000.
Naiman, Michael I.; and Schield, John A., 4,536,551, Cl. 525-334.100.

Schiess, Wolfgang; and Thorandt, Herbert, to VEB Hochvakuum Dresden. Method and apparatus for the protection of analyzers and other sensitive components from soiling and corrosion. 4,535,633, Cl. 73-706.000.

Schiff, Leonard N.: *See*—
Raychaudhuri, Dipankar; and Schiff, Leonard N., 4,536,846, Cl. 364-514.000.

Schildkraut, Alan L.; and MacAvoy, David W., to Allied Corporation. Anti-decoupling mechanism for an electrical connector assembly. 4,536,048, Cl. 339-89.00M.

Schildkraut, Irwin: *See*—
Bergen, Henry M.; Zaimi, Sedat; Castellano, Vincenzo; and Schildkraut, Irwin, 4,536,621, Cl. 179-99.00R.

Schindel, Arnold; and Higgins, Edward, Jr., to Singer Company, The. Clear view screen. 4,536,064, Cl. 350-583.000.

Schindl, Klaus; and Nyman, Georg, to C. Reichert Optische Werke AG. Magnetic coupling for parts of an optical instrument. 4,536,732, Cl. 335-285.000.

Schlegel Corporation: *See*—
Yackiw, Charles, 4,535,564, Cl. 49-489.000.

Schlosser, Erich J.; and Stephen, James C., to Weber-Stephen Products Co. Portable barbecue grill. 4,535,749, Cl. 126-25.00R.

Schlotzhauer, Kenneth G.: *See*—
Metz, Arthur J.; and Schlotzhauer, Kenneth G., 4,536,666, Cl. 307-494.000.

Schlumberger Technology Corporation: *See*—
Clark, Brian, 4,536,714, Cl. 324-338.000.
Sinha, Bikash K.; and Gouilloud, Michel, 4,535,631, Cl. 73-703.000.
Sinha, Bikash K.; and Gouilloud, Michel, 4,535,632, Cl. 73-703.000.

Schmeer, Gert; Engelmann, Eberhard; and Schafer, Karl, to Beiersdorf Aktiengesellschaft. Adhesive tape. 4,536,441, Cl. 428-317.300.

Schmidt, Ewald: *See*—
Baum, Helmut; Pfizenmaier, Heinz; Schmidt, Ewald; and Strauss, Franz, 4,536,719, Cl. 331-37.000.

Schmidt, Manfred; and Dicke, Hans-Rudolf, to Bayer Aktiengesellschaft. Thermotropic, wholly aromatic polyesters. 4,536,561, Cl. 528-191.000.

Schmidt, Martin; and Hattendorff, Horst D., to Dragerwerk Aktiengesellschaft. Optical multi-beam gas measuring apparatus. 4,536,090, Cl. 356-414.000.

Schmidt, V. Hugo. Piezoelectric wind generator. 4,536,674, Cl. 310-330.000.

Schmitt, Joseph M., to American Cyanamid Company. Treatment of acrylamide and related compounds. 4,536,326, Cl. 252-400.00R.

Schneider, Arthur, to Volkswagenwerk Aktiengesellschaft. Apparatus for obtaining an information on the motion of a moving element, preferably for rotational speed of a rotating element in an automobile. 4,536,708, Cl. 324-174.000.

Schnirch, Leo; and Weyel, Karl-Hermann, to Weyel KG Visuelle Einrichtungen. Mechanism for vertically movably supporting a board member on a wall. 4,536,163, Cl. 434-420.000.

Schockner, Richard C.: *See*—
Thurlow, Norman C.; Hayter, Walter R.; and Schockner, Richard C., 4,536,653, Cl. 250-390.000.

Schoeneberger, Carl F.: *See*—
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., 4,536,791, Cl. 358-122.000.

Schoenmakers, Wijnand J., to U.S. Philips Corporation. Device for the serial merging of two ordered lists in order to form a single ordered list. 4,536,857, Cl. 364-900.000.

Schonstedt Instrument Company: *See*—
Dunham, Warren D., 4,536,710, Cl. 324-244.000.

Schorwerth, Mathias: *See*—
Pollinger, Hans; Saumweber, Eckart; Schorwerth, Mathias; and Wirth, Xaver, 4,535,874, Cl. 188-73.100.

Schouhamer Immink, Kornelis A., to U.S. Philips Corporation. Method of encoding a stream of data bits, device for carring out the method, and device for decoding a stream of data bits. 4,536,742, Cl. 340-347.0DD.

Schreiber, Max: *See*—
Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,535,709, Cl. 112-83.000.

Schubert, Johannes, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Apparatus for supplying liquid mediums to rollers of printing machines utilizing a distributor plate. 4,535,692, Cl. 101-337.000.

Schubert, Paul: *See*—
Fischer, Peter; and Schubert, Paul, 4,535,527, Cl. 29-568.000.

Schuman, Merlin D.: *See*—
Sprouse, Kenneth M.; Schuman, Merlin D.; and Combs, L. Paul, 4,536,603, Cl. 585-539.000.

Schurter AG: *See*—
Wallner, Peter; and Hollenstein, Peter, 4,536,054, Cl. 339-147.00R.

Schutten, Herman P.: *See*—
Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased, 4,536,884, Cl. 378-119.000.

Schutz, Matthias; Sivers, Rolf V.; Roesems, Dirk; and Rebmann, Rolf, to Dr. Ing. h.c.F. Porsche A.G. Vibration damped suspension for a drive aggregate of a motor vehicle in a body structure. 4,535,964, Cl. 248-607.000.

Schutzle, Gunter: *See*—
Reichardt, Manfred; and Schutzle, Gunter, 4,536,045, Cl. 339-14.00P.

Schweitzer, Edmund O., Jr. Fault indicator with push button reset. 4,536,758, Cl. 340-664.000.

Scott, Kenneth W.: *See*—
Bartok, Stephen; Stansbury, Benjamin H., Jr.; and Backus, Alan L., 4,535,931, Cl. 236-20.00R.

Scott, Lewis A.: *See*—
Gibson, Duane M.; and Scott, Lewis A., 4,535,667, Cl. 83-830.000.

Sea Savory, Inc.: *See*—
Reinke, Theodore S., 4,535,507, Cl. 17-48.000.

Seaborn Development, Inc.: *See*—
Seaborn, Paul E., 4,535,567, Cl. 51-140.000.

Seaborn, Paul E., to Seaborn Development, Inc. Computer magnetic media burnisher. 4,535,567, Cl. 51-140.000.

Seaford, F. Leo, to Wil-Mat Corporation. Molded shock-absorbing wheel assembly. 4,535,827, Cl. 152-7.000.

Sealy, Incorporated: *See*—
Wagner, Robert F., 4,535,978, Cl. 267-91.000.

Seaton, John: *See*—
Shah, Hemen V.; Mashikian, Victor; Seaton, John; and Keller, Gordon, 4,536,839, Cl. 364-200.000.

Sebest, Albert E., to Spectro Industries, Inc. Pillow bed mechanism. 4,535,492, Cl. 5-68.000.

Secom Co., Ltd.: *See*—
Ebihara, Shigeto; Ohta, Atsuo; and Kuwabara, Kunikazu, 4,536,750, Cl. 340-539.000.
Shigemitsu, Mineo; Maruyama, Ichiyo; and Niimura, Shigeru, 4,536,751, Cl. 340-545.000.
Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, 4,536,749, Cl. 340-525.000.

Securicard Systems Limited: *See*—
Boutaleb, Lucy A.; Boutaleb, Aboubekr; and Kerekess, Tibor T., 4,536,014, Cl. 283-83.000.

Seemuth, Paul D., to Ethyl Corporation. Cetane improver composition. 4,536,190, Cl. 44-57.000.

Seidel, Harry W.: *See*—
Remington, John L.; and Seidel, Harry W., 4,535,897, Cl. 211-70.600.

Seidl, Gunther, to Zahnradfabrik Friedrichshafen, AG. Regulatable vane pump. 4,536,133, Cl. 417-307.000.

Seino, Junzaburo: *See*—
Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.

Seitz, James P.; and Helmers, Michael, to NWL Transformers. Visible disconnect/ground switch. 4,536,659, Cl. 307-41.000.

Sekisui Kaseihin Kogyo Kabushiki Kaisha: *See*—
Hayashi, Motoshige; Kobayashi, Toshirou; Yoshii, Motokazu; Tsubone, Masahiro; and Ishikawa, Mikio, 4,536,357, Cl. 264-53.000.

Seltveit, Arne, to Sintef. Diffusion barrier for aluminium electrolysis furnaces. 4,536,273, Cl. 204-243.00R.

Sengoku, Isao: *See*—
Friedman, Harry; Sengoku, Isao; Hattori, Yukiro; and Isikawa, Minoru, 4,535,539, Cl. 30-161.000.

Sentementes, Thomas: *See*—
Bouchard, Andre C.; Maya, Jakob; and Sentementes, Thomas, 4,536,678, Cl. 313-493.000.

Sentrol, Inc.: *See*—
Holce, Thomas J.; and Huckins, Charles M., 4,536,754, Cl. 340-568.000.

Seragan Diagnostics, Inc.: *See*—
Sokoloff, Roger L.; and Reno, John M., 4,536,478, Cl. 436-533.000.

Seremet, Louis J. Padlock shield. 4,535,612, Cl. 70-56.000.

Serrano, Arthur L., to Novation, Inc. Telephone line interface. 4,536,618, Cl. 179-84.00R.

Settineri, William J.; Charles, John G.; Hinkel, Jerald J.; and Malone, Bradley P., to Dow Chemical Company, The. Method for removing or retarding paraffin buildup on surfaces in contact with natural gas. 4,536,222, Cl. 134-5.000.

Sevastakis, Gus. Continuous casting apparatus. 4,535,832, Cl. 164-421.000.

Seyferth, Dietmar: *See*—
Fellmann, Jere D.; Garrou, Philip E.; Withers, Howard P., Jr.; and Seyferth, Dietmar, 4,536,589, Cl. 556-14.000.

Seyfried, Philippe: *See*—
Fiori, Robert; Seyfried, Philippe; and Symard, Jose , 4,535,666, Cl. 83-795.000.

Shah, Hemen V.; Mashikian, Victor; Seaton, John; and Keller, Gordon, to MAI Basic Four, Inc. Memory request arbitrator. 4,536,839, Cl. 364-200.000.

Sharp Kabushiki Kaisha: *See*—
Hayakawa, Masao; Maeda, Takamichi; and Kumura, Masao, 4,536,786, Cl. 357-68.000.
Kamuro, Setsufumi, 4,536,859, Cl. 365-154.000.
Kasubuchi, Takeshi; Hara, Takeo; and Ozawa, Kaoru, 4,536,804, Cl. 360-4.000.
Masuda, Sinichi, 4,536,667, Cl. 307-592.000.
Nobuta, Yoshiji, 4,536,739, Cl. 340-323.00R.
Takamatsu, Toshiaki; Funada, Fumiaki; Ishii, Yutaka; and Wada, Tomio, 4,536,060, Cl. 350-343.000.

Shaw, Frank W.: *See*—
Thayer, Timothy Z.; and Shaw, Frank W., 4,536,371, Cl. 422-171.000.

Shaw, Herbert J.; and Bergh, Ralph A., to Leland Stanford Junior Univérsity, The Board of Trustees of The. Method of manufacturing a fiber optic directional coupler. 4,536,058, Cl. 350-320.000.

Shaw, Wilfrid G.: *See*—
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,536,585, Cl. 549-453.000.

Shay, Lucas K., to Phillips Petroleum Company. Functional protein products. 4,536,407, Cl. 426-250.000.

Shcwaighofer, Roman: *See*—
Mesey, Milton; Shcwaighofer, Roman; and Donner, Meinrad, 4,535,573, Cl. 51-165.870.

Shealy, James B., to Allied Corporation. Apparatus for removing cut staple. 4,535,663, Cl. 83-100.000.

Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., to Celanese Corporation. Poly(butylene terephthalate) based molding resins. 4,536,527, Cl. 524-193.000.

Shedigian, Vandos, to Emhart Industries, Inc. Non-toxic impregnant for electrical capacitors. 4,536,331, Cl. 252-579.000.

Sheehan, Bernard P.; and Werwick, Volker, to NCR Corporation. Self-regulating ribbon re-inking device. 4,536,098, Cl. 400-196.100.

Sheehan, Joseph C. M., to Kells Medical, Incorporated. Skin closure device. 4,535,772, Cl. 128-337.000.

Sheehan, Ronald T.: *See*—
Rowland-Hill, E. William; and Sheehan, Ronald T., 4,535,788, Cl. 130-27.0AE.

Sheingorn, Larry A. Fixation device for eye testing. 4,536,065, Cl. 351-239.000.

Sheldrake, Leonard J.: *See*—
Johnston, Ralph H.; Munden, Curtis D.; and Sheldrake, Leonard J., 4,536,697, Cl. 322-14.000.

Shell Development Company: *See*—
Powell, James E., 4,536,586, Cl. 549-463.000.

Shell, Melvin E. Separator apparatus for peanuts and other seed crops. 4,535,894, Cl. 209-665.000.

Shell Oil Company: *See*—
Blytas, George C., 4,536,381, Cl. 423-437.000.
Blytas, George C., 4,536,382, Cl. 423-437.000.
Drent, Eit, 4,536,354, Cl. 260-549.000.
Klingensmith, G. Bruce; Whitehead, Richard O.; and Higgins, Thair L., 4,536,537, Cl. 524-481.000.
Sanborn, James R., 4,536,497, Cl. 514-112.000.

Shelly, Randolph D., to Sperry Corporation. High frequency inverter transformer for power supplies. 4,536,733, Cl. 336-182.000.

Shemwell, David M., to Perkin-Elmer Corporation, The. Holographic figure sensor. 4,536,086, Cl. 356-348.000.

Shen, John C. S., to International Business Machines Corporation. Rigid magnetic recording media coating composition. 4,536,451, Cl. 428-418.000.

Sheng, Ping; and Bloch, Aaron N., to Exxon Research and Engineering Co. Solar cell with two-dimensional hexagonal reflecting diffraction grating. 4,536,608, Cl. 136-259.000.

Shepherd, Robert G.; and Upeslacis, Janis, to American Cyanamid Company. Aralkanamidophenyl compounds. 4,536,346, Cl. 260-465.00D.

Sheppard, Clyde H.: *See*—
Lubowitz, Hyman R.; and Sheppard, Clyde H., 4,536,559, Cl. 528-170.000.

Sherman, Ralph A., II; and Watson, Calvin R., to E-Z P.A.C., Inc. Reusable shipping box with cam tabs for release of closure interlock. 4,535,929, Cl. 229-39.00R.

Shernoff, Donald, to Singer Company, The. Dither compensator for ring laser gyroscope. 4,536,087, Cl. 356-350.000.

Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., to Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Po Ochikh Tke Tekhnologichesky Gazov, Stochnykh Vod I Ispolzovaniju Vtorichnykh Energoresursov Predpriyaty Chernoi Metallurgii Vnipichermetenergoochist Ka. Method and apparatus for supplying voltage to high-ohmic dust electrostatic precipitator. 4,536,698, Cl. 323-237.000.

Shiau, David W.; and Smith, Eric, to Borden, Inc. Low formaldehyde emission urea-formaldehyde resins containing a melamine additive. 4,536,245, Cl. 156-307.300.

Shibata, Makoto: *See*—
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,536,250, Cl. 156-651.000.

Shibuya Kogyo Co., Ltd.: *See*—
Tanaka, Hideo; and Muranaka, Shiaru, 4,535,583, Cl. 53-75.000.

Shibuya, Koji: *See*—
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.

Shiga, Mitsuo, to Honda Giken Kogyo Kabushiki Kaisha. Three-wheeled motor vehicle. 4,535,866, Cl. 180-215.000.

Shigei, Tetsuro: *See*—
Ogawa, Hiroyasu; Shigei, Tetsuro; Takahashi, Hayashi; Okabe, Tetuya; and Miyatake, Fumio, 4,536,448, Cl. 428-394.000.

Shigemitsu, Mineo; Maruyama, Ichiyo; and Niimura, Shigeru, to Secom Co., Ltd. System for detecting an alarm. 4,536,751, Cl. 340-545.000.

Shimada, Fumio: *See*—
Nishi, Shinichi; Satoh, Taxey; Shimada, Fumio; and Takahashi, Toshiaki, 4,536,471, Cl. 430-495.000.

Shimada, Haruo: *See*—
Toyoda, Kazuhiro; and Shimada, Haruo, 4,536,860, Cl. 365-190.000.

Shimada, Yuzo: *See*—
Utsumi, Kazuaki; Shimada, Yuzo; Suzuki, Masanori; and Takamizawa, Hideo, 4,536,435, Cl. 428-209.000.

Shimiya, Keiji: *See*—
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,536,436, Cl. 428-212.000.

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Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,536,436, Cl. 428-212.000.

Shimizu, Masaki; and Nomura, Takeo, to Terumo Kabushiki Kaisha. Polysaccharides N9GI, their preparation and therapeutic compositions containing them. 4,536,496, Cl. 514-54.000.

Shimizu, Toshihiko, to Onoda Construction Materials Co., Ltd. Method for repairing and restoring deteriorated cement-containing inorganic material. 4,536,417, Cl. 427-140.000.

Shimoda, Tatsuya: *See*—
Okonogi, Itaru; and Shimoda, Tatsuya, 4,536,233, Cl. 148-101.000.

Shimokura, Akihiro, to Tokico Ltd. Hydraulic damper of adjustable damping force type. 4,535,877, Cl. 188-319.000.

Shimp, Lawrence A., to FMC Corporation. Process for making sodium tripolyphosphate. 4,536,377, Cl. 423-315.000.

Shimura, Kazuhiro: *See—*
Uehara, Masafumi; Yamazaki, Atsuo; and Shimura, Kazuhiro, 4,536,465, Cl. 430-192.000.

Shinohara, Yoshiki: *See—*
Tsutsumikoshi, Shinobu; Goto, Akira; Murakami, Tsuyoshi; Takasaka, Masao; and Shinohara, Yoshiki, 4,535,869, Cl. 180-311.000.

Shipman, Douglas L.: *See—*
Shukla, Rahul B.; and Shipman, Douglas L., 4,535,576, Cl. 51-413.000.

Shirai, Shigeru: *See—*
Kanbe, Junichiro; Shirai, Shigeru; Misumi, Teruo; Saitoh, Keishi; and Osato, Yoichi, 4,536,460, Cl. 430-57.000.
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Shirai, Shiro; Ogahara, Shunji; and Kubo, Miyuki, to Secom Co., Ltd. Security-ensuring apparatus having an operational guidance function. 4,536,749, Cl. 340-525.000.

Shiraishi, Hiroyuki: *See—*
Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, 4,536,211, Cl. 75-5.000.

Shirey, Richard, to Donn Incorporated. Screw slot runner system. 4,535,580, Cl. 52-484.000.

Shirley, Ian M.: *See—*
Ballard, Denis G. H.; Courtis, Andrew; and Shirley, Ian M., 4,536,555, Cl. 526-295.000.

Shiseido Company Ltd.: *See—*
Nara, Michiko; Yamazaki, Kazunori; and Akiyama, Yasuko, 4,536,405, Cl. 514-781.000.

Shmorgunenko, Nikolai S.: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.

Shneider, Benjamin L.: *See—*
Winzenburg, Mark L.; Fields, Ellis K.; and Shneider, Benjamin L., 4,536,560, Cl. 528-188.000.

Shoham, Ilan. Cotton drying tower for ginneries. 4,535,510, Cl. 19-0.270.

Shomura, Takashi: *See—*
Ito, Tatsuo; Oba, Kazunori; Fukuyasu, Harumi; Niwa, Tomizo; Shomura, Takashi; and Kazuno, Yuzo, 4,536,398, Cl. 514-43.000.

Shono, Tetsuji, to Asahi Kogaku Kogyo Kabushiki Kaisha. Device for adjusting the focusing detecting mechanism of a single-lens reflex camera. 4,536,070, Cl. 354-402.000.

Shook, Forrest A., to NLB Corp. Method and apparatus for cleaning welding electrode wheels with high pressure water. 4,536,635, Cl. 219-83.000.

Shores, William M.: *See—*
Harshbarger, John H.; and Shores, William M., 4,536,793, Cl. 358-150.000.

Shout, Robert S.: *See—*
Paparizos, Christos; Shout, Robert S.; and Shaw, Wilfrid G., 4,536,585, Cl. 549-453.000.

Shukla, Rahul B.; and Shipman, Douglas L., to Pennwalt Corporation. Anti-static process for abrasive jet machining. 4,535,576, Cl. 51-413.000.

Shum, Yick-Mow: *See—*
Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, 4,535,845, Cl. 166-272.000.

Sidman, Michael, to Digital Equipment Corporation. Adaptive misposition correcting method and apparatus for magnetic disk servo system. 4,536,809, Cl. 360-77.000.

Siebert, Edward T., to Perkin-Elmer Corporation, The. Analyzer for coherent radiation. 4,536,089, Cl. 356-352.000.

Siegal, Burton L.: *See—*
Varon, David; Dorner, Steven C.; and Siegal, Burton L., 4,535,525, Cl. 29-463.000.

Siemens Aktiengesellschaft: *See—*
Forster, Alfred, 4,536,673, Cl. 310-327.000.
Grallert, Hans-Joachim, 4,536,880, Cl. 375-30.000.
Hetz, Walter, 4,535,781, Cl. 128-660.000.
Nilsson, Kenth, 4,536,097, Cl. 400-126.000.
Strandberg, Hans G.; and Andersen, Hans, 4,535,776, Cl. 128-419.0PG.
von Pieverling, Klaus, 4,536,763, Cl. 343-9.00R.

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Ingram, Wayne A.; Johnson, Stephen L.; and Coleman, Thomas E., 4,536,823, Cl. 361-355.000.

Silvestri, Oreste, to Innse Innocenti Santeustacchio S.p.A. Revolving-ladle turret for continuous casting steel plants. 4,536,124, Cl. 414-744.00R.

Simon Engineering Dudley Limited: *See—*
Ashworth, Denis H., 4,536,009, Cl. 280-755.000.

Singer Company, The: *See—*
Duve, John P., 4,536,627, Cl. 200-38.00R.
Ketterer, Stanley J., 4,535,711, Cl. 112-199.000.
Schindel, Arnold; and Higgins, Edward, Jr., 4,536,064, Cl. 350-583.000.
Shernoff, Donald, 4,536,087, Cl. 356-350.000.
Szostak, Jan; and Fennesz, Frank, Jr., 4,535,710, Cl. 112-459.000.
Wojtanek, Guy A., 4,536,626, Cl. 200-35.00R.

Singer, Robert; Goetze, Richard; Maier, Karl; and Kerbl, Maximilian, to Wacker-Chemie GmbH. Alkaline resistant primer and the use thereof. 4,536,534, Cl. 524-262.000.

Sinha, Bikash K.; and Gouilloud, Michel, to Schlumberger Technology Corporation. Surface acoustic wave sensors. 4,535,631, Cl. 73-703.000.

Sinha, Bikash K.; and Gouilloud, Michel, to Schlumberger Technology Corporation. Surface acoustic wave sensors. 4,535,632, Cl. 73-703.000.

Sinker, Stephen M.: *See—*
Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., 4,536,527, Cl. 524-193.000.

Sintef: *See—*
Seltveit, Arne, 4,536,273, Cl. 204-243.00R.

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Plath, Ernst-Dieter; and Klinger, Dieter, 4,535,608, Cl. 66-9.00R.

SIRAC Spa: *See—*
Carobbi, Renato; Miletti, Sandro; and Franci, Vittorio, 4,536,221, Cl. 127-30.000.

Sirrenberg, Wilhelm; Marhold, Albrecht; Hammann, Ingeborg; Krehan, Ingomar; and Stendel, Wilhelm, to Bayer Aktiengesellschaft. Combating pests with substituted benzoyl-(thio)ureas. 4,536,587, Cl. 549-366.000.

Sivers, Rolf V.: *See—*
Schutz, Matthias; Sivers, Rolf V.; Roesems, Dirk; and Rebmann, Rolf, 4,535,964, Cl. 248-607.000.

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Gallas, Gunter A., 4,536,613, Cl. 174-65.00R.

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Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.

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Shiau, David W.; and Smith, Eric, 4,536,245, Cl. 156-307.300.

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Belsterling, Charles A.; and Soberman, Robert K., 4,536,690, Cl. 318-687.000.

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Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev, Jury A., 4,536,041, Cl. 303-119.000.

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Giussani, Alberto, 4,536,610, Cl. 174-26.00R.

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Greco, Claudio; and Blandino, Silvano, 4,536,139, Cl. 417-471.000.
Societe Ano ¸me: Aussedat-Rey: *See—*
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Lelu, Andre ; Gonthier, Bruno; Grignon, Jean; and Tauzia, Jean-Michel, 4,536,235, Cl. 149-19.400.
Societe Nationale D'Etude et de Construction de Moteurs D'Aviation: *See—*
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Societe Nationale Elf Aquitaine: *See—*
Vio, Lino, 4,536,296, Cl. 252-8.50C.
Societe Nouvelle Rockall France S.A.: *See—*
Porcher, Alain, 4,535,557, Cl. 40-300.000.
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Klaschka, John T., 4,535,706, Cl. 110-245.000.
Sokoloff, Roger L.; and Reno, John M., to Seragan Diagnostics, Inc. Method for reducing non-specific interferences in agglutination immunoassays. 4,536,478, Cl. 436-533.000.
Solbach, Klaus: *See—*
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Loftin, Royal E.; and Son, Adelina J., 4,536,297, Cl. 252-8.50C.
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Saito, Etsuro, 4,536,813, Cl. 360-137.000.
Soper, Peter H. H.; and Cammack, Andrew S., to Autoflow Engineering Limited. Apparatus for moving a tool in a controlled manner. 4,535,566, Cl. 51-124.00L.
Sord Computer Systems, Inc.: *See—*
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Sorrells, Frank D., to Cole National Corporation. Mounting apparatus for processing lens blanks. 4,535,575, Cl. 51-216.0LP.
Soulakis, George, to Eldon Industries, Inc. Systems in which one or more objects are supported by vertical standards. 4,535,705, Cl. 108-152.000.
South African Inventions Development Corporation: *See—*
Hourahane, Donald H.; and Strover, Angus E., 4,535,768, Cl. 128-305.100.
Southern Research Institute: *See—*
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., 4,536,575, Cl. 544-279.000.
Southwell, William H., to Rockwell International Corporation. Transmissive phase retarder. 4,536,063, Cl. 350-395.000.
Southwest Microwave: *See—*
Cheal, James; and Fitzsimons, James R., 4,536,752, Cl. 340-554.000.
Southwest Research Institute: *See—*
King, James D.; and Riewerts, Erroll S., 4,536,711, Cl. 324-306.000.
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Williams, David L.; Southwick, Everett W.; and Houminer, Yoram, 4,535,791, Cl. 131-278.000.
Sowa, Kunihiro, to Nippon Soken, Inc. Phosphor indication device. 4,536,656, Cl. 250-463.100.
Spain, Robin L. Solar energy operated irrigation surge valve. 4,535,813, Cl. 137-625.500.
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Spears, James E.: *See—*
Fekete, Ferenc; and Spears, James E., 4,536,169, Cl. 446-461.000.
Speca, Anthony N., to National Distillers and Chemical Corporation. Intermetallic compounds of polymeric transition metal oxide alkoxides and catalytic use thereof. 4,536,487, Cl. 502-119.000.
Speca, Anthony N.; and Laib, Roger D., to National Petro Chemicals Corporation. High pore volume, high purity alumina gels containing a chromium catalyst. 4,536,489, Cl. 502-162.000.
Specialty Systems, Inc.: *See—*
Zinsmeyer, Herbert G., 4,535,592, Cl. 60-597.000.
Spector, Donald. Rechargeable sachet. 4,535,935, Cl. 239-34.000.
Spector, George; and Spector, Lesley. Heated glove. 4,535,482, Cl. 2-160.000.
Spector, Lesley: *See—*
Spector, George; and Spector, Lesley, 4,535,482, Cl. 2-160.000.
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Speed Queen Company: *See—*
Fey, Robert M.; Woehler, Harold L.; and Manthei, Philip J., 4,535,610, Cl. 68-3.00R.
Speer, Billy L.: *See—*
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Spellman, Gordon B.: *See—*
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Sperry Corporation: *See—*
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Kroger, Harry; Jillie, Don W.; and Smith, Lawrence N., 4,536,414, Cl. 427-38.000.
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Rattlingourd, Glen D.; Currie, Robert J.; and Moss, Stanley D., 4,536,878, Cl. 371-43.000.
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Shelly, Randolph D., 4,536,733, Cl. 336-182.000.
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SPICA S.p.A.: *See—*
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Spraker, Terry E.: *See—*
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Sprouse, Kenneth M.; Schuman, Merlin D.; and Combs, L. Paul, to Rockwell International Corporation. Production of acetylene from coal by contact with a combustion gas. 4,536,603, Cl. 585-539.000.
Spruth, Wilhelm G.: *See—*
Bahr, Dietrich J.; Burckardt, Karl-Heinz; Goldrian, Gottfried; Rudolph, Volker; and Spruth, Wilhelm G., 4,536,769, Cl. 346-1.100.
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Bhatia, Harsaran S.; Dorler, Jack A.; Gaur, Santosh P.; Lechaton, John S.; Mosley, Joseph M.; and Srinivasan, Gurumakonda R., 4,535,531, Cl. 29-577.00C.
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Claren, Jan S.; Jeppsson, Jan-Bertil; and Staehr, Peter R., 4,535,635, Cl. 73-756.000.
Stahel, Alwin J., to Drag Specialties, Inc. Anti-slip handlebar grip. 4,535,649, Cl. 74-551.900.
Stals, Theo: *See—*
Hendriks, Ivo G. M.; and Stals, Theo, 4,535,506, Cl. 17-45.000.
Stamberg, Jiri : *See—*
Loth, Fritz; Dautzenberg, Horst; Stamberg, Jiri ; Peska, Jan; Bertram, Dieter; and Lettau, Herbert, 4,536,217, Cl. 106-122.000.
Stamicarbon B.V.: *See—*
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Standard Oil Company, The: *See—*
Burgess, Lester E.; Fox, Karl M.; McGarry, Phillip E.; and Herman, David E., 4,536,372, Cl. 422-187.000.
Coffey, Gerald P., 4,536,566, Cl. 528-363.000.
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Standard Oil Company (Indiana): *See—*
Jageler, Alfred H., 4,535,843, Cl. 166-250.000.
Millheim, Keith K.; and Warren, Tom M., 4,535,972, Cl. 254-277.000.
O'Grady, Thomas M.; Tatterson, David F.; and Coates, Ronald, 4,536,277, Cl. 208-11.00R.
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Standard Oil Company (Ohio), The: *See—*
Eskamani, Abolghassem; and Krause, Warren H., 4,536,584, Cl. 549-429.000.
Hunger, Josef; and Neumaier, Anton, 4,536,109, Cl. 408-240.000.
Pesa, Frederick A.; and Haase, Thomas A., 4,536,597, Cl. 562-522.000.
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Standard Telephones and Cables, plc: *See—*
Wheeler, Jennifer M.; and Jackson, Dawn A., 4,536,821, Cl. 361-321.000.
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Stanley Works, The: *See—*
Remington, John L.; and Seidel, Harry W., 4,535,897, Cl. 211-70.600.
Stansbury, Benjamin H., Jr.: *See—*
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Stansel, F. Harrison: *See—*
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Staudenmaier, Paul: *See—*
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,536,085, Cl. 355-93.000.
Steen, Adam: *See—*
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Stegmaier, Alwain: *See—*
Feder, Meinrad; and Stegmaier, Alwain, 4,535,816, Cl. 137-625.650.
Steiger, Anton, to Sulzer Brothers Limited. Drive for an oscillatory mechanical system. 4,535,817, Cl. 137-625.650.
Steinemann, Max: *See—*
Moser, Franz; and Steinemann, Max, 4,535,697, Cl. 102-468.000.
Stelzer, Jack C.; and Fritsch, Joseph E. Control handle extension. 4,535,648, Cl. 74-544.000.
Stempin, John L.; and Wexell, Dale R., to Corning Glass Works. Spontaneously-formed machinable glass-ceramics. 4,536,452, Cl. 428-433.000.
Stempin, John L.: *See—*
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Flannery, James E.; Stempin, John L.; and Wexell, Dale R., 4,536,481, Cl. 501-32.000.
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Stening, Goran B.: *See—*
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Stephen, James C.: *See—*
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Stephens, Charles R., Jr.; and Torres, Anibal, to Pfizer Inc. Synergistic sweetening compositions. 4,536,396, Cl. 514-2.000.
Stephens, William F., to Mattel, Inc. Toy vehicle playset. 4,536,168, Cl. 446-444.000.
Sterle, Vinko, to Sattler, Roland. Detachable drape clamp. 4,535,513, Cl. 24-346.000.
Stewart, Robert D.; and Gamble, Robert L., to Foster Wheeler Energy Corporation. Divided rotary valve feeder. 4,536,121, Cl. 414-219.000.
Stockel, Richard F.; and Dumas, Philip E. Selenium-containing platinum compound. 4,536,571, Cl. 536-23.000.
Stoffel, James C., to Xerox Corporation. Multi-mode scanner. 4,536,077, Cl. 355-8.000.
Stoffel, James C.; and Ramchandani, Chander B. Bandwidth efficient multipoint data communication system. 4,536,874, Cl. 370-85.000.
Stolfa, Frank: *See—*
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Stolle Corporation, The: *See—*
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Stopper, Howard R., to Drackett Company, The. Non-flammable aerosol propellant microemulsion system. 4,536,323, Cl. 252-305.000.
Storage Technology Corporation: *See—*
Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., 4,536,836, Cl. 364-200.000.
Story, Michael S.: *See—*
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Story, Robert J.: *See—*
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Stouffer Corporation, The: *See—*
Terauds, Oskar R., 4,535,889, Cl. 206-527.000.
Strain, Don R., to Hydro-Dri Systems, Inc. Moisture control device. 4,536,198, Cl. 55-33.000.
Strandberg, Hans G.; and Andersen, Hans, to Siemens Aktiengesellschaft. Cardiac pacemaker with two unipolar electrodes. 4,535,776, Cl. 128-419.0PG.
Straubel, Max: *See—*
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Strauss, Franz: *See—*
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Stromberg, Paul C.; and Luoma, Van A. Stick type drumstick. 4,535,671, Cl. 84-422.00S.
Strong, John R., to Paccar Inc. Apparatus and method for a suspension system. 4,535,977, Cl. 267-64.150.
Strover, Angus E.: *See—*
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Sturges, Fred D., to Borg-Warner Corporation. Control system for controlling the engagement of a pressure-operated actuator. 4,535,879, Cl. 192-52.000.
Stutzel, Bernhard, to Chemische Werke Huels, A.G. Highly transparent, impact-resistant modified polyvinyl chloride molding compositions. 4,536,548, Cl. 525-227.000.
Stypulkowski, Paul H.: *See—*
van den Honert, Christopher; and Stypulkowski, Paul H., 4,535,785, Cl. 128-746.000.
Sucheski, Matthew M.: *See—*
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Suga, Hiroyuki: *See—*
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Sugimori, Shigeru; Kojima, Tetsuhiko; Goto, Yasuyuki; Isoyama, Toyoshiro; and Nigorikawa, Kazunori, to Chisso Corporation. Fluorobenzene derivatives and liquid crystal compositions containing the same. 4,536,321, Cl. 252-299.630.
Sugimoto, Yukihiro: *See—*
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Sullivan, Lawrence B.; and Lo, Charng-Wen M., to Texas Instruments Incorporated. Seismic cable assembly having improved transducers. 4,536,862, Cl. 367-153.000.
Sulzer Brothers Limited: *See—*
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Sumi, Akiyasu; and Kawai, Tohru, to Canon Kabushiki Kaisha. Filter mounting mechanism for an optical assembly. 4,536,057, Cl. 350-318.000.
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Sumitomo Chemical Company, Limited: *See—*
Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.
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Tagami, Manabu; Urayama, Kenzi; Ooishi, Tadashi; Okamoto, Yukikazu; and Tsuji, Kozo, 4,536,498, Cl. 514-147.000.
Sumitomo Heavy Industries Ltd.: *See—*
Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, 4,536,211, Cl. 75-5.000.
Sumitomo Metal Industries, Ltd.: *See—*
Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, 4,536,211, Cl. 75-5.000.
Sumiya, Kenji; Togawa, Fumio; and Saito, Osamu, to Hitachi Maxell, Ltd. Magnetic recording medium. 4,536,444, Cl. 428-340.000.
Sumrall, Howell M. Impelling mechanism. 4,536,142, Cl. 418-227.000.
Sunagawa, Makoto; Matsumura, Haruki; Inoue, Takaaki; and Hirohashi, Toshiyuki, to Sumitomo Chemical Company, Limited. Preparation of β-lactam derivatives. 4,536,334, Cl. 260-239.00A.
Sundeen, Joseph E.; Haugwitz, Rudiger D.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. Substituted 4-phenoxy or 4-phenylthio prolines. 4,536,501, Cl. 514-225.000.
Sung, Rodney L., to Texaco Inc. Corrosion inhibitor and motor fuel composition containing the same. 4,536,189, Cl. 44-56.000.
Suppan, Anton, to M.A.N. Maschinenfabrik. Bulk-handling belt conveyor. 4,535,884, Cl. 198-626.000.
Susumu Jatsumura: *See—*
Matsumura, Susumu; Yano, Masao; Sashida, Nobuo; and Yamamoto, Yoshihiko, 4,536,816, Cl. 361-91.000.
Sutter, Robert E. Fireplace shovel assembly for removing and transporting ashes. 4,536,023, Cl. 294-9.000.
Suttles, James M., to Mead Corporation, The. System of shelving. 4,535,704, Cl. 108-108.000.
Sutton, Leroy A., to Zenith Electronics Corporation. Horizontal phase shifter. 4,536,683, Cl. 315-401.000.
Suzuki, Kenji: *See—*
Kitagishi, Nozomu; Suzuki, Kenji; and Sakai, Shinji, 4,536,073, Cl. 354-406.000.
Suzuki, Masanori: *See—*
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Suzuki Motor Company Limited: *See—*
Tsutsumikoshi, Shinobu; Goto, Akira; Murakami, Tsuyoshi; Takasaka, Masao; and Shinohara, Yoshiki, 4,535,869, Cl. 180-311.000.
Suzuki, Nobuyuki: *See—*
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Suzuki, Toshiyasu: *See—*
Kurihara, Norimitsu; Suzuki, Toshiyasu; Iwanaga, Takashi; and Hisadomi, Masaru, 4,535,547, Cl. 33-356.000.
Suzuki, Toshiyuki; Nakamura, Tohru; and Tsutsumi, Hisao, to Kao Soap Co., Ltd. Emulsifying agent and emulsified cosmetics. 4,536,519, Cl. 514-785.000.
Suzuki, Yoshiharu: *See—*
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,536,605, Cl. 585-640.000.
Suzuki, Yujiro: *See—*
Maeoka, Hidehiko; Shimizu, Etsuo; Suzuki, Yujiro; Shimiya, Keiji; and Miura, Norio, 4,536,436, Cl. 428-212.000.
Svensson, Erik W., Sr.: *See—*
Varone, Richard B.; and Svensson, Erik W., Sr., 4,536,047, Cl. 339-75.00M.
Svoboda, George: *See—*
Dines, David R.; Svoboda, George; and Workman, Robert G., 4,535,535, Cl. 29-845.000.

Swedo, Raymond J.: *See—*
Malloy, Thomas P.; and Swedo, Raymond J., 4,536,301, Cl. 252-8.55D.
Sweeting, Charles W.: *See—*
Bello, Vincent G.; and Sweeting, Charles W., 4,536,700, Cl. 323-285.000.
Swoboda, Johann: *See—*
Hambrecht, Juergen; Reffert, Rudi W.; Minges, Peter; and Swoboda, Johann, 4,536,567, Cl. 528-486.000.
Sybron Corporation: *See—*
Maizenberg, Leonid I., 4,536,157, Cl. 433-129.000.
Symard, Jose : *See—*
Fiori, Robert; Seyfried, Philippe; and Symard, Jose , 4,535,666, Cl. 83-795.000.
Syntex (U.S.A.) Inc.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,536,503, Cl. 514-255.000.
Szostak, Jan; and Fennesz, Frank, Jr., to Singer Company, The. Stabilizing arrangement for a sewing machine cam post. 4,535,710, Cl. 112-459.000.
T.A.D. Avanti, Inc.: *See—*
Lyle, Stephen V., 4,536,624, Cl. 179-170.0NC.
Tabata, Yukio: *See—*
Kawanishi, Toshiyuki; and Tabata, Yukio, 4,536,437, Cl. 428-212.000.
Tachikawa Spring Company, Limited: *See—*
Sakurada, Kenichi; and Nishino, Takaichi, 4,536,030, Cl. 297-284.000.
Tagami, Manabu; Urayama, Kenzi; Ooishi, Tadashi; Okamoto, Yukikazu; and Tsuji, Kozo, to Sumitomo Chemical Company, Limited. Fungicidal composition. 4,536,498, Cl. 514-147.000.
Taihei Kinzoku Kogyo Co., Ltd.: *See—*
Maeda, Keikichi; Iijima, Takahiro; and Sato, Eiichi, 4,536,455, Cl. 428-629.000.
Takagi, Kunihiko: *See—*
Sakamoto, Izumi; and Takagi, Kunihiko, 4,536,387, Cl. 424-14.000.
Takagi, Shigeru: *See—*
Yoshida, Hitoshi; Tomita, Masahiro; and Takagi, Shigeru, 4,535,589, Cl. 60-303.000.
Takahashi, Hayashi: *See—*
Ogawa, Hiroyasu; Shigei, Tetsuro; Takahashi, Hayashi; Okabe, Tetuya; and Miyatake, Fumio, 4,536,448, Cl. 428-394.000.
Takahashi, Hiroto: *See—*
Ikeda, Masami; Matsuda, Hiroto; Shibata, Makoto; and Takahashi, Hiroto, 4,536,250, Cl. 156-651.000.
Takahashi, Masahiro: *See—*
Masuda, Takanori; Kakei, Tsutomu; Miyashita, Teruo; Morita, Akira; and Takahashi, Masahiro, 4,536,264, Cl. 204-129.430.
Takahashi, Toshiaki: *See—*
Nishi, Shinichi; Satoh, Taxey; Shimada, Fumio; and Takahashi, Toshiaki, 4,536,471, Cl. 430-495.000.
Takalo, Pasi: *See—*
Kylmanen, Pasi; and Takalo, Pasi, 4,536,120, Cl. 414-173.000.
Takamatsu, Toshiaki; Funada, Fumiaki; Ishii, Yutaka; and Wada, Tomio, to Sharp Kabushiki Kaisha. Seal for dynamic scattering-twisted nematic liquid crystal display. 4,536,060, Cl. 350-343.000.
Takami, Akira, to Mitsubishi Denki Kabushiki Kaisha. Centrifugal spark-advance controlling device. 4,535,737, Cl. 123-420.000.
Takamizawa, Hideo: *See—*
Utsumi, Kazuaki; Shimada, Yuzo; Suzuki, Masanori; and Takamizawa, Hideo, 4,536,435, Cl. 428-209.000.
Takano, Seigo: *See—*
Takiguchi, Kiyoaki; and Takano, Seigo, 4,535,895, Cl. 209-683.000.
Takasaka, Masao: *See—*
Tsutsumikoshi, Shinobu; Goto, Akira; Murakami, Tsuyoshi; Takasaka, Masao; and Shinohara, Yoshiki, 4,535,869, Cl. 180-311.000.
Takayama, Syuichi, to Olympus Optical Co., Ltd. Calculus disintegrating apparatus. 4,535,771, Cl. 128-328.000.
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, to Tokico Ltd. Pneumatic servo booster. 4,535,680, Cl. 91-376.00R.
Takeda Chemical Industries, Ltd.: *See—*
Okutani, Tetsuya, 4,536,504, Cl. 514-270.000.
Takeda, Hideo: *See—*
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.
Takemura, Kaoru: *See—*
Kubo, Yoshiaki; Takemura, Kaoru; and Kouno, Shuichiro, 4,536,206, Cl. 71-3.000.
Takeuchi, Hiroshi: *See—*
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.
Takeuchi, Yukihisa: *See—*
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,535,588, Cl. 60-286.000.
Takiguchi, Kiyoaki; and Takano, Seigo, to Computer Services Corporation. Sorting device. 4,535,895, Cl. 209-683.000.
Talon, Inc.: *See—*
Moertel, George B., 4,536,143, Cl. 425-115.000.
Tam, Man C., to Xerox Corporation. Migration imaging process. 4,536,457, Cl. 430-41.000.
Tamura, Akihiko: *See—*
Motohashi, Mitsuo; Nemoto, Mitsugu; and Tamura, Akihiko, 4,536,082, Cl. 355-3.0SH.
Tamura, Tetsuomi: *See—*
Kodama, Hisashi; Hamamoto, Tooru; Tamura, Tetsuomi; Sato, Katsujiro; and Yamada, Kazuharu, 4,535,734, Cl. 123-90.580.
Tamura, Tooru: *See—*
Ito, Akio; Matsuda, Shunsuke; Murakami, Yoshinobu; and Tamura, Tooru, 4,536,267, Cl. 204-159.230.
Tamura, Yutaka: *See—*
Kida, Koichi; Kawai, Yoshio; Tamura, Yutaka; and Suzuki, Yoshiharu, 4,536,605, Cl. 585-640.000.
Tan, Yoichi: *See—*
Kume, Hiroshi; and Tan, Yoichi, 4,536,875, Cl. 370-85.000.
Tanaka, Hideo; and Muranaka, Shiaru, to Shibuya Kogyo Co., Ltd. Rotary type capping apparatus. 4,535,583, Cl. 53-75.000.
Tanaka, Hideshi, to Victor Company of Japan, Ltd. Heating control device for a thermal ink-transfer type printing apparatus. 4,536,771, Cl. 346-76.0PH.
Tanaka, Hiroshi: *See—*
Ohtake, Yasuhisa; Tanaka, Hiroshi; and Oka, Koichiro, 4,536,226, Cl. 148-12.00C.
Tanaka, Kiichiro: *See—*
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.
Tanaka, Minako: *See—*
Fujiwara, Masami; Fukuda, Hidenori; and Tanaka, Minako, 4,536,324, Cl. 252-311.000.
Tanaka, Minoru: *See—*
Kubota, Hitoshi; Tanaka, Minoru; and Aiuchi, Susumu, 4,536,419, Cl. 427-255.500.
Tanaka, Norio; Miura, Takeo; and Miyata, Jiro, to Honda Giken Kogyo Kabushiki Kaisha. Front leg shield for a motor scooter. 4,536,005, Cl. 280-289.00S.
Tanaka, Taro: *See—*
Igashira, Toshihiko; Tanaka, Taro; and Sakakibara, Yasuyuki, 4,535,743, Cl. 123-472.000.
Tanaka, Torata, to Nikku Industry Co., Ltd. Method of manufacturing carbon electrode. 4,536,359, Cl. 264-102.000.
Tanaka, Yoshikazu; Abo, Keiju; Hirano, Hiroyuki; Kumura, Haruyoshi; Yamamuro, Sigeaki; and Morimoto, Yoshiro, to Nissan Motor Co., Ltd. Method and apparatus for controlling continuously variable transmission. 4,536,171, Cl. 474-28.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, to Fujitsu Ten Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Cruise control system for automotive vehicle. 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, to Fujitsu Ten Limited; and Toyota Jidosha Kogyo Kabushiki Kaisha. Cruise control system for automotive vehicle. 4,535,865, Cl. 180-177.000.
Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Automatic focus control system. 4,536,072, Cl. 354-403.000.
Tatin, Gerard, to Atochem. Bath and method for the simultaneous desizing and bleaching of fabrics. 4,536,182, Cl. 8-107.000.
Tatterson, David F.; O'Grady, Thomas M.; and Coates, Ronald, to Standard Oil Company (Indiana). Shale oil stabilization with a hydrogen donor quench. 4,536,278, Cl. 208-11.00R.
Tatterson, David F.: *See—*
O'Grady, Thomas M.; Tatterson, David F.; and Coates, Ronald, 4,536,277, Cl. 208-11.00R.
Taura, Mitsuharu; and Mizuno, Toshiaki, to Toyota Jidosha Kabushiki Kaisha. Method and apparatus for controlling air-fuel ratio in internal combustion engine. 4,535,736, Cl. 123-344.000.
Tauzia, Jean-Michel: *See—*
Lelu, Andre ; Gonthier, Bruno; Grignon, Jean; and Tauzia, Jean-Michel, 4,536,235, Cl. 149-19.400.
Tayco Developments, Inc.: *See—*
Ebert, Edward A., 4,535,764, Cl. 128-92.00B.
Taylor, Paul H., 4,535,876, Cl. 188-311.000.
Taylor, Frank J. P. Non-electric portable dishwasher. 4,535,795, Cl. 134-93.000.
Taylor, Paul H., to Tayco Developments, Inc. Shock absorber construction. 4,535,876, Cl. 188-311.000.
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, to Sanyo Electric Co., Ltd.; and Tokyo Sanyo Electric Co., Ltd. Induction heating cooking apparatus. 4,536,631, Cl. 219-10.770.
Teaneck Graphics Corp.: *See—*
Hliboki, Joseph G.; and Staudenmaier, Paul, 4,536,085, Cl. 355-93.000.
Teche, Andre : *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,536,345, Cl. 260-465.00D.
Technar, Incorporated: *See—*
Diller, Robert W., 4,536,629, Cl. 200-61.45R.
Teepak, Inc.: *See—*
Arnold, Lionel C., 4,536,175, Cl. 493-308.000.
Hendriks, Ivo G. M.; and Stals, Theo, 4,535,506, Cl. 17-45.000.
Teijin Limited: *See—*
Ogawa, Yoshinari; and Akagi, Noriyuki, 4,536,531, Cl. 524-135.000.
Tektronix, Inc.: *See—*
Metz, Arthur J.; and Schlotzhauer, Kenneth G., 4,536,666, Cl. 307-494.000.
Navarro, Luis J.; Peter, Joseph R.; and Blair, Bruce W., 4,536,760, Cl. 340-722.000.

Telefonaktiebolaget LM Ericsson: *See—*
Lahti, Mauritz J. B., 4,536,872, Cl. 370-82.000.
Teljupa, Sergei P.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Tempel, Christel: *See—*
Nachbur, Hermann; and Tempel, Christel, 4,536,779, Cl. 346-212.000.
Temple, Carroll G.; Montgomery, John A.; and Elliott, Robert D., to Southern Research Institute. 2-Amino-4(3H)-oxopyrido[2,3-d]pyrimidino. 4,536,575, Cl. 544-279.000.
Temple, Chester S.: *See—*
Hsu, Edward C.; and Temple, Chester S., 4,536,446, Cl. 428-392.000.
Tenney, William L., to London Fog, Inc. Gas compressor. 4,536,132, Cl. 417-237.000.
ten Pierick, Hendrik, to U.S. Philips Corporation. Circuit for generating a deflection current through the field deflection coil of a picture display device. 4,536,682, Cl. 315-387.000.
Tenser, Adrian; Prizlow, Alfred J.; and Peters, Gerald I., to Global Upholstery Company Limited. Office panelling system. 4,535,577, Cl. 52-221.000.
Terauds, Oskar R., to Stouffer Corporation, The. Frozen food package and cover lid. 4,535,889, Cl. 206-527.000.
Terneu, Robert: *See—*
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,536,204, Cl. 65-60.400.
Terrones, Johnny; and Kennard, Walter E. Seismic actuated shut-off valve. 4,535,796, Cl. 137-45.000.
Terumo Kabushiki Kaisha: *See—*
Shimizu, Masaki; and Nomura, Takeo, 4,536,496, Cl. 514-54.000.
Tessier, Jean: *See—*
Martel, Jacques; Tessier, Jean; and Teche, Andre , 4,536,345, Cl. 260-465.00D.
Tetra Pak International Akteibolag: *See—*
Tsubota, Nobutaka, 4,535,584, Cl. 53-128.000.
Tetras S.A.: *See—*
Hoffman, Lionel B., 4,536,075, Cl. 355-3.0DD.
Tetro, Roland G., to Delaval Turbine Inc. Flexible means for measuring liquid level. 4,536,660, Cl. 307-118.000.
Texaco Inc.: *See—*
Brown, Alfred; Huang, Wann-Sheng; and Shum, Yick-Mow, 4,535,845, Cl. 166-272.000.
Grigsby, Robert A., Jr.; Speranza, George P.; Brennan, Michael E.; and Yeakey, Ernest L., 4,536,522, Cl. 521-172.000.
Lewis, Paul H., 4,536,486, Cl. 502-74.000.
Lin, Jiang-Jen; and Alexander, David C., 4,536,604, Cl. 585-601.000.
Pehler, Rebecca C. C.; Whiteman, James R.; and Witte, Arnold C., Jr., 4,536,308, Cl. 252-32.70E.
Sung, Rodney L., 4,536,189, Cl. 44-56.000.
Yeakey, Ernest L.; and Watts, Lewis W., Jr., 4,536,600, Cl. 564-153.000.
Texas Instruments Incorporated: *See—*
Andrews, Peter J., 4,536,835, Cl. 363-163.000.
Huse, Horst; and Elmer, Werner, 4,536,738, Cl. 340-146.200.
Martin, Robert C., 4,536,664, Cl. 307-475.000.
Papamichalis, Panos E.; and Doddington, George R., 4,536,886, Cl. 381-41.000.
Pejouhy, Radi, 4,536,817, Cl. 361-105.000.
Sullivan, Lawrence B.; and Lo, Charng-Wen M., 4,536,862, Cl. 367-153.000.
Thalmann, Alfred, to Georg Fischer Aktiengesellschaft. Arrangement for welding together thermoplastic molded members. 4,536,644, Cl. 219-535.000.
Thayer, Timothy Z.; and Shaw, Frank W., to Arvin Industries, Inc. Catalytic converter divider. 4,536,371, Cl. 422-171.000.
Theisen, Peter J.; and Chen, C. Gregory, to Eaton Corporation. D. C. power controller with fuse protection. 4,536,814, Cl. 361-7.000.
Thevenon, Henri. Fixed position machine for coiling down a cable. 4,535,946, Cl. 242-54.00R.
Thieme, Thomas R.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,536,503, Cl. 514-255.000.
Thomas, Charles L.: *See—*
Little, Victor, Jr.; and Thomas, Charles L., 4,536,152, Cl. 431-159.000.
Thomas, Edward B.; and Peters, Mark C., to Crepaco, Inc. Vertically extending heat exchanger. 4,535,836, Cl. 165-86.000.
Thomsen, Svend E.; and Christensen, Thorkild, to Danfoss A/S. Hydraulic control apparatus for a servo-motor, particularly for vehicle steering. 4,535,678, Cl. 91-29.000.
Thomson-CSF: *See—*
Graindorge, Philippe; and Arditty, Herve , 4,536,861, Cl. 367-149.000.
Kaire, Jean C., 4,536,616, Cl. 179-81.00A.
Lange , Francois; and Cornet, Jean, 4,536,868, Cl. 369-284.000.
Thomson-CSF Broadcast, Inc.: *See—*
Kruger, Robert A.; and Bateman, Wayne, 4,536,790, Cl. 358-111.000.
McMann, Renville H., Jr., 4,536,799, Cl. 358-219.000.
Thomson, Daniel C. Marine door lockset. 4,536,020, Cl. 292-173.000.
Thorandt, Herbert: *See—*
Schiess, Wolfgang; and Thorandt, Herbert, 4,535,633, Cl. 73-706.000.
Thukral, Prem S.: *See—*
Cayless, Richard A.; and Thukral, Prem S., 4,536,225, Cl. 148-6.15R.
Thurlow, Norman C.; Hayter, Walter R.; and Schockner, Richard C., to Westinghouse Electric Corp. Seismic restraint means. 4,536,653, Cl. 250-390.000.
Tiefel, Thomas H.: *See—*
Jin, Sungho; and Tiefel, Thomas H., 4,536,229, Cl. 148-31.550.
Tiep, Brian L.; Phillips, Robert E.; and Otsap, Ben A. Oxygen delivery apparatus. 4,535,767, Cl. 128-207.180.
Tijssen, Jan; and van der Loos, Jozef L. M., to Stamicarbon B.V. Process for the preparation of a copolymer comprising alpha-methylstyrene and acrylonitrile. 4,536,556, Cl. 526-342.000.
Timex Corporation: *See—*
Wuthrich, Paul; Daigle, Lyman R.; and Daddona, Anthony D., 4,536,095, Cl. 368-321.000.
Tloczysnki, James J.: *See—*
Brubaker, Ronald L.; Tloczysnki, James J.; Budzol, Melvin; Ahola, Clifford J.; Boyle, Frederick P.; Parkinson, Truman D.; and Rine, James C., 4,535,941, Cl. 241-21.000.
Tocom, Inc.: *See—*
Campbell, John G.; Schoeneberger, Carl F.; Bundens, Allan B.; Fogle, Richard M.; and Lemburg, John R., 4,536,791, Cl. 358-122.000.
Tod, Roger J.: *See—*
Bellis, Robert D.; Tod, Timothy W.; and Tod, Roger J., 4,535,794, Cl. 133-8.00E.
Tod, Timothy W.: *See—*
Bellis, Robert D.; Tod, Timothy W.; and Tod, Roger J., 4,535,794, Cl. 133-8.00E.
Togawa, Fumio: *See—*
Sumiya, Kenji; Togawa, Fumio; and Saito, Osamu, 4,536,444, Cl. 428-340.000.
Tokico Ltd.: *See—*
Shimokura, Akihiro, 4,535,877, Cl. 188-319.000.
Takayama, Toshio; Ando, Hiromi; and Endou, Mitsuhiro, 4,535,680, Cl. 91-376.00R.
Tokita, Kiyoshi; Sone, Toshinao; and Nakamura, Michio, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode-ray tube. 4,535,907, Cl. 220-2.10A.
Tokuhara, Mitsuhiro, to Canon Kabushiki Kaisha. Projection device. 4,536,084, Cl. 355-55.000.
Tokyo Sanyo Electric Co., Ltd.: *See—*
Tazima, Yoshihisa; Morishima, Masayuki; Okumura, Hiroshi; and Kasahara, Shin-ichi, 4,536,631, Cl. 219-10.770.
Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Ishida, Tsuyoshi, 4,536,709, Cl. 324-239.000.
Mabuchi, Sadaaki, 4,536,734, Cl. 336-196.000.
Maruyama, Jisaburou; Fukayama, Sumio; Miyake, Masanobu; Watanabe, Yoshimi; and Eguchi, Yoshinori, 4,536,676, Cl. 313-318.000.
Nagano, Katsumi, 4,536,701, Cl. 323-315.000.
Nagano, Katsumi, 4,536,702, Cl. 323-316.000.
Ochiai, Nobuo; and Tsumagari, Takashi, 4,535,570, Cl. 51-165.770.
Tokita, Kiyoshi; Sone, Toshinao; and Nakamura, Michio, 4,535,907, Cl. 220-2.10A.
Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, 4,536,842, Cl. 364-424.000.
Yoshida, Yoshihiro; and Aoki, Hidehiko, 4,536,716, Cl. 330-69.000.
Tom Sawyer Supply & Equipment: *See—*
Sawyer, Robert D.; and Fohl, Michael W., 4,536,145, Cl. 425-289.000.
Tomashauser, Josef: *See—*
Buchholz, Rainer; Tomashauser, Josef; Zodrow, Rudolf; and Mohn, Hans-Werner, 4,536,247, Cl. 156-477.100.
Tomasson, Tom: *See—*
Brynielsson, Thore; Tomasson, Tom; Ahlberg, Leif; and Johansson, Magnus, 4,536,004, Cl. 280-166.000.
Tomita, Masahiro: *See—*
Sato, Susumu; Takeuchi, Yukihisa; and Tomita, Masahiro, 4,535,588, Cl. 60-286.000.
Yoshida, Hitoshi; Tomita, Masahiro; and Takagi, Shigeru, 4,535,589, Cl. 60-303.000.
Tonello, Marc, to Compagnie Europeenne de Teletransmission C.E.T.T. Process for protecting a remote monitoring system against sabotage and a system using this process. 4,536,748, Cl. 340-506.000.
Toon, Michael B., to Mobil Oil Corporation. Gas chromatograph for reseparating a sampel into pure components. 4,536,199, Cl. 55-67.000.
Topits, John. Push peg game apparatus. 4,535,993, Cl. 273-241.000.
Topp-Jorgensen, Jorgen, to Haldor Topsoe A/S. Process for the preparation of catalysts for use in ether synthesis. 4,536,485, Cl. 502-62.000.
Torkelson, John; and Sanders, Weldon A., Jr., to BancTec, Inc. Video data compression system and method. 4,536,801, Cl. 358-280.000.
Torobin, Leonard B. Method for producing plastic microfilaments. 4,536,361, Cl. 264-167.000.
Torres, Anibal: *See—*
Stephens, Charles R., Jr.; and Torres, Anibal, 4,536,396, Cl. 514-2.000.
Torrington Company, The: *See—*
De Bisschop, James; Neri, Anthony A.; and Williams, Thomas J., 4,535,645, Cl. 74-492.000.

Toux, Jacques: *See—*
Gervais, Alain; Vermeire, Daniel; Cerf, Olivier; and Toux, Jacques, 4,535,621, Cl. 73-59.000.
Toy, Lester T., to Raychem Corporation. Elastomer based adhesive compositions. 4,536,445, Cl. 428-349.000.
Toyo Boseki Kabushiki Kaisha: *See—*
Okudaira, Tadashi; Tsuboi, Akio; Hama, Yoshihisa; and Hara, Mamoru, 4,535,901, Cl. 215-1.00C.
Toyo Seikan Kaisha, Ltd.: *See—*
Imatani, Tsuneo; Yasumuro, Hisakazu; Watanabe, Michio; Kurashima, Hideo; and Ishibashi, Kazuhisa, 4,536,243, Cl. 156-274.600.
Toyo Soda Manufacturing Co., Ltd.: *See—*
Oyama, Kiyotaka; and Harada, Tuneo, 4,536,342, Cl. 260-465.00G.
Toyoda, Kazuhiro; and Shimada, Haruo, to Fujitsu Limited. Random access memory device. 4,536,860, Cl. 365-190.000.
Toyota Jidosha Kabushiki Kaisha: *See—*
Ohumi, Takeharu; Kurahashi, Yasuo; Hattori, Kyo; and Sakurai, Kazuhiro, 4,535,815, Cl. 137-625.480.
Taura, Mitsuharu; and Mizuno, Toshiaki, 4,535,736, Cl. 123-344.000.
Yamawaki, Takesi, deceased; Kusuhara, Masakazu; and Saitou, Tatuya, 4,536,025, Cl. 296-37.160.
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, 4,535,735, Cl. 123-310.000.
Toyota Jidosha Kogyo Kabushiki Kaisha: *See—*
Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, 4,536,010, Cl. 280-802.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,864, Cl. 180-177.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,535,865, Cl. 180-177.000.
Travis, E. Clayton. Wall ornament for shower and bathtub enclosures. 4,536,423, Cl. 428-14.000.
Trede, Brian E.: *See—*
Dodd, P. David; Blickenstaff, Ronald L.; Coulson, Richard L.; Moreno, Robert J.; and Trede, Brian E., 4,536,836, Cl. 364-200.000.
Treharne, Timothy J., to Pemberton Sintermatic S.A. Corrosion inhibition in sintered stainless steel. 4,536,228, Cl. 148-6.15R.
Trewhella, Joseph M., to Multiplex Company, Inc. Dispensing apparatus. 4,535,917, Cl. 222-129.100.
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Herrmann, John M.; and Voisin, Suzanne M., 4,536,122, Cl. 414-404.000.
Troup, Leon M. Apparatus for applying lap sealant. 4,535,920, Cl. 222-612.000.
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Orban, Ivan; and Troxler, Eduard, 4,536,593, Cl. 560-75.000.
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Trush, Vladimir I.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
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Hosel, Fritz, 4,536,852, Cl. 364-562.000.
Leifeld, Ferdinand; and Hosel, Fritz, 4,535,511, Cl. 19-105.000.
TRW Inc.: *See—*
Bookout, Russell J.; Pearson, Bernard A.; and Jacobs, John W., 4,536,137, Cl. 417-390.000.
Tsai, Boh C.: *See—*
Farrell, Christopher J.; and Tsai, Boh C., 4,536,409, Cl. 426-398.000.
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Denda, Masahiko; Sato, Shinichi; Tsubouchi, Natsuro; Kinoshita, Shigeji; and Ohbayashi, Yoshikazu, 4,535,530, Cl. 29-571.000.
Tsuge, Hiroshi: *See—*
Matsunami, Muneharu; Tsuge, Hiroshi; Kubota, Tatsushi; and Ogawa, Hisashi, 4,536,010, Cl. 280-802.000.
Tsuji, Kozo: *See—*
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Tsukuda, Toshio: *See—*
Futakuchi, Takashi; Nakamura, Kiyofumi; Sato, Yoshimasa; Tsukuda, Toshio; and Shiraishi, Hiroyuki, 4,536,211, Cl. 75-5.000.
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Ochiai, Nobuo; and Tsumagari, Takashi, 4,535,570, Cl. 51-165.770.
Tsunoda, Kazuyuki; and Ichikawa, Yoshio, to Nippon Electric Co., Ltd. Radio paging receiver having display control means. 4,536,761, Cl. 340-825.440.
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Suzuki, Toshiyuki; Nakamura, Tohru; and Tsutsumi, Hisao, 4,536,519, Cl. 514-785.000.
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Tubiflex, S.p.a.: *See—*
Quaranta, Cosimo, 4,536,019, Cl. 285-322.000.
Tucker, Donna L.: *See—*
Jones, Mary A.; and Tucker, Donna L., 4,536,028, Cl. 297-224.000.
Tukahara, Ryoichi: *See—*
Nishizawa, Tsutomu; Tukahara, Ryoichi; Morinaka, Ryoichi; and Hidaka, Tuneo, 4,536,320, Cl. 252-299.100.
Tukamoto, Masatoshi; and Sawayama, Tadahiro, to Dainippon Pharmaceutical Co., Ltd. Optically active N-substituted phenylalaninols and use thereof. 4,536,601, Cl. 564-355.000.
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Turner, James A., to Dow Chemical Company, The. Certain naphthyridine diether compounds and their herbicidal use. 4,536,208, Cl. 71-94.000.
Turner, Norman L., to Varian Associates, Inc. Method and apparatus for controlling thermal transfer in a cyclic vacuum processing system. 4,535,834, Cl. 165-80.00R.
Turner, Paul W.: *See—*
Perkins, Richard A.; Brady, William C.; and Turner, Paul W., 4,536,202, Cl. 65-1.000.
Tyszkiewicz, Theodore J.: *See—*
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Uchida, Kenji: *See—*
Saito, Makoto; Sakamoto, Masakatsu; Uchida, Kenji; and Kamino, Yukishige, 4,536,131, Cl. 417-102.000.
Uchikoshi, Gohji, to Nakamichi Corporation. Method of converting a digital signal into an analog signal and a digital-to-analog converter therefor. 4,536,743, Cl. 340-347.0DA.
Uehara, Masafumi; Yamazaki, Atsuo; and Shimura, Kazuhiro, to Konishiroku Photo Industry Co., Ltd. Positive-working photosensitive composition with o-quinone diazide and admixture of resins. 4,536,465, Cl. 430-192.000.
Ueno, Kouji, to Fujitsu Limited. Junction short-circuiting-type programmable read-only memory device. 4,536,858, Cl. 365-104.000.
Umeda, Hiroyuki, to Victor Company of Japan, Ltd. Adapter for a miniature type tape cassette. 4,536,810, Cl. 360-94.000.
Umnyashkin, Vladimir A.: *See—*
Kosolapov, Gennady M.; Revin, Alexandr A.; Komarov, Jury Y.; Umnyashkin, Vladimir A.; Kondrashkin, Alexandr S.; and Sobolev, Jury A., 4,536,041, Cl. 303-119.000.
Underhill, Michael J., to U.S. Philips Corporation. Jitter reduction circuit for frequency synthesizer. 4,536,718, Cl. 331-16.000.
Underwood, Mark R., to Probe Adventures, Inc. Axial flow combine. 4,535,787, Cl. 130-27.00T.
Unger, Stefan H.: *See—*
Nelson, Peter H.; Ringold, Howard J.; Unger, Stefan H.; and Thieme, Thomas R., 4,536,503, Cl. 514-255.000.
Uni-Cardan Aktiengesellschaft: *See—*
Krude, Werner, 4,536,038, Cl. 301-124.00R.
Union Camp Corporation: *See—*
Olechowski, Jerome R., 4,536,333, Cl. 260-99.500.
Union Carbide Corporation: *See—*
Aceto, Roger, 4,535,508, Cl. 17-49.000.
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Evans, William P., 4,536,456, Cl. 429-194.000.
Matzner, Markus; and Papuga, Donald M., 4,536,543, Cl. 525-68.000.
Matzner, Markus; and Papuga, Donald M., 4,536,544, Cl. 525-68.000.
O'Connor, Michael C.; and Hann, George W., 4,535,904, Cl. 215-215.000.
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Kennedy, Peter; and Parkinson, Kenneth, 4,536,449, Cl. 428-408.000.
United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Brittanic Majesty's Government of the: *See—*
Bishop, Sarah M.; and Curtis, Paul T., 4,536,438, Cl. 428-246.000.
United States of America
Agriculture: *See—*
Harper, Robert J., Jr., 4,536,422, Cl. 427-381.000.
Air Force: *See—*
Eylon, Daniel; and Froes, Francis H., 4,536,234, Cl. 148-133.000.
Ludington, Charlotte E., 4,536,658, Cl. 250-578.000.
Army: *See—*
Dubowicz, Palemon W., 4,536,768, Cl. 343-736.000.

McDonald, Joseph K.; and Merritt, James A., 4,536,252, Cl. 156-662.000.
Yuen, Harvard, 4,535,698, Cl. 102-529.000.
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Bianchini, Gregory M.; and McRae, Thomas G., 4,535,639, Cl. 73-863.110.
Chapline, George F., Jr., 4,536,883, Cl. 378-36.000.
Huffman, Lester H.; and Knoke, Gerald S., 4,536,035, Cl. 299-17.000.
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Waechter, David A.; Erkkila, Bruce H.; and Vasilik, Dennis G., 4,536,841, Cl. 364-414.000.
Health & Human Services: *See—*
Antonucci, Joseph M., 4,536,523, Cl. 523-115.000.
National Aeronautics and Space Administration: *See—*
Belew, Robert R., 4,536,114, Cl. 410-156.000.
Blackburn, Linda B.; and Ellingsworth, John R., 4,535,636, Cl. 73-831.000.
Mikroyannidis, John A., 4,536,565, Cl. 528-352.000.
U.S. Philips Corporation: *See—*
Brice, John C.; Page, John L.; and Whiffin, Peter A. C., 4,535,720, Cl. 118-415.000.
Brice, John C.; and Brough, Colin R., 4,536,227, Cl. 148-13.100.
Guittard, Pierre; Guillemet, Bernard; and Piaget, Claude, 4,536,679, Cl. 313-541.000.
Ijntema, Johannes, 4,536,757, Cl. 340-636.000.
Jochems, Pieter J. W., 4,535,529, Cl. 29-571.000.
Martens, Theodorus H. G.; and Sanders, Franciscus H. M., 4,536,415, Cl. 427-40.000.
Osinga, Halbe, 4,536,729, Cl. 335-210.000.
Ponjee, Johannes J.; and Melgert, Frederik B., 4,536,416, Cl. 427-131.000.
Postma, Pieter, 4,536,675, Cl. 313-46.000.
Schoenmakers, Wijnand J., 4,536,857, Cl. 364-900.000.
Schouhamer Immink, Kornelis A., 4,536,742, Cl. 340-347.0DD.
ten Pierick, Hendrik, 4,536,682, Cl. 315-387.000.
Underhill, Michael J., 4,536,718, Cl. 331-16.000.
van den Berk, Theodorus H. M., 4,536,059, Cl. 350-333.000.
Van Rosmalen, Gerard E., 4,536,864, Cl. 369-44.000.
United States Steel Corporation: *See—*
Boggs, William E.; and Keener, Everett L., 4,536,194, Cl. 48-180.100.
Kachik, Robert H., 4,536,237, Cl. 149-37.000.
United Technologies Corporation: *See—*
Bello, Vincent G.; and Sweeting, Charles W., 4,536,700, Cl. 323-285.000.
Jankot, Alan L., 4,536,129, Cl. 416-95.000.
Rannenberg, George C., 4,535,606, Cl. 62-402.000.
Unitika Ltd.: *See—*
Murase, Shigemitsu, 4,536,526, Cl. 523-433.000.
Sakamoto, Izumi; and Takagi, Kunihiko, 4,536,387, Cl. 424-14.000.
Unitrode Corporation: *See—*
van Dyk Soerewyn, Herman F., 4,536,825, Cl. 361-386.000.
University of Guelph: *See—*
Cocivera, Michael, 4,536,260, Cl. 204-37.100.
University of Minnesota: *See—*
Anderson, Michael H.; Lyons, Christopher S.; and Wigness, Bruce D., 4,536,179, Cl. 604-266.000.
University of Utah: *See—*
Kim, Wan S.; Jeong, Seo Y.; and McRea, James C., 4,536,572, Cl. 536-179.000.
University Patents, Inc.: *See—*
Garito, Anthony F., 4,536,450, Cl. 428-411.100.
Uno, Hiroshi: *See—*
Ishii, Takahito; Yamashita, Kazuo; and Uno, Hiroshi, 4,535,837, Cl. 165-104.170.
UOP Inc.: *See—*
Carson, Don B., 4,536,276, Cl. 208-100.000.
Malloy, Thomas P.; and Swedo, Raymond J., 4,536,301, Cl. 252-8.55D.
Welsh, Lawrence B.; and Leyerle, Richard W., 4,536,358, Cl. 264-81.000.
White, John B., Jr.; McHarg, Robert E.; and Stolfa, Frank, 4,536,280, Cl. 208-106.000.
Upeslacis, Janis: *See—*
Shepherd, Robert G.; and Upeslacis, Janis, 4,536,346, Cl. 260-465.00D.
Upjohn Company, The: *See—*
Chen, Augustin T.; Goldwasser, David J.; and Onder, Kemal, 4,536,533, Cl. 524-161.000.
Regelman, Dale F., 4,536,490, Cl. 502-167.000.
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Urban, Martin: *See—*
Zerfass, Karl C.; and Urban, Martin, 4,535,526, Cl. 29-469.500.
Urban, Warren J.; Barillo, Joseph; and Krupa, Jerry J., to Lever Brothers Company. Process for manufacture of fatty acid esters of hydroxy sulfonates. 4,536,338, Cl. 260-400.000.
Usala, Hugo R., to Du Pont de Nemours, E. I., and Company. Castable ceramic compositions. 4,536,535, Cl. 524-403.000.
Utsumi, Kazuaki; Shimada, Yuzo; Suzuki, Masanori; and Takamizawa, Hideo, to Nippon Electric Co., Ltd. Multilayer substrate including layers of an alumina and borosilicate-lead-glass ceramic material. 4,536,435, Cl. 428-209.000.
Vaccaro, Nancy J.; Frost, John R.; Glatz, Alfred C.; and Schenz, Timothy W., to General Foods Corporation. Dipeptide sweetener composition. 4,536,410, Cl. 426-548.000.
Vaerman, Jean F., to Societe Nationale D'Etude et de Construction de Moteurs D'Aviation. Device for detecting flaws on a piece. 4,536,654, Cl. 250-458.100.
Van Cauter, Albert: *See—*
Van Laethem, Robert; Van Cauter, Albert; and Terneu, Robert, 4,536,204, Cl. 65-60.400.
van den Berk, Theodorus H. M., to U.S. Philips Corporation. Liquid crystal display device with ridges. 4,536,059, Cl. 350-333.000.
van den Honert, Christopher; and Stypulkowski, Paul H., to Minnesota Mining and Manufacturing Co. Method and apparatus for determining the viability and survival of sensori-neutral elements within the inner ear. 4,535,785, Cl. 128-746.000.
van der Lely, Cornelis. Vehicle. 4,535,859, Cl. 180-15.000.
van der Loos, Jozef L. M.: *See—*
Tijssen, Jan; and van der Loos, Jozef L. M., 4,536,556, Cl. 526-342.000.
Vander-Mallie, Ronald, to Du Pont de Nemours, E. I., and Company. Use of anti-idiotype antibodies in immunoassays. 4,536,479, Cl. 436-537.000.
van der Scheer, Derk, to Hazemeijer B.V. Current limiting high voltage fuse assembly. 4,536,735, Cl. 337-159.000.
van Dyk Soerewyn, Herman F., to Unitrode Corporation. Leadframe having severable fingers for aligning one or more electronic circuit device components. 4,536,825, Cl. 361-386.000.
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Van Peteghem, Willy F.: *See—*
De Schamphelaere, Lucien A.; De Cock, Etienne M.; De Bondt, Werner E.; Librecht, Freddy M.; Boeve, Gerard J.; and Van Peteghem, Willy F., 4,536,778, Cl. 346-160.000.
van Roon, Johannes. Layout of a ship steering-house. 4,535,713, Cl. 114-71.000.
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Van Swaaij, Willibrordus P. M.: *See—*
Groeneveld, Michiel J.; Verver, Albert B.; and Van Swaaij, Willibrordus P. M., 4,535,551, Cl. 34-170.000.
Vaqua Pneumatique: *See—*
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Varco International, Inc.: *See—*
Boyadjieff, George I.; and Krasnov, Igor, 4,535,852, Cl. 175-170.000.
Varian Associates, Inc.: *See—*
Holden, Scott C., 4,535,835, Cl. 165-80.00R.
Turner, Norman L., 4,535,834, Cl. 165-80.00R.
Varon, David; Dorner, Steven C.; and Siegal, Burton L., to Crown Metal Mfg. Company. Adapter for bracket securement to wall studs and method of manufacture. 4,535,525, Cl. 29-463.000.
Varone, Richard B.; and Svensson, Erik W., Sr. Communications connector support bracket. 4,536,047, Cl. 339-75.00M.
Vasilik, Dennis G.: *See—*
Waechter, David A.; Erkkila, Bruce H.; and Vasilik, Dennis G., 4,536,841, Cl. 364-414.000.
Veatch, Michael W.: *See—*
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VEB Hochvakuum Dresden: *See—*
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Velsicol Chemical Corporation: *See—*
Stach, Leonard J., 4,536,210, Cl. 71-118.000.
Vereschagin, Igor P.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Verhagen, Laurentius A. M.: *See—*
Kirton, Douglas C.; MacNeill, Avril B.; and Verhagen, Laurentius A. M., 4,536,411, Cl. 426-603.000.
Vermeire, Daniel: *See—*
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Vernay Laboratories, Inc.: *See—*
Atkinson, Gordon E.; and Kubina, Stephen J., 4,535,819, Cl. 137-846.000.
Duncan, Richard K.; and Russell, Norton A., 4,535,818, Cl. 137-846.000.
VerPlanck, James A., to Aeroquip Corporation. Socketing machine hose pull. 4,535,521, Cl. 29-235.000.
Ver Strate, Gay: *See—*
Agarwal, Pawan K.; Lundberg, Robert D.; Graessley, William W.; and Ver Strate, Gay, 4,536,310, Cl. 252-33.000.
Verton, Jose ; and Henrion, Alain, to Champion Spark Plug S.A. Connecting device for wiper blades. 4,535,500, Cl. 15-250.230.

Verver, Albert B.: *See—*
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Victor Company of Japan, Ltd.: *See—*
Hirota, Akira; Miyahara, Hiroyuki; and Kosaka, Yoshiteru, 4,536,795, Cl. 358-160.000.
Kato, Hiroshi; and Kubota, Hiromitsu, 4,536,807, Cl. 360-72.300.
Tanaka, Hideshi, 4,536,771, Cl. 346-76.0PH.
Umeda, Hiroyuki, 4,536,810, Cl. 360-94.000.
Videonics of Hawaii, Inc.: *See—*
Jerome, Jonathan A.; Neu, Frank D.; and Wohlmut, Peter G., 4,536,866, Cl. 369-112.000.
Vie, Michel P.: *See—*
Ramisse, Yves D.; Baboulet, Jean-Pierre C.; Vie, Michel P.; and Malaval, Paul C., 4,536,327, Cl. 252-511.000.
Vierrath, Helmut: *See—*
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Viglietti, John E.: *See—*
Garton, Robert E., Jr.; and Viglietti, John E., 4,536,154, Cl. 433-8.000.
Vinding, Jorgen P., to Magnetic Peripherals. Doublet detector for data recording or transmission. 4,536,740, Cl. 340-347.0DD.
Vinekar, Sanjay R.: *See—*
Fernsler, Ronald E.; and Vinekar, Sanjay R., 4,536,794, Cl. 358-158.000.
Vio, Lino, to Societe Nationale Elf Aquitaine. Drilling and completion muds useful at elevated temperatures. 4,536,296, Cl. 252-8.50C.
Visual Information Institute, Inc.: *See—*
Harshbarger, John H., 4,536,792, Cl. 358-139.000.
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Vock, Manfred H.: *See—*
Mookherjee, Braja D.; Chant, Bernard J.; Evers, William J.; Wilson, Richard A.; Zampino, Michael J.; and Vock, Manfred H., 4,536,583, Cl. 549-1.000.
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Voest-Alpine Aktiengesellschaft: *See—*
Wolkenstein, Robert, 4,536,289, Cl. 210-401.000.
Voisin, Suzanne M.: *See—*
Herrmann, John M.; and Voisin, Suzanne M., 4,536,122, Cl. 414-404.000.
Volkswagenwerk Aktiengesellschaft: *See—*
Schneider, Arthur, 4,536,708, Cl. 324-174.000.
von Beckmann, Helmuth, to Canron Inc. Device for tamping railroad track adjacent the tie ends thereof. 4,535,700, Cl. 104-12.000.
von Pieverling, Klaus, to Siemens Aktiengesellschaft. On-board orientation device for aircraft. 4,536,763, Cl. 343-9.00R.
Voss, Wolf-Dietrich: *See—*
Horsky, Anton; Kuhn, Siegfried; and Voss, Wolf-Dietrich, 4,536,112, Cl. 409-134.000.
Vsesojuzny Nauchno-Issledovatelsky I Proektny Institut Aljuminievoi, Magnievoi I Elektrodnoi Promyshlennosti: *See—*
Kaluzhsky, Nikolai A.; Badaliants, Khoren A.; Kostin, Ivan M.; Zatulovsky, Isaak A.; Korneev, Valentin I.; Andreev, Vladimir V.; Kuzmin, Boris A.; Sizyakov, Viktor M.; Shmorgunenko, Nikolai S.; Krochevsky, Vladislav A.; and Alexeev, Alexei I., 4,536,216, Cl. 106-38.300.
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Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Vukanovic, Vladimir, to Standard Oil Company (Ohio), The. High pressure, non-logical thermal equilibrium arc plasma generating apparatus for deposition of coatings upon substrates. 4,536,640, Cl. 219-121.0PR.
Vulis, Mikhail L.: *See—*
Shevalenko, Ilya S.; Ilchenko, Anatoly V.; Trush, Vladimir I.; Vulis, Mikhail L.; Baryshnikov, Anatoly I.; Vereschagin, Igor P.; Makalsky, Leonid M.; Mirzabekian, Garri Z.; Smirnov, Vladimir A.; Dzigan, Viktor P.; Ginzburg, Vladimir E.; Miroshnik, Vladimir I.; Minaev, Alexandr S.; Orlov, Alexandr V.; and Teljupa, Sergei P., 4,536,698, Cl. 323-237.000.
Vykouk, Vlastimil: *See—*
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W. H. Brady Co.: *See—*
Downing, Gerald T.; and Gyllstrom, Gregory W., 4,535,960, Cl. 248-74.500.
W. Schlafhorst & Co.: *See—*
Buhren, Heinz, 4,535,893, Cl. 209-628.000.
Rohner, Joachim; and Kamp, Heinz, 4,535,945, Cl. 242-35.60R.
WABCO Westinghouse Compagnia Freni S.p.A.: *See—*
Barberis, Dario, 4,536,039, Cl. 303-16.000.
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Singer, Robert; Goetze, Richard; Maier, Karl; and Kerbl, Maximilian, 4,536,534, Cl. 524-262.000.
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Waechter, David A.; Erkkila, Bruce H.; and Vasilik, Dennis G., to United States of America, Energy. Portable neutron spectrometer and dosimeter. 4,536,841, Cl. 364-414.000.
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Wagner, Robert F., to Sealy, Incorporated. Coil spring and spring assembly. 4,535,978, Cl. 267-91.000.
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Kubo, Yoshiaki; Takemura, Kaoru; and Kouno, Shuichiro, 4,536,206, Cl. 71-3.000.
Walker, Fritz: *See—*
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Kuhnis, Ernst; Kobler, Armin; Schreiber, Max; and Wallimann, Hans, 4,535,709, Cl. 112-83.000.
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Harper, Michael J. K.; Richardson, Dora N.; and Walpole, Arthur L., deceased, 4,536,516, Cl. 514-514.000.
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Ward, James O., to Nekoosa Envelopes, Inc. Overnight letter envelope. 4,535,930, Cl. 229-71.000.
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Webster, David R. Suspension bridge. 4,535,498, Cl. 14-18.000.
Webster, Wilton W., Jr. Autoinflatable catheter. 4,535,757, Cl. 128-1.00D.
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Wegner, Gerhard; and Wernet, Wolfgang, to BASF Aktiengesellschaft. Preparation of poly(heteroaromatics), and films obtained by this method. 4,536,262, Cl. 204-56.00R.
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Weiss, Arnold; Schutten, Herman P.; Cartz, Louis; Spellman, Gordon B.; Jaskolski, Stanley V.; and Wackman, Peter H., deceased (by Wackman, Connie M., personal representative), to Eaton Corporation. Plasma pinch X-ray apparatus. 4,536,884, Cl. 378-119.000.
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Welch, Willard M., Jr.; Harbert, Charles A.; Koe, B. Kenneth; and Kraska, Allen R., to Pfizer Inc. Antidepressant derivatives of cis-4-phenyl-1,2,3,4-tetrahydro-1-naphthalenamine. 4,536,518, Cl. 514-647.000.
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Boltrek, Henry, 4,535,880, Cl. 198-330.000.
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Moates, Roger D., 4,536,762, Cl. 340-870.020.
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Schnirch, Leo; and Weyel, Karl-Hermann, 4,536,163, Cl. 434-420.000.
Wheeler, Jennifer M.; and Jackson, Dawn A., to Standard Telephones and Cables, plc. Ceramic capacitors and dielectric compositions. 4,536,821, Cl. 361-321.000.
Wheless, Jack C., to Philip Morris Incorporated. Method and apparatus for aligning oval cigarette filters. 4,535,790, Cl. 131-94.000.
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White, Christopher D.; and Levy, Alan A., to Richardson-Vicks Ltd. Bactericidal tabletting composition and tablets formed therefrom. 4,536,389, Cl. 424-44.000.
White, David W.: *See—*
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White, Edward A. Phosphate fertilizer production. 4,536,378, Cl. 423-321.00R.
White, John B., Jr.; McHarg, Robert E.; and Stolfa, Frank, to UOP Inc. Visbreaking process. 4,536,280, Cl. 208-106.000.
White, Mark E. Chain saw sharpening guide. 4,535,654, Cl. 76-36.000.
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Wiegers, Wilhelmus J.; Van Loveren, Augustinus G.; Hanna, Marie R.; Luccarelli, Domenick, Jr.; Bowen, David R.; and Vock, Manfred H., to International Flavors & Fragrances Inc. Perfuming with a macrocyclic carbonate. 4,536,299, Cl. 252-8.600.
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Willitts, Benjamin R.; and Klossman, Charles W., to Emhart Industries, Inc. Highly energy efficient heat reclamation means for food display case refrigeration systems. 4,535,603, Cl. 62-196.400.
Wilmes, Manfred, to C. A. Weidmuller GmbH & Co. Cutting connector. 4,536,049, Cl. 339-97.00R.
Wilson, Donald R., to Plantronics, Inc. Voice communication instrument system with line-powered receiver conditioning circuit. 4,536,888, Cl. 381-106.000.
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Winn, Ray, to Advanced Semiconductor Products, Inc. Method of forming thin optical membranes. 4,536,240, Cl. 156-74.000.
Winterhalter, Walter, to Gebruder Junghans GmbH. Fuse for a spin-type projectile. 4,535,695, Cl. 102-240.000.
Winzenburg, Mark L.; Fields, Ellis K.; and Shneider, Benjamin L., to Standard Oil Company (Indiana). Polyimides prepared from cyclic dianhydrides. 4,536,560, Cl. 528-188.000.

Wirth, Xaver: *See*—
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Wisler, Macmillan M.: *See*—
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Wisniewski, Gregory G. Reflector assembly for lamp fixtures. 4,536,830, Cl. 362-223.000.

Withers, Howard P., Jr.: *See*—
Fellmann, Jere D.; Garrou, Philip E.; Withers, Howard P., Jr.; and Seyferth, Dietmar, 4,536,589, Cl. 556-14.000.

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Witte, Arnold C., Jr.: *See*—
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Wittenberg, Mark S.: *See*—
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Woehler, Harold L.: *See*—
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Wohlmut, Peter G.: *See*—
Jerome, Jonathan A.; Neu, Frank D.; and Wohlmut, Peter G., 4,536,866, Cl. 369-112.000.

Wojtanek, Guy A., to Singer Company, The. Timer drive mechanism. 4,536,626, Cl. 200-35.00R.

Wolf, Richard A.: *See*—
Shearer, Wilfred L.; Sinker, Stephen M.; and Wolf, Richard A., 4,536,527, Cl. 524-193.000.

Wolfe, Saul; Westlake, Donald; and Jensen, Susan, to Queen's University at Kingston. Stable epimerase reagent, cyclase reagent and ring expansion reagent for cell-free production of cephalosporins. 4,536,476, Cl. 435-183.000.

Wolkenstein, Robert, to Voest-Alpine Aktiengesellschaft. Filter press for dewatering of materials. 4,536,289, Cl. 210-401.000.

Woo, Edmund P., to Dow Chemical Company, The. Polyamide from bis-carboxy containing 3,5,3',5'-tetraoxo-1,2-dipiperazine compound and diamine. 4,536,564, Cl. 528-341.000.

Wood, Joseph A.; and Peebles, William C., Jr., to Flanders Filters, Inc. Air flow control apparatus. 4,535,811, Cl. 137-601.000.

Word, Nancy S.: *See*—
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,536,477, Cl. 435-205.000.

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Worth, Charles C.; and Young, John N., to Charles C. Worth Corporation. Fishing reel with delayed action brake. 4,535,954, Cl. 242-84.52B.

Wright, Robert B., to B. F. Goodrich Company, The. Inflatable hot tub with cover. 4,535,490, Cl. 4-585.000.

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Wuthrich, Paul; Daigle, Lyman R.; and Daddona, Anthony D., to Timex Corporation. Crown setting switch for a wristwatch. 4,536,095, Cl. 368-321.000.

Wyckoff, Robert L. Method of texturing a surface and articles textured by the method. 4,536,431, Cl. 428-162.000.

Wyss, Robert P., to Augat Inc. Method of assembling adaptor for automatic testing equipment. 4,535,536, Cl. 29-845.000.

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Chiang, Anne; and Meuli, William P., 4,536,251, Cl. 156-657.000.
Hauser, Oscar G.; Lysy, Dusan G.; and Koehler, Richard F., Jr., 4,536,080, Cl. 355-14.00D.
Lippolis, Craig S.; and Nguyen, Tuan A., 4,536,079, Cl. 355-14.00R.
Ng, Dominic S., 4,536,458, Cl. 430-41.000.
Stoffel, James C., 4,536,077, Cl. 355-8.000.
Tam, Man C., 4,536,457, Cl. 430-41.000.
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Yackiw, Charles, to Schlegel Corporation. Weatherstrip mountable in a slot. 4,535,564, Cl. 49-489.000.

Yakura, John, to California Linear Circuits, Inc. Apparatus for rotating a wafer. 4,535,721, Cl. 118-503.000.

Yamada, Kazuharu: *See*—
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Yamada, Kazuo: *See*—
Yamaguchi, Hirohisa; Yamada, Kazuo; and Miyasato, Tsutomu, 4,536,745, Cl. 340-347.0DD.

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Izumi, Asashiro; Mikami, Yoshiharu; and Yamada, Seiji, 4,535,855, Cl. 177-1.000.

Yamada, Yasuyuki: *See*—
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Yamaguchi, Hirohisa; Yamada, Kazuo; and Miyasato, Tsutomu, to Kokusai Denshin Denwa Co., Ltd. Sampling frequency conversion device. 4,536,745, Cl. 340-347.0DD.

Yamaguchi, Masanori: *See*—
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Yamaichi Electric Mfg. Co., Ltd.: *See*—
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Yamamoto, Yoshihiko: *See*—
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Yamamoto, Yoshikazu; Mizuguchi, Ryuzo; and Yamada, Yasuyuki, to Nippon Paint Co., Ltd. Tissue culture of lichens. 4,536,474, Cl. 435-42.000.

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Yamanishi, Akio: *See*—
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Yamashiro, Ernest, to Mid-Continent Screw Products Company. Screw fastener. 4,536,117, Cl. 411-411.000.

Yamashita, Kazuo: *See*—
Ishii, Takahito; Yamashita, Kazuo; and Uno, Hiroshi, 4,535,837, Cl. 165-104.170.

Yamashita, Sadahiko: *See*—
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Yamatani, Tetsuo: *See*—
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Yamawaki, Hiroko, representative: *See*—
Yamawaki, Takesi, deceased; Kusuhara, Masakazu; and Saitou, Tatuya, 4,536,025, Cl. 296-37.160.

Yamawaki, Takesi, deceased (by Yamawaki, Hiroko, representative); Kusuhara, Masakazu; and Saitou, Tatuya, to Toyota Jidosha Kabushiki Kaisha. Package tray trim device for vehicles. 4,536,025, Cl. 296-37.160.

Yamazaki, Atsuo: *See*—
Uehara, Masafumi; Yamazaki, Atsuo; and Shimura, Kazuhiro, 4,536,465, Cl. 430-192.000.

Yamazaki, Kazunori: *See*—
Nara, Michiko; Yamazaki, Kazunori; and Akiyama, Yasuko, 4,536,405, Cl. 514-781.000.

Yanagita, Tomoatsu, to Hitachi, Ltd. Decimal arithmetic unit. 4,536,854, Cl. 364-749.000.

Yanazawa, Hiroshi: *See*—
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Yang, Shiow-Shong: *See*—
Katkocin, Dennis M.; Word, Nancy S.; and Yang, Shiow-Shong, 4,536,477, Cl. 435-205.000.

Yang, Tai-Her. Torque limiting wrench with an audio alarm. 4,535,659, Cl. 81-478.000.

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Yarnold, Bart M. Trap stand carrier. 4,535,922, Cl. 224-202.000.

Yasui, Toshihiko; Matsumoto, Tetsuo; and Akaike, Akihiko, to Dainippon Ink and Chemicals, Inc. Method of forming resist pattern. 4,536,468, Cl. 430-296.000.

Yasumuro, Hisakazu: *See*—
Imatani, Tsuneo; Yasumuro, Hisakazu; Watanabe, Michio; Kurashima, Hideo; and Ishibashi, Kazuhisa, 4,536,243, Cl. 156-274.600.

Yeakey, Ernest L.; and Watts, Lewis W., Jr., to Texaco Inc. Polyoxyalkylenepolyacrylamides and the preparation thereof. 4,536,600, Cl. 564-153.000.

Yeakey, Ernest L.: *See*—
Grigsby, Robert A., Jr.; Speranza, George P.; Brennan, Michael E.; and Yeakey, Ernest L., 4,536,522, Cl. 521-172.000.

Yeoman, Alan M.; and Mouche , Richard J., to Nalco Chemical Company. Non-clogging deposit monitor. 4,535,622, Cl. 73-61.200.

Yereance, John G., Jr.: *See*—
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Yokoshima, Minoru; Nawata, Kazuyoshi; Ohkubo, Tetsuo; and Hattori, Hideaki, to Nippon Kayaku Kabushiki Kaisha. Acetal glycol diacrylates and process for producing them. 4,536,588, Cl. 549-374.000.

Yoneda, Kiyoshi; Takeuchi, Hiroshi; Yamatani, Tetsuo; Hijiya, Toyoto; Takeda, Hideo; Shibuya, Koji; and Tanaka, Kiichiro, to Tokyo Shibaura Denki Kabushiki Kaisha. System for measuring interfloor traffic for group control of elevator cars. 4,536,842, Cl. 364-424.000.

Yoon, InBae. Safety puncturing instrument and method. 4,535,773, Cl. 604-51.000.

York-Shipley, Inc.: *See—*
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Yoshida, Hiroshi; and Niida, Sadao, to Ube Industries, Ltd. Process for preparing 2-alkyl-4-amino-5-aminomethylpyrimidine. 4,536,577, Cl. 544-326.000.
Yoshida, Hitoshi; Tomita, Masahiro; and Takagi, Shigeru, to Nippon Soken, Inc. Exhaust gas cleaning device for internal combustion engine. 4,535,589, Cl. 60-303.000.
Yoshida Kogyo K. K.: *See—*
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Yoshida, Masaru, to Citizen Watch Company Limited. Electronic timepiece with system for synchronizing hands. 4,536,093, Cl. 368-187.000.
Yoshida, Yoshihiro; and Aoki, Hidehiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Stereo amplifier circuit for bichannel signals. 4,536,716, Cl. 330-69.000.
Yoshii, Motokazu: *See—*
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Hashimoto, Kiyoyasu; Yoshinaga, Kenji; Mori, Yoshio; Seino, Junzaburo; Kenmochi, Hirohito; and Sato, Katsunobu, 4,536,569, Cl. 534-575.000.
Yoshinaga, Toru; Igashira, Toshihiko; Kawai, Hisasi; Morino, Seiji; and Nakamura, Norihiko, to Nippon Soken, Inc.; and Toyota Jidosha Kabushiki Kaisha. Multi-gap spark ignition system. 4,535,735, Cl. 123-310.000.
Young, Bill M.: *See—*
Borchardt, John K.; and Young, Bill M., 4,536,305, Cl. 252-8.55R.
Young, John N.: *See—*
Worth, Charles C.; and Young, John N., 4,535,954, Cl. 242-84.52B.
Young, Scott C. Commode anti-splash device and method. 4,535,491, Cl. 4-658.000.
Yuasa, Masaharu: *See—*
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Yugari, Yasumi: *See—*
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Zaimi, Sedat: *See—*
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Zampino, Michael J.: *See—*
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Zayauskas, Leo. Radiant heat collector. 4,535,753, Cl. 126-274.000.
Zehl, Otis G.: *See—*
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Zenith Electronics Corporation: *See—*
Hauge, Raymond C.; and Mycynek, Victor G., 4,536,717, Cl. 330-254.000.
Sutton, Leroy A., 4,536,683, Cl. 315-401.000.
Zerfass, Karl C.; and Urban, Martin, to Hoechst Aktiengesellschaft. Method for covering a length of pipe. 4,535,526, Cl. 29-469.500.
Ziegelheim, Irwin I.; and Lerner, Lawrence, to Discovery Concepts, Inc. Work stations of knock-down modular components. 4,536,044, Cl. 312-257.00R.
Ziegler, Georg, to Sulzer Brothers Limited. Heat exchanger with adjustable platform for cleaning and repairing. 4,535,727, Cl. 122-32.000.
Ziehm, Richard T., to Xerox Corporation. Recirculative document duplex copying. 4,536,078, Cl. 355-14.0SH.
Zinsmeyer, Herbert G., to Specialty Systems, Inc. Internal combustion engine having an exhaust gas turbine. 4,535,592, Cl. 60-597.000.
Zlotnick, Fredrick: *See—*
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Zodrow, Rudolf: *See—*
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Zoecon Corporation: *See—*
Lee, Shy-Fuh; and Henrick, Clive A., 4,536,355, Cl. 260-944.000.
Pearce, Robert C., III, 4,536,388, Cl. 424-28.000.
Zoltan, Bart J., to American Cyanamid Company. Method for determining wound volume. 4,535,782, Cl. 128-665.000.
Zorn, Walter, to Walztechnik Saacke Zorn GmbH & Co. Heavy duty hob. 4,536,106, Cl. 407-25.000.
Zufle, Tim T. Body armor. 4,535,478, Cl. 2-2.500.
Zundwarenfabrik Stracke GmbH & Co.: *See—*
Appel, Hans; and Heidenescher, Hermann, 4,535,830, Cl. 160-299.000.
Zwick, Maurice M., to American Cyanamid Company. Process for the manufacture of equally biaxially oriented film. 4,536,365, Cl. 264-558.000.
Zysset, Edgar H., to Automated Container Corporation. Easy opening container system. 4,535,909, Cl. 220-273.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 20TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Caterpillar Tractor Co.: *See*—
Nieman, John R.; and Worman, Roger A., Re. 31,972, Cl. 164-362.000.

FMC Corporation: *See*—
Gold, Kenneth S., Re. 31,971, Cl. 73-462.000.

Gold, Kenneth S., to FMC Corporation. Wheel unbalance measurement system and method. Re. 31,971, Cl. 73-462.000.

Honeywell Inc.: *See*—
Mott, Richard C., Re. 31,973, Cl. 236-49.000.

Mott, Richard C., to Honeywell Inc. Fluidic flow sensing and control apparatus. Re. 31,973, Cl. 236-49.000.

Nieman, John R.; and Worman, Roger A., to Caterpillar Tractor Co. Casting mold with constricting device. Re. 31,972, Cl. 164-362.000.

Worman, Roger A.: *See*—
Nieman, John R.; and Worman, Roger A., Re. 31,972, Cl. 164-362.000.

LIST OF DESIGN PATENTEES

Abe, Takeshi: *See*—
Shibayama, Masato; Abe, Takeshi; Koizumi, Kiyohide; Sugimoto, Kouichi; Kusakawa, Hitoshi; and Jinriki, Tatenori, 280,203, Cl. D15-199.000.

Aldridge, Rufus W., Jr., to Spencer Wright Industries, Inc. Grinding machine. 280,202, 8-20-85, Cl. D15-124.000.

Alessandro. Sofa. 280,154, 8-20-85, Cl. D6-381.000.

Alessandro. Table. 280,161, 8-20-85, Cl. D6-480.000.

Alex Synn AG: *See*—
Hopfer, Hans, 280,153, Cl. D6-378.000.

Alger, Andrew L., to Goldsmith, Yamasaki, Specht Inc.; and Uarco Incorporated. Burster or similar article. 280,213, 8-20-85, Cl. D18-34.000.

Allegheny International Exercise Co.: *See*—
Gold, Norman, 280,228, Cl. D21-194.000.
Kasuba, John A.; Kanne, John T.; Dhaliwal, Sajjan S.; Gold, Norman; and Weiss, John, 280,226, Cl. D21-194.000.

Allen, Richard T.; and Hammond, David A., to Hammond, David H. Emergency medical cabinet. 280,156, 8-20-85, Cl. D6-432.000.

Altera Salotti S.R.L.: *See*—
Giudici, Gianbattista, 280,152, Cl. D6-370.000.

American Standard Inc.: *See*—
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An-Teak-Qua Company: *See*—
Hanson, Harold W., Jr., 280,248, Cl. D32-50.000.

AT&T Teletype Corporation: *See*—
Genaro, Donald M.; Tilley, Alvin R.; Purzycki, Alfred Z.; Seidlitz, Raymond R.; and Sokolowski, Eugene K., 280,196, Cl. D14-93.000.
Genaro, Donald M.; Tilley, Alvin R.; Purzycki, Alfred Z.; Seidlitz, Raymond R.; and Sokolowski, Eugene K., 280,197, Cl. D14-93.000.

Barbato, Michael W.; Mattson, Ray W.; and Nordgren, Michael R., to Mattel, Inc. Extendable toy car or similar article. 280,223, 8-20-85, Cl. D21-136.000.

Bassett, Howard D., to Union Carbide Corporation. Casserole. 280,175, 8-20-85, Cl. D7-354.000.

Bell & Howell Company: *See*—
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Berry, Richard D., Jr., to Design Institute America, Inc. Etagere. 280,157, 8-20-85, Cl. D6-474.000.

Berry, Richard D., Jr., to Design Institute America, Inc. Etagere. 280,158, 8-20-85, Cl. D6-474.000.

Berry, Richard D., Jr., to Design Institute America, Inc. Table. 280,164, 8-20-85, Cl. D6-489.000.

Blight, Marshall R., to Emeraldine Limited. Boomerang. 280,220, 8-20-85, Cl. D21-85.000.

Bobrick Washroom Equipment Corporation: *See*—
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Boklund, Carl J., to Wilcoxen, James. Child's lap desk and blackboard. 280,216, 8-20-85, Cl. D19-52.000.

Bossack, Thomas J.; Shipos, Louis E.; and Brown, Frederick M., to NCR Corporation. Ribbon cassette or similar article. 280,212, 8-20-85, Cl. D18-22.000.

Bothe, Hans J. Aircraft. 280,194, 8-20-85, Cl. D12-323.000.

Braun, Claus J. Mini-geiger-counter. 280,183, 8-20-85, Cl. D10-46.000.

Bromley, R. Scott, to Cartier, Inc. Table. 280,162, 8-20-85, Cl. D6-484.000.

Bromley, R. Scott, to Cartier, Inc. Furniture shelf. 280,166, 8-20-85, Cl. D6-511.000.

Brown, Frederick M.: *See*—
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Buchet, Marcel, to L'Oreal, S.A. Dual pressed powder compact. 280,244, 8-20-85, Cl. D28-78.000.

Buchet, Marcel, to L'Oreal, S.A. Trio pressed powder compact. 280,245, 8-20-85, Cl. D28-78.000.

Burket, Kenneth A.; and Koenig, Gerhard F., to Corning Glass Works. Shade for light fixtures. 280,239, 8-20-85, Cl. D26-132.000.

Burket, Kenneth A.; Koenig, Gerhard F.; and Maxwell, Richard L., Sr., to Corning Glass Works. Shade for light fixtures. 280,240, 8-20-85, Cl. D26-132.000.

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Burket, Kenneth A.; Koenig, Gerhard F.; and Moss, Jay, to Corning Glass Works. Globe or the like. 280,242, 8-20-85, Cl. D26-134.000.

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Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., 280,191, Cl. D11-159.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a baby orca. 280,190, 8-20-85, Cl. D11-158.000.

Carbajales Santa-Eulalia, Jesus A.; and Carbajales Santa-Eulalia, Javier B., to John J. Madison Company, Inc. Figurine of a rising unicorn. 280,191, 8-20-85, Cl. D11-159.000.

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De Jiacomo, Velma. Hobby board for sewing and the like. 280,149, 8-20-85, Cl. D3-26.000.

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Drackett Company, The: *See*—
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Eagle, James P. Bicycle exercise support. 280,225, 8-20-85, Cl. D21-191.000.
Edwards, William H. Guitar. 280,207, 8-20-85, Cl. D17-18.000.
Edwards, William H. Guitar. 280,208, 8-20-85, Cl. D17-19.000.
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Kolb, Walter, to Wolf-Gerate GmbH. Gardening implement. 280,176, 8-20-85, Cl. D8-11.000.
Kosner, Jerry J.: *See*—
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Kusakawa, Hitoshi: *See*—
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LaMarsh, Robert D.; and Weiss, John, to Perfection Manufacturing Company. Exercise cycle. 280,227, 8-20-85, Cl. D21-194.000.
Lang, Manfred, to Wilkinson Sword GmbH. Pocket knife. 280,178, 8-20-85, Cl. D8-99.000.
Ledan, Inc.: *See*—
Leo, Daniel W., Sr., 280,163, Cl. D6-473.000.
Ledoux, Gilbert A., to Litton Systems, Inc. Ink ribbon cartridge. 280,210, 8-20-85, Cl. D18-12.000.
Lee, Alan Y. T. Star jewelry ornament or the like. 280,188, 8-20-85, Cl. D11-70.000.
Leo, Daniel W., Sr., to Ledan, Inc. Wine display rack or similar article. 280,163, 8-20-85, Cl. D6-473.000.
Lever Brothers Company: *See*—
Tyler, Frank S., 280,182, Cl. D9-425.000.
Liautaud, James P.; Stultz, Peter F.; and Maloney, David L., to Liautaud, James P. Belt holder for a portable radio or the like. 280,146, 8-20-85, Cl. D2-400.000.
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Mansfield, Allen: *See*—
Tooke, Michael H., 280,151, Cl. D6-326.000.
Martin, William P. Drainboard. 280,249, 8-20-85, Cl. D32-56.000.
Matsui, Yoshiyuki, to Daiwa Seiko, Inc. Spool for a fishing reel. 280,230, 8-20-85, Cl. D22-25.000.
Mattel, Inc.: *See*—
Barbato, Michael W.; Mattson, Ray W.; and Nordgren, Michael R., 280,223, Cl. D21-136.000.
Matthias, Jan H., to Casa Bella Imports, Inc. Combined bed and headboard lamp. 280,155, 8-20-85, Cl. D6-383.000.
Mattson, Ray W.: *See*—
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Miceli, Philip V. Folding knife. 280,179, 8-20-85, Cl. D8-99.000.

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Mikiya, Toshio: *See—*
Takeuchi, Hirosato; and Mikiya, Toshio, 280,234, Cl. D23-72.000.

Mr. Christmas Incorporated: *See—*
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Moreiras, Luis; and Burrington, George C., to Parker-Hannifin Corporation. Hose assembly crimping machine. 280,201, 8-20-85, Cl. D15-123.000.

Moses, Paul J.; and Moses, Paula B., to Dow Chemical Company, The. Pendant containing temperature sensitive matter. 280,189, 8-20-85, Cl. D11-79.000.

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Niemann, James E., to American Standard Inc. Sanitary faucet. 280,231, 8-20-85, Cl. D23-25.000.

Nitsubishi Denki Kabushiki Kaisha: *See—*
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Nordstrom, Lennart K., to Saab-Scania Aktiebolag. Attitude-director indicator. 280,187, 8-20-85, Cl. D10-74.000.

Northern Telecom Limited: *See—*
Ryan, Desmond J., 280,199, Cl. D14-113.000.

Okuyama, Tooru; Hara, Kunio; and Fujii, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electronic copying machine. 280,205, 8-20-85, Cl. D16-31.000.

Olsen, Gert P.: *See—*
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Olympus Optical Company, Ltd.: *See—*
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Oneida Ltd.: *See—*
Richmond, Colin B., II, 280,171, Cl. D7-137.000.
Richmond, Colin B., II, 280,172, Cl. D7-137.000.

Opel, George E. Credit card. 280,214, 8-20-85, Cl. D19-10.000.

Overman, John W.; and Kosner, Jerry J., to Bell & Howell Company. Addressing printing system or similar article. 280,211, 8-20-85, Cl. D18-13.000.

Parent, Donald G. Cleaner for a golf club head. 280,229, 8-20-85, Cl. D21-234.000.

Pargman, Steven R., to Terragrafics, Inc. Combined ceramic greeting card and photographic mounting apparatus. 280,150, 8-20-85, Cl. D6-311.000.

Parker-Hannifin Corporation: *See—*
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Paul Associates, Inc.: *See—*
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Perfection Manufacturing Company: *See—*
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Prescolite: *See—*
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Purzycki, Alfred Z.: *See—*
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Genaro, Donald M.; Tilley, Alvin R.; Purzycki, Alfred Z.; Seidlitz, Raymond R.; and Sokolowski, Eugene K., 280,197, Cl. D14-93.000.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 280,171, 8-20-85, Cl. D7-137.000.

Richmond, Colin B., II, to Oneida Ltd. Spoon or similar article. 280,172, 8-20-85, Cl. D7-137.000.

Ricoh Company Ltd.: *See—*
Soda, Koichi, 280,204, Cl. D16-8.000.

Rodgers, Bettye G. Thread dispenser/pleater platform. 280,148, 8-20-85, Cl. D3-25.000.

Roszel, Lynn, to Prescolite. Dimmer switch for a lamp or similar article. 280,195, 8-20-85, Cl. D13-32.000.

Royal Appliance Mfg. Co.: *See—*
Smith, Robert M., 280,246, Cl. D32-18.000.

Rubbermaid Commercial Products, Inc.: *See—*
Szablak, Michael J.; and Tomblin, Glen E., 280,218, Cl. D19-91.000.

Ryan, Desmond J., to Northern Telecom Limited. Display terminal. 280,199, 8-20-85, Cl. D14-113.000.

Saab-Scania Aktiebolag: *See—*
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Sakaguchi, Hiroshi: *See—*
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Sawada, Masaji; Hayashi, Shigeaki; Sakaguchi, Hiroshi; and Yamada, Kazuo, to Sharp Corporation. Electronic printing calculator. 280,209, 8-20-85, Cl. D18-7.000.

Seidlitz, Raymond R.: *See—*
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Shibayama, Masato; Abe, Takeshi; Koizumi, Kiyohide; Sugimoto, Kouichi; Kusakawa, Hitoshi; and Jinriki, Tatenori, to Hitachi, Ltd. Industrial robot. 280,203, 8-20-85, Cl. D15-199.000.

Shimano Industrial Company Limited: *See—*
Watanabe, Satoshi, 280,192, Cl. D12-125.000.

Shipos, Louis E.: *See—*
Bossack, Thomas J.; Shipos, Louis E.; and Brown, Frederick M., 280,212, Cl. D18-22.000.

Short, Donald G. Combined beach towel and pillow. 280,170, 8-20-85, Cl. D6-608.000.

Silver, William V., to Thomson-Leeds Company Inc. Collapsible display unit. 280,159, 8-20-85, Cl. D6-475.000.

Silver, William V., to Thomson-Leeds Company, Inc. Collapsible display unit. 280,160, 8-20-85, Cl. D6-475.000.

Silver, William V., to Thomson-Leeds Company Inc. Separator for cigarette packs. 280,165, 8-20-85, Cl. D6-509.000.

Smith, Robert M., to Royal Appliance Mfg. Co. Hand vacuum. 280,246, 8-20-85, Cl. D32-18.000.

Soda, Koichi, to Ricoh Company Ltd. Camera. 280,204, 8-20-85, Cl. D16-8.000.

Sokolowski, Eugene K.: *See—*
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Soloflex, Inc.: *See—*
Wilson, Jerry L., 280,224, Cl. D21-191.000.

Spanner, William F. Boat anchor. 280,193, 8-20-85, Cl. D12-215.000.

Spencer Wright Industries, Inc.: *See—*
Aldridge, Rufus W., Jr., 280,202, Cl. D15-124.000.

Sports Marketing, Inc.: *See—*
Vacanti, Eugene J., 280,145, Cl. D2-27.000.

Street, Lawrence M., to Hy-Per-Graph Limited. Flask-supportable stirrer drive unit. 280,235, 8-20-85, Cl. D24-8.000.

Stultz, Peter F.: *See—*
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Sugimoto, Kouichi: *See—*
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Suzuki, Ikuo, to Tomy Kogyo Company, Incorporated. Toy jack in the box. 280,219, 8-20-85, Cl. D21-59.000.

Szablak, Michael J.; and Tomblin, Glen E., to Rubbermaid Commercial Products, Inc. Typist's copy stand. 280,218, 8-20-85, Cl. D19-91.000.

Takeuchi, Hirosato; and Mikiya, Toshio, to Nitto Kohiki Co., Ltd. Solar energy collector or the like. 280,234, 8-20-85, Cl. D23-72.000.

Tapdrup, Erik P.; and Olsen, Gert P., to Interlego AG. Toy air plane. 280,222, 8-20-85, Cl. D21-90.000.

Terragrafics, Inc.: *See—*
Pargman, Steven R., 280,150, Cl. D6-311.000.

Thomson-Leeds Company Inc.: *See—*
Silver, William V., 280,159, Cl. D6-475.000.
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Tilley, Alvin R.: *See—*
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Genaro, Donald M.; Tilley, Alvin R.; Purzycki, Alfred Z.; Seidlitz, Raymond R.; and Sokolowski, Eugene K., 280,197, Cl. D14-93.000.

Tokyo Shibaura Denki Kabushiki Kaisha: *See—*
Okuyama, Tooru; Hara, Kunio; and Fujii, Kiyoshi, 280,205, Cl. D16-31.000.

Tomblin, Glen E.: *See—*
Szablak, Michael J.; and Tomblin, Glen E., 280,218, Cl. D19-91.000.

Tomozawa, Hisashi; Nagao, Yoshihiko; and Saito, Shigeru, to Nitsubishi Denki Kabushiki Kaisha. Talking mathematics trainer. 280,217, 8-20-85, Cl. D19-60.000.

Tomy Kogyo Company, Incorporated: *See—*
Suzuki, Ikuo, 280,219, Cl. D21-59.000.

Tooke, Michael H., to Mansfield, Allen. Clothes hanger for skirts, trousers and the like. 280,151, 8-20-85, Cl. D6-326.000.

Tyler, Frank S., to Lever Brothers Company. Packaging container. 280,182, 8-20-85, Cl. D9-425.000.

Uarco Incorporated: *See*—
Alger, Andrew L., 280,213, Cl. D18-34.000.
Union Carbide Corporation: *See*—
Bassett, Howard D., 280,175, Cl. D7-354.000.
Vacanti, Eugene J., to Sports Marketing, Inc. Thigh protector. 280,145, 8-20-85, Cl. D2-27.000.
Vitrac, Jean P., to Hanorah Italiana S.p.A. Bottle. 280,181, 8-20-85, Cl. D9-375.000.
Watanabe, Satoshi, to Shimano Industrial Company Limited. Pedal for a bicycle. 280,192, 8-20-85, Cl. D12-125.000.
Weiss, John: *See*—
Kasuba, John A.; Kanne, John T.; Dhaliwal, Sajjan S.; Gold, Norman; and Weiss, John, 280,226, Cl. D21-194.000.
LaMarsh, Robert D.; and Weiss, John, 280,227, Cl. D21-194.000.
Welch, Robert R., to Wilkinson Sword Limited. Handle for a knife. 280,173, 8-20-85, Cl. D7-152.000.
Wilcoxen, James: *See*—
Boklund, Carl J., 280,216, Cl. D19-52.000.
Wilkinson Sword GmbH: *See*—
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Wilkinson Sword Limited: *See*—
Welch, Robert R., 280,173, Cl. D7-152.000.
Wilson, Jerry L., to Soloflex, Inc. Variable resistance strap for exercise apparatus. 280,224, 8-20-85, Cl. D21-191.000.
Wolf-Gerate GmbH: *See*—
Kolb, Walter, 280,176, Cl. D8-11.000.
Wolff, Natalie A., to Container Corporation of America. Cowboy hat. 280,147, 8-20-85, Cl. D2-258.000.
Wright, Randall J. Level. 280,185, 8-20-85, Cl. D10-69.000.
Yamada, Kazuo: *See*—
Sawada, Masaji; Hayashi, Shigeaki; Sakaguchi, Hiroshi; and Yamada, Kazuo, 280,209, Cl. D18-7.000.
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Iwakura, Masato; Hirose, Mutsuo; and Yamada, Yoshiyuki, 280,200, Cl. D15-1.000.

LIST OF PLANT PATENTEES

Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara": *See*—
Holtkamp, Reinhold, 5,540, Cl. 69.000.
Holtkamp, Reinhold, to Gessellschaftsvertrag uber die Erfindergemeinschaft "Optimara". African violet plant named Capricorn. 5,540, 8-20-85, Cl. 69.000.
Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant named Tango. 5,538, 8-20-85, Cl. 68.000.
Mikkelsen, James C., to Mikkelsens, Inc. Begonia plant named Imke. 5,539, 8-20-85, Cl. 68.000.
Mikkelsens, Inc.: *See*—
Mikkelsen, James C., 5,538, Cl. 68.000.
Mikkelsen, James C., 5,539, Cl. 68.000.
Resch, Josef. Variegated schefflera plant 'Josef Resch'. 5,541, 8-20-85, Cl. 88.000.
Wallace, Robert D. Hybrid chestnut tree 'Revival'. 5,537, 8-20-85, Cl. 30.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 20, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

2.1 R	4,535,477
2.5	4,535,478
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436	4,535,587

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189	4,536,201

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116	4,535,616
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290 V	4,535,628
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587	4,535,629
642	4,535,630
703	4,535,631
	4,535,632
706	4,535,633
747	4,535,634
756	4,535,635
831	4,535,636
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862.59	4,535,638
863.11	4,535,639
864.55	4,535,640

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489	4,535,644
492	4,535,645
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544	4,535,648
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711	4,535,651
733	4,535,652
765	4,535,653

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101 R	4,536,214
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124.1	4,535,657
177.85	4,535,658
478	4,535,659
484	4,535,655

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100	4,535,663
162	4,535,664
556	4,535,665
795	4,535,666
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	4,535,675

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	4,535,680
527	4,535,681

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153	4,535,682
224	4,535,683

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40.12	4,535,685
67	4,535,686

CLASS 99

334	4,535,687
353	4,535,688

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CLASS 101

127	4,535,690
230	4,535,691
337	4,535,692
366	4,535,693
395	4,535,694

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240	4,535,695
380	4,535,696
468	4,535,697
529	4,535,698

CLASS 104

7 B	4,535,699
12	4,535,700
258	4,535,701

CLASS 105

4 R	4,535,702

CLASS 106

21	4,536,219
	4,536,220
38.3	4,536,216
122	4,536,217
290	4,536,218

CLASS 108

50	4,535,703
108	4,535,704
152	4,535,705

CLASS 110

245	4,535,706
	4,535,707
265	4,535,708

CLASS 112

83	4,535,709
199	4,535,711
459	4,535,710

CLASS 114

61	4,535,712
71	4,535,713
103	4,535,825
162	4,535,714
211	4,535,715
221 R	4,535,716
230	4,535,717

CLASS 116

212	4,535,718

CLASS 118

410	4,535,719
415	4,535,720
503	4,535,721
692	4,535,722

CLASS 119

20	4,535,723
29	4,535,724
	4,535,725
159	4,535,726

CLASS 122

32	4,535,727

CLASS 123

27 GE	4,535,728
41.1	4,535,729
78 F	4,535,730
90.15	4,535,731
90.16	4,535,732
90.17	4,535,733
90.58	4,535,734
310	4,535,735
344	4,535,736
420	4,535,737
425	4,535,738
	4,535,739
435	4,535,740
444	4,535,741
447	4,535,742
472	4,535,743
493	4,535,744
502	4,535,745
556	4,535,746

CLASS 124

87	4,535,747

CLASS 126

25 R	4,535,748
	4,535,749
41 B	4,535,750
121	4,535,751
	4,535,752
274	4,535,753
419	4,535,754
443	4,535,755
450	4,535,756

CLASS 127

30	4,536,221

CLASS 128

1 D	4,535,757
6	4,535,758
24 A	4,535,759
33	4,535,760
62 A	4,535,761
71	4,535,762
92 A	4,535,763
92 B	4,535,764
203.11	4,535,765
204.23	4,535,766
207.18	4,535,767
305.1	4,535,768
314	4,535,769
327	4,535,770
328	4,535,771
337	4,535,772
419 F	4,535,775
419 PG	4,535,774
	4,535,776
421	4,535,777
635	4,535,778
644	4,535,779
659	4,535,780
660	4,535,781
665	4,535,782
711	4,535,783
735	4,535,784
746	4,535,785
760	4,535,786

CLASS 130

27 AE	4,535,788
27 T	4,535,787

CLASS 131

84.1	4,535,789
94	4,535,790
278	4,535,791
281	4,535,792
336	4,535,793

CLASS 133

8 E	4,535,794

CLASS 134

5	4,536,222
93	4,535,795

CLASS 136

249	4,536,607
259	4,536,608

CLASS 137

45	4,535,796
87	4,535,797
174	4,535,799
205	4,535,800
240	4,535,801
322	4,535,802
375	4,535,803
458	4,535,804
489	4,535,805
493.6	4,535,806
533.31	4,535,807
543	4,535,808
596.14	4,535,809
596.17	4,535,810
601	4,535,811
624.11	4,535,812
625.17	4,535,814
625.21	4,535,798
625.48	4,535,815
625.5	4,535,813
625.65	4,535,816
	4,535,817
846	4,535,818
	4,535,819
854	4,535,820
884	4,535,821

CLASS 138

99	4,535,822

CLASS 140

111	4,535,824

CLASS 141

5	4,535,823
231	4,535,826

CLASS 148

1.5	4,536,223
6.11	4,536,224
6.15 R	4,536,225
	4,536,228
12 C	4,536,226
13.1	4,536,227
31.55	4,536,229
31.57	4,536,230
33.1	4,536,231
35	4,536,232
101	4,536,233
133	4,536,234

CLASS 149

19.4	4,536,235
19.92	4,536,236
37	4,536,237

CLASS 152

7	4,535,827

CLASS 156

64 4,536,238
4,536,239
74 4,536,240
89 4,536,241
96 4,536,242
274.6 4,536,243
304.4 4,536,244
307.3 4,536,245
429 4,536,246
477.1 4,536,247
502 4,536,248
643 4,536,249
651 4,536,250
657 4,536,251
662 4,536,252

CLASS 160

84 R 4,535,828
291 4,535,829
299 4,535,830

CLASS 162

30.11 4,536,253
135 4,536,254
358 4,536,255

CLASS 164

33 4,535,831
362 Re.31,972
421 4,535,832

CLASS 165

53 4,535,833
80 R 4,535,834
4,535,835
86 4,535,836
104.17 4,535,837
134 R 4,535,838
153 4,535,839
167 4,535,840
185 4,535,841

CLASS 166

63 4,535,842
250 4,535,843
252 4,535,844
272 4,535,845

CLASS 169

25 4,535,846

CLASS 172

2 4,535,847
311 4,535,848
468 4,535,849

CLASS 173

12 4,535,850

CLASS 174

11 R 4,536,609
26 R 4,536,610
41 4,536,611
48 4,536,612
65 R 4,536,613

CLASS 175

38 4,535,851
170 4,535,852
404 4,535,853

CLASS 177

1 4,535,854
4,535,855
4,535,856
50 4,535,857
134 4,535,858

CLASS 179

18 FA 4,536,614
81 A 4,536,616
81 B 4,536,615
81 R 4,536,617
84 R 4,536,618
4,536,619
90 D 4,536,620
99 R 4,536,621
103 4,536,622
115 R 4,536,623
170 NC 4,536,624

CLASS 180

15 4,535,859
24.05 4,535,860
53.5 4,535,861
68.1 4,535,862
68.5 4,535,863
177 4,535,864
4,535,865
215 4,535,866
294 4,535,867
297 4,535,868
311 4,535,869

CLASS 181

141 4,535,870

CLASS 182

93 4,535,871

CLASS 188

62 4,535,872
72.4 4,535,873
73.1 4,535,874
106 F 4,535,875
311 4,535,876
319 4,535,877

CLASS 190

1 4,535,878

CLASS 192

52 4,535,879

CLASS 198

330 4,535,880
420 4,535,881
425 4,535,882
499 4,535,883
626 4,535,884
695 4,535,885

CLASS 200

5 A 4,536,625
35 R 4,536,626
38 R 4,536,627
43.08 4,536,628
61.45 R 4,536,629
151 4,536,630

CLASS 202

164 4,536,256
177 4,536,257
180 4,536,258

CLASS 204

35.1 4,536,259
37.1 4,536,260
55 R 4,536,261
56 R 4,536,262
98 4,536,263
129.43 4,536,264
159.13 4,536,265
159.18 4,536,266
159.23 4,536,267
182.4 4,536,268
4,536,269
192 E 4,536,271
192 R 4,536,270
243 R 4,536,273
294 4,536,272
433 4,536,274

CLASS 206

205 4,535,886
228 4,535,887
444 4,535,888
527 4,535,889
530 4,535,890
564 4,535,891

CLASS 208

10 4,536,275
11 R 4,536,277
4,536,278
4,536,279
100 4,536,276
106 4,536,280
113 4,536,281
120 4,536,282
309 4,536,283

CLASS 209

3.3 4,535,892
305 4,536,284
628 4,535,893
665 4,535,894
683 4,535,895

CLASS 210

96.1 4,536,285
202 4,536,286
293 4,536,287
325 4,536,288
401 4,536,289
419 4,536,290
457 4,536,291
701 4,536,292
717 4,536,293
730 4,536,294
804 4,536,295

CLASS 211

41 4,535,896
70.6 4,535,897
153 4,535,898

CLASS 212

4,535,899
193 4,535,900

CLASS 215

1 C 4,535,901
4,535,902
213 4,535,903
215 4,535,904
218 4,535,905
329 4,535,906

CLASS 219

10.77 4,536,631
69 D 4,536,633
69 W 4,536,632
74 4,536,634
83 4,536,635
4,536,636
117.1 4,536,637
121 LC 4,536,638
121 LU 4,536,639
121 PR 4,536,640
253 4,536,641
374 4,536,642
400 4,536,643
535 4,536,644
543 4,536,645

CLASS 220

2.1 A 4,535,907
18 4,535,908
273 4,535,909
377 4,535,910
404 4,535,911

CLASS 221

46 4,535,912
251 4,535,913

CLASS 222

52 4,535,914
56 4,535,915
113 4,535,916
129.1 4,535,917
185 4,535,918
190 4,535,919
612 4,535,920

CLASS 223

106 4,535,921

CLASS 224

202 4,535,922
273 4,535,923

CLASS 225

104 4,535,924

CLASS 227

55 4,535,925
67 4,535,926

CLASS 228

6.1 4,535,927

CLASS 229

16 R 4,535,928
39 R 4,535,929
71 4,535,930

CLASS 235

377 4,536,646
379 4,536,647
454 4,536,648

CLASS 236

20 R 4,535,931
49 Re.31,973
4,535,932

CLASS 237

12.3 A 4,535,933
70 4,535,934

CLASS 239

34 4,535,935
117 4,535,936
206 4,535,937
269 4,535,938
533.3 4,535,939

CLASS 241

3 4,535,940
21 4,535,941
36 4,535,942
46.02 4,535,943

CLASS 242

35.5 A 4,535,944
35.6 R 4,535,945
54 R 4,535,946
55.2 4,535,947
4,535,948
57 4,535,949
66 4,535,950
84.2 G 4,535,952
84.21 R 4,535,953
84.52 B 4,535,954
151 4,535,956
158 R 4,535,955
754 4,535,951

CLASS 244

103 R 4,535,957
123 4,535,958

CLASS 246

34 R 4,535,959

CLASS 248

74.5 4,535,960
183 4,535,961
214 4,535,962
251 4,535,963
607 4,535,964

CLASS 249

83 4,535,965

CLASS 250

231 R 4,536,651
231 SE 4,536,649
4,536,650
281 4,536,652
390 4,536,653
458.1 4,536,654
461.1 4,536,655
463.1 4,536,656
492.2 4,536,657
578 4,536,658

CLASS 251

31 4,535,966
54 4,535,967
58 4,535,968
215 4,535,969
315 4,535,970

CLASS 252

8.05 4,536,298
8.5 C 4,536,296
4,536,297
8.55 D 4,536,300
4,536,301
8.55 R 4,536,302
4,536,303
4,536,304
4,536,305
8.6 4,536,299
32.7 E 4,536,306
4,536,307
4,536,308
33 4,536,309
4,536,310
47.5 4,536,312
51.5 A 4,536,311
100 4,536,313
102 4,536,314
174.11 4,536,315
4,536,316
174.17 4,536,317
4,536,318
4,536,319
299.1 4,536,320
299.63 4,536,321
301.16 4,536,322
305 4,536,323
311 4,536,324
314 4,536,325
400 R 4,536,326
511 4,536,327
518 4,536,328
4,536,329
522 R 4,536,330
4,536,349
579 4,536,331

CLASS 254

108 4,535,971
277 4,535,972
323 4,535,973

CLASS 256

1 4,535,974

CLASS 260

97.6 4,536,332
99.5 4,536,333
239 A 4,536,334
245.2 T 4,536,335
351.1 4,536,336
396 R 4,536,337
400 4,536,338
404.5 4,536,339
410.9 R 4,536,340
453 AR 4,536,341
465 D 4,536,345
4,536,346
465 F 4,536,343
4,536,347
465 G 4,536,342
465 R 4,536,344
502.4 P 4,536,348
543 F 4,536,352
543 P 4,536,350
4,536,351
545 R 4,536,353
549 4,536,354
944 4,536,355

CLASS 261

50 R 4,536,356

CLASS 264

53 4,536,357
81 4,536,358
102 4,536,359
142 4,536,360
167 4,536,361
171 4,536,362
182 4,536,363
227 4,536,364
558 4,536,365

CLASS 266

220 4,535,975

CLASS 267

8 R 4,535,976
64.15 4,535,977
91 4,535,978

CLASS 269

45 4,535,979
102 4,535,980

CLASS 271

121 4,535,981
127 4,535,982

CLASS 272

6 4,535,983
78 4,535,984
134 4,535,985

CLASS 273

29 A 4,535,986
32 B 4,535,987
55 D 4,535,988
173 4,535,990
176 FB 4,535,989
193 A 4,535,991
194 A 4,535,992
241 4,535,993
256 4,535,994
273 4,535,995

CLASS 277

1 4,535,996
102 4,535,997
212 FB 4,535,998
235 B 4,535,999

CLASS 279

1 R 4,536,000

CLASS 280

5 C 4,536,001
43.18 4,536,002
95 R 4,536,003
166 4,536,004
289 S 4,536,005
613 4,536,006
701 4,536,007
730 4,536,008
755 4,536,009
802 4,536,010
808 4,536,011

CLASS 281

21 R 4,536,012

CLASS 283

77 4,536,013
83 4,536,014
91 4,536,015
111 4,536,016

CLASS 285

26 4,536,017
229 4,536,018
322 4,536,019

CLASS 290

40 R 4,536,126

CLASS 292

173 4,536,020
201 4,536,021
228 4,536,022

CLASS 294

9 4,536,023
82.24 4,536,024

CLASS 296

37.16 4,536,025

CLASS 297

39 4,536,026
124 4,536,027
224 4,536,028
281 4,536,029
284 4,536,030
353 4,536,031
439 4,536,032

CLASS 298

2 4,536,033

CLASS 299

5 4,536,034
17 4,536,035
43 4,536,036
92 4,536,037

CLASS 301

124 R 4,536,038

CLASS 303

16 4,536,039
37 4,536,040
119 4,536,041

CLASS 307

41 4,536,659
118 4,536,660
119 4,536,661
270 4,536,662
355 4,536,663
475 4,536,664
4,536,665
494 4,536,666
592 4,536,667

CLASS 308

2 A 4,536,042

CLASS 310

75 R 4,536,668
241 4,536,669
249 4,536,670
258 4,536,671
268 4,536,672
327 4,536,673
330 4,536,674

CLASS 312

222 4,536,043
257 R 4,536,044

CLASS 313

46 4,536,675
318 4,536,676
481 4,536,677
493 4,536,678
541 4,536,679

CLASS 315

49 4,536,680
309 4,536,681
387 4,536,682
401 4,536,683
411 4,536,684

CLASS 318

254 4,536,685
434 4,536,686
480 4,536,687
490 4,536,688
565 4,536,689
687 4,536,690
696 4,536,691
723 4,536,692

CLASS 320

1 4,536,693
2 4,536,694
4,536,695
21 4,536,696

CLASS 322

14 4,536,697

CLASS 323

237 4,536,698
276 4,536,699
285 4,536,700
315 4,536,701
316 4,536,702

CLASS 324

52 4,536,703
4,536,704
53 4,536,705
117 R 4,536,706
121 R 4,536,707
174 4,536,708
239 4,536,709
244 4,536,710
306 4,536,711
309 4,536,712
324 4,536,713
338 4,536,714

CLASS 330

2 4,536,715
69 4,536,716
254 4,536,717

CLASS 331

16 4,536,718
37 4,536,719
57 4,536,720
116 R 4,536,721
117 D 4,536,722
127 4,536,723
177 V 4,536,724

CLASS 333

204 4,536,725

CLASS 335

23 4,536,726
54 4,536,727
182 4,536,728
210 4,536,729
213 4,536,730
272 4,536,731
285 4,536,732

CLASS 336

182 4,536,733
196 4,536,734

CLASS 337

159 4,536,735
317 4,536,736

CLASS 339

14 P 4,536,045
31 M 4,536,046
75 M 4,536,047
89 M 4,536,048
97 R 4,536,049
99 R 4,536,050
117 P 4,536,051
126 R 4,536,052
143 R 4,536,053
147 R 4,536,054
258 R 4,536,055

CLASS 340

146.2 4,536,738
323 R 4,536,739
347 AD 4,536,744
347 DA 4,536,743
347 DD 4,536,740
4,536,741
4,536,742
4,536,745
365 A 4,536,746
502 4,536,747
506 4,536,748
525 4,536,749
539 4,536,750
545 4,536,751
554 4,536,752
566 4,536,753
568 4,536,754
573 4,536,755
626 4,536,756
636 4,536,757
664 4,536,758
706 4,536,759
722 4,536,760
825.44 4,536,761
870.02 4,536,762

CLASS 343

5 SA 4,536,764
9 R 4,536,763
372 4,536,766
704 4,536,765
736 4,536,768
785 4,536,767

CLASS 346

1.1 4,536,769
29 4,536,770
74.2 4,536,773
76 PH 4,536,771
4,536,772
4,536,774
4,536,775
140 PD 4,536,777
140 R 4,536,776
160 4,536,778
212 4,536,779

CLASS 350

128 4,536,056
318 4,536,057
320 4,536,058
333 4,536,059
343 4,536,060
354 4,536,061
358 4,536,062
395 4,536,063
583 4,536,064

CLASS 351

239 4,536,065

CLASS 352

35 4,536,066

CLASS 354

180 4,536,067
195.12 4,536,068
265 4,536,069
400 4,536,071
402 4,536,070
403 4,536,072
406 4,536,073
442 4,536,074

CLASS 355

3 DD 4,536,075
3 FU 4,536,076
3 SH 4,536,082
8 4,536,077
14 D 4,536,080
14 R 4,536,079
14 SH 4,536,078
20 4,536,081
40 4,536,083
55 4,536,084
93 4,536,085

CLASS 356

348 4,536,086
350 4,536,087
351 4,536,088
352 4,536,089
414 4,536,090
435 4,536,091

CLASS 357

5 4,536,780
4,536,781
23.1 4,536,782
38 4,536,783
48 4,536,784
54 4,536,785
68 4,536,786

CLASS 358

38 4,536,787
4,536,788
99 4,536,789
111 4,536,790
122 4,536,791
139 4,536,792
150 4,536,793
158 4,536,794
160 4,536,795
166 4,536,796
192.1 4,536,797
197 4,536,798
219 4,536,799
243 4,536,800
280 4,536,801
287 4,536,802
299 4,536,803

CLASS 360

4 4,536,804
14.1 4,536,805
69 4,536,806
72.3 4,536,807
74.2 4,536,808
77 4,536,809
94 4,536,810
96.6 4,536,811
133 4,536,812
137 4,536,813

CLASS 361

7 4,536,814
47 4,536,815
91 4,536,816
105 4,536,817
154 4,536,818
274 4,536,819
283 4,536,820
321 4,536,821
340 4,536,822
355 4,536,823
384 4,536,824
386 4,536,825
407 4,536,826

CLASS 362

32 4,536,827
4,536,828
74 4,536,829
223 4,536,830
263 4,536,831
264 4,536,832
293 4,536,833
303 4,536,834

CLASS 363

163 4,536,835

CLASS 364

200 4,536,836
4,536,837
4,536,838
4,536,839
300 4,536,840
414 4,536,841
424 4,536,842
434 4,536,843
487 4,536,844
500 4,536,845
514 4,536,846
516 4,536,847
526 4,536,848
550 4,536,849
4,536,850
557 4,536,851
562 4,536,852
718 4,536,853
749 4,536,854
786 4,536,855
900 4,536,856
4,536,857

CLASS 365

104 4,536,858
154 4,536,859
190 4,536,860

CLASS 366

265 4,536,092

CLASS 367

149 4,536,861
153 4,536,862

CLASS 368

187 4,536,093
278 4,536,094
321 4,536,095

CLASS 369

43 4,536,863
44 4,536,864
75.2 4,536,865
112 4,536,866
282 4,536,867
284 4,536,868
287 4,536,869

CLASS 370

16 4,536,870
74 4,536,871
82 4,536,872
85 4,536,873
4,536,874
4,536,875
86 4,536,876
94 4,536,877

CLASS 371

43 4,536,878

CLASS 372

77 4,536,879

CLASS 375

30 4,536,880

CLASS 377

70 4,536,881

CLASS 378

35 4,536,882
36 4,536,883
119 4,536,884

CLASS 381

15 4,536,885
41 4,536,886
92 4,536,887
106 4,536,888

CLASS 400

120 4,536,096
126 4,536,097
196.1 4,536,098

CLASS 401

209 4,536,099

CLASS 403

12 4,536,100
389 4,536,101
390 4,536,102

CLASS 404

26 4,536,103

CLASS 406

183 4,536,104
4,536,105

CLASS 407

25 4,536,106

CLASS 408

214 4,536,107
230 4,536,108
240 4,536,109

CLASS 409

11 4,536,110
80 4,536,111
134 4,536,112
234 4,536,113

CLASS 410

156 4,536,114

CLASS 411

17 4,536,115
82 4,536,116
411 4,536,117

CLASS 414

43 4,536,118
100 4,536,119
173 4,536,120
219 4,536,121
404 4,536,122
448 4,536,123
744 R 4,536,124

CLASS 415

5 4,536,125
174 4,536,127
219 C 4,536,128

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DESIGN PATENTS

01	280,202	12	280,170	21	280,231		280,159		280,232	42	280,214
04	280,211		280,207	24	280,156		280,160		280,239		280,236
06	280,150		280,208		280,179		280,161		280,240	45	280,249
	280,151		280,238	25	280,198		280,162		280,241	47	280,148
	280,155	17	280,146		280,210		280,163		280,242		280,221
	280,167		280,174	26	280,189		280,165	37	280,157		280,226
	280,223		280,175	27	280,145		280,166		280,158	48	280,147
	280,229		280,213	33	280,216		280,168		280,164		280,195
	280,248		280,227	34	280,177		280,171	39	280,201	51	280,218
08	280,149		280,237		280,196		280,172		280,246	55	280,185
	280,186		280,243		280,197		280,212		280,247		280,233
09	280,188	18	280,225	36	280,154		280,228	41	280,224		

PLANT PATENTS

12	5,537		5,541	39	5,538	5,539	

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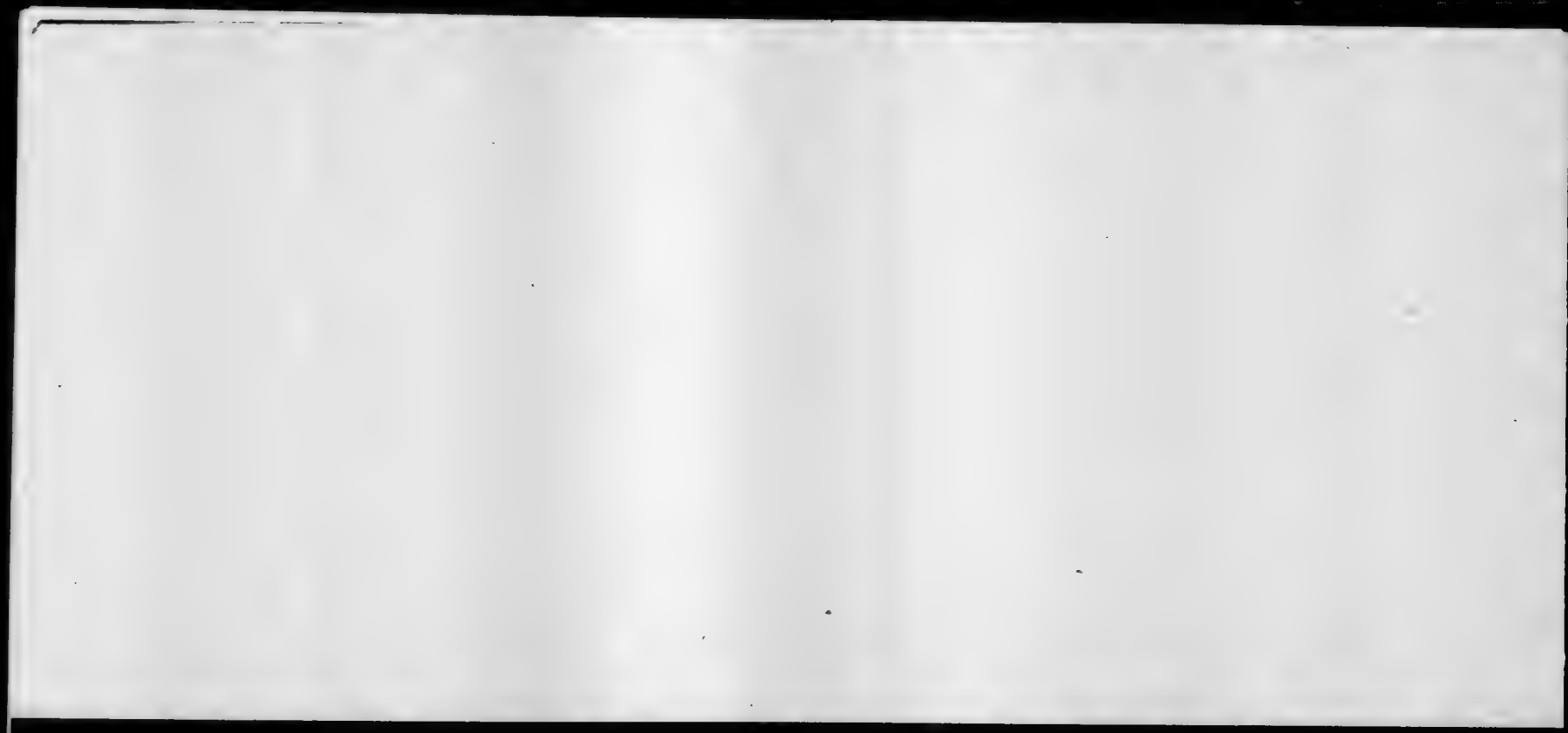
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Vol. 1057 Number 4

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of the

UNITED STATES PATENT AND TRADEMARK OFFICE

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PATENTS

August 27, 1985

PUBLISHED WEEKLY BY AUTHORITY OF CONGRESS

U.S.
DEPARTMENT
OF COMMERCE

Patent
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Office

OFFICIAL GAZETTE of the UNITED STATES PATENT AND TRADEMARK OFFICE

August 27, 1985 Volume 1057 Number 4

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The following are mailed under direction of the Superintendent of Documents, Government Printing Office, Washington, D.C., 20402, to whom all subscriptions should be made payable and all communications addressed:

THE OFFICIAL GAZETTE (PATENT SECTION), issued weekly.
THE OFFICIAL GAZETTE (TRADEMARK SECTION), issued weekly.
GENERAL INFORMATION concerning PATENTS.
GENERAL INFORMATION concerning TRADEMARKS.

COPIES OF PATENTS are furnished by the Patent and Trademark Office at $1.00 each; PLANT PATENTS in color, $8.00 each; copies of TRADEMARKS at $1.00 each. Address orders to the Commissioner of Patents and Trademarks, Washington, D.C., 20231.

Printing authorized by Section 11(a)3 of Title 35, U.S. Code P.T.O.

PATENT AND TRADEMARK OFFICE NOTICES

Patent Cooperation Treaty (PCT) Information

For information concerning the PCT member countries see the notice appearing in the *Official Gazette* at 1052 O.G. 52 on Mar. 26, 1985.

For use of the European Patent Office as a Searching Authority for PCT applications filed in the United States Receiving Office, see the notice appearing in the *Official Gazette* at 1022 O.G. 52 on Sept. 28, 1982.

Domestic PCT fees were increased on Oct. 1, 1982 by a rule change to 37 CFR 1.445 that was published in the *Official Gazette* at 1021 O.G. 11 on Aug. 10, 1982.

The Search fee for the European Patent Office was changed as of May 7, 1985 and was published in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

International PCT fees were changed effective May 28, 1985 and were announced in the *Official Gazette* at 1053 O.G. 42 on Apr. 16, 1985.

The current schedule of PCT fees is as follows:

Transmittal fee	$ 125.00
Search fee	
U.S. Patent and Trademark Office as Searching Authority	
· No corresponding prior U.S. national application filed	500.00
· Corresponding prior U.S. national application filed	250.00
European Patent Office as Searching Authority	
· All cases	620.00
International fees	
Basic fee (first 30 pages)	230.00
Basic Supplemental fee (for each page over 30)	4.00
Designation fee (for the first 10 national or regional offices)	55.00
Designation fee for 11th and subsequent designations	No charge

DONALD J. QUIGG,
Acting Commissioner of Patents and Trademarks.

May 7, 1985.

Notice of Maintenance Fees Payable

Title 37, Code of Federal Regulations, Section 1.362(d), effective Nov. 1, 1984, provides that maintenance fees may be paid without surcharge for a six-month period beginning 3, 7, and 11 years after the date of issue of patents based on applications filed on or after Dec. 12, 1980. An additional six-month grace period is provided by 35 U.S.C. 41(b) and 37 CFR 1.362(e) for payment of the maintenance fee with the surcharge set forth in 37 CFR 1.20(k) or (l), effective Nov. 1, 1984. If the maintenance fee is not paid in a patent requiring such payment, the patent will expire on the 4th, 8th or 12th anniversary of the grant.

Attention is drawn to the patents which were issued on August 24, 1982 for which maintenance fees due at 3 years and six months may now be paid. The patents have patent numbers within the following ranges:

Plant Patents	None
Utility Patents	4,345,335 through 4,346,480
Reissue Patents based on the above identified patents.	

No maintenance fees are required for design patents.

Payments of maintenance fees in patents should be directed to "Commissioner of Patents and Trademarks, Box M. Fee, Washington, D.C. 20231."

The current amounts of the maintenance fees due at 3 years and six months are set forth in 37 CFR 1.20(e) and (h), which are reproduced below:

37 CFR §1.20 Post-issuance fees

"(e) For maintaining an original or reissue patent, except a design patent, based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant . . . $ 200.00"

"(h) For maintaining an original or reissue patent, except a design or plant patent, based on an application filed on or after Aug. 27, 1982, in force beyond 4 years; the fee is due by three years and six months after the original grant:
By a small entity (§1.9(f)) . . . . . $ 200.00
By other than a small entity . . . . . $ 400.00"

The amounts of the surcharges, effective Nov. 1, 1984, are set forth in 37 CFR 1.20(k)-(m), which are reproduced below:

"(k) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Dec. 12, 1980 and before Aug. 27, 1982 . . . . . $ 100.00"

"(l) Surcharge for paying a maintenance fee during the 6-month grace period following the expiration of three years and six months, seven years and six months, and eleven years and six months after the date of the original grant of a patent based on an application filed on or after Aug. 27, 1982:
By a small entity (§1.9(f)) . . . . . $ 50.00
By other than a small entity . . . . . $ 100.00"

"(m) Surcharge for accepting a maintenance fee after expiration of a patent for non-timely payment of a maintenance fee on a patent based on an application filed on or after Aug. 27, 1982, where the delay in payment is shown to the satisfaction of the Commissioner to have been unavoidable . . . . . $ 500.00"

Board of Appeals Decisions Rendered in the Month of May 1985

Affirmed	185
Affirmed in Part	41
Reversed	75
Total	301

Board of Appeals Decisions Rendered in the Month of July 1985

Affirmed	164
Affirmed in Part	36
Reversed	77
Total	277

REISSUE APPLICATIONS FILED

Notice under 37 CFR 1.11(b). The reissue applications listed below are open to inspection by the general public in the indicated Examining Groups and copies may be obtained by paying the fee therefor (37 CFR 1.19(a)).

4,391,885, Re. S.N. 752,359, Filed July 5, 1985, Cl. 430/028, METHOD OF MANUFACTURING FLUORESCENT SCREENS OF CATHODE RAY TUBES, Yoshifumi Tomita, et al., Owner of Record: *Hitachi, Ltd., Tokyo, Japan,* Attorney or Agent: Charles E. Pfund, et al., Ex. Gp.: 156

4,391,898, Re. S.N. 750,139, Filed July 1, 1985, Cl. 430/306, METHOD OF MAKING A SLEEVE FOR A PRINTING CYLINDER, Hendricus J. van der Velden, Owner of Record: *Stork Screens B.V., Boxmeer, The Netherlands,* Attorney or Agent: Richard H. Tushin, et al., Ex. Gp.: 156

4,392,791, Re. S.N. 754,532, Filed July 11, 1985, Cl. 417/379, PRESSURE PUMPING AND PRIMING PUMP APPARATUS, Harold Mandroian, Owner of Record: *Inventor,* Attorney or Agent: Philip S. Johnson, et al., Ex. Gp.: 343

4,420,484, Re. S.N. 752,332, Filed July 3, 1985, Cl. 514/332, BASIC AMINO OR AMMONIUM ANTIMICROBIAL AGENT-POLYETHYLENE GLYCOL ESTER SURFACTANT-BETAINE AND/OR AMINE OXIDE SURFACTANT COMPOSITIONS AND METHOD OF USE THEREOF, William G. Gorman, et al., Owner of Record: *Sterling Drug, Inc., New York, N.Y.,* Attorney or Agent: B. Woodrow Wyatt, et al., Ex. Gp.: 125

4,427,213, Re. S.N. 752,830, Filed July 8, 1985, Cl. 280/711, VEHICLE SUSPENSION WITH RIGID TORQUE BEAM, John E. Raidel, Jr., Owner of Record: *Inventor,* Attorney or Agent: Edmund C. Rogers, et al., Ex. Gp.: 316

REQUESTS FOR REEXAMINATION FILED

Notice under 37 CFR 1.11(c). The requests for reexamination listed below are open to inspection by the general public in the indicated Examining Groups. Copies of the requests and related papers may be obtained by paying the fee therefor established in the Rules (37 CFR 1.19(a)).

In the event correspondence to the patent owner is not received, this notice will be considered to be constructive notice to the patent owner and reexamination will proceed (37 CFR 1.248(a)(5) and 1.525(b)).

3,774,056, Reexam. No. 90/000,808, Requested: June 27, 1985, Cl. 307/480, DIGITAL ELECTRONIC CONTROL CIRCUIT FOR CYCLICALLY OPERABLE APPLIANCES AND THE LIKE, Steven B. Sample, et al., Owner of Record: *Design and Manufacturing Corp., Connersville, Ind.,* Attorney or Agent: Melville, Strasser, et al., Ex. Gp.: 254, Requester: Sharp Corp., Abeno-Ku, Osaka 545, Japan

3,964,405, Reexam. No. 90/000,824, Requested: July 22, 1985, Cl. 111/6, PERENNIAL WEED CONTROL BY DEEP PLACEMENT OF VOLATILE SOIL FUMIGANTS, William A. Haglung, et al., Owner of Record: *Inventor,* Attorney or Agent: Seed, Berry, et al., Ex. Gp.: 330, Requester: Dow Chemical Co., Midland, Mich.

4,032,296, Reexam. No. 90/000,828, Requested: July 30, 1985, Cl. 422/89, ELECTROLYTIC CONDUCTIVITY DETECTOR SYSTEM, Randall C. Hall, Owner of Record: *Purdue Research Foundation, Inc., West Lafayette, Ind.,* Attorney or Agent: Arnold, White, et al., Ex. Gp.: 134 Requester: Purdue Research Foundation, Houston, Tex.

4,217,027, Reexam. No. 90/000,810, Requested: July 2, 1985, Cl. 350/96.3, OPTICAL FIBER FABRICATION AND RESULTING PRODUCT, John B. MacChesney, et al., Owner of Record: *Inventor,* Attorney or Agent: William L. Keefauver, Ex. Gp.: 133, Requester: ITT Corp., Secaucus, N.J.

4,354,007, Reexam. No. 90/000,826, Requested: July 24, 1985, Cl. 525/370, PROCESS FOR PREPARING OXIDATIVELY-STABLE POLYMERS, Gerald Scott, Owner of Record: *Inventor,* Attorney or Agent: Cushman, Darby, et al., Ex. Gp.: 155, Requester: Gerald Scott, Staffordshire, England

4,405,881, Reexam. No. 90/000,823, Requested: July 22, 1985, Cl. 313/477, COLOR CATHODE RAY TUBE INCLUDING Nd2°3 AND Cr2°3 IN FACE GLASS, Hiroo Kobayashi, Owner of Record: *Mitsubishi Denki Kabushki Kaisha, Tokyo, Japan,* Attorney or Agent: Oblon, Fisher, et al., Ex. Gp.: 260, Requester: General Electric Co., Portsmouth, Va.

4,438,584, Reexam. No. 90/000,827, Requested: July 25, 1985, Cl. 58/4, TRAP FOR RATS, MICE AND OTHER VERMIN, Stanley Z. Baker, et al., Owner of Record: *J. T. Eaton & Co., Inc., Twinsburg, Ohio,* Attorney or Agent: Body, Vickers, et al., Ex. Gp.: 320, Requester: Hampton Chemical, Inc., Riverdale, N.Y.

4,483,720, Reexam. No. 90/000,825, Requested: July 22, 1985, Cl. 148/6.14, PROCESS FOR APPLYING THERMAL BARRIER COATINGS TO METALS, Robert W. Bartlett, et al., Owner of Record: *SRI International, Menlo Park, Calif.,* Attorney or Agent: Edward B. Gregg, Ex. Gp.: 150, Requester: Owner

Status of PTO Services

The following is an update of the status of PTO services for July 1985:

Service Item	FY 1985 Performance Goal (Calendar Days)	Monthly Average	Comment
Filing Receipts:			
Patents	22	19	
Trademarks	30	29	
Patent/Trademark Copies:			
Special Window Coupons	1*	99% within 1 day	
Window Coupons	5	94% within 5 days	
Mail Coupons	29 (26)*	99% within 26 days**	
Letter Orders	34 (26)*	99% within 26 days**	
Date of oldest unfilled order		July 17, 1985	
Current Mail Date being processed		July 26, 1985	
Certified Copies:			
Trademark Registrations	30	25	
Applications-As-Filed	20 (10)*	92% within 7 days	
File-Wrapper/Contents	N/A	99% within 7 days	
Walk-up Certification	1	97% within 24 hours	
Trademark Search Library:			
Filing Pending Marks	21	33	Delays in publication pipeline and in filing.
Filing Reg. Certificates	3 (Issue Date)*	On schedule	
Assignments:			
Patents	25 (20)*	20	
Trademarks	25 (20)*	18	
Avg. Days from Issue Fee Payment to Issue Date	90–100	85	
Issue Fee Receipts Mailed	4 weeks prior to Issue Date	On schedule	
Patent Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Patent Grants Mailed	Issue Date	On schedule	
Trademark Official Gazette:			
In Bookstore	Issue Date	On schedule	
Mailed	Issue Date	On schedule	
Trademark Regs. Mailed	Issue Date	3 days late	Delayed to account for all withdrawals.
Patent Copies Available	Issue Date	98% on Issue Date	
Trademark Copies Available	Issue Date	99% on Issue Date	

*Reflects new goal for faster service.
**Figures include postal processing and delivery time.

IMPROVEMENTS TO SERVICE

- *Goals for Faster Service* — One of our special service objectives for this year was to commit to goals for faster service. As you will note on the report above, seven goals have been reduced. We will continue to look for ways to expedite services, as well as improve quality.

- *Extensions of Time in Drawing Corrections* — Effective July 15, 1985, extensions of time to effect drawing corrections will be granted by the Chief Draftsman where a delay in availability of drawings, or delay in review of drawings was caused by the Office.

- *Ordering Reexamination and Patent Files* — Recent comments from the public pointed out that a person ordering a patent file, unaware that a reexamination file on the same patent existed, would only receive the ordered patent file. The reexamination file not being ordered, would not be received. This situation resulted in an incomplete file being obtained as the reexamination file is an extension of the patent file.
  To overcome this problem the procedures which are used to request patented and abandoned files from the Files Repository have been modified so that (1) upon ordering a patent file, any and all associated reexamination files of that patent are automatically and simultaneously ordered and (2) upon ordering a reexamination file, the corresponding original patent file and any other associated reexamination files are automatically and simultaneously ordered.

HELPFUL HINTS FROM THE PTO

- *Returning Files to the File Information Unit (FIU)* — Recently, files obtained through the FIU have been left in the Public Search Room at the close of business rather than being returned as required.

  All customers are reminded that files obtained through the FIU are official government records which must be returned to the FIU by 7:45 p.m. on the same day they are obtained. Additionally, files obtained through the FIU shall not be removed from the confines of the Public Search Room at any time.
  Adherence to these regulations is requested. Continued violations will result in cessation or suspension of individual privileges.

- *Information Cited on Form PTO–1449*

  The Public is encouraged to use Form PTO–1449, "Information Disclosure Citation," when preparing a statement under 37 CFR 1.97–1.99 (see MPEP §609). This form provides the Office with a uniform way of listing the citations and vehicle from which the information thereon can be printed on the issued patent.
  Recently, citations are being presented on various forms prepared by the public rather than on Form PTO–1449. As a result, delays are cropping up in the printing process. Because the printer has difficulty in following the various formats and is having to query the examiner each time a non-PTO–1449 form is used, you are encouraged to use the Form PTO–1449 with any submission under 37 CFR 1.97–1.99.
  Note that listing citations on Form PTO–1449 does not raise an irrebuttable presumption that the citation is prior art. A holding by an examiner that any citation on Form PTO–1449 is prior art to claimed subject matter can be rebutted by procedures commonly used to rebut the prior art status of an examiner's citations on Form PTO–892, "Notice of References Cited".
  Among the information that should be provided on Form PTO–1449 is the date of the citation. In addition, it is helpful if the class and subclass of each citation is provided. It is appreciated that classification information may not be known at the time Form PTO–1449 is prepared. When classification information is not known, draw a line in the boxes under the class and subclass heading adjacent to the citation for which classification information is not known.

Aug. 5, 1985.

THERESA A. BRELSFORD,
Assistant Commissioner
for Administration.

PATENT NOTICES

Certificates of Correction for the Week of Aug. 27, 1985

Re. 31,468	4,490,387	4,503,633	4,511,605
Re. 31,670	4,490,642	4,503,829	4,511,669
Re. 31,784	4,491,004	4,504,170	4,511,689
Re. 31,826	4,491,324	4,504,291	4,511,698
4,393,370	4,491,343	4,504,576	4,511,703
4,414,222	4,491,344	4,504,607	4,511,734
4,416,124	4,491,675	4,504,814	4,511,747
4,418,123	4,491,777	4,504,869	4,512,096
4,433,999	4,493,778	4,504,872	4,512,104
4,434,037	4,494,958	4,504,879	4,512,116
4,434,686	4,495,288	4,505,067	4,512,183
4,443,110	4,495,647	4,505,151	4,512,222
4,451,795	4,495,703	4,505,626	4,512,273
4,454,103	4,496,057	4,506,293	4,512,629
4,457,967	4,496,148	4,506,738	4,512,648
4,461,376	4,496,556	4,507,139	4,512,667
4,465,618	4,496,575	4,507,143	4,512,684
4,466,312	4,496,885	4,507,239	4,512,722
4,467,446	4,497,157	4,507,438	4,513,068
4,467,577	4,497,158	4,507,451	4,513,204
4,469,455	4,497,206	4,507,459	4,513,397
4,470,911	4,497,363	4,507,617	4,513,514
4,471,162	4,497,615	4,507,623	4,513,828
4,473,216	4,497,917	4,507,827	4,514,149
4,473,245	4,498,531	4,508,092	4,514,255
4,475,597	4,498,537	4,508,203	4,514,308
4,476,523	4,498,702	4,508,309	4,514,384
4,477,762	4,498,708	4,508,355	4,514,468
4,479,172	4,498,765	4,508,455	4,514,540
4,481,067	4,498,893	4,508,949	4,514,550
4,482,331	4,499,066	4,509,015	4,514,602
4,482,474	4,499,316	4,509,181	4,514,916
4,483,122	4,499,625	4,509,279	4,515,079
4,483,222	4,499,637	4,509,494	4,515,427
4,484,776	4,500,131	4,509,644	4,515,453
4,484,779	4,500,789	4,509,847	4,515,476
4,485,404	4,500,906	4,509,877	4,515,635
4,486,148	4,501,253	4,509,932	4,516,009
4,488,220	4,501,548	4,510,043	4,516,152
4,489,047	4,501,587	4,510,100	4,516,170
4,489,095	4,501,727	4,510,503	4,516,891
4,489,104	4,501,874	4,510,972	4,517,231
4,489,318	4,503,372	4,511,198	4,520,904
4,490,096	4,503,374	4,511,354	4,521,669
4,490,227	4,503,569	4,511,372	

Disclaimers

3,937,813.—*Robert Kingsbury Clark, Jr.,* St. Petersburg, Fla. INSECTICIDAL COMPOSITIONS COMPRISING MIXTURES OF BACILLUS THURINGIENSIS AND CHLORDIMEFORM. Patent dated Feb. 10, 1976. Disclaimer filed June 26, 1985, by the assignee, *Abbott Laboratories.*

Hereby enters this disclaimer to claims 1–6 of said patent.

4,041,283.—*John E. Mosier,* Duncan Okla. RAILWAY TRAIN CONTROL SIMULATOR AND METHOD. Patent dated Aug. 9, 1977. Disclaimer filed June 10, 1985, by the assignee, *Halliburton Co.*

Hereby enters this disclaimer to claims 1 through 20 of said patent.

4,042,810.—*John E. Mosier,* Duncan, Okla. METHOD AND APPARATUS FOR FACILITATING CONTROL OF A RAILWAY TRAIN. Patent dated Aug. 16, 1977. Disclaimer filed June 10, 1985, by the assignee, *Halliburton Co.*

Hereby enters this disclaimer to claims 73 through 82 of said patent.

4,385,724.—*Larry R. Ramsauser* and *Ronald M. Scholer,* both of San Jose, Calif. APPARATUS FOR CONTROLLING THE WATER TEMPERATURE OF A SPA. Patent dated May 31, 1983. Disclaimer filed Dec. 21, 1984, by the assignee, *Ramco Manufacturing, Inc.*

The term of this patent subsequent to Sept. 20, 1984, has been disclaimed.

4,493,253.—*Arvindkumar C. Vyas,* Waterloo, Canada. VARIABLE IMPACT PRINTING MEANS. Patent dated Jan. 15, 1985. Disclaimer filed July 2, 1985, by the assignee, *NCR Canada LTD-NCR Canada LTEE.*

Hereby enters this disclaimer to claim 1 of said patent.

Disclaimers and Dedications

3,621,323.—*Frank W. Thomas,* Baltimore, Md.; and *William R. Tooke, Jr.,* Atlanta, Ga. COATED INCANDESCENT ELECTRIC LAMP. Patent dated Nov. 16, 1971. Disclaimer and Dedication filed June 8, 1984, by the assignee, *Thomas Manufacturing Corp.*

Hereby disclaims and dedicates to the Public the entire remaining term of said patent.

4,516,698.—*Vincent J. Cerrato,* Camarillo, Calif. KEG-PUMP CONSTRUCTION. Patent dated May 14, 1985. Disclaimer and Dedication filed June 21, 1985, by the assignee, *Vending Components, Inc.*

Hereby disclaims and dedicates to the Public the entire term of said patent.

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Facilities for making paper copies from either microfilm in reader-printers or from the bound volumes in paper-to-paper copies are generally provided for a fee.

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	Birmingham Public Library	(205) 226-3680
Alaska	Anchorage Municipal Libraries	(907) 264-4481
Arizona	Tempe: Science Library, Arizona State University	(602) 965-7607
Arkansas	Little Rock: Arkansas State Library	(501) 371-2090
California	Los Angeles Public Library	(213) 612-3273
	Sacramento: California State Library	(916) 322-4572
	San Diego Public Library	(619) 236-5813
	Sunnyvale: Patent Information Clearinghouse*	(408) 730-7290
Colorado	Denver Public Library	(303) 571-2122
Delaware	Newark: University of Delaware Library	(302) 451-2238
Florida	Fort Lauderdale: Broward County Main Library	(305) 357-7444
	Miami-Dade Public Library	(305) 375-2665
Georgia	Atlanta: Price Gilbert Memorial Library, Georgia Institute of Technology	(404) 894-4508
Idaho	Moscow: University of Idaho Library	(208) 885-6235
Illinois	Chicago Public Library	(312) 269-2865
	Springfield: Illinois State Library	(217) 782-5430
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Louisiana	Baton Rouge: Troy H. Middleton Library, Louisiana State University	(504) 388-2570
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Massachusetts	Amherst: Physical Sciences Library, University of Massachusetts	(413) 545-1370
	Boston Public Library	(617) 536-5400 Ext. 265
Michigan	Ann Arbor: Engineering Transportation Library, University of Michigan	(313) 764-7494
	Detroit Public Library	(313) 833-1450
Minnesota	Minneapolis Public Library & Information Center	(612) 372-6570
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	St. Louis Public Library	(314) 241-2288 Ext. 390
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New Jersey	Newark Public Library	(201) 733-7815
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	Buffalo and Erie County Public Library	(716) 856-7525 Ext. 267
	New York Public Library (The Research Libraries)	(212) 714-8529
North Carolina	Raleigh: D. H. Hill Library, N.C. State University	(919) 737-3280
Ohio	Cincinnati & Hamilton County, Public Library of	(513) 369-6936
	Cleveland Public Library	(216) 623-2870
	Columbus: Ohio State University Libraries	(614) 422-6286
	Toledo/Lucas County Public Library	(419) 255-7055 Ext. 212
Oklahoma	Stillwater: Oklahoma State University Library	(405) 624-6546
Oregon	Salem: Oregon State Library	(503) 378-4239
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	Philadelphia: Franklin Institute Library	(215) 448-1227
	Pittsburgh: Carnegie Library of Pittsburgh	(412) 622-3138
	University Park: Pattee Library, Pennsylvania State University	(814) 865-4861
Rhode Island	Providence Public Library	(401) 521-8726
South Carolina	Charleston: Medical University of South Carolina Library	(803) 792-2372
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	Nashville: Vanderbilt University Library	(615) 322-2775
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	College Station: Sterling C. Evans Library, Texas A & M University	(409) 845-2551
	Dallas Public Library	(214) 749-4176
	Houston: The Fondren Library, Rice University	(713) 527-8101 Ext. 2587
Utah	Salt Lake City: Marriott Library, University of Utah	(801) 581-8394
Washington	Seattle: Engineering Library, University of Washington	(206) 543-0740
Wisconsin	Madison: Kurt F. Wendt Engineering Library, University of Wisconsin	(608) 262-6845
	Milwaukee Public Library	(414) 278-3247

All of the above-listed libraries offer CASSIS (Classification And Search Support Information System), which provides direct, on-line access to Patent and Trademark Office data.

*Collection organized by subject matter.

PATENT EXAMINING CORPS

RENE D. TEGTMEYER, Assistant Commissioner

JAMES E. DENNY, Deputy Assistant Commissioner

CONDITION OF PATENT APPLICATIONS AS OF July 20, 1985

PATENT EXAMINING GROUPS	Actual Filing Date of Oldest New Case Awaiting Action
CHEMICAL EXAMINING GROUPS	
GENERAL METALLURGICAL, INORGANIC, PETROLEUM AND ELECTRICAL CHEMISTRY, AND ENGINEERING, GROUP 110—D. E. TALBERT, Director	12-28-83
ORGANIC CHEMISTRY AND BIOTECHNOLOGY, GROUP 120—C. E. VAN HORN, Director	6-01-83
SPECIALIZED CHEMICAL INDUSTRIES AND CHEMICAL ENGINEERING, GROUP 130—R. F. WHITE, Director	4-12-84
HIGH POLYMER CHEMISTRY, PLASTICS, COATING, PHOTOGRAPHY, STOCK MATERIALS AND COMPOSITIONS, GROUP 150—J. O. THOMAS, Director	11-30-83
ELECTRICAL EXAMINING GROUPS	
INDUSTRIAL ELECTRONICS, PHYSICS AND RELATED ELEMENTS, GROUP 210—G. GOLDBERG, Director	4-11-83
SPECIAL LAWS ADMINISTRATION, GROUP 220—K. L. CAGE, Director	3-21-83
INFORMATION PROCESSING, STORAGE, AND RETRIEVAL, GROUP 230—E. LEVY, Director	7-16-82
RECEPTACLES, CLEANING, WINDING, AND MEASURING, GROUP 240—G. M. FORLENZA, Director	10-11-83
ELECTRONIC AND OPTICAL SYSTEMS AND DEVICES, GROUP 250—S. S. MATTHEWS, Director	4-30-82
COMMUNICATIONS, MEASURING, TESTING AND LAMP/DISCHARGE GROUP, GROUP 260—S. G. KUNIN, Director	4-19-83
DESIGN, GROUP 290—K. L. CAGE, Director	2-11-83
MECHANICAL EXAMINING GROUPS	
HANDLING AND TRANSPORTING MEDIA, GROUP 310—B. R. GRAY, Director	7-12-83
MATERIAL SHAPING, ARTICLE MANUFACTURING AND TOOLS, GROUP 320—S. N. ZAHARNA, Director	8-29-83
MECHANICAL TECHNOLOGIES AND HUSBANDRY PERSONAL TREATMENT INFORMATION, GROUP 330—R. E. AEGERTER, Director	3-10-83
SOLAR, HEAT, POWER, AND FLUID ENGINEERING DEVICES, GROUP 340—D. J. STOCKING, Director	4-15-83
GENERAL CONSTRUCTIONS, PETROLEUM AND MINING ENGINEERING, GROUP 350—A. L. SMITH, Director	4-02-84

Expiration of patents: The patents within the range of numbers indicated below expire during July 1985, except those which may have had their terms curtailed by disclaimer under the provisions of 35 U.S.C. 253. Other patents, issued after the dates of the range of numbers indicated below, may have expired before the full term of 17 years for the same reasons, or have lapsed under the provisions of 35 U.S.C. 151.

Patents . . . . . **Numbers 3,390,405 to 3,395,405, inclusive**

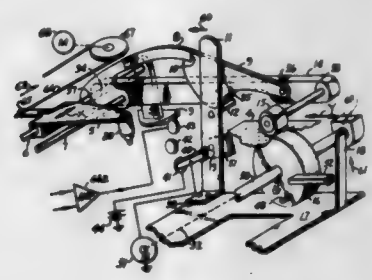
Plant Patents . . . . . **Numbers 2,817 to 2,824 inclusive**

REEXAMINATIONS

AUGUST 27, 1985

Matter enclosed in heavy brackets [ ] appears in the patent but forms no part of this reexamination specification; matter printed in italics indicates additions made by reexamination.

B1 Re. 31,684 (372nd)
X-Y PLOTTER
John O. Yeiser, Mission Viejo, Calif., assignor to Bausch & Lomb Incorporated, Rochester, N.Y.
Reexamination Request No. 90/000,628, Sep. 14, 1984.
Reexamination Certificate for Reissue Patent Re. 31,684, issued Sep. 25, 1984, Ser. No. 442,028, Nov. 15, 1982.
Original No. 3,761,950, dated Sep. 25, 1973, Ser. No. 64,467, Aug. 17, 1970. Request filed Sep. 14, 1984, Ser. No. 64,467
Int. Cl.[3] G01D *9/38*
U.S. Cl. 346—68



AS A RESULT OF REEXAMINATION, IT HAS BEEN DETERMINED THAT:

The patentability of claims 1, 2, and 4–12 is confirmed.

Claim 3 is determined to be patentable as amended.

1. An X–Y plotter comprising:
a table adapted to support a cut chart slidably thereon;
a fixed carriage guide extending across said table in an X-direction;
a carriage with a marking element, supported by said guide and movable therealong to provide X-deflection of said marking element across said chart;
driving roller means with pinch roller means engageable with said chart to provide bidirectional recording displacement of said chart across said table in the Y-direction orthogonal to said X-direction;
electromechanical X-servo means connected drivably to said carriage; and
electromechanical Y-servo means connected drivably solely to said driving roller means,
said bidirectional displacement of said cut chart being the sole provision for relative displacement of said chart and said marking element for recording in said Y-direction.

REISSUES

AUGUST 27, 1985

Matter enclosed in heavy brackets [ ] appears in the original patent but forms no part of this reissue specification; matter printed in italics indicates additions made by reissue.

Re. 31,974

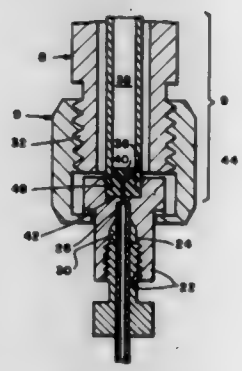
CARTRIDGE TYPE SEPARATION COLUMN AND HOLDER ASSEMBLY FOR LIQUID CHROMATOGRAPHS

Robert Brownlee, Los Altos Hills, Calif., assignor to Brownlee Labs, Inc., Santa Clara, Calif.

Original No. 4,283,280, dated Aug. 11, 1981, Ser. No. 116,466, Jan. 29, 1980. Continuation of Ser. No. 936,400, Aug. 24, 1978, abandoned. Application for reissue Jun. 28, 1982, Ser. No. 392,896

Int. Cl.³ B01D *15/08*

U.S. Cl. 210—198.2 **25 Claims**



11. An improved column cartridge for use in a liquid chromatograph having a pump and connected to a column input line for delivering a sample and eluent under pressure to an LC column and a column output line connected from the column to a detector for analyzing the column output, said cartridge comprising a circularly cylindrical solid tube having a bore therethrough, a chromatograph sorbent disposed in said bore, filter and seal means arranged across the opening of the bore at each end of the tube and mounted with the tube and sorbent as a self-contained unit to permit the same to be independently handled, said cartridge having no mounting structure associated therewith normally used to apply any force between any part of the cartridge and any external member, a pair of end fittings, each having one end connected to one of said input/output lines and the other end connected and arranged for mating contact with a respective of said column cartridge, a seal interposed between each said end fitting and said column cartridge, said cartridge seal and each end fitting being constructed and arranged to mate and to center together so as to establish a high pressure sealing configuration when placed in axial compression, means for contacting the outer ends of said end fittings for placing the same under axially directed inward force pushing said fittings against the ends of said cartridge, said cartridge being constructed to receive the compression force created by said end fittings and contacting means.

Re. 31,975

POLYESTER COMPOSITIONS

Lowell R. Comstock, Brookfield Center, Conn., and Percy L. Smith, Dunbar, W. Va., assignors to Union Carbide Corp., Danbury, Conn.

Original No. 4,288,571, dated Sep. 8, 1981, Ser. No. 336,120, Feb. 26, 1973. Continuation-in-part of Ser. No. 72,798, Sep. 16, 1970, Pat. No. 3,718,714, and Ser. No. 107,514, Jan. 18, 1971, abandoned, which is a continuation-in-part of Ser. No. 8,070, Feb. 2, 1970, abandoned. Application for reissue Sep. 8, 1983, Ser. No. 529,737

Int. Cl.³ C08L *67/06*

U.S. Cl. 523—514 **41 Claims**

1. A composition, suitable for use in molding, comprising an ethylenically unsaturated monomer, an unsaturated polyester which is the condensation product of an ethylenically unsaturated polycarboxylic acid or anhydride and a polyol, and, as a low profile additive, in an amount of from about 1 to about 85 weight percent, based on weight of said unsaturated polyester, a carboxyl containing polymer of a vinyl ester of an aliphatic, saturated monocarboxylic acid, wherein said carboxyl containing polymer contains from about 0.2 to about 5 weight percent of a polymerized carboxyl containing comonomer, and at least about 5 weight percent of polymerized vinyl alkanoate.

41. A composition as defined in claim 40 wherein said thermoplastic polymer is prepared from a polymerizable, ethylenically unsaturated monomer selected from the group consisting of vinyl chloride, vinyl bromide, vinyl fluoride, vinylidene chloride, vinylidene bromide, methyl acrylate, ethyl acrylate, butyl acrylate, n-octyl acrylate, 2-ethyl hexyl acrylate, n-decyl acrylate, glycidal methacrylate, acrylamide, n-methyl acrylamide, n,n-dimethylacrylamide, methyl acrylamide, n-methyl methacrylamide, n,n-dimethyl methacrylamide, acrylonitrile, chloroacrylonitrile, methacrylonitrile, ethacrylonitrile, vinyl naphthalene, dimethyl maleate, dibutyl maleate, vinyl methyl ether, vinyl ethyl ether, vinyl isobutyl ether, 2-chloroethyl vinyl ether, methyl vinyl ketone, ethyl vinyl ketone, isobutyl vinyl ketone, vinyl pyridine, n-vinyl carbazole, n-vinyl pyrrolidene, ethyl methylene malonate, isobutylene, ethylene, trichloroethylene, propylene, and vinyl norbornene.

Re. 31,976

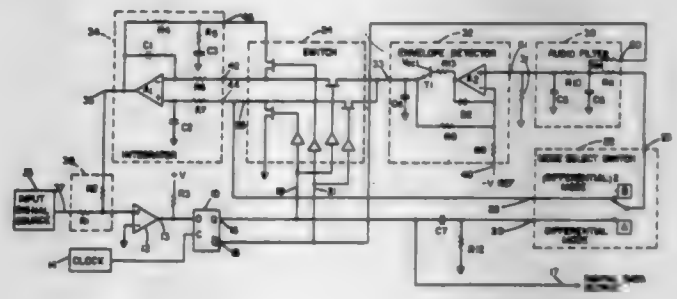
CIRCUITRY FOR GENERATING REFERENCE SIGNAL FOR DELTA ENCODING SYSTEMS

Richard E. DeFreitas, Westford, Mass., assignor to Analog and Digital Systems, Inc., Wilmington, Mass.

Original No. 4,305,050, dated Dec. 8, 1981, Ser. No. 71,246, Aug. 30, 1979. Continuation-in-part of Ser. No. 875,336, Feb. 6, 1978, Pat. No. 4,190,801. Application for reissue Mar. 3, 1983, Ser. No. 471,723

Int. Cl.³ H03K *13/22*

U.S. Cl. 332—11 D **28 Claims**



1. In an electrical system of the type in which a digitally encoded signal is determined at least in part by the difference between a present value of an input signal and a reference signal representative of a past value of said input signal, improved circuitry for generating said reference signal, comprising extraction means for extracting from the pattern of bits in said digitally encoded signal information relating to the time derivative of said present value to provide a corresponding control signal, said extraction means including a filter, and [an envelope detector] *means for providing a control signal that rises, to follow increases in said derivative, and decays more slowly than it rises upon decreases in said derivative,* said control signal from said extraction means being fed to *a digital-signal-generating means, which comprises* an integrating means, said integrating means being responsive to said [control] *digitally encoded* signal to provide said reference signal.

Re. 31,977

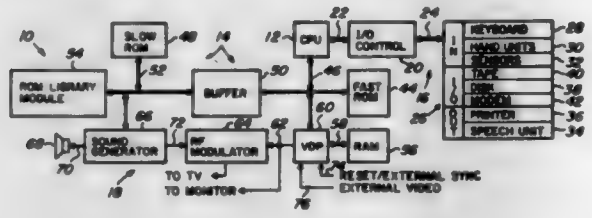
DIGITAL COMPUTING SYSTEM HAVING AUTO-INCREMENTING MEMORY

Granville E. Ott, Lubbock, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Original No. 4,286,320, dated Aug. 25, 1981, Ser. No. 20,111, Mar. 12, 1979. Application for reissue Aug. 19, 1983, Ser. No. 524,629

Int. Cl.[3] G06F *13/00, 13/06*

U.S. Cl. 364—200 11 Claims



11. A plug-in library module for use in a digital computing system having a central processing unit adapted to interact with a plurality of memory means each having a pre-assigned page number and a plurality of sequentially accessed address location, and wherein said central processing unit provides an address including both a page number corresponding to the pre-assigned page number of one of said plurality of memory means and the local address of a selected one of said plurality of sequentially accessed address locations, provides a memory access request including a read data signal, and is responsive to processing information provided thereto in response to said memory access request, and interface means including a plug-in type port for temporarily receiving said library module and for providing communication between the central processing unit and said library module, said library module comprising:

one of said memory means disposed within said library module, said memory means having processing information contained therein at sequentially accessed address locations;

first means for storing a page number provided by said central processing unit and for providing an enable signal when the stored page number corresponds to the pre-assigned page number of the memory means disposed within said library module,

second means for storing the local address provided by said central processing unit and for providing said local address to the memory means disposed within said library module,

connector means disposed within said library module and connectable to the plug-in port of said interface means, said connector means connecting the address provided by said central processing unit to said first and second storage means, and connecting the processing information outputted by said memory means to said central processing unit; and

control means responsive to the receipt from said central processing unit of a memory access request including a read data signal and to said enable signal for outputting the processing information at the memory location corresponding to the local address provided to said memory means and for incrementing the local address in said second storage means to the address of the next sequentially accessed location in said memory means, said control means being further operative to maintain the local address located in said second storage means in an unaltered state in the absence of a memory access request, whereby the processing information contained in said next sequentially accessed address location will be provided by said memory means in response to another memory access request including a read data signal.

PLANT PATENTS

GRANTED AUGUST 27, 1985

Illustrations for plant patents are usually in color and therefore it is not practicable to reproduce the drawing.

5,542

ALSTROEMERIA NAMED STALTANG

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij, M.C. van Staaveren, Aalsmeer, Netherlands

Filed Aug. 11, 1983, Ser. No. 522,313
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—68 1 Claim

1. A new and distinctive alstroemeria hybrid, substantially as herein shown and described, characterized by the generally magnolia purple coloration of its very large and profusely blooming flowers.

5,543

AFRICAN VIOLET PLANT NAMED MARGUERITE

Arnold Fischer, Hanover, Fed. Rep. of Germany, assignor to Pan American Plant Company, Parrish, Fla.

Filed Oct. 7, 1983, Ser. No. 539,935
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—69 1 Claim

1. A new and distinct cultivar of African violet named Marguerite, as described and illustrated, and particularly characterized by its large pink ruffled flowers that are star-shaped and actinomorphic rotate; compact rosette habit, with the flowers being carried on upright peduncles; floriferous habit, and its pleasantly contrasting dark green foliage.

5,544

CARNATION NAMED STANQUIN

Jacob van Andel, Aalsmeer, Netherlands, assignor to B. V. Handelskwekerij M. C. van Staaveren, Aalsmeer, Netherlands

Filed Nov. 30, 1983, Ser. No. 556,261
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—70 1 Claim

1. A new and distinct carnation variety, substantially as herein shown and described, characterized by its continuous production of very light green-yellow flowers of medium size.

5,545

CARNATION NAMED HILKARI

Jan J. Hilverda, Aalsmeer, Netherlands, assignor to Hilverda B.V., Aalsmeer, Netherlands

Filed Dec. 8, 1983, Ser. No. 559,358
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—71 1 Claim

1. The new and distinct variety of spray carnation, substantially as herein shown and described, characterized in particular by its delicate pink flower color, its profuse and continuous blooming habit, and the rapid growth rate of its tall, spray shape bush with relatively long flower stems.

5,546

ASPARAGUS PLANT-FEMALE PLANT NO. 53 INEZ

J. Howard Ellison, Milltown, and John J. Kinelski, Princeton, both of N.J., assignors to Rutgers University, New Brunswick, N.J.

Filed Oct. 21, 1983, Ser. No. 544,008
Int. Cl.[3] A01H *5/00*
U.S. Cl. Plt.—89 1 Claim

1. A new and distinct variety of Asparagus Plant as herein shown and described, distinguished particularly as to novelty by its unique combination of predominately female characteristics, which transmit high yield, resistance to rust (*Puccinia asparagi*), tolerance to root and crown rot (*Fusarium oxysporum*) and (*F. moniliforme*), maintaining vigor through long life, enabling growth of hybrids where standard susceptible cultivars cannot be grown profitably.

PATENTS

GRANTED AUG. 27, 1985

ERRATA

For CLASS	See PATENT NO.
623–003	4,536,893
623–022	4,536,894
623–006	4,536,895
623–006	4,536,896
623–006	4,536,897
623–033	4,536,898
514–009	4,537,772
514–063	4,537,773
514–398	4,537,775
514–424	4,537,776
514–521	4,537,777
514–275	4,537,779
514–464	4,537,780
514–616	4,537,781
514–774	4,537,782
423–502	4,537,835
435–215	4,537,852
252–052	4,537,920
525–424	4,537,947

PATENTS

GRANTED AUGUST 27, 1985

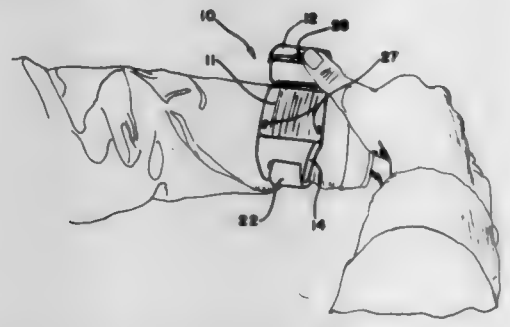
GENERAL AND MECHANICAL

4,536,889

FACE AND NOSE WIPER HOLDING DEVICE FOR SKIERS

Kevin D. Taylor, Ogden, and Galen N. Nichols, Salt Lake City, both of Utah, assignors to TNF Enterprises, Salt Lake City, Utah

Filed Mar. 8, 1984, Ser. No. 587,664
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—160 **10 Claims**



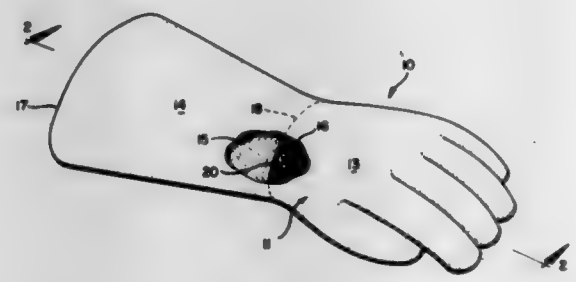
1. A holder for face and nose wiper means, comprising:
means for securing the holder to an upper limb of a skier;
generally rigid base member means;
means for securing the wiper means to the holder comprising clamping means for securing the wiper means to the base member means;
generally rigid wiper covering means covering the wiper means when not being used and retractable with respect to the base member means to expose the wiper means for use.

4,536,890

GLOVE FOR LOW PARTICULATE ENVIRONMENT

Steve M. Barnett, Glencoe, Ill.; Michael A. Flowers, Ontario, Calif., and John A. Varos, Willard, Ohio, assignors to Pioneer Industrial Products Company, Willard, Ohio

Filed Feb. 21, 1984, Ser. No. 581,691
Int. Cl.[3] A41D *19/00*
U.S. Cl. 2—164 **5 Claims**



1. A glove for use in a low particulate environment, said glove comprising:
an external shell composed of a material selected from the group consisting of polyvinyl chloride and elastomeric materials;
said external shell comprising a hand portion for enclosing the hand of a glove wearer and a gauntlet portion for enclosing the wrist and the lower forearm of the glove wearer;
said external shell having inside and outside surfaces;
and an internal lining attached to the inside surface of said hand portion;
said internal lining being composed of fibrous material, said fibrous material being of a kind from which particles may become detached if there were abrasion between said material and the surface of a sleeve on an article of clothing worn by the glove wearer;
the inside surface of said gauntlet portion being devoid of any lining from which said particle may become detached.

4,536,891

METHOD AND APPARATUS FOR MANUFACTURING PANTYHOSE

Werner Angele, Au am Rhein, Fed. Rep. of Germany, assignor to Pfaff Industriemaschinen GmbH, Fed. Rep. of Germany

Filed Aug. 25, 1982, Ser. No. 411,335
Claims priority, application Fed. Rep. of Germany, Sep. 4, 1981, 3134984
Int. Cl.[3] A41B *9/04*
U.S. Cl. 2—409 **3 Claims**



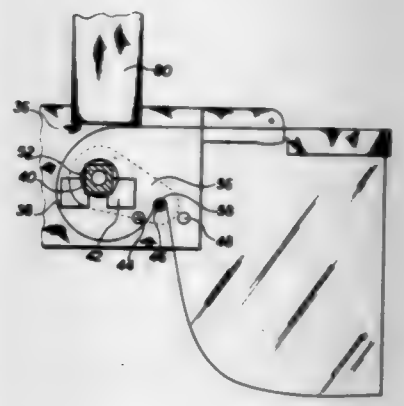
1. A method of manufacturing pantyhose using a sewing machine and hose shaped leg part workpiece, comprising arranging the leg parts in a flattened side by side longitudinally extending relationship, cutting each leg part along their adjacent inner edges from the waist rim of its panty area up to a crotch leaving a remaining leg portion of each leg part uncut and so as to form upper and lower plies of each leg cut along their inner opposite edges, sewing the cut edges of the laterally adjacent lower plies together from the waist rim to the crotch to form a seam, deflecting the outer plies outwardly to overlie the remaining leg portions, and continuing to sew the seam by sewing in the same direction the edge portions of the upper plies together.

4,536,892

RIOT FACESHIELD ASSEMBLY

Carl H. Brinkhoff, Pittsburgh, and Gordon C. Scott, Verona, both of Pa., assignors to Mine Safety Appliances Company, Pittsburgh, Pa.

Filed Apr. 23, 1984, Ser. No. 602,850
Int. Cl.[3] A61F *9/04*
U.S. Cl. 2—424 **8 Claims**



1. A riot faceshield assembly adapted for use with a variety of protective helmets of varying sizes, comprising:
a transparent protective faceshield member for protecting the face of a user;
first and second bracket members, each of said bracket mem-

bers including intermediate faceshield member fastening means for pivotally securing said faceshield member for movement between a protective orientation and an upraised position, each of said bracket members further including front and rear helmet engaging arms for engaging the edge of said helmet at positions in front of and behind the position of said intermediate faceshield member fastening means to limit the upward movement of said faceshield assembly relative to said helmet;

said intermediate faceshield member fastening means including at least two distinct pivot points to which said faceshield member may be pivotally secured, to permit said faceshield member to be adjusted in position relative to said front edge of said helmet to maintain said generally sealing relationship with helmets of different dimensions;

strap means secured at one end adjacent one of said bracket members and at its other end adjacent the other of said bracket members and adapted to be positioned over the top of said helmet to provide an upward bias upon said bracket members to urge said engaging arms against said edge of said helmet;

further wherein said bracket members are configured relative to said helmet to bring said faceshield member into a generally sealing relationship with the front edge of said helmet when said faceshield member is pivoted into its protective orientation; and

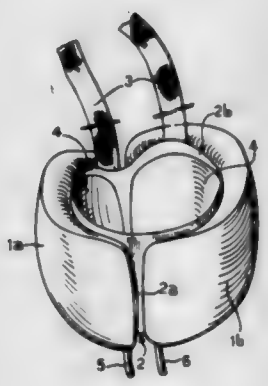
means for preventing said faceshield member from pivoting beyond said protective orientation, wherein said preventing means includes a solid pin member secured within each of said bracket members and positioned to rest in groove means in said faceshield member when said faceshield member is pivoted into said protective orientation, said pin members being movable to different positions relative to said bracket members to correspond to movement of said faceshield member between said at least two distinct pivot points.

4,536,893

IMPLANT DEVICE FOR SUBSTAINING THE ACTIVITY OF THE MYOCARDIUM

Roberto Parravicini, Corso Genova 13, Milan, Italy

Continuation of Ser. No. 387,897, Jun. 14, 1982, abandoned.
This application Nov. 7, 1984, Ser. No. 669,052
Claims priority, application Italy, Mar. 3, 1982, 67241 A/82
Int. Cl.[3] A61F *1/00*
U.S. Cl. 623—3 **5 Claims**



1. An implant device for sustaining the activity of the myocardium comprising:

a container housing including two substantially separate rigid shells adapted to envelop the left ventricular wall and the right ventricular wall of the myocardium, respectively, and a biocompatible fabric connecting strip bridging a space formed between said shells between said shells and securely attached to said shells wherein said fabric extends in said space between said shells in correspondence with the interventricular sulcus for attachment thereto by suturing,

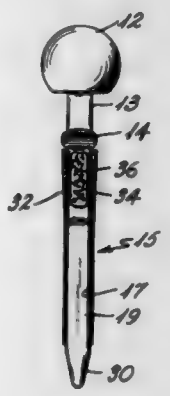
membrane means secured to the inner surface of said shells defining two separate independent pumping chambers each adapted to act independently on the left ventricular wall and the right ventricular wall of the myocardium, respectively, and means for selectively and separately feeding fluid to said two chambers so as to cause expansion of the chambers and consequent compression of the left ventricular wall and the right ventricular wall of the myocardium.

4,536,894

HIP PROSTHESIS WITH FLARED POROUS BONY INGROWTH PADS

Jorge O. Galante, One Brighton La., Oak Brook, Ill. 60521, and William Rostoker, 2052 W. 108th Pl., Chicago, Ill. 60643

Filed Aug. 4, 1983, Ser. No. 520,347
Int. Cl.[3] A61F *1/04*
U.S. Cl. 623—22 **13 Claims**



1. In a femoral insert for hip joint prothesis having a generally spherical shaped head member, a neck member connected to the head member and a stem having a proximal portion connected to the head member and a distal portion, the improvement comprising:

said stem having substantially flat anterior and posterior sides, each said side having a hollow depression therein, and

on each of the anterior and posterior sides of said stem, a porous body ingrowth member extending from said hollow depression over at least that region of the proximal portion corresponding to the metaphyseal portion of the bone, each of said porous members gradually increasing in thickness and protruding increasingly further out of its respective hollow depression in the proximal direction, whereby said increasingly thick porous members on said anterior and posterior sides provide a wedge tight fit when inserted in the femoral canal.

4,536,895

VAULTED INTRAOCULAR LENS

Timothy Bittner, Duarte, Calif., assignor to Ioptex Inc., Azusa, Calif.

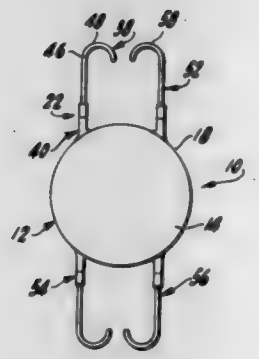
Filed Feb. 16, 1983, Ser. No. 466,918
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 623—6 **2 Claims**

1. An intraocular lens for placement within an eye comprising:

a. an optical portion having an optical plane;

b. means for positioning said optical portion in the eye, said means comprising first and second appendage units, each of said first and second appendage units extending outwardly from and spaced from one another along one side of said optical portion, and third and fourth appendage units extending outwardly from and spaced from one another along another side of optical portion generally opposite said one side, each appendage unit including a first relatively rigid member depending from said optical portion, said first member including a first part connected to said optical portion and oriented away from said optical

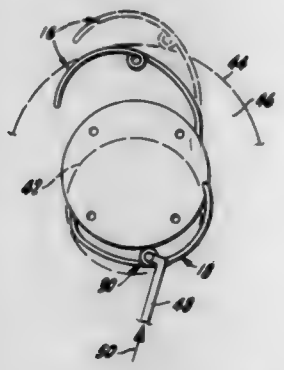
plane of said optical portion, said first part of said first member extending outwardly from said optical portion, said first member further including a second part connected to said first part and oriented, in relation to said first part, toward said optical plane said second part of said first member extending outwardly from said first part and from said optical portion, and, a second relatively flexible member connected to said second part of said first member and extending outwardly therefrom and outwardly in relation to said optical portion further than said first relatively rigid member, each relatively flexible member including an open loop defining a terminal end part for contacting eye tissue, said open loops of said first and second appendage units rotationally turned in opposite directions toward one another, and said open loops of said third and fourth appendage units rotationally turned in opposite directions toward one another.



4,536,896
INTRAOCULAR LENS WITH APPENDAGE MANIPULATION LOOP

Timothy Bittner, Duarte, Calif., assignor to Ioptex Inc., Azusa, Calif.

Filed May 17, 1983, Ser. No. 495,415
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 623—6
5 Claims

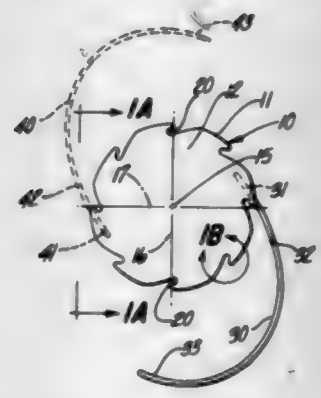


1. An intraocular lens comprising:
a. an optical portion; and
b. at least one resilient appendage having a first end portion connected to and extending from said optical portion, a second end portion intended for contacting the anatomy of the eye, and an intermediate portion between said first and second end portions, said intermediate portion of said at least one appendage including a substantially closed loop, said substantially closed loop including a continuous member which turns through an arc of at least one hundred eighty degrees, said continuous member forming a coil having an upper portion and an adjacent lower portion provided with an overlapped area, said continuous member of said closed loop being fixed against movement relative to said first end portion of said at least one appendage such that the exertion of force on said at least one appendage results in bending of said first end portion relative to said optical portion.

4,536,897
INTRAOCULAR LENS

Robert M. Powell, 686 Crestwood Dr., Gaylord, Mich. 49735

Filed Jul. 8, 1983, Ser. No. 511,849
Int. Cl.[3] A61F *1/16, 1/24*
U.S. Cl. 623—6
14 Claims

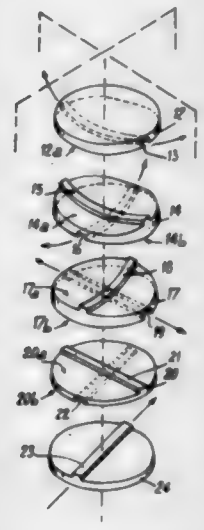


1. An intraocular lens useful for implantation or positioning in the chamber of an eye after capsular extraction, comprising:
an imperforate lens optic having an anterior face and a posterior face, the circumference of each face having a continuous curving common edge configured with at least one continuous curving axial socket recess open to said edge and faces, and haptic support means adapted for rotating the lens and centering the lens optic on the optical axis, the socket recess having bearing surfaces of a size adapted to receive and accommodate in close-fitting relation by open edge-access the distal end of a surgical tool to thereby enable the lens to be rotated or dialed and thus moved by the tool in the plane of the lens for positioning of the lens in a surgical procedure.

4,536,898
DEVICE FOR THE ALIGNMENT RESEARCH, ALIGNMENT AND ORIENTATION OF PROSTHESIS OF THE LOWER LIMBS

Michel R. Palfray, Seurre, France, assignor to Etablissements Proteor, Dijon, France

Filed Mar. 7, 1983, Ser. No. 473,134
Claims priority, application France, Jul. 30, 1982, 82 13332
Int. Cl.[3] A61F *1/02*
U.S. Cl. 623—33
12 Claims



1. An adjustment setting device for alignment and angular orientation of a prosthetic device for a lower limb, the prosthetic device including an upper portion and a lower portion, said adjustment setting device comprising:
first adjustment means, connected to said upper portion and having a lower spherical surface;

second adjustment means, connected to said lower portion, and having an upper planar surface;

third adjustment means positioned between, and coacting with, said first and second adjustment means, said third adjustment means including an upper spherical surface and a lower planar surface;

the lower spherical surface of said first adjustment means and the upper spherical surface of said third adjustment means being relatively displaceable in three orthogonal planes to define means for angularly orienting said lower portion relative to said upper portion,

the upper planar surface of said second adjustment means and the lower planar surface of said third adjustment means being relatively displaceable in two orthogonal planes to define means for aligning said lower portion relative to said upper portion in any direction in the plane of coaction of the planar surfaces and means for immobilizing said orienting means after said angular orientation has been set,

whereby upon first setting said angular orientation of sad prosthesis upper and lower portions, alignment of said upper and lower prosthesis portions in orthogonal horizontal planes may be accomplished without a corresponding simultaneous change in position of the upper and lower portions in a third, vertical plane.

4,536,899

TOILET WITH FLUSHING DEVICE AND SELF-CLEANING SEAT

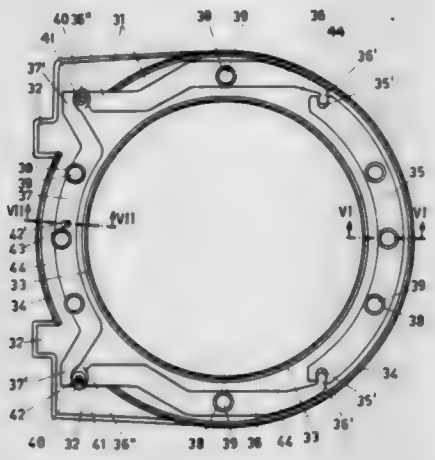
Erika Schnyder, Im Grubi, 9497 Triesenberg Fürstentum, Liechtenstein

Continuation-in-part of Ser. No. 232,514, Feb. 9, 1981, abandoned. This application Mar. 5, 1984, Ser. No. 586,326

Claims priority, application Switzerland, Feb. 28, 1980, 1583/80

Int. Cl.[3] **A47K** *13/30*

U.S. Cl. 4—233 **8 Claims**



1. A toilet, comprising:

a toilet seat comprising a stationary ring defining a toilet seat base and a rotatable ring defining a seat surface of the toilet seat;

said stationary ring having an outer circumference;

rollers arranged between said stationary ring and said rotatable ring and having upper portions;

said rollers conjointly defining a substantially circular path of travel for said rotatable ring in relation to said stationary ring and which path of travel extends substantially concentrically with respect to said outer circumference;

said rotatable ring being rotatably arranged upon said rollers for moving along said path of travel;

said stationary ring having an inner surface;

means for mounting each roller of said rollers translatably in a direction extending substantially transverse to said path of travel on said inner surface of the stationary ring and in a direction substantially normal to said inner surface;

said rotatable ring being provided with a substantially conical bearing surface;

said rollers being provided at said upper portions thereof with surfaces of revolution which are substantially conical; and

said substantially conical surfaces of revolution engaging in substantially straight-line contact said substantially conical bearing surface formed at said rotatable ring.

4,536,900

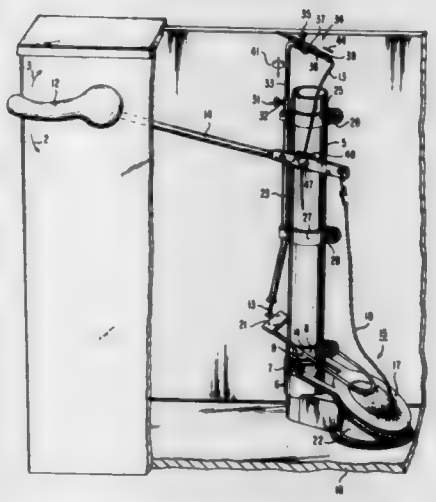
WATER CONSERVING FLUSH VALVE FOR TOILETS

Garrett P. Hayes, 72 Burlington Ave., Leonardo, N.J. 07737

Filed May 21, 1984, Ser. No. 612,619

Int. Cl.[3] **E03D** *5/094*

U.S. Cl. 4—324 **16 Claims**



1. A flush valve for use in a toilet tank, said flush valve comprising:

an overflow tube, having a base abutting against the bottom of the toilet tank and connected to an end of said overflow tube and extending to one side of said tube;

a valve pivotting about the overflow tube and abuttingly seating against said base to assume a closed position or pivotting upward from said base to assume an open position thereby directing water from said tank in order to produce a flush, said valve having a control arm extending away from said overflow tube in a direction substantially opposite to that of said base;

a flush handle, mounted to an outside surface of said tank, having an extension arm situated within said tank and extending towards said overflow tube;

means situated about the overflow tube proximate to said valve and being responsive to rotational movement of the flush handle in a pre-determined direction for forcing the valve to a desired position, wherein the forcing means comprises:

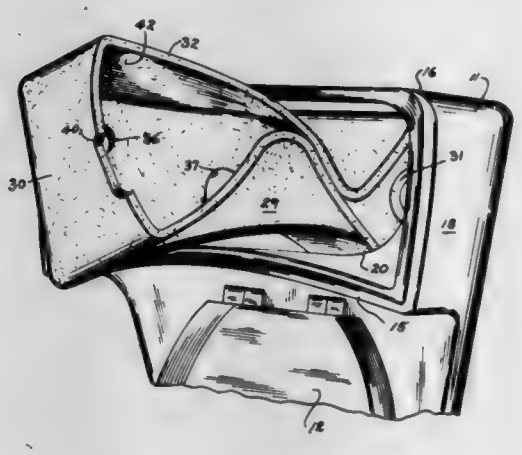
a cable connected at one end thereof to an end of the extension arm located near the overflow tube and connected at the other end thereof to said control arm, and

a conduit having two legs and mounted to said overflow tube and through which said cable is routed, the first leg extending laterally over a top end of said overflow tube and the second leg extending vertically downward and along said overflow tube, wherein each leg has a telescoping section for independently and appropriately adjusting the length and/or orientation of that section so that the cable assumes a substantially vertical orientation as it extends upward from the end of said extension arm and into the first leg of said conduit, whereby the flush valve can be readily installed in a wide variety of toilets without changing the flush handle existing therein.

4,536,901
INSULATING LINER FOR A WATER CLOSET TANK

Robert A. Jones, and Jack R. Reichert, both of Kohler, Wis., assignors to Kohler Co., Kohler, Wis.

Continuation of Ser. No. 534,986, Sep. 23, 1983, abandoned. This application Apr. 17, 1985, Ser. No. 723,720
Int. Cl.[3] E03D *1/00*
U.S. Cl. 4—416 3 Claims



1. An insulating liner for a water closet tank that has bottom and side tank walls and a top tank opening; said tank walls defining a tank water storage chamber, at least part of which is larger in horizontal cross sectional area than the top opening of the tank; said liner comprising:

bottom and side liner walls that are formed so as to be substantially coextensive with the interior surface of the tank bottom wall and tank side walls;

the liner walls normally being configured so that the horizontal cross sectional area defined by the exterior of the liner side walls at a certain height is greater than the cross sectional area of the tank top opening, and the liner side walls are suitable to lie against the interior of the tank side walls;

said liner being formed out of a flexible and resilient material so that the liner can be collapsed for insertion in the tank through the tank top opening, and then be released to resiliently return it to its normal configuration;

said liner having a horizontal cross section which defines at least one set of opposed liner side walls; and

said liner being sufficiently flexible and resilient so that the upper ends of the opposed liner side walls may be folded inwardly towards each other to permit the opposed side walls to touch each other along lateral sides of the folds, and then resiliently return to their normal position without substantial deformation of the liner.

4,536,902
TOILET ASSEMBLIES

Leland S. McGill, Portage, Ind., assignor to Richard G. Kinney, Merrillville, Ind.

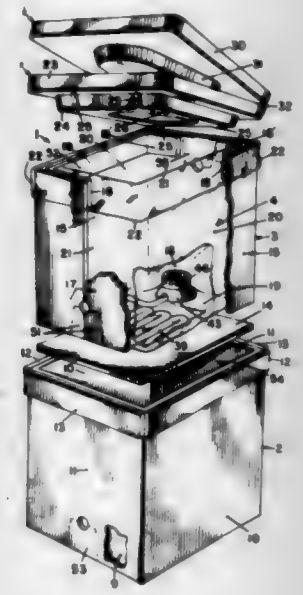
Filed Sep. 27, 1982, Ser. No. 423,642
Int. Cl.[3] A47K *3/022, 3/12*
U.S. Cl. 4—476 12 Claims

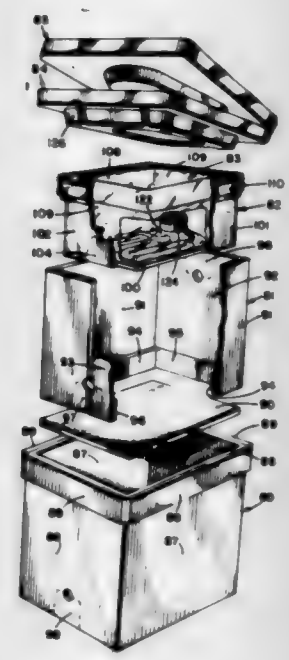
1. A toilet assembly for use with a removable flexible liquid-proof receptacle, comprising:

a structure including a seat, and means for receiving the flexible liquid-proof receptacle and for positioning said receptacle so that it opens upwards, said seat being mounted above said receptacle and provided with an opening for communication with said receptacle, said structure captivating said receptacle and substantially closing and sealing the interior, except for the opening of said seat;

said seat forming substantially the top of said structure and being formed of slightly compressible foam plastic material and said seat defining a downward tapered edge around the opening;

a cover for placement on said seat for substantially closing and sealing the opening in said seat and thus closing and sealing the interior of said receptacle; said cover having a downward projecting tapered marginal edge conforming to the shape of the opening of said seat for nesting against the tapered edges thereof to aid in sealing the opening





whereby the toilet assembly may be used, human body wastes discharged by the user through the opening in the seat into the removable flexible receptacle, and odors thereform contained within the assembly by placing the sealing cover over the seat between uses.

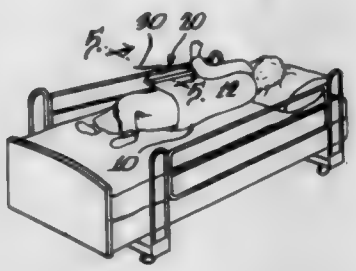
4,536,903
DEVICE FOR MANIPULATING INVALID BED PATIENTS

Leslie L. Parker, 4196 44th St., San Diego, Calif. 92105

Filed Jul. 1, 1983, Ser. No. 510,340
Int. Cl.[3] A61G *7/10*
U.S. Cl. 5—61 5 Claims

1. A device for manipulating bed patients into various positions of rest comprising a flexible, pliant sheet of porous fabric of a size to underlie the torso of the patient, said sheet of fabric including a central portion of a width approximately equal to the width of the patient's torso and of a length to underlie the patient's torso from approximately the shoulders to the buttocks, and end portions extending laterally outward from said central portion at an elevation to extend outwardly below the patient's arm pits, whereby the patient's arm and legs may be free from confinement when the device is in use, hand grip means on at least one end of said sheet adjacent a respective

side of the bed for moving the contiguous end portion of said sheet into partially encircling relation to the torso of the patient and for rolling the patient from a supine position into a position on one of the patient's sides, said hand grip means including a hemmed edge portion on said at least one end of said sheet defining a socket extending along substantially the full length of said end of said sheet, a renforcing member of a length approximately equal to the length of said end of said sheet removably inserted in said socket to rigidify said end of said sheet and to cause the same to move as a unitary whole despite the pliability of said sheet, and fastening means removably associated with said reinforcing member for fastening said end of said sheet to the bed for holding the respective end of said sheet to the bed in partially encircling relation to the patient's torso and for thereby holding the patient's body on its side in a selected position, said reinforcing member maintaining said sheet smooth and fully extended lengthwise throughout the length of said sheet both during a patient rolling movment and when the patient's torso is held in a selected position to insure uniform and comfortable engagement of said sheet with the patient's torso throughout the length of said sheet, said fastening means and said reinforcing member being removable from said sheet to facilitate laundering of said sheet.



4,536,904

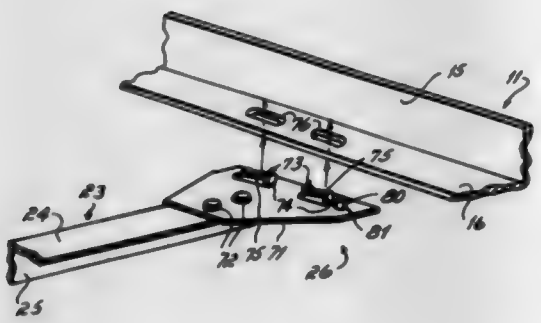
FOLDABLE BED FRAME

Larry W. Whitehead, Lexington, N.C., assignor to Leggett & Platt, Incorporated, Carthage, Mo.

Filed Oct. 7, 1982, Ser. No. 433,358

Int. Cl.³ A47C *19/02*; F16B *9/00*

U.S. Cl. 5—201 **5 Claims**



3. In a bed frame having a pair of elongate side rails and a pair of cross-rails, the cross-rails each having two elongate sections each pivotally secured at one end to a different side rail adjacent an end of the respective side rail, the improvement comprising:

releasable locking means for rigidly interconnecting two opposed cross-rail sections, the releasable locking means comprising,

a manually graspable locking member rotatably mounted on one cross-rail section, the member having a stem and an elongate segment extending radially from the stem, the cross-rail section having a first aperture spaced from the locking member,

a protrusion on the other cross-rail section, the cross-rail section having a second and elongate aperture spaced from the protrusion,

the locking member being receivable in a first orientation in the second and elongate aperture and the protrusion being receivable in the first aperture when the two cross-rail sections are aligned and juxtaposed such that the cross-rail sections are rigidly connected with a positive lock formed by rotating the locking member to a second orientation;

an elongate center brace having two ends, the center brace being joined at its ends to the opposed rails of the bed frame by means of a lock plate mechanism, the lock plate mechanism comprising,

a plate having two fingers formed thereon in laterally spaced relation, the fingers receivable in slots formed in each of the opposed rails to which the center support is joined, the slots being in equivalent spaced relation to the fingers,

a locking pin carried by the plate and extending generally perpendicular from the surface thereof, the locking pin being adjacent one of the fingers and extending through an aperture in the plate, the pin being urged through the aperture by resilient means,

the lock plate serving to positively lock the center brace in position on the rails when the fingers are inserted through the slots and the plate laterally shifted in one direction whereby the locking pin registers in a slot which has received a finger thereby preventing lateral motion of the center brace in the opposite direction;

a pair of headboard brackets, each attachable to a side reail adjacent the end thereof, each side rail having a pair of outwardly facing laterally spaced protrusions thereon, the headboard bracket comprising,

an L-shaped member having a longitudinal and transverse part,

plural elongate slots formed on the transverse portion for receiving a headboard attaching means,

a pair of upper and laterally spaced slots,

a pair of lower and laterally spaced slots,

the pairs of slots being each so spaced to receive the side rail protrusions therein, the protrusions having means thereon to engage the bracket against movement in an outward direction.

4,536,905

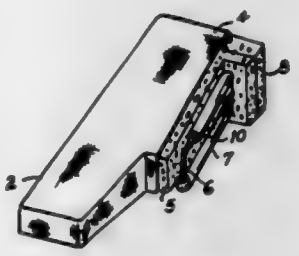
ANTI-SNORE PILLOW

Damian G. DeSantis, 1911 Greenfield Dr., El Cajon, Calif. 92021

Filed Feb. 23, 1984, Ser. No. 582,826

Int. Cl.³ A47C *20/00*

U.S. Cl. 5—434 **5 Claims**



1. A pillow for controlling the position of the head of a reclining subject to prevent snoring which comprises:

a resilient support pad for said subject's head;

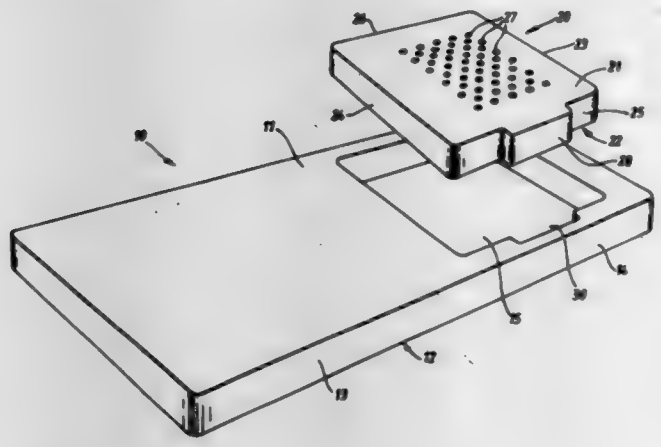
a pair of extensions of said support pad forming a slot around said subjects shoulders; and

a stiffening brace imbedded in the middle of said support pad, directly aligned with said slot.

4,536,906
MATTRESS WITH APERTURED INSERT

Sydney A. Varndell, Andover; Douglas R. Lawson, Minster, and Michael W. Fountain, Gillingham, all of England, assignors to Thomas Jourdan PLC, Windson, England

Filed Apr. 28, 1983, Ser. No. 489,386
Claims priority, application United Kingdom, Jun. 8, 1982, 8216656
Int. Cl.³ A47C *27/14*; A47D *7/00*
U.S. Cl. 5—468 5 Claims



1. A mattress comprising:

a foam mattress body with a main portion and a head portion, and a top surface and a bottom surface; and

a removable foam insert having a top face and a bottom face, and, distributed in a predetermined region thereof, a plurality of perforations each extending from the top face through to the bottom face;

the mattress body having an aperture in the head portion for receiving the insert, which aperture opens out on the top surface, extends from the top surface to the bottom surface of the mattress body and has a continuous perimeter shaped to correspond generally to the outline of the insert;

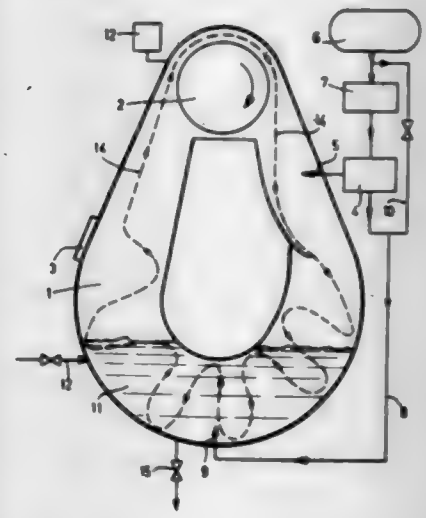
the thickness of the insert being such that the top face thereof lies substantially flush with the top surface of the mattress body, and the arrangement of the perforations providing air passages communicating with the underside of the mattress for ventilation of the top face of the insert, the perforations being grouped asymmetrically relative to the outline of the insert, and the insert and the aperture being so correspondingly shaped that the insert can only be fitted in a required orientation, the insert being generally rectangular, and having a key portion projecting from one side, the aperture having a correspondingly shaped recess for receiving the key portion.

4,536,907
PROCESS FOR EFFECTING AN ACCELERATED NEUTRALIZATION OF CELLULOSE TEXTILE SUBSTRATES IMPREGNATED WITH ALKALINE HYDROXIDE

Jean-Pierre Zumbrunn, Eaubonne; Jean Levielle, Chaource; André Thomas, Troyes, and Francoise Grangette, Bourg-la-Reine, all of France, assignors to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude, Paris, France

Filed Nov. 23, 1983, Ser. No. 554,797
Claims priority, application France, Nov. 29, 1982, 82 19963
Int. Cl.³ D06B *3/10*
U.S. Cl. 8—149.1 25 Claims

25. A process for neutralizing a cellulose textile substrate, impregnated with alkaline hydroxide which is at least in part fixed on the cellulose in the form of alkali-cellulose, comprising squeezing the wet cellulose textile to remove aqueous alkaline hydroxide liquid therefrom, thereby leaving a wet cellulose textile;



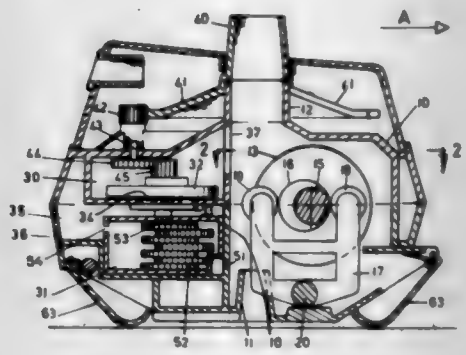
rapidly neutralizing said wet cellulose textile to a pH of at most 8.3 by contacting said wet cellulose textile with a neutralizing fluid containing carbon dioxide; and

rinsing said neutralized cellulose textile with water.

4,536,908
SUCTION CLEANERS

Johann N. Raubenheimer, Bedfordview, South Africa, assignor to Peacock Investments (Proprietary) Limited, Johannesburg, South Africa

Filed Mar. 30, 1983, Ser. No. 480,360
Claims priority, application South Africa, Apr. 2, 1982, 82/2293
Int. Cl.³ E04H *3/20*
U.S. Cl. 15—1.7 6 Claims



1. A suction cleaner head for use on a submerged surface comprising:

a turbine housing,

a suction inlet in the base of the housing,

a shaft journalled in the housing,

a turbine mounted on the shaft,

a pair of rockers for supporting the housing at least partially on a surface, each rocker being pivoted to the housing,

a pair of eccentrics on the turbine shaft, each eccentric being engaged with one of said rockers for providing a rocking action to a rocker,

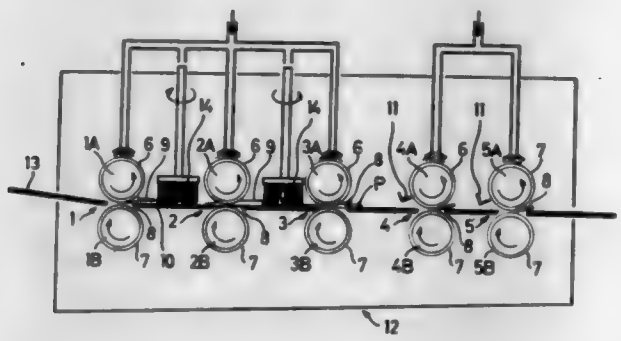
a pair of spaced apart friction feet pivoted to the underside of each rocker for contacting the surface,

means for resiliently biasing each of said feet to an inclination so that each of said feet can perform a limited rocking motion relatively to the rocker when forces directed towards the surface are applied to the rocker, and an outlet from the housing adapted to be connected to a flexible hose.

4,536,909
APPARATUS FOR TREATING FLEXIBLE PRINTING PLATES PRODUCED BY PHOTOCHEMICAL METHODS

Arnulf Bürger; Karl-Heinz Scharff; Kurt Geiger; Günther Schnee, and Hartwig Pieper, all of Ludwigshafen, Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

Filed Feb. 24, 1984, Ser. No. 583,205
Int. Cl.[3] G03D *5/06;* A46B *13/04*
U.S. Cl. 15—4 3 Claims



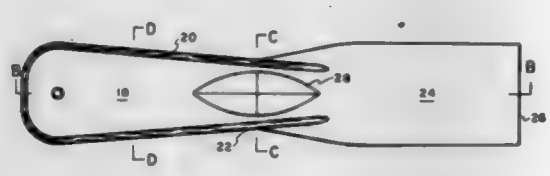
1. An apparatus for treating flexible printing plates produced by a photochemical method, in particular those produced from photopolymerizable substances and exposed with actinic light, which apparatus comprises a housing through which the plates are transported and in which they are washed out and cleaned, said housing including five roller pairs which are mutually spaced in the direction of transport of the plates, table sections which are located between said roller pairs and over which the plates are transported by the rollers, and brushes located between the roller pairs, rotating about axes normal to said table sections and having washout liquid supplied thereto, the first three pairs of rollers effecting transportation while the two subsequent pairs of rollers effect cleaning and partial drying in addition to transportation,

wherein the three upper transport rollers and the first upper cleaning roller downstream of the pairs of transport rollers are covered with velour, the corresponding lower rollers and both rollers of the second pair of cleaning rollers are covered with a textile fabric, and peeling members are located, parallel to the roller axis, at all of the upper rollers, the peeling members at the first and second upper transport rollers being equipped with hold-down means.

4,536,910
SPATULA TYPE HAND TOOL

Ronald M. Clark, 105 Factory, Addison, Ill. 60101

Filed Mar. 12, 1982, Ser. No. 357,724
Int. Cl.[3] B05C *17/10*
U.S. Cl. 15—104 S 6 Claims



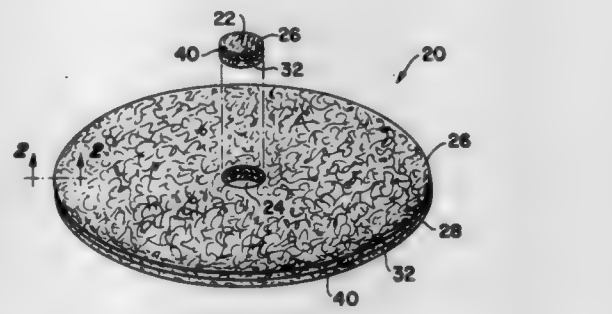
1. An improved spatula type hand tool of the character having an integrally formed handle portion and blade portion with a transition area therebetween and wherein said improvement comprises,

a reinforcing blister having a compound curved configuration with an apex disposed substantially on the longitudinal axis of said tool, across said transition area, extending at opposite ends thereof into said handle and blade portions respectively, and of a thickness which is relatively less at said apex than at the base thereof.

4,536,911
FLOOR CLEANING PAD

Peter G. Demetriades, 2118 Coleman Pl., Henderson, N.C. 27536

Filed Dec. 12, 1984, Ser. No. 680,826
Int. Cl.[3] A47L *13/16*
U.S. Cl. 15—230.12 21 Claims



1. A reversible hard-floor cleaning pad comprising:

a first porous non-woven air-layered web having an upper, floor-cleaning surface and an opposing lower surface,

said first web upper cleaning surface being adapted to clean hard surface floors when placed on the floor and rotated about a vertical axis passing through the center of said first web at super high speeds of at least 1000 revolutions per minute,

a second porous non-woven air-layered web having a lower, floor cleaning surface and an opposite upper surface,

said second web lower cleaning surface being adapted to clean hard surface floors when placed on the floor and rotated about said vertical axis at super high speeds of at least 1000 revolutions per minute,

said second web being disposed parallel to and spaced from said first web with said first web lower surface facing said second web upper surface,

a flexible wet-laid nonwoven strata layer having uniform directional strength and an upper layer surface and an opposite lower layer surface,

said strata layer being disposed between said first web and said second web, and

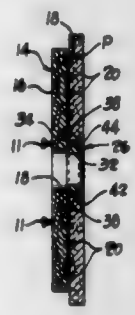
a bonding means for bonding said first web lower surface directly to said upper layer surface and said second web upper surface directly to said lower layer surface,

said first web, said strata layer, said second web, and said bonding means defining a hard-floor cleaning pad having general uniform strength in all directions perpendicular to said vertical axis, so as not to distort at said super high speeds.

4,536,912
COUPLER DEVICE FOR FLOOR MAINTENANCE PAD OR THE LIKE

Terrance J. Malish, 2520 Red Fox Pass, Willoughby, Ohio 44094

Filed Nov. 14, 1983, Ser. No. 550,942
Int. Cl.[3] A47L *11/14, 11/40*
U.S. Cl. 15—230.17 4 Claims



1. A coupler device of the type for detachably mounting a floor maintenance pad, such as for cleaning, stripping, polish-

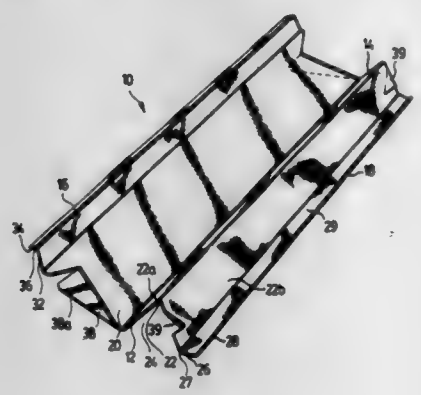
ing, scrubbing or the like, to a pad holder member for use with a floor maintenance machine, said coupler device comprising a unitary body member defining a centrally disposed hub portion for centering said pad relative to said pad holder, said hub portion having a base portion extending radially outwardly at one end and adapted for detachable securement to said pad holder member, said hub portion including at its other end a radially extending flange portion with said base and flange portions being laterally spaced apart a distance sufficient to accommodate the transverse thickness of said maintenance pad therebetween, and said hub portion including a plurality of tine elements extending radially therefrom and disposed for penetrating frictioaal coacting engagement with the material of said maintenance pad to restrain rotational movement of said maintenance pad relative to said pad holder and to frictionally center and lock said pad relative to said pad holder during usage of said floor maintenance machine, wherein said flange portion includes arcuate and flat portions defining a maximum transverse dimension which is greater than a central opening formed in said maintenance pad and a minimum transverse dimension that is less than said maximum transverse dimension to facilitate installation of said maintenance pad relative to said hub portion whereby outer peripheral edge portions of said flange portion are disposed in overlieing relationship relative to the corresponding inner peripheral edge defined by the hole in said maintenance pad.

4,536,913

PAINT GUARD HAND TOOL

Janusz Morawski, 169 Dolomite Dr., Downsview, Ontario, Canada

Filed Jul. 17, 1984, Ser. No. 631,813
Int. Cl.³ B05C *11/00*
U.S. Cl. 15—257 R **10 Claims**



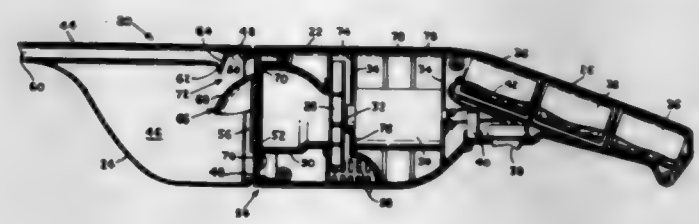
1. A paint guard hand tool comprising:
a base panel, defining upper and lower surfaces, forward and rearward edges and two ends;
a ridge formation extending generally upwardly from the forward edge of the base panel, the ridge formation including a front panel having a lower edge;
first trough-defining member means extending forwardly from the front panel, the first trough-defining member means defining an upwardly directed trough and including an upwardly and forwardly directed first lip;
a generally upwardly and rearwardly directed wall member extending from the rearward edge of the base panel;
second trough-defining member means extending generally rearwardly from the upper edge of the wall member, the second trough-defining member means defining a downwardly directed trough and including a downwardly and rearwardly directed second lip, and,
base stop members extending downwardly from the base panel.

4,536,914

WET-DRY VACUUM CLEANER

Morris M. Levine, Scarsdale, N.Y., assignor to CIC Int'l Corp., New York, N.Y.

Filed Mar. 7, 1984, Ser. No. 587,227
Int. Cl.³ A47L *5/24*
U.S. Cl. 15—344 **10 Claims**



1. A vacuum cleaner comprising:
a motor;
a generally cylindrical housing having a front end and a back end, said housing enclosing said motor;
a blower driven by said motor and disposed ahead of said motor within said housing, rotation of said blower producing a vacuum;
a canister removably attached to the front end of said housing, said canister having an intake nozzle for receiption of dirt, liquid and air drawn into said nozzle in response to a vacuum developed by said blower;
said canister including a storage chamber disposed alongside said nozzle for the storage of matter drawn in via said nozzle, said canister being closed off at a front end thereof for holding said matter when said canister is in an erect position corresponding to a vertical orientation of the longitudinal axis of said nozzle;
deflection means disposed at an interface between said canister and said housing for deflecting liquid and dirt drawn in via said nozzle away from said housing and into said chamber;
said nozzle comprising a posterior port by which said nozzle communicates with said chamber, and said deflection means comprising a flexible closure member fully closing off said posterior port of said nozzle, said closure member being sufficiently flexible to deflect away from said posterior port under vacuum forces to open said posterior port, said closure member being oriented for direction of fluids transversely toward a central portion of said chamber; and wherein
said closure member, upon a closing of said posterior port, secures said storage chamber against a spilling of liquid therefrom during erect and inclined orientations of said canister.

4,536,915

MACHINE FOR TRUING ELECTRICAL COLLECTORS AND THE LIKE

Jean Guglielmo, 58 Rue Pasteur, 69300 Caluire, France

Filed Mar. 17, 1983, Ser. No. 476,282
Claims priority, application France, Mar. 22, 1982, 82 05261
Int. Cl.³ A47L *7/04*
U.S. Cl. 15—345 **12 Claims**

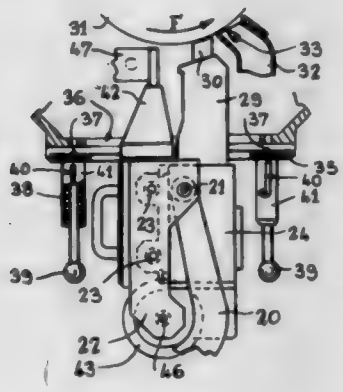
1. A machine for truing electrical connection members of a rotor rotatably mounted with respect to non-rotating casing parts of electrical machinery such as a traction motor, the machine having a tool holder system attachable to said non-rotating parts and comprising:
a first carriage located between the machinery and supported to roll in a longitudinal direction;
a second carriage supported on the first carriage and operative to roll in a transverse direction;
a turret borne by the second carriage and operative to rotate about a vertical axis;
arm means articulated at one end to the turret about a substantially horizontal axis;

a first support articulated about a horizontal axis to the arm means at the other end thereof, and rotatable about a vertical axis;

a second support articulated to the first support about a substantially horizontal axis;

means for fixing the second support to a non-rotating part of the machinery;

a tool-holder carriage borne by the second support to move with respect thereto in a substantially horizontal direction;



means for driving the tool-holder carriage horizontally with a reciprocation motion;

a grinding tool borne by said tool-holder carriage;

and means for advancing said tool-holder carriage toward the rotor members to be trued.

11. The machine of claim **1**, wherein the machine further includes suction means adjacent to the grinding tool for collecting grinding dust, and a blowing nozzle at said suction means and operative to direct an air jet against the member being ground.

4,536,916

DOOR HOLDER-CLOSER HAVING A CONTROL SIGNAL OPERATED HOLD-OPEN FUNCTION AND A MECHANICAL OVERRIDE FACILITY

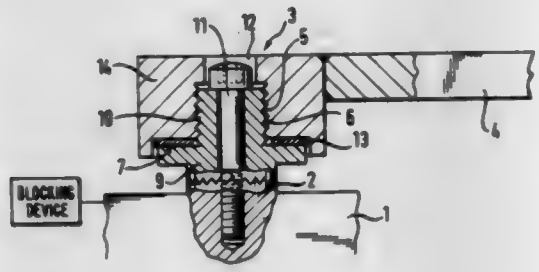
Ralf Storandt, Leonberg, and Karl Mettenleiter, Weil der Stadt, both of Fed. Rep. of Germany, assignors to Geze GmbH, Fed. Rep. of Germany

Filed Oct. 17, 1983, Ser. No. 542,730

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1982, 3246457

Int. Cl.³ E05F *15/20*

U.S. Cl. 16—48.5 **8 Claims**



1. A door holder-closer having a control signal operated hold-open function and a mechanical override facility, said door holder-closer being adapted to hold a door in any desired open position to which it is moved from a closed position and comprising a housing for mounting on one of a door and fixed structure adjacent thereto; a unit for generating a closing force contained in said housing; a drive axle extending from said unit out of said housing; lever means connectable between said drive axle and the other one of said door and said fixed structure; a mechanically overridable clutch disposed between said lever means and said drive axle for transmitting torque from said lever means to said drive axle to rotate the same on opening of said door, whereby to energize said unit; and a blocking device for blocking said unit to generate a holding force and prevent said unit from moving said door in the door closing direction, said blocking device being capable of being switched in and out by control signals; wherein said overridable clutch between said lever means and said drive axle comprises first and second interengaging threaded elements, a first abutment provided on said first threaded element, a second abutment provided on said second threaded element and confronting said first abutment, wherein, in said open position of said door, said confronting first and second abutments are in frictional engagement with one another, thus generating a frictional locking force and frictionally locking said lever means to said drive axle; wherein said threaded elements are handed so that manual forced closing movement of said door from a said open position to said closed position overcomes said frictional engagement without overcoming said holding force and thus produces relative rotation of said first and second threaded elements and separation of said confronting first and second abutments, thus permitting manual relative rotation between said drive axle and said lever means to thereby manually move the door toward said closed position, and wherein said frictional locking force is less than said holding force.

4,536,917

FURNITURE HINGE HAVING A SPRING BIASED PIVOTING PRESSURE MEMBER

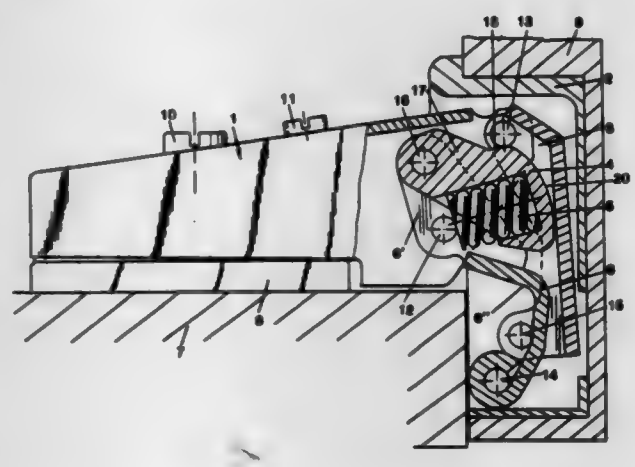
Erich Röck, Höchst, and Klaus Brüstle, Lauterach, both of Austria, assignors to Julius Blum Gesellschaft m.b.H., Höchst, Austria

Filed Jul. 7, 1983, Ser. No. 511,750

Claims priority, application Austria, Nov. 16, 1982, 4161/82

Int. Cl.³ E05F *1/14*

U.S. Cl. 16—288 **4 Claims**



1. A hinge comprising:

a hinge arm adapted to be mounted on an article of furniture and having first and second hinge axles;

a hinge casing adapted to be mounted on a door of the article of furniture and having third and fourth hinge axles;

an internal hinge link in the form of a two-arm lever including a first arm having first and second ends pivotally mounted on said first and third hinge axles, respectively, and a second arm extending from said first hinge axle into said hinge arm;

an external hinge link having first and second ends pivotally mounted on said second and fourth hinge axles, respectively;

a pressure member pivotally mounted directly to said second arm of said internal hinge link on a seperate pivot at a position spaced toward said hinge arm and spaced from said first and second hinge axles, said pressure member having a contact surface;

spring means for continuously abutting said first hinge axle and for urging said pressure member to pivot about said separate pivot to maintain said contact surface in direct abutment with said second hinge axle throughout both the open and closed positions of the hinge; and

said pressure member always extending from said position spaced from said first and second hinge axles in a direction between said first and second hinge axles and toward said hinge casing to a position between the second and fourth hinge axles, and wherein said pressure member is adjacent said hinge casing in the closed position.

4,536,918

TORSION BAR VEHICLE DOOR HINGE ASSEMBLY WITH HOLD OPEN MECHANISM

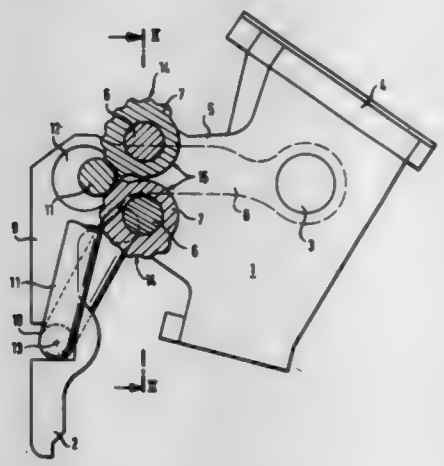
Ernst Brockhaus, Remscheid-Hasten, Fed. Rep. of Germany, assignor to Ed. Scharwächter GmbH & Co. KG, Remscheid, Fed. Rep. of Germany

Filed Aug. 9, 1983, Ser. No. 521,714

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1982, 3229766

Int. Cl.³ E05D *11/10*

U.S. Cl. 16—308 **11 Claims**



1. A door hinge assembly including a door stop mechanism for a motor vehicle comprising: a first and a second hinge member mounted relative to each other for pivotal motion about a hinge axis to mount a door for swinging movement between an open and a closed position; a torso bar spring supported at one of said hinge members, said torsion bar spring having a load arm projecting over the height of said hinge assembly and directed parallel to said hinge axis; a pair of abutment rollers rotatably mounted at the other of said hinge members at a position spaced from said hinge axis; said abutment rollers being located to be always substantially simultaneously engaged by said load arm of said torso bar spring at a position always between said rollers to form a catch device at least for said open position of said door; each of said abutment rollers being formed to comprise a smaller diameter portion and a larger diameter portion and bearing means rotatably mounting said abutment rollers about fixed respective bearing axes, said bearing axes being spaced a fixed distance from each other, wherein said distance is always smaller than said larger diameter portion of said rollers.

4,536,919

BREAST PROCESSOR

Miles L. Cashwell, Marietta, and Worthy D. Peterman, Cumming, both of Ga., assignors to Cagles', Inc., Atlanta, Ga.

Filed Mar. 18, 1983, Ser. No. 476,799

Int. Cl.³ A22C *21/00*

U.S. Cl. 17—11 **3 Claims**

1. In apparatus for cutting poultry carcasses into segments including a surface conveyor for movement along a predetermined path comprising parallel conveyor halves which define a space therebetween, a plurality of carcass supports mounted at intervals along said conveyor for carrying poultry carcasses along the path, each of said carcass supports including a carcass support bar extending along said path, said carcass support bar being approximately V-shaped in cross section whereby the previously eviscerated carcass of a bird is mounted on a carcass support with the carcass support bar extending into the eviscerated cavity of the bird and the back bone of the carcass is supported by the V-shaped carcass support bar, a cutting station positioned along the path including a rotatable backbone-cutting disk for cutting longitudinally through the backbones of carcasses, said backbone cutting disk being positioned above the path and located in a plane parallel to the path and extending toward the path of the carcass support bar for cutting the backbone of a carcass, the improvement therein of backbone guide means extending on opposite sides of the backbone-cutting disk for bearing downwardly against the carcass



on opposite sides of the backbone to press each carcass downwardly to urge the backbone of the carcass into the V-shaped carcass support bar and to guide the backbone into the backbone-cutting disk, and a breast-cutting disk protruding upwardly through said space between said conveyor halves for engaging and cutting the carcasses moved by the conveyor, the improvement therein including a breast support bracket carried by said surface conveyor comprising a pair of bracket elements mounted on the conveyor halves at positions adjacent each carcass support and the bracket elements together forming a surface against which the breast of a poultry carcass rests.

4,536,920

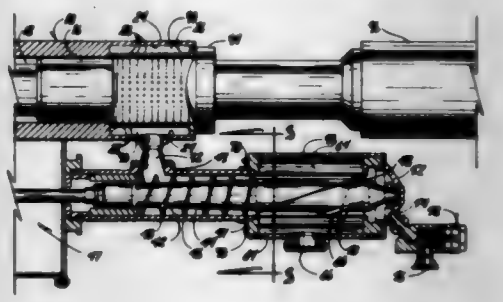
TWO STAGE MEAT STRAINER

Andre G. Amersfoort, Montfoort, Netherlands, assignor to Boldt Industries, Inc., Des Moines, Iowa

Filed Oct. 11, 1983, Ser. No. 540,653

Int. Cl.³ A22C *17/00*

U.S. Cl. 17—46 **12 Claims**



1. A method for separating and removing meat from bones by utilizing a pair of first and second communicating presses, each press having a cylindrical pressure chamber for containing meat and bones to be separated, a sealing wall for closing off one end of the pressure chamber, a cylindrical lining sleeve within the pressure chamber having openings extending therethrough, the openings in the sleeve of the second press being smaller in diameter than the openings of the sleeve in the first press and a collector channel in the pressure chamber surrounding said lining sleeve, said method comprising:

introducing a combination of meat and bones to be separated into said pressure chamber of said first press,

exerting a pressure on the contents of said pressure chamber of said first press whereby said combination is partially separated by forcing meat and some bone outwardly through the openings of said sleeve of said first press into said collector channel of said first press,

advancing the partially separated combination of meat and bones in said collector channel of said first press into said pressure chamber of said second press,

compressing the partially separated combination of meat and bones within said pressure chamber of said second press whereby meat is forced outwardly through the openings of said sleeve of said second press into said collector channel of said second press so as to further separate the meat from the bone.

4,536,921

CABLE CLAMP

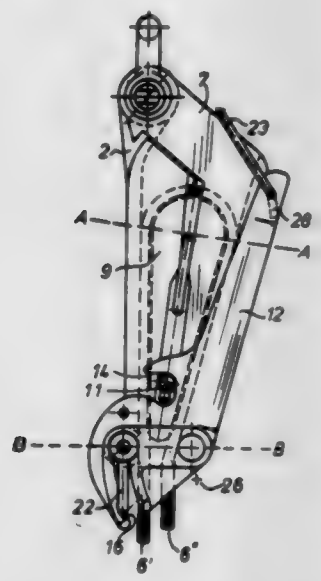
Richard Brendel, Pottenstein, and Herbert Conrad, Bayreuth, both of Fed. Rep. of Germany, assignors to Geroh GmbH, Mechanische Systeme, Waischenfeld, Fed. Rep. of Germany

Filed Oct. 27, 1982, Ser. No. 436,912

Claims priority, application Fed. Rep. of Germany, Oct. 30, 1981, 3143217; May 12, 1982, 3217885

Int. Cl.³ F16G *11/00*

U.S. Cl. 24—132 WL **11 Claims**



1. A cable clamp with clamping jaws, a clamping wedge and a clamping closing and locking device characterized by:

(a) a base having a fastening device for supporting the clamp at the upper end and including a clamping surface for engaging a cable and a bolt at the lower end with a nut tightenable thereon,

(b) an angular-shaped clamping jaw pivotally attached on a pivot at the upper end of the base to open and close therewith and including a clamping surface for engaging said cable,

(c) a clamping wedge mounted to slide between said base and said clamping jaw toward and away from said upper end including guide means and a carrier bolt thereon, said wedge movable upwardly toward a cable releasing position and downwardly toward a cable clamping position, and

(d) a breechblock pivotally mounted on a second pin at the lower end of said clamping jaw having first surfaces for driving the carrier bolt and clamping wedge downwardly between said base and jaw into said cable clamping position wherein said cable is wedged and held by clamping surfaces on said jaw and base against said wedge when said breechblock is pivoted towards a closed position, and including second surfaces forming a slot open at the end adapted to engage and receive said bolt on said base for moving the lower ends of said clamping jaw and base toward each other to close said clamp against said cable on said wedge as said breechblock is pivoted towrd a closed position,

said breechblock including a closing depression adjacent said slot for receiving said nut when tightened on said bolt to hold said base and jaw in a cable tensioning position intermediate said open and closed positions wherein tension can be applied to said cable by pulling on a free end of said cable, and further including a locking depression adjacent an inner end of said slot for receiving said nut when tightened on said bolt for securing said base and jaw in said cable clamping position tightly against a cable on said wedge, said second surfaces forming an angle of 82° to 88° with a connecting line running between said bolt on said base and said second pin when said clamp is in said cable clamping position.

4,536,922

ATTACHMENT DEVICE FOR A DECORATIVE ARTICLE

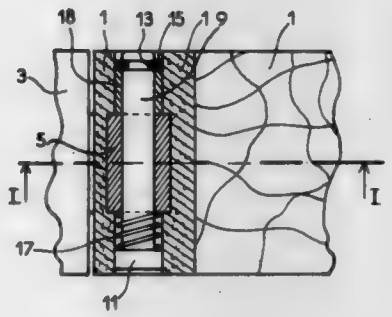
Gerard Brassoud, Faverges, France, assignor to S. T. Dupont, Paris, France

Filed Nov. 4, 1983, Ser. No. 549,343

Claims priority, application France, Nov. 4, 1982, 82 18501

Int. Cl.³ A44C *5/18*

U.S. Cl. 24—265 B **14 Claims**



1. An attachment device for attaching a strap to a decorative article, comprising:

at least one lateral support provided on said article, said lateral support being provided with a throughgoing bore;

a loop portion formed on said strap;

a shaft slidably mounted in said throughgoing bore of said lateral support, said shaft also passing through said loop portion of said strap;

an enlarged head portion provided on a first end of said shaft;

biasing means for biasing said head portion on said first shaft end away from said lateral support; and

removable locking means for engaging a second end of said shaft and thereby preventing withdrawal of said shaft from said bore provided in said lateral support;

said shaft being movable between two extreme positions under the biasing action of said biasing means, a first position achieved by moving said shaft against said biasing force and wherein said removable locking means is accessible outside of said attachment device for removal thereof, and a second position achieved by displacement of said shaft under the influence of and in the direction of said biasing force and wherein said locking means is secured and withdrawn to a position interior to said attachment device and is therefore substantially nonaccessible.

4,536,923

SEPARABLE SLIDE FASTENER

Shoetsu Murakami, Toyama, Japan, assignor to Yoshida Kogyo K.K., Tokyo, Japan

Continuation of Ser. No. 324,818, Nov. 25, 1981, abandoned. This application Jan. 23, 1984, Ser. No. 572,615

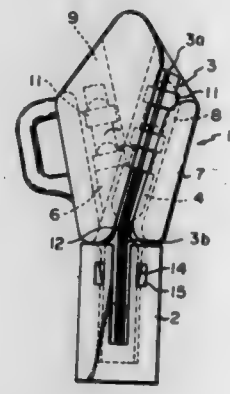
Claims priority, application Japan, Dec. 26, 1980, 55-186401

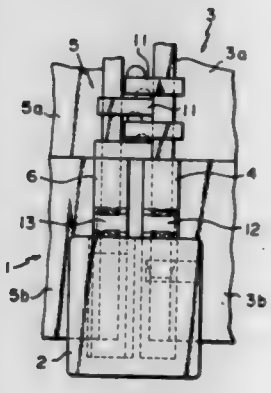
Int. Cl.³ A44B *19/00*

U.S. Cl. 24—433 **3 Claims**

1. A separable slide fastener comprising a pair of longitudinally extending stringer tapes with fastener elements on one edge of each stringer which interlock when brought together transversely in the plane of the fastener including a retainer pin secured to the end of the tape of one of the stringers and connected to a retainer, and a separable plastic pin sourced to the end of the tape of the other stringer annd longitudinally removably received in the retainer, characterized in that at least the separable pin is provided with a thin portion of reduced

dimension extending transversely across the pin at an intermediate portion thereof adjacent to, but outside the retainer when





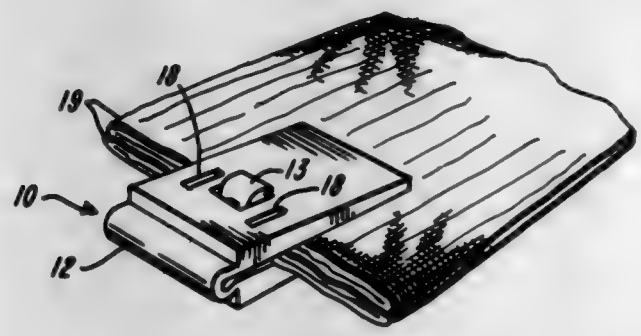
the separable pin is received therein making the separable pin flexible at such thin portion.

4,536,924

ONE PIECE CLAMPING DEVICE

Patrick Willoughby, 712 Elberon Ave., Dayton, Ohio 45403

Filed Mar. 5, 1984, Ser. No. 586,267
Int. Cl.³ A44B *9/10*; G09F *3/08*
U.S. Cl. 24—487 **8 Claims**



1. A one piece adjustable clamping device for paired or matching articles of clothing comprising

(A) A proximal, flexible hinge portion of lesser thickness than medial and distal portions;

(B) distal portions having interior, non-penetrating substantially flat gripping surfaces; and

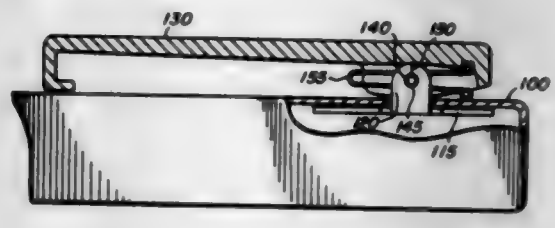
(C) male and female medial portions, said male medial portion having a male locking member one surface of which is toothed and the other surface of which is non-toothed and said female medial portion having a female locking cavity and a locking ledge(s) extending therein, wherein said toothed surface of said male locking member meshes with said locking ledge(s); said male medial portion includes a male guide(s) and said female medial portion includes a female guide channel(s) for receiving said guide(s) and a spur to guide the non-toothed surface of said male locking member into position in said female cavity and retain it.

4,536,925

BELT CLIP ASSEMBLY WITH A CONTROLLED FAILURE MODE

Nancy G. Boothe, Brighton, Mass., and Anthony M. Potts, Lauderdale Lakes, Fla., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Oct. 11, 1983, Ser. No. 540,972
Int. Cl.³ A45F *5/02*
U.S. Cl. 24—511 **7 Claims**



1. A mounting clip assembly having a controlled mode of failure, comprising:

a housing member including an inner surface and an outer surface;

a mounting clip;

a body member adjacent said inner surface of said housing member;

a pair of tabs attached to said body member and projecting substantially perpendicular therefrom, each of said tabs including an outer edge and an aperature, said tabs projecting through slots in said housing member from said inner surface to said outer surface;

pivot means attached to said mounting clip, for pivotably attaching said mounting clip to said body member; and

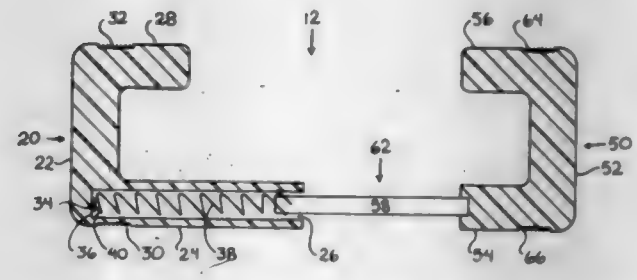
said tabs include controlled failure means for allowing said mounting clip and said housing member to separate upon application of a predetermined force between said housing member and said clip thereby minimizing damage to said housing member and said mounting clip.

4,536,926

SKI CLIP HOLDING DEVICE

Victor Pantaleo, 7854 Redondo La., Orland Park, Ill. 60462

Filed Jan. 4, 1983, Ser. No. 568,043
Int. Cl.³ A44B *21/00*; E05B *73/00*
U.S. Cl. 24—523 **15 Claims**



1. A generally large C-shaped ski clip for holding skis in pairs, said ski clip having a hollow section and a rod section joined together to form said generally large C-shaped clip, wherein:

(a) said hollow section is generally of a J-shape, said hollow section comprising a long, hollow arm of a generally square cross-section, a solid forward leg generally parallel to said long, hollow arm, a trunk connecting a first end of said long, hollow arm with a first end of said solid forward leg, said trunk being substantially perpendicular to said long, hollow arm and said solid forward leg;

(b) said rod section is generally of a small C-shape and combines with said J-shape to form said large C-shape;

(c) a rod is secured to one end of said rod section, and is slideably mounted and spring secured within said long hollow arm;

(d) said ski clip and said rod are of generally square cross-section; and

(e) said rod and said hollow section made in a male-female relationship.

4,536,927

APPARATUS FOR MANUFACTURING ENDLESS NEEDLED PAPER MACHINE FELTS

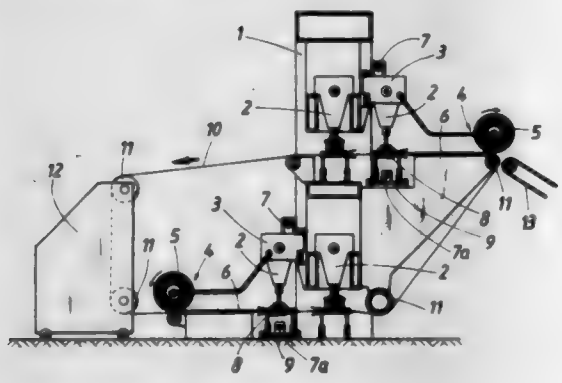
Günther Feyerl; Klaus Minichshofer, both of Linz, and Hans G. Pum, Wels, all of Austria, assignors to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Oct. 31, 1983, Ser. No. 547,399

Claims priority, application Austria, Dec. 10, 1982, 4494/82

Int. Cl.³ D04H *18/00*

U.S. Cl. 28—110 **3 Claims**



1. In apparatus for manufacturing an endless needled paper machine felt up to a predetermined maximum width, the felt comprising at least one ply formed by a plurality of overlapping loops of a sliver web, which apparatus comprises

a needling machine having a working width equal to said predetermined maximum width and

a sliver web feeder operable to feed a sliver web to said needling machine, wherein the improvement comprises

a needling device of smaller working width than the needling machine between said needling machine and said sliver web feeder, the needling device and the feeder having the same working width, and

means for reciprocating the needling device with the feeder in unison throughout the working width.

4,536,928

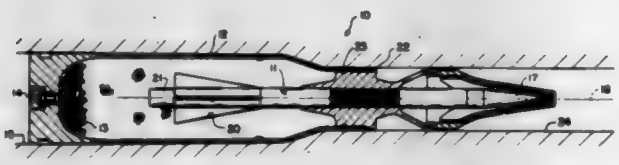
MANUFACTURE OF PROJECTILES

Roger W. Nicklas, Hamel; John E. Reynolds, Crystal, and Randall L. Schiestl, Brooklyn Park, all of Minn., assignors to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 17, 1983, Ser. No. 552,651

Int. Cl.³ B21K *21/06*

U.S. Cl. 29—1.2 **8 Claims**



1. The method of making a long rod penetrator having an axis and a rearward portion which comprise stamping from sheet metal a plurality of fin sections having base portions configured for superficial engagement with said rearward portion and vane portions extending therefrom in orthogonal planes, and laser welding said fin sections to said rearward portion so that said vanes lie in common planes passing through said axis.

4,536,929

DEVICE FOR MANUFACTURING A SHUTTER LINK FOR A MULTI-LINK OVERHEAD SHUTTER OR ROLLER BLIND

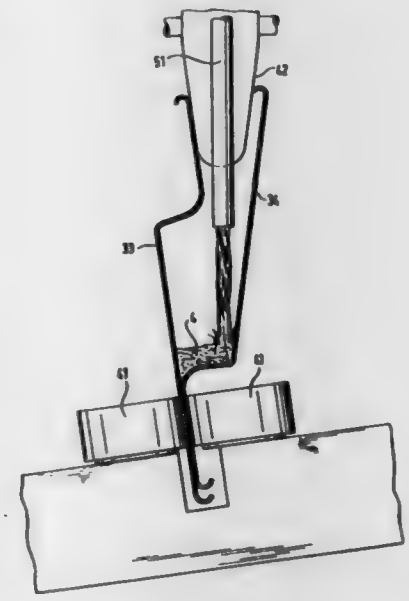
Gustav Riexinger sen., Brackenheim-Hausen, and Rudolf Nagel, Schöneich, both of Fed. Rep. of Germany, assignors to Tuerenwerke Riexinger GmbH & Co. KG, Fed. Rep. of Germany

Division of Ser. No. 308,552, Oct. 2, 1981, Pat. No. 4,470,444. This application Aug. 11, 1983, Ser. No. 522,454

Claims priority, application PCT Int'l Appl., Jul. 30, 1980, PCT/EP80/00066

Int. Cl.³ B21B *15/00*; B21D *39/03*; B23P *23/04, 25/00*

U.S. Cl. 29—33 K **13 Claims**



1. A device for manufacturing, in a continuous manner, shutter links for a multilink overhead-shutter or roller blind, said shutter links each comprising a pair of leaves which are bent into mutual engagement along their opposite longitudinal edges and which are shaped to form a cavity between said edges, said cavity being filled with a heat insulating compound, said device comprising a supply stand supporting two metallic strip coils, a first roll forming machine located along a path extending from said supply stand, said roll forming machine being provided with drive and shaping rolls to drive metallic strips from said strip coils and to shape the strips into the shape of the leaves of the shutter link elements and a second roll forming machine also located along said path beyond said first roll forming machine, said second roll forming machine having first pressure rolls adapted to force the shaped strips together along one longitudinal edge thereof, a spreading element positioned to extend between and force apart the other longitudinal edges of said strips, a filling nozzle positioned downstream of said spreading element for injecting a heat insulating compound between said forced apart other edges and into the cavity between the leaves and closing rolls arranged downstream from said filling nozzle to force the shaped strips together along said other longitudinal edge.

4,536,930

PROCESS AND MACHINE FOR INSERTING POINTS IN A MANDREL

Bruno P. Bompard, and Alain Bruyere, both of Lyons, France, assignors to Commissariat a l'Energie Atomique, Paris and Societe J. Brochier & Fils, Villeurbanne, both of, France

Division of Ser. No. 326,755, Dec. 2, 1981, Pat. No. 4,437,221. This application Mar. 9, 1984, Ser. No. 587,977

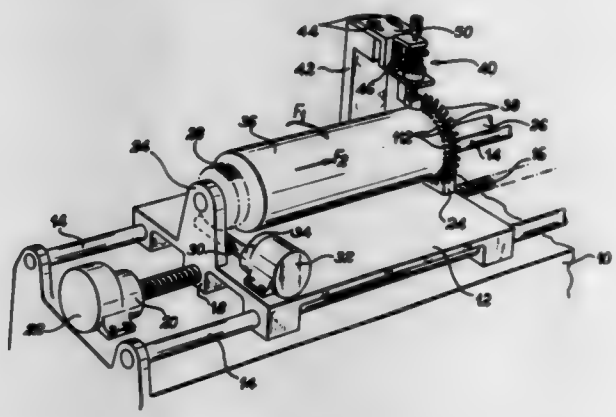
Claims priority, application France, Jul. 16, 1981, 8113868

Int. Cl.³ B21B *15/00*; B21D *39/03*; B23P *23/04, 25/00*

U.S. Cl. 29—33 K **4 Claims**

1. A machine for inserting points in a supporting mandrel made from a material able to receive the points by direct insertion under pressure, in order to form axial rows of points

aligned in accordance with the generatrixes of the mandrel, and circumferential rows of points aligned in accordance with the circumference of the mandrel, said machine comprising means for supporting the mandrel in rotary manner, a working head carrying means for inserting the points in the mandrel, and displacement means for carrying out a given relative displacement parallel to the closest generatrix of the mandrel and a step by step relative displacement along the circumference of the mandrel between the working head and the mandrel,



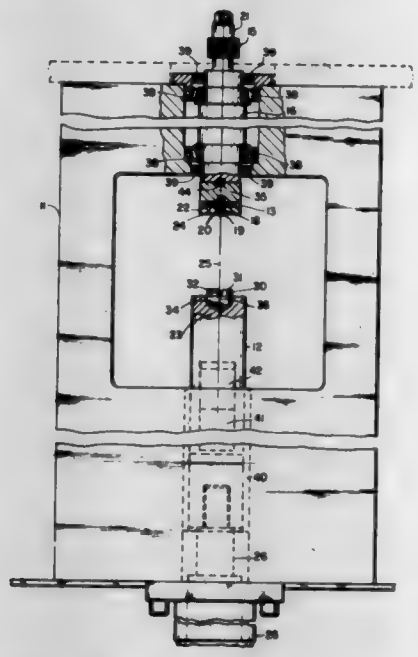
wherein the working head also carries a punch located ahead of the point to be inserted, in the displacement direction of the working head relative to the mandrel carried out by said displacement means, said punch being displaced by at least a distance equal to the spacing being defined by two successive points in at least one of said rows with respect to said point to be inserted, the means for inserting the points simultaneously acting on the punch to bring about a prior perforation of the mandrel.

4,536,931

BEARING BURNISHING METHOD AND APPARATUS

Ralph E. Roper, Indianapolis, Ind., assignor to Wallace Expanding Machines, Inc., Indianapolis, Ind.

Filed Mar. 26, 1982, Ser. No. 362,268
Int. Cl.³ B24B *39/00*
U.S. Cl. 29—90 R **8 Claims**



1. A burnishing apparatus for the burnishing of an annular thrust surface and wick slot oil ramps of a thrust bearing which has wick slots in the thrust surface, said apparatus comprising:

bearing holder means having means for immovably holding and orienting the thrust bearing, the thrust bearing having a first axis perpendicular to the annular thrust surface and positioned at the geometric center of the annular thrust surface;

a rotatable spindle which has a central axis and a tool assembly end and a gear assembly end;

first positioning means, on said bearing holder means, for positioning the thrust bearing so that the central axis is coaxial with the first axis;

a burnishing tool including an elongated bar which has a transverse convexly shaped burnishing surface and a tool mounting end, the tool mounting end being mounted to the tool assembly end of said spindle so that the burnishing surface rotates about the first axis;

second positioning means for positioning said burnishing tool with respect to said orienting means so that the burnishing surface and the wick slots of the thrust surface are in an initial alignment;

pressure means connected to said bearing holder means for maintaining the burnishing surface and the thrust surface in pressured contact;

rotating means for rotating said spindle, said rotating means including a rack and pinion, and the gear assembly end of said spindle being connected to the pinion said rotating means further including means connected to said rack for moving the rack and pinion to cause said spindle to rotate in a first direction about the first axis and then in a second opposite direction about the first axis;

first stopping means for stopping the rotation of said spindle at the end of movement in the first direction, said first stopping means being adjusted so that the burnishing surface and the wick slots of the thrust surface are in alignment at each such stopping; and

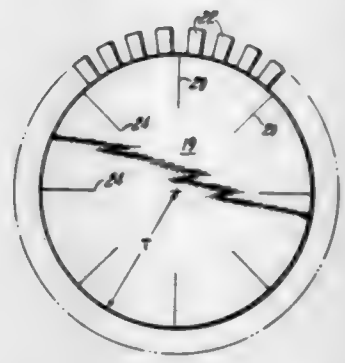
second stopping means for stopping the rotation of said spindle at the end of movement in the second direction, said second stopping means being adjusted so that the burnishing surface and the wick slots of the thrust surface are in alignment at each such stopping.

4,536,932

METHOD FOR ELIMINATING LOW CYCLE FATIGUE CRACKING IN INTEGRALLY BLADED DISKS

Roy L. Athey, North Palm Beach, Fla., assignor to United Technologies Corporation, Hartford, Conn.

Filed Nov. 22, 1982, Ser. No. 443,516
Int. Cl.³ B21K *3/04*; B23P *15/02*
U.S. Cl. 29—156.8 B **7 Claims**



1. In a method for forming an integrally bladed rotor disk from a plate-shaped forging preform having a rim, the steps of:

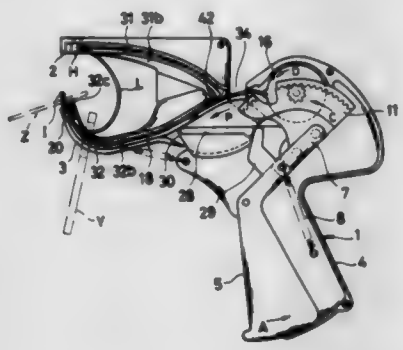
forming a plurality of circumferentially spaced-apart slots in said preform, said slots having a base, each slot extending radially from said rim to said base and extending axially through the full thickness of the preform; and

forming the rotor blades from the preform and forging the disk from the preform, including completely closing said slots from the slot base to the slot rim by forging to form forging laps along the radial extent of each slot without bonding together the surfaces of said slots, said forging laps being located circumferentially between adjacent blades.

4,536,933
DEVICE FOR CONNECTING ENDS OF FILAMENTARY FASTENER

Akira Furutsu, Tokyo, Japan, assignor to Japan Bano'k Co., Ltd., Tokyo, Japan

Filed Jan. 17, 1984, Ser. No. 571,538
Claims priority, application Japan, Jan. 31, 1983, 58-12996
Int. Cl.[3] B23P *19/02*
U.S. Cl. 29—235 5 Claims



1. A device for connecting the pin end to the socket end of a filament fastener, comprising:

a main body;

a first arm provided on the front end of said main body, said first arm having a first guide groove therein;

a second arm rockably secured to said first arm and having a second guide groove therein;

a lever rotatably supported by said main body;

a pulley rotatably supported by said main body;

rotation transmission means for transmitting rotation of said lever to said pulley, whereby movement of said lever causes rotation of said pulley;

a flexible member haivng a first end connected to said pulley so as to be wound up on said pulley upon rotation therof, said flexible member being shaped so as to be guided by said first and second guide grooves when directed toward said first and second arms, respectively;

guide means for directing said flexible member into said first guide groove upon rotation of said pulley in one direction and for directing said flexible member into said second guide groove upon rotation of said pulley in the other direction;

clamping means, provided on the end of said flexible member opposite that end connected to said pulley, for clamping either the pin end or the socket end of a fastener and pushing such ends through the guide grooves of said arms; and

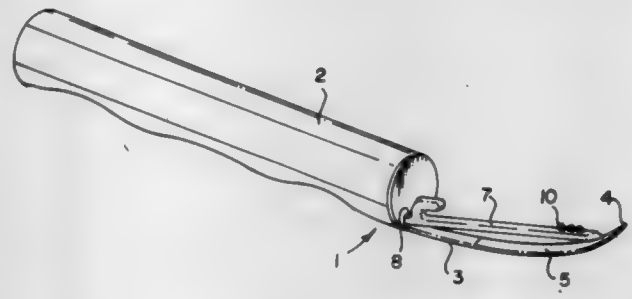
slider means operatively connected to said lever for moving said second arm close to said first arm, thereby causing the ends of a fastener, previously guided into position at the ends of said first and second arms by said flexible member, to become connected.

4,536,934
SHADE CLOTH PIN INSERTER

Francis P. Ward, P.O. Box 38632, Winnellie, Darwin, N.T., Australia (5789)

Filed Sep. 1, 1983, Ser. No. 528,734
Claims priority, application Australia, Apr. 22, 1983, 13907183
Int. Cl.[3] B25B *27/14*
U.S. Cl. 29—278 1 Claim

1. A shade cloth pin inserter for passing a pin through the shade cloth to pin overlapping portions of shade cloth together, said inserter comprising a handle, a curved needle extending from the handle, a recess in the handle opening onto the needle where it extends from the handle, said needle being curved in side elevation so that a pin can be inserted into said recess adjacent said needle and extend as a chord across the curved needle to be slightly stressed and retained therein, said

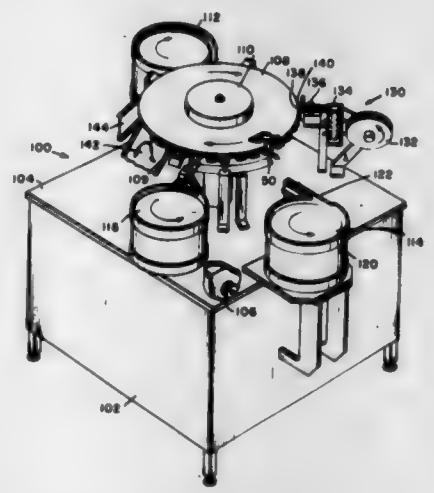


needle in cross-section being concave so that the end of the pin is located therein.

4,536,935
APPARATUS FOR MOVING, HANDLING AND MOUNTING ATTACHMENTS ONTO A LENGTH OF FLEXIBLE MATERIAL

Charles Wyle, Los Angeles; Donald M. Shea, Torrance, and Norman D. Best, Seal Beach, all of Calif., assignors to Charles Wyle Engineering Corporation, Torrance, Calif.

Filed Dec. 13, 1982, Ser. No. 449,143
Claims priority, application Sweden, Jun. 3, 1982, 8203424
Int. Cl.[3] B25B *27/14*
U.S. Cl. 29—281.1 40 Claims



21. An apparatus to be used in conjunction with mass production machinery for moving and handling flexible material comprising:

a. a two part sandwich structure comprising an upper section and a lower section;

b. said upper section containing an internal groove beginning at a first opening and ending at a second opening, with both the first and second openings located on the front face of the upper section and spaced apart from each other;

c. the lower extremity of said groove protruding through the lower surface of said upper section such that the upper surface of said lower section forms the wall of the lowermost portion of said groove; and

d. the cross-sectional size of said groove being only slightly larger than the cross-sectional size of the flexible material to be placed into the groove;

e. whereby said flexible material can be pushed through said groove thereby permitting said flexible material to be also pushed through components to be attached onto the flexible material and also permitting said flexible material to be pushed through gripping members which can hold the flexible material and permit objects to be placed on the ends of the flexible material.

23. An apparatus to be used in conjunction with mass pro-

duction machinery for moving and handling flexible material comprising:

a. a stationary two part sandwich structure comprising a first section and a second section;

b. said first section containing an internal groove beginning at a first opening and ending at a second opening, with both the first and second openings located on the same face of the first section and spaced apart from each other;

c. one extremity of said internal groove protruding through the surface of said first section which is adjacent and comes in contact with a surface of said second section when the two sections of the two part sandwich structure are placed together to form the sandwich, such that the adjoining surface of said second section forms one wall of said internal groove;

d. the cross-sectional size of said internal groove in said two part sandwich structure being only slightly larger than the cross-sectional size of the flexible material to be moved and handled;

e. a multiplicity of gripping members located on the mass production machine, each of which contains a pair of moving jaws disposed adjacent opposite sides of each gripping member to form first and second moving jaws;

f. each moving jaw and the adjacent portion of a gripping member forming the opening of an internal groove which extends through the entire thickness of said gripping member to thereby form a first groove and a second groove in each gripping member;

g. the distance between the first and the second internal grooves in each gripping member being equal to the distance between said first opening and said second opening in said two part sandwich structure such that a respective groove in the gripping member and a respective opening of the groove in the two part sandwich structure are aligned when a gripping member is brought into alignment with the two part sandwich structure; and

h. each of said gripping members being movable on said mass production machine such that a respective one of said gripping members can be brought into alignment with said stationary sandwich structure at any given time;

i. whereby a flexible material feeding apparatus can be caused to push flexible material tubing through the first groove in said gripping member, into the first opening of said two part sandwich structure, through the internal groove in said two part sandwich structure, out the second opening in said two part sandwich structure and through the second groove in said gripping member, and to cut the flexible material just ahead of the first groove in the gripping member, to thereby permit the flexible material to be moved and handled in the mass production machine.

38. An apparatus to be used in conjunction with mass production machinery for moving and handling flexible material comprising:

a. a stationary two part sandwich structure comprising a first section and a second section;

b. said first section containing an internal groove beginning at a first opening and ending at a second opening, with both the first and second openings located on the same face of the first section and spaced apart from each other;

c. one extremity of said internal groove protruding through the surface of said first section which is adjacent and comes in contact with a surface of said second section when the two sections of the two part sandwich structure are placed together to form the sandwich, such that the adjoining surface of said second section forms one wall of said internal groove;

d. the cross-sectional size of said internal groove in said two part sandwich structure being only slightly larger than the cross-sectional size of the flexible material to be moved and handled;

e. a multiplicity of gripping members located on the mass production machine, each of which contains a pair of moving jaws disposed adjacent opposite sides of each gripping member to form first and second moving jaws;

f. each moving jaw and the adjacent portion of a gripping member forming the opening of an internal groove which extends through the entire thickness of said gripping member to thereby form a first groove and a second groove in each gripping member;

g. said pair of moving jaws on each gripping member forming a first moving jaw which serves to open and close the opening to the first groove in said gripping member and a second moving jaw which serves to open and close the opening to the second groove in said gripping member;

h. the distance between the first and the second internal grooves in each gripping member being equal to the distance between said first opening and said second opening in said two part sandwich structure such that a respective groove in the gripping member and a respective opening of the groove in the two part sandwich structure are aligned when a gripping member is brought into alignment with the two part sandwich structure;

i. each of said gripping members being movable on said mass production machine such that a respective one of said gripping members can be brought into alignment with said stationary sandwich structure at any given time;

j. a multiplicity of flexible material receiving members located on the mass production machine, each of which is in alignment with a respective one of said gripping members and spaced apart from the gripping member to permit the stationary sandwich structure come between a gripping member and a flexible material receiving means when they are brought into alignment with said two part sandwich structure;

k. mechanical actuating means to permit said first section to be separated from said second section;

l. a jaw opening means located on the mass production machine;

m. said jaw opening means containing three settings which can cause said first moving jaw and said second moving jaw to be set in one of three positions, closed, cracked-open and open; and

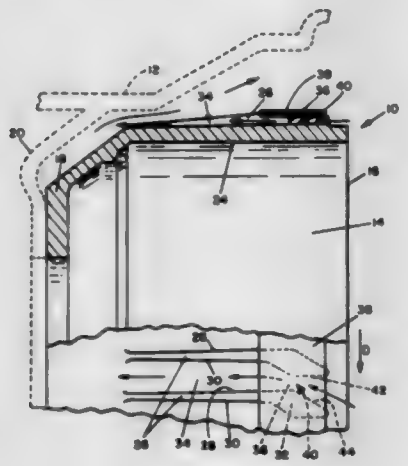
n. a flexible material sensing means which is in alignment with said internal groove in said two part sandwich structure and is adjacent said second opening in said two part sandwich structure;

o. whereby when said jaw opening means causes said first and second jaws to be in the cracked-open position, a flexible material feeding apparatus can be caused to push flexible material through the first groove in said gripping member, into the first opening of said two part sandwich structure, through the internal groove in said two part sandwich structure, out the second opening in said two part sandwich structure and through the second groove in said gripping member and when said flexible material sensing means detects said flexible material, said second movable jaw is caused to move to the closed position to grip the leading end of the flexible material while said first jaw remains in the cracked open position and said mechanical actuating means causes said first section of said two part sandwich to be separated from the second section of the two part sandwich to thereby permit additional lengths of flexible material to be fed and to slide between the separate sandwich sections and slide into the flexible material receiving means until a predetermined amount of flexible material has been fed.

4,536,936
METHOD OF FORMING A BRAKE DRUM

Richard J. Williams, Kenton, Ohio, assignor to Rockwell International Corporation, Pittsburgh, Pa.

Filed Jan. 20, 1984, Ser. No. 572,273
Int. Cl.[3] B23D *11/02;* F16D *65/10*
U.S. Cl. 29—447 5 Claims



1. A method of forming a brake drum comprising the steps of:

casting an iron cylindrical braking drum with a flange end and an opened end to include a plurality of generally axially extending fins around an exterior surface thereof, said casting including providing each of said fins with radially extending side walls which diverge along a length thereof from said opened end to a widest distance therebetween at a predetermined location from said opened end and converge along said length thereof from said predetermined location to said flange end, whereby adjacent said side walls of adjacent said fins define a space therebetween having its narrowest portion at said predetermined location;

machining a braking surface about an interior of said cylindrical braking drum;

machining the top of said fins on either side of said predetermined locations to form a shoulder extending around the drum and spaced inwardly of the opened end;

forming a steel band; and

securing said steel band to said braking drum at the machined top of said fins to encircle said braking drum and engage said shoulder to define, with adjacent sides of the fins, a plurality of venturi-shaped cooling channels at said predetermined locations.

4,536,937
PROCESS OF MANUFACTURING AUTO BUMPERS

Yasumasa Nagasaka, Okazaki, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Division of Ser. No. 93,974, Nov. 14, 1979, Pat. No. 4,339,144.
This application Jan. 15, 1982, Ser. No. 339,635
Claims priority, application Japan, Feb. 21, 1979, 54-19386
Int. Cl.[3] B23P *19/04*
U.S. Cl. 29—460 1 Claim



1. A process for forming an auto bumper comprising:

forming an outer visible part comprising a stainless steel plate having a first thickness;

forming a layer of one from the group consisting of aluminum and aluminum alloy bonded to one side surface of said plate, said layer being bonded to said plate by frictional deposition on substantially said entire one side surface, said layer having a second thickness smaller than said first thickness; and

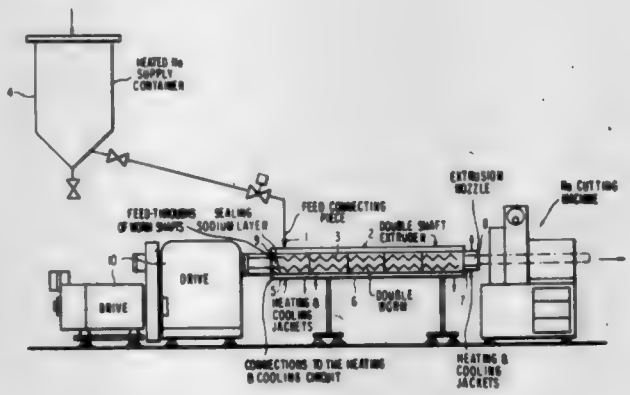
forming an inner part comprising a fiber reinforced plastic material bonded to said layer by heating and pressurizing said fiber reinforced plastic material to directly adhesively bond said layer to said fiber reinforced plastic material,

whereby said layer is sandwiched between and bonds said inner and outer parts to form a unitary bumper having low mass and high lustre.

4,536,938
PROCESS FOR THE CONTINUOUS PRODUCTION OF SOLID ALKALI METAL STRANDS

Walter Hinrichs, Brühl; Friedrich Hammer, Frechen-Habbelrath, and Ludwig Lange, Brühl, all of Fed. Rep. of Germany, assignors to Degussa Aktiengesellschaft, Frankfurt am Main, Fed. Rep. of Germany

Filed Apr. 17, 1981, Ser. No. 255,512
Claims priority, application Fed. Rep. of Germany, Apr. 26, 1980, 3016173
Int. Cl.[3] B22D *11/126;* B21C *23/00*
U.S. Cl. 29—527.5 6 Claims



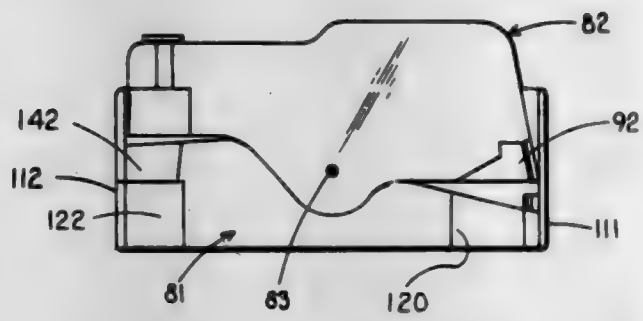
1. In a process for the production of solid alkali metal strands, the improvement which comprises providing molten alkali metal and introducing the molten alkali metal into a screw extrusion zone containing a double shaft extruder with side-by-side located horizontal worms, running in the same direction and being in mesh, establishing a temperature gradient in said extrusion zone, said gradient ranging from a relatively high temperature at or above the temperature at which the alkali metal is molten, to a relatively low temperature equal to a temperature below the molten point of the alkali metal, the relatively high temperature occurring at the point of introduction of the molten alkali metal to the extrusion zone, and the relatively low temperature occurring at the nozzle in the extrusion zone, moving the alkali metal in a continuous flow through the extrusion zone, cooling the molten alkali metal to a temperature below its melting point, at which temperature the metal is still sufficiently ductile for an extrusion, and feeding the metal to an extrusion nozzle for shaping, and thereafter shaping the metal by passing it through the extrusion nozzle having the required configuration for producing the strands.

4,536,939

TOOL FOR TERMINATING TELEPHONE CORDAGE WITH MODULAR PLUGS

Edwin C. Hardesty, Perry Hall, and Ronald C. Hardesty, Sykesville, both of Md., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Nov. 19, 1982, Ser. No. 442,929
Int. Cl.[3] B25B *25/00*
U.S. Cl. 29—566.4 4 Claims



1. A tool for terminating a flat cord, comprising a planar array of individually insulated conductors enclosed in a jacket having parallel sides and generally semi-circular ends, with a modular plug to connect electrically the conductors with terminals of the plug, said tool comprising:

a housing which includes a cord-receiving opening at one end and a plug-receiving nest at another end, said housing adapted to be supported and having a supporting surface at said one end to support an end portion of a cord stationary with respect to the housing, the cord-receiving opening of said housing having a width which is slightly greater than the least outer dimension of the cross-section of a cord which is to be inserted into the cord-receiving opening, and said housing including a plurality of ribs which extend into said plug-receiving nest to form a plurality of slots therebetween for receiving terminals which are partially seated in a plug when the plug is received in the nest to align and support the terminals; and

a rocker which is mounted pivotally centrally between the ends in said housing for movement between a first position where it is adapted to cut the cord jacket and a second position where it is adapted to cause the terminals to be inserted into the plug, said rocker having a first end which is adjacent to said cord-receiving opening and which includes cutting means having cutting edges that are spaced apart a fixed distance which is slightly greater than the outer diameter of each of the insulated conductors for cutting an end portion of a jacket of a cord that is inserted into said cord-receiving opening of said housing to facilitate stripping of the end portion, and a second end which is adjacent to said nest and which include terminal-inserting means for moving terminals that have been partially seated in a body of the plug into engagement with the conductors of the cord, and means for moving portions of the plug body into engagement with the cord jacket and the conductors to secure the plug to the cord, the cutting means in said first end of the rocker including a slot having a cord-entry portion and a jacket-stripping portion, the cord-entry portion being aligned with the cord-receiving opening of the housing when the rocker is in a first position, and the stripping portion of the slot of the rocker straddling a portion of the supporting surface as the rocker is moved into its second position, the supporting surface cooperating with the first end of the rocker during movement to cause the jacket-stripping portion of the slot to be moved into engagement with the jacket of the stationary, supported cord; and

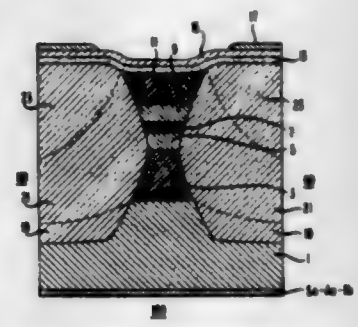
wherein said terminal-inserting means of said rocker includes a plurality of spaced rams which are aligned with the partially seated terminals when the plug is inserted into the plug-receiving nest, the terminal-inserting means at the other end of the housing being in an inoperative position when the rocker is in the second position to allow a plug to be inserted into the cavity, and in an operated position when forces are applied to the second end of the rocker to move it into the first position, the central pivotal mounting of said rocker being effective to allow a plug having partially seated terminals to be inserted into said nest in the housing when the first end of the rocker is moved from the first position to cut the jacket of the cord which is stationary on the supporting surface, and to allow a cord end portion to be inserted into said cord-receiving opening when said rocker has been moved to the first position to cause said second end of said rocker to cause said rams to seat the terminals.

4,536,940

METHOD OF MAKING A LOSS STABILIZED BURIED HETEROSTRUCTURE LASER

Charles H. Henry, New Providence, and Ralph A. Logan, Morristown, both of N.J., assignors to AT&T Bell Laboratories, Murray Hill, N.J.

Division of Ser. No. 273,109, Jun. 12, 1981, Pat. No. 4,481,631.
This application Jun. 4, 1984, Ser. No. 617,265
Int. Cl.[3] H01L *21/263, 33/00*; H01S *3/19*
U.S. Cl. 29—569 L 6 Claims



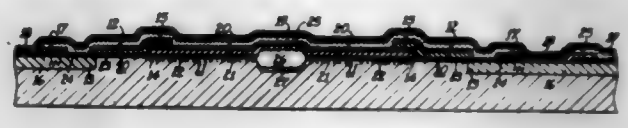
1. A method of fabricating at least one buried double heterostructure laser comprising the steps of sequentially growing first, second and third semiconductor layers on a semiconductor substrate, said second layer having a bandgap less than the bandgaps of said first and said third layers, said second layer being an active layer, etching a mesa having width fluctuations by removing portions of said first, second and third semiconductor layers thereby exposing said substrate and growing a fourth semiconductor layer, said fourth layer contacting opposite side faces of said first, second and third semiconductor layers.

4,536,941

METHOD OF MAKING HIGH DENSITY DYNAMIC MEMORY CELL

Chang-Kiang Kuo, 9639 Vista View Dr., Austin, Tex. 78750, and Shyh-Chang Tsaur, 12247 Monticeto, Stafford, Tex. 77477

Division of Ser. No. 133,376, Mar. 21, 1980, Pat. No. 4,376,983.
This application Feb. 28, 1983, Ser. No. 470,654
Int. Cl.[3] H01L *21/70, 21/22*; B01J *17/00*
U.S. Cl. 29—571 15 Claims



1. A method of making a dynamic semiconductor memory cell of the one-transistor type comprising the steps of:

applying a first layer of conductive material on a face of a body of semiconductor material, said first layer being separated from a capacitor region of said face by thin insulator,

applying a second layer of conductive material onto said face partially overlying the first layer but separated therefrom by an insulator, the second layer being patterned to

define an elongated strip and a transistor gate, the gate overlying a channel region of said face but being separated therefrom by thin insulator,

forming a heavily-doped region in said face adjacent said channel region,

applying a third layer of conductive material onto said face overlying a part of said heavily-doped region, the third layer being wider than said heavily-doped region but being spaced from said first and second layers along the face, and

applying a layer of metal over said face contacting said third layer at a contact window over said part of said region.

4,536,942

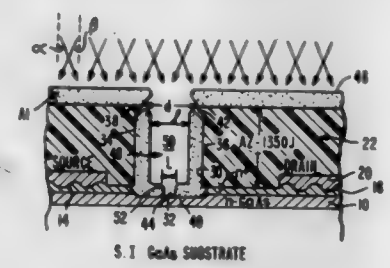
FABRICATION OF T-SHAPED METAL LINES FOR SEMICONDUCTOR DEVICES

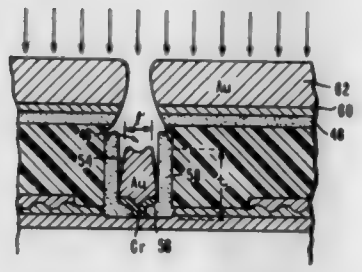
Pane-Chane Chao, and Walter H. Ku, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

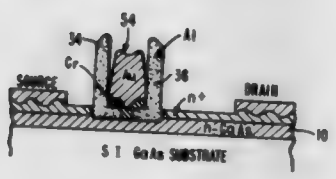
Division of Ser. No. 448,158, Dec. 9, 1982, abandoned. This application Oct. 5, 1984, Ser. No. 658,066

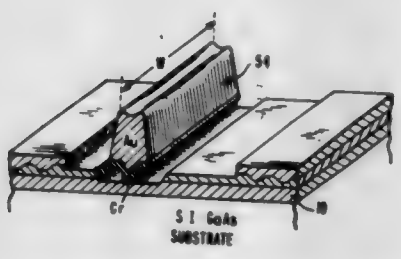
Int. Cl.³ H01L *21/285*

U.S. Cl. 29—571 **19 Claims**









1. A method of fabricating a low-resistance T-shaped gate electrode for a semiconductor device, comprising:

depositing a layer of resist material on a semiconductor surface;

defining a gate pattern in said resist material to produce a resist profile;

forming metal gate walls within and on the surface of said resist profile by angled evaporation to produce a metallized T-shaped gate cavity, said gate cavity having a bottom opening adjacent to and exposing said semiconductor surface, the dimension of said bottom opening being determined by the thickness of said layer of resist material and the angle of evaporation of said metal;

directly evaporating a gate material into said gate cavity, said gate material being deposited on the portion of said semiconductor surface exposed by the bottom opening of said gate cavity to form a Schottky junction at said semiconductor surface and being further deposited within said gate cavity to substantially fill said T-shaped gate cavity;

removing said layer of resist material; and

removing said gate walls.

4,536,943

METHOD OF MANUFACTURING A FET

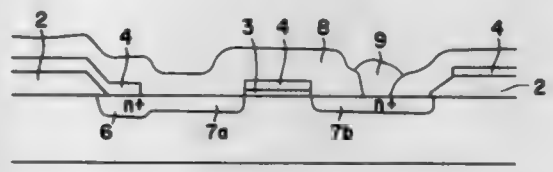
Masakazu Kakumu, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed May 20, 1983, Ser. No. 496,581

Claims priority, application Japan, May 21, 1982, 57-85937

Int. Cl.³ H01L *21/223, 21/225, 21/265, 21/283*

U.S. Cl. 29—571 **4 Claims**



1. A method of manufacturing an FET comprising:

forming an insulating film on the surface of a semiconductor substrate;

removing a portion of said insulating film from said substrate surface to form an exposed portion of said substrate;

forming a conductive film made up of a material selected from the group consisting of tungsten silicide (WSi_2), titanium silicide ($TiSi_2$), and platinum silicide (PtSi), on said insulating film and on said exposed portion, by simultaneously evaporating metal and silicon onto said exposed portion and insulating film;

introducing impurities into the surface of said substrate from outside the substrate through said conductive film so as to form an ohmic contact region at the contacting portion of said substrate and said conductive film; and

forming a source semiconductor region and a drain semiconductor region of said FET in said substrate by ion-implanting said substrate.

4,536,944

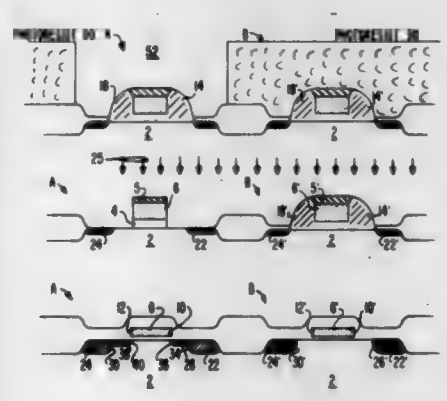
METHOD OF MAKING ROM/PLA SEMICONDUCTOR DEVICE BY LATE STAGE PERSONALIZATION

Al M. Bracco, Reston; Arthur R. Edenfeld, and Harish N. Kotecha, both of Manassas, all of Va., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 29, 1982, Ser. No. 454,315

Int. Cl.³ H01L *21/26, 21/265*

U.S. Cl. 29—571 **1 Claim**



1. A process for forming a FET memory on a semiconductor substrate of a first conductivity type, having a gate insulator layer deposited on the surface thereof with a polycrystalline silicon gate electrode formed on the surface of said insulator

layer, having a top surface and first and second opposed sidewall surfaces, comprising the steps of:

growing a silicon dioxide masking layer on said polycrystalline silicon gate electrode with a first portion thereof covering said first sidewall and having an exposed surface forming a first edge and a second portion thereof covering said second sidewall and having an exposed surface forming a second edge, to serve as an ion implantation blocking mask;

ion implanting a source and a drain region of a second conductivity type into said semiconductor substrate, said first portion of said masking layer blocking ion implantation into said substrate adjacent to said first sidewall and said second portion of said masking layer blocking ion implantation into said substrate adjacent to said second sidewall;

said source region having a first terminal edge aligned with said first edge of said silicon dioxide masking layer and separated by a first nonimplanted region in said substrate from alignment with said first sidewall of said gate electrode by the thickness of said first portion of said masking layer and said drain region having a first terminal edge aligned with said second edge of said silicon dioxide masking layer and separated by a second nonimplanted region in said substrate from alignment with said second side of said gate electrode by the thickness of said second portion of said masking layer, said first and second nonimplanted regions preventing FET action for the device, thereby representing a first stored binary state;

selectively removing said first and second portions of said silicon dioxide masking layer from said first and second sidewalls of said polycrystalline silicon gate electrode, exposing said first and second nonimplanted regions in said substrate;

ion implanting a source extension of said second conductivity type in said first nonimplanted region exposed by said selective removal step, extending said source region from said first terminal edge thereof to a second terminal edge aligned with said first sidewall of said gate electrode and ion implanting a drain extension of said second conductivity type in said second non-implanted region exposed by said selective removal step, extending said drain region from said first terminal edge thereof to a second terminal edge aligned with said second sidewall of said gate electrode, for selectively enabling FET action for the device, thereby selectively representing a second stored binary state;

whereby the FET memory device can have its binary state selectively programmed at a relatively late stage of its fabrication.

4,536,945

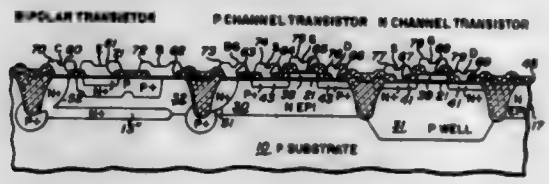
PROCESS FOR PRODUCING CMOS STRUCTURES WITH SCHOTTKY BIPOLAR TRANSISTORS

Bruce Gray, Danville; Kasivisvanatha Soundaranathan, San Jose, and Franklin D. VanGieson, Sunnyvale, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Continuation-in-part of Ser. No. 548,115, Nov. 2, 1983, abandoned. This application Apr. 17, 1984, Ser. No. 601,195

Int. Cl.³ H01L *21/22*

U.S. Cl. 29—571 **9 Claims**



1. In a process for forming isolated bipolar transistors, in combination with CMOS transistors, the steps comprising:

starting with a semiconductor wafer of a first conductivity type;

depositing a first impurity of an opposite conductivity type and heavy concentration in those regions where bipolar transistors are to be fabricated;

depositing a second impurity of said first conductivity type and heavy concentration in those regions where CMOS transistors having a channel conductivity of said opposite conductivity type are to be fabricated;

depositing a layer of epitaxial semiconductor material of said opposite conductivity type over said wafer and said first and second impurity regions;

depositing a third impurity of said first conductivity type on the surface of said epitaxial layer in those regions where said CMOS transistors having a channel conductivity of said opposite conductivity type are to be fabricated;

depositing an oxidation resistant coating over said epitaxial layer;

removing said oxidation resistant coating in the regions between said transistors wherein isolation is desired;

heating said wafer in an oxidizing atmosphere wherein said semiconductor is oxidized and continuing said heating until said epitaxial layer is approximately penetrated by the resulting oxide, said heating simultaneously acting to cause said second and third impurities to diffuse towards each other to contact each other and thereby from a well of said first conductivity type in said epitaxial layer;

forming a gate oxide;

depositing a polycrystalline semiconductor layer over said gate oxide and doping said layer to make it conductive;

removing said polycrystalline semiconductor layer except in those regions where CMOS transistor gates are desired;

masking said wafer with a resist having openings located in those regions where CMOS transistors having a channel conductivity of said opposite conductivity type are desired and depositing a fourth impurity of said opposite conductivity type at a heavy dose whereby the polycrystalline gates exposed in said openings are doped and act to self align the deposit to create transistor source and drain regions;

masking said wafer with a resist having openings located in those regions where bipolar transistor bases and CMOS transistors sources and drains having a channel conductivity of said first conductivity type are desired and ion implanting a fifth impurity of said first conductivity type at a low dose;

masking said wafer with a resist having openings located in those regions where bipolar transistor base contacts and CMOS transistors sources and drains having a channel conductivity of said first conductivity type are desired and ion implanting a sixth impurity of said first conductivity type to a level of doping substantially higher than that of said fifth impurity;

depositing a passivating oxide over said wafer thereby to cover said polycrystalline gates, said fourth and fifth impurity deposits, and said bipolar transistor regions;

masking said wafer with a resist having openings located in those regions where bipolar transistor collector contacts and CMOS transistor back gate contacts are desired, removing said passivating oxide exposed in said mask openings and diffusing a seventh impurity of said opposite conductivity type through the openings thus created in said passivating oxide to an extent where said seventh impurity contacts said first impurity;

masking said wafer with a resist having openings located where active device contact electrodes are desired for said CMOS and said bipolar transistors and etching holes in said passivating oxide;

masking said wafer with a resist having openings located in those regions where bipolar transistor emitters are desired and implanting into the thus exposed semiconductor an eighth impurity of said first conductivity type and a ninth impurity of said opposite conductivity type, said eighth impurity being deposited to a level selected to develop the

desired bipolar transistor base region and said ninth impurity being deposited to a level in said semiconductor to develop the desired bipolar transistor emitter;

heating said wafer to activate and diffuse said eighth and ninth impurities; and

applying metallization to said electrodes.

7. In a process for fabricating bipolar transistor emitter and base regions nested within a collector region in a monolithic integrated circuit semiconductor wafer, the improvement comprising the steps:

forming a passivating oxide, composed primarily of an oxide of said wafer material, on said wafer;

etching an opening in said oxide where said emitter is desired;

implanting base and emitter impurities into said wafer with said opening acting as an implant mask, wherein said base impurity species is selected to be lighter than said emitter impurity species; and

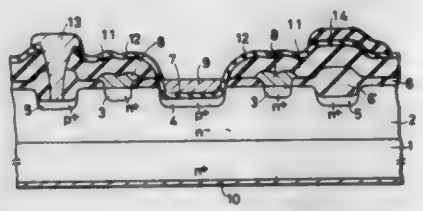
annealing said wafer to activate said impurities whereby said base impurities surround said emitter impurities.

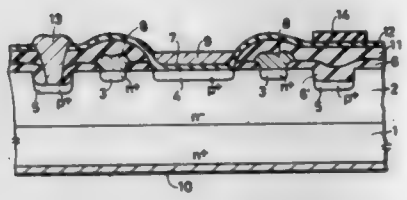
4,536,946

METHOD FOR FABRICATING SEMICONDUCTOR PHOTODETECTOR

Junichi Nishizawa, No. 6-16, Komegafukuro 1-chome, Sendai-shi, Miyagi, Japan; Sobei Suzuki, and Takashige Tamamushi, both of Miyagi, Japan, assignors to Junichi Nishizawa, Japan

Filed Dec. 13, 1983, Ser. No. 561,103
Claims priority, application Japan, Dec. 13, 1982, 57-218591
Int. Cl.[3] H01L *21/22*
U.S. Cl. 29—571 10 Claims





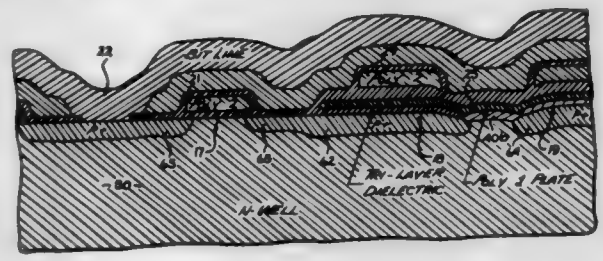
1. A process for producing a photodetector comprising a vertical static induction transistor, comprising the steps of: formaing a control gate region on a first principal surface of a silicon wafer; forming a shielding gate region on said first principal surface surrounding said control gate region; forming at least one first principal electrode region on said first principal surface in an area between said control region and said shielding gate region; forming a second principal electrode region on a second principal surface of said silicon wafer on the side opposite said first principal electrode region, said first electrode region and said shielding gate region being formed on said first principal surface in such a manner that a top of each of said regions is flush with said first principal surface; and forming an oxide film on the upper part of said shielding gate region by selective oxidation so that remaining portions of said shielding gate region are deeper in said silicon wafer than said first principal electrode region.

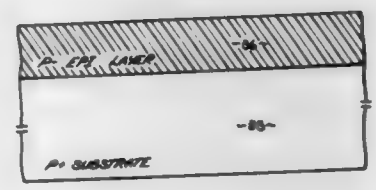
4,536,947

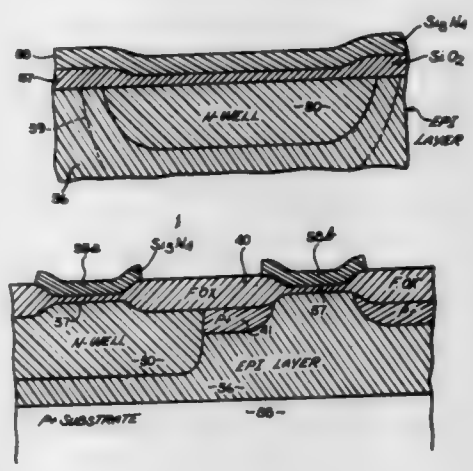
CMOS PROCESS FOR FABRICATING INTEGRATED CIRCUITS, PARTICULARLY DYNAMIC MEMORY CELLS WITH STORAGE CAPACITORS

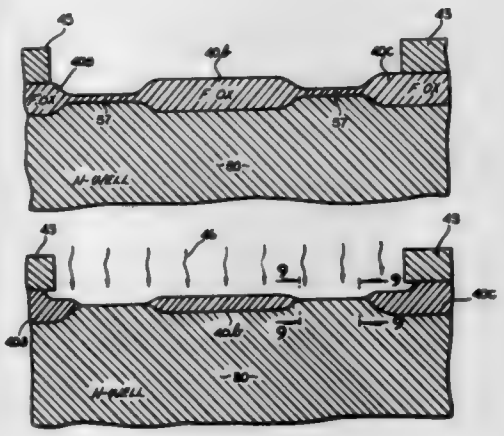
Mark T. Bohr, Beaverton; Ken K. Yu, Portland; Leo D. Yau, Durham, and Shyam G. Garg, Beaverton, all of Oreg., assignors to Intel Corporation, Santa Clara, Calif.

Continuation of Ser. No. 513,658, Jul. 14, 1983, Pat. No. 4,505,026. This application Jul. 2, 1984, Ser. No. 627,061
Int. Cl.[3] H01L *21/306, 21/31*
U.S. Cl. 29—576 C 6 Claims









1. A process for fabricating complementary metal-oxide-semiconductor dynamic memory comprising the steps of:

forming a well of a first conductivity type in an epitaxial layer;

forming an oxide layer of a first thickness on said epitaxial layer;

forming field oxide regions on said oxide layer to a second thickness;

defining first regions in said well for capacitors by performing a wet etch to remove said oxide layer in said first region and reduce said field oxide regions in said first region to a third thickness;

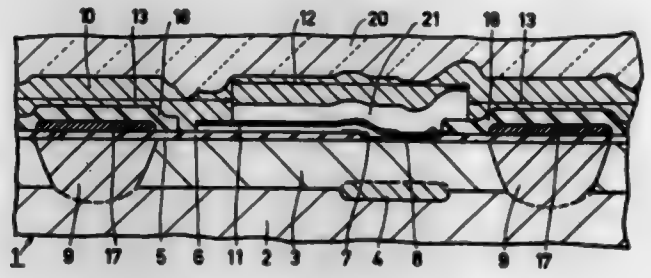
non-implanting said defined first regions with a dopant of a second conductivity type;
forming an insulative layer at least over said defined first regions;
forming a first polysilicon layer over said well, said first polysilicon layer being used to form a portion of said capacitor;
forming openings in said first polysilicon layer to define second regions for field effect transistors which are coupled to said capacitors;
forming word lines from a second layer of polysilicon;
whereby memory cells are fabricated in said well and the area for capacitor formation is increased.

4,536,948

METHOD OF MANUFACTURING PROGRAMMABLE SEMICONDUCTOR DEVICE

Ties S. Te Velde, and Arie Slob, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Division of Ser. No. 258,112, Apr. 27, 1981, Pat. No. 4,460,914.
This application Apr. 23, 1984, Ser. No. 602,793
Claims priority, application Netherlands, May 8, 1981, 8002634
Int. Cl.³ H01L *21/90*
U.S. Cl. 29—577 C **6 Claims**



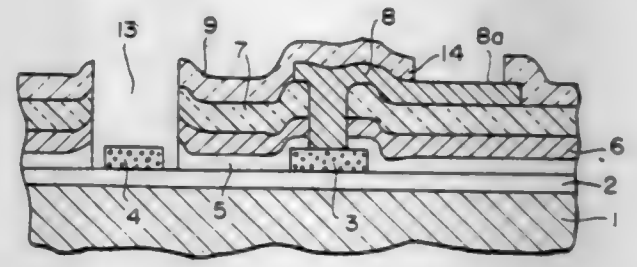
1. A method of manufacturing a programmable semiconductor device comprising a supporting member having at least a first line and at least a semiconductor circuit element connected to said first line by means of a blowable fuse, in which the blowable fuse is situated at least over a part of its length at a distance from the supporting member or the semiconductor circuit element, comprising the steps of:
starting with a supporting member having at a surface at least a first line and at least a semiconductor circuit element which comprises an electrode of nickel connected electrically conductively to a contact layer;
covering the assembly with a first auxiliary layer of aluminum;
providing in said first auxiliary layer a first window which exposes at least a part of the electrode and a second window which exposes at least a part of the first line;
providing a blowable fuse of nickel-chromium which connects the first line to the semiconductor circuit element on the first auxiliary layer and at least in the first and second windows;
covering the assembly with a second auxiliary layer of aluminum and forming apertures through the first and second auxiliary layers;
providing a patterned first layer of protective material, in which protective material remains at least at the area of the blowable fuse and in the apertures;
using said pattern as a mask, removing the two auxiliary layers selectively, in which the material of the first auxiliary layer is etchable selectively with respect to the materials of the supporting member, the first line, the electrode and the blowable fuse, the protective material and, at least insofar as covered by the first auxiliary layer, the material of the semiconductor circuit element, and in which the material of the second auxiliary layer can be etched selectively with respect to the protective material and the materials of the blowable fuse, as a result of which treatment protective material remains both in the apertures and at the area of the blowable fuse at a distance from the fuse;
providing at least the part of the surface which is not protected by the pattern from the first layer of protective material with a second layer of protective material so that a hollow space remains in which the blowable fuse is present while walls of the hollow space comprise protecting material of the first and second layers of protective material.

4,536,949

METHOD FOR FABRICATING AN INTEGRATED CIRCUIT WITH MULTI-LAYER WIRING HAVING OPENING FOR FUSE

Yoshihisa Takayama, Kawasaki; Kunihiko Gotoh, Kunitachi; Akihiko Ito, Kawasaki; Takeshi Yamamura, Zama, and Kazuyoshi Fujita, Yokohama, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed May 11, 1984, Ser. No. 609,441
Claims priority, application Japan, May 16, 1983, 58-85302
Int. Cl.³ H01L *21/28*
U.S. Cl. 29—578 **12 Claims**



1. A method for fabricating an integrated circuit device with multi-layer wiring and having an opening for a fuse in said multi-layer wiring, comprising the steps of:
(a) forming a first wiring layer of said multi-layer wiring to include said fuse;
(b) forming a first insulating layer covering said first wiring layer and said fuse;
(c) forming a contact hole in said first insulating layer for connection to said first wiring layer and removing at least a part of the whole thickness of said first insulating layer at a portion thereof over said fuse for providing said opening;
(d) forming a second wiring layer over said first insulating layer and connecting said second wiring layer to said first wiring layer through said contact hole;
(e) forming a second insulating layer covering said second wiring layer; and
(f) removing a respective portion of said second insulating layer over said fuse for providing said opening.

4,536,950

METHOD FOR MAKING SEMICONDUCTOR DEVICE

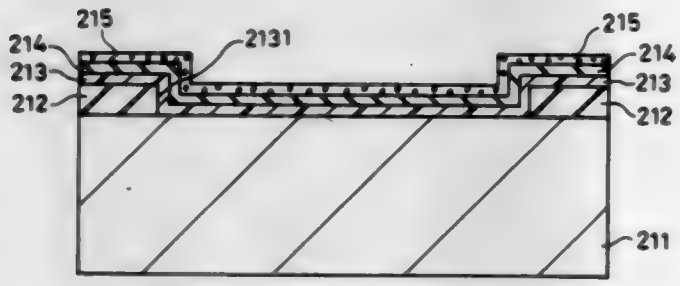
Hideaki Sadamatsu, Hirakata; Michihiro Inoue, Ikoma; Akihiro Kanda, and Akira Matsuzawa, both of Neyagawa, all of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Kadoma, Japan

Filed Feb. 8, 1984, Ser. No. 578,036
Claims priority, application Japan, Feb. 10, 1983, 58-20660; Feb. 10, 1983, 58-20662; Feb. 10, 1983, 58-20663
Int. Cl.³ H01L *21/225, 21/265*
U.S. Cl. 29—578 **7 Claims**

1. A method of making semiconductor device comprising the successive steps of:
(1) forming an insulation film on a surface of semiconductor substrate of a first conductivity type;
(2) boring an opening in a selected portion of said insulation film thereby exposing said surface of said substrate;
(3) forming an antioxidation film directly on a selected region of said exposed surface of said substrate;

(4) forming first regions of a second conductivity by diffusion of an impurity through said opening into the portion of said substrate not covered by said antioxidation film;

(5) selectively forming an oxide film over the exposed surface of said substrate and the exposed surface of said first regions by thermal oxidation utilizing said antioxidation film as a mask;



(6) forming a second region of said second conductivity type communicating with said first regions by ion implantation through said antioxidation film on said semiconductor substrate using said insulation film and said oxide film as an integral mask; and

(7) forming a third region of said first conductivity type by ion implantation through said antioxidation film in said first and second regions using said insulation film and said oxide film as an integral mask.

4,536,951

METHOD OF PRODUCING A LAYERED STRUCTURE

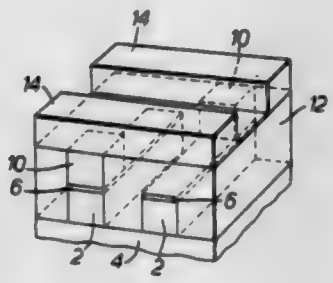
Stephen J. Rhodes, and Raymond E. Oakley, both of Northampton, England, assignors to Plessey Overseas Limited, Ilford, England

Filed Jun. 15, 1984, Ser. No. 621,187

Claims priority, application United Kingdom, Jun. 16, 1983, 8316476

Int. Cl.³ H01L *21/28, 21/88*

U.S. Cl. 29—589 **10 Claims**



1. A method of forming a layered structure, which method comprises depositing a first metal layer on a substrate, depositing a barrier layer on the first metal layer, depositing a second metal layer on the barrier layer, forming a first masking pattern on the second metal layer, etching the first and second metal layers and the barrier layer in accordance with the first masking pattern, removing the first masking pattern, forming a second masking pattern on the second metal layer, etching the second metal layer in accordance with the second masking pattern, removing the second masking pattern, depositing a dielectric layer having a thickness sufficient to cover the second metal layer, etching the dielectric layer to expose the second metal layer, and depositing on the etched dielectric layer and exposed second metal layer a further metal layer to contact the exposed second metal layer.

4,536,952

PREPARATION OF LAMINATED IRON CORE OF ELECTRIC DEVICE

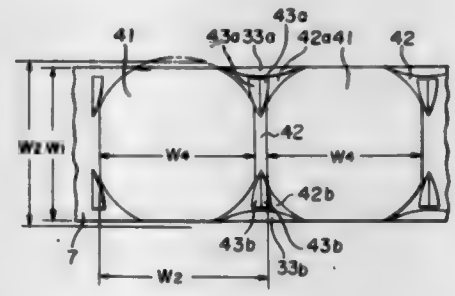
Yuko Shinryo, and Takashi Yamamoto, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 338,994, Jan. 12, 1982, abandoned. This application Mar. 16, 1984, Ser. No. 589,405

Claims priority, application Japan, Jan. 12, 1981, 56-563472

Int. Cl.³ H02K *15/02*

U.S. Cl. 29—596 **2 Claims**



1. A method of preparation of a circular laminated iron core of an electric device, said method comprising the steps of:

stamping a strip having a width smaller than an outer diameter of said laminated iron core;

stamping iron core discs and excess from said strip, each of said discs having four straight edges, adjacent straight edges of adjacent ones of said discs being separated by first portions of said excess;

stamping segmented circular pieces from said excess, and stamping half segmented circular pieces from portions of said excess including said first portions of said excess;

processing said iron core discs to form iron core ring plates having four straight edges;

assembling said half segmented circular pieces to form additional segmented circular pieces; and

attaching said segmented circular pieces to said straight edges to form said circular laminated iron core plate.

4,536,953

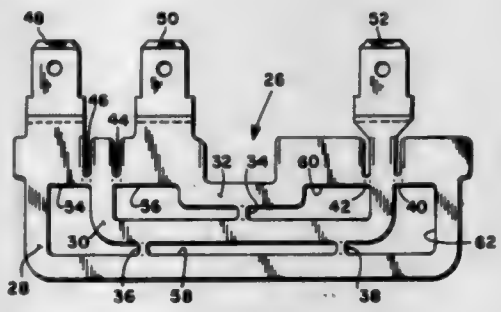
SWITCHING MECHANISM AND METHOD OF MAKING SAME

Dennis De Vera, Mundelein, Ill., assignor to Eaton Corporation, Cleveland, Ohio

Filed Oct. 31, 1983, Ser. No. 547,560

Int. Cl.³ H01H *11/00, 1/36*

U.S. Cl. 29—622 **5 Claims**



1. A method of manufacturing an electrical switch comprising:

(a) providing a base of electrically insulating material;

(b) positioning and retaining on said base a plate of electrically conducting material having a plurality of individual contact forming regions thereon interconnected by frangible portions;

(c) breaking away said frangible portions and forming on said strip a plurality of electrically isolated contacts; and,

(d) assembling on said base a wiper means moveable thereon

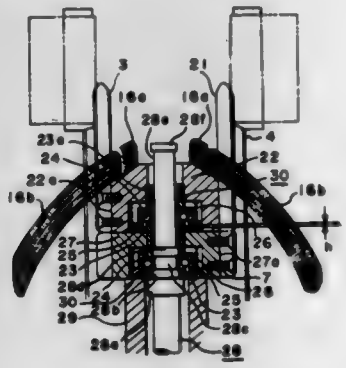
for making and breaking contact between a plurality of said contacts.

4,536,954

COIL INSERTER

Takatoshi Hattori, Kasugai, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 23, 1983, Ser. No. 535,292
Claims priority, application Japan, Sep. 25, 1982, 57-167002; Nov. 15, 1982, 57-200142
Int. Cl.[3] H02K *15/06*
U.S. Cl. 29—736 3 Claims



1. A coil inserter for inserting coils into the slots of a stator core, said coil inserter comprising:

(a) a pressing piece having a forward surface on which coils are disposed during use of the coil inserter, a rearward surface, and an axial through hole, said pressing piece being sized and shaped to slide axially into a stator core during use of the coil inserter;

(b) a blade supporter having a forward surface which faces the rearward surface of said pressing piece, a rearward surface, and an axial through hole which communicates with the axial through hole in said pressing piece, said blade supporter being sized and shaped to slide axially into a stator core during use of the coil inserter;

(c) a supporting member having a forward surface which faces the rearward surface of said blade supporter;

(d) a plurality of symmetrically arranged, axially extending first blades attached to the outer periphery of said pressing piece and extending forwardly therefrom;

(e) a plurality of symmetrically arranged, axially extending second blades attached to the outer periphery of said blade supporter and extending forwardly therefrom;

(f) said first and second blades having axial lengths such that, when the forward surface of said blade supporter abuts the rearward surface of said pressing piece, said first and second blades lie alongside each other forwardly of said pressing piece;

(g) said first and second blades alternating with one another around the periphery of said pressing piece and being spaced from one another to hold coils therebetween during use of the coil inserter;

(h) a first ball plunger fitted in the axial through hole in said pressing piece, said first ball plunger comprising an inner cylinder which is fastened to said pressing piece and which has a rearward surface which is co-planar with the rearward surface of said pressing piece, an outer cylinder which is axially movable relative to said inner cylinder and which has an inner, axially symmetric cam surface, a plurality of balls received in ball receiving holes in said inner cylinder in position to be cammed inwardly by rearward movement of the cam surface on said outer cylinder relative to said inner cylinder, and a spring which biases said outer cylinder rearwardly, said outer cylinder being axially movable between a first position in which its rearward surface is co-planar with the rearward surface of said pressing piece and abuts the forward surface of said blade supporter and a second position in which its rearward surface projects rearwardly from the rearward surface of said pressing piece by a stroke distance h, said inner and outer cylinders being interconnected to prevent said outer cylinder from projecting rearwardly from the rearward surface of said pressing piece by more than the stroke distance h;

(i) a second ball plunger fitted in the axial through hole in said blade supporter, said second ball plunger comprising an inner cylinder which is fastened to said blade supporter and which has a rearward surface which is co-planar with the rearward surface of said blade supporter, an outer cylinder which is axially movable relative to said inner cylinder and which has an inner, axially symmetric cam surface, a plurality of balls received in ball receiving holes in said inner cylinder in position to be cammed inwardly by rearward movement of the cam surface on said outer cylinder relative to said inner cylinder, and a spring which biases said outer cylinder rearwardly, said outer cylinder being axially movable between a first position in which its rearward surface is co-planar with the rearward surface of said blade supporter and abuts the forward surface of said supporting member and a second position in which its rearward surface projects rearwardly from the rearward surface of said pressing piece by the stroke distance h, said inner and outer cylinders being interconnected to prevent said outer cylinder from projecting rearwardly from the rearward surface of said blade supporter by more than the stroke distance h; and

(j) an operating rod which extends forwardly from said supporting member and is axially movable relative thereto, said operating rod extending through said inner cylinders of said first and second ball plungers and having a first enlarged collar at its forward end sized and positioned to abut against the balls in said first ball plunger when said balls have been cammed inwardly by rearward movement of said outer cylinder of said first ball plunger, a second enlarged collar spaced rearwardly from said first enlarged collar sized and positioned to abut against the balls in said second ball plunger when said balls have been cammed inwardly by rearward movement of said outer cylinder of said second ball receiving plunger, and a third enlarged collar spaced rearwardly from said second enlarged collar sized and positioned to abut against said inner cylinder of said second ball plunger to transmit forward motion of said operating rod to said blade supporter,

whereby, during use of the coil inserter,

(k) each coil is initially held by two pairs of blades, each pair of blades consisting of one of said first blades and one of said second blades;

(l) said pressing piece and said blade supporter are then moved forwardly together by forward motion of said operating rod with the forward surface of said blade supporter in abutment with the rearward surface of said pressing piece to insert the coils into the slots of a stator core;

(m) said blade supporter is then moved rearwardly by rearward motion of said operating rod, disengaging said second blades from the coils while said pressing piece and said first blades remain in position;

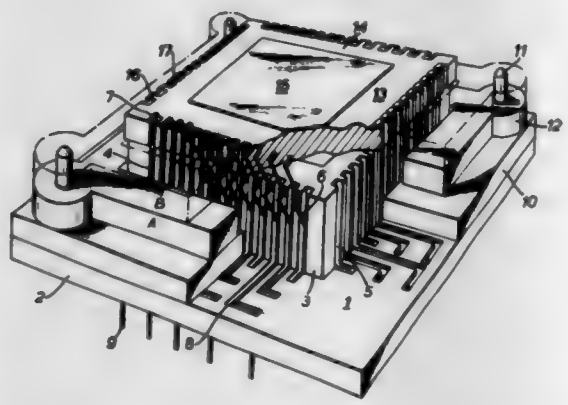
(n) said pressing piece is then moved rearwardly, disengaging said first blades from the coils; and

(o) steps (l), (m), and (n) are all accomplished by a single extension and retraction of said operating rod.

4,536,955
DEVICES FOR AND METHODS OF MOUNTING INTEGRATED CIRCUIT PACKAGES ON A PRINTED CIRCUIT BOARD

Bryan Gudgeon, Rossendale, England, assignor to International Computers Limited, London, England

Filed Sep. 20, 1982, Ser. No. 420,274
Claims priority, application United Kingdom, Oct. 2, 1981, 8129896
Int. Cl.³ H05K *3/34*; B23P *19/00*
U.S. Cl. 29—840 **4 Claims**



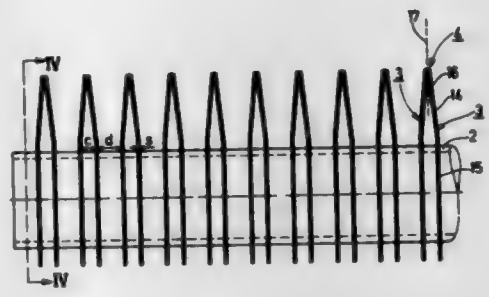
1. A method of mounting an integrated circuit package on a printed circuit board, the integrated circuit package having a plurality of conductive terminations for connection to conductors on the printed circuit board, by using a support member having a plurality of contact means arranged so as to be postionable one adjacent each conductive termination, with each of the contacts being so resiliently loaded that in a first relative positioning between the integrated circuit package conductive terminations and the contact means the contact means do not electrically connect with the conductive terminations, and a second relative positioning therebetween electrical contact is produced and maintained between the conductive terminations and the contact means, each said contact means being connected with a specified one of the conductors on the printed circuit board, the method of including the steps of providing means for exerting pressure upon the contact means to produce said electrical connection; electrically connecting each of the contact means to its specified conductor of the printed circuit board; actuating the means for exerting pressure to move the contact means against the resiliency thereof into electrical contact with the conductive terminations; and soldering each contact means to the associated conductive termination, the method being further such that the electrical contact producing pressure is maintained upon the contacts following the soldering operation, and that whenever it is required to unsolder the contacts the pressure is relieved prior to unsoldering so that following an unsoldering operation the resiliency of the contact means automatically causes each unsoldered contact means to spring away from the associated conductive termination as it is unsoldered.

4. A device for electrically interconnecting a plurality of conductive terminations on an integrated circuit package of corresponding terminations of conductors on a printed circuit board, the device including a support unit presenting a first surface or region for co-operating with the printed circuit board on mounting the support to the board, and a second surface or region for receiving the package, a first group of electrically conductive contact members having first portions mounted on the support and having second portions for connection with the terminations of the package on positioning the latter on the second surface or region of the support; a second group of electrically conductive second contact members electrically connected to the first group of contact members and having portions for connection with corresponding ones of the terminations of the conductors of the printed circuit board, each of said second portions of the first contact members being resiliently biased in a direction away from electrical contact with the associated terminations of the package, and a pressure producing means, movably mounted upon the support and arranged for co-operation with the second portions of the first contact members, the pressure producing means having a first position in which the second portions of the first contact members are resiliently loaded into electrical contact with associated ones of the package terminations to enable the physically co-operating second portions of the first group of contact members and package terminations to be soldered together, said loading being maintained on the first portions of the first group of contact members whilst the pressure producing means is in the first position thereby to stress relieve the soldered connections, the pressure producing means having a second position in which the loading on the second portions of the first group of contact members is released so that upon breaking any of the soldered connections, the unsoldered second portions of the first group of contact members automatically move out of electrical connection with the package terminations.

4,536,956
RECIPROCATINGLY DRIVABLE CUTTER FOR A DRY-SHAVING APPARATUS

Adam Koroncai; Alfred Nowak, and Herbert Piber, all of Klagenfurt, Austria, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 2, 1982, Ser. No. 414,159
Claims priority, application Austria, Feb. 12, 1982, 544/82
Int. Cl.³ B26B *19/02*
U.S. Cl. 30—43.92 **7 Claims**



1. A cutter reciprocatingly drivable in opposite directions and adapted to co-operate with the shear foil of a dry-shaving apparatus, which comprises support means; and a plurality of pairs of arcuate cutter lamellae mounted on said support means, the distance between the two cutter lamellae of each pair being smaller than the distance between either cutter lamella of such pair and the adjacent cutter lamella of the adjacent pair at the location of the top of the cutter lamellae; the two cutter lamellae of each pair respectively including angular portions oriented towards each other at the location of the top of the cutter lamellae, the angular portions of the two cutter lamellae of each pair being urged against each other under pre-load; and the cutter lamellae of each pair being elastically movable in both directions of reciprocation of the cutter, the leading cutter lamella of each pair, viewed in the direction of reciprocation of the cutter, acting as an elastic hair-pulling blade and the trailing cutter lamella of such pair acting as a rigid cutting blade.

4,536,957
SPLITTER FOR ELECTRICAL CABLE

Walter Britton, 4713 Acorn Dr., Lakeland, Fla. 33802

Division of Ser. No. 368,272, Apr. 14, 1982, Pat. No. 4,459,745, which is a continuation-in-part of Ser. No. 271,942, Jun. 9, 1981, abandoned. This application May 19, 1983, Ser. No. 495,997
Int. Cl.³ H02G *1/12*
U.S. Cl. 30—90.4 **1 Claim**

1. A method of splitting the outside sheath of an electrical cable comprising the steps of:

inserting a beading strip within a first trough of a first elongated member;

inserting the edge of the beading strip protruding from the first trough of the first elongated member within a longitudinal groove defined by a second elongated member such that the first and the second member are connected together by the interaction of the beading strip with the first trough and the longitudinal groove respectively;

adjusting the location of a cutting element within a transverse channel defined by the elongated members such that the cutting edge of the cutting element is disposed within a second trough of the second elongated member;



pressing the cable against the cutting edge of the cutting element such that the cutting edge pierces the outside sheath of the cable; and

pulling the cable longitudinally past the cutting means to split the sheath from the inner conductors.

4,536,958

TWIN ELEMENT, CYLINDRICALLY DISASSEMBLABLY HINGED TOOL

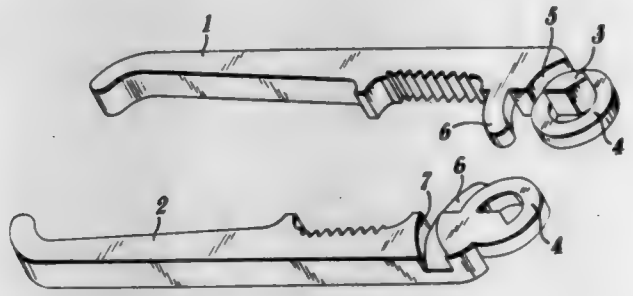
Riccardo Tosi, Valle Ceppi-Pino Torinese, Italy, assignor to Merisinter S.p.A., Arzano, Italy

Filed Nov. 22, 1982, Ser. No. 443,743

Claims priority, application Italy, Jun. 17, 1982, 48665 A/82

Int. Cl.³ A47J *43/26*; B26B *17/00*

U.S. Cl. 30—120.3 **3 Claims**



1. A hinge arrangement, comprising two identical twin elements pivotable relative to one another about a pivot axis, each said element having a base portion with a circle sector surface with a center conciding with said pivot axis and formed with a predetermined width, an annular element defining a circular hole and having a width equal to half of said circle sector surface width, said annular element being connected to said circle sector surface so as to be concentric thereto, a cylinder sector shaped projection located in said circular hole so as to define an eyelet together with said annular element, said eyelet completing the cylindrical shape of said projection, said projection projecting from said annular element so as to form a circle sector groove together with said annular element and said circle sector surface, said groove being formed concentric to said projection and said annular element for slidably accepting said annular element of the other twin element, a circle sector tongue projecting from said base portion, and a seat for slidably accepting said tongue of the other twin element, said tongue and said seat being located adjacent to said circle sector groove and also concentric to said annular element, whereby said projection, said annular element and said tongue of each of the two twin elements may be coupled, respectively, with said eyelet, said groove and said seat of the other of the two twin elements to form the hinge, said projection of each twin element cooperating together to form a pivot which has an opening end-of-stroke position in which said tongues are disengaged from said seats said circle sector tongues and said seats cooperating so as to hinder an axial displacement of said twin elements, thereby permitting disengagement of said twin elements only when said tongues are pulled out of their respective seats in the opening end-of-stroke position.

4,536,959

FOLDING KNIFE

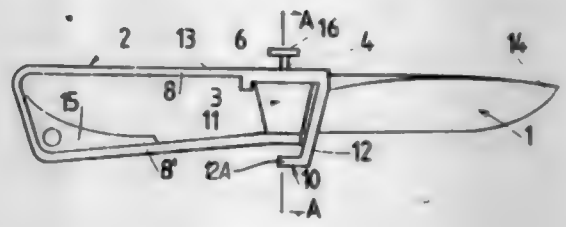
Mark A. Ross, P.O. Box 12, Greta Valley, North Canterbury, New Zealand, assignor to Mark Anthony Ross, N. Canterbury and Robert Allen Hiseman, Christchurch, both of, New Zealand

Filed Oct. 12, 1982, Ser. No. 433,782

Claims priority, application Netherlands, Oct. 12, 1981, 198614

Int. Cl.³ F41B *13/08*

U.S. Cl. 30—161 **11 Claims**



1. A folding knife comprising:

a handle including upper and lower longitudinally extending arms interconnected at a rear end of said handle to form a generally U-shape as viewed in side elevation,

a blade including a cutting edge portion and a tang portion, said tang portion being disposed between said upper and lower arms and having top and bottom edges located adjacent said upper and lower arms respectively, pivot means pivotally connecting said blade to a forward end of said handle, said pivot means extending through said tang portion to define a pivot axis lying within the plane of said tang portion and about which said blade can be rotated by about 180 degrees between a forwardly projecting open position and a rearwardly projecting closed position,

one of said upper and lower edges of said tang portion including a portion of rectangular cross-section and the one of said arms situated adjacent said one edge including a recess of correspondingly rectangular cross-section,

said portion of the tang and said recess in the arm being mutually engageable when said blade is in said open and closed positions to unyieldingly resist lateral forces applied to said blade and which tend to rotate said blade about said pivot axis, and

an additional arm connected to said one arm and projecting across and beyond the blade toward the other of said arms such that a distal portion of said additional arm is disposed beyond said other arm, thereby enabling said handle to be manually gripped by a user's hand with one finger on said distal portion,

said pivot means being manually displaceable along said pivot axis relative to said one arm by an engageable end of said pivot means projecting beyond said one arm and adapted to be engaged by another finger of the user's hand, said pivot means being connected to said tang portion such that when said engageable end is depressed by said other finger while said handle is held by the user's hand and while said one finger exerts pressure on said distal portion, said pivot means pushes said tang portion against said other arm to move said other arm away from said one arm to thereby mutually disengage said portion of rectangular cross-section to enable said blade to be rotated about said axis.

4,536,960

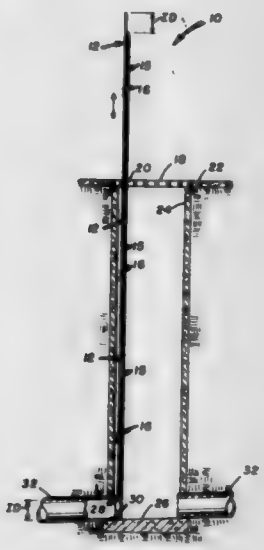
CALIPERS ARRANGED FOR REMOTE READING

Elliott J. Muti, 3423 E. Pratt St., Baltimore, Md. 21224

Filed Jul. 13, 1984, Ser. No. 631,828

Int. Cl.[3] G01B *5/02, 5/12*

U.S. Cl. 33—143 M **22 Claims**



1. A calipers device, said calipers device being arranged for remote reading of the measurement taken, comprising:

a first rod member;

a second rod member;

a plurality of coupler-guide members, said plurality of coupler-guide members being suitably affixed to said second rod member, each of said plurality of coupler-guide members being triangular in cross section configuration, said coupler-guide members each having a passageway therethrough, said first rod member being removably inserted through said passageways in said plurality of coupler-guide members and capable of slidingly moving in either direction through said passageways in said plurality of coupler-guide members when said second rod member is in a stationary position;

a first measuring point contact means, said first measuring point contact means being suitably affixed to said first rod member; and

a second measuring point contact means, said second measuring point contact means being suitably affixed to said second rod member.

4,536,961

THREE-DIMENSIONAL MEASURING DEVICE

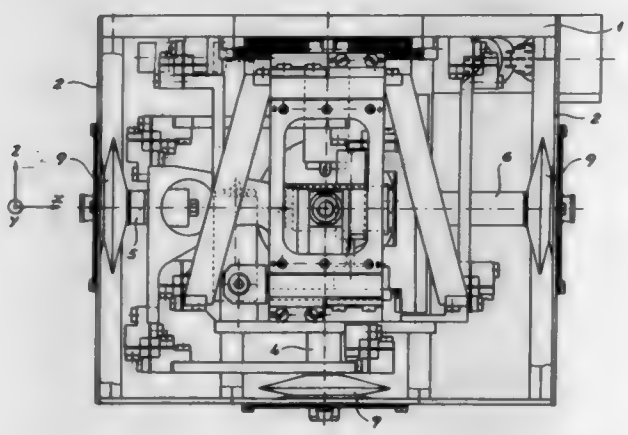
Michel Degoumois, Le Locle, Switzerland, assignor to Meseltron S. A., Corcelles, Switzerland

Filed Mar. 28, 1984, Ser. No. 594,101

Claims priority, application Switzerland, Mar. 31, 1983, 1799/83

Int. Cl.[3] G01B *7/28*

U.S. Cl. 33—169 R **28 Claims**



1. A three-dimensional measuring device containing at least one measuring sensor suspended by means of a suspension device, so as to be simultaneously displaceable in three orthogonal directions identified as x, y and z at right angles to a frame, that suspension device comprising, for each direction of displacement two moving bridges parallel to each other and joined by two rigid connecting elements hinged on the bridges so as to form a deformable frame, and a measuring detector to measure the relative displacement of the two bridges, characterized in that the suspension device comprises for the x direction a first upper bridge integral with the frame and a first lower bridge, for the y direction a second upper bridge rigidly connected to the first lower bridge and a second lower bridge, those second bridges located in the space separating the first upper and lower bridges, and for the z direction a first side bridge rigidly connected to the second lower bridge and a second side bridge to which said measuring sensor is fastened, said measuring sensor being moved to a reference position in the first two directions by gravity.

4,536,962

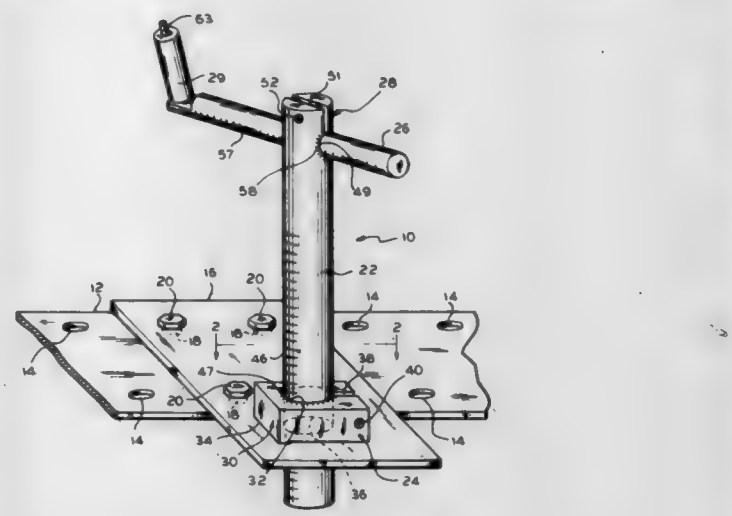
DATUM POINT LOCATION APPARATUS

Thomas R. Hense, New Berlin, and Ronald M. Rudolph, Oak Creek, both of Wis., assignors to Applied Power Inc., Milwaukee, Wis.

Filed Nov. 17, 1983, Ser. No. 552,768

Int. Cl.[3] G01B *5/03*

U.S. Cl. 33—516 **8 Claims**



1. A motor vehicle datum locating fixture includes a base having means for securing the base to a support frame so that the base can be secured to a frame in any one of a plurality of discreet locations,

first, second and third elongate bar means which are circular in transverse cross-section,

first clamping means for fixing said first elongate bar means, in any of a plurality of axial and angular positions relative to the base,

second clamping means disposed on said first elongate bar means for fixing said second elongate bar means with its longitudinal axis extending perpendicular to the direction in which the axis of said first elongate bar means extends and in any one of a plurality of rotational angles,

said first and second clamping means including clamp means and means slidably and rotatably engaging said first and second bar means, respectively, to permit said first and second bar means to be slid axially and rotated in their respective first and second clamping means prior to the clamping thereof so that each may be positioned in a selected angular and longitudinal position relative to its respective clamping means, and

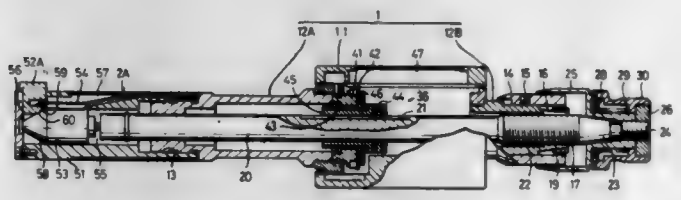
third means for mounting said third elongate bar means with its axis extending in a direction perpendicular to the direction in which the axis of the second bar means extends.

4,536,963

DIGITAL INDICATION TYPE MEASURING MACHINE

Takeshi Yamamoto, and Hideo Sakata, both of Kawasaki, Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan

Filed Aug. 21, 1984, Ser. No. 643,225
Claims priority, application Japan, Aug. 29, 1983, 58-133266[U]; Aug. 29, 1983, 58-133267[U]
Int. Cl.³ G01B 5/12
U.S. Cl. 33—178 E 13 Claims



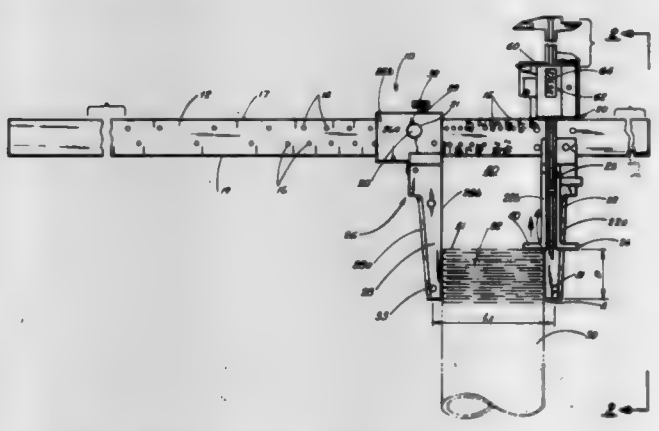
1. A digital indication type measuring machine comprising:
a main body having a spindle displaceable in the axial direction thereof;
a plurality of measuring heads detachably mounted to said main body, being different in size from one another, and each incorporating therein direction changing mechanism, in each of which a displacement value of said spindle is converted into a radial projection value of each of plural measuring elements at conversion rates equal to one another;
a displacement detector for detecting a displacement value of said spindle; and
an indication circuit processing an output signal from said displacement detector to obtain a measured length signal, digitally indicating a measured length value obtained from said measured length signal in an indicator and having a zero clear mechanism for forcedly clearing the indicated value in the indicator to zero value irrespective of the position of said spindle.

4,536,964

PIPE THREAD GAUGE

Richard J. Lazes, 2748 Orchid St., New Orleans, La. 70119

Continuation-in-part of Ser. No. 430,586, Sep. 30, 1982. This application Sep. 23, 1983, Ser. No. 535,216
Int. Cl.³ G01B 3/40
U.S. Cl. 33—199 R 12 Claims



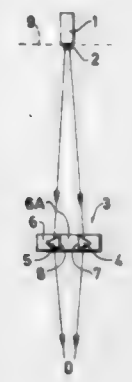
1. A pipe thread gauge comprising:
a. an elongated rail;
b. first blade block assembly fixedly mounted on said rail and having a first thread-engaging blade fixedly connected thereto, said blade extending substantially normal to said rail;
c. second blade block assembly slidably mounted on said rail for longitudinal sliding movement therealong;
d. means for locking said second blade block assembly at selected locations along said rail;
e. second thread-engaging blade fixedly connected to said second blade block assembly and set at a selected angle to said first thread-engaging blade thereby defining an open throat capable of receiving the threaded end of said pipe; and
f. means slidable along said first blade block assembly for engaging said end of the threaded end portion of said pipe for visually indicating the length occupied by the threads on said threaded end portion of said pipe, wherein said visual indicating means provides a digital read-out of said length.

4,536,965

OPTICAL AIMING DEVICE

Bernhard Tildeblad, Grönsaksvägen 64, 611 45 Nyköping, Sweden

Filed Nov. 3, 1983, Ser. No. 548,322
Claims priority, application Sweden, Nov. 3, 1982, 8206249
Int. Cl.³ F41G 1/14
U.S. Cl. 33—233 7 Claims



1. Optical aiming device comprising a front sight and spaced therefrom a rear sight, said front sight comprising an upstanding needle-like element or an illuminated spot, characterized in that the rear sight comprises two prisms disposed symmetrically on either side of the plane of symmetry through the front and rear sights and disposed so as to produce one image each of the front sight, said image lying in level with the front sight.

4,536,966

REAR-SIGHT FOR A WEAPON

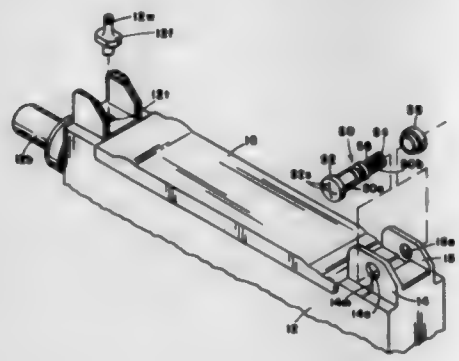
Isaac Engel, Tel-Aviv, Israel, assignor to The State of Israel, Ministry of Defence, Military Industries, Israel

Filed Jun. 28, 1984, Ser. No. 625,653
Claims priority, application Israel, Aug. 18, 1983, 69516
Int. Cl.³ F41G 1/28
U.S. Cl. 33—257 6 Claims

1. For use in a gun or the like having a front sight extending upwardly from a top side of the gun near the front thereof, a rear sight alignable with the front sight and supportable by first and second spaced apart ears extending upwardly from the gun near the rear end thereof, said rear sight comprising:
an elongated bolt-like element having a head and a substantially cylindrical body extending from said head, the ears of the gun having openings through which said substantially cylindrical body is insertable and alignable to be substantially parallel with the top side of the gun,
The length of said substantially cylindrical body from said head to an opposite end thereof being greater than the distance between the outer sides of the ears, whereby the

opposite end of said substantially cylindrical body extends through and out from a second one of the ears, and a portion of said substantially cylindrical body adjacent said head extends through and out from a first one of the ears when said cylindrical body is inserted into the openings of the ears.

said substantially cylindrical body having a first unthreaded portion extending a specific distance from said head and having a specific diameter, which is smaller than a diameter of said first one of the ears, whereby said substantially cylindrical body is insertable therethrough to extend to



said second one of the ears, and a second threaded cylindrical portion extending from said first cylindrical portion to the end of said cylindrical body, with the opening of the second one of the ears being threaded to receive said second cylindrical portion therethrough,

a radial recess formed in said first cylindrical portion at a predetermined distance from said head and having a predeterminded shape, and

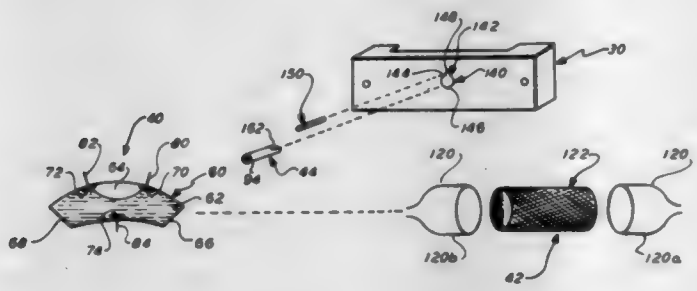
a locking nut adapted to threadably engage the part of said second cylindrical portion extending beyond the second ear.

4,536,967

TILT SENSOR AND METHOD OF ASSEMBLY

George W. Beitzer, Huntington, N.Y., assignor to Spectron Glass and Electronics, Incorporated, Uniondale, N.Y.

Filed Jan. 9, 1984, Ser. No. 569,399
Int. Cl.³ G01C *9/06, 9/28*
U.S. Cl. 33—366 **18 Claims**



1. A tilt sensor; comprising:

(a) mounting means;

(b) pedestal means secured to and extending from said mounting means;

(c) level sensor means secured to said pedestal means and having an exterior surface;

(d) thermal shunt means dispsosed about and in close proximity to said level sensor means and urged into close contact with said exterior surface of said level sensor means;

(e) said level sensor means containing a fluid electrolyte disposed therewithin to form a bubble of predetermined size and configuration and which is disposed at a predetermined location therewithin when the tilt sensor is in a predetermined position with respect to a given reference;

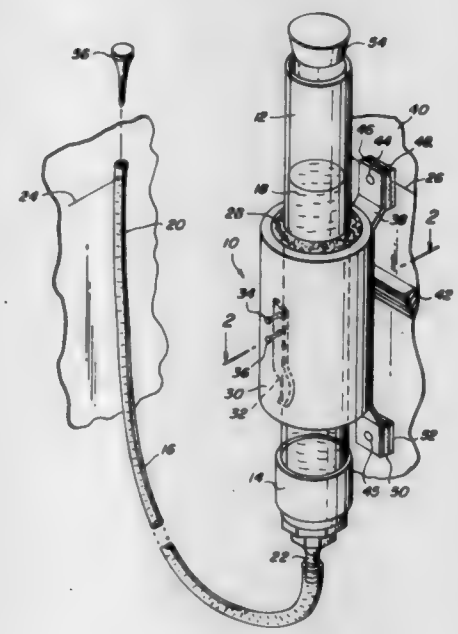
(f) said level sensor means further including conductive means suitably connected to said level sensor means for providing an output signal indicative of movement of said level sensor means with respect to said given reference.

4,536,968

ADJUSTABLE WATER LEVEL DEVICE

Jerome J. Lopiccolo, 90 Fischer Ave., Islip Terrace, N.Y. 11752

Filed Jun. 14, 1984, Ser. No. 620,693
Int. Cl.³ G01C *5/04*
U.S. Cl. 33—367 **4 Claims**



1. An adjustable water level device, comprising in combination:

(a) a transparent cylinder filled with a liquid whose upper surface is exposed to the atmosphere;

(b) an adapter fitting located at the bottom of said transparent cylinder wherein the downward force of water pressure may be transferred through a nipple located at the bottom end of said adapter fitting and thereon to liquid contained in a piece of tubing attached to said nipple whereby the level of water in said transparent cylinder is equal to the level of water in said piece of tubing as long as said tubing forms a "U" and as long as the level of the end of said tubing is such that water does not flow out of said tubing;

(c) means for attaching said adjustable water level device to a vertical surface such as a wall; and,

(d) means for adjusting said height of said water in said transparent cylinder, wherein said means for adjusting said height of said water in said transparent cylinder comprising an outer retaining cylinder encircling said transparent cylinder and permanently attached to said means for attaching and wherein the inner surface of said outer retaining cylinder is provided with an intermediate cylinder of resilient foam which acts as a friction clutch allowing the vertical movement of said transparent cylinder yet holding said transparent cylinder securely once set.

4,536,969

HOT WATER DRYING OF LOW RANK COAL

Michael I. Sherman, Glens Falls, N.Y., assignor to Kamyr, Inc., Glens Falls, N.Y.

Filed Sep. 30, 1983, Ser. No. 537,718
Int. Cl.³ F26B *3/00*
U.S. Cl. 34—9 **20 Claims**

1. A method of dehydrating low rank coal utilizing a heat exchange vessel having a top and a bottom, and comprising the steps of continuously:

(a) establishing a first flow stream of particulate low rank coal;

(b) preheating the first flow stream of particles;

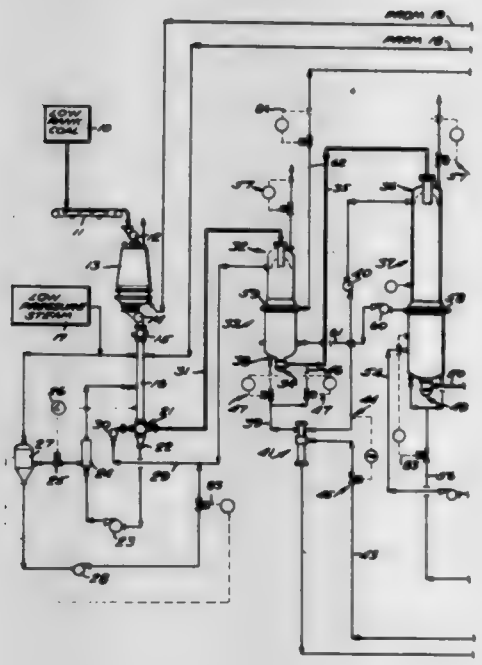
(c) immersing the first flow stream of particles in water;

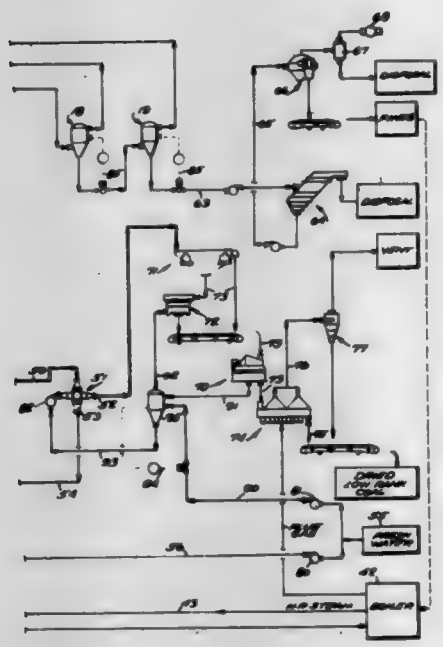
(d) transferring the particles flowing in the first stream immersed in water to a second flow stream having a pressure higher than in said first flow stream, but at a temperature less than the steam saturation temperature of the first stream;

(e) feeding the particles in the second flow stream to the top of the heat exchange vessel, and extracting liquid from the particles at the top of the heat exchange vessel and recirculating the extracted liquid to the second flow stream;

(f) introducing hot water to the bottom of the heat exchange vessel, to flow downwardly therein, the water having a temperature sufficient to facilitate dehydration of the low rank coal particles;

(g) discharging low rank coal particles from the bottom of the heat exchange vessel;





(h) feeding the low rank coal particles discharged from the bottom of the heat exchange vessel, with hot water, to the top of a dehydration vessel;

(i) extracting liquid from the particles at the top of the dehydration vessel and recirculating the extracted liquid to the heat exchange vessel;

(j) effecting counter-current washing of the particles at the bottom of the dehydration vessel to cool and wash the particles at the bottom of the dehydration vessel;

(k) withdrawing spent hot wash water, and water of dehydration, from the dehydration vessel and directing the hot spent wash water, and water of dehydration, to the heat exchange vessel to flow countercurrently to the low rank coal therein to effect a substantial recovery of heat from dehydrated low rank coal; and

(l) depressurizing the particles of low rank coal as they are discharged from the bottom of the dehydration vessel, the particles being withdrawn in a third particle flow stream, by transferring the particles flowing in the third flow stream to a fourth, lower pressure flow stream.

4,536,970

PROCEDURE FOR BOOSTING THE VENTILATION IN THE HOOD OF A PAPER MACHINE

Pekka Eskelinen, Turku, Finland, assignor to Valmet Oy, Finland

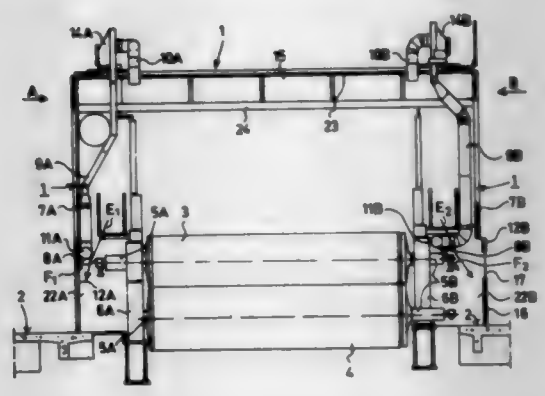
PCT No. PCT/FI83/00026, § 371 Date Nov. 14, 1983, § 102(e) Date Nov. 14, 1983, PCT Pub. No. WO83/03269, PCT Pub. Date Sep. 29, 1983

PCT Filed Mar. 16, 1983, Ser. No. 557,186

Claims priority, application Finland, Mar. 18, 1982, 820935

Int. Cl.³ F26B *3/24*

U.S. Cl. 34—41 **12 Claims**



1. In a drying section having a closed hood and side wall structures enclosing drying cylinders therewithin, a method for inhibiting condensation on the inner surfaces of the side wall structures, comprising the steps of:

disposing an air duct adjacent to at least one of the side wall structures of the closed drying section,

directing an air stream through the air duct, at least a portion of the air stream constituted by air from within the closed drying section, and

directing the air stream out from the air duct, substantially obliquely downwardly, and at least partially towards the inner surface of the respective adjacent side wall structure, to inhibit condensation on the inner surface wherein the humidity within the closed drying section is at least about 0.15 kg/kg.

4,536,971

APPARATUS FOR TESTING THE AIR-PERMEABILITY OF LENGTHS OF TEXTILES

Harald Pulsmeier, Hamischerstr., D-5163 Langerwehe-Heistern, and Walter Best, Merowingerstr. 8, D-5160 Dueren, both of Fed. Rep. of Germany

Filed Feb. 23, 1984, Ser. No. 582,719

Claims priority, application Fed. Rep. of Germany, Feb. 25, 1983, 8305292[U]

Int. Cl.³ F26B *9/06*

U.S. Cl. 34—89 **40 Claims**

1. An air-permeability measuring apparatus for textiles, particularly for paper-machine felts and dryer fabrics, comprising:

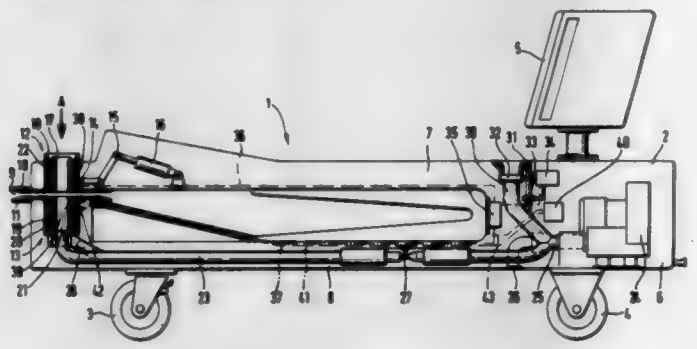
(a) a measuring fork having first and second rigid legs disposed in parallel overlying relation;

(b) a first double pipe stub displacably mounted to said first leg and said first double pipe stub comprising a first inner pipe stub providing a first inner flow channel and a first outer pipe stub radially spaced from said first inner pipe stub and therewith providing a first annular flow channel;

(c) a second double pipe stub mounted to said second leg and said second double pipe stub comprising a second inner pipe stub providing a second inner flow channel and a second outer pipe stub radially spaced from said second inner pipe stub and therewith providing a second annular flow channel;

(d) said double pipe stubs being coaxial and said first double pipe stub adapted for being displaced between a first insert position and a second clamping position wherein end faces of said double pipe stubs are oppositely disposed for clamping a length of fabric therebetween so that said second inner and annular flow channels commuicate with said first inner and annular flow channels;

(e) pipe means extending from each of said second inner and annular flow channels;



(f) exhauster means operably associated with each of said pipe means for exerting a vacuum on said second inner and annular flow channels and thereby inducing air flow through said first inner and annular flow channels when said first double pipe stub is in said second position;

(g) control valve means operably associated with the pipe means extending from said second annular flow channel for regulating the air flow therethrough;

(h) measuring means associated with the pipe means extending from said second inner flow channel for measuring the air flow therethrough; and,

(i) control means operably associated with said control valve means and with said exhauster means for assuring constant pressure on each of said second inner and annular flow channels.

4,536,972

SHELF LOWERING AND VIAL STOPPERING FREEZE-DRYING APPARATUS

Thomas E. Norton, Sr., 302 Valley Forge Rd., Cinnaminson, N.J.

Filed May 25, 1984, Ser. No. 614,346
Int. Cl.³ F26B *13/30*; B65B *7/28*
U.S. Cl. 34—92 **13 Claims**

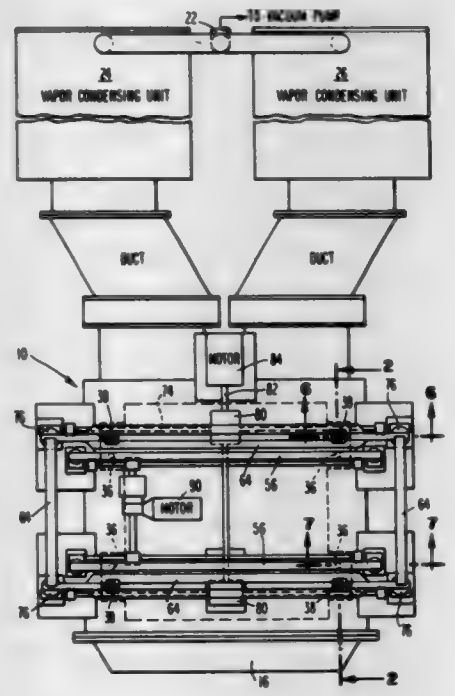
1. Freeze drying apparatus comprising

a chamber having a plurality of initially positioned, predeterminedly spaced, horizontally disposed, vertically aligned shelves supported therewithin,

means for simultaneously depressing a plurality of upper of said shelves to form a progressively increasing stack thereof atop an intermediately disposed support shelf,

means for controllably elevating each of said stacked shelves successively to said initially predeterminedly spaced disposition, and

additional means for elevating each shelf within said chamber disposed below uppermost of said shelves to decrease



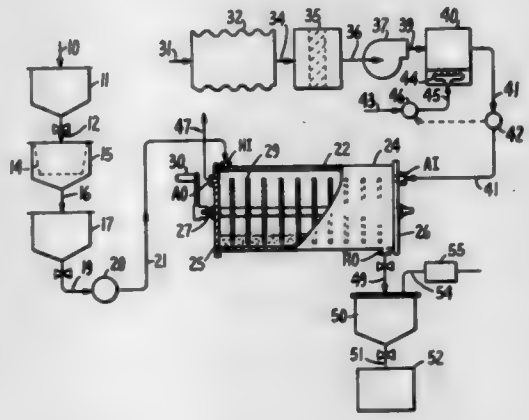
said predeterminedly spaced distance between adjacent shelves.

4,536,973

REMOVING WATER FROM HONEY AT AMBIENT PRESSURE

James L. Platt, Jr., Novato, and John R. B. Ellis, Kentfield, both of Calif., assignors to Chevron Research Company, Inc., San Francisco, Calif.

Division of Ser. No. 456,115, Jan. 6, 1983, Pat. No. 4,472,450.
This application Jul. 3, 1984, Ser. No. 627,648
Int. Cl.³ F26B *17/20*
U.S. Cl. 34—182 **5 Claims**

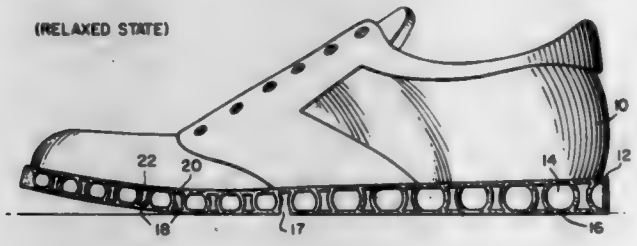


1. An apparatus for removing water from honey under evaporative cooling conditions comprising a housing for holding the honey, a horizontally positioned rotatable shaft within said housing having a high surface area rotatable body mounted thereon, means for adding honey to and removing honey from said housing, means for adding 40°to 75° C. substantially dry air to and removing moist air from said housing at a temperature effective to avoid decomposition of the honey, and means for rotating said shaft and said high surface area body.

4,536,974
SHOE WITH DEFLECTIVE AND COMPRESSIONABLE MID-SOLE

Eli Cohen, 350 Continental Ave., Paramus, N.J. 07652

Filed Nov. 4, 1983, Ser. No. 548,614
Int. Cl.[3] A43B *13/18, 7/08*
U.S. Cl. 36—28 9 Claims

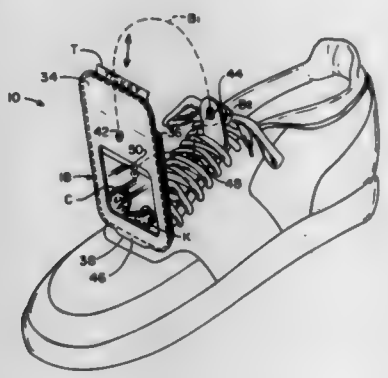


1. A sole component for a shoe comprising:
an inner sole provided directly underneath the shoe;
a mid-sole provided directly underneath said inner sole, said mid-sole provided with a plurality of pairs of ribs transverse to the longitudinal axis of said shoe, each of said pairs of ribs provided with first and second ribs, said first rib of one of said pairs of ribs provided with at least one portion angled with respect to said inner sole, and said second rib of said one of said pairs of ribs provided with at least one portion angled with respect to said inner sole and angled oppositely from said angled portion of said first rib, each of said pairs of ribs initially spaced from adjacent pairs of ribs such that when a force is applied normal to said shoe, each of said ribs freely deflects until each of said first ribs of said pairs of ribs intrudes upon a second rib of an adjacent pair of said ribs, at which point said ribs begin to compress; and
an outer sole provided directly underneath said mid-sole.

4,536,975
MULTI-PURPOSE DETACHABLE POCKET SYSTEM

Bruce W. Harrell, 3402 Auchentoroly Ter., Baltimore, Md. 21217

Continuation-in-part of Ser. No. 504,888, Jun. 16, 1983, Pat. No. 4,507,882. This application Mar. 30, 1984, Ser. No. 595,415
Int. Cl.[3] A43B *23/24*
U.S. Cl. 36—136 7 Claims

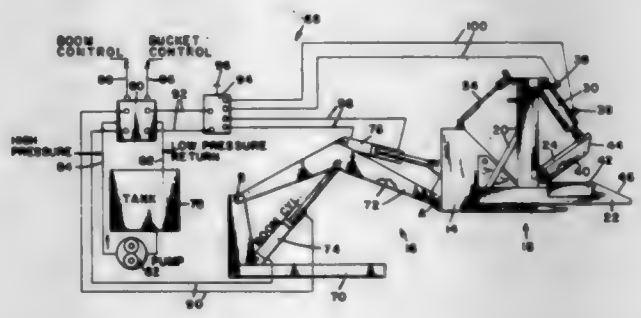


1. In a detachable pocket system for support by apparel such as laces of shoes or belts and having: a pocket with a bottom, open top, front face and back face and fold over cover for extending over the open top, a strap extending from the bottom of the pocket and having means for detachably securing around objects such as shoelaces or belts, the improvement comprising: the fold over cover being an extension of said front face and said extension over the open top being extend rearwardly and downwardly, said strap being an extension of one or the other of said front and back faces and extending rearwardly, then upwardly and then forwardly over said extension of the front face and downwardly to a free end, and said means for detachably securing including first means for attaching the free end to the front face.

4,536,976
BRANCH CUTTER MOUNTED ON FRONT LOADER BUCKET

Weikko R. Holopainen, Clover Ridge Farm Barre Rd., Hubbardston, Mass. 01452

Filed Jul. 22, 1983, Ser. No. 516,108
Int. Cl.[3] E02F *3/76*
U.S. Cl. 37—117.5 8 Claims



1. Branch cutter for a tractor having a material handling element which is movable independently of the tractor, said branch cutter comprising:
(a) a frame,
(b) a fixed blade fixed to the frame,
(c) a movable blade which is pivotally mounted on the frame for movement between an open position in which the movable blade is spaced from the fixed blade to a closed position in which the movable blade cooperated with the fixed blade for cutting a branch which is positioned between the blades,
(d) a fluid driven actuator which is operatively connected to the frame and the movable blade for moving the movable blade between said open position and closed position,
(e) a bracket which is adapted to be attached to the material handling element of the tractor,
(f) means for for pivotally connecting the frame of the branch cutter to the bracket so that the frame can swing from a first position in which the movable blade moves in a vertical plane which is parallel with the moving plane of the material handling element of the tractor to a second position in which the movable blade moves in a plane which is perpendicular to the moving plane of said material handling element, and
(g) an adjustable stabilizing rod which is operatively connected to the said material handling element and the frame of the branch cutter for locking the branch cutter in either of said first and second positions.

4,536,977
PORTABLE, HAND-HELD STEAMING OR PRESSING DEVICE

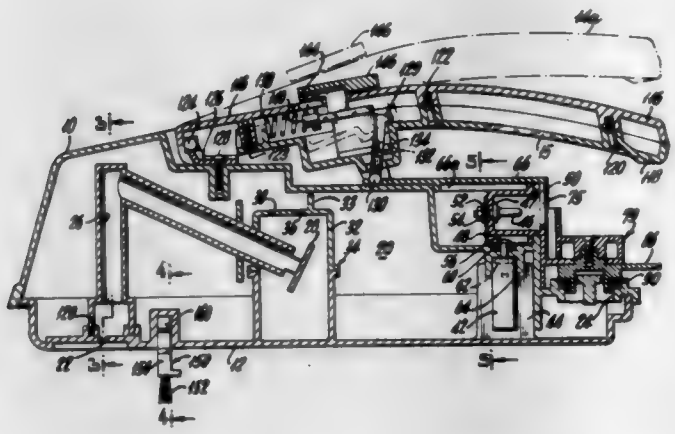
John S. Doyel, 404 W. 20th St., New York, N.Y. 10011

Filed Mar. 21, 1984, Ser. No. 591,971
Int. Cl.[3] D06F *75/16*
U.S. Cl. 38—77.83 6 Claims

1. A portable, hand-held steaming/pressing device comprising:
a hollow, sealed housing having a front and a back end and a sole plate at its bottom, said plate having a steam outlet therein, and a filling hole positioned a selected distance above the sole plate to allow only a selected quantity of liquid electrolyte to be poured into the housing before overflowing when the sole plate is on a horizontal surface and a filling hole stopper manually movable between a locked position in which it engages and seals the filling hole, and a filling position, in which it can be moved away from the filling hole to allow pouring electrolyte onto the housing;
a pair of electrodes positioned inside the housing to be immersed in electrolyte when the housing is resting on the sole plate on a horizontal or nearly horizontal surface or

the front end of the housing points upwardly but not when up to said selected quantity of electrolyte is in the housing and the housing is upside down or on its side or its front end points downwardly, and a pair of electrical connector elements respectively connected electrically to the electrodes and extending outwardly of the sealed housing for connection with the plug of an electrical cord connectible to an electrical power outlet; and

safety interlock means for both (i) preventing the filling hole



stopper from being moved from its locked to its filling position while the cord plug makes electrical contact with said connector elements and (ii) preventing the plug from being moved into electrical contact with said connector elements while the stopper is in its filling position;

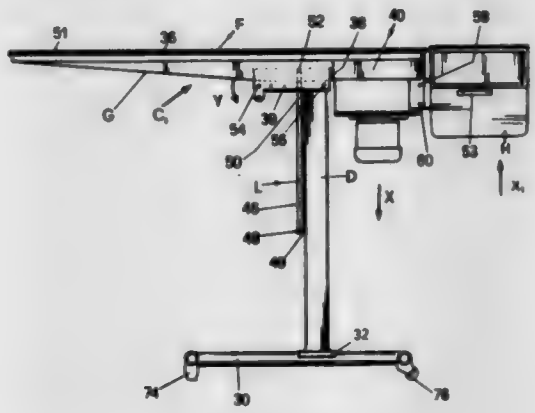
said electrodes, when immersed in electrolyte and connected electrically to a power outlet, passing electrical current through the electrolyte and thereby heating it to generate steam, and said steam exiting the housing through said seam outlet in the sole plate.

4,536,978

STEAM IRONING APPLIANCE

Rosanna Cerutti, Via degli Odescalchi 15, Milan (20148)

Filed Jan. 25, 1984, Ser. No. 573,681
Claims priority, application Italy, Feb. 7, 1983, 20706/83[U]
Int. Cl.[3] D06F *81/08*
U.S. Cl. 38—103 **11 Claims**



1. A steam ironing machine comprising:

a support member;

an ironing board having first and second ends; a steam iron for cooperation with said ironing board to iron a cloth article and connected to a source of steam for applying steam to the cloth article;

suction means mounted on said first end of said ironing board for connection to means at said ironing board for removing residual moisture from the cloth article;

hinge means for pivotally mounting said ironing board, at a position thereof between said first and second ends thereof, to said support member for pivotal movement with respect thereto between a work position, whereat said ironing board extends horizontally, and a rest position, whereat said ironing board extends vertically with said second end thereof directed downwardly; and

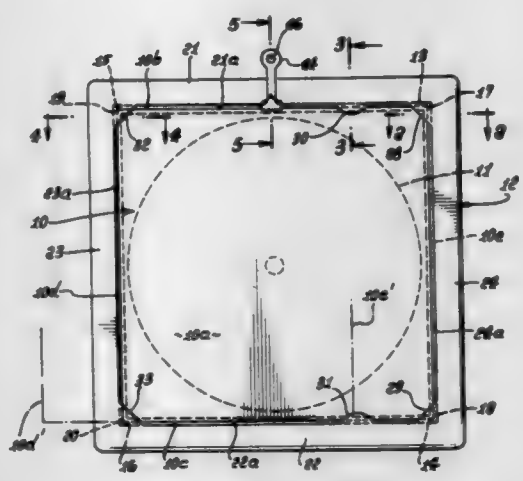
shock absorber means for controlling movement of said ironing board in opposite directions between said work and rest positions and for absorbing stresses resulting from said movement, said shock absorber means comprising a pair of parallel shock absorbers, each said shock absorber including a cylinder having a lower end pivoted to said support member, and a piston rod movable into and out of said cylinder and having an upper end pivoted to said ironing board, said shock absorbers being located on a side of said support member directed toward said second end of said ironing board, said shock absorbers extending substantially parallel to said support member when said ironing board is in said work position thereof, and said shock absorbers being inclined to said support member when said ironing board is in said rest position thereof.

4,536,979

RECORD JACKET FRAME PERMITTING RECORD REMOVAL

Delbert J. Parkinson, Box 771, CECOM, FPO Seattle, Wash. 98773, assignor to Delbert J. Parkinson and William W. Haefliger, both of Pasadena, Calif., a part interest

Filed Oct. 26, 1981, Ser. No. 314,675
Int. Cl.[3] G09F *1/10*
U.S. Cl. 40—159 **3 Claims**



1. For use in combination with a phonograph record jacket which is rectangular and has resiliently flexible corners, the combination comprising

(a) a rectangular frame having corners located to receive jacket corners,

(b) primary holder means on the frame to guide jacket longitudinal sliding movement generally parallel relative to the frame to displace first and second jacket corners into first and second positions of reception and retention in first and second corners respectively of the frame,

(c) and secondary holder means on the frame to interface with displacement of third and fourth jacket corners into and out of third and fourth positions of reception and retention in third and fourth corners respectively of the frame, and located to permit forcible flexible displacement of the third and fourth corners past said secondary holder means into and out of said third and fourth positions where the jacket first and second corners are in said first and second positions, whereby the jacket third and fourth corners may be displaced out of said third and fourth positions and the jacket slidably moved to displace the jacket first and second corners out of said first and second positions allowing edgewise insertion or removal of a record disc into or out of the jacket,

(d) said primary holder means including first and second tabs at said first and second frame corners to overlie the jacket first and second corners in said first and second positions thereof,

(e) said primary holder means also including auxiliary tabs on frame longitudinal lengths extending in the direction of said jacket sliding movement in spaced relation to the frame corners to overlie and guide longitudinal edge portions of the jacket,

(f) said primary holder means including third and fourth tabs at said frame third and fourth corners and having edges past which the jacket third and fourth coreners may be resiliently snap-deflected, into and out of said third and fourth positions,

(g) and including said record jacket having said first, second, third and fourth corners retained by the frame at said frame first, second, third and fourth corners, respectively, lengthwise edge extent of the jacket also being retained by said auxiliary tabs,

(h) said auxiliary tabs located closer to said first and second tabs, respectively, than to said third and fourth tabs, respectively, one auxiliary tab located between the first and third tabs, and the other auxiliary tab located between the second and fourth tabs,

(i) said frame having elongated ledges at the rear side thereof to register with jacket elongated edge portions when the jacket corners are displaced into said first through fourth positions, said first through fourth tabs being oversize relative to the jacket corners and extending diagonally relative thereto so that the jacket corners may be loosely received in said first through fourth positions, in directions parallel to the plane of the jacket,

(j) the frame including two longitudinally extending members interconnected by two laterally extending members, and including support means on one of the longitudinally extending members for hanging the frame on a carrier.

4,536,980

PIN SCREEN

Ward Fleming, 88 W. Broadway, New York, N.Y. 10007

Continuation-in-part of Ser. No. 423,114, Sep. 24, 1982, abandoned, which is a division of Ser. No. 91,125, Mar. 21, 1980, Pat. No. Des. 270,317. This application Aug. 30, 1983, Ser. No. 527,741

Int. Cl.³ A47F *11/06*

U.S. Cl. 40—427 **10 Claims**



1. A pin screen for producing visual display comprising:

a plate having a plurality of apertures extending through said plate,

supporting means supporting said plate in an elevated position relative to the ground,

at least some of said apertures in said plate receiving pins having (1) a shank insertable through said aperture and being selectively relatively movable with respect to said plate and (2) a pin head larger in width than the diameter of said aperture,

said pins inserted through said apertures being selectively movable relative to said plate through said respective apertures, said pins producing a visual display resultant only from the varying attitudes of said pin heads and oscillating and vibrating movements of the pin heads relative to said apertured plate.

4,536,981

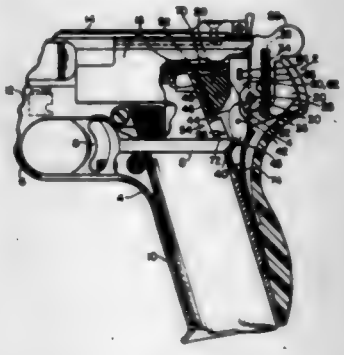
FIREARM ASSEMBLY

Paul S. Giragosian, 66 Lake St., Arlington, Mass. 02174

Continuation-in-part of Ser. No. 423,325, Sep. 24, 1982. This application Dec. 11, 1984, Ser. No. 680,353

Int. Cl.³ F41C *5/00, 19/00*

U.S. Cl. 42—69 B **2 Claims**



1. A firearm assembly comprising a frame assembly, a modular hammer and safety assembly, a slide receiver, and a barrel assembly,

said hammer and safety assembly comprising a housing,

slide means extending from said housing,

hammer means mounted in said housing,

disconnector means slidably mounted in said housing, and

safety means mounted in said housing,

said frame assembly having

slide means thereon adapted for alignment with said hammer and safety assembly slide means to cooperatively constitute an elongated uninterrupted slide means adapted to receive said slide receiver,

said slide receiver having

slide means thereon for slidable engagement with said combined frame assembly and hammer and safety assembly slide means, whereby to lock said hammer and safety assembly in said frame assembly,

safety actuator means thereon operable to engage said hammer and safety assembly safety means, and

cam means thereon for engagement with said hammer and safety assembly disconnector means,

said barrel assembly having means thereon for attachment to said frame assembly,

said frame assembly having means thereon for releasably retaining said barrel assembly.

4,536,982

CYLINDRICAL RIFLE HANDGUARD ASSEMBLY

Seth K. Bredbury, Winsted, and Harold J. Waterman, Jr., Wallingford, both of Conn., assignors to Colt Industries Operating Corp., West Hartford, Conn.

Filed Oct. 21, 1983, Ser. No. 544,009

Int. Cl.³ F41C *23/00*

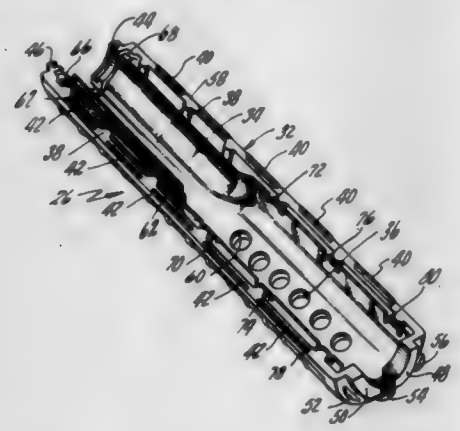
U.S. Cl. 42—71 R **12 Claims**

8. A section of a rifle barrel handguard assembly adapted to be formed by two substantially identical sections which section comprises:

a shell having a generally semi-cylindrical shape, the shell having a plurality of vent holes arranged in a longitudinal row in the center thereof extending substantially from the front to the rear of the shell, the shell being adapted to be placed around a barrel with the sides of the shell disposed laterally of the barrel, the front and rear of the shell having surfaces for mounting the shell upon the barrel and clamping the shell and an identical shell together; and

a liner, having a forward segment and a rear segment, of generally semi-cylindrical configuration, mounted in the shell, the forward segment of the liner having a plurality of vent holes which define a centrally disposed longitudinal row, the vent holes in the forward segment of the liner

registering with certain of the vent holes in the shell for cooling the barrel, the rear segment of the liner covering



the adjacent vent holes in the shell and having a flange which projects from a side thereof.

4,536,983

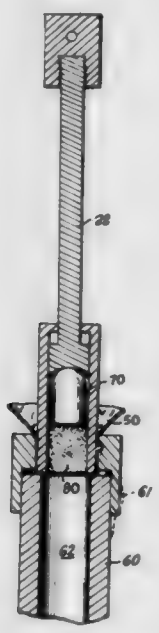
RELOADER FOR MUZZLE LOADERS

Daniel J. Fry, 731 Prospect Ave., Van Wert, Ohio 45891

Filed Aug. 12, 1983, Ser. No. 522,442

Int. Cl.³ F41C *27/00*

U.S. Cl. 42—90 **7 Claims**



1. A reloading device used to deposit a ball, a charge of powder, and at least a portion of a frangible membrane, into the bore of a muzzle loading firearm, wherein the reloading device comprises:

a plunger chamber, comprising an elongated hollow cylinder dimensioned to receive the ball and the charge of powder, and having a shallow reduced dimater portion on its exterior surface, and a projection extending outwardly from the shallow reduced diameter portion,

a plunger member slideably disposed in the plunger chamber, and

a locking collar having an internal recess dimensioned to receive the said projection on the plunger chamber, to join the locking collar and the plunger chamber together.

4,536,984

RETRIEVAL DEVICE FOR FISHING TACKLE

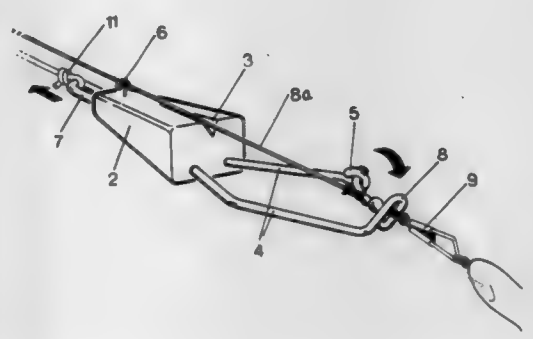
Leon Kowal, 15 Illingworth St., Canberra, Australia 2903

Filed Feb. 15, 1984, Ser. No. 580,422

Claims priority, application Australia, Feb. 18, 1983, PF8386; Feb. 23, 1983, 13537/83

Int. Cl.³ A01K *97/00*

U.S. Cl. 43—17.2 **2 Claims**



1. A fishing tackle retriever comprising

a weighted elongated body member having a forward portion and a rearward portion,

an attachment member at the rearward portion thereof for connection to a retriever line,

a pair of forwardly converging limbs extending from the said forward portion terminating in an upwardly directed closed loop to receive a snagged fishing line, said limbs including an openable metallic spring means forming a slot to admit said snagged line, said snagged fishing line being admittable to said closed loop by means of manually springing apart two contiguous unjoined portions of one of said limbs, said limbs being sufficiently spaced to permit the retriever to ride over a portion of the snagged fishing tackle whereby said loop can sit on a narrower portion of said tackle to engage the tackle on retrieval of said retriever line,

a rear guide member on the upper rearward portion of said weighted body member for admitting and being guided by the snagged line, and

a longitudinal groove in the weighted body, said rear guide member, and the upper portion of said closed loop, all being in longitudinal alignment for close guiding by the snagged fishing line.

4,536,985

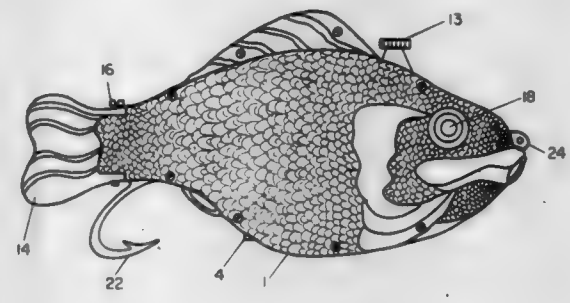
SELF-PROPELLED, PREPROGRAMMABLE FISHING LURE

Robert J. Caviness, 1601 18th St. NW. Apt. 210, Washington, D.C. 20009

Filed Aug. 19, 1983, Ser. No. 524,752

Int. Cl.³ A01K *85/01, 85/06*

U.S. Cl. 43—17.6 **11 Claims**



1. A self-propelled, preprogrammable fishing lure, comprising:

(a) a hollow body member;

(b) a propulsion means located in said body member;

(c) a direct current voltage source for powering said propulsion means; and

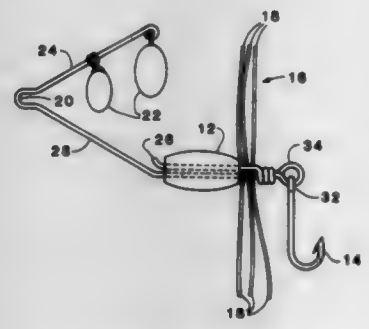
(d) electronic circuit means for causing said propulsion means to operate automatically in a variable, intermittent manner once said voltage source is actuated.

4,536,986

METHOD OF CONSTRUCTION OF SKIRT FOR FISHING LURES

Larry E. Stout, 9240 Carmel Rd., Atascadero, Calif. 93422

Filed Jan. 27, 1984, Ser. No. 574,396
Int. Cl.³ A01K *85/08*
U.S. Cl. 43—42.27 **9 Claims**



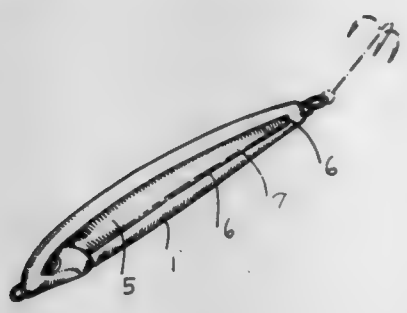
1. A method for securing skirt strands and a hook having an eye to a lure body, comprising the steps of:
(a) bending a length of wire back upon itself to define a shorter leg and a longer leg that extend from the bend;
(b) threading the eye of the hook onto the length of wire and positioning the eye at the bend;
(c) entwining the shorter leg and the longer leg to form a closed loop that passes through the eye of the hook;
(d) arranging the shorter and longer legs to extend side-by-side away from the closed loop;
(e) inserting skirt strands between the shorter and longer legs and generally perpendicular to them;
(f) inserting both the shorter and longer legs through the lure body;
(g) pressing the lure body toward the closed loop;
(h) bending the portion of the shorter leg that has passed through the lure body to lie at an angle with respect to the longer leg, to secure the skirt strands.

4,536,987

FISHING LURE

Clifford Sanders, and Joanne Sanders, both of Box 114, Whaletown, B.C., Canada V0P 1K0

Filed Sep. 28, 1983, Ser. No. 536,657
Claims priority, application Canada, Oct. 19, 1982, 413762
Int. Cl.³ A01K *85/00*
U.S. Cl. 43—42.34 **10 Claims**



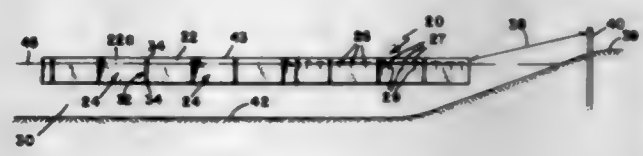
1. In a jigging lure having a body simulating a fish, at a head portion thereof means for attachment to a fishing line and, at a tail portion thereof hook means for hooking the fish, the improvement comprising; an identical recess disposed symmetrically on each side of the body extending longitudinally of the body from behind the head portion to the tail portion, said recess having a flat planar base and surrounding side walls extending at an obtuse angle from the base and to the side surface of the body, whereby to provide the lure with an improved motion and acton as it is jerked or jigged through the water, making the lure more attractive to predatory fish.

4,536,988

AQUATIC BIOMASS CONTAINMENT BARRIER AND METHOD OF ASSEMBLING SAME

Delman R. Hogen, Minneapolis, Minn., assignor to The Lemna Corporation, Minneapolis, Minn.

Filed Jan. 31, 1984, Ser. No. 575,331
Int. Cl.³ A01G *7/00*
U.S. Cl. 47—1.5 **11 Claims**



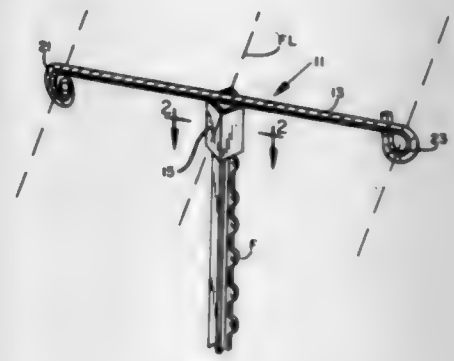
1. A floating containment barrier grid structure for containment of floating aquatic plants in a body of water, comprising:
a plurality of interconnected floating barrier sections, each barrier section having four sides arranged in a square configuration and enclosing the same amount of water surface area, the sides of said barrier sections having a top edge and a bottom edge, the sides lying in a vertical plane, said barrier sections having a specific gravity less than water, the top edge of said barrier sections extending above the surface of the water and the bottom edge of said barrier sections being off the bottom of the body of water, said barrier grid structure having sufficient elasticity to enable a portion of said barrier grid structure to be submerged below the surface of the water, the barrier grid structure being suitably anchored to prevent substantial lateral movement of said barrier sections across the surface of the water.

4,536,989

CROSS ARM UNIT

Clayton D. Caywood, Lodi, Calif., and Ronald L. Bogh, McMinnville, Oreg., assignors to Cascade Steel Rolling Mills, Inc., McMinnville, Oreg.

Filed Apr. 26, 1984, Ser. No. 604,238
Int. Cl.³ A01G *17/06*
U.S. Cl. 47—46 **2 Claims**

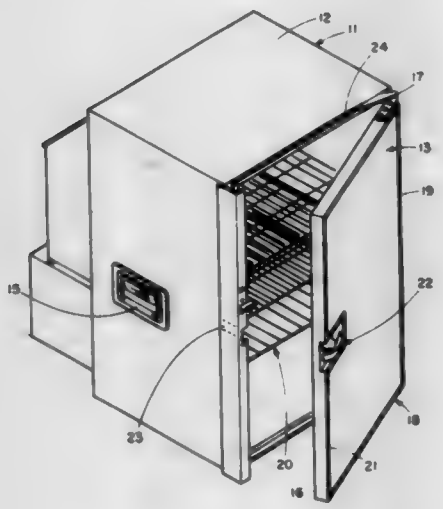


1. A trellis unit comprising a standard metal fence post of T shape in cross section having a head portion and a shank portion,
a cross arm unit of claim 9 for said post, with said socket member being slidably fitted over an end of said post,
The length of the shank portion of said metal post with the post considered in cross section being greater than one-half the diagonal of said passageway,
the end edge of said shank portion engaging a corner of said passageway,
the end edges of said head engaging inner faces which are remote from the mentioned corner.

4,536,990
TORSIONALLY STIFF LIGHTWEIGHT REFRIGERATOR/FREEZER DOOR

Gary D. Siegrist, and Edward S. Blain, both of Rockford, Ill., assignors to Sundstrand Corporation, Rockford, Ill.

Filed May 17, 1982, Ser. No. 378,681
Int. Cl.[3] E06B *3/00*
U.S. Cl. 49—501 5 Claims



1. A torsionally stiff door structure mounted for pivotal movement at an upper and lower point on a line parallel to a hinge edge of said door, said door having a latch means at a point on an opposing latch edge of said door, said door structure, comprising in combination:

a pair of spaced apart panels forming respectively one side of said door and another side of said door,

said door experiencing a loading over the surface of said one side of said door, as well as, a highly directional opposing point loading on the other side of said door at a point near an upper portion of said door near said latch edge of said door, said surface loading and point loading tending to establish a bending moment about a first and second line, said first line passing through said upper point and intersecting a second line of said latch point, said second line additionally passing through said lower point,

at least two sets of intersecting U-shaped channel support members, each set having ends generally contiguous with said latch edge and said hinge edge,

said U-shaped channels having laterally extending flanges,

each support member of each of said sets of intersecting U-shaped channel support members having said extending flanges integrally secured over the length of said members to an adjacent surface of said spaced apart panels, each of said U-shaped channels having an outer surface integrally secured over the length of said channel to an adjacent surface of the other of said panels to thereby form a continuous box beam to transfer stresses to said space apart panels,

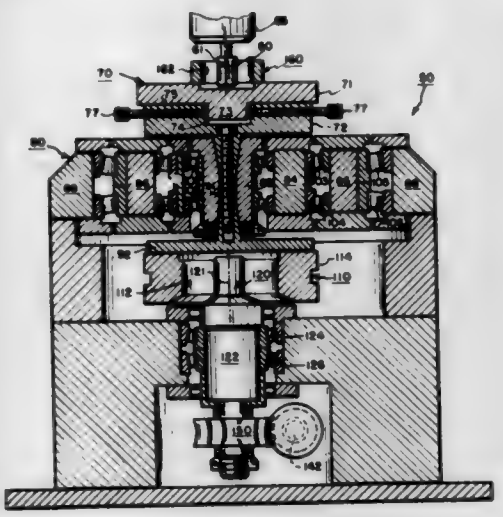
rigid support means between said panels along said hinge edge, said support means integrally secured to said panels and to said U-shaped channel support member ends contiguous with said hinge edge,

latch support means integrally mounted between said panels, said latch support means integrally secured to at least one of said U-shaped channel support members of each of said sets of intersecting U-shaped channel support members to thereby establish a door that is torsionally stiff when receiving said surface loading in one direction and said point loading in an opposing direction.

4,536,991
WORKTABLE WITH LATERAL AND ROTATIONAL MOVEMENT

Nils O. Hoglund, Jr., Berkeley Heights, N.J., assignor to Hoglund Tri-Ordinate Corporation, Berkeley Heights, N.J.

Filed Jul. 18, 1983, Ser. No. 514,505
Int. Cl.[3] B24B *17/02*
U.S. Cl. 51—101 R 4 Claims



1. A grinding apparatus for grinding a surface of a workpiece comprising:

a cam member having a surface corresponding to the surface to be ground on the workpiece.

a cam follower engaging the surface of the cam member,

means for supporting the workpiece and cam member for movement in accordance with the surface of said cam member, said means comprising:

a worktable to which said workpiece may be secured, said worktable comprising first and second members that fit together in sliding relation with a rectangular extension of one member protruding into a recess in the other member, said recess being large enough to permit in said recess linear movement of said extension in two dimensions and rotational movement about an axis perpendicular to said two dimensions, and at least eight adjustment screws with all of said screws mounted substantially in a single plane in said other member so at least two screws bear on each different side of said extension, whereby the lateral and rotational position of one of said members relative to the other may be varied by adjustment of the position of said adjusting screws,

a spindle connected to said cam member and said worktable, and

a spindle housing means in which said spindle is mounted for rotation about an axis of said spindle,

means for causing relative movement of the cam surface with respect to the cam follower, and

grinding means for engaging the surface of the workpiece to be ground as the cam surface moves relative to the cam follower.

4,536,992
PRECISION LAPPING SYSTEM

Douglas J. Hennenfent, New Hope; Allan L. Holmstrand, Bloomington, and Alan G. Kracke, Minnetonka, all of Minn., assignors to Magnetic Peripherals, Minneapolis, Minn.

Filed Nov. 4, 1983, Ser. No. 548,598
Int. Cl.[3] B24B *7/00*
U.S. Cl. 51—109 R 19 Claims

1. Apparatus for machining a workpiece surface, said surface having initial lateral stability, comprising:

a. a substantially rigid frame;

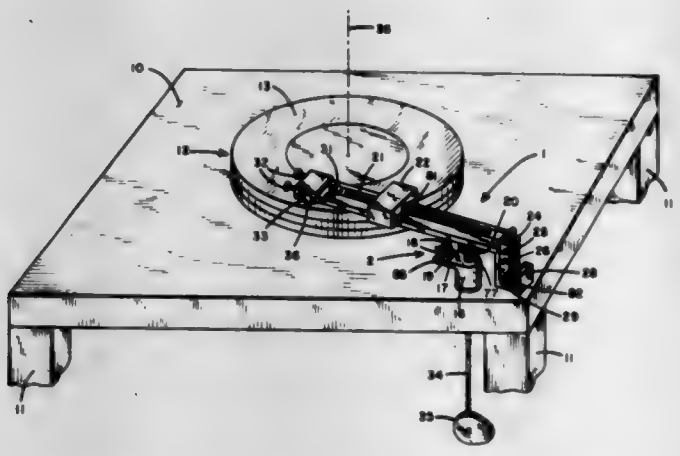
b. a lapping body having a substantially flat lapping surface carrying thereon abrasive particles within a predetermined area, and mounted on the frame for rotation about

a vertical axis with the lapping surface substantially horizontal;

c. a motor mounted on the frame and operatively connected to the body to provide torque for rotating the body;

d. a carrier arm support attached to the frame;

e. a rigid carrier arm assembly attached to the carrier arm support by a carrier arm pivot having a horizontal axis of rotation extending generally toward the predetermined area of the lapping body and lying within a predetermined distance of the plane of the lapping surface, said carrier arm assembly having a generally vertically extending segment journaled at the pivot, a segment extending generally horizontally toward the predetermined area of the lapping surface and along the carrier arm pivot's horizontal axis of rotation, and fixed to the upper end of the vertically extending segment, and a workpiece carrier attached to the horizontally extending segment at a point above and extending downwardly toward the lapping surface; and



f. means cooperating with the carrier arm support and the carrier arm pivot for allowing the workpiece carrier vertical movement above the lapping surface, wherein the workpiece carrier element includes a workpiece attachment means for fixing the workpiece with the surface to be machined facing downwardly toward and resting with gravity pressure on the lapping surface and within the circles traced by the inner and outer peripheries of the abrasive-carrying area.

4,536,993

GRINDING MACHINE

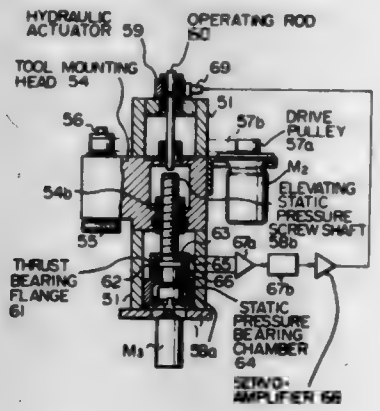
Masami Shimizu; Hisao Yoshikawa; Sosaku Kimura; Kazuo Shiba; Fumio Maeno; Shigehiro Fuwa, and Kuniyuki Mihara, all of Tokorozawa, Japan, assignors to Citizen Watch Company Limited, Tokyo, Japan

Filed Mar. 9, 1983, Ser. No. 473,513

Claims priority, application Japan, May 12, 1982, 57-78311

Int. Cl.³ B24B *49/16*

U.S. Cl. 51—165.8 **2 Claims**



1. A grinding machine, comprising

a bed;

a pair of guide columns fixedly mounted on said bed, with a plurality of guide surfaces being formed on said guide columns in a common vertical plane;

a tool mounting head disposed between said guide columns, supported for vertical movement by supporting means comprising elevating means coupled to said tool mounting head and operable to adjust the vertical position of said tool mounting head, sensing and control means for detecting any vertically directed force applied to said elevation means by said tool mounting head, and an operating member coupled to support said tool mounting head and controlled by said sensing and control means for applying a vertically directed force to said tool mounting head having a direction and magnitude such as to compensate for said vertically directed force applied to said elevation means by said tool mounting head, said tool mounting head being further provided with hydrostatic bearing means for restraining said tool mounting head against movement other than in a direction parallel to said plane of said guide surfaces of the guide columns;

a tool shaft rotatably mounted in said tool mounting head;

drive means for rotating said tool shaft;

a grinding tool fixedly mounted on said tool shaft;

a workpiece slide mounted on said bed for sliding motion traversing a guide surface formed on said bed; and

means for mounting at least one workpiece holding jig upon said workpiece slide.

4,536,994

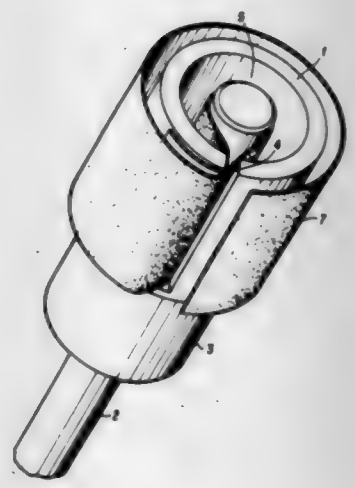
CURVED SURFACE SANDING DEVICE

William T. Krebs, 106 Virginia Ave., Cheraw, S.C. 29520

Filed Sep. 7, 1983, Ser. No. 530,062

Int. Cl.³ B24D *9/00*

U.S. Cl. 51—328 **2 Claims**



1. A method of sanding curved surfaces using a self-locking sanding device, said method comprising the steps of:

making a fold in a strip of abrasive paper;

inserting said fold around a mandrel and through a longitudinal slot of a tube coaxial to and surrounding said mandrel such that the abrasive paper strip on both sides of said fold extends through said slot to the outside of said tube;

wrapping said abrasive paper strip around said tube such that both sides of the fold extend at least partially around said tube;

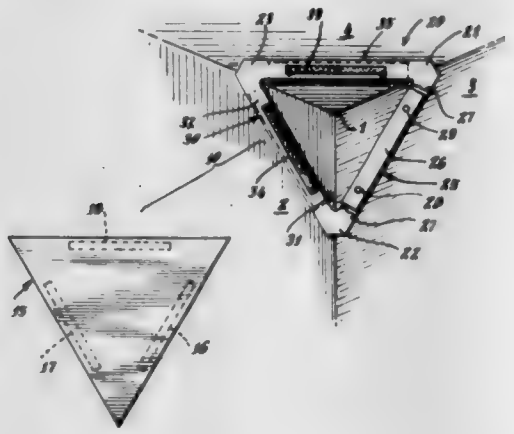
inserting an end of said mandrel into a drill chuck; and

operating said self-locking sanding device to sand an object, whereby said abrasive paper strip is positively locked in place by the forces acting thereon during said operation.

4,536,995
CORNER PANEL ASSEMBLY

Russell A. Frederick, 74 Walnut St., Milford, Conn. 06460

Filed Jun. 22, 1984, Ser. No. 623,354
Int. Cl.[3] E04F *19/00*
U.S. Cl. 52—27 12 Claims



1. A corner panel assembly for mounting in a corner of a room, where two walls and the ceiling converge, the corner panel assembly comprising:

(A) a generally triangular mounting frame having three side pieces connected by corner brackets at their adjacent ends, the side pieces being V-shaped in crosssection and each having a panel leg deployed in one plane and a wall leg extending from the panel legs at an acute angle such that a wall leg lies substantially flat against the wall and ceiling surfaces, the wall legs adapted to receive fasteners for securing the wall legs to the adjacent wall and ceiling and thereby mounting the mounting frame in the corner;

(B) a generally triangular front panel sized to be received on and conceal the generally triangular mounting frame, with the marginal edges of the rear surface of the front panel being disposed against the panel legs of the side pieces; and

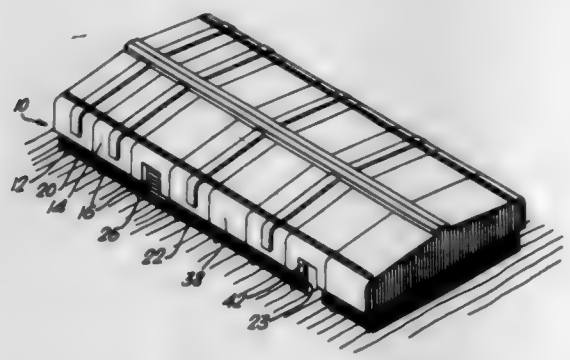
(C) securement means removably securing the front panel to the triangular mounting frame,

whereby the corner panel is adapted to mount items such as speakers, or security devices and the entire corner panel assembly mounts such devices in a corner of a room.

4,536,996
BUILDING STRUCTURE

Laurence M. Soden, 12 Corrib Heights, 30 Crescent Rd., London, N8, and John B. West, Pinehurst, Branksome Part Rd., Camberley, Surrey, both of England

Filed Feb. 17, 1983, Ser. No. 467,257
Int. Cl.[3] E04B *1/346*
U.S. Cl. 52—67 15 Claims

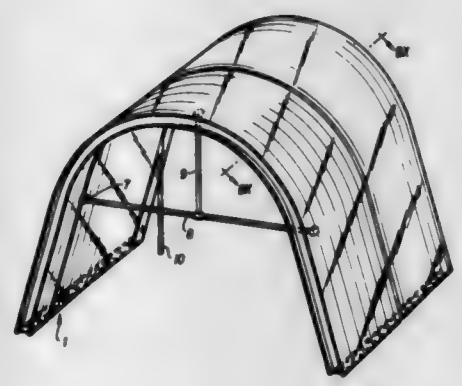


5. A permanent, non-transportable building structure which is constructed on site from component materials comprising an outer shell arranged to define a substantially enclosed usable space of adjustable dimensions, a section at least of the outer shell having a rigid lower frame including structural beams permanently mounted in foundations and defining a lower shell portion, a rigid upper frame defining an upper shell portion and including structural beams arranged slidably to engage the structural beam of the lower frame, wherein each of the structural beams is formed with a longitudinal side flange and the structural beams are arranged in slidably engaged pairs with the side flanges of the beams in each pair being arranged adjacent and generally parallel to one another for relative sliding movement and guide means are provided for fitting around the edges of adjacent side flanges of the beams in an associated pair for holding the beams in sliding engagement, the upper shell portion being slidable relative to the lower shell portion between a lowered position in which the two shell portions overlap to a substantial extent and a raised position in which the two shell portions overlap to a lesser extent, and means for fixing the upper shell portion relative to the lower shell portion in the raised position at least.

4,536,997
REINFORCED CONSTRUCTION PANEL

Felix Heescher, Horstel-Bevergern, Fed. Rep. of Germany, assignor to Rohm GmbH Chemische Fabrik, Darmstadt, Fed. Rep. of Germany

Filed Nov. 12, 1982, Ser. No. 441,173
Claims priority, application Fed. Rep. of Germany, Mar. 7, 1981, 3108711
Int. Cl.[3] E04B *1/32*
U.S. Cl. 52—86 9 Claims



1. A structure comprising:

(a) a panel bent around a longitudinal flexure axis, said panel having a plurality of parallel, dovetail-shaped grooves in the inner surface thereof, each of said plurality of parallel, dovetail-shaped grooves lying in a plane which is perpendicular to said longitudinal flexure axis, and

(b) a plurality of tension elements each one of which is disposed in a plane which is perpendicular to said longitudinal flexure axis, each of said plurality of tension elements comprising two male fittings, one at either end, each of said male fittings being sized and shaped so as to be received and held in one of said plurality of parallel, dovetail-shaped grooves.

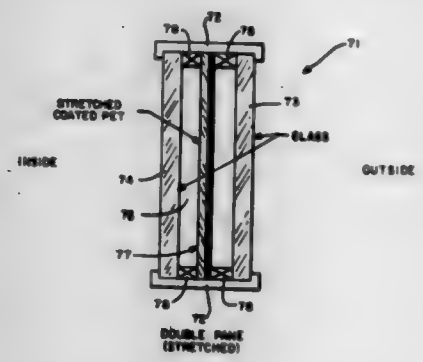
4,536,998
FLEXIBLE SELECTIVE ENERGY CONTROL SHEET AND ASSEMBLY USING THE SAME

John S. Matteucci, Healdsburg; James K. Snyder, and Robert E. Hahn, both of Santa Rosa, all of Calif., assignors to Optical Coating Laboratory, Inc., Santa Rosa, Calif.

Division of Ser. No. 308,025, Oct. 2, 1981, Pat. No. 4,463,047.
This application Mar. 29, 1984, Ser. No. 594,927
Int. Cl.[3] E06B *7/12*
U.S. Cl. 52—171 11 Claims

1. In an assembly of the character described, a frame, a pane of glass mounted in the frame and having inside and outside surfaces and an energy control sheet carried by the inside surface of the pane of glass, said energy control sheet comprising a sheet of substantially transparent flexible polymer thin film plastic material having first and second surfaces, an optically active substantially transparent adhesion promoting layer

adherent to said second surface of said sheet, said adhesion promoting layer being substantially continuous, a substantially transparent metal layer adherent to said adhesion promoting layer and a protective layer adherent to said metal layer, said



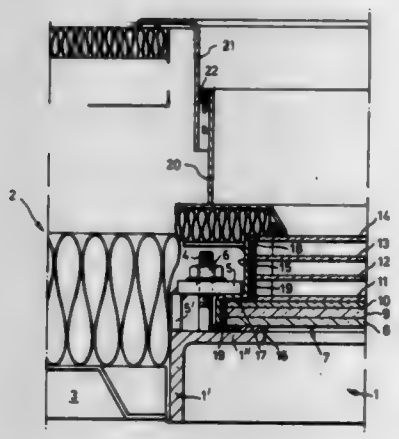
metal layer being formed of silver and having a thickness ranging from 60 to 200 Angstroms, said adhesion promoting layer and said protective layer being formed of zinc sulphide and having a thickness ranging from 300 to 500 Angstroms.

4,536,999

SHIP/OFFSHORE WINDOW FOR PERMANENT MOUNTING IN THE EXTERNAL STEEL BULKHEAD OF A WALL

Einar Eike, Tvedestrand, Norway, assignor to Golar Metall, Hilco Industries A/S, Tvedestrand, Norway

Filed May 25, 1983, Ser. No. 497,848
Claims priority, application Norway, Jun. 4, 1982, 821873
Int. Cl.³ B63B *19/00*; E06B *3/00*
U.S. Cl. 52—208 **2 Claims**



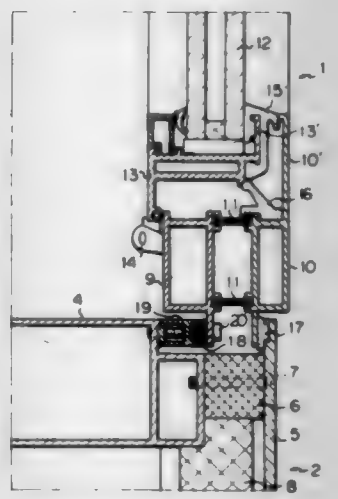
1. A ship/offshore window for permanent mounting in the external steel bulkhead of a wall, for example by welding, comprising a frame, preferably of steel, for pressure/proof and airtight retention of a number of glass members assembled in a package and having different desired properties for rendering the window pressureexplosion-proof and optionally, fireproof, light/heat reflective and soundproof, in different degrees and both separately and in various combinations, wherein the marginal edges of the pressure-proof glass member(s) project beyond the edges of the other glass members, said marginal edges being intended to be tightly but detachably retained between the window frame and releasable fastening means in engagement cooperating with the window frame, the improvement which comprises that the desired types of glass members are assembled in a hermetically sealed package unit of glass members, where said projecting margins of the pressure-proof glass members and the retracted margins of the other glass members are surrounded by a similarly offset (in cross section) protective/retainer frame, the projecting portion of said frame and the projecting margins of said pressure-proof glass member(s) being intended to be tightly but detachably retained between the inside surface of the window frame and said releasable fastening means which are secured to the window frame and are inwardly-projecting.

4,537,000

THERMAL INSULATING WINDOW FOR APPLICATION IN CURTAIN WALLS

Karl Gartner, Gundelfingen, Fed. Rep. of Germany, assignor to Yoshida Kogyo K. K., Tokyo, Japan

Filed Jul. 25, 1983, Ser. No. 517,007
Claims priority, application Japan, Jul. 26, 1982, 57-113264[U]
Int. Cl.³ E06B *1/32, 1/22*
U.S. Cl. 52—235 **2 Claims**



1. A thermal insulating window for application in curtain walls in which outer side skeleton members are connected to room side skeleton members of framed vertical members and horizontal members by means of thermal insulating members, said window comprising,

a thermal insulating window framework having internal framework members supported by the room side skeleton members of the curtain walls and external framework members connected to the internal framework members through thermal insulating members; and

a window body having a window casing mounted to the internal framework members of the thermal insulating window framework capable of opening and closing and a panel member supported at its periphery on the window casing;

said window being characterized in that it further includes a first sealing member consisting of a thermal insulating member which is adapted to cover the whole of the outer surface of the window casing and to be in contact with the outer upper portion of the external framework member whereby a thermal insulating area is provided at the junction of the window casing and the panel member and a thermal insulating space is defined between the thermal insulating window framework and the window body and

a second sealing member extends so as to be in contact at one end with the thermal insulating member which connects the internal framework members to the external framework members and at another end with the first sealing member and the window casing, thereby dividing the thermal insulating space between the thermal insulating window framework and the window body into two consecutive compartments disposed between outer and room side skeleton members.

4,537,001

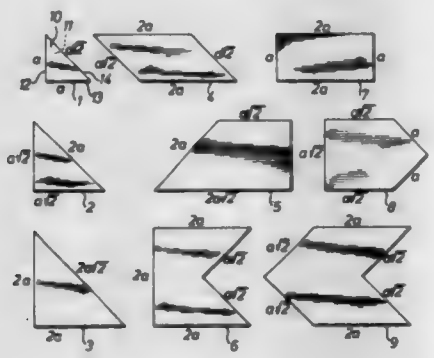
BUILDING ELEMENTS

Leif R. Uppström, P.O. Box 83, 154 00 Gnesta, Sweden

Filed May 23, 1983, Ser. No. 496,816
Int. Cl.³ B44F *7/00*
U.S. Cl. 52—311 **5 Claims**

1. Building elements of predetermined number with match-

ing side surfaces for fitting all of the predetermined number of building elements together to form construction of varying shape, each said building elements having the same length (L) and each having two opposite, equiform, flat, parallel end surfaces and at least three flat, rectangular side surfaces extending between said end surfaces thereby to present said matching side surfaces, the cross-sectional surfaces of the building elements each having a size which is a multiple of a triangular area of the size $a^2/2$, and the sides of the end surfaces having proportional lengths selected from the group consisting of a, $a\sqrt{2}$, 2a and $2a\sqrt{2}$ or a multiple thereof, "a" having a predetermined value, and the sides of the end surfaces defining proportional angles selected from the group consisting of 45°, 90°, 135° and 270°, said building elements to form said varying shape constructions being non-congruent, having non-congruent matching side surfaces and being always a nine in number said nine building elements being divided into three groups, a first group comprising a right-angled isosceles triangle, the equal sides of which each has a length a, a rectangle with sides



a and 2a and a parallelogram with sides $a\sqrt{2}$ and 2a, a second group comprising a right-angled isosceles triangle, the equal sides of which each has a length $a\sqrt{2}$, a parallel trapezium with sides $a\sqrt{2}$, 2a and $2a\sqrt{2}$, and a symmetrical pentagon defining with respect to its line of symmetry two parallel trapeziums having sides a, $a\sqrt{2}$, the third of said three groups of building elements comprising a right-angled isosceles triangle, the equal sides of which each has a length 2a, a symmetrical pentagon defining with respect to its line of symmetry two parallel trapeziums having sides $a\sqrt{2}$ and 2a, and a symmetrical hexagon defining with respect to its line of symmetry two parallelograms having sides $a\sqrt{2}$ and 2a, the end surfaces of the first group of building elements each having a height a, the end surfaces of the second group of building elements each having a height $a\sqrt{2}$ and the end surfaces of the third group of building elements each having a height 2a, all of said nine non-congruent building elements always being fitted together with predetermined of said side surfaces adjacent each other to form constructions of various shapes of varying cross-section but of the same area, $20a^2$.

4,537,002

GLAZING BEAD STRUCTURE

Robert T. Ellingson, Lakeville, Minn., assignor to Reese Enterprises, Inc., Rosemount, Minn.

Filed Sep. 8, 1983, Ser. No. 530,478

Int. Cl.³ E06B *7/16*

U.S. Cl. 52—403 **4 Claims**

1. A glazing bead member secured within the socket of a window frame, comprising

a window frame having channels to receive a window pane,

a glazing bead having a body portion drawn through said channel to be partially disposed therein,

a flexible projection of said body portion for a weather seal engagement with an adjacent window pane,

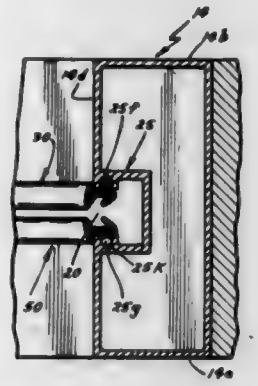
said channel having a restricted neck opening forming a shoulder at each side thereof at each side of said channel,

said body portion including an integral substantially rigid neck portion disposed into said restricted neck opening of said channel and extending thereinto,

said neck portion having a rigid stepped offset projection overlying a shoulder of said neck opening at one side of said channel,

said neck portion having a portion extending to the side of said channel opposite said one side of said channel,

said projection overlying said shoulder being pivotal thereon,



said bead upon being biased by a pane of glass being into said frame is caused to have said offset projection pivoted upon said shoulder restricted by said portion thereof engaging the opposed side of said channel securing said neck portion within said channel.

4,537,003

ELASTOMERIC SECTIONAL STRIP FOR EXPANSION JOINTS

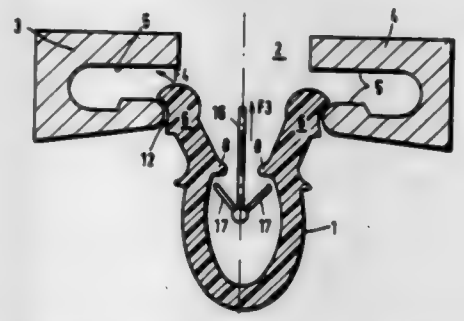
Reinhold Huber, Bulach, Switzerland, and Waldemar Koster, Forsbach, Fed. Rep. of Germany, assignors to Kober AG, Glarus, Switzerland

Filed Jul. 28, 1983, Ser. No. 518,238

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1982, 3228315

Int. Cl.³ E04B *1/68*

U.S. Cl. 52—573 **4 Claims**



1. An elastomeric sectional strip for sealing an expansion joint on a building, each edge of which is thickened for engagement in one of a pair of grooves bordering the joint, characterized in that seen in cross-section, in the installed position, each thickened edge region is supported at three points with respect to walls of the groove, said three-point support being defined by:

(a) a bulge on an upper side of said edge region, said bulge being located inside said groove adjacent its opening;

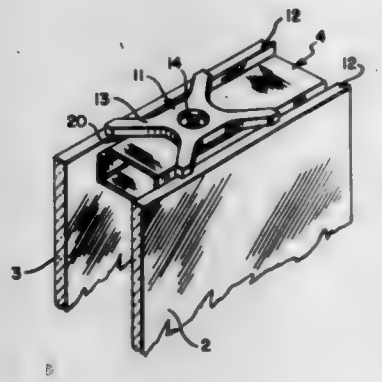
(b) a shoulder projecting in the form of a wedge into said groove in the opposite direction to the insertion direction on the underside of said edge region, said shoulder being supported against a corresponding stop face of said groove; and

(c) a camber on said upper side of said edge region on or close to its outer end, each of said grooves having a hollow cross-section complementary to the cross-sectional shape of said thickened edge region, excepting for the upper camber of the sectional strip, the height of each groove in the inlet region being less than the thickness of said section, measured through the lower shoulder.

4,537,004
INSULATED GLASS SPACER SUPPORT

Richard N. Anderson, Owensboro, Ky., assignor to Hunter Douglas Inc., Totowa, N.J.

Filed Jan. 24, 1983, Ser. No. 460,564
Int. Cl.³ E04C 2/34
U.S. Cl. 52—788 8 Claims

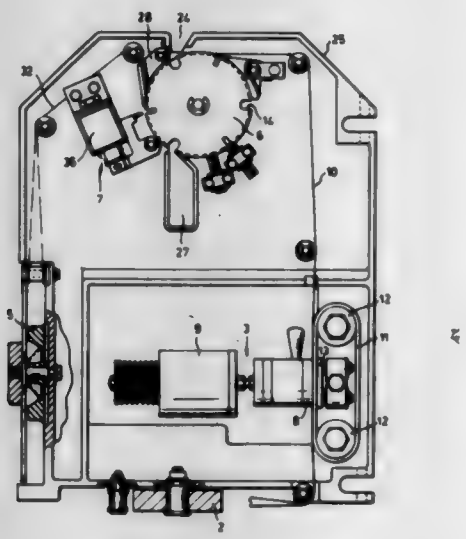


1. An insulated glass spacer support for use in an insulated glass structure having two parallel spaced glazings separated along adjacent edges by a spacer element, said support including a base adapted to overlie and contact a portion of the adjacent edges of said glazings and extending less than the length of the adjacent edges, and fastener means on said base adapted to fasten to and support a spacer element extending parallel to said adjacent edges and between said glazings.

4,537,005
BAG TYING MACHINE

Trevor B. Hoyland, Norwich, England, assignor to Thurne Engineering Co. Ltd., Norwich, England

Filed May 5, 1983, Ser. No. 491,735
Claims priority, application United Kingdom, Jul. 20, 1982, 8220925
Int. Cl.³ B65B 51/06, 51/08, 61/02
U.S. Cl. 53—131 9 Claims



1. A machine for applying adhesive tape ties to gathered together necks of filled bags comprising:

an adhesive tape supply means for supplying adhesive tape having an adhesive and a nonadhesive side;

manually moveable accommodation means including means for accommodating a gathered together neck of a bag and controlling translation movement of said neck through said machine;

an adhesive tape support means for supporting said adhesive tape and including an upstream end and a downstream end, said upstream end being remote from said accommodation means and forming a space therewith, said downstream end being adjacent to said accommodation means;

a slot in said support means adjacent said downstream end;

paper tape supply means for supplying paper tape through said slot;

a cutter;

adhesive tape from said adhesive tape supply means following a path between said manually moveable accommodation means and said adhesive tape support means with said adhesive side of said adhesive tape facing said adhesive tape support means, said adhesive tape being in substantially line contact only with said downstream end of said adhesive tape support means;

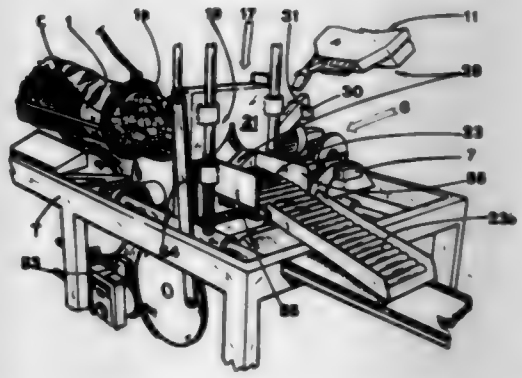
said paper tape being supplied through said slot into contact with said adhesive side of said adhesive tape;

movement of said neck and said accommodating means causing the adhesive tape downstream from said neck to bow away from said accommodation means into said space and in contact with said upstream end of said adhesive tape support means, continued movement of said neck and said accommodation means forming an adhesive tape loop around said neck of said bag and causing further adhesive tape to be drawn from said supply means and past said support means with line contact only being established between said further adhesive tape and said adhesive tape support means whereby said bag and said accommodation means will continue to move freely as said tie is formed and said paper tape is applied to said tie, said cutter severing both said paper and said adhesive tape upon completion of said tie.

4,537,006
AUTOMATIC APPARATUS FOR INDIVIDUALLY ENSHROUDING FRUIT AND VEGETABLE CONTAINERS IN A NET PROVIDED WITH A REINFORCING STRIP AND A LABEL

Vincenzo Pieri, Cesena, Italy, assignor to SORMA S.r.l., Italy

Filed Jan. 26, 1984, Ser. No. 573,968
Claims priority, application Italy, Mar. 25, 1983, 3378 A/83
Int. Cl.³ B65B 9/15, 51/05, 61/14
U.S. Cl. 53—134 10 Claims



1. Automatic apparatus for individually enshrouding fruit and vegetable containers in a net provided with a reinforcing strip and a label, comprising:

a station for infeeding the containers, sustained by a supporting frame and having, starting upstream and working downstream in the direction in which the containers move forward; a first conveyor for the containers; a second conveyor whose speed is greater than that of the first conveyor; a photocell, placed immediately downstream of the second conveyor, the obscuring of which, in the part of each container, interrupts the supply circuit of the drive motor of the said first and second conveyor; and a net carrying pipe, placed downstream of the said conveyors, the said net prior sealed at the front extremity in such a way as to constitute a sort of intestine made out of netting, mounted around the external surface of the said net carrying pipe, this having internally a channel through which the containers can pass and along which is able to traverse, guided, alternately in the two directions, a longitudinal element provided with a plurality of equidistant projecting parts, each of which furnished to define a

unidirectional locator member in the direction in which each container issues from the pipe, so as to cause each container to move one step at a time from the entry point to the exit point of the pipe and a pair of extension members to support the containers downstream of the exit point of the net pipe;

a station at which each container is enshrouded in a net, placed downstream of the net carrying pipe and completely supported by a carriage that is sustained by the frame in a way whereby it is able to slide, movable alternately in the two directions along the path followed by the containers as they move forward, the said carriage having fixed thereto a net sealing and cutting means and a guillotine device constituted by: a first pair of stationary locator elements of V conformation, placed transversely to the forward movement direction of the containers and spaced with corresponding parallelism in such a way as to accept there between, said sealing and cutting means for sealing and cutting the said front extremity of the net; and a second pair of movable locator elements of upside down V conformation that operate in contrast with the said first elements and are placed there above in planes slightly staggered with respect thereto, the said second elements being able to traverse vertically in the two directions, from a first raised position coinciding with the maximum upstream position of the said carriage towards the net carrying pipe, in which the two pairs of elements form a rhomboid aperture such as to allow the free passage of each net enshrouded container, the front extremity of the said longitudinal element and said pair of extension members destined to support the container prior to its transfer, to way past the guillotine device onto a transiting platform mounted on the carriage, to a second extreme lowered position in which the said carriage is placed sufficiently downstream for the said second movable elements not to come into contact with the said extension members, and in which the vertices of the said V's define a small aperture sufficient to firmly restrain, in the correct position, the front part of the netting immediately upstream of each container already positioned on the transiting platform;

a station for the fitting on of the container reinforcing strips, comprising a reel that is placed upstream of the said guillotine device and supplies a long strip kept at the side of the section of the net issuing from the net carrying pipe and having the extremity thereof initially fastened to the front part of the net, the said strip subsequently being fixed and cut along with the net every time the said sealing and cutting head operates;

a labelling station at which, downstream of a label supply group, a chute is provided fitted to the side of the said first pair of stationary locator elements, for transferring a pair of labels at a time, with one label hanging from one side thereof and with the other label hanging from the other side thereof, in the region of the vertex of the V of the said stationary locator elements, where the said sealing and cutting head operates, the action of this also determining one label being firmly fixed to each container;

and one single main motor, carried by the frame, for providing contemporaneously and on a time relationship basis, the said longitudinal element, the said second movable locator elements and the said carriage, with their motion.

4,537,007

PROCESS AND PLANT FOR ENDLESS-CYCLE STERILIZATION OF SHEET MATERIAL UTILIZED IN ASEPTIC PACKAGING OF PRE-STERILIZED FLUID PRODUCTS

Ettore Lattanzi, Via Caprera, 1, Parma, Italy (43100)

Filed Jan. 21, 1983, Ser. No. 459,968

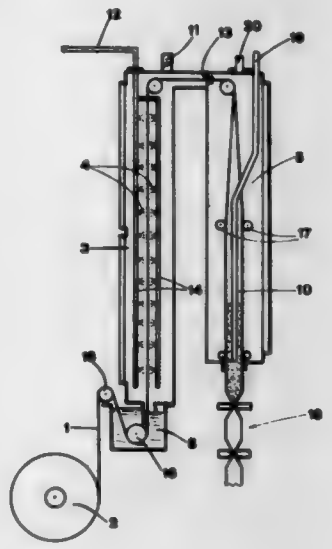
Claims priority, application Italy, Jan. 29, 1982, 40007 A/82

Int. Cl.³ B65B *55/02*

U.S. Cl. 53—425 **11 Claims**

1. A method for preparing sterilized packages containing pre-sterilized foodstuffs without the use of chemical sterilizers, comprising the steps:

bathing both sides of a continuous sheet of material in a non-sterilizing fluid;



applying superheated steam to both sides of the wetted sheet so that the wetted sheet is sterilized;

shaping the sheet into a tube;

filling the tube with pre-sterilized foodstuffs; and

forming the tube into individual packages.

4,537,008

METHOD AND APPARATUS FOR PACKING SOFT PACKAGES INTO BOXES

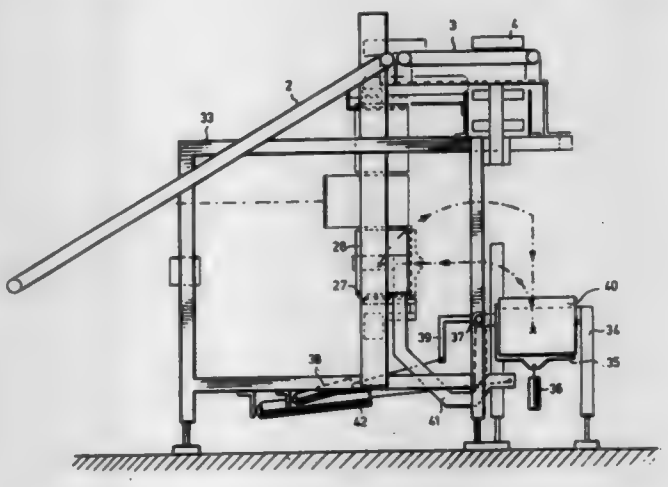
Gotlieb Benz, Flums, Switzerland, assignor to Machinenfabrik Flums AG, Flums, Switzerland

Filed Dec. 1, 1983, Ser. No. 556,794

Claims priority, application Switzerland, Dec. 8, 1982, 7133/82

Int. Cl.³ B65B *63/02, 35/40, 35/50*

U.S. Cl. 53—438 **10 Claims**



1. A method of packing a plurality of tubular bags in a box comprising the following steps:

(a) placing the tubular bags in layers between two lateral walls and one depth bounding wall and supported by a stepwise lowerable, rake-like main base;

(b) lowering the main base after a desired number of layers of tubular bags has been deposited thereon in order to deposit the tubular bags in an intermediate container which comprises an intermediate rake-like base, and a pair of side walls disposed outside of the lateral walls when the intermediate container is situated in an upper position;

(c) lowering the intermediate container to a lower position and the main base to a position below the intermediate base;

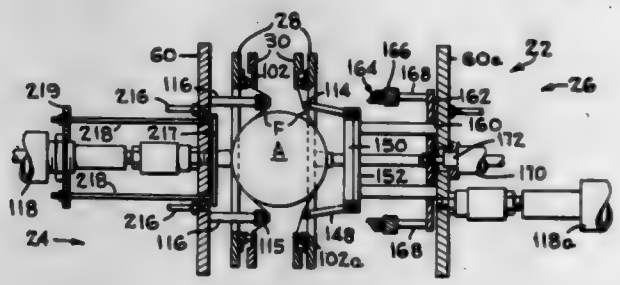
(d) moving a box over the intermediate container; and
(e) depositing the tubular bags from the intermediate container into the box.

4,537,009

METHOD AND APPARATUS FOR PACKAGING ARTICLES SUCH AS FRUIT

William C. Kreamer, San Jose, Calif., assignor to FMC Corporation, Chicago, Ill.

Filed Sep. 14, 1982, Ser. No. 418,118
Int. Cl.[3] B65B *47/04*
U.S. Cl. 53—441 19 Claims



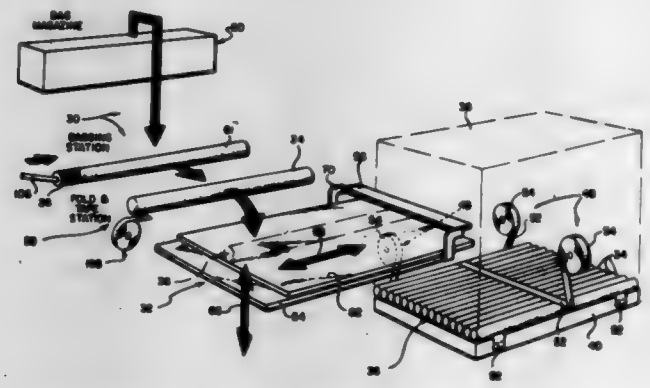
1. An apparatus for packaging articles within thermal sealing film, comprising:
means for capturing and firmly clamping first and second film portions between first and second outer pairs of film clamping annuluses,
feed means for moving an article between said captured film portions,
means for moving at least one of the first and second outer pairs of clamping annuluses toward the other for physically deforming the film portions into the general shape of the article by stretching the film portions over the article,
means defining inner clamping annuluses disposed inwardly of said outer annuluses for clamping the two film portions together at an inner film gripping plane and for providing an isolated annulus of film between said inner and outer clamping annuluses,
means for releasing said first and second outer pairs of clamping annuluses for removing tension from and relaxing said isolated annuluses of film, and
means for sealing the two portions of film together in the relaxed isolated annulus of film for sealing the first and second film portions together in an untensioned portion of the film.

4,537,010

PALLETIZING SYSTEM

Wallace W. Mojden, Hinsdale, and Robert E. Darr, Chicago, both of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Jan. 21, 1983, Ser. No. 459,978
Int. Cl.[3] B65B *35/50*
U.S. Cl. 53—447 35 Claims



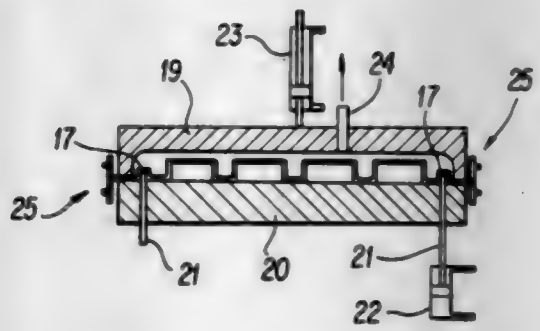
18. Apparatus for handling and bagging articles, such as can ends, and thereafter depositing filled bags of said article on a pallet member in such a manner as to provide one or more layers of filled, palletized bags, said apparatus including: receiving station means for providing individual stacks of articles disposed in facewise relationship; transport means for delivery of a stack of articles from said receiving station; bagging station means for receiving a stack of articles from said receiving station, and including means for disposing said stack of articles within a bag to provide a filled bag; collating station means for receiving and temporarily storing a predetermined number of filled bags received from said bagging station, with said filled bags being disposed in generally side-by-side horizontal disposition prior to palletizing such that the said predetermined number of filled bags will define a layer of palletized bags once deposited on a pallet member, and discharge means for discharging a layer of filled bags from said collating station means; palletizing station means including means for receiving a pallet member preparatory to the disposition of one or more layers of filled bags on said pallet member by said collating station means; and said palletizing station means further including tape dispensing means for interweaving a plurality of strips of tape between the respective layers of filled bags disposed on said pallet member to maintain the respective layers in palletized relationship during subsequent transport, said tape dispensing means comprising at least two tape support units upon which rolls of tape may be mounted; drive means for said tape support units for moving said support units transversely and horizontally of the palletizing station, the respective tape support units arranged to move oppositely of each other thereby to interweave at least two strips of tape between respective layers of filled bags, but with the strips of tape disposed in opposite alternating orientation with respect to each said layer.

4,537,011

VACUUM PACKAGING

Ermanno Bortolani, Legnano; Sandro Brembilla, Arese, both of Italy, and Enzo Vassarotti, Bugnaux S/Rolle, Switzerland, assignors to W. R. Grace & Co., Cryovac Div., Duncan, S.C.

Filed Nov. 26, 1982, Ser. No. 444,956
Int. Cl.[3] B65B *11/52*
U.S. Cl. 53—509 3 Claims



1. Apparatus for vacuum packaging comprising:
(a) a vacuum chamber adapted to receive a support sheet and a cover film over the support sheet;
(b) means for evacuating a space between the cover film and support sheet to form a vacuum pack of the cover film sealed to the support sheet around a product article;
(c) upstanding adjustable rib-like means projecting into the chamber once the chamber is closed, said means defining a cover film collector to absorb cover film material which would otherwise form webbing on a product article being packed; and,
(d) means for retracting said rib-like means and for extending it into the chamber.

4,537,012

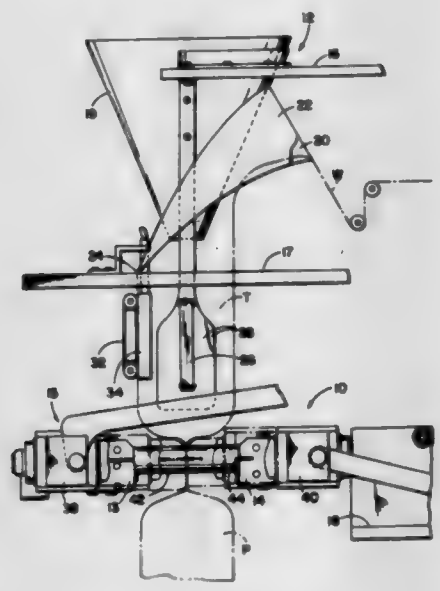
PACKAGING MACHINE WITH ROTARY ACTUATED SEALING JAWS

James S. Groom, Wales, and Paul J. LaFleur, Jr., Wilbraham, both of Mass., assignors to Package Machinery Company, East Longmeadow, Mass.

Filed Oct. 28, 1983, Ser. No. 546,744

Int. Cl.[3] B65B *9/10, 51/30*

U.S. Cl. 53—552 17 Claims



1. In a sealing jaw mechanism for a packaging machine, the jaw mechanism having a pair of elongated parallel drawbars extending transversely of a given axis, a pair of opposing sealing jaws, each of said jaws being carried by an associated one of said drawbars, and rotary actuating means for moving said drawbars in one and an opposite direction relative to each other along said given axis to move said jaws between open and closed positions and including a pair of transversely spaced apart rotary actuating members supported for rotary movement about another axis extending transversely of said given axis, means for connecting said drawbars to said rotary actuating members to move in response to angular movement of said rotary actuating members, and drive means for imparting angular movement to said rotary actuating members, the improvement comprising said drive means including a pair of rotary actuators, each of said actuators having a drive shaft projecting from its opposite ends, means for coupling the inboard ends of the drive shafts to each other in coaxial alignment to rotate in unison, the axis of coupled driveshafts extending transversely of said given axis, each of said actuating members being connected to an outboard end portion of an associated one of said drive shafts.

4,537,013

BAG-FILLING APPARATUS

Konrad Tetenborg, and Heinz Eschmann, both of Lengerich, Fed. Rep. of Germany, assignors to Windmoller & Holscher, Lengerich, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,286

Claims priority, application Fed. Rep. of Germany, Nov. 23, 1981, 3146319

Int. Cl.[3] B65B *39/02, 39/04, 43/30*

U.S. Cl. 53—570 5 Claims

1. Bag filling apparatus comprising:

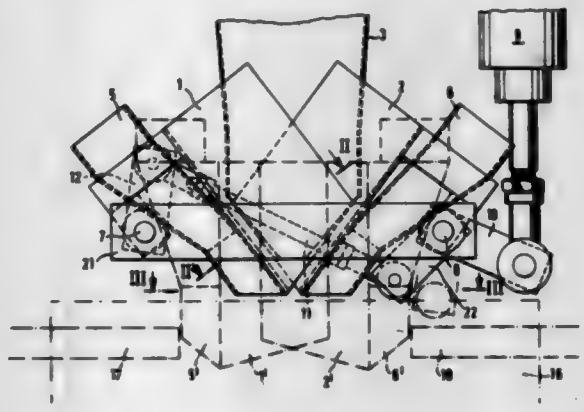
(a) a filling pipe having an axis and a filling outlet;

(b) a pair of opposed filling hopper halves positioned about the filling pipe and adjacent the filling outlet, said filling hopper halves pivotally supported for movement about respective spaced, parallel pivot axes, said filler hopper halves having lower portions defining spreading members adapted to engage the upper, inner surfaces of a bag;

(c) drive means for pivotally moving said filling hopper halves from a first position in which said spreader members are in an inward position to prevent flow of material into a bag positioned below said filling outlet, to a second position in which said spreader members are in an outward position to permit flow of material into a bag positioned below said filling outlet;

(d) opposed gripping means positioned below said filling pipe and on opposite sides of the axis thereof, said opposed gripping means lying on a line transverse to said pivot axes, said gripping means adapted to grip flat bags adjacent to their top edges and along side edges thereof and spaced a predetermined fixed distance from each other and on opposite edges of a bag, the spacing between said gripping means being less than the width of the bag to be gripped and sufficient to provide an ungripped portion of the bag which when opened defines an opening having an inner periphery that is substantially equal to the outer periphery of said filling hopper halves when in said second position, to prevent escape of product dust during filling of the bag;

(e) opposed vacuum cups for engaging the bag on opposite outer sides and adjacent the top edges thereof, said opposed vacuum cups lying on a line substantially perpendicular to and substantially equidistant from the line on which said gripping means lie and movable away from the bag to draw the sides thereof apart to provide a filling opening;



(f) said drive means being operative to pivot said filling hopper halves into the second position so that they act against inner surfaces of drawn-apart sides of the bag after release of vacuum from the vacuum cups, to provide a bag opening of uniform size independent of bag widths that are greater than the spacing between the opposed gripping means; and

(g) said spreading members including outwardly protruding end walls, the outmost points of which lie on a line connecting said gripping means, each of said filler hopper halves having side walls that extend toward the opposite filler hopper half, the side walls overlapping each other in a direction along the axis of the filling pipe when the filling hopper halves are in the second position to prevent the escape of dust therebetween.

4,537,014

PACKAGING MACHINE

Hans-Jörg Emmerling, Kürten, and Josef Hamm, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed May 7, 1982, Ser. No. 375,910

Claims priority, application Fed. Rep. of Germany, May 7, 1981, 3118078

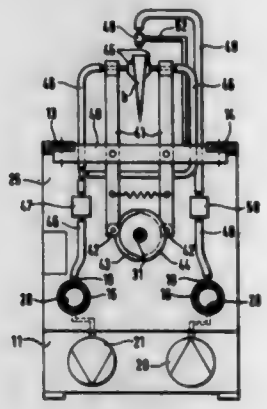
Int. Cl.[3] B65B *43/26*

U.S. Cl. 53—570 2 Claims

1. A packaging machine having an elongated frame provided with two rigid apertured end walls with a lower end that forms feet and an upper portion; two support beams connected to said end walls at the upper portion along an edge thereof; at least one support plate secured between two support beams, a suction means supported by said plate for opening a bag to be

filled and air blowing means to blow air into said bag for opening said bag;

a plurality of spaced, apertured, plate-like intermediate walls of identical shape disposed between said end walls parallel thereto and extending from and fixedly secured to said two support beams; at least two spaced, longitudinal, cylindrical tubular members which protrude through said apertures in said intermediate walls and said end walls at a lower portion of said end walls between said feet and said upper portion thereof, and said at least two tubular mem-



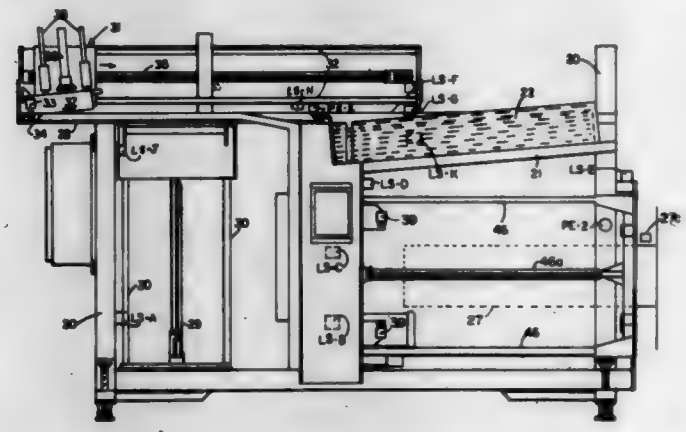
bers are fixedly secured to said plurality of plate-like intermediate walls and to each of said end walls said tubular members are provided with end cap members on the portions protruding through said endwalls, means for connecting one of said tubular memebers to said suction means and for connecting said blowing means to a different tubular member, said cap members arranged to receive connections for connecting a compressed air means to said one of said tubular members and to connect an underpressure means to said different tubular member.

4,537,015

BAG PLACER FOR A PACKAGING MACHINE

Wilfred L. Inglett, Jr.; Walter M. Ashley, Jr., both of Augusta, and Abe J. Manfredonia, Evans, all of Ga., assignors to Inglett & Company, Inc., Augusta, Ga.

Filed Sep. 2, 1983, Ser. No. 529,113
Int. Cl.³ B65B *43/18, 43/30, 43/46*
U.S. Cl. 53—386 **3 Claims**



1. Apparatus to place a bag on a spout to receive a tightly compressed material comprising:

a magazine to hold a stack of bags said bags having open ends and closed ends and with their closed ends facing toward the center of the apparatus;

a spout positioned below the magazine, the said spout having expandable jaws to grip a bag with one end of the spout adapted to receive the open end of a bag and the opposite end of the spout adapted to receive the compressed material;

an elevator to hold a bag lengthwise moveable between an up position adjacent the magazine and a down position aligned with the spout;

a gripper arm moveable from a position over the closed ends of the bags on the magazine lengthwise of the elevator, the said gripper arm having grippers extendable into the magazine to grip and lift the closed end of the top bag in the stack;

means to move the gripper bar and the bag held by the grippers along the elevator and place the bag on the elevator;

means to lower and raise the elevator;

upper and lower opening bars provided with vacuum cups facing each other positioned adjacent the bag end of the spout;

means to move the elevator and bag horizontally to bring the open end of the bag between the opening bars to permit the opening vacuum cups to grip opposite faces of the open end of the bag;

means to separate the opening bars and open the bag;

a finger assembly comprising a pair of bars moveable horizontally on stationary rods along the opposite faces of the spout and fingers adapted to rotate into the mouth of the bag when the bag is almost opened and grip the bag;

means to move the bars of the finger assembly and the bag gripped by the finger onto the spout for substantially the full length of the bag; and

means to expand the jaws of the spout;

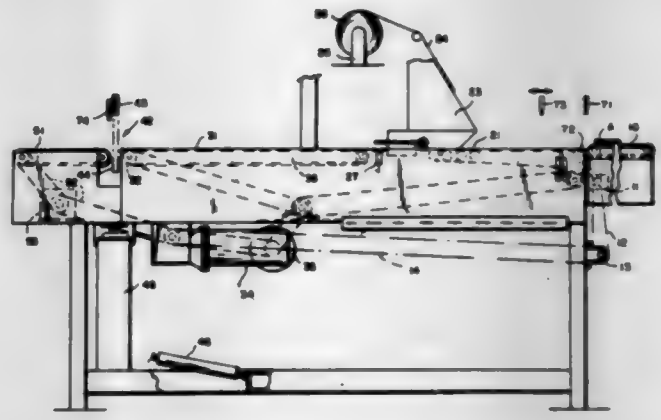
whereby the bag will be held on the spout ready to receive the compressed material through the spout and then be pushed from the spout.

4,537,016

HORIZONTAL FORM, FILL, SEAL MACHINES

Frank G. Shanklin, Groton, Mass., and Francis X. King, Nashua, N.H., assignors to Shanklin Corporation, Ayer, Mass., by said Francis Xavier King, Jr.

Filed Dec. 30, 1982, Ser. No. 454,688
Int. Cl.³ B65B *9/06, 51/26;* B65G *47/31*
U.S. Cl. 53—493 **21 Claims**



1. A continuous run horizontal form fill seal wrapping machine operable to uniformly space wrap and seal discrete product units without use of flighted conveyors comprising:

an infeed conveyor and a transfer conveyor arranged in horizontal in-line sequence to move discrete units of product through the machine;

a film forming head adapted to form film received from a roll of film on an unwind stand into a tube surrounding said product as it moves on said transfer conveyor;

means for supporting said transfer conveyor below said infeed conveyor to provide a vertical offset between the discharge end of said infeed conveyor and the adjacent input end of said transfer conveyor, the amount of vertical offset being sufficient to enable detection of drop of the trailing edge of product delivered by said infeed conveyor onto said transfer conveyor;

control means for said conveyors comprising:

means for normally running said infeed conveyor;

means responsive to the arrival of product at the discharge

end of said infeed conveyor for running said transfer conveyor;

means responsive to detecting said drop for stopping said infeed conveyor until said transfer conveyor has run a predetermined distance afer said drop for producing predetermined spacing between sequential units of product on said transfer conveyor;

means responsive to absence of product on said infeed conveyor for maintaining said transfer conveyor stopped after it has run said predetermined distance and until product again arrives at the discharge end of said infeed conveyor for preventing said stopping of said infeed conveyor until the next arrival of product at said discharge end of said infeed conveyor;

an end sealing mechanism for said wrapping machine having:

a carriage mounted on said machine for reciprocating longitudinal motion along the direction of travel of the continuous stream of spaced units of product enclosed in said tube of film, said tube delivered by a conveyor belt to pass through said end sealing mechanism;

upper and lower sealing jaws mounted on said carriage for movement transverse to said longitudinal motion above and below the path of said tube containing said product;

brake means operable to engage said carriage to said conveyor belt to move said carriage with said tube as it travels through said mechanism;

actuator means for closing said sealing jaws on said tube in the space between said units as said carriage travels with said film and thereafter opening said jaws, said jaws when closed simultaneously sealing the ends of said tube and severing the film tube between successive units of product;

pneumatic actuators operable for returning said carriage in the opposite direction to the travel of said film; and

control means for operating said brake means and said actuator means to close said jaws on said film tube between said units while said carriage moves with said film tube to seal and sever said film and reopen said jaws after the film tube is sealed and severed, said control means releasing said brake means and energizing said pneumatic actuators to return said carriage as soon as said jaws reopen, said conveyor belt driven and stopped in synchronism with said transfer conveyor.

4,537,017

MACHINE FOR FILLING JARS WITH PIECES OF VEGETABLES OR FRUITS, IN PARTICULAR QUARTERED PICKLES

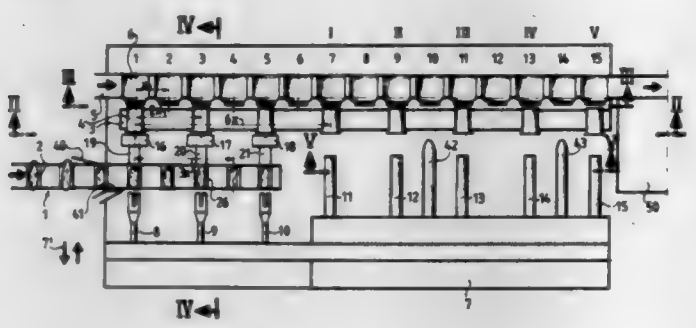
Eckart Hengstenberg, Esslingen, and Heinrich Disch, Hohengehren, both of Fed. Rep. of Germany, assignors to Firma Rich. Hengstenberg, Fed. Rep. of Germany

Filed May 23, 1983, Ser. No. 497,385

Claims priority, application Fed. Rep. of Germany, May 22, 1982, 3219340

Int. Cl.³ B65B *5/10*

U.S. Cl. 53—515 **6 Claims**



1. A machine for filling jars with pieces of vegetables or fruits, and in particular quartered pickles, comprising:

a plurality of cutting stations;

a conveyor belt on which the vegetables or fruits are carried in a horizontal position and by which they are carried and moved in increments to the cutting stations, while the horizontal orientation is maintained;

a plurality of filling stations;

a magazine conveyor belt defining a path of travel, on which a plurality of magazines are carried and moved incrementally to the cutting statons and the filling stations, each magazine being provided with a partition for dividing the spaced within the magazine into two portions;

means for cutting the vegetables or fruits at the cutting stations into pieces and for feeding the cut pieces into the magazines at the cutting stations, such that a portion of the cut pieces at each cutting station are received within one portion of an associated magazine and rest on the partition thereof and the remainder of the cut pieces at each cutting station are received within the other portion of the associated magazine;

a jar conveyor belt having an upper horizontal plane defining a path of travel, on which a plurality of jars are carried and moved incrementally to the filling stations; and

means for feeding the cut pieces from the magazines at the filling stations into the jars at the filling stations, wherein:

(i) the path of travel of the magazine conveyor belt is disposed parallel relative to the path of travel of the jar conveyor belt and obliquely relative to said horizontal plane, such that

(ii) the height of the magazine relative to a jar varies at each filling station.

4,537,018

APPARATUS FOR SLIVER CAN CONTROLLING IN A SPINNING MILL

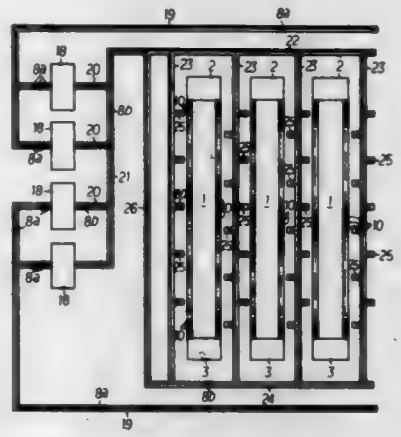
Takuzo Tooka, Toyoake, Japan, assignor to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho, Kariya, Japan

Filed Oct. 20, 1983, Ser. No. 543,914

Claims priority, application Japan, Oct. 23, 1982, 57-186544

Int. Cl.³ D01H *9/18, 13/24, 13/32*

U.S. Cl. 57—90 **6 Claims**



1. In a yarn spinning mill having a plurality of drawing frames for producing sliver, and a plurality of elongated spinning machines each having a plurality of spinning stations along its length, each said spinning station having means for spinning yarn from sliver drawn from a supply thereof within a removable sliver can adjacent to the station, the improvement comprising detecting means for detecting any one of said sliver cans adjacent to said spinning stations in which said sliver supply has been substantially exhausted by said yarn spinning at the spinning station, said detecting means comprising spun yarn length measuring means including yarn-breakage sensing means associated with each said spinning station and which together detect when said sliver supply adjacent to said station is substantially exhausted; sliver can delivery means operable responsive to said detecting means for delivering respective sliver cans, each containing said supply of sliver, from said drawing frames to adjacent any of said spinning

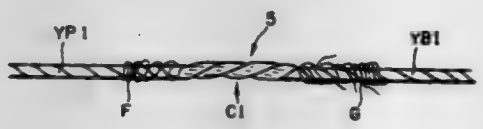
stations at which said sliver supply is substantially exhausted, said sliver can delivery means comprising conveyor means including respective distributing tracks extending from said drawing frames, respective supply tracks branching from respective ones of said distributing tracks, each said supply track extending along the length of one of said spinning machines for conveying a sliver can to adjacent any one of its said spinning stations, sliver can transfer means at each branch point between any said distributing track and any said supply track branching therefrom, and a plurality of sliver can stop means on each said supply track for stopping a delivered sliver can substantially adjacent to any selected spinning stations therealong; and control means operable responsive to said detection by any of said spun yarn length measuring means for determining a route, and actuating said conveyor means along such route between said drawing frames and said spinning station associated with said yarn length measuring means to automatically deliver a sliver can to the spinning station.

4,537,019

SPLICED JOINT OF SPUN YARNS

Isamu Matsui, and Hiroshi Mima, both of Kyoto, Japan, assignors to Murata Kikai Kabushiki Kaisha, Japan

Filed Mar. 19, 1982, Ser. No. 359,789
Claims priority, application Japan, Mar. 25, 1981, 56-44547
Int. Cl.³ D01H *15/00*
U.S. Cl. 57—202 **13 Claims**



1. A joint of a spun yarn, said yarn having an inherent twist direction, comprising:

a spliced region formed by overlapping two yarn ends of said spun yarn in opposing directions and jetting a compressed fluid centrally on the region of overlap such that fibers of the two yarn ends are integrated by swirling within the jetted compressed fluid, in a controlled manner, to form one yarn within the spliced region, said spliced region comprising:

a first joint portion, having twists in the same twisting direction as the twisting direction of inherent twists of the spun yarn; and

a second joint portion, having twists in a twisting direction opposite to the twisting direction of inherent twists of the spun yarn;

and having wrapping fibers, formed of loose ends of the two yarn ends, entangled with one another around the spun yarn at adverse ends of the spliced region.

4,537,020

PROCESS AND APPARATUS FOR SPINNING A STAPLE FIBER JOINED TO A PREVIOUSLY SPUN YARN

Helmut Fuchs, Linz, Austria, assignor to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft, Leonding, Austria

Filed Jan. 4, 1985, Ser. No. 688,905
Claims priority, application Austria, Jan. 19, 1984, 160/84
Int. Cl.³ D01H *15/02*
U.S. Cl. 57—263 **15 Claims**

1. In a process of spinning a staple fiber yarn joined to a previously spun staple fiber yarn comprising

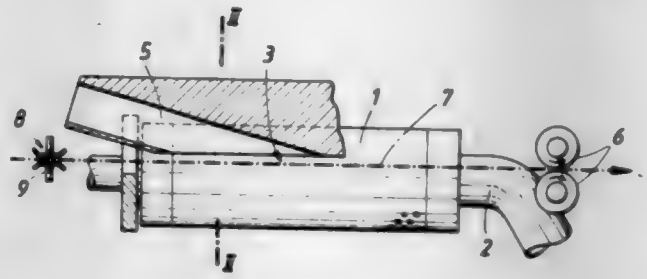
providing two juxtaposed solids of revolution having peripheral surfaces which define an elongate nip and a generally triangular space tapering to said nip,

providing in a predetermined region of said triangular space a joint-forming portion of said previously spun yarn extending into said triangular space from one end thereof,

sucking air from said triangular space near said nip in said predetermined region, rotating said solids of revolution in a first sense, supplying singled staple fibers to said triangular space in said predetermined region so that said fibers contact said joint-forming portion, and withdrawing said previously spun yarn from said triangular space at said one end thereof, said sucking, rotating, supplying and withdrawing being performed at the same time so that said fibers are twisted together to form a newly spun yarn joined to said joint-forming portion,

the improvement residing in that

said previously spun yarn is placed into said trianglar space so that a rear end portion of said previously spun yarn



protrudes from said triangular space at the other end thereof,

said previously spun yarn is untwisted in said predetermined region to form an untwisted portion,

said previously spun yarn is tensioned to detach,

said rear end portion from said untwisted portion to form the latter in said predetermined region with a thinned-out, untwisted fiber tuft, which constitutes said joint-forming portion, and

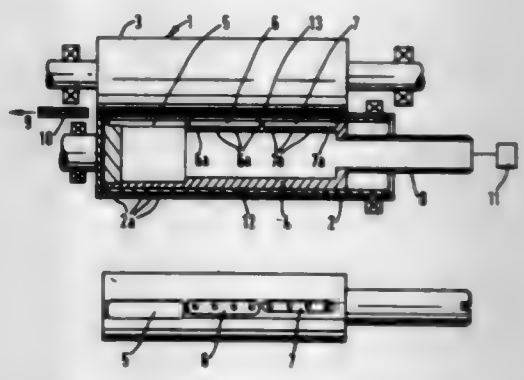
said rear end portion is removed from said triangular space.

4,537,021

FRICTION SPINNING

Alan Parker, Bolton, England, assignor to Hollingsworth (U.K.) Limited, United Kingdom

Filed Jun. 11, 1984, Ser. No. 618,974
Claims priority, application United Kingdom, Jun. 15, 1983, 8316341; Feb. 2, 1984, 8402838
Int. Cl.³ D01H *7/898*
U.S. Cl. 57—401 **10 Claims**



1. In friction spinning apparatus comprising:

(a) co-operating first and second movable surfaces of which at least said first surface is perforated, said first and second surfaces defining a yarn formation line transverse to which the first and second surfaces move;

(b) suction means to generate suction within said first surface along a line thereof perpendicular to the direction of movement of the perforated surface; and

(c) means for withdrawing yarn from said co-operating surfaces along a yarn formation line parallel to said suction line;

the improvement wherein said suction means are effective to ensure that the static pressure within said first surface is different at different locations along said suction line and the static pressure reduces in the yarn withdrawal direction so that weaker suction is exerted at the tip of the forming yarn than at a downstream portion thereof.

4,537,022
ADJUSTABLE BEARING SUPPORT FOR OPEN-END FRICTION SPINNING ROLLERS

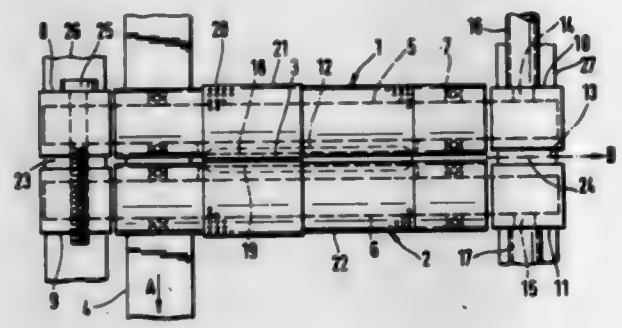
Fritz Stahlecker, Josef-Neidhart-Strasse 18, 7347 Bad Überkingen, Fed. Rep. of Germany, assignor to Hans Stahlecker and Fritz Stahlecker, both of, Fed. Rep. of Germany

Filed Jul. 25, 1984, Ser. No. 634,131

Claims priority, application Fed. Rep. of Germany, Aug. 30, 1983, 3331195

Int. Cl.³ D01H *7/882*

U.S. Cl. 57—401 **14 Claims**



1. Friction roller support apparatus for open end friction spinning machines of the type having two friction rollers arranged next to one another forming a wedge shaped yarn forming gap therebetween, said support apparatus comprising:

a pair of non-rotating axle means and bearing means rotatably supporting the respective friction rollers on the axle means,

four holding means arranged in pairs and at opposite ends of the friction rollers including receptacle means for receiving the axle means,

and adjusting screw means disposed between one pair of holding means, said adjusting screw means extending transverse to the longitudinal extension of the wedge shaped gap and being operable to adjust the spacing of the holding means with respect to one another to thereby adjust the size of the wedge shaped gap.

4,537,023
REGENERATIVE GAS TURBINE CYCLE

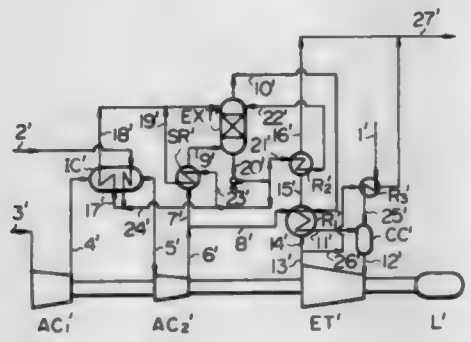
Hiromi Nakamura; Takehiko Takahashi, both of Chiba; Norio Narazaki; Kazuo Yamamoto, both of Kanagawa, and Norio Sayama, Chiba, all of Japan, assignors to Mitsubishi Gas Chemical Company, Inc., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,322

Claims priority, application Japan, Dec. 10, 1981, 56-199362; Dec. 10, 1981, 56-199364

Int. Cl.³ F02C *7/00*

U.S. Cl. 60—39.05 **11 Claims**



1. In a method for the operation of a regenerative gas turbine cycle with water addition wherein heat recovery is carried out by a single-phase and multi-component mixture of compressed gaseous medium/steam (hereinafter referred to as "SPCM") and cooled water which are obtained through a containing operation comprising the steps of,

compressing a gaseous medium to a predetermined pressure;

contacting the compressed gaseous medium with heated water so that the SPCM and the cooled water are obtained;

recovering heat from an exhaust gas to heat the SPCM;

recovering heat from an exhaust gas to heat a part of the cooled water;

burning fuel together with heated SPCM while mixing it;

driving a gas turbine for production of power;

discharging the exhaust gas after heat recovery; and,

supplying water corresponding to the amount of water which is lost by evaporation;

said step of contacting the compressed gaseous medium with heated water being preceded by a step of after-cooling the compressed gaseous medium by the remainder of the cooled water being obtained through the contacting operation.

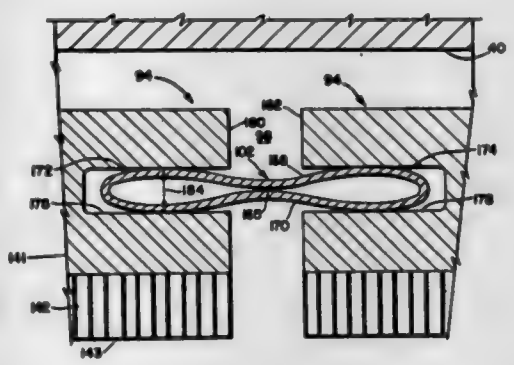
4,537,024
TURBINE ENGINES

William C. Grosjean, Poway, Calif., assignor to Solar Turbines, Incorporated, San Diego, Calif.

Continuation of Ser. No. 32,485, Apr. 23, 1979, abandoned, which is a continuation of Ser. No. 862,279, Dec. 19, 1977, abandoned. This application Sep. 14, 1982, Ser. No. 418,019

Int. Cl.³ F02C *7/28*

U.S. Cl. 60—39.161 **18 Claims**



1. A gas turbine comprising: a nozzle case through which heated gases are adapted to flow; a segmented, annular, stationary component in and supported from said nozzle case; and means for sealing the gaps between adjacent segments of said component to keep the heated gases from escaping through said gaps, said last-mentioned means comprising seals which are of monometallic, sheet metal construction and have a concave cross-section and arcuate edge portions, each said seal extending longitudinally with respect to, and sealing the gap between, two adjacent segments at both ambient and higher operating temperatures and each said seal being oriented with its major cross-sectional dimension orthoganally related to the axial centerline of the segmented component and to a radius extending from said centerline through the gap between said segments.

4,537,025
ELECTRONIC FUEL CONTROL WITH MANUAL TRAINING MODE

George D. Cropper, Newington, and Anthony J. Gentile, Waterbury, both of Conn., assignors to Chandler Evans, Inc., West Hartford, Conn.

Division of Ser. No. 420,139, Sep. 20, 1982, Pat. No. 4,478,038. This application Jun. 25, 1984, Ser. No. 624,220

Int. Cl.³ F02C *9/28*

U.S. Cl. 60—39.281 **3 Claims**

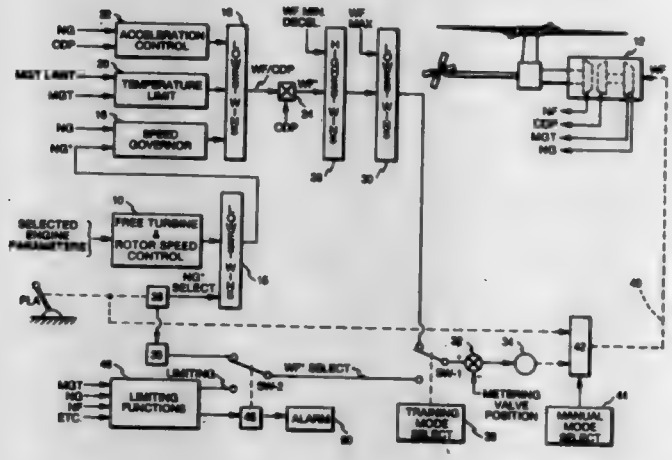
1. In a fuel control for a gas turbine engine, the fuel control being operable in either an automatic or a manual mode, the fuel control including a fuel metering valve which is automatically adjusted in response to a control signal delivered to a motor to provide an appropriate fuel flow rate in the automatic

mode, the metering valve being manually adjusted in response to movements of an operators control member in the manual mode, the improvement comprising:

means for selectively operating the fuel control in a training mode which simulates the manual control mode, said training mode operating means including:

means for generating command signals commensurate with the movements of the operators control member;

training mode selector means for applying either said command signals or the automatic mode control signals to the metering valve adjusting motor;



means responsive to signals commensurate with a plurality of monitored engine operating parameters for generating a fuel flow limit signal and an alarm signal commensurate with a monitored engine operating parameter approaching its safe operating limit; and

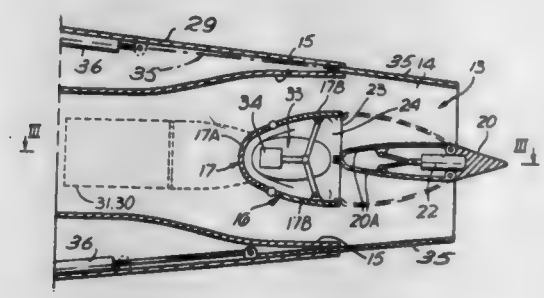
switch means responsive to said alarm signal for delivering either a limit signal or said command signals to said selector means whereby said command signals will be delivered to the motor in the training mode under normal operating conditions and a limit signal will be delivered to the motor in the training mode when the operator's actions as applied to the control member have been inappropriate.

4,537,026

VARIABLE AREA NOZZLES FOR TURBOMACHINES

Douglas J. Nightingale, Atlanta, Ga., assignor to Rolls-Royce Inc., New York, N.Y.

Continuation of Ser. No. 366,391, Apr. 7, 1982, abandoned. This application Sep. 25, 1984, Ser. No. 654,520
Int. Cl.[3] F02K *1/08*; B64D *33/04*
U.S. Cl. 60—264 3 Claims



1. A jet propulsion powerplant comprising:

a gas producer;

a first flow duct for efflux of said gas producer, said first flow duct including a nozzle at the downstream end thereof;

a center body positioned within said nozzle and having an interior chamber, said center body including an upstream part and a downstream part, said upstream part including a fixed forward portion and an expandable and contractible downstream portion, said downstream part having an expandable and contractible upstream portion selectively operable to coact and move with said downstream portion of said upstream part to vary the cross-sectional area of said nozzle of said first flow duct and to contract and move relative to said downstream portion of said upstream part to provide communication between said chamber and said first flow duct;

means for expanding and contracting said downstream portion of said upstream part and said upstream portion of said downstream part, said means including a first means operatively connected to said downstream portion of said upstream part for expanding and contracting the same and a second means operatively connected to the said upstream portion of said downstream part for expanding and contracting the same, said first means and said second means being capable of simultaneous operation to simultaneously expand and contract said downstream portion of said upstream part and said upstream portion of said downstream part, said second means being capable of operation independently of said first means to contract said upstream part of said downstream portion relative to said downstream portion of said upstream part to provide the communication between said chamber and said first flow duct;

a second flow duct having an inlet for air flow and an outlet opening into said chamber of said center body;

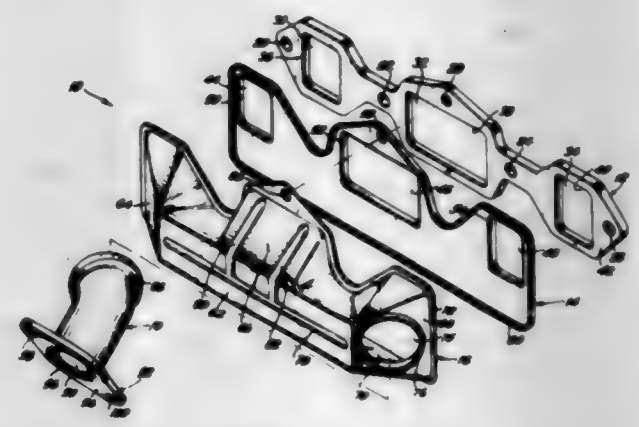
and means to open and close said second flow duct, said last mentioned means including a door operatively closing said second flow duct and a motor operatively connected to said door, said motor being operable to open said door of said second flow duct for air flow therethrough when said upstream portion of said downstream part has been contracted relative to said downstream portion by said second means.

4,537,027

HYBRID EXHAUST MANIFOLD

Jon W. Harwood; Michael W. Clegg, and Mark C. Treadwell, all of Toledo, Ohio, assignors to APX Group, Inc., Toledo, Ohio

Filed Nov. 21, 1983, Ser. No. 554,127
Int. Cl.[3] F01N *7/10*
U.S. Cl. 60—323 14 Claims



1. A hybrid exhaust manifold for an engine having a plurality of cylinders which are operative to generate exhaust gases, said manifold comprising:

a generally planar inlet flange adapted to be mounted on the engine and having at least one exhaust port extending therethrough, said exhaust port being generally in register with at least one of said cylinders when said inlet flange is mounted on the engine;

a stamp formed sheet metal inner shell including at least one planar portion, said planar portion of said inner shell being mounted adjacent to said planar inlet flange, said inner shell further including an inlet aperture for each said exhaust port, said inlet aperture extending through the planar portion of said inner shell and being substantially the same size and configuration as the corresponding exhaust port, said inlet aperture being defined by a stamp

formed mounting flange unitary with the inner shell and extending generally normal to the planar portion thereof, the mounting flange extending into and telescopingly engaging the corresponding exhaust port;

a stamp formed sheet metal outer shell fixedly attached to said inner shell, said inner and outer shells being configured to define an exhaust chamber therebetween, said outer shell including an outlet aperture extending therethrough; and

an outlet tube fixedly attached to said outer shell adjacent said outlet aperture, whereby when said inlet flange is mounted on the engine, exhaust gases generated by the cylinders enter the exhaust chamber through the inlet aperture and exit the exhaust chamber through the outlet aperture and outlet tube.

4,537,028

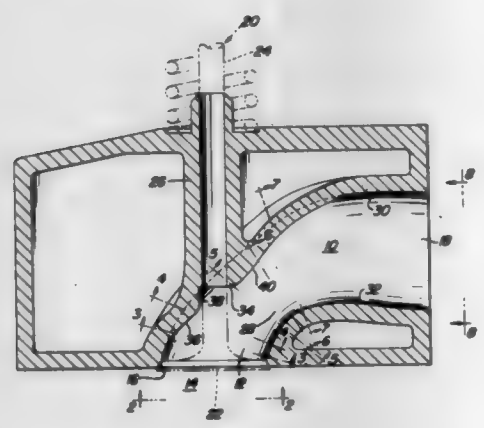
EXHAUST PORT

Albert L. Humke, Cedar Falls, Iowa, assignor to Deere & Company, Moline, Ill.

Filed Aug. 8, 1983, Ser. No. 520,924

Int. Cl.³ F02F *1/42*

U.S. Cl. 60—272 **9 Claims**



1. In an internal combustion engine having a cylinder closed at one end, an exhaust port communicating with the cylinder through the closed end and a poppet exhaust valve disposed in the port and having head and stem portions reciprocal along an axis for controlling communication of the cylinder with the exhaust port, the exhaust port comprising:

a wall having a first flow-divider projecting therefrom upstream of the valve stem, the first flow-divider merging gradually and smoothly with the wall in a direction away from the valve stem, the wall also having a second flow-divider projecting therefrom downstream of the valve stem, the second flow-divider merging gradually and smoothly with the wall in a direction away from the valve stem, the flow-dividers cooperating to reduce turbulence in gasses flowing through the exhaust port and around the valve stem.

4,537,029

POWER TRANSMISSION

Rajamouli Gunda, Rochester; Michael R. McCarty, Troy, and Melvin A. Rode, W. Bloomfield, all of Mich., assignors to Vickers, Incorporated, Troy, Mich.

Filed Sep. 23, 1982, Ser. No. 421,817

Int. Cl.³ F15B *9/09*; F16H *39/46*

U.S. Cl. 60—390 **6 Claims**

1. A system for controlling distribution of hydraulic power between first and second applications comprising

hydraulic pump means responsive to electrical pump control signals for controlling hydraulic output of said pump means,

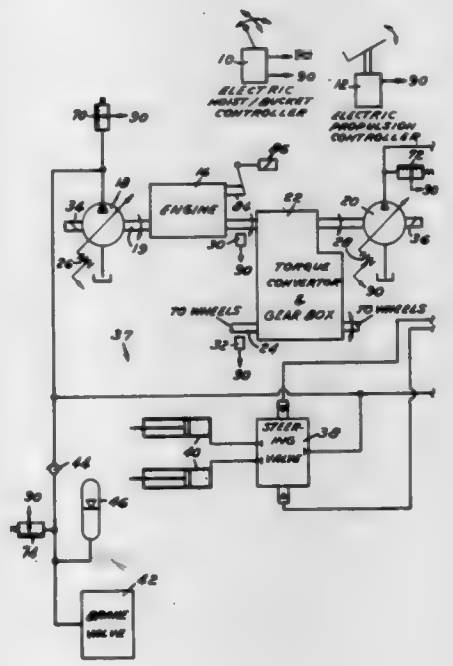
first and second motive actuators for respectively performing first and second hydraulic power applications,

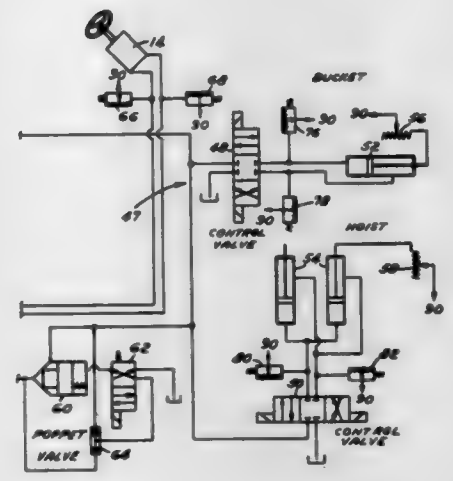
first and second hydraulic valve means responsive to first and second electrical valve control signals for connecting said pump means to said first and second actuators respectively,

first and second operator control means respectively associated with said first and second applications, said control means including means for sensing operator motion demands at said first and second applications and means for providing first and second demand signals as a respective function of such operator demands,

first and second pressure sensor means respectively coupled to said first and second motive actuators for providing first and second pressure sensor signals as respective functions of hydraulic pressure at said first and second actuators,

first and second motion sensor means respectively coupled to said first and second actuators for providing first and second motion sensor signals as respective functions of actual motion at said actuators, and





electronic control means responsive to said first and second demand signals from said operator control means and to said first and second motion sensor signals from said motion sensor means for providing said pump control signals, and said first and second valve control signals as a function of total operator demand,

said control means including means responsive to the sum of said first and second demand signals for operating said pump means to satisfy total operator demand at said first and second applications, means for each said application responsive to said first and second demand signals and to said first and second motion sensor signals for controlling said first and second valve means so as to proportion output of said pump means between said first and second

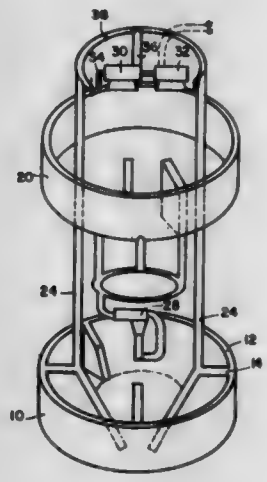
actuators, and means responsive to said first and second pressure signals for completely opening the said valve means associated with the greater pressure at said first and second actuators and modulating the other of said valve means associated with the lesser of said pressures to provide demand motion at each of said actuators.

4,537,030

OCEAN THERMAL ENERGY SYSTEM

Daniel Berman, Rehov Harav Friedman 49, Tel Aviv, Israel

Filed Dec. 3, 1982, Ser. No. 446,649
Int. Cl.³ F03G 7/04
U.S. Cl. 60—641.7 **1 Claim**



1. A method of generating electrical energy from ocean thermal energy comprising:

pressurizing a working fluid at a low temperature in a relatively cool, deep layer of ocean water;

conducting said fluid through thermally conductive working fluid conduits disposed so as to pass through progressively warmer layers of ocean water such that said fluid is preheated by absorbing heat from said ocean water;

heating said preheated fluid to a hot gas in a thermally conductive working fluid heating compartment disposed in a shallower, warmer layer of ocean water by heat transference from said ocean water;

causing said hot gas to pass through generating means so as to generate electrical energy;

conducting said hot gas from said generating means through thermally conductive exhaust conduits disposed so as to pass through progressively cooler layers of ocean water such that said gas is cooled by releasing heat to said ocean water; and

cooling and condensing said gas in a thermally conductive working fluid cooling compartment disposed in a deep, cool layer of ocean water by heat transference to said ocean water;

the preceding steps being conducted in the absence of a step of circulating ocean water relative to said compartments.

4,537,031

POWER CYCLES BASED UPON CYCLICAL HYDRIDING AND DEHYDRIDING OF A MATERIAL

Lynn E. Terry, 22 Suncrest Ave., Bridgeton, N.J. 08302, and Roger J. Schoeppel, P.O. Box 971, Stillwater, Okla. 74074

Division of Ser. No. 126,377, Mar. 3, 1980, Pat. No. 4,397,153, which is a division of Ser. No. 900,769, Apr. 27, 1978, Pat. No. 4,198,827, which is a division of Ser. No. 666,786, Mar. 15, 1976, Pat. No. 4,090,361. This application Aug. 5, 1982, Ser. No. 405,422
Int. Cl.³ F01K 25/06
U.S. Cl. 60—649 **3 Claims**

1. The method for deriving power from a low-grade thermal energy course comprising:

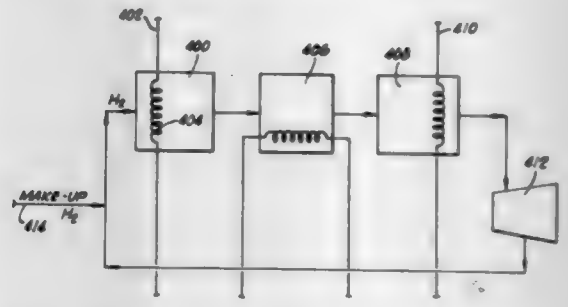
combining hydrogen gas with a first hydride-forming material under conditions of temperature, T_1, and a pressure, P_1, such that a first hydride saturated with, and in equilibrium with, hydrogen gas is formed;

heating the first hydride at constant volume to a temperature above the equilibrium temperature of the hydride to chemically compress the hydrogen gas;

transferring heat to said first hydride and concurrently releasing hydrogen gas therefrom under a pressure, P_2, which is higher than pressure, P_1;

cooling the released hydrogen gas from the first hydride material to a temperature, T_2;

combining the cooled hydrogen gas at temperature, T_2, with a second hydride-forming material under a pressure, P_2, such that a second hydride saturated with, and in equilibrium with hydrogen gas is formed, said equilibrium pressure, P_2, being higher than P_1;



heating the second hydride at constant volume to a temperature above the equilibrium temperature, T_3, to chemically compress the hydrogen gas;

transferring heat to the second hydride and concurrently releasing the hydrogen gas therefrom;

expanding the hydrogen gas released from said second hydride through a power producing expansion device to produce power and cool the hydrogen gas to a temperature at least as low as the hydride equilibrium temperature, T_1, of said first hydride-forming material; and

recycling said cooled hydrogen gas following expansion to the zone of combination of hydrogen gas with said first hydride-forming material; and

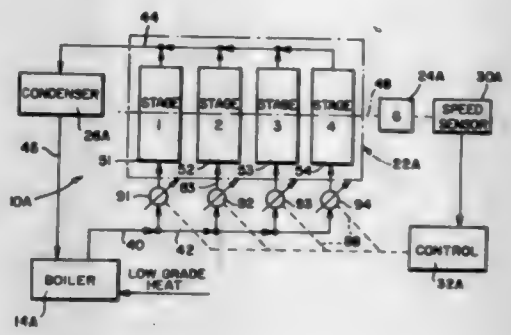
cyclically repeating the foregoing steps.

4,537,032

PARALLEL-STAGE MODULAR RANKINE CYCLE TURBINE WITH IMPROVED CONTROL

Uri Kaplan, Rehovot, Israel, assignor to Ormat Turbines (1965) Ltd., Yavne, Israel

Filed Apr. 19, 1983, Ser. No. 486,498
Int. Cl.³ F01K 13/02
U.S. Cl. 60—662 **6 Claims**

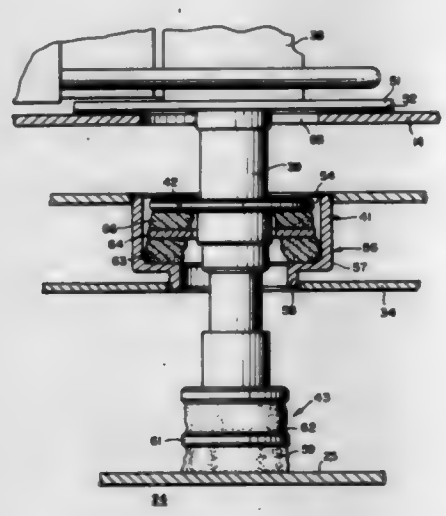


1. A method for controlling the load on a Rankine cycle power plant comprising a plurality of modular turbine units to which vaporized working fluid from a boiler is supplied in parallel through respective throttle valves, and from which exhausted vapor is removed in parallel, said method comprising the step of controlling the operation of each throttle valve such that under any load condition, only one throttle valve at a time is variable and all of the other valves are either fully open or fully closed.

4,537,033
CRYOGENIC MAGNET SYSTEMS

Zvi Kamil, Tel Aviv, Israel, assignor to Elscint Ltd., Haifa, Israel

Filed Feb. 10, 1984, Ser. No. 579,010
Claims priority, application Israel, Mar. 15, 1983, 68138
Int. Cl.[3] F25B *21/02*
U.S. Cl. 62—3 14 Claims



1. An improved cryogenic superconductive magnet system for use in nuclear magnetic resonance (NMR) devices, said system comprising:

(a) a cryogenic superconducting electro-magnet immersed in a first tank containing a first liquified gas;

(b) said first tank being mounted in a vacuum container;

(c) heat radiation shielding means surrounding said first tank in said vacuum container;

(d) a refrigerator system external to said vacuum container, said refrigerator system including refrigerant means, and means for compressing said refrigerant means;

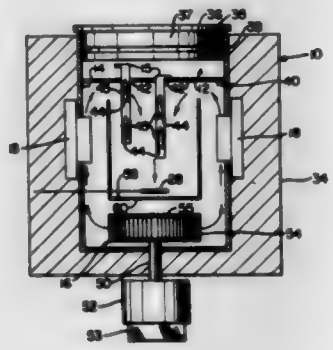
(e) coupling means comprising cold head means for carrying said compressed refrigerant means to said heat radiation shielding means to remove heat from said heat radiation shielding means; and

(f) said cold head means comprising heat transferrable mesh means attached to said cold head means to be between said cold head means and said heat shielding means and in contact with said heat shielding means for increasing the area of direct contiguity between said cold head means and said heat shielding means.

4,537,034
METHOD FOR CONTROLLED REDUCTION IN TEMPERATURE AND PRESERVATION OF EMBRYOS IN A CRYOGENIC STATE

Michael D. Crouch, 9312 Highland Garden, Baton Rouge, La. 70811

Division of Ser. No. 402,840, Jul. 29, 1982, Pat. No. 4,459,825.
This application Jun. 14, 1984, Ser. No. 620,501
Int. Cl.[3] F25D *25/00*
U.S. Cl. 62—62 4 Claims



1. The method of freezing embryos at a controlled rate from room temperature to cryogenic temperatures on the order of −50° C. comprising the steps of:

providing an insulated, sealed chamber in which said embryos are removably supported;

positioning a heat transfer medium in said chamber;

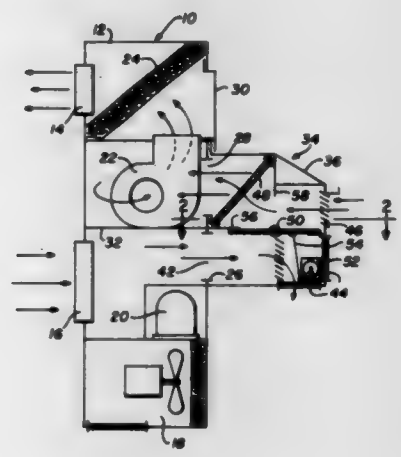
recirculating air under pressure through said chamber along a closed path into direct contact with said heat transfer medium followed by passing said air across said embryos to progressively reduce the temperature in said chamber to a cryogenic temperature on the order of −50° C.; and

programming the rate of cooling of said air by regulating the temperature of said heat transfer medium.

4,537,035
AIR CONDITIONING SYSTEM

Jack L. Stiles, 3912 E. Acapulco, Irving, Tex. 75062

Filed May 4, 1984, Ser. No. 607,185
Int. Cl.[3] F25B *29/00*; F25D *17/04*
U.S. Cl. 62—89 7 Claims



7. A method for increasing the efficiency of a thin-line air conditioner having a blower, a compressor, a return air filter located in an opening between said blower and compressor and having an access opening adjacent to said blower closed by an access panel, said method comprising the steps of:

removing the access panel;

removing the filter;

closing the opening between the blower and compressor;

pivotally attaching an air control housing to said air conditioner with an outlet in said housing disposed adjacent to the access opening;

sensing the ambient temperature;

transmitting a signal related to said sensed temperature to a control motor; and,

positioning a control member to admit only recirculated air to said blower in response to one signal, to admit only fresh air to said blower in response to another signal, and to admit a mixture of recirculated and fresh air in response to still another signal.

4,537,036
THERMALLY POWERED HEATING SYSTEM

Robert W. Clark, III, 2232 W. Joan de Arc Ave., Phoenix, Ariz. 85029

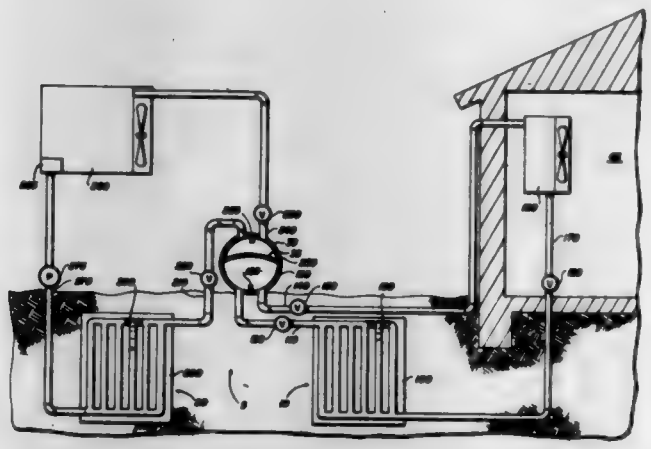
Filed Sep. 27, 1984, Ser. No. 654,725
Int. Cl.[3] F25B *1/00*
U.S. Cl. 62—116 20 Claims

1. A thermally powered heat transfer system having a first and a second cycle of operation, comprising:

first and second closed loop heat transfer means each of said transfer means including respectively a first and a second refrigerant, a first and a second condenser means for transferring heat from the first and second refrigerants to a first and a second heat sink, said heat sinks being separate from each other, a first and a second heat exchanger for transfer-

ring heat from a common heat source to the first and the second refrigerants, the temperatures ofthe first heat sink being above that of the common heat source and the temperature of the second heat sink being below that of the common heat source;

compressor means for said first and second heat transfer means powered by energy derived from the common heat source



for causing said second condenser means to transfer heat from the second refrigerant to the second heat sink during each first cycle of operation and powered by energy derived from the common heat source for causing said first condenser means to transfer heat from the first refrigerant to the first heat sink during each second cycle of operations; and

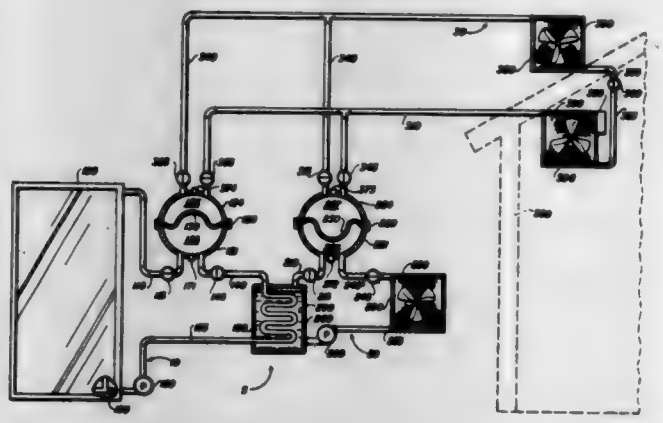
control means for causing such system to change its cycle of operation.

4,537,037

THERMALLY POWERED HEAT TRANSFER SYSTEMS UTILIZING SEQUENTIAL DISPLACEMENT

Robert W. Clark, Jr., 2232 W. Joan de Arc Ave., Phoenix, Ariz. 85029

Filed Oct. 31, 1984, Ser. No. 666,742
Int. Cl.³ F25B *1/00*
U.S. Cl. 62—116 **15 Claims**



1. A thermally powered heat transfer system comprising:

a plurality of compressors, each compressor including a high temperature and a low temperature chamber with movable divider means separating the two chambers;

a higher temperature heat transfer loop for each compressor each high temperature heat transfer loop including a refrigerant, an evaporator, a source of heat for the evaporator, a condenser, a heat sink for the condenser, a high temperature chamber of a compressor and means for controlling flow of the the refrigerant through higher temperature heat transfer loops, the condensers of all the high temperature heat transfer loops, except one being the source of heat for all the higher temperature heat transfer loops except one;

a lower temperature heat transfer loop for each compressor including a refrigerant, an evaporator, a source of heat for the evaporator, a condenser, a heat sink for the condenser, a low temperature chamber of a compressor and means for controlling the flow of the refrigerant of the lower temperature heat transfer loop; and

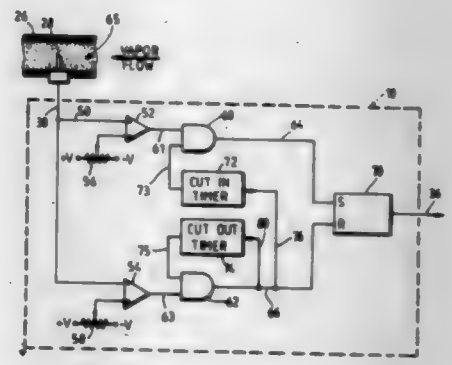
control means for the means for controlling of each loop of the system.

4,537,038

METHOD AND APPARATUS FOR CONTROLLING PRESSURE IN A SINGLE COMPRESSOR REFRIGERATION SYSTEM

Richard H. Alsenz, 2402 Creek Meadow, Missouri City, Tex. 77459, and Roger C. Ansted, 7842 Kendalia, Houston, Tex. 77036

Filed Apr. 30, 1982, Ser. No. 373,626
Int. Cl.³ G05D *23/32*
U.S. Cl. 62—118 **7 Claims**



1. A method of controlling the system refrigerant pressure in a single compressor refrigeration system, comprising the steps of

establishing a selected period functionally related to the compressor on-off cycle,

establishing an operating suction pressure range, detecting the suction pressure in the system for determining when upper and lower limits of said operating pressure range have been exceeded,

applying a compressor turn-on signal to the compressor in response to exceeding said upper limit of said operating pressure range,

operating the compressor in the system in response to applying said turn-on signal,

determining when said lower limit of said operating pressure range has been exceeded for generating a compressor turn-off signal, and

preventing the application of said turn-off signal to the compressor only if said established selected period has not elapsed

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4,537,039

VAPOR COMPRESSION DISTILLING AND SALT CONCENTRATING DEVICE

Robert E. Fearon, 5246 S. 76th East Ave., Tulsa, Okla. 74145

Filed Jun. 6, 1983, Ser. No. 501,164
Int. Cl.³ B01D *3/02*
U.S. Cl. 62—182 **10 Claims**

1. In a vapor compression distilling device including:

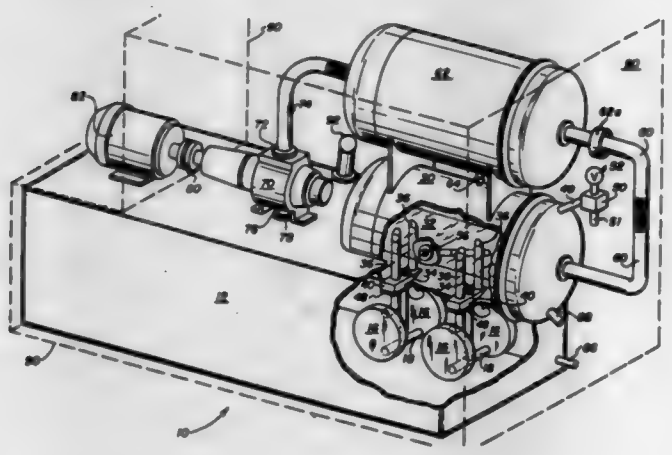
(a) an internal area where the scale will concentrate during operation,

(b) a first chamber adapted to contain the liquid to be distilled,

(c) a compressor means connected to the vapor space above the liquid in said first chamber for withdrawing vapor from the said vapor space in the said first chamber and compressing said vapor, and

(d) a second chamber adapted to receive the compressed vapor from the said compressor such that the compressed vapor is

condensed therein into a liquid condensate derived from said compressed vapor, the improvement comprising a means for



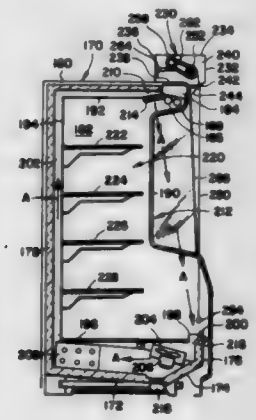
enabling replacement of said area, designed to be plugged into or out of said device.

4,537,040

AUTOMATED ENERGY CONSERVING COVER FOR REFRIGERATED CABINET ACCESS OPENINGS

Fayez F. Ibrahim, Niles, Mich., assignor to Tyler Refrigeration Corporation, Niles, Mich.

Division of Ser. No. 256,996, Apr. 24, 1981, Pat. No. 4,424,685.
This application Aug. 26, 1983, Ser. No. 526,883
Int. Cl.[3] A47F *3/04*
U.S. Cl. 62—186 **7 Claims**



1. Apparatus for automatically covering and uncovering the access of opening of a refrigerated display cabinet having outer walls defining a products storage and display space containing refrigerated air and having an access opening in at least one wall thereof to provide for product access comprising:

elongated housing means, including a first wall and end walls, said first wall defining an opening in said housing between said end walls;

take-up reel means rotatably mounted in said housing means between said end walls of said housing means;

flexible cover means extendable through said opening in said first wall of said housing means, said cover means having a first end portion and a second end portion, said first end portion being attached to said reel means and said cover means being positionable on said reel means between a reeled up position in which said cover means is rolled onto said reel means for storage and a reeled out position in which said access opening in said display cabinet is covered by said cover means;

sensing means for monitoring the occurrence of selected operational input conditions associated with the operation of said refrigerated display cabinet;

means for positioning said flexible cover means by causing the rotation of said reel means, said positioning means being disposed inside said housing means; and

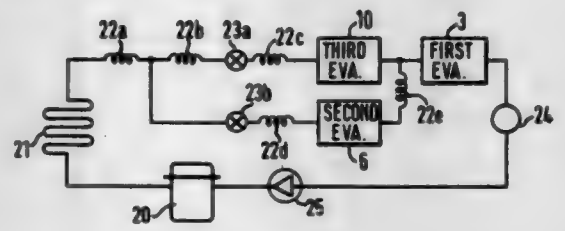
control means, operable in response to said sensing means, for automatically actuating said means for positioning said flexible cover means in the absence of operating personnel whereby contact of ambient air with refrigerated air contained within said product storage and display space is automatically limited when said flexible cover means is in said reeled-out position.

4,537,041

REFRIGERATOR HAVING TEMPERATURE-RESPONSIVE CONTROL MEANS FOR COMBINED DIRECT AND FAN-COOLED OPERATION

Kazuo Denpou; Kazumi Eto, both of Ibaraki, and Hideo Niida, Takatsuki, all of Japan, assignors to Kabushiki Kaisha Toshiba, Kawasaki, Japan

Filed Apr. 6, 1984, Ser. No. 597,751
Claims priority, application Japan, Jun. 22, 1983, 58-112342
Int. Cl.[3] F25B *5/00*; F25D *21/06*
U.S. Cl. 62—199 **16 Claims**



1. A refrigerator having a freezing chamber and a cold chamber comprising:

a main cooling means, including a first evaporator and a fan, for cooling the freezing chamber;

a secondary cooling means, including a second evaporator positioned adjacent said freezing chamber for direct cooling thereof;

a third cooling means, including a third evaporator disposed in said cold chamber for cooling thereof;

a compressor for providing gas coolant for the first, second and third evaporators;

a first control valve for directing gas coolant to the third and first evaporators;

a second control valve for directing gas coolant to the second and first evaporators;

first means for detecting the temperature of the freezing chamber and for controlling the compressor according to the detected temperature thereof; and

second means for detecting the temperature of the cold chamber and for controlling the first and second control valves in accordance therewith.

4,537,042

AUTOMOTIVE REFRIGERATION SYSTEM

Yasuyuki Nishi; Masao Sakurai, both of Oobu, and Masashi Takagi, Kariya, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Division of Ser. No. 372,380, Apr. 27, 1982, Pat. No. 4,480,443.
This application May 8, 1984, Ser. No. 608,276
Int. Cl.[3] F25B *27/00*
U.S. Cl. 62—208 **4 Claims**

1. An automotive refrigeration system comprising:

a variable capacity refrigerant compressor adapted to be driven by an automotive engine and including means for varying the displacement of said compressor;

means for driving said compressor displacement varying means so as to controllably vary the displacement of said compressor;

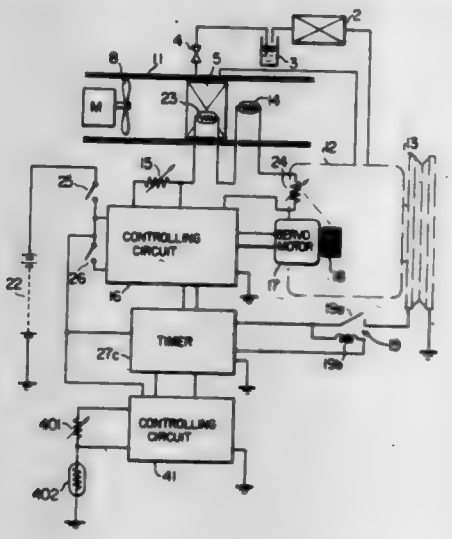
clutch means for drivingly connecting and disconnecting said compressor respectively to and from said engine;

an evaporator disposed in fluid-flow communication with the intake side of said compressor;

sensor means for detecting a condition related to the cooling

operation of said evaporator and for emitting a signal representing the detected condition; and

electric circuit means, responsive to the signal from said sensor means, for actuating said driving means so as to controllably vary the displacement of said compressor and for controlling the operation of said clutch means;



said electric circuit means including means for assuring that said compressor displacement varying means places said compressor in a small compressor displacement position each time, during engine operation, said clutch means is put into operation to drivingly connect said compressor to said engine.

4,537,043

PROCEDURE FOR CREATING AN INERT GAS ATMOSPHERE WITH CONSTANT COMPOSITION OF NITROGEN AND CARBON DIOXIDE IN A REFRIGERATED CONTAINER

Wolfgang Volker, Tönisvorst, and Hendrik Glastra, Enschede, both of Fed. Rep. of Germany, assignors to Messer Griesheim GmbH, Fed. Rep. of Germany

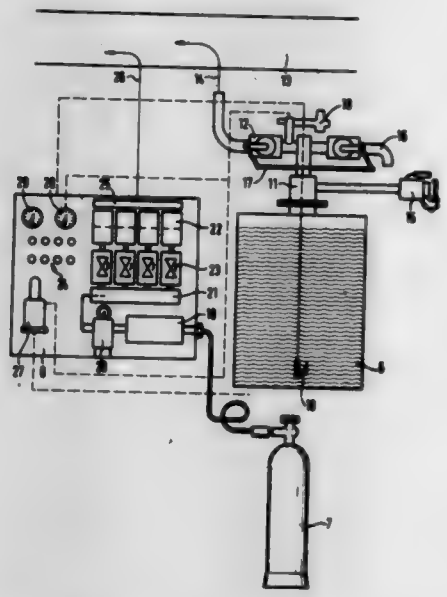
Filed May 21, 1984, Ser. No. 612,583

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319249

Int. Cl.³ B60H *3/04*

U.S. Cl. 62—239

9 Claims



1. In a process for creating an inert gas atmosphere having a constant composition of nitrogen and carbon dioxide in a refrigerated container equipped with an engine and a refrigerator, the atmosphere having a low oxygen content which is maintained by means of an oxygen limit value control, the nitrogen being led into the interior of the refrigerated container from at least one storage tank for liquid nitrogen which is connected with the refrigerated container, the carbon dioxide being led into the interior off the refrigerated container from at least one gas bottle which is connected with the refrigerated container, the nitrogen and carbon dioxide being supplied when the predetermined oxygen limit value is exceeded; the improvement being that while the inert gases are being supplied, a constant flow of cold, gaseous nitrogen is produced by means of an electrical evaporator located in the storage tank for liquid nitrogen and connected to the generator of the engine, simultaneously with the production of the gaseous nitrogen also removing carbon dioxide from the gas bottle, and heating and releasing the carbon dioxide at a constant pressure and feeding the carbon dioxide into the refrigerated container via at least one throttle point from a parallel-switched group of such throttle points which can be individually activated.

4,537,044

FOOD STORAGE CONTAINER

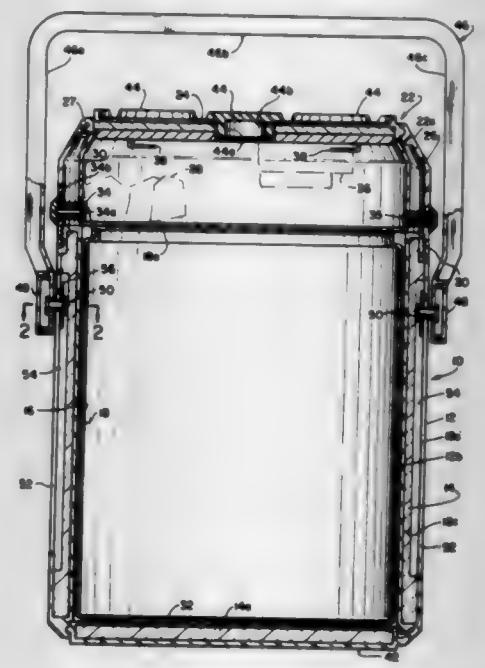
David Putnam, Mohawk St. and Keystone Ave., Sayre, Pa. 18840

Filed Jan. 11, 1985, Ser. No. 690,778

Int. Cl.³ F25D *3/08*

U.S. Cl. 62—371

5 Claims

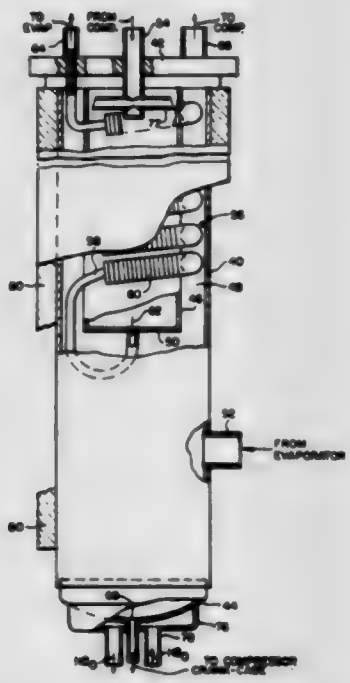


1. In a food storage container of the type having a main housing bounding a food storage compartment and means for selectively providing an input either of heat or cold to the food contents therein, the improvements to said container comprising an auxiliary housing formed on one end of said main housing bounding an operative compartment in adjacent heat and cold transferring relation to said food storage compartment, a first lid for an opening into said auxiliary housing operative compartment for selectively inserting thereinto a source of heat or cold, a second lid for an opening into said food storage compartment from the end opposite from said auxiliary housing for selectively inserting thereinto food contents requiring an input of heat or cold, and a handle movable into first and second container-carrying positions, said first handle position establishing an orientation of said container in which a cold source is in said auxiliary housing operative compartment and is above said food storage compartment for transferring cold in a descending direction thereto, said second handle position establishing a 180 degree reversal in orientation of said container in which a heat source is in said auxiliary housing operative compartment and is below said food storage compartment for transferring heat in an ascending direction thereto, whereby the efficiency of the transfer to said food contents of either heat or cold is enhanced by the container orientation and the direction of said transfer.

4,537,045
COMBINATION REFRIGERANT RECEIVER, ACCUMULATOR AND HEAT EXCHANGER

Donald K. Mayer, Bloomington, Minn., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Dec. 7, 1984, Ser. No. 679,512
Int. Cl.[3] F25B *43/00*
U.S. Cl. 62—503 8 Claims



1. For a refrigeration unit including a refrigerant compressor, a refrigerant condenser having an inlet and outlet, and a refrigerant evaporator having an inlet and outlet, a combined liquid refrigerant receiver, refrigerant suction gas accumulator, and refrigerant heat exchanger, comprising:

an outer cylindrical shell serving as the accumulator and having a refrigerant gas inlet and a refrigerant gas outlet;

an inner cylindrical casing, concentrically disposed within said shell to provide an annular space therebetween, and serving as the liquid refrigerant receiver, said receiver having an inlet connected to said condenser outlet, and an outlet located internally of said shell; and

a heat exchanger located in said annular space and having an inlet connected to said receiver outlet and an outlet in communication with said evaporator inlet.

4,537,046
SEMI-CLOSED TYPE REFRIGERANT COMPRESSING MACHINE

Shigeo Fujiyama, and Yasuhiro Ogata, both of Nagasaki, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 29, 1984, Ser. No. 625,894
Claims priority, application Japan, Jul. 1, 1983, 58-120612
Int. Cl.[3] F25B *31/00*
U.S. Cl. 62—505 4 Claims

1. A semi-closed type refrigerant compressing machine comprising:

(a) a casing provided with a refrigerant gas intake port;

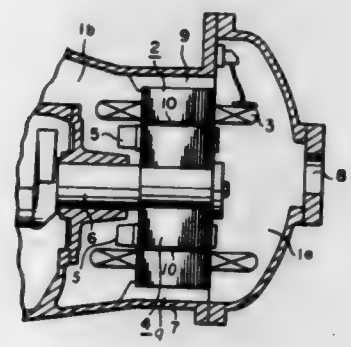
(b) a compressor shaft mounted in said casing and projecting towards said refrigerant gas intake port;

(c) a rotor mounted on said compressor shaft;

(d) a stator bearing a stator winding mounted in said casing and surrounding said rotor so as to leave an air gap therebetween, said rotor and said stator being mounted between the inlet side and the outlet side of a motor chamber, the inlet side of said motor chamber being in fluid communication with said refrigerant gas intake port; and

(e) a plurality of refrigerant gas passages leading from the inlet side of the motor chamber to the outlet side of the motor chamber radially outwardly of said stator,

(f) said rotor having a plurality of vanes formed on the outlet side thereof to direct refrigerant gas over the stator winding on the outlet side of said stator but no vanes formed on the inlet side thereof to direct refrigerant gas over the

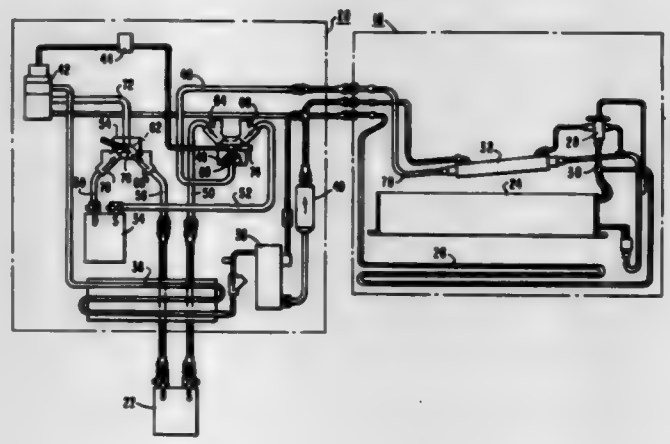


stator winding on the inlet side of said stator, whereby the temperature on said outlet side is lowered by said vanes without unnecessarily lowering the temperature on said inlet side.

4,537,047
TRUCK TRANSPORT REFRIGERATION UNIT

Jayaram Seshadri, and Daniel T. Neimy, both of Minneapolis, Minn., assignors to Thermo King Corporation, Minneapolis, Minn.

Filed Mar. 2, 1984, Ser. No. 585,683
Int. Cl.[3] F25B *1/10*
U.S. Cl. 62—510 4 Claims



1. For a transport refrigeration unit of the type adapted for temperature conditioning a load in a truck having an engine compartment, and having two separate, mutually exclusively operable refrigerant compressors connected to a common refrigerant system circuit, one of said compressors being located in said engine compartment and driven by the truck engine and the other compressor being electrically driven and located away from said engine compartment, an arrangement for preventing undue oil and refrigerant exchange between one compressor and the other, wherein:

both said compressors are substantially identical with respect to pumping and oil capacity;

each compressor suction line is connected to a separate check valve to a first fitting connected to the refrigerant system suction line;

each compressor discharge line is connected to a separate check valve to a second fitting connected to the refrigerant system pressure line; and

said refrigerant system suction line is connected to the physical bottom side of said first fitting and said check valves are physically located above said first fitting.

4,537,048

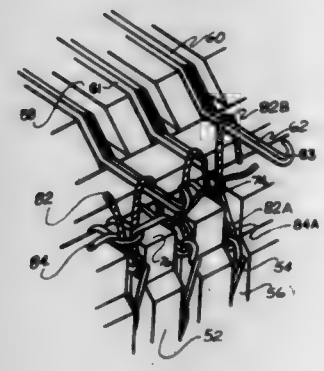
PILE LOOP FORMING AND CUTTING ELEMENTS FOR CIRCULAR KNITTING MACHINES

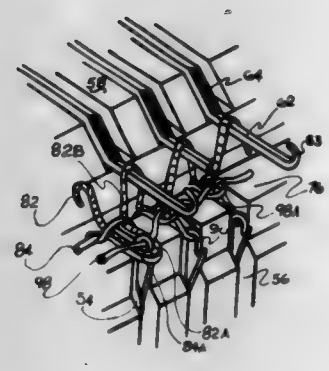
Alan Gutschmit, Troy, and Paul W. York, Asheboro, both of N.C., assignors to Monarch Knitting Machinery Corp., Glendale, N.Y. and Monatex S.A., Neuchatel, Switzerland

Division of Ser. No. 213,872, Dec. 8, 1980, Pat. No. 4,409,800, which is a continuation-in-part of Ser. No. 905,021, May 11, 1978, abandoned. This application Jul. 21, 1983, Ser. No. 515,690

Int. Cl.³ D04B *35/02, 9/12*

U.S. Cl. 66—93 6 Claims





5. A movable one-piece pile loop forming and cutting element comprising a lengthwise extending body member having an open sided yarn engaging hook at an end thereof, having a yarn cutting edge spaced from and facing the open side of said hook, and having a yarn supporting surface extending lengthwise therebetween for drawing of an uncut loop of pile yarn over and for supporting of said loop on said surfaces, said element being movable to three positions relative to said yarn thereto, said positions including a middle position wherein said yarn is drawn into said pile yarn loop over and is supported on said surface, one position moved longitudinally in one direction from said middle position wherein said hook engages, distends and retains said pile yarn loop, and another position moved longitudinally in the opposite direction from said middle position wherein said cutting edge severs said pile yarn loop to free said element of said loop and to provide cut pile ends of said yarn.

4,537,049

CONTROL CIRCUIT FOR LOCKING MECHANISM OF VEHICLE DOOR

Peter J. Lupoli, Hamden, Conn., assignor to Sun Chemical Corporation, New York, N.Y.

Filed Mar. 21, 1983, Ser. No. 477,319

Int. Cl.³ E05B *47/00*

U.S. Cl. 70—277 25 Claims

1. An electric-powered door lock system for a door movable between open and closed positions in a van or other vehicle, comprising in combination:

(a) a manually operable locking member,

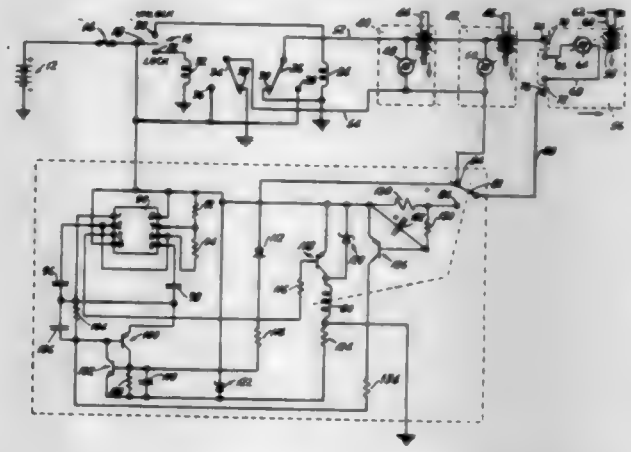
(b) cooperable locking means on the vehicle body and door, to enable the latter to be locked in its closed position,

(c) an electrically powered mechanism carried by said door for operating the locking means,

(d) a pair of cooperable electrical contacts on said door and vehicle body respectively, adapted to engage one another only when the door is in its closed position,

(e) said electrical contact on the door being adapted to transmit power to said mechanism,

(f) power means for applying an intermittent voltage to said



vehicle body contact, said power means being capable of operating said electrically powered mechanism and being rendered operable in response to actuation of said manually operable locking member, and

(g) automatically actuated disabling means controlling said power means and responsive to engagement of said cooperable contacts, for automatically rendering inactive the power means only after said electrically powered mechanism has at least once been activated to lock the door.

4,537,050

METHOD OF CONTROLLING A STAND FOR ROLLING STRIP MATERIAL

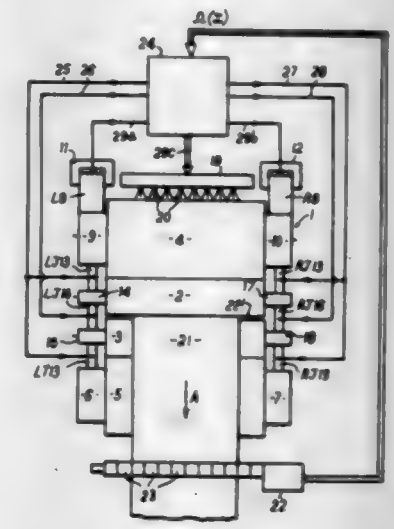
Greyham F. Bryant, Southall; Peter D. Spooner, Middlesex, and William K. J. Pearson, Amersham, all of England, assignors to The British Aluminium Company plc, London, England

Continuation of Ser. No. 453,860, Dec. 20, 1982, abandoned. This application Nov. 8, 1984, Ser. No. 669,445

Claims priority, application United Kingdom, Apr. 25, 1981, 8112816; PCT Int'l Appl., Apr. 23, 1982, PCT/GB82/00120

Int. Cl.³ B21B *37/06, 37/12, 27/06*

U.S. Cl. 72—8 12 Claims



1. A method of controlling one stand of a mill for rolling strip material, the mill having upper and lower back-up rolls and a pair of work rolls disposed between the back-up rolls, first and second screw means for respectively controlling movement of the ends of one of the back-up rolls and first and second jack means for respectively applying forces to each of the ends of the work rolls and a shape sensor having outputs

from which the stress distribution across the width of the rolled strip is determined, comprising determining the effect upon the shape of the strip of the joint operation of the screw means and the joint operation of the jack means and deriving two mathematical expressions, respectively, representative of such operations, determining the difference between said stress distribution and a desired stress distribution and obtaining a correction of stress distribution characterised by separately determining the effect upon the shape of the strip of the operation of each screw means and each jack means and deriving four mathematical expressions each including a control parameter respectively representative of such operations, determining a single error distribution E (x) as the difference between said stress distribution and a desired stress distribution, obtaining a single correction of stress distribution C (x) by determining an optimum value for each of said control parameters such that a function of the distribution E (x) − C (x) is minimized and separately controlling each of said screws and jacks in accordance with said control parameters.

4,537,051

CONTROL DEVICE FOR SUCCESSIVE ROLLING MILL

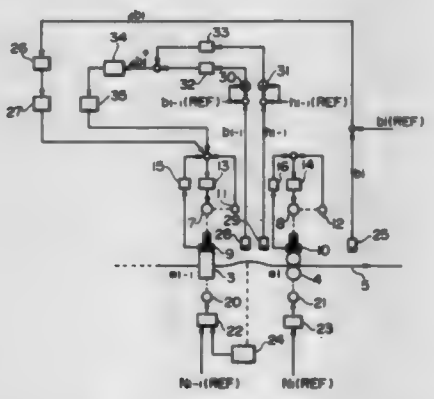
Shuhei Niino; Koichi Ishimura; Ken Okamoto, and Koichi Ohba, all of Hyogo, Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 29, 1982, Ser. No. 427,340

Claims priority, application Japan, Sep. 30, 1981, 56-157211

Int. Cl.³ B21B *37/02, 37/12*

U.S. Cl. 72—12 **4 Claims**



1. A control device for a successive rolling mill having alternating vertical and horizontal roll stands for rolling a material in the width and height directions, respectively, comprising:

an (i-1)-th vertical roll stand and an i-th horizontal roll stand for screwing down on a material through the roll gaps of the stands;

first dimension detecting means for detecting a dimension of said rolling material at the output side of said (i-1)-th stand;

first dimension deviation computing means for computing and providing a dimension deviation factor indicative of the deviation between a reference dimension of said rolling material at the output side of said (i-1)-th stand and the detected dimension from said dimension detecting means, said deviation factor representing the deviation as a percentage of the reference dimension;

forecasting means, responsive to said deviation factor, for providing a forecast output representing a forecast change in the width dimension of said rolling material at the output side of said i-th roll stand;

width dimension detecting means for detecting and providing the actual width dimension of said rolling material at the output side of said i-th stand;

width dimension deviation computing means for computing and providing as an output the deviation between the actual width dimension provided by said width dimension detecting means and a reference width dimension; and

screw control means for controlling the screwing down of the roll gap in said (i-1)-th stand in accordance with the forecast output of said forecasting means and the output of said width dimension deviation computing means so that said deviation of the actual width dimension at the output side of said i-th stand is zeroed.

4,537,052

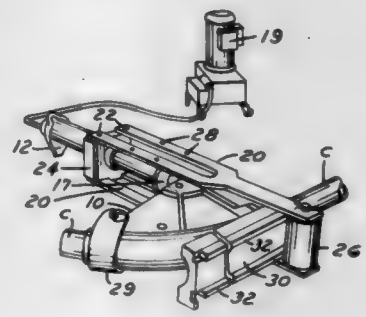
FOLLOW BAR WITH CAM TRACKS FOR ROCKER TYPE CONDUIT BENDER

Larry G. Adleman, 1307 E. Gate Parkway, Rockford, Ill. 61108

Filed Jul. 13, 1984, Ser. No. 630,912

Int. Cl.³ B21D *7/04*

U.S. Cl. 72—154 **5 Claims**



2. In a rocker type conduit or tube bender having a shoe wherein a bending force is transmitted through an axis thereon offset from the axis of shoe rotation by a lever arm distance which varies during bending and having a follow bar movable with rotation of the shoe with the conduit therebetween, the improvement comprising cam means provided on the follow bar and configured to effect changes in bending force on the conduit in inverse relation to changes in lever arm distance to enhance uniformity of bending forces on the conduit during rotation of the shoe and consequent bending of the conduit or tube.

4,537,053

PIPE BENDING MACHINE

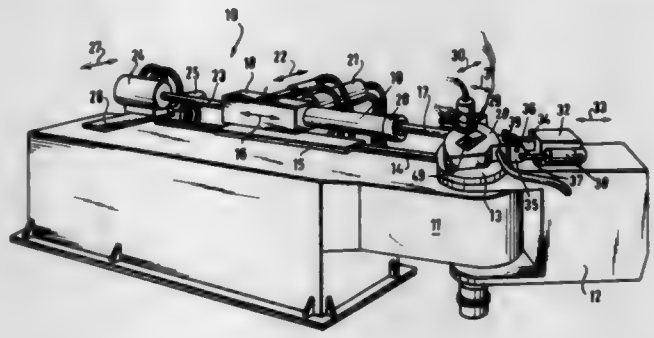
Rigobert Schwarze, Olpener Str. 460-474, 5000 Köln 91, Fed. Rep. of Germany

Filed Nov. 17, 1982, Ser. No. 442,444

Claims priority, application Fed. Rep. of Germany, Dec. 15, 1981, 3149557

Int. Cl.³ B21D *7/04*

U.S. Cl. 72—157 **26 Claims**



1. A pipe bending machine comprising means defining a feed path;

pipe holding and feeding means operative to hold a pipe to be bent and movable to feed said pipe along said feed path;

a slidable guide member extending in the longitudinal direction of said feed path for guidance of said pipe;

a feed table mounted for pivotation about an axis;

a bending template shiftably mounted on said table to be movable therewith and comprising means defining two curved bending surfaces disposed one at each of two substantially opposite sides of said template and in a single plane for selective bending there-around of said pipe on pivotation of said table with said template, said two

curved bending surfaces being of respectively different radii;

clamping means movable with said template and co-operable with said template for clamping of said pipe selectively to said curved bending surfaces in dependence on the radius of a bend to be formed in said pipe;

displacing means operatively connected with said template and operable to displace said template during the bending of the pipe in a horizontal plane and relative to said longitudinal direction of said feed path to compensate for any eccentricity of the center of curvature of either or each of said curved bending surfaces with respect to said axis of pivotation of said bending table; and

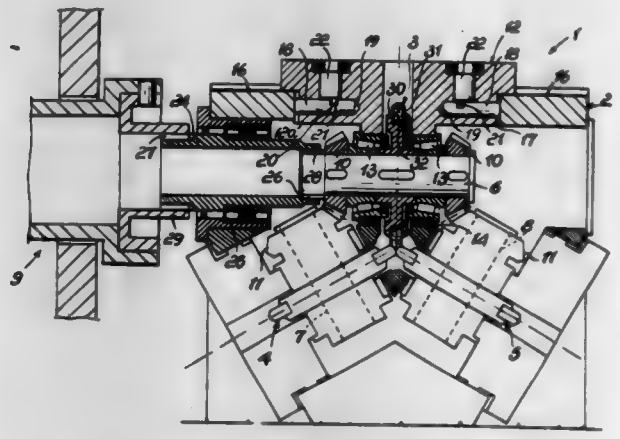
wherein said displacing means is arranged coaxially with said axis of pivotation of said bending table and is adapted to so control the position of said template on said bending table as to maintain a constant spacing between said axis of pivotation and a point of tangency of said slidable guide member with said template during bending of said pipe around either one of said curved bending surfaces, said spacing being equal to the length of a smaller one of said radii, whereby during bending of the pipe around the curved bending surface of smaller radius the position of said template on said bending table remains unchanged whereas in bending the pipe around the curved bending surface of the larger radius said displacing means continuously urges said template against said slidable guide member.

4,537,054

ROLLING UNIT FOR A BAR OR THE LIKE ROLLING MILL

Giulio Properzi, Via Pietro Cossa 1, Milano, Italy

Filed May 26, 1983, Ser. No. 498,406
Claims priority, application Italy, Jun. 18, 1982, 21935 A/82
Int. Cl.³ B21B *13/10*
U.S. Cl. 72—224 **3 Claims**



1. A rolling unit for a bar or the like rolling mill comprising:

a support casing,

mill rollers having axes arranged at 120° from one another and including a main drive roller having a shaft, supports and bearings for said rollers and seals for isolating an oil circuit from an emulsion circuit; said mill rollers with respective supports, and said bearings and seals being contained in said support casing;

a body removably positionable on the unit casing and carrying the main drive roller; said body being removably positionable in a direction radial to said main drive roller and being adjustable on said casing, at least in the direction of the axis of said main roller;

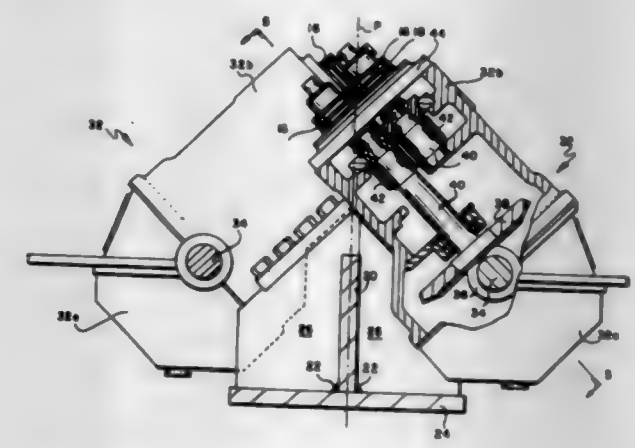
a coupling shaft driven by a drive and having dog clutch means on at least one end thereof; said shaft of said main drive roller having an end thereof with other dog clutch means for mutual rotatory engagement, but in an axially slidable way, with said dog clutch means of said coupling shaft.

4,537,055

SINGLE STRAND BLOCK-TYPE ROLLING MILL

Harold E. Woodrow, Northboro, and Raymond L. Smola, Holden, both of Mass., assignors to Morgan Construction Company, Worcester, Mass.

Filed Jun. 20, 1984, Ser. No. 622,543
Int. Cl.³ B21B *35/02*
U.S. Cl. 72—235 **8 Claims**



1. A single strand block-type rolling mill having successive pairs of oppositely inclined work rolls arranged to roll products such as bars or rods in a twist-free manner, comprising:

a vertically upstanding structural member joined to an underlying horizontal base plate to form an inverted "T" shaped cross section, said structural member extending beneath and in parallel relationship to the rolling line;

a plurality of rib members extending laterally away from and spaced along said structural member on opposite sides thereof, said rib members being joined on edge to both said structural member and said base plate and having upper support edges;

a plurality of gear housings successively arranged along the rolling line, said gear housings having lower portions alternately arranged on opposite sides of said structural member, each gear housing being carried on and secured to the upper support edges of an adjacent pair of said rib members, said gear housings each containing a line shaft segment with a driving bevel gear which meshes with a driven bevel gear on one of a pair of intermediate drive shafts, said intermediate drive shafts carrying intermeshed gears;

roll packages carried by said gear housings, each roll package having a pair of roll shafts carrying a pair of said work rolls, said roll shafts having gears which mesh with the gears on said intermediate drive shafts;

means for interconnecting the line shaft segments on opposite sides of said structural member; and

primary drive means at one end of said structural member for driving said interconnected line shaft segments.

4,537,056

ROLLING MILL

Joel L. Heffentrager, Mars, Pa., assignor to SMS Schloemann - Siemag, Inc., Pittsburgh, Pa.

Filed Dec. 1, 1983, Ser. No. 557,052
Int. Cl.³ B21B *31/12*
U.S. Cl. 72—238 **12 Claims**

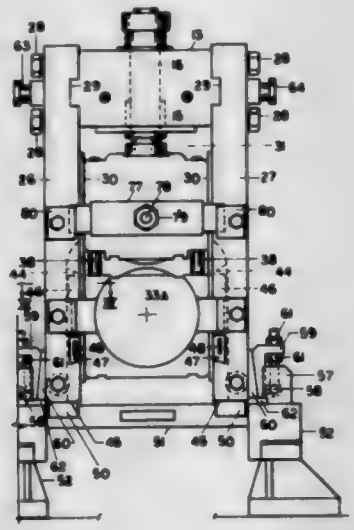
1. A rolling mill comprising:

upper and lower roll assemblies each including a roll having a journal at each of opposite ends thereof received in a bearing chock,

a pair of inverted U-shaped housings each having two housing post sections depending from a top beam section forming a window to receive the bearing chock at one end of each roll for support thereby, each window being open at the bottom of the housing post sections to permit the chocks of at least the lower roll assembly to move into and

out of the windows of the housings, by moving the housings relative to the chocks of the lower roll assembly

load transfer means removably mounted on the lower end portions of said housing post sections for transferring a rolling load from the bearing chocks of said lower roll assembly to the housing post sections, said load transfer



means being movable to a position out of engagement with the bearing chocks for the lower roll assembly to allow the roll assembly to pass from the housing windows beyond the lower ends of the housing post sections, and

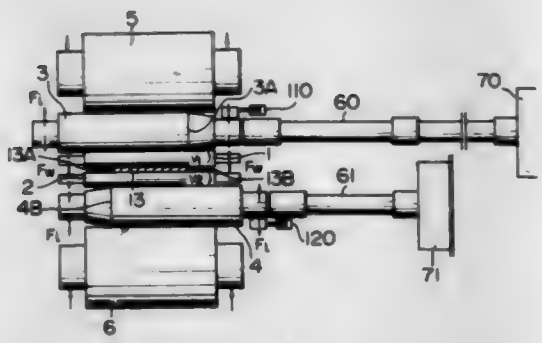
first platform means removably mounting said post sections for supporting said housings with said roll assemblies while in a normally operative position.

4,537,057

METHOD FOR RD ROLLING SHEET METAL

Toshiyuki Kajiwara, and Tatsuji Kojima, both of Hitachi, Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Mar. 8, 1983, Ser. No. 473,197
Claims priority, application Japan, Mar. 10, 1982, 57-38802
Int. Cl.[3] B21B *29/00, 31/18, 31/20*
U.S. Cl. 72—243 **7 Claims**



1. A method for RD rolling of sheet metal with a mill having a pair of working rolls, at least a pair of back-up rolls, and at least a pair of intermediate rolls, comprising the steps of:

continuously passing sheet metal between the working rolls while maintaining a gap between the working rolls to effect a reduction in sheet metal thickness;

simultaneously tensioning the sheet metal as it passes through the working rolls and driving the working rolls at different peripheral speeds, so that the upper and lower neutral points between the upper and lower work rolls and the sheet metal are displaced relative to each other a controlled amount sufficient to obtain a reduction of the rolling pressure and so that the energy for causing plastic deformation of the sheet metal is given by the difference between the tension applied to the delivery and entrance sides of the sheet metal, all to obtain a controlled RD rolling effect; and

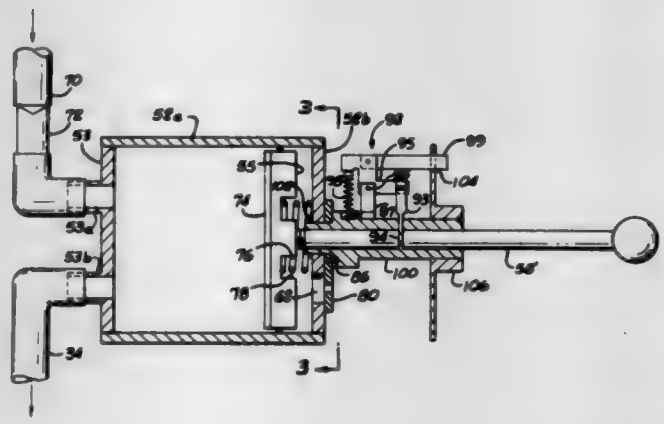
during said reduction of said sheet metal, simultaneously controllably imparting slight edge wave only in each edge portion of the sheet metal, said each edge portion being defined by the area of the strip extending inwardly from the strip edge by a distance of about 0.5 to 2% of the strip width, by controllably axially shifting of the intermediate rolls relative to the sheet metal edges, respectively, and controllably bending the opposite ends of at least one pair of the work rolls and intermediate rolls, sufficiently to correspondingly essentially eliminate tension in the sheet metal edges on the delivery side of the working rolls, so that the reduction ratio and correspondingly delivery side tension may be set desirably high without producing edge cracking and sheet breakage.

4,537,058

VOLUME CALIBRATION SYRINGE

Charles R. Luper, Anaheim, Calif., assignor to Sensormedics Corporation, Anaheim, Calif.

Filed Jul. 6, 1982, Ser. No. 395,171
Int. Cl.[3] G01D *18/00*; G01F *25/00*; G01N *37/00*
U.S. Cl. 73—1 G **24 Claims**



1. In a gas volume calibration syringe of the type including a housing having a central section and first and second end sections, a piston slidably mounted in the housing, a shaft attached to the piston and slidably mounted in the first end section, and a gas inlet aperture in the first end section, the improvement comprising:

(a) means for establishing a predetermined first end position for the piston in the vicinity of the first end section,

(b) separate inlet and outlet openings in the second end section, the contact between one surface of the piston and at least one of said openings defining a second end position for the piston, and

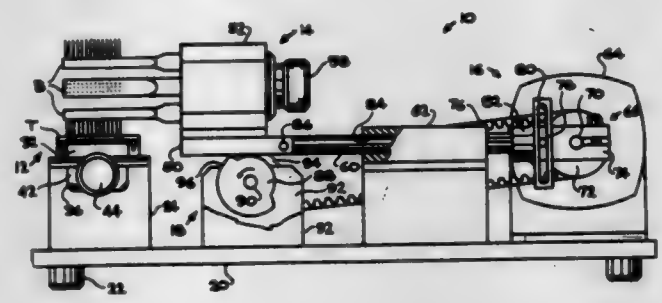
(c) spring-loaded means for driving the piston between said first and second end positions.

4,537,059

AUTOMATIC BRUSHING MACHINE

Paul J. Sokolovsky, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Aug. 12, 1983, Ser. No. 522,910
Int. Cl.[3] G01N *3/56*
U.S. Cl. 73—7 **7 Claims**



1. A reciprocating-brush testing apparatus comprising:

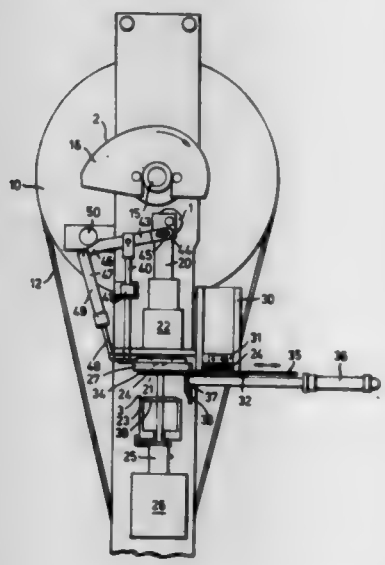
a support platform;
means mounted on the platform for removably supporting a test piece at a fixed location;
a rod reciprocatably mounted on the platform;
a brush holder having a predetermined weight pivotally attached at one end to the rod;
means for reciprocating the rod to translate a brush held by the brush holder along a substantially straight path over the test piece; and
means for periodically elevating the brush holder so that the brush will not contact the test piece during one stroke of the reciprocation cycle, but be lowered onto the test piece during the other stroke of the reciprocation cycle.

4,537,060

APPARATUS AND METHOD FOR MULTIAXIAL IMPACT TESTING OF MATERIALS

John D. Underwood, Wales, United Kingdom, assignor to Monsanto Europe, S.A., Brussels, Belgium

Filed Dec. 19, 1983, Ser. No. 562,921
Claims priority, application United Kingdom, Dec. 23, 1982, 8236587
Int. Cl.³ G01N *3/30*
U.S. Cl. 73—12 **11 Claims**



1. Apparatus for multiaxial impact-testing of a material, comprising an impact member arranged for impact with a sample of the material, wherein either the energy or the force required to rupture the sample in its weakest direction on such impact is employed as a measure of the multiaxial impact strength of the material, characterized in that relative movement of the sample and the member is maintained at a substantially constant velocity along a straight line before and after impact and is derived from angular movement of a cam driven by a flywheel.

4,537,061

ELECTRONIC LEVEL DETECTOR

Roy W. DeMeyer, Oconomowoc, Wis., and Martin F. Kozi, Lombard, Ill., assignors to Magnetrol International, Incorporated, Downers Grove, Ill.

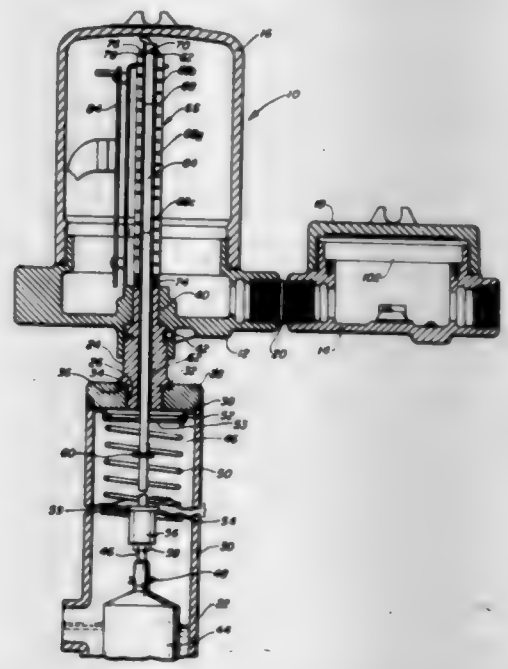
Filed Feb. 4, 1983, Ser. No. 463,712
Int. Cl.³ G01F *23/00*
U.S. Cl. 73—290 R **5 Claims**

1. In a level detector having a movable displacer for following the level of liquid in a tank, a displacer rod coupled to and movable with the displacer and an enclosure tube coupled to the tank for enclosing the displacer rod, the improvement comprising:
a linear variable differential transformer having
a primary winding and two secondary windings disposed about the outside of the displacer rod, and
a ferromagnetic core disposed atop the displacer rod inside the enclosure tube such that the displacer rod moves in response to movement of the displacer with the magnetic coupling between the primary and secondary windings being a function of the position of the core, wherein one of the secondary windings develops a first signal having an amplitude E_1 and the other of the secondary windings develops a second signal having an amplitude E_2 wherein

$$E_1 = kE_a$$

$$E_2 = (1-k)E_a$$

where E_a is the maximum amplitude of the signal from one of the secondary windings when full coupling is present



between the primary winding and that secondary winding and wherein k is a coupling coefficient representing the degree of magnetic coupling between the primary and the secondary windings; and
means for developing an indication of the magnetic coupling between the primary and the secondary coils, and hence the level of the liquid in the tank, wherein the indication developing means includes an oscillator coupled to the primary winding for developing an alternating current signal therein, means for rectifying the first and second signals to develop DC signals having amplitudes proportional to E_1 and E_2, respectively, and a difference amplifier for subtracting E_1 from E_2 to generate a difference signal representative of the level of the liquid in the tank.

4,537,062

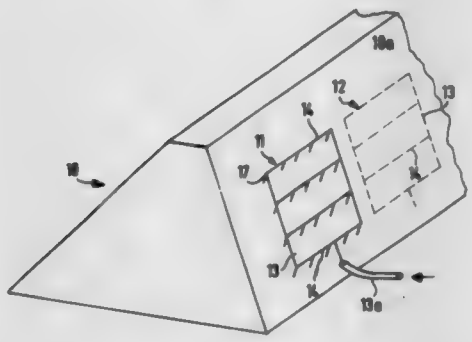
METHOD AND APPARATUS FOR INVESTIGATING THE STRUCTURE AND POROSITY OF EARTH AND STONY REGIONS

Werner Ernst, Tübingen, Fed. Rep. of Germany, assignor to Kohlensaure-Werke Rudolf Buse Sohn GmbH & Co., Bad Honningen, Fed. Rep. of Germany

Filed Oct. 19, 1983, Ser. No. 543,434
Claims priority, application European Pat. Off., Oct. 19, 1982, 82109653.4
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **6 Claims**

1. The non-destructive method of investigating the structure, dampness, and porosity of soil and stony bodies over substantially large areas such as that effecting the percolation of water in areas about dams, comprising the steps of,
introducing a measuring gas under slight pressurization at an injection site in the locality being investigated to penetrate the soil and flow outwardly from the injection site as a function of the porosity and dampness of the soil,
recapturing and measuring the gas at several measuring sites

remote from the injection site after penetration into said bodies, and



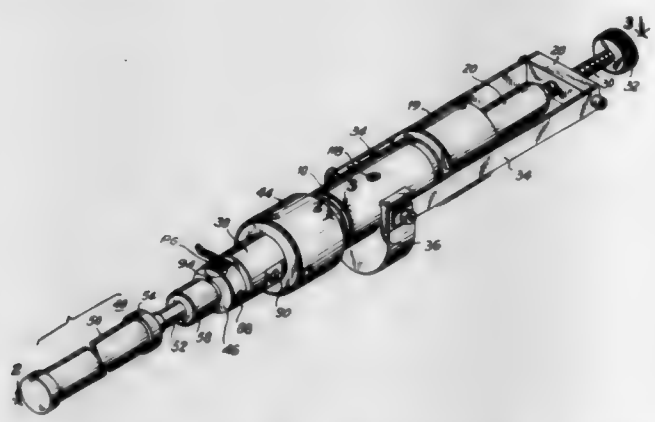
measuring the time of penetration through the bodies under investigation from the injection site to the measuring site and the concentration of the resulting gas to establish the dampness and porosity of the bodies.

4,537,063

NONSTEADY-STATE CORE HOLDER

Harold T. Barnaby, Duncanville, Tex., assignor to Core Laboratories, Inc., Dallas, Tex.

Filed May 17, 1984, Ser. No. 611,101
Int. Cl.³ G01N *15/08*
U.S. Cl. 73—38 **9 Claims**



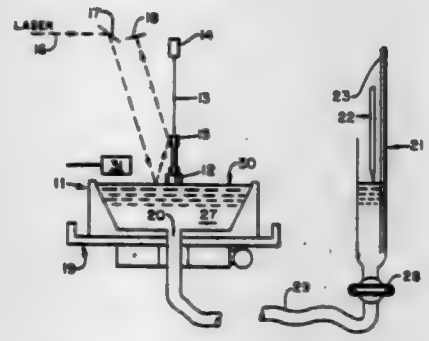
1. Core holder apparatus for nonsteady-state measurement of flow characteristics of a geological core sample, comprising a barrel having a core chamber therein open at its ends for holding said core sample for passage of a gaseous test medium therethrough from an upstream end to a downstream end; retaining means within said barrel for retaining said core sample in said core chamber; reference pressure reservoir means for containing a predetermined volume of said gaseous test medium under a predetermined pressure, said volume to pass from said reservoir means to the upstream end of said core sample and thence therethrough and out the downstream end thereof to a lower pressure drain for said test medium; gas operated valve means coupling said reservoir means to the upstream end of said core chamber and rapidly opening for rapidly exposing the upstream end of said core sample to the gaseous test medium in said reservoir when a control gas pressure is applied to an opening actuator port of said valve means; and pressure monitoring means coupled to said reference pressure reservoir means for measuring the pressure therein decaying over time as said gaseous test medium flows therefrom through said core sample.

4,537,064

METHOD AND APPARATUS FOR MEASURING SHEAR MODULUS AND VISCOSITY OF A MONOMOLECULAR FILM

Bernard M. Abraham, Oak Park, Ill.; Kenjiro Miyano, Sendai, Japan, and John B. Ketterson, Evanston, Ill., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 18, 1983, Ser. No. 542,957
Int. Cl.³ G01N *11/16, 13/02*
U.S. Cl. 73—54 **15 Claims**



1. Apparatus for measuring the shear modulus of a monomolecular film (monolayer) comprising:

(a) a circular trough having inwardly sloping sides, containing a liquid for supporting said monolayer on the surface thereof;

(b) a circular rotor suspended above the trough such that the lower surface of the rotor contacts the surface of the liquid, positioned such that the axis of the rotor is concentric with the axis of the trough, and freely rotable about its axis;

(c) means for hydrostatically compressing said monolayer in the annular region formed between the rotor and the sides of the trough; and

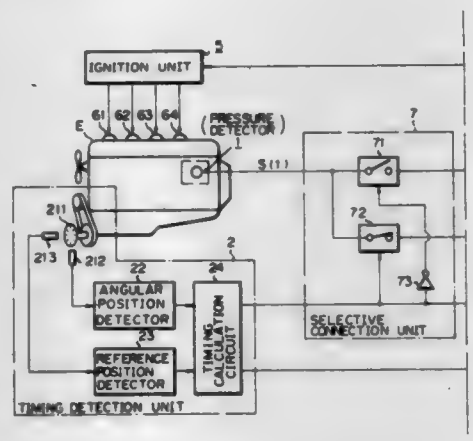
(d) means for rotating the trough about its axis.

4,537,065

DEVICE FOR DETECTION OF ABNORMALITY IN PRESSURE DETECTOR FOR INTERNAL COMBUSTION ENGINE

Yoshinori Ootsuka; Tadashi Hattori; Minoru Yamamoto, all of Okazaki, and Tadashi Ozaki, Gamagori, all of Japan, assignors to Nippon Soken, Inc., Nishio and Nippondenso Co., Ltd., Kariya, both of, Japan

Filed Feb. 1, 1984, Ser. No. 575,996
Claims priority, application Japan, Feb. 3, 1983, 58-15519
Int. Cl.³ G01M *15/00*
U.S. Cl. 73—117.3 **8 Claims**



1. A device for detecting an abnormality in a pressure detector in an internal combustion engine comprising:

a piezoelectric type pressure detector;

a timing detection means having an angular position detector,

a reference position detector, and a timing calculation circuit for calculating the timing;

a selective connection means for carrying out the selective connection of the output terminal of said pressure detector; and

an abnormality detection means for receiving the output of said timing detection means and one of the outputs of said selective connection means,

said abnormality detection means including a capacitor connected in series to an oscillation circuit,

said pressure detector being connected in parallel with the series connection of said oscillation circuit and said capacitor.

4,537,066

AEROENGINE TEST CELLS

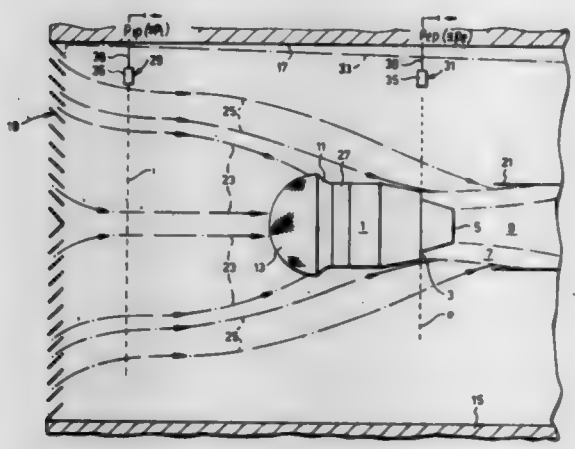
Philip A. Simpson, Nottingham, England, assignor to Rolls-Royce Limited, London, England

Filed Oct. 12, 1983, Ser. No. 541,314

Claims priority, application United Kingdom, Nov. 10, 1982, 8232151

Int. Cl.³ G01M *15/00*

U.S. Cl. 73—117.4 **8 Claims**



1. A method of correcting thrust measurements in an aeroengine test cell in respect of an aeroengine installed for testing therein, said aeroengine having an air-washed external surface with an upstream end and a downstream end with respect to airflow thereover, and said testing of said aeroengine involving the correction of net thrust measurements X_B to gross thrust measurements X by means of a thrust correction D representing the drag due to air-flows into said aeroengine, over said air-washed external surface of said aeroengine, and through said test cell, where $X_B=X-D$, said test cell having;

air inlet means for allowing air to enter said test cell to supply said aeroengine,

exhaust means whereby efflux from said aeroengine plus air entrained into said efflux from within said test cell is exhausted from said test cell, and

thrust balance means for measuring said net thrust X_B of said aeroengine in said test cell: said method comprising;

obtaining, during testing of said engine, a measure of static pressume p_i at an "inlet" location i in said test cell, and a measure of static pressure p_e at an "exit" location e in said test cell, said location i being downstream of said air inlet means and upstream of said aeroengine and said location e being spaced outwardly from, but in substantial registration with, said downstream end of said air-washed external surface of said aeroengine, and

calculating the value of D by utilising said measures of p_i and p_e in a function of the form $D=f(p_i, p_e)$

4,537,067

INERTIAL BOREHOLE SURVEY SYSTEM

Harper E. Sharp, Houston, Tex.; Leo Spiegel, Sharon, Mass.; Richard M. Masters; Elmer J. Frey, both of Lexington, Mass.; John R. Howatt, Bedford, Mass., and Gary E. Walker, Dover, Mass., assignors to Wilson Industries, Inc., Houston, Tex.

Division of Ser. No. 442,849, Nov. 18, 1982, abandoned. This application Nov. 9, 1983, Ser. No. 535,281

Int. Cl.³ E21B *47/00*

U.S. Cl. 73—151 **38 Claims**



1. A probe for insertion in a borehole for making measurements therein comprising:

an elongated outer housing forming a pressure vessel;

a temperature sensitive instrument means disposed in said housing;

a thermal insulating member disposed in said housing and defining a chamber in which said instrument means is disposed, said member forming a thermal barrier between said housing and said instrument means; and

isothermal heat absorbing means disposed in said housing and in heat flow receiving communication with said instrument means, said heat absorbing means including a quantity of material for absorbing heat in said chamber, said material being adapted to undergo a phase change at a phase change temperature which will maintain said instrument means in a predetermined temperature range for a predetermined time period, said phase change temperature being substantially above most ambient temperatures wherein an ambient temperature fluid may be utilized to cool said material to a temperature below said phase change temperature.

4,537,068

THERMAL ANEMOMETER

Stanley A. Wrobel, Harbert, and Robert G. Ashton, Watervliet, both of Mich., assignors to Dwyer Instruments, Inc., Michigan City, Ind.

Filed Mar. 10, 1983, Ser. No. 474,043

Int. Cl.³ G01F *1/68*

U.S. Cl. 73—202 **7 Claims**

1. A thermal anemometer for measuring the velocity of an air stream, and comprising:

a probe having mounted in same in spaced relation a thermistor and a solid state linear output temperature sensor,

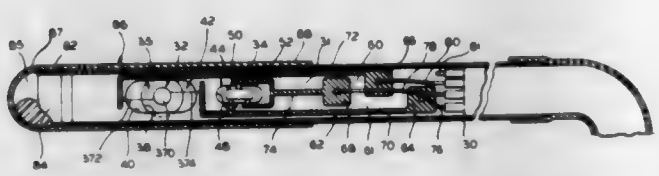
said probe being ported transversely across same at said thermistor and said sensor, respectively, for passage of the air flow therethrough about said thermistor and said sensor,

a source of electrical energy,

means for electrically operating said thermistor in a self

heated mode at a constant predetermined temperature from said energy source to provide a thermistor signal in proportion to the velocity and the difference in temperature between that of the thermistor and the ambient temperature of the air stream,

means for operating said sensor from said energy source to provide a sensor signal in proportion to the ambient temperature of the air stream,



means for electronically combining said signals to provide a resultant signal that is in proportion to the velocity of the air stream free of effect of the ambient temperature variation of said signal of said thermistor, and

means for reading out said resultant signal,

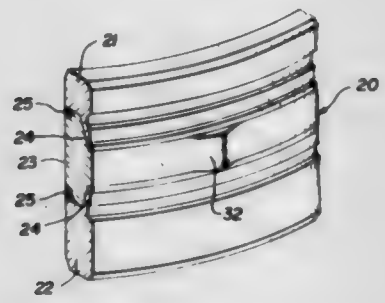
said sensor comprising a transistor having a constant current flow through its base emitter junction to provide said sensor signal.

4,537,069

DEVICE AND METHOD TO ENABLE DETECTION AND MEASUREMENT OF DEFORMITIES IN WELL COMPONENTS

John H. Mayo, 404 Alonda Dr., Lafayette, La. 70503

Filed Jun. 12, 1984, Ser. No. 619,828
Int. Cl.[3] G01B *5/28, 21/30*
U.S. Cl. 73—432 R **2 Claims**



1. A device for detecting the existence and magnitude of wear-induced recesses in the bores of tubular well components comprising a body portion adapted to be positioned in a well adjacent to a tubular component of the well and within the bore of such component, an axially narrow ring element on and surrounding the body portion and being formed entirely of a non-elastic compliant and formable material, a pair of rigid containment rings for the ring element of compliant and formable material on and surrounding the body portion on opposite sides of said ring element coaxially therewith, said containment rings being recessed in their opposing end faces to receive and hold end portions of the ring element, the compliant and formable ring element having its exterior circumferential face freely disposed and unobstructed between said rigid containment rings, and means on the body portion to exert axial forces on the containment rings in opposite directions and causing compression and radial expansion of the compliant and formable ring element whereby the latter will enter any existing wear-induced recess in the bore of the adjacent tubular component of the well to indicate the existence and magnitude of such wear-induced recess following withdrawal of the body portion from the well.

4,537,070

MAGNETICALLY RESPONSIVE CIRCUIT-ELEMENT MODULE FOR LIQUID-LEVEL MONITORING AND PROBE THEREFROM

William P. Milish, Bristol, Conn., assignor to Transamerica Delaval Inc., Princeton, N.J.

Filed Aug. 26, 1983, Ser. No. 526,878
Int. Cl.[3] G01F *23/12;* H01H *35/18*
U.S. Cl. 73—313 **20 Claims**



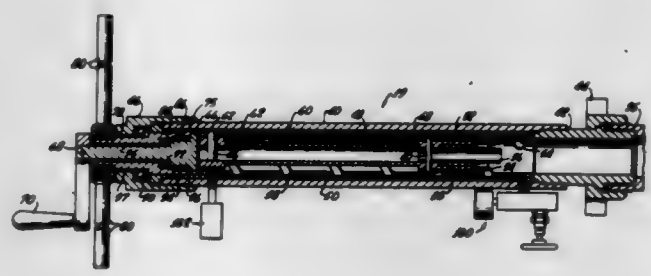
1. A magnetically responsive circuit-element module for liquid-level monitoring apparatus comprising an elongated body having ends that are complementally shaped and keyed for interlocking end-to-end assembly with other modules having the same end construction to form an assembly of any desired length, at least one float-magnet actuatable magnetic reed switch confined within said body, and electrically conductive members that are accessible from outside said body and that extend into the interior of said body where said conductive members are coupled to said reed switch for establishing electrical connection to said reed switch, said conductive members having portions located and oriented with respect to said body such that upon effecting said interlocking end-to-end assembly with other modules said conductive member portions are positioned for coupling to complemental conductive members that extend into said other modules to establish a network of reed switches connected electrically in a liquid-level sensing circuit.

4,537,071

RETRIEVER TOOL

David K. Waterman, Placentia, Calif., assignor to Rohrback Corporation, Seattle, Wash.

Filed Nov. 23, 1983, Ser. No. 554,317
Int. Cl.[3] G01D *21/00*
U.S. Cl. 73—432 R **27 Claims**



1. A tool for retrieving a device holder from and inserting it into a vessel having an access fitting and an access valve connected with the fitting, said tool comprising

an elongated tool housing,

a transport shaft mounted in said housing for translational and rotational motion,

connector means carried by said shaft for detachably securing a device holder to said shaft,

translation drive means for axially driving said shaft between an extended position in which the shaft and connector means project forwardly of said housing so as to extend through said access valve and said access fitting and a retracted position in which the shaft is withdrawn into said housing, said drive means including an end portion that overlaps at least a portion of said connector means within said housing when said shaft is in said retracted position, and

rotation drive means for rotating said shaft.

4,537,072

ARRANGEMENT FOR EXCHANGING MEASURING AND/OR SAMPLING PROBES

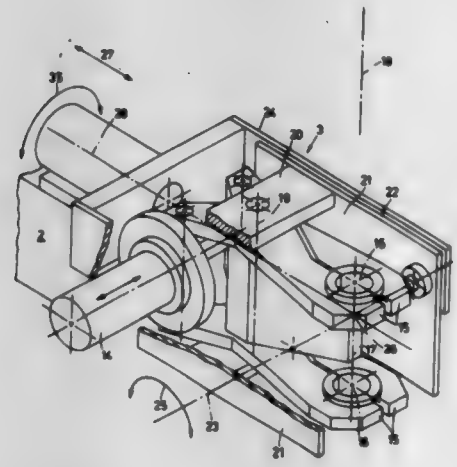
Johann Fohler, Puchenau, Austria, assignor to Voest-Alpine Aktiengesellschaft, Linz, Austria

Filed Dec. 1, 1983, Ser. No. 557,356

Claims priority, application Austria, Dec. 9, 1982, 4474/82

Int. Cl.³ F27D *21/00*; G01N *33/20*

U.S. Cl. 73—432 R **8 Claims**



1. In an arrangement for exchanging measuring and/or sampling probes, which probes are slippable onto holding means on the lower end of a verticaly movable lance for frictional engagement therewith, said arrangement including a grab adapted to clamp said probes and movable between an operation position below said lance and a position laterally displaced therefrom, the improvement comprising

an arm movable laterally towards and away from said operation position, and

universal joint means securing said grab to said arm and enabling said grab automatically to align a probe clamped thereby with the holding rod on said lance.

4,537,073

INSPECTION METHOD OF SQUARE BILLET USING ELECTRONIC SCANNING

Takehiko Ooshiro, Kobe; Masayoshi Iwasaki, Hyogo; Kousuke Sahara, Kobe; Norio Suzuki, Kobe; Hitoshi Utsumi, Kobe; Kazuo Miyake, Kobe, and Kenji Aburatani, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Dec. 21, 1983, Ser. No. 563,953

Claims priority, application Japan, Dec. 24, 1982, 57-233944; Feb. 14, 1983, 58-23527

Int. Cl.³ G01N *29/04*

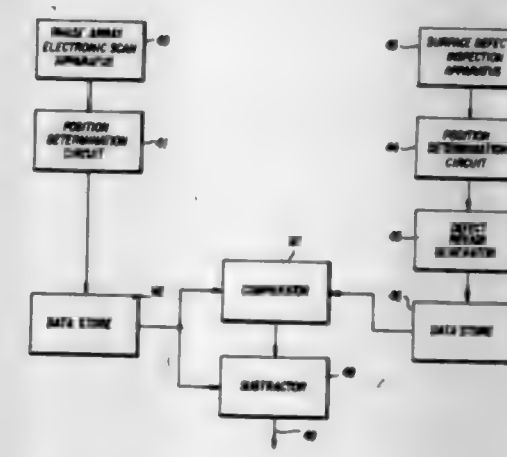
U.S. Cl. 73—602 **4 Claims**

1. A method of detecting subsurface defects in a specimen by ultrasonic inspection, comprising the steps of:

detecting both internal and surface defects by an angle beam inspection on the surface layer of said specimen using a phased array probe;

determining the projection on the surface of the estimated position of a said defect located by said angle beam inspection utilizing the positional relation of said probe and said specimen, the incident angle of the ultrasonic beam, and the defect echo detecting time;

detecting surface defects only using a surface defect inspection apparatus;



determining a defect region for each surface defect detected by said surface defect inspection apparatus;

comparing said estimated defect position information with said defect regions to determine surface defect position information; and

detecting only subsurface defects by subtracting said surface defect region information from said estimated defect position information.

4,537,074

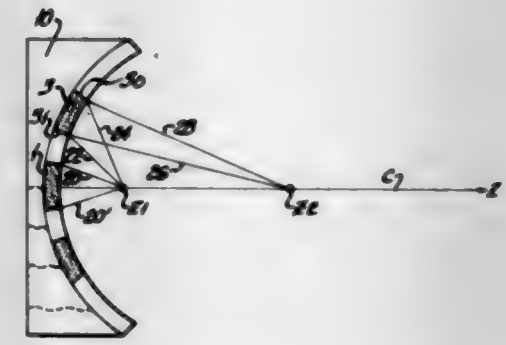
ANNULAR ARRAY ULTRASONIC TRANSDUCERS

Dennis R. Dietz, Littleton, Colo., assignor to Technicare Corporation, Solon, Ohio

Filed Sep. 12, 1983, Ser. No. 530,687

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—625 **10 Claims**



1. A selectable focus annular array ultrasonic transducer comprising a concave of piezoelectric material which is separated into a plurality of concentric rings including a central disc-shaped element and capable of being selectively focused over consecutive regions of a given depth of field by activating rings of increasing radii in combination with said disc-shaped element and rings activated in shorter field regions, if any, as the transducer is focused at increasing depths of field; each ring exhibiting a width selected in accordance with a predetermined phase criterion such that the received signal phase error across the ring width does not exceed a given signal phase change for signals received from the nearest field point at which the ring is initially activated.

4,537,075
POSITION CONTROL

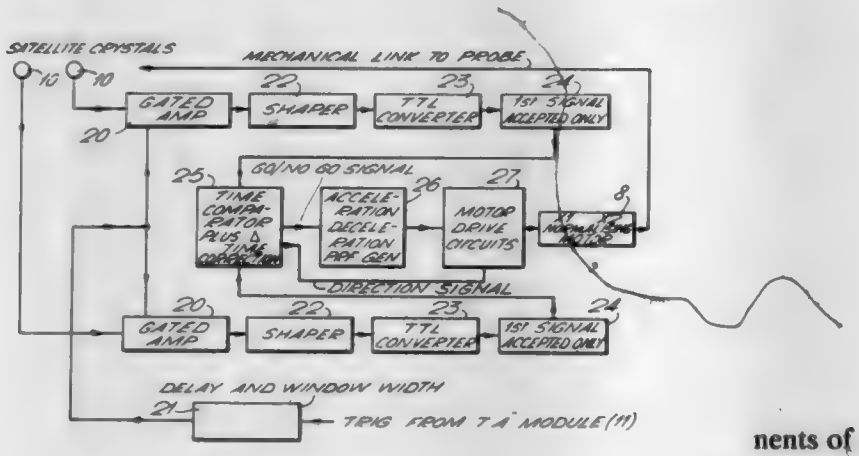
Graham Jackson, Lancashire, and Ryszard Surawy, Chippenham, both of England, assignors to British Aerospace Public Limited Company, London, England

Continuation of Ser. No. 401,218, Jul. 23, 1982, abandoned. This application Jun. 1, 1984, Ser. No. 616,780

Claims priority, application United Kingdom, Jul. 25, 1981, 8123024

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—634 **9 Claims**



1. Ultrasonic test equipment, comprising

a transducer head having primary transducer means, mounted on said transducer head, for emitting a pulsed beam of ultrasonic energy towards a workpiece to be tested and for receiving energy reflected back from said workpiece for subsequent formation of signals indicative of workpiece flaws;

drive pulse supply means, connected to said primary transducer means, for causing said primary transducer means to emit said beam; and

motor drive support system means for relatively moving said workpiece and transducer head to scan said beam across said workpiece and, during such scanning, for automatically regulating the angle of incidence between said beam and a surface of said workpiece, said support system means including

at least two receive-only satellite transducers supported by said transducer head at respective sides of the axis of said beam so as to receive respective portions of said reflected energy of each pulse of said beam emitted by said primary transducer means at respective times dependent upon said angle of incidence,

an angle control motor and associated motor drive circuit means for relatively moving said transducer head and workpiece to vary said angle of incidence, and

time comparator means, connected between said satellite transducers and said motor drive circuit means for controlling said drive circuit means by comparing the timing of said respective reflected energy pulses received by said satellite transducers.

4,537,076
APPARATUS FOR AND METHOD OF RANDOM VIBRATION CONTROL

David R. Lax, Irvine, Calif.; Michael Page, Reading, and James S. Johnstone, Surry, both of England, assignors to Schlumberger Electronics (U.K.) Limited, Farnborough, England

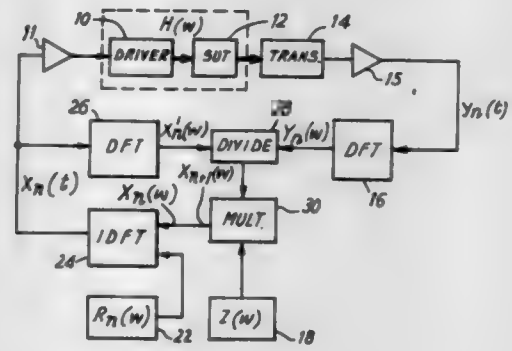
Filed Jan. 16, 1984, Ser. No. 571,163

Claims priority, application United Kingdom, Jan. 26, 1983, 8302169

Int. Cl.³ G01N *29/00*

U.S. Cl. 73—662 **11 Claims**

1. In apparatus for random vibration control, of the type comprising means for controlling a driver for imparting vibrations to a system under test, means for receiving a signal from a transducer sensing the actual vibrations of the system under test, and a feedback loop arranged between the said means to equalize the apparatus to a state in which the power spectrum of the actual vibrations approximates a reference power spectrum, wherein the feedback loop includes means for performing the discrete Fourier transfer (DFT), means for performing the inverse discrete Fourier transform (IDFT), equalizing means responsive to the output of the DFT means and the reference power spectrum to establish the input to the IDFT means, and means for randomizing the phases of the components of the drive signal for the driver provided by the IDFT means, the improvement wherein the equalizing means comprise first means operative to compare the output of the DFT means with the corresponding drive signal in the frequency domain and second means responsive to the reference power spectrum and to the first means to derive the input to the IDFT means in accordance with the reference power spectrum modified by the results of the comparison to equalize the power spectrum of the actual vibrations to the reference power spectrum.



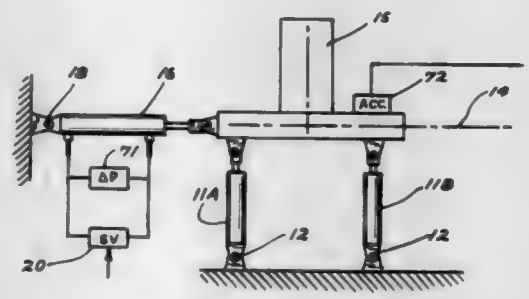
4,537,077
LOAD DYNAMICS COMPENSATION CIRCUIT FOR SERVOHYDRAULIC CONTROL SYSTEMS

Allen J. Clark, and Dale N. Maue, both of Minnetonka, Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Feb. 8, 1984, Ser. No. 578,055

Int. Cl.³ G01N *29/00, 3/32;* B06B *1/18;* G01M *7/00*

U.S. Cl. 73—665 **4 Claims**



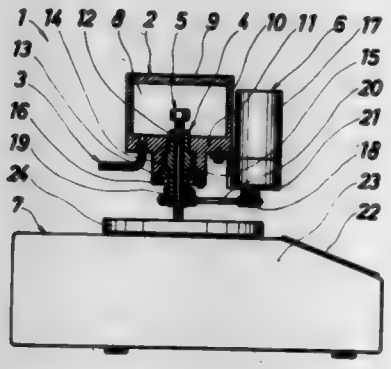
1. In a servo controlled displacement generating apparatus having control means for generating an error signal representing the desired displacement of a servovalve that will provide a desired displacement of a heavy dynamically operated load, said load being driven by an actuator having an area and a displacement, said actuator being provided with hydraulic oil through said servovalve, the improvement comprising:

means for providing a compensation signal summed with said error signal, which compensation signal is a function of the load acceleration and actuator force scaled through a differentation function including scaling factors relating to the actuator area, divided by factors comprising functions of the compliance of the oil and the flow gain of the servovalve.

4,537,078
PRECISION PRESSURE GAUGE

Kotohiko Sekoguchi, 18-8, Hinosato 6-chome, Munakata-shi, Fukuoka-ken, Japan, and Yoshiteru Sonoda, Osaka, Japan, assignors to Kotohiko Sekoguchi and Fujikin International, Inc., both of Osaka, Japan

Filed Nov. 21, 1983, Ser. No. 553,913
Claims priority, application Japan, Nov. 22, 1982, 57-205287; Nov. 22, 1982, 57-205288
Int. Cl.[3] G01L *7/16*
U.S. Cl. 73—744 8 Claims



1. A precision pressure gauge for measuring the pressure of a fluid applied thereto, said gauge comprising:

a stationary cylinder having a cylinder chamber one end of which has an opening therein;

means connected directly to said cylinder for applying said fluid to said chamber;

a rotatable sleeve mounted in said cylinder;

a ram extending through said rotatable sleeve and freely rotatable with respect to said sleeve,

said ram having a first end extending into said chamber and a second end extending out of said sleeve;

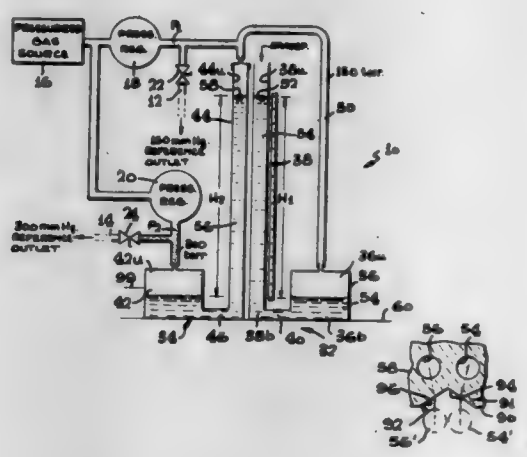
drive means for rotating said sleeve relative to said cylinder; and,

weight measuring means including a receiver to which movement is imparted by axial movement of said ram in response to fluid pressure in said chamber.

4,537,079
MULTI-PRESSURE MANOMETER

Arnold S. J. Lee, 1033 Hilts Ave., Los Angeles, Calif. 90024

Filed Mar. 13, 1984, Ser. No. 589,147
Int. Cl.[3] G01L *7/18*
U.S. Cl. 73—747 3 Claims



3. Apparatus for producing a number n of reference outlet pressures, where n is an integer that is more than one, wherein each outlet pressure is precisely related to every other outlet pressure, comprising:

a number n of reservoirs, each having an upper portion containing gas and a lower portion;

a number n of vertical tubes, each having upper and lower portions, the upper portions of the tubes being positioned so the levels of any liquids therein can be compared;

a number n of lower couplings, said reservoirs and tubes arranged in pairs, with each lower coupling connecting together the lower portion of a reservoir and of a tube of the same pair;

a manometer liquid lying in each lower coupling and the lower portions of the reservoir and tube it connects;

a number n-1 of upper couplings, each containing gas and connected to the upper portion of a reservoir of one of said pairs to the upper portion of a tube of another pair;

means for establishing a base pressure in the upper portion of that one of said tubes which is not connected to an upper coupling;

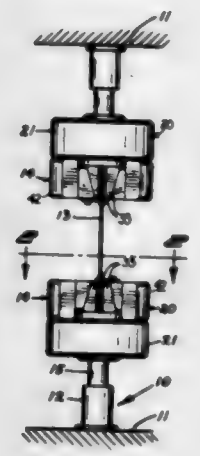
a number n of pressure regulator means, each having an outlet coupled to gas in the upper portion of a different reservoir, for applying a controllable gas pressure thereto; and

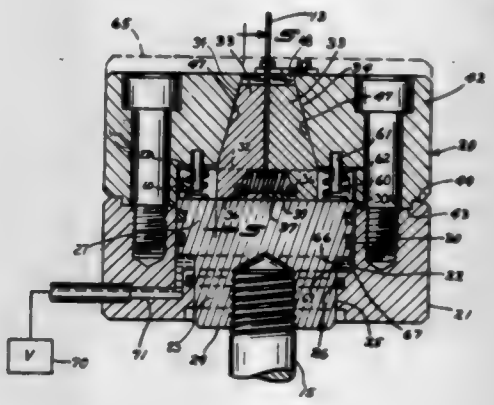
a transparent housing forming said vertical tubes at spaced locations, the outside walls of said housing including a concave region formed by a pair of walls that converge, said converging walls positioned so that two of said tubes appear closer together than their actual separation, to a person viewing said tubes through said pair of walls from a position outside said housing.

4,537,080
SIDE LOADING SPECIMEN GRIP

John A. Christiansen, Minneapolis, Minn., assignor to MTS Systems Corporation, Eden Prairie, Minn.

Continuation-in-part of Ser. No. 350,056, Feb. 18, 1982, abandoned. This application Mar. 1, 1984, Ser. No. 585,354
Int. Cl.[3] G01N *3/04*
U.S. Cl. 73—857 12 Claims





1. A side loading specimen grip assembly suitable for use in both tensile and compressive loading of a specimen comprises a main mounting body, said main mounting body being adapted to be loaded by an actuator in direction along a longitudinal axis, means on said main mounting body defining a slide on an upper surface thereof, jaw means mounted on said slide

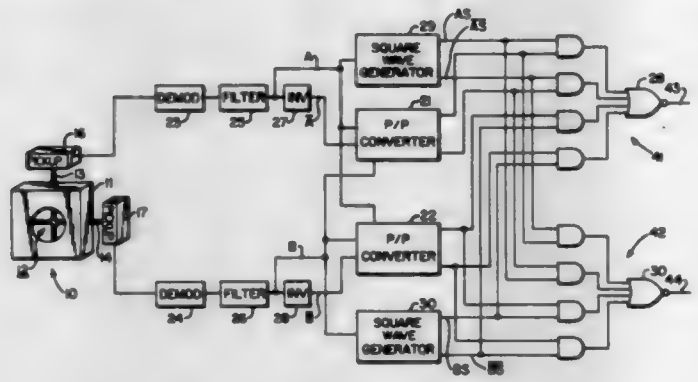
for movement transverse to the longitudinal axis, said jaw means comprising a pair of opposed grip jaws mounted on said slide for simultaneous longitudinal movement therewith when the mounting body is loaded by the actuator, the grip jaws being movable toward and away from each other and having wedge surfaces thereon, a housing mounted on said main mounting body and having cam surfaces mating with said wedge surfaces so that upon movement of the housing relative to the mounting body along said longitudinal axis in a first direction the cam surfaces force said jaws to move toward each other, and cooperating cylinder and piston means between said main mounting body and said housing forming a chamber into which hydraulic fluid under pressure may be introduced to force the housing in direction along the longitudinal axis to tend to force the cam surfaces against the wedge surfaces and force the grip jaws together, said housing having a first recess so that the side portions of said grip jaws are accessible from the exterior of said housing and above the mounting body to permit installation and removal of a specimen from a side of the grip jaws and specimen grip assembly without the need for longitudinal movement of the grip jaws.

4,537,081

FLOW METERING CIRCUIT AND METHOD

John K. Max, 1420 Healdsburg Ave., Healdsburg, Calif. 95448

Filed Dec. 15, 1983, Ser. No. 562,484
Int. Cl.³ G01F *15/00*
U.S. Cl. 73—861.77 **9 Claims**



1. A circuit arrangement for use in a fluid metering device for providing an output signal accurately representing a fluid flow, said metering device sampling the fluid flow and providing a multiphase flow signal including a plurality of input phase signals conjointly representing the fluid flow, wherein said circuit arrangement comprises:

reference-sequence means responsive to each said input phase signal for deriving therefrom a reference sequence of instantaneous graduated reference levels;

comparison means responsive to each said input phase signal for comparing each said signal to a cross-associated reference sequence;

reference-crossed means connected to said comparison means for providing a reference-crossed signal associated with each said input phase signal, each said reference-crossed signal indicating the moment and direction said input phase signal crosses the levels of the cross-associated reference sequence; and

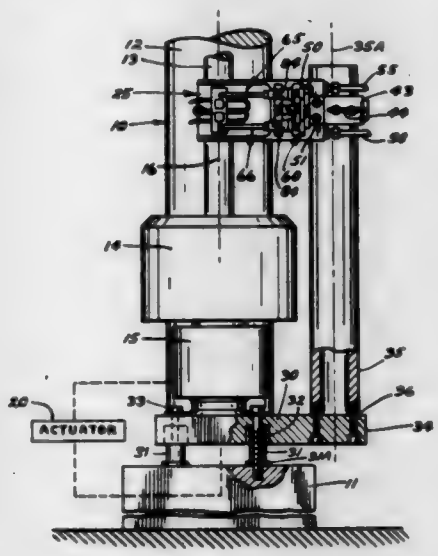
logic means responsive to said reference-crossed signals for providing an output signal indicating the amount and direction of said fluid flow.

4,537,082

REFERENCE FRAME AND HOLD-DOWN SUPPORT SYSTEM FOR REMOTE SUPPORTED AXIAL TORSIONAL EXTENSOMETER

Harry R. Meline, Minnetonka, and Richard A. Meyer, Carver, both of Minn., assignors to MTS Systems Corporation, Eden Prairie, Minn.

Filed Jan. 24, 1984, Ser. No. 573,821
Int. Cl.³ G01N *3/02*
U.S. Cl. 73—794 **16 Claims**



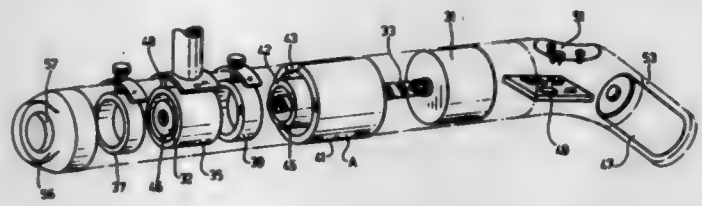
1. An extensometer support for use in combination with a test frame having a base, and having means for loading a test specimen along a specimen loading axis generally perpendicular to the base, and for loading said specimen for rotation about its specimen axis, the improvement comprising a support plate, an upright column fixed to said support plate and laterally offset from a specimen when the plate is installed on a base for a test frame holding a test specimen, a plurality of flexure standoff members for mounting the support plate relative to the base in a position spaced from said base and connected to the base only through said standoff members, means at the upper end of said column for supporting an extensometer in engagement with a specimen to be tested, said standoff members providing a flexible connection to the base which will not substantially deflect extensometer members supported relative to and operatively engaging a specimen as the base deflects during loading of the specimen.

4,537,083

DEVICE FOR IMPARTING CONTINUOUS PASSIVE MOTION TO HUMAN JOINTS

John H. Saringer, Toronto, Canada, assignor to Imasco-CDC Research Foundation, Toronto, Canada

Division of Ser. No. 362,896, Mar. 29, 1982, Pat. No. 4,487,199. This application Oct. 15, 1984, Ser. No. 660,704
Claims priority, application Canada, Oct. 23, 1981, 388659
Int. Cl.³ F16H *27/02*
U.S. Cl. 74—89.15 **12 Claims**



1. An actuator for imparting back and forth motion in a slow rhythmic cycle, comprising,

a support housing having a longitudinal slot defining a guide track,

a traveller operatively mounted to said support housing for back and forth motion relative to said housing,

a tubular housing mounted in said support housing, said tubular housing having a longitudinally extending slot offset relative to said guide track, and

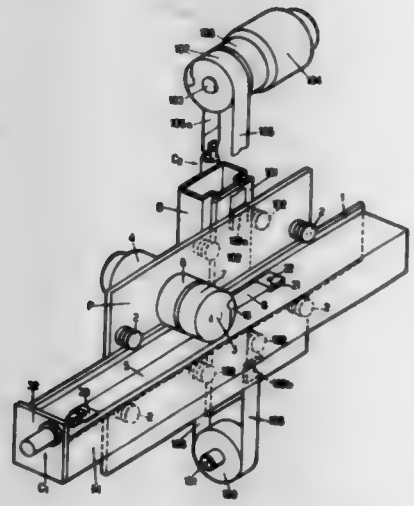
a drive member mounted inside said tubular housing adapted to drive said traveller with said back and forth motion, said traveller including a travel element mounted inside said support housing operatively connected through the longitudinally extending slot in said tubular housing to said drive member, said travel element being connected to a travel member mounted for travel along said guide track.

4,537,084

RECTILINEAR TRANSFER MECHANISM WITH PULLEYS AND BELTS

Jean R. Passemard, Bailly Romainvilliers, and Gaston Kélédjian, Boulogne Billancourt, both of France, assignors to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed Sep. 10, 1982, Ser. No. 416,714
Claims priority, application France, Sep. 15, 1981, 81 17427
Int. Cl.³ F16H *27/02, 29/02*
U.S. Cl. 74—89.22 **6 Claims**



1. An apparatus for providing rectilinear sliding motion of a first object in a first direction in relation to a relatively fixed second object, said first object being longer than said second object in said first direction, said apparatus comprising:

means connected to one of said objects for guiding said motion;

a motor fixed to said second object, said motor having an output shaft rotatable about an axis transverse to said first direction;

first and second pulleys having the same diameter and fixedly mounted on said shaft in axially staggered relation;

a straight groove formed in each of said first and second pulleys, each said groove merging with the cylindrical peripheral surface of a corresponding one of said pulleys by a large diameter fillet, each said groove being capped by a complementary piece having an outer surface which is shaped to reconstruct the cylindrical surface of said pulley, said grooves and fillets of said two pulleys having opposite senses;

a first belt having a first end inserted and fixed in said groove of said first pulley, said first belt having a second end fixed relative to said first object at a first point;

a second belt having a first end inserted and fixed in said groove of said second pulley, said second belt having a second end fixed relative to said first object at a second point, wherein said first and second belts are wound on said first and second pulleys in opposite rotational directions, whereby rotation of said motor shaft causes one belt to be wound and the other belt to be simultaneously unwound [.]; and

means for moving said second object in a second direction, transverse to said first direction, in relation to a relatively fixed third object, said third object being longer than said second object in said second direction, said means for moving comprising:

(a) means connected to one of said second and third objects for guiding the motion of said second object relative to said third object;

(b) a second motor fixed relative to said third object and having an output shaft rotatable about an axis transverse to said second direction;

(c) third and fourth pulleys mounted on said output shaft of said second motor, said third and fourth pulleys being respectively indentical to said first and second pulleys;

(d) a third belt having a first end fixed to said third pulley and a second end fixed to said second object;

(e) a fourth belt having a first end fixed to said fourth pulley and a second end fixed to said second object; and

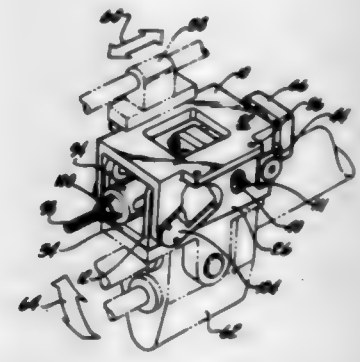
(f) an elastic tensioning device associated with said fourth belt for tensioning said fourth belt.

4,537,085

PIVOTAL LIFT APPARATUS

Al L. Valentine, 21658 Summerdale, Southfield, Mich. 48034

Filed Jan. 24, 1983, Ser. No. 460,109
Int. Cl.³ F16H *21/44*
U.S. Cl. 74—99 A **12 Claims**



1. Apparatus for effecting pivotal movement of a load comprising:

a first housing;

a second housing including means adapted for mounting said load thereon;

means mounting said second housing for pivotal movement on said first housing about a fixed axis;

at least a pair of elongate, overlapping cam tracks respectively defined in said first and second housings, said pair of cam tracks extending obliquely relative to each other;

cam means within said pair of cam tracks for transferring force between said first and second housings causing pivotal movement of said first housing relative to said second housing about said fixed axis in response to displacement of said cam means within said cam tracks; and

motor means carried by and pivotally mounted on said housings and coupled with said cam means for displacing said cam means within said cam tracks to cause pivotal movement of said first housing relative to said second housing about said fixed axis.

4,537,086

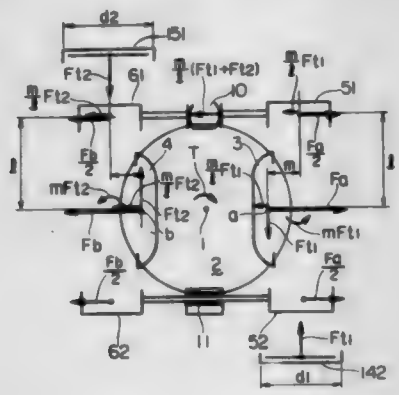
INFINITELY VARIABLE TORIC TRANSMISSION

Hideo Okoshi, Fujisawa, Japan, assignor to Nippon Seiko Kabushiki Kaisha, Tokyo, Japan

Filed Feb. 13, 1984, Ser. No. 579,374
Claims priority, application Japan, Feb. 21, 1983, 58-26290
Int. Cl.³ F16H *15/08, 15/00*
U.S. Cl. 74—201 **2 Claims**

1. An infinitely variable toric transmission having a housing, input and output shafts rotatably and coaxially supported in said housing, toric input and output disks fitted on and engaged with said input and output shafts, respectively, for rotation

together, the opposed surfaces of said disks cooperating with each other to form a toric cavity, two right and left traction rollers disposed in said toric cavity symmetrically with respect to the axis of said input and output shafts, trunnion devices rotatably supporting said traction rollers and supported in said housing through upper and lower support link members for rightward and leftward pivotal movement about a pivot axis perpendicular to the rotational axes of said traction rollers, and pressing means for abutting said input and output disks and said traction rollers into engagement with each other and generating a traction force, one of said upper and lower support link



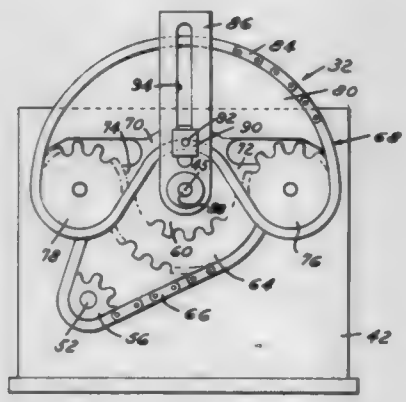
members being supported in said housing by a sliding post for slight rightward and leftward movement and the other of said upper and lower support link members having its central portion tiltably supported in said housing by a spherical post, characterized in that hydraulic cylinder devices are provided which extend on the upper and lower pivot shaft ends, respectively, of said right and left trunnion devices, the right and left cylinder diameter of said cylinder devices which is adjacent to said spherical post is larger than the right and left cylinder diameter of said cylinder devices which is adjacent to said sliding post, and the cylinder devices on each diagonal are conjunctioned with each other by pipings.

4,537,087

ROTARY CHAIN DRIVE MECHANISM WITH PERIODIC OUTPUT DWELL

William M. Faitel, Detroit, Mich., assignor to Lamb Technicon Corp., Warren, Mich.

Filed Apr. 29, 1983, Ser. No. 490,123
Int. Cl.³ F16H *35/02, 27/04*
U.S. Cl. 74—394 **8 Claims**



1. A rotary drive mechanism with periodic output dwell comprising

input means including means for imparting rotary input motion about a fixed axis,

a first sprocket coaxial with said fixed axis and fixed against rotation about said fixed axis,

a frame coupled to said input means for corotation with said input means about said fixed axis,

second and third sprockets coplanar with said first sprocket and carried by said frame for free rotation about axes disposed on opposite sides of said fixed axis, said axes being rotatable about said fixed axis conjointly with said frame,

said frame including a chain guide which is coplanar with all of said sprockets and extends between said second and third sprockets,

an endless chain slidably trained along said guide, around said second and third sprockets, and around a circumferential portion of said first sprocket adjacent to and radially inwardly of said guide,

an arm mounted for rotation about said fixed axis, and

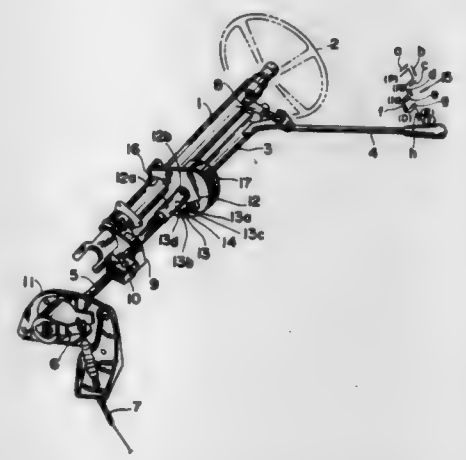
means slidably carried by said arm and affixed to said chain for rotating said arm about said fixed axis as a combined function of rotation of said frame, said second and third sprockets, and said chain guide about said first axis, and motion of said chain around said sprockets and along said guide.

4,537,088

COLUMN SHIFT TYPE GEAR SELECTOR DEVICE FOR AN AUTOMATIC POWER TRANSMISSION OF AN AUTOMOTIVE VEHICLE

Shikibu Kubota, Musashino, Japan, assignor to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jun. 11, 1982, Ser. No. 387,692
Claims priority, application Japan, Jun. 17, 1981, 56-92123
Int. Cl.³ G05G *9/16, 5/02*
U.S. Cl. 74—473 SW **11 Claims**



1. A column shift type gear selector device for an automatic power transmission of an automatic vehicle comprising:

a manually operated selector lever mounted on a steering column for controlling the shift operation of said automatic power transmission;

a control rod connected to said selector lever and extending along said steering column and movable in accordance with movement of said selector lever in axial and circumferential directions with respect to the axis thereof, to shift the transmission to a desired gear ratio;

a linkage connected to said control rod and to a power transmission gear selector mechanism in the automatic power transmission;

a locking means associated with said control rod for locking said control rod to block the shift operation in at least one predetermined transmission gear position, said locking means incorporating an unlocking means associated with said control rod and responsive to axial movement of the latter for unlocking said locking means to allow a shifting operation of said control rod from said at least one predetermined transmission gear position to another gear position; and

a click mechanism positioned adjacent said control rod, said click mechanism including a first stationary member mounted on said steering column and located adjacent said control rod and a second movable member movable with said control rod, said second member being biased for clicking engagement with said first member at the

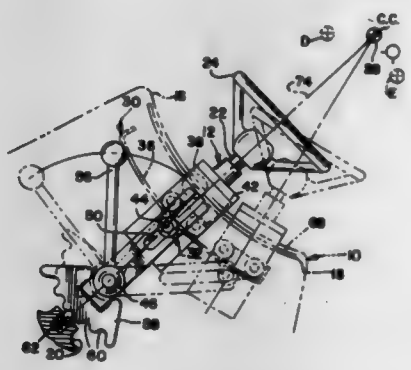
control rod positions respectively corresponding to respective transmission gear positions, said first member having an axial length sufficiently long to allow axial movement of said second member while maintaining clicking engagement between said first member and said second member.

4,537,089

STEERING WHEEL

Casimir Moneta, Chicago, Ill., assignor to J. I. Case Company, Racine, Wis.

Filed Jan. 14, 1983, Ser. No. 457,844
Int. Cl.³ B62D *1/18*
U.S. Cl. 74—493 **25 Claims**



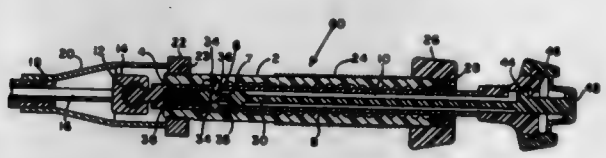
24. Vehicle station (14), for an operator thereat, equipped with longitudinally slotted console face structure (10) distal to the operator and relatively proximal telescoping shaft (130) and column (12) structure operatively related therewith in the face slot and constrained by means providing for equivalent movement consistent with the longitudinal face slot (26), said console face structure and its longitudinal slot having an appreciably curved contour concave with respect to the operator and said slot comprising an approximately bottom to top curvilinear face slot, means (20) supporting the longitudinally slotted console face structure and telescoping shaft and column structure in the operative relationship described and with the telescoping shaft (130) further telescopically related to the longitudinal slot operatively, and a wheel (24) for the operator to steer the vehicle, said telescoping shaft having means (22) thereon supporting the wheel for wheel tilting movement up and down therewith, for wheel telescoping movement in and out therewith, and for independent rotation relative thereto.

4,537,090

VERNIER CONTROL DEVICE

Michael E. Jones, Wooster, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Dec. 19, 1983, Ser. No. 562,772
Int. Cl.³ F16C *1/10*
U.S. Cl. 74—502 **9 Claims**



1. An improved vernier control device for selectively moving an object in gross or vernier, incremental amounts, said device comprising a housing secured against movement with respect to the object and having an open-ended bore therethrough surrounded by a wall of the housing, a control sleeve slidably received within the housing bore and moveable in opposite axial and rotational directions with respect thereto, said sleeve having one end rotatably secured to the object and having a bore therewithin extending from the opposite end thereof, an aperture extending through the wall of the sleeve between the housing bore and the sleeve bore, an operating rod disposed in the sleeve bore and moveable axially in opposite directions with respect thereto, thread means having a prescribed pitch disposed on the housing bore wall intermediate said wall and the sleeve, and thread engagement means moveable radially through the control sleeve aperture into and out of engagement with the thread means according to the position of the operating rod along the sleeve bore, wherein the improvement is characterized by said device provided with lower friction and having improved resistance to wear of the thread means and having the ability to withstand increased axial force between the thread engagement means and the thread means as a result of said thread engagement means comprising:

a pair of apertures extending through opposite sides of the sleeve wall between the housing bore and the sleeve bore,

first and second thread engaging members respectively moveably disposed within each aperture, said members having a ball-like configuration dimensionally adapted to move radially inwardly and outwardly therethrough,

a third member disposed within a bore through the operating rod adjacent the end thereof closest to the end of the sleeve secured to the object and moveable axially along the sleeve bore in response to axial movement of the operating rod therewithin, said member having a ball-like configuration dimensionally adapted such that axial movement thereof to an intermediate position between the first and second members in response to movement of the operating rod to a thread engagement position within the sleeve bore urges each of said members radially outwardly through the respective apertures a distance sufficient to establish threaded engagement with the thread means,

biasing means disposed in the sleeve bore intermediate the operating rod and the end of the sleeve to which the object is secured, said biasing means adapted to urge the operating rod axially along the sleeve bore in a direction away from said end to at least the position at which the third member is positioned intermediate the first and second members,

stop means secured to the sleeve holding the operating rod against the biasing means when the third member is in the intermediate position between the first and second members so that the sleeve is caused to move axially along the housing bore and move the object in incremental amounts determined by the thread means pitch in response to rotation of the sleeve,

and means enabling the first and second members to move radially inwardly a distance sufficient to cause the disengagement thereof with the thread means response to axial movement of the operating rod in a direction towards the end of the sleeve secured to the object enabling movement of the object in gross amounts in response to axial movement of the sleeve in gross amounts within the sleeve bore.

4,537,091

MATCHED METAL DIE COMPRESSION MOLDED STRUCTURAL RANDOM FIBER SHEET MOLDING COMPOUND FLYWHEEL

Satish V. Kulkarni, San Ramon; Richard M. Christensen, Danville, both of Calif., and Richard H. Toland, West Chester, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Continuation of Ser. No. 190,305, Sep. 24, 1980, abandoned. This application Apr. 1, 1983, Ser. No. 479,193
Int. Cl.³ G05G *1/00, 3/00*
U.S. Cl. 74—572 **4 Claims**

1. A matched metal die compression molded flywheel body which is fundamentally planar isotropic only in all planes perpendicular to an axis of rotation, which comprises:

a multiplicity of plies of sheet molding compound;

each of said plies comprising a randomly oriented fiber and a resin compacted to be planar isotropic only in the plane of each said ply; and

each of said plies being positioned essentially perpendicular to an axis of rotation of said flywheel body so that said



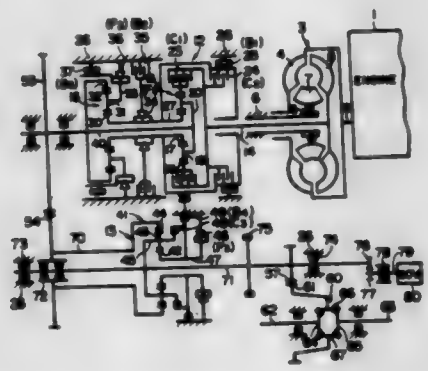
flywheel body is fundamentally planar isotropic only in all planes perpendicular to said axis of rotation.

4,537,092

TRANSVERSE TYPE AUTOMATIC TRANSMISSION WITH THROUGH LAY SHAFT

Kunio Morisawa, Okazaki, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Sep. 14, 1982, Ser. No. 418,026
Claims priority, application Japan, Sep. 17, 1981, 56-147436
Int. Cl.[3] F16H *37/08, 37/00, 57/10*
U.S. Cl. 74—695 **3 Claims**



1. An automatic transmission for an automotive vehicle, comprising:

(a) a fluid torque converter comprising a first rotational power input member and a first rotational power output member, said first rotational power input member and said first rotational power output member both being rotatable about a first axial line;

(b) a first gear transmission mechanism comprising a second rotational power input member and a second rotational power output member and being selectively controllable to produce any one of a plurality of speed ratios between said second rotational power input member and said second rotatinal power output member, said second rotational power input member and said second rotational power output member both being rotatable about said first axial line, said second rotational power input member being rotationally connected to said first rotational power output member;

(c) a second gear transmission mechanism comprising a third rotational power input member and a third rotational power output member and being selectively controllable to produce any one of a plurality of speed ratios between said third rotational power input member and said third rotational power output member, said third rotational power input member and said third rotational power output member both being rotatable about a second axial line parallel to said first axial line and displaced laterally therefrom;

(d) a rotational power transfer mechanism comprising a first gear wheel drivingly connected with said second rotational power output member so as to be rotatable about said first axial line and a second gear wheel drivingly connected with said third rotational power input member so as to be rotatable about said second axial line and which transfers rotational power between said second rotational power output member and said third rotational power input member; and

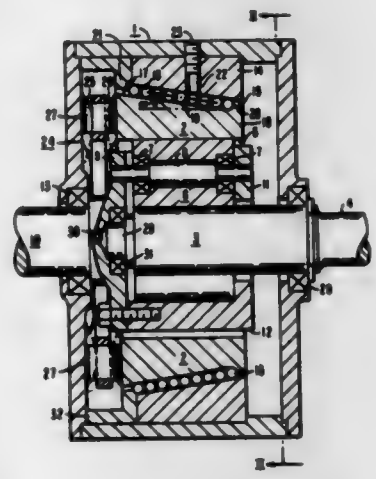
(e) a through lay shaft which extends along and is rotatable about said second axial line, which is drivingly connected with said third rotational power output member and which passes through said second gear transmission mechanism and said second gear wheel, said second gear wheel being rotatably supported primarily by said through lay shaft.

4,537,093

FIXED RATIO TRACTION ROLLER TRANSMISSION

Charles E. Kraus, Austin, Tex., assignor to Excelermatic Inc., Austin, Tex.

Filed Oct. 27, 1983, Ser. No. 545,833
Int. Cl.[3] F16H *13/08*
U.S. Cl. 74—798 **13 Claims**



1. A traction roller transmission comprising a traction ring structure having an inner traction surface, a sun roller disposed centrally within said traction ring structure and having a circumferential traction surface, said sun roller having a diameter substantially smaller than the inner diameter of said traction ring structure such that an annular space is formed between the traction surfaces of said sun roller and said traction ring structure and a number of planetary traction rollers rotatably supported in said annular space between, and in engagement with, the traction surfaces of said sun roller and said traction ring structure, said traction ring structure consisting of two concentric sleeves having complementary conical surfaces opposite, and spaced from, one another such that an annular gap is formed therebetween, a plurality of bearing balls disposed in said annular gap so as to facilitate relative axial and rotational motion of said two concentric sleeves, and axial cam means arranged adjacent the radially wider end of said inner sleeve for axially forcing said inner sleeve into said outer sleeve when a torque is transmitted through said transmission thereby to compress said inner sleeve and force the traction rollers into firm engagement with the traction surfaces of said sun roller and said traction ring structure.

4,537,094

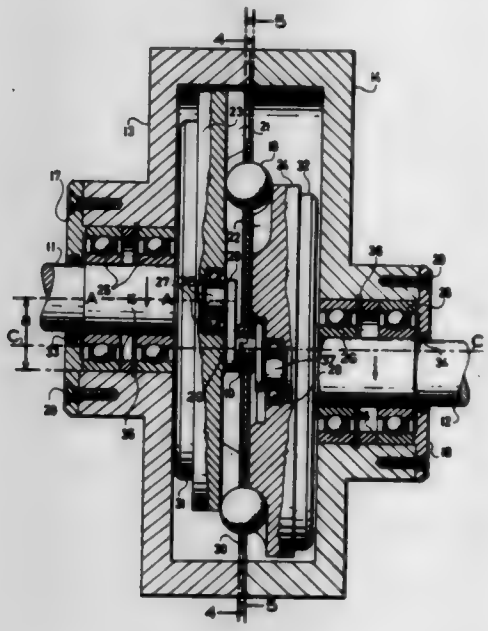
GEAR TRANSMISSION

Miloslav Bursa, Brno; Frantisek Musil, Blansko, and Ladislav Podmela, Brno, all of Czechoslovakia, assignors to Prvni brnenska strojirna, koncernovy podnik, Brno, Czechoslovakia

Filed Feb. 14, 1983, Ser. No. 466,038
Int. Cl.[3] F16H *1/28*
U.S. Cl. 74—804 **6 Claims**

1. A gear equipment for transmitting rotating motion, comprising a first and a second parallel confronting disc-like trans-

mission member rotating about parallel offset axes, the confronting faces of the transmission members being provided with face transfer grooves in which there are positioned antifrictionally disposed transfer elements, in the form of balls, a



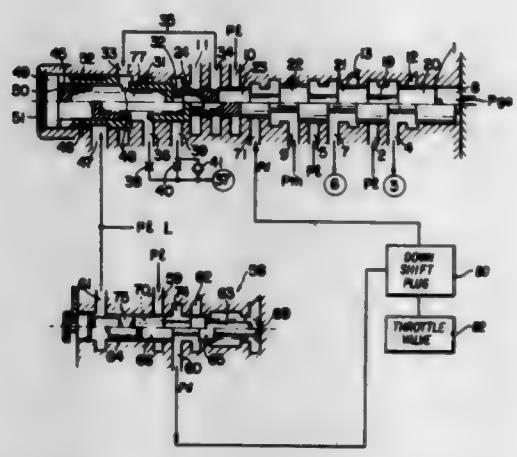
guide gear including a guide plate which is disposed between the transmission members and which retains the balls uniformly spaced angularly in a circle, and means mounting the guide plate for rotation about a fixed axis parallel to said axes of the transmission members.

4,537,095

HYDRAULIC CONTROL SYSTEM FOR AUTOMATIC TRANSMISSION

Kunio Morisawa, Toyota, Japan, assignor to Toyota Jidosha Kogyo Kabushiki Kaisha, Toyota, Japan

Continuation of Ser. No. 160,575, Jun. 18, 1980, abandoned. This application Feb. 8, 1983, Ser. No. 464,859
Claims priority, application Japan, Jun. 26, 1979, 54-681
Int. Cl.³ B60K *41/02*
U.S. Cl. 74—868 **13 Claims**



1. A hydraulic control system for an automatic transmission of an engine driven vehicle, the automatic transmission having at least drive and low speed ranges and reverse drive and the engine having a throttle, the control system comprising:

first, second and third coaxial valves, said valves being axially displaceable in opposite first and second directions, said second valve axially abutting said first valve and axially spaced from said third valve;

stop means for limiting axial movement of said third valve in said first direction;

means for introducing governor fluid pressure to bias said first valve in said second direction, said governor fluid pressure being directly related to the speed of said vehicle;

first port means for introducing line pressure to bias said third valve in said first direction to said stop means;

friction engaging means for permitting engine braking of said vehicle;

second port means for selectively conducting line pressure to actuate said friction engaging means when said low speed range is selected, said second port means including means for applying line pressure to bias said second valve in said first direction;

first spring means interconnecting said second and third valves for opening said second port means to accuate said friction engaging means with line pressure when force in said first direction caused by said first spring means exceeds governor pressure biasing said first valve in said second direction and for positively moving said first and second valves to their limit in said first direction; and

means responsive to said throttle for supplying a detent pressure of a predetermined level to act on said first valve in a direction opposite to said governor pressure when said throttle means exceeds a predetermined level and for preventing application of said detent pressure to said first valve when engine braking is effective, said detent pressure supply means comprising a regulator valve including:

a first input port receiving said line pressure;

an output port generating said detent pressure;

a first spool having first and second lands defining a first chamber in continuous communication with said output port and with a second chamber by means of an oil path through said first land;

a drain port;

a spring acting on said second land in substantially equal opposition to fluid pressure in said first chamber for oscillating said first spool to alternatively connect said first input port and said drain port with said first chamber to generate the predetermined level of detent pressure;

a second spool coaxial with said first spool and disposed in said second chamber; and

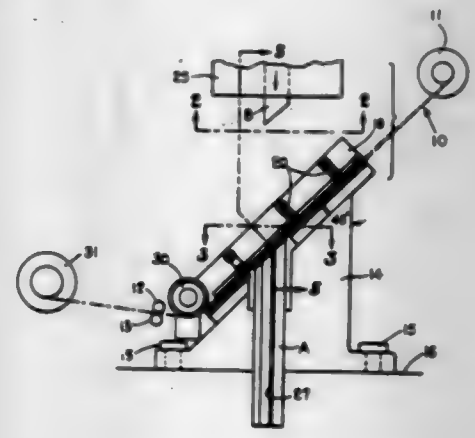
a second input port communicating with said second chamber and receiving said line pressure when said low speed range is selected for forcing said first and second spools against said spring to prevent generation of detent pressure at said outlet port.

4,537,096

METALLIC CARD CLOTHING AND METHOD AND APPARATUS FOR MAKING SAME

John D. Hollingsworth, P.O. Box 516, Greenville, S.C. 29602

Division of Ser. No. 167,069, Jul. 9, 1980, Pat. No. 4,453,431, which is a division of Ser. No. 904,004, Sep. 6, 1978, Pat. No. 4,233,711. This application Feb. 27, 1984, Ser. No. 584,145
Int. Cl.³ B21F *45/10*
U.S. Cl. 76—1 **4 Claims**



1. Apparatus for punching teeth in a metallic strip comprising:

means for continuously longitudinally feeding said strip;

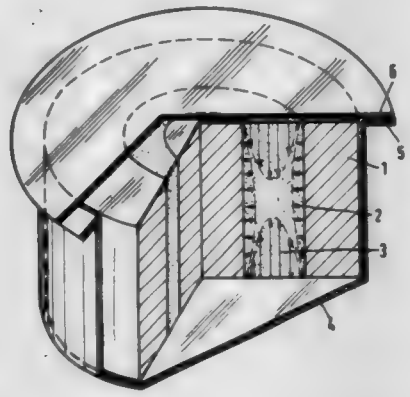
a surface for supporting and guiding a side portion of said strip as the strip is fed thereover;
a driven punch opposite said surface;
a die surface being inclined in an acute angle in relation to the direction of travel of said driven punch operating in cooperation therewith; and
guide means positioning said strip as it is fed between said die surface and said punch.

4,537,097

METHOD AND APPARATUS FOR MANUFACTURING CUTTING ELEMENTS PARTICULARLY FOR DEEP DRILLING

Roland Illerhaus, Spore, Singapore, and Rainer Jürgens, Celle, Fed. Rep. of Germany, assignors to Christensen, Inc., Salt Lake City, Utah

Filed Dec. 29, 1983, Ser. No. 566,607
Claims priority, application Fed. Rep. of Germany, Jan. 7, 1983, 3300357
Int. Cl.³ B22F *7/08, 3/14;* B23P *5/00;* B24D *3/10*
U.S. Cl. 76—108 A **19 Claims**



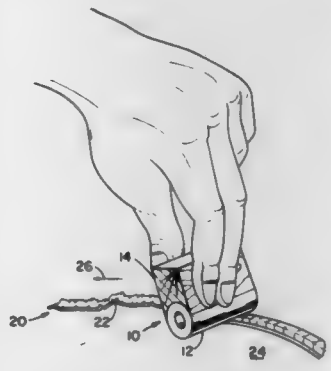
1. A method for the manufacture of cutting elements containing diamond material bound in a metal matrix mass which comprises:
(a) providing a mold block, said mold block having at least one recess;
(b) providing a base powder mixture, said base power mixture containing components comprising solid particulate diamond material and solid particulate metal matrix carrier material;
(c) inserting said base powder mixture into said recess in said mold block;
(d) externally hermetically enclosing said mold block, after step (c), in a capsule enclosure, said capsule enclosure being composed of thin-walled, flexible, pressure-tight and temperature-resistant material, said capsule enclosure surrounding the outer surface of said mold block;
(e) sintering the hermetically enclosed mold block of step (d) at elevated temperature and pressure so that said diamond material is closely bound to said metal matrix material in a metal matrix mass;
(f) reducing the temperature and pressure about said hermetically enclosed mold block so that said mold block is cooled;
(g) removing said capsule enclosure from about said mold block; and
(h) removing at least one finished cutting element comprising said diamond material bound in said metal matrix mass from said recess in said mold block.

4,537,098

TOOL FOR STRAIGHTENING JEWELRY CHAIN

John F. Keck, P.O. Box 35, Madison, Pa. 15663

Filed Jun. 4, 1984, Ser. No. 616,570
Int. Cl.³ B25B *31/00*
U.S. Cl. 81—488 **5 Claims**



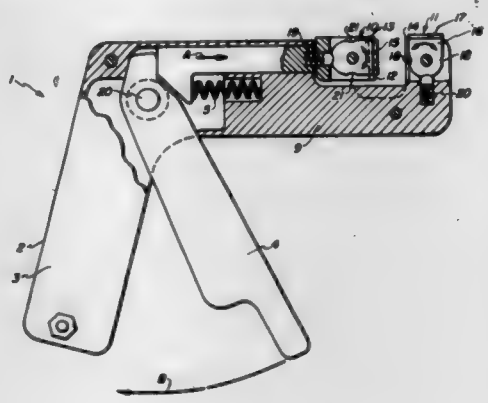
1. A tool for removing kinks and bends from jewelry chain comprising:
a. a cylindrical member formed of a hard, smooth-surfaced, non-metallic material;
b. a handle adapted to be gripped between the thumb and fingers of a hand, said handle being of a thickness approximately equal to the diameter of said cylindrical member and having a concave, semicylindrical recess on one edge thereof; and
c. adhesive means securing said handle by the recessed edge to said cylindrical member along the length thereof.

4,537,099

TENSIONING AND BRAKING PLIERS

Stanley M. Oster, 871 SW. 88 Ter., Plantation, Fla. 33024, and Lester Axelrod, 3650 N. 36 Ave., Hollywood, Fla. 33021

Filed Apr. 15, 1983, Ser. No. 485,276
Int. Cl.³ B25B *7/00*
U.S. Cl. 225—93 **2 Claims**



1. A tensioning and breaking plier device for removing the interior portion of a sheet of vitreous material between at least two holes drilled in said material, there being score lines connecting said holes, said device comprising:
a handle means operable for manipulating said device;
a pair of cooperating means constructed and arranged for gripping, at a working position, said sheet of vitreous material on opposite sides of said vitreous material to facilitate the tensioning and breaking of the sheet of vitreous material along the score line;
connecting means connected between said handle means and each of said cooperating means
for moving said pair of cooperating means towards one another in response to operation of said handle means to grip the sheet of vitreous material at said working position; and
each of said cooperating means having an anvil means and a movable head means, each of said head means having a

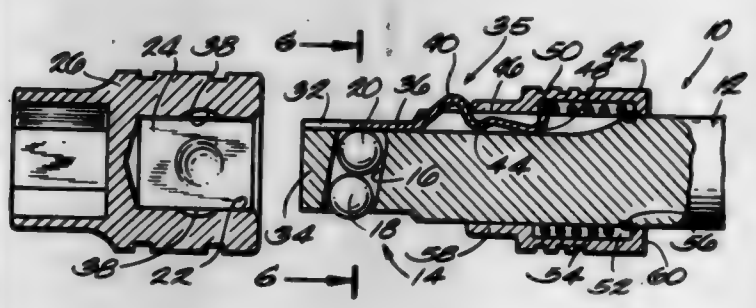
pressure applying surface and a passive surface which are connected for movement within said anvil means to selectively position one of either said pressure applying surface or said passive surface at said working position, said anvil means having portions engaging said vitreous material on opposite sides of said score line when said head means passive surface is at said working position, whereby the running, reverse running or breaking said sheet along said score line is determined by the position of said positioned surfaces selected.

4,537,100

PUSH-ON/QUICK RELEASE LOCKING ARRANGEMENT FOR SOCKET WRENCH EXTENSION

Bernhard Palm, 17420 Continental Dr., Brookfield, Wis. 53005

Filed Feb. 28, 1984, Ser. No. 584,512
Int. Cl.³ B25B *13/00*
U.S. Cl. 81—177.85 **8 Claims**



3. A socket wrench extension provided with a push-on/quick release locking arrangement comprising,

a square drive end on said extension having flat drive faces,

a transverse bore through said drive end, lock means mounted in said bore for movement between a lock position in which the lock means projects from one end of the bore and a release position in which the lock means lies within the drive end,

said one end of said bore being closer to an end of said drive end than is the other end of said bore,

an axial groove in one of said drive faces intersected by said other end of said bore,

a slider including a lock tab mounted on the extension for slidable axial movement in said groove between an obstructing position in which said tab holds the lock means in said lock position and a non-obstructing position in which the lock means can move to said release position,

said extension having a cylindrical shaft terminating at said drive end,

an annular groove in said shaft adjacent said drive end,

a sleeve mounted on said shaft and having in-turned ends,

said slider being connected to said sleeve by means including an arm projecting radially into the space between said sleeve and said shaft adjacent an end of the sleeve closer to said drive end,

said arm being connected to said slider at a junction portion,

said spring having a coil engaged in said annular groove and enclosed in said space between the sleeve and the shaft and compressed against said arm to bias the sleeve and slider towards said drive end,

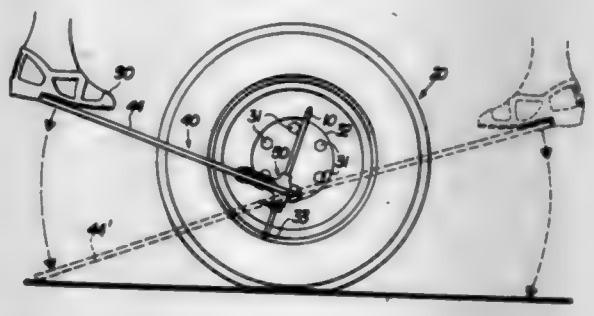
said slider being rockable on said junction portion to enable said lock tab to move radially out of said groove when acted on by said lock means moving to said release position.

4,537,101

LUG NUT REMOVER

Frank A. Eversole, 327 Windley Rd., Key Largo, Fla. 33037

Filed Dec. 12, 1983, Ser. No. 560,240
Int. Cl.³ B25B *13/58*
U.S. Cl. 81—180.1 **12 Claims**



1. A support assembly primarily designed for use in combination with a lug wrench means for removal of lug nuts from a wheel, said assembly comprising:

(a) body means comprising attachment means formed thereon and a mounting means integrally secured to said body means and structured to removably mount a lug wrench means thereon,

(b) a support rod movably secured to said body means and interconnected to said attachment means, and selectively positioned into engaging relation with a wheel on which said lug wrench means is mounted,

(c) locking means secured to said body means in fixed relation thereto and positionable into and out of frictional, substantially locking engagement with said support rod,

(d) said mounting means disposed to substantially orient and maintain the lug wrench means in substantially transverse relation to said support arm when the former is engaging a lug nut and the latter is engaging the wheel on which the lug nut is secured, and

(e) said lug wrench means comprising a lever arm portion extending outwardly from said body means when said lug wrench is supported on said mounting means; said lug wrench means further comprising an operative arm portion having one end connected to said lever arm portion and an opposite free end secured to a socket means; said lever arm portion disposed in substantially transverse relation to said operating arm portion,

(f) said lever arm portion being rotatably connected to said operating arm portion, said operating arm portion including an arm extension disposed in substantially perpendicular relation to said operating arm portion, a bearing arm mounted on a free end of said arm extension in perpendicular relation to said arm extension and disposable in interruptive relation to a path of travel of the movement of said lever arm portion relative to said operating arm portion;

(g) whereby a lever arm of the lug wrench is extended and maintained outwardly from the wheel for forceful engagement by the foot of one removing the lug nut.

4,537,102

METHOD OF SHEARING METAL BILLETS

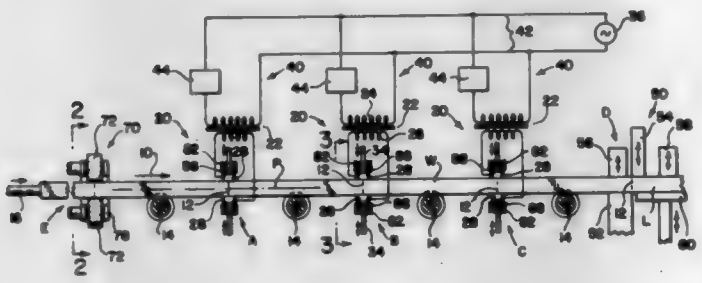
Norbert R. Balzer, Boaz, Ala., assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Feb. 3, 1983, Ser. No. 463,592
Int. Cl.³ B26D *7/10*
U.S. Cl. 83—16 **10 Claims**

1. The method of shearing sections of predetermined gauge length from an elongated metal bar comprising the steps of:

(a) intermittently indexing the elongated bar longitudinally along a horizontal linear feed path through successive distances, corresponding to the said gauge length, to position each one of a plurality of spaced shear line zones of the bar successively at a plurality of heating stations, and thence at a shearing station, for a predetermined length of dwell time at each of said stations;

(b) moving the electrical contacts of a plurality of respective electrical resistance heating units into operative position, at respective ones of said heating stations during the dwell time of each said shear line zone thereat, with the work surfaces of said contacts in continuous mating surface contacting engagement throughout with localized surface areas of said bar located at and immediately adjacent the said shear line zones and extending across substantially the full width of the opposite sides of the cross-section of the bar at the said shear line zones;



(c) energizing the said resistance heating units during the interval their said contacts are engaged with the said bar at said heating stations to thereby effect direct resistance heating of said bar approximately uniformly throughout substantially the full cross-sectional extent of the bar at each of said bar shear line zones to only a partial degree of the total heating of each of said shear line zones, by all said heating units in toto, for subsequent shearing of the bar through said shear line zones; and,

(d) then successively shearing said bar through said heated bar shear line zones during their dwell at said shearing station.

4,537,103

ARRANGEMENT FOR A CUTTING DEVICE

Claes-Göran Flodin, Åsgatan 3, 441 51 Alingsås, Sweden

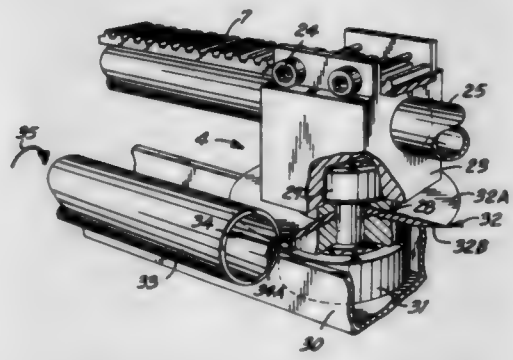
PCT No. PCT/SE82/00438, § 371 Date Aug. 18, 1983, § 102(e) Date Aug. 18, 1983, PCT Pub. No. WO83/02250, PCT Pub. Date Jul. 7, 1983

PCT Filed Dec. 22, 1982, Ser. No. 530,579

Claims priority, application Sweden, Dec. 22, 1981, 81076960

Int. Cl.³ B26D *1/20, 7/12*

U.S. Cl. 83—174 **12 Claims**



1. An apparatus for cutting a web of material, comprising:

a circular cutting blade having a circumferential cutting edge and being rotatable about an axis perpendicular to said blade; means for moving said cutting blade across the web so that said axis moves parallel to itself in a plane; a tubular accomodating member having a longitudinal axis extending essentially parallel to said plane and having a longitudinal slot therein defined by a metal edge receiving therein the circumferential cutting edge; and means biasing said tubular member to rotate so that said edge rests against said circumferential cutting edge; whereby said blade is rotated when said moving means moves said blade across the web and said cutting edge is sharpened.

4,537,104

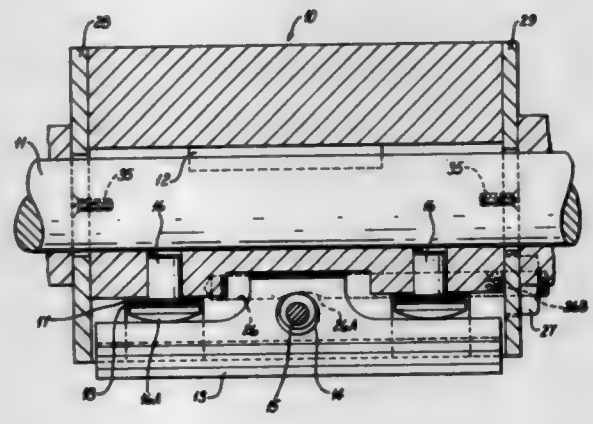
CUTTING HEAD FOR FILTER ASSEMBLER

Michael E. Dealto, Richmond, Va.; Joseph D. DiGiacomo, Pound Ridge, N.Y., and Clifford R. Marritt, Richmond, Va., assignors to Molins, Ltd., London, England

Division of Ser. No. 138,092, Apr. 7, 1980, Pat. No. 4,370,908. This application Nov. 9, 1982, Ser. No. 440,418

Int. Cl.³ B23D *25/02*

U.S. Cl. 83—348 **7 Claims**



1. A cutting head for filter attachment machine comprising a drum carrying a plurality of radially-directed knives each of which is urged radially outwards by two springs at or near the opposite ends of the respective knife so that the knife is freely outwardly movable against a single adjustable retaining device which limits said outward movement and by which the normal distance of the cutting edge of the knife from the axis of the drum can be adjusted, said retaining device for each knife being positioned centrally between the two springs so as to permit pivotal movement of the knife with respect to the cutting head.

4,537,105

CIRCULAR CROSS-CUT AND MITER SAW BOX

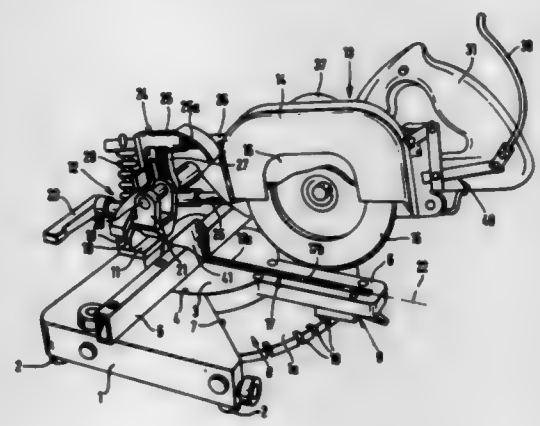
Otto Bergler, Mühlacker-Lomersheim, Fed. Rep. of Germany, assignor to Black & Decker Overseas AG, Vaduz, Liechtenstein

Filed Aug. 8, 1984, Ser. No. 638,694

Claims priority, application Fed. Rep. of Germany, Aug. 16, 1983, 3329496

Int. Cl.³ B27B *5/20*

U.S. Cl. 83—471.3 **8 Claims**



1. A saw mechanism comprising:

a work support including a circular opening and a recess communicating radially with said opening,

a circular table rotatably carried in said circular opening of said work support and including an arm with an insertion slit projecting radially into said recess so as to be movable circumferentially within said recess, the circumferential extent of said recess corresponding to the range of the miter cut for the saw mechanism,

a pivot support carried by said table,

a guide means mounted on said pivot support for rotation about an axis extending generally transversely relative to said slit, said guide means including parallel rods projecting generally transversely relative to said axis, said rods lying in a common plane oriented perpendicularly to the plane of said table, and

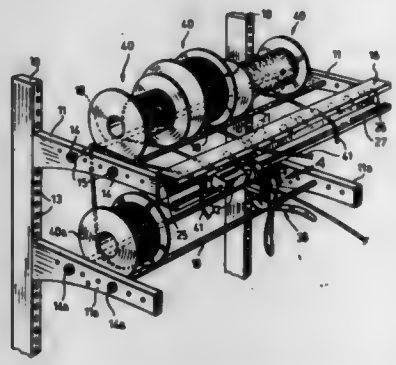
saw means comprising a saw housing and a motor driven blade rotatably carried by said saw housing for rotation about an axis, said saw housing having passages located directly therein which passages slidably receive said rods such that said saw housing can be adjusted relative to said table along said rods, said passages each disposed in the immediate vicinity of said axis of rotation of said blade and lying in a common plane oriented perpendicularly to said plane of said table in the immediate vicinity of the plane of said blade.

4,537,106

STAND FOR DISPENSING FILAMENTARY MATERIAL FROM REELS

Earle B. Rider, 80 Galaxy Blvd., Rexdale, Ontario, Canada (M9W 4Y8)

Filed Aug. 19, 1983, Ser. No. 524,539
Int. Cl.³ B65H *49/22*
U.S. Cl. 83—650 **1 Claim**



1. A display and dispensing rack for reels of filamentary material comprising;

a. an upright frame;

b. a pair of spaced, forwardly projecting arms carried by the frame;

c. a guide and cutter supporting bar joining the forward ends of the arms and provided with a plurality of spaced apertures through which the filamentary material is led from reels;

d. at least two spaced, parallel rods extending between the arms at locations behind the guide and cutter bar and in front of the frame and spaced apart by a distance that is less than the flange diameter of the smallest reel from which filamentary material is to be dispensed;

e. each of said rods carrying a plurality of closely spaced, separate, short rollers fully occupying the space between the arms and freely rotatable thereon, each short roller being provided with a radial flange adjacent at least one end.

4,537,107

APPARATUS FOR SEVERING STRAND

Gordon P. Armstrong, Newark; Martin C. Flautt, Granville, and Gary L. Williams, Newark, all of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

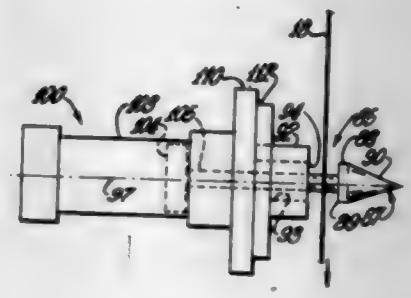
Filed May 24, 1984, Ser. No. 613,854
Int. Cl.³ B26D *1/02, 1/04*
U.S. Cl. 83—694 **4 Claims**

1. Apparatus for severing a strand comprising:

a cutting head linearly movable along an axis, the cutting head having a base section and a conical section, the base section having a cutting edge along the periphery thereof,

motive means for moving the cutting head between an extended position and a retracted position;

a die having a bore adapted to slidably receive the cutting head, the bore of the die having a cutting edge at the periphery thereof to cooperate with the cutting edge of the base section of the head to sever the strand as the



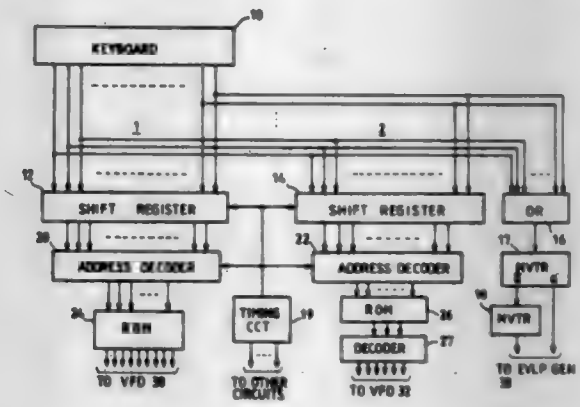
cutting head moves from the extended position to the retracted position within the casing, the conical section of the head being adapted to permit the strand to slide transversely over the cutting head into a region intermediate the head and die as the head is moved from the retracted position to the extended position.

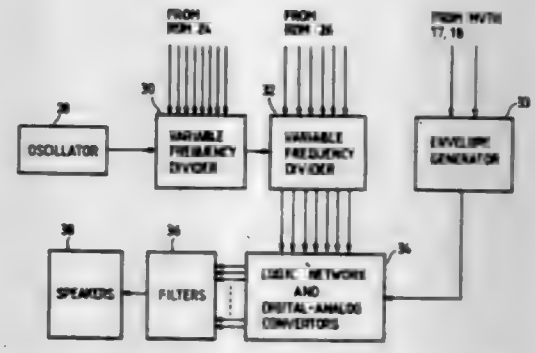
4,537,108

ELECTRONIC MUSICAL INSTRUMENT HAVING VARIABLE FREQUENCY DIVIDERS

Takami Shiramizu, Kanagawa, Japan, assignor to Victor Company of Japan, Limited, Yokohama, Japan

Filed Mar. 29, 1983, Ser. No. 480,128
Claims priority, application Japan, Mar. 31, 1982, 57-51308
Int. Cl.³ G10H *1/00*
U.S. Cl. 84—1.01 **14 Claims**





1. An electronic musical instrument having a keyboard comprising:

code generating means responsive to the operation of each of the keys on said keyboard for generating a first code indicating a pitch tone and a second code indicating an octave associated with the operated key, said first code including an odd number signal and an even number signal respectively indicating that an integer by which the fre-

quency of said master clock pulses is divided is odd or even;

an oscillator for generating master clock pulses at a constant frequency;

a first variable frequency divider presettable to a first count value which is variable as a function of said first code for dividing the frequency of said master clock pulses by counting the same and generating a first divider output when said first count value is reached, said first variable frequency divider comprises:

first counter means including a series of interconnected counter stages presettable to said first count value for counting said master clock pulses and generating an output pulse when said first count value is reached;

second counter means for counting said master clock pulses upon a first occurrence of said output pulse for resetting said counter stages to said first count value when a first predetermined additional value is counted and upon a second occurrence of said output pulse for resetting said counter stages to said first count value when a second predetermined additional value is counted, there being a difference of one count between said first and second predetermined additional values in the presence of said odd number signal and there being no difference therebetween in the presence of said even number signal; and

bistable means responsive to said output pulse for generating said first divider output at a first voltage level in response to the first occurrence of said output pulse and at a second voltage level in response to the second occurrence of said output pulse;

a second variable frequency divider responsive to said first divider output and presettable to a second count value which is variable as a function of said second code for dividing ' the frequency of said first divider output by counting the same and generating a plurality of pulse trains having octave frequency relationship; and

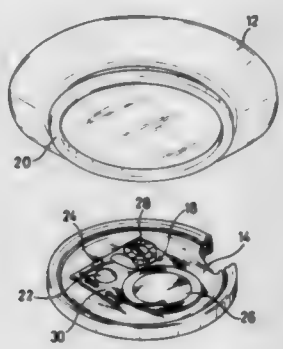
digital-to-analog converting means for converting said pulse trains into an analog signal.

4,537,109

DISH WITH A MELODY SOUNDING FUNCTION

Koichi Sakurai, Tara, Japan, assignor to Sakuraya Corporation, Tara, Japan

Filed Jan. 16, 1984, Ser. No. 570,906
Int. Cl.³ G10F *1/00*
U.S. Cl. 84—1.03 **4 Claims**



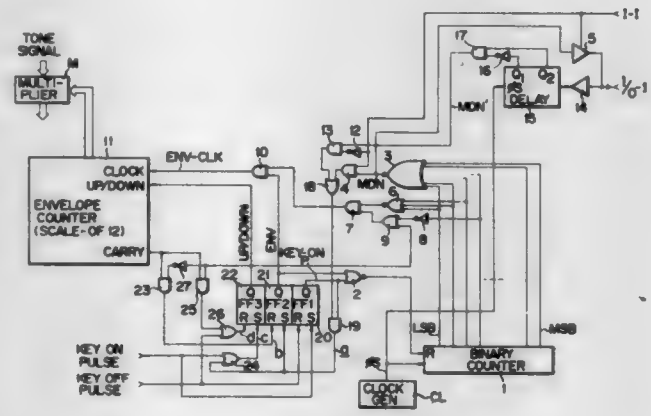
1. A dish having a melody sounding function and comprising a bottom wall of predetermined thickness and an annular wall outwardly flared from the bottom wall, at least said bottom wall for its entire extent being light permeable throughout its thickness and having an upper surface adapted to receive a light blocking object, a melody sounding means supported below said bottom wall of the dish in proximate relation to said bottom wall for producing a melody for a predetermined time, means for thus supporting the melody sounding means, and means forming part of the melody sounding means and comprising a photosensor normally exposed to light through the light permeable bottom wall of the dish for initiating production of a melody when said photosensor is impinged by light as occurs when the dish is free of the light blocking object, said melody supporting means comprising a plate mounted to the dish in relation to its bottom wall to define a space between the plate and the bottom wall in which space said melody sounding means is received.

4,537,110

ENVELOPE CONTROL APPARATUS

Keiichi Sakurai; Hideaki Ishida, and Kohtaro Hanzawa, all of Tokyo, Japan, assignors to Casio Computer Co., Tokyo, Japan

Filed Sep. 14, 1983, Ser. No. 532,504
Claims priority, application Japan, Sep. 20, 1982, 57-164518
Int. Cl.³ G10H *1/057*
U.S. Cl. 84—1.26 **13 Claims**



1. An envelope control apparatus comprising:

clock pulse generating means for generating clock pulses of a predetermined cycle in response to continued operation of a key;

envelope clock pulse counting means for counting clock pulses generated by said clock pulse generating means;

means for forming envelope waveform data defining a complete envelope waveform which varies in accordance with the count of said envelope clock pulse counting means; and

changing means for changing the state of said envelope clock pulse counting means to a counting state corresponding to an attack state of the envelope waveform when the clock pulses of said predetermined cycle are supplied from said clock pulse generating means to said changing means;

wherein new envelope waveform data defining a new complete envelope waveform is generated by said envelope waveform data forming means prior to formation of one envelope waveform.

4,537,111

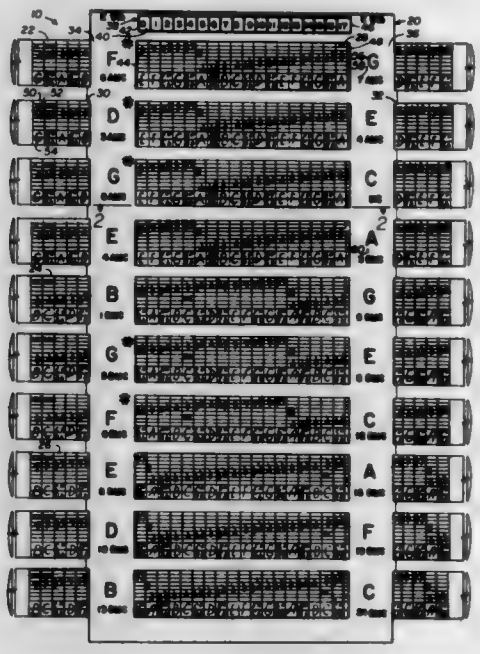
SYSTEM FOR AIDING NOTE TRANSPOSITIONS FOR STRINGED INSTRUMENTS

Joseph R. Heath, 884 Jeannette Ave., Baltimore, Md. 21222

Filed Aug. 19, 1983, Ser. No. 524,531
Int. Cl.³ G09B *15/02*
U.S. Cl. 84—473 **1 Claim**

1. In a system for aiding note transpositions for stringed instruments, said system having a frame, means on the frame slidably mounting in parallel a plurality of slides, the frame having means parallel with the slides for simulating a spaced succession of stringed instruments fret locations between first and second ends of said means for simulating, each slide having a succession of musical scale elements therealong on a spacing corresponding to the spacings of said means for simulating, the improvement comprising: first and second strips on the frame with each of said first and second strips overlying a portion of the plurality of slides, said first and second strips parallel-spaced a distance substantially aligning an edge of the first strip with the first end of the means for simulating and an edge of the second strip with the second end of the means for simulat-

ing; each of said first and second strips having thereon a succession of open string identifications spaced to coincide respectively with respective slides, each musical scale element including a measure corresponding in length to said spacing of the fret locations and in said measure a note on a scale and the name of said note, the entirety of each slide being visible except for said portion overlain by the first and second strips, each slide being freely slidable past the first strip and past the second strip, said frame comprising a unitary rectangular sheet, said



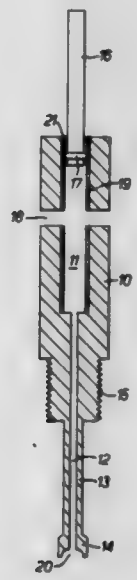
means slidably mounting comprising structure of said unitary rectangular sheet defining a plurality of rectangular windows parallel with each other between said first and second strips and further defining a respective slot outboard each rectangular window, said unitary rectangular sheet having first and second inwardly folded margins, each fold being medianly through a respective said slot, means for securing said inwardly folded margins and forming a flattened tube of said frame, and said rectangular windows and slots having substantially the same height as said slides.

4,537,112

CARTRIDGE DECAPPING TOOL

James T. Dabonde, P.O. Box 502, Gympie, Queensland, Australia

Filed Feb. 7, 1984, Ser. No. 577,678
Int. Cl.³ F42B *33/04, 33/10*
U.S. Cl. 86—37 **4 Claims**



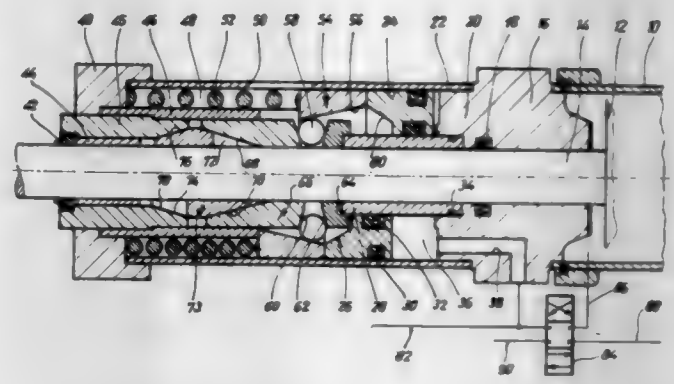
1. A Berdan primer cap removing tool for decapping a spent Berdan primed cartridge case, having flash hole means in the base thereof, to enable reloading of the cartridge case, comprising a tubular means for communicating at a first end thereof with the inside of the base of a cartridge to sealingly contact against said base and communicate pressurized fluid thereto from a source of said fluid, said tubular means first end being dimensioned to overlie said flash hole means, said first end of said tubular means being adapted to be sealingly held against said cartridge case base during decapping, the improvement comprising in that said source of pressurized fluid comprises a cylinder body and a piston reciprocably movable therein, means for feeding a working fluid within said cylinder body, said piston having a striking surface extending externally of said cylinder body which when struck acts on said working fluid to impulsively communicate pressurized fluid to the primer cap to be removed, said cylinder body being formed with a bore of predetermined size, said cylinder body having an axially extending cylindrical tubular part adapted to be received in the cartridge case and having a bore in communication with the bore in the cylindrical body, said tubular part having a diameter and bore size smaller than the diameter and bore size of the cylindrical body, said first end of the tubular means comprising the free end of the tubular part extension of the cylindrical body, said cylindrical body having a threaded portion adapted for threaded engagement with a standard shooter's device for sealingly engaging said first end of the tubular means with the cartridge base, said first end of the tubular means having resizing means for resizing the cartridge on removing the axially extending tubular part from the cartridge case after decapping thereof.

4,537,113

BRAKING DEVICE FOR A FLUID POWER ACTUATOR

Kurt Stoll, Lenzhalde 72, 7300 Esslingen, and Gerhard Hihn, Schurwaldstr. 7, 7300 Esslinge-Berkheim, both of Fed. Rep. of Germany

Filed Sep. 3, 1982, Ser. No. 414,681
Claims priority, application Fed. Rep. of Germany, Sep. 12, 1981, 3136311
Int. Cl.³ F15B *15/26*
U.S. Cl. 92—24 **11 Claims**



1. A braking device for a fluid power actuator, comprising:
an elongate cylinder housing having at least one end wall with an opening extending axially therethrough;
a piston reciprocally mounted in said cylinder housing and having a piston rod extending through said opening;
an elongate brake housing fixedly connected to said cylinder housing with said piston rod extending into said brake housing;
a contractible brake ring mounted in said brake housing and encircling said piston rod and adapted to contract into braking engagment with said piston rod, said brake ring having at least one first inclined ramp surface thereon;
drive ring means mounted on said brake housing, said drive ring means having a second inclined ramp surface thereon conformed to the inclination of and adapted to engage said first ramp surface, said brake ring contracting into braking engagement with said piston rod in response to said first

and second ramp surfaces moving into engagement with each other;

guide means on said brake housing for guiding said drive ring means for reciprocal movement to thereby facilitate a movement of said first and second ramp surfaces into engagement with each other;

collar means fixedly mounted on said brake housing and encircling said piston rod and being axially spaced from said drive ring means on a side thereof remote from said brake ring;

means defining radially inwardly converging surfaces on the mutually facing ends of said drive ring means and said collar means;

plural ball elements received between and engaging said converging surfaces, a radially inward movement of said balls effecting an axial movement of said driving ring means and said ramp surface thereon into engagement with said ramp surface on the brake ring;

reciprocal brake freeing piston means mounted on said brake housing and having a third inclined ramp surface engaging said plural ball elements, a movement of said brake freeing piston in a first direction effecting a radially inward movement of said plural ball elements;

resilient means for continually urging said brake freeing piston means in said first direction; and

means for urging said brake freeing piston means in a second direction opposite said first direction and against the urging of said resilient means in response to a supply of pressurized fluid, whereby a failure of said supply of pressurized fluid will automatically cause said resilient means to bring said first and second ramp surfaces into engagement and a contracting of said brake ring into braking relation with said piston rod.

4,537,114

AIR CONDITIONING APPARATUS FOR CARS

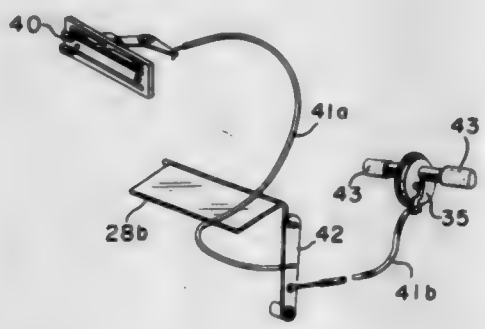
Katsura Izaki, Yaizu, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed May 15, 1984, Ser. No. 610,475

Claims priority, application Japan, Jun. 20, 1983, 58-110351

Int. Cl.³ B60H *3/00*

U.S. Cl. 98—2.06 **4 Claims**



1. An air conditioning apparatus for cars comprising:

an air intake fan having internal and external air inlet ports;

a heat exchanger for cooling and a heat exchanger for warming, both of said heat exchangers being arranged in series downstream of said intake fan and extending in a direction substantially perpendicular to the direction of the air flow;

and air mixing chamber formed downstream of said heat exchanger for warming, said air intake fan, said heat exchanger for cooling, said heat exchanger for warming and said air mixing chamber being all installed in order in one and the same casing, wherein the area of ventilation of said heat exchanger for warming is smaller than that of said heat exchanger for cooling;

a by-pass route formed in said casing; an air mixing damper positioned in said by-pass route, said air mixing damper having a pivot arm for opening and closing said air mixing damper; and

a warm water valve provided in said casing to regulate the flow rate of warm water supplied to said heat exchanger for warming,

wherein said warm water valve for regulating the flow rate of warm water is connected to said pivot arm through a first wire cable and a manual operating lever for temperature control is connected to said pivot arm through a second wire cable, said manual operating lever thereby operating both said warm water valve and said air mixing damper,

wherein said first and second cables are linked to said air mixing damper in such a manner that when said warm water valve is entirely opened, said air mixing damper is entirely closed and when said warm water valve is entirely closed, said air mixing damper is entirely opened.

4,537,115

VENTILATION ARRANGEMENT FOR A TAILGATE

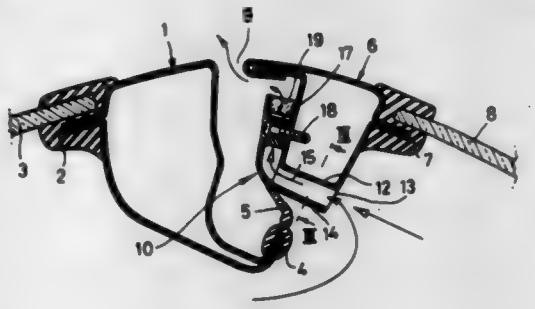
Hermann Haesters, Pulheim, Fed. Rep. of Germany, assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 7, 1984, Ser. No. 618,284

Claims priority, application Fed. Rep. of Germany, Jul. 20, 1983, 3326030

Int. Cl.³ B60H *1/24*

U.S. Cl. 98—2.18 **7 Claims**



1. A ventilation arrangement for a hinged motor vehicle tailgate, the arrangement having air-inlet openings disposed in the region of a tailgate frame member and air-outlet openings discharging into the gap between the tailgate and the surrounding opening in the bodywork of the motor vehicle, wherein portions of a tailgate frame member are provided with a recessed portion which extends along an edge of the frame member, there being disposed within the recessed portion an air-guiding insert of which the inner contour is shaped to fit within the recessed portion and of which the outer contour lies flush with unrecessed portion of the tailgate frame member and is engageable by a door seal.

4,537,116

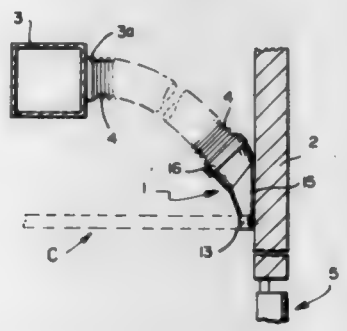
AIR DRAPE

Martin Nassof, 300 Winston Dr., Cliffside Park, N.J. 07010, assignor to Martin Nassof, Cliffside Park, N.J.

Filed May 25, 1984, Ser. No. 614,317

Int. Cl.³ F24F *9/00*

U.S. Cl. 98—36 **16 Claims**



1. Apparatus for producing an air curtain at the perimeter of a room defined by a vertical wall, which comprises a plurality of air curtain means for delivering a thin, downwardly flowing, fan-shaped flow of air mounted adjacent the interior and at

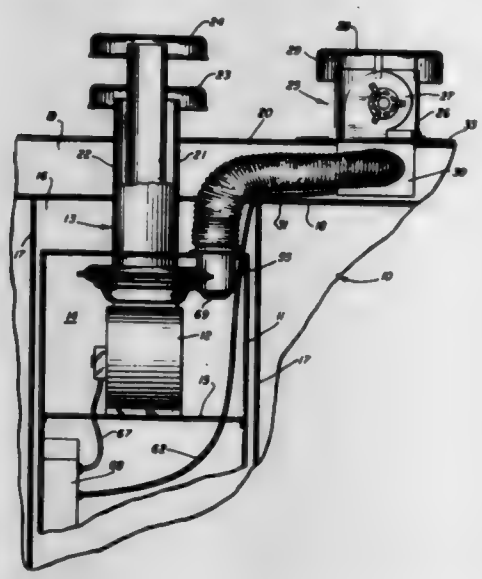
the top of the vertical wall defining the room and spaced apart by a distance such that the downwardly flowing, fan-shaped flow of air delivered by each said air curtain means overlaps the fan-shaped flow of air delivered by the next adjacent air curtain means; each said air curtain means having an elongated air inlet, a narrow, enlongated air outlet, said air outlet being longer and narrower than said air inlet, and wall means between said air inlet and air outlet defining a flow path for air flowing from said air inlet to said air outlet, said wall means having opposed wall portions connected between the ends of said air inlet and air outlet and diverging from said air inlet to said air outlet, said wall means further having a plurality of cross-sections along said flow path to provide a transition between said air inlet and air outlet, whereby said air curtain means is operable to provide said thin, fan-shaped flow.

4,537,117

FRESH AIR DEVICE FOR MOBILE HOME OR OTHER DWELLING

Adrian V. Cavestany, and Alan R. Zimmerman, both of Wichita, Kans., assignors to The Coleman Company, Inc., Wichita, Kans.

Filed Jan. 11, 1984, Ser. No. 569,919
Int. Cl.³ F24D 5/00; F24F 7/00
U.S. Cl. 98—39.1 **21 Claims**



1. A fresh air device for a dwelling equipped with a furnace having an air blower for supplying heated air to the dwelling, the dwelling having an attic, the fresh air device comprising:

a fresh air blower for drawing outside air into the dwelling,

air dividing means for diverting a first portion of the outside air to the attic and a second portion of the outside air to the furnace, and

duct means for conveying the second portion of the outside air to the furnace.

4,537,118

FLOW DISTRIBUTOR

Leif I. Lind, Burevägen 5, 182 63 Djursholm, Sweden

PCT No. PCT/SE82/00301, § 371 Date May 27, 1983, § 102(e) Date May 27, 1983, PCT Pub. No. WO83/01290, PCT Pub. Date Apr. 14, 1983
PCT Filed Sep. 29, 1982, Ser. No. 506,645
Claims priority, application Sweden, Sep. 30, 1981, 8105785
Int. Cl.³ F24F 13/06
U.S. Cl. 98—40.01 **9 Claims**

1. A flow distributor for uniformly distributing fluid flow, said flow distributor comprising:

a wall;

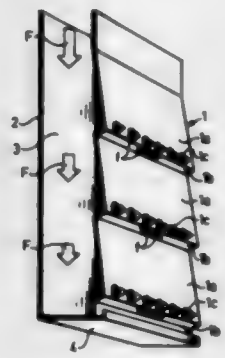
at least one further wall spaced from and extending parallel to said wall;

a chambr defined by said wall and said at least one further wall, said chamber adapted to receive flow of a fluid;

rows of perforations defined by said wall, each said row including at least one perforation;

profile sections defined by said wall extending into said chamber in a direction transverse to the flow of said fluid for deflecting the flow of said fluid from said chamber to said rows of perforations to divide said fluid into a plurality of uniform flow parts as the fluid flows from said chamber through said rows of perforations in a common direction transverse to the direction of the flow of said fluid and for strengthening said wall;

each profile section being located adjacent to one row of perforations in a downstream direction from said one row of perforations along the flow of said fluid, and a distance between an edge of each row of perforations and their respective adjacent profile section being less than 1/10 of the height of the respective adjacent row of perforations;



said profile sections being substantially planar and extending into said chamber in said direction transverse to the direction of the flow of said fluid, substantially along the width of said wall;

the width of said profile sections extending into said chamber in said direction transverse to the direction of the flow of said fluid being at least equal to the height of the respective adjacent row of perforations; and

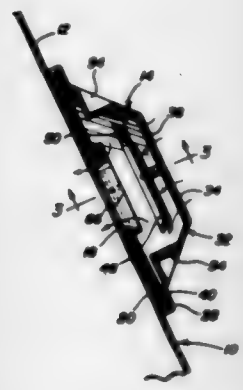
planar sections defined by said wall, each of said planar sections including one of said rows of perforations, said planar sections being located between said profile sections, and said planar sections extending substantially parallel to the direction of flow of said fluid to form a stepped arrangement with said profile sections and the area of the planar sections being substantially greater than the area of the profile sections.

4,537,119

WEATHER PROTECTIVE COVER VENTILATOR

Frank R. Jarnot, Lantana, Fla., assignor to Airlette Manufacturing Corporation, Inc., Lantana, Fla.

Filed May 8, 1984, Ser. No. 608,170
Int. Cl.³ F24F 7/00
U.S. Cl. 98—52 **13 Claims**



1. A ventilator for a panel having a vent opening formed

therethrough, said ventilator including a generally annular panel-like base for overlying and anchoring to one side of said panel, said base having a central opening therein and defining first and second remote sides with said first side of said base adapted to be mounted in at least reasonably good fluid tight sealed engagement with the portions of said panel extending about the vent opening formed in said panel, a cup-shaped cover defining a closed end, an open end and peripheral wall means extending about said closed end and between said closed end and said open end, said cover being constructed of a material rendering said cover shape retentive, but flexible and resilient to an extent that predetermined remote portions of said peripheral wall means, adjacent said open end, may be manually deflected inwardly and thereafter released for inherent return to non-inwardly deflected positions, said open end of said cover opposing and opening toward said second side of said base, said base and predetermined remote portions of said peripheral wall means including coacting anchor structure interlockingly engageable with each other upon return of said inwardly deflected portions of said wall means to their non-inwardly deflected positions, said cover including ventilation openings formed in said closed end, said coacting anchor structure including first radially outwardly projecting flanges carried by remote portions of said peripheral wall means adjacent said open end and second angle flanges carried by remote portions of said base and projecting outwardly from said second side and toward each other, said first flanges being removably captively receivable beneath said second flanges upon inward deflection of said remote portions of said peripheral wall means and subsequent release of said peripheral wall means remote portions for return to non-inwardly deflected positions.

4,537,120

SURFACE TREATMENT PLANT AND A METHOD OF VENTILATING SAME

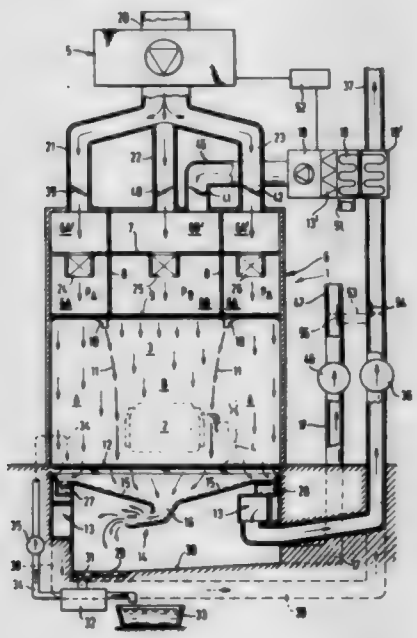
Leif Josefsson, Torpsbruk, Sweden, assignor to Flakt Aktiebolag, Nacka, Sweden

Filed Apr. 20, 1983, Ser. No. 486,736

Claims priority, application United Kingdom, Apr. 30, 1982, 8212649

Int. Cl.³ F24F *11/00*

U.S. Cl. 98—115.2 **11 Claims**



1. A paint spray booth having an enclosure in which spray painting is effected, said enclosure having a ceiling providing a plenum chamber above said ceiling, openings through /said ceiling admitting ventilating air into said enclosure from said chamber, and partition means dividing said chamber into passageways and into the enclosure, said enclosure having a floor underlying said ceiling with a plurality of air exit means associated therewith, means adjacent the partition means to provide at least one curtain of air to partition the enclosure into at least two separate zones extending over at least part of the enclosure, said curtain extending from the ceiling adjacent said /partition means to the floor whereby each zone is supplied with air from a separate passageway, the air in one zone being polluted differently than the air in the other zone, a first of said plurality of exit means being at one side of said curtain to receive air from said one zone, a second of said plurality of exit means being at the other side of said curtain to receive air from said other zone, the ventilating air passing through each zone of the enclosure entraining the pollutant in said zone, a first separator means having a first fan means communicating with said first air exit means of the floor for receiving the ventilating air discharged from said one zone and adapted to separate the air and the pollutant discharged from that zone, and a second separator means having a second fan means communicating with said second exit means for receiving the ventilation air discharged from the other zone and adapted to separate the air and the pollutant discharged from that zone, said one zone being more heavily polluted with paint particles than the other zone, the first separator means being a wet separator and the second separator means being a dry separator.

4,537,121

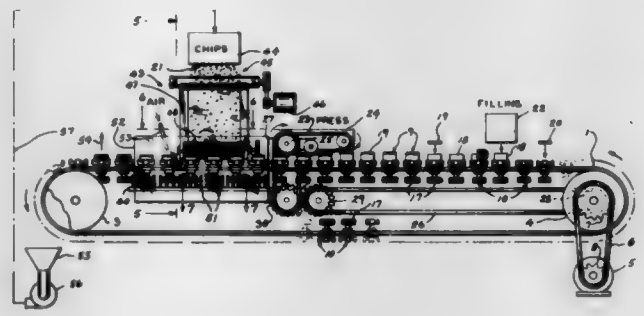
APPARATUS FOR THE MANUFACTURE OF ICE CREAM SANDWICHES

Vernon L. Bero, and Fredrick W. Schultz, both of Green Bay, Wis., assignors to Gold Band Ice Cream, Inc., Green Bay, Wis.

Filed Apr. 30, 1984, Ser. No. 605,101

Int. Cl.³ A21C *9/04, 15/00*

U.S. Cl. 99—450.4 **17 Claims**



1. In a machine for manufacturing ice cream sandwiches, the initial components of which include a layer of ice cream or the like sandwiched between upper and lower cookies or the like, the combination comprising:

(a) a conveyor belt having an upstream portion and a downstream portion,

(b) motive means to drive said belt along a path,

(c) a plurality of carrier assemblies disposed along and carried by said belt and with said assemblies being adapted to receive in succession the individual components of said sandwiches at said upstream belt portion,

(d) drive means disposed downstream of said upstream portion of said belt to rotate said assemblies and the sandwiches thereon about a vertical axis,

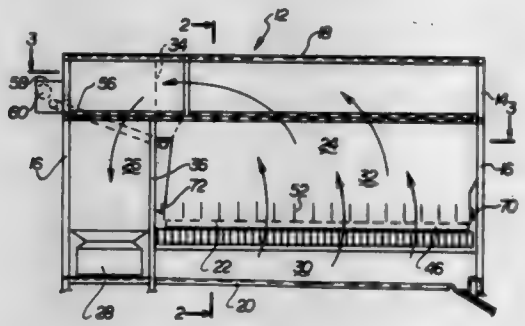
(e) spraying means disposed adjacent said belt to spray chips onto the rotating sandwiches so that chips adhere thereto,

(f) and means disposed downstream of said chip spraying means to remove stray chips from the upper cookie of said the sprayed sandwiches.

4,537,122
SKIN REMOVAL APPARATUS FOR ALMONDS

Kurudamannil A. George, Levittown, Pa., assignor to Proctor & Schwartz, Inc., Horsham, Pa.

Division of Ser. No. 438,279, Nov. 1, 1982, Pat. No. 4,491,603.
This application Sep. 24, 1984, Ser. No. 653,638
Int. Cl.[3] A23N *5/08*
U.S. Cl. 99—516 10 Claims

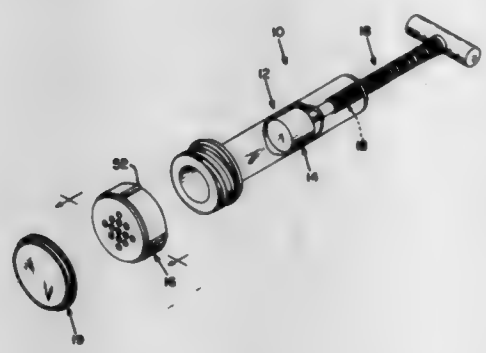


1. Apparatus for removing skins from edible nuts comprising
means for presoaking said nuts in a liquid to loosen the skins;
means for washing the soaked nuts to remove a majority of said skins from the nuts, said nuts after washing having remaining skins;
means for predrying said nuts in an amount effective to remove superficial water from the nuts;
a housing;
a foraminous support within said housing;
means to form a bed of said predried nuts on said support;
means to fluidize said bed with air; and
means to separate the skins entrained in the air from such air.

4,537,123
DEVICE FOR PRESSING GARLIC AND THE LIKE

David A. Holcomb, Seattle, Wash., assignor to F & H Holdings, Inc., Bellevue, Wash.

Filed Sep. 27, 1982, Ser. No. 424,838
Int. Cl.[3] B30B *1/20*
U.S. Cl. 100—125 4 Claims

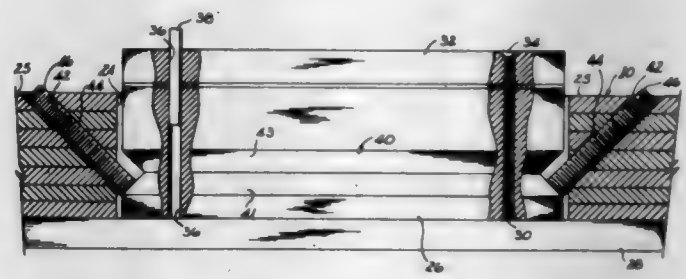


1. Device for extruding garlic cloves and the like, comprising:
(a) an integrally formed elongated cylindrically tubular transparent plastic body having a cylinder wall and also having a closed end and an open end, said closed end having an inwardly extending central stem support portion of predetermined greater thickness than said cylinder wall and including generally axially disposed internal threads for receiving a threaded stem member, the open end of said body having external threads for receiving a threaded end piece, said body defining therein a storage cavity,
(b) a shallow, cylindrical, cup-shaped plastic end piece having an integral side wall and bottom wall and also having internal threads on said side wall for threadably engaging the external threads on the open end of said body, and further including a plurality of openings in said bottom wall, said end piece having an annular, radially inwardly offset closure cap engaging surface around the outside of said bottom wall,
(c) a cylindrically shaped plastic piston member slidable within said body and shaped to present a generally flat round surface facing toward the open end of said body and designed to be engaged by a piston stem,
(d) an elongated plastic threaded stem member for being receiving at said closed end of said body through said internal threads and having an inner end which coactingly engages said piston member within said body and which extends out of said closed end and has an outer end to which is attached a handle means for threading said stem member in and out as required, and
(e) a plastic closure cap means for engaging said closure cap engaging surface on said end piece for enclosing the interior of said device and preventing the escape of odors from food contained within said storage cavity.

4,537,124
EMBOSSER MOUNTING INSERT REGISTERING MEANS

Herman A. Graboyes, Mishawaka, Ind., assignor to Atlas Steel Rule Die, Inc., Elkhart, Ind.

Filed Jan. 30, 1984, Ser. No. 574,716
Int. Cl.[3] B44B *5/02*; B31F *1/07*
U.S. Cl. 101—28 1 Claim



1. In combination, a steel rule die and an adjustable embosser comprising a mounting insert carrying said embosser, said die having an opening herein, said die including knives circumscribing said die opening, said insert fitted into said die opening with clearance to permit lateral movement of the insert relative to the die, threaded bores formed in said die in communication with said die opening at opposite sides of the opening, adjustment screws turned into said die bores and contacting said insert such that axial movement of said screws is translated into said lateral movement of said insert to position said embosser relative to said die, said insert having a peripheral groove, said peripheral groove being V-shaped and having upper and lower surfaces, said adjustment screws abutting the lower surface of said peripheral groove for laterally moving said block to position said embosser relative to said die, said upper surface of said peripheral groove constituting means for contacting said adjustment screws to prevent separation of said insert from said die.

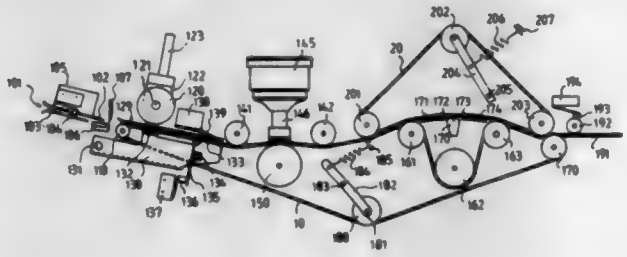
4,537,125
ENDLESS DRIVE BELT APPARATUS FOR PROCESSING CARD TICKETS WITH MAGNETIC TRACK

Michel M. G. Gaucher, Le Mesnil Saint Denis, France, assignor to Electronique Serge Dassault, Paris, France

Filed Jun. 25, 1984, Ser. No. 623,959
Claims priority, application France, Jul. 8, 1983, 83 11444
Int. Cl.[3] B41J *3/00*
U.S. Cl. 101—93.04 10 Claims

1. Card ticket processing apparatus including conveyor means for conveying a ticket along a path internal to the apparatus between a ticket inlet and a ticket outlet, and a print station at a first point along the said path for printing on the ticket, said conveyor means including an endless drive belt running round a circuit defined by guide wheels, the improvement wherein said belt is serrated and co-operates with each

ticket over a fraction of the width of the ticket, and said print station co-operates with a smooth platen roller located at said first point along the said path; said smooth roller having a notched portion over which said belt passes, the notched portion being of such a depth that the ticket-contacting surface of



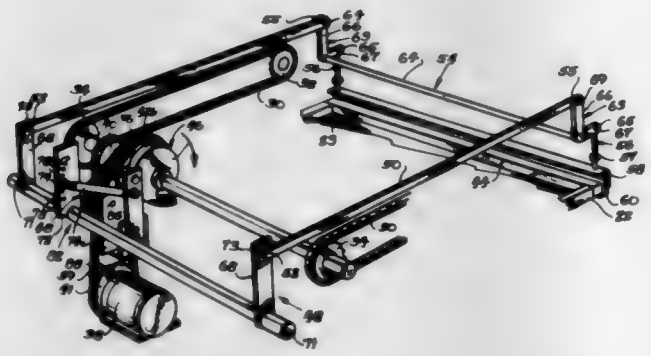
the belt is level with the rest of the cylindrical surface of the smooth roller where the belt passes over the roller; said print station being movable transversely relative to the belt to enable it to print on a ticket which is backed by a continuous platen surface which is constituted partly by the smooth roller and partly by the belt where it is level with the roller.

4,537,126

AUTOMATIC PEEL CONTROL MECHANISM

Henry J. Bubley, Deerfield, Ill., assignor to American Screen Printing Equipment Co., Chicago, Ill.

Filed Oct. 26, 1982, Ser. No. 436,679
Int. Cl.[3] B41L *13/16*; B41F *15/08*
U.S. Cl. 101—123 **5 Claims**



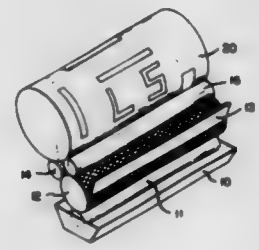
1. In a screen printing press, the combination of:
a press frame,
a screen,
a screen frame supporting the screen,
a printing bed fixed to the press frame for supporting the screen frame and a sheet of stock during printing,
a squeegee which slides across an upper surface of the screen during printing,
a traveling carriage which transports the squeegee in reciprocating motion between a front end and a rear end of the screen during a printing cycle,
carriage driving means for imparting the reciprocating motion to the carriage,
a printing head mounted on the press frame to support the carriage and screen frame, and
an automatic peel control mechanism which raises a front end of the screen frame at a controlled rate during a printing cycle, the automatic peel control mechanism comprising:
a rotatable cam means,
means for rotating the cam means in timed relation to the travel of the carriage, extending means extending from the cam means to the front end of the screen frame and extending along the sides of the printing head,
lever means driven by said cam means to operate said extending means to lift the front end of the screen, and
adjusting means associated with said lever means to change simultaneously an initial off contact position for the screen and a rate of peel for the screen.

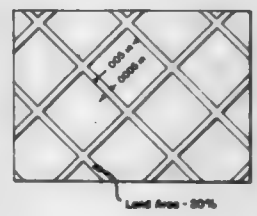
4,537,127

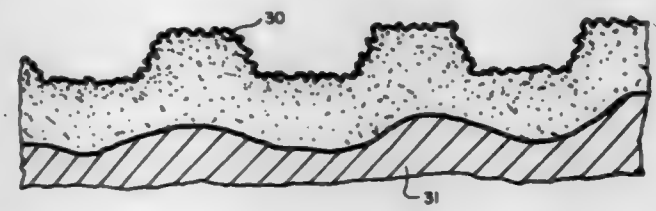
BLACK OXIDE LITHOGRAPHIC INK METERING ROLLER

Thomas A. Fadner, LaGrange, and Stanley H. Hycner, Bartlett, both of Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

Filed Sep. 12, 1984, Ser. No. 649,773
Int. Cl.[3] B41F *1/46, 31/26*
U.S. Cl. 101—141 **8 Claims**







1. An ink metering roller for use in lithographic printing comprising:
a. an engraved base roller of suitable diameter and length, selected from nitride-hardenable steel;
b. an outer zone of not less than about 3 mils thickness that is nitride-hardened to an R_c value of not less than about 55;
c. an outermost microporous iron oxide layer on said outer surface of said steel roller that consists essentially of Fe_3O_4.

4,537,128

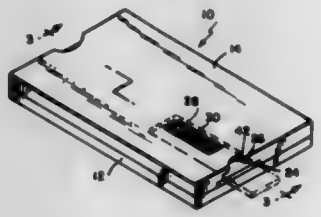
HAND PRINTER DESIGNED TO ENABLE A HANDICAPPED PERSON TO APPLY A SIGNATURE TO A DOCUMENT

Robert H. Burroughs, Brookline, Mass.; John D. Wright, Sandown, N.H.; Jeffrey A. Secunda, Sharon, and Ronald S. Newbower, Acton, both of Mass., assignors to Massachusetts General Hospital, Boston, Mass.

Filed Oct. 20, 1983, Ser. No. 543,609
Int. Cl.[3] B41K *1/00, 1/48*; B41F *1/28*
U.S. Cl. 101—407 BP **3 Claims**

1. Structure designed to enable a handicapped person to apply his signature or other identifying mark to a predetermined area of a document with the aid of a finger ring bearing an embossment of the signature or other identifying mark of the person, comprising, in combination, a holder for receiving the document and a finger ring bearing the signature or other identifying mark of the person, said holder embodying a bottom part defining a substantially rectangular recess of such area and depth as to receive the document to be signed, said recess being open at one end to enable inserting a document therein and closed at the other, a top part coextensive in area

with the bottom part containing substantially rectangular openings, one above the other, in the area thereof above the area of the document to be signed, so positioned relative to the closed end of the recess of the bottom part that when a document is inserted into the recess in the bottom part between the parts in engagement with the closed end of the recess in the bottom part, the area of the document to be signed will be aligned with the upper one of said openings in the top part, the lower one of the openings in the top part being larger in area than the upper one of the openings and said lower one of said openings being closed at the end proximate the open end of the recess in the bottom part and open at the end remote therefrom for receiving transfer paper, a retainer plate constituting a spacer recessed into the top part below the lower one of the openings therein, said spacer defining an opening corresponding in area to the area of the upper one of the openings in the







top part and being centered with respect thereto, said spacer further defining a supporting surface for supporting the transfer sheet in spaced, parallel relation to the document in the recess in the bottom part, said upper one of the openings in the top part and the opening in the spacer being of an area commensurate with the signature or other identifying mark to be applied to the document situated in the recess in the bottom part, said openings being of a size to enable inserting the embossment of the signature bearing ring through the openings in the top part and the opening in the spacer into engagement with the transfer sheet located in the recess in the bottom part and arcuate reentrant notches at the opposite ends of the top part centered on the longitudinal center lines of the recess in the bottom part and the openings in the top part providing access to the document located in the recess in the bottom part and access to the transfer sheet located in the lower one of the openings in the top part.

4,537,129

OFFSET PRINTING BLANKET

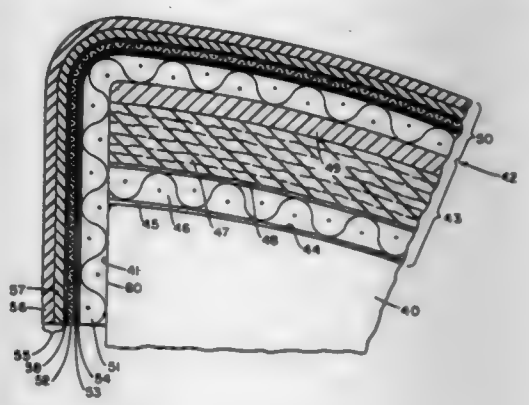
Frederick F. Heinemann, Canton, and Thomas O. Gavin, Harvard, both of Mass., assignors to W. R. Grace & Co., Cambridge, Mass.

Division of Ser. No. 172,055, Jul. 25, 1980, Pat. No. 4,452,143. This application Mar. 5, 1984, Ser. No. 586,157

Int. Cl.³ B41N *9/00*

U.S. Cl. 101—415.1 **5 Claims**

1. A printing element attached to a printing cylinder having a lock-up gap comprising a compressible printing element attached to the cylinder, the compressible printing element having a first and second edge, the first edge being substantially flush with a first edge of the lock-up gap and the second edge being substantially flush with a second edge of the lock-up gap, a non-compressible printing element having a first and second end portion, the first end portion directly engaging the first edge of the compressible printing element and extending into the lock-up gap, the second end portion directly engaging the second edge of the compressible printing element and extending into the lock-up gap, a portion of the non-compressible printing element, intermediate the first and second end portions, overlaying and directly engaging the compressible



printing element and the non-compressible printing element being secured to the cylinder at its first and second end portions by a lock-up means in the lock-up gap.

4,537,130

STRIPPER FOR A ROLLER CLEANING DEVICE

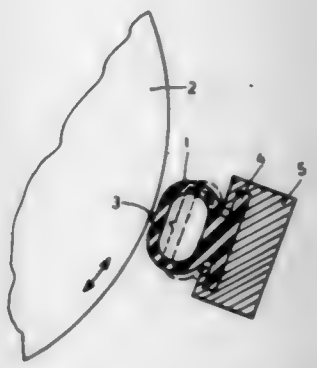
Klaus Theilacker, Friedberg, Fed. Rep. of Germany, assignor to M.A.N.-Roland Druckmaschinen Aktiengesellschaft, Offenbach am Main, Fed. Rep. of Germany

Filed Mar. 12, 1984, Ser. No. 588,664

Claims priority, application Fed. Rep. of Germany, Mar. 17, 1983, 3309557

Int. Cl.³ B41F *35/04*

U.S. Cl. 101—425 **15 Claims**



1. In combination with a printing machine having a roller (2, 8), the surface of which is to be cleaned or stripped,

a stripping device for cleaning said roller (2, 8) comprising, in accordance with the invention,

a support rail (5, 7) extending axially parallel to the roller (2, 8) to be cleaned;

and a pressure hose (1, 6) secured to the rail with a surface thereof remote from the roller (2, 9) and extending axially along the roller, the pressure hose being expandable in cross section upon pressurization with a pressure fluid, and thereby engageable with the facing surface of the roller at a pressure which is essentially uniform over the axial length of the roller.

4,537,131
APPARATUS FOR INITIATING EXPLOSIONS AND METHOD THEREFOR

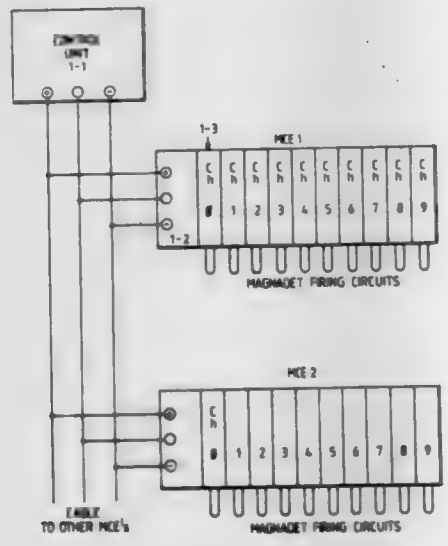
Peter J. Saunders, Dundonald, Scotland, assignor to Imperial Chemical Industries PLC, London, England

Filed May 23, 1983, Ser. No. 497,222

Claims priority, application United Kingdom, Jun. 3, 1982, 8216211

Int. Cl.[3] F42C *11/06*

U.S. Cl. 102—217 17 Claims



1. An apparatus for initiating explosions by providing an electrical firing current in a plurality of detonator circuits connected thereto, said apparatus comprising:

a control unit locatable remote from the detonator circuits,

at least one multi-channel exploder (MCE) connected to said control unit and having a plurality of channels, each channel being provided with output means for connection to one of the detonator circuits,

each MCE comprising energy storage means for receiving and storing electrical energy provided by the control unit, means for testing the impedance of the detonator circuit connected to each channel thereby to detect whether the circuit is complete or broken, and firing means responsive to a firing signal from the control unit for converting at least a portion of the energy storage means into a firing current in each channel at a predetermined time interval after receipt of the firing signal;

and the control unit comprising an energy source from which to provide the electrical energy requirements of all the MCEs connected thereto, means for interrogating each MCE to determine whether or not all of the MCE's channels have complete detonator circuits, and a firing signal generator to activate the firing means in the MCEs.

4,537,132
HOLLOW-CHARGE INSERT FOR ARMOR-PIERCING PROJECTILE

Udo Sabranski, Willich, and Hans Orth, Ratingen, both of Fed. Rep. of Germany, assignors to Rheinmetall GmbH, Dusseldorf, Fed. Rep. of Germany

Filed Jun. 19, 1978, Ser. No. 920,621

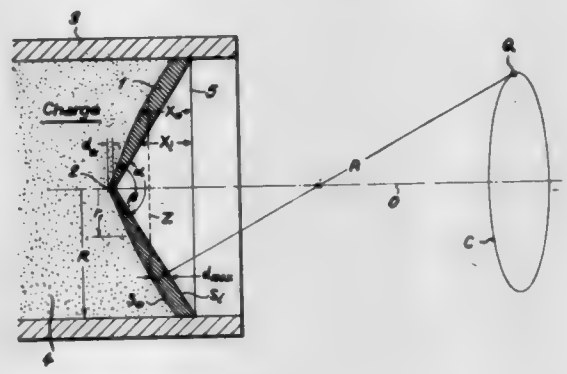
Claims priority, application Fed. Rep. of Germany, Jun. 30, 1977, 27295176

Int. Cl.[3] F42B *1/02*

U.S. Cl. 102—307 8 Claims

1. In an armor-piercing projectile having a casing with a substantially cylindrical wall portion, an insert of generally hollow-frustoconical shape in said casing with a rearwardly facing point on the axis of said wall portion and a forwardly facing base adjoining said wall portion, and a charge behind said insert in said casing,

the improvement wherein said insert has an inner peripheral surface of conical shape with an obtuse vertex angle and straight-line generatrices and an outer peripheral surface of generally conical shape whose axial distance from said inner surface progressively from a minimum value at said



point to a maximum value in a predetermined annular zone and thereafter decreases to a value greater than said minimum value at said base.

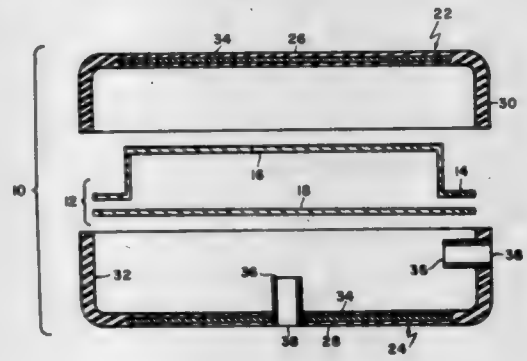
4,537,133
NON-INCENDIVE ROCK-BREAKING EXPLOSIVE CHARGE

Richard J. Mainiero, Pittsburgh, Pa., assignor to The United States of America as represented by the Secretary of the Interior, Washington, D.C.

Filed Mar. 31, 1983, Ser. No. 480,793

Int. Cl.[3] F42B *3/00*

U.S. Cl. 102—316 24 Claims



1. A non-incendive explosives charge comprising:

explosive means sheathed in a layer of flame quenching material surrounding said explosive means; and

squat housing means formed of a rubbery material enclosing said explosive means and said flame quenching material, said housing means having a pair of substantially planar surfaces separated by a transverse peripheral surface having a height smaller than the smallest dimension of said planar surfaces.

4,537,134
SELF-PROPELLING PROJECTILE FOR FIREARMS

Giovanni Galluzzi, Lecco, Italy, assignor to Giulio Fiocchi S.p.A., Lecco, Italy

Continuation of Ser. No. 438,308, Nov. 1, 1982, abandoned, which is a division of Ser. No. 147,878, May 8, 1980, Pat. No. 4,356,769, which is a division of Ser. No. 934,606, Aug. 17, 1978, Pat. No. 4,236,451, which is a continuation of Ser. No. 816,915, Jul. 19, 1977, abandoned, which is a continuation of Ser. No. 626,352, Oct. 28, 1975, abandoned, which is a division of Ser. No. 450,305, Mar. 12, 1974, Pat. No. 3,916,793. This application Jan. 29, 1985, Ser. No. 696,844

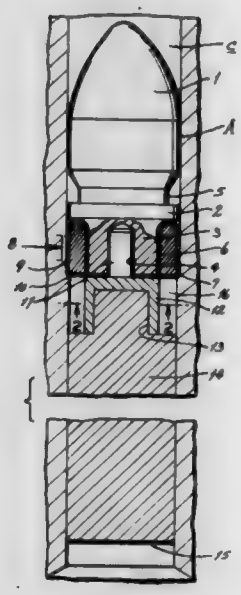
Claims priority, application Italy, May 31, 1971, 25246 A/71; Nov. 30, 1971, 31868 A/71

Int. Cl.[3] F42B *5/26*

U.S. Cl. 102—380 3 Claims

1. A self-propelling, side-firing projectile comprising a pro-

jectile body, said body being of general bullet-like character of ogival contour, said body having a base, a cylindrical tang projecting rearwardly from said base, said tang being diametrally reduced with respect to the base of said projectile body for presenting an annular laterally opening recess, a cylindrical member extending rearwardly from said projectile body to a point remote from said tang and being closed at it's forward end and open at it's rearward end, a propellant charge provided within said cylindrical member and extending rearwardly therefrom, said tang having a socket, there being a disc disintegratable upon ignition, said disc constituting the rear-



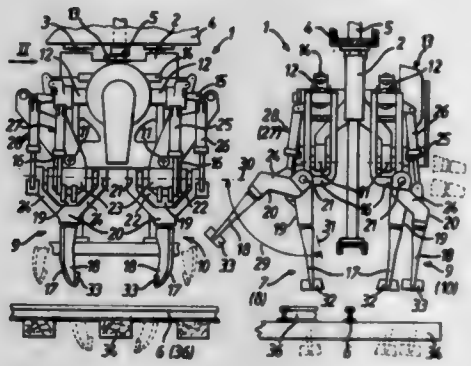
ward end of said laterally opening recess for defining thereby a compartment, a priming mixture received in said compartment, the closed end of said member being disposed between said disc and said propellant charge, a plug provided on said closed end of said member and extending through said case-forming for reception within said tang socket, said case-forming member having an outer wall defining exterior of said priming mixture compartment, said outer wall portion being adapted for transmission of percussion impinged thereon to said priming mixture for causing ignition of said priming mixture and disintegration of said disc whereby combustionof said propellant charge is effected upon disintegration of said disc.

4,537,135

TAMPING UNIT

Josef Theurer, Vienna, Austria, assignor to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H., Vienna, Austria

Filed Jan. 30, 1984, Ser. No. 575,059
Claims priority, application Austria, May 4, 1983, 1648/83
Int. Cl.³ E01B *27/16*
U.S. Cl. 104—12 **9 Claims**



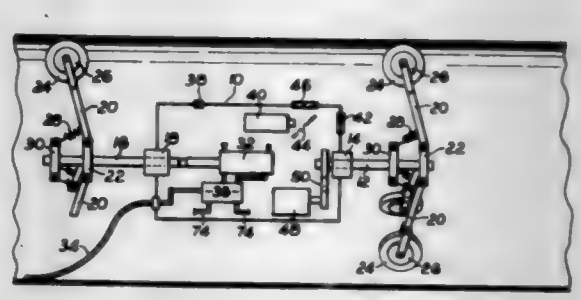
1. A tamping unit for a track working machine mounted for mobility on a track comprised of two rails fastened to a succession of ties resting on ballast, which comprises
(a) a vertically adjustable tamping tool means carrier,
(b) a pair of vibratory tamping tool means arranged to straddle a respective one of the ties and mounted on the carrier for reciprocation in a direction towards and away from the one tie, each of the tamping tool means on each rail side including
(1) a tamping tool means holder constituted by a pivotal lever, the tamping tool means holder having an upper end and a lower end, and the holder being pivotal in said direction about a fulcrum extending perpendicularly to said direction intermediate the tamping tool holder ends,
(2) a power drive connected to the tamping tool means holder for pivoting the holder in said direction,
(3) two side-by-side tamping picks mounted on the lower tamping tool means holder end adjacent each side of a respective one of the rails for immersion in the ballast upon vertical adjustment of the tamping tool means carrier, a first one of the tamping picks on each side of the one rail being closer to the one rail than the other tamping pick and the two tamping picks on each side being mounted for independent pivoting in a plane extending perpendicularly to the direction of reciprocation between an operating position wherein the picks extend substantially vertically for immersion in the ballast and an inoperative position wherein the picks extend substantially horizontally above the track, and
(4) separate power drives for pivoting the two tamping picks on each side independently of each other.

4,537,136

PIPELINE VEHICLE

Brian Douglas, Dunfermline, England, assignor to Subscan Systems Ltd., Great Britain

Filed Jan. 25, 1983, Ser. No. 460,788
Claims priority, application United Kingdom, Feb. 2, 1982, 8202978
Int. Cl.³ B61B *13/10*
U.S. Cl. 104—138 G **5 Claims**



A

1. A pipeline vehicle comprising a body, forward and rear wall engaging means carried by the body and alternately operable to grip the wall of a pipe, and reciprocable power means operable to extend and retract the wall engaging means relative to each other in synchronism with gripping of the wall so as to cause the vehicle to advance stepwise; and in which each wall engaging means comprises a plurality of wheels biased towards the wall for engagement therewith to support the vehicle, and each wheel is provided with braking means operating in synchronism with the reciprocable power means to cause the wheels of one wall engaging means to grip the wall while the wheels of the other wall engaging means are free to roll on the wall.

4,537,137

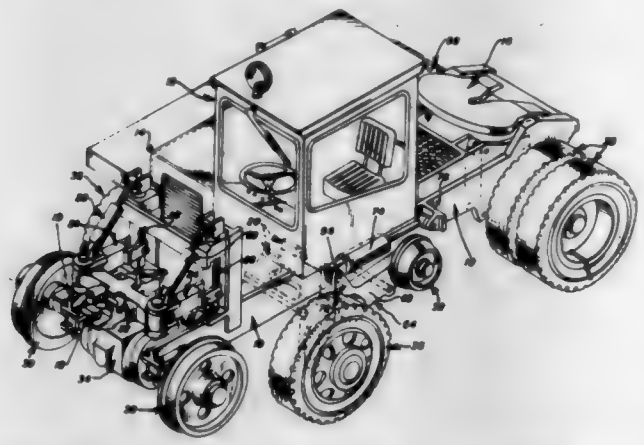
COMBINATION RAILCAR MOVING VEHICLE AND TRAILER SPOTTER

Eugene B. White, Jr., Park Forest, Ill., assignor to White Machinery Corporation, Joliet, Ill.

Filed Mar. 1, 1982, Ser. No. 353,842
Int. Cl.³ B61C *11/00*
U.S. Cl. 105—26 R **14 Claims**

1. In a railcar moving vehicle having a coupler for coupling with a railcar when driving on rail, the improvement compris-

ing, in combination, four steel wheels for supporting the vehicle on rail, four road wheels for supporting the vehicle on the ground, two of said steel wheels and two of said road wheels being movable between operative and inoperative positions, means for actuating said two movable steel wheels into lowered operative positions causing said vehicle to be supported on said four steel wheels with said four road wheels raised and for alternately actuating said two movable road wheels into lowered operative positions causing said vehicle to be supported on said four road wheels with said four steel wheels raised, two of said four steel wheels being driven and the other two steel wheels being free-wheeling, two of said road wheels being driven and the other two of said road wheels being



free-wheeling, common drive means for driving the driven steel and road wheels, one free-wheeling steel wheel and one free-wheeling road wheel on one side of said vehicle being mounted on first common pivot arm means, and a second free-wheeling steel wheel and a second free-wheeling road wheel on the other side of said vehicle being mounted on second common pivot arm means, and said means for actuating comprising means for simultaneously pivoting said first and second pivot arm means between a first position where said vehicle is supported on said four steel wheels and a second position where said vehicle is supported on said four road wheels, said first and second pivot arms and the free-wheeling steel and road wheels being positioned between the driven steel wheels and road wheels.

4,537,138

RADIAL TRUCKS

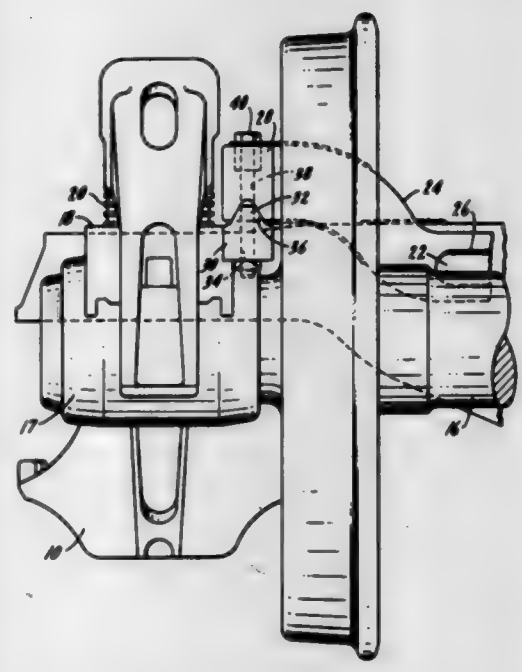
Robert L. Bullock, Lombard, Ill., assignor to Standard Car Truck Company, Park Ridge, Ill.

Filed Jul. 5, 1983, Ser. No. 510,764

Int. Cl.³ B61F *3/08, 5/38, 5/00*

U.S. Cl. 105—168 **3 Claims**

1. A railroad truck including a pair of side frames with wheeled axles mounted therebetween, a roller bearing adaptor mounted upon each end of each axle with side frames being mounted upon the adaptors, a subframe for connecting opposite corner adaptors, and a rigid connection between each adaptor and the subframe, each rigid connection including an adaptor portion and a subframe portion, said adaptor and subframe portions being relatively vertically disposed and having interlocking parts with slanted walls, and vertical fastening means for connecting said vertically disposed portions extending symmetrically through said interlocking parts, said



interlocking parts with slanted walls substantially reduce horizontal shear forces upon said fastening means.

4,537,139

GRATE OF INCINERATOR

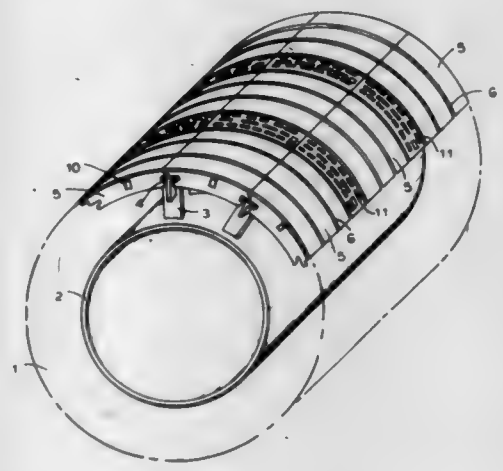
Anton Esser, Kaarst, Fed. Rep. of Germany, assignor to Deutsche Babcock Anlagen Aktiengesellschaft, Oberhausen, Fed. Rep. of Germany

Filed May 3, 1984, Ser. No. 608,022

Claims priority, application Fed. Rep. of Germany, May 5, 1983, 3316363

Int. Cl.³ F23K *3/18*

U.S. Cl. 110—276 **8 Claims**



1. In a refuse-supporting grate of an incinerator, comprising a plurality of hollow rotary cylindrical drums each having an outer peripheral surface receiving refuse thereon, each drum having a central axis and including a plurality of grate bars extended parallel to each other and forming said outer peripheral surface, grate bar carriers extended parallel to said central axis, said grate bars being suspended in the direction transversal to said central axis between said carriers and on the latter so that between each two adjacent grate bars air slots are formed, each grate bar including a head portion having two side faces which are straight-line and smooth, the improvement comprising spaces between said grate bars, said grate bars each further including a foot portion having two opposite lateral faces, said spacers being positioned in pairs between the one lateral face of one grate bar and the lateral face of the adjacent grate bar, facing towards said one lateral face, the spacers in each pair

having abutting surfaces abutting against each other, said abutting surfaces being flat and smooth, each of said suspended grate bars having two opposite recesses and two extended portions above said recesses, said bar carriers being partially inserted in said recesses, each bar carrier being inserted into an assigned recess so that the play occurs between the respective extended portion of the suspended grate bar and the respective bar carrier at operation temperature.

4,537,140

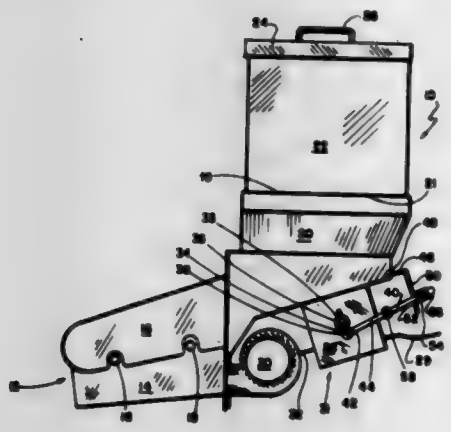
AUTOMATIC COAL STOVE STOKER

Charles M. Baker, Box 2076, R.D. #2, Orwigsburg, Pa. 17961

Filed Jul. 2, 1984, Ser. No. 626,888

Int. Cl.³ F23N *7/08*

U.S. Cl. 110—281 **14 Claims**



1. In a coal stoker including a hopper with a lower forward passage, a base box forming an ash pit, a ramp, said ramp including a fire grate proximate the lower two-thirds of said ramp and a plate proximate the higher one-third of said ramp with the plate extending generally through said hopper's bottom and a motor including a shaft, the improvement comprising:

(a) a linear reciprocating carpet overlying at least generally the length and width of said plate; said carpet operatively connected to said motor by eccentric movement means, said means including:

(i) a housing including two aligned sleeves, one said sleeve overfitting said motor shaft, said housing's second sleeve adapted to receive

(ii) one end of a J-shaped rod, said rod's other end being operatively connected to said movable carpet,

so that when said motor is activated by said power source, said motor shaft's 360 degree revolution causes said second sleeve to rotate, thereby moving said rod in its stroke so that

coal falling on said carpet from said hopper will continually advance from said carpet's leading edge onto said grate in an even flow.

4,537,141

COMBUSTION CHAMBER FOR SOLID FUELS

Ernst Brunner, Mümliswil, Switzerland, assignor to TIBA AG Kochherdfabrik und Apparatebau, Bubendorf, Switzerland

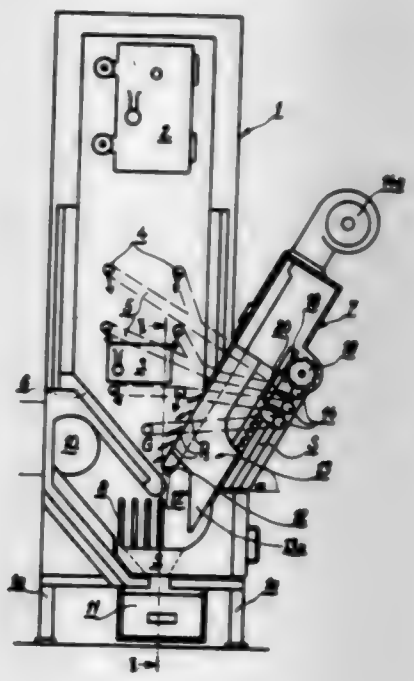
Filed Jun. 6, 1984, Ser. No. 617,734

Claims priority, application Switzerland, Jun. 8, 1983, 3144/83

Int. Cl.³ F23N *3/00*

U.S. Cl. 110—300 **8 Claims**

1. A combination chamber for solid fuels, with a housing, a closable charging orifice located in its top part, a grate arranged in the lower portion of the housing, and a number of primary-air orifices directed into the furnace and connected to a compressed-air source, wherein the grate is designed as an air feeder and has an arrangement of hollow profiles which are connected to said compressed-air source and which are arranged at a distance from one another forming gaps and are provided with a number of air outflow orifices, a covering slide means being mounted in the region of the grate so as to be displaceable relative to the latter, in such a way that it more or



less covers or completely exposes the gaps between the hollow profiles, depending on its position.

4,537,142

SHUTTLE STOPPER FOR LOCK STITCH SEWING MACHINE

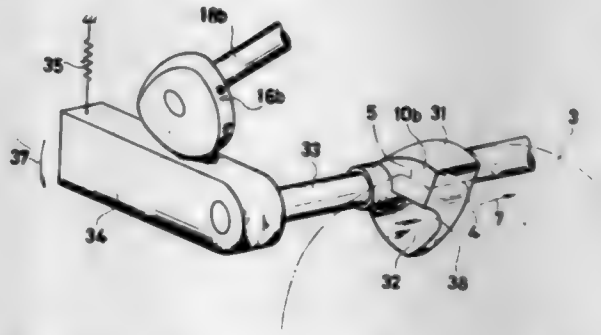
Tokuzo Hirose, Hyogo, Japan, assignor to Hirose Manufacturing Co., Ltd.,, Osaka, Japan

Filed Sep. 22, 1983, Ser. No. 534,624

Claims priority, application Japan, May 14, 1983, 58-84756

Int. Cl.³ D05B *57/08, 57/26*

U.S. Cl. 112—231 **4 Claims**



1. In a lock stitch sewing machine of the type including a rotating loop taker, a bobbin case adjacent said loop taker, said bobbin case having therein a recess defining a first contacting face, and a stopper device for preventing rotation of said bobbin case with said loop taker, said stopper device including a retaining member extending into said recess and having a second contacting face contacting said first contacting face, the improvement of means for allowing a thread loop to pass between said first and second contacting faces without allowing substantial collision therebetween, said means comprising:

a third contacting face formed by a recess extending concavely into said retaining member in a downstream direction with respect to the direction of rotation of said loop taker, said third contacting face being joined to said second contacting face by a communicating surface curving smoothly from and third contacting face in an upstream direction;

means for moving said retaining member within said recess in said bobbin case from a first position, whereat said second contacting face abuts said first contacting face to prevent rotation of said bobbin case, to a second position,

whereat said third contacting face confronts said first contacting surface, whereby a thread loop may be passed between said first contacting face and said retaining member; and

means for restoring said retaining member from said second position thereof to said first position thereof after such passing of the thread loop.

4,537,143

APPARATUS FOR THE STABILIZING OF THE DIRECTION OF TRAVEL OF WATERCRAFT, SPECIFICALLY A SWORD OR FIN FOR SAILBOARDS

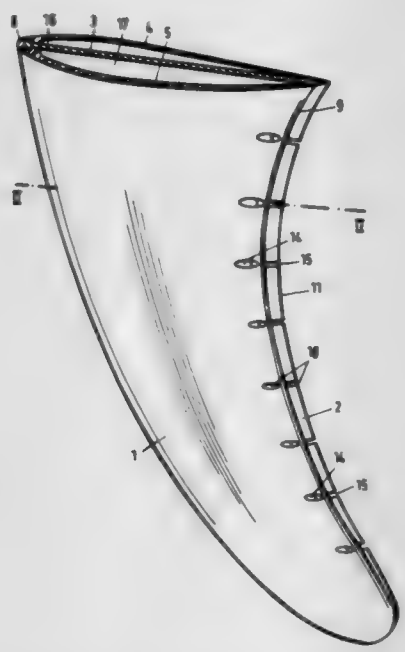
Albert Gaide, Monnaz, Switzerland, assignor to Mistral Windsurfing AG, Nurensdorf, Switzerland

Filed Jul. 2, 1982, Ser. No. 394,687

Claims priority, application Fed. Rep. of Germany, Jul. 3, 1981, 3126371

Int. Cl.³ B63B *3/38*

U.S. Cl. 114—39 **15 Claims**



9. An apparatus for stabilizing the direction of travel of watercraft comprising a guide device extending from a bottom side of the watercraft and having a longitudinal axis, a leading edge, and a trailing edge, said guide device comprising:

two independently from each other flexibly deformable side walls defining a profile of said guide device, said side walls being joined at said leading edge and free from each other at said trailing edge, said side walls having sufficient internal elasticity to hold their trailing edges adjacent said axis while allowing individual and asymmetric deformation of portions of said side walls between said leading edge and said trailing edge in accordance with prevailing pressures against said side walls solely due to velocity of flow and-/or solely due to angle of flow thereagainst, and a rigid center wall aligned along said axis, said leading edge of said side walls being joined to a leading edge of said center wall, said trailing edges of said side walls only resting against a trailing edge of said center wall, said portions of said side walls defining together with two oppositely located surfaces of said center wall two substantially closed void spaces or cavities, respectively.

4,537,144

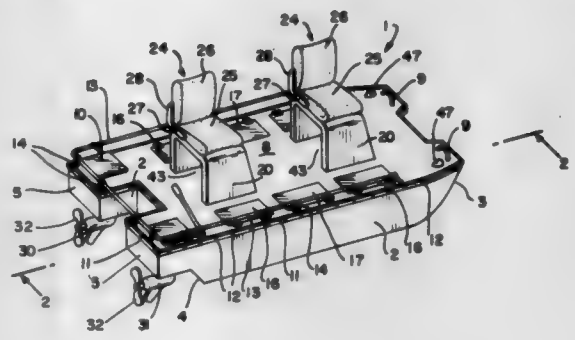
PROPELLED WATER CRAFT

Jerry L. Horton, Bossier City, La., assignor to Small Waters, Inc., Chattanooga, Tenn.

Filed Jan. 17, 1983, Ser. No. 458,310

Int. Cl.³ B63B *1/12*

U.S. Cl. 114—61 **13 Claims**



1. A propelled water craft comprising:

(a) a pair of pontoons in generally parallel, spaced relationship;

(b) a deck connecting and covering said pontoons;

(c) a pair of seat means mounted on said deck;

(d) a first reversible electric motor carried by one of said pontoons, and a second reversible electric motor carried by the other of said pontoons, said first reversible electric motor and said second reversible electric motor mounted in fixed relationship on said pontoons, respectively, and the forward ends of said first reversible electric motor and said second reversible electric motor positioned at a preselected angle with respect to said pontoons, respectively;

(e) first thrust control means for said first reversible electric motor and second thrust control means for said second reversible electric motor mounted on said seat means and cooperating with said first reversible electric motor and said second reversible electric motor, respectively, whereby forward and reverse operation of said first reversible electric motor and said second reversible electric motor are facilitated; and

(f) a portable support means selectively positioned on said deck and a first motor start switch for said first reversible electric motor mounted on said portable support means, and a second motor start switch for said second reversible electric motor mounted on said portable support means and cooperating with said first reversible electric motor and said second reversible electric motor, respectively, whereby said first reversible electric motor and said second reversible electric motor are selectively energized to steer said water craft by operation of one or both of said first reversible electric motor and said second reversible electric motor.

4,537,145

WIND PROPELLED VESSEL

Christopher R. White, 48 Bush St., South Dartmouth, Mass. 02748

Filed Mar. 7, 1984, Ser. No. 587,247

Int. Cl.³ B63B *15/02*

U.S. Cl. 114—91 **11 Claims**

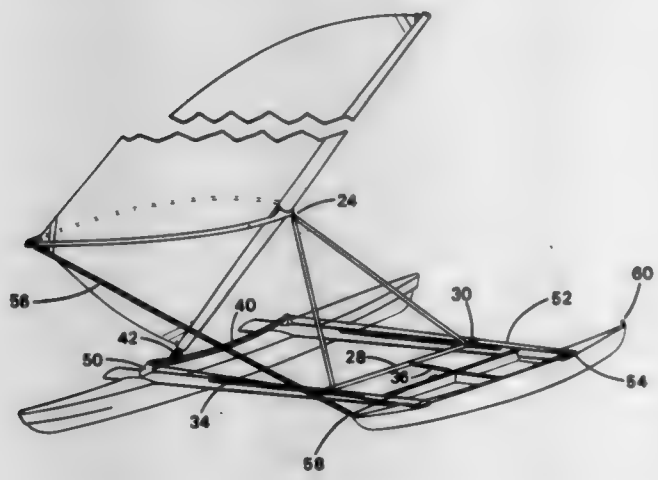
1. A sailing vessel comprising an elongated hull, a mast, a boom pivotally connected at one end to the mast, means to secure the mast and boom to a sail having one side extending along the mast and one part extending near the other end of the boom, and mast supporting and angular adjustment means comprising the following elements operative as follows:

(a) An upper mast holding means connected to the mast;

(b) A lower mast holding means connected to the mast near the bottom end of the mast;

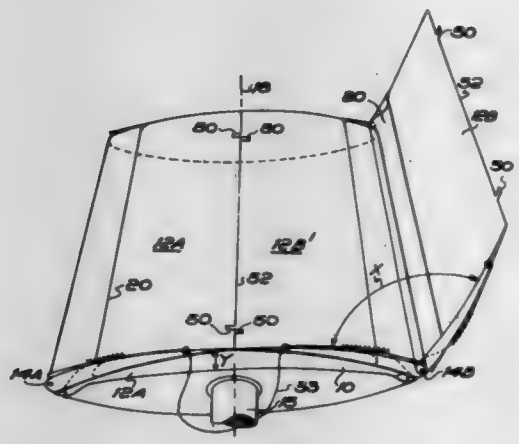
(c) means mounting said lower mast holding means for movement substantially lengthwise of the hull;

(d) means to apply and release restraint on said lengthwise movement while sailing;
(e) means mounting said upper mast holding means for movement substantially sidewise relative to the length of the hull; and
(f) means to apply and release restraint on said sidewise movement while sailing;
(g) whereby during restraint of said sidewise movement, said lengthwise movement is effective to tilt the mast in a direction substantially lengthwise of the hull;



(h) whereby during restraint of said lengthwise movement, said sidewise movement is effective to tilt the mast in a direction substantially sidewise relative to the length of the hull; and
(i) whereby combinations of said sidewise and lengthwise movements are effective to tilt the mast in directions having both lengthwise and sidewise components relative to the length of the hull.

4,537,146
AEROFOILS
Barry Wainwright, Help Cottage, Dundry, Bristol, BS18 8JF, England
Filed Oct. 18, 1982, Ser. No. 434,922
Int. Cl.³ B63H *9/04*
U.S. Cl. 114—103 **3 Claims**



1. An aerofoil, comprising a central panel and lateral panels hingedly connected at each side thereof, the central panel being arranged for rotation about a central longitudinal axis, the lateral panels on the two sides being of similar cross-section and the central panel being of symmetrical cross-section about a median plane passing through said central axis at right-angles to the panel, the cross-sections of the panels being such that either one of the lateral panels can be folded inwardly to lie against the central panel leaving the other lateral panel extended, the combined panels thereby forming a non-symmetrical aerofoil in cross-section, the mirror-image of which can be provided by alternatively folding the other lateral panel, the aerofoil thus formed being adjustable relative to the prevailing air flow by rotation about said axis, the lateral panels also being foldable inwards together to meet edge-to-edge in a stowed configuration for the aerofoil wherein the meeting edges of the lateral panels in the stowed configuration are spaced from the surface of the central panel and the lateral panels provide an external surface whose profile substantially matches that of the external surface of the central panel.

4,537,147
PLASTIC SHEET BARGE HATCH COVER
James E. Nivin, Louisville, Ky., assignor to American Commercial Barge Line Co., Jeffersonville, Ind.
Continuation of Ser. No. 459,204, Jan. 19, 1983, abandoned. This application Aug. 31, 1984, Ser. No. 646,045
Int. Cl.³ B63B *19/12*
U.S. Cl. 114—201 R **4 Claims**



1. A hatch cover that withstands the wind, rain and other in transit and storage conditions encounted by in-water barges which hatch cover can be installed and stored on deck in limited space by two deck hands on open hatch barges having a rimmed coaming extending above the deck about a hatchway to form a substantially rectangular hatch occupying a large portion of the total deck area, comprising in combination,
a substantially rectangular thin film plastic sheet for covering the hatch by extending over the rim of the coaming about the hatchway,
four watertight plastic pipe sections formed by hems along substantially the entire edge of said sheet located with the sheet hems for overhanging substantially the entire coaming to hang over the coaming in a position between the coaming rim and the deck and being watertight of such dimensions for filling with water of enough weight and storing it to hold down the edges of the sheet over the coaming edge to seal the hatch and hold the plastic sheet in place with uniform tension while the barge is in transit encountering said in transit conditions, and including for each of the four pipe sections formed by the hems valving structure located for filling and venting the respective pipe sections disposed near opposite ends of the respective pipe sections respectively for rapidly filling one end of the pipe sections with water adjacent the barge by pumps and venting the opposite end and thereafter retaining the water therein for holding the plastic sheet in place covering the hatch, said valving structure on said pipe sections comprising a tapered section extending from each piping section at the rectangle corners, and retaining the water comprising a drawstring for substantially closing the tapered ends of the piping together with means for holding the substantially closed drawstring end of the tapered section at a level above the pipe sections formed by said hem when the pipe sections are filled with water and in place overhanging the coaming.

4,537,148

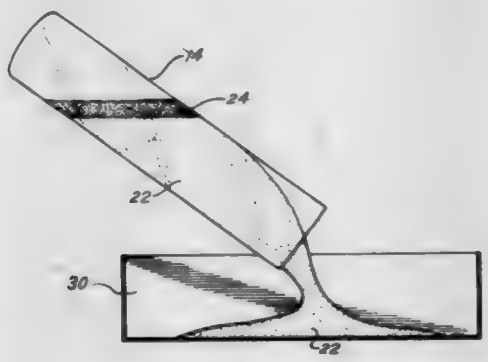
PACKAGE OF LITTER MATERIAL FOR CATS AND OTHER SMALL ANIMALS

Henry E. Lowe, Jr., 201 N. Edwards St., Cassopolis, Mich. 49031

Continuation-in-part of Ser. No. 439,034, Nov. 4, 1982, , which is a continuation-in-part of Ser. No. 132,285, Mar. 20, 1980, Pat. No. 4,448,151. This application Jun. 28, 1984, Ser. No. 625,529

Int. Cl.[3] A01K *1/015*

U.S. Cl. 119—1 15 Claims



1. A package of litter material for small animals, comprising a container having elongated side walls and opposite end walls, a first layer of relatively light particulate material of organic composition disposed in one end of said elongated container and having an odor suppressant therein, and a second layer of relatively heavy particulate material of inorganic composition disposed in the other end of said elongated container, the end wall adjacent said relatively heavy material being openable for discharging sequentially first said relatively heavy particulate layer and then said relatively light particulate layer to form a multiple layer bed of litter with said relatively light particulate material forming the top layer of said bed.

4,537,149

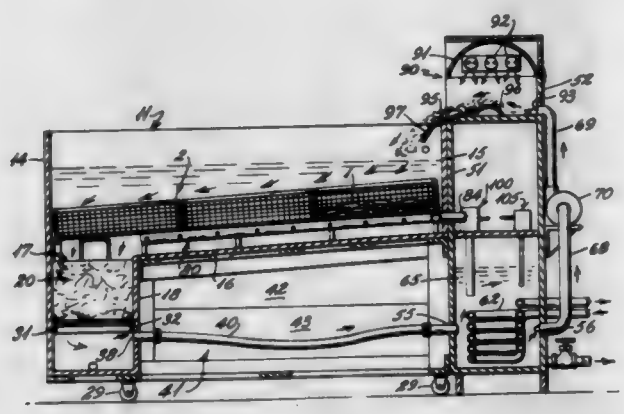
METHOD AND APPARATUS FOR CLEANING TAINTED SHELLFISH

William J. Ryan, 135 Ramble Rd., Staten Island, N.Y. 10308

Filed Sep. 14, 1982, Ser. No. 418,057

Int. Cl.[3] A01K *61/00*

U.S. Cl. 119—4 6 Claims



1. In a method for treating bivalves containing inedible impurities to render the bivalves of edible quality by maintaining the tainted bivalves while supported in a holding tank in a quantity of circulating salt water which has been purified with the aid of ultraviolet light irradiation until the impurities have been removed from the bivalves, the improvement which comprises circulating salt water from said holding tank through filter means for removing suspended solid impurities, then through heat exchange means for maintaining the temperature of said circulating water in the range of from about 40° to 70° F., through an ultraviolet light irradiation zone to destroy bacterial impurities present in said water, through an aeration zone to maintain an oxygen content in said circulating salt water in the range of from about 5 to about 10 milligrams dissolved oxygen per liter salt water, and back to said holding tank, while maintaining the average salinity of said salt water in said holding tank in the range of from about 18 to about 31 mg salt per kg water, said salt water being maintained in said holding tank in an amount sufficient to provide at least about 8 gallons of salt water per bushel of said bivalves, and said salt water being circulated at a rate of from about 1 to about 2 gallons per minute.

4,537,150

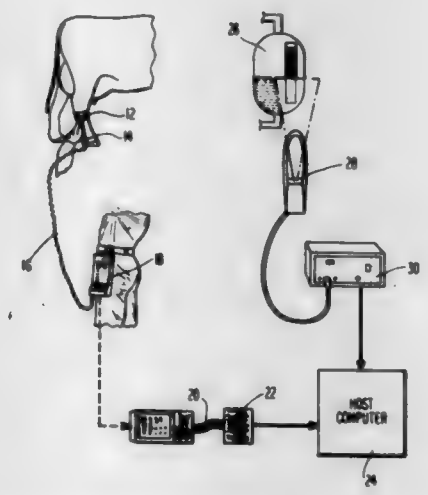
DATA ENTRY SYSTEMS

David L. Bowers, 9385 La Suvida Dr., La Mesa, Calif. 92041

Filed Feb. 13, 1984, Ser. No. 579,722

Int. Cl.[3] A01J *5/00*; G01F *17/00*

U.S. Cl. 119—14.17 10 Claims



8. A system for identifying each cow in a herd and for correlating identification of said cow with milk produced by said cow, the system comprising;

machine-readable identification tag means for providing an encoded symbol indicative of a cow's identity affixed to the cow;

label means attached in predetermined relation to a milk vessel containing milk produced by said cow, for providing machine-readable endoded symbols indicative of relative amounts of milk in said vessel;

scanner means for scanning said identification tag and for scanning said label means;

means for decoding and storing the symbols read by said scanner means; and

means for correlating identification of the cows with the symbols read from the label.

4,537,151

PORTABLE FOLDING CORRAL

William W. Bolton, 8512 N. 32nd Dr., Phoenix, Ariz. 85021

Filed Jul. 30, 1984, Ser. No. 635,934

Int. Cl.[3] A01K *15/04*

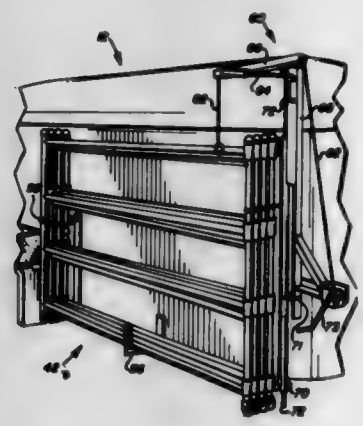
U.S. Cl. 119—20 13 Claims

1. A portable folding corral for mounting on a trailer, comprising:

folding panel means for forming an enclosure to contain animals such as horses including a plurality of panels rotatably and permanently coupled to each other by sleeve means for allowing said plurality of panels to be folded and for allowing said plurality of panels to be extended in order to form one continuous enclosure, one end of said folding panel means being rotatably coupled to said trailer;

mounting means for mounting said folding panel means on said trailer including means coupled to said trailer and said folding panel means for raising and lowering said folding panel means in order to mount said folding panel means on

the outside of said trailer and to lower said folding panel means to form said enclosure; and



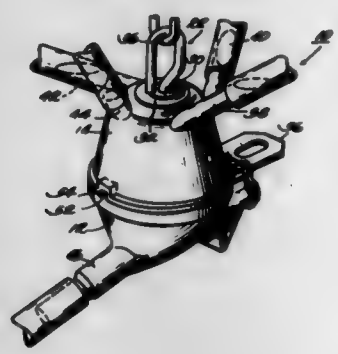
securing means for securing said folding panel means to said trailer.

4,537,152

MILKING CLAW

Paul D. Thompson, Madison, Wis., assignor to DEC International, Inc., Madison, Wis.

Filed Jun. 1, 1984, Ser. No. 616,115
Int. Cl.³ A01J *7/00*
U.S. Cl. 119—14.54 **4 Claims**



1. A milking claw having a bowl and a cover meeting at a generally circular connection,

said cover having a frusto-conical shape with the lower, larger diameter portion connected to said bowl, four inlet nipples connected to the upper side wall of said cover,

each inlet nipple extending upwardly and outwardly from the sloping side wall of the cover generally tangential to said side wall so the incoming milk is downwardly directed and introduced to the interior of the cover in a tangential manner and swirls down and around the sloping inside of said cover on a path having an increasing diameter causing the milk velocity to decrease,

and an outlet from said bowl positioned below said inlet nipples and receiving the milk after its velocity has decreased, any tendency of the milk to flow back to said nipples from said outlet requiring lifting and accelerating the milk.

4,537,153

DEVICE WITH POUCHES FOR RECEIVING ANIMAL WASTE

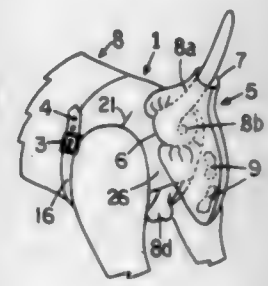
Stella M. Vidal, 21 E. 22nd St., #6H, New York, N.Y. 10010

Continuation-in-part of Ser. No. 337,712, Jan. 7, 1982, abandoned. This application Jun. 21, 1984, Ser. No. 623,222
Int. Cl.³ A01K *23/00*
U.S. Cl. 119—95 **41 Claims**

1. A device to be worn on the body by an animal such as a dog, cat or the like, for receiving and retaining the discharge of body waste, said animal being a wearer of the device, and having a top line, a rear, an anal region at the rear, a tail with a root at the rear above the anal region, a genital region, a belly, hind legs, and forelegs, said root having a top and said tail projecting rearwardly from said root, said device comprising:

a wearer-contacting garment having margins, an upper portion which extends over the top line of the wearer, and a back portion which extends over the rear of the wearer, and said back portion having one opening defined therein of a size to encompass both the root of the tail and the anal region of the wearer, said opening having a continuous periphery extending entirely around an area of the rear of the wearer including the root of the tail and the anal region of the wearer;

container means having at least one entrances opening defined therein to receive the discharge of body waste, said



one entrance opening being of a size to encompass both the root of the tail and the anal region of the wearer and being coextensive with said one opening of said back portion, said entrance opening having a continuous periphery secured to the periphery of said one opening of said back portion entirely around said one opening of said back portion and said entrance opening for connecting said container means to said back portion, said container means being shaped and dimensioned to completely laterally surround said one opening of said back portion and at least a substantial portion of the wearer's tail rearwardly of the root thereof; and

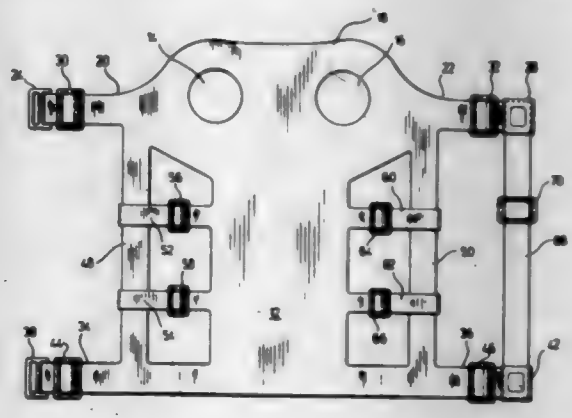
means connected to the margins of the said wearer-contacting garment at selected regions, to fasten the garment tightly yet comfortably and securely around the body of the wearer.

4,537,154

SAFETY VEST OR HARNESS FOR PETS OR SMALL CHILDREN

Fern Kay, 52 Yatesbury Rd., New York, Ontario, Canada M2H 1E9

Continuation-in-part of Ser. No. 390,498, Jun. 21, 1982, abandoned. This application Aug. 8, 1983, Ser. No. 520,928
Claims priority, application Canada, Jun. 20, 1983, 430778
Int. Cl.³ A62B *35/00*
U.S. Cl. 119—96 **7 Claims**



1. An animal or child harness suitable for pets such as dogs, cats or monkeys or for small children, the harness comprising a panel portion of flexible material shaped to pass around the

underneath of the body of the animal or child from one side to the other and to extend over a substantial part of the length of the body in a front to rear direction, a pair of front straps extending laterally from opposite sides of the panel portion adjacent the front thereof for passing laterally across the top of the body of the animal or child behind the neck, said front straps having free end portions carrying releasable securing means to enable said front free end portions to be secured together, a pair of rear straps extending laterally from opposite sides of the panel portion adjacent the rear thereof for passing laterally across the top of the body of the animal or child near the rear thereof, said rear straps having free end portions to be secured together, and a longitudinal strap extending between a front strap and a corresponding rear strap so as to extend centrally along the back of the animal or child in a front to rear direction when the harness is secured in position, a first connecting portion extending between one front strap and a corresponding rear strap, a second connecting portion extending between the other front strap and the other corresponding rear strap, and at least one intermediate strap extending between the main panel portion and each adjacent connecting portion.

4,537,155

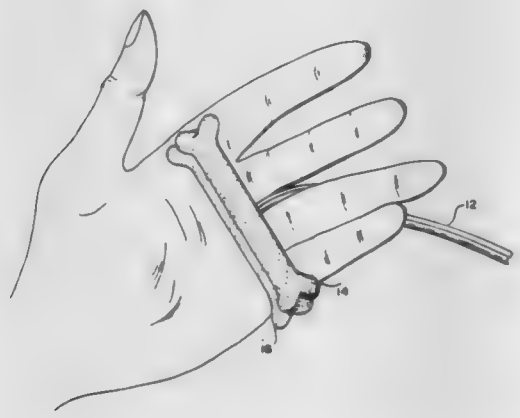
ANIMAL LEASH

Prosper Buratovich, 249 Woodside Ave., Franklin Lakes, N.J. 07417

Filed Oct. 22, 1984, Ser. No. 663,414

Int. Cl.³ A01K *27/00*

U.S. Cl. 119—109 **3 Claims**



1. An animal leash for engaging a ring on an animal's collar comprising a cord having a length approximately twice the normal length of an animal leash; handles permanently affixed to each end of said cord with each of said handles being of a generally rectangular configuration and having a width less than the diameter of a ring on said collar and a length substantially greater than said diameter to enable use of said leash at a first length upon both of said handles being held and at a second length, approximately twice said first length, upon release of one of said handles.

4,537,156

HEAT EXCHANGER HAVING A VERTICAL GAS FLUE

Karl Rees, Ruti, Switzerland, assignor to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Aug. 24, 1984, Ser. No. 643,794

Claims priority, application Switzerland, Aug. 31, 1983, 4773/83

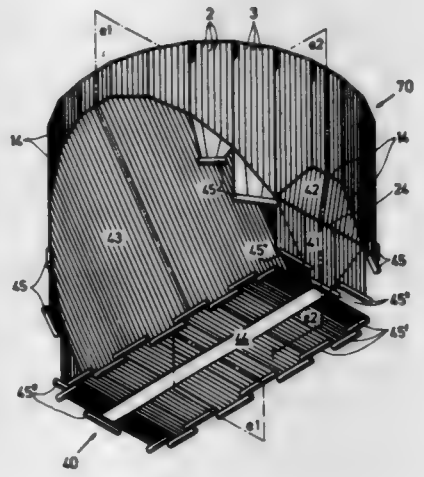
Int. Cl.³ F22B *37/20*

U.S. Cl. 122—6 A **11 Claims**

1. A heat exchanger comprising

a vertical gas flue having a plurality of vertically disposed sides defining at least a pentagonal cross-section, each said side including a plurality of interconnected medium-carrying wall-forming tubes extending longitudinally of said sides;

a hopper below said gas flue having walls defining an outlet opening at a lower end, each said wall including a plurality of parallel interconnected medium-carrying wall-forming tubes; and



each said tube of said hopper being connected to a respective tube of said gas flue along a boundary edge extending over the entire periphery of said gas flue with each tube of said gas flue being bent at said boundary edge.

4,537,157

VERTICAL, COLLECTOR-TYPE HIGH-PRESSURE FEED WATER PREHEATER, WITH A DESUPERHEATER CASING

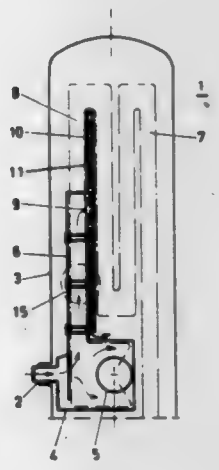
Günter Volks, Lauchringen, Fed. Rep. of Germany, assignor to BBC Brown, Boveri & Company, Limited, Baden, Switzerland

Filed Jun. 28, 1983, Ser. No. 508,713

Claims priority, application Switzerland, Jun. 30, 1982, 3991/82

Int. Cl.³ F22D *1/00*

U.S. Cl. 122—412 **1 Claim**



1. A vertical, collector-type high-pressure feed water preheater, comprising:

a desuperheater casing;

an outlet feed water collector in the form of a duct which is connected with said casing;

a preheater tube-bundle having serpentine tubes wherein at least a portion of said preheater tube-bundle is enclosed in said duct and is contiguous with said outlet feed water collector;

a plurality of support points being present for fixing the position of said preheater tube-bundle at right angles to its length; and

a plurality of support strips having spacer tabs wherein said serpentine tubes of said preheater bundle are positively fixed in a region of said support points at right angles to a longitudinal axis thereof;

said duct, on two opposite sidewalls in a region of said support points, further comprising widened portions

which, viewed from an interior of said duct, project outward and form support surfaces for said support strips and form stop surfaces for restricting movement thereof in an axial direction of said preheater tube-bundle; and

each of said widened portions including pairs of integral sheet metal flanges located on opposite sidewalls of said duct and a web sheet located between each pair of integral sheet metal flanges, wherein a supporting crosspiece is fastened to an inner surface of said web sheet and said support strips are located above and below said supporting crosspiece whereby support strips of a first layer are staggered relative to support strips of a second layer by a single pipe spacing.

4,537,158

APPARATUS FOR COOLING AN INTERNAL COMBUSTION ENGINE

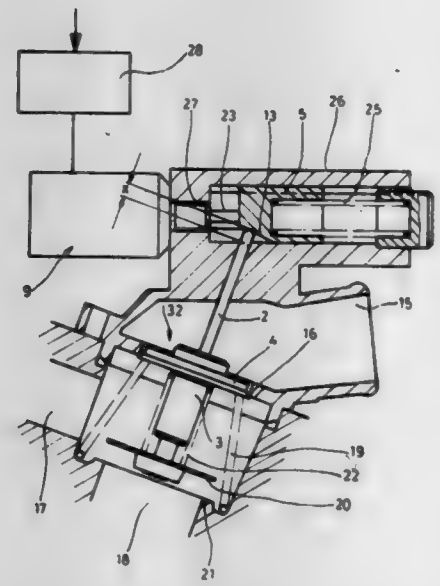
Roland Saur, Stuttgart, Fed. Rep. of Germany, assignor to Behr-Thomson Degnstoffregler GmbH, Fed. Rep. of Germany

Filed Jun. 1, 1984, Ser. No. 616,493

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1983, 3320338

Int. Cl.³ F01P *7/16, 3/20;* G05D *7/06*

U.S. Cl. 123—41.1 **6 Claims**



1. Apparatus for cooling an internal combustion engine, comprising:

a thermostatic-valve having a closed position for directing a coolant flow to the engine via a direct return, and having an open position for directing the coolant flow to the engine via a radiator when said coolant flow reaches a temperature in excess of an opening temperature of the thermostatic valve;

means for adjusting said opening temperature of the thermostatic valve to at least two different temperature operating levels;

at least one fan associated with said radiator and being operable in at least a lower and a higher output stage in correspondence with at least a lower and a higher engine coolant temperature, respectively; and

switching means, responsive to said means for adjusting the opening temperature of the thermostatic valve, have been for blocking the operation of the lower output stage of said fan when the opening temperature of the thermostatic valve is adjusted to a higher of said at least two different temperature operating levels.

4,537,159

COOLANT RESERVE TANK

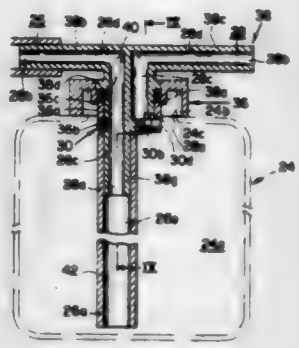
Yoshitomi Matsuzaki, Hatano; Toshihiko Hayashi, Zama, and Keizou Kushibiki, Hachioji, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama and Nihon Radiator Co., Ltd., Tokyo, both of, Japan

Filed Oct. 23, 1984, Ser. No. 664,020

Claims priority, application Japan, Oct. 25, 1983, 58-164008[U]

Int. Cl.³ F01P *11/02;* B65D *51/16*

U.S. Cl. 123—41.27 **13 Claims**



1. A coolant reserve tank comprising:

a tank main body having a coolant reserve chamber;

means for defining a coolant conveying passage for conveying coolant to and from a radiator;

means for defining a coolant reserve chamber vent having a first end disposed inside said chamber at a location adjacent the top of same and a second end disposed outside said chamber and opening to the atmosphere; and

a splash-guard member disposed inside said chamber at a location adjacent said first end of said vent and having a sideway passage which extends in a plane normal to the top-to-bottom directions of said tank main body and only through which said first end of said vent opens to said chamber.

4,537,160

AIR CLEANER FOR AN AIR-COOLED ENGINE

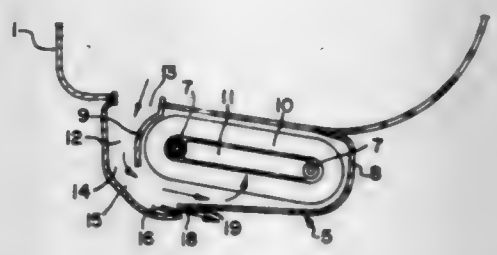
Tetsuaki Shirai, Kobe, Japan, assignor to Kawasaki Jukogyo Kabushiki Kaisha, Kobe, Japan

Filed Aug. 8, 1984, Ser. No. 638,736

Claims priority, application Japan, Aug. 12, 1983, 58-125955[U]

Int. Cl.³ F01P *5/06*

U.S. Cl. 123—41.58 **7 Claims**



1. An air cleaner for an air-cooled engine, the engine further including a cooling fan within a fan housing and the fan housing having an air outlet formed therein, said cleaner comprising a casing adapted to be attached to said fan housing, said casing having a side wall, an air inlet opening in said casing which is adapted to communicate with said air outlet of the fan housing and air flowing from said fan, through said air outlet and said air inlet opening and into said casing, an air passage formed within said casing and extending from said inlet opening along said side wall and air from said fan flowing through said passage, an air filter in said air passage, said passage including a curved portion between said air inlet opening and said air

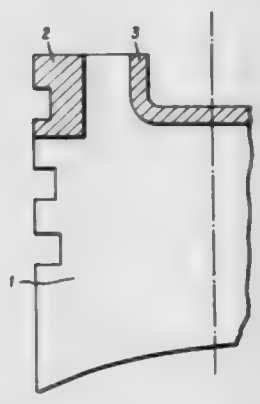
filter, and a slit opening formed in said side wall adjacent said curved portion.

4,537,161

INSERTS FOR PISTONS OF DIESEL ENGINES OF ALUMINUM-SILICON ALLOYS HAVING AN IMPROVED THERMAL RESISTANCE AND MACHINABILITY

Noel Huret, Noisy-le-Grand, and Jean Meunier, Grenoble, both of France, assignors to Cegedur Societe de Transformation de l'Aluminium Pechiney, Paris, France

Filed Dec. 5, 1983, Ser. No. 558,296
Claims priority, application France, Dec. 8, 1982, 82 20892
Int. Cl.³ C22C *21/04*; C22F *1/04*; F02F *3/04*
U.S. Cl. 123—41.71 **3 Claims**



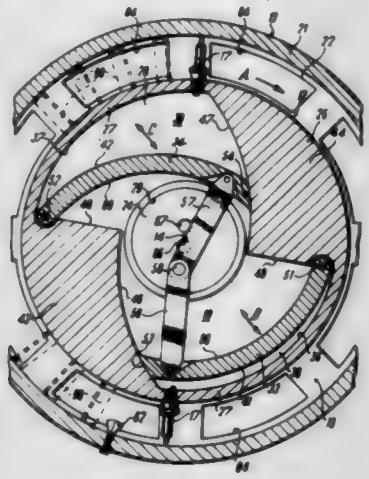
1. Inserts for pistons of DIESEL engines, said inserts comprised of aluminum-silicon alloys containing 12 to 25% silicon, obtained by powder metallurgy and having both an improved thermal resistance and machinability, as well as a good friction capacity, characterized in that they contain between 2 and 8% by weight of iron and 0.2–1.5% by weight of zirconium.

4,537,162

INTERNAL COMBUSTION ENGINE HAVING A ROTATING PISTON ASSEMBLY

Gerhard K. Kienle, Schonwalterstrasse 11, D-7000, Stuttgart 31, Fed. Rep. of Germany

Filed Dec. 27, 1982, Ser. No. 453,035
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3150654
Int. Cl.³ F02B *53/00*
U.S. Cl. 123—43 R **35 Claims**



1. An internal combustion engine having a housing including mixture inlet and exhaust gas outlet openings, a rotating piston assembly situated within said housing, and a drive shaft defining an axis of rotation, the rotating piston assembly comprising:

a cylinder which rotates about its longitudinal axis, said cylinder including a transverse end wall having at least one slit formed therein and at least one interior side surface which extends in the direction of said longitudinal axis;

a least one arcuate piston element having a free end defining a sealing surface, said piston element being situated within the cylinder and pivotably mounted at the end opposite to its free end to the cylinder for pivotal movement in the radial direction of the cylinder;

at least one valve slide displaceably supported within a slit of the transverse end wall;

lever means for each piston element for mounting the free end of said piston element to said housing eccentrically of the axis of rotation;

means within the cylinder for engaging the sealing surface of the piston element;

at least one work chamber defined by the piston element, an interior side surface and the transverse end wall; and

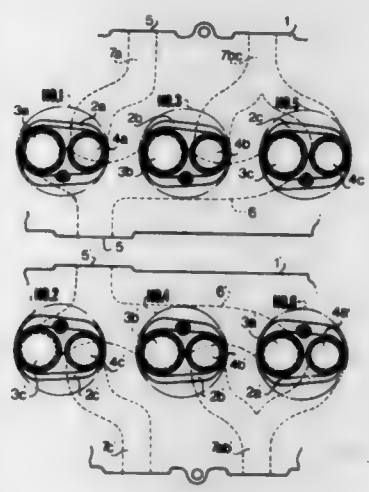
means connected to the housing and the valve slide to control the movements of the valve slide to produce compulsory movement of the valve slide in accordance with the rotational movement of the cylinder, such that the slit alternately aligns itself with the inlet and outlet openings.

4,537,163

INTAKE PASSAGES IN CYLINDER HEADS OF AN OPPOSED SIX-CYLINDER ENGINE

Tatsuo Sakai, Tokyo, Japan, assignor to Fuji Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 6, 1983, Ser. No. 558,639
Claims priority, application Japan, Dec. 7, 1982, 57-214144
Int. Cl.³ F02F *1/42*
U.S. Cl. 123—52 MC **3 Claims**



1. In cylinder heads of an opposed six-cylinder engine of the type wherein said cylinder heads are disposed on opposite sides of a crankcase including cylinder blocks, each of the latter having three cylinders, the improvement wherein

said three cylinders of each block being arranged in firing order;

an intake valve provided in each cylinder head adjacent each of said cylinders respectively communicating therewith;

an exhaust valve provided in each cylinder head adjacent each of said cylinders respectively communicating therewith;

said intake valves and said exhaust valves communicating with each said cylinder being disposed in the same arrangement with respect to said each cylinder so that in each of said cylinder heads respectively the distances between adjacent of the intake valves are equal to each other;

each said cylinder head being formed with an intake passage and an opening into said intake passage,

said intake passage in each said cylinder head communicates each of said intake valves in each said cylinder head with said opening in each said cylinder head respectively,

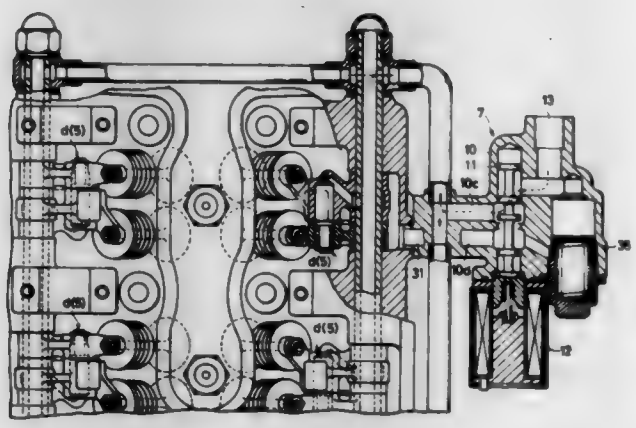
said opening in each said cylinder head respectively being located at a central position between two associated of said intake valves which communicate with two of said three cylinders in the associated cylinder block which are earlier in firing order than the other of said three cylinders in said associated cylinder block.

4,537,164

VALVE ACTUATING APPARATUS

Yoshio Ajiki, Saitama, and Masaaki Matsuura, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 8, 1984, Ser. No. 618,696
Claims priority, application Japan, Jul. 27, 1983, 58-137181
Int. Cl.³ F01L *1/34, 1/26*
U.S. Cl. 123—90.16 **8 Claims**



1. A valve actuating apparatus for an internal combustion engine, comprising:

at least one valve actuator for selectively engaging and disengaging the operation of at least one corresponding valve of said engine in accordance with the pressure of operating oil supplied thereto; and

a spool valve connected through an oil line between said valve actuator and a pressurized source of operating oil for controlling said pressure of said operating oil supplied to said valve actuator, said spool valve having a spool movable between a first position wherein a quantity of operating oil sufficient for energizing said actuator is supplied to said actuator and a second position where the quantity of operating oil supplied to said valve actuator is insufficient for energizing said actuator, said spool valve having a bypass for supplying to said actuator in said second position of said spool in a quantity insufficient for energizing said actuator but sufficient to purge air from a portion of said oil line connecting said spool valve to said actuator.

4,537,165

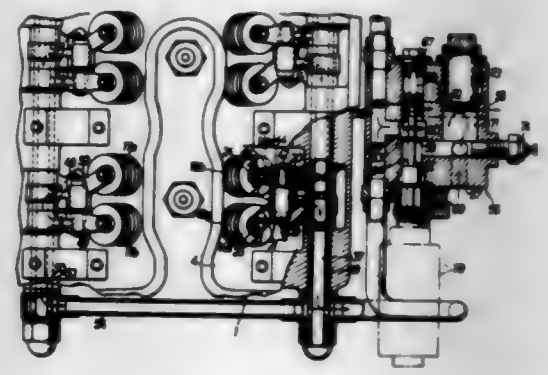
VALVE ACTUATING MECHANISM HAVING STOPPING FUNCTION FOR INTERNAL COMBUSTION ENGINES

Shoichi Honda, Tokyo; Yoshikatsu Nakano, Kawagoe; Makoto Hirano, Asaka, and Masaaki Matsuura, Tokyo, all of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Mar. 19, 1984, Ser. No. 591,145
Claims priority, application Japan, Jun. 6, 1983, 58-100505; Jun. 13, 1983, 58-105458; Jun. 13, 1983, 58-105459
Int. Cl.³ F01L *1/34, 1/26*
U.S. Cl. 123—90.16 **7 Claims**

1. In an internal combustion engine of the type in which at least one pair of intake or exhaust valves having an identical function and disposed adjacent to each other are arranged for use with one cylinder,

a valve actuating mechanism having a stopping function wherein: first and second rocker arms respectively having arms abutting against the upper ends of the paired intake or exhaust valves are rockingly supported on a common support shaft which is fixed on the engine body while having an axis perpendicular to the operating directions of said valves; said first rocker arm is formed with a cylinder bore which is opened toward said second rocker arm to bear a plunger therein whereas said second rocker arm is formed with a guide bore which is opened toward said first rocker arm to fit said plunger therein; a hydraulic



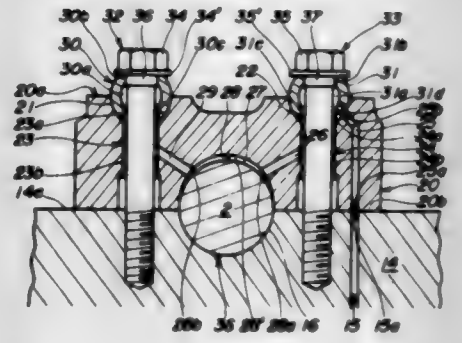
actuation chamber defined between the bottom portion of said cylinder bore and the rear end of said plunger is connected with an oil pressure source through a hydraulic change-over valve for changing the supply and stop of the oil pressure to said actuation chamber; and either of said first or second rocker arm is formed with a cam slipper for sliding contact with a cam which is adapted to rotate in accordance with the run of said engine.

4,537,166

LUBRICATING ARRANGEMENT IN VALVE MECHANISM OF AN OVERHEAD CAMSHAFT ENGINE

Kenji Kimura, Sayama, and Masayasu Nishikawa, Tokyo, both of Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 27, 1983, Ser. No. 536,253
Claims priority, application Japan, Sep. 27, 1982, 57-168210
Int. Cl.³ F01L *1/46*
U.S. Cl. 123—90.36 **11 Claims**



6. In a valve mechanism for an internal combustion engine of the overhead camshaft type, including a cylinder head having a lubricating oil passage formed therein, at least one pair of intake valve and exhaust valve, a pair of rocker shafts, each having a substantially cylindrical outer configuration and a hollow interior defined therein, each of said rocker shafts having a peripheral wall thereof formed with a pair of diametrically opposite through holes, at least one pair of rocker arms supported on said rocker shafts for rocking motions thereabout and drivingly coupled, respectively, to said intake valve and said exhaust valve, a camshaft drivingly coupled to said rockerarms for causing rocking motions thereof, whereby rocking motions of said rocker arms in response to rotation of said camshaft cause said intake valve and exhaust valve to be closed and opened alternately, a camshaft holder rotatably supporting said camshaft and supporting said rocker shafts, said camshaft holder having first and second bolt-fitting holes formed therein, and first and second bolts extending through respec-

tive ones of said through holes of said rocker shafts and said first and second bolt-fitting holes of said camshaft holder and threadedly fitted in said cylinder head to fasten said rocker shafts and said camshaft holder thereto, the improvement wherein said camshaft holder has first and second bearing recesses, each having a generally semicylindrical shape corresponding to said outer configuration of said rocker shafts, said first and second bearing recesses opening in a side surface of said camshaft holder remote from said cylinder head and arranged in spaced relation to each other, said rocker shafts having part of said peripheral walls thereof supportedly received in respective ones of said first and second bearing recesses, a first lubricating oil passage formed in said camshaft holder and having one end communicating with said lubricating oil passage formed in said cylinder head and another end opening in one of said first and second bearing recesses, one of said rocker shafts being received in said one bearing recess and having a second lubricating oil passage formed therein and communicating said first lubricating oil passage with said hollow interior of said one rocker shaft, said first and second bolt-fitting holes extending from respective ones of said first and second bearing recesses to another side surface of said camshaft holder facing said cylinder head, one of said through holes of each said rocker shafts communicating said hollow interior of said each rocker shaft with a corresponding one of said first and second bolt-fitting holes, a corresponding one of said first and second bolts extending through said one through hole, said first and second bolt-fitting holes and said one through holes of said rocker shafts each having an inner diameter larger than the outer diameter of said corresponding one bolt to define first and second annular gaps, respectively, between said first and second bolts and corresponding ones of said bolt-fitting holes and corresponding ones of said one through holes, said camshaft holder further having a recess formed in said another side surface thereof and having an inner peripheral surface, said recess cooperating with a recess formed in a surface of said cylinder head facing said camshaft holder to define a generally cylindrical bearing space in which said camshaft is supportedly fitted, a circumferentially extending peripheral groove formed in said inner peripheral surface of said recess of said camshaft holder, and first and second communication passages formed in said camshaft holder and communicating said peripheral groove with respective ones of said first and second annular gaps.

4,537,167

ENGINE CYLINDER LINERS BASED ON ALUMINUM ALLOYS AND INTERMETALLIC COMPOUNDS, AND METHODS OF OBTAINING THEM

Michel Eudier, Paris; Noël Huret, Noisy le Grand, and Jean Meunier, Crenoble, all of France, assignors to Cegedur Societe de Transformation de L'Aluminim Pechiney and Alliages Frittes METAFRAM, both of Paris, France

Filed Dec. 5, 1983, Ser. No. 557,947
Claims priority, application France, Dec. 9, 1982, 82 20983
Int. Cl.[3] F02F *1/18*
U.S. Cl. 123—193 C **14 Claims**

1. Engine cylinder liners comprising:

(1) a matrix comprising an aluminum alloy produced by powder metallurgy, said alloy being selected from the group consisting of A—S_{12}UG alloys and series 7,000 alloys containing from 1 to 12% by weight added silicon, and

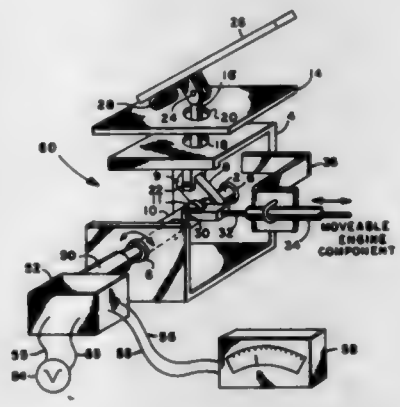
(2) a dispersion of grains distributed within said matrix comprising at least one added intermetallic compound having a melting point of more than 700° C., said grains being distinct and not forming part of the actual alloy structure.

4,537,168

ENGINE COMPONENT POSITION INDICATING SYSTEM

Bretislav Durisin, Wooster, Ohio, assignor to Eaton Corporation, Cleveland, Ohio

Filed Jun. 4, 1984, Ser. No. 616,634
Int. Cl.[3] G01M *13/00*
U.S. Cl. 123—198 R **11 Claims**



1. A moveable engine component position indicating system comprising;

a frame secured against movement with respect to the engine component,

an elongate shaft rotatably mounted on the frame in such a manner as to be able to rotate in opposite directions about a central rotational axis extending between opposite ends thereof,

input means operatively secured to the shaft and functional to rotate the shaft in opposite directions about the central rotational axis thereof in response to movement of the input means in opposite directions,

output means operatively secured to the shaft and functional to move in opposite directions in response to the rotation of the shaft in opposite directions,

linking means operatively connected at one end to the output means and at an opposite end to the engine component and functional to move the component in opposite directions in response to movement of the output means in opposite directions,

operator controlled means operative to enable an operator to move the input means in opposite directions and cause the input means to rotate the shaft in opposite directions and cause the shaft to move the output means in opposite directions and cause the output means to cause the linking means to move the engine component in opposite directions to a desired position,

indicator means, operative to visually indicate the position of the engine component in response to receipt of a position signal indicative of the rotational position of the shaft with respect to a predetermined initial rotational position, and

signal generating means operatively coupled to at least one end of the shaft and functional to provide the position signal to the indicator means in response to the rotation of the shaft.

4,537,169

FUEL INJECTION DEVICE OF DIESEL ENGINE

Noboru Tsuge, Kariya; Masahiro Taguchi, Okazaki; Masanori Kato, Toyoake, and Satosi Kuwakado, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed May 31, 1983, Ser. No. 499,401
Claims priority, application Japan, May 31, 1982, 57-91363
Int. Cl.[3] F02M *51/00*
U.S. Cl. 123—325 **3 Claims**

1. A fuel injection device of a diesel engine comprising;

a fuel injection nozzle;

a fuel injection pump;

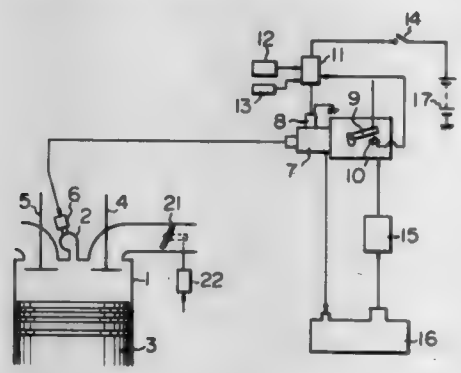
a control means for the fuel injection pump; and

an intake air throttling valve interlocked with an accelerator

so as to throttle the intake air during accelerator nonoperation;

characterized in that there are provided:

a means for detecting engine braking and



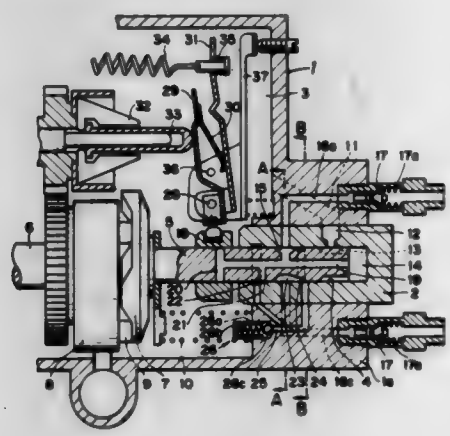
a means for controlling fuel injection by signals from said detecting means, so that fuel injection is interrupted during engine braking where the accelerator does not operate and vehicle speed and engine speed exceed a predetermined speed.

4,537,170

DISTRIBUTION TYPE FUEL INJECTION PUMP

Kelichi Yamada, and Hideyuki Kimura, both of Higashi-Matsuyama, Japan, assignors to Diesel Kiki Co., Ltd., Tokyo, Japan

Filed Feb. 28, 1984, Ser. No. 585,218
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—449 **6 Claims**



1. In a distribution type fuel injection pump having a suction chamber for containing fuel, a plunger bore having a pump chamber in the inner end thereof and communicating with said suction chamber, a reciprocating and rotating plunger reciprocally and rotatably sliding in said plunger bore for drawing fuel from said suction chamber into said pump chamber and pressurizing it therein, a plurality of fuel distribution passages extending from said bore to supply pressurized fuel through injection pipes to corresponding fuel injection nozzles, said distribution passages opening into said bore at points spaced around the periphery thereof, said plunger having a distributing port communicating with said pump chamber and opening out of the peripheral surface of said plunger in alignment with the distribution passages when said plunger is in a position in which fuel is pressurized in said pump chamber, the improvement comprising:

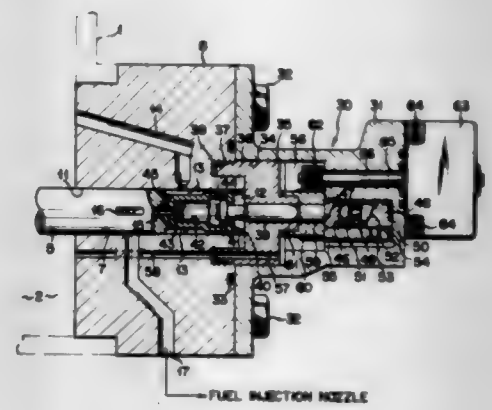
a delivery valve in each of said fuel distribution passages which creates substantial suction downstream thereof when it closes for reducing the pressure in the fuel injection pipes at least to near zero, said plunger having an auxiliary port opening out of the periphery thereof spaced along the plunger from said distribution port and connected with said pump chamber, said bore having a groove therearound in a position to be aligned with said auxiliary port during the time of the stroke of said plunger when said distribution port is aligned with one of said distribution passages, a communicating passage in said pump opening into said plunger bore adjacent said distribution paths, said plunger having a uniform pressure slit therealong spaced circumferentially from said distribution port by an amount of at least the spacing of said distribution paths around the circumference of said bore and having the end thereof aligned with said communicating passage for receiving pressurized fuel from said communicating passage and delivering it to a distribution passage other than the distribution passage to which pressurized fuel is being delivered from said distribution port, and a pressure equalizing valve in said communicating passage for limiting the pressure of the fuel in said communicating passage to a pressure slightly less than the pressure required to open the fuel injection nozzles.

4,537,171

FUEL INJECTION DEVICE

Masatoshi Kuroyanagi, Kariya, and Masahiko Suzuki, Aichi, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Feb. 24, 1984, Ser. No. 583,265
Claims priority, application Japan, Feb. 28, 1983, 58-33186
Int. Cl.³ F02M *41/00*
U.S. Cl. 123—449 **10 Claims**



1. A fuel injection device for injecting fuel into a combustion chamber of an internal combustion engine, comprising:

a pump housing;

a pump cylinder portion provided in said pump housing;

a pump plunger fitted in said pump cylinder portion in such a manner as to slide in its axial direction, said pump plunger defining a fuel pumping chamber for receiving the fuel in said pump cylinder portion;

fuel delivery means for reciprocating said pump plunger in said pump cylinder portion, thereby delivering the fuel in the fuel pumping chamber to the combustion chamber; and

a controller for controlling a fuel delivery rate from the fuel pumping chamber to the combustion chamber, the fuel delivery rate indicating the amount of fuel delivered from the fuel pumping chamber per stroke travel-unit of said pump plunger, said controller including,

a body having therein a controller cylinder portion which is provided coaxially with said pump plunger,

piston means having a piston fitted in the controller cylinder portion of the body in a liquid-tight manner so as to be slidable in the axial direction of said pump plunger, one end of the piston extending into the fuel pumping chamber and engaging the distal end of said pump plunger so that the piston is moved together with said pump plunger in the same moving direction thereof when said pump plunger is moved in such a first direction as to increase the volume of the fuel pumping chamber, and that the piston receives the pressure of the fuel in the fuel pumping chamber to axially move independently of said pump plunger when said pump plunger is moved in such a second direc-

tion as to decrease the volume of the fuel pumping chamber, and

control means for controlling the movement of the piston in such a manner that, when said plunger is moved in the second direction, the piston is prevented from being moved in the second direction or the moving speed of the piston is decreased, the movement of the piston being controlled in accordance with the operating condition of the engine.

4,537,172

FUEL SUPPLY CONTROL APPARATUS FOR AN INTERNAL-COMBUSTION ENGINE

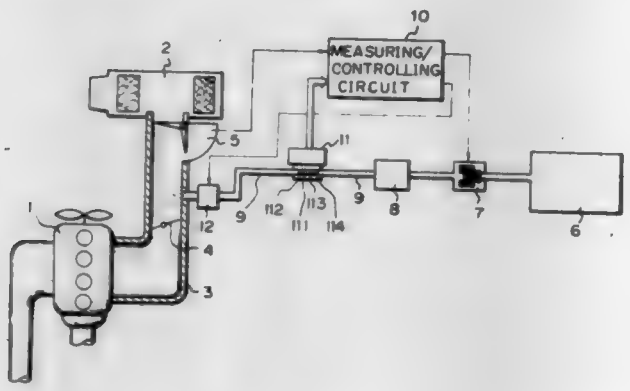
Kenji Kanehara, Aichi; Tokio Kohama, Nishio; Hisasi Kawai, Toyohashi, and Norihito Tokura, Aichi, all of Japan, assignors to Nippon Soken, Inc., Nishio, Japan

Filed Oct. 21, 1983, Ser. No. 544,416

Claims priority, application Japan, Nov. 26, 1982, 57-207921

Int. Cl.³ F02M *21/04*

U.S. Cl. 123—527 **6 Claims**



1. A fuel supply control apparatus for an internal-combustion engine having a fuel gas passage leading to an intake air passage, comprising:

a means for vaporizing liquid fuel and supplying vaporized fuel to said fuel gas passage;

a means for detecting the actual mass flow rate of said vaporized fuel flowing through said fuel gas passage said actual mass flow rate detecting means being provided in said fuel gas passage downstream of said liquid fuel vaporizing means;

a means for detecting the load of said engine;

a means for calculating the mass flow rate of fuel in accordance with the detected load of said engine; and

a means for controlling feedback of fuel to be supplied to said engine so that the detected actual mass flow rate of said vaporized fuel is close to the calculated mass flow rate of fuel.

4,537,173

FREE-RUNNING ROTARY INDUCTION SYSTEM

Claude R. Norris, 9030 Normandy La., Dayton, Ohio 45459

Filed Sep. 26, 1984, Ser. No. 655,188

Int. Cl.³ F02M *29/02*

U.S. Cl. 123—592 **6 Claims**

1. An improved fuel distribution system for a multi-cylinder internal combustion engine which includes

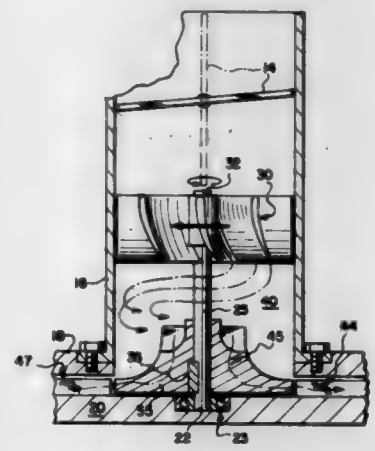
an intake manifold having

an inlet stack with a mount for a carburetor and

a plurality of runner passages below said stack extending to intake ports at each cylinder,

a shaft having an axial flow turbine thereon and a radial flow impeller thereon spaced from said turbine,

said manifold including bearing means providing a freely rotatable mounting for said shaft supporting said turbine in said stack and said impeller therebelow, and



a diffuser in said manifold surrounding said impeller and connected to each of said runner passages.

4,537,174

OUTPUT SUPPLY CONTROL APPARATUS FOR INTERNAL COMBUSTION ENGINE MAGNETO GENERATOR

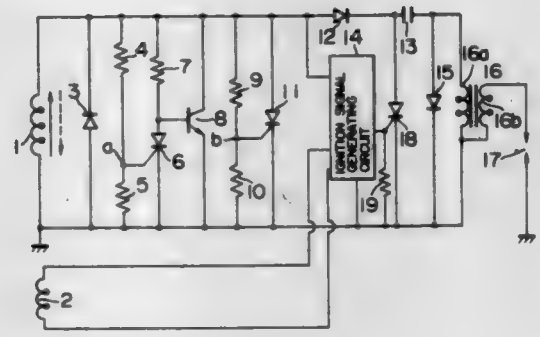
Masao Nagasawa, Kariya, Japan, assignor to Nippondenso Co., Ltd., Kariya, Japan

Filed Mar. 31, 1983, Ser. No. 480,924

Claims priority, application Japan, Apr. 2, 1982, 57-55699; Apr. 22, 1982, 57-67549; May 7, 1982, 57-77059; May 17, 1982, 57-82890; Sep. 13, 1982, 57-160246; Oct. 25, 1982, 57-187160

Int. Cl.³ F02P *1/00*

U.S. Cl. 123—604 **14 Claims**



1. An apparatus for controlling the supply of an output from a magneto generator of an ignition system comprising:

a generating coil of said magneto generator;

a shorting semiconductor switching element for substantially short-circuiting an output from said generating coil;

an interruption control circuit for turning off said shorting semiconductor switching element when a short-circuit current flowing therethrough reaches a predetermined value;

a capacitor disposed to be charged by a high voltage induced in said generating coil when said shorting semiconductor switching element is turned off;

an ignition coil having a primary winding and a secondary winding;

an ignition signal generating circuit voltage regulator circuit connected in series with said shorting semiconductor switching element to receive an output supplied from said generating coil in response to the turning on of said shorting semiconductor switching element and generate a constant voltage output;

an ignition signal generating circuit for receiving said constant voltage output from said voltage regulator circuit as a power supply and generating an ignition signal;

an ignition semiconductor switching element responsive to

said ignition signal from said ignition signal generating circuit to turn on and thereby supply a stored charge on said capacitor to the primary winding of said ignition coil; and

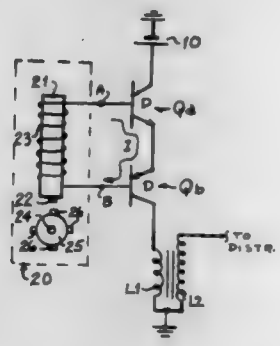
a spark plug connected to the secondary winding of said ignition coil.

4,537,175

BIPOLAR MAGNETIC PULSE ACTIVATED IGNITION SYSTEM

Martin E. Gerry, 13452 Winthrope St., Santa Ana, Calif. 92705

Filed Nov. 29, 1984, Ser. No. 676,514
Int. Cl.³ F02P *1/00*
U.S. Cl. 123—649 **21 Claims**



1. An ignition system for a fuel burning engine, said system having a transformer with a primary winding, characterized by the combination of:

a pair of transistors of opposite conductivities, each of said transistors having an input and an output circuit, the output circuits of said transistors being connected in series, said primary winding being serially coupled to the output circuits of said transistors; and

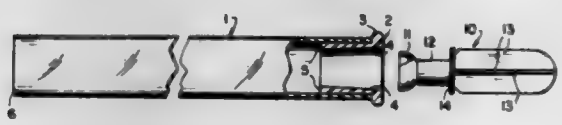
a timer coupled to the input circuits of said transistors.

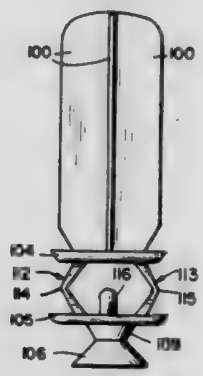
4,537,176

BLOW DART GAME INCLUDING HOLLOW TUBE AND DART WITH TARGET IMPACTING MEMBER AND SHOCK-ABSORBING PORTION

David M. Stravitz, New York, N.Y., and Gary D. Johnson, 151 Hudson St., New York, N.Y. 10013, assignors to Gary D. Johnson, New York, N.Y.

Filed Jan. 18, 1983, Ser. No. 458,962
Int. Cl.³ F41B *1/02*
U.S. Cl. 124—62 **20 Claims**





1. A blow dart game comprising:

an elongated hollow tubular member which is open at both ends;

abutment means spaced inwardly from an end of said elongated tubular member and comprising an abutment internally of said elongated tubular member;

a dart having a front target impacting suction cup member, an air guiding section extending rearwardly of said target impacting member, and a resiliently yieldable shock-absorbing portion extending rearwardly of said target impacting member, said shock absorbing portion comprising at least two resilient, spaced apart members coupling said front target impacting member with said air guiding section of said dart; and

sealing means on said dart for providing a substantial seal interior of said elongated tubular member when said dart is placed interior of said elongated tubular member, said sealing means being rearward of said target impacting suction cup member, said suction cup member being smaller in diameter than said sealing means so that said suction cup member passes substantially freely through said tubular member;

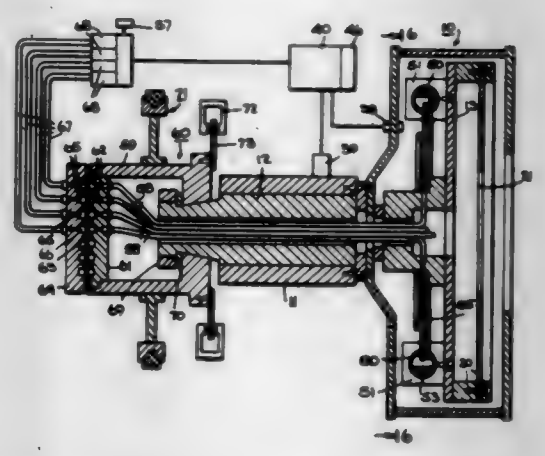
said abutment means being abuttable against at least a portion of said dart when said dart is interior of said elongated tubular member to prevent said dart from inadvertently coming out of the end of said elongated tubular member at which said abutment means is located.

4,537,177

BALANCED ROTARY SAW ASSEMBLY AND A METHOD OF BALANCING THE SAME

Robert E. Steere, Jr., Boonton, and Thomas Lewandowski, Wanaque, both of N.J., assignors to Silicon Technology, Oakland, N.J.

Continuation-in-part of Ser. No. 376,173, May 7, 1982, abandoned. This application May 2, 1983, Ser. No. 490,664
Int. Cl.³ B28D *1/04*
U.S. Cl. 125—13 R **12 Claims**



1. In combination

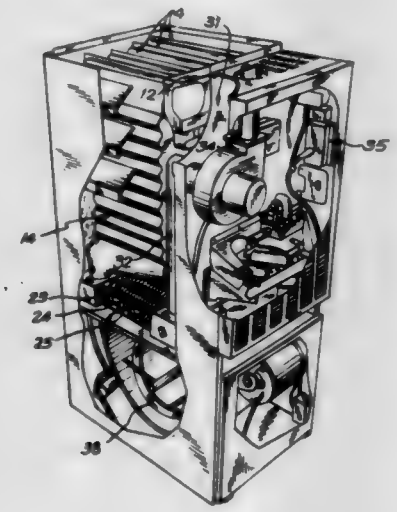
a rotary saw assembly including a wheel head rotatably mounted about an axis of rotation and an internal diamter blade mounted on said wheel head about said axis of rotation; and

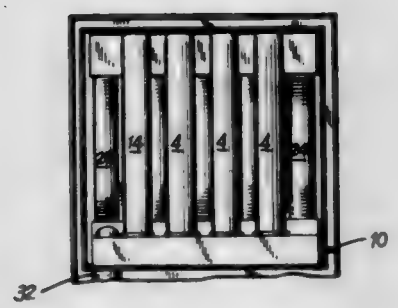
balancing means for transferring a mass of a fluid medium about said wheel head during rotation of said wheel head from a heavier unbalanced side to a lighter side to automatically maintain said wheel head in balance, said balancing means including a plurality of circumferentially spaced chambers mounted on said wheel head for rotation therewith and sized to receive a fluid balancing medium therein, at least one connecting tube communicating one of said chambers with at least one other of said chambers to pass fluid medium therebetween, and means for connecting a compressed air source to said one chamber in response to an unbalance of said wheel head to deliver compressed air into said one chamber to force balancing medium therefrom through said connecting tube into said other chamber to balance said wheel head.

4,537,178
HIGH EFFICIENCY FURNACE

Kyu S. Hwang, St. Claire Beach, and Dennis J. Koestler, Leamington, both of Canada, assignors to Duo-Matic/Olsen Inc., Ontario, Canada

Filed Dec. 16, 1983, Ser. No. 562,437
Int. Cl.[3] F24H *3/02*
U.S. Cl. 126—110 R 7 Claims





1. A furnace comprising:
an exterior housing having means for introducing air to be heated and means for discharging heated air from the furnace;
at least one clam-shell type primary heat exchanger having a combustion chamber for the ignition of fluid fuel yielding hot combustion gases in a lower end and an exhaust outlet in an upper end;
a secondary heat exchanger having an inlet for receiving the combustion gases produced in the primary heat exchanger in an upper end communicating with the exhaust outlet of the primary heat exchanger and a secondary exhaust outlet in a lower end, and being parallel to the primary heat exchanger, said primary and secondary heat exchangers being vertically oriented relative to the furnace housing;
a tertiary heat exchanger for receiving combustion gases and condensate from the secondary exhaust outlet, comprising a pair of spaced apart opposed manifolds, a plurality of parallel condensation tubes interconnecting the manifolds, and drainage means for removing the condensate from the manifolds, the tertiary heat exchanger oriented approximately perpendicular to the primary and secondary heat exhangers, horizontally relative to the housing, below the combustion chamber of the primary heat exchanger, and below the secondary exhaust outlet;
exhaust means communicating with the tertiary heat exchanger for removing combustion gases from the housing; and
an induced draft blower for (a) drawing combustion gases through the primary, secondary and tertiary heat exchangers, (b) inducting sufficient air to the combustion chamber of the primary heat exchanger for efficient combustion, and (c) forcing the combustion gases through the exhaust means.

7. A furnace comprising:
an exterior housing having means for introducing air to be heated and means for discharging heated air from the furnace;
at least one clam-shell type primary heat exchanger having a combustion chamber for the ignition of fluid fuel yielding hot combustion gases in a lower end and an exhaust outlet in an upper end;
a conduit having an inlet for receiving the combustion gases produced in the primary heat exchanger in an upper end communicating with the exhaust outlet of the primary heat exchanger and an exhaust outlet in a lower end, said conduit being parallel to the primary heat exchanger;
a condensing heat exchanger for receiving combustion gases and condensate from the conduit exhaust outlet, comprising a pair of spaced apart opposed manifolds, a plurality of parallel condensation tubes interconnecting the manifolds, and drainage means for removing the condensate from the manifolds, the condensing heat exchanger oriented approximately perpendicular to the primary heat exhanger, horizontally relative to the housing, and below the combustion chamber of the primary heat exchanger;
exhaust means communicating with the condensing heat exchanger for removing combustion gases from the housing; and
an induced draft blower for (a) drawing combustion gases through the primary heat exchanger, the conduit and condensing heat exchanger, (b) inducting sufficient air to the combustion chamber of the primary heat exchanger for efficient combustion, and (c) forcing the combustion gases through the exhaust means.

4,537,179
POLYMER-GEL COVERED SOLAR ENERGY COLLECTOR AND STORAGE UNIT

Ebtisam S. Wilkins, and Michael G. Wilkins, both of 643 Fairview Rd. NW., Albuquerque, N. Mex. 87107

Continuation of Ser. No. 273,594, Jun. 15, 1981, abandoned.
This application Nov. 4, 1983, Ser. No. 549,015
Int. Cl.[3] B01J *11/18;* C09K *3/00;* F24J *3/02*
U.S. Cl. 126—415 5 Claims

1. A solar pond comprising:
(a) a container deployed to receive solar radiation;
(b) a transparent heat-absorbing fluid within the container freely flowing therein and heated principally by convection currents induced by solar radiation;
(c) means for withdrawing heat from the fluid; and
(d) a transparent, cross-linked, aqueous polymer gel covering the fluid in amount and thickness sufficient to decrease substantially heat losses therefrom.

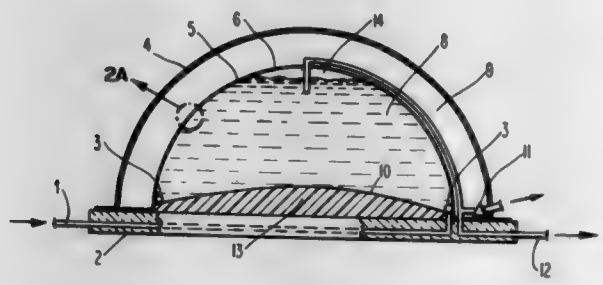
4,537,180
SOLAR HEATING AND STORAGE UNIT

John W. Minor, 173 Dolphin Ave. SE., St. Petersburg, Fla. 33705

Continuation of Ser. No. 313,270, Oct. 21, 1981, abandoned.
This application Aug. 21, 1984, Ser. No. 642,751
Int. Cl.[3] F24J *3/02*
U.S. Cl. 126—437 12 Claims

1. A solar heater and storage unit comprising:
an insulated base structure,
a hemispherically shaped inner dome having a surface capable of absorbing solar energy and attached to said base to form a reservoir capable of withstanding a preselected pressure,
a substantially transparent hemispherically shaped outer dome having a diameter larger than said inner dome and positioned over said inner dome,
means for introducing a fluid under pressure into the bottom area of said reservoir,

a diffuser, said fluid being introduced into said reservoir through said diffuser without disturbing the fluid at the top of said reservoir, and



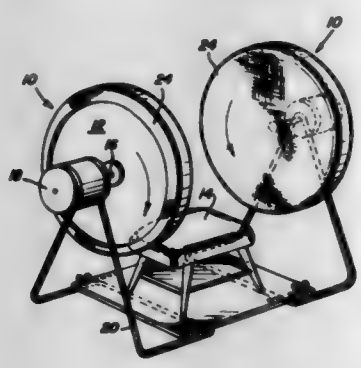
exit means for removing heated fluid under said pressure from the top of said reservoir.

4,537,181

HYDROMAGNETIC APPARATUS FOR NON-SURGICAL IN VIVO REMOVAL OF CALCIUM DEPOSITS

William N. Shalhoob, Santa Ynez, and Alfred F. Kaspaul, Malibu, both of Calif., assignors to Hydromagnetics, Inc., Solvang, Calif.

Filed Dec. 5, 1978, Ser. No. 966,630
Int. Cl.³ A61N *1/42*
U.S. Cl. 128—1.3 **4 Claims**



1. Apparatus for treatment of arthritic conditions of the body, comprising:

magnetic means for producing a magnetic field of an effetive field intensity, the magnetic means comprising a support plate and a plurality of annular magnetic segments disposed on one face of the support plate, the polarity of outer portions of each segment being opposite to the polarity of outer portions of adjacent segments; and

means for rotating the magnetic means at a desired rotational speed.

4,537,182

ENDOSCOPE

Yutaka Otani, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jan. 25, 1983, Ser. No. 460,779
Claims priority, application Japan, Feb. 2, 1982, 57-15074
Int. Cl.³ A61B *1/00*
U.S. Cl. 128—4 **2 Claims**

1. An endoscope comprising:

(i) an elongated insertion section having a distal end and a proximal end, said insertion section being adapted to be inserted in a coelic cavity;

(ii) a control section connected to the proximal end of said insertion section;

(iii) a suction channel member having first and second ends disposed in said insertion section, the first end of said suction channel member being open to the distal end of said insertion section, and the second end of said suction channel member being connected to said control section;

(iv) a suction tube having first and second ends, the first end of said suction tube being positioned in said control section;and

(v) a suction selector mechanism disposed in said control section, which allows connection of the second end of said suction channel member with the first end of said suction tube, and which selectively connects said suction channel member and said suction tube, said suction selector mechanism including :

(a) a cylinder having an inner surface portion a cross-section of which has a circular shape,

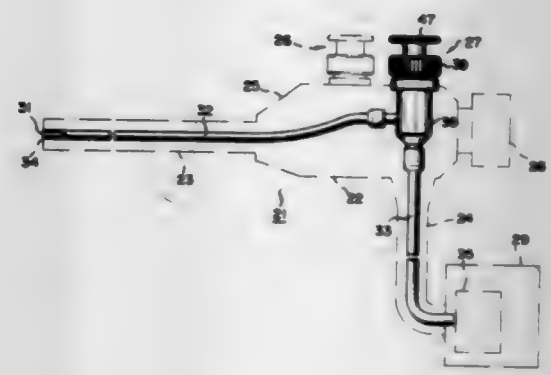
(b) a piston having an outer surface disposed inside said cylinder and, as part of the outer surface, a circular outer surface portion being provided such that it is brought into air-tight and slidable contact with the inner surface portion of said cylinder, said piston being capable of adopting a non-pressed position and a pressed position and of moving therebetween,

(c) regulating means for regulating movement of said piston between the non-pressed position and the pressed position,

(d) urging means for urging said piston into the non-pressed position,

(e) an end portion which is formed as a unit with said piston and extends therefrom toward said regulating means,

(f) a first connecting port which is formed in the inner surface portion of said cylinder and which connects with the second end of said suction channel member, said first connecting port being closed by the circular outer surface



portion of said piston when said piston is positioned in the non-pressed position, and being freed of the circular outer surface portion of said piston when said piston is positioned in the pressed portion,

(g) a small-diameter portion which is formed along the outer surface of said piston and which defines a space with the inner surface portion of said cylinder, said small-diameter portion being positioned opposing said first connecting port when said piston is in the pressed position,

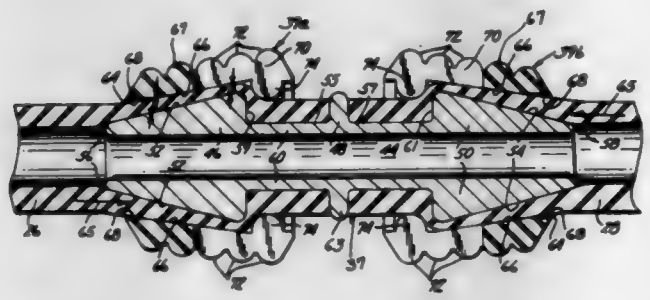
(h) a second connecting port disposed in said cylinder and connected to the first end of said suction tube, said second connecting port being positioned outside a range of movement of the circular outer surface portion of said piston,

(i) communicating means, formed in said piston, for communicating the space defined by said small-diameter portion with said second connecting port, said end portion of said piston having a leakage hole of a certain diameter communcating with the outside of said control section, said piston having said communicating means and a hollow chamber which communicates with said leakage hole, said hollow chamber having a diameter greater than the diameter of said leakage hole, the outer surface of said small-diameter portion being tapered from said leakage hole towards said hollow chamber and having a hole continuously open to said hollow chamber.

4,537,183
CONNECTOR DEVICE FOR CONNECTING ELASTIC TUBING OF AN IMPLANTABLE DEVICE

Terence M. Fogarty, Lakeland, Minn., assignor to Mentor Corporation, Minneapolis, Minn.

Filed Apr. 8, 1983, Ser. No. 483,186
Int. Cl.[3] A61F 5/00
U.S. Cl. 128—79 9 Claims



1. An implantable device for implantation in a living body, the device comprising:

first implantable component means for implanting into a first portion of the body and having a fluid reservoir;

second implantable component means for implanting into a second portion of the body spaced from the first portion of the body, the second component means having a fluid chamber;

a first section of elastic tubing fixedly attached at one end to the first implantable component means;

a second section of elastic tubing fixedly attached to the second implantable component means; and

a connector device for fluidly connecting the first and second sections of elastic tubing, each tubing section having an outer surface with an outer diameter and an inner surface with an inner diameter, the connector comprising:

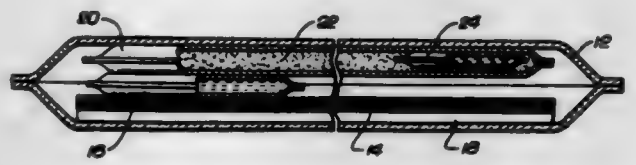
a main body having first and second ends and a connector fluid passage extending between the first and second ends, a center surface section having an outer diameter, and first and second frusto-conical surface sections disposed proximate the first and second ends with the maximum diameter of the first and second frusto-conical surface sections being greater than the outer diameter of the center surface sections, the first and second frusto-conical surface sections frictionally engaging the inner surface of the first and second sections of tubing, respectively; and

first and second clamps, each clamp having a body with an inner substantially smooth frusto-conical surface defining a cavity, the cavity having a forward and a rearward end with a opening at least equal to the outer diameter of the tubing, said opening being defined by a cylindrical surface portion of a constant diameter contiguous with the inner frusto-conical surface, the tubing extending through the opening and the cavity, and the inner frusto-conical surface engaging the outer surface of the tubing which is located over the frusto-conical surface of the connector device so that a compressive force is exerted on the tubing between the inner frusto-conical surface of the clamp and the outer frusto-conical surface of the connector, in a direction opposing any creeping of the tubing section and retaining tubing on the frusto-conical surface section and wherein the first clamp has a plurality of flexible fingers proximate the forward end and wherein at least one of the fingers has an inwardly projecting spur for retaining the clamp in position over the tubing and the first frusto-conical surface, said spur being positioned at a forward end of the finger such that the spur is disposed between the first frusto-conical surface and the center surface section of the main body.

4,537,184
PORTABLE ORTHOPAEDIC SPLINT SYSTEM

James T. Williams, Jr., 4316 Marina City Dr., Apartment No. 633, Marina Del Rey, Calif. 90291

Filed Sep. 27, 1983, Ser. No. 536,342
Int. Cl.[3] A61F 13/04
U.S. Cl. 128—90 5 Claims



1. A portable orthopaedic splint system, comprising:

a durable tear-resistant outer bag containing a linear segment of an orthopaedic splint material impregnated with an unreacted hardening agent;

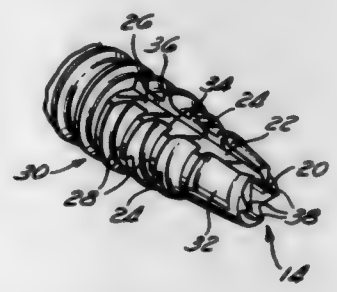
an inner bag containing a liquid for reacting with said hardening agent to produce a hard, stiff splint, said inner bag capable of being ruptured by manual pressure upon said outer bag and being in juxtaposition with said splint material, whereby when said outer bag is manually squeezed to rupture said inner bag, the liquid from said inner bag will be released, mix with said splint material, and react with the hardening agent therein to form a hard, stiff splint; and

a refrigeration bag in juxtaposition with said linear splint material, said refrigeration bag comprising a durable tear-resistant outer refrigeration bag containing a water reactive refrigeration agent and an inner refrigeration bag containing water, said inner refrigeration bag capable of being ruptured by manual pressure to release said water for reaction with said refrigeration agent to produce a cooling effect in said splint system and thereby counteract any heat released from the reaction of said hardening agent and reduce any swelling in the injured area to which the splint system is applied.

4,537,185
CANNULATED FIXATION SCREW

Denis P. Stednitz, 209 Via Pasqual, Redondo Beach, Calif. 90017, assignor to Denis P. Stednitz, Redondo Beach, Calif.

Filed Jun. 10, 1983, Ser. No. 502,924
Int. Cl.[3] A61F 5/04
U.S. Cl. 128—92 B 1 Claim



1. A cannulated fixation screw for use in orthopedic surgery comprising;

an elongate hollow shaft defining a cannula through the center of the shaft;

self-tapping threads adjacent the distal end of the shaft formed by a plurality of flutes arcuately spaced apart around the circumference of the shaft having lands therebetween, each of said lands having a plurality of threads thereon and a heel, the flutes forming a plurality of self-tapping cutting edges on each of said threads, each thread having a maximum thread height at the cutting edge thereof, and a mimimum thread height at the heel of the land in which the thread is located; and

means on the distal tip forming a plurality of teeth projecting

from said distal tip, each of said teeth forming a drilling edge formed by the intersection of the cutting face of the corresponding land, the cannula and the exterior of the corresponding land.

4,537,186

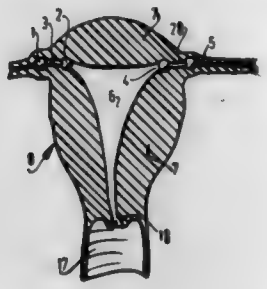
CONTRACEPTIVE DEVICE

Karel J. H. Verschoof, Staringstraat 31, 7514 DE Enschede, and Jan W. Smit, Schumannlaan 31, 7522 KD Enschede, both of Netherlands

Continuation of Ser. No. 378,821, May 17, 1982, abandoned, which is a continuation of Ser. No. 92,266, Nov. 8, 1979, abandoned. This application Sep. 2, 1983, Ser. No. 528,865

Int. Cl.³ A61F *5/46*

U.S. Cl. 128—130 **3 Claims**



1. A contraceptive device comprising a body adapted to block an oviduct passage through a user's uterine muscle tissue, said body having a first means for effecting closure of the oviduct passage by forcibly seating against the uterine muscle tissue at and around the mouth defined at the opening of the oviduct passage into the uterine cavity, an elongate connection means connected with said first means for extending therefrom through said mouth of the oviduct passage, and a second means connected with said elongate connection means for effecting closure of the oviduct passage opening where the user's Fallopian tube connects with the oviduct passage by forcibly seating against the uterine muscle tissue at and around such oviduct passage opening, said first and second means being of bulbous form abruptly enlarged with respect to said connection means to present opposed surface portions, said elongate connection means being of a length in the range of about 2–14 mm determined from anatomic data of the user which assures that said opposed surface portions are forcibly seated against the uterine muscle tissue to effect their closures of the oviduct passage predominantly at the largest diameters of the bulbous portions respectively at said mouth of the oviduct passage and at said opening of the oviduct passage where the Fallopian tube connects with the oviduct passage, said connection means being of generally cylindrical form and of sufficient diameter as determined from anatomical data of the user so as to be completely surrounded and gripped by such muscle tissue to effect further closure of said passage, said opposed surface portions having substantially the same area when projected onto a plane transverse to the longitudinal axis of said body so that oppositely directed and substantially balancing forces are exerted thereon by the uterine muscle tissue to effect axial fixation of the device, and said elongate connection means having a diameter in the range of about 2–6 mm and which, with respect to the diameter of each of said bulbous portions is in the range of 0.4:1 to 0.8:1 so that both gripping of the connection means by the uterine muscle tissue and axial fixation are preserved.

4,537,187

EARPLUG

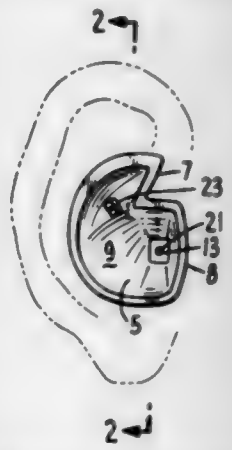
Robert T. Scott, 416 Lighthouse Ave., Santa Cruz, Calif. 95060

Filed Oct. 6, 1983, Ser. No. 539,483

Int. Cl.³ A61F *11/02*

U.S. Cl. 128—151 **2 Claims**

1. An earplug having thin walls and having an external flange adapted to engage the pinna helix and tragus of the ear and with an inwardly extending conical portion adapted to fit into the concha and outer portion of the auditory canal, terminating in a rectangular knob with a flat substantially solid wall with a small hole in said wall, and with a small flange thereon, said knob sealing off the meatus of the external ear canal without substantially penetrating the external ear canal, said flange anchoring the plug at the entrance of the external ear canal, said plug being made of a soft plastic with a density of less than 1.



4,537,188

GAS JET DEVICE FOR USE IN RESPIRATORS

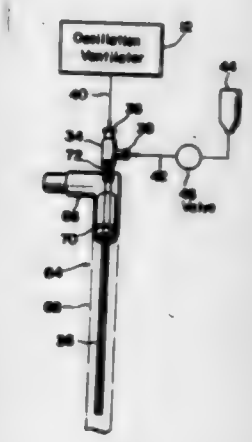
Tran N. Phuc, Ohmiya, Japan, assignor to Senki Medical Instrument Mfg. Co., Ltd., Tokyo, Japan

Filed Jan. 24, 1983, Ser. No. 460,652

Claims priority, application Japan, Jan. 26, 1982, 57-8906[U]

Int. Cl.³ A61M *16/00*

U.S. Cl. 128—200.21 **3 Claims**



1. In a humidified respiratory gas jet device for injecting in a humidified state into a patient circuit a respiratory gas supplied from an oscillation ventilator, the improvement which comprises:

an oscillation ventilator constructed and arranged for providing an oscillating supply of ventilating gas; and

a gas jet device operatively connected to said oscillation ventilator, said gas jet device including:

(a) a connecting member having:

a first inlet adapted to be connected to a water source to receive water,

a second inlet connected to said oscillation ventilator to receive an oscillating stream of respiratory gas therefrom.

a first water passage formed in said connecting member, opening at one end thereof, said first water passage being substantially straight,

a second water passage connecting another end of the first water passage to said first inlet, and

a gas passage formed in said connecting member to communicate at one end thereof to the second inlet and at another end to the first water passage, said gas passage being substantially straight and in alignment with said first water passage;

(b) a first straight pipe connected at one end to said first water passage to receive water therefrom;

(c) a second straight pipe connected at one end to said gas passage, said second straight pipe and said gas passage being arranged to form a straight gas conduit for transporting the respiratory gas and having another end portion coaxially fitted into said first straight pipe to form an annular humidifying conduit between an inner wall of the first pipe and an outer wall of the second pipe for conducting the water from the water source, said other end of said second straight pipe being axially inwardly spaced from said other end of said first straight pipe;

said one end of said second pipe being sealingly fitted into said gas passage to pass through the gas passage to thereby directly communicate with said second inlet; and

said one end of said first pipe being securely fitted into said first water passage; and

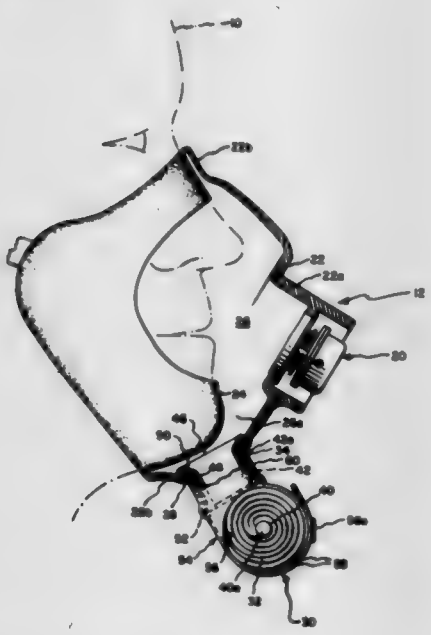
(d) the ratio of the cross-sectional area of said straight gas conduit to the cross-sectional area of said humidifying conduit being 4:1 to 8:1 at said other end of said second pipe, the cross-sectional area of said straight gas conduit at said other end of the second pipe being within the range of about 0.75 mm^2 to about 2.90 mm^2.

4,537,189

BREATHING DEVICE

Reno L. Vicenzi, Riverside, Calif., assignor to Figgie International Inc., Willoughby, Ohio

Filed Sep. 22, 1983, Ser. No. 534,792
Int. Cl.³ A62B *7/00*
U.S. Cl. 128—202.13 **12 Claims**



1. A breathing device comprising:

a face portion which is adapted to be spaced away from the face of a wearer of the breathing device to provide a breathing cavity within the interior of the face portion, said face portion being provided with inlet means for directing breathing gases into said breathing cavity, exhaust means for directing exhaust gases from said breathing cavity, said face portion further including an aperture therein adapted to be located adjacent the chin of the wearer

sealing means interconnected with the face portion and capable of providing a seal to prevent the ingress of ambient gases into the breathing cavity of the egress of breathing gases from the breathing cavity other than through said inlet means, said exhaust means and said aperture, said sealing means being adapted to contact the bridge of the nose, cheeks, and chin of the wearer;

a disposable effluent receiver comprising a container having one end removably secured to the exterior of the face portion and fluidically connected to said aperture; and

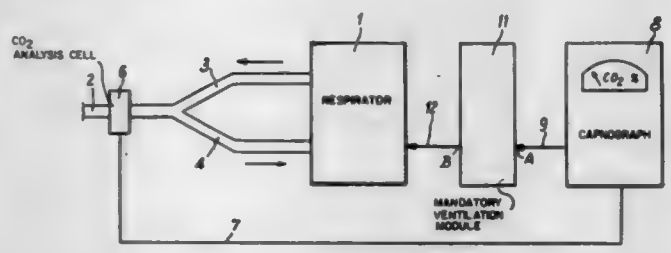
one-way valve means operatively mounted for permitting effluent material and/or gases to flow in one direction from the breathing cavity into the effluent receiver and for preventing the effluent material and/or gases within the receiver from flowing in the other direction into the breathing cavity.

4,537,190

PROCESS AND DEVICE FOR CONTROLLING ARTIFICIAL RESPIRATION

Luc Caillot, Paris, and Claude Chopin, Attiches, both of France, assignors to SYNTHELABO, Paris, France

Filed Dec. 7, 1982, Ser. No. 447,584
Claims priority, application France, Dec. 11, 1981, 81 23193
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—204.22 **7 Claims**



4. Device for controlling the starting and stopping of an artificial respirator for a patient who had been completely assisted by the artificial respirator, and for helping the patient to recover natural respiration, comprising: an artificial respirator (1) with an inhalation line (3) and an exhalation line (4), a line common to both said inhalation and exhalation lines, a cell (6) for analysing the CO_2 content of the gas which passes through it, said cell being placed in said line common to inhalation and to exhalation, a control module (11), and a capnograph (8) coupled between the cell and the control module and converting the signals received from the cell in order to deliver converted signals to said control module, said control module (11) being coupled between the capnograph and the respirator and receiving these signals from the capnograph in order to control the starting and stopping of the respirator, the module being arranged so as to control the starting and stopping of the respirator as a function of the CO_2 content, measured at the end of each exhalation, of the gas exhaled, such that the respirator is turned on when the CO_2 content measured at the end of each expiration is outside of predetermined upper and lower limits for a predetermined period of time to provide controlled ventilation for the patient, and turned off when the CO_2 content measured at the end of each expiration is within said limits to provide for spontaneous ventilation of the patient.

4,537,191

PUMP ELEMENT OF A DEVICE FOR ARTIFICIAL RESPIRATION

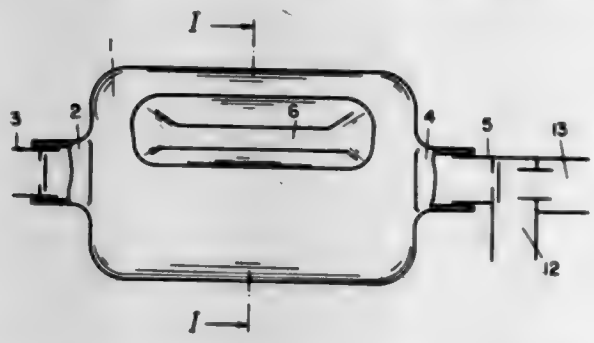
Hans C. Blumensaadt, Virum, Denmark, assignor to Gottlieb Weinmann Geräte für Medizin und Arbeitsschutz G.m.b.H. & Co., Hamburg, Fed. Rep. of Germany

PCT No. PCT/EP81/00167, § 371 Date Jun. 20, 1983, § 102(e) Date Jun. 20, 1983, PCT Pub. No. WO83/01386, PCT Pub. Date Apr. 28, 1983
PCT Filed Oct. 21, 1981, Ser. No. 505,910
Int. Cl.³ A61M *16/00*
U.S. Cl. 128—205.13 **7 Claims**

1. A manually-operated pump element of a device for artificial respiration of human beings safely both as to children as well as adults having different lung capacity for volume of air to be supplied free of danger and without risk of pressure-overloading to lungs, respectively; said pump element comprising in combination:

a gastight, elastomeric, self-expanding hollow body having a periphery and an essentially circular cross section; said hollow body including a wall having only two actual

indentations integrated therein which extend in the axial direction of said hollow body; said two indentations, when viewed on a given cross section of said hollow body, being separated from one another by an angle in a range of approximately 100° to 140° as a result of which said hollow body can be grasped via the palm of the hand, and the fingers span the periphery of said hollow body by



engagement therewith rather than visually so that when said hollow body is compressed manually, such hollow body thus being emptied either approximately one third or two thirds for children as well as adults respectively;

a first tubular connecting piece joined to said hollow body as an air-inlet opening; and

a second tubular connecting piece joined to said hollow body as an air-exit opening.

4,537,192

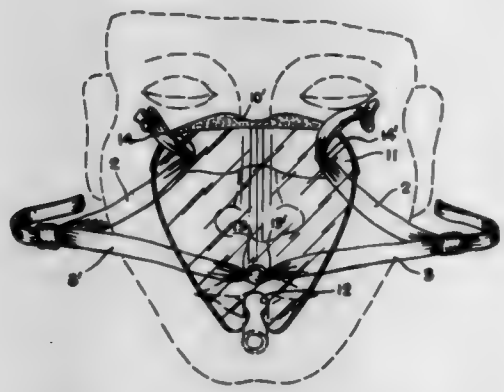
UNITARY ENDOTRACHEAL TUBE HOLDER

Billy R. Foster, 1040 Glenn Common, Livermore, Calif. 94550

Continuation of Ser. No. 167,419, Jul. 11, 1980, Pat. No. 4,331,143. This application Jun. 14, 1982, Ser. No. 388,210

Int. Cl.³ A61M *25/00*

U.S. Cl. 128—207.17 **9 Claims**



1. An endotracheal tube holder, comprising:

a support member having an integral body adapted to fit over the oral-nasal region of the patient's face, said body having wall means adapted to be place over, and upwardly supported by, the nose of the patient said wall means having a lower peripheral edge spaced from the patient's face, and further having holding means formed in the lower portion of said peripheral edge adapted to firmly engage and hold in place an endotracheal tube in a substantially perpendicular direction to the oral cavity for delivery of vapors to and from the patient's lungs, said holding means being formed such that said tube may be introduced laterally into said holding means; and

attachment means for attaching said support member to the patient's face, holding said support member firmly in place against the patient's nose and providing lateral support to said support member, including a main strap having opposite ends adapted to extend around the back of the patient's head, the two ends of said main strap being attached to either side of said support member, whereby said support member is maintained in place, and two supplemental straps having opposite ends, one end of each supplemental strap being attached to said support member at an elevational level different from the points of attachment of said main strap, the opposite ends of each supplemental strap being further connected to said main strap at positions on opposite sides of said support member, whereby said support member is provided further mechanical stability.

4,537,193

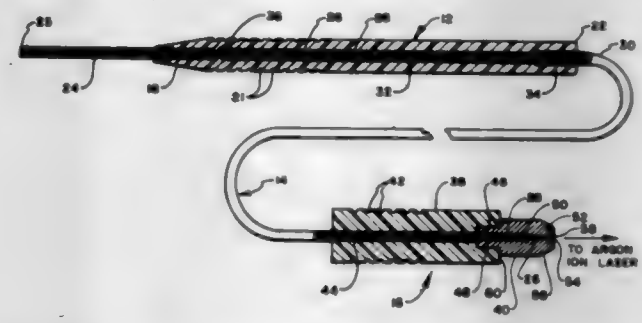
LASER ENDOCOAGULATOR APPARATUS

Howard M. C. Tanner, Salt Lake City, Utah, assignor to HGM, Inc., Salt Lake City, Utah

Filed Oct. 28, 1982, Ser. No. 437,288

Int. Cl.³ A61B *17/36*; A61N *5/00*

U.S. Cl. 128—303.1 **2 Claims**



1. A disposable endocoagulator apparatus adapted for connection to an argon laser having a female receptacle providing a laser output suited to optical fiber transmission for ophthalmic surgery and like procedures, comprising:

(a) an elongated, cylindrical-shaped handtool formed as a integral, plastic molded structure having:

(i) a cylindrical, pencil-like body having a leading end and a trailing end;

(ii) a tip portion formed integral with said body leading end and tapered towards the leading end of said body;

(iii) a central bore extending through the length of said handtool body and tip portion;

(iv) within said tip portion a first enlarged bore concentric with said central bore for mounting a probe;

(v) within the trailing end of said body a second enlarged bore concentric with said central bore for receiving a first optical fiber sheath; and

(vi) within said body an annular shoulder surrounding and concentric with said central bore and extending within said body between said shoulder and said second enlarged bore a third enlarged bore substantially equal in size to the size of said first enlarged bore and concentric with said central bore for receiving a second optical fiber sheath;

(b) a hollow, elongated, stainless steel tube forming a laser probe, said probe having a minor portion of the length thereof anchored in said tip portion first enlarged bore and having a major portion of the length thereof extending outwardly from said tip portion to a leading end, the axis of said probe being aligned with the axis of said handtool;

(c) a fiber optics connector assembly comprising:

(i) an elongated, cylindrical-shaped, integral, plastic-molded body member having a leading end and a trailing end and having a central bore through the length thereof and a fourth enlarged bore at the trailing end thereof concentric with said body member central bore, said body member having a flat annular surface at the trailing end thereof surrounding said body member fourth enlarged bore; and

(ii) a cylindrical, precisely-formed, male plug member having a leading end and a trailing end and positioned at the trailing end of and forming an integral connector structure with said body member, said plug member having a cylindrical portion of reduced diameter at its leading end and being secured to said body member by said plug member leading end of reduced diameter being inserted and secured in said body member fourth

enlarged bore, the trailing end of said plug member being tapered for guiding said male plug member into said female receptacle, said plug member having a bore aligned with and forming a continuation of the central bore of said body member and at the trailing end of said plug member an inwardly tapered recess around the plug member bore, the diameter and length of said male plug member being adapted for precise alignment and positioning within a mating argon laser female receptacle having an output source oriented along an axis aligned with the axis of said male plug member when inserted in said female receptacle, said flat annular surface serving as a stop for controlling the depth of said plug member in said receptacle; and

(d) a single, continuous length of optical fiber, said optical fiber having:

(i) a leading portion extending from a leading polished end surface positioned slightly outwardly from the leading end of said probe and extending through said probe and handtool bore;

(ii) an intermediate portion extending from the trailing end of said handtool to said connector assembly;

(iii) a trailing end portion extending through said connector assembly body member central bore and said plug member bore and terminating with a trailing end surface disposed slightly within said plug member recess;

(iv) a first cladding sheath extending over said length of optical fiber from a location slightly behind the leading polished end thereof to a location within said plug member and forwardly of said recess; and

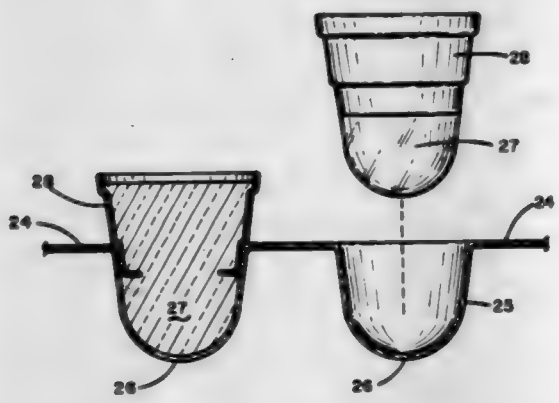
(v) a second plastic sheath anchored in said connector assembly body member central bore at one end and surrounding said optical fiber and extending to and anchored in said second enlarged bore at the trailing end of said handtool.

4,537,194

ICE APPLICATOR FOR MEDICINAL PURPOSES

Oliver D. Hanson, 2255 Viking Bldg. NW., Cedar, Minn. 55011; Donald R. Nicolai, Box 415, and Les O. Strong, 240 Mississippi, both of Monticello, Minn. 55362

Filed Mar. 12, 1984, Ser. No. 588,505
Int. Cl.[3] A61F 7/00
U.S. Cl. 128—399 11 Claims



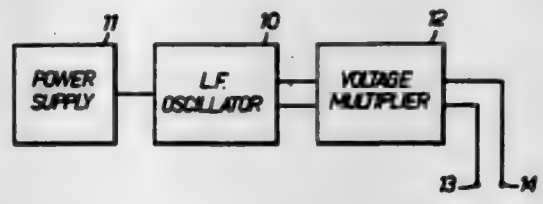
1. An applicator assembly for making, storing and applying a frozen solid to an injured area comprising first container means and second container means; said first container means having an open top of a predetermined size, a tapered side wall and a bottom of a size less than said predetermined size and having a central opening therethrough; said second container means having a shape conforming at least in part to the shape of said first container means and including a closed bottom, a side wall and a top with an opening of a size which will allow a top portion of the second container means to be slipped over a bottom portion of the first container means and to engage the side wall of the first container means a predetermined distance above the said bottom of said first container forming a seal.

4,537,195

ELECTRICAL CONTROL OF BODY DISCHARGES AND HEADACHES

Roy E. McDonnell, 15 Miller St., O'Connor, Capital Territory 2601, Australia

PCT No. PCT/AU81/00167, § 371 Date Jul. 16, 1982, § 102(e) Date Jul. 16, 1982, PCT Pub. No. WO82/01656, PCT Pub. Date May 27, 1982
PCT Filed Nov. 20, 1981, Ser. No. 403,497
Claims priority, application Australia, Nov. 20, 1980, PE6562
Int. Cl.[3] A61N 1/36
U.S. Cl. 128—422 10 Claims



1. A method for controlling discharge from a stoma comprising:

(a) winding a length of muscle around the intestine connected to the stoma in the region adjacent to the stoma;

(b) applying a pair of mutually spaced electrodes to the skin in the region of the length of muscle; and

(C) applying to the electrodes a continuous electrical signal at a voltage in the range 20 volts to 60 volts and at a frequency in the range 10 Hz to 80 Hz,

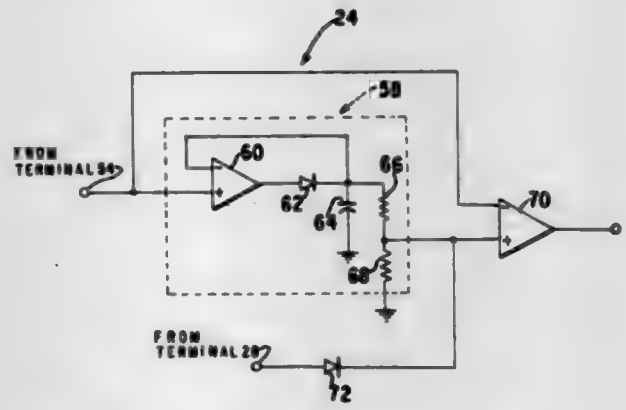
whereby the length of muscle is caused to contract around the intestine and effectively prevent discharge through the stoma.

4,537,196

SYSTEMS AND METHODS FOR PROCESSING PHYSIOLOGICAL SIGNALS

Patrick G. Phillipps, Wayland, and Jeffrey Schenkel, Norwood, both of Mass., assignors to American Home Products Corporation (Del.), New York, N.Y.

Filed Dec. 21, 1981, Ser. No. 333,088
Int. Cl.[3] A61B 5/00
U.S. Cl. 128—630 13 Claims



1. A system for detecting the recurrence of a periodic physiological function comprising:

an input terminal for receiving a physiological signal representing the function, the physiological signal having periodic artifact;

threshold producing means coupled with the input terminal to receive the physiological signal for producing a minimum threshold amplitude proportional to the fundamental frequency of the periodic artifact;

filtering means coupled with the input terminal to receive the physiological signal for suppressing the periodic artifact in the physiological signal to produce a filtered means signal therefrom; and

threshold detecting means operable for maintaining a threshold level equal to at least the minimum threshold amplitude and for producing a recurrence signal representative

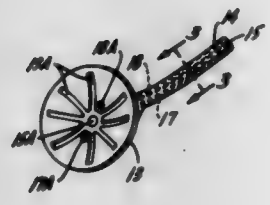
of the recurrence of the physiological function in response at least in part to the filtered signal exceeding the threshold level.

4,537,197

DISPOSABLE FETAL OXYGEN MONITOR

Jaroslav F. Hulka, 2317 Honeysuckle Rd., Chapel Hill, N.C. 27514

Filed Mar. 6, 1981, Ser. No. 241,433
Int. Cl.[3] A61B 5/00
U.S. Cl. 128—633 3 Claims



1. Surgical equipment comprising an obstetrical scalp cap of soft flexible plastic to be attached to a fetal scalp incidental to monitoring oxygenation of the fetal brain tissue, said cap having on its inner surface one or more recesses communicating with a port in the cap by which vacuum may be delivered thereto to hold the scalp cap in place at the time of expected delivery, said scalp cap including a pair of apertures at the inner surface, and a comolded catheter on the outside of the cap, said catheter having a channel for communicating vacuum to said port and having a pair of channels respectively accommodating fiber optic bundles by which a beam of light may be transmitted to the fetal brain through one of said pairs of apertures and reflected back through the other.

4,537,198

ELECTRODE CAP

Sue Corbett, 901 Harvard Pl., Woodland, Calif. 95695

Filed May 3, 1983, Ser. No. 491,238
Int. Cl.[3] A61B 5/04
U.S. Cl. 128—639 24 Claims

1. An electrode cap comprising:
a flexible helmet including:
a pair of opposed side portions adapted for positioning at particular locations on the head of a patient;
a flexible crown flap connected to said side portions; and means for detachably engaging the crown flap to said opposed side portions to position the helmet upon the head of an individual;
a plurality of spaced electrode anchoring tabs positioned at least partially inside the helmet and arrayed over a major portion of the interior thereof, each of said tabs including attaching means adapted for removably attaching a pickup electrode to the respective one of said tabs;
a plurality of brain wave pickup electrodes movably located within the interior of the helmet, and each including means to selectively engage said attaching means of any selected one of said anchoring tabs at variable positions thereon; and
means for electrically connecting the electrodes to a recording means.

24. A pickup electrode useful for contacting a patient's head during electroencephalography comprising:
a contact adhering anchoring element having a central opening therethrough, including means for engagement, upon contact, with a helmet-carried anchoring tab;
an annular mounting plate having an opening through the center thereof;
a tubular boss projecting from one side of the mounting plate and having a bore therethrough aligned with the central opening through the mounting plate;
an annular metallic contact mounted between, and secured to, the anchoring element and the mounting plate and having a central opening aligned with the openings in the



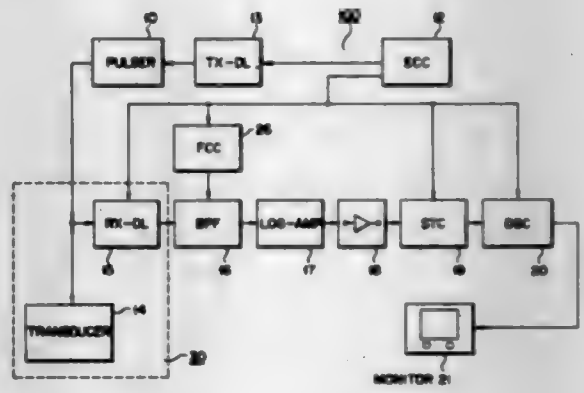
anchoring element, and in the mounting plate, and aligned with the bore through said tubular boss, said central opening in said metallic contact being of smaller diameter than the opening in said plate and than the diameter of the bore through said tubular boss, said metallic contact being located on the opposite side of said mounting plate from the side from which said tubular boss projects;
a closed cell resilient pad having a central opening therethrough receiving said boss; and
an electrical lead connected to said metallic contact.

4,537,199

ULTRASONIC DIAGNOSTIC APPARATUS

Yuuichi Muranaka, Ootawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 22, 1984, Ser. No. 582,538
Claims priority, application Japan, Feb. 22, 1983, 58-26953; Mar. 10, 1983, 58-38226
Int. Cl.[3] A61B 10/00
U.S. Cl. 128—660 13 Claims



1. An ultrasonic diagnostic apparatus for displaying a tomographic image of an object to be investigated, the apparatus comprising:
a transducer means, including an array of ultrasonic vibration elements, for applying beams of ultrasonic waves into

the object at preselected steering angles, receiving ultrasonic echo signals reflected from the object, and converting the received echo signals into electric echo signals;

transmitter means coupled with said transducer means for applying timed electric pulses to the array of ultrasonic vibration elements in a manner that produces beams of ultrasonic waves deflected at preselected steering angles;

a variable gain amplification means coupled with said transducer means for receiving electric echo signals from said transducer means and selectively amplifying the received electric echo signals;

signal means for producing signals representative of the steering angle of each respective ultrasonic beam;

a gain sensitivity control means responsive to the deflection angle of the respective ultrasonic beams and coupled with said signal means and said variable gain amplification means for increasing the gain of the variable gain amplification means as the steering angle of the respective ultrasonic beams increases; and

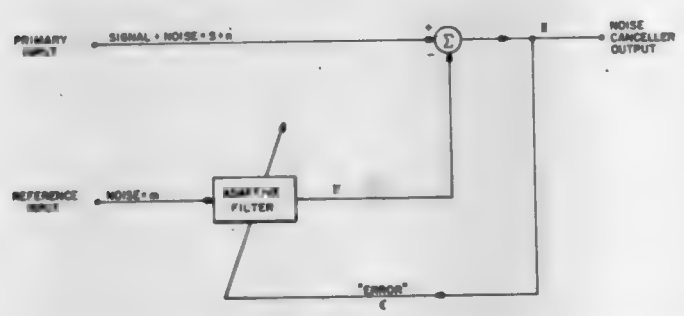
display means coupled with said variable gain amplification means for converting the amplified echo signals into a tomographic image of the object being investigated.

4,537,200

ECG ENHANCEMENT BY ADAPTIVE CANCELLATION OF ELECTROSURGICAL INTERFERENCE

Bernard Widrow, Stanford, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jul. 7, 1983, Ser. No. 512,191
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—696 **11 Claims**



1. In a patient monitoring system, means for improving the signal-to-noise ratio, comprising

(a) means for detecting primary signals from a patient comprising a desired signal and a noise signal,

(b) means for detecting a reference signal from the patient comprising substantially only said noise,

(c) means for filtering said patient originated signals; and

(d) adaptive filter means comprising

(i) adaptive means responsive to the reference signal for continuously generating a reference noise signal comprising an estimate of the noise in the primary signal received at an input of said adaptive filter; and

(ii) means for subtracting said reference noise signal from said primary patient originated signal to provide an accurate representation of said desired signal.

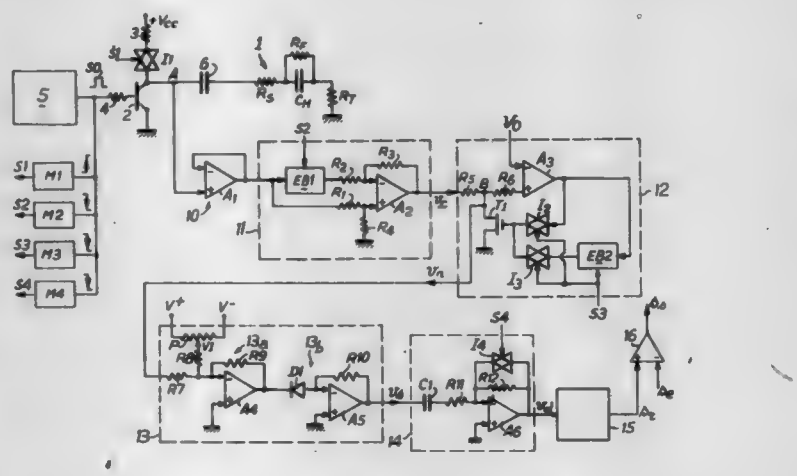
4,537,201

PROCESS AND DEVICE FOR DETECTING THE RESPONSE OF THE HEART TO AN ELECTRICAL STIMULATION PULSE

Daniel Delle-Vedove, Aulnay sur Mauldre; Yves Lallemand, Vernon, and Olivier Hubert, Paris, all of France, assignors to Societe Europeenne de Propulsion, Puteaux, France

Filed Sep. 9, 1983, Ser. No. 530,522
Claims priority, application France, Sep. 23, 1982, 82 16034
Int. Cl.³ A61B *5/02*; A61N *1/36*
U.S. Cl. 128—697 **13 Claims**

1. Process for detecting the response of the heart to an electrical stimulation pulse applied to an electrode in contact with the heart, by detection in a signal representing the potential of said electrode of a component produced by the provoked contraction of the heart, comprising the following steps of:



collecting, after the end of the stimulation pulse, a first signal v which represents the electrode potential in open circuit and of which the variation in time t, from an original instant t_o is of substantially logarithmic form:

$$v = v_o + k.\mathrm{Log}\,\frac{t}{t_o},$$

v_o being the value of v at instant t_o and k being a parameter connected in particular with the duration and amplitude of the stimulation pulse,

converting the first signal v into a second signal of which the variation in time is substantially linear and,

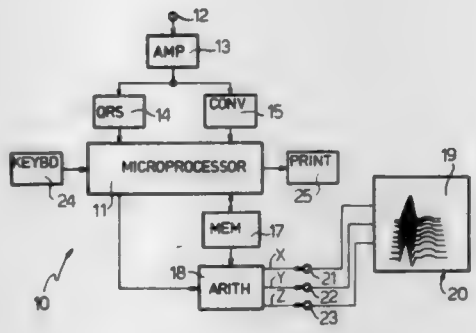
detecting in said second signal a non-linear component representing the signal produced by the provoked contraction of the heart.

4,537,202

DEVICE FOR DISPLAYING ELECTRICAL SIGNALS OF THE PERIODIC AND/OR SYNCHRONIZABLE TYPE

Paolo Mancini, Pisa; Alessandro Taddei, Uzzano; Alberto Macerata, and Carlo Marchesi, both of Pisa, all of Italy, assignors to Remco Italia S.p.A., Milano, Italy

Filed Aug. 30, 1982, Ser. No. 412,576
Claims priority, application Italy, Sep. 2, 1981, 68161 A/81
Int. Cl.³ A61B *5/04*
U.S. Cl. 128—712 **16 Claims**



1. A device for displaying periodic synchronisable electrical signals comprising:

input means for receiving an electrical signal to be displayed;

first memory means (17) for sequentially memorizing samples of said signal to be displayed;

recognition means (14) connected to said input means for generating a synchronization signal upon recognizing a correspondence between said signal to be displayed and said predetermined pattern;

microprocessor means (11) connected to said recognition means (14) and to said first memory means for (17) causing said first memory means (17) to store a predetermined signal and causing a plurality of cycles of the signal to be displayed to be identified in said memory upon receipt of each said synchronization signal;

processor means (18) connected to said first memory means (17) and to said microprocessor means (11) for generating horizontal and vertical cathode ray tube deflection signals from said memorized samples of said signal to be displayed for each of said identified cycles;

said processor means (18) including first comparator means (42) for comparing a reference signal with said stored predetermined signal and for generating a cathode ray tube horizontal axis synchronization output signal (x) when said stored predetermined signal is equal to said reference signal;

said processor means (18) including a horizontal deflection signal generator (52), said output signal of said first comparator (42) connected to a zeroing input of said horizontal deflection signal generator;

said processor means (18) further including a threshold comparator (57) having input means, a first of said threshold comparator inputs provided by the output of said horizontal deflection generator (52) and a second of said threshold comparator inputs supplied with a signal having an adjustable amplitude, the output of said threshold comparator connected to said zeroing input;

a cathode ray tube (20) including a screen (19) connected to said processor means;

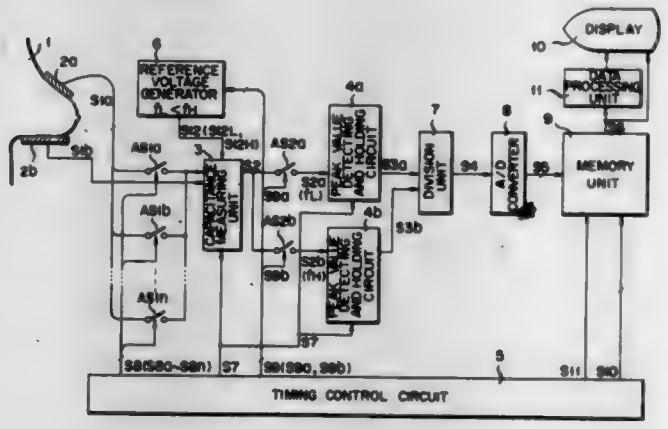
whereby a perspective, juxtaposed, representation of the wave form corresponding to said identified cycles is displayed on said screen.

4,537,203

ABNORMAL CELL DETECTING DEVICE

Kaoru Machida, Otawara, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 311,911, Oct. 16, 1981, abandoned.
This application Jun. 25, 1984, Ser. No. 623,549
Claims priority, application Japan, Oct. 21, 1980, 55-147408
Int. Cl.³ A61B 5/05
U.S. Cl. 128—734 **6 Claims**



1. A method for detecting an abnormal cell, comprising the steps of:

attaching at least a pair of electrodes to a portion of a body to be measured, at least one electrode of said pair being formed of a plurality of electrode cells;

supplying each of said electrode cells with first and second voltages having different frequencies between said electrodes;

independently detecting from between each electrode cell of one electrode and the other electrode of said electrode pair, first and second impedance values, said values being obtained from the body portion being measured when the first and second voltages are supplied across said electrodes;

calculating a plurality of ratios by dividing the first and second impedance values obtained from each cell;

storing in a memory, at predetermined addresses corresponding to the locations of each of said electrode cells, the ratios calculated for each of said electrode cells during said calculating step;

determining the existence of an abnormal data representing said abnormal cell based upon said calculated ratios;

selecting the address of said memory at which said abnormal data is stored, so that said abnormal data is read out in accordance with the selected address;

producing an image data corresponding to said abnormal cell based on the read-out abnormal data; and

displaying the produced image data in the form of various visual images,

said frequencies of the first and second voltages being selected so as to border the range of dispersion of frequency-specific inductive capacity of the cells of said body portion, whereby a difference between the electrostatic capacitances measured at the body portion at the two frequencies is made great.

4,537,204

METHOD OF TOBACCO TREATMENT TO PRODUCE FLAVORS

Helmut Gaisch, Cormondreche, Switzerland; Patrick D. L. Ghiste, Montbazin-Meze, France, and Dieter Schulthess, Neuchatel, Switzerland, assignors to Fabriques de Tabac Reunies S.A., Neuchatel, Switzerland

Filed Jan. 10, 1983, Ser. No. 456,868
Claims priority, application European Pat. Off., Jan. 9, 1982, 82100112
Int. Cl.³ A24B 3/12, 15/20
U.S. Cl. 131—274 **16 Claims**

1. A method for treating tobacco to produce flavors comprising the steps of:

(a) hydrolytically degrading into an amino acid mixture the proteins of biomass produced by the assimilation of low-molecular weight nitrogen compounds from an aqueous tobacco extract, with tryptophane being destroyed in the process to less than 0.01 percent by weight of said amino acid mixture; and

(b) converting the amino acid mixture into flavors, in the course of the Maillard reaction, by treating said mixture with reducing sugars and heat under continuous stirring, at a pH value of 3–12, for 1–200 hours, at a temperature of 20°–180° C., with a molar ratio of the amino acid mixture to the reducing sugar added between 4:1 and 1:4 in aqueous solution, with a solids content of 20–70 percent by weight and at a pressure of 1–5 atmospheres.

4,537,205

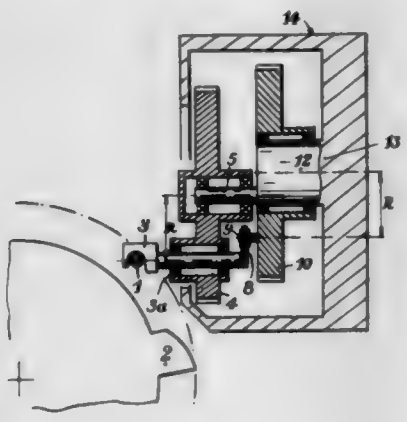
CUTTING GUIDE FOR CIGARETTE MAKING MACHINES

Jean Verjux, Montgeron, France, assignor to Decoufle S.A.R.L., Evry, France

Filed Sep. 20, 1982, Ser. No. 419,911
Claims priority, application France, Mar. 9, 1982, 82 03905
Int. Cl.³ A24C 5/28
U.S. Cl. 131—280 **4 Claims**

1. In a cigarette making machine: a first gear wheel rotatable about a first axis; a plurality of cutting guides; a plurality of shaft means respectively rotatably supporting said guides in said gear wheel about second axes evenly distributed over said gear wheel at a distance R from said first axis such that $2\pi R = n1$, in which 1 is the length of the cigarettes to be cut and n the number of cutting guides; a plurality of forks respectively connected to said shaft means remote from said guides; a plurality of rollers respectively engaged in said forks; a second gear wheel arranged parallel to and of the same size as said

first gear wheel and rotatable about a third axis; a plurality of shafts connected to said second gear wheel at said distance R



from said third axis and respectively connected to said rollers, and means for driving said gear-wheels.

4,537,206

APPARATUS FOR PERFORATING AND TESTING THE PERMEABILITY OF RUNNING WEBS OF CIGARETTE PAPER OR THE LIKE

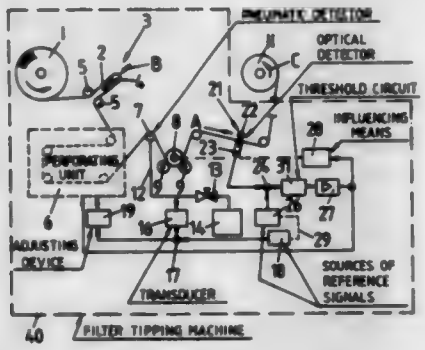
Heinz-Christen Lorenzen, Wentorf; Uwe Heitmann, Hamburg; Kurt-Eckart Petersen, Wentorf, and Peter Pinck, Gross-Hansdorf, all of Fed. Rep. of Germany, assignors to Hauni-Werke Körber & Co. KG., Hamburg, Fed. Rep. of Germany

Filed Sep. 27, 1982, Ser. No. 424,487

Claims priority, application Fed. Rep. of Germany, Jun. 1, 1982, 3220594

Int. Cl.³ A24C *5/56, 5/60*

U.S. Cl. 131—281 **12 Claims**



1. Apparatus for treating a running web of cigarette paper, tipping paper or the like, comprising means for advancing the web in a predetermined direction along a predetermined path; adjustable means for perforating the running web in a first portion of said path; first monitoring means for ascertaining the permeability of the perforated web in a second portion of said path, comprising means for generating first signals when the permeability of successive increments of the running web in said second portion of said path deviates from a preselected permeability; means for adjusting said perforating means in response to said first signals; second monitoring means for ascertaining the permeability of the perforated web in a third portion of said path, comprising means for generating second signals denoting the ascertained permeability of successive increments of the running web in said third portion of said path; a source of third signals denoting a predetermined permeability; and means for comparing said second signals with said third signals, including means for generating fourth signals when said second signals deviate from said third signals.

4,537,207

CALLOUS-REMOVING SKIN-FILE

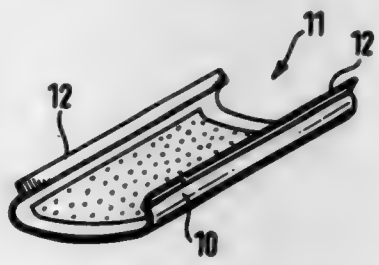
Heinz Gilhaus, Solingen, Fed. Rep. of Germany, assignor to Firma Credo Stahlwarenfabrik Gustav Kracht, Solingen, Fed. Rep. of Germany

Filed Mar. 28, 1983, Ser. No. 479,801

Claims priority, application Fed. Rep. of Germany, Apr. 2, 1982, 3212274; United Kingdom, Apr. 29, 1982, 8212519

Int. Cl.³ A45D *29/20*

U.S. Cl. 132—76.4 **17 Claims**



1. A callous-removing skin file, or rasp, comprising:

a longitudinally extending gripping handle having an inner and an outer end;

a rasp head extending from the inner end of said handle having an upper side, a lower side, and longitudinal edges extending parallel to the longitudinal axis of said handle, said longitudinal edges being thicker than the part of the rasp head between said edges;

grooveways in and extending substantially parallel to and along the outer sides of said longitudinal edges;

flanges along said edges forming limiting inner shoulder portions of said grooveways;

projecting shoulder portions at both ends of said rasp head forming end stops;

a filing or rasping foil member removably attached to said rasp head having a cutting surface and longitudinal edges with inturned portions releasably engaged in said grooveways in abutting relationship along the edges thereof with said flanges and at the ends thereof with said end stops so that said foil member is retained on and in fixed embracing relationship with said rasp head during use; and outwardly angled flanges along the edges of said foil member of the rasp.

4,537,208

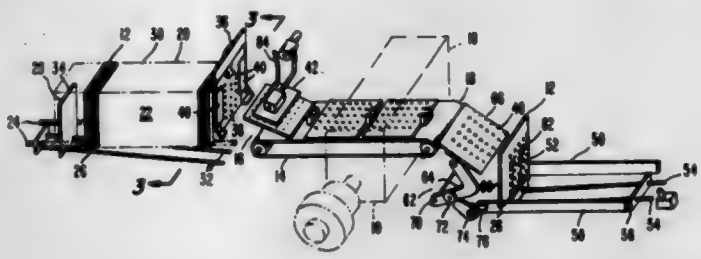
HORIZONTAL FLAT DESTACKER

Henry Y. Kuhl, Kuhl Rd., P.O. Box 26, Flemington, N.J. 08822

Filed Jul. 25, 1983, Ser. No. 517,122

Int. Cl.³ B08B *3/00*

U.S. Cl. 134—124 **9 Claims**



9. A horizontal flat destacker comprising:

(a) a processing station for washing article carrying flats singly, said processing station including a processing conveyor means for moving single flats through said processing station, said processing station including an inlet area and an exit area with said processing conveyor means adapted to move flats from said inlet area thereof to said exit area thereof;

(b) a horizontal flat supply means adapted to supply a stack of flats oriented extending horizontally to said inlet area of said

processing station, said horizontal flat supply means comprising:

(1) a supply conveyor means traveling toward said processing station and adapted to receive a horizontally extending stack of flats with the edges of the flats resting upon said supply conveyor means to facilitate conveying same toward said processing station;

(2) a supply biasing means positioned in abutment with the bottommost flat of a horizontally extending stack of flats to urge the stack toward said processing station, said supply biasing means including a supply bar means extending longitudinally with respect to said supply conveyor means and a supply biasing member in abutment with the bottommost flat of the horizontally extending stack and movably mounted upon said supply bar means to allow free longitudinal movement thereof with respect to said bar means, said supply bar means being inclined downwardly toward said processing station to cause said supply biasing member to urge the horizontal stack of flats toward said processing station by gravitational force urging said supply biasing member to move downwardly on said supply bar means;

(c) a flat transfer means for moving onto the processing conveyor means a single uppermost flat of the horizontally extending stack thereof located upon said horizontal flat supply means, said flat transfer means comprising:

(1) a supply retaining means for resiliently retaining the uppermost flat of a horizontal stack upon said horizontal flat supply means, said supply retaining means including resiliently biased pivotally movable door member;

(2) a transfer arm movable between a pick-up position adjacent to the horizontally extending stack of flats on said horizontal flat supply means and a placement position adjacent said inlet area of said processing conveyor means, said transfer arm adapted to abut and releasably vacuum grip the uppermost flat in the pick-up position and overcome said supply retaining means by opening of said resiliently biased pivotally movable door members to move the uppermost flat to said inlet area of said processing conveyor means by release thereof when in said placement position;

(d) a horizontal flat restacking means adjacent to said exit area and adapted to receive flats from said processing station for restacking in a horizontal orientation, said horizontal flat restacking means including stack support rails for abutting the lower edge of each flat of the horizontally extending stack for support thereof, said horizontal flat restacking means also including a restacking biasing means comprising a restacking bar means extending longitudinally along said stack support rails and a restacking biasing member comprising two vertically extending rods mounted upon said restacking bar means with freedom of longitudinal movement therealong, said restacking biasing member adapted to abut the uppermost flat of the horizontal stack thereof positioned on said horizontal flat restacking means, said restacking bar means being inclined downwardly toward said processing station to cause said restacking biasing means to urge the horizontally extending stack of flats toward said processing station, said horizontal flat restacking means including a resilient holding means secured with respect to said stack support rails and adapted to resiliently bias and hold the edges of the lowermost flats positioned on said horizontal flat restacking means, said resilient holding means comprising flexible plastic members, said horizontal flat restacking means further including a limit switch means operable to be activated responsive to the maximum flat capacity of said horizontal flat restacking means;

(e) a flat removal means positioned between said exit area of said processing station and said horizontal flat restacking means to move individual flats from said processing conveyor means to the bottom of the horizontal stack positioned on said stack support rails, said flat removal means including:

(1) a removal arm pivotally mounted with respect to said processing station and said horizontal flat restacking means and movable from a removal position adjacent to said exit area of said processing station to a restacking position adjacent to the lowermost flat of the horizontal stack located thereon, said removal arm when in the removal position adapted to remove a single flat exiting the processing station for being carried to said horizontal flat restacking means for placement onto the bottom of the stack of flats thereon;

(2) a cam follower means secured with respect to said removal arm; and

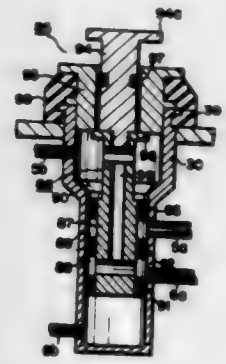
(3) a camming means rotatably mounted with respect to said flat removal means and adapted to abut said cam follower means to cause and control movement of said removal arm from the removal position to the restacking position and vice versa.

4,537,209

DEVICE FOR CLEANING ENDOSCOPES

Hiroyuki Sasa, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Oct. 13, 1983, Ser. No. 541,423
Claims priority, application Japan, Oct. 15, 1982, 57-180827
Int. Cl.³ B08B 9/02
U.S. Cl. 134—166 C
6 Claims



1. A device for cleaning an endoscope comprising an insert section which is inserted into a body cavity from a front end thereof; an operation section connected to a base end of the insert section; an air and water supply cylinder arranged in the operation section; a changeover piston slidable in the cylinder and detachable from the cylinder; an air supply passage having a lower side portion, one end of which is opened at the front end of the insert section while the other end thereof is communicated with the cylinder, and an upper side portion, one end of which is communicated with the cylinder while the other end thereof is connected to a means for supplying air; a water supply passage having a lower side portion, one end of which is opened at the front end of the insert section while the other end thereof is communicated with the cylinder, and an upper side portion, one end of which is communicated with the cylinder while the other end thereof is connected to a means for supplying water; an instrument inserting channel; a suction cylinder arranged in the operation section; a changeover piston slidable in the suction cylinder and detachable from the suction cylinder; and a suction passage having an upper side portion, one end of which is opened at the front end of the insert section, said suction passage being connected halfway thereof to the instrument inserting channel, and the other end of the suction passage being communicated with the suction cylinder, and said suction passage having a lower side portion, one end of which is communicated with the suction cylinder while the other end thereof being connected to a means for producing suction; said device comprising

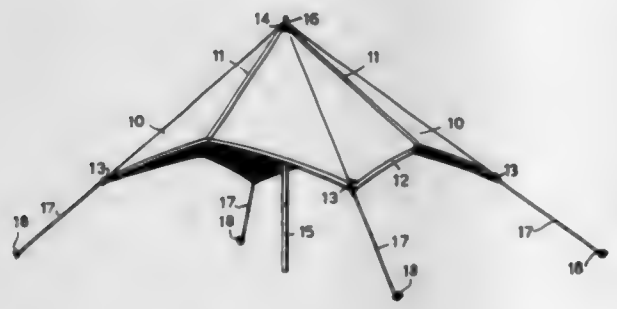
a communication member inserted into the air and water supply cylinder after removing the changeover piston from the cylinder to communicate at least one of the combinations consisting of the upper side portion of the water supply passage and the lower side portion of the air supply passage, and consisting of the upper side portion of the water supply passage and the suction passage;

said communication member being inserted to move in the air and water supply cylinder between first and second positions and having a changeover mechanism which allows the upper side portion of the water supply passage to be communicated with the lower side portion of the air supply passage when said communication member is in the first position; and said changeover mechanism allows the upper side portion of the air supply passage to be communicated with the lower side portion of the air supply passage when said communication member is in the second position.

4,537,210
SHELTER

Rodney L. Montgomery, 4 Kellaway St., Darwin, Australia

PCT No. PCT/AU82/00048, § 371 Date Dec. 6, 1982, § 102(e) Date Dec. 6, 1982, PCT Pub. No. WO82/03317, PCT Pub. Date Oct. 14, 1982
PCT Filed Apr. 5, 1982, Ser. No. 448,902
Claims priority, application Australia, Apr. 6, 1981, PE8327
Int. Cl.[3] A45F *1/00*; E04B *1/347*
U.S. Cl. 135—87 3 Claims



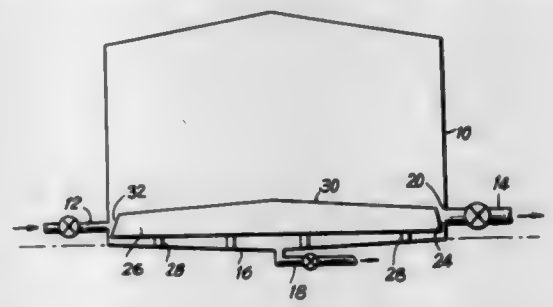
1. A shelter including:
a cover having substantially rectangular corner sections of fabric which is unstable on the bias,
means for supporting the cover at the innermost corners of the corner sections,
tensioning means,
attachment means for attaching the tensioning means to the outermost corners of the corner sections to stretch such corner sections on the bias in a downward direction relative to the point or points at which the shelter cover is supported,
a reinforced eye in said corner opposite said stretched corner sections,
a central support pole for supporting the inner corners of the rectangular sections, said pole having means at the top which engages closely in said eye; and
adjacent sections of the cover being joined along lines reinforced by strips of flexible material resistant to stretch extending from said reinforced eye to substantially the outer edge of said sections, said pole, reinforced eye and strips keeping the innermost corners and sides of the rectangular sections adjacent thereto relatively undeformed and linear while the outermost corners are stretched on the bias to stretch the outermost sides of the rectangular section so as deform the rectangular sections into a substantially offset diamond shape.

4,537,211
APPARATUS FOR IMPROVING OIL STORAGE TANKS

Robert Almeida, 29 Overhill Rd., Scarsdale, N.Y. 10583

Filed May 17, 1983, Ser. No. 495,247
Int. Cl.[3] F17D *1/00*
U.S. Cl. 137—1 16 Claims

1. Apparatus for decreasing a quantity of oil held as deadstock in an oil storage tank having a top, bottom, and sides, an oil inlet pipe, and an oil delivery pipe located above the level of the bottom of the tank, the apparatus comprising:
positive volume displacement means for displacing a predetermined volume of oil including a tray having a solid, substantially flat bottom and upraised sides for retaining therein a quantity of material substantially inert to oil;
means for arranging said tray adjacent said bottom at a

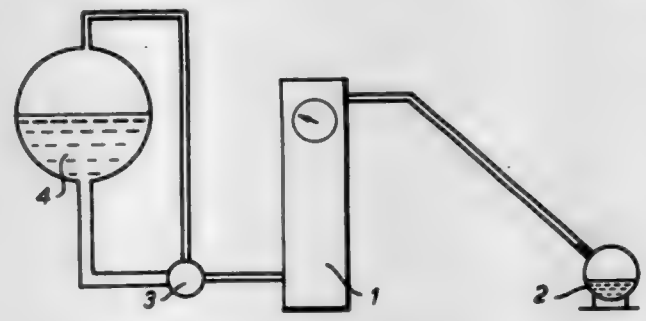


location determined by a lowermost edge and an uppermost edge of said oil delivery pipe; and
means for preventing occlusion of said oil delivery pipe and for maintaining a quantity of oil at least above an uppermost edge of said oil delivery pipe.

4,537,212
METHOD AND SYSTEM FOR TANK OVERFILL PROTECTION

Colin C. Rogers; John N. Baker, and Joseph Estebanez, all of Chester, England, assignors to Shell Oil Company, Houston, Tex.

Filed Dec. 12, 1983, Ser. No. 560,095
Claims priority, application United Kingdom, Dec. 31, 1982, 8237085
Int. Cl.[3] B67D *5/372*
U.S. Cl. 137—2 16 Claims



1. A method for preventing the overfilling of an LPG tank comprising:
supplying LPG fuel to said tank while measuring the pressure and flow rate of said LPG fuel;
determining for equal time intervals the tank pressure using the measured pressure and flow rate of said LPG fuel;
determining from said tank pressures the rate of increase of the tank pressure with respect to time;
comparing said determined rate of increase of tank pressure with a preselected rate of increase of tank pressure; and
shutting off the LPG fuel if said determined rate exceeds said preselected rate and said flow rate is less than a preselected flow rate.

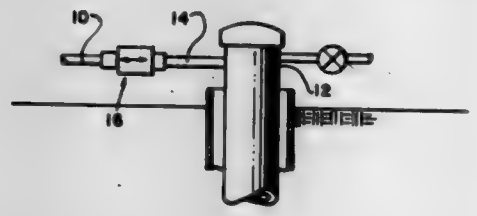
4,537,213
DOUBLE FLAPPER CHECK VALVE

Domingo F. Molina, 1008 Hickory, Colorado City, Tex. 79512

Filed Aug. 27, 1984, Ser. No. 644,616
Int. Cl.[3] F16K *17/12*
U.S. Cl. 137—269.5 2 Claims

1. A reversible check valve for a pipeline having a horizontal longitudinal axis comprising:
a. a housing divided into
b. an upstream chamber and
c. a downstream chamber,
d. each chamber having a top and bottom,
e. a horizontal tube connecting the chambers,

f. said tube extending in the direction of the pipeline axis,
g. a valve seat on the tube in each of the chambers,
h. each valve seat having a top and bottom,
i. the valve seats being parallel,
j. the bottom of the downstream valve seat extending into the downstream chamber further than the top,
k. a downstream pivot pin extending transversely of the tube in the housing above the top of the downstream valve seat,
l. a downstream flapper valve on the downstream pivot pin adapted to seat on the valve seat,
m. so that the downstream flapper valve prevents fluid flow from the downstream chamber to the upstream chamber,



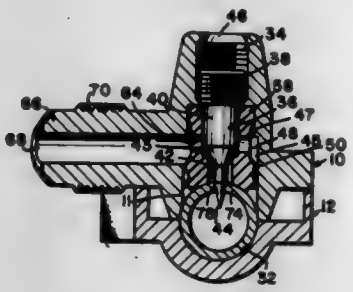
n. an upstream pivot pin extending transversely of the tube in the housing below the bottom of the upstream valve seat,
o. an upstream flapper valve on the upstream pivot pin adapted to lie on the bottom of the chamber below the bottom of the upstream valve seat,
p. the chambers and their contents of similar shape and arrangement, and
q. means for connecting the housing in the pipeline for rotating the housing upsidedown about the pipeline axis so that the top becomes the bottom and upstream becomes downstream.

4,537,214

SINGLE SEAL PIPELINE TAPPING FIXTURE HAVING SECURE VALVE

Arnold A. Cowan, Encino, Calif., assignor to Gem Products, Inc., Garden Grove, Calif.

Filed Nov. 19, 1984, Ser. No. 672,696
Int. Cl.³ F16K *43/00*
U.S. Cl. 137—318 **10 Claims**



1. An externally attachable and sealed pipeline system piercing valve comprising:

(a) upper and lower blocks having, respectively, lower and upper mating surfaces, said mating surfaces each having a positionally corresponding generally linear groove extending thereacross, said upper block having a generally cylindrical bore extending vertically therethrough and intersecting the grooved lower surface thereof, the upper section of said bore being adapted for receiving screw threads with the topmost section of said bore having a diameter less than that of the threaded upper section thereof, the lower section of said bore having a diameter greater than that of said upper section to define a sealing chamber, said upper block further having an access port extending therethrough and intersecting said bore along said lower section thereof;

(b) a cylindrical piercing needle having an upper threaded portion having a radial diameter suitable for engaging the threads of said bore, a coaxial central portion having a decreasing radial diameter, and a coaxial lower portion having means for tapping an access hole in said pipeline;

(c) a cylindrical unitary seal coaxially interposed in said sealing chamber between said piercing needle and the inner bore surface of said upper block, said seal extending above the intersection point of said access port with said bore and of a length to make sealing contact with the surface of the pipeline being pierced, said seal including an opening extending through the cylindrical wall thereof so as to permit the communication of a fluid from a point external to the mated upper and lower portions of said block into the region defined by the grooves thereof and said needle being adapted to seal and block communication between said access hole and said opening; and

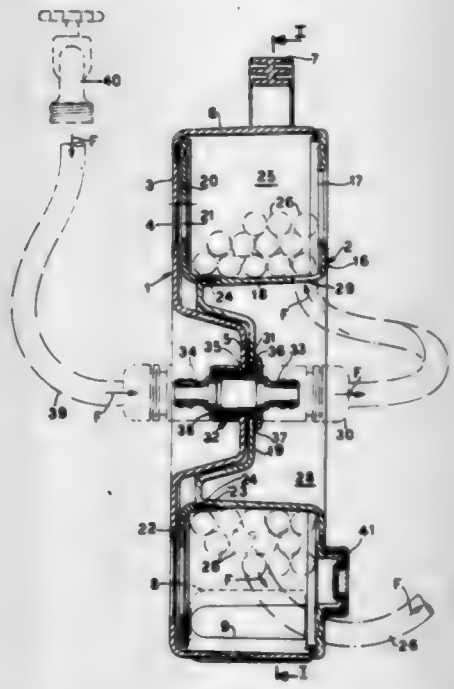
(d) means for clamping said upper and lower blocks together about said pipeline.

4,537,215

PORTABLE WINDING DEVICE FOR FLEXIBLE PIPE, PARTICULARLY FOR CARS, CARAVANS, COACHES, CRAFTS, BALCONIES AND SMALL GARDENS

Gianfranco Roman, Pasiano, Italy, assignor to Claber S.p.A., Fiume Veneto, Italy

Filed Sep. 30, 1983, Ser. No. 537,715
Claims priority, application Italy, Apr. 13, 1983, 21519/83[U]
Int. Cl.³ B65H *75/34*
U.S. Cl. 137—355.26 **8 Claims**



1. A portable winding device for flexible pipe, comprising a fixed casing provided with gripping and hanging means and a drum rotatable on a support conduit, the drum shaped so as to define with said casing an annular housing for a flexible pipe which can be wound therein, the annular housing being provided with a first opening facing toward the center of the winding device for the passage of the receiving end of the pipe and a second opening facing outwards for the extraction of the distributing end of the pipe, the support conduit axially connecting the casing and the drum, the support conduit provided with a coupling at one end, capable of coupling to the flexible pipe, the support conduit provided with a second coupling at the opposite end capable of coupling to a fluid supply, each of the couplings being situated such that they are readily accessible from the exterior of the winding device, the casing further comprising a first plane annular member, a projecting central member supported on said support conduit and a circular peripheral wall disposed perpendicular to said annular member, the drum comprising a second plane annular member

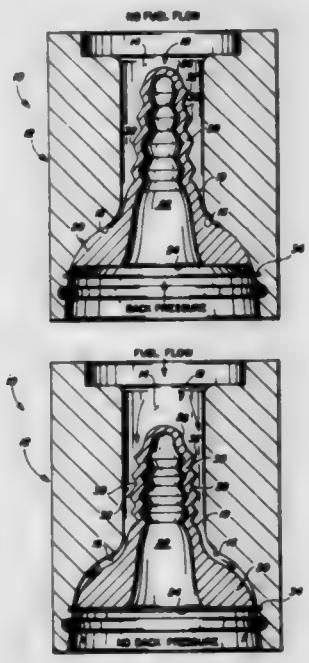
spaced parallel to said first plane annular member, an annular wall disposed perpendicular to and spaced from said peripheral wall, a recessed central member receiving said projecting central member and rotatably supported on said support conduit.

4,537,216

ANTI-KNOCK LIQUID FLOW CONTROL VALVE

Edwin Schwartz, 16604 Park Lane Pl., Los Angeles, Calif. 90049, and David Frees, 5407 Amestoy, Encino, Calif. 91316

Filed Jul. 13, 1984, Ser. No. 630,536
Int. Cl.[3] F16K *15/00, 47/02*
U.S. Cl. 137—514 1 Claim



1. An improved shock absorbing, one-way liquid flow control valve, said valve comprising, in combination:

(a) a housing defining a passageway extending longitudinally therethrough, and a shoulder extending into said passageway;

(b) a hollow valve element comprising a main body having a longitudinal conduit extending therethrough, said valve element being disposed longitudinally in said valve passageway and having a seat portion of expanded diameter adapted to seat on said shoulder to seal said valve against liquid flow through said passageway, said valve element being longitudinally slideable in said passageway to unseat said expanded diameter portion from said shoulder and thereby open said valve, said valve element also including a bellows connected to said main body and sealing off said conduit, which bellows folds and unfolds longitudinally in response to pressure variations in said passageway, thereby absorbing and dampening shocks generated in said valve,

(c) wherein said bellows comprises a flexible generally inelastic sheet connected to said main body of said valve element, and

(d) wherein said bellows moves in response to back pressure from a position within said conduit to a position upstream of said valve element main body to effect shock absorbing dampening.

4,537,217

FLUID DISTRIBUTOR

Crowley C. Allen, Jr., Durham, N.C., assignor to Research Triangle Institute, Research Triangle Park, N.C.

Filed Dec. 9, 1982, Ser. No. 448,201
Int. Cl.[3] F15D *1/14*
U.S. Cl. 137—561 A 14 Claims

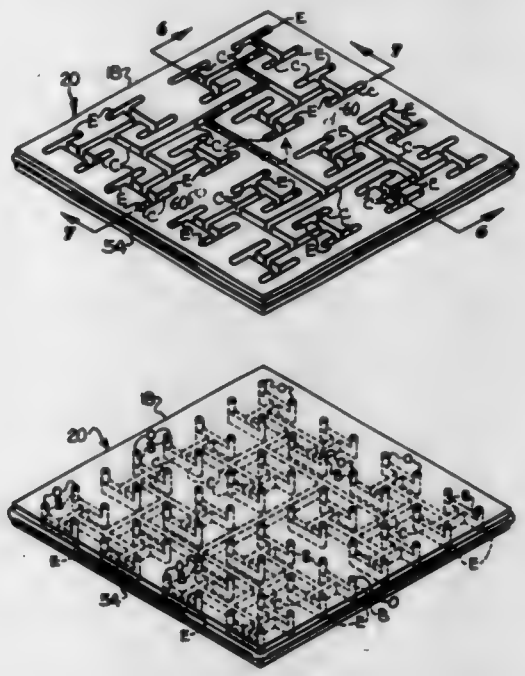
1. A fluid distributor characterized by providing a low resistance to flow thereacross and uniform distribution throughout the distribution surface thereof, said distributor comprising:

a distributor body defining first and second opposed exterior portions;

said first exterior portion including a fluid port;

said second exterior portion defining a two-dimensional distribution surface having a plurality of distribution openings so spaced as to be uniformly distributed over the surface area thereof;

means defined by interconnecting fluid passages in said distributor body, said means extending through said distributor body for providing communication between said fluid port and each of said distribution openings, and such that the fluid flow path between said fluid port and each of said distribution openings is of substantially uniform length and has similar geometric flow resistance characteristics so as to provide substantially the same resistance to flow therealong, said interconnecting fluid passages comprising a first set of passages formed in the face of said first exterior portion serving to subdivide the fluid flow from said fluid port and a second set of passages for delivering the subdivided flow from the first set to the distribution openings of the two-dimensional distribution surface.

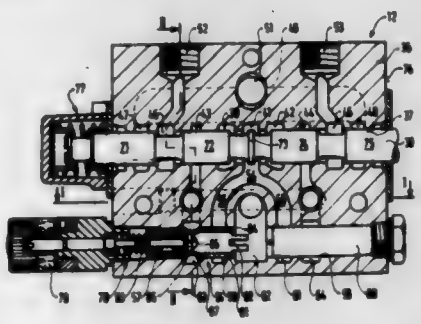


4,537,218

HYDRAULIC DIRECTIONAL VALVE FOR CONTROLLING DOUBLE-ACTING MOTOR

Wolfgang Kötter, Markgröningen, Fed. Rep. of Germany, assignor to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,853
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1983, 3310863
Int. Cl.[3] F15B *13/08*
U.S. Cl. 137—596.13 9 Claims



1. A hydraulic directional valve for controlling a double-acting motor, comprising a housing having a center and two

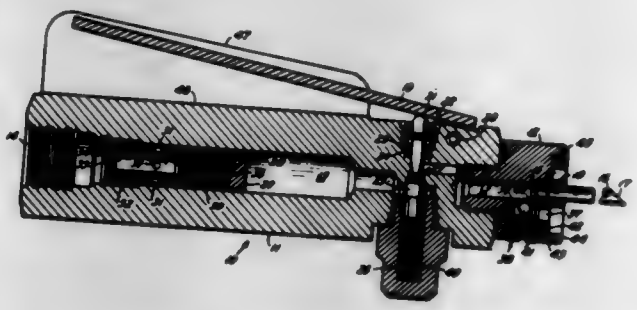
end sides; a longitudinal opening formed in said housing; a neutral circulating passage for flowing a pressure medium flow from a pump to a tank, said neutral circulating passage being formed symmetrically and having three chambers including a circulating chamber; a plurality of chambers formed in said housing and being in operative communication with said longitudinal opening, said chambers including two motor chambers, two supply chambers, and two return chambers; the control slider axially movable in longitudinal opening between a neutral position in which said control slider controls said neutral circulating passage and separates said two motor chambers from a respective one of said supply chambers and a respective one of said return chambers, and two working positions in which said control slider blocks said neutral circulating passage and connects one of said motor chambers with one of said supply chambers and the other motor chamber with one of said return chambers; an outwardly adjustable three-way flow regulating valve extending between a feed passage arranged in said housing and said supply chambers and supplying the latter with a constant stream, whereas its residual stream is supplied into one of said circulating chambers of said neutral circulating passage located downstream; two auxiliary openings extending in said housing parallel to said longitudinal opening from both end sides of the housing, a feed chamber arranged in the center of said housing so that said auxiliary openings extend into said feed chamber; a bridge passage extending from a central one of said circulating chambers and having two branches enclosing said feed chamber therebetween and crossing said auxiliary openings; two constant stream chambers each formed near a respective one of said branches in each auxiliary opening and connected with the associated supply chambers; and a valve insert with a hollow slider associated with said outwardly adjustable flow regulating valve and arranged in at least one of said auxiliary openings.

4,537,219

FLUID-SAMPLING VALVE FOR A HYDRAULIC SYSTEM

William P. Milish, Bristol, Conn., assignor to Transamerica DeLaval, Inc., Princeton, N.J.

Filed Oct. 7, 1983, Ser. No. 539,797
Int. Cl.³ F16K *17/168*
U.S. Cl. 137—614.19 17 Claims



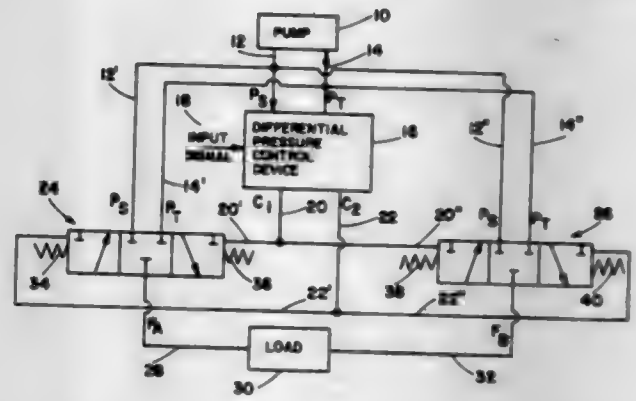
1. A valve assembly for use in sampling fluids from high pressure hydraulic systems, said assembly comprising in combination a housing, a fluid flow passage through said housing from an inlet port to an outlet port, a nozzle coupled to said outlet port, means for selectably starting and stopping the flow of fluid through said flow passage, means for limiting the flow velocity of said flow of fluid substantially independent of input fluid pressure, and means including positive-pressure-responsive valve means for diverting fluid from said outlet port to a vent port if fluid pressure at said outlet port exceeds ambient pressure by a predetermined amount.

4,537,220

TWO MEMBER BOOST STAGE VALVE FOR A HYDRAULIC CONTROL

Wayne R. Anderson, Bloomington, Minn., assignor to Sundstrand Corporation, Rockford, Ill.

Filed Feb. 28, 1983, Ser. No. 470,891
Int. Cl.³ E03B *3/00*
U.S. Cl. 137—625.64 11 Claims



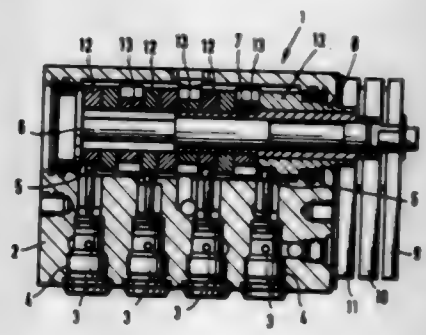
1. A boost stage valve for a two stage hydraulic flow control having a pilot stage transducer converting an input signal into a first signal and a second signal capable of generating a pressure differential, a source of fluid flow under pressure and a flow return at pressure lower than the pressure of said source, said boost stage valve comprising: first and second valve members independently movable within first and second valve chambers respectively, two pairs of spring centering means with each pair independently biasing sone of said valve members to a null position in its respective bore, a first boost stage controlled output in fluid communication with said first valve chamber, a second boost stage controlled output in fluid communciation with said second valve chamber, said first and second boost stage outputs being applied across a load, means for applying said pressure differential of said first and second signals to both of said valve members so as to move said valve members against the respective biasing forces of said spring centering means, and said source and said flow return communicating with both of said chambers whereby independent movement of said first and second valve members controls fluid communication between said first and second boost stage outputs respectively from said source and to said flow return.

4,537,221

HYDRAULIC CONTROL DEVICES FOR USE WITH MINING APPARATUS

Walter Weirich, Dortmund, and Michael Dettmers, Kamen, both of Fed. Rep. of Germany, assignors to Gewerkschaft Eisenhutte Westfalia, Lunen, Fed. Rep. of Germany

Filed Apr. 24, 1984, Ser. No. 603,456
Claims priority, application Fed. Rep. of Germany, Apr. 27, 1983, 3315313
Int. Cl.³ F16K *31/122, 31/524*
U.S. Cl. 137—637.2 9 Claims



1. In a hydraulic control device comprising a housing, a

plurality of individual control valves operated by tappets, manually-operable rotatable cam shaft means for displacing the tappets to operate the valves, and an automatic restoration system for acting on the cam shaft means to restore at least part of the cam shaft means back into a neutral position when manually released; the improvement comprising said restoration system includes at least a pair of hydralic piston and cylinder assemblies detachably mounted as cartridges within reception bores within the housing, one of said assemblies serving to act on a cam of the cam shaft means depending on the rotation of said cam to bias said part into its neutral position while a pressure medium is expelled from the other of said assemblies, and passage means within the housing communicating via said reception bores with the cylinders of the assemblies to permit the pistons thereof to be exposed to pressure-medium to create the restoration force.

4,537,222

HIGH-PRESSURE HOSE AND METHOD FOR THE MANUFACTURE OF SAME

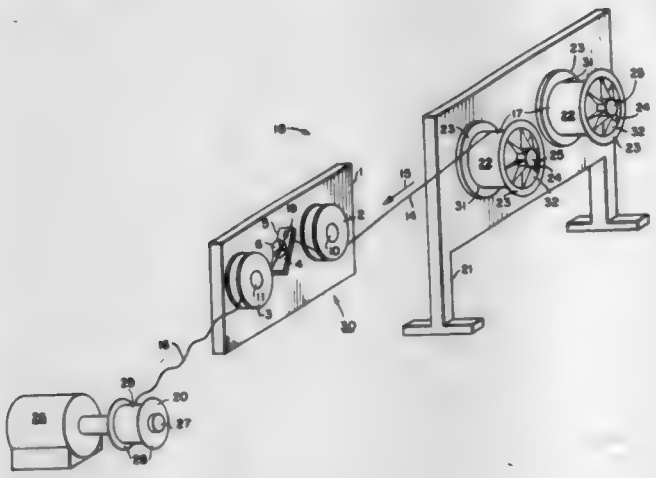
Hans G. Schwarz, Weinheim-Waid, Fed. Rep. of Germany, assignor to Polyflex Schwarz GmbH & Co., Hüttenfeld, Fed. Rep. of Germany

Continuation of Ser. No. 381,648, May 24, 1982, Pat. No. 4,444,707. This application Mar. 20, 1984, Ser. No. 591,544

Claims priority, application Fed. Rep. of Germany, May 23, 1981, 3120688

Int. Cl.³ B32B *1/08*

U.S. Cl. 138—130 **18 Claims**



1. A high-pressure hose comprising:

(a) a plastic hose core;

(b) a first layer of only pre-helically formed pressure-resisting wire members of high-tensile strength wire strands wound around the plastic hose core without a pressure-resisting fabric layer therebetween;

(c) an unbonded intermediate layer formed of plastic yarn spun from individual filaments wrapped without bonding around said first layer of pressure-resisting wire members;

(d) a second layer of only pre-helically formed pressure-resisting wire members of high-tensile strength strands directly wound around the intermediate layer; and

(e) an outer hose cover.

4,537,223

RUBBER TUBE FOR DREDGING WORK

Katsuyoshi Sumitani, Kobe, Japan, assignor to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

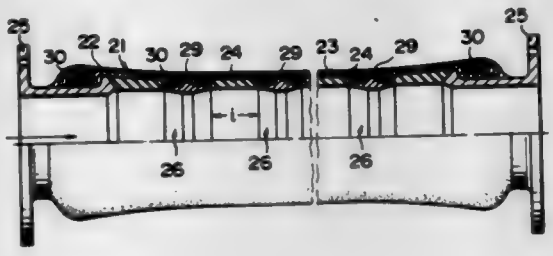
Filed Apr. 21, 1983, Ser. No. 487,125

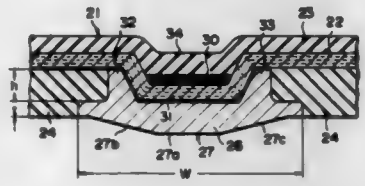
Claims priority, application Japan, Apr. 22, 1982, 57-59348[U]

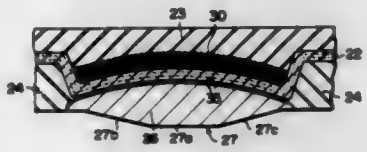
Int. Cl.³ F16L *11/08, 11/12*

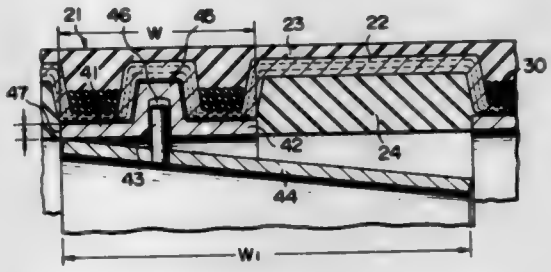
U.S. Cl. 138—139 **5 Claims**

1. A rubber tube for dredging work comprising: a tubular body made of rubber having one or more strengthening cloth layers embedded therein, and a plurality of metal rings axially arranged in a predetermined spaced relation and embedded in an inner peripheral surface of said tubular body such that the inner peripheral surface of each metal ring forms a part of the inner peripheral surface of said tubular body, each of said metal rings having an outer peripheral surface a portion of which extends substantially parallel to the longitudinal axis of said









tubular body, and an inner peripheral surface having a central surface portion extending parallel to the longitudinal axis of said tubular body, and two tapered surface portions extending longitudinally in opposite directions from opposite ends of the central surface portion and tapering radially outwardly in the oppositely extending directions.

4,537,224

RUBBER TUBE FOR DREDGING WORK

Katsuyoshi Sumitani, and Yasuo Takehara, both of Kobe, Japan, assignors to Sumitomo Gomu Kogyo Kabushiki Kaisha, Kobe, Japan

Filed Apr. 21, 1983, Ser. No. 487,126

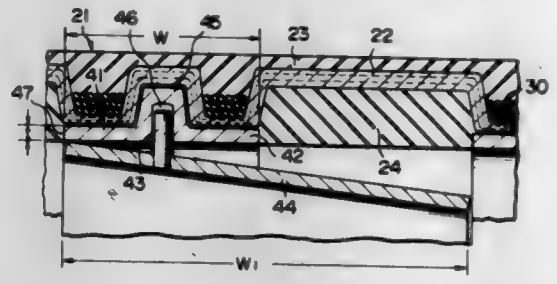
Claims priority, application Japan, Apr. 30, 1982, 57-64490[U]; May 18, 1982, 57-72856[U]; Aug. 6, 1982, 57-119789[U]

Int. Cl.³ F16L *11/08, 11/12*

U.S. Cl. 138—139 **7 Claims**

1. A rubber tube for dredging work comprising: a tubular body made of rubber having one or more strengthening cloth layers embedded therein, and a plurality of metal rings axially arranged in a predetermined spaced relation and embedded in an inner peripheral surface of said tubular body such that the inner peripheral surface of each metal ring forms a part of the inner peripheral surface of said tubular body, each of said metal

rings having an outer peripheral surface a portion of which extends substantially parallel to the longitudinal axis of said tubular body and an inner peripheral surface having a guide portion which is inclined radially inwardly in the axial direction of said tubular body in the moving direction of fluids flowing through said tubular body during use of the rubber tube in a dredging operation, each said metal ring comprising a substantially cylindrical body portion having said outer peripheral surface and a substantially truncated cone-shaped ring member disposed interiorly of said body portion and formed in its inner peripheral surface with said guide portion, and connecting means for connecting said body portion and said ring member, the connecting means comprising means defining an annular groove in said body portion and a plurality of engaging pins each having one end mounted on said ring member and the other end fitted in said annular groove.

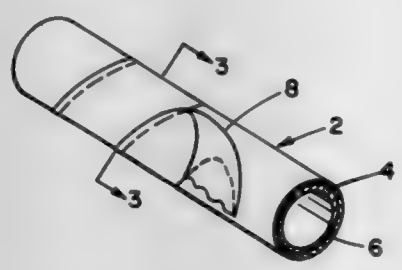


4,537,225

CONDUIT HAVING WATERPROOF LAYER OF UNIFORM THICKNESS AND METHOD OF MANUFACTURE

Frank E. McNulty, R.R. #1 Box 113, Siloam Springs, Ark. 72761

Continuation of Ser. No. 288,480, Nov. 16, 1981, abandoned.
This application Jul. 25, 1983, Ser. No. 516,726
Int. Cl.³ F16L 9/14
U.S. Cl. 138—145
6 Claims



1. The method of coating a metal conduit for protection from corrosion in a below ground surface environment which comprises coating said conduit with a layer of hot applied cold flowable waterproofing material of nonuniform thickness and surrounding said layer under tension with an air permeable wrap of heat shrink resistant unwoven continuous spun bonded nylon grade polyamide having essentially no fiber ends within said wrap, said wrap being of substantially uniform thickness and permeability to permit air to expel between the waterproofing material and the wrap leaving said wrap slightly embedded in the outer surface of said material, resulting in a hot applied waterproofing material of substantially uniform average thickness on the surface of said conduit.

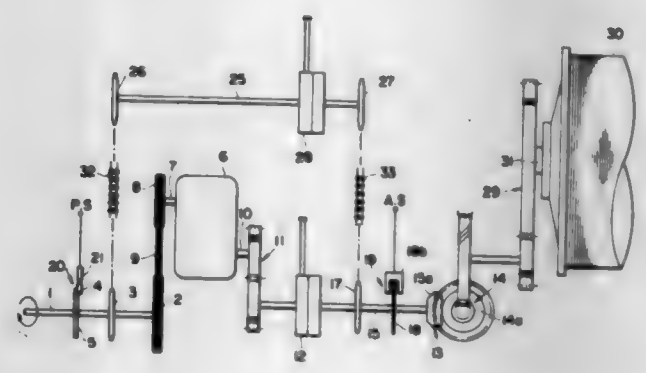
2. A coated conduit comprising a metal pipe coated with a layer of hot applied cold flowable water-proofing material of uniform thickness, an inner wrap sheet of unwoven continuous spun bonded heat shrink resistant individual thermoplastic filaments having essentially no fiber ends within said sheet and wrapped under tension in direct contact with said material and around said pipe, said sheet being of substantially uniform permeability whereby said sheet becomes slightly embedded in the outer surface of said coating resulting in a hot applied coating of substantially uniform average thickness on the surface of said conduit.

4,537,226

SYSTEM FOR CONTROLLING WARP LET-OFF MOTION OF WEAVING MACHINE DURING MACHINE DOWNTIME

Miyuki Gotoh, Machida, Japan, assignor to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Sep. 21, 1983, Ser. No. 534,387
Claims priority, application Japan, Sep. 24, 1982, 57-166319
Int. Cl.³ D03D 49/06, 51/00
U.S. Cl. 139—100
20 Claims



1. A weaving system comprising
a warp beam,
a main weaving mechanism, combined with said warp beam, for moving periodically so as to repeat a weaving cycle, said main mechanism being capable of operating alternately in a normal weaving operation mode and a slow operation mode,
a driving shaft which is driven in synchronism with the periodical movement of said main mechanism,
first drive means for driving said warp beam in said normal operation mode by transmitting power from said driving shaft, said first drive means including speed change means capable of changing the speed of the warp beam rotation, said first drive means including first clutch means for connecting and disconnecting the driving connection between said driving shaft and said warp beam through said first drive means,
second drive means for driving said warp beam in said slow operation mode by transmitting power from said driving shaft, said second drive means including second clutch means for connecting and disconnecting the driving connection between said driving shaft and said warp beam through said second drive means,
first sensing means for sensing the periodical movement of said main mechanism,
second sensing means for sensing the rotational movement of said warp beam, and
control means connected with said first and second sensing means, for determining, during said normal operation mode, a quantity indicative of an angular displacement of said warp beam per weaving cycle in accordance with signals produced by said first and second sensing means, storing the determined value of said quantity, and controlling the warp beam rotation during said slow operation mode by controlling said second clutch means in such a manner that said warp beam rotates only through an angle equal to the stored value when said main mechanism is moved through one weaving cycle during said slow operation mode.

4,537,227

FABRICS WITH A CREPE EFFECT CONSTITUTED BY CONTINUOUS TEXTURIZED SYNTHETIC YARNS OF HIGH YARN/COUNT/NO. OF FILAMENTS RATIO

Vito Ballarati, Cuggiono, and Franco Tajana, Como, both of Italy, assignors to Val Lesina S.p.A., Como, Italy

Filed Apr. 19, 1982, Ser. No. 369,667
Claims priority, application Italy, Apr. 24, 1981, 21372 A/81
Int. Cl.³ D03D *15/08*; D04B *1/14*; D06C *23/04*
U.S. Cl. 139—420 R 5 Claims

1. A fabric with a crepe effect comprising continuous synthetic yarns which are texturized, substantially non-twisted, have a count between 30 and 160 Dtex, a yarn count/no. of filaments ratio between 7 and 11 Dtex, and a shrinkage in boiling water higher than 28%.

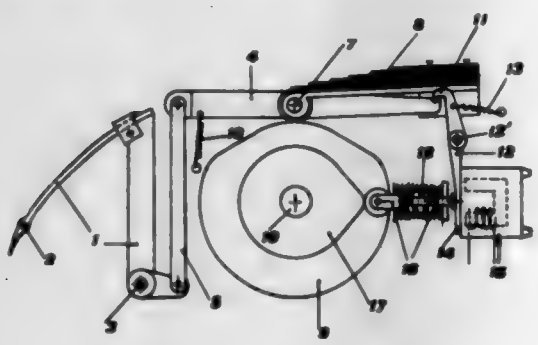
5. A method for producing fabric with a crepe effect, comprising a step in which substantially non-twisted yarns having a count between 30 and 160 Dtex and a yarn count/no. of filaments ratio between 7 and 11 Dtex are texturized, then are passed through a setting oven at such a temperature as to obtain shrinkage in boiling water of at least 28%, and are used to produce a fabric having a crepe effect.

4,537,228

WEFT PRESENTING DEVICE FOR WEAVING LOOMS

Ettore Viscardi, Nembro, Italy, assignor to Somet Societa' Meccanica Tessile S.p.A., Bergamo, Italy

Filed Jul. 6, 1983, Ser. No. 511,260
Claims priority, application Italy, Jul. 19, 1982, 22441/82[U]
Int. Cl.³ D03D *47/38*
U.S. Cl. 139—453 3 Claims



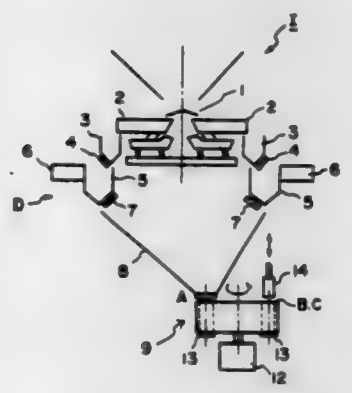
1. Weft presenting device for a weaving loom with continuous weft feed, comprising a presenting needle oscillatable between an inoperative and operative position, a pivotal rocking lever, a connecting rod pivotally attaching said needle and one end of said rocking lever, a spring on said end of said rocking lever to bias said rocking lever toward an inoperative position corresponding to the inoperative position of said needle, a pivotal control lever having a hook on one end to engage the other end of said rocking lever, a first rotatable cam having a cam surface, a control rod having one end in contact with the surface of said first cam, the other end of said control rod contactible with the other end of said pivotal control lever to push said control lever into an engageable position with said rocking lever under the action of said first cam, a spring connected to said control lever to bias it in an unengageable direction and electromagnetic means to be energized to hold said control lever in an engageable position with the other end of said rocking lever.

4,537,229

AUTOMATIC WEIGHING APPARATUS AND METHOD

Takashi Sashiki, Nagaokakyo, and Keiko Sakaeda, Kyoto, both of Japan, assignors to Kabushiki Kaisha Ishida Koki Seisakusho, Kyoto, Japan

Filed Sep. 15, 1983, Ser. No. 532,519
Claims priority, application Japan, Sep. 16, 1982, 57-161995; Sep. 16, 1982, 57-161996
Int. Cl.³ G01G *19/04*; B65B *1/32*
U.S. Cl. 141—83 9 Claims



1. An automatic weighing apparatus comprising;

weighing means for weighing out articles having variable specific gravity, to obtain a batch thereof having a weight corresponding to a target weight value and which is within preset allowable limits of the target weight value;

shaping means for shaping said batch of articles into a fixed volume;

pressure sensing means for sensing the pressure which develops when the weighed out articles are shaped into the fixed-volume batch, and for providing a corresponding output; and

target weight value adjusting means responsive to said output from said pressure sensing means for adjusting means for adjusting said target weight value within the preset allowable limits, for subsequent operation of said weighing means, so as to render the volume of batches of weighed out articles substantially constant.

4,537,230

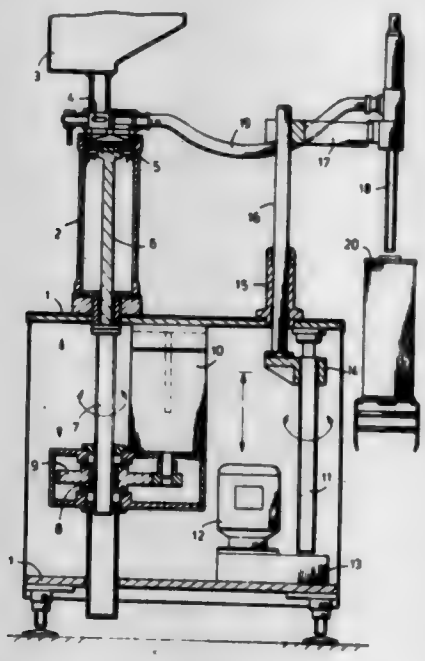
APPARATUS FOR MOVING DISPENSING PISTONS AND FILLING TUBES

Hugo Schindel, Saulheim, Fed. Rep. of Germany, assignor to Rationator-Maschinenbau GmbH, Hillesheim, Fed. Rep. of Germany

Filed Aug. 2, 1983, Ser. No. 519,676
Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228935
Int. Cl.³ B65B *3/12*; B67D *5/46*
U.S. Cl. 141—146 4 Claims

1. Apparatus for moving a dispensing piston and a filling tube during the filling of shaped containers with a fluid, comprising at least one dispensing piston and at least one filling tube spaced therefrom, separate first and second screw-threaded spindles and nuts mated thereto respectively to move the piston to dispense filling fluid to the filling tube and to position the filling tube relative to the container to be filled

thereby, each spindle having a driven element for rotating the spindle, and respective drive means for each spindle including



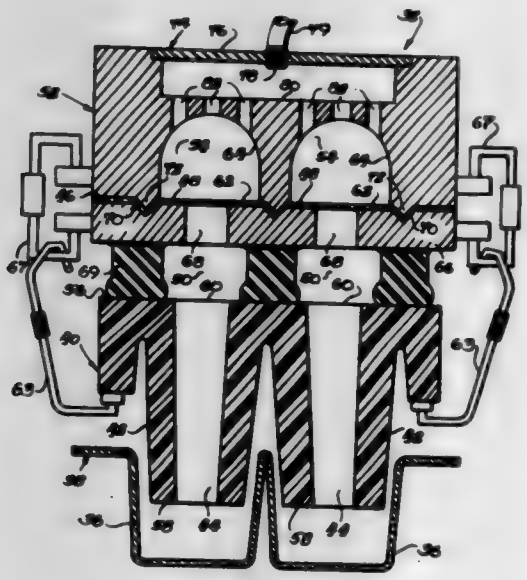
an infinitely variable electric motor gear-coupled to the related driven element.

4,537,231

DISPENSER APPARATUS FOR SIMULTANEOUSLY DISPENSING PREDETERMINED EQUAL VOLUMES OF LIQUID INCLUDING A DISPOSABLE DISPENSER MODULE

Paul R. Hasskamp, Cockeysville, Md., assignor to Becton, Dickinson and Company, Paramus, N.J.

Filed Aug. 29, 1983, Ser. No. 527,294
Int. Cl.[3] B65B *3/30*
U.S. Cl. 141—238 1 Claim



1. Dispenser apparatus for simultaneously providing predetermined equal volumes of liquid to each of a plurality of wells, said apparatus comprising:

a disposable multiple chamber dispenser module of integral plastic construction having a top surface and a plurality of dependent walls each defining a lower chamber for alignment with a corresponding well, each chamber having an open lower nozzle end and extending upwardly to an opening in said top surface;

a die plate having a plurality of concavities each having an equal volume and a mouth, and each being defined by an inner surface and corresponding to one of said chambers;

a diaphragm having a portion extending across the mouth of each concavity, each said portion being movable from said mouth into substantially full surface contact with said inner surface,

means for spacing said diaphragm from said top surface and forming an upper chamber which constitutes an upper extension of each lower chamber, said upper chamber having a volume that is variable by the position of said diaphragm portion; and

means for moving each diaphragm portion between a first position across the mouth of its concavity and a second position wherein it is in surface contact with said inner surface, whereby the volume of each upper chamber can be changed by the same amount by selective operaton of said means for moving, said diaphragm being disposed between said die plate and said dispenser module and wherein said means for moving comprises means for providing a vacuum,

said means for providing a vacuum including a vacuum manifold on said die plate, each inner surface having a plurality of vacuum openings,

said means for spacing comprising a clamping plate disposed between said diaphragm and said dispenser, said clamping plate having a bottom surface,

said dispenser apparatus further comprising means for sealing for forming air tight seals with the top surface of said dispenser module including a gasket sheet bonded to said bottom surface of said clamping plate to enter into a sealing relationship with said top surface of said dispenser module, said gasket sheet having an aperture in alignment with each upper chamber and its corresponding lower chamber so that the upper chambers are isolated from one another, the material of said gasket sheet not overlying any of said lower chambers,

said dispenser module further including a dependent peripheral skirt terminating in a lower abutment surface for engagement by a clamp, said clamping plate also comprising an abutment surface for engagement by said clamp,

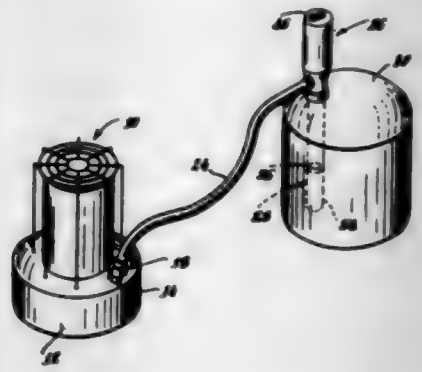
said clamping plate having a first surface facing said diaphragm and said die plate has a second surface facing said diaphragm, one of said first and second surfaces having grooves and the other of said first and second surfaces having corresponding projections, the projections pushing components of said diaphragm into said grooves.

4,537,232

FLUID DISCRIMINATING APPARATUS

Michael F. Barber, 177 Richmond Hill, New Canaan, Conn. 06840

Continuation-in-part of Ser. No. 481,793, Apr. 4, 1983,. This application Apr. 4, 1984, Ser. No. 596,544
Int. Cl.[3] G01N *9/00*
U.S. Cl. 141—382 14 Claims



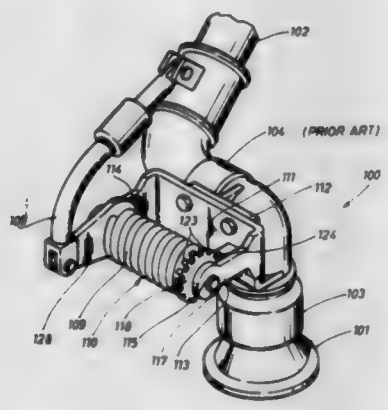
1. An apparatus for fueling kerosene heaters with improved safety, which comprises:

(a) a fuel reservoir, adapted for integral use with a kerosene heater, which includes a port for filling said reservoir with kerosene;

(b) lock means integral with said port for limiting access therethrough to a mating connector;

(c) said mating connector configured to mate with said lock means and provide access through said port;
(d) conduit means operatively engaged with said mating connector for transporting kerosene to said reservoir from a supply of kerosene;
(e) means operatively engaged with said conduit means for withdrawing kerosene from a storage vessel and advancing it through said conduit means; and
(f) fluid discriminator means, operatively engaged with said withdrawing and advancing means, for sensing the presence of fluids other than kerosene suitable for heater use and terminating flow in response to the sensed presence of such other fluids.

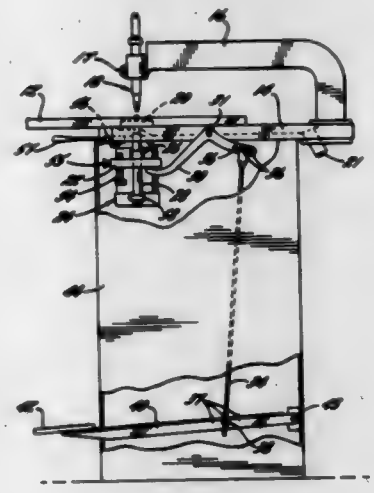
4,537,233
SPRING BALANCE ASSEMBLY
Evart. J. Vroonland, and William M. Curtis, both of Richardson, Tex., assignors to Continental Emsco Company, Garland, Tex.
Filed Jun. 21, 1983, Ser. No. 506,276
Int. Cl.[3] B65B *3/04*
U.S. Cl. 141—387 **9 Claims**



1. A loading arm comprising:
(a) a support means;
(b) an arm pivotally attached to said support means for swivel movement in the horizontal and vertical plane relative to said support means;
(c) a means for balancing said swivel arm relative to said support means including:
(1) a coil spring of pre-determined length;
(2) a housing enclosing said coil spring;
(3) a first end of said housing having a means for engaging a first coil end of said coil spring and a means for positioning said first coil end in infinitely small increments along a generally circular path radially disposed from the center line of said spring;
(4) a second end of said housing having a means for engaging a second coil end of said spring;
(5) a linkage arm attached at one end to said swivel arm and at its other end to said second end such that movement of said swivel arm in said vertical plane will cause said second coil end to move along a generally circular path radially disposed from the centerline of said spring; and
(d) a means for attaching said balancing means to said loading arm and said horizontal swivel means.

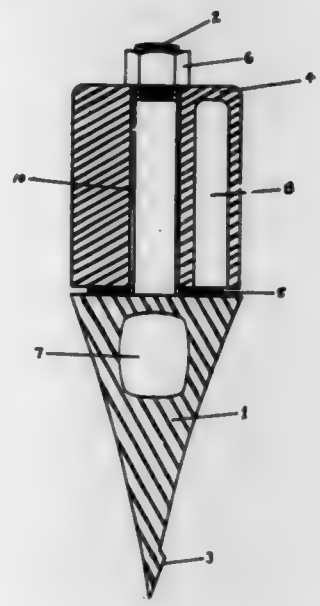
4,537,234
ROUTING MACHINES
Charles R. Onsrud, P.O. Box 416, Troutman, N.C. 28166
Filed Sep. 7, 1982, Ser. No. 415,012
Int. Cl.[3] B27C *5/00*
U.S. Cl. 144—134 A **6 Claims**

1. In an inverted pin routing machine, a router spindle slide having a first vertically aligned shaft attached to a machine base and adapted to receive a close fitting bushing, said bushing being the primary bearing surface for guiding a router spindle carried by a router mount in the vertical direction; a second vertically aligned shaft spaced apart from said first shaft attached to said machine base and fine adjustment screws attached to said router mount, said screws engaging said second shaft to prevent rotation of said router mount about said



first shaft; said screws further allowing axial alignment of the router spindle and being adjustable to compensate for wear and to control the relative freedom of the vertical sliding of the router spindle with respect to the shafts.

4,537,235
WOOD SPLITTER
Stephen E. Aderneck, Box 188, Quathiaski Cove BC, Canada V0P 1N0, assignor to Stephen Aderneck
Filed Feb. 21, 1984, Ser. No. 581,555
Int. Cl.[3] B27L *7/00*
U.S. Cl. 144—193 C **1 Claim**



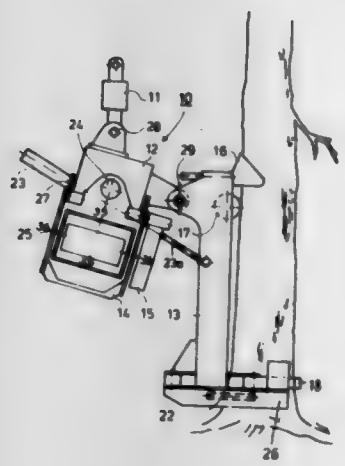
1. A wood splitting tool comprising a wedge-shaped metal piece having a thickened end portion and an opposite, elongated, wood penetrating blade portion having opposite sides; said tool further comprising a ridge along one side of said blade portion, a handle tool located in said end portion for securing a handle therein, a shaft attached to and extending outwardly from said end portion opposite said blade portion and having threads at its free end, a driving piece having a central hole therethrough for slideably engaging said threaded shaft, and a nut threadably attached to said shaft for securing said driving piece to said shaft; said driving piece being of greater mass than said wedge-shaped piece and having a means defining a hollow cavity and a means defining a lip for preventing rotation of said driving piece with respect to said wedge-shaped piece; said tool also having a rubber washer located between said wedge-shaped piece and said driving piece.

4,537,236

GRAB HARVESTER

Sakari Kulju, Pello, Finland, assignor to Valmet Oy, Finland

Filed Dec. 16, 1983, Ser. No. 561,992
Claims priority, application Finland, Dec. 21, 1982, 824397
Int. Cl.[3] A01G *23/08*
U.S. Cl. 144—336 8 Claims



1. In a grab-type tree harvester for processing trees, including

a frame;

rotation means mounted to said frame and adapted to be connected to lifting means, for rotating said frame about a substantially vertical axis;

grab means mounted on said frame for operatively engaging a tree to be processed, said grab means being selectively movable between open and closed positions;

actuating means for selectively opening and closing said grab means;

roller means for operatively engaging and pulling a felled tree being processed through said grab means; and

pruning means for operatively engaging and removing branches from the felled tree being processed as it moves through said grab means;

the improvement comprising:

a jib pivotally mounted to said frame and adapted to be turned with respect to said frame, said pruning means, and said grab means to a position substantially parallel to a standing tree to be felled;

means for turning said jib with respect to said frame, said pruning means, and said grab means to said position substantially parallel to the standing tree to be felled;

means mounted on said jib for gripping the standing tree to be felled; and

saw means mounted on said jib for cross-cutting the standing tree to fell the same.

5. Method for harvesting a standing tree, comprising the steps of

disposing a jib substantially parallel to a trunk of the standing tree, the jib being pivotally mounted to a frame on which grab means and pruning means are mounted,

actuating gripping means mounted on said jib to grip the standing tree and to press the same against saw means,

actuating said saw means mounted on said jib and pressing against the tree trunk, to cross-cut the standing tree, and

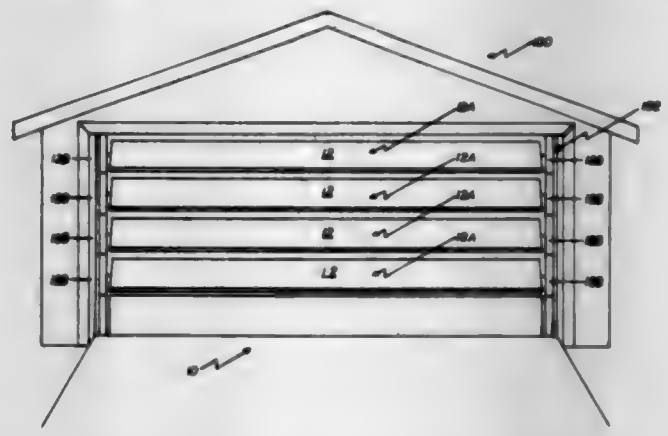
guiding the cross-cut tree to fall in a directed manner by turning only said jib with respect to said frame, said pruning means, and said grab means, to a felled position where said grab means and pruning means operatively engage the same.

4,537,237

LOUVERING OVERHEAD SECTIONAL DOOR

Frank J. Sepulveda, and Robert R. Silva, both of San Jose, Calif., assignors to Robert E. Reid, San Jose, Calif., a part interest

Continuation of Ser. No. 283,089, Jul. 13, 1981,. This application Dec. 12, 1983, Ser. No. 561,123
Int. Cl.[3] E05D *15/06*
U.S. Cl. 160—201 8 Claims



1. A louvering overhead sectional door assembly such as that utilized to close a vertical opening in a structure, the assembly including a door comprising a plurality of substantially planar, articulatably interconnected members and having means attached thereto for engaging a guide means mounted in correspondence to the opening such that the door may traverse the guide means to open and close the opening, said assembly characterized by

(a) each of a plurality of adjacent substantially planar members comprising a center louvering section pivotally attached to a pair of non-louvering end sections;

(b) louvering means attached to each of the center louvering sections for pivoting the center louvering sections when the door is vertically disposed, the louvering means comprising a pair of hinge assemblies, each hinge assembly comprising interconnected hinges, one such hinge being attached to a corresponding center louvering section;

(c) a plurality of releasable section locks, at least one such lock being attached to each center louvering section for locking the center louvering section into the plane of its corresponding planar member; and

(d) section lock release means operatively connected to the section locks for simultaneously releasing the section locks such that each of the center louvering sections may pivot out of the plane of its corresponding planar member.

4,537,238

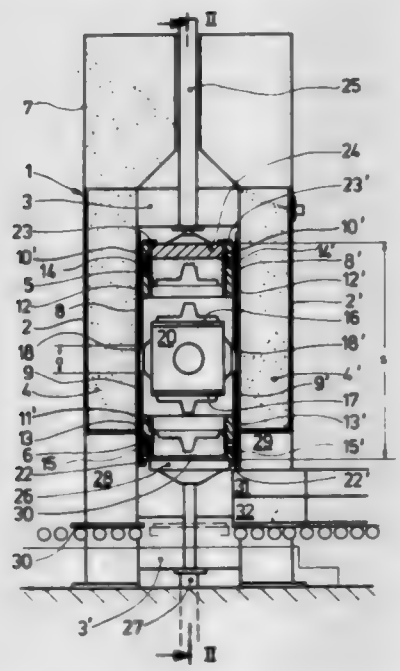
MOLDING MACHINE FOR MAKING FLASKLESS MOLDS

Michael Achinger, Neuburger Strasse 40, 8900 Augsburg, Fed. Rep. of Germany; Erhard Jaeger, Mettmann; Reinhold Lipp, Holzheim, and Walter Streitenberger, Freidberg-Derching, all of Fed. Rep. of Germany, assignors to Michael Achinger, Augsburg, Fed. Rep. of Germany

Filed Feb. 22, 1983, Ser. No. 468,624
Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206169
Int. Cl.[3] B22C *15/00*
U.S. Cl. 164—169 12 Claims

1. A molding machine for pressure shaping flaskless molds comprising a rectangular support frame including a pair of oppositely disposed side parts, two oppositely disposed molding flasks which are movable back and forth vertically and enclosed within said pair of side parts, a match plate carrier that can be moved in a horizontal direction into and from a position between said molding flasks, said match plate carrier including oppositely disposed match plates thereon, said rectangular support frame in which said molding flasks are en-

closed absorbs any reactive forces arising during a pressure-shaping process, said side parts are hollow for receiving a pourable molding material, said rectangular frame being symmetrical in a central plane that is normal to a vertical central plane of the rectangular frame, said side parts containing oppositely disposed openings and each of said molding flasks having



oppositely disposed openings in their sides which are in alignment with said openings in said side parts when said molding flasks are in a mold forming position relative to said match plates so that molding material can be transferred from said side parts to said molding flasks via said openings, and guide plates on said side parts for guiding said molding flasks for movement relative to said side parts.

4,537,239

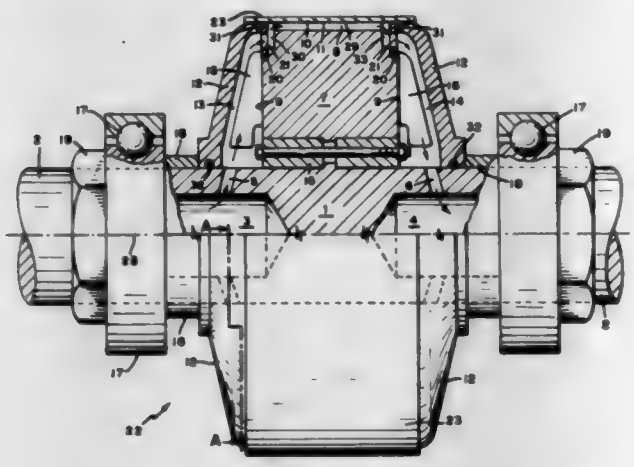
TWO PIECE CASTING WHEEL

Boleslaw L. Budzyn, Passaic, and Charles E. Carlson, Succasunna, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation of Ser. No. 397,755, Jul. 13, 1982, abandoned. This application Aug. 20, 1984, Ser. No. 641,939

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—423 **20 Claims**



17. A chilled casting wheel for providing a quench rate of at least about $10^{4\circ}$ C./sec, comprising:

(a) a hub shaft member having a concentric axis of rotation and two axial end portions, each end portion delimiting an axial coolant chamber having at least one coolant supply passage communicating radially therefrom;

(b) an annular wheel core member concentrically connected to said hub shaft and adapted to rotate therewith, said wheel core having axially extending channels formed about an outer peripheral surface thereof, two axially facing side portions, and an annular, radially extending channel in each of said side portions for conducting coolant to and from said axial channels;

(c) a separate, cylindrical, axially extending wheel rim member, which is concentrically connected to said peripheral core surface, has a preselected interference fit therewith to provide a residual, circumferential tensile stress within said rim, and which has a thickness, measured radially, ranging from about 0.060–0.25 in (0.15–0.64 cm), wherein said residual stress counteracts crowning stresses induced by a radial temperature gradient between an outer quench surface and an interior surface of said rim to hold said rim substantially flat across the width of said wheel core member;

(d) two annular flange members connected concentric with said hub shaft and adjacent to each of said core side portions to delimit an annular coolant chamber at each side of said wheel core which communicates with its respective coolant supply passage;

(e) a ring member located at each axial edge of said rim member, each ring member being connected to said wheel core and spaced axially from said axially extending channels, providing a sealing surface against which to connect the respective flange member, and having a plurality of openings extending axially therethrough into said annular channels in the face portions of the wheel core; and

(f) a plurality of coolant vanes disposed within said annular coolant chambers to direct coolant radially therethrough, said vanes aligned radially and positioned to face circumferentially.

4,537,240

APPARATUS FOR CONTINUOUS CASTING

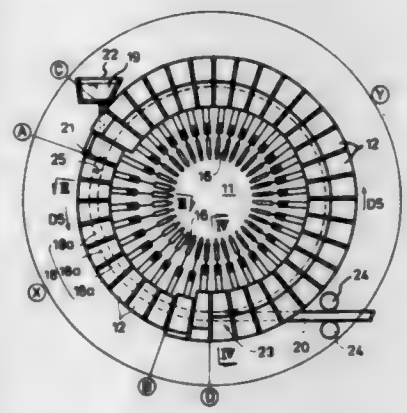
Yutaka Tsuchida, Yokosuka, and Toshiyuki Fukai, Yokohama, both of Japan, assignors to Ishikawajima-Harima Jukogyo Kabushiki Kaisha, Tokyo, Japan

Filed Jun. 9, 1983, Ser. No. 502,722

Claims priority, application Japan, Jun. 23, 1982, 57-107837

Int. Cl.³ B22D *11/06*

U.S. Cl. 164—430 **5 Claims**



1. A machine for continuously casting at high speed a thin strip of metal from a molten metal bath comprising:

(a) a rotary casting wheel provided with a casting ring on the outer periphery thereof;

(b) a plurality of contiguous molds pivotally carried by said casting wheel, each of said molds being moveable between open and closed positions and cooperating with said casting ring to define, upon closing, a continuous cavity along part of the outer periphery of said wheel to form said cast metal strip, each said mold being L-shaped in cross section at the point of contact with said casting ring;

(c) means for pivoting said molds to open and close said molds in sequence during rotation of said wheel, thereby permitting molten metal to be poured into closed molds, to solidify in said closed molds, and to be removed from open molds in the form of a casting, said means for pivoting said molds including a power cylinder pivotally af-

fixed to said wheel and an arm connected to each said mold;

(d) means for pouring molten metal into said closed molds; and

(e) means for removing the resulting casting from said open molds in the form of a continuous thin strip of metal.

4,537,241

METAL SUPPORTING STRUCTURE FOR CONTINUOUS CASTING MACHINES

Toshio Kanamori, Niihama, Japan, assignor to Sumitomo Heavy Industries, Ltd., Tokyo, Japan

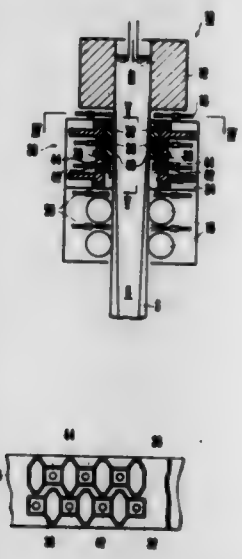
Filed Feb. 22, 1983, Ser. No. 468,723

Claims priority, application Japan, Feb. 25, 1982, 57-024928[U]; Mar. 30, 1982, 57-044013[U]

Int. Cl.³ B22D *11/12, 11/124*

U.S. Cl. 164—442

19 Claims



17. A continuous casting machine comprising a downwardly opening mold for casting a continuous metal strand, a structure for supporting and cooling the cast metal strand after it is discharged from said continuous casting mold, comprising: a backing frame having interior wall means defining a downwardly extending cavity extending away from said mold, said backing frame having exterior wall means remote from said cavity and a multiplicity of spaced-apart through openings extending through said backing frame from said exterior wall means to said interior wall means; a multiplicity of spray nozzles arranged adjacent to said exterior wall means of said backing frame and arranged to spray cooling water through said openings onto the cast metal strand that is moving through said cavity; a wear lining on the interior wall means of said backing frame, said wear lining comprising a multiplicity of metal-supporting elements protruding inwardly into said cavity from said interior wall means of said backing frame, said metal supporting elements having inner end faces adapted to contact and support the cast metal strand and defining a guide passage that conforms to the shape of the cast metal strand, said metal supporting elements being spaced apart from each other and being spaced from said openings so as not to obstruct spraying of said cooling water through said openings into said guide passage, said metal supporting elements being arrayed in horizontally and vertically spaced-apart, staggered relationship to each other, said metal supporting elements being of a generally octagonal shape and having upper edge portions which taper in an upward direction and having lower edge portions which taper in a downward direction so as to permit water easily to flow downwardly in said guide passage and to permit water vapor generated by contact of water with said cast metal strand to escape upwardly in said guide passage, the upper and lower edge portions of adjacent vertically spaced-apart metal supporting elements being in vertically overlapping relationship to that vertically continuous support for the cast metal strand is provided by said metal supporting elements;

a plurality of guide rollers disposed below said structure for guiding the cast metal strand after it leaves said structure;

a plurality of upper spray nozzles between said structure and said mold for spraying water onto the cast metal strand in order to cool said strand; and

a plurality of lower spray nozzles associated with said guide rollers for spraying water onto the cast metal strand in order to cool said strand.

4,537,242

METHOD AND APPARATUS FOR FORMING A THIXOFORGED COPPER BASE ALLOY CARTRIDGE CASING

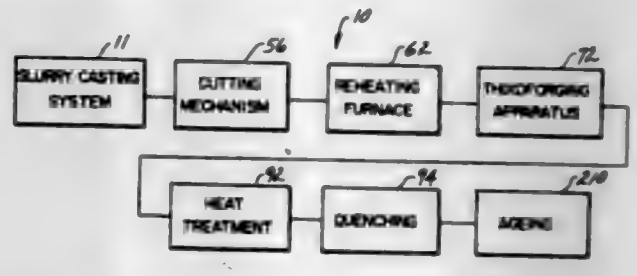
Michael J. Pryor, Woodbridge; Joseph Winter, New Haven, and Jonathan A. Dantzig, Hamden, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Division of Ser. No. 337,560, Jan. 6, 1982, Pat. No. 4,494,461. This application May 31, 1984, Ser. No. 616,023

Int. Cl.³ B22D *27/00*

U.S. Cl. 164—460

19 Claims



1. A process for forming a cartridge casing having a thin-walled, high strength, elongated member, said process comprising:

forming a semi-solid slurry from an age hardenable copper base alloy;

forging said semi-solid slurry to form said member; and age hardening said forged member.

4,537,243

METHOD OF AND APPARATUS FOR STEAM PREHEATING ENDLESS FLEXIBLE CASTING BELT

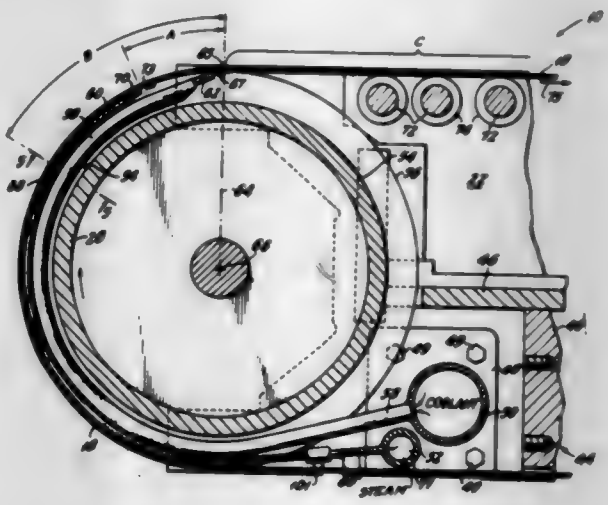
Robert W. Hazelett, Winooski, and John F. B. Wood, Burlington, both of Vt., assignors to Hazelett Strip-Casting Corporation, Malletts Bay, Vt.

Continuation of Ser. No. 199,619, Oct. 22, 1980, abandoned. This application Nov. 9, 1983, Ser. No. 550,253

Int. Cl.³ B22D *27/02*

U.S. Cl. 164—481

29 Claims



1. In the continuous casting of molten metal wherein the molten metal is contained and moved along in a casting zone

having an input end and an output end by at least one thin, flexible endless casting belt, said output end of said casting zone being downstream from said input end of said casting zone, said casting belt having a front surface carrying said molten metal in said casting zone and having a reverse surface and wherein the casting belt travels partially around curved guide means adjacent to the input end of the casting zone with the reverse surface of the belt being curved concave where the belt travels around said guide means, the improved method of preheating the casting belt before it reaches the input end of the casting zone comprising the steps of:

providing said guide means with deep circumferential grooves adjacent to said curved reverse surface of the casting belt,

conducting steam along confining passages within said deep grooves,

impinging first jets of steam directed radially outwardly from said confining passages in said deep grooves against the reverse surface of the belt for producing a first stage of elevation of the belt temperature before the belt reaches said input end of said casting zone,

said first jets of steam being located upstream of the input end of the casting zone by an angular distance of at least 45° defined by the arc of a 45 degree angle as measured from said first jets to the input end of said casting zone with an axis of curvature of said guide means defining the apex of said angle,

impinging second jets of steam aimed downstream from said confining passages in said deep grooves contacting the reverse surface of the belt with the steam in said second jets travelling downstream for producing a second stage of elevation of the belt temperature following said first stage of elevation of the belt temperature in front of the position where the belt reaches said input end of said casting zone and for creating a downstream flow of steam in said deep grooves travelling downstream toward the input end of said casting zone,

said second jets of steam being angularly spaced downstream by a second angular distance of at least 20° from said first jets,

conducting coolant liquid along other confining passages within said deep grooves, and

impinging jets of liquid coolant aimed downstream from said deep grooves striking the reverse surface of the belt at an angle of incidence less than 25° near to the input end of the casting zone and travelling downstream along the reverse surface of the belt as the belt enters the casting zone.

15. In a machine for continuously casting molten metal wherein at least one thin, endless, flexible casting belt having a front face and a reverse face revolves around pulleys and passes along a casting zone having an input end and an output end, said output end of the casting zone being downstream from said input end, said belt moving along said casting zone from the input end to the output end of the casting zone for carrying the metal being cast against the front face of the casting belt through said casting zone, apparatus for preheating said casting belt with steam comprising:

an input pulley for moving said casting belt into the input end of said casting zone,

said input pulley having circumferential grooves therein underlying the reverse face of said casting belt as said casting belt revolves partially around said input pulley in moving toward and into the input end of the casting zone,

wrap-around steam feed tubes each having a nozzle on the end thereof, said steam feed tubes and nozzles being positioned in the respective circumferential grooves of said input pulley,

said steam feed tubes each having radial steam ports aimed toward the reverse face of the casting belt for applying steam from said radial ports to the reverse face of said endless belt near to the input end of the casting zone for preheating said belt before said belt enters the input end of said casting zone,

said radial steam ports being located upstream of the input end of the casting zone by a first angular distance of at least 45° defined by an angular arc as measured from said first jets to the input end of said casting zone with an axis of rotation of said input pulley defining the apex of said angle,

said nozzles being located downstream from said radial ports by a second angular distance of at least 20° from said radial ports, said second angular distance being defined by an angular arc as measured from said radial ports with said axis of rotation defining the apex thereof, and

said nozzles being aimed downstream for applying steam travelling downstream from said nozzles impinging against the reverse face of the belt nearer to the input end of the casting region than said radial ports for producing a second stage of preheating said belt before the belt reaches said input end of the casting zone,

said two stages of steam preheating reducing belt distortion caused by the tremendous heating effect of the molten metal for thereby enabling the speed of the casting machine to be increased.

4,537,244

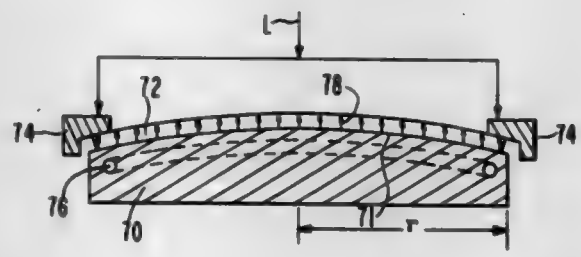
METHOD FOR OPTIMUM CONDUCTIVE HEAT TRANSFER WITH A THIN FLEXIBLE WORKPIECE

Scott C. Holden, Manchester, Mass., assignor to Varian Associates, Inc., Palo Alto, Calif.

Division of Ser. No. 381,668, May 25, 1982, abandoned. This application Mar. 2, 1984, Ser. No. 585,743

Int. Cl.³ F28F *9/00*

U.S. Cl. 165—1 **7 Claims**



1. A method for optimizing transfer of thermal energy with a thin, flexible workpiece in vacuum comprising:

establishing the geometry and material of the thin, flexible workpiece; and

selecting a contour of a nonplanar, nonspherical contact surface, based on the geometry and material of said workpiece, for transfer of thermal energy to or from said workpiece when said workpiece is clamped thereto at its periphery, said contour being selected to impose uniformity of contact pressure over the surface area of said workpiece and to simultaneously stress said workpiece to approach the limiting elastic stress thereof.

4,537,245

ZONE AIR-CONDITIONING CONTROL SYSTEM FOR MOTOR VEHICLE COMPARTMENT

Masao Nishimura, Anjo; Masami Mori, and Akirou Yoshimi, both of Oobu, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1982, Ser. No. 428,613

Claims priority, application Japan, Oct. 9, 1981, 56-161475

Int. Cl.³ F24F *3/044, 7/06*

U.S. Cl. 165—22 **6 Claims**

1. A zone air-conditioning control system for use with a motor vehicle, comprising:

(a) an air-conditioning unit having:

a single duct for leading incoming air thereinto,

a refrigerating unit disposed in said single duct for cooling air led into said single duct,

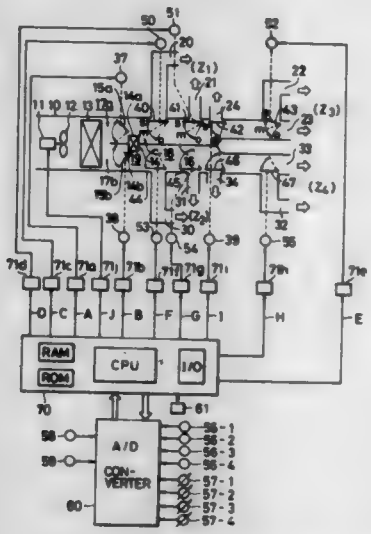
first and second ducts respectively communicating with

said single duct at a downstream portion of said single duct, and

first and second temperature adjustment mechanisms respectively disposed in said first and second ducts, each of said first and second temperature adjustment mechanisms including a heat exchanger, for heating air passing therethrough, and being provided for controlling the amount of heat exchanged;

(b) first to fourth branch ducts for distributing temperature-controlled air to first to fourth air-conditioning zones established in the passenger compartment of said motor vehicle, said air-conditioning zones being respectively defined by the front right seat area, the front left seat area, the rear right seat area, and the rear left seat area of the passenger compartment, said first and third branch ducts being communicated to said first duct and being related to said first temperature adjustment mechanism, and said second and fourth branch ducts being communicated to said second duct and being related to said second temperature adjustment mechanism, said first branch duct communicating with said first air-conditioning zone, said second branch duct communicating with said second air-conditioning zone, said third branch duct communicating with said third air-conditioning zone, and said fourth branch duct communicating with said fourth air-conditioning zone;

(c) first and second flow rate changing means for changing



the flow rate of air flowing through said branch ducts, said first flow rate changing means being disposed in said first duct, and said second flow rate changing means being disposed in said second duct;

(d) temperature detecting means for generating electrical signals each indicative of the temperature of air in each of said air-conditioning zones;

(e) temperature setting adjusters with which a desired temperature in each of said first to fourth air-conditioning zones can be set;

(f) a control unit for controlling said first and second temperature adjustment mechanisms and said first and second flow rate changing means in accordance with electrical signals from said temperature detecting means and electrical signals from said temperature setting adjusters so as to cause temperature detected in each of said first to fourth air-conditioning zones to approach temperature set by means of said temperature setting adjusters, said control unit controlling said first temperature adjustment mechanism in accordance with each difference between said set temperature and said detected temperature in said first and third air-conditioning zones and controlling said second temperature adjustment mechanism in accordance with each difference between said set temperature and said detected temperature in said second and fourth air-conditioning zones, said control unit controlling said first flow rate changing means to proportion a first distribution amount of temperature-controlled air to be supplied between said first air-conditioning zone and said third air-conditioning zone and controlling said second flow rate changing means to proportion a second distribution amount of temperature-controlled air to be supplied between said second air-conditioning zone and said fourth air-conditioning zone; and

(g) actuating means for actuating said first and second temperature adjustment mechanisms and said first and second flow rate changing means in accordance with commands from said control unit.

4,537,246

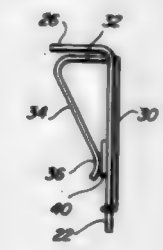
VERTICAL HEAT SINK

Robert H. F. Lloyd, Woodside, Calif., assignor to Conver Corporation, Woodside, Calif.

Filed Dec. 9, 1983, Ser. No. 559,782

Int. Cl.³ H01L *23/40*

U.S. Cl. 165—80 B **10 Claims**



1. A heat sink for dissipating heat generated by an electronic component mounted thereon, comprising:

a vertical heat conductive member having upper and lower edges and first and second surfaces, said lower edge having connecting tabs at opposite ends thereof, said upper edges having two mounting tabs at opposite ends thereof, said mounting tabs having apertures passing therethrough; and

resilient clip means removably coupled to said vertical heat conductive member for holding said electronic component to said vertical heat conductive member, said resilient clip means including first and second legs resiliently biased toward each other so that said first leg holds said electronic component against said vertical heat conductive member when said electronic component and said vertical heat conductive member are placed between said first and second legs, said second leg having a terminating lip which engages said lower edge of said vertical heat conductive member.

4,537,247

HEAT PIPE HEAT EXCHANGER

Eiji Okamoto; Yasuhiro Fukaya, both of Kobe, and Michio Chikami, Ibaraki, all of Japan, assignors to Gadelius Kabushiki Kaisha, Japan

PCT No. PCT/JP82/00283, § 371 Date Mar. 21, 1983, § 102(e) Date Mar. 21, 1983, PCT Pub. No. WO83/00380, PCT Pub. Date Feb. 3, 1983

PCT Filed Jul. 21, 1982, Ser. No. 480,949

Claims priority, application Japan, Jul. 22, 1981, 56-113527

Int. Cl.³ F28D *15/00*

U.S. Cl. 165—104.14 **5 Claims**

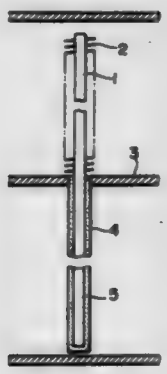
1. A heat pipe heat exchanger comprising:

a low temperature fluid passage and a high temperature fluid passage defined by a partition board;

a plurality of heat pipes extending over the entire width of said passages, said heat pipes being bare at least at the high temperature fluid passage side;

finless outer pipes coated at the outer surface with enamel for corrosion protection, said heat pipes at the high tem-

perature fluid passage side being removably inserted into said finless outer pipes; and



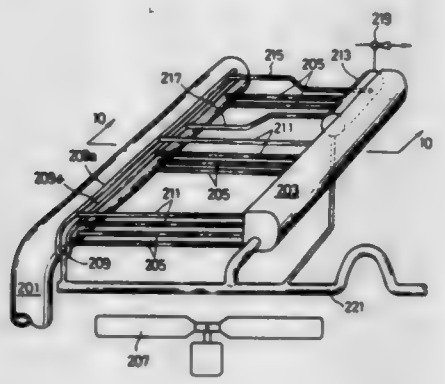
a heat conductive material disposed between said heat pipes and said finless outer pipes.

4,537,248

AIR-COOLED HEAT EXCHANGER

Kunihiko Minami, Sakai, Japan, assignor to Sasakura Engineering Co., Ltd., Osaka, Japan

Division of Ser. No. 214,086, Dec. 8, 1980, Pat. No. 4,417,619.
This application May 25, 1983, Ser. No. 497,863
Int. Cl.[3] F28B *1/06, 9/10*
U.S. Cl. 165—113 2 Claims



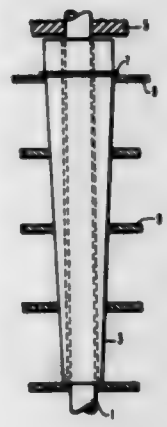
1. An air-cooled heat exchanger comprising at least one set of first tubes and second tubes extending generally in parallel to each other through which fluid being cooled flows in the same direction and across which air flows to cool the fluid within said tubes, said first tubes having a first longitudinal portion and a second longitudinal portion downstream of said first portion with respect to the air flow, and said second tubes having a first longitudinal portion adjacent to and downstream with respect to the air flow from said first portion of said first tubes and a second longitudinal portion adjacent to said second portion of said first tubes and upstream with repect to the air flow of said first portion of said second tubes and also upstream of said second portion of said first tubes, said first and second portions of said tubes being connected by an intermediate bend, first header means and second header means extending substantially in parallel to each other and at an angle to a horizontal plane, said first and second longitudinal portions of each tube extending horizontally between said header means, said tubes being devoid of rising portions in the direction of the fluid flow therethrough, said intermediate bend of one of said first and second tubes being directed substantially horizontally and said bend of the other tubes being directed substantially in a generally vertical plane adjacent said other tubes.

4,537,249

HEAT FLUX LIMITING SLEEVES

William G. Harris, Tampa, Fla., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Feb. 2, 1981, Ser. No. 230,554
Int. Cl.[3] F28F *13/14*
U.S. Cl. 165—134 R 7 Claims



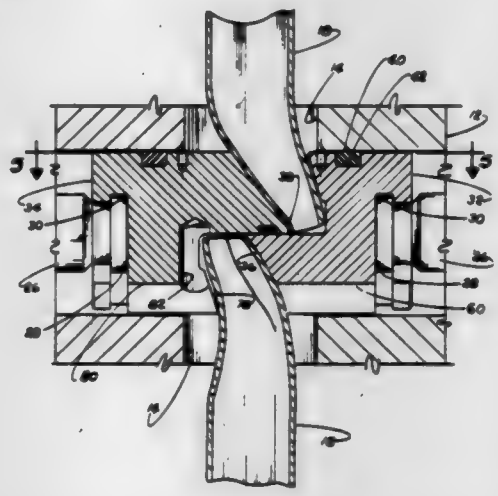
1. A heat flux limiting tubular sleeve for a single heat exchanger tube having a generally uniform outside diameter, said tubular sleeve extending over only a portion of said tube, being open on both ends, having one end of the tubular sleeve larger in diameter than the other end thereof and having a wall thickness which decreases in the same direction as the diameter of the sleeve decreases, whereby the heat transferred through the tubular sleeve and tube is less on the larger diameter end of the sleeve than on the other end thereof.

4,537,250

SHEARING TYPE BLOWOUT PREVENTER

John N. Troxell, Jr., Houston, Tex., assignor to Cameron Iron Works, Inc., Houston, Tex.

Filed Dec. 14, 1983, Ser. No. 560,941
Int. Cl.[3] E21B *29/08*
U.S. Cl. 166—55 3 Claims



1. A ram-type shearing apparatus for a wellhead comprising
a body having a bore therethrough and ram guideways extending laterally from opposite sides of the bore,
a ram assembly located in each of the ram guideways, each ram assembly comprising a ram body and means for reciprocating the ram bodies into and from the bore,
each ram body having a cutting blade in position for the cutting edge of the blade on one ram body to pass just below the cutting edge of the blade on the other to shear a string positioned in the bore when the ram assemblies are moved together in the bore,
sealing means on each of said ram bodies including a sealing strip positioned in a groove extending transversely across

the lower surface of the upper of said cutting blades to seal against the upper surface of the lower of said cutting blades,

the lower cutting blade includes a pair of nodes on its face extending toward the upper cutting blade with an arcuate recess therebetween to engage the string initially during shearing and to penetrate said string prior to other shearing of the string whereby the forces of shearing said string are reduced,

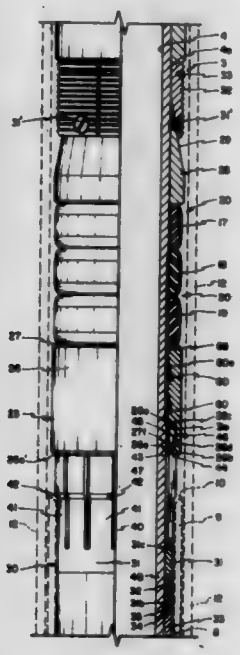
the shape of said ram bodies and their cutting blades constraining the upper end of the lower sheared portion of the string so that it is partially open after the lower cutting blade is in sealing engagement with said upper cutting blade sealing strip to allow flow therein to be engaged by an overshot type of retrieving tool.

4,537,251

ARRANGEMENT TO PREVENT PREMATURE EXPANSION OF EXPANDABLE SEAL MEANS

Britt O. Braddick, P.O. Box 35729, Houston, Tex. 77235

Filed Apr. 6, 1984, Ser. No. 597,697
Int. Cl.³ E21B *23/06*
U.S. Cl. 166—196 **10 Claims**



1. In a seal nipple packer having a tubular member with seals thereon for sealing above the annular end of a tubular receptacle supported in a well string, the invention including:

expandable seal means on the tubular member for sealing with the well string above the annular end of the receptacle;

actuating means including a setting sleeve movable on the tubular member for expanding said expandable seal means into engagement with the well string; and

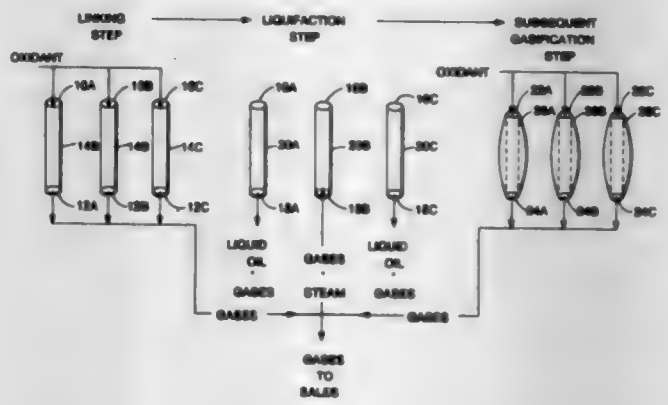
releasable retaining means having a radially flexible portion engaged with said actuating means and the tubular member to retain said actuating means in a nonactivated position until said radially flexible portion of said releasable retaining means engages substantially the full annular end of the tubular receptacle and is radially collapsed to release said retaining means from said actuating means.

4,537,252

METHOD OF UNDERGROUND CONVERSION OF COAL

Rajen Puri, Tulsa, Okla., assignor to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 371,108, Apr. 23, 1982, abandoned. This application Jan. 20, 1984, Ser. No. 572,737
Int. Cl.³ E21B *43/247, 43/30*
U.S. Cl. 166—245 **5 Claims**



1. A method of converting to gaseous and liquid products coal and other solid carbonaceous material contained in a coal seam provided with a plurality of well groupings, each grouping comprising at least two pairs of wells comprising the steps of:

(a) injecting an oxygen containing gas into at least a pair of wells in a grouping;

(b) initiating combustion between said first pair of wells in said grouping and a second pair of wells in said grouping, said combustion linking said wells and producing syngas;

(c) thereafter blocking wells into which oxygen was injected in step (a), thereby providing blocked wells;

(d) injecting syngas and steam into a well in said first grouping linked to a blocked well in said grouping and removing liquid and gaseous products from at least one adjacent well in said first grouping, thereby leaving char;

(e) unblocking wells blocked in step (c) in said first grouping and introducing an oxygen containing gas into said wells to gasify coal and char therein by combustion;

(f) removing syngas from wells in communication with wells having oxygen injected thereinto in step (e); and

(g) repeating the sequence of steps (a) to (e) in a subsequent grouping of wells and utilizing a portion of the syngas produced in the steps (b) and (f) as the feed to step (d) carried out in said subsequent grouping.

4,537,253

MICELLAR SLUG FOR OIL RECOVERY

Hiroshi Morita, Chiba; Yasuyuki Kawada, Funabashi; Junichi Yamada, and Toshiyuki Ukigai, both of Chiba, all of Japan, assignors to Lion Corporation, Tokyo, Japan

Continuation-in-part of Ser. No. 415,840, Sep. 8, 1982,. This application Mar. 31, 1983, Ser. No. 480,863
Claims priority, application Japan, Oct. 9, 1981, 56-160296; Mar. 11, 1982, 57-37186
The portion of the term of this patent subsequent to Apr. 23, 2002, has been disclaimed.
Int. Cl.³ E21B *43/22*
U.S. Cl. 166—274 **6 Claims**

1. A micellar slug for use in the recovery of oil from subterranean reservoirs, said slug consisting essentially of a hydrocarbon, in the amount of about 2% to about 90% by weight, an aqueous medium, in the amount of about 4% to about 95% by weight, a surfactant in the amount of about 1% to about 3% by weight, and a cosurfactant in the amount of about 0.1% to about 20% by weight, said surfactant containing, as an essential component, an alpha-olefin sulfonate having 10 to 26 carbon atoms and containing 0.5% to 12% by weight of disulfonate said micellar slug further containing an aqueous component which is oil-phase water included from the subterranean reser-

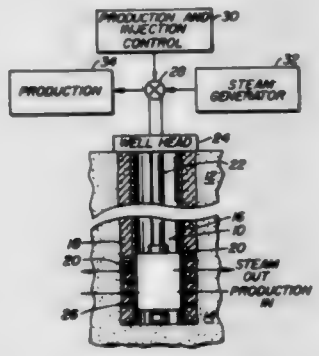
voir which has an inorganic salt concentration of about 5% to 25%, so that the total inorganic salt concentration, after inclusion of the oil-phase water, is in the range of about 2% to 20%.

4,537,254

STEAM INJECTION WELL GRAVEL PACK MATERIAL OF SINTERED BAUXITE

Thomas D. Elson, Chino, and Ralph S. Millhone, Brea, both of Calif., assignors to Chevron Research Company, San Francisco, Calif.

Division of Ser. No. 455,372, Jan. 3, 1983, abandoned. This application Jul. 5, 1984, Ser. No. 628,010
Int. Cl.³ E21B *43/04*
U.S. Cl. 166—278 **1 Claim**



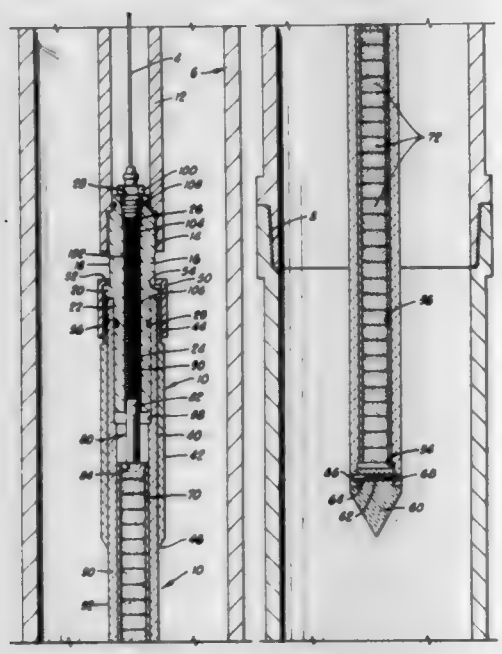
1. A method for reducing particulate material pack dissolution in subsurface wellbore environment comprising installing a pack material consisting essentially of sintered bauxite without a binder material in the subsurface wellbore as said pack particulate material and passing hot well fluids including steam into or out of said subsurface through said sintered bauxite.

4,537,255

BACK-OFF TOOL

John A. Regalbuto, and Jack E. Dines, both of Fort Worth, Tex., assignors to Jet Research Center, Inc., Arlington, Tex.

Filed Jun. 22, 1983, Ser. No. 506,739
Int. Cl.³ E21B *23/00*
U.S. Cl. 166—297 **15 Claims**



15. A method of backing off a conduit joint in a well bore, comprising:

disposing, adjacent said joint, an explosive in the form of a plurality of mutually abutting explosive pellets in a non-metallic housing adapted to substantially disintegrate upon detonation of said explosive;

pressurizing said explosive to substantially the level of pressure in said well bore adjacent said joint;

applying torque to said joint;

detonating said explosive and substantially disintegrating said housing while maintaining said torque; and

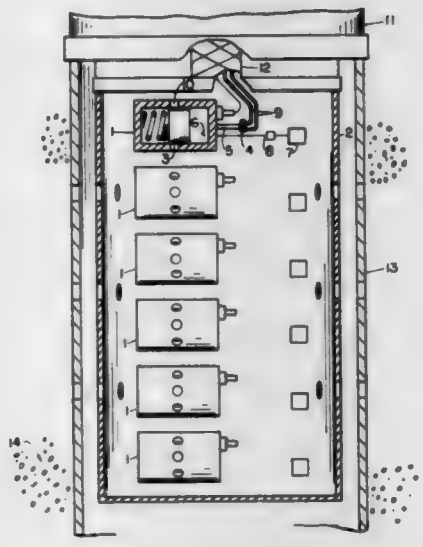
backing off said joint subsequent to said detonation of said explosive and disintegration of said housing.

4,537,256

SONIC FRACING PROCESS AND MEANS TO CARRY OUT SAID PROCESS

Franklin Beard, 2900 Wilcrest, Houston, Tex. 77079

Filed Jun. 13, 1983, Ser. No. 503,595
Int. Cl.³ E21B *43/26*
U.S. Cl. 166—299 **4 Claims**



1. In a formation stimulator, means mountable within a well casing for creating successive sonic waves in a production formation by controlled explosions in measured series said means for creating sonic waves has a housing, a plurality of cylinders within said housing, reciprocable pistons in said cylinders, means for introducing fuel into said cylinders, port holes in said cylinders through which exhaust gases from said fuel pass into the formation when said fuel has been ignited and said pistons are in one position.

3. The method of fracing a production formation, introducing a series of explosions creating a flow of exhaust gas in the well casing opposite a perforated area therein, said gas carrying its thermal properties into the adjacent production formation, said series having three successively greater explosions, creating reciprocating sonic waves in the formation, fracing the formation and forming passageways into the well casing.

4,537,257

SUBMERSIBLE PUMP

David B. Todd, Calgary, Canada, assignor to Shell Oil Company, Houston, Tex.

Filed Mar. 16, 1984, Ser. No. 590,312
Int. Cl.³ E21B *43/00*
U.S. Cl. 166—369 **6 Claims**

1. A method for isolating a well casing from the fluids in a well being produced by a submersible pump, said method comprising:

enclosing and sealing the submersible pump in a cylindrical shell;

attaching the top of the cylindrical shell to the production tubing string;

attaching a packer to the lower end of a tubing section projecting from the lower end of the cylindrical shell;

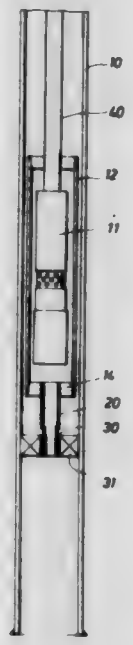
lowering the pump and production tubing into the well; and

seating said packer to seal the annular space between the well casing and the cylindrical shell.

5. An apparatus for producing hydrocarbon fluids contain-

ing corrosive fluids from a well using a submersible pump having suction and discharge openings while isolating the well casing from the fluids, said apparatus comprising:

a cylindrical shield member having closed ends, said submersible pump being disposed in said cylindrical shield with means for fluid communication between the lower closed end of the shield and the suction opening of the pump;



a production tubing string, said tubing string being secured to the other of the closed ends of the shield member;

a short tubing section, said short tubing section being secured to the lower closed end of the shield member; and

a hydraulically setable packer, said packer being attached to said short tubing string, whereby said packer when set will close the annular space between said short tubing string and said well casing.

4,537,258

LOW PRESSURE RESPONSIVE DOWNHOLE TOOL

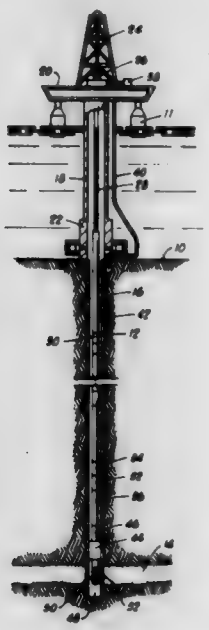
Harold K. Beck, Duncan, Okla., assignor to Halliburton Company, Duncan, Okla.

Filed Sep. 19, 1983, Ser. No. 533,835

The portion of the term of this patent subsequent to Dec. 25, 2001, has been disclaimed.

Int. Cl.³ E21B *34/08*

U.S. Cl. 166—374 **38 Claims**



1. An annulus pressure responsive downhole tool apparatus, comprising:

a tool housing;

a power piston slidably disposed in said housing;

a first pressure conducting passage means for communicating a well annulus with a first side of said power piston;

a second pressure conducting passage means for communicating said well annulus with a second side of said power piston;

retarding means, disposed in said second pressure conducting passage means, for delaying communication of a sufficient portion of an increase in well annulus pressure to said second side of said power piston for a sufficient time to allow a pressure differential from said first side to said second side of said power piston to move said power piston from a first position to a second position relative to said housing; and

pressure relief means, communicated with a first portion of said second pressure conducting passage means between said second side of said power piston and said retarding means, for relieving from said first portion of said second pressure conducting passage means a volume of fluid sufficient to permit said power piston to travel to its said second position.

4,537,259

BLADE CONTROL DEVICE

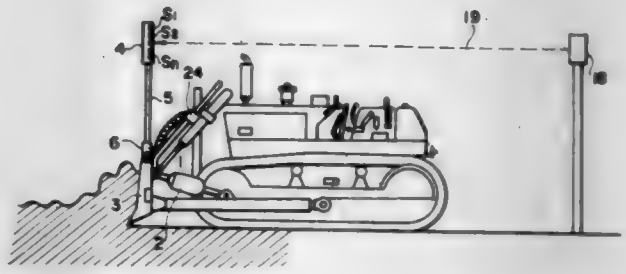
Tetsuji Funabashi, and Shingo Kobayashi, both of Hiratsuka, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 26, 1982, Ser. No. 436,841

Claims priority, application Japan, Oct. 26, 1981, 56-171064; Nov. 25, 1981, 56-188553; Nov. 25, 1981, 56-188554

Int. Cl.³ E02F *3/76, 3/85*

U.S. Cl. 172—4.5 **6 Claims**



6. A blade control device comprising:

a blade;

a light receiving device mounted to the blade so as to be movable in vertical directions;

a light receiving device controlling system means for positioning, when in an automatic leveling mode where said blade is automatically controlled using a reference surface formed by a laser beam, said light receiving device to a height corresponding to a command value;

a lift cylinder control system means to which, when in the automatic leveling mode, a deviation signal representative of the deviation of the light receiving position of said light receiving device with respect to the laser beam projecting at a predetermined height is provided, for lifting or lowering the blade so as to eliminate said deviation;

a manual control means for producing a manual control electronic signal output indicative of desired lifting or lowering of the blade in a manual operation; and

switching means for inputting the signal output of said manual control means, instead of said command value, to said light receiving device controlling system means during manual operation, and for inputting said command value to said light receiving device controlling system means during the automatic leveling mode after the manual operation is finished, said lift cylinder control system means being free from receiving signals from said light receiving device during manual operation, and said light receiving device controlling system means being operable

by said deviation value to move said light receiving device vertically relative to said blade during said manual operation.

4,537,260

APPARATUS WITH REAR AND FRONT POWER LIFT, COMMON REGULATING AND CONTROL ELEMENTS, AND CHANGEOVER VALVE

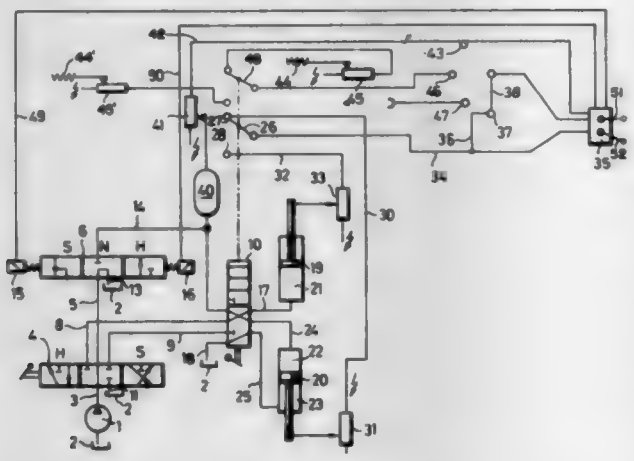
Herbert Knepper, Brühl, Fed. Rep. of Germany, assignor to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Apr. 12, 1983, Ser. No. 484,190

Claims priority, application Fed. Rep. of Germany, Apr. 17, 1982, 3214206

Int. Cl.³ A01B *63/112*

U.S. Cl. 172—9 **8 Claims**



1. In an apparatus having coupled therewith a rear and a front hydraulic power lift for raising and lowering implements, with each power lift including a lifting cylinder; actuation of the rear power lift being a function of not only pick-up determined measurement of values of respectively working resistance and position, comparison values of respectively working resistance and position, and mixed values of respectively working resistance and position of an implement as well as cylinder pressure, but also of random setting of the rear power lift; said apparatus having the improvement therewith comprising function regulating elements in common for the rear and the front power lifts, an operation control element in common for the rear and the front power lifts, and a changeover valve in common with both of said lifting cylinders for effecting actuation of the rear power lift as a function of the aforementioned values, and for effecting actuation of the front power lift, even for a single operation, as a function of at least one of said aforementioned values also applicable for operation said rear power lift; said lifting cylinders of said power lifts being connectible with said regulating elements and said control element, respectively via intervention of said changeover valve, in such a way that one of said lifting cylinders can be controlled as to operation while the other lifting cylinder can be regulated as to function, and vice versa.

4,537,261

COMBINED CHISEL PLOW, ROD WEEDER AND DRILL

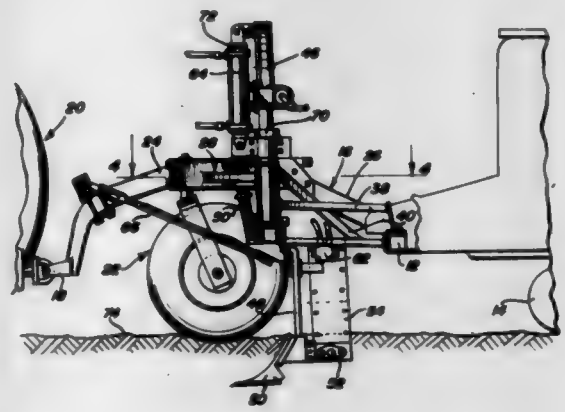
Paul H. Hatzell, 1733 Hwy. 87 East, Billings, Mont. 59101

Filed Mar. 1, 1984, Ser. No. 585,240

Int. Cl.³ A01B *39/19, 49/06*

U.S. Cl. 172—44 **7 Claims**

1. In combination with a seeder of the type including a main frame supporting a plurality of laterally spaced rear seeder units and equipped with a forwardly projecting hitch assembly including dependingly supported ground engaging wheel means, said hitch assembly including forward hitch means for coupling to the rear of a tractor and mounting frame means intermediate the hitch means and the rear portion of said hitch assembly, a pair of generally aligned, axially spaced and transversely extending opposite side tool bars disposed on opposite sides of said ground wheel means, a pair of laterally spaced upstanding guide and support members projecting upwardly from adjacent ends of said tool bars, said mounting frame including guide means from which said guide and support members are supported for guided vertical shifting, a cross-head assembly extending between and connecting the upper ends of said guide and support members, lift means operatively connected between said cross-head assembly and said hitch assembly for raising and lowering said cross-head assembly



relative to said hitch assembly, said mounting frame means and the remote ends of said tool bars including coacting guide means guiding said remote ends against rearward displacement relative to said main frame, a plurality of tool shanks dependingly supported from each of said tool bars, sweep means mounted from the lower ends of said tool shanks, shaft journal means supported from said sweep means in trailing relation relative thereto, and driven rod weeder shaft means journaled from and extending between said journal means rearward of said wheel means.

4,537,262

SOIL CULTIVATION

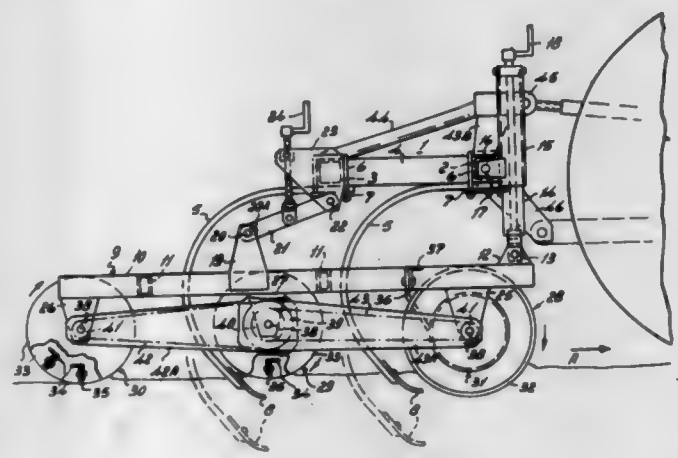
Cornelis van der Lely, 7 Brüschenrain, Zug, Switzerland

Filed Jun. 15, 1983, Ser. No. 504,414

Claims priority, application Netherlands, Jun. 23, 1982, 8202530

Int. Cl.³ A01B *49/02*

U.S. Cl. 172—146 **14 Claims**



1. A soil cultivating machine comprising a carrying frame and a plurality of cultivating members arranged on said frame, said cultivating members comprising three rollers arranged in series transverse to the machine's direction of travel during operations, said rollers being provided with cultivating elements and being drivably interconnected with each other during operation, the machine further comprising a framework and further cultivating members, said framework supporting said further cultivating members, said rollers being mounted on said carrying frame, said framework being adjustably connected to said carrying frame by two independently operable

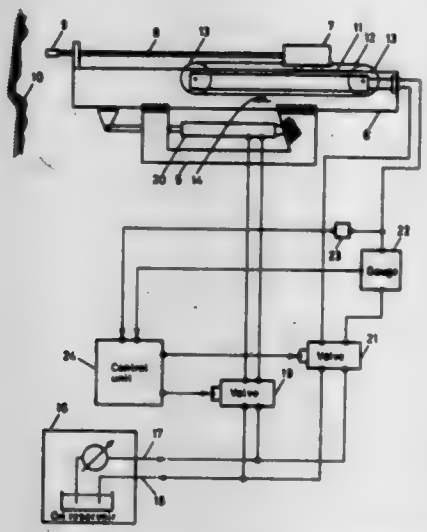
height adjustment means at two respective horizontally spaced apart locations so that said carrying frame and said rollers mounted thereon are movable as a whole relatively upwardly and downwardly with respect to said framework to which said further cultivating members are fastened, said rollers serving to establish the working depth of said further cultivating members.

4,537,263

METHOD AND MEANS FOR ADJUSTING THE FEED SUPPORT OF A ROCK DRILLING UNIT INTO A GIVEN DISTANCE FROM THE DRILLING LOCATION

Hakon E. Bjor, Hvalstad, Norway, assignor to Ingenior Thor Furuholmen A/S, Oslo, Norway

Filed Apr. 26, 1982, Ser. No. 372,237
Claims priority, application Norway, Apr. 29, 1981, 811458
Int. Cl.[3] E21B *15/04*
U.S. Cl. 173—1 13 Claims



1. A method for positioning at a predetermined distance from a rock surface into which holes are to be drilled a feed support of a rock drilling unit of the type including a carrier supporting said feed support for longitudinal movement relative thereto, first hydraulic means for moving said feed support longitudinally with respect to said carrier, a drilling machine mounted on said feed support for longitudinal movement relative thereto, a drill stem supported by said drilling machine and movable therewith, a drill bit fixed to an end of said drill stem, second hydraulic means for moving said drilling machine, said stem and said bit longitudinally with respect to said feed support, and means for measuring the depth of a drilled hole as a function of the relative position of said drilling machine with respect to said feed support, said method comprising:

operating said second hydraulic means and thereby moving said drilling machine, said stem and said bit toward said rock surface until said bit abuts said rock surface;

operating said first hydraulic means to move said feed support toward said rock surface, while maintaining said bit in abutment with said rock surface, whereby said feed support moves relative to said drilling machine; and

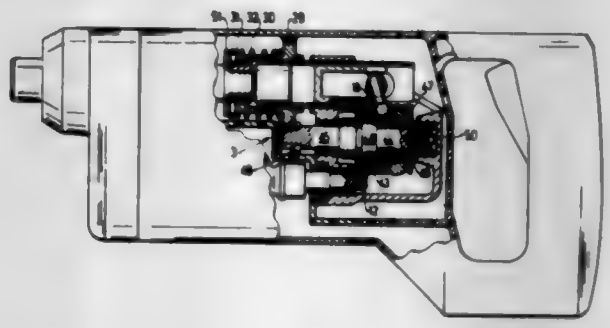
stopping operation of said first hydraulic means and thereby movement of said feed support when said depth measuring means determines that said feed support has reached a position spaced said predetermined distance from said rock surface, as a function of the relative position of said bit, and thereby of said drilling machine, with respect to said feed support.

4,537,264

POWER-DRIVEN HAND TOOL

Wolfgang Schmid, Plattenhardt; Karl Wanner, Echterdingen; Jorg Fälchle, Bempflinge; Manfred Bleicher, and Frank Müller, both of Leinfelden, all of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Continuation of Ser. No. 279,036, Jun. 30, 1981, Pat. No. 4,456,076, which is a continuation-in-part of Ser. No. 950,585, Oct. 12, 1978, Pat. No. 4,280,359, which is a continuation of Ser. No. 810,959, Jun. 29, 1977, abandoned, which is a continuation-in-part of Ser. No. 615,904, Sep. 28, 1975, abandoned. This application Mar. 19, 1984, Ser. No. 590,877
Claims priority, application Fed. Rep. of Germany, Oct. 16, 1974, 2449191
The portion of the term of this patent subsequent to Jul. 28, 1998, has been disclaimed.
Int. Cl.[3] E02D *7/02*
U.S. Cl. 173—48 2 Claims



1. A power-driven hammer drill, comprising a housing; a tool chuck on said housing and adapted to hold an elongated tool; means for impacting said tool chuck in direction lengthwise of the tool, including a guide tube coaxial with said tool chuck, and a piston which is slidingly received and reciprocable in said guide tube in said direction, said piston having one end portion facing towards said tool chuck and another end portion facing away therefrom, said other end portion being formed with a bore extending transverse to said direction; and drive means for said impacting means, comprising a driven rotatable shaft mounted for rotation about an axis paralleling said direction, a drum coaxially mounted on said shaft freely turnably surrounding the same and having a circumferential surface formed with a circumferentially complete cam track formed as a groove having an axial flank shaped to act as a wobble plate, coupling means for coupling said drum for joint rotation with said shaft, and transmitting means guided by said cam track and operatively connected with said piston for transmitting reciprocatory motion to the same in response to rotation of said drum with said shaft, said transmitting means comprising a ring freely turnably received in said groove and a projection extending substantially radially from said ring and slidably received in said bore of said other end portion of said piston, said coupling means comprising cooperating first and second coupling portions on said shaft and said drum, respectively, and said shaft being axially shiftable relative to said drum between two positions in which said first and second coupling portions are engaged and disengaged, respectively.

4,537,265

SELF PROPELLED REVERSIBLE BORING RAM

William E. Cox, Woodbridge, and Kenneth L. Hemmings, Colchester, both of England, assignors to British Telecommunications, London, England

Filed Apr. 22, 1983, Ser. No. 487,767
Int. Cl.[3] E21B *4/14, 7/26, 11/02*
U.S. Cl. 175—19 10 Claims

1. A self-propelled reversible boring ram comprising a tubular body which contains a reciprocable hammer and a pneumatically balanced reciprocable control member for supplying working fluid to the hammer in either a forward motion mode position or a reverse motion mode position,

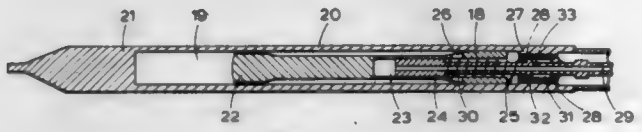
said control member having oppositely directed piston surfaces which are at all times subjected to substantially balanced pneumatic forces from said working fluid in both said reverse and forward mode positions.

6. A self-propelled reversible boring ram comprising:

a tubular body;

a hammer contained within the body, said hammer being reciprocable by working fluid supplied to the ram; and

a pneumatically balanced control member movable between



a forward position for advancing the ram and a reversing position, rearwards of the forward position, for reversing the ram;

wherein said control member includes oppositely directed surfaces which are both subjected to the pressure of the working fluid such that the net pneumatic fluid pressure on said member is substantially balanced at both said forward and reversing positions of the control member and during motion of the control member between said forward and reversing positions.

4,537,266

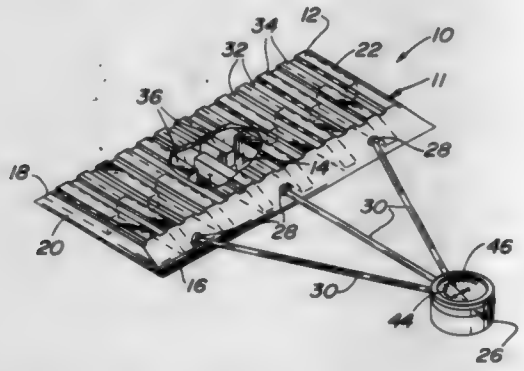
PORTABLE AND COMPACTIBLE SCALE

Mitchell H. Greenberg, 796 Sport Hill Rd., Easton, Conn. 06612

Filed Dec. 30, 1983, Ser. No. 567,032

Int. Cl.³ G01G *5/04, 21/00*

U.S. Cl. 177—208 **8 Claims**



1. A portable and compactible scale characterized by a flexible, compactible bladder providing an interior chamber, said bladder including a flexible top wall adapted to support a load to be weighed and a flexible bottom wall adapted to conform to a scale-supporting surface; a non-compressible fluid filling the closed chamber and spaced-apart compressible elongated support members extending along said top wall in a first direction and downwardly from the top wall each of said support members terminating short of the bottom wall under no-load conditions, said top wall being more rigid in areas including the support members than in other areas, said elongated members defining therebetween plural, spaced-apart, substantially parallel flexure regions extending in said first direction about which said scale can be bent to compact the scale.

4,537,267

BELT TENSIONING MECHANISM

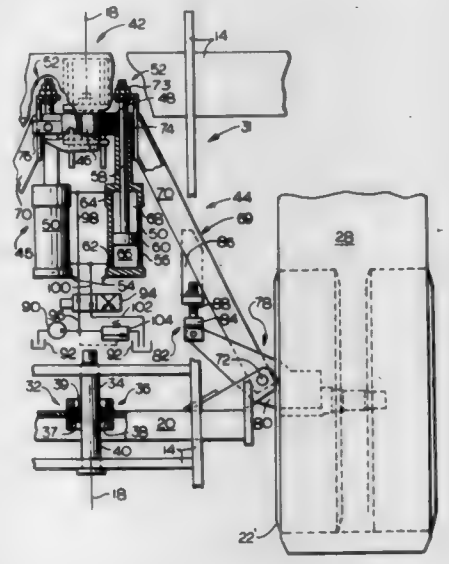
Ronald L. Satzler, Princeville, Ill., assignor to Caterpillar Tractor Co., Peoria, Ill.

Filed Dec. 20, 1983, Ser. No. 563,719

Int. Cl.³ B62D *55/08*

U.S. Cl. 180—9.1 **13 Claims**

1. A belt tensioning mechanism for use on a vehicle having a frame defining a plane aligned along its longitudinal axis, an axle connected to the frame at one end of the vehicle and extending thereacross through said plane, a first pair of wheel assemblies rotatably mounted on opposite ends of the axle independent of said frame, a second pair of wheel assemblies drivably mounted on opposite sides of the frame at the other end of the vehicle, and first and second inextensible belts respectively enstrained about the wheel assemblies on each side of the vehicle, comprising:



means for universally swiveling said axle relative to said frame and said centrally disposed plane and for sliding said axle longitudinally relative to said frame and said centrally disposed plane; and

means for adjusting the position of said axle relative to said frame to maintain at least a predetermined tension in said first and second belts while permitting said universal swiveling and longitudinal movements of said axle.

4,537,268

HYDRAULIC CONNECTION MEANS BETWEEN A VEHICLE BODY AND A TRACK-MOUNTED HYDRAULIC MOTOR

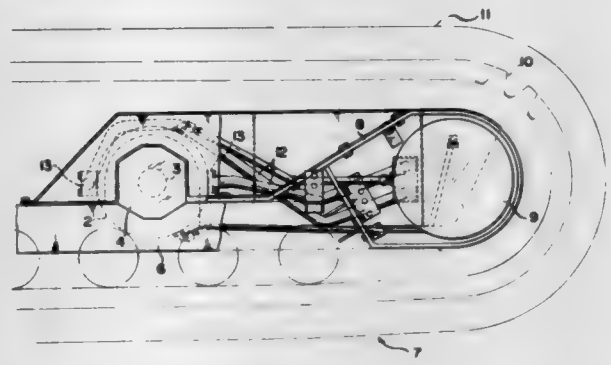
Akira Fukushima, and Yutaka Sugimoto, both of Komatsu, Japan, assignors to Kabushiki Kaisha Komatsu Seisakusho, Tokyo, Japan

Filed Oct. 24, 1983, Ser. No. 544,895

Claims priority, application Japan, Oct. 25, 1982, 57-160216[U]

Int. Cl.³ B62D *65/00*

U.S. Cl. 180—9.1 **3 Claims**



1. A hydraulically driven track-type vehicle including pivot shafts which respectively extend inside pivot shaft casings projecting outwardly on both sides of the vehicle body in a cantilevered manner, one end of each of said pivot shafts being fixedly secured to the vehicle body and the other end thereof being supported by the leading end of each of the pivot shaft casings, and track frames mounted on both sides of the vehicle and pivotally supported through track frame mounting members by the respective leading ends of said pivot shafts, charac-

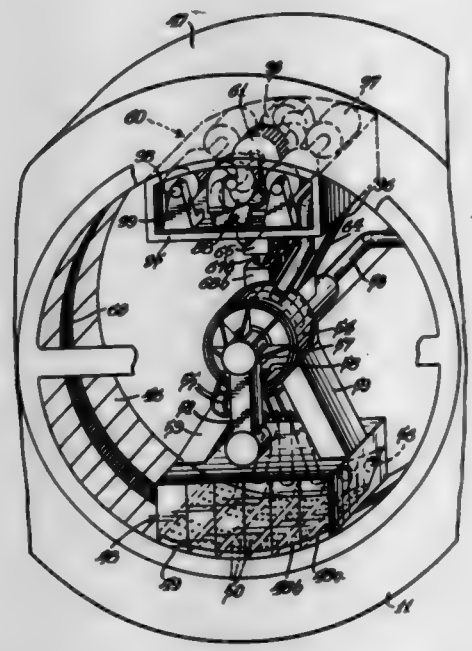
terized in that said vehicle comprises flexible pipes connected between respective one ends of hydraulic fluid passages formed in said track frame mounting members and hydraulic fluid pipes mounted on the vehicle body, and conduits connected between hydraulic motors respectively mounted on the rear portions of said track frames and respective other ends of said hydraulic fluid passages.

4,537,269

VEHICLE WITH PNEUMATIC ASSEMBLY FOR DRIVING, BRAKING, AND REDUCING FRICTION ON BEARINGS

William M. Fisher, 2017 Plainfield, Des Plaines, Ill. 60018

Division of Ser. No. 166,472, Jul. 7, 1980, Pat. No. 4,360,222.
This application Sep. 30, 1982, Ser. No. 429,789
Int. Cl.[3] B60K *3/00*
U.S. Cl. 180—10 12 Claims



1. A pneumatic drive assembly in which a drive wheel is adapted to engage a track, comprising:

a frame,

a drive wheel mounted to a drive shaft, said drive shaft being supported by said frame and movable relative to said frame,

an enclosed chamber supported by said frame, said chamber defining first and second openings,

a conduit communicating with said first opening in said chamber for providing air to said chamber,

means for regulating the entry of air into said chamber, whereby an operator can have air admitted into said chamber or substantially prevent air from entering said chamber,

a second conduit having one end in communication with said second opening in said chamber,

pneumatic cylinder means in communication with the other end of said second conduit, said pneumatic cylinder being supported by said frame and movable between an unextended position and an extended position,

means for operably connecting said pneumatic cylinder means to said drive shaft,

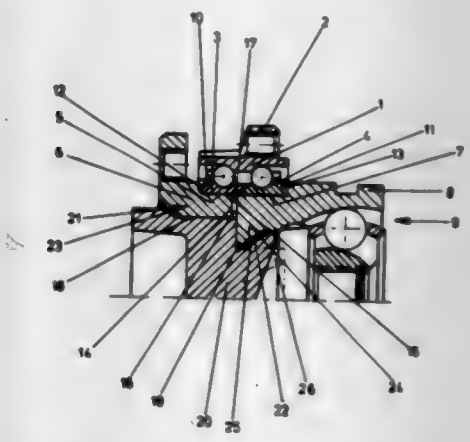
whereby when air is admitted into said chamber, said air exits said chamber into said second conduit, moves said pneumatic cylinder means from said unextended position to said extended position, and thereby moves said drive shaft and drive wheel from a first position in which said drive wheel is spaced apart from said track to a second position in which said drive wheel engages said track.

4,537,270

BEARING ARRANGEMENT FOR A DRIVEN WHEEL OF A VEHICLE

Manfred Brandenstein, Eussenheim, and Rüdiger Hans, Niederwerrn, both of Fed. Rep. of Germany, assignors to SKF Kugellagerfabriken GmbH, Schweinfurt, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,278
Claims priority, application Fed. Rep. of Germany, May 26, 1982, 3219745
Int. Cl.[3] F16C *35/04*
U.S. Cl. 180—70.1 4 Claims



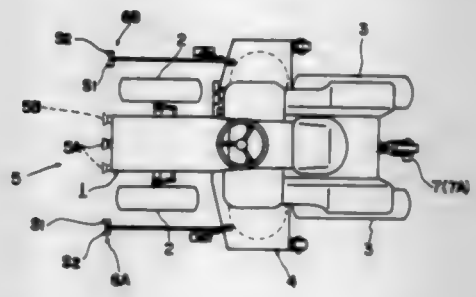
1. In a bearing arrangement for the driven wheel of a vehicle, comprised of a rolling bearing having an outer ring with a flange for affixing the bearing arrangement to a vehicle frame and an inner ring, a wheel hub having a flange for supporting a wheel, a drive joint for driving said wheel hub, and means for holding said wheel hub, said drive joint and said inner ring together, the improvement wherein said wheel hub and said drive joint each have an end surface, a first shoulder surface, a second shoulder surface, and a bore surface, said inner ring being seated on the outer surface of at least one of said wheel hub and drive joint, between and in contact with said first shoulder surfaces, said end faces being arranged to confront each other and formed to engage each other in an interlocking relationship such that torque is transmitted from said drive joint to said wheel hub, and wherein said holding means comprises a pin extending through said wheel hub and drive joint and contacting said bore surfaces, said pin having radially extending projections arranged to engage said second shoulder surfaces of said wheel hub and drive joint, respectively.

4,537,271

RUNNING VEHICLE

Katsumi Ito, Osaka, and Osami Fuziwara, Kishiwada, both of Japan, assignors to Kubota, Ltd., Osaka, Japan

Filed May 26, 1983, Ser. No. 498,512
Claims priority, application Japan, Oct. 27, 1982, 57-188386
Int. Cl.[3] B60T *7/12;* B62D *1/24;* G08G *11/00*
U.S. Cl. 180—131 11 Claims



11. A self-propelled vehicle controllable to follow a path and to avoid obstacles comprising a plurality of obstacle sensor means arranged on the vehicle so as to establish respective different sensing areas transversely of the vehicle, boundary sensor means for detecting a boundary between a treated re-

gion and an untreated region, distance sensor means for detecting a traveling distance of the vehicle, and obstacle-detection means for judging the presence of obstacles, said obstacle-detection means including:

means to actuate said obstacle sensors at a predetermined time interval,

determining means to determine a position of an obstacle by measuring a distance to the obstacle when at least one of said obstacle sensors detects the obstacle and to define a transverse range of the obstacle relative to the vehicle by a combination of said obstacle sensors, said determining means for deciding the position of the obstacle on the basis of said distance and said traverse range,

pattern means to determine a direction and distance pattern of movement of the obstacle during said time interval when at least one of said obstacle sensors continually detects the obstacle on the basis of (i) the position of the obstacle being determined at a first time, (ii) the position of the obstacle being determined at a second time, and (iii) a distance the vehicle has advanced during said time interval between said first and second times, and

control means for controlling movement of said vehicle relative said detected obstacle, said control means, in response to said pattern means determining that the obstacle is at rest, for (a) causing the vehicle to sequentially advance to a predetermined distance to the obstacle, steer toward the treated region, advance a predetermined distance, steer toward the untreated region, and finally return to an original traveling mode following said path upon detection by said boundary sensor means of said boundary between the treated region and the untreated region, and (b) for stopping the vehicle when said pattern means determines that the obstacle is in motion.

4,537,272

AUTOMOTIVE VEHICLE SPEED CONTROL DEVICE BASED ON A PRESELECTED SPEED

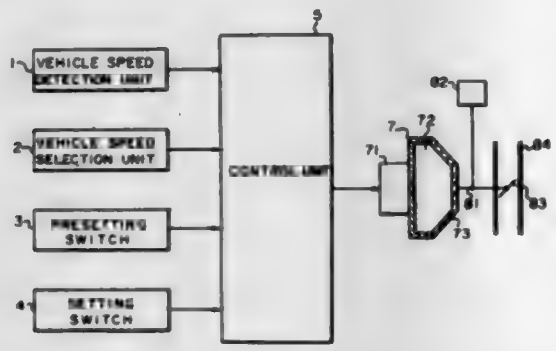
Kou Tanigawa, Akashi; Jiro Masuda, Kobe; Kazumasa Nakamura, Okazaki, and Kazuhiko Hayashi, Toyota, all of Japan, assignors to Fujitsu Ten Limited, Kobe and Toyota Jidosha Kabushiki Kaisha, Toyota, both of, Japan

Filed Jan. 25, 1983, Ser. No. 460,857

Claims priority, application Japan, Jan. 25, 1982, 57-10635; Jan. 25, 1982, 57-10638

Int. Cl.³ B60K *31/00*

U.S. Cl. 180—176 **5 Claims**



1. A device for controlling the speed of an automotive vehicle hased on a selected vehicle speed, said device comprising:

a vehicle speed detector for detecting the actual vehicle speed of said vehicle and generating a signal representative of said actual vehicle speed;

an actual speed setting switch for enabling speed control based on a desired actual vehicle speed;

adjustable speed selection means for generating a signal in accordance with a preselected vehicle speed from within a predetermined range of speeds;

a selected speed presetting switch for enabling speed control based on said preselected vehicle speed;

a pneumatic actuator for changing the opening degree of a throttle valve;

control means responsive to signals from said vehicle speed detector, said actual speed setting switch, said adjustable speed selection means and said selected speed presetting switch, for generating a signal for controlling said pneumatic actuator by comparing said detected actual vehicle speed to either said preselected vehicle speed or said desired actual vehicle speed, wherein vehicle speed may be selectively controlled in accordance with the detected actual vehicle speed when said actual speed setting switch is actuated and in accordance with said preselected vehicle speed when said selected speed presetting switch is actuated.

4,537,273

RADIATOR SYSTEM FOR MOTORCYCLE

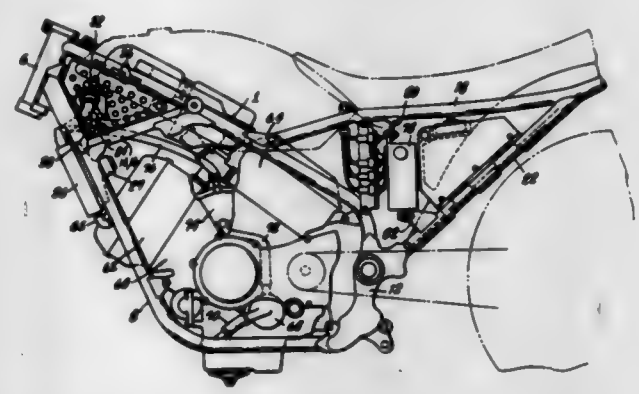
Katsunori Funabashi, Saitama, Japan, assignor to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed May 19, 1983, Ser. No. 496,127

Claims priority, application Japan, May 24, 1982, 57-87789

Int. Cl.³ B60K *11/04*

U.S. Cl. 180—229 **5 Claims**



3. A radiator system for motorcycles comprising

a frame body having left and right main frame sections and left and right down tube sections, with the front ends of the sections being connected by means of a head pipe and intermediate points of the sections connected by left and right front stays;

a radiator having a filling tube and filler cap attached to the upper end of said filling tube, wherein said radiator is mounted in front of the left and right down tube sections in such a manner that the filler cap is located within a chamber bounded by the main frame section, head pipe, down tube section and front stays;

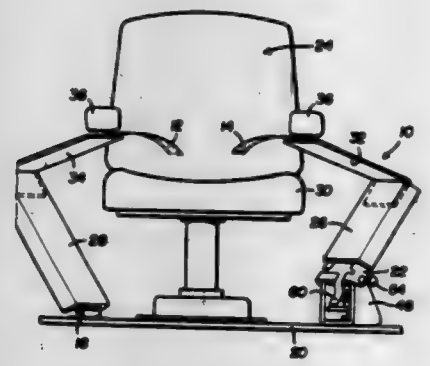
a pair of cover plates, detachably mounted on each side of the frame body between said main frame sections, down tube sections and front stays wherein the cover plates each consist of a perforated plate having curved, alternately spaced and oppositely facing holding flanges affixed to the top thereof and an arm located on the lower front edge of the cover plate mounted at a right angle and facing inward from the cover plate, said arm having a slot passing through the arm so as to accommodate a tab located on the down tube section; and

a locking means comprising a locking plate mounted at the junction of the main frame section and down tube section and a bolt wherein the locking plate has a threaded aperature which is aligned with a locking aperture in the cover plate such that the bolt may be inserted through the locking aperature and threaded into the locking plate and tightened thereby securing the cover plate to the frame body.

4,537,274
SEAT BELT ASSEMBLY

Donald J. Parquet, Burlington, Iowa, assignor to J. I. Case Company, Racine, Wis.

Filed Oct. 15, 1984, Ser. No. 660,824
Int. Cl.³ B60R *21/10*
U.S. Cl. 180—270 6 Claims



1. A seat belt assembly for use in connection with an operator's chair which is mounted on a frame, said seat belt assembly comprising:

first and second opposed straps and means for securing one end of said first strap to one end of said second strap, the other end of said first strap secured to said frame and the other end of said second strap connected to a rotatable support member;

said straps inserted through open flexible shield members which are positioned on opposed sides of said operator's chair, spring members extending from said shield members to positions beneath and slightly inwardly of arms on said chair, and said straps supported by said spring members such that said spring members cause discomfort to an operator who fails to buckle said straps together in front of him; and

switch means secured to a mounting bracket on said frame, said support member rotatably attached to said mounting bracket, spring means for normally biasing said support member against a stop on said mounting bracket, and a spring actuator member mounted on said support member for actuating said switch means when said support member is rotated in response to the securing of said straps together.

4,537,275
VIBRATION RESPONSIVE MOUNTING ARRANGEMENT FOR AUTOMOTIVE ENGINE

Akira Kimura, Zushi; Masao Ishihama, Yokosuka; Toshiro Abe, Yokohama; Kiyoshi Shimada, and Shinichi Matsui, both of Yokosuka, all of Japan, assignors to Nissan Motor Co., Ltd., Yokohama, Japan

Filed Dec. 30, 1982, Ser. No. 454,546
Claims priority, application Japan, Jan. 8, 1982, 57-927[U]
Int. Cl.³ B60G *17/00*
U.S. Cl. 180—300 13 Claims

1. A mounting arrangement for suspending a vibrating body on a base member comprising:

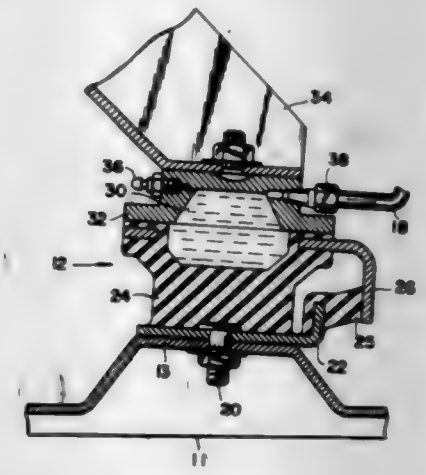
an insulator supportingly interposed between said vibrating body and said base member;

means defining a variable volume chamber, said variable volume chamber defining means being connected in series with said insulator;

a a pulsation pump which produces pressure pulsations in a timed relationship with a predominant vibration of said vibrating body;

a non-pressurized reservoir communicating with said pulsation pump;

means fluidly interconnecting said pulsation pump and said variable volume chamber; and

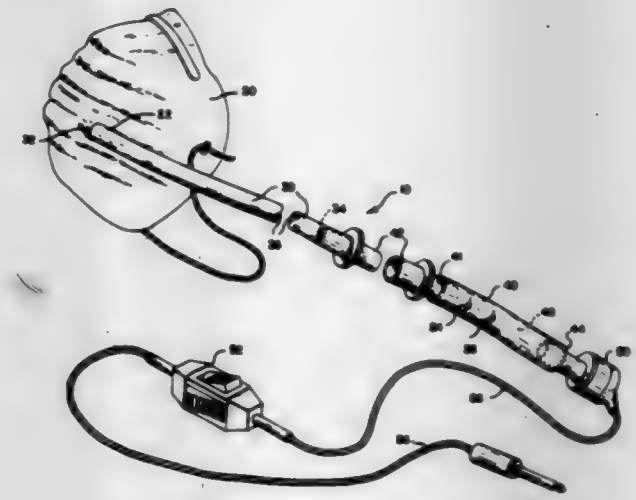


valve means in said fluidly interconnecting means for varying the amount of fluid fed into said variable volume chamber per pulsation produced by said pulsation pump.

4,537,276
MASK/MICROPHONE SYSTEM FOR VOICE ACTUATED CONTROL

Richard G. Confer, Erie, Pa., assignor to American Sterilizer Company, Erie, Pa.

Filed Sep. 7, 1984, Ser. No. 648,805
Int. Cl.³ G10K *11/00*
U.S. Cl. 181—21 7 Claims



1. A device for use with a microphone for transmitting sound from a speaker in a first area to a second area outside of the first area, comprising:

a sound conduit having an inlet and an outlet of a length sufficient to permit placement of said inlet in the first area and placement of said outlet in the second area;

means for securing said inlet in an operative position relative to the speaker's mouth; and

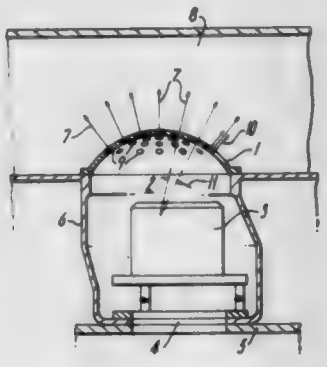
a coupler connected to said outlet for acoustically coupling said microphone to said outlet, said coupler forming a hollow tube and having a plurality of holes in said tube for adjusting the sound pressure transmitted through said conduit to said microphone, said holes, when covered, increasing the sound pressure in said tube.

4,537,277

SILENCER FOR HIGH VELOCITY GAS FLOW

William D. Bryce, Farnham, England, assignor to The Secretary of State for Defence in Her Britannic Majesty's Government of the United Kingdom of Great Britain and Northern Ireland, London, England

Filed Nov. 23, 1983, Ser. No. 554,703
Claims priority, application United Kingdom, Dec. 3, 1982, 8234633
Int. Cl.[3] B64D 33/02
U.S. Cl. 181—214 4 Claims



1. A silencer incorporated in a bypass duct of a jet engine, the silencing means having:

an air bleed passage,

the air bleed passage connected at a first end to an air bleed valve,

the air bleed valve controlling the output of high pressure air from the engine core to the air bleed passage,

at a second end of said air bleed passage a terminating plate, the terminating plate being domed and perforated, said perforations being distributed over the surface of said plate so as to direct gas issuing from said passage to form a plurality of diverging jets, said jets mixing with the gas flowing in the bypass duct, whereby

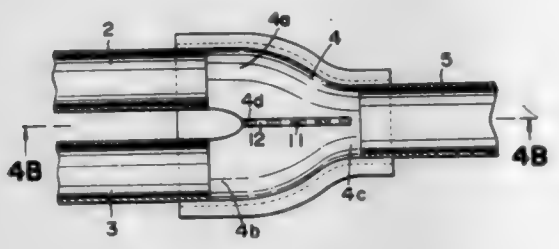
noise produced by said divergent jets and bypass gases have a frequency at maximum intensity in a range of the audible spectrum at which human auditory perception is relatively insensitive.

4,537,278

EXHAUST DUCT CONNECTOR

Makoto Okada, Tokyo, and Kazunori Fujita, Tachikawa, both of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Oct. 5, 1984, Ser. No. 658,214
Claims priority, application Japan, Oct. 20, 1983, 58-197318
Int. Cl.[3] F01N 7/08
U.S. Cl. 181—227 13 Claims



1. An exhaust duct connector for internal combustion engines, comprising:

(a) first means defining a substantially Y-shaped internal passage, both branches of the Y being adapted to receive a pair of upstream exhaust ducts and the leg of the Y being adapted to receive a downstream exhaust duct;

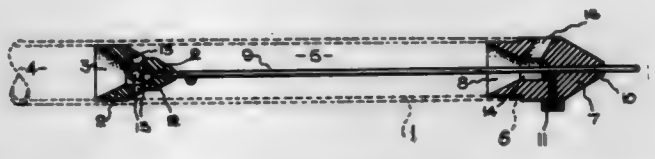
(b) a partition means coaxial with the leg of the Y and disposed at the junction of the branches of the Y, said partition means taking the form of a substantially thin plate having a plurality of small holes allowing exhaust flow therethrough.

4,537,279

TUNEABLE TUNED PIPE EXHAUST SYSTEM

Walraven Van Heeckeren, Studio 11, 17 Herbert St., St. Leonards, N.S.W., 2065, Australia

Filed Jul. 21, 1983, Ser. No. 515,981
Claims priority, application Australia, Jul. 22, 1982, PF 4998
Int. Cl.[3] F01N 7/18
U.S. Cl. 181—241 6 Claims



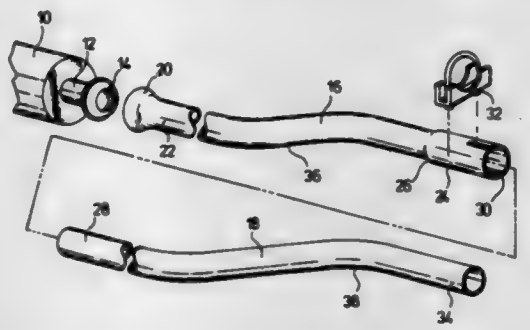
1. Tuneable means for the exhaust system of a two-stroke cycle internal combustion engine, comprising a baffle slidable longitudinally within an exhaust pipe of said exhaust system; a plug insertable into the free, downsteam end of said exhaust pipe; and means for selectively positioning said baffle within said exhaust pipe to thereby define therein an upstream primary chamber and a downstream secondary chamber; said baffle having a wave-reflecting upstream side constituted by a concavity of substantially conical configuration, and being provided with at least one conduit therethrough communicating said primary chamber with said secondary chamber; said plug having a wave-reflecting upstream side constituted by a concavity of substantially conical configuration, and being provided with at least one conduit therethrough communicating said secondary chamber with atmosphere; and said baffle positioning means including an elongated rod, one end of which is affixed to the downstream side of said baffle and the other end of which is adapted to extend through a co-acting bore extending longitudinally through said plug, said plug being provided with means to immobilize said elongated rod in said bore to thereby immobilize said baffle at a selected location within said exhaust pipe.

4,537,280

EXHAUST EXTENSION PIPE REPLACEMENT KIT

Peter Roberts, Mississauga, Canada, assignor to Thrush Incorporated, Rexdale, Canada

Continuation-in-part of Ser. No. 371,230, Apr. 23, 1982, Pat. No. 4,441,579. This application Mar. 23, 1984, Ser. No. 592,818
The portion of the term of this patent subsequent to Apr. 10, 2001, has been disclaimed.
Int. Cl.[3] F01N 7/18
U.S. Cl. 181—243 13 Claims



1. A replacement exhaust extension pipe kit suitable for use with either a first vehicle that was originally equipped with a first tubular exhaust extension pipe having an inlet end connected to a catalytic converter, an intermediate region of predetermined first configuration, and an outlet end spaced apart from the inlet end by a first distance, or a second vehicle that was originally equipped with a second tubular exhaust

extension pipe having an inlet end connected to a catalytic converter, an intermediate region of predetermined second configuration, and an outlet end spaced apart from the inlet end by a second distance, said kit comprising:

a first tubular section having an inlet end for connecting to the catalytic converter, an intermediate portion configured to the spatial envelope of both the first and second configurations, and an outlet end spaced apart from said inlet end by a third distance;

a second tubular section having an inlet end and an outlet end spaced apart from the inlet end by a fourth distance, said second tubular portion having an intermediate portion configured to the spatial envelope of the first and second vehicle, the fourth distance being approximately the same as the third distance and the sum of the third and fourth distances being at least as long as the larger of the first and second distances;

packaging means for temporarily retaining the first and second tubular sections in overlapping relationship to provide a shipping package substantially shorter than either of said first and second distances; and

means permitting said outlet end of said first tubular section to be operatively connected to said inlet end of said second tubular section is gas flow relationship when said replacement tail pipe kit is being permanently installed in one of said first and second vehicles.

4,537,281

TWO PERSON AERIAL PLATFORM

Douglas W. Endres, Lexington; Kenneth D. McDaniel, Jr., Midway, and Francis J. Griebel, Lexington, all of Ky., assignors to FMC Corporation, Chicago, Ill.

Filed Oct. 9, 1984, Ser. No. 659,141
Int. Cl.³ B66F 9/06, 11/04; G06C 7/16
U.S. Cl. 182—2 **3 Claims**



1. An aerial platform for attachment to the head machinery of a hydraulic crane, said machinery having a pair of mounting lugs extending from each side thereof, said platform comprising:

a pair of base plates, each plate having a pair of mounting ears complementary to and engageable with said lugs;

a cross tube attached at each end to said base plates;

a beam extending beyond and secured to said base plates;

a pair of braces, each brace attached to and extending between one of said base plates and the adjacent end of said beam;

a pair of suspension arms, each arm attached to one end of said beam and extending outward from said base plates at an obtuse angle; and

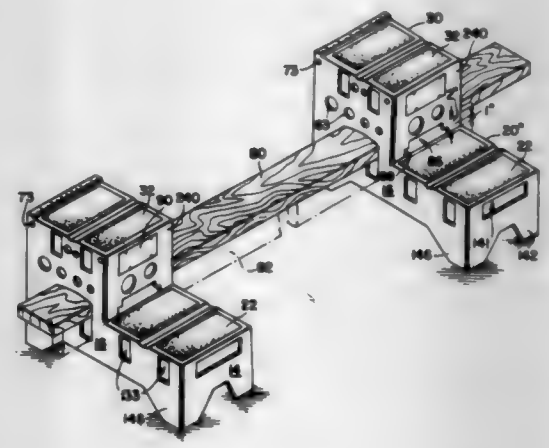
a personnel basket pivotally attached to the free ends of said arms.

4,537,282

WORK HOLDING STACKABLE STEP STOOL

George H. Lobdell, Rte. 4 - Box 60, Canton, N.Y. 13617

Filed Mar. 27, 1984, Ser. No. 593,841
Int. Cl.³ E04G 1/28
U.S. Cl. 182—46 **21 Claims**



1. A device for use by a skilled craftsman comprising:

a formed body of non-corrosive plastic material;

said body configured to provide two planar step surfaces at different heights and two equal sides and two equal ends each having leg extensions for raising the body above a support surface, said two sides and two ends being substantially parallel and with a slight inward and upward taper so that a plurality of the devices can be stacked for storage purposes;

means with at least one of said two planar step surfaces for holding tubular material such as pipe to be worked on; and

further means provided in said sides for holding boards therewith.

4,537,283

LADDER ASSEMBLY

Arnold F. Humes, R.R. #1, Ganges, British Columbia, V0S 1E0, Canada

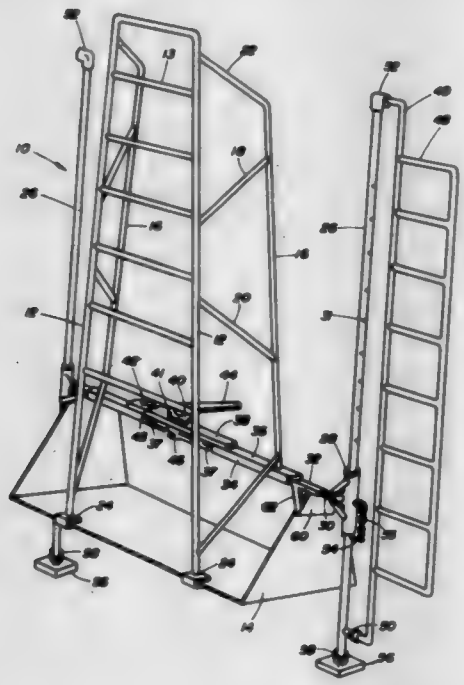
Filed Jul. 6, 1984, Ser. No. 628,665
Int. Cl.³ E06C 5/04
U.S. Cl. 182—127 **8 Claims**

1. A ladder assembly for use on an articulating member of a moveable vehicle, comprising;

(a) a main ladder mountable on said member;

(b) a truss assembly coupled to said main ladder and coupla-

ble to said articulating member supporting said main ladder; and



(c) bracing means affixed to said ladder assembly for bracing said main ladder from the ground.

4,537,284

LUBRICANT DISTRIBUTOR

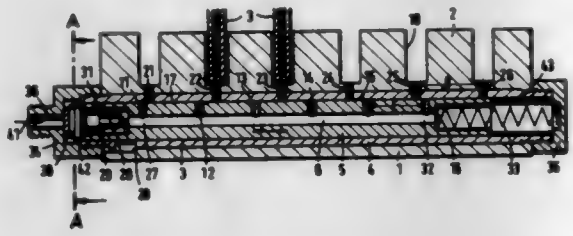
Otto Breisinger, Meersburg, and Herbert Burgbacher, Hilzingen, both of Fed. Rep. of Germany, assignors to Sulzer Brothers Limited, Winterthur, Switzerland

Filed Jun. 8, 1982, Ser. No. 386,229

Claims priority, application European Pat. Off., Jun. 19, 1981, 81810252.7

Int. Cl.³ F16N *25/02*

U.S. Cl. 184—7.4 12 Claims



1. A lubricant distributor comprising

a housing having a longitudinal axis and a plurality of feed channels disposed longitudinally along said axis and in axially spaced part relation to each other at a given spacing; and

a piston movably mounted within said housing, said piston including an axially disposed main channel for receiving lubricant and a plurality of radially disposed distribution channels in communication with said main channel to receive lubricant therefrom, said distribution channels being disposed longitudinally along said axis in axially spaced apart relation to each other at a spacing different from said given spacing and aligned with said feed channels whereby upon movement of said piston in said housing, each said distribution channel is progressively aligned with a respective one of said feed channels.

4,537,285

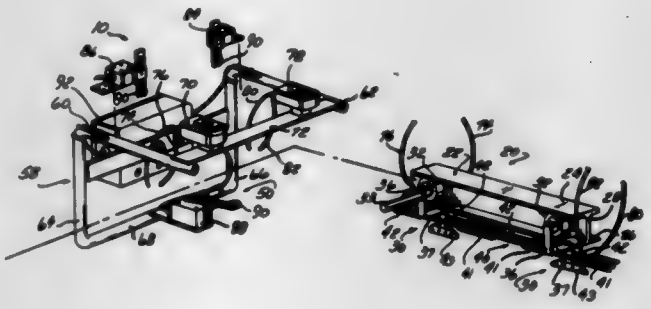
CONVEYOR LUBRICATING APPARATUS

Patrick A. Brown, 1490 South Stone Rd., and William C. Murphy, 9576 West 40th St., both of Fremont, Mich. 49412

Filed Apr. 11, 1983, Ser. No. 483,941

Int. Cl.³ F16N *29/00*

U.S. Cl. 184—15.2 3 Claims



1. A conveyor lubrication apparatus for a conveyor having a plurality of interconnected and movable elements arranged in a continuous, closed loop and movable in successive cycles about the loop and a central lubricant supply reservoir pressurized by a pump, the conveyor lubrication apparatus comprising;

fluid flow conduits connected to the central pumpdriven lubricant supply reservoir;

valve means disposed in fluid flow communication with the central lubricant supply reservoir by the fluid flow conduits and located in proximity with the conveyor for controlling the application of lubricant to the conveyor;

control means for controlling the energization of the valve means once for each pre-determined number of cycles of the conveyor past the lubrication apparatus, the control means including;

first detector means for detecting the presence of one particular element of the conveyor at the lubrication apparatus;

programmable counter means, responsive to the first detector means, for counting the number of cycles of the one particular element of the conveyor past the lubrication apparatus;

program means, connected as inputs to the counter means, for inputting count information to the counter means specifying the number of complete cycles of the conveyor past the lubrication apparatus between lubrication application;

the counter means providing an output specifying the application of lubricant to the conveyor during one cycle of the conveyor past the lubrication apparatus once for each programmed number of cycles of the conveyor past the lubrication apparatus;

second detector means for detecting the presence of the elements of the conveyor at the lubrication apparatus;

first timer means, responsive to the output of the counter means and the second detector means for energizing the valve means for a first pre-determined period of time to apply lubricant to the conveyor as the conveyor passes through the lubrication apparatus;

means for sensing current flow to the valve means;

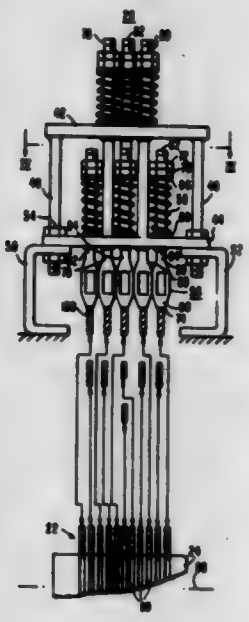
second timer means, responsive to the output of the current sensing means, for providing an output signal for a second pre-determined period of time after current is initially applied to the valve means; and

first switch means, responsive to the output of the second timer means, for conencting electrical power to the pump in the central lubricant supply reservoir only for the second pre-determined time period.

4,537,286
ELEVATOR SYSTEM

Arnold M. Morris, West Caldwell, and Jitendra K. Trivedi, West Milford, both of N.J., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 7, 1983, Ser. No. 540,069
Int. Cl.[3] B66B *9/00*
U.S. Cl. 187—1 A
8 Claims

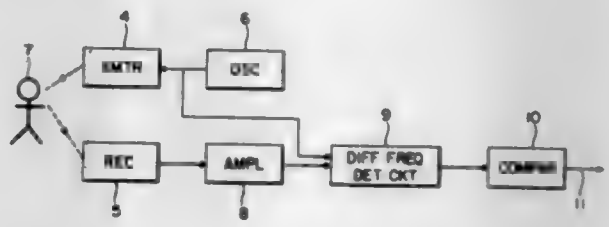


1. A traction elevator system, comprising:
first and second movable components including an elevator car and a counterweight each mounted for guided, vertical movement between predetermined travel limits,
drive means for said first and second movable components, including first and second hitch plate means associated with said first and second movable components, respectively, for terminating the plurality of ropes,
at least one of said first and second hitch plate means including upper and lower, vertically spaced support plate members and rope termination means distributed substantially equally between said support plate members to reduce the maximum fleet angle as the associated movable component travels between its limits,
said upper and lower plate members each having horizontally oriented, major, flat surfaces,
said upper plate member being disposed directly above the lower, with their facing flat surfaces being in parallel planes, said upper and lower plate members being rigidly spaced to provide a fixed dimension between them,
each of said rope termination means including a rope socket, a shackle rod connected to each rope socket, and a shackle spring disposed about each shackle rod, with the shackle spring being a compression spring, co-acting with a flat major surface of a support plate member,
each of said first and second plate members cooperating with predetermined rope termination means to provide two spaced rope termination levels, with the shackle rods of a predetermined termination level proceeding through openings disposed in the plate member associated with the other termination level,
the ropes of the two termination levels being disposed such that the shackle rods are interleaved on one of the levels with a predetermined pattern in which a rod from one level is closer to a rod from the other level than it is to another rod from its same termination level.

4,537,287
APPARATUS FOR DETECTING ABNORMALITY IN THE CAGE OF AN ELEVATOR

Masahiro Noda, Ichinomiya, and Hiroshi Ando, Inazawa, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Japan

Filed Jun. 8, 1984, Ser. No. 618,739
Claims priority, application Japan, Jun. 17, 1983, 58-92815
Int. Cl.[3] B66B *13/24*
U.S. Cl. 187—29 R
10 Claims

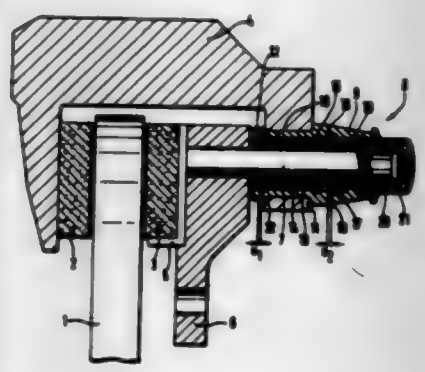


1. An apparatus for detecting any abnormality in a cage of an elevator, comprising a transmitter which continuously transmits an ultrasonic wave inwardly of the cage of the elevator, a receiver which receives an ultrasonic wave retrogressing in such a manner that the ultrasonic wave transmitted from said transmitter is reflected by an object within the cage, and a processing circuit which detects a speed of movement of the object within the cage on the basis of a magnitude of a difference between frequencies of the ultrasonic waves of said transmitter and said receiver and which decides that an abnormal condition exist within the cage when the difference frequency has become at least a preset value.

4,537,288
SPOT-TYPE DISC BRAKE FOR AUTOMOTIVE VEHICLES

Roberto Stoka, Nauheim, Fed. Rep. of Germany, assignor to ITT Industries, Inc., New York, N.Y.

Filed Sep. 1, 1983, Ser. No. 528,396
Claims priority, application Fed. Rep. of Germany, Oct. 9, 1982, 3237515
Int. Cl.[3] F16D *65/54*
U.S. Cl. 188—71.8
9 Claims



1. A spot type disc brake for an automotive vehicle having a brake shoe on each side of a brake disc, and including a brake caliper straddling the brake disc and the brake shoes, a brake support member secured to the vehicle frame for receiving braking torque, a guide rod for slidably guiding the brake caliper on the brake support member, said brake caliper being provided with an actuating device to urge the brake shoes against the brake disc, said caliper being resiliently biased in the brake release direction and a friction element slidably supported by the brake support member for maintaining the resilient force constant independent of the thickness of pads on the brake shoes bearing against the brake disc, wherein said friction element is mounted within a tubular sleeve allowing movement of the element in an axial direction in a limited clearance dimension, and means on said sleeve for guiding the caliper to enable movement of said caliper axially in a brake

release direction a distance corresponding to the elastic expansion of the brake caliper in which the sleeve protrudes through a guide opening of the brake caliper and is provided with a projecting annular collar located at a distance from the brake caliper corresponding to the limited clearance dimension.

4,537,289

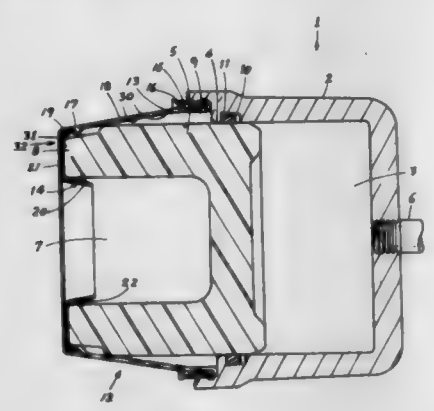
DUST BOOT FOR A DISC-BRAKE ACTUATING CYLINDER-AND-PISTON UNIT

Hubertus VonGrünberg, Bloomfield Hills; Jonathan M. Rowell, Birmingham, and Frederick C. Corey, Dearborn, all of Mich., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jun. 18, 1982, Ser. No. 389,739

Int. Cl.[3] F16D *65/00;* F16J *15/52*

U.S. Cl. 188—97.4 **1 Claim**



1. A flexible sealing boot adapted for use as a disc brake dust boot to prevent contaminants from reaching the interface between a cylinder having a central bore with an open end thereof and a piston reciprocable within the bore of said cylinder such that a transverse end face of the piston extends a distance out from the open end of said cylinder bore when said piston is fully retracted into said bore, said piston having an annularly extending open end portion having an internal recess, said cylinder having a recess adjacent the open end of said bore enlarging the open end of said bore, said piston having an annular recess at the end portion thereof forming with the cylinder recess an enlarged common inset open at the cylinder open end, an annular bellows member of elastically deformable material resting within said inset, said bellows member having a plurality of folded bellows when said piston is fully retracted into said bore, an annular rigid reinforcing ring sealing and holding the outer periphery of the bellows member to the cylinder against a wall of said inset, an annular resilient cup shaped member permanently affixed to the bellows member at the inner periphery of the bellows member, said resilient member comprising three integrally connected ring sections, a first of said ring sections permanently affixed to an end section of said bellows member within the piston recess, said first ring having its length generally parallel to the axis of the cylinder bore, the second ring section overlying and contacting the transverse face of the piston, and the third ring section protruding into the open end recess of said piston to grip the annular protruding portion of the piston from the interior thereof, said bellows member including an inner region overlying the second ring of said resilient member with said inner region compressed between the second ring and a brake shoe, and said bellows member is disposed to stretch on sliding movement of said piston in the out of bore direction and cover said interface.

4,537,290

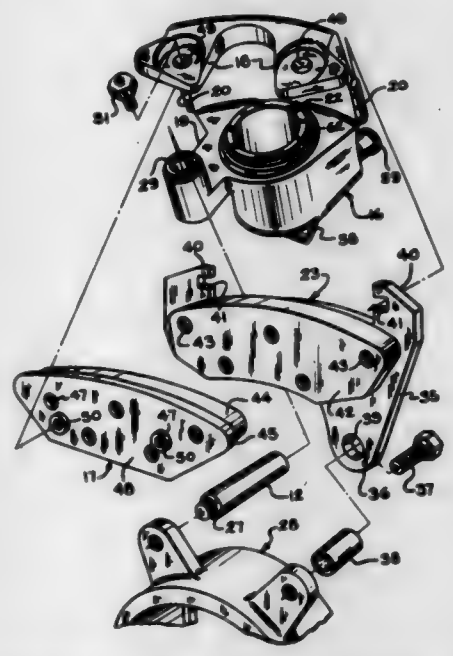
SLIDING CALIPER DISC BRAKE

Anthony C. Evans, Northville, Mich., assignor to Kelsey-Hayes Company, Romulus, Mich.

Division of Ser. No. 099,392, Dec. 3, 1979, Pat. No. 4,391,355. This application Nov. 4, 1982, Ser. No. 439,007

Int. Cl.[3] F16D *65/06*

U.S. Cl. 188—73.31 **1 Claim**



1. In a vehicle disc brake having a generally C-shaped caliper extending across the periphery of a rotatable disc, an improved inboard brake pad comprising a back plate having inboard and outboard sides, a friction pad, means mounting said friction pad on said outboard side, said back plate defining first arm and second radially extending arms said arms having means for slidably engaging said caliper, and said back plate defining a third arm extending oppositely from said first and second arms said third arm having means for slidably engaging a mounting pin attached to the vehicle.

4,537,291

BRAKE SHOE ASSEMBLY INCLUDING BRAKE SHOE SPRING

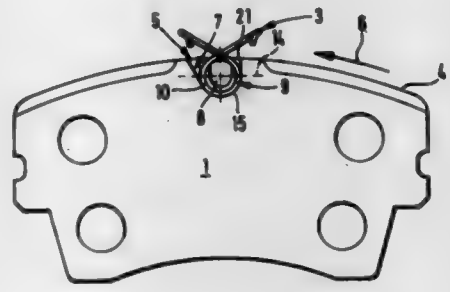
Rudolf Thiel, Frankfurt am Main; Helmut Weisbrod, Bad Nauheim, and Hermann Braehler, Darmstadt, all of Fed. Rep. of Germany, assignors to ITT Industries, Inc., New York, N.Y.

Filed May 9, 1983, Ser. No. 492,929

Claims priority, application Fed. Rep. of Germany, Jun. 2, 1982, 3220632

Int. Cl.[3] F16D *65/02*

U.S. Cl. 188—73.38 **17 Claims**



1. A brake shoe assembly for use in its mounted position as a component of a brake, comprising

a brake shoe including

a carrier plate extending along a plane and having two oppositely facing major surfaces along said plane, an edge surface facing outwardly in the mounted position, delimiting surfaces that bound in said carrier plate at the area of said edge surface a recess that opens onto said

edge surface, and a projection which extends into said recess substantially parallel to said plane, and

a friction material lining arranged at one of said major surfaces and affixed to said carrier plate; and

a spring including

a convoluted portion at least partially received in said recess of said carrier plate and having at least two convolutions situated across said projection from one another to confine said projection between themselves, and an interconnecting section connecting said convolutions with one another and situated at the region of said edge surface, and

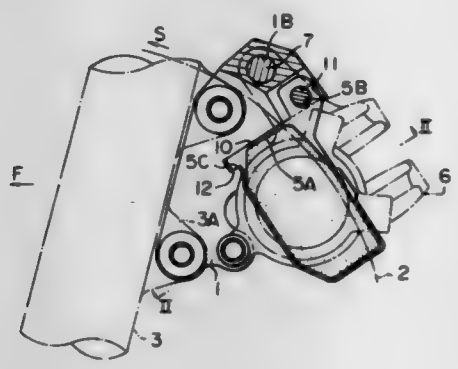
two legs each connected to one of said convolutions and extending therefrom outside said recess and outwardly of said edge surface as considered in the mounted position.

4,537,292

FRICTION PAD ASSEMBLY FOR A DISC BRAKE

Koichi Tamura, Tokyo, Japan, assignor to Tokico Ltd., Kawasaki, Japan

Continuation of Ser. No. 293,089, Aug. 17, 1981, abandoned.
This application Jan. 5, 1984, Ser. No. 568,528
Claims priority, application Japan, Aug. 20, 1980, 55-114148
Int. Cl.³ F16D *55/224, 65/02*
U.S. Cl. 188—73.39 **3 Claims**



1. A brake pad assembly comprising:

a brake disc;

two brake pads located on opposite sides of the brake disc, each brake pad including a backing plate with friction material secured thereto, each said backing plate having a radial inner side, a radial outer side and opposing peripheral sides;

a stationary brake support;

a brake caliper mounted on said brake support, said brake caliper straddling said brake disc and engaging said brake pads;

first locating means spaced radially outwardly from the periphery of the brake disc for slidingly engaging said backing plates with said brake support, said backing plates being slidable in a direction parallel to the center axis of the brake disc, said first locating means locating one of said opposing peripheral sides of the backing plates with respect to the brake support;

second locating means spaced radially inwardly from the periphery of the brake disc, said second locating means locating said one peripheral side of the backing plates with respect to the brake support, said second locating means including a projection defined by each of the backing plates, each said projection extending radially inwardly towards the center of the brake disc, and

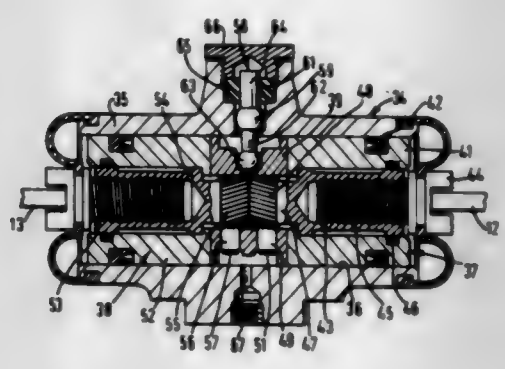
a recess defined by the brake support being shaped complementary to each said projection for guiding the sliding movement of each said projection in the direction parallel to the center axis of the brake disc, said recess including a first abutment surface and a second abutment surface opposite one another abutting each said projection so that each of the backing plates is supported along said one peripheral side on said brake support projecting in a cantilever style toward the other peripheral side from the brake support and each of said backing plates is slidingly anchored at the first locating means and the second locating means, the effective area of the second abutment surface being substantially smaller than the effective area of the first abutment surface, said first abutment surface receiving the braking torque from the brake pads in the normal rotational direction of said brake disc and said second abutment surface receiving the braking torque from the brake pads in the reverse rotational direction of said brake disc.

4,537,293

HYDRAULIC CYLINDER ASSEMBLIES

Duncan W. Osborne, Leamington Spa, England, assignor to Automotive Products plc, Leamington Spa, England

Continuation of Ser. No. 326,040, Nov. 30, 1981, abandoned.
This application Mar. 29, 1984, Ser. No. 594,431
Claims priority, application United Kingdom, Dec. 9, 1980, 8039439
Int. Cl.³ F16D *65/56*
U.S. Cl. 188—196 BA **7 Claims**



1. In an internal shoe drum brake comprising a pair of brake shoes arranged for outward movement against a brake drum and a mechanical expander arranged between one pair of adjacent ends of the shoes, a hydraulic wheel cylinder assembly arranged between the other pair of adjacent ends of the shoes, said wheel cylinder assembly comprising:

a cylinder body having a through bore therein;

a pair of piston assemblies slidable in said bore each of said piston assemblies having a respective variable length adjustable tappet assembly which comprises a rotatable screw-threaded component interengaged with a non-rotatable screw-threaded component;

means on each of said tappet assemblies for transmitting a thrust to an adjacent brake shoe;

an inlet port in the cylinder body opening into said bore for supplying hydraulic pressure to urge the piston assemblies apart;

an abutment member axially slidable in the same through bore as the said piston assemblies in either direction away from a centered position so as to enable both piston assemblies to move together so that the drag load from the trailing end of one brake shoe applied to the adjacent piston assembly is transmitted through the abutment member onto the other piston assembly and onto the leading end of the other brake shoe;

a spring centering device acting on the abutment member resiliently to bias the abutment member into said centered position in the bore after moving together with said piston in either direction away from the centered position,

said spring centering device comprising a lever which is pivotable on the cylinder body and on the abutment member.

4,537,294

CLUTCH RELEASE BEARING WITH SPACER MEMBER

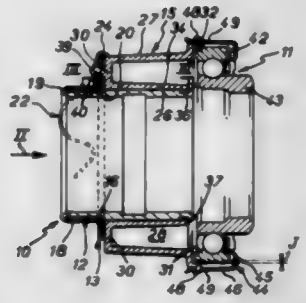
Pierre Renaud, Le Plessis-Trevise, France, assignor to VALEO, Paris, France

Filed Feb. 4, 1983, Ser. No. 463,849

Claims priority, application France, Feb. 5, 1982, 82 01870

Int. Cl.³ F16D *23/14;* F16C *19/10*

U.S. Cl. 192—98 14 Claims



1. A clutch release bearing for an automotive clutch having a clutch release mechanism, said clutch release bearing comprising an operating member adapted to be controlled by an actuating member, a drive member attached axially to said operating member and being responsive to the said operating member for coacting with the clutch release mechanism, said operating member having an axial sleeve adapted to be received on a guide member and a transverse flange adapted to bear axially against the actuating member on one side and said drive member on the opposite side, said drive member being substantially axially spaced from said transverse flange, a spacer member slidably received on said sleeve and interposed axially between said flange and said drive member, said spacer member maintaining said drive member in axially spaced relationship relative to said transverse flange; the improvement wherein resilient detent means are operably disposed between said spacer member and said sleeve for fixing said spacer member axially in position on said sleeve.

4,537,295

CLUTCH DISC ASSEMBLY WITH TORSIONAL OSCILLATION DAMPERS

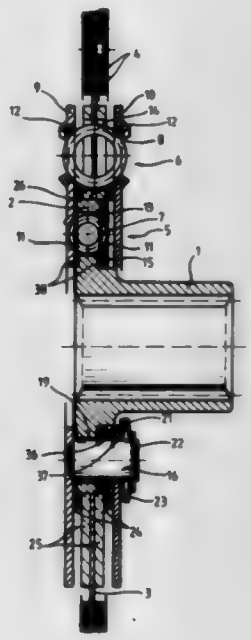
Kurt Fädler, Niederwerrn, and Friedrich Kittel, Schweinfurt, both of Fed. Rep. of Germany, assignors to Fichtel & Sachs AG, Schweinfurt, Fed. Rep. of Germany

Filed Nov. 2, 1982, Ser. No. 438,482

Claims priority, application Fed. Rep. of Germany, Nov. 14, 1981, 3145312

Int. Cl.³ F16D *3/14, 3/66, 13/64*

U.S. Cl. 192—106.2 25 Claims



1. A clutch disc assembly for a motor vehicle comprising: a hub having a radially projecting annular flange affixed thereto; annular friction pad means coaxially arranged with said hub for torque transmission therebetween; annular plate means comprising a pair of annular plate members arranged on axially opposite sides of both said friction pad means and said annular flange; annular disc means comprising an annular disc member axially adjacent said annular flange and arranged between said annular flange and one of said annular plate members; said annular plate means and said annular disc means being rotatably mounted relative to said hub; coupling means rotatively connecting together said annular plate means and said annular disc means, said coupling means being arranged in rotative driving engagement with said hub with angular play being provided therebetween; load damper means operatively interposed between said annular friction pad means and said annular plate means; idler damper means operatively interposed between said annular flange and said annular disc means; said idler damper means being located radially inwardly of said load damper means within openings formed in said annular flange with at least one of said annular plate members extending radially alongside said idler damper means; and indentation means formed in said annular plate means and in said annular disc means for holding said idler damper means within said openings of said annular flange; wherein said coupling means are fastened on one of said annular plate members, wherein the other of said annular plate members and said disc member are guided to be nonrotatable but axially displaceable relative to said coupling means, wherein said coupling means are provided with support elements on an axially remote side of said one plate member, wherein compression springs are provided in engagement between said support elements and said other plate member and said disc member to produce damping frictional forces; and wherein said compression springs comprise twin-armed spring elements held on said coupling means, said twin-armed spring elements including a first arm supported on said other plate member and a second arm supported on said disc member.

4,537,296

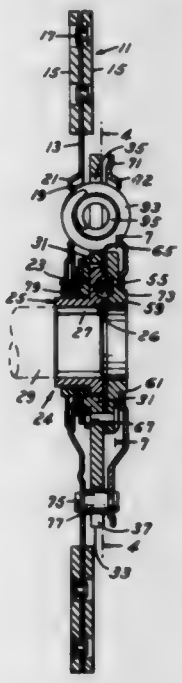
CLUTCH DRIVEN PLATE ASSEMBLY

Thaddeus Lech, Jr., Farmington Hills, and Richard T. Popchock, Lake Orion, both of Mich., assignors to Alma Piston Company, Southfield, Mich.

Filed Jul. 23, 1984, Ser. No. 633,715

Int. Cl.³ F16D *13/68*

U.S. Cl. 192—106.2 27 Claims



1. A clutch driven plate assembly comprising a hub assembly connectable to a driven shaft;

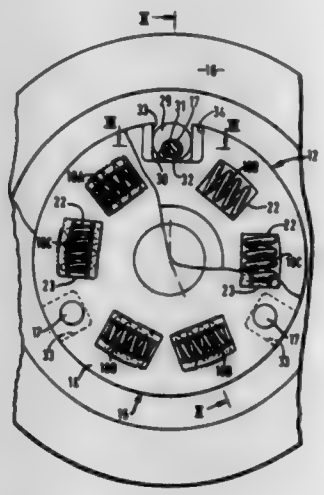
a driven plate having a peripheral friction facing rotatably mounted upon said hub assembly;
a spring retainer plate rotatably mounted upon said hub assembly and spaced from and secured to said driven plate and rotatable therewith;
said hub assembly including an inner hub and an outer hub having a driven flange;
said inner hub having a splined bore and a pair of outwardly directed converging radial flanges;
said outer hub flange being interposed between said driven plate and said spring retainer plate and having a central opening of the same shape and oversized with respect to and loosely receiving said inner hub flanges for limited rotation thereof relative to said inner hub flanges;
a centrally apertured back plate upon the interior of and bearing against said spring retainer plate and spaced from said inner and outer hubs and secured to said outer hub flange;
a resilient apertured disc spacer interposed between and bearing against said inner and outer hubs and back plate and bearing against said inner hub flanges and outer hub flange on one side of said inner hub;
axial spring means interposed in compression between said inner hub flanges and said back plate normally biasing said inner hub flanges away from said back plate;
a resilient washer mounted upon said inner hub bearing against the other side of said inner hub flanges and retained between said inner hub and said driven plate;
there being a plurality of circumferentially spaced axially aligned windows in said plates and outer hub flange;
and at least one compression spring nested and retained within each set of laterally aligned windows defining a yieldable connection between said driven plate and outer hub flange;
said springs dampening relative rotary motions between said plates and said outer hub flange;
said spring means, spacer disc and washer further dampening relative rotary motions betwen said inner and outer hubs.

4,537,297

FRICTION CLUTCH DRIVEN PLATE

David A. Davies, Leamington Spa, England, assignor to Automotive Products plc, Leamington Spa, England

Filed Jan. 11, 1983, Ser. No. 457,143
Claims priority, application United Kingdom, Jan. 13, 1982, 8200965
Int. Cl.³ F16D 3/66
U.S. Cl. 192—106.2 9 Claims



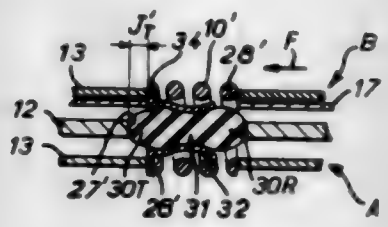
1. A friction clutch driven plate comprising:
a hub;
a hub flange fast with the hub;
a friction facing carrier assembly mounted for limited rotation relative to the hub, said carrier assembly including at least one flange;
friction damper means for damping said relative rotation and includng an intermediate plate located for friction engagement with the hub and having an aperture therein;
spring windows in the carrier assembly flange and the hub flange;
damping springs in the spring windows for controlling rotation of said carrier assembly relative to the hub;
a pivot pin mounted on the carrier assembly;
and a centrifugal force responsive pendulum device comprising a collar having a cylindrical outer periphery and an eccentric pivot hole by which the pendulum device is pivotable on said pivot pin;
the outer periphery of the pendulum device cooperating with the aperture in the intermediate plate to vary the operation of said friction means in response to variations in the rotational speed of the driven plate whereby the friction damping at higher speeds is increased compared with that at lower speeds.

4,537,298

TORSIONAL DAMPERS

Pierre Loizeau, Ville d'Avray, France, assignor to Valeo, Paris, France

Filed Feb. 8, 1983, Ser. No. 464,933
Claims priority, application France, Feb. 9, 1982, 82 02033
Int. Cl.³ F16D 3/66, 3/68
U.S. Cl. 192—106.2 12 Claims



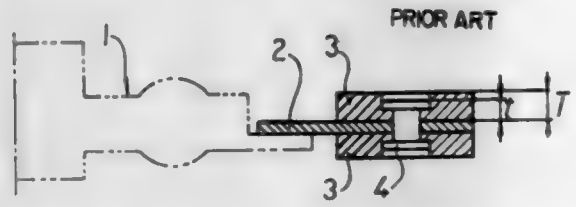
1. A multi-stage torsional damper comprising at least two coaxial parts mounted so as to be rotatable relative to one another within pre-determined limits of relative angular movement, first and second torsional damping stages operatively disposed between said coaxial parts, said second stage torsional damping means comprising a plurality of helical springs extending in a substantially tangential direction relative to a circumference of the damper and disposed between said coaxial parts in the circumferential direction, each of said springs being partially housed, without circumferential clearance in a rest configuration of the damper, in an opening formed for this purpose in a first of said coaxial parts, and partially housed with circumferential clearance in said rest configuration, in an opening formed for this purpose in a second of said coaxial parts, said first stage torsional damping means comprising a peg of elastic material arranged inside at least one of said helical springs and housed in an associated opening in said second coaxial part and a bush coaxial with said spring accommodating said peg and being circumferentially slidable relative thereto; and constricting means disposed between said elastic material peg and said bush to impede movement of said peg within said bush and to return said peg to a substantially central rest position after such movement, said bush being held in engagement with said first coaxial part during an initial range of relative angular displacement of said coaxial parts while being slidable relative to said peg to effect first stage damping.

4,537,299

FACING ASSEMBLY OF A FRICTION CLUTCH DISC

Yasunobu Fukatani, Hirakata, Japan, assignor to Kabushiki Kaisha Daikin Seisakusho, Osaka, Japan

Filed Jun. 29, 1982, Ser. No. 393,402
Claims priority, application Japan, Jun. 30, 1981, 56-98240[U]
Int. Cl.³ F16D *69/04*
U.S. Cl. 192—107 C 2 Claims



1. A facing assembly of a friction clutch disc, comprising:

a facing fixing plate having plural apertures arranged at radially outer portions and radial inner portions;

a pair of facings disposed on both faces of the fixing plate, said facings integrally connecting each other by connection portions extending through said plural apertures such that said facings are fixed to said fixing plate, and wherein a total sectional area of connecting portions in radially outer portions of the facings is larger than a total sectional area of connecting portions in radially inner portions of the facings, and wherein the facings and the plate portion to which the facings are fixed are divided into plural portions by substantially radial slits, and the adjacent two facings portions with each slit therebetween are axially shifted with respect to each other with a slight axial distance therebetween so that the plate portions pressed to a flywheel by a pressure plate may be elastically deformed to reduce the axial distance to zero; and

grooves formed in each facing portion running from the radial inner portion to the radial outer portion of each facing portion, said grooves being inclined with respect to the radial direction and the radially inner and end of each of said grooves occupying a forward position with respect to the clutch rotating direction wherein said grooves on opposing sides of said fixing plate alternate with respect to the clutch rotating direction, and wherein the greater distance from a leading edge of the facings, with respect to the clutch rotating direction, to the first groove of each facing portion from said leading edge is located on the side nearest an engaging pressure plate compared with the opposing side nearest an engaging flywheel.

4,537,300

APPARATUS FOR SELECTING AND SUPPLYING CAPSULES OR LIKE ROUND ARTICLES OF DEFORMABLE MATERIAL TO THE FEED HOPPER OF MACHINES FOR HANDLING THESE ARTICLES

Libero Facchini, Bologna, Italy, assignor to Farmatic S.r.l., Ozzano Emilia, Italy

Filed Apr. 15, 1983, Ser. No. 485,169
Claims priority, application Italy, May 3, 1982, 3411 A/82
Int. Cl.³ B65G *47/12*
U.S. Cl. 198—453 4 Claims

1. An apparatus for selecting and supplying elongate round articles of a deformable material to a device for handling said articles comprising:

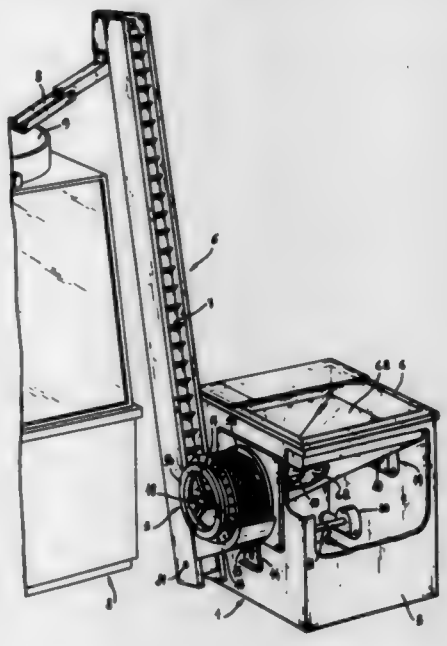
a support base;

a hopper mounted on said base for receiving a supply of said articles;

a hollow drum rotatable about a horizontal axis mounted on said base, said drum having a peripheral shell formed by a plurality of planar segments pivotally mounted between an endwall and an end ring of said drum for providing access to the interior thereof for the removal of unselected damaged articles, said end ring being disposed adjacent said hopper for the communication therewith of the interior of said drum;

a plurality of openings formed in each of said segments perpendicular thereto and arranged in axial rows lying in a staggered relationship with one another, the inner ends of said openings tapering outwardly;

an upright flight conveyor disposed tangentially to said



drum and provided at the upper end thereof with a chute for discharge into said device for handling said articles;

a trough provided beneath said drum extending along a portion of the periphery thereof for collecting the articles passed through said openings and feeding same into said conveyor; and

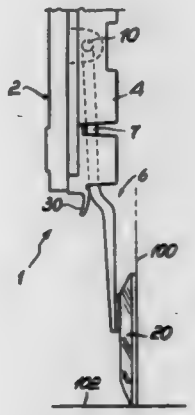
means for driving said drum and said conveyor in the same direction.

4,537,301

PRESSURE SHOE FOR GLASS PROCESSING APPARATUS

Franco Bavelloni, Appiano Gentile, Italy, assignor to Z. Bavelloni S.p.A., Bregnano, Italy

Filed Apr. 25, 1983, Ser. No. 488,460
Int. Cl.³ B65G *15/14*
U.S. Cl. 198—626 6 Claims



1. A glass plate pressing or backingup shoe structure particularly for attachment on conveyor means of glass processing apparatus such as a glass plate edge bevelling machine comprising an elongate body having blocks on one face thereof, said blocks defining free engagement surfaces adapted for abutment engagement with a plate glass workpiece to be processed, and auxiliary supporting plate member, movably connected to said elongate body, said plate member being positionable in a first position, whereat said plate member forms a

supporting extension of said elongate body and in a second idle position, whereat said plate member is accommodated within said elongate body behind said engagement surfaces.

4,537,302

DEVIATING STATION FOR HANDLING ARRANGEMENT, AND HANDLING ARRANGEMENT PROVIDED THEREWITH

Arnold Gsponer, Oberuzwil, Switzerland; Werner Huber, and Milan Petrovic, both of Brunswick, Fed. Rep. of Germany, assignors to Bühler - Miag GmbH, Brunswick, Fed. Rep. of Germany

Filed Nov. 15, 1982, Ser. No. 441,799

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1981, 3145104

Int. Cl.³ B65G *15/14*

U.S. Cl. 198—626 **9 Claims**



1. A deviating station for a handling arrangement with a supporting frame and conveying means including a movable band conveyor element which has at least two conveyor portions and is closed by a movable cover band element, the deviating station comprising

a plurality of supporting rollers arranged on the supporting frame in groups so as to form a plurality of supporting points for the band conveyor element and the cover band element;

a shape-variable roller holder which is arranged to support the supporting rollers of at least some of the supporting points of at least one of the movable elements of the conveying means and follows the movement of the band conveyor element and the cover band element, said roller holder being formed as a link chain with two ends one of which is pivotally connected with the supporting frame; and

tensioning means connected with the other end of said link chain formed by said roller holder.

4,537,303

DEVICE AND METHOD FOR MIXING LIQUID AND POWDERY COMPONENTS, PARTICULARLY FOR DENTAL PURPOSES

Ernst Muhlbauer, Dorpfeldstieg 3, 2000 Hamburg 52, Fed. Rep. of Germany

Filed Dec. 2, 1983, Ser. No. 557,472

Claims priority, application Fed. Rep. of Germany, Feb. 4, 1983, 3303838

Int. Cl.³ B65D *25/08*

U.S. Cl. 206—219 **16 Claims**

1. A method of mixing a dental amalgam in a vibration mixing chamber comprising the steps of:

providing a predetermined amount of liquid dental component tightly enclosed in a first rupturable foil pocket of sufficient strength to rupture and thereby release the said predetermined amount of liquid dental component from the said first pocket upon the action of a mixing vibration,

providing a predetermined amount of powdery dental component enclosed in a second rupturable foil pocket of sufficient strength to rupture and thereby release the said predetermined amount of powdery dental component from the said second pocket upon the action of a mixing vibration and comprised of a material having a specific gravity at least five times less than said powdery dental component, said predetermined amount of powdery dental component being coordinated to said predetermined amount of liquid dental component for forming a dental



amalgam of fixed predetermined proportions of said liquid dental component and said powdery dental component,

vibration mixing the first and second foil pockets in a vibration mixing chamber to rupture the foil pockets and admix the said predetermined amounts of the liquid and powdery dental components to form a dental amalgam of said fixed predetermined proportions of said liquid dental component and said powdery dental component.

4,537,304

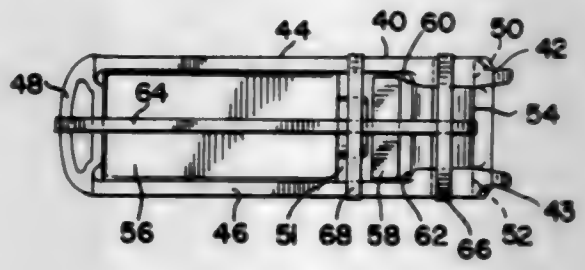
RAILWAY, COUPLER YOKE, DRAFT GEAR AND FOLLOWER ASSEMBLY

John W. Kaim, Chicago; Norman A. Berg, Wheaton, both of Ill., and Russell G. Altherr, Munster, Ind., assignors to AMSTED Industries Incorporated, Chicago, Ill.

Filed Jan. 17, 1983, Ser. No. 458,205

Int. Cl.³ B65D *85/68*; B65B *13/02*

U.S. Cl. 206—335 **5 Claims**



1. A pre-assembled railway car yoke, follower and draft gear assembly comprising a coupler yoke having a head portion at one end thereof with an opening therein and two elongated strap portions extending from said head portion to a rear portion joining said two strap portions to form a central pocket with two open sides in said yoke,

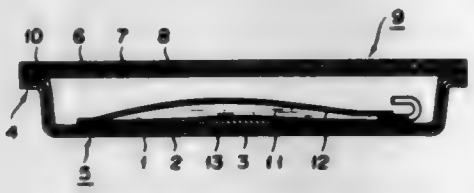
a partly compressed draft gear means in said central pocket of said yoke between said two strap portions, said draft gear means comprising a housing having top, bottom and side walls and a cushioning means located within said housing,

a follower between said draft gear means and said yoke head portion in said central pocket of said yoke, and a band means extending in line with the longitudinal axis of said yoke to hold said draft gear and said follower in said central pocket of said yoke, said band means extending around the outside of said rear portion of said yoke, across the said two open sides and around the draft gear, the follower and into the yoke head portion so as to maintain the draft gear and the follower in the central pocket of the yoke prior to assembly within a railway car.

4,537,305
PACKAGE FOR STORAGE OF MEDICAL CONTAINER

Nobuyasu Takanashi, Fujinomiya, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 426,216, Sep. 28, 1982, abandoned. This application Nov. 9, 1984, Ser. No. 670,660
Claims priority, application Japan, May 6, 1982, 57-74502
Int. Cl.[3] B65D *81/20*
U.S. Cl. 206—438 16 Claims



1. A package containing (i) a plastic medical container and (ii) a deoxidizer, said medical container containing a medicinal fluid which will degrade when contacted with oxygen gas and said container being made of a material which is pervious to gases and steam, said package comprising:

a tray part having an opening and comprising a laminated structure including an outer polypropylene layer, an intermediate layer capable of barriering passage of gases and steam and and inner polyolefin layer, and a flange portion around said opening;

a lid member having a laminated structure including an inner polyamide layer, an intermediate layer capable of barriering passage of gases and steam and an outer layer of a resin having a thermal resistance sufficient to withstand the condition of heat sealing;

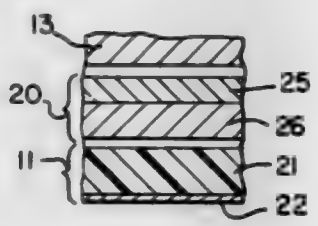
said intermediate layers being substantially impervious to steam so that the steam which permeates from the medical container is retained within the package whereby the atmosphere in the package may be saturated with said steam; and

a hotmelt adhesive layer formed of a blend of polyethylene and polypropylene, said hotmelt adhesive layer being inserted between said flange portion of said tray part and said lid member, said flange portion and said lid member being peel openably heat sealed to each other in a said hotmelt adhesive layer.

4,537,306
RADIOGRAPHIC FILM PACKAGE

Wilfried E. Muylle, Schoten, Belgium, assignor to AGFA-Gevaert N.V., Mortsel, Belgium

Continuation of Ser. No. 428,807, Sep. 30, 1982, abandoned, which is a continuation of Ser. No. 246,107, Mar. 20, 1981, abandoned. This application Jul. 3, 1984, Ser. No. 626,483
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1980, 8008205[U]
Int. Cl.[3] B65D *85/48*
U.S. Cl. 206—455 7 Claims

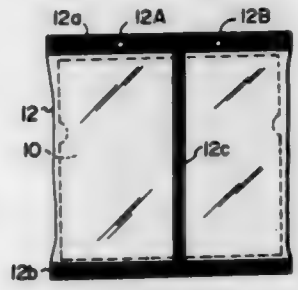


1. In a flat, air-tight, evacuated radiographic film package for non-destructive testing which comprises: a radiographic film sheet, a foil sheet comprising a layer of lead in contact with at least one side of the film sheet, and a light-opaque laminated wrapper extending over both sides of said film sheet and foil sheet with said film and foil sheets sandwiched therebetween, said laminated wrapper comprising an inner layer of a heat-sealable peel-strippable thermoplastic, and an outer protective layer of a generally transparent polymer, with the two sides of said wrapper being air-tightly sealed around the open edges thereof by heat-sealing together the mutually facing inner thermoplastic layers in the margins of said wrapper sides proximate said edges while the interior of said wrapper is under vacuum, the improvement wherein said laminated wrapper includes an intermediate layer of aluminum vacuum deposited upon the inner face of said outer protective layer.

4,537,307
DAYLIGHT FILM LOADING METHOD AND APPARATUS, FILM AND FILM PACKAGE USED FOR SAME

Kaoru Tamura, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Japan

Filed Aug. 15, 1983, Ser. No. 523,319
Claims priority, application Japan, Aug. 16, 1982, 57-141976; Aug. 16, 1982, 57-141977; Aug. 16, 1982, 57-141978
Int. Cl.[3] B65D *85/62, 85/30, 85/48;* G03B *19/10*
U.S. Cl. 206—455 24 Claims



11. A film package for loading in a daylight environment comprising:

(i) an unexposed rectangular light-sensitive film sheet provided with at least one clamp notch at each side edge, or a sheet stack of a plurality of such film sheets laid one upon another by aligning the corresponding notch positions with one another,

(ii) a protective sheet for protecting said film sheet or said sheet stack by covering at least one surface of said film sheet or said sheet stack, which has higher rigidity than the rigidity of said film sheet and has a size at least equal to the size of said film sheet, and which is provided with clamp notches at least at the portions overlapping said clamp notches when laid on said film sheet or said sheet stack, and

(iii) a flexible lighttight packaging material containing said film sheet or said sheet stack protected by said protective sheet in lighttight condition,

(iv) said film package being adapted for hanging said film sheet or said sheet stack by engagement of said notches of said sheet or said sheet stack and said protective sheet with clamp members from outside said packaging material.

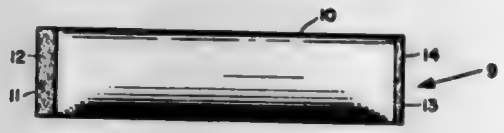
4,537,308
RUPTURABLE PACKAGES

Edward F. Hollander, Jr., Broomall, Pa., assignor to John P. Glass, Essington, Pa.

Division of Ser. No. 938,774, Sep. 1, 1978, Pat. No. 4,227,614, which is a division of Ser. No. 720,084, Sep. 2, 1976, abandoned. This application Feb. 8, 1980, Ser. No. 119,863
Int. Cl.[3] B65D *77/12*
U.S. Cl. 206—484 4 Claims

1. A package comprising a cylindrical tube of flexible material, a first end of said tube being closed by a first ultrasonic seal extending transversely across the tube, a second end of said tube being closed by a second ultrasonic seal extending transversely across the tube, said tube providing an internal chamber between said seals for containing a product and said second seal having a portion narrower than any portion of the first seal for rupturing under pressure for the dispensing of the product

only through said second end of the tube, and a tab extending beyond one of said seals, said tab consisting of an open exten-



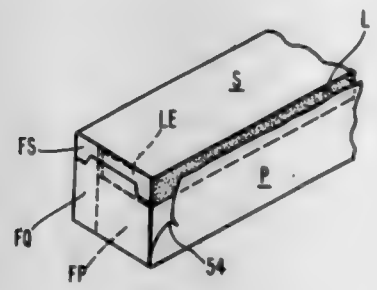
sion of said tube, and a plurality of notches formed in the open edge of said extension providing a code to identify the contents of the package.

4,537,309

TAMPER RESISTANT AND TAMPER EVIDENT SEALED END CARTONS

Nancy B. Boorsma, Penfield, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Sep. 16, 1983, Ser. No. 532,861
Claims priority, application Japan, Sep. 10, 1982, 57-137569
Int. Cl.³ B65D *5/42, 77/22, 55/02*
U.S. Cl. 206—525 **12 Claims**



1. In a product including

secondary packaging means comprising a carton wherein one of four wall panels is provided with a glue lap for gluing to an interior surface of another of said four wall panels to form a rectangularly shaped carton having a glue lap seam, said carton including a pair of opposed dust flaps foldable and folded toward each other and provided at ends of a pair of opposing wall panels, a first closure flap provided at each end of another of said four wall panels for folding over said folded dust flaps, a second closure flap extending from each end of remaining of said four wall panels for overlapping said first closure flaps and glued thereto, and

primary packaging means contained within said carton, said primary packaging means containing a consumable product therein, in combination, the improvement comprising

an extension provided at each end of said glue lap, each of said extensions glued to a respective dust flap extending from said panel to which said glue lap is glued, said extensions foldable with said dust flaps,

said carton providing tamper resistance to intrusion thereinto via said glue lap seam and visual evidence of said tampering upon physical separation of said glue lap from said wall panel carrying said dust flaps with said glue lap extensions.

4,537,310

TEAR-OFF PAD RAIL CLIP

James L. Thul, Plymouth, Minn., assignor to The Press, Inc., Chanhassen, Minn.

Filed May 23, 1984, Ser. No. 613,959
Int. Cl.³ B65D *85/00*; G09F *1/00*
U.S. Cl. 206—526 **15 Claims**

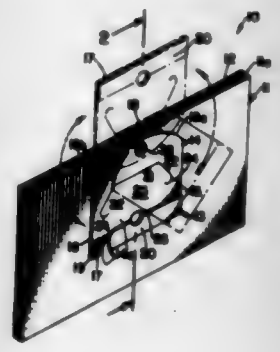
1. A tear off pad and rail clip assembly comprising:

(a) a plurality of individual sheets each having a top edge, said sheets cooperatively connected at said top edge to form a pad having a top edge;

(b) a mounting plate of a flexible, resilient material, said mounting plate having a mounting hole formed therein, whereby when said mounting plate is rotated to an up position, said assembly may be supported from a hook positioned through said mounting hole;

(c) a strip of pressure sensitive adhesive cooperatively connected to said mounting plate and a release paper covering said adhesive;

(d) means for forming a tongue section in said mounting plate;



(e) means for pivotally mounting said plate to said pad, said plate being rotatable between a down position and an up position, wherein when in the up position, said mounting hole, tongue section and adhesive are all positioned above said pivotally mounting means; and

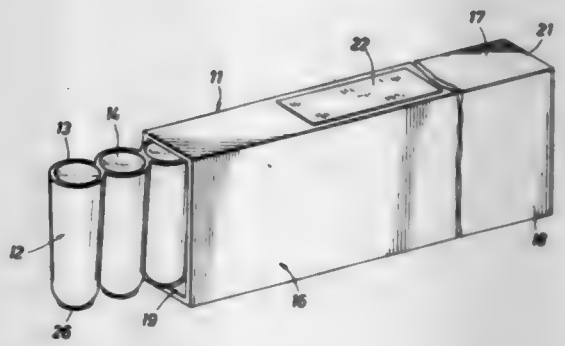
(f) said plate, when in said down position, having a top side having an apex positioned generally above said pivot means and said top side having generally downwardly depending segments, wherein said plate is rotatable to an intermediate position between said up and down positions, wherein said top side of said plate is below said top edge of said pad when in said intermediate position.

4,537,311

SEAMLESS SUPPOSITORY DISPENSER

William R. Wilkinson, Houston, Tex., and Russell G. Sharp, 707 Santa Maria, Sugarland, Tex. 77478, assignors to Russell G. Sharp, Sugarland, Tex.

Filed Jun. 27, 1983, Ser. No. 507,965
Int. Cl.³ B65D *83/04*
U.S. Cl. 206—529 **6 Claims**



1. A combination mold and a carrier for suppositories, comprising:

(a) an elongated rectangular body of flexible material that is dimensionally stable at ordinary temperatures;

(b) said body having a width substantially less in dimension than in height, and a length substantially greater than both its width and height;

(c) said body having parallel planar top and bottom surfaces, and tapered side surfaces that merge together adjacent said top surface and separate into individual tubular members as they extends towards said bottom surfaces;

(d) a plurality of tapered cavities formed side-by-side within said body and said cavities uniformly spaced laterally along said top surface and extending axially in a uniform constant taper within each tubular member through said body towards said bottom surface;

(e) said cavities each having rounded walls defining a rounded bottom of said cavities to facilitate suppository ejection from each cavity by a manual pinching action upon said rounded walls and said tubular members, said rounded bottom beginning in curvature at a predetermined dimension above said bottom surface of said body whereby said volumetric capacity of each cavity can be adjusted;

(f) said rounded walls at their apex carrying flat supporting bases in parallel to said top surface to receive a suppository mixture downwardly into said cavities; and

(g) said rounded walls connected by tubular walls to said top surface and said tubular walls about said cavities forming a common wall of uniform thickness between said cavities in said body.

4,537,312

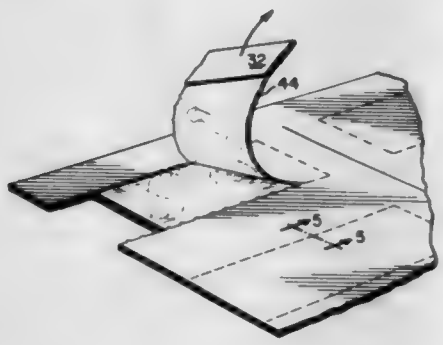
CHILD-RESISTANT TAMPER-EVIDENT PACKAGE

Thomas D. Intini, 9720 Recollet St., Brossard, Quebec, Canada J4X 1B9

Continuation-in-part of Ser. No. 495,993, May 19, 1983, abandoned. This application May 23, 1984, Ser. No. 613,334

Int. Cl.[3] B65D *83/04*

U.S. Cl. 206—531 4 Claims



1. A child-resistant tamper evident package comprising an outer front layer and an outer back layer, an intermediate laminate between the outer front layer and outer back layer, said intermediate laminate including a blister layer having at least one capsule-receiving pocket formed therein, a rupturable film adhered to the blister layer with the film overlying said pocket, at least one aperture formed in said laminate, said front and back layers being sized larger than the intermediate laminate to thereby envelope the laminate, the front and back layers being sealed to each other about their periphery and to the aperture in said laminate, said outer back layer also being sealed to said film, a tab member formed in said outer front layer, a removable panel formed in said outer back layer, the removable panel overlying the tab member and at least one of the capsule-receiving pockets, said outer back layer being formed of a material which, when a force is applied thereto, sufficient to remove the removable panel, the material will delaminate to leave a portion thereof adhering to the film to thereby reinforce said film.

4,537,313

FLEXIBLE INSULATED CONTAINER

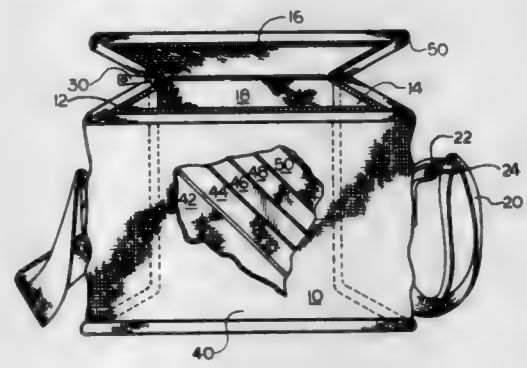
Eleanor Workman, 545 Ridge Ave., Elk Grove Village, Ill. 60007

Filed Feb. 27, 1984, Ser. No. 583,722

Int. Cl.[3] H45C *11/20;* F25D *3/08;* B65D *81/18*

U.S. Cl. 206—545 8 Claims

1. An insulated container comprising a bottom panel, a front panel, a back panel and opposed side panels, said front, back and side panels being secured to said bottom panel along marginal edges thereof and being selectively secured to each other so as to lie generally normal to said bottom panel and define therewith a pouch, and a top panel hingedly attached to one of said side panels in a manner to enable selective movement between a closed position closing said pouch and an open position providing access to said pouch, said bottom, front, rear, side and top panels each including an outer exposed



durable layer of nylon and an inner layer of metalized mylar, and a composite insulation layer between said outer and inner layers comprising a layer of needle punched dacron, a layer of aluminum foil, a layer of dacron and a layer of thermal suede, said composite insulation layers being of substantially equal planar size to the corresponding inner and outer layers.

4,537,314

VORTEX CLEANER

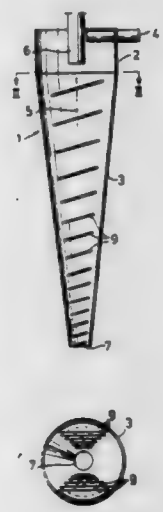
Karl A. Skardal, Bergatigen 21A, S-182 74 Stocksund, Sweden

Filed Aug. 16, 1983, Ser. No. 523,782

Claims priority, application Sweden, Sep. 2, 1982, 8205011

Int. Cl.[3] B04C *5/16*

U.S. Cl. 209—211 12 Claims



1. A vortex cleaner for separating a fibre-liquid suspension into a first fraction and a second relatively lighter fraction, comprising

an elongated vortex chamber having a circular cross-section and tapering toward its one end over at least part of its length,

a substantially tangentially directed inlet for the suspension to be treated at the wider end of said chamber,

an axially directed, first outlet for said second relatively lighter fraction at the wider end of said chamber,

a second outlet for said first relatively heavier fraction at the narrower end of said chamber, and

within the narrowing part of said chamber a plurality of shelf-like vanes attached to the inner wall surface of the chamber so as to project substantially radially into the chamber from the chamber wall and extending in an oblique direction relative to the axial direction of the chamber substantially coinciding with the flow direction of a helical vortex flow formed close to the chamber wall

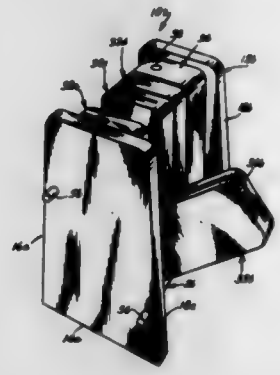
by a suspension being fed into the chamber through said tangential inlet, said vanes being mutually spaced apart in a manner such that the upstream end, as related to the flow direction of said helical vortex flow, of a given vane is located downstream, as related to the flow direction of said helical vortex flow, of the downstream end of the immediately preceding vane, as related to the flow direction of said helical vortex flow, and is substantially spaced in a peripheral direction and an axial direction from said downstream end of said immediately preceding vane.

4,537,315

KNIFE AND/OR STEEL STORAGE UNIT

Michael E. Griffin, Grand Rapids, Mich., assignor to F & M Trading Company, Howard City, Mich.

Filed May 3, 1984, Ser. No. 606,475
Int. Cl.³ A47F *7/00*
U.S. Cl. 211—70.6 **10 Claims**



1. A knife and/or steel storage unit, comprising:

spaced end panels, each having forward and rear surfaces, a lower surface adapted to rest on a countertop or the like;

an axle member extending between and connected to said end panels;

a series of knife receiving and retaining blocks pivotally mounted on said axle member, each of said blocks having a knife-receiving slot opening upwardly of said block and extending longitudinally along said block so as to open to one side thereof, said slots extending from said upward opening downward a sufficient distance to receive and encase the entirety of a knife-blade therein, and each block having at least one closure element secured thereto located adjacent said one side to block access to said slot from said one side and thereby retain a knife received therein;

said blocks pivotally mounted on said axle member so as to pivot forwardly from a storage position at which the slot and any knife contained therein are generally vertical with the handle uppermost to an access position at which the slot and any knife contained therein are at an angle with respect to the vertical permitting withdrawal of the knife from the slot without interference from an overhead obstruction, such as the bottom of a cupboard;

first means for retaining each of said blocks in said storage position, said first retaining means spanning the space between and interconnected to said end panels, the rear surfaces of any given block abutting said first retaining means when the block is in the storage position, and said first retaining means being located relative to said axle member such that the center of gravity of said block is not forward of said axle member when said block is in a storage position; and

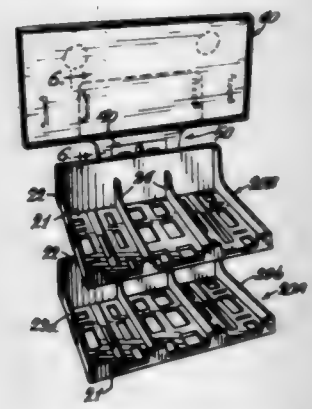
second means for retaining each of said blocks in said access position, said second retaining means spanning the space between and interconnected to said end panels, the forward surfaces of any given block abutting said second retaining means when the block is in the access position, and said second retaining means being located relative to said axle member such that the center of gravity of said storage unit lies rearwardly from the forwardmost points of said panel lower surfaces.

4,537,316

MODULAR DISPLAY FOR CIGARETTE PACKS

Virgil S. Simon, Glenview; Marvin L. Adenau, Hoffman Estates, and John S. Skalski, Hanover Park, all of Ill., assignors to Thomas A. Schutz Co., Inc., Morton Grove, Ill.

Filed Jul. 1, 1983, Ser. No. 510,436
Int. Cl.³ A47F *3/14*
U.S. Cl. 211—133 **22 Claims**



1. A modular retail counter display apparatus for merchandise which is displayed and sold in small packages, said apparatus comprising, in combination:

a single column which has a front wall provided with transversely adjacent vertical rows of aligned openings which are spaced apart by a predetermined distance;

and a pair of trays, each of said trays having a rear wall, four integral, coplanar, downwardly open hooks extending rearwardly from each rear wall, a central pair of said hooks being spaced apart by said predetermined distance so they may hook into two aligned column openings, and there being a flanking hook adjacent each end of each rear wall and spaced from the adjacent end toward the central pair of hooks by one-half said predetermined distance, and interfitting connectors at the ends of the pair of trays for fixedly joining the trays together with their ends abutting and the flanking hooks adjacent said abutting ends positioned to hook into two aligned single column openings, whereby said trays may be selectively connected to the column either in vertically spaced relationship or in end-abutting horizontal arrangement in which the two trays are supported only on said single column.

4,537,317

HEAVY DUTY TRAVEL CRANE

Lyle B. Jensen, Cedar Rapids, Iowa, assignor to FMC Corporation, Chicago, Ill.

Filed Apr. 23, 1984, Ser. No. 603,010
Int. Cl.³ B66C *23/72*
U.S. Cl. 212—189 **7 Claims**

1. A heavy duty mobile crane comprising:

means defining a steerable power driven main mobile unit supported by only two ground engaging propelling members which members remain parallel to each other at all times;

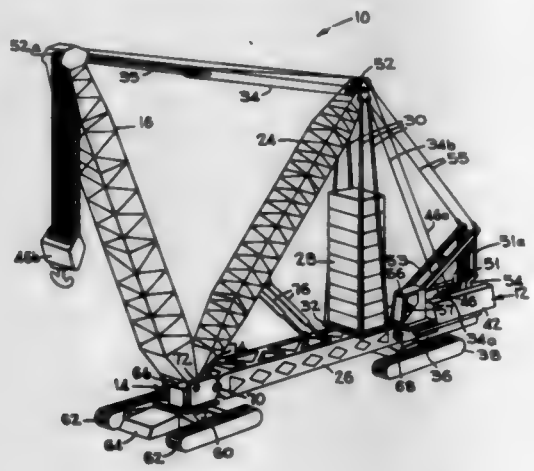
means defining a steerable independently power driven second mobile unit supported by only two second ground engaging propelling members which remain parallel to each other at all times;

a spreader link pivotally connected to said main and second mobile units for separating said units from each other a distance of at least one and one-half times the length of said ground engaging propelling members of said main unit when said propelling members are parallel to said spreader link;

a boom pivotally mounted on and supported by said second mobile unit and having an outer end;

a gantry pivotally mounted on and supported by said second mobile unit and having an outer end;

load engaging means including a load line trained over the outer ends of said boom and said gantry and adapted to be operatively connected to a load for lifting the load off the ground;



a counterweight supported on said spreader link between said mobile unit at a location adjacent said main mobile unit and operatively connected to and directly below the outer end of said gantry for counterbalancing said load;

boom positioning and hoisting means including a boom hoist line operatively connected to the upper ends of said boom and gantry and to the main control unit; and

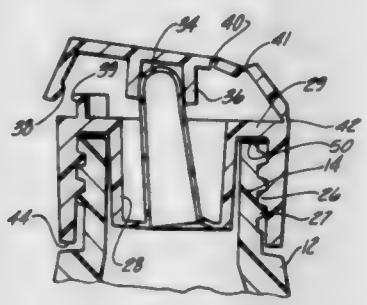
control means for actuating said load lifting means for raising said load and for thereafter actuating said mobile units for carrying the load to a different location.

4,537,318

DISPENSING CLOSURE LOCK AND SEAL

Gary V. Montgomery, Evansville, Ind., assignor to Sunbeam Plastics Corp., Evansville, Ind.

Filed May 7, 1984, Ser. No. 607,640
Int. Cl.³ B65D *41/04*
U.S. Cl. 215—232 **10 Claims**



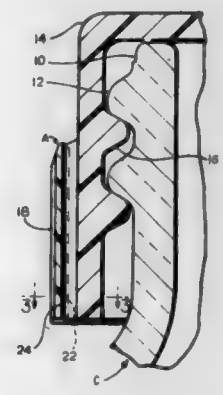
1. A dispensing package comprising: a container having a neck portion forming an opening with a lip around the edge of said opening and means for attaching a closure thereto, a closure for covering said opening having complementary means for attachment to said container, a metallic seal member disposed between said closure and said lip portion and having an annular portion engaged with said lip and with said closure when said closure has been initially applied to said container by engagement of said attachment means, said annular portion of said seal member having a coating on one side surface of a material fusible with said container and a coating on the other side surface of said seal member fusible with the material of said closure when said seal member is subjected to heat, said seal member being fused to said closure and said container to form a permanent connection therebetween.

4,537,319

CONCENTRIC TAMPER-INDICATING BAND

Ralph H. Whitney, Whitehouse, Ohio, assignor to Owens-Illinois, Inc., Toledo, Ohio

Filed Nov. 19, 1984, Ser. No. 673,071
Int. Cl.³ B65D *41/34*
U.S. Cl. 215—252 **5 Claims**



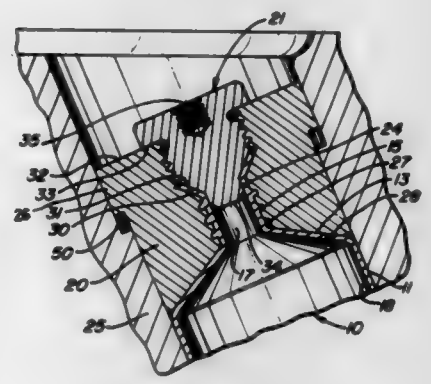
1. A tamper-indicating cap and band assembly for use with a container with a neck having external screw threads comprising, a container cap having internal screw threads that mesh with the container neck external screw threads, and a coacting tamper-indicating ring band circumferentially encircling said cap and connected to the cap with a plurality of flexible frangible bridges and having a plurality of internal band projections disposed in peripheral spaced relation on the inner periphery of the band, said cap having a plurality of spaced cap projections disposed in peripheral spaced relation on the outer periphery of the cap and positioned thereon for coacting locking gear tooth type engagement with certain respective band projections on the band when the assembly is threaded onto the container and for locking gear tooth type engagement with other respective band projections when the assembly is unscrewed from the container, said cap and band projections being positioned to avoid fracturing the bridges when the cap and band are threaded onto the container in tightening rotation, and when the cap and band assembly is unscrewed from the container the frangible bridges will fracture before the cap will unscrew from the container thus separating the band from the container to indicate prior opening.

4,537,320

CENTRIFUGE TUBE HAVING REMOVABLE CROWN AND SWAGE FITTING

Steven T. Nielsen, 1126 W. Knickerbocker Dr., Sunnyvale, Calif. 94087

Filed Oct. 27, 1983, Ser. No. 546,010
Int. Cl.³ B65D *39/08*
U.S. Cl. 215—276 **15 Claims**



1. A centrifuge tube for repeated and reliable use in an ultracentrifuge, comprising:

a tube having an enclosed bottom portion, a body portion

and a partially enclosed upper end, said upper end terminating in a filler stem;

a support crown for fitting over said filler stem when said tube is placed in a rotor cavity within said ultracentrifuge; and

a swage plug for insertion into said support crown to cause a swaged seal to be formed between said filler stem and the internal surface of said support crown.

4,537,321

CATHODE-RAY TUBE

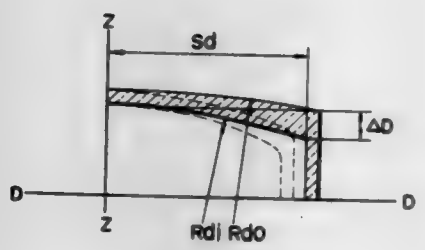
Kiyoshi Tokita, Fukaya, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 22, 1983, Ser. No. 564,197

Claims priority, application Japan, Mar. 9, 1983, 58-37439; Mar. 31, 1983, 58-53511

Int. Cl.³ H01J *61/30*

U.S. Cl. 220—2.1 A **11 Claims**



1. A cathode-ray tube (CRT) comprising:

a substantially funnel-shaped glass portion having a tube axis; and

a substantially rectangular faceplate, joined with said funnel-shaped portion to form the envelope of said CRT, said faceplate having curved inner and outer surfaces, a pair of long sides, a pair of short sides and four curved corners at which corresponding long and short sides meet, the dimensions of the faceplate being chosen so as to satisfy the relation

$$0.06 \leqq \frac{(Rd - \sqrt{(Rd)^2 - (Sd)^2})}{Sd} \leqq 0.12.$$

wherein

Rd is the radius of curvature of the inner surface in a plane including said tube axis and a diagonal connecting a pair of diagonally opposite corners among said four corners, and

Sd is one half of the diagonal dimension distance between a pair of diagonally opposite corners.

4,537,322

GLASS ENVELOPE FOR A CATHODE-RAY TUBE

Hisafumi Okada, Hyogo; Yoshio Suzuki, and Shigeo Takenaka, both of Fukaya, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 12, 1983, Ser. No. 560,105

Claims priority, application Japan, Dec. 13, 1982, 57-217098; Mar. 9, 1983, 58-37437

Int. Cl.³ H01J *61/30*

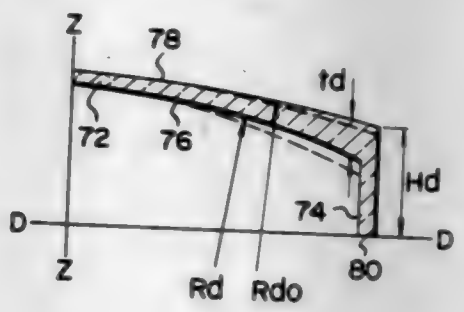
U.S. Cl. 220—2.1 A **8 Claims**

1. A glass envelope for a cathode-ray tube having a tube axis comprising:

a glass panel section including a faceplate and a skirt, said faceplate having two face surfaces on opposite sides of said faceplate, a substantially rectangular shape with long and short sides, a curved inner surface on one face surface thereof and a curved outer surface on the other face surface thereof, and said skirt extending from a peripheral portion of said faceplate along the tube axis,

said inner surface including a first inner surface radius of curvature Rsi set within a first plane including the tube axis and passing through center points of long sides of said faceplate, a second inner surface radius of curvature Rli set within a second plane including the tube axis and passing through center points of short sides of said faceplates and a third inner surface radius of curvature Rdi set within a third plane including the tube axis and a diagonal line connecting a pair of diagonally opposite corners of said faceplate,

said outer surface including a first outer surface radius of



curvature Rso set within said first plane, a second outer surface radius of curvature Rlo set within said second plane and a third outer surface radius of curvature Rdo set within said third plane, and

said inner and outer surface radii of curvature being defined by the following inequalities (1) and (2), respectively:

$$Rsi < Rli \text{ and } Rsi < Rdi \quad (1),$$

$$Rso < Rlo \text{ and } Rso < Rdo \quad (2).$$

4,537,323

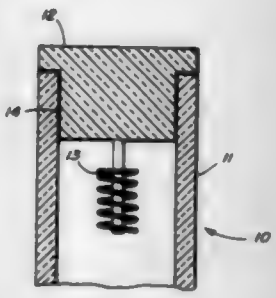
MO-TI MEMBERS WITH NON-METALLIC SINTERING AIDS

Brian M. Ditchek, Milford, and Thomas R. Middleton, Peabody, both of Mass., assignors to GTE Laboratories Incorporated, Waltham, Mass.

Filed Jan. 9, 1984, Ser. No. 568,995

Int. Cl.³ C22C *1/10*; H01J *61/36*

U.S. Cl. 220—2.1 R **28 Claims**



1. A member having an approximately uniform thermal expansion coefficient, said member sintered from a mixture comprised of molybdenum in the form of approximately −325 mesh powder, titanium in the form of approximately −325 mesh powder, and, as a sintering aid, 0.01 to 5 weight percent of oxygen in the form of oxide or boron or mixtures thereof.

23. A sealed assembly comprised of

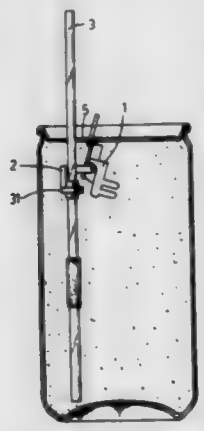
a ceramic tube having two ends;

at least one member hermetically sealed to one of asid ends, said member a sintered composition of molybdenum in the form of approximately −325 mesh powder, titanium in the form of approximately −325 mesh powder, and approximately 0.01 to 5 weight percent of oxygen in the form of oxide, or boron, or mixtures thereof.

4,537,324
AUTOMATIC STRAW-EMERGING DEVICE FOR EASY-TO-OPEN BEVERAGE CAN OF PRESS-DOWN TYPE SEALING TAP

Ming-Sheng Wang, No. 6, 77 La., An Ho Rd., Taipei, Taiwan

Filed Nov. 6, 1984, Ser. No. 668,793
Int. Cl.[3] A47G *19/22*
U.S. Cl. 220—90.2 5 Claims



1. A device to ensure a straw incorporated in an easy-to-open beverage can provided with top sealing tap, said straw being mounted in a manner that when said top sealing tap is opened, said straw can emerge a length from the opening sealed by said top sealing tap, said top sealing tap comprising a sealing portion which seals the opening of said can in an easy-to-open manner and a handle, said handle being disposed in a manner such that when a force is applied to the handle, said sealing portion can pivotally be moved into said can around an swinging axis to release the opening, yet still remain attaching to said can, characterized in that said device comprises a first part fixedly attaching beneath the sealing portion of said sealing tap sealing the opening of said can, and a second part pivotally mounted to said first part, allowing a pivotal movement of said top sealing tap and said first part relative to said second part around an axis;

said second part defining a first recess and a a second recess;

said second recess being structured to retain the upper part a straw;

said first recess being structured to allow the attaching portion with which said first part attaches to said sealing tap, of said first part, and said sealing portion of said sealing tap to pivotally pass through without touching said straw retained in said second recess;

said first and second parts being such that when said can is in sealed state, the top end of said straw is located in the vicinity of the opening of said can, and when said can is opened by pressing said top sealing tap to depress said first part, the top end of said straw is shifted to said opening.

4,537,325
STORAGE CONTAINER CLOSURE

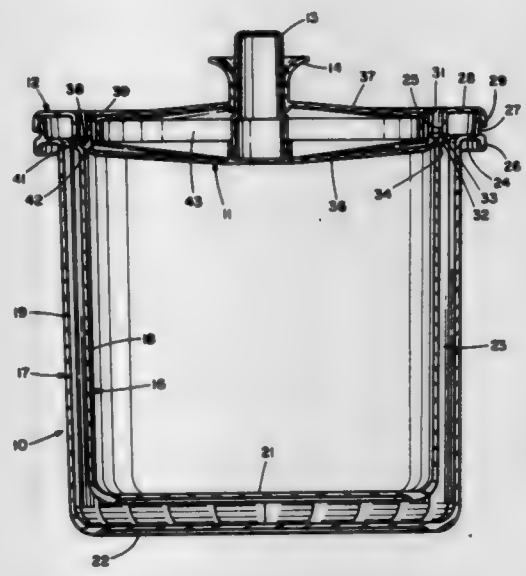
Mark P. Zieff, Lexington, Mass., assignor to Dart Industries Inc., Northbrook, Ill.

Continuation of Ser. No. 544,311, Oct. 21, 1983, abandoned.
This application Aug. 29, 1984, Ser. No. 646,027
Int. Cl.[3] B65D *53/00*
U.S. Cl. 220—234 10 Claims

1. In a closure for a container of the type having a generally circular throat opening and a closure member of the type comprising an elastically distortable seal member having a peripheral bead portion selectively contractable from a first bead diameter to a second, smaller bead diameter, said bead portion being releasably, sealingly engageable with the inner surface of said throat opening, the combination therewith comprising:

a first wall portion formed in said throat opening having a diameter greater than said first bead diameter;

a second wall portion formed in said throat opening below and adjacent said first wall portion having a diameter less than said first bead diameter and at least equal to said second bead diameter;



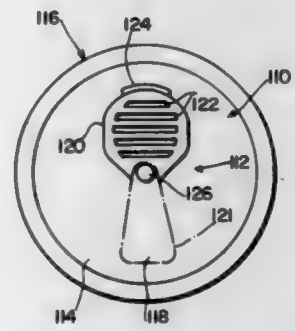
a first annular ledge extending inwardly and disposed between said first wall portion and said second wall portion; and

a second annular ledge extending inwardly below said second wall portion.

4,537,326
PROTECTOR FOR DRINK OPENING

Clyde D. Morehead, 4 Oak Meadow, Evansville, Ind. 47711

Filed Dec. 13, 1983, Ser. No. 560,844
Int. Cl.[3] B65D *17/32, 17/34, 47/04*
U.S. Cl. 220—269 10 Claims



1. A protector for a drink opening in a liquid container comprising,

a removable closure for the opening in the container,

a flat cover having a plurality of small apertures therein and a peripheral portion surrounding the apertures,

mounting means comprising an adhesive located on said peripheral portion for mounting the cover to the container,

a releasable mounting area located on the container where the cover is initially mounted prior to removal of the closure whereby after removal of the closure the cover is removed from said mounting area and adhesively attached about the exterior periphery of the opening of the container so that dangerous insects and the like are prevented from entering the container through the drink opening by said cover but the liquid in the container is capable of passing through said cover.

3. A protector for a drink opening in a liquid container comprising,

a tab opening device including a tab actuator and a shearable closure which is displaced by the tab actuator to expose the can opening,

the tab actuator having a portion thereof including a flat cover having a plurality of samll apertures therein,

mounting means for mounting said cover to the container

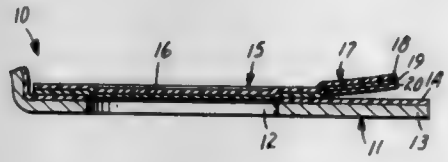
over the drink opening, said mounting means including a locking means for locking said flat cover in position over the opening whereby dangerous inserts and the like are prevented from entering the container through the drink opening by said cover but the liquid in the container is capable of passing through said cover.

4,537,327

TAPE CLOSURE FOR A CAN END

Shih-Lai Lu, Woodbury, Minn., assignor to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Filed Sep. 13, 1984, Ser. No. 650,050
Int. Cl.[3] B65D *41/00*
U.S. Cl. 220—359 **7 Claims**



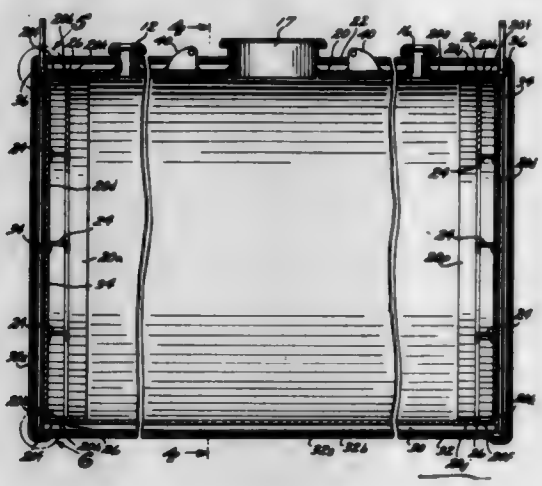
1. A container end assembly comprising
(a) a container end formed of metallic material having an exterior surface and an interior surface and being formed with a pour opening therein;
(b) a coating over at least the exterior surface of said container end, said coating comprising a carboxyl group-containing vinyl chloride/vinyl acetate copolymeric composition;
(c) a pressure sensitive tape bonded to an area of said exterior surface of said coating which is circumjacent and covers said pour opening, said pressure sensitive adhesive tape forming a bond to said coating which is greater than the bond between said coating and said container end, whereby upon peeling of said tape from said container end, said coating delaminates from said container end in the area of the pressure sensitive adhesive tape bond.

4,537,328

STORAGE TANK

Kenneth M. Keesee, Anaheim, and John R. Guyer, Riverside, both of Calif., assignors to Keesee Tank and Pump Co., Inc., Anaheim, Calif.

Filed May 14, 1984, Ser. No. 609,612
Int. Cl.[3] B65D *87/24*
U.S. Cl. 220—445 **7 Claims**



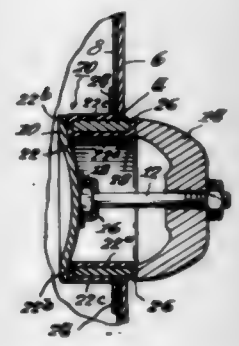
1. A storage tank comprising, in combination,
a primary tank adapted to be filled with fluid and having a coating of resinous material thereabout,
an outer tank surrounding said primary tank formed of relatively inert material,
and elongated spacers between said primary and outer tanks formed of plastic material and having a generally semi-circular cross-section providing a pair of spaced mounting edges,
said mounting edges of said spacers being embedded in said resinous material on said primary tank to locate and retain said spacers in proper position on said primary tank.

4,537,329

TANK LINING SYSTEM

William W. Norton, Lincolnshire, Ill., assignor to Culligan International Company, Northbrook, Ill.

Filed Apr. 2, 1984, Ser. No. 595,941
Int. Cl.[3] B65D *25/14*
U.S. Cl. 220—465 **6 Claims**



1. A tank lining system which comprises:
a tank having a wall defining an opening;
a sheet lining adhering to the interior surface of said wall and defining an opening that is aligned with the opening defined by the tank wall;
a penetration fitting having a periphery that is similar in configuration to said opening and extending into the interior of the tank through said opening, said fitting having an outer surface, an end surface, and an inner surface;
a collar having a flange surrounding the periphery of said opening, a first wall surrounding said penetration fitting outer surface and extending towards the tank interior and generally perpendicular to said flange, and a second wall overlying said end surface and extending generally perpendicular to said first wall towards the center of said opening, said collar having a generally Z-shaped cross-sectional configuration;
means connecting said collar flange to the plastic sheet adjacent its opening; and
said first wall and said second wall of the collar being located in tight conformance with the outer surface and end surface respectively, of the penetration fitting, whereby a tight fit is provided between the plastic lining and the penetration fitting.

4,537,330

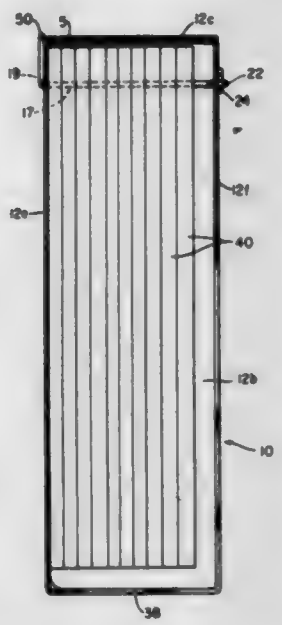
BAG DISPENSING SYSTEM

Edward Gelbard, Monte Carlo, Monaco, assignor to Wilverly Mansions I.B.V., Netherlands

Filed Apr. 1, 1983, Ser. No. 481,460
Int. Cl.[3] B65D *83/00*
U.S. Cl. 221—26 **1 Claim**

1. A dispenser for plastic bags comprising two side panels, top and bottom panels and back panel forming a rigid container, a front panel hingedly connected to said bottom panel for closing said container, said front panel having flaps hingedly connected to the sides not connected to said bottom panel, each flap being approximately as long as its respective side and being approximately as wide as said side and top panels for supporting said front panel when said container is closed, said front panel being formed with a rectangular-

shaped perforated pull-out extending from the mid to lower portion thereof and into said bottom panel for exposing the interior of said container, the upper side of said rectangular-shaped pull-out being in the shape of a wide inverted V, and having a thumb-press portion provided at the vertex of the V, to facilitate initiation of perforation rupture, a generally U-shaped hanger having a base lying outside said container near the top thereof to facilitate securing said container to an outside support, said base having a portion in the shape of an inverted V to facilitate hanging said dispenser and having a pair of arms passing through and secured by said back and



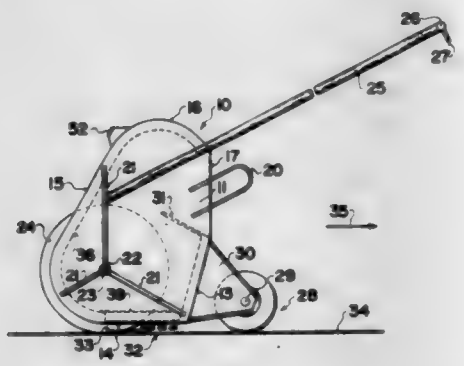
front panels near the respective tops thereof, said arms being formed with eyelets at their ends remote from said base, said eyelets lying outside said container and said arms being adapted to pass through holes formed in the bindings of pads of plastic bags to support said pads within said container, and a retainer formed with a pair of hooks respectively engageable in said eyelets, at least one of said hooks being S-shaped for snapping said retainer into engagement with said eyelets, whereby, when said pads of bags are thus supported within said container and said perforated pull-out is opened, said bags can conveniently be removed singly by users.

4,537,331

APPARATUS FOR DISPENSING VISCOUS MATERIALS

Joseph J. Matula, 114 Sanderson Ave., Winnipeg, Manitoba, Canada (R2R 1R4)

Filed Jun. 21, 1983, Ser. No. 506,362
Claims priority, application Canada, Aug. 13, 1982, 409445
Int. Cl.³ B67D *5/64*; A01C *3/06*
U.S. Cl. 222—165 **24 Claims**



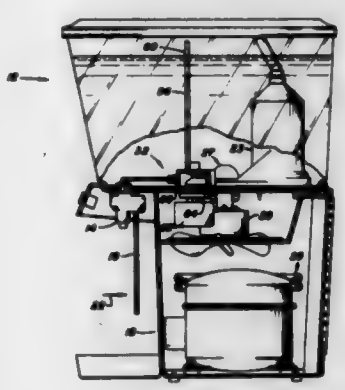
1. A dispensing apparatus for viscous materials such as asphalt or the like comprising in combination a container, ground engaging wheels one upon each side thereof, at least one handle extending therefrom, said container being rotatable upon said ground engaging wheels through approximately 120°, from a filling and transporting position, to a dispensing position and vice-versa, said container including a filling opening, which, when said container is in the filling and transporting position, is substantially on the upper side thereof, material dispensing means in one wall thereof, a spreader chain assembly on said one wall adjacent said dispensing means, said spreader chain assembly engaging said one wall when in the filling and transporting position whereby the heat of the viscous material transfers to said spreader chain assembly and engaging the ground when said container is in the dispensing position and at least one support wheel journalled for rotation upon the upper side of said container when said container is in the filling and transporting position, said support wheel engaging the ground when said container is in said dispensing position, said dispensing means being in a non-dispensing position adjacent the upper side of said container when in said filling and transporting mode and in a dispensing position adjacent the lower side of the container, when said container is in a dispensing position.

4,537,332

BEVERAGE DISPENSER WITH IMPROVED IN-BOWL WHIPPER

Merle S. Brown, Cohasset, and William A. Arzberger, Medfield, both of Mass., assignors to Jet Spray Corp., Norwood, Mass.

Filed Sep. 30, 1982, Ser. No. 430,234
Int. Cl.³ B67D *1/10*
U.S. Cl. 222—190 **5 Claims**



1. In a beverage dispensing machine having a base and a bowl mounted above the base, a whipper assembly for frothing non-carbonated beverages dispensed by the machine comprising

a housing adapted to be immersed in the beverage in the bowl,

said housing having a top wall and a generally cylindrical side wall,

an outlet passage from the housing in the side wall, and a pair of inlet ports in the side wall distal from said outlet passage,

an impeller body in the housing having a driven magnet imbedded therein,

impeller blades formed on the top surface of the body, said blades not exceeding 1/16 inch in height,

fins mounted on the housing and extending downwardly toward the blades,

a drive magnet mounted in the base and magnetically coupled to the driven magnet in the impeller, and

a motor in the base connected to the drive magnet for rotating the impeller at 4000 to 8000 rpm.

4,537,333

AIRBORNE PARTICLE DISPENSER

Richard S. Bjerregaard, Boise, Id., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Jul. 20, 1981, Ser. No. 285,346
Int. Cl.³ G01F *11/10*
U.S. Cl. 222—345 **10 Claims**

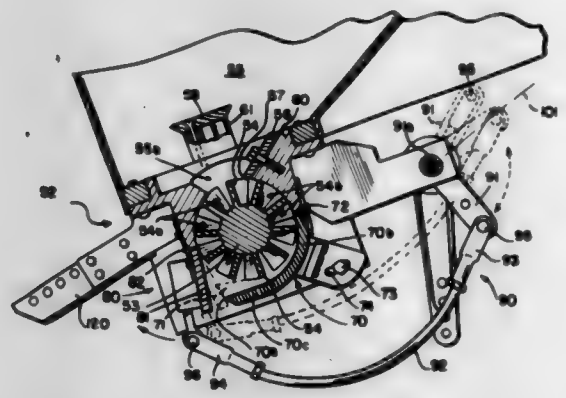
2. Apparatus for dispensing particulate agricultural material

at controllable uniform rates from an aircraft in flight comprising:

a housing having an inlet opening for receiving particulate material by gravity flow from a container carried by the aircraft, and having a dispensing opening;

a horizontal rotor mounted in said housing in clearance relation with an arcuate portion of the housing and having a plurality of material-receiving pockets and intervening rotor edges for moving the material from the inlet opening to the dispensing opening; and

a rigid blade fixed on said housing and having a blade edge in shear relation with said rotor edges,



said rotor edges and blade edge being disposed so as to be angularly oriented with respect to each other in the shear plane as the rotor blades move in shear relation across the fixed blade and thereby to present single points of shear intersection and reduce crushing of the particulate material; and

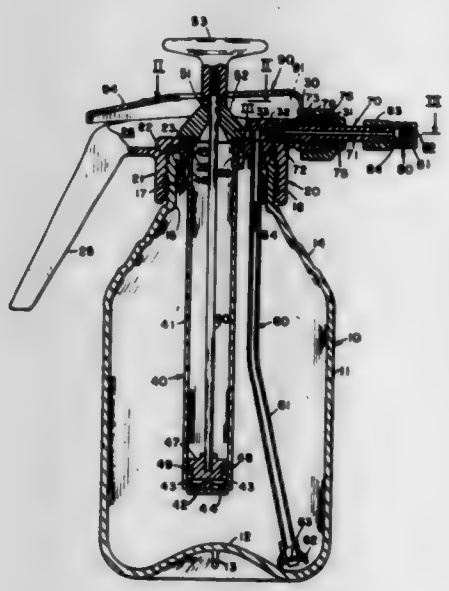
wherein said fixed blade edge extends parallel to the axis of the rotor and the rotor edges extend in a spiral about such axis so as to cross the fixed blade edge in an angular shear relation.

4,537,334

PORTABLE PRESSURE SPRAYER

William E. Spengler, Toledo, and William C. Ramsey, Bryan, both of Ohio, assignors to Tolco Corporation, Toledo, Ohio

Filed Jul. 18, 1983, Ser. No. 514,510
Int. Cl.[3] B65D *83/00*
U.S. Cl. 222—401 50 Claims



1. A portable pressure sprayer comprising:

(A) a reinforced plastic container with a cut threaded neck having a top bevelled edge,

(B) a plastic cap means threaded on said neck having an integral handle and a nozzle connecting means,

(C) a manually operated pump means supported by said cap means including means for snap-locking said pump means to said cap means,

(D) a plastic siphon tube depending from said cap means into said container, and being in fluid communication with said nozzle connecting means,

(E) a nozzle means connectable to said nozzle connecting means and having a normally resiliently closed tubular valve means axially slidable in said nozzle means and in said nozzle connecting means,

(F) a lever means adjacent said integral handle and pivoted in said cap means for operating said tubular valve means, and

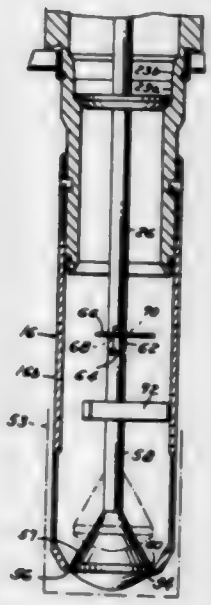
(G) diametrically opposite outward projecting means on said tubular valve means for engagement with said lever means, and substantially paralleled grooves on said nozzle connecting means on said cap means for said diametrically opposite outward projecting means.

4,537,335

FILLER MEANS FOR CHARGING CONTAINERS

Badruddin K. Rangwala, Farmington Hills, and Toney S. Flack, Livonia, both of Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation of Ser. No. 382,889, May 28, 1982, abandoned.
This application Jun. 14, 1984, Ser. No. 620,581
Int. Cl.[3] F16K *31/12*
U.S. Cl. 222—496 14 Claims



1. A filler valve assembly for filling containers with liquid products, said filler valve assembly comprising an upper body; a main body; a pressure-responsive assembly mounted so as to separate said upper and main bodies; spring means mounted between said pressure-responsive assembly and the upper end of said upper body; an inlet connection and opening in a side of said main body; a sleeve nozzle connected to the lower end of said main body; a valve seat formed at the lower end of said sleeve nozzle; a valve connected by rod means to said pressure-responsive assembly; orifice means formed in said main body, said orifice means including a cylindrical surface formed in said main body for a predetermined height and an adjacent member secured to said rod means to accommodate the flow therepast of a selected volume of fluid products, and a frust-conical surface formed just above said cylindrical surface for a second predetermined height for cooperation with said adjacent member secured to said rod means to accommodate the flow therepast of a larger selected volume of fluid products; said valve being urged by said spring means into engagement with said valve seat until such time as a measured volume of fluid product is communicated from a source of fluid product through said inlet opening to said main body, to thereby urge said pressure-responsive assembly upwardly against the force of said spring means and thereby lift said valve from said valve

seat and providing the pressure to vary said orifice means as required to correspond to the measured volume per unit time and to force an equivalent measured volume of fluid product through the space between said valve and valve seat into said containers.

4,537,336

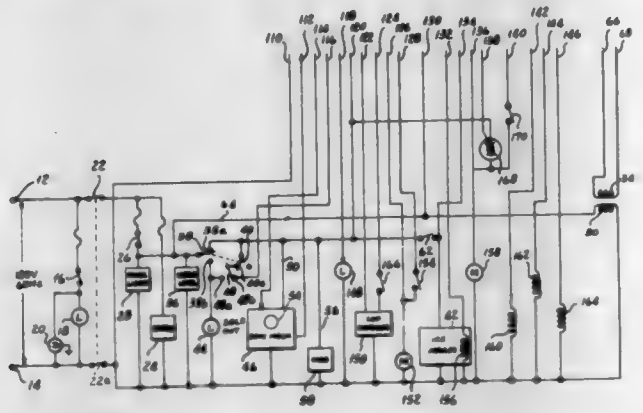
CONTROL SYSTEM FOR COLD DRINK MERCHANDISING MACHINE

Lee C. Verduin, Grand Rapids, and Michael J. St. Clair, E. Grand Rapids, both of Mich., assignors to Rowe International, Inc., Whippany, N.J.

Continuation of Ser. No. 226,252, Jan. 19, 1981, abandoned. This application Jun. 4, 1984, Ser. No. 616,696

Int. Cl.³ B67D *5/56*

U.S. Cl. 222—641 **6 Claims**



1. In a cold drink merchandising machine adapted in the course of a cycle of operation thereof to dispense a variety of drinks of different flavors, each of which drinks has a water component and a flavoring syrup component, said machine having respective syrup delivery means each of which is set to operate at the same rate and for the same period of time for a given size of drink and a water component delivery means and respective customer operated selecting means corresponding to said variety of drinks for initiating said cycle of operation of said machine, a control system comprising means responsive to said selecting means for actuating said water component delivery means, a plurality of internal service-person settable switches, each of said switches comprising an input terminal and a plurality of output terminals and settable means for connecting the switch input terminal selectively to the switch output terminals to cause the switch to produce a predetermined binary-coded signal at its output terminals in response to a signal at its input terminal, said settable means being set in accordance with the viscosities of said syrups to control the mix thereof with said water component, means responsive to actuation of said selecting means respectively to apply signals to the input terminals of said switches, and means including a microprocessor responsive to said binary coded signals for controlling said syrup delivery means to determine the point in said cycle at which said means is energized in accordance with the viscosity of the syrup being delivered thereby.

4,537,337

BOOT REMOVAL APPARATUS

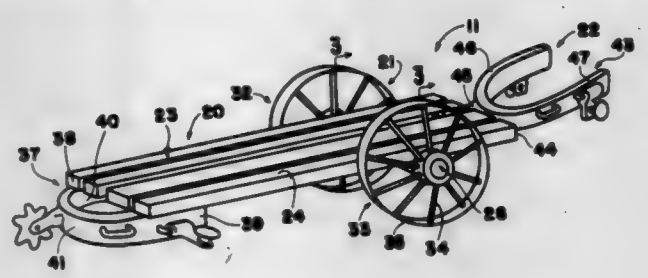
Vernon L. Girty, P.O. Box 1304, Forsyth, Mont. 59327

Filed Aug. 21, 1984, Ser. No. 642,882

Int. Cl.³ A47J *51/02*

U.S. Cl. 223—114 **12 Claims**

1. Boot removing apparatus including a platform portion, an undercarriage portion and a boot gripping portion; said platform portion including an elongated bed section, said bed section having a substantially rectangular configuration with a length significantly longer than the width thereof; said undercarriage portion including a transverse axle section extending under said bed section with free ends of said axle section extending beyond said edges of said bed section, wheels mounted on said free ends of said axle section, a first U-shaped member mounted under said bed section adjacent an end thereof, said first U-shaped member being mounted so free ends thereof are in contact with an underside of said bed section and an arcuate section thereof extends beyond said bed section, said free ends of said first member being aligned longitudinally of said bed section, said first U-shaped member having a thickness significantly less than a radius of said wheels to incline said bed section upwardly from said first U-shaped member; said boot gripping portion including a second U-shaped member extending from an end of said bed section opposite to said first U-shaped member, said second U-shaped member having a configuration substantially the same as said first U-shaped member, said second U-shaped member being disposed along a longitudinal center line of said bed section and secured thereto with said free ends extending beyond said bed section; whereby a user can place one foot on said bed section and insert a heel of a boot with a second foot therein into said second U-shaped member and withdraw said second foot from said boot.



4,537,338

BAGGAGE CARRIER FOR TWO-WHEELED VEHICLES

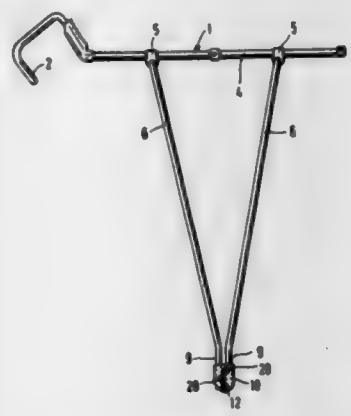
Heinrich Belka, Bielefeld, Fed. Rep. of Germany, assignor to Esge-Marby GmbH & Co. KG, Bielefeld, Fed. Rep. of Germany

Filed Apr. 12, 1984, Ser. No. 599,535

Claims priority, application Fed. Rep. of Germany, Apr. 12, 1983, 3312994; Aug. 23, 1983, 3330286; Dec. 3, 1983, 3343844

Int. Cl.³ B62J *7/04*

U.S. Cl. 224—39 **18 Claims**



1. Baggage carrier for two-wheeled vehicles, comprising

a frame including the supporting surface for the baggage, and

a pair of support legs extending downward from the frame toward one another at both sides, the legs of which are optionally secured in an articulated manner to the frame and extend toward one another in the form of a V and are bent at the free ends such that they extend beside and approximately parallel to one another, being spaced apart by a short distance from one another,

wherein the free ends of the legs of each pair of legs can be secured to an extension piece of the vehicle frame in an adjustable manner by means of a clamping part placed upon these ends, the clamping part having a bore for a fastening screw which passes between the two ends of the legs and through a bore in the extension piece,

wherein, in accordance with the invention,

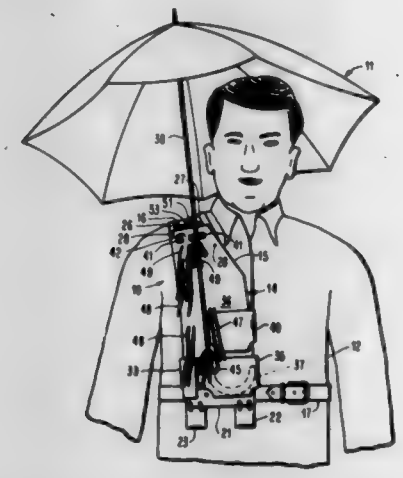
the clamping part (10) for each pair of support legs (6) has two continuous through bores (11), extending parallel to one another and disposed at both sides of the bore for the fastening screw (12), for the two associated cylindrical ends (9) of the legs, and wherein associated with the reception bores (11) is at least one clamping piece (15) cooperating with the inserted ends (9) of the legs, the clamping piece (15) being fastenable by means of a locking screw (20) against the ends (9) of the legs and against the clamping part (10), thereby fixing the ends (9) of the legs in their respective installed positions.

4,537,339

UMBRELLA SUPPORT

Beverly Pearson, 200 Blue Grass Dr., Richmond, Ky. 40475

Filed Jun. 19, 1984, Ser. No. 622,256
Int. Cl.[3] F16M *13/00*
U.S. Cl. 224—188 22 Claims



1. An umbrella support for holding an umbrella at a selected position irrespective of whether the umbrella has a short or long shaft and a curved or straight handle including:

support means for disposition on a user's body;

means to retain said support means on the user's body at a selected position;

said support means having first receiving means and second receiving means fixedly mounted thereon in vertically spaced relation to each other, said first receiving means being disposed beneath said second receiving means and receiving a handle of a relatively long umbrella shaft of an umbrella to be supported thereby, and said second receiving means receiving a handle of a relatively short shaft of an umbrella to be supported thereby, each of said first receiving means and said second receiving means receiving either a curved handle or a straight handle;

at least said second receiving means being formed of a non-rigid material so that said second receiving means does not block insertion of a handle of an umbrella shaft into said first receiving means;

a plurality of non-movable shaft guide means mounted on said support means above said second receiving means to receive a portion of the umbrella shaft having its handle supported by one of said first receiving means and said second receiving means;

each of said shaft guide means including means to hold a portion of the umbrella shaft therein;

said shaft guide means being spaced from each other in a substantially horizontal direction so that each of said shaft guide means provides a different angle to the umbrella shaft supported on said support means;

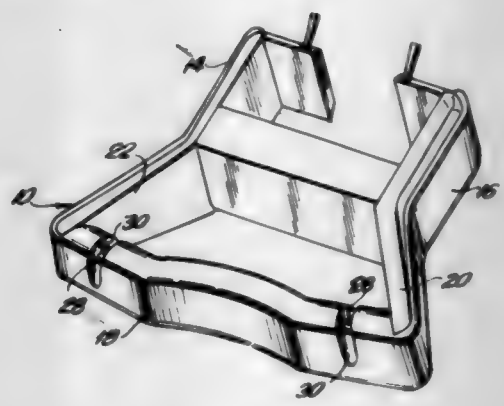
and securing means on said support means to secure to said support means a portion of the umbrella shaft extending from one of said first receiving means and said second receiving means, said securing means being separate from said shaft guide means and securing the portion of the umbrella shaft independently of said shaft guide means.

4,537,340

SUPPORT BRACKET FOR ELECTRONIC REMOTE CONTROL MODULE

Jeremy Waltzer, 22 Victorian La., Brookville, N.Y. 11545

Filed Aug. 29, 1983, Ser. No. 527,243
Int. Cl.[3] A45C *11/00*
U.S. Cl. 224—202 5 Claims



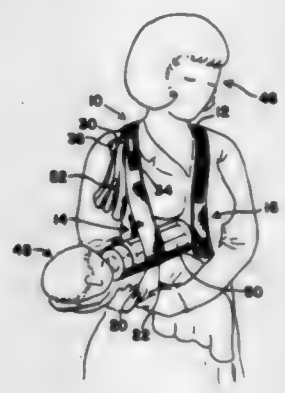
1. A support bracket for an electronic remote control module adapted to enable the module to be conveniently held and braced against the body while in use to facilitate operation thereof with both hands comprising: a pair of generally parallel support arms extending in spaced apart relationship to each other adapted to hold therebetween an electronic remote control module; a brace member extending generally perpendicularly to said support arms adapted to be placed against the body of a user to enable said bracket to be braced thereby while in use, said brace member extending across a distance greater than the spacing between said support arms; and a pair of intermediate members each extending, respectively, from an end of one of said support arms between said support arms and said brace member, said intermediate members being arranged to extend obliquely relative to both said support arms and said brace member thereby to enable the inner sides of the wrists of a user to rest thereagainst during operation of a control module mounted between said support arms.

4,537,341

NURSING BOTTLE HOLDER

Oscar Kelly, 1834 Lencar Way, San Jose, Calif. 95124

Filed Aug. 2, 1984, Ser. No. 637,118
Int. Cl.[3] A61J *9/06*
U.S. Cl. 224—202 4 Claims



1. A nursing bottle holder comprising:

(a) an elongated, flexible strip having a first end portion and a second end portion, said strip being adapted to be draped around an attendant's neck with said first end portion and said second end portion hanging substantially parallel to each other along said attendant's upper torso, said first end portion and said second end portion being unattached to each other;

(b) bottle holding means provided at said first end portion of said strip, said bottle holding means including a pair of

spaced apart fastener means attached to said first end portion such that said pair of fastener means can be engaged to form a loop at said first end portion, said loop being engagable with the circumference of a nursing bottle; and

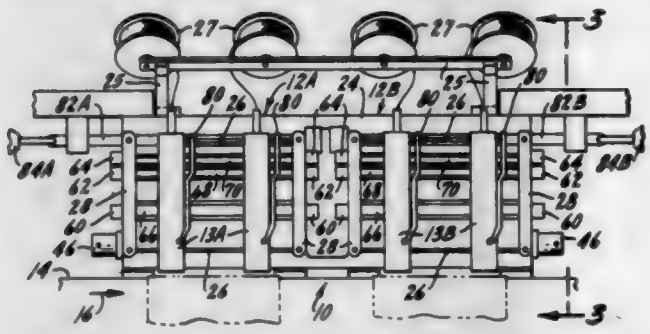
(c) counterbalance means provided at said second end portion of said strip, said counterbalance means including a counterbalance weight attached to said second end portion, said counterbalance means further including a pair of cooperating fastener means attached to said second end portion such that said second end portion may be formed into a loop to vary the position of said counterbalance weight and to shorten the overall extension of said strip.

4,537,342

BINDING MACHINE FOR A SIGNATURE MACHINE

William B. McCain, Hinsdale, Ill., and George D. Higgins, Kansas City, Mo., assignors to McCain Manufacturing Corporation, Chicago, Ill.

Filed Oct. 26, 1983, Ser. No. 545,217
Int. Cl.³ B27F 7/28
U.S. Cl. 227—78 **4 Claims**



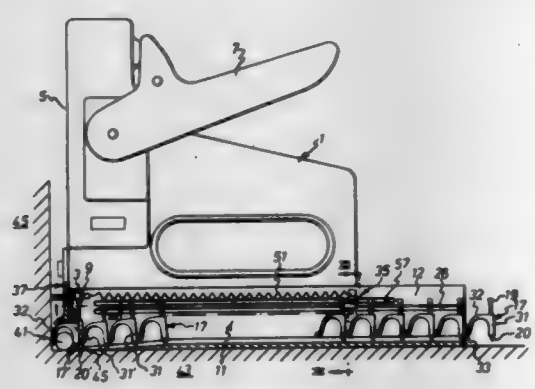
1. In a signature machine for assembling books, a plurality of signature feeders for feeding signatures onto a conveyor which advances unbound books to a binding machine, the improvement comprising a binding machine which can accommodate variable book thicknesses without adjustment during operation, the binding machine having multiple binding stations, each book being bound at one of the stations, the binding stations being independently adjustable such that each station can be set up prior to operation of the binding machine to bind books of a given thickness which is different from the thicknesses of books stitched at the other stations.

4,537,343

TOOL FOR FASTENING AN ELONGATED OBJECT ON A SUPPORTING SURFACE

Curt R. Johansson, Lagm.v.53, S-186 00 Vallentuna, Sweden

PCT No. PCT/SE83/00111, § 371 Date Nov. 7, 1983, § 102(e) Date Nov. 7, 1983, PCT Pub. No. WO83/03721, PCT Pub. Date Oct. 27, 1983
PCT Filed Mar. 28, 1983, Ser. No. 551,986
Claims priority, application Sweden, Apr. 5, 1982, 8202171
Int. Cl.³ B25C 5/11, 7/00
U.S. Cl. 227—120 **10 Claims**



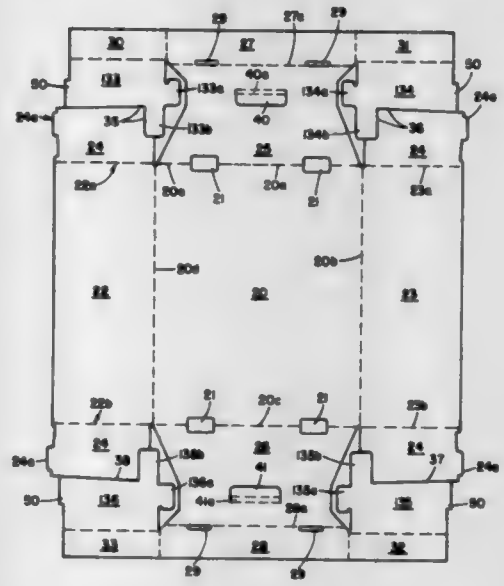
1. A tool for fastening an elongated object (41) on a wall or other supporting surface (43) by means of U-shaped clips (17) which are intended to embrace the elongated object and, by means of a fastening member (19) passing through one leg (31) of the clip, to be secured to the supporting surface, said tool comprising a magazine (11) for housing a strip of clips in the form of a continuous succession of mutually detachable clips (17), a feed device (35) which is adapted to feed the strip of clips in a direction towards a mounting station determined by an abutment member (9, 37) at the front end of the tool, and a driving device with a driving element (3) for driving the fastening member (19') of a clip (17') located at the mounting station into the supporting surface (43), characterized in that the magazine (11) has means for guiding a strip (17) of mutually detachable clips in a manner such that each individual clip carrying its fastening member (19) is oriented with its U-legs disposed one after the other in the plane of movement of the clips to be secured over the elongated object (41) oriented transversely of the longitudinal direction of the magazine, and that the abutment member (9, 37) is adapted to arrest the foremost clip (17') of the strip of clips in a substantially freely protruding position at the mounting station with the plane of the foremost clip transverse of the elongated object and to align the fastening member (19') of this clip with respect to said driving element (3).

4,537,344

INTERLOCKING CORNER STRUCTURE ON TRAY FOR FROZEN FRUITS AND VEGETABLES

Gilles R. Thomas, Mortagne au Perche, France, assignor to International Paper Company, New York, N.Y.

Continuation of Ser. No. 357,177, Mar. 11, 1982, abandoned. This application Sep. 25, 1984, Ser. No. 654,529
Int. Cl.³ B65D 5/22
U.S. Cl. 229—34 R **3 Claims**



1. A container blank, said blank comprising:

(a) a rectangular section;

(b) two walls each connected at fold lines to a longitudinal side of said rectangular section;

(c) two walls each connected at fold lines to a transverse side of said rectangular section;

(d) a plurality of tabs each connected at fold lines to one of the longitudinal walls of said rectangular section;

(e) a plurality of flaps each connected at fold lines to one of the transverse walls and whose outermost extremity constitutes an outermost boundary of said blank;

(f) a plurality of engagement pieces, each of whose outermost extremities is parallel to those of said flaps and which is integral with one of said flaps; and

(g) a plurality of sliding pieces each of which is integral with a flap and each of which has appended thereto one or more feet, locking pieces, and locking tongues, said feet

and locking pieces, respectively, being appended to opposed edges of said sliding pieces, said transverse walls and said rectangular section having abutting indentations which form one or more holes at their points of intersection and said flaps having one or more holes adjacent their intersection with said transverse walls.

4,537,345

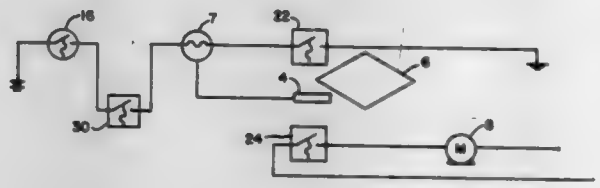
FLAME CONTROL SYSTEM FOR HEAT EXCHANGER

Claude D. Brown, Arvada, Colo., assignor to BBC Industries Inc., Grass Valley, Calif.

Continuation-in-part of Ser. No. 432,074, Sep. 30, 1982, Pat. No. 4,487,361, which is a continuation-in-part of Ser. No. 237,822, Feb. 25, 1981, abandoned. This application Feb. 2, 1983, Ser. No. 463,328

Int. Cl.³ F24D 5/00

U.S. Cl. 236—11 **12 Claims**



1. A heat exchange system comprising:
a thermostat controller for initiating and terminating a heat demand cycle;
a burner directly fluidly coupled to a fuel valve, said fuel valve being operable in the open position to provide a constant fuel supply to said burner and being operable in the closed position to prevent any fuel supply to said burner, said fuel valve being responsive to a heat demand signal from said controller;
a heat exchanger proximate the burner;
a heat duct distribution network arranged and adapted to direct heated fluid from said heat exchanger to a region to be heated; and
a temperature responsive switch electrically connected in series with said controller and said fuel valve, said switch arranged and adapted to sense the temperature at a chosen position in said heat duct distribution network remote from said heat exchanger to prevent the application of said heat demand signal to close said fuel valve when the temperature at said chosen position rises above a first temperature, and to permit the reapplication of said heat demand signal to open said fuel valve when the temperature at said chosen position drops below a second temperature.

4,537,346

FAIL-SAFE OIL FLOW CONTROL APPARATUS

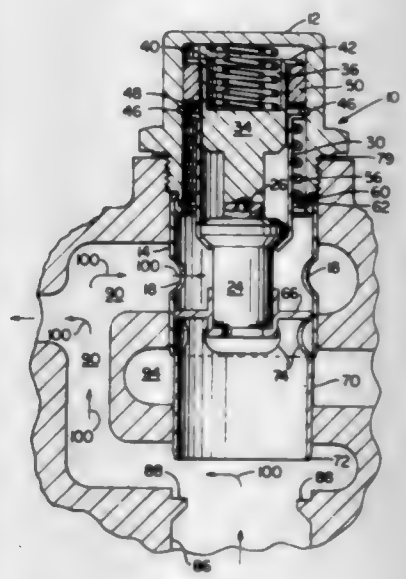
Wayne R. Duprez, Waltham, Mass., assignor to Standard-Thomson Corporation, Waltham, Mass.

Filed Oct. 17, 1983, Ser. No. 542,522

Int. Cl.⁴ F01P 7/16

U.S. Cl. 236—34.5 **6 Claims**

1. Oil flow control apparatus adapted to be positioned within an internal combustion engine system having an engine, a heat exchanger, a conduit system and a fluid pump for forcing oil flow through the conduit system to the heat exchanger and to the engine, the conduit system having an outlet passage leading to the engine and an outlet passage leading to the heat exchanger and an inlet passage leading from the fluid pump, the inlet passage being encompassed by a valve seat, the conduit system having a connecting passage leading from the inlet passage to the outlet passage which leads to the engine, comprising:
a housing provided with an enclosing wall having an opening therethrough for communication between the housing and the outlet passage which leads to the engine,
a piston slidably movable within the housing,
a sleeve valve attached to the piston and movable therewith to engage the valve seat to close the connecting passage, the sleeve valve being movable from the valve seat to open the connecting passage, the sleeve valve having a port therein, the sleeve valve being movable to position the port therein in communication with the outlet passage which leads to the heat exchanger for flow of fluid from the inlet passage, through the sleeve valve and through the port to the heat exchanger,
a thermally responsive actuator within the housing,
means attaching the thermally responsive actuator to the piston for movement of the piston with movement of the actuator,
a connector member within the housing,
means joining the connector member to the thermally responsive actuator,



a first spring member, the first spring member having a portion fixedly positioned within the housing and a portion in engagement with the connector member for urging movement of the connector member and the actuator away from the valve seat,
an abutment member movably positioned within the housing,
means operably joining the abutment member to the thermally responsive actuator for simultaneous movement of the actuator and the abutment member,
a second spring member, the second spring member being within the housing and in engagement with the abutment member and urging movement of the abutment member and the actuator toward the valve seat, the thermally responsive actuator moving the piston and the sleeve valve with respect to the abutment member and with respect to the valve seat, excessive pressure of fluid within the sleeve valve forcing movement of the piston and the sleeve valve in a direction away from the valve seat.

4,537,347

BI-DIRECTIONAL AIR DIFFUSER

Robert W. Noll, and Brian J. Noll, both of 800 Wikiup Rd., Santa Rosa, Calif. 95401

Filed Mar. 1, 1984, Ser. No. 585,336

Int. Cl.³ F24F 7/00

U.S. Cl. 236—49 **12 Claims**

1. A bi-directional ceiling mounted air diffuser for discharging supply air into a room comprising:
output means for varying the orientation and size of an air diffuser discharge opening;
means for sensing the temperature of the supply air;
linkage operatively connecting said supply air temperature

sensing means to said output means so that when said supply air temperature is cool, said linkage operates to open said output means and direct said supply air generally parallel to the ceiling of said room, and when said supply air temperature is warm, said linkage operates to open said output means and direct said supply air generally vertically downward into said room, where said output means varies the size of said discharge opening so that the size of said discharge opening is smaller for warm supply air than for cool supply, thereby increasing the discharge velocity of a volume of warm supply air over the discharge velocity of a like volume of cool supply air.

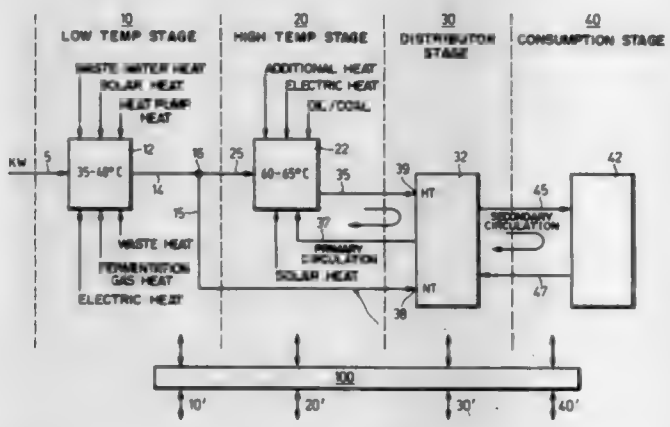


4,537,348

SYSTEM FOR EFFICIENT SERVICE WATER HEATING

Hans Gössi, Oberdorf 25, Küssnacht am Rigi, Switzerland

Filed Dec. 28, 1982, Ser. No. 453,931
Claims priority, application Switzerland, Jan. 8, 1982, 106/82
Int. Cl.³ F24D *3/00*
U.S. Cl. 237—8 A **22 Claims**



1. A method for providing heated service water, comprising the steps of:

heating a quantity of service water to a lower temperature range in a lower temperature stage;

heating a quantity of service water to a higher temperature range in a higher temperature stage;

conveying service water between the lower and higher temperature stages through a first line means;

conveying service water directly and separately from each of the higher and lower temperature stages to a distribution stage through second line means;

mixing and circulating service water in the distribution stage;

conveying service water, from the distribution stage to a consumption stage draw-off point through a third line means, of one of the temperature ranges for a shorter time period than of the other temperature range, and conveying lower temperature stage service water directly to the distribution stage and then to the consumption stage without being mixed with service water of the higher temperature stage;

controlling flow of service water through the line means by valve means; and

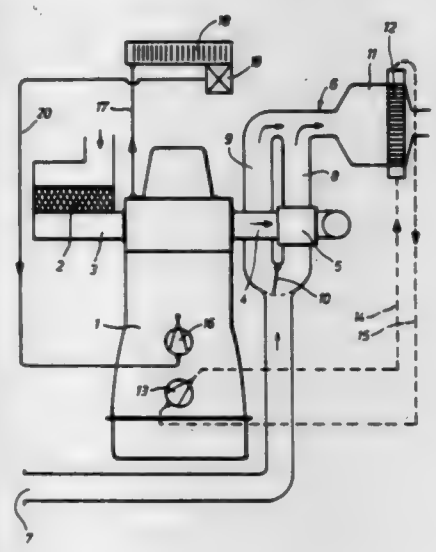
monitoring operation of the method and regulating operation of the valve means with programmable control means.

4,537,349

MOTOR VEHICLE WITH AN INTERNAL-COMBUSTION ENGINE AND WITH MEANS FOR HEATING A PAYLOAD SPACE

Albert Stolz, Tübingen, Fed. Rep. of Germany, assignor to Daimler-Benz Aktiengesellschaft, Stuttgart, Fed. Rep. of Germany

Filed Jul. 5, 1984, Ser. No. 628,213
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324138
Int. Cl.³ B60H *1/02*
U.S. Cl. 237—12.3 C **14 Claims**



1. A heating system for a motor vehicle with an internal-combustion engine, and a payload space, the heating system comprising:

an atmospheric relief pipe leading into the atmosphere through which air is transportable, the atmospheric relief pipe being formed to include at one end an inlet orifice for admitting air from one of the atmosphere and the payload space and at the other end an outlet orifice for discharging air back into the atmosphere, said atmospheric relief pipe being divided into a first pipe branch and a second pipe branch at a junction point;

a first heat exchanger in communication with an exhaust gas of the engine, the first heat exchanger being positioned in said first pipe branch to warm air flowing through the first pipe branch;

second heat exchanger means in communication with a liquid for cooling the engine, the second heat exchanger being positioned in the atmospheric relief pipe at a point downstream of the junction of the two pipe branches so that the air flowing through the atmospheric relief pipe intercepts the second heat exchanger to warm or cool selectively the liquid for cooling the engine;

and air dividing means for dividing the air between the first and second pipe branches.

4,537,350

SELF-ACTUATING DRINKING FOUNTAIN/FAUCET

Edward W. Apri, 998 Lehigh St., Altadena, Calif. 91001

Filed Jun. 27, 1983, Ser. No. 508,178
Int. Cl.³ E03B *9/20*
U.S. Cl. 239—25 **10 Claims**

1. An automatic drinking fountain and faucet assembly comprising:

a hollow housing;

inlet means for supplying water to said housing at one end thereof;

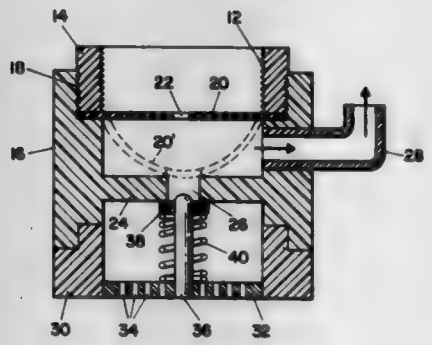
a drinking fountain outlet connected to said housing at a central portion thereof;

an outlet screen connected to said housing at the other end thereof;

a partition extending substantially across the open center of

said housing between said screen and the central portion of said housing, said partition having a central passage through the partition;

first valve means for normally closing said central passage, and for opening said passage when the water pressure exceeds a predetermined level;



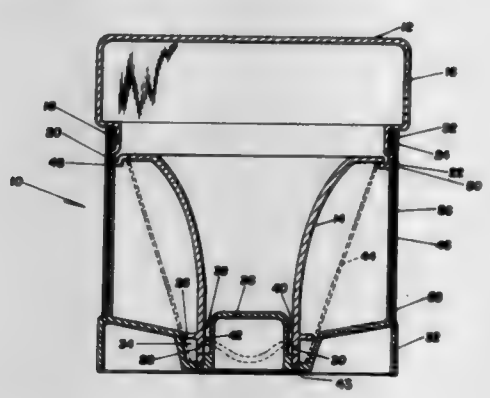
second valve means for selectively permitting the flow of water from said water supply means to said fountain when the incoming water flows out of the fountain at low water flow and pressure levels, and for blocking water flow to the fountain as the water pressure and flow level are increased.

4,537,351

LIQUID AIR FRESHENER DISPENSER

Daniel C. Wilson, Taylors, S.C., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jul. 14, 1983, Ser. No. 513,551
Int. Cl.³ A61L 9/04
U.S. Cl. 239—43 **14 Claims**



1. A vaporizing device comprising,

a base, said base including a perforated sleeve, a cylindrical plug and an annular well with said plug being located substantially centrally of said well and having diametrically opposed slots formed therein,

a container having a neck forming a mouth therefor, said neck having transverse diametrically opposed holes therein,

said container being mounted in inverted position on said base with said plug inserted in said neck thereof and with said sleeve being positioned in surrounding relation to at least a portion of said container, and

absorbent material positioned between said neck of said container and said sleeve and having a portion thereof extending into said annular well,

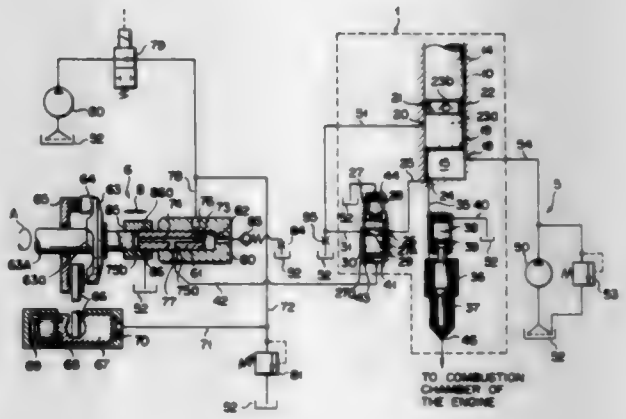
said base being angularly adjustable with respect to said container between two positions in one of which positions said transverse slots of said plug are out of alignment with the transverse holes in said neck and a liquid tight seal is effected between said plug and said neck whereby the flow of liquid out of said container is precluded, and in the other of which positions said transverse slots of said plug are in alignment with said transverse holes in ssid neck whereby liquid is allowed to flow from said container into said annular well to wet said portion of said absorbent material as long as there is access of air through the transverse slots of said plug and the holes of said neck to relieve the partial vacuum created in the container by the flow of liquid therefrom, said annular well having an outer wall and wherein a lip is provided on said neck, said lip being so formed and positioned that with the base in position on said container, said lip squeezes said absorbent material against said outer wall to prevent liquid from spilling from the device if waved about in the air.

4,537,352

FUEL INJECTION APPARATUS

Masaaki Kato, Toyoake, and Tetsuji Akashi, Oobu, both of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Sep. 30, 1982, Ser. No. 430,609
Claims priority, application Japan, Oct. 5, 1981, 56-158499; Oct. 5, 1981, 56-158500
Int. Cl.³ F02M 47/02
U.S. Cl. 239—90 **12 Claims**



1. A fuel injection apparatus for an internal combustion engine comprising:

(a) a fuel tank;

(b) a fuel injection unit mounted on an internal combustion engine for injecting fuel into a combustion chamber of said engine, said fuel injection unit having,

(i) a cylinder,

(ii) a driving plunger reciprocally held in said cylinder to form a pump chamber for receiving fuel from said fuel tank, said driving plunger being driven by said engine,

(iii) a timing port formed in said cylinder and opening to said pump chamber,

(iv) a nozzle holder communicated with said pump chamber;

(c) a fuel control pump operated by said engine for feeding out a fuel through an output port thereof, the amount of said fuel and the timing of feeding out said fuel responding to operational conditions of said engine;

(d) a timing passage communicating said pump chamber of said fuel injection unit with said fuel tank; and

(e) a control valve disposed in said timing passage for opening and closing said timing passage, said control valve having,

(i) a control chamber,

(ii) a control valve body reciprocally disposed in said control chamber,

(iii) a spring for biasing said control valve body in a direction of opening said timing passage, and

(iv) a timing chamber connected to said output port of said fuel control pump for driving said control valve body in a direction of closing said timing passage so long as the fuel from said fuel control pump is supplied into said

timing chamber, whereby the timing of fuel injection and the amount of the fuel injected through said fuel injection unit are controlled by said fuel control pump.

4. A fuel injection apparatus for an internal combustion engine having engine cylinders, comprising:

(a) a fuel tank;

(b) fuel delivery means connected with said fuel tank for delivering fuel from said fuel tank;

(c) fuel injection units each mounted on a corresponding one of said engine cylinders and including:

(i) cylinder means including a first cylinder and a second cylinder arranged in tandem;

(ii) plunger means including a fuel delivery plunger inserted in said first cylinder and reciprocated by said engine and an injection plunger inserted in said second cylinder;

(iii) pump chamber means including a first pump chamber defined by said first cylinder and one end of said fuel delivery plunger which is close to said second cylinder, a pressure chamber defined by said second cylinder and one end of said injection plunger which is close to said first cylinder, said pressure chamber communicating with said first pump chamber, and a second pump chamber defined by said second cylinder and the other end of said injection plunger;

(iv) an injection nozzle operatively connected with said second pump chamber for injecting fuel into said engine cylinder while fuel under pressure is supplied from said pump chamber means to said injection nozzle, and

(v) a timing port formed in said first cylinder and opening to said first pump chamber;

(d) a timing passage for allowing fuel in said pump chamber means to drain when said timing port is connected with said timing passage;

(e) a control valve connected with said timing passage for opening and closing said timing passage and including:

(i) a control chamber;

(ii) a control valve body disposed in said control chamber and movable between an open position in which said timing passage is opened and a closed position in which said timing passage is closed, whereby fuel injection from said injection nozzle is controlled,

(iii) urging means for normally urging said control valve body to be disposed in said open position, and

(iv) a timing chamber formed adjacent said control valve body in said control chamber for receiving fuel to move said control valve body to said closed position against said urging means; and

(f) a fuel control pump having as many output ports as said engine cylinders and wherein each of said output ports communicates with said second pump chamber of a corresponding one of said fuel injection units and with the timing chamber of the control valve of the fuel injection unit which is adjacent to said one of said fuel injection units and with the engine cylinder with which said adjacent fuel injection unit it connected, whereby, when fuel is delivered from said fuel control pump through said output ports the fuel is supplied to said second pump chamber of said one of said fuel injection units and the timing chamber of the control valve of said adjacent fuel injection unit to close the timing passage of said adjacent fuel injection unit; and said fuel injection unit also comprises a metering port formed in said second cylinder and communicating with said second pump chamber, and a drain port formed in said second cylinder and opening to said pressure chamber when said injection plunger is moved toward said pressure chamber, for a predetermined length to drain fuel in said first pump chamber through said drain port.

4,537,353

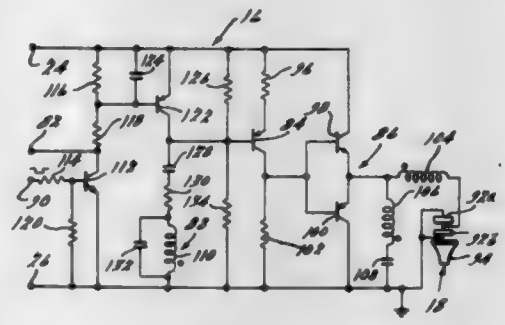
LOW-POWER ACOUSTIC INJECTOR DRIVE CIRCUIT WITH ENHANCED TURN-ON

Donald Speranza, Canton, Mich., assignor to Eaton Corporation, Cleveland, Ohio

Filed Feb. 28, 1983, Ser. No. 470,794

Int. Cl.³ B05B 3/14

U.S. Cl. 239—102 **21 Claims**



1. An acoustic fuel injector system comprising:

a mechanically resonant injector structure responsive to an alternating current excitation signal to atomize fuel supplied thereto;

oscillator circuit means for producing said alternating current excitation signal in response to a control signal; and

a DC-to-DC converter for producing a selectively variable regulated output voltage from an unregulated supply, whereby power applied to said injector structure varies as a function of converter output voltage level.

4,537,354

ORIFICE VALVE FOR AN ULTRASONIC LIQUID ATOMIZER

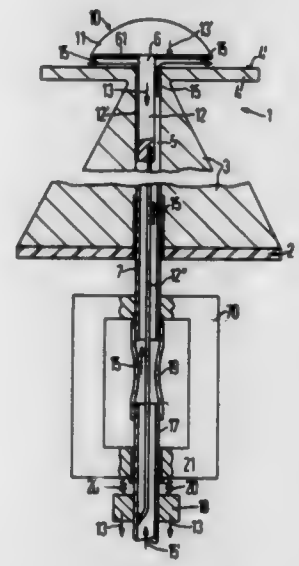
Gerhard Eith, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 1, 1983, Ser. No. 470,958

Claims priority, application Fed. Rep. of Germany, Mar. 12, 1982, 3209139

Int. Cl.³ B05B 3/14

U.S. Cl. 239—102 **7 Claims**



1. An ultrasonic liquid atomizer with an orifice valve, comprising: an ultrasonic oscillator having an atomizer plate; axial bore means in the oscillator and atomizer plate for liquid supply onto a surface of the atomizer plate; impact body means for deflecting and distributing supplied liquid on the atomizer plate; the impact body means having a stem which is situated in the axial bore means of the oscillator and of the atomizer plate, the impact body means being approximately centered over said bore means; the stem of the impact body means being continued in the form of a retaining element extending through the axial bore means beyond the oscillator through a liquid supply

tube connected to the axial bore means at a side opposite the atomizer plate; an end of the retaining element opposite the stem being secured to a component means for executing a motion of the impact body means relative to the atomizer plate such that an orifice opening at the surface of the atomizer plate between the atomizer plate and impact body means can be selectively closed when desired via the retaining element and the stem of the impact body means; said component means comprising a tube which is guided in sliding fashion on a retaining or mounting element of the liquid atomizer; and the tube being connected to a socket piece of the liquid atomizer via an elastic hose part such that a liquid line feed-through is formed.

4,537,355

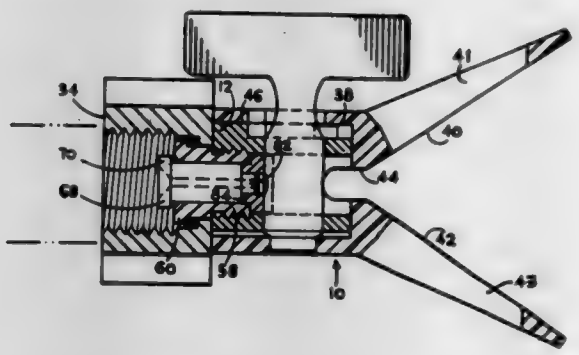
SPRAY TIP

Oliver J. Calder, Orange, Calif., assignor to Phyllis Graham, Orange, Calif.

Continuation of Ser. No. 457,919, Jan. 14, 1983, Pat. No. 4,484,707, which is a continuation-in-part of Ser. No. 442,525, Nov. 18, 1982, Pat. No. 4,483,481, which is a continuation of Ser. No. 165,247, Jul. 2, 1980, abandoned. This application Jan. 30, 1984, Ser. No. 575,153

Int. Cl.³ B05B *15/02*

U.S. Cl. 239—119 **6 Claims**



1. A spray tip comprising:

a housing having a longitudinal through passageway and an intersecting orthogonal cylindrical bore;

a cylindrical turret member rotatably seated in said intersecting cylindrical bore and having a transverse bore in alignment with said through passageway;

a spray tip orifice member mounted in said transverse bore;

a hard surface seal support received in said longitudinal through passageway and having a central through passage and a cylindrical concave seal support surface facing said turret member;

a thin layer seal supported by said cylindrical concave seal support surface and seated against said turret member and formed of a plastic having a low coefficient of friction and having a uniform thickness from about 0.001 to about 0.1 inch, sufficient to resiliently seal, but insufficient to sieze said turret member when compressively loaded; and

a retainer cap nut on said housing to secure said housing to a spray gun and a plastic tee seal received within said nut for capture between the end of said spray gun and said seal support, thereby providing compression means for axially compressing said seal support and seal sufficiently against said turret member to prevent leaking

whereby said turret member can be readily rotated by hand to reverse the position of the spray orifice in the assembly without releasing said compression means.

4,537,356

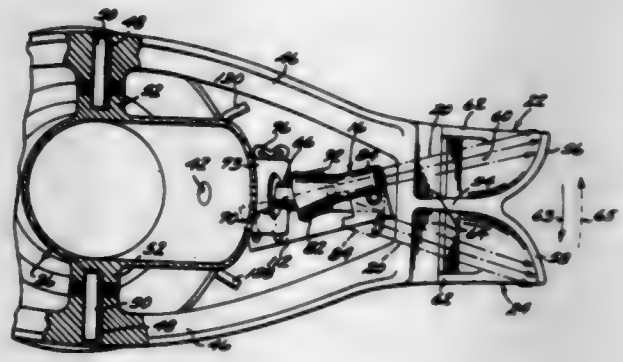
DRIVE ASSEMBLY FOR A REACTION DRIVE SPRINKLER

Kenneth L. Lawson, Ontario, Calif., assignor to Rain Bird Sprinkler Mfg. Corp., Glendora, Calif.

Filed May 7, 1984, Ser. No. 607,579

Int. Cl.³ B05B *3/08*

U.S. Cl. 239—230 **17 Claims**



1. A rotatable water sprinkler, comprising:

a range tube having a flow path therethrough for receiving water from a water supply pipe and for discharge projection of the water generally outwardly therefrom, said range tube further defining a relatively small bleed opening for bleed passage of a relatively small water stream from said flow path;

means for rotatably mounting said range tube on the water supply pipe;

a fixed drive nozzle on said range tube for discharge projection of the relatively small water stream outwardly from the sprinkler;

drive means pivoted with respect to said range tube and including first and second oppositely oriented deflector spoons for interrupting engagement with the relatively small water stream to rotatably drive said range tube respectively in opposite rotational directions with respect to the water supply pipe;

diverter means movable between a first position for guiding the relatively small water stream discharged from said drive nozzle in a first direction for interrupting engagement by said first deflector spoon and a second position for guiding said small water stream in a second direction for interrupting engagement by said second deflector spoon; and

reversing means responsive to the rotational position of said range tube with respect to the water supply pipe for shifting said diverter means between said first and second positions.

4,537,357

SPRAY GUNS

Samuel W. Culbertson, Arvada, Colo., and George Dixon, West Midlands, England, assignors to Binks Manufacturing Company, Franklin Park, Ill.

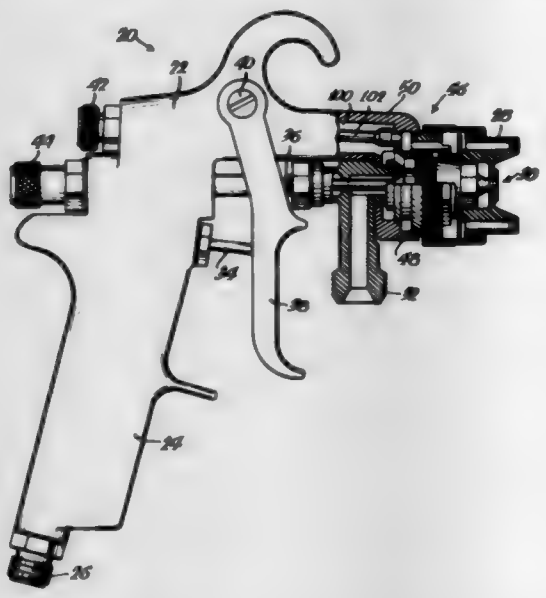
Continuation-in-part of Ser. No. 374,257, May 3, 1982, abandoned. This application Oct. 5, 1984, Ser. No. 658,209

Int. Cl.³ B05B *1/28*

U.S. Cl. 239—290 **19 Claims**

1. A spray gun having a gun body and a spray head assembly carried at a forward end of said body for emitting an atomized spray of fluid, said spray head assembly comprising a fluid inlet fitting separate from said gun body and having a passage therethrough connectable at one end with a supply of fluid; a fluid nozzle having a passage therethrough terminating at one end in a fuid outlet orifice; a fluid nozzle retainer detachably connected with said fluid inlet fitting and said fluid nozzle for supporting the same with opposite ends of said passage in communication, whereby fluid introduced into said one end of said inlet fitting passage flows through said passages for being emitted from said orifice; air emitting means at said one end of

said fluid nozzle for emitting air for flow against fluid emitted from said outlet orifice, said air emitting means being detachably connected with said fluid nozzle retainer; and a member integral with and extending from said forward end of said gun



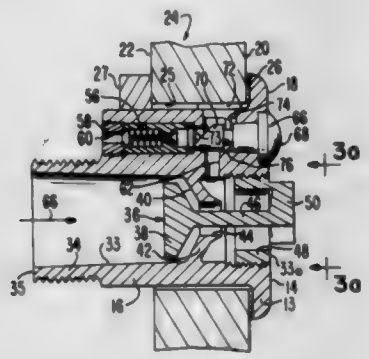
body, said inlet fitting and fluid nozzle retainer compressibly capturing said member therebetween without threaded connection therewith when the same are detachably connected to mount said spray head assembly on said member at said forward end of said gun body.

4,537,358

NOZZLE FOR WATER TUB

George F. Anderson, Mountaintop, Pa., assignor to U.S. Leisure Incorporated, Incline Village, Nev.

Filed Sep. 27, 1982, Ser. No. 423,769
Int. Cl.³ B05B 7/02
U.S. Cl. 239—413 **9 Claims**



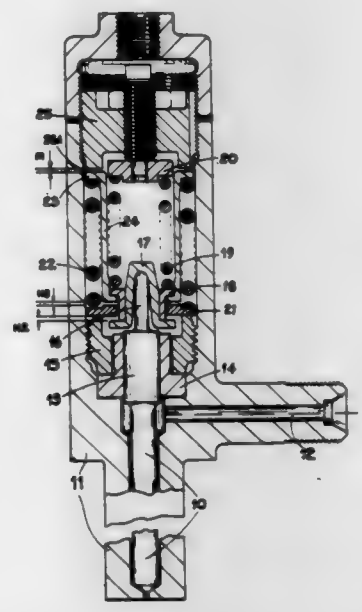
1. A fluid nozzle for a water tub comprising: a unitary nozzle body having means defining a main bore therethrough, said nozzle body adapted to receive a flow of water through the main bore; means carried by the main bore defining means and within the main bore for adjustably controlling the volume rate of flow of water therethrough, there being means coupled with the control means, independent of said main bore defining means, and accessible at the outlet end of the main bore for adjusting said control means, said nozzle body having a secondary bore adjacent to the main bore; a spring-biased check valve in the secondary bore for permitting a flow of air in one direction therethrough, said body having a third bore placing the secondary bore in fluid communication with the main bore near the outlet end thereof, the third bore having one end in fluid communication with the main bore at the outer periphery of the main bore; means coupled with said nozzle body for adjusting the volume rate of flow of air through the third bore, whereby air can flow past the check valve and into the main bore to aerate the water flowing therethrough.

4,537,359

FUEL INJECTION NOZZLES

Robert T. J. Skinner, High Wycombe, England, assignor to Lucas Industries, p.l.c., Birmingham, England

Filed Sep. 26, 1983, Ser. No. 535,696
Claims priority, application United Kingdom, Oct. 20, 1982, 8229951
Int. Cl.³ F02M 61/18, 61/20
U.S. Cl. 239—533.6 **4 Claims**



1. A fuel injection nozzle for supplying fuel to an internal combustion engine, the nozzle being of the so-called inwardly opening type including a valve member slidable within a bore, resilient means biasing the valve member into contact with a seating defined at one end of the bore, a fuel inlet passage through which fuel under pressure can act upon the valve member to lift the valve member away from the seating against the action of the resilient means, thereby to allow fuel flow through an outlet, said resilient means comprising a first coiled compression spring acting on said valve member through an abutment carried by the valve member, a second coiled compression spring, an abutment plate engaged by one end of said second coiled compression spring, a part positioned on the valve member so as to be movable therewith, said abutment and said part defining a lower surface on the abutment and an upper surface on said part between which surfaces is located said abutment plate, whereby said abutment plate is positioned so as to be engaged by said part after a predetermined movement of the valve member against the action of the first coiled compression spring, a tubular member having an outwardly extending flange which forms an abutment for the other end of the second coiled compression spring and an inwardly directed flange which in the closed position of the valve member engages the lower surface defined by said abutment carried by the valve member, and means operable during the opening movement of the valve member to halt the movement of said tubular member before said abutment plate is engaged by said part, whereby the initial movement of the valve member is against the action of the first coiled compression spring and the final movement of the valve member is against the action of both compression springs.

4,537,360

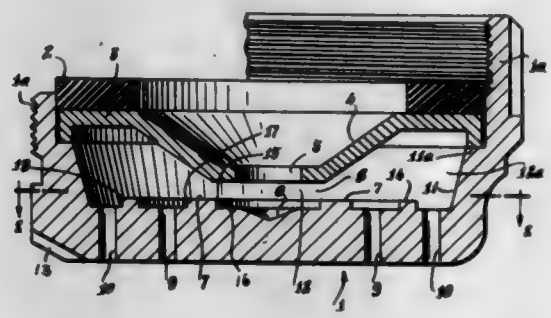
STREAM-CONTROLLING DEVICE FOR FAUCETS

Robert E. Bock, Woodbury, Conn., assignor to WPM, Inc., Waterbury, Conn.

Filed May 20, 1983, Ser. No. 496,521
Int. Cl.³ B05B 1/14
U.S. Cl. 239—553.3 **6 Claims**

1. A stream-controlling device for faucets, which comprises a generally cylindrical hollow casing having bottom and side walls and an annular threaded upper portion adapted for secur-

ing the casing to an annular threaded portion of a faucet, a flow restrictor of circular form mounted in said casing and forming with said bottom and side walls a circular chamber, the flow restrictor having a central first orifice for passage of liquid from the faucet to said chamber, said restrictor having a conical portion forming a conical upper surface sloping downwardly and inwardly toward said first orifice, said conical portion also forming a conical lower surface sloping upwardly and outwardly from said first orifice, said bottom wall having an imperforate central conical recess opposite said orifice, said bottom wall and the lower end of said conical lower surface defining an annular second orifice, the conical wall of said recess being arranged to deflect liquid from said first orifice radially outward through said second orifice, the lower surface



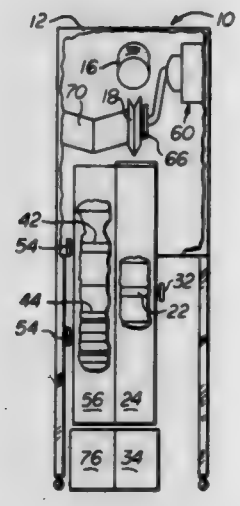
of the restrictor forming with said bottom and side walls an annular sub-chamber of said chamber for receiving liquid from said second orifice, said sub-chamber increasing substantially in height in the radial direction from the second orifice to said side wall, the conical wall of said recess forming with the horizontal an angle no greater than the angle formed by said conical lower surface with the horizontal, said bottom wall having a multiplicity of holes located radially outwardly beyond said imperforate central conical recess and at different radial distances from said conical recess and constituting in sum total a third orifice for discharging liquid from said casing, said holes extending through said bottom wall in a downward direction generally parallel to one another, and said first, second and third orifices being of progressively increasing throughflow area.

4,537,361

APPARATUS FOR BREAKING GLASS BOTTLES AND CRUSHING CANS AND LIKE CONTAINERS

Henry R. Heimerich, Lynbrook, N.Y., assignor to Boro Recycling Center, Inc., Brooklyn, N.Y.

Filed Sep. 2, 1983, Ser. No. 529,159
Int. Cl.[3] B02C *19/14*
U.S. Cl. 241—81 13 Claims



1. Amended apparatus for disintegrating used glass containers and for sufficiently crushing or deforming used metallic and plastic containers to preclude reuse of such types of containers, said apparatus comprising

a housing,

glass container disintegrating means disposed in said housing,

metallic and plastic container crushing means disposed in said housing situate proximate said glass container disintegrating means,

entry chute means carried on said housing for introducing containers into said housing, the course of said chute being disposed such as to provide a gravity induced and supported container travel along a predetermined course in line with said glass container disintegrating means, said chute means including an extension piece which girds a portion of the container periphery, and

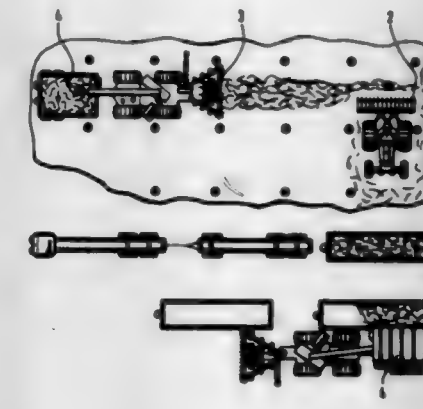
diverter means carried within said housing and operative to divert any metallic and plastic container introduced therein from its travel along said predetermined course and cause it to be delivered to said metallic and plastic container crushing means, said diverter means comprising an air flow generator discharging a flow of air in a container diverting stream across said container course and including an air manifold extending longitudinally of said travel course adjacent thereto, the quantity and velocity of said flow being sufficient to displace metallic and plastic containers from their girded embrace on said extension piece but insufficient to divert a glass container from its travel in said course.

4,537,362

SYSTEM FOR MECHANICALLY GATHERING TREES, BUSHES AND BRANCHES

Jose M. A. Zuloaga, Pamplona, Spain, assignor to Biomasa, S.A., Spain

Filed May 14, 1982, Ser. No. 378,216
Int. Cl.[3] A01D *55/00*
U.S. Cl. 241—101.7 7 Claims



1. A system for collecting ground strewings comprising trees, bushes, branches, bark, leaves and toppings and for separating foliage therefrom, said system comprising:

(a) a first moving machine for placing said strewings in rows, said machine including a rake with a plurality of prongs of different shapes, said prongs being straight or concave with respect to the direction of movement of said first machine;

(b) a second moving machine for travel along said rows, said second machine including

(i) means to pick up said strewings;

(ii) means to shred said strewings; and

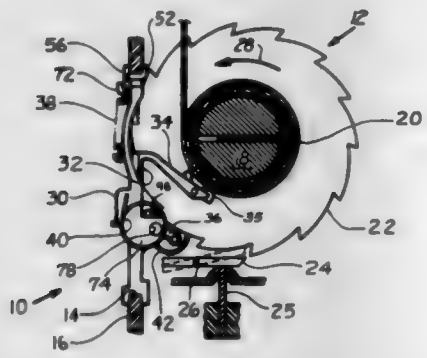
(iii) means to pneumatically separate foliage from said shredded strewings to form foliage-free shreddings.

4,537,363

LOCK-UP MECHANISM FOR A VEHICLE SENSITIVE AUTOMOTIVE SEAT BELT RETRACTOR

Rudy V. Thomas, Sterling Heights, Mich., assignor to Allied Corporation, Morris Township, Morris County, N.J.

Filed Aug. 30, 1984, Ser. No. 646,394
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.4 A **17 Claims**



8. A lock-up mechanism for vehicle sensitive seat belt retractor having a base plate, a spool rotatably attached to the base plate, a length of seat belt webbing wound on said spool, a spring motor for retracting the seat belt webbing on the spool, a ratchet wheel attached to the spool and rotatable therewith, a lock bar pivotally attached to the base plate adjacent to the ratchet wheel, and an inertia sensor for pivoting the lock bar to engage the ratchet wheel to prevent unwinding of the webbing from the spool in response to the inertial forces of a vehicular crash, the lock-up mechanism characterized by:

a frame adapted to be connected to the base plate adjacent to the spool;

a shuttle slidably disposed in said frame, said shuttle movably displaced between a first position when the webbing is unwound from the spool and a second position when the webbing is wound on the spool; and

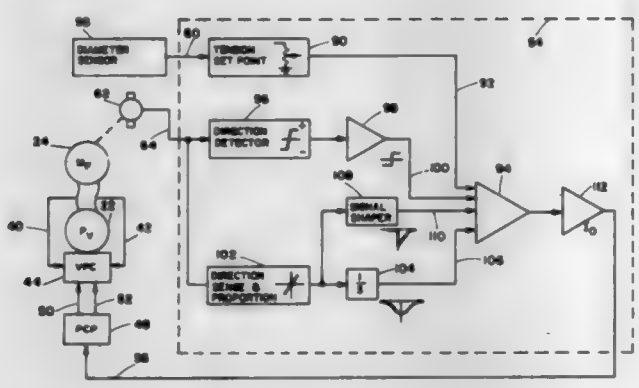
lock pawl means pivotally attached to said frame, said lock pawl means displaceable between a locked position pivoting the lock bar to engage the ratchet wheel in response to said shuttle being displaced to said first position, and a reset position disengaged from said lock bar in response to said shuttle being displaced to said second position.

4,537,364

CONSTANT TENSION CABLE REEL DRIVE

Frederic W. Pollman, Ames; David W. Reynolds, Huxley, both of Iowa, and Richard Heiser, Wayzata, Minn., assignors to Sundstrand Corporation, Rockford, Ill.

Filed Dec. 15, 1982, Ser. No. 449,920
Int. Cl.³ B65H *75/42*
U.S. Cl. 242—86.51 **12 Claims**



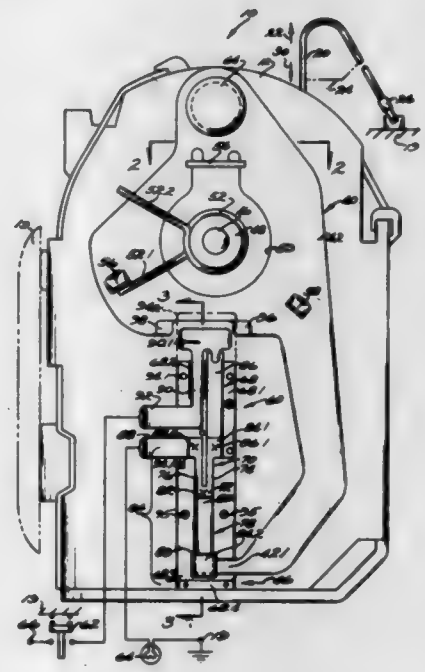
1. A control system for use with a vehicle mounted cable reel, a hydraulic motor for driving said cable reel, a source of hydraulic fluid under pressure for driving said motor, and said control system modulating the fluid flow from said source to said motor comprising; flow control means responsive to the fluid pressure differential across said motor which represents a torque feedback signal, electrohydraulic transducer means providing an input command signal to said flow control means, basic command means providing a basic signal for controlling said transducer means, speed sensing means responsive to the rotation of said cable reel to provide a speed signal proportional to cable reel rpm, transient condition command means receiving said speed signal and differentiating said speed signal to provide an acceleration signal, said acceleration signal being further provided to said transducer means to modify said basic signal in response to cable reel deceleration and acceleration to form said command signal, said flow control means responding to said command signal to drive said motor in a manner which reaches equilibrium between said torque feedback signal and said command signal.

4,537,365

SAFETY SEAT BELT SYSTEM AND LATCH RELEASE MECHANISM USED THEREIN

Henry Ty, Attleboro, Mass., and Alfred J. White, North Providence, R.I., assignors to Texas Instruments Incorporated, Dallas, Tex.

Continuation-in-part of Ser. No. 333,234, Dec. 21, 1981, abandoned. This application Jul. 6, 1982, Ser. No. 395,533
Int. Cl.³ A62B *35/02*; B65H *75/48*
U.S. Cl. 242—107.6 **24 Claims**



1. An electrically operable control mechanism comprising an insulating support, a first thermally responsive bimetal strip, a second thermally responsive bimetal strip welded to the first bimetal strip to form a reverse bimetal, the reverse bimetal having one end secured to the support and having a control portion at its opposite end movable between control positions, and means for directing electrical current through at least a selected portion of the reverse bimetal for self-heating the reverse bimetal, the first and second strips having corresponding thermal response characteristics for maintaining the control portion of the reverse bimetal in a selected control position during changes in ambient temperature, the first strip having relatively greater electrical resistivity than the second strip to be more rapidly self-heated to move the control portion between control positions to perform a control function when electrical current is selectively directed through said selected portion of the reverse bimetal, the first bimetal strip having a U-shape being welded to the second strip and the ends of the two legs of the U-shape being secured to the support in fixed position relative to the support, and the means directing electrical current through the reverse bimetal directing current

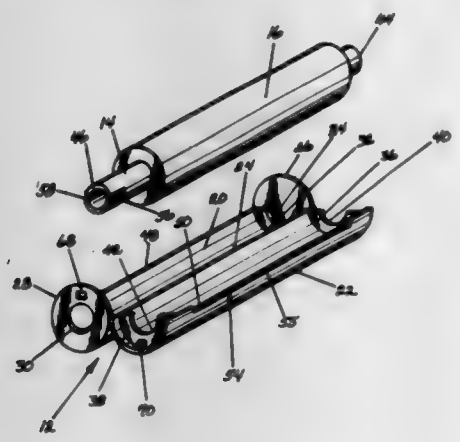
through the two legs of the U-shape in series for more rapidly self-heating the first strip of the reverse bimetal.

4,537,366

ROLL CONTAINER

Kirk A. Swenson, 6516 Longview Beach Rd., and Robert E. Swenson, 1932 Utica Pike, both of Jeffersonville, Ind. 47130

Filed Jul. 13, 1983, Ser. No. 513,455
Int. Cl.³ B65H *49/18*
U.S. Cl. 242—137 12 Claims



1. A roller container comprising:

a first generally semi-cylindrically shaped shell having a generally circularly shaped end wall at one of its ends and an annularly shaped wall at the opposite one of its ends;

a second generally semi-cylindrically shaped shell adapted to be selectively located in registered concavely facing relationship to the first shell so that the first and second shells cooperate to form a generally cylindrically shaped housing;

a spindle having a length substantially longer than the length of the housing adapted to be removable located within the housing for rotational movement about the longitudinal axis of the housing and having one end projecting from an end of the housing through the bore defined by the annular end wall of the first shell, the spindle is hollow with the projecting end being open and adapted to receive drawing instruments in its hollow interior for storage;

a web of material spirally wound on the spindle, the width of the web being somewhat less than the length of the housing, and the web being asymetically located between the ends of the spindle;

a pair of flanges associated with at least the first shell or second shell spaced apart longitudinally of the shell by a distance generally equal to the width of the web wound on the spindle and adapted to cage the web wound on the spindle therebetween for limiting the longitudinal movement of the spindle within the housing when the first and second shells are in cooperating relationship to form the housing;

an elongated notch formed in one longitudinal edge of one of the shells, the longitudinal edge of the elongated notch being recessed inwardly of the convex surface of the shell in which it is formed, when the shells are in concavely facing relationship one longitudinal edge of the other one of the shells lays in juxtaposition to the open side of the elongated notch and cooperates to define a slot having a length generally equal to the width of the web; and,

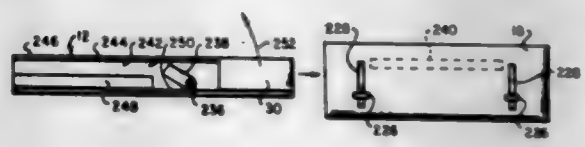
a cap attached to the projecting end of the spindle so that the the spindle is rotatably movable with the cap, the cap is adapted to be removably attached to the spindle to open and close access to the hollow interior of the spindle.

4,537,367

HIGH SPEED BIDIRECTIONAL MAGNETIC TAPE TRANSPORT WITH CONSTANT TENSION

Lawrence Herrington, and Raymond E. Avra, both of Fountain Valley, Calif., assignors to MegaTape Corporation, Duarte, Calif.

Division of Ser. No. 285,756, Jul. 22, 1981, Pat. No. 4,445,650. This application Feb. 29, 1984, Ser. No. 584,593
Int. Cl.³ G03B *1/04;* B65D *85/67*
U.S. Cl. 242—198 2 Claims



1. A tape cartridge for use in a tape transport, the cartridge comprising the combination of:

a generally enclosed housing of relatively thin, generally planar configuration having a hollow interior and a front edge;

a length of magnetic tape disposed within the hollow interior of the housing;

means for directing the length of magnetic tape through a path adjacent the front edge of the housing; and

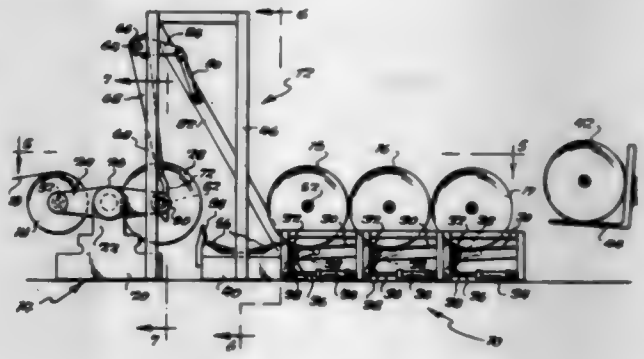
a door comprising a substantial portion of and extending across the entire width of the front edge of the housing and having opposite ends pivotally coupled to opposite sides of the housing along a common axis, the door normally assuming a closed position in which it encloses the housing at the front edge and being pivotable upwardly and away from the housing into an open position so as to expose the hollow interior of the housing at the front edge and provide access to a portion of the length of magnetic tape, the door having a pair of camming levers mounted thereon at the opposite ends thereof and adapted to pivot the door into the open position when engaged, the housing having a groove in each of the opposite sides thereof adjacent the camming levers for receiving an elongated protrusion therein when the cartridge is mounted in place and the camming levers being mounted at an angle relative to the groove when the door is closed so as to be engaged and pivoted by elongated protrusions to raise the door to the open position as the cartridge is mounted in place.

4,537,368

PENDULUM ROLL LOADER

Robert R. Radmore, Olcott, and John T. Hall, Williamsville, both of N.Y., assignors to Carborundum Abrasives Company, Niagara Falls, N.Y.

Filed May 1, 1984, Ser. No. 605,789
Int. Cl.³ B65H *19/30*
U.S. Cl. 242—58.6 4 Claims



1. Apparatus for handling rolls of material, said apparatus including storage means for storing a plurality of rolls of material, an unwinder device including means for receiving a shaft

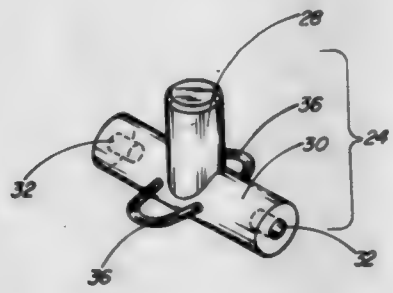
of one of said rolls and supporting said shaft during unwinding of the material thereon, transfer means for sequentially indexing each of said plurality of rolls of material from said storage means to said unwinder device, said transfer means including lift means for raising one of said rolls of material, cam means for axially positioning said roll into alignment with said means for receiving a shaft during lifting of said roll by said lift means, said lift means including anti-friction means for supporting said roll of material and providing freedom of movement axially of said roll, a roll shaft carried by said roll of material and engageable with said cam means during lifting of said roll for moving said roll in a direction axially of said shaft on said anti-friction means, said transfer means including a frame, hook means pivotally mounted on said frame and engageable with said roll shaft for supporting said roll of material following precise positioning of said roll shaft by said cam means.

4,537,369

ADAPTER FOR TOWING AIRCRAFT

Huntley H. Perry, Washington, D.C., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Oct. 11, 1983, Ser. No. 540,970
Int. Cl.³ B64D *3/00*
U.S. Cl. 244—1 R **2 Claims**



1. Apparatus for connecting a towing device, having laterally spaced arms with attachment means at the ends thereof, to an aircraft having a fuselage, said apparatus comprising:

a socket member fixed in the bottom of said fuselage along the centerline thereof, said socket member comprising a cylindrical tube having a closed end interior to the fuselage and an outward flange by which said socket member is attached to said fuselage, said socket member defining a vertically extending cylindrical recess in said fuselage accessible from the exterior thereof; and

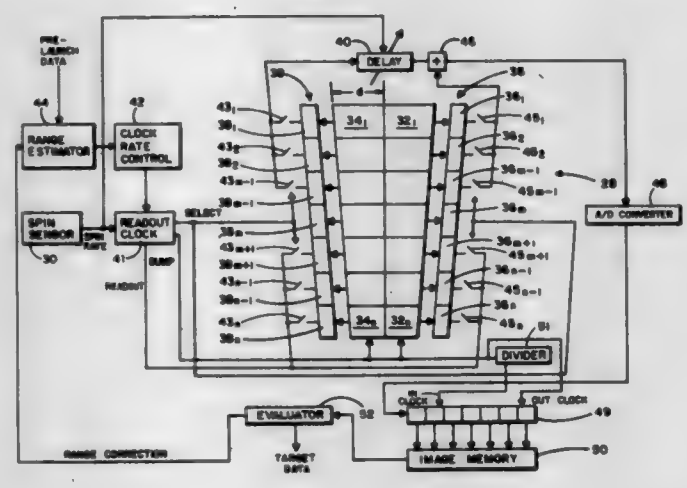
a towing adapter comprising a vertical section received in said recess, an elongated horizontal section integrally attached at its middle to the lower end of said vertical section and rotatable between transverse positions relative to the centerline of said fuselage and aligned positions relative thereto, said horizontal section having horizontal recesses in the opposite ends thereof for pivotal engagement by horizontal pins of said attachment means when the horizontal section is in said transverse positions, and first and second ring members extending laterally from opposite sides of the middle of said horizontal section for pivotal engagement by hooks of said attachment means when said horizontal section is in said aligned positions, whereby said apparatus is optionally operable with different towing devices.

4,537,370

OPTICAL GROWTH COMPENSATOR

Vito F. Pizzurro, Villa Park, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Nov. 2, 1983, Ser. No. 548,183
Int. Cl.³ F41G *7/22*
U.S. Cl. 244—3.16 **10 Claims**



1. A method of moving target acquisition by a spinning body, comprising the steps of:

(a) using the spin of said body to scan an area ahead of the body, with a multi-element sensor fixed with respect to said body, to produce an image;

(b) sotring said image in pixel form;

(c) predicting, on the basis of pre-programmed expected trajectory information, position changes of stationary objects in said image in time-spaced frames of said scan due to optical growth of said image as a result of closing range;

(d) compensating for said position changes in such a way as to cause said objects to be imaged in the same pixel in time-spaced frames; and

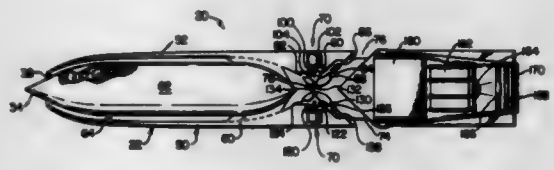
(e) identifying moving targets by their failure to be imaged in the same pixel in time-spaced frames.

4,537,371

SMALL CALIBER GUIDED PROJECTILE

William S. Lawhorn, Rockwall, and Ivan L. Clinkenbeard, Euless, both of Tex., assignors to LTV Aerospace and Defense Company, Dallas, Tex.

Filed Aug. 30, 1982, Ser. No. 412,827
Int. Cl.³ F41G *7/00*
U.S. Cl. 244—3.22 **27 Claims**



1. A guided projectile comprising:

a projectile housing with diametrically opposed divergently oriented guidance nozzles mounted therein;

a supersonic external compression air inlet and subsonic diffuser for supplying air to the guidance nozzles; and

flow control means for selectively diverting air flow through said nozzles permitting input of lateral forces to the projectile, said flow control means comprising a bifurcated discharge arrangement with vortex generator means for generating a small vortex within each nozzle and downstream of said generator means to cause flow entrainment and attachment to the wall of the nozzle, thereby increasing flow through a selected one of said

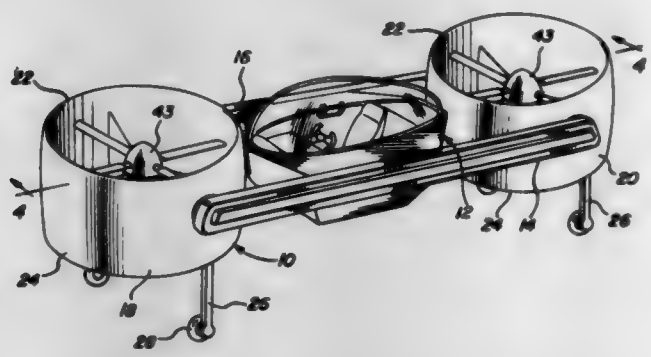
nozzles, said flow control means further comprising a valve for selectively directing air into the non-selected nozzle downstream of said vortex generator means to permit aspiration and prevention of flow attachment to the boundary wall of the non-selected nozzle to impede flow through the nozzle.

4,537,372

VTOL AIRCRAFT

Lorant Forizs, 983 Sunrise Dr., Tarpon Springs, Fla. 33589

Filed May 6, 1983, Ser. No. 492,233
Int. Cl.³ B64C *27/20, 29/00*
U.S. Cl. 244—12.4 **9 Claims**



1. A VTOL aircraft including a fuselage defining front and rear ends, opposite sides and top and bottom portions, a pair of laterally spaced front-to-rear extending elongated support structures between adjacent sides of which said fuselage is mounted and including front and rear ends which project forward and rearward of said fuselage, a pair of front and rear tubular wings oscillatably supported between the front and rear ends of said support structures for angular displacement about axes extending generally along diametric planes of said tubular wings, said tubular wings including inlet and discharge ends, control means connected between said tubular wings and support structures operative to simultaneously and equally angularly adjust said tubular wings relative to said support structures between upright positions with said inlet ends opening upwardly and horizontal positions with said inlet ends opening forwardly, and motor driven rotor means journalled in said wings for intaking air through said inlet ends and discharging air from said discharge ends, the discharge ends of said tubular wings including axially endwise outwardly projecting landing gear struts mounted from opposite side portions of the discharge ends of said tubular wings, the free ends of said struts including ground-engaging elements, said motor driven rotor means, when said tubular wings are in their upright positions, being disposed in planes spaced appreciably above the center of gravity of the aircraft.

4,537,373

AIR VEHICLE HAVING DRIVEN WHEELS AND DUCTED FANS

Dennis D. Butts, 2057 S. Estrella Cir., Mesa, Ariz. 85202

Filed Aug. 16, 1979, Ser. No. 67,195
Int. Cl.³ B64C *37/00*
U.S. Cl. 244—22 **31 Claims**

6. Aircraft comprising:

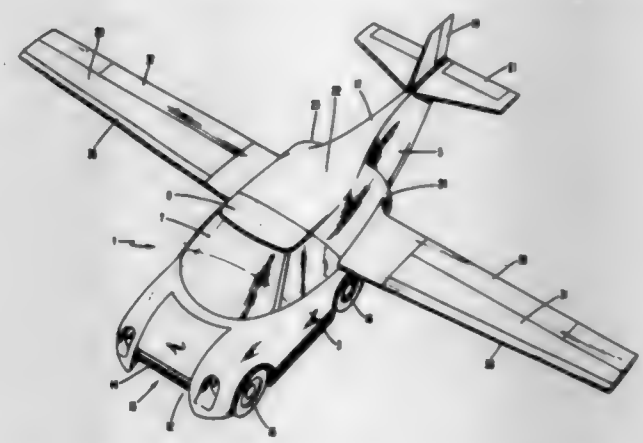
a passenger section and fuselage;

landing gear, comprising driving and steering wheels mounted on said passenger section;

wing and tail assemblies mounted on said fuselage;

high speed fan means mounted in said fuselage for propelling the aircraft while airborne; and

means for driving said fan means and said driving wheels, said fan means having insufficient thrust to accelerate the aircraft into flight while at low speed on the ground during normal take-off operations, said aircraft being accelerated while on the ground by said driving wheels to speeds approaching approximately take-off speed at which speeds said fan means has sufficient thrust to accelerate said aircraft in flight and further including an airflow area formed below said passenger section, a substantially forward facing inlet opening and a pair of outlet ducts formed on opposite sides of said fuselage and communicating with said airflow area, said outlet housing said high speed fan means.

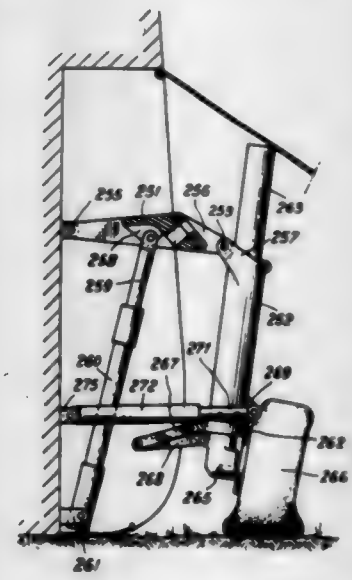


4,537,374

STRUCTURAL SUPPORTS AND AIRCRAFT LANDING GEARS INCLUDING SUCH SUPPORTS

Pierre Barnoin, Equilles; Jacques M. N. Mens, Marignane, and Gilbert Merle, Saint-Victoret, all of France, assignors to Societe Nationale Industrielle Aerospatiale, France

Filed Aug. 5, 1982, Ser. No. 405,647
Claims priority, application France, Aug. 10, 1981, 81 15432
Int. Cl.³ B64C *25/60*
U.S. Cl. 244—102 R **3 Claims**



1. Main landing gear for aircraft comprising a plurality of ground engaging elements each of which is carried by a leg in the form of a substantially vertical structural support; said support comprising a tubular outer element, an inner element telescopingly engaged in the outer element, one of which elements is capable of plastic deformation, a cage secured to the other of the elements at a location within the tubular outer element, a plurality of rolling members located in respective apertures in the cage and disposed between the inner and outer members, means on said other of the elements for locating the rolling members in a radial position to deform said one element plastically, and a frangible connection between the inner and outer elements which connection locks the inner and outer elements against relative axial movement but is adapted to fracture under a predetermined axial loading applied between the inner and outer elements, whereby fracture of the connection allows relative axial movement of the inner and outer elements which causes the rolling elements to deform said one

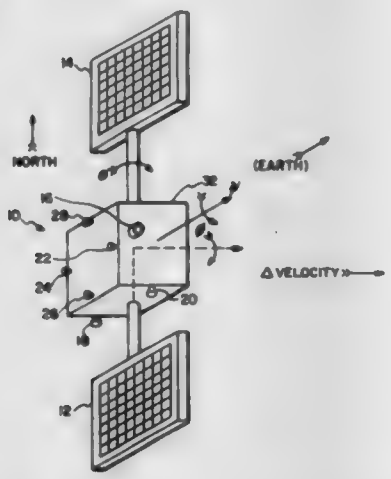
element plastically and dissipate energy from the force producing the movement, the inner element being tubular and having a tubular piston member mounted therein, and the support further comprising a closure member sealing one end of said inner element, the tubular piston member extending through the other end of the inner element, a transverse wall member in the tubular piston member which wall member has therein a throttling aperture for throttling flow of a fluid between a chamber within the end portion of the inner element closed by the closure member and a second chamber formed in the tubular piston member at the side of the transverse wall remote from the closure member, and an external cylinder member within which said outer tubular element is mounted; and further comprising a balance beam pivotally connected intermediate its ends to the lower end of the leg, the ground engaging element being mounted on one end of the beam, a ring encircling and located against axial movement relative to the external cylinder member, a radius link pivotally connected at its ends to the other end of the beam and the ring about respective horizontal axes, a radially-extending frangible pin securing the ring rotationally to the external cylinder member which pin is adapted to shear when a force above a predetermined value is applied to the ground-engaging element in a direction to swivel the ground-engaging element about the lengthwise axis of the leg.

4,537,375

METHOD AND APPARATUS FOR THRUSTER TRANSIENT CONTROL

Fred N. Chan, Atherton, Calif., assignor to Ford Aerospace & Communications Corporation, Detroit, Mich.

Filed Apr. 21, 1983, Ser. No. 487,364
Int. Cl.³ B64G *1/26*
U.S. Cl. 244—171 **13 Claims**



1. For use in a spacecraft during a change in velocity maneuver, the spacecraft employing a plurality of thrusters, at least a first thruster and a second thruster being disposed to develop mutually counteractive moment arms of thrust relative to at least one axis through a center of mass of the spacecraft, said first thruster and said second thruster being capable of developing unequal moment arms of force, a method for counteracting disturbance transients comprising the steps of:

storing prior to said manuever a value representative of an estimated disturbance torque; thereafter

modulating in response to said stored value one of said first and second thrusters during said maneuver to counteract an actual disturbance torque a sufficient amount to compensate for said actual disturbance torque in order to minimize a net position error without initially detecting said net position error; thereafter

detecting said net position error, said net position error being indicative of a difference between said estimated disturbance torque and said actual disturbance torque with respect to said axis; and thereafter

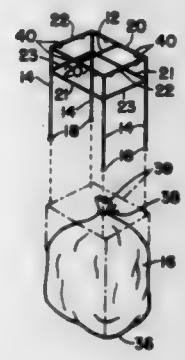
modulating in response to a sum of said stored value and said net position error one of said first and second thrusters during said manuever to counteract said actual disturbance torque to further minimize said net position error.

4,537,376

FRAME FOR HOLDING PLASTIC BAG

Berniece Buku, 6846 Brandt Pike, Apt. A, Huber Heights, Ohio 45424

Filed Oct. 5, 1983, Ser. No. 539,321
Int. Cl.³ A63B *55/04*
U.S. Cl. 248—97 **10 Claims**



1. A structure including a collapsible and rectractable frame to fit inside a plastic bag of a soft, pliable plastic material including polyethylene and the like that is non-self-supporting though initially open at one end closed off when filled as used for gathering leaves, weeds, clippings of grass, bulky materials such as garbage, trash, paper towels and other disposible items, comprising:

four upright corner-side rods spaced from each other in parallel locations and having upper ends as well as lower ends;

four upper rod members interconnecting only upper ends of said upright rods;

four intermediate rod members interconnecting said upright rods only in locations approximately intermediate upper and lower ends of said upright rods; and

double hinge means at eight juncture locations of said four upper rod members and said four intermediate rod members whereby said frame is unfoldable to fit into the plastic bag and foldable into a substantially flat storage configuration, each double hinge means including a pair of central loop portions fitted snugly around said four upright corner-side rods and including therewith projections laterally thereof connected to hold said upper and intermediate rod members therebetween.

4,537,377

BAG HOLDER

W. Donald Shewchuk, 170 Commander Blvd., Agincourt, Ontario, Canada M1S 3C8

Filed Nov. 30, 1984, Ser. No. 676,572
Claims priority, application Canada, Oct. 26, 1984, 466462
Int. Cl.³ B65B *67/04*
U.S. Cl. 248—99 **6 Claims**

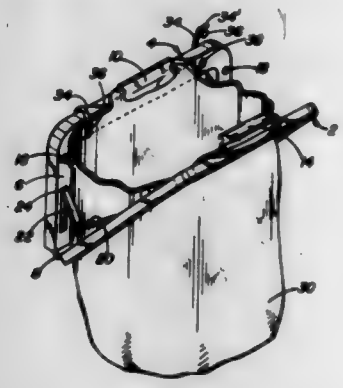
1. A holder for garbage and refuse bags integrally molded of plastic material

comprising front and rear frame members each of inverted U-shape interconnected at the ends of their arms by hinges formed of webs of plastic material permitting relative movement of the frame members from closed contacting position to open position, and having means to secure the frame members in closed contacting position, and and

means on the front and rear frame members to hold a shopping, garbage or refuse bag, and

links molded integrally with the front and rear frame members, one end of each link being pivotally secured to its respective frame member by a plastic hinge web, with the

free ends of the links on the rear frame member being pivotally interconnected with the free ends of respective



links on the front frame member to limit the opening of the frame members.

4,537,378

MOBILE STORAGE PLATFORM AND LIFTABLE BED TRAILER

Nick P. Glumac, P.O. Box 327, Kingsbury, Ind. 46345

Continuation of Ser. No. 393,067, Jun. 28, 1982, abandoned, which is a continuation-in-part of Ser. No. 187,349, Sep. 15, 1980, Pat. No. 4,372,514. This application Aug. 9, 1984, Ser. No. 639,188

Int. Cl.³ F16M *11/32*

U.S. Cl. 248—163.1 **5 Claims**



1. In a transport vehicle having a fixed bed and a liftable bed, the fixed bed having means to cause said liftable bed to be moved upwardly from a loading position in which said liftable bed is superimposed thereupon to a raised transport position directly above said superimposed position, the improvement comprising: a plurality of generally equi-length rotary arms pivotally connected at each end thereof respectively to spaced apart portions of said fixed and liftable beds, said rotary arms being capable of swinging from a generally horizontal position in which said beds are superimposed to an overcenter position in which said liftable bed is in its raised transport position, stop means to stop movement of said liftable bed following movement of said rotary arms into said overcenter position, stanchion means connected to the fixed bed, said stanchion means extending generally upwardly and rearwardly, said stanchion means defining bifurcated means for the reception of the forward end of the liftable bed when the liftable bed is in its raised position and means interlocking the bifurcated means and the forward end of the liftable bed.

4,537,379

SHELVING MEANS

Reginald L. Rhoades, Box 165, Hagerstown, Ind. 47346

Filed Mar. 25, 1982, Ser. No. 362,024

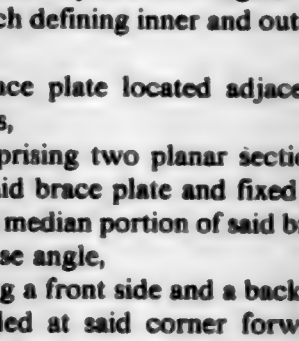
Int. Cl.³ E04G *5/06*

U.S. Cl. 248—222.2 **12 Claims**

1. Support means by which a first support member is supported by a second support member,

the second support member being provided with an elongated recess opening to a face of the second support member;

the portion of the first support member supportively engageable with the said recess of the second support member being such that it is insertable freely thereinto, into a first relative position, by first positioning the said portion into the recess, and then, upon applying a twisting force to the outer portion of the first support member about the general axis of the recess, the said engageable portion of the first support member is caused to snugly engage the said recess as the parts are relatively moved thereby to a second relative position of firm support of the first support member by the second support member;



the first support member having a fulcrum portion displaced transversely of the outer portion; and

a connecting portion between said outer portion and said fulcrum portion having a surface adapted to bearingly engage an undercut portion of the said elongated recess.

4,537,380

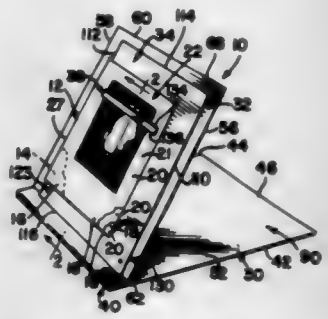
NEEDLEWORK PATTERN BOOKLET HOLDER

Edward C. Erickson, Crete, Ill., assignor to Sales Tools, Inc., Des Plaines, Ill.

Filed Jun. 9, 1983, Ser. No. 502,488

Int. Cl.³ A47B *97/04*

U.S. Cl. 248—460 **10 Claims**



1. A needlework pattern booklet holder comprising:

a front panel and a rear panel,

said panels each being quadrilateral in configuration with each said panel defining parallel side edges along either side of same, inner edges that are in adjacency, and outer free edges,

with said inner and outer edges being disposed generally normal of the respective panel side edges,

said panels further each defining inner and outer side surfacings,

an elongate rigid brace plate located adjacent said inner edges of said panels,

said brace plate comprising two planar sections extending longitudinally of said brace plate and fixed together at a corner adjacent the median portion of said brace plate and disposed at an obtuse angle,

said brace plate having a front side and a back side and said sections being angled at said corner forwardly of said front whereby said brace plate defines an internal apex along said corner at said front side thereof,

with one of said brace plate sections overlying said inner edge of said rear panel in substantial parallelism thereto and along the inner side surfacing thereof with the brace plate back side facing said rear panel inner side surfacing,

and with said inner edge of said front panel being hinged with respect to said brace plate other section along a swing axis that parallels said brace plate corner and that is

spaced therefrom across and at least the width of said brace plate other section,

a mounting panel of quadrilateral shape overlying the inner surfacing of said rear panel and defining opposite side edges paralleling the rear panel side edges, an outer edge that parallels said rear panel outer free edge, an inner edge paralleling said rear panel inner edge, and front and rear side surfacings,

with said mounting panel inner edge overlying said brace plate one section across said brace plate front side thereof,

and means for anchoring said brace plate one section and said mounting panel along said inner edge thereof to said rear panel in the area of said one brace plate section,

with said mounting panel being free of fixed connection to said rear panel between said brace plate one section and said outer edge thereof for forming a quadrilateral holder flap for fold over receiving positioning thereon a pattern booklet optionally from either of said edges or said outer edge thereof,

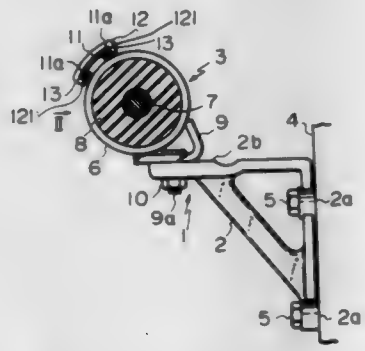
whereby when said front and rear panels of said pattern booklet holder are swung about said swing axis to bring said inner side surfacings in adjacency, said holder is in closed relation over said mounting panel front side surfacing, and when said panels are swung about said swing axis to set said brace plate other section in seated relation against the outside surfacing of said front panel adjacent said inner edge thereof, said holder front panel inner surface may be rested on a horizontal support to dispose said mounting panel and said rear panel in easel forming position for said reception of the pattern booklet across said holder pattern front and rear side surfacings and display of a selected pattern and grid therefor over said mounting panel front side surfacing, with the pattern booklet disposed in one of said positions to orient the horizontal lines of the selected pattern grid substantially horizontally across said mounting panel front side surfacing.

4,537,381

ENGINE MOUNT

Shigeharu Arai, Toyota, Japan, assignor to Toyota Jidosha Kabushiki Kaisha, Toyota, Japan

Filed Dec. 28, 1982, Ser. No. 454,010
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—559 **6 Claims**



1. An engine mount for connecting an engine to a vehicle body, the engine mount comprising:

a bracket having a first surface for connecting the bracket to the engine in a cantilever fashion and a second surface;

an outer rigid tubular member having an axis which is parallel to the second surface;

a first connection means for fixedly connecting the outer rigid tubular member to the second surface of the bracket;

an inner rigid tubular member which is concentric with respect to the outer rigid tubular member;

a first resilient member of tubular shape fixedly arranged between the outer and the inner rigid tubular members;

a second connection means for connecting the inner rigid tubular member to the vehicle body; and

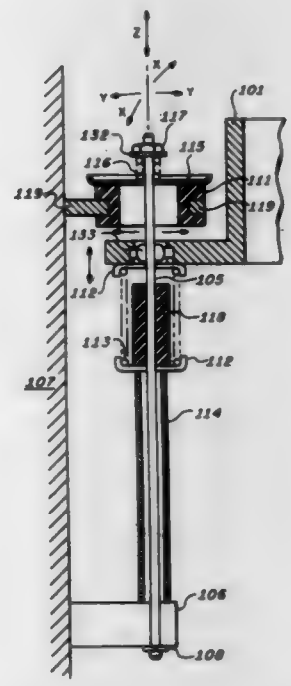
damping means connected to the outer rigid tubular member for achieving resonant frequencies of the mount outside of a predetermined frequency band corresponding to specified types of noises, wherein said damping means comprises a free weight member located at a position opposite to the first connection means and resilient means for connecting the free weight member only to the outer rigid tubular member.

4,537,382

SWAY ROD SUSPENSION SYSTEM

Franklin L. Beck, Guilford, Conn., assignor to Sperry Corporation, New York, N.Y.

Filed Feb. 4, 1982, Ser. No. 345,868
Int. Cl.³ F16M *13/00*
U.S. Cl. 248—568 **19 Claims**



1. A suspension system for an instrument having a frame and vertically supported mounting platform, comprising:

at least three vertically disposed sway rods each fixedly attached at a first end to said frame and pivotally and slidably coupled to said vertically supported mounting platform such that a second end of said sway rods is substantially free to translate in a horizontal plane defined by a pair of orthogonal axes and said mounting platform is substantially free to translate along a vertical axis normal to the horizontal plane;

first means coupled to said frame for limiting translation of said second ends of said sway rods in said horizontal plane;

second means for limiting the translation of said mounting platform along said vertical axis;

third means for damping horizontal translation of said sway rods; and

fourth means for damping vertical translation of said mounting platform.

4,537,383

VALVE

John V. Fredd, Dallas, Tex., assignor to Otis Engineering Corporation, Dallas, Tex.

Filed Oct. 2, 1984, Ser. No. 657,009
Int. Cl.³ F16K *31/12*
U.S. Cl. 251—58 **7 Claims**

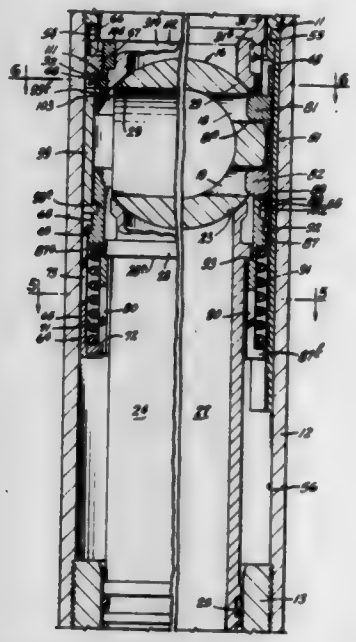
1. A valve comprising:

a housing having a flowway therethrough;

a spherical ball valve member and cooperable seat means;

ball rotation means for rotating said ball valve member between open and closed position including:

a pair of spaced waffle plates formed as segments of a ring with their non-arcuate dimension parallel to said flowway,
said waffle plates having symmetrical, helical intersecting lands and grooves in their interior surfaces,
four cranks rotatably coupled in pairs to opposite spherical sides of the ball valve member,



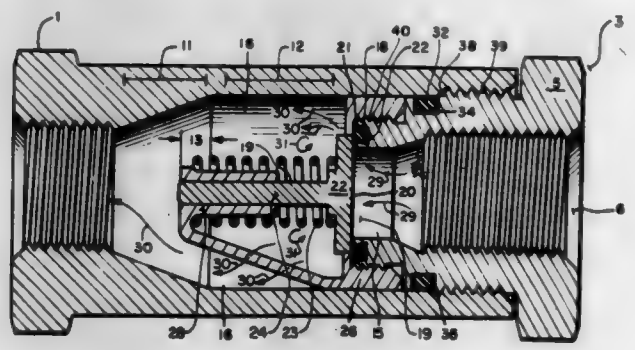
the cranks of each pair having helical lands and grooves inclined in opposite directions and mating with the lands and grooves of one waffle plate; and actuator means for reciprocating one of said waffle plates and crank pairs in directions parallel to said flowway to rotate the ball valve member between open and closed positions.

4,537,384

IN-LINE CHECK VALVE HAVING COMBINED DOWNSTREAM POPPET SUPPORT AND FLOW CONTROL ELEMENTS

Oscar J. Petersen, Orange; Ross J. Barton, Costa Mesa; Jack E. Dalke, Whittier; Gerald W. Sheffield, Santa Ana, and Theodore Towle, Huntington Beach, all of Calif., assignors to Brunswick Corporation, Skokie, Ill.

Filed Jul. 17, 1984, Ser. No. 631,594
Int. Cl.³ F16K *31/44, 17/20*
U.S. Cl. 251—83 **7 Claims**



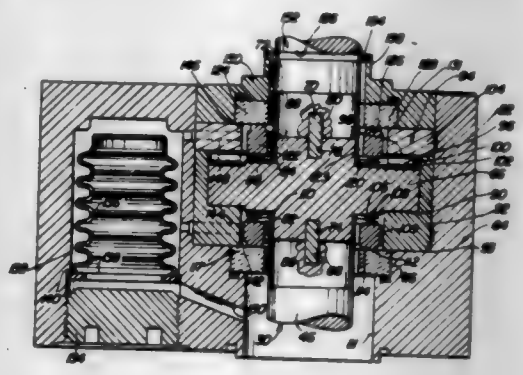
1. In an in-line check valve of the type employing an internal seat, and reciprocating spring biased poppet for preventing reverse flow through said seat, and allowing predetermined forward flow, the improvement comprising;
an in-line housing having an internal concentric orifice;
a seat seal circumferentially surrounding and partially embedded in said seat;
an axially aligned poppet having a seal face cooperating with said seat seal for preventing flow therethrough;
a stem on said poppet;
a poppet support extending downstream from said orifice, defining a poppet guide;
means mounting said poppet stem internal said guide for reciprocating motion therein;
means mounting said poppet support in said housing thereby defining a first relief flow passage downstream said seat and a second flow passage extending therefrom, and a fluid containment chamber for poppet flow and check positions, respectively;
said poppet support extending through said first flow passage and into said second flow passage;
a compression spring concentric said poppet guide and intermediate said seal face and guide;
means on said guide and poppet initially compressing said spring and establishing a predetermined poppet/seal force;
wherein upstream pressure on said poppet seal face in excess of a predetermined value, on overcoming said poppet spring bias, translate said poppet downstream, thereby disengaging said poppet and seal, establishing flow through said passage and around said poppet stem guides.

4,537,385

LOW EMISSION VALVE

Duncan D. Bragg, Simi Valley, and Robert S. Wentworth, Temecula, both of Calif., assignors to Borg-Warner Corporation, Chicago, Ill.

Filed Oct. 14, 1982, Ser. No. 434,291
Int. Cl.³ F16K *31/44, 37/00*
U.S. Cl. 251—214 **7 Claims**



1. A valve assembly for a fluid system, said assembly having a rotatable stem means connected to a movable member located in a valve housing, said member being movable to control the flow of a product fluid through said housing, and a mechanical seal assembly having contacting seal faces for reducing and substantially preventing the escape of product fluid along said stem means and across said contacting seal faces to the exterior of said valve assembly, said mechanical seal assembly comprising:
a rotor having upper and lower surfaces and connected to said stem means for rotation therewith;
an upper pair of seal rings with contacting surfaces surrounding said stem means, one of said upper seal rings being fixed with respect to said rotor;
a lower pair of seal rings with contacting surfaces surrounding said stem means, one of said lower seal rings being fixed with respect to said rotor;
generally cylindrical bellows connecting the others of said seal rings to said upper and lower surfaces of said rotor and resiliently urging the connected seal rings toward their corresponding fixed seal rings; said bellows each surrounding said stem means and each defining a pair of zones, one zone of which is located interiorly of each bellow and the other zone of which is located exteriorly of each bellow, the exteriorly located zone also being defined by a portion of said rotor;
a source of buffer fluid;
means to supply buffer fluid to each of said exteriorly located zones; and
means controlled by the pressure of said product fluid in said valve housing to pressurize said buffer fluid in one of said exteriorly located zones to a pressure above that in one of

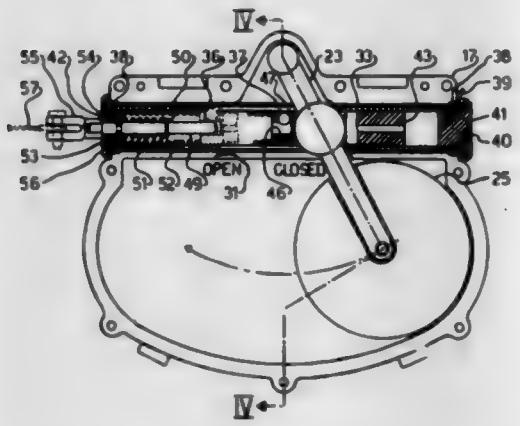
said exteriorly located zones and in the other of said exteriorly located zones to a pressure substantially equal to that in the other of said interiorly located zones.

4,537,386

ENGINE SHUTDOWN VALVE

Josef Krepela, and Jaromir Friedrich, both of Edmonton, Canada, assignors to Bralorne Resources Limited, Canada

Filed Sep. 22, 1982, Ser. No. 421,062
Int. Cl.³ F16K *1/16*
U.S. Cl. 251—302 **20 Claims**



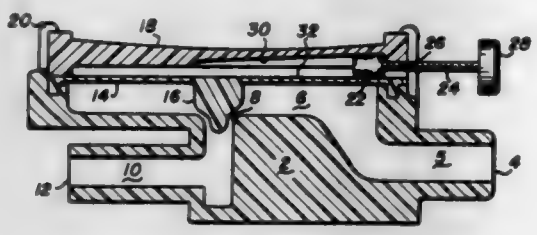
1. An engine shutdown device adapted to be inserted in the induction manifold of an engine and comprising a substantially circular gate valve movable within a valve housing about an axis between open and closed positions, a gate lever between said gate valve and said axis, latching means to hold said valve and lever in said open position, release means to release said latching means, and movement means acting on a portion of said gate lever to move said valve and lever between said open and said closed positions, said latching, release and movement means being positioned in a latch housing located exterior of and substantially immediately adjacent to said valve housing and said induction manifold, said latch housing having a generally cylindrical cross-sectional configuration with a diameter generally approximating the width of said shutdown device between its upstream and downstream faces, said gate lever passing through said latch housing, and said gate lever portion being aligned with said release, latching and movement means within said latch housing.

4,537,387

PRECISION VALVE ASSEMBLY

Hal C. Danby, Palo Alto, and Werner W. Ciupke, San Mateo, both of Calif., assignors to Anatros Corporation, San Jose, Calif.

Filed Sep. 30, 1982, Ser. No. 431,311
Int. Cl.³ F16K *7/12*
U.S. Cl. 251—331 **7 Claims**



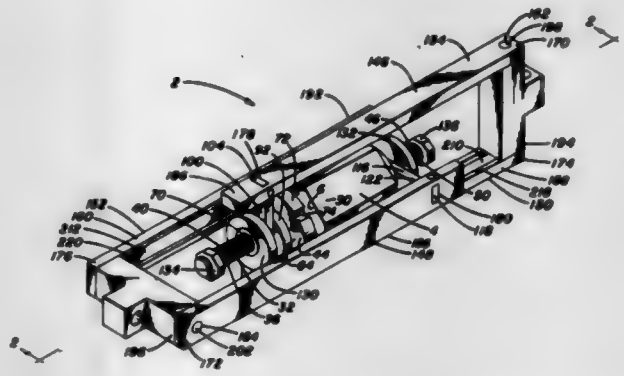
1. A precision valve assembly comprising first and second valve elements, one of which is a valve and the other is a valve seat aligned therewith, the first valve element being joined to a diaphragm having first and second opposite surfaces and movable therewith, the first valve element projecting from the first surface of the diaphragm, an adjustable actuation means contacting the second surface of the diaphragm between the axis of the valve element and adjacent the edge of the diaphragm for flexing the diaphragm and displacing the first valve element toward the second valve element, a backstop means facing the second surface of the diaphragm and the actuator means positioned in contacting engagement between the backstop means and the second surface of the diaphragm, whereby movement of the actuator means pressing the surfaces of the diaphragm and backstop means apart flexes the diaphragm in a direction away from the backstop means and displaces the first valve element toward the second valve means, wherein the backstop means is less flexible than the diaphragm but sufficiently flexible to relieve pressure on the diaphragm resulting from actuator movement continued after the first and second valve elements are maximally closed.

4,537,388

ADJUSTABLE TENSIONING DEVICE

Francis B. McCabe, 38 Cedar St., Everett, Mass. 02149

Filed May 14, 1982, Ser. No. 378,215
Int. Cl.³ F16B *7/06*
U.S. Cl. 254—232 **20 Claims**



1. A device for drawing together two members, the device comprising:

anti-separation means;

a first member attached to the anti-separation means;

a second member attached to the anti-separation means;

the anti-separation means intermediate the first and second member;

first moveable means adjustably engaged with the first member;

second moveable means adjustably engaged with the second member;

a third member associated with the first moveable means whereby movement of the first moveable means on the first member causes corresponding movement of the third member;

a fourth member associated with the second moveable means whereby movement of the second moveable means on the second member causes corresponding movement of the fourth member;

a first attachment means for connecting a first member to be tensioned to the third member with the anti-separation means intermediate the first attachment means and the first moveable means;

a second attachment means for connecting a second member to be tensioned to the fourth member with the anti-separation means intermediate the second attachment means and the second moveable means, whereby movement of the first moveable means results in corresponding movement of the first attachment means and first attached member to be tensioned and movement of the second moveable means results in corresponding movement of the second attachment means and second attached member to be tensioned thereby varying tension on the attachements to the first and second attachment means and the anti-separation means intermediate the first moveable means and first attachment means as well as the second moveable means and the second attachment means precluding separation of

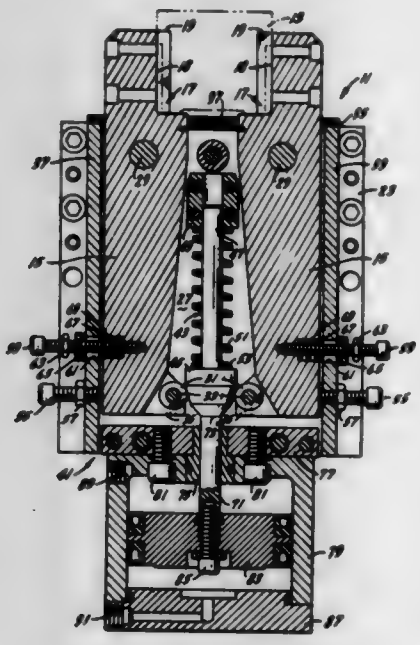
the device if either the first or second moveable means fails.

4,537,389

MACHINE TOOL FIXTURE

Adolph V. Kancnik, Glenview, and Kenneth A. Klancnik, Palatine, both of Ill., assignors to Universal Automatic Corporation, Des Plaines, Ill.

Filed Dec. 27, 1983, Ser. No. 565,292
Int. Cl.[3] B23Q *3/08*
U.S. Cl. 269—34 4 Claims



1. A fixture for holding and presenting a work piece to a tool and including:

a pair of pivotally mounted elongated arms,

said arms at one end each having a jaw for closing on and engaging the work piece,

said arms being disposed between a pair of opposed plates,

rollers mounted on the arms adjacent the opposite ends thereof,

a tapered rod extending between the rollers with the narrow part thereof engaging the rollers when the jaws are in their open position,

spring means biasing the tapered rod to dispose the wider portion of the rod in the space between the rollers to cause the jaws to close, and

a fluid actuated piston attached to the tapered rod and movable by the fluid alternately to assist or oppose the bias of the spring.

4,537,390

HIGH SPEED FOLDER FLY

Roberto C. Kiamco, Wood Dale, and Eugene Skipor, Jr., Palos Hills, both of Ill., assignors to Rockwell International Corporation, Pittsburgh, Pa.

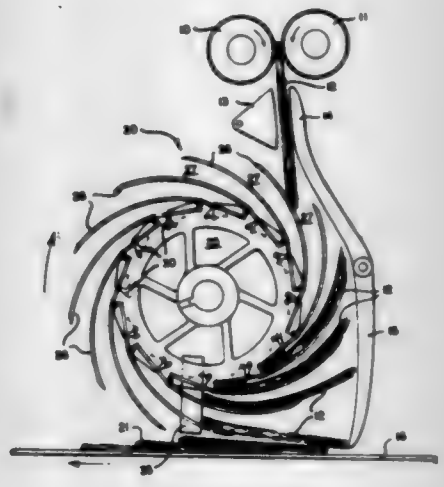
Filed Jun. 14, 1984, Ser. No. 620,649
Int. Cl.[3] B42B *1/02*
U.S. Cl. 270—53 6 Claims

1. A high speed rotary fly for receiving newspapers from a folder and depositing them in imbricated form on a conveyor apparatus, said fly comprising:

(a) a central fly hub;

(b) a plurality of fly fingers attached to said fly hub and extending outwardly therefrom in arcuate, overlapping relationship to form pockets into which newspapers are received; and

(c) yieldable means pivotally attached to said fly hub extending across the bottom portion of each pocket to prevent



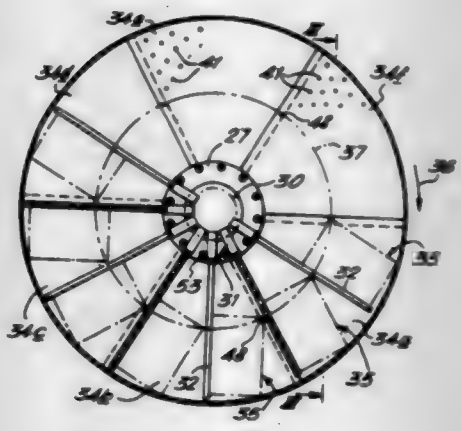
the newspaper from bouncing when it reaches the pocket bottom.

4,537,391

ROTARY COLLATING AND/OR INSERTING MACHINES AND METHOD OF COLLATING AND/OR INSERTING SHEET MATERIAL

Christopher R. Watkiss, and Michael C. Watkiss, both of Biggleswade, England, assignors to Watkiss Automation Limited, Bedfordshire, England

Filed Dec. 22, 1982, Ser. No. 452,182
Claims priority, application United Kingdom, Dec. 24, 1981, 8138992
Int. Cl.[3] B65H *3/08*
U.S. Cl. 271—101 22 Claims

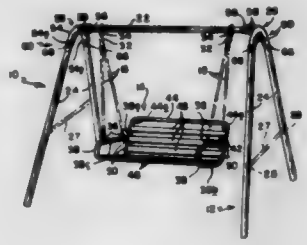


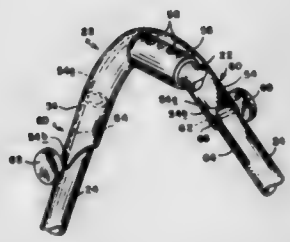
8. A rotary machine comprising a table for receiving a plurality of stacks of sheets of material spaced at intervals around a circle centered on the axis of rotation of the machine, means providing for relative rotational movement between the table and the stacks, the table defining at least one substantially radial slot down through which sheets separated from the bottom of the respective stacks are arranged to pass, suction means provided within the contour of a table section to create changes in air pressure at the upper trailing edge region of the table section to exert a suction effect on the bottom sheet of each stack, control means for said suction means operative to cause cyclic variations in the suction effect generated by said suction means on the sheets during the period from initial separation of a bottom sheet from a stack to completion of the movement of the sheet down through a slot whereby the suction effect is terminated after initial separation of a bottom sheet from a stack and before completion of movement of the sheet down through the slot.

4,537,392
FOLDABLE SWING SET

William L. Defibaugh, Bedford, Mass., assignor to Brown Group Recreational Products, Inc., Bedford, Pa.

Filed Jun. 6, 1984, Ser. No. 617,892
Int. Cl.[3] A63G *9/00*
U.S. Cl. 272—85 4 Claims





1. In a foldable swing set of the type including a support frame composed of a crossbar, a pair of suport legs connected to each of the opposite ends of the crossbar, a swing seat and means for suspending the seat from the crossbar, the improvement wherein the connection of each pair of legs to the crossbar comprises

A. a bracket composed of a substantially inverted U-shaped tubular member defining a pair of sockets at its opposite ends sized to slidably receive upper end portions of the associated pair of legs;

B. means for attaching said tubular member between its ends to the corresponding end of the crossbar;

C. a pair of diametrically opposite ears extending beyond each end of said tubular member on the opposite sides of the associated leg for a distance that is no less than the radius of said leg;

D. a pair of aligned holes in each pair of ears, the line between each said pair of holes being spaced from and substantially perpendicular to the longitudinal axis of said crossbar;

E. a pair of diametrically opposite longitudinal slots in each said leg upper end portion, said slots being aligned with said ear openings; and

F. fastener means extending through said ear holes and slots at each bracket socket so as to slidably and rotatively connect each leg to its socket whereby each leg can be moved between a first position in which the upper end portion of said leg is telescopically received in the associated socket with the leg lying generally perpendicular to the crossbar and a second position wherein said leg portion is withdrawn from its said socket with the leg lying generally parallel to the crossbar.

4,537,393
NECK EXERCISER

Richard J. Kusch, Box 205, Pewaukee, Wis. 53072

Filed Jun. 8, 1983, Ser. No. 502,189
Int. Cl.[3] A63B *21/12, 21/16*
U.S. Cl. 272—94 1 Claim

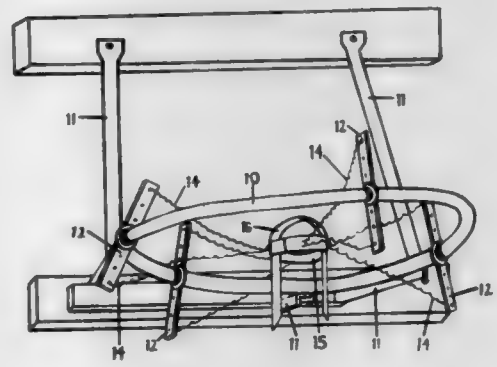
1. A device for exercising various muscles of the human body, especially the neck muscles, said exercise device comprising:

a ring;

a plurality of support brackets attaching said ring to a wall to support said ring in a plane substantially parallel to the floor;

a plurality of bracket members rotatably mounted on said ring at approximately equal intervals;

harness means adjustable to fit the head of the person exercising, said harness means being positioned approximately in the center of the diameter of said ring;

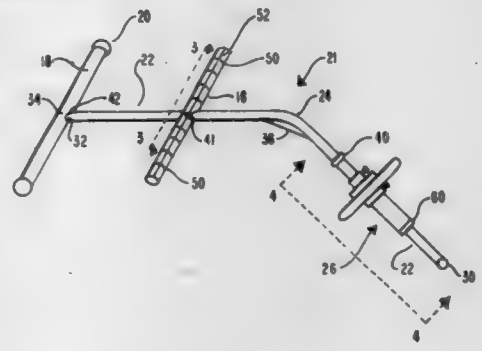


a plurality of springs, each of which attaches at one end to one of said rotatably mounted bracket members and attaches at the opposite end to said harness means, said springs providing resistance against which exercises can be performed.

4,537,394
EXERCISE APPARATUS FOR DEVELOPING ARM AND WRIST MUSCLES

Joseph J. Golinsky, Jr., 357 Henry St., Hellertown, Pa. 18055

Filed Oct. 17, 1983, Ser. No. 542,679
Int. Cl.[3] A63B *21/06*
U.S. Cl. 272—117 17 Claims



1. An exercise apparatus for wrists and arms comprising:

(a) a generally longitudinal angled bar said angle located proximate said bar's midpoint;

(b) an elongated arm brace of a length sufficient to span the distance between a user's outwardly extended forearms, said brace mounted perpendicularly on and to said longitudinal bar's proximal end at said arm brace's midpoint;

(c) a transverse crossbar slidably mounted on said longitudinal bar parallel to said arm brace and between said proximal end of said longitudinal bar and said bar's angle, said crossbar adapted to receive handles;

(d) a carriage assembly slidably mounted on said longitudinal bar between said longitudinal bar's angle and said distal bar end, said assembly adapted to receive supplemental weights;

(e) two adjustable, mushroom-shaped handles, each handle including:

(i) a stem;

(ii) a generally flat circular head on one stem end, said head having a stem-aligned aperture and at least one radial aperture; and,

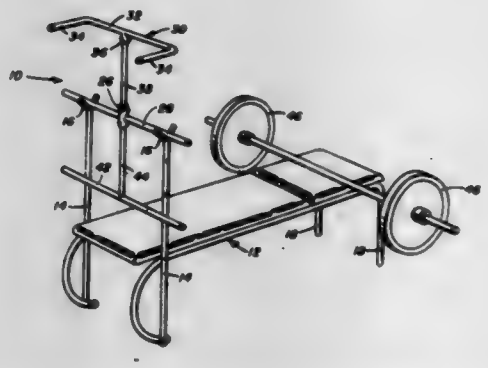
(iii) a handle locking assembly adapted slidably and rotatably to circumscribe said crossbar, said lock including two pins intended to mate with said apertures of part (ii) to adjustably lock said handle in a multitude of radial positions, one position at a time.

4,537,395

EXERCISE DEVICE

Gene A. Spinelli, 1541 Circle La., Newman, Calif. 95360

Filed Nov. 2, 1983, Ser. No. 547,846
Int. Cl.[3] A63B *13/00*
U.S. Cl. 272—123 12 Claims



1. An exercise device particularly adapted for use in conjunction with exercise apparatus including a pair of spaced upwardly opening support saddles to which the exercise device is freely introduced, and a stable structure below the saddles for free abutment of the exercise device thereagainst; said exercise device comprising an elongated base member adapted for free reception in spaced upwardly opening support saddles, a support comprising an elongated post including a lower end rigid with said base member at an intermediate point therealong, said support post projecting vertically upward from said base member and terminating at an upper end, a handle, said handle comprising a cross-member fixed to the upper end of the support post, said cross-member generally paralleling said base member and terminating in opposed ends, said handle further including gripping arms rigid with said opposed ends of said cross-member and projecting laterally of said cross-member in spaced parallel relation to each other, and a stabilizer, said stabilizer comprising an elongated stem rigid with said base member at an intermediate point therealong and terminating in a lower end, said stabilizer further including a cross-member fixed to the lower end of the stem and extending parallel to said base member generally coextensive therewith, and in vertically spaced relation therebelow for free engagement against a stable structure, said base member, support, handle cross-member and stabilizer defining a common plane, said gripping arms projecting laterally of said plane.

4,537,396

ENERGY ABSORBER FOR EXERCISING MACHINES

Lindsay A. Hooper, Victoria, Australia, assignor to Repco Ltd., Melbourne, Australia

Filed Jun. 23, 1983, Ser. No. 507,145
Claims priority, application Australia, Jun. 24, 1982, PF4580
Int. Cl.[3] A63B *21/00, 31/00, 69/06*
U.S. Cl. 272—130 14 Claims

1. An energy absorber module for an exercising machine, including:

a frame;

a face board secured to said frame;

a fan housing secured to said frame;

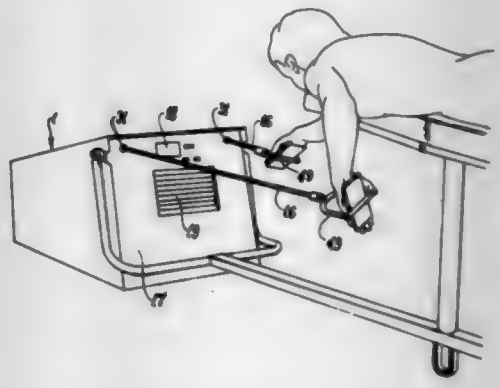
an energy absorber in the form of an air displacement fan rotatably mounted within said housing;

a pair of drive drums rotatably mounted on said frame in axially spaced relationship, wherein each said drum is stepped to form two sections of different diameter;

a drive connection between said drums and said fan, at least one clutch in said drive connection and being operable to transmit drive from said drums to said fan only when said drums are rotating in one direction relative to said frame;

a pair of pull cords each extending beyond said face board and each connected to a respective first diameter section of each said drum and having a portion wound thereupon in a rest position of the drum so that tension applied to each said cord, to cause unwinding movement thereof, causes rotation of said drum in said one direction;

a pair of return cords, each of which is attached to a respective second diameter section of each of said drums and arranged to be wound thereupon during rotation of the drums in said one direction; and



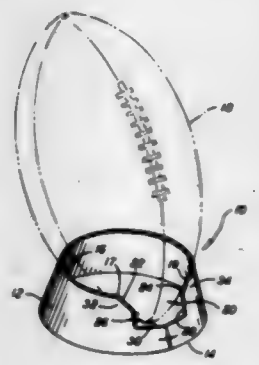
spring means comprising two lengths of elastic shock-cord, each of which is attached to said frame and to a respective said return cord and being operable upon release of tension in said pull cords to unwind said return means from said drums to thereby cause rotation of said drums in the direction opposite to said one direction.

4,537,397

FOOTBALL KICKING TEE

Harold W. Kopp, 137 Daytona Ave., R.R. 6A, Narragansett, R.I. 02882

Filed Dec. 1, 1982, Ser. No. 445,825
Int. Cl.[3] A63B *67/00*
U.S. Cl. 273—55 B 5 Claims



1. In the placement kicking function of the sport of football, the combination comprising:

(a) a regulation size and weight football of substantially ellipsoidal shape having bluntly pointed ends;

(b) a tee supporting said ball above ground level to be met by the foot of a kicker;

(c) said tee consisting essentially of a continuous wall member configured as a truncated cone having a central axis and tapering inwardly from a lower, ground engaging end lying in a flat plane to an open, upper, ball supporting end;

(d) said ball supporting end comprising an upper edge of said wall extending in a segment of a circle for a perimetral distance of between about 220° and 300°;

(e) said ball resting upon said edge and supported by said wall with one of said pointed ends extending not greater than a predetermined maximum distance into said cone, whereby said end is at least a predetermined minimum distance from said flat plane;

(f) said wall member including a cut-out section extending from the ends of said edge of said ball supporting end toward said ground engaging end for a distance at least as great as said maximum distance, whereby said ball may be

kicked from said tee with said one end of said ball passing through said cutout section without substantial interference; and

(g) said wall member being formed entirely of a material which is easily deformable in directions transverse to said central axis, thereby presenting virtually no resistance to the foot of a kicker impacting upon said tee, and sufficiently rigid in the direction of said central axis by virtue of said truncated one configuration to support said regulation weight ball upon said ball supporting end.

4,537,398

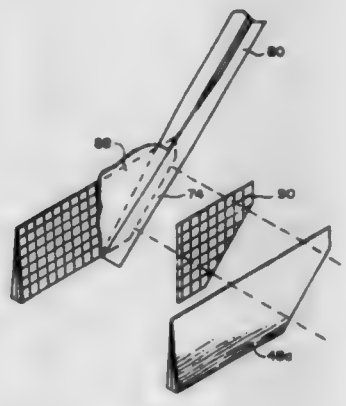
HOCKEY STICK HAVING LAMINATED BLADE STRUCTURE

Reijo K. Salminen, 1842 Academy Rd., Bellingham, Wash. 98225

Continuation of Ser. No. 300,123, Sep. 8, 1981, abandoned, which is a continuation of Ser. No. 171,126, Jul. 22, 1980, abandoned, which is a continuation-in-part of Ser. No. 56,421, Jul. 10, 1979, Pat. No. 4,369,970. This application Jan. 13, 1983, Ser. No. 457,742

Int. Cl.³ A63B *59/12*

U.S. Cl. 273—67 A **3 Claims**



1. A game stick, such as a hockey stick, comprising:

a. an elongate handle member having an upper end and a lower end;

b. a blade member with a lengthwise axis and a heel portion attached to said handle member, said blade member having at least two laminations, with at least one lamination having a grain orientation generally slanted with respect to the lengthwise axis of the blade member;

c. said blade member comprising two blade sections and hardened filler material with heel portions of the blade sections being positioned on opposite sides of the lower portion of the handle member, and toe portions of the two blade sections extending outwardly from the handle member and joined to each other, and the filler material being located in an area between the blade sections, and hardened to form with the blade sections the blade of the stick.

4,537,399

GRIP FOR A RACKET, ESPECIALLY A TENNIS RACKET

Günter Adam, Straubing, Fed. Rep. of Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

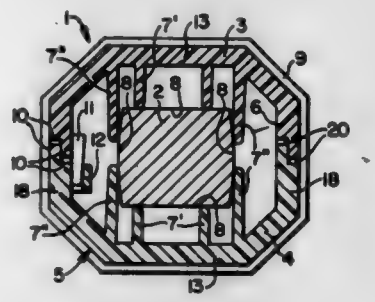
Filed Jul. 3, 1984, Ser. No. 627,512

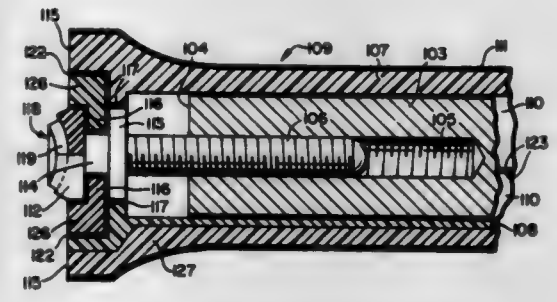
Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324145

Int. Cl.³ A63B *49/08*

U.S. Cl. 273—75 **22 Claims**

1. A hand-grip for a racket of the type having a hand-grip sleeve formed of longitudinally extending components joined together about a shaft of the frame of the racket which is connected to a hitting surface, wherein the hand-grip sleeve comprises at least two, at least similar, shell parts made of a hard, elastic material, said shell parts having longitudinally extending edge portions which are arranged in such a way that, when they are formed into said hand-grip sleeve and the hand-grip sleeve is applied firmly against the shaft, adjacent end faces of said edge portions don't abut against one another,





and wherein the hand-grip sleeve is provided with an elastic covering which presses it onto the shaft on all sides.

4,537,400

RACKET GRIP HAVING A GRIP STRIP

Günter Adam, Straubing, Fed. Rep. of Germany, assignor to Puma-Sportschuhfabriken Rudolf Dassler KG, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,526

Claims priority, application Fed. Rep. of Germany, Jul. 5, 1983, 3324144

Int. Cl.³ A63B *49/08*

U.S. Cl. 273—75 **28 Claims**

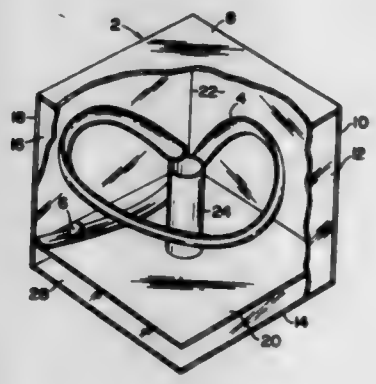


1. A racket handle of the type having a grip strip fastened at the bottom end of a hand-grip of the racket handle, wherein the bottom end of the hand-grip is provided with a slot that projects inwardly from one side of the hand-grip, and opens through a bottom wall of the hand-grip an end of a grip strip being insertable edgewise into said slot through said bottom wall, and wherein means, comprising a structural part of said hand-grip, is provided for holding said end of the grip strip in co-action with a tensional pulling effect of winding of the grip strip about the periphery of said hand-grip.

4,537,401
GAME APPARATUS

Roger D. Smith, 2705 S. Sunshine Dr., Lakeland, Fla. 33801, and Harold J. Baer, 6597 Lake Elmo Ave., N., Stillwater, Minn. 55082

Filed Dec. 22, 1983, Ser. No. 564,564
Int. Cl.[3] A63B *67/14*
U.S. Cl. 273—112 27 Claims



1. A game apparatus comprising

a manipulatable container having a first compartment, said first compartment having a plurality of sides;

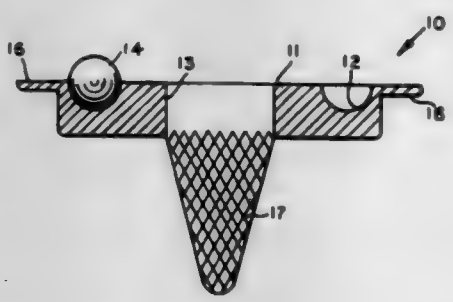
track means comprising a first sinuous track mounted within said first compartment and having a concave surface of predetermined width and depth said track beginning at a first starting point and ending at a first finishing point spaced from said first starting point and describing a three-dimensional path extending between said points, and said track including a longitudinal twist between said first starting point and said first finishing point such that a line perpendicular to said track surface at its maximum depth at one point along said track extends in a direction generally perpendicular to the direction of a similar line at another point along said track; and

a first ball of predetermined diameter adapted to be received onto said concave surface of said track and to roll along said track means.

4,537,402
METHOD OF PLAYING A MOVING SURFACE BALL GAME

Herbert W. Prather, Jr., R.D. #3, Station Rd., North East, Pa. 16428

Filed Oct. 14, 1980, Ser. No. 196,444
Int. Cl.[3] A63F *7/00*
U.S. Cl. 273—116 1 Claim



1. The method of playing a game including: providing an apparatus which comprises,

a platform having a round flat planar top upper surface terminating in a flat outer edge,

an endless annular groove in the upper surface,

handle means attached to each side of the platform,

a ball approximately the size of a tennis ball for engaging said groove and being guided along said groove along the upper surface of the platform and to be moved by gravity when the platform is manually tilted,

the groove being generally semi-circular in cross section and having a radius slightly larger than the radius of the ball and a depth approximately equal to the radius of said ball,

a central cylindrical hole formed in the platform and extending therethrough and terminating at said flat planar surface concentric to said groove and at the center thereof, the hole being at least as large in diameter as the cross-section diameter of the groove,

a generally cylindrical net being attached to the platform around the inner periphery of the hole and extending downward below the hole for catching balls that may roll out of the groove to the center when the platform velocity of the ball and rate of tilting is improperly coordinated,

grasping the handle means by the hands of an operator at two diametrically opposite positions and tilting the platform rapidly from side to side, thereby causing the ball to roll around the groove at a maximum velocity and to fall off said outer edge if rolled greater than said velocity or to roll into said net under said improper coordination, the rounds of travel of said ball in a given time being counted to determine the score of said player before said ball rolls over the outside edge of said groove or into said net, thereby terminating a turn of said player.

4,537,403
GOLF CLUB

John Farina, 2228 W. Belmont, Chicago, Ill. 60618

Filed Nov. 21, 1983, Ser. No. 553,584
Int. Cl.[3] A63B *53/14*
U.S. Cl. 273—164 3 Claims



3. A putter golf club having a shank and a head at one end and a flat handle at the other end all located in a common plane, and said head having ballstriking faces at opposite sides thereof and said handle having parallel sides coplanar with respective faces of the head, and stroke-gauging means formed in said sides of the handle comprising a series of indents spaced lengthwise of the handle and being concavely shaped.

4,537,404
BROADHEAD ARROW HEAD STRUCTURE

Gary M. Castellano, 527 Elizabeth Ave., Grand Rapids, Minn. 55744, and Kenneth W. Alto, Rte. 2, Bovey, Minn. 55709

Filed Dec. 19, 1984, Ser. No. 683,607
Int. Cl.[3] F41B *5/02*
U.S. Cl. 273—422 7 Claims

1. A broadhead arrow head assembly for attachment to an arrow shaft, having in combination

a substantially cylindrical body portion having a tip portion,

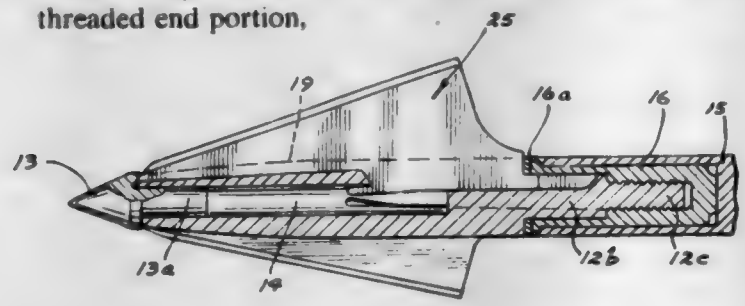
a bore extending inwardly of said body portion from said tip portion,

a plurality of longitudinal slots spaced about said body portion,

rearward portions of said slots extending deep enough into said body portion to communicate with said bore,

a further rearward extension of said body portion having a threaded end portion,

a shaft having means in one end thereof to receive said threaded end portion,



blade members disposed into said slots,

said blade members respectively having elongated forwardly extending tongue portions,

said tongue portions entering said bore and underlying the adjacent body portion to be secured therein, and

a shaft having means in one end thereof receiving said threaded end portion and engaging and locking said blade members in operating position.

4,537,405

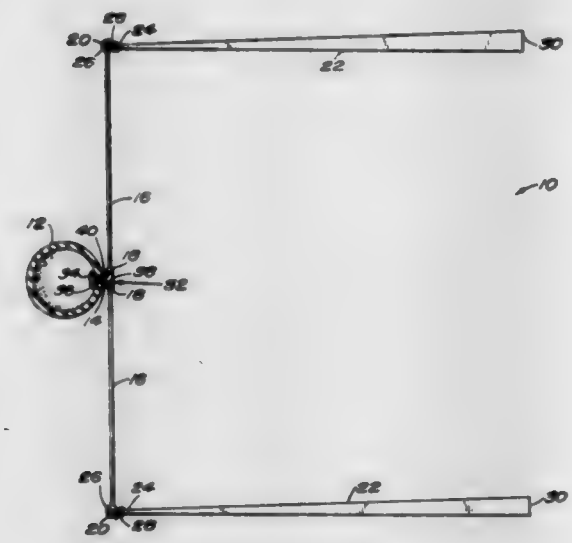
AERIAL RECREATION DEVICE

Murray J. Cymbler, East Meadow, N.Y., assignor to The Astro-Stream Corporation, East Meadow, N.Y.

Filed Nov. 13, 1984, Ser. No. 670,183

Int. Cl.³ A63B *65/00*

U.S. Cl. 273—428 **14 Claims**



1. An aerial recreation device, comprising:

a weighted head;

two or more, elongated, flexible arms that are resilient when bent; each arm having a first end and a second end at its opposite ends; the first ends of the arms being connected to the head; the second ends of the arms extending laterally away from one another and from the longitudinal axis of the device and extending laterally beyond the head; and

two or more, light and flexible, elongated tails; each tail having a first end and a second end at its opposite ends; the first end of each tail being connected to the second end of one of the arms; the arms and tails being adapted so that: (1) the second ends of the arms move laterally closer to one another and to the longitudinal axis of the device when the second ends of the tails are grasped together and the head is swung about the grasped second ends of the tails; and (2) the second ends of the arms move laterally apart, away from the longitudinal axis of the device and beyond the head, after the grasped second ends of the tails are released to propel the device through the air.

4,537,406

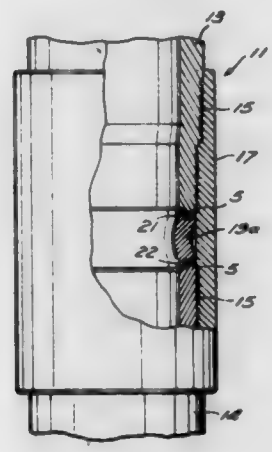
HOSTILE ENVIRONMENT JOINT SEAL AND METHOD FOR INSTALLATION

Alan R. Hirasuna, Newport Beach, and Gordon R. Veal, Mission Viejo, both of Calif., assignors to L'Garde, Inc., Newport Beach, Calif.

Filed Apr. 27, 1983, Ser. No. 489,244

Int. Cl.³ F16L *33/24*

U.S. Cl. 277—1 **44 Claims**



15. A method for providing a gas and fluid-tight seal for a joint comprising:

fabricating a backup member out of a shape memory material;

forming said backup member in a suitable memory shape to effect a sealing between sealing surfaces of the joint;

fabricating a sealing member out of a compliant material;

installing the sealing member on a sealing surface of the backup member in a manner whereby a continuous portion of the sealing surface remains exposed adjacent the installed sealing member;

deforming the backup member to an intermediate shape that provides clearance between the sealing surfaces of the backup member and the sealing surfaces of the completed joint;

placing the intermediate shape backup and sealing member assembly in the joint prior to the mechanical completion thereof;

completing the mechanical or structural formation of the joint; and

heating the intermediate shape backup member present in the completed joint sufficiently to cause transformation of the intermediate shape backup member to its memory shape, and thus formation of the seal whereby the exposed portion of the sealing surface forms a backup for the compliant sealing member.

4,537,407

APPARATUS FOR TESTING PIPES BY A PIPE TESTER

Herbert Jansen, Glehn; Hans-Gunter Schiffers, Monchen-Gladbach, and Richard Gerretz, Viersen, all of Fed. Rep. of Germany, assignors to Mannesmann Demag Wean, Coraopolis, Pa.

Filed Feb. 28, 1984, Ser. No. 584,372

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1983, 3307813

Int. Cl.³ F16J *15/12*

U.S. Cl. 277—2 **12 Claims**

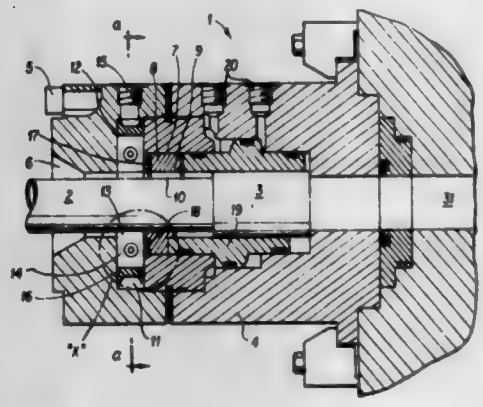
1. In a sealing assembly for a pipe tester or the like, in which fluid under pressure is introduced into the interior of the pipe and the ends of the pipe are sealed, comprising:

a housing having an aperture for receiving said end of said pipe,

sealing ring means in said aperture through which said pipe

is caused to pass, constructed in a manner to be deformable in opposite axial directions and radially towards and away from said pipe such that when deformed it will contact the external circumference of said pipe to form a sealing condition,

supporting ring means arranged concentric to said pipe and adjacent said deformable sealing ring and to one side thereof, and constructed in a manner to contact said external circumference of said pipe and to control the extent of said deformation of said sealing ring means in a said axial direction on said one side when said sealing ring means is deformed,



means for introducing pressure against said support ring means to effect its said contact against said pipe and said deformation of said sealing ring means, and

forming means arranged in said aperture adjacent to and on both sides of said sealing ring means in a manner to cause said sealing ring means when deformed to be displaced in said opposite axial directions with respect to said pipe, and to create a sealing surface substantially larger in said deformed condition than in said non-deformed condition of said sealing ring means.

4,537,408

DEVICE FOR APPLYING SURFACE PRESSURE TO ADVANCING WORKPIECES

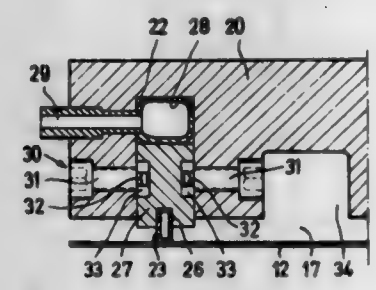
Werner Pankoke, Bielefeld, Fed. Rep. of Germany, assignor to Firma Theodor Hymmen KG., Bielefeld, Fed. Rep. of Germany

Filed Apr. 11, 1984, Ser. No. 598,948

Claims priority, application Fed. Rep. of Germany, Apr. 13, 1983, 3313406

Int. Cl.³ F16J *15/46*

U.S. Cl. 277—34 **10 Claims**



1. In a device for applying surface pressure to workpieces advancing on at least one movable compression belt, means for forcing the workpiece against the belt including a pressure chamber adjacent to the belt and a hose therein receptive of a pressure medium and a continuous sealing strip between the pressure chamber and belt for sealing off the pressure chamber and means mounting the strip such that the belt slides therealong, including a pressure plate having a groove and a holder in the groove, the improvement wherein the means mounting the strip further comprises at least one lateral recess positioned in the holder transversely to its length and to the surface of the belt connected to the pressure plate and having means disposed in the recess.

4,537,409

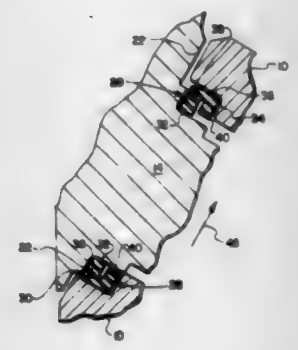
RADIAL ROCK BIT SEAL

Roy D. Estes, Weatherford, and Beaumont B. Wright, Fort Worth, both of Tex., assignors to Rock Bit Industries U.S.A., Inc., Fort Worth, Tex.

Filed Mar. 22, 1984, Ser. No. 592,182

Int. Cl.³ F16J *15/24*

U.S. Cl. 277—83 **21 Claims**



1. A rotary seal for utilization with an earth boring drill bit having a drill bit body with a shaft rigidly mounted on a face surface thereof and a rolling cutter rotatably mounted on such shaft, said seal comprising:

a circular seal body adapted to be mounted around said shaft, said circular seal body including;

a first seal portion having a first elastomeric surface in sealing and sliding engagement with said shaft;

a second seal portion axially displaced from said first seal portion with respect to said shaft, having a second elastomeric surface in sealing and sliding engagement with said rolling cutter; and

a flexible juncture joining said first seal portion and said second seal portion wherein displacement of said rolling cutter will have minimal effect on said sealing and sliding engagement of said first elastomeric surface with said shaft.

4,537,410

ARRANGEMENT FOR SUPPLYING A CHUCK WITH PRESSURE FLUID

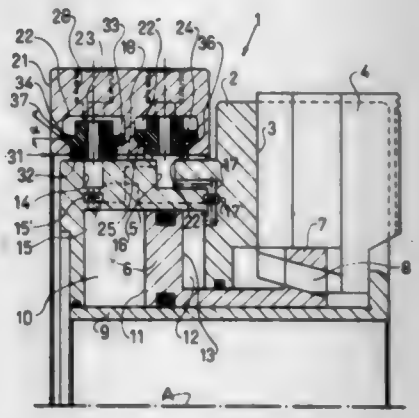
Karl Hiestand, Pfullendorf, Fed. Rep. of Germany, assignor to SMW Schneider & Weisshaupt GmbH, Fed. Rep. of Germany

Filed May 23, 1984, Ser. No. 613,288

Claims priority, application Fed. Rep. of Germany, May 27, 1983, 3319228

Int. Cl.³ B23B *31/30*

U.S. Cl. 279—4 **16 Claims**



16. In a pressure fluid supply arrangement for chucks including a chuck body having a longitudinal axis, a pressure proof

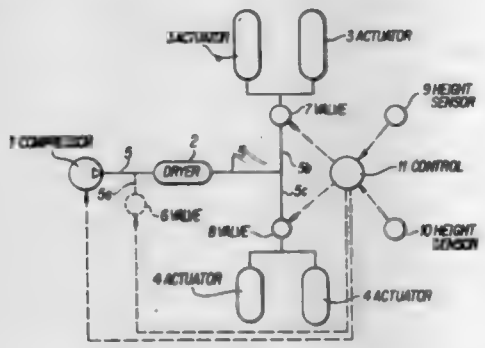
connection for transferring pressure fluid radially from a fixed supply ring to chuck parts in the chuck body to be temporarily moved, with an annular seal ring being inserted in the supply ring so as to surround a circumferential surface of the chuck body, which seal ring is elastically deformable to vary its diameter and, in an unload state, is in a position slightly spaced from the circumferential surface of the chuck body, the improvement comprising: the seal ring being formed of a ring body portion having a substantially rectangular cross section and being stable in its shape, cross sectional shape, and in which at least one flow passage for the pressure fluid is provided; a pair of fins formed on said ring body portion which projects from the opposite body surfaces of said ring body portion that are perpendicular to the longitudinal axis of the chuck body, about in a middle of said ring body portion; said fins being radially elastically deformable and bearing against the supply ring; said seal ring in the unloaded state being biased to sealingly apply against a peripheral inner surface of an annular groove provided in the supply ring; and said sealing ring having a radially outer seal ring surface parallel to the axis of the chuck body and exposable to the inflowing pressure fluid which has a larger area than a radially inner seal ring surface of said sealing ring to be exposed to the pressure fluid during and upon pressure fluid transfer.

4,537,411

VEHICLE BODY POSITION CONTROL SYSTEM

Yuichi Naramoto, Chiryu, Japan, assignor to Aisin Seiki Kabushiki Kaisha, Kariya, Japan

Filed Sep. 13, 1983, Ser. No. 531,746
Claims priority, application Japan, Sep. 13, 1982, 57-159081
Int. Cl.³ B60G *9/00*
U.S. Cl. 280—6 R **4 Claims**



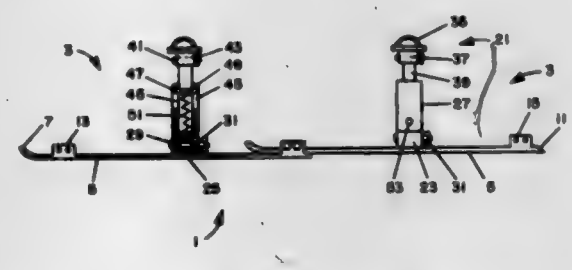
1. A vehicle body position control system, comprising:
first and second actuator means operated by a pressurized air for generating vertical movement of said vehicle body;
air compressor means for supplying said pressurized air to said first and second acutator means;
air passage means interconnecting said compressor means and said first and second actuator means;
air dryer means, including a desiccating agent disposed therein, being positioned within said air passage means between said compressor and said first and second actuator means;
said air passage means having a first branch passage leading therefrom between said compressor means and said dryer means, said first branch communicating with the atmosphere;
first solenoid valve means positioned within said first branch passage;
second solenoid valve means in said air passage means between said dryer means and at least one of said first and second actuator means;
control means for controlling operation of said first and second solenoid valve means and said compressor meand, said control means including delay means for opening said second solenoid valve means with a delay of a predetermined time after opening said first solenoid valve means, to thereby release said pressurized air within said at least one of said first and seocnd actuator means into the atmosphere through said dryer means.

4,537,412

MULTI-SEASON SKI SLED

Walter F. Hill, P.O. Box 116, Crown Point, N.Y. 12928

Filed Aug. 6, 1984, Ser. No. 638,121
Int. Cl.³ A63C *5/02*
U.S. Cl. 280—7.12 **3 Claims**



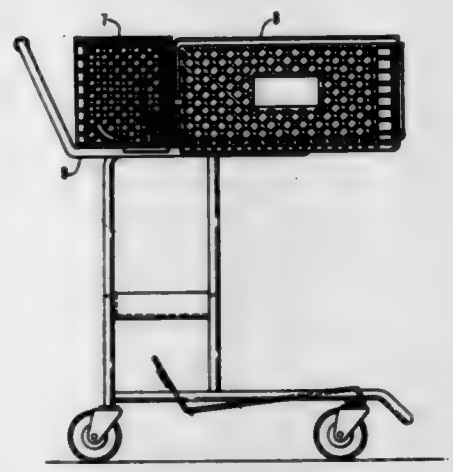
1. A ski sled for skiing and sledding, comprising identical and interchangeable ski members for assembling said ski members in tandem relationship, or for assembling said ski members in side-by-side relationship, or for assembling said ski members in a combination of both tandem and side-by-side relationships; each ski member having a seat assembly for a rider, each ski member having a fore or toe end and an aft or rear end, each ski member having forward or toe and rear or heel brackets at said fore and aft ends, respectively, and in the assembly of said ski members in tandem relationship: one of said ski members being a leading ski member and the other of said ski members being a trailing ski member, and said forward bracket on said trailing ski member being connected to said rear bracket on said leading ski member; and said ski members having coupling means for connecting said ski members in side-by-side relationship.

4,537,413

PLASTIC BASKET FOR USE WITH A CART HAVING FRONT AND REAR BASKETS

B. Houston Rehrig, 4539 Gorham St., Corona Del Mar, Calif. 92625

Filed May 9, 1983, Ser. No. 492,631
Int. Cl.³ B62B *3/00*
U.S. Cl. 280—33.99 B **8 Claims**



8. A plastic rear basket for use with a cart having separate front and rear baskets, said cart having a horizontal frame portion to which the baskets are attached, said plastic basket comprising:
a pair of opposed side panels, a rear panel, and a bottom panel attached together along their contiguous edges, said side panels and said bottom panel terminating in a front edge;
a seat back panel pivotally attached to said side panels and

supported by said bottom panel at the front portion of said rear basket;

a child's seat pivotally attached to said bottom panel at the rear portion of said basket;

said rear panel comprising at least one leg opening for accommodating the legs of a child sitting on said child's seat, said child's seat adapted to be movable between a first position in juxtaposition to said bottom panel and a second position covering said leg opening;

said seat back panel being movable between a first seat back position substantially perpendicular to said bottom panel and a second seat back position in juxtaposition to said bottom panel; and

a lifting bar adapted to move said child's seat to said first position in juxtaposition to said bottom panel when said seat back panel is moved to said seat back position substantially perpendicular to said bottom panel and to move said child's seat to said second position covering said leg opening when said seat back panel is moved to said seat back position in juxtaposition to said bottom panel, wherein said bottom panel comprises hinge means integral to said bottom panel and said child's seat comprises a hinge member for hingedly engaging said hinge means for moving said child's seat between said first position in juxtaposition to said bottom panel and said second position covering said leg opening and wherein said hinging means integral to said bottom panel comprises recessed sections including a flexible member which can be elevated for receiving said hinge member.

4,537,414

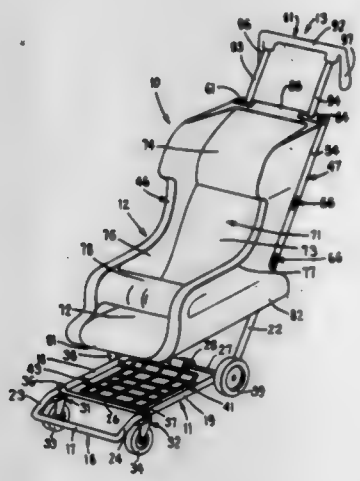
COMBINATION CAR SEAT AND STROLLER

Ronnie W. Nusbaum, 68640 Balk Rd., Sturgis, Mich. 49091

Continuation-in-part of Ser. No. 293,116, Aug. 17, 1981, abandoned. This application Mar. 21, 1983, Ser. No. 477,283

Int. Cl.³ B62B *7/10*

U.S. Cl. 280—47.41 **9 Claims**



1. A child seating device adapted for use as a protective car seat and as a stroller, comprising:

a child support having a seat member for a child, said seat member having an upright back supporting portion and a generally horizonally aligned seat portion extending forwardly from the lower portion of said back supporting portion, said child support further having means defining first and second openings on the reawardly facing side of said back supporting portion and extending parallel to the longitudinal extent of said back supporting portion;

sidewall means extending downwardly from the lower peripheral edge of said seat portion at the front and two sides thereof to define a downwardly and rearwardly opening recess immediately below said seat portion;

a U-shaped base having a bight and two generally parallel legs, said bight and legs extending approximatley horizontally and parallel to said seat portion, said base further having a pair of upwardly extending rods contiguous with the ends of each of said legs remote from said bight and being slidingly received in said first openings in said child support, said legs of said base having wheels rotatably supported thereon for movably supporting said base on a floor surface, said bight and legs of said base being oriented beneath said seat portion and parallel thereto with said bight being located adjacent said front of said seat member and said two legs extending rearwardly therefrom;

means cooperable with said two upwardly extending rods and said child support for releasably securing said child support against movement relative to said upwardly extending rods in first and second positions thereof, said bight, legs and wheels being housed between said sidewall means in said first position and lowered downwardly out of said sidewall means in said second position, the parallel relationship between said bight, parallel legs and said seat portion being maintained throughout a movement between said first and second positions by the sliding connection between said upwardly extending rods and child support;

a handle including a manually engagable grip and two downwardly extending rods thereon being slidably received in said second openings in said child support; and

means for releasably securing said child support and downwardly extending rod against relative movement in a third position in which said handle is adjacent said child support and a fourth position in which said handle is spaced from said child support.

4,537,415

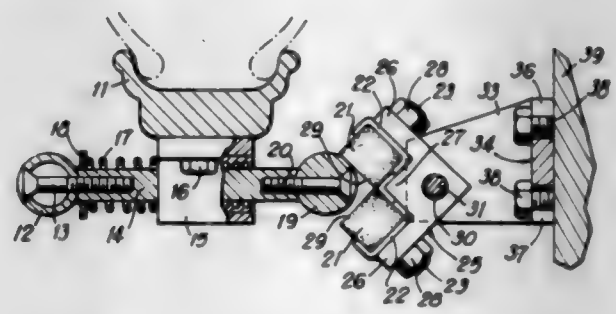
DYNAMIC BRAKE FOR MANUAL WHEELCHAIR

Ronald D. Delahoussaye, Ruston, La., and Gary W. Kelly, Atlanta, Ga., assignors to Georgia Tech Research Institute, Atlanta, Ga.

Filed Feb. 24, 1984, Ser. No. 583,407

Int. Cl.³ B62M *1/14*

U.S. Cl. 280—242 WC **12 Claims**



1. In a manually propelled wheelchair having a pair of manual propulsion rings disposed adjacent to the outer sides of the two main wheels of the chair, a brake means comprising a brake ring disposed adjacent to the interior side of each main wheel, axially shiftable means connecting each propulsion ring and brake ring and responding to hand pressure applied laterally to each propulsion ring to move such ring and the associated brake ring axially inwardly relative to each main wheel, and a cooperative friction brake means attached to each side of the wheelchair structure in opposing relationship to each brake ring and becoming engaged with each brake ring to slow or stop the wheelchair when the brake ring is shifted axially inwardly by a chair occupant.

4,537,416

TRAILER HITCH ALIGNMENT DEVICE

Clyde P. Linaburg, Rte. 2, Box 493, Luray, Va. 22835

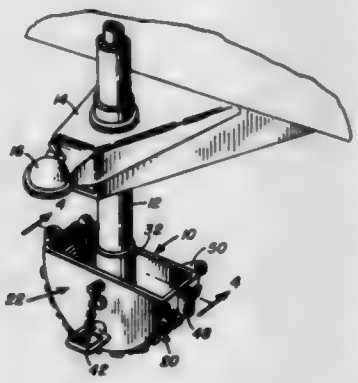
Filed Feb. 15, 1984, Ser. No. 580,197

Int. Cl.³ B60D *1/00*

U.S. Cl. 280—478 R **11 Claims**

1. A trailer hitch alignment device including a generally

arcuate, upwardly opening cradle defined by a pair of spaced side supports interconnected by a generally arcuate base, a jack socket pivotally mounted between said side supports within said cradle, said socket opening upwardly of said cradle and



being dimensioned to receive the lower end of a conventional trailer jack shaft, and handle mounting means on said cradle for mounting one end of an elongated handle for a rocking manipulation of said cradle and a corresponding lateral movement of the pivotally mounted jack socket.

4,537,417

SKI, PARTICULARLY A CROSS COUNTRY SKI

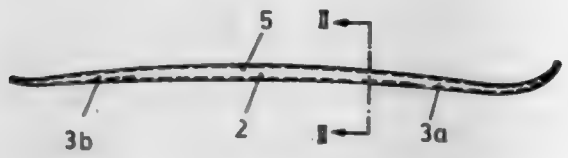
Rudolf Hirnböck, and Adolf Haudum, both of Hohenems, Austria, assignors to Kastle Gesellschaft m.b.H., Austria

Filed Oct. 26, 1983, Ser. No. 545,480

Claims priority, application Austria, Nov. 2, 1982, 3981/82

Int. Cl.³ A63C *5/07*

U.S. Cl. 280—602 **5 Claims**



1. A cross-country ski, comprising a lower bearing sheet absorbing the occurring tensile stresses and being subdivided into at least two sheet members with each of said sheet members extending in the longitudinal direction over less than the whole length of the ski wherein the individual sheet members of said lower bearing sheet, extending in the longitudinal direction of the ski are substantially arranged one after the other and overlap one another in the direction normal to the sliding surface of the ski over less than their entire respective length, and wherein at least in the overlapping portions of said sheet members, between said overlapping sheet members at least one elastic layer of elastic-viscous material is arranged.

4,537,418

SKI BRAKE

Walter R. Knabel, Murnau, and Gerhard J. Sedlmair, Farchant, both of Fed. Rep. of Germany, assignors to Marker International, Salt Lake City, Utah

Filed Mar. 15, 1982, Ser. No. 358,372

Claims priority, application Fed. Rep. of Germany, Mar. 19, 1981, 3110743

Int. Cl.³ A63C *7/10*

U.S. Cl. 280—605 **2 Claims**

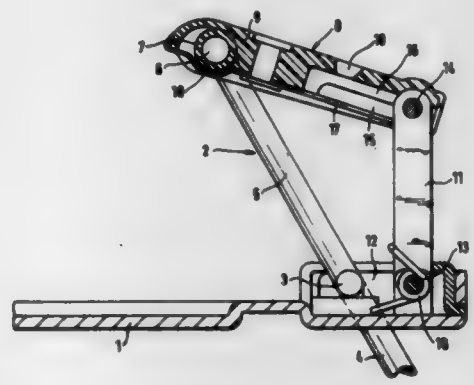
1. A brake for a ski, comprising:

lever means comprising a pivot shaft intermediate a lower lever arm and an upper lever arm, said lever means being rotatable between a braking position in which said lower arm extends below the ski and a non-braking position in which said lower arm does not extend below the ski;

an actuating arm operatively connected to said lever means and movable between a first position wherein said lever means in the braking position and a second position wherein said lever means is in the non-braking position;

a pedal having one portion rotatably attached to said upper arm and another portion rotatably attached to said actuating arm, said pedal having a skiing position for moving said lever means to the non-braking position and a non-skiing position;

biasing means for biasing said actuating arm to said first position to cause said pedal to assume the non-skiing position and move lever means into said braking position; and



attaching means for releasably attaching said pedal to said actuating arm, said attaching means comprising a pin on said actuating arm and a slot extending longitudinally in said pedal, said slot having an external opening for receiving said pin, said pedal being released from said actuating arm when said pin is moved out of said slot through said opening;

wherein said pedal includes releasing means for disconnecting said attaching means to release said pedal from said actuating arm.

4,537,419

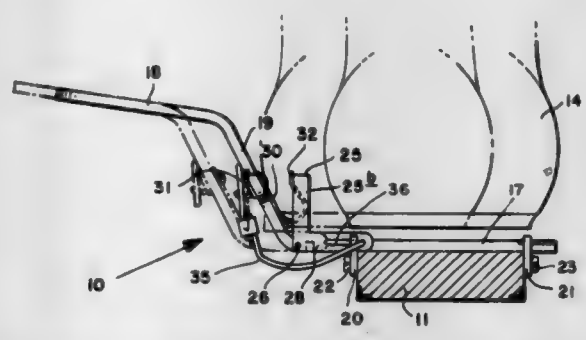
SKIING ACCESSORY

James T. Kiernan, 204 Washington Ave., Newtown, Pa. 18940

Filed Dec. 2, 1983, Ser. No. 557,207

Int. Cl.³ A63C *11/00*

U.S. Cl. 280—607 **11 Claims**



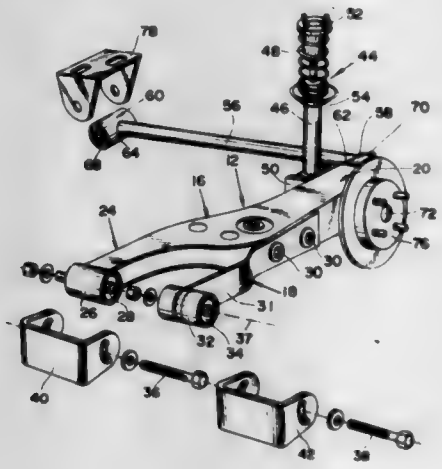
1. For use with a ski having bindings for releasably retaining one boot, a device for supporting another boot alongside and ski while skiing comprising:

a plate having a tongue adapted to overlie said ski and an arm ofset upwardly from said tongue and extending laterally therefrom for supporting said other boot, bracket means mounted to said ski for releasably connecting said tongue thereto, and means for sensing release movement of said one boot with respect to its bindings and automatically releasing said tongue from said bracket means, including an actuator disposed adjacent to said one boot, means mounting said actuator for movement when engaged by said one boot, and latch means operable in response to movement of said actuator to permit disengagement of said tongue from said bracket means.

4,537,420
SWING-ARM-TYPE SUSPENSION WITH A LATERAL ROD FOR AN AUTOMOTIVE VEHICLE

Hideo Ito, Zushi; Junsuke Kuroki, and Namio Irie, both of Yokohama, all of Japan, assignors to Nissan Motor Company, Limited, Yokohama, Japan

Filed Jul. 22, 1982, Ser. No. 400,941
Claims priority, application Japan, Jul. 28, 1981, 56-111002[U]; Feb. 19, 1982, 57-25500[U]
Int. Cl.³ B62D *17/00*
U.S. Cl. 280—661 12 Claims

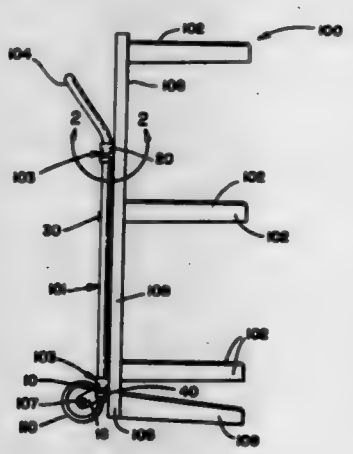


1. A swing arm suspension for an automotive vehicle comprising:
a vehicle body;
a suspension arm having a rear portion rotatably supporting a wheel and a front portion pivotably connected to said vehicle body for vertical pivoting movement with respect to a pivot axis between said vehicle body and said suspension arm, said pivot axis crossing a longitudinal axis of the vehicle; and
a rod member having an outer end connected to said rear portion of said suspension arm and an inner end connected to said vehicle body at a point offset from said pivot axis and above the level of said outer end so that said rod moves the wheel on said suspension arm to a toe-in and negative camber position in response to cornering forces.

4,537,421
FOLDABLE DOLLY

Paul H. Teachout, 23 Acacia Dr., Orinda, Calif. 94563

Filed Jan. 3, 1984, Ser. No. 567,742
Int. Cl.³ B62B *1/04*
U.S. Cl. 280—654 5 Claims

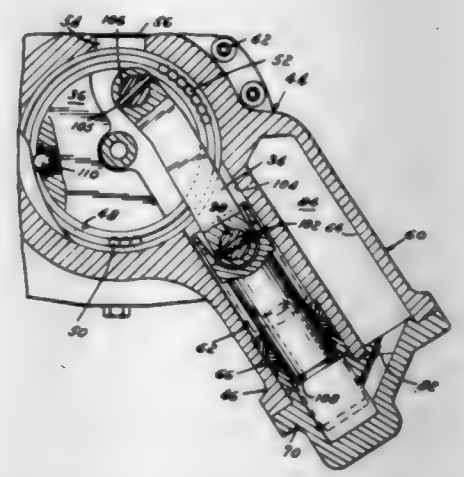


1. A foldable dolly including frame means, arm means, and mounting means movably mounting said arm means to said frame means for rotation of said arm means with respect to said frame means between an outwardly extending deployed position and a collapsed stored position, said mounting means including interengaging shoulders providing stop means formed to limit rotation of said arm means at said deployed position, and said mounting means further including a first ramp carried by said frame means and a second ramp formed for mating sliding engagement with said first ramp and carried by said arm, said first ramp and said second ramp being formed and positioned to urge said shoulders into interengagement in said deployed position and formed to permit rotational movement of said arm means from said deployed position to said collapsed position, wherein the improvement comprises:
said stop means is provided by a first substantially vertically oriented shoulder carried by said frame means in opposed relation to said first ramp, and a second substantially vertically oriented shoulder carried by said arm means in opposed relation to said second ramp.

4,537,422
SEALING SYSTEM FOR ROAD WHEEL SUSPENSION

Glenn R. O'Rourke, Lake Orion, Mich., assignor to Ex-Cell-O Corporation, Troy, Mich.

Filed Oct. 7, 1983, Ser. No. 539,782
Int. Cl.³ B60G *11/26*
U.S. Cl. 280—705 6 Claims



1. A self-contained road wheel suspension system comprising in combination, a spindle fixedly secured to a vehicle hull, a unitary road arm having a spindle housing on one end and a road wheel support on the opposite end thereof, bearing means for supporting said spindle housing for rotation relative to said spindle, means defining a single chamber gas spring means at the opposite end of said arm, and a fluid controlled damper means included within said spindle, said spring means including a gas volume and a piston rod relatively reciprocated with respect to said arm, seal assembly means carried by said arm, means defining a low pressure oil region on one end of said piston rod and means defining a high pressure oil region on the opposite end of said piston rod to submerge said seal assembly in oil and separate it from the gas volume, said rod displacing said high pressure oil region to vary the gas volume pressure.

4,537,423
BALLAST WEIGHT ARRRANGEMENT ON AGRICULTURAL PRIME MOVERS

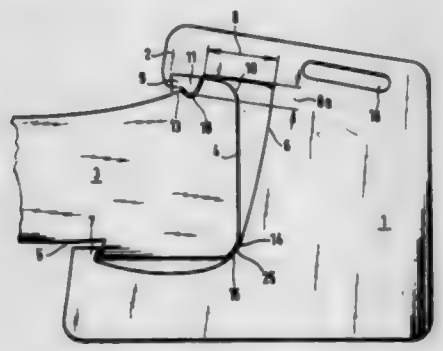
Walter Nau, Cologne, and Jes Carstensen, Erftstadt, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz Aktiengesellschaft, Cologne, Fed. Rep. of Germany

Filed Aug. 10, 1982, Ser. No. 406,934
Claims priority, application Fed. Rep. of Germany, Aug. 11, 1981, 3131686
Int. Cl.³ B60R *11/00*
U.S. Cl. 280—759 5 Claims

1. A ballast weight arrangement on an agricultural prime mover, said arrangement comprising:
a carrier element arranged on said prime mover transverse to a longitudinal central axis thereof, said carrier element having an end face remote from said prime mover and

extending transverse to the longitudinal central axis thereof; and

at least one plate-like ballast weight, each ballast weight having an inner side which faces said end face of said carrier element when said ballast weight in in its attached end position on said carrier element; each ballast weight being provided with a nose by means of which said ballast weight can be attached to said carrier element; and nose, in the attached position of said ballast weight, being provided in the upper region of the latter; each ballast weight also being provided with a projection which, in the attached position of said ballast weight, is located in a region thereof which extends below said carrier element; said carrier element being provided with a corresponding part with which said projection of said ballast weight cooperates in the attached end position of said ballast weight; said nose being spaced from said inner side of said ballast weight by such a distance, and a recess of such a depth being provided on said ballast weight between said nose



and said inner side thereof, that when, during an attaching position of said ballast weight, said inner side rests against said carrier element, i.e. when an upper edge of said end face of said carrier element rests against said inner side, said projection of said ballast weight can be pivoted over a lower edge of said end face of said carrier element and over that portion of the latter located ahead of said corresponding part thereof; that surface of said carrier element which faces said nose during attaching and attached positions of said ballast weight being provided with a sloped surface; said nose, when said ballast weight is being pivoted into its attached end position, cooperating with said sloped surface of said carrier element to lift said ballast weight to such an extent that said projection thereof catches in said corresponding part of said carrier element, and that said ballast weight can be arrested in tis attached end position, said sloped surface of said carrier element being provided with a depression for receiving said nose of said ballast weight to effect arresting of the latter in its attached end position.

4,537,424

CLEANING APPARATUS

Siegfried Maier, Leinfelden-Echterdingen, Fed. Rep. of Germany, and Eckart Albrecht, Romanshorn, Switzerland, assignors to Düpro AG, Romanshorn, Switzerland

Filed Sep. 30, 1982, Ser. No. 431,605

Claims priority, application Fed. Rep. of Germany, Feb. 23, 1982, 3206464

Int. Cl.³ A47L *9/24*

U.S. Cl. 285—7 **11 Claims**

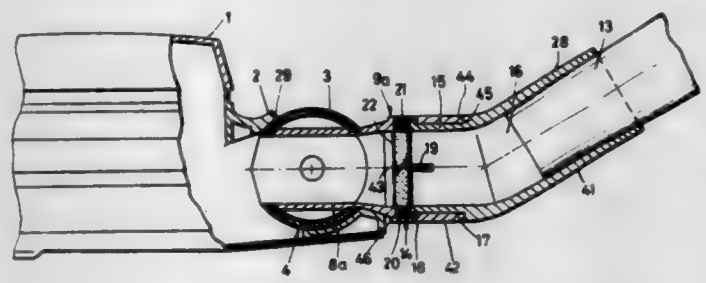
1. A cleaning apparatus for a vacuum cleaner which has a handle, said apparatus comprising:

an apparatus housing;

a joint pan connected to said housing;

a connecting piece detachably connected to said handle; and

a joint head connected to said connecting piece; said joint head and said joint pan forming a joint and delimiting a gap of movement; at least one of said joint head and said joint pan being detachably connected to its associated part, and being provided at least partially with a fiber packing which projects into said movement gap and is provided with closely packed fibers which are disposed



substantially at right angles on an associated support surface of said joint head or said joint pan.

4,537,425

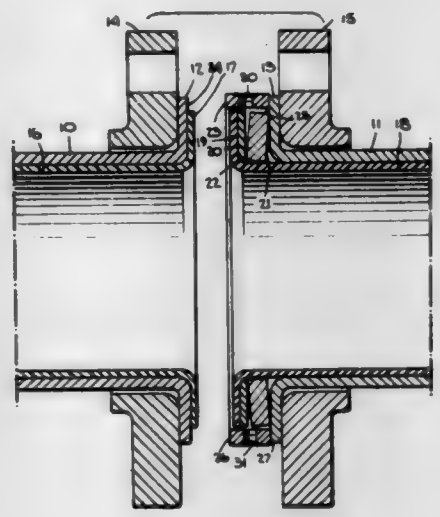
HIGH INTEGRITY FLANGE CONNECTION ARRANGEMENT

Irving D. Press, West Orange; Harvey R. Nickerson, Roseland, and Helm A. Rink, North Haledon, all of N.J., assignors to UMC Industries, Inc., Stamford, Conn.

Filed May 11, 1982, Ser. No. 377,187

Int. Cl.³ F16L *9/14*

U.S. Cl. 285—55 **26 Claims**



1. An arrangement for establishing a fluid-tight seal between the faces of an assembled piping system flange connection, said arrangement comprising a rigid metal load bearing ring sized to fit between said flange faces with an inside diameter larger than the diameter of the fluid passage through said piping system at said connection and with a predetermined axial length for engaging said flange faces upon assembly of said flange connection for establishing a cavity of predetermined size bounded by said flange faces, said inside diameter and said diameter of said fluid passage; and an assemblage of components comprising at least one subset consisting of a coned ring spring, a force distributing ring, and a radial flare from a tubular element of non-metallic material, said force distributing ring being located between and adjacent said radial flare and said coned ring spring, said assemblage being disposed within said load bearing ring for location within said cavity upon its establishment, the dimension in the axial direction and the configuration of said components of said assemblage being related to the axial direction dimensions of said load bearing ring such that when said assemblage and said load bearing ring are installed in said cavity in said flange connection along with a predetermined number, including zero, of other radial flares from tubular elements of non-metallic material associated with said flange connection, and with the radial flare of said subset in contact with a respective mating surface, in said subset said coned ring spring will be partially compressed for exerting a predetermined force through said adjacent force distributing

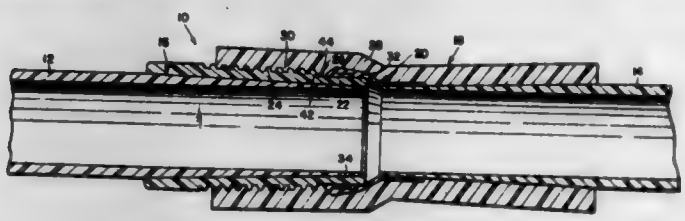
ring against said adjacent radial flare to urge said adjacent radial flare into fluid sealing engagement with said mating surface.

4,537,426

COUPLINGS FOR NON-FERROUS PIPE

J. Warne Carter, Sr., Wichita Falls, Tex., assignor to Ameron Inc., Monterey Park, Calif.

Filed Jun. 24, 1982, Ser. No. 391,826
Int. Cl.[3] A16L *17/02*
U.S. Cl. 285—110 7 Claims



1. A coupling for joining two sections of non-ferrous pipe, at least one of said sections having an end portion which is tapered inwardly toward its extremity, said coupling comprising

a female coupling element having a first end with a tapered inner wall portion complementary to said tapered end portion of said one pipe section for receiving the same and a second end with a threaded inner wall portion,

a male coupling element adapted to be secured about an end of the remaining pipe section, said male coupling element having an externally threaded portion for threadably engaging said threaded inner wall portion of said female coupling element and having a terminal portion with a cylindrical, non-tapered outer surface receivable within said female coupling element in advance of said externally threaded portion, and

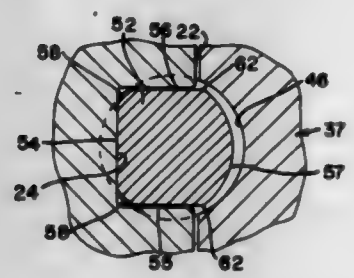
a tubular liner for effecting a fluid seal between said pipe sections when said coupling elements are threadably engaged, said liner having an internal circumferential web adjacent one end thereof for forming a lip seal against said outer surface of said male coupling element, said liner further having a tapered sleeve portion at an opposite end thereof for sealingly engaging, along its outer surface, said tapered inner wall portion of said female coupling element and for sealingly engaging, along its inner surface, said tapered end portion of said one pipe section.

4,537,427

CLIP FOR A FLUID COUPLING

Horise M. Cooke, Weatherford, Tex., assignor to Stratoflex, Inc., Fort Worth, Tex.

Continuation-in-part of Ser. No. 294,846, Aug. 21, 1981, abandoned. This application Oct. 15, 1981, Ser. No. 311,533
Int. Cl.[3] F16L *37/14*
U.S. Cl. 285—305 11 Claims



1. In a coupling including a tubular nipple part and a tubular adapter sleeve part, said parts having an axially extending flow passage formed therethrough, and said sleeve part being positioned around a portion of said nipple part when said parts are in fully assembled relation, said nipple part having an annular groove formed in the outer periphery thereof and said sleeve part having two bores formed therethrough, said bores being generally radially aligned with said groove and extending generally tangentially of said groove when said parts are assembled, said groove being generally rectangular in radial cross section and including two spaced radial side walls and an axially extending bottom wall connecting said radial side walls, and said bores being generally circular in cross section and overlying said groove when said parts are assembled, the improvement of a U-shaped clip comprising a pair of generally parallel legs and a curved center part that connects said legs, said legs thereof being positioned in said bores and groove for holding said parts in assembled relation, each of said legs having two radial sides and a bottom side interconnecting said radial sides, said sides of said legs being substantially parallel to said walls of said groove, the radial distance between said bottom sides of said legs being substantially equal to the diameter of said bottom wall whereby said bottom sides substantially engage said bottom wall, said radial sides of said legs being engageable with said radial side walls of said groove, each of said legs further having an arcuate outer side that connects said radial sides and is opposite from said bottom side, said arcuate outer side connecting with said radial sides closely adjacent said radial sides of said groove, said outer side having substantially the same radius as said bores and the radially outermost part of said arcuate outer side being spaced from the wall of said bore to form a clearance between said outermost part and said wall, portions of said radial sides of said legs being adapted to engage said radial side walls of said groove and said sleeve part being adapted to engage a surface of said arcuate outer side closely adjacent to the juncture of said arcuate outer side with a radial side and thereby reduce twisting of each arm, and said arcuate outer side extends radially outwardly from said surface of engagement of said sleeve part with said legs.

4,537,428

JOINT AND JOINT COMPONENTS FOR PIPE SECTIONS SUBJECTED TO AXIAL COMPRESSION LOADS

L. Steven Landriault, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Continuation of Ser. No. 192,436, Sep. 29, 1980, abandoned. This application May 19, 1982, Ser. No. 379,814
Int. Cl.[3] F16L *25/00*
U.S. Cl. 285—333 9 Claims



1. Joint for axially compressive loaded pipe sections, comprising:

(a) a pair of pipe sections arranged end-to-end, the adjacent ends of the sections being threaded, said threads of the pipe sections being formed in two groups, the threads in one group being spaced radially and axially from the threads in other group, said threads including cylindrical, non-interference threads;

(b) a coupling member for connecting the threaded adjacent ends of the pipe sections, the coupling member including threads on each of its ends interengaged with the threads on the adjacent ends of the pipe sections, the threads on each end of the coupling member being formed in two groups, the threads in one group being spaced radially and

axially from the threads of the other group, said threads including cylindrical non-interference threads;

(c) an abutment member located between the outer ends of the pipe sections, the abutment member being shaped so that the ends of the pipe sections abut against opposite sides of the abutment member;

(d) each pipe section including a shoulder formed integral with and extending circumferentially around the section between the groups of threads, the shoulder including an angled surface which faces the angled surface on the other pipe section and is oriented at an angle substantially the same as the surface on the other pipe section, each surface terminating at a circumferential edge which is closer to the edge on the other surface than is any other portion of its respective surface;

(e) the coupling member including angled surfaces between each of said groups of threads which approach being complementary to and engaging the surfaces on the pipe sections when the joint is formed and a compressive load is applied wherein a gap is formed at either the inner or outer ends of the unequal angled surfaces on the coupling member and the pipe section when the surfaces are initially brought together and before the compressive load is applied; and

(f) whereby the angled surfaces between the thread groups of the pipe section and the coupling member enhance the load bearing surface area of the pipe sections so that when they are subjected to an axial compressive load, deformation of the sections is retarded so that the section can be loaded with greater stability near the upper rating of the section, and whereby providing the surfaces to have unequal angles which approach being complementary on full compressive loading of the joint enhances the pressure integrity of the joint because of the unequal load distribution across the surfaces.

4,537,429

TUBULAR CONNECTION WITH CYLINDRICAL AND TAPERED STEPPED THREADS

L. Steven Landriault, Houston, Tex., assignor to Hydril Company, Los Angeles, Calif.

Filed Apr. 26, 1983, Ser. No. 488,633

Int. Cl.³ F16L *25/00*

U.S. Cl. 285—334 **12 Claims**



1. A tubular connection of pin and box members defining an axis comprising,

first and second pairs of interengaged threads on the respective members, the first pair of threads being axially spaced from the second pair of threads, the first pair of threads provided on a taper angle with respect to the axis, the second pair of threads being cylindrical threads, the first pair of threads being radially stepped with respect to the second pair of threads,

a first pair of engaged sealing surfaces on the pin and box members disposed adjacent the end of the pin member,

a second pair of engaged sealing surfaces on the pin and box members disposed axially between the first and second pairs of threads, said second pair of sealing surfaces provided at a steeper angle than the taper angle of the first pair of the threads,

engaged reverse angle torque shoulders, the torque shoulder on the pin member disposed on the end of the pin member, the torque shoulder on the box member disposed on the interior end of the box member, and

wherein said threads are hooked threads having negative angle load flanks.

4,537,430

DUCT JOINING SYSTEM

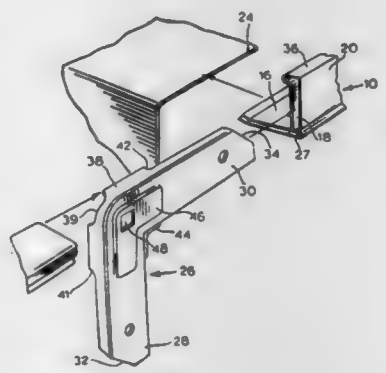
Michael T. Sullivan, Mount Hope, Canada, assignor to Exanno Products Limited, Hamilton, Canada

Division of Ser. No. 299,280, Sep. 4, 1981, Pat. No. 4,447,079, which is a division of Ser. No. 81,501, Oct. 3, 1979, Pat. No. 4,288,115. This application Feb. 14, 1984, Ser. No. 590,656

The portion of the term of this patent subsequent to Sep. 8, 1998, has been disclaimed.

Int. Cl.³ F16L *23/00*

U.S. Cl. 285—364 **10 Claims**



1. A duct jointing system, comprising:

a plurality of elongate flange members;

each flange member having a longitudinal channel portion defining a longitudinal opening for receiving therein one end of a respective wall of a section of a sheet metal duct and a longitudinal hollow portion upstanding from said channel portion, each hollow portion providing a respective outer side face for engagement by sealing means for sealing the joint between abutting flange members and having end openings at opposite ends thereof;

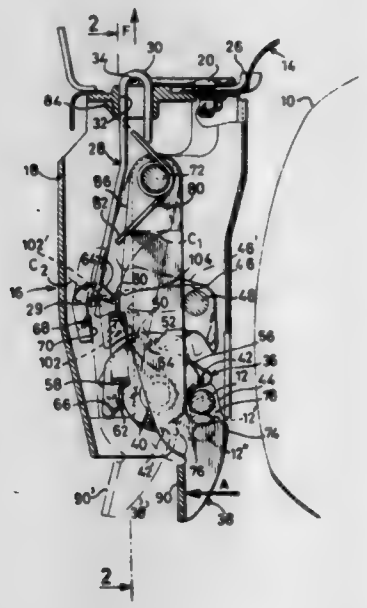
each flange member channel portion having a hollow protuberance extending longitudinally of the respective flange member and protruding beyond the said outer side face, the protuberances of immediately adjacent flange members permitting the respective immediately adjacent sheet metal duct wall ends to extend closer together to facilitate the sealing between the duct sections at the corners; and

generally L-shaped corner connecting pieces for linking said flange members together in mutually angularly disposed relationship to form a frame, each corner connecting piece comprising a pair of limbs for engagement in respective ones of said flange member end openings and a common junction portion from which said limbs extend.

4,537,431
LOCKING DEVICE, PARTICULARLY FOR A SPARE WHEEL CRADLE

Calin Philippe, Pontchartrain, France, assignor to Regie Nationale des Usines Renault, Boulogne-Billancourt, France

Filed May 6, 1983, Ser. No. 492,383
Claims priority, application France, May 6, 1982, 82-07860
Int. Cl.[3] E05C *3/26*
U.S. Cl. 292—216 6 Claims

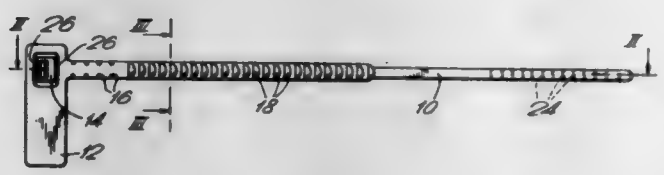


1. A locking device, particularly for a cradle mounted to pivot under the floor of a vehicle, comprising:
control means for releasing the cradle from inside the vehicle; and
a locking device connected to said control means and which further comprises a housing mounted under said floor of the vehicle, a retaining hook for retaining said cradle, and a safety hook positioned in said housing, said cradle being automatically locked by said safety hook upon said cradle being placed under said floor, wherein said locking mechanism further comprises means for retaining said safety hook in a retracted position and wherein release of said means for retaining said safety hook is controlled by automatic locking of said cradle by said retaining hook wherein said means for retaining said safety hook further comprises retractable stop means operatively associated with said safety hook so as to be automatically retracted when said safety hook is positioned in said retracted position, retraction of said retractable stop means being controlled automatically by the locking of said cradle by said retaining hook.

4,537,432
SECURITY SEALS

Alan M. G. Meeks, Chineham, England, assignor to ITW Limited, Windsor, England

Filed Sep. 27, 1982, Ser. No. 423,754
Claims priority, application United Kingdom, Sep. 30, 1981, 8129525; Feb. 18, 1982, 8204824
Int. Cl.[3] B65D *33/34*
U.S. Cl. 292—318 8 Claims



1. A one-piece plastic security seal comprising a housing having a passageway therein, a tab extending generally transversely to the housing, and a flexible strap extending generally transversely to the housing, with the strap being connected to the tab and the tab being frangibly connected to the housing by at least a first and a second lines of reduced thickness, said tab including a single aperture with said housing bridging just a central part of said aperture to leave a pair of spaced-apart end openings on opposite sides of said housing, at least said first of said lines of reduced thickness extending directly between said pair of spaced-apart end openings on the side of said housing opposite sand strap.

4,537,433
AUXILIARY HANDLE FOR A SHOVEL

Sung H. Yang, 2764 Woodland Dr., Northbrook, Ill. 60062

Filed Feb. 27, 1984, Ser. No. 584,111
Int. Cl.[3] B25G *3/38*
U.S. Cl. 294—58 3 Claims



1. A shovel assembly having an auxiliary handle comprising
an elongated main handle having a blade at one end and a hand grip at its opposite end;
an auxiliary handle means being affixed to said main handle;
said auxiliary handle means having a mounting member for affixing said auxiliary handle means to said main handle;
said auxiliary handle means further having a pair of integrally connected handle members, pivotally attached to said mounting member and extending in crossing relationship to said main handle;
said handle members being pivotally mounted about a pivot axis lying beneath the longitudinal axis of said main handle during use;
said pair of handle members are interconnected adjacent one end portion by an upper grip; and
said pair of handle members are further interconnected by an intermediate grip member, said intermediate grip member further acting as a stop for said pair of handle members and as a striker member to jar material from said blade.

4,537,434
ADJUSTABLE SELF-RELEASING HOOK

William B. Piercy, Alameda, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed May 2, 1984, Ser. No. 606,011
Int. Cl.[3] B66C *1/38*
U.S. Cl. 294—82.31 10 Claims

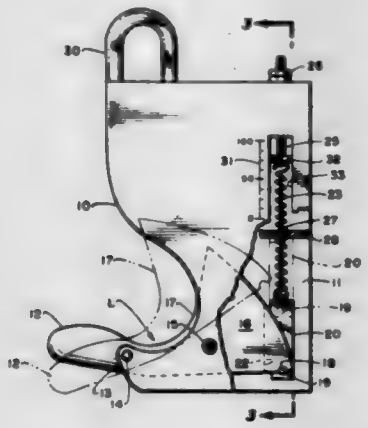
1. A load-carrying adjustable self-releasing hook assembly, comprising:
a. a main body structure having a fixed lower hook-shaped portion and a means for attaching the assembly to a lifting cable; said lower hook-shaped portion having a nose section and a crotch section;
b. a main hook member having a body portion and a nose portion defining together a hook crotch for the reception of load rigging and slings;
c. said main hook member being mounted to pivotally rotate between the nose portion and the hook crotch at a point toward the end of the nose section of said main body structure such that the nose portion of said main hook member and the nose section of said main body structure

are aligned in the same direction with the crotch section of the main body structure and the hook crotch of the main hook member being substantially in alignment rearward of the main hook member pivot point when the adjustable self-releasing hook assembly is in a load holding position;

d. means for securely locking said main hook member in the load holding position in alignment with the hook-shaped portion of said main body structure while a load is readied to be moved; said main hook member operable to be unlocked prior to moving a load to allow the main hook member to be pivoted when relieved of load weight;

e. an eject mechanism means mounted within said main body structure;

f. the body portion of said main hook member engaging said eject mechanism means when the body portion is pivoted



toward the load holding position that places the hook crotch in substantial alignment with the crotch section of the main body structure;

g. said eject mechanism means being operable to be adjusted to compensate for various load rigging weights to provide a force sufficient to eject the load rigging from the hook assembly when a load is lowered into place and only the weight of the load rigging remains carried by the hook assembly; said eject mechanism means operating to cause the body portion of said main hook member to pivot upward carrying the weight of residual load rigging while lowering the nose portion thereof thereby ejecting the load rigging; and

h. said main hook member being shaped to prevent entanglement of cables and lines when the main hook member releases and ejects the load rigging.

4,537,435

DOWNHOLE RETRIEVAL TOOL

Herman C. Carver, 1105A Sequoia, Bakersfield, Calif. 93308

Filed Mar. 27, 1984, Ser. No. 593,942
Int. Cl.³ E21B *31/12*
U.S. Cl. 294—86.1 **7 Claims**

1. A retrieval tool for retrieving wires lost downhole, said tool comprising:

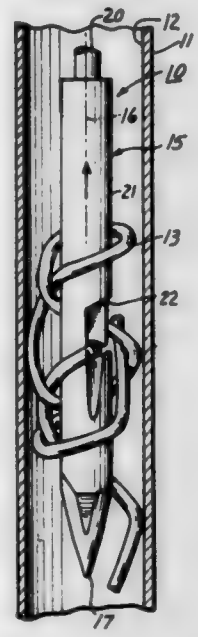
an elongated body having an axis, a smooth axially extending peripheral wall, and a notch in said wall having dimensions adequate to receive the cross-section of a wire to be retrieved, said notch being bounded by a wall at its downhole edge;

a latch member axially slidably fitted in said body, which latch member is adapted to be moved toward and away from said wall, and having a trap face which faces toward said wall;

latch bias means exerting bias force on said latch member tending to move it toward said wall;

a trip member axially slidably fitted in said body, said trip member being adapted to move into and out of said notch and having a trip face facing away from said wall; and

a catch member interposed between said body and said latch member adapted to hold said latch member away from said wall until said catch member is enabled to be moved



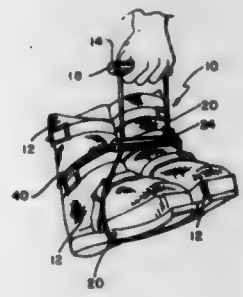
by said trip member to enable the latch member to be moved toward said wall by its said bias means.

4,537,436

BOOT CARRIER

Donald D. Pfortmiller, 806 N. Crestway, Wichita, Kans. 67208

Filed Mar. 19, 1984, Ser. No. 591,062
Int. Cl.³ B65D *63/18*
U.S. Cl. 294—150 **5 Claims**



1. A boot carrier for carrying ski boots or the like, comprising:

a handle means including a pair of opposed ends;

a rope means having two rope ends that are secured to the handle means such as to define a closed loop;

a generally hollow conduit spacer means including a pair of opposed open ends and a structure defining two pairs of spacer apertures, each spacer aperture within each pair of spacer aperture being diametrical with respect to each other, said rope means slidably passing through the two pairs of spacer apertures;

elastic cord means having a pair of cord ends and adapted for being positioned around the tops of said boots; and

means secured to said cord ends and to said spacer means such that tension on said elastic cord means causes friction where the rope means passes through the two pairs of spacer apertures in order to cause a tightening effect on the rope means.

4,537,437

NOZZLE POSITIONER FOR AUTOMATIC FUEL TANK

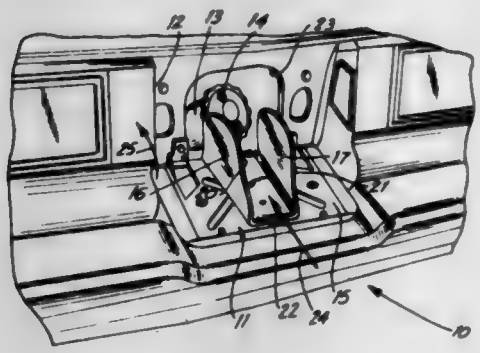
Anthony A. Buccola, 5550 Fieldston Rd., Bronx, N.Y. 10470

Filed Oct. 31, 1983, Ser. No. 547,106
Int. Cl.³ B60R *27/00*
U.S. Cl. 296—1 C **8 Claims**

1. An access port with a hose nozzle holder for a liquid filler pipe of a vehicle comprising:

a cover assembly disposed in a body of the vehicle at the site of the pipe, there being an aperture in said body providing access to said pipe, and wherein said cover assembly includes a cover pivotally mounted about an axis of pivot to said body for pivoting between an open position wherein said pipe is exposed and a closed position wherein said pipe is covered; and

a nozzle holder for aligning a nozzle with the pipe, said nozzle holder comprising a flange assembly secured to



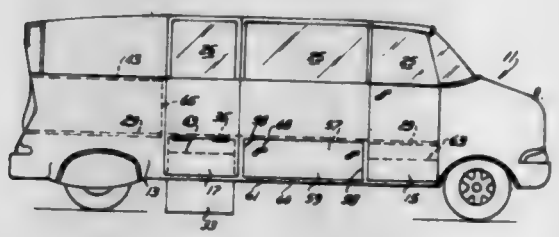
said cover and having a pair of flanges upstanding from said cover for releasable engagement with the nozzle when said cover is in the open position, said flanges being oriented generally perpendicularly to said pivot axis and being spaced apart a sufficient distance from each other to pass via said aperture alongside said pipe when said cover is in the closed position, thereby providing for a stowage of the nozzle holder when said cover is pivoted to the closed position.

4,537,438

LIMOUSINE HEARSE

Warren Reasor, 15708 Heyden, Detroit, Mich. 48223, and Mary L. Singleton, 10325 E. Outer Dr., Detroit, Mich. 48224

Filed Mar. 8, 1985, Ser. No. 709,485
Int. Cl.³ B60P *3/26*
U.S. Cl. 296—17 **5 Claims**



1. In a limousine hearse having an elongated body, front and rear ends, a roof and a pair of doors;

the improvement comprising a unit floor extending substantially the length of said body in a horizontal plane to said rear end;

a first partition upon said floor extending transversely of its length intermediate its ends and more closely adjacent said rear end;

said first partition defining an elongated passenger compartment forwardly of said partition adapted to receive a plurality of seats upon opposite sides thereof;

said first partition and floor defining a storage compartment rearwardly thereof extending to the rear of said body;

an upright second partition upon said floor within said storage compartment intermediate the sides of said body extending at right angles to said first partition defining upon one side thereof an axially elongated storage chamber adapted to receive and enclose a casket lengthwise thereof;

and upon its other side a second axially elongated storage chamber adapted to receive and enclose flowers or a second casket;

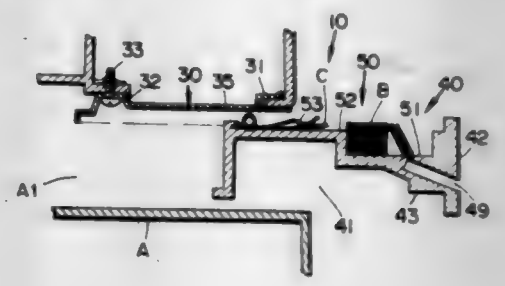
and a substantially upright closure lid hinged upon the rear end of said body normally closing off said storage chambers.

4,537,439

ASH TRAY ASSEMBLY OF VEHICLE

Syuichi Otani, Zama, Japan, assignor to Nissan Motor Co., Ltd., Japan

Filed May 10, 1984, Ser. No. 608,909
Claims priority, application Japan, Jun. 2, 1983, 58-98607
Int. Cl.³ B60N *3/08*
U.S. Cl. 296—37.9 **10 Claims**



1. An ash tray assembly of a vehicle, comprising:

an ash tray of a drawer type, formed with an ash receiving cavity on a first side thereof and having a first position in which said ash receiving cavity opens upward to function to receive ash therein;

an installation section in which said ash tray is slidably movably supported in said first position, said installation section being formed in a vehicle body;

means defining an article storing section on a reverse side of said ash tray which side is opposite the first side; and

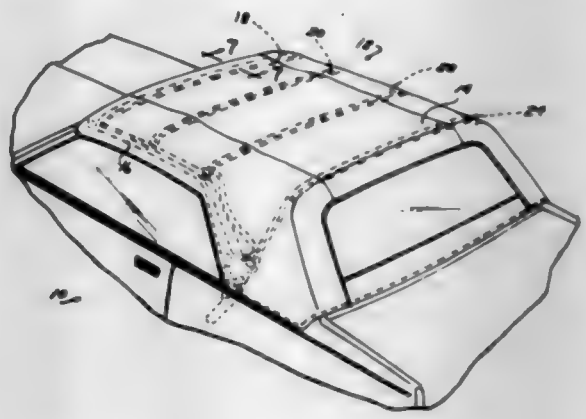
means for supporting said ash tray on said installation section in an inverted position in which said ash receiving cavity opens downward to disable said ash receiving cavity from receiving the ash while enabling said article storing section to store articles.

4,537,440

VEHICLE WITH A CONVERTIBLE TOP

Patrick H. Brockway, Taylor; Howard C. Lehr, Monroe, and Richard D. George, Trenton, all of Mich., assignors to ASC Incorporated, Southgate, Mich.

Filed Apr. 29, 1983, Ser. No. 489,819
Int. Cl.³ B60J *7/18*
U.S. Cl. 296—108 **2 Claims**



1. In a vehicle having a windshield supported between side body pillars and having a folding top comprised of a plurality of articulatable side members and interconnecting cross bows movable between raised and lowered positions, the improvement comprising:

means, carried by the folding top, for releasably latching the forward edge of the folding top to the vehicle when the top is in the raised position;

the latch means including a pivotal hook member movable

between a first latching position and a second unlatching position; and

an aperture formed in the upper portion of the side body pillar, the hook member being inserted through the aperture to engage the side body pillar when the hook member is in the first latching position to latch the folding top to the vehicle.

4,537,441

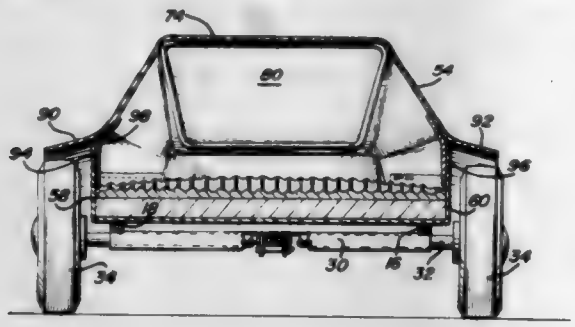
CAMPER-TRAILER

Donald J. McCleary, 733 E. McKinney, Neosho, Mo. 64850

Filed Jun. 15, 1983, Ser. No. 504,867

Int. Cl.[3] B62D *63/06, 29/04*

U.S. Cl. 296—181 **12 Claims**



1. A trailer including a main frame having front and rear end portions, said front end portion including a forwardly projecting towing tongue means, said rear end portion including opposite side ground engageable support wheels, a body assembly for said main frame, said body assembly including an upwardly opening tray-type lower half defining a generally horizontal bottom wall and at least substantially peripherally continuous upwardly projecting peripheral walls each lying in a substantially vertical plane and extending about and supported from the outer periphery of said bottom wall, said body assembly also including a downwardly opening upper half defining a top wall and at least substantially peripherally continuous downwardly projecting skirt walls extending about said upper half, said upper half being downwardly telescoped over the lower half with at least the lower marginal portions of said skirt walls lapped over and sealed relative to at least the upper marginal portions of the lower half peripheral walls, opposite side portions of said skirt walls including front and rear ends, said side portions each, intermediate said front and rear ends, being vertically abbreviated and terminating downwardly in outwardly flaring and vertically arched downwardly opening integral fenders projecting laterally outwardly of the remainder of said side portions, opposite side portions of said lower half peripheral walls including portions corresponding to said vertically abbreviated skirt wall portions including upwardly arched extensions where upper edges abuttingly engage and are sealed to the underside portions of the inner portions of said fenders, said upwardly arched extensions defining inner fender well walls, said wheels including upper peripheral portions over which said fenders extend and spaced at least slightly outwardly of said inner fender well walls.

4,537,442

SLIDING AND TILTING ROOF FOR MOTOR VEHICLES

Hans Jardin, Inning, Fed. Rep. of Germany, assignor to Webasto-Werk W. Baier GmbH & Co., Fed. Rep. of Germany

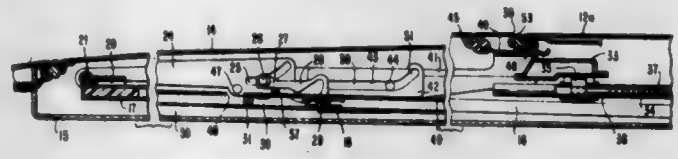
Filed Apr. 8, 1983, Ser. No. 483,176

Claims priority, application Fed. Rep. of Germany, May 14, 1982, 3218209

Int. Cl.[3] B60J *7/04*

U.S. Cl. 296—221 **26 Claims**

26. In a sliding and tilting roof of the type having a rigid cover which, in a closed position, closes a roof opening, the cover being slidably displaceable from said closed position on guide elements that are pivotally connected thereto and displaceably received in lengthwise guides on opposite lengthwise sides of the roof opening, and being tiltably raisable relative to a fixed roof area about a pivot axis defined by said guide elements, and having a gutter for collecting water entering through said roof opening between the cover and fixed roof area, the improvement for conforming the outside contour of the cover, in a direction transverse to the displacement direc-



tion of said cover, to the corresponding contour of the fixed roof area, when said cover is in said closed position, comprising means for producing relative movement between the cover and the gutter in a manner causing an interengagement between the gutter and the underside of the cover that adjusts the transverse contour of said cover.

4,537,443

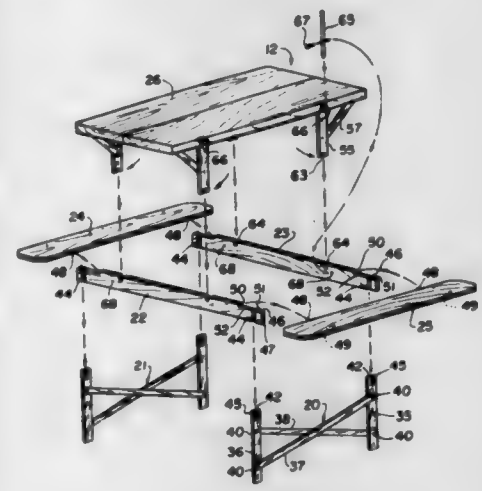
PORTABLE OCCASIONAL TABLE AND SEATING

Gilbert Bray, 6180 N.W. 7th St., Margate, Fla. 33063

Filed Oct. 7, 1983, Ser. No. 539,969

Int. Cl.[3] A47B *3/06*

U.S. Cl. 297—159 **9 Claims**



1. A portable table and seating comprising

a pair of parallel spaced support beams,

a pair of bench seats each being removably attached to opposite ends of said support beams,

a pair of braced leg assemblies each being removably attached to opposite ends of said support beams,

a table top and means attached to said table top for removably connecting said table top to said support beams, and

means for cross bracing each of said pairs of leg assemblies and for folding the legs of each of said pairs of leg assemblies into a substantially collinear position.

4,537,444

OCCUPANT'S SIDE HOLDING DEVICE FOR THE SEAT BACK OF A SEAT

Katsuaki Maruyama; Yaichi Oishi, both of Toyota; Norio Noda, Okazaki; Takami Terada, and Motoi Hyodo, both of Toyota, all of Japan, assignors to Toyota Jidosha Kogyo Kabushiki Kaisha and Aisin Seiki Kabushiki Kaisha, both of Aichi, Japan

Filed Jun. 24, 1982, Ser. No. 391,712

Claims priority, application Japan, Jun. 25, 1981, 56-94162[U]

Int. Cl.[3] A47C *7/46*

U.S. Cl. 297—284 **6 Claims**

1. An occupant's side holding device for a seat back of a seat in which occupant's body side holders are rockable in a lateral direction of the seat back at both a right side and a left side of

the seat back, said device comprising: a frame on each one of said occupant's side holders;

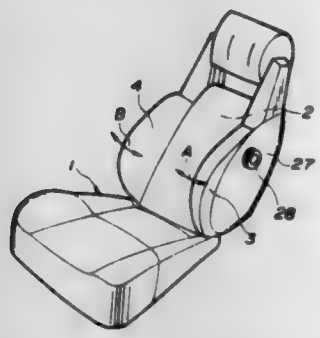
vertical operating shafts rotatable around their own axes at both a right side and a left side of a seat back frame;

a rockable arm secured to one of said operating shafts;

a nut pivotally secured to said rockable arm;

a threaded shaft rotatably journaled to the seat back frame and extending toward the lateral inside of the seat back;

the threaded part of said threaded shaft being engaged with the threaded hole of said nut;



said rockable arm and said operating shafts being integrally formed and being rocked in the lateral direction of said seat back upon rotation of said threaded shaft;

an interlocking member arranged between said operating shafts for rotating the other operating shaft symmetrically with respect to said one operating shaft;

fitting members integrally secured to said operating shafts for securing both said operating shafts to suitable positions on the frames of said occupant's side holders; and

a handle provided at an outside end of said threaded shaft.

4,537,445

CHAIR

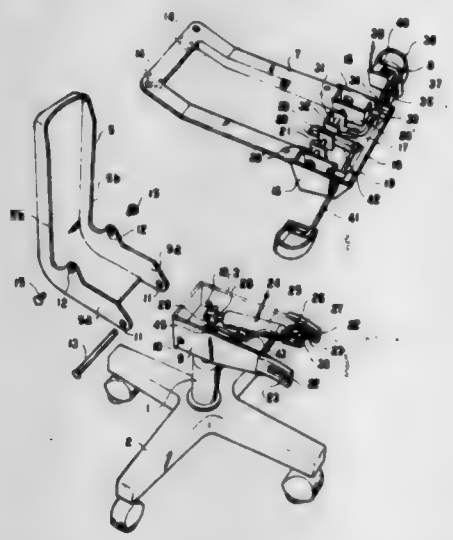
Uredat Neuhoff, Lindern, Fed. Rep. of Germany, assignor to Meiko Industrial Co., Ltd., Aichi, Japan

Filed Jul. 12, 1983, Ser. No. 513,062

Claims priority, application Japan, May 10, 1983, 58-82101

Int. Cl.³ A47C *3/00*

U.S. Cl. 297—300 **2 Claims**



1. A chair adapted for inclination adjustment comprising:

(a) leg members and a pole brace mounted on said leg members,

(b) a box-like stationary frame member mounted on said pole brace, the front portion of said stationary frame member containing a pair of opposed generally horizontally extending slots,

(c) a base frame member for mounting a seat plate thereon;

(d) an L-shaped back rest frame member including a horizontal portion, a curved portion and a vertical portion, the free end of said horizontal portion being pivotally fixed to the rear portion of said stationary frame member, said curved portion being axially fixed to the rear portion of said base frame member,

(e) a horizontal shaft member supported on the front portion of said base frame member, the respective opposed ends of said shaft member extending through the slots contained in said stationary frame member,

(f) a gas spring pivotally fixed at one end to an inner wall of said stationary frame member and pivotally fixed at the other end of said horizontal shaft and including a push valve for actuating said gas spring, and

(g) an operation lever for actuating said push valve to operate said gas spring to thereby adjust the inclination of said back rest frame member and said base frame member.

4,537,446

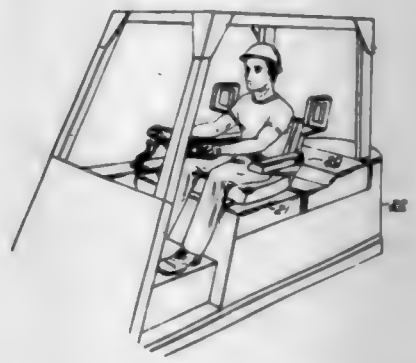
SAFETY SEAT

Thomas W. Roney, and Maynard L. Adams, both of Battle Creek, Mich., assignors to Clark Equipment Company, Buchanan, Mich.

Filed Aug. 4, 1983, Ser. No. 520,140

Int. Cl.³ A62B *35/00*

U.S. Cl. 297—464 **18 Claims**



1. A safety seat assembly for use with industrial vehicles comprising upper and lower restraint means for keeping the body of the operator within the confines of the vehicle cab area, said assembly including a seat member and a back support member mounted generally perpendicular to the seat member, said upper restraint means including a right supporting arm extending laterally and forwardly from said back support member and having a first guard neans disposed on the outer end thereof and a left support arm extending laterally and forwardly from said back support member and having a second guard means disposed on the outer end thereof, said lower restraint means including a safety belt and one arm rest having one end of said safety belt connected thereto and another arm rest pivotable laterally outwardly from said seat member on a substantially horizontal plane and having a plurality of fastening means for receiving and releasably holding the other end of said safety belt.

4,537,447

DEVICE FOR COOLING THE BITS OF CUTTING MACHINE

Alfred Zitz; Otto Schetina, and Herwig Wrulich, all of Zeltweg, Austria, assignors to Voest-Alpine Aktiengesellschaft, Vienna, Austria

Filed May 27, 1982, Ser. No. 382,650

Claims priority, application Austria, Jun. 4, 1981, 2519/81

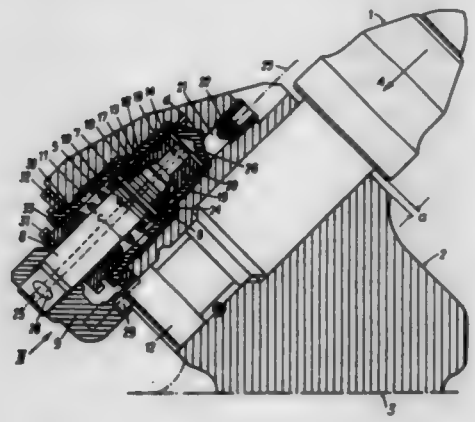
The portion of the term of this patent subsequent to Mar. 26, 2002, has been disclaimed.

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—1 **4 Claims**

1. A device for cooling the bits of a cutting machine comprising a nozzle, arranged adjacent the bit, for the cooling water to be ejected under pressure and to which nozzle the water supply can be interrupted by means of a shutoff valve assembly which includes a valve member movable within a

valve housing, the bit being supported on a bit holder for limited axial shifting movement under the action of the cutting pressure against a restoring force provided by the force of a spring and the water pressure and the shutoff valve assembly being coupled with the bit by a coupling member such that the shutoff valve opens on a shifting movement of the bit in direc-



tion of the cutting pressure, the device being characterized in that the restoring force loading the bit in opposite direction to the cutting pressure is rated such that this restoring force is at least 3000 N and is only overcome with a uniaxial cubic compression strength of the rock to be cut of at least 20 N/mm^2, the spring being supported against an adjustable abutment so that restoring force can be adjusted.

4,537,448

EXCAVATING HEAD WITH PICK-CONTROLLED WATER SUPPLY

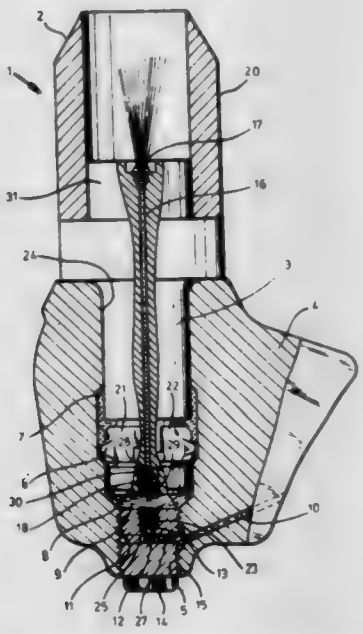
Klaus Ketterer, Krefeld, Fed. Rep. of Germany, assignor to Voest Alpine AG, Linz, Austria

Filed Nov. 10, 1983, Ser. No. 550,939

Claims priority, application Fed. Rep. of Germany, Nov. 13, 1982, 3242137

Int. Cl.³ E21C *35/22*

U.S. Cl. 299—81 **10 Claims**



1. A rotary excavating head carrying tool holders in which picks with cutting tips are positioned for intermittent engagement with a formation of mineral matter to be fragmented, each of said picks having a shank received with limited linear mobility in a socket of the respective tool holder, said shank being separated from the bottom of said socket by a space of variable volume having an inlet port communicating with a source of water under supply pressure urging said shank linearly outward, said space further having an outlet port opening via a restricted passage onto a nozzle disposed in the vicinity of the respective cutting tip, said inlet port being provided with blocking means preventing a return of water from said space to said source whereby the water trapped in said space is ejected under increased pressure through said nozzle upon linear inward repression of said shank by contact of the respective cutting tip with said mineral matter.

4,537,449

VEHICLE WHEEL ATTACHING DEVICE

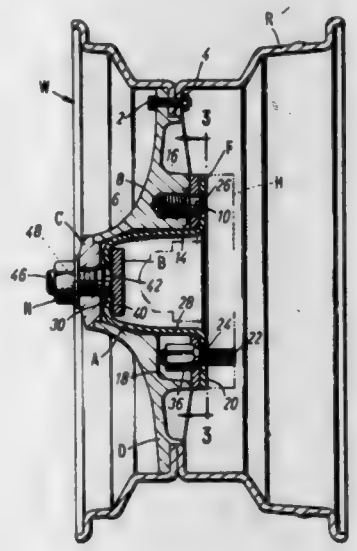
Masakazu Hayashi, Higashi-Osaka, Japan, assignor to Kabushiki Kaisha Hayashi Racing, Osaka, Japan

Filed Apr. 7, 1983, Ser. No. 482,978

Claims priority, application Japan, Dec. 24, 1982, 57-228537

Int. Cl.³ B60B *3/16, 3/14, 3/00*

U.S. Cl. 301—9 CN **5 Claims**



1. A vehicle wheel attaching device for removably attaching wheels to the hubs of a vehicle, comprising

an adapter attachable to a hub of the vehicle, said adapter being formed generally in the shape of a top hat having a cylindrical barrel portion with a top cap and an outwardly radially extending flaring flange at top and base ends thereof, respectively, said top cap being provided with an axially inclined inwardly projecting conical dish spring surface with a central axial bolt-receiving hole therethrough, said flange being provided with a plurality of radially symmetrical stud bolt-receiving holes and a plurality of radially symmetrical torque pin clearance holes therethrough;

an annular fitting plate substantially corresponding in diameter to said flange and having a central hole accommodating said cylindrical barrel portion of said adapter, said fitting plate being provided with a plurality of radially symmetrical conical taper nut-receiving holes and a plurality of radially symmetrical torque pin-receiving holes, said plurality of taper nut-receiving and torque pin receiving holes of said fitting plate corresponding in number and location with said plurality of stud bolt-receiving and torque pin clearance holes, respectively, of said adapter so as to be alignable therewith; and

a center bolt provided with a threaded portion, and a head having an axially inclined contact surface having an angle of inclination less than the angle of inclination of said top cap of said adapter and a diameter greater than the diameter of said central axial bolt-receiving hole of said adapter;

wherein said adapter may be mounted to a hub of the vehicle with said stud bolt-receiving holes of the adapter engaged over corresponding stud bolts of the hub and with said threaded portion of said center bolt protruding outwardly through said central axial bolt-receiving hole of the adapter such that said contact surface of said center bolt contacts an inner surface of said top cap; said fitting plate may then be mounted to the hub over said adapter with said taper nutreceiving holes engaged over corresponding stud bolts of the hub such that said fitting plate and said

adapter may be clamped to the hub with taper nuts applied to the stud bolts of the hub and engaging said taper nut-receiving holes of said fitting plate; and a wheel may be then mounted onto the hub by placing the wheel onto said barrel portion of said adapter and said fitting plate, a plurality of torque pins carried by the wheel aligning with corresponding said torque pin clearance holes of said adapter and being received by corresponding said torque pin-receiving holes of said fitting plate, a center hole of the wheel being fitted onto said threaded portion of said center bolt;

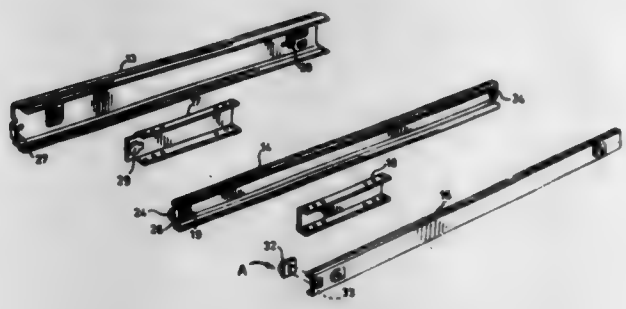
whereby the wheel may be then removably attached to the hub by applying a center nut to said center bolt such that tightening of said center nut on said center bolt causes said head portion of said center bolt to cause elastic deformation of said top cap of said adapter so as to maintain the wheel in a non-rigid fixed stabilized condition on said adapter, torque being transmitted from the hub successively through said stud bolts, said taper nuts, and said fitting plate to the torque pins carried by the wheel.

4,537,450

THREE PART SLIDE

Alan R. Baxter, Hamilton, Canada, assignor to Jacmorr Manufacturing Limited, Kitchener, Canada

Division of Ser. No. 229,980, Jan. 30, 1981, abandoned. This application May 16, 1983, Ser. No. 494,622
Claims priority, application Canada, Nov. 7, 1979, 339355
Int. Cl.³ F16C *29/04*
U.S. Cl. 308—3.8 **12 Claims**



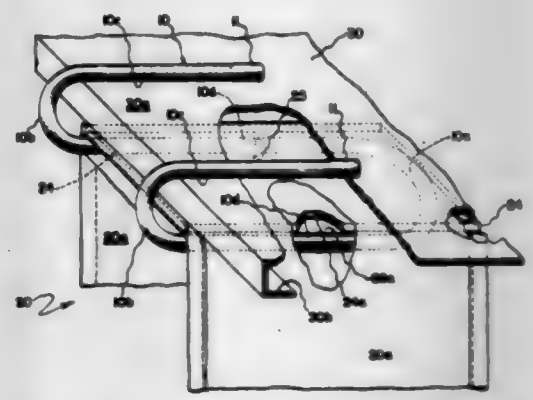
1. A three-part drawer slide comprising outer, intermediate, and inner rails, outer and inner bearings between the outer and intermediate rails and between the intermediate and inner rails, respectively, for reduced friction sliding movement of the outer rail relative to the intermediate rail and of the intermediate rail relative to the inner rail, each of said bearings comprising rolling members held in a bearing cage stop means defining a retracted condition of said rails relative to one another and an extended position of said rails relative to one another, said stop means including a stop member on one end of the intermediate rail for engaging a rear face of the outer bearing cage and a stop member on one end of the outer rail for engaging a front face of the outer bearing cage in the extended position of the intermediate rail relative to the outer rail, and said stop means further permitting the inner rail to move freely from its extended position relative to intermediate rail to is retracted position relative to the intermediate rail, first latching means for releasably latching the intermediate and inner rails together stationary relative to one another in a retracted condition of the latter relative to the former, and second latching means releasably latching the intermediate and outer rails together stationary relative to one another in said extended position of the intermediate rail relative to the outer rail having said outer bearing cage rear and front faces engaged between said stop members on the intermediate and outer rails, and said second latching means comprising a resilient latching member disengagable by applying hand pressure to the intermediate rail to retract it relative to the outer rail, and release means responsive to movement of the intermediate rail relative to the outer rail and operative to release the first latching means when the intermediate rail reaches its extended position relative to the outer rail.

4,537,451

HANGING LOCKER SHELVES

Theodore Bredderman; Virginia Bredderman; Kathryn Bredderman, and David Bredderman, all of #3 Sunset Dr., Delmar, N.Y. 12054

Filed Apr. 13, 1983, Ser. No. 469,998
Int. Cl.³ A47B *61/00*
U.S. Cl. 312—6 **1 Claim**



1. A supporting device for suspending a shelf assembly from a horizontal locker shelf, said device comprising:

a rigid support member having upper parallel horizontally spaced arms for making direct weighted contact along their entire respective bottom surfaces with the upper horizontal surface of said locker shelf,

said parallel arms respectively curving vertically downward into two lower parallel and horizontally spaced arms joined by a horizontally curved central portion, which central portion is designed to fit tautly into the uppermost pocket of a collapsible assembly of vertically spaced hanging shelves to suspend the assembly beneath the locker shelf;

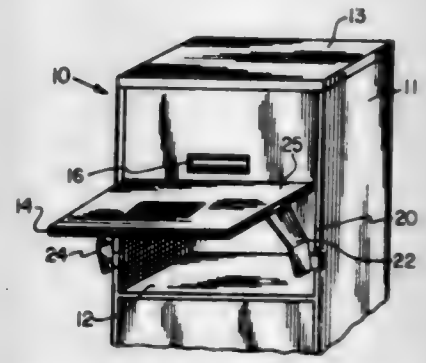
said shelf assembly having a top wall and a plurality of side walls extending downwardly therefrom, and an additional wall extending between the side walls parallel to the top wall forming a pocket with the top wall to tautly receive the support member.

4,537,452

LATERAL FILE RECEDING POSTING SHELF

Thomas E. Rice, Cheswick, and Paul R. Staropoli, Pittsburgh, both of Pa., assignors to Haskell of Pittsburgh, Inc., Verona, Pa.

Filed Sep. 28, 1982, Ser. No. 425,664
Int. Cl.³ A47B *77/10*
U.S. Cl. 312—314 **7 Claims**



7. In a lateral file having a frame and including a receding door having a front surface and an inner surface and movable between a closed position in which the door is substantially vertical, an open position in which the door is open and extend-

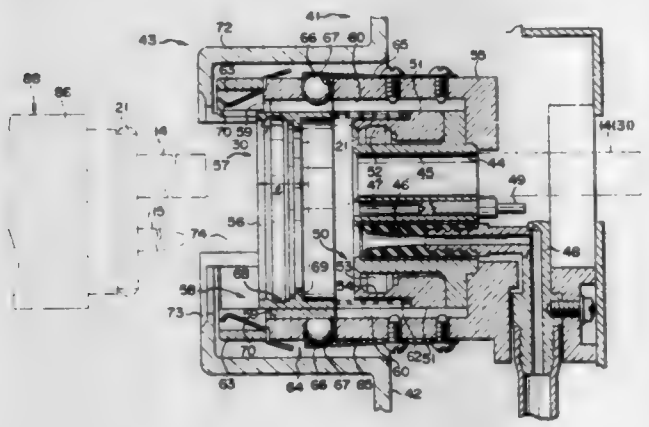
ing substantially horizontal, and a receded position in which the door has been slid inward from the open position into the file frame, the improvement comprising support means retained on the inner surface of the door and movable into engagement with the file frame to retain the door in the open position as a posting shelf, said support means including left hand and right hand supports mounted on opposite sides of said door, said supports each comprising a mounting member attached along a door edge spaced from the file frame in the open position, a spring loaded hinge attached to said mounting member, and a shelf support bracket having a first section connected to the spring loaded hinge inward of the door edge and a second section extending at an angle from said first section and a channel member connected to said second section to receive said file frame, said angle causing said channel member to be aligned with said file frame and engaged therewith when the door is retained in the open position as a posting shelf.

4,537,453

CONNECTING MECHANISM OF LIGHT SOURCE DEVICE FOR ENDOSCOPE

Haruo Takeuchi, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Jul. 17, 1984, Ser. No. 631,824
Claims priority, application Japan, Jul. 19, 1983, 58-130153
Int. Cl.³ H01R *27/00*
U.S. Cl. 339—33 **13 Claims**



1. A connecting mechanism of a light source device for an endoscope to which a various types of connectors of endoscopes are selectively connected; the first type of connector having a substantially cylindrical connector body connected at one end to the endoscope and at the other end having a recess, and at least one electric contact and a light guide tube extended along the axial direction of the connector body from the bottom of the recess; the second type of connector having a substantially cylindrical connector body connected at one end to the endoscope and closed at the other end, said connector body of the second type of connector having a diameter larger than the body of the first type of connector, a light guide tube extended along the axial direction of the body from the other end of the connector body, and at least one electric contact projected from the outer peripheral surface of the connector body; and the third type of connector having a substantially cylindrical connector body connected at one end to the endoscope and having at the other end a recess, said connector body of the third type of the connector having a diameter larger than the body of the second type of connector, and at least one electric contact and a light guide tube extended along the axial direction of the connector body from the bottom of the recess; said connecting mechanism comprising:

a socket having a connecting portion to which the light guide tubes of the various types of connectors and the electric contacts of the first and third types of connectors are connected;

first holding means for engaging with the other end of the connector body of the first type of connector to hold it when the light guide tube and the contacts of the first type of connector are connected to the socket; and

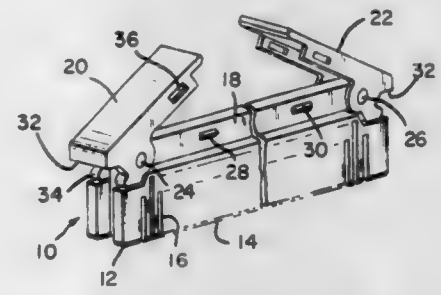
second holding means for engaging with the other end of the connector body of the second type of connector to hold it when the light guide tube of the second type of connector is connected to the socket, the second holding means having a contact portion which contacts with the other end of the connector body of the third type of connector, and being arranged to be movable between a normal position for engaging with the connector body of the second type of connector and an evacuating position for allowing the third type of connector to be connected to the socket, and the second holding means being in contact with the connector body of the third type of connector and moved to the evacuating position by the third type of connector when the third type connector is connected to the socket.

4,537,454

INTERCARD-EXTRACTION MEANS

George H. Douty, Mifflintown; John M. Landis, Camp Hill, and Clair W. Snyder, Jr., York, all of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 25, 1983, Ser. No. 516,626
Int. Cl.³ H01R *13/62*
U.S. Cl. 339—45 M **8 Claims**



1. In a multi plane connector system having header assemblies mounted on respective circuit boards, each header assembly having an elongated header housing of rigid insulative material containing an array of pin terminals each engaging circuitry of the respective circuit board and having an end portion exposed from a mating surface of said housing, at least one rib at each end of said header housing, connector members adapted to mate with header assemblies on adjacent pairs of circuit boards, each connector member having an elongated housing of rigid insulative material containing an array of terminals each adapted to mate with a respective pair of said pin terminals extending from said mating surfaces of headers on said adjacent circuit boards, and a releasable latching means comprising:

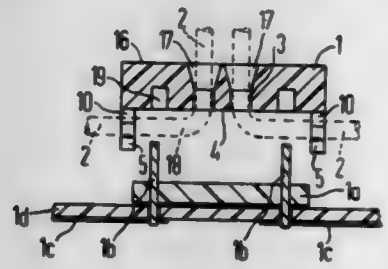
a pair of arm members each pivotally attached at a respective end of said connector, each arm member having first and second parallel spaced shoulders directed toward the adjacent end of said connector and each adapted to engage a respective side of said rib of said header housing,

whereby rotation of said arm member causes at least one of said shoulders to be biased against said respective side of said rib, thereby camming the connector in a desired direction.

4,537,455
ELECTRICAL CONNECTOR

Edward Vertenten, Oostkamp, Belgium, and Josef Heft, Munich, Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Mar. 24, 1983, Ser. No. 478,531
Claims priority, application Fed. Rep. of Germany, Mar. 25, 1982, 8208576[U]
Int. Cl.³ H01R *11/20*
U.S. Cl. 339—99 R
6 Claims



1. A connector for connection of insulated filamentary or stranded individual electrical conductors with cut-clamp electric contact members carried on a base plate, which comprises:

a cover plate having a face adapted to lie in juxtaposition to a face of said base plate and to sandwich portions of said conductors between said plate faces;

multiple through-passage openings extending through said cover plate in a direction of the face of said base plate, sized to receive individual insulated electrical conductors and disposed in a strip-shaped central region of said cover plate, wherein said strip-shaped central region of said cover plate extends parallel to at least one longitudinal edge of said cover plate;

opposite longitudinal edges of said cover plate each having a wall extending from the face of said cover plate in the direction of said base plate, each wall including retaining members disposed intermediate a plurality of detent slots,

said detent slots being open to an edge of the respective wall and being adapted to retain individual conductors in substantially parallel relation to said face of said cover plate so that when a conductor is inserted through said openings and retained by said retaining member, it is contactable by a cut-clamp contact carried by said base plate in a region of said conductor sandwiched between said plate;

said through-passage openings being arranged in two rows which are parallel to longitudinal edges of said cover plate and the retaining members on one wall being associated with the one row and the retaining members on the opposite wall being associated with the other row;

mating detent means on said cover and base plates for releasably locking the plates together; and

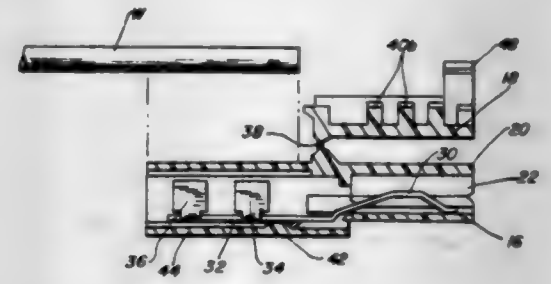
at least one electric conductor having its two ends inserted through two of said through-passage openings in said cover plate and having two end portions thereof sandwiched between said cover and base plates with its two ends contained within separate detent slots.

4,537,456
ELECTRICAL CONNECTOR

Vincent B. Brown, Prospect Heights; Charles A. Kozel, McHenry; John T. Scheitz, Palatine, and John E. Armando, Schiller Park, all of Ill., assignors to Methode Electronics Inc., Chicago, Ill.

Filed Jun. 7, 1982, Ser. No. 386,016
Int. Cl.³ H01R *13/38*
U.S. Cl. 339—99 R
10 Claims

1. An electrical connector of the type having an unsulator housing and a plurality of conductive contacts within the housing for terminating corresponding insulated conductors, each contact having at least one pair of insulation displacement jaws which receive an insulated conductor therebetween and sever the insulation to make electrical contact with the conductor, the improvement comprising, in combination, an insulator housing including a top and a base, said base having a plurality of parallel compartments for mounting individual metal contacts, a metal contact positioned in each of said parallel compartments with a forward mating contact portion extending toward a forward end of said base and a rearward contact portion disposed in a rear portion of said base, said rearward contact portion having at least one pair of insulation displacement jaws for terminating an insulated conductor, said top including a rigid forward top wall and a hinged rear top wall which is hingedly connected at the rear of said rigid forward top wall, bottom wall means for cooperating with said forward top wall and hinged rear top wall in the closed position for enclosing said metal contacts, a plurality of bosses formed on the bottom of said hinged rear top wall with at least one boss aligned with each of said parallel compartments and projecting sufficiently so when said cover is in a closed posi-



tion it functions as a termination tool, said hinged rear top wall being movable between an open position where it folds back over the top of said rigid forward top wall to expose said insulation displacement jaws and permits a conductor to be positioned in each of said compartments adjacent a corresponding pair of said jaws, and a closed position where said bosses terminate said conductors and said hinged rear top wall insulates said rearward contact portions, where at least one boss aligned with each of said compartments is dimensioned and located so when said cover is closed the boss forces a conductor positioned in that compartment into electrically contacting relation with said contact in said compartment and also said boss projects into interfering relation with the contact located in said compartment thereby serving to longitudinally retain said contact in said compartment when a pulling force is applied to an insulated conductor terminated therein, said electrical connector being capable of connection with an inverted connector of identical design.

4,537,457
CONNECTOR FOR PROVIDING ELECTRICAL CONTINUITY ACROSS A THREADED CONNECTION

Albert P. Davis, Jr., and Leon H. Robinson, both of Houston, Tex., assignors to Exxon Production Research Co., Houston, Tex.

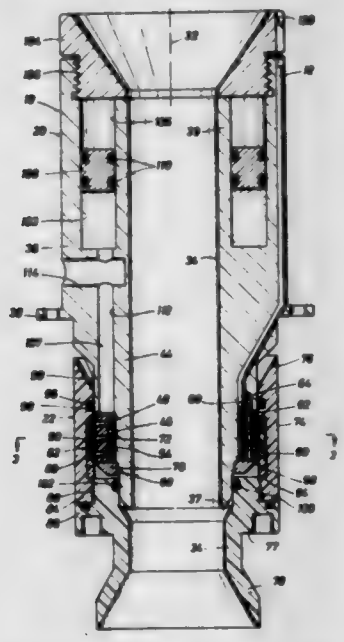
Continuation of Ser. No. 489,639, Apr. 28, 1983, abandoned. This application Feb. 4, 1985, Ser. No. 697,689
Int. Cl.³ H01R *3/00*
U.S. Cl. 339—117 P
14 Claims

1. A connector for establishing electrical continuity between a plurality of conductors in a first element and a plurality of corresponding conductors in a second element, said first element having a box end and said second element having a pin end adapted to be threaded into said first element box end, said first and second elements defining, in the assembled condition, a longitudinal axis and a longitudinally extending, central recess adapted for receiving fluid flow therethrough, said connector comprising:

a generally annular connector box element fixedly positionable within said second element pin end, said connector box element having a plurality of circuit bands, said circit bands lying in planes perpendicular to said longitudinal axis and having a center of curvature on said longitudinal

axis, said circuit bands being adapted to be connected to corresponding ones of said second element conductors;

a generally annular connector pin element fixedly positionable within said first element box end, said connector pin element having a plurality of circuit band contacts, said circuit band contacts being adapted to be connected to corresponding ones of said first element conductors, said conductor pin element being adapted to be so positioned within said first element box end and said circuit band contacts being so arranged that in response to said first and second elements being threadably connected, said



circuit band contacts are biased against corresponding ones of said circuit bands;

means for establishing an enclosed, sealed volume surrounding said circuit bands and circuit band contacts, said enclosed, sealed volume being adapted to be occupied by a dielectric fluid; and

means for varying the pressure of said dielectric fluid within said enclosed, sealed volume in response to pressure changes within said central recess such that the pressure differential across all sealed interfaces separating said enclosed, sealed volume from said central conduit is maintained within a preselected range.

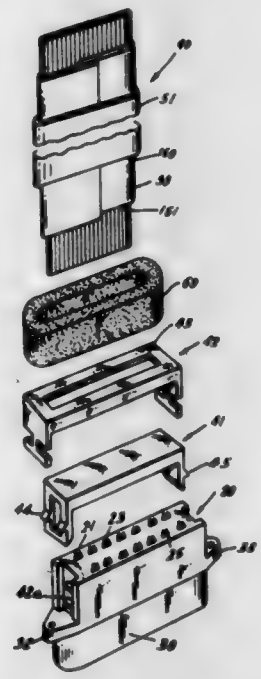
4,537,458

CONDUCTIVE SHIELDING HOUSING FOR FLAT CABLE CONNECTOR

Sidney V. Worth, Flourtown, Pa., assignor to Continental-Wirt Electronics Corp., Southampton, Pa.

Filed Sep. 1, 1983, Ser. No. 528,624
Int. Cl.³ H01R *13/698*
U.S. Cl. 339—143 R **22 Claims**

1. A conductive shielding enclosure for a generally flattened rectangular multiconductor cable connector having an outer conductive sheath; said connector having a generally rectangular configuration which has generally flat parallel faces which are joined at their edges by first and second generally parallel sides which has first and second ends; said connector having a flat shielded multiconductor cable extending from said first end thereof; said connector having a plurality of contacts; each of said plurality of contacts connected to a respective one of the conductors of said multiconductor cable; said shielding enclosure comprising first and second conductive end cups which are adjacent to and which extend across said first and second sides respectively of said connector and first and second conductive side plates which are adjacent to and extend across said first and second faces respectively of said conductors respectively; said first and second end cups and said first and second side plates extending beyond said one end of said connector; means connecting said first and second side plates and said first and second end cups together to form a rectangular enclosure which defines a hollow interior region surrounding said cable connector and extending from said one end of said connector; the multiconductor cable connector being loosely bent within said hollow interior region and pressed by the force of its inherent resiliency to flexibly con-



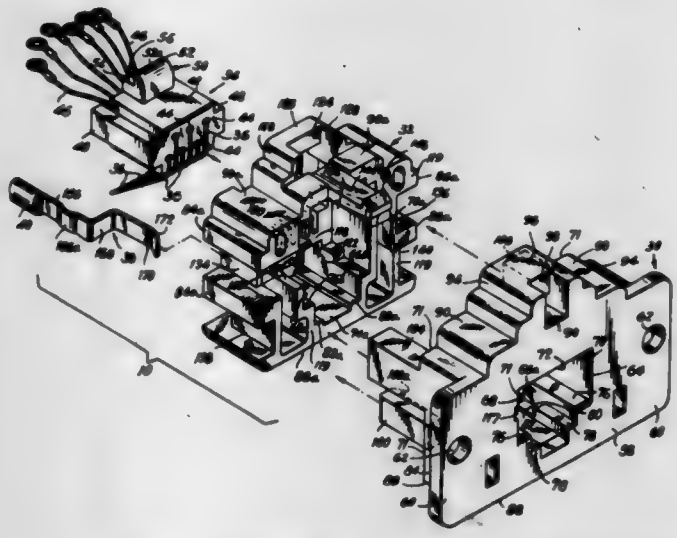
nect the outer surface of the conductive sheet into electrical engagement with at least a portion of the interior of said generally rectangular configuration enclosure formed by said first and second end cups and said first and second side plates.

4,537,459

JACK FOR EMI/RFI SHIELD TERMINATING MODULAR PLUG CONNECTOR

Robert J. Brennan, Ossining; Terrence Meighen, Stormville, and Walter M. Phillipson, Woodside, all of N.Y., assignors to Stewart Stamping Corporation, Yonkers, N.Y.

Filed Jan. 16, 1984, Ser. No. 570,806
Int. Cl.³ H01R *13/652*
U.S. Cl. 339—143 R **21 Claims**



1. A jack for a modular plug connector which terminates a cord constituted by a plurality of insulated conductors surrounded by a sheath of conductive material constituting a shield for suppressing radiation of electromagnetic and radio frequency interference-causing signals from and to the conductors, the modular plug connector including a dielectric housing having a cord-receiving aperture communicating with an internal cord-receiving cavity having a conductor-receiving portion in which the cord conductors are situated, a plurality of flat contact terminals having conductive piercing portions and contact edges, each flat contract terminal being situated in a

respective slot in the housing aligned with a respective conductor with its piercing portion piercing said respective conductors to electrically engage the same and wherein the contact edges of the flat contact terminals are exposed at a common side wall of the housing, and shield terminating contact means passing through a side wall of said connector housing electrically engaging said shield, the shield terminating contact means including an externally exposed portion situated at the exterior surface of one of the walls of the connector housing, the jack comprising:

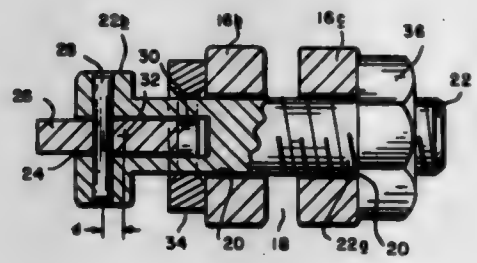
a jack housing having a receptacle for the modular plug connector, an array of contact wires mounted in said jack housing having portions situated within said connector receptacle adapted to be electrically engaged by contact edges of respective flat contact terminals upon insertion of the modular plug connector into said connector receptacle, grounded jack contact means adapted to be electrically engaged by said externally exposed portion of said shield terminating contact means upon insertion of the modular plug connector into said connector receptacle and wherein at least a portion of said jack housing is formed of a material which attenuates electromagnetic and radio frequency interference-causing signals passing therethrough so that the jack housing constitutes an EMI/RFI shield for the modular plug connector.

4,537,460

QUICK RELEASE CLAMP FOR BATTERY CABLE CONNECTOR

John R. McCaig, Wilmington, Mass., assignor to McNold Corp., Wilmington, Mass.

Filed Apr. 27, 1984, Ser. No. 604,851
Int. Cl.[3] H01R *11/26*
U.S. Cl. 339—235 7 Claims



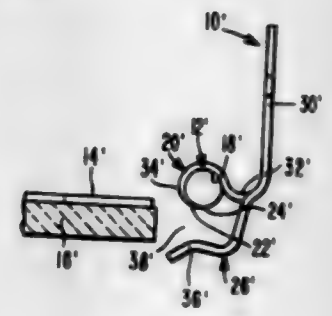
1. A quick release clamp for applying the laterally constrictable ears of a cable connector to the terminal of an electric storage battery, comprising: a bolt having a threaded shank terminating at one end in an enlarged head and having a slit extending axially through said head into said shank, said shank being dimensioned to extend through aligned holes in said ears with said enlarged head being located on the outermost side of one of said ears; a nut threaded onto said shank on the outermost side of the other of said ears; and a cam lever received in said slit, said lever being rotatably connected to said bolt by means of a pin extending transversally across said slit, said lever being adjustable between a closed position cooperating with said bolt and nut to laterally urge said ears together to grip said terminal therebetween, and an open position permitting said ears to move away from each other to an extent sufficient to permit said cable connector to be removed from said terminal.

4,537,461

LEAD HAVING A SOLDER-PREFORM AND PREFORM-CARRYING FINGER ENGAGEABLE DIRECTLY WITH A CONTACT PAD

Paul J. Ouellette, Amesbury, Mass., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jul. 28, 1982, Ser. No. 402,684
The portion of the term of this patent subsequent to Feb. 19, 2002, has been disclaimed.
Int. Cl.[3] H01R *11/22, 4/02*
U.S. Cl. 339—258 R 8 Claims



7. A solder-bearing lead, which comprises:

an elongated stem;

first and second resilient clamping fingers having opposed clamping portions extending in opposed spaced relationship from the elongated stem to define a gap for the reception of a substrate therebetween, the clamping portion of the first resilient clamping finger having an inner surface;

a solder preform attached to the inner surface of the clamping portion of the first resilient clamping finger and having a surface portion in opposed relationship to the clamping portion of the second resilient clamping finger;

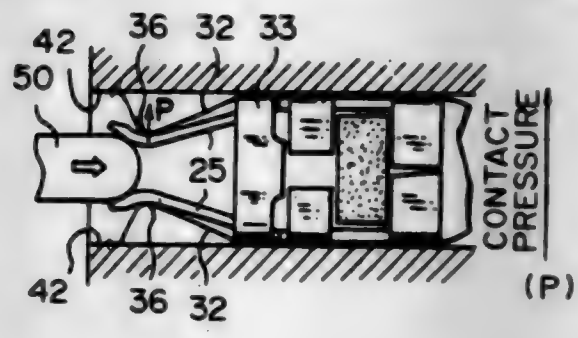
the clamping portion of the first resilient clamping finger being partially wrapped about the solder preform in a direction facing toward the clamping portion of the second resilient clamping finger and having an outer end portion which is of a tapered configuration such that an outer end surface portion of the clamping finger outer end portion is essentially flush with the surface portion of the solder preform, and such that both the clamping finger outer end surface portion and the preform surface portion directly engage a contact pad on the substrate when the substrate is received between the finger clamping portions.

4,537,462

ELECTRICAL CONNECTOR

Sakae Manabe, Kawasaki, Japan, assignor to AMP Incorporated, Harrisburg, Pa.

Filed Jul. 30, 1984, Ser. No. 636,033
Claims priority, application Japan, Sep. 9, 1983, 58-139213
Int. Cl.[3] H01R *13/16*
U.S. Cl. 339—259 R 9 Claims



1. A spring assist means for a female electrical contact terminal, said female terminal having opposing contact arms to receive therebetween contact portions of a male terminal and being secured within a cavity of an insulating housing, said

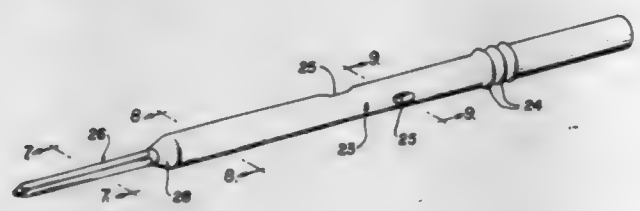
spring assist means comprising a spring body portion and leaf spring portions, said spring body portion securable to a body portion of said female terminal remote from contact portions of said contact arms, said leaf spring portions extending from said spring body portion along and proximate outer surfaces of said contact arms and including free ends engageable with and slidable along associated side walls of said housing cavity, whereby when a said male terminal is inserted into and between said contact arms, said contact arms are urged into engagement with said leaf springs whose free ends are urged into slidable engagement with said cavity side walls and thereby provide spring force against said contact arms increasing contact force of said contact arms with contact portions of said male terminal.

4,537,463

SPRING CONTACT HOLDING SHELL HAVING INTEGRAL WIRE WRAP POST

Russell E. Coiner, Staunton, and Thomas W. Moore, Fisherville, both of Va., assignors to Virginia Panel Corporation, Waynesboro, Va.

Filed Jun. 27, 1984, Ser. No. 625,206
Int. Cl.³ H01R *4/14*
U.S. Cl. 339—276 A **1 Claim**



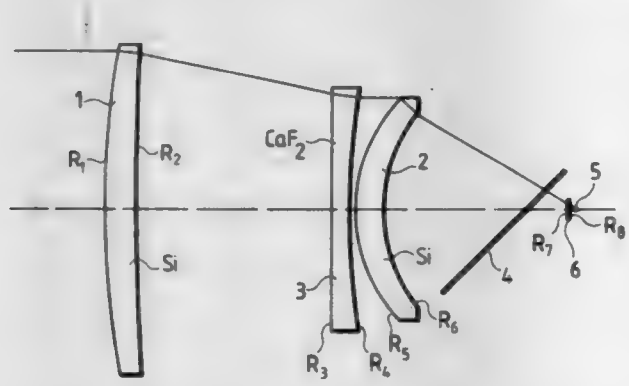
1. A unitary holding shell and wire wrap post comprising an elongated cylindrical tubular holding shell body portion having an open rear end, said holding shell body portion being provided somewhat forwardly of its open rear end with press rings projecting somewhat beyond the periphery of the holding shell body portion, an integral forward end coaxial reduced cross sectional size wire wrap post on the holding shell body portion and being elongated, a comparatively short conically tapered transition portion joining the rear of the wire wrap post to the forward end of the holding shell body portion, and the wire wrap post being hollow and approximately square in cross section and having four concave side walls forming four pronounced closed corners on the wire wrap post extending substantially for its entire length.

4,537,464

INFRARED OBJECTIVE SYSTEM LENS

Roman Boutellier, Stüsslingen, Switzerland, assignor to Kern & Co. Ltd., Aarau, Switzerland

Filed Jun. 22, 1983, Ser. No. 506,595
Claims priority, application Switzerland, Jun. 25, 1982, 3912/82
Int. Cl.³ G02B *9/14, 13/14*
U.S. Cl. 350—1.4 **2 Claims**



1. An infrared objective system lens with an image field that is convex toward the lens with a radius of curvature of 17.5, wherein the elements of the system have the following numerical values:

Lens Element Number	f = 100.0 Radius of Curvature	Axial Thicknesses and Separations	Material
1	$R_1 = 335.5$	$t = 10.0$	Si
	$R_2 = 819.8$	$s = 59.6$	air
3	$R_3 = 914.5$	$t = 5.4$	CaF_2
	$R_4 = 260.0$	$s = 1.6$	air
2	$R_5 = 49.2$	$t = 9.1$	Si
	$R_6 = 51.8$		

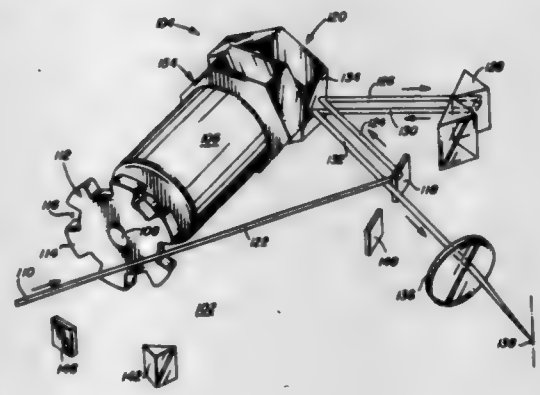
where the indicated values of R_1, R_2, R_5 and R_6 may vary by $\pm 5\%$, the indicated values of R_3 and R_4 may vary by $\pm 20\%$, f is the focal length of the system and R is the radius of curvature of the indicated elements.

4,537,465

APPARATUS WITH TWO INPUT BEAMS FOR GENERATING OPTICAL SCANS

Randy J. Sherman, and Derald F. Hanson, both of Phoenix, Ariz., assignors to Lincoln Laser Company, Phoenix, Ariz.

Continuation-in-part of Ser. No. 320,331, Nov. 12, 1981, Pat. No. 4,433,894. This application Jun. 6, 1983, Ser. No. 501,504
Int. Cl.³ G02B *27/17, 27/14*
U.S. Cl. 350—68 **19 Claims**



1. An optical scanner for receiving an input beam and for generating an optical output beam which repetitively scans a fixed path comprising:

a. means for converting a single input beam into alternating upper and lower input beams;

b. a first mirror repetitively rotated through an angle about a vertically oriented first axis for receiving the upper input beam and for repetitively generating a first scan;

c. a second mirror repetitively rotated through an angle about the first axis for receiving the lower input beam and for repetitively generating a second scan, said first and second mirrors having a relative phase angle greater than zero and random facet to axis errors;

d. first means for redirecting the first scan back onto the first mirror to form a first redirected scan, wherein the first redirected scan is reflected from the first mirror to generate a plurality of first output scans which define a family of non-coincident surfaces, said family of surfaces being non-intersecting with respect to the upper input beam, the first redirected scan being vertically displaced from the first scan by a distance related to the mirror facet to axis error and laterally displaced from the first scan by a distance related to the relative angle between the mirror and the upper input beam;

e. second means for redirecting the second scan back onto the second mirror to form a second redirected scan, wherein the second redirected scan is reflected from the

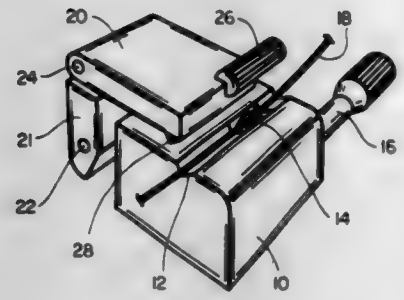
second mirror to generate a plurality of second output scans which define a family of non-coincident surfaces, said family of surfaces being non-intersecting with respect to the lower input beam; the second redirected scan being vertically displaced from the second scan by a distance related to the mirror facet to axis error and laterally displaced from the second scan by a distance related to the relative angle between the mirror and the lower input beam; and

f. means for converging the plurality of first and second output scans onto the fixed path such that the optical output beam from said scanner repetitively scans the fixed path thereby eliminating the effect of the facet to axis errors of the first and second mirrors and doubling the effective scan efficiency of the optical scanner.

4,537,466
OPTICAL FIBER CHUCK INCLUDING A COVER COMPRISING AN IDLER WHEEL AND A V-SHAPED INSERT

Marc F. Moisson, Los Altos, and Martin L. Wisecarver, Sonora, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 15, 1983, Ser. No. 466,683
Int. Cl.³ G02B *5/14*; B25B *11/02*
U.S. Cl. 350—96.20 **7 Claims**



1. An optical fiber chuck, comprising:

(a) a chuck body having on its upper surface a straight V-groove into which an optical fiber can be loaded;

(b) a drive wheel rotatably mounted on the chuck body such that a portion of its circumference intersects the V-groove in the chuck body to such an extent that it will engage a fiber loaded into the V-groove;

(c) drive means for rotating the drive wheel;

(d) a chuck cover pivotably mounted on the chuck body between a loading position and an operating position;

(e) an idler wheel rotatably mounted on the chuck cover such that when the chuck cover is in its operating position and a fiber is loaded into the V-groove of the chuck body, the idler wheel presses the fiber against the drive wheel to ensure adequate friction between the fiber and the drive wheel;

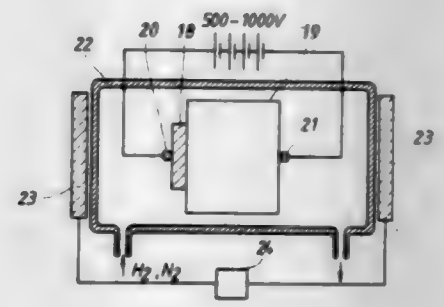
(f) a chuck cover insert mounted in the chuck cover and having a V-shaped lower surface such that when the chuck cover is in its operating position the V-shaped lower surface of the insert enters the V-groove of the chuck body, the apex of the V-shaped lower surface being so shaped that it cooperates with the V-groove of the chuck body to hold a fiber which has been loaded into the V-groove; and

(g) means for urging the chuck cover against the chuck body when the chuck cover is in its operating position.

4,537,467
HERMETIC SEALING OF GALLIUM ARSENIDE COMPONENTS

Chantal Dubon, Versailles, France; Bertil Hök, and Christer Ovrén, both of Västerås, Sweden, assignors to ASEA Aktiebolag, Västerås, Sweden

Filed Jun. 17, 1983, Ser. No. 505,278
Claims priority, application Sweden, Jun. 21, 1982, 8203826
Int. Cl.³ G02B *5/14*; C23C *13/04*
U.S. Cl. 350—96.20 **22 Claims**



1. A gallium arsenide opto-component comprising an interface between a body of gallium arsenide and a body of glass, said interface being free of surface irregularities larger than 0.1 μm and smaller than 100 μm and said gallium arsenide body and said glass body being hermetically sealed together at said interface,

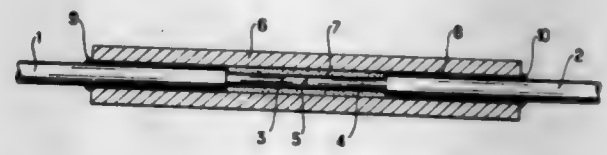
said interface being free from any bonding medium and having no optically detectable tints, and

said glass body having a concentration of oxygen which, at least in a 10 μm layer adjacent to the interface, is considerably lower than the stoichiometric concentration needed for the formation of oxides selected from the group consisting of gallium oxides and arsenic oxides.

4,537,468
REINFORCED OPTICAL FIBER BUTT WELD CONNECTION

Bernard Degoix; Daniel Boussemaer, both of Calais, and Didier Allemand, Marck; all of France, assignors to Les Cables de Lyon, France

Filed Oct. 20, 1982, Ser. No. 435,592
Claims priority, application France, Oct. 28, 1981, 81 20212
Int. Cl.³ G02B *5/14*
U.S. Cl. 350—96.21 **5 Claims**



1. A reinforced butt weld connection between the ends of two optical fibres, said fibres having a protective sheath over most of their length and having an end portion stripped of said sheath, said connection comprising a capillary tube made of a metal of high mechanical strength, said tube surrounding a butt weld between said fibre ends and adjacent stripped portions of optical fibre and extending over a non-stripped portion of each of said fibres, said tube having a bore which leaves little clearance around the sheaths of the optical fibres and a slow-setting adhesive which is very fluid in the liquid state and which hardens in the absence of air filling the space between the capillary tube and the stripped ends of the fibres and between the capillary tube and the sheaths of the fibres by capillarity to the extent of the entire volume of said space between the fibres and the internal surface of the capillary tube with the slow-setting adhesive completely wetting the surfaces of the optical fibres and the tube with which it contacts to facilitate complete

transmission of the traction forces applied to the fibres to the capillary tube.

4,537,469

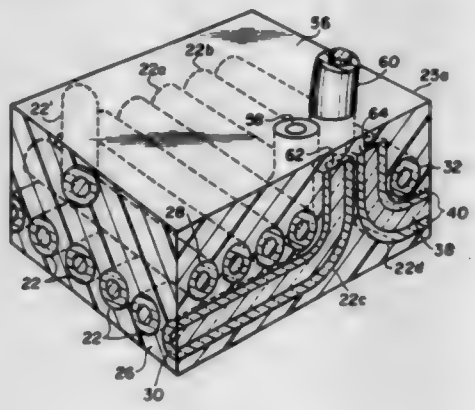
MULTI-FUNCTION COMPOSITE MATERIAL UTILIZING EMBEDDED OPTICAL FIBERS

Hartmann J. Kircher, Sparta, N.J., assignor to Grumman Aerospace Corporation, Bethpage, N.Y.

Continuation of Ser. No. 614,385, May 25, 1984, abandoned, which is a continuation of Ser. No. 337,977, Jan. 1, 1982, abandoned. This application Dec. 21, 1984, Ser. No. 684,176

Int. Cl.³ G02B *5/16*

U.S. Cl. 350—96.24 **6 Claims**



1. A reinforced structural member for detecting fires occurring in the vicinity of the member and comprising:

a binder material conforming to a desired shape of the structural member;

a plurality of high tensile strength optical fibers imbedded in the binder material and rigidly adhering thereto to reinforce the structural member;

the fibers including first ends optically exposing the fibers to a flame occurring in the vicinity of the ends; and

optical signal receiving means located at opposite ends of the fibers for detecting the occurrence of light travelling along the length of the fibers, produced by a flame.

4,537,470

SCREEN SYSTEMS FOR MULTICOLOR PRINTING

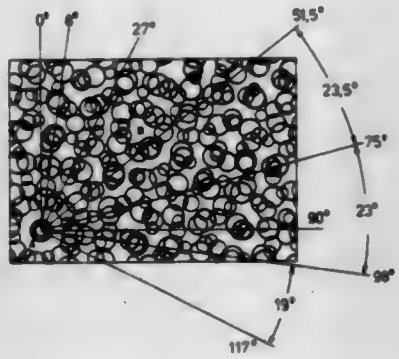
Johannes Schoppmeyer, St. Augustin, Fed. Rep. of Germany, assignor to Dr.-Ing. Rudolf Hell GmbH, St. Augustin, Fed. Rep. of Germany

Filed Nov. 4, 1982, Ser. No. 438,989

Claims priority, application European Pat. Off., Nov. 20, 1981, 81109796.3

Int. Cl.³ G02B *5/22*

U.S. Cl. 350—317 **9 Claims**



1. A screen system for color reproduction comprising first, second, and third screens of different colour separations each having different screen angles and line spacings, said screens having lines which lie at successive angles selected from the ranges of 19° to 24°, 25° to 29°, and 32° to 36°, as measured in a common direction from the first screen to the second screen, and from the second screen to the third screen, the tolerance range for screen fineness extending to plus or minus approximately 12% of the mean screen fineness.

4,537,471

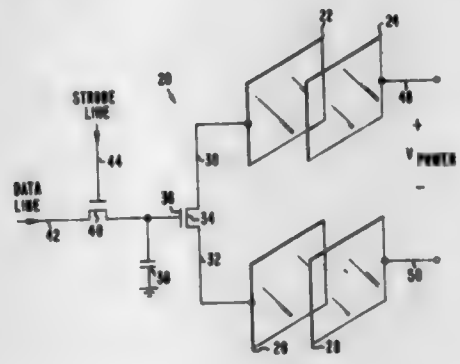
LIQUID CRYSTAL PIXEL DRIVER CIRCUIT AND MATRIX DISPLAY

Jan Grinberg, Los Angeles, and Michael J. Little, Tarzana, both of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Filed Dec. 23, 1983, Ser. No. 564,954

Int. Cl.³ G02F *1/13*

U.S. Cl. 350—333 **9 Claims**



1. A liquid crystal light valve pixel driver circuit comprising:

(a) a pair of power electrodes having a voltage potential applied thereinbetween;

(b) a pair of half-pixel electrodes, each of said half-pixel electrodes being associated with a respective one of said power electrodes; and

(c) a first transistor switch selectably conductively interconnecting said half-pixel electrodes, said first transistor switch being responsive to an applied voltage data potential.

4,537,472

OBJECTIVE LENS SYSTEM FOR MICROSCOPES

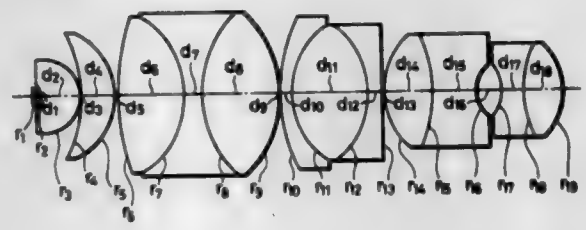
Yoshito Asoma, Nagano, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Feb. 6, 1984, Ser. No. 577,336

Claims priority, application Japan, Feb. 15, 1983, 58-22162

Int. Cl.³ G02B *9/62, 21/02*

U.S. Cl. 350—414 **3 Claims**



1. An objective lens system for microscopes comprising a first cemented doublet component comprising a plano-convex lens element and a meniscus lens element having a strongly concave surface on the object side, a second meniscus lens component, a third cemented component comprising a positive lens element, a negative lens element and a positive lens element, a fourth cemented component comprising a negative meniscus lens elements, a biconvex lens element and a negative lens element, and a fifth cemented doublet component and a sixth cemented doublet component respectively having strongly concave surfaces opposite to each other, said lens system being so designed as to satisfy the following conditions (1) through (6):

$$-0.1 < f/f_2 < 0.05 \quad (1)$$

$$-0.1 < f/f_B < -0.07 \quad (2)$$

$$1.75 < n_2 \quad (3)$$

$$29 < \nu_5 < 45 \quad (4)$$

$$60 < \nu_6, \nu_8 \quad (5)$$

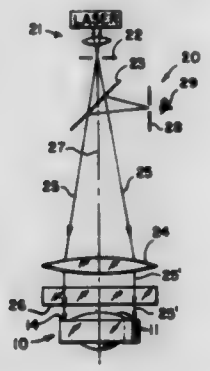
$$d_{16} < 1.2f \quad (6)$$

wherein the reference symbol f represents focal length of said objective lens system as a whole, the reference symbol f_2 designates focal length of the image side lens element of said first lens component, the reference symbol f_B denotes composite focal length of said fifth and sixth lens components as a whole, the reference symbol n_2 represents refractive index of the image side lens element of said first lens component, the reference symbols ν_5 and ν_6 designate Abbe's numbers of the middle negative lens element and the image side lens element respectively of said third lens component, the rererence symbol ν_8 denotes Abbe's number of the middle positive lens element of said fourth lens component and the reference symbol d_{16} represents airspace reserved between said fifth and sixth lens components.

4,537,473
FIDUCIAL SURFACES

Richard O. Maschmeyer, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

Continuation of Ser. No. 439,341, Nov. 5, 1982, abandoned. This application Aug. 13, 1984, Ser. No. 639,738
Int. Cl.[3] G02B *3/02*
U.S. Cl. 350—432 3 Claims



1. A method for optically measuring any tilt in the alignment of the axis of symmetry of the surface of a molded aspheric lens relative to the optical axis of an optical system which comprises the steps of:

(a) molding said lens to its final size and shape with a fiducial surface thereon, said fiducial surface having a predetermined location and alignment relative to the axis or point of symmetry of the optical surface of said lens;

(b) directing light waves onto said optical surface of said lens that are oriented to the optical axis of said optical system; and

(c) observing

(1) the interference pattern generated by said light waves reflecting off said fiducial surface and off a reference surface which is interposed between said fiducial surface and the source of said light waves and is aligned in a direction normal to the optical axis of said optical system; or

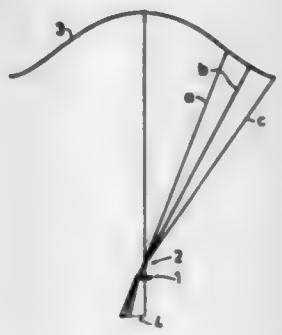
(2) the specific angle at which said waves are reflected off said fiducial surface; or

(3) the specific angle at which said light waves are bent while being transmitted through said fiducial surface.

4,537,474
OPTICAL SYSTEM FOR PROJECTION

Ulf J. Asterö, Tumba, Sweden, assignor to Optik Innovation AB OIAB, Tumba, Sweden

PCT No. PCT/SE81/00223, § 371 Date Feb. 25, 1982, § 102(e) Date Feb. 25, 1982, PCT Pub. No. WO82/00529, PCT Pub. Date Feb. 18, 1982
PCT Filed Jul. 29, 1981, Ser. No. 355,757
Claims priority, application Sweden, Jul. 30, 1980, 8005475
Int. Cl.[3] G02B *3/04, 9/02;* G03B *21/56*
U.S. Cl. 350—432 9 Claims

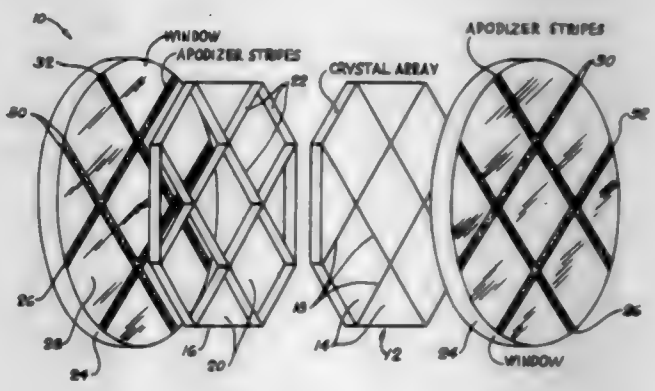


1. An optical system for a projector apparatus which is preferably adapted for projecting an image on a display screen with a generally negative curvature, characterized in that the system includes a single-element lens with a generally convex front surface oriented towards the object plane and with a generally non-parallel concave rear surface, both surfaces of the lens being aspherically corrected so that in annular areas concentric with the lens axis the lens surfaces have positive deviation in the vicinity of said axis, then negative deviation, and outmost positive deviation, said deviation being related to the best suited sphere for the respective lens surface, wherein the best suited sphere for the front and back surfaces of the lens has radii of the order of magnitude +110 mm and +1650 mm, respectively, and in that the lens is provided with a diaphragm having an aperture of about 45 mm and being arranged about 70 mm in front of the back lens surface, and the lens has an aperture attaining about 100 mm, said system being suited to projecting an object with a format of the order of magnitude of 190×250 mm with an enlargement of about 6 to 8 times.

4,537,475
SCATTERING APODIZER FOR LASER BEAMS

Mark A. Summers; Wilhelm F. Hagen, and Robert D. Boyd, all of Livermore, Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Apr. 1, 1983, Ser. No. 481,411
Int. Cl.[3] G02B *3/00, 27/46*
U.S. Cl. 350—448 7 Claims



1. A harmonic conversion device for converting a single input laser beam at a fundamental frequency to a single output laser beam at a harmonic frequency, said device being for use

in a large aperture laser system, said device being comprised of a plurality of crystals which are fitted together to form a single conversion device of diameter sufficient for use in a large aperture laser system, a grid of divider elements provided between said crystals, said grid elements constituting optical discontinuities that produce diffraction peaks as a single laser beam is passed through all of the crystals of the conversion device, said device further comprising:

transparent means for retaining said grid and crystals,

a scattering apodizing pattern carried by said means,

said pattern having a central portion overlying said grid of divider elements and a narrow boundary portion extending slightly beyond said grid elements, leaving the major portion of said crystals unobstructed for passage of a laser beam therethrough and conversion therein,

said scattering pattern having a distribution density which is at a maximum in said central portion and which tapers gradually and smoothly to zero in said boundary portion to provide a gradient of said distribution density,

said scattering pattern smoothing, reducing and minimizing the diffraction peaks produced by the optical discontinuities introduced by said grid elements.

4,537,476

RETRO-FOCUS TYPE WIDE ANGLE LENS

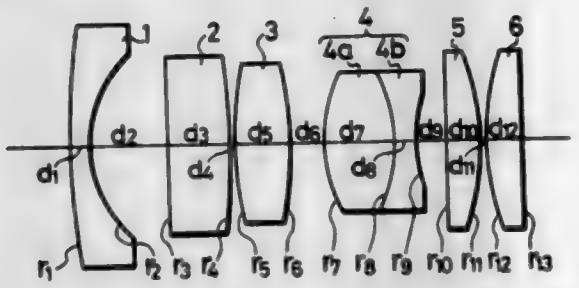
Yusuke Nanjo, Yokohama, Japan, assignor to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1983, Ser. No. 528,628

Claims priority, application Japan, Sep. 6, 1982, 57-154822

Int. Cl.³ G02B *13/04*

U.S. Cl. 350—461 **1 Claim**



1. A retro-focus type wide angle lens system having an optical axis, an object side and an image side and an angle of view within the range of 60° to 70°, comprising:

in succession from the object side, a first negative meniscus lens component having a convex surface facing the object side;

a second positive lens component;

a third biconvex lens component;

a fourth negative doublet component formed of a positive biconvex lens and a negative biconcave lens and having an object-side lens surface and an image-side lens surface;

a fifth positive lens component having a convex surface facing the image side; and

a sixth positive lens component having a convex surface facing the object side,

the lens system satisfying the conditions:

$$1.3f<|f_1|<2f$$

$$d_2+d_3+d_4<2f$$

$$v_2<40$$

$$1.2<r_7/r_9<2$$

where f_1 is the focal length of said first lens component, d_2 is the distance along the optical axis between said first and second lens components, d_3 is the thickness along the optical axis of said second lens component, and d_4 is the distance along the optical axis between said second and third lens components, v_2 is an Abbe number of said second lens component, and r_7 and r_9 are curvature radii of said object-side and image-side lens surfaces, respectively, of said fourth lens component.

4,537,477

SCANNING ELECTRON MICROSCOPE WITH AN OPTICAL MICROSCOPE

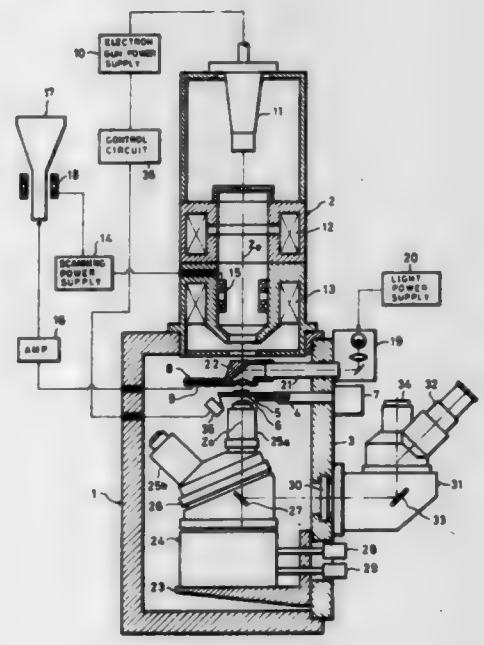
Toshijiro Takagi, and Eiji Watanabe, both of Tokyo, Japan, assignors to JEOL Ltd., Tokyo, Japan

Filed Mar. 2, 1983, Ser. No. 471,440

Claims priority, application Japan, Mar. 5, 1982, 57-30940; Apr. 9, 1982, 57-51532

Int. Cl.³ G02B *21/00, 21/06, 21/26;* H01J *37/26*

U.S. Cl. 350—507 **5 Claims**



1. A scanning electron microscope comprising:

(a) a specimen chamber having a removable front cover;

(b) an electron gun for creating an electron beam;

(c) means for coverging the electron beam to a spot on a specimen;

(d) means for scanning the spot of the electron beam over the specimen;

(e) a detector for generating a signal in response to the electron beam spot scanning over the specimen;

(f) image means for displaying an image in response to the signal from said detector by modulating a CRT beam scanned in synchronism with the electron beam spot scanning said specimen;

(g) a specimen moving mechanism for supporting and moving the specimen in the specimen chamber said mechanism being supported from said front cover;

(h) slide support means for illuminating the specimen with light in the direction in which the electron beam irradiates the specimen, said detector being mounted on said slide support in said specimen chamber for detecting backscattered and/or secondary electrons from the specimen; and

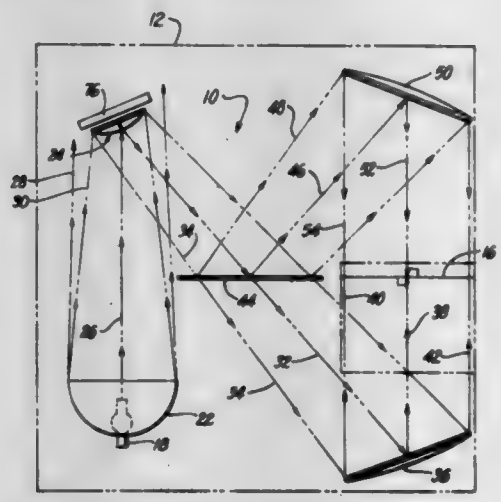
(i) an optical microscope having an objective lens unit disposed adjacent to the specimen moving mechanism along the optical axis in said specimen chamber for receiving light passed through the specimen, and an eyepiece unit disposed outside of said specimen chamber for receiving the light having passed through said objective lens, said objective lens unit and eyepiece unit supported from said front cover.

4,537,478

APODIZED MIRROR OPTICAL SYSTEM

Thomas A. Richter, 640 19th St., Manhattan Beach, Calif. 90266

Filed Jan. 19, 1984, Ser. No. 571,924
Int. Cl.[3] G02B 5/10; F21M 3/20
U.S. Cl. 350—611 14 Claims



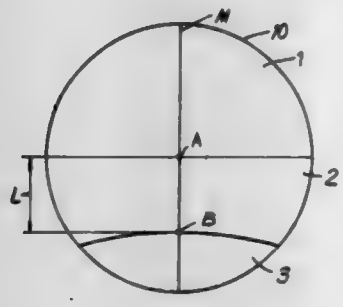
1. An optical system comprising:
a lamp, a reflector positioned with respect to said lamp to provide a beam of illumination;
a petal mirror on the path of said beam to reflect the beam;
a collimating mirror on the path of the reflected beam;
an exposure plane, said collimating mirror directing the reflected beam toward the exposure plane as a collimated beam, said petal mirror being adjusted so as to provide substantially uniform illumination intensity across said exposure plane.

4,537,479

PROGRESSIVE MULTIFOCAL OPHTHALMIC LENS

Toshihide Shinohara, and Sakiho Okazaki, both of Suwa, Japan, assignors to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Sep. 10, 1984, Ser. No. 648,913
Claims priority, application Japan, Sep. 16, 1983, 58-170647; Apr. 6, 1984, 59-68648; Jun. 7, 1984, 59-117210; Jun. 7, 1984, 59-117211
Int. Cl.[3] G02C 7/06
U.S. Cl. 351—169 12 Claims



1. A progressive multifocal ophthalmic lens comprising first and second refractive surfaces facing each other, said first refractive surface having upper and lower portions and including a far vision viewing zone in said upper portion for viewing mainly distant objects, a near vision viewing zone in said lower portion for viewing mainly nearby objects, and an intermediate vision viewing zone for viewing mainly intermediate objects between said far and near vision viewing zones, said intermediate vision viewing zone having an intermediate vision viewing zone central portion and said near vision viewing zone having a near vision viewing zone central portion, said first refractive surface having a principal meridian curve extending vertically in the general center of said far, intermediate and near vision viewing zones, the surface power along said principal meridian curve in said intermediate vision viewing zone progressively increasing from a far vision viewing zone reference focal power (D1 diopter) to a near vision viewing zone reference focal power (D2 diopter), and an additional power Ad [Ad=D2−D1] of said first refractive surface being about 1.5 diopter or more, said intermediate vision viewing zone central portion and said near vision viewing zone central portion extending on opposite sides of said principal meridian curve,

the principal curvatures at each arbitrary point on said first refractive surface being C1 and C2, each point on said first refractive surface in said intermediate vision viewing zone central portion satisfying the condition:

$$|C1-C2| \leqq 1/(N-1)\ (m^{-1}),$$

wherein m^{-1}=1/meters, and each point on said first refractive surface in said near vision viewing zone central portion satisfying the conditions:

$$|C1-C2| \leqq 1/(N-1)(m^{-1})$$

$$\frac{D_2-0.5}{N-1} \leqq \frac{C_1+C_2}{2} \leqq \frac{D_2+0.5}{N-1}\ (m^{-1}),$$

where N is the refractive index of the lens material,

the minimum width of said intermediate vision viewing zone central portion and the maximum width of said near vision viewing zone central portion being S(mm) and W(mm), respectively,

said minimum width S and said maximum width W satisfying the conditions:

$$W \leqq 30/A\ (mm)$$

$$W \leqq 1.5 \times S\ (mm),$$

where A is the value of the additional power Ad expressed in units of diopter,

and the gradient of the variation of the surface power at each arbitrary point along said principal meridian curve is G(diopter/mm),

every point along said principal meridian curve in said intermediate vision viewing zone satisfying the condition:

$$G \leqq Ad/18\ (diopter/mm),$$

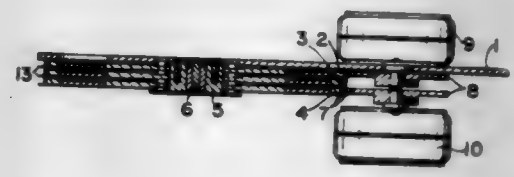
where Ad is the additional power in units of diopter.

4,537,480

MOTOR-DRIVEN SUBJECTIVE PHOROMETER

Hayao Akaba; Takeshi Yamada, and Masahiro Jinbo, all of Tokyo, Japan, assignors to Hoya Lens Corporation, Tokyo, Japan

Filed Jun. 1, 1983, Ser. No. 500,069
Claims priority, application Japan, Jun. 25, 1982, 57-109451
Int. Cl.[3] A61B 3/02
U.S. Cl. 351—235 1 Claim



1. In a subjective phorometer having two eye heads, each eye head having a first rotatable spherical lens plate, a second rotatable spherical lens plate, a first rotatable toric lens plate, a second rotatable toric lens plate and a rotatable accessory lens plate, the improvement comprising: means on each eye head for rotating the first spherical lens plate and the accessory lens plate comprising a first D-C motor for each lens plate and gear means engaging the motors and plates; means on each eye head

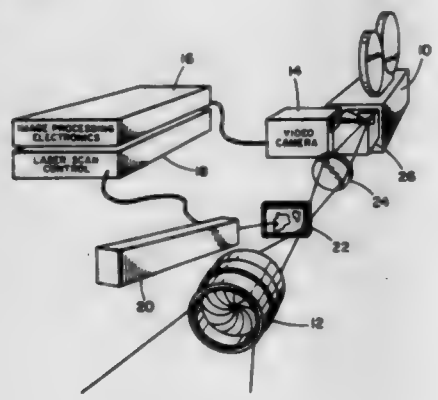
for rotating the second spherical lens plate comprising a first electromagnetic clutch with a double shaft mechanism for engaging the gear means for the first spherical lens plate or the accessory plate to rotate therewith; means on each eye head for rotating the first and second toric lens plates comprising a second D-C motor, a second electromagnetic clutch, gear means for alternatively engaging the first and second toric lens plates to effect rotation by the second D-C motor, a third D-C motor and gear means for effecting rotation the two toric lens plates together by the third motor; means for raising and lowering one eye head comprising a fourth D-C motor and gear means engaging the one eye head and the fourth motor; means for sliding the two eye heads towards and away from each other comprising a fifth D-C motor and gear means engaging the two eye heads with the fifth motor; means for rotating each eye head for converging motion comprising a sixth motor and gear means for each eye head to engage same with the sixth motor; first control switches settable to correspond to vision data; second control switches for effecting desired movement of the lens plates; central processing means receptive of the vision data from the first switches and for controlling the motors and electromagnetic clutches in response to the second switches; a monitor for digitally displaying vision data; and a printer for printing out vision data.

4,537,481

PROCESS AND APPARATUS FOR CREATING TRAVELING MATTES

Craig D. Witty, 645 Ash St., Winnetka, Ill. 60093

Filed Nov. 1, 1982, Ser. No. 438,165
Int. Cl.³ G03B *21/32*; A63J *5/00*
U.S. Cl. 352—89 **9 Claims**



1. A system for creating traveling mattes for special-effects cinematography comprising:

(a) photographic recording means for recording an image:

(b) electronic camera means:

(c) means for transmitting said image to said electronic camera means so that the photographic recording means and the electronic camera means receive the same image;

(d) light valve means for selectively modulating the light received by said photographic recording means;

(e) means for generating an image on said light valve means whereby the light received by said photographic recording means is selectively modulated; and,

(f) control means for controlling said means for generating an image responsive to said camera means

whereby the image received by said electronic camera means can be transmitted to said light valve means to modulate the light received by said photographic recording means.

4,537,482

MOTION PICTURE FILM MOVEMENT APPARATUS

Lewis Weiner, 8708 Santiago St., Holliswood, N.Y. 11423

Filed Dec. 29, 1983, Ser. No. 566,665
Int. Cl.³ G03B *1/24*
U.S. Cl. 352—186 **12 Claims**

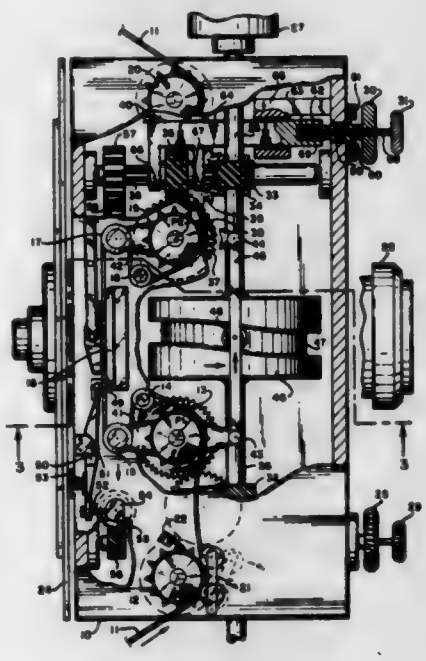
1. An apparatus for intermittently moving film through a film gate in a manner to provide a dwell time for each film frame, greater than one-half the period of a complete cycle, comprised of the dwell time and the transport time involved in moving the film from one frame to the next, said apparatus including, in combination:

(a) first and second rollers;

(b) means for feeding film to said first roller and taking up film from said second roller including a first sprocket wheel about which film to be fed to said first roller passes, a second sprocket wheel of the same size as said first sprocket wheel about which film taken up from said second roller passes and means for rotating said sprocket wheels at equal constant rates;

(c) first and second arms;

(d) means pivoting said arms at first and second pivot points coinciding respectively with the axes of rotation of said first and second sprocket wheels, extending ends of said arms mounting said rollers so that back and forth swinging movement of said arms moves said rollers along arcs defining a given path and a return path;



(e) a rotatable member having a camming means on its periphery following a direction constituting a function of the rate of movement of the rollers along said given path and return path; and

(f) a cam follower connected to the ends of said first and second pivot arms opposite the extending ends on the other side of said pivot points movable by said camming means in a repititive pattern in response to rotation of said member, said first and second rollers being rocked back and forth by action of said cam follower in unison along said given path for a first given period during which the first roller takes up all film fed to it and the second roller releases all film taken from it and in unison along a return path to their original positions during a second given period less than said first given period whereby film in said film gate is stationary during said first given period and moved through said gate from one frame to the next within said second given period.

4,537,483

OPTICAL PROJECTION VIEWING SYSTEM

Roger S. Turner, 620 Carpenter La., Philadelphia, Pa. 19119

Filed May 21, 1984, Ser. No. 612,646
Int. Cl.³ G02B *21/36*
U.S. Cl. 353—39 **19 Claims**

1. An optical projection viewing system comprising:

a viewing housing,

an objective lens juxtaposed an object to be viewed,

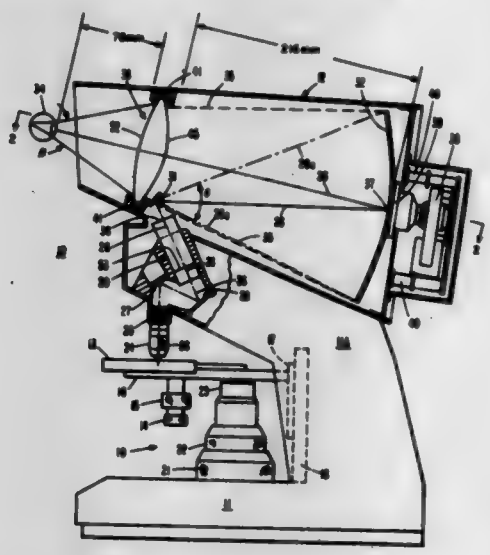
a relay projection lens in said viewing housing for projecting

a wide field image from said object from said objective lens,

a viewing screen in said viewing housing having a full field image projected thereon,

a non-symmetric biocular viewing lens in said viewing housing intermediate said imaging screen and a person viewing said full image on said imaging screen,

said biocular viewing lens having non-symmetric front and rear biconvex surfaces,



said biconvex surfaces having different radius of curvature, whereby the light path distance from a point on said viewing screen to the eyes of the person viewing said screen is different and the field distance correction provided by said non-symmetric biconvex biocular viewing lens provides a uniform field distance to both eyes within one eighth of one diopter over said field of image.

4,537,484

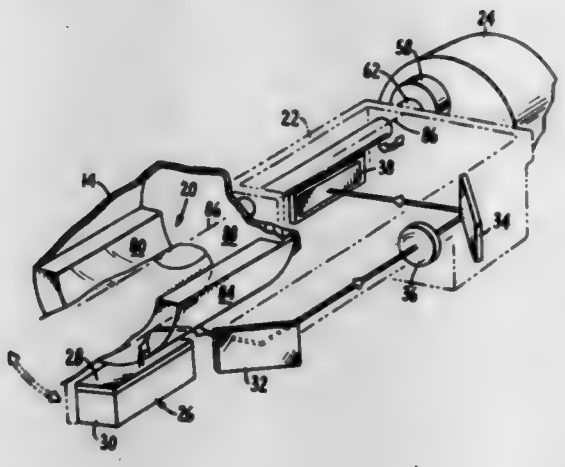
FINGERPRINT IMAGING APPARATUS

Randall C. Fowler, Los Altos, Calif.; Kenneth Ruby, Florence, and Thomas F. Sartor, Jr., Eugene, both of Oreg., assignors to Identix Incorporated, Palo Alto, Calif.

Filed Jan. 30, 1984, Ser. No. 575,842

Int. Cl.³ G03B *29/00*

U.S. Cl. 354—62 **9 Claims**



1. A fingerprint imaging apparatus comprising:

a frame;

a carriage rotatably mounted on said frame;

motor drive means for rotatably driving said carriage;

a transparent optical element secured to said frame for receiving a finger to be imaged;

a light source secured to said carriage which directs light towards said optical element; and

a light detector secured to said carriage which receives light from said optical element, the position of said light detector being fixed with respect to said light source.

4,537,485

AUTOMATIC DEVELOPING MACHINE

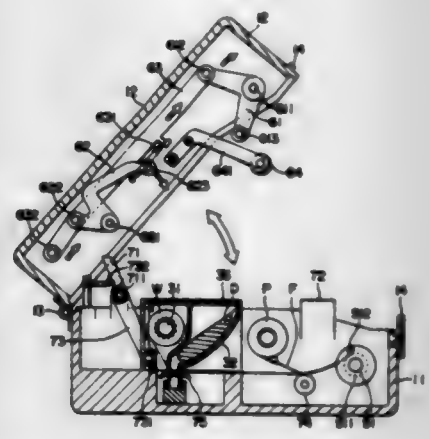
Kaneo Saito, Hino, Japan, assignor to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Oct. 20, 1983, Ser. No. 543,823

Claims priority, application Japan, Oct. 25, 1982, 57-188015

Int. Cl.³ G03D *5/02*

U.S. Cl. 354—304 **6 Claims**



1. A photographic developing machine comprising a light-tight housing (11);

a rotatable drum (511) within said housing; and

winding means operable to wind onto said drum (511) a length of exposed photosensitive material (F) in area contact with a guide web (W) coated with a gelatinous processing agent (D) and to rewind the developed said photosensitive material (F) and the used guide web (W) from said drum (511) into respective individual locations (P,31);

characterized in that:

said winding means comprises electric motor means;

and by an overload detector (531,532,300) operable to detect an overload condition imposed on said electric motor means, said overload condition being representative of completion of a said winding operation onto said drum (511);

means (55,S_{2-1}, S_{2-2}) associated with said overload detector (531,532,300) and responsive to detection of a said overload condition to stop a said winding operation of said electric motor means and to start operation of a timer (T) to time a predetermined development time; and

means (S_3) responsive to said timer (T) to initiate a said rewinding operation by said electric motor means after elapse of said predetermined development time.

4,537,486

APPARATUS FOR THE EXPOSURE AND DEVELOPMENT OF PHOTOGRAPHIC IMAGES

Immo Boie, Niederkassel; Hermann Lührig, Leverkusen, and Guido Kovacic, Unkel, all of Fed. Rep. of Germany, assignors to Agfa-Gevaert Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Division of Ser. No. 497,087, May 23, 1983,. This application Apr. 2, 1984, Ser. No. 595,826

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220912

Int. Cl.³ G03D *9/00, 3/16*

U.S. Cl. 354—317 **11 Claims**

1. In an apparatus for development of photographic images the combination comprising,

a frame means adapted to hold a laminated monosheet material having a first member defining an opening and provided with a lateral surface extending inwardly from the frame into the opening, and forming a shoulder

for receiving a photosensitive side of said monosheet material,

a seal means seated over the monosheet material,

a second frame member hinged to one side of the first frame member and defining an opening substantially coextensive with the opening defined by said first frame member,

means for lockably attaching the first and second frame members together



whereby the seal means and the monosheet material are pressed against the shoulder in the first frame in a light proof and moisture tight manner when said second member is locked to said first frame member, and

means associated with said first frame member and located on the side of said first frame member most adjacent to the photosensitive layer of said monosheet material

and being able to protect said photosensitive layer against light.

4,537,487

AUTOMATIC FOCUS CONTROL SYSTEM WITH BACKLASH CORRECTING ARRANGEMENT

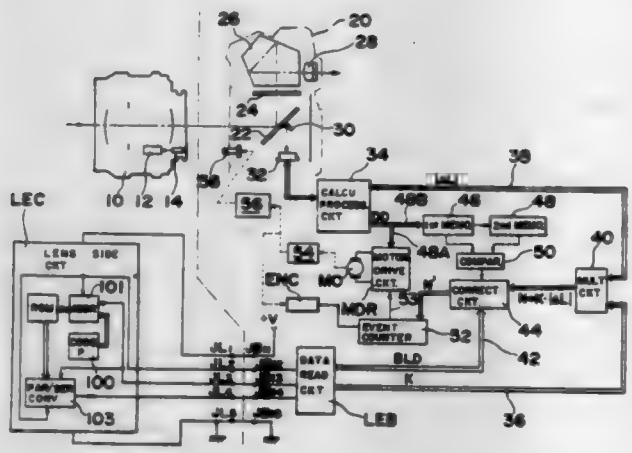
Nobuyuki Taniguchi, Tondabayashi; Norio Ishikawa, and Takeshi Egawa, both of Osaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Aug. 29, 1984, Ser. No. 646,380

Claims priority, application Japan, Sep. 1, 1983, 58-161393; Nov. 4, 1983, 58-207758; Jul. 2, 1984, 59-137570

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—400 **10 Claims**



1. An automatic focus control system which comprises means for detecting an amount of deviation of a position of an image of a target object to be photographed formed by an objective lens with respect to a predetermined focal plane, a calculating circuit for calculating a driving amount of a focusing control driving motor required for driving a focusing optical system of the objective lens up to an in-focus position based on a result of the detection by said detecting means, a drive control circuit for controlling the driving motor based on data of the driving amount calculated by said calculating circuit, a transmission mechanism for transmitting the driving force of the driving motor to the focusing optical system of the objective lens, an output circuit for producing data of an amount of backlash in said transmission mechanism, a direction detecting circuit for detecting alteration of the driving direction by said driving motor, and a correction circuit for correcting the driving amount data by the backlash amount data of said output circuit in response to the driving direction alteration detecting signal from said direction detecting circuit.

4,537,488

CAMERA SYSTEM

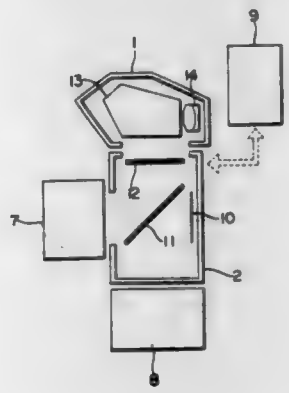
Nobuhiko Terui, Tokyo, Japan, assignor to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 22, 1984, Ser. No. 582,636

Claims priority, application Japan, Mar. 1, 1983, 58-29419[U]

Int. Cl.³ G03B *3/00, 7/28, 13/02*

U.S. Cl. 354—402 **6 Claims**



1. A camera system for exposing a photographic film to an image of a photographic object, which comprises in combination:

(a) an optical device for focusing the image of the photographic object on a predetermined plane;

(b) a camera body, in which said photographic film is disposed in a predetermined plane, said camera body being detachably mounted on said optical device, and including a first power source, exposure control means for controlling exposure on said film by application of a voltage from said first power source, and a voltage detection means for detecting a voltage to be applied to said exposure control means from said first power source, said voltage detection means producing a detection signal when the voltage as detected is lower than a predetermined voltage level; and

(c) a view-finder device for observing the image of the photographic object on said predetermined plane, said device being detachably mounted on said camera body, and including a second power source, focus detection means operable for detecting a focused state of the image of the photographic object on said predetermined plane by application of a voltage from said second power source, and means for introducing said detection signal from said camera body, said focus detection means stopping its operation in response to said detection signal.

4,537,489

AUTOMATIC FOCUSING DEVICE

Ryoichi Suzuki, Kanagawa, and Ryuji Tokuda, Tokyo, both of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 407,478, Aug. 12, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 597,587

Claims priority, application Japan, Aug. 21, 1981, 56-131080

Int. Cl.³ G03B *3/10*

U.S. Cl. 354—403 **6 Claims**

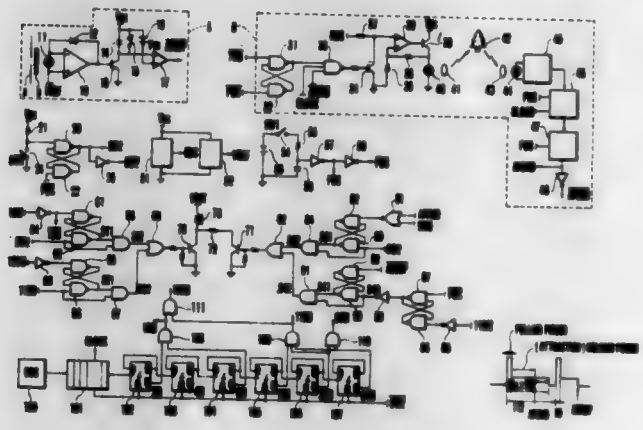
1. An active type automatic focusing device having signal projecting means and electromagnetic means for initiating a focal point adjusting action, the automatic focusing device comprising:

signal producing means for producing a control signal;

first power supply means for effecting a power supply for operating said projecting means, said first power supply means being arranged to begin to effect the power supply to said signal projecting means in response to the signal produced from said signal producing means; and

second power supply means for effecting a power supply for

actuating said electromagnetic means, said second power supply means being arranged to effect the power supply to said electromagnetic means until the signal is produced from said signal producing means wherein said signal



producing means is arranged to produce said signal after the lapse of a period of time long enough for allowing said electromagnetic means to complete an action for initiating said focal point adjusting action.

4,537,490

APPARATUS AND METHOD FOR ELECTROPHOTOGRAPHICALLY PRODUCING COPY HAVING CONTINUOUS-TONE AND OTHER CONTENT

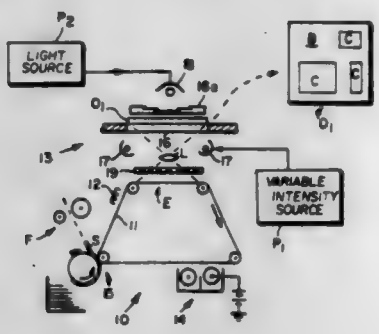
Michael D. Stoudt, Webster, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Division of Ser. No. 493,868, May 12, 1983, Pat. No. 4,472,047. This application Jun. 4, 1984, Ser. No. 617,047

The portion of the term of this patent subsequent to Sep. 18, 2001, has been disclaimed.

Int. Cl.³ G03G *15/04*

U.S. Cl. 355—3 R **7 Claims**



4. In electrophotographic apparatus in which a photoconductor sector is moved along an operative path past: (a) primary charging means, (b) first support means for supporting a continuous tone original, (c) exposing means for producing a half-tone-screened light image of an original on said first support means on said photoconductor sector and (d) means for developing the electrostatic image on said photoconductor sector, characterized as further including: (i) second support means for accurately positioning another original that is complementary to said continuous tone original, in a location which is registered relative to said operative path, (ii) exposing means for exposing said photoconductor sector to the unscreened light image of the positioned complementary original and (iii) means for synchronizing said first and second exposing means and the movement of said sector so that the image exposures are in predetermined register on said sector.

4,537,491

DEVELOPMENT APPARATUS FOR DEVELOPING LATENT ELECTROSTATIC IMAGES

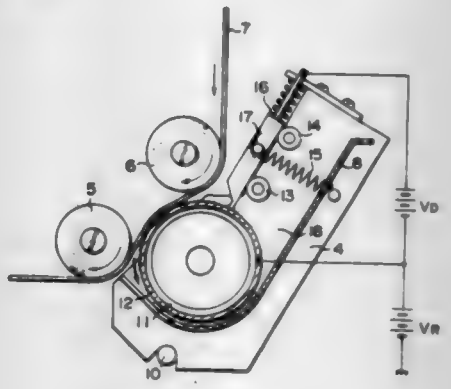
Kenya Komada, Yokohama; Kazuhiro Yuasa, Zama, and Shiroh Kondoh, Sagamihara, all of Japan, assignors to Ricoh Company, Ltd., Tokyo, Japan

Filed Oct. 13, 1982, Ser. No. 434,005

Claims priority, application Japan, Oct. 20, 1981, 56-167737; Nov. 26, 1981, 56-189523; Mar. 31, 1982, 57-50982

Int. Cl.³ G03G *15/09*

U.S. Cl. 355—3 DD **8 Claims**



1. In a development apparatus for developing latent electrostatic images borne by a belt-shaped flexible recording medium to visible or transferable images by a rotatable development roller which carries toner thereon and supplies the toner to said recording medium for developing the latent electrostatic images, the improvement wherein said development roller comprises a non-magnetic, cylindrical sleeve and a magnetic roller disposed within said non-magnetic cylindrical sleeve, said non-magnetic cylindrical sleeve and said magnetic roller each capable of being driven in rotation relative to the other, the ratio of the peripheral rotary speed of said non-magnetic cylindrical sleeve or said magnetic roller to the peripheral rotary speed of said recording medium is in the range of 1.5 to 2.5, said toner carried on said development roller is regulated to a predetermined thickness by a doctor blade, and said belt-shaped flexible recording medium is in arc-contact with said development roller.

4,537,492

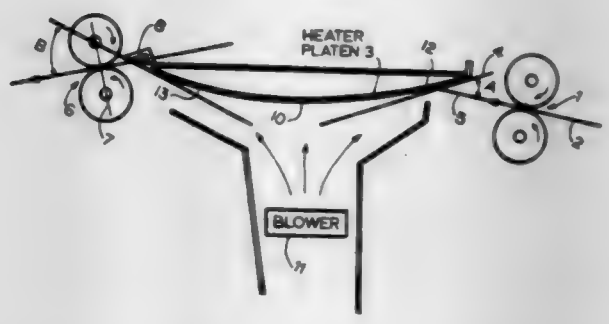
HEATER-DRIER FOR FUSING TONER IMAGES ON WET PRINTING PLATES

Juergen G. Lein, West Henrietta, and Daniel H. Robbins, Rochester, both of N.Y., assignors to Itek Corporation, Lexington, Mass.

Filed Jul. 7, 1983, Ser. No. 511,693

Int. Cl.³ G03G *15/20*

U.S. Cl. 355—3 FU **6 Claims**



1. Fuser drier for fixing toner images upon wet cut relatively stiff sheets having a beam flexure strength and resiliency substantially greater than the beam flexure stength and resiliency of electrostatic copy paper comprising:

a. a vacuum curved platen for heating said relatively stiff sheets to fix said image;

b. a first entrance roller drive means for directing the lead edge of said sheets at a first acute angle of between 10° and 50° with respect to a first surface portion of said platen for maintaining substantial lead edge portions of said sheets in intimate contact with said first portion of said platen by virtue of said first acute angle and the resiliency of said sheets and;

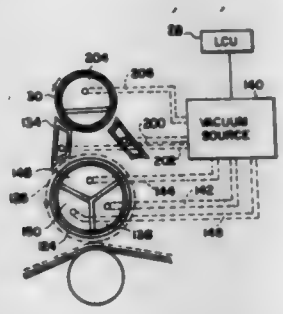
c. a second exit roller drive means for withdrawing said sheets from said platen in a direction forming a second acute angle between 10° and 50° with respect to a second surface portion of said platen for maintaining substantial trailing edge portions of said sheets in intimate contact with said second portion of said platen, by virtue of said second acute angle and said resiliency of said sheets, said first and second surface portions being separated by a third curved surface portion for contacting major centralized portions of said sheets to fix the toner images thereon.

4,537,493

COPY SHEET POSITIONING APPARATUS

Matthew J. Russel, Rochester, N.Y., assignor to Eastman Kodak Company, Rochester, N.Y.

Filed Feb. 1, 1984, Ser. No. 575,966
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 SH **5 Claims**



1. In electrographic apparatus which produces copies on copy sheets of at least first and second dimensions and which includes a moving image transfer member upon which transferable unfixed images are formed, copy sheet positioning apparatus comprising:

first sheet handling means located adjacent to said image transfer member for defining a first path for a copy sheet of said first dimension, said first sheet handling means operating to remove said copy sheet of said first dimension from transferable relationship with said image transfer member after transfer of one unfixed image to said sheet of said first dimension and to reposition said copy sheet in transferable relationship with a successive unfixed image on said image transfer member wherein said removing and repositioning is effected without contacting said first unfixed image on said copy sheet; and

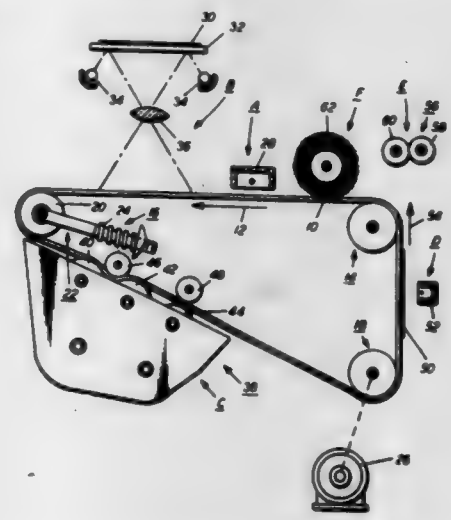
second sheet handling means for defining with said first sheet handling means a second path for a copy sheet of said second dimension, said second sheet handling means cooperating with said first sheet handling means to remove said copy sheet of said second dimension from transferable relationship with said image transfer member after transfer of one unfixed image to said copy sheet and to reposition said copy sheet in transferable relationship with a successive unfixed image on said image transfer member, wherein said removing and repositioning is effected without contacting said first unfixed image on said copy sheet.

4,537,494

MULTI-ROLL DEVELOPMENT SYSTEM

Anthony R. Lubinsky, Webster; Gary A. Denton, Rochester; Paul D. Keller, Rochester, and James E. Williams, Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jan. 26, 1984, Ser. No. 574,114
Int. Cl.³ G03G *15/08*
U.S. Cl. 355—3 DD **16 Claims**



1. An apparatus for developing a latent image recorded on a flexible member with a developer material, including:

first means, positioned closely adjacent to the flexible member defining a first development zone therebetween, for transporting the developer material into contact with the flexible member in the first development zone;

second means, spaced from said first transporting means and positioned closely adjacent to the flexible member defining a second development zone therebetween, for transporting the developer material into contact with the flexible member in the second development zone;

means for maintaining the flexible member, in the region of at least the first development zone and the second development zone, at a preselected tension of sufficient magnitude so that the developer material being transported into contact with the flexible member, in at least the first development zone and the second development zone, deflects the flexible member about said first transporting means and said second transporting means to form a wrapped first development zone and a wrapped second development zone; and

third means, spaced from said second transporting means and positioned closely adjacent to the flexible member defining a third development zone therebetween, for transporting developer material into contact, in at least the third development zone, with the flexible member, said third transporting means receiving developer material from said second transporting means forming a blanket of developer material therebetween, said first transporting means, said second transporting means and said third transporting means transporting developer material into contact with the latent image recorded on the flexible member to optimize development thereof.

4,537,495

MULTISPEED DEVELOPMENT SYSTEM

John J. Kopko, Macedon, N.Y., assignor to Zerox Corporation, Stamford, Conn.

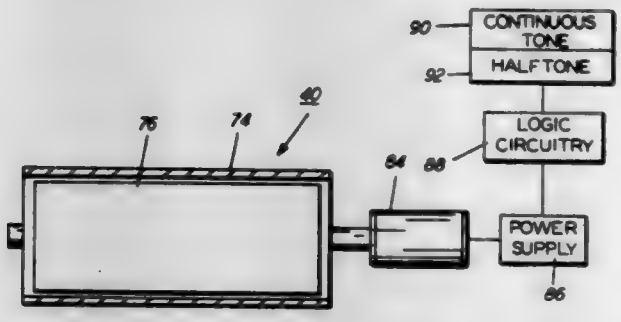
Filed Jul. 1, 1983, Ser. No. 510,123
Int. Cl.³ G03G *15/00*
U.S. Cl. 355—3 DD **12 Claims**

1. An apparatus which develops continuous tone and halftone latent images recorded on a flexible belt, including:

means, positioned closely adjacent to the flexible belt defining a development zone therebetween, for transporting developer material into contact with the flexible belt in

the development zone so as to develop the latent image recorded thereon;

means for maintaining the flexible belt at a preselected tension of sufficient magnitude so that the developer material being transported into contact therewith deflects the



flexible belt about said transporting means to form a wrapped development zone; and

means for controlling the speed of said transporting means so that said transporting means moves at a higher speed when developing continuous tone latent images than when developing half-tone latent images.

4,537,496

METHOD OF REPLENISHING A DEVELOPER FOR PHOTOSENSITIVE PLATE

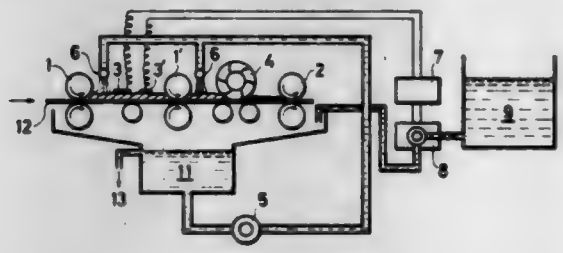
Hisao Ohba; Toshio Uchida; Azusa Ohashi, and Nobuyuki Kita, all of Shizuoka, Japan, assignors to Fuji Photo Film Company, Limited, Kanagawa, Japan

Filed Nov. 22, 1982, Ser. No. 443,831

Claims priority, application Japan, Nov. 30, 1981, 56-192429

Int. Cl.³ G03F *7/00*

U.S. Cl. 355—10 **21 Claims**



1. A method of replenishing a source of developer compound for an automatic image developing machine which develops images upon a plurality of pre-exposed photosensitive plates by depositing said developer compound on said plates as said plates are transported through said machine, said method comprising the steps of:

sensing a residual amount of a photosensitive layer remaining on said photosensitive plates a predetermined period of time after said plates are coated with said developer compound; and

sending a predetermined quantity of a replenisher developer compound to said source of developer compound when said residual amount of said photosensitive layer exceeds a predetermined level.

4,537,497

IMAGE RECORDING APPARATUS

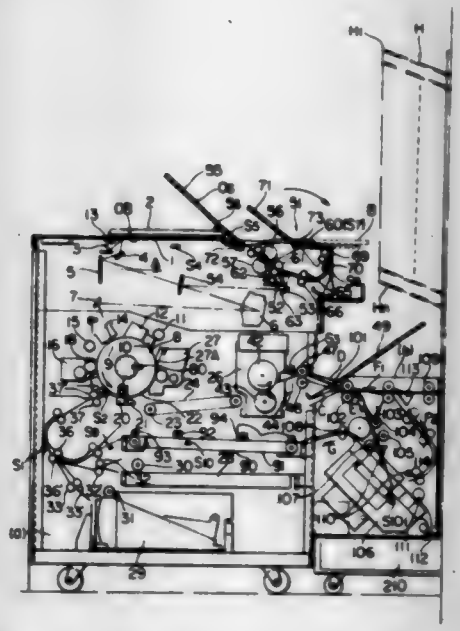
Shunichi Masuda, Wakabayashi, Japan, assignor to Canon Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 15, 1982, Ser. No. 449,843

Claims priority, application Japan, Dec. 21, 1981, 56-205175; Dec. 21, 1981, 56-205176

Int. Cl.³ G03G *15/00*

U.S. Cl. 355—14 R **13 Claims**



1. An image recording apparatus comprising:

recording means for recording an image on a sheet, said recording means being capable of operating in a first mode and a second mode different from the first mode;

feeding means for feeding the sheet to said recording means so as to allow overlay recording on the same side of the sheet on which an image has been previously recorded by said recording means; and

controlling means for controlling said recording means and said feeding means such that after image recording is performed on a desired number of sheets in the first mode, the overlay recording of an image on the same sides of the sheets is allowed in the second mode, and wherein said first and second modes are maintained, once they are commenced, until the image recording or the overlay image recording on the desired number of sheets is completed.

4,537,498

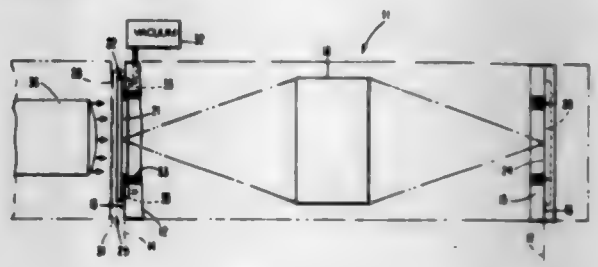
FOCAL PLANE ADJUSTED PHOTOMASK AND METHODS OF PROJECTING IMAGES ONTO PHOTOSENSITIZED WORKPIECE SURFACES

Edward L. Banks, Allentown; Thomas S. Ellington, IV, Emmaus, and Terrence E. Zavecz, Alburtis, all of Pa., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed May 3, 1984, Ser. No. 606,561

Int. Cl.³ G03B *27/52*

U.S. Cl. 355—55 **11 Claims**



1. A photomask for use in a projection printer, comprising:

a substrate having a major surface in a plane and a pattern of projectable object features on such surface;

a transparent coverplate positioned over the pattern and

attached to the substrate, such coverplate having a predetermined thickness and an index of refraction greater than unity, thereby causing a shift by a predetermined distance of an object plane along an optical path of such projection printer upon insertion of the photomask therein; and

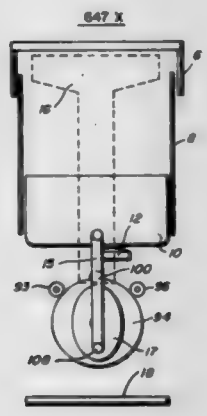
mounting surfaces disposed on the substrate in regions of the substrate adjacent to support surfaces of a mounting chuck in the projection printer upon insertion of the photomask into the projection printer, such mounting surfaces being located in a plane parallel to, and offset from, the plane of the pattern by a distance equal to the predetermined distance by which the object plane is shifted due to a presence of the coverplate in the optical path of the projection printer.

4,537,499

IMAGING SYSTEM FOR PRODUCING REDUCED OR ENLARGED IMAGES OF AN ORIGINAL DOCUMENT

Joachim A. Ritter; Edward C. Bock, both of Webster; Richard A. Spinelli, and John R. Dennis, both of Rochester, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Mar. 21, 1983, Ser. No. 477,193
Int. Cl.³ G03B *27/36*
U.S. Cl. 355—58 **4 Claims**



1. An imaging system for providing, at an image plane, reduced or enlarged images of a document, said system comprising:

an enclosed light housing which comprises fixed side walls, a transparent platen assembly forming the top document-supporting surface of said housing, said platen assembly adapted to be vertically translated in light-tight sliding contact with the interior surface of said side walls and a floor assembly forming the bottom surface of said housing, said floor assembly adapted to be vertically translated in light-tight sliding contact with the interior surfaces of said side walls,

a projection lens mounted in said floor assembly,

means for simultaneously translating said platen assembly and said floor assembly in response to a particular document magnification selection, and

flash illumination means within said housing to provide substantially uniform illumination of said platen.

4,537,500

PHOTOGRAPHIC CONTRAST CONTROL DEVICE

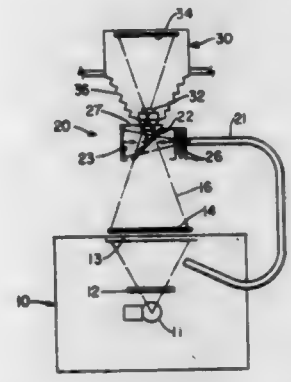
John C. Nemesnyik, Nutley, N.J., assignor to Charles Beseler Company, Florham Park, N.J.

Filed Jan. 19, 1984, Ser. No. 571,996
Int. Cl.³ G03B *27/54*
U.S. Cl. 355—67 **17 Claims**

1. A photographic contrast control device for use with apparatus having a light source that creates a cone of light forming an image, which light is directed along a path from the image source through a lens onto film while the film is simultaneously partially fogged by diffused light which is substantially colinear with the light from the image, comprising:

a partial mirror means positioned diagonally across the path of the cone of light travelling to the lens so that one side generally faces the image source and one side generally faces the lens, said partial mirror means being at least partially transmissive to light directed onto the side facing the image source and at least partially reflective to light directed onto the side facing the lens;

diffuse light means for directing diffuse light at substantially a right angle to the light path through said partial mirror means from the image source side of said partial mirror; and



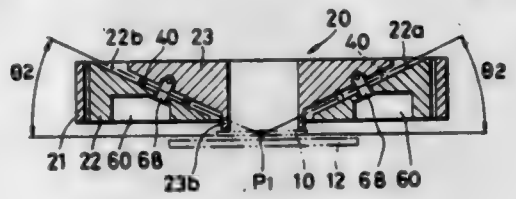
reflecting means for reflecting the diffuse light from said diffuse light means after it has passed through said partial mirror means and forming it into a cone of light approximating the cone of light from the image source, the cone of light from said reflecting means being directed onto said partial mirror means and being reflected thereby into the lens such that it is colinear with the cone of light from the image source.

4,537,501

APPARATUS FOR THE ATTITUDE CONTROL OF PLATE-FORM BODY

Yukio Kakizaki, Yokohama; Hisao Izawa, and Junji Hazama, both of Kawasaki, all of Japan, assignors to Nippon Kogaku K.K., Tokyo, Japan

Filed Feb. 17, 1984, Ser. No. 581,049
Claims priority, application Japan, Feb. 22, 1983, 58-28336
Int. Cl.³ G03B *27/62, 27/64*
U.S. Cl. 355—76 **10 Claims**



1. Apparatus for the attitude control of a plate-form body placed on a reference plane comprising:

(a) support table means;

(b) at least two first spring members arranged on said support table means at different positions including two positions opposed to each other relative to one of the axes of rectangular coordinates on said reference plane;

(c) first movable stage means placed on said support table means through said first spring members;

(d) first driving means for producing a displacement of said first movable stage means at different positions including two positions opposed to each other relative to said one coordinate axis and in the direction tangent to a circle described normally to said one coordinate axis with the center of the circle being on said one coordinates axis;

(e) at least two second spring members arranged on said first movable stage means at different positions including two positions opposed to each other relative to the other axis of said rectangular coordinates;

(f) second movable stage means placed on said first movable stage means through said second spring members, said

second stage means including means for holding said plate-form body on said reference plane containing the origin of said rectangular coordinates; and

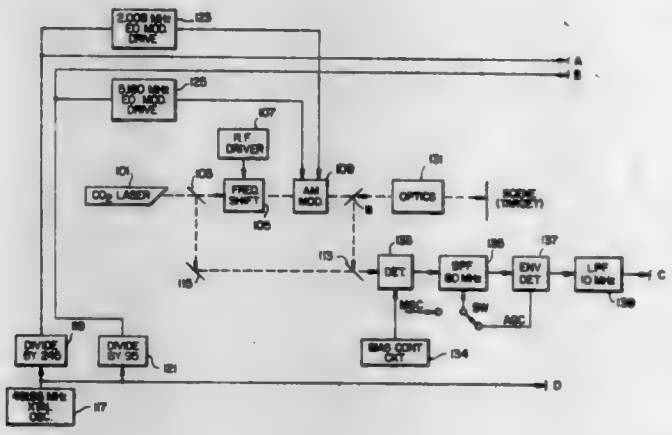
(g) second driving means for producing a displacement of said second movable stage means at different positions including two opposed positions relative to the other coordinate axis and in the direction tangent to a circle described normally to the other coordinate axis with the center of the circle being on the other coordinate axis.

4,537,502

MULTIPLE DISCRETE FREQUENCY RANGING WITH ERROR DETECTION AND CORRECTION

Dale D. Miller, Seattle, and John N. Polky, Kent, both of Wash., assignors to The Boeing Company, Seattle, Wash.

Filed Sep. 30, 1982, Ser. No. 428,550
Int. Cl.³ G01C *3/08*; G01S *13/38*; G06F *7/72*
U.S. Cl. 356—5 **9 Claims**



1. Range determination apparatus for determining target range within a range depth of D and within a range bin error of e comprising:

(a) a carrier frequency transmitter for transmitting a carrier frequency,

(b) means for generating at least two modulating signals having frequency f_1 and f_2 respectively,

(c) modulation means coupled to said carrier frequency transmitter for modulating said carrier, said modulation means operative for said at least two discrete frequencies f_1 and f_2 for providing one of simultaneous or sequential modulated signals,

(d) said at least two modulating frequencies and a common sub-multiple counting frequency f_o related such that

$$f_o m_1' f_1 = m_2' f_2$$

where,

$$m_1' = m_1 m_r$$

$$m_2' = m_2 m_r$$

$$m_r \geqq 4e+1$$

$$m_1 m_2 \geqq D/m_r$$

and where m_1,m_2 and m_r are pairwise relatively prime,

(e) a receiver for receiving a reflected signal from said target and for producing a received electrical signal corresponding thereto,

(g) phase detection means responsive to said modulating signals of said generating means and said received signals for detecting the phase difference x_1' and x_2' respectively between the modulating signals of frequencies f_1 and f_2 and each of the corresponding received signals,

(h) data processing means coupled to receive said detected phase differences for each of said received signals, said data processing means operative

(1) to calculate

$$R(x_1')_{m1},\ R(x_2')_{m2}$$
$$R(x_1')_{mr},\ R(x_2')_{mr}$$

where $R(x)_m$ is defined as the residue of x modulo m,

(2) to compare $R(x_1')_{mr}$ with $R(x_2')_{mr}$ and if unequal to modify at least one of x_1' and x_2' by adding or subtracting an integer $\leqq e$ to produce modified phase differences x_1'' and x_2'' so that residues $R(x_1'')_{mr}$ and $R(x_2'')_{mr}$ of the modified phase differences are equal, and

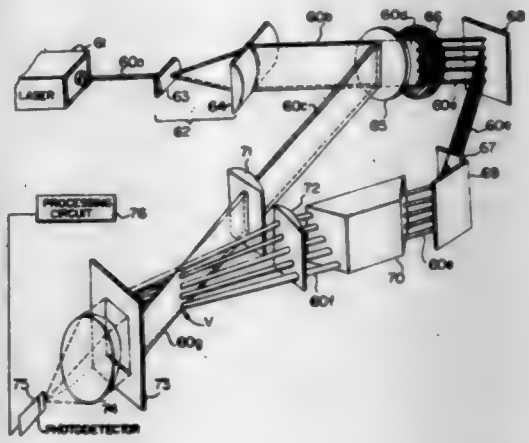
(3) to decode one of (1) the residue number triplet $[R(x_1')_{m1}, R(x_2')_{m2}, R(x_1')_{mr}]$ and the modified residue number triplet $[R_1'')_{m1}, R(x_2'')_{m2}, R(x_1'')_{mr}]$ relative to the moduli set $[m_1,m_2,m_r]$ to obtain the target range.

4,537,503

MULTIPLE MEASURING CONTROL VOLUME LASER DOPPLER ANEMOMETER

Dirkson D. S. Liu, Ottawa, Canada, assignor to Atomic Energy of Canada Limited, Ottawa, Canada

Filed Sep. 10, 1982, Ser. No. 417,191
Claims priority, application Canada, Dec. 22, 1981, 393182
Int. Cl.³ G01P *3/36*
U.S. Cl. 356—28.5 **8 Claims**



1. A multiple measuring-control volume laser Doppler anemometer comprising:

laser means for generating an optical beam;

means for transforming the optical beam to produce a number V of measuring control volumes wherein each control volume has two focussed optical beams intersecting at a unique predetermined angle ϕ, wherein the angles ϕ_1, ϕ_2, . . . ϕ_n for the different control volumes each differ from one another, the optical beam transforming means having:

means for broadening the optical beam into an elongated beam;

means for splitting the elongated beam into a first elongated beam and a second elongated beam;

means for gating the first elongated beam into V parallel beams; and

means for causing the second elongated beam to intersect with the V parallel beams to form the control volumes; and

means for detecting the scattered light from measuring control volumes for determining the velocity at each of the control volumes.

4,537,504

SECURITY BLANK WITH ENHANCED AUTHENTICATING FEATURES, AND A METHOD AND AN APPARATUS FOR DETERMINING THE GENUINENESS OF THE SECURITY BLANK

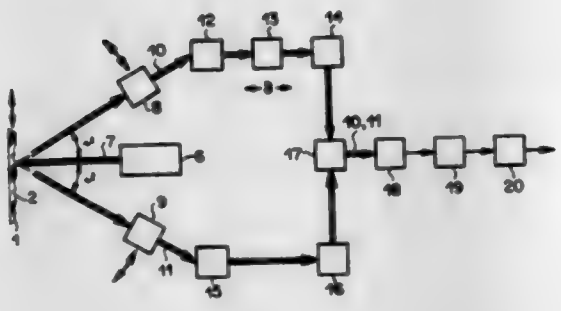
Heinrich P. Baltes; Andrew S. Glass, both of Zug, and Karl Jauch, Le Lignon, all of Switzerland, assignors to LGZ Landis & Gyr Zug AG, Zug, Switzerland

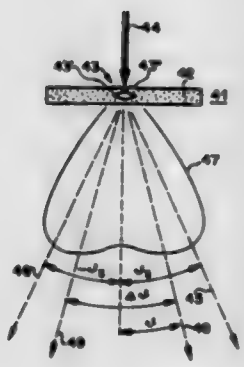
Filed Jan. 25, 1982, Ser. No. 342,065

Claims priority, application Switzerland, Feb. 3, 1981, 720/81; Apr. 16, 1981, 2559/81; Sep. 23, 1981, 6126/81

Int. Cl.³ G06K *7/10*

U.S. Cl. 356—71 47 Claims





1. In a method of determining the genuineness of a security blank having a light redirecting spatial structure establishing at least one authenticating feature, said method including illuminating said spatial structure, forming from light scattered from said spatial structure two narrow bundles of light rays, and converting said two bundles of light rays into electrical signals, said spatial structure having characteristics enabling a predetermined amount of coherence to be established between said two bundles of light rays,

the improvement comprising the steps of worsening said characteristics by a prearranged measure so as to largely frustrate recognition of the function of said one authenticating feature by intensity measurements of the scattered light, while still allowing recognition thereof by determining a sufficient degree of coherence between said two bundles of light rays,

determining the degree of coherence between said two bundles of light rays,

forming "yes" or "no" outputs in dependence of the degree of coherence determined, and

ascertaining from said outputs information pertaining to the genuineness of said security blank.

4,537,505

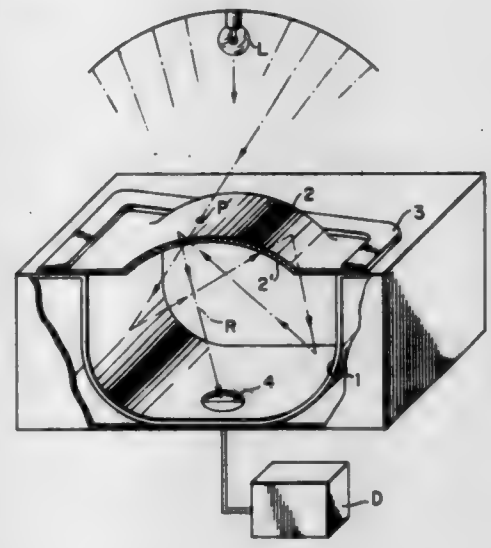
METHOD FOR DETECTING PIN HOLES AND THE LIKE IN SHEET MATERIAL FOR PACKAGING AND SIMILAR APPLICATIONS

Robert Bishop, Brookline, and Krikor Bezjian, Cambridge, both of Mass., assignors to Beltronics Inc., Brookline, Mass.

Filed Aug. 11, 1982, Ser. No. 407,097

Int. Cl.³ G01N *21/89*

U.S. Cl. 356—237 5 Claims



1. A method of pin-hole detection in a sheet to be used as part of a sealed enclosure, that comprises, placing the sheet over an open-mouth light-reflecting or light-scattering walled cavity; light-sealing the periphery of the sheet over the cavity mouth; brightly illuminating the outer surface of the sheet to cause light to leak through any pin hole therein into the cavity; shaping the light-reflecting cavity walls to insure multiple and randomly distributed light reflections including from the inner surface of the sheet within the cavity as light enters the pin-hole; and detecting a signal from such multiply reflected light at a predetermined region within the cavity which statistically will receive at least part of such multiply reflected light to register the presence of the pin hole.

4,537,506

ATOMIZER FOR ATOMIC ABSORPTION SPECTROSCOPY

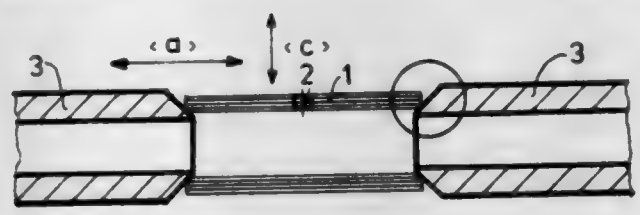
Bernhard Lersmacher, Schlossweiherstrasse 31, 5100 Aachen, Fed. Rep. of Germany; Michael P. Wassall, 32 Greenfields, Earith, Cambridge, and Philip J. Connor, 5 Mereton Walk, Hardwick, Cambridge, both of England

Filed Oct. 12, 1982, Ser. No. 433,760

Claims priority, application Fed. Rep. of Germany, Oct. 12, 1981, 3140458

Int. Cl.³ G01N *21/16*; G01J *3/30*

U.S. Cl. 356—312 10 Claims



1. An atomizer for producing free atoms and an atomic cloud for atomic absorption spectroscopy comprising

a tubular cuvette for receiving a sample, said cuvette being at least outwardly enveloped by layers of pyrolytic graphite,

electrical supply means for Joule heating said cuvette to produce free atoms of said sample,

contact member means for contacting said cuvette and said electrical supply means, wherein said cuvette and said

contact member means are constructed to obtain a predetermined temperature distribution in said cuvette,

first contact surfaces of said cuvette and second contact surfaces of said contact member means being constructed so that electric current flows from said electrical supply means through an inner wall of said cuvette by way of said contact member means, and

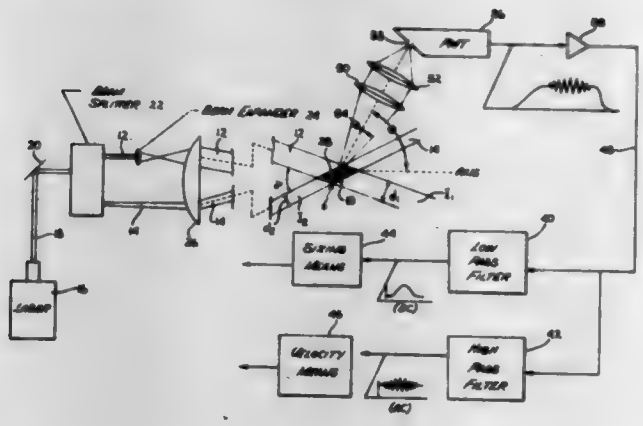
interruptions of said pyrolytic graphite layers between said first contact surfaces and outer surfaces of said cuvette.

4,537,507

DUAL BEAM MAXIMUM INTENSITY LASER SIZING SYSTEM

Cecil Hess, Irvine, Calif., assignor to Spectron Development Laboratories, Inc., Costa Mesa, Calif.

Filed Oct. 18, 1982, Ser. No. 434,905
Int. Cl.³ G01N *15/02*
U.S. Cl. 356—336 **22 Claims**



1. In an apparatus for measuring or sensing parameters associated with particles, droplets or the like, employing laser scattering, a method for determining when a particle, droplet or the like has crossed the central portion of a first laser beam, comprising the steps of:

(a) generating a second laser beam, said second laser beam having a smaller diameter than said first laser beam;

(b) directing said laser beams along an axis and causing said beams to cross said axis at a known angle in order to establish an interference pattern within the area defined by the intersection of said first and second laser beams;

(c) sensing the scattered signal of said beams caused by a particle, droplet or the like passing through said interference pattern;

(d) filtering said signal such that only signal components having frequencies within a predetermined range are permitted to pass;

(e) detecting the presence of Doppler fringes in said filtered signal, thereby indicating that said particle, droplet or the like has crossed the central portion of said first laser beam.

4,537,508

INTERFEROMETER SPECTROMETER HAVING IMPROVED SCANNING REFERENCE POINT

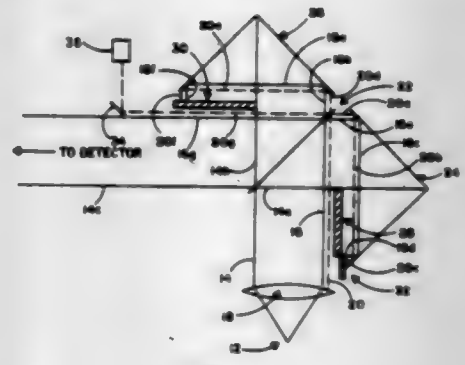
Walter M. Doyle, Laguna Beach, Calif., assignor to Laser Precision Corporation, Utica, N.Y.

Filed Mar. 1, 1983, Ser. No. 470,937
Int. Cl.³ G01B *9/02*
U.S. Cl. 356—346 **20 Claims**

1. In a spectrometer having means for receiving and integrating successive analytical interferograms provided by an analytical beam, which analytical interferograms are synchronized by reference interferograms provided by a reference beam, an interferometer, of the type having a fixed-length arm and a variable-length arm which is varied to cause spectral scanning, comprising:

a moving retroreflector in the variable-length arm which reflects both the analytical beam and the reference beam;

stationary reflecting means in the variable-length arm providing a flat folding reflector which causes the path of at least the reference beam from the retroreflector to be folded on itself, and returned to the retroreflector; and



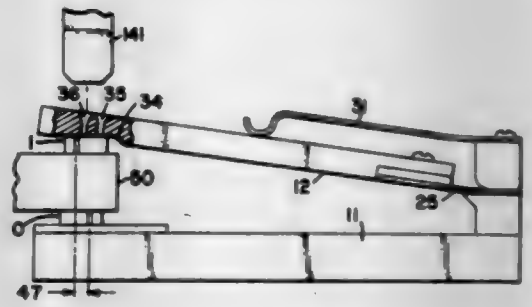
stationary reflecting means for the reference beam in the fixed-length arm so located as to offset the reference interferogram with respect to the analytical interferogram.

4,537,509

OPTICAL INSPECTION AND ALIGNMENT VERIFICATION SYSTEM

Leonard E. Kronfeld, Minneapolis, Minn., assignor to Nortronics Company, Inc., Minneapolis, Minn.

Filed Mar. 10, 1982, Ser. No. 356,328
Int. Cl.³ G01B *11/00*
U.S. Cl. 356—399 **14 Claims**



1. Apparatus for optical verification of head alignment for floppy disk transducer assemblies, comprising:

an optical probe having spaced parallel transparent viewing surfaces on opposite sides thereof and having a thickness between said surfaces small enough to permit insertion of the probe between opposing heads of a transducer assembly, said probe including image transmission and reflection means for transmitting images of transducer heads objects adjacent said viewing surfaces through the probe to end portions thereof;

optical path means positioned to receive said images transmitted from end portions of said probe, and operative to provide magnified images of the transducer heads objects adjacent said viewing surfaces for visual inspection thereof;

means for supporting a transducer assembly to be inspected with the heads thereof adjacent said viewing surfaces of said probe;

means for providing relative movement between said optical probe and said transducer assembly supporting means;

means for measurement of the relative positions of the read/-write gaps of transducer heads positioned adjacent opposite sides of said probe by measuring the amount of relative movement of said probe and transducer assembly supporting means required to bring said gaps into predetermined alignment in said optical path means; and

an optical tracking scope and means positioning it in alignment with said transducer supporting means for observation and measurement of movement of the transducer

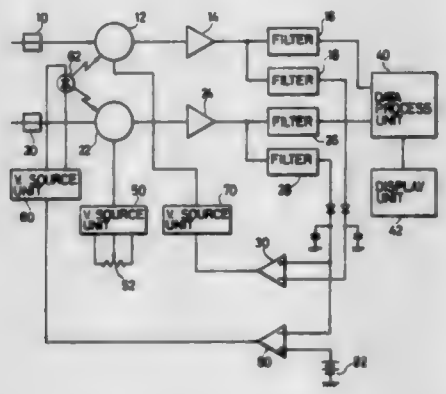
heads caused by opening of the transducer assembly to receive the optical probe.

4,537,510

OUTPUT CONTROL DEVICE FOR LIGHT DETECTORS FOR PHOTOMETERS

Kenichiro Takahasi, Naka, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Dec. 9, 1982, Ser. No. 448,271
Claims priority, application Japan, Dec. 15, 1981, 56-203249
Int. Cl.³ G01J *1/16, 1/18*
U.S. Cl. 356—435 **14 Claims**



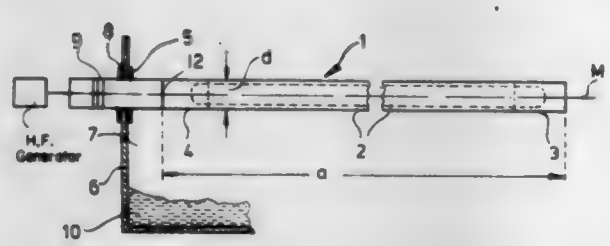
4. A device for correcting outputs from light detector adapted to detect the light passing through an object sample, a second light detectors for photometers, comprising a first light detector adapted to detect the light passing through a reference sample, a reference light source adapted to apply modulated light having a predetermined frequency to said first and second light detectors, a first filter circuit adapted to detect such a component of an output signal from said first light detector that is representative of the modulated light from said reference light source, a second filter circuit adapted to detect such a component of an output signal from said second light detector that is representative of the modulated light from said reference light source, a correcting and computing means adapted to compare output signals from said first and second filter circuits and to correct the relative sensitivities of said first and second light detectors in accordance with the results of the comparison, and a means for comparing a voltage of an output signal of one of said first and second filter circuits with a predetermined reference voltage to control the illuminance of said reference light source in accordance with the result of the comparison.

4,537,511

APPARATUS FOR GENERATING AND RADIATING ULTRASONIC ENERGY

Karl Frei, Bronschhofen, Switzerland, assignor to Telsonic AG Fur Elektronische Entwicklung Und Fabrikation, Bronschhofen, Switzerland

Continuation of Ser. No. 361,917, Mar. 15, 1982, abandoned.
This application Mar. 28, 1984, Ser. No. 594,229
Claims priority, application Fed. Rep. of Germany, Jul. 20, 1980, 3027533
Int. Cl.³ B01F *11/02;* B08B *3/12;* H01L *41/04*
U.S. Cl. 366—127 **9 Claims**



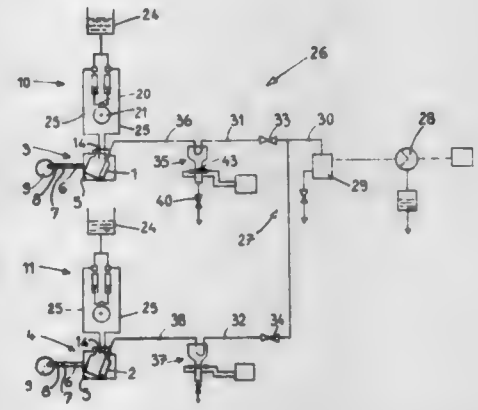
1. A device for the generation and radiation of ultrasonic energy in a liquid comprising: a first resonator having a longitudinal axis and dimensioned to be resonant in a direction along its longitudinal axis, said first resonator having a radial output surface which undergoes longitudinal vibratory displacement as said first resonator is vibrated, and a second resonator comprising a hollow tube including walls in contact with the liquid, means coupling said second resonator to said radial output surface of said first resonator, substantially at an anti-nodal region of axial vibratory motion of said first resonator, for producing longitudinal vibratory motion in said second resonator from said first resonator, said second resonator being dimensioned for producing standing longitudinal waves having a pattern of standing nodes along the second resonator and for converting said longitudinal motion into a standing radial wave motion in said second resonator which is 90° out of phase with the longitudinal wave motion.

4,537,512

METHOD AND APPARATUS FOR KORSAKOVIAN DILUTION

Jean Boiron; Christian Boiron; Jacky Abécassis, and André-Marcel Favier, all of Rhone, France, assignors to Laboratoires Boiron, Rhone, France

Filed Sep. 14, 1983, Ser. No. 532,174
Claims priority, application France, Nov. 18, 1982, 82 19618
Int. Cl.³ B01F *11/00*
U.S. Cl. 366—132 **15 Claims**



1. A Korsakovian dilution apparatus for processing at least one bottle by impregnating the inner wall of said at least one bottle with a tincture and repeatedly filling said at least one bottle with a predetermined amount of fluid, agitating said at least one bottle to dissolve a portion of said tincture into said fluid to produce a solution, and emptying said solution from said bottle for a predetermined number of cycles, said Korsakovian dilution apparatus comprising:

bottle clamping means for securing said at least one bottle;

fluid supply means for selectively supplying said at least one bottle with said predetermined amount of fluid;

shaking means selectively imparting a shaking motion to said bottle clamping means such that a portion of said tincture dissolves in said fluid to produce said solution;

solution intake means selectively operable to draw said solution from said at least one bottle;

automatic control means sequentially controlling said fluid supply means, said shaking means, and said intake means to repeatedly produce said solution from said predetermined amount of said fluid; and

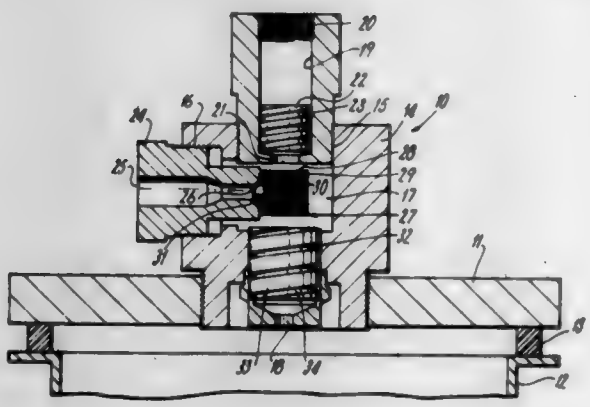
automatic counting means counting the number of cycles of operation controlled by said automatic control means.

4,537,513

PROCESS FOR DISSOLVING POLYMERIC MATERIAL

Peter Flesher, and John G. Langley, both of West Yorkshire, England, assignors to Allied Colloids Limited, United Kingdom

Filed Aug. 2, 1983, Ser. No. 519,601
Claims priority, application United Kingdom, Aug. 6, 1982, 8222726; Nov. 9, 1982, 8231898; May 13, 1983, 8313165
Int. Cl.³ B01F 5/00
U.S. Cl. 366—162 12 Claims



1. A process of dissolving into water the polymer particles of a dispersion of the particles in a non-aqueous liquid using an orifice mixer, the process comprising forcing the dispersion and the water into the orifice mixer and thereby bringing the dispersion and the water into contact under high shear, and ejecting the resultant mixture from the orifice within a period of less than about 100 milliseconds from the time of contact and in which the pressure drop between the pressure where the dispersion and the water come into contact and the constant pressure of the mixture after said ejection is at least 6 kg/cm^2.

4,537,514

MULTI-FUNCTION ANALOG DISPLAY STOPWATCH

Tatsuo Moriya, 3-5, Owa 3-chome, Suwa-shi, Nagano-ken, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

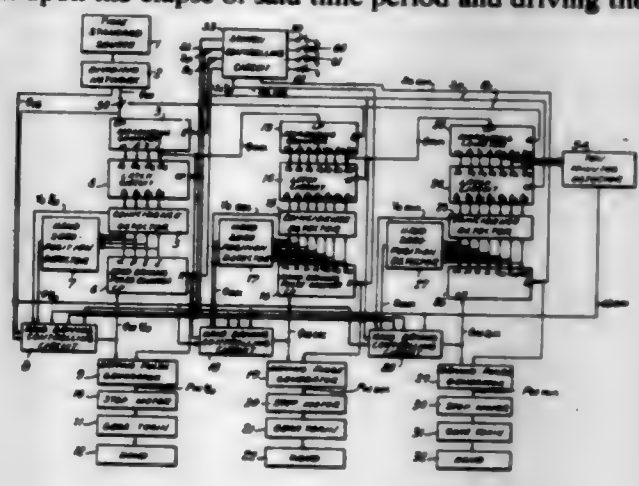
Filed Jun. 6, 1983, Ser. No. 501,343
Claims priority, application Japan, Jun. 7, 1982, 57-97292; Jul. 22, 1982, 57-127908; Dec. 17, 1982, 57-221574
Int. Cl.³ G04F 8/00
U.S. Cl. 368—107 9 Claims

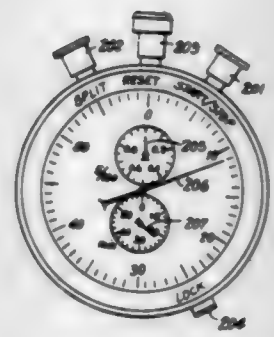
1. An analog display stopwatch for displaying elapsed time in selected time units by means of at least one hand driven by an electrical step motor, said stopwatch comprising: oscillator means for generating a high frequency signal, divider means for reducing said high frequency standard standard signal to lower frequency timekeeping signals and driver means for driving said motor on command on response to said lower frequency signals for indicating elapsed time in a selected time unit, said driver means including:

switch control circuit means for generating a signal respectively for commanding a start and a stop for time measurement and a signal for commanding a return-to-zero of each hand;

detector means for detecting the elapse of a preselected time period, said time period being measured from initiation of time measurement; and

hand driving control circuit means for permitting continuous driving of each hand during time measurement within said time period, driving at least one hand to a zero position upon the elapse of said time period and driving the at least one hand to display the elapsed time upon generation of the stop signal after the time period.



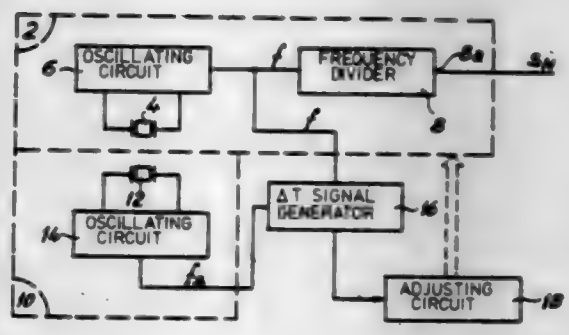


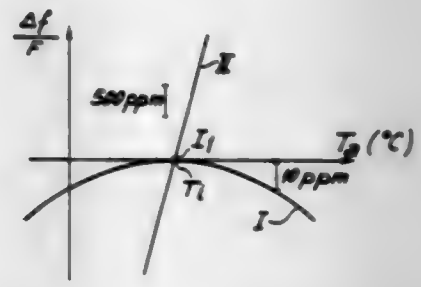
4,537,515

RESONATOR TEMPERATURE COMPENSATED TIME BASE AND WATCH USING SAID TIME BASE

Rudolf Dinger, St-Aubin; Jean-Georges Michel, Neuchâtel, and Claude-Eric Leuenberger, Chézard, all of Switzerland, assignors to Asulab S.A., Bienne, Switzerland

Filed Dec. 6, 1982, Ser. No. 447,457
Claims priority, application Switzerland, Dec. 17, 1981, 8060/81
Int. Cl.³ G04B 17/20
U.S. Cl. 368—202 6 Claims





1. A time base provided with thermal compensation, comprising:

a first frequency generator including a first oscillator provided with a piezoelectric resonator and producing a first signal at a first frequency which is dependent on temperature wherein said first resonator has a relationship between the relative variation in frequency ($\Delta f/f$) and the variation in temperature T with respect to its inversion temperature of the form $(\Delta f/f)=\alpha_O T+\beta_O T^2+\gamma_O T^3+\ldots$, wherein α_O, β_O and γ_O are constant coefficients;

a second frequency generator including a second oscillator provided with a piezoelectric resonator and producing a second signal at a second frequency which is substantially linearly dependent on temperature in a range for which thermal compensation is desired, wherein said second resonator has a substantially linear relationship between the relative variation in frequency ($\Delta f/f$) and the variation in temperature T with respect to the inversion temperature of the first resonator, of the form: $(\Delta f/f)=\alpha_s T+\beta_s T^2$, α_s and β_s being coefficients such that α_s is at least one hundred times greater than β_s, wherein β_s is of the same order of magnitude as β_o;

means for producing a signal which is representative of temperature, in response to the signals produced by said oscillators;

means for producing a correction signal in response to said temperature signal, and

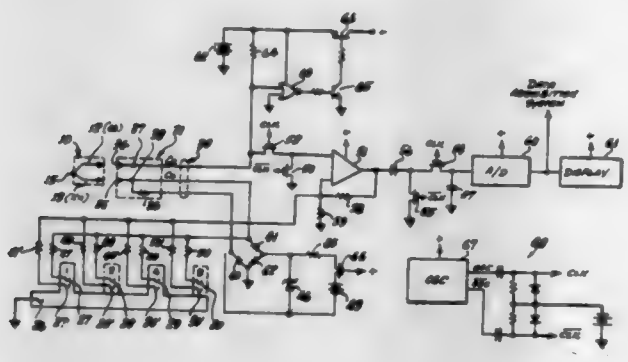
means for adjusting the frequency of the signal produced by said first frequency generator in response to said correction signal.

4,537,516

ELECTRONIC THERMOMETER

Saul Epstein, 14558 Deervale Pl., Sherman Oaks, Calif. 91403

Filed Sep. 27, 1982, Ser. No. 424,601
Int. Cl.³ G01K *7/14, 15/00*
U.S. Cl. 374—1 **39 Claims**



21. In an electronic thermometer of the type comprising a replaceable thermocouple probe and signal conditioning means, the improvement which comprises means responsive to impedance connected across the input of said signal conditioning means for energizing said signal conditioning means when a thermocouple probe is connected to said input, and for deenergizing said signal conditioning means when said thermocouple probe is disconnected.

36. In a measuring system for measuring the magnitude of a physical variable, said system having replaceable sensors and signal conditioning means, the improvement which comprises:

(a) a group of replaceable sensors selected to have substantially identical transfer functions; and

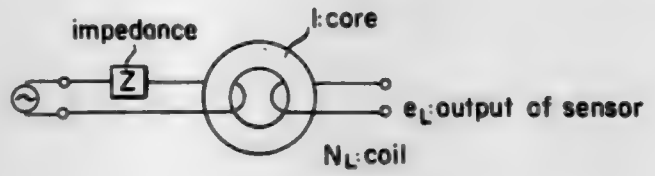
(b) replaceable calibration adjusting means having a characteristic depending on said transfer function for use in conjunction with any one of said replaceable sensors to adjust the calibration of said signal conditioning means responsive to said characteristic.

4,537,517

TEMPERATURE SENSITIVE AMORPHOUS MAGNETIC ALLOY

Koichiro Inomata, Yokohama, and Shinichi Murata, Tokyo, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Division of Ser. No. 346,952, Feb. 8, 1982, abandoned. This application Oct. 18, 1983, Ser. No. 543,053
Claims priority, application Japan, Feb. 10, 1981, 56-17431
Int. Cl.³ G01K *7/38;* H01H *37/32*
U.S. Cl. 374—21 **8 Claims**



1. A method for detecting a predetermined temperature, comprising the steps of:

(a) by electromagnetically exciting a magnetic core element, inducing a voltage in electrically conductive means, which core element is comprised of a temperature sensitive amorphous magnetic alloy having a Curie point at approximately said predetermined temperature, which Curie point is not higher than 200° C., said alloy consisting essentially of a composition represented by the formula

$$(M_{1-a-b}Ni_aCr_b)_{100-z}X_z$$

wherein M represents a cobalt atom or an iron atom; X represents at least one of a phorophorous atom, a boron atom, a carbon atom and a silicon atom; a is a numeral ranging between 0.2 and 0.8 inclusive when M is Co, or a is a numeral ranging between 0.4 and 0.9 inclusive when M is Fe; b is a numeral ranging between 0 and 0.05, such that the sum of a and b does not exceed 0.8 when M is cobalt or 0.9 when M is iron; and z is a numeral ranging between 15 and 30 inclusive, and

wherein a and z are selected such that the temperature difference between the temperature showing the maximum value of effective permeability at 10 kHz and the temperature of the Curie point is less than 10 centigrade degrees;

(b) heating said core to a temperature above said predetermined temperature; and then

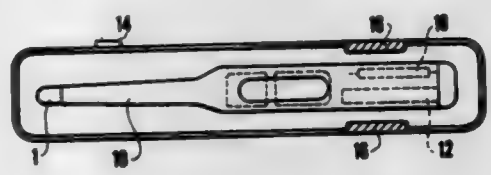
(c) measuring an abrupt decrease in said voltage.

4,537,518

ELECTRONIC CLINICAL THERMOMETER

Masakazu Murase, Fuji, Japan, assignor to Terumo Kabushiki Kaisha, Tokyo, Japan

Continuation of Ser. No. 418,287, Sep. 15, 1982, Pat. No. 4,461,584. This application Mar. 23, 1984, Ser. No. 592,704
Claims priority, application Japan, Dec. 28, 1981, 56-214320
The portion of the term of this patent subsequent to Jul. 24, 2001, has been disclaimed.
Int. Cl.³ G01K *7/00*
U.S. Cl. 374—188 **6 Claims**



1. An electronic clinical thermometer which comprises;

temperature sensing means for producing an output signal commensurate with temperature;

decision means for discriminating, on the basis of the output signal of said temperature sensing means, a temperature above a predetermined threshold temperature as well as a rising temperature gardient over a predetermined period of time, said decision means first discriminating a temperature above the threshold temperature and then discriminating a rising temperature gradient from said discriminated temperature; and

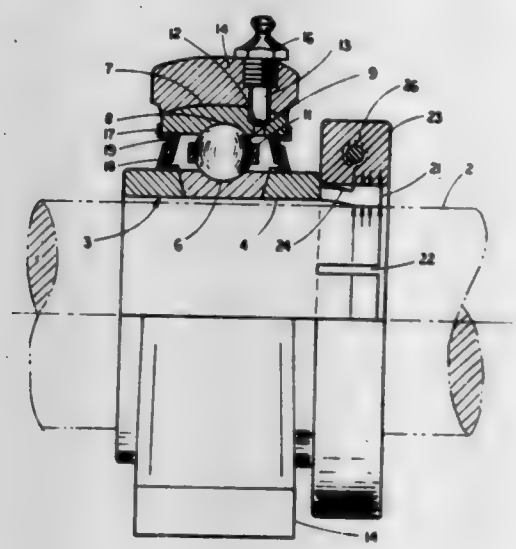
measuring means placed in a measurement start mode by a discrimination from said decision means for initiating a temperature measurement on the basis of an input from said temperature sensing means;

said decision means comprising a counting means for producing an output commensurate with a temperature sensed by said temperature sensing means; first discriminating means for making a first discimination in response to an input from said counting means indicative of a count corresponding to a temperature above the predetermined threshold temperature, and second discriminating means for producing a second discrimination in response to subsequent output from said counting means indicative of a count over said predetermined period of time corresponding to a rising temperature gradient of a magnitude larger than that of a predetermined rising temperature gradient, said second discrimination establishing the measurement start mode.

4,537,519
SHAFT LOCKING DEVICE FOR BEARING ASSEMBLIES

Albert M. LaRou, Naperville, and Eldon A. Atteberry, Aurora, both of Ill., assignors to Emerson Electric Co., St. Louis, Mo.

Filed Sep. 14, 1984, Ser. No. 650,452
Int. Cl.³ F16C *35/063*
U.S. Cl. 384—478 9 Claims

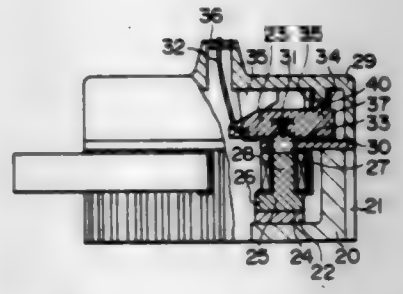


1. A bearing assembly comprising: inner and outer annular bearing rings, each including bearing raceways positioned in opposed annular spaced relation to each other; a rolling element loaded annular cage mounted in the space between said opposed raceways with the rolling elements therein engaging in said opposed raceways; said inner bearing ring including slotted inner ring finger extensions extending in cantilever fashion from at least one end thereof; and force means to compress said inner ring finger extensions when said inner ring finger extensions are mounted on a shaft to lock said inner ring tightly to said shaft; said inner ring finger extensions having a recessed annular grooved area extending at least partially therearound in spaced relation from the outer ends of said finger extensions of sufficient breadth and depth to convert what would otherwise be shearing stresses along such area to bending stresses and thus improve radial and thrust accommodation capacity and rotational torque transmission.

4,537,520
DOT PRINTER HEAD WITH REDUCED MAGNETIC INTERFERENCE

Kuniaki Ochiai, and Shigeo Komakine, both of Shizuoka, Japan, assignors to Tokyo Electric Co., Ltd., Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,066
Claims priority, application Japan, Nov. 16, 1982, 57-201430; Dec. 20, 1982, 57-223405; Jan. 31, 1983, 58-14219
Int. Cl.³ B41J *3/12*
U.S. Cl. 400—124 7 Claims

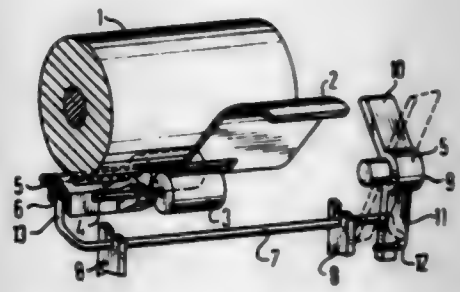


1. A dot printer head comprising an annular plurality of armatures each mounted for motion to actuate a needle, a spring for urging each of said armatures in a printing direction, a permanent magnet on which cores holding faces are formed in a plane perpendicular to a line connecting said cores and said plurality of armatures, a yoke providing a magnetic path between said permanent magnet and said armatures, and an annular plurality of cores each having a mounting portion contacted with one said core holding face of said permanent magnet, each of said cores further having a post-like projection which extends from said mounting portion and has an electromagnetic coil held thereon, the area of each said mounting portion which is contacted with said core holding face being greater than the area of the cross section of said post-like projection, said cores being secured to said permanent magnet in spaced relationship from each other in an annular row on said core holding faces of said permanent magnet, said area of said mounting portion defining a trapezoid having sides defined by radii of said annular row so that said area of said mounting portion is maximized.

4,537,521
PAPER FEED MECHANISM WITH VARYING CONTACT PRESSURE

Rudolf Rekewitz, Wolfratshausen, and Hermann Wambach, Unterhaching, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Oct. 26, 1983, Ser. No. 545,812
Claims priority, application Fed. Rep. of Germany, Nov. 5, 1982, 3240989
Int. Cl.³ B41J *11/26*
U.S. Cl. 400—637.6 7 Claims



1. A paper feed mechanism for printing and typing equipment, comprising:

(a) a frame;

(b) a platen;

(c) at least one paper pressure roller support shaft having

first and second ends: a first end of said shaft being mounted in said frame;

(d) at least one paper pressure roller mounted on said shaft; and

(e) means to vary the force applied by said roller against said platen, said means comprising a frame-supported spring wire lever having first and second arms, the second end of said shaft being supported by said first arm of said spring wire lever, said second arm being pivotally supported and settable at a plurality of predeterminable pivot positions, said spring wire lever being movable to and from an additional predetermined position to move said roller away from and toward said platen whereby both the position of said roller with respect to said platen and the force applied by said roller against said platen may be selectively varied by setting the position of said second arm so that the holding pressure of paper which may be insertable between said platen and said roller is selectively variable.

4,537,522

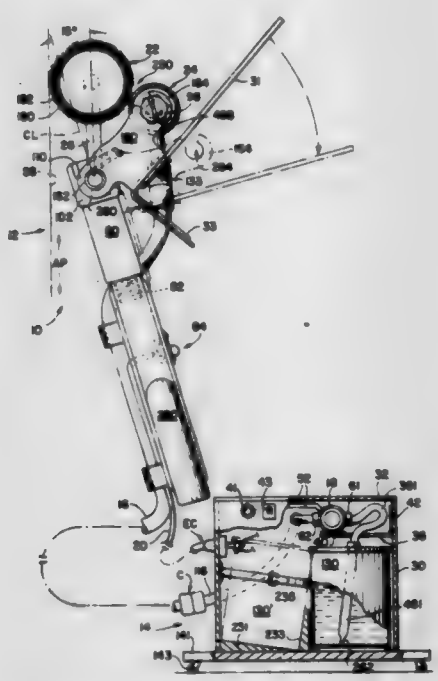
PAINT DISPENSING APPLICATOR WITH SAFETY FEATURES

Joseph C. Charney; Phillip M. Goodman, and Robert H. Morgan, all of Milwaukee, Wis., assignors to EPR Corporation, Danville, Calif.

Continuation-in-part of Ser. No. 344,545, Feb. 1, 1982, Pat. No. 4,422,789, and a continuation-in-part of Ser. No. 193,001, Oct. 2, 1980, abandoned. This application Jul. 1, 1983, Ser. No. 509,687

Int. Cl.³ B43M *11/02*

U.S. Cl. 401—218 **24 Claims**



1. A paint applying apparatus comprising:

a frame;

an applicator roller mounted on said frame for applying paint to a surface;

a paint feed roller removably mounted on a pivotable carriage on said frame;

bias means normally holding the feed roller in engagement with said applicator roller;

said feed roller having dispensing means therewith for thoroughly and efficiently distributing paint thereacross;

a portable base unit;

power means with said base unit for supplying paint under relatively low pressure to said feed roller through a flexible connecting hose;

a handle removably attached to said frame having a switch thereon for remotely controlling energization of said power means for supplying paint; and

said dispensing means on said feed roller for thoroughly and efficiently distributing paint thereacross including a pair of closed loop helical troughs extending the working width of said feed roller.

4,537,523

DEVICE FOR DETECTING THE POSITION OF A SHAFT IN A COUPLING ELEMENT, AND IN PARTICULAR A UNIVERSAL JOINT YOKE

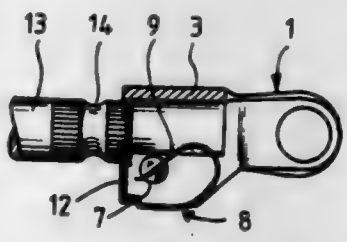
Bernard Haldric, Vendome, France, assignor to NACAM, Vendome, France

Filed Jun. 6, 1984, Ser. No. 617,638

Claims priority, application France, Jun. 13, 1983, 83 09757

Int. Cl.³ F16B *41/00*

U.S. Cl. 403—12 **11 Claims**



1. A device for detecting the position of a coupling element having a split hub and spaced apart ears of clamping means for the hub, on a shaft or other torque transmitting element, said hub defining a throughway passage for said shaft, said ears defining throughway apertures for receiving a screw for tightening the clamping means, said device comprising a resiliently yieldable element mounted on the hub and having a strip disposed between said ears and extends into said passageway and an end portion which extends across said apertures to prevent full insertion of said screw in said apertures in the absence of said shaft, said strip of the resiliently yieldable element being positioned and arranged to be urged by said shaft laterally back out of the path of the shaft upon insertion of said shaft in the hub of the coupling element so that said end portion ceases to extend across said apertures and clears the screw when the shaft has sufficiently penetrated the hub.

4,537,524

BALL AND SOCKET JOINT

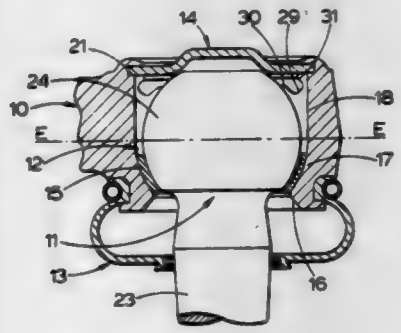
William M. Hanson, Leamington Spa, England, assignor to Automotive Products plc, Leamington Spa, England

Filed Apr. 12, 1984, Ser. No. 599,329

Claims priority, application United Kingdom, Apr. 16, 1984, 8310345

Int. Cl.³ F16C *11/06*

U.S. Cl. 403—140 **12 Claims**



1. A ball and socket joint comprising:

a ball pin having a shank and a part-spherical head;

a housing defining a substantially cup-shaped cavity including a cylindrical bore portion and an aperture, the shank of the ball pin extending through said aperture;

a bearing insert of a resilient material within said cavity and partially enclosing the part-spherical head of the ball pin and including a truncated spherical base portion, a thickened end portion which before insertion into the housing has a flared outer surface, an end face, an internal cylindri-

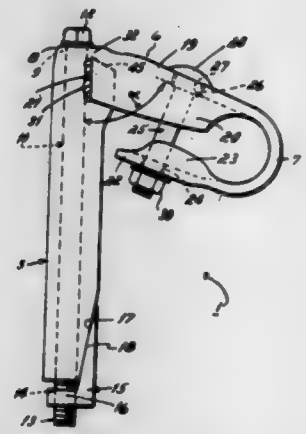
cal surface and slots in the thickened end portion extending axially from the end face, said thickened end portion being deformed during assembly such that the flared outer surface after assembly conforms to the cylindrical bore portion of the housing and the internal cylindrical surface conforms to the part-spherical head of the ball pin; and retainer means in the housing for retaining the bearing insert.

4,537,525

BICYCLE HANDLEBAR STEM

David K. McMurtrey, 540 S. Algonquin Dr., Mayville, Ky. 41056

Continuation of Ser. No. 492,807, May 9, 1983,. This application Jun. 4, 1984, Ser. No. 640,638
Int. Cl.³ F16B *7/08*
U.S. Cl. 403—191 **10 Claims**



8. A one-piece, sheet metal bicycle handlebar mounting stem comprising,

a hollow cylindrical post section adapted to be mounted within the stem of a fork of a bicycle,

a neck section integral with and extending from the top of said post section, said neck section having a top portion and a pair of side flanges, said top portion defining an angle with said post section, one edge of each of said pair of said flanges extending generally parallel to the axis of said cylindrical post section, said one edge of each of said pair of side flanges being welded to the periphery of said post section, and

a handlebar receiving head section of substantially cylindrical shape formed integral with said neck section.

4,537,526

HUB MOUNTING DEVICE

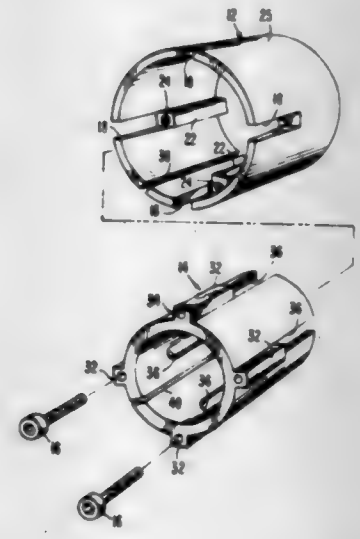
Werner Hartl, Plainsboro, N.J., assignor to Roller Bearing Company of America, West Trenton, N.J.

Filed Nov. 16, 1984, Ser. No. 672,236
Int. Cl.³ F16B *2/14*
U.S. Cl. 403—370 **11 Claims**

9. A radially expandable device for mounting a hub upon a shaft, comprising:

(a) outer and inner wedges bearing against the hub and shaft respectively and having slidably contacting, tapered surfaces, each wedge having circumferentially spaced slots and having ribs aligned with the slots, the ribs of one wedge extending within the slots of the other wedge in alignment with the ribs of said other wedge; and

(b) fastening elements extending through the aligned ribs for relatively axially shifting the wedges in a direction to



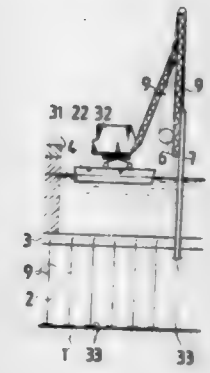
radially expand the same into gripping engagement with the hub and shaft.

4,537,527

MEANS FOR PROVIDING A VERTICAL DRAIN IN SOIL

Mauno O. Juhola, Helsinki, and Matti Numminen, Espoo, both of Finland, assignors to Pohjavahvistus Oy, Helsinki, Finland

Filed May 28, 1982, Ser. No. 383,167
Claims priority, application Finland, Mar. 19, 1982, 820951
Int. Cl.³ E02B *11/00*; E02D *3/10*
U.S. Cl. 405—50 **5 Claims**



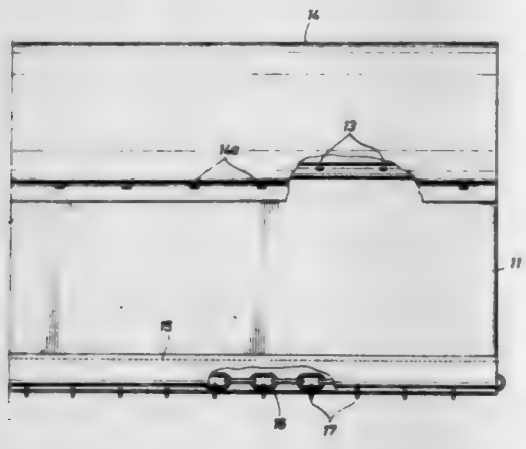
1. Apparatus for making a vertical drain in soil, comprising a push tube to be pushed into and pulled up from the soil and which carries within it a prefabricated drain having an anchor on a lower end thereof which aids in keeping the prefabricated drain stationary when the push tube is being pulled upwards, a cutting-off means carried within said push tube at a lower end thereof for cutting the prefabricated drain at a desired height which is within said tube, pushing means provided within said push tube above the cutting-off means for pushing a leading uncut end of the prefabricated drain within said tube to a point that is below the bottom end of the tube, said pushing means comprising pressing means mounted on both sides of the prefabricated drain and arranged to press against the prefabricated drain from opposite sides, and operating means for actuating said pressing means to press the prefabricated drain therebetween and move said pressing means and prefabricated drain downward together a desired length in said push tube so that said leading uncut end protrudes below the bottom end of the tube, whereby another anchor can be affixed to the lower uncut end of the prefabricated drain protruding from the push tube for use with a new drain section after the push tube is pulled up.

4,537,528

FIREPROOF BOOM

Wayne F. Simpson, Anchorage, Ak., assignor to Shell Oil Company, Houston, Tex.

Continuation of Ser. No. 520,873, Aug. 5, 1983, abandoned. This application Nov. 27, 1984, Ser. No. 675,456
Int. Cl.[3] E02B *15/04*
U.S. Cl. 405—72 6 Claims



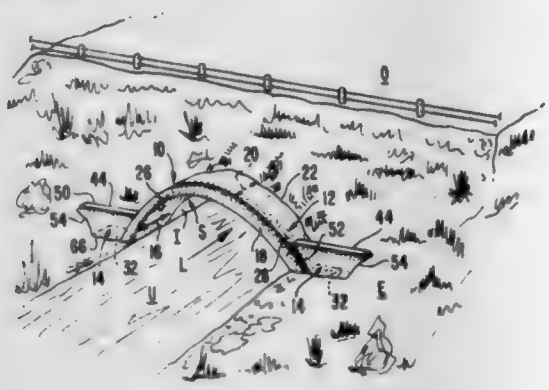
1. A fireproof boom for containing a flammable pollutant on a water surface comprising, a flotation member, and at least two layers of heat-resistant, water-sorbent material surrounding the flotation member and extending into the water and functionable to perform an osmotic wicking action to draw water up into the layers of the heat-resistant material and around the flotation member, thereby positioning the water to from protective steam about the flotation member upon exposure of the boom to fire.

4,537,529

EARTH RETAINING END ELEMENT FOR USE WITH OVERFILLED LOAD SUPPORT STRUCTURES

Louis N. FitzSimons, 10149 Cedar La., Kensington, Md. 20895

Filed Mar. 19, 1984, Ser. No. 590,799
Int. Cl.[3] E01F *5/00;* E04B *1/32;* E21D *11/00*
U.S. Cl. 405—125 9 Claims



1. An earth retaining end element for retaining earth overfill adjacent to an overfilled load support structure, with the load support structure including an arch element extending upward from foundation level, comprising:

(A) a longitudinal extension means having a crown and extending longitudinally from the arch element out of the earth overfill so that the earth overfill forms a toe on top of said longitudinal extension means, with said toe being unrestrained in at least one horizontal direction for permitting essentially unrestrained support of earth overfill on top of the; longitudiinal extension means and

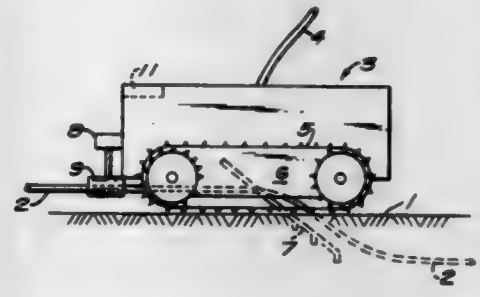
(B) a retaining panel means having a height less than the height of the extension means crown above the foundation level and being located adjacent to said longitudinal extension means, said retaining panel means being spaced longitudinally from the arch element to contact the earth overfill at locations spaced from the arch element and resisting horizontal earth pressure at locations spaced from the top of the arch element for resisting horizontal movement of the earth overfill located adjacent to the arch element, whereby the earth overfill is supported without using a spandrel wall or wingwalls.

4,537,530

MARINE CABLE BURYING METHOD AND DEVICE THEREFOR

Kazuomi Yamamura, Yokohama; Hideo Ishihara, Kamakura; Yoshinao Iwamoto, Fujimi; Hifumi Sakaguchi, Abiko; Masao Morita, and Toshio Izawa, both of Tokyo, all of Japan, assignors to Kokusai Denshin Denwa Co., Ltd., Tokyo, Japan

Continuation of Ser. No. 250,882, Apr. 3, 1981, abandoned. This application Mar. 7, 1984, Ser. No. 585,631
Claims priority, application Japan, Apr. 3, 1980, 55-42758
Int. Cl.[3] F16L *1/04*
U.S. Cl. 405—160 1 Claim



1. A marine cable burying device comprising:

a vehicle adapted for movement along a marine bed;

ultrasonic signal-receiving means carried by said vehicle for receiving transmissions from ultrasonic oscillators previously positioned along the cable, said signal-receiving means being rotatable and directed for scanning in a horizontal plane;

means for rotating said signal-receiving means, including a potentiometer rotatable therewith;

means coupled to said receiving means for guiding said vehicle towards the cable in response to said transmissions by comparing the detected output from said ultrasonic signal-receiving means with the potentiometer reading obtained by rotational scanning;

means carried by said vehicle for excavating a trench in the marine bed;

means extending forward of said vehicle and having arms for engaging the cable, each arm terminating in a semicylindrical engagement device, the arms being spring loaded for forcing apart said engagement devices allowing any one of said engagement devices to contact the cable upon approach of the burying device to the cable; and

means responsive to movements of said arms for directing said vehicle along the cable to provide for the excavation of a trench at the location of the cable, said directing means including a set of sensors coupled to respective ones of said arms for sensing a displacement of one of said arms in response to contact of the engagement device of said one arm with the cable, said engaging means lowering the cable into the trench for burial.

4,537,531

TILE LAYER

David L. Diefenthaler, 80 West La., Apt. 2-H, Columbus, Ohio 43201

Filed Jun. 14, 1982, Ser. No. 387,814
Int. Cl.[3] F16L *1/02*
U.S. Cl. 405—174 4 Claims

1. An apparatus for laying semi-flexible arched plastic drainage tile having a flexible flat bottom in a trench, comprising:

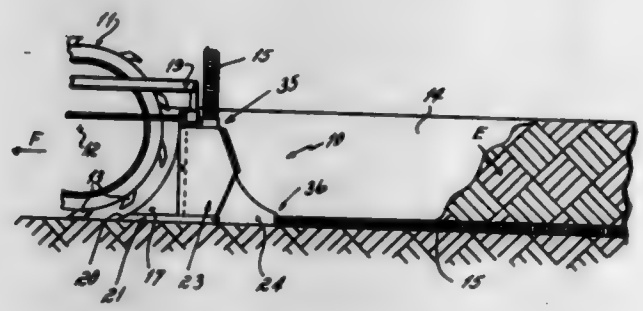
two spaced side shields, the side shields being rigidly inter-

connected by bracing means, the side shields defining a layer interior which is rearwardly and upwardly open, an upper tile entry end and a lower tile discharge end,

a top panel means substantially enclosing the rearwardly and upwardly open interior of the layer when mounted on the side shields,

plural guide rollers mounted within the interior of the layer for directing the tile in a smooth curved path between the side shields from the entry end to the discharge end for laying in the trench, a plurality of guide rollers being removably mounted on the side shields and a plurality of guide rollers being mounted on the top panel means,

means for mounting the top panel on the side shields so it can be opened to provide access to the interior of the layer for loading and unloading of tile through the upwardly open interior,



the arched tile being fed into the entry end in a collapsed form, the flat bottom of the arched tile lying within the apex of the curved upper portion of the tile, the guide means further including a spreader means for opening the collapsed arched tile, the spreader means comprising a concave roller, and a spreader roller, the spreader roller having a radially extending disc-shaped central portion and tapered ends, the spreader roller and the concave roller being in opposed spaced relation such that when arched tile is caused to pass therebetween, the concave roller applies a force on the tile substantially perpendicular to the apex of the curved portion of the tile and the arched tile is partially spread out in opposite directions across the spreader roller.

4,537,532

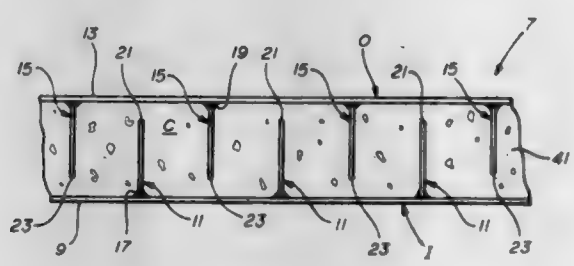
COMPOSITE LOAD BEARING OUTER SKIN FOR AN ARCTIC STRUCTURE AND A METHOD FOR ERECTING SAME

Jade Chen, Humble; Jal N. Birdy, and Brian J. Watt, both of Kingwood, all of Tex., assignors to Brian Watt Associates, Inc., Houston, Tex.

Filed Dec. 20, 1983, Ser. No. 563,940

Int. Cl.³ E02D *23/00, 31/00;* E04B *5/04*

U.S. Cl. 405—217 **11 Claims**



1. A load bearing outer skin for an arctic offshore structure comprising:

an inner assembly;

an outer assembly aligned substantially parallel to said inner assembly and defining an internal cavity therebetween;

said inner and outer assemblies each comprising:

a skin plate member;

a plurality of stiffeners attached at spaced intervals to said skin plate member and mounted substantially perpendicular to said skin plate member so as to extend partially into the internal cavity;

whereupon said stiffeners of said inner assembly are out of contact with said skin plate member of said outer assembly and said stiffeners of said outer assembly are out of contact with said skin plate member of said inner assembly; and

a cementitious material substantially filling the internal cavity;

whereupon shear forces exerted on said skin plate member of said outer assembly are transferred to said inner skin plate member through the bond between said cementitious material and said skin plate members; and also via said stiffeners connected to said outer skin plate member whereupon said shear forces are then transmitted to said stiffeners on said inner skin plate member through said cementitious material and then to said inner skin plate member, thereby allowing said inner and outer assembly and said cementitious material to form a composite flexural member in resisting applied loads.

4,537,533

INSTALLATION AND LEVELLING OF SUBSEA TEMPLATES

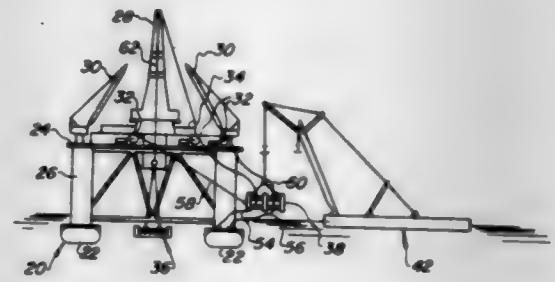
James E. Hampton, Peterculter, Scotland, assignor to Sedco, Inc., Dallas, Tex.

Continuation-in-part of Ser. No. 292,014, Aug. 11, 1981, Pat. No. 4,435,108. This application Dec. 21, 1982, Ser. No. 450,992

Claims priority, application United Kingdom, Jan. 28, 1981, 8102548; Jan. 28, 1982, 8202491

Int. Cl.³ E02B *17/02*

U.S. Cl. 405—227 **11 Claims**



1. A method of positioning a template or the like on the seabed comprising the steps of:

providing a floating vessel having a hoisting apparatus including a motion compensator suspended from said hoisting apparatus, and suspension means adapted to be connected to said motion compensator and to said template for lifting said template in response to operation of said hoisting apparatus;

providing means fixed to the seabed and adapted to be connected to said template for securing said template in a predetermined level position on the seabed;

providing adjustable tension means adapted to interconnect said suspension means and said means fixed to the seabed;

connecting said suspension means to said hoisting apparatus and said template;

interconnecting said tension means with said suspension means between said motion compensator and said template and with said means fixed to the seabed;

operating said hoisting apparatus to lift said template to level said template in a predetermined position while allowing said motion compensator to compensate for movement of said vessel with respect to said seabed,

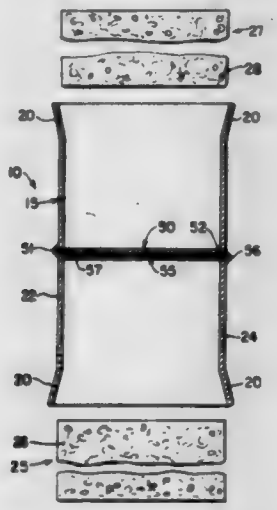
adjusting the tension in said tension means to dampen motion between said template and said means fixed to the seabed; and

securing said template to said means fixed to said seabed.

4,537,534
DRIVE FIT COUPLING FOR PRECAST CONCRETE PILES

Richard O. Marsh, Jr., 401 Standard Life Bldg., Pittsburgh, Pa. 15222

Filed Jun. 27, 1983, Ser. No. 507,765
Int. Cl.³ E02D 5/00, 5/72
U.S. Cl. 405—252 2 Claims



1. A drive fit coupling for joining a pair of plain end precast piles each having a polygonal cross sectional configuration comprising:

(a) an expandable sleeve having entry portions at each end thereof sized to receive the piles and align the sleeve and piles for engagement therebetween, said sleeve otherwise having a cross sectional configuration generally the same as that of the piles and having a portion of its perimeter extending inwardly to encroach upon the space which will ultimately be occupied by the piles in a manner so that when the piles are driven into the sleeve, said inwardly extending portions of the sleeve perimeter are forced outwardly causing the sleeve to fit tightly over the ends of the piles; and

(b) pile stopping means intermediate the ends of the coupling and comprising:

(i) a first horizontally oriented plate having one end thereof secured to one side of the sleeve and extending inwardly intermediate the ends of the sleeve; and

(ii) a second horizotally oriented plate secured at one end thereof to an opposite side of the sleeve, said second plate also extending inwardly from the vertical center of the sleeve in a manner so that the first and second plates slide over each other as the piles are driven into the sleeve thereby allowing the sleeve to freely expand while preventing either pile from entering the sleeve beyond the vertical center of the sleeve.

4,537,535
ROCK REINFORCEMENT

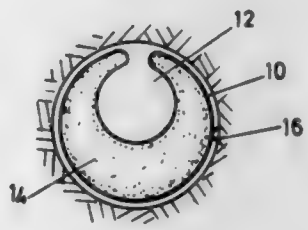
John W. MacBain, 205 Anderson Ave., Northcliff Ext. 2, Johannesburg, Transvaal, South Africa

Filed Jun. 23, 1982, Ser. No. 391,288
Claims priority, application South Africa, Jun. 25, 1981, 81/4291
Int. Cl.³ E21D 20/02
U.S. Cl. 405—260 20 Claims

1. Apparatus component assembly combination for reinforcing a hole formed in rock comprising:

as first component at least one expandable tubular member having a longitudinally extending bore and adapted to be placed in a hole formed in rock, and

as second component in combination therewith a selective supply of a volume increasing settable and expandable non-explosive material which in initial unset and unexpanded condition occupies a given volume and in final set and expanded condition occupies an increased volume relative to said given given volume, and which non-explosive material is capable of changing from its unset to its set condition over a period of setting time and during its setting period is capable of increasing expanding and as it expands of increasingly generating a compressive force in the expanding direction of its increasing volume until it reaches its final set and expanded condition and occupies said increased volume,

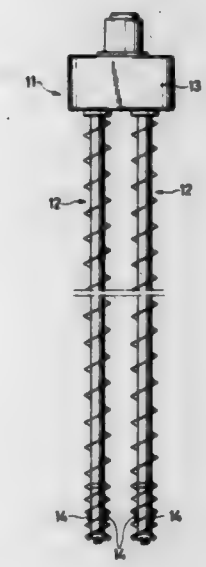


said supply of non-explosive material being disposed within the bore of the tubular member, such that when the tubular member is disposed in said hole formed in the rock, said non-explosive material upon changing from its unset to its set condition during its setting period causes the adjacent portion of the tubular member to expand outwardly into frictional contact with said hole in the rock, said supply of non-explosive material being sufficient upon setting to maintain and frictional contact but being insufficient during and upon setting to split the rock.

4,537,536
PROCESS AND APPARATUS OF CONSTRUCTING A WATER TIGHT UNDERGROUND PILE WALL

Yoshio Tsubonuma, Hoya, and Tohru Kawai, Chiba, both of Japan, assignors to The Shimizu Construction Co., Ltd., Tokyo, Japan

Filed Oct. 18, 1983, Ser. No. 543,071
Int. Cl.³ E02D 5/18
U.S. Cl. 405—267 7 Claims



1. Apparatus for producing an elongated water-tight pile wall consisting of a row of mutually overlapping and mutually interpenetrating subsequently and previously formed adjacent pile wall portions such that one previously formed pile wall portion has a longitudinally extending groove therein and an adjacent subsequently formed pile wall portion has a longitudinally extending torque that is received in the groove to provide a water-tight interlock therebetween, comprising:

a drive;

a pair of longitudinally extending and generally parallel augers operative to excavate the earth for corresponding previously formed and subsequently formed pile wall portions each mounted on an end thereof for rotary motion to said drive and axially spaced by a distance less than

the opertive width dimension of an auger to insure overlapping between adjacent previously formed and subsequently formed pile wall portions, each auger having a hollow shaft;

a hollow cutting head having a tip mounted for rotation with the elongated shaft of each auger with the hollow of the head in fluid communication with the hollow of the shaft and in fluid communication with an aperture provided therefor in said tip;

first and second pairs of elongated cutting blades each having ends having an operative generally rectangular geometry of dimensions selected to be less than the operative width of an auger to cut said grooves in adjacent previously formed pile wall portions;

first means for mounting said first pair of cutting blades to one of said heads for motion between a first position where the lateral dimension defined between the ends of said first pair of cutting blades is less than the operative width dimension of its auger and a second position where the lateral dimension defined between the ends of said first pair of cutting blades is greater than the operative width dimension of its auger to allow the generally rectangular cutting blades to cut into the confronting surrface of the previously formed pile portions to form said longitudinally extending grooves to insure the mutual interpenetration of subsequently formed and previously formed adjacent pile wall portions;

second means for mounting said second pair of cutting blades to the other one of said heads for motion between a first position where the lateral dimension defined between the ends of said second pair of cutting blades is less than the operative width dimension of its auger and a second position where the lateral dimension defined between the ends of said second pair of cutting blades is greater than the lateral width dimension of its auger to allow the generally rectangular cutting blades to cut into the confronting surface of the previously formed pile wall portion to form said longitudinally extending grooves likewise to insure the mutual interpenetration of adjacent subsequently formed and previously formed adjacent pile wall portions; and

means coupled to said augers and to said first and second pairs of cutting blades for selectively moving said first and said second pairs of cutting blades to a selected one of their first and second positions.

4,537,537

METHOD OF SHAPING BY GENERATING FOR PRODUCING PROFILES ON WORKPIECES, AND APPARATUS FOR PERFORMING THIS METHOD

Friedrich Becher, and Walter Eggert, both of Ludwigsburg, Fed. Rep. of Germany, assignors to Hermann Pfauter GmbH & Co., Ludwigsburg, Fed. Rep. of Germany

Filed Aug. 6, 1982, Ser. No. 406,082

Claims priority, application Fed. Rep. of Germany, Aug. 7, 1981, 3131381

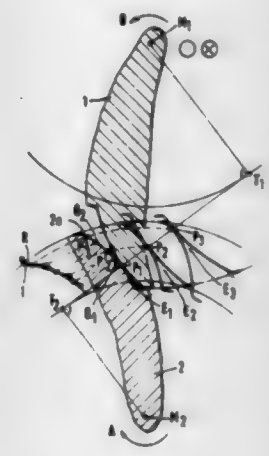
Int. Cl.³ B23F *5/16*

U.S. Cl. 409—34 **12 Claims**

1. An apparatus for shaping by generating for producing profiles on workpieces with a tool, said apparatus comprising:

a rotatably driven shaping tool which additionally carries out a stroke movement in the direction of its axis of rotation; and

a rotatably driven clamping device for said workpiece; means for the rotary motions of said tool and of said clamping device occurring continuously according to a fixed preset transmission ratio, and means for the stroke movement of said tool and the shaping movement being coupled with one another according to the equation $p=k(\pm)q$, where p is the number of small cuts per work-



piece rotation, $k=int(p+0.5)$, and q is at least approximately 1/i, where i is the number of shaping rotations.

4,537,538

APPARATUS FOR WORKING ON TURBINE BLADE MOUNTING GROOVES

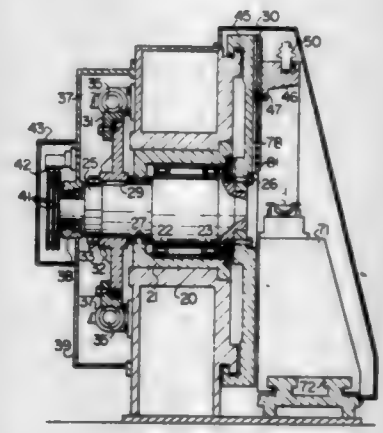
Sachio Mitamura, Kitaibaraki, and Hirotsugu Kuroume, Hitachi, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Jun. 7, 1983, Ser. No. 501,992

Claims priority, application Japan, Jun. 7, 1982, 57-96216

Int. Cl.³ B23D *37/14*

U.S. Cl. 409—217 **2 Claims**



1. An apparatus for working on mounting grooves formed at a base of turbine blades of a radial entry type for mounting the turbine blades on rotor disks, the apparatus comprising:

rotary drive means;

a rotary disk driven by said rotary drive means for rotation substantially in a vertical plane;

a plurality of cutters supported on said rotary disk, said plurality of cutters being located in positions forming an arc on said rotary disk in such a manner that cutters for giving coarse finishes, cutters for giving middle finishes, and cutters for giving final fine finishes are arranged successively in the indicated order in the direction of rotation of said rotary disk, said plurality of cutters are mounted on said rotary disk through a cutter holder;

said rotary disk is formed with a plurality of T-shaped slots for guiding said cutter holder in its movement radially of the rotary disk, and a plurality of racks for positioning said cutter holder radially of said rotor disk;

blade holding means for supporting a tubine blade in such a manner that a groove of coarse finishes formed beforehand at the base of said turbine blade is located in a position through which said plurality of cutters move as said rotary disk is rotated;

wherein a rotation of said rotary disk causes said cutters to move through the groove of said turbine blade to be

machined, to give fine finishes to the mounting groove of said turbine blade; and

said cutter holder is mounted on an end face of said rotary disk, said cutters are mounted on said cutter holder such that said cutters extend radially outwardly from an outer peripheral surface of said cutter holder and are fixed so as to be maintained substantially equidistantly spaced from each other, and a distance from a center of rotation of said rotary disk to said cutters is adjustable so as to conform with a diameter of the rotor disk on which the turbine blades to be machined are to be mounted.

4,537,539

LASHING BAR

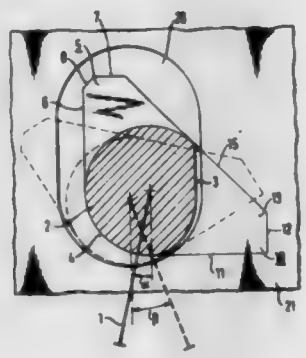
Dieter Borchardt, Rissener Dorfstr. 45, 2000 Hamburg 56, Fed. Rep. of Germany

Continuation of Ser. No. 402,532, Jul. 28, 1982, abandoned. This application Nov. 13, 1984, Ser. No. 670,672

Claims priority, application Fed. Rep. of Germany, Aug. 10, 1981, 8123436[U]; Sep. 3, 1981, 8125939[U]

Int. Cl.[3] **B61D** *45/00*

U.S. Cl. 410—77 **5 Claims**



1. A lashing bar for incorporation in a lashing assembly for lashing containers to the deck of a ship, where the containers each have upper and lower corners provided with means defining anchoring openings with mouths of two different respective standard perimetrical figures, each opening being enlarged to the left, to the right internally of its mouth so that a perimetrical edge is defined at the mouth to the left, to the right and upwardly of a lower lip thereof, where the standard perimetrical figure of each bottom corner end opening, each bottom corner side opening and each upper corner side opening is generally that of a vertically elongated rectangle with substantially semi-circular upper and lower ends, and where the perimetrical figure of each upper corner end opening is generally that of a square with a substantially semi-circular lower end and a slightly arched upper end, said lower ends each providing a respective said lower lip,

said lashing bar being constructed and engaged for alternative locking in said corner openings without regard to which of said two different standard perimetrical figures of mouth such corner openings have, and comprising:

a longitudinally elongated bar having a longitudinal axis and two opposite ends;

a hooking-in fitting provided on one end of said bar, this hooking-in fitting being adapted to be selectively, alternatively introduced into each of said openings and to clamp therein to the respective corner, by including:

a pin mounted on said one end of the bar, said pin having a longitudinal axis extending substantially perpendicularly to the longitudinal axis of the bar, this pin having an outer peripheral surface extending angularly about said longitudinal axis of said pin, and

a first locking lug attached to the pin so as to have a base on the pin and a free end located remotely of the pin;

said first locking lug extending from base to free end, generally longitudinally of the bar, and from the pin in a direction away from the end of said bar which is opposite to said one end;

said first locking lug having a maximum width, measured transversally of its base, which is smaller than the maximum width of the mouth of each said standard lower corner anchoring opening;

the distance between said free end of said first locking lug and whichever is the furthest therefrom of

(a) the furthest opposite side portion of said peripheral surface of said pin from where said first locking lug is based on said pin, and

(b) the furthest extent of said first locking lug from said free end thereof, being smaller than the height of the mouth of each said standard lower corner anchoring opening, but sufficiently large as to permit said first locking lug after, entering a said standard upper corner end opening to engage the respective container upper corner marginally of the respective opening mouth from within the respective end opening upon angular displacement of said bar at least generally about said longitudinal axis of said pin toward a clamping position adjacent the respective container;

said lashing bar being further characterized in having:

an additional locking lug attached to said pin so as to have a base on the pin and a free end located remotely of the pin;

said additional locking lug extending radially outwardly of the pin and being displaced angularly about said longitudinal axis of said pin from the first-described locking lug by an amount sufficient that when said bar is in said clamping position said additional locking lug engages the respective container upper corner marginally of the respective opening mouth from within the respective opening across the respective opening mouth from where said first-described locking lug is engaged;

said first locking lug and said additional locking lug comprising respective, plate-like members each having opposite faces, corresponding ones of which are substantially coplanar, and each having an edge which proceeds from the respective base to the respective free end to provide respective outer edge portions disposed relatively distally of one another, and around the respective free end and back to the respective base to provide respective inner edge portions disposed relatively proximally of one another;

the two said outer edge portions, respectively of said first locking lug and said additional locking lug extending tangentially of said peripheral surface of said pin, each from the respective said base toward the respective said end at respective sites disposed substantially 90° apart angularly of said peripheral surface;

said first and additional locking lugs being disposed on the pin relative to where the pin is mounted on the bar with such angular spacing between the free ends of the respective said locking lugs and the longitudinal axis of the bar, that, for insertion of the locking lugs of the hooking-in fitting into a said anchoring opening, the bar must be angled at about 5° to about 15° to vertical about the longitudinal axis of said pin while tilted outwards from having the longitudinal axis thereof lying in an imaginary vertical plane sufficiently to permit the additional locking lug to be inserted through the respective said opening mouth above the respective said lower lip and hooked behind the respective said perimetrical edge to the left or to the right of, but above the respective said lower lip, tilted inwards to have said longitudinal axis thereof lie in an imaginary vertical plane and to cause said first locking lug to be inserted through the respective opening mouth, and, that for bringing the thus-inserted hooking-in fitting to its clamping Position, the bar must be rotated through vertical about the longitudinal axis of said pin and then past vertical through another about 20° to about 50°, and neither during such insertion nor during such angling, outward tilting, inward tilting and rotating to said clamping position need either of said locking lugs pass below the said lower lip of the respective said opening while disposed within the respective said opening.

4,537,540

TRANSPORT FRAMES FOR VEHICLES

Thomas T. Boughton, Amersham, England, assignor to T. T. Boughton & Sons, Ltd., England

Filed Dec. 16, 1982, Ser. No. 450,241
Claims priority, application United Kingdom, Dec. 23, 1981, 8138707
Int. Cl.³ B63B *25/00*; B60P *1/64*; B61D *45/00*; B65D *19/10*
U.S. Cl. 410—82 6 Claims



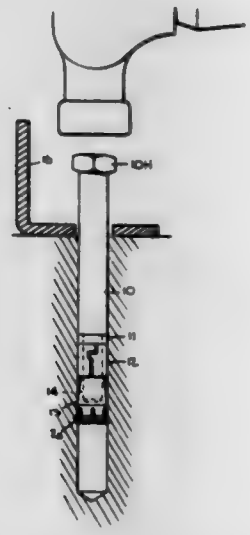
1. A rectangular transport frame comprising:
a pair of longitudinally extending members;
transverse members joining said pair of longitudinally extending members;
an upstanding extension at a first end of said frame, said upstanding extension being operative to receive a lifting hook for drawing said frame onto a vehicle;
a corner fitting provided to said frame at each corner of said frame,
each corner fitting being a substantially retangular block with a top wall, a bottom wall and four side walls,
said top wall having a generally elliptical opening therein,
said bottom wall having a generally elliptical opening therein, and
one side wall having a generally elliptical opening therein and
a twist-lock at each corner of said frame, having a first means to mate with a corresponding corner fitting on a freight container located on said frame, each said twist-lock at the end of the frame opposite to said first end being releasably secured.

4,537,541

ANCHOR BOLT ASSEMBLY

Louis N. Giannuzzi, 4 Shelter Dr., Cos Cob, Conn. 06807

Division of Ser. No. 930,741, Aug. 3, 1978, Pat. No. 4,195,547.
This application Mar. 31, 1980, Ser. No. 135,858
The portion of the term of this patent subsequent to Apr. 1, 1997, has been disclaimed.
Int. Cl.³ F16B *13/06*
U.S. Cl. 411—55 4 Claims



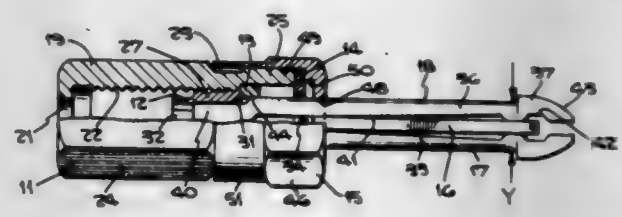
1. In combination with masonry or other material having a hole of predetermined diameter drilled therein, an anchor bolt assembly adapted to tightly fasten a fixture having a hole therein against the surface of said masonry, said assembly comprising:
A. A bolt insertable through the fixture hole into said masonry hole, the bolt being provided with an enlarged head engageable by a torque tool for turning the bolt, said bolt having a main section and a threaded rear section;
B. an expansible shell loosely encircling the upper portion of the rear section to define an annular space therebetween, the normal diameter of the shell being substantially no greater than that of the masonry hole; and
C. a wedge nut provided with an internally-threaded bore threadably received on the lower portion of the rear section, said nut having a conical upper zone and means defining a compressible lower zone whose normal diameter defines a transverse dimension which is greater than that of any other part of the assembly except for the enlarged head of the bolt and exceeds the diameter of the masonry hole to the extent that the assembly has to be driven into the masonry hole in order to insert the assembly therein, thereby subjecting the lower zone to compression preventing rotation of the nut whereby when the bolt is then turned in, the wedge nut advances axially toward the shell and the conical zone thereof enters the annular space to expand the shell and force it outwardly against the masonry hole, the lower zone remaining outside the shell and and having a configuration such that compression of the lower zone acts to constrict the internally threaded bore therein whereby when the threaded rear section of the bolt enters therein it expands the lower zone against the masonry hole to provide a first anchoring force, the expanded shell providing a second anchoring force.

4,537,542

WEDGE-TYPE LOW PROFILE FASTENER

John D. Pratt, Rancho Cucamonga, and Raymond Ramirez, Valinda, both of Calif., assignors to Monogram Industries, Inc., Providence, R.I.

Filed Apr. 19, 1984, Ser. No. 602,224
Int. Cl.³ F16B *13/04*
U.S. Cl. 411—55 10 Claims



1. A wedge-type fastener comprising:
a main body portion having a first internally threaded interior section and a second smooth walled interior section;
a screw member having external threads adapted to engage and mate with the threaded interior section of said body portion, said screw member being mounted within said body portion and movable from a first position disposed in said smooth walled section to a second position threadably engaging said threaded interior section;
a pair of spaced wire members fixedly mounted at one end in said screw member;
a spacer loosely disposed between said wire members movable between a first position totally contained within and between said wire members when said screw member is in said first position and to a second position forcing said wire members apart and extending out of the end of said wire members remote from the ends thereof mounted to said screw member when said screw member moves to said second position; and
an end cap having said wire members extending there-

through encircling both said wire members and said body member and fixedly secured to said body member.

4,537,543

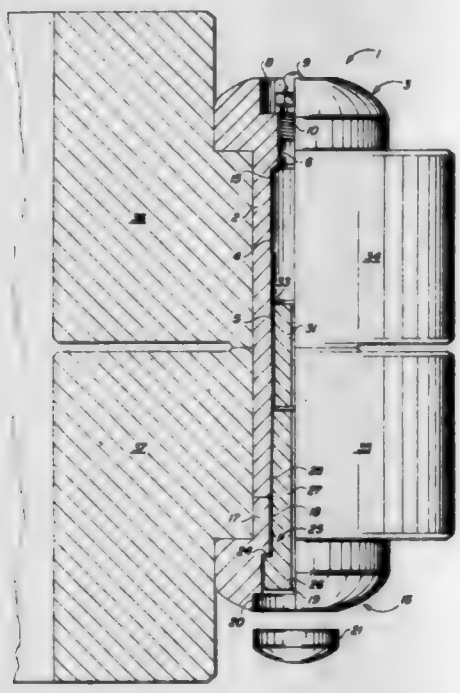
SECURITY LOCKING BOLT

Tommy L. Scott, Rte. 1, Box 322, De Berry, Tex. 75639, and Morris C. Moss, P.O. Box 602, Carthage, Tex. 75633

Filed Jul. 11, 1983, Ser. No. 512,354

Int. Cl.³ F16B *35/00, 41/00*

U.S. Cl. 411—371 **22 Claims**



1. A security locking bolt comprising a bolt body having an internal bore and bore threads provided in at least a portion of said bore; a security bolt head provided on one end of said bolt body; a locking head having a locking head body engaging the opposite end of said bolt body from said security bolt head; a locking head cavity in said locking head, said locking head cavity extending through said locking head body and communicating with said bore; a locking bolt removably recessed in said locking head cavity and extending into said bore in threadable cooperation with said bore threads; a locking bolt aperture extending axially through said locking bolt; and end cap tightly pressed into said locking head cavity and a grease fitting provided in said security bolt head and in communication with said internal bore, whereby grease inserted in said grease fitting and said internal bore causes removal of said end cap from said locking head; and engaging means in cooperation with said locking bolt for receiving a tool and securing said locking head to said bolt body responsive to manipulation of the tool.

4,537,544

METHOD OF FORMING A FOLDER FOR REPORTS OR STATEMENTS OF ACCOUNT AND COVER TO EFFECT THE METHOD

Friedrich Joost, DK 8900 Randers, Denmark

Filed Mar. 2, 1983, Ser. No. 471,492

Int. Cl.³ B42D *1/00*

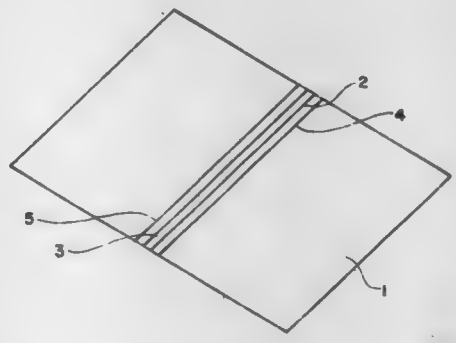
U.S. Cl. 412—5 **4 Claims**

1. A folder for documents comprising a sheet of thin, flexible material having first and second parallel spine folds or creases to define a first cover, a spine area, and a second cover; a side fold or crease in the first cover of the folder, said side fold or crease being adjacent and parallel to said first spine fold; a double-sided adhesive covering the area defined by the side fold in said first cover and a region in the second cover adjacent and parallel to the second spine fold and extending into said second cover approximately the same distance as said side fold from said first spine fold; and a removable protective film covering said double-sided adhesive.

3. A method of forming a folder of documents comprising the steps of:

a. securing a sheaf of documents along the spine edge thereof;

b. inserting the sheaf of documents into a folder which comprises a sheet of thin, flexible material having first and second parallel spine folds or creases which define a first cover, a spine area, and a second cover; a side fold or crease in the first cover of the folder, said side fold or crease being adjacent and parallel to said first spine fold; a



double-sided adhesive covering the area defined by the side fold in said first cover and a region in the second cover adjacent and parallel to the second spine fold and extending into said second cover approximately the same distance as said side fold from said first spine fold; the spine edge of said sheaf of documents being in line with and in contact with the spine area of said folder;

c. folding said folder over said sheaf of documents, and

d. pressing the outside of the folder in the area covered by the double-sided adhesive whereby the sheaf of documents is securely bound therein.

4,537,545

METHOD AND APPARATUS FOR ALIGNING A PILE OF SHEETS PROVIDED WITH PERFORATIONS FOR BINDINGS

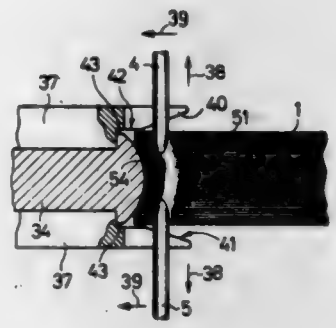
Otto Kunzmann, Neuffen, Fed. Rep. of Germany, assignor to bielomatik Leuze GmbH & Co., Fed. Rep. of Germany

Filed May 16, 1983, Ser. No. 494,967

Claims priority, application Fed. Rep. of Germany, Jun. 3, 1982, 3220814

Int. Cl.³ B24B *5/08, 5/10*

U.S. Cl. 412—7 **15 Claims**



1. A method for aligning a pile of sheets having perforations for receiving bindings, comprising the steps of:

moving two sets of prongs in opposite directions to insert said prongs into the perforations from opposite sides of the pile, the prongs of both sets being parallel to one another;

successively pressing an outer edge of the sheets in the pile against a shaped surface of a desired curvature from the center of the pile outwards for shaping the outer edge of the pile in correspondence with said shaped surface, by pressing tip portions of the prongs against inside edges of the perforations of successive sheets and holding both sets of prongs parallel to each other, and simultaneously

urging said prongs toward the shaped surface while moving the prongs in opposite directions to be withdrawn from the pile.

4. An apparatus for aligning a pile of sheets having perforations for receiving bindings, comprising:

a shaped part having a surface conforming to a desired curvature for an edge of the pile of sheets;

two sets of generally-linear prongs, each set having a plurality of parallel prongs aligned for insertion in the perforations, the prongs of each set projecting opposite the prongs of the other set; and,

driving means for the sets of prongs, adapted to insert the prongs into the perforations by moving each set relative to the other in a plane comprising the axes of the perforations before the prongs are inserted, and to withdraw the sets of prongs from the perforations, the prongs remaining aligned parallel to each other and remaining in said plane, the driving means having a resilient urging means to urge and move the prongs toward the shaped part while withdrawing the prongs from the perforations, whereby the pile of sheets is aligned by successive alignment of each sheet.

4,537,546

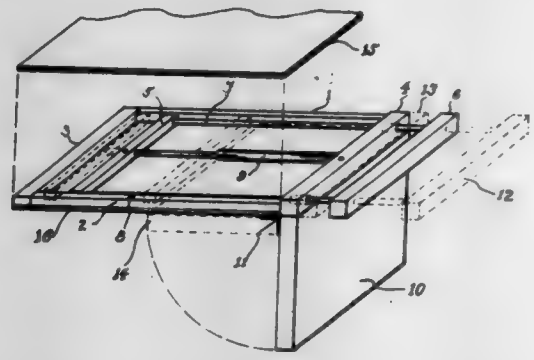
BOOKBINDING DEVICE

Robert L. Lucas, 679 Sanchez St., San Francisco, Calif. 94114

Filed Jul. 25, 1983, Ser. No. 516,703

Int. Cl.[3] B42C *13/04*

U.S. Cl. 412—10 4 Claims



1. A bookbinding apparatus for use in performing several different binding operations comprising:

an elongated frame having two ends and two sides, one of said ends comprising a first, fixed, clamping surface which surface extends generally perpendicular to the longitudinal axis of said frame;

first means comprising a second, movable, clamping surface, said means being mounted to said frame by second means which permits the first means to be moved along the longitudinal axis of said frame from a first, open, position to a second, clamping, position whereby a book may be clamped between said two surfaces;

a flap hinged to said frame near said one end so as to pivot between an open position generally perpendicular to said longitudinal axis of said frame and a closed position generally parallel to said axis;

whereby said apparatus may be supported for use in a bookbinding operation near the edge of a work surface with either the frame or the flap resting on said surface.

4,537,547

MANIPULATOR

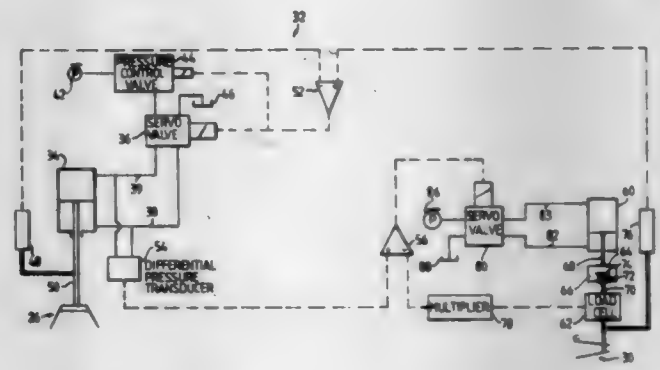
Geoffrey V. Cole, Newbury, England, assignor to The United Kingdom Atomic Energy Authority, London, England

Filed Sep. 22, 1982, Ser. No. 421,426

Claims priority, application United Kingdom, Oct. 23, 1981, 8132084

Int. Cl.[3] B25J *13/02*

U.S. Cl. 414—5 6 Claims



1. A manipulator comprising, a slave arm with at least one movement thereof operable by fluid power means; a manually operated grip means for controlling the movement of the slave arm; positional transducers at the slave arm and the grip means to provide positional signals representing the positions of the slave arm and of the grip means, means for comparing the positional signals and providing a difference signal representing the difference between the positional signals, and a servovalve and a pressure control valve each responsive to the difference signal and arranged to operate the fluid power means; means for monitoring the fluid pressure of the fluid power means and providing a pressure signal, a load transducer for monitoring the load on the grip means and providing a load signal, comparator means for comparing pressure and load signals from the pressure monitoring means and the load transducer and providing an error signal representing the difference between the pressure and load signals, and a fluid power means connected to the grip means and operable in response to the error signal so as to impose on the grip means a load proportional to the said fluid pressure.

4,537,548

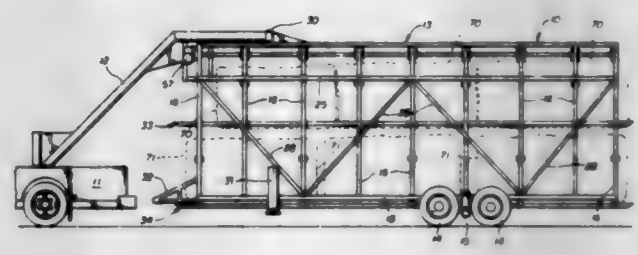
COMBINATION HAY HAULER AND STOCK TRAILER

Billy J. Lockhart, c/o M and A Petroleum, Inc., P.O. Box 89, Lampasas, Tex. 76550

Filed Dec. 12, 1983, Ser. No. 560,242

Int. Cl.[3] A01D *90/02*

U.S. Cl. 414—24.5 11 Claims



1. An agricultural vehicle for collecting and transporting hay bales at different levels, comprising

a mobile wheeled frame for movement over the ground and having an open forward end, an open trailing end, and an open bottom,

an upper lifting and supporting assembly having longitudinally extending lifting members movably mounted on opposite sides of said frame for vertical movement relative thereto,

a lower lifting and supporting assembly having longitudinally extending lifting members movably mounted on

opposite sides of said frame for vertical movement relative thereto,

said upper and lower lifting and supporting assemblies each having an initial lower position adjacent to ground level and nested together in such lowered portion,

means on said frame operatively connected to said upper and lower lifting and supporting assemblies for moving same vertically along said frame from said lower nested position to spaced raised load supporting positions independently or together, and

means for connecting said frame to a prime mover for transporting said frame.

4,537,549

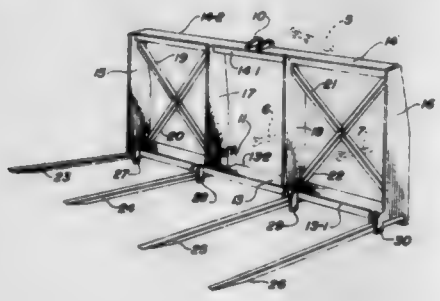
BALE CARRIER

Kenneth J. Knels, Rte. #2 Box 93A, Fairview, Mont. 59211

Filed May 14, 1984, Ser. No. 610,196

Int. Cl.³ A01D *87/12*

U.S. Cl. 414—24.5 **17 Claims**



1. A bale carrier of elongated character for three-point hitch mounting on a tractor so as to extend transversely to the direction of travel by the tractor, comprising

a unitary elongated mainframe having a rectangular perimeter the longer members of which are formed by a lower horizontal base bar which has an upper inwardly facing surface of generally plate-like character and an upper header bar which has a lower inwardly facing surface of generally plate-like character, and the shorter members of which are formed by end plates lying in planes perpendicular to the base and header bars, the members of said rectangular perimeter having opposing transversely outward surfaces characterized as a face side surface on one side and a far side surface on the other,

said elongated mainframe having an interior frame structure consisting essentially of two interior plates spaced from each other and from the end plates, with said interior plates lying in planes parallel to the planes of the end plates and united to the base and header bars, and two X braces of substantially equal configuration, with a said X brace between each end plate and the interior plate most adjacent thereto and having the lower arms of the X brace united at their termini to the base bar at intersections formed by a said plate with the base bar, and having the upper arms of the X brace united at their termini to the header bar at intersections formed by a said plate with the header bar, the central portion of the elongated mainframe embracing the two interior plates being characterized as the medial portion thereof,

three-point means for receiving a three-point hitch of a tractor, said three-point means being located medially on the mainframe, the three-point means consisting essentially of an upper bracket means medially rigidly fixed on the header bar for receiving the upper link of a three-point hitch and a pair of spaced lower bracket means united to the base bar for receiving the pair of lower links of a three-point hitch, and

bale-supporting teeth mounted on the base bar and extending perpendicularly outward from the face side surface of the mainframe, said teeth being adapted to carry more than one bale with the bales carried in laterally spaced relationship with respect to each other.

4,537,550

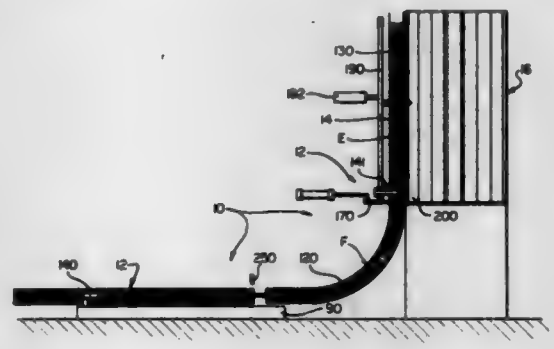
AUTOMATIC STACK DEVELOPING AND LOADING SYSTEM

Wallace W. Mojden, Hinsdale, and Robert E. Darr, Chicago, both of Ill., assignors to Fleetwood Systems, Inc., Countryside, Ill.

Filed Sep. 29, 1983, Ser. No. 537,725

Int. Cl.³ B65G *57/16*

U.S. Cl. 414—46 **13 Claims**



1. Apparatus for supplying can ends or the like to a downstream processing unit, such as rotary carousel feed unit or the like, said apparatus comprising; in combination; a generally horizontal trough section for accumulating in stacked array can ends delivered from an upstream source; a transfer pocket disposed generally vertically and above said trough section for receiving a quantity of can ends in stacked array from said trough section; an intermediate transition chute means of generally arcuate configuration extending upwardly from said trough section to said transfer pocket to interconnect said trough section and said transfer pocket; transport means for driving at least a portion of the stacked accumulated ends in said trough sectiona long said trough section and upwardly into said arcuate chute means and further into said transfer pocket; means for maintaining a quantity of stacked ends in said vertically disposed transfer pocket upon retraction of said transport means which retractive movement will result in the provision of a gap below the quantity of stacked ends; and pusher means disposed adjacent said transfer pocket for transferring a quantity of stacked ends supported therein laterally from said transfer pocket to a downstream processing unit.

4,537,551

METHOD AND MEANS OF CHARGING ELECTROTHERMIC SMELTING FURNACES

Harald Krogsrud, Gjettum, Norway, assignor to Elkem a/s, Oslo, Norway

Filed Apr. 25, 1983, Ser. No. 488,418

Claims priority, application Norway, May 3, 1982, 821454

Int. Cl.³ F23K *3/00*

U.S. Cl. 414—199 **12 Claims**

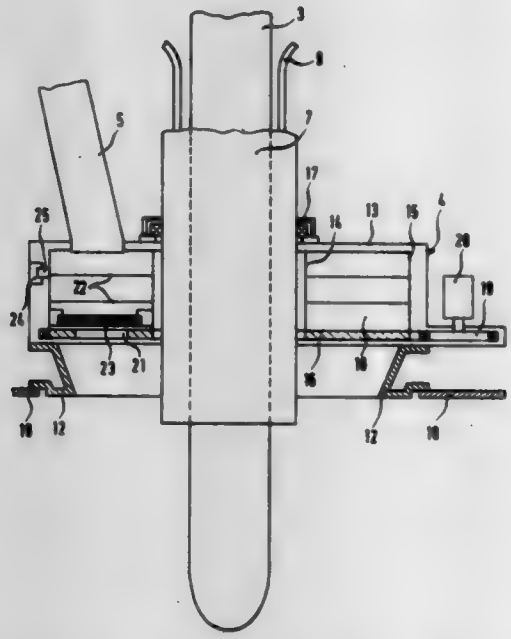
2. Apparatus for charging an electrothermic smelting furnace having at least one electrode comprising an annular chamber concentrically disposed about the electrode and rotatable with respect thereto, said annular chamber including a bottom member, said bottom member having at least one opening therein for communication with the furnace, inner and outer concentric walls resting on said member, means for closing said opening in the bottom member and means for rotating said annular chamber wherein the walls and bottom member of said annular chamber are rotatable with respect to each other and wherein the bottom member is driven by said means for rotating and further comprising a stop member for preventing further rotation of said walls while the bottom member continues to rotate.

4. In an electrothermic smelting furnace having at least one electrode, a chamber surrounding said electrode for feeding charge into said furnace said chamber having an inner wall, an outer wall positioned in spaced relationship to said inner wall, a bottom member having at least one aperture therein and a

closure member to open and close said aperture for feeding charge down into the furnace, the method which comprises the steps of:

(a) causing relative rotation around the electrode between said bottom member and closure member to bring said closure member into a first position to close said aperture;

(b) simultaneously rotating said bottom member and closure



member together around the electrode with the closure member in position closing said aperture while feeding furnace charge into said chamber;

(c) causing relative rotation around the electrode between said bottom member and closure member to bring said closure member into a second position to open said aperture whereby charge in the chamber is free to drop down through said aperture into the furnace.

4,537,552

APPARATUS FOR FEEDING COMPONENTS TO A WORK STATION

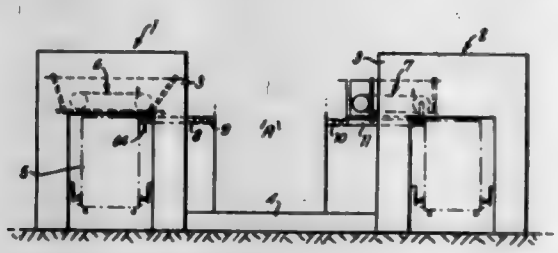
Robert K. Slee, London, England, assignor to South London Electrical Equipment Company Limited, London, England

Filed Sep. 26, 1983, Ser. No. 535,951

Claims priority, application United Kingdom, Jan. 14, 1983, 8300960

Int. Cl.³ B65H *1/00*

U.S. Cl. 414—222 **11 Claims**



1. Apparatus for loading components into a machine, including,

a main frame, a docking station in said main frame, a mobile storage device for said components in the form of a cart moveable into and out of said docking station in said main frame, loading means to transfer said components from the cart to said machine, mounting means for movably mounting the loading means on said main frame, means to bring the loading means and the cart into a cooperative relationship by relative movement therebetween, at least part of the loading means being movable relative to the main frame during said relative movement to align the cart with the loading means in two mutually perpendicular axes,

a plurality of component carriers in the cart, each component carrier being adapted to hold a plurality of said components, each cart having a loading station, and the apparatus having drive means for selectively moving each carrier to said loading station to enable the components in the carrier to be transferred by said loading means from the cart to the machine, the loading means including control means responsive to the position of a carrier in the loading station for controlling the drive means to align the carrier in the loading station with said loading means in an axis perpendicular to said two mutually perpendicular axes.

4,537,553

ARRANGEMENT IN A SILO OR THE LIKE FOR STORING PULVERULENT, GRANULAR OR LUMPY MATERIAL, SUCH AS COAL

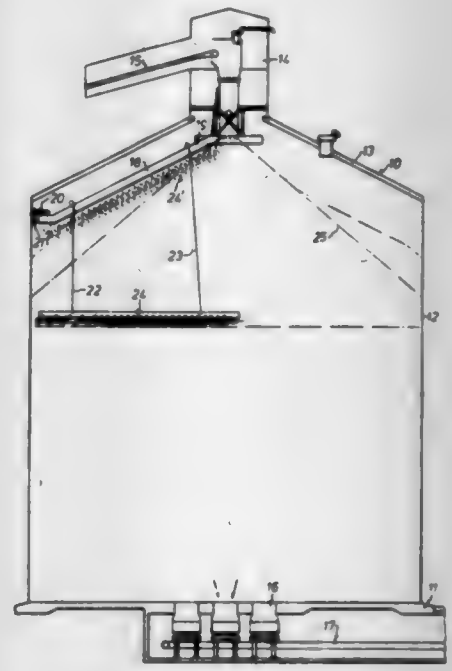
Sven A. Andersson, Tyringe, Sweden, assignor to Nils Weibull AB, Sweden

Filed May 12, 1983, Ser. No. 494,086

Claims priority, application Sweden, May 17, 1982, 8203068

Int. Cl.³ B65G *65/46*

U.S. Cl. 414—302 **1 Claim**



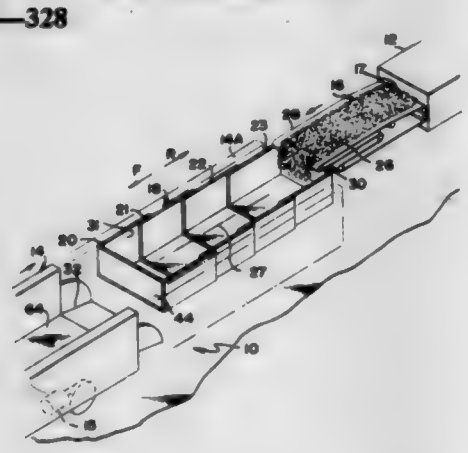
1. In a silo or the like for storing pulverulent, granular or lumpy material, such as coal, and comprising a side wall, a floor, a roof which is supported by said side wall at an angle of inclination that substantially corresponds to the angle of repose of the material to be stored in the silo, a central material inlet opening in said roof, at least one central discharge opening in said floor, and at least one screw conveyor which extends substantially from a central axis of the silo to a location adjacent to said side wall, a supporting beam located in said silo adjacent to said roof and rotatable about the central axis of the silo, said supporting beam being inclined downwardly from said material inlet opening toward said side wall substantially parallel to said roof, said conveyor being suspended from said beam by wires adjustable in length independently of each other.

4,537,554

SHUTTLE CAR LOADING SYSTEM

Earl R. Collins, Jr., La Canada, Calif., assignor to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Jan. 14, 1983, Ser. No. 457,990
Int. Cl.³ B65G *67/06*
U.S. Cl. 414—328 **3 Claims**



1. A mineral storage bin apparatus for holding newly mined material for loading it in a shuttle car comprising:

a bin having a plurality of bin sections, including forward and rearward bin sections, which telescope along a largely horizontal axis, said bin sections having side walls, open upper ends for receiving pieces of mined material and bottom walls for supporting the weight of the material; a shuttle car;

means for supporting said bin sections to allow said shuttle car to move thereunder;

said shuttle car, having side walls and having a bottom wall which is thin and low enough to slip under said bin sections while the side walls of the car lie on opposite sides of the side walls of the bin sections, and motor means for driving said car to move it so said bottom wall slips under said bin sections and the side walls of the car lie on either side of the side walls of the bin sections and to then move said car away from said bin;

said forward bin section having an openable forward end, and

actuator means coupled to at least one of said sections, for collapsing said sections along said largely horizontal axis including moving said forward bin section rearwardly while its forward end is open, so the material formerly supported by the bottom of a bin section can fall down, to release the material held therein to fall out into said shuttle car lying under the sections.

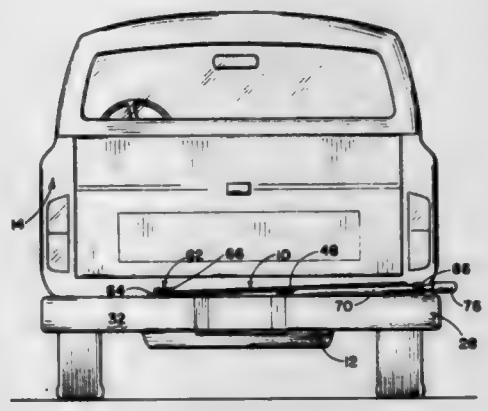
4,537,555

WIRE ROPE SPARE TIRE CARRIER

Linsey L. Combs, Seminole, Okla., assignor to W.W.B. Developers, Midvale, Utah

Continuation of Ser. No. 581,138, Feb. 17, 1984, abandoned, which is a continuation of Ser. No. 378,911, May 17, 1982, abandoned. This application Jan. 18, 1985, Ser. No. 693,223
Int. Cl.³ B62D *43/04*
U.S. Cl. 414—463 **5 Claims**

1. A vehicle spare tire carrier comprising a stationary non-rotatable roll bar securable to the vehicle adjacent the storage position of the tire, pulley means secured to the vehicle in spaced relation with respect to the roll bar, an elongated lever arm having one end pivotally secured to the vehicle, the pivot point thereof being in spaced relation with respect to the pulley assembly and having an axis of rotation substantially parallel to the axis of the pulley means, a cable attachment point provided on the the lever arm in spaced relation with respect to the pivot point thereof, a flexible cable extending from the attachment point on the lever arm and around the pulley means and over the roll bar and terminating at a connection with a tire carrier bracket means, the length of the cable being such that when the lever arm is fully pivoted in a first direction the tire may be removed from the vehicle and when the lever arm is pivoted in a second direction the spare tire is pulled into tight engagement with the vehicle and latching means securable to the vehicle for receiving one end of the lever arm thereagainst in one pivotal direction thereof, and means cooperating between the latching means and the lever arm for removably securing the lever arm in said engagement with the latching means, wherein the latching means comprises a latching bracket secured to said rear bumper, said latching bracket being of an arcuate configu-



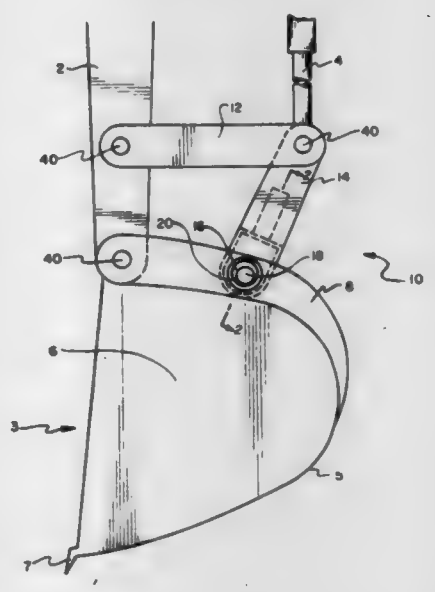
ration for receiving the lever arm therein, and wherein outwardly extending eye means is provided on the outer periphery of the lever arm and disposed in substantial alignment with the latching bracket member in one position of the lever arm, and said latching bracket is provided with slot means for receiving the eye member therethrough for securely retaining the lever arm means in engagement therewith, and including lock means engagable with the eye member extending through the slot means for further securing the lever arm means against accidental disengagement with the latching bracket member.

4,537,556

RECIPROCATING BACKHOE BUCKET

Emery C. Tharp, 2520 Fox Harbor Dr., Indianapolis, Ind. 46227

Filed May 12, 1983, Ser. No. 493,921
Int. Cl.³ B66C *23/00*
U.S. Cl. 414—725 **3 Claims**



1. A reciprocating device for a backhoe bucket which includes a downwardly extending dipper stick having respective ends pivotally connected and supporting an associated pair of bucket brackets, the bucket brackets having a contour complemental to an end wall of the bucket to support same, and a bucket curl cylinder and piston connected to the dipper stick by means of transverse links, similarly pivoted, and a pair of connecting links extending from the intersection of the bucket

curl cylinder/piston and the transverse link to a further area on the bucket bracket, the reciprocating device including:

shaft means being the connection between the connecting links and the bucket brackets,

said shaft means rotatably supported by the connecting links by a bearing means and provided with means for rotating said shaft, said rotating means encased in a housing disposed between said pair of connecting links, and

cam means associated with said shaft means and connecting the connecting links to the bucket brackets, whereby rotation of said shaft means imparts reciprocal oscillating motion to the bucket bracket and therefor the backhoe bucket.

4,537,557

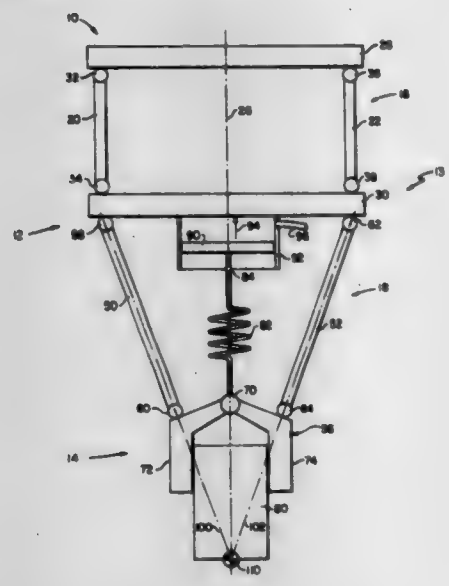
REMOTE CENTER COMPLIANCE GRIPPER SYSTEM

Daniel E. Whitney, Arlington, Mass., assignor to The Charles Stark Draper Laboratory, Inc., Cambridge, Mass.

Filed Apr. 23, 1982, Ser. No. 371,197

Int. Cl.³ B25J *17/02*

U.S. Cl. 414—735 **8 Claims**



1. A remote center compliance (RCC) gripper system comprising:

support means;

at least three compliance members mounted to said support means and disposed along conical radii from a focus;

an articulated gripper mechanism interconnected with one end of said compliance members and including a base having a generally centrally disposed joint and having a plurality of fingers extending from siad base; and

means for applying a force between said centrally disposed joint and said support means to fix said joint and apply a force to said compliance members.

4,537,558

MULTI-STAGE HYDRAULIC MACHINE AND CONTROL METHOD FOR A MULTI-STAGE HYDRAULIC MACHINE

Sachio Tsunoda, Yokohama, and Shinsaku Sato, Ebina, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 27, 1982, Ser. No. 343,325

Claims priority, application Japan, Feb. 3, 1981, 56-13800; Feb. 3, 1981, 56-13801

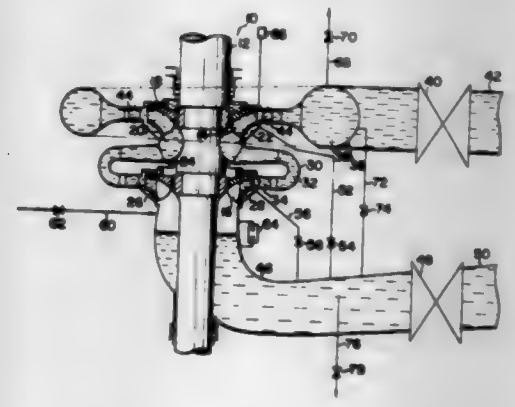
Int. Cl.³ F01D *17/00*

U.S. Cl. 415—1 **8 Claims**

1. A control method for a multi-stage hydraulic machine which comprises a rotatable shaft; a plurality of runners fixed to said shaft and arranged from a highest-pressure stage to a lowest-pressure stage; runner chambers which, respectively, house said runners; a return channel for connecting adjacent ones of said runner chambers with each other; movable wicket gates provided at least in said highest-pressure stage and capable of moving between a position in which said movable wicket gates block the channel and a position in which said movable wicket gates open the channel; a casing connected to said highest-pressure stage, and an inlet valve disposed between said casing and a penstock, said method comprising

a first step of causing said movable wicket gates and said inlet valve to block the channel;

a second step of feeding air to an upper portion of a draft tube which is connected to a lower portion of said lowest-pressure stage after the channel is substantially blocked by said movable wicket gates;



a third step of discharging water in said return channel and said lowest-pressure stage runner chamber adjacent thereto through a lowest-pressure stage drain pipe after a water level in said draft tube is lowered to a predetermined value;

a fourth step of discharging water in said highest-pressure stage runner chamber to said draft tube through a highest-pressure stage drain pipe after a pressure in said highest-pressure stage runner chamber is lowered below a predetermined pressure; and

a fifth step of interrupting the operation of air-feeding in said second step after the water level in said draft tube is stabilized at a predetermined value.

4,537,559

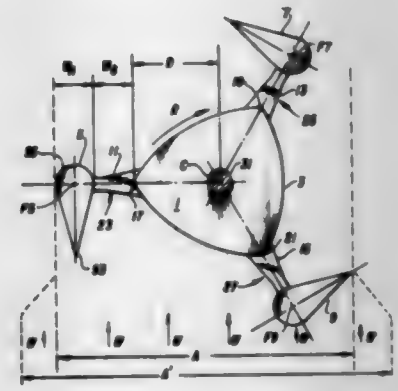
VENTURI ROTOR APPARATUS FOR THE GENERATION OF POWER

Christian W. Herrmann, 515 E. 35th St., Joplin, Mo. 64801, assignor to Christian W. Herrmann and Anna Herrmann, both of Joplin, Mo.

Filed Sep. 23, 1983, Ser. No. 535,099

Int. Cl.³ F03D *3/06*

U.S. Cl. 416—119 **15 Claims**



1. A venturi rotor apparatus for producing power from the rotation thereof, said apparatus comprising:

(a) support means;

(b) a central core means having an outer surface with verticies thereon, mounted on said support means for rotation about a central axis through said core means;

(c) a plurality of support arms fixed to said central core means and extending radially outward therefrom; and

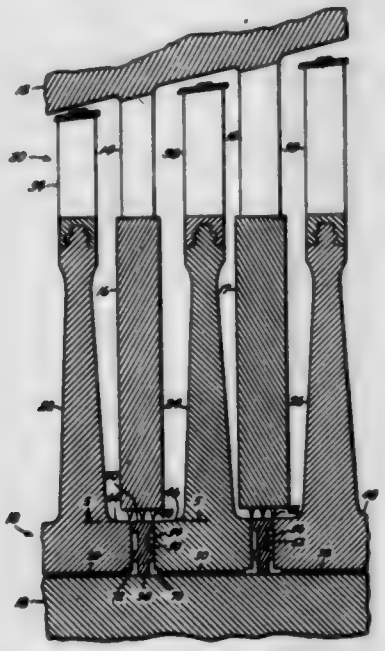
(d) at least three airfoil means each airfoil means having leading and trailing edges, with respect to the direction of rotation, wherein said leading edge is arcuate and wider than said trailing edge, and side surfaces extending between the ends of the leading edge and the trailing edge, said airfoil means being fixed to a radially extended portion of said support arms, and wherein the junction of said side surfaces and ends of said leading edge of each airfoil means is positioned on a radial line extending from the center of the central axis of the center core means through a corresponding vertex of the outer surface, and wherein a gap is formed between the surface of said central core means and the junction of one of said side surfaces and the end of said leading edge of each of said airfoil means, each of said airfoil means being aligned on an axis parallel to the axis of said central core means, such that fluid flow having at least a component in a direction perpendicular to the axis of said central core means, flows through at least one of said gaps producing a venturi effect for enhancing the movement of said airfoil means about the axis of said central core means, the movement of said airfoil means applying torque to said central core means through said support arms to thereby rotate said central core means.

4,537,560

RADIAL KEY FOR STEAM TURBINE WHEELS

Eloy V. Emeterio, Amsterdam; Robert E. Deallenbach, Schenectady; Martin F. O'Connor, Scotia, and Oleg Klufas, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed May 29, 1984, Ser. No. 614,902
Int. Cl.[3] F01D *5/06*
U.S. Cl. 416—198 A 18 Claims



1. In a steam turbine, a rotor comprising:

a rotatable shaft;

a plurality of wheels axially spaced along said shaft and respectively affixed thereto by an interference shrink fit between the respective radially inner surface of said wheels and said shaft, each wheel of said plurality of wheels carrying a plurality of circumferentially aligned steam turbine blades at the radially outermost portion of said each wheel, at least two adjacent wheels, each of said at least two adjacent wheels respectively comprising:

a hub section at the radially inner portion of the wheel, said hub extending axially from both axial ends of the wheel, said hub including an axial end face surface at each axial end of the hub;

each opposing axial end face respectively defining at least one substantially radial slot thereon, each said radial slot being open to the periphery of the respective hub and extending to said shaft, each said radial slot being axially aligned with the respective radial slot on the respective opposing end face to form a substantially radial keyway between the hubs of said at least two adjacent wheels;

retaining means fixedly secured to the hub section of one of the opposing axial end faces for preventing outward radial movement of any key to be disposed in the keyway; and

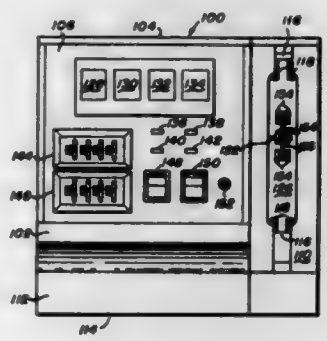
at least one key disposed in said keyway, said key comprising a body portion and at least a pair of spacing means for axially spacing said key from respective axial end walls of said keyway, said key including at least one flange extending outwardly from said body portion and engaging said retaining means said key further including a radially inner extremity in close proximity to said shaft, and a leading and a trailing face, said leading and trailing face respectively contacting a leading and a trailing sidewall of said keyway, respectively.

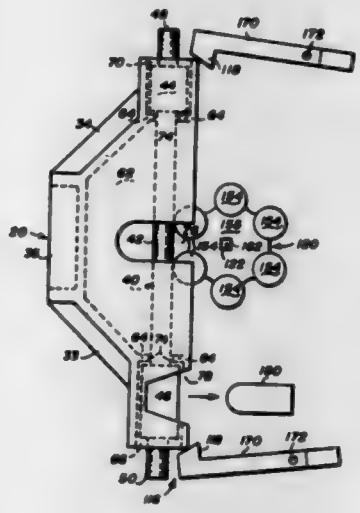
4,537,561

PERISTALTIC INFUSION PUMP AND DISPOSABLE CASSETTE FOR USE THEREWITH

Piritheos E. Xanthopoulos, San Jose, Calif., assignor to Medical Technology, Ltd., Fresno, Calif.

Filed Feb. 24, 1983, Ser. No. 469,421
Int. Cl.[3] F04B *43/12, 21/00*
U.S. Cl. 417—63 5 Claims





1. A peristaltic pump assembly, comprising:

a pump arrangement including a pump cassette housing having portions defining a vertical cassette aperture located adjacent a pump housing enclosing a pump mechanism, said pump cassette housing having means for supporting and aligning a disposable cassette in an operative position relative to said pump mechanism, said pump mechanism having securing means for securing said disposable cassette within said pump cassette housing and a locking mechanism to securely support and retain said cassette in an operative position relative to said securing means while said cassette is positioned in said pump cas-

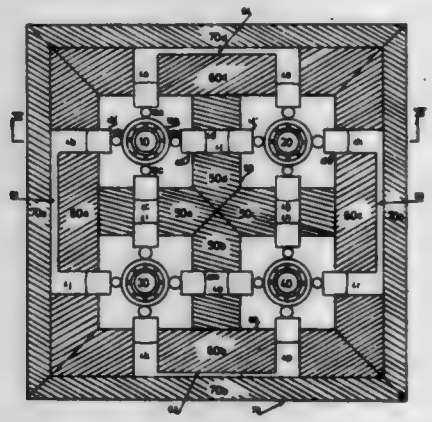
sette housing, said locking mechanism including a plurality of locking arms and hooks with each arm articulating about a pivot shaft connecting said pump cassette housing with each locking arm and one of said locking hooks located on each locking arm to physically restrain said cassette in its operative position relative to said pump mechanism, and means located in said pump cassette housing for cooperating with said cassette in a predetermined manner for peristaltically pumping fluid; said cassette having a hollow conduit arrangement including a predetermined length of elastic tubing and first and second connectors with opposite end portions of said tubing being joined to said first and second connectors forming leakproof junctions with said tubing such that fluid may be pumped through said hollow conduit arrangment; said cassette further including a single piece cartridge structure of dimensions for fitting in said cassette aperture and being supported by said pump cassette housing having a first means for removably mounting an end portion of said first connector and a second means for removably mounting an end portion of said second connector to permit removal aand replacement of said connectors without dismantling said cartridge, and said tubing being tautly suspended and accessible to said pump mechanism along a portion of the base of said cartridge structure so that said tube is longitudinally elongated in a predetermined manner when fitted in the pump cassette housing; said cassette including a U-shaped pump shaft opening symetrically positioned along at least one side of said cartridge to expose a predetermined length of said elastic tubing; said U-shaped pump shaft opening located in an off-center position in the wall of said cartridge structure to expose a predetermined section of said tubing; wherein said operative position of the cassette causes said tube to be longitudinally elongated about the pump rotor rollers so that peristaltic pumping can be accomplished on said tube, and said elongated tube creates a spring-like tension on said cassette cartridge such that said cassette cartridge is forced out of the pump cassette housing if not restrained.

4,537,562

PUMP

Malte Lindmark, and Margareta Lindmark, both of Sibyllegatan 53, 114 43 Stockholm, Sweden

Filed Feb. 23, 1984, Ser. No. 582,896
Claims priority, application Sweden, Jan. 5, 1982, 8200028
Int. Cl.³ F04B *1/28*
U.S. Cl. 417—215 **14 Claims**



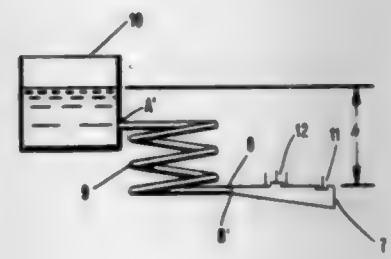
1. A pump comprising an inlet through which passes a medium intended for pumping, and an outlet through which passes the medium pumped by the pumping elements of the pump, and a drive source acting upon four rotatable shafts having cams, said pumping elements arranged diametrically to each shaft so that they are driven by the cams on said shafts, said four rotatable shafts being situated so as to interact with a number of the pumping elements, a first diametrically arranged pair of said shafts constituting a rotating pair having the same direction of rotation and with a fixed opposite phase, a second diagonally arranged pair of said shafts constituting a similar rotating pair having the same mutual direction of rotation and with a fixed opposite relative phase, and wherein the first pair of shafts has a first direction of rotation while the second pair of shafts has an opposing direction of rotation, and wherein the phase of one of the pairs of shafts is adjustable in relation to the phase of the second pair of shafts.

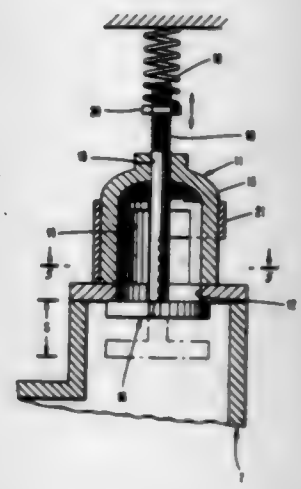
4,537,563

RAM PUMPS

Tetsuo Ogawa, Kawasaki, Japan, assignor to Katsuhiko Ohki, Briarcliff Manor, N.Y.

Filed Apr. 14, 1983, Ser. No. 484,870
Int. Cl.³ F04F *7/02*; F16K *51/00*
U.S. Cl. 417—226 **6 Claims**





1. A ram pump powered by a fluid head created by a reservoir located above said pump comprising:

(a) a pump housing;

(b) a lead pipe connected to the reservoir and said pump housing for inflow of fluid from the reservoir into said pump housing;

(c) a release valve mechanism having:

(1) a release valve outlet defined by said housing for exhaust of fluid from said pump;

(2) a release valve cup attached to said housing and cooperating with said outlet, said cup having cup slots in communication with said outlet;

(3) an adjusting ring having ring slots through said ring in a radial direction, said ring adapted for communication with and slidable rotation about said release valve cup, said ring slots cooperating with said valve cup slots to form an outlet port having a cross section, such that rotation of said ring varies said cross section;

(4) a release valve reciprocating valve having a stem portion slidably mounted in said valve cup for movement from an open position, to a closed position, such that said release valve reciprocating valve blocks said outlet in said closed position;

(5) means for biasing said release valve reciprocating valve in said open position, such that a bias force generated thereby when said release valve reciprocating

valve is in said closed position is between approximately 2% and 12% of a hydrostatic pressure generated by said reservoir fluid head on said closed release valve reciprocating valve; and

(d) a lifting mechanism having:

(1) a lifting valve outlet defined by said housing;

(2) a lifting valve outlet face on said lifting valve outlet;

(3) a reciprocating lifting valve having a valve head, said valve head cooperating with said lifting valve outlet face to contact said lifting valve outlet face and seal said lifting valve outlet when the said reciprocating lifting valve reciprocates to a closed position; and

(4) means for biasing said reciprocating lifting valve to said closed position, a bias force generated thereby establishing a contact pressure between said head and lifting valve outlet face greater than approximately 10 g/cm^2 without fluid in said pump.

4,537,564

PUMPING SYSTEM FOR OIL PRODUCTION

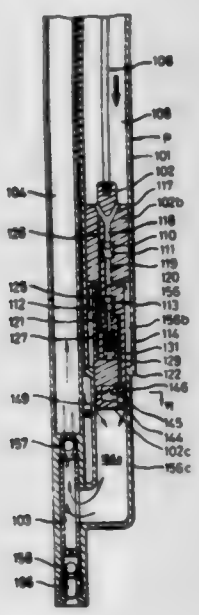
Isao Yamato, and Tominori Yamada, both of Tamano, Japan, assignors to Mitsui Engineering & Shipbuilding Co., Ltd., Tokyo, Japan

Division of Ser. No. 318,981, Nov. 6, 1981, Pat. No. 4,451,212. This application Mar. 8, 1984, Ser. No. 587,801

Claims priority, application Japan, Nov. 17, 1980, 55-160752; Dec. 30, 1980, 55-187412

Int. Cl.³ F04B *47/02*

U.S. Cl. 417—313 **3 Claims**



1. A pumping system for oil production, comprising:

a hydraulic unit set on the ground and adapted to send out a high-pressure oil having a viscosity lower than that of crude oil to be drawn up; and

a pump unit set in an oil well and adapted to draw up crude oil, said pump unit including,

a pump cylinder,

a plunger adapted for reciprocating movement in said pump cylinder, said plunger being provided with an oil reservoir adapted to receive the high-pressure oil sent from said hydraulic unit thereto,

a sucker rod attached to said plunger, said sucker rod also being atached to a reciprocating mechanism set on the ground, said plunger being reciprocatingly moved in response to the reciprocating motion of said reciprocating mechanism,

a clearance formed between that portion of the outer circumferential surface of said plunger which is on the side of a cylinder chamber and the inner circumferential surface of said pump cylinder, said clearance communicating with said oil reservoir, the high-pressure oil being ejected from said clearance along the inner surface of said pump cylinder into said cylinder chamber while said plunger is reciprocatingly moved in said pump cylinder,

a hydraulic piston provided in said plunger and adapted for reciprocating movement between a pair of opposing oil chambers, such that said high-pressure oil is received in each of said opposing oil chambers, and

a pair of communicating lower chambers formed within said plunger, said lower chambers containing a slider adapted for reciprocating movement therebetween in response to said high-pressure oil from said oil chambers, the reciprocating movement of said slider causing the high-pressure oil to be pumped into said oil reservoir.

4,537,565

ELECTROMAGNETICALLY OPERATED DIAPHRAGM PUMP

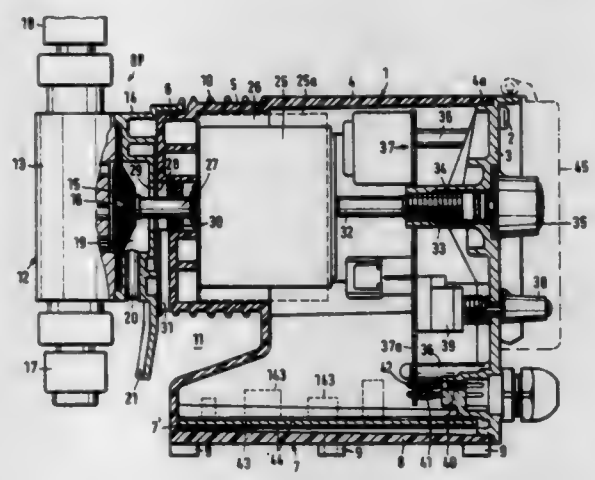
Friedrich Edler, Bammental, Fed. Rep. of Germany, assignor to Chemie und Filter GmbH Verfahrenstechnik KG, Heidelberg, Fed. Rep. of Germany

Filed Feb. 3, 1983, Ser. No. 463,407

Claims priority, application Fed. Rep. of Germany, Feb. 10, 1982, 3204534

Int. Cl.³ F04B *43/04, 17/04;* H02K *5/18*

U.S. Cl. 417—413 **21 Claims**

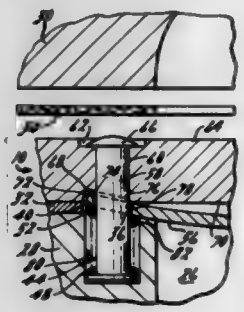


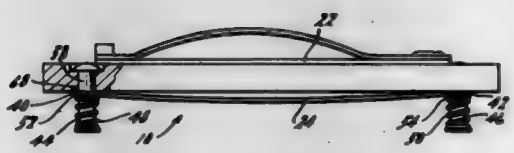
1. A fluid flow machine, comprising an axial piston pump, particularly a diaphragm pump; an electromagnet adjacent to and arranged to operate said pump and to thereby generate heat, said electromagnet having an at least substantially cylindrical external casing surface; and a housing including a partition disposed between said pump and said electromagnet, a substantially cylindrical section adjacent to said partition, spacedly surrounding at least a portion of said external casing surface and defining therewith a gap of substantially constant width for transfer of heat from said cylindrical external casing surface to said cylindrical section, said cylindrical section having an outer surface which is exposed to the surrounding atmosphere and external heat dissipating projections at least some of which extend circumferentially of said cylindrical section, said housing further including an additional section integral with and supporting said cylindrical section and the cross-sectional area of the interior of said additional section exceeding the cross-sectional area of the interior of said cylindrical section, said additional section extending downwardly beyond said cylindrical section and said housing also including a supporting leg rigid with said additional section and having an extension extending toward said pump and spaced apart from and disposed at a level below said cylindrical section, said cylindrical section, said additional section and said leg of said housing consisting of a synthetic plastic material.

4,537,566
VALVE ASSEMBLY FOR A COMPRESSOR

Jaroslav Blass, and Michael A. Deal, both of Sidney, Ohio, assignors to Copeland Corporation, Sidney, Ohio

Filed May 10, 1984, Ser. No. 609,098
Int. Cl.³ F04B *39/10*; F16K *15/14*
U.S. Cl. 417—569 **7 Claims**



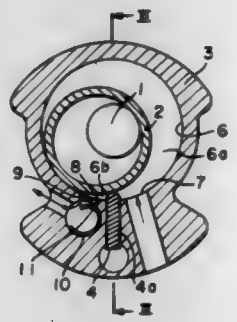


1. A valve assembly for a compressor comprising:
a valve plate having a gas passage extending therethrough;
an elongated valve member having a portion overlying said passage and operative to selectively control flow of gas therethrough;
resilient biasing means acting on said valve member adjacent said one end for exerting a moment on said valve member adjacent one end thereof, said moment being operative to normally position said portion in slightly spaced relationship to said valve plate when said valve member is in an at rest position; and
fastener means extending from said valve plate for retaining said biasing means and said valve member in assembled relationship with said valve plate.

4,537,567
ROLLING PISTON TYPE COMPRESSOR

Susumu Kawaguchi, Shizuoka, and Ken Morinushi, Kobe, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Nov. 15, 1983, Ser. No. 552,026
Claims priority, application Japan, Nov. 29, 1982, 57-208771; Feb. 2, 1983, 58-15796
Int. Cl.³ F04C *29/00*
U.S. Cl. 418—63 **4 Claims**

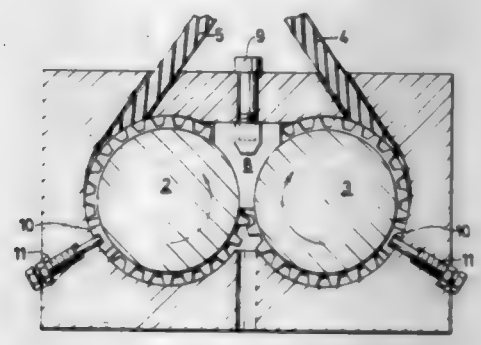


1. A rolling piston type compressor, comprising:
a cylinder;
a piston eccentrically rotatably mounted along an inner peripheral surface of said cylinder;
a vane mounted in said cylinder and engageable with the outer peripheral surface of said piston for reciprocating movement therealong and defining within said cylinder a low pressure chamber and a high pressure chamber, said cylinder including discharge port means formed entirely therein for discharging compressed gas outside said cylinder; a discharge valve provided in said discharge port means and escape groove means formed in an inner peripheral wall of said cylinder; and
means for communicating said escape groove means with said discharge port means wherein said escape groove means has a length which is in a range of 1.5 to 4 times as long as a diameter portion of said discharge port means, has a maximum depth set to be from 5 to 25% of the diameter of said discharge port means and has a width equal to or greater than the diameter of said discharge port means.

4,537,568
FORCE PUMP

Gösta Larsson, Värnamo, Sweden, assignor to Jochnick & Norrman Press AB, Värnamo, Sweden

Continuation of Ser. No. 418,356, Sep. 15, 1982, abandoned. This application Nov. 23, 1984, Ser. No. 674,479
Int. Cl.³ F04C *2/18, 13/00, 15/00*
U.S. Cl. 418—202 **4 Claims**



1. In a gear pump for injection molding and extrusion of rubber and other elastomers, said gear pump comprising two gears (2,3) mounted in a housing and in engagement with each other, two entrance holes for introduction of strip starting material (4,5) into the spaces between said gears (2,3) and said housing, mid-sections of said gears being provided with circumferential grooves (7) against which the teeth of said gears terminate, the improvement comprising a removable tongue (8) inserted into said grooves (7) between said gears (2,3) in the region where they are in engagement, said tongue (8) filling less than one quarter of the circumference of each of said grooves and pointing counter to the direction of rotation of said gears (2,3), dividing-and-sealing members (10,11) being inserted into said grooves (7) of said gears (2,3) at locations in said housing between the region where said gears (2,3) are in engagement and the respective entrance hole, and a channel disposed at said circumferential grooves (7) and opposite said tongue (8) for discharging the product out of the region where said gears are in engagement.

4,537,569
HOT ISOSTATIC PRESSING APPARATUS

Akira Asari, Osaka; Hidehiro Tsuzuki, Kobe; Yoichi Inoue, Hyogo, and Takahisa Tabuchi, Kobe, all of Japan, assignors to Kabushiki Kaisha Kobe Seiko Sho, Kobe, Japan

Filed Nov. 28, 1983, Ser. No. 555,620
Claims priority, application Japan, Jan. 7, 1983, 58-968[U]
Int. Cl.³ B30B *11/00*
U.S. Cl. 425—405 H **4 Claims**

1. A hot isostatic pressing apparatus comprising:
(a) a vessel frame;
(b) a press frame swingably mounted on said vessel frame;
(c) an auxiliary station located adjacent to said vessel frame;
(d) a hot isostatic pressing vessel having a bottom opening mounted in said press frame;
(e) a plurality of detachable bottom lids each of which is sized and shaped to fit into and to plug the bottom opening in said hot isostatic pressing vessel;
(f) a plurality of auxiliary cylinders supported on said auxil-

iary station along a central horizontal extension of said hot isostatic pressing vessel, said auxiliary cylinders being provided for cooling or preheating purposes, each of said plurality of auxiliary cylinders having a bottom opening sized and shaped so that said detachable bottom lids will fit into and plug the bottom opening in it;

(g) first means for swinging said swingably mounted press frame back and forth between an operative position in which hot isostatic pressing takes place and a transfer position which is spaced laterally of the central horizontal extension of said hot isostatic pressing vessel;

(h) at least one rail running between but beneath and spaced laterally from said swingably mounted press frame when it is in its operative position and beneath and laterally spaced from said plurality of auxiliary cylinders; and

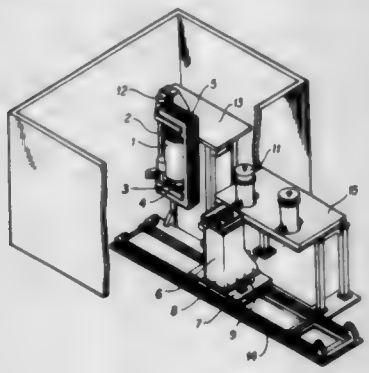
(i) a carrier movably mounted on said at least one rail for movement between said press frame and said plurality of auxiliary cylinders, said carrier comprising:

(i) a car which engages said at least one rail and which is laterally spaced from the central horizontal extension of said hot isostatic pressing vessel;

(ii) second means for driving said car reciprocally in either direction along said at least one rail;

(iii) a lift frame mounted on said car;

(iv) a bottom lid cradle cantileveredly mounted on said lift frame so as to extend laterally therefrom such that, when said carrier is positioned adjacent said press frame, said bottom lid cradle extends beneath the transfer position of said press frame and, when said carrier is positioned adjacent one of said plurality of auxiliary cylinders, said bottom lid cradle extends beneath said one or said auxiliary cylinders; and



(v) third means for driving said bottom lid cradle reciprocally up and down on said lift frame beteween one or more upper transfer positions and a lower carrying position; whereby:

(j) when said press frame is located in its transfer position and said carrier is located adjacent to said press frame with said bottom lid cradle located in an upper transfer position, one of said detachable bottom lids and an object to be treated located on said one of said detachable bottom lids can be loaded into or removed from said hot isostatic pressing vessel;

(k) when said carrier is located adjacent to one of said plurality of auxiliary cylinders with said bottom lid cradle located in an upper transfer position, one of said detachable bottom lids and an object to be treated located on said one of said detachable bottom lids can be loaded into or removed from said one plurality of auxiliary cylinders; and

(l) an object to be treated located on one of said detachable bottom lids can be transferred back and forth between said hot isostatic pressing vessel and said plurality of auxiliary cylinders while said bottom lid cradle is in its lower carrying position and an object to be treated located thereon is beneath and out of the way of said hot isostatic pressing vessel and said plurality of auxiliary cylinders.

4,537,570

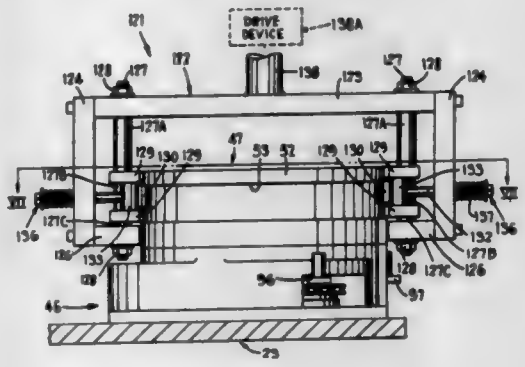
LIFTING APPARATUS FOR AN INJECTION MOLD

John W. Black, Hickory Corners; Richard D. Shupe, and Earl Simon, both of Kalamazoo, all of Mich., assignors to Pemco-Kalamazoo, Inc., Kalamazoo, Mich.

Division of Ser. No. 243,030, Mar. 12, 1981, Pat. No. 4,424,015. This application Oct. 20, 1983, Ser. No. 543,749

Int. Cl.[3] **B29F** *1/00;* **B29C** *3/00*

U.S. Cl. 425—450.1 **6 Claims**



1. A mold top lifting apparatus for lifting a mold top generally upwardly away from a position adjacent a mold bottom to a position spaced from said mold bottom, said mold top having generally vertical first and second side surfaces facing outwardly on opposite sides thereof and having means defining a downwardly facing lip at the top of each said side surface, comprising:

movable support means supporting said mold bottom and first drive means for effecting movement of said support means in a generally horizontal direction approximately perpendicular to the directions in which said side surfaces on said mold top face;

movable frame means and second drive means for effecting generally vertical movement of said frame means between a first position and a second position above said first position; and

first and second gripping means on said frame means which are spaced horizontally in a direction approximately perpendicular to said direction of movement of said support means, movement of said support means when said frame means is in said first position causing said mold top to move to a position in which said mold top is between said first and second gripping means and said first and second gripping means are respectively engaging said side surfaces thereon, and subsequent movement of said frame means from said first toward said second position thereof causing said mold top to be lifted upwardly away from said mold bottom due to engagement of said gripping means with said lips on said mold top;

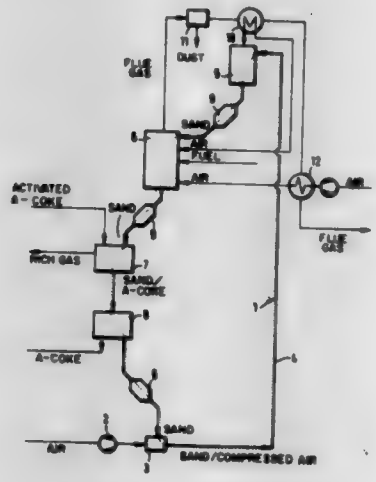
wherein said first and second gripping means respectively include first and second roller support members supported on said frame means for pivotal movement about respective substantially vertical pivot axes, wherein said first gripping means includes two first rollers supported on said first roller support member on opposite sides of said pivot axis thereof for rotation about respective substantially vertical axes, and wherein said second gripping means includes two second rollers supported on said second roller support member on opposite sides of said pivot axis thereof for rotation about respective substantially vertical axes, said mold top passing between said first and second roller support members as said support means moves and said first rollers and said second rollers respectively rolling firmly across said first and second side surfaces on said mold top just below said lips thereon.

4,537,571

PROCESS OF AND APPARATUS FOR REHEATING AND CONVEYING A GRANULAR HEAT CARRIER

Ludwig M. Buxel, Waltrop, and Ludwig Mülhaus, Iserlohn, both of Fed. Rep. of Germany, assignors to Uhde GmbH, Dortmund, Fed. Rep. of Germany

Filed Aug. 17, 1983, Ser. No. 524,090
Claims priority, application Fed. Rep. of Germany, Aug. 18, 1982, 3230656
Int. Cl.³ F27B *15/00*; F28C *3/10*
U.S. Cl. 432—27 22 Claims



1. Process of reheating and conveying a granular heat carrier, such as sand, using a gas where the heat carrier may be employed for desorption by heating a charged lumpy adsorbent, such as activated carbon pellets, comprising a vertically arranged cycle loop having a lower end and an upper end with the heat carrier located in the loop, introducing a carrier gas into the lower end of the loop with the carrier gas at a lower temperature than the heat carrier in the lower end of the loop and conveying the heat carrier by the lower temperature carrier gas in the upward direction from the lower end of the loop into a closed space located at the upper end of the loop, separating the heat carrier from the carrier gas in the closed space, flowing the separated heat carrier under the effect of gravity downwardly in the loop and during the gravity feed, in turn, heating the heat carrier, mixing the heated heat carrier and the adsorbent in a desorber, separating the heat carrier from the adsorbent and returning the heat carrier to the point at the lower end of the loop where the carrier gas is introduced for conveying the heat carrier.

4,537,572

ASSEMBLY FOR POSITIONING A THERMOGRAVIMETRIC FURNACE

Harold I. Hill, Fairfield, Conn.; Stanley D. Norem, Bayside, N.Y., and Roger Targowski, Fairfield, Conn., assignors to The Perkin-Elmer Corporation, Norwalk, Conn.

Filed Feb. 2, 1984, Ser. No. 576,292
Int. Cl.³ F27D *19/00, 15/02, 3/00*
U.S. Cl. 432—55 15 Claims

1. Apparatus for positioning two halves of a thermogravimetric furnace, said apparatus comprising, in combination:

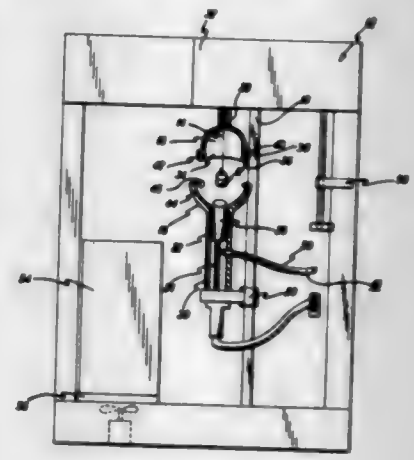
a first portion of a thermogravimetric furnace disposed at a fixed location;

a rotatable shaft;

means affixing a second portion of a thermogravimetric furnace such that said second portion rotates about the axis of said shaft when it rotates and said affixing means is longitudinally displaceable along said shaft;

moving means coupled to said affixing means to longitudinally displace said second portion relative to said shaft between a first position where said first portion and said second portion fit together to form an oven enclosure;

rotating means to rotate said shaft between two positions, the first position comprising a cooling position and the second position comprising an engaging position whereat said moving means may be actuated to cause said first and said second portion to fit together;



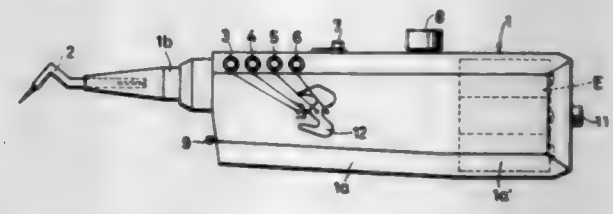
means for excluding simultaneous rotation of said shift and longitudinal displacement of said affixing means.

4,537,573

DETECTOR FOR DIAGNOSING DENTAL CARIES

Imao Sunada, Tokyo, Japan, assignor to Noburu Onuki, Tokyo, Japan

Filed Dec. 29, 1983, Ser. No. 566,808
Int. Cl.³ A61C *3/00*
U.S. Cl. 433—32 4 Claims



1. A detector for diagnosing dental caries comprising:

a casing having thereon a plurality of indicating lamps, said casing being shaped so as to be easily grasped with one hand;

a tooth electrode attached to an end portion of said casing;

a second electrode;

a measuring circuit means within said casing and connected to said indicating lamps, tooth electrode, and second electrode, for determining said measuring the presence and progress of dental caries and indicating such progress in cooperation with said indicating lamps;

an adjusting means, provided on said casing and connected to said measuring circuit means, for setting a reference voltage for calibrating said measuring circuit means; and

a tooth pattern indicia provided on said casing and associated with said indicating lamps to enable one to visually observe the progress of dental caries.

4,537,574

DENTAL ARTICULATOR

Alan D. Clark, 810 Gardendale, Ferndale, Mich. 48220

Filed Mar. 24, 1983, Ser. No. 478,243
Int. Cl.³ A61C *19/04*
U.S. Cl. 433—69 14 Claims

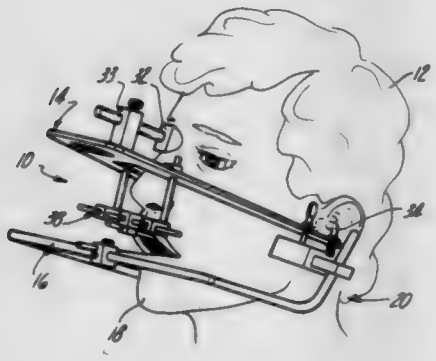
11. An articulator for simulating occlusal displacement of a particular condylar structure, said displacement being recorded by at least one stylus, each of said at least one stylus being fixedly secured with respect to the maxillary structure of the head of a patient, receptacles corresponding in number to the number of styli, each receptacle being filled with impressionable material, fixed with respect to the mandibular structure of the patient and positioned so as to be in communication with one of said styli so that displacement of each said at least

one stylus records an impression by said stylus in said material, the articulator comprising;

an upper arm formed by a one-piece face bow having an anterior bar and means for receiving an incisal pin and spaced apart, rearwardly extending arms, means for supporting an upper dental cast on said upper arm,

a base having means for supporting a lower dental cast, and

means for displaceably mounting said arm to said base comprising said at least one stylus, said at least one receptacle,



and means for supporting said at least one receptacle in registration with said at least one stylus, whereby said stylus rides in said impression and wherein said stylus and impression form the sole condylar guidance means for controlling displacement of said upper arm with respect to said base,

and wherein said means for supporting an upper dental cast comprises a bracket secured to and extending across said arms having means for mounting a dental cast.

4,537,575

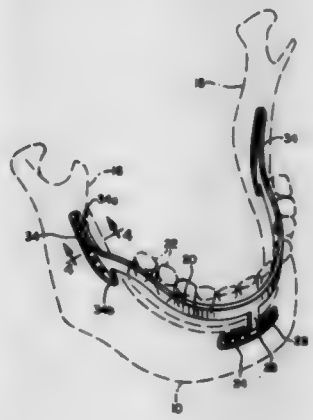
DENTURE SUPPORT FRAME

Harold D. Roberts, 202-1862 W. Broadway, Vancouver, BC, Canada V6J 1Y9

Continuation of Ser. No. 527,237, Aug. 29, 1983, abandoned. This application Dec. 19, 1984, Ser. No. 684,151

Int. Cl.[3] A61C *8/00*

U.S. Cl. 433—176 **2 Claims**



1. A denture support frame arranged to be secured to the lower jaw of a person for supporting an artificaial denture thereon, said frame comprising

a one-piece U-shaped bar having upper and lower edges and arranged to support an artificial denture on its upper edge, said bar having front and rear portions with the front being narrowed and curved and the rearwardly extending portions at the sides diverging outwardly in substantially a straight line whereby to be of a contour similar to the contour of the lower jaw of a person,

a rear ramus implant portion on each side at the rear portion arranged to be implanted in recesses cut in the ramus portion of the jaw bone,

and front support means on said bar arranged for engagement with the jaw,

said ramus implant portions comprising rear longitudinal extensions of said bar,

said extensions having substantially the same vertical disposition as the rear portion of said bar from which it extends,

said extensions being joined with said bar at an angle substantially greater than a right angle but less than 180 degrees and extending both upwardly and downwardly relative to rear portions of the bar with the upward extending portion having a length substantially greater than the downward extending portion,

said rear portions of said bar immediately forward of said ramus implant extensions being bent upward a small amount whereby to be disposed out of alignment with the straight side portions of said bar and to extend into the ramus jaw portions approximately centrally between the sides,

said extensions being directed from front to rear toward said front support means.

4,537,576

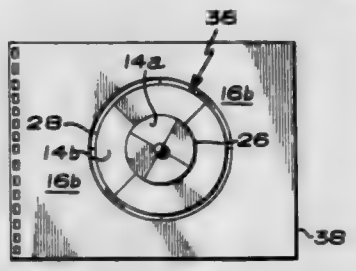
EDUCATIONAL BOOK WITH INTERACTIVE ELEMENTS

Howard I. Thorsheim, 314 Oxford St., and Bruce B. Roberts, 415 Ivanhoe Ave. West, both of Northfield, Minn. 55057

Filed Jul. 16, 1984, Ser. No. 631,162

Int. Cl.[3] G09B *1/22*

U.S. Cl. 434—404 **15 Claims**



1. An educational book providing interaction between graphic information contained on reference elements with graphic information contained on apertured leaves, said book comprising:

a base leaf;

a plurality of reference elements of varying size, each containing graphic information, the reference elements being rotatably mounted on the base leaf in succession, each reference element being smaller than the reference element behind it;

a plurality of apertured leaves containing a second set of graphic information juxtaposed with respect to the apertures, said leaves in register with and overlying the base leaf with the apertures visually aligned with the reference elements, the reference elements being rotatable with respect to each other and the leaves; and

binding means binding said apertured leaves and base leaf together at one end.

4,537,577

TOY VEHICLE AND TRACK ASSEMBLY

Terry Sansome, 13176 Jasper Pl., Windsor, Ontario, Canada N8N3K4, and Thomas L. Simmel, 44 Booras La., Milford, Conn. 06460

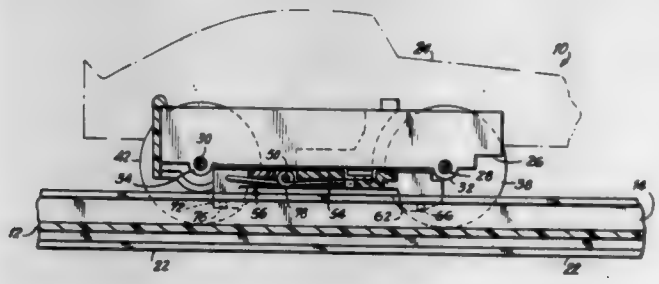
Filed Jan. 27, 1984, Ser. No. 574,569

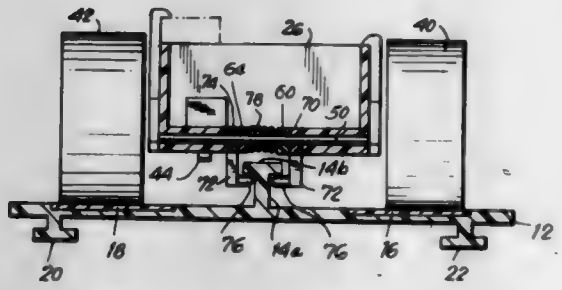
Int. Cl.[3] A63H *18/14*

U.S. Cl. 446—445 **19 Claims**

1. Apparatus including in combination a vehicle formed with a plurality of wheels and a motor adapted to drive said wheels upon actuation, a track along which said vehicle travels, said track formed with a guide extending the length of said track, a first clip mounted for pivotal movement to the underside of said vehicle, said first clip adapted to engage said guide, a

second clip mounted for pivotal movement to the underside of said vehicle, said second clip adapted to engage said guide, said first and second clips cooperating to guide said vehicle along said track and positioned on said vehicle so as to maintain said





vehicle moving on said track by pivoting said vehicle with respect to said track such that one end of said vehicle is urged towards said track and at least one of said wheels is always in driving contact with the track.

4,537,578

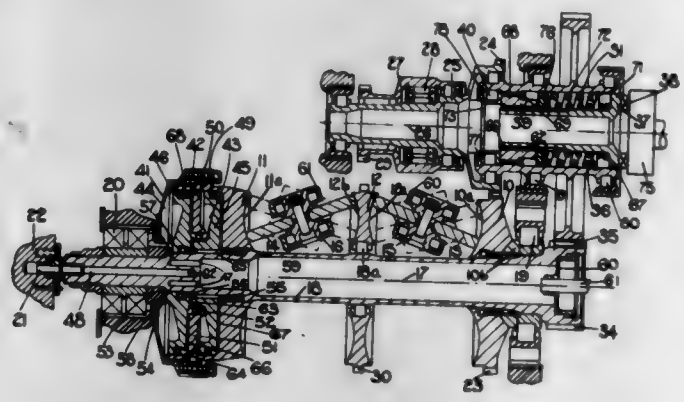
COUPLINGS

Raymond Sharpe, Mirfield; Trevor J. Griffiths, Bradford, and Peter Hunt, Shipley, all of England, assignors to Lucas Industries Limited, England

Continuation-in-part of Ser. No. 824,248, Aug. 12, 1977, abandoned. This application Jan. 3, 1980, Ser. No. 109,225

Int. Cl.³ F16D *11/00*

U.S. Cl. 464—31 **7 Claims**



1. A coupling for two coaxial rotary members, axially interengaging teeth on said members arranged for driving engagement between said members, one of said members being connected to a further part rotatable therewith, helical splines by means of which said member and said further part are directly or indirectly connected, the helical splines, during rotation of the members in one direction, applying an axial force between said one member and said further part tending to disengage said teeth, an element sensitive to temperature rise arranged to resist the tendency for axial relative movement between said one member and said further part, said element being arranged to melt when the temperature is in excess of a predetermined value, resulting in said one member being allowed to move axially relatively to said further part under the influence of said force, to disengage the teeth, bearings for rotationally supporting said one member and being substantially free from axial loading due to said force, and spring means to hold the teeth out of engagement after the temperature sensitive element has melted.

4,537,579

TORSIONAL DAMPER DEVICE

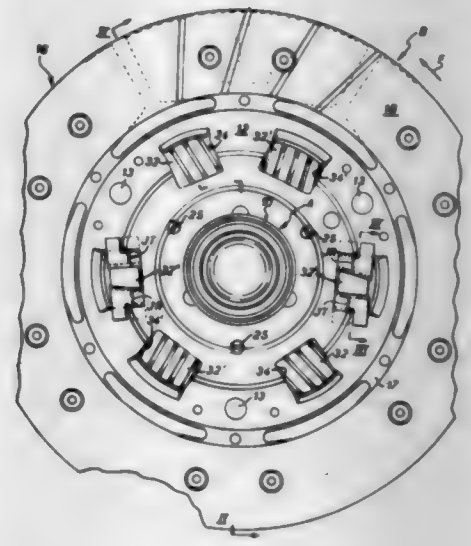
Pierre Loizeau, Ville d'Avray, France, assignor to Valeo, Paris, France

Filed Sep. 7, 1983, Ser. No. 530,042

Claims priority, application France, Sep. 7, 1982, 82 15176

Int. Cl.³ F16D *3/14, 13/68*

U.S. Cl. 464—68 **15 Claims**



1. A torsional damper device in particular for a clutch plate comprising at least two coaxial parts mounted to rotate relative to each other within defined limits of relative angular movement, a transversely extending flange on one of said coaxial parts, two transversely extending guide rings on the other of said coaxial parts, said guide rings being spaced from and attached to each other and disposed one on each side of said flange, circumferentially acting elastic means disposed between and adapted to act circumferentially on said coaxial parts so as to resist said relative angular movement, apertures in said guide rings and flange for housing said elastic means, said elastic means comprising at least one elastic member, a bearing member circumferentially and operatively disposed between said elastic member and said guide rings, said bearing member having two transverse arms extending perpendicularly to the axis of said device and circumferentially overlying the respective guide rings, said arms being axially spaced from and out of contact with said flange, constant frictional contact being provided between said arms and the respective guide rings, whereby frictional torque is produced between said arms and guide rings in the course of relative angular movement therebetween.

4,537,580

TORSIONAL DAMPER DEVICE

Pierre Loizeau, Ville D'Avray, and André Caray, Valence, both of, assignors to Valeo, Paris, France

Filed Sep. 6, 1983, Ser. No. 529,741

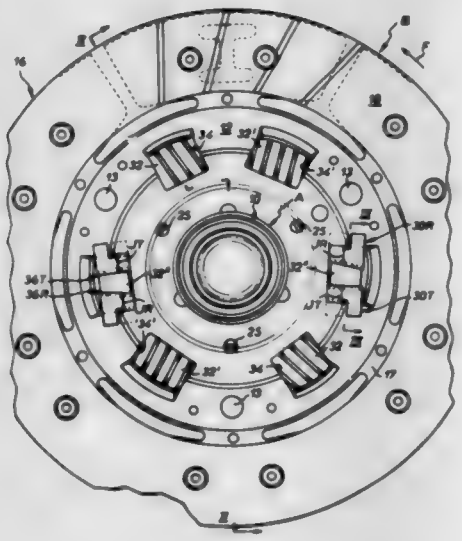
Claims priority, application France, Sep. 7, 1982, 82 15175

Int. Cl.³ F16D *3/14, 13/68*

U.S. Cl. 464—68 **23 Claims**

1. A torsional damper device comprising at least two coaxial parts disposed to rotate relative to one another within defined limits of relative angular movement, one of said parts having a transversely disposed flange and the other of said parts having a transversely disposed guide ring, circumferentially acting elastic means disposed between said parts for acting circumferentially on said parts so as to resist said relative angular movement between said parts, said elastic means including a plural-

ity of individual elastic members, holes in said flange, holes in said guide ring, said holes in said flange and said guide ring together forming housings in which respective ones of said elastic members are disposed, a chock through which at least one of said elastic members bears on the edge of the respective



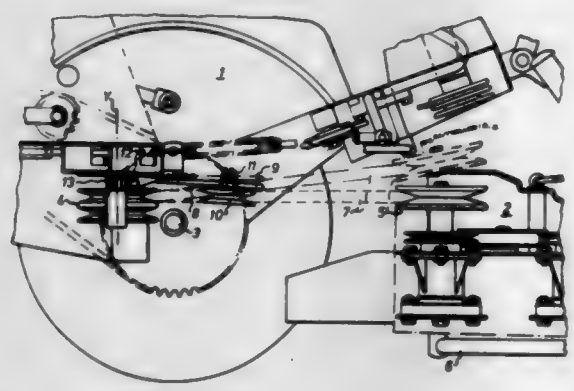
hole in said guide ring, and a recess in said chock disposed in line with said flange, said recess defining means permitting angular movement of said flange relative to said guide ring in the circumferential direction beyond the point of contact of said chock with the edge of the corresponding hole in said guide ring.

4,537,581

CONE BELT TIGHTENING DEVICE

Sören Johansson, Tranås; Roger Andersson, Gränna, and Lennart Jonsson, Österbymo, all of Sweden, assignors to Stiga AB, Tranas, Sweden

Filed Apr. 18, 1983, Ser. No. 485,996
Claims priority, application Sweden, Apr. 30, 1982, 8202729
Int. Cl.[3] F16H *7/22*
U.S. Cl. 474—123 **4 Claims**



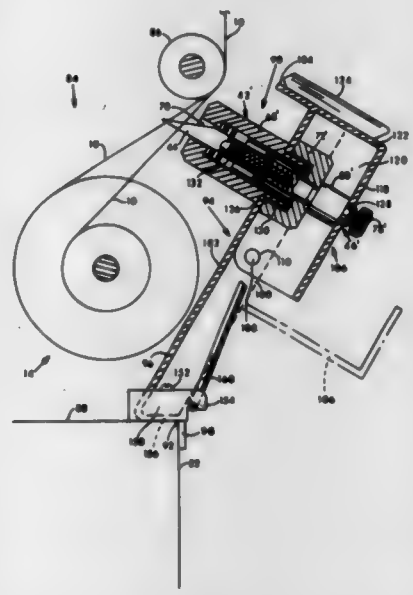
1. A tightening device for cone belts and the like for use in cone belt transmissions, including at least one preferably driven cone belt pulley (5) which is axially or substantially axially displaceable relative to at least one other, preferably driving cone belt pulley (4) mounted on a shaft, and a cone belt (7) interconnecting said cone belt pulleys, said tightening device engaging one run of the cone belt by means of a rotary member, wherein the tightening means includes a preferably spring-loaded support lever (8) arranged adjacent one (4) of the cone belt pulleys and adapted to pivot about a first axis (Y) situated substantially parallel with the cone belt pulley shaft and also about a second axis (X), said second axis being located between said pulleys (4, 5) and being generally perpendicular to said first axis (Y), and a tightening pulley (10) preferably provided with a cone belt groove is fitted at a free end of said support lever (8) in order to maintain the engagement of the tightening pulley (10) independently of any displacement of the cone belt runs (7', 7'') caused by the relative displacement of the cone belt pulleys (4, 5).

4,537,582

PLOTTER PAPER SLITTER

Dean-Yuan Liu, Canoga Park, Calif., assignor to Sanders Associates, Inc., Nashua, N.H.

Filed Oct. 4, 1983, Ser. No. 538,864
Int. Cl.[3] B26D *3/08*
U.S. Cl. 493—38 **10 Claims**



1. In a strip media system wherein a strip media is moved from a supply roller through a work area and onto a takeup roller mounted to a frame, apparatus for longitudinally slitting the strip of media comprising:

(a) a housing adapted to be releasably attached to the frame and including a plate member having a surface in parallel, spaced relationship to the strip media, said surface having an opening therethrough for the passage of a cutting blade;

(b) a cutter assembly retractably mounted to said plate member and having a cutting blade aligned with said opening said cutter assembly being adapted to be moved between an extended position with said blade extending through said opening to contact the strip media to slit it and a retracted position with said blade retracted back through said opening and not being exposed on said surface wherein it is in a safety position protected from being contacted by a system operator;

(c) a latching mechanism having unlocked and locked positions for releasably securing said housing to the frame; and,

(d) safety actuator means connected between said latching mechanism and said cutter assembly for moving said cutter assembly to said extended position when said latching mechanism is in said locked position and for moving said cutter assembly to said retracted position when said latching mechanism is in said unlocked position whereby when said apparatus is removed from the system, said blade is automatically moved to said safety position, the improvement wherein:

(e) said housing has a releasably latchable opening portion moveable between open and closed positions;

(f) said cutter assembly is disposed within said housing;

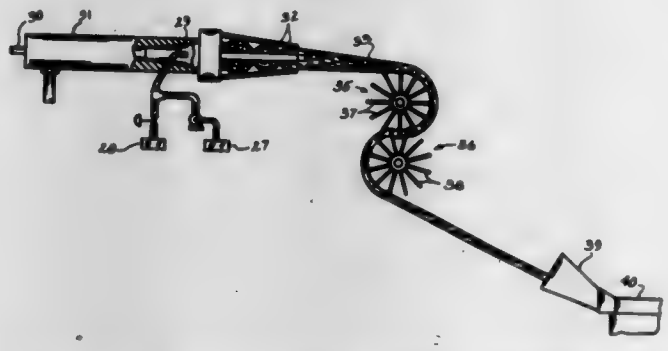
(g) said safety actuator means is connected to said opening portion: and,

(h) said latching mechanism is operated by said opening portion whereby when said opening portion is moved to said open position said latching mechanism is in said unlocked position and when said opening portion is moved to said closed position said latching mechanism is in said locked position.

4,537,583
METHOD AND APPARATUS FOR CONVEYING FILTER TOW

James W. Pryor, Winston-Salem, N.C., assignor to R. J. Reynolds Tobacco Company, Winston-Salem, N.C.

Filed Feb. 18, 1983, Ser. No. 468,012
Int. Cl.[3] B31C *13/00*
U.S. Cl. 493—42 9 Claims

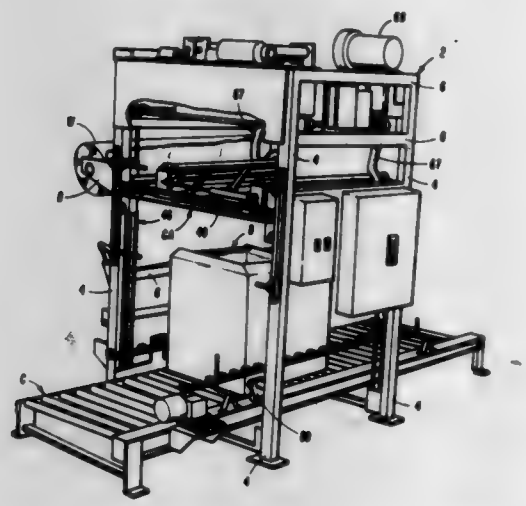


1. Apparatus for withdrawing a bloomed, continuous multifilament filter tow from a jet device and conveying the bloomed filter tow to filter rod-forming means, said apparatus including at least two rotatable, cooperating rolls with each roll comprising a shaft provided with a plurality of tow-contacting members projecting radially outwardly from the longitudinal axis of the shaft and spaced circumferentially around the periphery of the shaft with the tow-contacting members of at least one of the rolls being provided with recessed areas for engaging the filter tow, means for rotating at least one of the rolls and means for maintaining the cooperating rolls in parallel, aligned juxtaposition that is close enough to engage and advance the filter tow introduced between the rolls without significantly compressing the filter tow between directly opposed tow-contacting members.

4,537,584
METHOD AND APPARATUS FOR FORMING PLASTIC LINERS AND INSERTING THEM INTO BULK CONTAINERS

Wayne F. Everman; D. Michael Lewis, and Raymond L. Russell, all of Cedar Falls, Iowa, assignors to Container Corporation of America, Chicago, Ill.

Filed Dec. 19, 1983, Ser. No. 563,290
Int. Cl.[3] B31B *7/00*
U.S. Cl. 493—93 9 Claims



1. Apparatus for forming, from continuous plastic sleeve material, an inverted plastic liner bag, closed at the top and open at the bottom, and inserting it into an open top container, comprising the combination of:

(a) a frame structure;

(b) a carriage assembly mounted for vertical movement on said frame structure;

(c) dispensing means mounted on an upper portion of said frame structure for engaging and moving downwardly a continuous web of plastic sleeve material past cutting and sealing means toward said carriage, said dispensing means being operable to feed the continuous web a predetermined length with the downwardly leading end of the web adjacent the carriage assembly;

(d) cutting and sealing means mounted on said frame structure for cutting from said web said predetermined length of plastic sleeve material and for sealing an upper end of said length to form an inverted bag;

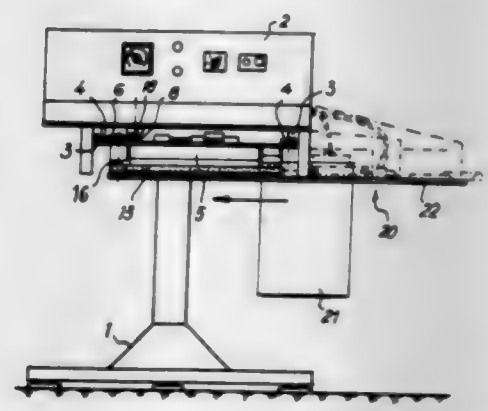
(e) said carriage assembly including a pair of laterally movable inserting means for grasping and spreading open the downwardly leading end of said inverted bag and drawing it over an upper open end of said container to form a cuff while the remaining sealed end of the bag is free to fall by gravity into said container;

(f) bag positioning means for covering the upper open end of the container and forcing air into the bag to urge said bag against the inner surfaces of the container.

4,537,585
CONTINUOUS HEAT SEALER FOR SACKS AND BAGS IN THERMOPLASTIC MATERIAL

Rodric H. Norman, 19,Chemin du Blanc Caillou, B-1420 Braine-L'Alleud, Belgium

Filed Apr. 27, 1982, Ser. No. 372,444
Claims priority, application Luxembourg, Apr. 28, 1981, 83326
Int. Cl.[3] B31B *1/64*
U.S. Cl. 493—205 12 Claims



1. An apparatus for heat sealing together confronting side walls of thermoplastic bags as the bags pass through the apparatus, said apparatus comprising a main assembly including drive and control means for the apparatus, and a heat sealing head having confronting heat transfer means between and in contact with which the bags pass such that confronting sidewalls thereof are heat sealed together, said heat sealing head constituting a sub-assembly which is provided with its own drive means and which is removably fitable to said main-assembly with a single drive connection between the drive means of the main and sub-assemblies to allow replacement of the heat sealing head sub-assembly by another said heat sealing head sub-assembly.

4,537,586
METHOD AND APPARATUS FOR APPLYING COUPON STRIPS TO PAPER BAGS

Ronald S. Gale, Beaverton; William E. Bristol, Hillsboro, and Carroll Noonan, Beaverton, all of Oreg., assignors to Willamette Industries, Inc., Beaverton, Oreg.

Filed Feb. 21, 1984, Ser. No. 581,547
Int. Cl.[3] B31B *1/90, 37/74*
U.S. Cl. 493—220 2 Claims

1. A method of applying a coupon strip to the inside of the front panel of a four-sided self-opening paper grocery bag having a front panel, a back panel, inwardly-folded opposite

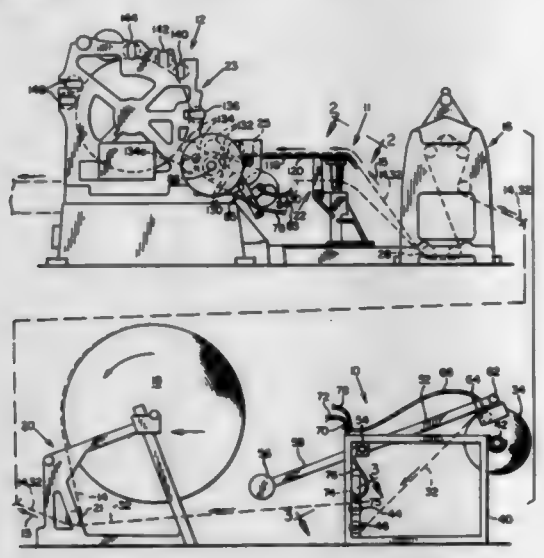
side panels joining the front and back panels, and a bottom panel closing the front, back and side panels, comprising:

conveying a continuous web of bag paper in the longitudinal direction thereof;

providing a continuous strip of coupons, the width of the strip being sized to a width less than the spacing between the inwardly-folded side panels of the bag when the bag is folded flat;

perforating the strip of coupons along a margin thereof, thus defining a margin portion and a detachable coupon portion, the width of the strip being further sized so that at least the detachable coupon portion is not overlapped by the ends of the side panels when the side panels are folded inwardly to form the bottom panel for the bag;

conveying the continuous strip of coupons longitudinally of the web of bag paper along one side thereof at a position spaced centrally of the longitudinal margins of the web of bag paper;



applying glue longitudinally solely to the margin portion of the strip of coupons on the side of the strip facing the web of bag paper;

pressing the margin portion and the coupon portion of the strip of coupons against the web of bag paper to adhere the margin portion to said one side of the web of bag paper prior to forming the web into a tube;

after adhering the margin portion of the strip of coupons to said one side of the web, continuously turning longitudinal margins of the web of bag paper with the strip of coupons adhered thereto toward said one side of the web to form the web into a tube and enclose the strip of coupons therein;

periodically cutting a portion of the web transversely to define a top of a first bag and a bottom of a second bag and to cut the strip of coupons into an elongated segment;

folding portions of the longitudinal margins of the bag inwardly to form inwardly-folded side panels of the bag; and

folding the bottom of the bag to close the same.

4,537,587

CARTON OPENING MECHANISM

Marinus J. M. Langen, Rexdale, Canada, assignor to H. J. Langen & Sons Limited, Mississauga, Canada

Filed Aug. 9, 1983, Ser. No. 521,576

Int. Cl.³ B31B *1/78, 1/80*

U.S. Cl. 493—315 **3 Claims**

1. A carton opening mechanism for use in opening a knocked-down carton and transferring the open carton to a receiver having a receiver compartment proportioned to receive an open carton, said receiver compartment having an entranceway opening therefrom, comprising;

(a) a carton storage means having a discharge opening through which knocked-down cartons may be withdrawn one at a time,

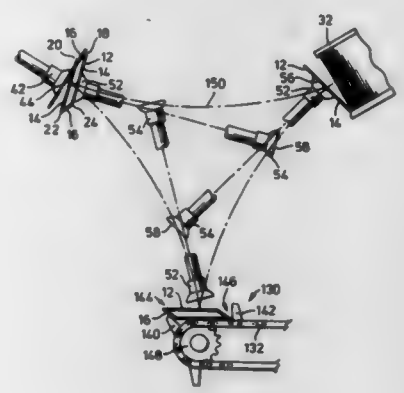
(b) carton opening means having a first suction face,

(c) said discharge opening and first suction face being circumferentially spaced 120 degrees from one another about the perimeter of a circle and facing inwardly toward a central axis located at the center of said circle,

(d) said carton opening mechanism being mounted so as to locate the receiver compartment on the perimeter of said circle equidistant from the discharge opening and first suction face with the entranceway of said compartment opening toward said central axis,

(e) a rotary transfer means mounted for rotation about said central axis, said transfer means having a suction head formed with a transfer suction face, said transfer means being operable, in response to continuous rotation thereof, to effect movement of said transfer suction face along a triangular path which has first, second and third shallow concave arcuate portions which extend, respectively, between,

(i) a first position in which the transfer suction face is located at a first apex of said triangular path and is directed toward said discharge opening and positioned to engage a



wall of a carton blank located in the storage means in use, and

(ii) a second position in which the transfer suction face is located at a first apex of said triangular path and is directed toward and disposed opposite the first suction face of said carton opening means to press an opposite wall of the carton into engagement with the first suction face, and between said second position and,

(iii) a third position in which the transfer suction face is located at a first apex of said triangular path and is directed toward and disposed adjacent the entranceway of the receiver to deposit an open carton in said receiver compartment in use, and between said third position and said first position,

(f) suction control means adapted to generate a negative pressure at said transfer suction face when it is in said first position and during movement of said transfer suction face between said first, second and third positions so as to secure a wall of a knocked-down carton thereto, withdraw it from the storage means, transported to and open it by engagement with the opening means and deposit the open carton in the receiver compartment and thereafter to relieve the negative pressure to release the open carton.

4,537,588
PUNCH DEVICE FOR MAKING WINDOW CUT-OUTS

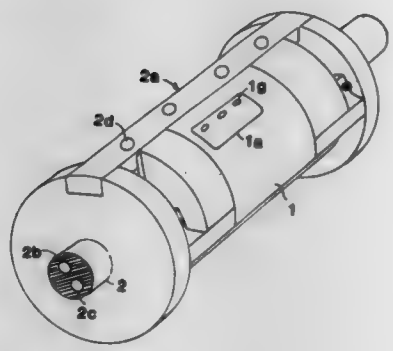
Gunter Ehlscheid, Neuwied, and Heinz-Helmut Frost, Puderbach, both of Fed. Rep. of Germany, assignors to Winkler & Dunnerbier Maschinenfabrik und Eisengiesserei GmbH & Co. KG., Neuwied, Fed. Rep. of Germany

Filed Jan. 16, 1984, Ser. No. 570,872

Claims priority, application Fed. Rep. of Germany, Jan. 22, 1983, 3302038

Int. Cl.[3] B31B *1/24*

U.S. Cl. 493—342 1 Claim



1. A rotating punch device for making window cut-outs in envelope blanks and cardboard box blanks comprising:

(a) a punch roller;

(b) a metal foil disposed on said punch roller having a cutting edge in the shape of the window cut-out thereon, said metal foil having leading and trailing bent ends, one of said bent ends having a U-shaped cut-out therein;

(c) a retaining segment on said punch roller for engaging said bent end of said metal foil having the U-shaped cut-put therein, said segment including a pin disposed therein for engagement with said U-shaped cut-out to thereby accurately register said metal foil on said punch roller;

(d) a clamping segment on said punch roller for engaging the other bent end of said metal foil and clamping said metal foil onto said punch roller;

(e) a stationary cutting bar which cooperates with the cutting edge of said metal foil to form said window cut-out;

(f) a transport segment carried by said punch roller which grips the leading edge of said blank and transports said blank;

(g) vacuum openings disposed in said transport segment for the purpose of gripping the leading edge of said blank to be cut so that said blank can be conveyed and retained on said punch roller; and

(h) vacuum openings within the cutting edge of said metal foil which are alternately subjected to vacuum and an air blast so as to control the discharge of the cut-out material.

4,537,589
APPARATUS FOR REMOVING THE WASTE EDGE PIECES FROM PUNCHED BLANKS

Heinrich Schmidt, Porta Westfalica, Fed. Rep. of Germany, assignor to Heinrich Greve GmbH, Lubbecke, Fed. Rep. of Germany

Filed Nov. 5, 1982, Ser. No. 439,640

Claims priority, application Fed. Rep. of Germany, Nov. 6, 1981, 3144125

Int. Cl.[3] B31B *49/00*

U.S. Cl. 493—373 13 Claims

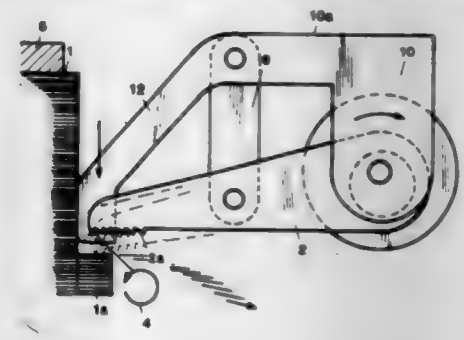
1. Apparatus for removing at least partly severed waste edges from sheet material which has been stacked comprising:

movable frame means;

at least a first parting element, said first parting element comprising an elongated arm having serrations in a first side edge adjacent a first end thereof;

means supporting said first parting element from said frame means; and

means for imparting orbital movement to said first parting element first end whereby said serrated edge will contact and penetrate the waste edge of a sheet of material and then pull said waste edge outwardly with respect to the stack of sheets, said frame means being at least in part



movable relative to said stack of sheets to cause said first parting element first end to consecutively engage a waste edge of adjacent sheets comprising the stack of sheets.

4,537,590
SUPERTHIN ABSORBENT PRODUCT

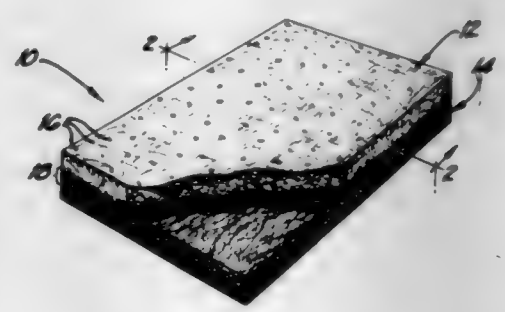
Heinz A. Pieniak, North Brunswick, and Michael J. Iskra, Flemington, both of N.J., assignors to Personal Products Company, Milltown, N.J.

Continuation-in-part of Ser. No. 439,963, Nov. 8, 1982, Pat. No. 4,500,315. This application Jun. 20, 1983, Ser. No. 505,579

The portion of the term of this patent subsequent to Feb. 19, 2005, has been disclaimed.

Int. Cl.[3] A61F *13/00*

U.S. Cl. 604—379 34 Claims



1. An absorbent compressed composite laminate comprising a first layer, a second layer, and a transition zone integrally and intimately connecting said first and second layers and being substantially coextensive therewith, said first layer comprising a fibrous web having a dry bulk recovery of at least about 30 percent, an initial dry bulk of at least about 20 cc/gm, and a weight less than about 2 oz/yd^2, and a plurality of particles or globules of superabsorbent material disposed intermittently throughout said first layer, said particles or globules being present in at least about 200 percent dry-add-on basis, said second layer comprising substantially uniformly disposed, frictionally engaged hydrophilic particles selected from the group consisting of cellulosic fibers, peat moss, rayon fibers and mixtures thereof, said particles being sufficiently closely spaced to adjacent particles to promote rapid movement of liquid along the plane of said layer, and said transition zone comprising portions of said engaged particles extending into and becoming integral with said first layer with portions of said engaged particles in intimate contact with said superabsorbent material, said composite laminate being compressed to substantially reduce its thickness.

4,537,591

ADJUSTABLE DIAPER WITH A BACKBAND AND FASTENING PROTECTION MEANS

Fredrica V. Coates, 1608 Dublin Rd., Charlottesville, Va. 22903

Continuation-in-part of Ser. No. 315,049, Oct. 26, 1981,. This application May 5, 1982, Ser. No. 375,231

Int. Cl.[3] A61F *13/16*

U.S. Cl. 604—391 **23 Claims**



1. A diaper, comprising:

(a) a substantially rectangular piece of absorbent washable fabric having opposite inner and outer surfaces, said inner surface positionable to contact a wearer's skin to be diapered;

(b) a pair of attachment tabs attached to an upper edge portion of the fabric, each tab carrying a plurality of resiliently deformable, hook-like projections projecting outward from a surface of the tab;

(c) fastening means secured to the outer surface of the fabric, adjacent a lower transverse edge thereof for engaging the attachment tabs to secure the diaper of the wearer, said fastening means having a surface carrying a plurality of resiliently deformable, loop-like projections for engagement with the tab surfaces; and

(d) self-closing protective cover means carrying loop-like projections one edge of each tab and one end of its cover means being joined such that the surface areas of the tab and cover means are maintained face to face, in juxtaposition and coextensive and thereby tend to self-close, insulating the hook-like projections of the tabs from lint, during diaper cleaning.

4,537,592

Patent Not Issued For This Number

4,537,593

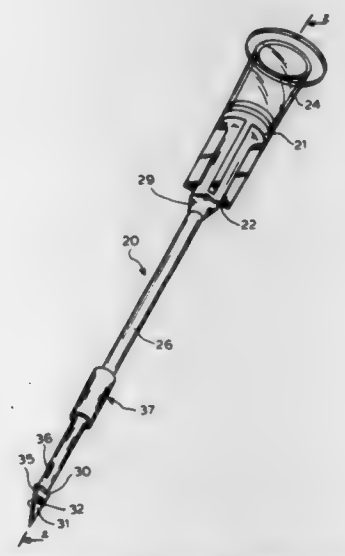
SELF-VENTING, NON-CORING NEEDLE ASSEMBLY

Paul G. Alchas, Montclair, N.J., assignor to Becton, Dickinson and Co., Paramus, N.J.

Filed Jun. 6, 1983, Ser. No. 501,303

Int. Cl.[3] A61M *5/00*

U.S. Cl. 604—411 **20 Claims**



1. A self-venting, non-coring needle assembly for the transfer of liquid to or from a container having a needle penetrable stopper thereon comprising:

a rigid hub having a forward end, a rearward end adapted to engage external fluid transfer apparatus and a passageway therethrough;

a cannula extending outwardly from said forward end and terminating in a closed distal end means for penetrating said stopper, said cannula having a lumen in fluid communication with said passageway, said cannula having an aperture in the side thereof adjacent to said distal end and in fluid communication with said lumen;

a sleeve member slidably engaged on said cannula and being shorter in length than the distance between said aperture and said forward end of said hub, said sleeve member adapted to enter the hole in the needle penetrable stopper made by said distal end means;

venting means for allowing gas to pass between the outside of said cannula and the inside of said sleeve; and

retention means for preventing said sleeve from sliding off said cannula.

4,537,594
PROCESSED FEATHERS

Charles R. W. Fleet, and Vincent K. Hewinson, both of Boston, England, assignors to Fogarty P.L.C., Lincolnshire, England

Filed Jul. 13, 1984, Ser. No. 630,763

Claims priority, application United Kingdom, Jul. 22, 1983, 8319816; Nov. 4, 1983, 8329538

Int. Cl.[3] D06M *19/00*

U.S. Cl. 8—94.1 R 9 Claims

1. Feathers having thereon a water-repellent, bacterial-resistant, low friction cured fluoroalkyl acrylate copolymer finish.

4,537,595
ORGANOPOLYSILOXANES WITH BUNTE SALT GROUPS, THEIR SYNTHESIS AND USE FOR THE SURFACE TREATMENT OF INORGANIC OR ORGANIC MATERIALS

Burghard Grüning; Ulrich Holtschmidt, and Götz Koerner, all of Essen, Fed. Rep. of Germany, assignors to TH. Goldschmidt AG, Essen, Fed. Rep. of Germany

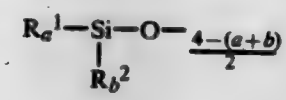
Filed Jun. 28, 1984, Ser. No. 625,711

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1983, 3323881

Int. Cl.[3] D06M *3/06, 13/26;* C07F *7/08;* D21F *11/14*

U.S. Cl. 8—115.6 15 Claims

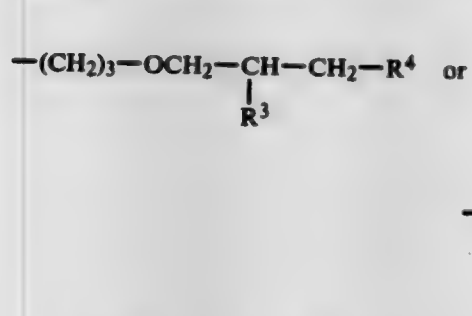
1. Organopolysiloxanes with Bunte salt groups attached having the formula:



the Bunte salt groups being linked to a silicon atom by a carbon atom wherein

R^1 is methyl with the proviso that up to 10% of the R^1 groups may be alkyl with up to 18 carbon atoms, vinyl phenyl, hydrogen or hydroxyl,

R^2 is



in which one of the R^3 and R^4 is OH and the other $—S_2O_3Me$ wherein Me is alkali, ammonium, or substituted ammonium, providing that in an amount up to 50% of the R^2 groups, R^3 and R^4 taken together can be OH or the oxygen atom of an oxirane ring,

a is from 1 to 2.33 and

b is from 0.02 to 1.

4,537,596
POLYETHERESTERS, THEIR PREPARATION, AND THEIR USE FOR TREATING TEXTILES

Hanns P. Müller, Odenthal, and Karl Schäfer, Leverkusen, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Sep. 14, 1984, Ser. No. 651,003

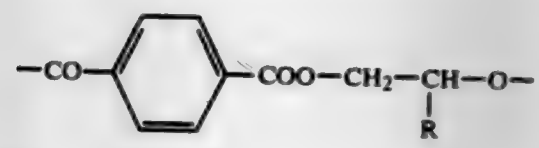
Claims priority, application Fed. Rep. of Germany, Sep. 26, 1983, 3334798

Int. Cl.[3] D06M *9/00;* C08G *63/66*

U.S. Cl. 8—115.6 8 Claims

1. Water-soluble or water-dispersible segmented polyetheresters having a predominantly linear molecular structure and containing

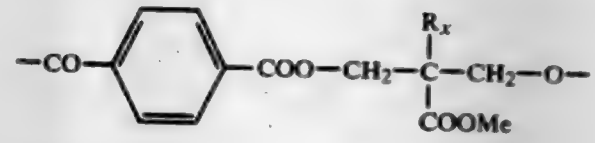
(a) 3–45% by weight of terephthalate groups of the formula



wherein

R denotes hydrogen or methyl,

(b) 0.4–6% by weight of terephthalate groups of the formula



wherein

R_x denotes hydrogen or C_1–C_4-alkyl and

Me denotes an alkali metal or ammonium ion, and

(c) 49–96.6% by weight of terminal polyalkylene glycol groups, all the weights being relative to that of the polyetherester.

4,537,597
NAVY BLUE MIXTURES OF DISPERSE MONO-AZO DYES FOR CELLULOSE ACETATE

Udo Bergmann, Darmstadt; Helmut Degen, Frankenthal; Guenter Hansen, Ludwigshafen; Reinhold Krallmann, Weisenheim, and Hans Weber, Hassloch, all of Fed. Rep. of Germany, assignors to Basf Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

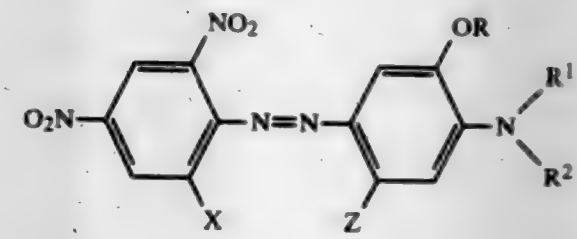
Filed May 17, 1984, Ser. No. 611,536

Claims priority, application Fed. Rep. of Germany, May 20, 1983, 3318451

Int. Cl.[3] C09B *29/08, 67/22;* D06P *1/04*

U.S. Cl. 8—639 5 Claims

1. A dye mixture which contains at least two different dyes of the formula



wherein

X is chlorine or bromine,

Z is methyl, methoxy, ethoxy or acetylamino,

R is methyl or ethyl and

R^1 and R^2 independently of one another are hydroxyethyl, hydroxypropyl, acetoxyethyl, acetoxypropyl, propionyloxyethyl or propionyloxypropyl.

4,537,598
PROCESS FOR TRICHROMATIC DYEING OR PRINTING OF POLYAMIDE

Harry Schaetzer, Wehr, Fed. Rep. of Germany; Helmut Raisin, Riehen, and Dieter Mäusezahl, Biel-Benken, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed May 24, 1984, Ser. No. 614,222

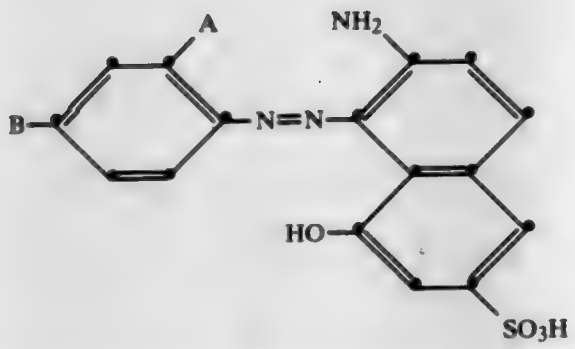
Claims priority, application Switzerland, May 25, 1983, 2838/83

Int. Cl.[3] C09B *67/22;* D06P *3/06*

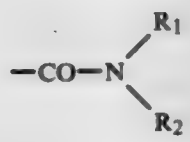
U.S. Cl. 8—641 18 Claims

1. A process for dyeing or printing natural and synthetic polyamide material by the trichromatic technique, which comprises the use of a red dye of the formula

(1)

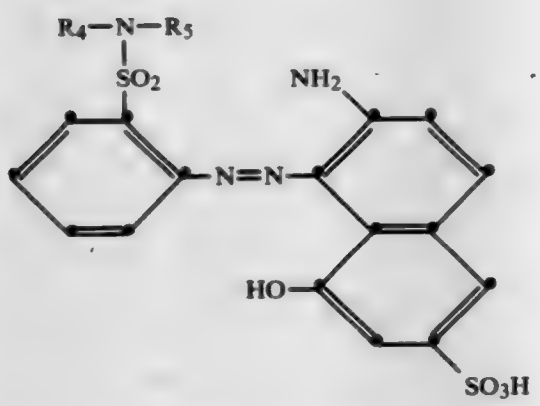


wherein A is hydrogen, unsubstituted or substituted C_1–C_4alkyl,



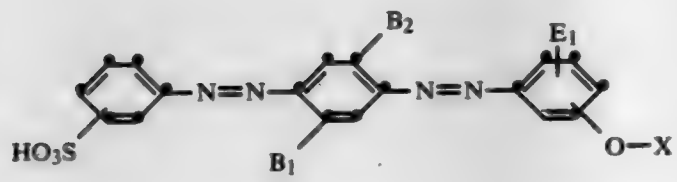
or $—SO_2R_3$, wherein R_1 is C_1–C_4alkyl, R_2 is unsubstituted or substituted C_5–C_7cycloalkyl or unsubstituted or substituted phenyl, and R_3 is unsubstituted or substituted phenyl or unsubstituted or substituted phenoxy, and B is hydrogen, C_2–C_4alkanoylamino, C_5–C_8cycloalkoxycarbonylamino, C_1–C_4alkoxycarbonylamino, C_1–C_4alkylsulfonylamino or unsubstituted or substituted phenylsulfonylamino, or a mixture of the red dye of the formula (1) with a red dye of the formula

(2)



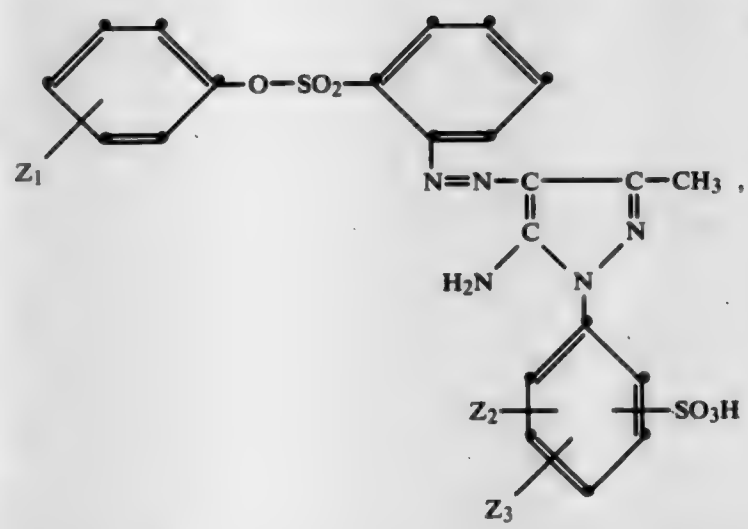
wherein R_4 is methyl or ethyl and R_5 is cyclohexyl or phenyl, together with at least one yellow or orange dye of the formula

(3)



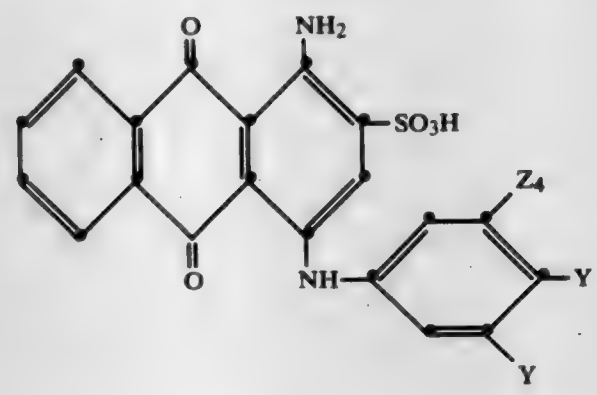
wherein B_1, B_2 and E_1 are hydrogen, C_1–C_4alkyl or C_1–C_4alkoxy, and X is straight chain or branched C_1–C_4alkyl or straight chain or branched C_2–C_4hydroxyalkyl, or a mixture of at least one yellow or orange dye of the formula (3) with a yellow dye of the formula

(4)



wherein Z_1, Z_2 and Z_3 are each independently hydrogen, halogen, C_1–C_4alkyl or C_1–C_4alkoxy, and at least one blue dye of the formula

(5)



wherein one Y is hydrogen or methyl and the other Y is C_2–C_4alkanoylamino or C_2–C_4hydroxyalkylsulfamoyl and Z_4 is hydrogen or methyl.

4,537,599

PROCESS FOR REMOVING SULFUR AND ASH FROM COAL

Edward H. Greenwald, Sr., 92 Nancy La., McMurray, Pa. 15317

Continuation-in-part of Ser. No. 489,568, Apr. 28, 1983, abandoned. This application Apr. 16, 1984, Ser. No. 598,979

Int. Cl.[3] **C10L** *9/02*

U.S. Cl. 44—1 SR **32 Claims**

1. A process for removing clay and pyrite from coal comprising:

forming a slurry of coal particles from a coal-feed stream contaminated with clay and pyrite, the coal particles having a desired mesh size,

adjusting the pH of the slurry to maintain a colloidal dispersion wherein clay and pyrite particles are a colloid,

forming a colloidal dispersion of clay and pyrite particles by agitating the slurry of coal particles to release clay and pyrite from the surface of the coal particles,

recovering a slurry of coal particles having a size greater than 2 microns,

adjusting the pH of the recovered slurry of coal particles to maintain a colloidal dispersion wherein clay and pyrite particles are a colloid,

again forming a colloidal dispersion of clay and pyrite particles by releasing additional clay and pyrite from the surface of the coal particles, and

recovering coal particles greater than 2 microns.

12. The method according to claim **1** wherein said step of recovering coal particles includes separating coal particles from the slurry in a centrifuge.

4,537,600
METHOD FOR THE PREPARATION OF PITCH-IN-WATER SLURRY

Hiroto Tajima, Yokohama; Hironori Kawakami, Kawasaki; Zenichi Mashino, Soka; Seinoshin Hayami, Yokohama, and Osamu Ohzeki, Fukui, all of Japan, assignors to Chiyoda Chem. Engineering & Constr. Co., Yokohama and Nikka Chemical Industry Co., Ltd., Fukui, both of, Japan

Filed Mar. 27, 1984, Ser. No. 593,827
Claims priority, application Japan, Mar. 30, 1983, 58-54847
Int. Cl.³ C10L *1/30*
U.S. Cl. 44—51 17 Claims

1. A method of preparing a pitch-in-water slurry, comprising the steps of:

mechanically molten pitch in the presence of water to obtain coarse pitch particles solidified during the comminution by contact with the water, and

finely pulverizing the coarse pitch particles in the presence of water to form a slurry containing the finely pulverized pitch particles dispersed in the water.

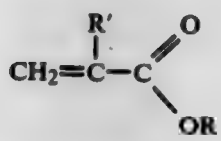
4,537,601
ANTISTATS CONTAINING ACRYLONITRILE COPOLYMERS AND POLYAMINES

Michael I. Naiman, St. Louis, Mo., assignor to Petrolite Corporation, St. Louis, Mo.

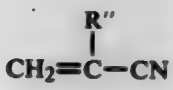
Division of Ser. No. 378,541, May 17, 1982, Pat. No. 4,491,651. This application Oct. 29, 1984, Ser. No. 634,251
Int. Cl.³ C10L *10/00*
U.S. Cl. 44—62 12 Claims

1. A hydrocarbon fuel containing an effective antistatic amount of composition comprising

(1) a copolymer of (a) a monomer of the formula



and (b) a monomer of the formula



Where R′ and R″, which may be the same or different, are hydrogen or an alkyl group and R is selected from the group consisting of alkyl, cycloalkyl, aryl and alkaryl, the molar ratio of (b) to (a) being from about 10:1 to 1:10, and the molecular weight of the copolymer being at least about 1000; and

(2) a polymeric polyamine selected from the group consisting of (i) the reaction product of an epihalohydrin and an amine and (ii) an α-olefin-maleimide copolymer.

4,537,602
ADDITIVE CONCENTRATES FOR DISTILLATE FUELS

Albert Rossi, Warren, N.J., and Kenneth Lewtas, Wantage, England, assignors to Exxon Research & Engineering Co., Florham Park, N.J.

Filed Sep. 15, 1983, Ser. No. 532,319
Claims priority, application United Kingdom, Sep. 16, 1982, 82-26430
Int. Cl.³ C10L *1/24*
U.S. Cl. 44—62 20 Claims

1. An additive concentrate for incorporation into wax containing petroleum fuel oil compositions to improve low temperature flow properties of said oil comprising an oil solution containing

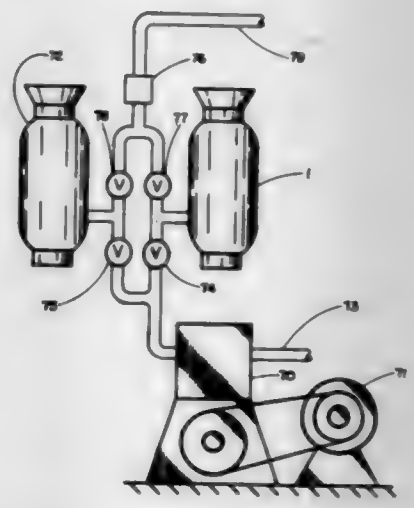
(a) In the range of 3% to 90 wt. % based on a total weight of the concentrate of a C_{30}–C_{300} oil-soluble nitrogen compound wax crystal growth inhibitor having at least one straight C_8–C_{40} alkyl chain and being selected from the class consisting of ammonium salts, amine salts and amides of aromatic or cycloaliphatic dicarboxylic acids or anhydrides thereof having 5 to 13 carbon atoms in their cyclic moiety, and mono esters of said acids or anhydrides, said nitrogen compound being formed by reaction of about one to two moles of amine per mole of acid, anhydride or ester; and

(b) one to three moles per mole of (a) of an organic acid capable of hydrogen bonding with (a) and improving the fluidity of said additive concentrate, selected from the group consisting of carboxylic acid, sulfonic acid and phenols.

4,537,603
CYCLIC CHAR GASIFIER DEVOLATILIZATION PROCESS

Joseph C. Firey, P.O. Box 15514, Seattle, Wash. 98115

Continuation-in-part of Ser. No. 492,484, May 6, 1983, Division of Ser. No. 328,148, Dec. 7, 1981, abandoned, which is a continuation-in-part of Ser. No. 121,973, Feb. 15, 1980, abandoned. This application Oct. 31, 1984, Ser. No. 666,662
Int. Cl.³ C10J *3/04*
U.S. Cl. 48—197 R 4 Claims



1. A process of gasifying at least two char fuel masses within separate containers comprising the steps of:

compressing at least one reactant gas into the pores of at least one char fuel mass;

while concurrently expanding reacted gases out of the pores of at least one other char fuel mass;

alternating said compression process with said expansion process for each char fuel mass, with but one of said compression or expansion processes being applied to any one char fuel mass at any one time;

repeating said compression process alternated with said expansion process several times for each of said at least two char fuel masses;

continuing said compression process continuously to at least one char fuel mass at a time;

continuing said expansion process continuously to at least one char fuel mass at a time;

removing substantially all reacted gases as product gases, which have expanded outside the pores, from continued contact with said char fuel, during each expansion on each char fuel mass;

supplying at least one fresh reactant gas for each compression on each char fuel mass, said reactant gases comprising a gas essentially free of oxygen gas.

4,537,604

ABRASIVE AGGLOMERATES FOR USE IN SCOURING CLEANING COMPOSITIONS

Peter L. Dawson, Upton-by-Chester, England, assignor to Lever Brothers Company, New York, N.Y.

Filed Aug. 31, 1983, Ser. No. 528,186

Claims priority, application United Kingdom, Sep. 1, 1982, 8224944; Jul. 19, 1983, 8319441

Int. Cl.[3] C09K *3/14*

U.S. Cl. 51—298 23 Claims

1. Scouring cleaning compositions comprising from 5 to 99% by weight of an abrasive agent consisting of agglomerates of finely divided abrasive material having no particles of initial size above 20 micrometers, at least 80% by weight thereof being of initial size below 10 micrometers, and an organic binder for agglomerating such material, from 1 to 20% by weight of the binder being an oil-soluble anionic or cationic polar compound; the flexural strength of the agglomerates being above 1.5 kilograms.

4,537,605

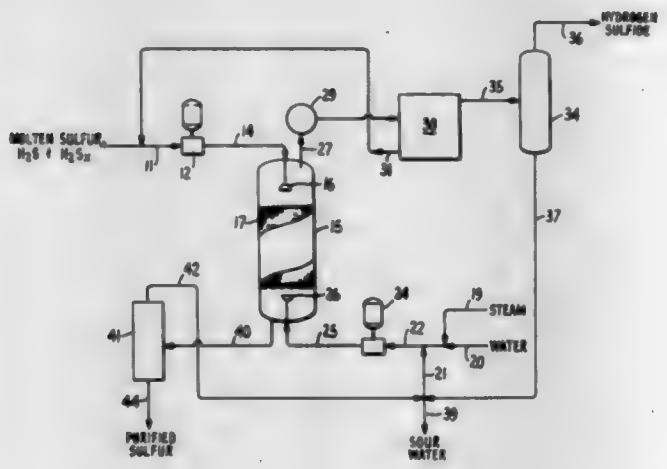
REMOVAL OF HYDROGEN SULFIDE FROM ELEMENTAL SULFUR BY A COUNTERCURRENT WET STEAM PROCESS

T. H. Gouw, El Cerrito, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Continuation of Ser. No. 398,804, Jul. 16, 1982, abandoned. This application Jan. 30, 1984, Ser. No. 574,948

Int. Cl.[3] B01D *53/14*

U.S. Cl. 55—48 6 Claims



1. A process for reducing the hydrogen sulfide content of hydrogen sulfide-contaminated petroleum byproduct elemental sulfur from 20 to 2000 pm by weight to less than 1 ppm by weight which comprises passing the elemental sulfur in liquid phase downward in countercurrent through upward flowing water and steam in a single contacting at a temperature of from 250° F. to 310° F., a pressure adequate to prevent total vaporization of the water and a water plus steam usage of from 0.3 to 2 pounds per pound of sulfur, wherein the water and steam is partially vaporized sour water having a pH of 4 to 7.

4,537,606

OXYGEN ENRICHED GAS SUPPLY ARRANGEMENT FOR COMBUSTION

Yoshimasa Itoh, Machida, and Shiroh Asakawa, Zama, both of Japan, assignors to Matsushita Electric Industrial Co., Ltd., Asaha, Japan

Continuation of Ser. No. 331,902, Dec. 18, 1981, abandoned. This application Nov. 21, 1983, Ser. No. 553,430

Claims priority, application Japan, Dec. 19, 1980, 55-180686

Int. Cl.[3] B01D *53/22*

U.S. Cl. 55—158 12 Claims

1. An apparatus for providing an air supply enriched in an oxygen concentration which can be selectively varied for use for combustion purposes which comprises, in combination:

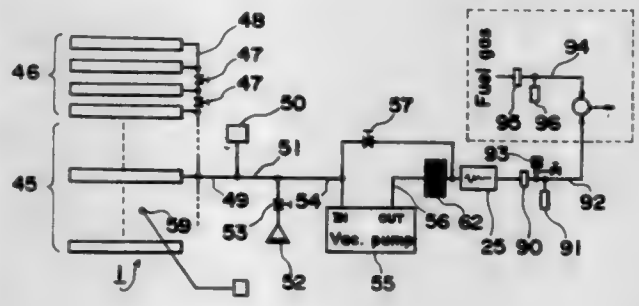
a membrane cell divided into a main gas permeating membrane including means for causing atmospheric air to flow through and along the surface of said main gas permeating membrane to obtain an oxygen enriched air stream,

means for supplying air to said membrane cell,

a plurality of auxiliary membranes connected in parallel with said main gas permeating membrane, including means for optionally directing at least a portion of the atmospheric air through said auxiliary membranes to obtain an oxygen enriched air stream,

means for controlling the number of auxiliary membranes to be utilized thereby controlling the flow rate of oxygen concentration of the oxygen enriched air obtained from the membrane cell together with pressure adjustment,

pressure reduction means having an inlet and outlet for causing atmospheric air to pass through said main membrane and auxiliary membranes, said pressure reduction means being disposed downstream from said main membrane and auxiliary membranes for providing oxygen enriched air to be adapted as combustion air to burn fuel in combustion,



by-pass means communicating at one end with said outlet of said pressure reduction means, and at a second end with said inlet of said pressure reduction means for recycling at least a portion of the air from said outlet to said inlet, said by-pass means containing means for controlling the amount of air to be recycled,

first atmospheric air inlet means connected with said inlet of said pressure reduction means for adjustably supplying atmospheric air to said inlet and

second atmospheric air inlet means connected with said outlet of said pressure reduction means for adjustably supplying atmospheric air to said outlet, wherein the amount of the oxygen concentration of the air to be discharged from the outlet of the pressure reduction means for use in combustion is selectively varied by the operation of the main and auxiliary membranes for control of the concentration and flow rate of the enriched air, the by-pass means and the first and second atmospheric air inlet means.

4,537,607

GAS FLOW CONTROLLERS FOR AIRCRAFT MOLECULAR SIEVE TYPE GAS SEPARATION SYSTEMS

Brian H. Rogers, and Paul A. Tucker, both of Yeovil, United Kingdom, assignors to Normalair-Garrett (Holdings) Limited, Yeovil, England

Filed Jul. 31, 1984, Ser. No. 636,265

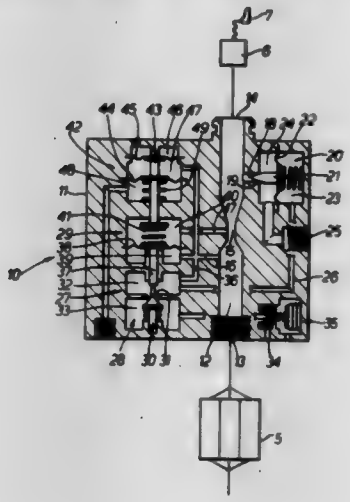
Claims priority, application United Kingdom, Aug. 3, 1983, 8320960

Int. Cl.[3] B01D *53/04*

U.S. Cl. 55—163 8 Claims

1. A gas flow controller for use in controlling the mass of air flowing through an aircraft molecular sieve type oxygen enrichment of air system, such flow controller having a gas flow duct connecting an inlet and an outlet by way of a venturi section, the inlet being arranged to receive product gas in the form of oxygen enriched air flowing from molecular sieve beds, and a servo-operated valve means for removing product gas from the gas flow duct downstream of the venturi section

comprising a servo-operated valve regulated both by an actuator means responsive to pressure difference through the venturi section, and by adjustment means having at least one



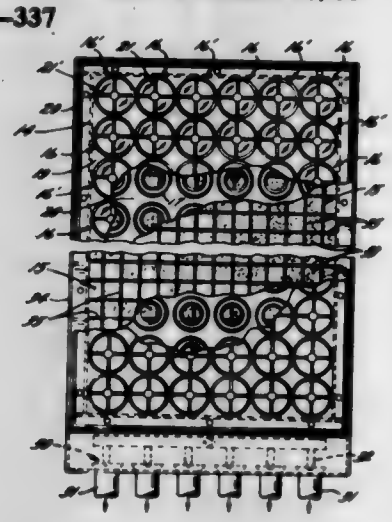
pressure responsive wall arranged to respond to the difference between duct pressure upstream of the venturi section and at least one varying external pressure conducted into the gas flow controller for applying a biasing force to the actuator means.

4,537,608

SYSTEM FOR REMOVING CONTAMINANT PARTICLES FROM A GAS

Evan E. Koslow, Westport, Conn., assignor to Pall Corporation, Glen Cove, N.Y.

Filed Nov. 16, 1983, Ser. No. 552,275
Int. Cl.³ B01D *50/00*
U.S. Cl. 55—337 **4 Claims**



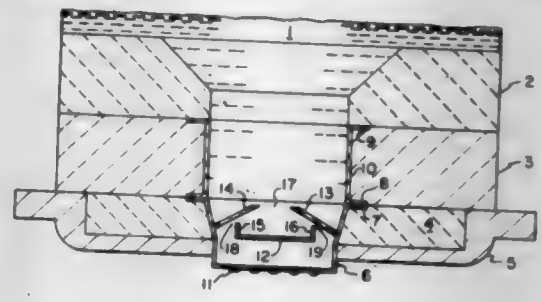
1. A system for removing contaminants from a gas, said system having, in combination, a housing having an inlet and an outlet to define a passage for the flow of gas carrying aerosol contaminants, a vortex cleaner assembly disposed within said passage and including a plurality of parallel tubes disposed in said passage and alined with the flow of gas through the passage, said tubes being alined in rows in each of two perpendicular directions, a plurality of vortex generators, one for each of said tubes and each disposed adjacent the inlet end of the associated tube to impart a rotational flow to the gas flowing through the tube, the rotational flow of the gas causing a major portion of the contaminants in the gas to be separated from the main flow of gas through said tubes, means for removing the separated contaminants from said passage, said vortex generators being constructed to impart rotational flows of preselected hands through said tubes with the flow through each tube being of the opposite hand from the flow through adjacent tubes in both of said perpendicular directions whereby the velocity vectors of the flow from any two tubes are in the same direction and of substantially the same magnitude in the region of adjacent flow so that the well-defined rotational flow of gas through said tubes is maintained without substantial turbulence as the gas leaves the vortex cleaner assembly, and a depth-type barrier filter disposed in said passage downstream of said vortex cleaner assembly between the vortex cleaner assembly and the outlet of the passage and extending across the passage to further remove contaminants from the gas as it passes through the filter by gradually converting the well-defined rotational flow of the gas to a well-defined laminar flow, said rotational flow facilitating penetration of said gas into said filter before conversion to laminar flow, thereby effecting deposition of contaminant particles throughout the thickness of said filter.

4,537,609

STONE TRAP AND METHOD OF USING FOR MAKING GLASS FIBERS

Eugene D. McEathron, Butler, Pa., assignor to PPG Industries, Inc., Pittsburgh, Pa.

Filed Jun. 4, 1984, Ser. No. 616,864
Int. Cl.³ C03B *37/085*
U.S. Cl. 65—1 **13 Claims**



4. A fiber glass forming bushing comprising an electrically heated container having four sides and a bottom, a plurality of tips on the bottom communicating with the interior of the container and through which molten glass may flow, a flange around the sides of the container at the top of the sides, means to attach the bushing to a forehearth opening, an elongated first baffle inclined upwardly from all sides of the bushing toward the center and defining an opening in the central portion of the bushing interior for the admission of molten glass therethrough, a second baffle member below said first baffle and spaced therefrom, said second baffle member having sidewalls sloped upwardly to a point adjacent to but below said first baffle to thereby define a narrow passage between the first baffle and the sides of said second baffle which communicates with the bottom of said container and means to maintain said first and second baffles spaced from each other as molten glass passes over their surfaces, and both baffles being positioned below the bushing flange.

4,537,610

METHOD AND APPARATUS FOR PRODUCING CHOPPED STRANDS

Gordon P. Armstrong, Newark, and Martin C. Flautt, Granville, both of Ohio, assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Filed May 24, 1984, Ser. No. 613,847
Int. Cl.³ C03C *25/02*
U.S. Cl. 65—3.44 **27 Claims**

1. A method of producing discrete bundles of filaments comprising:

drawing streams of glass into continuous filaments;

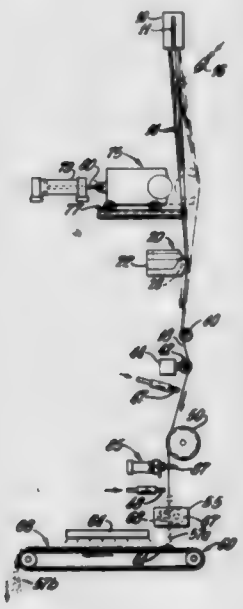
applying a molten, non-aqueous, hot melt coating material to the continuous filaments;

gathering the coated continuous filaments into a bundle;

solidifying said coating material on said continuous bundle to fixedly establish a first cross-sectional shape;

severing the bundle into discrete segments at a severing means, the severing step deforming the bundle segments

such that the bundle segments have a second cross-sectional shape at the severing regions; and



heating the bundle segments having the second cross-sectional shape sufficient to soften the coating material to permit the bundle segments to substantially return to the first cross-sectional shape.

4,537,611

METHOD FOR MANUFACTURING GLASS FROM THE GAS PHASE

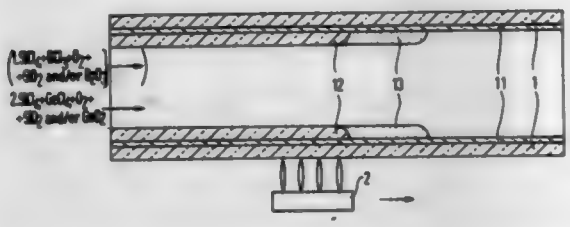
Nikolaos Douklias, Kirchheim, and Josef Grabmaier, Berg, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed May 4, 1984, Ser. No. 607,264

Claims priority, application Fed. Rep. of Germany, Jul. 29, 1983, 3327484

Int. Cl.³ C03B *19/06*

U.S. Cl. 65—18.2 **10 Claims**



1. A method for manufacturing glass by means of deposition from the vapor phase which comprises feeding reaction gases into a vapor phase reaction zone, said reaction gases being capable of reacting to form a glass-forming chemical compound in a chemical reaction, the conditions in said reaction zone being sufficient to initiate said chemical reaction and cause particles of said glass-forming chemical compound to deposit out of said reaction zone onto a solid surface in a deposition zone as soot, fusing said soot to form a glass film, feeding into said reaction zone micron-sized particles of said glass-forming chemical compound while said chemical reaction is occurring in said reacton zone, said particles acting as condensation nuclei, and being present in sufficient amount such that the rate of formation of said soot and the rate of its vapor phase deposition on said solid surface is increased.

4,537,612

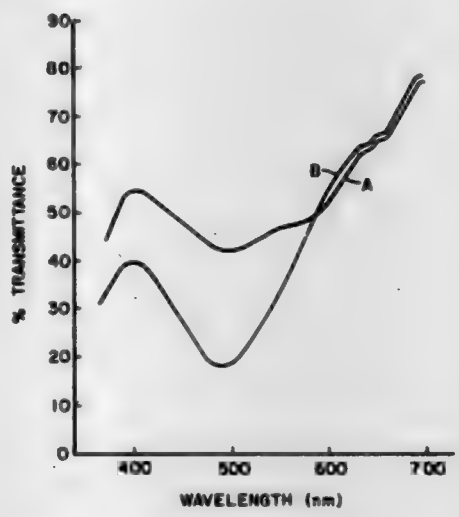
COLORED PHOTOCHROMIC GLASSES AND METHOD

Nicholas F. Borrelli, Elmira; George B. Hares, Corning; Dennis W. Smith, Corning, and Brent M. Wedding, Corning, all of N.Y., assignors to Corning Glass Works, Corning, N.Y.

Continuation-in-part of Ser. No. 364,472, Apr. 1, 1982, abandoned. This application Sep. 17, 1984, Ser. No. 650,846

Int. Cl.³ C03C *21/00, 3/26*

U.S. Cl. 65—30.11 **8 Claims**



1. A method for producing a permanent coloration in a surface zone on a photochromic glass article wherein silver halide is the photochromic agent, wherein the glass composition contains at least 1% by weight Li_2O, at least 2% by weight Na_2O, and at least 6% by weight $Li_2O+Na_2O+K_2O$, and wherein the glass article is heat treated at a temperature not exceeding about 450° C. under reducing conditions for a time at least sufficient to modify the light absorption characteristics of the article surface, the improvement comprising shifting the optical absorption band imparted to the article during the reduction treatment by (1) changing the content of said Na_2O in at least a portion of the surface coloration zone of the article by exchanging lithium ions and potassium ions from within the glass surface sodium ions from an external source, said exchanging being effected prior to said reduction treatment and by (2) controlling the conditions of and the extent of ion exchange such that said shifting will be effected to provide a new absorption band.

4,537,613

PRODUCT FOR THE FERTILIZATION OF MYCORHIZAL MUSHROOMS AND APPLICATION TO THE FERTILIZATION OF TRUFFLE-BEDS

Pierre-Jean Pebeyre, Cahors; René Gleyze, Valreas, and Charles Montant, Toulouse, all of France, assignors to S. A. Pebeyre, Cahors, France

Filed Jan. 19, 1984, Ser. No. 572,013

Claims priority, application France, Jan. 21, 1983, 83 01049

Int. Cl.³ C05F *13/00*

U.S. Cl. 71—5 **16 Claims**

1. A fertilizer for enhancing the mycorhization and/or the fructification of mycorhizal mushrooms selected from the group consisting of tuber melanosporum,

consisting essentially of a mixture of non-fermented organic substances of animal origin, organic substances of proteins and carbohydrates of vegetable origin, and at least one alkalizing compound selected from the group consisting of calcium compounds for raising the pH value of the mixture so that the mixture has a pH value greater than 8, the mutual proportions of the organic substances being adjusted so that the mixture has a C/N ratio of at least 10.

4,537,614
S-ARYL AND S-ALIPHATIC DIAMIDOPHOSPHOROTHIOLATES AS UREASE INHIBITORS AND UREASE INHIBITED UREA BASED FERTILIZER COMPOSITIONS

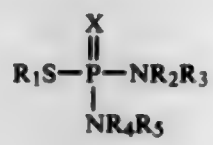
Michael Van Der Puy, Cheektowaga, N.Y.; Jaroslav F. Kolc, Randolph Township, Dover County, N.J.; Louis G. Anello, Hamburg; Larry L. Hendrickson, Camillus, both of N.Y.; Milorad M. Rogic, Whippany, and Michael D. Swerdloff, Parsippany, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Continuation-in-part of Ser. No. 475,988, Mar. 16, 1983, abandoned. This application Feb. 3, 1984, Ser. No. 575,787

Int. Cl.³ C05C *9/00*

U.S. Cl. 71—28 **31 Claims**

22. An improved fertilizer composition comprising urea or one or more urea precursor compounds capable of forming urea in situ when subjected to the use conditions of the composition and a urease inhibiting effective amount of one or more phosphorothiolate compounds of the formula:



wherein

X is oxygen or sulfur;

R_1 is substituted or unsubstituted alkyl, cycloalkyl, heterocycle, alkenyl, alkynyl, cycloalkyl, aralkyl, aryl or alkaryl, wherein permissible substituents are one more trihalomethyl, alkyl, isocyano, isocyanato, halogen, phenoxy, phenyl, nitro, cyano amino, alkylamino, arylamino, diarylamino, dialkylamino, alkoxy, arylmercapto, mercapto, alkylcarbonyl, arylcarbonyl, carboxy, heterocycle, alkylmercapto, carbonamide, hydroxy, alkoxy, aryloxy, cyano, or acyloxy; and

R_2, R_3, R_4 and R_5 are individually hydrogen, or alkyl having from 1 to 4 carbon atoms.

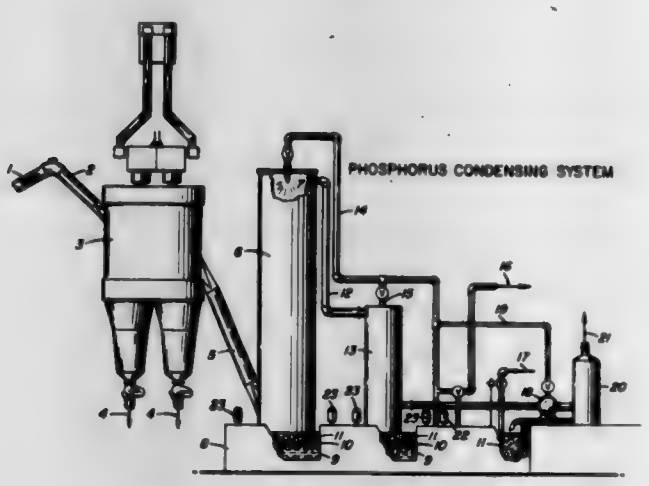
4,537,615
FERTILIZER FROM PHOSPHORUS FURNACE WASTE STREAM

James C. Barber, Florence, Ala., assignor to James C. Barber and Associates, Inc., Florence, Ala.

Division of Ser. No. 428,840, Sep. 30, 1982, Pat. No. 4,451,277, which is a continuation-in-part of Ser. No. 301,378, Sep. 11, 1981, Pat. No. 4,383,847, which is a division of Ser. No. 223,122, Jan. 7, 1981, Pat. No. 4,372,929. This application Jun. 10, 1983, Ser. No. 502,921

Int. Cl.³ C05B *7/00, 11/10*

U.S. Cl. 71—36 **5 Claims**



1. A process for the production of fluid fertilizer comprising the steps of:

(a) smelting a mixture of phosphate ore, reducing carbon, and silica rock in a submerged-arc electric furnace wherein a phosphorus-containing gas is evolved;

(b) cooling the phosphorus-containing gas in an adiabatic condenser wherein an aqueous slurry is sprayed into the condenser and phosphorus is condensed from the gas and collects as phosphorus and phosphorus sludge in a sump;

(c) further cooling the phosphorus-containing gas in a tubular condenser;

(d) collecting said phosphorus and phosphorus sludge together with condenser water from said adiabatic condenser in a sump;

(e) pumping phosphorus and phosphorus sludge together with condenser water from said sump in step (d) to a vessel for separation of phosphorus and phosphorus sludge and therein separating out phosphorus and, said sludge from the condenser water;

(f) processing phosphorus sludge into an acid mixture comprised of phosphoric and phosphorous acids;

(g) adding the mixture of acids of step (f) to said condenser water from said sump in step (d) where acids are neutralized by also adding an alkaline solution to form a neutralized slurry;

(h) recirculating neutralized slurry from step (g) as a recirculating stream to said adiabatic condenser to provide the slurry of step (b);

(i) bleeding off a stream of neutralized slurry from said recirculating neutralized slurry in step (h);

(j) mixing slurry bled off in step (i) with monoammonium phosphate, ammonia, and suspending clay to produce a base suspension fluid fertilizer; and

(k) processing phosphorus from step (e) into phosphoric acid in a production unit.

4,537,616
HERBICIDAL 2,6-DIOXOCYCLOHEXYLIDENE DERIVATIVES

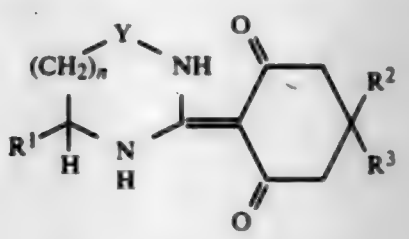
David T. Manning, Raleigh, N.C., assignor to Union Carbide Corporation, Danbury, Conn.

Filed Jun. 30, 1983, Ser. No. 509,456

Int. Cl.³ A01N *43/02*; C07D *239/02, 233/00, 243/04*

U.S. Cl. 71—92 **12 Claims**

1. A herbicidal composition comprising an acceptable carrier and an active toxidant wherein said toxicant comprises a herbicidally effective amount of a compound of the formula:



wherein:

Y is CH_2 or CHR^4; wherein R^4 is C_1–C_3 alkyl

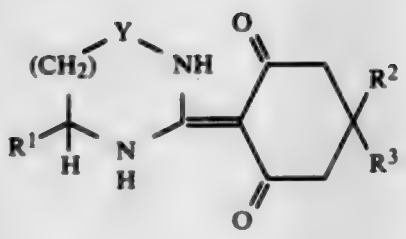
R^1 is hydrogen or C_1–C_3 alkyl, with the proviso that the number of carbon atoms in R^1 plus Y is less than or equal to 5;

R^2 is hydrogen or C_1–C_5 straight chain, branches or cyclic alkyl;

R^3 is C_1–C_3 straight chain alkyl or R^2 and R^3 together may form a cyclopentane or cyclohexane ring wherein the number of carbon atoms in R^2 plus R^3 is less than or equal to 6; and

n is 0, 1, or 2.

7. A method of controlling undesired plant growth which comprises subjecting said plant to a herbidically effective amount of the compound of the formula:



wherein:

Y is CH_2 or CHR^4, wherein R^4 is C_1–C_3 alkyl

R^1 is hydrogen or C_1–C_3 alkyl, with the proviso that the number of carbon atoms in R^1 plus Y is less than or equal to 5;

R^2 is hydrogen or C_1–C_5 straight chain, branches or cyclic alkyl;

R^3 is C_1–C_3 straight chain alkyl or R^2 and R^3 together may form a cyclopentane or cyclohexane ring wherein the number of carbon atoms in

R^2 plus R^3 is less than or equal to 6; and n is 0, 1, or 2.

4,537,617

3-PHENYL-4-METHOXYCARBONYLPYRAZOLES AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Peter Plath, Ludwigshafen; Karl Eicken, Wachenheim; Hubert Sauter, Mannheim, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

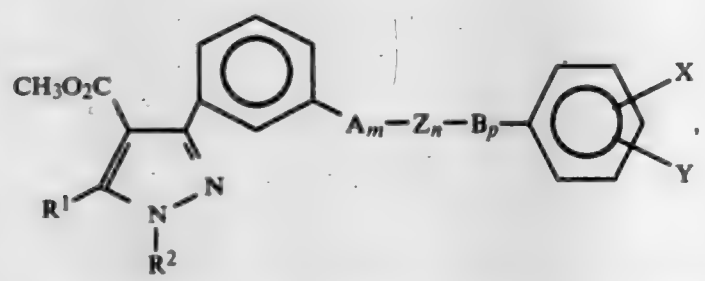
Filed Aug. 30, 1984, Ser. No. 645,770

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3331692

Int. Cl.³ A01N *43/56*; C07D *231/14*

U.S. Cl. 71—92 **10 Claims**

1. A 3-phenyl-4-methoxycarbonylpyrazole derivative of the formula



(I)

where R^1 is hydrogen or methyl, R^2 is hydrogen, unsubstituted or halogen-substituted C_1–C_4-alkanoyl, methoxycarbonyl, or phenoxycarbonyl which is unsubstituted or substituted by halogen or C_1–C_4-alkyl, or is hydroxymethyl or methoxymethyl, A and B independently of one another are each oxygen or sulfur, Z is unsubstituted or methyl-substituted alkylene of 1 to 5 carbon atoms, m, n and p independently of one another are each zero or 1, X is hydrogen, halogen or nitro and Y is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkyl, halogen, nitro or cyano.

10. A method for combatting the growth of unwanted plants, wherein the plants and/or their location are treated with a herbicidally effective amount of a 3-phenyl-4-methoxycarbonylpyrazole derivative of the formula I as defined in claim 1.

4,537,618

N-PHENYLSULFONYL-N'-PYRIMIDINYLUREAS

Rolf Schurter, Binningen; Werner Föry, Basel, and Willy Meyer, Riehen, all of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

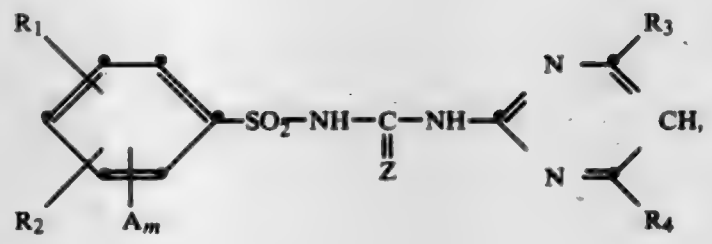
Filed May 19, 1983, Ser. No. 496,326

Claims priority, application Switzerland, May 26, 1982, 3232/82

Int. Cl.³ C07D *239/42*; A01N *47/36*

U.S. Cl. 71—92 **17 Claims**

1. An N-phenylsulfonyl-N'-pyrimidinylurea of the formula



wherein

A is a radical of the formula —C=O—K,

m is 1 or 2,

Z is oxygen or sulfur,

R is hydrogen, branched or unbranched C_1–C_9alkyl which is unsubstituted or substituted by halogen, hydroxyl, C_1C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkoxy, C_3–C_9cycloalkyl, cyano, —$COOR_6$, —$CONR_7R_8$ or by phenyl which is in turn unsubstituted or substituted by halogen, C_1–C_4alkyl, C_1–C_4alkoxy, nitro, cyano or trifluoromethyl; or is C_3–C_9-cycloalkyl which is unsubstituted or substituted by halogen, hydroxy, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, cyano, —$COOR_6$, —$CONR_7R_8$; or is phenyl or phenyl substituted by halogen, nitro, cyano, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, trifluoromethyl, —$COOR_6$ or —$CONR_7R_8$; or is a 5- or 6-membered heterocyclic ring selected from the group consisting of furan, thiophene, pyrrole, pyrazole, triazole, pyridine, pyrimidine, pyridazine, triazine, thiazole, oxazole, thiadiazole and oxadiazole, which is unsubstituted or substituted by halogen, C_1–C_4alkyl C_1–C_4alkoxy, —$COOR_6$ or —$CONR_7R_8$,

R_1 is hydrogen, halogen, C_1–C_5alkyl, C_2–C_5alkenyl or a radical —Y—R_5,

R_2 is hydrogen, halogen, C_1–C_5alkyl, C_2–C_5alkenyl, C_1–C_4-haloalkyl, a radical —Y—R_5, —$COOR_6$, —NO_2 or —CO—NR_7—R_8,

R_3 and R_4, each independently of the other, are hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, C_1–C_4alkylthio, C_1–C_4haloalkyl, C_1–C_4haloalkoxy, C_1–C_4haloalkylthio, halogen, C_2–C_5alkoxyalkyl, —NR_9R_{10} or —O—CH_2—CH_2—NR_9R_{10},

R_5 and R_6, each independently of the other, are C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl, C_1–C_5haloalkyl, C_2–C_5alkenyl or C_2–C_6alkoxyalkyl,

R_7 and R_8, each independently of the other, are hydrogen, C_1–C_5alkyl, C_2–C_5alkenyl or C_2–C_6alkynyl,

R_9 is hydrogen, methyl or ethyl,

R_{10} is hydrogen, C_1–C_4alkyl, C_1–C_4alkoxy, methoxymethyl, cyanomethyl, cyanoethyl, C_3–C_5alkenyl or C_3–C_6alkynyl, and

Y is oxygen, sulfur, a sulfinyl or sulfonyl bridge, or a salt thereof.

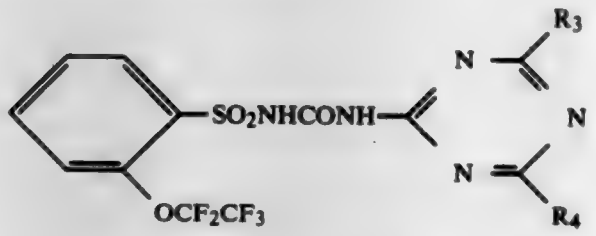
4,537,619

N-PHENYLSULFONYL-N'-TRIAZINYLUREAS

Willy Meyer, Riehen, and Werner Föry, Basel, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Continuation-in-part of Ser. No. 282,779, Jul. 13, 1981, abandoned. This application Jan. 17, 1983, Ser. No. 458,694
Claims priority, application Switzerland, Jul. 17, 1980, 5481/80; Nov. 5, 1980, 8216/80; Jun. 17, 1981, 3991/81
Int. Cl.³ C07D *251/46, 251/22, 251/42;* A01N *43/66*
U.S. Cl. 71—93 8 Claims

1. A compound of the formula:



wherein R_3 is chloro, fluoro, methyl, chloromethyl, ethoxy, isopropyloxy, ethyl or methoxy, and R_4 is methyl, ethyl, methoxy or ethoxy.

4. A herbicidal and growth regulating composition which comprises an effective amount of at least one compound according to claim 1, together with a suitable carrier therefor.

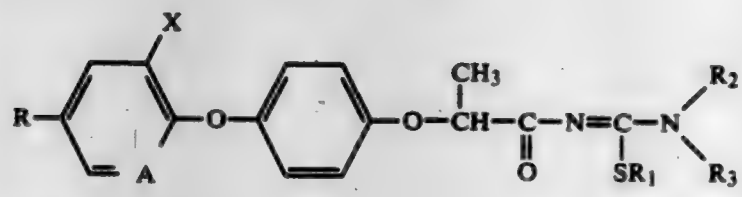
4,537,620

ARYLOXYPHENOXY PROPONYL ISOTHIOUREAS AND USE AS HERBICIDES

Ferenc M. Pallos, Walnut Creek, Calif., assignor to Stauffer Chemical Company, Westport, Conn.

Filed Jul. 2, 1984, Ser. No. 626,844
Int. Cl.³ C07D *211/90;* B21B *19/12*
U.S. Cl. 71—94 15 Claims

1. As new compounds, acyl isothiourea substituted aryloxyphenoxy propionic acids having the formula



wherein

R is CF_3 or halogen;

X is hydrogen or halogen;

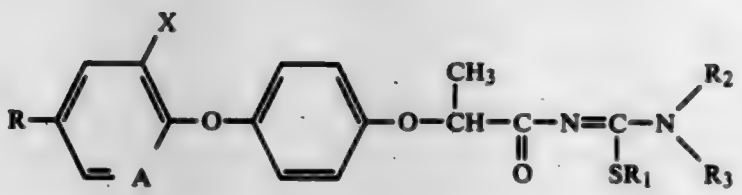
A is CH or nitrogen;

R_1 is hydrogen, lower alkyl, alkenyl, alkynyl, phenyl, cyanoalkyl, alkoxyalkyl, or alkoxycarbonylalkyl;

R_2 is hydrogen, lower alkyl, phenyl, or substituted phenyl; and

R_3 is acyl or halogen substituted acyl selected from the group consisting of propionyl, dichloro bromoacetyl, propionaminocarbonyl and phenylaminocarbonyl.

6. A herbicidal composition which comprises a herbicidally effective amount of a compound having the formula



wherein

R is CF_3 or halogen;

X is hydrogen or halogen;

A is CH or nitrogen;

R_1 is hydrogen, lower alkyl, alkenyl, alkynyl, phenyl, cyanoalkyl, alkoxyalkyl, or alkoxycarbonylalkyl;

R_2 is hydrogen, lower alkyl, phenyl, or substituted phenyl; and

R_3 is acyl or halogen substituted acyl selected from the group consisting of propionyl, dichloro bromoacetyl, propionaminocarbonyl and phenylaminocarbonyl; and an inert diluent carrier.

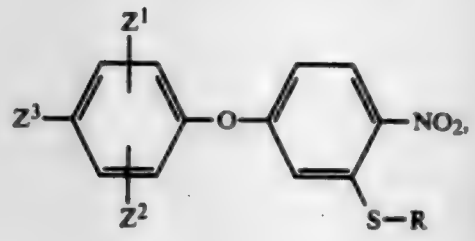
4,537,621

HERBICIDAL DIPHENYL ETHERS AND THEIR USE FOR CONTROLLING UNDESIRABLE PLANT GROWTH

Adolf Parg, Bad Durkheim; Hans Ziegler, Mutterstadt, and Bruno Wuerzer, Otterstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Mar. 31, 1983, Ser. No. 481,100
Claims priority, application Fed. Rep. of Germany, Apr. 1, 1982, 3212165
Int. Cl.³ A61N *9/12;* C07C *145/00*
U.S. Cl. 71—103 10 Claims

1. A diphenyl ether of the formula



(I)

where Z^1 and Z^2 independently of one another are each hydrogen, halogen, nitro, cyano, carboxyl, C_1–C_4-alkyl, C_1–C_4-haloalkyl or C_1–C_4-alkoxy, Z^3 is halogen, nitro, cyano, C_1–C_4-alkyl, C_1–C_4-haloalkyl, C_1–C_4-alkoxy, C_1–C_4-haloalkoxy, C_1–C_4-alkylmercapto, C_1–C_4-haloalkylmercapto, C_1–C_4-alkylsulfinyl, C_1–C_4 -haloalkylsulfinyl, C_1–C_4-alkylsulfonyl or C_1–C_4 -haloalkylsulfonyl, and R is, halogen or —X—R^1, where X is oxygen or sulfur and R^1 is hydrogen, C_1–C_{20}-alkyl, C_2–C_{20}-alkoxyalkyl, C_2–C_{20}-alkylthioalkyl, C_2–C_{20}-alkylaminoalkyl, C_3–C_{20}-dialkylaminoalkyl, C_1–C_{20}-haloalkyl, an unsubstituted or halogen-substituted phenyl alkyl radical of 7 to 9 carbon atoms, C_2–C_8-alkenyl, C_2–C_8-haloalkenyl or C_2–C_8-alkynyl, carboxyalkyl, alkoxycarbonylalkyl or carbamylalkyl of not more than 6 carbon atoms, cycloalkyl of 3 to 20 carbon atoms or unsubstituted phenyl or phenyl substituted by halogen, C_1–C_4-alkyl, C_1–C_4-haloalkyl, cyano or —O—$(CHR^4)_n$—$COOR^5$, where R^4 is hydrogen, methyl, ethyl or propyl, R^5 is alkyl of 1 to 4 carbon atoms and n is 1, 2, or 3, R is —NR^2R^3, where R^2 and R^3 are identical or different and have the meanings stated for R^1, or if R^3 is hydrogen or C_1–C_4-alkyl, R^2 is hydroxyl or C_1–C_{20}-alkoxy, or is C_1–C_{20}-alkoxy which is substituted by C_1–C_6-alkoxy, C_1–C_6-alkylthio, C_1–C_6-alkylamino, C_2–C_6-dialkylamino, halogen, carboxylalkyl, alkoxycarbonyl or phenyl, or is unsubstituted phenoxy or phenoxy substituted by halogen or C_1–C_4-alkyl or unsubstituted, C_1–C_{20}-alkyl-substituted or phenyl-substituted amino, or R^2 and R^3 together with the nitrogen atom to which they are attached are azetidino, pyrrolidino, piperidino, morpholino, 2,6-dimethylmorpholino, piperazino, 2,6-dimethylpiperazino, N-methylpiperazino or N-ethylpiperazino .

10. A process for combating the growth of unwanted plants, wherein the unwanted plants or the area to be kept free from unwanted plant growth are treated with a herbicidally effective amount of a diphenyl ether of the formula I as claimed in claim 1.

4,537,622

DIURETHANES AND SELECTIVE HERBICIDAL AGENT CONTAINING THEM

Gerhard Boroschewski, and Friedrich Arndt, both of Berlin, Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkamen, Fed. Rep. of Germany

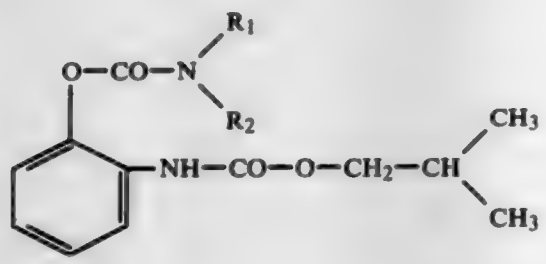
Continuation of Ser. No. 44,547, Jun. 1, 1979, abandoned, which is a continuation of Ser. No. 935,106, Aug. 21, 1978, abandoned, which is a continuation of Ser. No. 849,168, Nov. 7, 1977, abandoned. This application Jun. 6, 1980, Ser. No. 157,638

Claims priority, application Fed. Rep. of Germany, Nov. 9, 1976, 2651526

Int. Cl.[3] C07C *125/07, 125/075;* A01N *37/36, 37/44*

U.S. Cl. 71—108 21 Claims

1. Diurethanes of the general formula



in which

R_1 is alkyl, alkenyl or halogen alkyl and

R_2 is phenyl, or phenyl or cyclohexyl mono- or poly-substituted, equally or differently, by halogen, trifluoromethyl, alkyl and/or alkoxy.

21. A herbicidal composition comprising about 10 to 80 weight-% of a compound as defined in claim 1 and about 90 to 20 weight-% liquid or solid carrier material administered as a spray solution.

4,537,623

HERBICIDAL 2-(OXA OR THIA HETEROCYCLE)5-AMINO-3-OXO-4-(SUBSTITUTED-PHENYL)-2,3-DIHYDROFURANS

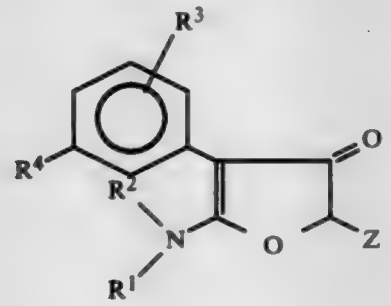
Carl E. Ward, San Jose, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 29, 1984, Ser. No. 594,497

Int. Cl.[3] A01N *43/02, 43/00;* C07D *333/00*

U.S. Cl. 71—90 35 Claims

1. A compound having the formula:



(I)

wherein

R^1 and R^2 are independently hydrogen, lower alkyl having 1 through 4 carbon atoms or alkenyl having 3 through 6 carbon atoms;

R^3 is hydrogen, lower alkyl, lower alkoxy, halo, or trifluoromethyl and can be at any available position on the phenyl ring;

R^4 is lower alkyl, lower alkoxy, halo, or trifluoromethyl;

Z is a saturated or unsaturated sulfur or oxygen heterocycle radical having 5 or 6 ring atoms one of which is sulfur or oxygen and the remainder of which are carbon atoms;

and compatible cation salts thereof.

4,537,624

AMORPHOUS METAL ALLOY POWDERS AND SYNTHESIS OF SAME BY SOLID STATE DECOMPOSITION REACTIONS

Michael A. Tenhover; Richard S. Henderson, both of Solon, and Robert K. Grasselli, Aurora, all of Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Mar. 5, 1984, Ser. No. 586,380

Int. Cl.[3] B22F *3/24, 9/00*

U.S. Cl. 75—0.5 B 44 Claims

1. A process for the synthesis of a substantially amorphous metal alloy comprising thermally decomposing at least one precursor metal-bearing compound at a temperature below the crystallization temperature of the amorphous metal alloy to be formed, the at least one precursor metal-bearing compound having a decomposition temperature below the crystallization temperature of the amorphous alloy to be formed and containing the metals which comprise the substantially amorphous metal alloy.

4,537,625

AMORPHOUS METAL ALLOY POWDERS AND SYNTHESIS OF SAME BY SOLID STATE CHEMICAL REDUCTION REACTIONS

Michael A. Tenhover; Richard S. Henderson, and Joseph R. Fox, all of Solon, Ohio, assignors to The Standard Oil Company (Ohio), Cleveland, Ohio

Filed Mar. 9, 1984, Ser. No. 588,014

Int. Cl.[3] B22F *3/24, 9/00*

U.S. Cl. 75—0.5 A 41 Claims

1. A process for the synthesis of a substantially amorphous metal alloy powder comprising disposing at least one metal-bearing compound in a liquid medium and reducing the at least one metal-bearing compound so as to form a substantially amorphous metal powder.

4,537,626

METHOD FOR THE PRODUCTION OF REACTION GASES

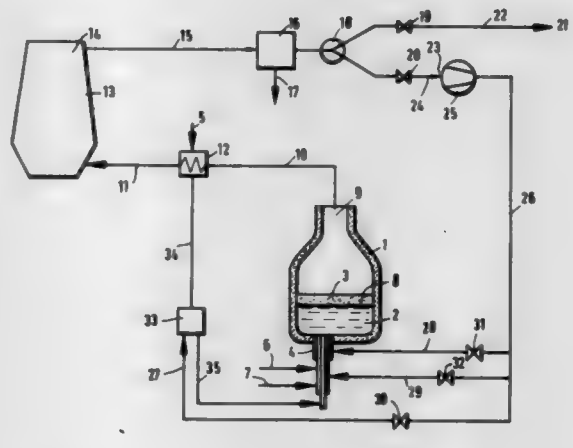
Roland Pfeiffer, Cologne, and Heinz-Dieter Waldhecker, Bergisch Gladbach, both of Fed. Rep. of Germany, assignors to Klöckner-Humboldt-Deutz AG, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 279,437, Jul. 1, 1981, abandoned. This application Nov. 15, 1983, Ser. No. 551,919

Claims priority, application Fed. Rep. of Germany, Jul. 2, 1980, 3024977

Int. Cl.[3] C22B *5/12*

U.S. Cl. 75—35 8 Claims



1. In a method for the production of reaction gases consisting essentially of CO and H_2 in which reactants including a carbonaceous source, slag formers and an oxygen-containing gas are directed in the form of jets through nozzles under the surface of a molten metal bath in a reactor to produce said reaction gases, and said reaction gases are passed to a metallurgical reduction reactor wherein exhaust gases are produced

containing CO_2, CO, H_2O and H_2, the improvement which comprises:

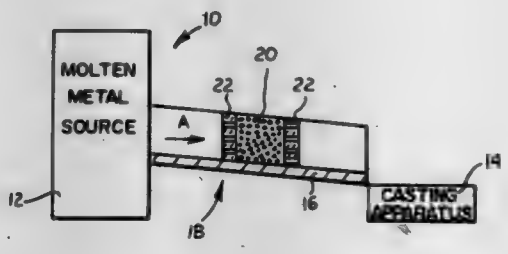
recycling at least a portion of said exhaust gases into heat exchange relationship with said nozzles in said reactor to cool the same.

4,537,627

TECHNIQUE FOR REMOVING IMPURITIES FROM A COPPER MELT

Derek E. Tyler, Cheshire; Harvey P. Cheskis, North Haven, and Paul D. Tungatt, Middletown, all of Conn., assignors to Olin Corporation, New Haven, Conn.

Filed Apr. 11, 1984, Ser. No. 599,098
Int. Cl.³ C22B *15/00*
U.S. Cl. 75—76 **16 Claims**



1. A process for forming a structure for removing impurities from a molten copper or copper base alloy, said process comprising:

providing a material in a solid state consisting essentially of from about 5% to about 99% silicon carbide and the balance being selected from at least one of a filler material and a bonding material; and

treating said material to expose silicon carbide particles at the outer periphery of said material to permit removal of said impurities by contact between said exposed silicon carbide particles and said molten copper or copper base alloy, said treating step maintaining said particles in an unoxidized condition.

4,537,628

RECOVERY OF PRECIOUS METALS

Vaikuntam I. Lakshmanan, Mississauga, and Jurgen K. Biskupski, Toronto, both of Canada, assignors to Ontario Research Foundation, Mississauga, Canada

Filed Dec. 6, 1983, Ser. No. 558,469
Claims priority, application United Kingdom, Dec. 7, 1982, 8234879; Jun. 14, 1983, 8316161; Jun. 14, 1983, 8316163
Int. Cl.³ C22B *11/00*
U.S. Cl. 75—118 R **13 Claims**

1. In a method of recovery of a precious metal from a sulphide-containing arsenic- and/or antimony-containing precious metal-containing material, the improvement which comprises treating said material with H_2SO_5 to oxidize at least part of the arsenic and/or antimony content of the material to a water-soluble form prior to processing to effect said precious metal recovery.

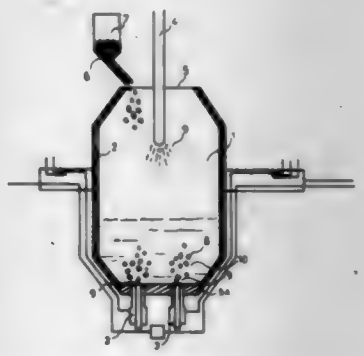
4,537,629

METHOD FOR OBTAINING HIGH PURITY DUCTILE IRON

Arturo Lazcano-Navarro, and Miguel A. Alcantara, both of Saltillo, Mexico, assignors to Instituto Mexicano de Investigaciones Siderurgicas, Saltillo, Mexico

Filed Aug. 20, 1984, Ser. No. 642,256
Int. Cl.³ C22C *33/08*
U.S. Cl. 75—130 R **11 Claims**

1. The method for obtaining high purity ductile iron comprising the steps of using sponge iron as a raw material, and melting it to form a molten bath in a basic lining converter by the energy of an external reaction between carbon and oxygen



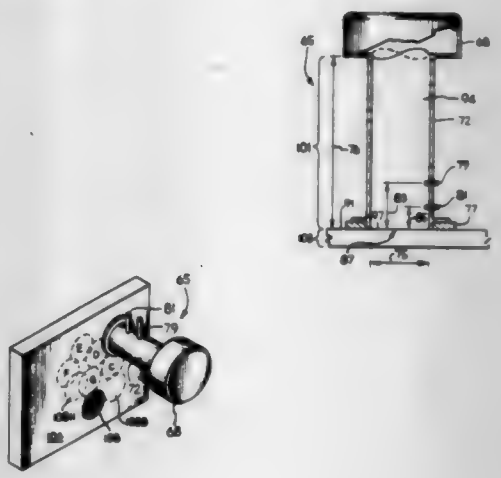
injected into the metal bath through nozzles extending through the converter lining.

4,537,630

ACOUSTIC IMPEDANCE MEASUREMENT

Asif A. Syed, Loveland, Ohio, assignor to General Electric Company, Cincinnati, Ohio

Filed May 31, 1983, Ser. No. 499,641
Int. Cl.³ G01N *29/04*
U.S. Cl. 73—589 **6 Claims**



3. A method, which includes the use of an acoustic waveguide, for measuring the acoustic impedance of a sample laminated material having normal and transverse directions definable therein, having a first, acoustically hard, outer face, and a second outer face, and having an internal cellular matrix such that no boundary exists in the matrix which

(i) comprises walls of the cells

(ii) extends in the normal direction

(iii) diminishes acoustic propagation in the transverse directions

(iv) is similar in size and shape to the cross-sectional shape of the acoustic waveguide,

the method comprising the following steps:

(a) measuring the actual acoustic impedance of a reference material which is similar in structure and composition to the sample material;

(b) measuring the apparent acoustic impedance of the reference material without taking active measures to diminish transverse acoustic propagation;

(c) deriving a correction factor based on the actual and apparent acoustic impedance values according to a predetermined formula;

(d) measuring the apparent reflection coefficient of the sample material in a manner similar to the measurement of (b); and

(e) inferring the actual acoustic impedance of the sample material from the apparent reflection coefficient of (d) and

the correction factor of (c) according to a predetermined formula.

4,537,631

INK JET INK FORMULATION FOR REDUCED START-UP PROBLEMS

Theodore M. Cooke, Danbury; Robert A. Lin, New Town; Richard G. Whitfield, Brookfield, and Allan G. Hock, New Milford, all of Conn., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation of Ser. No. 327,994, Dec. 7, 1981, Pat. No. 4,400,215. This application Aug. 12, 1983, Ser. No. 522,837

The portion of the term of this patent subsequent to Aug. 23, 2000, has been disclaimed.

Int. Cl.³ C09D *11/02*

U.S. Cl. 106—22 **10 Claims**

1. A ink jet ink comprising about 5–15 weight percent oleic acid, about 47.5 to 60.0 weight percent benzyl ether, and at least one dye component.

8. An ink jet ink comprising dibutyl sebacate and typophor black.

4,537,632

SPHERICAL ALUMINUM PARTICLES IN COATINGS

Mark F. Mosser, Sellersville, Pa., assignor to Sermatech International, Inc., Limerick, Pa.

Filed Oct. 19, 1983, Ser. No. 543,281

Int. Cl.³ C09D *5/10*

U.S. Cl. 106—14.12 **33 Claims**



CONVENTIONAL AIR ATOMIZED ALUMINUM POWDER MANUFACTURED BY REYNOLDS AT 1,000X; REPORTED TO HAVE AN AVERAGE PARTICLE SIZE OF 6.5-9 MICRONS. THEY ARE ROUNDED AND OF IRREGULAR SIZE AND SHAPES

1. A coating composition especially suitable for coatings which have improved surface profile, corrosion resistance, erosion resistance and which are capable of faster curing and becoming electrically conductive more rapidly, which coating composition comprises (a) and aqueous acid binder solution which comprises phosphate ions and ions selected from the group consisting of chromate and molybdate ions,and (b) a powder which comprises atomized aluminum spheroids having an average particle size (measured in $\overline{ESD}$) not larger than about 4 microns.

4,537,633

PORTLAND CEMENT, PROCESS FOR PREPARING SAME, AND COMPOSITIONS CONTAINING SAME

Won P. Hong, Chungnam, Rep. of Korea, assignor to Suh Kyung Suk, Seoul, Rep. of Korea

Filed Jun. 10, 1983, Ser. No. 503,107

Claims priority, application Rep. of Korea, Feb. 2, 1983, 83-396

Int. Cl.³ C04B *7/04;* B32B *13/00*

U.S. Cl. 106—96 **18 Claims**



1. A Portland cement composition comprising
(1) dry powder of Portland cement, whose surface is coated with an asphalt film, and
(2) particles of carbon black.

4,537,634

COMPOUNDS AND THEIR USE AS INSOLUBILIZERS FOR BINDERS FOR PAPER COATING COMPOSITIONS

William C. Floyd, Chester, S.C., assignor to Sun Chemical Corporation, New York, N.Y.

Division of Ser. No. 500,283, Jun. 1, 1983,. This application Nov. 2, 1984, Ser. No. 667,716

Int. Cl.³ C08B *31/00;* C08L *3/00*

U.S. Cl. 106—214 **4 Claims**

1. A paper coating composition comprising a pigment, a binder, and as an insolubilizer for the binder the hemiacetal product of the reaction of glyoxal and a polyol selected from the group consisting of glycerin, sorbitol, dextrine, α-methyl-glucoside, and their mixtures.

4,537,635

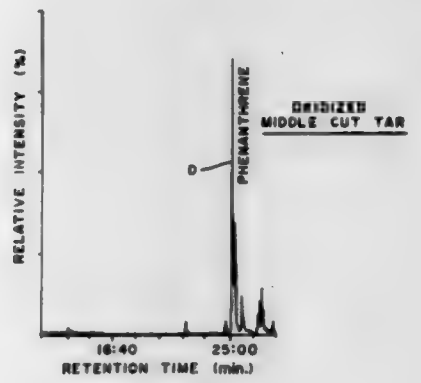
TAR FRACTION FOR DRIVEWAY SEALERS USING OXIDIZED COAL TAR DISTILLATE

Edward F. Bart, Califon, N.J.; Arthur S. Chu, E. Amherst, and George R. Cook, Buffalo, both of N.Y., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Dec. 5, 1983, Ser. No. 557,784

Int. Cl.³ C08L *95/00;* C09D *3/24;* C10C *3/04*

U.S. Cl. 106—277 **8 Claims**



2. A coal tar sealer emulsion composition having a liquid consistency for applying to paved surfaces comprising
(a) a coal tar derivative,
(b) a filler and
(c) water

wherein (a) is an oxidized middle cut derivative of heavy coal tar oil said middle cut containing less than 10 percent of material boiling below the boiling point of phenanthrene, and having a float test analysis of between about 150 seconds and 400 seconds as determined by ASTM D139-77 and (b) and (c) are present in sufficient amounts to provide the desired viscosity.

4,537,636

PROCESS FOR THE PREPARATION OF NACREOUS PIGMENTS WITH IMPROVED GLOSS PROPERTIES, PRODUCTS THEREOF, AND COMPOSITIONS USING SAID PIGMENTS

Horst Bernhard, Schwarzenberg, Austria, and Reiner Esselborn, Darmstadt, Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschrankter Haftung, Darmstadt, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 453,045, Dec. 27, 1982, Pat. No. 4,494,993. This application Mar. 30, 1983, Ser. No. 480,200

Claims priority, application Fed. Rep. of Germany, Mar. 30, 1982, 3211602

Int. Cl.³ C09C *3/00*

U.S. Cl. 106—291 **7 Claims**

1. A process for preparing nacreous pigments having improved gloss properties and based on mica platelets coated with metal oxides, comprising suspending mica platelets in a first aqueous medium comprising aluminum, silicon and titanium ions corresponding to the amount to be incorporated into the metal oxide layer and uniformly coprecipitating thereon titanium dioxide hydrate, silicon dioxide and aluminum hydroxide to form a uniform layer homogeneously containing about 0.1 to about 20 percent by weight of SiO_2 and about 0.1 to about 20 percent by weight of Al_2O_3, wherein the uniform coprecipitation of the titanium, silicon and aluminum is achieved by suspending mica platelets in an aqueous solution of a pH of about 0.5–5, heating the solution to about 50°–100° C., adding a soluble titanium salt thereto and maintaining the solution pH substantially constant, and simultaneously adding SiO_2 to the solution in the form of a soluble silicate salt, these additions being effected in the presence of aluminum ions in the solution, and then separating, washing, drying and calcining the coated mica platelets; suspending the coated mica platelets in a second aqueous medium containing titanium sulfate prior to the point at which the titanium solution has begun substantially to hydrolyze to hydrated titanium dioxide, further coating the suspended platelets by slow heating of the suspension, and then separating, washing and calcining the further coated platelets.

6. Nacreous pigments based on mica flakes prepared by the process of claim 1.

7. In a composition comprising a base ingredient and a nacreous pigment prepared by suspending mica platelets in a first aqueous medium comprising aluminum, silicon and titanium ions corresponding to the amount to be incorporated into the metal oxide layer and uniformly coprecipitating thereon titanium dioxide hydrate, silicon dioxide and aluminum hydroxide to form a uniform layer homogeneously containing about 0.1 to about 20 percent by weight of SiO_2 and about 0.1 to about 20 percent by weight of Al_2O_3, wherein the uniform coprecipitation of the titanium, silicon and aluminum is achieved by suspending mica platelets in an aqueous solution of a pH of about 0.5–5, heating the solution to about 50°–100° C., adding a soluble titanium salt thereto and maintaining the solution pH substantially constant, and simultaneously adding SiO_2 to the solution in the form of a soluble silicate salt, these additions being effected in the presence of aluminum ions in the solution, and then separating, washing, drying and calcining the coated mica flakes; the improvement which comprises suspending the coated mica platelets in a second aqueous medium containing titanium sulfate prior to the point at which the titanium solution has begun substantially to hydrolyze to hydrated titanium dioxide, further coating the suspended platelets by slow heating of the suspension, and then separating, washing and calcining the further coated platelets.

4,537,637

HYDRATION DRYING PROCESS

George L. K. Hunter, Atlanta; Daniel B. Dennison, Tucker, and Charles E. Stephens, Dunwoody, all of Ga., assignors to The Coca-Cola Company, Atlanta, Ga.

Continuation-in-part of Ser. No. 179,452, Aug. 19, 1980, abandoned. This application Feb. 2, 1983, Ser. No. 463,187

Int. Cl.³ C13F *5/00*

U.S. Cl. 127—60 **12 Claims**

1. A process for drying a solids-containing aqueous product comprising the steps of:

adding the aqueous product to a pre-determined quantity of particulate anhydrous alpha-dextrose and aqeous product;

hydrating said particulate anhydrous alpha-dextrose with the aqueous component of the aqueous product by repeatedly agitating the particulate anhydrous alpha-dextrose and the aqueous product in a violent manner, whereby a substantial portion of the anhydrous alpha-dextrose is hydrated to alpha-dextrose monohydrate by the water in the aqueous product; and

maintaining the temperature of the hydrating particulate anhydrous alpha-dextrose and aqueous product at or below 50° C. by allowing the anhydrous alpha-dextrose, aqueous product and alpha-dextrose monohydrate to remain quiescent after each agitating step whereby the heat generated by the agitating step is dissipated and the temperature of the alpha-dextrose monohydrate and the remaining anhydrous alpha-dextrose and aqueous product is maintained at or below 50° C.; wherein

the hydration reaction is not inhibited by temperatures greater than 50° C. and a dry, free-flowing non-hygroscopic powder results;

conditions are such that temperature would rise above 50° C. in the absence of admixing using intermittent, brief periods of substantially violent agitation; and

formation of the dry, free-flowing non-hygroscopic powder is a result of water in the aqueous product forming alpha-dextrose monohydrate.

4,537,638

METHOD FOR REMOVAL OF UNDESIRABLE ORGANIC MATTER

Arthur W. Petersen, Chatham Township, Morris County, and Dennis T. Smialowicz, Waldwick, both of N.J., assignors to American Cyanamid Co., Stamford, Conn.

Continuation-in-part of Ser. No. 458,229, Jan. 17, 1983, abandoned. This application Jun. 6, 1984, Ser. No. 617,156

Int. Cl.³ B08B *3/08*; C09D *9/00*

U.S. Cl. 134—2 **9 Claims**

1. A method for facilitating the removal of undesirable organic matter from a surface which comprises contacting said organic matter, with a substantially loosening effective amount of an active ingredient consisting essentially of from 1 to 25% by weight of a compound selected from imidazole, pyrazole, an alkyl or aryl substituted imidazole, an alkyl or aryl substituted pyrazole, or a mixture of two or more thereof, in the substantial absence of an alkali metal hydroxide, for a time sufficient to effect a substantial loosening of said organic matter and wherein said compound is in liquid form at use temperature.

4,537,639

METHOD FOR CLEANING WELD SMUT FROM A SURFACE

Forrest A. Shook, Fenton, Mich., assignor to NLB Corp., Wixom, Mich.

Filed Sep. 12, 1983, Ser. No. 531,463

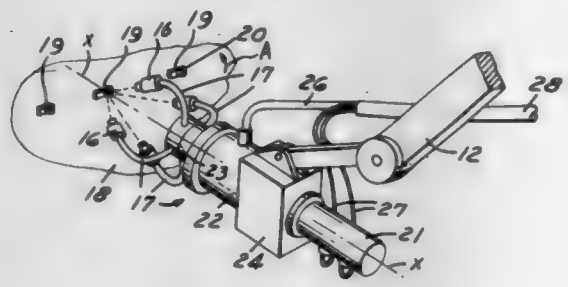
Int. Cl.³ B08B *3/02*

U.S. Cl. 134—10 **5 Claims**

1. A method for cleaning weld smut from a surface having studs welded thereto with a jet spray device having a plurality of rotatable tubular arms radially spaced from the stud directed

to a zone of concentration on the surface comprising the steps of:

aiming the jet spray device at one of the studs so that the tubular arms are inwardly directed at a zone of concentration spaced radially from the base of the stud and said tubular arms are encircling the stud;



directing a fluid under high pressure through the tubular arms and spraying the high pressure fluid against said zone of concentration; and,

rotating said tubular arms about the stud during said spraying step to spinningly focus said spray in a narrow band of surface area at said zone of concentration.

4,537,640

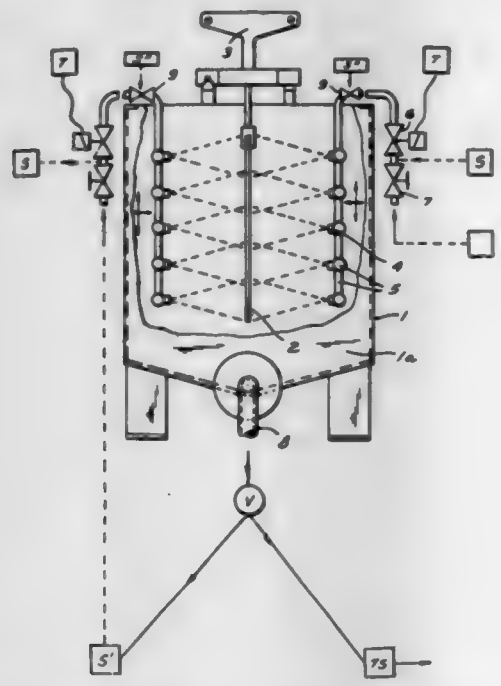
RINSING OF ARTICLES TO REMOVE AN ADHERING SUBSTANCE

Rudolf Kreisel, Nuremberg, and Walter Meyer, Berlin, both of Fed. Rep. of Germany, assignors to Schering Aktiengesellschaft, Berlin and Bergkammen, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 829,255, Aug. 30, 1977, abandoned. This application Sep. 23, 1981, Ser. No. 304,971

Int. Cl.³ B08B *3/02*

U.S. Cl. 134—18 **9 Claims**



1. A method of rinsing articles to remove an adhering substance, particularly subsequent to chemical or electrochemical surface treatment of the articles, comprising the steps of

positioning an article to be rinsed in a confined space;

spraying a rinsing agent onto the article at a pressure of between substantially 2 and 6 bar for a first period of time corresponding to between substantially 0.1 and 5 seconds to remove an adhering substance from a surface of the article with keeping the surface intact;

terminating the spraying and allowing the rinsing agent to run off the article for a second period of time corresponding to between substantially 1 and 10 seconds and which is at least substantially equal to or greater than said first period; and

repeating the spraying and terminating steps with the same time periods.

4,537,641

PROCESS FOR PRODUCING VALVE-METAL ANODES FOR ELECTROLYTIC CAPACITORS

Wolf-Wigand Albrecht; Axel Hoppe, both of Bad Harzburg; Uwe Papp, Goslar, and Rudiger Wolf, Vienenburg, all of Fed. Rep. of Germany, assignors to Hermann C. Starck Berlin, Berlin, Fed. Rep. of Germany

Filed Mar. 16, 1984, Ser. No. 590,740

Claims priority, application Fed. Rep. of Germany, Mar. 18, 1983, 3309891

Int. Cl.³ H01G *9/05*

U.S. Cl. 148—11.5 P **10 Claims**

1. A process for producing a valve-metal anode for electrolytic capacitors which comprises heating under a high vacuum or under an inert gas atmosphere a previously heat-treated, shaped and pressed mass of valve-metal powder in the presence of a reducing metal at a temperature above the melting point of the reducing metal and below a temperature conventionally used for sintering a valve-metal anode.

4,537,642

METHOD OF MANUFACTURING AL-STABILIZED SUPERCONDUCTOR

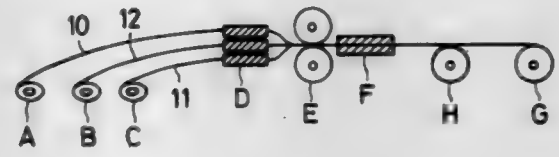
Shigeo Saito, and Masayuki Nagata, both of Osaka, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Jan. 18, 1984, Ser. No. 571,761

Claims priority, application Japan, Jan. 19, 1983, 58-6993

Int. Cl.³ H01B *12/00*

U.S. Cl. 148—11.5 Q **8 Claims**



1. A method of manufacturing an Al-stabilized superconductor, comprising combining into a composite an Al tape or ribbon and a superconductive wire comprised of a material selected from the group consisting of Cu and Cu alloy matrix by rolling.

4,537,643

METHOD FOR THERMOMECHANICALLY ROLLING HOT STRIP PRODUCT TO A CONTROLLED MICROSTRUCTURE

John E. Thomas, Pittsburgh; Ronald D. Gretz, Tarentum, and George W. Tippins, Pittsburgh, all of Pa., assignors to Tippins Machinery Company, Inc., Pittsburgh, Pa.

Division of Ser. No. 397,789, Jul. 13, 1982, Pat. No. 4,505,141. This application Jul. 11, 1984, Ser. No. 629,579

Int. Cl.³ C21D *7/14*

U.S. Cl. 148—12 R **10 Claims**

1. A method of thermomechanically rolling a steel hot strip product to a controlled microstructure on a hot strip mill including a final reducing stand and an incubator positioned along a runout table intermediate first and second cooling means comprising in sequence:

A. causing the strip to leave the final reducing stand at a temperature above the A_3;

B. cooling said strip below the A_3 by the first cooling means;

C. coiling the strip in the incubator;

D. holding the strip in the incubator between the A_1 and A_3 temperatures to cause nucleation and growth of ferrite particles in austenite;

E. decoiling the strip out of the incubator; and

F. cooling said strip out of the incubator by the second

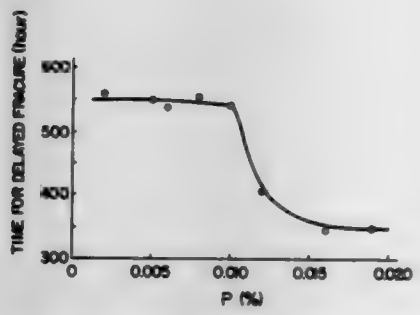
cooling means to minimize grain growth and carbide coarsening.

4,537,644

HIGH-TENSION HIGH-TOUGHNESS STEEL HAVING EXCELLENT RESISTANCE TO DELAYED FRACTURE AND METHOD FOR PRODUCING THE SAME

Jiro Tominaga, Hikari; Hiroshi Yada, and Mitsuo Honda, both of Kitakyushu, all of Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 21, 1982, Ser. No. 420,685
Claims priority, application Japan, Sep. 28, 1981, 56-153484
Int. Cl.[3] C22C *38/14, 38/28, 38/32*
U.S. Cl. 148—36 17 Claims



1. A high tensile tension high-toughness steel excellent in resistance to delayed fracture, having a tempered martensitic structure obtained by quenching and tempering and having a tensile strength of at least 100 kg/mm^2 and consisting essentially, by weight, of 0.15 to 0.50% of C, up to 1.50% of Si, 0.20 to 1.50% of Mn, up to 2.00% of Cr, 0.0005 to 0.0030% of B, 0.005 to 0.10% of acid-soluble Al, up to 0.010% of P, up to 0.0020% of N, 0.010 to 0.050% of Ti and the balance iron and inevitable impurities.

4,537,645

MAGNETICALLY TRACEABLE EXPLOSIVES WITH STABILITY AND A METHOD FOR THE PREPARATION THEREOF

Tadashi Yamaguchi; Takayuki Ono; Michitoshi Hirata, and Toshihiko Yokoyama, all of Sendai, Japan, assignors to Tohoku Metal Industries, Ltd., Senadi and Taisei Corporation, Tokyo, both of, Japan

Division of Ser. No. 315,136, Oct. 26, 1981, Pat. No. 4,455,179.
This application Dec. 27, 1983, Ser. No. 565,571
Int. Cl.[3] C06B *45/18*
U.S. Cl. 149—3 5 Claims

1. A magnetically traceable explosive which comprises

(a) an explosive selected from the group consisting of nitric ester explosives, nitrate explosives and perchlorate explosives, and

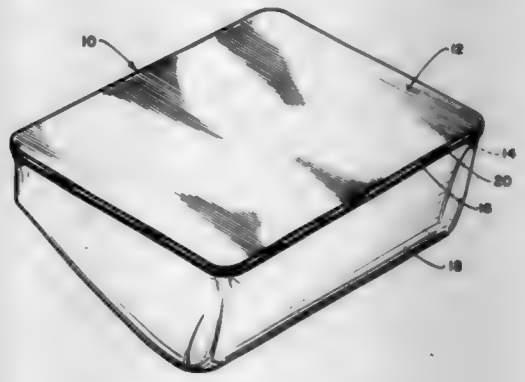
(b) magnetic ferrite powder particles dispersed throughout said explosive, each particle of said ferrite powder having a polymeric material coating thereon, wherein the polymeric material forming the coating on the ferrite particles is a polymer produced by the free radical polymerization of a monomer selected from the group consisting of acrylic and methacrylic acids and esters thereof, vinyl esters of aliphatic carboxylic acids, aromatic vinyl compounds, dienic monomers, acrylonitrile, methacrylonitrile, acrylamide, and methacrylamide, and combinations thereof, and the substrate surface of each particle within said coating being substantially chemically neutral, so that the explosive does not react with particles having defects in the polymeric material coating which permit the explosive to contact the substrate surface.

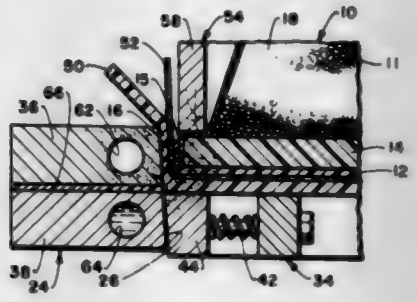
4,537,646

LAP DESK

James E. Hoyle, P.O. Box 606, Fillmore, Calif. 93015

Filed Jun. 10, 1983, Ser. No. 503,383
Int. Cl.[3] B32B *3/00;* B29H *7/04;* B29C *17/04;* A47B *97/04*
U.S. Cl. 156—212 7 Claims





1. Process for making a lap desk comprising:

securing an edge of a bag which edge surrounds said bag to an edge of a planar board having a face and the edge therearound to create a space between the bag and the board;

filling the space between the bag and board with stuffing material;

adhering a polymeric sheet having a peripheral portion onto the face of the board opposite from the stuffing material-filled bag, thereby creating an assembly, the edge of the sheet extending beyond the edge of the board by a distance not substantially greater than the thickness of the board;

heating the peripheral portion of the sheet to render the sheet bendable over the edge of the board;

moving the assembly in a given direction on a path normal to the plane of the board through a forming die having a die passager slightly larger than the planar periphery of the board;

causing the die to bend and form the peripheral portion of the sheet over and adjacent the edge of the board and the edge of the bag, around the periphery of the board;

completing the moving of the assembly in said given direction through the die.

4,537,647

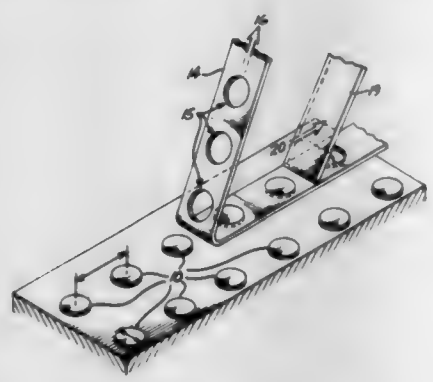
METHOD FOR APPLYING TURBULATORS TO WIND TUNNEL MODELS

Clark B. Foster, Seattle, Wash., assignor to The Boeing Company, Seattle, Wash.

Filed Oct. 6, 1982, Ser. No. 433,189
Int. Cl.[3] B29C *19/00;* B32B *31/00;* B28B *3/06;* B05D *1/32*
U.S. Cl. 156—245 6 Claims

1. A method for forming turbulators in situ on the surface of a scale model airfoil used in wind tunnel testing, comprising the steps of: forming a mold by applying an adhesive backed tape stencil having a series of circular apertures, to a predetermined location on said airfoil; filling the apertures in said tape

stencil with an epoxy resin; leveling the epoxy resin with the surface of said tape stencil; cure hardening said epoxy resin; removing said tape stencil from said airfoil and leaving in situ formed epoxy disk turbulators on said airfoil; predetermining a



thickness of said tape stencil for substantially producing a height of the epoxy disk turbulators which protrudes into free airstream flow in the wind tunnel during testing of said scale model airfoil for producing a transition point on said airfoil.

4,537,648

AUTOMATIC SPECIMEN SEALING SYSTEM

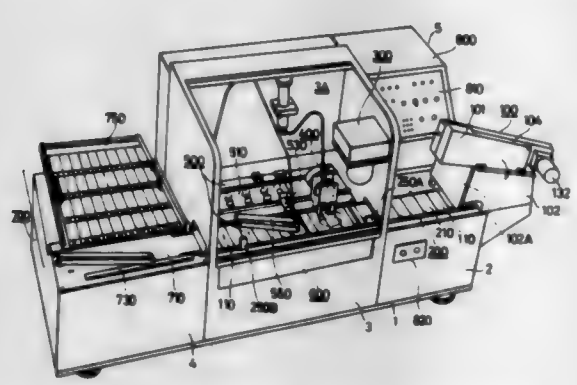
Kouji Shiino; Nobuo Hashimoto; Shozo Wada, all of Tokyo; Keijiro Nakamura; Akio Izumi, both of Kanagawa; Toshio Sato, Kanagawa, and Takashi Matsui, Tokyo, all of Japan, assignors to Sankyo Company Limited and Fuji Electric Company Ltd., both of, Japan

Filed Feb. 28, 1984, Ser. No. 584,289

Claims priority, application Japan, Feb. 28, 1983, 58-30903

Int. Cl.³ G01N *1/28*; A65C *9/08*

U.S. Cl. 156—351 **2 Claims**



1. An automatic specimen sealing system comprising:

a conveyor for conveying said glass slides;

a glass slide supplying device for ejecting glass slides sequentially at predetermined time intervals onto said conveyor at a predetermined orientation;

a discriminating device for detecting optically the size of specimens on said glass slides being conveyed on said conveyor;

a pouring device for supplying an adhesive liquid onto said glass slides in an amount determined by the size of the respective specimens;

a glass cover sorting/supplying device for supplying glass covers of a size determined by the size of said specimens to said glass slides conveyed to a supply position on said conveyor;

a binding device for lifting up said glass slides from said supply position to effect sealing of said specimens between said glass slides and said glass covers and then returning again said glass slides to said supply position;

an assemblying device for moving simultaneously a predetermined number of said glass slides having been returned to said supply position and ejected by said conveyor to assemble said slides in a tray; and

a control unit for effecting in synchronization with movement of said conveyor processing of said glass slide supplying device, said discriminating device, said pouring device said glass cover sorting/supplying device, and said sealing device.

4,537,649

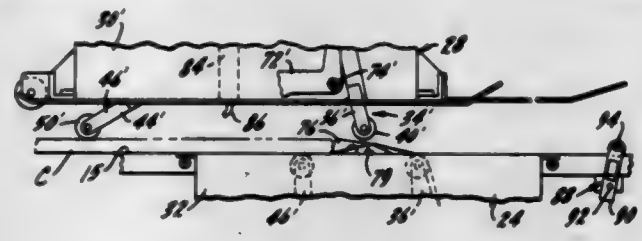
APPARATUS FOR SEALING CARTONS

Lawrence W. Ulrich, and Connie W. Walker, both of Bolingbrook, Ill., assignors to Durable Packaging Corporation, Chicago, Ill.

Filed Jul. 9, 1982, Ser. No. 396,885

Int. Cl.³ B65C *1/04*

U.S. Cl. 156—355 **2 Claims**



1. In an apparatus for applying a strip of sealing tape to seal the bottom flaps of a low profile five panel carton; said carton having a main panel, upstanding side panels of a short dimension hinged to each of the edges of the main panel, and bottom flaps hinged to the opposed edges of each of the side panels; said apparatus comprising: a frame structure defining a generally horizontal carton transporting surface; a tape applying means mounted to said frame structure generally below said transporting surface, said tape applying means includes a bottom leading tape engaging wipe down means for engaging the portion of the strip of tape which is initially applied to a vertical surface of the leading side panel of the carton and which extends across the bottom flaps of the carton; a bottom trailing tape engaging wipe down means for engaging the portion of the strip of tape applied to the vertical surface of the trailing side panel of the carton; a top leading tape engaging wipe down means mounted to said frame structure above said transporting surface for engaging a leading end portion of the strip of tape applied to the top surface of the main panel of the carton adjacent said vertical surface of the leading side panel; a directing means mounted to said frame structure for directing a trailing end portion of the strip of tape onto the top surface of the main panel of the carton adjacent said vertical surface of the trailing side panel, said directing means includes a gas jet means for supplying a blast of pressurized gas onto the trailing end portion of the strip of tape; a control means for sensing the trailing edge of the carton and initiating the blast of pressurized gas and terminating the blast of pressurized gas; and a top trailing tape engaging wipe down means mounted to said frame structure above said transporting surface for engaging said trailing end portion of the strip of tape directed onto said top surface of the main panel of the carton by said directing means.

4,537,650

SHEET BINDING APPARATUS

Robert A. Coons, Jr., Holcomb, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed May 1, 1984, Ser. No. 606,040

Int. Cl.³ B05C *1/02, 11/105*; B42C *9/00*

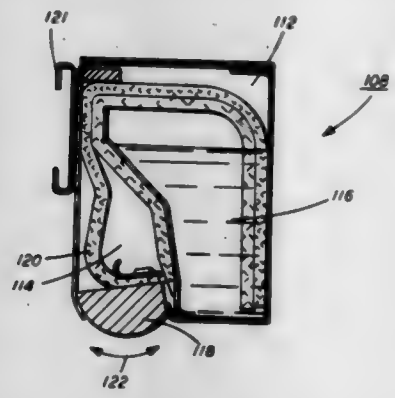
U.S. Cl. 156—384 **14 Claims**

1. An apparatus for adhesively binding together a plurality of sheets to form a bound booklet thereof, including:

means for receiving successive sheets;

an operator replaceable cartridge comprising a housing storing a supply of adhesive threein, a glue applicator blade, in communication with the housing, and being of a length at least equal to the length of the marginal region of the sheet adapted to have glue deposited thereon, and means for extending a portion of the blade from the housing in the operative mode when applying glue to the

sheets and retracting the portion of the blade extending from the housing into the housing in the inoperative mode; and



means for reciprocating the cartridge so that the portion of the blade extending outwardly from the housing thereof contacts the marginal region of successive sheets in said receiving means to apply a strip of glue thereon.

4,537,651

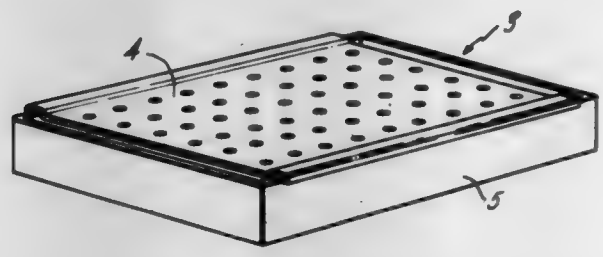
METHOD FOR REMOVING SEMICONDUCTOR LAYERS FROM SALT SUBSTRATES

Alexander J. Shuskus, West Hartford, Conn., and Melvyn E. Cowher, East Brookfield, Mass., assignors to United Technologies Corporation, Hartford, Conn.

Continuation of Ser. No. 266,544, May 22, 1981, abandoned. This application Nov. 12, 1982, Ser. No. 441,325

Int. Cl.³ C30B *25/12*

U.S. Cl. 156—613 **7 Claims**



1. A method for removing a semiconductor from an alkali hailde substrate, the alkali halide having a melting point which is less than that of the semiconductor, which consists of:

a. supporting the semiconductor-substrate combination on a support which is wettable by the substrate material, when molten, said support being adapted to attract and remove the substrate material from the semiconductor when the substrate is molten, with the substrate contacting the wettable support;

b. heating the semiconductor-substrate-support combination to a temperature above the melting point of the substrate material but below the melting point of the semiconductor material so that the molten substrate material will be removed from the semiconductor material by capillary action.

4,537,652

PROCESS FOR PREPARING SINGLE CRYSTAL

Akihisa Kawasaki; Kohji Tada; Toshihiro Kotani, all of Osaka, and Shintaro Miyazawa, Isehara, all of Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka and Nippon Telegraph & Telephone Public Corp., Tokyo, both of, Japan

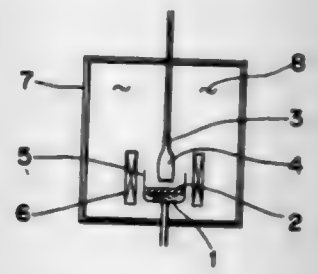
Filed Jun. 5, 1984, Ser. No. 617,563

Claims priority, application Japan, Jun. 10, 1983, 58-104732

Int. Cl.³ C30B *15/00*

U.S. Cl. 156—617 SP **2 Claims**

1. A process for preparing a single crystal comprising pulling up a single crystal by the Czochralski process and cooling it at a temperature not lower than 600° C. at a reduced pressure or in vacuo wherein the cooling step of the pulled single crystal comprises lowering the temperature at a rate of up to 5° C./min. to a temperature higher than 600° C., keeping the same temperature for 1 to 2 hours, reducing the pressure at the same temperature at a rate of up to 60 Kg/cm^2/hr. to 1 to 3 kg/cm^2, keeping the same pressure for 1 to 2 hours, lowering the temperature at the same pressure for 1 to 2 hours, lowering the temperature at the same pressure at a rate of up 5° C./min. to a temperature not lower than 600° C., reducing the pressure at the same temperature at a rate of up to 60 Kg/cm^2/hr. to atmospheric pressure, evacuating at a rate of up to 10 Torr/-min. to a pressure of 10^{-2} Torr. or lower, and keeping the same vacuum for 1 to 2 hours.



4,537,653

SYNTHESIS OF BERYL CRYSTALS

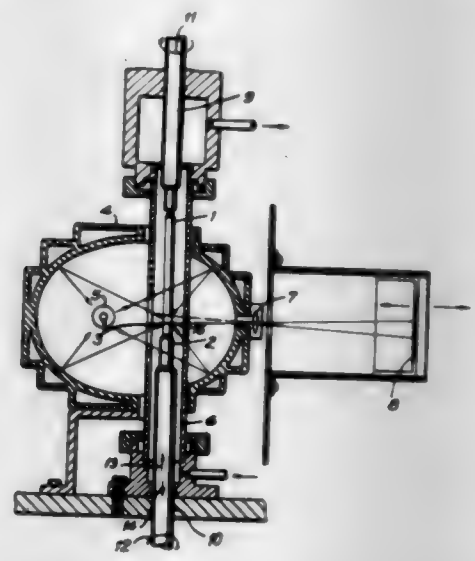
Katsuhiro Teraishi, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Dec. 23, 1982, Ser. No. 452,488

Claims priority, application Japan, Dec. 25, 1981, 56-210438

Int. Cl.³ C30B *13/02*

U.S. Cl. 156—620 **15 Claims**



1. A method of synthesizing beryl single crystals in a zone floating apparatus, comprising:

forming a raw material powder by mixing beryllium oxide (BeO), aluminum oxide (Al_2O_3), silicon dioxide (SiO_2) and chromium oxide (Cr_2O_3) in a molar ratio substantially that of natural beryl, said raw material having the composition, $3BeO.Al_2O_3.6SiO_2.0.005Cr_2O_3$;

sintering the raw material powder and forming a feed rod;

mounting the feed rod on a first rotating axis and rotating the feed rod in a first rotational direction;

forming a flux pellet of raw material powder including at least one material selected from the group consisting of molybdates, vanadates and tungstates;

placing the flux pellet on the free end of the feed rod;

forming a melt zone in the free end of said rotating feed rod;

mounting a seed crystal on a second rotational axis and rotating said axis in a direction opposite to the first rotation direction;

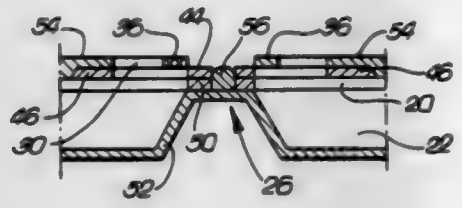
contacting the rotating seed crystal with the melt zone including the flux pellet;
moving the melt zone along the feed rod so that beryl crystal is synthesized as the melt zone is displaced along the feed rod; and
heating said synthetic crystal at a temperature of between about 1000°–1410° C. for about 50 to 500 hours.

4,537,654

TWO-GATE NON-COPLANAR FET WITH SELF-ALIGNED SOURCE

John J. Berenz, Lawndale, and Kenichi Nakano, North Hollywood, both of Calif., assignors to TRW Inc., Redondo Beach, Calif.

Filed Dec. 9, 1983, Ser. No. 560,075
Int. Cl.³ H01L *21/306*; B44C *1/22*; C03C *15/00*; C23F *1/02*
U.S. Cl. 156—644 **15 Claims**



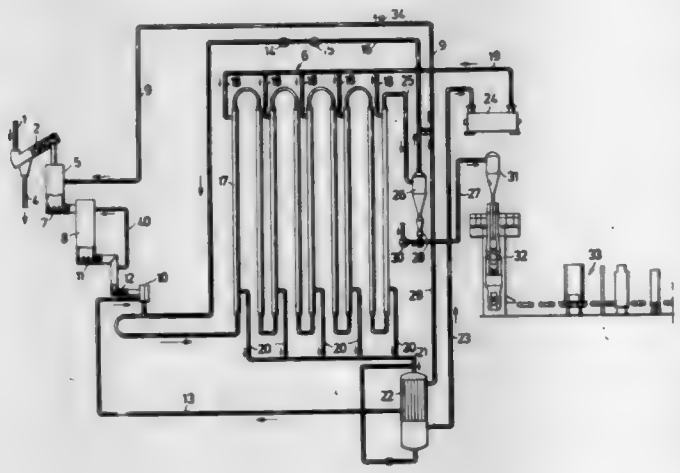
1. A method of fabricating a non-coplanar field-effect transistor, comprising the steps of:
forming a stop-etch layer on a semiconductor substrate;
forming an active semiconductive layer on the stop-etch layer;
forming a metallized via hole in the substrate;
locating the via hole from the active layer face of the device;
forming a two-element gate on the active layer and centered in approximate alignment with the via hole;
implanting a source region in the active layer and the stop-etch layer, in an area located between the gate elements;
implanting drain contact regions in the active layer;
etching an opening in the source region, to extend through to the metallized via hole; and
depositing metal in the source region opening to establish good contact with the via hole metallization.

4,537,655

PROCESS FOR PRODUCING AND FLASH DRYING HIGH YIELD MECHANICAL CELLULOSE PULP WITH STEAM AND CONDENSATE RECYCLE

Sven-Erik D. Henriksson, North Vancouver, Canada; Bo A. Ahrel, Frövi, Sweden; Claes G. S. Svensson, Kungälv, Sweden, and Torsten A. H. Franzen, Domsjö, Sweden, assignors to MoDo-Chemetics AB, Ornskoldsvik, Sweden

Filed May 2, 1983, Ser. No. 490,597
Claims priority, application Sweden, May 7, 1982, 8202868
Int. Cl.³ D21C *1/12, 1/16*
U.S. Cl. 162—23 **7 Claims**



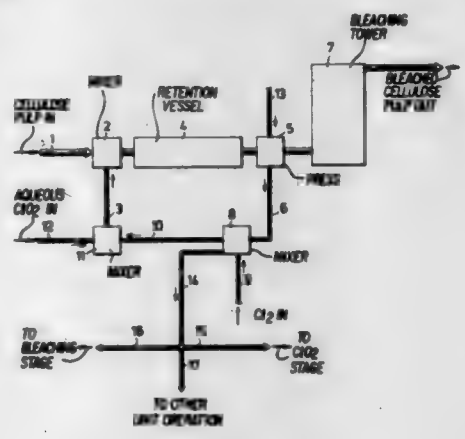
1. A process for inexpensively producing high yield mechanical cellulose pulp having good paper properties, which comprises
(1) preheating particulate lignocellulosic material;
(2) difibrating the preheated material under a steam pressure within the range from about 2 to about 4.5 bar above atmospheric pressure in a disc refiner under conditions such that steam is generated during the defibration;
(3) continuing the defibration until a cellulose pulp is obtained having a freeness within the range from about 300 to about 700 ml CSF;
(4) flash drying the defibrated cellulose pulp in a steam-heated flash dryer while maintaining a superatmospheric steam pressure within the said range during the drying;
(5) withdrawing steam generated during the defibration and passing it in indirect heat exchange with steam utilized in the flash drying, so as to utilize in the drying at least 30% of the heat content thereof; and then
(6) removing and baling the flash-dried cellulose pulp;
(7) separating water vapor produced by evaporation in the steam-heated flash dryer and condensing the water vapor to water;
(8) recycling the water condensate for cooling and dilution to the disc refiner;
(9) vaporizing water condensate from the heating steam of the steam-heated flash dryer converting it to high pressure steam; and then
(10) recycling the steam for heating to the steam-heated flash dryer.

4,537,656

METHOD FOR DELIGNIFYING OR BLEACHING CELLULOSE PULP WHEREIN CHLORINE IS ADDED TO RECYCLE LIQUOR TO REGENERATE CHLORINE DIOXIDE

Jonas A. I. Lindahl, and John R. Bergstrom, both of Domsjo, Sweden, assignors to Mo och Domsjo Aktiebolag, Ornskoldsvik, Sweden

Continuation of Ser. No. 323,323, Nov. 20, 1981, abandoned.
This application Dec. 1, 1983, Ser. No. 557,385
Claims priority, application Sweden, Nov. 27, 1980, 8008337
Int. Cl.³ D21C *9/14*
U.S. Cl. 162—38 **9 Claims**



1. A method for delignifying or bleaching cellulose pulp which comprises in at least one stage adding a liquid containing chlorine dioxide to the cellulose pulp; reacting the cellulose pulp with the chlorine dioxide over a selected period of time; and then decreasing the amount of active chlorine available to the pulp by removing at least a substantial amount of the chlorine by removing a portion of the liquid accompanying the pulp; replenishing active chlorine as chlorine dioxide in the liquid removed from the pulp by regenerating chlorine dioxide in situ by adding chlorine as chlorine only in an amount from 10 to 35% of the amount of active chlorine already present in the liquid; and then recyling the replenished liquid as chlorine dioxide liquor to newly supplied cellulose pulp for delignifying or bleaching the pulp.

4,537,657

WET STRENGTH RESINS

Gerald I. Keim, West Grove, Pa., assignor to Hercules Incorporated, Wilmington, Del.

Division of Ser. No. 526,304, Aug. 26, 1983, Pat. No. 4,501,862, which is a continuation-in-part of Ser. No. 497,362, May 23, 1983, abandoned. This application Oct. 22, 1984, Ser. No. 663,105

Int. Cl.[3] D21H *3/58*

U.S. Cl. 162—164.3 5 Claims

1. A paper product having wet and dry strength and improved repulpability comprising sheeted cellulose fibers treated with from about 0.2 to about 3% by weight, based on dry weight of fibers, of a water-soluble, cationic thermosetting resin derived by reacting methylbisaminopropylamine with (a) oxalic acid or a lower alkyl diester of oxalic acid and (b) urea to form an aminopolyamide-polyureylene containing tertiary amine groups, the mole ratio of (a) to (b) being from about 0.1:1 to about 10:1 and the mole ratio of methybisaminopropylamine to (a) plus (b) being from 0.9:1 to about 1.2:1 and then reacting the intermediate in aqueous solution with from about 1 mole to about 1.5 moles of epihalohydrin per mole of tertiary amine groups present in said intermediate.

4,537,658

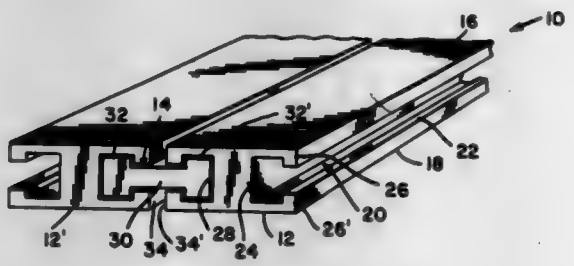
PAPERMAKERS FABRIC CONSTRUCTED OF EXTRUDED SLOTTED ELEMENTS

Hans Albert, Vienna, Austria, assignor to Scapa Inc., Waycross, Ga.

Filed Sep. 30, 1982, Ser. No. 429,154

Int. Cl.[3] D21F *1/10*

U.S. Cl. 162—348 14 Claims



1. A papermakers fabric comprising:

a plurality of formed elongated elements of generally rectangular cross section having a length commensurate with the width of the desired fabric, said elements being positioned with their longitudinal axes oriented in the cross-machine direction and having substantially parallel flat upper and lowe surfaces,

a first slot formed in and extending completely along at least one longitudinal edge of each of said elements, a second slot formed in and extending completely along another longitudinal edge of each of said elements, said element being formed with equivalently dimensioned slots on two opposite sides thereof,

a first aperture pattern formed in and extending through the upper and lower surfaces of said elements to provide a given permeability of the fabric,

connecting means for linking said plurality of elements one next to the other by means of said slots to form either an endless or an open ended fabric as required, said connecting means including a pintle formed to fit into said slots and thereby join adjacent formed elements, wherein the linked elements form a smooth papermaking fabric with no protrusions on either the upper or lower surfaces thereof and with no substantial gaps between the elements.

4,537,659

SUPPORTING BEAM FOR A FOIL IN A PAPER MACHINE

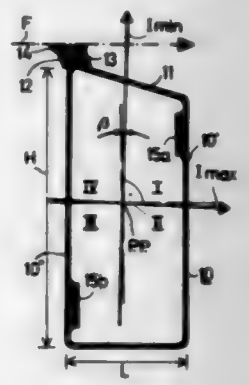
Erkki Koski, Jyväskylä, Finland, assignor to Valmet Oy, Finland

Filed Oct. 25, 1982, Ser. No. 436,403

Claims priority, application Finland, Oct. 28, 1981, 813368

Int. Cl.[3] D21C *1/48;* D21G *7/00, 9/00*

U.S. Cl. 162—352 9 Claims



1. In an assembly including a paper machine foil having a forward leading edge and a rearward trailing edge, a supporting beam for said paper machine foil, and over which foil a paper machine wire passes in a direction from said forward leading edge of said foil towards said rearward trailing edge thereof, said beam being constituted by a box-type beam extending in a substantially horizontal cross-machine direction during operation and having a height H in the range of about 1.3 to 2.5 times the breadth L of said beam, said beam having forward and rearward side walls, the improvement comprising the combination wherein:

said forward and rearward side walls of said supporting beam are situated in planes which are substantially perpendicular to the direction of wire run over said foil;

said foil is situated in a region situated substantially vertically above said forward side wall of said supporting beam; and

with reference to forward and rearward upper quadrants and forward and rearward lower quadrants of the interior of said box-type beam, first and second stiffener means extending substantially parallel to the longitudinal axis of said beam for inclining the principal axes of inertia of said beam at a small positive angle to the vertical and horizontal planes passing through the center of gravity of said beam relative to the direction of the run of the paper machine wire passing over said foil, said first stiffener means being disposed in said rearward upper quadrant of the beam interior and said second stiffener means being disposed in said forward lower quadrant of the beam interior, whereby vibrations of said beam caused by friction forces between said foil and the wire passing thereover are reduced.

4,537,660

VAPOR GENERATING AND RECOVERING APPARATUS

James W. McCord, 9101 Nottingham Pkwy., Louisville, Ky. 40222

Continuation-in-part of Ser. No. 919,978, Jun. 28, 1978, abandoned. This application Mar. 8, 1982, Ser. No. 355,668

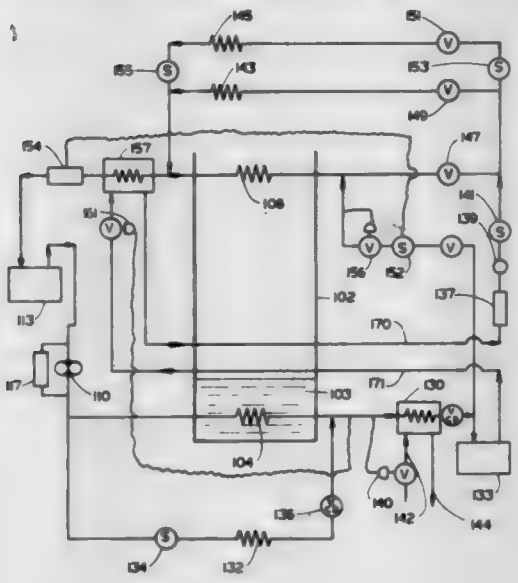
Int. Cl.[3] B01D *3/02;* F25B *41/00*

U.S. Cl. 202—170 41 Claims

1. In a vapor generating and recovery apparatus for vaporizing a liquid and condensing a vapor, including a housing comprising at least one compartment therein, said compartment having a liquid therein, the improvement comprising:

heating and cooling system in heat transfer relation with said liquid and said vapor in said compartment, said system including a main condenser in heat emitting relation with said liquid; a main evaporator in heat absorbing relation

with said vapor; a complementary condenser in heat emitting relation in said system disposed outside said compartment; and, means to compress a refrigerant flowing in said system, said means to compress being in fluid communication on its high pressure side with said main condenser and said complementary condenser, and on its low pressure side with said main evaporator, said system including expansion means disposed between said main condenser and said main evaporator, pump down valve means



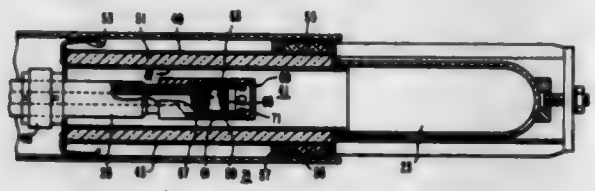
therein disposed downstream of said main condenser and upstream of said main evaporator selectively closed prior to the shut down of the compressor and remains closed during system pump down while simultaneously said means to compress continues to operate for pumping refrigerant out of said compressor, and means to de-activate said means to compress at preselected refrigerant conditions said means to de-activate being operatively connected to said means to compress.

4,537,661

TECHNIQUE FOR MONITORING THE OXIDATION/REDUCTION POTENTIAL CHARACTERISTICS OF A STEAM ENVIRONMENT

Pang K. Lee, Murrysville, and William M. Hickam, Churchill Borough, both of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 24, 1984, Ser. No. 613,832
Int. Cl.³ G01N *27/46*
U.S. Cl. 204—1 T **5 Claims**



1. A method of operating a solid electrolyte electrochemical cell assembly in a steam environment for the purpose of monitoring the oxidation/reduction potential of the environment, said solid electrolyte electrochemical cell assembly being of the type in which the solid electrolyte electrochemical cell is a solid electrolyte member having a first electrode disposed in contact with a first surface of the solid electrolyte member and a second electrode disposed in contract with the opposite surface of the solid electrolyte member, the solid electrolyte member is disposed in the cell assembly such that the first surface of the solid electrolyte member is exposed to a reference gas and the opposite surface of the solid electrolyte member is exposed to an environment of interest such that an electrical signal reflecting the gas partial press is generated, and the cell assembly includes heating means operatively associated therewith for effecting the controllable heating of the solid electrolyte member, said operational method comprising the steps of:

disposing the cell assembly in a steam environment such that the second surface of the solid electrolyte member is in communication with the steam environment,

providing a reference gas of determinable content in communication with the first surface of the solid electrolyte member,

heating the solid electrolyte member by means of said heating means operatively associated therewith to a temperature of about 500° C. at which low concentration levels of oxygen and hydrogen are distinguished from one another, and

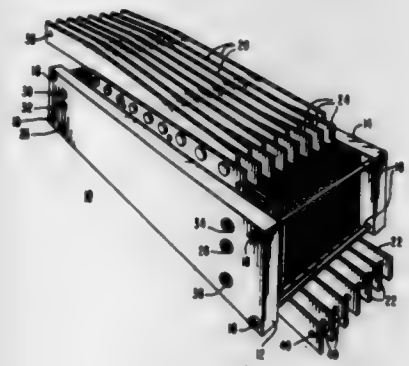
measuring the electrical signal generated by the solid electrolyte member as a function of the oxygen or hydrogen content in the steam environment.

4,537,662

METHOD OF ELECTRICALLY SHORTING AN ELECTROLYTIC CELL

Robert M. Hruda, Horseheads, N.Y., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed May 4, 1984, Ser. No. 607,098
Int. Cl.³ C25G *15/02*
U.S. Cl. 204—1 R **6 Claims**



1. A method for electrically shorting an electrolytic cell from a system comprised of a series of electrolytic cells, said cells each having conductor bars of a first polarity disposed along a top surface of the cell and conductor bars of a second polarity disposed along a bottom surface of the cell, said cells in the system being electrically connected in a series circuit relationship by bus bars connecting the conductor bars of the second type polarity on one cell to the conductor bars of the first type polarity on the adjacent cell, said method comprising disposing a jumper circuit adjacent a first cell, said first cell to be electrically shorted from the system, and a second cell, said cell being adjacent to said first cell, said second cell being electrically connected to said first cell by the bus bars electrically connected to the conductor bars of said second polarity of said second cell and conductor bars of said first polarity of said first cell, said jumper circuit being comprised of a first bus bar and a second bus bar, said first and second bus bars being connected electrically in series by a switch, electrically connecting the conductor bar of said first polarity of said second cell to said second bus bar of said jumper circuit, electrically connecting the conductor bar of said first polarity of a third cell to said first bus bar of said jumper circuit, said third cell being disposed adjacent to said first cell on the side of said first cell opposite to said second cell, closing the switch of the jumper circuit whereby said first and second cells are electrically shorted from said system, disconnecting at said first cell the bus bar connected between the conductor bar of said second polarity of said second cell and the conductor bar of said first polarity of said first cell, disconnecting at said first cell the bus bar connected between the conductor bar of said second polarity of said first cell and the conductor bar of said first polarity of said third cell, physically connecting the bus bar

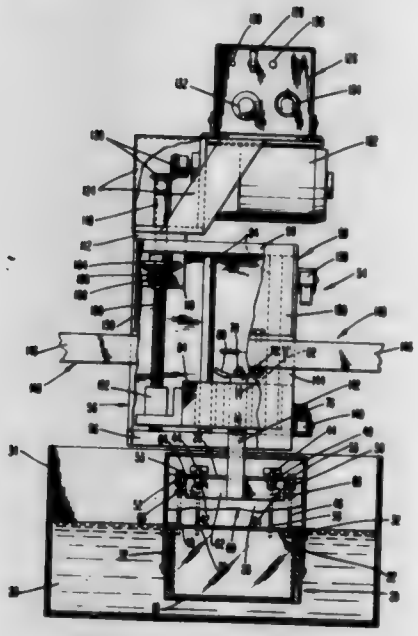
which was disconnected from the conductor bar, of said first polarity, of the first cell to a terminal of the switch in the jumper circuit and opening the switch in the jumper circuit.

4,537,663

METHOD OF AND APPARATUS FOR PLATING USING CONTROLLED PROGRESSIVE IMMERSION

David I. Macdonald, Revere, Mass., assignor to AT&T Technologies, Inc., Berkeley Heights, N.J.

Filed Jul. 27, 1982, Ser. No. 402,406
Int. Cl.³ C25D *5/04, 17/00, 17/06*
U.S. Cl. 204—14.1 **10 Claims**



1. A method of plating an essentially uniform thickness of an electrically conductive material onto an electrically conductive portion of an article, which comprises the steps of:

supporting the article above an electroplating bath containing the electrically conductive material such that a lower end of the electrically conductive portion of the article is adjacent the electroplating bath;

electrically contacting the electrically conductive portion of the article adjacent only an upper end thereof to apply electrical plating potential to the article portion; and

progressively immersing the article portion, lower end first, at a preselected rate into the electroplating bath as the electrical plating potential to being applied to the article portion, such that successive sections of the article portion between the upper and lower ends thereof are continuously immersed in the electroplating bath for progressively increasing time periods, with the lower end of the article portion being continuously immersed in the electroplating bath for the longest time period and the upper end of the article portion being continuously immersed in the electroplating bath for the shortest time period, respectively, to form a layer of the electrically conductive material of an essentially uniform thickness on the article portion.

6. Apparatus for plating an essentially uniform thickness of an electrically conductive material on an electrically conductive portion of an article, which comprises:

an anode;

means for mounting the anode and the electrically conductive portion of the article in spaced opposed relationship above an electroplating bath containing the electrically conductive material such that lower ends of the article portion and the anode are adjacent the electroplating bath;

means for electrically contacting the electrically conductive portion of the article and the anode adjacent only upper ends of the article portion and the anode, to apply electrical plating potential across the article portion and the anode;

drive means for lowering the mounting means and progressively immersing the article portion and the anode, lower ends first, at a preselected rate into the electroplating bath simultaneously as the plating potential is being applied across the article portion and the anode, such that successive sections of the article portion between the upper and lower ends thereof are continuously immersed in the electroplating bath for progressively increasing time periods, with the lower end of the article portion being continuously immersed in the electroplating bath for the longest time period and the upper end of the article portion being continuously immersed in the electroplating bath for the shortest time period, respectively, to form a layer of the electrically conductive material of an essentially uniform thickness on the article portion; and

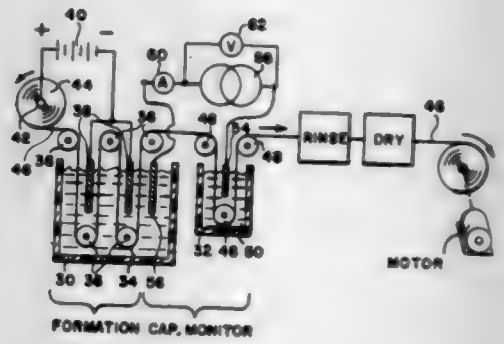
means responsive to the lowering of the mounting means for de-energizing the drive means when the article portion has become fully immersed in the electroplating bath.

4,537,664

METHOD FOR CONTINUOUSLY MONITORING OXIDE THICKNESS ON MOVING ALUMINUM FOIL

William G. Novacek, Clinton, Tenn., assignor to Sprague Electric Company, North Adams, Mass.

Filed Apr. 6, 1984, Ser. No. 597,300
Int. Cl.³ C25D *11/04*
U.S. Cl. 204—28 **7 Claims**



5. A method for continously monitoring the thickness of the oxide that is being formed on an aluminum electrolytic capacitor foil comprising:

(a) drawing a bare aluminum capacitor foil through a formation machine including an energized formation tank containing a formation electrolyte and continuously forming therein an aluminum oxide film over said foil;

(b) drawing said formed foil through a second electrolyte contained in a second tank, an AC voltage source being connected between a first electrode immersed in said formation electrolyte and a second electrode immersed in said second electrolyte;

(c) separating from the current flowing through said AC source, the leading reactive component relative to said AC voltage; and

(d) monitoring said reactive current whereby the ratio of said AC voltage to said reactive current is a direct measure of the thickness of said oxide film.

4,537,665

PRODUCTION OF ALUMINUM FOIL CAPACITOR ELECTRODES

Trung H. Nguyen, Williamstown, Mass., and Clinton E. Hutchins, Pownal, Vt., assignors to Sprague Electric Company, North Adams, Mass.

Filed Sep. 4, 1984, Ser. No. 646,876
Int. Cl.³ C25D *11/10, 11/12, 11/16*
U.S. Cl. 204—29 **7 Claims**

1. In the manufacture of low-voltage aluminum foil electrolytic capacitor electrodes including etching said foil, cleaning it, and anodizing said foil, the improvement comprising ther-

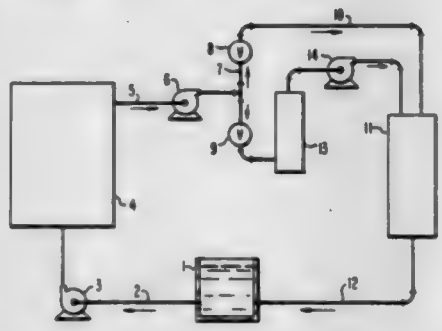
mal treating said cleaned foil at about 595° to 650° C. and then anodizing said treated foil in an adipate formation electrolyte.

4,537,666

DECONTAMINATION USING ELECTROLYSIS

Alexander P. Murray, Murrysville, and Thomas S. Snyder, Wilkins Township, Allegheny County, Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Mar. 1, 1984, Ser. No. 585,062
Int. Cl.³ C25F *3/02*
U.S. Cl. 204—129.95 **6 Claims**



1. A method of decontaminating metal surfaces having a radioactive coating thereon which contains metal ions including ferric ions, comprising:

(A) passing an aqueous decontamination solution containing at least one chelate for said metal ions over said coating to solubilize said metal ions, including said ferric ions;

(B) passing said aqueous decontamination solution through a porous DC electrode to reduce said ferric ions to ferrous ions; and

(C) passing said aqueous decontamination solution containing said ferrous ions over said coating.

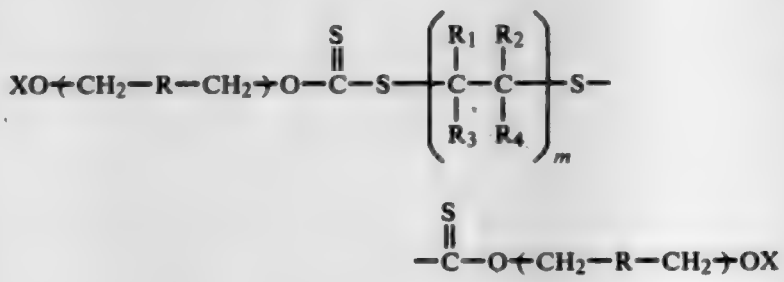
4,537,667

RADIATION-CURABLE COPOLYMERS OF MONOETHYLENIC MONOMERS

Timothy E. Bishop, Arlington Heights; George Pasternack, Lincolnshire, and John M. Zimmerman, Mount Prospect, all of Ill., assignors to DeSoto, Inc., Des Plaines, Ill.

Filed Apr. 25, 1984, Ser. No. 603,836
Int. Cl.³ C08F *8/00*
U.S. Cl. 204—159.15 **13 Claims**

1. A radia[illegible]n-curable linear addition polymer or copolymer having a weight average molecular weight of from about 1,500 to about 15,000 of polymerized monoethylenically unsaturated monomers, which may include up to 25% by weight of an hydroxy-functional monomer, and which carries an hydroxyl group at most of its ends, reacted with a monoethylenically unsaturated monomer carrying a single functional group reactive with the hydroxyl group, so that the polymer carries monoethylenically unsaturated groups bonded to an average of from 1.6 to 5 of the hydroxyl groups per polymer molecule, said polymer having the structure:



where R is an organic radical free of reactive groups, R1, R2, R3 and R4 are the remaining groups in the monoethylenic monomers which were polymerized, or hydrogen, n is the number of repeating units in the polymer providing the said molecular weight, and X is the residue of a monoethylenically unsaturated monomer having a single hydroxy-reactive functional group.

4,537,668

PROCESS FOR THE PRODUCTION OF A CATION EXCHANGE DIAPHRAGM AND THE DIAPHRAGM OBTAINED BY THIS PROCESS

Gilbert Gaussens, Meudon, and Francis Lemaire, Chatillon Sous Bagneux, both of France, assignors to Commissariat a l'Energie Atomique, Paris, France

Filed Jun. 10, 1981, Ser. No. 272,206
Claims priority, application France, Jun. 24, 1980, 80 13939
Int. Cl.³ C25B *13/08*
U.S. Cl. 204—159.17 **19 Claims**

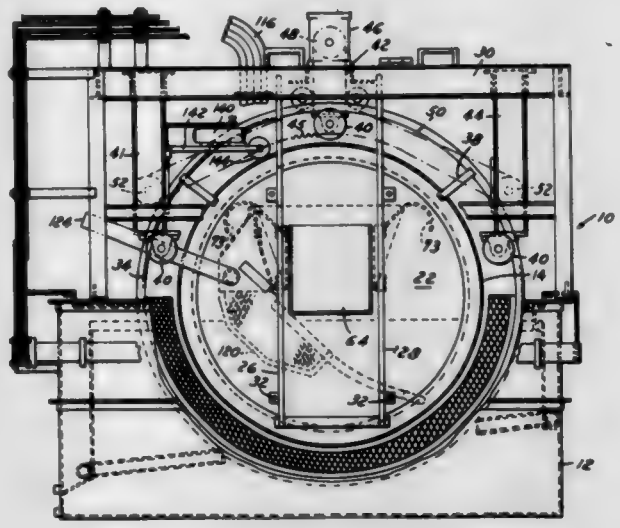
1. A process for the production of a cation exchange diaphragm, wherein in a first stage of grafted copolymer powder is prepared by grafting styrene and/or its derivatives onto a polyethylene powder by exposing a suspension of said polyethylene and styrene and/or its derivatives to irradiation by means of ionizing rays so as to obtain a grafting degree of the monomers on the polyethylene polymer of 15 to 60%, in a second stage the grafted copolymer powder is brought into the form of a thin film by dissolving the grafted copolymer powder in an organic solvent, by pouring the thus obtained solution onto a support and then evaporating the solvent and in a third stage cation exchanger groups are fixed to the thus obtained grafted copolymer film.

4,537,669

APPARATUS FOR CLEANING, PLATING AND/OR COATING ARTICLES

Robert McInnes, 4444 W. Bristol Rd., Flint, Mich. 48507

Filed Apr. 6, 1984, Ser. No. 600,795
Int. Cl.³ B08B *3/06*; B65G *49/02*; C25D *17/20*
U.S. Cl. 204—201 **28 Claims**



1. In an apparatus for cleaning, plating and/or coating articles, the combination comprising

a container adapted to contain a liquid treatment material,

a barrel adapted to be at least partially submerged in liquid in said container,

said barrel having a longitudinal axis,

means for rotatably supporting said barrel so that it is partially submerged in liquid in said container,

said barrel having a plurality of circumferentially spaced baffles on the inner periphery thereof, said baffles extending radially inwardly and forming an acute angle with said inner periphery such that when said barrel is rotated in one direction, said baffles agitate the articles, and when said barrel is rotated in the opposite direction, said baffles elevate the articles and cause them to drop,

laterally spaced stationary end walls mounted in fixed positions covering the ends of said barrel,

and chute means extending from the interior of said barrel adjacent one end wall through an opening in the other end wall such as to receive articles dropped by the baffles by gravity and discharge them from the barrel.

4,537,670

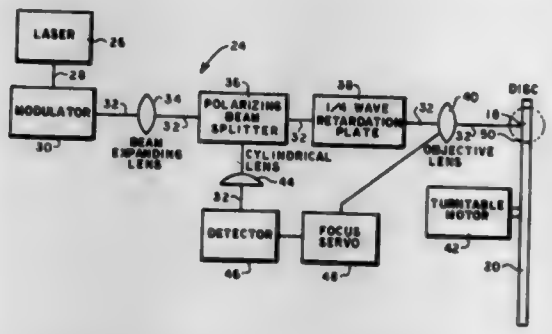
APPARATUS FOR MAKING A STAMPING MASTER FOR VIDEO DISK REPLICATION

David A. Strand, West Bloomfield, Mich., assignor to Energy Conversion Devices, Inc., Troy, Mich.

Division of Ser. No. 383,176, May 28, 1982, abandoned. This application Apr. 25, 1984, Ser. No. 603,618

Int. Cl.³ C25D *17/00*; B05D *5/06*; B32B *3/02*

U.S. Cl. 204—224 R **33 Claims**



1. An apparatus for making a stamping master to facilitate video disk replication comprising:

(a) thin film deposition means for depositing a thin film of material over a substrate, said material being reversibly convertible at least twice between a first state and a second state, said means depositing said film in one of said states;

(b) converting means for converting selected areas of said film from one of said states to the other said state in a predetermined pattern;

(c) means for depositing at least one additional material onto at least a portion of the areas of said film corresponding to one of said states;

(d) means for forming a continuous backing layer over at least part of said additional material; and

(e) means for separating said backing layer and said additional material from said film, said backing layer and said additional material forming a first stamping master.

4,537,671

CATHODE POT OF AN ALUMINUM REDUCTION CELL

Max Zollinger, Wädenswil, and Raoul Jemec, Benglen, both of Switzerland, assignors to Swiss Aluminium Ltd., Chippis, Switzerland

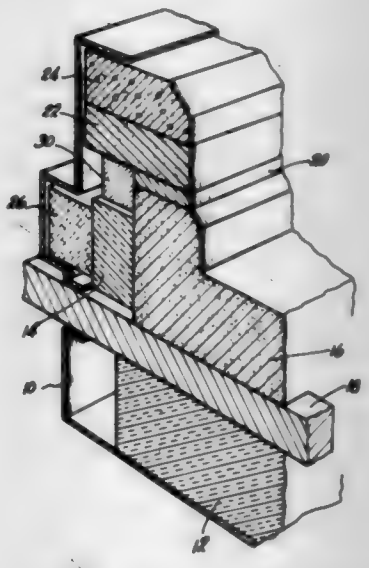
Filed Jul. 6, 1983, Ser. No. 511,266

Claims priority, application Switzerland, Jul. 12, 1982, 4249/82

Int. Cl.³ C25C *3/08, 17/00*; C25B *11/12*

U.S. Cl. 204—243 R **17 Claims**

1. A cathode pot of a fused salt reduction cell comprising an outer steel shell, a thermally insulating layer and an inner lining made of carbon, the improvement comprising a low shear strength electrolyte resistant layer which runs horizontally around the cell and exclusively arranged at the level of the electrolyte to which it is resistant for dividing the carbon lining into a lower part and an upper part such that the electric field in the cell runs through the lower part of said carbon lining thereby resulting in swelling of the lower part of said carbon lining to a greater degree than said upper part of the carbon lining wherein the resultant stresses due to the swelling are accommodated by the fracturing of said low shear strength elctrolyte resistant layer wherein said layer is formed of a material characterized by the ability to withstand temperatures



up to 1000° C. and a shear strength significantly lower than that of the carbon lining.

4,537,672

ELECTROLYTIC CELL

Colin Brereton, Middlewich, England, assignor to Imperial Chemical Industries, PLC, England

Filed Jan. 26, 1984, Ser. No. 574,245

Claims priority, application United Kingdom, Feb. 9, 1983, 8303586

Int. Cl.³ C25B *13/08, 9/00, 11/04*

U.S. Cl. 204—253 **9 Claims**



1. An electrolytic cell positioned in a vertical mode and comprising a plurality of anodes each having an active anode area and a plurality of cathodes each having an active cathode area, and a substantially hydraulically impermeable cation-exchange membrane and a gasket of an electrically insulating material positioned between each adjacent anode and cathode to form in the cell a plurality of separate anode and cathode compartments, characterised in that either

(a) the cation-exchange membrane is in contact with the anode at least around the periphery of the anode, is positioned on both sides of the anode, and is in the form of a film draped over the top of the anode, and in that the gasket is positioned between the membrane and the cathode and abuts onto that part of the membrane which is in contact with the periphery of the anode, or

(b) the cation-exchange membrane is in contact with the cathode at least around the periphery of the cathode, is

positioned on both sides of the cathode, and is in the form of a film draped over the top of the cathode, and in that the gasket is positioned between the membrane and the anode and abuts onto that part of the membrane which is in contact with the periphery of the cathode.

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ELECTROLYTIC CELL

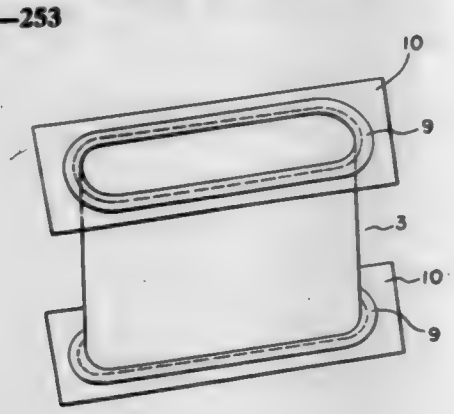
Tatsuro Asawa; Yasuo Sajima, and Junjiro Iwamoto, all of Yokohama, Japan, assignors to Asahi Glass Company Ltd., Tokyo

Filed Jul. 12, 1982, Ser. No. 397,177

Claims priority, application Japan, Jul. 14, 1981, 56-108840; Jul. 14, 1981, 56-108841; Jul. 21, 1981, 56-112973

Int. Cl.³ C25B *13/02*

U.S. Cl. 204—253 **9 Claims**



1. In an electrolytic cell comprising intercalated finger-shaped electrodes each disposed through a cation exchange membrane, the improvement comprising that said cation exchange membrane constitutes a cylinder or envelope enclosing a finger-shaped anode or cathode which has a flare formed at one end or each end of the cylinder or at the open end of the envelope, said flare having a width of from 10 to 15 mm and being joined with a flange to form a unitary cation exchange membrane-flange structure with liquid-tightly divides an anode compartment from a cathode compartment of said cell.

4,537,674

ELECTROLYTIC CELL ANODE

Stanford R. Ovshinsky, Bloomfield Hills; Krishna Sapru, Troy, and Gao Liang, Detroit, all of Mich., assignors to Energy Conversion Devices, Inc., Troy, Mich.

Filed Jul. 19, 1982, Ser. No. 399,878

Int. Cl.³ C25B *11/00*; C25C *15/00*

U.S. Cl. 204—290 R **20 Claims**

1. A multicomponent compositionally disordered catalytic material for use as an anode catalyst in an electrolytic cell comprising:

a host element having at least one transition element,

said host matrix having incorporated therein one or more modifier elements, said modifier element selected from a group consisting of Co, Ni, Sr, Li, K, In, Sn, C, Mn, Ru and Al, said modifier element modifying the local structural and chemical environments throughout the bulk of said material to provide the disorder and create an increased density of catalytically active sites for oxygen gas evolution in an electrolytic cell, said material having at least one amorphous phase, microcrystalline phase, polycrystalline phase lacking long-range compositional order, or any combination of these phases.

5. The catalytic material as defined in claim 1 wherein said catalytic material forms at least part of a cathode for an electrolytic cell.

4,537,675

UPGRADED SOLVENTS IN COAL LIQUEFACTION PROCESSES

Howard F. Silver, and Ronald L. Miller, both of Laramie, Wyo., assignors to In-Situ, Inc., Laramie, Wyo.

Filed May 13, 1982, Ser. No. 377,791

Int. Cl.³ C10G *1/00, 1/06*

U.S. Cl. 208—8 LE **15 Claims**

1. In a coal liquefaction process wherein a slurry of feed coal and a solvent are introduced into a coal liquefaction zone wherein coal dissolution and hydrogen transfer to the coal fragments formed in dissolution are accomplished by heating the slurry in the presence of molecular hydrogen, the improvement comprising using as a hydrogen donor material in the solvent, coal-derived, pyridine-soluble, bottoms consisting essentially of oils, asphaltenes and preasphaltenes boiling above about 800° F. to about 1000° F., containing no more than about 50 weight percent benzene-insoluble material, all of which bottoms have been hydrotreated in a hydrotreater under mild conditions sufficient to add to said bottoms a controlled amount of hydrogen in the range of from about 0.05 to about 2.0 weight percent.

4,537,676

REDUCING METAL CONTENT OF OIL FEEDS

Roby Bearden, and Gordon F. Stuntz, both of Baton Rouge, La., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Continuation-in-part of Ser. No. 221,844, Dec. 31, 1980, abandoned. This application Jan. 4, 1982, Ser. No. 336,785

Int. Cl.³ C10G *17/06, 29/10*

U.S. Cl. 208—251 R **16 Claims**

1. A method for reducing the metal contaminant concentration in distillate derived by processing a bottoms fraction from an atmospheric separation where the bottoms fraction contains metal contaminant, said method comprising:

A. passing the bottoms fraction into a contacting zone maintained at a temperature ranging between about 200° C. and about 450° C. and contacting the bottoms fraction therein with one or more metal devolatilization agents selected from the group consisting of vapor phase sulfur dioxide and precursors of vapor phase sulfur dioxide so that the concentration of sulfur dioxide in the contacting zone ranges from about 0.5 to about 5.0 wt.% of the bottoms fraction; and

B. passing the bottoms fraction from the contacting zone into a vacuum separation zone wherein the bottoms fraction containing the metal contaminant is separated into a distillate having a relatively low metal contaminant concentration and a bottoms having a relatively high metal contaminant concentration.

4,537,677

OIL EMULSIONS OF FLUOROSILICONE FLUIDS

Joseph W. Keil, Midland, Mich., assignor to Dow Corning Corporation, Midland, Mich.

Filed Nov. 5, 1984, Ser. No. 668,048

Int. Cl.³ C10M *1/18, 1/28, 1/30*

U.S. Cl. 208—370 **27 Claims**

1. An emulsion comprising, in combination:

(A) from 0.5 to 90 parts by weight of a fluorosilicone fluid having the average formula

$$R_2''R'SiO(RR''SiO)_xSiR_2''R'$$

wherein

R is a fluoroalkyl radical having the general formula

$$(C_mF_{2m+1})(CH_2CH_2)_y,$$

m having an average value of 1, 2, 3, or 4,

y having a value of 1, 2, or 3,

wherein in said average formula for the fluorosilicone fluid
x has a value of from 5 to 100,
R'' is a monovalent hydrocarbon radical, and
R' is selected from the group consisting of OH radicals, R'' radicals, and R radicals,

(B) from 0.1 to 25 parts by weight of a block copolymer selected from the group consisting of polydimethylsiloxane-polybutadiene block copolymers and polydimethylsiloxane-polybutadiene block copolymers in which the polybutadiene block has been wholly or partially hydrogenated; and

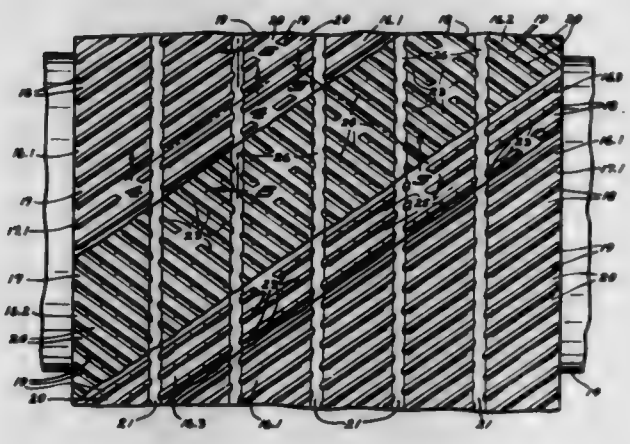
(C) from 9 to 89 parts by weight of mineral oil.

4,537,678

ROTARY BIOLOGICAL CONTACTOR

Christopher P. Thissen, Austin, Minn., assignor to Walker Process Corporation, Aurora, Ill.

Filed Oct. 4, 1984, Ser. No. 657,507
Int. Cl.[3] C02F *3/08*
U.S. Cl. 210—150 19 Claims



1. A rotary biological contactor to be partially immersed in a tank of waste water being processed, comprising

mounting means including a rigid central core to accommodate locating the contactor in the tank, and

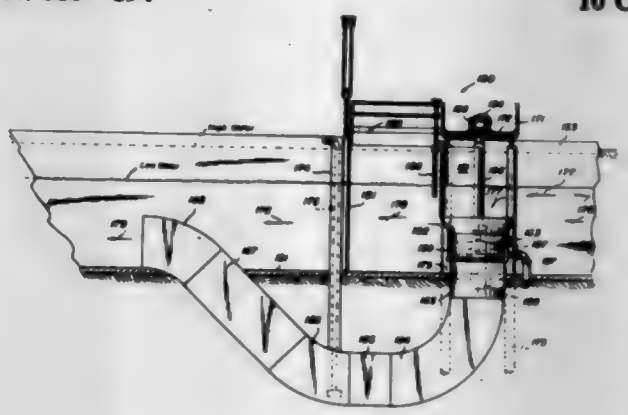
a cylindrical waste water treating module upon which biological slimes and biomass are established, the module being affixed on the central core and including a multiplicity of circumferential turns of stiff sheet plastic one within the other and having substantially aligned edges defining the ends of the module, the sheet plastic in the turns having a multiplicity of elongate undulations forming elongate ridges and valleys extending obliquely of said edges, adjacent turns of the sheet plastic having the elongate undulations extending transversely of each other, the ridges in the sheet plastic having crests welded to the next adjacent turn of the sheet plastic and preventing deformation of the module along and around the rotation axis and maintaining uniform and constant spacing in a radial direction, the undulations forming a multiplicity of intersecting flow channels extending to the ends of the module for establishing numerous diverse routes for flow of water and air and alternate filling and purging of the channels in each revolution in the tank, the alternate filling and purging of the flow channels causing mixing, turbulence, and changes of velocity of the water and continued shearing of excess biomass from the sheet plastic.

4,537,679

CONSERVATION OF MOMENTUM IN A BARRIER OXIDATION DITCH

John H. Reid, 7 Stansbury Ct., Fredericksburg, Va. 22401

Division of Ser. No. 282,592, Jul. 13, 1981, which is a division of Ser. No. 28,383, Apr. 9, 1979, Pat. No. 4,278,547, which is a continuation-in-part of Ser. No. 848,705, Nov. 4, 1977, abandoned, which is a continuation-in-part of Ser. No. 649,995, Jan. 19, 1976, abandoned. This application Sep. 30, 1982, Ser. No. 431,302
Int. Cl.[3] C02F *3/20*
U.S. Cl. 210—194 10 Claims



1. A mixing-control apparatus which comprises, in combination with an endless channel of a closed-circuit oxidation ditch:

(a) a barrier, sealably attached to the bottom and sides of said channel, for dividing said channel into an intake channel portion and a discharge channel portion, said barrier having at least one aperture therethrough for providing substantially translational fluid flow communication between said intake channel and said discharge channel, thereby conserving momentum of fluid flowing is said channel by enabling induced fluid-flow therebetween;

(b) means for adjustably opening and closing said at least one aperture; and

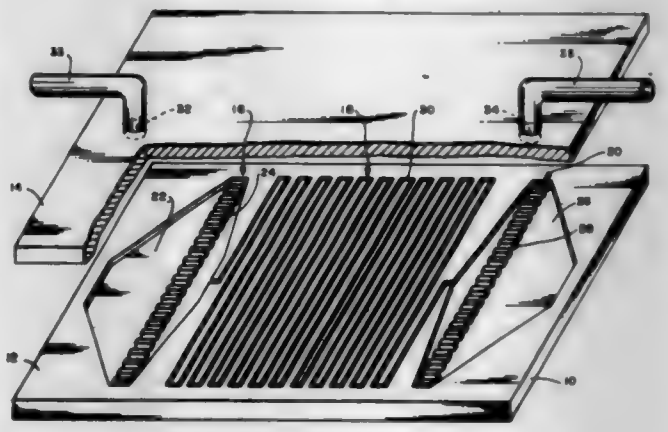
(c) at least one pump assembly which comprises a motor having a shaft, an impeller attached to said shaft, and a discharge duct within which said impeller operates and which has an intake end and a discharge end, said intake end being within said intake channel portion and said discharge end being within said discharge channel portion thereby enabling a pumped fluid-flow therebetween.

4,537,680

INTEGRAL FLUID FILTER AND CAPILLARY

Phillip W. Barth, Palo Alto, Calif., assignor to The Board of Trustees of the Leland Stanford Junior University, Stanford, Calif.

Filed Jun. 4, 1984, Ser. No. 616,658
Int. Cl.[3] B01D *31/00*
U.S. Cl. 210—316 6 Claims



1. An integral filter and capillary comprising

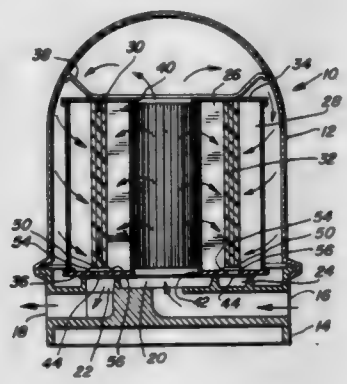
a substrate having a major surface,
a first recessed region on said surface and in said substrate including a first plurality of generally parallel grooves,
a second groove on said surface and in said substrate connected with said first recessed region adjacent to one end of said first plurality of grooves, said second groove having cross-sectional dimensions greater than the cross-sectional dimensions of said first plurality of grooves,
a cover affixed to said major surface and covering said first recessed region and said second groove,
a fluid input to said first recessed region adjacent to one end of said first plurality of grooves opposite from said second groove, and
a fluid output connected to said second groove.

4,537,681

CARTRIDGE FILTER END CAP

George D. Argiropoulos, Lake Geneva, and Somchai Sahachaisere, Darien, both of Wis., assignors to Sta-Rite Industries, Inc., Milwaukee, Wis.

Filed Jul. 11, 1983, Ser. No. 512,223
Int. Cl.[3] B01D *27/06*
U.S. Cl. 210—317 4 Claims



1. A fluid filter assembly, comprising:
a housing including means defining an inlet and an outlet,
a fluid filter cartridge mounted in said housing, said cartridge including first and second end caps, first and second tubular filter media concentrically mounted between said first and second end caps, said first and second filter media spaced apart to define a gap therebetween,
said first end cap including means defining an outlet in fluid communication with said housing outlet, said outlet in said end cap being in alignment with said gap, and
a reinforcing member in said first end cap surrounding said outlet in said first end cap, said reinforcing member including first and second inclined ends, wherein said first end cap outlet is annular, said reinforcing member is annular and includes means defining a plurality of openings in fluid communication with said outlet in said first end cap, and radial rib members on said reinforcing member adjacent each said opening, a space defined between adjacent rib members, at least a portion of said first and second filter media located in said space.

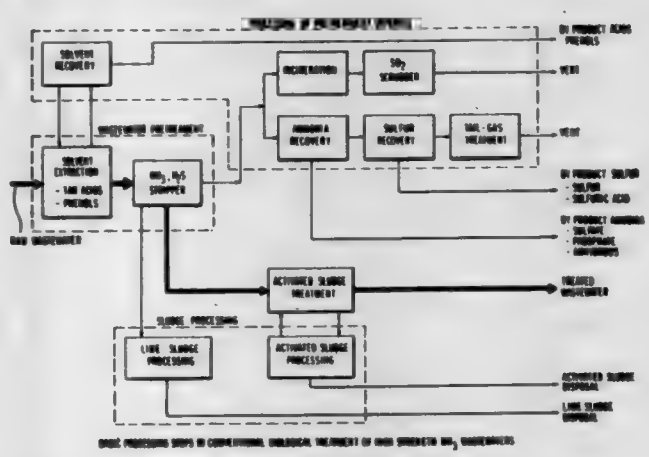
4,537,682

ACTIVATED SLUDGE WASTEWATER TREATING PROCESS

George M. Wong-Chong, Allison Park, Pa., assignor to Environmental Research & Technology, Concord, Mass.

Continuation-in-part of Ser. No. 344,165, Jan. 29, 1982,. This application Jan. 21, 1983, Ser. No. 460,090
Int. Cl.[3] C02F *3/12*
U.S. Cl. 210—611 128 Claims

1. An activated sludge process for treating wastewater containing ammonia as a contaminant and further other wastewater contaminants, if present, including cyanide, thiocyanate, sulfide and/or organic materials, to achieve substantially complete nitrificiation of said ammonia into nitrite and/or nitrate and substantially complete denitrification of said nitrite and/or nitrate into free nitrogen, said process comprising
microbially treating the wastewater in an activated sludge process in the presence of a microorganism population acclimated to the wastewater contaminants and their levels in the wastewater and including
nitrifying microorganisms capable of converting ammonia to nitrite,
optionally, nitrifying microorganisms capable of converting nitrite to nitrate, and
facultative microorganisms capable of denitrifying nitrite and/or nitrate by oxidizing organic material and converting nitrite and/or nitrate to free nitrogen,
under the following conditions:
(1) controlling the sludge wastage rate to the extent that, for the wastewater fed during the treatment and at the conditions at which the treatment is operated, the sludge wastage rate
(i) is low enough to provide and maintain a steady state population of microorganisms capable of converting ammonia to nitrite and/or nitrate and yet
(ii) is high enough to prevent buildup of inert solids in the sludge;
(2) controlling the hydraulic residence time of the wastewater in treatment such that the hydraulic residence time is
(i) long enough to produce a sludge concentration that can be water/solid separated at the sludge wastage rate of (1) above, and



(ii) long enough to achieve substantially full sludge performance;
(3) maintaining a dissolved oxygen level on a continuous or weighted average basis,
(i) sufficiently high that microbial conversion of ammonia to nitrite and/or nitrate occurs but
(ii) lower than the dissolved oxygen level at which microbial conversion of nitrite and/or nitrate to free nitrogen ceases to occur;
(4) mixing the sludge
(i) to the extent that the sludge mixing rate achieves utilization of sludge present during treatment so as to avoid causing a sludge growth rate which would result in exceeding the maximum allowable sludge wastage rate of (1) above, and
(ii) to the extent that the sludge mixing rate is large enough to reduce gradients in levels of bulk dissolved oxygen to a level consistent with the denitrification desired for the wastewater treatment, yet
(iii) to the extent that the sludge mixing rate is below the rate at which microbial cell rupture occurs, irreversible breakup of agglomerates of sludge occurs, and/or sludge/water settleability characteristics are not deteriorated;
(5) controlling the biological oxygen demand during treatment such that at least the stoichiometric amount of biological oxygen demand required to achieve denitrification by microbial conversion of nitrite and/or nitrate

to free nitrogen during treatment at a particular concentration of ammonia in the wastewater fed for treatment is present;

(6) controlling the pH of the treatment

(i) in a range in which the level of free ammonia inhibitory to microorganism activity during the treatment is avoided, and

(ii) in a range in which the level of free nitrous acid inhibitory to microorganism activity during treatment is avoided, yet

(iii) in a hospitable range for microorganism growth and effective waste treatment of waste in the wastewater; and

(7) controlling the temperature of the treatment

(i) in a range in which the level of free ammonia inhibitory to microorganism activity during the treatment is avoided, and

(ii) in a range in which the level of free nitrous acid inhibitory to microorganism activity during the treatment is avoided, yet

(iii) in a hospitable range for microorganism action on and effective treatment of the waste in the wastewater.

69. A process for producing an acclimated population of microorganisms for treating wastewater containing ammonia as a contaminant, and further other contaminants, if present, including cyanide, thiocyanate, sulfide and/or organic materials, to achieve substantially complete nitrification of said ammonia into nitrite and/or nitrate and substantially complete denitrification of said nitrite and/or nitrate into free nitrogen, said process comprising introducing the wastewater into an activated sludge process containing a microorganism population including

nitrifying microorganisms capable of converting ammonia to nitrite,

optionally, nitrifying microorganisms capable of converting nitrite to nitrate, and

facultative microorganisms capable of denitrifying nitrite and/or nitrate by oxidizing organic material and converting nitrite and/or nitrate to free nitrogen, and

allowing the nitrifying microorganisms capable of converting ammonia to nitrite, nitrifying microorganisms capable of converting nitrite to nitrate, if present, and facultative microorganisms, each having a different growth rate, to grow and become acclimated to the level of ammonia, and other contaminants if present, by feeding the wastewater to the activated sludge system and microorganisms population at a rate sufficiently high to a stimulate microbial cell division but at a rate insufficiently high that an inhibitory level of ammonia, and other contaminants if present, in the wastewater is not reached, thereby causing the nitrifying microorganisms capable of converting ammonia to nitrite, nitrifying microorganisms capable of converting ammonia to nitrite to nitrate, if present, and facultative microorganisms to grow relatively such that the microorganism population becomes acclimated to the wastewater contaminants and their levels in the wastewater.

4,537,683

TRIHALOMETHANE PRECURSOR REMOVAL USING ION EXCHANGE EMULSIONS

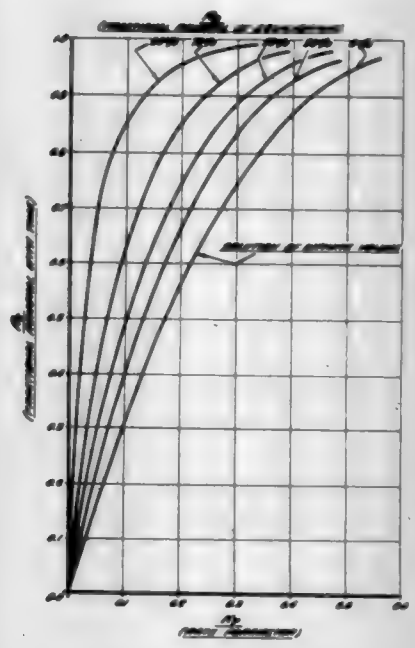
Eric G. Isacoff, Richboro, and James W. Neely, Dresher, both of Pa., assignors to Rohm and Haas Company, Philadelphia, Pa.

Continuation-in-part of Ser. No. 482,684, Apr. 6, 1983, abandoned, which is a continuation-in-part of Ser. No. 344,584, Feb. 1, 1982, abandoned. This application Nov. 18, 1983, Ser. No. 553,225

Int. Cl.³ C02F *1/42*

U.S. Cl. 210—667 **15 Claims**

1. A process for removing trihalomethane precursors from water containing said precursors which comprises treating the water, at a rate of from about 1 to about 25 milligrams of resin per liter of water, with a fine-particle-size anion exchange resin having an equilibrium parameter of $K_e=6\times10^5$ cm³/g or greater, a kinetic parameter of $K_k=6$ sec^{-1} or greater, and a



combined value of $K_e/10^5+K_k$ of about 13 to about 22, and subsequently removing the resin from the water.

4,537,684

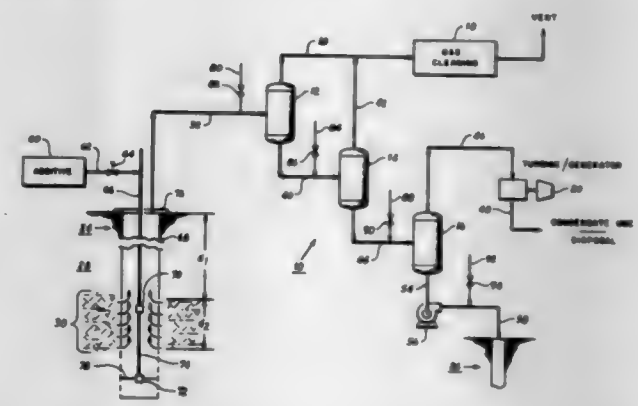
CONTROL OF METAL-CONTAINING SCALE DEPOSITION FROM HIGH TEMPERATURE BRINE

Darrell L. Gallup, Ontario, and John W. Jost, Santa Ana, both of Calif., assignors to Union Oil Company of California, Los Angeles, Calif.

Filed Dec. 29, 1983, Ser. No. 566,484

Int. Cl.³ C02F *5/08*

U.S. Cl. 210—696 **21 Claims**



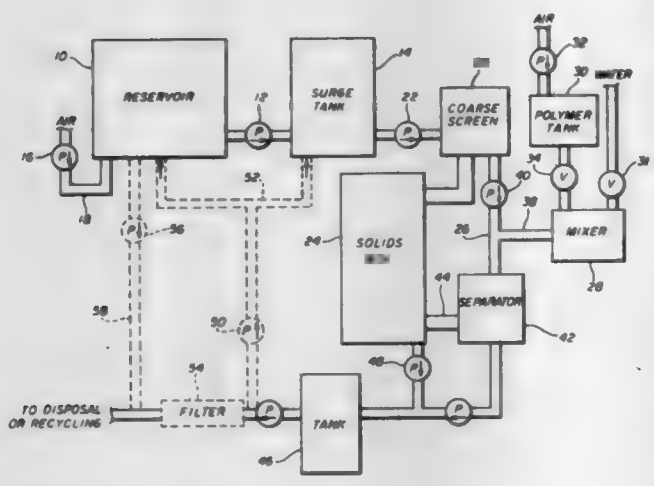
16. A method for inhibiting the precipitation of iron silicate scales from a hot, pressurized stream of geothermal brine containing dissolved iron and silicon components and further containing trivalent iron or manganese cations, said method comprising (A) adding to the brine stream before pressure reduction (1) an amount of a water-soluble acid sufficient to lower the pH of the stream by between about 0.1 and 0.5 pH unit to form a pH modified stream, and (2) a greater than stoichiometric amount of a reducing agent compatible with the pH modified stream for reducing the trivalent cations of iron and manganese contained therein to divalent ions so as to decrease precipitation of iron silicate containing scales and to dissolve any previously formed iron silicate containing scales while inhibiting corrosion to liquid handling equipment that confines and contains the stream, and (B) subjecting said stream to sudden pressure reduction so that at least a portion of the stream flashes to produce steam.

4,537,685

METHOD FOR SEPARATING INTERMIXED SOLIDS AND LIQUIDS

Alvin B. Kennedy, III, Alvin; Joseph S. Fontaine, West Columbia; Alfred J. Kennard, Houston, and J. Bruce Morrison, Friendswood, all of Tex., assignors to Methods Engineering, Inc., Angleton, Tex.

Filed Feb. 1, 1983, Ser. No. 463,006
Int. Cl.[3] C02F *1/56*
U.S. Cl. 210—709 3 Claims



1. A continuous method useful in the separation of intermixed solids and liquid phase components of wastes so as to facilitate the recycling or disposal thereof, comprising the steps of:

(a) pretesting a sample of the waste designated for treatment so as to determine the character of solid waste matter and content of suspended and/or settled waste solids,

(b) selecting a polyelectrolyte compound calculated to react most effectively with the tested waste, said polyelectrolyte compound being a high molecular weight polymer emulsion selected from the group consisting of cationic, and anionic and non-ionic polymers,

(c) calculating a dosage rate determined to overflocculate the waste matter and to achieve optimal efficiency from the polyelectrolyte-waste matter reaction so as to achieve solid waste particles which will freely dewater, which are larger than 20 mesh, and which exhibit an appropriate durability factor to allow separation of the solid waste particles from the liquid phase,

(d) air sparging the waste source to promote consistency and fluidity so as to minimize adjustment of the dosage rate of polyelectrolyte compounds to waste matter,

(e) continuously diluting the polyelectrolyte compound with water,

(f) introducing the diluted polyelectrolyte compound into the waste matter without mechanical agitation at a varying rate so as to achieve over-flocculation of the suspended and/or settled waste solids,

(g) separating the over-flocculated solid waste particles from the treated liquid waste with a vibratory shaker screen,

(h) recycling all of the treated liquid for further use as a pre-treatment for untreated waste thereby reducing the overall polyelectrolyte requirement for continued treatment, and elminating the need to remove the polyelectrolyte from the liquid.

4,537,686

CYANIDE REMOVAL FROM AQUEOUS STREAMS

Gyula J. Borbely, Copper Cliff; Eric A. Devuyst, Toronto; Victor A. Ettel, Mississauga; Marcel A. Mosoiu, Toronto, and Konstantin J. Schitka, Sudbury, all of Canada, assignors to INCO Limited, Toronto, Canada

Filed Mar. 8, 1984, Ser. No. 587,611
Int. Cl.[3] C02F *1/58*
U.S. Cl. 210—713 21 Claims

1. The method for treating aqueous effluent to reduce the total cyanide content of said aqueous effluent solution which comprises treating said effluent solution with an oxygen-containing gas and a reagent from the group consisting of sulfur dioxide, an alkali or alkaline earth metal sulfite or bisulfite, at a pH of about 5 to about 12 in the presence of a copper catalyst.

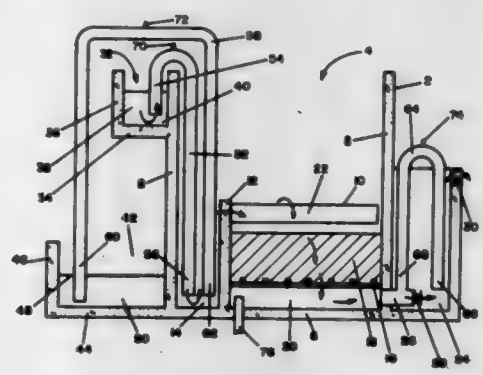
19. The method for treating effluent solution and tailings from gold mining operations, said operations involving the leaching of comminuted gold ore with aqueous cyanide and recovery of soluble gold from said aqueous cyanide solution comprising treating essentially gold-barren aqueous effluent and tailings to reduce the total cyanide content thereof with an oxygen-containing gas and a reagent from the group consisting of sulfur dioxide and an alkaline earth or alkali metal sulfite or bisulfite at a pH of about 5 to about 12 in the presence of a copper catalyst at ambient temperature for said effluent and tailings and discharging said effluent and tailings to a disposal site without interposing any gold recovery operation between said treatment and said disposal site.

4,537,687

OPEN GRAVITY BACKWASH FILTER AND METHOD

Louis H. Piper, Richmond, Va., assignor to Infilco Degremont Inc., Richmond, Va.

Filed Jun. 1, 1984, Ser. No. 616,171
Int. Cl.[3] B01D *23/24*
U.S. Cl. 210—793 8 Claims



1. An open gravity backwash filter comprising:

an filter basin defined by a first floor and an enclosure wall that extends vertically upwardly from said floor,

a filter compartment located within said filter basin defined along one side by a first vertical partition of less height than said wall and on the remaining sides by at least some of said enclosure wall of said filter basin,

a gullet located within said filter basin juxtaposed to said filter compartment defined along one side by said vertical partition and on the remaining sides by at least some of said enclosure wall of said filter basin,

a filter bed of particulate material supported in said filter compartment above said first floor on a perforate horizontal web,

a drainage space between said first floor and said horizontal web,

distribution means into said filter compartment from said gullet to distribute liquid to said filter compartment from said gullet,

an effluent channel juxtaposed to said filter basin,

a conduit connecting said drainage space to said effluent channel for flow of liquid between them,

a weir in said effluent channel having a vertical height

greater than the height of said distribution means and less than the height of said enclosure wall,

an influent channel juxtaposed to said filter basin defined by a second floor and sidewalls,

a vertical transverse partition in said influent channel of less height than said sidewalls of said influent channel creating in said influent channel an inlet water seal chamber,

a waste channel juxtaposed to said filter basin defined by a third floor and sidewalls,

a vertical overflow baffle in said waste channel that creates in said waste channel an exit water seal chamber,

a first siphon that extends above the height of said enclosure wall of said filter basin, one end of said first siphon extending into said inlet water seal chamber and its other end extending into said gullet,

a second siphon that extends above the height of said enclosure wall of said filter basin, one end of said second siphon extending into said exit water seal chamber and its other end extending into said gullet,

a third siphon that extends above the height of said weir, one end of said third siphon extending into said effluent channel and its other end being connected for flow of liquid from it into said drainage space,

ports in each of said siphons at approximately the highest point of each siphon by which the siphons may be primed by application of vacuum to said ports or deactivated by opening of said ports.

8. In a method of removing suspended material from a aqueous suspension thereof by flowing in a filter mode said suspension from a gullet on to and through a filter bed of particulate material contained in a filter chamber to produce filtered effluent and in a backwash mode regeneration of said bed by backwashing said bed thereby producing waste effluent that is passed to a waste channel, the improvement which comprises:

flowing said filtered effluent in said filter mode into an effulent channel,

controlling the height of said filtered effluent in said effluent channel so that it is higher at the completion of said filter mode than the top of said filter bed,

providing aqueous suspension to be filtered via an influent channel at a level above the top of said filter bed,

siphoning during said filter mode aqueous suspension from said influent channel into said gullet,

siphoning during said backwash mode filtered effluent from said effluent channel into said filter chamber beneath said filter bed, and

siphoning during said backwash mode waste effluent from said gullet into said waste channel.

4,537,688

LOW AND HIGH TEMPERATURE DRILLING FLUIDS BASED ON SULFONATED TERPOLYMER IONOMERS

Dennis G. Peiffer, East Brunswick; Robert D. Lundberg, Bridgewater, both of N.J., and Kenneth W. Pober, Houston, Tex., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Nov. 2, 1983, Ser. No. 547,906
Int. Cl.³ C09K *7/06*
U.S. Cl. 252—8.5 M **11 Claims**

1. An oil-based drilling mud which comprises:

(a) an hydrocarbon liquid substantially immiscible with water;

(b) about 1 to about 10 parts by weight of water per 100 parts by weight of the hydrocarbon liquid;

(c) about 20 to about 50 lb/bbl. of at least one emulsifier;

(d) weighting material necessary to achieve the desired density; and

(e) about 0.25 to about 6.0 lb/bbl. of a neutralized sulfonated thermoplastic terpolymer having an $\overline{M}n$ as measured by GPC of about 5,000 to about 200,000, said neutralized sulfonated thermoplastic polymer having about 5 to about 100 meq. of sulfonate groups per 100 grams of the neutralized sulfonated thermoplastic terpolymer, wherein said sulfonated thermoplastic terpolymer is a terpolymer of t-butyl-styrene/sodium styrene sulfonate/styrene and is prepared by the free radical emulsion terpolymerization of said t-butyl styrene,styrene and sodium styrene sulfonate.

4,537,689

ORAL LUBRICANT FOR ATHLETIC MOUTH PROTECTOR

Robert M. Morrow; William A. Kuebker, both of San Antonio, and James W. McGinity, Austin, all of Tex., assignors to The Board of Regents, University of Texas System, Austin, Tex.

Filed Dec. 19, 1983, Ser. No. 563,239
Int. Cl.³ C10M *5/00, 1/06*
U.S. Cl. 252—11 **14 Claims**

1. A method for reducing the discomfort associated with the wearing of mouth protectors during a period of physical activity comprising:

applying to a mouth protector a composition consisting essentially of a lubricating agent, a thickening agent, a pharmaceutically suitable sweetner, a pharmaceutically suitable flavoring agent, a preservative, and water; and

thereafter inserting said mouth protector into the oral cavity.

4,537,690

AQUEOUS METALWORKING COMPOSITION CONTAINING 2-HYDROXYETHYL-(3-CHLORO-2-HYDROXYPROPYL)SULFIDE

Gary D. Macdonell; Merlin R. Lindstrom; Bernard A. Baldwin; Rector P. Louthan, and Alexander D. Schuettenberg, all of c/o Ste. 1107, 1825 K St. N.W., Washington, D.C. 20006, assignors to Phillips Petroleum Co., Bartlesville, Okla.

Filed Aug. 17, 1984, Ser. No. 641,652
Int. Cl.³ C10M *3/24, 3/32*
U.S. Cl. 252—48.4 **8 Claims**

1. A metalworking composition comprising an extreme pressure effective amount of 2-hydroxyethyl-(3-chloro-2-hydroxypropyl)sulfide with an effective amount of (1) lubricity additive, (2) pH adjusting compound, (3) rust inhibitor and (4) biocide in an aqueous medium.

4,537,691

SILICONE-BASED WORKING FLUID COMPOSITION

Shigeru Mori, Gunma; Yoshiaki Kudo, Tokyo, and Satoshi Kuwata, Gunma, all of Japan, assignors to Shin-Etsu Chemical Co. Ltd., Tokyo, Japan

Filed Nov. 2, 1984, Ser. No. 667,535
Claims priority, application Japan, Nov. 14, 1983, 58-213474
Int. Cl.³ C10M *3/46*
U.S. Cl. 252—49.6 **3 Claims**

1. A silicone-based working fluid composition which comprises:

(A) 100 parts by weight of a diorganopolysiloxane or a mixture of diorganopolysiloxanes each represented by the general formula

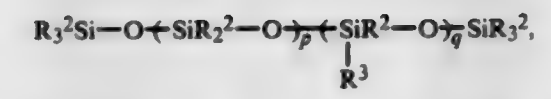
$$R^1—SiR^2_2-O)_mSiR^2_2-R^1,$$

in which each R^1 is trihydrocarbylsiloxy group or a hydroxy group independently from the other, R^2 is an alkyl group or a phenyl group and m is a positive integer in the range from 20 to 2000, the groups denoted by R^1 in the overall component (A) being a combination of trihydrocarbylsiloxy groups and hydroxy groups in such a molar proportion of the former to the latter in the range from 95/5 to 10/90, and

(B) from 0.01 to 5 parts by weight of an organopolysiloxane represented by the general formula

$$R^3—SiR^2_2-O)_nSiR^2-R^3$$

or



in which R^2 has the same meaning as defined above, R^3 is an imino-substituted phenoxy group selected from the class consisting of 4-anilinophenoxy group, 4-(4-anilino)anilinophenoxy group, 4-(α-naphthylamino)phenoxy group and 4-(β-naphthylamino)phenoxy group, n is a positive integer in the range from 1 to 50, q is a positive integer in the range from 1 to 10 and p is zero or a positive integer with the proviso that p+q is in the range from 1 to 48.

4,537,692

ETHERDIAMINE BORATES AND LUBRICANTS CONTAINING SAME

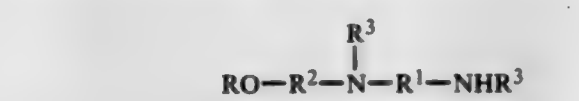
Andrew G. Horodysky, Cherry Hill, and Richard S. Herd, Woodbury, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 535,133, Sep. 23, 1983,. This application Aug. 31, 1984, Ser. No. 646,199

Int. Cl.³ C10M *1/54, 1/10*

U.S. Cl. 252—49.6 **15 Claims**

1. A lubricant composition comprising a major proportion of an oil lubricating viscosity and a minor antioxidant or antifriction amount of a product of reaction made by reacting a N-hydroxcarbyloxyhydrocarbyleneamine of the formula



wherein R is a hydrocarbyl group containing 6 to 30 carbon atoms, R^1 and R^2 are hydrocarbylene groups containing 2 to 3 carbon atoms and R^3 is hydrogen or a C_1 to C_5 hydrocarbyl group with a boron compound.

4,537,693

LUBRICATING OIL COMPOSITIONS CONTAINING METHYLOL POLYETHER AMINO ETHANES

Curtis B. Campbell, Rodeo, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed May 31, 1983, Ser. No. 499,132

Int. Cl.³ C20M *1/32*

U.S. Cl. 252—51.5 R **8 Claims**

1. A lubricating oil composition comprising a major portion of oil of lubricating viscosity, and an amount sufficient to provide dispersancy of a hydrocarbyl methylol polyoxyalkylene amino ethane of molecular weight from about 300 to about 2500; wherein said hydrocarbyl group contains from 5 to about 30 carbon atoms, said polyoxyalkylene moiety comprises 1 to 30 oxyalkylene units selected from oxyalkylene units having from 2 to 4 carbon atoms, said ethane moiety is a two carbon chain, or a two carbon chain substituted with one or two lower alkyl units of up to 5 carbon atoms each with the proviso that the alkyl units contain a different number of carbon atoms as those extending from the oxyalkylene units of the polyoxyalkylene moiety and said amino moiety is a polyamine which comprises from 2 to about 12 amine nitrogen atoms and from about 2 to 40 carbon atoms.

4,537,694

DIAMINE CARBOXYLATES AND LUBRICANT COMPOSITIONS CONTAINING SAME

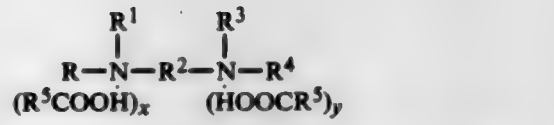
Andrew G. Horodysky, Cherry Hill, N.J., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Sep. 23, 1983, Ser. No. 535,140

Int. Cl.³ C10M *1/32*

U.S. Cl. 252—51.5 A **25 Claims**

1. A compound of the formula



wherein R, R^1, R^3 and R^4 with the N groups making up a diamino group are hydrogen or a C_6 to C_{20} hydrocarbyl group, at least one of R and R^1 being a hydrocarbyl group, R^2 is a C_2 to C_4 hydrocarbylene group, R^5 is a component of at least one acid group and is a C_6 to C_{20} hydrocarbyl group, x is 0 or 1 and y is 0 to 1, at least one of x and y being 1.

4,537,695

THERMAL ENERGY STORAGE COMPOSITIONS

Malcolm Hawe, 3 Broombank, Birkby, Huddersfield, West Yorkshire; David Marshall, 25 Park Dr., North Mirfield, West Yorkshire, and John R. Walker, 1 Salisbury Pl., Hipperholme, Halifax, West Yorkshire, all of England

Division of Ser. No. 465,379, Feb. 10, 1983, Pat. No. 4,470,917. This application Jun. 18, 1984, Ser. No. 621,774

Claims priority, application United Kingdom, Feb. 23, 1982, 8205280; Feb. 23, 1982, 8205281; Feb. 23, 1982, 8205282

Int. Cl.³ C09K *3/18*

U.S. Cl. 252—70 **10 Claims**

1. A thermal energy storage composition comprising a thermal energy storage hydrate material that includes polyvalent metal ions and that is held in a thermally conducting matrix of cationic polymeric material that is water absorbent.

4,537,696

HYDRAULIC FLUIDS BASED ON TWO CENTISTOKE SYNTHETIC HYDROCARBONS

Bruce J. Beimesch, Crescent Springs, Ky., assignor to National Distillers and Chemical Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 419,894, Sep. 20, 1982, abandoned. This application Sep. 30, 1982, Ser. No. 537,772

Int. Cl.³ C10M *3/12*; C07C *2/74*

U.S. Cl. 252—75 **5 Claims**

1. A hydraulic fluid characterized by having a minimum viscosity of 5.5 centistokes at 210 °F., a maximum viscosity of 1400 centistokes at −40° F. and viscosity index of 230 or above and comprised of:

(a) 70 to 87 percent by weight of a synthetic hydrocarbon having a 210° F. viscosity of 1.6 to 2.2 centistokes and obtained from the oligomerization of 1-decene or an alpha-olefin mixture containing a major proportion of 1-decene;

(b) 12 to 30 percent by weight of a polymethacrylate viscosity index improver wherein the polymer has a weight average molecular weight of 20,000 to 70,000; and

(c) 0.25 to 3.0 percent by weight of a zinc-based universal/-multifunctional additive package which contains 3–8 percent zinc, 2.5–6 percent phosphorous and 5–14 percent sulphur.

4,537,697

METHOD OF ENHANCING SOLUBILITY OF HALOGENATED HYDANTOINS

Theodore A. Girard, Williamsport, Pa., assignor to Glyco, Inc., Norwalk, Conn.

Filed Dec. 16, 1983, Ser. No. 562,088

Int. Cl.³ C11D *7/54, 17/00*

U.S. Cl. 252—90 **23 Claims**

17. A method of increasing the rate of solubility of a halogenated hydantoin in an aqueous solution, which comprises adding to said solution a halogenated hydantoin and a solubility agent selected from the group consisting of magnesium oxide, barium hydroxide, and mixtures thereof, in an amount sufficient to increase the rate of solubility of the halogenated hydantoin in the aqueous solution.

4,537,698

LIQUID CRYSTALLINE PIPERIDINE DERIVATIVES

Wolfgang Sucrow; Wolfgang Schatull, both of Paderborn, and Peter Fuss, Mühltal-Traisa, all of Fed. Rep. of Germany, assignors to Merck Patent Gesellschaft mit beschränkter Haftung, Darmstadt, Fed. Rep. of Germany

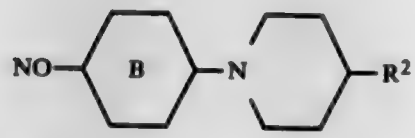
Filed May 31, 1983, Ser. No. 499,685

Claims priority, application Fed. Rep. of Germany, May 28, 1982, 3220155

Int. Cl.[3] C09K *3/34;* G02F *1/13;* C07D *211/08, 211/62, 211/38, 211/20, 211/14*

U.S. Cl. 252—299.61 10 Claims

1. A liquid crystalline dielectric material useful in electro-optical display elements and comprising at least two liquid crystalline components, wherein at least one component is a piperidine derivative of the formula



wherein

R^2 is alkyl or alkoxy each of 1 to 10 carbon atoms, F, CL or Br or an acid addition salt thereof.

4,537,699

PROCESS FOR IMPROVING THE RHEOLOGICAL PROPERTIES OF A SUSPENSION OF PRECIPITATED SILICA

Jean-Noel Jas, Fontaine-sur-Saone, France, assignor to Rhone-Poulenc Specialites Chimiques "Les Miroirs", France

Filed Nov. 23, 1983, Ser. No. 554,640

Claims priority, application France, Nov. 24, 1982, 82 19646

Int. Cl.[3] B01J *13/00;* C01B *33/14, 33/18, 33/141*

U.S. Cl. 252—313.2 38 Claims

1. A process for making a sprayable suspension of precipitated silica comprising the steps of:

a. providing an aqueous suspension of precipitated silica having a solids content of at least about 15% by weight; and

b. adding to the aqueous suspension an aluminum compound to produce a sprayable suspension having a pH value greater than 3.5.

4,537,700

ORGANIC GELS

Robert J. Purinton, Jr., Tulsa County, Okla., assignor to The Dow Chemical Company, Midland, Mich.

Division of Ser. No. 338,928, Jan. 12, 1982, Pat. No. 4,473,408. This application Mar. 26, 1984, Ser. No. 593,074

Int. Cl.[3] B01J *13/00;* B08B *9/04*

U.S. Cl. 252—315.1 12 Claims

1. An organic gel comprising: (a) a nonpolar, liquid, organic solvent, and (b) a gelling amount of a gelling agent mixture of (1) a phosphate ester component which is composed predominantly of an ethyl oleyl phosphate and (2) an alkali metal aluminate.

4,537,701

DEMULSIFIERS FOR BREAKING CRUDE-OIL EMULSIONS AND THEIR USE

Knut Oppenlaender; Rolf Fikentscher; Egon Buettner; Wilhelmus Slotman; Erich Schwartz, all of Ludwigshafen, and Rudolf Mohr, Lampertheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Continuation of Ser. No. 899,331, Apr. 24, 1978, abandoned. This application Dec. 11, 1981, Ser. No. 330,027

Claims priority, application Fed. Rep. of Germany, May 4, 1977, 2719978

Int. Cl.[3] B01D *17/04;* C09K *3/00*

U.S. Cl. 252—344 8 Claims

1. A petroleum demulsifier which contains, as the active ingredients:

(A) from 25 to 75 percent by weight, based on the total active ingredients, of an oxyethylation product or a mixed oxyethylation-oxypropylation product of an isoalkylphenol-formaldehyde resin which contains per molecule from 3 to 30 benzene nuclei each carrying an oxyalkylate group comprising from 4 to 50 alkylene oxide units and, in the p-position to the oxyalkylate group, an isoalkyl radical of 8 to 12 carbon atoms, and

(B) from 75 to 25 percent by weight, based on the total active ingredients, of one or more polyalkylenepolyamines having at least 50 and up to 3,000 recurring ethylene imine or propylene imine units per molecule and in which each nitrogen is completely oxyalkylated with from 10 to 200 alkylene oxide units.

5. A process for breaking crude oil emulsions, in which from 1 to 1,000 ppm, based on the weight of the emulsion to be broken, of a petroleum demulsifier is added to the emulsions, at from 20° to 80° C., which demulsifier contains, as the active ingredients,

(A) from 25 to 75 percent by weight, based on the total active ingredients, of an oxyethylation product or a mixed oxyethylation-oxypropylation product of an isoalkylphenol-formaldehyde resin which contains per molecule from 3 to 30 benzene nuclei each carrying an oxyalkylate group comprising from 4 to 50 alkylene oxide units and, in the p-position to the oxyalkylate group, an isoalkyl radical of 8 to 12 carbon atoms, and

(B) from 75 to 25 percent by weight, based on the total active ingredients, of one or more polyalkylenepolyamines having at least 50 and up to 3,000 recurring ethylene imine or propylene imine units per molecule and in which each nitrogen is completely oxyalkylated with from 10 to 200 alkylene oxide units.

4,537,702

PERFUME AND FLAVORING COMPOSITIONS, PERFUMED ARTICLES AND MATERIALS, AND FLAVORED FOOD PRODUCTS CONTAINING AN OXASPIRODECADIENE DERIVATIVE AS THE ESSENTIAL COMPOUND, AS WELL AS THE OXASPIRO[4.5]DECADIENE DERIVATIVE PER SE

Antonius J. A. van der Weerdt, Huizen, and Harrie Renes, Blaricum, both of Netherlands, assignors to Naarden International N.V., Naarden-Bussum, Netherlands

Filed May 10, 1983, Ser. No. 493,412

Claims priority, application Netherlands, May 13, 1982, 8201991

Int. Cl.[3] A61K *7/46;* C07D *307/94*

U.S. Cl. 252—522 R 4 Claims

1. Perfume and flavoring compositions, perfumed articles and materials, and flavoured food products containing an oxa-spirodecadiene derivative as the basic compound, characterized by a content of 10-isopropyl-2,7-dimethyl-1-oxaspiro[4.5]deca-3,6-diene as the oxa-spirodecadiene derivative.

4. 10-Isopropyl-2,7-dimethyl-1-oxaspiro[4.5]deca-3,6-diene.

4,537,703

BOROSILICATE GLASS COMPOSITIONS

Jacob Hormadaly, Wilmington, Del., assignor to E. I. Du Pont De Nemours and Company, Wilmington, Del.

Filed Dec. 19, 1983, Ser. No. 562,966
Int. Cl.[3] C03C *3/08, 3/10;* H01B *1/06*
U.S. Cl. 252—518 5 Claims

1. A glass which is suitable for use as a binder in high end resistors, which is substantially free of Bi, Cd and Pb and on a molar basis consists essentially of:

A. 50–85% of glass forming materials consisting of 25–50% B_2O_3, 15–40% SiO_2, and 0.1–5% SnO_2, and

B. 50–15% of glass modifying materials consisting of 10–30% BaO, 0–12% MgO and 1–10% NiO, providing that

(1) the mole ratio $B_2O_3/SiO_2 \geqq 0.8$; and

(2) $\Sigma(B_2O_3+SiO_2) \geqq 50$.

4. A printable thick film resistor composition comprising a dispersion in organic medium of an admixture of finely divided particles of (a) 95–55% wt. tin oxide pyrochlore-based material and (b) 5–45% wt. of the glass of claim 1 or the composition of claim 3.

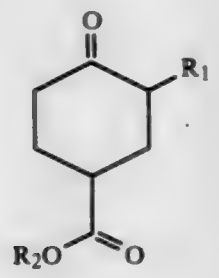
4,537,704

ALKYL SUBSTITUTED AND UNSUBSTITUTED PARA-CARBOALKOXY CYCLOHEXANONES AND ORGANOLEPTIC USES THEREOF

Mark A. Sprecker, Sea Bright; Wilhelmus J. Wiegers, Red Bank; Robert P. Belko, Woodbridge, and Richard M. Boden, Ocean, all of N.J., assignors to International Flavors & Fragrances Inc., New York, N.Y.

Filed Dec. 21, 1983, Ser. No. 563,801
Int. Cl.[3] C11B *9/00*
U.S. Cl. 252—522 R 5 Claims

1. A process for augmenting or enhancing the aroma of a consumable material selected from the group consisting of perfume compositions, colognes and perfumed articles comprising the step of adding to said consumable material an aroma augmenting or enhancing quantity of at least one compound defined according to the structure:



wherein R_1 represents C_5 or C_6 alkyl and R_2 represents methyl or ethyl.

4,537,705

AQUEOUS ALKALINE POLYAMINE PAINT STRIPPING COMPOSITIONS

Dennis F. Mahoney, Hastings, and William V. Block, Apple Valley, both of Minn., assignors to Economics Laboratory, Inc., St. Paul, Minn.

Filed Apr. 25, 1984, Ser. No. 603,679
Int. Cl.[3] C11D *7/14, 7/52*
U.S. Cl. 252—529 34 Claims

1. An alkaline paint remover composition having reduced toxicity and improved heat stability which comprises:

an aqueous solution comprising about 2–40% of an alkali metal hydroxide and about 0.2–10% of a polyalkylene polyamine of the formula:

$$(R_1)(R_2)NXN(R_1)(R_2)$$

wherein R_1 and R_2 are selected from the group consisting of hydrogen, (lower)alkyl and $[CH_2CH(Y)O]_mH$, wherein Y is hydrogen or (lower)alkyl and m is about 1–4; and X is polyoxy(lower)alkylene.

4,537,706

LIQUID DETERGENTS CONTAINING BORIC ACID TO STABILIZE ENZYMES

Roland G. Severson, Jr., Mason, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 14, 1984, Ser. No. 609,944
Int. Cl.[3] C11D *1/14, 7/42*
U.S. Cl. 252—545 13 Claims

1. A heavy-duty liquid detergent composition comprising, by weight:

(a) from about 10% to about 50% of an anionic synthetic surfactant;

(b) from about 3% to about 30% of a C_{10}–C_{22} fatty acid;

(c) from about 2% to about 15% of a water-soluble detergency builder;

(d) from about 0.01% to about 5% of a proteolytic or amylolytic enzyme;

(e) from about 0.25% to about 10% of boric acid or a boron compound capable of forming boric acid in the composition;

(f) from about 1 to about 30 millimoles of calcium ion per liter of composition; and

(g) from about 20% to about 80% of water.

4,537,707

LIQUID DETERGENTS CONTAINING BORIC ACID AND FORMATE TO STABILIZE ENZYMES

Roland G. Severson, Jr., Mason, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed May 14, 1984, Ser. No. 609,945
Int. Cl.[3] C11D *1/14, 7/42*
U.S. Cl. 252—545 14 Claims

1. A heavy-duty liquid detergent composition comprising, by weight:

(a) from about 10% to about 50% of an anionic synthetic surfactant;

(b) from about 3% to about 30% of a C_{10}–C_{22} fatty acid;

(c) from about 2% to about 15% of a water-soluble detergency builder;

(d) from about 0.01% to about 5% of a proteolytic enzyme;

(e) from about 0.25% to about 10% of boric acid or a boron compound capable of forming boric acid in the composition;

(f) from about 0.05% to about 5% of a water-soluble formate;

(g) from about 1 to about 30 millimoles of calcium ion per liter of composition; and

(h) from about 20% to about 80% of water.

4,537,708

HOMOGENEOUS LAUNDRY DETERGENT SLURRIES CONTAINING NONIONIC SURFACE-ACTIVE AGENTS

Gale D. Downey, Pennington, N.J., and Charles E. Jones, Yardley, Pa., assignors to FMC Corporation, Philadelphia, Pa.

Filed Aug. 30, 1983, Ser. No. 527,895
Int. Cl.[3] C11D *1/83, 3/065, 11/00, 3/04*
U.S. Cl. 252—554 17 Claims

1. A stable, homogeneous aqueous detergent slurry consisting essentially of:

a. a sodium polyphosphate in amounts of from about 14 weight percent to about 30 weight percent,

b. an alkali metal salt or alkali metal hydroxide in amounts of from about 1 weight percent to about 5 weight percent,

c. a soluble, anionic surface-active agent selected from the group consisting of alkyl-, alkylaryl-, alkene-sulfate salts and alkyl-, alkylaryl-, and alkene-sulfonate salts,

d. a soluble, nonionic surface-active agent which is an alcohol alkoxylate having a hydrophilic-lipophilic balance (HLB value) of from about 4 to about 9,

e. said sodium polyphosphate being present in part as insoluble particles having an average diameter of about 1 to 10 microns,

f. said anionic and nonionic surface-active agents being present in a weight ratio of about 6.7:1 to about 1.35:1, and

g. the total amount of said surface-active agents in said detergent slurry being from about 13 weight percent to about 20 weight percent.

4,537,709

LIQUID DETERGENT COMPOSITION COMPRISING SELECTED ALKYLBENZENE SULPHONATES AND ALKYL ETHER SULPHATES

David J. Edge, Chester; Appaya R. Naik, Merseyside, and Melvin Scott, Cheshire, all of England, assignors to Lever Brothers Company, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 551,456

Claims priority, application United Kingdom, Nov. 16, 1982, 8232644

Int. Cl.[3] C11D *1/12, 1/29, 1/37, 3/065*

U.S. Cl. 252—558

14 Claims

1. A foaming liquid detergent composition in the form of a stable aqueous solution containing from 2 to 60% by weight of an active detergent mixture comprising

(a) a linear C_{10}–C_{13}alkylbenzene sulphonate substantially free of material of other alkyl chain length and having a C_{13} content not exceeding 15% by weight if its 2-phenyl isomer content is 30% by weight or more, or not exceeding 30% by weight if its 2-phenyl isomer content is less than 30% by weight, and

(b) a C_{10}–C_{18} primary alkyl ether sulphate containing 20% by weight or less of C_{14} and above chain length material and having an average degree of ethoxylation of from 1 to 12,

the weight ratio of (a) to (b) being within the range of from 8:1 to 0.5:1, and the composition being substantially free from alkylbenzene sulphonates and alkyl ether sulphates other than those defined under (a) and (b) above.

4,537,710

METHOD OF STORING RADIOACTIVE WASTES USING MODIFIED TOBERMORITE

Sridhar Komarneni, and Della M. Roy, both of State College, Pa., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Oct. 31, 1983, Ser. No. 547,266

Int. Cl.[3] G21F *9/16*

U.S. Cl. 252—628

5 Claims

1. A method of fixing metal ions contained in liquid low and intermediate level nuclear wastes for long-term storage comprising:

contacting the liquid waste with an ion-exchange material which is a modified tobermorite containing aluminum isomorphously substituted for silicon and containing per 100 grams, about 1 to 200 milliequivalents of an alkali metal selected from the group consisting of sodium, potassium and mixtures thereof, whereby the metal ions in the liquid waste are taken up by the ion-exchange material;

separating the ion-exchange material from the liquid;

mixing the ion-exchange material containing the ions with portland cement to form a mixture containing up to about 40 weight percent ion-exchange material; and

solidifying the mixture, thereby fixing the ions for long-term storage.

4,537,711

FUEL ASSEMBLY SKELETON COMPACTION

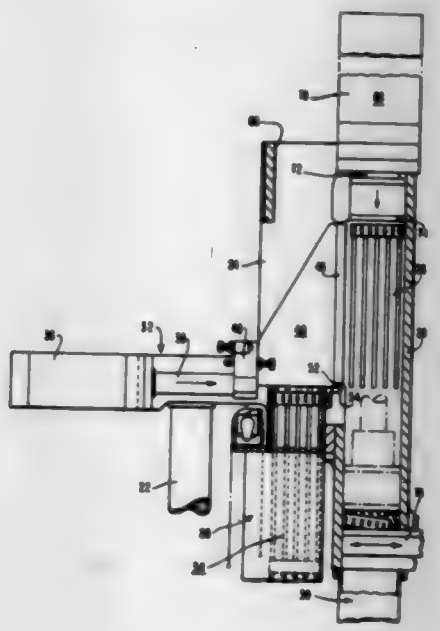
John J. Wilhelm, New Kensington; Anoop Kapoor, Monroeville; Richard M. Kobuck, Delmont; Ronald F. Antol, North Huntingdon, and George W. Norris, Wilkins Township, Allegheny County, all of Pa., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 5, 1983, Ser. No. 455,684

Int. Cl.[3] G21F *9/22, 9/34;* B30B *15/06*

U.S. Cl. 252—633

7 Claims



1. Apparatus for compacting an irradiated nuclear fuel assembly skeleton while said skeleton remains submerged in a water coolant comprising:

a vertically disposed compaction housing mounted on a plurality of vertical supports and defining therein a shear chamber and a compaction chamber;

a first cylinder horizontally disposed relative to said compaction housing;

a first piston connected to said first cylinder,

a vertically disposed first side plate slidably connected to said compaction housing;

a vertically disposed second side plate slidably connected to said compaction housing;

a front plate attached to said first and second side plates;

a blade mounted on the bottom and leading edge of said front plate;

a shear mounted in said shear chamber and in alignment with said blade for shearing said skeleton when said skeleton is forced between said front plate and said shear;

a mounting mechanism attached at one end to said first and second side plates and at the other end to said first piston and capable of sliding horizontally into and out of said shear chamber for causing said front plate and said shear to contact said skeleton thereby shearing said skeleton into a plurality of pieces and thereby moving said pieces into said compaction chamber;

a feed chamber vertically disposed and attached to said compaction housing near said shear chamber for introducing said skeleton into said shear chamber;

an elevator mechanism disposed in said feed chamber for selectively moving said skeleton in said feed chamber and into said shear chamber;

a compaction device mounted on said compaction housing near said compaction chamber for compacting said pieces of said skeleton that are introduced into said compaction chamber by said front plate; and

a canister vertically disposed under said compaction device for receiving the compacted pieces of said skeleton.

4,537,712

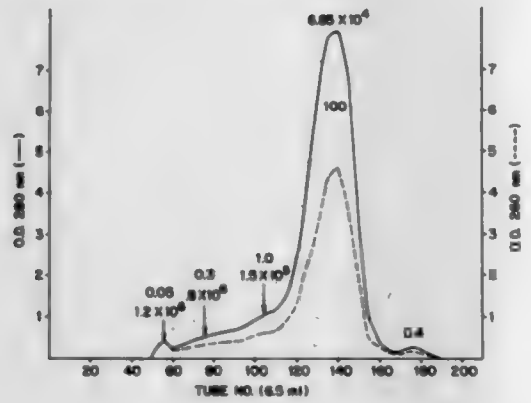
NON-SPECIFIC SUPPRESSIVE FACTORS AND PROCESS

Se-Kyung Oh, Brookline, Mass., assignor to Trustees of Boston University, Boston, Mass.

Continuation of Ser. No. 325,710, Nov. 30, 1981, abandoned. This application Sep. 19, 1983, Ser. No. 533,065

Int. Cl.³ C07G *7/00*

U.S. Cl. 260—112 R **1 Claim**



1. The process of obtaining a pure composition derived from human ascites fluid of a cancer patient or Cohn fraction IV having non-specific immunosuppressive factor activity and free of carbohydrate moities consisting of reduced immunosuppressive factor having a molecular weight of about 25,000, which composition is free from the components of immunosuppressive factor which degrade the immunosuppressive factor, said composition being reactive with anti-human thymocyte serum or anti-normal human, being non reactive with monoclonal antibodies to non-polymorphic HLA antigen or HLA-DR antigen, being cross-reacted with monoclonal antibody directed against sheep erythrocyte receptors on human peripheral T-cells, being absorptive with sheep erythrocyte and uniformly suppresses the PHA responsive donor lymphocytes regardless of HLA or HLA-DR and having an isoelectric point below about 4.0 which comprises forming a delipidated aqueous animal fluid containing immunosuppressive factor, precipitating the immunosuppressive factor by salt fractionation, passing said delipidated fluid through a gel filtration column resin to form a component rich in said immunosuppressive factor and substantially free of components of said ascites fluid that degrade said immunosuppressive factor, eluting said column with an aqueous salt solution to recover said component rich in immunosuppressive factor and contacting said component with anti-human IgG (Fc specific), recovering said pure composition and dissociating and separating said pure composition by column chromatography to obtain an active immunosuppressive factor having a molecule weight of about 25,000.

4,537,713

PROCESS FOR THE REDUCTION OF REDUCIBLE GROUPS AND ITS USE

Heiner Eckert, Lerchenauerstrasse 9, 8000 München 40, Fed. Rep. of Germany

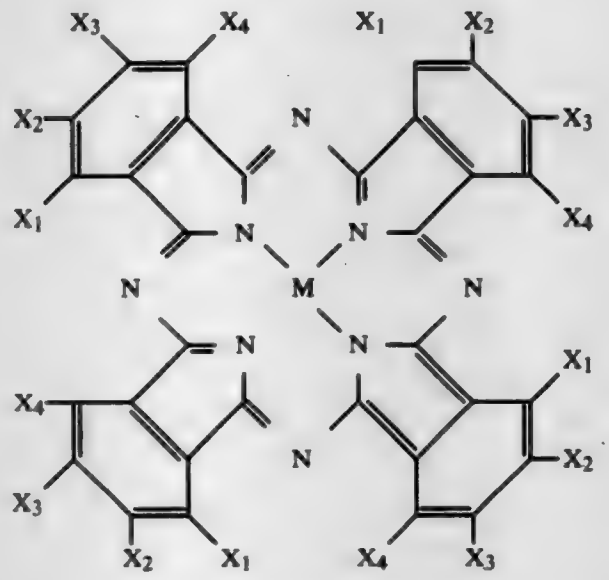
Filed May 19, 1982, Ser. No. 379,789

Claims priority, application Fed. Rep. of Germany, May 29, 1981, 3121478

Int. Cl.³ C07C *103/52, 101/00, 69/76, 63/04, 101/04;* C11C *3/12;* C07D *265/30, 215/04*

U.S. Cl. 260—112.5 R **25 Claims**

1. Process for the reduction of reducible groups characterized in that an effective amount of a platinum-metal-phthalocyanine of the following formula is used as the catalyst:



where M is a metal of the platinum metal series, X^{1-4} is halogen, cyano or optionally other substituents with —I— effect, alkyl or aryl, while X^{2-3} can also be components of an annellated ring system or poly-Pc-structure, and X^{1-4} can independently substitute one or more of the benzoid rings, for a selective reduction at a temperature of 0° C. to 200° C. with an effective amount of hydrogen on [MPc], with M having a formal charge $z \geqq 2$ to reduce the functional groups C═C, C═N, aromatic NO_2, aromatic CH═O, benzyl esters and aromatic halogen compounds, the latter being only reduced in a basic medium.

4,537,714

PROCESS FOR THE PREPARATION OF LOWER ALKYL ESTERS OF N-L-α-ASPARTYL-L-PHENYLALANINE AND OF NEW INTERMEDIATES FOR THEIR PREPARATION

Hans-Rudolf Müller, Schaffhausen, and Heinrich Bollinger, Beringen, both of Switzerland, assignors to Eprova Ag Forschungsinstitut, Schaffhausen, Switzerland

Filed Jul. 7, 1983, Ser. No. 511,672

Claims priority, application Switzerland, Jul. 20, 1982, 4433/82; Jan. 20, 1983, 4433/82

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **13 Claims**

1. A process for the selective preparation of N-L-α-aspartyl-L-phenylalanine-1-lower alkyl ester which comprises:

A. reacting an L-aspartic acid 4-arylmethyl ester with a

(i) 1,3-diketone; or

(ii) acylacetic ester;

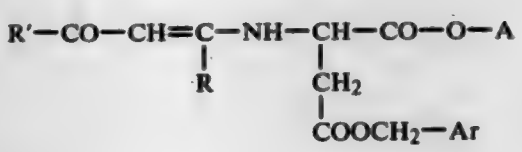
in the presence of a base to form the salt of

(i′) L-N-(1-alkyl-2-acyl-vinyl)-aspartic acid 4-arylmethyl ester; or

(ii′) L-N-(1-alkyl-2-alkoxycarbonyl-vinyl)-aspartic acid 4-arylmethyl ester,

and then either:

(1) reacting salt (i′) or (ii′) with an organic or inorganic acid halide having the formula X-A, wherein X represents a halogen and A has the meaning indicated hereinafter, or with an acid anhydride to form



I

wherein

R represents an alkyl radical with 1 to 6 carbon atoms;

R′ represents an alkyl or alkoxy radical with 1 to 6 carbon atoms;

Ar represents the phenyl, nitrophenyl, halogenphenyl or alkylphenyl radical; and

A represents an acyl with 2 to 12 carbon atoms, alkoxycarbonyl with 2 to 12 carbon atoms, or a phosphoric acid, phosphorous acid, sulfuric acid, sulfurous acid or sulfonic acid radical;

and reacting ester (I) with an L-phenylalanine lower alkyl ester;

(2) reacting a salt of (i') or (ii') with a phosphorazo-L-phenyl lower alkyl ester; to form

(i'') N-L-α-N'-(1-alkyl-2-acyl-vinyl)-aspartyl-L-phenylalanine-1-lower alkyl-4-arylmethyl ester; or

(ii'') N-L-α-N'-(1-alkyl-2-alkoxycarbonyl)-aspartyl-L-phenylalanine-1-lower alkyl-4-arylmethyl ester;

B. reacting (i'') or (ii'') with a strong acid to split off the respective N-(1-alkyl-2-acyl-vinyl) or N-(1-alkyl-2-alkoxycarbonyl-vinyl) protective group and produce:

(iii) N-L-α-aspartyl-L-phenylalanine-1-lower alkyl-4-(arylmethyl)ester; and

C. subjecting ester (iii) to catalytic hydrogenation to selectively split off the 4-(arylmethyl)-ester group and leave the N-L-α-aspartyl-L-phenylalanine-1-lower alkyl ester product.

4,537,715

GLYCOPEPTIDE ANTIBIOTIC CUC/CSV AND PROCESS FOR ITS PRODUCTION

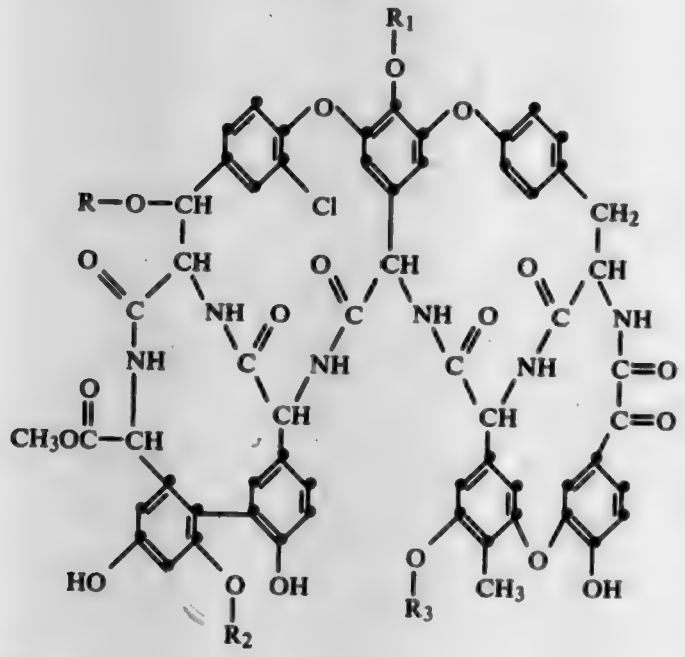
LaVerne D. Boeck; Gladys M. Clem, both of Indianapolis; Charles L. Hershberger, New Palestine; Marie T. Anderson, and Karl H. Michel, both of Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Oct. 21, 1983, Ser. No. 544,338

Int. Cl.³ C07C *103/52*; C12P *21/04*; A23K *1/22*

U.S. Cl. 260—112.5 R **4 Claims**

1. Antibiotic CUC/CSV which has the formula:



wherein

R is L-ristosaminyl;

R_1 is the disaccharide mannosyl-glucosyl; and

R_2 and R_3 are mannosyl; and its salts.

4,537,716

DES-SERINE[2] OR DES-GLYCINE[2]-LEUCINE[22] CALCITONIN

Ronald C. Orlowski, Frankfort, and Jay K. Seyler, Bourbonnis, both of Ill., assignors to Armour Pharmaceutical Co., Tarrytown, N.Y.

Filed Dec. 5, 1983, Ser. No. 557,778

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 T **3 Claims**

1. Des-X^2-Leu^{22}-Calcitonin wherein X is serine or glycine, said calcitonin being a salmon, eel or human calcitonin deletion analog.

4,537,717

DERIVATIVES OF A-21978C CYCLIC PEPTIDES

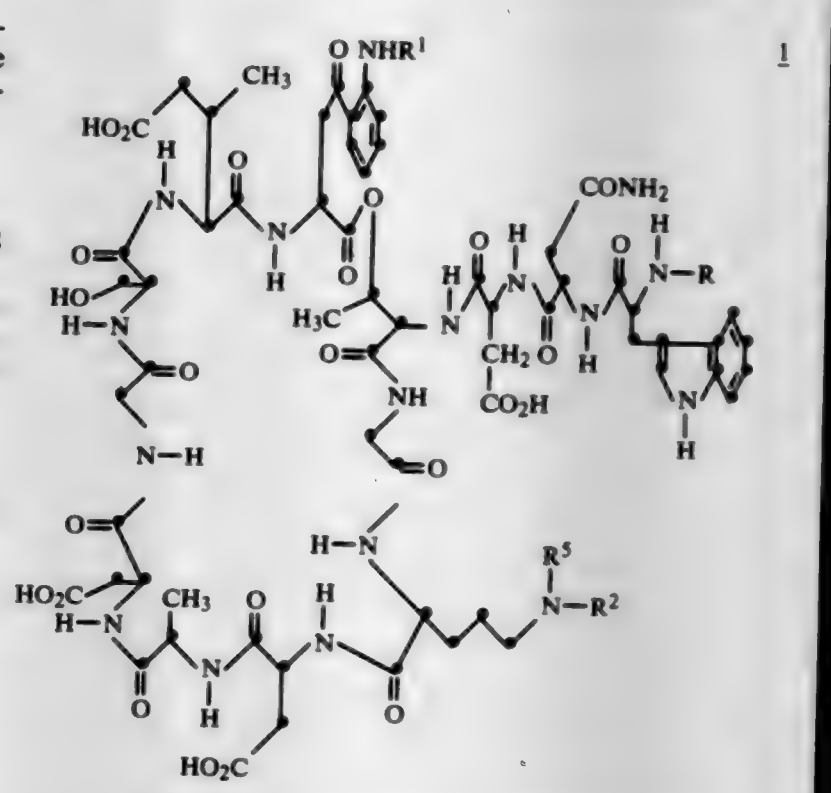
Bernard J. Abbott, Greenwood; Manuel Debono, Indianapolis, and David S. Fukuda, Brownsburg, all of Ind., assignors to Eli Lilly and Company, Ind.

Continuation of Ser. No. 573,901, Jan. 26, 1984, abandoned, which is a continuation of Ser. No. 493,447, May 11, 1983, abandoned, which is a continuation-in-part of Ser. No. 382,012, May 21, 1982, abandoned. This application Sep. 21, 1984, Ser. No. 652,695

Int. Cl.³ C07C *103/52*

U.S. Cl. 260—112.5 R **30 Claims**

1. An A-21978C cyclic peptide derivative of the formula:



1

in which R, R^1 and R^2 are, independently, hydrogen, C_4–C_{14}-alkyl, optionally substituted C_2–C_{19}-alkanoyl, C_5–C_{19}-alkenoyl or an amino-protecting group; R^3, R^4 and R^5 are hydrogen or (i) R^3 and R^1 nd/or (ii) R^4 and R and/or (iii) R^5 and R^2, taken together, may represent a C_4–C_{14} alkylidene group; provided that (1) at least one of R, R^1 or R^2 must be other than hydrogen or an amino-protecting group, (2) at least one of R^1 or R^2 must be hydrogen or an amino-protecting group, (3) the R, R^1 and R^2 groups must together contain at least four carbon atoms, and (4) when R^1 and R^2 are both selected from hydrogen or an amino-protecting group, R cannot be 8-methyldecanoyl, 10-methyldodecanoyl, 10-methylundecanoyl, the mixes C_{10}-alkanoyl group of A-21978C_0 or the specific C_{12}-alkanoyl groups of A-21978C factors C_4 and C_5; and the salts thereof.

4,537,718

IMPERMEANT SPECTROSCOPIC PROBES

David Schachter, Bronx, N.Y.; Richard E. Abbott, Englewood, N.J., and Uri Cogan, Haifa, Israel, assignors to Columbia University in the City of New York, New York, N.Y.

Filed Oct. 26, 1982, Ser. No. 436,799

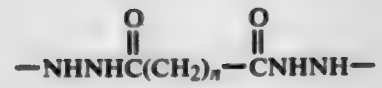
Int. Cl.³ C07C *103/52*; G01N *21/84*

U.S. Cl. 260—112.5 R **6 Claims**

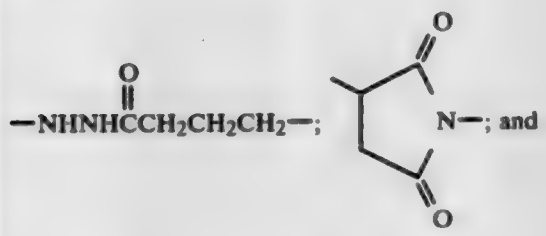
1. An impermeant spectroscopic probe, comprising:

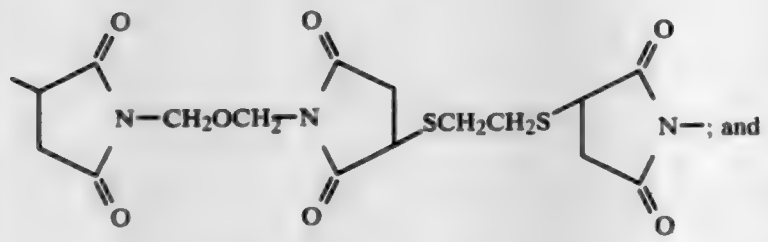
glutathione joined by a linkage group to a spectroscopic reporter group, wherein

(1) said linkage group is selected from the group consisting of



wherein n is 2, 4, 6, 8 or 10;





(2) said spectroscopic reporter group is selected from the group consisting of pyrenes, nitrobenz-oxa-diazoles, anthracenes, coumarins, acridines, anthranilates, bimanes, stilbenes, parinaric acids, and N-oxyl-4,4-dimethyloxayolidine derivatives of ketostearic acids or 2,2,5,5-tetramethyl-3-pyrrolin-1-oxyl-3-carboxylic acid.

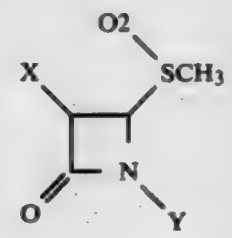
4,537,719

4-METHYLSULFONYL-AZETIDINONE DERIVATIVES

Toshihisa Kato; Hisao Iwagami, both of Kawasaki, and Naohiko Yasuda, Yokosuka, all of Japan, assignors to Ajinomoto Company Incorporated, Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,557
Claims priority, application Japan, Oct. 1, 1981, 56-156635
Int. Cl.³ C07D *205/08, 403/12;* A61K *31/495, 31/395*
U.S. Cl. 260—239 A **6 Claims**

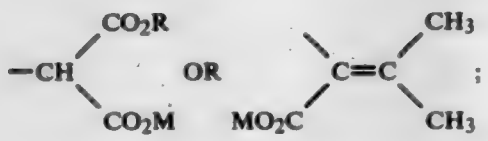
1. Azetidinone derivatives represented by the formula:



wherein

X is hydrogen, halogen, amino, methylamino, ethylamino, benzylamino, dimethylamino or acylamino selected from the group consisting of acetamide, arylacetamide, 2-amino-2-arylacetamide, 2-acylamino-2-arylacetamide, or D(−)1-α-(4-ethyl-2,3-dioxo-1-piperazinecarboxamide)-α-(4-hydroxyphenyl)acetamide); and

Y is



wherein R is lower alkyl, benzyl, or 2,2,2-trichloroethyl, and M is hydrogen or alkali metal.

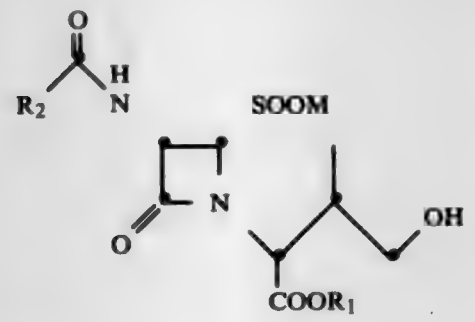
4,537,720

N-SUBSTITUTED-2-(R)-(SULFINIC ACID)-3-(S)-(ACYLAMINO)-4-OXO-AZETIDINES AND PROCESS

David A. Hall, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 442,075, Nov. 16, 1982, Pat. No. 4,436,596.
This application Dec. 12, 1983, Ser. No. 560,283
Int. Cl.³ C07D *205/08, 403/12, 405/12, 409/12*
U.S. Cl. 260—239 A **33 Claims**

1. A compound of the formula



wherein,

M is hydrogen or is a lithium, potassium, sodium, ammonium, tetramethylammonium, tetraethylammonium, tetrabutylammonium, tributylammonium, trimethylammonium, triethylammonium, tribenzylammonium, trihexylammonium, trimethylphenylammonium or triphenylammonium;

R_1 is hydrogen, a carboxylic acid protecting group, lithium, potassium, sodium, ammonium, tetramethylammonium, tetraethylammonium, tetrabutylammonium, tributylammonium, trimethylammonium, triethylammonium, tribenzylammonium, trihexylammonium, trimethylphenylammonium or triphenylammonium;

R_2 is

a. C_1 to C_7 alkyl, C_3 to C_7 alkenyl, chloromethyl, dichloromethyl, 4-carboxybutyl, 4-formylbutyl, 4-amino-4-carboxybutyl, 4-formylbutyl, 4-amino-4-carboxybutyl, 4-protected carboxybutyl, or 4-protected amino-4-protected carboxybutyl; or

b. C_1 to C_6 alkoxy, C_3 to C_6 cycloalkyloxy, benzyloxy or substituted benzyloxy, wherein the substituents are one to three groups chosen from the group consisting of C_1 to C_4 alkyl, C_1 to C_4 alkoxy or chloro; or

c. 1,4-cyclohexadienyl, phenyl or substituted phenyl, wherein the substituents are one or two groups chosen from the group consisting of chlorine, bromine, hydroxy, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, carboxy, carboxymethyl, hydroxymethyl, aminomethyl and protected aminomethyl; or

d. a group of the formula

$R'—(O)_m—CH_2—$

wherein R′ is 1,4-cyclohexadienyl, phenyl or substituted phenyl as defined above, and m is 0 or 1; or

e. a group of the formula



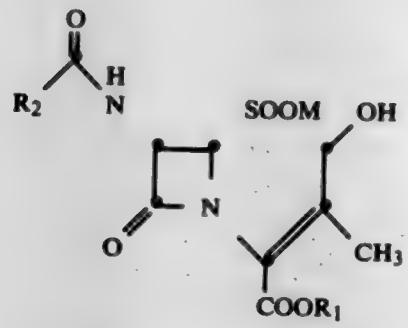
wherein R″ is R′ as defined above, 2-thienyl, or 3-thienyl; W is hydroxy, carboxy, protected carboxy, amino or protected amino; or

f. a heteroarylmethyl group of the formula

$R'''—CH_2—$

wherein R‴ is 2-thienyl, 3-thienyl, 2-furyl, 3-furyl, 2-thiazolyl, 5-tetrazolyl or 1-tetrazolyl;

with the limitation that when the compound is of the formula



R_2 is 1,4-cyclohexadienyl, phenyl or substituted phenyl, wherein the substituents are one or two groups chosen from the group consisting of chlorine, bromine, hydroxy, trifluoromethyl, C_1 to C_4 alkyl, C_1 to C_4 alkoxy, carboxy, carboxymethyl, hydroxymethyl, aminomethyl and protected aminomethyl.

4,537,721

CU-PC DYESTUFFS

Manfred Groll, Leverkusen, and Dieter Ockelmann, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

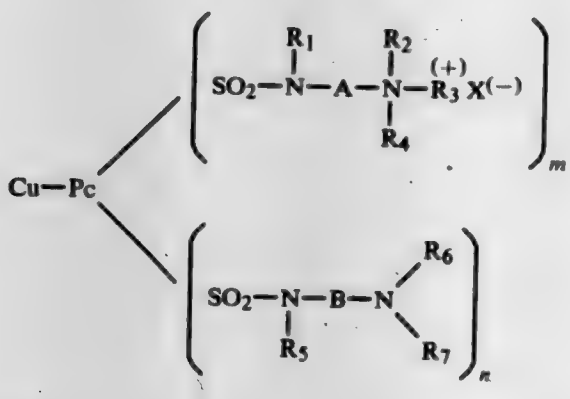
Filed Dec. 14, 1983, Ser. No. 561,609

Claims priority, application Fed. Rep. of Germany, Dec. 29, 1982, 3248466

Int. Cl.³ C09B *47/32*

U.S. Cl. 260—242.2 **6 Claims**

1. Basic copper phthalocyanine dyestuffs of the general formula

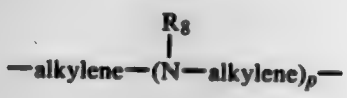


in which

Cu-Pc denotes the radical of an m+n-valent copper phthalocyanine radical,

A denotes alkylene

B denotes a radical of the formula



R_1 denotes hydrogen or alkyl,

R_2, R_3 and R_4, independently of one another, denote alkyl which can be substituted by hydroxyl or alkoxy groups,

R_5 denotes hydrogen, alkyl or aminoalkyl,

R_6 and R_7, independently of each other, denote hydrogen or alkyl which can be substituted by hydroxyl, alkoxy or amino groups, and

R_8 denotes hydrogen or alkyl, or

R_1 can form a closed ring with R_2,

R_2 can form a closed ring with R_3,

R_5 can form a closed ring with R_6 and/or

R_6 can form a closed ring with R_7,

m denotes a number from 1.0 to 2.5,

n denotes a number from 0 to 1.4, but is 0 only if R_2 forms a closed ring with R_3,

m+n is 1.8 to 2.5,

p denotes 0, 1, 2 or 3 and

$X^{(-)}$ denotes an anion.

4,537,722

STEROID ESTERS PREPARATION

Anders R. Stamvik; Sten K. Kristensson, both of Helsingborg, and Karl-Erik Lundvall, Ängelholm, all of Sweden, assignors to Ab Leo, Helsingborg, Sweden

Filed May 29, 1984, Ser. No. 614,991

Claims priority, application Sweden, May 30, 1983, 8303031

Int. Cl.³ C07J *17/00*

U.S. Cl. 260—397.4 **19 Claims**

1. A process for the preparation of a steroid carboxylic acid ester of high purity and in improved yield and colour, comprising reacting in an inert organic solvent, which is nonreactive with the reactants and the reaction products under the condition of the reaction, a carboxylic acid, a steroid hydroxyl compound which has a cyclopentanophenanthrene carbon-carbon skeleton and contains up to a maximum of 40 carbon atoms, and which is selected from the group consisting of steroid primary or secondary alcohols and phenols, and a carbodiimide, in the presence of a combination of a 4-(tertiary amino)-pyridine and a strong acid.

4,537,723

DERIVATIVES OF LEUKOTRIENES A AND C

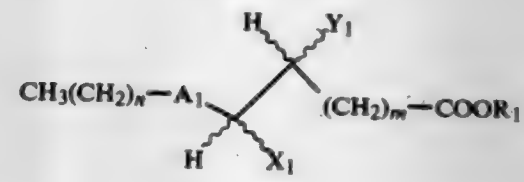
William P. Schneider, Kalamazoo Township, Kalamazoo County, Mich., assignor to The Upjohn Company, Kalamazoo, Mich.

Continuation of Ser. No. 345,896, Feb. 4, 1982, abandoned. This application Oct. 24, 1983, Ser. No. 545,107

Int. Cl.³ C07C *163/00, 149/40*

(I) U.S. Cl. 260—400 **5 Claims**

1. A compound of the formula II



wherein A_1 is

(1) $-CH_2-CH_2-$, or

(2) trans$-CH=CH-$;

wherein R_1 is

(1) hydrogen,

(2) C_1-C_3 alkyl, or

(3) a pharmacologically acceptable cation;

wherein one of X_1 and Y_1 is hydroxy and the other is

(1) $-S-C_6H_5$, or

(2) $-SeC_6H_5$;

wherein m is an integer from 3 to 7, inclusive; and wherein n is an integer from 7 to 13, inclusive.

4,537,724

ALKANOYLOXYBENZENESULFONATE SALT PRODUCTION

Bonnie G. McKinnie, and Gene C. Robinson, both of Baton Rouge, La., assignors to Ethyl Corporation, Richmond, Va.

Filed May 11, 1983, Ser. No. 493,452

Int. Cl.³ C07C *143/90*; C11D *1/28*

U.S. Cl. 260—400 **20 Claims**

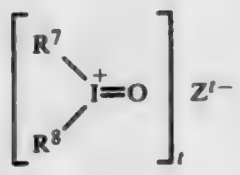
1. A process for the preparation of an alkali metal or an alkaline earth metal salt of an acyloxybenzenesulfonic acid which comprises reacting at elevated temperature in the range of about 200° to about 350° C. the corresponding hydroxybenzenesulfonate salt with an aryl ester of an aliphatic carboxylic acid.

4,537,725
DIARYLIODOSYL SALTS

Edward Irving, Burwell, England, assignor to Ciba-Geigy Corporation, Ardsley, N.Y.

Filed Sep. 9, 1983, Ser. No. 530,801
Claims priority, application United Kingdom, Sep. 18, 1982, 8226706; Jun. 10, 1983, 8315925
Int. Cl.³ C07F *15/02, 7/22, 9/68, 9/92*
U.S. Cl. 556—138 18 Claims

1. A diaryliodosyl salt of formula



IV

wherein

R^7 and R^8, which are the same or different, represent phenyl, naphthyl or said phenyl or said naphthyl substituted by one or two groups selected from the group consisting of alkoxy of 1 to 4 carbon atoms, alkyl of 1 to 4 carbon atoms, phenyl, nitro and halogen,

Z^{t-} denotes a t-valent anion of formula MX_n— or R^9SO_3— or is a t-valent anion selected from the group consisting of phosphate, hydrogenphosphate, dihydrogenphosphate, sulfate and hydrogensulfate,

t is 1, 2 or 3,

M represents antimony, bismuth, tin, boron, iron, arsenic or phosphorus,

X represents fluoro or chloro,

n is 4, 5 or 6, and is one more than the valency of M,

with the proviso that, when M represents antimony, n is 6 and five of X are each fluoro and the other X represents fluoro or hydroxo, and

R^9 represents methyl, trifluoromethyl, phenyl or said phenyl substituted by alkyl of 1 to 4 carbon atoms or by halogen.

4,537,726
MULTI-STAGE PROCESS WITH ADIABATIC REACTORS FOR THE PREPARATION OF ISOCYANATES

Velliyur N. M. Rao, Wilmington, Del., and George E. Heinsohn, Elkton, Md., assignors to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Nov. 9, 1984, Ser. No. 669,850
Int. Cl.³ C07C *118/04*
U.S. Cl. 260—453 P 8 Claims

1. An improved process for the preparation of isocyanates of the formula $R—(NCO)_n$ where R is a C_1–C_{10} alkyl, cycloalkyl, aryl, alkaryl, or aralkyl group and n is 1 or 2, by reacting a corresponding formamide of the Formula $R(NH—CO—H)_n$ with oxygen or an oxygen-containing gas at 400°–700° C. in the presence of a silver catalyst, wherein the improvement comprises performing the reaction in at least two essentially adiabatic reaction stages in series and wherein the improvement is characterized by:

(a) introducing the formamide and up to 70% of the stoichiometric amount of oxygen to the first reaction stage at a temperature sufficiently low to maintain the temperature of the reaction in the first stage at 700° C. or below;

(b) introducing additional oxygen to the reaction mixture effluent of each non-final stage; and

(c) introducing the resultant reaction mixture of step (b) to the succeeding reaction stage at a temperature sufficiently low to maintain the temperature of the reaction in the succceeding stage at 700° C. or below.

4,537,727
PROCESS FOR RECOVERING 2-ACETYLTHIOMETHYL-5-AMINOPENTANOIC ACID

Russell L. Barton, Indianapolis; Stephen L. Briggs, Clayton, and Gary A. Koppel, Indianapolis, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Nov. 12, 1982, Ser. No. 441,139
Int. Cl.³ C07C *153/017*
U.S. Cl. 260—455 R 6 Claims

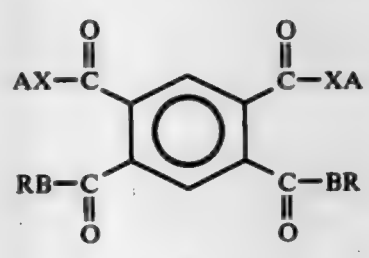
1. A process for recovering 2-acetylthiomethyl-5-aminopentanoic acid of increased purity from an impure acid addition salt thereof, which comprises treating the impure acid addition salt in a polar organic solvent selected from the group consisting of a nitrile, an alcohol, a glycol, nitromethane, nitrobenzene, and an amide with a base selected from the group consisting of an alkoxide and an amine.

4,537,728
FLUORINATED AND NON-FLUORINATED TERMINALLY HALOGENATED ALKYL PYROMELLITATES

Bryce C. Oxenrider, Florham Park, and David J. Long, Stanhope, both of N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

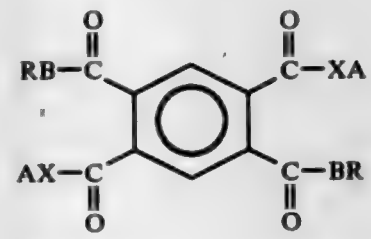
Filed Sep. 30, 1982, Ser. No. 431,452
Int. Cl.³ C07C *153/07, 69/76, 101/20, 101/24, 101/26*
U.S. Cl. 260—455 R 15 Claims

1. A monocyclic compound having the structure:



(I)

or



(II)

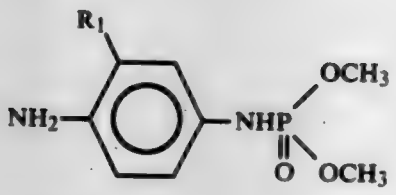
or mixtures thereof wherein X is independently at each occurrence —O—, —S—, —N(CH₃)— or —NH—; wherein A is alkyl of 2–24 carbons or $R'—(CF_2)_pCF_3$ with R' being alkylene of 1–6 carbons and p being an integer of 3–15; wherein B is —O—, —S—, —NH—, or —N(CH₃)—; wherein R is $(CH_2)_nQ$ or $(CH_2)_mCH_2$ with n being an integer of 2–10, m being an integer of 0–10, and z being an integer of 1–5; wherein Q is Cl or Br.

4,537,729
DIMETHYLPHOSPHORAMIDATES

Gordon W. Rewcastle; Graham J. Atwell; Bruce C. Baguley, and William A. Denny, all of Auckland, New Zealand, assignors to Development of Finance Corporation of New Zealand, Wellington, New Zealand

Division of Ser. No. 409,594, Aug. 19, 1982, Pat. No. 4,479,000.
This application Apr. 5, 1984, Ser. No. 597,236
Claims priority, application New Zealand, Aug. 21, 1981, 198115
Int. Cl.³ C07F *9/24*
U.S. Cl. 260—944 1 Claim

1. A compound of the general formula (III):



where R_1 is H or OCH_3.

4,537,730
PREPARATION OF O,S-DIMETHYL-THIOLOPHOSPHORIC ACID AMIDE

Peter Feyen, Mettmann; Hermann Seifert, Cologne, and Egon Kohler, Dormagen, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

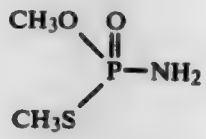
Filed Jul. 21, 1983, Ser. No. 516,167

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228868

Int. Cl.³ C07F 9/24

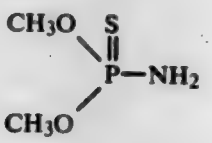
U.S. Cl. 260—989 18 Claims

1. A process for the preparation of O,S-diemthylthiolophosphoric acid amide of the formula

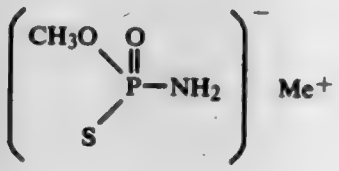


comprising

(a) contacting O,O-dimethyl-thiophosphoric acid amide of the formula



with an aqueous solution of KOH or NaOH, in the presence of a sparingly water-miscible organic solvent selected from the group consisting of chlorobenzene, xylene and toluene, thereby to form the salt of the formula



in which

Me is sodium or potassium, separating the aqueous phase,

(b) optionally adding an organic solvent to the aqueous phase, and reacting the mass with methyl bromide or methyl chloride thereby to form the O,S-dimethyl-thiolphosphoric acid amide, and

(c) extracting the amide with a solvent selected from the group consisting of isobutanol, n-butanol and isopropanol thereby to dissolve the amide.

4,537,731
SADDLE FILLING MEMBER FOR GAS-LIQUID CONTACT

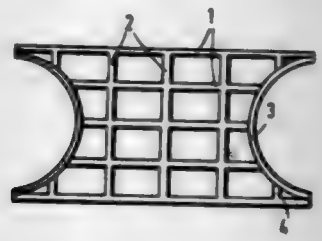
Reinhard Billet, Bochum; Rainer Kober, Steinwiesen; Jerzy Makowiak, Bochum, and Werner Geipel, Steinwiesen, all of Fed. Rep. of Germany, assignors to Paul Rauschert GmbH & Co. KG, Pressig, Fed. Rep. of Germany

Filed May 26, 1983, Ser. No. 498,557

Claims priority, application Fed. Rep. of Germany, Jun. 4, 1982, 32211309

Int. Cl.³ B01F 3/04

U.S. Cl. 261—94 6 Claims



1. A saddle filling member for gas-liquid contact, characterized in that it comprises a plurality of first ribs which are arranged parallel to each other and which are arcuately curved towards one side, and a plurality of second ribs which are arranged parallel to each other and normal to the first ribs and which are arcuately curved towards the opposite side, and also two arcuately curved connecting web portions which interconnect the end regions of the first ribs, the ribs being of a sharp-edged configuration and forming with said connecting web portions a grid-like structure over all the surfaces of said member.

4,537,732
SYSTEM AND PROCESS FOR PRODUCING MOLDED OPTICAL ELEMENTS

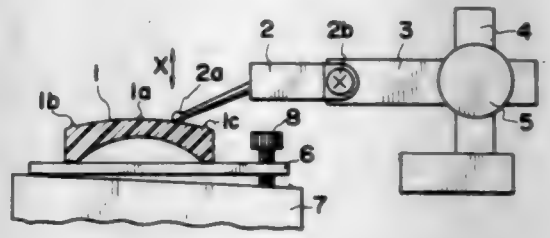
Hiroshi Ueda, Nara; Mitsuru Saito, Kaizuka, and Hideo Kajita, Chihayaakasaka, all of Japan, assignors to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Continuation of Ser. No. 156,064, Jun. 2, 1980, abandoned. This application May 17, 1984, Ser. No. 612,062

Claims priority, application Japan, Jun. 19, 1979, 54-77714

Int. Cl.³ B29D 11/00

U.S. Cl. 264—1.1 17 Claims



1. A process for mass manufacturing of optical elements and inspecting the accuracy of their optical surfaces, comprising the steps of:

molding a curved optical body to have a curved optical surface with an integral indexing means on a predetermined position, located at a fixed relative position to a predetermined optical axis of the optical surface, the indexing means forming at least one discontinuity of a predetermined surface configuration of sufficient magnitude for measurement but limited in size to prevent any perceptible aberration to be introduced within the desired application of the optical element;

positioning the molded optical body in an operative position

relative to a measuring instrument that directly contacts the optical surface;

measuring the optical body to provide a measurement of the optical surface including a measurement of the indexing means to insure a proper alignment, and

comparing the measurement with a standard reference model measurement to evaluate acceptable surface accuracy.

17. A production system for the inspection of the accuracy of optical surfaces, comprising:

a die cavity for molding a curved optical body to have a curved optical surface with an integral indexing means on a predetermined position, located at a fixed relative position to a predetermined optical axis of the optical surface, the indexing means forming at least one discontinuity of a predetermined surface configuration of sufficient magnitude for measurement but limited in size to prevent any perceptible aberration to be introduced within the desired application of the optical element;

means for positioning a molded optical body in an operative position relative to a measuring instrument that directly contacts the optical surface;

means for measuring the optical body to provide a measurement of the optical surface including a measurement of the indexing means to insure a proper alignment, and

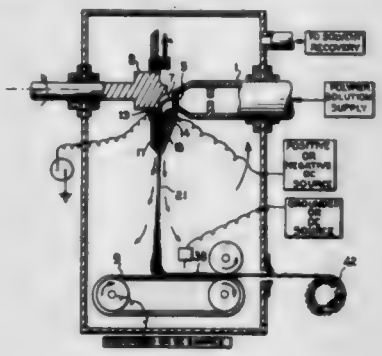
means for comparing the measurement with a standard reference model measurement to evaluate acceptable surface accuracy.

4,537,733

NONWOVEN FIBER-SHEET PROCESS

John Farago, Richmond, Va., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Oct. 31, 1983, Ser. No. 547,384
Int. Cl.[3] B29C *6/00*
U.S. Cl. 264—9 4 Claims



1. In a process for making a wide nonwoven fiber sheet wherein a fiber stream issues from each of a plurality of positions located above a moving receiver and along a line that makes an angle with the direction of receiver movement, each fiber stream being oscillated as it is forwarded to the receiver whereon it deposits fiber to form a ribbon which is lapped with ribbons from preceding and succeeding positions along the line, the improvement comprising varying the oscillation frequency of every other fiber stream along the line by more than ±5%, but less than ±50%, of the average oscillation frequency, the variation in oscillation frequency having a period in the range of 1 to 120 seconds.

4,537,734

METHOD FOR REDUCING THE MONOMER CONTENT IN ACRYLONITRILE CONTAINING POLYMERS

Kennard H. Morganstern, Roslyn, N.Y., assignor to Radiation Dynamics, Inc., Melville, N.Y.

Continuation-in-part of Ser. No. 4,046, Jan. 17, 1979, abandoned, which is a continuation of Ser. No. 840,415, Oct. 7, 1977, abandoned. This application Mar. 12, 1979, Ser. No. 19,616
Int. Cl.[3] C08F *6/28, 220/44;* C08J *3/28, 7/10*
U.S. Cl. 264—22 16 Claims

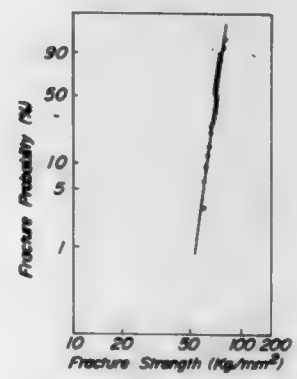
1. A method for reducing the acrylonitrile monomer content in an acrylonitrile polymer which comprises exposing the polymer to ionizing radiation at an irradiation dosage level of from about 0.050–2.0 megarads at a rate sufficient to significantly reduce the extractable residual acrylonitrile monomer content in the polymer, wherein the polymer is not at or above its softening point during exposure to said ionizing radiation.

4,537,735

METHOD OF PRODUCING A SILICON CARBIDE SINTERED COMPACT

Ryo Enomoto, and Kiyotaka Tsukada, both of Oogaki, Japan, assignors to Ibiden Kabushiki Kaisha, Oogaki, Japan

Filed Mar. 28, 1983, Ser. No. 479,331
Claims priority, application Japan, Mar. 29, 1982, 57-48957
Int. Cl.[3] C04B *35/56*
U.S. Cl. 264—63 4 Claims



1. In a method of producing a silicon carbide sintered compact comprising steps of placing silicon carbide fines, at least one sintering additive selected from a group consisting of boron containing additives, carbonaceous additives, beryllium containing additives and aluminum containing additives, and at least one shaping additive selected from a group consisting of polyethylene glycol, magnesium stearate, barium stearate, aluminum stearate, zinc stearate, stearic acid, starch, dextrin, gum arabic, casein, sugar, molasses, na-carboxymethyl cellulose, methyl cellulose, polyvinyl alcohol, polyvinyl methyl ether, polyacrylic amide, tannic acid, liquid paraffin, wax emulsion, ethyl cellulose, polyvinyl acetate, phenol resin, cellulose acetate, glycerol and polyethylene glycol, as required into a dispersing medium solution of water or organic liquid to form a suspensoid, performing a sieving operation of said suspensoid, processing and forming said suspensoid into a green compact from powders obtained in said sieving operation, and subjecting said green compact to a pressureless sintering process to produce a sintered compact:

the improvement comprising limiting the solid content comprising said silicon carbide fines and sintering additive within a range of 10–50% by volume to said suspensoid; when water is used as said dispersing medium solution, adding and dispersing at least one of the dispersing agents in the following group A, while when an organic liquid is used as said dispersing medium solution, adding and dispersing at least one of the dispersing agents in the following group B, in said solution to form a suspensoid, said organic liquid being selected from a group consisting of acetone, methenol, ethanol, butanol, hexane, heptane,

nonane, toluene, xylene, ethyl methyl ketone, methyl isobutyl ketone, ethyl benzene, ethylene glycol, trichloroethylene, cyclohexane, nitromethane, nitroethane, isopropyl alcohol, benzene and carbon tetrachloride; applying a pressure differential to promote the sieving operation retarded by a pressure loss between, before and after said sieve, with or without vibration, to said suspensoid to pass a sieve having an opening less than 65 μm, removing coarse foreign matters which cause pores or inclusion affecting adversely the bending strength of said compact;

A. amines, organic compounds containing carboxyl group, organic compounds containing sulfo group, esters, ammonium compounds, organic compounds containing ether linkage, carboxylic acid salts, aluminates, phosphates, phosphoric acid complex salts, sulfonates and silicates;

B. amines, organic compounds containing carboxyl group, organic compounds containing sulfo group and esters.

4,537,736

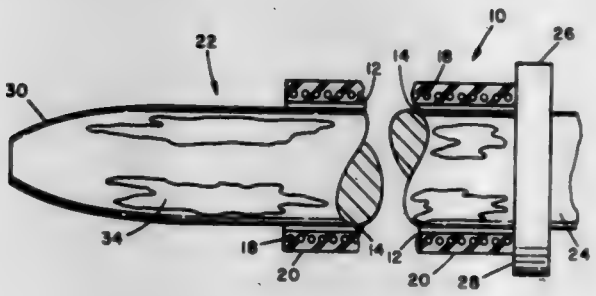
METHOD FOR CURING A FLEXIBLE HOSE

William S. Peltzman, Northglenn; Raymond A. Rohlfing, and Charles C. Gates, Jr., both of Denver, all of Colo., assignors to The Gates Rubber Company, Denver, Colo.

Division of Ser. No. 385,169, Jun. 4, 1982, abandoned. This application Dec. 5, 1983, Ser. No. 544,026

Int. Cl.³ B29C *25/00*

U.S. Cl. 264—130 **6 Claims**



1. A method for heat curing a flexible hose using a curved metallic mandrel comprising the steps of:

extruding an elastomeric tube that is heat curable at temperatures from about 200° F. to about 400° F. while simultaneously:

heating a remeltable material characterized as pliant while in solid form and lubricious while in melted form;

melting the material starting at a temperature below about 210° F.; and

coating at least a portion of an inside of the tube and forming a layer of melted material;

cooling the tube while simultaneously solidifying the material and forming a layer of solidified material;

heating a curved mandrel to a temperature that is above the material melting temperature, the mandrel of appropriate size to fit inside the tube;

pushing and sliding a length of tube over the mandrel while simultaneously remelting the layer of solidified material with the heated mandrel and thereby lubricating the mandrel with the remelted material for easily receiving the length of tube;

curing the length of tube on the heated mandrel;

pulling and sliding the cured length of tube from the mandrel while the mandrel and tube are hot and the layer of material is still melted and in lubricious form; and

cooling the cured length of tube.

4,537,737

METHOD AND EQUIPMENT FOR PROCESSING A PLASTICIZABLE MATERIAL

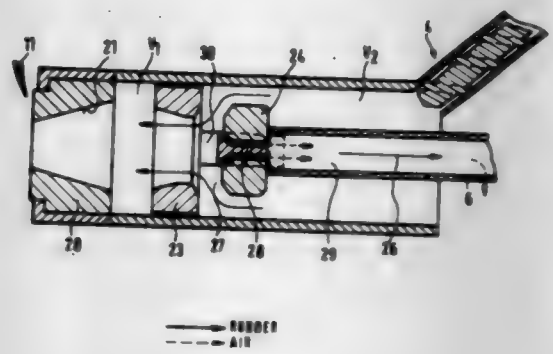
Anthony Crowe, Langgarbenstrasse 18, CH-4416 Bubendorf, Switzerland

Filed Sep. 13, 1983, Ser. No. 531,761

Claims priority, application Switzerland, Oct. 1, 1982, 5814/82

Int. Cl.³ B29C *17/00*

U.S. Cl. 264—40.4 **3 Claims**



1. A preformer for processing rubber compounds into a semi-finished rubber blank, whereby the rubber compound which is preheated and plasticised by kneading and finally is extruded through a die out of cylinder using a piston and is cut in exact metered volumes, characterized by the fact that a piston extruder (2) has at its free end a die (20) as well as inside of a cylinder (19) there is a movable piston (5), whereby the piston is connected to a drive (6), with the purpose of moving the piston back and forwards and further a feed and plasticising unit (4) is provided, which fits into the cylinder (19), so that the cold material fed into the feed and plasticising unit (4) is only preheated and plasticised shortly before entry into the cylinder (19) and thereafter can be pressed through the piston head, the piston (5) containing a non-return valve (23,24), which permits during operation the transfer of material fed into the cylinder (2) from one cylinder side (V2) to the other (V1), but only during the return stroke of the piston, whereby in the cylinder part (V2) which lies at the opposite end to the die (20), said feed and plasticiser unit (4) feeds in a way that the rubber compound shortly before entering the extrusion cylinder (2) is preheated and plasticised, the piston rod (6) containing a hole to which is connected on one side a vacuum source, on the other side a non-return value (28), which opens to the die side of the cylinder (V1), so that the air in the cylinder area is sucked out.

2. A method for the processing of a rubber compound from raw rubber material to produce a semi-finished rubber blank, the steps comprising

feeding and plasticising the rubber compound in a cold state in a feed and plasticiser unit,

preheating by kneading and plasticising and finally extruding the rubber compound out of a cylinder and through a die by means of a piston,

transferring material fed during operation into the cylinder from one cylinder side which lies at the opposite end to the die to the other cylinder side by means of a non-return valve of the piston unit feeding the rubber compound into the cylinder shortly after the rubber compound has been heated and plasticised, and

cutting the rubber compound into exact metered volumes.

4,537,738
PROCESS FOR ORIENTING PARTIALLY CRYSTALLIZED 3-HYDROXYBUTYRATE POLYMERS

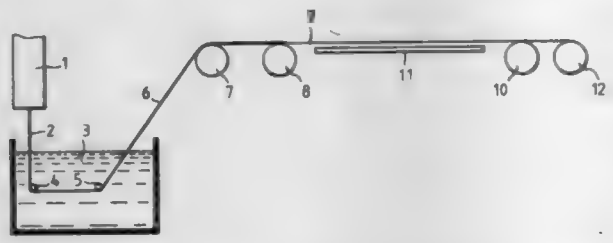
Paul A. Holmes, Middlesbrough, England, assignor to Imperial Chemical Industries PLC, London, England

Filed Aug. 18, 1983, Ser. No. 524,314

Claims priority, application United Kingdom, Aug. 27, 1982, 8224683

Int. Cl.³ D01D *5/12*

U.S. Cl. 264—210.5 **8 Claims**



1. A process for the production of an oriented shaped article from a polymer containing at least 40 mole % of 3-hydroxybutyrate residues in the polymer chain comprising uni- or bi-axially drawing a preform of said hydroxybutyrate polymer in a partially crystalline state at a temperature between the glass transition temperature, Tg, and the melting point of the hydroxybutyrate polymer into said shaped article, and then increasing the degree of crystallinity of the hydroxybutyrate polymer by subjecting the drawn preform, while in the drawn condition, to a temperature between the glass transition temperature and the drawing temperature until the drawn article is nonrubbery, the amount of said uni- or bi-axial drawing being such that, after said step of increasing the degree of crystallinity, at least one dimension of the preform has increased by at least 200%, said hydroxybutyrate polymer having a degree of crystallinity, at the time of drawing, such that the preform is not so brittle that it breaks before achieving said increase in said at least one dimension, and such that the drawn article does not break during the step of increasing the degree of crystallinity.

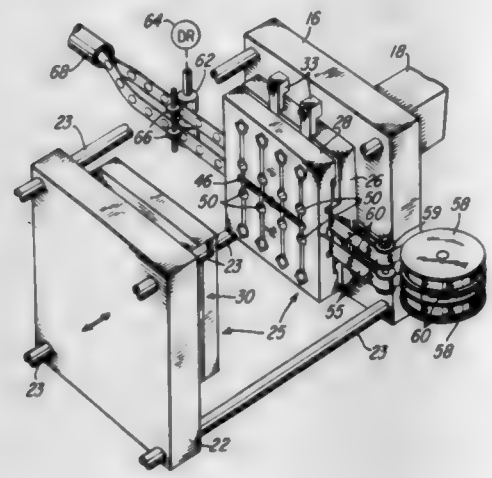
4,537,739
PRODUCTION OF MOLDED PLASTIC ARTICLES WITH ARTWORK THEREON

Gerald F. Ruhl, Greenville, Ohio, assignor to Replicap Products, Inc., Greenville, Ohio

Filed Aug. 22, 1983, Ser. No. 524,935

Int. Cl.³ B29C *1/00, 9/00;* B29F *1/00*

U.S. Cl. 264—247 **9 Claims**



1. A method of producing articles of molded plastics material with each article having thereon a decorative coating according to predetermined artwork, comprising the steps of forming on a first mold section and a second mold section corresponding surfaces cooperating to define a primary portion of at least one mold cavity corresponding to the shape of the article, positioning adjacent the second mold section a mold plate having a generally flat surface defining a secondary portion of the cavity and substantially coextensive with the cavity, supporting the first and second mold sections for relative movement between open and closed positions, supporting the second mold section and the mold plate for relative movement between a clamped position and a released position defining a clearance space therebetween, providing an elongated flexible carrier strip releasably supporting a layer of heat responsive transfer material, directing the carrier strip through the clearance space and along a path adjacent the mold plate surface and the cavity, clamping the carrier strip between the mold plate surface and the second mold section when the mold plate and the second mold secton are in the clamped position, injecting a molten plastics material into the mold cavity remote from the surface of the mold plate and into contact with the layer of transfer material on the carrier strip adjacent the mold plate surface to form an article within the cavity and to transfer a portion of the layer of transfer material from the carrier strip to the article while the corresponding portion of the carrier strip remains in contact with the generally flat mold plate surface, and pulling the carrier strip longitudinally through the clearance space when the mold plate and the second mold section are in the released position to advance the carrier strip and position another portion of the layer of transfer material adjacent the mold cavity.

4. Apparatus for producing articles of molded plastics material with each article having thereon a decorative coating according to predetermined artwork, comprising a mold including a first mold section and a second mold section having corresponding surfaces cooperating to define a portion of at least one mold cavity corresponding to the shape of the article, a mold plate disposed adjacent said second mold section and having a generally flat surface also defining a portion of said cavity and substantially coextensive with said cavity, means supporting said first and second mold sections for relative movement between open and closed positions, means supporting said second mold section and said mold plate for relative movement between a clamped position and a released position defining a clearance space therebetween, an elongated flexible carrier strip releasably supporting a layer of heat responsive transfer material, means for directing said carrier strip through said clearance space and along a path adjacent said mold plate surface and said cavity, said carrier strip being clamped between said mold plate surface and said second mold section when said mold plate and said second mold section are in said clamped position, means for injecting a molten plastics material into said mold cavity remote from said surface on said mold plate and into contact with said layer of transfer material on said carrier strip adjacent said mold plate surface to form an article within said cavity and to transfer a portion of said layer of transfer material from said carrier strip to the article while the corresponding portion of said carrier strip remains in contact with said mold plate surface, and means for pulling said carrier strip longitudinally through said clearance space when said mold plate and said second mold section are in the said released position to advance said carrier strip and position another portion of the said layer of transfer material adjacent said mold cavity.

4,537,740
FISSION GAS DETECTION SYSTEM

Richard P. Colburn, Pasco, Wash., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Mar. 31, 1983, Ser. No. 480,961

Int. Cl.³ G21C *17/00*

U.S. Cl. 376—256 **6 Claims**

6. A device for monitoring a nuclear fuel assembly for rod cladding failure and subsequent fission gas release which comprises:

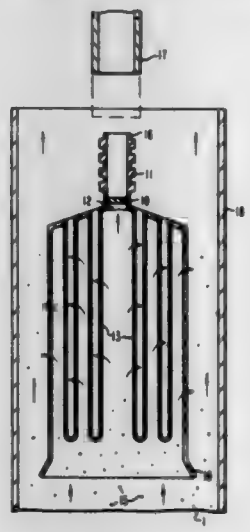
(a) a path for passage of a portion of coolant flow after passage through said fuel assembly;

(b) a first filter in said path having holes adapted to pass

coolant therethrough but sufficiently small to prevent passage of entrained fission gas bubbles, said filter holes having a diameter ranging from about 10 μm to 100 μm;

(c) a plenum located within said path to gather fission gas bubbles which are denied passage through said first filter;

(d) a second small filter located in said path, such that a portion of coolant flow through said first filter passes



through said second small filter and second filter located adjacent to said plenum such that said second small filter becomes gas blanketed by fission gas bubbles which gather in said plenum when cladding failure occurs; and

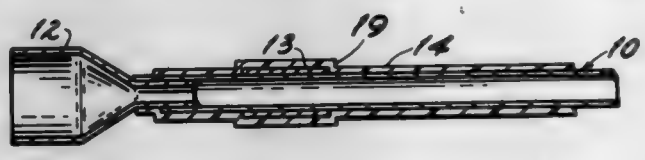
(e) means for monitoring coolant flow through said second small filter, such flow indicative of cladding failure since the gas blanketing of said second filter by fission gas then released reduces said flow.

4,537,741

FUNNEL FOR FUEL PIN LOADING SYSTEM

David W. Christiansen, Kennewick; Jim M. Steffen, Richland, and William F. Brown, West Richland, all of Wash., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Nov. 30, 1982, Ser. No. 445,605
Int. Cl.³ G21C *19/00*
U.S. Cl. 376—261 7 Claims



1. In combination with a length of tubular fuel cladding for a nuclear reactor, in which the cladding has an open axial end;

a funnel mounted to the open axial end of the cladding, said funnel having an enlarged outer open end leading to a reduced diameter neck that is at least partially inserted within the open axial end of the cladding as a coaxial outwardly protruding attachment;

and a continuous length of tubing shrunk about both the cladding and funnel to grip and maintain them as a unit during handling of the unfilled cladding and reception of fuel into the cladding through the attached funnel.

4,537,742

METHOD FOR CONTROLLING DIMENSIONS OF RSPD ARTICLES

Paul A. Siemers, Clifton Park; Robert W. Kopp, Ballston Lake, and Melvin R. Jackson, Schenectady, all of N.Y., assignors to General Electric Company, Schenectady, N.Y.

Filed Oct. 28, 1983, Ser. No. 546,234
Int. Cl.³ B22F *3/00*
U.S. Cl. 419—8 8 Claims

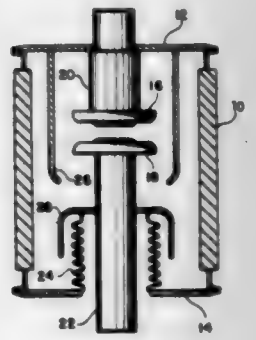
1. A method of forming an article to close internal dimensions from a difficult to fabricate material which comprises providing the material in a finely divided form, low pressure plasma spraying the material to form a body having a density less than 100% of its theoretical density, and having an internal cavity, providing a densification mandrel having dimensions slightly smaller than the final dimensions to be imparted to said cavity and having a thermal coefficient of expansion greater than that of said body, introducing said densification mandrel into said cavity and heat treating said body and densification mandrel to densify said body and to shrink said body into contact with said mandrel and to impart to said body a set of desired internal dimensions.

4,537,743

ELECTRODE COMPOSITION FOR VACUUM SWITCH

Takashi Yamanaka, Itami; Yasushi Takeya, Osaka; Mitsumasa Yorita, Itami; Toshiaki Horiuchi, Settsu; Kouichi Inagaki, Itami; Eizo Naya, Ibaraki; Michinosuke Demizu, Takarazuka, and Mitsuhiro Okumura, Sakai, all of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Division of Ser. No. 451,324, Dec. 20, 1982, Pat. No. 4,499,009.
This application Jun. 25, 1984, Ser. No. 624,519
Claims priority, application Japan, Dec. 21, 1981, 56-208687
Int. Cl.³ B22F *1/04*
U.S. Cl. 419—38 2 Claims



1. An electrode for a vacuum switch, said electrode being produced by subjecting a composition consisting essentially of:

(a) not more than 20% by weight of at least one low melting point metal selected from the group consisting of bismuth (Bi), lead (Pb), indium (In), lithium (Li), tin (Sn) and alloys thereof;

(b) not more than 10% by weight of a metal capable of forming an alloy with said low melting point metal at a temperature not less than the melting point of said low melting point metal, and being alloyable with copper at a temperature not higher than the melting point of said alloy, selected from the group consisting of tellurium (Te), antimony (Sb), lanthanum (La), magnesium (Mg) and alloys thereof; and

(c) the balance being copper (Cu)

to a powder metallurgical technique which comprises mixing components (a), (b) and (c) in powder form, molding the resultant mixture into a predetermined electrode shape and sintering the resultant shape in a furnace at a temperature not higher than the melting point of copper in an atmosphere of substantially pure hydrogen.

4,537,744

HIGH-TEMPERATURE PROTECTION LAYER

Franz Gross, Neckargemünd; Georg Wahl, Eppelheim, and Andrew R. Nicoll, Oftersheim, all of Fed. Rep. of Germany, assignors to BBC Aktiengesellschaft Brown, Boveri & Cie, Baden, Switzerland

Filed Nov. 30, 1983, Ser. No. 556,639

Claims priority, application Fed. Rep. of Germany, Dec. 16, 1982, 3246507

Int. Cl.³ C22C *19/05*

U.S. Cl. 420—446 4 Claims

1. High-temperature protection layer for protecting structural elements of austenitic material subjected to temperatures below and above 900° C., of an alloy applied to the austenitic structural material, said alloy having a base material containing at least 8 to 12 atom % aluminum, 18 to 28 atom % chromium, with the remainder nickel and 1 to 6 atom % silicon and 1 to 3 atom % titanium based on the base material of the alloy admixed to the base material as additives to induce a passive cover layer of chromium oxide to develop on the alloy at a temperature below 900° C., and a passive cover layer of aluminum oxide to develop on the alloy at a temperature above 900° C.

4,537,745

METHOD OF PRODUCING COPPER-CHROMIUM FUSION ALLOYS AS CONTACT MATERIAL FOR VACUUM POWER SWITCHES

Heinrich Hässler, Wendelstein; Reiner Müller, Steinbach; Horst Kippenberg, Herzogenaurach, and Norbert Prölss, Wendelstein, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jan. 27, 1984, Ser. No. 574,792

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303170

Int. Cl.³ C22C *1/02*

U.S. Cl. 420—590 22 Claims

1. In a method of producing copper-chromium fusion alloys having a chromium content of at least 25% by mass and at most 60% by mass with a homogeneous macrostructure without lattice defects and without shrink holes or pipes for use as contact material for vacuum power switches with breaking currents above 10 KA, wherein a starting material is prepared for the fusion process from the alloy components copper and chromium and then a melt is formed from this starting material, the improvement comprising the steps of:

(a) superheating at least a partial zone of an instantaneous volume of said melt to at least 2000° C., thereby to fuse the starting material into the fusion alloy; and

(b) rapidly cooling the melt at a non-thermodynamic equilibrium rate such that a primary Cr precipitation or segregation does not occur.

4,537,746

METHODS FOR DISINFECTING AND PRESERVING CONTACT LENSES

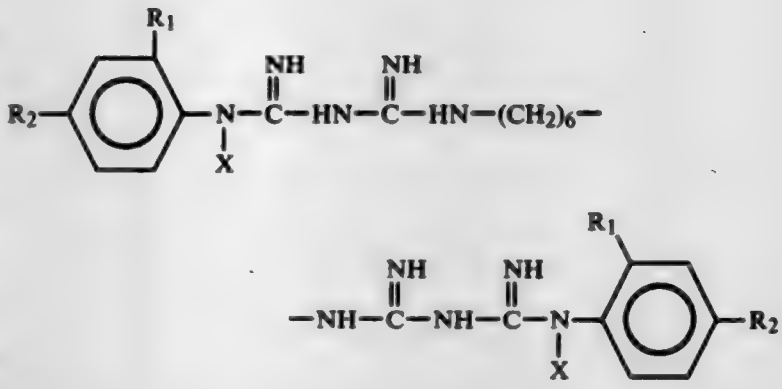
Lai Ogunbiyi, Fairport; Francis L. Scott, Rochester, and Francis X. Smith, Walworth, all of N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,833

Int. Cl.³ A61L *2/16*

U.S. Cl. 422—28 19 Claims

1. A method of disinfecting and/or preserving contact lenses which comprises treating said lenses with an antimicrobial amount of a solution comprising a biguanide or its water soluble salt of the formula:



wherein R_1 and R_2 are hydrogen or halogen and X is hydrogen or alkyl, provided that when R_2 is halogen then R_1 is hydrogen and X is alkyl.

4,537,747

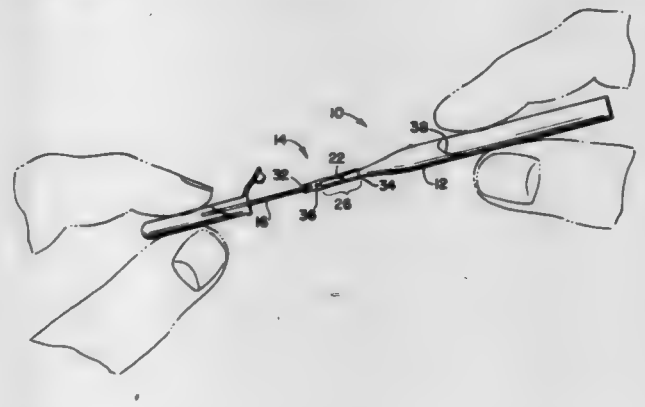
DISPOSABLE DEVICE FOR SAMPLING AND DILUTING

Henry B. Castaneda, Woodbridge, Va., assignor to Chemetrics, Inc., Warrenton, Va.

Filed Mar. 16, 1983, Ser. No. 475,975

Int. Cl.³ G01N *1/14*

U.S. Cl. 422—100 9 Claims



1. A disposable device for the sampling and diluting of a liquid, comprising a hollow tubular body that includes means for drawing up and capturing by capillary attraction a predetermined volume of a liquid; and that further includes a valveless connecting tube in an air-tight sealing relationship with an upper end of the liquid drawing up and capturing means;

a sealed pre-evacuated container having a fill volume selected to effect a predetermined dilution of the liquid captured by said liquid drawing up and capturing means, said container haivng means for mutually interengaging in an air-tight sealing relationship with said connecting tube;

means for providing ready communication between the interior of said container and said hollow tubular body when said container and said connecting tube are in an air-tight sealing relationship; and

a two-way vent port in a wall of said hollow tubular body for preventing air pressure build-up within said hollow tubular body that would preclude the drawing up of said predetermined volume of said liquid, or that would overcome the capturing capability of said liquid drawing up and capturing means, for readily venting otherwise trapped air from within said hollow tubular body to the ambient atmosphere, and for allowing diluent flow into said hollow tubular body and thereafter into said container other than through said liquid drawing up and capturing means to effect rapid container fill.

4,537,748

APPARATUS FOR TREATING COMPRESSED AIR FOR BREATHING PURPOSES

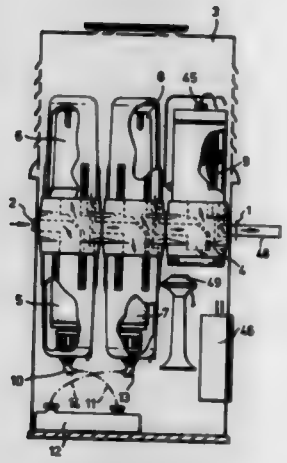
Colin T. Billiet, Durham, England, assignor to Domnick Hunter Filters Ltd., Durham, England

Filed Sep. 9, 1982, Ser. No. 416,306

Claims priority, application United Kingdom, Sep. 11, 1981, 81127557

Int. Cl.[3] A62B 7/08

U.S. Cl. 422—122 16 Claims



1. Apparatus for treating a supply of humid contaminated compressed air to render it suitable for breathing purposes, the apparatus comprising: inlet means for receiving compressed air directly from a compressor; a first filter for removing bulk liquids and gross particulate matter; a second filter comprising a soda lime adsorption bed for removing carbon dioxide and acidic fumes; a third coalescing filter for removing oil and water aerosols and sub-micron particulate matter; a fourth filter comprising an activated carbon adsorption bed for removal of hydrocarbon vapors and odors; means for directing the air sequentially through the first, second, third and fourth filters to deliver from the fourth filter a filtered humid air supply substantially devoid of water aerosol; a pressure vessel having an inlet at which said filtered humid air supply is received from said fourth filter via said air delivery means; a bed of granular catalyst material within the pressure vessel, the catalyst material being effective to cause oxidation of carbon monoxide in the air to carbon dioxide; an air passage from the inlet to the catalyst bed; a heater comprising at least one heating element extending within the air passage, the heating element being formed of a material that exhibits a rapid increase in electrical resistance at a temperature of from 101° C. to 110° C.; means for supplying electrical current to the heating element; a temperature sensor immediately downstream of the catalyst bed; control means connected to the sensor and the heater whereby the control means is responsive to the sensor to cause operation of the heater so as to maintain a mean catalyst bed temperature of not less than 100° C. during air passage therethrough; and outlet means within said pressure vessel located downstream of the catalyst bed for passing the relatively high pressure and temperature air from the catalyst bed and out of said pressure vessel, said air, upon cooling and expansion to atmospheric pressure, being suitable for breathing purposes.

4,537,749

PROCESS AND DEVICE FOR STERILIZING TUB-SHAPED CONTAINERS

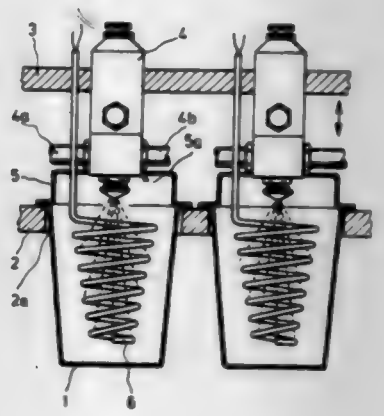
Werner Hick, Hiddenhausen, Fed. Rep. of Germany, assignor to Hick & Co. GmbH, Hiddenhausen, Fed. Rep. of Germany

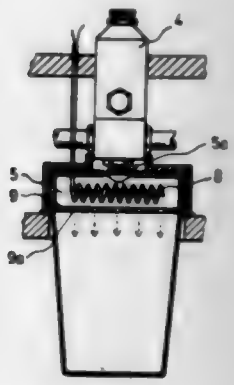
Division of Ser. No. 391,246, Jun. 23, 1982, Pat. No. 4,424,189. This application Jun. 27, 1983, Ser. No. 507,924

Claims priority, application Fed. Rep. of Germany, Jun. 27, 1981, 3125430

Int. Cl.[3] A61L 2/04, 2/18

U.S. Cl. 422—304 7 Claims





1. Apparatus for sterilizing open-topped containers comprising:

conveyor means for supporting containers to be sterilized, said conveyor means moving containers to be sterilized in a first direction along a path;

nozzle means for producing an atomized spray of a liquid delivered thereto, said nozzle means defining a spray discharge path having an axis;

cap means, said cap means being hermetically affixed to said nozzle means;

means for delivering a liquid sterilizing agent capable of the formation of free oxygen upon thermal decomposition to said nozzle means whereby said nozzle means will discharge an atomized spray of said sterilizing agent;

heater means, said heater means having a heating element with a surface which is at a temperature above the thermal decomposition temperature of the sterilizing agent;

support means for said nozzle and heater means, said support means positioning said heater means so that said heater means heating element extends across said nozzle means spray discharge path and intersects the axis thereof so that the spray discharged from said nozzle means will impinge upon said heater means heating element surface whereby said sterilizing agent will undergo instantaneous thermal decomposition; and

means for moving said support means relative to said conveyor means in a second direction which is at an angle relative to said first direction whereby said cap means may be selectively positioned either at a first location spaced from the open top of a container to be sterilized or at a second location sealing the open top of a container to be sterilized, an atomized spray of said sterilizing agent dis-

charged from said nozzle means with said cap at said second location impinging upon said heater means heating element surface in the vicinity of a container to be sterilized, the internal surface of a container thus being sterilized by the combined effects of the free oxygen produced during the instantaneous thermal decomposition of said atomized sterilizing agent and of the sterilizing agent which condenses on the internal surface of a container to be sterilized.

5. Apparatus for sterilizing open-topped containers comprising:

conveyor means for supporting containers to be sterilized, said conveyor means moving containers to be sterilized in a first direction along a path;

nozzle means for producing an atomized spray of a liquid delivered thereto;

cap means, said cap means being hermetically affixed to said nozzle means;

means for delivering a liquid sterilizing agent capable of the formation of free oxygen upon thermal decomposition to said nozzle means whereby said nozzle means will discharge an atomized spray of said sterilizing agent;

heater means, said heater means having a heating element with a surface which is at a temperature above the thermal decomposition temperature of the sterilizing agent, said heater means heating element being at least partly positioned downstream of said nozzle means in the direction of travel of the spray discharged from said nozzle means, said heater means heating element extending beyond said cap means in the direction of travel of the spray discharged from said nozzle means;

support means for said nozzle means and heater means; and

means for moving said support means relative to said conveyor means in a second direction which is generally perpendicular to said first direction whereby said cap means may be selectively positioned either at a first location spaced from the open top of a container to be sterilized or at a second location sealing the open top of a container to be sterilized, said heater means heating element surface being at least partly positioned within a container to be sterilized when said cap means is in said second location whereby the spray discharged from said nozzle means will impinge upon said heater means heating element surface and the atomized sterilizing agent will thereupon undergo instantaneous thermal decomposition in the vicinity of container to be sterilized, the internal surfaces of a container thus being sterilized by the combined effects of the free oxygen produced during thermal decomposition of the atomized sterilizing agent and the sterilizing agent which condenses on the internal surfaces of a container to be sterilized.

4,537,750

PROCESS FOR PRODUCING HIGH PURITY TANTALUM OXIDE

Joseph E. Ritsko, and Howard L. Acla, both of Towanda, Pa., assignors to GTE Products Corporation, Stamford, Conn.

Filed Feb. 29, 1984, Ser. No. 584,848

Int. Cl.³ C01G *35/00*

U.S. Cl. 423—65 **10 Claims**

1. A process for producing optical grade tantalum oxide from an impure tantalum oxide, said process comprising:

(a) contacting said impure tantalum oxide with an aqueous solution of hydrofluoric acid of sufficient strength to solubilize said impure tantalum oxide,

(b) separating said aqueous solution of hydrofluoric acid containing the tantalum values from any insolubles,

(c) adjusting the pH of said aqueous solution of hydrofluoric acid containing said tantalum values to from about 6.0 to about 8.0 with a base to precipitate the tantalum values,

(d) separating the precipitate of tantalum values from the pH adjusted aqueous hydrofluoric acid mother liquor,

(e) contacting said precipitate of tantalum with an oxalic acid solution of sufficient strength to dissolve said precipitate of tantalum,

(f) adjusting the pH of the oxalic acid solution containing the tantalum values to from about 5.1 to about 5.5,

(g) digesting the resulting oxalate solution containing the tantalum values at above about 80° C. for a sufficient time to produce a high purity compound of tantalum,

(h) separating said high purity compound of tantalum from the oxalate solution mother liquor and,

(i) digesting said high purity compound of tantalum in an aqueous solution of hydrochloric acid having a strength of from about 1N to about 10N, at a sufficient temperature and for a sufficient time to dissolve said high purity compound of tantalum in said aqueous solution of hydrochloric acid and continuing digesting for a sufficient time to subsequently precipitate pure optical grade tantalum oxide and,

(j) separating said precipitate from the hydrochloric acid mother liquor.

4,537,751

TREATMENT OF ALUMINA-BASE CATALYSTS

Paul J. Marcantonio, Novato, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Mar. 28, 1984, Ser. No. 594,078

Int. Cl.³ C01F *7/02*

U.S. Cl. 423—114 **12 Claims**

1. A process for the treatment of spent particulate alumina-base catalysts, comprising:

(a) treating the particles of catalyst with gaseous sulfur trioxide at a temperature of from 350° to 550° C. to cause a first reaction converting at least a substantial portion of the alumina present inthe catalyst to aluminum sulfate; and

(b) treating the particles produced in step (a) with an aqueous solution of the hydroxide of a cation having a soluble sulfate salt at a pH of 9 to 12 to cause a second reaction converting at least a substantial proportion of the aluminum sulfate to an aluminum hydroxide.

4,537,752

METHOD FOR REMOVING HYDROGEN SULFIDE FROM GAS STREAMS

Gunter Weber, Linden, Fed. Rep. of Germany, assignor to Linde Aktiengesellschaft, Wiesbaden, Fed. Rep. of Germany

Continuation-in-part of Ser. No. 455,703, Jan. 5, 1983, abandoned, This application Jul. 17, 1984, Ser. No. 631,706

Claims priority, application Fed. Rep. of Germany, Oct. 26, 1982, 3239602

Int. Cl.³ B01D *53/34;* C01B *17/05*

U.S. Cl. 423—224 **16 Claims**

1. In a process for the simultaneous absorption and oxidation of hydrogen sulfide to sulfur, comprising the steps of scrubbing in a scrubbing stage a gas consisting essentially of a sour gas containing H_2S with an aqueous, alkaline scrubbing solution containing pentavalent vanadium as the oxidizing agent, wherein the hydrogen sulfide is absorbed by the scrubbing agent and oxidized by pentavalent vanadium to elemental sulfur with reduction of the pentavalent vanadium to tetravalent vanadium, and then in a regeneration stage, separate from the scrubbing stage, regenerating the thus-reduced scrubbing solution in the presence of a promoter by reoxidation of the tetravalent vanadium gas to pentavalent vanadium with a gas containing molecular oxygen, the improvement wherein the scrubbing solution consists essentially of sodium carbonate, vanadium, and an amine promoter.

4,537,753

REMOVAL OF CO_2 AND H_2S FROM NATURAL GASES

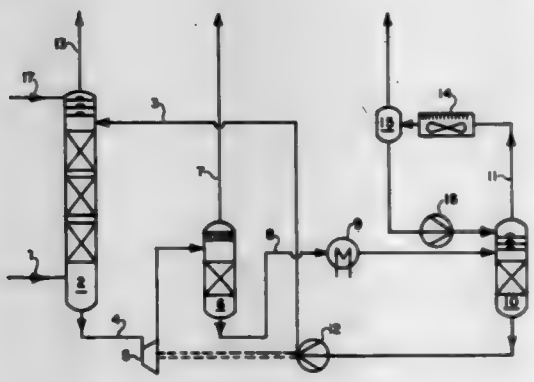
Eckhart Wagner, Ludwigshafen; Klaus Volkamer, Frankenthal, and Ulrich Wagner, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Sep. 30, 1983, Ser. No. 537,837

Claims priority, application Fed. Rep. of Germany, Oct. 2, 1982, 3236600

Int. Cl.[3] B01D *53/34*

U.S. Cl. 423—228 5 Claims



1. A process for removing CO_2 and, where relevant, H_2S from a natural gas which contains CO_2 and may or may not contain H_2S, which comprises:

(a) treating said natural gas in an absorption stage at from 40° to 100° C. and at a pressure of from 10 to 110 bar with an aqueous absorption liquid containing from 20 to 70% by weight of methyldiethanolamine by feeding in the natural gas at the bottom and the aqueous absorption liquid at the top of the absorption stage, CO_2 and, where it is present, H_2S being washed out by a counter-current procedure;

(b) taking off the treated natural gas at the top of the absorption stage;

(c) taking off the aqueous absorption liquid laden with CO_2 and, where relevant, H_2S at the bottom of the absorption stage;

(d) regenerating the laden aqueous absorption liquid without the use of a stripping column by flashing the liquid in one or more flash stages, letting down the pressure in the last flash stage, or in the single flash stage where only one such stage is employed, to about 1 to 3 bar; and

(e) recycling the regenerated absorption liquid to the absorption stage.

4,537,754

ZEOLITE EU-1 AND A METHOD OF MAKING ZEOLITE EU-1

John L. Casci, Redcar; Barrie M. Lowe, Edinburgh, and Thomas V. Whittam, Darlington, all of England, assignors to Imperial Chemical Industries PLC, London, England

Filed Jun. 11, 1981, Ser. No. 272,465

Claims priority, application United Kingdom, Jun. 12, 1980, 8019210

Int. Cl.[3] C01B *35/10, 33/28, 33/20*

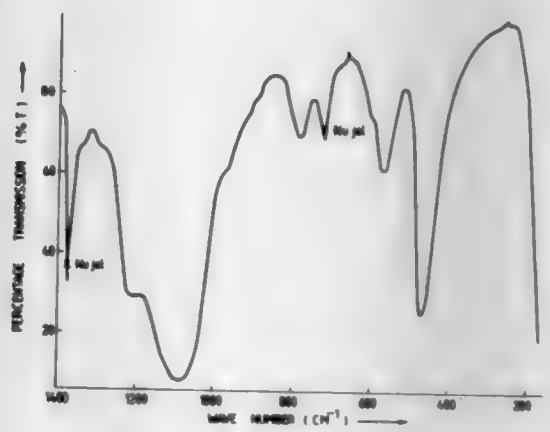
U.S. Cl. 423—277 13 Claims

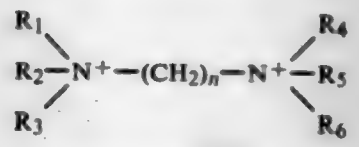
1. Zeolite EU-1 having a molar composition expressed by the formula:

$$0.5 \text{ to } 1.5\ R_2O:Y_2O_3:\text{at least } 10\ XO_2:0 \text{ to } 100\ H_2O$$

wherein R is a monovalent cation or $^1/_n$ of a cation of valency n, X is silicon and/or germanium, Y is one or more of aluminium, iron, gallium or boron, and H_2O is water of hydration additional to water notionally present when R is H, and having, when freshly prepared, an X-ray diffraction pattern as shown in Table 1.

5. A method of making zeolite EU-1 as defined in claim 1 which comprises reacting an aqueous mixture comprising at least one oxide XO_2, at least one oxide Y_2O_3 and at least one alkylated derivative of a polymethylene α-ω diamine having the formula:





, or a precursor thereof, wherein n is in the range from 3 to 12 and R_1 to R_6 which may be the same or different, can be alkyl or hydroxyalkyl groups containing from 1 to 8 carbon atoms and up to five of the groups R_1–R_6 can be hydrogen, the mixture having the molar composition:

XO_2/Y_2O_3	at least 10
OH^-/XO_2	0.1 to 6.0
$(M^+ + Q)/Y_2O_3$	0.5 to 100
$Q/(M^+ + Q)$	0.1 to 1.0
H_2O/XO_2	1 to 100

where X is silicon and/or germanium, Y is one or more of aluminium, iron, gallium, or boron, M is an alkali metal or ammonium, and Q is the aforesaid alkylated derivative of a polymethylene diamine, or a precursor thereof.

4,537,755

SELECTIVE OLIGOMER PRODUCTION

Hsueh M. Li, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Dec. 5, 1983, Ser. No. 558,314

Int. Cl.[3] C01B *25/10*

U.S. Cl. 423—300 3 Claims

1. A non-catalytic process for the preparation of halophosphazene oligomer enriched in cyclic trimer which consists essentially of:

(a) concurrently introducing halogen halide and ammonia into an agitated liquid dilvent in which halophosphazene oligomer is soluble, these materials being proportioned so as to form a reaction system composed of a dilute slurry of finely divided ammonium halide particles; and then

(b) concurrently introducing phosphorus trihalide and halogen into the slurried reaction system from (a) heated to a temperature of about 80° to about 180° C.;

the quantities of the reactants introduced into the reaction medium being proportioned such that:

(c) the ammonium halide:phosphorus trihalide molar ratio is between about 1:1 and about 3:1;

(d) the phosphorus trihalide:halogen molar ratio is kept above about 0.5:1 and below about 2:1 until all of the phosphorus trihalide has been introduced, and thereafter the halogen is introduced in an amount sufficient to give a total phosphorus trihalide : halogen molar ratio above about 0.5:1 but below about 1:1.

4,537,756

PROCESS FOR THE ELECTROTHERMAL PRODUCTION OF YELLOW PHOSPHORUS

Karl Röttgen, Erftstadt; Joachim Stendel, Brühl, and Herbert Diskowski, Erftstadt, all of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 3, 1984, Ser. No. 627,427

Claims priority, application Fed. Rep. of Germany, Jul. 18, 1983, 3325813; Feb. 11, 1984, 3404952

Int. Cl.[3] C01B *25/01, 25/02, 25/04*

U.S. Cl. 423—323 21 Claims

1. A process for making yellow phosphorus from phosphate pellets, coke and gravel inside an electrothermal furnace while removing foreign components from the furnace's material cycle which comprises: removing molten ferrophosphorus, a molten calcium metasilicate slag and a dust-containing gas mixture consisting essentially of carbon monoxide and phosphorus in vapor form from the furnace; separating the dust electrostatically from said gas mixture; treating said dust with water with the resultant formation of a dust suspension; granulating crude phosphate and a mixture of dust suspension and binder on a granulating means; calcining the granulated material on a sintering means; and making it into phosphate pellets; grinding a portion of said slag; granulating the ground slag and at least a portion of dust suspension in a ratio by weight of 5:1 to 7:1 on a granulating means; drying and calcining the granulated material with the resultant formation of pellets containing the foreign components selected from the group consisting of zinc, cadmium and further heavy metals in the form of insoluble matter; and giving said pellets on to a deposition site.

4,537,757

CRYSTALLINE ALUMINOSILICATE AZ-1 AND A PROCESS FOR PRODUCING THE SAME

Masazumi Chono, and Hiroshi Ishida, both of Kurashiki, Japan, assignors to Asahi Kasei Kogyo Kabushiki Kaisha, Osaka, Japan

Continuation-in-part of Ser. No. 562,495, Dec. 16, 1983, abandoned. This application Mar. 30, 1984, Ser. No. 595,069

Claims priority, application Japan, Dec. 30, 1982, 57-228283; Apr. 30, 1983, 58-77265

Int. Cl.[3] C01B *33/28*

U.S. Cl. 423—328 11 Claims

1. A crystalline aluminosilicate having a molar composition represented by the formula:

$$M_{2/n}O.Al_2O_3.YSiO_2$$

wherein M is at least one cation having a valence n and Y is at least 10, and having in its X-ray diffraction pattern obtained by using CuKα line at least seven diffraction lines showing the following relative intensities at the positions of the following respective diffraction angles (2θ):

Diffraction angle (2θ, deg)	Relative intensity
7.8 ± 0.2	5–30
8.7 ± 0.2	90–100
8.9 ± 0.2	90–100
17.5 ± 0.2	5–30
17.7 ± 0.2	5–30
23.1 ± 0.2	30–80
23.3 ± 0.2	20–50

taking the intensity of the diffraction line at a diffraction angle of 8.7°±0.2° or 8.9°±0.2° as 100.

4. A process for producing a crystalline aluminosilicate according to claim 1 which comprises preparing a mixture of a silica source, an alumina source, a sodium source, water and 1,8-diamino-4-aminomethyloctane and having the following molar composition:

SiO_2/Al_2O_3	10 to 1000
Na/SiO_2	0.05 to 1.0
H_2O/SiO_2	5 to 200
1,8-diamino-4-aminomethyloctane/SiO_2	0.1 to 10

and reacting the components of said mixture with one another at a temperature of 100° to 250° C.

4,537,758

PROCESS FOR PREPARING HIGHLY SILICEOUS POROUS ZSM-12 TYPE CRYSTALLINE MATERIAL

Pochen Chu, West Deptford, and Güenter H. Küehl, Cherry Hill, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Continuation-in-part of Ser. No. 288,603, Jul. 30, 1981, abandoned, and a continuation-in-part of Ser. No. 235,116, Feb. 17, 1981, Pat. No. 4,452,769, which is a continuation of Ser. No. 140,466, Apr. 17, 1980, abandoned, which is a continuation of Ser. No. 22,260, Mar. 21, 1979, abandoned. This application Mar. 19, 1984, Ser. No. 591,092

The portion of the term of this patent subsequent to Jun. 5, 2001, has been disclaimed.

Int. Cl.[3] C01B *33/28*

U.S. Cl. 423—329 2 Claims

1. In a process for preparing a zeolite ZSM-12 type crystalline material by preparing a reaction mixture containing a source of an alkali or alkaline earth metal oxide, an oxide of silicon, methyltriethylammonium ion and water, and maintaining said mixture under crystallization conditions until crystals of said zeolite are formed, the improvement which comprises:

preparing the reaction mixture from a high purity silica source, said reaction mixture containing no added alumina, having a pre-crystallization pH of about 13, and having a composition, in terms of mole ratios of oxides, falling within the following ranges:

SiO_2/Al_2O_3	200 to ∞
$M_2O/[MTEA)_2O + M_2O]$	0.0 to 0.8
OH^-/SiO_2	0.1 to 1.2
$H_2O/[(MTEA)_2O + M_2O]$	50 to 250

wherein M is an alkali or alkaline earth metal and $(MTEA)^+$ is a methyltriethylammonium ion.

4,537,759

PRODUCTION OF ELEMENTAL SILICON FROM IMPURE SILANE FEED

Joe M. Walker, Pittsburg, Kans., and Thomas M. Potts, Miami, Okla., assignors to Eagle-Picher Industries, Inc., Cincinnati, Ohio

Continuation-in-part of Ser. No. 295,654, Aug. 24, 1981, abandoned. This application Jun. 27, 1983, Ser. No. 507,768

Int. Cl.[3] C01B *33/02*

U.S. Cl. 423—349 11 Claims

1. In the production of elemental silicon by decomposition of silane,

the improvement comprising,

providing a gas chromatograph column having a packing selected from the group consisting of porous polymer and molecular sieve column packing materials and which differentially retards the flow through it of silane gas in comparison to the flow of undesirable impurities contained in said gas,

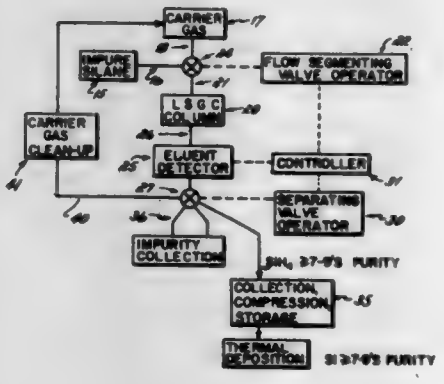
preconditioning said packing by heating the column and packing therein for a period of at least one hour at a temperature about 10°–30° C. below the maximum operating temperature of the packing, then flowing a stream of silane gas over the packing so heated for a period of at least about one-half

hour, the column so conditioned providing substantially better separation of silane from impurities than a corresponding column which is not so preconditioned,

providing a silane gas feed containing undesirable impurities of the electronically active type,

injecting said feed as a series of regularly spaced pulses into a stream of an inert carrier gas,

passing the resulting stream through said column, the packing therein differentially retarding the silane gas component of each respective pulse so that it elutes from the column as a silane peak at a different time than the said impurities,



operating a valve to direct the silane peak of each respective pulse to a separate outlet line from the impurities, said valve being opened only during elution of the silane peak, for so brief a period that the purity of the valved silane and admixed carrier gas is no less than that of electronic grade silicon, and

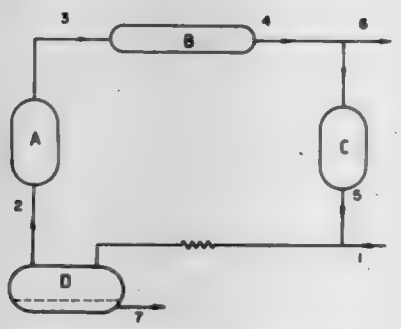
decomposing the thus separated silane, in the presence of the carrier gas, to produce elemental silicon of at least electronic grade purity.

4,537,760

PROCESS FOR THE MANUFACTURE OF AMMONIA

Ram Lavie, Haifa, Israel, assignor to Technion Research and Development Foundation, Inc., Haifa, Israel

Continuation-in-part of Ser. No. 403,137, Jul. 29, 1982, abandoned. This application Aug. 14, 1984, Ser. No. 640,858
Claims priority, application Israel, Aug. 21, 1981, 63630
Int. Cl.[3] C01C *1/04*
U.S. Cl. 423—359 15 Claims



1. A process for the manufacture of ammonia, comprising the steps of

(a) feeding a gaseous mixture of hydrogen and nitrogen, or generators thereof in the proportions of about 3 moles hydrogen to 1 mole nitrogen, together with inert gases, into a converter containing catalyst(s) for ammonia synthesis and thereby producing ammonia;

(b) conveying the reaction mixture from said converter through an adsorbent to effect adsorption of the formed ammonia together with some inert gases, whereby the adsorbed gases are separated from the unreacted mixture of gases, the latter being recycled to the converter;

(c) effecting desorption of ammonia from the ammonia-loaded adsorbent by direct contact of said adsorbent with a concentrated hot stream of ammonia-containing gases comprising the hot effluent from the converter;

(d) condensing the ammonia eliberated from the adsorbent to liquid ammonia; and

wherein the adsorption and desorption steps are carried out in phased order, providing continuous streams of controlled compositions.

8. A process for the manufacture of ammonia, comprising the steps of

(a) feeding a gaseous mixture of hydrogen and nitrogen, or generators thereof in the proportions of about 3 moles hydrogen to 1 mole nitrogen, together with inert gases, into a converter containing catalyst(s) for ammonia synthesis and thereby producing ammonia;

(b) conveying the reaction mixture from said converter through an adsorbent to effect adsorption of the formed ammonia together with some inert gases, whereby the adsorbed gases are separated from the unreacted mixture of gases, the latter being recycled to the converter;

(c) effecting desorption of ammonia from the ammonia-loaded adsorbent by direct contact of said adsorbent with a concentrated hot stream of ammonia-containing gases comprising hot compressed ammonia refrigerant which is at least as concentrated with ammonia as the hot effluent from the converter;

(d) condensing the ammonia eliberated from the adsorbent to liquid ammonia; and

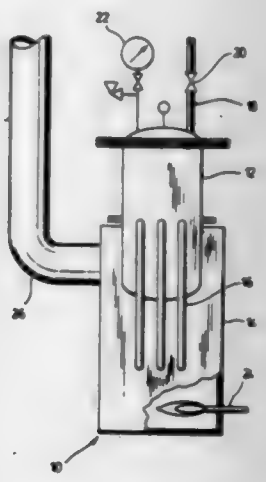
wherein the adsorption and desorption steps are carried out in phased order, providing continuous streams of controlled compositions.

4,537,761

HYDROGEN STORAGE SYSTEM

Gordon A. D. Reed, Don Mills, and Irwin J. Itzkovitch, Nepean, both of Canada, assignors to Liquid Carbonic Inc., Montreal, Canada

Continuation of Ser. No. 475,143, Mar. 14, 1983, abandoned. This application May 17, 1984, Ser. No. 611,343
Int. Cl.[3] C01B *6/74*
U.S. Cl. 423—644 14 Claims



1. A method of preparing a metal for metal hydride formation consisting essentially of:

subjecting a particulate hydride-forming magnesium/copper alloy composition in which magnesium is the major component, to a plurality of sequential activating cycles to produce an activated particulate magnesium/copper alloy composition,

each activating cycle comprising a step of heating the magnesium/copper alloy composition in hydrogen at a temperature of 280° to 355° C. and a pressure of 500 to 650 psig to hydride the magnesium/copper alloy composition followed by an immediate step of dehydriding the hydrided composition.

4,537,762

HAIR COMPOSITIONS CONTAINING MIXTURES OF QUATERNARY AMMONIUM COMPOUNDS AND TERTIARY AMINE SALTS OF LONG-CHAIN ACIDS

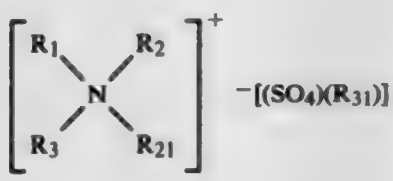
Arnold W. Fogel, Park Ridge, and Albert Zofchak, Matawan, both of N.J., assignors to Bernel Chemical Co., Waldwick and Alzo, Inc., Matawan, both of, N.J.

Filed Nov. 14, 1983, Ser. No. 551,484

Int. Cl.³ A61K *7/06*

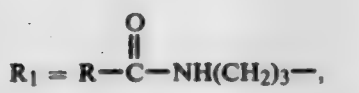
U.S. Cl. 424—70 **4 Claims**

1. A hair treating composition seleereo from the group consisting of creme rinses and conditioners comprising component (a) a quaternary ammonium compound of the formula



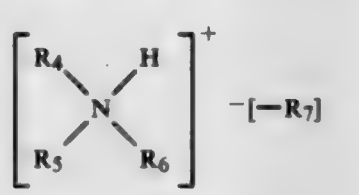
$$^{+}\left[\begin{matrix} R_1 & & R_2 \\ & N & \\ R_3 & & R_{21} \end{matrix}\right] \; {}^{-}[(SO_4)(R_{31})]$$

in which



$$R_1 = R{-}\overset{\overset{O}{\|}}{C}{-}NH(CH_2)_3{-},$$

where R is an alkyl or alkenyl chain of 8 to 22 carbon atoms, R_2 and R_{21} are methyl or ethyl, and R_3 and R_{31} are alkyl chains of 1 to 3 carbons, and component (b) a tertiary amine salt of a long-chain acid of the formula



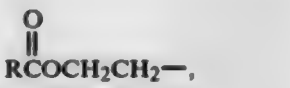
$$^{+}\left[\begin{matrix} R_4 & & H \\ & N & \\ R_5 & & R_6 \end{matrix}\right] \; {}^{-}[{-}R_7]$$

wherein R_4 is selected from the group consisting of saturated and unsaturated aliphatic groups containing from about 8 to about 22 carbon atoms,



$$\overset{\overset{O}{\|}}{R}CNHCH_2CH_2CH_2{-},\ \overset{\overset{O}{\|}}{R}CONHCH_2CH_2{-},$$

$RN(CH_3)CH_2CH_2CH_2{-}$, $RN(CH_2CH_2OH)CH_2CH_2CH_2{-}$,



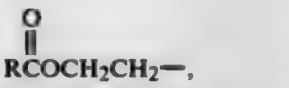
$$\overset{\overset{O}{\|}}{R}COCH_2CH_2{-},$$

$CH_3O[CH_2CH(CH_3)0]_{1-5}CH_2CH_2CH_2{-}$, $H[O(CH_3)CHCH_2]_{3-8}$, $H[O(CH_3)CHCH_2]_{3-8}OCH_2CH_2{-}$, $RCHOHCH_2$, and $ROCH_2CH_2CH_2$, wherein R represents a saturated or unsaturated aliphatic group containing from about 8 to about 22 carbon atoms; R_6 is selected from the group consisting of saturated and unsaturated groups containing from one to about two carbon atoms and $H(OCH_2CH_2)_{1-15}$, R_5 is selected from the group consisting of saturated and unsaturated aliphatic groups containing from about 1 to about 22 carbon atoms,



$$\overset{\overset{O}{\|}}{R}CNHCH_2CH_2CH_2{-},\ \overset{\overset{O}{\|}}{R}CONHCH_2CH_2{-},$$

$RN(CH_3)_2CH_2Ch_2CH_2{-}$, $RN(CH_2CH_2OH)CH_2CH_2CH_2{-}$,



$$\overset{\overset{O}{\|}}{R}COCH_2CH_2{-},$$

$CH_3O[CH_2CH(CH_3)O]_{1-5}CH_2CH_2CH_2{-}$, $H[O(CH_3)CHCH_2]_{3-8}$, $H[O(CH_3)CHCH_2]_{3-8}OCH_2CH_2{-}$, $RCHOHCH_2$, $ROCH_2CH_2CH_2$, saturated and unsaturated groups containing from one to about two carbon atoms and $H(OCH_2CH_2)_{1-15}$, and R_7 is selected from the group consisting of



$$\overset{\overset{O}{\|}}{R}{-}C{-}O,$$

$RCH{=}CH_2SO_3{-}$, $RCONHCH(CH_3)CO_2{-}$, $ROSO_3$, $RC_6H_5SO_3{-}$, $RNHCOCH{=}CHCO_2$, isostearic acid residue, ricinoleic and residue, and dimer acid residue, wherein R represents a saturated or unsaturated aliphatic group containing from about 8 to about 18 carbon atoms, the weight-to-weight ratio of the quaternary ammonium compound/tertiary amine salt of long-chain acid varying from 60/40 to 90/10.

4,537,763

PRODUCTS SWEETENED WITH α-GLYCOSYL GLYCYRRHIZIN

Toshio Miyake, and Hiromi Hijiya, both of Okayama, Japan, assignors to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Jun. 11, 1982, Ser. No. 387,651

Claims priority, application Japan, Jun. 20, 1981, 56-95714

Int. Cl.³ A61K *7/16*; A23L *1/236*; C12P *19/18*; C07H *3/00*

U.S. Cl. 424—49 **13 Claims**

1. In an orally usable product containing a sweetening or flavoring amount of a sweetening or flavoring agent, the improvement wherein said sweetening or flavoring agent comprises α-glycosyl glycyrrhizin.

4,537,764

STABILIZED ENZYMATIC DENTIFRICE CONTAINING B-D-GLUCOSE AND GLUCOSE OXIDASE

Michael A. Pellico, and Robert E. Montgomery, both of Los Angeles, Calif., assignors to Laclede Professional Products, Inc., Gardena, Calif.

Continuation-in-part of Ser. No. 292,633, Aug. 13, 1981, abandoned. This application Jun. 6, 1983, Ser. No. 501,383

Int. Cl.³ A61K *7/28, 37/48, 37/50*

U.S. Cl. 424—50 **10 Claims**

1. An enzymatic dentifrice comprising, per gram of dentifrice, from about 0.015 to about 0.6 millimoles of Beta-D-glucose and from about 0.5 to about 500 International Units of glucose oxidase for producing hydrogen peroxide upon oral application of said dentifrice, and limiting any water present in the dentifrice to an amount not more than about 10 wt. % based on the dentifrice weight to stabilize the dentifrice against the production of hydrogen peroxide prior to oral application of the dentifrice.

4,537,765

PEROXYDIPHOSPHATE TOOTHPASTE COMPOSITION

Abdul Gaffar, Somerset; Calvin B. Davis, North Brunswick; John J. Donohue, Neshanic, and Debbie Moy, Livingston, all of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation of Ser. No. 361,180, Mar. 24, 1982, abandoned. This application Jun. 21, 1983, Ser. No. 506,183

Int. Cl.³ A61K *7/16, 7/20*

U.S. Cl. 424—53 **20 Claims**

1. A toothpaste composition having a pH of about 9.2 to about 10.5 consisting essentially of

I. an oral vehicle

II. as essentially the only oral chemically active agents,

A. 0 to about 2 wt.% of a fluorine-providing anticaries compound and

B. about 1 to about 7 wt. % of a peroxydiphosphate salt,

III. as essentially the only polishing material, about 10 to about 75 wt.% of at least one polishing material selected from the group consisting of silica and hydrated alumina,

IV. about 0.5 to about 10 wt.% of at least one thickener selected from the group consisting of colloidal silica, synthetic hectorite, poly(methyl vinyl ether/maleic anhydride), carboxyvinyl polymer, carboxymethyl cellulose, hydroxypropyl methyl cellulose, hydroxybutyl methyl cellulose, and hydroxyethyl cellulose, and

V. about 5 to about 75 wt.% of polyethylene glycol as essentially the only humectant.

4,537,766

LONG-WEARING EYESHADOW COMPOSITIONS

Julio G. Russ, Germantown, and Donna L. Barrom, Arlington, both of Tenn., assignors to Plough, Inc., Memphis, Tenn.

Continuation of Ser. No. 463,196, Feb. 2, 1983, abandoned, which is a continuation-in-part of Ser. No. 286,108, Jul. 22, 1981, abandoned. This application Mar. 12, 1984, Ser. No. 589,033

Int. Cl.³ A61K *7/021*

U.S. Cl. 424—63 **18 Claims**

1. An eyeshadow composition comprising by weight:

(a) 2 to 30 percent candelilla wax,

(b) 2 to 30 percent C_{18-36} acid triglyceride having a melting point between about 70° and 75° C. wherein the acid groups contain an average of about 28 carbon atoms,

(c) 2 to 30 percent wax other than (a) or (b) having a melting point between 55° and 100° C.;

wherein the total amount of (a), (b), and (c) is 10 to 50 percent by weight of the eyeshadow composition,

(d) 5 to 50 percent volatile, non-aqueous solvent for (a), (b), and (c),

(e) 5 to 50 percent cosmetically acceptable oil, and

(f) 5 to 50 percent of at least one pigment.

4,537,767

METHOD FOR CLEANSING FLUID DISCHARGING SKIN SURFACES, WOUNDS AND MUCOUS MEMBRANES AND MEANS FOR CARRYING OUT THE METHOD

Ulf S. E. Rothman, Bjärred, and Sten A. L. Jacobsson, Malmö, both of Sweden, assignors to Pharmacia Aktiebolag, Uppsala, Sweden

Continuation of Ser. No. 144,559, Apr. 28, 1980, abandoned, which is a continuation of Ser. No. 619,148, Oct. 2, 1975, Pat. No. 4,225,580, which is a continuation of Ser. No. 437,558, Jan. 29, 1974, abandoned. This application Sep. 24, 1982, Ser. No. 422,660

The portion of the term of this patent subsequent to Sep. 30, 1997, has been disclaimed.

Int. Cl.³ A61K *31/74, 31/70*

U.S. Cl. 424—78 **24 Claims**

1. A method for cleansing a fluid-discharging infected sore located on the exterior of the body, which method comprises applying thereto a particulate mass of dry water-insoluble polymer particles within the size range of 30 to 400μ, mixed with a dermatologically acceptable binder, said polymer particles being selected from water-soluble dextran, starch, and derivatives thereof cross-linked in aqueous solution to form a water-insoluble three-dimensional network held together by bonds of covalent nature, one gram of which swells in the presence of water to absorb approximately 1.5 to 10 grams of water, the swellability of the polymer particles in water being such that the polymeric particles in swollen state have a pore size which permits the penetration theretinto of low molecular weight materials discharging from the sore but which completely or substantially excludes penetration thereinto of materials discharging from the sore that have a molecular weight greater than about 50,000, which excluded materials migrate between the particles towards the outer boundaries of the particulate mass, thereby avoiding formation of a scab directly on the surface of the infected sore, maintaining said particulate mass in contact with said sore for a sufficient length of time to make the particles swollen and thereafter removing the resulting swollen particulate mass from contact with said sore.

4,537,768

COMBINED VACCINE

Peter Apontoweil, EK Leersum, and Johannes A. G. Kok, AB Soest, both of Netherlands, assignors to Roussel Uclaf, Paris, France

Continuation of Ser. No. 73,431, Sep. 7, 1979, abandoned. This application Mar. 11, 1982, Ser. No. 356,952

Claims priority, application Netherlands, Sep. 14, 1978, 7809364; Apr. 26, 1979, 7903300

Int. Cl.³ A61K *39/17, 39/235*

U.S. Cl. 424—89 **14 Claims**

1. In a combined inactivated vaccine ready for administration and active against Newcastle disease and egg production drop comprising a mixture of an aqueous phase containing an inactivated adeno-like virus (ALV) and an inactivated Newcastle disease virus (NDV) and an oily phase containing at least one emulsifier, the improvement, resulting in a smaller volume for administration, thus causing less irritation, comprising the aqueous phase comprising an adeno-like virus (ALV) containing aqueous liquid obtained by cultivating an in duck egg passaged virus strain 127 with a titre of at least 4×10^2 units/ml and an aqueous liquid of an inactivated Newcastle disease virus (NDV) with a titre of at least $10^{9.8}$ EID_{50}/ml, the volume ratio of NDV-liquid and ALV liquid being 3:4 to 5:1 and the volume ratio between the aqueous phase containing both virus liquids and the oily phase being 7:13 to 3:7.

4,537,769

STABILIZATION OF INFLUENZA VIRUS VACCINE

Costantino P. Cerini, Pearl River, N.Y., assignor to American Cyanamid Company, Stamford, Conn.

Filed Apr. 6, 1982, Ser. No. 366,296

Int. Cl.³ A61K *39/145*

U.S. Cl. 424—89 **21 Claims**

1. In a method for stabilizing the immunogenicity of neuraminidase and neuraminidase containing antiviral influenza vaccines neuromidase-stabilizing formulating the vaccine with an effective amount within the range of about 0.0% to about 4.0% w/v of an agent selected from the group consisting of protein hydrolysates, amino acids and combinations thereof.

4,537,770

A41030 ANTIBIOTICS

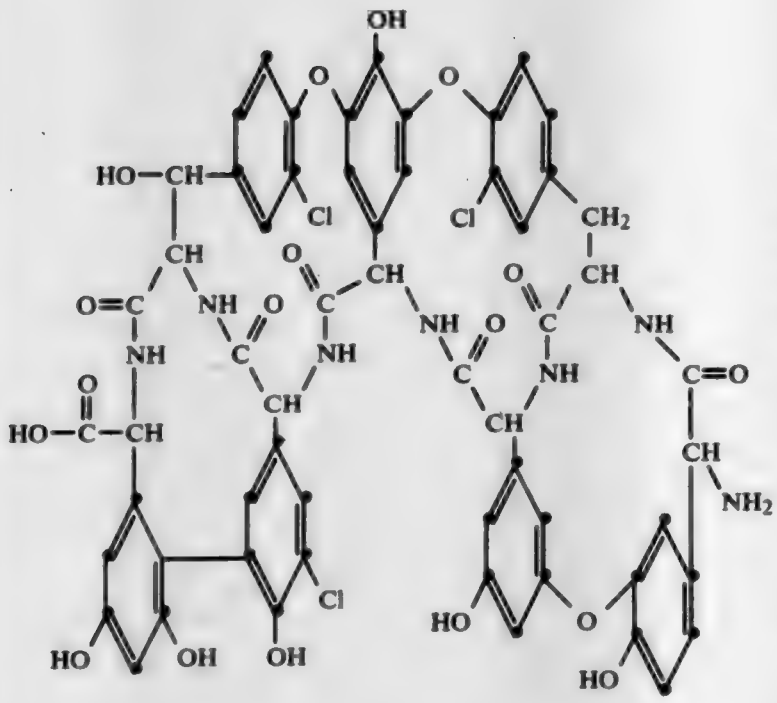
Karl H. Michel, and Ralph E. Kastner, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Continuation of Ser. No. 443,496, Nov. 22, 1982, abandoned, which is a continuation-in-part of Ser. No. 361,301, Mar. 24, 1982, abandoned. This application Oct. 18, 1984, Ser. No. 662,464

Int. Cl.³ A61K *35/00*; C07C *103/52*; C07G *7/00*

U.S. Cl. 424—118 **7 Claims**

1. A41030 factor A, which has the structure



and the pharmaceutically-acceptable, non-toxic salts thereof.

4,537,771

ANTACIDS CONTAINING ZEOLITIC MOLECULAR SIEVES

Wolfgang Greb; Peter Christophliemk, and Christine Schröder, all of Duesseldorf, Fed. Rep. of Germany, assignors to Henkel Kommanditgesellschaft auf Aktien, Duesseldorf, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 514,140

Claims priority, application Fed. Rep. of Germany, Jul. 30, 1982, 3228485

Int. Cl.³ A61K *33/06*

U.S. Cl. 424—154 **23 Claims**

1. An antacid composition comprising

(a) an antacid effective quantity of at least one zeolitic alkali metal aluminosilicate, having a calcium binding power (Ca BP) of at least about 100 mg of CaO/g of aluminosilicates, of the A, X, Y, or P type molecular sieve, wherein the alkali metal is sodium or potassium or both sodium and potassium; and

(b) antacid adjuvant materials.

4,537,772

ENHANCING ABSORPTION OF DRUGS FROM GASTROINTESTINAL TRACT USING ACYLCARNITINES

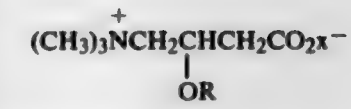
Jose Alexander, and Joseph A. Fix, both of Lawrence, Kans., assignors to Merck & Co., Inc., Rahway, N.J.

Filed May 2, 1984, Ser. No. 606,054

Int. Cl.³ A61K *31/52, 31/54, 31/70, 31/195, 31/205, 31/505, 37/00*

U.S. Cl. 514—9 **16 Claims**

1. A method of enhancing the rate of gastrointestinal absorption of an orally or rectally administered poorly absorbed drug selected from the group consisting of β-lactam antibiotics, aminoglycoside antibiotics, antiviral agents, amino acids, smooth muscle relaxants and polypeptides, said method comprising the steps of preparing a dosage form capable of being orally or rectally absorbed, said dosage form comprising a therapeutically effective dosage amount of said drug and an absorption enhancing effective amount of an acylcarnitine agent of the formula:



wherein R is saturated acyl(C_2–C_{20}), acyl(C_2–C_{20}) with 1 to 6 double bonds, hydroxyacyl(C_2–C_{20}) with 1 to 3 hydroxy groups, ketoacyl(C_4–C_{20}), unsaturated hydroxyacyl(C_5–C_{20}) or carbalkoxyacyl(C_5–C_{20}) and X is a pharmaceutically acceptable counterion.

4,537,773

α-AMINOBORONIC ACID DERIVATIVES

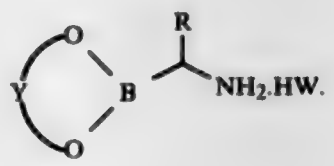
Ashokkumar B. Shenvi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Filed Dec. 5, 1983, Ser. No. 558,361

Int. Cl.³ C07F *5/02, 5/04, 7/08, 7/02*

U.S. Cl. 514—63 **22 Claims**

1. A compound of the formula



wherein

R is alkyl or $—CH_2R^1$;

R^1 is $—XR^2$, aryl, or aryl substituted with one or more alkyl groups;

R^2 is —H, alkyl, or $—SiR^3R^4R^5$;

R^3, R^4 and R^5 are independently alkyl, aryl or aryl substituted with one or more alkoxy groups;

X is O or S;

Y is a moiety derived from a dihydroxy compound comprising at least two hydroxy groups separated by at least two connecting atoms in a chain or ring, said chain or ring comprising carbon atoms and, optionally, a heteroatom which can be N, S, or O; and

HW is a mineral acid, sulfonic acid, alkanoic acid or a perfluoroalkanoic acid.

4,537,774

HOT-WATER EXTRACTS OF NEEM BARK

Masaki Shimizu, Tokyo; Tadashi Sudo, Honmachi, and Takeo Nomura, Hino, all of Japan, assignors to Terumo Corporation, Tokyo, Japan

Continuation of Ser. No. 290,876, Aug. 7, 1981, abandoned. This application Oct. 13, 1983, Ser. No. 541,479

Claims priority, application Japan, Aug. 19, 1980, 55-113786; Sep. 8, 1980, 55-124353; Apr. 24, 1981, 56-61482; Apr. 24, 1981, 56-61483

Int. Cl.³ A61K *35/78*

U.S. Cl. 424—195.1 **16 Claims**

1. Hot-water extract of neem bark which is characterized by being active against mouse L-5178Y cells and against transplanted sarcoma 180 tumors produced by successively contacting the bark of neem which is *Melia azadirachta* with a polar organic solvent selected from the group consisting of an alcohol, pyridine and acetone, and water at a temperature from 0° C. to 40° C. to form liquid extracts and a residue, subjecting said residue from said treatments to extraction with hot water at the boiling temperature to obtain hot-water liquid extract and purifying said hot water liquid extract by alcohol precipitation or dialysis using a diaphragm which fractionates molecules having a molecular weight of 50,000 or lower.

4,537,775

THERAPEUTIC TREATMENT FOR VIRAL INFECTIONS

James B. Mercer, 13109 W. 95th St., Lenexa, Kans. 66215

Continuation-in-part of Ser. No. 64,072, Aug. 6, 1979, Pat. No. 4,346,095. This application Aug. 13, 1982, Ser. No. 407,808

Int. Cl.[3] A61K *31/415*

U.S. Cl. 514—398 10 Claims

1. A method for treating a human host having viral thyroiditis, said method comprising:

(a) repeatedly orally administering anti-viral thyroiditis infection effective amounts of a pharmaceutical composition which contains, as an active ingredient, 1-(β-hydroxyethyl)-2-methyl-5-nitroimidazole, to a human host in need of said treatment.

4,537,776

PENETRATING TOPICAL PHARMACEUTICAL COMPOSITIONS CONTAINING N-(2-HYDROXYETHYL) PYRROLIDONE

Eugene R. Cooper, Cincinnati, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Jun. 21, 1983, Ser. No. 506,273

Int. Cl.[3] A01N *43/36*; A61K *31/40*

U.S. Cl. 514—424 22 Claims

1. A penetration-enhancing pharmaceutical composition for topical application, comprising:

(a) a safe and effective amount of a non-steroidal anti-inflammatory agent selected from the group consisting of salicylic acid, acetyl salicylic acid, methyl salicylate, glycol salicylate, salicylmides, benzyl-2,5-diacetoxybenzoic acid, ibuprofen, fulindac, naproxen, ketoprofen, etofenamate, phenylbutazone, indomethacin, piroxicam, and mixtures thereof;

(b) 0% to about 80% by weight of a solvent selected from ethanol or 2-propanol;

(c) 0% to about 80% by weight water; and

(d) about 10% to about 99.9% by weight of a penetration-enhancing vehicle consisting essentially of

(i) N-(2-hydroxyethyl)pyrrolidone, and

(ii) a cell-envelope disordering compound selected from the group consisting of methyl laurate, oleic acid, oleyl alcohol, monoolein, myristyl alcohol, and mixtures thereof;

wherein component (d)(i) and (d)(ii) are present in a ratio of (d)(i):(d)(ii) of about 1:5 to about 500:1 by weight.

4,537,777

A52688 ANTIBIOTICS AND PROCESS FOR THEIR PRODUCTION

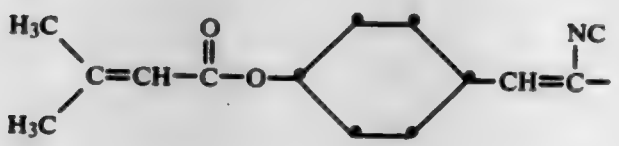
Marie T. Anderson; Karl H. Michel, both of Indianapolis, and Thomas H. Sands, Brownsburg, all of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

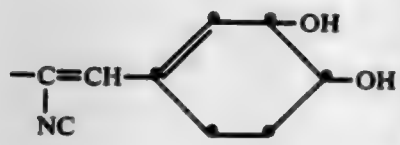
Filed Dec. 16, 1983, Ser. No. 562,256

Int. Cl.[3] A01N *37/34*; C07C *119/02*; C12P *13/00*

U.S. Cl. 514—521 40 Claims

1. A52688 factor A which has the formula





(trans)

and the C_2–C_{18}-acyl ester derivatives of A52688 factor A.

23. An antineoplastic composition which comprises an effective amount of a compound of claim 1 and a suitable vehicle.

4,537,778

ORAL PREPARATION

Donald Clipper, Belle Mead, and James Norfleet, Plainfield, both of N.J., assignors to Colgate-Palmolive Company, New York, N.Y.

Continuation-in-part of Ser. No. 455,388, Jan. 3, 1983, Pat. No. 4,431,631. This application Feb. 13, 1984, Ser. No. 579,835

The portion of the term of this patent subsequent to Feb. 14, 2001, has been disclaimed.

Int. Cl.[3] A61K *7/16, 7/20*

U.S. Cl. 424—53 13 Claims

1. An aqueous oral composition comprising:

(a) from about 0.5 to about 5% by weight of hydrogen peroxide, and

(b) a flavoring agent selected from the group consisting of:

(1) wintergreen flavor containing methyl salicylate and menthol in a weight ratio of about 3:1 to 5:1, and

(2) cinnamon flavor containing 6–9% menthol, 32–38% cinnamic aldehyde and 6–9% clove oil

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4,537,779

PHARMACOLOGICALLY ACTIVE COMPOUNDS

Graham J. Durant, Welwyn Garden City; John C. Emmett, Codicote, and Charon R. Ganellin, Welwyn Garden City, all of England, assignors to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

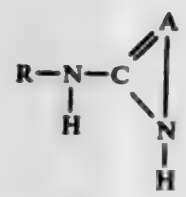
Division of Ser. No. 485,535, Apr. 15, 1983, Pat. No. 4,470,985, which is a division of Ser. No. 364,134, Mar. 31, 1982, Pat. No. 4,399,142, which is a division of Ser. No. 239,238, Mar. 3, 1981, Pat. No. 4,341,787, which is a division of Ser. No. 60,324, Jul. 25, 1979, Pat. No. 4,282,221, which is a division of Ser. No. 893,859, Apr. 6, 1978, Pat. No. 4,181,730, which is a division of Ser. No. 736,662, Oct. 29, 1976, Pat. No. 4,104,381, which is a division of Ser. No. 619,985, Oct. 6, 1975, Pat. No. 4,005,205, which is a division of Ser. No. 463,647, Apr. 24, 1974, Pat. No. 3,932,644. This application Jun. 18, 1984, Ser. No. 621,778

Claims priority, application United Kingdom, May 3, 1973, 21063/73; Jul. 26, 1983, 35551/73

Int. Cl.[3] A61K *31/44*

U.S. Cl. 514—275 5 Claims

1. A method of inhibiting H-2 histamine receptors, said H-2 histamine receptors being those histamine receptors which are not inhibited by mepyramine but are inhibited by burimamide, which comprises administering to an animal in need of inhibition of said receptors in an effective amount to inhibit said receptors a heterocyclic compound of the formula:



wherein A taken together with the nitrogen and carbon atoms show forms a pyridine ring, said ring having a keto or thione group and optionally substituted by one or two lower alkyl, phenyl or benzyl groups; R is a grouping of the formula:

$$Het—CH_2Z(CH_2)_n—$$

wherein Het is a nitrogen containing heterocyclic ring selected from pyridine, thiazole, isothiazole or thiadiazole, said ring being optionally substituted by lower alkyl, amino, hydroxy or halogen; Z is sulphur or a methylene group and n is 2 or 3 or a pharmaceutically acceptable acid addition salt thereof.

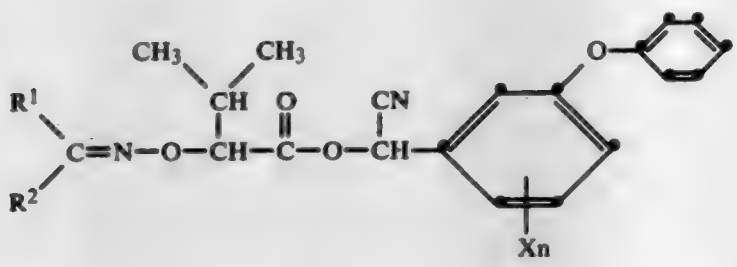
4,537,780

ALPHA-AMINOOXY ISOVALERATE INSECTICIDES

James R. Sanborn, and Charles H. Tieman, both of Modesto, Calif., assignors to Shell Oil Company, Houston, Tex.

Filed Oct. 18, 1984, Ser. No. 662,116
Int. Cl.[3] A01N *43/16, 37/34;* C07C *121/75;* C07D *317/60*
U.S. Cl. 514—464 13 Claims

1. A compound of the formula



wherein X is a halogen atom; n is 0 or 1; R^1 is a hydrogen atom or an alkyl group containing from 1 to 6 carbon atoms; and R^2 is an alkyl or an alkenyl group containing up to 6 carbon atoms or a phenyl group optionally substituted by one or more substituents selected from a halogen atom or, an alkyl group containing from 1 to 4 carbon atoms optionally substituted by one or more halogen atoms or by a methylenedioxy group.

13. A method of controlling insect pests at a locus which comprises applying to the insects or to the locus an insecticidally effective amount of a compound according to claim 1.

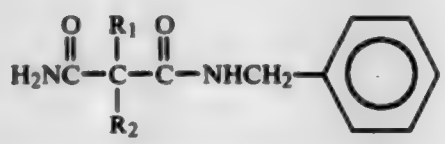
4,537,781

PHARMACEUTICALLY USEFUL MALONAMIDES

Charles M. Darling, Auburn, Ala., assignor to Research Corporation, New York, N.Y.

Filed Sep. 16, 1983, Ser. No. 533,261
Int. Cl.[3] C07C *103/147*
U.S. Cl. 514—616 27 Claims

1. A compound of the formula



wherein R_1 and R_2 are the same or different and are hydrogen or alkyl with the proviso that R_1 and R_2 are not both hydrogen.

4,537,782

EMULSIFYING SYSTEM BASED ON A FATTY ACID OR A PROTEIN CONDENSATE, A POLYOXYETHYLENATED STEROL AND A PHOSPHATIDE, AND A COSMETIC OR PHARMACEUTICAL COMPOSITION CONTAINING THE SAME

Catherine Millet, Paris; Jean-Claude Ser, Chevilly Larue, and Quang L. N'Guyen, Antony, all of France, assignors to Societe Anonyme dite: L'Oreal, Paris, France

Filed Jan. 20, 1983, Ser. No. 459,496
Claims priority, application France, Jan. 28, 1982, 82 01329
Int. Cl.[3] A61K *7/021, 7/42, 31/685, 47/00*
U.S. Cl. 514—774 15 Claims

1. A emulsifying system to produce an emulsoid or gel comprising

(i) 5 to 60 weight percent of at least one fatty acid having 8–22 carbon atoms or a protein condensate of a fatty acid having 8–40 carbon atoms and a polypeptide of animal origin,

(ii) 5 to 45 weight percent of sterol polyoxyethylenated with 12–40 moles of ethylene oxide, and

(iii) 15 to 90 weight percent of a phosphatide.

4,537,783

CONTROL OF PARTICLE SIZE DISTRIBUTION DURING CONTINUOUS HEAT-SETTING OF MEAT ANALOG

Alexander L. Liepa, Montgomery, Ohio, assignor to The Procter & Gamble Company, Cincinnati, Ohio

Filed Apr. 20, 1983, Ser. No. 486,612
Int. Cl.[3] A23J *3/00*
U.S. Cl. 426—243 13 Claims

1. In a process for continuously forming and heat-setting moist agglomerated textured protein in the form of a particulate meat analog, the improvement comprising forming a continuous layer on a moving feeder surface as a wet slurry an agglomerate having a bulk density of about 0.45 g/cc to about 0.80 g/cc, said layer having a thickness of 0.3 cm to 3.5 cm, and then transferring the agglomerate layer by dropping said agglomerate onto a conveyor such that discrete particulates are formed and wherein said conveyor is traveling through a heat-setting zone, the ratio of the heat-setting conveyor surface speed to the feeder surface speed being from about 1.1:1 to about 5:1.

4,537,784

PROCESS OF PREPARING A PARTICULATE FOOD ACIDULANT

Phillip J. Percel, Parma, and Douglas W. Perkins, Medina, both, Ohio, assignors to SCM Corporation, New York, N.Y.

Division of Ser. No. 499,353, May 31, 1983, Pat. No. 4,511,584.
This application Feb. 7, 1985, Ser. No. 699,384
Int. Cl.[3] A23L *1/221*
U.S. Cl. 426—303 3 Claims

1. A process for making a particulate food acidulant comprising calcium lactate carrier, lactic acid, and lipid coating comprising the steps of:

plating lactic acid onto particulate calcium lactate carrier by spray applying said lactic acid onto said calcium lactate carrier, while said carrier is in the form of a fluid bed, from a lactic acid solution of more than 80% concentration; the calcium lactate plated with lactic acid containing less than about 13% by weight water following spray application; and said calcium lactate plated with lactic acid having a particle size distribution such that at least 80% is retained on U.S. Standard Sieve screens in the range of 20–70 mesh, inclusive; and then

encapsulating said carrier and acid by spray coating said carrier and acid with a molten edible lipid in an amount effective to prevent substantial release of acid from said acidulant before said lipid coating melts, while said carrier and acid are in the form of a fluid bed, said lipid containing less than about 0.5% by weight water;

said coating taking place before material absorption of water by the lactic acid.

4,537,785

PROCESS FOR PRODUCING PRESERVED FISH FOOD AND FISH FOOD PRODUCED

Ralph A. Nichols, 21 Elm Way, Kerrville, Tex. 78028

Filed Apr. 25, 1983, Ser. No. 488,582
Int. Cl.[3] A23L *3/34*
U.S. Cl. 426—332 11 Claims

1. A process for producing a preserved fish food from live fish food material naturally sized for feeding to aquarium fish comprising providing a quantity of live fish food, draining any excess water from the live fish food, mixing the drained live fish food with 17–50% by weight of the fish food of substantially anhydrous liquid propylene glycol for dehydrating the live fish food, allowing the mixture to stand for a sufficient period of time to reach a substantially equilibrium concentration of water in said liquid, draining said liquid from the fish food, and adding approximately 10–20by weight based upon the weight of the fish food of anhydrous propylene glycol.

4,537,786

METHOD OF PREPARING LOW OIL FRIED POTATO CHIPS

Donald C. Bernard, Lewisville, Tex., assignor to Frito-Lay, Inc., Dallas, Tex.

Filed Dec. 5, 1983, Ser. No. 558,360
Int. Cl.[3] A23L *1/216*
U.S. Cl. 426—438 10 Claims

1. A process for producing low oil content fried potato chips comprising; frying potato slices in edible oil at a temperature of from about 280° F. to about 320° F., removing said potato slices from said edible oil when said potato slices have a moisture content of from about 3% to about 15% by weight, orienting said potato slices on-edge and contacting the fried potato slices for from about 1 to about 10 minutes with an oil-removing forced stream of air within about 10 seconds after said potato slices are fried and while said potato slices are oriented on-edge, said air being preheated to a temperature of from about 250° F. to about 350° F.

4,537,787

METHOD OF PREPARING A PRESSED CHEESE CURD HAVING A CLOSED RIND

Ype Y. van der Velde, Wommels, and Jan Zantinge, Drachten, both of Netherlands, assignors to Tebel Machinefabrieken B.V., Netherlands

Continuation of Ser. No. 306,898, Sep. 29, 1981, abandoned. This application Sep. 16, 1983, Ser. No. 532,690
Claims priority, application Netherlands, Oct. 6, 1980, 8005516
Int. Cl.[3] A23C *19/02*
U.S. Cl. 426—478 2 Claims

1. In a method of making a pressed curd having a closed rind which includes introducing curd into a cheese mold and subjecting said curd to a pressing cycle having a plurality of pressing operations thereby separating whey from curd, the improvement comprising subjecting said curd to stages of increased pressure wherein at least one of said stages has pressure periods of substantially equal duration and equal pressure throughout said pressure periods alternated with pressureless periods of substantially equal duration throughout said pressureless periods and wherein the pressure exerted during each successive stage of said pressing cycle is increased.

4,537,788

EGG JERKY PRODUCT AND METHOD OF PREPARATION

Valerie A. Proctor, Manhattan, and Franklin E. Cunningham, Leonardville, both of Kans., assignors to Kansas State University Research Foundation, Manhattan, Kans.

Filed Feb. 13, 1984, Ser. No. 579,580
Int. Cl.[3] A23L *1/32*
U.S. Cl. 426—614 7 Claims

1. A method of producing a meatless jerky-type product from whole eggs, comprising:

(a) preparing a blended fluid mixture comprising at least about 35% by weight of uncooked hydrated whole eggs, said mixture also containing flavoring ingredients;

(b) spreading said mixture in the form of flat sheets having an average thickness of from about 1 to 10 millimeters;

(c) heating said sheets at non-burning temperatures sufficient to coagulate the egg protein and integrate said mixture;

(d) drying the integrated mixture to a moisture content of from about 18 to 24% by weight, said mixture on completion of the drying having a water activity below 0.8 and being further characterized by a flexible, deformable, chewy condition; and

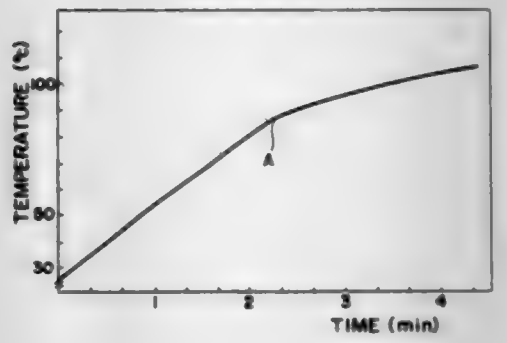
(e) before, during or after step (d), slicing said sheets into elongated strips to produce a jerky-type product.

4,537,789

PROCESS FOR PREPARING RETORT TOFU

Ko Sugisawa; Yasushi Matsumura; Kazumitsu Taga; Kouji Sengoku, and Yoshiaki Nagatome, all of Higashiosaka, Japan, assignors to House Food Industrial Company Ltd, Osaka, Japan

Filed Nov. 23, 1983, Ser. No. 554,863
Claims priority, application Japan, Oct. 20, 1983, 58-196806
Int. Cl.[3] A23J *3/00*; A23L *1/20*
U.S. Cl. 426—634 9 Claims



1. In a process for preparing retort tofu comprising the steps of charging a mixture of soybean milk or an aqueous solution of separated soybean protein and a coagulant into a heat-resistant container, sealing the container and then subjecting the container to heat treatment under pressure in a retort apparatus, the improvement which comprises:

(a) adjusting the rate of rise in temperature at the center of the mixture to within the range of about 0.05° to about 1.0° C./sec. by controlling a flow rate of steam or hot water to the retort apparatus from the beginning of the treatment to the inflection point A of a time-temperature graph having time as the abscissa and temperature as the ordinate of the graph, and

(b) controlling the pressure in the retort apparatus at the latest at the inflection point A by introducing air into the retort apparatus in order to make the pressure in the retort apparatus higher than that in the container.

4,537,790

PROCESS FOR GROWING CELL CULTURES OF DIPLOID CELLS ON CELL SUPPORTS

Florian Horodniceanu, Meudon, and Raphaël Le Fur, Louviers, both of France, assignors to Institut Pasteur, Paris, France

Division of Ser. No. 93,050, Nov. 13, 1979, Pat. No. 4,504,547, which is a continuation of Ser. No. 930,226, Aug. 2, 1978, abandoned. This application May 11, 1983, Ser. No. 493,715
Claims priority, application France, Aug. 8, 1977, 77 24421
The portion of the term of this patent subsequent to Mar. 12, 2002, has been disclaimed.
Int. Cl.[3] A01N *1/02*; C12N *11/08*
U.S. Cl. 427—2 10 Claims

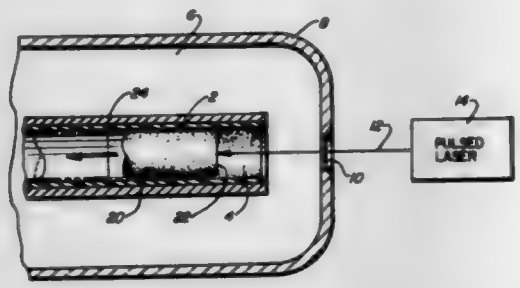
10. In a process for growing human or animal diploid cells in a culture medium,

the improvement which comprises growing said cells in contact with cell support prepared by applying to glass or polysaccharide base support a solution of a thermosetting plastic material comprising the reaction product of an aldehyde with a polyvinyl alcohol and then subjecting said support thus-coated to the effect of heat under sufficient conditions to permit hardening of said thermosetting plastic material and the sterilization of the thus-coated support.

4,537,791
CARBON COATING OF GRAFTS OR CATHETERS

Peter P. Tarjan, Miami, Fla., assignor to Cordis Corporation, Miami, Fla.

Filed Mar. 27, 1984, Ser. No. 594,037
Int. Cl.[3] A01N *1/02;* B05D *3/06*
U.S. Cl. 427—2 15 Claims



1. A method of coating an internal surface of a tube having a lumen comprising the steps of

positioning a carbon body within the lumen of the tube to be coated;

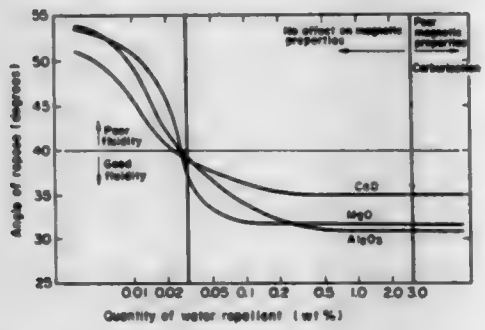
applying a beam of energy to said carbon body and causing the creation of gaseous carbon atoms to be deposited on the internal surface forming said lumen; and

causing relative movement between the internal surface and the carbon body during application of said beam.

4,537,792
METHOD OF APPLYING AN ANNEALING SEPARATOR TO GRAIN ORIENTED MAGNETIC STEEL SHEETS

Minoru Kitayama; Motoharu Nakamura; Kikuji Hirose, and Masashi Tanida, all of Himejishi, Japan, assignors to Nippon Steel Corporation, Tokyo, Japan

Filed Sep. 30, 1983, Ser. No. 537,665
Int. Cl.[3] B05D *1/04;* C23F *7/00*
U.S. Cl. 427—13 1 Claim



1. In a method of applying an annealing separator electrostatically to a glass-like film-forming undercoating consisting mainly of a magnesium oxide on the surface of a grain oriented magnetic steel sheet, thus overcoating said undercoating, the improvement wherein said annealing separator contains an organic silicon compound in a quantity of 0.3 to 3.00% by weight.

4,537,793
METHOD FOR GENERATING HARD, WEAR-PROOF SURFACE LAYERS ON A METALLIC MATERIAL

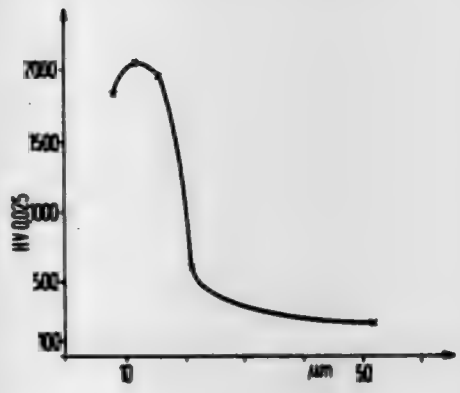
Hans-Peter Kehrer, Pforzheim; Jüergen Villain, Unterhaching, and Werner Reiff, Baldham, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jun. 6, 1983, Ser. No. 501,287
Claims priority, application Fed. Rep. of Germany, Jul. 2, 1982, 3224810
Int. Cl.[3] C23C *3/04*
U.S. Cl. 427—35 7 Claims

1. A method for producing hard, wear-proof surface layers on a metallic material, comprising:

applying a decomposable compound containing an element capable of hardening metallic material onto a metallic material surface to be hardened; and

applying an energy surge to at least the surface areas containing said compound so as to decompose said compound and release said element which diffuses into the surface to



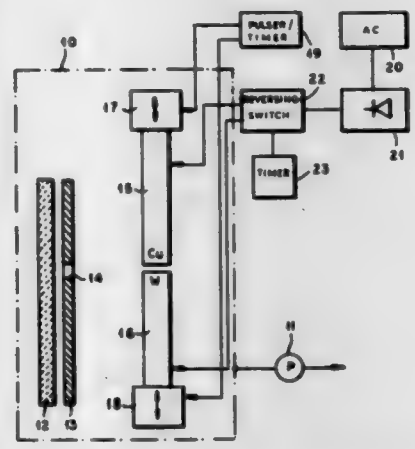
be hardened, thereby producing a surface layer having a chemical composition different from that of said metallic material;

said applyings being carried out so that said surface layer has a thickness up to about 20 µm.

4,537,794
METHOD OF COATING CERAMICS

Eduard Pinkhasov, Mt. Vernon, N.Y., assignor to Wedtech Corp., Bronx, N.Y.

Continuation-in-part of Ser. No. 614,434, May 25, 1984, Pat. No. 4,505,948, which is a continuation-in-part of Ser. No. 494,302, May 13, 1983, , which is a continuation-in-part of Ser. No. 358,186, Mar. 15, 1982, Pat. No. 4,438,153, which is a continuation-in-part of Ser. No. 237,670, Feb. 24, 1981, Pat. No. 4,351,855. This application Jun. 29, 1984, Ser. No. 626,056
Int. Cl.[3] B05B *1/24;* C23C *13/00*
U.S. Cl. 427—37 12 Claims



1. A method of bonding a high conductivity metal to a ceramic which comprises the steps of:

applying to a ceramic substrate a thin bonding layer of a refractory metal; and

thereafter applying said high conductivity metal to said layer, each of said metals being applied by striking an arc between a pair of electrodes to vaporize the respective metal from one of said electrodes in an evacuated chamber, an electrode of said refractory metal being juxtaposed with an electrode of said high-conductivity metal, said electrodes being brought into contact and drawn apart to strike said arc, and said electrodes being initially energized with positive and negative polarities in one sense to initially deposit said refractory metal on said substrate and the polarity being thereafter reversed to deposit said high-conductivity metal upon said substrate.

4,537,795

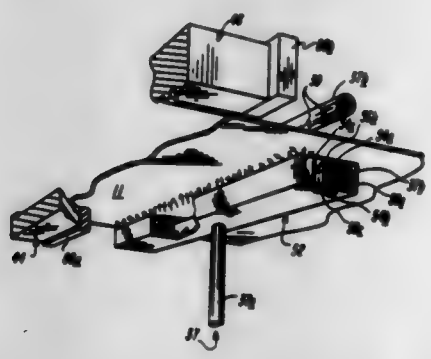
METHOD FOR INTRODUCING SWEEP GASES INTO A GLOW DISCHARGE DEPOSITION APPARATUS

Prem Nath, Rochester; Kevin R. Hoffman, Sterling Heights, and Timothy D. Laarman, Almont, all of Mich., assignors to Sovonics Solar Systems, Solon, Ohio

Continuation of Ser. No. 418,929, Sep. 16, 1982, abandoned. This application Aug. 3, 1984, Ser. No. 637,358

Int. Cl.[3] H01L *21/365*

U.S. Cl. 427—39 1 Claim



1. An improved method for the glow discharge deposition of semiconductor material utilizing apparatus adapted to operate at sub-atmospheric pressure, said apparatus including at least two adjacent deposition chambers operatively interconnected by a gas gate passageway, each of the chambers including (1) a plasma region wherein semiconductor precursor process gases are introduced for disassociation into an ionized plasma and deposition as layers of semiconductor material onto a substrate, the process gases introduced into the first chamber differing from the process gases introduced into the second chamber by the addition of at least one element; and (2) means for withdrawing the unused process gases and non-deposited plasma from adjacent the respective plasma region of each chamber; the improved method including the steps of:

providing an introducing means, operatively disposed adjacent the gas gate passageway in the second one of said chambers, for directing a flow of said sweep gases across both the layered and unlayered surfaces of the substrate as the substrate passes through the gas gate passageway from the first toward the second chamber;

assuring that the flow of sweep gases across both the layered and unlayered surfaces of the substrate is of a sufficient velocity to substantially prevent back diffusion of said at least one element from the first to the second chamber;

providing means for effecting the substantially laminar flow of sweep gases traveling through the gas gate passageway; and,

introducing a sufficient volumetric flow of sweep gases such that a portion of said introduced flow is directed so as to substantially prevent unused process gases and nondeposited plasma from leaving the plasma region of the second of the chambers.

4,537,796

METHOD FOR TREATING THE SURFACE OF A CONCRETE SLAB

Romain J. B. Buys, Mandekenstraat, 141B, 9360 Buggenhout, and Jean-Aimé Manouvrier, Avenue de la Rochefoucauld, 37, 1330 Rixensart, both of Belgium

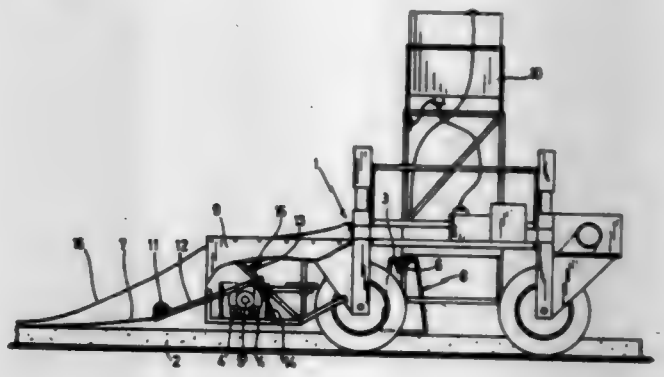
Filed Feb. 7, 1983, Ser. No. 464,169

Claims priority, application Belgium, Feb. 8, 1982, 207255

Int. Cl.[3] B05D *3/12, 5/02*

U.S. Cl. 427—136 7 Claims

1. A method of chemically stripping a concrete slab, comprising the steps of: distributing an agent for retarding the setting of an upper layer of mortar on the surface of a freshly laid concrete slab by spraying said agent from a row of nozzles, simultaneously spreading a water-impermeable sheet of plastics material over said upper layer immediately upstream of said spraying nozzles, and, as soon as the concrete in a layer subjacent to said upper layer has set, removing said sheet, then removing said upper layer of mortar whose setting has been



retarded from between surface aggregates in the concrete by simultaneously brushing and spraying with pressurized water.

4,537,797

PROCESS FOR THE PRODUCTION OF RECORD MATERIAL

Kenneth J. Shanton, Beaconsfield, England, assignor to The Wiggins Teape Group Limited, England

Division of Ser. No. 442,566, Nov. 18, 1982, Pat. No. 4,462,616. This application May 10, 1984, Ser. No. 608,856

Claims priority, application United Kingdom, Dec. 4, 1981, 8136583

Int. Cl.[3] B41M *3/12*

U.S. Cl. 427—150 6 Claims

1. A process for the production of record material, comprising the steps of:

(a) forming an aqueous dispersion of hydrated zirconia;

(b) formulating said dispersion into a coating composition and applying the coating composition to a substrate web suitable for the production of record material; and

(c) drying the resulting coated web to produce said record material.

4,537,798

SEMI-REFLECTIVE GLAZING COMPRISING A NICKEL-CHROMIUM-MOLYBDENUM ALLOY ANCHORING LAYER

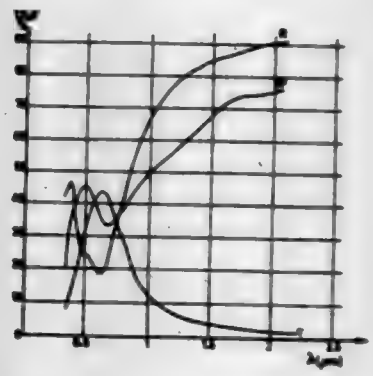
Sabatino Cohen, Sceaux, France, assignor to Saint-Gobain Vitrage, Courbevoie, France

Continuation of Ser. No. 267,528, May 27, 1981, abandoned. This application Aug. 1, 1983, Ser. No. 518,913

Claims priority, application France, Jun. 4, 1980, 80 12449

Int. Cl.[3] B05D *5/06*

U.S. Cl. 427—166 26 Claims



1. In the process for making semi-reflective metallized glasses, the improvement which comprises vacuum depositing an anchoring layer of a nickel base alloy containing at least 3% molybdenum and at least 5 percent chromium by thermal evaporation from an evaporation crucible upon at least one face of a glass substrate, said alloy providing increased deposi-

tion rates, improved properties of the deposit, and the elimination or substantial reduction of corrosion and/or the breakage of said crucible.

4,537,799

SELECTIVE METALLIZATION PROCESS

John K. Dorey, II, Ewing Township, Mercer County; Steven L. Schmidt, Trenton, and Wesley P. Townsend, Princeton Township, Mercer County, all of N.J., assignors to AT&T Technologies, Inc., New York, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,712
Int. Cl.³ B05D *5/12, 1/32, 3/10*
U.S. Cl. 427—259 **15 Claims**

1. A selective metallization process comprising the steps of providing a patterned mask on a substrate, treating the patterned substrate so as to provide a catalytic layer thereon and electrolessly plating the catalyzed substrate with the patterned mask thereon, including the step of treating the patterned substrate with a weak acid reactant which modifies the surface of the mask without substantial attack or modification of the exposed substrate before catalyzation and prior to electroless plating so as to prevent electroless plating on the mask.

4,537,800

ONE STEP METHOD OF APPLYING POLYSILOXANE AND PTFE COATING COMPOSITION

Edmund J. Kuziemka, Naperville, Ill., assignor to Material Sciences Corporation, Elk Grove Village, Ill.

Division of Ser. No. 527,244, Aug. 29, 1983,. This application Apr. 16, 1984, Ser. No. 600,993
Int. Cl.³ B05D *3/00, 3/02*
U.S. Cl. 427—327 **15 Claims**

1. A one-step method of applying a fast curing resin coating composition to a metal substrate comprising:

applying a thin film directly to said metal substrate,

said thin film containing an epoxy resin having a molecular weight measured by gel permeation chromatography in the range of from about 300 to about 200,000 present in the range of from about 10% by weight to about 20% by weight of said composition,

not less than about 85% of the epoxy resin having a molecular weight in the range of from about 50,000 to about 200,000,

an effective amount of a cross-linking agent for the epoxy resin,

a polysiloxane resins system present in the range of from about 2% by weight to about 7% by weight of said composition,

an effective amount of a curing agent for the polysiloxane resins system,

polytetrafluoroethylene present in the range of from about 4% by weight to about 15% by weight of said composition, and

the balance being suitable solvents,

the film having a dry thickness in the range of from about 0.7 mils to about 1.2 mils, and

curing the coating by heating the metal substrate to a temperature in the range of from about 450° F. to about 480° F. for a time of not greater than about one minute.

2. The method of claim 1, wherein the metal surface is pretreated with a degreasing agent.

4,537,801

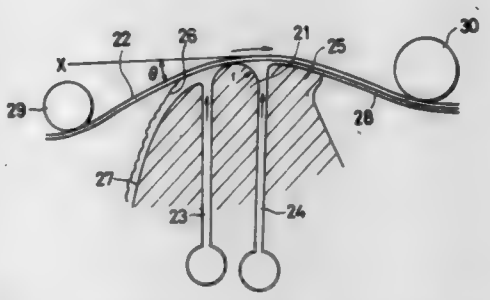
COATING METHOD AND APPARATUS

Hideo Takeda, Kanagawa, Japan, assignor to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 23, 1983, Ser. No. 497,281
Claims priority, application Japan, May 25, 1982, 57-87227
Int. Cl.³ B05D *3/12*
U.S. Cl. 427—356 **6 Claims**

1. In coating method which comprises applying a solution to a continuously running web, the improvement wherein the web is run along a stationary metering member having a curved smooth surface at the upper end in such a manner that said web is in contact with said smooth surface, a solution which is substantially the same in composition as the coating solution is continuously supplied to the web at a position which is before said metering member to wet the surface of the web to be coated and a predetermined quantity of coating solution is continuously supplied to the web at a position which is after said metering member.

2. In coating apparatus for coating a continuously running web, the improvement wherein the apparatus comprises a stationary metering member having a curved smooth surface at



the upper end, a web wetting solution supplying slot which is located before the metering member, a coating solution supplying slot which is positioned after the metering member, a smoother which is disposed after the coating solution supplying slot, and a source of a solution which is substantially the same in composition as the coating solution, said solution of substantially the same composition continuously supplied through the web wetting solution supplying slot to the web which is run continuously along the upper surfaces of the metering member and the smoother while the coating solution is continuously supplied to the web through the coating solution supplying slot.

4,537,802

FLOOR FINISHING, CLEANING AND BURNISHING COMPOSITIONS CONTAINING UCON POLYMERS, AND METHOD OF USE

John J. Flanagan, #3 Summit Dr., Dune Acres, Ind. 46304

Filed Aug. 31, 1984, Ser. No. 646,137
Int. Cl.³ C09G *1/04, 1/16;* **C11D** *3/37, 3/43*
U.S. Cl. 427—368 **1 Claim**

1. The method of cleaning, burnishing and reconditioning a plastic and plastic coated floor surfaces and other floor surface to which a floor finish has been applied, said method comprising

applying to the floor surface an aqueous composition including about 0.1 to about 2.0 parts by weight of an ethyl ether of a water-soluble linear polymer of ethylene oxide and propylene oxide having a viscosity in Saybolt Universal Seconds (S.U.S.) at about 100° F., in the range of from about 50 to about 90,000,

about 0.01 to about 1.5 parts by weight of a glycol ether,

about 0.01 to about 0.5 parts by weight of a surfactant different from said linear polymer,

and about 1 to about 200 parts by weight of water,

distributing said composition over the floor surface to wet the surface,

impressing frictional scrubbing forces to the wet surface to generate heat,

continuing the application of heat-generating frictional forces to the floor surface to effect a burnishing and polishing of the floor finish, and

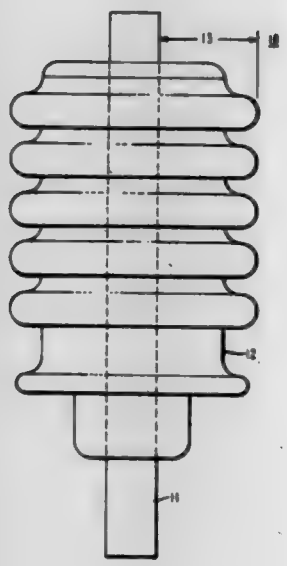
mechanically distributing the polymer of ethylene oxide and propylene oxide and the glycol ether of the composition over the heated floor surface to establish a contiguously intimate residual microfilm thereon to effect a partial plasticization of the floor finish and to improve gloss.

4,537,803

RESINS CONTAINING A LOW VISCOSITY ORGANOPOLYSILOXANE LIQUID DIELECTRIC AND A METHOD OF INSULATING A CONDUCTOR THEREWITH

Thomas W. Dakin, Boca Raton, Fla.; Stanley A. Studniarz, Murrysville, Pa., and Terrence E. Chenoweth, Watkinsville, Ga., assignors to Westinghouse Corp., Pittsburg, Pa.

Filed May 24, 1984, Ser. No. 613,672
Int. Cl.[3] B05D *3/02;* B32B *15/08, 27/38*
U.S. Cl. 427—385.5 5 Claims



1. A completely cured insulating composition disposed about at least one conductor, said cured insulating composition necessarily having minute voids therein and/or having minute voids at the composition-conductor interface, said cured composition being a completely cured admixture of ingredients, the admixture comprising:

(A) a liquid, polymerizable organic resin system selected from the group consisting of epoxy, polyurethane and polyester resin systems;

(B) a low viscosity, liquid, non-polymerizable organopolysiloxane dielectric filler having the structural formula:

$$(R)_3—Si[OSi(R)_2]_nOSi(R)_3,$$

where n=0 to about 10, and each R group is selected from H, alkyl having from 1 to 6 carbons, and phenyl; and

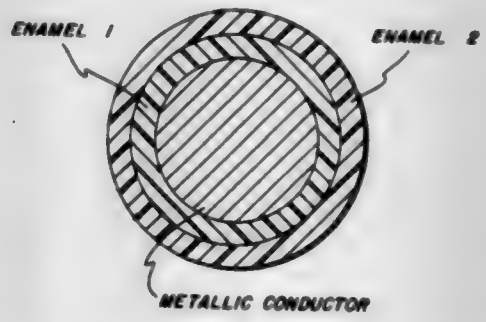
(C) solid, inorganic filler particles, where the admixture contains from about 2 wt.% to about 15 wt.% liquid, organopolysiloxane dielectric based on the total weight of (A), (B) and (C), and from about 20 wt.% to about 85 wt.% solid, inorganic filler particles based on the total weight of (A), (B) and (C), and the liquid organopolysiloxane dielectric is from about 60% to about 95% soluble in the liquid, organic resin system; where the completely cured insulating composition is an organic resin matrix containing liquid organopolysiloxane dielectric, where the liquid organopolysiloxane dielectric remains non-polymerized, having precipitated out of solution as a liquid, and flows or diffuses through the resin matrix to fill the voids within the insulating composition or at the insulating composition-conductor interface, and where the liquid organopolysiloxane dielectric in the completely cured insulating composition will flow or diffuse to fill voids caused by thermal cycling or voltage stress which may occur after complete curing of the composition.

4,537,804

CORONA-RESISTANT WIRE ENAMEL COMPOSITIONS AND CONDUCTORS INSULATED THEREWITH

John J. Keane, Ballston Lake, and Denis R. Pauze, Scotia, both of N.Y., assignors to General Electric Company, Waterford, N.Y.

Division of Ser. No. 374,844, May 5, 1982,. This application Jul. 25, 1983, Ser. No. 517,187
Int. Cl.[3] B05D *5/12;* B32B *9/00*
U.S. Cl. 427—118 5 Claims



1. A method of providing a corona-resistant two stage insulated electrical conductor comprising:

coating said conductor with a composition consisting essentially of a polyimide, polyester, polyamideimide, polyesterimide, or polyetherimide resin and curing said resin to form a continuous first layer around said conductor; and

thereafter applying a second coating of a composition consisting essentially of a polyimide, polyamide, polyester, polyamideimide, polyesterimide or polyetherimide resin around said first layer and curing said resin to form a continuous second layer,

wherein said first layer and said second layer are formed from a different resin and wherein either the first layer resin, the second layer resin, or both contains from approximately 1% to approximately 35% by weight of alumina particles of a size less than approximately 0.1 micron dispersed therein by high shear mixing.

4,537,805

REACTIVE PLASTISOL DISPERSION

Shiow C. Lin, Columbia, Md., assignor to W. R. Grace & Co., New York, N.Y.

Filed Mar. 26, 1984, Ser. No. 593,500
Int. Cl.[3] B05D *3/06*
U.S. Cl. 427—54.1 27 Claims

1. A reactive plastisol dispersion composition comprising

(1) at least one acrylonitrile-butadiene-styrene (ABS) copolymer in particle form having a particle size in the range from about 0.01 to about 1,500 microns;

(2) a liquid reactive plasticizer member of the group consisting of (a) at least one epoxide resin having an average of more than one epoxide group in the molecule, (b) at least one liquid monomer, oligomer or prepolymer characterized by (1) containing at least one ethylenically unsaturated group and (2) capable of solvating the ABS copolymer at the fluxing temperature, and (c) a mixture of (a) and (b), said liquid reactive plasticizer being present in an amount ranging from 5 to 2,000 parts by weight; and

(3) 0.01 to 10% by weight of either a thermal initiator or photoinitiator for group member plasticizers present in the composition.

4,537,806

COMPACT ORNAMENT

Muriel Sherrard, 213 Ninth St., Hicksville, N.Y. 11801

Filed Oct. 29, 1984, Ser. No. 665,743
Int. Cl.[3] B44F *1/00*
U.S. Cl. 428—7 6 Claims

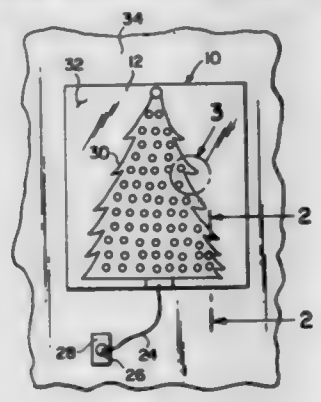
1. A compact ornament connectable to a power source and

which is self storing, easily attached, and may be used as scenery, a room divider, a replacement in screen tracks of windows, a space saver, and a sliding glass door, comprising:

(a) a flat planar non-conductive plate member containing a plurality of apertures;

(b) a plurality of sockets embedded in said plurality of apertures of said flat planar non-conductive plate member and arranged in a predetermined pattern;

(c) a plurality of light bulbs, each light bulb of said plurality of light bulbs being removeably mounted to each socket of



said plurality of sockets so that said each light bulb is easily replaceable;

(d) a printed circuit embedded in said flat planar non-conductive plate member and to which said plurality of socket are electrically connected in parallel so that when at least one light bulb of said plurality of light bulbs burn out the remaining at least one light bulb will stay lit; and

(e) means for electrically connecting said printed circuit to the power source so that said plurality of light bulbs can be illuminated for viewing.

4,537,807

BINDER FOR PRE-MOISTENED PAPER PRODUCTS

Lock-Lim Chan, Willowdale, and Patrick W. Lau, Scarborough, both of Canada, assignors to The Borden Company, Limited, Willowdale, Canada

Filed Apr. 16, 1984, Ser. No. 600,543

Claims priority, application Canada, Nov. 18, 1983, 441431

Int. Cl.³ B32B *7/10*

U.S. Cl. 428—74 **21 Claims**

1. A pre-moistened paper product characterized by having high initial wet strength when wetted with a solution having an acid pH and yet which has substantially lower wet strength when disposed of in a neutral or alkaline pH solution comprising a sheet of non-woven fibrous webs which are bonded together with a binder comprising a copolymer of glyoxal and polyvinyl alcohol, and which is subsequently wetted with an aqueous acid solution to form a bonded sheet of pre-moistened paper.

4,537,808

ELECTRICALLY CONDUCTIVE COMPOSITE MATERIAL

Susumu Yamamoto, and Kazuyoshi Sato, both of Hyogo, Japan, assignors to Sumitomo Electric Industries, Ltd., Osaka, Japan

Filed Apr. 23, 1984, Ser. No. 602,984

Claims priority, application Japan, May 7, 1983, 58-79730

Int. Cl.³ B32B *15/08*; F16F *3/00*; H01C *3/10*

U.S. Cl. 428—36 **6 Claims**

1. An electrically conductive composite comprising:

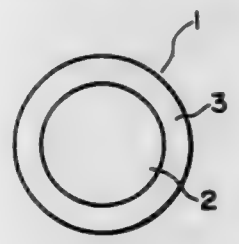
a copper or copper alloy core;

an iron- or nickel-base alloy clad material surrounding the core;

the cross-sectional ratio of the clad material to core is within the range of: $0.1 \leqq Se/(Se+Scu) \leqq 0.8$ where:

Se is the cross-sectional area of the clad material,

Scu is the cross-sectional area of the copper-core and,



the tensile strength P in kg/mm is within the range of:

$230-1.9(100Scu+2.3Se)/(Se+Scu) \leqq P \leqq 80-0.4(100Scu+2.3Se)/(Se+Scu)$.

4,537,809

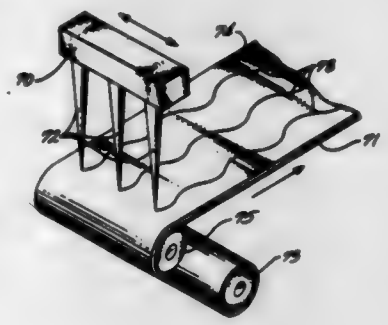
VAN LABEL HAVING NON-LINEAR DISCONTINUOUS SCORE LINES IN THE BACKING

T. Liem Ang, South Pasadena; Donald Van Arnam, Ontario, and Earl McFeaters, La Crescenta, all of Calif., assignors to Avery International Corporation, Pasadena, Calif.

Continuation-in-part of Ser. No. 28,165, Apr. 9, 1979, abandoned, which is a continuation-in-part of Ser. No. 893,002, Apr. 3, 1978, abandoned. This application Jul. 20, 1983, Ser. No. 515,948

Int. Cl.³ B32B *3/30, 7/06*

U.S. Cl. 428—41 **19 Claims**



1. An adhesive laminate comprising:

(a) a base web having a coating of pressure-sensitive adhesive on at least one major surface and a backing removably adhered to the coating of pressure-sensitive adhesive for protecting and containing the pressure-sensitive adhesive; and

(b) at least one non-linear, discontinuous score line extending across the backing and intersecting two edges of the backing, the score line comprising scored segments, wherein a portion of the backing has been cut, of from about 0.01 to about 0.5 inch in length and a depth of at least 80 percent of the thickness of the backing, separated by unscored segments of from about 0.005 to about 0.06 inch in length, said non-linear, discontinuous score line having a wavelength of from about 0.5 to about 6 inches and an amplitude of from about 0.03 to about 1.0 inch, said backing of the laminate having both crackability and pull-across.

4,537,810

METALLIC ENDLESS PRESS BAND HAVING AN EMBOSSED SURFACE FOR USE IN DOUBLE BAND PRESSES IN THE MANUFACTURE OF LAMINATES

Kurt Held, Alte Str. 1, D-7218 Trossingen 2, Fed. Rep. of Germany

Filed Dec. 15, 1983, Ser. No. 561,636

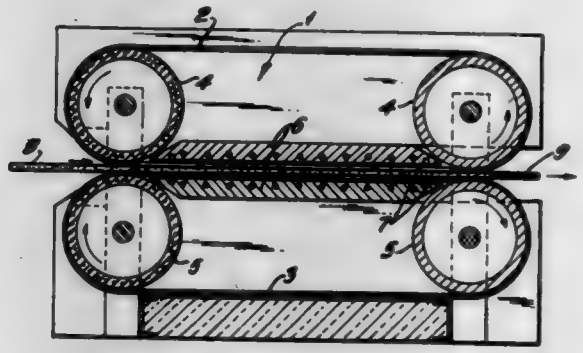
Claims priority, application Fed. Rep. of Germany, Dec. 21, 1982, 3247145

Int. Cl.³ B22D *11/06*

U.S. Cl. 428—156 **1 Claim**

1. In an endless metallic press band having an embossing pattern thereon particularly for use in double band presses for the manufacture of laminates having textured surfaces, said

endless band being formed with a transverse weld seam, the improvement comprising that said endless band consists essentially of a material which is a metal alloy wherein said metal alloy is selected from the group consisting of beryllium-copper alloy, copper-cobalt-beryllium alloy and copper-nickel-beryllium alloy, which can be precipitation hardened or altered in



its crystal structure by heat or radiation treatment and that after hardening, or after treatment, the metal structure at the welding seam is identical with the unwelded base material to the extent that no hardness and crystal structure differences which might impair the texture depth result when texturing the surface by knurling, etching or mechanical engraving.

4,537,811

ELECTRON BEAM IRRADIATING PROCESS FOR RENDERING ROUGH OR TOPOGRAPHICALLY IRREGULAR SURFACE SUBSTRATES SMOOTH; AND COATED SUBSTRATES PRODUCED THEREBY

Sam V. Nablo, Lexington, Mass., assignor to Energy Sciences, Inc., Bedford, Mass.

Filed Apr. 24, 1978, Ser. No. 899,493
Int. Cl.³ B05D *3/06*
U.S. Cl. 428—166 **50 Claims**



1. A process for providing a substrate with an adhered coating of controlled penetration and predetermined external surface texture, that comprises, applying an electron-beam-curable, thin, low viscosity, solid coating to a surface of the substrate; subjecting the coated substrate to electron-beam energy after a dwell time following the applying of the coating adjusted to be sufficiently short to prevent the coating from relaxing into conformity with the substrate surface and from substantial penetration into the substrate, said dwell time being within the range of the order of one second down to fractions thereof; and adjusting the electron beam energy to sufficient value, dose, coverage and penetration thereupon rapidly to cure the coating uniformly throughout its thickness and extent in adhering engagement with the substrate, and with an external coating surface of controlled defect-free texture.

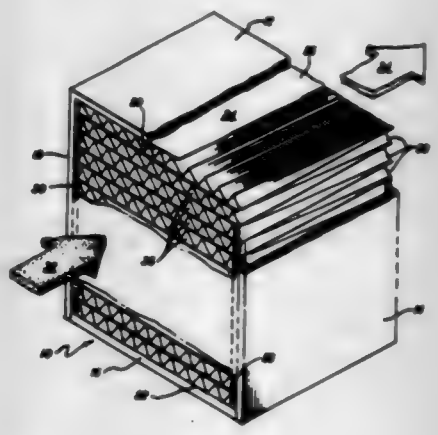
19. A coated substrate product having, in combination, a substrate of relatively rough texture; a thin electron-beam-cured coating adhered to, but not substantially penetrating and contouring to the rough texture of the substrate; said coating having its external surface cured into glass-like smoothness and its inner surface separated with voids between portions of the substrate and the inner surface of the coating.

4,537,812

CORRUGATED SPACERS FOR PLEATED AIR FILTER MEDIA

Richard W. Elbers, Syracuse, N.Y., assignor to Cambridge Filter Corporation, Syracuse, N.Y.

Division of Ser. No. 505,541, Jun. 17, 1983,. This application Dec. 16, 1983, Ser. No. 562,372
Int. Cl.³ B32B *3/28, 3/02*
U.S. Cl. 428—182 **5 Claims**



1. An article of manufacture in the form of a corrugated spacer for pleated filter media, said spacer comprising:

(a) a rectangular sheet of aluminum having a thickness between about 1 to 2 mils and a hardness of not less than H19;

(b) said sheet being folded in zig-zag fashion with successive folds at evenly spaced intervals forming a succession of V formations along each of first and second opposite edges of said sheet;

(c) the amplitude and frequency of said V formations along said first edge being substantially constant, first and second dimensions respectively;

(d) the number of said V formations within a given linear width along said second edge being five times the number within the same width along said first edge, whereby the amplitude and frequency of said V formations along said second edge are substantially 1/5 of said first and second dimensions respectively;

(e) the fold lines forming said V formations along said first edge extending completely between said first and second edges, parallel to one another and to the third and fourth edges of said sheet; and

(f) wherein the fold lines forming said V formations along said second edge, in addition to said fold lines extending completely between said first and second edges, extend from said second edge for about 80% to 90% of the distance to said first edge, at which point they merge into the surface of said sheet, substantially parallel to one another and to said fold lines extending completely between said first and second edges, said spacer being essentially free of cracks and breaks.

4,537,813

PHOTOMASK ENCAPSULATION

Birol Kuyel, Hopewell Township, Mercer County, N.J., assignor to AT&T Technologies, Inc., New York, N.Y.

Continuation-in-part of Ser. No. 425,834, Sep. 27, 1982, abandoned. This application Apr. 25, 1983, Ser. No. 488,315
Int. Cl.³ G03F *1/00*; H01L *21/30*
U.S. Cl. 428—209 **4 Claims**

1. A photomask comprising:

a light transmissive, selectively metallized baseplate; and

a plasma deposited, electrically resistive SiO_2 coating conformally covering the baseplate wherein the coating is a



lossy dielectric and has substantially the same refractive index as the baseplate.

4,537,814

RESIN ARTICLE HAVING A CERAMICS COATING LAYER

Toshiyasu Itoh, Kasugai, and Takaaki Mori, Handa, both of Japan, assignors to Toyoda Gosei Co., Ltd., Nishikasugai, Japan

Filed Jan. 26, 1984, Ser. No. 574,256
Claims priority, application Japan, Jan. 27, 1983, 58-11852
Int. Cl.³ B32B *27/08, 27/30*
U.S. Cl. 428—217 **5 Claims**

1. A resin article having a ceramics coating layer thereon, said article comprising:

a resin substrate formed in an uniform shape,

an intermediate layer made of a cross-linked acrylate having a hardness greater than said resin substrate at least partially covering the surface of said resin substrate, and

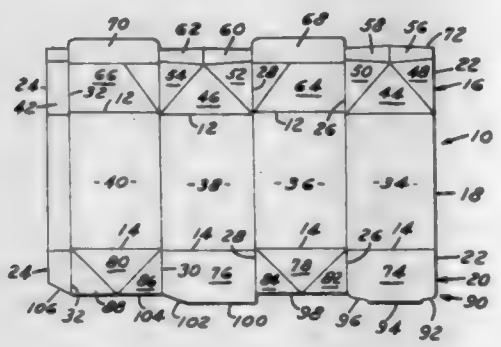
a ceramics coating layer formed on the surface of said intermediate layer.

4,537,815

LAMINATED PAPERBOARD CONTAINER WITH ABSORPTION RESISTANCE MEANS, AND BLANK FOR CONSTRUCTING SAME

Daniel J. Wise, Columbus, Ohio, and Donna M. Woodhall, Livonia, Mich., assignors to Ex-Cell-O Corporation, Troy, Mich.

Continuation-in-part of Ser. No. 479,603, Mar. 28, 1983, Pat. No. 4,489,112. This application Mar. 9, 1984, Ser. No. 587,748
Int. Cl.³ B32B *21/06*
U.S. Cl. 428—219 **4 Claims**



1. A one-piece foldable, laminated blank for forming a sealed liquid container, said blank comprising:

(a) a layer of fluorochemically treated paperboard weighing between 250 and 500 grams per square meter;

(b) a layer of selected ionomer resin weighing in the range of 35–60 grams per square meter and forming a uniform coating on one surface of said layer of treated paperboard;

(c) a layer of an intermediate adhesive weighing in the range of 10–20 grams per square meter and forming a uniform coating on the other surface of said layer of treated paperboard;

(d) a layer of aluminum foil weighin between 16 and 25 grams and secured to said layer of adhesive; and

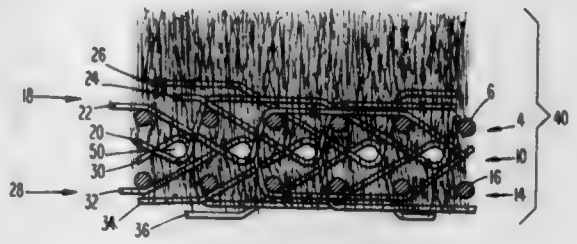
(e) first and second layers of thermoplastic material weighing in the ranges of 15–35 and 12–24 grams per square meter, respectively, and forming uniform inner and outer coatings on said layer of ionomer resin and said layer of aluminum foil, respectively.

4,537,816

PAPERMAKERS SUPERIMPOSED FELT WITH VOIDS FORMED BY REMOVING YARNS

Ian K. Booth, Clinton, and Francis J. Cunnane, III, Laurens, both of S.C., assignors to Ascoe Felts, Inc., Clinton, S.C.

Continuation of Ser. No. 484,575, Apr. 13, 1983, abandoned. This application Oct. 10, 1984, Ser. No. 659,277
Int. Cl.³ B32B *5/02*
U.S. Cl. 428—234 **22 Claims**



1. A papermaker's felt comprising at least:

a first yarn system of machine direction yarns defining a first plane;

a second yarn system of cross machine direction yarns interwoven with said first yarn system in said first plane and extending freely beyond said first plane into a second plane adjacent to said first plane;

a third yarn system of machine direction yarns defining a third plane adjacent to said second plane;

a fourth yarn system of cross machine direction yarns interwoven with said third yarn system in said third plane and extending freely above said third plane and into said second plane and cooperating with said second yarn system to define a plurality of void in said felt; and

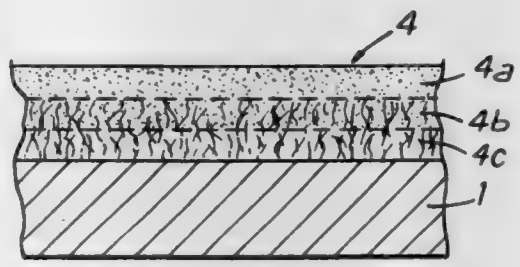
a batt needled adjacent to said first plane and having portions thereof extending into said first, second and third planes and retaining said planes relative to each other.

4,537,817

WATERPROOF FABRIC AND FABRICATION METHOD THEREOF

Jean-Luc Guillaume, Ste Foy les Lyon, France, assignor to Societe a Responsabilite Limitee styled: Speri-France, Melisey, France

Filed Dec. 6, 1983, Ser. No. 558,489
Claims priority, application France, Dec. 8, 1982, 82 20594
Int. Cl.³ B32B *7/00*
U.S. Cl. 428—260 **18 Claims**



1. A waterproof fabric fabricated by the textile substrate having interstices less than 1 mm wide being taut and coated on one side with a thin film of liquid synthetic material and the whole is treated to solidify said film, wherein said film consists of an acid solution containing between 20 percent and 30 percent of a polyamide by weight, and is applied to said textile substrate to a depth of at least 50 microns by spreading in liquid form, whereafter the action of the acid solution on said textile substrate is immediately neutralized and the polyamide of said solution is coagulated by running the coated fabric product through a base bath, and the fabric is thereupon washed in water and dewatered, wherein said coagulated film adjacent to said textile substrate has elongated pores extending transversely to said film, said pores open to said textile substrate, and said coagulated film adjacent its surface away from said

fabric substrate has smaller, open ovoid pores communicating with both said surface and said elongated pores.

4,537,818

METHOD FOR PRODUCTION OF CERAMIC OXIDE AND CARBIDE BODIES BY POLYMER INCLUSION AND DECOMPOSITION

Thomas C. Quinby, Kingston, Tenn., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Aug. 30, 1984, Ser. No. 645,653
Int. Cl.³ C01B *31/07*
U.S. Cl. 428—262 **32 Claims**

1. Process for the preparation of a thin, free-standing metal oxide film comprising:

(a) absorbing cations of a metal which forms a stable oxide on a thin film of polymeric material selected from the group consisting of carboxymethylcellulose, viscose rayon and cellophane;

(b) drying the film of cation-impregnated polymeric material;

(c) heating the dried film of cation-impregnated polymeric material in an inert atmosphere to form a carbonized membrane; and

(d) oxidizing the carbonized membrane to yield a thin, self-supporting, metal oxide membrane.

4,537,819

SCRUB-WIPE FABRIC

Walter E. Schortmann, West Hartford, Conn., and Dennis Metrick, Natick, Mass., assignors to The Kendall Company, Boston, Mass.

Filed Dec. 5, 1984, Ser. No. 678,303
Int. Cl.³ D04N *1/46*
U.S. Cl. 428—284 **11 Claims**



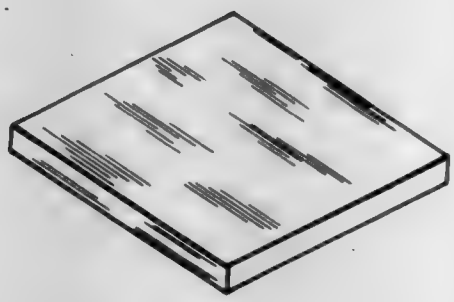
1. A composite wipe fabric comprising: a reticulated foam sheet material disposed in a surface-to-surface relation to at least one layer of a nonwoven web, said foam material and said web being hydroentangled together so as to cause portions of said foam to penetrate said web as bristles protruding therefrom.

4,537,820

INSULATION BOARD AND PROCESS OF MAKING

Jeffert J. Nowobilski, Orchard Park, and William J. Owens, Kenmore, both of N.Y., assignors to Union Carbide Corporation, Danbury, Conn.

Filed Nov. 1, 1983, Ser. No. 547,669
Int. Cl.³ B32B *15/00*
U.S. Cl. 428—285 **19 Claims**



1. Insulation board having a density less than 30 pounds per cubic foot and capable of bearing a load, produced by a process comprising:

(a) providing a stack of substantially binderless glass fiber sheets in an amount sufficient to achieve insulation board of desired density less than 30 pounds per cubic foot;

(b) providing a press to compress the stack;

(c) heating the stack and the press to a temperature in the range of from the glass strain temperature to less than the glass softening temperature for a time period sufficient to achieve thermal equilibration of the stack and the press surface;

(d) thereafter compressing the stack by applying a light vertically compressive force of from 0.2 to 5.0 pounds per square inch to the stack with the press, at said thermal equilibrium for a time period sufficient to produce insulation board of desired density and to substantially relieve stress within the board; and

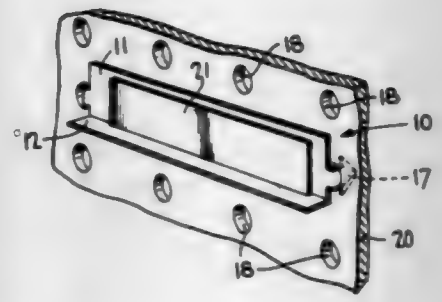
(e) cooling the compressed glass fiber stack to ambient temperature.

4,537,821

MERCHANDISE INFORMATION DISPLAY TAG WITH GUIDE MEANS

Jacob Fast, 6850 NW. 12th Ave., Ft. Lauderdale, Fla. 33309

Filed Jan. 27, 1984, Ser. No. 574,617
Int. Cl.³ G09F *3/02*
U.S. Cl. 428—121 **12 Claims**



1. An article of manufacture for displaying coded indicia in a manner which permits the indicia to be read by a portable automatic code reading apparatus which is translated along said coded indicia, said article comprising: a plastic sheet having a first section with a display surface on which said coded indicia are to be placed for display, means for guiding and properly positioning said code reading apparatus relative to said coded indicia on said first section when said code reading apparatus is translated along said coded indicia, said means comprising a second section formed integrally with said first section and joined to said first section by a first fold line along which the sheet may be folded to project said second section out of plane with respect to said first section to define a positional guide surface along said second section for said portable code reading apparatus when said code reading apparatus is moved along said display surface to read said coded indicia, and projectional support means formed integrally with said sheet for securing said sheet to a support structure.

4,537,822

THREE-LAYERED FABRIC MATERIAL

Shosuke Nanri, and Kazuyoshi Tsuchida, both of Otsu, Japan, assignors to Toyo Boseki Kabushiki Kaisha, Osaka, Japan

Filed Feb. 6, 1984, Ser. No. 577,282
Claims priority, application Japan, Feb. 8, 1983, 58-19508
Int. Cl.³ B32B *7/02*
U.S. Cl. 428—212 **10 Claims**



1. A three-layered fabric material composed of a non-woven

fabric of hydrophobic fibers not more than 1 denier in single-filament denier as the inner layer, a fabric of hydrophilic fibers as the intermediate layer and a fabric of hydrophobic fibers larger in denier than the fibers of the intermediate layer as the outer layer.

4,537,823

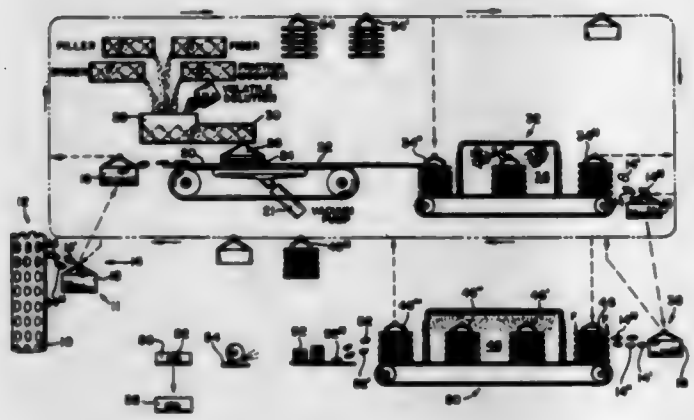
METHOD OF MANUFACTURING A FRICTION ARTICLE

Peter H. Tsang, Union Lake; Joseph P. Coyle, Warren, both of Mich.; Tung Liu, Granger, Ind., and John G. VanderPoorte, St. Clair Shores, Mich., assignors to Allied Corporation, Morristown, N.J.

Filed Nov. 18, 1983, Ser. No. 553,288

Int. Cl.³ B32B *3/26, 5/18;* **B05D** *3/12;* **D04H** *1/64*

U.S. Cl. 428—308.4 **11 Claims**



1. A method of manufacturing a friction article for use in a brake comprising the steps of:

stamping a blank having a predetermined shape from a web of open foamed material selected from a group consisting of carbon, iron, silicon carbide, nickel, and aluminum, said web having voids therein produced by a substantially continuous three dimensional matrix, said three dimensional matrix providing uniform structural rigidity for said blank and a conductive flow path for thermal energy;

placing said blank on a conveyor;

preparing a slurry made up of fillers, modifiers and a liquid binder in a volatile solution;

moving said blank to a location where said slurry fills said voids to create a preformed friction article;

transporting said preformed friction article to a dryer where about fifty percent of said volatile solution is removed without the formation of surface depressions caused by the release of bubbles of gas;

conveying said dried preformed friction article to an oven to cure said binder and form a second matrix which holds said fillers, modifiers, and fibers in said three dimensional matrix; and

applying a force to said preformed friction article during curing to produce a desired density in said friction article.

4,537,824

MAGNETIC RECORDING MEDIUM

Masao Asano; Wataru Fujimatsu; Kazumasa Matsumoto; Hideki Murata; Toshihiko Sato, and Kenji Watanabe, all of Hino, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Mar. 9, 1984, Ser. No. 588,084

Claims priority, application Japan, Mar. 11, 1983, 58-40087

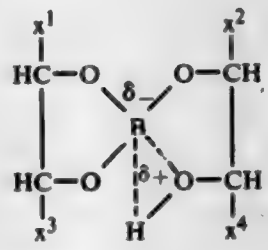
Int. Cl.³ G11B *5/72, 5/70*

U.S. Cl. 428—323 **12 Claims**

1. In a magnetic recording medium comprising a support having thereon a magnetic layer containing a ferromagnetic powdery material,

said magnetic recording medium comprising at least one layer containing a high-molecular compound having a boron-containing unit having the formula (I):





Formula (I)

wherein at least one of x^1, x^2, x^3 and x^4 has through an oxygen atom a linkage "-O—R-" with a polymer chain, and R is a divalent substituted or unsubstituted hydrocarbon residue.

4,537,825

BONDED COMPOSITES OF A THERMOPLASTIC ELASTOMERIC BLEND WITH A VULCANIZED EPOM OR EPM RUBBER COMPOSITION

James F. Yardley, Barton Under Needwood, United Kingdom, assignor to Dunlop Limited, London, England

Filed Oct. 17, 1983, Ser. No. 542,711

Claims priority, application United Kingdom, Oct. 27, 1982, 8230704

Int. Cl.³ B32B *25/08;* **C08L** *23/02;* **B29H** *9/00;* **C09J** *3/12*

U.S. Cl. 428—327 **2 Claims**

1. A bonded composite of

(i) a thermoplastic elastomeric blend of vulcanized ethylene/propylene/diene monomer terpolymer rubber particles not more than 50 microns in size dispersed in a thermoplastic linear crystalline polyolefin continuous phase, with

(ii) a vulcanized ethylene/propylene/diene monomer terpolymer or ethylene/propylene copolymer rubber composition containing less than 50% by volume of rubber, made by a method which comprises fusing the thermoplastic elastomeric blend and solidifying it in contact with the vulcanized rubber composition in the absence of an adhesive interlayer.

4,537,826

ELECTROCHROMIC DISPLAY ELEMENT

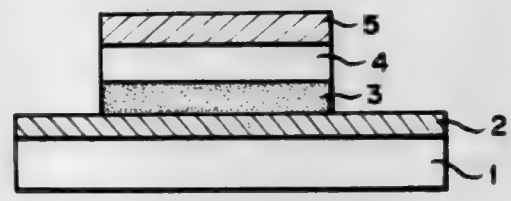
Masataka Miyamura, Kamakura; Masanori Sakamoto, Kawasaki, and Yuko Nakajima, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jun. 8, 1983, Ser. No. 502,322

Claims priority, application Japan, Jun. 29, 1982, 57-110863; Jun. 29, 1982, 57-110864; Nov. 24, 1982, 57-204520

Int. Cl.³ B32B *15/04;* **C09K** *1/10;* **G02F** *1/17*

U.S. Cl. 428—328 **17 Claims**



1. An electrochromic display element comprising

(a) a first layer consisting essentially of an electrochromic material comprising a transition metal oxide, and

(b) a second layer in contact with said first layer, said second layer consisting essentially of (i) a light-transmissive organic

polymeric resin and (ii) an inorganic material which is ion-conductive.

4,537,827

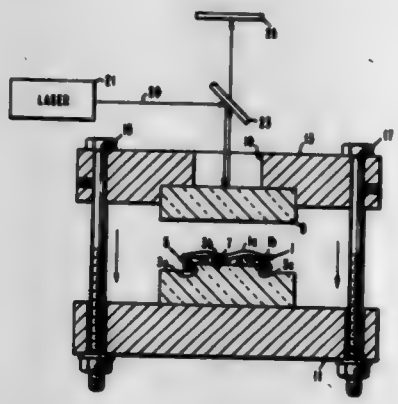
OPTICALLY FLAT SEMICONDUCTOR BASEPLATE STRUCTURE

Michael J. Little, Tarzana; Roger H. Brown, Burbank; Uzi Efron, Los Angeles, and Clarence P. Hoberg, Pacific Palisades, all of Calif., assignors to Hughes Aircraft Company, El Segundo, Calif.

Continuation of Ser. No. 464,442, Feb. 7, 1983, Pat. No. 4,470,856. This application May 18, 1984, Ser. No. 611,808

Int. Cl.³ B32B *7/00*; G01B *11/06*

U.S. Cl. 428—409 **6 Claims**



1. An optical baseplate structure comprising:
(a) a baseplate having a top surface;
(b) a layer of solidified fluid adhesive adjacent said baseplate top surface; and
(c) a semiconductor member having first and second major surfaces, said second major surface being adjacent said solidified fluid adhesive layer, said semiconductor member being held thereby in a stressed condition such that said first major surface is substantially optically flat.

4,537,828

LAMINATES COMPRISING PLASTICIZED POLYVINYL BUTYRAL INTERLAYERS

I. Luis Gomez, Longmeadow, Mass., assignor to Monsanto Company, St. Louis, Mo.

Filed Aug. 12, 1983, Ser. No. 522,929

Int. Cl.³ B32B *27/36, 9/04*

U.S. Cl. 428—412 **7 Claims**

1. In a laminate comprising at least one sheet of thermoplastic resin selected from the group consisting of polycarbonate and polyacrylate laminated to a polyvinyl butyral sheet plasticized with a multiester of an alcohol having 2 to 4 hydroxyl groups and a C_{16} to C_{20} unsaturated fatty acid having a hydroxyl group attached to the acid molecule, the improvement which comprises, in property improving combination with such multiester, a synergistically effective amount of an additional plasticizer in said polyvinyl butyral sheet which is a monoester of a glycol and said C_{16} to C_{20} unsaturated fatty acid, wherein the ratio of said monoester to said multiester is between about 1:1 to about 5:1.

4,537,829

CURABLE SILICONE COMPOSITIONS COMPRISING RESINS

John D. Blizzard, Bay City, and Terence J. Swihart, Essexville, both of Mich., assignors to Dow Corning Corporation, Midland, Mich.

Filed Sep. 20, 1984, Ser. No. 652,936

Int. Cl.³ B32B *9/00*

U.S. Cl. 428—429 **48 Claims**

1. A composition comprising in combination,
(A) from 1 to 200 parts by weight of the reaction product of
(i) an organosilicon resin consisting essentially of $R_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units wherein R represents a monovalent hydrocarbon radical and the ratio of $R_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units is from 0.6/1 to 0.9/1 and
(ii) a polyorganohydrogensiloxane;
(B) 100 parts by weight of an organosilicon polymer having the formula $R''R_2'SiO(R_2'SiO)_xSiR_2'R''$, wherein each R' is selected from the group consisting of monovalent hydrocarbon radicals, each R'' is selected from the group consisting of OH radicals and R' radicals, x has a value of from 0 to 5000, there being on average at least two radicals of said organosilicon polymer selected from the group consisting of vinyl radicals and hydroxyl radicals;
(C) from 1 to 50 parts by weight of an organosilicon resin consisting essentially of $(CH_3)_2(CH_2{=}CH)SiO_{\frac{1}{2}}$ units, $(CH_3)_3SiO_{\frac{1}{2}}$ units and $SiO_{4/2}$ units, said units being in a ratio of $(CH_3)_2(CH_2{=}CH)SiO_{\frac{1}{2}}$ units to $(CH_3)_3SiO_{\frac{1}{2}}$ units to $SiO_{4/2}$ units of from 0.10/0.6/1 to 0.25/0.9/1; and
(D) from 0.00003 to 0.035 parts by weight of a hydrosilylation catalyst, said parts being by weight of the metal in the catalyst.

4,537,830

THERMOPLASTIC MOLDING COMPOSITIONS OF POLYVINYLBUTYRAL CONTAINING PLASTICIZER

Hans D. Hermann, Bad Soden am Taunus, and Klaus Fabian, Kriftel, both of Fed. Rep. of Germany, assignors to Hoechst Aktiengesellschaft, Fed. Rep. of Germany

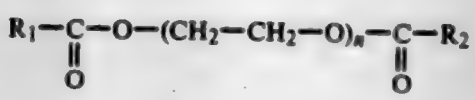
Filed Jan. 31, 1984, Ser. No. 575,711

Claims priority, application Fed. Rep. of Germany, Jan. 31, 1983, 3303111

Int. Cl.³ C08L *29/14*; C08K *5/10, 5/52*; B32B *17/10*

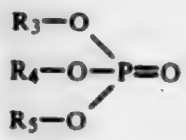
U.S. Cl. 428—437 **8 Claims**

1. A thermoplastic molding composition based on polyvinylbutyral containing plasticizer, comprising a component mixture of
(A) 65–80% by weight, based on the component mixture, of a polyvinylbutyral containing vinyl alcohol units and
(B) 35–20% by weight, based on the component mixture, of a plasticizer mixture of
(a) 50–99% by weight, based on the plasticizer mixture, of a glycol ester of formula I



(I)

in which R_1 and R_2, which can be identical or different, denote aliphatic radicals with in each case 4–10 carbon atoms and n denotes an integer from 2 to 4, and
(b) 50–1% by weight, based on the plasticizer mixture, of a phosphoric acid ester of formula II



(II)

in which R_3, R_4 and R_5, which can be identical or different, denote aliphatic radicals which have in each case up to 18 carbon atoms, optionally contain double bonds and/or optionally contain hetero-atoms and/or optionally contain halogen atoms and can also be substituted, and R_4 and/or R_5 can also denote cycloaliphatic, aromatic or araliphatic radicals with in each case up to 18 carbon atoms.

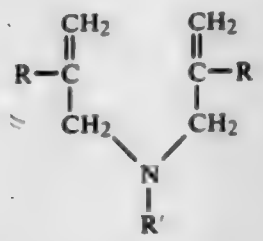
4,537,831

CROSSLINKING OF CHLORINE-CONTAINING POLYMERS

Frank V. Di Stefano, Macungie, Pa., assignor to Air Products and Chemicals, Inc., Allentown, Pa.

Filed Feb. 22, 1984, Ser. No. 582,427
Int. Cl.[3] C08L *27/04, 27/06, 27/08*
U.S. Cl. 428—514 16 Claims

1. A binder composition for nonwovens comprising a chlorine-containing polymer which is a vinyl chloride homopolymer, a vinyl chloride copolymer, a vinylidene polymer or a chlorinated acrylic polymer and, as an amine crosslinking agent, up to 25 wt. % polyamine polymer which is the product of the polymerization of at least one diallylamine of the formula



where R is hydrogen or a C_1-C_4 alkyl group and R′ is hydrogen or a methyl group.

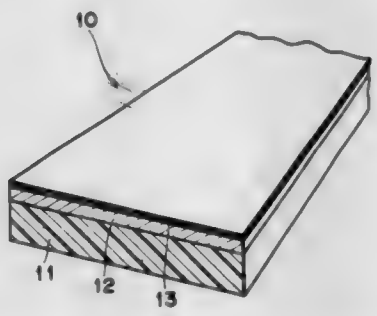
9. A nonwoven product comprising a nonwoven fibrous substrate bonded with 5 to 80 wt. % of the binder composition of claim 1.

4,537,832

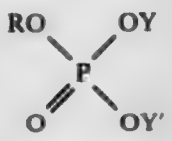
MAGNETIC RECORDING MEDIUM

Osamu Kohmoto, Ichikawa; Yasufumi Takasugi; Hiroshi Sugihara, both of Saku, and Masaharu Nishimatsu, Komoro, all of Japan, assignors to TDK Corporation, Tokyo

Filed Dec. 20, 1983, Ser. No. 563,502
Claims priority, application Japan, Dec. 25, 1982, 57-234816; Oct. 5, 1983, 58-186622; Oct. 6, 1983, 58-187523; Oct. 7, 1983, 58-187965; Oct. 7, 1983, 58-187966
Int. Cl.[3] G11B *5/72*
U.S. Cl. 428—216 21 Claims



1. A magnetic recording medium comprising a substrate, a continuous thin magnetic layer on the substrate, and a topcoat formed over the magnetic layer deposited by evaporation or sputtering, characterized in that the topcoat consists of a compound having the formula:



where R is selected from alkyl radicals having 10 to 22 carbon atoms, and

Y and Y′ are independently selected from the group consisting of hydrogen atom, alkyl radicals and monovalent cations, and Y and Y′ may together represent a divalent cation.

4,537,833

MAGNETIC RECORDING MEDIUM

Akira Kasuga; Nobuyuki Yamamoto, and Hajime Miyatsuka, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 2, 1984, Ser. No. 606,097
Claims priority, application Japan, May 2, 1983, 58-77840
Int. Cl.[3] G11B *5/70*
U.S. Cl. 428—328 26 Claims

1. A magnetic recording medium comprising a non-magnetic support having thereon a magnetic recording layer comprising ferromagnetic metal particles and a binder, wherein the ferromagnetic metal particles have a specific surface area of about 35 to about 80 m^2/g, and the magnetic recording layer has a surface roughness of about 0.001 to about 0.04 μm and the residual amount of solvent in the magnetic recording layer is about 0.5 to about 30 mg/m^2.

13. The magnetic recording medium as claimed in claim 1, wherein the ferromagnetic metal particles have an oxidized layer with a thickness of about 20 Å to about 100 Å.

4,537,834

METAL (II) 4,4′,4″,4‴-PHTHALOCYANINE TETRAAMINES AS CURING AGENTS FOR EPOXY RESINS

Bappalige N. Achar, Mysore, India; George M. Fohlen, Millbrae, and John A. Parker, Los Altos, both of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Continuation-in-part of Ser. No. 440,656, Nov. 10, 1982, Pat. No. 4,499,260. This application Apr. 11, 1984, Ser. No. 598,777
Int. Cl.[3] G08G *59/50*
U.S. Cl. 428—413 12 Claims

1. A homogeneous cured polymer of metal 4,4′,4″,4‴-phthalocyanine tetraamine and one or more epoxy compounds.

4,537,835

OXIDATION OF HYDROGEN HALIDES TO ELEMENTAL HALOGENS

Charles A. Rohrmann, Kennewick, and Harold T. Fullam, Richland, both of Wash., assignors to Battelle Memorial Institute, Richland, Wash.

Continuation-in-part of Ser. No. 770,282, Feb. 18, 1977, abandoned. This application May 31, 1978, Ser. No. 911,097
Int. Cl.[3] C01B *7/00, 7/07*
U.S. Cl. 423—502 3 Claims

1. A process for regenerating chlorine from hydrogen chloride comprising:

in a fused salt contactor which contains only liquids and gases and which is maintained substantially free of sulfur oxide gases, contacting an oxidizing gas comprising molecular oxygen and hydrogen chloride containing substantially no sulfur impurities with a molten salt mixture comprising 5 to 25 wt. percent K_2SO_4 and 50 to 90 wt percent $K_2S_2O_7$ and 2 to 25 wt. percent dissolved V_2O_5 oxidizing catalyst; and

maintaining said salt mixture at a temperature between 275° C. and 475° C., sufficient to oxidize a major portion of said hydrogen chloride, and insufficient to substantially change or alter the balance of the components so that substantially no additions of make up quantities of said components are required and regeneration of said salt mixture outside said reactor is not required, thereby producing a gaseous effluent which contains primarily steam and chlorine along with a smaller amount of unreacted hydrogen chloride and unreacted oxidizing gas and which is substantially free of sulfur oxide gases.

4,537,836

COMPOSITE STRUCTURES

Ashok M. Adur, Wescosville, Pa.; Seymour Schmukler, Palatine, Ill.; John Maconis, Jr., Schaumburg, Ill., and Mitsuzo Shida, Barrington, Ill., assignors to Chemplex Company, Rolling Meadows, Ill.

Division of Ser. No. 510,292, Jul. 1, 1983, Pat. No. 4,487,885, and a continuation-in-part of Ser. No. 468,871, Feb. 22, 1983, abandoned, which is a division of Ser. No. 339,984, Jan. 18, 1982, abandoned, said Ser. No. 510,292, is a continuation-in-part of Ser. No. 339,984, ,. This application Dec. 4, 1984, Ser. No. 677,843

Int. Cl.[3] B32B *27/32*

U.S. Cl. 428—522 59 Claims

1. A composite structure comprising:

(a) a substrate, and adhered thereto

(b) an adhesive blend consisting essentially of:

(1) about 0.1 to less than about 40 parts by weight in said blend of a graft copolymer of about 70–99.95 wt.% of a polyethylene backbone grafted with about 30–0.05 wt.% of at least one grafting monomer comprising at least one polymerizable ethylenically unsaturated carboxylic acid or carboxylic acid derivative for a total of 100%, and

(2) about 0.1–99 parts by weight in said blend of LDPE, or ethylene-unsaturated ester copolymers, or LLDPE or mixtures thereof, and

(3) about 0.1–60 parts by weight in said blend of a blending component comprising a homopolymer or copolymer, or mixtures thereof, containing greater than about 50 wt.% of an α-olefin of 4–15 carbon atoms, for a total of components (1), (2) and (3) of 100 parts by weight.

4,537,837

CORROSION RESISTANT METAL COMPOSITE WITH METALLIC UNDERCOAT AND CHROMIUM TOPCOAT

Walter H. Gunn, 45 Virginia Dr., Painesville, Ohio 44077, and Alexander W. Kennedy, 11857 Auburn Rd., Chardon, Ohio 44024

Continuation-in-part of Ser. No. 475,734, Mar. 16, 1983, Pat. No. 4,500,610. This application Feb. 13, 1984, Ser. No. 578,010

Int. Cl.[3] C23C *1/02;* C23F *7/10*

U.S. Cl. 428—621 21 Claims

1. A coated metal substrate having enhanced corrosion resistance and protected by a coating composite comprising a thin metallic undercoating layer of a metal combination having at least one metal selected from the group consisting of zinc, nickel, iron, chromium, aluminum and cobalt, and a substantially resin-free topcoat layer from a hexavalent-chromium-containing bonding coating composition heat-curable to a water resistant protective coating, said topcoat layer containing particulate metal as well as above 20 milligrams per square foot of coated metallic undercoating of chromium, as chromium, in non-elemental form, said composition containing hexavalent-chromium-providing-substance in liquid medium.

4,537,838

SYSTEM WITH SEVERAL PANELS CONTAINING PHOTOELECTRIC ELEMENTS FOR THE PRODUCTION OF ELECTRIC CURRENT

Rudolf Jetter, and Heinz Jetter, both of Feldmeilen, Switzerland, assignors to Hartag AG, Basel, Switzerland

PCT No. PCT/CH83/00088, § 371 Date Mar. 5, 1984, § 102(e) Date Mar. 5, 1984, PCT Pub. No. WO84/00253, PCT Pub. Date Jan. 19, 1984

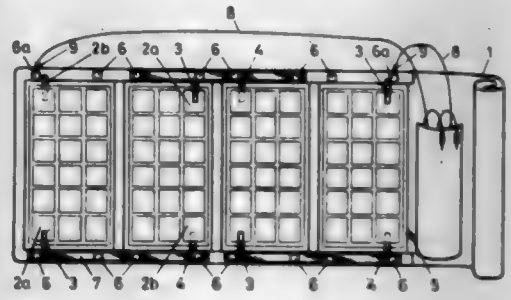
PCT Filed Jul. 5, 1983, Ser. No. 598,278

Claims priority, application Switzerland, Jul. 5, 1982, 4069/82; Sep. 28, 1982, 5694/82

Int. Cl.[3] H01M *12/00;* H01L *31/06*

U.S. Cl. 429—9 13 Claims

1. System with several panels containing electrically interconnected photoelectric elements for the production of electric current, characterized in that the panels are arranged side by side in a compartmented folding pocket open on one side and have an interval between adjoining panels to form at least one folding position, the panels are electrically connected in series and/or parallel connection by means of flexible conductors incorporated into the compartmented folding pocket and extending at least in part over the folding positions and that



connection devices are present to connect the panels mechanically with the conductors and the compartmented folding pocket and to tap voltages and/or electric currents from the conductors.

13. System as in claim 1, wherein the compartmented folding pocket contains at least one flat buffer battery.

4,537,839

FUEL CELL AND METHOD OF PURGING A FUEL CELL

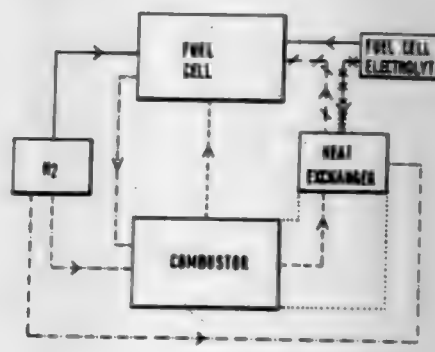
Donald S. Cameron, Reading, England, assignor to Johnson Matthey Public Limited Company, London, England

Filed Nov. 16, 1983, Ser. No. 552,099

Claims priority, application United Kingdom, Nov. 23, 1982, 8233312

Int. Cl.[3] H01M *8/22*

U.S. Cl. 429—20 12 Claims



1. A fuel cell in combination with a combustor for combusting hydrogen with air to yield a gas stream comprising water vapour and nitrogen optionally together with hydrogen at a concentration below the explosive limit and means for passing the gas stream through the fuel cell as a purge and/or as a preheater or through a heat exchanger for imparting heat to a reactant for the fuel cell or to the fuel cell electrolyte.

4,537,840

FUEL CELL USING ORGANIC, HIGH-MOLECULAR WEIGHT ELECTROLYTE

Tsutomu Tsukui, Hitachi; Toshio Shimizu, Katsuta; Ryota Doi, Naka, and Yasuyuki Tsutsumi, Hitachi, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Aug. 1, 1983, Ser. No. 519,264

Claims priority, application Japan, Jul. 30, 1982, 57-132237

Int. Cl.[3] H01M *8/08*

U.S. Cl. 429—33 26 Claims

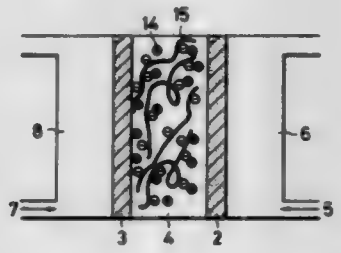
1. A fuel cell, adapted to be operated at a temperature of from room temperature to about 100° C., comprising:

(a) a fuel electrode placed so that a fuel in a fuel chamber is in contact therewith,

(b) an oxidizer electrode placed so that an oxidizer in an oxidant chamber is in contact therewith, and

(c) an electrolyte between said fuel electrode and said oxi-

dizer electrode, the electrodes facing each other via said electrolyte, wherein said electrolyte is an organic, high-molecular weight electrolyte having a molecular weight of at least 1000, which electrolyte is at least partially



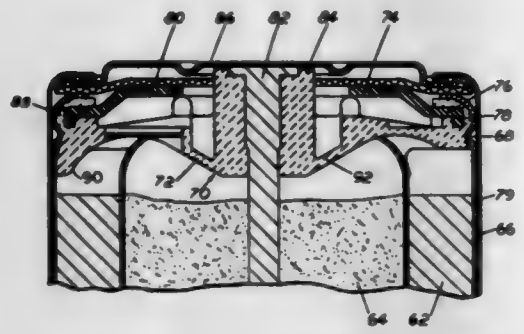
soluble in water thereby to generate low-molecular weight ions and high-molecular weight ions being separated from each other in water, said ions being hardly permeable through the electrodes, whereby leakage of the electrolyte from between the electrodes can be avoided.

4,537,841

METAL-SUPPORTED SEALS FOR GALVANIC CELLS

Marian Wiacek; Charles Markin, and Ronald J. Book, all of Toronto, Canada, assignors to Duracell Inc., Bethel, Conn.

Filed Nov. 4, 1983, Ser. No. 548,740
Int. Cl.³ H01M *2/00*
U.S. Cl. 429—56 **22 Claims**



1. In combination, a cylindrical sealed galvanic cell, having an anode, a ca[illegible]ode, and a generally cylindrical can into which the principal components of the cell are placed, said can having a closed end and an open end; and further comprising a sealing and insulating member at the open end of said can, said member being held in sealing relationship to said can by a crimp formed at the top edge of said can; where:

said sealing and insulating member comprises a molded thermoplastic body portion and a metal disc portion over said thermoplastic body portion, with a space between said disc and said thermoplastic body;

said molded thermoplastic body portion has an inwardly directed shoulder in its periphery subtended by a downwardly and outwardly extending discontinuous skirt portion, which is formed as a plurality of discrete leg-like projections; and

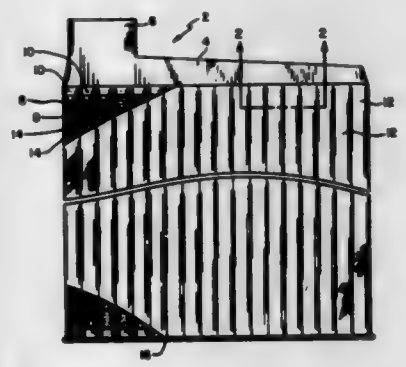
said metal disc has a central opening therein and has an interference fit over a centrally located upwardly extending boss in the upper surface of said thermoplastic body portion, and has at least one opening formed therein to provide a passage for pressure equalization between the outside of said cell and the space between said disc and said molded thermoplastic body.

4,537,842

THIN TUBULAR POSITIVE ELECTRODES FOR LEAD-ACID BATTERIES AND METHOD OF MAKING SAME

Erik G. Sundberg, 447 Union St., Newtown Crossing, Pa. 18940

Filed Jun. 15, 1983, Ser. No. 504,472
Int. Cl.³ H01M *4/76*
U.S. Cl. 429—140 **17 Claims**



1. A positive tubular electrode for a lead-acid battery, the said electrode including a grid structure comprising a top bar, a lug, and a plurality of spaced-apart spines depending from the top bar, a plurality of tube members arranged around the spines such that one spine is enclosed by each tube member, active material portions received in the tube members and the lower ends of the said tube members being closed by a bottom bar part,

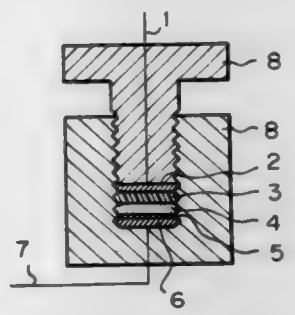
characterized in that the ratio between a calculated weight of formed, dry active material received in each tube member to the weight of the spine enclosed by that tube member is restricted to a maximum value of 1.5:1.

4,537,843

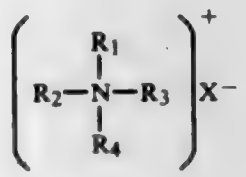
SECONDARY BATTERY

Toshikazu Shishikura; Hiroshi Konuma, both of Yokohama; Hidenori Nakamura, Kawasaki, and Yukio Kobayashi, Sagamihara, all of Japan, assignors to Showa Denko Kabushiki Kaisha and Hitachi, Ltd., both of, Japan

Filed Oct. 22, 1984, Ser. No. 663,540
Claims priority, application Japan, Oct. 26, 1983, 58-199280; Feb. 27, 1984, 59-034175
Int. Cl.³ H01M *10/40*
U.S. Cl. 429—197 **11 Claims**



1. A secondary battery comprising a polymeric compound having conjugated double bonds in the main chain as a material of a negative electrode or a material of positive and negative electrodes, wherein an ammonium salt represented by the following general formula:



wherein R_1, R_2, R_3 and R_4 stand for an alkyl group having 1 to 16 carbon atoms or an aryl group having 6 to 15 carbon atoms, with the proviso that the case where all of R_1, R2, R_3 and R_4 are the same groups is excluded, and X is an anion, is used as the electrolyte.

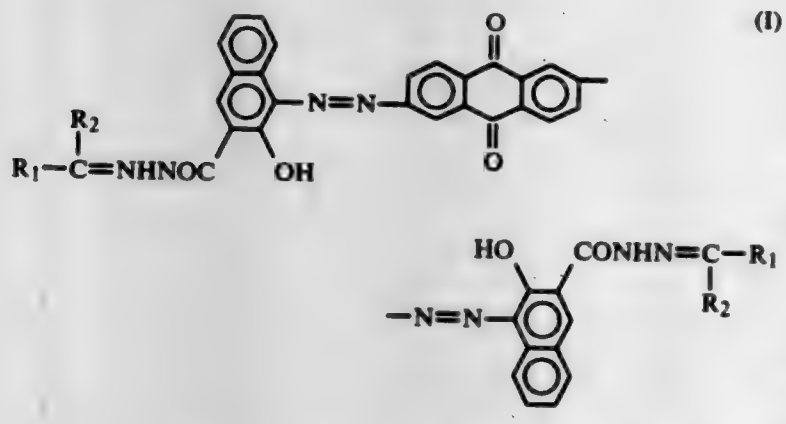
4,537,844

ELECTROPHOTOGRAPHIC ELEMENT CONTAINING DISAZO COMPOUND

Mitsuru Hashimoto, Numazu, Japan, assignor to Ricoh Co. Ltd., Tokyo, Japan

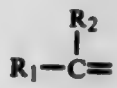
Filed Sep. 28, 1983, Ser. No. 536,924
Claims priority, application Japan, Oct. 8, 1982, 57-177419; Jan. 12, 1983, 58-2310
Int. Cl.³ G03G 5/06, 5/14
U.S. Cl. 430—58 18 Claims

1. An electrophotographic element comprising a charge carrier generating layer and a charge transfer layer formed on an electrically conductive substrate, wherein said charge carrier generating layer contains therein a disazo compound represented by the general formula (I):



(I)

wherein, R_1 and R_2 are the same or different and each stands for hydrogen, C_1–C_4 lower alkyl group, a substituted or unsubstituted aralkyl group, a substituted or unsubstituted aromatic group, or a substituted or unsubstituted hetero group, or



forms a ring.

4,537,845

MULTICONDUCTIVE LAYER ELECTROPHOTOGRAPHIC PHOTOSENSITIVE DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshiyuki Mimura; Takao Okada, and Akitoshi Toda, all of Hachioji, Japan, assignors to Olympus Optical Company Ltd., Japan

Filed Oct. 19, 1983, Ser. No. 543,385
Claims priority, application Japan, Oct. 20, 1982, 57-184189
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 10 Claims

1. An electrophotographic photosensitive device, comprising:

an aluminium substrate conductive layer;

a zinc conductive layer formed on the aluminium conductive layer;

a nickel conductive layer formed on the zinc conductive layer;

a selenium based photoconductive layer formed on the nickel conductive layer; and

a transparent insulating layer formed on the photoconductive layer.

4,537,846

MULTICONDUCTIVE LAYER ELECTROPHOTOGRAPHIC PHOTOSENSITIVE DEVICE AND METHOD OF MANUFACTURE THEREOF

Yoshiyuki Mimura; Takao Okada, and Akitoshi Toda, all of Hachioji, Japan, assignors to Olympus Optical Company, Ltd., Japan

Filed Oct. 19, 1983, Ser. No. 543,285
Claims priority, application Japan, Oct. 20, 1982, 57-184192
Int. Cl.³ G03G 5/14
U.S. Cl. 430—58 10 Claims

1. An electrophotographic photosensitive device, comprising:

an aluminium substrate conductive layer;

a zinc conductive layer formed on the aluminium conductive layer;

a silver conductive layer formed on the zinc conductive layer;

a selenium based photoconductive layer formed on the silver conductive layer; and

a transparent insulating layer formed on the photoconductive layer.

4,537,847

DISAZO PHOTORECEPTORS FOR ELECTROPHOTOGRAPHY

Jiro Takahashi; Kiyoshi Sawada, both of Hachioji; Akira Kinoshita, Hino; Tawara Komamura; Satoshi Goto, both of Hachioji, and Osamu Sasaki, Hino, all of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

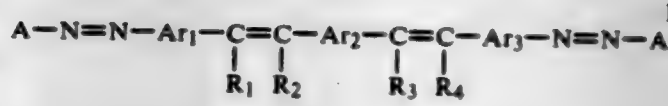
Continuation of Ser. No. 435,102, Oct. 18, 1982, abandoned.
This application Aug. 10, 1984, Ser. No. 640,205
Claims priority, application Japan, Oct. 23, 1981, 56-169554; Feb. 15, 1982, 57-23297
Int. Cl.³ G03G 5/06
U.S. Cl. 430—58 15 Claims



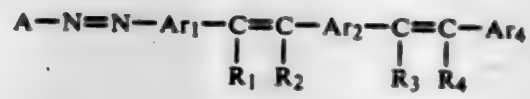


1. A photoreceptor for electrophotography comprising a conductive support and an overlaying photosensitive layer, said photosensitive layer containing a binder and at least one azo compound of Formula I or II

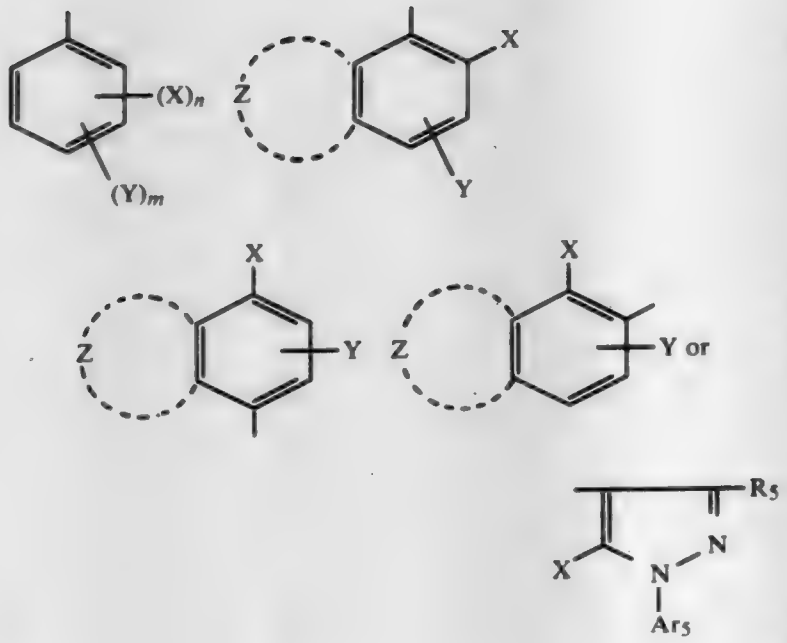
Formula I



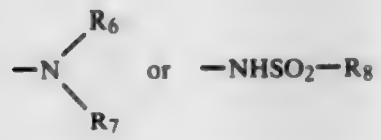
Formula II



wherein Ar_1, Ar_2, Ar_3 and Ar_4 each is an aromatic hydrocarbon ring radical or an aromatic heterocyclic ring radical; R_1, R_2, R_3 and R_4 each is an electron attractive group or hydrogen provided that at least one of R_1, R_2, R_3 and R_4 is an electron attractive group; and A is

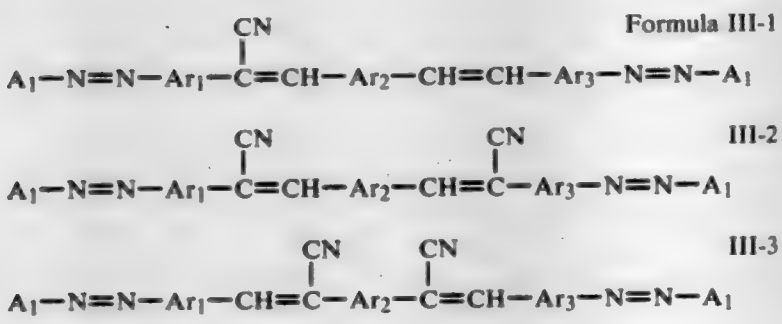


wherein X is a hydroxy group or a group represented by the formula:



wherein R_6 and R_7 each is hydrogen or an alkyl group, and R_8 is an alkyl or aryl group; Y is halogen, an alkyl or alkoxy group, a carboxy group, a sulfo group, a carbamoyl or sulfamoyl group; Z is an atomic group necessary for making an aromatic hydrocarbon ring or an aromatic heterocyclic ring; R_5 is hydrogen, an amino or carbamoyl group, a carboxy group or an ester group thereof; Ar_5 is an aryl group; n is an integer of 1,2 or 3; and m is an integer of 0, 1 or 2.

7. The photoreceptor of claim 1 wherein said azo compound is selected from the group consisting of Formulas III-1 to III-3

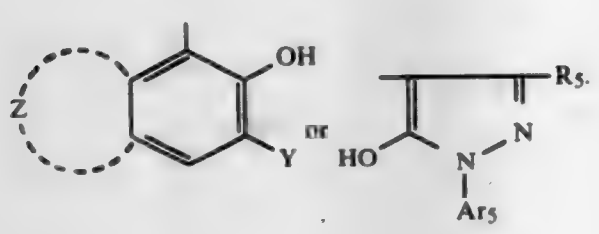


Formula III-1

III-2

III-3

wherein A_1 is



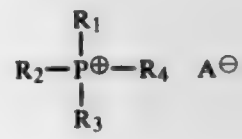
4,537,848

POSITIVELY CHARGED TONER COMPOSITIONS CONTAINING PHOSPHONIUM CHARGE ENHANCING ADDITIVES

Raymond A. Yourd, III; Debesh Majumdar, both of Rochester, and Robert J. Gruber, Pittsford, all of N.Y., assignors to Xerox Corporation, Stamford, Conn.

Filed Jun. 18, 1984, Ser. No. 621,977
Int. Cl.³ G03G *9/12*
U.S. Cl. 430—110 **35 Claims**

1. An improved positively charged toner composition comprised of resin particles, pigment particles, and as a charge enhancing additive in an amount of from about 0.1 percent by weight to about 20 percent by weight a phosphonium compound of the formula:



I.

wherein R_1, R_2, R_3, and R_4, are independently selected from the group consisting of alkyl, aryl, substituted alkyl, and substituted aryl, and A is an anion.

4,537,849

PHOTOSENSITIVE ELEMENT HAVING ROUGHENED SELENIUM-ARSENIC ALLOY SURFACE

Akio Arai, Nagano, Japan, assignor to Fuji Electric Company, Ltd., Kanagawa, Japan

Filed Jan. 18, 1984, Ser. No. 571,860
Claims priority, application Japan, Jan. 25, 1983, 58-11132
Int. Cl.³ G03G *5/08*
U.S. Cl. 430—85 **5 Claims**

1. A photosensitive element for use in electrophotography comprising a photoconductive layer composed of a selenium-arsenic alloy at least at the exposed surface thereof, the exposed surface having a rough surface portion having ridges and grooves in the range from 0.1 to 2 microns in height and 3 microns or less in width created by superfinishing the exposed surface.

4,537,850

PROCESS AND APPARATUS FOR REJUVENATING ELECTROSTATIC COPY MACHINE TONER

Wilfred Smeiman, 33372 Bremerton St., Dana Point, Calif. 92629

Filed Aug. 30, 1983, Ser. No. 527,699
Int. Cl.³ G03G *9/08;* G01R *33/12;* C22C *19/00*
U.S. Cl. 430—137 **12 Claims**

1. A process for rejuvenating toner for electrostatic copy machines comprising:

transferring a used toner having magnetic particles coated with a fusible component to a container;

surrounding said container with an electromagnetic coil;

energizing said electromagnetic coil to apply a pulsed magnetic field to said toner;

timing the output of said electromagnetic coil to optimize the application of said pulsed electromagnetic field for optimum magnetic strength of said toner.

7. Apparatus for rejuvenating toner for electrostatic copy machines comprising:

a hollow core means;

an electromagnetic coil surrounding said hollow core means;

container means containing used toner having magnetic particles coated with a fusible component for placing the toner to be rejuvenated inside said core;

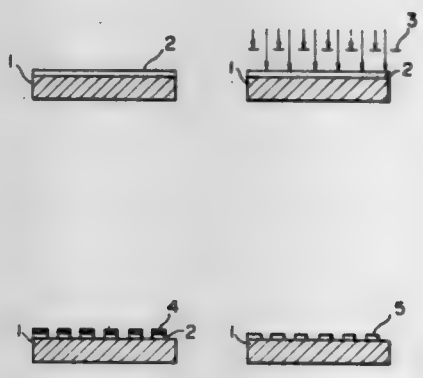
energizing means for energizing said electromagnetic coil to produce a pulsed electromagnetic field to said toner;

timing means for timing the operation of said energizing means to optimize the application of said electromagnetic field for optimum magnetic strength of said toner.

4,537,851
PROCESS OF FORMING POWDER PATTERN USING POSITIVE DIAZONIUM SALT PHOTORESIST

Saburo Nonogaki, Tokyo; Nobuaki Hayashi, Hachioji, and Yoshifumi Tomita, Mobara, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Continuation of Ser. No. 313,170, Nov. 20, 1981, abandoned. This application Sep. 12, 1983, Ser. No. 531,266
Claims priority, application Japan, Oct. 22, 1980, 55-146941
Int. Cl.³ G03C *5/34, 5/18;* G03F *7/08, 7/26*
U.S. Cl. 430—144 44 Claims



1. A process for forming a powder pattern using a positive-working photoresist, which comprises:

(1) applying a water-soluble, positive-working photoresist composition comprising an admixture of water-soluble aromatic diazonium salt, water soluble phenolic compound, and water-soluble polymeric compound, on a substrate to form a positive-working photoresist film, said composition having sufficient concentration of water-soluble aromatic diazonium salt and phenolic compound, and polymeric compound, such that, upon later contact of the photoresist film with alkaline gas or solution, areas of the film can be rendered at most only sparingly water-soluble;

(2) exposing the applied film to a prescribed pattern of actinic ray to decompose the diazonium salt in exposed areas;

(3) contacting the resultant exposed film with an alkaline gas or solution to cause a reaction of the diazonium salt with the phenolic compound in unexposed areas to render the unexposed areas of the film at most only sparingly water-soluble, to form a treated film, said alkaline gas or solution having a sufficient concentration so as to make the unexposed area of the film sufficiently uniformly at most only sparingly water-soluble so as to dissolve only exposed areas of the film upon development;

(4) developing the film, having been contacted with the alkaline gas or solution, with water to remove the film in exposed areas and form a positive-working resist image having a powder pattern; and

(5) contacting a powder with the film to adhere thereto, the contacting with a powder being performed at any time after said applying a water-soluble, positive-working photoresist composition, up to being performed simultaneously with said developing;

whereby fogging of the powder pattern on the substrate using a positive-working photoresist is avoided.

4,537,852
PROCESS FOR THE PRODUCTION OF HUMAN UROKINASE

Kaname Sugimoto, Okayama, Japan, assignor to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo, Okayama, Japan

Filed Nov. 12, 1981, Ser. No. 320,746
Claims priority, application Japan, Dec. 5, 1980, 55-171588
Int. Cl.³ C12N *9/72, 15/00, 5/00;* C12R *1/91*
U.S. Cl. 435—215 22 Claims

1. A process for producing human urokinase, comprising:

fusing parent human cells inherently capable of producing human urokinase with a human lymphoblastoid line to obtain hybridoma cells capable of producing human urokinase;

implanting said hybridoma cells in an immunodeficient or immunosuppressed non-human warm-blooded animal;

feeding the animal to allow said hybridoma cells to utilize the nutrient body fluid of the animal for their multiplication;

extracting and disaggregating the resultant tumor, formed in the animal, to obtain the multiplied hybridoma cells;

culturing the multiplied hybridoma cells on an in vitro nutrient medium in the presence of an effective amount of a urokinase inducer under conditions appropriate to accumulate a substantial amount of human urokinase; and

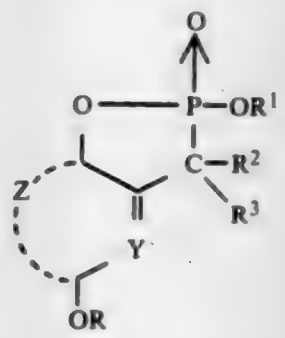
recovering the accumulated human urokinase from the culture.

4,537,853
PHOTOGRAPHIC SILVER HALIDE MATERIAL CONTAINING A BALLASTED ELECTRON-DONOR PRECURSOR COMPOUND

Christian C. Van de Sande, Belsele; André Verhecken, Mortsel, and Wilhelmus Janssens, Aarschot, all of Belgium, assignors to Agfa-Gevaert, N.V., Mortsel, Belgium

Filed Feb. 21, 1984, Ser. No. 581,723
Claims priority, application European Pat. Off., Mar. 15, 1983, 83200353.7
Int. Cl.³ G03C *5/54, 1/42, 5/30;* C07F *9/02*
U.S. Cl. 430—218 11 Claims

10. An image receiving material useful in diffusion-transfer-reversal processing with exposed silver halide emulsion layer(s), wherein said material contains in a water-permeable binder layer an EDP-compound corresponding to the general formula:



wherein:

R represents hydrogen or a substituent which an hydrolytic removal allows the replacement of R by H,

R^1, R^2 and R^3 (same or different) represent a hydrocarbon group or R^3 represents hydrogen, and

Z and Y represent the necessary atoms to close a benzene ring, or Z and Y represent the necessary atoms to form a fused ring system including said benzene ring, at least one of R^1, R^2, R^3, Z and Y being or including a ballast group making said EDP-compound non-diffusing in a hydrophilic colloid layer when permeated by an alkaline aqueous liquid.

4,537,854
PHOTORESIST COMPOSITIONS AND METHOD

James V. Crivello, Clifton Park, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Sep. 14, 1983, Ser. No. 531,977
Int. Cl.³ G03C *1/70*
U.S. Cl. 430—283 8 Claims

1. A water soluble photocurable photoresist composition which is based on a simultaneous cationic and free radical cure between alkanol acrylamide and a water soluble hydroxyl functional film forming organic oligomer comprising a blend of by weight,

(A) 50 to 98% of a solvent and
(B) 2 to 50% of a photoresist composition comprising
(i) 100 parts of water soluble hydroxyl functional film forming organic oligomer,
(ii) 50 to 100 parts of an alkanolacrylamide,
(iii) an effective amount of an onium salt which is sufficient to effect the cure of the photocurable photoresist compositions selected from the class consisting of

$[Ar_2I]^+[MF]_d^-$ and

$[Ar_3S]^+[MF]_d^-$

where Ar is selected from $C_{6-13)}$ aromatic monovalent hydrocarbon radical and substituted aromatic monovalent hydrocarbon radical, M is a metalloid selected from phosphorous, arsenic and antimony and d is an integer equal to 4–6 inclusive.

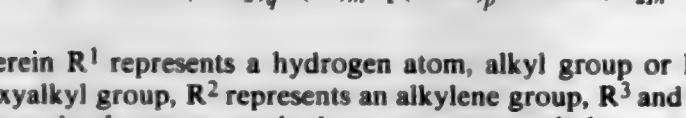
4,537,855

PHOTOPOLYMERIZABLE PHOTOSENSITIVE COMPOSITION

Hiroshi Ide, Yokohama, Japan, assignor to Mitsubishi Chemical Industries Limited, Tokyo, Japan

Filed Oct. 11, 1983, Ser. No. 540,868
Claims priority, application Japan, Oct. 18, 1982, 57-182471
Int. Cl.³ G03C *1/68*
U.S. Cl. 430—285 **25 Claims**

1. A photopolymerizable photosensitive composition comprising:
(a) a photopolymerizable photosensitive high molecular weight compound having polyfunctional ethylenically unsaturated groups in the side chains or end groups thereof, wherein said polyfunctional ethylenically unsaturated groups have structural units of the general formula



wherein R^1 represents a hydrogen atom, alkyl group or hydroxyalkyl group, R^2 represents an alkylene group, R^3 and R^4 independently represent a hydrogen atom or methyl group, R^5 represents a hydrogen atom or carboxyl group, m is 0 or 1 and n is 2 or 3 provided that $m+n=3$, p is an integer of 1 to 3, and q is an integer of 0 to 3 and
(b) a photopolymerization initiator.

3. A photopolymerizable photosensitive composition according to claim 1, further comprising an ethylenically unsaturated compound.

4,537,856

METHOD OF PROCESSING SILVER HALIDE COLOR PHOTOGRAPHIC MATERIALS

Masayuki Kurematsu, Hachioji, and Shigeharu Koboshi, Sahamihara, both of Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Apr. 5, 1984, Ser. No. 596,871
Claims priority, application Japan, Apr. 5, 1983, 58-58692; Apr. 7, 1983, 58-59980
Int. Cl.³ G03C *7/40*
U.S. Cl. 430—372 **23 Claims**

1. A method of processing a silver halide color photographic material which comprises
(a) imagewise exposing said material,
(b) then developing said material,
(c) then treating said material with one of a bleach-fixing solution or a fixing solution, each of said bleach-fixing solution and said fixing solution containing an organic acid iron (III) complex salt, and
(d) then, without washing with water, treating said material with a stabilizing solution containing a water-soluble chelate compound of at least one metal selected from a first group consisting of Ba, Ca, Ce, Co, In, La, Mn, Ni, Pb, Ti, Sn, Zn, and Zr, and a second group consisting of Mg, Al, and Sr,
wherein said chelate compound of a metal from said first group is present in an amount of 1×10^{-4} to 1×10^{-1} mole per liter of said stabilizing solution and said chelate compound of a metal from said second group is present in an amount of 1×10^{-4} to 3.5×10^{-2} mole per liter of said stabilizing solution.

4,537,857

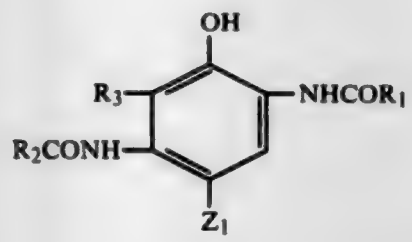
SILVER HALIDE PHOTOGRAPHIC LIGHT-SENSITIVE MATERIAL

Shun Takada; Kaoru Onodera, and Takashi Kadowaki, all of Odawara, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,129
Claims priority, application Japan, Nov. 30, 1982, 57-210219
Int. Cl.³ G03C *7/26*
U.S. Cl. 430—549 **20 Claims**

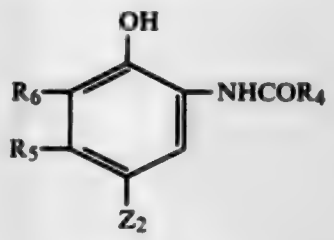
1. A silver halide photographic light-sensitive material comprising a support having thereon at least one silver halide emulsion layer containing in combination at least one of those cyan couplers having the following Formula [I] and at least one of those cyan couplers having the following Formula [II]:

Formula [I]

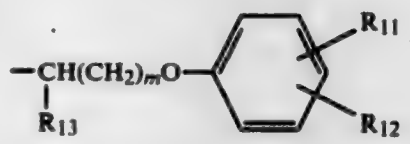


wherein R_1 is an aryl radical, a cycloalkyl radical or a heterocyclic radical; R_2 is an alkyl radical, a phenyl radical, or R_8—X-R_9—$_n$ wherein R_8 represents an alkyl or aryl radical, R_9 represents an alkylene radical, n represents an integer of 0 to 5, and X represents a divalent radical selected from the group consisting of —O—, —CO—, —COO—, —OCO—, —SO_2N-R′—, —NR′SO_2NR″—, —S—, —SO— and —SO_2— wherein R′ and R″ represent an alkyl radical; R_3 is a hydrogen atom, a halogen atom, an alkyl radical or an alkoxy radical; and Z_1 is a hydrogen atom, a halogen atom, or a radical that can be split off by the reaction of said coupler with the oxidized product of an aromatic primary amine-type color devloping agent,

Formula [II]



wherein R_4 is an alkyl radical or



wherein R_{11} and R_{12} may be either the same or different from each other and each is a hydrogen atom, an alkyl radical or an alkoxy radical, provided that the sum of the carbon atoms of R_{11} and R_{12} is from 8 to 16, R_{13} is a hydrogen atom or an alkyl radical, and m is an integer of 0 to 2; R_5 is an alkyl radical; R_6 is a hydrogen atom, a halogen atom, or an alkyl radical; and Z_2 is a hydrogen atom, a halogen atom, or a radical that can be split off by the reaction of said coupler with the oxidized

product of an aromatic primary amine-type color developing agent.

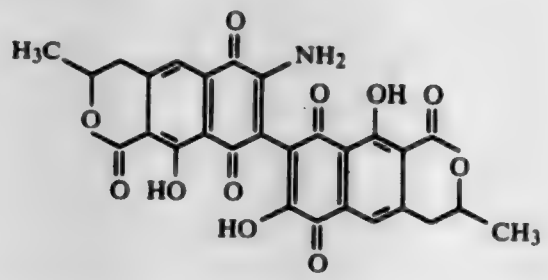
4,537,858

PLASTATIN

Joseph O'Sullivan, Belle Mead; Carol A. Aklonis, North Brunswick, and Pushpa Singh, Piscataway, all of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Filed Jun. 22, 1984, Ser. No. 623,306
Int. Cl.[3] C12P *17/18;* C12N *1/20;* C07D *311/92*
U.S. Cl. 435—119 4 Claims

1. Plastatin, having the structural formula



and pharmaceutically acceptable salts thereof.

2. A process for preparing plastatin which comprises cultivating *Penicillium chermesinum* A.T.C.C. No. 20700 in an aqueous nutrient medium containing an assimilable carbohydrate and nitrogen source under submerged aerobic conditions until substantial phospholipase A_2 inhibitory activity is imparted to the medium.

4. A biologically pure culture of the microorganism *Penicillium chermesinum* A.T.C.C. No. 20700, said culture being capable of producing plastatin in a recoverable quantity upon fermentation in an aqueous nutrient medium containing an assimilable carbohydrate and nitrogen source.

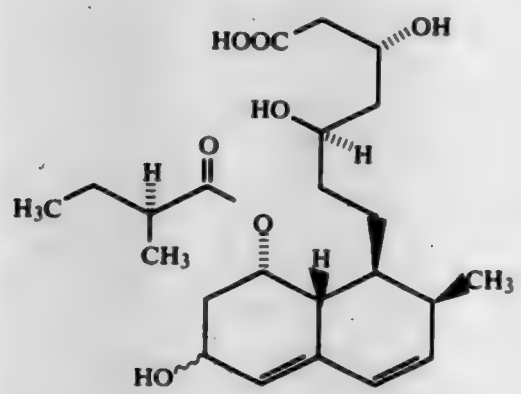
4,537,859

PROCESS FOR PREPARING 3-HYDROXY-ML-236B DERIVATIVES KNOWN AS M-4 AND M-4'

Akira Terahara, and Minoru Tanaka, both of Hiromachi, Japan, assignors to Sankyo Company, Limited, Tokyo, Japan

Filed Nov. 18, 1982, Ser. No. 442,840
Claims priority, application Japan, Nov. 20, 1981, 56-186641
The portion of the term of this patent subsequent to Oct. 18, 2000, has been disclaimed.
Int. Cl.[3] C12P *7/42, 7/62;* C12N *1/20*
U.S. Cl. 435—146 22 Claims

1. A process for preparing a compound of formula (I):



(I)

wherein ~~OH represents ▬ OH or ⁞⁞⁞ OH, pharmaceutically acceptable salts and esters thereof and the corresponding ring-closed lactones, which process comprises contacting an ML-236B compound selected from the group consisting of ML-236B carboxyic acid, salts and esters thereof and the corresponding ML-236B lactone with a hydroxylation enzyme produced by a microorganism of the genus Nocardia to produce the hydroxylated ML-236B compound of the formula (I).

4,537,860

STATIC CELL CULTURE MAINTENANCE SYSTEM

William R. Tolbert, Manchester; Joseph Feder, University City, and Charles Lewis, Jr., Hazelwood, all of Mo., assignors to Monsanto Company, St. Louis, Mo.

Filed Dec. 8, 1982, Ser. No. 447,748
Int. Cl.[3] C12M *1/12, 1/04, 3/00, 1/00;* B07B *1/30;* B07C *5/16;* C12N *5/00, 5/02*
U.S. Cl. 435—240 9 Claims

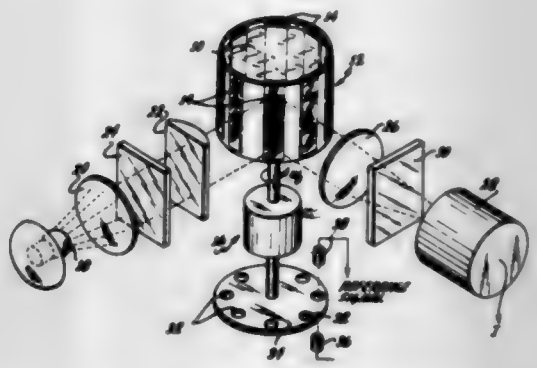
7. Apparatus for maintaining animal cells in vitro in a substantially arrested state of proliferation with continuous secretion of cell product which comprises a housing, a chamber within said housing for holding cells in a semi-rigid matrix of finely divided particles with interstices for passage of fluid culture media, external culture medium inlet and outlet means disposed in a wall in said housing, said inlet means being in fluid communication with at least one first porous tube disposed substantially throughout the length or width of said chamber, said outlet means being in fluid communication with at least one second porous tube disposed substantially throughout the length or width of said chamber, external gas inlet and outlet means disposed in a wall in said housing and in gaseous communication with a selectively-permeable membrane disposed substrantially throughout the expanse of said chamber, said first and second porous tubes having closures at their ends within said chamber which are distal to the external culture medium inlet and outlet means, and said second porous tube having a pore size larger than the pore size of said first porous tube, wherein the pore size of the first porous tube is from about 0.2 to abut 5μ and wherein the pore size of the second porous tube is from about 10μ to about 150μ.

4,537,861

APPARATUS AND METHOD FOR HOMOGENEOUS IMMUNOASSAY

Virgil B. Elings, P.O. Box 6463, Santa Barbara, Calif. 93111, and David F. Nicoli, 448 Mills Way, Goleta, Calif. 93017

Filed Feb. 3, 1983, Ser. No. 463,658
Int. Cl.[3] G01N *33/54, 33/58*
U.S. Cl. 436—518 67 Claims



1. Apparatus for providing an immunoassay of a binding reaction between an ligand and an antiligand, including

a spatial pattern formed by a predetermined known spatially periodic array of stripes of antiligand material and with the stripes having a predetermined width and spacing,

ligand material dispersed to interact with the spatially periodic array of stripes of antiligand material for producing a binding reaction between the ligand and the antiligand in the spatial pattern of stripes,

means for labeling the binding reaction with a particular physical characteristic,

a source of input energy and with the input energy at a particular spectrum for interacting with the particular physical characteristic of the labeled binding reaction,

means for scanning the spatial pattern with the input energy at the particular spectrum for producing output energy having amplitude levels formed by a substantially random background component and a periodic component representing the labeled binding reaction, and

means responsive to the output energy for detecting the periodic component representing the labeled binding reaction and for producing an output signal in accordance with the labeled binding reaction.

4,537,862

LEAD-FREE AND CADMIUM-FREE GLASS FRIT COMPOSITIONS FOR GLAZING, ENAMELING AND DECORATING

Josef Francel; Uriah Horn, both of Toledo, and Daniel R. Stewart, Maumee, all of Ohio, assignors to Owens-Illinois, Inc., Toledo, Ohio

Continuation-in-part of Ser. No. 392,974, Jun. 28, 1982, Pat. No. 4,446,241. This application Apr. 27, 1984, Ser. No. 604,560

The portion of the term of this patent subsequent to May 1, 2001, has been disclaimed.

Int. Cl.³ C03C *1/00*

U.S. Cl. 501—14 **17 Claims**

1. A glass frit composition having a fiber softening point of at least about 535° C., the composition being free of lead, cadmium, and zinc, the composition consisting essentially of the following components in approximate weight percents:

Component	%
SiO_2	25–32
B_2O_3	25–32
ZrO_2	10–18
Rare earth oxide	10–18
Li_2O	0–9
Na_2O	0–9
K_2O	0–5
SrO	0–6
F	0–3
CaO	0–3
SnO_2	0–2
WO_3	0–10

in which the ratio of ZrO_2 to rare earth oxide is about 1:1 to 1.4:1, the amount of ZrO_2 + rare earth oxide is about 20 to 33 and the amount of Li_2O, K_2O and Na_2O is about 1 to 10, the composition having an alkali resistance of less than about 1% (5% sodium pyrophosphate at 60° C. for 8 hours) and an acid resistance of less than about 1.9% (4% by weight acetic acid for 24 hours at room temperature).

4,537,863

LOW TEMPERATURE SEALING COMPOSITION

Ichiro Matsuura, and Fumio Yamaguchi, both of Shiga, Japan, assignors to Nippon Electric Glass Company, Ltd., Otsu, Japan

Filed Aug. 10, 1983, Ser. No. 521,896

Int. Cl.³ C03C *7/02*

U.S. Cl. 501—15 **5 Claims**

1. A low temperature sealing composition for a seal of high mechanical strength between two alumina ceramic parts to form a sealed package having a shearing strength of at least 310 kg, the sealing composition having a sealing temperature of no more than 450° C. and consisting essentially of a mixture of 50–80 wt.% of a vitreous solder glass powder of PbO-B_2O_3 system having a deformation point of 350° C. or less, 1–35 wt.% of a first ceramic powder and 1–45 wt.% of a second ceramic powder, the total amount of said first and second ceramic powders being 20–50 wt.%, said first ceramic powder consisting of 68–75 wt.% ZnO, 23–28 wt.% SiO_2 and up to 8 wt.% Al_2O_3, and said second ceramic powder consisting of 98–99.9 wt.% SnO_2 and 0.1–2 wt.% ZnO.

4,537,864

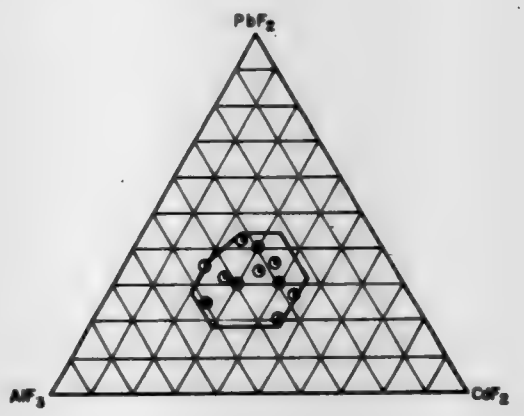
METAL FLUORIDE GLASSES IN THE CDF_2-PBF_2-ALF_3-(LIF) SYSTEM

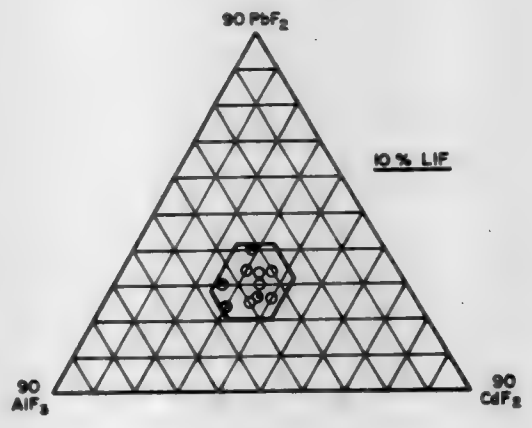
Paul A. Tick, Corning, N.Y., assignor to Corning Glass Works, Corning, N.Y.

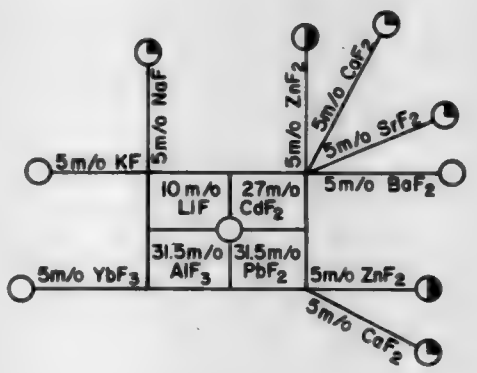
Filed Aug. 31, 1983, Ser. No. 528,256

Int. Cl.³ C03C *3/18*

U.S. Cl. 501—30 **7 Claims**







1. A non-oxide, metal-fluoride-containing glass-forming composition comprising, in mole percent, about 20–46% CdF_2, 22–52% AlF_3, 18–44% PbF_2, and at least 80% total of $CdF_2 + AlF_3 + PbF_2$, the mole ratio of CdF_2:PbF_2 in the composition being greater than 1:2.

4,537,865

PROCESS FOR PREPARING A PARTICULATE CERAMIC MATERIAL

Shinsei Okabe; Hiroshi Komatsu; Yukio Hamaji; Shozo Kojima, and Yoshiharu Kato, all of Kyoto, Japan, assignors to Murata Manufacturing Co., Ltd., Nagaokakyo, Japan

Filed Jul. 11, 1984, Ser. No. 629,846

Int. Cl.³ C04B *35/46*

U.S. Cl. 501—135 **4 Claims**

1. A process for preparing a particulate ceramic material comprising the steps of:

(a) adding carbon dioxide or an aqueous solution of a soluble carbonate to first aqueous solution of a nitrate or chloride of Ba, Sr, Ca or Mg in a first vessel to adjust the pH of said first aqueous solution to between 7 and 10 thereby forming a carbonate precipitate;
(b) adding an aqueous solution of a soluble hydroxide to a second aqueous solution of a nitrate or chloride of Ti, Zr, Sn or Pb in a second vessel to adjust the pH of said second aqueous solution to between 7 and 10 thereby forming a hydroxide precipitate;
(c) combining slurries containing the precipitates formed in said first and second vessels;
(d) mixing the combined slurries;
(e) passing the slurries through a filter;
(f) washing the filter cake with water;
(g) drying the filter cake to form a powder;
(h) calcining the dried powder; and
(i) grinding the calcined powder.

4,537,866

METHOD OF PREPARING SILICATE COMPOSITION

Jean-Pierre Gilson, Buffalo Grove, Ill., assignor to UOP Inc., Des Plaines, Ill.

Filed Mar. 29, 1984, Ser. No. 594,590
Int. Cl.³ B01J *21/08, 29/04*
U.S. Cl. 502—70 **35 Claims**

1. A method of preparing a silica-containing composition comprising the steps of:
(a) forming a shaped particle of a lithium silicate sol;
(b) heating the particle to a temperature of about 70° C. or more in the absence of a gelling agent to form a gel while maintaining the shape thereof; and,
(c) subjecting the shaped particle to a washing step prior to cooling of said gel to a temperature of less than 70° C. to remove lithium therefrom and thereby prevent reversion of said gel to said sol.

8. The method of claim 1 further characterized in that the lithium silicate sol has dispersed therein an alumina source.

9. The method of claim 1 further characterized in that the lithium silicate sol has dispersed therein a molecular sieve.

4,537,867

PROMOTED IRON-COBALT SPINEL CATALYST FOR FISCHER-TROPSCH PROCESSES

Rocco A. Fiato, Scotch Plains; Stuart L. Soled, Madison, and Angelo A. Montagna, Summit, all of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Dec. 14, 1983, Ser. No. 561,292
Int. Cl.³ B01J *23/78*
U.S. Cl. 502—74 **19 Claims**

1. A hydrocarbon synthesis catalyst composition comprising an unsupported, Group IA or IIA metal salt promoted iron-cobalt single phase spinel, said spinel having the initial empirical formula:

$$Fe_xCo_yO_4$$

wherein x and y are integer or decimal values, other than zero, with the proviso that the sum of x+y is 3 and the ratio of x/y is 7:1 or above, said spinel exhibiting a powder X-ray diffraction pattern substantially isostructural with Fe_3O_4 and said spinel having an initial BET surface area of up to about 5 m^2/g.

4,537,868

CATALYST CONTAINING AN AROMATIC SILICON COMPOUND FOR THE POLYMERIZATION OF ETHYLENE

Karel Bujadoux, Lens, and Jean-Marie Neyer, Behren Les Forbach, both of France, assignors to Societe Chimique des Charbonnages S.A., Paris, France

Continuation of Ser. No. 326,195, Dec. 1, 1981, abandoned. This application Mar. 28, 1984, Ser. No. 594,415
Claims priority, application France, Dec. 2, 1980, 80 25519
Int. Cl.³ C08F *4/64, 4/68, 4/62*
U.S. Cl. 502—104 **12 Claims**

1. A catalyst for the polymerization or copolymerization of ethylene comprising at least one halogenated compound of a transition metal of Groups IV to VI of the Periodic System, said metal being in the trivalent state in said compound, and at least one aromatic silicon compound having the formula $\phi_nSi(OH)_{4-n}$, in which ϕ is an aromatic or polyaromatic ring compound having from 6 to 15 carbon atoms and $1 \leqq n \leqq 3$, said aromatic silicon compound being present in a molar ratio of between 0.2 and 2 inclusive with respect to said transition metal, wherein said aromatic or polyaromatic ring compound may have one or more hydrocarbon radicals substituted on the aromatic or polyaromatic rings of said compound.

11. A process for the manufacture of a catalyst according to claim 1 in which the halogenated transition metal compound is suspended in an aliphatic, cycloaliphatic or aromatic hydrocarbon solvent and then the aromatic silicon compound is added to the suspension in the quantity desired in relation to the transition metal.

4,537,869

TETRAVALENT TITANIUM TREATED CALCINED VANADIUM CATALYST WITH TRIALKYLALUMINUM COCATALYST

Max P. McDaniel, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Nov. 19, 1984, Ser. No. 672,634
Int. Cl.³ C08F *4/64*
U.S. Cl. 502—107 **13 Claims**

1. A method of producing a catalyst comprising:
(a) impregnating a vanadium compound onto a particulate refractory support;
(b) subjecting the thus supported vanadium composition to calcination;
(c) thereafter contacting the thus calcined supported vanadium catalyst with a titanium component selected from $TiCl_4$ and $TiORCl_3$ wherein R is a 1 to 10 carbon atom alkyl group; and
(d) contacting the resulting catalyst with a trihydrocarbylaluminum cocatalyst.

4,537,870

POLYOLEFIN POLYMERIZATION PROCESS AND CATALYST

Gil R. Hawley, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Jul. 12, 1984, Ser. No. 630,172
Int. Cl.³ C08F *4/64, 4/66*
U.S. Cl. 502—111 **12 Claims**

1. A process for preparing a catalyst comprising (1) reacting (a) a metal dihalide selected from Groups IIA and IIB, (b) a transition metal compound, wherein the transition metal is selected from Groups IVB and VB transition metals and is bonded to at least one atom selected from the group consisting of oxygen, nitrogen, and sulfur, said atom in turn being bonded to the carbon atom of an organic radical, and (c) at least one electron donor to form a first catalyst component; (2) reacting said first catalyst component with an organoaluminum precipitating agent selected from compounds of the general formula

$$AlR_nX_{3-n}$$

wherein each R is individually selected from saturated and unsaturated hydrocarbyl radicals containing 1 to 20 carbon atoms per radical, X is halogen, an n is any number such that $1 \leqq n \leqq 2$; then (3) reacting the resulting solid with $TiCl_4$, and (4) then reacting that resulting solid with $HSiCl_3$.

4,537,871

CARBONYLATION CATALYST

Nabil Rizkalla, River Vale, N.J., assignor to The Halcon SD Group, Inc., New York, N.Y.

Division of Ser. No. 429,925, Sep. 30, 1982, Pat. No. 4,483,803. This application Apr. 23, 1984, Ser. No. 602,648

Int. Cl.³ B01J *27/08, 27/06, 31/20;* **C07C** *51/14*

U.S. Cl. 502—161 **1 Claim**

1. A liquid-phase carbonylation catalyst consisting essentially of a molybdenum-nickel-alkali metal, tungsten-nickel-alkali metal, or chromium-nickel-alkali metal co-catalyst component and a halide component represented by the following formula: X:T:Z:Q, wherein X is molybdenum, tungsten or chromium, T is nickel, X and T being in zero valent form or in the form of a halide, an oxide, a carboxylate of 1 to 20 carbon atoms, a carbonyl or an hydride; Z is a halide source which is hydrogen halide, halogen, or an alkyl halide wherein the alkyl group contains 1 to 20 carbon atoms, and Q is the alkali metal component and is in the form of an iodide, a bromide, a chloride or a carboxylate as defined for X and T, the molar ratio of X to T being 0.1–10:1, the molar ratio of X+T to Q being 0.1–10:1, and the molar ratio of Z to X+T being 0.01–0.1:1.

4,537,872

PROCESS FOR PREPARING A HYDROCARBON REFORMING CATALYST

Tadashi Ohmori, Yokohama; Tokuo Fujisó, Yokosuka; Eiji Yasui, Yokohama; Soichi Nomura, Tokyo, and Yukio Aizawa, Kawasaki, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Apr. 23, 1984, Ser. No. 602,751

Claims priority, application Japan, Apr. 28, 1983, 58-73842; Dec. 1, 1983, 58-225434

Int. Cl.³ B01J *23/36, 23/42, 27/06*

U.S. Cl. 502—230 **12 Claims**

1. A process for preparing a hydrocarbon reforming catalyst, utilizing as a precursor a rhenium compound and platinum carbonyl cluster complex salt of the general formula

$$[P+_3(CO)_6]_n^{2-} \cdot 2M^+$$

wherein n is an integer of 1-5, M^+ is a cation selected from the group consisting of Li^+, Na^+, K^+, Rb^+, Cs^+, NH_4 or quaternary alkyl amine cation; which process comprises supporting on an inorganic porous carrier the platinum carbonyl cluster complex salt in an amount of 0.01 to 5% by weight as platinum metal, and the rhenium compound in an amount of 0.01 to 5% by weight as rhenium metal and a halogen in an amount of 0.2 to 5% by weight, and then subjecting the resultant catalyst precursor to a thermal decomposition treatment and a reduction treatment.

4,537,873

CATALYST FOR CATALYTIC COMBUSTION

Akira Kato, Hitachi; Tomoichi Kamo, Ibaraki; Shigeo Uno, Hitachi; Hiroshi Kawagoshi, Hitachi; Hisao Yamashita, Hitachi, and Shinpei Matsuda, Ibaraki, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Nov. 29, 1983, Ser. No. 556,049

Claims priority, application Japan, Nov. 29, 1982, 57-207749; Mar. 4, 1983, 58-34380

Int. Cl.³ B01J *21/06*

U.S. Cl. 502—242 **18 Claims**

17. A catalyst for catalytic combustion consisting of precious metal particles of at least one member selected from the group consisting of platinum, palladium, ruthenium, iridium and rhodium and at least one member selected from the group consisting of nickel, cobalt, manganese and chromium supported on a carrier obtained from (a) a first component of titania and (b) a second component of at least one metal oxide selected from the group consisting of oxides of magnesium, strontium, lanthanum, yttrium, cerium, silicon and tin; the compositional ratio of the first component titania to the second component metal oxide being 1:0.05 to 1:<1 in atomic ratio of Ti:metal of the second component. A catalyst according to claim 17, wherein the amount of the precious metal particles if from 0.1 to 3% by weight based on the weight of the carrier.

4,537,874

CATALYST FOR PRODUCTION OF UNSATURATED ALDEHYDES

Takahisa Sato; Masahiro Takata, both of Himeji; Michio Ueshima, Nishinomiya, and Isao Nagai, Suita, all of Japan, assignors to Nippon Shokubai Kagaku Kogyo Co Ltd, Osaka, Japan

Filed Oct. 18, 1983, Ser. No. 543,150

Claims priority, application Japan, Oct. 22, 1982, 57-184668; Jul. 27, 1983, 58-135740

Int. Cl.³ B01J *23/16, 21/02, 27/14, 23/84*

U.S. Cl. 502—311 **2 Claims**

1. A catalyst for the production of unsaturated aldehydes, said catalyst being represented by the general formula

$$Bi_aW_bFe_cMo_dA_eB_fC_gD_hO_x$$

wherein Bi represents bismuth, W represents tungsten, Fe represents iron, Mo represents molybdenum, O represents oxygen, A represents nickel (Ni) and/or cobalt (Co), B represents at least one element selected from the group consisting of alkali metals, alkaline earth metals and thallium, C represents at least one element selected from the group consisting of phosphorus (P), arsenic (As), boron (B), antimony (Sb), tin (Sn), cerium (Ce), lead (Pb) and niobium (Nb), D represents at least one element selected from the group consisting of silicon (Si), aluminum (Al), zirconium (Zr) and titanium (Ti), a, b, c, d, e, f, g, h and x represent the atomic ratios of the individual elements, and when d is taken as 12, a=0.1–10.0, b=0.5–10.0 (provided that a/b=0.01–6.0), c=0.1–10.0, e=2.0–20.0, f=0.001–10.0, g=0–10.0, and h=0–30, and x takes a number determined by the atomic valences of the individual elements; said catalyst having been calcined in air at a temperature of from 400° C.–600° C.

the Bi component being introduced thereinto in the form of a bismuth tungstate obtained beforehand by calcining a mixture of a bismuth compound and a tungsten compound at a temperature of 600° to 900° C.

4,537,875

CRUSHED CATALYSTS CONTAINING ALUMINA, SILICA OR SILICA-ALUMINA, AND PROCESS FOR THEIR MANUFACTURE

Hervé Toulhoat, Le Pecq; Jean-Claude Plumail, Le Vesinet; Marc Mercier, Ales, and Yves Jacquin, Sevres, all of France, assignors to Societe Francaise des Produits pour Catalyse Pro-Catalyse, Rueil-Malmaison, France

Filed Dec. 27, 1983, Ser. No. 565,557

Claims priority, application France, Dec. 24, 1982, 82 21854

Int. Cl.³ B01J *29/10*

U.S. Cl. 502—314 **9 Claims**

1. A process for manufacturing a catalyst consisting essentially of at least one alumina, silica or silica-alumina carrier and at least one active element selected from vanadium and the metals of groups VI and VIII and compounds of said metals, said process comprising the steps of shaping said carrier as extrudates, calcining said extrudates at about 300°–1000° C., coarsely crushing said calcined extrudates and recovering resultant crushed particles of average size from 0.05 to 0.5

times the diameter of said calcined extrudates, introducing said at least one active element into said recovered crushed particles, and calcining resultant catalyst particles at about 300°–1000° C.

4,537,876

ACTIVATION OF CATALYSTS FOR SYNTHESIZING METHANOL FROM SYNTHESIS GAS

David B. Blum, 108 Tall Oaks Dr., Wayne, N.J. 07470, and Abraham P. Gelbein, 45 Headley Rd., Morristown, N.J. 07960

Filed Nov. 29, 1983, Ser. No. 556,032
Int. Cl.³ B01J *21/04, 23/06, 23/72*
U.S. Cl. 502—342 **5 Claims**

1. A method for activating a methanol synthesis catalyst for use in a liquid phase methanol process comprising:

forming a slurry of solid metal oxide catalyst particles in an inert liquid, in a methanol synthesis reactor; and

activating said catalyst by reducing said catalyst particles with a reducing gas stream containing at least 25% hydrogen at a temperature in the range of between 150°–300° C. and a pressure in the range of between 200 and 7,000 kPa at a reducing gas stream volumetric flow rate in the range of between 750 and 3000 liters per hour per kilogram of catalyst.

4,537,877

PARTICULATE OIL-ABSORBING COMPOSITION TO ABSORB OIL

Thomas Ericsson, Molndal, Sweden, assignor to Papyrus Kopparfors AB, Molndal, Sweden

Filed May 10, 1983, Ser. No. 493,393
Claims priority, application Sweden, May 10, 1982, 8202932
Int. Cl.³ B01J *20/22*
U.S. Cl. 502—402 **10 Claims**

1. A particulate oil-absorbing composition which in dust form displays a low explosion hazard and a low flammability, but which after absorption of oil is flammable and entirely consumed when burned, the particles consisting essentially of as the major component at least 50% by weight hydrophobic cellulose pulp fibers in admixture with at least 30% up to 50% of an inorganic cellulose paper pulp filler.

4,537,878

PROCESS FOR USING ENDOGENOUS ENKEPHALINS AND ENDORPHINS TO STIMULATE THE IMMUNE SYSTEM

Nicholas P. Plotnikoff, Tulsa, Okla., assignor to TNI Pharmaceuticals, Inc., Chicago, Ill.

Continuation-in-part of Ser. No. 308,287, Oct. 5, 1981,. This application Apr. 6, 1984, Ser. No. 597,378
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—2 **11 Claims**

1. A process for stimulating the T-cell and NK cell immune activity comprising the step of administering in vivo an endogenous endorphin.

4,537,879

A47934 ANTIBIOTIC AND PROCESS FOR PRODUCTION THEREOF

Robert L. Hamill, Greenwood, and Ralph E. Kastner, Indianapolis, both of Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 403,842, Jul. 30, 1982, Pat. No. 4,462,942. This application Jun. 22, 1984, Ser. No. 607,864
Int. Cl.³ A61K *37/00*
U.S. Cl. 514—9 **10 Claims**

1. A method of increasing the efficiency of feed utilization by ruminant animals having a developed rumen function which comprises the oral administration to such animals of a propionate-increasing amount of antibiotic A47934, or a pharamaceutically-acceptable, non-toxic salt thereof.

4,537,880

AMINOPROPYLAMINOBLEOMYCIN DERIVATIVES AND PROCESS FOR PREPARATION THEREOF

Hamao Umezawa, Tokyo; Akio Fujii, Kanagawa; Yasuhiko Muraoka, Saitama; Tokuji Nakatani, Saitama; Takeyo Fukuoka, Saitama, and Katsutoshi Takahashi, Tokyo, all of Japan, assignors to Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai, Tokyo, Japan

Continuation-in-part of Ser. No. 453,254, Dec. 27, 1982, abandoned. This application Jul. 27, 1984, Ser. No. 635,096
Claims priority, application Japan, Dec. 29, 1981, 56-210449
Int. Cl.³ A61K *37/00*; C07C *103/52*
U.S. Cl. 514—19 **10 Claims**

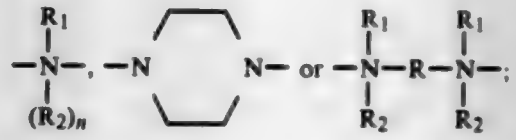
1. An aminopropylaminobleomycin represented by the following general formula or a salt thereof:

$$[BX]—NH—(CH_2)_3—A—(CH_2)_3—B$$

wherein

[BX] represents the bleomycin acid acyl group;

A is

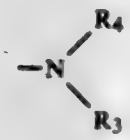


R_1 and R_2 are independently lower alkyl or benzyl;

R is lower alkylene;

n is the integer 0 or 1; and

B has the formula



wherein

(i) R_3 is hydrogen and R_4 is

(a) benzyl substituted by one or more halogen atoms, provided that the benzyl is substituted by two halogen atoms when R_1 is lower alkyl,

(b) benzyl substituted by cyano, two or more alkoxy groups or two or more benzyloxy groups,

(c) lower alkyl substituted by cycloalkyl or anthranyl,

(d) phenylethyl substituted by one or more halogen atoms, or

(e) diphenylethyl; or

(ii) both R_3 and R_4 are benzyl which may be substituted by one or more

(a) benzyloxy groups,

(b) ring substituted benzyloxy groups in which the ring substituents may be one or more halogen atoms, lower alkoxy groups or benzyloxy groups, or

(c) cycloalkylmethoxy groups;

4,537,881
5-NITRO 1,4-DIHYDROPYRIDINES HAVING A POSITIVE INOTROPIC EFFECT

Fred R. Heiker, Wuppertal; Jürgen Stoltefuss, Haan; Gerhard Franckowiak, Wuppertal; Matthias Schramm, Cologne; Günter Thomas, and Rainer Gross, both of Wuppertal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

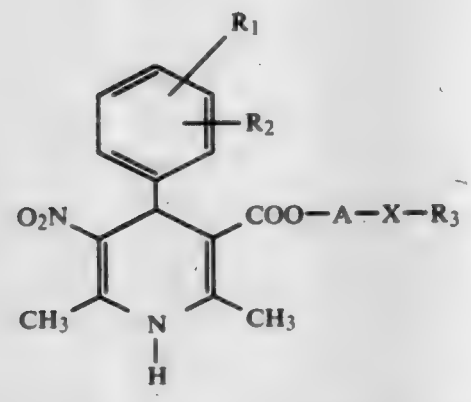
Filed Jul. 3, 1984, Ser. No. 627,596

Claims priority, application Fed. Rep. of Germany, Jul. 22, 1983, 3326384

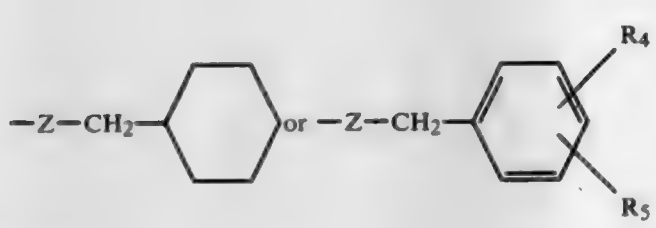
Int. Cl.[3] A61K *31/41, 31/395;* **C07D** *405/12*

U.S. Cl. 514—25 **9 Claims**

1. A 1,4-dihydropyridine of the formula



in which R_1 and R_2 each independently is hydrogen, C_1–C_4-alkyl, C_1–C_{12}-alkoxy, C_1–C_4-halogenoalkoxy, halogen, nitro, C_1–C_4-halogenoalkyl, C_1–C_4-halogenoalkylmercapto,

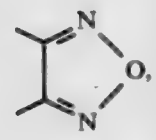


in which

Z is oxygen or sulphur, and

R_4 and R_5 each independently is hydrogen, C_1–C_4-alkyl, C_1–C_6-alkoxy, halogen, C_1–C_4-halogenoalkyl, C_1–C_4-halogenoalkoxy or nitro, or

R_1 and R_2, together with 2 C atoms of the phenyl ring, form the ring



X is oxygen, sulphur or the radical NR_6,

R_6 is a C_1–C_6-alkyl group,

A is a C_2–C_{10}-alkylene group, it being necessary that at least two C atoms are located in the alkylene chain which connects the carbonyloxy group to X, and

R_3 is a monosaccharide or disaccharide moiety or a protected monosaccharide or disaccharide moiety,

or a pharmaceutically acceptable addition salt thereof.

6. A composition for improving the myocardial contractility comprising an amount of a compound or salt according to claim 1 effective therefor plus a diluent.

4,537,882
4-DEMETHOXY-3'-DESAMINO-2'-HALO-ANTHRACYCLINE AND PHARMACEUTICAL COMPOSITION CONTAINING SAME

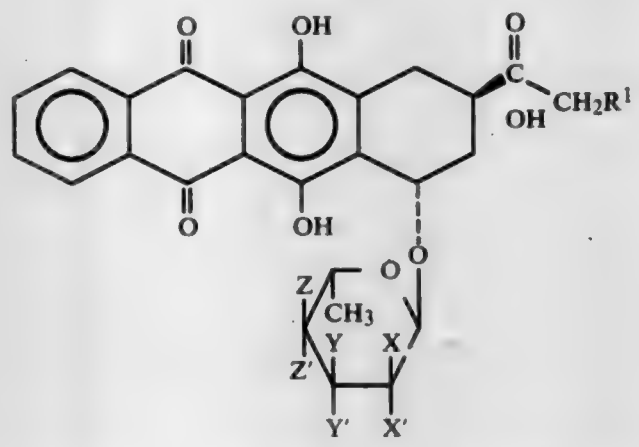
Derek Horton, Columbus, and Waldemar Priebe, Plain City, both of Ohio, assignors to Ohio State University, Columbus, Ohio

Filed May 10, 1984, Ser. No. 609,072

Int. Cl.[3] A61K *31/70;* **C07H** *15/24*

U.S. Cl. 514—34 **12 Claims**

7. A pharmaceutical preparation useful for treating the growth of implanted tumors comprising a carrier and a therapeutically effective amount of a compound of the formula



wherein R^1 is hydroxy; one of X and X' is hydrogen and the other is a halogen atom selected from the group consisting of fluorine, chlorine, bromine, and iodine; one of Y and Y' is hydrogen and the other is selected from the group consisting of hydrogen, hydroxy and —OCOR; one of Z and Z' is hydrogen and the other is hydrogen, hydroxy or —OCOR, and R is a lower alkyl group; or a pharmaceutically acceptable acid addition salt thereof.

4,537,883
LYOPHILIZED CYCLOPHOSPHAMIDE

Robert L. Alexander; Robert J. Bequette; Terry T. Kensler, and Joseph A. Scott, all of Evansville, Ind., assignors to Mead Johnson & Company, Evansville, Ind.

Continuation-in-part of Ser. No. 440,906, Nov. 12, 1982, abandoned. This application Mar. 13, 1984, Ser. No. 589,202

Int. Cl.[3] A61K *31/66*

U.S. Cl. 514—110 **16 Claims**

1. A hydrated lyophilizate composition with improved stability, superior solubility characteristics and enhanced appearance comprising about 20 parts by weight of cyclophosphamide, taken as the anhydride, about 1¼–2 parts by weight of water and from about 10 to 85 parts by weight of mannitol.

4,537,884
2-TRIFLUOROMETHYLPHENYL (DI)THIOPHOSPHATES, AND THEIR USE FOR PEST CONTROL

Walter Seufert, Ludwigshafen; Juergen Varwig, Heidelberg; Wolfgang Seppelt, Bobenheim-Roxheim, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

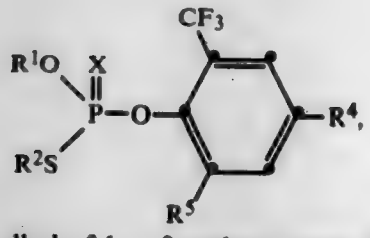
Filed Jan. 11, 1983, Ser. No. 457,184

Claims priority, application Fed. Rep. of Germany, Jan. 16, 1982, 3201227

Int. Cl.[3] A01N *57/14;* **C07F** *9/165*

U.S. Cl. 514—127 **5 Claims**

1. A 2-trifluoromethylphenyl (di)thiophosphate of the formula



(I)

where R^1 is alkyl of 1 to 3 carbon atoms, R^2 is alkyl of 1 to 5 carbon atoms, alkoxyalkyl or alkylthioalkyl of 2 to 8 carbon atoms or cycloalkyl of 3 to 6 carbon atoms, R^4 and R^5 independently of one another are each hydrogen, halogen or alkyl of 1 to 4 carbon atoms, and X is oxygen or sulfur.

4. A process for combating pests, wherein an effective amount of a 2-trifluoromethylphenyl (di)thiophosphate of the formula I as defined in claim 1 is allowed to act on pests and/or their habitat.

4,537,885

CERTAIN BENZAZOCINONE AND BENZAZONINONE DERIVATIVES

Jeffrey W. H. Watthey, Chappaqua, N.Y., assignor to Ciba Geigy Corporation, Ardsley, N.Y.

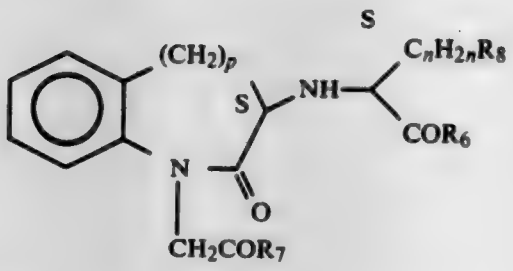
Continuation-in-part of Ser. No. 465,696, Feb. 10, 1983, Pat. No. 4,470,988. This application Feb. 9, 1984, Ser. No. 578,454

The portion of the term of this patent subsequent to Sep. 11, 2001, has been disclaimed.

Int. Cl.[3] **A61K** *31/395;* **C07D** *225/06*

U.S. Cl. 514—183 **11 Claims**

1. A compound of the formula



(IC)

wherein

S represents the chirality,

n represents an integer from 1 to 4; p is the integer 3 or 4;

R_8 is hydrogen, amino, benzyloxycarbonylamino, phenyl unsubstituted or monosubstituted by lower alkyl, lower alkoxy, lower alkanoyloxy, halogen, hydroxy, or trifluoromethyl;

R_6 and R_7 independently represent hydroxy, lower alkoxy of up to 4 carbon atoms, benzyloxy or amino; or

a pharmaceutically acceptable salt thereof.

9. A pharmaceutical composition suitable for oral or parenteral administration to mammals for the treatment or prevention of diseases responsive to inhibition of angiotensin-converting enzyme comprising an effective amount of a compound of claim 1 in combination with one or more pharmaceutically acceptable carriers.

4,537,886

β-LACTAM ANTIBACTERIAL AGENTS AND COMPOSITIONS CONTAINING THEM

Andrew W. Taylor, Reigate, and Richard T. Cook, Redhill, both of England, assignors to Beecham Group p.l.c., England

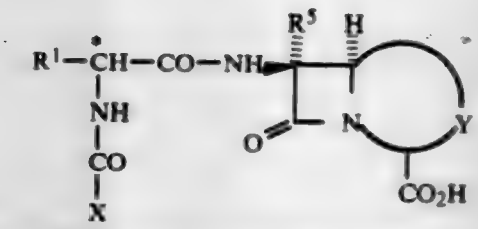
Filed Mar. 29, 1983, Ser. No. 479,953

Claims priority, application United Kingdom, Mar. 31, 1982, 8209426

Int. Cl.[3] **A61K** *31/43, 31/545;* **C07D** *499/54, 501/22*

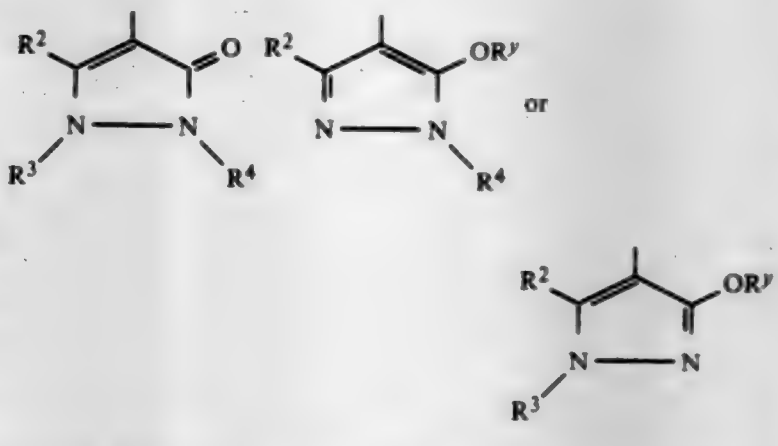
U.S. Cl. 514—193 **24 Claims**

1. A compound of formula (I) or a pharmaceutically acceptable salt or in-vivo hydrolysable ester thereof:

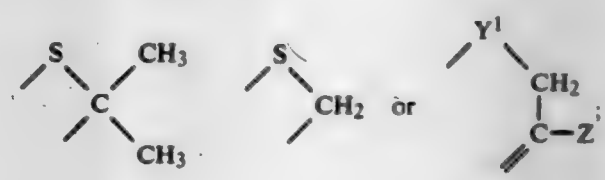


(I)

wherein R^1 is phenyl, substituted phenyl or a 5- or 6-membered heterocyclic ring containing up to three heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen, optionally substituted with hydroxy, amino, halogen or alkoxy of 1 to 6 carbon atoms; X represents

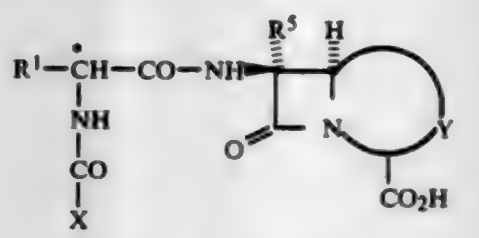


wherein R^y is methyl or acetyl; R^2 and R^3 may be the same or different and each is hydrogen, an aryl group, a heterocyclyl group or an alkyl group of 1 to 6 carbon atoms optionally substituted by an aryl group or a heterocyclyl group; and R^4 is hydrogen, an alkylcarbonyl group of 1 to 6 carbon atoms in the alkyl moiety, an aryl group, a heterocyclyl group, an alkyl group of 1 to 6 carbon atoms optionally substituted by an aryl group or a heterocyclyl group; R^5 represents hydrogen, methoxy or —NHCHO; and Y is:



wherein Y^1 is oxygen, sulphur or $—CH_2—$ and Z represents hydrogen, halogen, alkoxy of 1 to 4 carbon atoms, $—CH_2Q$ or $—CH{=}CH—Q$ wherein Q represents hydrogen, halogen, hydroxy, mercapto, cyano, carboxy, carbamoyloxy carboxylic ester, alkyloxy of 1 to 4 carbon atoms, acyloxy, aryl, a heterocyclyl group bonded via carbon, a heterocyclylthio group or a nitrogen containing heterocyclic group bonded via nitrogen and the carbon atom marked * is asymmetric.

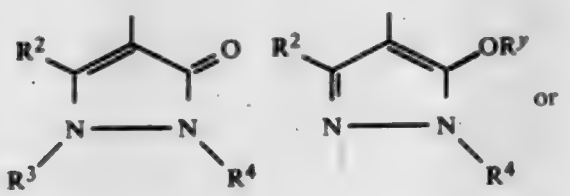
7. A pharmaceutical composition useful for treating bacterial infections in humans and animals which comprises an antibacterially effective amount of a compound of the formula (I) or a pharmaceutically acceptable salt or in-vivo hydrolysable ester thereof:

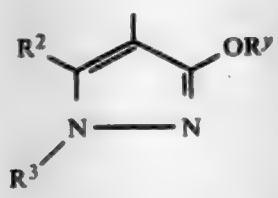


(I)

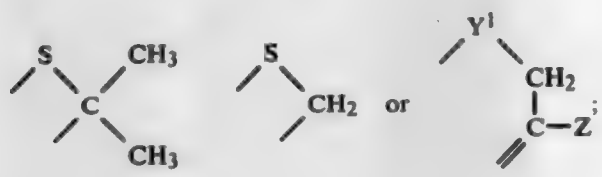
wherein R^1 is phenyl, substituted phenyl or a 5- or 6-membered heterocyclic ring containing up to three heteroatoms selected from the group consisting of oxygen, sulphur and nitrogen,

optionally substituted with hydroxy, amino, halogen or alkoxy of 1 to 6 carbon atoms; X represents





wherein R^y is methyl or acetyl; R^2 and R^3 may be the same or different and each is hydrogen, an aryl group, a heterocyclyl group or an alkyl group of 1 to 6 carbon atoms optionally substituted by an aryl group or a heterocyclyl group; and R^4 is hydrogen, an alkylcarbonyl group of 1 to 6 carbon atoms in the alkyl moiety, an aryl group, a heterocyclyl group, an alkyl group of 1 to 6 carbon atoms optionally substituted by an aryl group or a heterocyclyl group; R^5 represents hydrogen, methoxy or —NHCHO; and Y is:



wherein Y^1 is oxygen, sulphur or —CH_2— and Z represents hydrogen, halogen, alkoxy of 1 to 4 carbon atoms, —CH_2Q or —CH=CH—Q wherein Q represents hydrogen, halogen, hydroxy, mercapto, cyano, carboxy, carbamoyloxy carboxylic ester, alkyloxy of 1 to 4 carbon atoms, acyloxy, aryl, a heterocyclyl group bonded via carbon, a heterocyclylthio group or a nitrogen containing heterocyclic group bonded via nitrogen and the carbon atom marked * is asymmetric, in combination with a pharmaceutically acceptable carrier.

4,537,887

PHARMACEUTICAL FORMULATION

David J. Rooke, Horsham, and Barry W. Burnstead, Littlehampton, both of England, assignors to Beecham Group Limited, England

Continuation of Ser. No. 478,151, Mar. 23, 1983, which is a continuation of Ser. No. 303,786, Sep. 21, 1981, abandoned. This application Oct. 5, 1983, Ser. No. 539,099

Claims priority, application United Kingdom, Sep. 27, 1980, 8031298

Int. Cl.³ A61K *31/43, 31/42, 47/00*

U.S. Cl. 514—197 **12 Claims**

1. A pharmaceutical composition in unit does tablet form suitable for oral administration to humans and animals which comprises amoxycillin trihydrate equivalent to 20 mg to 1500 mg of amoxycillin, potassium clavulanate equivalent to 20 mg to 500 mg of clavulanic acid, the weight ratio of amoxycillin to clavulanic acid being in the range of from 12:1 to 1:1, an effective amount of a colloidal silica having an average particle size of 8 μm and a BET specific surface area of about 750 m^2/g incorporated within each tablet as a desiccant, and a pharmaceutically acceptable carrier suitable for tablets.

4,537,888

SUBSTITUTED BENZOXAZINE DERIVATIVES AND FUNGICIDAL USE

Klaus Naumann; Hans Scheinpflug, both of Leverkusen; Hans-Jürgen Rosslenbroich, Langenfeld, and Volker Paul, Soest, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

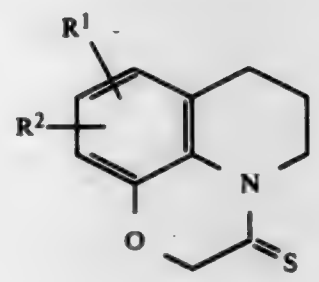
Filed Aug. 29, 1983, Ser. No. 527,442

Claims priority, application Fed. Rep. of Germany, Sep. 17, 1982, 3234529

Int. Cl.³ A01N *43/90*; C07D *498/04*

U.S. Cl. 514—228 **16 Claims**

1. A substituted benzoxazine derivative of the formula



in which

R^1 and R^2 each independently is hydrogen, alkyl, alkoxy, alkylthio, halogenoalkyl, alkanoyl, aroyl, halogen, cyano, nitro, nitroso, amino or the sulphonic acid grouping.

2. A compound selected from the group consisting of
5-bromo-4,5-trimethylene-1,4-benzoxazin-3-one,
6-chloro-4,5-trimethylene-1,4-benzoxazin-3-one,
6-iodo-4,5-trimethylene-1,4-benzoxazin-3-one, and
7-cyano-4,5-trimethylene-1,4-benzoxazin-3-one.

14. A method of combatting fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 1.

16. A method of combatting fungi which comprises administering to such fungi or to a fungus habitat a fungicidally effective amount of a compound according to claim 2.

4,537,889

INOTROPIC AGENTS

Wayne A. Spitzer, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

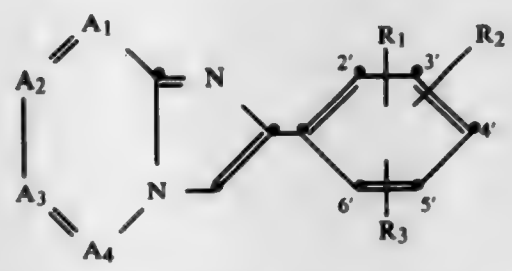
Division of Ser. No. 453,565, Dec. 27, 1982, abandoned. This application May 3, 1984, Ser. No. 606,806

Int. Cl.³ C07D *487/04*; A61K *31/53*

U.S. Cl. 514—243 **10 Claims**

1. Compounds of the formula

I



and their pharmaceutically acceptable salts, wherein two of A_1, A_2, A_3, and A_4 are N, and the remaining A_1, A_2, A_3, and A_4 are CH, and each of R_1, R_2, and R_3 is independently hydrogen, C_1–C_4 alkyl, C_1–C_4 alkoxy, allyloxy, benzyloxy, (C_1–C_4 alkyl)thio, (C_1–C_4 alkyl)sulfinyl, (C_1–C_4 alkyl)sulfonyl, hydroxy, halo, cyano, amino, mono- or di-(C_1–C_4 alkyl)amino, trifluoromethyl, or Z-Q-substituted C_1–C_4 alkoxy, wherein Q is oxygen, sulfur, sulfinyl, sulfonyl, or a bond, and Z is C_1–C_4 alkyl, phenyl or phenyl substituted with halo C_1–C_4 alkyl, C_1–C_4 alkoxy, hydroxy, nitro, amino, C_1–C_4 alkylthio, C_1–C_4 alkylsulfinyl, or C_1–C_4 alkylsulfonyl, with the proviso that R_1, R_2, and R_3 may not all be hydrogen at the same time.

9. A method of producing a positive inotropic effect or

causing vasodilation in a warm-blooded mammal, which comprises the administration to such mammal an effective amount of a compound of claim 1.

4,537,890

2-(3,5-SUBSTITUTED-2-PYRIDYLALKYLAMINO)-5-OXOPYRIDYLMETHYL-4-PYRIMIDONES USEFUL AS HISTAMINE H_1-ANTAGONISTS

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

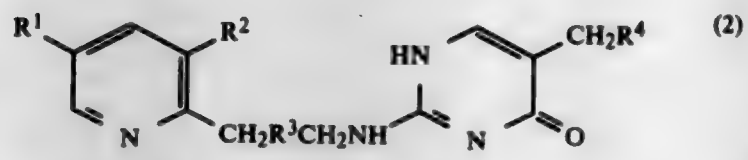
Filed Nov. 23, 1983, Ser. No. 554,497

Claims priority, application United Kingdom, Dec. 3, 1982, 8234513; Aug. 19, 1983, 8322346

Int. Cl.³ A61K *31/505*; C07D *239/02, 401/00*

U.S. Cl. 514—272 **20 Claims**

1. A compound of formula (2)



(2)

or a pharmaceutically acceptable salt thereof; where

R^1 is halogen, nitro, amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino or C_{1-4} alkyl;

R^2 is halogen, nitro, amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino, C_{1-4} alkyl or C_{3-4} alkoxy; provided that R^1 and R^2 are not both selected from amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino and nitro;

R^3 is a C_{1-3} alkylene group; and

R^4 is a pyridone group in which the nitrogen atom is optionally substituted with a group R^5, where R^5 is C_{1-4} alkyl, hydroxy C_{1-4} alkyl, C_{1-4} alkoxy C_{1-4} alkyl, or phenyl-C_{1-4} alkyl optionally substituted by one hydroxy, halogen, C_{1-4} alkoxy or C_{1-4} alkyl; or is a 2- or 4- C_{1-4} alkoxy pyridyl group.

20. A method of blocking histamine H_1-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim 1.

4,537,891

2-(3,5-SUBSTITUTED-2-PYRIDYLALKYLAMINO)-5-BENZYL-4-PYRIMIDONES

George S. Sach, Welwyn, England, assignor to Smith Kline & French Laboratories Limited, Welwyn Garden City, England

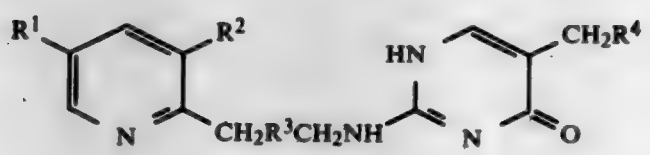
Filed Sep. 29, 1983, Ser. No. 537,457

Claims priority, application United Kingdom, Oct. 1, 1982, 8228029; Dec. 2, 1982, 8234381; Jul. 23, 1983, 8319875

Int. Cl.³ A61K *31/505*; C07D *239/02*

U.S. Cl. 514—272 **17 Claims**

1. A compound of formula (2):



or a pharmaceutically acceptable salt thereof; where

R^1 is halogen, nitro, amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino or C_{1-4} alkyl;

R^2 is halogen, nitro, amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino, C_{1-4} alkyl or C_{3-4} alkoxy; provided that R^1 and R^2 are not both selected from amino, C_{1-4} alkylamino, C_{1-4} alkanoylamino and nitro;

R^3 is a C_{1-3} alkylene group; and

R^4 is phenyl optionally bearing one or two substituents which are the same or different and are halogen, hydroxy, C_{1-4} alkyl or C_{1-4} alkoxy or a methylenedioxy group.

17. A method of blocking histamine H_1-receptors which comprises administering to a subject an effective amount to block said receptors of a compound according to claim 1.

4,537,892

SPIRO-TRICYCLICAROMATIC SUCCINIMIDE DERIVATIVES AS INHIBITORS OF ALDOSE REDUCTASE

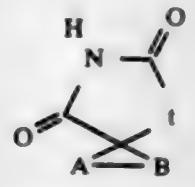
Billie M. York, Jr., Fort Worth, Tex., assignor to Alcon Laboratories, Inc., Fort Worth, Tex.

Filed Sep. 14, 1983, Ser. No. 532,168

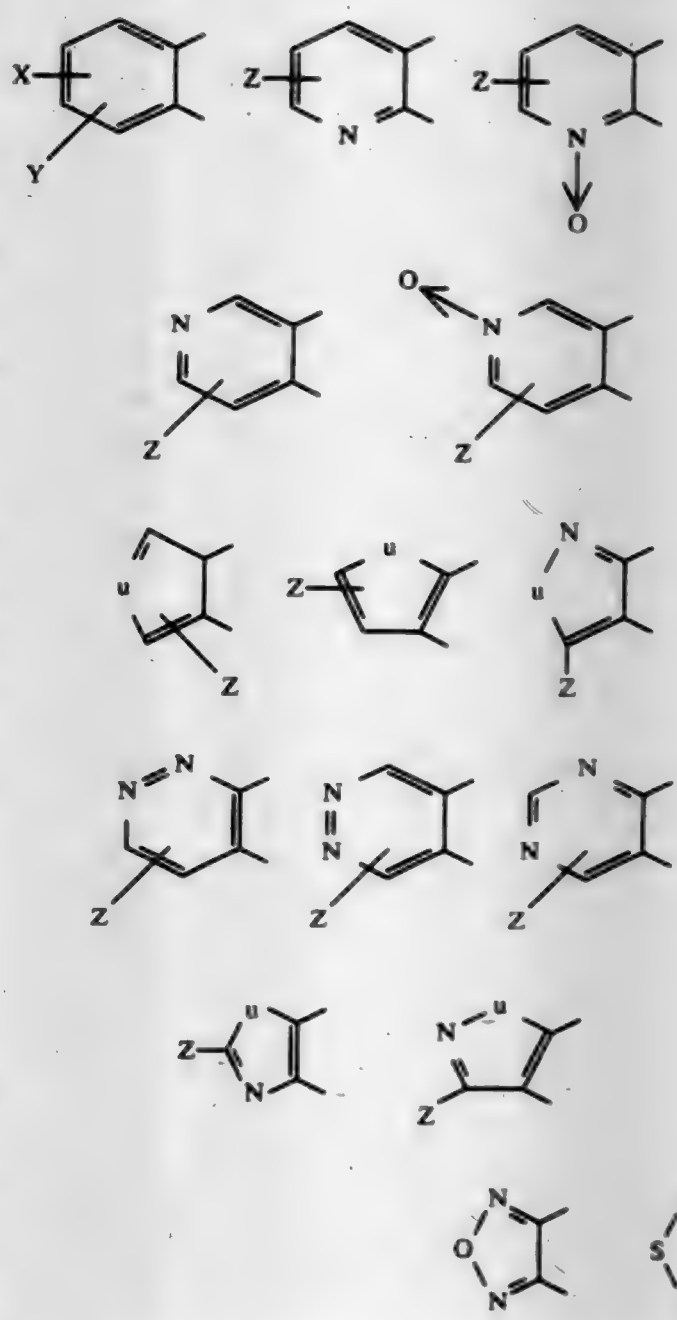
Int. Cl.³ A61K *31/415*; C07D *487/10, 487/20*

U.S. Cl. 514—278 **72 Claims**

1. A compound of the formula:



and the pharmaceutically acceptable salts thereof, wherein A and B are aromatic rings connected through two adjacent positions to a central five-membered ring, and are independently selected from the group consisting of:



U is selected from the group consisting of O, S, and NR^1;

X is selected from the group consisting of H, F, lower alkyl sulfide, and lower alkylsulfinyl;

Y is selected from H, —OH, —OCOR[3], F, Cl, lower alkyl, lower alkoxy, lower alkylsulfide, lower alkylsulfinyl, lower alkylsulfonyl, $-CF_3$, $-S-CF_3$, $-SO_2CF_3$, $CO-N(R^1)-R^2$, lower alkyl alcohol, lower alkyl ether, nitro, lower alkyl sulfide lower alkyl, lower alkylamine, lower alkyl esters, —COOH and lower alkyl ester, lower alkyl carboxylic acids and lower alkyl esters, and cycloalkyl of six or less carbons, provided that when both of Rings A and B are phenyl, and one of X or Y is H or F, the other of X or Y must be other than H or F; and

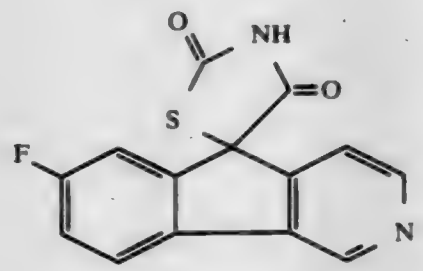
R^1 and R^2 are selected from the group consisting of hydrogen and lower alkyl;

R^3 is lower alkyl;

Z is selected from the group consisting of hydrogen, lower alkyl, and halogen;

t is selected from the group consisting of CHR^1, NH, O, and S.

18. A spiro-tricyclic compound according to claim **1** of the formula:



4,537,893

OCTAHYDROTHIAZOLO[4,5-g]QUINOLINES AND USE AS PROLACTIN SECRETION INHIBITORS

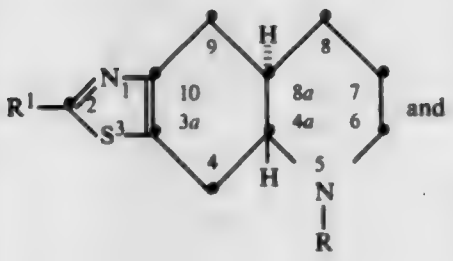
Robert D. Titus, and Edmund C. Kornfeld, both of Indianapolis, Ind., assignors to Eli Lilly and Company, Indianapolis, Ind.

Filed Apr. 27, 1984, Ser. No. 604,687

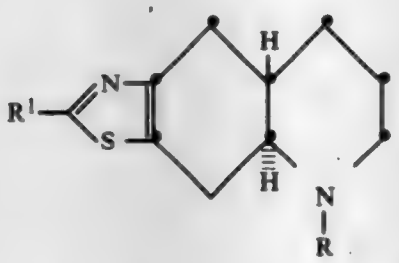
Int. Cl.[3] A61K *31/47;* **C07D** *513/02*

U.S. Cl. 514—293 **53 Claims**

1. A trans-(±)-racemate containing trans-(−) and trans-(+) enantiomers of the formula



and



wherein R is H, C_{1-3} straight-chain alkyl or allyl and R^1 is H, halogen, methyl, OH, NH_2, NHC_{1-3} alkyl, $N(C_{1-3}$ alkyl$)_2$, 1-pyrrolidinyl, $NHCOC_{1-3}$ alkyl or NHC_{1-2} alkylphenyl and pharmaceutically-acceptable acid addition salts thereof.

51. A pharmaceutical formulation in unit dosage form adapted for administration to counter depression, alleviate anxiety, reduce elevated blood pressure, lower excessively high prolactin levels, treat Parkinson's Syndrome, potentiate sexual behaviour, treat sexual dysfunction or restore sexual potency comprising per dosage unit, a standard pharmaceutical excipient plus an amount of a drug according to claim **6** to inhibit the secretion of prolactin, to relieve anxiety, to counter depression, to lower blood pressure of hypertensives, to treat Parkinson's Syndrome, to potentiate sexual behaviour, to treat sexual dysfunction or to restore sexual potency.

4,537,894

METHODS OF USING COMPOSITIONS HAVING ANTITHROMBOTIC AND ANTI-BLOOD-PLATELET-AGGREGATING ACTIVITY

Jean Blanchard, and Edouard Panak, both of Toulouse, France, assignors to Sanofi, S.A., Paris, France

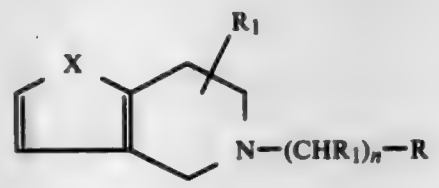
Continuation of Ser. No. 347,700, Feb. 11, 1982, abandoned, which is a continuation of Ser. No. 108,651, Dec. 31, 1979, abandoned, which is a continuation-in-part of Ser. No. 917,374, Jun. 20, 1978, Pat. No. 4,210,649. This application May 16, 1983, Ser. No. 494,133

Claims priority, application United Kingdom, Dec. 29, 1978, 50359/78

Int. Cl.[3] A61K *31/415, 31/435*

U.S. Cl. 514—301 **5 Claims**

1. A method for the prevention or treatment of a disease inducing pathological change in blood-platelet-aggregation in a patient subject to or suffering from such a disease, comprising administering to said patient in an amount effective for prevention or treatment of said disease, sulfinpyrazone and a pyridine derivative, for causing antithrombotic and anti-blood-platelet-aggregation activity, the blood platelet aggregation being A.D.P. induced, said pyridine derivative being selected from the group consisting of compounds having the formula:



(I)

in which

X represents oxygen or sulfur;

R is selected from the group consisting of unsubstituted phenyl and benzoyl, phenyl and benzoyl having at least one substituent selected from the group consisting of halogen, straight or branched-chain lower alkyl, straight- or branched-chain lower alkoxy, nitro, amino, sulfonylamino, carboxy, lower alkoxycarbonyl, cyano, phenyl, hydroxy alkyl, methylene-dioxy and ethylene-dioxy, and an alpha-naphthyl group or a thienyl group;

R_1 represents a hydrogen or halogen atom or a hydroxy group, a straight- or branched-chain lower alkyl group, a straight- or branched-chain lower alkoxy group, or a phenyl group;

R′ represents a lower alkyl group; and

n is an integer from 1 to 15; and the symbols R_1 may have different meanings in each radical CHR_1 when n is greater than 1;

and the pharmaceutically acceptable acid addition salts and quaternary ammonium derivatives of said compounds.

4,537,895

ISOQUINOLINE DERIVATIVES

Gyula Deák; Erzsébet Zára née Kaczián; Lajos György; Márton Fekete; Margit Dóda; András Seregi, all of Budapest; Béla Kanyicska, Kerepestarcsa; Erzsébet Tóth née Pécsi, Budapest; Mária Horváth née Gaál, Budapest; Sándor Mányai, Budapest; Frigyes Görgényi, Budapest, and Györgyi Vászovics née Reichmann, Budapest, all of Hungary, assignors to EGYT Gyógyszervegyészeti Gyár, Budapest, Hungary

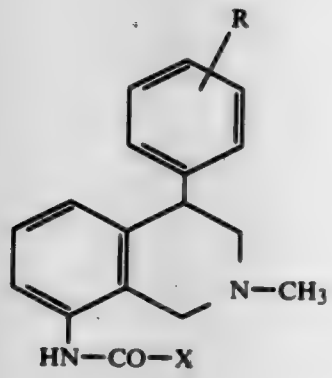
Filed Jun. 3, 1983, Ser. No. 500,969

Claims priority, application Hungary, Apr. 4, 1982, 1797; Apr. 4, 1982, 1798; Apr. 4, 1982, 1799

Int. Cl.[3] A61K *31/47;* **C07D** *217/04*

U.S. Cl. 514—307 **9 Claims**

1. 4-aryl-2-methyl-1,2,3,4-tetrahydro-isoquinoline derivatives of the formula I



wherein
R stands for hydrogen, lower alkyl or halogen and
X represents a group of the formula $—(CH_2)_n—NR^1R^2$, $—NH—R^3$ or $—OR^4$, in which
R^1 and R^2 may be the same or different and stand for for hydrogen or lower alkyl or R^1 and R^2 together with the adjacent nitrogen atom to which they are attached, form a 5- or 6-membered saturated pyrrolidino, piperidino, morpholino, thiomorpholino, piperazino, N-alkylpiperazino or N-benzyl piperazino ring;
n is the integer 1, 2, 3 or 4;
R^3 stands for lower alkyl, phenyl or phenyl substituted by halogen or lower alkyl and
R^4 is lower alkyl, halogeno lower alkyl, or phenyl lower alkyl
and pharmaceutically acceptable acid addition salts thereof.

9. Pharmaceutical compositions having advantageous central nervous system effects as active ingredient an effective amount of at least one compound of the formula I as defined in claim 1 or a pharmaceutically acceptable acid addition salt thereof in admixture with suitable inert non-toxical, pharmaceutical carriers and/or excipients.

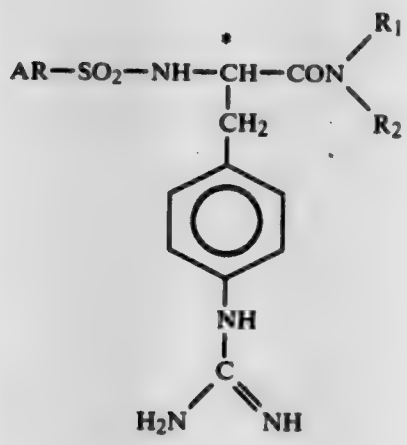
4,537,896

THROMBIN INHIBITING ARYLSULFONYL GUANIDINOPHENYLALANINE AMIDES

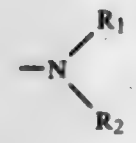
Carl G. Claeson, Lidingö , and Stig I. Gustavsson, Mölndal, both of Sweden, assignors to KabiVitrum AB, Stockholm, Sweden

Filed Jun. 14, 1983, Ser. No. 504,338
Claims priority, application Sweden, Jun. 23, 1982, 8203887
Int. Cl.³ A61K *31/445, 31/16;* C07D *211/16;* C07C *147/13*
U.S. Cl. 514—330 **14 Claims**

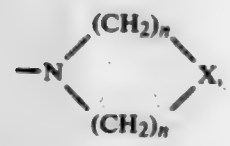
1. N^{α}-arylsulfonyl-p-guanidinophenylalanine amides of the formula



wherein Ar is ortho-, meta- or para-tolyl, naphthyl-1, naphthyl-2 or 5-dimethylamino-1-naphthyl; R_1 and R_2 are an alkyl group having 1–5 carbon atoms or

I 

is a ring system



wherein n=2
or 3 and X is a single-bond, CH_2,CH—CH_3, CH—CH_2H_5, CH—CH_3H_7, O, NH or N—CH_3, in free base form or in form of pharmaceutically acceptable acid addition salt thereof.

11. Pharmaceutical composition for treatment or prevention of thrombosis containing one or more compounds according to claim 1 in an amount effective for said treatment or said prevention and a carrier.

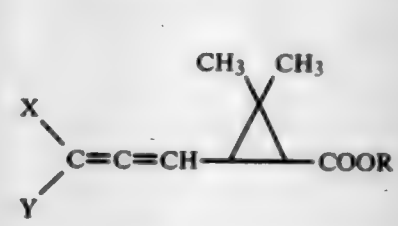
4,537,897

3-(1,2-PROPADIENYL)-CYCLOPROPANE-CARBOXYLATES

Jean Tessier, Vincennes; Jean-Pierre Demoute, Montreuil-Sous-Bois, and Joseph Cadiergue, Aulnay-Sous-Bois, all of France, assignors to Roussel Uclaf, Paris, France

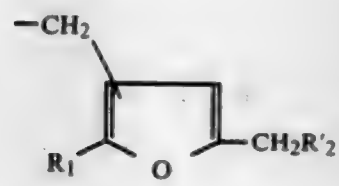
Filed Sep. 15, 1983, Ser. No. 532,825
Claims priority, application France, Sep. 29, 1982, 82 16372
Int. Cl.³ A01N *53/00;* C07D *213/68;* C07C *69/743, 69/747*
U.S. Cl. 514—351 **28 Claims**

1. A 3-(1,2-propadienyl)-cyclopropane-carboxylate of the formula



I

wherein R is selected from the group consisting of (1) alkyl of 1 to 18 carbon atoms, (2) benzyl optionally substituted with at least one member of the group consisting of alkyl of 1 to 4 carbon atoms, alkenyl of 2 to 6 carbon atoms, alkenyloxy of 2 to 6 carbon atoms, alkadienyl of 4 to 8 carbon atoms, methylenedioxy and halogens,



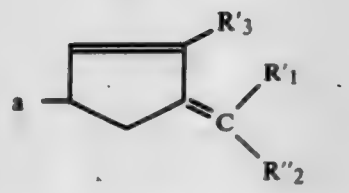
(3)

wherein R_1 is selected from the group consisting of hydrogen and methyl and R_2' is selected from the group consisting of —C≡CH and 5-benzyl-3-furyl-methyl,



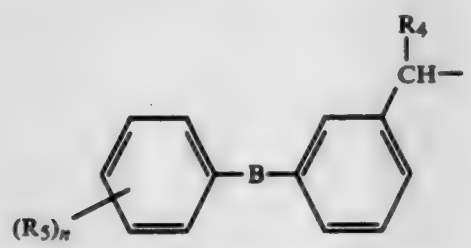
(4)

wherein a is selected from the group consisting of hydrogen and methyl and R_3' is an aliphatic group of 2 to 6 carbon atoms containing at least one carbon-carbon unsaturation,



(5)

wherein a and R_3' have the above definition and R_1' and R_2'' are individually selected from the group consisting of hydrogen, halogen, alkyl of 1 to 6 carbon atoms, phenyl, cyano and alkoxy carbonyl of 2 to 5 carbon atoms,

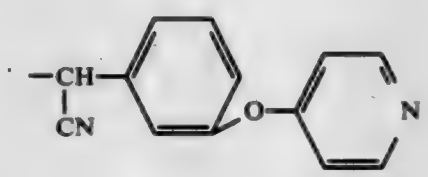


(6)

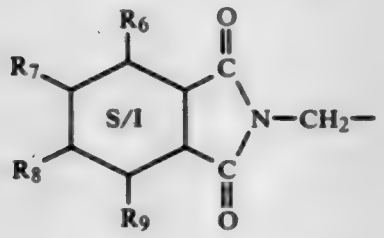
wherein B is selected from the group consisting of $-CH_2-$,



$-O-$ and $-S-$, R_4 is selected from the group consisting of hydrogen, $C\equiv N$, $-CH_3$, $-CONH_2$, $-CSNH_2$ and $-C\equiv CH$, n is an integer from 0, 1 or 2 and R_5 is selected from the group consisting of halogen and $-CH_3$

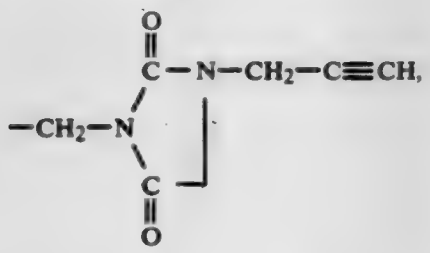


(7)

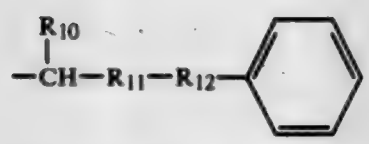


(8)

wherein R_6, R_7, R_8 and R_9 are selected from the group consisting of hydrogen, chlorine and methyl and S/I symbolizes an aromatic ring or dihydro, tetrahydro or hexahydro ring, (9) (succinimido or maleimido) $-CH_2-$

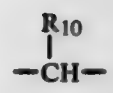


(10)

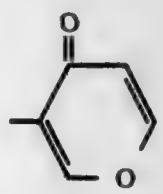


(11)

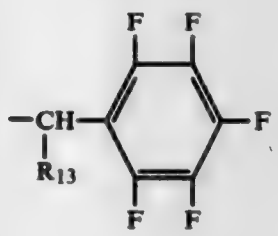
wherein R_{10} is selected from the group consisting of hydrogen and —CN, R_{12} is selected from the group consisting of $-CH_2-$ and —O— and R_{11} is selected from the group consisting of thiazolyl and thiadiazolyl with the bond to



being in any one of the positions, R_{12} being bonded to R_{11} by the carbon atom included between a sulfur atom and a nitrogen atom,

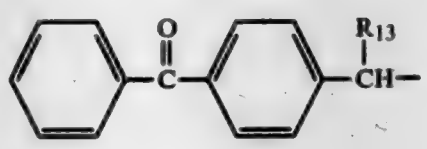


(12)



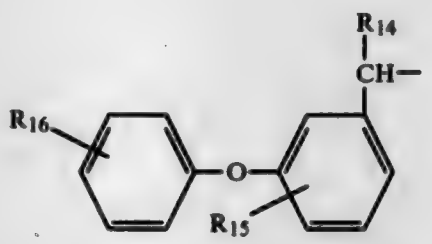
(13)

wherein R_{13} is selected from the group consisting of hydrogen and —CN,



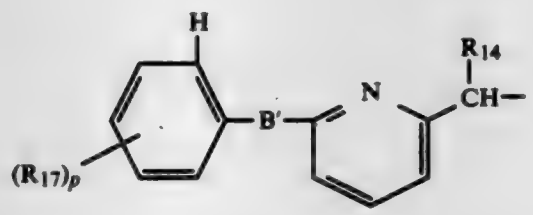
(14)

wherein R_{13} has the above definition



(15)

wherein R_{14} is selected from the group consisting of hydrogen, methyl, ethynyl and —CN and R_{15} and R_{16} are individually selected from the group consisting of hydrogen, bromine and fluorine and



(16)

wherein R_{14} has the above definition, p is 0, 1 or 2, each R_{17} is selected from the group consisting of alkyl of 1 to 4 carbon atoms, alkoxy of 1 to 4 carbon atoms, alkylthio of 1 to 4 carbon atoms, alkylsulfonyl of 1 to 4 carbon atoms, $-CF_3$, 3,4-methylenedioxy, chlorine, bromine and fluorine, B' is selected from the group consisting of —O— and —S—, X and Y are both hydrogen or individually halogen or X is hydrogen or halogen and Y is alkyl of 1 to 18 carbon atoms or halogen.

4,537,898

LIQUID FORMULATIONS OF DIHYDROPYRIDINES

Dieter Hoff, Leverkusen, and Klaus-Dieter Rämsch, Wuppertal, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Feb. 13, 1984, Ser. No. 579,833

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307422

Int. Cl.[3] A61K *31/455*

U.S. Cl. 514—356 5 Claims

1. A liquid formulation of a dihydropyridine comprising, by weight, about 1 to 5 parts of a dihydropyridine selected from the group consisting of nisoldipine, nimodipine and 3-methyl 5-trifluoroethyl diester of 4-(2-chlorophenyl)-2,6-dimethyl-1,4-dihydropyridine-3,5-dicarboxylic acid, 30 to 50 parts of weight of a solubilizing agent comprising glycerol polyethylene glycol oxystearate oxyethylated with about 35, 45 or 60 mols of ethylene oxide and 70 to 50 parts of a diluent consisting essentially of water, ethanol, glycerol, 1,2-propylene glycol, polyethylene glycol 200, polyethylene glycol 400 or polyethylene glycol 600.

4,537,899

ANTIVIRAL ACYLATED 1,2,4-TRIAZOLE DERIVATIVES

István Horváth; Tibor Láng; László Pongo; József Reiter; Tamás Somorai; Géza Szilágyi, and Lajos Toldy, all of Budapest, Hungary, assignors to BIOGAL Gyógyszergyár, Debrecen, Hungary

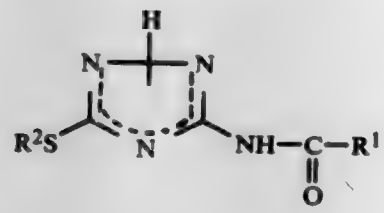
Filed Aug. 25, 1983, Ser. No. 526,694

Claims priority, application Hungary, Sep. 1, 1982, 2797/82

Int. Cl.[3] A01N *43/64;* A61K *31/41;* C07D *249/14*

U.S. Cl. 514—384 6 Claims

1. Acylated 1,2,4-triazole derivatives of formula I



I

wherein

R^1 represents an unsubstituted phenyl group or a phenyl group substituted by one or more halogen atoms, lower alkyl, lower alkoxy, acyloxy, carbomethoxy hydroxy, amino, azido, nitro, trifluoromethyl, lower alkylthio, lower alkylsulfinyl, or lower alkylsulfonyl group, and

R^2 stands for a C_{1-6} alkyl group or a phenyl lower alkyl group which is either unsubstituted or substituted in the aromatic nucleus by a halogen atom or a nitro group,

and their pharmaceutically acceptable salts.

6. Antiviral pharmaceutical compositions containing as active ingredient an effective amount of one or more compounds of formula I—wherein R^1 and R^2 have a meaning as claimed in claim 1—or a pharmaceutically acceptable salt thereof, and a conventional inert, non-toxic, solid or liquid carrier and/or additive.

4,537,900

CIMETIDINE Z, A NEW CRYSTAL MODIFICATION OF CIMETIDINE

János Kreidl; Maria Farkas née Kirják; Kalmán Harsányi; Belá Benke; András Radó; György Domany; Béla Hegediis; Éva Csongor; Ida Deutsch née Juhász, and Hajnalka Pethö, all of Budapest, Hungary, assignors to Richter Gedeon Vegyészeti Gyar R.T., Budapest, Hungary

Continuation of Ser. No. 423,074, Sep. 24, 1982, abandoned. This application Jul. 20, 1984, Ser. No. 632,311

Claims priority, application Hungary, Sep. 25, 1981, 2767/81

Int. Cl.[3] A61K *31/415;* C07D *233/64*

U.S. Cl. 514—400 3 Claims

3. A composition for producing the histamine H-2 receptor antagonist modification A which comprises an effective amount of the crystal modification Z of N-methyl-N'-2-[(5-methylimidazol-4-yl)-methylthio]-ethyl-N''-cyanoguanidine in association with a pharmaceutically acceptable carrier and/or excipient.

4,537,901

INSECTICIDAL CARBAMATES

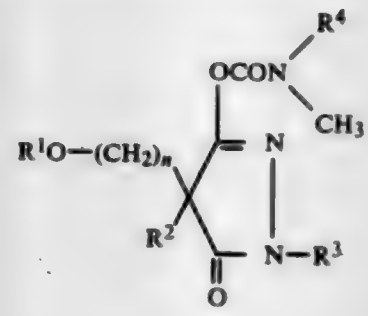
Arno Lange, Bad Durkheim; Franz Merger, Frankenthal; Peter Hettinger, Edingen-Neckarhausen, and Heinrich Adolphi, Limburgerhof, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,564

Int. Cl.[3] A01N *43/56;* C07D *231/08, 491/107*

U.S. Cl. 514—404 5 Claims

1. A carbamate of the formula



(I)

where either R^1 is straight-chain or branched alkyl of not more than 4 carbon atoms and R^2 is straight-chain or branched alkyl of not more than 6 carbon atoms, or R^1 and R^2, together with the molecular moiety which they include, form a 5-membered, 6-membered or 7-membered saturated heterocyclic ring, R^3 is straight-chain or branched alkyl of not more than 6 carbon atoms or cycloalkyl of 3 to 6 carbon atoms, R^4 is methyl or methoxy, and n is 1 or 2.

5. A method for combatting insects and acarids, wherein an effective amount of a carbamate of the formula I as defined in claim 1 is allowed to act on the insects or acarids or their habitat.

4,537,902

4-SUBSTITUTED-3-HYDROXY-3-PYRROLINE-2,5-DIONE INHIBITORS OF GLYCOLIC ACID OXIDASE

Edward J. Cragoe, Jr., Lansdale; Clarence S. Rooney, Worcester, both of Pa., and Haydn W. R. Williams, Dollard des Ormeaux, Canada, assignors to Merck & Co., Inc. and Merck Sharp & Dohme (I.A.) Corp., both of Rahway, N.J.

Filed Jun. 11, 1979, Ser. No. 47,412

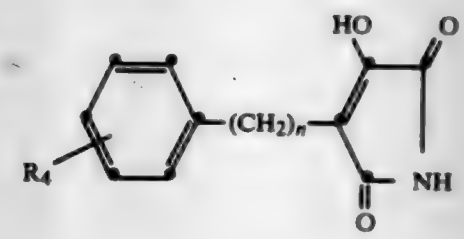
Int. Cl.[3] C07D *403/02, 207/40;* A61K *31/40*

U.S. Cl. 514—422 4 Claims

1. 3-Hydroxy-4-(cyclohexyl)phenyl-3-pyrroline-2,5-dione.

2. 3-Hydroxy-4-[4-(2'-phenyl-1-indolyl)phenyl]-3-pyrroline-2,5-dione.

3. A method of treating persons afflicted with calcium oxalate kidney or bladder stones or preventing the formation of calcium oxalate bladder or kidney stones which comprises administering to such a patient an effective amount of a compound having the structure



wherein

n is 0 to 3; and

R_4 is alkyl having 4 to 12 carbon atoms, cycloalkyl contain-

ing from 5 to 7 carbon atoms, iodo 1,2,3,4-tetrhydro-1 naphthyl, 4-(2'-phenyl-1-indolyl)phenyl or a pharmaceutically acceptable salt thereof.

4,537,903

SUBSTITUTED CINNAMYL-2,3-DIHYDROBENZOFURAN AND ANALOGS USEFUL AS ANTI-INFLAMMATORY AGENTS

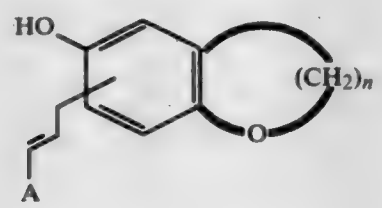
Michael N. Chang, Westfield; Milton L. Hammond, Edison; Norman P. Jensen, New Providence, all of N.J.; John McDonald, Indianapolis, Ind., and Robert A. Zambias, Hoboken, N.J., assignors to Merck & Co., Inc., Rahway, N.J.

Filed Oct. 12, 1983, Ser. No. 541,200

Int. Cl.[3] **A61K** *31/34, 31/35;* **C07D** *307/79, 311/58*

U.S. Cl. 514—456 **12 Claims**

1. A compound of formula (I) or (II)



(I)

or a pharmaceutically acceptable salt thereof wherein

n is 2 or 3

A is

(a) phenyl substituted with $(R^1)_q$ wherein when q is 2 to 5 R^1 can be the same or different from each other and R^1 is

(1) hydrogen;
(2) halo;
(3) loweralykoxy;
(4) lower alkylthio;
(5) lower alkyl sulfinyl;
(6) lower alkyl sulfonyl;
(7) unsubstituted or substituted phenyl loweralkoxy;
(8) loweralkyl;
(9) loweralkenyl;
(10) lower alkanoyl;
(11) halololoweralkyl;
(12) —COOH;
(13) aryl;
(14) aryloxy;
(15) cyano;
(16) hydroxyloweralkyl;
(17) halo loweralkanoyl;
(18) heteroaryl as defined below; or
(19) loweralkanoyloxy;

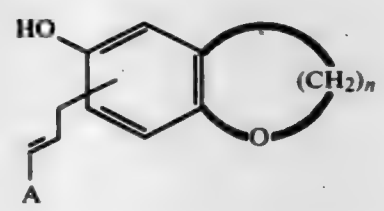
q is 0 to 5;

(b) unsubstituted or substituted heteroaryl selected from a group consisting of:

(1) thienyl;
(2) benzothienyl;
(3) furyl;
(4) benzofuryl;
(5) pyrryl;
(6) indolyl;
(7) thiazolyl;
(8) benzothiazolyl;
(9) thiadiazolyl;
(10) benzothiadiazolyl;
(11) quinolyl;
(12) isoquinolyl;
(13) pyridyl;
(14) pyrazinyl;
(15) tetrazolyl; or
(16) triazolyl,

the heteroaryl above being substituted with one or more of R^1.

9. A method of treating or decreasing topical inflammation comprising the administration to a mammalian species in need of such treatment a therapeutically effective amount of a compound of formula I or II



(I)

or a pharmaceutically acceptable salt thereof wherein

n is 2 or 3

A is

(a) phenyl substituted with $(R^1)_q$ wherein when q is 2 to 5 R^1 can be the same or different from each other and R^1 is

(1) hydrogen;
(2) halo;
(3) loweralkoxy;
(4) lower alkylthio;
(5) lower alkyl sulfinyl;
(6) lower alkyl sulfonyl;
(7) unsubstituted or substituted phenyl loweralkoxy;
(8) loweralkyl;
(9) loweralkenyl;
(10) lower alkanoyl;
(11) halololoweralkyl;
(12) —COOH;
(13) aryl;
(14) aryloxy;
(15) cyano;
(16) hydroxyloweralkyl;
(17) halo loweralkanoyl;
(18) heteroaryl as defined below; or
(19) loweralkanoyloxy;

q is 0 to 5;

(b) unsubstituted or substituted heteroaryl, selected from a group consisting of:

(1) thienyl;
(2) benzothienyl;
(3) furyl;
(4) benzofuryl;
(5) pyrryl;
(6) indolyl;
(7) thiazolyl;
(8) benzothiazolyl;
(9) thiadiazolyl;
(10) benzothiadiazolyl;
(11) quinolyl;
(12) isoquinolyl;
(13) pyridyl;
(14) pyrazinyl;
(15) tetrazolyl; or
(16) triazolyl,

the heteroaryl above being substituted with one or more of R^1.

4,537,904

COMPOSITIONS OF 7-OXABICYCLOHEPTANE AND 7-OXABICYCLOHEPTENE COMPOUNDS AND A METHOD FOR THEIR USE IN INHIBITING BRONCHOCONSTRICTION

David L. Snitman, Boulder, Colo.; Martin F. Haslanger, Lambertville, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

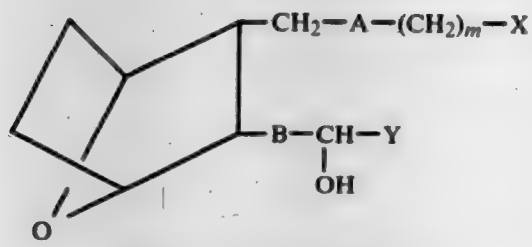
Division of Ser. No. 378,547, May 17, 1982, which is a continuation-in-part of Ser. No. 319,511, Nov. 9, 1981, abandoned. This application Jul. 28, 1983, Ser. No. 518,227

Int. Cl.[3] **A61K** *31/34, 31/41*

U.S. Cl. 514—469 **20 Claims**

1. A method of inhibiting bronchoconstriction, which comprises administering to the circulatory system of a mammalian

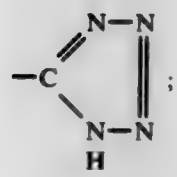
host an effective amount of a compound having the structural formula



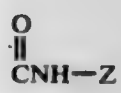
and including all stereoisomers thereof; wherein

A and B may be the same or different and A is CH=CH or $(CH_2)_2$, B is CH=CH, C≡C, or $(CH_2)_2$; m is 1 to 8;

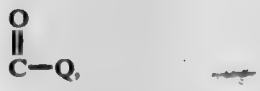
X is OH;



CO_2R^1 wherein R^1 is H or lower alkyl; or



wherein Z is H, lower alkyl, or aryl, SO_2—Q (wherein Q is lower alkyl or aryl),



or OR^2 wherein R^2 is H;

Y is substituted alkyl (wherein the substituent is halo, lower alkoxy, alkyl-aryl, haloalkyl, cycloalkyl or alkylcycloalkyl); aryl-lower alkyl; alkenyl containing 3 to 6 carbons; alkynyl containing 3 to 6 carbons; aryl (which may be unsubstituted or substituted with lower alkyl, halogen or lower alkoxy); cycloalkyl; substituted cycloalkyl; cycloalkylalkyl; substituted cycloalkylalkyl; or phenoxymethyl;

wherein alkyl or lower alkyl by itself or as part of another group contains 1 to 12 carbons, cycloalkyl by itself or as part of another group contains 3 to 12 carbons in the ring portion, aryl by itself or as part of another group refers to a monocyclic or bicyclic armomatic ring which contains 6 to 10 carbons in the ring portion, and the cycloalkyl group by itself or as part of another group may be substituted with 1 or 2 halogens, 1 or 2 lower alkyl groups or lower alkoxy groups (the above substituents not being adjacent to sterically hindered groups);

and represents a single bond or double bond, with the proviso that where represents a double bond, A is CH=CH and B is CH=CH or $(CH_2)_2$ and Y is other than alkenyl or alkynyl, or a pharmaceutically acceptable salt thereof.

479-975 O.G.-85-12

4,537,905

FUNGICIDALLY ACTIVE SUBSTITUTED OXIMINOACETANILIDES

Wilhelm Brandes, Leichlingen, and Werner Daum, Krefeld, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

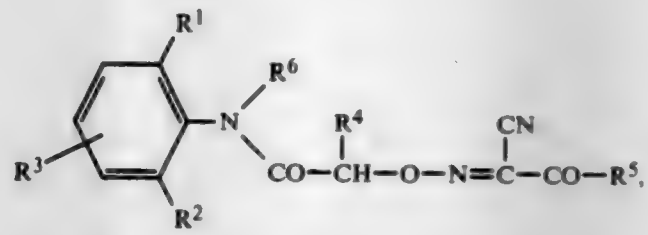
Filed Jan. 27, 1983, Ser. No. 461,304

Claims priority, application Fed. Rep. of Germany, Feb. 20, 1982, 3206235

Int. Cl.³ A01N *37/34, 43/64;* C07C *121/84;* C07D *249/08*

U.S. Cl. 514—521 **7 Claims**

1. A substituted oximinoacetanilide of the formula



in which

R^1 denotes an alkyl or alkoxy group having 1 to 4 carbon atoms or a halogen atom,

R^2 denotes a hydrogen or halogen atom or an alkyl group having 1 to 4 carbon atoms or trifluoromethyl group,

R^3 denotes a hydrogen or halogen atom or an alkyl group having 1 to 4 carbon atoms,

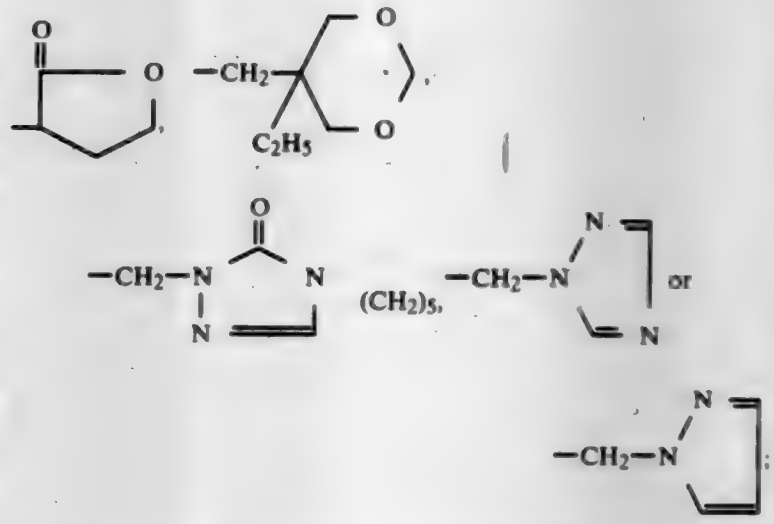
R^4 denotes a hydrogen atom or a methyl group,

R^5 denotes an alkoxy group having 1 to 4 carbon atoms, amino or —NH—CO—NH—R^7 group,

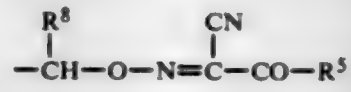
wherein

R^7 is a hydrogen atom or an optionally cyano-, C_1–C_4-alkoxy- or alkoxycarbonyl-substituted C_1–C_{15}-alkyl group, or represents a C_3–C_6-cycloalkyl group, and

R^6 denotes a C_3 to C_5 alkinyl, C_1 to C_4 alkoxy-C_1 to C_3 alkyl, halogeno-C_1 to C_4 alkoxy-C_1 to C_3 alkyl, cyano-C_1 to C_4 alkoxy-C_1 to C_3 alkyl, C_4 to C_7 cyclo-alkoxy-C_1 to C_3 alkyl, C_2 to C_4 alkenoxy-C_1 to C_3 alkyl, C_2 to C_4 alkinoxy-C_1 to C_3 alkyl, C_1 to C_4 alkylthio-C_1 to C_3 alkyl, (C_1 to C_4 alkyl)carbonyl-C_1 to C_3 alkyl, (C_1 to C_4 alkoxy)carbonyl-C_1 to C_3 alkyl or (C_1 to C_4 alkylthio)carbonyl-C_1 to C_3 alkyl group; denotes an aminocarbonyl-C_1 to C_3 alkyl group, wherein the amino group thereof is optionally substituted by 1 to 2 C_1 to C_3 alkyl radicals; denotes



or denotes a radical of the general formula



wherein R^8 is a hydrogen atom or a methyl or ethyl group.

5. A fungicidal composition comprising a fungicidally effec-

tive amount of a compound according to claim 1 in admixture with a diluent.

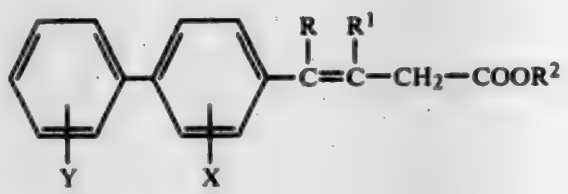
4,537,906

SUBSTITUTED PHENYLALKENOIC ACIDS AND ESTERS

Patrice C. Belanger, Dollard des Ormeaux, and John W. Gillard, Pointe Claire, both of Canada, assignors to Merck Frosst Canada, Inc., Quebec, Canada

Filed Dec. 6, 1982, Ser. No. 446,909
Int. Cl.³ C07C *69/76*; A01N *37/00*
U.S. Cl. 514—532 **8 Claims**

1. A pharmaceutical composition useful for treating asthma or for treating or inhibiting blood platelet aggregation comprising a pharmacologically effective amount of the cis isomer of a compound having the formula

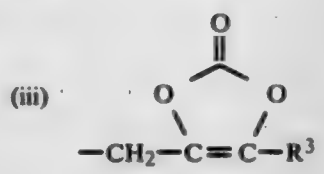


wherein

R is H or C_1-C_4 alkyl,

R_1 is H or C_1-C_4 alkyl,

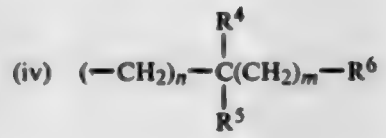
R^2 is (i) hydrogen, (ii) C_1-C_6 alkyl,



II

(iii)

wherein R^3 is C_1-C_6 alkyl or aryl; or



(iv)

wherein

n is 0, 1, 2, or 3;

m is 0, 1, 2, or 3;

R^4 and R^5 are individually H or alkyl of 1 to 3 carbon atoms; and

R^6 is selected from the group consisting of

(A) a monocyclic or bicyclic heterocyclic radical containing from 3 to 12 nuclear carbon atoms and 1 or 2 nuclear hetero atoms selected from N and S with at least one being N, and with each ring in the said heterocyclic radical containing 5 to 6 members and

(B) the radical X-R^7 wherein X is —O—, —S—, or —NH— and R^7 contains up to 21 carbon atoms and is (1) a hydrocarbon radical or (2) an acyl radical of an organic acyclic or monocyclic carboxylic acid containing not more than 1 hetero atom in the ring,

Y is H, halo, C_1-C_4 alkoxy, carboxy, C_1-C_6 alkyl or azido, and

X is H, halo, C_1-C_4 alkoxy, carboxy, C_1-C_6 alkyl or azido, and pharmaceutically acceptable salts thereof.

4,537,907

HYPNOTIC COMPOSITION AND METHOD OF INDUCING SLEEP

Miodrag Radulovacki, Evanston, Ill., assignor to University of Illinois Foundation, Urbana, Ill.

Filed Oct. 6, 1980, Ser. No. 194,662
Int. Cl.³ A61K *31/195*
U.S. Cl. 514—567 **3 Claims**

1. A method of providing hypnotic therapy to a mammal comprising, administering to said mammal a hypnotically effective amount of a compound selected from the group consisting of 2-amino-3-(naphthyl)propanoic acid and its pharmaceutically acceptable salts in a pharmaceutically acceptable carrier therefor.

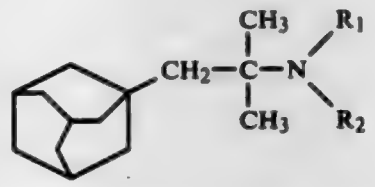
4,537,908

HERPES II TREATMENT

Ronald C. Griffith, Pittsford, and Clyde R. Kinsolving, Fairport, both of N.Y., assignors to Pennwalt Corporation, Philadelphia, Pa.

Continuation-in-part of Ser. No. 277,777, Jun. 26, 1981, Pat. No. 4,351,847. This application Sep. 27, 1982, Ser. No. 425,138
Int. Cl.³ A61K *31/13*
U.S. Cl. 514—659 **4 Claims**

1. A process for the treatment of herpes II virus in a warm blooded animal comprising administering to said animal in need of said treatment an amount effective for said treatment of an anti-viral agent of the formula given below or the acid addition salt thereof;



wherein R_1 and R_2 are selected from the class consisting of H and lower alkyl, said agent being administered orally in conjunction with a topical application in the area of lesions resulting from herpes II virus of said anti-viral agent.

4,537,909

ALCOHOL SYNTHESIS

Fan-Nan Lin, and Filippo Pennella, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Feb. 28, 1984, Ser. No. 584,374
Int. Cl.³ C07C *27/06, 29/15*
U.S. Cl. 518—713 **8 Claims**

1. A process for the production of alcohols from synthesis gas which comprises contacting a synthesis gas under suitable reaction conditions with a catalyst consisting of:

(a) at least one copper component,

(b) at least one iron group metal component,

(c) at least one metal component other than compounds (b) having a Periodic element number of 23 to 26,

(d) at least one alkali metal component, and

(e) a promoting amount of about 0.1 to about 5 weight percent of at least one rhodium component, which promoting amount is a small effective amount sufficient to increase catalyst activity and catalyst life without significantly changing selectivity in comparison with the unpromoted catalyst.

4,537,910

METHOD OF PRODUCING CATION-EXCHANGE MEMBRANE HAVING ROUGHED SURFACE

Michiharu Oogai, Hikari; Toru Seita, Shinnanyo; Kosuke Takeshige, Kudamatsu, and Hideo Shuyama, Hofu, all of Japan, assignors to Toyo Soda Manufacturing Co., Ltd., Shinnanyo, Japan

Filed Nov. 9, 1983, Ser. No. 550,338
Claims priority, application Japan, Nov. 10, 1982, 57-196104; Nov. 11, 1982, 57-196836; Nov. 12, 1982, 57-197690
Int. Cl.³ C08D 5/20
U.S. Cl. 521—27 13 Claims

1. A method of producing a cation-exchange membrane having a roughed surface and high strength said membrane being capable of reducing electrolysis voltage and maintaining current efficiency when used as a membrane in an electrolysis cell, said method comprising mixing silica powder having an average particle diameter of 0.01–20μ, with water to give a suspended or pasty mixtures, supporting the resultant mixture on art paper or filter paper, drying the mixture to form silica powder layer, adhering with heating and pressing the silica powder layer on a surface of membrane composed of perfluorocarbon polymer having cation-exchange group and/or group convertible into the cation-exchange group, and removing the silica powder layer formed on the surface of said membrane with caustic alkali aqueous solution.

4,537,911

INTERFACE BEADS FOR MIXED-BED ION EXCHANGE RESINS

Yohannes Chonde, Midland, Mich., assignor to The Dow Chemical Company, Midland, Mich.

Filed Jan. 13, 1984, Ser. No. 570,561
Int. Cl.³ C08D 5/20
U.S. Cl. 521—28 19 Claims

1. A bead for a cation and anion mixed-bed ion exchange resin composition, which bead is an essentially spherical, hydrolytically stable polymer bead having a controlled particle size, a controlled density and a water wettability, wherein said bead comprises the polymerization product of a major amount of at least one monoethylenically unsaturated hydrophobic monomer, at least one polyethylenically unsaturated monomer, and minor amount of a monoethylenically unsaturated ionizable hydrophilic monomer which contains anionic or cationic moieties such that said bead does not exhibit a significantly titratable amount of hydrophilic moieties.

4,537,912

PROCESS FOR RAPID CURING OF POLYETHER POLYURETHANE FOAM

Azel A. Griswold, Charlotte, N.C., assignor to Reeves Brothers, Inc., Spartanburg, S.C.

Filed Sep. 5, 1984, Ser. No. 647,583
Int. Cl.³ C08G 18/14
U.S. Cl. 521—53 10 Claims

1. A process for the rapid post curing of polyether polyurethane foam blocks without adversely affecting the compression set of said foam which process comprises subjecting said polyether polyurethane foam having a porosity of greater than about 3 cubic feet per minute to a mixture of air and gaseous ammonia, primary or secondary amine at a temperature of above about 50° F., wherein the amount of ammonia, primary or secondary amine is present at a concentration of at least 0.5% by volume of the air, the air has a relative humidity above about 50% and the air/ammonia or primary amine mixture reacts with the foam for a period of at least one minute.

4,537,913

METHOD OF PREPARING A UREA-FORMALDEHYDE COMBINATION FOAM THAT IS LOW IN FORMALDEHYDE

Heinz Baumann, Kleinniedesheim, Fed. Rep. of Germany, assignor to Schaum-Chemie W. Bauer GmbH & Co. KG, Fed. Rep. of Germany

Filed Mar. 7, 1984, Ser. No. 586,966
Claims priority, application Fed. Rep. of Germany, Mar. 9, 1983, 3308237
Int. Cl.³ C08J 9/30
U.S. Cl. 521—107 2 Claims

1. A method of preparing a urea-formaldehyde combination foam that is low in formaldehyde which comprises:

(a) adding to a conventional solution of a urea formaldehyde resin precondensate, before forming, up to 50% urea (relative to the solid resin substance) and one or several connecting agents from the group consisting of, formic acid, acetic acid, oxalic acid, malonic acid, succinic acid, maleic acid, fumaric acid, uric acid, xanthine, hydrochloric acid, sulfuric acid, thiosulfuric acid and phosphoric acid and their salts, calcium chloride, magnesium chloride, magnesium sulfate, sodium chloride and potassium chloride, said connecting agents being added in such quantity and in such a way that the pH of the resulting solution does not fall below 7; and then

(b) foaming the resulting solution with a hardner/foaming-agent solution in a conventional manner.

4,537,914

FLOOR CLEANING AND WAXING COMPOSITION

James A. Smith, Old Tappan, and Betty J. Murphy, Upper Montclair, both of N.J., assignors to Creative Products Resource Associates, Ltd., Clifton, N.J.

Continuation-in-part of Ser. No. 511,185, Jul. 6, 1983, , and a continuation-in-part of Ser. No. 660,350, Oct. 12, 1984,. This application Jan. 4, 1985, Ser. No. 688,864
Int. Cl.³ C08J 9/38, 9/40
U.S. Cl. 521—111 14 Claims

1. A process for preparing a floor cleaning and waxing composition comprising:

(a) forming an aqueous reactant phase comprising about 30–75% by weight of abrasive solid particles, about 0.1–5% of the weight of the solid particles of a silane-coupling agent, about 0.1–10% of a nonionic surfactant, about 0.1–20% of a silicone fluid, about 5–15% wax and about 20–50% water;

(b) mixing said aqueous reactant phase with a water-foamable prepolymer resin which contains at least 2 free isocyanate groups per resin molecule so that the final mole ratio of water to total free isocyanate groups is within the range of about 5–100:1, thereby shaping said resin into a hydrophilic, open-celled, highly reticulated polyurethane foam bun; and

(c) shredding said foam bun.

4,537,915

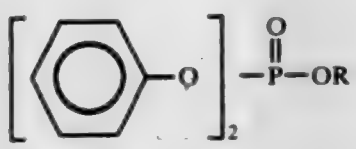
CHAR RESISTANT FOAMS

Patrick Oberle, Reichstett; Michel Longuet, Haguenau, both of France, and David Walker, Onnens, Switzerland, assignors to Polysar International S.A., Canton of Fribourg, Switzerland

Filed May 9, 1983, Ser. No. 492,712
Claims priority, application France, May 7, 1982, 82 07948
Int. Cl.³ C08J 9/30, 9/00
U.S. Cl. 521—84.1 16 Claims

1. A latex composition comprising from about 0 to about 15 parts by dry weight of natural rubber latex and correspondingly from about 100 to about 85 parts by dry weight of styrene-butadiene polymer latex having a styrene:butadiene ratio of from about 20:80 to about 40:60, characterized in that said composition additionally comprises per 100 parts by dry weight of total latex from about 10 to about 30 parts by weight

of a compound selected from the group consisting of an organic phosphate of the formula



wherein R is a C_{6-12} alkyl radical or a phenyl radical which is unsubstituted or substituted by a C_{1-4} alkyl radical, butyl benzyl phthalate, and mixtures thereof.

4,537,916

STRUCTURED LATEX PARTICLES WHICH ARE FILM FORMING AND A PROCESS FOR THEIR PREPARATION

Fabio B. Bruschtein, Midland; Robert G. Jahn, Saginaw, and Edwin L. Wittbrodt, Auburn, all of Mich., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 25, 1984, Ser. No. 624,329

Int. Cl.³ C08L *23/00*

U.S. Cl. 523—201 **20 Claims**

1. A process for preparing a structured latex particle whose film exhibits good film strength having a core and shell region by a continuous addition emulsion polymerization technique wherein said core region is formed from core monomer feeds comprising:

(a) aliphatic conjugated diene monomer feed,

(b) vinylidene halide or vinyl halide monomer feed, and/or

(c) monovinyl aromatic monomer feed,

(d) from about 0 to about 10 percent by weight monoethylenically unsaturated carboxylic acid monomer feed;

and said shell region is formed from shell monomer feeds comprising:

(e) from about 10 to about 20 percent by weight of said latex particle of an acrylate monomer feed, and/or

(f) a monovinyl aromatic monomer or extended core monomer feed (c); and

(g) extended core monomer feeds comprising, independently, (a), (b) or (d);

wherein said process is characterized by adjusting the feed rate of said shell monomer feeds such that as the weight fraction of the shell increases the feed rate of said (e) and (f) monomers are decreased, whereby a shell region which encapsulates said core region is formed and said structured latex particle is rendered film forming at room temperature.

4,537,917

COMPOSITES AND SIZE COATED GLASS FIBERS USED THEREIN

William L. Hergenrother, Akron, Ohio, assignor to The Firestone Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 656,211, Oct. 1, 1984, , which is a division of Ser. No. 520,388, Aug. 4, 1984,. This application Feb. 21, 1985, Ser. No. 703,632

Int. Cl.³ B32B *9/00*; D04H *1/58*

U.S. Cl. 523—209 **6 Claims**

1. Glass fiber reinforced composite having high flexural strength to density ratio and resistance to strength loss incident to exposure to water, said composite comprising cured unsaturated thermosetting resin reinforced by glass fibers having thereon a size coating comprising maleic anhydride adduct of 1,2-polybutadiene having a number average molecular weight of more than 10,000 and a crystallinity ranging from 0% to 50%, said adduct being soluble in an organic solvent, the amount of said adduct forming the size coating ranging from about 0.1 grams to about 6 grams per 100 grams of glass fibers, said size coated glass fibers being present in an amount ranging from about 20% to about 70% by weight of said composite.

4,537,918

CEMENT COMPOSITIONS FOR CEMENTING WELLS, ALLOWING PRESSURE GAS-CHANNELING IN THE CEMENTED ANNULUS TO BE CONTROLLED

Philippe A. Parcevaux; Bernard M. Piot, both of Saint Etienne, and Claude J. Vercaemer, Sorbiers, all of France, assignors to Etudes et Fabrication Dowell Schlumberger, France

Filed Mar. 30, 1983. Ser. No. 480,334

Claims priority, application France, Apr. 6, 1982, 82 05983; Jan. 24, 1983, 83 01031

Int. Cl.³ C04B *7/35*; E21B *33/14, 43/10*

U.S. Cl. 523—130 **17 Claims**

1. Cement slurry compositions for cementing oil wells having improved properties of the cement and inhibiting pressure gas channeling in the cemented annulus, even at high temperature, said composition consisting essentially of a hydraulic cement, about 5–30% by weight of cement of a compatible styrene (70–30 weight percent)/butadiene (30–70 weight percent) copolymer latex, about 1–20% by weight of latex of a latex stabilizer selected from the group consisting of

lignosulfonates and their partly desulfonated derivatives

sulfonic acid or sulfite modified melamine-formaldehyde resins

formaldehyde/sulfonate naphthalene resins, and

condensation products of bi-nuclear sulfonated phenols and of formaldehyde

and water in an amount such that the total fluid content of water, latex and stabilizer is about 30–70% by weight of cement.

14. In the use of cement slurry composition in oil wells, the improvement which comprises employing the cement slurry composition of claim 1 as said cement slurry.

15. In the process of cementing an oil well up to a temperature of 212°–230° F., the improvement which comprises employing the cement slurry composition of claim 1 whereby pressure gas channeling in the cemented annulus is prevented.

4,537,919

GELATION OF HYDROCARBON SOLUTIONS OF BLENDS OF ASSOCIATING AND NON-ASSOCIATING POLYMERS

Pawan K. Agarwal, Westfield, and Robert D. Lundberg, Bridgewater, both of N.J., assignors to Exxon Research and Engineering Co., Florham Park, N.J.

Filed Aug. 24, 1984, Ser. No. 643,693

Int. Cl.³ C08J *3/00, 3/20*

U.S. Cl. 523—336 **16 Claims**

1. A process for forming a thickened fluid have a viscosity of at least about 50 cps which includes the steps of:

(a) forming two solvent systems, one of an organic liquid and the other of said organic liquid and a polar cosolvent, said polar cosolvent being less than about 15 weight percent of each said solvent system, a viscosity of each said solvent system being less than about 100 cps;

(b) dissolving a water insoluble sulfonated elastomeric polymer in said first solvent system to form a first solution, a concentration of said sulfonated polymer in said first solution being about 0.2 to about 10 weight percent, a viscosity of said first solution being less than about 2000 cps;

(c) dissolving an elastomeric polymer in said second solvent system of said organic liquid to form a second solution, a concentration of said elastomeric polymer in said second solution being about 0.02 to about 10 weight percent, a viscosity of said solution being less than about 2000 cps, said water insoluble sulfonated elastomeric and said elastomeric polymer having the same polymeric backbone;

(d) mixing said first solution and said solution to form a solution of said sulfonated elastomeric polymer and said elastomeric polymer; and

(e) adding about 5 to about 500 volume percent water to said solution of said sulfonated elastomeric polymer and said elastomeric polymer, said water being immiscible with

said solution of said sulfonated elastomeric polymer and said elastomeric polymer, said polar cosolvent transferring from said organic liquid to said water thereby causing the viscosity of said organic liquid to increase to at least 5000 cps.

4,537,920

4H-1-BENZOPYRANS AND LUBRICANT COMPOSITIONS CONTAINING SAME

Jerry M. Roper, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed Aug. 18, 1983, Ser. No. 524,402

Int. Cl.³ C10M *1/20*

U.S. Cl. 252—52 R **17 Claims**

1. A process which comprises reacting one molar proportion of an aminomethylphenol with about 1–10 molar proportions of a 1,3-diketone and about 1–10 molar proportions of an alkali or alkaline earth metal hydroxide at a temperature of at least about 50° C. and a pressure in the range of from atmospheric up to about 1000 psig so as to form a 4H-1-benzopyran.

4,537,921

BLENDED PRESSURE-SENSITIVE ASPHALTIC BASED ADHESIVES

William E. Uffner, Newark; Robert N. White, Etna, both of Ohio, and Edward R. Harrington, Naperville, Ill., assignors to Owens-Corning Fiberglas Corporation, Toledo, Ohio

Division of Ser. No. 407,394, Aug. 12, 1982, Pat. No. 4,478,962.

This application Jan. 30, 1984, Ser. No. 575,248

The portion of the term of this patent subsequent to Apr. 13, 2001, has been disclaimed.

Int. Cl.³ C09J *3/12, 3/30, 7/02*

U.S. Cl. 524—59 **2 Claims**

1. A hot melt blended pressure sensitive adhesive having substantially no cold flow and the ability to stick to cementitious substrates substantially instantaneously upon contact at 40° F., said adhesive consisting essentially of a paving grade asphalt, effective tacky amounts of a depolymerized virgin rubber having a molecular weight from about 10,000 to 110,000, effective viscosity depressing amounts of a terpene resin, and effective cold flow resisting amounts of a non-depolymerized styrene-butadiene copolymer.

4,537,922

SULFUR STABILIZED OXIDIZED POLYOLEFIN COMPOSITION

Irving B. Chang, and Robert E. Beckwith, Jr., both of Morristown, N.J., assignors to Allied Corporation, Morris Township, Morris County, N.J.

Filed Nov. 14, 1983, Ser. No. 551,622

Int. Cl.³ C08F *27/04*

U.S. Cl. 524—82 **11 Claims**

1. A composition comprising an oxidized polyolefin having a number average molecular weight of from 1500 to 6000 and from 0.1 to 25 percent by weight based on the weight of the oxidized polyolefin of a sulfur compound selected from the group consisting of elemental sulfur and sulfur compounds which release elemental sulfur.

4,537,923

POLYALKYLPIPERIDINESULFONIC ACID ESTERS

Mario Siongo, Tafers, and Friedrich Karrer, Zofingen, both of Switzerland, assignors to Ciba Geigy Corporation, Ardsley, N.Y.

Filed Jun. 13, 1983, Ser. No. 503,436

Claims priority, application Switzerland, Jun. 17, 1982, 3743/82

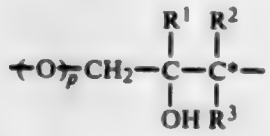
Int. Cl.³ C08K *5/34*; C08G *63/04*

U.S. Cl. 524—100 **9 Claims**

1. A composition of matter containing an acid-curable resin and a compound of the formulae I

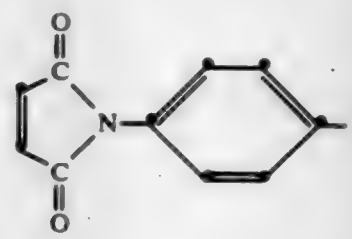
$$B—X—O—SO_2—A)_m \quad (I)$$

in which m is a number 1 to 3, X is a direct bond or a group of the formula III

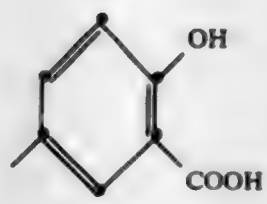


(III)@

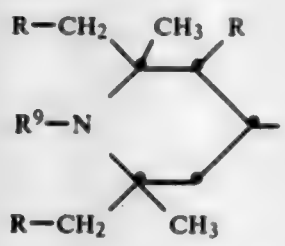
which is attached via C* to the oxygen of the sulfo group, p being zero if the group of the formula III is attached to a nitrogen atom of B, and p otherwise being the number 1, and R^1, R^2 and R^3 independently of one another being hydrogen or methyl, A is C_1–C_{20}-alkyl, C_1–C_4-alkoxy, C_2–C_{12}-alkenyl, C_7–C_{12}-aralkyl, C_6–C_{10}-aryl, C_7–C_{30}-alkaryl, C_5–C_8-cycloalkyl, trifluoromethyl or camphoryl, each of which is unsubstituted or substituted by hydroxyl, a group $—N(R^4)(R^5)$ or $—C(CH_3)_2—CH_2—N(R^6)—C(O)—C(R^7)=CH_2$, in which R^4, R^5 and R^6 are hydrogen or C_1–C_{12}-alkyl and R is hydrogen or methyl, or a group of the formula



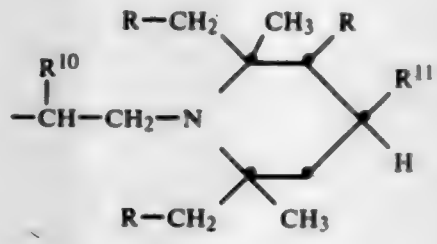
or of the formula



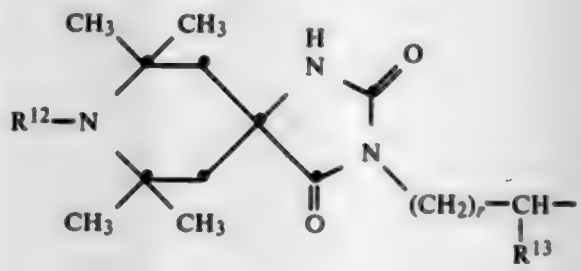
and B, provided that m = 1, is a group of the formulae IV to X



(IV)

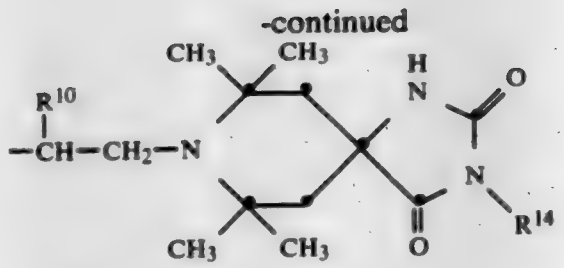


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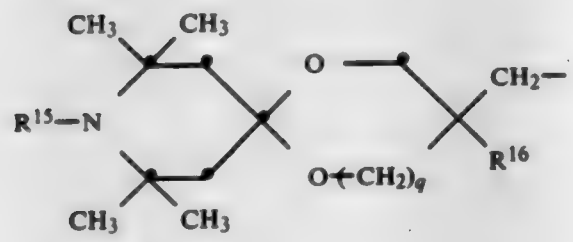


(VI)

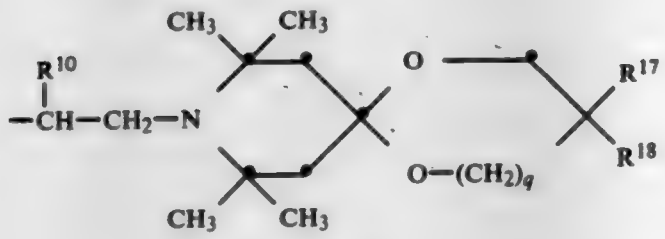
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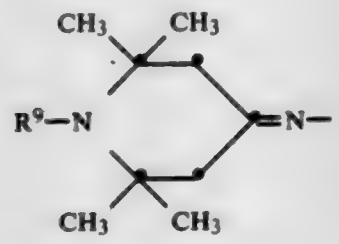
(VII)



(VIII)

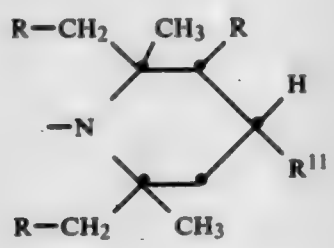


(IX)

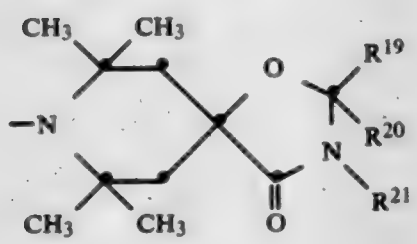


(X)

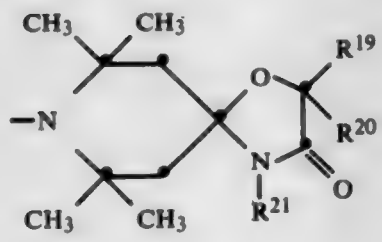
in addition, B, provided that m=1, and provided that X is a group of the formula III, can also be a group of the formulae XI to XVI



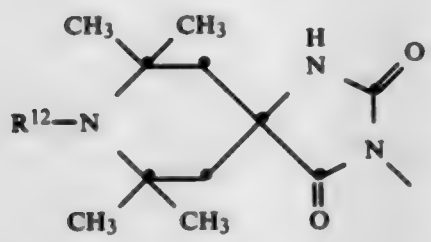
(XI)



(XII)

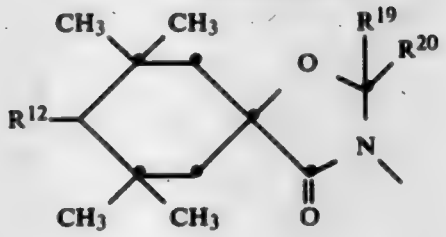


(XIII)

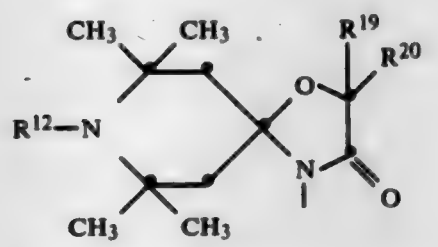


(XIV)

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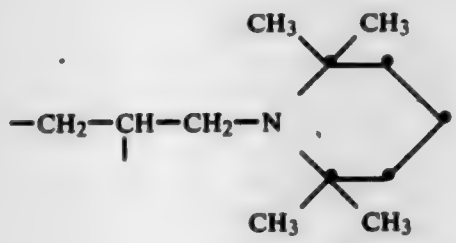


(XV)

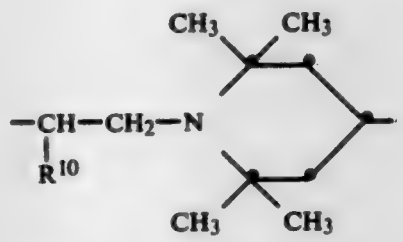


(XVI)

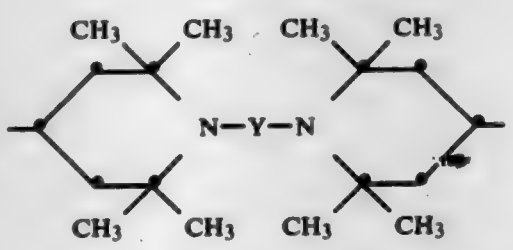
if m=2, B is a group of the formulae XVII to XX



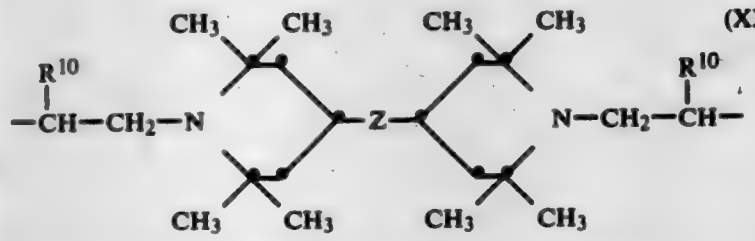
(XVII)



(XVIII)

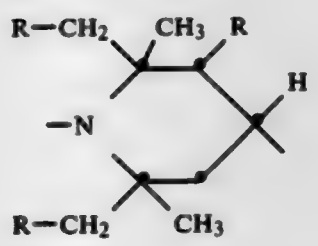


(XIX)

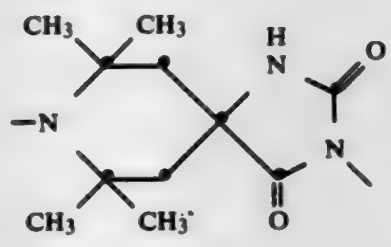


(XX)

in addition, if m=2 and if X is a group of the formula III, B can also be a group of the formulae XXI to XXV

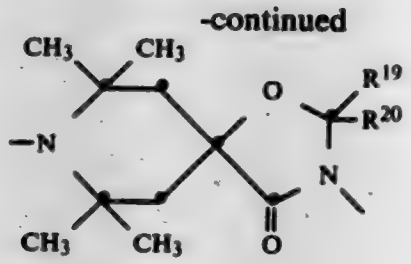


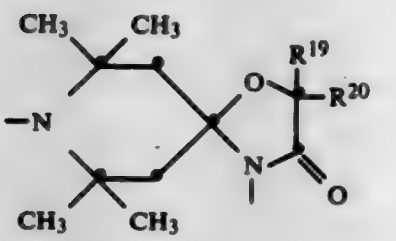
(XXI)

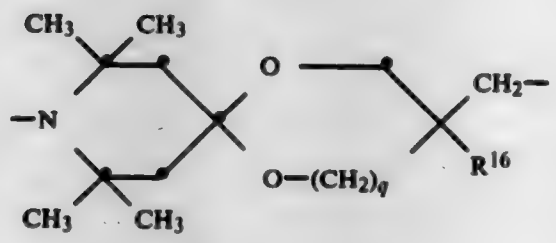


(XXII)

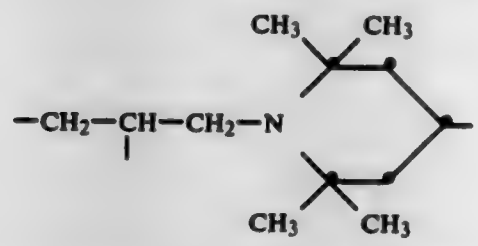
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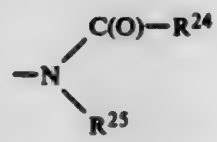




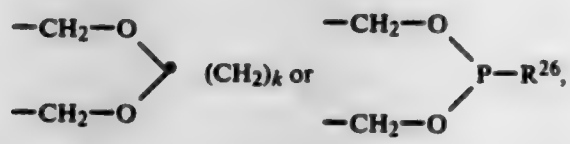
and, if m=3, B is a group of the formula XXVI



and, if the formulae IV to XXV, R is hydrogen or methyl, R^9 is hydrogen, C_1–C_{20}-alkyl, C_3–C_5-alkenyl, C_3–C_5-alkynyl, C_7–C_{12}-aralkyl, C_1–C_{18}-acyl, C_3–C_{10}-alkoxycarbonylalkyl, C_2–C_4-hydroxyalkyl, cyanomethyl, oxyl, a group of the formula $-CH_2-CH(OH)-CH_2-OR^{27}$ or a group of the formula $-C(O)-N(R^{22})(R^{23})$, R^{10} is hydrogen, C_1–C_4-alkyl, C_1–C_4-alkoxy, phenyl, phenoxy which is unsubstituted or substituted in the phenyl nucleus by C_1–C_4-alkyl, or phenoxymethyl, R^{11} is hydrogen, hydroxyl, C_1–C_{12}-alkoxy, C_3–C_5-alkenyloxy, C_1–C_{12}-acyloxy, C_1–C_{12}-acylamino, C_2–C_{14}-alkoxycarbonyl or a group of the formula



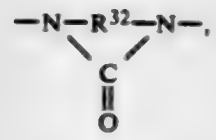
$-C(O)-N(R^{24})(R^{25})$, $-OC(O)-N(R^{24})(R^{25})$, or $-CH_2-COOR^{24}$, R^{12} is hydrogen, C_1–C_{12}-alkyl, C_3–C_5 alkenyl, C_3–C_5-alkynyl, C_7–C_{12}-aralkyl, C_1–C_{18}-acyl, cyanomethyl or C_2–C_4-hydroxyalkyl, R^{13} is hydrogen or C_1–C_4-alkyl, R^{14} is hydrogen, C_1–C_{20}-alkyl, C_3–C_5-alkenyl C_3–C_5-alkynyl, C_7–C_{12}-aralkyl or C_6–C_8-cycloalkyl, R^{15} is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_7–C_{12}-aralkyl, C_1–C_{18}-acyl, cyanomethyl or C_2–CHD 4-hydroxyalkyl, R^{16} is hydrogen, methyl or ethyl, R^{17} and R^{18} independently of one another are hydrogen or C_1–C_6-alkyl or R^{17} and R^{18} together are one of the groups of the formulae



R^{19} and R^{20} independently of one another are hydrogen, C_1–C_{12}-alkyl, phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, C_5–C_8-cycloalkyl or C_7–C_{12}-aralkyl or R^{19} and R^{20} together are C_4–C_{11}-alkylene, R^{21} is hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, C_1–C_{18}-acyl or C_7–C_{12}-aralkyl, R^{22} and R^{23} independently of one another are hydrogen, C_1–C_{12}-alkyl, C_3–C_5-alkenyl, phenyl or cyclohexyl, R^{24} is C_1–C_{12}-alkyl, R^{25} is hydrogen or C_1–C_{12}-alkyl, R^{26} is C_1–C_4-alkyl, C_1–C_{12}-alkoxy, phenyl, benzyl or phenoxy, R^{27} is C_1–C_4-alkyl or phenyl, r is a number 1 to 4, q is the number 0 or 1, k is a number 4 to 11, Y is ethylene, 1,4-but-2-enylene or o-, p- or m-xylylene, Z is a group of the formulae $-O-R^{28}-O-$, $-OC(O)-R^{29}-C(O)O-$, $-N(R^{30})-C(O)-R^{31}-C(O)-N(R^{30})-$, $-N(R^{30})-C(O)-C(O)-N(R^{30})$, $-C(O)O-R^{31}-OC(O)-$ or

(XXIII)

(XXIV)



(XXV)

R^{28} is C_2–C_{20}-alkylene, o-, m- or p-xylylene or 1,2-, 1,3- or 1,4-dimethylenecyclohexylene, R^{29} is C_2–C_{20}-alkylene, o-, m- or p-phenylene or C_8–C_{12}-arylenedialkylene, R^{30} is hydrogen, C_1–C_{12}-alkyl, C_7–C_{12}-aralkyl, C_5–C_8-cycloalkyl or phenyl which is unsubstituted or substituted by C_1–C_4-alkyl, R^{31} is C_2–C_{20}-alkylene or o-, m- or p-phenylene or 1,2-, 1,3- or 1,4-cyclohexylene, each of which is unsubstituted or substituted by C_1–C_4-alkyl, and R^{32} is ethylene or propylene, and acid addition salts thereof.

(XXVI)

4,537,924

QUADRATIC ACID AMIDE DERIVATIVES, THEIR USE AS STABILIZERS, AND SYNTHETIC RESINS TREATED THEREWITH

Konrad Rombusch; Günther Maahs, and Wolfgang Schäfer, all of Marl, Fed. Rep. of Germany, assignors to Chemische Werke Huels, AG, Marl, Fed. Rep. of Germany

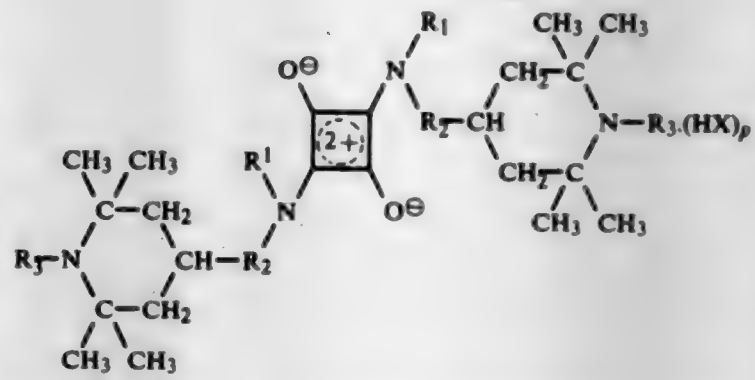
Filed Sep. 14, 1983, Ser. No. 532,127

Claims priority, application Fed. Rep. of Germany, Sep. 14, 1982, 3233954

Int. Cl.³ C08K 5/34

U.S. Cl. 524—103 **20 Claims**

1. A quadratic acid bisamide or salt thereof having the formula



wherein R_1 is H, $C_{1\text{-}12}$ alkyl or OH-substituted $C_{2\text{-}12}$ alkyl;

R_2 is $-(CH_2)_m-O-_n$, wherein m is an integer of 2–6; n is 0 or 1;

R_3 is H, CH_3, CH_2-CH_2-OH, CH_2-COOH or CH_2-CH_2-COOH;

HX is an acid equivalent of an unsubstituted or substituted monobasic, dibasic or polybasic organic acid of not more than 20 carbon atoms, or of sulfuric or phosphoric acid; and

$0 \leqq p \leqq 2$.

4,537,925

POLYPHENYLENE ETHER BLENDS CONTAINING ELECTROSTATICALLY BOUND ADDITIVE

Bruce A. Luxon, Stamford, Conn., assignor to General Electric Company, Pittsfield, Mass.

Continuation-in-part of Ser. No. 596,559, Apr. 4, 1984, abandoned. This application Nov. 7, 1984, Ser. No. 669,461

Int. Cl.[3] C08K *5/42, 5/51*

U.S. Cl. 524—151 **19 Claims**

1. A thermoplastic composition comprising:

(a) a polyphenylene ether resin, alone, or together with another non-ionomerized thermoplastic polymer;

(b) an alkenyl aromatic resin having pendant polar ionic groups thereon; and

(c) one or more property modifying additives bound to the pendant ionic groups of component (b) by electrostatic attraction.

4,537,926

AQUEOUS CHIP RESISTANT COATING COMPOSITION

Daniel M. Kivel, Troy, and Gerhard M. Weber, Detroit, both of Mich., assignors to Grow Group, Inc., New York, N.Y.

Division of Ser. No. 417,857, Sep. 14, 1982, Pat. No. 4,456,507, which is a division of Ser. No. 275,901, Jun. 22, 1981, abandoned. This application Apr. 6, 1984, Ser. No. 597,671

Int. Cl.[3] C08K *5/05;* **C08L** *37/00*

U.S. Cl. 524—388 **20 Claims**

1. An aqueous chip-resistant coating composition capable of being applied to a substrate, comprising (a) about 50 to about 90 percent by weight (pbw) film-forming latex binder selected from the group consisting of:

(i) an ethylene vinyl acetate copolymer;

(ii) a carboxylated ethylene vinyl acetate;

(iii) epoxy functional acrylic resin;

(iv) carboxylated styrene-butadiene resin;

(v) carboxylated acrylic;

(vi) hydroxy functional acrylic;

(vii) self-crosslinking acrylic; and

(viii) carboxylated polyvinyl chloride acrylic, and mixtures thereof, dispersed in the water;

(b) about 10 to about 50 pbw filler mixed with the binder to form a composition having a viscosity of at least 5000 centipoise; and

(c) an effective amount of a humectant.

4,537,927

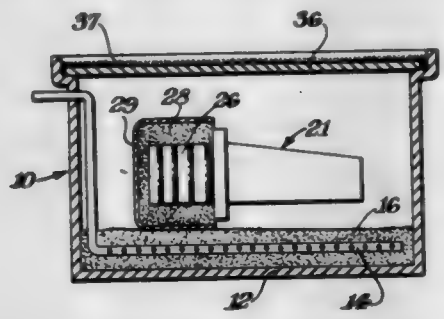
DIFFUSION COATING MIXTURES

Alfonso L. Baldi, Wynnewood, Pa., assignor to Alloy Surfaces Company, Inc., Wilmington, Del.

Continuation-in-part of Ser. No. 398,830, Jul. 16, 1982, and a continuation-in-part of Ser. No. 310,085, Oct. 19, 1981, and a continuation-in-part of Ser. No. 242,350, Mar. 10, 1981, and a continuation-in-part of Ser. No. 851,504, Nov. 14, 1977. This application Jan. 17, 1984, Ser. No. 571,510

Int. Cl.[3] C08K *3/10*

U.S. Cl. 524—407 **1 Claim**



1. In a combination of materials for masking against diffusion coating,

(a) a mixture of about 56¼% powdered nickel, about 25% powdered inert refractory, and the balance a prefired combination of nickel powder, aluminum powder, chromium powder and inert refractory powder, and

(b) a solution of resin binder in a readily-evaporated solvent, the solution (b) being in an amount large enough to slurry the mixture (a).

4,537,928

RUBBER COMPOSITIONS CONTAINING ALUMINUM PHOSPHATE

Marvin M. Johnson, and Max P. McDaniel, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 7, 1983, Ser. No. 559,135

Int. Cl.[3] C08K *3/32, 3/10*

U.S. Cl. 524—417 **22 Claims**

1. A vulcanizable rubber composition comprising:

(a) a vulcanizable natural rubber or vulcanizable synthetic rubber

(b) a reinforcing amount of aluminum phosphate and,

(c) additive effective for vulcanizing.

4,537,929

HIGH IMPACT NYLON COMPOSITION

Khemchand J. Nangrani, Evansville, Ind., assignor to Plastic Specialties and Technologies, Inc., Neshanic Station, N.J.

Filed Jan. 20, 1984, Ser. No. 572,334

Int. Cl.[3] C08K *3/40*

U.S. Cl. 524—504 **25 Claims**

1. A fiber-reinforced molding composition comprising a grafted polyamide resin and a fiber-reinforcing material, said grafted polyamide resin obtained by heating a polyamide resin with an adduct of a polyethylene polymer and an α,β-ethylenically unsaturated dicarboxylic acid compound.

4,537,930

COMPOSITION OF A POLYCARBONATE RESIN AND A SELECTIVELY HYDROGENATED COPOLYMER OF A VINYL AROMATIC COMPOUND AND AN OLEFINIC ELASTOMER

Jan Bussink, Bergen op Zoom; Johannes W. J. DeMunck, Huybergen, and Petrus C. A. Marie van Abeelen, Gilze, all of Netherlands, assignors to General Electric Company, Pittsfield, Mass.

Continuation of Ser. No. 225,102, Jan. 14, 1981, abandoned, Continuation-in-part of Ser. No. 833,364, Sep. 14, 1977, abandoned. This application Dec. 29, 1982, Ser. No. 454,366

Int. Cl.[3] C08L *69/00*

U.S. Cl. 524—505 **26 Claims**

1. A thermoplastic composition having superior resistance to impact fracture in thick-walled molded articles and improved environmental solvent resistance comprising an intimate blend of:

(a) an aromatic polycarbonate resin; and

(b) up to 3.5 parts by weight, based on 100 parts by weight of components (a) and (b) combined, of a selectively hydrogenated linear copolymer of a vinyl aromatic compound $(A)_n$ and $(A^1)_n$ and an olefinic elastomer (B), of the type A-B-A^1, wherein n is an integer from 1 to 10.

4,537,931

FLOW-REGULATED LATEX SYSTEMS

Gunilla E. Gillberg-La Force, Summit, and Helen A. Kravas, Chatham, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 14, 1983, Ser. No. 550,844

The portion of the term of this patent subsequent to Nov. 15, 2000, has been disclaimed.

Int. Cl.[3] C08L *9/08, 9/10*

U.S. Cl. 524—510 **11 Claims**

1. A shear-thinning aqueous adhesive composition comprising (1) between about 0.1-25 weight percent of water-soluble

associative polyether surfactant, based on the total weight of polymeric components, wherein the associative polyether surfactant is a polymer consisting of a hydrophilic polyoxyalkylene backbone with at least two pendant hydrophobic side chains; (2) water-soluble dihydric phenol-aldehyde resin; and (3) a latex of curable elastomer.

2. A shear-thinning aqueous adhesive composition in accordance with claim 1 wherein the surfactant is a copolymer prepared by copolymerizing a 1,3-dioxolane with a C_8–C_{36} monoepoxide.

4,537,932

RUBBERY CONJUGATED DIENE POLYMERS TERMINATED WITH HYDROCARBYL PHOSPHITES

Carl A. Uraneck, and John E. Burleigh, both of Bartlesville, Okla., assignors to Phillips Petroleum Company, Bartlesville, Okla.

Division of Ser. No. 500,680, Jun. 3, 1983, Pat. No. 4,485,833. This application Jul. 30, 1984, Ser. No. 636,052

Int. Cl.³ C08F *8/40*

U.S. Cl. 524—572 **29 Claims**

1. A rubbery conjugated diene polymer, wherein said diene polymer is a polymer of at least one conjugated diene, or copolymer thereof with at least one monovinylarene wherein the copolymerized conjugated diene content is at least 60 weight percent, characterized by treatment of the polymer in hydrocarbon solution as polymer-alkali metal with at least one mole of trihydrocarbyl phosphite or trihydrocarbyl thiophosphite per g-atom of alkali metal in the polymer such that the resulting said diene polymer contains about 0.005 to 0.3 weight percent phosphorus as P.

4,537,933

BLENDS OF POLYOLEFIN GRAFT POLYMERS AND ASA POLYMERS

Leigh E. Walker, Lewiston, and Gautam R. Ranade, Grand Island, both of N.Y., assignors to Occidental Chemical Corporation, Niagara Falls, N.Y.

Filed Oct. 12, 1983, Ser. No. 541,399

Int. Cl.³ C08L *51/04, 51/06, 27/06*

U.S. Cl. 525—71 **24 Claims**

1. A polymer composition comprising:

a polymer of a vinyl aromatic compound, an unsaturated nitrile and a base polymer selected from the group consisting of chlorinated polyethylene, an acrylic polymer, and an ethylene, propylene polyene modified polymer, and

a vinyl halide polyolefin graft polymer wherein the vinyl halide alone or in combination with up to 50 percent by weight based on the total weight of monomer of an ethylenically unsaturated compound copolymerizable therewith, and in the liquid state, is polymerized with a polyolefin which comprises a polymer of an aliphatic hydrocarbon monoolefin of 2 to about 8 carbon atoms, and which is in the solid state and is substantially insoluble in the monomer but absorbs a substantial amount of the monomer.

4,537,934

THERMOSETTING ADHESIVE

Jürgen Fock, Düsseldorf, and Dietmar Schedlitzki, Essen, both of Fed. Rep. of Germany, assignors to Th. Goldschmidt AG, Essen, Fed. Rep. of Germany

Filed Jun. 18, 1981, Ser. No. 275,016

Claims priority, application Fed. Rep. of Germany, Jul. 1, 1980, 3024869

Int. Cl.³ C08F *8/30*

U.S. Cl. 525—123 **6 Claims**

1. A thermosetting adhesive composition comprising

(a) a copolymer obtained by the polymerization of

(a_1) 35 to 70 weight percent of one or more alkyl esters of acrylic or methacrylic acid having 1 to 8 carbon atoms in the alkyl radical,

(a_2) 20 to 45 weight percent of acrylonitrile, methacrylonitrile or vinyl acetate,

(a_3) 10 to 20 weight percent of one or more ω-hydroxyalkyl esters of acrylic or methacrylic acid having 1 to 5 carbon atoms in the alkyl radical,

(a_4) 0 to 15 weight percent of acrylamide or methacrylamide, and

(a_5) 0 to 35 weight percent of acrylic or vinyl monomers, whose composition is different from that of components (a_1) to (a_4),

wherein the sum of the monomers (a_1) to (a_5) totals 100 weight percent and the copolymer possesses a limiting viscosity of 0.05 to 0.6 (100 $ml \cdot g^{-1}$) at 25° C. in methyl acetate; and

(b) one or more polyisocyanates or the partial reaction product of a polyisocyanate with a polyol, the product having at least 2 isocyanate groups per molecule on the average,

wherein components (a) and (b) are present in a ratio such that one hydroxyl group of component (a) corresponds to 1 to 1.5 isocyanate groups of component (b).

4,537,935

COMPOSITION FOR COLD DRAWN FILM

Isao Yoshimura, Fujisawa; Hideo Hata, and Takashi Kaneko, both of Yokohama, all of Japan, assignors to Asahi-Dow Limited, Tokyo, Japan

Continuation of Ser. No. 457,364, Jun. 12, 1983, abandoned, which is a division of Ser. No. 213,461, Dec. 5, 1980, Pat. No. 4,499,241, which is a division of Ser. No. 949,253, Oct. 6, 1978, Pat. No. 4,277,578. This application Oct. 29, 1984, Ser. No. 665,492

Claims priority, application Japan, Oct. 11, 1977, 52-120917; Nov. 22, 1977, 52-139431; May 30, 1978, 53-63870; May 30, 1978, 53-63872

Int. Cl.³ C08L *31/04, 23/16, 23/10, 23/08*

U.S. Cl. 525—222 **10 Claims**

1. A composition consisting essentially of a homogeneous blend of one of the specific combinations of components, namely the combination of (A)+(B)+(C); wherein

(A) is at least one selected from the group consisting of copolymers of ethylene with vinyl ester monomers, with vinyl ester monomers,

(B) is an elastomer having a density of not more than 0.91 g/cm^3 and made of an ethylene-α-olefin copolymer, and

(C) is crystalline polypropylene and the ratios of the components are such as to satisfy $0.07 \leqq B/(A+B) \leqq 0.70$ and $0.07 \leqq C/(A+B) \leqq 0.8$.

4,537,936

DIENE RUBBER COMPOSITION, METHOD OF PREPARING THE SAME AND TIRE EMPLOYING SAID COMPOSITION

Hiroyoshi Takao, Chiba; Keisaku Yamamoto, Ichihara; Akio Imai, Ichihara; Nobuyuki Yoshida, Ichihara; Hiroshi Furukawa, Kobe; Yuichi Saito, Nishinomiya, and Akio Okumura, Kobe, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka and Sumitomo Rubber Industries, Limited, Kobe, both of, Japan

Filed Apr. 22, 1982, Ser. No. 371,020

Claims priority, application Japan, Apr. 30, 1981, 56-66381; Apr. 30, 1981, 56-66679

Int. Cl.³ C08L *9/00, 9/06*

U.S. Cl. 525—236 **5 Claims**

1. A diene rubber composition comprising 25 to 90 parts by weight of at least one high molecular weight diene rubber (A) having an intrinsic viscosity [η] of 2.5 to 5, a $\overline{M}w/\overline{M}n$ value of not more than 2.0 and a glass transition point of not lower than −50° C. and 75 to 10 parts by weight of at least one low molecular weight diene rubber (B) having an intrinsic viscosity [η] of 0.1 to 0.7 and a glass transition point of not lower than −50° C., said composition having an average intrinsic viscosity of at least 1.8.

4,537,937
CHELATING RESIN AND PROCESS FOR MAKING SAME

David W. Cawlfield; William M. Moore, and John L. Stubbs, Jr., all of Cleveland, Tenn., assignors to Olin Corporation, Cheshire, Conn.

Filed Feb. 13, 1984, Ser. No. 579,233
Int. Cl.[3] C08L *79/00*
U.S. Cl. 525—417 27 Claims

1. A process for preparing a resin chelating agent comprising:

(a) reacting an aqueous suspension of a polyethyleneimine with a polycarboxylic acid to produce a crosslinked polyamido precursor resin;

(b) breaking up the precursor resin by saturation with a first polar solvent;

(c) grinding the broken precursor resin to a uniform particle size below about 1 millimeter;

(d) suspending said ground precursor resin in a second polar solvent and reacting said precursor resin in a mixture comprising carbon bisulfide and a hydroxyl containing compound selected from the group consisting of alkali metal hydroxides, alkaline earth metal hydroxides, and ammonium hydroxide, whereby said resin chelating agent is produced; and

(e) separating said resin from said mixture.

4,537,938
PROCESS FOR PREPARING POLYOLEFINS

Kazuo Matsuura, Ota; Yutaka Shikatani, Yokohama; Hirofumi Kamiishi, Yokohama; Nobuyuki Kuroda, Yokohama, and Mituji Miyoshi, Fujisawa, all of Japan, assignors to Nippon Oil Company, Limited, Tokyo, Japan

Filed Mar. 21, 1984, Ser. No. 591,912
Claims priority, application Japan, Mar. 29, 1983, 58-51585
Int. Cl.[3] C08F *4/44*; C01B *15/14*
U.S. Cl. 526—97 6 Claims

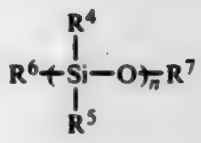
1. A process for preparing a polyolefin, comprising polymerizing at least one olefin in the presence of a catalyst, which catalyst comprises a combination of the following components [I] and [II]:

[I] a solid component obtained by intercontacting and reacting the following components (1) through (4):

(1) a compound obtained by treating an oxide of an element of Groups II-IV in the Periodic Table with a compound represented by the general formula $R^1_mSi(OR^2)_nX_{4-m-n}$, used in an amount of 0.0001 to 2 mol per gram of the oxide of an element of Groups II-IV and heating them at a temperature in the range of 0° C. to 500° C. from 10 minutes to 24 hours, wherein R^1 and R^2 being each a hydrocarbon radical having 1 to 24 carbon atoms, a hydrocarbon radical having 1 to 18 carbon atoms containing oxygen, sulfur or nitrogen, or hydrogen, X being a halogen atom, m being $0 \leqq m < 4$ and n being $0 \leqq n \leqq 4$, provided $0 \leqq m+n \leqq 4$,

(2) a reaction product obtained by the reaction of a magnesium halide and a compound represented by the general formula $Me(OR^3)_nX_{z-n}$, where the reaction ratio of the magnesium halide and the compound of the general formula $Me(OR^3)_nX_{z-n}$ being in the range of 1:0.05 to 1:1 in terms of Mg:Me molar ratio, wherein Me, being Na, Mg, Ca, Zn, Cd, Al, B, Ga, Ge, Sn, P, Cr, Mn, Fe, Co, or Ni, with the limitation that silicon, titanium and vanadium being excluded, R^3 being a hydrocarbon radical having 1 to 24 carbon atoms, X being a halogen atom, z being the valence of Me, and n being $0 < n \leqq z$,

(3) a compound represented by the general formula



wherein R^4, R^5 and R^6 being each a hydrocarbon radical having 1 to 24 carbon atoms, an alkoxy group, hydrogen, or a halogen atom, R^7 being a hydrocarbon radical having 1 to 24 carbon atoms, and n being $1 \leqq n \leqq 30$, and

(4) a titanium compound and/or a vanadium compound;

wherein conditions for the intercontacting and reacting of components (1) through (4) being:

(i) intercontacting 0.01 to 5 grams of component (2) per gram of component (1) and at a temperature of 20° to 400° C.; (ii) reacting 0.01 to 5 grams of component (3) per gram of the contacted product of components (1) and (2); and (iii) reacting that reaction product with 1 to 20 wt. % of the titanium compound and/or vanadium compound of component (4); and

an organometallic compound.

4,537,939
PROCESS FOR PRODUCTION OF POLYMERS HAVING INCREASED 1,2-MICROSTRUCTURE

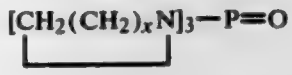
James E. Hall, Akron, Ohio, and Donald N. Schulz, Annandale, N.J., assignors to The Firestone Tire & Rubber Company, Ohio

Division of Ser. No. 394,066, Jul. 1, 1982, Pat. No. 4,476,240.
This application Jun. 4, 1984, Ser. No. 617,407
Int. Cl.[3] C08F *4/48*
U.S. Cl. 526—179 20 Claims

1. A process for the preparation of a homopolymer of a 1,3-diene monomer said homopolymer containing a 1,2-microstructure ranging between about 20 and about 65 percent which process comprises polymerizing said 1,3-diene monomer in an in inert non-polar solvent system in the presence of a catalytically effective amount of a catalyst comprising:

(a) an anionic initiator based on lithium, said anionic initiator being selected from the group consisting of organolithium catalysts having the formula $R(Li)_x$ wherein R represents a hydrocarbyl radical of 1 to 20 carbon atoms per R group and x is an integer of 1–4, phenyllithium, naphthyllithium, 4-butylphenyllithium, p-tolyllithium, 4-phenylbutyllithium, 4-butylcyclohexyllithium, 4-cyclohexylbutyllithium, 1,4-dilithiobutane, 1,10-dilithiodecane, 1,20-dilithioeicosane, 1,4-dilithionaphthalene, 9,10-dilithioanthracene, 1,2-dilithio-1,2-diphenylethane, 1,3,5-trilithiopentane, 1,5,15-trilithioeicosane, 1,3,5-trilithiocyclohexane, 1,3,5,8-tetralithiodecane, 1,5,10,20-tetralithioeicosane, 1,2,4,6-tetralithiocyclohexane, 4,4'-dilithiobiphenyl, lithium dialkyl amines, lithium dialkyl phosphines, lithium alkyl aryl phosphines and lithium diaryl phosphines, and

(b) a phosphine oxide modifier represented by the structural formula:



wherein x represents an integer of 3, 4 or 5, in which the molar ratio of the anionic initiator (a) to the phosphine oxide modifier (b) ranges between about 1.0/0.1 to about 1.0/10.0 in which the temperature of polymerization initiation is at least 0° C. and in which the millimoles of the anionic initiator per 100 grams of the 1,3-diene monomer ranges between about 0.2 and about 100.

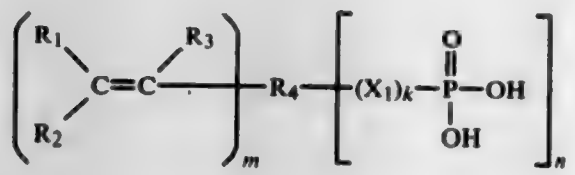
4,537,940

ADHESIVE COMPOSITIONS

Ikuo Omura; Junichi Yamauchi, both of Kurashiki; Yoshinori Nagase, Takatsuki, and Fumiko Uemura, Kurashiki, all of Japan, assignors to Kuraray Co., Ltd., Kurashiki, Japan

Continuation of Ser. No. 570,292, Jan. 13, 1984, Pat. No. 4,499,251. This application Oct. 10, 1984, Ser. No. 659,455
Claims priority, application Japan, Jan. 21, 1983, 58-9170
Int. Cl.[3] C09K *3/00;* C09J *3/14;* C08F *30/02*
U.S. Cl. 526—278 12 Claims

1. An adhesive composition which comprises 1 part by weight of (a) a compound of the general formula:



wherein

R_1 represents H, a hydrocarbon group of 1–6 carbon atoms, a hydrocarbon group of 1–6 carbon atoms containing halogen, COOR', wherein R' represents a hydrocarbon group of 1–20 carbon atoms, a hydrocarbon group of 1–20 carbon atoms containing halogen or halogen;

R_2 is as defined for R_1;

R_3 represents H, a hydrocarbon group of 1–6 carbon atoms, a hydrocarbon group of 1–6 carbon atoms containing halogen, halogen or CN;

H_4 represents $(COX_2)_{m1}(CO)_{m2}(ZCO)_{m3}(Z)_{m4}Ra$ wherein Ra represents an organic residue of 6–60 carbon atoms and a valency of m+n; m1, m2, m3 and m4 each represents an integer of 0–4 and satisfies $m1+m2+m3+m4 \leqq m$; X_2 represents O, S or NRb, wherein Rb represents H or alkyl of 1–4 carbon atoms and Z represents O or S;

X_1 is as defined for X_2;

m is an integer of 1–4;

n is an integer of 2–6; and

k is 0 or 1,

and 0–199 parts by weight of (b) a vinyl monomer copolymerizable with the aforesaid compound.

4,537,941

LIGNIN-MODIFIED PHENOLIC ADHESIVES FOR PRESSED WOOD PRODUCTS

Stamatis M. Kambanis, Toronto; Antoine Berchem, Rosemere; Dennis Gregoire, Laval, and Jaroslav Rybicky, Brampton, all of Canada, assignors to Reichhold Limited, Ontario, Canada

Filed Aug. 28, 1984, Ser. No. 644,949
Int. Cl.[3] C08G *8/28;* C08H *5/02*
U.S. Cl. 527—403 35 Claims

1. A process for the preparation of a lignin-modified phenol-formaldehyde resin which comprises reacting together phenol, formaldehyde, lignosulfonate, potassium ferricyanide, and an alkali or alkaline earth basic catalyst in the following ratios:

(a) phenol/formaldehyde: from 1:1.8 to 1:3.0, on a molar basis;

(b) phenol/basic catalyst: from 1:0.1 to 1:0.5, on a molar basis;

(c) phenol/potassium ferricyanide: from 100:1 to 10:1, on a weight basis; and

(d) phenol/lignosulfonate: from 1:0.1 to 1:0.5 on a weight basis as lignosulfonate solids, or from 1:0.2 to 1:1.0 on a weight basis as lignosulfonate liquor containing approximately 50% by weight solids,

and continuing the reaction until a desired viscosity is reached, provided that the potassium ferricyanide is added either with or before the phenol.

23. A modified phenol-formaldehyde resin containing lignosulfonate, obtained by reacting together phenol, formaldehyde, lignosulfonate, potassium ferricyanide, and an alkali or alkaline earth basic catalyst in the following ratios:

(a) phenol/formaldehyde: from 1:1.8 to 1:3.0, on a molar basis;

(b) phenol/basic catalyst: from 1:0.1 to 1:0.5, on a molar basis;

(c) phenol/potassium ferricyanide: from 100:1 to 10:1, on a weight basis; and

(d) phenol/lignosulfonate: from 1:01 to 1:0.5 on a weight basis as lignosulfonate solids, or from 1:0.2 to 1:1.0 on a weight basis as lignosulfonate liquor containing approximately 50% by weight solids, and continuing the reaction until a desired viscosity is reached, provided that the potassium ferricyanide is added either with or before the phenol.

4,537,942

POLYHYDRIDOSILANES AND THEIR CONVERSION TO PYROPOLYMERS

Katherine A. Brown-Wensley, Lake Elmo, and Robert A. Sinclair, St. Paul, both of Minn., assignors to Minnesota Mining and Manufacturing Company, St. Paul, Minn.

Continuation-in-part of Ser. No. 579,017, Feb. 10, 1984, abandoned. This application Apr. 6, 1984, Ser. No. 597,540
Int. Cl.[3] C08G *77/06*
U.S. Cl. 528—12 19 Claims

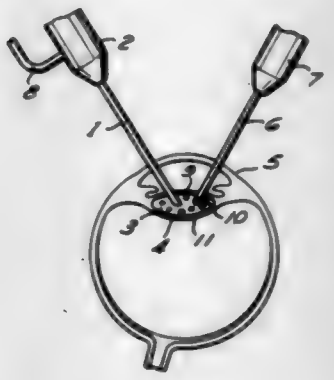
1. A polyhydridosilane having a catenated silicon backbone having an average of 20 to 4000 silicon atoms with a number of hydride atoms per silicon atom in the range of 0.3 to 2.2, at least 0.1 gram of said polyhydridosilane being soluble at 20° C. in 100 grams of at least one of the organic solvents selected from the group consisting of tetrahydrofuran, toluene, and methylene chloride, said polyhydridosilane being tractable and moisture-sensitive.

4,537,943

CORRECTION OF DEFECTS IN THE EYE AND COMPOSITIONS THEREFOR

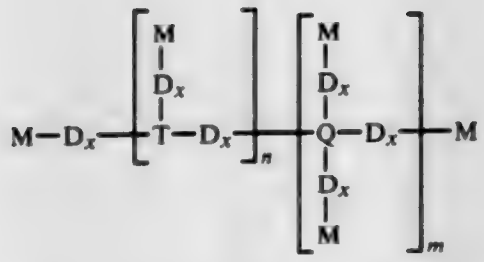
Thomas D. Talcott, Irvine, Calif., assignor to Innovative Surgical Products, Inc., Santa Ana, Calif.

Filed Jul. 21, 1983, Ser. No. 515,789
Int. Cl.[3] C08G *77/06*
U.S. Cl. 528—15 24 Claims



1. A composition for forming in vivo a lens in the eye of a human being or other animal, said composition being substantially curable at body temperature to form a lens which is optically clear and remains so in the presence of physiological fluids, said composition being free of filler material and comprising:

(a) a crosslinkable organosiloxane polymer containing crosslinkable hydrogen or alkenyl groups and having the average formula:



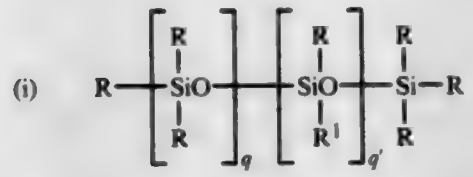
(I)

wherein:

M is a monofunctional, silicon-containing, chain capping residue; D is a difunctional, siloxane monomer unit, T is a trifunctional, siloxane monomer unit; and Q is a tetrafunctional siloxane monomer unit; and m and n are average numbers whose total is from about 2 to about 1000, n being a positive number greater than zero, m being zero or a positive number greater than zero; the average degree of polymerization of said polymer being from about 100 to about 20,000, the value of said degree of polymerization and m and n determining the average value of x;

(b) an organosiloxane crosslinker polymer containing alkenyl groups when polymer (a) contains said crosslinkable hydrogen groups or hydrogen groups when said polymer (a) contains said crosslinkable alkenyl groups, polymer (b) having at least one of the following general formulae (i), (ii) and (iii):

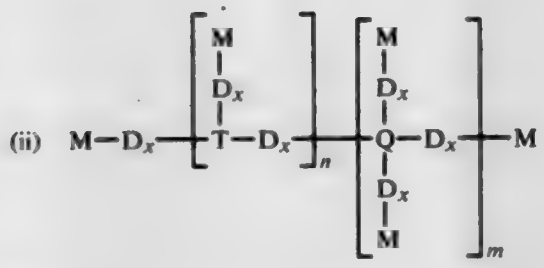
(VIII)



(i)

wherein the R substituents are substituted or unsubstituted and are the same or different and are selected from the group consisting of alkyl, aryl, alkaryl and aralkyl; R^1 is hydrogen or alkenyl; and q is an average number from about 1 to 250 times the value of q', q' being an average number of from about 3 to 20; the material of Formula VIII having an average degree of polymerization of from about 50 to 5,000, the average value of q being determined by the difference between the degree of polymerization and the average value of q';

(VIII A)



(ii)

wherein

M is a monofunctional, silicon-containing, chain-capping residue;

D is a difunctional siloxane monomer unit;

T is a trifunctional siloxane monomer unit; and

Q is a tetrafunctional siloxane monomer unit; and

wherein n and x are average positive numbers, m is 0 or an average positive number, the total of n+m being from about 2 to 100 and, when m=0, n alone has these values, the degree of polymerization (DP) being from 50 to 5,000; and

(VIII B)



(iii)

wherein R and R^1 are as defined above, n is an average number substantially equal to the average degree of polymerization of the material which is from about 50 to 5,000; and

(c) a platinum complex catalyst capable of promoting a crosslinking reaction between said hydrogen or alkenyl groups in polymer (a) and said alkenyl or hydrogen groups in polymer (b).

4,537,944

ROOM TEMPERATURE CURABLE POLYORGANOSILOXANE COMPOSITION

Takafumi Imai, and Fumihiko Kobayashi, both of Ohta, Japan, assignors to Toshiba Silicone Co., Ltd., Tokyo, Japan

Filed Jun. 21, 1984, Ser. No. 623,275

Claims priority, application Japan, Jul. 11, 1983, 58-125649

Int. Cl.³ C08G *77/06*

U.S. Cl. 528—18 **20 Claims**

1. A room temperature curable polyorganosiloxane composition comprising:

(A) 100 parts by weight in total of:

(1) a polydiorganosiloxane of the general formula:

$$R_a^1(R^2O)_{(3-a)}SiO—R_2SiO—_nSi(OR^2)_{(3-a)}R_a^1$$

wherein R and R^1 are the same or different and represent a monovalent substituted or unsubstituted hydrocarbon group, R^2 represents a monovalent group selected from the group consisting of alkyl groups having 1 to 4 carbon atoms and alkoxyalkyl groups having 1 to 6 carbon atoms in total, a represents a number of 0 or 1 and n represents a number for controlling the viscosity of (a) from 100 to 500,000 cP at 25° C., and

(2) a silane of the general formula:

$$R_b^3Si(OR^4)_{4-b}$$

wherein R^3 represents a monovalent substituted or unsubstituted hydrocarbon group, R^4 represents a monovalent group selected from the group consisting of alkyl groups having 1 to 4 carbon atoms and alkoxyalkyl groups having 1 to 6 carbon atoms in total and b represents a number of 0 or 1, or a partially hydrolyzed condensate thereof with the proviso that the amount of (A)(1) is 85 to 100 wt. % based on the total of (A)(1) and (A)(2);

(B) 0.01 to 10 parts by weight of a curing catalyst;

(C) 0.5 to 10 parts by weight of a nitrogen-containing silicon compound in which the nitrogen atom is bonded with a silicon atom through one or more carbon atoms and said nitrogen atom is further bonded directly with said silicon atom or another silicon atom; and

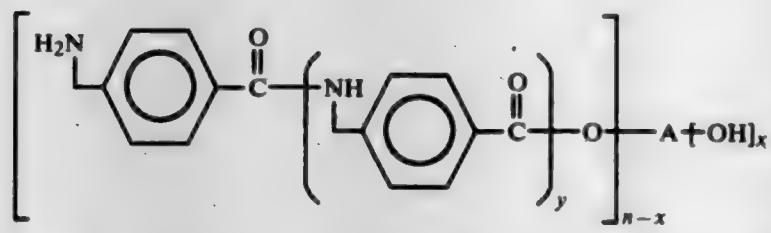
(D) 0.05 to 50 parts by weight of a polyoxyalkylene chain-containing compound.

4,537,945
POLYETHER DERIVATIVE AND A POLY(URETHANE)UREAMIDE OBTAINED THEREFROM

Kozo Otani, Hyogo, and Yoshio Yamada, Osaka, both of Japan, assignors to Toyo Tire & Rubber Company Limited, Osaka, Japan

Filed Sep. 17, 1984, Ser. No. 651,264
Claims priority, application Japan, Apr. 2, 1984, 59-66599; Jun. 16, 1984, 59-124019
Int. Cl.[3] C08G *18/32, 18/60;* C07C *101/00*
U.S. Cl. 528—68 8 Claims

1. A polyether derivative of the formula



wherein

A is an n-valent radical obtained by removal of hydroxyl groups from an n-valent polyoxyalkylenepolyol having a molecular weight of 400 to 10,000,

n is an integer of 2 to 8,

x is an average value and a number of $0 \leqq x < (n-1)$ and

y is an average value and a number of $0.05 \leqq y < 1$.

4,537,946
CURABLE MIXTURES CONTAINING EPOXY RESINS AND ISOMELAMINES

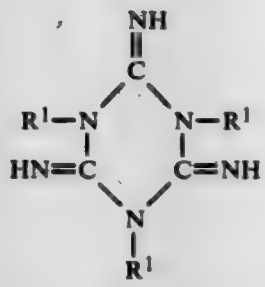
Friedrich Lohse, Oberwil, and Helmut Zondler, Bottmingen, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

Division of Ser. No. 466,454, Feb. 15, 1983, Pat. No. 4,499,268.
This application Nov. 28, 1984, Ser. No. 675,906
Claims priority, application Switzerland, Feb. 23, 1982, 1105/82
Int. Cl.[3] C08G *59/50*
U.S. Cl. 528—118 4 Claims

1. A curable mixture which comprises

(a) an epoxy resin having more than one epoxy group in the molecule, and

(b) an isomelamine of formula I



(I)

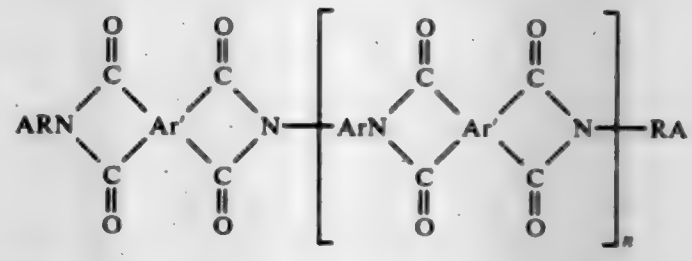
in which each R^1 is alkyl having 1 to 8 C atoms, aralkyl having not more than 12 C atoms, allyl or methallyl, in which there are 0.75 to 1.25 NH equivalents per epoxide equivalent.

4,537,947
CHAIN-EXTENDING FUNCTIONAL POLYIMIDES BY DIPOLE REACTIONS

Gaetano F. D'Alelio, South Bend, Ind., assignor to University of Notre Dame du Lac, Notre Dame, Ind.

Division of Ser. No. 363,801, May 25, 1973, Pat. No. 3,897,395.
This application Mar. 14, 1975, Ser. No. 558,447
Int. Cl.[3] C08G *20/32*
U.S. Cl. 525—424 26 Claims

1. A polymeric chain-extending process comprising: reacting one mole of a polyimide of the formula:



wherein

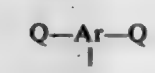
Ar′ is a tetravalent aromatic organic radical, the four carbonyl groups being attached directly to separate carbon atoms and each pair of carbonyl groups being attached to adjacent carbon atoms in the Ar′ radical,

Ar is a divalent aromatic organic radical,

R is a hydrocarbon radical of 1 to 12 carbon atoms, and

n is a positive integer of at least one, and

A is a radical selected from the group consisting of $-CH{=}CHR^{\circ}$, $-C{\equiv}CR^{\circ}$, $-CN$, $-CHO$ and $-CH{=}NR''$ wherein R″ is a monovalent aromatic organic radical of 6 to 12 carbon atoms and R° is H or R, with at least ¾ mole of an aromatic bis-dipole of the formula:

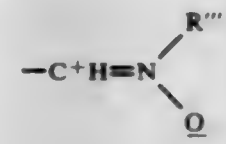


wherein

Ar is as defined above and

Q is selected from the group consisting of

$-C^{+}NO^{-}$, $-C^{+}N{=}N{-}R'''$, $-C^{+}{=}N{-}CHR^{\circ}$ and



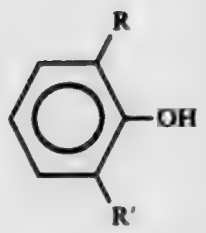
wherein R‴ is an aliphatic or aromatic organic radical of 1 to 12 carbon atoms.

4,537,948
PROCESS FOR THE PRODUCTION OF POLYPHENYLENE OXIDES

Martin Bartmann, Recklinghausen; Hanns-Jorg Bax; Klaus Burzin, both of Marl, and Wilfried Ribbing, Dorsten, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Feb. 23, 1984, Ser. No. 582,711
Claims priority, application Fed. Rep. of Germany, Apr. 16, 1983, 3313864
Int. Cl.[3] C08G *65/44*
U.S. Cl. 528—215 15 Claims

1. A process for the production of polyphenylene oxides which comprises oxidatively coupling a diorthosubstituted phenol having the formula:



wherein R and R' are C_1–C_6 n-alkyl or phenyl, in the presence of an oxidizing gas and an activated copper (II)-amine catalyst, consisting of a mixture of

(a) equivalents of a copper salt, CuX_2 of the formula wherein X is the anion of an organic acid or an inorganic acid;

(b) equivalents of a secondary C_4–C_{10} aliphatic or cyclic amine; and

(c) equivalents of a hydrobromide of the same or a different secondary C_4–C_{10} aliphatic or cyclic amine; in a solvent mixture of a C_6–C_8 aromatic hydrocarbon and a lower aliphatic alcohol in a ratio of 92.5:75 to 50:50; thereby preventing precipitation of the formed polyphenylene oxide during reaction.

4,537,949

CONTINUOUS PREPARATION OF NYLON WITH DIAMINE RECYCLING

Franz Schmidt, Mannheim; Gunter Pipper, Bad Durkheim; Josef G. Floss, Neustadt, and Franz Zahradnik, Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jun. 14, 1984, Ser. No. 620,563

Claims priority, application Fed. Rep. of Germany, Jun. 15, 1983, 3321581

Int. Cl.³ C08G *69/28*

U.S. Cl. 528—335 **10 Claims**

1. A process for the continuous preparation of a nylon, which comprises

(a) passing an aqueous solution of a salt of a dicarboxylic acid of 6 to 18 carbon atoms and a diamine of 6 to 18 carbon atoms through an evaporator zone, a residence time of not more than 60 seconds being maintained,

(b) heating the aqueous solution in the evaporator zone to 250°–300° C. under superatmospheric pressure of from 1 to 10 bar, with evaporation of water, and not less than 93% conversion of the salt to form a vapor phase mixed with a prepolymer containing not more than 7% by weight of water,

(c) separating off the prepolymer from the vapor phase,

(d) transferring the prepolymer to a condensation zone,

(e) condensing the prepolymer in the condensation zone under superatmospheric pressure of from 1 to 10 bar and at from 250° to 300° C., and

(f) rectifying the vapor obtained in stage (c) in a column, with separation into steam and diamine, and recycling of the diamine to stage (a).

4,537,950

POLYVINYLENE SULFIDE AND POLYVINYLENE SELENIDE

Shu Kambara, Tokyo; Tatsumi Arakawa, Fuji, and Akio Takahashi, Otsu, all of Japan, assignors to Director-General of Agency of Industrial Science and Technology, Tokyo, Japan

Filed Mar. 1, 1983, Ser. No. 471,152

Claims priority, application Japan, Apr. 14, 1982, 57-60943

Int. Cl.³ C08L *81/02*

U.S. Cl. 528—380 **9 Claims**

1. A polyvinylene chalcogenide represented by the following structural formula (I):

$$—CH=CH—L)_n \quad \text{(I)}$$

wherein L stands for sulfur or selenium.

4,537,951

PROCESS FOR THE PRODUCTION OF OPTIONALLY BRANCHED POLYARYLENE SULFIDES

Karsten Idel, Krefeld; Edgar Ostlinning, Duesseldorf; Wolfgang Koch, Bischoffen; Ludwig Bottenbruch, Krefeld, and Walter Heitz, Kirchhain, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Mar. 23, 1984, Ser. No. 592,698

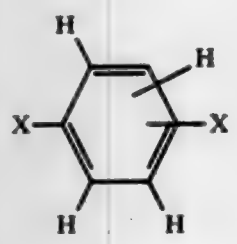
Claims priority, application Fed. Rep. of Germany, Apr. 5, 1983, 3312284

Int. Cl.³ C08G *75/14*

U.S. Cl. 528—388 **9 Claims**

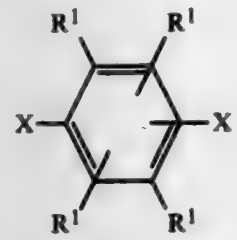
1. A process for the production of an optionally branched, high molecular weight polyarylene sulfide having a high melt viscosity, comprising reacting in the presence of a reducing agent selected from hydrazine, alkali metal borohydrides, alkali metal formates; a mixture of

(a) from 100 to 0 mole percent



(I)

and from 0 to 100 mole percent



(II)

where the sum of (I) and (II) is 100 mole percent, and where each X is independently chlorine or bromine in the meta or para position to one another and where each R^1 is independently hydrogen, an alkyl containing from one to twenty carbon atoms, a cycloalkyl containing from five to twenty carbon atoms, an aryl containing from six to twenty-four carbon atoms, an alkaryl containing from seven to twenty-four carbon atoms, or an aralkyl containing from seven to twenty-four carbon atoms, where two of R^1 in the ortho position to one another may be attached to form an aromatic or 6-membered heterocyclic ring containing up to 3 heteratoms, and where one of R^1 is always different from hydrogen; and

(b) from 0 to 3.0 percent, based on the sum of (I) and (II), of an aromatic trihalogen or tetrahalogen compound

$$ArX_n$$

where Ar is an aromatic or heterocyclic moiety having from six to twenty-four carbon atoms and up to 3 heteroatoms, X is chlorine or bromine, and where n is 3 or 4;

(c) an alkali metal sulfide, in a molar ratio (a+b):c of from 0.85:1 to 1.15:1; and

(d) at least one polar solvent, in a molar ratio of c:d of from 1:2 to 1:15.

4,537,952

POLYMERIC COMPOUNDS PREPARED FROM DIPHENYLAMINE AND DIALKYLALKENYLBENZENE OR DIHYDROXYALKYLBENZENE

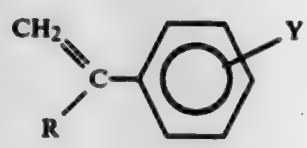
Richard E. Gloth, Copley; James J. Tazuma, Stow, and Robert A. Smith, Akron, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Division of Ser. No. 460,979, Jan. 26, 1983, Pat. No. 4,463,170. This application May 21, 1984, Ser. No. 612,281

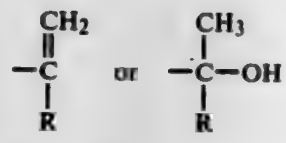
Int. Cl.³ C08G *73/00*

U.S. Cl. 528—392 11 Claims

1. A polymeric reaction product of diphenylamine and an addititonal component comprising one or more meta or para substituted compounds of the structure:



wherein Y is the



and R is an alkyl radical of from 1 to 8 carbon atoms.

4,537,953

PROCESS FOR PRODUCING AROMATIC SULFIDE POLYMER WITH ALKALINE EARTH METAL OXIDE DEHYDRATING AGENT

Yukichika Kawakami; Zenya Shiiki, and Yo Iizuka, all of Iwaki, Japan, assignors to Kureha Kagaku Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Sep. 6, 1984, Ser. No. 647,733

Claims priority, application Japan, Sep. 7, 1983, 58-164692

Int. Cl.³ C08G *75/16*

U.S. Cl. 528—388 8 Claims

1. In a process for producing an aromatic sulfide polymer which comprises subjecting (A) a hydrous sulfide of a metal selected from the group consisting of alkali metals and alkaline earth metals and (B) a dihalo-aromatic compound to a reaction in an aprotic solvent to form the aromatic sulfide polymer, the improvement which comprises contacting in the aprotic solvent the hydrous sulfide (A) with an effective amount of (C) an alkaline earth metal oxide before said reaction between the reactants (A) and (B) is substantially initiated thereby to dehydrate the hydrous sulfide (A).

4,537,954

PROCESS FOR THE PREPARATION OF POLYMER COMPOSITIONS HAVING LOW VOLATILE CONTENT

Toshihiko Ando; Norifumi Ito; Tetsuyuki Matsubara, all of Yokohama; Kozo Ichikawa, Hatano; Susumu Fukawa, Hiratsuka, and Tetsuo Maeda, Urayasu, all of Japan, assignors to Mitsui Toatsu Chemicals, Inc. and Toyo Engineering Corporation, both of Tokyo, Japan

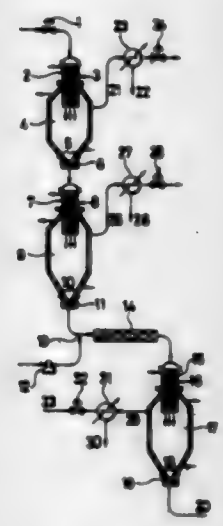
Filed Mar. 8, 1984, Ser. No. 587,592

Claims priority, application Japan, Mar. 14, 1983, 58-41796

Int. Cl.³ C08F *6/00*; C08G *6/00*; C08J *3/00*

U.S. Cl. 528—481 9 Claims

1. A continuous process for the preparation of polymer compositions having low volatile content which comprises passing a styrene polymer-containing polymerization fluid composition obtained by solution polymerization or bulk polymerization through a volatile component separator comprising vertical foaming preheaters and vacuum vessels directly connected therewith and thereby removing volatile components continuously from the polymerization fluid composition in three stages to obtain a polymer composition having low volatile content, the process being characterized in that each of the three stages includes at least one vertical foaming preheater and one vacuum vessel, the first stage is carried out under such pressure and temperature conditions that the polymerization fluid composition leaving this stage contains said styrene polymer in an amount of 60 to 80% by weight and the temperature of the polymerization fluid composition passing through this stage lies between 70° and 120° C., wherein the pressure within the vacuum vessel of said first stage is kept in the range of 80 to 300 Torr, the second stage is carried out in such a way that



the molten polymer composition leaving this stage has a volatile content of 0.3 to 1% by weight, and can retain good fluidity, the temperature of the polymerization fluid composition heated in the preheater of this stage lies between 160° and 250° C., and the pressure within the vacuum vessel of this stage is kept in the range of 30 to 100 Torr, and the third stage is carried out in such a way that the temperature of the molten polymer composition heated in the preheater of this stage lies between 190° and 260° C. and devolatilization is effected at a pressure of 50 Torr or less in the presence of a highly volatile foaming agent.

4,537,955

UNSYMMETRICAL 1:2 CHROMIUM COMPLEX OF A MONOAZO DYESTUFF AND A DISAZO DYESTUFF WHICH IS NON-FIBER REACTIVE AND CONTAINS NO SULFONAMIDO OR AMINO GROUPS

Klaus Grychtol, Bad Durkheim, and Hans Baumann, Wachenheim, both of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

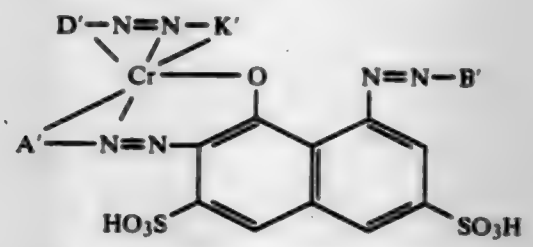
Filed Mar. 1, 1983, Ser. No. 470,943

Claims priority, application Fed. Rep. of Germany, Mar. 2, 1982, 3207331

Int. Cl.³ C09B *45/06, 45/16, 45/26*; D06P *1/10*

U.S. Cl. 534—696 2 Claims

1. An unsymmetrical 1:2 chromium complex of a monoazo dyestuff and a disazo dyestuff which is non-fiber reactive and is free of sulfonamido and amino groups, and which, in the form of the free acid, has the formula



wherein A′ is the radical of a 1-hydroxy-2-aminobenzene substituted by nitro, sulfo or a mixture thereof, B′ is the radical of β-naphthol, K′ is unsubstituted or sulfo-substituted 1- or 2-naphthol and D′ is the radical of 1-hydroxy-2-aminobenzene or

1-amino-2-naphthol substituted by nitro, sulfo or a mixture thereof.

4,537,956

ANTIBIOTICS X-14889 A, C AND D

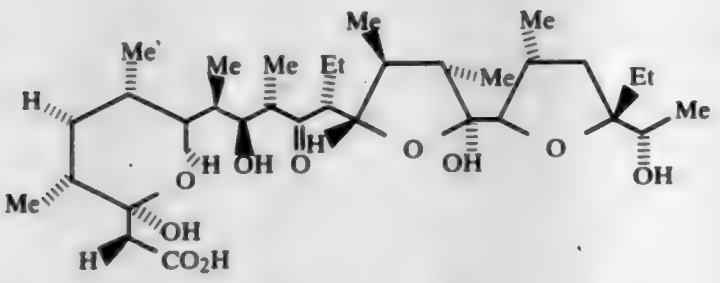
Chao-Min Liu, and John Westley, both of Cedar Grove, N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Filed Nov. 23, 1983, Ser. No. 554,506

Int. Cl.³ C07H *3/00*

U.S. Cl. 536—1.1 **3 Claims**

1. A compound of the formula



and the pharmaceutically acceptable salts thereof.

4,537,957

PROCESS FOR THE PRODUCTION OF MYCAMINOSYLTYLONOLIDE

Richard H. Baltz; Gene M. Wild, both of Indianapolis, Ind., and Eugene T. Seno, Norwich, England, assignors to Eli Lilly and Company, Indianapolis, Ind.

Division of Ser. No. 260,961, May 6, 1981, Pat. No. 4,419,447, which is a division of Ser. No. 156,854, Jun. 12, 1980, Pat. No. 4,321,361. This application Jun. 13, 1983, Ser. No. 503,986

Int. Cl.³ C07H *17/08;* C12P *19/62*

U.S. Cl. 336—7.1 **4 Claims**

1. The process for preparing 5-O-mycaminosyltylonolide which comprises treating 23-demycinosyltylosin at a temperature of about 20° C. to about 100° C. with a mild acid solution until 5-O-mycaminosyltylonolide is formed.

4,537,958

PROCESS FOR PREPARING CELLULOSE ETHERS

Carl P. Strange, Walker; Harold B. Martin, Jr., Plaquemine, and Albert C. Tsang, Baton Rouge, all of La., assignors to The Dow Chemical Company, Midland, Mich.

Filed Jun. 29, 1984, Ser. No. 626,513

Int. Cl.³ C08B *11/20, 11/22*

U.S. Cl. 536—85 **8 Claims**

1. A process for purifying a crude non-gelling water-soluble cellulose ether comprising (a) mixing under high agitation, a crude non-gelling water-soluble cellulose ether prepared in a dry process, or in a slurry in a liquid organic diluent, wherein substantially all of the diluent has been removed; with from about 1 to about 5 percent by weight of said cellulose ether of a dialdehyde under acidic conditions, whereby the cellulose ether is rendered substantially water-insoluble, (b) forming an aqueous slurry of the crosslinked cellulose ether, (c) transferring said slurry to a filter by means of a slurry pump such that substantially none of the cellulose ether becomes dissolved in the water and (d) dewatering said slurry on a filter to remove water-soluble impurities therefrom.

4,537,959

CRYSTALLINE CEPHALOSPORIN ANTIBIOTIC SALT

Ta-Sen Chou, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Mar. 26, 1984, Ser. No. 593,441

Int. Cl.³ C07D *501/38;* A61K *31/545*

U.S. Cl. 544—025 **1 Claim**

1. The α-monohydrate crystalline form of ceftazidime bishydrobromide having the following X-ray diffraction pattern:

d	I/I_1
14.85	.17
10.65	.50
9.94	.08
8.08	.29
7.66	.29
6.71	.25b
5.74	.38
5.37	.04
5.16	.04
4.77	.25
4.37	.83
4.22	1.00
4.04	.04
3.89	1.00
3.78	.17
3.56	.17
3.35	.21
3.29	.25
3.11	.25
2.93	.29
2.88	.25
2.79	.08
2.74	.17
2.70	.04
2.58	.08
2.54	.13
2.45	.13
2.24	.17
2.14	.08
2.09	.08

4,537,960

PREPARATION OF CARBAMATES

Franz Merger, Frankenthal; Gerhard Nestler, and Friedrich Towae, both of Ludwigshafen, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

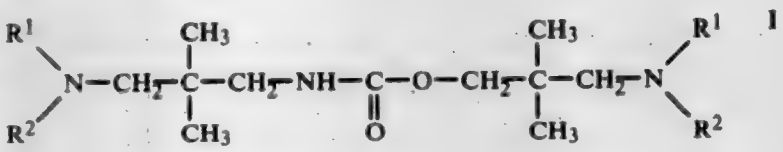
Filed Sep. 2, 1983, Ser. No. 529,037

Claims priority, application Fed. Rep. of Germany, Sep. 8, 1982, 2033310

Int. Cl.³ C07C *125/065;* C07D *265/30, 295/14*

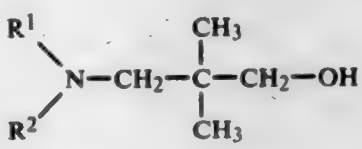
U.S. Cl. 544—86 **11 Claims**

1. A process for the preparation of an N- and O-substituted carbamate of the formula



I

where the individual radicals R^1 and R^2 are identical or different and are each an aliphatic, cycloaliphatic or araliphatic radical, or R^1 and R^2, together with the adjacent nitrogen atom, can furthermore form a heterocyclic ring, wherein urea is reacted with an aminopropanol of the formula



II

where R^1 and R^2 have the above meanings, at 140° C. or above.

4,537,961
CATALYTIC CYCLOTRIMERIZATION OF POLYISOCYANATES

Jean Robin, Lyons, France, assignor to Rhone-Poulenc Specialites Chimiques, Courbevoie, France

Filed Mar. 1, 1983, Ser. No. 470,988
Claims priority, application France, Mar. 4, 1982, 82 03799
Int. Cl.³ C07D *251/34;* C08G *18/02;* C08F *4/16*
U.S. Cl. 544—193 **11 Claims**

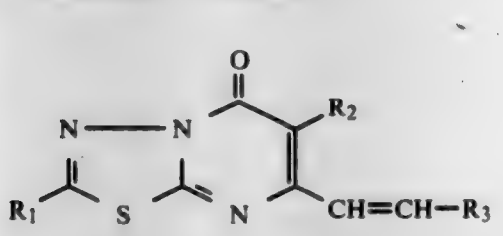
1. A process for the preparation of a polyisocyanato-polyisocyanurate, comprising catalytically cyclotrimerizing an aliphatic or cycloaliphatic polyisocyanate in the presence of a catalytically effective amount of an aminosilyl catalyst, and further comprising terminating the cyclotrimerization reaction when a predetermined desired amount of isocyanurate groups has been attained, by adding to the reaction mixture a reaction terminating amount of an organic catalyst deactivating compound comprising at least one free hydroxyl moiety, or the reaction product of such hydroxylated organic catalyst deactivating compound with an isocyanate.

4,537,962
SUBSTITUTED 1,3,4-THIADIAZOLO[3,2-A]PYRIMIDINES AND COMPOSITIONS CONTAINING THEM

Gianfederico Doria, Milan; Carlo Passarotti, Gallarate, and Ada Buttinoni, Milan, all of Italy, assignors to Farmitalia Carlo Erba, S.p.A., Milan, Italy

Filed Jan. 19, 1983, Ser. No. 459,188
Claims priority, application United Kingdom, Feb. 4, 1982, 8203238
Int. Cl.³ C07D *239/00;* A61K *31/495*
U.S. Cl. 544—255 **3 Claims**

1. A compound of formula (I)



(I)

wherein

R_1 is

(a) hydrogen or halogen;

(b) a C_1–C_6 alkyl group, unsubstituted or substituted by C_1–C_4 alkoxy or by halogen;

(c) a phenyl ring unsubstituted or substituted by a group chosen from halogen, C_1–C_4 alkyl and C_1–C_4 alkoxy;

(d) a C_1–C_6 alkylthio group;

R_2 is hydrogen or halogen;

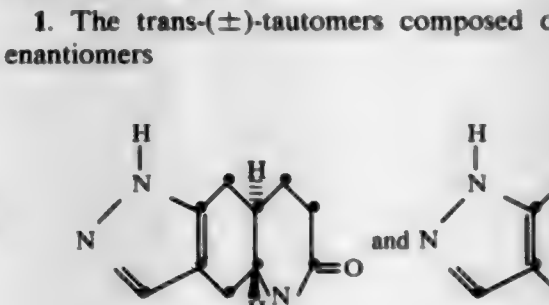
R_3 is 2-pyridyl, 3-pyridyl or 4-pyridyl, wherein each pyridyl group is unsubstituted or substituted by C_1–C_4 alkyl; and the pharmaceutically acceptable salts thereof.

4,537,963
INTERMEDIATES FOR OCTAHYDROBENZOFURO[3,2-E]ISOQUINOLINES

Ashokkumar B. Shenvi, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Division of Ser. No. 334,839, Dec. 28, 1981, Pat. No. 4,421,916. This application Aug. 11, 1983, Ser. No. 522,094
Int. Cl.³ C07D *491/048*
U.S. Cl. 546—66 **1 Claim**

1. The compound, Compound XI, having the formula:



wherein R is H, allyl or C_{1-3} straight-chain alkyl.

4,537,964
METHOD OF PREPARING PERMISSIBLY-SUBSTITUTED 1H(AND 2H)PYRAZOLO[3,4-G]QUINOLINES; PYRIMIDO[4,5,G]QUINOLINES; THIAZOLO[4,5,G]QUINOLINES AND INTERMEDIATES THEREFORE

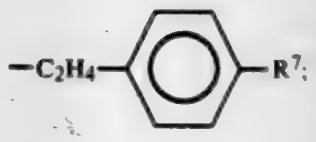
John M. Schaus, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1984, Ser. No. 637,665
The portion of the term of this patent subsequent to Aug. 27, 2002, has been disclaimed.
Int. Cl.³ C07D *255/04, 273/01, 285/00*
U.S. Cl. 544—250 **29 Claims**

1. The trans-(±)-tautomers composed of the tautomeric enantiomers

wherein

R^1 is C_{1-10} alkyl, $—CH_2R^6$ or



R_2 is —H or —OH;

R^6 is C_{3-6} cycloalkyl, phenyl or 2-tetrahydrofuryl optionally substituted with a methyl group; and

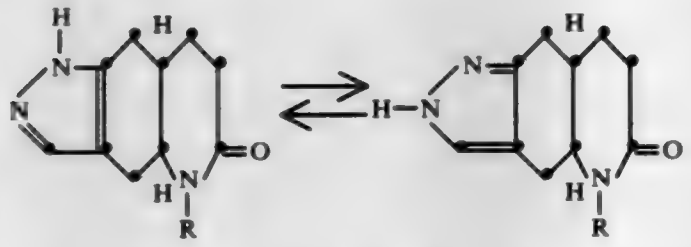
R^7 is —H or C_{1-3} alkyl.

4,537,965
METHOD OF PREPARING 4AR,8AR-5-PERMISSIBLY SUBSTITUTED-6-OXO-OCTAHYDRO-1H(AND 2H)-PYRAZOLO[3,4-G]QUINOLINES, USEFUL AS INTERMEDIATES

Nancy G. Gallick-Whitaker, Indianapolis, Ind., assignor to Eli Lilly and Company, Indianapolis, Ind.

Filed Aug. 3, 1984, Ser. No. 637,354
Int. Cl.[3] C07D *471/12*
U.S. Cl. 546—82 3 Claims

1. A tautomeric pair of the formula



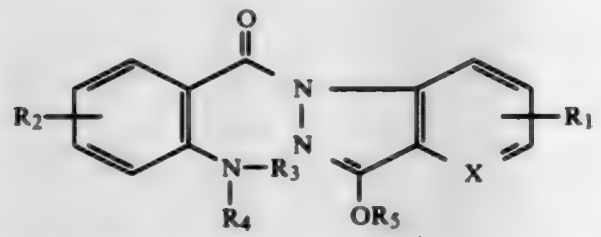
wherein R is H, C_{1-3} straight-chain alkyl or allyl, and pharmaceutically acceptable acid addition salts thereof.

4,537,966
1-(AMINOBENZOYL)-1H-INDAZOL-3-OLS

Robert J. Murray, Penfield, N.Y., assignor to Pennwalt Corporation, Philadelphia, Pa.

Filed Dec. 22, 1983, Ser. No. 564,540
Int. Cl.[3] C07D *231/56, 471/04*
U.S. Cl. 546—120 18 Claims

1. An aminobenzoyl-1H-indazole-3-ol having the formula:



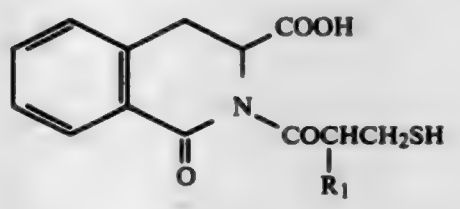
in which R_1 and R_2 are independently selected from the group consisting of H, lower alkyl, lower alkoxy, hydroxy, amino, nitro, and halogen,
R_3 is selected from the group consisting of H, lower alkyl, cycloalkyl having 3 to about 7 carbons, phenyl, phenyl which is mono- or disubstituted with lower aryl or trifluoromethyl, and benzyl,
R_4 is H and R_5 is selected from H and lower alkyl, and
X is CH or N, or a pharmacologically acceptable salt thereof.

4,537,967
1-OXO-1,2,3,4-TETRAHYDRO-3-ISOQUINOLINE CARBOXYLIC ACID DERIVATIVES

Koohei Nozawa, Ohi; Toyokichi Yoshizawa, Isehara, and Toshio Kuroda, Sagamihara, all of Japan, assignors to Wakamoto Pharmaceutical Co., Ltd., Tokyo, Japan

Filed Jul. 1, 1983, Ser. No. 510,227
Claims priority, application Japan, Jul. 8, 1982, 57-117817
Int. Cl.[3] C07D *217/24*
U.S. Cl. 546—141 3 Claims

1. A compound of the following general formula [I]:



[I]

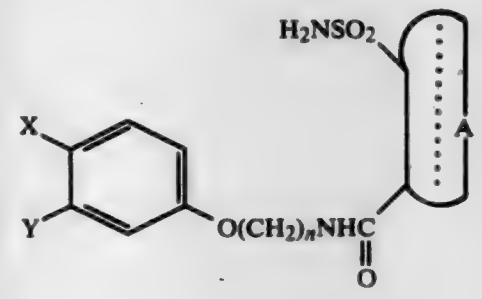
wherein R_1 represents a hydrogen atom or a lower alkyl group,
and pharmaceutically acceptable salts thereof.

4,537,968
THIOPHENE DERIVATIVES WITH ANTISECRETORY ACTIVITY

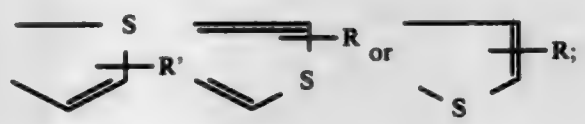
Anthony C. Scotese, King of Prussia; Robert L. Morris, Devon; Arthur A. Santilli, Havertown, and Donald P. Strike, St. Davids, all of Pa., assignors to American Home Products Corporation, New York, N.Y.

Filed Dec. 21, 1983, Ser. No. 564,440
Int. Cl.[3] C07D *413/12, 333/36, 417/12*
U.S. Cl. 546—209 2 Claims

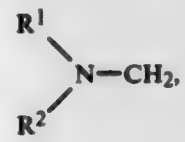
1. A compound having the formula:



wherein
A is



R is mono- or dihalo, amino, nitro, cyano, hydroxy, trifluoromethyl, mercapto, lower alkyl, lower alkoxy, alkanoyl of 2–5 carbon atoms, cycloalkyl of 5–7 carbon atoms, carboxy, alkoxycarbonyl of 2–7 carbon atoms, mono- or di-lower alkyl substituted amino, alkanoylamino of 2–5 carbon atoms, lower alkyl thio, loweralkyl-sulfonyl, sulfamoyl, lower alkyl substituted sulfamoyl, phenyl or phenyl substituted with halo, lower alkyl, lower alkoxy, trifluoromethyl, hydroxy, amino, cyano or nitro;
X and Y are each, independently, hydrogen or



wherein
R^1 is hydrogen or lower alkyl;
R^2 is hydrogen or lower alkyl; or
R^1 and R^2 taken together form a heterocyclic moiety selected from 1-pyrrolidinyl, 1-piperidinyl, 1-hexahydroazepinyl, 1-octahydroazocinyl, 3, tetrahydrothiazolyl, 4-morpholinyl or 4-thiomorpholinyl, with the proviso that one of X and Y is always hydrogen;
n is 1–4;
and the pharmacologically acceptable salts thereof.

2. The compound of claim 1, which is 4-(aminosulfonyl)-N-

[3-[3-(1-piperidinylmethyl)phenoxy]-propyl]-3-thiophenecarboxamide.

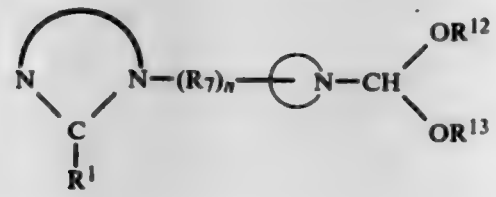
4,537,969

IMIDAZOLE DERIVATIVES

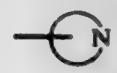
Chung-Chen Wei, Cedar Knolls, and Manfred Weigele, North Caldwell, both of N.J., assignors to Hoffmann-La Roche Inc., Nutley, N.J.

Division of Ser. No. 359,326, Mar. 18, 1982, Pat. No. 4,431,653. This application Jan. 5, 1984, Ser. No. 568,329
Int. Cl.[3] C07D *277/08;* A61K *31/415*
U.S. Cl. 546—210 6 Claims

1. A compound of the formula



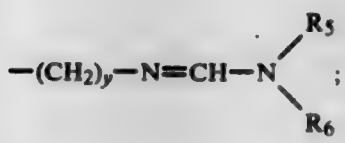
wherein n is an integer from 0 to 1;



is a saturated 5 to 7 membered heterocyclic ring containing the nitrogen as the only hetero atom in said ring, said ring being unsubstituted or substituted in one or more positions with lower alkyl;



is a 5 membered heterocyclic ring having at most one additional nitrogen atom as the only hetero atom, from 0 to 2 additional double bonds, and, aside from R, either beingunsubstituted or substituted in one or more positions with lower alkyl; R is selected from the group consisting of lower alkyl, nitro, hydrogen, —COOH, $-(CH_2)_y-NHR_4$, $-(CH_2)_yOR_3$ and



R_3 is hydrogen or lower alkyl, y is an integer from 0 to 4; R_4 is lower alkyl or an amino protecting group, R_5 and R_6 are lower alkyl or one of R_5 or R_6 is hydrogen and the other is an amino protecting group or lower alkyl; R_{12} and R_{13} are lower alkyl or taken together form $-CH_2-(CH_2)_x-CH_2$; x is an integer from 0 to 2; and R_7 is lower alkylene.

4,537,970

PROCESS FOR THE PREPARATION OF ESTERS OR SALTS OF AROMATIC OR ETHEROAROMATIC ACIDS

Marco Foà ; Franco Francalanci, both of Novara; Andrea Gardano, Trino Vercellese, and Elena Bencini, Novara, all of Italy, assignors to Montedison S.p.A., Milan, Italy

Filed Dec. 12, 1983, Ser. No. 560,228
Claims priority, application Italy, Dec. 14, 1982, 24723 A/82
Int. Cl.[3] C07D *239/02;* C07C *67/36, 51/10*
U.S. Cl. 546—319 12 Claims

1. A process for the preparation of esters or salts of aromatic or etheroaromatic acids having formula (I):

$$Y—Ar—CO—OR \quad (I):$$

where:

Ar represents an aromatic group constituted by one or more benzene rings, optionally condensed or an etheroaromatic nucleus optionally condensed with one or more benzene rings;

Y represents from zero to more substituents, equal or different, chosen among a halogen; an alkyl group having up to 6 carbon atoms; an alkoxy group having up to 5 carbon atoms; an ester group —COOR′, where R′ contains up to 5 carbon atoms; a hydroxyl group; a phenyloxy group optionally substituted with groups inert under the reaction conditions; a trifluoromethyl group; a nitrile group; an amidic group ($-CONH_2$); an acetamidic group ($-NH-CO-CH_3$), or an acyl group —CO—R″, where R″ represents a hydrocarbon group having up to 8 carbon atoms;

R represents an alkyl group R_1 having up to 5 carbon atoms or an alkali metal or alkaline-earth metal M;

characterized in that a halide having formula (II)

$$Y—Ar—X \quad (II)$$

where Ar and Y have the hereinabove defined values, while X is Cl, Br or I, is made to react with carbon monoxide in an alcoholic solvent R_1OH (where R_1 is an alkyl group having up to 5 carbon atoms) at atmospheric pressure and at temperatures ranging between −10° and 60° C. in the presence of an acidity-acceptor compound and of a catalyst constituted by a cobalt complex having formula (III):

$$Z—Co(CO)_4 \quad (III)$$

where Z is a group chosen among CH_3; CH_2F; CHF_2; CF_3; $CH_2—CN$; $CH_2—COOR'''$, where R‴ is an alkyl group having up to 8 carbon atoms or a benzene group, the latter optionally substituted with groups inert under the reaction conditions; CH_2Ar', where Ar′ is an aromatic group constituted by from one to three benzene rings optionally condensed and optionally substituted with groups inert under reaction conditions, in particular with electron-attractor groups.

4,537,971

PROCESS FOR PREPARING QUINOLINIC ACID

Robert W. J. Rebhahn, West Chester, Ohio; James E. Kassner, Fort Mitchell, Ky., and Raymond E. Werner, Cincinnati, Ohio, assignors to The Hilton-Davis Chemical Co., Cincinnati, Ohio

Continuation of Ser. No. 261,254, May 6, 1981, abandoned. This application Sep. 26, 1983, Ser. No. 536,133
Int. Cl.[3] C07D *213/55*
U.S. Cl. 546—320 8 Claims

1. In a process wherein quinoline is oxidized in an initial step with hydrogen peroxide in an aqueous medium in the presence of sulfuric acid and copper sulfate to produce copper quinolinate and in subsequent steps, the copper quinolinate is treated with alkali to convert said copper quinolinate to its soluble alkali salt form which is removed from the insoluble cupric oxide and thereafter said soluble alkali salt form is treated with acid to produce quinolinic acid, the improvement whereby the reaction of the initial step is carried out in a thermally control-

lable and safe manner and the formation of by-products is minimized which comprises adding separately in said initial step in a portion-wise manner approximately fifteen to approximately twenty-five approximately equal portions of the reaction quantities of the sulfuric acid, the quinoline and the hydrogen peroxide either sequentially in that order or simultaneously at time intervals of sufficient length spaced between each group of portion-wise additions as to allow the hydrogen peroxide to react before the next addition to an unreacted hydrogen peroxide concentration in the reaction mixture of between approximately three and approximately fifteen percent.

4,537,972

2,4-DIAZABICYCLO[3.3.0]OCTANE-3,7-DIONES

Clifford J. Harris, Crown Close, Chelsfield, Orpington, and Paul Barraclough, 138 Postley Rd., Hayle Estate Maidstone, both of Kent, England

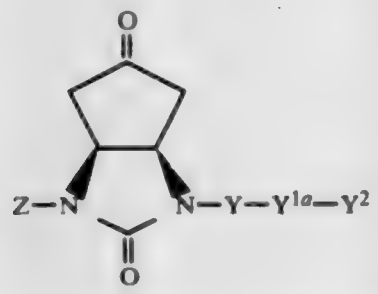
Division of Ser. No. 296,138, Aug. 25, 1981, Pat. No. 4,432,988. This application Nov. 30, 1983, Ser. No. 556,449

Claims priority, application United Kingdom, Aug. 26, 1980, 8027561

Int. Cl.³ C07D *235/02*

U.S. Cl. 548—302 **3 Claims**

1. A compound of the formula



where Z is hydrogen or C_{1-4} straight chain or branched chain alkyl;

Y is $—CR_2—CH_2—$ in which each R is independently hydrogen or methyl;

Y^{1a} is methylene substituted by hydroxyl, methylene substituted by hydroxyl and C_{1-6} alkyl, methylene, methylene substituted by a protected hydroxyl, methylene substituted by a protected hydroxyl and a C_{1-6} alkyl group, or carbonyl and

Y^2 is C_{1-7} straight chain or branched alkyl, phenyl, benzyl or C_{4-7} cycloalkyl.

4,537,973

PROCESS FOR PREPARING BIOTIN

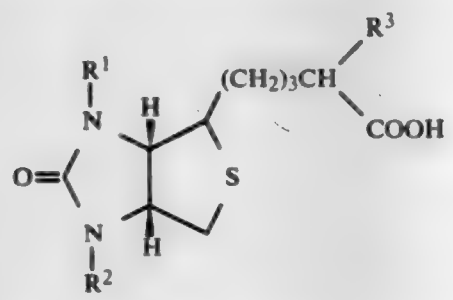
Takeo Takahashi, Takarazuka; Kozo Shimago, Osaka, and Kaoru Maeshima, Takarazuka, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Continuation of Ser. No. 129,732, Mar. 12, 1980, abandoned. This application Oct. 8, 1981, Ser. No. 309,765

Int. Cl.³ C07D *495/04*

U.S. Cl. 548—303 **13 Claims**

1. A process for preparing biotin, comprising: heating a mixture of a compound of the formula:



wherein R^1 and R^2 are each hydrogen or benzyl and R^3 is hydrogen or carboxyl, with the proviso that R^1 and R^2 are not simultaneously hydrogen and a lower alkanesulfonic acid at a temperature of 80° to 180° to form biotin and separating biotin from said mixture.

4,537,974

DIETHYNYLATED PHENYLBENZIMIDAZOLE COMPOUNDS

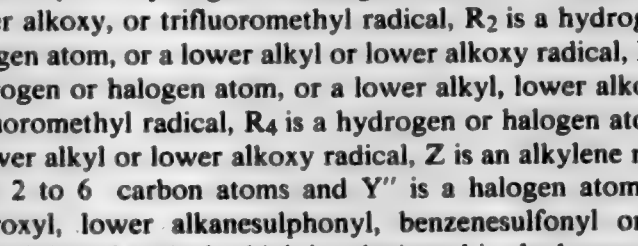
Kreisler S. Y. Lau, Alhambra, Calif., assignor to Hughes Aircraft Company, El Segundo, Calif.

Filed Sep. 26, 1984, Ser. No. 655,009

Int. Cl.³ C07D *235/04*; C08F *14/18*

U.S. Cl. 548—328 **17 Claims**

1. A diethynylated bisbenzimidazole monomer having the formula:



where Y is phenyl, cyclohexyl, adamantyl or phenoxylated-phenyl of the formula $C_6H_5(OC_6H_4)n$ (N=1 to 3) and where R1, R2 and R3 are ethynyl, phenoxyethynyl, phenylethynyl or hydrogen, and further wherein at least one of said R1, R2 or R3 is not hydrogen.

4,537,975

1-PHENYLINDAZOL-3-ONE COMPOUNDS

Henning Heinemann, Hanover, Fed. Rep. of Germany; Daniel Jasserand, Paris, France; Wolfgang Milkowski, Burgdorf, Fed. Rep. of Germany; Dimitri Yavordios, Chatillon-sur-Chalaronne, France, and Horst Zeugner, Hanover, Fed. Rep. of Germany, assignors to Kali-Chemie Pharma GmbH, Hanover, Fed. Rep. of Germany

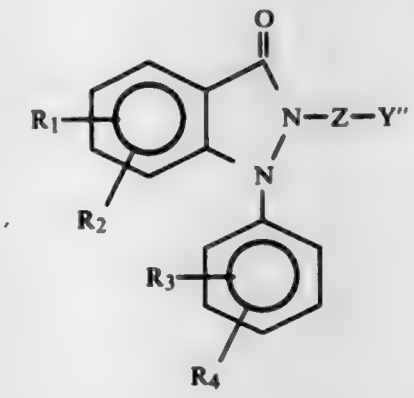
Division of Ser. No. 409,632, Aug. 19, 1982, Pat. No. 4,448,777. This application Dec. 22, 1983, Ser. No. 564,398

Claims priority, application Fed. Rep. of Germany, Aug. 20, 1981, 3132916

Int. Cl.³ C07D *231/56, 403/06*; A61K *31/495*

U.S. Cl. 548—359 **6 Claims**

1. A compound of the formula II



II

where R_1 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy, or trifluoromethyl radical, R_2 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy radical, R_3 is a hydrogen or halogen atom, or a lower alkyl, lower alkoxy or trifluoromethyl radical, R_4 is a hydrogen or halogen atom, or a lower alkyl or lower alkoxy radical, Z is an alkylene radical with 2 to 6 carbon atoms and Y″ is a halogen atom, or a hydroxyl, lower alkanesulphonyl, benzenesulfonyl or benzenesulphonyl radical which is substituted in the benzene ring by a lower alkyl radical or a halogen atom, or an acid addition salt thereof, with the proviso that Y″ is other than chlorine if the substituents R_1, R_2, R_3, and R_4 each are hydrogen and Z is an ethylene or propylene group.

4,537,976
BENZO[B]THIOPHENES

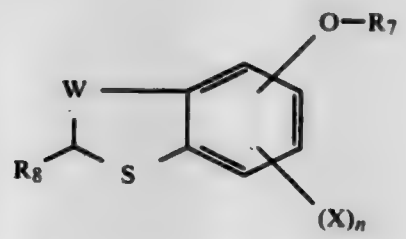
Helen H. Ong, Whippany, N.J., and James A. Profitt, Goshen, Ind., assignors to Hoechst-Roussel Pharmaceuticals Inc., Somerville, N.J.

Division of Ser. No. 256,470, Apr. 4, 1981, Pat. No. 4,436,748, which is a continuation-in-part of Ser. No. 198,736, Oct. 20, 1980, abandoned. This application Dec. 5, 1983, Ser. No. 558,074

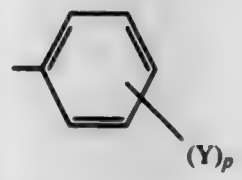
Int. Cl.³ C07D *333/64*

U.S. Cl. 549—54 **19 Claims**

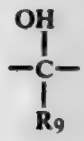
1. The compound of the formula



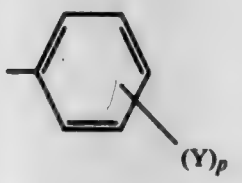
wherein R_1 is lower alkyl; R_8 is hydrogen, lower alkyl, lower cycloalkyl or a group of the formula



wherein Y is hydrogen, halogen, lower alkyl, lower alkoxy or hydroxy and p is 1 or 2; W is a carbonyl or a group of the formula



wherein R_9 is hydrogen, lower alkyl, lower cycloalkyl or a group of the formula



wherein Y and p are as above; X is hydrogen, halogen or lower alkyl; and n is 1 or 2; or the tautomer thereof when W is carbonyl and the geometric isomers thereof when it is other than carbonyl.

4,537,977
TETRASUBSTITUTED PHTHALIC ACID DERIVATIVES, AND A PROCESS FOR THEIR PREPARATION

Walter Fischer, Reinach, and Hans Zweifel, Basel, both of Switzerland, assignors to Ciba-Geigy Corporation, Ardsley, N.Y.

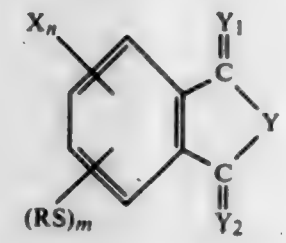
Division of Ser. No. 363,188, Mar. 29, 1982, Pat. No. 4,459,414. This application Apr. 4, 1984, Ser. No. 596,865

Claims priority, application Switzerland, Apr. 8, 1981, 2364/81

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—243 **9 Claims**

1. A compound of the formula I



(I)

in which m is an integer from 1 to 4, n is 0, 1, 2 or 3 and the sum of m+n is 4, Y_1 and Y_2 are oxygen and Y is —O—, X is chlorine or bromine, and the group R is, or in the case where m>1 the groups R independently of one another are, straight-chain C_{1-12}-alkyl, 2-hydroxyethyl, phenyl, p-tolyl, 2-, 3- or 4-methoxyphenyl, 4-chlorophenyl, 2,5-dichlorophenyl, 4-nitrophenyl, 4-acetylaminophenyl, 2- or 4-aminophenyl, 4-hydroxyphenyl or $—CH_2CH_2C_pF_{2p+1}$ with p=6, 8 or 10, with the proviso that when m is the integer 1, the group —SR is bonded in the 4-position; and when m is the integer 2, the groups —SR are bonded in the 4,5-positions and the groups R are both identical.

4,537,978
PROCESS FOR THE PRODUCTION OF TRIMELLITIC ANHYDRIDE

Peter H. Kilner, Chicago; Joseph P. Egan, Jr., Plainfield; Stephen G. Ceisel, Shorewood, and Wayne P. Schammel, Bartlett, all of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Filed Mar. 20, 1984, Ser. No. 591,468

Int. Cl.³ C07D *307/89*

U.S. Cl. 549—245 **13 Claims**

1. A process for oxidizing pseudocumene to trimellitic anhydride which comprises catalytic oxidation of pseudocumene with air in the presence of acetic acid in an oxidation zone wherein liquid-phase conditions are maintained and wherein the weight ratio of acetic acid to pseudocumene is in the range of about 1.0–2.5:1.0 and the catalyst comprises one or more heavy metal oxidation catalysts comprising zirconium, cobalt and manganese to provide about 0.2 to about 0.4 weight percent total metals based on pseudocumene and a source of bromine, to provide a total of about 0.10 to about 0.30 weight percent total bromine based on pseudocumene, wherein the total weight ratio of bromide ions to total metals ions is about 0.7 to about 2.0 and the zirconium content is about 1 to about 5% and the manganese content is about 14 to about 24% each metal by weight of the total metals and wherein the cobalt content is about 60 to about 70 weight percent and the temperature in the last stage is upward from about 175° C. to about 225° C. and the temperature in the preceding stage is between about 125° C. and about 165° C. and wherein acetic acid solvent and water of reaction are withdrawn during the last 5 to about 20% of the oxidation reaction.

4,537,979
ALPHA-SUBSTITUTED-ALKYLARYLKETALS PARTICULARLY USEFUL FOR PREPARING ALPHA-ARYLALKANOIC ACIDS

Graziano Castaldi, Briona, and Claudio Giordano, Vicenza, both of Italy, assignors to Zambon S.p.A., Vicenza, Italy

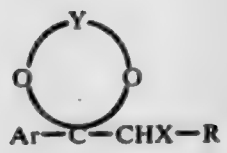
Filed Aug. 3, 1983, Ser. No. 520,130

Claims priority, application Italy, Mar. 7, 1983, 19930 A/83

Int. Cl.³ C07D *321/00*

U.S. Cl. 549—347 **2 Claims**

1. A compound of formula



(I)

wherein

Ar is a phenyl ring substituted by one or two substituents selected from halogen, 1–6 C alkyl, 1–4 C alkoxy, 2–4 C alkenyloxy or a naphthyl ring substituted by one or two substituents selected from halogen and 1–4 C alkoxy;

X is OR_3 in which R_3 is H, acyl or aroyl, $OSO_2—CH_3$ or $OSO_2—C_6H_4—CH_3$;

R is H or an alkyl having from 1to 3 C atoms;

and Y is $—CH_2—C(R_1)=C(R_2)—CH_2—$ in which R_1 and R_2 are H or CH_3.

4,537,980

ACETALS

James N. Greenshields, Stockport, England, assignor to Imperial Chemical Industries Limited, London, England

Division of Ser. No. 140,599, Apr. 15, 1980, Pat. No. 4,459,418. This application Dec. 23, 1983, Ser. No. 564,900

Claims priority, application United Kingdom, May 2, 1979, 7915225

Int. Cl.³ C07D *407/00, 319/06, 17/00*

U.S. Cl. 549—370 **4 Claims**

1. An acetal having a color not exceeding 250 Hazen units derived from a polyol containing at least four hydroxyl groups and a fatty aliphatic aldehyde having an alkyl chain containing at least 11 and up to 20 carbon atoms.

4,537,981

7-OXABICYCLOHEPTANE AND 7-OXABICYCLOHEPTENE COMPOUNDS

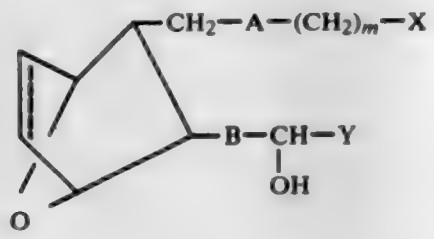
David L. Snitman, Boulder, Colo.; Martin F. Haslanger, Lambertville, and Peter W. Sprague, Pennington, both of N.J., assignors to E. R. Squibb & Sons, Inc., Princeton, N.J.

Continuation-in-part of Ser. No. 319,511, Nov. 9, 1981, abandoned. This application May 17, 1982, Ser. No. 378,547

Int. Cl.³ C07D *493/08*

U.S. Cl. 549—463 **27 Claims**

1. A compound having the structural formula



and including all stereoisomers thereof;

wherein A and B may be the same or different and A is CH=CH or $(CH_2)_2$,

B is CH=CH, C≡C, or $(CH_2)_2$; m is 1 to 8;

X is CO_2R^1 wherein R^1 is H or lower alkyl;

Y is aryl-lower alkyl; alkenyl containing 3 to 6 carbons; alkynyl containing 3 to 6 carbons; cycloalkyl; substituted cycloalkyl, cycloalkylalkyl, substituted cycloalkylalkyl or phenoxymethyl; wherein alkyl or lower alkyl by itself or as part of another group contains 1 to 12 carbons and may include as substituents halo, lower alkoxy, alkyl-aryl, haloalkyl, cycloalkyl or alkylcycloalkyl; cycloalkyl by itself or as part of another group contains 3 to 12 carbons in the ring portion, and may include as substituents 1 or 2 halogens, 1 or 2 lower alkyl groups or 1 or 2 lower alkoxy groups; aryl by itself or as part of another group refers to a monocyclic or bicyclic aromatic ring which contains 6 to 10 carbons in the ring portion, which may include as a substituent lower alkyl, halogen or lower alkoxy, which substituents will not be adjacent sterically hindered groups;

and ⋯ represents a single bond or double bond, with the proviso that where ⋯ represents a double bond, A is CH=CH and B is CH=CH or $(CH_2)_2$ and Y is other than alkenyl or alkynyl.

4,537,982

PRODUCTION OF ORGANIC NICKEL COMPOUNDS

Karl-Heinz A. O. Starzewski, Frankfurt am Main, and Josef Witte, Cologne, both of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

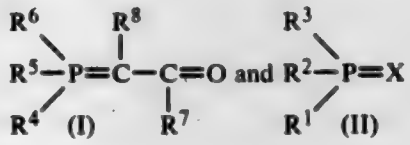
Filed Jul. 22, 1983, Ser. No. 516,104

Claims priority, application Fed. Rep. of Germany, Aug. 3, 1982, 3228865; May 17, 1983, 3317825; Jun. 11, 1983, 3321179

Int. Cl.³ C07F *15/04*

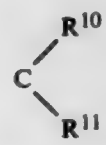
U.S. Cl. 556—22 **6 Claims**

1. Nickel compounds producible by reacting a nickel-(O)-compound or a nickel compound convertible thereto in situ with two different compounds corresponding to the following general formulae



wherein

R^1, R^2 and R^3, which may be the same or different, represent optionally by halogen, hydroxy, C_1–C_{20}-alkoxy or C_6–C_{12}-aryloxy substituted C_1–C_{20}-alkyl radicals, C_6–C_{12}-aryl radicals or C_3–C_8-cycloalkyl radicals; C_6–C_{12}-aryl-C_1–C_{20}-alkyl radicals, C_1–C_{20}-alkyl-C_6–C_{12}-aryl radicals, C_1–C_{20}-alkyl-C_3–C_8-cycloalkyl radicals, C_6–C_{12}-aryl-C_3–C_8-cycloalkyl radicals C_2–C_6-alkenyl radicals, C_6–C_{12}-aryl-C_2–C_6-alkenyl radicals, di-C_1–C_4-alkylamino radicals and optionally substituted phenoxy and alkoxy radicals X denotes O, NR^9 or



R^4, R^5, R^6, R^7 and R^8, which may be the same or different, represent optionally by halogen, hydroxy, C_1–C_{20}-alkoxy or C_6–C_{12}-aryloxy substituted C_1–C_{20}-alkyl radicals, C_6–C_{12}-aryl radicals, C_2–C_{30}-alkenyl radicals or C_3–C_8-cycloalkyl radicals; C_6–C_{12}-aryl-C_1–C_{20}-alkyl radicals, C_1–C_{20}-alkyl-C_6–C_{12}-aryl radicals halogen, hydroxy, C_1–C_{20}-alkoxy radicals, or C_6–C_{12}-aryloxy radicals, in addition to which

R^7 may represent hydrogen,

R^8 may represent hydrogen or sulphonate and

R^9, R^{10} and R^{11}, which may be the same or different represent hydrogen, silyl, halogen, nitrophenyl, cyano or R^1.

4,537,983

METHOD OF PREPARING 2-PHENYLETHYLCHLOROSILANES

Claus-Dietrich Seiler, Rheinfelden, and Hans-Joachim Vahlensieck, Wehr, both of Fed. Rep. of Germany, assignors to Dynamit Nobel AG, Cologne, Fed. Rep. of Germany

Filed Aug. 27, 1984, Ser. No. 644,808

Claims priority, application Fed. Rep. of Germany, Sep. 2, 1983, 3331682

Int. Cl.³ C07F *7/08*

U.S. Cl. 556—479 **10 Claims**

1. method of preparing 2-phenylethyl chlorosilanes by the addition of hydrogen chlorosilane onto styrene in homogene-

ous systems in the presence of platinum catalysts, comprising conducting the addition reaction in the presence of benzothiazole.

4,537,984

PROCESS FOR PRODUCING 2-(4-HYDROXYPHENOXY) PROPIONATE DERIVATIVES

Isao Hashiba; Tadashi Nishikimi, and Shuji Tsuchiya, all of Funabashi, Japan, assignors to Nissan Chemical Industries Ltd., Tokyo, Japan

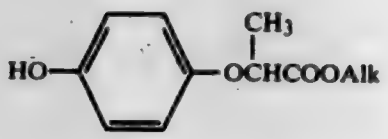
Filed Apr. 26, 1984, Ser. No. 604,156

Claims priority, application Japan, May 19, 1983, 58-88097; Oct. 8, 1983, 58-188889

Int. Cl.[3] C07C *69/76*

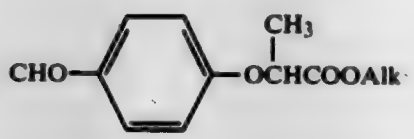
U.S. Cl. 560—061 2 Claims

1. A process for producing a 2-(4-hydroxyphenoxy)propionate derivative represented by the formula:



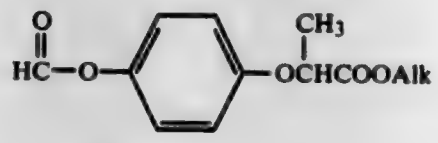
(I)

where Alk is a C_1–C_5 alkyl group, which comprises reacting a phenoxy propionate derivative represented by the formula:



(II)

where Alk is as defined above, with a peroxide to obtain a formate derivative represented by the formula:



(III)

where Alk is as defined above, and hydrolyzing the formate of the formula III.

4,537,985

PROCESS FOR THE MANUFACTURE OF 1,4-BIS[2-(4'-CARBOMETHOXYSTYRENYL)] BENZENE

Imre Puskas, Wheaton, and Marshall Schmitt, Chicago, both of Ill., assignors to Standard Oil Company (Indiana), Chicago, Ill.

Continuation-in-part of Ser. No. 369,035, Apr. 16, 1982, abandoned. This application Jul. 18, 1983, Ser. No. 514,681

Int. Cl.[3] C07C *67/00*; C07F *9/54*

U.S. Cl. 560—96 11 Claims

1. A process for the manufacture of 1,4-bis-[2-(4'-carbomethoxystyrenyl)]benzene which comprises reacting, at a temperature of about 0° C. to about 100° C., in a highly polar anhydrous organic solvent or solvent mixture, or in liquid ammonia a p-xylylene-bis—(trialkylphosphonium halide) or a p-xylylene-bis—(triarylphosphonium halide) with 4-carbomethoxybenzaldehyde, initiated by the slow introduction of an organometallic base or an inorganic base.

7. A process for the preparation of p-xylene-bis(triphenylphosphonium chloride) wherein alpha, alpha'-dichloro-p-xylene and triphenyl phosphine are reacted in about 1:2 molar ratio without a solvent at a temperature of about 140° C. to about 200° C.

4,537,986

PREPARATION OF PYROCATECHOL METHYLCARBAMATE

Gernot Reissenweber, Boehl-Iggelheim; Siegfried Kersten, Frankenthal; Walter Ditter, Heidelberg, and Peter Jacobs, Gruenstadt, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 27, 1983, Ser. No. 517,625

Claims priority, application Fed. Rep. of Germany, Jul. 27, 1982, 3227931

Int. Cl.[3] C07C *125/067*

U.S. Cl. 560—132 4 Claims

1. A process for the preparation of pyrocatechol methylcarbamate by reacting pyrocatechol carbonate with methylamine, wherein the reaction is carried out in the presence of 0.2 to 1.4 moles of a free tertiary amine, per mole of carbonate.

4,537,987

PREPARATION OF PURE MONOESTERS OF ADIPIC ACID

Heinz-Walter Schneider; Wolfgang Richter, both of Ludwigshafen; Walter Disteldorf, Wachenheim, and Rudolf Kummer, Frankenthal, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Fed. Rep. of Germany

Filed Jul. 11, 1984, Ser. No. 629,766

Claims priority, application Fed. Rep. of Germany, Jul. 14, 1983, 3325372

Int. Cl.[3] C07C *67/38*

U.S. Cl. 560—193 5 Claims

1. A process for the preparation of a pure monoester of adipic acid, wherein

(a) a pentenoate is reacted with carbon monoxide and hydrogen at from 90° to 140° C. and under from 5 to 300 bar in the presence of a carbonyl complex of cobalt or of rhodium, said pentenoate being an alkyl ester of 1–12 carbon atoms, a cycloalkyl ester of 5–12 carbon atoms, an alkaryl ester of 7–9 carbon atoms or a phenyl ester, and a 5-formylvalerate is separated off, and

(b) the 5-formylvalerate thus obtained is oxidized with molecular oxygen, or with a gas containing this, at from 20° to 100° C. under from 1 to 10 bar.

4,537,988

PROCESS FOR THE PREPARATION OF 2-(4-HYDROXYPHENYL)-3-METHYLBUTYRIC ACID

Charles P. Grasso, Princeton, N.J., assignor to American Cyanamid Company, Stamford, Conn.

Filed Jun. 6, 1983, Ser. No. 501,337

Int. Cl.[3] C07C *65/01*

U.S. Cl. 562—478 2 Claims

1. A process for the preparation of 2-(4-hydroxyphenyl)-3-methylbutyric acid comprising: hydrolyzing 2-(4-chlorophenyl-3-methylbutyronitrile with a concentrated aqueous solution of an alkali metal hydroxide selected from 50 to 80% by weight of aqueous sodium or potassium hydroxide at a temperature from 140° to 200° C. for a period of time from one to ten hours or until the reaction is essentially complete, to the corresponding 2-(4-chlorophenyl)-3-methylbutyric acid, introducing into the reaction mixture an aqueous solution of 2 to 10 molar percent of a cupric salt selected from cupric chloride or cupric sulfate and displacing the halide with hydroxide at a temperature of 190° to 250° C. at a superatmospheric pressure of 2 to 25 kg cm^{-2} for 1 to 20 hours, or until the reaction is essentially complete.

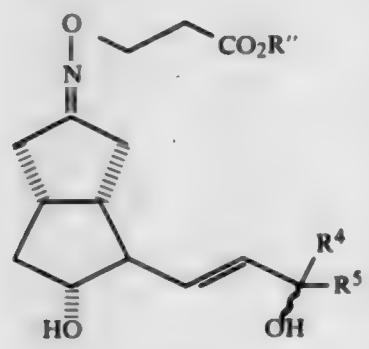
4,537,989

IMINO-BICYCLO (3.3.0) OCTANE DERIVATIVES

Keiichi Ono, Osaka; Akihiko Sugie; Masami Muraoka, both of Toyonaka, and Michihiro Yamamoto, Nishinomiya, all of Japan, assignors to Sumitomo Chemical Company, Limited, Osaka, Japan

Filed Apr. 15, 1983, Ser. No. 485,587
Claims priority, application Japan, Apr. 26, 1982, 57-71071
Int. Cl.³ C07C *131/02*; A61K *31/19, 31/195, 31/215*
U.S. Cl. 562—501 5 Claims

1. A compound of the formula



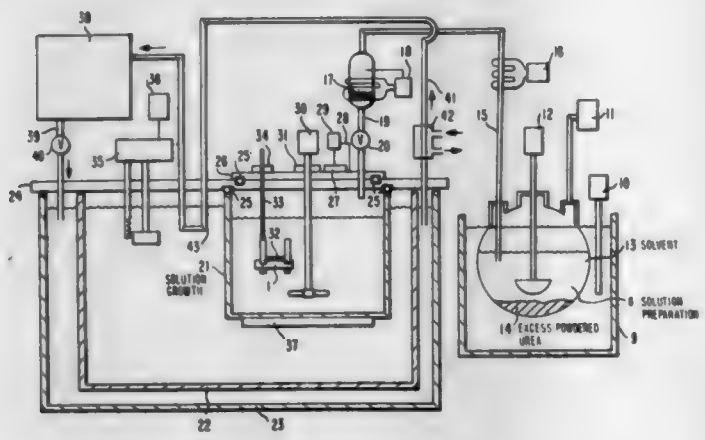
wherein R'' is a hydrogen atom or a C_1-C_4 alkyl group, and R^4 is a hydrogen atom or a C_1-C_4 alkyl group, R^5 is a hydrogen atom, a C_3-C_8 alkynyl group, a C_3-C_8 alkenyl group, a C_1-C_8 alkyl group, a C_3-C_7 cycloalkyl group, a hydroxy C_1-C_8 alkyl group or a group of the formula: $-(CH_2)_m$-B (m is 1 or 2 and B is a C_1-C_4 alkoxy, a C_3-C_7 cycloalkyl, or a phenyl or phenoxy group optionally substituted with a halogen atom, a C_1-C_4 alkyl group, a trifluoromethyl group or a C_1-C_4 alkoxy group).

4,537,990

METHOD FOR GROWING SINGLE CRYSTALS OF UREA

William R. Donaldson, and Chung L. Tang, both of Ithaca, N.Y., assignors to Cornell Research Foundation, Inc., Ithaca, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,601
Int. Cl.³ C30B *7/08*
U.S. Cl. 564—63 2 Claims



1. A process for growing single urea crystals having an altered crystal habit with significant dimensions on the 110 and 110 faces which comprises growing a urea crystal upon a seed crystal from an alcoholic solution of urea containing a crystal quality enhancing amount of ammonium bromide less than an amount which would saturate the crystal growth solution at the lowest crystal growth temperature employed while covering the ends of the growing crystal along the Z axis throughout the crystal growth process to prevent growth of the crystal along the Z axis, thereby providing a urea crystal adapted for laser use.

4,537,991

PROCESS FOR THE DIRECT ACETYLATION OF AROMATIC AMINES

Ellis Margaret D.; Richard L. Ferencz, both of Mount Pleasant, and Dietmar Kalz, Summerville, all of S.C., assignors to Mobay Chemical Corporation, Pittsburgh, Pa.

Filed Nov. 30, 1983, Ser. No. 556,680
Int. Cl.³ C07C *103/127, 102/00*
U.S. Cl. 564—133 9 Claims

1. A process for the acetylation of solid aromatic amines comprising contacting an aromatic amine in flowable particulate form with liquid acetic anhydride under agitation conditions sufficient to prevent the aggolomeration of the particles and then evaporating any unreacted acetic anhydride and the acetic acid by-product without melting the acetylated amine.

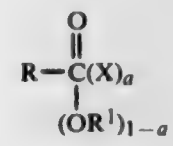
4,537,992

METHOD FOR REMOVAL OF NITROSOAMINE IMPURITIES FROM HERBICIDES

Michael Pikarski, Ramat-Gen; Julian Gabe, Rehovoth, and Edmund Dykman, Ashdod, all of Israel, assignors to Agan Chemical Manufacturers, Ltd., Israel

Filed Feb. 9, 1984, Ser. No. 578,518
Claims priority, application Israel, Feb. 18, 1983, 67948
Int. Cl.³ C07C *87/60, 111/00*
U.S. Cl. 564—437 12 Claims

1. A method for removal of nitrosoamine impurities from herbicides comprising contacting a nitrosoamine containing herbicide homogeneously with 0.001% to 1.0% of a compound having the formula:



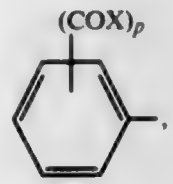
where

X equals chlorine or bromine,

R^1 equals lower alkyl, and

a equals zero or 1; provided that when a equals 1, then:

R equals $X_nH_{(3-n)}C(CH_2)_p$—, or



or R^2COX, where R^2 is selected from alkylene, alkenylene, alkynylene groups having 1 to 5 carbon atoms,

n equals 1 to 3, and

p equals zero, 1 or 2; and provided that when a equals zero, then:

R equals aminophenyl, for a sufficient length of time to remove at least a substantial amount of the nitrosoamine.

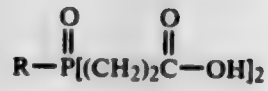
4,537,993

BIS(β-CARBOXYETHYL)ISOBUTYL, SEC. BUTYL AND T-BUTYL PHOSPHINE OXIDE AND POLYAMIDES CONTAINING THE SAME

Christos Savides, Fairfield, Conn., and Allan J. Robertson, Thorold, Canada, assignors to American Cyanamid Company, Stamford, Conn.

Continuation-in-part of Ser. No. 591,287, Mar. 19, 1984, abandoned. This application Jun. 18, 1984, Ser. No. 621,760
Int. Cl.³ C07F *9/53*
U.S. Cl. 568—14 4 Claims

1. A compound having the formula:



wherein R is a secondary butyl radical, an isobutyl radical or a t-butyl radical.

4,537,994

SULFIDE METATHESIS

John S. Roberts, Bartlesville, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Oct. 18, 1983, Ser. No. 542,960
Int. Cl.³ C07C *149/10, 148/00*
U.S. Cl. 568—59 **17 Claims**

1. A process for the reaction of organosulfides with mercaptans which comprises:

contacting a feed consisting essentially of organosulfide and mercaptan in the presence of a catalyst which contains a reaction product of a Group III A component and a phospho Group VIB reactant under reaction conditions to exchange one organic moiety of the organosulfide with the hydrogen of the mercaptan.

15. A process for the reaction of organosulfides with mercaptans which comprises:

contacting an organosulfide with a mercaptan in the presence of a catalyst which contains a reaction product of a Group IIIA component and a phospho molybdic reactant under reaction conditions to exchange one organic moiety of the organosulfide with the hydrogen of the mercaptan.

16. A process for the reaction of organosulfides with mercaptans which comprises:

contacting an organosulfide with a mercaptan in the presence of a phospho Group VIB reactant on a support selected from the group consisting of metal aluminate and Group IIIA phosphate, under reaction conditions to exchange one organic moiety of the organosulfide with the hydrogen of the mercaptan.

17. A process for the reaction of organosulfides with mercaptans which comprises:

contacting di-n-propylsulfide with thiophenol in the presence of a catalyst which contains a reaction product of a Group IIIA component and a phospho Group VIB reactant under reaction conditions to exchange one organic moiety of the organosulfide with the hydrogen of the mercaptan.

4,537,995

ISOMERIZATION OF BRANCHED ALDEHYDES TO KETONES

H. Clay Linstid, III, Maplewood, and Gerald S. Koermer, Springfield, both of N.J., assignors to Celanese Corporation, New York, N.Y.

Filed Nov. 7, 1983, Ser. No. 549,129
Int. Cl.³ C07C *45/67*
U.S. Cl. 568—384 **6 Claims**

1. A process for isomerizing branched aldehydes to ketones which comprises contacting a 2-alkyl substituted aldehyde with a ZSM-5 type crystalline aluminosilicate zeolite at a temperature from about 200° C. to about 600° C. in the presence of water in a molar ratio range from about 0.03 to about 20 moles of water per mole of aldehyde.

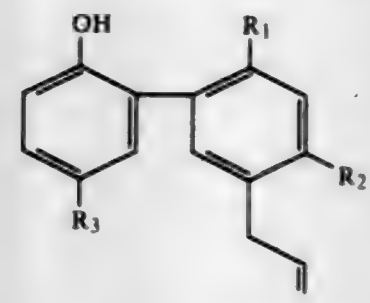
4,537,996

HYDROXYBIPHENYL COMPOUNDS

Akihide Kooda, Gifu; Itsuo Nishioka, Fukuoka; Takeshi Nishiyori, Gifu, and Shoji Yahara, Fukuoka, all of Japan, assignors to Kabushiki Kaisha Tsumurajuntendo, Tokyo, Japan

Filed Sep. 22, 1983, Ser. No. 534,702
Claims priority, application Japan, Nov. 24, 1982, 57-204482
Int. Cl.³ C07C *47/228, 43/168, 39/21*
U.S. Cl. 568—442 **11 Claims**

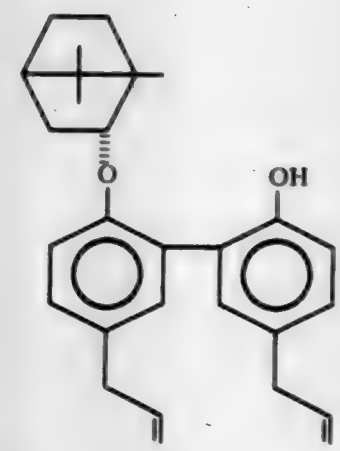
1. An hydroxybiphenyl compound of the formula:



(I)

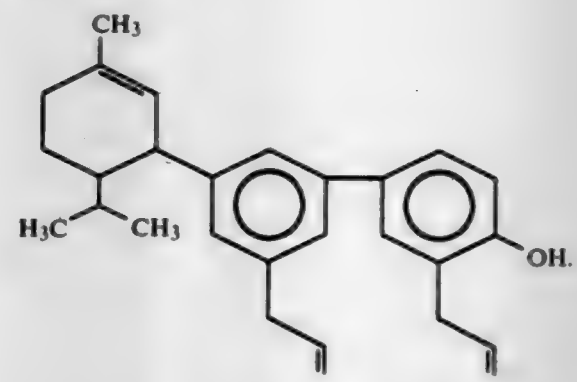
wherein one of R_1 and R_2 is a hydrogen atom and the other is a hydroxyl group and R_3 is a hydroxyl group or a group of the formula —CH=CH—COH.

11. A substantially pure hydroxybiphenyl compound of the formula:



(II)

or of the formula:



(III)

4,537,997

PROCESS FOR TREATING HYDROFORMYLATION CATALYST

Hidetaka Kojima; Takeshi Horikawa, and Masahiro Kagotani, all of Himeji, Japan, assignors to Daicel Chemical Industries, Ltd., Sakai and Kuraray Co., Ltd., Kurashiki, both of, Japan

Filed Dec. 2, 1983, Ser. No. 557,763
Claims priority, application Japan, Dec. 15, 1982, 57-219650
Int. Cl.³ C07C *45/50*
U.S. Cl. 568—454 **8 Claims**

1. In a process for producing an aldehyde by hydroformylation of allyl alcohol with carbon monoxide and hydrogen, in the presence of a rhodium-tertiary phosphine complex hy-

droformylation catalyst, which comprises, in a reaction zone, providing a liquid reaction medium which comprises a solution of said catalyst dissolved in an organic solvent, supplying carbon monoxide, hydrogen and allyl alcohol to said liquid reaction medium under conditions that effect hydroformylation of said allyl alcohol to convert same to the aldehyde, then extracting the aldehyde from the liquid reaction medium with water and separately recovering said solution of said catalyst dissolved in said organic solvent wherein the recovered solution of said catalyst is substantially free of said aldehyde, hydrogen and carbon monoxide and contains spent catalyst, the improvement which comprises: placing said recovered solution in a treatment zone separate from said reaction zone and, in said treatment zone, heating said recovered solution at a temperature of from 40° to 100° C., in contact with a gaseous mixture of carbon monoxide and hydrogen mixed at a volume ratio of from 1:99 to 80:20, to restore the activity of said spent catalyst whereby said solution containing the restored catalyst an be recycled to said reaction zone as said liquid reaction medium.

4,537,998

PROCESS FOR THE OXIDATION OF ISOBUTYLENE OXIDE TO METHACROLEIN

Wilfred P. Shum, East Windsor; John F. White, Princeton, both of N.J., and Eva M. Beals, Washington Crossing, Pa., assignors to Atlantic Richfield Company, Los Angeles, Calif.

Division of Ser. No. 257,675, Apr. 27, 1981,. This application Aug. 13, 1984, Ser. No. 639,765

Int. Cl.³ C07C *47/22, 45/32*

U.S. Cl. 568—483 **9 Claims**

1. A method for producing methacrolein comprising: contacting at a temperature between 250° and 350° C. a catalyst comprising a member selected from the group consisting of a heteropolyacid or a salt thereof and an oxide of a metal of Group IV A, V A, VI A, VII A, VIII, or I B of the Periodic Table of Elements, thallium, tin, lead, arsenic, antimony, bismuth, phosphorous, cerium, uranium and thorium with an isobutylene oxide vapor in the presence of oxygen to produce a reaction mixture containing said methacrolein.

4,537,999

PROCESS FOR A PRODUCTION OF DINITROPHENYL ETHERS

Tetsuya Ogawa; Shinichi Saitoh, both of Chibaken; Takeshi Inoi, Kanagawaken; Masaji Kato, Shizuokaken, and Heitaro Obara, Miyagiken, all of Japan, assignors to Chisso Corporation, Osaka and Kaken Pharmaceutical Co., Ltd., Tokyo, both of, Japan

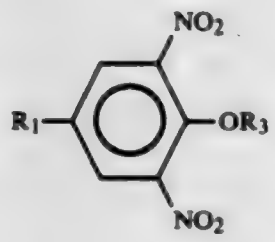
Filed Sep. 21, 1983, Ser. No. 534,145

Claims priority, application Japan, Sep. 30, 1982, 57-172265

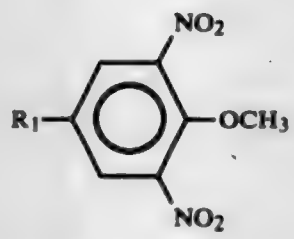
Int. Cl.³ C07C *41/14, 79/35*

U.S. Cl. 568—584 **3 Claims**

1. A process for producing a dinitrophenyl ether of the formula



wherein R_1 represents a member selected from the group consisting of methyl, sec.-butyl, t-butyl and cyclohexyl, and R_3 represents a member selected from the group consisting of ethyl, propyl, isopropyl, sec.-butyl, t-butylcyclohexyl, phenylpropyl, phenyl, 3,5-dichlorophenyl, 2-chloro-4-methyl-phenyl 2-ethoxy-phenyl, and 3,5-dimethyl-4-chloro-phenyl, which process comprises reacting a compound of the formula



wherein R_1 is as defined above, with a compound of the formula

R_3OH

wherein R_3 is as defined above, in the presence of an alkaline compound.

4,538,000

NON-IONIC UNSATURATED CHEMICAL COMPOUNDS

Rodney W. Parr, Doncaster, Australia, assignor to Dulux Australia Ltd., Melbourne, Australia

Filed Nov. 21, 1983, Ser. No. 554,104

Claims priority, application Australia, Dec. 3, 1982, PF7102

Int. Cl.³ C07C *43/15*

U.S. Cl. 568—616 **2 Claims**

1. A non-ionic chemical compound having both hydrophilic and lipophilic components, the hydrophilic component comprising a polyalkylene oxide chain and the lipophilic component comprising at least one ethylenic double bond, characterised in that

(a) the hydrophilic component comprises at least two ethylene oxide units

(b) the lipophilic component has a molecular weight of 1000 maximum and comprises an entity derived from an unsaturated compound selected from the group consisting of pentaerythritol triallyl ether and trimethylolpropane diallyl ether; and

(c) the compound has an HLB value of below 8.

4,538,001

1-ARYLOXY-4-AMINO-2-BUTANOLS

Carl D. Lunsford, and Ying-Ho Chen, both of Richmond, Va., assignors to A. H. Robins Company, Inc., Richmond, Va.

Continuation of Ser. No. 418,940, Sep. 16, 1982, abandoned, which is a division of Ser. No. 813,056, Jul. 5, 1977, Pat. No. 4,379,167, which is a continuation-in-part of Ser. No. 730,498, Oct. 17, 1976, abandoned, which is a continuation of Ser. No. 618,984, Oct. 2, 1975, abandoned, which is a continuation-in-part of Ser. No. 518,122, Oct. 25, 1974, abandoned. This application Sep. 11, 1984, Ser. No. 649,331

Int. Cl.³ C07C *43/225*

U.S. Cl. 568—633 **4 Claims**

1. A 1-aryloxy-4-chloro-2-butanol compound having the formula:

$$ArO—CH_2—CHOH—CH_2—CH_2Cl$$

wherein Ar is 1-naphthyl, 2-naphthyl, indene-4-yl, or indene-5yl.

4,538,002

PROCESS FOR THE PRODUCTION OF HYDROXYANISOLE AND ALKYLATED HYDROXYANISOLES

Howard A. Colvin, Akron; Joel Muse, Jr., Kent, and William S. Hollingshead, Cuyahoga Falls, all of Ohio, assignors to The Goodyear Tire & Rubber Company, Akron, Ohio

Filed Sep. 10, 1984, Ser. No. 649,231
Int. Cl.[3] C07C 41/18, 41/16, 37/00, 39/19
U.S. Cl. 568—650 15 Claims

1. A process for the production of alkylated hydroxyanisoles which consists essentially of:

(A) dehydrogenating para-isopropylphenol in the vapor phase by passing para-isopropylphenol over a catalyst consisting of CuO and Cr_2O_3, the weight ratio of Cr_2O_3 to CuO ranging from 2:1 to 1:1, at a temperature from 350° C. to 650° C. and at an LHSV of from 1.0 to 3.0 to yield para-isopropenylphenol;

(B) reacting para-isopropenylphenol with a methylating agent to yield para-isopropenylanisole;

(C) reacting para-isopropenylnisole with hydrogen peroxide in the presence of a mineral acid and a solvent to yield para- hydroxyanisole;

(D) reacting para-hydroxyanisole with an alkylating agent wherein the alkyl radical is from 3 to 6 carbon atoms to yield the alkylated hydroxyanisole.

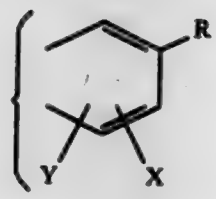
4,538,003

MONOORGANYLATION OF DIHALOAROMATICS

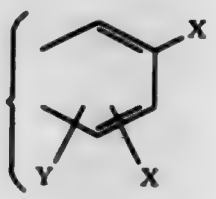
Wilson Tam, Wilmington, Del., assignor to E. I. Du Pont de Nemours and Company, Wilmington, Del.

Continuation-in-part of Ser. No. 546,097, Oct. 27, 1983, abandoned. This application Feb. 24, 1984, Ser. No. 583,336
Int. Cl.[3] C07C 41/18, 17/00, 25/02, 25/18
U.S. Cl. 568—656 50 Claims

1. A method for making compounds of the formula:



comprising reacting a compound of the formula:



with the compound RMX'
wherein:



is an aromatic moiety selected from one of benzene, naphthalene or anthracene;

X is individually Cl or Br, there being no more than one Br atom in the starting compound;

Y is hydrogen, C_1 to C_{20} branched or straight chain alkyl or alkoxy, cycloalkyl, alkaryl, aryl, aralkyl, substituted alkyl, cycloalkyl, alkaryl, aryl, aralkyl, in which the substituents do not react with RMX';

R is C_1 to C_{20} branched or straight chain alkyl containing no tertiary carbon centers, cycloalkyl, alkaryl, aralkyl, or aryl;

M is Mg or Zn; and

X' is Cl, Br, or I;

in the presence of a nickel/bidentate phosphorus catalyst complex or a nickel/tridentate phosphorous catalyst complex; wherein the bidentate phosphorous ligands are selected from the group consisting of:

$(C_6H_5)_2P(CH_2)_aP(C_6H_5)_2$, where a=1, 2, 3 or 4;

$(CH_3)_2P(CH_2)_bP(CH_3)_2$, where b=1, 2, 3 or 4; and

cis-$(C_6H_5)_2PCH=CHP(C_6H_5)_2$;

and the tridentate ligands are selected from the group consisting of:

$[(C_6H_5)_2P]_3CH$,

$[(C_6H_5)_2PCH_2]_3CCH_3$,

$[(C_2H_5)_2PCH_2]_3CCH_3$,

$[o\text{-}(C_6H)_5PC_6H_4]_2PC_6H_5$,

$[o\text{-}(C_2H_5)_2PC_6H_4]_2PC_6H_5$,

$C_6H_5P[(CH_2)_2P(cyclohexyl)_2]_2$,

$[(C_6H_5)_2P(CH_2)_2]_2PC_6H_5$,

$C_6H_5P[(CH_2)_2P(CH_3)_2]_2$,

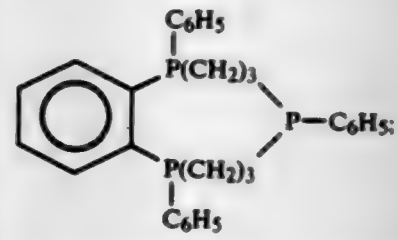
$CH_3P[(CH_2)_2P(CH_3)_2]_2$,

$CH_3P[(CH_2)_2P(C_6H_5)_2]_2$,

$(CH_3)_2P(CH_2)_2P(C_6H_5)(CH_2)_2P(C_6H_5)_2$,

$(CH_3)_3CCH_2P[(CH_2)_2P(CH_3C(CH_3)_3)_2]_2$,

and



with the nickel/bidentate phosphorus catalyst complex, at least one molar equivalent, based on nickel, or triarylphosphine is also present during the reaction.

4,538,004

AROMATIC COUPLING PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 4, 1984, Ser. No. 607,303
Int. Cl.[3] C07C 79/24
U.S. Cl. 568—707 10 Claims

1. A process which comprises reacting (a) a 2-trifluoromethyl-1-nitrobenzene having a replaceable hydrogen in the 4-position with (b) a phenol having a replaceable hydrogen in the 4-position and selected from the group consisting of phenol and substituted phenols bearing at least one inert ring substituent selected from alkyl, alkoxy, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, and alkaryl groups in an inert solvent and in the presence of an alkali metal hydride, hydroxide, or alkoxide to form a 4-(3-trifluoromethyl-4-nitrophenyl)phenol.

4,538,005

AROMATIC COUPLING PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 7, 1984, Ser. No. 607,432
Int. Cl.[3] C07C 79/24
U.S. Cl. 568—707 10 Claims

1. A process which comprises reacting (a) a 3-trifluoromethyl-1-nitrobenzene having a replaceable hydrogen in the 4-position with (b) a phenol having a replaceable hydrogen in the 4-position and selected from the group consisting of phenol and substituted phenols bearing at least one inert ring substituent selected from alkyl, alkoxy, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, and alkaryl groups in an inert solvent in the

presence of an alkali metal hydride, hydroxide, or alkoxide to form a 4-(2-trifluoromethyl-4-nitrophenyl)phenol.

4,538,006

AROMATIC COUPLING PROCESS

G. Patrick Stahly, Baton Rouge, La., assignor to Ethyl Corporation, Richmond, Va.

Filed May 4, 1984, Ser. No. 606,952

Int. Cl.³ C07C *79/24*

U.S. Cl. 568—707 **9 Claims**

1. A process which comprises reacting (a) a 1,3-dinitrobenzene having a replaceable hydrogen in the 4-position with (b) a phenol having a replaceable hydrogen in the 4-position and selected from the group consisting of phenol and substituted phenols bearing at least one inert ring substituent selected from alkyl, alkoxy, alkenyl, alkynyl, cycloalkyl, aryl, aralkyl, and alkaryl groups in an inert solvent and in the presence of an alkali metal hydride, hydroxide, or alkoxide to form a 4-(2,4-dinitrophenyl)phenol.

4,538,007

PROCESS FOR THE SIMULTANEOUS RECOVERY OF 4-HYDROXY-DIPHENYL AND 4,4'-DIHYDROXYDIPHENYL

Eike Gabel, Cologne; Heinz U. Blank, and Horst Behre, both of Odenthal, all of Fed. Rep. of Germany, assignors to Bayer Aktiengesellschaft, Leverkusen, Fed. Rep. of Germany

Filed Jan. 26, 1984, Ser. No. 573,990

Claims priority, application Fed. Rep. of Germany, Feb. 1, 1983, 3303220

Int. Cl.³ C07C *37/68, 37/84*

U.S. Cl. 568—751 **17 Claims**

1. A process for simultaneously separating 4-hydroxydiphenyl and 4,4'-dihydroxydiphenyl from a mixture containing an alkali metal salt thereof which comprises adjusting the water and alkali metal content of said mixtures such that it contains a stoichiometric excess of 1–15 mols of alkali metal hydroxide per mol of the combined amount of 4-hydroxydiphenyl or 4,4'-dihydroxydiphenyl or the corresponding phenolate thereof and the alkali metal hydroxide is present in an amount of 4–25% by weight based upon the weight of the water, whereby to form a solid phase which contains a predominant amount of said 4-hydroxydiphenyl or the corresponding phenolate and a solution phase which contains a predominant amount of said 4,4'-dihydroxydiphenyl or the corresponding phenolate, separating said solution phase and said solid phase at −28° C. to +40° C. and acidifying at least one of said phases.

4,538,008

PREPARATION OF ORTHO-ALKYLATED PHENOLS

Bruce E. Firth, Arlington Heights, Ill., and Terry J. Rosen, Berkeley, Calif., assignors to UOP Inc., Des Plaines, Ill.

Continuation-in-part of Ser. No. 440,676, Nov. 10, 1982, Pat. No. 4,447,652. This application Apr. 20, 1984, Ser. No. 602,302

Int. Cl.³ C07C *37/00, 39/06*

U.S. Cl. 568—783 **15 Claims**

1. A method of rearranging a secondary alkyl or tertiary alkyl phenyl ether to an ortho-alkylphenol, where the alkyl group contains from 3 to about 20 carbon atoms, comprising contacting said ether with alumina, aluminum phosphate, or a silica-modified alumina at a temperature from about 75° C. to about 175° C. and recovering the orthoalkyl phenol.

4,538,009

PREPARATION OF SUBSTITUTED PHENOLS

Norbert Goetz, Limburgerhof; Harald Laas, Maxdorf; Peter Tavs, Limburgerhof; Leopold Hupfer, Friedelsheim, and Karl Baer, Weinheim, all of Fed. Rep. of Germany, assignors to BASF Aktiengesellschaft, Ludwigshafen, Fed. Rep. of Germany

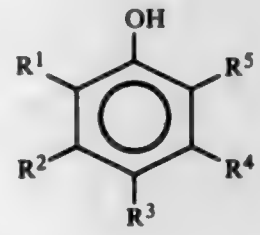
Filed Apr. 12, 1984, Ser. No. 599,574

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1983, 3314372

Int. Cl.³ C07C *37/06*

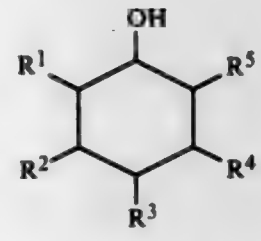
U.S. Cl. 568—799 **14 Claims**

1. An improved process for the preparation of a substituted phenol of the formula I



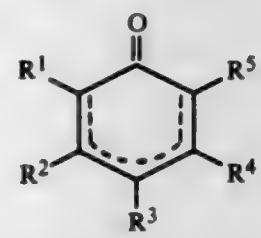
I

where R^1, R^2, R^3, R^4 and R^5 are each independently hydrogen or an aliphatic or aromatic hydrocarbon radical, by dehydrogenating a cyclic alcohol of the formula II



II

or a cyclic ketone of the formula III



III

where one of the broken lines can be an additional C—C bond, in the gas phase at from 150° to 380° C. over a supported noble metal catalyst, wherein the dehydrogenation catalyst used is palladium or platinum on an aluminum spinel carrier which, in addition to aluminum, contains magnesium, zinc, cobalt or nickel.

4,538,010

ALCOHOL RECOVERY PROCESS

William D. Diana, Belle Mead, N.J., assignor to Exxon Research & Engineering Co., Florham, N.J.

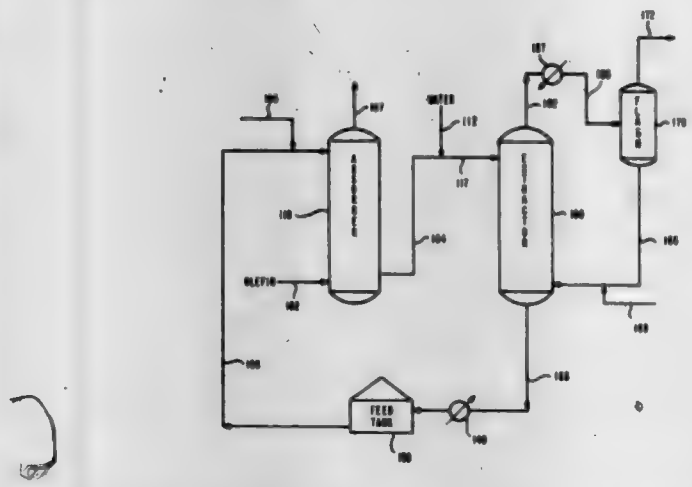
Filed Sep. 17, 1984, Ser. No. 650,874

Int. Cl.³ C07C *29/86, 31/12*

U.S. Cl. 568—918 **30 Claims**

1. An improved process for recovering alcohols from acid-/alcohol feedstreams comprising aqueous strong acid solutions containing said alcohols which comprises (a) contacting said acid/alcohol feedstream in an extraction zone with an effective amount of an extraction solvent selected from the group consisting of alicyclic and acyclic carboxylic acids having from 6 to 20 carbons per molecule and mixtures thereof, for a time and under conditions sufficient to selectively extract said alcohol from said acid/alcohol feedstream and to form a first liquid phase comprising an alcohol-enriched carboxylic acid extract, and a second liquid phase comprising an aqueous strong acid raffinate depleted in alcohol, (b) introducing said alcohol-

enriched carboxylic acid extract into an alcohol vaporization zone and contacting said extract therein with substantially anhydrous stripping vapors, in an amount and under conditions sufficient to form an overhead product comprising at least a



majority of said alcohol passed to said vaporization zone and an alcohol-depleted carboxylic acid extraction solvent liquid, (c) recovering said alcohol vapors from said vaporization zone, and (d) recycling said alcohol-depleted carboxylic acid extraction solvent to said extraction zone.

4,538,011

METHOD FOR THE PREPARATION OF HALOGEN SUBSTITUTED METHANES AND ETHANES

Russell S. Drago, Gainesville, Fla.; James G. Miller, Nyack, N.Y., and Keith D. Weiss, Gainesville, Fla., assignors to University of Florida, Gainesville, Fla.

Filed Apr. 24, 1984, Ser. No. 603,301

Int. Cl.³ C07C *17/00*

U.S. Cl. 570—240 **37 Claims**

1. A method for the preparation of CH_3X or a mixture of CH_3X and XCH_2-CH_3, wherein X is a halogen selected from the group consisting of chlorine, bromine, fluorine and iodine, comprising contacting CO, H_2 and HX at a temperature below 200° C. in the presence of a catalytic amount of a metal carbonyl complex having the formula $M_n(CO)_m$, wherein M is a transition metal, n and m are the same or different and represent integers having a value of at least 1, said complex being capable of oxidatively adding H_2 or HCl and further being in association with (1) at least one Lewis or Brönsted acid capable of coordinating the oxygen atom of said carbonyl moiety and (2) at least one Lewis base other than CO attached to the metal atom of the metal carbonyl complex capable of oxidatively adding hydrogen or HX or a metal carbonyl complex having the formula $Z_y[M_n(CO)_m^{y-}]$ wherein M, n and m have the meanings set forth above, y is an integer having a value of at least 1 and Z is a cation or a cationic support ionically bonded to or in association with the transition metal anion.

4,538,012

OLIGOMERIZATION OF LIQUID OLEFIN OVER A NICKEL-CONTAINING SILICACEOUS CRYSTALLINE MOLECULAR SIEVE

Stephen J. Miller, San Francisco, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Feb. 27, 1984, Ser. No. 584,031

The portion of the term of this patent subsequent to Nov. 22, 2000, has been disclaimed.

Int. Cl.³ C07C *2/02*

U.S. Cl. 585—255 **15 Claims**

1. A process for oligomerizing alkenes comprising:

(a) contacting a C_2 to C_{20} olefin or mixture thereof in the liquid phase with a nickel-containing silicaceous crystalline molecular sieve in the hydrogen form selected from the group consisting of silicalite, an organosilicate disclosed in U.S. Pat. No. RE 29,948, and CZM or mixtures thereof, at a temperature from about 45° F. to about 450° F.;

(b) recovering an effluent comprising oligomerized alkene.

4,538,013

PROCESS FOR PRODUCING DIELS-ALDER ADDUCTS WHILE INHIBITING THE FORMATION OF POLYMERIC BY-PRODUCTS

Wilhelm Donike, Marl; Helmut Ulrich, Dorsten; Heinz Thiemer, Marl, and Josefa Pieper, Haltern, all of Fed. Rep. of Germany, assignors to Chemische Werke Huls AG, Marl, Fed. Rep. of Germany

Filed Mar. 2, 1984, Ser. No. 585,471

Claims priority, application Fed. Rep. of Germany, Mar. 3, 1983, 3307486

Int. Cl.³ C07C *3/00*

U.S. Cl. 585—361 **9 Claims**

1. In a process for preparing 5-vinylnorbornene-2 by the Diels-Alder reaction of 1,3-butadiene with cyclopentadiene, dicyclopentadiene or a mixture thereof, at a temperature of 120°–250° C., with exclusion of oxygen, and in the presence of an effective polymerization inhibiting amount of a polymerization inhibitor, and recovering the 5-vinylnorbornene-2 thereby prepared,

the improvement wherein said polymerization inhibitor is nitric oxide (NO), a nitric oxide precursor capable of liberating NO in situ, or a mixture thereof.

4,538,014

CATALYSIS OVER ACTIVATED ZEOLITES

Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 552,541, Nov. 16, 1983, Pat. No. 4,500,419, which is a continuation-in-part of Ser. No. 355,413, Mar. 8, 1982, Pat. No. 4,427,787. This application Nov. 5, 1984, Ser. No. 668,353

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—408 **21 Claims**

1. A process for converting a feedstock comprising an alcohol, ether or mixture thereof to conversion products comprising hydrocarbons which comprises contacting said feedstock at conversion conditions with a catalyst composition comprising a supported crystalline zeolite, said zeolite having an initial silica-to-alumina mole ratio greater than about 100, prepared by a method which comprises compositing said crystalline zeolite with alumina, reacting the composite with a dilute aqueous solution of hydrogen fluoride of from about 0.1 to about 5 Normal at a temperature of from about 0° C. to about 30° C. for a time of less than about 60 minutes, drying the hydrogen fluoride reacted composite, treating the dried hydrogen fluoride reacted composite by contact with an ammonium salt solution, by hydrolysis or ammonolysis, and calcining the resulting material at a temperature of from about 200° C. to about 600° C.

4,538,015

CATALYSIS OVER ACTIVATED ZEOLITES

Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 552,542, Nov. 16, 1983, Pat. No. 4,500,422, which is a continuation-in-part of Ser. No. 355,415, Mar. 8, 1982, Pat. No. 4,427,788. This application Nov. 5, 1984, Ser. No. 668,356

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—408 **16 Claims**

1. A process for converting a feedstock comprising an alcohol, ether or mixture thereof to conversion products comprising hydrocarbons which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite composition prepared by a method which comprises impreg-

nating a zeolite having an initial silica-to-alumina mole ratio of 70 or more with an ammoniacal aluminum fluoride solution at a temperature of from about 0° C. to about 100° C., said solution comprising from about 0.1 to about 5 weight percent of an aluminum fluoride in solution with at least one member selected from the group consisting of ammonium hydroxide and ammonia, contacting the impregnated zeolite with a warm aqueous 0.1 to 2 Normal solution of an ammonium salt, and calcining the ammonium salt solution contacting material at a temperature of from about 200° C. to about 600° C.

4,538,016

CATALYSIS OVER ACTIVATED ZEOLITES

Joseph N. Miale, Lawrenceville, and Clarence D. Chang, Princeton, both of N.J., assignors to Mobil Oil Corporation, New York, N.Y.

Division of Ser. No. 552,543, Nov. 16, 1983, Pat. No. 4,500,420, which is a continuation-in-part of Ser. No. 355,416, Mar. 8, 1982, Pat. No. 4,427,789. This application Nov. 5, 1984, Ser. No. 668,355

Int. Cl.³ C07C *1/20*

U.S. Cl. 585—408 **18 Claims**

1. A process for converting a feedstock comprising an alcohol, ether or mixture thereof to conversion product comprising hydrocarbons which comprises contacting said feedstock at conversion conditions with a catalyst comprising a zeolite composition prepared by a method which comprises the steps of (1) compositing a porous crystalline zeolite having an initial silica-to-alumina mole ratio greater than about 100 with alumina, (2) impregnating the composite under a vacuum with an aqueous solution of an alkali metal fluoride, (3) contacting the impregnated composite with a warm aqueous solution of an ammonium salt, and (4) calcining the ammonium salt solution contacted material at a temperature of from about 200° C. to about 600° C.

4,538,017

CONVERSION OF PARAFFINS TO AROMATICS

James R. Butler, and James M. Watson, both of Big Spring, Tex., assignors to Cosden Technology, Inc., Dallas, Tex.

Filed Aug. 1, 1984, Ser. No. 636,852

Int. Cl.³ C07C *3/20*

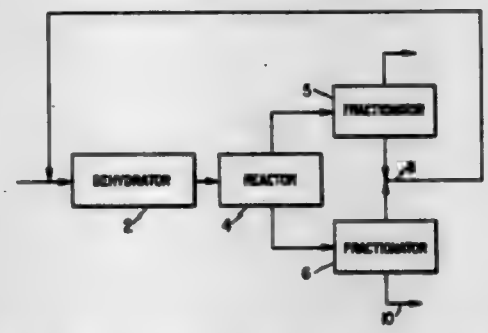
U.S. Cl. 585—415 **21 Claims**

1. In a method of producing aromatic compounds from a paraffin containing feed stock, the combination comprising:

(a) passing said feedstock into a reaction zone into contact with a catalyst system within said reaction zone comprising a discrete physical mixture of a shape-selective crystalline silica polymorph silicalite homologation catalyst and a metal or metal oxide dehydrogenation catalyst,

(b) providing a temperature within said reaction zone sufficient to cause the dehydrogenation of paraffinic hydrocarbons to olefins, the oligomerization of olefinic hydrocarbons to cyclic naphthenes and the aromatization of said naphthenes, and

(c) providing temperature and pressure conditions and relative concentrations of said silicalite catalyst and said dehydrogenation catalyst in said mixture to provide a relationship between the thermodynamic constraint for the dehydrogenation of said paraffinic hydrocarbons and the bal-



ancing of the kinetics of said dehydrogenation and oligomerization reactions to limit the olefin concentration within said reaction zone to a value which does not produce substantial coking of said catalyst system.

4,538,018

SURFACE CONDITIONING IN OLEFIN DIMERIZATION REACTORS

Cecil O. Carter, Wann, Okla., assignor to Phillips Petroleum Company, Bartlesville, Okla.

Filed Dec. 13, 1983, Ser. No. 560,788

Int. Cl.³ C07C *2/24*

U.S. Cl. 585—512 **31 Claims**

1. A method for dimerizing at least one α-olefin in a reactor comprising the steps of:

(a) contacting the surface of said reactor with a homogeneous catalyst selective to dimerization, comprising at least one hydrocarbon-soluble nickel compound as first catalyst component, and at least one organoaluminum compound selected from the group consisting of hydrocarbyl aluminum halides and hydrocarbyl aluminum as second catalyst component, wherein the feed rates of said first and second catalyst components are adjusted so as to give a molar ratio of aluminum in said second catalyst component to nickel in said first catalyst component (Al/Ni mol ratio) being below a first value;

(b) introducing at least one α-olefin having from 2 to 20 carbon atoms into said reactor;

(c) operating said reactor under such conditions as will result in the dimerization of the α-olefin, with the Al/Ni mol ratio of the catalyst being below said first value, for a first period of time ranging from about 0.1 to about 25 hours so as to pre-condition the interior surface of said reactor; and

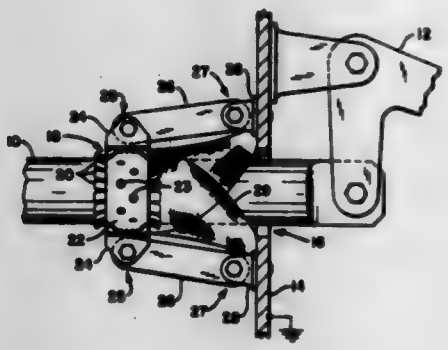
(d) thereafter operating said reactor for a second period of time with the feed rates of said first and second catalyst components adjusted so as to give an Al/Ni mol ratio of the catalyst being at a second value which is higher than said first value.

4,538,019

GROUNDING OF A CONTROL ROD EXTENDING THROUGH AN OPENING IN A STRUCTURE

Frank Bramwell, Hamden, and John DeSouza, Shelton, both of Conn., assignors to United Technologies Corporation, Hartford, Conn.

Filed Apr. 30, 1984, Ser. No. 605,323
Int. Cl.[3] H01R 4/66; H05K 9/00
U.S. Cl. 174—6 6 Claims



1. A structure having an opening therethrough, a control rod extending through said opening and being movable both longitudinally and transversely through the opening, and a grounding device providing an electrical path between said control rod and said structure;

said grounding device including a conductive wiper surrounding and resiliently contacting the control rod while allowing for longitudinal motion of the control rod in the wiper; and

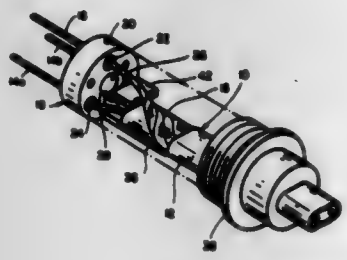
mounting means attaching the wiper to the structure adjacent the opening while allowing for relative transverse motion between the wiper and the structure.

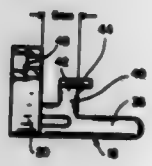
4,538,020

DEVICE TO SEPARATE WIRES TO BE ENCAPSULATED IN A CONNECTOR

Donald Tucker, Mountain View, Calif., assignor to Raychem Corporation, Menlo Park, Calif.

Filed Feb. 6, 1984, Ser. No. 577,106
Int. Cl.[3] H02G 3/18
U.S. Cl. 174—65 R 14 Claims





1. A device for maintaining physical separation between electrical conductors of a cable passing through a connector and for facilitating encapsulation of said conductors in a connector body, said device comprising:

(a) an insulating platform having a configuration for engaging a connector body, said platform having

(i) at least one passageway for passage of a conductor;

(ii) at least one aperture through which an encapsulant can be dispensed; and

(iii) at least one opening for allowing air to be voided during an encapsulation process;

said platform, when engaged with a connector body, forming therewith a hollow chamber through which at least one conductor passes and into which encapsulant can be dispensed through said aperture; and

(b) a spline that extends from said platform for locating said device within a connector body; said spline comprising an extended step portion for resting on a cable and for defining a predetermined separation distance between a cable and said platform.

11. Electrical apparatus comprising

(1) a connector comprising

(a) an inlet

(b) an outlet, and

(c) a chamber between the inlet and the outlet;

(2) an electrical cable which enters the connector through said inlet and which at that point comprises

(a) at least two conductors, each of said conductors being surrounded by an insulating primary jacket, and

(b) an outer insulating jacket which surrounds the insulated conductors; a terminal portion of said outer jacket having been removed to form an outer jacket shoulder which lies within the chamber of the connector, and terminal portions of the primary jackets having been removed to form primary jacket shoulders which lie with the chamber of the connector and to expose terminal portions of the conductors which pass through the outlet of the connector;

(3) an encapsulant which substantially fills the chamber and which encapsulates the electrical cable within the chamber; and

(4) a conductor separating member which is composed of an insulating material and which comprises

(a) a platform which engages the outlet of the connector and which comprises

(i), at least two passageways through which pass said exposed terminal portions of the conductors;

(ii) at least one aperture through which said encapsulant has been dispensed into the hollow chamber, and

(iii) at least one opening through which air was voided from the hollow chamber, and

(b) a spline which extends from the platform into the chamber of the connector and which contacts the outer jacket shoulder of the conductor, the spline comprising an extended step portion for resting on the cable and for defining a predetermined separation distance between the cable and the platform.

4,538,021

CABLE CLOSURE HAVING ASYMMETRICAL END PLATE ASSEMBLY

Andrew H. Williamson, Jr., Doraville, Ga., assignor to AT&T Bell Laboratories, Inc., Murray Hill, N.J.

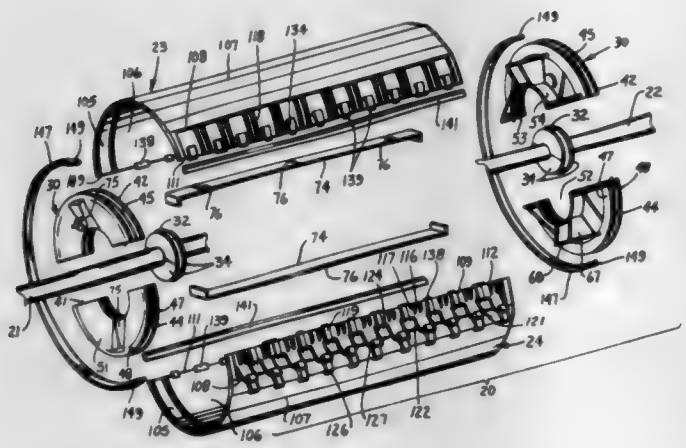
Filed Apr. 6, 1984, Ser. No. 597,688
Int. Cl.[3] H02G 5/113, 5/013
U.S. Cl. 174—92 18 Claims

1. A closure adapted to have at least one cable extend thereinto, said closure comprising:

first and second end plate assemblies being spaced apart and each comprising portions assembled together to form a flanged peripheral portion connected to a wall which converges inwardly toward the interior of said closure and which terminates adjacent to a hub which is offset from the flanged peripheral portion along a longitudinal axis of said closure, each said hub being disposed with said closure and having an opening which is adjacent to have a cable extend therethrough;

first and second covers which are assembled together to engage the flanged portion of each of said end plate assemblies and form a cylindrical housing; and

means disposed within said housing and aligned with each said hub in a plane normal to the longitudinal axis for applying balanced forces to each said end plate assembly



to secure together said portions thereof and to maintain each said hub having a cable extending therethrough in compliant engagement with a sealing material which is disposed about the cable within the hub opening.

4,538,022

FLEXIBLE ELECTRIC CABLE

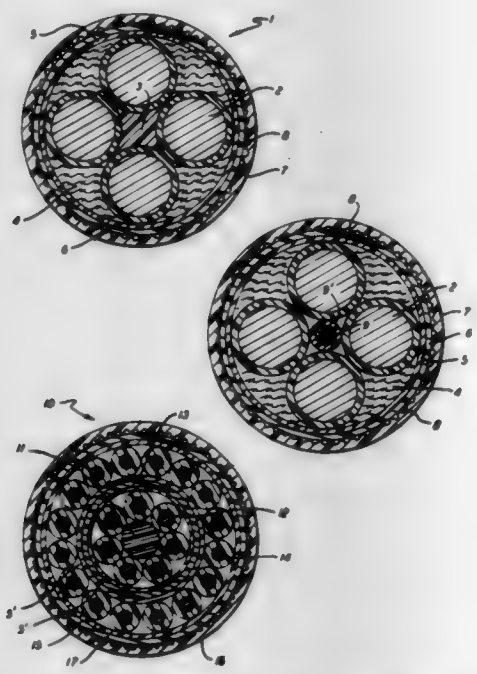
Max Barnicol-Öttler; Martin Loczenski, both of Neustadt; Norbert Mieschke, Coburg; Gerhard Ott; Gerhard Przybylski, both of Neustadt, and Dietmar Weber, Coburg, all of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Dec. 21, 1982, Ser. No. 451,737

Claims priority, application Fed. Rep. of Germany, Dec. 21, 1981, 3151235

Int. Cl.³ H01B *7/04*

U.S. Cl. 174—113 R **8 Claims**



1. In a flexible electric multiconductor cable, comprising a core; insulated conductors twisted about the core in one or more layers; and a plastic or rubber jacket surrounding the insulated conductors, the improvement comprising: a structural element which extends over the entire length of the cable and consists, at least in a region adjacent to the outer surface of the insulated conductors, of a rubber-elastic material with a Shore-A hardness of at most 75; and each insulated conductor having the outer surface of its insulation joined in a material-bonded manner to said structure.

4,538,023

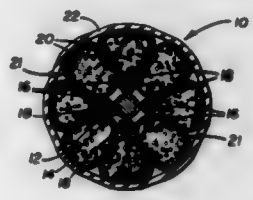
AUDIO SIGNAL CABLE

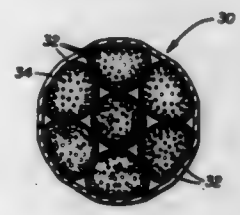
Bruce A. Brisson, 1081 Kachina Ct., Fremont, Calif. 94539

Continuation-in-part of Ser. No. 372,550, Apr. 28, 1982,. This application Dec. 30, 1983, Ser. No. 567,080

Int. Cl.³ H01B *11/12*

U.S. Cl. 174—115 **14 Claims**





1. A cable for transmitting signals which have relatively high and relatively low frequency components over substantially the entire audio frequency range comprising at least one inner conductor for principally transmitting the low frequency components of said signal, a plurality of outer conductors surrounding said inner conductor for principally transmitting the relatively high frequency components of said signal, the lengths of the outer conductors being sufficiently greater than the length of the inner conductor to insure substantially equal speeds of transmitting for said low frequency components and said high frequency components along said cable, and an outer layer of insulating material surrounding said outer conductors.

4,538,024

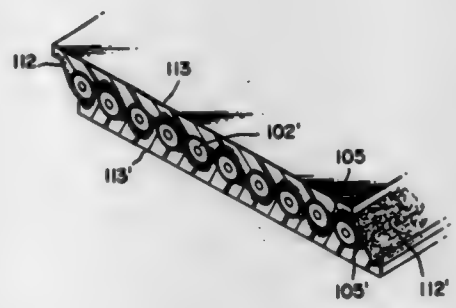
FLAT MULTICONDUCTOR CABLE EXTRUDED ON A WHEEL

Joseph A. Wise, Hershey, and Michael P. Green, Mechanicsburg, both of Pa., assignors to AMP Incorporated, Harrisburg, Pa.

Division of Ser. No. 510,475, Jul. 1, 1983, , which is a continuation-in-part of Ser. No. 437,999, Nov. 1, 1982, abandoned. This application Apr. 9, 1984, Ser. No. 598,142

Int. Cl.³ H01B *7/08*

U.S. Cl. 174—117 F **1 Claim**



1. A substantially endless flat multiconductor cable of the type comprising a plurality of conductors in side-by-side parallel relationship and a ribbon of insulating material in which the conductors are encased, the ribbon of insulating material having oppositely facing first and second major surfaces and side edges, the cable being characterized in that:

the cable is a composite cable comprising first and second cable parts which are substantially identical, the first major surface being on the first cable part and the second major surface being on the second cable part, the first and second cable parts having opposed interface surfaces which are against each other,

every other conductor in the cable being embedded in the interface surface of the first cable part, the remaining conductors being embedded in the interface of the second cable part, the first and second cable parts being offset from each other laterally of the cable axis so that every other conductor is between an adjacent pair of the remaining conductors, the cable parts being laminated together at their interface surfaces,

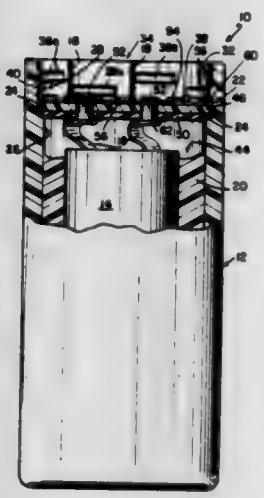
each of the cable parts having been manufactured by continuously passing wires partially around the circumference of a molding wheel, extruding thermoplastic material onto the surface of the molding wheel, chilling the extruded thermoplastic while the wires are on the wheel, and continuously removing the cable parts from the wheel.

4,538,025

ANCHORING APPARATUS FOR A CAPACITOR

Jerry R. Coe; Godfrey R. Pearce, and Francis R. See, all of Glasgow, Ky., assignors to Emhart Industries, Inc., Indianapolis, Ind.

Filed Jan. 16, 1984, Ser. No. 570,883
Int. Cl.³ H01G *9/06*
U.S. Cl. 174—52 S **8 Claims**



1. An electrical device comprising an electrical component, a housing having an open end for receiving the electrical component, a closure member for sealing the open end of the housing, the housing including an inner wall and a shoulder on the inner wall providing an axially outwardly facing seat for the closure member, retaining means for retaining the closure member in sealing engagement with the seat, the retaining means including a plurality of radially outwardly extending ears for gripping the inner wall of the housing, and a plurality of radially inwardly projecting lugs on the inner wall of the housing, each lug having an axially inwardly facing surface for engaging the ears to maintain the closure member in sealing engagement with the seat.

4,538,026

LOOP BACK SYSTEM FOR LOOP TRANSMISSION LINE

Kazuo Yasue, Tokyo, Japan, assignor to NEC Corporation, Tokyo, Japan

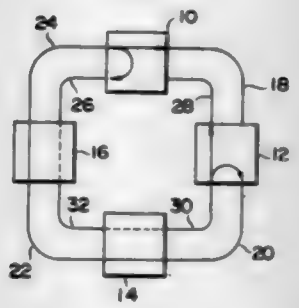
Filed Feb. 28, 1984, Ser. No. 583,538
Claims priority, application Japan, Feb. 28, 1983, 58-32291
Int. Cl.³ H04L *11/16*
U.S. Cl. 178—2 R **4 Claims**

1. A loop back system for a loop transmission line, comprising: an active loop and a backup loop which are paired for transmitting data;

a plurality of transmission devices each being connected to said active loop and said backup loop for generating a loop-back command;

first loop-back command transmission means for causing first one of the transmission devices to transmit a first loop-back command to second one of the transmission devices which is connected to the active loop and to be looped back, said second transmission device being located in the active loop, to which data is to be transmitted, downstream of and adjacent to said first transmission device;

first loop-back means for looping back the second transmission device such that the second transmission device received the first loop-back command is turned back from



the active loop to the backup loop while being kept in connection with the active loop;

second loop-back command transmission means for causing the first transmission device to transmit a second loop-back command to third one of the transmission devices after the second transmission device is looped back by the first loop-back means, said third transmission device being located in the active loop downstream of and adjacent to the second transmission device; and

second loop-back means for looping back said third transmission device such that the third transmission device received the second loop-back command is turned back from the backup loop to the active loop.

4,538,027

SYSTEM FOR INPUTTING A SECURITY CODE TO A COMPUTER

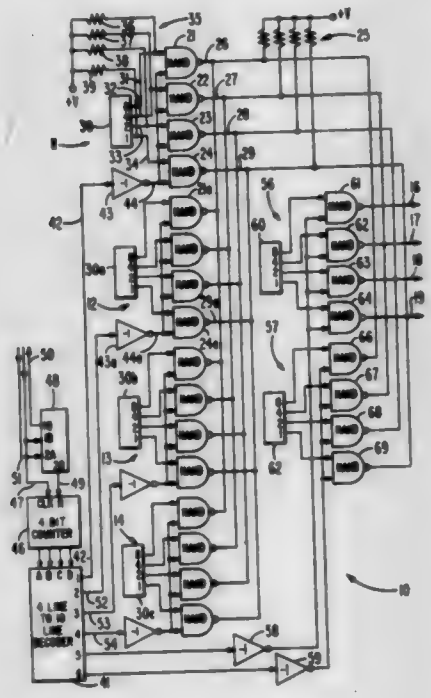
Craig E. Deyer, Akron, Pa., assignor to RCA Corporation, Princeton, N.J.

Filed Jul. 28, 1982, Ser. No. 402,426
Int. Cl.³ H04K *1/00*
U.S. Cl. 178—22.01 **9 Claims**

1. A system for inputting a multi-bit security code to a computer comprising:

a plurality of security bit input means for individually providing the bits of said security code, each of said security bit input means having a plurality of common output lines, said security bit input means also including output line

selection means for selecting the output lines upon which said security bits are provided; and



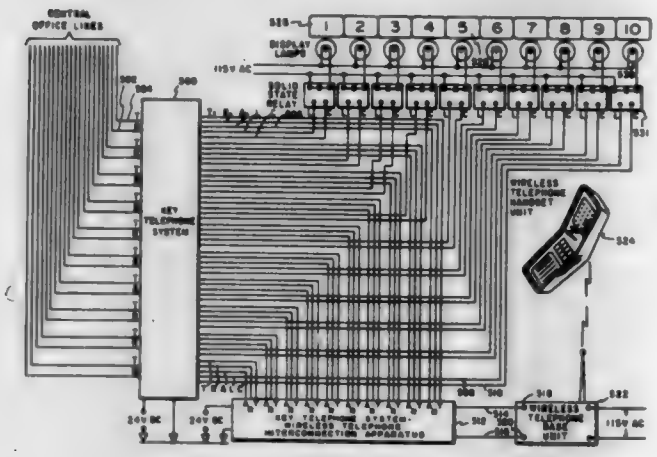
means for sequentially actuating said security bit input means whereby said security bits are sequentially provided to said computer.

4,538,028

APPARATUS FOR USE WITH KEY TELEPHONE SYSTEM WITH WIRELESS TELEPHONE DEVICE

Italo Gazzoli, Clearwater, and Frank Keller, Tampa, both of Fla., assignors to General Telephone of Florida, Tampa, Fla.

Filed Sep. 30, 1983, Ser. No. 538,073
Int. Cl.³ H04Q *7/04;* H04M *1/72*
U.S. Cl. 179—2 EA **10 Claims**



1. In combination with a key telephone system having output circuits connectable to a plurality of outside lines which are connected to a central exchange, said output circuits including lamp controlling circuits adapted for connection to a like plurality of signal lamps, each lamp being associated with a corresponding outside line whereby when said output circuits are connected to said outside lines and said lamp controlling circuits are connected to said lamps, each lamp is lit when its corresponding outside line is busy and is dark when its corresponding outside line is free:

a wireless telephone device having a base unit with first and second output terminals and a separable cooperating handset unit having a manually operable number entry device, said units having cooperating transmitters and receivers which permit wireless communication links to be established between said units;

said plurality of signal lamps being connected to said lamp controlling circuits, said lamps being visually accessible in the vicinity of said cordless telephone; and

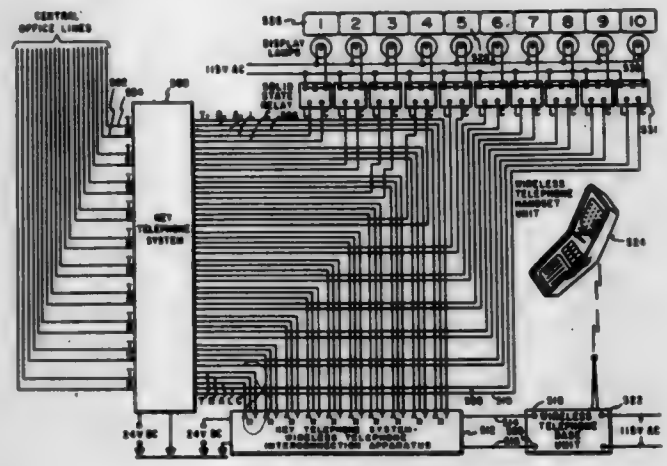
cordless telephone - key telephone interconnection means having first and second input terminals respectively connected to the first and second output terminals of the base unit and having output terminals connected to the output circuits of the key system, said means establishing a plurality of calling numbers for said outside lines to be used by a user of the handset unit, there being a different number associated with each different outside line whereby when said system output circuits are connected to said exchange and said wireless links are established between said units, said user, after observing the lamps to identify these outside lines which are free, can enter any number corresponding to any one of the free outside lines into the device in the handset unit in order to establish a communication channel between the outside line corresponding to the number entered and said handset unit.

4,538,029

APPARATUS FOR USE WITH KEY TELEPHONE SYSTEM WITH WIRELESS TELEPHONE DEVICE

Italo Gazzoli, Clearwater, and Frank Keller, Tampa, both of Fla., assignors to General Telephone of Florida, Tampa, Fla.

Filed Sep. 30, 1983, Ser. No. 538,074
Int. Cl.³ H04Q *7/04;* H04M *1/72*
U.S. Cl. 179—2 EA **10 Claims**



1. Wireless telephone - key telephone interconnection apparatus adapted for connection between a wireless telephone having a base unit with tip and ring output terminals and a separable cooperating handset unit having a manually operable number entry device, and a key telephone system having a plurality of output circuits connectable to a like plurality of outside lines which are connected to a central exchange, each line having a ring conductor and a tip conductor, each output circuit including the same ring and tip conductors as the corresponding line, said apparatus comprising:

an input circuit adapted for connection to said tip and ring output terminals of the telephone;

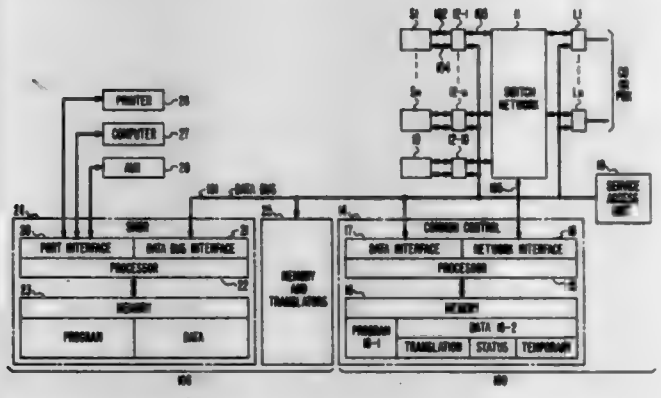
an output network adapted for connection to all of the output circuits of said system;

tone generating means rendered responsive when the apparatus is connected to the telephone and the system and the handset unit is off hook to generate a distinctive dial tone different from central office dial tone and to feed said distinctive tone to said tip and ring terminals whereby the distinctive tone can be reproduced in the handset unit.

4,538,030
METHOD AND APPARATUS FOR ESTABLISHING TELEPHONE CALLING COSTS

Lawrence D. Fossett, Morganville, and Steven C. Michael, Freehold, both of N.J., assignors to AT&T Information Systems Inc., Holmdel, N.J.

Filed Dec. 8, 1983, Ser. No. 559,295
Int. Cl.[3] H04M *15/06, 15/34*
U.S. Cl. 179—7.1 TP 13 Claims



1. A method of establishing the cost of a telephone call made from a first telephone located in a first area code to a second telephone located in one of a number of second area codes the method comprising the steps of:

providing a pair of coordinates based on the geographical location of said first telephone,

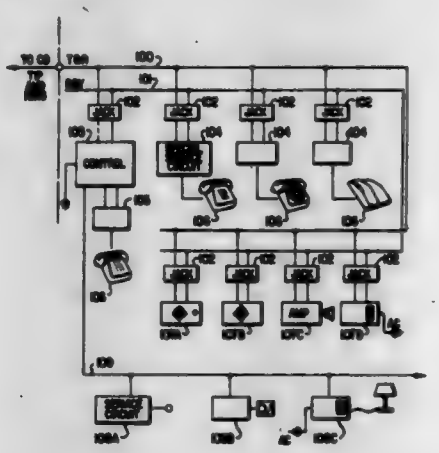
supplying a unique pair of geographical coordinates for each of said number of second area codes, and

determining said telephone cost using the provided coordinates for said first telephone and the supplied coordinates for said one of said number of second area codes within which said second telephone is located.

4,538,031
HOME COMMUNICATIONS AND CONTROL SYSTEM

Gordon D. Benning, Ottawa; Brian J. Pascas; Robert K. Blackhall, both of Kanata; Paul S. Wilker, Ottawa, and Graham A. Neathway, Almonte, all of Canada, assignors to Trillium Telephone Systems Inc., Canada

Filed Sep. 10, 1982, Ser. No. 416,612
Claims priority, application Canada, Sep. 11, 1981, 385716
The portion of the term of this patent subsequent to Jul. 10, 2001, has been disclaimed.
Int. Cl.[3] H04M *1/60, 1/72, 3/42, 11/00*
U.S. Cl. 179—81 B 22 Claims



17. A service circuit for a local telephone line in a building wired with quad telephone conductors, including a tip and ring pair continuous with a subscriber's line connected to a remote switching machine, and a local service lead pair, comprising:

(a) a first special service circuit connected to the quad telephone conductors to which one or more local telephones are connected, for providing a signal path between said tip and ring pair and said local service lead pair,

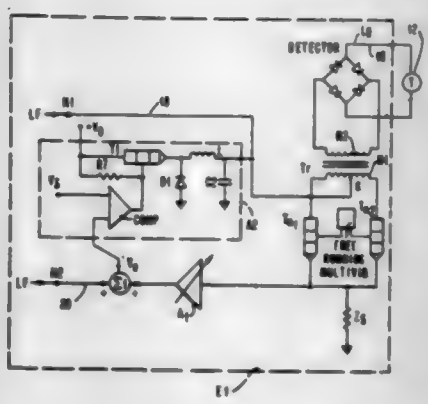
(b) means including a loudspeaker connected to the first special service circuit, for reproducing a message spoken into a microphone of one of said local telephones and carried by said signal path, and

(c) control means connected to the quad telephone conductors for enabling the means including the loudspeaker upon said one of the local telephones going off hook.

4,538,032
INTERFACE CIRCUIT WITH IMPEDANCE ADAPTATION MEANS

Daniel Ballatore, Bar-sur-Loup; Yves A. Bonnet, Saint Laurent due Var; Michel F. Ferry, Vallauris, and Christian A. Jacquart, Gattieres, all of France, assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Oct. 8, 1982, Ser. No. 433,346
Claims priority, application European Pat. Off., Oct. 28, 1981, 81430035.6
Int. Cl.[3] H04B *3/03;* H04M *1/76, 19/00*
U.S. Cl. 179—170 D 7 Claims



1. An interface circuit between a bidirectional telephone line carrying in particular low frequency voice signals, and a telephone switching network connected to said interface circuit via a first and a second unidirectional lines, said interface circuit including means for adjusting the impedance (Z_T) seen by said telephone line and including:

a high frequency transformer including a primary with two end terminals and a center tap K, and a secondary;

means for connecting said secondary to said bidirectional line through a rectifier circuit;

switching means for respectively connecting the end terminals of said primary to first and second switches which alternately open and close at a predetermined frequency;

a load of impedance Z_s connecting said switches to ground;

first amplification means whose predetermined gain $A1(\omega)$ is a function of frequency and which is connected to said load;

addition means connected to said first amplification means and to said first unidirectional line;

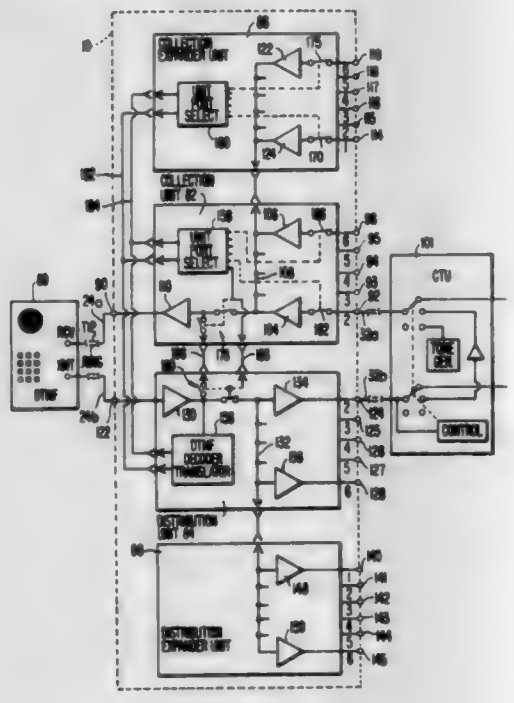
second amplification means whose predetermined gain $A2(\omega)$ is a function of frequency and which has an input from said addition means and an output to said center tap; and

means for connecting said center tap to said second unidirectional line wherein said gains $A1(\omega)$ and $A2(\omega)$ are made adjustable so that the product $A1(\omega).A2(\omega)$ will be substantially proportional to Z_T in a predetermined frequency range.

4,538,033
DATA BRIDGE WITH GATING AND/OR TESTING

Duncan Bruce, Staatsburg, and Charles E. Conklin, Pleasant Valley, both of N.Y., assignors to Conklin Instrument Corporation, Pleasant Valley, N.Y.

Filed Dec. 29, 1983, Ser. No. 566,705
Int. Cl.[3] H04M *1/24*
U.S. Cl. 179—175 20 Claims



1. A communication bridge responsive to a series of control signals containing a bridge address code and a port address code, the bridge comprising:

a primary port,

a plurality of secondary ports,

branching means for coupling the primary port to the plurality of secondary ports,

a plurality of electrically operated switch means connected in series with the respective secondary ports,

bridge switch enablement means connected to the primary port and responsive to the bridge address code corresponding to a predetermined bridge address for enabling a bridge switching function, and

port address means enabled by the bridge switch enablement means and being responsive to the port address code for selectively operating one of the plurality of electrically operated switch means.

4,538,034
EARPHONE ASSEMBLY

Alan French, 27 Druid Rd., Warwick, R.I. 02888

Filed Mar. 18, 1983, Ser. No. 476,761
Int. Cl.[3] H04M *1/05*
U.S. Cl. 179—182 R 5 Claims

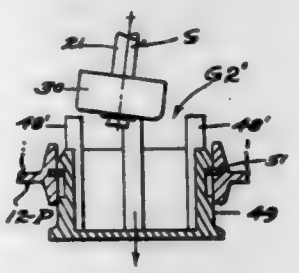


1. An earphone assembly for use in combination with a relatively narrow flexible head gear for retaining an earphone unit adjacent an ear on the head of a user comprising a bracket member and an earphone unit mounted on said bracket member, said bracket member comprising a main body portion, an upper flange which extends outwardly from said main body portion, and an intermediate portion which extends outwardly from said main body portion in downwardly spaced relation to said flange when said earphone assembly is received on the head of said user, said flange, said body portion and said intermediate portion cooperating to define a channel which is dimensioned to receive said head gear in engagement therein for retaining said bracket member between the head gear and the head of said user, said channel being open and substantially unobstructed to facilitate the removal of said bracket member from and the installation thereof on said head gear while said head gear is on the head of a user, said bracket further comprising a leg portion which extends downwardly from said intermediate portion in outwardly offset relation to said ear when said earphone assembly is mounted on the head of said user, said earphone unit being mounted on said leg portion so that it is urged into engagement with said ear of said user as a result of the engagement of said bracket member by said head gear when said earphone assembly is secured on the head of said user with said head gear.

4,538,035
JOYSTICK OCCLUSION GATE CONTROL FOR VIDEO GAMES

Danny J. Pool, 2942 Indian Creek, Bishop, Calif. 93541

Continuation-in-part of Ser. No. 446,508, Feb. 11, 1983, Pat. No. 4,479,083. This application Oct. 13, 1983, Ser. No. 541,687
Int. Cl.[3] H01H *25/04*
U.S. Cl. 200—6 A 34 Claims



1. A joystick control for the selective actuation of at least two contact members along right angularly related X and Y axes intersecting a centered axis of a gimbaled joystick, and including;

a mounting fixedly carrying said at least two contact members disposed about said X and Y axes in right angular relation to each other forming an opening configuration for simultaneous actuation of said at least two right angularly related contact members,

the joystick being gimbaled on the mounting and extending therefrom to be tilted laterally from the centered axis and having a cam portion simultaneously engageable with said at least two right angularly related contact members,

means yieldingly urging the joystick into alignment with the centered axis,

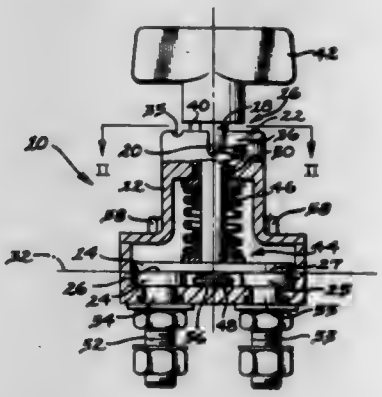
and a selectively positionable gate carried by the mounting concentric with the centered axis and having an obstruction engageable with the joystick and restricting movement of the cam portion thereof into a corner area of the opening configuration between said angularly related contact members for individual actuation of each of said contact members.

4,538,036

ELECTRICAL SWITCHING APPARATUS

Andrew L. Heinrich, Peoria, and Richard L. Oljace, Washington, both of Ill., assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed May 18, 1982, Ser. No. 648,232
Int. Cl.[3] H01H *19/54*
U.S. Cl. 200—11 EA 9 Claims



1. An electrical switching apparatus (10) comprising:
a housing (12) having a cam (22);
a contact (14) movable between first and second positions within said housing (12);
a shaft (18) having a shaft end (56) and a cam follower (20), said shaft (18) extending through said housing (12) and said movable contact (14) and being slidably and rotatably movable relative to said movable contact (14);
multiple spaced apart stationary contacts (24,25) each having a contact surface (26,27), said stationary contacts (24,25) being positioned within said housing (12), and said contact surfaces (26,27) defining a plane (32);
means (16) for moving said movable contact (14) from said first position to said second position at a first rate and for moving said movable contact (14) from said second position to said first position at a second rate, said rates differing substantially one from the other and being controlled by said cam (22) and follower (20); and
wherein said cam (12) includes first and second detents (28,30) disposed substantially radially opposite one another about said shaft (18) along a second plate parallel to and at a first elevational distance from said contact surface defining plane (32);
a third detent (34) annularly positioned between said first and second detents (28,30) and located along a third plane parallel to and at a second elevational distance from said contact surface defining plane (32), said third detent (34) being spaced relatively annularly near one of said first and second detents (28,30), and spaced relatively annularly distant from the other of said first and second detents (28,30); and
a first annular cam portion (36) having a predetermined slope and being positioned between said first and third detents (28,34), and a second annular cam portion (38) having a first segment substantially parallel to said contact surface defining plane (32) and a second segment substantially perpendicular to said contact surface defining plane (32), said second cam portion (38) being positioned between said second and third detents (30,34).

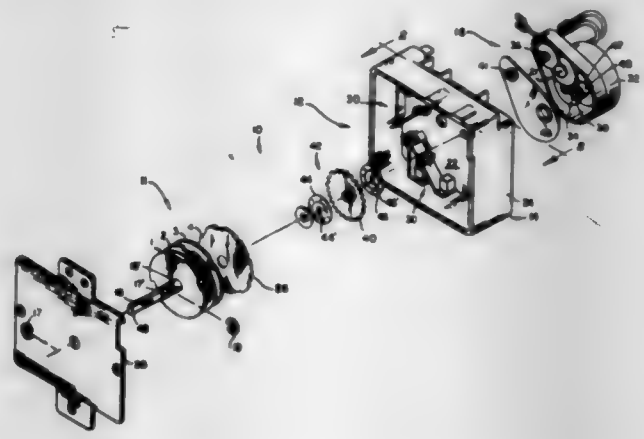
4,538,037

CLUTCH FOR A TIMING MECHANISM

Daniel K. Amonett, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 31, 1984, Ser. No. 615,776
Int. Cl.[3] H01H *43/10*
U.S. Cl. 200—38 R 4 Claims

1. A timing mechanism comprising:
(a) a shaft rotatably journalled between end plates,
(b) a first drive gear fixedly carried by said shaft,
(c) first cam means fixedly carried by said shaft,
(d) a one piece integrally constructed second cam means and a second drive gear carried by said shaft and independently rotatable thereof,
(e) motor drive means and a gear train connected thereto, said gear train including at least two output pinions providing two rotational outputs at different speeds, one of said two output pinions connected to said first drive gear, the other output pinion of said two output pinions connected to said second drive gear through a lost motion connection, and
(f) electrical switch means opening and closing in response to the rotation of said first and second cam means.

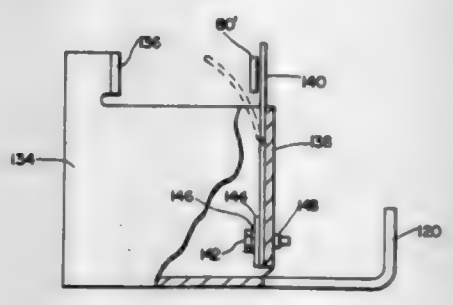


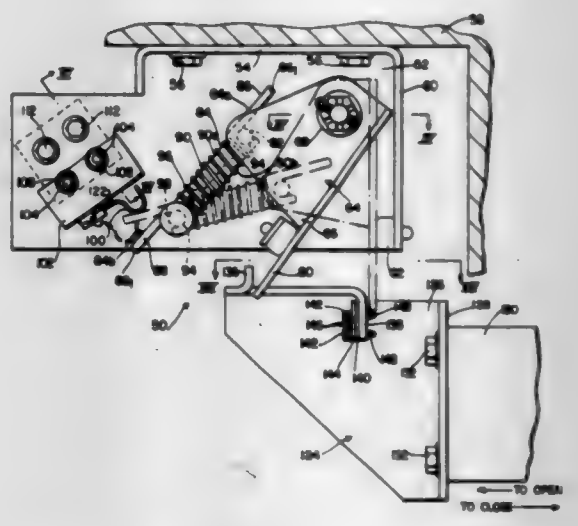
4,538,038

DOOR PANEL POSITION SENSOR ASSEMBLY

Benjamin B. James, Birchrunville, and Edward Peel, Havertown, both of Pa., assignors to Westcode, Inc., Frazer, Pa.

Filed Nov. 9, 1983, Ser. No. 550,084
Int. Cl.[3] H01H *3/16*
U.S. Cl. 200—61.71 18 Claims





12. A door position sensor assembly for sensing the position of the door of a transit vehicle and for indicating whether the door is in the open or closed position thereof, said door being

movable along a predetermined path between the open and closed positions thereof and said door position sensor comprising:

a mounting bracket mounted on the trailing edge of the door and comprising first and second, longitudinally spaced actuator members spaced apart along said predetermined path, said second actuator member being located closest to the trailing edge of the door and comprising a directional flexible actuator which is rigid for one direction of travel of the and is flexible for the other direction of travel of the door; and

a second mounting bracket mounted on the vehicle adjacent to the path of travel of the door, actuator means mounted on said second mounting bracket and including a single actuator arm pivotable between a first position in which the actuator is engageable by both of said actuator members and a second position in which the actuator is engageable by only said first actuator, said single actuator arm normally being in the second position thereof when the door is open and being pivoted to the first position thereof by said first actuator arm during the movement of the door to the closed position and being pivoted from the first position thereof to the second position thereof during movement of the door to the open position, and switch means, mounted on said second mounting bracket and actuated responsive to pivoting of said single actuator arm to the first position thereof, for signalling that the door is closed.

4,538,039

COMPOSITE CIRCUIT BREAKER

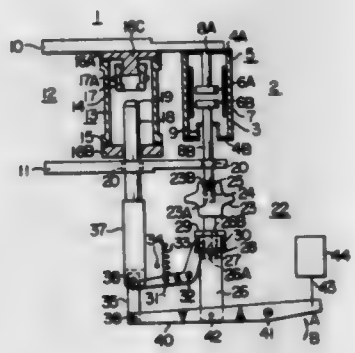
Yoshitomo Gotoh, Hitachi, and Kiyofumi Iwamoto, Ibaraki, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 484,894

Claims priority, application Japan, Apr. 19, 1982, 57-63895

Int. Cl.³ H01N *33/66, 33/16*

U.S. Cl. 200—144 B **17 Claims**



1. A composite circuit breaker comprising:

a vacuum circuit-breaking part including a vacuum envelope, at least one pair of contacts disposed within said vacuum envelope, and rods respectively extending to an exterior of said vacuum envelope from said contacts;

a closing switching part disposed in parallel with said vacuum circuit-breaking part and including a closed housing having disposed therein at least one pair of contact members, a dimension of a stroke of engagement between said contact members is larger than that between said contacts, and contact rods extending to the exterior of said closed housing from said contact members, respectively;

conductors respectively connecting said rods to said contact rods;

operating means including operating rods respectively operatively connected with one of said rods and one of said contact rods associated with one of said conductors, said operating rods moving one of said contacts and one of said contact members so that said contacts and said contact members are respectively connected and disconnected; and

delaying means including a delaying lever associated with said operating means, said delaying means delaying a connecting and disconnecting operation of said contacts latter than that of said contact members.

4,538,040

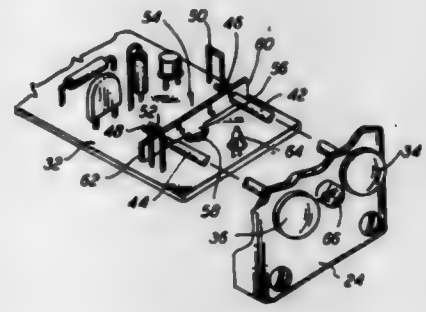
ELECTRICAL SWITCH MEANS PARTICULARLY ADAPTED TO GFCI TEST AND RESET SWITCHES

DeHertburn N. Ronemus, North Syracuse, and Victor M. Tice, Manlius, both of N.Y., assignors to Pass & Seymour, Inc., Solvay, N.Y.

Filed Oct. 5, 1983, Ser. No. 539,155

Int. Cl.³ H01H *1/26*

U.S. Cl. 200—159 A **3 Claims**



1. A ground fault circuit interrupter module having switch means for selectively testing and resetting a circuit-interrupting means, said module comprising:

a. a housing including a rigid, substantially planar cover member;

b. first and second, manually movable actuating members having portions mounted in spaced relation upon said cover member;

c. a generally planar printed circuit board mounted within said housing and having a portion in proximity to said cover member, said board carrying at least a portion of said circuit-interrupting means, and including said switch means;

d. first and second electrical contact pins fixedly attached to and extending outwardly in the same direction from said board at spaced positions along a line substantially parallel to the plane of said cover member;

e. first and second discrete terminals on said board to which said first and second pins are respectively physically and electrically connected;

f. an elongated strip of electrically conducting, springy metal having a central portion essentially midway between opposite, first and second end portions;

g. a third discrete terminal on said board located between said first and second terminals;

h. a solder connection physically and electrically connecting said central portion of said strip to said third terminal, said solder connection providing the sole means of physical support of said strip, said first and second end portions extending to positions in proximity to said first and second pins, respectively, for movement into and out of contact therewith by flexing said strip about said central portion; and

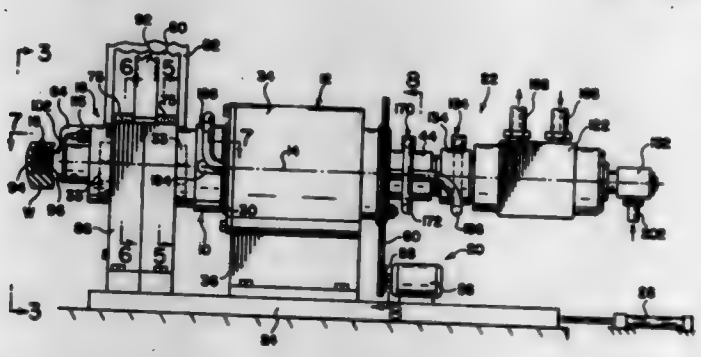
i. portions on each of said first and second actuating members positioned to contact said first and second end portions, respectively, to move the latter into and out of contact with said first and second contact pins in response to manual movement of said actuating members, said first, second and third terminals being so arranged in said circuit-interrupting module that movement of said first end portion operates a first switch means to create a simulated ground fault to actuate said circuit-interrupting means, and movement of said second end portion operates second switch means to electrically restore said circuit-interrupting means to its operative, non-actuated condition, said third terminal being common to the circuits of both said first and second switch means.

4,538,041

ROTATING INDUCTION HEATING APPARATUS

Roger R. Budzinski, Seven Hills, Ohio, assignor to Park-Ohio Industries, Inc., Shaker Heights, Ohio

Filed Aug. 24, 1983, Ser. No. 525,996
Int. Cl.³ H05B 6/14
U.S. Cl. 219—10.75 26 Claims



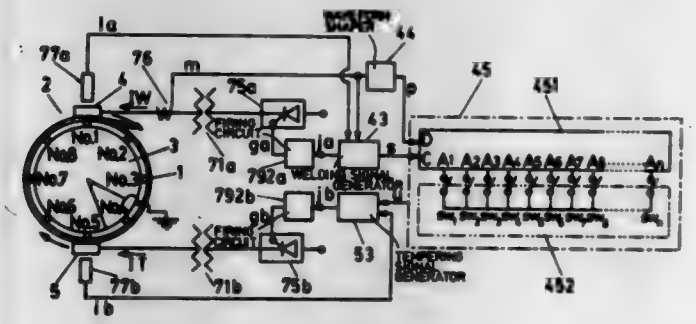
1. Apparatus for inductively heating a non-rotating workpiece having an axis and a surface concentric therewith, comprising spindle means of insulating material having an axis and axially opposite ends, axially reciprocable slide means, means including said slide means supporting said spindle means for rotation about said axis, inductor means supported on one of said ends of said spindle means for rotation therewith, means providing a primary winding spaced radially outwardly of and extending about said spindle means and having ends connectable across a source of alternating current, means including said slide means supporting said primary winding in axially fixed and concentric relationship with said spindle means, plate means extending about said spindle means between said opposite ends thereof and providing a secondary winding concentric with said spindle axis and supported on said spindle means for rotation therewith, said plate means having circumferentially opposite ends, said inductor means having opposite ends each electrically connected to a different one of said opposite ends of said plate means, means for rotating said spindle means during energization of said primary winding, and means to reciprocate said slide means to selectively bring said inductor means and workpiece surface into magnetically coupled relationship, whereby said workpiece is inductively heated in response to rotation of said spindle means and energization of said primary winding.

4,538,042

METHOD AND APPARATUS FOR FORMING REINFORCING CAGE FOR PRESTRESSED CONCRETE PILE

Masaho Tanaka, Yokohama; Tomio Shishido, Ibaragi; Tetsukazu Fukuhara, Hiratsuka; Yugo Yao, Hiratsuka; Kunihilo Kobayashi, Hiratsuka, and Yoshio Inoue, Chigasaki, all of Japan, assignors to Neturen Co., Ltd., Tokyo; Asahi Kasei Kogyo Kabushiki Kaisha, Osaka and Asahi Kasei Kogyo Kabushiki Hiraoka & Co., Tokyo, all of, Japan

Filed May 25, 1982, Ser. No. 381,761
Int. Cl.³ B23K 11/32
U.S. Cl. 219—58 5 Claims



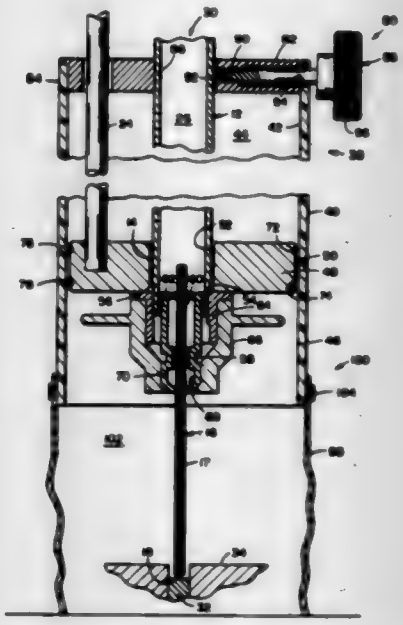
3. In a method of forming a reinforcing cage for prestressed concrete pile including the steps of providing a welding and a tempering rotary electrode which rotate simultaneously in the same direction around the periphery of a cylindrical stationary electrode with a given spacing therebetween, disposing a set of main members in the form of a plurality of steel bars which are to be ultimately used in the prestressed concrete pile so as to be spaced apart circumferentially and slidable axially in parallel relationship with the axis of the stationary electrode, winding an auxiliary member in a helical configuration around the set of main members, causing the welding electrode to urge a crossing of the main member and the auxiliary member toward the stationary electrode while simultaneously passing a welding current between the welding and the stationary electrode for a given cycle through the crossing to thereby weld both members together, and causing the tempering electrode to urge the welded crossing toward the stationary electrode while simultaneously passing a tempering current between the tempering electrode and the stationary electrode through the crossing to thereby temper the weld, the welding current and the tempering current being repeatedly passed across the welding and the tempering electrode and the stationary electrode to weld and temper successive crossings to thereby form a reinforcing cage; the improvement comprising the steps of, when the welding electrode reaches a crossing to be welded, generating an energization indication timing signal, which initiates an energization cycle for passing the welding current for the given cycle through the crossing, simultaneously with an energization confirmation time interval signal of less duration in time than the energization cycle for the welding operation, detecting the presence of the welding current, and interrupting the energization cycle for welding and the flow of welding current if insufficient welding current is detected when the energization confirmation time interval is over so that the crossing remains unwelded, and thereafter in response to said interuption, preventing the tempering current from being applied to such unwelded crossing.

4,538,043

WATER SHIELD FOR A METAL DISINTEGRATOR DEVICE

Rayburn G. Alexander, 569 Hawthorne Ave., San Bruno, Calif. 94066

Filed May 23, 1983, Ser. No. 496,887
Int. Cl.³ B23P 1/08
U.S. Cl. 219—69 V 10 Claims



1. A water shield (38) for use with a metal disintegrator (10), having a longitudinally extending quill (12) having one end (14) adapted to hold a longitudinally extending electrode (16), said electrode (16) having a discharge end (18) spaced from said quill (12), vibrating means (20) for longitudinally vibrating

said electrode (16), and fluid delivery means (30) for delivering a stream of pressurized liquid coolant generally parallel to said electrode (16) and against a broken piece of metal (32) embedded in a metallic member (34), comprising:

a rigid tubular member (40) having an inner wall (42) defining an interior tubular cavity (44) positionable in surrounding relation about least said one end (14) of said quill (12) and having a first end portion (46) positionable generally adjacent said electrode (16), said tubular member (40) including a second end portion (84);

a piston (48) having an outer periphery (50) in tight-fitting sliding relation with said inner wall portion (42) and being generally sealingly attached to said quill (12) adjacent said one end (14) thereof; and

positioning means (80) for selectively longitudinally positioning said tubular member (40) in releasably fixed relation relative to said electrode (16), said positioning means (80) including a cover (82) generally covering said second end portion (84) of said tubular member (40), said cover (82) including a longitudinal opening (86) in which said quill (12) is slidably positionable, and fastening means (88) for selectively fastening said quill (12) in fixed relation to said cover (82).

4,538,044

APPARATUS FOR ASSEMBLING MOTORCAR BODY

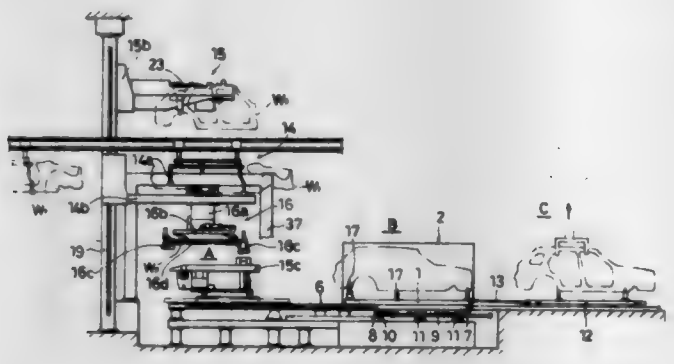
Satoshi Kadowaki, and Yuzi Ikeda, both of Sayama, Japan, assignors to Honda Giken Kogyo Kabushiki Kaisha, Tokyo, Japan

Filed Dec. 22, 1983, Ser. No. 564,618

Claims priority, application Japan, Dec. 22, 1982, 57-223859; Dec. 22, 1982, 57-223860; Dec. 25, 1982, 57-226539

Int. Cl.³ B23K *37/04, 9/12*

U.S. Cl. 219—80 **7 Claims**



1. An apparatus for assembling a motorcar body including a set carrier able to reciprocate between a setting station and a welding station in front thereof, the welding station having on both sides thereof welding jig means for connecting by welding side panels to a floor panel and a roof panel, characterized in that the set carrier is provided with floor panel holding members for positioning and supporting the floor panel, side panel holding members for pressing the side panels against and fixing the side panels to the floor panel with the roof panel solely being held between receiving upper edges of the side panel thereby forming a predetermined car body frame work, so that the side panels, the roof panel and the floor panel can be conveyed from the setting station to the welding station as said predetermined car body framework set on the set carrier, and the car body framework may be transferred as it is to the welding jig means at the welding station.

4,538,045

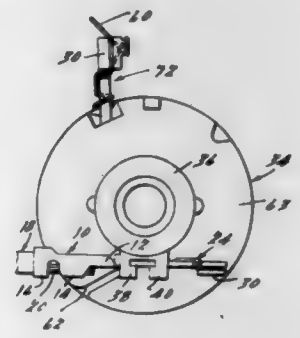
ELECTRIC WIRING TERMINAL AND METHOD OF MAKING SAME

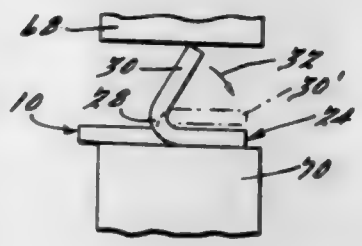
Michael Slavin, Troy, and Ellsworth S. Miller, Mt. Clemens, both of Mich., assignors to Lectron Products, Inc., Rochester, Mich.

Division of Ser. No. 375,764, May 6, 1982, abandoned. This application Jul. 25, 1984, Ser. No. 634,358

Int. Cl.³ B23K *11/16*

U.S. Cl. 219—91.21 **5 Claims**





1. A method of connecting wire coated with a resin-type high temperature insulation to an electrical terminal of metallic material having a connector portion and a relatively large flag portion connected thereto by an essentially narrow neck portion and disposed in acute angular relation with respect to said connector portion, said method comprising the steps of

wrapping said wire around said neck portion with a portion of said wire extending from said neck portion and between said connector portion of said terminal and said flag portion, then

electrically contacting a pair of spaced electrodes with said connector portion of said terminal and said flag portion and passing current therebetween so that resistance to passage of said current by said neck portion heats said neck portion and said wire wrapped therearound sufficiently to explode said insulation from said wire whereby establishing a good electrical connection between said wire and said terminal at said neck portion, and

simultaneously moving at least one of said electrodes toward the other to bend said neck portion and to press said flag portion against said connector portion of said terminal to clamp the extending portion of said wire therebetween.

4,538,046

PRECISE POSITIONING FOR A WELDING ELECTRODE WHICH FOLLOWS A THREE DIMENSIONAL WELD PATH

Gasparas Kazlauskas, 10219 Briarwood Dr., Los Angeles, Calif. 90024

Continuation-in-part of Ser. No. 207,128, Nov. 17, 1980, abandoned. This application Apr. 22, 1982, Ser. No. 370,687

Int. Cl.³ B23K *9/12*

U.S. Cl. 219—125.1 **4 Claims**

1. A welding apparatus for producing a weld along a weld path within a workpiece, said apparatus comprising:

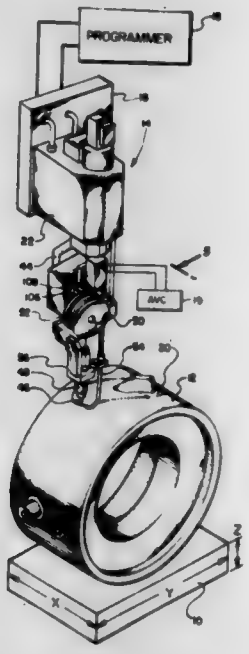
a welding electrode mounted on a welding electrode bracket;

means for producing relative movement between said weld-

ing electrode and said workpiece, said relative movement comprising a plurality of separate axes forming an x-axis and a y-axis and a z-axis, said axes being perpendicular to each other, said z-axis being in a direction toward and away from said workpiece;

a filler wire assembly fixed relative to said welding electrode, said filler wire assembly having an outer free end located directly adjacent to said welding electrode;

a housing, said welding electrode bracket being rotatably mounted upon said housing about a first axis, said welding electrode being located on said first axis, the rotation of said welding electrode bracket being controlled by a predetermined program, said welding electrode bracket to



rotate to continuously maintain said outer free end of said filler wire assembly at a precise position relative to said welding electrode, with said precise position being just forward of said welding electrode as such moves along said weld path, said first axis coinciding with said z-axis; and

said welding electrode being movable along a lineal path relative to said welding electrode bracket, said lineal path coinciding with said z-axis, said movement along said lineal path being controlled by a control means, said control means maintaining the arc voltage constant by physically controlling the spacing of said welding electrode from said workpiece.

4,538,047

METHOD OF CONTROLLING ROBOTIC AUTOMATIC WELDING APPARATUS

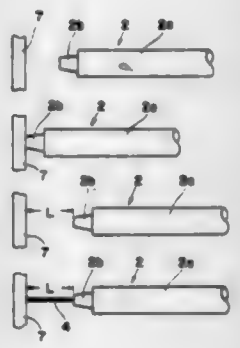
Teruo Nakano, Toyonaka; Hideji Ohtani, Kobe; Kunio Miyawaki, Ashiya, and Shigeo Mogi, Takatsuki, all of Japan, assignors to Hitachi Zosen Corporation, Japan

Filed Nov. 18, 1983, Ser. No. 555,364

Int. Cl.³ B23K *9/10*

U.S. Cl. 219—125.1 **9 Claims**

1. A method of controlling an automatic welding apparatus comprising a welding torch for welding the work to be welded, a robot for movably supporting the welding torch, a feeder for supplying a core wire to the welding torch, and a control device for controlling supply of power to the welding torch, movement of the robot and operation of the core wire feeder, charaterized in that the method comprises the steps of causing the robot to move first until the forward end of the welding torch comes into contact with the work with the forward end of the core wire drawn completely into the torch, subsequently causing the robot to move so that the forward end of the welding torch is brought away from the work by a predetermined amount, and thereafter causing the core wire feeder to inch the core wire until the forward end of the core



wire is projected from the welding torch into contact with the work.

4,538,048

WELDING METHOD AND EQUIPMENT THEREFOR

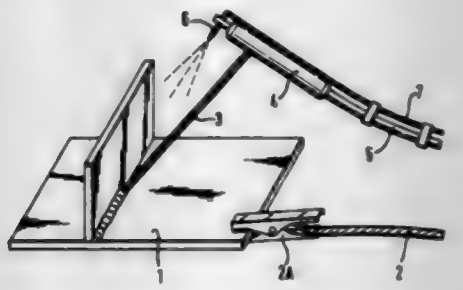
Björn Heed, Utlandagatan 19, 412 61 Götenborg, Sweden

Filed Sep. 10, 1982, Ser. No. 416,548

Claims priority, application Sweden, Sep. 15, 1981, 8105476; Jun. 29, 1982, 8203992

Int. Cl.³ B23K *9/32*

U.S. Cl. 219—137 R **20 Claims**



1. Welding means, comprising: a grounded electrode for connection to a workpiece to be welded, a source of electrical energy, a welding electrode connected to said source of electrical energy for welding said workpiece at a point, at least one further electrode, means for supporting said further electrode adjacent said point of welding at said workpiece, and a current source for generating high voltage direct current, said current source having a first terminal connected to said further electrode, and a second terminal for connection to said workpiece, whereby upon a high-voltage discharge from said further electrode smoke particles formed at the point of welding will be electrically charged and deposited at least on one of said grounded electrode and workpiece.

20. A method of electrical welding a workpiece comprising the steps of:

grounding an electrode to a workpiece to be welded;

connecting a welding electrode to a source of electrical energy;

welding said workpiece at a point with an arc formed by said welding electrode;

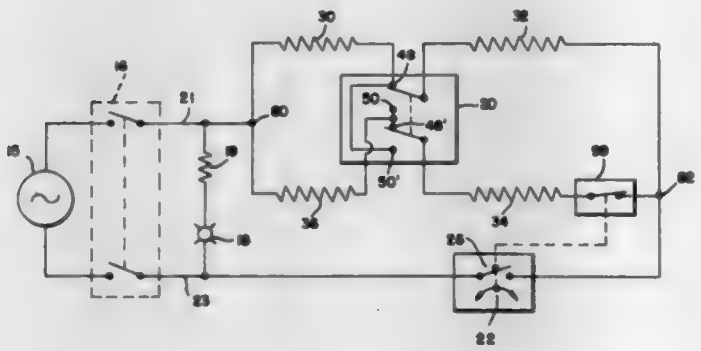
the improvement comprising the steps of providing a high voltage electrode in the welding area;

and establishing a high voltage electrical discharge from said high voltage electrode to the workpiece in the welding area during welding for minimizing particle emission.

4,538,049
TOASTER OVEN

William D. Ryckman, Jr., Orange, Conn., assignor to Black & Decker, Inc., Newark, Del.

Filed Apr. 3, 1984, Ser. No. 596,382
Int. Cl.[3] H05B *1/02*; F24C *7/10*
U.S. Cl. 219—386 7 Claims



1. An electric toaster oven, comprising:

a chamber adapted to hold at least one item of food in a predetermined position during the application of heat thereto;

an upper heat source including a plurality of upper heating elements positioned in said chamber to heat said food item from above, the electrical resistance of each of said upper heating elements being substantially equal to each other;

a lower heat source including a plurality of lower heating elements positioned in said chamber to heat said food items from below, the electrical resistance of each of said upper heating elements being substantially equal to each other;

circuit energizing means; and switch means for

selectively connecting

said circuit energizing means to said heating elements to selectively establish a plurality of circuits, the electrical resistance of said upper heating elements being different from the electrical resistance of said lower heating elements so that

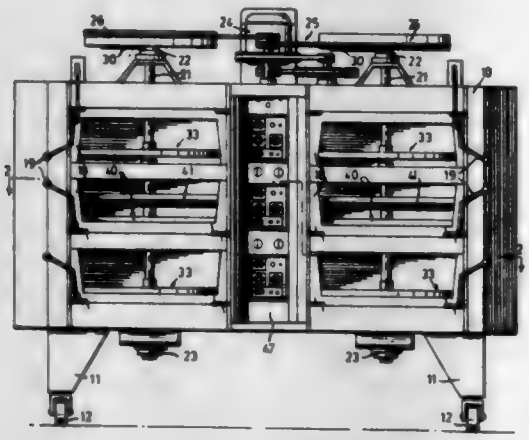
each of said circuits selectively establish different heating ratios with respect to the heat applied to said food items by said upper and lower heat sources,

the rated power output of said upper and lower heat sources being approximately 900 and 600 watts respectively for one heating ratio and approximately 580 and 860 watts respectively for another heating ratio.

4,538,050
BAKER'S OVEN

Paul E. Willett, Clontarf, Australia, assignor to Baker Perkins Exports Pty. Ltd., Springvale, Australia

Filed Oct. 25, 1983, Ser. No. 545,232
Claims priority, application Australia, Oct. 26, 1982, PF6504; Sep. 21, 1983, PG1510
Int. Cl.[3] F27B *9/16*; A21B *1/22*; F27D *11/00*
U.S. Cl. 219—388 5 Claims

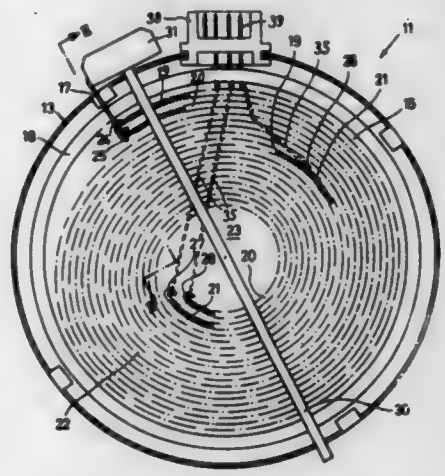


1. A baker's oven comprising a casing, two adjacent series of oven compartments within and insulated from the casing, the compartments of each series being substantially cylindrical, arranged coaxially one above another, and separated by horizontal heat insulating decks, a loading passage leading into each one of the oven compartments through a front opening of the casing, electric heating elements in each of the oven compartments and including top elements mounted under the heat insulating deck forming the compartment top and bottom elements mounted on the heat insulating deck forming the compartment bottom, a drive shaft passing axially through each series of oven compartments, drive means for simultaneously driving the two drive shafts, a rotary support for products to be baked within each oven compartment and being mounted on the drive shaft passing through the compartment, at lest one of the oven compartments containing a second rotary support mounted on the drive shaft passing through the compartment, the two rotary supports being spaced one above another, intermediate thermostatically controlled electric heating elements mounted within said compartment below an upper one and above a lower one of the two rotary supports, said drive means including a drive wheel rotatably mounted on each of the drive shafts, a motor on the casing, a drive from the motor to both of the drive wheels, and rotation transfer means for transferring rotation of each drive wheel to its drive shaft, such means being yieldable to resistance so that each drive shaft may be restrained from rotating without interrupting the drive from the motor to the drive wheels.

4,538,051
HEATING ELEMENT FOR HEATING BOILING PLATES, HOTPLATES AND THE LIKE

Felix Schreder; Leonhard Dörner, both of Oberderdingen, and Eugen Wilde, Knittlingen, all of Fed. Rep. of Germany, assignors to E.G.O. Elektro-Gerate Blanc U. Fischer, Fed. Rep. of Germany

Filed Apr. 19, 1984, Ser. No. 602,122
Claims priority, application Fed. Rep. of Germany, Apr. 28, 1983, 3315438
Int. Cl.[3] H05B *3/68*
U.S. Cl. 219—466 11 Claims



1. A heating element for heating an electrical hot plate, comprising:

a support of electrically-insulating material;

a plurality of electrical heating conductors carried by said support and defining a heating area;

a plurality of connection lines for connecting the heating conductors to a source of electrical energy;

a switching means adapted to switch connections to said heating conductors and said source, the switching means being operable to make individual, parallel and series connections of said heating conductors to said source, to energize the hot plate in a plurality of power stages;

a first of said heating conductors being arranged in a first spiral path having a plurality of windings, said first heating conductor extending from an outer end at an outer limit of said heating area to an inner end at a central zone

of said heating area and connected at both said ends to at least one of said connection lines; and,

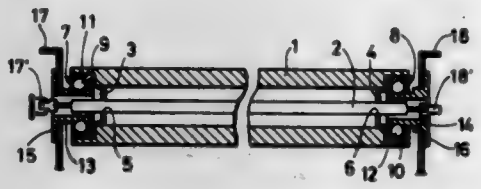
a second and a third of said heating conductors being serially arranged one after the other in a second spiral path interposed between adjacent windings of said first heating conductor, an outer end of said second heating conductor and an inner end of said third heating conductor being arranged at the outer limit and at the central area, respectively, and being there connected to said connection lines, and, the inner end of the second heating conductor and the outer end of the third heating conductor being connected together and to one of said connecting lines, at a connection point situated in the heating area remote from the central zone.

4,538,052

FIXING ROLLER FOR A COPYING MACHINE

Tetsu Asanuma, Saitama, and Satoru Inagaki, Kanagawa, both of Japan, assignors to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jul. 30, 1982, Ser. No. 403,389
Claims priority, application Japan, Jul. 31, 1981, 56-120187
Int. Cl.³ H05B *3/02*; B21B *27/06*
U.S. Cl. 219—469 **4 Claims**



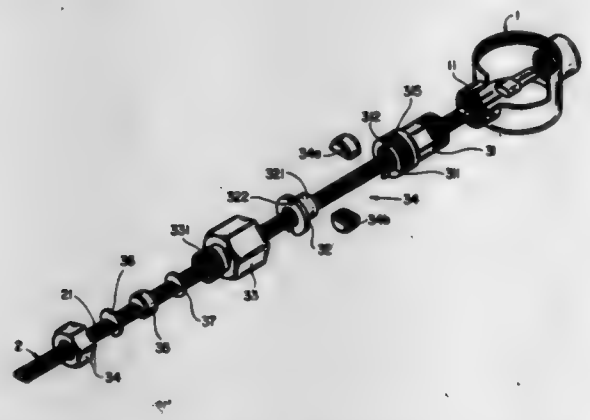
1. A fixing roller for a copying machine comprising a frame means, a heat conductive cylinder, a heater disposed within said cylinder, support means for holding said heater, and bearing means secured to said frame means for rotatably supporting said cylinder on said frame means, said bearing means being comprised of two bearings each having an outer race made of heat resistant resin fitted into opposite end portions of said cylinder under pressure, respectively.

4,538,053

TERMINATION APPARATUS FOR HEATERS IN HAZARDOUS ENVIRONMENTS

Danny G. Morrow, La Honda, and Thomas Y. Oiwa, San Mateo, both of Calif., assignors to Raychem Corporation, Menlo Park, Calif.

Filed Jan. 11, 1983, Ser. No. 457,295
Int. Cl.³ H05B *3/08*
U.S. Cl. 219—541 **8 Claims**



1. Termination apparatus for terminating an elongate electrical heater having an outer metal sheath, the apparatus comprising

(1) a junction box having an entry port through which an elongate heater having a metal outer sheath can be passed for termination within the junction box;

(2) a connection member which is secured to the entry port and which comprises

(a) a first compression member which surrounds a heater passing through the entry port,

(b) a second compression member which surrounds a heater passing through the entry port, the first and second compression members defining between them a chamber having walls spaced apart from a heater passing through the compression members and the entry port,

(c) compression means for drawing the first and second compression members towards each other, without rotating the members relative to each other, along the axis of a heater passing through them, thus reducing the size of the chamber defined by the first and second compression members, and

(d) a grommet which is adapted to be placed within the chamber defined by the first and second compression members, which is composed of lead and is split axially into at least two parts, which has a passageway therethrough conforming generally to the shape of a heater to be passed through the passageway, and which can be deformed into close conformity with a heater passing through the passageway by drawing the first and second compression members towards each other,

the grommet having frusto-conical end sections and the compression members having complementary inverse frusto-conical heating surfaces which bear upon said frusto-conical end sections.

4,538,054

ELECTRIC HEATING FABRIC

André B. de la Bretonière, Beethovenlaan 29, Doorwerth, Netherlands

Continuation of Ser. No. 252,735, Apr. 10, 1981, abandoned, which is a continuation of Ser. No. 21,130, Mar. 16, 1979, abandoned, which is a continuation-in-part of Ser. No. 743,750, Nov. 22, 1976, abandoned, which is a continuation-in-part of Ser. No. 523,731, Nov. 14, 1974, abandoned. This application Dec. 27, 1983, Ser. No. 564,780
Claims priority, application Netherlands, Nov. 14, 1973, 7315574
The portion of the term of this patent subsequent to Mar. 23, 1993, has been disclaimed.
Int. Cl.³ H05B *3/34*
U.S. Cl. 219—545 **6 Claims**



1. An electrical heating fabric comprising warp strands and weft strands, two opposed selvedges being formed by interweaving said warp and weft strands, electrically conductive lead wires being provided as a warp in each of said selvedges, warp threads of electrically insulating material being disposed between said selvedges, the weft strands comprising separate spaced groups of thin threads of electrically insulating material and separate spaced groups of thin wires of electrically conductive material, respectively, said groups of weft threads and said groups of weft wires being arranged in alternating parallel first and second groups, each of which first groups contains a plurality of thin parallel threads of electrically insulating material extending directly between the selvedges, each of which second groups contains a plurality of discrete thin wire strands of electrically conductive material extending in straight paral-

lel lines directly between the selvedges, one of the ends of each individual one of the weft wire strands of each of the groups of electrically conductive material being in electrical contact with the lead wires of one of the selvedges and in electrical contact with the lead wires of the other of said selvedges, whereby, for a fabric of predetermined dimensions, various amounts of heat capacity may be provided by electrically disconnecting individual conductive weft strands from the lead wires in the selvedges.

4,538,055

SLIDE RULE

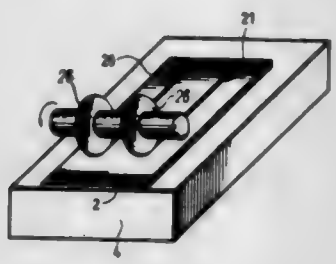
Harald Riehle, Anna-Schieber-Weg 13, D-7300 Esslingen, Fed. Rep. of Germany

Continuation of Ser. No. 447,723, Dec. 7, 1982, abandoned. This application Dec. 7, 1984, Ser. No. 678,390

Claims priority, application Fed. Rep. of Germany, Dec. 7, 1981, 3148355

Int. Cl.³ G06G *1/02*

U.S. Cl. 235—70 R **8 Claims**



1. A slide-rule comprising an upper cover plate, a lower cover plate a pair of spaced apart guide strips and a plastic slide plate situated between the upper and lower cover plates and the guide strips such that the slide plate and the guide strips define parallel slots of a predetermined width, said plastic slide plate having parallel flat surfaces and said upper cover plate and said lower cover plate having at least one flat surface which engages a respective one of the parallel flat surfaces of said slide plate, said slide-rule being made by the process comprising the steps of:

forming spaced parallel slots of substantially equal length in the plastic slide plate by a milling or sawing blade, such that the side surfaces of each slot are perpendicular to the parallel flat surfaces of the slide plate and the width of each slot is equal to the width of the milling or sawing blade;

attaching the upper cover plate and the lower cover plate to a respective one of the parallel flat surfaces of the slide plate at those portions of said parallel flat surfaces situated between the spaced parallel slots and the respective edge of the slide plate; and

cutting the assembly of the upper cover plate, the lower cover plate and the slide plate adjacent both edges perpendicular to the spaced parallel slots forming thereby the guide strips for the slide plate, such that the portion of the slide plate between said slots is slideable relative to the upper cover plate, the lower cover plate and the guide strip's.

4,538,056

CARD READER FOR TIME AND ATTENDANCE

Jorge A. Young, and Bhupendra J. Khandwala, both of Claremont, Calif., assignors to Figgie International, Inc., Richmond, Va.

Continuation of Ser. No. 412,302, Aug. 27, 1982, abandoned. This application Feb. 6, 1985, Ser. No. 698,742

Int. Cl.³ G06C *15/10*

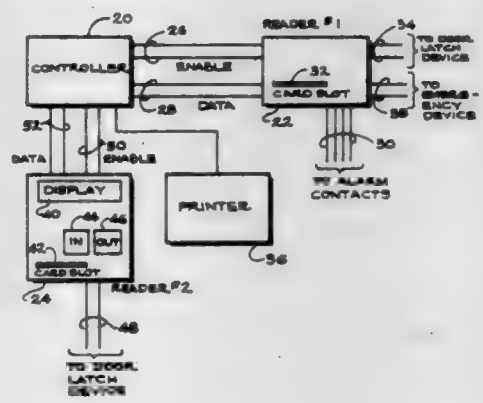
U.S. Cl. 235—377 **20 Claims**

1. A card reader for use in a security system having a central controller and a plurality of said card readers, which controller keeps the time of day, and wherein the central controller and each card reader are electrically connected so as to each define an electrical communication system, each said card reader comprising:

means for reading data stored permanently on a card;

means for determining the time of day;

storage means for said data in said card reader and said time of day;



operative means in said reader for authorizing or refusing authorization independent of the central controller, based upon the data on said card and for causing said data read from said card and said time of day to be stored in said storage means at a first time; and

means for sending said data read from said card and said stored time of day data from said storage means to said central controller at a second time controlled by said electrical communication system.

4,538,057

CASH ACCOUNTING SYSTEM

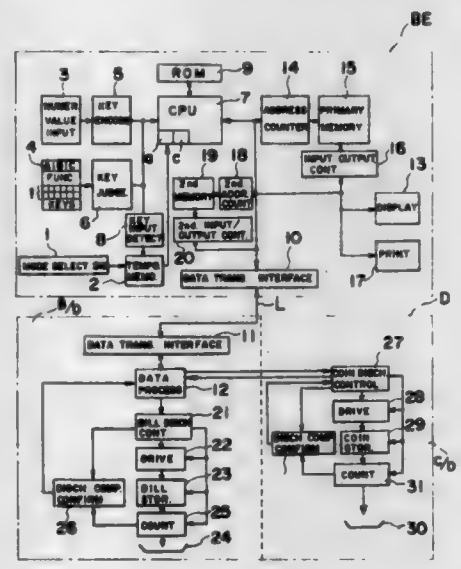
Kenji Iwagami, Sakai, and Hachizou Yamamoto, Kyoto, both of Japan, assignors to Sharp Kabushiki Kaisha, Osaka, Japan

Filed Jun. 16, 1983, Ser. No. 505,366

Claims priority, application Japan, Jun. 18, 1982, 57-105982

Int. Cl.³ G06F *15/30*

U.S. Cl. 235—379 **2 Claims**



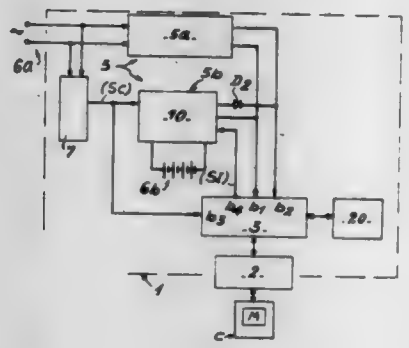
1. A cash accounting system which comprises a cash register (BE) for registering various money transaction information, and a cash dispenser (D) for paying out money in the form of bills and/or coins corresponding to sum of money to be paid out resulting from various transaction registration, said cash register (BE) being electrically coupled to said cash dispenser (D), the improvement comprising means for judging whether or not the cash dispenser (D) corresponds to paying-out of specific money, based on length of data fed from said cash dispenser (D) to said cash register (BE).

4,538,058

POWER SUPPLY SYSTEM OF A DEVICE DESIGNED TO COOPERATE WITH A REMOVABLE ELECTRONIC MEDIUM SUCH AS A CARD AND DEVICE EQUIPPED WITH SUCH A SYSTEM

Michel Ugon, Maurepas, and Serge Fouchard, Plaisir, both of France, assignors to Cii Honeywell Bull (Societe Anonyme), Paris, France

Filed Apr. 20, 1983, Ser. No. 486,670
Claims priority, application France, May 5, 1982, 82 07773
Int. Cl.[3] G06K 5/00
U.S. Cl. 235—380 12 Claims



1. A transaction terminal adapted to cooperate with a portable electronic medium such as a credit card or the like having a non-volatile memory and a first processing circuit, said terminal comprising a second processing circuit for processing data recorded in the memory of the card, the first and second processing circuits being adapted to transfer data therebetween to permit transactions between the terminal and the card; a main supply circuit connected to a main power source for generating a first voltage and for supplying the first voltage to the processors of the terminal and the card; first means for compensating for failure of the main power source, especially during said transfer of data, said first means comprising a backup power supply circuit adapted to be connected to an auxiliary power source for generating a second voltage corresponding to the first voltage; a detector circuit for monitoring the main power source and for generating a control signal upon failure of the main power source during a transaction; second means responsive to the control signal for automatically connecting the auxiliary power source to the backup power supply circuit and for causing the backup power supply circuit to apply the second voltage to the card; and a timing circuit responsive to the control signal for controlling the second means so as to maintain said second voltage applied to the card for a predetermined period of time after said failure sufficient to enable a transaction in progress to be completed and for thereafter disabling the backup power supply circuit and disconnecting the backup power supply circuit from the auxiliary power source.

4,538,059

IDENTIFICATION CARD WITH CONCEALED CODING AND A SIMPLE READER MODULE TO DECODE IT

Peter E. Rudland, Broadstone, England, assignor to ITR International Time-Limited, Swindon, England

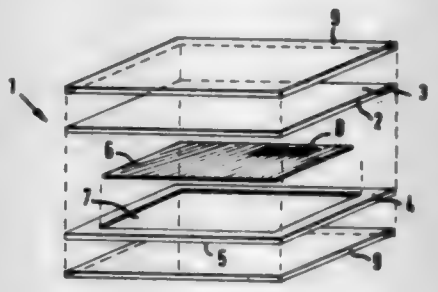
Filed Sep. 13, 1982, Ser. No. 417,624
Claims priority, application United Kingdom, Sep. 16, 1981, 8127962
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—468 16 Claims

1. The combination of an identification card and reading apparatus for said card, said combination comprising:

(a) a card provided with a concealed code which, while being invisible to the naked eye when viewed in visible light, is readable in transmission using infra-red radiation, said code being characterized by successive digits represented by transparent windows alternating with regions opaque to infra-red radiation, the said windows and opaque regions being arranged along a line parallel to one edge of the card and each window representing a binary digit of the code with one binary digit being represented by wide rectangular windows while the other binary digit is represented by significantly narrower windows;

(b) an optoelectric reader consisting of a single source of infra-red radiation and a single infra-red detector arranged to either side of a card slot to enable the coded card to be read on passage along the slot; and

(c) an electronic system responsive to a signal from said



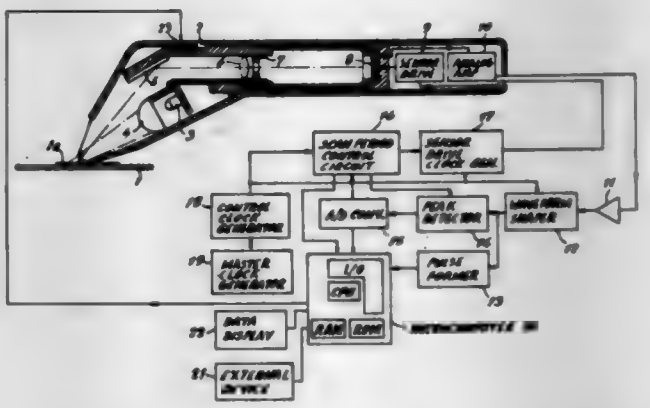
reader and having a first threshold detector arranged to produce a clock signal each time that the reader detects a window in the card and a second threshold detector arranged to produce a second signal to represent a binary one when a second threshold level of output from the electronic reader is passed, the absence of said second signal when a clock signal is detected indicating the presence of a binary ZERO whereby said code windows are self-clocking and the code can be scanned independently of the rate at which said card is moved along the slot.

4,538,060

OPTICAL READING APPARATUS HAVING A READING SENSOR OF ELECTRONIC SCANNING TYPE

Toshiyasu Sakai; Masahiro Hara, both of Kariya, and Nobuyuki Teraura, Tokai, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed May 31, 1983, Ser. No. 499,406
Claims priority, application Japan, May 31, 1982, 57-93375
Int. Cl.[3] G06K 7/10
U.S. Cl. 235—472 14 Claims



1. An optical reading apparatus for converting optically readable information into an electrical signal by means of a reading sensor of electronic scanning type, comprising:

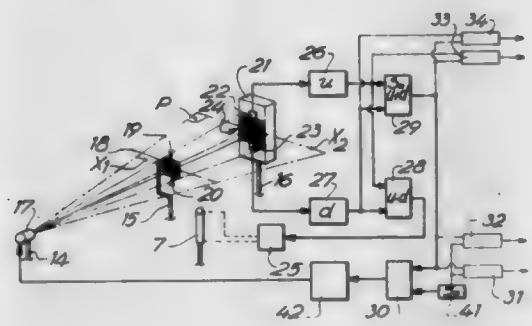
first means for detecting the intensity of light incident on an information label on which said optically readable information is provided; and

second means responsive to said first means for controlling the scanning period of said reading sensor.

4,538,061
RAILWAY WORK MACHINE

André Jaquet, Crissier, Switzerland, assignor to SIG Societe Industrielle Suisse, Neuhausen-Chutes du Rhin, Switzerland

Continuation of Ser. No. 340,971, Jan. 20, 1982,. This application May 23, 1984, Ser. No. 613,747
Claims priority, application Canada, Sep. 25, 1981, 6191/81
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 2 Claims

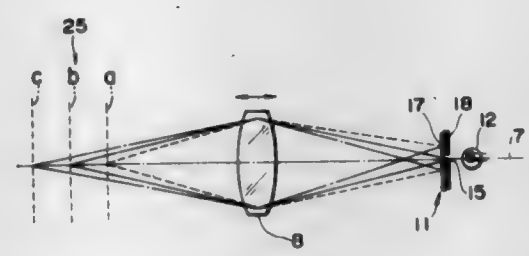


1. A railway work machine comprising railway track displacement tool for correcting levelling and/or alignment defects of the railway track, at least one regulating member for adjusting the displacements of at least one of said tools, and a detection device for the detection of said defects, said detection device being connected to and controlling said regulating member and comprising, in combination, at least one series of three feelers arranged one behind the other at three spaced points of a line of rails of said railway track and to which there are connected, respectively in order, a point-source of light-rays emitter, a screen which masks off a part of said rays and has at least two parallel delimiting edges spaced apart from each other in the direction of the defect to be corrected, a receiver having at least one group of two photosensitive cell means for emitting electrical signals proportional to their irradiated surfaces and to the intensity of their irradiation, said two cell means having identical dimensions and electrical characteristics and being spaced apart from each other and aligned in a direction perpendicular to said two delimiting edges of the screen, whereby the two projected images of said two delimiting edges of the screen fall each in the middle of one of said two cell means when the axis of symmetry of the two delimitting edges is located in a reference plane defined by said point-source of light-rays and the axis of symmetry of said two cell means, and the difference of the irradiated surfaces of said cell means is proportional to the amplitude of the detected defects, a processing circuit for the signals emitted by said two cell means comprising a first totalizer which delivers a control signal proportional to the difference between the values represented by said signals, which signal is used as a control signal for said regulating member, a second totalizer which delivers a signal proportional to the sum of the values represented by said signals, and a pilot circuit for said emitter comprising a comparator having a first input connected to said second totalizer and a second input connected to a generator of a reference signal representative of an instruction irradiation intensity and the output of which is connected to a feed regulator for said point-source of light-rays of the emitter, whereby the sum of the irradiated surfaces of said two cell means is a constant equal to the surface of one of them and therefore the signal delivered by the second totalizer is only representative of the intesity of irradiation of said two cell means and this intensity is maintained as a constant equal to the instruction intensity, while the value of the control signal is exclusively proportional to the difference of the irradiated surfaces of said two cell means and therefore said value of the control signal may also be used as in indication of the actual amplitude of the detected defects.

4,538,062
FOCUSING DETECTING DEVICE WITH COAXIAL SOURCE AND DETECTOR

Yoshio Shishido, Tokyo, Japan, assignor to Olympus Optical Co., Ltd., Tokyo, Japan

Filed Nov. 16, 1982, Ser. No. 442,087
Claims priority, application Japan, Nov. 10, 1981, 56-186530; Nov. 19, 1981, 56-185980; Nov. 20, 1981, 56-186531; Jan. 14, 1982, 57-4117; Jan. 20, 1982, 57-13774
Int. Cl.[3] G01J *1/20*
U.S. Cl. 250—201 31 Claims

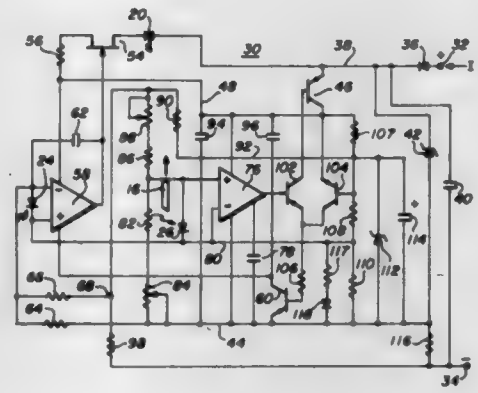


1. A focusing detecting device comprising
an optical system defining an optical axis between an image forming surface and an object to be photographed;
a light projecting means having a small aperture for projecting a light therethrough and along said optical axis onto the object to be photographed; and
a light receiving means having a small aperture for receiving light reflected from the object along said axis and a photoelectric converting surface adjacent said aperture with at least one of said aperture and said surface being in a position optically conjugate with the image forming surface said surface being disposed to emit a signal in response to the reflected light being received thereon whereby a focused state is detected with the reflected light being received within said aperture of said light receiving means.

4,538,063
PHOTO TRANSDUCER CIRCUIT FOR SETTING MINIMUM AND MAXIMUM CURRENT FLOW BETWEEN POWER TERMINALS

Bulent Bulat, Derby, Conn., assignor to Dresser Industries, Inc., Dallas, Tex.

Filed Jan. 5, 1983, Ser. No. 455,679
Int. Cl.[3] G05F *1/56;* H01J *40/14*
U.S. Cl. 250—214 R 10 Claims



1. A photo transistor circuit, comprising:
first and second power terminals for supplying power to said transducer circuit,
a photo emitter for producing light,
a first photo receiver positioned to receive light from said photo emitter,
means responsive to said first photo receiver for regulating the amplitude of light produced by said photo emitter,

a second photo receiver positioned to receive a variable amount of the light from said photo emitter,

means responsive to said second photo receiver for controlling the amplitude of current flow between said first and second power terminals wherein said current flow comprises the output signal of said photo transducer circuit, and

means connected to said means responsive to said second photo receiver for setting a minimum amplitude and a maximum amplitude for said current flow between said power terminals.

4,538,064

DEVICE FOR THE MONITORING OF ICE FORMATION

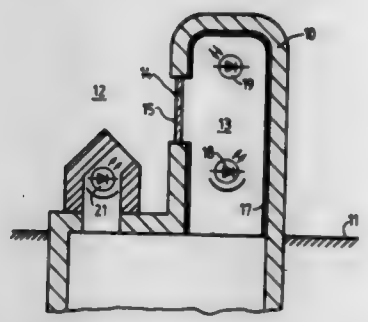
Paul Kovacs, Am Brunnenbächli 2, CH-8125 Zollikerberg, Switzerland

Filed Nov. 12, 1982, Ser. No. 441,167

Claims priority, application Switzerland, Nov. 13, 1981, 7310/81

Int. Cl.³ G01N *21/17*; G01W *1/00*; G08B *21/00*

U.S. Cl. 250—231 R **8 Claims**



1. A device for monitoring the formation of ice, comprising:

a first radiation source for continuously emitting radiation;

a second radiation source for intermittently emitting radiation;

light-sensitive means disposed so as to receive said radiation from said first and second radiation sources and capable of producing an electrical output signal in response to said radiation from either radiation source;

a transparent element disposed between one of said radiation sources and said light-sensitive means, the transparency of said transparent element being changeable depending upon whether said transparent element is clean or is contaminated with a deposit of foreign material; and

circuitry means responsive to said output signal of said light-sensitive means, said circuitry means providing at least one output for indicating the presence of ice on said transparent element, wherein said output signal of said light-sensitive means varies as a function of said changes in transparency of said transparent element and may be substantially continuous or substantially intermittent depending on the transparency of the transparent element.

4,538,065

STROBOSCOPIC SCANNING ELECTRON MICROSCOPE

Motosuke Miyoshi, Fujisawa, and Tetsuya Sano, Yokohama, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 28, 1983, Ser. No. 470,632

Claims priority, application Japan, Mar. 1, 1982, 57-30593; Jun. 25, 1982, 57-109525

Int. Cl.³ G01N *23/00*

U.S. Cl. 250—310 **6 Claims**

1. A stroboscopic scanning electron microscope which comprises:

a scanning electron microscope having a beam pulse generator for emitting a pulsed electron beam onto an object to be measured;

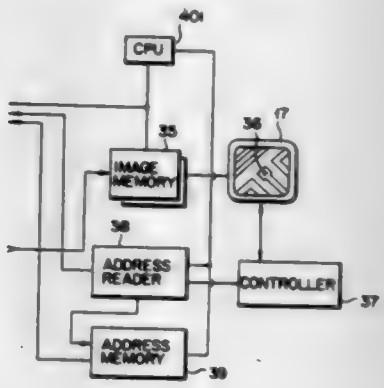
test signal supplying means for supplying a test signal to the object;

beam pulse generating means for controlling said beam pulse generator in response to a synchronizing signal from said test signal supplying means;

scanning controlling means for controlling scanning by the electron beam from said beam pulse generator;

detecting means for detecting the number of secondary electrons generated from the object upon focusing of the electron beam thereon;

memory means for storing data of the number of secondary electrons detected by said detecting means for use in developing potential contrast images;



displaying means for displaying said potential contrast images from said data stored in said memory means;

display controlling means for controlling said display means; and

address generating means for reading a desired address of said memory means which is accessed by said displaying means and for generating an address signal to said memory means.

4,538,066

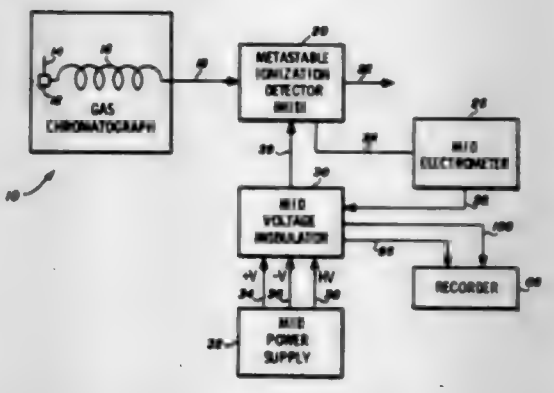
MODULATED VOLTAGE METASTABLE IONIZATION DETECTOR

Glenn C. Carle, Sunnyvale; Daniel R. Kojiro, San Jose, and Donald E. Humphry, Cupertino, all of Calif., assignors to The United States of America as represented by the Administrator of the National Aeronautics and Space Administration, Washington, D.C.

Filed Feb. 22, 1984, Ser. No. 582,643

Int. Cl.³ H01J *47/02*

U.S. Cl. 250—374 **13 Claims**



1. In a gas chromatographic system which employs a carrier gas, and a metastable ionization detector which provides an output signal representative of the concentration of constituents of a substance passing through said system, apparatus for increasing the operating range of said system, which comprises:

power supply means for providing a high voltage ionization potential to said metastable ionization detector; and

modulation means responsive to said output signal to maintain the high voltage ionization potential at a maximum amplitude for constituent concentrations below a predetermined threshold level, and to cause the ionization po-

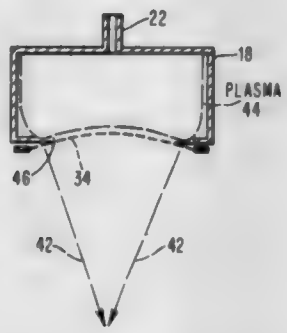
tential amplitude to vary inversely with constituent concentrations as they increase above said threshold level.

4,538,067

SINGLE GRID FOCUSSED ION BEAM SOURCE

Jerome J. Cuomo, Lake Lincolndale; James M. E. Harper, Yorktown Heights, and Gary A. Waters, Peekskill, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 9, 1982, Ser. No. 448,122
Int. Cl.³ H01J *3/14*
U.S. Cl. 250—396 R **23 Claims**



1. An ion beam system for producing a beam of ions, comprising in combination:

means for producing a plasma of charged ions,

a flexible multiapertured grid comprised of an electrically conducting material and located close to said plasma for extracting ions from said plasma and for accelerating said extracted ions, said grid being sufficiently flexible that it will bow toward said plasma by electrostatic attraction to said plasma, and

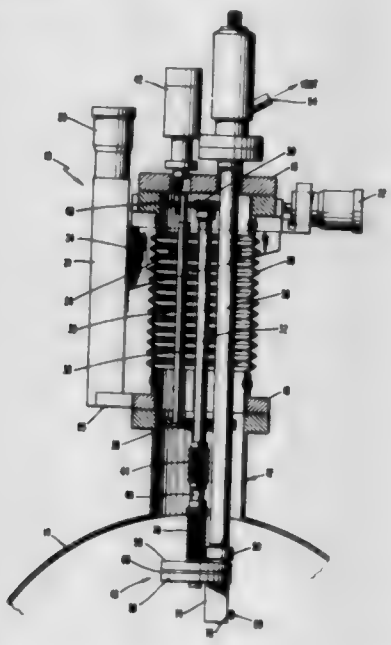
means for biasing said grid.

4,538,068

MANIPULATOR HAVING THERMALLY CONDUCTIVE ROTARY JOINT FOR TRANSFERRING HEAT FROM A TEST SPECIMEN

Steven J. Haney, Tracy; Richard H. Stulen, and Norman F. Toly, both of Livermore, all of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed May 3, 1983, Ser. No. 491,134
Int. Cl.³ G01N *21/00*
U.S. Cl. 250—443.1 **16 Claims**



1. A manipulator for rotating a material specimen in a high vacuum environment comprising:

a frame extending into the high vacuum environment;

a rotary shaft carried by the frame;

a first disc constructed of a first thermally conductive material rigidly supported by an end of the rotary shaft;

a specimen mount carried by the first disc for rotation therewith;

a second disc constructed of the first thermally-conductive material carried by the frame, said second disc being provided with a clearance hole for receiving the rotary shaft therethrough;

bearing means constructed of a second material which is thermally conductive interposed between and in contact with the first and second discs for facilitating rotary movement between the discs while maintaining thermal conduction between the discs;

means for cooling said second disc with a thermal media; and

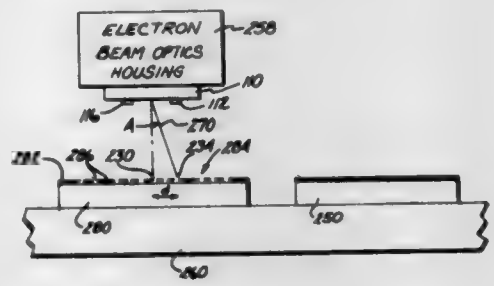
drive means for effectuating rotary movement to said rotary shaft whereby said specimen mount is rotated with said rotary shaft while maintaining a thermal conductive path from the mount through the first disc, the bearing means and the second disc.

4,538,069

CAPACITANCE HEIGHT GAGE APPLIED IN RETICLE POSITION DETECTION SYSTEM FOR ELECTRON BEAM LITHOGRAPHY APPARATUS

John R. Shambroom, Lexington, and Alan P. Sliski, Lincoln, both of Mass., assignors to Control Data Corporation, Minneapolis, Minn.

Filed Oct. 28, 1983, Ser. No. 546,760
Int. Cl.³ H01J *37/304*
U.S. Cl. 250—491.1 **1 Claim**



1. A method of detecting the position of a chrome-on-glass reticle in an electron beam lithography apparatus which includes an electron beam source in an electron beam housing, further comprised of a control system for controlling the angle of deflection of said electron beam, and a circuit substrate secured to the bottom of said electron beam housing, comprising the steps of:

positioning a calibration plate under said electron beam housing said calibration plate having an overlying conductive layer and a grid of spaced nonconductive points of known geometry formed into said conductive layer, one of said nonconducting points comprising an origination point, said origination point of said grid being aligned with the center line of said optics housing;

varying said deflection angle to deflect said electron beam from one of said nonconductive points of said grid to the next until said beam strikes a desired point, said desired point being spaced a specified distance from said origination point, the angle of deflection of said beam with respect to the center line of said optics housing when said beam strikes said desired point comprising a normal deflection angle;

measuring the distance between at least three sensor plates disposed on the bottom of said substrate and said calibration plate, each of said sensor plates being coupled to an associated measuring capacitor circuit, each of said sensor plates comprising the driven plate of a measuring capacitor and said calibration plate comprising the grounded plate of each of said measuring capacitors, each of said

measuring capacitor circuits generating a measuring capacitor signal representative of the distance between each sensor plate and said calibration plate;

processing each of said measuring capacitor signals into information defining the position of said calibration plate with respect to said sensors, said position of said calibration plate comprising a calibrated position for said reticle;

positioning said reticle under said electron beam housing and aligning an origination point on said reticle with said center line of said housing;

measuring the distance between each of said sensors and said reticle wherein each of said sensors comprises the driving plate of a measuring capacitor and said reticle comprises the grounded plate of said measuring

capacitors, each of said measuring capacitors generating a measuring capacitor signal representative of the distance between each sensor plate and said reticle;

processing each of said measuring capacitor signals into information defining the position of said reticle with respect to said sensors, said position comprising a reticle position;

comparing said reticle position with said calibrated position to determine the deviation of said reticle from said calibrated position; and

adjusting the angle of deflection of said electron beam from said normal deflection angle to a corrected deflection angle in response to said deviation information so that said electron beam is deflected said specified distance from said origination point on said reticle to strike said desired point on said reticle.

4,538,070

APPARATUS FOR TREATING DENTAL PROSTHETIC PARTS WITH RADIATION

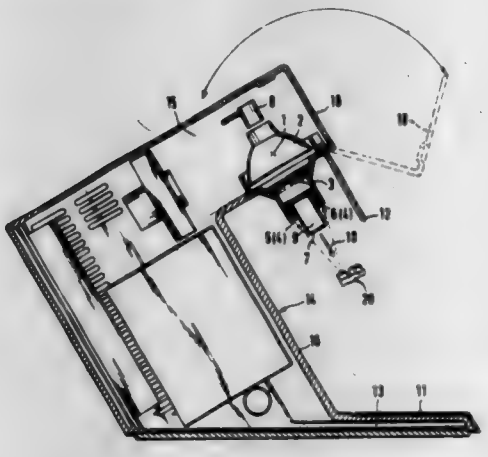
Wolf-Dietrich Herold, Hechendorf; Karl L. Grafwallner, Munich, and Michael Keller, Lochham, all of Fed. Rep. of Germany, assignors to ESPE Fabrik pharmazeutischer Praeparate GmbH, Fed. Rep. of Germany

Filed Jun. 3, 1983, Ser. No. 500,849

Claims priority, application Fed. Rep. of Germany, Jul. 8, 1982, 3225589

Int. Cl.³ C08J *3/28*

U.S. Cl. 250—504 R **12 Claims**



1. An apparatus for treating dental prosthetic parts and materials with radiation of a selected spectral range, including

a source of radiation which comprises said selected spectral range,

reflecting means for directing radiation of said selected spectral range onto a location of treatment,

filter means substantially transmitting said selected spectral range, disposed between said source and said location of treatment, and

a non-contacting proximity switch for switching on said source, the switch being actuated by the presence of an object at said location of treatment.

4,538,071

PRACTICAL DEVICE FOR THE MEASUREMENT OF THE ABSORBED DOSE VERSUS DEPTH IN SOFT TISSUES

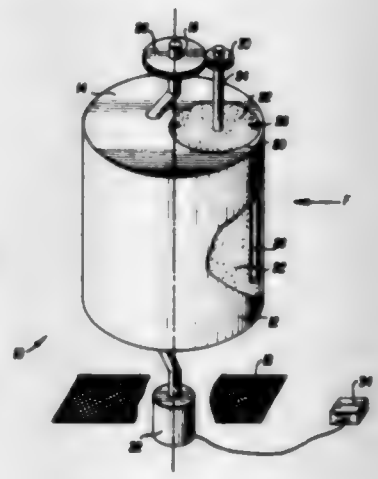
Raymond Bardoux, Neuilly, and Henri Joffre, Bourg-la-Reine, both of France, assignors to Commissariat a l'Energie Atomique and Merlin Gerin, both of, France

Filed Oct. 19, 1982, Ser. No. 435,330

Claims priority, application France, Oct. 27, 1981, 81 20282

Int. Cl.³ G01D *18/00*

U.S. Cl. 250—505.1 **5 Claims**



1. A device for irradiation measurement comprising a phantom representing a portion of the human body and having a cavity for housing a radiation detector, the phantom comprising a first rotary right cylinder having a first axis and a cylindrical housing with a second axis parallel and eccentric relative to said first axis of the first cylinder, a second revolution cylinder mounted for rotation in said cylindrical housing, said cavity being eccentrically accommodated in said second cylinder, and drive means for rotating the second cylinder in an opposite direction and by a rotation angle twice the rotation angle of the first cylinder for varying the depth of the detector in the phantom.

4,538,072

OPTICAL WAND FOR READING OCR CHARACTERS AND BAR CODE MARKS

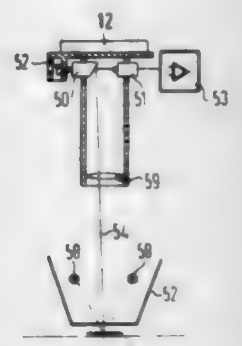
Josef Immler, Puchheim, and Cornelis van der Sel, Grafing, both of Fed. Rep. of Germany, assignors to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Apr. 19, 1983, Ser. No. 486,587

Claims priority, application Fed. Rep. of Germany, Apr. 20, 1982, 3214621

Int. Cl.³ G06K *7/10*

U.S. Cl. 250—568 **5 Claims**



1. An optical wand for automatic character recognition designed to be manually movable along a line of print of a data carrier for recognizing optical characters and bar code marks, respectively and including a scanner unit incorporating a light source for illuminating a scanning window via reflected light

and the portion of the data carrier appearing therein, an optical system and a sensing unit, said optical wand comprising:

a housing body having a nose section including a scanning tip with the optical system being located within the nose section, the housing body having a handle section adapted for manually gripping and angularly extending away from the nose section and the nose section includes a tip having an

aperture serving as the scanning window for the optical system commonly utilized for scanning of both optical characters and bar code marks and means for receiving the reflected light, and means for deflecting said reflected light; and

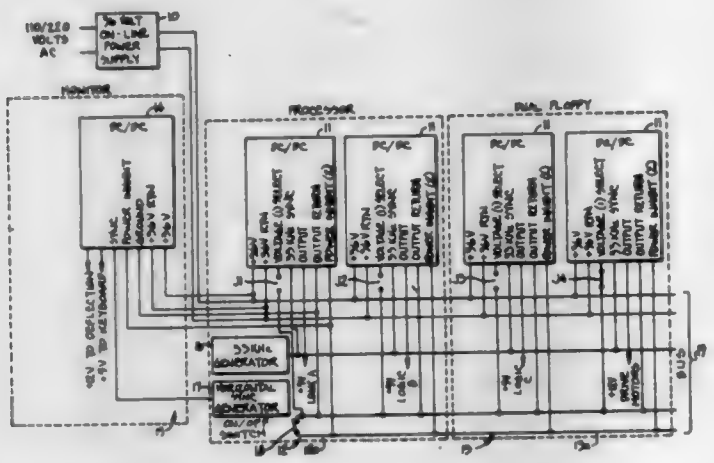
said sensing unit being arranged in said housing and being composed of first and second sensor devices, the first sensor device being arranged in alignment with said aperture for directly receiving one portion of reflected light and the second sensor device being arranged for receiving another portion of the reflected light from said deflecting means.

4,538,073

MODULAR POWER SUPPLY SYSTEM

Diab E. Freige, Los Altos; John J. Lockwood, San Jose; Michael Ramsay, Los Altos, and Leroy B. Keely, Sunnyvale, all of Calif., assignors to Convergent Technologies, Inc., Santa Clara, Calif.

Filed May 9, 1983, Ser. No. 493,103
Int. Cl.³ H02J *3/00*
U.S. Cl. 307—33 **16 Claims**



1. A modular programmable DC power supply for providing a designated DC output voltage to a computer system comprising:

a power module for producing a first fixed regulated DC voltage output;

a power bus coupled to said first DC voltage output; and

at least one DC-to-DC converter module coupled to said power bus to receive said first DC voltage from said power module and operable to convert said first DC voltage to a second regulated DC voltage at an output terminal, said DC-to-DC converter module including

an input terminal,

programmable reference means, coupled to said input terminal and responsive to an input on said input terminal, for producing one of a plurality of reference voltage values, and

voltage regulation means, coupled to said reference means and responsive to said reference voltage value, for selecting one of a plurality of values for said second DC voltage,

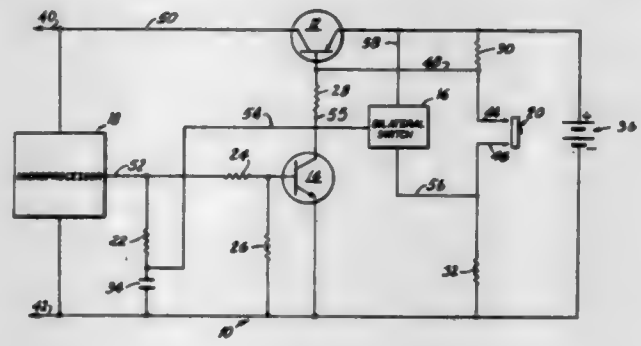
such that said DC power supply is generic in that the value of the second voltage at the output terminal for a computer system using said DC power supply is determined by the signal provided to said input terminal by the computer system.

4,538,074

POWER SWITCH

Jacob Fraden, Hamden, Conn., assignor to Healthcheck Corporation, Cheshire, Conn.

Filed Aug. 24, 1983, Ser. No. 525,864
Int. Cl.³ H01H *43/00*; H03K *17/28*
U.S. Cl. 307—126 **9 Claims**



1. In a power switch circuit of the type having a first transistor connected for switching power from a battery to an electronic instrument and a second transistor electrically connected to said first transistor for controlling said first transistor, the improvement comprising:

a momentary contact switch arranged so that its closure will turn said first transistor on when connected in a first power switch circuit configuration, and arranged so that its closure will turn said first transistor off when connected in a second power switch circuit configuration,

a bilateral switch electrically connected to place the power switch circuit into either of said first or second circuit configurations when said bilateral switch is deactivated or activated, respectively,

timing means responsive to turning on and off of said first transistor and having an output line connected to said second transistor, said timing means providing a first output signal to turn on the second transistor when the first transistor turns on and providing a second output signal to turn off the second transistor either when the first transistor turns off or after a predetermined time has elapsed, and

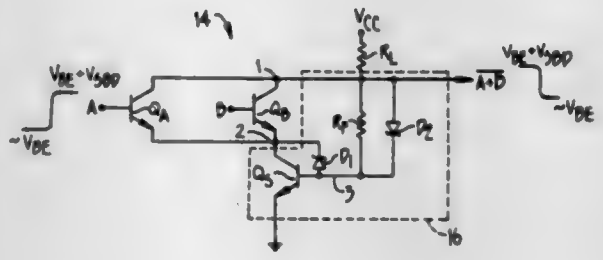
a capacitor coupled to said bilateral switch, said capacitor being connected to charge when the first transistor turns on to activate said bilateral switch and to discharge when said first transistor turns off to deactivate said bilateral switch.

4,538,075

HIGH SPEED REFERENCELESS BIPOLAR LOGIC GATE WITH MINIMUM INPUT CURRENT

Hemmige D. Varadarajan, Sunnyvale, Calif., assignor to Advanced Micro Devices, Inc., Sunnyvale, Calif.

Filed Sep. 7, 1983, Ser. No. 529,917
Int. Cl.³ H03K *17/04, 19/086*
U.S. Cl. 307—454 **9 Claims**



1. A logic gate having at least one input transistor means, each said input transistor means having a collector electrode connected to a first node, said first node being an output signal node, an emitter electrode connected to a second node and a

base electrode for receiving binary logic signal input, and said gate further having a load resistor between said first node and a supply voltage terminal, the improvement comprising:

means coupled to said second node and responsive to the voltage on said first node for controlling emitter current of said input transistor means through said second node to inhibit saturation of said input transistor means; and

means coulpled to said first node, and further coupled to said emitter current controlling means, for limiting the output voltage of said logic gate by clamping said output voltage to a maximum value.

4,538,076

LEVEL CONVERTER CIRCUIT

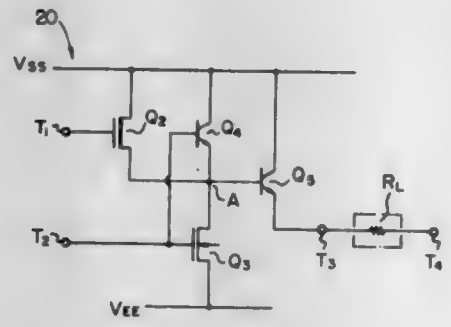
Hiroshi Shimada, Tokyo, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Filed Jun. 28, 1982, Ser. No. 392,750

Claims priority, application Japan, Jun. 30, 1981, 56-102875

Int. Cl.³ H03K *19/092*

U.S. Cl. 307—475 **8 Claims**



1. A level converter circuit for converting a first logic signal, having a lower voltage supply as a base potential, into a second logic signal, having a higher voltage supply as a base potential, the level converter circuit comprising:

an input terminal for receiving the first logic signal;

an output terminal for outputting the second logic signal;

a first bipolar transistor having a collector operatively connected to the higher voltage supply, having an emitter and having a base;

a second bipolar transistor, having a collector operatively connected to the higher voltage supply, having an emitter operatively connected to said output terminal, and having a base operatively connected to said emitter of said first bipolar transistor; and

means, operatively connected to said input terminal and said second bipolar transistor, for turning on only said second bipolar transistor or both said first and second bipolar transistors, in response to the logic level of the first logic signal, said turning on means including:

a first MOS transistor operatively connected in parallel with said first bipolar transistor; and

a second MOS transistor connected to the lower voltage supply and having a gate operatively connected to said base of said first bipolar transistor.

4,538,077

CIRCUIT UTILIZING JOSEPHSON EFFECT

Junichi Sone, Tokyo, Japan, assignor to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Sep. 8, 1982, Ser. No. 415,877

Claims priority, application Japan, Sep. 10, 1981, 56-142748; Sep. 10, 1981, 56-142749; Sep. 14, 1981, 56-145313

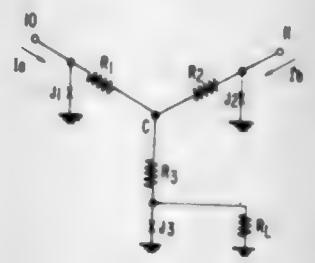
Int. Cl.³ H03K *19/195*

U.S. Cl. 307—476 **16 Claims**

1. A circuit utilizing a plurality of Josephson junctions each of which switches from a zero voltage state to a voltage state in response to a current greater than its respective critical current, said circuit comprising:

a first resistor, a second resistor and a third resistor having predetermined resistances R_1, R_2, R_3, respectively, each of said resistors having first and second ends and all of said resistors being connected together at said second ends thereof, said first ends of said first and second resistors receiving input currents and said first end of said third resistor providing an output current;

a first Josephson junction and a second Josephson junction having predetermined critical currents I_{01} and I_{02}, respectively, and connected between a reference potential and the first end of said first and second resistors, respectively; and



a specific Josephson junction having a predetermined critical current I_{03} and connected in series with said third resistor.

4,538,078

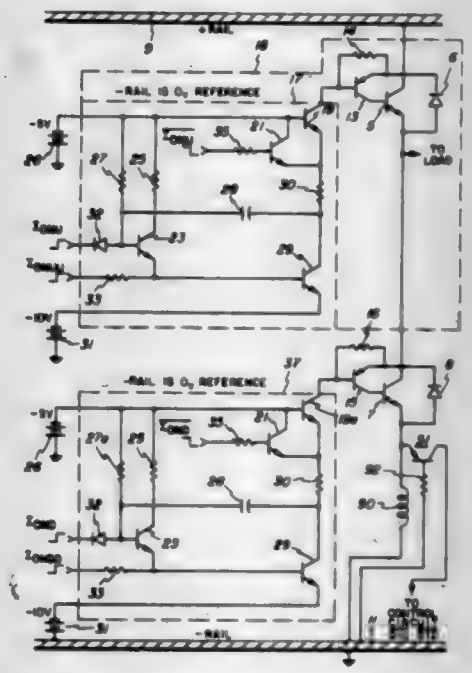
BASE DRIVE CIRCUIT CONTROLLER

George F. Pfeifer, Liverpool, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Apr. 4, 1983, Ser. No. 481,696

Int. Cl.³ H03K *17/16, 17/296*

U.S. Cl. 307—592 **3 Claims**



1. A base drive circuit controller for two base drive circuits, each of said base drive circuits connected to an upper and a lower series-connected power switch, respectively, said base drive circuit controller responsive to an external command signal indicative of desired conduction of said upper or lower power switch, said base drive circuit controller comprising:

a multistage shift register responsive to said external command signal so as to function as a pseudo random counter, said multistage shift register having a stable waiting state and a predetermined number of sequentially generated states which end in said stable state, said multistage shift register generating said sequential states when said external command signal transitions from indicating desired conduction of one of said switches to indicating desired conduction of the other of said switches;

decode circuit means responsive to predetermined ones of

said sequentially generated states for providing timing signals at predetermined times after said external command signal transitions from one amplitude to another;

logic means responsive to said timing signals and said external command signal, for providing control signals that begin and end at predetermined times corresponding to said predetermined ones of said sequentially generated states, respectively, to said base drive circuits corresponding to the upper and lower power switches dependent on said external command signal; and

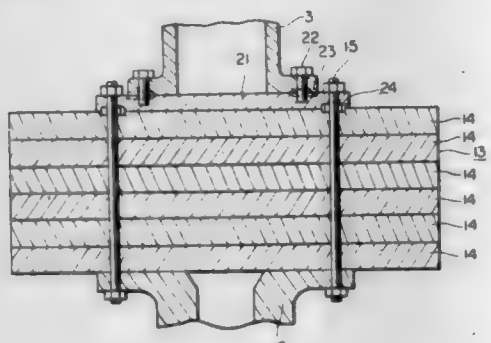
gating means coupling said external command signal to said multistage shift register only when said multistage shift register is in the stable waiting state.

4,538,079

FLYWHEEL DEVICE WITH COMPENSATION FOR NON PARALLEL PLATES

Taesuke Nakayama, Kobe, and Tadashi Konishi, Akashi, both of Japan, assignors to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 16, 1984, Ser. No. 600,403
Int. Cl.³ H02K *7/02*
U.S. Cl. 310—74 **5 Claims**



1. A flywheel device having a horizontal axis, comprising:

a plurality of flywheel discs axially stacked one upon the other, with a topmost disc on top of said discs having top surfaces substantially parallel to the horizontal axis of the flywheel device;

a first plurality of bolt means for tightening the plurality of flywheel discs together;

an adjustment disc arranged on top of the plurality of flywheel discs, said adjustment discs having a top surface parallel to the horizontal axis of the flywheel device and having a bottom surface in contact with a top surface of the topmost disc of the plurality of flywheel discs;

a shaft having a flange;

a second plurality of bolt means for connecting the flange of the shaft to the adjustment disc; and

radial knock pin means, arranged between the shaft and the adjustment disc, for transmitting torque from the shaft through the adjustment disc to the plurality of flywheel discs;

whereby the top surface of the adjustment disc corrects the accumulated dimensional error of the stacked plurality of flywheel discs from the horizontal axis of the flywheel device.

4,538,080

FLUX CONTOURED ROTARY ELECTROMAGNETIC MACHINE

Thomas R. England, Blacksburg, Va., assignor to Kollmorgen Technologies, Corporation, Dallas, Tex.

Filed Jun. 14, 1983, Ser. No. 504,071
Int. Cl.³ H02K *21/28*
U.S. Cl. 310—154 **8 Claims**

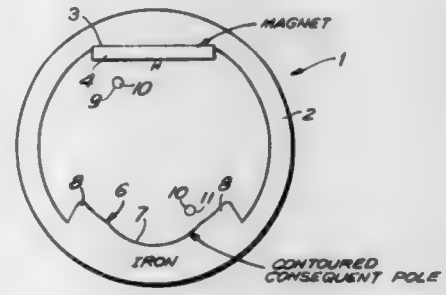
1. In a rotary electromagnetic machine, the combination of

a magnetic structure including

at least two poles,

a block permanent magnet providing one of said poles, with a nonuniform gap spacing, and

wherein the other one of said poles is a consequent pole structure; and at least one coil moving relative to said poles;



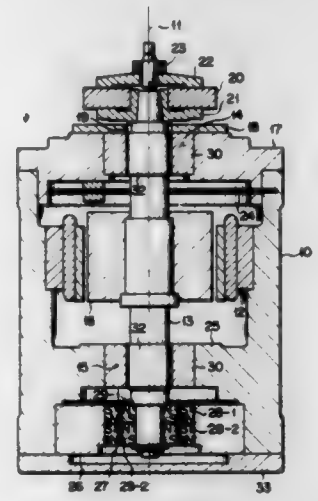
said consequent pole being contoured to provide a nonuniform gap spacing relative to said moving coil so that the sum of the flux densities encountered by said coil moving relative to said consequent pole and the other of said poles is substantially constant for portions of each revolution.

4,538,081

ELECTRIC MOTOR WITH HYDRODYNAMIC PRESSURE AND MAGNETIC THRUST BEARINGS

Masashi Kamiya, Tokyo; Mitsuo Sumiya, Yokohama, and Ryoji Yamaguchi, Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Feb. 7, 1983, Ser. No. 464,148
Claims priority, application Japan, Feb. 13, 1982, 57-20681
Int. Cl.³ F16C *17/16*; H02K *7/09*
U.S. Cl. 310—90 **3 Claims**



1. An electronic motor unit, comprising:

a spindle having a journal with a number of grooves extending parallel to one another along the rotation axis of the spindle, each of said grooves having an arcuate cross section;

a rotor mounted on the spindle to rotate therewith;

a stator for rotating the rotor;

a bearing of a hydrodynamic pressure type, receiving the journal and having an inner surface facing the outer surface of the journal with a gap therebetween;

a motor housing on which the bearing and the stator are fixed;

a magnetic thrust bearing section including an even number of superposed rotor magnets fixed to the spindle, each having an outer surface, and including an equivalent number of stator magnets in which the rotor magnets are inserted, the stator magnets being superposed and fixed to the housing, each of said stator magnets having an inner surface facing the outer surface of the corresponding rotor magnet with a gap therebetween, the rotor and stator

magnets having magnetic poles of opposite polarity on their outer and inner surfaces facing each other; wherein during rotation of said journal, gas flows into said gap formed between said journal and said bearing to thereby produce hydrodynamic pressure.

4,538,082

HIGH-OUTPUT MAGNETIC FIELD TRANSDUCER

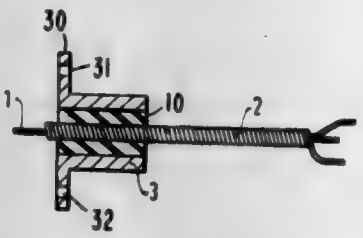
Walter Hinke, Ludwigsburg, and Harry Kaiser, Markgröningen, both of Fed. Rep. of Germany, assignors to Robert Bosch GmbH, Stuttgart, Fed. Rep. of Germany

Filed Jun. 18, 1982, Ser. No. 389,585

Claims priority, application Fed. Rep. of Germany, Jul. 16, 1981, 3128031

Int. Cl.³ H02K *21/00*

U.S. Cl. 310—152 **4 Claims**



1. High-output magnetic field transducer, particularly for a contactless ignition signal system for use with an internal combustion engine, having

a mechanically treated ferro-magnetic Wiegand element (1) which abruptly changes its magnetization when exposed to a magnetic field of changing polarity,

and a pick-up coil (2) surrounding the Wiegand element, and comprising, in accordance with the invention, a flux concentration element (3, 3*a*, 3*b*, 3*c*, 3*d*, 4, 5, 6, 7) surrounding, at least in part, said Wiegand element (1) along at least a longitudinal portion thereof and being magnetically coupled to the pick-up coil, the flux concentration element comprising highly magnetically permeable material having a magnetization direction changeable in response to the magnetization of said Wiegand element (1); and

wherein said flux concentration element (3, 3*a*, 3*b*, 3*c*, 3*d*, 4, 5, 6) comprises a tubular structure.

4,538,083

ROTOR/STATOR WINDING AND METHOD AND APPARATUS FOR PRODUCING SAME

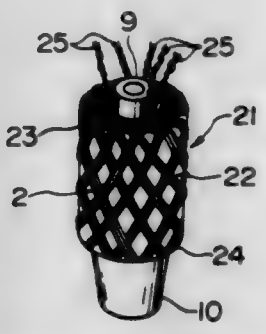
Yoshikuni Nozawa, Nagano, Japan, assignor to Entac Company, Limited, Japan

Filed Jul. 7, 1983, Ser. No. 511,687

Claims priority, application Japan, Jul. 7, 1982, 57-118015; Aug. 26, 1982, 57-147989; Aug. 26, 1982, 57-147990; Nov. 25, 1982, 57-206412; Nov. 25, 1982, 57-206413; Nov. 25, 1982, 57-206414; Nov. 29, 1982, 57-208995

Int. Cl.³ H02K *3/00*

U.S. Cl. 310—198 **12 Claims**



1. A cup-shaped winding for motors, said cup-shaped winding having a cylindrical shape and having a substantially closed end defined by a shoulder portion, a substantially open end defined by a peripheral portion and an intermediate cylindrical portion between said shoulder and peripheral portions, said winding comprising a plurality of bands of wire wound at a predetermined angle with respect to a center axis of said cylindrical shape, said bands of wire being displaced with respect to one another about the circumference of said cup-shaped winding and overlapping one another at said closed end to form a bow string portion comprising said shoulder portion, overlapping at said open end to form said peripheral portion and overlapping between said bow string and peripheral portions to form an inclined portion comprising said intermediate portion, each of said bands of wire extending in said peripheral portion for a predetermined distance in a substantially circumferential direction of said cylindrical shape and perpendicular to a line parallel to said center axis.

4,538,084

STATOR OF MOTOR

Shigeki Kawada, Hino; Yoichi Amemiya; Masatoyo Sogabe, both of Hachioji, and Noboru Iwamatsu, Hino, all of Japan, assignors to Fanuc Ltd., Tokyo, Japan

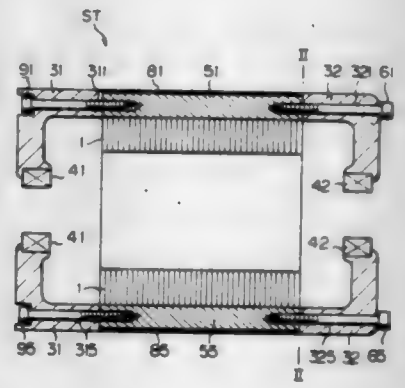
PCT No. PCT/JP83/00275, § 371 Date Apr. 20, 1984, § 102(e) Date Apr. 20, 1984, PCT Pub. No. WO84/01061, PCT Pub. Date Mar. 15, 1984

PCT Filed Aug. 24, 1983, Ser. No. 604,354

Claims priority, application Japan, Aug. 26, 1982, 57-146797

Int. Cl.³ H02K *1/06*

U.S. Cl. 310—217 **4 Claims**



1. A stator of a motor having a stator core consisting of laminated magnetic core sheets, wherein:

through holes are bored at predetermined positions of the stator core, reinforcing bars are inserted into said through holes along with being fixed to said stator core by welding,

said stator core is supported between a front bracket and a rear bracket, and

tap bolts penetrate said front bracket and said rear bracket, and are screwed with internal threads at the end of said reinforcing bars, thereby fixing in place said stator core, said front bracket, and said rear bracket.

4,538,085

MAGNETO-TYPE D-C ELECTRIC MOTOR

Toshinori Tanaka, Himeji, Japan, assignor to Mitsubishi Denki Kabushiki Kaisha, Tokyo, Japan

Filed Apr. 6, 1983, Ser. No. 482,554

Claims priority, application Japan, Apr. 8, 1982, 57-52118[U]; Nov. 2, 1982, 57-167204[U]

Int. Cl.³ H02K *13/00*

U.S. Cl. 310—239 **3 Claims**

1. A magneto-type D-C electric motor comprising:

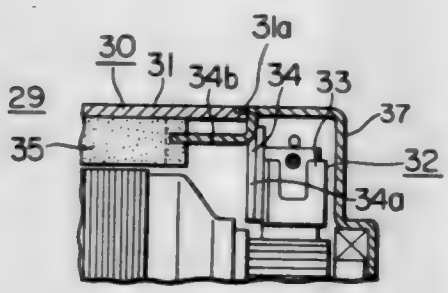
a cylindrical yoke having first engaging portions;

field poles including permanent magnets having second engaging portions, adhered to the inner peripheral surface of said yoke;

an armature opposed to said field poles in the radial direction with respect to the axis of rotation of said armature;

a bracket coupled to said yoke, surrounding and rotatably supporting said armature;

brushes in slidable contact with said armature to supply electric power thereto;



a brush holder secured to said bracket and holding said brushes; and

an engaging member having a disk portion secured to said brush holder, integral projecting portions fitted to said second engaging portions, and a circumferential portion engaging said first engaging portions and said bracket.

4,538,086

STATOR FOR AN ELECTROMAGNETIC MACHINE

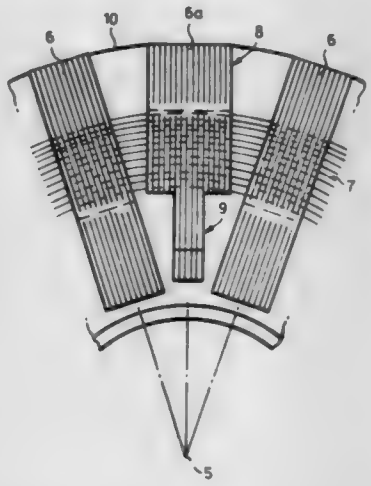
John D. Marsh, Waterloo, Belgium, and Craig A. Nazzer, Sydney, Canada, assignors to Caterpillar Tractor Co., Peoria, Ill.

Filed Aug. 17, 1984, Ser. No. 605,954

Claims priority, application United Kingdom, May 3, 1983, 8311997

Int. Cl.³ H02K *1/12*

U.S. Cl. 310—258 **2 Claims**



1. A stator of an electromagnetic machine, comprising:

a stator frame having a central axis;

an annular coil wound on said frame;

a plurality of U-shaped pole pieces mounted on said frame in straddling relationship to said coil and opening radially outwardly from said axis;

a plurality of U-shaped pole pieces mounted on said frame in straddling relationship to said coil and opening radially inwardly from said axis;

adjacent ones of said pole pieces opening in opposite radial directions from said axis; and

said radially inwardly opening pole pieces having a radially inner portion and a radially outer portion, said radially outer portion and a radially inwardly opening pole pieces having a cross-sectional area greater than the cross-sectional area of said radially outwardly opening pole pieces, and said radially inner portion of said radially inwardly opening pole pieces having a cross-sectional area less than the cross-sectional area of said radially outwardly opening pole pieces.

4,538,087

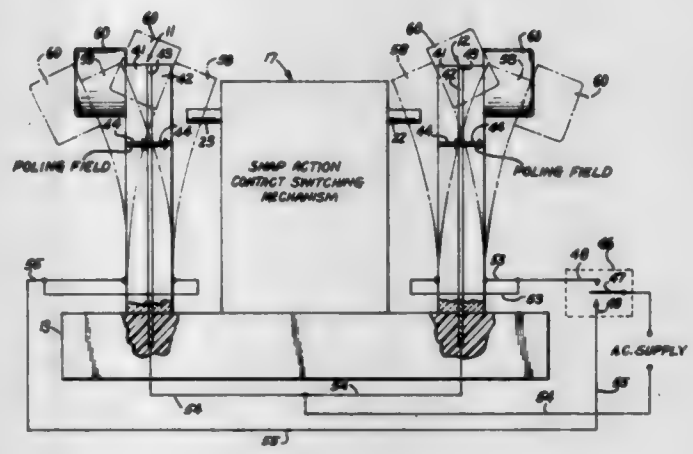
ALTERNATING CURRENT DRIVEN PIEZOELECTRIC LATCHING RELAY AND METHOD OF OPERATION

Carmen P. Germano, and John M. Davenport, both of Lyndhurst, Ohio, assignors to General Electric Company, Schenectady, N.Y.

Filed Jun. 11, 1984, Ser. No. 619,673

Int. Cl.³ H01L *41/08*

U.S. Cl. 310—332 **42 Claims**



1. An alternating current latching relay including in combination at least one electrically actuated piezoelectric drive member, a latching type snap-action switch mechanism having a set of electrical contacts that are selectively latched either in the open or the closed condition in a snap-action manner upon successive actuations of the switch mechanism, operating push rod means for actuating the snap-action switch mechanism and engageable by the free end of the piezoelectric drive member whereby movement of the piezoelectric drive member selectively operates the snap-action switch mechanism, and selectively operable alternating current electric excitation circuit means connected to said piezoelectric drive member for selectively electrically exciting the piezoelectric element thereof with an alternating current electric excitation field whereby the piezoelectric drive member is caused to mechanically resonate and to repeatedly strike the engageable end of the push rod means with sufficient force to selectively actuate the snap-action switch mechanism to the opposite one of its two operating conditions from that in which it had been initially set.

4,538,088

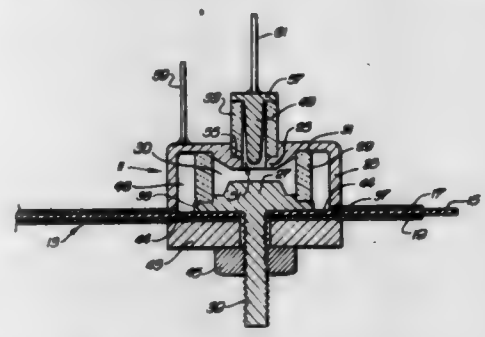
SPARK GAP DEVICE

Edgar W. Malone, Goleta, Calif., assignor to Reynolds Industries, Inc., Los Angeles, Calif.

Filed Aug. 11, 1983, Ser. No. 521,985

Int. Cl.³ A47B *88/00*

U.S. Cl. 313—325 **5 Claims**



1. A spark gap device comprising:

first and second circumferentially-symmetrical electrodes;

a hollow-cylindrical insulator for positioning the first and second electrodes in a confronting relationship, a predetermined distance apart from each other, and for defining

a closed chamber that includes the space between the electrodes;

an elongated shaft projecting from the side of the first electrode opposite the second electrode, the shaft being threaded and electrically conductive;

an electrically-conductive washer encircling the shaft and having a flat, ring-shaped surface that faces the first electrode;

an electrically-conductive retaining nut threadedly engaging the shaft and retaining the washer; and

an electrically-conductive cylindrical wall projecting from the second electrode and surrounding the cylindrical insulator, the wall terminating in a flat, ring-shaped surface coaxial with the flat, ring-shaped surface of the washer, the two surfaces having substantially the same outer diameters and confronting each other in spaced relationship;

wherein the washer and cylindrical wall are sized and located to permit placement of a flat, two-conductor foil strip transmission line between their respective confronting ring-shaped surfaces, with one surface contacting a first foil conductor of the transmission line and the other surface contacting a second foil conductor of the transmission line.

4,538,089

GREEN LUMINESCENT CATHODE-RAY TUBE DEVICE WITH IMPROVED COLOR FILTERING SYSTEM

Brian J. Fitzpatrick, Ossining, N.Y., assignor to North American Philips Corporation, New York, N.Y.

Filed Nov. 2, 1983, Ser. No. 548,065

Int. Cl.³ H01J *31/00, 5/16*

U.S. Cl. 313—478 **15 Claims**



1. A cathode-ray tube device for generating a bright green light spot comprising;

a cathode-ray tube including an evacuated envelope, means, located within said envelope, to generate an electronic beam, a terbium activated phosphor, capable of emitting radiation when excited by electrons, positioned within said envelope and in the path of said electron beam and a transparent face plate forming part of said envelope is situated in the path of said green radiation, and positioned outside of the outer surface of said face plate and in the path of said green radiation, a light beam filtering means comprising in a container which at least in the path of said green radiation is transparent to said radiation, a concentrated solution of a soluble praseodymium salt, sodium fluorescein and Fast Green FCF.

4,538,090

LAMP/REFLECTOR UNIT

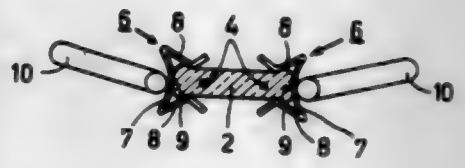
Dieter Wilhelm, Eschweiler, Fed. Rep. of Germany, and Volker Kuhnert, Kerkrade, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 7, 1979, Ser. No. 46,581

Claims priority, application Fed. Rep. of Germany, Jun. 12, 1978, 2825666

Int. Cl.³ H01J *5/16*

U.S. Cl. 313—578 **2 Claims**



1. An automobile lamp/reflector unit having a concave reflector member and a lens member attached thereto for supporting an associated light bulb in spaced relation to the reflecting surface of said reflector member, the associated light bulb having a pinch seal at one end thereof which is substantially rectangular in cross-section and from which current conductors extend which are in electrical contact with a filament disposed within the light bulb, each of said current conductors being attached to a respective support wire, said reflector member having at least two mutually electrically insulated contact members, each of said support wires being attached to respective contact members, characterized in that the pinch seal is secured between two opposed metal mounting clips, each clip engaging in a clamping manner around a respective narrow side face of the pinch seal, each support wire being secured to a respective metal mounting clip, each clip being generally U-shaped and having side limbs and a base and being formed from a resilient metal strip, each of said side limbs of said clip sloping inwardly from the base of the U to a region where they engage a respective major surface of the pinch seal.

4,538,091

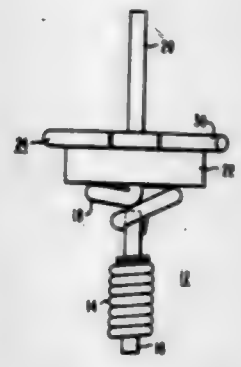
HIGH-PRESSURE SODIUM LAMP SPRING CLIP CROSS PIECE FOR ELECTRODE AND END PLUG SUPPORT

George A. Lewis, Bath; Kent L. Collins, Hammondsport; Joseph C. Benesh, Bath, all of N.Y., and Patrick C. Ward, Sparta, N.J., assignors to North American Philips Lighting Corp., New York, N.Y.

Filed Feb. 16, 1983, Ser. No. 466,810

Int. Cl.³ H01J *9/40*

U.S. Cl. 313—625 **4 Claims**



3. In an electric discharge lamp arc tube assembly including a ceramic arc tube, a pair of discharge electrodes within said arc tube each adjacent a respective one of the arc tube ends, and a pair of arc tube end closures closing the respective ends of said arc tube, the improvement comprising: at least one of said end closures comprising a ceramic plug having a pair of flat major end surfaces and a central bore extending through said ceramic plug between said pair of flat major surfaces; a conductive electrode support for supporting one of said dis-

charge electrodes adjacent said ceramic plug; a conductive lead wire extending through said central bore and connected to said electrode support; and a refractory metal clip connected to said lead wire outside the arc tube assembly and against the outer major surface of said ceramic plug, said metal clip having an end bend and a pair of legs having generally parallel portions having lengths greater than the radius and less than the diameter of said ceramic plug and extending away from said end bend; and said legs having diverging end portions that diverge away from each other, the total length of each of said legs being greater than the diameter of said ceramic plug, one of said clip legs having a surface indentation facing the other of said clip legs with the space between the clip legs at the indentation being less than the diameter of said lead wire, said lead wire extending between said clip legs at said indentation and being frictionally retained therebetween with s id clip against the outer major surface of said ceramic plug, the clip end bend and clip leg ends extending beyond the plug for limiting the depth of insertion of said plug into said arc tube, and the clip end bend and clip legs lying in a plane with the clip end bend and clip leg ends defining at least three points of contact with said arc tube.

4,538,092

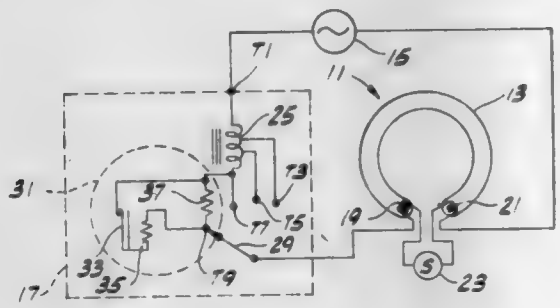
DIMMER AND STARTING CIRCUITS FOR A FLUORESCENT LAMP

Charles D. Goralnik, 200 Bryn Wyck Pl., St. Louis, Mo. 63141

Filed Jun. 27, 1983, Ser. No. 507,741

Int. Cl.³ H01J *7/44*

U.S. Cl. 315—58 **16 Claims**



1. A dimmer for a fluorescent lamp adapted to be connected between one terminal of a power source and a first filament of the fluorescent lamp, the other terminal of said power source being connected to the second filament of the lamp, and a starting switch interconnecting said first and second filaments for opening the circuit therebetween when the filaments are sufficiently heated, said dimmer comprising:

ballast inductor means for providing impedances of various values, said ballast inductor means being adapted for connection between said one power source terminal and said first filament;

impedance adjusting means for effecting connection of one value of impedance to the first filament of the fluorescent lamp in a first position thereof and for effecting connection of a second value of impedance to said first filament of the fluorescent lamp in a second position thereof, each of said values of impedance being such as will allow a current sufficient to start the fluorescent lamp to pass therethrough; and

means for increasing the impedance provided by the ballast inductor means, once starting of the fluorescent lamp has occurred, to reduce the current from a level sufficient to start the fluorescent lamp to a level below the minimum current required to start the fluorescent lamp but above the minimum required to maintain the lamp emission once started, the last said means being adapted to be connected in series with the ballast inductor means between said first filament and said one power source terminal, whereby the light intensity level of the fluorescent lamp during operation is reduced below that which would be produced at a current corresponding to the minimum starting current of the lamp.

4,538,093

VARIABLE FREQUENCY START CIRCUIT FOR DISCHARGE LAMP WITH PREHEATABLE ELECTRODES

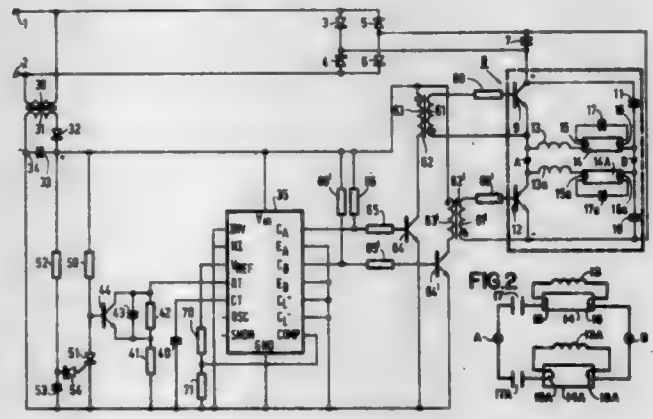
Henri A. I. Melai, Eindhoven, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.

Filed May 10, 1982, Ser. No. 376,808

Claims priority, application Netherlands, May 14, 1981, 8102364

Int. Cl.³ H05B *37/00, 39/00, 41/36*

U.S. Cl. 315—219 **17 Claims**



1. An electric arrangement for starting and supplying an electric discharge lamp having two preheatable electrodes comprising, in the connected condition of the lamp, means connecting an inductive element, one of the lamp electrodes, a capacitive element and the other lamp electrode in a series arrangement such that one of said elements is in series with the lamp and the other one of said elements is in parallel with the lamp, means connecting said series arrangement between two output terminals of an auxiliary device, said auxiliary device including means for generating an alternating voltage and means for varying the frequency thereof after switch-on of the electric arrangement from an initial frequency to a lamp operating frequency independent of lamp current, the inductive element and the capacitive element having a series resonant frequency falling between the initial frequency and the lamp operating frequency, and means coupling the alternating voltage to the two output terminals of the auxiliary device.

4,538,094

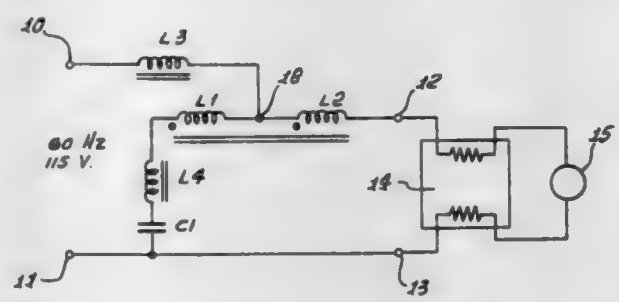
LAMP BALLAST WITH NEAR UNITY POWER FACTOR AND LOW HARMONIC CONTENT

Lloyd J. Perper, Tucson, Ariz., assignor to Iota Engineering Co., Tucson, Ariz.

Filed Aug. 12, 1983, Ser. No. 522,505

Int. Cl.³ H05B *37/02*

U.S. Cl. 315—221 **9 Claims**



1. A ballast circuit for a fluorescent lamp, comprising in combination:

means defining first and second line terminals;

means defining first and second load terminals, with said

second line terminal connected to said second load terminal;

first, second and third inductances connected at a junction; and

a capacitance connected in series with said first inductance between said junction and said second line terminal, with said second inductance connected to said first load terminal and said third inductance connected to said first line terminal;

with the magnitudes of said first inductance and said capacitance selected to be a series resonant circuit at a frequency of about three times the frequency of the line voltage connected at said line terminals.

4,538,095

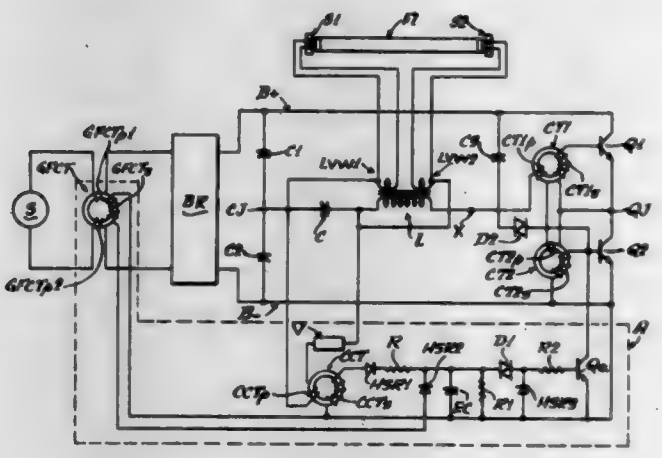
SERIES-RESONANT ELECTRONIC BALLAST CIRCUIT

Ole K. Nilssen, Caesar Dr., Rte. 5, Barrington, Ill. 60010

Filed Jun. 3, 1983, Ser. No. 500,841

Int. Cl.³ H05B *37/00*

U.S. Cl. 315—244 **13 Claims**



1. A ballast for a gas discharge lamp, said lamp having a pair of electrodes and requiring thereacross in order to initiate lamp operation an initial relatively high-magnitude lamp starting voltage for a relatively brief period of time, said ballast being adapted to be powered from an ordinary electric utility power line and comprising:

rectifier-means connected in circuit with said power line by way of a pair of power-line-wires and operative to provide a DC voltage;

inverter-means connected with said DC voltage and operative to provide a high-frequency-voltage at an AC output, said high-frequency-voltage having a fundamental frequency that is substantially higher than that of the voltage normally present on said power line;

tuned-circuit-means connected in circuit with said AC output, said tuned-circuit-means being substantially resonant at the fundamental frequency of said high-frequency-voltage and having a pair of output terminals with a tuned-circuit-voltage thereacross, the presence of said tuned-circuit-voltage being a response to the presence of said high-frequency-voltage;

lamp-socket-means connected in circuit with said pair of output terminals and operable to permit disconnectable connection of said gas discharge lamp therewith;

disable-means connected in circuit with said inverter-means and operable, upon the receipt of a disable-signal, to disable the operation of said inverter-means, thereby to remove said tuned-circuit-voltage from said pair of output terminals;

voltage-sensing-means connected in circuit with said pair of output terminals and operable to provide said disable-signal to said disable-means whenever the magnitude of said tuned-circuit-voltage has remained at or above a pre-determined level for a time longer than a certain first length of time, said pre-determined level being of a magnitude at least equal to that of said relatively high-magnitude lamp starting voltage and said certain first length of time being at least equal in length to that of said relatively brief period of time; and

current-sensing-means operative to sense the flow of high-frequency-current through said pair of power-line-wires and to provide said disable-signal to said disable-means whenever said high-frequency-current has been flowing for a time longer than a certain second length of time, said high-frequency-current having a fundamental frequency that is substantially the same as that of said high-frequency-voltage.

4,538,096

SPEED CONTROL CIRCUIT FOR A DC MOTOR

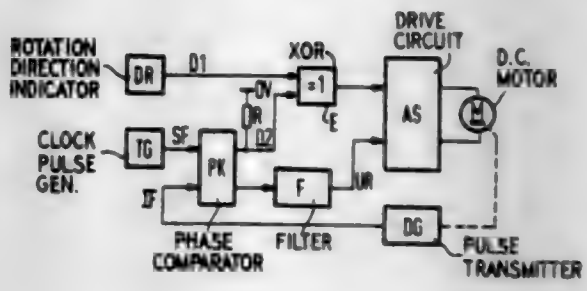
Hans Kern, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Dec. 12, 1984, Ser. No. 680,850

Claims priority, application Fed. Rep. of Germany, Jan. 4, 1984, 3400198

Int. Cl.³ H02P *5/16, 5/06*

U.S. Cl. 318—314 **5 Claims**



1. A speed control circuit for a DC motor comprising:

a drive circuit connected to said motor for supplying current thereto, said drive circuit having first and second control inputs;

a means connected to said motor for generating an actual rotation frequency signal;

a means for generating a theoretical frequency signal;

a comparator having respective inputs to which said actual frequency signal and said theoretical frequency signal are supplied, said comparator generating a second rotation direction signal at a first output connected to said first contol input and generating a reference voltage proportional to the amount of phase difference between said theoretical frequency signal and said actual frequency signal at a second output of said comparator; and

a filter having an input connected to said second output of said phase comparator, and having an output connected to said second control input of said drive circuit for controlling said drive circuit in response to said reference voltage.

4,538,097

PROCESS AND APPARATUS FOR RECOVERING ENERGY, IN THE FORM OF ELECTRIC ENERGY, FROM A MOTOR TEST BENCH

Auburt Tourneur, deceased, late of Pontault Combault, France (by Monique Tourneur, legal representative), assignor to Appareillages et Materiels de Servitudes, Fresnes, France

Filed Dec. 30, 1981, Ser. No. 335,769

Claims priority, application France, Dec. 30, 1980, 80 27813

Int. Cl.³ G01L *3/00*

U.S. Cl. 318—490 **26 Claims**

1. An apparatus for recovering energy, in the form of electrical energy, from an engine on a test bench comprising:

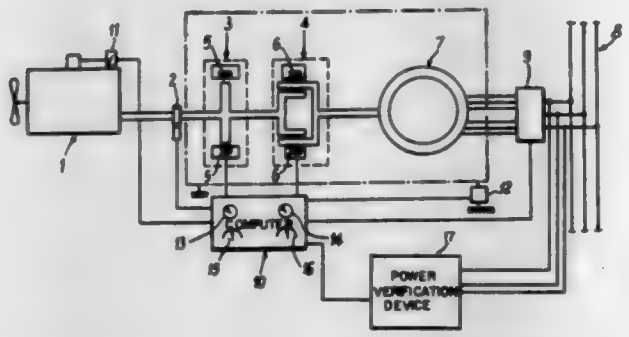
(a) brake means for applying a braking torque to an output shaft of the engine;

(b) electrical power generating means for connection to a distribution network to be supplied;

(c) variable-speed electromagnetic coupling means for cou-

pling said output shaft to said electrical power generating means; and

(d) a controller for continuously monitoring and controlling



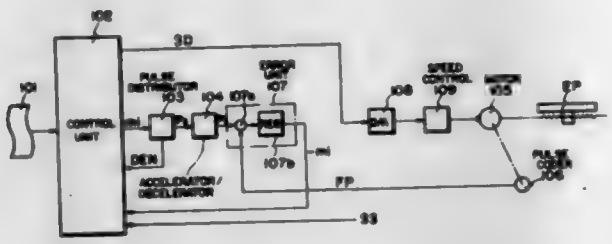
said brake means and said variable-speed electromagnetic coupling means for apportioning the power produced by the engine between said coupling means and said brake means as a function of the power produced by the engine.

4,538,098

METHOD AND APPARATUS FOR CONTROLLING ELECTRIC DISCHARGE MACHINE

Mitsuo Matsui, Tokyo, and Teruyuki Matsumura, Hachioji, both of Japan, assignors to Fanuc Ltd., Minamitsuru, Japan

Filed Jul. 16, 1982, Ser. No. 398,902
Claims priority, application Japan, Jul. 21, 1981, 56-114059
Int. Cl.³ B23P *1/08*
U.S. Cl. 318—567 **19 Claims**



1. A method of controlling an electric discharge machine wherein a motor, for establishing relative movement between an energized electrode and a workpiece, is driven in accordance with command data in order to machine the workpiece to a desired shape by an electric discharge produced between the electrode and workpiece, the electric discharge machine including a memory, counting means and a sensor, said method comprising the steps of:

(a) entering the command data;

(b) storing in the memory retraction control information contained in the entered command data;

(c) moving the electrode in an advancing direction relative to the workpiece by controlling the speed of the motor in accordance with machining feed speed information contained in the entered command data;

(d) monitoring the current position of the electrode by counting, via the counting means, sensor pulses generated by the sensor whenever the motor rotates by a predetermined amount;

(e) moving the electrode substantially immediately in a retracting direction relative to the workpiece by reading in a retraction speed from the retraction control information stored in the memory and controlling the speed of the motor on the basis of the retraction speed, when a signal indicative of a short circuit is generated; and

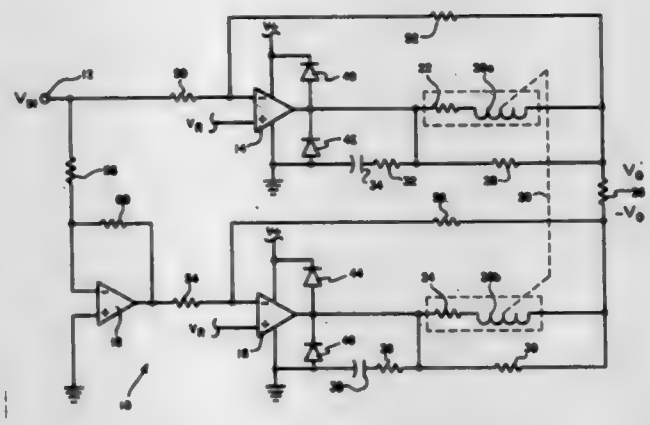
(f) moving the electrode in the advancing direction relative to the workpiece by reading in a re-advancing speed from the retraction control information stored in the memory, when a signal indicative of an end to the short circuit is generated.

4,538,099

AMPLIFIER CIRCUIT

Ronald R. Moon, Santa Clara, Calif., assignor to Quantum Corporation, Milpitas, Calif.

Filed Jan. 17, 1983, Ser. No. 458,450
Int. Cl.³ G05F *1/00*
U.S. Cl. 318—678 **8 Claims**



1. A driver amplifier circuit for an electromechanical position translator having two low impedance coils of substantially equal inductance and resistance, said amplifier circuit comprising

input means for providing a control voltage V_{in} and for providing a control voltage $-V_{in}$ representing desired translator position;

said two coils being series connected, and a very low ohmic value reference resistor connected in series between said coils to form a $+V_{out}$ node and a $-V_{out}$ node,

a pair of differentially driven push pull amplifier means connected between ground and supply potential, one of said pair having an input connected to said $+V_{in}$ voltage and to a reference source voltage V_{ref} and the other of said pair having an input connected to said $-V_{in}$ voltage and to said reference source voltage V_{ref} and having outputs connected to drive said coils, one of said pair connected to one of said coils and the other of said pair connected to the other of said coils;

two equal, high ohmic value feedback resistors, one thereof being connected from said $+V_{out}$ node to an inverting input of one of said amplifier pair and the other thereof being connected from said $-V_{out}$ node to an inverting input of the other of said differentially driven push pull amplifier pair means;

whereby current passing through said coils is substantially proportional to said input control voltage within a range of linearity and operating frequency of said circuit.

4,538,100

DC TO AC INVERTER AND MOTOR CONTROL SYSTEM

William J. Tuten, Scottsdale; Kennith D. Crosby, Carefree, and Bertil R. Bergquist, Mesa, all of Ariz., assignors to Creative Technology, Inc., Scottsdale, Ariz.

Filed Mar. 10, 1980, Ser. No. 128,858
Int. Cl.³ H02P *5/40*
U.S. Cl. 318—808 **7 Claims**

1. A DC to AC inverter system, comprising:

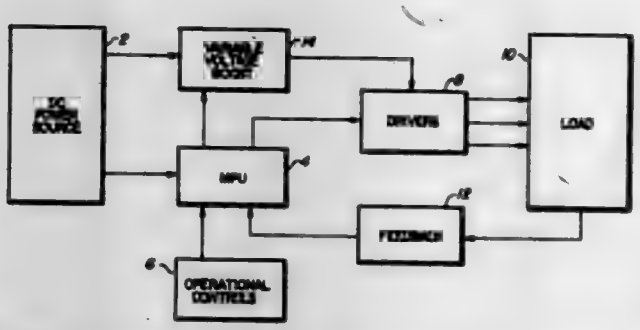
microprocessing means;

a first plurality of counting means each coupled to said microprocessing means for receiving data therefrom and for generating a plurality of square wave signals;

a second plurality of driver means, each one of which is coupled to a different one of said first plurality of counting means for receiving the square wave signals generated thereby and deriving therefrom one phase of a multiphase AC signal; and

first means coupled to said microprocessor means for vary-

ing the frequency of each phase of said multiphase signal by varying the contents of each of said first plurality of



counting means associated with each of said second plurality of driver means.

4,538,101

POWER SUPPLY DEVICE

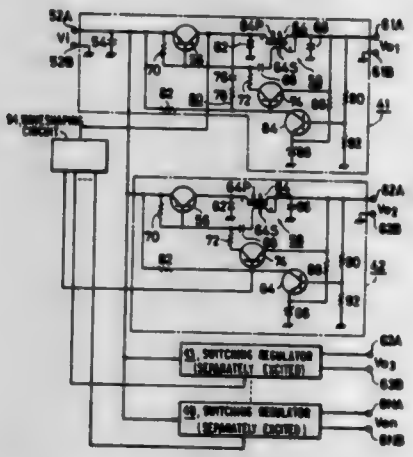
Tetsuhiko Shimpo, and Isao Fujihata, both of Tokyo, Japan, assignors to Nippon Chemi-Con Corporation, Tokyo, Japan

Filed Jun. 3, 1983, Ser. No. 500,672

Claims priority, application Japan, Jun. 4, 1982, 57-95980; Aug. 14, 1982, 57-123342[U]; Sep. 6, 1982, 57-154882

Int. Cl.³ G05F *1/46*

U.S. Cl. 323—272 **7 Claims**



1. A power supply device, comprising: a plurality of switching regulators; and a waveshaping circuit for shaping switching pulses generated within one of said switching regulators and for supplying the shaped output of said waveshaping circuit to the others of said switching regulators as an input reference waveform in order to synchronize the switching operations of the rest of said switching regulators, the output of each of said switching regulators supplying a different load.

4,538,102

POWER SUPPLY CIRCUIT

Masayuki Takagi, Kawasaki; Hiroshi Mugiya, Tama, and Shigeru Komaju, Sendai, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Sep. 6, 1983, Ser. No. 529,637

Claims priority, application Japan, Sep. 10, 1982, 57-157700; Oct. 29, 1982, 57-172349

Int. Cl.³ G05F *1/48*

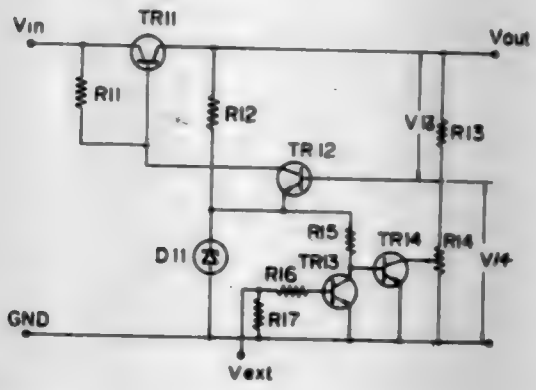
U.S. Cl. 323—349 **14 Claims**

1. A power supply circuit receiving an external control signal, comprising:

an output transistor having a base and outputting a stabilized voltage;

a control transistor, operatively connected to the base of said output transistor, having a base and controlling the base potential of said output transistor;

impedance means, operatively connected to the base of said control transistor, for dividing the stabilized voltage and applying a divided voltage to the base of said control transistor; and



switching means operatively connected to said impedance means and to receive the external control signal, for varying the division ratio of said impedance means.

4,538,103

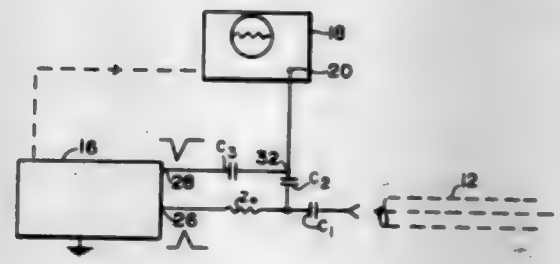
TIME DOMAIN REFLECTOMETER APPARATUS FOR IDENTIFYING THE LOCATION OF CABLE DEFECTS

John Cappon, 1 Cathcart St., Willowdale, Ontario, Canada (M2M 1E8)

Filed Aug. 30, 1982, Ser. No. 412,866

Int. Cl.³ G01R *27/04, 31/08*

U.S. Cl. 324—52 **8 Claims**



1. A time domain reflectometer apparatus for testing a cable and for cooperation with an oscilloscope or other display apparatus which comprises:

means for generating a first plurality of pulses which are positive going;

means for generating a second plurality of pulses which are negative going and which are each synchronized with one of said positive going pulses;

means for applying at least one of said pluralities of pulses to the cable being tested;

means for cooperation with the associated display apparatus for providing a display of at least reflected pulses from the cable being tested;

means for bucking said positive going pulses with said negative going pulses to minimize the amplitude displayed of the pulses being supplied to the cable being tested; and

means for delaying at least some of said pulses for substantially synchronizing said negative going pulses and said positive going pulses.

4,538,104

IN-CIRCUIT TEST APPARATUS FOR PRINTED CIRCUIT BOARD

Bruce S. Douglas, San Jose, and Chester V. Westergart, Scotts Valley, both of Calif., assignors to Test Point 1, Inc., San Jose, Calif.

Filed Apr. 11, 1983, Ser. No. 483,696

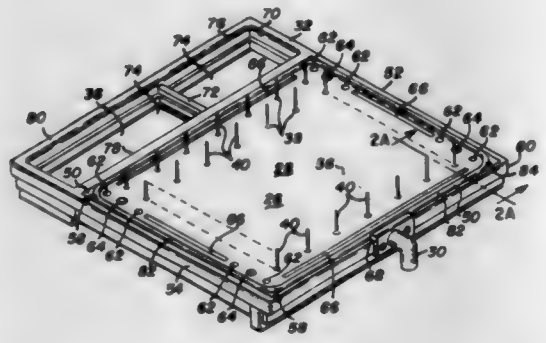
Int. Cl.³ G01R *31/02*

U.S. Cl. 324—158 F **17 Claims**

1. An in-circuit test apparatus for printed circuit boards, comprising in combination:

a baseplate having a first and second section, said first section including a top surface having a continuous groove about a baseplate edge forming a vertical outer wall, said groove having molded rounded interior corners, a channel slot with a cylindrical cavity at each end and an external penetration through said vertical outer wall, and further including a bottom surrounded by said vertical outer wall having at least one baseplate penetration adjacent to each of said rounded interior corners, said baseplate penetration piercing a shallow rectangular recess having a first threaded receptacle within the baseplate bottom, said second section including an outer frame molded to said first section, said outer frame including a hinge for connecting said outer frame to a tester interface;

a top plate mounted atop said first section forming a chamber therebetween and having a flat, smooth upper surface, and a bottom surface with a center portion having peripheral edges and including an array of standoff stops distributed about said bottom center portion, and at least a single guide shaft for aligning the top plate with said base pene-



tration and having contoured corners symmetrically matching said rounded interior corners of the baseplate;

a vacuum inlet fitted to said external penetration through the baseplate vertical outer wall for creating a vacuum within said chamber;

a first vacuum seal held captive between the top plate and the baseplate and within said continuous groove, the vacuum seal being closed upon itself and sealing said rounded interior corners of the baseplate and said contoured corners of the top plate for maintaining said vacuum within said chamber; and

a bearing block assembly having an adjustable mounting block in physical communication with each of said shallow rectangular recesses within said baseplate bottom and a linear bearing pressed into said block and passing through one of said baseplate penetrations and further comprising a second threaded receptacle located within said guide shaft, said guide shaft passing through said bearing and said block for independently adjusting the top plate relative to the baseplate.

4,538,105

OVERLAY TEST WAFER

Christopher P. Ausschnitt, Southport, Conn., assignor to The Perkin-Elmer Corporation, Norwalk, Conn.

Continuation-in-part of Ser. No. 327,862, Dec. 7, 1981, Pat. No. 4,437,760. This application Apr. 28, 1983, Ser. No. 489,641

Int. Cl.³ G01R *27/14;* H01L *21/66*

U.S. Cl. 324—158 R **14 Claims**

1. A test wafer for testing the overlay alignment of a second level pattern over a first level pattern for testing lithographic equipment used in making microcircuits comprising:

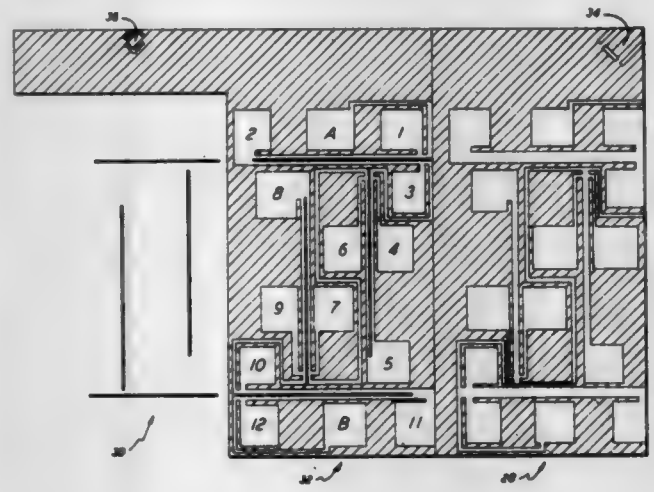
a first conductor, means for measuring the conductance of said first conductor;

a second conductor, means for measuring the conductance of said second conductor;

a third conductor, means for measuring the conductance of said third conductor;

a fourth conductor, means for measuring the conductance of said fourth conductor;

said conductors being constructed and arranged so that the conductance of the first conductor with respect to the



second conductor, and the conductance of the third conductor with respect to the fourth conductor is indicative of the offset of said first level pattern with respect to said second level of pattern.

4,538,106

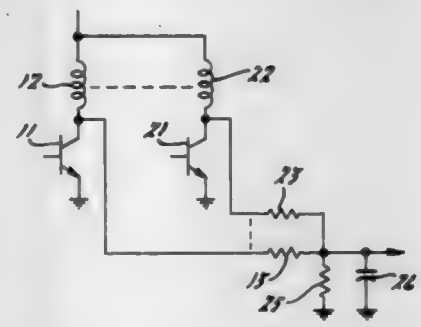
OUTPUT TRANSISTOR DRIVER DIAGNOSTIC SYSTEM

Robert L. Anderson, Saline, Mich., assignor to Ford Motor Company, Dearborn, Mich.

Filed Jun. 13, 1983, Ser. No. 503,924

Int. Cl.³ G01R *31/26;* G08B *21/00*

U.S. Cl. 324—158 T **2 Claims**



1. An apparatus for diagnosing the operation of a plurality of output transistor drivers of an electronic engine control module including:

a plurality of detection resistors, each detection resistor having a magnitude of about 100,000 ohms and being coupled from a collector of one output transistor driver to a common node;

a reference resistor, having a magnitude of about 3000 ohms, coupled between said common node and a ground potential; and

a voltage detector coupled to said common node for measuring voltage to determine whether the voltage is within predetermined limits and thereby to determine the existence of an improperly functioning transistor driver.

4,538,107

CABLE FAILURE DETECTION SYSTEM

Richard B. Varone, 81 Hilltop Dr., Smithtown, N.Y. 11787

Filed Jan. 10, 1983, Ser. No. 456,544

Int. Cl.³ G01B *7/04*

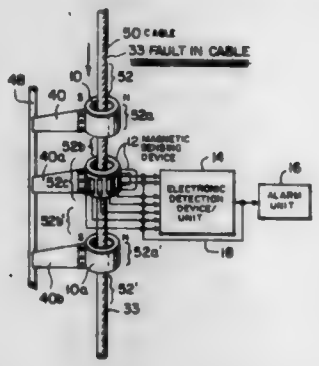
U.S. Cl. 324—206 **5 Claims**

1. Apparatus to detect a flaw in a moving cable that can be magnetized, comprising:

(a) first and second magnets each having a north pole and a

south pole spatially separated and adjacent said cable to magnetize the moving cable;

(b) a magnetic sensing device adjacent said cable located between said magnets independent of and not coupled to either of said magnets wherein the moving cable in either direction after being magnetized by one of said magnets is passed through the magnetic sensing area of said magnetic



sensing device, said magnetic sensing device sensing any change in the magnetic field of the magnetized cable, said change in the magnetic field resulting from any flow in said magnetized cable; and

(c) means to convert the output of the magnetic sensing device to useable form so that the flaw of the magnetic cable becomes known.

4,538,108

TESTING ARRANGEMENT FOR FERROMAGNETIC BODIES INCLUDING MAGNETIC FIELD DETECTORS EXTENDING BETWEEN TWO PAIRS OF POLES OF MAGNETIC FIELD GENERATORS SPACED LONGITUDINALLY ALONG THE BODY

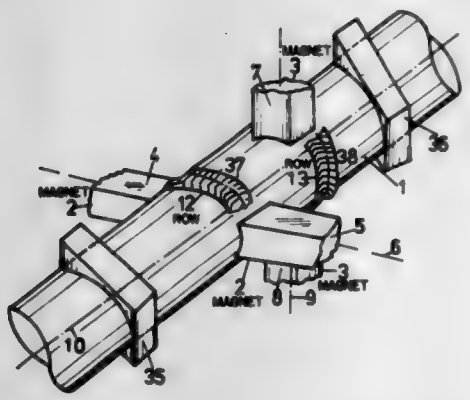
Gerhard Hüschelrath, Laufach-Frohnhofen, and Wilfried Lein, Hanau, both of Fed. Rep. of Germany, assignors to NUKEM GmbH, Hanau, Fed. Rep. of Germany

Filed Aug. 16, 1982, Ser. No. 408,686

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1981, 3132808

Int. Cl.³ G01N *27/82*; G01R *33/06*

U.S. Cl. 324—232 **17 Claims**



1. An apparatus for non-destructively testing for structural irregularities in a ferromagnetic body having a longitudinal extent comprising:

first magnetic pole means, including at least two magnetic poles, for generating a first stationary magnetic field having a first central linear axis passing through said two magnetic poles and radially through said body;

second magnetic pole means, including at least two magnetic poles spaced apart along said body from said first magnetic pole means, for generating a second stationary magnetic field having a second central linear axis passing through said two magnetic poles and radially through said ferromagnetic body, said first and second central axes being inclined with respect to one another at an angle α which is substantially equal to $180°/N$, where N is the total number of magnetic fields generated by said apparatus;

means for longitudinally displacing said body with respect to the poles of said first and second magnetic pole means;

a plurality of rows of stationary Hall generators, each row extending either in a space between the magnetic poles of the first magnetic pole means or between the magnetic poles of the second magnetic pole means, for detecting a magnetic field over a zone corresponding to a section of said body perpendicular to the displacing direction of said body, said Hall generators providing detector signals indicative of the fields sensed thereby;

means for time multiplexing said detector signals to form a time multiplexed signal;

a pulse sequence control circuit for driving said Hall generators and to which said time multiplexed signal can be synchronized;

means for generating compensation values for various signal levels of said Hall generators as a function of the position of the Hall generator whose output is being compensated;

a compensation amplifier for compensating said time multiplexed signal with said compensation values; and

means for analyzing said compensated time multiplexed signal.

4,538,109

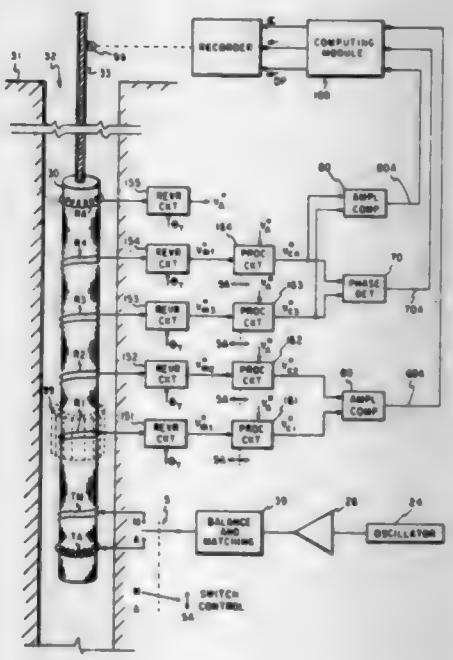
APPARATUS AND METHOD FOR ELECTROMAGNETIC LOGGING WITH REDUCTION OF SPURIOUS MODES

Brian Clark, Ridgefield, Conn., assignor to Schlumberger Technology Corporation, New York, N.Y.

Filed Jun. 23, 1982, Ser. No. 391,096

Int. Cl.³ G01V *3/30*

U.S. Cl. 324—338 **35 Claims**



1. A method for borehole logging, comprising the steps of:

transmitting electromagnetic energy from a transmitter location in the borehole;

receiving transmitted energy at a receiver location in the borehole spaced from the transmitter location;

generating a receiver signal in response to the received energy;

detecting the transverse magnetic electromagnetic energy component of the transmitted energy in the region of the receiver location; and

correcting the receiver signal in accordance with the detected transverse magnetic component, so as to remove from said receiver signal the effect of said transverse magnetic component.

4,538,110
HIGH-STABILITY CLOCK SIGNAL REGENERATOR WITH A STABLE FIXED FREQUENCY BACKUP CLOCK GENERATOR

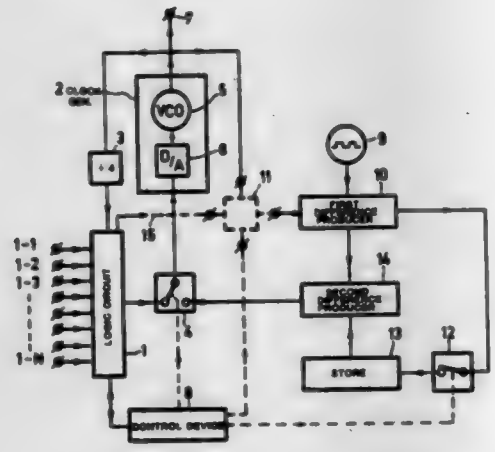
Leendert J. Hollaar, Zwolle; Herman Zoetman, and Robert J. M. Verbeek, both of Hilversum, all of Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Jun. 29, 1983, Ser. No. 508,997

Claims priority, application Netherlands, Jul. 5, 1982, 8202685

Int. Cl.[3] H03K *5/135, 5/26*

U.S. Cl. 328—63 6 Claims



1. A clock signal regenerator comprising a clock signal generator whose frequency is controlled by a control signal, said clock signal generator included in a control loop for synchronizing the frequency of the clock signal generated by the clock signal generator with an input signal applied to the control loop by means of a control signal derived from the frequency difference between the clock signal and the input signal, said regenerator comprising: an auxiliary signal generator for producing a fixed-frequency auxiliary signal, a first difference-signal producer connected to the auxiliary signal generator and connected to receive the generated clock signal to determine the frequency difference between the auxiliary signal and a signal which is proportional to the clock signal, a storage device connected to the first difference signal producer for storing the determined frequency difference, a second difference signal producer connected to the first difference signal producer and to the storage device to determine the difference between the frequency difference stored in the storage device and a signal produced by the first difference signal producer, which signal is proportional to the frequency difference between the auxiliary signal and the clock signal, and switching means for applying in the absence of a reliable input signal the signal produced by the second difference signal producer as a control signal to the controllable clock signal generator.

4,538,111
CIRCUIT RECOVERING THE CARRIER OF A SIGNAL AMPLITUDE AND PHASE MODULATED BY DIGITAL SIGNALS

Pietro P. Giusto, Turin, Italy, assignor to CSELT Centro Studi e Laboratori Telecomunicazioni SPA, Turin, Italy

Filed Sep. 24, 1982, Ser. No. 423,086

Claims priority, application Italy, Nov. 12, 1981, 68462 A/81

Int. Cl.[3] H03D *3/00*

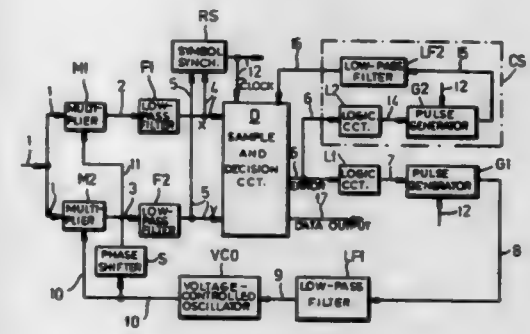
U.S. Cl. 329—122 1 Claim

1. An apparatus for recovery of a carrier of a signal herein referred to as recovered carrier, amplitude-modulated and phase modulated by digital signals referred to herein as modulating signal in a coherent demodulation system which reconstructs base-band components of said modulating signal, said base-band components of said modulating signal being apt to be represented by modulus and sign on a Cartesian plane (signal plane), and forming a geometric representation of said received signal, characterized in that a phase-error estimate of said recovered carrier is effected by making a comparison between position of said received signal in a signal plane and a plurality of decision thresholds duly positioned in said signal plane; said comparison being effected at a decision instant usually used to estimate transmitted digital symbols; said decision thresholds subdividing the signal plane into three classes of regions, a first class comprising points where said received signal can be found when there is a positive-sign phase error in said recovered carrier, a second class comprising points where said received signal can be found when there is a negative-sign phase-error in said recovered carrier, a third class comprising points where said received signal can be found when no phase error exists in said recovered carrier; said first and second classes comprising a pre-determined number of regions in relation with the magnitude of said phase error of said recovered carrier; the inclusion in one of said classes and regions being univocally denoted by a digital symbol which is utilized to generate a control signal for a local oscillator which comprises:

a first and a second multiplier, each receiving as one input the modulated signal, the outputs of the multipliers being in phase quadratures;

a pair of low-pass filters respectively connected to said outputs of multipliers;

a sample and decision circuit receiving outputs from said filters having controllable thresholds for comparing at a selected instant, amplitudes of baseband components from said filters and producing an output;



a first logic circuit coupled to said sample and decision circuit for estimating positioning errors of said thresholds with respect to an ideal position on the basis of the digital symbol output by said sample and decision circuit, a first pulse generator connected to and controlled by said first logic circuit, and another low-pass filter connected between said first pulse generator and said sample and decision circuit for applying said adjustment signal thereto;

a second logic circuit connected to said output of said sample and decision circuit for receiving a digital symbol output by said sample and decision circuit and representing the phase error of the received carrier;

a second pulse generator connected and controlled by said second logic circuit for generating a correction pulse;

a further low-pass filter connected to said second pulse generator and filtering a sequence of correction pulses received therefrom;

a voltage-controlled oscillator having as an output said recovered carrier which is applied as first multiplier signal to said second multiplier;

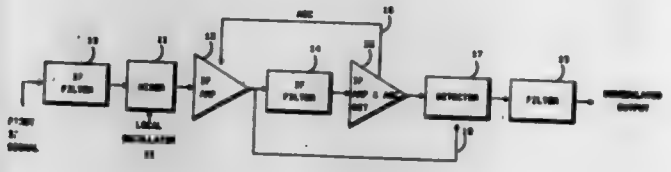
a phase shifter connected between said output of said voltage-controlled oscillator and said first multiplier for feeding a second multiplier signal to said first multiplier which is in a phase quadrature with said first multiplier signal; and

a symbol synchronism-recovery circuit for triggering said sample and decision circuit at said instant.

4,538,112
DETECTOR USING DELAYED AND UNDELAYED INPUTS FOR DEMODULATING FM OR PM SIGNALS

Richard M. Lena, Tewksbury, Mass., assignor to Wang Laboratories, Inc., Lowell, Mass.

Filed Aug. 30, 1982, Ser. No. 412,626
Int. Cl.[3] H03D 3/06
U.S. Cl. 329—145 2 Claims



1. A demodulator for demodulating a frequency or phase modulated carrier signal to obtain a demodulated signal comprising

at least one intermediate frequency (IF) filter for delaying a modulated carrier signal for subsequent mixing with the undelayed modulated carrier signal,

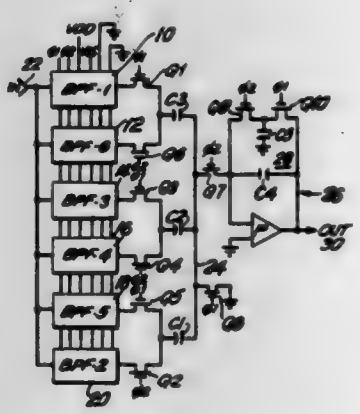
amplifying means for amplifying the output of said IF filter including automatic gain control for controlling the gain of said amplifying means, and

mixing means for mixing said modulated carrier signal with said delayed modulated carrier signal whereby a demodulated signal is obtained.

4,538,113
SWITCHED CAPACITOR FILTER

Charles A. Lish, Coram, N.Y., assignor to Standard Microsystems Corporation, Hauppauge, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,264
Int. Cl.[3] H03F 3/68
U.S. Cl. 330—126 6 Claims

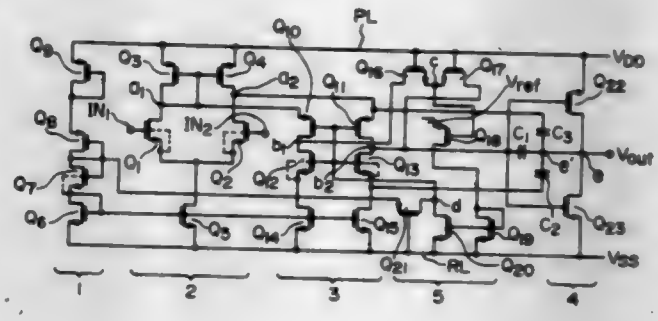


1. A band-pass filter comprising an input terminal, a plurality of filter sections having predetermined transform functions and each having an input operatively connected to said input terminal, an output terminal, each of said plurality of filter sections comprising a switched capacitor filter including a plurality of switched capacitors, the values of the capacitances of said switched capacitances being selected so that each of said filter sections contributes one pair of conjugate poles to the overall filter transform function, and means operatively interposed between the outputs of said plurality of filter sections and said output terminal for selectively weighting and summing the outputs of said filter sections such that the active poles contributed by each of said filter sections are arranged on a circle concentric with and having a radius less than that of a unit circle of the z plane, said poles, with the exception of corrector poles, being equiangularly spaced from one another along said pole circle.

4,538,114
DIFFERENTIAL AMPLIFIER

Nobuo Kunimi, Sayama; Koichi Shimizu, Yokohama, and Toshiro Suzuki, Tama, all of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 1, 1983, Ser. No. 528,656
Claims priority, application Japan, Sep. 3, 1982, 57-152731
Int. Cl.[3] H03F 3/45
U.S. Cl. 330—253 9 Claims



1. A differential amplifier comprising:

a pair of differential input field-effect transistors with channels of a first conductivity type;

a current-mirror load circuit which is comprised of first and second field-effect transistors with channesl of a second conductivity type connected between the drains of said pair of differential input field-effect transistors and a first power terminal;

a third field-effect transistor with a channel of the second conductivity type receiving at its source a signal from the junction between the drain of said first field-effect transistor of said current-mirror load circuit and the drain of one of said pair of differential input field-effect transistors;

a fourth field-effect transistor with a channel of the second conductivity type receiving at its source a signal from the junction between the drain of said second field-effect transistor of said current-mirror load circuit and the drain of the other of said pair of differential input field-effect transistors;

a load circuit which forms a current path between the drains of said third and fourth field-effect transistors and a second power terminal;

a voltage generation circuit which generates a bias voltage applied to the gates of said third and fourth field-effect transistors, and

feed back means coupled between the drains of said third and fourth field-effect transistors and the gates of said third and fourth field-effect transistors, said feedback means including means for controlling the voltage level of the gate bias on said gates of said third and fourth field-effect transistors in accordance with the voltage level at said drains of said third and fourth field-effect transistors.

4,538,115
JFET DIFFERENTIAL AMPLIFIER STAGE WITH METHOD FOR CONTROLLING INPUT CURRENT

James R. Butler, San Jose, Calif., assignor to Precision Monolithics, Inc., Santa Clara, Calif.

Filed Jun. 15, 1984, Ser. No. 621,053
Int. Cl.[3] H03F 3/16, 3/45
U.S. Cl. 330—253 7 Claims

1. A JFET (junction field effect transistor) differential amplifier stage, comprising:

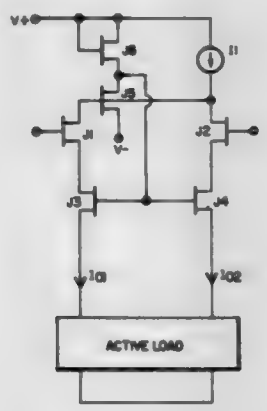
first and second JFETs connected in a differential amplifier stage with their sources connected together, and their gates adapted to receive respective input voltage signals,

a current source connected to supply current to the JFETs, the magnitude of current supplied by said current source being great enough to establish gate-source voltages for the two JFETs which are less than their pinchoff voltages (V_p),

a third JFET cascoded with the first JFET and with its gate connected in circuit with the source of the first JFET,

a fourth JFET cascoded with the second JFET and with its gate connected in circuit with the source of the second JFET,

said third and fourth JFETs each developing a voltage at least as great as the differential between the gate-source



voltage and V_p for their respective first and second JFETs, whereby the gate-drain voltages of the first and second JFETs are maintained at at least V_p to keep them in a saturated mode with a high ouput impedance, and

fifth and sixth JFETs connected to buffer the first and second JFETs from capacitances at the gates of the third and fourth JFETs.

4,538,116

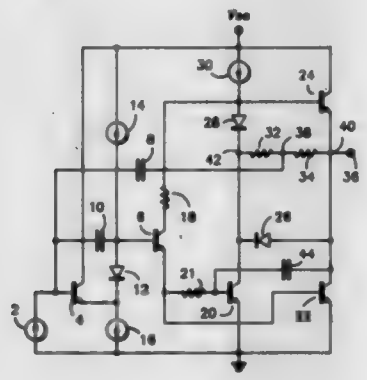
OUTPUT STAGE FOR AN OPERATIONAL AMPLIFIER

Robert L. Vyne, Tempe, Ariz., assignor to Motorola, Inc., Schaumburg, Ill.

Filed Mar. 19, 1984, Ser. No. 590,948

Int. Cl.³ H03F *3/30*

U.S. Cl. 330—271 **5 Claims**



1. An operational amplifier for providing load current to an output terminal, comprising:

an input stage;

an output stage including first, second and third NPN output transistors, each having base, emitter and collector terminals, said first NPN output transistor having an emitter coupled to said output terminal for conducting load current thereto and a collector terminal for coupling to a first source of supply voltage, said second NPN output transistor having a collector coupled to said output terminal for sinking load current therefrom and an emitter for coupling to a second source of supply voltage, and said third NPN output transistor having a collector coupled to said output terminal and an emitter for coupling to said second source of supply voltage;

at least a first emitter follower transistor having a base terminal coupled to the output of said input stage, a collector coupled to the base of said first NPN output transistor and an emitter coupled to the base of said third NPN output transistor;

a first capacitor coupled between the output of said input stage and said output terminal;

a resistor coupled between the emitter of said emitter follower transistor and the base of said second NPN output transistor; and

a second capacitor coupled between the base of said second NPN output transistor and said output terminal, said first and second capacitors for stabilizing said amplifier.

4,538,117

TRANSISTOR AMPLIFIER

Bengt G. Olsson, Galärvägen 13, Saltsjö-Boo, Sweden (S-132 00)

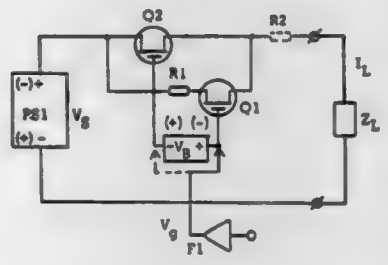
PCT No. PCT/SE82/00272, § 371 Date Apr. 6, 1983, § 102(e) Date Apr. 6, 1983, PCT Pub. No. WO83/00965, PCT Pub. Date Mar. 17, 1983

PCT Filed Aug. 27, 1982, Ser. No. 483,955

Claims priority, application Sweden, Aug. 28, 1981, 8105111

Int. Cl.³ H03F *3/16*

U.S. Cl. 330—277 **3 Claims**



1. An amplifier for connection as a two-pole device between a DC power source and a load impedance comprising:

(a) first and second MOS-transistors of the same conductivity type, each having source, drain and gate terminals, the source terminals being commonly connected and forming one pole of said two-pole device, said one pole being connectable to said load impedance;

(b) resistance means connected between the drains of the first and second MOS-transistors, said resistance means having substantially the same magnitude as said load impedance, said resistance means having a first end connected to the drain of said first MOS-transistor means and a second end connected to the drain of the second MOS-transistor to form the other pole of said two-pole device, said other pole being connectable to said DC power source;

(c) DC voltage generating means connected between the respective gates of said first and second MOS-transistors for applying a substantially constant voltage therebetween, the polarity of said constant voltage causing said second MOS-transistor to conduct less than said first MOS-transistor, the magnitude of said constant voltage precluding said second MOS-transistor from conducting until said first MOS-transistor conducts at the full rated current thereof; and

(d) drive means connected in the gate circuits of said first and second MOS-transistors for applying a control voltage, causing said transistors to conduct.

4,538,118
TRANSISTOR AMPLIFIER OPERATING AT ULTRA HIGH FREQUENCY UNDER PULSE OPERATING CONDITIONS

Roland Lorieux, Paris, France, assignor to Thomson CSF, Paris, France

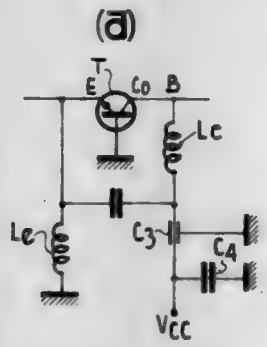
PCT No. PCT/FR82/00083, § 371 Date Aug. 27, 1982, § 102(e) Date Aug. 27, 1982, PCT Pub. No. WO82/04166, PCT Pub. Date Nov. 25, 1982

PCT Filed May 18, 1982, Ser. No. 414,372

Claims priority, application France, May 22, 1981, 81 10255

Int. Cl.³ H03F *3/60*

U.S. Cl. 330—286 **6 Claims**



1. A transistor microwave amplifier operating under pulse operating conditions comprises:

at least one transistor connected with base to ground and receiving input pulses;

an input inductance placed in parallel across the base and connected to the emitter of said at least one transistor;

a collector inductance connected to the collector of said at least one transistor;

a voltage supply source applying a current to the collector of said at least one transistor through said collector inductance;

a capacitor connected in parallel across said source;

a decoupling capacitor connected between said source and said collector inductance;

a capacitor connected between the emitter and the collector of said at least one transistor, supplied by said source and intended to store the energy during the test periods of said at least one transistor and to restore it at the beginning of each input pulse, said capacitor connected between said emiter and collector of said at least one transistor having a short time constant in order to reduce the effects of the input and collector inductances.

4,538,119
CLOCK EXTRACTION CIRCUIT USING AN OSCILLATOR AND PHASE-LOCKED PROGRAMMABLE DIVIDER

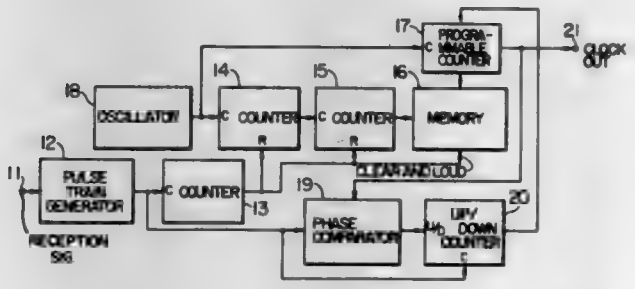
Akira Ashida, Yokohama, Japan, assignor to Hitachi, Ltd., Tokyo, Japan

Filed Apr. 15, 1982, Ser. No. 368,665

Claims priority, application Japan, Apr. 17, 1981, 56-56949

Int. Cl.³ H03L *7/06*

U.S. Cl. 331—1 A **5 Claims**



1. A phase-locked circuit capable of following a varying frequency input signal comprising:

an oscillator for generating a clock signal having a frequency higher than the frequency of the input signal;

a pulse train generator receiving the input signal for providing a timing signal indicating a certain phase in the input signal and forming a pulse train having pulses appearing corresponding to the timing signal;

average period count/storage means for measuring an average period of the input signal by counting the number of pulses of said clock signal during an interval of a predetermined number of input periods obtained by counting pulses of the pulse train and storing the count;

a programmable counter for dividing the frequency of said clock signal in accordance with the stored count and providing an output signal; and

phase comparison/correction means for comparing the phase of said output signal with the phase of pulses in said pulse train, and producing a phase correction signal as a result of said comparison; whereby said programmable counter increases or decreases said stored count in accordance with said phase correction signal to modify the phase of said output signal.

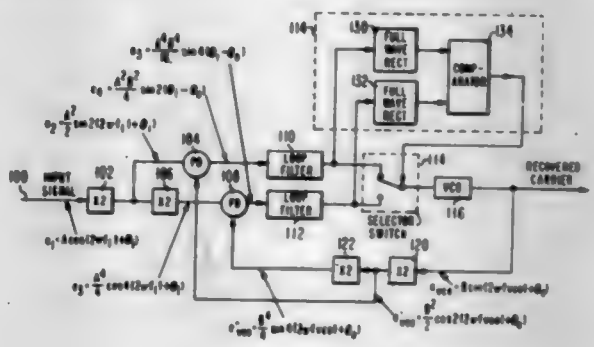
4,538,120
CARRIER RECOVERY LOOP FOR RECEPTION OF QUADRAPHASE SHIFT KEYED SIGNALS

Thaddeus A. Hawkes, Haddonfield, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Dec. 19, 1983, Ser. No. 562,525

Int. Cl.³ H03L *7/00*

U.S. Cl. 331—12 **7 Claims**



1. A carrier recovery loop for the reception of quadraphase shift keyed (QPSK) signals e_1 of frequency f_1 and comprising:

first and second frequency multiplying means for successively multiplying f_1 by two to produce a signal e_2 of frequency $2f_1$ and then again by two to produce a signal e_3 of frequency $4f_1$ with the phase modulation thereby removed;

a voltage controlled oscillator (VCO) for producing an output signal e_{vco} of variable frequency f_{vco};

third and fourth frequency multipling means for successively multiplying f_{vco} by two to produce a signal e'_{vco} of frequency $2f_{vco}$ and then again by two to produce a signal e''_{vco} of frequency $4f_{vco}$;

first and second phase detector means responsive respectively to e_2 and e'_{vco} and to e_3 and e''_{vco} to produce first and second output signals;

means for filtering out high frequency components from the output signals of said first and second phase detectors;

said phase detectors each having a characteristic operating curve wherein the output of the phase detector varies substantially sinusoidally with linear variation of the phase difference of the two signals supplied thereto and where the negative-going cross-over transitions of said sinusoidal operating characteristic curves are unstable; and

means responsive to the output signals of said means for filtering to generate a control signal indicating when the output of said second phase detector is nearing an unstable negative-going cross-over transition; and

switching means responsive to said control signal to connect

the output signal of said first phase detector to the input of said VCO when the output of said second phase detector is near an unstable negative-going cross-over transition.

4,538,121

HIGH FREQUENCY GENERATOR WITH OUTPUT SHUT-OFF OR REDUCED BY BIASING MULTIPLIER DIODE

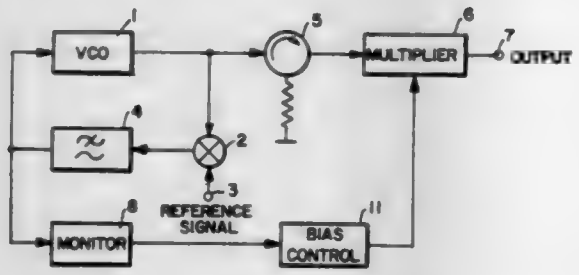
Yasuhiro Yano, Inagi; Isamu Umino, Kawasaki; Zenichi Ohsawa, Yokohama, and Takayuki Ozaki, Tochigi, all of Japan, assignors to Fujitsu Limited, Kawasaki, Japan

Filed Dec. 27, 1982, Ser. No. 452,922

Claims priority, application Japan, Dec. 29, 1981, 56-212127

Int. Cl.³ H03L *7/06;* H03B *1/00*

U.S. Cl. 331—25 **8 Claims**



1. A high frequency generator comprising:

generating means for generating a high frequency signal, said generating means comprising a phase-locked loop, including:

a voltage controlled oscillator generating a first output signal and having an input terminal;

a reference signal generator, operatively connected to said voltage controlled oscillator, for providing a reference signal;

mixing means having an output terminal, operatively connected to said voltage controlled oscillator and said reference signal generator, for mixing the first output signal and the reference signal, and outputting a signal in accordance with a phase-difference between the first output signal and the reference signal; and

a loop-filter, operatively connected to said output terminal of said mixing means and said input terminal of said voltage controlled oscillator, for supplying a control signal to said voltage controlled oscillator, wherein said voltage controlled oscillator generates the first output signal in dependence upon the control signal supplied from said loop-filter;

multiplier means, operatively connected to said generating means, for receiving and multiplying the high frequency signal and outputting harmonic frequency signals, said multiplier means including:

an input terminal, operatively connected to said generating means, for receiving the high frequency signal;

a multiplier diode, operatively connected to said input terminal, for providing harmonic frequency signals of the high frequency signal; and

means, operatively connected to said multiplier diode, for supplying a bias voltage to said multiplier diode, so that the harmonic frequency signals of said multiplier means are controlled in accordance with the bias voltage supplied to said multiplier diode;

bias controlling means, operatively connected to said multiplier means, for controlling the bias voltage supplied to said multiplier diode;

output means, operatively connected to receive the harmonic frequency signals from said multiplier means, for outputting a fixed harmonic signal of the harmonic frequency signals; and

a monitoring circuit, operatively connected to said output terminal of said mixing means, for monitoring the synchronization between the reference signal and the first output signal from said voltage controlled oscillator, and for providing an alarm signal to said bias controlling means when the synchronization is not detected by said monitoring circuit.

4,538,122

DIODE OSCILLATOR WITH INDEPENDENTLY VARIABLE FREQUENCY AND POWER

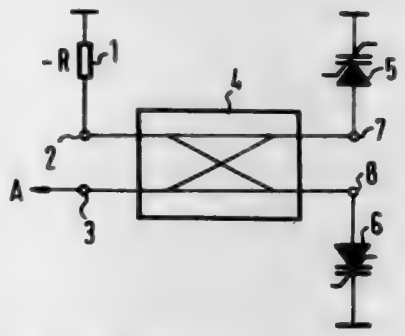
Laszlo Szabo, Korntal, and Klaus Schünemann, Braunschweig, both of Fed. Rep. of Germany, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Aug. 16, 1983, Ser. No. 523,546

Claims priority, application Fed. Rep. of Germany, Aug. 19, 1982, 3230830

Int. Cl.³ H03B *7/12;* H03L *5/02;* H03C *3/20*

U.S. Cl. 331—96 **16 Claims**



1. An oscillator for electromagnetic waves, comprising a two-terminal device (1) as an active element and an impedance-matching network (4) for matching the two-terminal device to a load (A), characterized in that the impedance-matching network is formed by a coupler (4) having four terminals (2, 3, 7, 8), that a respective first and second of the terminals (7, 8) are terminated with variable impedances (5, 6) for independently adjusting or continuously varying the output power and the frequency, respectively, that a third one of the terminals (2) is connected to the active two-terminal device (1), and that a fourth terminal (3) is the oscillator output.

4,538,123

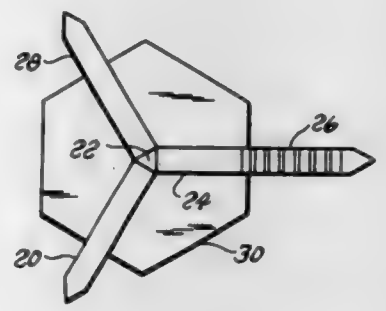
DIELECTRIC WAVEGUIDE BANDPASS APPARATUS

Elio A. Mariani, Hamilton Square; Richard A. Stern, Allenwood, and Richard W. Babbitt, Fair Haven, all of N.J., assignors to The United States of America as represented by the Secretary of the Army, Washington, D.C.

Filed Jan. 20, 1984, Ser. No. 572,350

Int. Cl.³ H01P *1/20, 3/16, 1/213*

U.S. Cl. 333—208 **6 Claims**



1. Dielectric waveguide bandpass apparatus comprising:

a dielectric waveguide input having one end for receiving a broadband millimeter wavelength signal including the desired bandpass signal;

a right ferrite prism positioned to receive the broadband signal from the other end of said dielectric waveguide input;

a dielectric waveguide bandstop filter element having one end positioned to receive the broadband signal from said

right ferrite prism, said dielectric waveguide bandstop filter element having a series of periodically spaced transverse slots cut in its upper surface to reflect a narrow band of frequencies including said desired bandpass signal of said broadband signal back to said right ferrite prism and pass the remaining frequencies of said broadband signal through said dielectric waveguide bandstop filter element to the other end thereof;

a load connected to the other end of said dielectric waveguide bandstop filter element; and

a dielectric waveguide output having one end positioned to receive said reflected narrow band of frequencies from said right ferrite prism and the other end for transmitting said narrow band of frequencies.

4,538,124

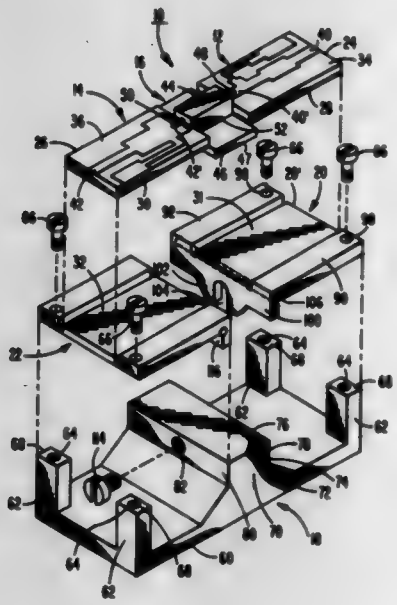
PLANAR MICROWAVE CIRCUIT COMPONENT MOUNTING SYSTEM

Melvin M. Morrison, Paterson, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Feb. 10, 1984, Ser. No. 579,186

Int. Cl.³ H01P *1/00*

U.S. Cl. 333—246 **10 Claims**



1. In a planar microwave circuit system including at least one subsystem, said subsystem including a thermally conductive heat sink base;

an electrically conductive circuit support structure adapted to be secured to said base;

a dielectric substrate secured to the support structure, said substrate having first and second plane surfaces, one of said surfaces including at least one conductor lying in a first plane and being adapted to receive a lead of a circuit component connected thereon, the other surface including a ground plane conductor which is ohmically connected to said support structure, said lead being spaced a given distance from a mounting surface of the component, the improvement comprising:

at least one thermally and electrically conductive component receiving surface on said base to which said component mounting surface can be secured, said receiving surface lying in a second plane spaced from the first plane of said one conductor; and

means coupled to said support structure and said base for setting the distance between said first plane and said component receiving surface to substantially the value of said given distance.

4,538,125

DEVICE FOR MICROWAVE TRANSMISSION BETWEEN TWO BODIES WHICH ARE ROTATABLE RELATIVE TO EACH OTHER

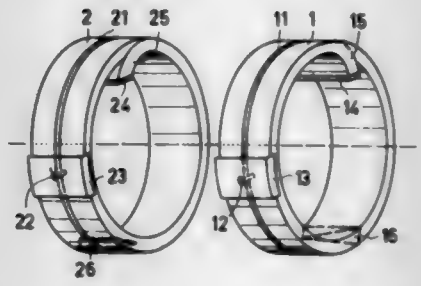
Friedrich K. Beckmann, Schenefeld; Wolfgang Hoppe, Norderstedt, and Wolfgang Meyer, Henstedt-Ulzburg, all of Fed. Rep. of Germany, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Apr. 21, 1983, Ser. No. 487,406

Claims priority, application Fed. Rep. of Germany, Apr. 24, 1982, 3215377

Int. Cl.³ H01P *1/00*

U.S. Cl. 333—248 **6 Claims**



1. A microwave slip ring comprising:

a first waveguide arranged at least partly around an axis, said first waveguide having first and second ends and a coupling slot therein extending around the axis between the first and second ends;

a first fixed aerial arranged in the first waveguide at the first end thereof;

a first attenuator in the first waveguide, said attenuator and the first end of the first waveguide defining an active sector therebetween, said active sector having an end at the aerial and an end at the attenuator, microwave energy propagated in the active sector of the first waveguide interacting with the first fixed aerial;

a first moveable aerial rotatable around the axis, said first moveable aerial projecting into the coupling slot and into the active sector of the first waveguide, said moveable aerial projecting into the active sector over an angular range approximately equal to 180°;

a second waveguide arranged at least partly around the axis and axially spaced from the first waveguide, said second waveguide having first and second ends and a coupling slot therein extending around the axis between the first and second ends;

a second fixed aerial arranged in the second waveguide at the first end thereof;

a second attenuator in the second waveguide, said second attenuator and the first end of the second waveguide defining an active sector therebetween, said active sector having an end at the aerial and an end at the attenuator, microwave energy propagated in the active sector of the second waveguide interacting with the second fixed aerial;

a second moveable aerial coupled to the first moveable aerial so as to be rotatable around the axis therewith, said second moveable aerial projecting into the coupling slot and into the active sector of the second waveguide, said second moveable aerial projecting into the active sector of the second waveguide over an angular range approximately equal to 180° ;

characterized in that the first and second waveguides and the first and second moveable aerials are arranged so that:

the first moveable aerial rotates out of the active sector of the first waveguide near the aerial end of the active sector of the first waveguide when the second moveable aerial rotates into the active sector of the second waveguide near the aerial end of the active sector of the second waveguide; and

the second moveable aerial rotates out of the active sector of the second waveguide near the attenuator end of the

active sector of the second waveguide when the first moveable aerial rotates into the active sector of the first waveguide near the attenuator end of the active sector of the first waveguide.

4,538,126

ELECTROMAGNETIC RELAY WITH SYMMETRIC REACTION

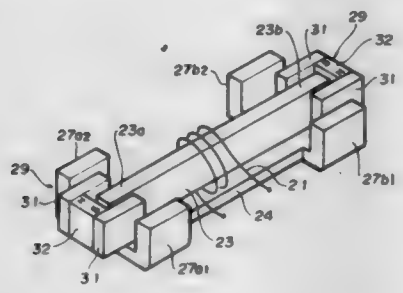
Yoshihide Bando, Kyoto, Japan, assignor to Omron Tateisi Electronics Co., Kyoto, Japan

Filed Apr. 30, 1984, Ser. No. 605,655

Claims priority, application Japan, Apr. 24, 1983, 58-64888[U]

Int. Cl.³ H01H *50/04*

U.S. Cl. 335—78 **5 Claims**



1. An electromagnetic relay, comprising:
(a) a core made of magnetic material;
(b) an electromagnetic coil wound around said core so that the two ends of said core project therefrom and constitute core end poles;
(c) a yoke extending generally parallel to said core, each end of the said yoke being formed with two poles pieces which extend towards the corresponding end pole of said core so as to lie one on each side thereof with a certain gap being defined therebetween;
(d) a connecting member extending generally parallel to said core and said yoke and mounted so as to be movable transversely to its longitudinal axis;
(e) means for establishing and breaking electrical connection according to movement of said connecting member transversely to its longitudinal axis; and
(f) two armature pieces, one for each end of said core, both fixed to said connecting member, and each comprising a permanent magnet plate and two plates of magnetic material fixed to said permanent magnet plate so as generally to form a C shape with one of said magnetic material plates being magnetized to be a north pole and the other being magnetized to be a south pole, each of the two plates of magnetic material being inserted on one side of said end of said core between the side of said end of said core and the opposing one of said pole pieces of said yoke into said gap therebetween;
(g) the directions of magnetization of said armature pieces being oppositely oriented.

4,538,127

MAGNETIC QUADRIPOLE

Denis F. Spicer, Bedford, England, assignor to Texas Instruments Incorporated, Dallas, Tex.

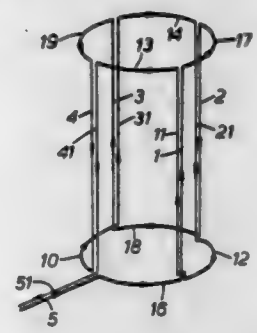
Continuation of Ser. No. 948,845, Oct. 5, 1978, abandoned. This application May 14, 1981, Ser. No. 263,611

Claims priority, application United Kingdom, Oct. 31, 1977, 45237

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—210 **2 Claims**

1. A cylindrical coil structure comprising a single continuous conductive path having first and second portions each disposed in a meander around the axis of symmetry of said cylindrical coil structure and including equispaced longitudinal conductor sections parallel to said axis of symmetry joined by bridge conductor sections extending transversely of said axis of symmetry at ends of said cylindrical coil structure, wherein said meanders of the first and second portions extend in antiphase to each other such that longitudinal conductor sections of the first and second portions overly each other in pairs and corresponding bridge conductor sections of the first and second portions together define substantially closed peripheries at opposite ends of said longitudinal conductor sections to form a series of pseudo-loops each comprising spaced



first and second pairs of longitudinal conductor sections, each of the first and second pairs including a longitudinal conductor section of each meander, and a pair of bridge conductor sections one of each meander for constraining current flow along said continuous conductive path in one direction along the longitudinal conductor sections of the second pair, and in opposite directions through adjacent bridge conductor sections of the first and second portions.

4,538,128

DEVIATOR FOR AN AUTO CONVERGENT COLOR PICTURE TUBE AND ITS METHOD OF MANUFACTURE

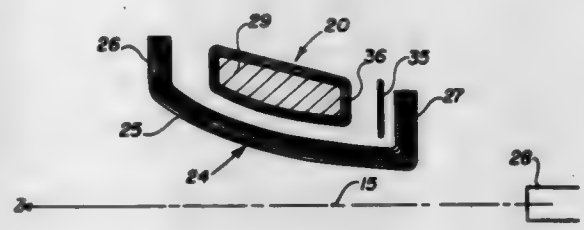
Jean-Pierre Fourché , Marsaunay la Cote, and Marc Milili, Dijon, both of France, assignors to Videocolor, Montrouge, France

Filed Sep. 30, 1983, Ser. No. 538,053

Claims priority, application France, Oct. 5, 1982, 82 16680

Int. Cl.³ H01F *7/00*

U.S. Cl. 335—210 **5 Claims**

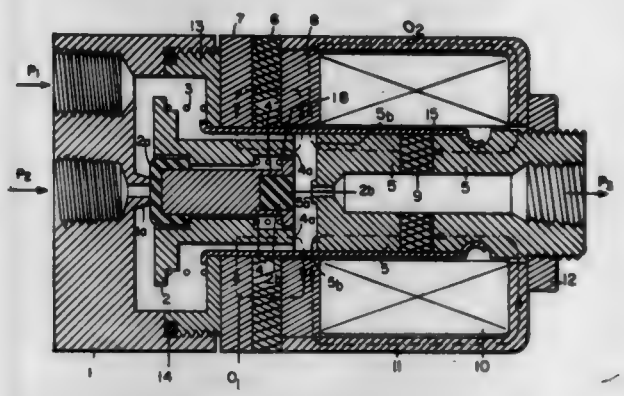


1. In autoconvergent color image tubes having differently sized tube screens, an interchangeable deviator assembly for use in any of the tubes, the assembly comprising:
a saddle-shaped horizontal deviation coil having front and rear napes being generally perpendicular to the axis of the tube;
a vertical deviation coil positioned in radially outward concentric relation to the horizontal deviation coil; and
a magnetic screen positioned generally perpendicular to the tube axis, between the rear nape of the horizontal deviation coil and a confronting surface of the vertical deviation coil for
(a) deviating magnetic lines of force from the vertical deviation coil, in the vicinity of the magnetic screen, forwardly toward the tube screen;
(b) deviating magnetic lines of force from the horizontal deviation coil, in the vicinity of the magnetic screen, rearwardly away from the tube screen;
the inclusion of the magnetic screen resulting in a displacement of the horizontal and vertical deviation centers to effect accurate vertical and horizontal deviation for the tubes having differently sized tube screens without necessitating modifications to the horizontal or vertical deviation coils.

4,538,129
MAGNETIC FLUX-SHIFTING ACTUATOR

Richard T. Fisher, 149 Barker St., Pembroke, Mass. 92359

Continuation of Ser. No. 264,365, May 18, 1981, Pat. No. 4,403,765, which is a continuation of Ser. No. 97,079, Nov. 25, 1979, abandoned. This application Jul. 1, 1982, Ser. No. 394,475
The portion of the term of this patent subsequent to Sep. 13, 2000, has been disclaimed.
Int. Cl.³ H01F *3/12*; F16K *31/08*
U.S. Cl. 335—230 **7 Claims**



1. In a magnetic flux-shifting actuator the combination of:
(a) a fixed armature substantially of soft iron;
(b) a plunger movable relative to said armature to outwardly move and retract a connection to an external load;
(c) said plunger having a first position in which a gap is formed between said plunger and said armature and said plunger having a second position in which said gap between said plunger and said armature is closed;
(d) means for forcing said plunger away from said armature to establish said gap;
(e) a housing for an electromagnet surrounding said armature and having a wall of soft iron;
(f) a first fixed permanent magnet having a relatively high coercive force so that the polarization thereof is normally unalterable;
(g) a second fixed permanent magnet having a relatively low coercive force so that the polarization thereof is normally alterable, said second magnet being displaced relative to said first magnet in a direction longitudinally of said armature;
(h) a first soft iron member engaging one side of said first magnet;
(i) a second soft iron member engaging the other side of said first magnet;
(j) said first soft iron member, said plunger, said second soft iron member and said first magnet forming a first flux path;
(k) a portion of said armature, said second soft iron member, said wall of said housing for an electromagnet, and said second magnet forming a second flux path; and
(l) an electromagnet in said housing adapted to be energized in opposite directions to change the polarity of said second magnet thereby causing attraction of said plunger by said armature.

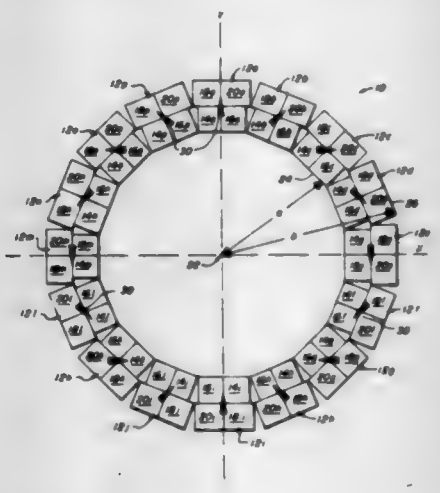
4,538,130
TUNABLE SEGMENTED RING MAGNET AND METHOD OF MANUFACTURE

Robert L. Gluckstern, College Park, Md.; Ronald F. Holsinger, Carlisle, and Robert R. Lown, Billerica, both of Mass., assignors to Field Effects, Inc., Acton, Mass.

Filed Apr. 23, 1984, Ser. No. 602,761
Int. Cl.³ H01F *7/02*
U.S. Cl. 335—306 **24 Claims**

1. A tunable segmented ring magnet extending along a magnet axis perpendicular to the plane of the ring configuration thereof, and defining a torus surrounding an interior space, said magnet producing a preselected magnetic field within said interior space transverse to said magnet axis, said magnet comprising

A. a first plurality of inner magnet segments, each of said inner magnet segments being formed of a permanant magnetic material having essentially linear behavior in the second quadrant of the B-H curve and having an easy axis of magnetization in a predetermined orientation,

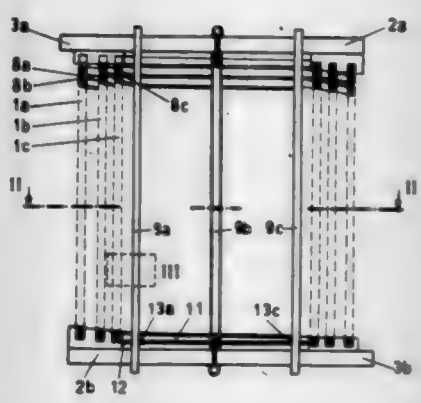


B. a second plurality of outer magnet segments located radially outward from said inner magnet segments, each of said outer magnet segments being formed of a permanant magnetic material having essentially linear behavior in the second quadrant of the B-H curve and having an easy axis of magnetization in a predetermined orientation, and
C. tuning means for moving at least one said magnet segment radially relative to said ring to produce a preselected transverse magnetic field in said interior space.

4,538,131
AIR-CORE CHOKE COIL

Manfred Baier, Oberehrendingen, and Andreas Rascher, Küttigen, both of Switzerland, assignors to BBC Brown, Boveri & Company, Ltd., Switzerland

Filed Nov. 30, 1983, Ser. No. 556,645
Claims priority, application Switzerland, Jan. 27, 1983, 442/83
Int. Cl.³ H01F *27/08*
U.S. Cl. 336—57 **14 Claims**



1. An axially symmetric air-core choke coil, comprising:
at least one winding, said at least one winding having a plurality of helically wound, spaced apart, wire cable turns, said coil having an inner cylindrical periphery inside said coil and an outer periphery concentrically surrounding said inner periphery;
a plurality of axially extending, electrically non-conductive, strips, spaced circumferentially around said at least one winding, each strip including a plurality of folded sections, respective ones of said folded sections being fitted between respective adjacent turns, a plurality of air gaps being defined between said turns and said strips, said strips

being arranged to permit radial and longitudinal air flow through said air gaps;

means for generating an axial air flow along said inner cylindrical periphery of said coil, said axial air flow being adapted to reduce the air pressure at said inner periphery to induce outside air to flow through said air gaps; said means for producing an axial air flow comprises a screen, said screen being adapted to block air flow through the center of one axial end of said coil and to define an axial gap between the circumferential periphery of said screen and said at least one winding of said coil, whereby air entering said axial gap is accelerated to produce said reduced air pressure along said inner periphery of said coil; and

means for axially prestressing said at least one winding.

4,538,132

IMPEDANCE CONVERTING TRANSFORMER FORMED OF CONDUCTORS EXTENDING THROUGH A MAGNETIC HOUSING

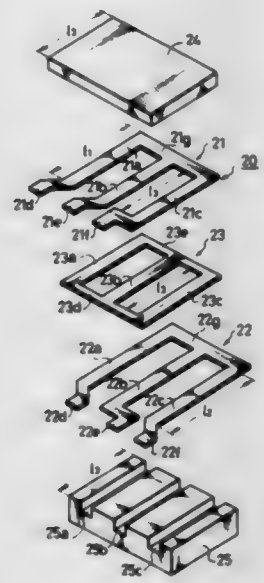
Torao Hiyama, Haramachi, and Kazuo Nishizawa, Koide, both of Japan, assignors to Alps Electric Co., Ltd., Japan

Filed Sep. 24, 1982, Ser. No. 423,240

Claims priority, application Japan, Oct. 6, 1981, 56-148313[U]

Int. Cl.³ H01H *85/46*

U.S. Cl. 336—221 **4 Claims**



1. A transformer for converting an input signal to an output signal of different impedance comprising first and second conductors each being formed unitarily to have at least three overlap portions each having respective terminals at one end and an integral connection portion connecting the other ends of each of said overlap portions together; means including a member formed of insulating material and interposed between said first and second conductors electrically isolating said overlap portions of said first conductor from said overlap portions of said second conductor; and two discrete housing members each formed as a block of a magnetic substance and forming respective cores, at least one of said cores having three grooves; said overlap portions being placed in said grooves of said one core; said two cores being bonded to each other with said overlap portions between them to couple said overlap portions together electromagnetically, wherein said first and second conductors are arranged such that said connecting portions thereof do not superpose with each other.

4,538,133

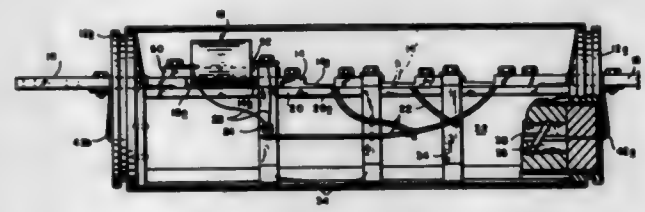
PASSIVELY DETONATED EXPLOSIVELY-ASSISTED FUSE

Herbert M. Pflanz, Westwood, Mass., assignor to Phoenix Electric Corporation, Boston, Mass.

Filed Dec. 19, 1983, Ser. No. 562,827

Int. Cl.³ H01H *85/00, 37/76*

U.S. Cl. 337—4 **13 Claims**



1. In an explosively-assisted fuse having a main current conductor, explosive charge proximate to said conductor for severing said conductor when said charge is detonated, a detonator responsive to a voltage applied thereto for detonating said charge, and a main fuse in parallel with said main conductor for receiving current from said conductor when said conductor is severed, the improvement comprising

an auxiliary fuse in series with said main conductor and providing a voltage across opposite ends thereof on melting in response to fault currents therethrough, and

means connecting said detonator across said auxiliary fuse for receiving a detonating voltage therefrom.

4,538,134

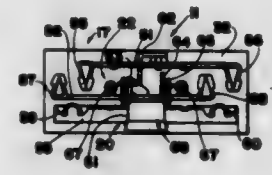
CONTROL APPARATUS

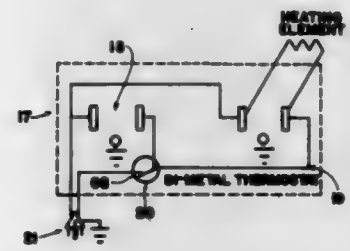
John C. Carey, Box 1143, Glasgow, Mont. 59230

Continuation-in-part of Ser. No. 366,042, Apr. 29, 1982, abandoned. This application Mar. 30, 1984, Ser. No. 595,549

Int. Cl.³ H01H *37/04*

U.S. Cl. 337—113 **15 Claims**





1. Temperature responsive control apparatus including a housing portion, a socket portion, a circuit portion, a temperature responsive portion, a connecting portion and a fastening portion; said housing portion including an enclosure member including a major face section and a plurality of sidewall sections extending from edges thereof, a cover section joining free edges of said sidewall sections and forming a chamber with said enclosure member, said enclosure member including divider sections extending from said major face section and said sidewall sections toward said cover section; said socket portion including a plurality of openings in said enclosure member; said openings being arranged into groups of at least two adjacent openings with each group providing a combination of openings mateable with an electrical plug member; said circuit portion including at least two spaced buss bar members, said

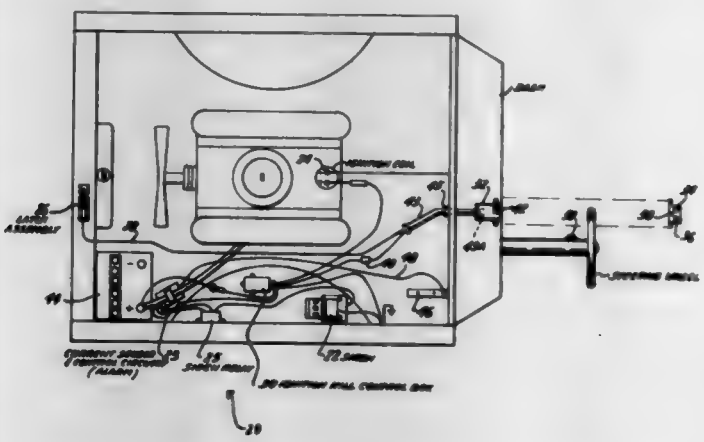
buss bar members being disposed within said chamber of said enclosure member in a generally parallel relationship, each of said buss bar members including a contact section adjacent each end thereof extending in one direction therefrom toward said socket openings and terminating adjacent thereto, one of said contact sections that extends from one of said buss bar members being disposed adjacent a socket opening of each socket opening group and one of said contact sections that extends from another buss bar member being disposed adjacent a second socket opening of each socket openings group; said temperature responsive portion including bi-metal thermostat means, said bi-metal thermostat means being disposed within said chamber and having one contact thereof connected to one of said buss bar members; said connecting portion including positive and neutral contact terminals, a contact terminal extending from one of said buss bar members, and another of said contact terminals extending from a second contact of said bi-metal thermostat means; said contact terminals being arranged closely adjacent to each other, each of said contact terminals extending through said cover section; said fastening portion including fasteners securing said cover section to said enclosure member; whereby electrical current only moves through said control apparatus to energize electrical devices having plug members inserted into said socket portion when a threshold temperature of said bi-metal thermostat means is passed.

4,538,135

VEHICULAR SECURITY SYSTEM

Earl W. Turner, Brockton, Mass., assignor to Audiovox Corp., Hauppauge, N.Y.

Filed Jul. 9, 1982, Ser. No. 396,716
Int. Cl.³ B60R *25/00*; E05B *65/19*
U.S. Cl. 340—63 **14 Claims**



1. The security system for a vehicle having an engine compartment with an engine and ignition contained therein, a hood covering for the engine compartment, and an ignition switch for operation of the ignition and the engine, the system comprising:

a. a hood latch;

b. ignition disabling means;

c. lock means for operating said hood latch;

d. switch means for releasing said disabling means to permit operation of the ignition, said disabling means being in circuit with said ignition switch to reinstitute a disabling of said ignition upon the turning off of said ignition switch;

e. a tamper resistant housing enclosing said lock means and said switch means to permit operation of said lock means and said switch means; and wherein

f. said housing comprises a front wall, a back wall, a bottom wall, a top wall configured as a cover of said housing, and sidewalls joining the front wall and the back wall and extending from said bottom wall to said top wall, a lock of said lock means being disposed in said front wall, and a switch of said switch means being disposed in said front wall alongside said lock of said lock means;

g. said lock means comprising a cable interconnecting said lock with said hood latch, said cable being coupled to said lock at a location within said housing, said security system further comprising a tube extending through said back wall of said housing and entering into said engine compartment, said tube being positioned for receiving said cable within said housing to provide a secure passage for said cable from said housing and into said engine compartment;

h. said disabling means including a lock-up circuit responsive to the joint occurrence of an electric current from said ignition switch and from said switch means, said switch means including an electrical conductor passing through said housing and through said tube and into said engine compartment for connecting the switch of said switch means with said lock-up circuit, said tube providing secure passaage for said electrical conductor from said housing to said engine compartment;

i. said housing including a guide disposed within the housing, a front end of said tube being rotatably secured within said housing by said guide, the front end of said tube having a flange for engagement with said guide to prevent extraction of said tube from said housing while permitting rotation of said tube relative to said housing to facilitate installation of said housing and said tube within said vehicle;

j. said lock means including a slide extending inwardly from said front wall to permit displacement of said lock in a direction along an axis of said cable, thereby to impart longitudinal motion to said cable for locking and locking said hood latch, said guide extending between said bottom wall and said cover with a bottom portion of said guide connecting with said bottom wall and a top portion of said guide connecting with said cover to permit assembly of said tube to said housing, and a portion of said slide being located on said cover to permit assembly of said lock to said housing; and wherein

k. said disabling means includes a relay having a contact connected in parallel connection with breaker apparatus of said ignition for bypassing the breaker apparatus, said relay being driven by said lockup circuit, said lockup circuit having a first input terminal and a second input terminal, means in circuit with said ignition switch for applying a voltage representing a logic level to said first terminal, means in circuit with said switch of said switch means for applying a variable voltage as a logic level to said second input terminal, said variable voltage means including a resistor-capacitor circuit allowing the voltage level to drop during a discharge of said capacitor with a predetermined time constant, a set of interconnected logic gate elements connecting with said first and said second input terminals and providing an output signal for operation of said relay; and a diode interconnecting an output terminal of one of said logic gates with said variable voltage level at said second input terminal to provide a lockup function for retaining said relay in a state of energization during closure of said ignition switch, and subsequent to a momentary closure of said switch of said switch means.

4,538,136

POWER LINE COMMUNICATION SYSTEM UTILIZING A LOCAL OSCILLATOR

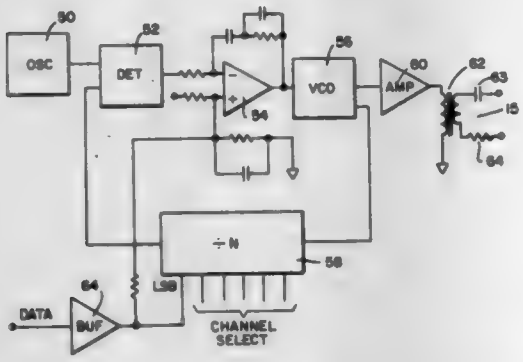
Richard B. Drabing, Los Altos, Calif., assignor to Amtel Systems Corporation, Sunnyvale, Calif.

Filed Mar. 30, 1981, Ser. No. 248,728
Int. Cl.³ H04B *3/54*; H03D *3/00*; H03C *3/00*
U.S. Cl. 340—310 R **2 Claims**

1. In a communication system, a transmitter for generating a narrow band RF frequency shift keyed signal on a powerline including a first and a second frequency in each of a plurality of channels corresponding to a first and a second logical data bit from a source of data, respectively, comprising:

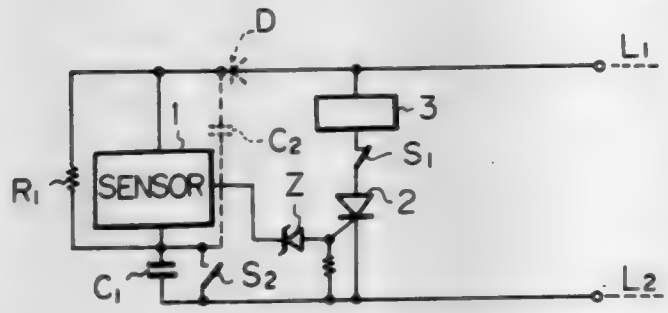
an oscillator having an output;

a phase detector having a first input coupled to said output of said oscillator, a second input and an output;
an operational amplifier having a first input coupled to said output of said detector, a second input and an output;
a first RC network coupled between said first input and said output of said amplifier;
a voltage controlled oscillator (VCO) having an input coupled to said output of said amplifier and an output;
a multi-channel select circuit having an input coupled to said output of said VCO, an output coupled to said second input of said detector and a data input for providing a plurality of channels;



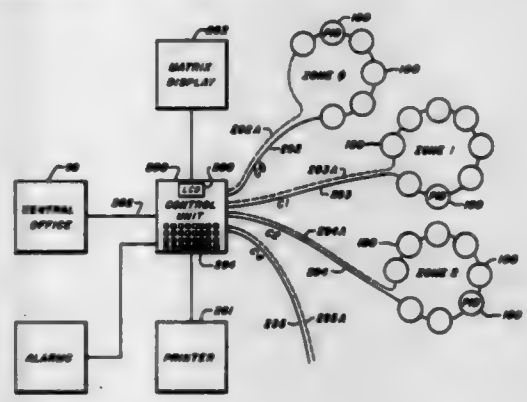
a second RC network coupled to said second input of said amplifier;
first means for providing each of said data bits to said data input of said multi-channel select circuit; and
second means for providing each of said data bits to said second input of said amplifier and said second RC network for controlling the magnitude and speed of change in the frequency of the output of said VCO in response to said first and said second data bits whereby said output of said VCO undergoes smooth transitions between said first and said second frequencies in each of said channels.

4,538,137
FIRE DETECTOR
Tetsuo Kimura, Tokyo, Japan, assignor to Nittan Company, Limited, Tokyo, Japan
Filed Jan. 20, 1983, Ser. No. 444,475
Int. Cl.³ G08B *29/00, 17/06*
U.S. Cl. 340—512 **9 Claims**



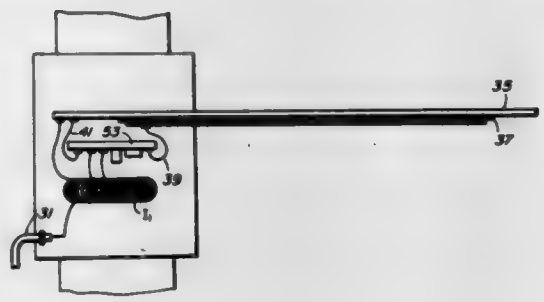
1. A fire detector designed for connection between a pair of electrical alarm lines, comprising:
a sensor producing an output voltage which corresponds to a magnitude of a condition of interest, such as smoke concentration, air temperature and the like;
a charge reservoir connected between said pair of alarm lines and being charged by current flowing through them; and
a switching circuit connected to the sensor and the charge reservoir and turning on and off to respectively discharge and charge the charge reservoir, the switching circuit turning on as a function of said output voltage and voltage across the charge reservoir, whereby the charge reservoir is repeatedly charged and discharged with a period determined by said output voltage.

4,538,138
INTEGRATED SECURITY SYSTEM HAVING A MULTIPROGRAMMED CONTROLLER
Roy L. Harvey, Milton; Kevin J. Griffin, Waltham; Aaron A. Galvin, Lexington, and Louis H. Auerbach, Brighton, all of Mass., assignors to American District Telegraph Company, New York, N.Y.
Filed Dec. 17, 1982, Ser. No. 451,744
Int. Cl.³ G08B *19/00, 26/00*
U.S. Cl. 340—521 **27 Claims**



1. A security system comprising:
a control unit;
a plurality of cables, each connected to the control unit and each having a respective address;
a plurality of point interface devices each having a respective address, and at least one point interface device being connected to each of said cables;
each of the point interface devices being operative to provide a signal in response to and representative of a sensed condition;
said control unit including:
means for simultaneously addressing point interface device on different cables;
means for simultaneously receiving signals from the addressed point interface devices on different cables; and
processing means for sequentially processing the signals received from the point interface devices.

4,538,139
SIGNALLING APPARATUS
Anthony R. Clemente, Malden, Mass., assignor to Bolt Beranek and Newman Inc., Cambridge, Mass.
Filed Apr. 30, 1982, Ser. No. 373,524
Int. Cl.³ G08B *1/08*
U.S. Cl. 340—539 **6 Claims**



1. Apparatus for signalling remotely a sensed change in a local condition; said apparatus comprising:
a base;
a flat metal spring cantilevered from said base;
bonded to a face of said spring, a piezoelectric film of polyvinylfluoride;
means response to the sensed change in condition for snap-

ping the free end of said spring causing the spring to oscillate at its resonant frequency, thereby causing said film to generate a pulsating voltage;

means for rectifying and partially filtering said pulsating voltage thereby to provide a supply voltage having substantial ripple content at a frequency which is twice the characteristic resonant frequency of said spring frequency;

a crystal frequency controlled r.f. transmitter interconnected with said film and powered by said supply voltage to radiate an r.f. signal modulated at a signalling frequency which is essentially twice the characteristic resonant frequency of said spring;

a receiver for detecting and demodulating said radiated r.f. signal;

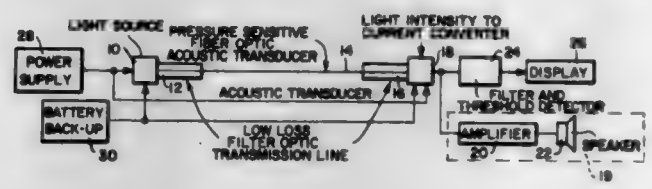
frequency selective means responsive to the demodulated signal for detecting and responding to a detected frequency component within the demodulated signal at essentially twice the resonant frequency of said spring and for generating an output signal in response thereto.

4,538,140

FIBER OPTIC ACOUSTIC TRANSDUCER INTRUSION DETECTION SYSTEM

David J. Prestel, Chagrin Falls, Ohio, assignor to Gould Inc., Rolling Meadows, Ill.

Filed Mar. 31, 1982, Ser. No. 363,854
Int. Cl.³ G08B *13/00*
U.S. Cl. 340—556 **10 Claims**



1. An intrusion detection system for sensing mechanical and acoustical vibrations in a room having walls, comprising:

a light source for generating a light beam at a point remote from the room;

first means, operatively connected to said light source, for transmitting the light beam to the room;

second means, coupled to said first means and positioned inside the walls of the room, for modulating the intensity of the light beam in response to mechanical or acoustical vibrations;

third means, coupled to said second means, for conducting the modulated light beam to a position remote from the room;

fourth means, operatively connected to said third means, for converting the modulated light beam to a detection signal;

fifth means, operatively connected to said fourth means, for generating an intrusion display signal in dependence upon the detection signal; and

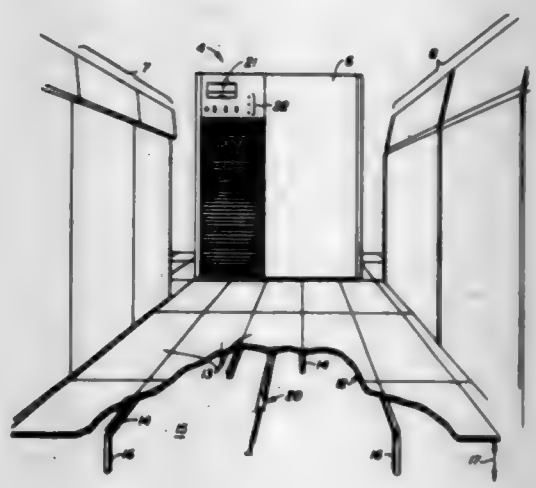
sixth means, operatively connected to said fourth means, for generating an audio signal in dependence upon the detection signal, the audio signal being a substantial reproduction of the mechanical or acoustical vibrations at all audio frequencies of the mechanical or acoustical vibrations which cause said second means to modulate the intensity of the light beam.

4,538,141

WATER DETECTION SUBASSEMBLY AND METHOD OF FORMING SAME, FOR COMPUTER PROCESSING CENTERS

Richard B. Feldman, Redwood City, Calif., assignor to Chevron Research Company, San Francisco, Calif.

Filed Oct. 4, 1982, Ser. No. 432,846
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—604 **4 Claims**



1. Method of forming a series of water detection subassemblies in association with a water detection system for use in a digital computing center, said center including a computing room have a raised floor above a sub-floor supporting computing equipment and the like comprising:

(i) pre-drilling a section of conventional plastic pipe with a series of transverse openings, said openings have axes of symmetry coextensive with each other and intersecting the central axis of symmetry of the pipe at about 90 degrees;

(ii) slicing the plastic pipe longitudinally along a central plane to bisect both the pipe and said series of openings transverse to the central axis of symmetry, whereby at least a pair of shields per longitudinal cut of the pipe is formed;

(iii) attaching said shields to said sub-floor in a predetermined deployment pattern;

(iv) stringing lengthwise through each of said shields a fabric mesh formed of an electrically non-conducting material to physically support a pair of conductors;

(v) disconnectably connecting said conductors to a voltage source means in circuit with an alarm of said detection system whereby said alarm is normally inactive, but if water contacts said conductors adjacent said sub-floor the alarm is activated to warn operators of said water invasion, but wherein said mesh and conductors are completely protected against physical abuse as from contact with workmen's shoes and the like during repair, replacement or renovation of said computing equipment.

4,538,142

SIGNAL SEAT FOR CHILDREN

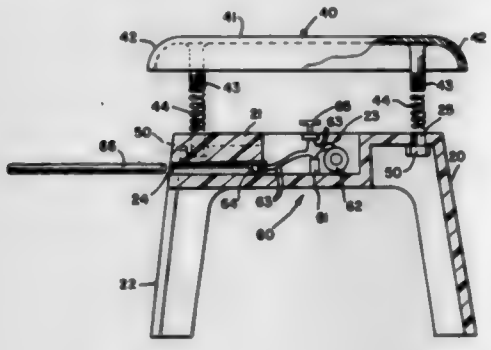
Scott B. Hamilton, 3733 S. County Rd. #5, Fort Collins, Colo. 80525, and Douglas B. Golden, 7843 SW. Ruby Ter., Portland, Oreg. 97219

Filed Sep. 30, 1982, Ser. No. 430,204
Int. Cl.³ G08B *21/00*
U.S. Cl. 340—667 **7 Claims**

1. A signal seat for use in the disciplinary technique known as "time-out"; wherein the signal seat comprises, a stool member provided with: a normally closed first switch projecting above its surface; a recess adapted to receive a battery and a signal device; and an elongated aperture that is in open communication with the recess and the exterior of the stool member;

a seat member moveably mounted to said stool member, and having a surface adapted to engage said first switch to open the switch;

a battery and signal device operatively connected by electrical leads to said first switch device, whereby the signal device will be activated when the electrical circuit is completed;



a second switch operatively connected to the electrical circuit between the battery and the signal device to selectively open and close the electrical circuit; and

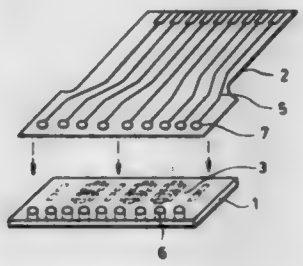
an elongated removable dowel dimensioned to be received within said elongated aperture, and having a length sufficient to engage said second switch while still projecting a substantial distance beyond said stool member.

4,538,143

LIGHT-EMITTING DIODE DISPLAYER

Tsukasa Ito, Tokyo, Japan, assignor to Clarion Co., Ltd., Japan

Filed Jun. 21, 1982, Ser. No. 390,186
Claims priority, application Japan, Jun. 24, 1981, 56-92414[U]
Int. Cl.³ G09G *3/14*
U.S. Cl. 340—719 **2 Claims**



1. A light-emitting diode displayer which comprises:

an LED substrate having opposite major surfaces on a first surface of which a plurality of LED chips are provided;

a film-like substrate having opposing major surfaces and adhered on the opposite surface of said LED substrate;

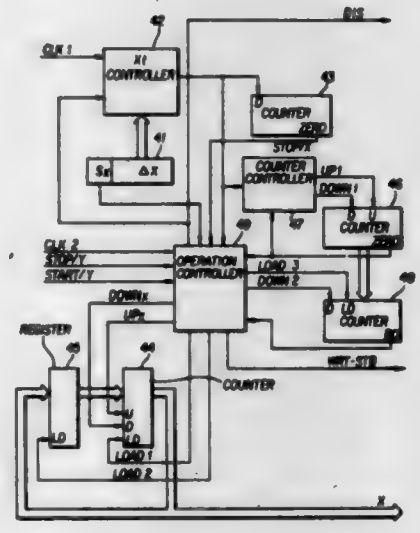
said LED substrate having conductive paths on said first surface electrically connected to said LED chips and having holes formed therein communicating between said major faces and intersecting portions of said paths, said film-like substrate having a conductive pattern of paths formed on one major surface thereof and holes so formed therein aligned with said holes of said LED substrate and intersecting portions of said conductive pattern, each aligned pair of said holes being filled with conductive paste self-curing to a hardened form to electrically connect the conductive paths of said substrates to each other.

4,538,144

GRAPHIC DISPLAY DEVICE HAVING GRAPHIC GENERATOR FOR SHADING GRAPHS

Nobuhiko Yamagami, Fuchu, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jan. 18, 1982, Ser. No. 340,387
Claims priority, application Japan, Jan. 16, 1981, 56-4662
Int. Cl.³ G09G *1/16*
U.S. Cl. 340—747 **8 Claims**



1. A graphic display device for shading the region between the lines L_1 and L_2, comprising:

a straight line coordinates generating means for generating plural coordinates in order from a point P_1 to a point P_2 defining a line L_1 which connects said two points P_1 and P_2;

X or Y coordinates generating means electrically connected to said straight line generating means for counting X or Y coordinates from a point P_t on said line L_1 given by said straight line coordinates generating means in a predetermined direction and for generating the X or Y coordinates of lattice points of said graphic display device to provide shading in order to define shading lines parallel to the X or Y axis of said graphic display device;

control means, electrically connected to said straight line generator means and said X or Y coordinates generating means, for signalling said straight line coordinates generating means when the X or Y coordinates generating means completes the generation of the coordinates for a selected shading line;

a display generating means, electrically connected to said straight line coordinates generating means and said X or Y coordinates generating means, for shading a region between said line L_1 and said line L_2 in accordance with said coordinates of said lattice points designated to provide shading as designated by said straight line coordinates generating means and said X or Y coordinates generating means for said shading lines;

further comprising:

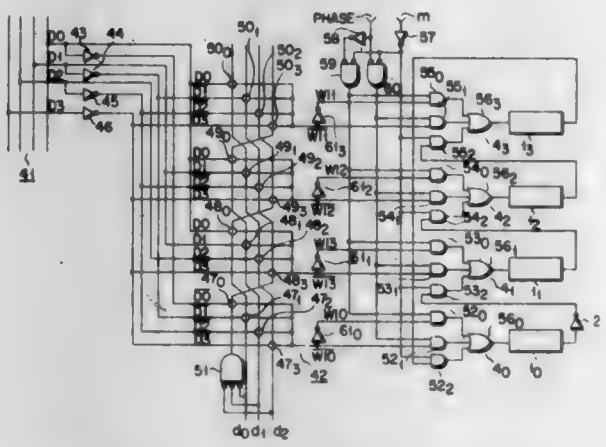
a detecting means, electrically connected to said straight line coordinates generating means and said X or Y coordinates generating means, for detecting intersections of said line L_1 and said line L_2 in accordance with the number of said lattice points designated to provide shading on a selected shading line; and

a changing means, electrically connected to said detecting means and said X or Y coordinates generating means, for changing the counting direction of said X or Y coordinates generating means after said detecting means detects an intersection of the lines L_1 and L_2.

4,538,145
DATA TRANSFER CONTROL DEVICE

Ryo Mitani, Yokohama; Yoshiaki Moriya, and Atsushi Kobayashi, both of Tokyo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Oct. 12, 1982, Ser. No. 433,711
Claims priority, application Japan, Oct. 15, 1981, 56-164706
Int. Cl.[3] G09G *1/00, 3/00*
U.S. Cl. 340—805 3 Claims



1. A data transfer control device having an input terminal for receiving constant-formatted data and an output terminal for connection to a display having common electrodes, said data transfer control device comprising:

a plurality of shift registers for storing data and providing output signals to said output terminal;

means for receiving a common electrode selecting signal;

selector means, coupled to said input terminal and said common electrode selecting signal means, for receiving said constant-formatted data at said input terminal, for changing the arrangement of said constant-formatted data in accordance with said common electrode selecting signal, said selector means comprising a plurality of outputs for outputting said data with changed arrangements to a plurality of multiplexers; and;

means for receiving a mode selection signal;

wherein each one of said plurality of multiplexers is coupled to said mode selection signal receiving means and to a different one of said selector means outputs, and is further coupled to an input of a different one of said plurality of shift registers, said plurality of multiplexers including means, responsive to said mode selection signals, for either supplying said constant-formatted display data from said selector means to said shift registers or shifting the stored data in said shift registers in a closed loop.

4,538,146
INTEGRATED CIRCUIT OUTPUT PINS USED FOR INPUT SIGNALS

Dennis E. Morris, Saratoga, Calif., assignor to National Semiconductor Corporation, Santa Clara, Calif.

Filed Sep. 17, 1982, Ser. No. 419,265
Int. Cl.[3] G09G *3/00, 3/32*
U.S. Cl. 340—814 4 Claims

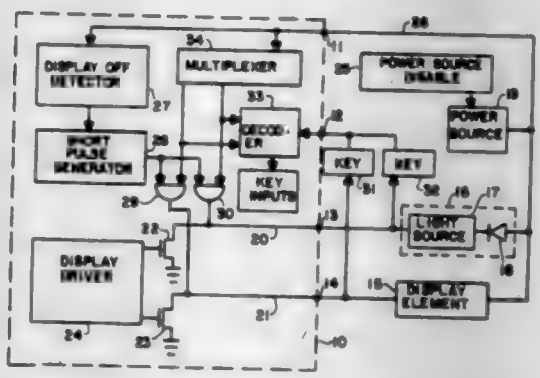
1. A circuit for permitting connections to an integrated circuit to be used to both drive display elements and provide strobe signal to a keyboard comprising:

a plurality of pins for coupling the integrated circuitt to the display elements and to the keyboard;

detection means coupled to all of said plurality of pins and responsive to signals appearing thereon for determining when the pins are not being used to supply signals to the display elements are in response thereto generating a first signal;

pulse generator means coupled to the detection means for generating pulses in response to the first signal;

a plurality of AND gates each having a first input terminal connected to receive the pulses from the pulse generator and each having an output terminal connected to a different one of the plurality of pins for supplying strobe signals thereto; and

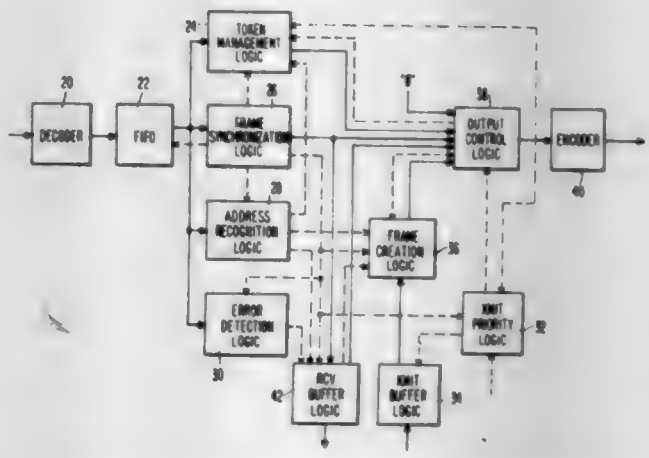


multiplexer means connected to receive signals from all of the pins and connected to supply signals to a different second input terminal of each of the AND gates for controlling which of the AND gates passes the strobe signal to one of the pins and the keyboard.

4,538,147
BANDWIDTH ALLOCATION IN A TOKEN CONTROLLED LOOP COMMUNICATIONS NETWORK

Robert M. Grow, Newtown, Conn., assignor to Burroughs Corp., Detroit, Mich.

Division of Ser. No. 388,122, Jun. 14, 1982, Pat. No. 4,459,588, which is a division of Ser. No. 355,021, Mar. 5, 1982, Pat. No. 4,404,557. This application Jun. 7, 1984, Ser. No. 618,335
The portion of the term of this patent subsequent to Apr. 24, 2001, has been disclaimed.
Int. Cl.[3] H04Q *9/00*; H04L *11/00*
U.S. Cl. 340—825.05 20 Claims



1. A method of allocating bandwidth in a logical loop communications network, said network including a bus connected set of stations on a broadcast medium wherein a logical ordering of said stations is enforced by passing a write token from one of said stations to another in a predictable order with the last station in the order passing the write token to the first station in the order, each of said stations having associated with it at least one identifier address, said method comprising the steps of:

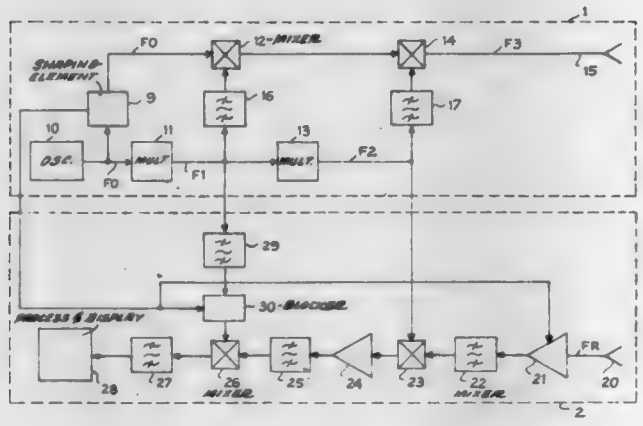
allocating to a number of said stations a portion of the bandwidth available on said logical loop; and

reserving for each one of said number of said stations that desires to reserve bandwidth for itself a portion of the allocated bandwidth, wherein the sum of the portions of the allocated bandwidth reserved by all of said number of said stations does not exceed the allocated bandwidth.

4,538,148
COHERENT RADAR

Christian Petitjean, and Maurice Marchand, both of Boulogne Billancourt, France, assignors to LMT Radio Professionnelle, Boulogne Billancourt, France

Filed Sep. 28, 1981, Ser. No. 306,342
Claims priority, application France, Oct. 3, 1980, 80 21225
Int. Cl.[3] G01S 7/36, 13/34
U.S. Cl. 343—17.2 R 5 Claims



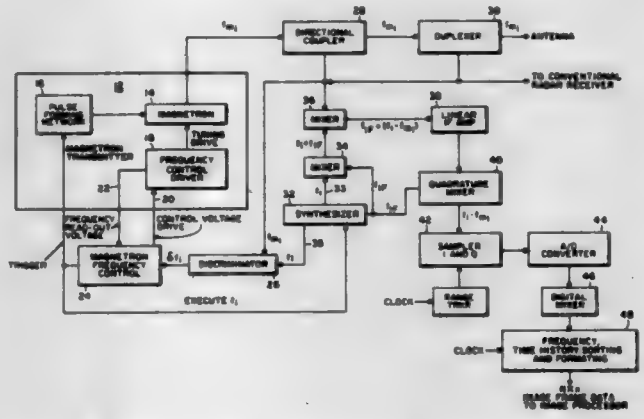
1. A coherent radar comprising:
a single master oscillator generating a master signal at a fixed frequency F0;
means, coupled to said master oscillator, for generating a first signal at a fixed frequency F1 and a second signal at a variable frequency F2, said first and second signals each being coherent with said master signal;
a first bandpass filter for filtering the first signal;
a second bandpass filter for filtering the second signal;
first means for mixing the first signal as filtered with said master signal to provide a first mixer signal coherent with said master signal;
second means for mixing the second signal as filtered with said first mixer signal to produce a transmission signal coherent with said master signal;
a transmission antenna for radiating the transmission signal;
a receiving antenna for receiving a reception signal having a frequency component FR;
a third bandpass filter for filtering the reception signal;
third means for mixing the reception signal filtered by the third filter with the second signal and providing a third mixer signal having a frequency component FR−F2;
an amplifier for amplifying the third mixer signal;
a fourth bandpass filter for filtering the third mixer signal amplified by the first preamplifier;
a fifth bandpass filter for filtering the first signal;
fourth means for mixing the third mixer signal filtered by the fourth filter with the first signal filtered by the fifth filter and for delivering a fourth mixer signal having a frequency component FR−F1−F2;
a sixth filter for filtering the fourth mixer signal; and
processing and display means for utilizing the fourth mixer signal to provide a radar indication.

4,538,149
FREQUENCY AGILE MAGNETRON IMAGING RADAR

Donald R. Wehner, San Diego, Calif., assignor to The United States of America as represented by the Secretary of the Navy, Washington, D.C.

Filed Jan. 18, 1982, Ser. No. 339,961
Int. Cl.[3] G01S 7/42, 13/89
U.S. Cl. 343—17.2 R 11 Claims

1. A signal generator comprising:
a magnetron transmitter including a magnetron and having a read-out voltage terminal, said magnetron transmitter including a pulse forming network operably coupled to said magnetrons said magnetron further including an adjustable member for varying the output frequency of said magnetron, said magnetron transmitter further comprising a magnetron control driver and having a driving voltage terminal, said adjustable member being operably coupled to said driving voltage terminal and being responsive to a change in the voltage on said driving voltage terminal to change the magnetron output frequency; and
control means operably coupled to said magnetron and to said pulse forming network for providing trigger signals

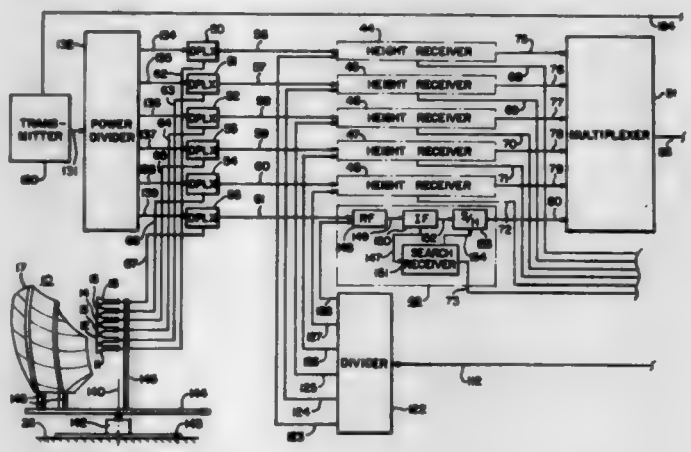


to said pulse forming network in response to the voltage signal on said read-out voltage terminal, said control means further providing a periodically reoccurring voltage input to said driving voltage terminal, said control means providing one of said trigger signals to said pulse forming network each time the voltage level on said read-out voltage terminal reaches a different one of the voltage levels of a set of predetermined voltage levels.

4,538,150
SELF-CALIBRATION OF STACKED BEAM RADAR

George D. Bone, Jr., Severna Park, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Jan. 10, 1983, Ser. No. 456,676
Int. Cl.[3] G01S 7/40, 7/18
U.S. Cl. 343—17.7 2 Claims



1. A stacked beam radar system including a transmitter and multi-channel receiver having amplification over a predetermined input signal amplitude range, wherein amplified received radar target signals are compared to a stored amplified calibrated value to permit accurate measurement of relative target amplitude in each channel, which system comprises:
stacked beam transmitting means for transmitting a signal towards a target;
multi-channel receiver means for receiving target reflected signals including means for amplifying said target reflected signals;
means for generating a sequence of reference signals each having a predetermined amplitude;
means for coupling the sequence of reference signals to the input of respective channels of the receiver;

means for sensing calibrated output reference signals of the receiver fed from the input reference signals;

means for storing the calibrated output reference signals indicative of amplitude along with corresponding input reference signals to provide a table of receiver reference input signals and calibrated output reference signals over the dynamic range of the receiver;

means for looking up and comparing the amplified output received signals produced by an unknown amplitude target signal input to the receiver with stored calibrated output reference signals, and selecting the corresponding known reference signal which produced the calibrated output reference signal which most closely matches the amplified output received signals, and using said corresponding known reference signal as an indication of the amplitude of the unknown reflected receiver input signal.

4,538,151

ELECTRO-MAGNETIC WAVE ABSORBING MATERIAL

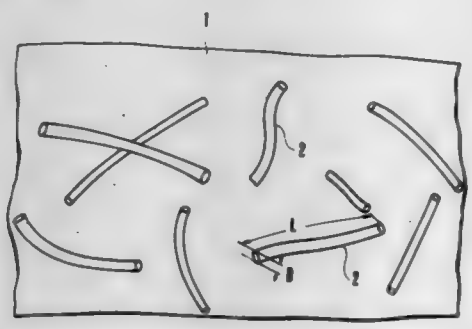
Kenichi Hatakeyama, and Tetsuji Inui, both of Tokyo, Japan, assignors to Nippon Electric Co., Ltd., Tokyo, Japan

Filed Mar. 25, 1983, Ser. No. 478,914

Claims priority, application Japan, Mar. 31, 1982, 57-52610; Apr. 5, 1982, 57-56175

Int. Cl.³ G01S *7/36*; B22F *3/00*

U.S. Cl. 343—18 A **6 Claims**



1. Electro-magnetic wave absorbing material comprising a mixture more than 3% by weight of short fibers of metal or alloy having a high electric conductivity selected from the group consisting of Au, Ag, Cu, Ae, Zn, Ni, Fe and alloys thereof, a length of 0.1 mm to 50 mm and a length to diameter ratio of larger than 10, a ferromagnetic material selected from the group consisting of ferrite, iron, cobalt and nickel and a high molecular synthetic resin which further comprises carbon black and a ferrodielectric substance selected from the group consisting of barium titanate, lead titanate, strontium titanate, lead neobate, and lead zirconate.

2. An electro-magnetic wave absorbing body comprising a low input impedance layer formed on a electro-conductive member, and an impedance transforming layer formed on said low input impedance layer, said low input impedance layer comprising a mixture of short fibers of metal or alloy having a high electric conductivity, a length of from 0.1 mm to 50 mm and a length to diameter ratio of larger than 10, a ferromagnetic material and a high molecular synthetic resin.

4,538,152

SURVEILLANCE RADAR SYSTEM WHICH IS PROTECTED FROM ANTI-RADAR MISSILES

Wulf D. Wirth, Rheinbach, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

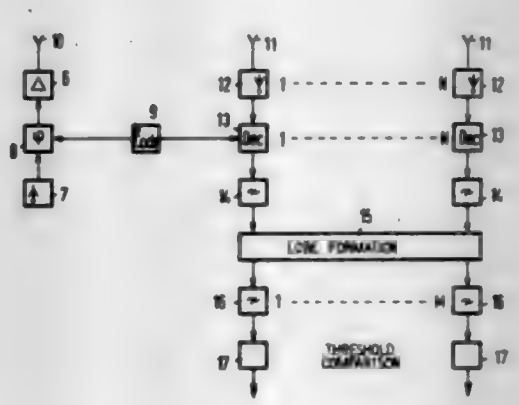
Filed Jan. 18, 1980, Ser. No. 113,175

Claims priority, application Fed. Rep. of Germany, Jan. 19, 1979, 2902039

Int. Cl.³ G01S *13/00, 7/36*

U.S. Cl. 343—5 VQ **6 Claims**

1. A radar system comprising a radar transmitter located at a first geographic position and radiating coded omnidirectional signal on a substantially continuous basis, at least one radar receiver located at a second geographic location and including a directive antenna which is capable of being scanned and comprises a multiple lobe beam directional antenna with each lobe of the antenna being selectively connected to the receiver for continuously receiving radiant energy in each of said lobes, means for supplying the code of said transmitter to said receiver, each of said lobes of said directional antenna of said receiver comprising a resolution cell having a size determined by the single lobe width and said cell being at least large enough so that targets have a dwell time in said cell, said radar receiver antenna having a number of receiving elements with said elements determining said multiple lobe beams, a plurality of radio frequency amplifier and frequency conversion stages with one connected to each of said individual antenna elements to continuously receive a particular beam lobe and converting the incoming signal to a base band, a plurality of decoders with one of the decoders connected in each of said receiving lobe beam paths to compress the received signals for distance discrimination, a code member connected to said decoders to control them with the same code as utilized in said transmitter,



a plurality of first filters with a single filter connected to each of said plurality of decoders for filtering out permanent target echoes, a lobe formation network receiving the outputs of all of said plurality of first filters and supplying a plurality of outputs corresponding to the number of said receiving paths in said receiver, a plurality of second filtering means receiving the outputs of said lobe formation network and said second filtering means each comprising Doppler filters for coherent integration and further suppression of permanent signals in each lobe path through the receiver, and a plurality of integrators with at least one integrator connected in each receiving path for performing incoherent integration in each receiving path receiving the outputs of said second integrators so as to produce the output signals for each of said receiving paths of the receiver characterized in that the transmitter (1) is arranged at a specified distance from at least one receiver (3), and characterized in that the transmitter (1) has an antenna (10) with a constant omni-directional characteristic which may be a vertical dipole or a horizontal omni-directional antenna.

4,538,153

DIRECTIVITY DIVERSITY COMMUNICATION SYSTEM WITH MICROSTRIP ANTENNA

Tokio Taga, Yokohama, Japan, assignor to Nippon Telegraph & Telephone Public Corp., Tokyo, Japan

Filed Sep. 3, 1982, Ser. No. 414,804

Claims priority, application Japan, Sep. 7, 1981, 56-139827; Aug. 3, 1982, 57-134694

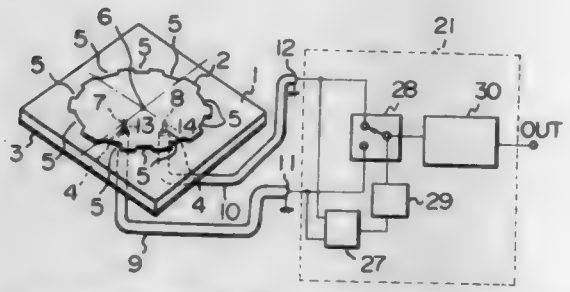
Int. Cl.³ H01Q *1/38*

U.S. Cl. 343—700 MS **5 Claims**

1. A directivity diversity communication system comprising:

(a) a micro-strip antenna having a dielectric layer sandwiched by a ground conductor plane and a circular radiation conductor plane, said circular radiation conductor plane having a plurality of slots provided around the entire circumference thereof, a pair of feed points provided on said radiation conductor plane, said feed points being positioned so that a line between a first feed point

and a center of the radiation conductor plane is substantially perpendicular to a line between a second feed point and a center of the radiation conductor plane, so that a radiation pattern by a first feed point is perpendicular to a radiation pattern by a second feed point,



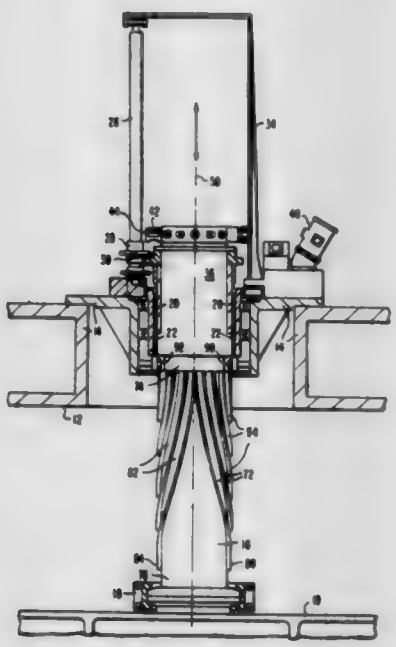
(b) a diversity receiver for receiving signals on a pair of input terminals, each of which is coupled with one of said feed points and each of the signals on an input terminal being combined with another on another input terminal through a diversity technique.

4,538,154

ANTENNA STOW MECHANISM

John H. Staehlin, Lutherville, Md., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Oct. 21, 1983, Ser. No. 544,167
Int. Cl.[3] H01Q *1/28*
U.S. Cl. 343—705 **8 Claims**



1. An antenna assembly supported by a stationary housing having a surface, said antenna assembly including an antenna structure translationally movable along a first axis to render said antenna structure extended away from said stationary housing surface in a deployed state and retracted toward said stationary housing surface in a stowed state, when in said deployed state, said antenna structure operative to rotate through an angular azimuth path about said first axis, when in said stowed state, said antenna structure disposed in a predetermined azimuth orientation, said antenna assembly including:

a drive shaft having mechanically coupled to one end thereof said antenna structure and translationally movable along said first axis to permit extension and retraction of said antenna structure with respect to said stationary housing surface, said drive shaft having a plurality of integral cam grooves disposed around the periphery at the other end thereof and extending longitudinally along the surface of said drive shaft to said one end thereof; and

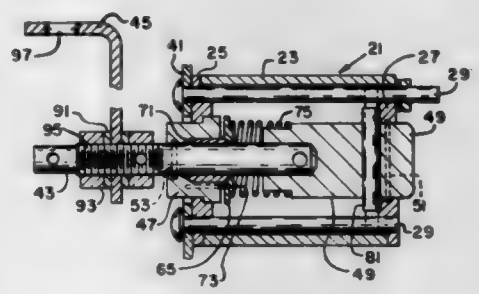
at least one cam follower bearing fixedly coupled to said stationary housing and disposed in a position to engage randomly one of said cam grooves of said plurality along the periphery at said other end of said drive shaft at the commencement of retraction of said antenna structure and to guide said drive shaft rotationally along the path of said engaged cam groove during said translational retraction movement of said antenna structure, said antenna structure being driven to said predetermined azimuth orientation by said cam guided drive shaft rotation during retraction thereof.

4,538,155

ANTENNA MOUNT WITH ROTARY POSITIONABLE FEATURE

William H. Stewart, 13610 Beech St., Milwaukie, Oreg. 97222

Filed Jun. 22, 1982, Ser. No. 390,987
Int. Cl.[3] H01Q *1/32, 1/08*
U.S. Cl. 343—715 **6 Claims**



1. In an antenna mount,

a mount body,

antenna mounting means for mounting an antenna whip on said body for movement from a vertical position to one or more other positions,

said antenna mounting means including an antenna mounting member,

said antenna mounting means including a shaft carrying said antenna mounting member and mounted by said antenna mounting means for turning movement about a predetermined axis to provide for movement of an antenna to the above recited positions,

said antenna mounting means also mounting said shaft for axial movement along said predetermined axis,

positive locking means for locking said antenna mounting member in positions corresponding to said above recited positions, and releasable upon axial movement of said shaft to permit turning movement of said shaft to change the position of the antenna mounting member,

friction clutch holding means independent of said locking means and being interposed between said shaft and said mounting member providing for forced turning movement of said antenna mounting member and thus the antenna whip relative to said shaft despite the shaft being held in a fixed position by said positive locking means.

4,538,156

INK JET PRINTER

David B. Durkee, Arlington Heights, and Alan J. Liebman, Skokie, both of Ill., assignors to AT&T Teletype Corporation, Skokie, Ill.

Filed May 23, 1983, Ser. No. 497,386
Int. Cl.[3] G01D *15/16*
U.S. Cl. 346—21 **1 Claim**

1. An ink jet page printer comprising:

a source of ink (**201**);

one or more print heads (**7**) each comprising a plurality of jets (**55**) and a corresponding plurality of actuators (**62**) responsive to electrical signals for selectively projecting droplets of ink;

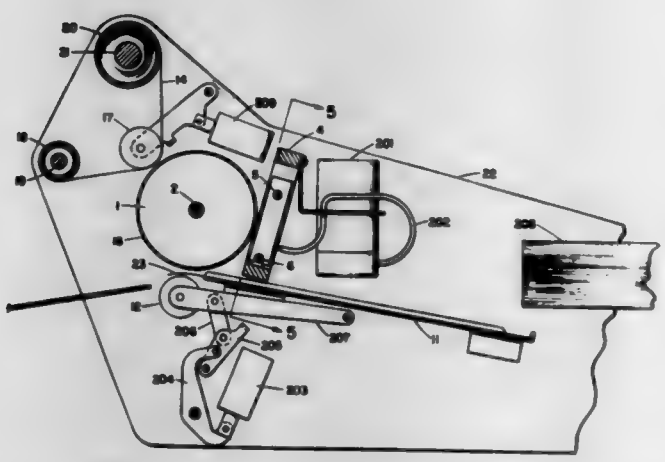
a transfer medium (**1**) having a moving surface (**16**) thereof adjacent to but spaced apart from said print head (**7**) for receiving said projected droplets;

circuitry (902) for generating said electrical signals for controlling said print heads to create patterns of droplets of ink on said moving surface (16) said circuitry comprising a memory (908) for storing indicia representative of patterns of droplets of ink to be projected on said moving surface (16), a means (906) for writing indicia into said memory in response to received input signals, a means (910) for reading indicia from said memory and means (913) for controlling said printing heads (7) in accordance with said indicia read from said memory;

an arrangement (12, 203 to 207) for selectively transferring the droplet patterns from said transfer medium surface (16) to a printing medium (23), said arrangement comprising a printing medium support surface (11) and a printing pressure roller assembly (12, 204 to 207) for pressing a printing medium (23) supported on said support surface into line contact with said transfer medium surface (16) when enabled, and means (203) for selectively enabling said printing pressure roller assembly;

a printing medium feed assembly (208) for storing a plurality of sheets of printing medium (23) and for moving said sheets one at a time to said printing medium support surface (11) in timed sequence with the operation of said printing pressure roller assembly (12, 204 or 207);

means (81, 921) coordinated with the movement of said moving surface for generating control signals for said



circuitry (902) said means coordinated with the movement of said transfer medium moving surface (16) comprising a timing track containing optically or magnetically discernible indicia (81) disposed on said surface (16) and means (921) for generating control signals in response to said discernible indicia;

lateral motion means (8, 9, 10, 51) for controlling moving said print heads (7) in a first direction transverse to the direction of travel of said transfer medium moving surface (16);

means (8) for controlling said lateral motion means to move said print heads (7) in coordination with the movement of said transfer medium such that each ink jet (55) successively serves the tracks of a plurality of adjacent parallel tracks on said transfer surface (16);

means for controlling said lateral motion means to move said print heads in a direction opposite to said first transverse direction so as to position said ink jet over the first track of its plurality of tracks; and

an arrangement (13) for cleaning said transfer medium (16) surface after the droplet patterns have transferred from said transfer medium surface to said printing medium (23), said arrangement (13) including a roller (17) for pressing a cleaning medium (14) into contact with the transfer medium surface (16) when enabled, and means (209) for selectively enabling said cleaning arrangement (13).

4,538,157

FLUID JET PRINTER AND METHOD OF OPERATION

David E. Jones, Richardson, Tex., assignor to The Mead Corporation, Dayton, Ohio

Filed Feb. 23, 1983, Ser. No. 468,439
Int. Cl.³ G01D *15/18*
U.S. Cl. 346—75 11 Claims



1. A jet printer for printing on a print receiving medium, comprising:

print head means for generating a plurality of jet drop streams arranged in a row and directed at said print receiving medium, a plurality of fluid filaments emerging from said print head and breaking up into said jet drop streams,

drop charging means, including a notched charge electrode plate in which a plurality of charge electrodes are defined by electrically conductive coatings within notches spaced along one edge of said plate, said drop charging means permitting selective electrical charging of drops in each of the jet drop streams when electrical charging potentials are selectively applied to said charge electrodes and said charge electrodes partially surround corresponding fluid filaments,

drop control means for deflecting said drops in dependence upon the electrical charges carried thereby and for catching at least some of said drops,

mounting means for pivotally supporting said charging means such that said charge electrode plate may be pivoted between an operating position in which each charge electrode partially surrounds a corresponding one of said fluid filaments emerging from said print head, and a retracted position in which said charge electrodes are retracted from said fluid filaments, said mounting means providing for pivoting said charge electrode plate about an axis parallel to each of said streams and in line with said row of jet drop streams, and

means for pivoting said charge electrode plate into said operating position after start-up of said print head means and for pivoting said charge electrode plate into said retracted position prior to shutdown of said print head means, whereby contamination of said charging means by jet drops generated unstably at start-up and shutdown is prevented.

4,538,158

ELECTROSENSITIVE MEDIA AND RECORDING PROCESS

Bernard Warszawski, 122 avenue de Wagram, 75017 Paris, France

Filed Apr. 21, 1982, Ser. No. 370,475
Int. Cl.³ G01D *15/34*
U.S. Cl. 346—135.1 31 Claims

1. Electrochromic material comprising a homogeneous mixture having a solid consistency and consisting essentially of

(a) a hydrosoluble salt or a hydrosoluble mixture of salts of at least one metal cathodically depositable from an aqueous solution of its ions;

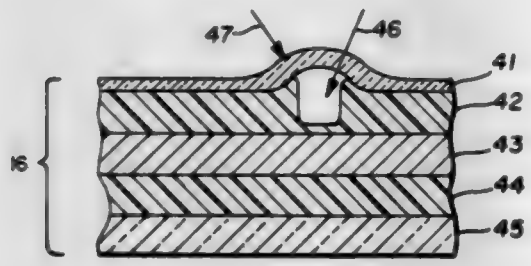
(b) an initially hydrosoluble film-forming polymer resin; and
(c) water;
the electrochromic material being able to develop by cathodic reduction of at least one depositable metal ion present within the electrochromic material metal marks, said metal marks electrocrystallizing as integral parts of the electrochromic material;
said electrochromic material being electroconductive.

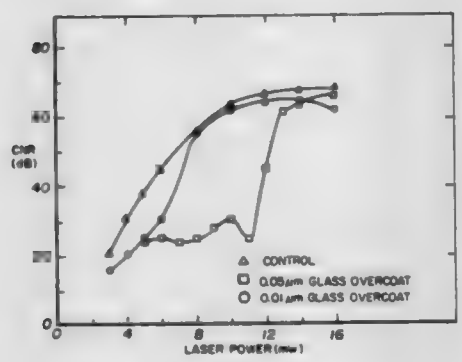
4,538,159

CERAMIC OVERCOATED OPTICAL RECORDING ELEMENT

Mool C. Gupta, W. Webster; Joseph J. Wrobel, Rochester, and Dennis G. Howe, Pittsford, all of N.Y., assignors to Eastman Kodak Company, Rochester, N.Y.

Filed Apr. 16, 1984, Ser. No. 600,643
Int. Cl.[3] G01D *15/34*; G03C *1/76*
U.S. Cl. 346—135.1 **10 Claims**





1. A recording element comprising a support having thereon a heat-deformable optical recording layer having a transparent ceramic overcoat characterized in that the optical recording layer
(a) is an amorphous layer of a dye and a binder;
(b) has an absorption factor of at least 20 at a first wavelength and is substantially transparent at a second wavelength;
(c) is capable of being thermally deformed by a beam of high energy density radiation of the first wavelength to form a deformation comprising a hole or depression surrounded by a sharply defined ridge; and
(d) the overcoat has a thickness up to 0.05 μm.

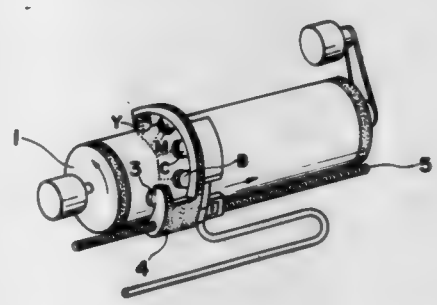
4,538,160

INK JET RECORDING APPARATUS

Tadamitsu Uchiyama, Yokohama, Japan, assignor to Minolta Camera Kabushiki Kaisha, Osaka, Japan

Filed Jan. 12, 1983, Ser. No. 457,395
Claims priority, application Japan, Jan. 26, 1982, 57-10381
Int. Cl.[3] G01D *15/18*; H04N *1/46*
U.S. Cl. 346—140 R **7 Claims**

1. An ink jet recording apparatus which comprises, in combination:
a plurality of first nozzles for respectively jetting different colored inks towards a recording medium being moved in a scanning direction, said first nozzles being adapted to receive image signals independently of each other while the first nozzles are moved in a sub-scanning direction relative to the recording medium thereby to record an image on the recording medium;
a second nozzle device provided separately of, and spaced a predetermined distance from, the first nozzles for jetting a processing liquid, containing a preselected processing material, onto the recording medium only in an area substantially corresponding to the area in which colored ink is jetted by said first nozzles; and



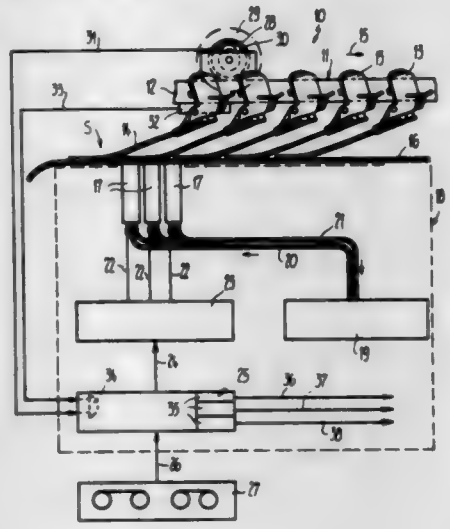
a control device for applying the image signals at different times to the respective first nozzles and to said second nozzle devices such that the colored inks and the processing liquid are respectively deposited on the recording medium in superimposed relation to each other, said control device being operable to produce a logical product of the image signals associated with the colored inks of different colors.

4,538,161

APPARATUS FOR ADDRESSING NEWSPAPERS, JOURNALS AND OTHER PRINTED PRODUCTS

Walter Reist, Hinwil, Switzerland, assignor to Ferag AG, Hinwil, Switzerland

Filed May 23, 1983, Ser. No. 497,141
Claims priority, application Switzerland, Jun. 1, 1982, 3348/82
Int. Cl.[3] G01D *15/18*; B65H *25/04*
U.S. Cl. 346—140 R **4 Claims**



1. An apparatus for addressing newspapers, journals, periodicals and other printed products, comprising:
a stationary printer defining a printing station for applying an address to the printed products;
conveying means for guiding said printed products past said printer;
said conveying means and said printer having coordinated conveying and printing velocities;
said conveying means comprising an individual conveyor equipped with gripper units arranged in spaced relationship from each other and structured to each take-up one of said printed products;
control means associated with said individual conveyor and including means for generating a control pulse at the passage of each one of said gripper units;

said control means further including a monitor responsive to empty ones of said gripper units in order to suppress said control pulse; and

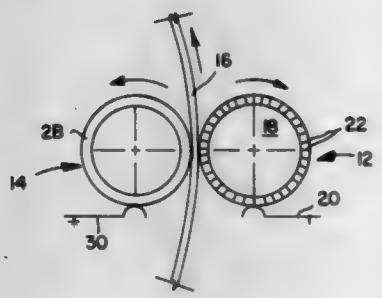
said control means initiating a printing operation by said printer each time an unsuppressed control pulse is generated.

4,538,162

METHOD AND APPARATUS FOR LINE-AT-A-TIME PRINTING

Steven C. Detweiler, 1624 The Alemeda #32, San Jose, Calif. 95126

Filed Jan. 21, 1983, Ser. No. 432,255
Int. Cl.[3] G01D *15/06*
U.S. Cl. 346—155 5 Claims



3. Apparatus for signal transfer from a horizontal scan of stored information to a line of dots on a reproduction surface comprising,

(a) a printing drum having a cylinder-like exterior surface and an axis of rotation,

(b) a transferal drum having a cylinder-like exterior surface and an axis of rotation,

(c) said printing drum and said transferal drum being rotatable relative to each other about their axes with their axes parallel to each other,

(d) said printing drum comprising a plurality of individual disk-like wheels, the center of each wheel being at said axis of rotation of said printing drum, each wheel insulated from its neighbor, said disk-like wheels having radial spurs around the circumference thereof, the radial extremity of each spur being separated from its neighbor at the circumference of said wheel, all of said spurs of a wheel being conductively connected within that wheel, each wheel of said plurality being aligned so as to align spur extremities on adjacent wheels along said cylinder-like exterior surface into a row of spurs,

(e) separate means for energizing each of said wheels by contacting at least one radial extremity of said spurs on a wheel in response to said horizontal scan of said stored information,

(f) said reproduction surface being positioned between said printing drum and said transferal drum with a row of spurs having at least electrical contact with said reproduction surface,

(g) whereby a horizontal scan of said stored information energizes individual disk-like wheels in sequence horizontally along said printing drum by energizing said separate means in sequence at a spur of each wheel to energize a spur in said contact with said reproduction surface and aligned with said transferal drum thus producing a row of dots across said reproduction surface in accord with said horizontal scan,

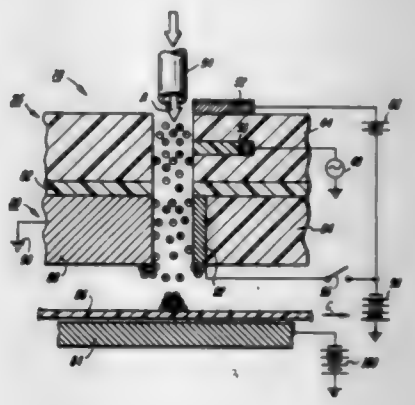
(h) and means for rotating said printing drum and said transferal drum and for advancing said reproduction surface in accord with vertical spaced sequence of said horizontal scans of said stored information to establish said line of dots on said reproduction surface.

4,538,163

FLUID JET ASSISTED ION PROJECTION AND PRINTING APPARATUS

Nicholas K. Sheridon, Saratoga, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Mar. 2, 1983, Ser. No. 471,380
Int. Cl.[3] G01D *15/06*
U.S. Cl. 346—155 18 Claims



1. A fluid jet assisted electrographic marking apparatus for placing electrostatic charges upon a charge receptor in an imagewise pattern, said apparatus being characterized by including

means for supplying a transport fluid,

housing means defining a channel therethrough, said channel being elongated in a direction transverse to the direction of movement of the transport fluid, through which the transport fluid may be directed to the charge receptor, said housing including an ion generation portion and an ion modulation portion, each portion being adjacent to said channel, and wherein

said ion generation portion includes ion generating means located adjacent said channel and extending along the length of said channel for initiating a continuous series of RF arc discharges within said channel, for simultaneously creating a uniform supply of positive and negative ions along the length of said channel, directly in the transport fluid moving within said channel, and

said ion modulation portion includes modulation means located adjacent said channel comprising a plurality of spaced, conductive, modulating electrodes on one side of said channel, a conductive member on the side of said channel opposite to said modulating electrodes, a source of modulating potential, switch means for selectively connecting said source of modulating potential to each of said modulating electrodes, and a second source of reference potential connected to said conductive member, whereby each of said modulating electrodes controls the passage of a beam of ions from said channel when its respective switch is energized.

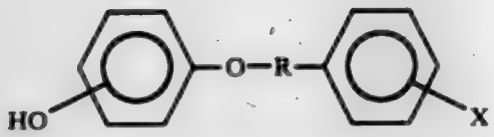
4,538,164

HEAT-SENSITIVE TRANSFER MEDIUM

Nobuhiro Takigawa; Hideo Watanabe; Kanzirou Kawasaki, all of Numazu; Keishi Kubo, Yokohama; Minoru Hakiri, and Eiichi Kawamura, both of Numazu, all of Japan, assignors to Ricoh Co., Ltd., Tokyo, Japan

Filed Nov. 28, 1984, Ser. No. 675,911
Claims priority, application Japan, Nov. 30, 1983, 58-226470
Int. Cl.[3] B41M *5/18*
U.S. Cl. 346—209 6 Claims

1. A heat-sensitive transfer medium comprising a transfer sheet having a transfer layer containing a leuco dye as the main component and a receiving sheet having a receiving layer containing a developer for said leuco dye as the main component, characterized in that said receiving layer contains porous filler having an oil absorption amount of at least 50 ml/100 g and a phenolic compound expressed by the general formula,



wherein R represents an alkylene group and X represents hydrogen or a halogen atom.

4,538,165

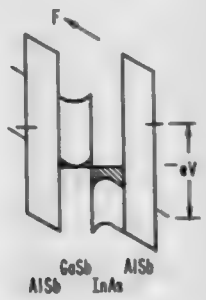
FET WITH HETEROJUNCTION INDUCED CHANNEL

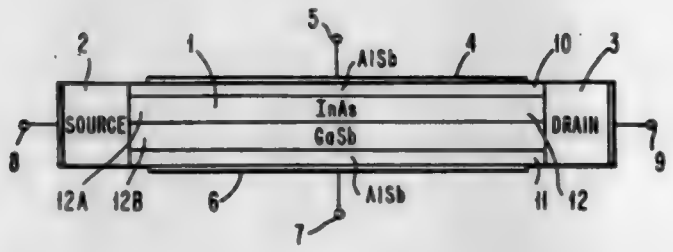
Chin-An Chang, Peekskill; Leroy L. Chang, Goldens Bridge; Leo Esaki, Chappaqua, and Emilio E. Mendez, Croton-on-Hudson, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Division of Ser. No. 355,942, Mar. 8, 1982,. This application Mar. 5, 1984, Ser. No. 586,497

Int. Cl.³ H01L *29/80, 29/205*

U.S. Cl. 357—22 **4 Claims**





1. In a field effect transistor of the type wherein current in a channel region is influenced by a voltage signal applied to a gate electrode over said channel, the improvement comprising a channel structure of contiguous undoped layers of semiconductor materials wherein an external material is provided between said gate electrode and said channel having a bandgap higher than that of the combined bandgaps of the semiconductor material layers of the conductive channel region and having the further requirement that the conduction band of a first layer of said channel is located below the top of the valence band of a second layer of said channel.

4,538,166

SEMICONDUCTOR MEMORY DEVICE

Motoo Nakano, Yokohama, Japan, assignor to Fujitsu Limited, Kawasaki, Japan

Continuation of Ser. No. 220,967, Dec. 29, 1980, abandoned. This application Jan. 17, 1984, Ser. No. 571,639

Claims priority, application Japan, Dec. 29, 1979, 54-171195

Int. Cl.³ H01L *29/78, 27/02, 29/04*

U.S. Cl. 357—23.6 **6 Claims**

1. A semiconductor memory device including a plurality of memory cells, each of which comprises a transistor and a capacitor, said memory device comprising:

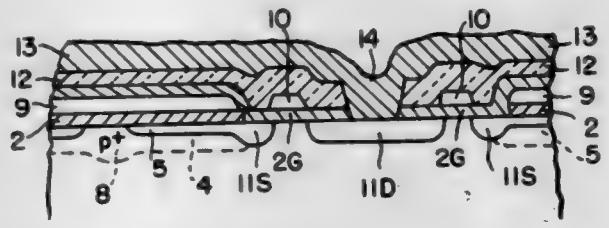
a semiconductor substrate of a first conductivity type;

an insulator layer formed on the surface of said semiconductor substrate;

a first semiconductor region of a second conductivity type, opposite said first conductivity type, formed in said semiconductor substrate beneath said insulator layer, said first semiconductor region functioning as one electrode of the capacitor of a memory cell;

a second semiconductor region of the first conductivity type having a first portion formed in said semiconductor substrate beneath said first semiconductor region, and having a second portion formed in said semiconductor substrate in a field area surrounding said first semiconductor region, each of said first and second portions having an impurity concentration higher than that of said semiconductor substrate, said first and second portions having different thicknesses;

a conductive layer formed on the portion of said insulator layer covering said first and second semiconductor regions and serving as the other electrode of the capacitor and as a field shield electrode, said conductive layer having a pattern identical to that of said second semiconductor region except at the portion where the capacitor is coupled to the transistor by said first semiconductor region; and



a gate conductor formed on said insulator layer and spaced apart from said conductive layer, said gate conductor functioning as a gate of the transistor of the memory cell;

said first semiconductor region having first and second portions, the first portion of said second semiconductor region being located beneath the first portion of said first semiconductor region, the second portion of said first semiconductor region being located under an area between said conductive layer and said gate conductor so as to connect the first portion of said first semiconductor region to the transistor, the second portion of said first semiconductor region having a depth greater than that of the first portion of said first semiconductor region.

4,538,167

SHORTED JUNCTION TYPE PROGRAMMABLE READ ONLY MEMORY SEMICONDUCTOR DEVICES

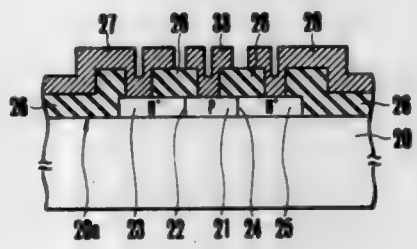
Hideo Yoshino; Eisuke Arai, and Kazuhide Kiuchi, all of Tokyo, Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Japan

Filed Sep. 8, 1981, Ser. No. 300,345

Claims priority, application Japan, Sep. 24, 1980, 55-133260; Nov. 20, 1980, 55-162565

Int. Cl.³ H01L *29/04, 29/90, 27/10;* **G11C** *17/00*

U.S. Cl. 357—59 **2 Claims**



2. A shorted junction type programmable read only memory device having at least one element that has a PN junction which can be shorted by applying thereacross a predetermined

voltage higher than the breakdown voltage of the junction, said read only memory device comprising:

a quartz substrate;

three adjacent regions laterally disposed on the surface of said quartz substrate, said three adjacent regions comprising a semiconductor middle region and two side regions, one on either side of said middle region, said two side regions each forming a PN junction with said middle region;

an insulating layer disposed over said three regions having two contact holes, one above each of said two side regions;

a control electrode disposed on said second insulating layer overlaying said semiconductor middle region and said PN junctions;

two independent conductors for receiving a voltage therebetween sufficient to destroy one of said PN junctions, one of said conductors connected to one of said two side regions through one of said contact holes and said other of said two conductors connected to said other side region through said other of said contact holes; and

a third conductor connected to said control electrode for applying a predetermined voltage to said control electrode to reduce the voltage applied across said two side regions necessary to breakdown and short one of said PN junctions.

4,538,168

HIGH POWER SEMICONDUCTOR PACKAGE

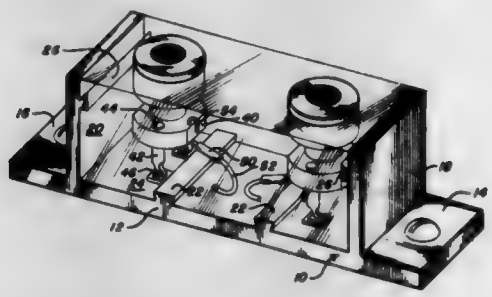
Herman F. Van Dyk Soerewyn, Peabody, Mass., assignor to Unitrode Corporation, Lexington, Mass.

Continuation of Ser. No. 307,106, Sep. 30, 1981, abandoned. This application Apr. 3, 1984, Ser. No. 596,079

The portion of the term of this patent subsequent to Apr. 17, 2001, has been disclaimed.

Int. Cl.³ H01L *23/28, 23/16, 23/02*

U.S. Cl. 357—72 **13 Claims**



1. A high power semiconductor package comprising:

a unitary extruded-metal housing having a bottom plate having ends, first and second end walls upstanding from the bottom plate and spaced from each other and from the ends of the bottom plate defining a planar open top and open side walls, the ends of the bottom plate including means for mounting the housing to a mounting surface;

the housing including a plurality anchor elements integrally formed on at least one end wall and the bottom plate of said unitary extruded-metal housing;

first and second electrical terminals disposed in spaced-apart relation in the housing, each having an outer end protruding from the planar open top of the housing and by which external electrical connection is made, and an inner end within the housing in spaced relation to the bottom plate of the housing;

first and second semiconductor die assemblies;

means for mounting the semiconductor die assemblies to the bottom plate in spaced-apart relation;

means for electrically connecting the first and second die assemblies to the inner ends of corresponding ones of the terminals; and

an encapsulant disposed in the housing between the upstanding end walls thereof, the encapsulant being secured by the anchor elements of the housing.

4,538,169

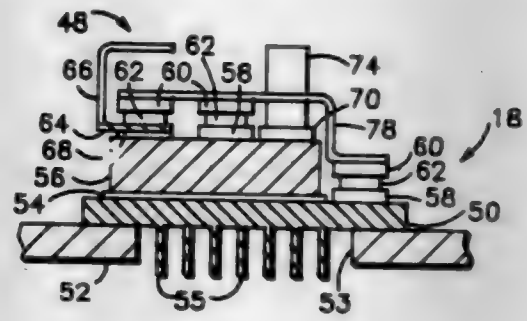
INTEGRATED ALTERNATOR BRIDGE HEAT SINK

William R. Smith, Mesa, and Theodore R. Myers, Phoenix, both of Ariz., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Nov. 4, 1982, Ser. No. 439,500

Int. Cl.³ H01L *23/32, 23/02*

U.S. Cl. 357—76 **10 Claims**



1. An apparatus for transferring heat from one or more first electronic devices and one or more second electronic devices to a frame, comprising:

a mounting base of heat and electrical conducting material thermally and electrically connected to said frame, said first electronic device connected to a first portion of said mounting base, said mounting base for coupling to receive a first voltage;

a first layer of thermally conductive epoxy adjacent a second portion of said mounting base, said layer being electrically nonconductive; and

a plate of thermal and electrical conducting material adjacent said layer, a first portion of said plate thermally and electrically connected to said second electronic device and for coupling to receive a second voltage, wherein heat generated by said first electronic device may transfer through said mounting base to said frame, heat generated by said second electronic device may transfer through said plate, said material, and said mounting base to said frame.

4,538,170

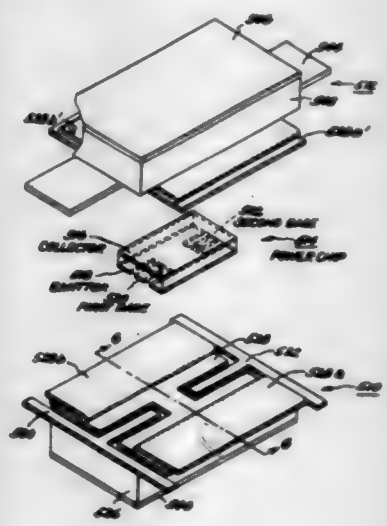
POWER CHIP PACKAGE

Alexander J. Yerman, Scotia, N.Y., assignor to General Electric Company, Schenectady, N.Y.

Filed Jan. 3, 1983, Ser. No. 455,186

Int. Cl.³ H01L *23/08, 23/04, 23/48, 23/12*

U.S. Cl. 357—80 **15 Claims**



1. A power chip package comprising:

a power chip having a first terminal on one side thereof and a second terminal on the opposite side thereof;

a first dielectric substrate;

a first sheet metal lead attached to one side of said first dielectric substrate and patterned in mirror image fashion to, and attached to, said first terminal;

a second dielectric substrate;

a second sheet metal lead attached to one side of said second dielectric substrate and patterned in mirror image fashion to, and attached to, said second terminal; and

a heat transfer means in heat flow communication with said first and second dielectric substrates for transferring heat between said first and second dielectric substrates, said heat transfer means comprising a plurality of compacted folds of sheet metal interposed between said first and second dielectric substrates.

4,538,171

HIGH POWER SEMICONDUCTOR HEAT SINK ASSEMBLY

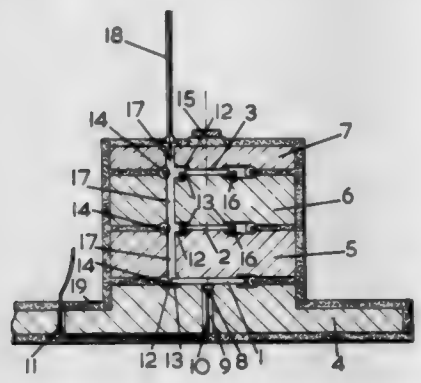
Keith D. Stevens; John Harrison, and Stanley B. Kaye, all of Stockport, England, assignors to Cableform Limited, England

Filed Oct. 9, 1981, Ser. No. 310,255

Claims priority, application United Kingdom, Oct. 30, 1980, 8034892; Jun. 5, 1981, 8117292

Int. Cl.³ H01L *23/02, 23/32, 23/42*

U.S. Cl. 357—81 **12 Claims**



1. A high power semiconductor heat sink assembly comprising: a semiconductor chip; two spaced apart thermally and electrically conductive rigid heat sink plates having substantially parallel facing planar surfaces between which a space is defined and between which the semiconductor chip is clamped so that the width of the space is substantially the same as the width of the chip, the thickness of each plate being substantially greater than the thickness of the space between them, and the facing surfaces of the plates extending a substantial distance beyond the edges of the chip so that a substantial proportion of the space defined between the plates is not occupied by the chip; resilient sealing means sandwiched between the plates and extending around the chip to define with said plates a sealed compartment within which the chip is located; and a thin layer of a solid, electrically nonconductive, thermally conductive material filling the space between the plates outside said compartment, the area of each plate surface in contact with said material being substantially larger than the area of each plate surface in contact with the chip, whereby heat can be rapidly conducted away from the chip through the plates and from one plate to the other.

4,538,172

ANALOG TO DIGITAL CONVERTING SYSTEM FOR COMPOSITE VIDEO SIGNAL

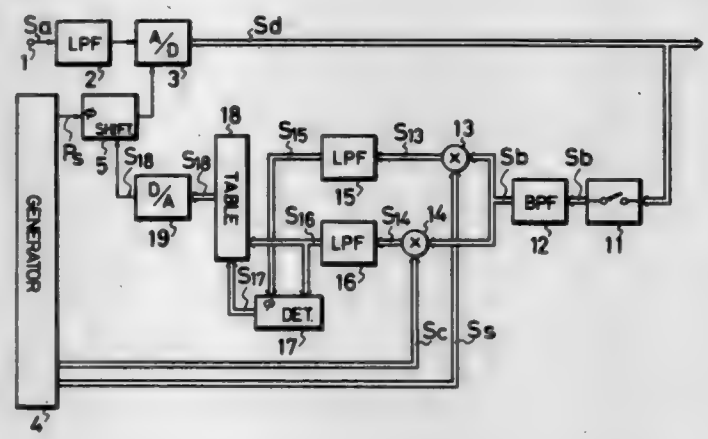
Seiichiro Iwase, Sagamihara, and Shinichi Komori, Isehara, both of Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Jun. 16, 1983, Ser. No. 504,739

Claims priority, application Japan, Jun. 17, 1982, 57-104329

Int. Cl.³ H04N *9/46*

U.S. Cl. 358—13 **6 Claims**



1. An analog to digital converting system for a video signal having a pedestal component, comprising:

analog to digital converter means having a signal input terminal, a signal output terminal and a clock input terminal, an analog video signal being supplied to said signal input terminal and a sampling clock signal having a predetermined frequency being supplied to said clock input terminal so that said analog to digital converter means supplies a digital video signal from said output terminal in response to said sampling clock signal;

filter means for filtering said pedestal component from said digital video signal to supply a filtered digital video signal;

burst gate means for deriving a digital burst signal from said filtered digital video signal;

reference signal generator means for generating first and second digital reference signals, each of said reference signals varying in time, and for generating a sampling clock signal;

multiplier means for multiplying said first and second digital reference signals by said digital burst signal to produce first and secod multiplied signals;

DC component detecting means for detecting DC components of said first and second multiplied signals to produce a detector signal therefrom;

phase error calculating means for calculating a phase error of said digital burst signal in said detector signal from said DC component detecting means to produce a phase error signal in response thereto; and

phase shifter means for controlling a phase of said sampling clock signal in response to said phase error signal and supplying a corrected sampling clock signal having a corrected phase to said clock input terminal of said analog to digital converter means.

4,538,173

IMPRINT CONTROL SYSTEM WITH FEEDBACK FEATURE

Kari Kirjavainen, Kristianinkatu 7 C 38, 00170 Helsinki 17, and Asko S. Riekkinen, Sepontie 1 E, 02130 Espoo 13, both of Finland

Filed Jan. 4, 1983, Ser. No. 455,471

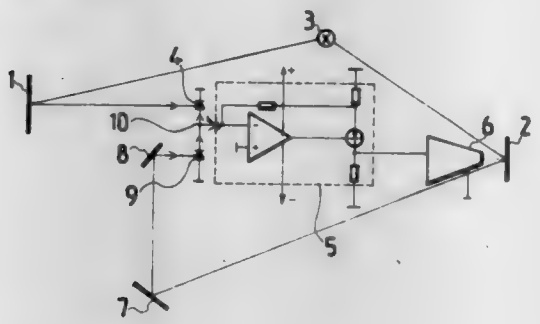
Claims priority, application Finland, Jan. 4, 1982, 820009

Int. Cl.³ H04N *1/46*

U.S. Cl. 358—75 **12 Claims**

1. A process for controlling formation of an imprint having individual picture elements in reproductive printing by means of an optical system comprising the steps of:

forming an imprint image signal corresponding to the imprint;
forming a set-point image signal;
comparing said imprint image signal with said set-point image signal;



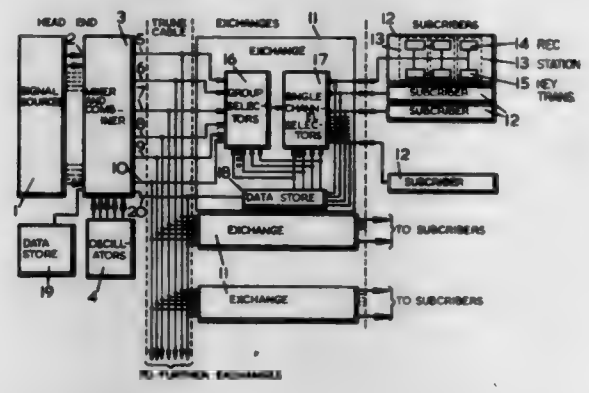
forming an electrical differential signal from the result of comparison thus obtained; and
according to the feedback principle controlling the formation of the imprint of each object under examination.

4,538,174

TWO-WAY SUBSCRIBER TV SYSTEM WITH MULTIPLE SUBSCRIBER'S SETS

Eric J. Gargini, West Drayton, and Henry L. Baker, Northwood, both of England, assignors to Communications Patents Limited, London, England

Filed May 16, 1983, Ser. No. 494,988
Claims priority, application United Kingdom, Mar. 11, 1982, 8306725; May 14, 1982, 8214159
Int. Cl.³ H04N *7/10*
U.S. Cl. 358—86 **19 Claims**



1. A communications system comprising at least one exchange, a plurality of television signal sources making signals available at the exchange, a plurality of subscriber's units each connected to the exchange by a respective direct communications link and each provided with a television signal receiver, and selectors located at the exchange for selectively connecting the television signal sources to the communications links, the subscriber's units having transmitters for applying data signals to the respective communications links for transmission to the exchange to control the selectors, wherein each subscriber's unit is associated with a respective exchange located selector controlled by that subscriber's unit's transmitter, the selector associated with at least one subscriber's unit applying television signals to the respective communications link at a frequency to which the subscriber's unit's receiver is tuned, and the subscriber's unit transmitter being responsive to a timing signal transmitted on the communications link from the exchange to apply data signals to the respective communications link, the exchange comprising means responsive to said timing signal to identify the source of data signals received from the subscriber's units wherein at least one of the subscriber's units comprises two subscriber's stations each of which has a respective television receiver and data signal transmitter, and each subscriber's station is associated with a respective exchange located selector controlled by that subscriber's station's transmitter, the selectors associated with the subscriber's stations of said at least one subscriber's unit applying frequency division multiplexed television signals to the respective communications link, each subscriber's station receiver being tuned to receive a respective one of the television signals applied to the communications link, and the subscriber's station's transmitters being responsive at different times to the timing signal to apply time division multiplexed data signals to the communications link, whereby the means at the exchange responsive to the timing signal can identify the source of data signals received on the communications link.

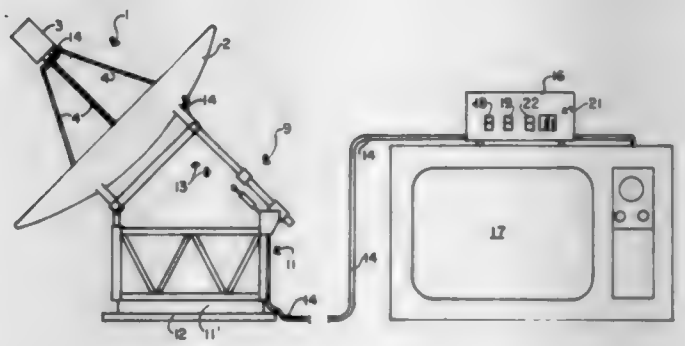
19. A communications system comprising a plurality of subscriber's units each connected to a communications network capable of delivering any one of a plurality of different signals on respective television channels, wherein at least one subscriber's unit is provided with a teletext receiver, means are provided for supplying teletext signals on one television channel of the system, and said at least one subscriber's unit is allocated exclusive use of one teletext sub-page, the content of the said one sub-page being responsive only to data signals supplied by the said at least one subscriber's unit, wherein a first television channel is dedicated to full field teletext signals, and a second channel is dedicated to provide interactive services, means being provided such that if the said at least one subscriber's unit transmits data over the system in response to information on the second channel a system response is transmitted on the sub-page of teletext dedicated to that subscriber's unit, the subscriber's unit's selector at the exchange being automatically controlled to momentarily connect the teletext receiver to the said first channel such that the data transmitted on the dedicated sub-page is acquired and inlaid on the picture received from the said second channel.

4,538,175

RECEIVE ONLY EARTH SATELLITE GROUND STATION

Michael S. Balbes; Charles E. Day; Robert L. Hooper, and Hank S. Lin, all of Ocala, Fla., assignors to Microdyne Corporation, Ocala, Fla.

Filed Jul. 11, 1980, Ser. No. 168,665
Int. Cl.³ H04N *7/10*
U.S. Cl. 358—86 **20 Claims**



1. An earth satellite ground station having an antenna with a focal point,
an antenna feed adapted to be supported at the focal point of the antenna,
a wave guide positioned to receive energy from said antenna feed,
a housing disposed about said feed and said wave guide,
a frequency agile receiver disposed within said housing for producing an IF signal,
a lead, and
means disposed within said housing for receiving said IF signal and producing modulated subcarrier signals on said lead for direct application to the audio and video signal processing circuits of a television set.

4,538,176

BUFFER MEMORY DISPERSION TYPE VIDEO/AUDIO TRANSMISSION SYSTEM

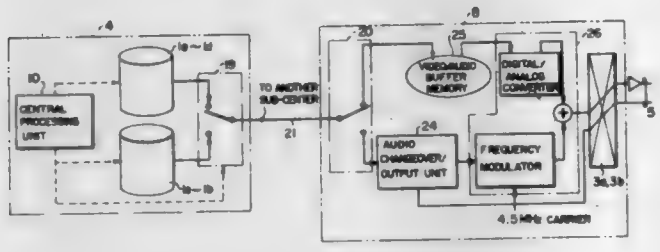
Hirohito Nakajima, Tokyo; Katsumi Haji, Narashino; Yoji Shibata, and Wataru Kosuge, both of Yokohama, all of Japan, assignors to Hitachi, Ltd. and Nippon Telegraph & Telephone Public Corporation, both of Tokyo, Japan

Filed Nov. 26, 1979, Ser. No. 97,364

Claims priority, application Japan, Nov. 24, 1978, 53-144160

Int. Cl.³ H04N *7/10*

U.S. Cl. 358—86 **5 Claims**



1. A buffer memory dispersion type video/audio transmission system comprising:

a plurality of subscriber terminal units each including a telephone set and/or a keyboard, a video-audio receiver, and a converter for converting a video signal and an audio signal transmitted in a base band to a standard television signal;

a center including a group of audio files for storing audio information and a group of video files for storing video information, and a central processing unit responsive to a requesting command received from said subscriber terminal units for fetching specific video and/or audio information from said files and for transmitting the fetched information in time division multiplex form;

a plurality of sub-centers each accommodating thereto a plurality of said subscriber terminal units and each including a plurality of video and audio buffer memories for temporarily storing specific video information and specific audio information received from said center in time division multiplex form, a D/A converter for digital to analog converting the information of said audio buffer memory, a modulator for modulating a carrier wave by the audio information, and exchange means for combining outputs of said D/A converter and said modulator and for connecting said sub-center to a subscriber terminal lunit requesting information; and

a first transmission line connecting said sub-centers in common to said center and a plurality of second transmission lines connecting the respective sub-centers to a respective subscriber terminal unit, the length of said second transmission lines being shorter than the length of said first transmission line, said first transmission line enabling transmission in time division multiplex form and said second transmission lines enabling transmission in base band form.

4,538,177

AUTOMATIC EQUIPMENT

John M. Morison, Edinburgh, Scotland, assignor to plc Ferranti, London, England

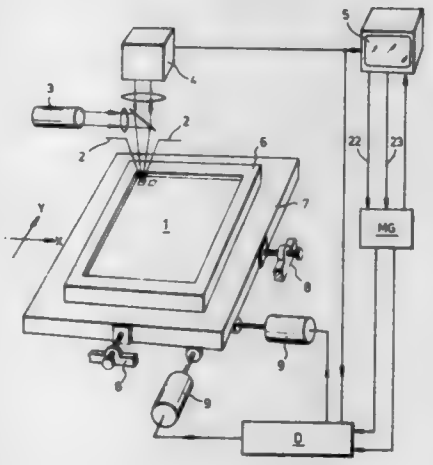
Filed Nov. 21, 1983, Ser. No. 553,970

Claims priority, application United Kingdom, Nov. 27, 1982, 8233908

Int. Cl.³ H04N *7/18*

U.S. Cl. 358—101 **2 Claims**

1. Automatic equipment, to be employed in association with devices each having constituent features detectable by a radiation sensitive device, the features having only straight line boundaries and axes of symmetry, the features forming an orthogonal pattern extending parallel to orthogonal axes associated with a plane including the device features, and each device having a shape in plan enabling it to co-operate with means provided within the automatic equipment so as to be located without any angular misalignment in relation to the two orthogonal axes of the device plane, and the automatic equipment also including displacing means by which each device is displaceable within the automatic equipment, along either orthogonal axis of the device plane, and relative to co-operative parts of the automatic equipment, inspection means having a radiation sensitive device, at least considered as, being arranged to move, at a constant speed, and in relation to each device, individually, along a predetermined raster scanning path of parallel lines in a plane, parallel to the plane including the device features, there being two orthogonal axes of symmetry associated with the raster scanning pattern, one such axis being parallel to the scanning lines, and both axes being parallel to the two orthogonal axes of the plane including the device features, and the radiation sensitive device being arranged to produce signals in response to the detection of boundaries of features in the plane of the device; the inspection means also including manually adjustable marker generating means, arranged to produce associated pairs of groups of signals, with each group including at least one signal, in each raster scan period, the time interval between the signals of each such associated pair of signals representing a particular distance of movement of the radiation sensitive device, along an



axis parallel to one of the two orthogonal axes of the raster scan pattern, so that each such associated pair of groups of signals represents a marker within the raster scan pattern, considered as being capable of being superimposed upon the device plane, and considered as being detactable by the radiation sensitive device, in addition to the detection thereby of the device feature boundaries, each marker representing, individually, a particular distance at a location within the raster scan pattern, each signal produced by the marker generating means representing a line in the raster scan pattern considered as being detected by the radiation sensitive device simultaneously with the production of the signal; in an initial setting operation of the automatic equipment, with an operator having determined a unique pattern of feature boundaries, in the plane of each device, the operator adjusts the marker generating means to produce a plurality of associated pairs of groups of signals, each of the associated pairs of groups of signals, considered individually, defining a location within the raster scan pattern of a determined feature boundary of the unique pattern of feature boundaries, in relation to each device positioned within the automatic equipment, and considered sequentially, the defined location of a feature boundary being considered to be a line in the raster scan pattern extending parallel to the orthogonal axis parallel to the feature boundary, and equidistant between the lines in the raster scan pattern represented by the corresponding associated pairs of groups of signals, and the adjustment of the marker generating means by the operator to

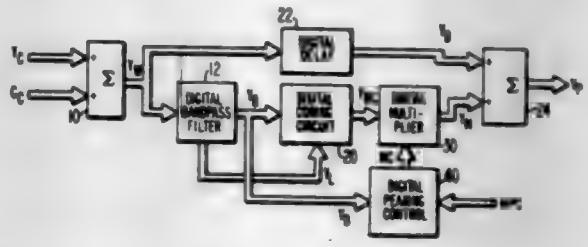
be such that the feature boundary location defining line, in the raster scan pattern, is within a predetermined distance from the desired accurate location of the feature boundary in the raster scan pattern, and along an axis parallel to the orthogonal axis at right angles to the feature boundary, different markers being so adjusted in relation to different determined feature boundaries of the unique pattern of feature boundaries, each of the determined feature boundaries, individually, having a marker so adjusted in relation thereto; the automatic equipment also including discriminating means to operate upon, individually, each combination of related signals produced by the inspection means, each such a combination of related signals comprising the associated pair of groups of signals from the marker generating means corresponding to a feature boundary, together with a signal from the radiation sensitive device indicative of the detection of the feature boundary, in relation to each device, at least, coarsely positioned within the automatic equipment, as defined below, and each device being considered sequentially, the discriminating means being arranged to be capable of detecting whether, individually, each of the plurality of determined feature boundaries of the unique pattern of feature boundaries, is located within a threshold distance from the defined location of the feature boundary, and along an axis parallel to the orthogonal axis at right angles to the feature boundary, each threshold distance being at most equal to half the appropriate particular distance; the automatic equipment being set up such that when the discriminating means operates upon each combination of related signals associated with any device, and when each of the plurality of determined feature boundaries, considered individually, is detected by the discriminating means to be within an appropriate combined distance from its desired accurate location within the automatic equipment, the appropriate combined distance comprising the appropriate threshold distance plus the appropriate predetermined distance, the device is located within the automatic equipment so as to be inherently capable of co-operating with the co-operative parts of the automatic equipment, and, then, in relation to any device instantaneously being considered, when the discriminating means detects that each of the plurality of determined feature boundaries, is within the appropriate combined distance from its desired accurate location, or within the appropriate threshold distance from its defined location, the device is considered to be precisely positioned within the automatic equipment; and the automatic equipment including means whereby each of a plurality of identical devices, sequentially, and automatically, is, at least, coarsely positioned within the automatic equipment, the device being located so as not to be inherently capable of co-operating with the co-operative parts of the automatic equipment, each device being considered to be coarsely positioned when the discriminating means is capable of operating upon each combination of related signals associated with the device, but, in response, the discriminating means detecting that at least one of the plurality of determined feature boundaries is not located within the appropriate threshold distance from its defined location in the raster scan pattern; in a constituent error determining step, of a device positioning operation of the automatic equipment, the discriminating means detecting whether the device is precisely positioned within the automatic equipment, and in response to the detection by the discriminating means that the device is not so precisely positioned, the discriminating means, which is arranged to control the device displacing means, causing the displacing means to displace the device, whereby the device, at least approaches, being precisely positioned within the automatic equipment, the constituent error determining step being repeated automatically in the device positioning operation, until the discriminating means detects that the device is precisely positioned within the automatic equipment.

4,538,178

DIGITAL SIGNAL PEAKING APPARATUS WITH CONTROLLABLE PEAKING LEVEL

Thomas V. Bolger, Merchantville, N.J., assignor to RCA Corporation, Princeton, N.J.

Filed Jun. 24, 1983, Ser. No. 507,554
Int. Cl.³ H04N 5/14
U.S. Cl. 358—166 **19 Claims**



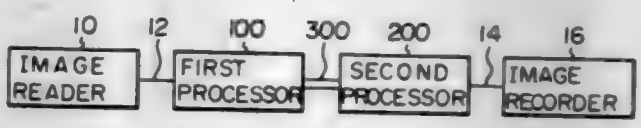
1. Digital signal processing apparatus comprising:
a source for providing digital input signals to be processed;
digital filtering means coupled to said source for developing filtered digital signals including relatively higher frequency components of said digital input signals;
scaling means coupled to said digital filtering means for scaling the magnitudes of said filtered digital signals in accordance with a scaling signal to develop scaled digital signals;
combining means, coupled to said source and to said scaling means, for combining said input digital signals and said scaled digital signals to produce processed digital signals; and
control means coupled to said digital filtering means for developing said scaling signal in response to said filtered digital signals and coupled to said scaling means for applying said scaling signal thereto.

4,538,179

IMAGE PROCESSING FOR UNSHARP MASKING OF IMAGE

Kimura Tsutomu; Hideo Nakayama, and Yuichi Fuseda, all of Kanagawa, Japan, assignors to Fuji Photo Film Co., Ltd., Kanagawa, Japan

Filed May 11, 1983, Ser. No. 493,555
Claims priority, application Japan, May 19, 1982, 57-84571
Int. Cl.³ H04N 5/30, 1/40
U.S. Cl. 358—166 **4 Claims**



1. An image processing system comprising:
video signal input means for receiving an original video signal S_{org} associated with a pixel involved in an original image, the original video signal S_{org} being formed by scanning the original image;
operational circuitry interconnected to said input means for executing an unsharp masking processing in accordance with an expression defined by

$$S' = \gamma\left[S_{org} + \beta(S_{org}, S_{us})\left(S_{org} - \sum_{p=1}^{P} \frac{\alpha p M_{p\Sigma} \cdot N_{pS_{org}}}{M_p \cdot N_p}\right)\right],$$

to produce a resultant signal S' with respect to a rectangular area formed by N_p scanning lines each including M_p pixels and defined by two lengths of line which are substantially parallel to the direction of a scanning line and two lengths of line which are substantially perpendicular

to the direction of a scanning line, wherein α_p is a weight, β is an emphasis function, γ is a nonlinear function, M_p, N_p and P are a natural number, and p is one of P;

video signal producing means interconnected to said operational circuitry for producing the resultant signal S' calculated from the expression as a video signal to be reproduced of the original image; wherein said operational circuitry comprises:

first and second processors interconnected with each other;

said first processor executing operations on the term

$$M_{p\Sigma} \cdot N_{pS_{org}}$$

in the expression sequentially with respect to the rectangular areas of the original image to transfer the results

$$M_{p\Sigma} \cdot N_{pS_{org}}$$

together with the associated original video signals S_{org} to said second processor;

said second processor being in response to the results

$$M_{p\Sigma} \cdot N_{pS_{org}}$$

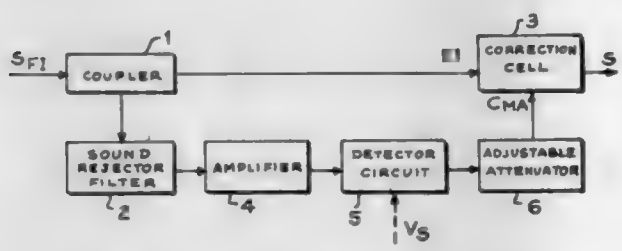
and the associated original video signals S_{org} to execute operations on the remaining portions of the expression sequentially with respect to the rectangular areas to form the resultant signal S'.

4,538,180

SYSTEM FOR NON LINEARITY CORRECTION BY INTERMEDIATE FREQUENCY PREMODULATION IN TELEVISION EQUIPMENT

Claude Cluniat, Chatou, France, assignor to LGT Laboratoire General des Telecommunications, Chatou, France

Filed Jan. 13, 1983, Ser. No. 457,624
Claims priority, application France, Jan. 28, 1982, 82 01354
Int. Cl.³ H04N *5/38, 5/40*
U.S. Cl. 358—186 **9 Claims**



1. A system for pre-correcting, by intermediate frequency pre-modulation, non-linearities introduced into a high frequency amplified television signal in common channel transmission equipment having intermediate frequency stages, comprising at least one group delay time correction cell receiving said signal and having an output and placed in said intermediate frequency stages, including:

a direct channel receiving said signal and having an output;

a compensated channel receiving said signal and having an output which when added to said direct channel output comprises said cell output, including:

an amplifier receiving said signal; and

a group delay time modulation circuit, connected to said amplifier, for introducing group delay time corrections to said signal at a frequency of a correction pole, said delay time modulation circuit having a group delay time control input and including an oscillating circuit for tuning said delay time modulation circuit to said correction pole frequency, said delay time modulation circuit having no effect on an amplitude of said signal at said correction pole frequency; and

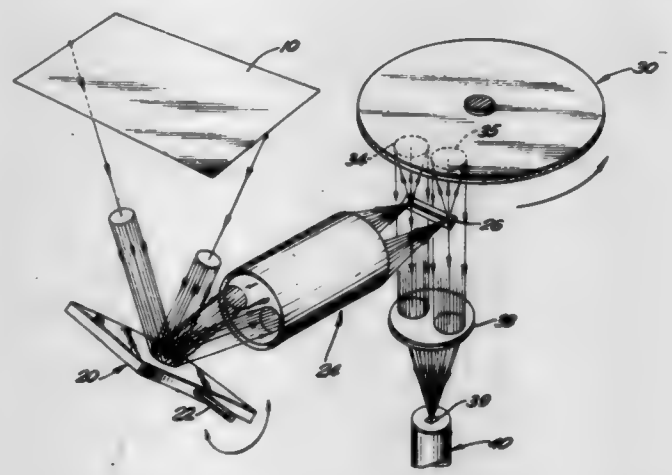
an amplitude pre-modulation control circuit, having a control input and an output which is connected to said amplifier, for introducing amplitude corrections of said signal at said correction pole frequency in a manner independent of said group delay time corrections.

4,538,181

OPTICAL SCANNER

William H. Taylor, South Deerfield, Mass., assignor to Kollmorgen Technologies, Dallas, Tex.

Continuation-in-part of Ser. No. 470,499, Feb. 28, 1983,. This application Apr. 6, 1984, Ser. No. 597,645
Int. Cl.³ H04N *3/08*
U.S. Cl. 358—208 **60 Claims**



9. In a scanning system wherein a scene is scanned in an orthogonal pattern including linear scanning traces in one of the orthogonal directions focused at a locus of foci, the improvement comprising:

a rotating scanning disc including a circular array of concave reflectors on a plane surface thereof;

an image means configured and dimensioned to coincide with the locus of foci and on which the linear scanning trace appears such that said image means redirects the focused radiation of the scanning trace to the concave reflectors; and

radiation detecting means positioned to detect the intensity of radiation reflected from said image means by said concave reflectors.

4,538,182

IMAGE PROCESSING APPARATUS

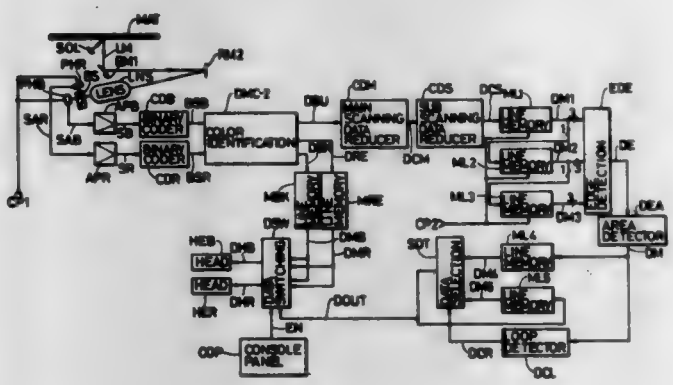
Seiji Saito, Yokosuka; Naoki Ayata, Machida; Hidetoshi Suzuki, Tokyo; Kunitaka Ozawa, Azumabashi, and Noboru Koumura, Narashino, all of Japan, assignors to Canon Kabushiki Kaisha, Tokyo, Japan

Filed May 3, 1982, Ser. No. 374,102
Claims priority, application Japan, May 11, 1981, 56-69316; May 26, 1981, 56-78699; May 27, 1981, 56-79292; May 28, 1981, 56-80045; Jun. 5, 1981, 56-85622; Jun. 10, 1981, 56-88008; Jun. 11, 1981, 56-88824; Jun. 25, 1981, 56-97453; Oct. 8, 1981, 56-159390; Nov. 17, 1981, 56-184634
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **31 Claims**

1. Image processing apparatus comprising:

outputting means for outputting an image signal containing area specifying data;

detecting means for detecting a duration of the image signal output by said outputting means; and



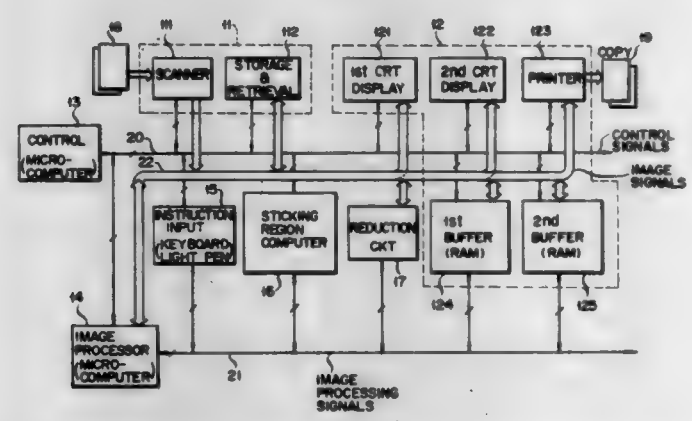
means for discriminating the area specifying data in accordance with the duration detected by said detecting means.

4,538,183

IMAGE EDITING APPARATUS

Masayuki Kanno, Fujisawa; Hisao Tezuka; Kouji Izawa, both of Yokohama, and Tadanobu Kamiyama, Yokosuka, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Dec. 28, 1982, Ser. No. 454,110
Claims priority, application Japan, Jan. 8, 1982, 57-887
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—280 **13 Claims**



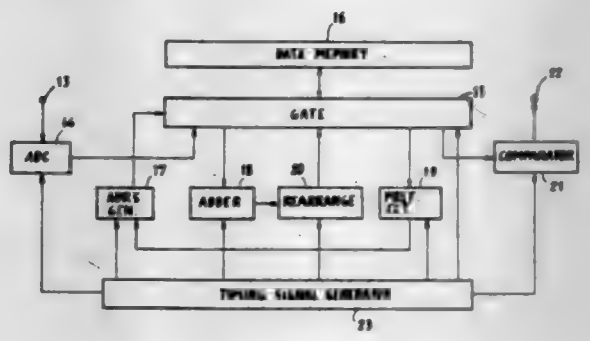
1. A cut-and-paste image editing apparatus comprising:
input means for separately inputting documents each having image information to be edited;
display means for displaying each of the documents;
cutting region designating means for designating at least one cutting region of a document displayed on said display means and providing coordinate information of the cutting region;
first image information storing means for storing image information of each cutting region designated by said cutting region designating means;
pasting region computing means storing in advance a plurality of basic pasting patterns each representing a layout for pasting a plurality of cutting regions on a sheet, and responsive to the coordinate information of said cutting regions provided by said cutting region designating means for judging whether the cutting regions can be pasted on the sheet according to each of the basic pasting patterns, computing the coordinates of pasting regions corresponding to the cutting regions for each of basic pasting patterns which have been so judged, and storing the coordinate information of each of the pasting regions;
second image information storing means having storage areas each corresponding to a size of a sheet on which a plurality of cutting regions are pasted according to a basic pasting pattern;
means for transferring the image information of the cutting regions stored in said first image information storing means to locations of the storage area of said second image information storing means, designated by the coordinate information of the corresponding pasting regions stored in said pasting region computing means for each pasting pattern according to which the cutting regions can be pasted; and
means for outputting the image information of the cutting regions stored in said second image information storing means in a form such that the cutting regions have been pasted on a sheet according to at least one of the basic pasting patterns which have been judged that the cutting regions can be pasted.

4,538,184

METHOD AND APPARATUS FOR PROCESSING VIDEO SIGNALS

Hirotaka Otsuka, Kawasaki; Katsuo Nakazato, Tokyo; Kunio Sannomiya, Atsugi; Hidehiko Kawakami, Tokyo; Hiroyoshi Tsuchiya, Kawasaki, and Hideo Uchida, Tokyo, all of Japan, assignors to Matsushita Electric Industrial Company, Limited and Matsushita Graphic Communication Systems, Inc., both of, Japan

Filed Jun. 7, 1983, Ser. No. 501,873
Claims priority, application Japan, Jun. 7, 1982, 57-97938; Jun. 18, 1982, 57-106063; Sep. 29, 1982, 57-171643
Int. Cl.³ H04N *1/40*
U.S. Cl. 358—283 **6 Claims**



1. A method for processing a video signal, characterized by a first step of storing a video signal derived from each picture element of a scanned original into a video memory, a second step of establishing a scan window in said memory such that the scan window comprises M picture elements adjacent to each other (where M is a natural number), a third step of determining the total sum S of the signal levels of all of said picture elements in said scan window and determining N and A which satisfy the following formula:

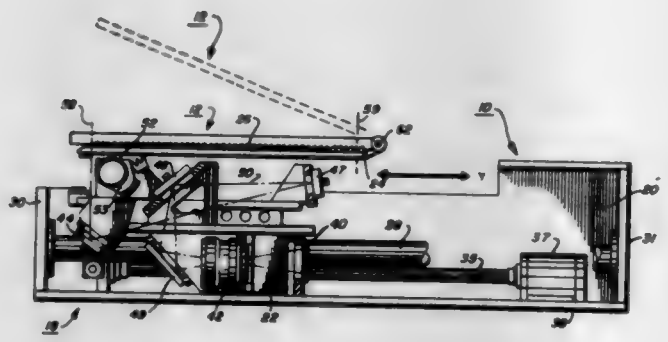
$$S=C\times N+A$$

where C represents a given video signal level, N is an integer and $0 \leqq A < C$, and a fourth step of identifying each of said picture elements in said scan window with an increasing or decreasing number in the order of signal level, and if in the decreasing order, transforming the signal levels of the picture elements #1 through #N to a signal level C, transforming the signal level of the picture element #(N+1) to a signal level A, transforming the signal levels of the picture elements #(N+2) through #M to a signal level zero, and if in the increasing order, transforming the signal levels of the #1 through #(M−N−1) picture elements to zero, transforming the signal levels of the #(M−N) picture elements to A, transforming the signal levels of the picture elements #(M−N+1) through #M to C, and repeating said second, third and fourth steps with respect to all the stored areas of said memory while shifting said scan window by a predetermined number of picture elements.

4,538,185
PLATEN COVER FOR DOCUMENT BOUNDARY DETECTION IN RASTER SCANNERS

Douglas G. Wiggins, Penfield, N.Y., assignor to Xerox Corporation, Stamford, Conn.

Filed Sep. 30, 1983, Ser. No. 538,037
Int. Cl.[3] H04N *1/04, 1/40, 1/10, 1/02*
U.S. Cl. 358—285 11 Claims



1. In a raster input scanner having a platen for supporting the document to be scanned and at least one scanning array for scanning the document image to produce image signals of varying potentials representative of the document image for output, the combination comprising:

(a) a cover member; and

(b) means supporting said cover member for movement into and out of overlaying relation with said platen and the document thereon,

said cover member being sized to cover said platen on closure of said cover member,

the inside surface of said cover member facing said platen being corrugated and reflective to provide a relatively coarse specular light reflecting surface which when scanned reflects a relatively bright intense image distinguishable from the document image;

said scanning array producing image signals of maximum potential when scanning said cover specular reflective surface; and

(c) control means for controlling the output of image signals to avoid output of unnecessary image signals representing areas outside the document perimeter, including

means establishing a preset reference potential greater than the image signal potentials produced by scanning said document image but less than the maximum potential produced by scanning said cover specular light reflecting surface, and

means for preventing output of image signals when the image signal potential is above said preset reference signal potential.

4,538,186
METHOD AND APPARATUS FOR DISTRIBUTING LEADING SPACE

David E. Adsett, Charlton Kings, England, assignor to Allied Corporation, Morris Township, Morris County, N.J.

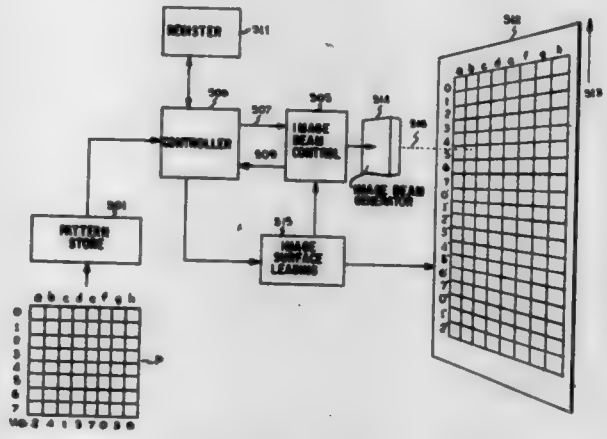
Filed Apr. 22, 1982, Ser. No. 370,777
Claims priority, application United Kingdom, May 28, 1981, 8116389
Int. Cl.[3] H04M *1/24*
U.S. Cl. 358—298 12 Claims

1. A method of interspersing a leading space of a first width produced between pairs of a series of images formed by deflection of an imaging beam, by a leading step in a first direction over a plurality of lines separated by a leading space of a second width produced by said leading step in said first direction, and wherein said lines are formed by image areas in a graphic image located on an imaging surface having at least first and second dimensions extending in said respective first and second directions and comprising the steps of:

a. deriving signals indicative of the information content of said image areas,

b. reproducing said image areas, responsive to said signals, on said image surface at predetermined locations, to form a succession of said lines of said images in said second direction,

c. and, wherein said step of reproducing includes the steps of

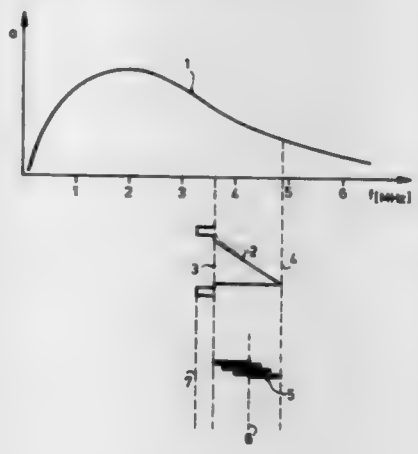


spacing said reproduced image areas in separate leading steps, producing leading spaces of said second width in said first direction to form said succession of said lines extending in the said second direction, and the step of interspersing one said leading space of said first width, produced between the pairs of said images in said leading space of said second width between a plurality of said line of images.

4,538,187
METHOD OF AND CIRCUIT ARRANGEMENT FOR RECORDING A COLOR VIDEO SIGNAL

Karl H. Rehfeldt, Quickborn, Fed. Rep. of Germany, assignor to U.S. Philips Corporation, New York, N.Y.

Filed Sep. 10, 1982, Ser. No. 416,752
Claims priority, application Fed. Rep. of Germany, Sep. 14, 1981, 3136347
Int. Cl.[3] H04N *9/493*
U.S. Cl. 358—330 5 Claims



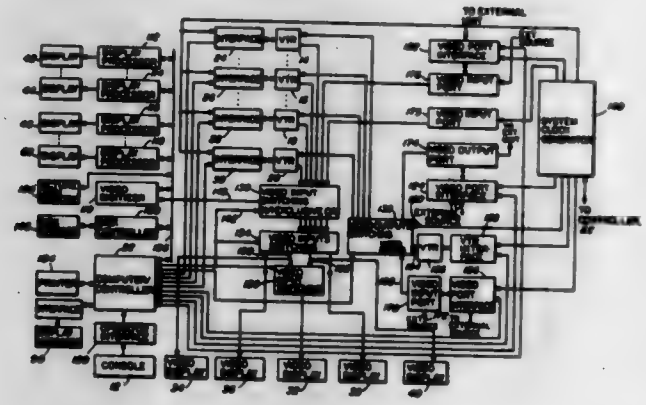
1. A method for recording the information contained in a colour video signal, which signal comprises a luminance signal and two alternately transmitted colour-difference signals, on a record carrier, in particular a magnetic tape, by frequency modulation, recording being effected in the range of the falling portion of the frequency-amplitude transmission curve, including recording the colour-difference signals (R-Y) and (B-Y) with negative polarity in such a way that the amplitude values of bright colour such as a yellow, cyan and green are recorded at a higher frequency value and, consequently, at lower values of the frequency-amplitude transmission curve, and darker colours such as purple, red and blue are recorded at higher values of the frequency-amplitude transmission curve.

4,538,188

VIDEO COMPOSITION METHOD AND APPARATUS

Ronald C. Barker, Weston, and Chester L. Schuler, Sudbury, both of Mass., assignors to Montage Computer Corporation, West Concord, Mass.

Filed Dec. 22, 1982, Ser. No. 452,287
Int. Cl.³ H04N *5/782*; G11B *27/02*
U.S. Cl. 360—14.3 67 Claims



1. Composing apparatus for selecting segments from image source material stored in at least one storage medium and for denoting serially connected sequences of said segments, said apparatus comprising

a pictorial display means,

an operator control means, and

a composing control means responsive to said operator control means for controlling said storage media and said pictorial display means, said composing control means comprising

means for denoting a start and an end of each of a plurality of segments of said source material,

means for identifying each said segment by a pictorial image segment label,

means for selectively displaying segments of said image source material on said pictorial display means,

means for assembling at least a plurality of said labels into a serially connected label sequence,

operator responsive means for locating any said segment by displaying said pictorial labels in said label sequence, and

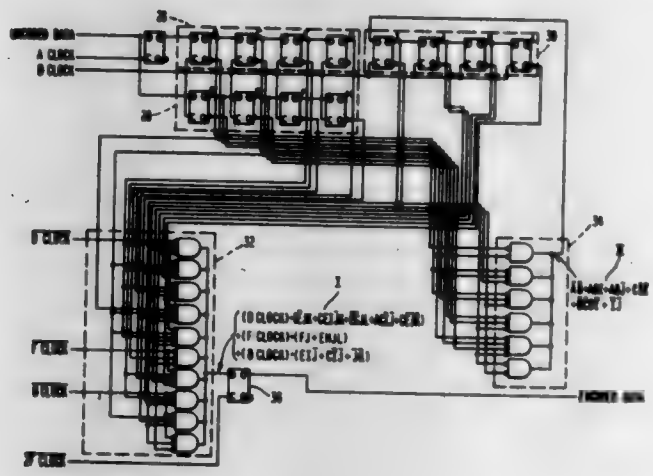
said displaying means being further adapted for displaying the segment identified by a selected label.

4,538,189

(1,8) DATA ENCODER/DECODER

William B. Fitzpatrick, Sunnyvale, Calif., assignor to Storage Technology Corporation, Louisville, Colo.

Filed Feb. 6, 1984, Ser. No. 577,510
Int. Cl.³ G11B *5/09*
U.S. Cl. 360—40 6 Claims



1. A disk drive for storing data received from a host computer comprising:

magnetic disk storage media;

read/write head means for writing data to said disk and reading data from said disk;

data encoding circuitry for encoding data received from the host computer according to (1,8) run-length-limited, variable length code word encoding techniques; and

data decoding circuitry for decoding (1,8) encoded data read from said disk into a stream of data suitable for outputting to said host;

wherein said encoding circuitry comprises first, second and third shift registers, each comprising four stages, each of those stages outputting a signal;

the signals output by the stages of said first shift register being denominated A, C, E and G, respectively;

the signals output by the stages of the second shift register being denominated B, D, F, and H respectively;

the signals output by the stages of the third shift register being denominated I, J, K and L, respectively;

clock means for outputting D clock, F clock, and B clock signals; and

first and second group of logic circuitry, said first group of logic circuitry outputting a signal equivalent to the Boolean logic statement I, where

$$I=(D\ \text{clock})\cdot(\bar{E}JK+CE\bar{I}JK+\bar{E}GJL+AC\bar{I}J+C\bar{E}JK)+(F\ \text{clock})\cdot(FJ+EHJL)+(B\ \text{clock})\cdot(E\bar{I}J+C\bar{I}J+\bar{J}K),$$

as the encoded data signal, and the second group of logic circuitry outputting a signal equivalent to the Boolean logic statement II, where

$$II=\overline{AB}+ABI+AB\bar{J}+C\bar{D}I+\overline{BC}DI+\bar{I}J,$$

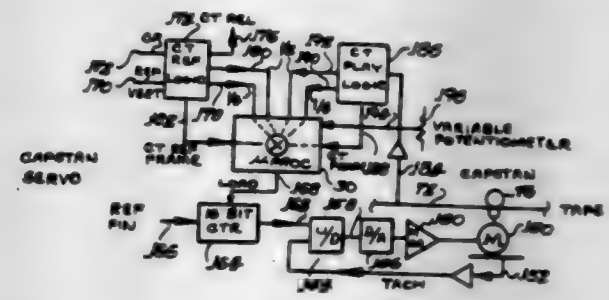
supplied to said third shift register.

4,538,190

PROGRAMMABLE NON-LINEAR SPEED CONTROL FOR A RECORDING AND/OR REPRODUCING APPARATUS

Kenneth Louth, Los Altos, Calif., assignor to Ampex Corporation, Redwood City, Calif.

Continuation of Ser. No. 364,962, Apr. 2, 1982, abandoned. This application Sep. 4, 1984, Ser. No. 647,260
Int. Cl.³ G11B *15/44*
U.S. Cl. 360—73 20 Claims



9. A nonlinear speed control apparatus for varying the transport speed of tape in a magnetic tape recording and reproducing machine, comprising:

means for transporting the tape at a speed proportional to a parameter of a driving signal;

movable means having positional settings for providing a speed control signal which varies with the positional setting of said movable means; and

means responsive to the speed of the tape and to said speed control signal for varying said parameter of said driving signal in a non-linear fashion with incremental changes in said speed control signal to produce a smaller percentage change in the speed of the tape at relatively faster speeds and a greater percentage change at slower speeds.

13. A speed control apparatus for varying the transport

speed of a tape in a magnetic tape recording and reproducing machine, comprising:

means for transporting the tape at a speed proportional to the parameter of a driving signal; movable means having positional settings for providing a speed control signal which varies with the positional setting of said movable means; and

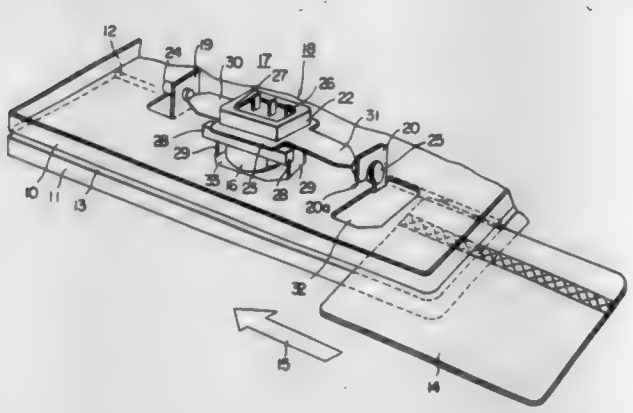
means responsive to the speed of the tape and to said speed control signal for varying said parameter of said driving signal with a delay between the time that a change occurs in said speed control signal and the time that the corresponding variation in said parameter occurs, said delay being proportional to the speed of the tape in the range of normal playback speed and above.

4,538,191

MAGNETIC CARD READER

Akihiro Suzuki, Okazaki; Keiichi Souda; Masao Kuno, both of Kariya, and Hiroshi Ikuta, Okazaki, all of Japan, assignors to Nippondenso Co., Ltd., Kariya, Japan

Filed Jul. 7, 1982, Ser. No. 395,982
Claims priority, application Japan, Jul. 8, 1981, 56-107294
Int. Cl.³ G11B *17/00*
U.S. Cl. 360—88 **19 Claims**



1. A magnetic card reader, comprising:

guide members including an interior card path having space larger than the thickness of a magnetic card for guiding the movement of the magnetic card; and

holding means provided in said guide members for holding a transducer to face said path, said transducer reading data recorded on said magnetic card when said magnetic card is moving by it; said holding means including

a movable assembly including a holding frame for holding said transducer, a pair of elastic members, with ends, extending in the direction of movement of said magnetic card in a manner to hold said holding frame and a pair of bar-shaped members, with respective outer peripheries adapted to permit rotation thereof, formed at the ends of the elastic members, said bar-shaped members extending in the direction of movement of the magnetic card,

a pair of support members for supporting said bar-shaped members by contacting the respective outer peripheries thereof, said support members supporting said movable assembly with respect to said guide members along a rotational axis having a direction parallel to the direction of movement of said magnetic card, and

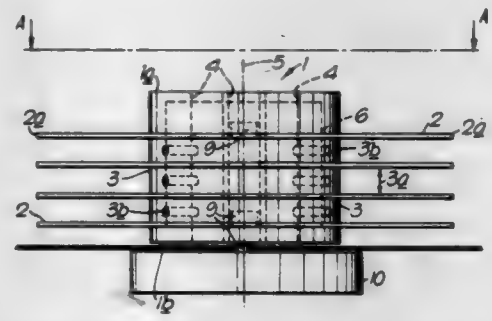
paired positioning members respectively provided on one of said guide members on opposite sides of said holding frame for engaging said pair of elastic members urge said pair of elastic members away from said one guide member to place said elastic members so as to define an initial position of said transducer.

4,538,192

VENTILATION SYSTEM FOR COMPUTER DISC DRIVE HUB ASSEMBLY

James N. J. White, Kinross, and Michael G. Caithness, Fife, both of Scotland, assignors to Rodime Limited, United Kingdom

Filed Jun. 14, 1982, Ser. No. 388,165
Int. Cl.³ G11B *5/012*
U.S. Cl. 360—98 **2 Claims**



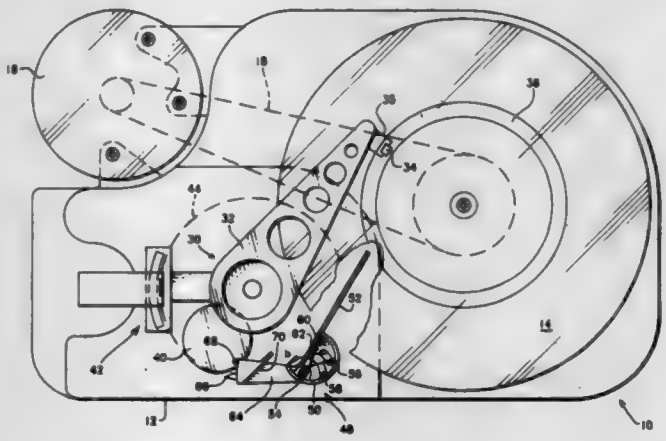
1. A computer disc drive including a hub assembly supporting a plurality of axially-stacked discs and a housing defining a chamber, said chamber enclosing said hub assembly, said hub assembly having a plurality of axially extending channels interconnecting the space adjacent the axial ends of the hub with the spaces between the discs via a plurality of radially extending channels, said housing having air ventilating and filtering means therein, said ventilating and filtering means comprising a breather filter located in said housing co-axially with the axis of the hub assembly, said breather filter interconnecting the interior of the chamber with the outside atmosphere, the air enclosed by the chamber being circulated within the chamber via said axially and radially extending channels by the pumping action of the rotating discs, said circulation of air causing pressure gradients to be established within the chamber wherein the spaces adjacent the axial ends of said hub assembly are the points of lowest pressure, said points of lowest pressure being at atmospheric pressure by virtue of the co-axial location of said breather filter.

4,538,193

AERODYNAMICALLY RELEASED SAFETY LATCH FOR DATA TRANSDUCER ASSEMBLY IN ROTATING RIGID DISK DATA STORAGE DEVICE

W. Scott Dimmick, Atherton; Charles S. Mitchell, Portola Valley, and William G. Moon, Sunnyvale, all of Calif., assignors to Quantum Corporation, Milpitas, Calif.

Filed Nov. 8, 1982, Ser. No. 439,897
Int. Cl.³ G11B *21/20*
U.S. Cl. 360—137 **17 Claims**



1. In a data storage device including a frame and one or more rigid rotating disks, at least one data transducer capable of riding in close proximity to a data storage major surface of said disk upon an air bearing created by rotation of said disk for writing and reading data on said surface, a transducer support

carriage for supporting and moving said data transducer relative to said surface, and including a rest position for said transducer, and driver means for moving said carriage,

an improved safety latch for locking said transducer at its rest position in the absense of disk rotation and for releasing in response to air flow generated by disk rotation, said latch comprising:

moveable airvane means disposed adjacent to said rotating disk, said airvane means being biased to a first position in opposition to the direction of airflow generated by disk rotation, said airvane means for moving in response to airflow generated by disk rotation to a second position in the direction of airflow,

moveable latch means connected to said airvane means, said latch means for engaging said carriage to lock said transducer at said rest position when said airvane means is at said first position, and for releasing said carriage when said airvane means moves to said second position in response to airflow, and

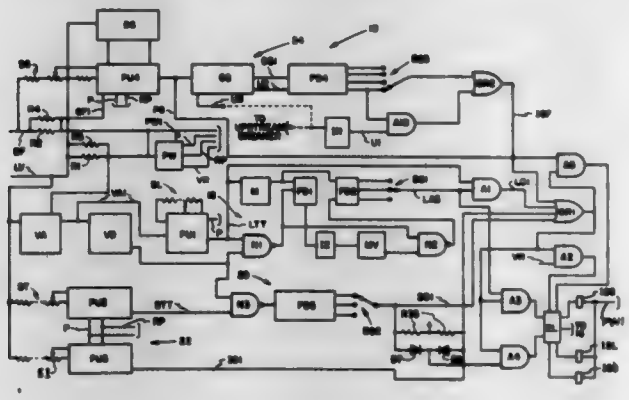
bias means for providing a predetermined bias to said airvane means to urge it to said first position, said predetermined bias being overridden by airflow generated by disk rotation enabling said airvane means to move to said second position.

4,538,194

GROUND FAULT DESENSITIZATION CIRCUIT FOR ELECTRONIC BREAKER

Henry J. Zylstra, Alburnette, and Harley W. Jansen, Marion, both of Iowa, assignors to Square D Company, Palatine, Ill.

Filed May 9, 1983, Ser. No. 492,516
Int. Cl.[3] H02H *3/16*
U.S. Cl. 361—42 **20 Claims**



1. A circuit breaker having interruption means operable for interrupting a plurality of line conductors with each conductor having a respective current transformer for sensing the current in the respective line conductor and for deriving a signal corresponding to the overcurrent present in the respective line conductor the improvement comprising:

ground fault means for detecting a ground fault current in any one of said conductors and for thereafter operating said interrupting means to interrupt said line conductors,

a desensitization circuit responding to a signal above a first predetermined level derived from any of said conductors,

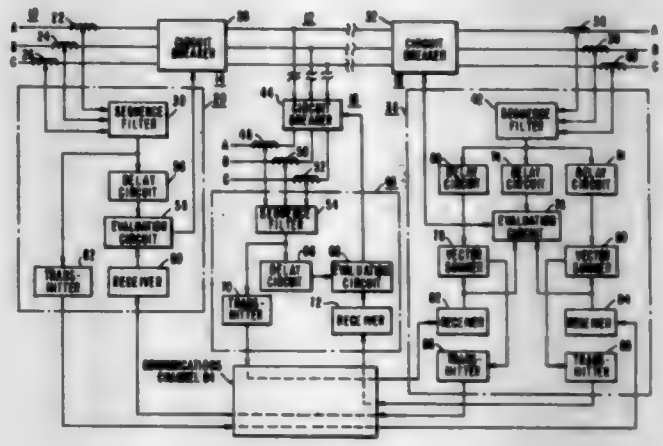
and means in said desensitization circuit for preventing said ground fault means from operating said interruption means for a predetermined time period in response to the detection of said signal exceeding a first predetermined value for preventing interruption of said line conductors during the detection of said ground fault current.

4,538,195

THREE TERMINAL CURRENT DIFFERENTIAL PROTECTIVE RELAY

Walter A. Elmore, Coral Springs, Fla., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Feb. 22, 1984, Ser. No. 582,344
Int. Cl.[3] H02H *7/26*
U.S. Cl. 361—64 **7 Claims**



1. A current differential protective relay system for detecting a fault on an ac electric power network having first, second, and third terminals, and for opening a circuit interrupter at each terminal thereof, said current differential protective relay system comprising:

means responsive to the current at each of the first, second, and third terminals of the electrical power network for producing a first current signal at the first terminal, a second current signal at the second terminal, and a third current signal at the third terminal;

first communications means for communicating said first current signal to the second terminal;

second communication means for communicating said third current signal to the second terminal;

first summing means at the second terminal for producing a first sum signal representative of the vector sum of said first and second current signals;

second summing means at the second terminal for producing a second sum signal representative of the vector sum of said second and third current signals;

third communications means for communicating said first sum signal to the third terminal;

fourth communications means for communicating said second sum signal to the first terminal; and

comparator means at each of the first, second, and third terminals for logically relating said first current signal and said second sum signal at the first terminal, for logically relating said first, second, and third current signals at the second terminal, and for logically relating said third current signal and said first sum signal at the third terminal, to detect a fault on the electrical power network and for tripping the circuit interrupter at the first, second, and third terminals.

4,538,196

PROTECTIVE RELAY APPARATUS AND METHOD FOR PROVIDING SINGLE-POLE TRIPPING

Shan C. Sun, and James P. Garitty, both of Coral Springs, Fla., assignors to Westinghouse Electric Corp., Pittsburgh, Pa.

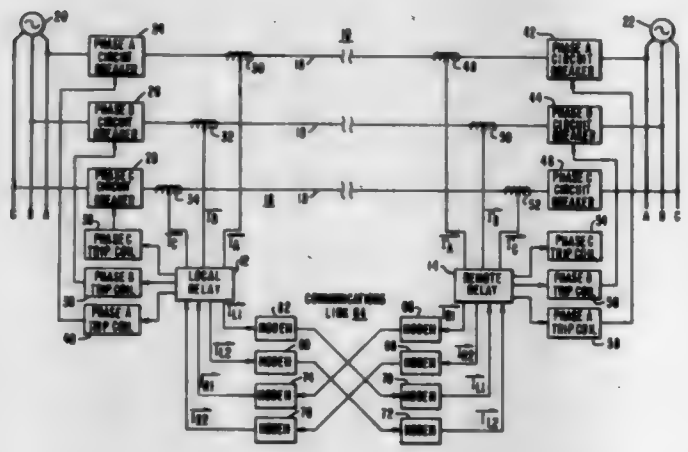
Filed Apr. 22, 1983, Ser. No. 487,480
Int. Cl.[3] H02H *3/30*
U.S. Cl. 361—64 **38 Claims**

1. A phasor-comparison protective-relay system detecting the faulted phase conductor of a three-phase ac transmission line section having a circuit interrupter on each of the first, second, and third phase conductors at each of the local and

remote terminals thereof, said phasor-comparison protective-relay system comprising:

means at each of the local and remote terminals responsive to first, second, and third electrical parameters thereat for providing first and second local derived signals at the local terminal, and first and second remote derived signals at the remote terminal;

means at each of the local and remote terminals for transmitting said first and second local derived signals to the remote terminal and for transmitting said first and second remote derived signals to the local terminal;



means at each of the local and remote terminals for expanding said first and second derived signals received from the other into first, second, and third local comparison signals at the local terminal and first, second, and third remote comparison signals at the remote terminal;

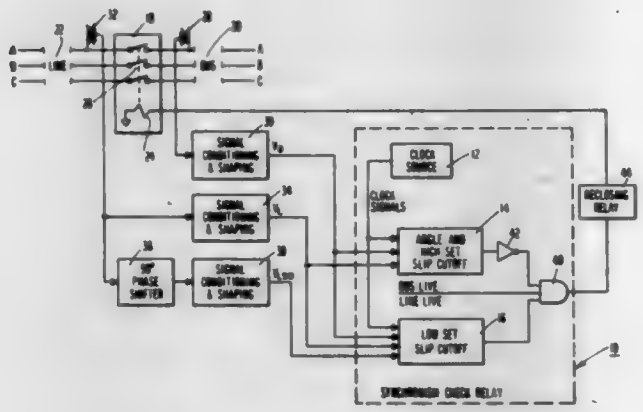
and comparator means at each of the local and remote terminals for logically relating said first, second, and third local comparison signals at the local terminal and said first, second, and third remote comparison signals at the remote terminal to detect the faulted phase conductor and for tripping the circuit interrupter on the faulted phase conductor at each of the local and remote terminals.

4,538,197

SYNCHRONISM CHECK RELAY

Thomas B. Breen, Lansdowne, Pa., assignor to General Electric Company, King of Prussia, Pa.

Filed Jan. 18, 1984, Ser. No. 571,967
Int. Cl.³ H02H *7/22*
U.S. Cl. 361—71 **27 Claims**



1. An apparatus for determining synchronism between first and second voltages present on opposite sides of an open circuit breaker in an AC power distribution system, said apparatus comprising:

a. means for setting a closing angle limit θ;

b. means for setting a high slip frequency limit F_H;

c. means for setting a low slip frequency limit F_L;

d. means for measuring phase angle difference ϕ between said first and second voltages;

e. means for measuring slip frequency F_S between said first and second voltages;

f. means for comparing ϕ with θ and generating a circuit breaker reclose enable signal whenever ϕ remains less than θ for a predetermined period of time T_H which is a function of F_H; and

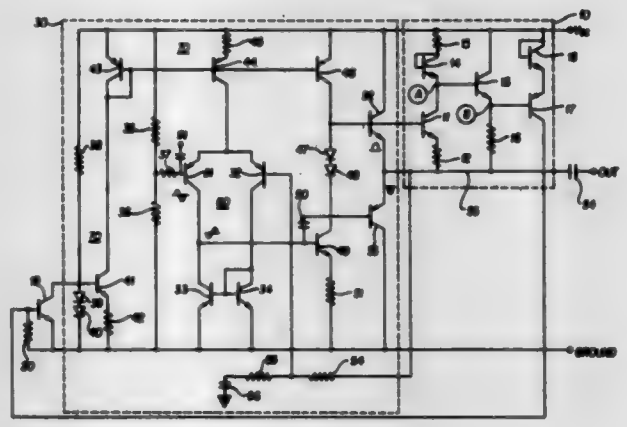
g. means for detecting predetermined low set measurement conditions and, whenever said measurement conditions are detected, comparing F_S with F_L and preventing the generation of said reclose enable signal when F_S is greater than F_L.

4,538,198

PROTECTION CIRCUIT FOR AN OUTPUT TRANSISTOR

Kazuo Imanishi; Masaru Hashimoto, and Makoto Mori, all of Yokohama, Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation-in-part of Ser. No. 343,260, Jan. 27, 1982, abandoned. This application Jul. 21, 1984, Ser. No. 515,680
Claims priority, application Japan, Jan. 27, 1981, 56-10569
Int. Cl.³ H02H *3/26*
U.S. Cl. 361—86 **4 Claims**



1. A protection circuit for an output transistor having a base electrode, an emitter electrode, and a collector electrode, comprising:

a first terminal coupled to the collector electrode of said output transistor;

a second terminal coupled to the emitter electrode of said output terminal;

a first transistor having a base electrode, an emitter electrode and a collector electrode;

first means for connecting the base electrode of said first transistor to the base electrode of said output transistor;

first resistor means coupled between said emitter electrode and said second terminal for reducing a collector current of said first transistor;

second means comprising first diode means and second resistor means for connecting said collector electrode of said first transistor to said first terminal for producing a voltage being equal to the base to emitter voltage of said output transistor;

a second transistor having a base electrode, an emitter electrode and a collector electrode;

third means for connecting the base electrode of said second transistor to the collector electrode of said first transistor;

fourth means for connecting the collector electrode of said second transistor to said first terminal;

third resistor means coupled between said emitter electrode of said second transistor and said second terminal;

a fourth transistor having a base electrode, an emitter electrode and a collector electrode;

fifth means for connecting the base electrode of said fourth transistor to the emitter electrode of said third transistor; and

second diode means coupled between said emitter electrode of said third transistor and said first terminal, thereby

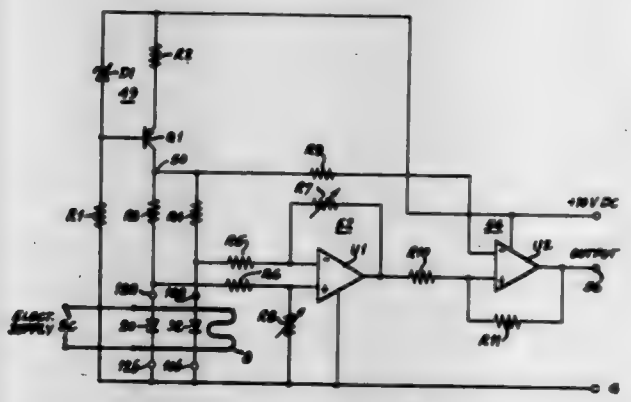
producing a protecting signal from the collector electrode of said third transistor.

4,538,199

ELECTROTHERMAL WIRE RESPONSIVE MINIATURE PRECISION CURRENT SENSOR

Ralph F. Bielinski, So. Milwaukee, Wis.; M. Frank Chacon, Athens, Ala.; Dennis M. Kramer, Brookfield; William R. Mathias, Cedarburg, both of Wis., and Stanley Schneider, Broomall, Pa., assignors to Eaton Corporation, Cleveland, Ohio

Filed Jul. 14, 1983, Ser. No. 513,570
Int. Cl.³ H02H *5/04*
U.S. Cl. 361—93 **14 Claims**



1. An overcurrent protection system for an electrical supply circuit comprising:

a fast response current sensor comprising:

electrothermal menas for generating heat as a function of the value of current in said supply circuit;

means comprising a first PN junction semiconductor sensor device for sensing ambient temperature and providing a first control signal in proportion thereto;

means comprising a second PN junction semiconductor sensor device for sensing the temperature of said heat generating electrothermal means and providing a second control signal in proportion thereto;

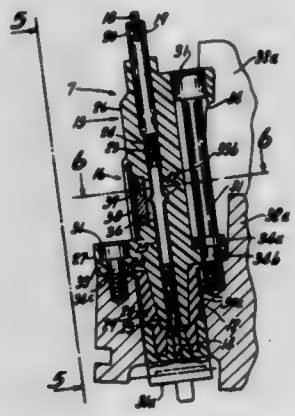
and differential means responsive to said first and second control signals, including means for adjusting the same for a predetermined output value at ambient temperature, for providing an electrical operating signal proportional to the differential of said first and second control signals indicative of the current in said supply circuit.

4,538,200

POWER CONNECTION APPARATUS HAVING INTEGRATED SURGE ARRESTOR

Maqboolhusein G. Shaikh, Troy, Ohio, assignor to A. O. Smith Corp., Milwaukee, Wis.

Filed Mar. 17, 1983, Ser. No. 476,115
Int. Cl.³ H02H *3/22*
U.S. Cl. 361—117 **13 Claims**



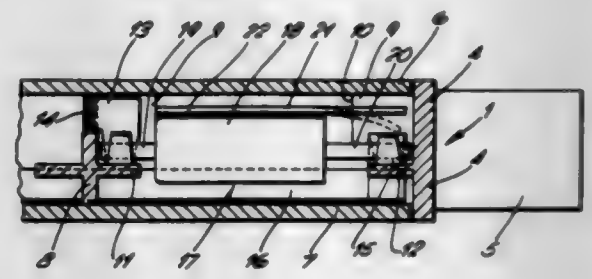
1. A power line unit having a least two power leads, an insulating shell encasing said power leads, said shell including a sidewall arrestor opening exposing said power leads, an arrestor unit secured within said opening to form an exterior exposed wall and secured to the edges of said opening to close said opening and including an arrestor block within said opening in opposed operative relation to said exposed leads, and said arrestor unit having a ground connection secured to said arrestor block.

4,538,201

SURGE PROTECTOR

Oscar Wuyts, Beveren-Waas; Remy F. Ruelens, Edegem, and Lucien J. M. Van Camp, Zandhoven, all of Belgium, assignors to International Standard Electric Corporation, New York, N.Y.

Filed Apr. 6, 1984, Ser. No. 597,774
Claims priority, application Belgium, May 2, 1983, 60084
Int. Cl.³ H02M *1/04*
U.S. Cl. 361—124 **9 Claims**



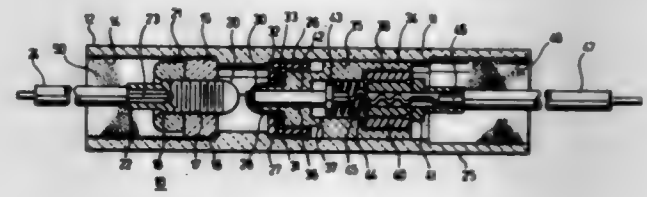
1. Surge protector with first and second electrodes, with a heat sensitive means and with a contact member which is electrically connected with said first electrode and which is mounted so as to be abruptly brought into contact with said second electrode upon the temperature of said heat sensitive means reaching a predetermined value when receiving heat from said protector, wherein said heat sensitive means is comprised of a material whose shape is a function of its temperature, wherein said protector forms part of an assembly including a plurality of such protectors whose first electrodes are electrically interconnected, and wherein said contact members of said plurality of protectors, which are mounted adjacent one another, form part of a common contact plate electrically and thermally connected to the bodies of said protectors.

4,538,202

CURRENT TRANSFORMER SECONDARY VOLTAGE LIMITER

Donald K. Ferguson, Peterborough, Canada, assignor to Canadian General Electric Company Limited, Toronto, Canada

Filed Feb. 23, 1984, Ser. No. 582,812
Claims priority, application Canada, May 27, 1983, 429079
Int. Cl.³ H02H *1/00*; H01H *61/00*
U.S. Cl. 361—124 **13 Claims**



1. A protective device for protecting an apparatus, against destructive overvoltages comprising,

a tubular casing of insulating material,

a stud support mounted within said casing at a first end thereof,

a conductive stud mounted on said stud support, the inner end thereof forming an arcing surface,

a support member mounted within said casing at a second end opposite said first end,

a conductive plunger mounted in said support member for longitudinal sliding movement between a first position engaging said arcing surface of said stud and a second position spaced from said arcing surface of said stud,

a fusible element mounted to the inner end of said support member forming an arcing surface and engaging the inner end of said plunger retaining it in said second position,

spring means engaging said plunger and biasing said plunger against said fusible element and towards said first position,

means for adjusting the spacing between the arcing surface on said stud and the arcing surface formed by said fusible element, and

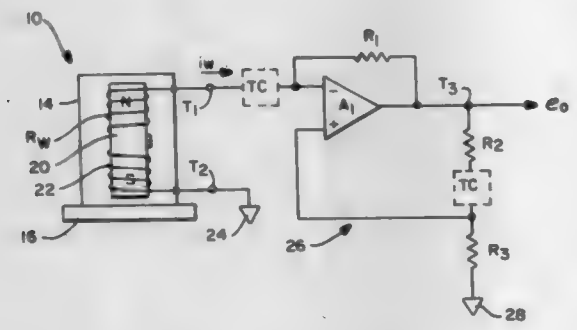
terminal means on the outer end of said stud and connected to said plunger for connection of said device to an apparatus to be protected whereby an overvoltage will cause an arc discharge between said arcing surface and an arc energy of sufficient level will fuse said fusible element permitting movement of said plunger to said first position shorting the apparatus.

4,538,203

PASSIVE MASS-SPRING TYPE OF SENSING DEVICE HAVING ELECTRONIC DAMPING

Philip D. Flanner, Pleasant Hill; Harold D. Morris, Orinda, and Gerald R. Newell, Concord, all of Calif., assignors to Systron Donner Corp., Concord, Calif.

Filed Apr. 11, 1983, Ser. No. 483,584
Int. Cl.³ H01H *47/00*
U.S. Cl. 361—159 **19 Claims**



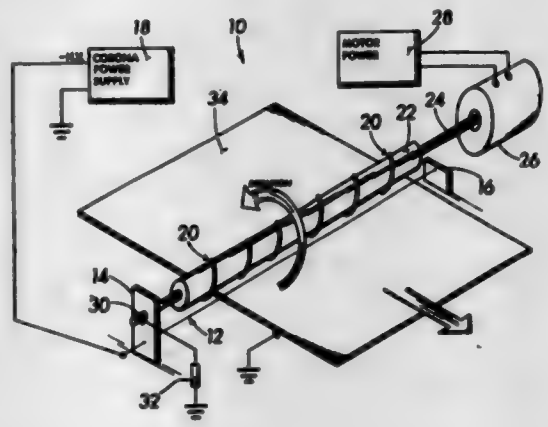
1. In a device including means for producing a magnetic field and a single electrically conductive coil having a given impedance disposed within said magnetic field in a way which results in relative movement between the coil and field corresponding to a particular parameter being monitored whereby to produce a voltage signal which also corresponds to said parameter, a circuit arrangement for damping said relative movement, comprising means connected with said coil for providing a closed electrical circuit including the coil such that the relative velocity between the coil and field as a result of said movement causes a current to be produced in said circuit including said single coil and to flow through said single coil in a way which produces a force, proportionate in magnitude to said current, opposing said movement whereby to dampen said movement, said circuit providing means also including mean for maintaining said voltage signal at a measurable value while, at the same time, reducing the total effective impedance of said closed circuit including said single coil below the given impedance of said coil whereby to increase the magnitude of said current and therefore its associated damping force to a greater value than would be possible merely by shorting together the ends of the coil.

4,538,204

CORONA PRODUCING METHOD AND APPARATUS

Harold J. Weber, Sherborn, Mass., assignor to Coulter Systems Corporation, Bedford, Mass.

Filed Feb. 16, 1982, Ser. No. 348,762
Int. Cl.³ H01T *19/00*
U.S. Cl. 361—229 **13 Claims**



1. Apparatus for producing a substantially uniform elongate corona discharge comprising:

A. at least one stationary elongate corona electrode;

B. elongate ground electrode having a series of equally-spaced grounding points disposed along an axis parallel to said stationary elongate corona electrode at a predetermined distance therefrom;

C. means for moving said grounding points along said axis; and

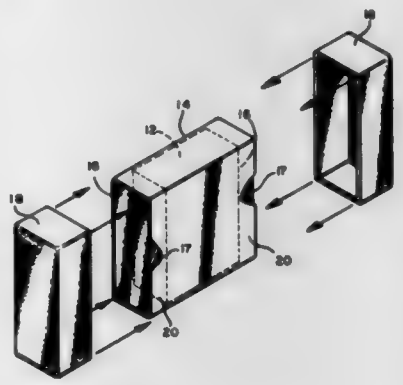
D. source of corona power coupled to said stationary elongate corona electrode.

4,538,205

MEANS AND METHOD FOR FABRICATING PLANAR TERMINATED CAPACITORS

Bernard Lavene, Ocean, N.J., assignor to Electronic Concepts, Inc., Eatontown, N.J.

Continuation-in-part of Ser. No. 348,401, Feb., 1982, Pat. No. 4,455,591. This application Mar. 5, 1984, Ser. No. 586,014
Int. Cl.³ H01G *1/13;* H01L *21/64*
U.S. Cl. 361—308 **9 Claims**



1. A planar terminated capacitor comprising:

(a) a capacitor element having first and second terminals at opposite ends thereof;

(b) a non-conductive sleeve surrounding said capacitor element with the ends of said sleeve extending outwardly substantially beyond said first and second terminals forming first and second cavities;

(c) a conductive substance substantially filling and sealing the cavities and engaging and electrically coupled to the terminals; and

(d) first and second metal end caps individually positioned at opposite ends of the sleeve distant from the terminals and substantially enclosing the first and second cavities and

engaging and electrically coupled to the conductive substance, the first and second end caps being electrically coupled to the first and second terminals respectively only through the conductive substance but free of direct engagement with the first and second terminals.

4,538,206

DIELECTRIC FLUID FOR A CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed May 31, 1984, Ser. No. 615,562

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—315 **3 Claims**

1. In a metallized polypropylene film capacitor, a dielectric fluid consisting of a cycloaliphatic epoxide.

4,538,207

DIELECTRIC FLUID FOR A CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Filed Mar. 29, 1984, Ser. No. 594,877

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—317 **4 Claims**

1. In a paper, paper-film capacitor, a dielectric fluid including a mixture of dioctyl phthalate and branched alkylated benzene with 18 carbons outside the benzene ring.

4,538,208

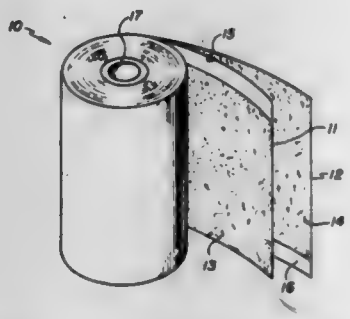
ALTERNATING CURRENT CAPACITOR

Vandos Shedigian, Indianapolis, Ind., assignor to Emhart Industries, Inc., Indianapolis, Ind.

Continuation-in-part of Ser. No. 538,090, Oct. 3, 1983, abandoned, which is a continuation of Ser. No. 336,722, Jan. 4, 1982, abandoned, which is a continuation-in-part of Ser. No. 189,126, Sep. 22, 1980, abandoned. This application May 21, 1984, Ser. No. 612,554

Int. Cl.³ H01G *4/22*

U.S. Cl. 361—319 **7 Claims**



1. In an alternating current capacitor of the type having a housing enclosing a pair of convolutely wound electrodes, a dielectric including soybean oil and dielectric spacer means interleaved therebetween for separating said electrodes, with at least one of said electrodes being formed by a metallized film, a method of reducing the mobility of said dielectric and maintaining same in proximity to said electrodes which comprises adding a minor amount of an alkylhydroxyphenylalkanolyhydrazine compound to provide a gel of said soybean oil within said housing.

4,538,209

DOUBLE FILE PRINTED WIRING BOARD MODULE

William A. Reimer, Wheaton, Ill., assignor to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Aug. 29, 1983, Ser. No. 527,634

Int. Cl.³ H05K *1/14*

U.S. Cl. 361—395 **14 Claims**

1. A double file printed wiring board module comprising:

first and second columns of printed wiring boards, each column including at least one printed wiring board, each board including a component mounting surface, first and second edges, and a plurality of connector tabs adjacent to said first edge to provide access to said board, said board in said first column arranged parallel to said board in said second column without overlap in a direction normal to said component mounting surfaces, said connector tab edge of said board in said first column adjacent to said connector tab edge of said board in said second column;

a pair of support plates, each support plate positioned adjacent to a different one of said board second edges;

a plurality of positioners positioning said support plates relative to each other;

at least one pair of printed wiring board guides, each guide attached to a different one of said support plates and including at least one groove engaged with a corresponding one of said board second edges;



at least first and second interconnected connectors, each connector engaging said plurality of connector tabs of a different one of said printed wiring boards;

a side plane positioned relative to said support plates, positioned intermediate to said printed wiring boards, mounting said first connector on a first side thereof and said second connector on a second side thereof not opposite said first connector, said side plane via said connectors cooperating with said support plates via said board guides to support said printed wiring boards;

an inner plane formed in said side plane intermediate said first and said second side surfaces; and

a plurality of printed wiring conductors formed on said first side surface, on said second surface and on said inner plane, said printed wiring conductors connected in a predetermined manner to said connectors to provide signal paths between said first and second interconnected connectors.

4,538,210

MOUNTING AND CONTACTING ASSEMBLY FOR PLATE-SHAPED ELECTRICAL DEVICE

Werner Schaller, Lampertheim, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Munich, Fed. Rep. of Germany

Filed Mar. 29, 1983, Ser. No. 479,996

Claims priority, application Fed. Rep. of Germany, Apr. 15, 1982, 3213884

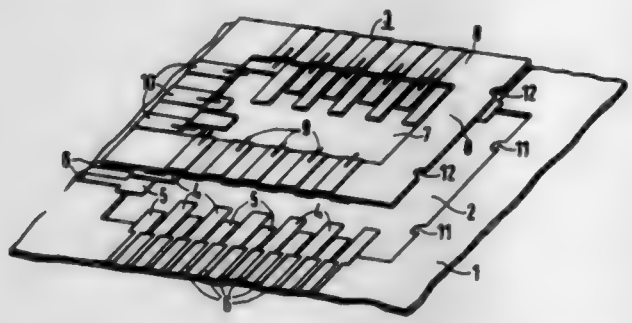
Int. Cl.³ H05K *1/16*

U.S. Cl. 361—401 **24 Claims**

1. In a mount in the form of a circuit board for holding an electrical device comprising a plate member with a periphery bearing a multiplicity of electrical contacts in a predetermined array, said circuit board having a window larger than said plate member for receiving same, said circuit board being provided with conductor runs and connection means for operatively linking said conductor runs to respective electrical contacts of said plate member, the improvement comprising:

a multiplicity of elastically resilient holding tabs attached to the circuit board, at least some of said holding tabs being operatively connected to respective conductor runs of said circuit board, said holding tabs including respective

tab portions projecting into said window in a disposition corresponding at least in part to the array of electrical contacts on the periphery of the plate member, the connection means including at least some of said holding tabs, said window having approximately the same size and shape as said plate member, said plate member having a first side and a second side facing opposite thereto, said tab portions including short tab portions having a first length and long tab portions having a second length greater than said first length, said lengths differing by a sufficiently



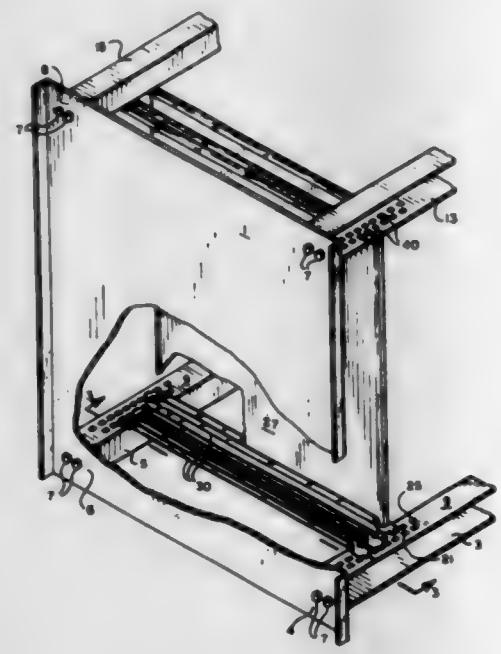
great amount and said holding tabs being sufficiently resilient so that, upon an engagement of said tab portions with said first side of said plate member and a motion thereof through said window, all of said tab portions initially bend in the direction of motion of said plate member and said short tab portions subsequently snap back in a direction opposite said motion of said plate member, said short tab portions engaging said second side and said long tab portions engaging said first side of said plate member upon a mounting thereof in said window.

4,538,211

PRINTED WIRING BOARD FILE WITH VARIABLE PRINTED WIRING BOARD SPACINGS

Ansano Bertellotti, Addison, and Anthony Traina, Villa Park, both of Ill., assignors to GTE Communication Systems Corporation, Northlake, Ill.

Filed Aug. 13, 1984, Ser. No. 639,881
Int. Cl.³ H05K *1/14*
U.S. Cl. 361—415 **11 Claims**



1. A file for a printed wiring board employing printed wiring board guides positionable within said file, said file comprising:

first and second end panels;

at least first and second support members, each attached to said first and said second end panels, and each including a row of first indexing means, each of said first indexing means spaced apart a predetermined distance from adjacent ones of said first indexing means,

a row of second indexing means, each of said second indexing means spaced a predetermined distance from adjacent ones of said second indexing means, said rows parallel to each other with said second indexing means displaced laterally relative to said first indexing means;

at least first and second printed wiring board guides, each including first and second engaging means, said first engaging means of said first guide engaging only a predetermined one of said first indexing means of said first support member, and said second engaging means of said first guide engaging only a corresponding first indexing means of said second support member, said first engaging means of said second guide engaging only a predetermined one of said second indexing means of said first support member, and said second engaging means of said second guide engaging only a corresponding second indexing means of said second support member;

whereby said first and second board guides are positioned within said file and spaced a predetermined distance from each other, said spacing being an alternative to that available if said engaging means of both of said guides are engaged, only with selected ones of said first indexing means or alternately, both of said guides are engaged only with selected ones of said second indexing means

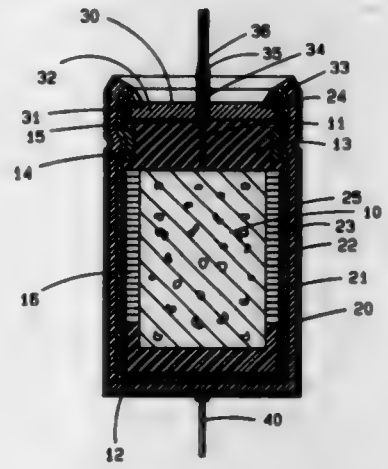
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4,538,212

ELECTROLYTIC CAPACITOR

William P. Montgomery, Pownal, Vt., assignor to Sprague Electric Company, North Adams, Mass.

Filed Jul. 30, 1984, Ser. No. 635,972
Int. Cl.³ H01G *9/00*
U.S. Cl. 361—433 **8 Claims**



1. In an electrolytic capacitor having a porous anodized valve-metal pellet anode, a hermetic glass-metal seal having a metal ring forming its periphery and a housing in the form of a can, the improvement comprises a thin layer of a ductile and solderable metal on the inner surface of the mouth of said can which extends into said can at most as far as the bottom of said seal.

4,538,213

VEHICLE HEADLIGHT ATTACHMENT

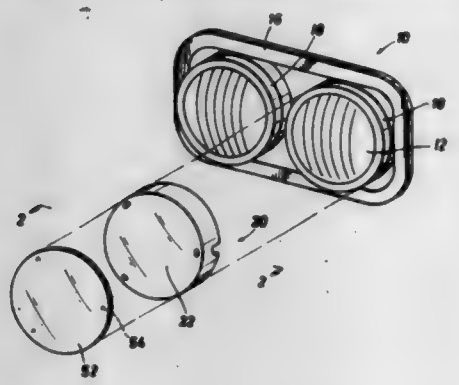
Jessie A. Martin, 15442 Linkshire, Houston, Tex. 77062

Continuation of Ser. No. 236,771, Feb. 23, 1981, abandoned, which is a continuation-in-part of Ser. No. 130,751, Mar. 31, 1980, abandoned. This application Mar. 7, 1984, Ser. No. 587,230
Int. Cl.³ B60Q *1/00*
U.S. Cl. 362—61 **7 Claims**

1. A detachable lens attachment for vehicle headlights having a substantially smooth headlight rim, comprising:

(a) a transparent surface having a diameter corresponding to the diameter of the headlight;

(b) an upstanding circumferential rim extending outwardly from said surface and located about the peripheral edge thereof having continuously, unbroken portions; and



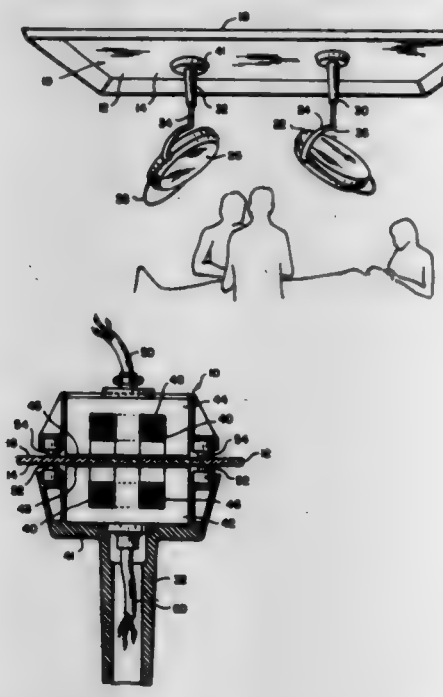
(c) a plurality of beads formed on the interior surface of said continuously, unbroken portions of said rim, said beads adapted to form a friction fit with the substantially smooth headlight rim.

4,538,214

MAGNETICALLY SUPPORTED SURGICAL LIGHT

Kenneth J. Fisher, and William R. Miller, both of Erie, Pa., assignors to American Sterilizer Company, Erie, Pa.

Filed Dec. 29, 1983, Ser. No. 566,580
Int. Cl.[3] F21S *1/02*
U.S. Cl. 362—147 18 Claims



1. An illumination system suspended from a continuous panel having an exposed surface and a concealed surface for use with a conventional power source comprising:

at least one light source suspended from the panel;

at least one split-core transformer for creating a magnetic field for transferring electrical energy through the panel to said light source, each said transformer adapted for sliding motion over the exposed and concealed surfaces while maintaining said transfer of electrical energy, each said transformer having two halves, one of said halves disposed on the concealed surface and connected to the power source and the other of said halves disposed on the exposed surface and connected to said light source; and

each of said halves comprising electroinductive coils enclosed in permanent magnets,

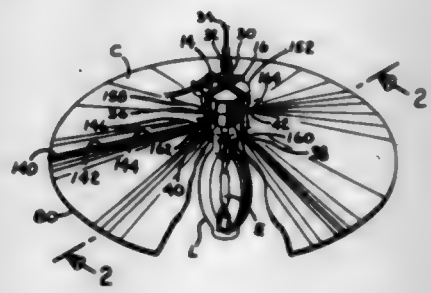
each of said magnets having rollers on which said magnet can slide over the one of the surfaces on which said magnet is disposed.

4,538,215

HALIDE AND LIKE LIGHT REFLECTOR AND SOCKET ASSEMBLY

Melvin J. De Marsh, 4306 SW. Juneau St., #11, Seattle, Wash. 98136

Division of Ser. No. 299,673, Sep. 8, 1981, Pat. No. 4,418,379.
This application Nov. 17, 1983, Ser. No. 552,698
The portion of the term of this patent subsequent to Dec. 29, 2000, has been disclaimed.
Int. Cl.[3] F21V *7/00*
U.S. Cl. 362—282 7 Claims



7. A lighting assembly especially adapted to enhance use thereof for effectively illuminating growing plants in a greenhouse or the like, said assembly comprising:

a conically shaped reflector in the form of a simple frustocone with the lower, concavical, reflecting surface thereof arranged at a uniform cone angle of about 76°–64° with respect to the center axis of the cone, said cone having a central opening about four inches in diameter, said cone being fabricated of nominally planar sheet metal stock, with a small segment cut therefrom along cuts extending generally radially of the cone, the radial cuts being joined generally adjacent the edges thereof to provide the conical configuration of the reflector;

a lamp socket mounted coaxially of and slightly above the central opening of the cone, and in open, spaced relation thereto for air circulation therebetween;

means attached to said socket by which the assembly can be hung or otherwise supported in a depending manner from overhead structure; and

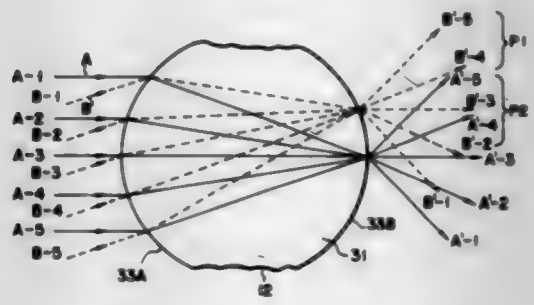
a high powered halide light mounted in said socket in part extending substantially below the plane of the outer edge of the conically shaped reflector.

4,538,216

LIGHTING APPARATUS

Leo Mori; Mamoru Tominaga, both of Yokohama, and Takashi Aoba, Ageo, all of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Jul. 21, 1982, Ser. No. 400,477
Claims priority, application Japan, Jul. 28, 1981, 56-118191
Int. Cl.[3] F21V *3/00*
U.S. Cl. 362—311 12 Claims



1. A lighting apparatus having a first light transmitting-cover through which light rays are projected, said first light transmitting-cover comprising:

a plate of light transmitting-material having a first and second surfaces;

a plurality of first segment lens elements of a same size and

a same shape, integrally formed with the plate and arranged on the first surface of the plate; and

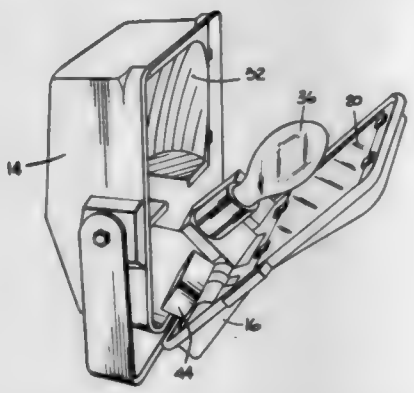
a plurality of second segment lens elements of a same size and a same shape, integrally formed with the plate and arranged on the second surface of the plate in face-to-face relation with the plurality of first segment lens elements, respectively, thereby forming a plurality of segment lenses, wherein the first and second segment lens elements of each pair have a common optical axis and convex surfaces and have substantially equal focal lengths so that a focal point of the first segment lens element lies on a convex surface of the second segment lens element and a focal point of the second segment lens element lies on a convex surface of the first segment lens element.

4,538,217

FLOODLIGHT LUMINAIRE

Robert L. Ewing, Newark; James S. Hughes, and Bruce Bruggeman, both of Columbus, all of Ohio, assignors to Manville Service Corporation, Denver, Colo.

Filed Sep. 16, 1983, Ser. No. 533,322
Int. Cl.³ F21V *17/00*
U.S. Cl. 362—375 **3 Claims**



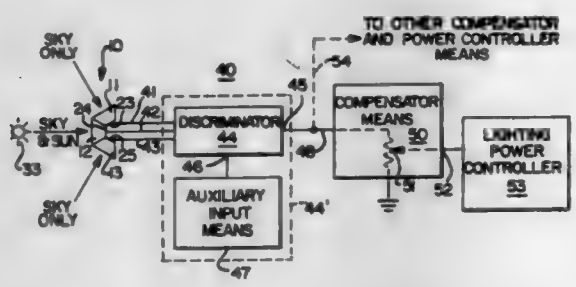
1. A luminaire comprising a housing, a luminaire door, pivotedly and detachably mounted on said housing, a reflector fixedly attached in the interior of said housing; a lamp socket and lamp mounted on said luminaire door, and electrical components of said luminaire mounted on said luminaire door below said lamp socket; an opening in said luminaire door with a lens covering said opening.

4,538,218

SKYLIGHT SENSOR AND CONTROL SYSTEM

Francis M. Watson, York, Canada, assignor to Honeywell Ltd., Canada

Filed Nov. 3, 1983, Ser. No. 548,522
Claims priority, application Canada, May 20, 1983, 428593
Int. Cl.³ F21S *11/00*
U.S. Cl. 362—802 **15 Claims**



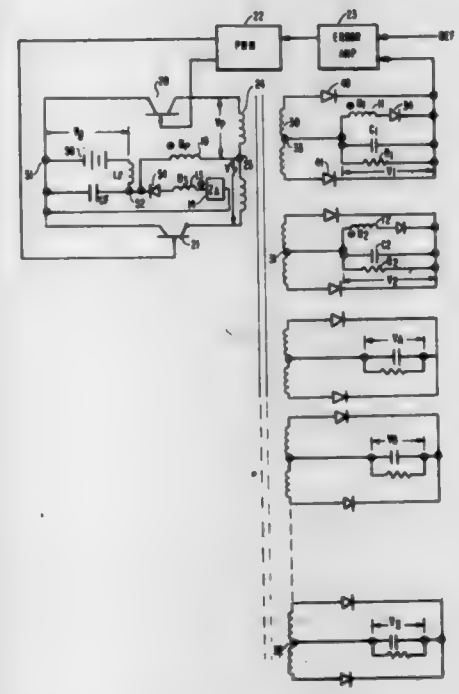
1. A skylight sensor and control system for the control of the interior illumination of an area having fenestration means and controllable artificial light source means, including: light sensor means having an active area adapted to be mounted so as to expose said active area to the exterior of said fenestration means; said light sensor means including a plurality of adjacent segments with said segments shielded from each other so that each of said segments form light gathering means; a front portion for each of said segments and a corresponding rear portion for each of said segments; said front portion of each of said segments exposed to the exterior of said fenestration means; said rear portion of each of said segments including light responsive means collecting light from said active area; discriminator means including input connection means connected to said light responsive means, and said discriminator means further having output means; said discriminator means providing said output means with a voltage from the light responsive means having the lowest level of illumination; and lighting power controller means adapted to control said artificial light source means to lower the level of illumination from said artificial light source means in response to an increase in the light at said light sensor means.

4,538,219

MULTIWINDING INDUCTOR AND ASSOCIATED APPARATUS

David Morris, Woodbridge, and Albrecht Schwarz, North Caldwell, both of N.J., assignors to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Jul. 15, 1983, Ser. No. 514,138
Int. Cl.³ H02M *3/335*
U.S. Cl. 363—26 **19 Claims**



1. In a power control circuit, said power control circuit of the type employing a transformer having a primary winding with a center tap and at least three secondary windings, said primary winding having first and second terminals coupled to switching devices for selectively controlling the power applied to said winding during a first free wheeling mode when both switching device are off and during a second power stroke mode when at least one switching device is on with the on time plus the off time equal to the period of said circuit, said switching devices having an input terminal adapted to be coupled to a source of power to be controlled, the combination therewith of an improved multiwinding inductor, said inductor comprising:

a first winding (N_P) having one terminal coupled to said center tap of said primary winding and a second terminal adapted to be coupled to said power source a second winding (N_3) having one terminal coupled through a rectifier to said second terminal of said first winding and a second terminal of said second winding coupled through an auxiliary impedance to said input terminal of said switching devices, a third winding (N_1) of said inductor coupled to a first one of said secondary windings of said transformer, and a fourth winding (N_2) of said inductor

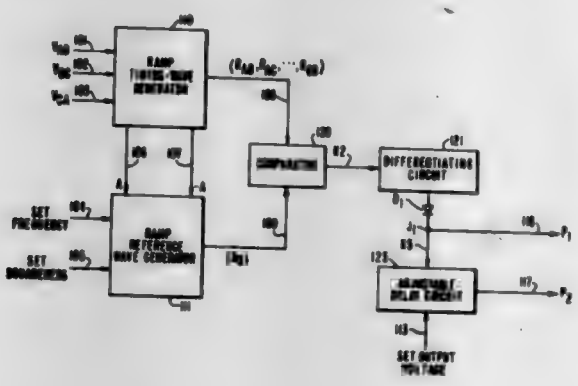
coupled to a second one of said secondary windings of said transformer, whereby said third secondary winding has no winding associated with said inductor with said second winding of said inductor and said auxiliary impedance operative to transfer back stored energy in said circuit to said power source during said free wheeling mode.

4,538,220

ADJUSTABLE FREQUENCY AC MOTOR DRIVE USING AN UNRESTRICTED FREQUENCY CHANGER SYSTEM

Laszlo Gyugyi, Penn Hills Township, Allegheny County, Pa., assignor to Westinghouse Electric Corp., Pittsburgh, Pa.

Filed Nov. 3, 1983, Ser. No. 548,546
Int. Cl.³ H02M *5/27*
U.S. Cl. 363—161 **6 Claims**



6. An unrestricted frequency changer (UFC) controlled by a train of control pulses having a rate selectable in relation to frequency, said rate being increased beyond a predetermined operating frequency of the UFC during selected initial and final portions of a half cycle of the output AC power supply of the UFC, and said rate being at the natural commutation rate of the input AC power supply of the UFC during the intermediate portion thereof, whereby at higher operating frequency the UFC delivers a trapezoid-like waveform.

4,538,221

APPARATUS AND METHOD FOR MIXING A PLURALITY OF SUBSTANCES

Stephen F. Crain; Steven H. Gray; Edward P. Arnold, and Timothy J. Dodd, all of Duncan, Okla., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 6, 1983, Ser. No. 483,001
Int. Cl.³ G06F *15/46;* G05D *11/13*
U.S. Cl. 364—172 **10 Claims**

1. An apparatus for controlling the addition of a substance to a primary flow, comprising:

conduit means for providing a path for said primary flow;

additive means for flowing said substance into said conduit means;

First detector means for detecting a rate of said primary flow;

second detector means for detecting a rate of said substance when said additive means flows said substance into said conduit means, said second detector means including:

speed detector means for detecting a speed rate at which said additive means is operating; and

flow detector means for detecting a flow rate of said substance; and

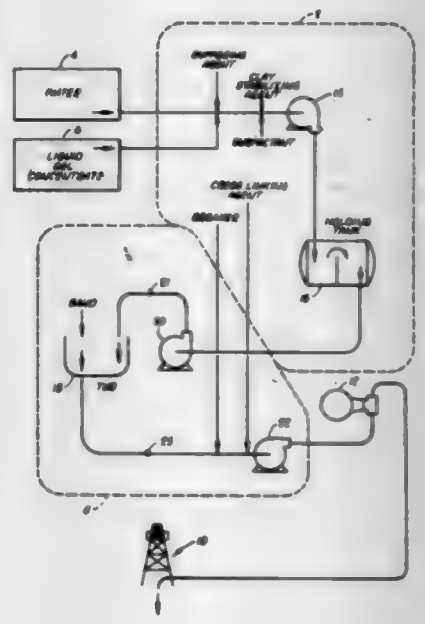
control means, responsive to said first detector means and said second detector means, for controlling said additive means, said control means including a unified control panel comprising:

a channel control sector including:

first data entry means for manually entering a first data number specifying a first magnitude of an additive substance flow rate determining parameter for use by said control means in controlling said additive means;

second date entry means for manually entering a second data number specifying a second magnitude of said additive substance flow rate determining parameter for use by said control means in controlling said additive means; and

means for directing said control means to use either said



speed rate or said flow rate for controlling said additive means; and

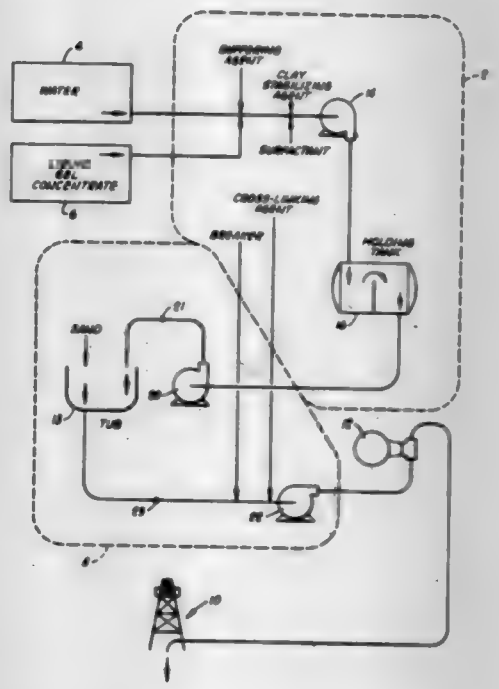
means for selectably directing said control means to utilize either said first data number or said second data number in controlling said additive means.

4,538,222

APPARATUS AND METHOD FOR MIXING A PLURALITY OF SUBSTANCES

Stephen F. Crain; Steven H. Gray; Michael L. Green, all of Duncan, Okla., and Ronald A. Gibson, Camarillo, Calif., assignors to Halliburton Company, Duncan, Okla.

Filed Apr. 6, 1983, Ser. No. 483,031
Int. Cl.³ G06F *15/46;* G05D *11/13*
U.S. Cl. 364—172 **14 Claims**



1. An apparatus for controlling the mixing of a plurality of substances, comprising:

portable support means for being transported;

a holding tank mounted on said support means;

first container means, mounted on said support means, for holding a first additive;

second container means, mounted on said support means, for holding a second additive;

inlet conduit means, mounted on said support means, for providing a flow path to said holding tank;

outlet conduit means, mounted on said support means, for providing a flow path from said holding tank;

first connector means, mounted on said support means, for providing a flow path from said first container means to said inlet conduit means;

second connector means, mounted on said support means, for providing a flow path from said second container means; and

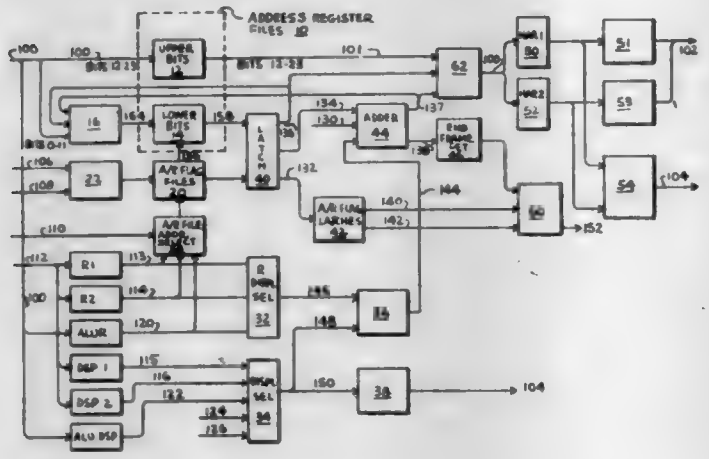
control means, for controlling, in response to a flow along said inlet conduit means, the flow of said first additive from said first container means into said inlet conduit means so that a selectable amount of said first additive is added to a fluid flowing through said inlet conduit means to define a reactable mixture flowed into said holding tank, and for controlling, in response to a flow along said outlet conduit means occurring at a time after said mixture has reacted in said holding tank, the flow of said second additive from said second container means into the reacted mixture.

4,538,223

COMPUTER OPERAND ADDRESS COMPUTATION

Richard Vahlstrom, Villa Park, and Dennis R. Keats, Irvine, both of Calif., assignors to Microdata Corporation, Irvine, Calif.

Filed Sep. 29, 1982, Ser. No. 427,830
Int. Cl.³ G06F *9/36*
U.S. Cl. 364—200 **5 Claims**



1. An address computation (ADC) system for use in a computer system for determining an absolute main memory address of an operand stored in main memory wherein the initial address of the operand is defined in terms of a base address, a displacement from the base address and a constant comprising:

initial address input means to supply the ADC with the initial address originating from a direct software instruction from the computer system arithmetic logic unit (ALU) and a firmware word latched onto an instruction register in the ALU;

address register means for storing the base address of the operand;

displacement register means for storing the initial displacement for the operand received from the firmware word;

adder means for combining the constant received from the firmware word and the displacement with the base address to produce the absolute main memory address; and

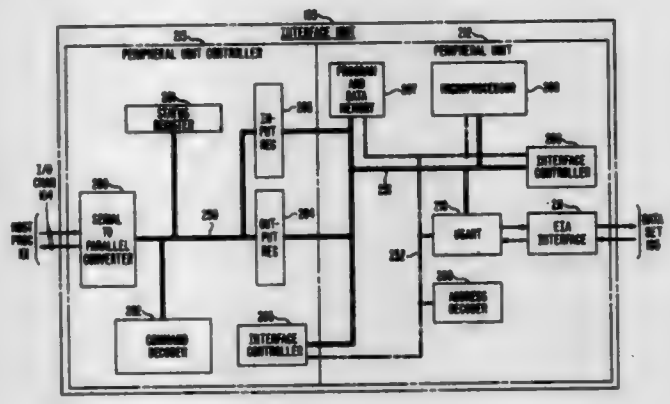
output means to supply the absolute main memory address to memory address bus means in the computer system via at least one of two separate, selectable hardware address registers.

4,538,224

DIRECT MEMORY ACCESS PERIPHERAL UNIT CONTROLLER

Thomas A. Peterson, Naperville, Ill., assignor to AT&T Bell Laboratories, Murray Hill, N.J.

Filed Sep. 30, 1982, Ser. No. 428,681
Int. Cl.³ G06F *9/24, 3/00*
U.S. Cl. 364—200 **20 Claims**



1. A direct memory access peripheral unit controller for loading a peripheral unit program received from a host processor into a peripheral unit; said peripheral unit having a random access memory, a peripheral processor, a data bus, and an address bus; said data and address buses interconnecting said memory and said peripheral processor; said memory having a data portion addressable with a data address for storing data and a program portion addressable with a program address for storing said program; said peripheral processor being responsive to said program for transferring data between said host processor and said data portion of said memory on said data bus; said direct memory access peripheral unit controller comprising:

buffer means for transferring information including a controller address, said program address, and said program received from said host processor onto said data bus;

direct memory access controller means having a controller location addressable with said controller address received from said address bus to store said program address received from said host processor on said data bus for addressing said program portion with said program address on said address bus; and

host processor access means for transferring to said address bus said controller address received from said host processor on said data bus.

4,538,225

TABLE-DRIVEN APPARATUS FOR DATA DISPLAY AND MODIFICATION

Edwin R. Banks, 1208 Country Ct., Cary, N.C. 27511; Roger C. Ray, SW. 9320 Royal Woodlands, Beaverton, Oreg. 97005, and Paul B. Dale, 210 Old Westboro Rd., North Grafton, Mass. 01536

Filed Mar. 15, 1982, Ser. No. 358,509
Int. Cl.³ G06F *3/023, 3/14, 9/00*
U.S. Cl. 364—200 **36 Claims**

1. In a data processing system, editing means for modifying data codes comprising:

(1) receiving means for receiving input codes in said editing means;

(2) memory means including

(a) buffer memory means for storing said data codes,

(b) control data memory means for storing at least state data specifying the state of said editing means, and

(c) editing table memory means for storing an editing table including

(i) editing instruction sequences corresponding to said input codes for specifying editing operations modifying said data codes in said buffer memory means, and

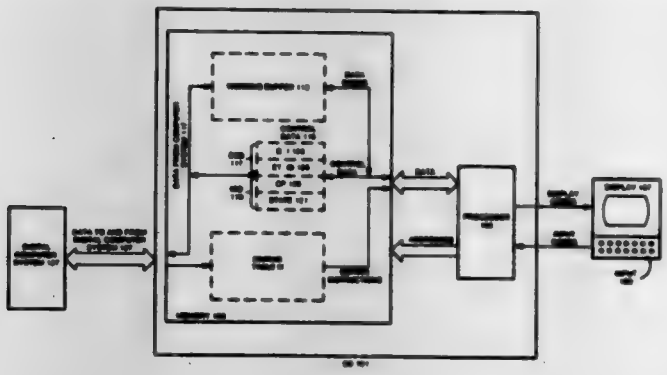
(ii) a plurality of sections containing said editing instruc-

tion sequences, each said section corresponding to one value of said state data; and

(3) processing means connected to said receiving means and said memory means including

(a) means for receiving said input codes from said receiving means,

(b) for each said input code and one said value of said state data, means for determining the location of said corresponding said section corresponding to said one said value



and means for determining the location of said editing instruction sequence corresponding to said input code in said corresponding said section,

(c) means for receiving said editing instructions of said corresponding said editing instruction sequence, and

(d) means for responding to said editing instructions of said corresponding said editing instruction sequence by modifying said data codes in said buffer memory means,

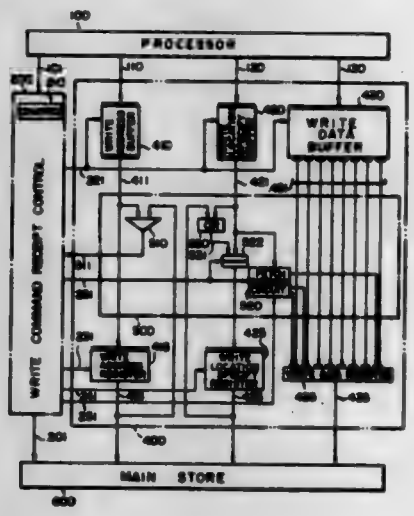
whereby said data codes are modified by said processing means in response to said input codes.

4,538,226

BUFFER CONTROL SYSTEM

Kiyoshi Hori, Tokyo, Japan, assignor to NEC Corporation, Japan

Filed Jan. 25, 1984, Ser. No. 573,745
Claims priority, application Japan, Jan. 27, 1983, 58-11841
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—200 4 Claims



1. A buffer control apparatus for controlling delivery of data from a processing unit equipped with a buffer device to a main store, comprising:

write command request means for generating a write command request signal, a write address signal, a write data signal and a write location specify signal;

store means for storing the write address signal, the write data signal and the write location specify signal which are supplied thereto from said write command request means;

counter means for responding to the write command request signal from the write command request means by incrementing at a predetermined time interval;

command signal generator means for generating a command signal when said counter means reaches a predetermined value;

comparator means for comparing a last write address stored in the store means before the command signal generator means generates the command signal and an address of a subsequent request;

merging means for writing subsequent write data over preceding write data stored in the store means in response to a coincidence output of the comparator means and according to a write command by a subsequent request having a write address which is coincident with the last write address; and

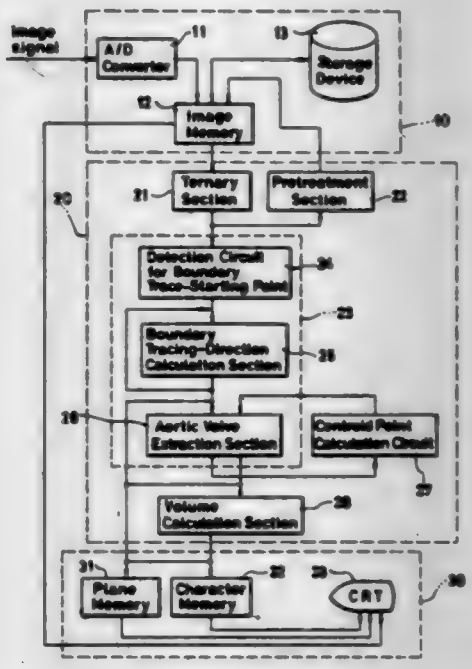
data read command means for delivering a command for reading data out of the store means in response to the command signal from the command signal generator means.

4,538,227

MEDICAL IMAGE PROCESSOR

Kazuo Toraichi, Sayama; Nobuyuki Otsu, Yatabemachi, and Motomu Suzuki, Ohtawara, all of Japan, assignors to Agency of Industrial Science and Technology and Ministry of International Trade and Industry, both of Tokyo, Japan

Filed Sep. 30, 1982, Ser. No. 431,384
Claims priority, application Japan, Oct. 5, 1981, 56-157410
Int. Cl.[3] G06F *15/42*
U.S. Cl. 364—414 12 Claims



1. An image processor comprising:

an image input circuit including an analog-to-digital converter for converting a provided gray-level image into a quantized image signal, and an image memory for successively storing an image on the basis of the quantized image signal from the analog-to-digital converter;

an image processing circuit including,

a ternary circuit for producing a ternary code signal based on the quantized signals outputted from the image memory in said image input circuit on the basis of a gray-level histogram,

a boundary extraction means for extracting a boundary of a measured part within the image to be processed on the basis of the ternary code signal from said ternary circuit and for producing a corresponding boundary signal,

a volume calculation means for integrating the boundary signal from said boundary extraction means and the value of gray-level within said boundary to produce a volume signal corresponding to the volume of the measured part, and

a centroid operation means for obtaining the centroid of the measured part on the basis of the volume signal from said

boundary extraction means and for producing a corresponding centroid signal; and

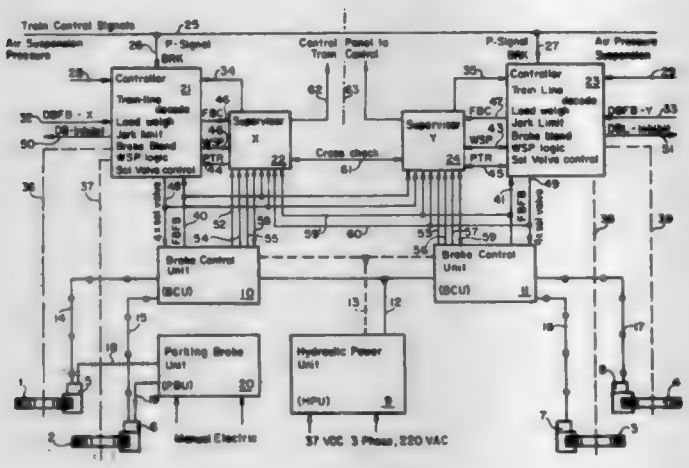
an output circuit including a plane memory for storing at least selected of the signals produced by said image processing circuit and a display device for displaying images corresponding to at least selected of the signals stored in said plane memory.

4,538,228

HYDRAULIC PRESSURE ACTUATED BRAKE SYSTEM FOR RAIL VEHICLES

Nicholas J. Brearey, and Rolf Baumgarth, both of Gaithersburg, Md., assignors to Knorr-Bremse GmbH, Munich, Fed. Rep. of Germany

Filed Sep. 29, 1982, Ser. No. 427,385
Int. Cl.[3] B60T *13/68*; G06F *15/20*
U.S. Cl. 364—426 **31 Claims**



19. A brake system for a vehicle comprising:

a plurality of brake actuators for engaging the brakes of said vehicle, said brake actuators applying a braking force to said brakes in response to an applied fluid pressure;

means for applying a pressure to said brake actuators including a plurality of valve means, each valve means connected to control the pressure to a pair of actuators, and responsive to a plurality of electrical signals for individually controlling the pressure to a pair of actuators;

a plurality of pressure sensitive transducers for measuring the fluid pressure applied to each pair of brake actuators;

a pressure switch associated with each of said valve means having a predetermined pressure threshold for a switching state;

a control unit connected to receive signals from said transducers, and pressure switches, and to receive a plurality of brake operating parameters including a demand pressure command, said control unit providing a first set of actuating electrical signals to said valve means to provide a closed loop brake system at a pressure setting indicated by said demand pressure, said control unit including:

a first memory, and means for writing representative values of fluid pressure and valve means settings for a plurality of demand pressure settings during closed loop operation of said brake system in said first memory, and, a second memory for storing said predetermined pressure switch threshold;

means for detecting a fault in said brake system from said transducer signals, said means connected to disable said closed loop operation;

means for detecting the state of said pressure switches when a fault is detected;

means for establishing an initial open loop fluid pressure on said brake actuators, said initial pressure being determined in response to a comparison of the state of said pressure switch and a stored predetermined pressure level, said initial open loop pressure being selected in a direction to change the state of said pressure switch;

means for reading out of said first memory valve means setting data for obtaining a pressure setting indicated by a subsequently received demand pressure command; and

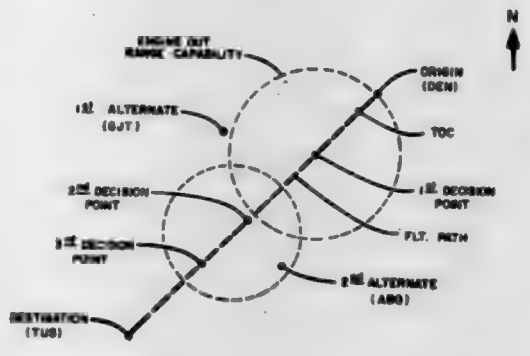
means for providing a second set of actuating electrical signals to said valve means in response to said read out valve means setting data whereby said valve means are first operated in an open loop mode with said predetermined pressure level, and then with fluid pressure determined in response to earlier stored closed loop data from said transducers selected in response to a pressure demand signal.

4,538,229

SYSTEM FOR PREPARING AIRCRAFT DRIFTDOWN PLANS

Karen L. Baltzer, Minneapolis, and Jan B. Peterson, Burnsville, both of Minn., assignors to Kavouras, Inc., Minneapolis, Minn.

Filed Mar. 10, 1983, Ser. No. 474,149
Int. Cl.[3] G06F *15/50*
U.S. Cl. 364—428 **4 Claims**



1. A method for preparing driftdown plans for aircraft, comprising the steps of:

(a) developing a first data base defining the height above sea level of terrain at predetermined geographic coordinate locations;

(b) storing said first data base in the memory of a digital computer, each height value entry in said data base being at a predetermined addressable location in said memory;

(c) developing a second data base defining driftdown flight performance characteristics of a variety of multi-engine aircrafts upon the loss of power of at least one of said engines for a variety of engine types;

(d) storing said second data base in said memory of said digital computer;

(e) entering flight specification data, including the type of aircraft, the type of engine on said aircraft, the load factor of the aircraft and the geographic location of a flight origin and a flight destination for a proposed route into said computer;

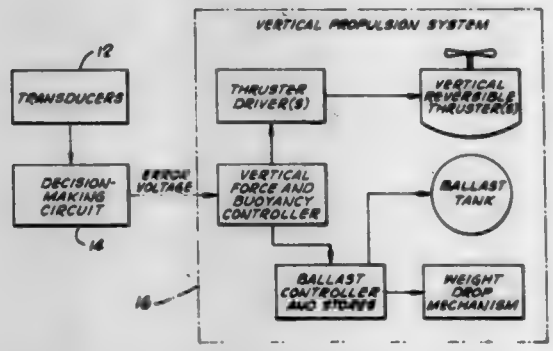
(f) executing a program of instructions in said computer for comparing terrain height information in said first data base related to the routing of the aircraft between said origin and said destination to driftdown altitude in said flight performance characteristics along said proposed route in said second data base; and

(g) providing a visual manifestation based on the result of the comparison of alternate landing sites which the aircraft would be capable of reaching, while maintaining a predetermined safe clearance distance above the terrain, in the event the loss of power of at least one engine at predetermined, spaced points along said proposed route.

4,538,230
METHOD AND APPARATUS FOR CONTROLLING ALTITUDE

Dennis K. Reust, Houston, Tex., and John S. Gergely, Ponca City, Okla., assignors to Conoco Inc., Ponca City, Okla.

Filed Oct. 29, 1982, Ser. No. 437,891
Int. Cl.³ G06G 7/78; G05D 1/00
U.S. Cl. 364—433 14 Claims



1. An apparatus for maintaining an object at a predetermined altitude by generating an altitude control signal from a first signal representing a first ambient condition and from a second signal representing a second ambient condition, said apparatus comprising:

means, responsive to said first signal, for providing a vertical velocity output;

integration means for integrating said second signal, thereby providing an integration output;

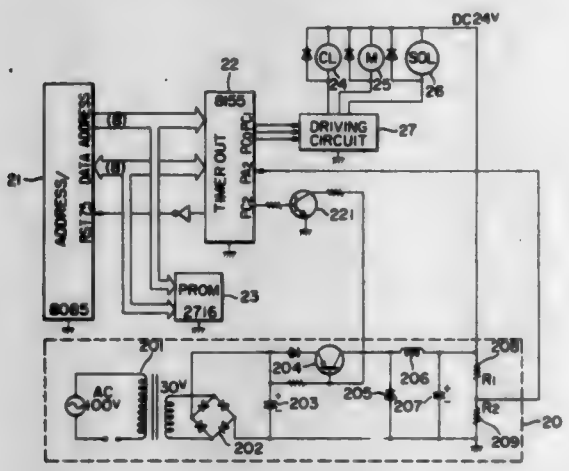
summing means for summing said vertical velocity output with said integration output, thereby providing a summed output;

comparison means for comparing said summed output with a predetermined reference signal representing an altitude to be maintained whereby said output of comparison means provides said altitude control signal, when said summed output differs from said predetermined reference signal and altitude control means responsive to said altitude control signal for maintaining said object at said predetermined altitude.

4,538,231
CIRCUIT FOR ELECTRIC POWER SOURCE

Shunichi Abe; Mitsuo Akiyama, and Yoshihiko Kudo, all of Tokyo, Japan, assignors to Konishiroku Photo Industry Co., Ltd., Tokyo, Japan

Filed May 19, 1982, Ser. No. 379,745
Claims priority, application Japan, May 28, 1981, 56-82373
Int. Cl.³ G05F 1/46; G06F 15/20
U.S. Cl. 364—483 6 Claims



1. A method for stabilizing an output of a D.C. power source by using a micro-computer comprising the steps of:

regulating an input voltage so as to provide an output voltage according to a controlling signal;

monitoring a voltage relating to said output voltage;

comparing said monitored voltage with a predetermined threshold voltage;

operating a periodic interruption process of said micro-computer in accordance with a timer sequence;

and generating said controlling signal for said regulating step so that said output voltage is stabilized according to said comparing step in said periodic interruption process.

5. An apparatus for stabilizing an output of a D.C. power source by using a micro-computer comprising:

regulating means for regulating an input voltage to provide an output voltage according to a controlling signal;

monitoring means for monitoring a voltage relating to said output voltage;

comparing means for comparing said monitored voltage with a predetermined threshold voltage;

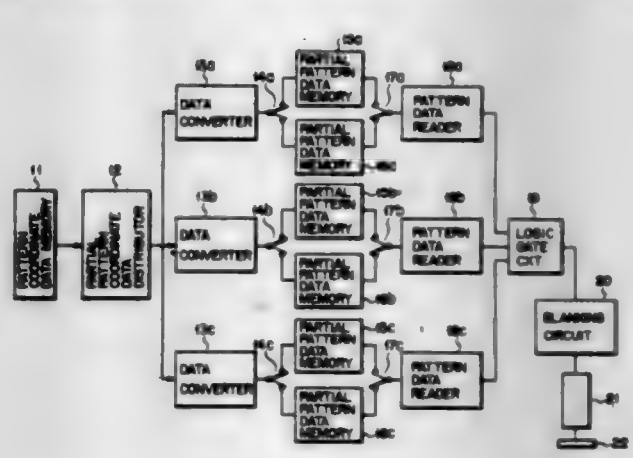
interrupting means for operating a periodic interruption process of said micro-computer in accordance with a timer sequence; and

generating means for generating said controlling signal for said regulating means so that said output voltage is stabilized by an output of said comparing means in said periodic interruption process.

4,538,232
ELECTRON-BEAM LITHOGRAPHIC APPARATUS

Kiyomi Koyama, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Filed Apr. 21, 1982, Ser. No. 370,403
Claims priority, application Japan, Apr. 30, 1981, 56-65912
Int. Cl.³ G06F 15/40; G21G 5/00; G21K 5/00
U.S. Cl. 364—491 7 Claims



1. An electron-beam lithographic apparatus comprising:

means for generating address data corresponding to a plurality of partial patterns in parallel;

pattern memory means specified in parallel by the address data from said address data generating means for forming bit patterns corresponding to said partial patterns in parallel;

means for synchronously reading out in parallel said bit patterns from said memory means;

means for synthesizing said bit patterns read out in parallel by said reading means to produce a resultant bit pattern in the form of bit data; and

means for effecting blanking of an electron beam according to the bit data from said synthesizing means to thereby draw a pattern on an object;

wherein said pattern memory means is constituted by a plurality of pair memories, and one bit pattern is formed in one memory in each of said pair memories while previously written bit pattern is being read out from the other memory in each of said pair memories.

7. An electron-beam lithographic apparatus, comprising:

a main memory for storing a plurality of partial patterns;

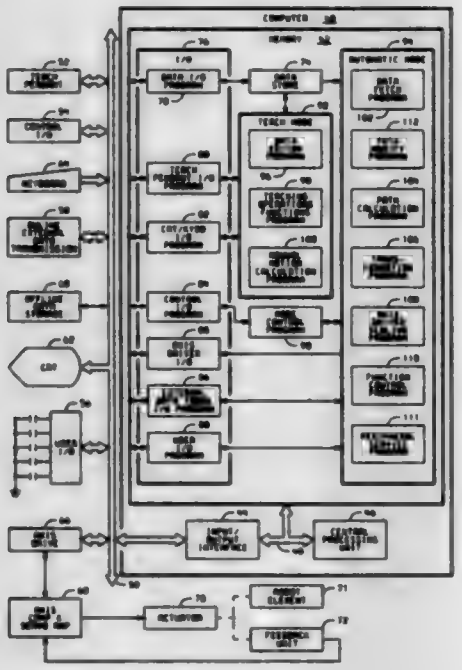
a data distributor connected to said memory for distributing said partial patterns from said memory;
a plurality of parallel data converters for receiving said partial patterns from said data distributor;
a plurality of pairs of parallel pattern memories, each of said pairs being connected to a corresponding one of said data converters;
a plurality of pattern data readers, each of said readers being connected to a corresponding pair of pattern memories for receiving a partial pattern therefrom;
a first pattern memory of each pair being connected to a data converter while a second pattern memory of each pair is connected to said data reader, said pattern memories alternating connections so that each pattern memory alternately receives and stores a partial pattern from said data converter and reads out said partial pattern to said data reader;
a logic gate circuit for receiving a plurality of partial patterns from said plurality of data readers logically combining said partial patterns to form a complete pattern;
a blanking circuit connected to said logic gate circuit for blanking an electron beam according to said complete pattern.

4,538,233

APPARATUS AND METHOD FOR OSCILLATORY MOTION CONTROL

Brian J. Resnick; Elena R. Messina; Madhukar Bhatia, and John G. Holmes, all of Cincinnati, Ohio, assignors to Cincinnati Milacron Inc., Cincinnati, Ohio

Filed Oct. 19, 1982, Ser. No. 435,259
Int. Cl.³ G06F *15/46*; G05B *19/42*
U.S. Cl. 364—513 **12 Claims**



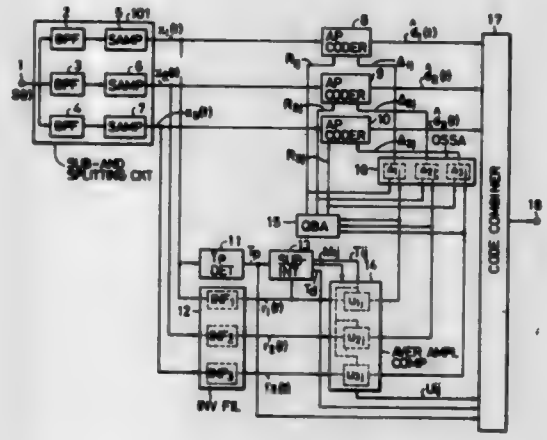
1. Method for controlling the motion of a point associated with a function element carried by a machine, the machine having a plurality of movable members and actuators for effecting motion of the function element, the controlled motion describing an oscillatory pattern in a selectable plane through a linear path between two positions, the positions being defined by position input signals representing position coordinates relative to a predetermined coordinate system, the oscillatory pattern defining excursions about the path, the oscillatory pattern being defined by oscillatory pattern parameter input signals, the selectable plane orientation being defined by selectable plane input signals, and the point velocity being defined by a velocity input signal, the method comprising the steps of:
(a) producing an incremental distance signal in response to the position input signals and the velocity input signal, the incremental distance signal representing an increment of displacement defining an intermediate position along the linear path;
(b) producing an incremental pattern amplitude signal in response to the incremental distance signal and the pattern parameter input signals, the incremental pattern amplitude signal representing the amplitude of an excursion described by the oscillatory pattern at the intermediate position;
(c) producing increment coordinate signals in respone to the incremental distance signal, the incremental amplitude signal, and the selectable plane input signals, the increment coordinate signals representing coordinates with respect to the predetermined coordinate system of an intermediate position displaced from the path by the incremental excursion amplitude;
(d) producing actuator control signals in response to the increment coordinate signals, the actuator control signals representing machine member displacements between the position of the point and the position defined by the increment coordinate signals;
(e) applying the actuator control signals to the actuators to effect motion of the point to the intermediate position defined by the increment coordinate; and
(f) iterating steps (a) through (e) to move the point along the oscillatory pattern between the two positions.

4,538,234

ADAPTIVE PREDICTIVE PROCESSING SYSTEM

Masaaki Honda, Tokyo; Fumitada Itakura, Hoya, and Nobuhiko Kitawaki, Iruma, all of Japan, assignors to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Sep. 2, 1982, Ser. No. 414,266
Claims priority, application Japan, Nov. 4, 1981, 56-177564
Int. Cl.³ G10L *1/00*
U.S. Cl. 364—513.5 **15 Claims**



1. An adaptive predictive processing system comprising:
sub-band splitting means for splitting an input signal into a plurality of sub-bands and producing sampled sub-band signals from the respective sub-bands;
adaptive predictive coding means connected to the respective outputs of said sub-band splitting means for subjecting the respective sub-band signals to adaptive predictive coding and producing adaptively quantized residual signals for the respective sub-bands, each of said adaptive predictive coding means including linear predictor means for producing a predicted value signal based on the quantized residual signal, a subtractor for receiving corresponding one of the subband signals from the input of said adaptive predictive means and the predicted value signal from said predictor means and providing therefrom a difference therebetween as a prediction residual signal, quantizer means connected to the output of said subtractor for producing the quantized residual signal, and adder means having inputs connected to the output sides of said quantizer means and said linear predictor means for adding the quantized residual signal and the predicted value signal to produce a locally decoded sub-band signal and

supplying the locally decoded sub-band signal to the input of said linear predictor means;

inverse filter means connected to the respective outputs of said sub-band splitting means for producing pseudo-residual signals of the respective sub-bands by subjecting the respective sub-band signals to inverse filtering processes;

pitch detecting means connected to one of the outputs of said sub-band splitting means corresponding to the lowest subband, for detecting a pitch period T_p of the sub-band signal;

sub-interval setting means connected to the output of said pitch detecting means and one of the outputs of said inverse filter means corresponding to the lowest sub-band, for dividing a pitch interval in the pseudo-residual signal equal to the detected pitch period into a plurality of sub-intervals and setting a sub-interval position T_d of the pitch interval relative to an analysis frame in the pseudo-residual signal;

average amplitude detecting means connected to the respective outputs of said inverse filter means and the output of said sub-interval setting means, for detecting average amplitudes Uij of the pseudo-residual signals in the respective subbands during each of the sub-intervals;

quantization bit number allocation means connected to the outputs of said average amplitude detecting means, for receiving the detected average amplitudes Uij of the respective pseudo-residual signals during each of the sub-intervals and computing, from the average amplitudes Uij, a number of bits Rij to be allocated to each of the sub-intervals in the respective sub-bands; and

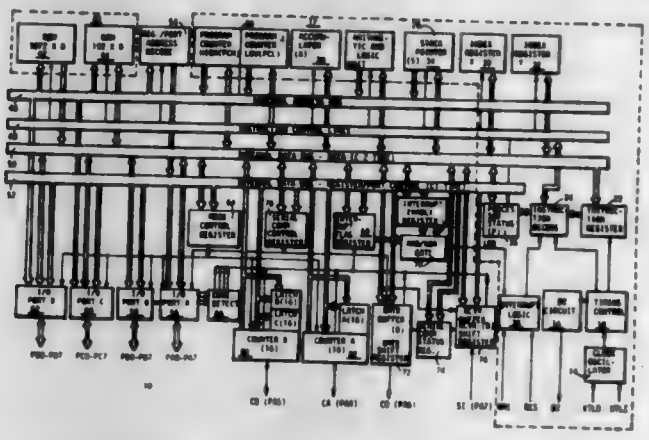
quantization step size computing means connected to the outputs of said quantization bit number allocation means and the output of said average amplitude detecting means, for receiving therefrom the computed allocation bit numbers Rij and the average amplitudes Uij and computing, from the allocation bit numbers and the average amplitudes, quantization step sizes Δij for the respective sub-intervals in the respective sub-bands, wherein the allocation bit numbers Rij from said quantization bit number allocation means and the quantization step sizes Δij from said quantization step size computing means are supplied to said quantizer means in said adaptive predictive coding means of the corresponding sub-band, thereby to adaptively control therewith the quantization of the prediction residual signals in the respective sub-bands.

4,538,235

MICROCOMPUTER RETRIGGERABLE INTERVAL COUNTER

Jerrold V. Henning, Anaheim, Calif., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Aug. 19, 1982, Ser. No. 409,485
Int. Cl.³ G06F *7/00*
U.S. Cl. 364—569 **20 Claims**



1. A microcomputer having an interval counter for timing the duration between successive input signals so as to provide a maskable output interrupt signal which is indicative of said time duration and to which said microcomputer is responsive, said interval counter comprising:

receiving means for storing a preset count number corresponding to a preset time duration;

counting means for periodically decrementing a count number and producing said output interrupt signal when said count number is fully decremented and when the time interval between said input signals exceeds the count number; and

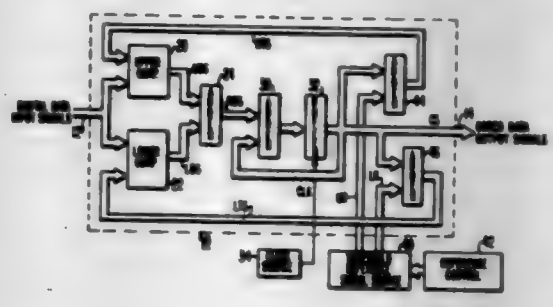
control means responsive to the receipt of said input signals in order to cause said preset count number to be transferred from said receiving means to said counting means.

4,538,236

ADAPTIVE DIGITAL SIGNAL CORING CIRCUIT

Robert A. Dischert, Burlington, N.J., and William H. Meise, Wrightstown, Pa., assignors to RCA Corporation, Princeton, N.J.

Filed Sep. 24, 1982, Ser. No. 422,667
Int. Cl.³ H04B *15/00*; H04N *5/14*
U.S. Cl. 364—574 **12 Claims**



1. Digital signal coring apparatus comprising:

a source of digital input signals;

a source of first and second digital signals having values which determine a range of digital values;

modifying means coupled to said source of first and second digital signals and responsive to a cored output signal for generating third and fourth digital signals corresponding to time varying upper and lower boundary values of said range of values;

comparison means coupled to outputs of said source of digital input signals and said modifying means, for producing signal sample values representing the degree to which the input digital signals depart from said range of digital values; and

means coupled to said comparison means and responsive to said signal sample values for producing said cored output signal by summing successive signal sample values.

4,538,237

METHOD AND APPARATUS FOR CALCULATING THE RESIDUE OF A BINARY NUMBER

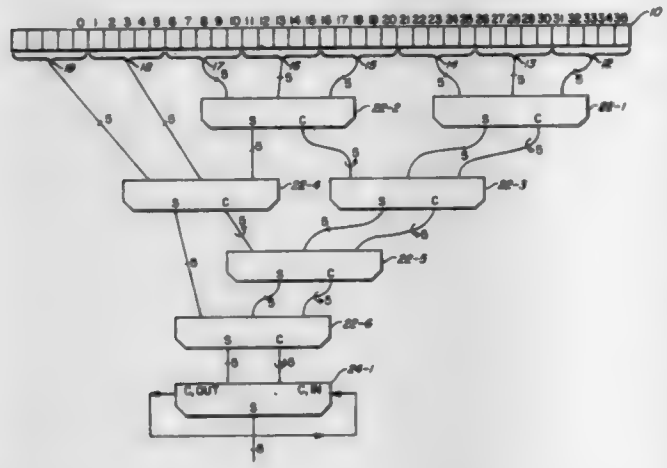
Joseph C. Circello, Phoenix, Ariz., assignor to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 18, 1983, Ser. No. 458,795
Int. Cl.³ G06F *7/38*
U.S. Cl. 364—746 **12 Claims**

1. Apparatus for calculating the residue of a binary number with respect to a check base, said binary number being partitioned into a plurality of equal sized segments, with each segment including b contiguous bits where b is an integer greater than one, comprising:

carry save adder means for adding the segments of the binary number and for reducing said segments to a single sum segment and a single rotated carry segment the single rotated carry segment being a carry segment wherein each bit position of the carry segment is increased in its bit significance by one, and further wherein the most significant bit is rotated to the least significant bit position; and

one's complement full adder means for adding said single sum segment and single rotated carry segment to produce



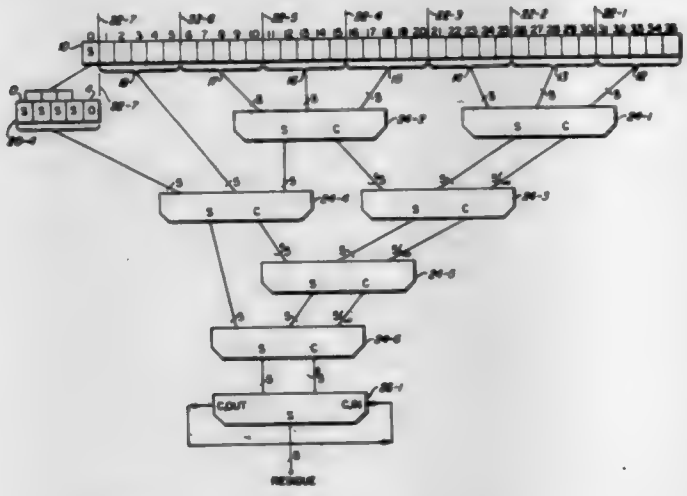
the residue of said binary number with respect to said check base.

4,538,238

METHOD AND APPARATUS FOR CALCULATING THE RESIDUE OF A SIGNED BINARY NUMBER

Joseph C. Circello, Phoenix, and Russell W. Guenthner, Glendale, both of Ariz., assignors to Honeywell Information Systems Inc., Phoenix, Ariz.

Filed Jan. 18, 1983, Ser. No. 458,794
Int. Cl.[3] G06F *7/38*
U.S. Cl. 364—746 **12 Claims**



1. Apparatus for calculating the residue of a signed binary number in two's complement notation, in which the most significant bit of the binary number is a sign bit, the bits of the binary number of lesser significance than the sign bit being partitioned into a plurality of equally sized number segments having segment boundaries, comprising:

circuit means for forming a sign segment having a segment boundary in which the sign position of the sign segment is filled with a logical zero and occupies the same position in the sign segment relative to a sign segment boundary as the sign bit of the number occupies with respect to the nearest boundary of a number segment, the other bit positions of the sign segment being filled with the sign bit;

carry save adder means for adding in 1's complement notation the number segments and sign segment and for reducing said segments to a single sum segment and a single rotated carry segment the single rotated carry segment being a carry segment wherein each bit position of the carry segment is increased in its bit significance by one, and further wherein the most significant bit is rotated to the least significant bit position; and

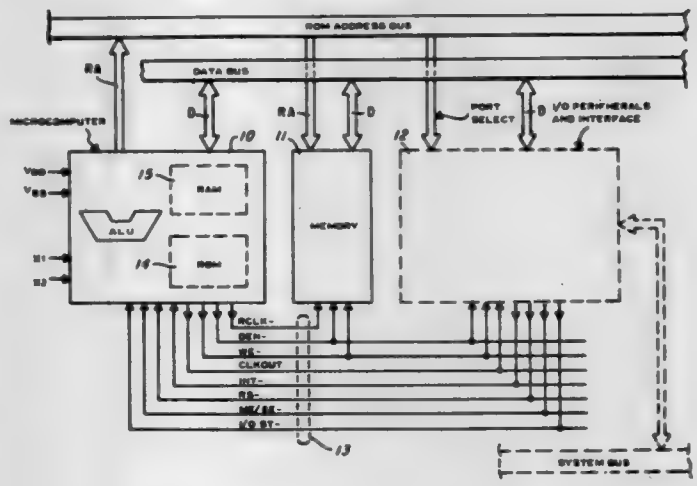
one's complement full adder means for adding said single sum and single rotated carry segment to produce the residue of said signed binary number.

4,538,239

HIGH-SPEED MULTIPLIER FOR MICROCOMPUTER USED IN DIGITAL SIGNAL PROCESSING SYSTEM

Surendar S. Magar, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Feb. 11, 1982, Ser. No. 347,859
Int. Cl.[3] G06F *7/52*
U.S. Cl. 364—759 **6 Claims**



1. A single-chip microprocessor device containing a multiplier circuit, and containing clock means to generate repetitive machine state intervals, said multiplier circuit operating to produce a product of first and second operands in a single one of said machine state intervals, said multiplier circuit comprising:

(a) a first input register for holding said first operand of N bits; and means for loading said first operand in a first machine state interval;

(b) a second input means for holding said second operand of M bits during a second machine state interval following said first interval;

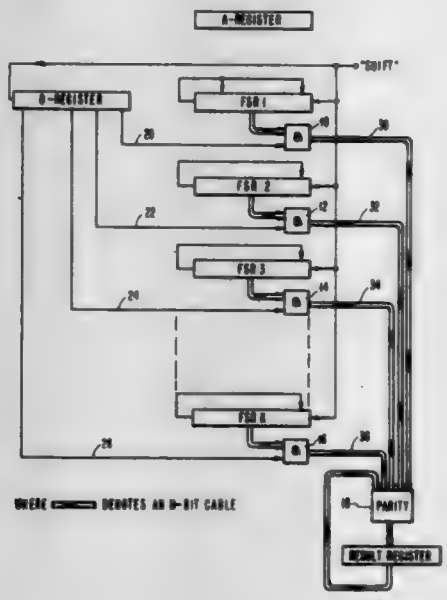
(c) N/2 static adder levels, each of said static adder levels including a control section having a plurality of inputs connected for receiving said control from said outputs of one of said decoder means, each level except the lowest containing at least M parallel binary adder stages, each stage of each level receiving one of said M bits from said second input means, the lowest level containing at least M adder stages receiving no carry input but only said controls and M bits, means for connecting partial products and carry from one level to the next higher level, but no carry being coupled along adder stages within a level.

(d) at least M+N dynamic adder stages, means for providing ripple carry along said dynamic adder stages, each stage receiving said partial product outputs from respective ones of said static adder levels, the MSB dynamic adder stages receiving partial product bits from the highest level of said static adder levels in a later part of a third machine state interval following said second machine state interval, the two LSB dynamic adder stages receiving two partial product bits from the lowest level of said static adder levels in an early part of said third machine state, and each pair of dynamic adder stages between LSBs and MSBs receiving two partial product bits from LSB stages of corresponding intervening static adder levels.

4,538,240
METHOD AND APPARATUS FOR PERFORMING HASHING OPERATIONS USING GALOIS FIELD MULTIPLICATION

John L. Carter, Putnam Valley; George Markowsky, Mount Kisco, and Mark N. Wegman, New York, all of N.Y., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Dec. 30, 1982, Ser. No. 454,912
Int. Cl.[3] G06F *7/52*
U.S. Cl. 364—754 9 Claims

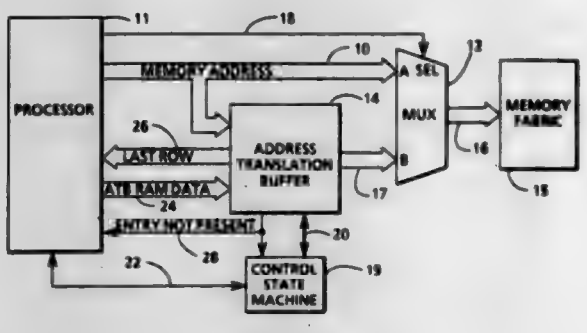


1. A hashing generator for performing a hashing operation on an N bit operand as a function of a predetermined N bit hashing constant, said generator comprising a shift register for receiving the operand to be hashed, a register for receiving and storing the hashing constant, K feedback shift registers wherein K is an integer factor of N, means for loading each of said K feedback shift registers with said hasing constant shifted from the low to the high order direction N/K-bit positions with respect to each of its adjacent feedback shift registers, means including a result register and combinatorial circuit means for accumulating the contents of each of said K feedback shift registers as a function of the binary state of an associated bit in said operand shift register together with the results of the immediately preceding accumulation and means for sequentially shifting all of said K feedback shift registers and said operand shift register and successively accumulating the interim results in said result register a total of N/K times to perform a complete hashing operation.

4,538,241
ADDRESS TRANSLATION BUFFER

Burton L. Levin; Andrew E. Phelps, both of San Diego, and Hanan Potash, La Jolla, all of Calif., assignors to Burroughs Corporation, Detroit, Mich.

Filed Jul. 14, 1983, Ser. No. 513,660
Int. Cl.[3] G06F *13/00*
U.S. Cl. 364—900 9 Claims



1. An apparatus for translating a selected number of a first group of numbers into another number selected from a second group of numbers, said apparatus comprising:

a plurality of rows of content addressable memory means for storing said first group of numbers, including means for receiving said selected number from an external source and for providing a match signal indicating the row in which said selected number is stored;

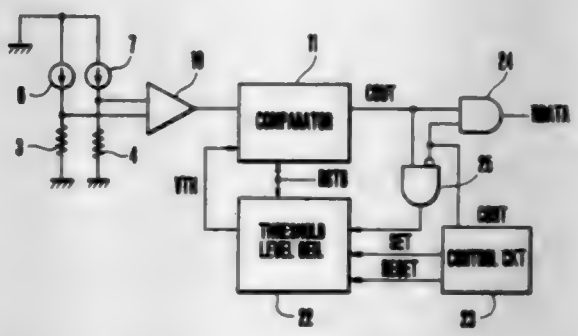
a corresponding plurality of rows of storage means for storing said second group of numbers including means for accessing the contents of the row of said storage means that corresponds to said match signal; wherein,

said rows of content addressable memory and said rows of storage means are coupled together by coupling means to form respective shift registers; and a control circuit means couples to both said shift registers for rewriting said numbers from the row in both shift registers corresponding to said match signal, into the first row of both shift registers in response to said match signal and for shifting down by one row all of the numbers stored in both shift registers above the row corresponding to said match signal.

4,538,242
SIGNAL PROCESSING CIRCUIT FOR MAGNETIC BUBBLE MEMORY DEVICES

Takashi Toyooka, 3-14-301, Tsutsujino, 259-1, Kamihirosi, Samama-shi, Saitama-ken; Aoki Hirokazu, 1-48-18, Akatsuki-machi, Hachiouji-shi, Tokyo; Mamoru Sugie, 25-18-710, Unoki, Sayama-shi, Saitama-ken, and Yutaka Sugita, 5-12-1, Nakaarai, Tokorozawa-shi, Saitama-ken, all of Japan

Filed Jul. 6, 1983, Ser. No. 511,334
Claims priority, application Japan, Jul. 9, 1982, 57-118554
Int. Cl.[3] G11C *19/08*
U.S. Cl. 365—8 3 Claims



1. A signal processing circuit for a magnetic bubble memory device having two bubble sensing elements, comprising:

a differential amplifier, connected to said two bubble sensing elements, for amplifying a difference between output signals from said two bubble sensing elements;

a comparator, connected to said differential amplifier, for comparing an output signal from said differential amplifier with a given reference level; and

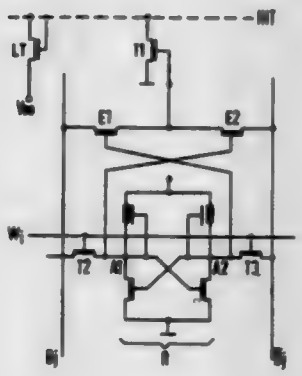
reference level determining means, connected to said comparator, for changing the reference level during a period in which absence of a bubble is detected by the bubble sensing elements until the output of the comparator changes at a first reference level and for determining a second reference level for bubble read operation on the basis of the first reference level.

4,538,243

ASSOCIATIVE MEMORY WITH IMPROVED MEMORY CELL AND METHOD FOR OPERATING SAME

Bernd Zehner, Holzkirchen, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin & Munich, Fed. Rep. of Germany

Filed Sep. 15, 1982, Ser. No. 418,526
Claims priority, application Fed. Rep. of Germany, Sep. 30, 1981, 3138993
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—49 4 Claims



1. An associative memory having a plurality of memory cells arranged in i rows, each row having j cells for use with i word lines respectively for said rows, j bit lines and j complementary bit lines respectively for each of said cells, and at least one hit line, each said memory cell comprising:

a random access memory cell having first and second output terminals;

a pair of first transistors each having a control electrode connected to the word line for the row in which said cell is located and one of said first transistors being interconnected between said first terminal of said random access memory cell and the bit line for said cell and the other of said first transistors being interconnected between said second terminal of said random access memory cell and the complementary bit line for said cell;

a pair of second transistors having a common terminal, one of said second transistors having a control electrode connected to said first terminal of said random access memory cell and being connected to said complementary bit line for said cell and the other of said second transistors having a control electrode connected to said second terminal of said random access memory cell and being connected to said bit line for said cell;

a third transistor connected to said hit line and having

a control electrode connected to said common terminal of said second transistors,

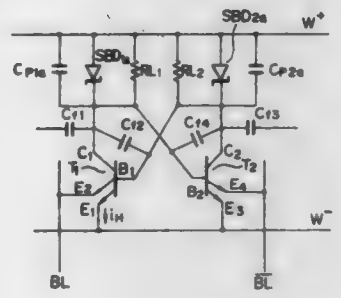
and said associative memory further having i load transistors each having a current path connected between a supply voltage and said hit line and a control electrode for said current path also connected to said hit line, each said load transistor forming a NOR gate in combination with said third transistors of each said cell in a row whereby information on said bit line is written into said random access memory cell when said word line activated and information on said bit line is compared with information stored in said random access memory cell when said word line is non-activated and the result of said comparison is utilized for controlling said third transistor for enabling of inhibiting said hit line.

4,538,244

SEMICONDUCTOR MEMORY DEVICE

Yasuhisa Sugo, Yokohama, and Tohru Takeshima, Tokyo, both of Japan, assignors to Fujitsu Limited, Kanagawa, Japan

Filed Dec. 27, 1984, Ser. No. 686,818
Claims priority, application Japan, Dec. 29, 1983, 58-247704
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—155 8 Claims



1. A semiconductor memory device comprising:

a plurality of word lines;

a plurality of bit lines intersecting to said word lines;

bipolar memory cells arranged on intersecting portions between said word lines and said bit lines;

each of said bipolar memory cells comprising a first transistor, a second transistor, and a load connected between the collector of each of said first transistor and said second transistor and one of said word lines;

the base and the collector of said first transistor being respectively connected to the collector and the base of said second transistor;

said load comprising a Schottky barrier diode and a load resistor connected in parallel;

said load further comprising a capacitor connected in parallel with said Schottky barrier diode;

each of said first transistor and said second transistor comprising a semiconductor layer having a first conductivity type and operatively functioning as a collector region; and

a high concentration buried layer formed in said semiconductor layer and having said first conductivity type;

said Schottky barrier diode comprising a Schottky barrier region formed at the surface of said semiconductor layer;

in said Schottky barrier region, a semiconductor region having a second conductivity type being formed so as to reach said high concentration buried layer;

said capacitor being formed by a junction between said semiconductor region and said high concentration buried layer.

4,538,245

ENABLING CIRCUIT FOR REDUNDANT WORD LINES IN A SEMICONDUCTOR MEMORY ARRAY

George Smarandoiu, Palo Alto, and George Perlegos, Fremont, both of Calif., assignors to SEEQ Technology, Inc., San Jose, Calif.

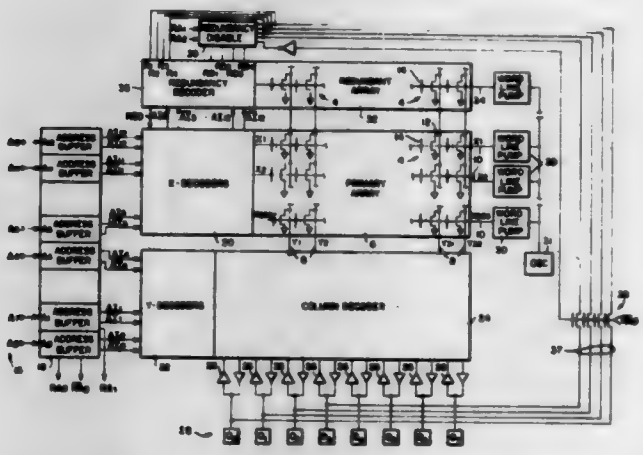
Filed Apr. 12, 1982, Ser. No. 367,331
Int. Cl.[3] G11C *11/40*
U.S. Cl. 365—200 30 Claims

1. Apparatus for enabling a redundant word line in a semiconductor memory whenever selected memory address indicators are input to the semiconductor memory, said apparatus comprising:

decoder means for accessing the redundant word line and raising the voltage thereon, said decoder means including a first circuit structure which is programmed to receive the selected memory address indicators such that said decoder means accesses and raises the voltage on the redundant word line in response to the input of the selected memory address indicators to the semiconductor memory; and

preventing the reprogramming of said first circuit structure with memory address indicators different than the se-

lected memory address indicators after said first circuit structure has been programmed to receive the selected memory address indicators, said disabling means including



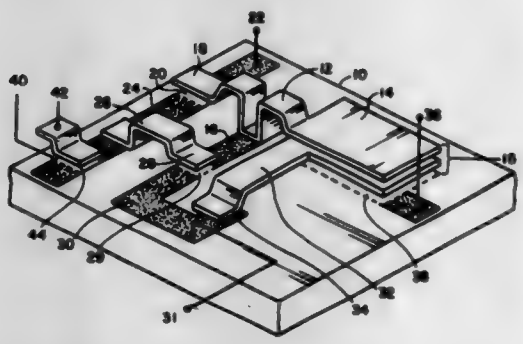
a second circuit structure which outputs a signal indicative of the fact that said first circuit structure has been programmed.

4,538,246

NONVOLATILE MEMORY CELL

Samuel T. Wang, San Jose; Chenming Hu, Hercules, and Ying Shum, Cupertino, all of Calif., assignors to National Semiconductor Corporation, Santa Clara, Calif.

Filed Oct. 29, 1982, Ser. No. 437,608
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—226 **9 Claims**



1. A nonvolatile static semiconductor random access memory cell for use in array of cells comprising:

means to generate a store signal if the power to said cell is interrupted;

a bistable circuit operable to maintain a first state when switched to said first state and operable to maintain a second state when switched to said second state;

floating gate means operable to maintain a first negatively charged condition in response to said store signal if said bistable circuit is in one of said states and a second uncharged condition if said bistable circuit is in the other state, said first and second conditions being maintained when outside power is interrupted;

disabling means connected to prevent said bistable circuit from assuming said first state, when power is restored, if said floating gate means is in said first condition; and

reset means operable to set said bistable circuit to said first state upon restoration of power unless said disabling means prevents reset

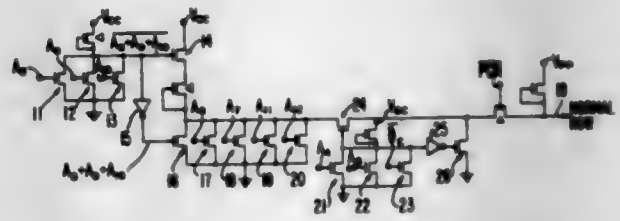
wherein said bistable circuit comprises first, second, and third nodes, a first FET connected between said first node and the array supply voltage with its gate connected to said second node, a second FET connected between said second and third nodes with its gate connected to said first node, a variable voltage supply connected to said third node, said bistable circuit being switched to said first and second states by the application of first and second voltages respectively to said first node.

4,538,247

REDUNDANT ROWS IN INTEGRATED CIRCUIT MEMORIES

Kalyanasundaram Venkateswaran, San Jose, Calif., assignor to Fairchild Research Center, Mountain View, Calif.

Filed Jan. 14, 1983, Ser. No. 457,999
Int. Cl.³ G11C *11/40*
U.S. Cl. 365—230 **18 Claims**



1. Decoding apparatus for an integrated circuit memory having first rows of memory cells, each first row being selectable by a row address, including at least one address bit, and having at least one second row selectively connectable in place of one of the first rows, the apparatus comprising:

at least one redundant decoder means, each redundant decoder means being connected to a second row, including a plurality of selectable connections for creating an address for the connected second row, and including means for producing an address signal of a first level if the row address corresponds to the created address and of a second level if the row address does not correspond to the created address;

logic means for generating a control signal of a first state until an address bit is supplied to the memory and of a second state if at least one address signal from the at least one second row is of the first level; and

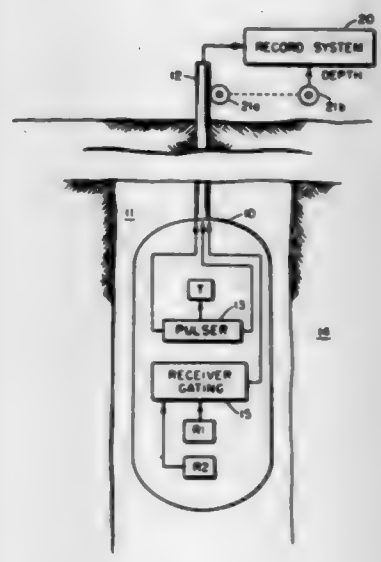
decoder means connected to each first row to receive the control signal from the logic means for controlling the first rows in response thereto.

4,538,248

RECORDING SYSTEM FOR A BOREHOLE LOGGING TOOL

Wilfred K. Lenhardt, Richardson, Tex., assignor to Mobil Oil Corporation, New York, N.Y.

Filed Apr. 1, 1982, Ser. No. 364,364
Int. Cl.³ G01V *1/40, 3/18, 5/04*
U.S. Cl. 367—25 **4 Claims**



1. A method for recording logging signals from a borehole

logging tool being moved through a borehole traversing subterranean formations, comprising the steps of:

(a) recording said logging signals on a moving recording medium,

(b) driving said recording medium such that the logging signals produced for a select rate of movement of the logging tool in the borehole are recorded at a select rate of movement of said recording medium, the driving of said recording medium comprising increasing the rate of movement of said recording medium when said rate has decreased relative to the rate of movement of said borehole logging tool, and decreasing the rate of movement of said recording medium when said rate has increased relative to the rate of movement of said borehole logging tool,

(c) determining a proportionality for the rates of movement of said logging tool and said recording medium, and

(d) changing the rate of movement of said recording medium in response to changes in said proportionality.

4,538,249

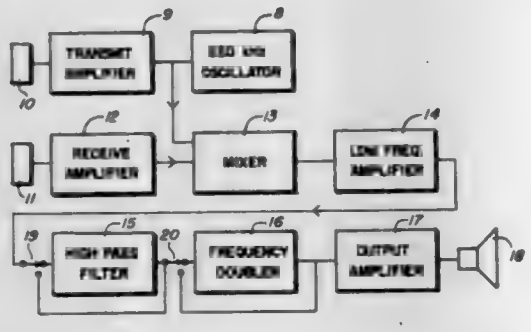
ULTRASONIC DOPPLER FISH DETECTOR

Joseph D. Richard, 531 S. Navy Blvd., Pensacola, Fla. 32507

Filed Sep. 29, 1982, Ser. No. 428,474

Int. Cl.³ A01K *97/12*; G08B *21/00*

U.S. Cl. 367—94 **5 Claims**



1. An ultrasonic Doppler apparatus for detecting normal fish movements or reactive fish movements in response to a fish lure or other artificial stimulus comprising:

means for directionally transmitting an ultrasonic signal into a body of water, the said transmitted ultrasonic signal having a frequency effective to penetrate particulate suspensions commonly encountered in natural bodies of water;

means for directionally receiving ultrasonic signals from the aforementioned body of water resulting from reflections of the said transmitted signal;

means for deriving a Doppler signal having frequency characteristics dependent on the frequency difference between said transmitted and received ultrasonic signals; means for multiplying the frequency of the said Doppler signal, so that at least some sub-sonic components in the said Doppler signal are made sonic; and electroacoustic means for generating an acoustic output signal having frequency characteristics dependent on the frequency of the said multiplied Doppler signal, the said acoustic signal being an audible indication of the movements of fish, including slow moving fish, in the aforementioned body of water.

4,538,250

CONSTRUCTION AND METHOD FOR ELONGATED TOWED UNDERWATER SONAR

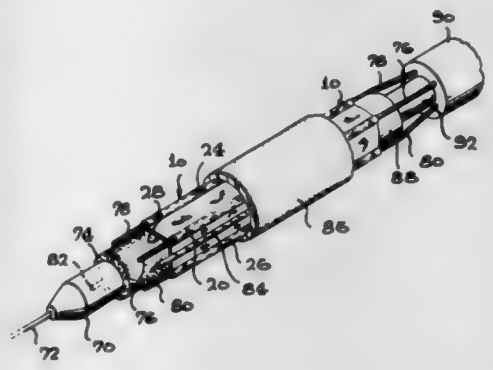
Frederick C. De Metz, Granada Hills, and John R. Rackliffe, Sepulveda, both of Calif., assignors to Allied Corporation, Morristown, N.J.

Filed Dec. 27, 1982, Ser. No. 453,305

Int. Cl.³ H04R *1/44*

U.S. Cl. 367—154 **8 Claims**

1. A construction for an elongated towed underwater acoustic array including a plurality of hydrophones and circuit modules interconnected by electrical conducting wires, a substantially continuous sheath of plastic foam material surrounding said hydrophones and said circuit modules, a hose-like jacket of durable plastic material surrounding and containing said sheath, a plurality of strength members contained in said hose-like jacket, and connector members at each end of said array to which said strength members and said electrical wires are attached,



characterized in that an elongated tube-like retaining member is interposed between said sheath and said jacket, said retaining member comprising a cylindrical tube of synthetic fabric, said fabric being longitudinally stitched or seamed at a plurality of locations to provide a structure with a large center tube and a plurality of spaced parallel peripheral tubes of small diameter, each of said peripheral tubes containing one of said strength members.

4,538,251

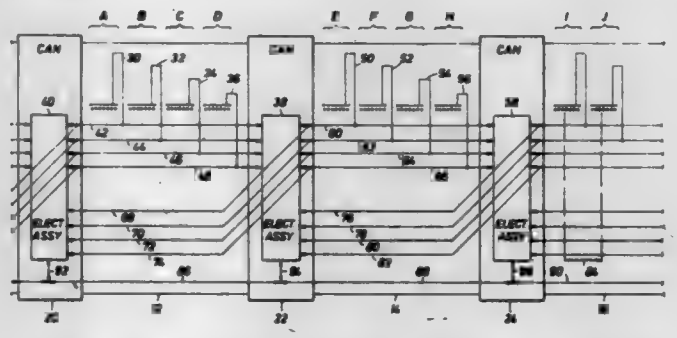
MARINE SEISMIC STREAMER CABLE FOR PROVIDING SELECTABLE DETECTOR ARRAY CONNECTIONS

David R. Steetle, Houston, Tex., assignor to Digicon, Inc., Houston, Tex.

Continuation-in-part of Ser. No. 472,136, Mar. 4, 1983,. This application Apr. 11, 1983, Ser. No. 483,623

Int. Cl.³ G01V *1/38*

U.S. Cl. 367—154 **12 Claims**



1. A marine seismic cable including a plurality of identical sections successively connected together by identical end connectors,

each of said sections comprising a plurality of linearly arrayed pressure detector groups which produce a composite electrical signal in response to the immediate pressure on the individual detectors within the group, each of said groups having the same number of detectors,

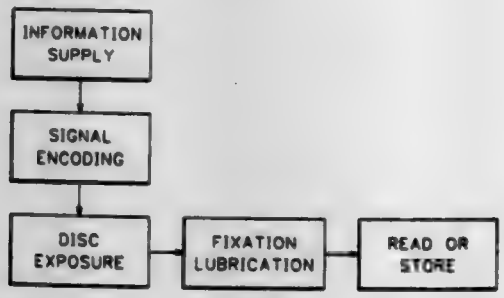
each of said connectors comprising an electronic assembly for receiving said separate composite signals from the plurality of detector groups in the preceding cable section to a first side of said connector and for receiving separate composite signals from the plurality of detector groups in the succeeding cable section to the second side of said connector for producing selectable-and-combinable outputs signals from said first side composite signals and said second side composite signals,

each of said cable sections further comprising wiring for connecting said end connector to the opposite end connector to carry signals originating from detectors in said cable section, signals originating from detectors in the succeeding cable section, and said selectable-and-combinable output signals.

4,538,252
LIGHT INDUCED CAPACITANCE CHANGES IN DONOR POLYMERS (OR SMALL MOLECULES) FILMS AND ITS USE FOR INFORMATION STORAGE IN VIDEO DISKS AND THE LIKE

Ari Aviram, Yorktown Heights, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Aug. 24, 1981, Ser. No. 295,210
Int. Cl.[3] G11B *11/00, 11/12*
U.S. Cl. 369—13 8 Claims



1. A method for capacitively storing data on a grooveless storage device including the steps of

(a) providing a storage device comprised of a conductive substrate having coated thereon a grooveless layer of a donor molecule composition which changes its dielectric constant when irradiated;

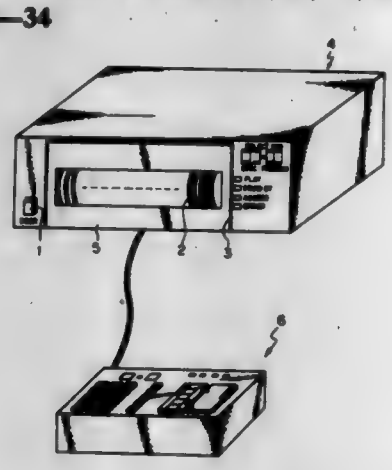
(b) projecting data in the form of light in a predetermined pattern onto the surface of said grooveless layer of donor molecule composition to effect changes in the dielectric constant in said layer in said predetermined pattern; and

(c) heating said exposed storage device to fix said predetermined pattern thereon.

4,538,253
DISC PLAYING SYSTEM WITH CONTINUOUS PLAYING FUNCTION

Masaya Ishibashi, and Atuki Tada, both of Tokorozawa, Japan, assignors to Pioneer Electronic Corporation, Tokyo, Japan

Filed Aug. 10, 1984, Ser. No. 639,469
Claims priority, application Japan, Aug. 12, 1983, 58-147828
Int. Cl.[3] G11B *15/00, 17/08*
U.S. Cl. 369—34 1 Claim



1. A disc playing system for playing selected ones of a plurality of stored discs in succession, comprising:

a disc storing part in which the plurality of discs are juxtaposed in a predetermined direction;

a disc carrying means slidable along said direction of arrangement of discs for carrying the disc to a playing position;

a transportation means for transporting a disc between said disc carrying means and said disc storing part;

a memory means for memorizing a correspondence between numbers assigned to each disc and numbers assigned to each storing position of said disc storing part;

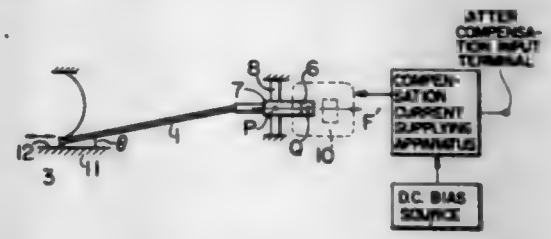
a detection means for detecting a playing frequency of each disc; and

a control means for operating said disc carrying means and said transportation means for altering an order of arrangement of the discs in the disc storing part and altering said memorized correspondence in accordance with a detected result from of said detection means.

4,538,254
PICKUP DEVICE

Osamu Hattori, Chigasaki, and Shingo Tamura, Yokohama, both of Japan, assignors to Hitachi, Ltd., Tokyo, Japan

Filed Sep. 15, 1982, Ser. No. 418,253
Claims priority, application Japan, Sep. 18, 1981, 56-146211
Int. Cl.[3] G11B *17/00*
U.S. Cl. 369—43 5 Claims



1. A pickup device comprising:

a scanning needle having a signal detecting electrode;

a cantilever having said scanning needle mounted at one end thereof and a permanent magnet mounted at the other end thereof;

a support for resiliently supporting said cantilever;

a jitter compensation drive coil for generating a magnetic field to be acted on said permanent magnet;

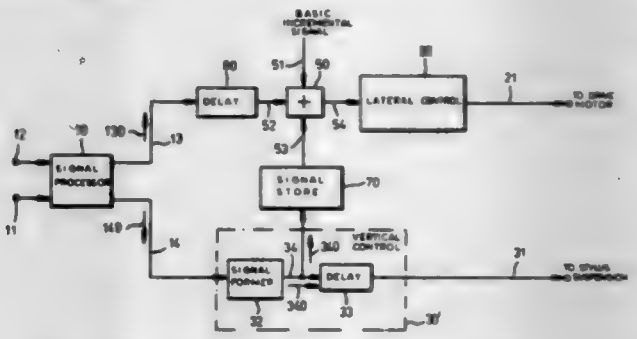
a current flowing in said drive coil being varied to drive said scanning needle in the direction of a record track of a disc to compensate for jitter;

said support and said permanent magnet being arranged relative to each other such that a line connecting a support point of said support and a center of said permanent magnet is in parallel to a surface of said disc.

4,538,255
METHOD OF AND SYSTEM FOR CUTTING A PHONOGRAPH RECORD WITH TWO-CHANNEL MODULATION

Otmar Kern, Berlin, Fed. Rep. of Germany, assignor to Georg Neumann GmbH, Berlin, Fed. Rep. of Germany

Filed Oct. 21, 1983, Ser. No. 544,404
Claims priority, application Fed. Rep. of Germany, Oct. 22, 1982, 3239199
Int. Cl.[3] G11B *3/74*
U.S. Cl. 369—51 7 Claims



1. A method of controlling the mean depth and spacing of V-groove cut by a stylus into a surface of a rotating phonograph disk for recording sound signals from two separate channels in the form of undulations of respective groove flanks in response to corresponding modulation signals picked up from respective tracks of a storage medium, the stylus being provided with a support movable both perpendicularly to the disk surface and laterally thereacross, comprising the steps of:

(a) picking up respective preview signals from said tracks with a predetermined lead time in advance of said modulation signals;

(b) deriving a first and a second signal component from a combination of said preview signals;

(c) converting said first signal component into a vertical-deflection signal with a rise time which is a small fraction of said lead time;

(d) combining one part of said vertical-deflection signal with said second signal component and with a basic incremental signal to produce a composite signal;

(e) deriving from said composite signal a lateral-deflection signal with a rise time on the order of said lead time effective to control a displacement of the stylus support across the disk surface at an instant following by said lead time the pickup in step (a); and

(f) delaying another part of said vertical-deflection signal to render same effective concurrently with said lateral-deflection signal for controlling a displacement of the stylus support transverse to the disk surface.

4,538,256

METHOD AND APPARATUS FOR CUTTING INFORMATION INTO A RECORD CARRIER

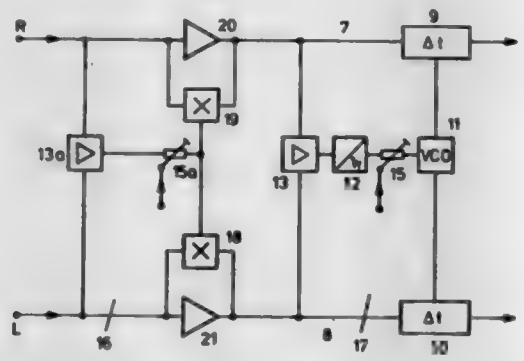
Horst Redlich, Berlin, Fed. Rep. of Germany, assignor to TELDEC Telefunken-Decca Schallplatten GmbH, Hamburg, Fed. Rep. of Germany

Filed Nov. 16, 1982, Ser. No. 442,123

Claims priority, application Fed. Rep. of Germany, Nov. 16, 1981, 3145477; Oct. 7, 1982, 3237135

Int. Cl.³ G11B *3/00*

U.S. Cl. 369—88 **10 Claims**



9. A method for producing a mechanically reproducible recording in a metal disk record by operating an electrically excited cutting stylus to cut a modulated groove in the record, comprising:

orienting the cutting stylus to be driven at a tracking angle of less than 20°;

providing two stereo signals to be recorded;

electronically compensating distortions caused by the tracking angle by deriving a representation of the amplitude of recording depth component which will be produced by the signals, producing oscillations at a frequency dependent on the amplitude of the depth recording component by means of a voltage controlled oscillator controlled by the representation, and delaying the signals as a function of the frequency of the oscillations by means of a controllable delay member controlled by the oscillator and connected to conduct the signals to the cutting stylus; and

compensating low frequency distortions introduced into the signals by said step of electronically compensating by adding to each signal, before it is conducted to the cutting stylus, a compensating component equal in amplitude and opposite in phase to the low frequency distortions.

4,538,257

ADAPTIVELY STABILIZED RECORDING FOR DIRECT READ AFTER WRITE OPTICAL MEMORIES

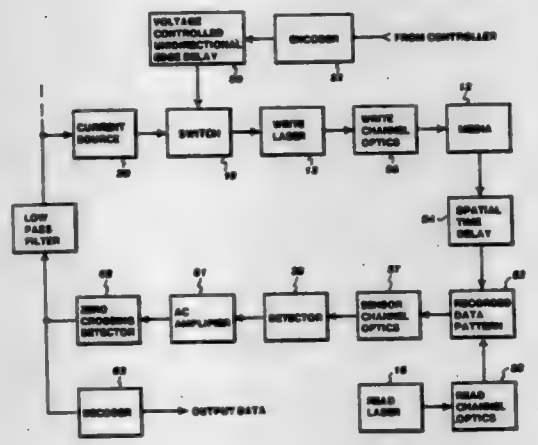
Lance T. Klinger, Mt. View, Calif., assignor to Xerox Corporation, Stamford, Conn.

Filed Dec. 23, 1982, Ser. No. 452,657

Int. Cl.³ G11B *7/00*; G01D *15/14*

U.S. Cl. 369—106 **6 Claims**

1. In a direct read after write optical memory having source means for supplying a write light beam and a read light beam, a detector, optical means for focusing said write and read beams on a recording medium such that said read beam trails immediately behind said write beam and for returning reflected read beam light from said recording medium to said detector, and an encoder coupled to said source means for intensity modulating said write beam in accordance with a code having a predetermined average dc content to record data on said recording medium; an improved feedback means coupled



between said detector and said source means for continuously adjusting said write beam to cause said recorded data to have substantially the same average dc content as said code; said feedback means comprising an ac coupled amplifier coupled to said detector, a zero-crossing detector coupled to said amplifier, and a low pass filter coupled to said zero-crossing detector to provide an error signal for adjusting the intensity of said write beam and for isolating said error signal from spurious influences.

4,538,258

RECORD

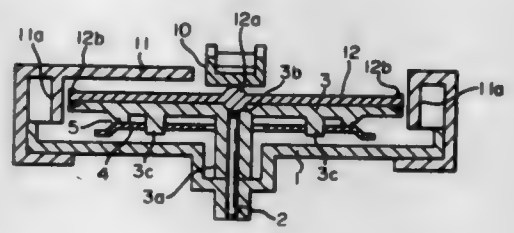
Haruyoshi Miyako, and Kiyoteru Arima, both of Nagano, Japan, assignors to Kabushiki Kaisha Sankyo Seiki Seisakusho, Nagano, Japan

Filed Aug. 26, 1983, Ser. No. 526,842

Claims priority, application Japan, Aug. 31, 1982, 57-132181

Int. Cl.³ G11B *23/00, 25/04*

U.S. Cl. 369—271 **3 Claims**



1. A record for play on a turntable having a central concave indentation and one or more circumferentially varying indentations on a circumference of said turntable, comprising:

a flat disc (12);

a convex protrusion (12*a*) substantially at the center of said disc for engaging said central indentation and centering said disc; and

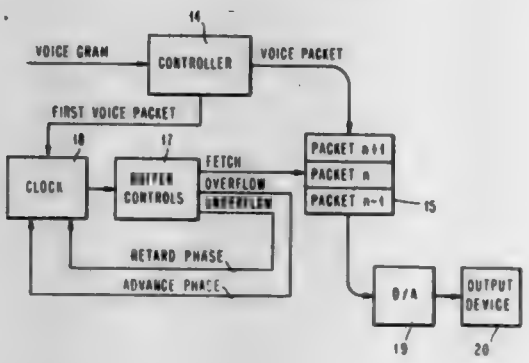
one or more protrusions (12*b*) formed on the circumferential periphery of said disc for engaging said circumferentially varying indentations and for rotating said disc as said turntable rotates, said peripheral protrusions varying circumferentially around said disc, insertable into one of said indentations and contactable with a circumferential side of said one indentation.

4,538,259

SYSTEM FOR DIGITIZED VOICE AND DATA WITH MEANS TO COMPENSATE FOR VARIABLE PATH DELAYS

Brian B. Moore, Poughkeepsie, N.Y., assignor to International Business Machines Corporation, Armonk, N.Y.

Filed Jul. 5, 1983, Ser. No. 511,059
Int. Cl.[3] H04J *3/02;* H04Q *11/04;* H04J *6/00*
U.S. Cl. 370—60 5 Claims



1. In a communication system of the type in which voice signals for a sending station are formed into a packet and in which Packets from several sending stations are combined into a message and are transmitted to intended receiving stations, the system having alternate pathways through intermediate stations such that messages containing first or subsequent packets in a conversation may arrive at an intended receiving station at varying times in relation of the time when the voice signal originated, the intermediate stations having means for handling a message according to a priority carried by the message, and in which the receiving station has means for delaying the output of the first packet of a conversation to compensate for variations in the delays of said subsequent packets, the improvement comprising,

means at the sending station for designating a message containing a first packet of a conversation to have a higher priority and for designating messages not containing a first packet of a conversation to have a lower priority,

whereby the range of delays for the first packet of a conversation transmitted through said pathways is less than the range of delays for packets transmitted at a lower priority and thereby a reduction is made in the range of the minimum time interval between the latest arrival of said first packet of a conversation and the earliest arrival of a message containing the next packet of the same conversation, and

means in a receiving station for delaying the first packet by an amount that is related to the more closely defined range of time intervals between said first packet and said next packet and is appropriate to a wide range of delays in the subsequent messages.

4,538,260

ELECTRONIC TIME SWITCH

Tadanobu Nikaido, Isehara, Japan, assignor to Nippon Telegraph & Telephone Public Corporation, Tokyo, Japan

Filed Aug. 22, 1983, Ser. No. 525,566
Claims priority, application Japan, Aug. 30, 1982, 57-150310; Feb. 26, 1983, 58-31651; Aug. 15, 1983, 58-149079
Int. Cl.[3] H04J *3/04;* H04Q *11/04*
U.S. Cl. 370—66 9 Claims

1. An electronic time switch comprising

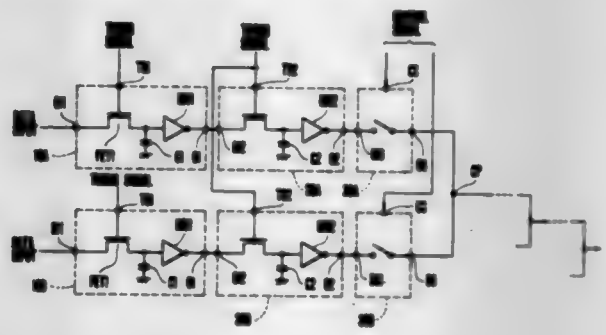
a plurality of successive stages, each stage having one or more units and each unit including serially connected first and second registers operating to receive input data at different times and a switch connected to the output of each second register, the operation of said switch being controlled by a control signal;

the units of a stage being formed as one or more groups thereof, the number of units in a stage other than the first stage being the same as the number of groups in a preceding stage;

the switches in each group of a stage having a common connection point, the connection points of the group in a preceding stage being connected to the first registers in the units of a succeeding stage, which units correspond to the groups in said preceding stage;

means for sequentially applying control signals having different switch connection times at predetermined time spacings to the switches in said stages;

the first registers of the first stage sequentially storing sequentially applied data at a first time;



means for applying a common frame pulse to the second registers of the first stage for storing the contents of respective first registers;

the first registers of the second and succeeding stages sequentially storing data at a second time; and

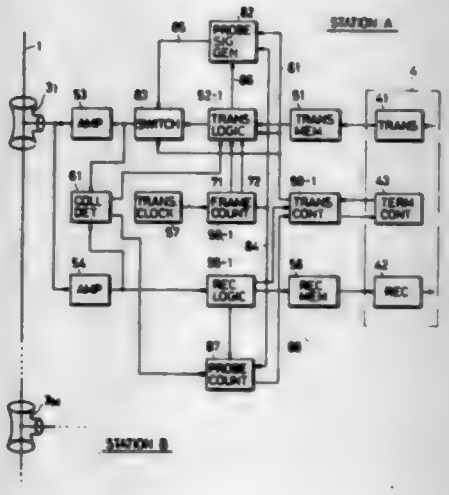
the second registers of the second and succeeding stages sequentially storing data at a third time which is synchronous with but different from the second time, thereby providing data, which has been stored at a predetermined time, at a different time.

4,538,261

CHANNEL ACCESS SYSTEM

Hiroshi Kume, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Jun. 29, 1983, Ser. No. 509,007
Claims priority, application Japan, Jun. 29, 1982, 57/110593
Int. Cl.[3] H04J *3/02*
U.S. Cl. 370—85 23 Claims



1. A channel access system in a communication network of the type wherein a plurality of stations communicate with one another over a communication medium and wherein data signals on said medium are grouped into frames periodically occurring on a time axis, with each frame comprising a plurality of successively occurring blocks, each station including packet transmitting means for transmitting packet signals onto said medium to occupy a previously unoccupied block, whereby multiplexed digital signals are transmitted on said

medium in a time division manner, said channel access system comprising:

means for dividing a first block into a plurality of time slots;

probe signal transmitting means at a particular station for transmitting a probe signal in one of said time slots when said particular station desires to transmit a packet signal in said first block; and

monitoring means for monitoring said one time slot to count the number of probe signals occurring in said time slot and to determine if more than one probe signal occurs in said one time slot, whereby said particular station is given occupation of said first block in accordance with the number of probe signals counted in said one time slot.

4,538,262

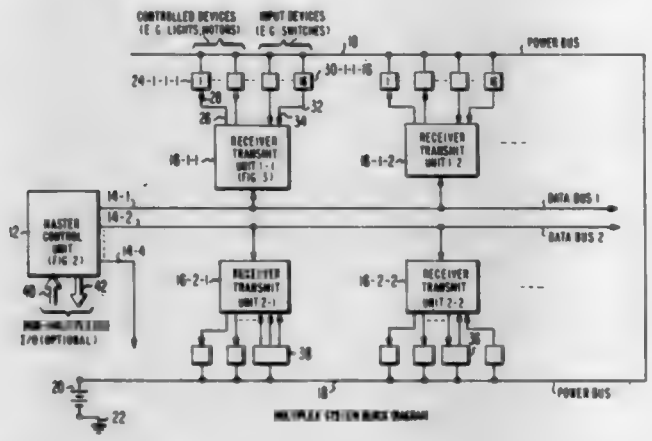
MULTIPLEX BUS SYSTEM FOR CONTROLLING THE TRANSMISSION OF DATA BETWEEN A MASTER CONTROL UNIT AND A PLURALITY OF REMOTELY LOCATED RECEIVER-TRANSMITTER UNITS

Joseph O. Sinniger, Pennington, and Richard M. Peterson, W. Windsor Township, Mercer County, both of N.J., assignors to RCA Corporation, Princeton, N.J.

Filed Aug. 3, 1983, Ser. No. 520,122

Int. Cl.³ H04J *3/06, 3/02*

U.S. Cl. 370—85 **17 Claims**



1. A multiplex bus system comprising in combination:

a master control unit (MCU) including a signal producing first clock source;

at least one receiver-transmit unit (RTU) including a signal producing second clock source;

bus means connecting said MCU and said at least one RTU for facilitating the transmission of information-bearing signals therebetween;

wherein said MCU transmits signals via said bus means to said RTU in the form of messages, each message comprising a synchronization pulse of known duration XT and a plurality of data bits of known duration T, wherein each of said messages includes a portion for the transmission of data bits from said RTU to said MCU;

said MCU including means utilizing said first clock source signal for determining said duration T;

said RTU including means responsive to the duration of said synchronization signal and to said second clock source signal for producing a signal representing said duration T as a function of said second clock source frequency; and

said RTU including means utilizing said signal representing said duration T for thereafter clocking said data bits from said MCU to said RTU into said RTU.

4,538,263

VARIABLE-BAND SWITCHING SYSTEM FOR VOICE AND DATA COMMUNICATION

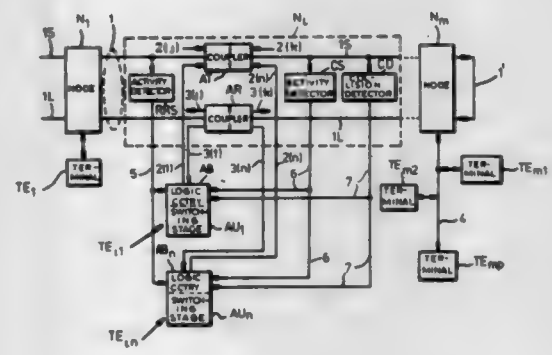
Luciano Gabrielli, Leini, and Maurizio Sposini, Rivalta di Torino, both of Italy, assignors to Cselt Centro Studi e Laboratori Telecommunicazioni SpA, Turin, Italy

Filed Jun. 8, 1983, Ser. No. 502,084

Claims priority, application Italy, Jun. 9, 1982, 67736 A/82

Int. Cl.³ H04J *3/00*

U.S. Cl. 370—86 **9 Claims**



1. A communication system wherein a plurality of nodes are associated with respective groups of subscriber terminals adapted for the exchange of speech and data packets via a common unidirectional bus forming a loop with a transmitting branch and a receiving branch passing through all said nodes,

each node comprising an outgoing coupler and an incoming coupler linking all the terminals of the associated group with said transmitting branch and said receiving branch, respectively;

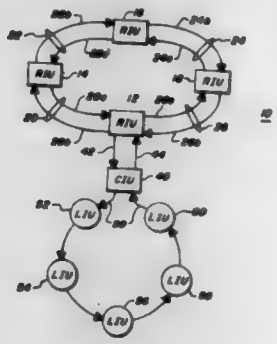
first and second detecting means in each node respectively disposed upstream and downstream of said outgoing coupler in said transmitting branch for recognizing the presence of signal carriers on said transmitting branch originating at any node upstream of a given node and at the given node itself and

logic circuitry at each terminal comprising a receiving section coupled to said incoming coupler, a transmitting section coupled to said outgoing coupler and control section coupled to said first detecting means, said second detecting means, said incoming coupler, said receiving section and said transmitting section, each terminal further comprising means connected to said transmitting section, for generating and storing speech packets, data packets and pre-engagement packets and for informing said transmitting section of the availability of such packets to be sent out, and means coupled to said receiving section for storing received speech packets, data packets and pre-engagement packets, said control section being responsive to signals from said first and second detecting means for enabling said transmitting section to send out a waiting packet in the absence of conflicting activity on said bus, said receiving section being responsive to the arrival of a pre-engagement packet addressed thereto for starting a time base in said control section to initiate a series of frames with a duration at least equal to the recurrence period of consecutively generated speech packets certaining to a particular voice communication between two terminals, said time base subdividing each frame into a voice period for the emission of at least one speech packet in an allocated time slot and a residual period reserved for the emission of data packets, said series of frames terminating in the absence of further packets to be sent out whereupon another terminal of the same node or of a node further downstream along said transmitting branch can send out packets in the course of a round giving all terminals successive access to said transmitting branch.

4,538,264
SELF-REPAIRING RING COMMUNICATIONS NETWORK

Richard G. Bahr, Framingham, and Russell L. Moore, Hudson, both of Mass., assignors to Prime Computer, Inc., Natick, Mass.

Filed Feb. 14, 1983, Ser. No. 466,108
Int. Cl.[3] G06F *11/20*
U.S. Cl. 371—8 2 Claims



1. A ring communications network comprising

a pair of oppositely directed, unidirectional, substantially parallel signal paths having a plurality of interface units (IU's) coupled in series along said pair of signal paths, whereby each IU is coupled to one inbound signal path and one outbound signal path from each of said parallel signal paths, wherein each of said IU's includes:

A. first detecting means for detecting when the two inbound signal paths coupled to that IU are operative and means responsive to said detection for coupling each of said inbound signal paths to the respective outbound signal path coupled to that IU which is parallel to the other inbound signal path,

B. second detecting means for detecting when one inbound signal path coupled to that IU is inoperative and means responsive to said detection for interrupting signal flow on the outbound signal path parallel to said one inbound signal path, and means for coupling the other inbound signal path to the outbound signal path parallel to said other inbound signal path,

C. reconnect network responsive to said second detecting means and operative when one of said inbound signal paths is inoperative, said reconnect network including means for periodically monitoring said inoperative inbound signal path, and including means for determining when said inoperative inbound signal path is again operative and, in response thereto for coupling said again operative inbound signal path to the outbound signal path at said IU which is parallel to the other inbound signal path at said IU and for coupling said other inbound signal path at said IU to the outbound signal path which is parallel to said again operative inbound signal path.

4,538,265
METHOD AND APPARATUS FOR INSTRUCTION PARITY ERROR RECOVERY

Michael N. Day, and Claude D. Miller, both of Austin, Tex., assignors to International Business Machines Corporation, Armonk, N.Y.

Filed Mar. 24, 1983, Ser. No. 478,574
Int. Cl.[3] G06F *11/16*
U.S. Cl. 371—12 4 Claims

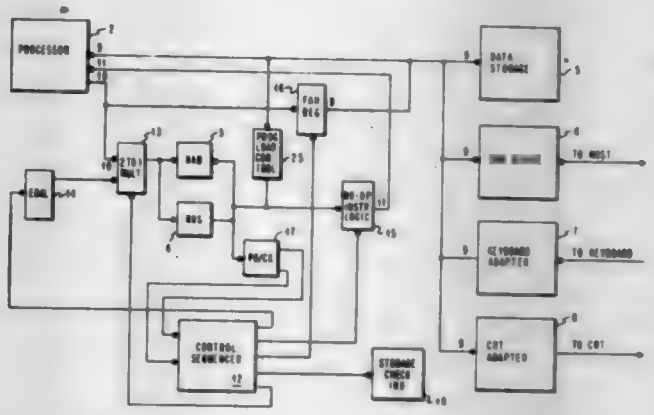
1. A method for automatic instruction parity error recovery in a programmable remote terminal connected to a host information processing system comprising the steps of:

(a) detecting the occurrence of a parity error during instruction fetch by the remote terminal processor;

(b) gating a No-Operation instruction onto the processor's instruction bus to replace the instruction containing the parity error;

(c) gating a branch instruction onto the processor's instruction bus for controlling the remote terminal processor to branch into an error recovery routine including utilizing said remote terminal processor to execute an error recovery program which comprises:

(d) storing the address of the instruction containing the parity error;



(e) logging the occurrence of the parity error to the host information processing system for recording;

(f) issuing a request to the host processing system for the instruction containing the parity error;

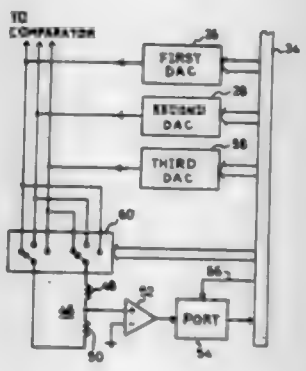
(g) reloading the instruction at the remote terminal processor memory address containing the parity error; and

(h) gating the address of the instruction onto the remote terminal processor's instruction bus for controlling the remote terminal processor to resume processing at the address where the parity error occurred.

4,538,266
DIAGNOSTIC APPARATUS FOR DIGITAL-TO-ANALOG CONVERTERS

Yasuhiko Miki, Tokyo, Japan, assignor to Sony/Tektronix Corporation, Tokyo, Japan

Filed Apr. 14, 1983, Ser. No. 484,799
Claims priority, application Japan, Aug. 30, 1982, 57-150598
Int. Cl.[3] G06F *11/00*
U.S. Cl. 371—15 19 Claims



11. A diagnostic apparatus for more than two digital-to-analog converters, comprising:

switch means for selecting two of the digital-to-analog converters;

digital signal generation means for applying digital signals to the selected two digital-to-analog converters, said digital signals being changed in sequence such that the analog output voltages from said two digital-to-analog converters are changed symmetrically with respect to a first predetermined voltage;

a resistor network for combining the analog output voltages from the selected two digital-to-analog converters; and

a comparator for comparing the output voltage from said resistor network with a second predetermined voltage, the

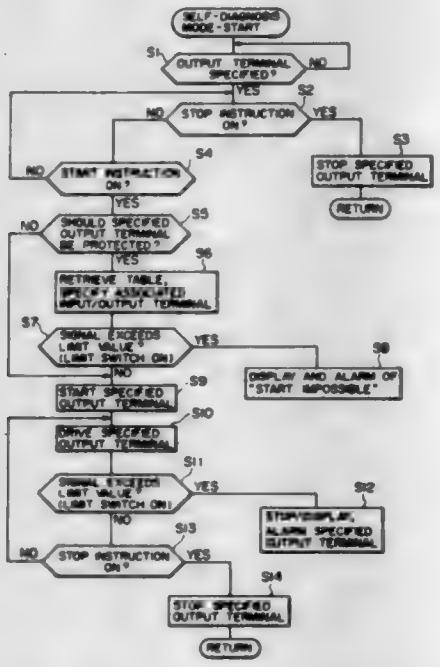
output signal from said comparator representing a diagnostic result of said selected digital-to-analog converters.

4,538,267

PROTECTING DEVICE IN SELF-DIAGNOSIS

Hiroyasu Uchida, Kanagawa, Japan, assignor to Fuji Xerox Co., Ltd., Tokyo, Japan

Filed Aug. 9, 1982, Ser. No. 406,142
Claims priority, application Japan, Aug. 10, 1981, 56-124114
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—20 **7 Claims**



1. In a copying machine of the type having output means comprising a plurality of electromechanical operating devices and activating means for activating said output means, and having a self-diagnosis mode of operation whereby a specified output means of said copying machine is activated by said activating means for testing purposes, and selection means manually operable by said operator for specifying desired output means, said selection means comprising control means on a machine front panel for designating individual ones of said operating devices to be activated for testing purposes, the improvement comprising:

protecting means, responsive to the operation of said selection means whereby a desired output means is specified, for automatically specifying at least one further output means to be activated during testing of said desired output means.

4,538,268

TEST-SIGNAL GENERATING DEVICE FOR TESTING ELECTRONIC EQUIPMENT

Luc Pham Van Cang, Paris, France, assignor to Thomson-CSF, Paris, France

Filed Mar. 16, 1983, Ser. No. 476,021
Claims priority, application France, Mar. 19, 1982, 82 04752
Int. Cl.³ G01R *31/28*
U.S. Cl. 371—20 **10 Claims**

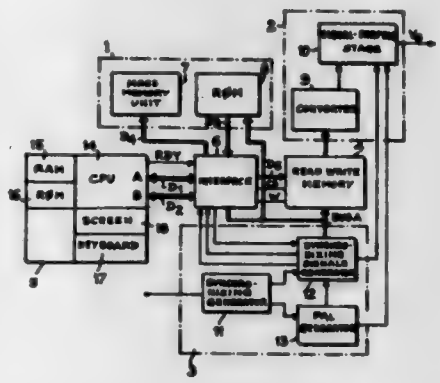
1. A test-signal generating device for testing electronic equipment and comprising means for storing test signals in the form of digital samples coupled to a digital-to-analog converter for converting the samples stored in digital form to analog signals at the output of the device, wherein said device comprises:

a read/write memory interposed between the analog-to-digital converter and the storage means;

a computer coupled to the storage means and to the read/-write memory and comprising:

means for generating test signals in the form of digital samples;

means for transferring into the read/write memory the signals stored within the storage means and the test signals produced by the generating means;



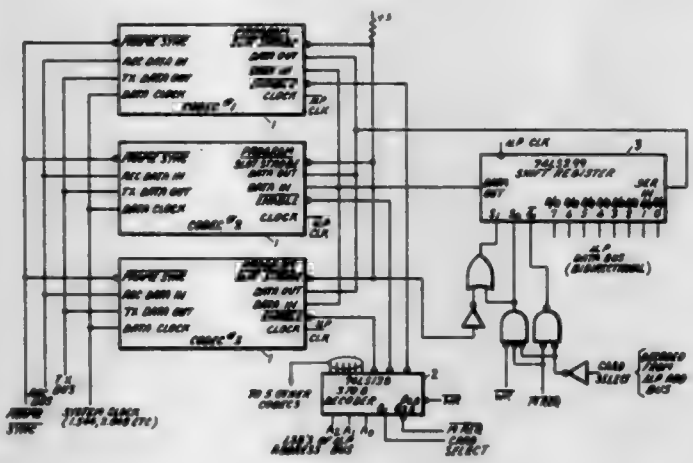
as well as means for synchronizing the transfer of samples stored within the read/write memory to the digital-to-analog converter.

4,538,269

PROGRAMMABLE CODING AND DECODING ARRANGEMENT

Milton R. Briscoe, Raleigh, N.C., assignor to International Telephone and Telegraph Corporation, New York, N.Y.

Filed Apr. 18, 1983, Ser. No. 485,988
Int. Cl.³ G06F *11/02*
U.S. Cl. 371—22 **16 Claims**



1. A digital signal processing arrangement, comprising:

at least one communication path for digital communication signals;

signal processing means including a plurality of testable components interposed in respective sections of said communication path and each operative for processing digital signals passing therethrough;

at least one testing path connected to the respective section of said communication path at a juncture and bypassing at least one of said components;

at least one switching means interposed between the respective section of said communication path, the testing path, and the remainder of said communication path at a location situated at the opposite side of said one component from said juncture as considered in the direction of propagation of digital signals and operative for selectively connecting said remainder of said communication path with said section of said communication path in one switching position and with said testing path in another switching position thereof; and

means for so controlling the operation of said switching means as to cause said switching means to temporarily assume said other switching position thereof during testing of the performance of said signal processing means to thereby provide at least one testing route bypassing said

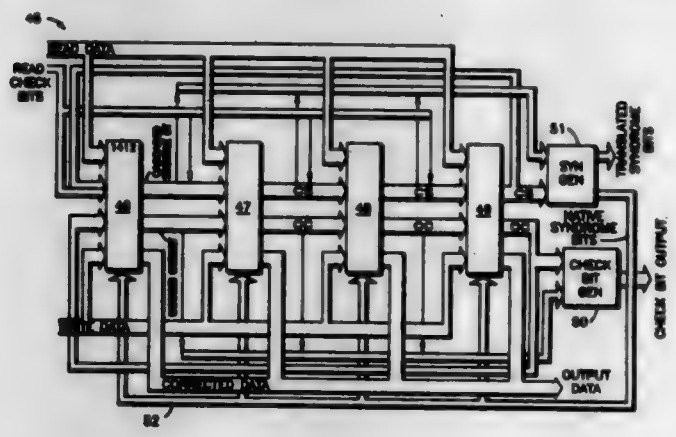
one component via said testing path for the signal processing means to process digital signals passing therethrough for subsequent evaluation to the exclusion of said one component.

4,538,270

METHOD AND APPARATUS FOR TRANSLATING A PREDETERMINED HAMMING CODE TO AN EXPANDED CLASS OF HAMMING CODES

Edgar R. Goodrich, Jr., Lubbock, and Philip Navratil, Austin, both of Tex., assignors to Motorola, Inc., Schaumburg, Ill.

Filed Apr. 4, 1983, Ser. No. 481,606
Int. Cl.³ G06F *11/12*
U.S. Cl. 371—37 **5 Claims**



1. In an error checking and correcting system for encoding a sequence of data bits in accordance with a selected Hamming code to provide a set of native check bits, each of which is an output of a corresponding one of a set of predetermined parity trees applied across the sequence of said data bits, a method for translatiang the selected Hamming code to a selected one of an expanded class of modified Hamming codes, comprising the steps of:

selecting a predetermined subset of said parity trees;

selectively encoding the selected subset of said parity trees in accordance with a predetermined translation code to provide a modified parity tree;

providing a modified check bit as the output of said modified parity tree; and

substituting said modified check bit for a selected one of said native check bits, whereby the resultant set of check bits is characteristic of the sequence of data bits as encoded in accordance with said expanded class of modified Hamming codes

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4,538,271

SINGLE PARITY BIT GENERATION CIRCUIT

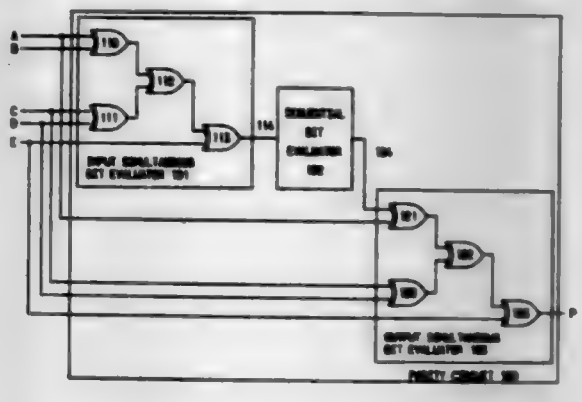
Dwight W. Kohs, Broomfield, Colo., assignor to AT&T Information Systems Inc., Holmdel, N.J.

Filed May 4, 1983, Ser. No. 491,279
Int. Cl.³ G06F *11/10*
U.S. Cl. 371—49 **10 Claims**

6. In a data handling system, a parity circuit connected to a plurality of data transmission leads over which is transmitted a prescribed data set having n increments of data where each of said increments contains a like plurality of bits and where each of said increments included in said data set is serially transmitted to said parity circuit in synchronization with control signals that delimit the first and last increment of said prescribed data set, comprising:

means connected to said data transmission leads for simultaneously combining in response to a first control signal that delimits the first increment of said prescribed data set all of said bits in each one of said increments as received to produce an associated representative bit for each of the first received n−1 increments indicative of the odd or even number of 1 bits included in each received n−1 increment;

sequential bit evaluator means connected to said simultaneously combining means and responsive to said produced representative bits associated with said n−1 increments and further responsive to a second control signal that delimits the end of said prescribed data set as generated



with a receipt of a last increment n for generating an indicative bit representing the odd or even cumulative number of 1 bits included in all received n−1 increments; and

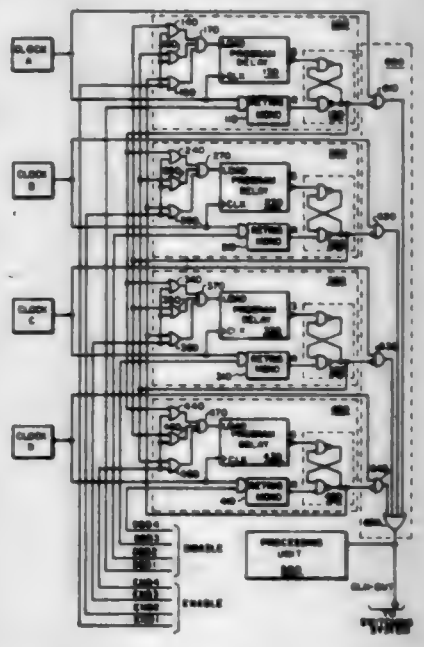
means connected to said sequential bit evaluator means and responsive to said indicative bit and the receipt of said n increment for generating a single parity bit indicative of the parity for said prescribed data set.

4,538,272

PRIORITIZED CLOCK SELECTION CIRCUIT

Ivan L. Edwards, West Lafayette, Ind., and Max S. Macrander, Warrenville, Ill., assignors to GTE Automatic Electric Incorporated, Northlake, Ill.

Filed Dec. 22, 1983, Ser. No. 564,270
Int. Cl.³ G06F *1/04, 11/20*; H04Q *3/54*
U.S. Cl. 371—61 **20 Claims**



1. A clock selection circuit for use in a switching system which includes a plurality of clock circuits, each being operative to provide a stream of clock pulses, said clock selection circuit comprising:

a plurality of delay circuits each connected to all but one associated clock circuit and each being operative to provide a time-out signal;

a plurality of clock pulse detection circuits, each connected to said associated clock circuit and operative, in response to an absence of a clock pulse for a predetermined time, to provide a clock failure signal;

a plurality of storage circuits each connected to a different one of said delay circuits and a different one of said detection circuits, and each being operative in response to the time-out signal from the connected delay circuit to provide a clock enable signal for said associated clock circuit, and each of said storage circuits being further operative in response to the clock failure signal from the connected clock pulse detection circuit to provide a clock disable signal for said associated clock circuit; and

a clock signal gating circuit connected to said plurality of clock circuits and said plurality of storage circuits and operative in response to each of said clock enable signal to gate clock pulses from the associated clock circuit to said switching system;

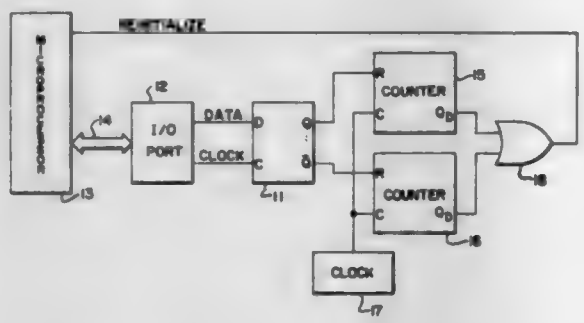
each of said delay circuits being operative in response to simultaneous presence of said clock disable signal from all of the unassociated clock circuits to provide said time-out signal after a different predetermined time.

4,538,273

DUAL INPUT WATCHDOG TIMER

George A. Lasser, Schaumburg, Ill., assignor to Honeywell Inc., Minneapolis, Minn.

Filed Nov. 12, 1982, Ser. No. 441,005
Int. Cl.[3] G06F *11/04*
U.S. Cl. 371—62 9 Claims



1. A dual input watchdog timer for processor means comprising:

dual input means having first and second inputs and having at least one output;

input connecting means for connecting said first and second inputs to a processor means such that said inputs receive signals from different software modules of said processor means; and,

output connecting means responsive to said at least one output of said dual input means for providing a reinitialization signal to said processor if said dual input means improperly receives said signals to said inputs within a predetermined amount of time.

4,538,274

Q-SWITCHED RAMAN LASER SYSTEM

E. Victor George, Livermore, Calif., assignor to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Jan. 4, 1983, Ser. No. 455,445
Int. Cl.[3] H01S *3/00*
U.S. Cl. 372—3 9 Claims

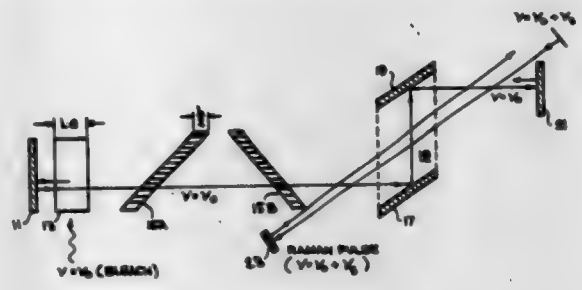
1. A method for producing a pulse of laser radiation of frequency $\nu=\nu_0+\Delta\nu_S$, the method comprising the steps of:

providing an optical cavity including two end mirrors, with a Raman cell, an energy storage laser amplifier and a saturable absorber therebetween, with the saturable absorber being positioned adjacent to one optical cavity end mirror, with the absorber density N, the length of the saturable absorber L_A, the absorber cross-sectional area Q_A, the effective amplifier gain length L and the amplifier gain per unit length αL satisfying $NQ_AL_A \gtrsim \alpha L$;

introducing into the Raman cell a Raman-active gas that is excited by passage therethrough of radiation of frequency $\nu=\nu_0$ and that emits radiation at the first Stokes or anti-Stokes frequency $\nu=\nu_0+\Delta\nu_S$ corresponding to excitation at frequency $\nu=\nu_0$;

introducing a small intensity pulse of predetermined frequency $\nu=\nu_0$ into the optical cavity and causing the pulse to propagate two or more times through the energy storage laser amplifier, the Raman cell, and the saturable absorber;

introducing a bleaching pulse centered at frequency $\nu=\nu_0$



into the saturable absorber so that the absorber becomes substantially transparent to radiation of frequency $\nu=\nu_0$;

shortly after introduction of the bleaching pulse, propagating a Raman pulse of predetermined frequency $\nu=\nu_0+\Delta\nu_S$ through the Raman cell in timed relationship with a counterpropagating pulse produced by the amplifier itself,

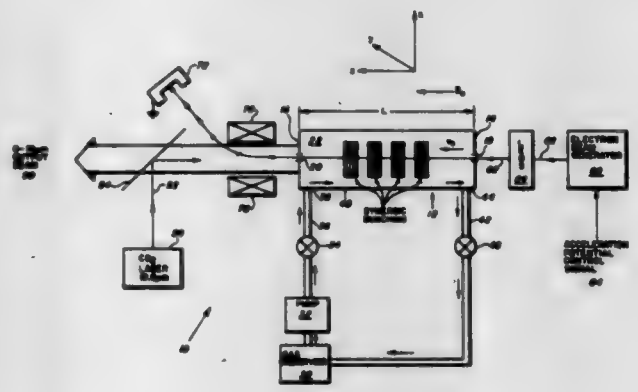
whereby a high intensity pulse of frequency $\nu=\nu_0+\Delta\nu_S$ issues from the Raman cell.

4,538,275

SYNERGISTIC QUASI-FREE ELECTRON LASER

Harold H. Szu, 9402 Wildoak Dr., Bethesda, Md. 20814

Filed Feb. 27, 1984, Ser. No. 584,224
Int. Cl.[3] H01S *3/30*
U.S. Cl. 372—4 17 Claims



1. An infrared radiation generator device comprising:

means for producing a volume of ionized gas plasma;

means for directing an electron beam through said gas plasma in a first direction; and

means for directing a laser pump beam into said gas plasma in a second direction opposite said first direction to produce synergistic bunching of said electron beam and said gas plasma;

said synergistically bunched electron beam and gas plasma acting to backscatter a portion of said laser pump beam to form an output beam;

said output beam having a frequency Ω_1 as given by:

$$\Omega_1 = \Omega_o\left[\left(1+\frac{V_{ob}}{c}\right)/\left(1-\frac{V_{ob}}{c}\right)\right]$$

where:

Ω_o is the frequency of said laser pump beam;

V_{ob} is the velocity of said electron beam; and

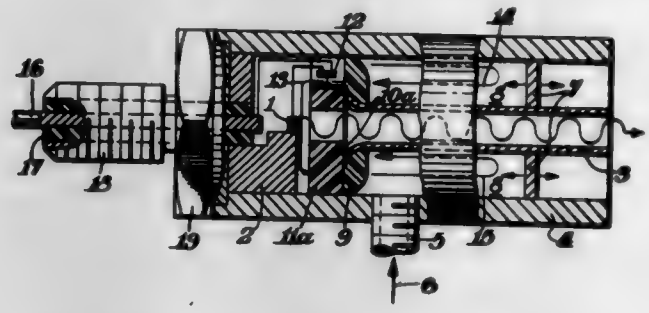
c is the free space velocity of light.

4,538,276

DIRECT MODULATION OF INJECTION LASERS

Hermann B. Sequeira, Baltimore, Md., and Jay E. Taylor, Elizabeth City, N.C., assignors to University of Delaware, Newark, Del.

Filed Jul. 27, 1982, Ser. No. 402,299
Int. Cl.[3] H01S *3/02, 3/19*
U.S. Cl. 372—26 2 Claims



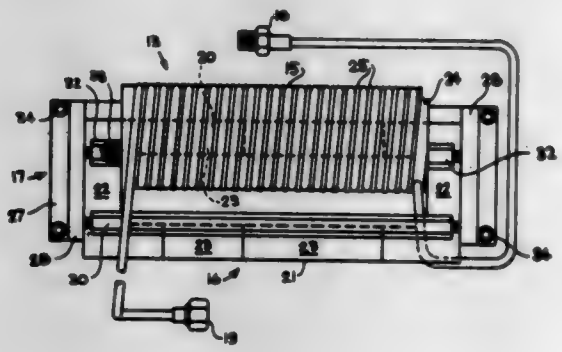
1. A laser diode system for modulating microwave signals wherein microwave signals of at least about 5 GHz frequency are caused to impinge on a laser diode, whereby said singals are translated to optical output consistent with the microwave signal, said system comprising a microwave channel for bringing microwave signals to said diode, a bias post for imposing a direct current bias signal on said diode, and an optical channel for carrying said optical signal out of the device, wherein said microwave channel comprises an annular space between said optical channel and a housing enclosing said system, and wherein said microwave channel, said bias post and said optical channel are colinear and said optical channel comprises means for essentially suppressing the propagation of microwave signals adventitiously present in said optical channel.

4,538,277

INDUCTIVE GAS LINE FOR PULSED LASERS

William J. Benett, Livermore, and Terry W. Alger, Tracy, both of Calif., assignors to The United States of America as represented by the United States Department of Energy, Washington, D.C.

Filed Sep. 29, 1982, Ser. No. 426,435
Int. Cl.[3] H01S *3/00*
U.S. Cl. 372—33 19 Claims



1. A method for eliminating an electrical discharge path through a gas inlet line connected to a gas discharge chamber utilizing pulsed electrical energy for producing the gas discharge, comprising the steps of:

utilizing a gas inlet line constructed of electrically conductive material,

forming the gas inlet line in a coil configuration, and

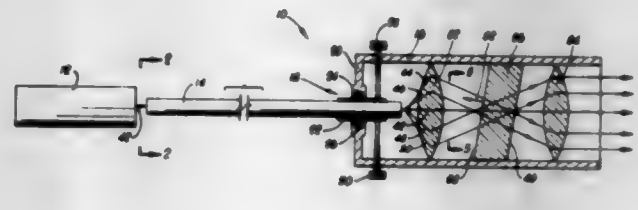
thereby providing animpedance with the coil to any pulsed electric current entering the gas inlet line.

4,538,278

APPARATUS AND METHOD FOR GENERATING LIGHT IN THE NEAR ULTRAVIOLET TO INFRARED RANGE

John S. Gergely, Ponca City, Okla., assignor to Conoco Inc., Ponca City, Okla.

Filed Sep. 2, 1982, Ser. No. 414,503
Int. Cl.[3] H01S *3/091*
U.S. Cl. 372—70 9 Claims



1. Apparatus for generating light of selected wavelength in the near ultraviolet to infrared wavelength range comprising:

a light source of linearly polarized light having a wavelength range of about 550–1100 nanometers;

a non-linear crystal;

an optical fiber having one end positioned adjacent said light source to permit transmission of said light within said fiber and the other end positioned adjacent said crystal to beam such transmitted light therethrough;

a dye cell positioned adjacent said crystal intercepting light therefrom, said cell including organic dye having an absorption spectrum in the ultraviolet range and a fluorescence emission spectrum in the near ultraviolet to infrared range; and

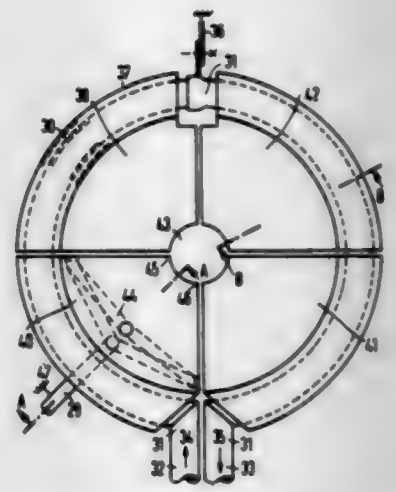
optical output means for passing only selected bandwidths of fluorescent light emitted from said dye cell.

4,538,279

INDUCTION COIL IN THE FORM OF A PANCAKE COIL FOR CRUCIBLE-FREE ZONE MELTING

Wolfgang Keller, Munich, Fed. Rep. of Germany, assignor to Siemens Aktiengesellschaft, Berlin and Munich, Fed. Rep. of Germany

Filed Jul. 15, 1983, Ser. No. 514,166
Claims priority, application Fed. Rep. of Germany, Jul. 16, 1982, 3226713
Int. Cl.[3] C03B *20/00*; H05B *6/44*
U.S. Cl. 373—139 27 Claims



1. Pancake induction heating coil for crucible-free zone melting of semiconductor crystal rod, comprising a primary winding surrounding a semiconductor rod to be remelted in the form of a ring through which cooling liquid flows, a hollow secondary winding surrounding said primary winding, and an energy concentrator lying in the plane of said primary winding and having a circular opening formed substantially in the center thereof for the semiconductor rod, said secondary

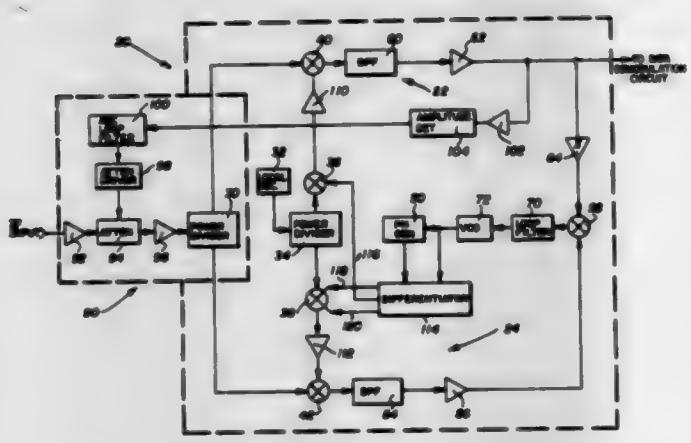
winding and said energy concentrator each being subdivided into at least two segments being electrically separated from each other, each of said segments of said secondary winding being connected to a respective one of said segments of said energy concentrator.

4,538,280

COHERENT SPREAD SPECTRUM PSEUDONOISE TRACKING LOOP

William H. Mosley, Jr., St. Petersburg, and Carl F. Andren, Indiatlantic, both of Fla., assignors to E-Systems, Inc., Dallas, Tex.

Filed May 5, 1983, Ser. No. 492,021
Int. Cl.³ H03D *1/22*
U.S. Cl. 375—1 **35 Claims**



30. A method of detecting a received data signal using a local generated reference signal comprising:

applying the received spread data signal to first and second channels;

generating the local reference signal having polarity transitions in response to a control signal;

demodulating within the first channel the received data signal in response to the local reference signal thereby generating a detected data signal;

detecting the polarity transitions in the local reference signal thereby generating a differential PN signal;

correlating within the second channel the received data signal and the differential PN signal thereby generating a recovered error signal; and

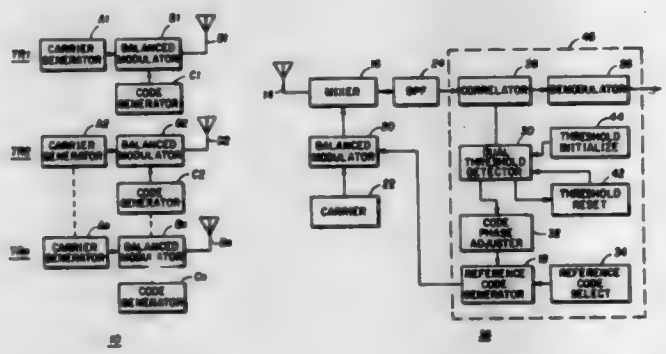
correlating the detected data signal and the error signal thereby generating the control signal.

4,538,281

ADAPTIVE ACQUISITION OF MULTIPLE ACCESS CODES

John A. Rajan, Hiawatha, Iowa, assignor to Rockwell International Corporation, El Segundo, Calif.

Filed May 6, 1982, Ser. No. 375,624
Int. Cl.³ H06K *1/04*
U.S. Cl. 375—2.2 **18 Claims**



16. In a direct sequence spread spectrum communication system having a plurality of transmitters and receivers wherein each of said transmitters transmit a differently coded carrier for code division multiplexing, and each receiver generates a reference code which is a replica of the code received from a transmitter from which reception is desired for enabling multiple access reception, said receivers including correlation controlled phase matching structure for measuring the correlation between the received code and reference code at successive different code phases for determining a match of the code phases, the improvement in said correlation controlled phase matching structure comprising:

means for establishing a first threshold signal and a second threshold signal having a magnitude greater than said first threshold signal;

means for detecting when a measured correlation exceeds said first or second threshold signals;

means for increasing the magnitude of said first and second threshold signals when a measured correlation exceeds said second threshold signal;

means for providing an indication of code phase when said measured correlation exceeds said first or second threshold signals; and

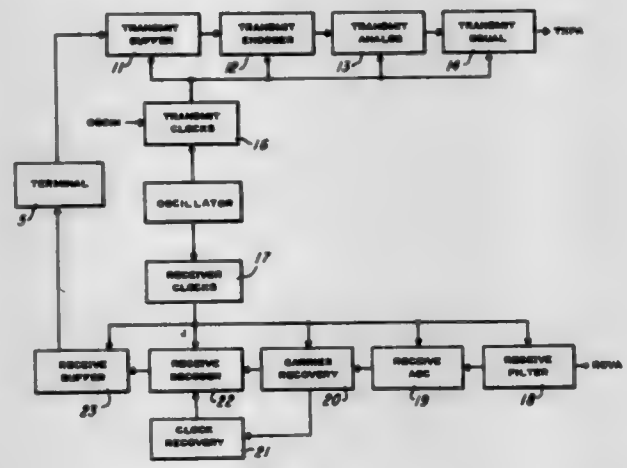
means for fixing the phase of the reference code at the phase represented by the most recent indication of code phase.

4,538,282

INTEGRATED CIRCUIT PSK MODEM PHASE LOCKED LOOP

James R. Hochschild, Houston, Tex., assignor to Texas Instruments Incorporated, Dallas, Tex.

Filed Aug. 16, 1982, Ser. No. 408,558
Int. Cl.³ H03D *3/00*; H03B *3/06*
U.S. Cl. 375—9 **9 Claims**



1. An integrated circuit PSK modem for transmitting and receiving PSK signals derived from digital signals, the PSK signals being impressed on a first and second carrier frequency, respectively, comprising:

(a) transmit and encoding means for encoding digital data into a first format for conversion to corresponding PSK signals;

(b) transmit modulating means, implemented in sampled analog signal processing circuitry connected to receive the first format, for phase modulating the first carrier frequency according to the first format to provide corresponding PSK signal;

(c) receive demodulating means implemented in sampled analog signal processing circuitry, for demodulating the PSK signals on the second carrier frequency to provide PSK signals in a second format for conversion to corresponding digital signals, the demodulating means including a phase locked loop comprising low pass filter means for receiving an input voltage signal, integrator means connected to receive the output from the low pass filter means and to integrate the signal, parallel path means connected to the output of the low pass filter means and parallel with the integrator means, gain adjusting means

connected to receive the output from the integrator means and connected to sum with the output of the low pass filter means, the gain adjusted to a value that permits the low pass filter output to override the gain adjusting means output, and voltage controlled oscillator means connected to receive the summed output; and

(d) receive encoding means connected to receive the second format for encoding the second format to corresponding digital signals.

4,538,283

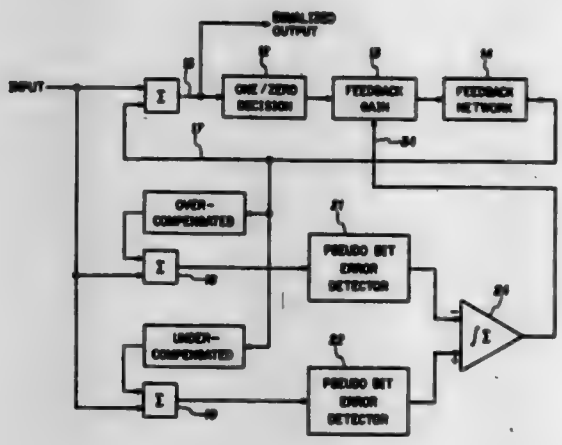
ADAPTIVE EQUALIZER SUITABLE FOR USE WITH FIBER OPTICS

Charles R. Hogge, Jr., Richardson, Tex., assignor to Rockwell International Corporation, El Segundo, Calif.

Filed Jul. 26, 1983, Ser. No. 517,317

Int. Cl.³ H04B 1/12

U.S. Cl. 375—14 **10 Claims**



1. A circuit for adaptively equalizing a digital signal to compensate for distortion introduced by a transmission medium, comprising:

means for modifying said digital signal, to an extent established by a controlling input signal, to provide an output signal for said circuit, said means being responsive, in feedback relationship, to said output signal;

means, responsive to said output signal in feedback relationship, for modifying said digital signal by an amount selected to overcompensate said digital signal for said distortion, thereby providing an overcompensated control loop signal;

means, for modifying said digital signal by an amount selected to undercompensate said digital signal for said distortion, thereby providing an undercompensated control loop signal;

means for detecting errors in said overcompensated signal and errors in said undercompensated signal; and

means for detecting the difference between said errors detected in said overcompensated signal and said undercompensated signal and generating said controlling input signal dependent on said difference,

whereby said output signal is adaptively equalized.

4,538,284

SIGNAL STRUCTURES WITH DATA ENCODING/DECODING FOR QCM MODULATIONS

Gordon R. Lang, Bolton, Canada; George D. Forney, Jr.; Shahid Qureshi, both of Mansfield, Mass.; Fred M. Longstaff, Islington, and Chi H. Lee, Willowdale, both of Canada, assignors to ESE Limited, Rexdale, Canada

Filed Feb. 25, 1982, Ser. No. 352,207

Claims priority, application Canada, Mar. 25, 1981, 373861

Int. Cl.³ H03C 5/00

U.S. Cl. 375—39 **31 Claims**

1. Means for providing QCM signals to a transmission link, comprising:

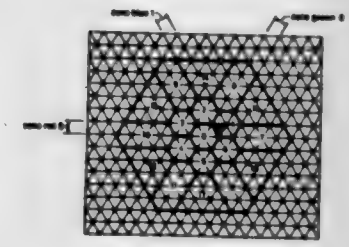
means for receiving binary signals,

means for converting groups corresponding to n of such binary signals having 2^n possible group values into signals represent a set of K signal message points each defined by Cartesian coordinate pairs where $K > 2^n$, the signal message points being substantially located at intersections on a regular equilateral triangular grid,

where each message point corresponds to only one group value of the 2^n possible values, and at least one of the 2^n possible values corresponds to at least two message points,

said converting means including means responsive to one of said at least one possible values for selecting at different times different ones of said at least two corresponding message points,

said converting means being designed, responsive to a continuing random sequence of said binary signals, to utilize



each of said K message points and to select message points corresponding to the at least one of the values, to substantially reduce the carrier component in said QCM signals,

means responsive to said message point signals for providing a pair of quadrature carriers respectively modulated in accord with the coordinates of said signal message points.

22. In a receiver for receiving QCM modulated signals wherein such modulated signals were encoded to represent the rectangular coordinates of signal points arranged at the intersection of lines on a regular equilateral triangular grid,

means for deriving said rectangular coordinates from the received signal,

means for converting said derived rectangular coordinates into sets of three signal values, each signal value being characteristic of a zone parallel to a different one of said triangular grid directions.

4,538,285

FM-RECEIVER FOR RECEIVING FM-SIGNALS WITH TRANSMISSION IDENTIFICATION

Gerardus C. M. Gielis, and Antoon M. M. Van Kessel, both of Eindhoven, Netherlands, assignors to U.S. Philips Corporation, New York, N.Y.

Filed Mar. 3, 1983, Ser. No. 472,375

Claims priority, application Netherlands, Mar. 15, 1982, 8201056

Int. Cl.³ H04B 1/10, 1/32

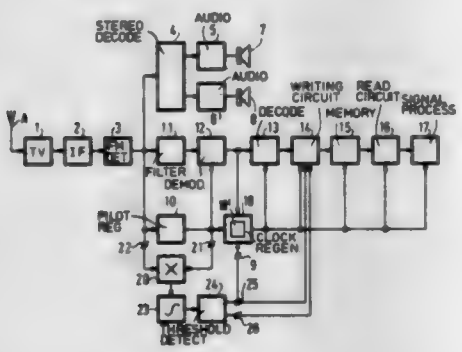
U.S. Cl. 375—104 **7 Claims**

1. An FM receiver for receiving an FM signal containing a transmission identification code of the type having an aerial input connected to a tuning unit, coupled to the combination of an IF unit, FM detector, pilot regeneration circuit and a demodulation circuit for demodulating said identification code, a circuit for processing said demodulated identification code comprising:

a clock regeneration circuit connected to said pilot regeneration circuit and said demodulation circuit which includes a resettable phase search circuit for producing a clock signal the frequency of which is derived from a regenerated pilot signal and the phase of which is derived from the demodulated code signal;

a clock controlled decoding circuit for decoding the code signals;

a switchable writing circuit for writing said code signals into a memory circuit;
a memory for receiving said decoded code signals as memory contents;
a reading circuit for reading the contents of said memory;
a signal unit connected to receive said read out memory contents controlled by said clock signal; and
interference detection means for detecting interference levels of a first and second level, said interference detector



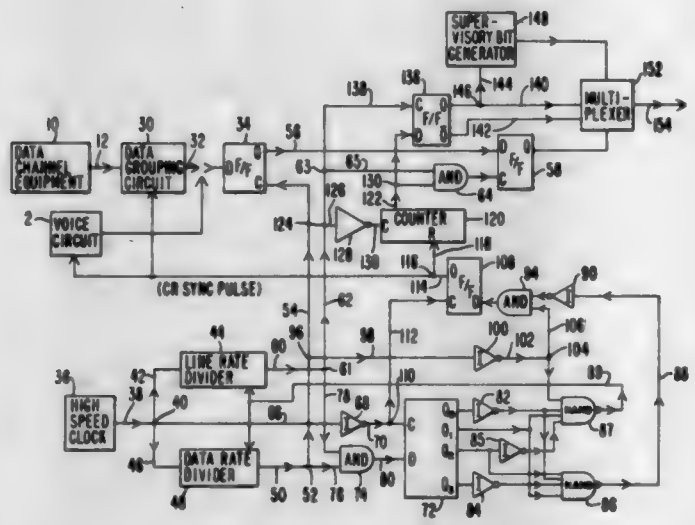
means having a control signal generation circuit connected to inhibit said writing circuit when an interference level of said first level is detected and resetting the clock regeneration circuit when interference levels of said second level are received, said first interference level being lower than said second interference level at which noticeable decoding errors occur, the second interference level being substantially equal to the interference level at which a phase slip of the clock signal occurs.

4,538,286

DATA RATE CONVERSION AND SUPERVISORY BIT INSERTION IN A DATA SYSTEM

John B. McNesby, Mesa, Ariz., and Joseph F. Krys, Denver, Colo., assignors to GTE Communications Products Corporation, Stamford, Conn.

Filed Jul. 26, 1983, Ser. No. 517,309
Int. Cl.³ H04J *3/06*
U.S. Cl. 375—112 **6 Claims**



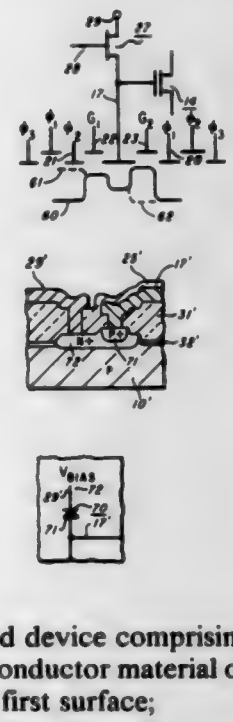
1. Digital transmission apparatus adapted to accept binary data from a data source and to convert said data into a serial pulse train formed of words having n bits per byte in n equal-length time slots at a line transmission rate L, and wherein said binary data has a bit rate M which is less than said line transmission rate L, said apparatus comprising:
timing means generating a first clock signal of bit rate L and a second clock signal of bit rate M;
synchronizing means, responsive to said second clock signal and to said binary data, providing a synchronized binary data signal in phase with said second clock signal of bit rate M;
retiming means, responsive to said first clock signal and to said synchronized binary data signal, providing a retimed binary data signal of bit rate M;
comparison means, responsive to said first and second clock signals, providing a coincidence output signal when said first and second clock signals are in phase alignment; and
multiplexing means for increasing the bit rate of said retimed binary data signal from M to L and for inserting additional bits into said retimed binary data signal at appropriate time slots in response to said coincidence output signal, and thereby providing a serial pulse train at the desired line transmission rate L.

4,538,287

FLOATING GATE AMPLIFIER USING CONDUCTIVE COUPLING FOR CHARGE COUPLED DEVICES

Charles G. Roberts, Plano, and Joseph E. Hall, Richardson, both of Tex., assignors to Texas Instruments Incorporated, Dallas, Tex.

Filed Jun. 4, 1979, Ser. No. 45,466
Int. Cl.³ G11C *19/28*; H01L *29/78*
U.S. Cl. 377—60 **1 Claim**



1. A charge-coupled device comprising:
a substrate of semiconductor material of one type conductivity and having a first surface;
means defining a charge transfer channel extending along said first surface of said substrate;
a body of insulating material disposed on said first surface of said substrate;
first and second phase electrodes embedded within said insulating body and extending transversely across said channel in spaced relationship;
a floating gate electrode embedded within said insulating body between said phase electrodes and extending transversely across said channel in spaced relationship with respect to said first and second phase electrodes;
a pair of parallel spaced conductive control gates disposed on said insulating body in overlying relation to said channel, each of said control gates partially overlying said floating gate electrode and a respective one of said first and second phase electrodes but spaced therefrom by insulating material of said insulating body;
first and second regions of the other type conductivity disposed in said substrate in spaced relationship and adjacent to said channel;
said floating gate electrode extending between said first and second regions of the other type conductivity and cooperating therewith to define a transistor wherein the first and second regions of the other type conductivity form the source and drain and said floating gate electrode is the gate thereof;
an elongated conductive member defining a bias line disposed on said insulating body and overlying said substrate at a location remote from said channel;

voltage source means connected to said bias line for providing a constant voltage thereto;

a semiconductor diode formed in said substrate and extending between said bias line and said floating gate electrode, said semiconductor diode comprising a first diffused region of the other type conductivity in said substrate defining a cathode connected to said bias line and a second diffused region of one type conductivity in said first diffused region defining an anode connected to said floating gate electrode to conductively connect said bias line and said floating gate electrode for setting the potential on said floating gate electrode;

means operable to apply voltages to said control gates in a manner transferring respective charge packets along the charge transfer channel to and away from a position under said floating gate electrode; and

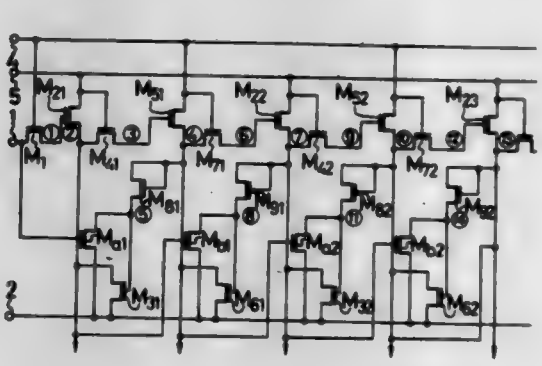
the potential on said floating gate electrode being changeable in response to a charge packet from the charge transfer channel being propagated thereunder for modulating the current flow in said transistor to produce an amplified output signal.

4,538,288

SHIFT REGISTER CIRCUIT WITH MULTIPLE, TAPPED OUTPUTS HAVING PULL-DOWN TRANSISTORS

Mitsuo Soneda; Toshikazu Maekawa, and Kouji Otsu, all of Kanagawa, Japan, assignors to Sony Corporation, Tokyo, Japan

Filed Sep. 1, 1983, Ser. No. 528,465
Claims priority, application Japan, Sep. 8, 1982, 57-156317
Int. Cl.[3] G11C *19/28*; H03K *17/06, 19/096*
U.S. Cl. 377—76 **5 Claims**



1. A signal translating circuit for generating plural pulse outputs in positions that are shifted time sequentially, said signal translating circuit comprising:

an input terminal supplied with an input signal;

first and second clock terminals supplied with first and second clock signals, respectively, said first and second clock signals having different phases from each other;

plural translating stages connected in series to said input terminal, each stage including

a source follower transistor having a gate, a source and a drain, said drain being connected to one of said first and second clock terminals, and a bootstrap capacitor formed between said gate and source; and

a transmission gate transistor having a gate, a source and a drain, the drain of said transmission gate transistor being connected to the source of said source follower transistor, the gate of said transmission gate transistor being connected to receive an enabling potential, and the source of said transmission gate transistor being connected to the gate of the source follower transistor of a succeeding stage;

plural output terminals where said plural pulse outputs appear, said output terminals being respectively connected to the sources of the source follower transistors;

means for connecting said first clock terminal to the drains of said source follower transistors of alternate stages and

for connecting said second clock terminal to the drains of said source follower transistors of the remaining stages;

a switching device connected between each output terminal and ground and actuating means in each stage for turning on said switching device, said actuating means receiving the pulse output of the succeeding output terminal and generating a control signal in response thereto for turning on said switching device; and

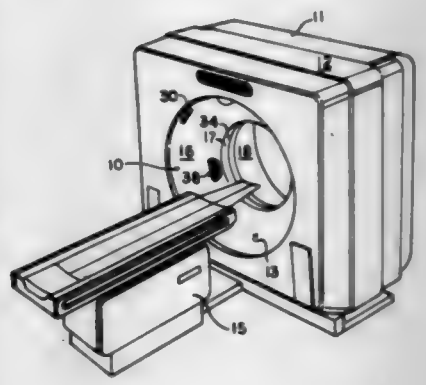
reset means in each stage for resetting said control signal, said reset means being controlled by the pulse output of the preceding output terminal.

4,538,289

REFLECTIVE ALIGNMENT LIGHT FOR COMPUTERIZED TOMOGRAPHY

Karl J. Scheibengraber, Milwaukee, Wis., assignor to General Electric Company, Milwaukee, Wis.

Filed Dec. 28, 1981, Ser. No. 335,024
Int. Cl.[3] G03B *41/16*
U.S. Cl. 378—20 **2 Claims**



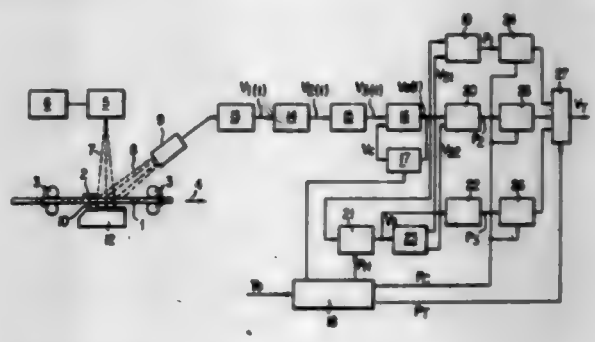
1. In a computerized tomography system having a gantry with a central opening and into which a patient can be placed for scanning, an alignment device for positioning a patient with respect to the central opening comprising: a source for projecting a beam of collimated light; and a reflective cylindrical rod disposed in such a position as to reflect said beam of collimated light in a diverging linear pattern.

4,538,290

APPARATUS FOR DETECTING AN ABNORMALITY IN PAPERLIKE MATERIAL

Yasushi Nakamura, Yokohama, Japan, assignor to Tokyo Shibaura Denki Kabushiki Kaisha, Kawasaki, Japan

Continuation of Ser. No. 969,379, Dec. 14, 1978, abandoned. This application Sep. 8, 1980, Ser. No. 184,904
Int. Cl.[3] G01M *23/22*
U.S. Cl. 378—44 **2 Claims**



1. An apparatus for examining a piece of paper having a pattern printed thereon, comprising:

means for transferring said piece of paper;

means for irradiating X-rays on said piece of paper transferred by said transferring means;

detecting means for detecting fluorescent X-rays scattered from said printed pattern on said paper;

subdividing means for subdividing said paper and the pattern located thereon into a plurality of areas;

a plurality of discriminator means each connected to said detecting means and said subdividing means for discriminating scattering characteristics of specific elements and for outputting pulses indicative of the presence of said specific elements;

a plurality of counting means corresponding to said plurality of discriminator means, each connected to said corresponding discriminator means for counting said output pulses from each of said discriminator means;

counter resetting means for resetting each of said counting means; and

means for outputting a predetermined reference signal indicative of an authentic document;

comparison logic means for comparing the counted outputs of said counting means with said predetermined output corresponding to said predetermined reference signal.

4,538,291

X-RAY SOURCE

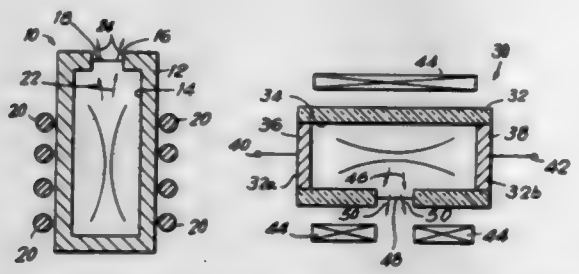
Seiichi Iwamatsu, Suwa, Japan, assignor to Kabushiki Kaisha Suwa Seikosha, Tokyo, Japan

Filed Nov. 2, 1982, Ser. No. 438,569

Claims priority, application Japan, Nov. 9, 1981, 56-179384; Nov. 9, 1981, 56-179385; Mar. 16, 1982, 57-41167

Int. Cl.³ H05G *1/00*; H01J *35/00*

U.S. Cl. 378—119 **14 Claims**



1. An X-ray source comprising a vessel, inert gas filling said vessel, and energizing means for causing said inert gas to enter a plasma state, said inert gas when placed in a plasma state producing X-rays, said vessel including window means for permitting sa[illegible] X-rays to radiate out of said vessel, said energizing means including a pair of spaced electrodes on said vessel, said electrodes, when energized, causing said inert gas to enter the plasma state, said energizing means further including coil means around said vessel for generating a magnetic field to cause said plasma to enter the pinch state so that X-rays are produced and radiated through said window means.

8. An X-ray source comprising a vessel, inert gas filling said vessel, and energizing means for causing said inert gas to enter a plasma state, a high frequency power being applied to said energizing means, said inert gas when placed in a plasma state producing X-rays, said vessel including window means for permitting said X-rays to radiate out of said vessel, said energizing means including magnetic coil means adjacent said vessel for creating a magnetic field when said high frequency power is applied thereto for causing said inert gas to enter the plasma state, said coil means being a high-frequency coil, with between substantially 100 KV and 500 KV being applied to said coil as said high-frequency power.

4,538,292

DENTAL INSTRUMENT FOR OPTIMAL POSITIONING OF AN X-RAY FILM SUPPORT

Enok S. R. Lindén, Teatergatan 34, S-582 22 Linköping, Sweden

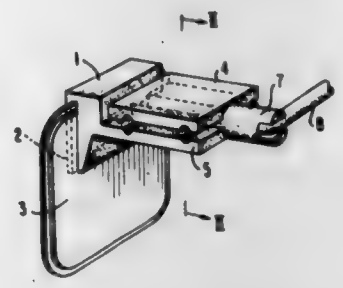
PCT No. PCT/SE82/00326, § 371 Date Jun. 14, 1983, § 102(e) Date Jun. 14, 1983, PCT Pub. No. WO83/01564, PCT Pub. Date May 11, 1983

PCT Filed Oct. 11, 1982, Ser. No. 505,035

Claims priority, application Sweden, Nov. 6, 1981, 8106601

Int. Cl.³ A61B *6/14*; A61C *19/00*; G03B *41/16*

U.S. Cl. 378—169 **6 Claims**



1. In a dental instrument for positioning of an X-ray film for X-raying of teeth or adjacent tissues, said dental instrument comprising an X-ray film support, a bite block integral with said film support and extending to one side thereof and generally perpendicular thereto to the plane of the X-ray film supported thereby, and an alignment rod coupled to said bite block for adjusting the position of the bite block relative to the film support, the improvement wherein said bite block comprises:

upper and lower flat plate portions spaced from each other, forming a gap,

one of said portions being integral with said film support extending outwardly therefrom and generally perpendicular to the plane of the X-ray film,

the other portion being generally parallel to said one portion, and

means for pivotably connecting said upper and lower plate portions at said gap for pivoting about an axis perpendicular to the plane of the X-ray film, and the plane of bite defined by the tooth rows contacting the top of the upper plate portion and the bottom of the lower plate portion of the bite block,

and wherein the plate portion of said bite block not integral with the film support, is free of said other portion except at said pivot connection therebetween, permitting the two plate portions to automatically assume such angular positions that each of them is parallel with a plane through the chewing surfaces of the adjacent tooth row to insure that once the teeth have been clamped to the bite block plate portions, the bite block and the X-ray film support are securely retained in the position selected by the dentist.

4,538,293

X-RAY FILM CASSETTE HOLDER

James W. Cutter, 85 Franks Dr., Hollister, Calif. 95023

Filed Feb. 23, 1983, Ser. No. 468,985

Int. Cl.³ H05G *1/00*

U.S. Cl. 378—181 **6 Claims**

1. An X-ray cassette holder for inserting and positioning an X-ray film cassette in an X-ray machine, said holder comprising:

a planar tray including means for inserting and positioning said tray in the X-ray machine and including:

first positioning means, coupled to said tray, for positioning the X-ray film cassette relative to said tray along a first coordinate axis;

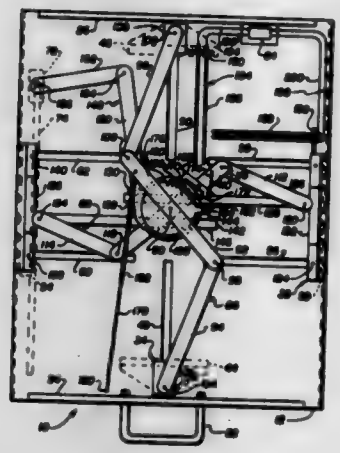
second positioning means, coupled to said tray, for positioning said cassette relative to said tray along a second coordinate axis orthogonal to said first coordinate axis;

actuator means, coupled to said machine and said second

positioning means, for enabling the positioning of said cassette by said second positioning means as said holder is inserted into said machine including:

(a) a slide for coupling said actuator means to said machine;

(b) an actuator link pivotably coupled at one end to said slide; and



(c) a crank rotatably coupled to the center of said tray and pivotably coupled to the other end of said actuator link; said slide, said actuator link and said crank forming a slider-crank mechanism that rotates said crank as said holder is inserted into and withdrawn from said machine; and

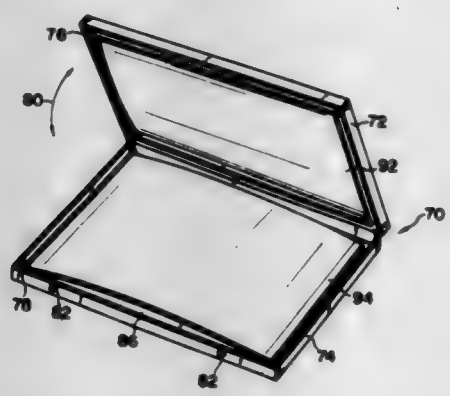
releasable coupling means for releasably coupling said actuator means to said second positioning means.

4,538,294

X-RAY FILM-HOLDING DEVICE WITH CONVEX CUSHION MEMBERS

Kaoru Tamura, Utsunomiya, and Yoshimasa Ogo, Ootawara, both of Japan, assignors to Tokyo Shibaura Denki Kabushiki Kaisha, Japan

Filed Feb. 10, 1984, Ser. No. 578,884
Claims priority, application Japan, Feb. 16, 1983, 58-22805
Int. Cl.³ G03B *11/00*
U.S. Cl. 378—187 **9 Claims**



1. An X-ray film-holding device for holding an X-ray film, comprising:

a front plate and a back plate permeable to X-rays;

supporting means for supporting the front and back plates so that the two plates can be fixed in overlapping relation;

cushion members on the front and back plate sides fixed to opposite faces of the front and back plates, said front- and back-plate-side cushion members having front- and back-plate-side convex surfaces curved in first and second directions, and arranged so that the first and second directions cross each other; and

intensifying screens on the front and back plate sides fixed to and curved along the front- and back-plate-side convex surfaces,

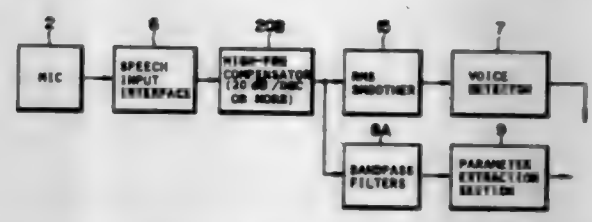
said X-ray film being held between the front- and back-plate-side intensifying screens by the elastic force of the front- and back-plate-side cushion members.

4,538,295

SPEECH RECOGNITION SYSTEM FOR AN AUTOMOTIVE VEHICLE

Kazunori Noso, Yokosuka, and Norimasa Kishi, Yokohama, both of Japan, assignors to Nissan Motor Company, Limited, Japan

Filed Aug. 16, 1982, Ser. No. 408,699
Int. Cl.³ G10L *1/00*
U.S. Cl. 381—43 **12 Claims**



1. A speech recognition system for an automotive vehicle for activating vehicle actuators in response to a spoken instruction signal received through a microphone, comprising:

(a) a voice input section including notch filter means for attenuating frequency components of the signals received through the microphone at approximately 400 Hz;

(b) voice detection means connected to said notch filter means for detecting beginning and end of spoken instruction signals and outputting instruction start and end signals for identifying, respectively, start and end of an instruction;

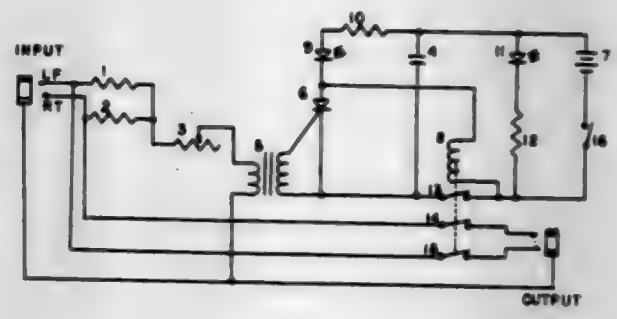
(c) a plurality of bandpass filter means connected to said notch filter means for further filtering signals filtered through said notch filter means to human speech frequency components and to noise frequency components due to noise resulting from engine operation; and (d) voice analysis means connected to said bandpass filter means and responsive to the instruction start and end signals for analyzing the signals filtered through said bandpass filter means, comparing analyzed results with predetermined reference values corresponding to at least one spoken instruction, and for activating at least one actuator when the analyzed results match predetermined reference values associated with the actuator.

4,538,296

SOUND INHIBITOR FOR AUDIO TRANSDUCERS

Robert S. Short, 24 Cornell Way, Hopatcong, N.J. 07843, and Mark S. Utter, 24 Lenape Dr., Montville, N.J. 07045

Filed Jul. 22, 1983, Ser. No. 516,040
Int. Cl.³ H02H *1/04*
U.S. Cl. 381—72 **21 Claims**



1. A protection circuit for limiting the sound pressure level provided by a transducer load but otherwise not interfering with the flow of audio signal current to said transducer load comprising:

(a) audio signal prevention means to immediately prevent audio signal current from reaching the transducer load which includes:

(i) means to sense voltage applied to the transducer load, and
(ii) means to increase said voltage, and
(iii) means to use said increased voltage when it exceeds a predetermined level to immediately prevent the audio signal current from reaching the transducer load,

(b) audio signal reestablishment means to reestablish the audio signal current to the transducer load after a fixed interval of time, and

(c) audio signal reprevention means to again prevent the audio signal current from reaching the transducer load in the event that said increased voltage still exceeds said predetermined level, and

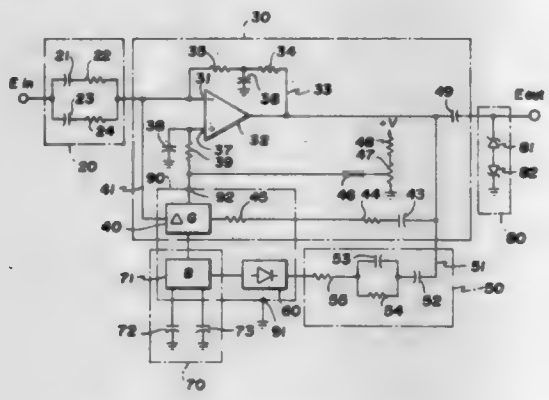
(d) repeating means to repeat the functions described in subparagraphs (b) and (c) above sequentially until said increased voltage does not exceed said predetermined level at which time said audio signal is allowed to reach the transducer load.

4,538,297

AURALLY SENSITIZED FLAT FREQUENCY RESPONSE NOISE REDUCTION COMPANSION SYSTEM

James Waller, Jr., 9901 Allen Rd., Clarkston, Mich. 48016

Filed Aug. 8, 1983, Ser. No. 521,144
Int. Cl.³ H04B *1/64*
U.S. Cl. 381—94 **14 Claims**



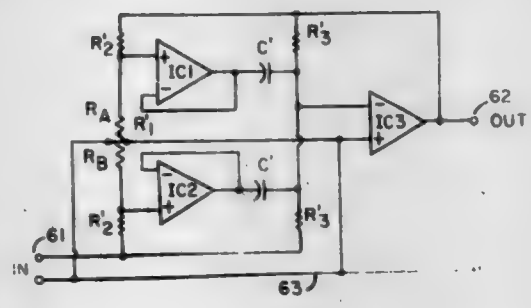
1. A flat frequency response compansion noise reduction system for an input signal comprising:
means for directly preemphasizing said input signal;
means for compressing said directly preemphasized signal;
means for inversely preemphasizing said compressed signal;
means for sensing said inversely preemphasized signal and for providing a first D.C. control signal having an amplitude that varies directly with the amplitude of said inversely preemphasized signal, said compressing means being variably responsive to said first D.C. control signal to determine the gain of said compressing means;
means for directly deemphasizing said compressed signal;
means for sensing said directly deemphasized signal and for providing a second D.C. control signal having an amplitude that varies directly with the amplitude of said directly deemphasized signal;
means for expanding said compressed signal, said expanding means being variably responsive to said second D.C. control signal to determine the gain of said expanding means; and
means for inversely deemphasizing said expanded signal,
the frequency response curve of said means for directly preemphasizing being a mirror image of the frequency response curve of said means for inversely deemphasizing,
the frequency response curve of said means for directly deemphasizing being a mirror image of the frequency response of said means for inversely preemphasizing,
the high frequency 3 db point of said means for inversely preemphasizing being within the flat frequency response range of the high frequency 3 db point of said means for directly preemphasizing, and
the high frequency 3 db point of said means for inversely deemphasizing being within the more sensitive frequency range of the human ear.

4,538,298

FIXED BANDPASS TONE CONTROLLING

Amar G. Bose, Wayland, Mass., assignor to Bose Corporation, Framingham, Mass.

Filed Sep. 29, 1982, Ser. No. 428,148
Int. Cl.³ H03G *5/00*
U.S. Cl. 381—98 **4 Claims**



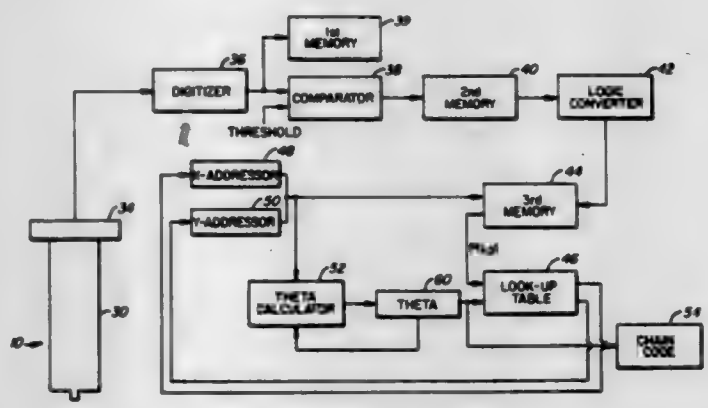
1. Fixed bandpass tone controlling apparatus comprising,
circuit means for establishing a transfer function characterized by a zero and a pole on the real axis in the complex frequency plane each spaced from the imaginary axis by a distance corresponding to an audible frequency,
and said circuit means including means for maintaining one of said pole and said zero fixed on said real axis while selectively moving the other along said real axis between a first position near the stationary one of said pole and said zero and a second position away from said stationary one of said pole and zero,
wherein said first position corresponds to that of said stationary one of said zero and said pole at substantially 1,000 Hz and said second position is always further from the center frequency of the audible spectrum corresponding substantially to 800 Hz than said first position.

4,538,299

METHOD AND APPARATUS FOR LOCATING THE BOUNDARY OF AN OBJECT

Sherman E. DeForest, Del Mar, Calif., assignor to International Remote Imaging Systems, Inc., Chatsworth, Calif.

Continuation-in-part of Ser. No. 327,368, Dec. 4, 1981, abandoned. This application Feb. 28, 1983, Ser. No. 470,208
Int. Cl.³ G06K *9/48*
U.S. Cl. 382—21 **16 Claims**



1. An apparatus for automatically locating the boundary of an object in a field of view, said apparatus comprising:
imaging means for forming an electrical image of the field of view;
means for forming a first representation of said image by segmenting said image into a plurality of pixels and digitizing the image intensity of each pixel into an electrical signal representing the greyscale value;
means for processing the electrical signal of each of said greyscale value to form a second representation of said image;

logic means for converting said second representation into a third representation whereby the value of a pixel at a location (hereinafter: pixel (X,Y)) in the second representation and the values of the nearest adjacent neighbors of said pixel at said location are converted into a single value at said corresponding location (hereinafter: P(X,Y)) in said third representation;

storage means for storing said third representation; and

table means for storing various possible values of P(X,Y), said table means for receiving a value of P(X,Y) and an input direction value, and for producing an output direction value to indicate the next location of P(X,Y) having a non-zero value; said non-zero values of P(X,Y) form the boundary of said object.

4,538,300

LINEAR SIGNAL STRENGTH DETECTOR IN AM RADIO

Oliver L. Richards, Jr., Windham, Conn., assignor to Sprague Electric Company, North Adams, Mass.

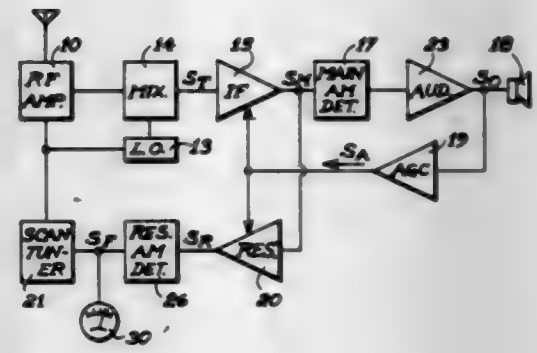
Filed Sep. 7, 1983, Ser. No. 530,131

Int. Cl.³ H03J *7/18*; H04B *1/16*

U.S. Cl. 455—161 **7 Claims**

1. In a radio receiver of the kind that is capable of operating in an analog-gain mode and that includes a plurality of tandem-connected analog-amplifier stages for processing and amplifying a radio signal which may be applied to the input of said tandem stages, and an AGC circuit for automatically altering the gain of at least one of said stages to maintain the output signal from said stages substantially constant for a wide range of amplitudes of said radio signal, the gain of said tandem stages as a function of the output signal from said AGC circuit being a transfer function, f_2, the improvement comprising:

a restorer means having a radio-signal input connected to said output of said tandem stages, said restorer means



having an electrically gain-alterable transfer function f_1 between said radio-signal input and output thereof and having a control input connected to the output of said AGC circuit, for making the product of said transfer functions f_1 and f_2 a constant over a wide range of amplitudes of said radio signal.

DESIGNS

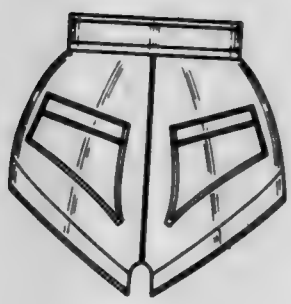
AUGUST 27, 1985

280,250
THIGH PROTECTOR
Eugene J. Vacanti, Edina, Minn., assignor to Sports Marketing, Inc., Eden Prairie, Minn.
Filed Aug. 17, 1982, Ser. No. 408,881
Term of patent 14 years
U.S. Cl. D2—27



280,251
CONVERTIBLE JEANS
Gloria J. Forbes, Aschman La., Croton on Hudson, N.Y. 10520
Filed May 20, 1983, Ser. No. 496,810
Term of patent 14 years
U.S. Cl. D2—28





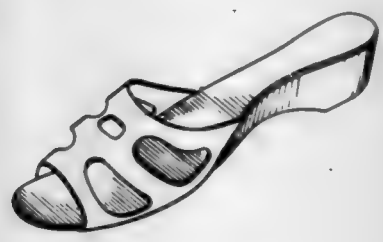
280,252
SWIMWEAR
Jacquelyn A. Briggery Myles, 1427 Newton Ave., Dayton, Ohio 45406
Continuation-in-part of Ser. No. 374,912, May 4, 1982, Pat. No. Des. 275,810, which is a continuation-in-part of Ser. No. 86,477, Oct. 19, 1979, abandoned. This application Sep. 30, 1982, Ser. No. 431,750
Term of patent 14 years
U.S. Cl. D2—40



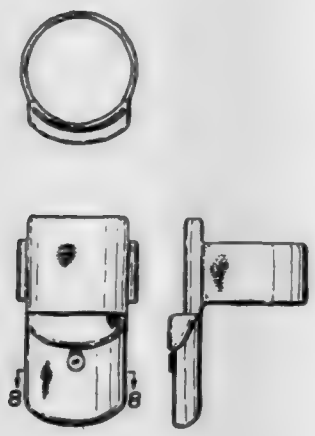
280,253
MALE FORMAL-WEAR COAT
Cal R. Williams, 6124 NE. 11th Ave., Portland, Oreg. 97211
Filed Apr. 29, 1983, Ser. No. 490,038
Term of patent 14 years
U.S. Cl. D2—187



280,254
SANDAL
Guadalupe Carvajal Pavon, Torrejon de Ardoz Optica St., 6, Madrid, Spain
Filed Jan. 10, 1983, Ser. No. 457,262
Term of patent 14 years
U.S. Cl. D2—283



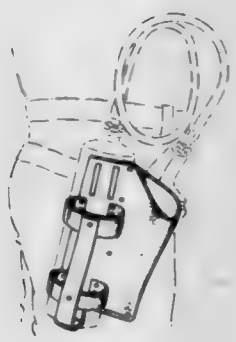
280,255
ARMBAND POUCH
Marilyn Blaivas, 104 Dunwoody La., Hollywood, Fla. 33021
Filed Feb. 22, 1983, Ser. No. 468,757
Term of patent 14 years
U.S. Cl. D2—383



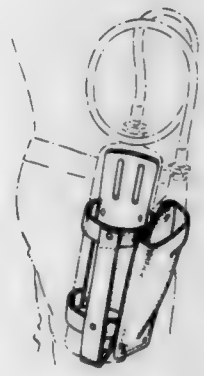
280,256
BATON CARRIER FOR USE WITH BELT
Leslie D. Miller, 2377 N. Plain City Rd., Ogden, Utah 84404
Filed Sep. 14, 1983, Ser. No. 532,219
Term of patent 14 years
U.S. Cl. D2—400



280,257
CARRIER FOR A GAS TORCH AND FUEL TANK
Benson L. Miller, Lexington, Ky., assignor to Ignitor Products International, Inc., Nicholasville, Ky.
Filed Nov. 1, 1983, Ser. No. 548,142
Term of patent 14 years
U.S. Cl. D2—400



280,258
CARRIER FOR GAS TORCH AND FUEL TANK
Benson L. Miller, Lexington, Ky., assignor to Ignitor Products International, Inc., Nicholasville, Ky.
Filed Nov. 1, 1983, Ser. No. 548,143
Term of patent 14 years
U.S. Cl. D2—400



280,259
SEAT CUSHION
Robert S. Scheurer, and Stephen Scheurer, both of P.O. Box 539, Wichita Falls, Tex. 76307
Filed Apr. 20, 1983, Ser. No. 486,913
Term of patent 14 years
U.S. Cl. D6—596

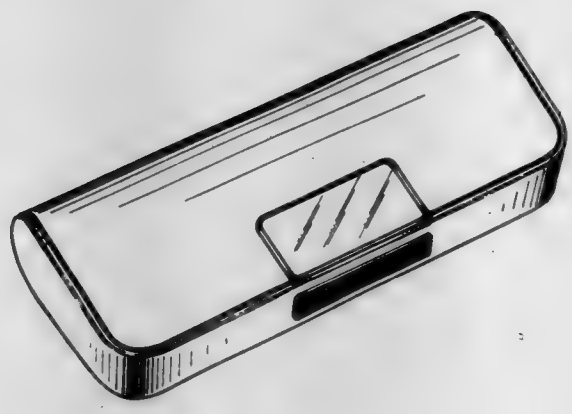


280,260
CARRYING CASE
Steven G. Leiserson, 9190 Manor Dr., La Mesa, Calif. 92041
Filed Aug. 16, 1982, Ser. No. 408,293
Term of patent 14 years
U.S. Cl. D3—33

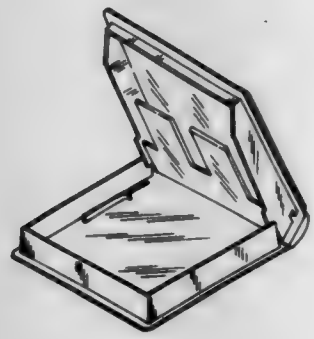


280,261
CARRYING CASE FOR SUNGLASSES OR THE LIKE
David P. Chuboff, North Barrington; Francis J. Greb, Buffalo Grove, both of Ill., and Aaron M. Markovitz, Rochester, N.Y., assignors to Bausch & Lomb Incorporated, Rochester, N.Y.
Filed Dec. 30, 1982, Ser. No. 454,830
Term of patent 14 years
U.S. Cl. D3—34

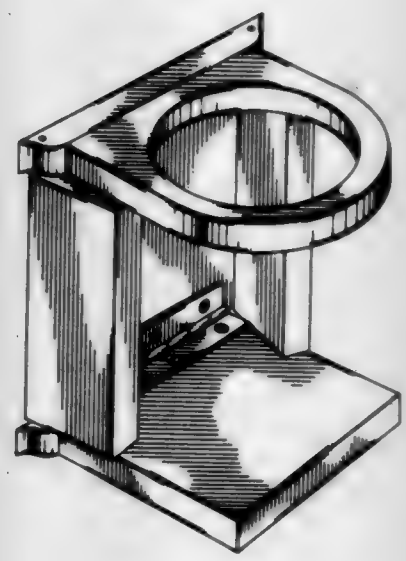




280,262
MAGNETIC MEMORY STORAGE CONTAINER
Robert A. Egly, 38 Whitewater Dr., Corona del Mar, Calif. 92625, and Patrick Sullivan, Tustin, Calif., assignors to Robert A. Egly, Corona del Mar, Calif.
Filed Sep. 13, 1982, Ser. No. 417,108
Term of patent 14 years
U.S. Cl. D3—35



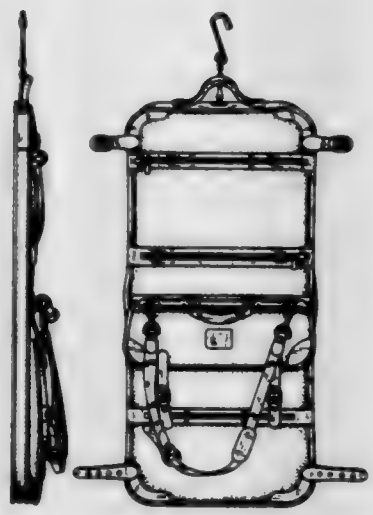
280,263
BEVERAGE HOLDER FOR BOATS
Thomas M. Hoye, 6850 N. 86th St., Scottsdale, Ariz. 85253
Filed May 27, 1983, Ser. No. 498,814
Term of patent 14 years
U.S. Cl. D3—40



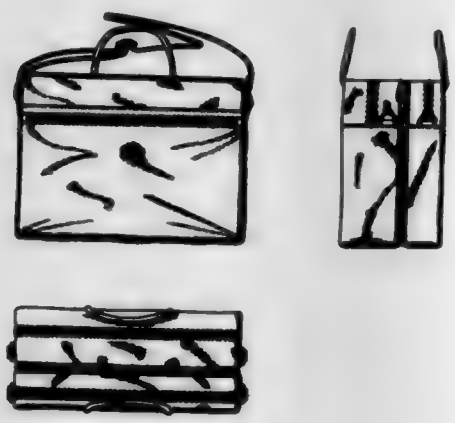
280,264
CARRYALL FOR SLEEPING BAG AND ACCESSORIES
Robert J. Lipsig, Chicago, Ill., assignor to Ero Industries, Inc., Chicago, Ill.
Filed Mar. 7, 1983, Ser. No. 473,118
Term of patent 14 years
U.S. Cl. D3—48



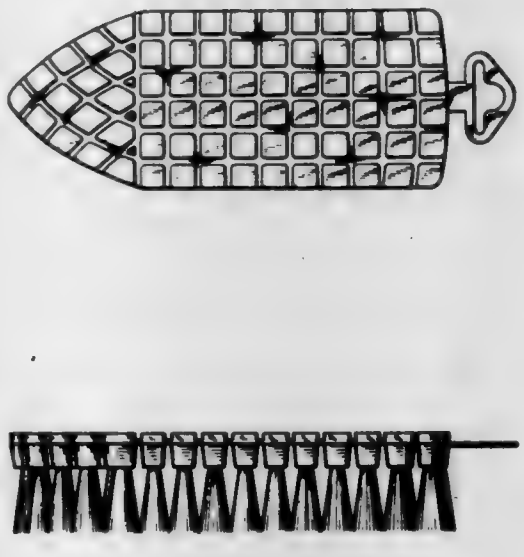
280,265
GARMENT BAG
Richard B. Gibbs, 11548 Thurston Cir., Los Angeles, Calif. 90049
Filed Jul. 8, 1983, Ser. No. 511,951
Term of patent 14 years
U.S. Cl. D3—71



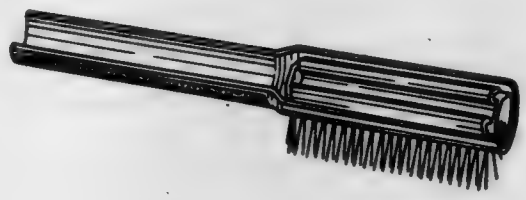
280,266
COMBINED BRIEFCASE AND OVERNIGHT CASE
James H. Allen, Covington, Ky., assignor to 'Totes', incorporated, Loveland, Ohio
Filed Apr. 18, 1983, Ser. No. 486,056
Term of patent 14 years
U.S. Cl. D3—71



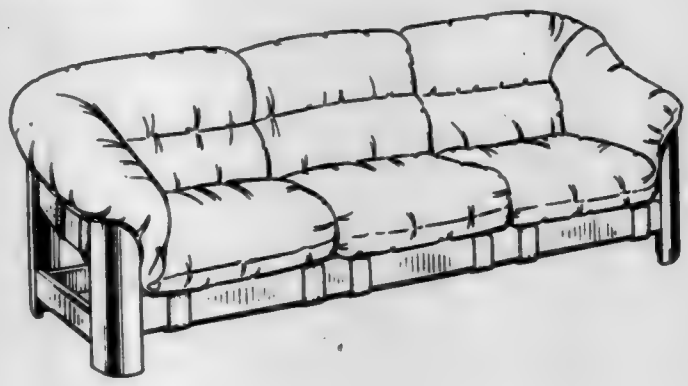
280,267
FLEXIBLY-BACKED BRUSH
William C. Bryant, Bell Arthur, and William C. Ferguson, Raleigh, both of N.C., assignors to Empire Brushes, Inc., Greenville, N.C.
Filed Aug. 27, 1984, Ser. No. 644,439
Term of patent 14 years
U.S. Cl. D4—130



280,268
HAIRBRUSH OR THE LIKE
Janice L. Schmidt, Providence, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 1, 1983, Ser. No. 462,828
Term of patent 14 years
U.S. Cl. D4—136



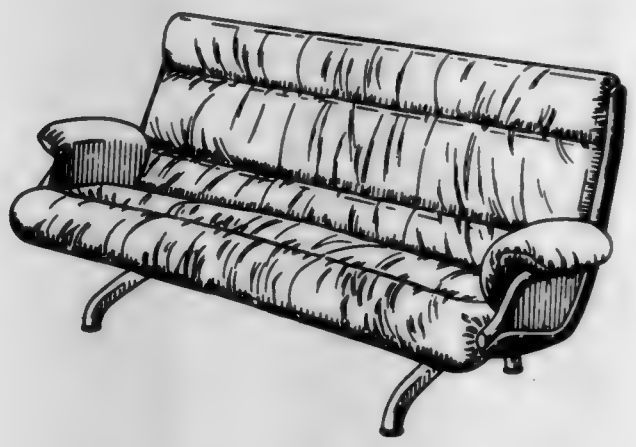
280,269
SOFA
David P. G. Williams, Englewood, N.J., assignor to Chairmakers, Inc., City of Commerce, Calif.
Filed Apr. 27, 1983, Ser. No. 489,093
Term of patent 14 years
U.S. Cl. D6—379



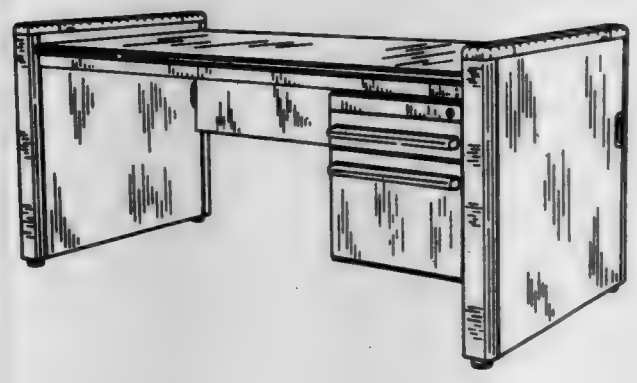
280,270
CHAIR
Yasuhiro Okuda, 310 E. 46th St., New York, N.Y. 10017
Filed Jun. 15, 1983, Ser. No. 504,360
Term of patent 14 years
U.S. Cl. D6—380



280,271
SOFA
Warren Platner, Foote's Bridge Rd., Guilford, Conn. 06437
Filed Jan. 3, 1983, Ser. No. 455,230
Term of patent 14 years
U.S. Cl. D6—381



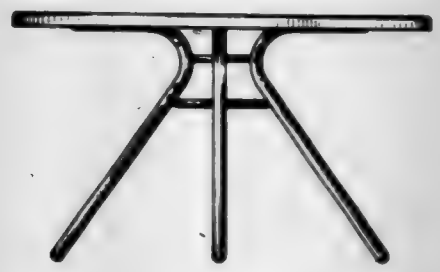
280,272
DESKS
Ettore Sottsass, and Michele De Lucchi, both of Milan, Italy, assignors to Olivetti Synthesis, S.p.A., Turin, Italy
Filed Jan. 10, 1983, Ser. No. 456,772
Claims priority, application Italy, Jul. 8, 1982, 53489/82 [U]
Term of patent 14 years
U.S. Cl. D6—422



280,273
STEP TUBE TABLE
Paul R. Goldman, 8 Joyce Ter., Andover, Mass. 01810
Filed Sep. 28, 1982, Ser. No. 425,557
Term of patent 14 years
U.S. Cl. D6—474



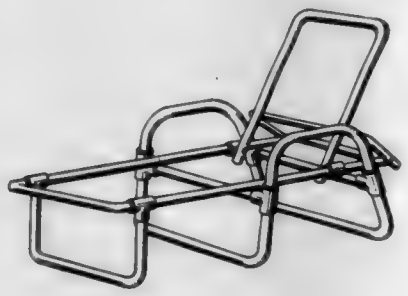
280,274
TABLE
Eugene A. Criqui, Covina, and Peter W. Homestead, San Clemente, both of Calif., assignors to Brown Jordan Company, El Monte, Calif.
Filed Apr. 15, 1983, Ser. No. 485,555
Term of patent 14 years
U.S. Cl. D6—487



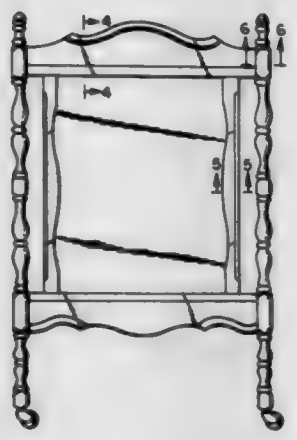
280,275
TABLE
Eugene A. Criqui, Covina, and Peter W. Homestead, San Clemente, both of Calif., assignors to Brown Jordan Company, El Monte, Calif.
Filed Apr. 18, 1983, Ser. No. 485,698
Term of patent 14 years
U.S. Cl. D6—487



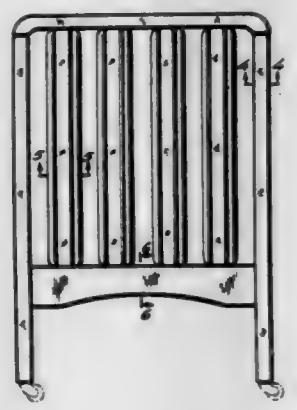
280,276
LOUNGE CHAIR FRAME
Stewart K. McKay, P.O. Box 5022, Gold Coast Mail Centre, Queensland, 4217, Australia
Filed Dec. 20, 1982, Ser. No. 451,347
Term of patent 14 years
U.S. Cl. D6—501



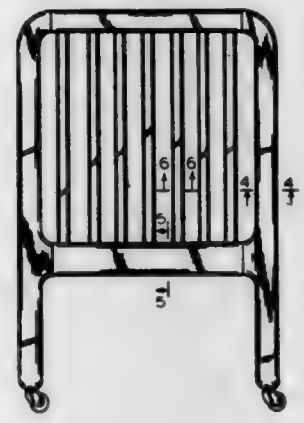
280,277
CRIB FOOTBOARD
Merlin A. Brunner; David W. Robinson, both of New London, and Harvey J. Draheim, Weyauwega, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jun. 24, 1983, Ser. No. 507,893
Term of patent 14 years
U.S. Cl. D6—505



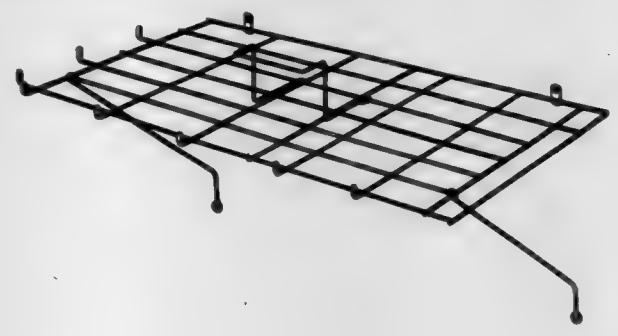
280,278
CRIB FOOTBOARD
Merlin A. Brunner; David W. Robinson, both of New London, and Harvey J. Draheim, Weyauwega, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jun. 9, 1983, Ser. No. 502,795
Term of patent 14 years
U.S. Cl. D6—508



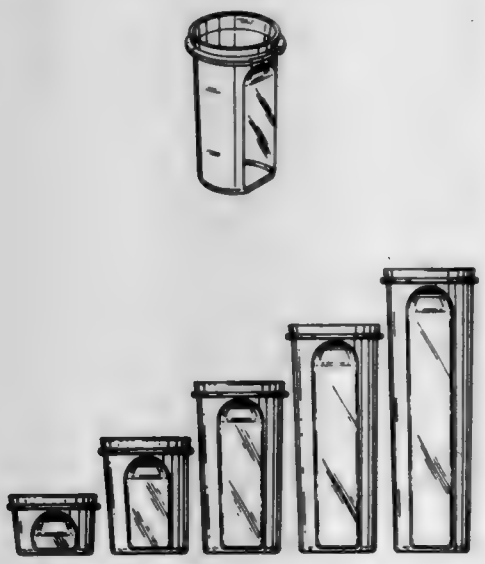
280,279
CRIB FOOTBOARD
Merlin A. Brunner; David W. Robinson, both of New London, and Harvey J. Draheim, Weyauwega, all of Wis., assignors to Simmons Universal Corporation, New York, N.Y.
Filed Jun. 9, 1983, Ser. No. 502,796
Term of patent 14 years
U.S. Cl. D6—508



280,280
POWER TOOL HOLDER
William J. Pestone, Scituate, Mass., assignor to Crawford Products, Inc., West Hanover, Mass.
Filed Mar. 18, 1983, Ser. No. 476,840
Term of patent 14 years
U.S. Cl. D6—566



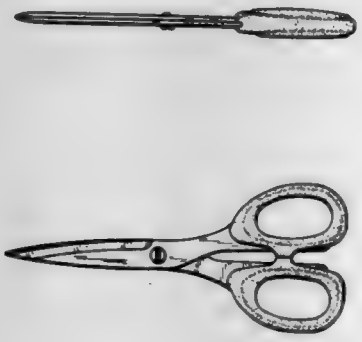
280,281
FOOD STORAGE CONTAINER OR THE LIKE
Rino Conti, Stoughton, Mass., and Robert H. C. M. Daenen, Hekelgem, Belgium, assignors to Dart Industries Inc., Northbrook, Ill.
Filed Aug. 10, 1982, Ser. No. 406,844
Term of patent 14 years
U.S. Cl. D7—79



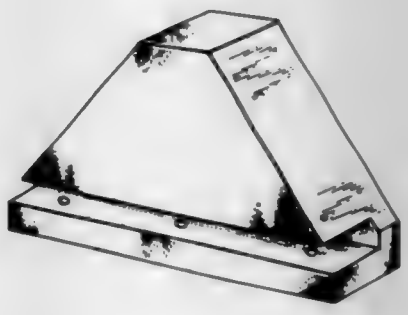
280,282
WIRE COOKING RACK
Arthur R. Erbach, Des Plaines, Ill., assignor to Weber-Stephen Products Co., Palatine, Ill.
Filed Jun. 6, 1983, Ser. No. 501,090
Term of patent 14 years
U.S. Cl. D7—404



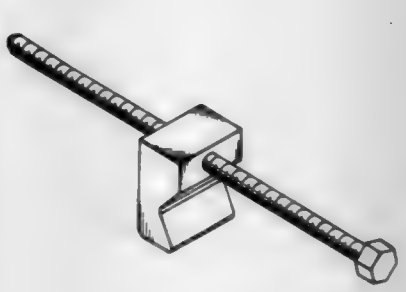
280,283
SCISSORS
Tamoru Asano, Gifu, Japan, assignor to Kai Jirushi Hamano Center, Gifu, Japan
Filed Mar. 12, 1982, Ser. No. 357,477
Claims priority, application Japan, Sep. 14, 1981, 56-40392
Term of patent 14 years
U.S. Cl. D8—57



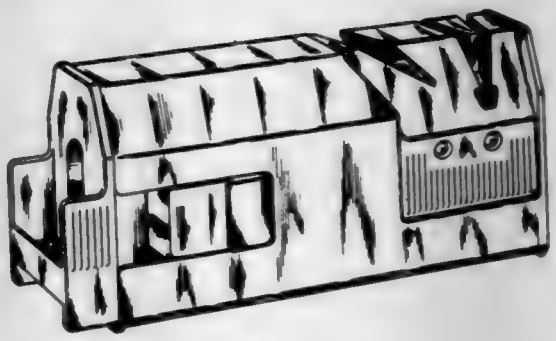
280,284
FILE HOLDER
Walfred R. Bachmann, 28 Main St., Ashburnham, Mass. 01430
Filed Apr. 7, 1983, Ser. No. 482,915
Term of patent 14 years
U.S. Cl. D8—71



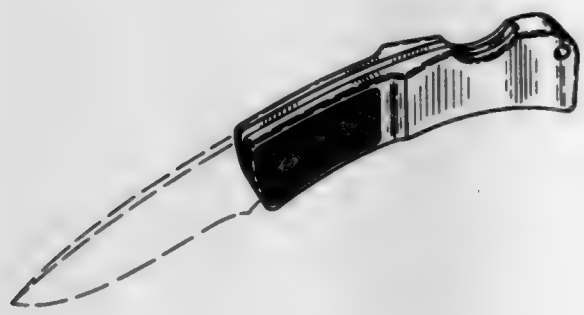
280,285
WHEEL ALIGNMENT TOOL OR SIMILAR ARTICLE
Ronnie R. Miller, Rte. 3 Box 985, and Michael W. Rogers, 701 Crotty, both of Rockwall, Tex. 75087
Filed Apr. 28, 1983, Ser. No. 489,472
Term of patent 14 years
U.S. Cl. D8—72



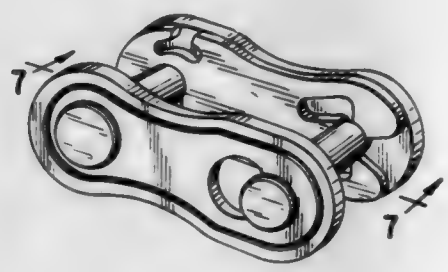
280,286
KNIFE SHARPENER
Jan F. Van Asten, Leek, Netherlands, assignor to U.S. Philips Corporation, New York, N.Y.
Filed Dec. 12, 1983, Ser. No. 560,701
Claims priority, application Benelux, Jun. 29, 1983, 58015-00
Term of patent 14 years
U.S. Cl. D8—93



280,287
HANDLE FOR FOLDING POCKET KNIFE
Walter W. Collins, 802 Bellwood St., Clover, S.C. 29710
Filed Mar. 14, 1983, Ser. No. 474,833
Term of patent 14 years
U.S. Cl. D8—99



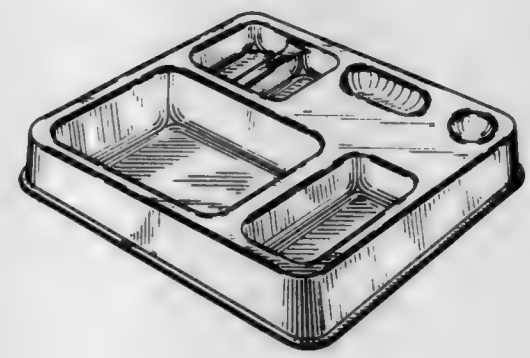
280,288
CHAIN LINK
Robert J. Lickton, 310 Lake, Oak Park, Ill. 60302
Filed May 9, 1983, Ser. No. 492,618
Term of patent 14 years
U.S. Cl. D8—499



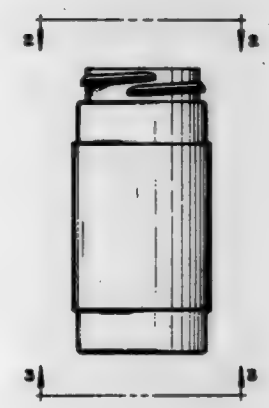
280,289
BOTTLE
Thomas B. Aldrich, III, Spring Valley, N.Y., and Ralph A. Muscatiello, Norwood, Mass., assignors to The Gillette Company, Boston, Mass.
Filed May 12, 1983, Ser. No. 493,788
Term of patent 14 years
U.S. Cl. D9—338



280,290
COMBINED PACKAGING AND MIXING CONTAINER
Steven L. Bakus, Vernon Hills, Ill., assignor to Felt Products Mfg. Co., Skokie, Ill.
Filed Mar. 4, 1983, Ser. No. 472,081
Term of patent 14 years
U.S. Cl. D9—347



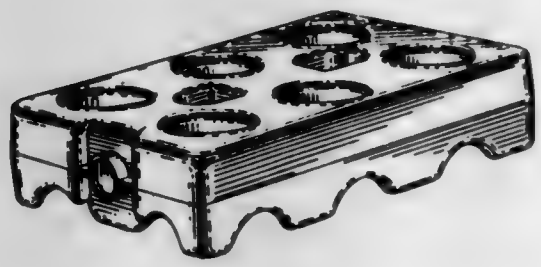
280,291
BOTTLE
Joan C. Copsey; John J. McNamara, Jr., both of Elkhart, Ind., and Jeremy L. Parker, Lancaster, Pa., assignors to Miles Laboratories, Inc., Elkhart, Ind.
Filed Jan. 13, 1983, Ser. No. 457,710
Term of patent 14 years
U.S. Cl. D9—349



280,292
BOTTLE
Timothy J. Beechuk, Batavia; Max E. Damron, and Ralph B. Vanderman, both of Cincinnati, all of Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed May 5, 1983, Ser. No. 491,635
Term of patent 14 years
U.S. Cl. D9—355



280,293
BOTTLE COOLER
Richard D'Amour, 1625 des Merisiers, Cote Ste. Catherine, Quebec, Canada (J0L 1E0), and Ronald D'Amour, 5 Belanger, St. Constant, Quebec, Canada (J0L 1X0)
Filed Feb. 14, 1984, Ser. No. 580,009
Term of patent 14 years
U.S. Cl. D9—373



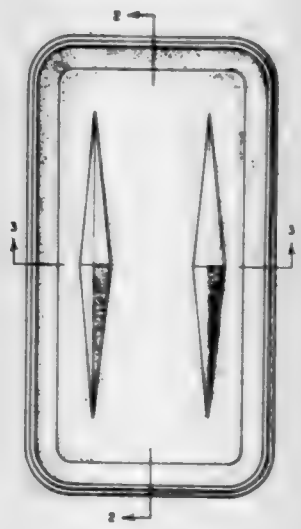
280,294
PERFUME BOTTLE
Lynda R. Resnick, Beverly Hills, Calif., assignor to Teleflora, Inc., Los Angeles, Calif.
Filed Apr. 13, 1983, Ser. No. 484,479
Term of patent 14 years
U.S. Cl. D9—385



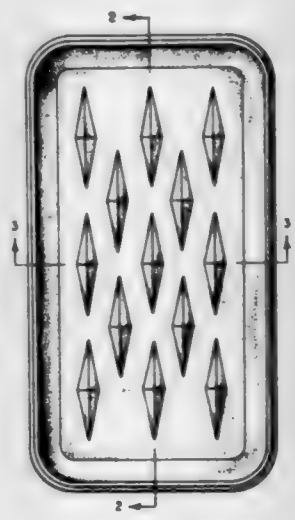
280,295
FLASK
Jean de Mouy, Biarritz, and Alain Carre, Tours, both of France, assignors to SOFIPAR International Inc., New York, N.Y.
Filed Jan. 5, 1982, Ser. No. 337,183
Claims priority, application France, Jul. 15, 1981, 81 2492
Term of patent 14 years
U.S. Cl. D9—408



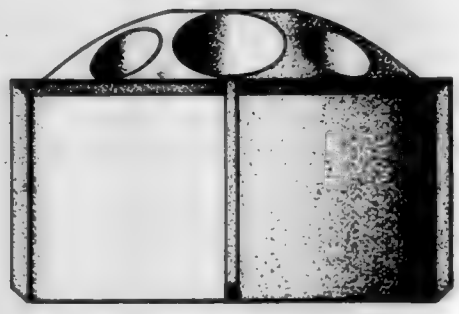
280,296
PACKAGING TRAY
M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 9, 1983, Ser. No. 502,437
Term of patent 14 years
U.S. Cl. D9—425



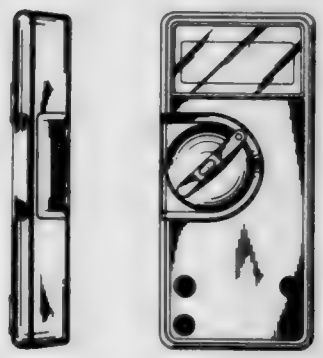
280,297
PACKAGING TRAY
M. James Holden, Canandaigua, N.Y., assignor to Mobil Oil Corporation, New York, N.Y.
Filed Jun. 9, 1983, Ser. No. 502,438
Term of patent 14 years
U.S. Cl. D9—425



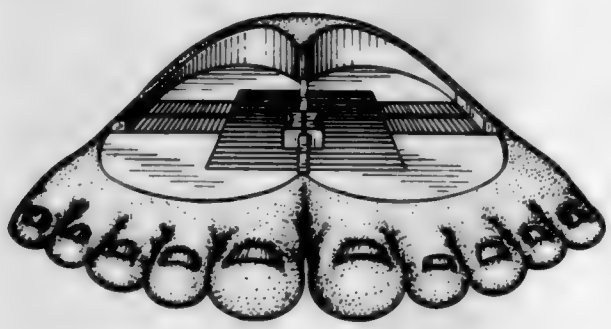
280,298
SOLID PRODUCT ELEVATOR CUP
Carl W. Hafer, and Eric S. Schwoeppe, both of Cincinnati, Ohio, assignors to The Procter & Gamble Company, Cincinnati, Ohio
Filed Feb. 14, 1983, Ser. No. 465,949
Term of patent 14 years
U.S. Cl. D9—434



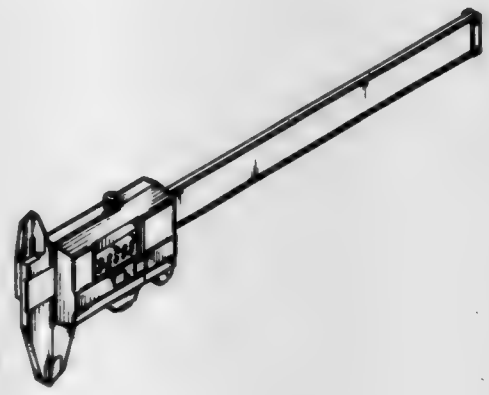
280,299
DIGITAL MULTIMETER FOR ELECTRICAL MEASUREMENT
Michael D. Nelson, Seattle, Wash., assignor to John Fluke Mfg. Co., Inc., Everett, Wash.
Filed Feb. 7, 1983, Ser. No. 464,670
Term of patent 14 years
U.S. Cl. D10—40



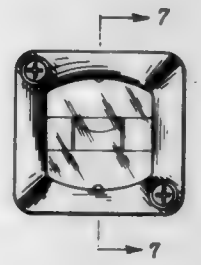
280,300
MEASURING DEVICE FOR CHILDREN'S FEET
Bernard Short, 185 Elliot St., Chestnut Hill, Mass. 02167
Filed Jun. 17, 1983, Ser. No. 505,436
Term of patent 14 years
U.S. Cl. D10—71



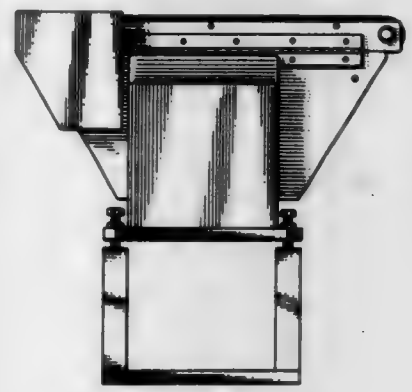
280,301
CALIPER
Shingo Nishina, Kawasaki, and Takashi Kobashi, Utsunomiya, both of Japan, assignors to Mitutoyo Mfg. Co., Ltd., Tokyo, Japan
Filed Apr. 15, 1983, Ser. No. 485,543
Claims priority, application Japan, Oct. 27, 1982, 57-48811
Term of patent 14 years
U.S. Cl. D10—73



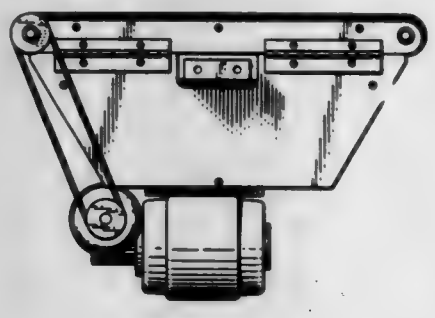
280,302
LEVEL VIAL HOLDER
James L. Clark, Milwaukee, Wis., assignor to Johnson Level & Tool Mfg. Co., Inc., Milwaukee, Wis.
Filed Jun. 20, 1983, Ser. No. 505,867
Term of patent 14 years
U.S. Cl. D10—74



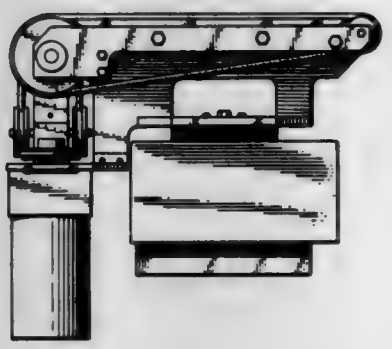
280,303
POWERED PLATFORM SCALE
Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Oct. 19, 1983, Ser. No. 543,330
Term of patent 14 years
U.S. Cl. D10—87



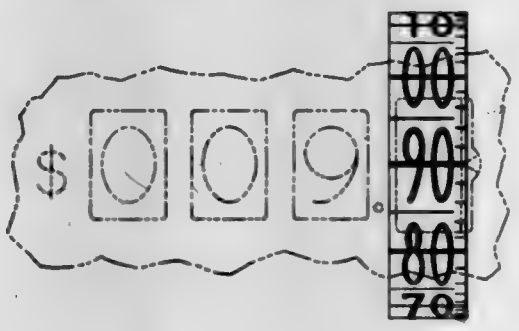
280,304
POWERED PLATFORM SCALE
Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Oct. 19, 1983, Ser. No. 543,349
Term of patent 14 years
U.S. Cl. D10—87



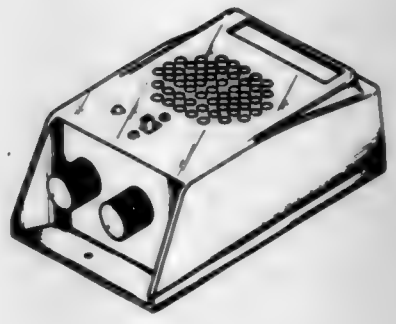
280,305
POWERED PLATFORM SCALE
Victor Del Rosso, Ithaca, N.Y., assignor to Hi-Speed Checkweigher Co., Inc., Ithaca, N.Y.
Filed Oct. 19, 1983, Ser. No. 543,350
Term of patent 14 years
U.S. Cl. D10—87



280,306
COUNTER WHEEL INDICIA RIM
Bruno S. Smilgys, Hartford, Conn., assignor to Veeder Industries Inc., Hartford, Conn.
Filed Jan. 18, 1982, Ser. No. 340,509
Term of patent 14 years
U.S. Cl. D10—103



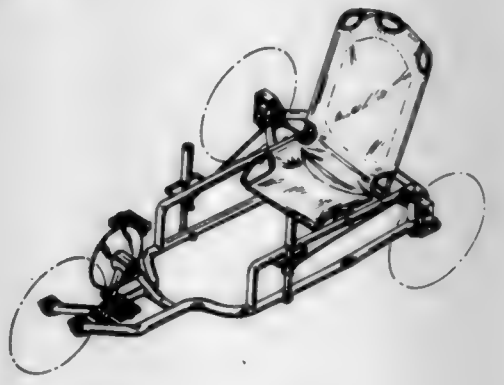
280,307
AUTOMOBILE ALARM
Terry T. Kunimune, 6058 San Fernando Rd., Glendale, Calif. 91202
Filed Jul. 25, 1983, Ser. No. 517,217
Term of patent 14 years
U.S. Cl. D10—106



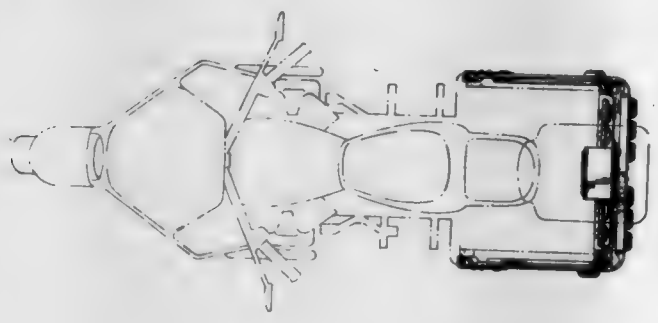
280,308
TOBOGGAN
Raymond A. Cashmere, Charlestown, Australia, assignor to Luckit Pty. Limited, Mayfield, Australia
Filed Dec. 10, 1982, Ser. No. 448,770
Claims priority, application Australia, Jun. 30, 1982, 0819/82
Term of patent 14 years
U.S. Cl. D12—11

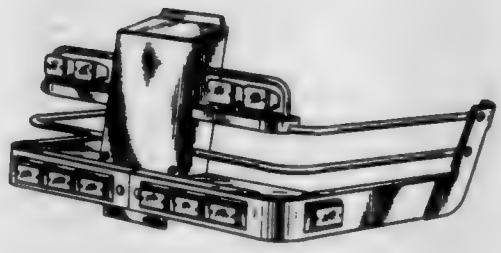


280,309
RECUMBENT TRICYCLE BODY
Robert C. Forbes, Sun Valley, Calif., and John VanderKam, Dayton, Ohio, assignors to Huffy Corporation, Miamisburg, Ohio
Filed Jan. 31, 1983, Ser. No. 462,488
Term of patent 14 years
U.S. Cl. D12—112

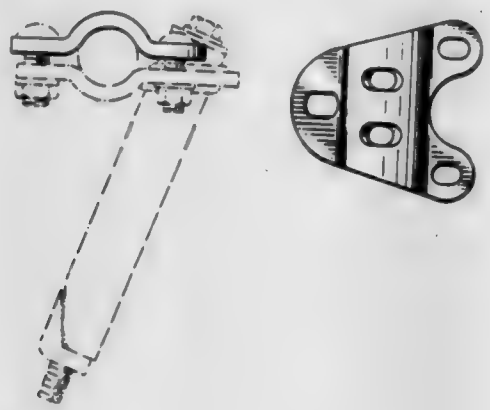


280,310
COMBINED MOTORCYCLE TRIM RAIL AND LIGHTING UNIT
James M. Preisler, Mound, and Alwin J. Stahel, St. Paul, both of Minn., assignors to Drag Specialties, Inc., Minnetonka, Minn.
Filed May 23, 1983, Ser. No. 496,839
Term of patent 14 years
U.S. Cl. D12—114

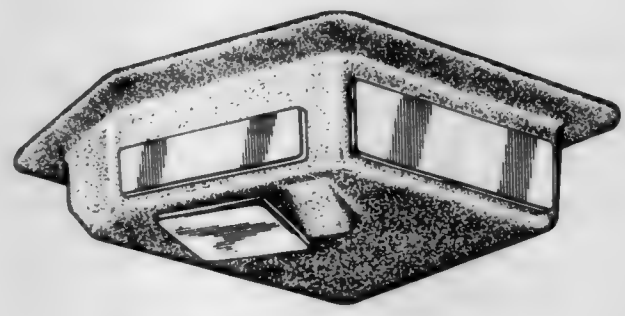




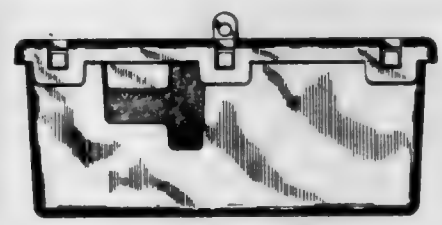
280,311
BICYCLE HANDLEBAR MOUNTING PLATE
Dennis P. Pawsat, Maysville, Ky., assignor to Wald Manufacturing Co., Inc., Maysville, Ky.
Continuation of Ser. No. 341,316, Jan. 21, 1982, abandoned. This application May 16, 1984, Ser. No. 610,887
Term of patent 14 years
U.S. Cl. D12—117

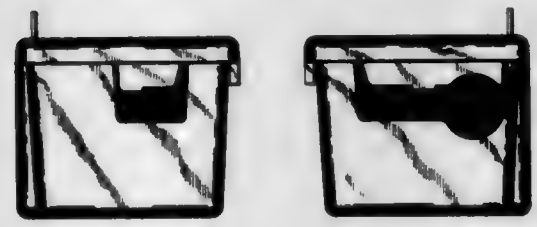


280,312
OVERHEAD CONSOLE FOR A VAN
Albert R. Simeri, and Paul S. Simeri, both of Elkart, Ind., assignors to Van Express, Inc., Elkhart, Ind.
Filed Apr. 18, 1983, Ser. No. 485,701
Term of patent 14 years
U.S. Cl. D12—155



280,313
PROTECTIVE CONTAINER FOR A VEHICLE JACK
Kenneth W. Jackson, Fort Collins; James Simon, and Robert Simon, both of Loveland, all of Colo., assignors to Carry-It, Inc., Fort Collins, Colo.
Filed Apr. 11, 1983, Ser. No. 483,749
Term of patent 14 years
U.S. Cl. D12—157

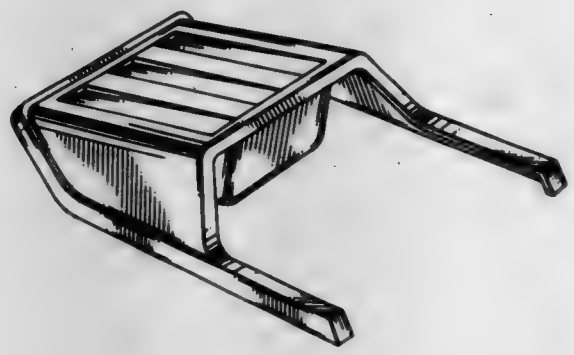




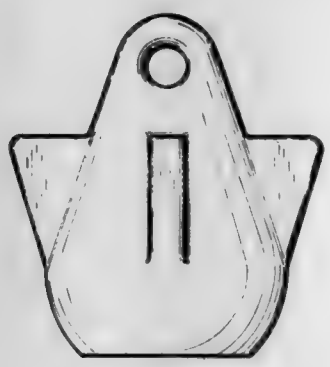
280,314
STEERING WHEEL COVER
Murray Strongwater, 326 Hewlett Neck Rd., Woodmere, N.Y. 11598
Filed Feb. 22, 1983, Ser. No. 468,160
Term of patent 14 years
U.S. Cl. D12—177



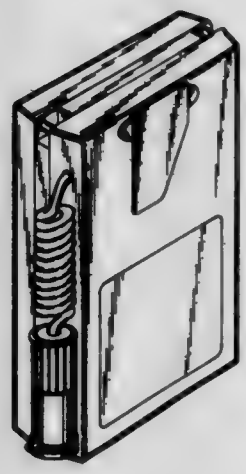
280,315
MOTORCYCLE LUGGAGE CARRIER
Mark T. Druecker, Glendale, and Ty S. Bowers, Phoenix, both of Ariz., assignors to Daystar, Inc., Glendale, Ariz.
Filed Mar. 31, 1983, Ser. No. 480,904
Term of patent 14 years
U.S. Cl. D12—158



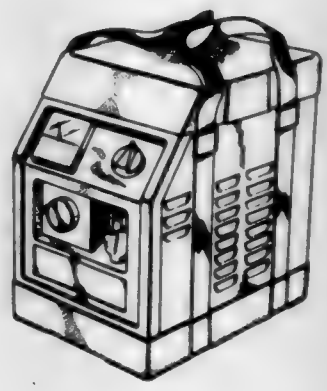
280,316
ANCHOR FOR SMALL BOATS
David S. Gooden, 6144 S. Fulton, Tulsa, Okla. 74136
Filed Apr. 4, 1983, Ser. No. 481,668
Term of patent 14 years
U.S. Cl. D12—215



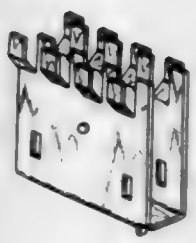
280,317
RECHARGABLE BATTERY PACK
Jeffrey A. Boyd; Vincent J. Pusateri, both of Gainesville; John Hooke, High Springs, and Danny F. Rockett, Alachua, all of Fla., assignors to General Electric Company, Gainesville, Fla.
Filed Jan. 17, 1983, Ser. No. 459,005
Term of patent 14 years
U.S. Cl. D13—5



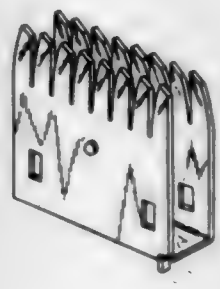
280,318
PORTABLE ELECTRIC POWER SUPPLY
Sam A. Barone, 1205 Ryson, Wheaton, Ill. 60187
Filed May 2, 1983, Ser. No. 490,426
Term of patent 14 years
U.S. Cl. D13—11



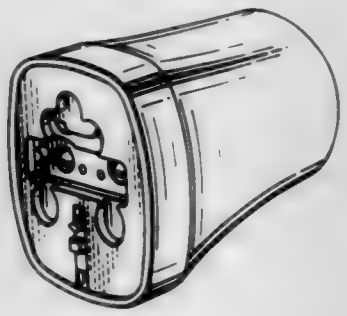
280,319
STAGGERED-FIN HEAT SINK FOR ELECTRICAL DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Jul. 29, 1983, Ser. No. 518,739
Term of patent 14 years
U.S. Cl. D13—23



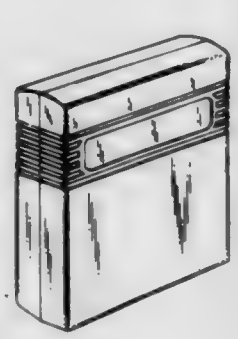
280,320
TWISTED-FIN HEAT SINK FOR ELECTRICAL DEVICES
Alfred F. McCarthy, Belmount, N.H., assignor to Aavid Engineering, Inc., Laconia, N.H.
Filed Jul. 29, 1983, Ser. No. 518,741
Term of patent 14 years
U.S. Cl. D13—23



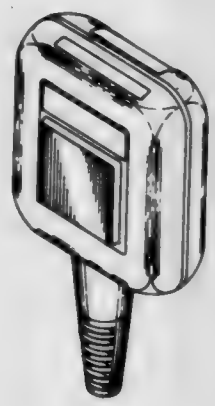
280,321
ELECTRICAL CONNECTOR
Clive St. J. Rumble, 51 Hays Mews, London, England (W1X 5DB)
Filed Aug. 9, 1983, Ser. No. 521,568
Claims priority, application United Kingdom, Jun. 21, 1983, 1013688
Term of patent 14 years
U.S. Cl. D13—24



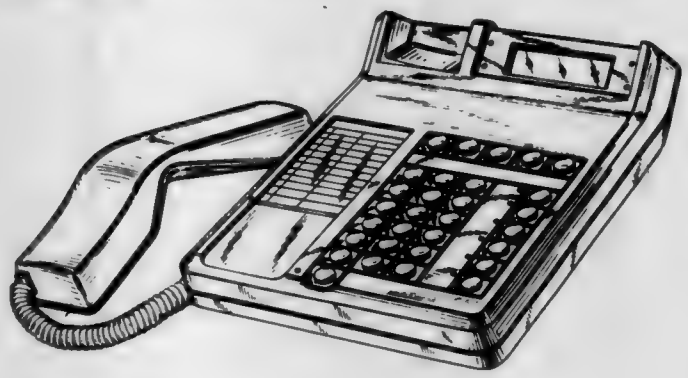
280,322
VIDEOGAME CARTRIDGE CASE
Ira L. Velinsky, Plainfield, N.J., assignor to Commodore Business Machines, Inc., West Chester, Pa.
Filed Apr. 4, 1983, Ser. No. 481,872
Term of patent 14 years
U.S. Cl. D14—11

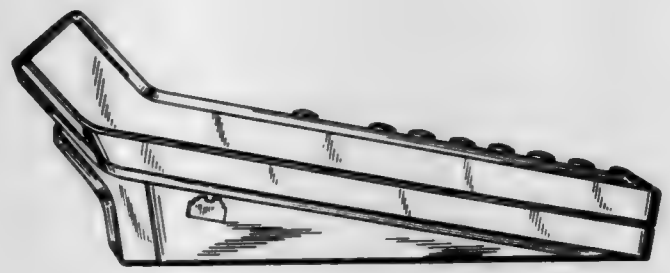


280,323
MICROPHONE OR SIMILAR ARTICLE
William J. Scheid, Coral Springs; Richard J. Toth, Boca Raton, both of Fla., and James W. Brinkerhoff, Cheyenne, Wyo., assignors to Motorola, Inc., Schaumburg, Ill.
Filed Jun. 13, 1983, Ser. No. 503,993
Term of patent 14 years
U.S. Cl. D14—12

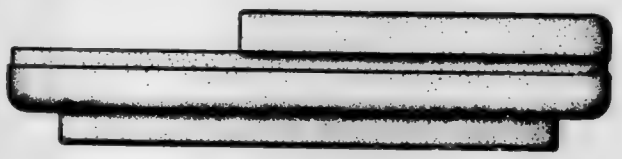


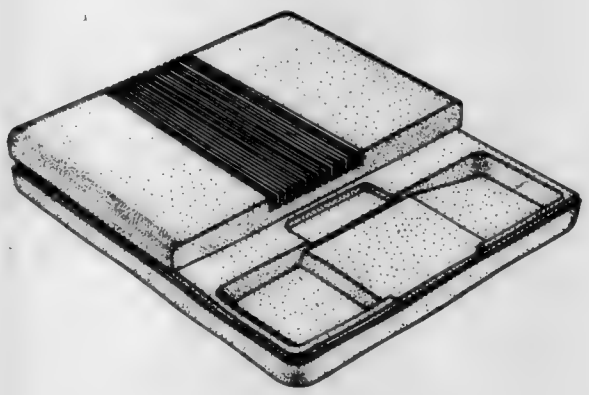
280,324
COMBINATION TELEPHONE HANDSET AND CONSOLE STAND ASSEMBLY
Evert Endt, Paris, France, assignor to Horlogerie Photographique Francaise, Bonneville, France
Filed Apr. 11, 1983, Ser. No. 483,561
Claims priority, application France, Oct. 13, 1982, 823494
Term of patent 14 years
U.S. Cl. D14—53



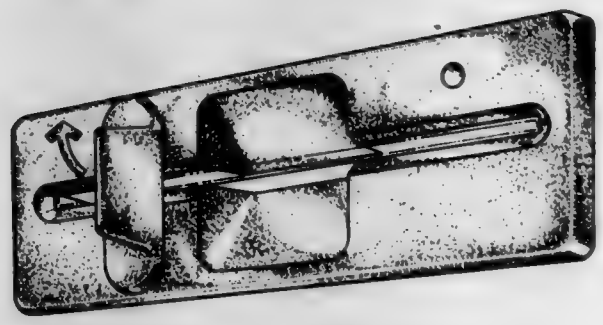


280,325
TELEPHONE STAND FOR A HANDSET
Richard M. Joffe, Palisades Park, N.J., and John N. McGarvey, Drexel Hill, Pa., assignors to AT&T Technologies, Inc., Berkeley Heights, N.J.
Filed Oct. 9, 1984, Ser. No. 658,858
Term of patent 14 years
U.S. Cl. D14—60

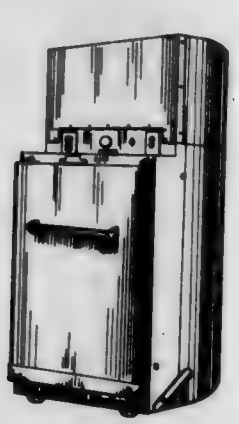




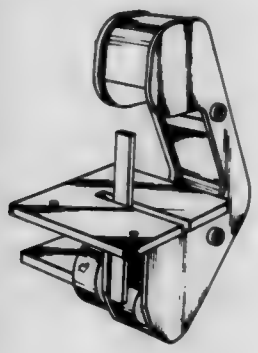
280,326
DISK DRIVE FRONT PANEL
James B. Jordan, Berkeley, Calif., assignor to Qume Corporation, San Jose, Calif.
Filed Apr. 12, 1983, Ser. No. 484,136
Term of patent 14 years
U.S. Cl. D14—115



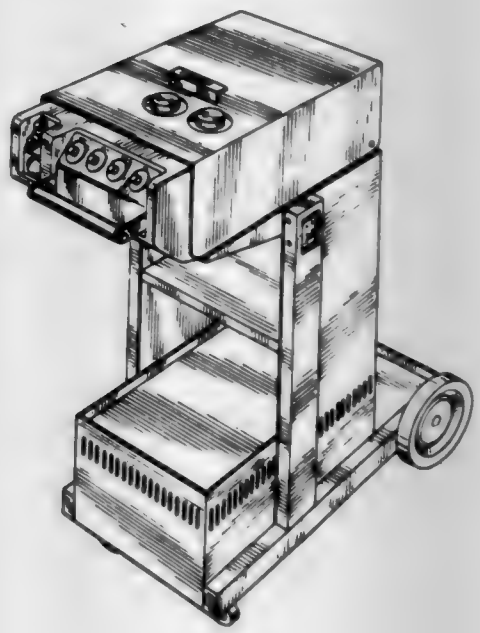
280,327
MATERIAL COMPACTOR
Robert A. Wilson, Litchfield, Ill., assignor to Waste Compaction Systems, Inc., St. Louis, Mo.
Filed Jun. 13, 1983, Ser. No. 503,784
Term of patent 14 years
U.S. Cl. D15—123



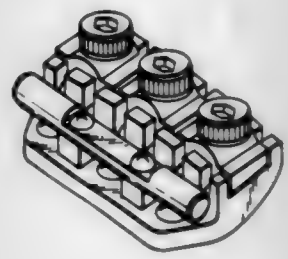
280,328
HOUSING FOR SANDERS, GRINDERS OR THE LIKE
Louis Zampini, Jr., 37 Conifer Dr., North Providence, R.I. 02904
Filed Feb. 7, 1983, Ser. No. 464,155
Term of patent 14 years
U.S. Cl. D15—124



280,329
WELDING MACHINE
Mark H. Bouman, Burnsville, Minn., assignor to Century Mfg. Co., Minneapolis, Minn.
Filed Jul. 25, 1983, Ser. No. 516,522
Term of patent 14 years
U.S. Cl. D15—144



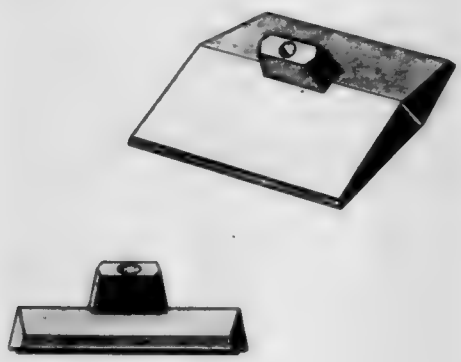
280,330
ELECTRIC GUITAR STRING LOCKING DEVICE
Yuji Tanaka, Akishima, and Hideo Matsumoto, Shizuoka, both of Japan, assignors to Tokai Gakki Co., Ltd., Japan
Filed Mar. 23, 1983, Ser. No. 478,152
Claims priority, application Japan, Dec. 31, 1982, 57-58620
Term of patent 14 years
U.S. Cl. D17—20



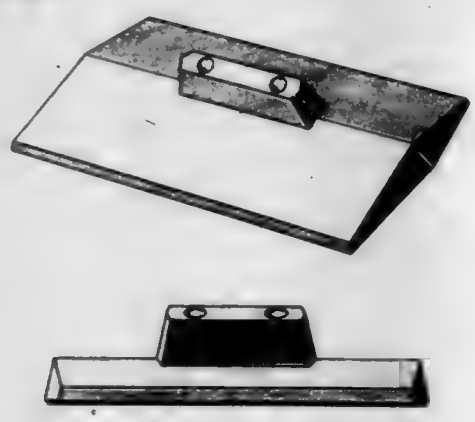
280,331
RUBBER STAMP
Susan Newman, 11 Irongate, Metuchen, N.J. 08840
Filed Feb. 22, 1983, Ser. No. 468,864
Term of patent 14 years
U.S. Cl. D18—16



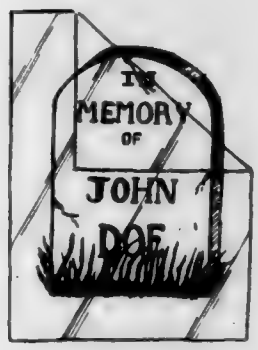
280,332
DESK PEN BASE
Nolan K. Rhoades, Beloit, Wis., assignor to The Parker Pen Company, Janesville, Wis.
Filed Jul. 14, 1983, Ser. No. 513,676
Term of patent 14 years
U.S. Cl. D19—84



280,333
DESK PEN BASE
Nolan K. Rhoades, Beloit, Wis., assignor to The Parker Pen Company, Janesville, Wis.
Filed Jul. 14, 1983, Ser. No. 513,612
Term of patent 14 years
U.S. Cl. D19—85



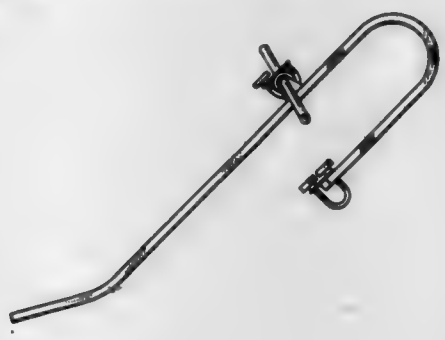
280,334
COMBINED DECAL AND PROTECTIVE COVER SHEET
David K. Halbritter, 7101 Argentine Rd., Howell, Mich. 48843
Filed Feb. 16, 1982, Ser. No. 348,991
Term of patent 14 years
U.S. Cl. D20—11



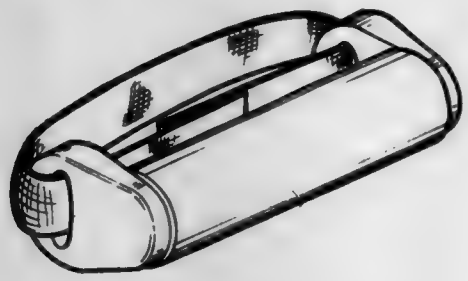
280,335
TOY TRANSPORTATION VEHICLE
Richard W. Dummar, 9826 Belmont St., Bellflower, Calif. 90706
Filed Oct. 14, 1983, Ser. No. 541,893
Term of patent 14 years
U.S. Cl. D21—87

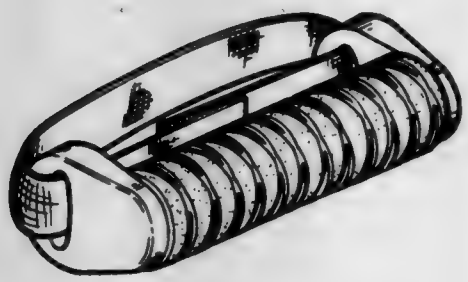


280,336
ARM EXERCISING ATTACHMENT FOR AN EXERCISING BICYCLE
David Webb, 30 Berkley Crescent, London, Ontario, Canada M6A 4B6
Filed Aug. 31, 1983, Ser. No. 528,345
Claims priority, application Canada, Jul. 13, 1983, 13-07-83-8
Term of patent 14 years
U.S. Cl. D21—191

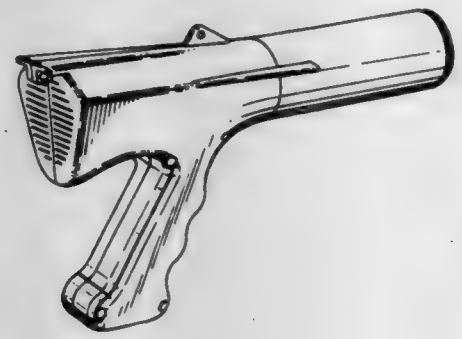


280,337
RUNNER'S HAND GRIP
J. Vincent Hood, 3810 N. Main St., #9, Racine, Wis. 53403
Filed Jul. 16, 1984, Ser. No. 631,122
Term of patent 14 years
U.S. Cl. D21—198

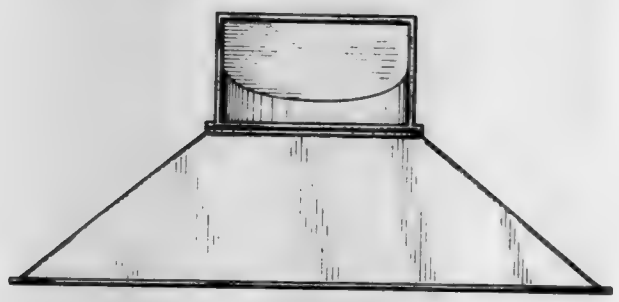




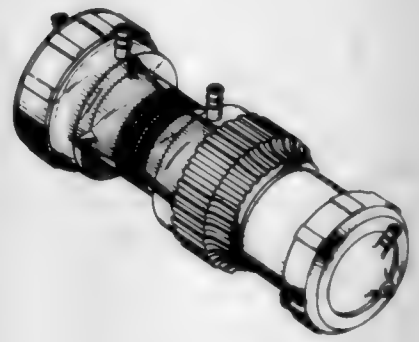
280,338
HOT AIR BLOWER
Stephen R. Skarsten, Welwyn, England, assignor to Skilten Electronics Limited, Welwyn, England
Filed Aug. 17, 1982, Ser. No. 409,043
Claims priority, application United Kingdom, Feb. 12, 1982, 1005093
Term of patent 14 years
U.S. Cl. D23—77



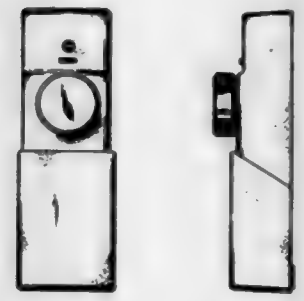
280,339
BOOSTER FAN AND DEFLECTOR FOR FLOOR VENT
Betty L. Harwell, 9643 E. 26th St., Tulsa, Okla. 74129
Filed Jan. 7, 1983, Ser. No. 456,419
Term of patent 14 years
U.S. Cl. D23—155



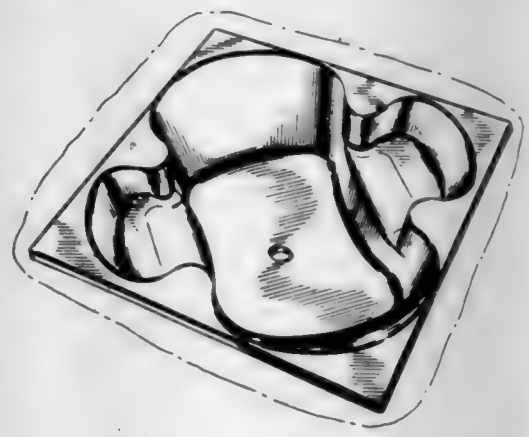
280,340
ARTIFICIAL LUNG WITH A BUILT-IN HEAT EXCHANGER
Masaru Wada, Wako, Japan, assignor to Terumo Corporation, Tokyo, Japan
Filed Dec. 17, 1982, Ser. No. 450,740
Term of patent 14 years
U.S. Cl. D24—8



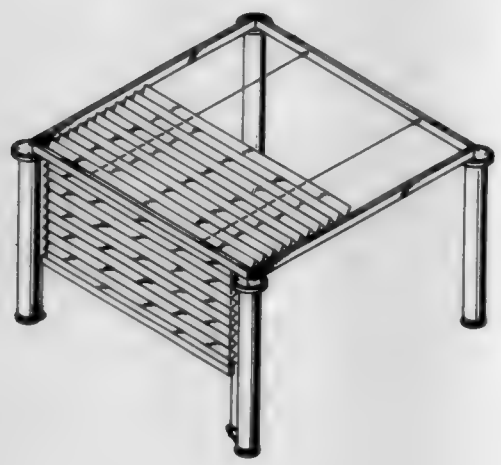
280,341
MUSCLE STIMULATOR
Floyd L. Carlisle, Clinton, Conn., assignor to Theratronics, Inc., Essex, Conn.
Filed Jun. 25, 1982, Ser. No. 392,072
Term of patent 14 years
U.S. Cl. D24—36



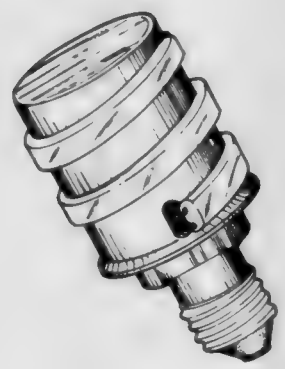
280,342
HYDROTHERAPY SPA OR THE LIKE
Herbert V. Kohler, Jr., Kohler, Wis., assignor to Kohler Co., Kohler, Wis.
Filed Jul. 18, 1983, Ser. No. 514,487
Term of patent 14 years
U.S. Cl. D24—38



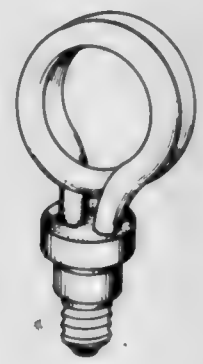
280,343
PAVILION
Moses R. Schultz, Barto, Pa., assignor to Knoll International, Inc., New York, N.Y.
Filed Jan. 12, 1983, Ser. No. 457,404
Term of patent 14 years
U.S. Cl. D25—56



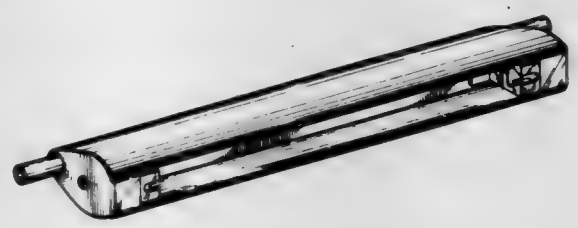
280,344
FLUORESCENT LAMP OR THE LIKE
John W. Anderson, Jr., Ipswich, and William J. Roche, Merrimac, both of Mass., assignors to GTE Products Corporation, Stamford, Conn.
Filed Oct. 3, 1983, Ser. No. 538,406
Term of patent 14 years
U.S. Cl. D26—3



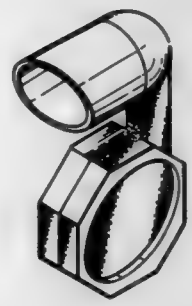
280,345
FLUORESCENT LAMP OR THE LIKE
Fredrick W. Paget, Rockport, Mass., assignor to GTE Products Corporation, Stamford, Conn.
Filed Dec. 1, 1983, Ser. No. 556,788
Term of patent 14 years
U.S. Cl. D26—3



280,346
FLUORESCENT LAMP HOLDER
John E. Aspenwall, 1327 E. Madrid Way, Sandy, Utah 84092
Filed Jan. 27, 1983, Ser. No. 461,392
Term of patent 14 years
U.S. Cl. D26—75



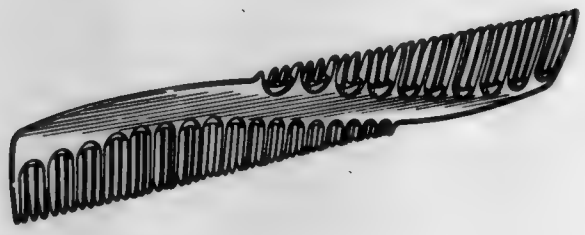
280,347
LAMP
Matthew A. Moustakas, Warrington, Pa., assignor to Touch-On Incorporated, Philadelphia, Pa.
Filed Feb. 14, 1983, Ser. No. 466,214
Term of patent 14 years
U.S. Cl. D26—93



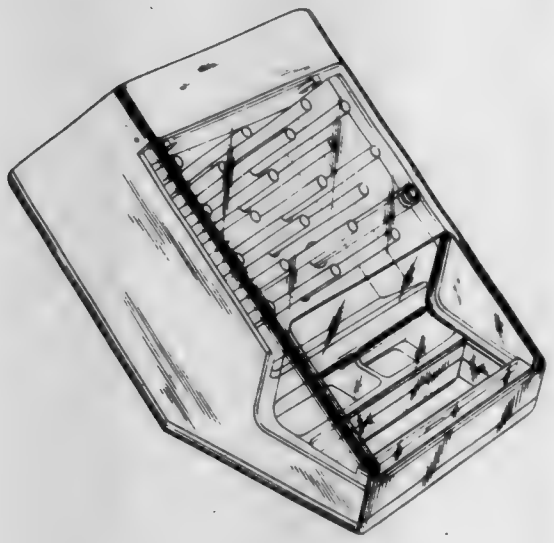
280,348
LAMP BASE
Emanuel M. Pupulidy, 503 Valasquez Dr., Osprey, Fla. 33559
Filed Mar. 21, 1983, Ser. No. 477,229
Term of patent 14 years
U.S. Cl. D26—140



280,349
REVERSIBLE COMB OR THE LIKE
Joan K. Creamer, East Greenwich, R.I., assignor to Dart Industries Inc., Northbrook, Ill.
Filed Feb. 1, 1983, Ser. No. 462,826
Term of patent 14 years
U.S. Cl. D28—29



280,350
HAIRSETTER
Carl Yurdin, Port Washington, N.Y., assignor to Clairol Incorporated, New York, N.Y.
Filed Mar. 4, 1983, Ser. No. 471,979
Term of patent 14 years
U.S. Cl. D28—38



280,351
MANICURE INSTRUMENT
Weldon Shay, 2324 S. Ewing, Dallas, Tex. 75216
Filed May 13, 1983, Ser. No. 494,354
Term of patent 14 years
U.S. Cl. D28—57



280,352
VANITY MIRROR
Gerald J. Ardito, 29 Meadow Rd., Old Westbury, N.Y. 11568
Filed Nov. 1, 1982, Ser. No. 438,251
Term of patent 14 years
U.S. Cl. D28—64.1



280,353
SINGLE PRESSED POWDER COMPACT
Marcel Buchet, Paris, France, assignor to L'Oreal, S.A., Paris, France
Filed Mar. 24, 1983, Ser. No. 478,276
Term of patent 14 years
U.S. Cl. D28—78

280,354
COSMETIC CASE
Dieter Bakic, Roemerstrasse 15, D-8000 Munich 40, Fed. Rep. of Germany
Filed Sep. 12, 1983, Ser. No. 531,335
Claims priority, application Fed. Rep. of Germany, Mar. 10, 1983, 11 AR 892/83
Term of patent 14 years
U.S. Cl. D28—82





LIST OF PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

A. H. Robins Company, Inc.: *See—*
Lunsford, Carl D.; and Chen, Ying-Ho, 4,538,001, Cl. 568-633.000.

A. O. Smith Corp.: *See—*
Shaikh, Maqboolhusein G., 4,538,200, Cl. 361-117.000.

Ab Leo: *See—*
Stamvik, Anders R.; Kristensson, Sten K.; and Lundvall, Karl-Erik, 4,537,722, Cl. 260-397.400.

Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., to Eli Lilly and Company. Derivatives of A-21978C cyclic peptides. 4,537,717, Cl. 260-112.50R.

Abbott, Richard E.: *See—*
Schachter, David; Abbott, Richard E.; and Cogan, Uri, 4,537,718, Cl. 260-112.50R.

Abe, Shunichi; Akiyama, Mitsuo; and Kudo, Yoshihiko, to Konishiroku Photo Industry Co., Ltd. Circuit for electric power source. 4,538,231, Cl. 364-483.000.

Abe, Toshiro: *See—*
Kimura, Akira; Ishihama, Masao; Abe, Toshiro; Shimada, Kiyoshi; and Matsui, Shinichi, 4,537,275, Cl. 180-300.000.

Abecassis, Jacky: *See—*
Boiron, Jean; Boiron, Christian; Abecassis, Jacky; and Favier, Andre-Marcel, 4,537,512, Cl. 366-132.000.

Abraham, Bernard M.; Miyano, Kenjiro; and Ketterson, John B., to United States of America, Energy. Method and apparatus for measuring shear modulus and viscosity of a monomolecular film. 4,537,064, Cl. 73-54.000.

Aburatani, Kenji: *See—*
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.

Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., to United States of America, National Aeronautics and Space Administration. Metal (II) 4,4',4'',4'''-phthalocyanine tetraamines as curing agents for epoxy resins. 4,537,834, Cl. 428-413.000.

Achinger, Michael; Jaeger, Erhard; Lipp, Reinhold; and Streitenberger, Walter, to Achinger, Michael. Molding machine for making flaskless molds. 4,537,238, Cl. 164-169.000.

Acla, Howard L.: *See—*
Ritsko, Joseph E.; and Acla, Howard L., 4,537,750, Cl. 423-65.000.

Adam, Gunter, to Puma-Sportschuhfabriken Rudolf Dassler KG. Grip for a racket, especially a tennis racket. 4,537,399, Cl. 273-75.000.

Adam, Gunter, to Puma-Sportschuhfabriken Rudolf Dassler KG. Racket grip having a grip strip. 4,537,400, Cl. 273-75.000.

Adams, Maynard L.: *See—*
Roney, Thomas W.; and Adams, Maynard L., 4,537,446, Cl. 297-464.000.

Adenau, Marvin L.: *See—*
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,537,316, Cl. 211-133.000.

Aderneck, Stephen: *See—*
Aderneck, Stephen E., 4,537,235, Cl. 144-193.00C.

Aderneck, Stephen E., to Aderneck, Stephen. Wood splitter. 4,537,235, Cl. 144-193.00C.

Adleman, Larry G. Follow bar with cam tracks for rocker type conduit bender. 4,537,052, Cl. 72-154.000.

Adolphi, Heinrich: *See—*
Lange, Arno; Merger, Franz; Hettinger, Peter; and Adolphi, Heinrich, 4,537,901, Cl. 514-404.000.
Seufert, Walter; Varwig, Juergen; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,537,884, Cl. 514-127.000.

Adsett, David E., to Allied Corporation. Method and apparatus for distributing leading space. 4,538,186, Cl. 358-298.000.

Adur, Ashok M.; Schmukler, Seymour; Maconis, John, Jr.; and Shida, Mitsuzo, to Chemplex Company. Composite structures. 4,537,836, Cl. 428-522.000.

Advanced Micro Devices, Inc.: *See—*
Sokolovsky, Paul J., 4,537,059, Cl. 73-7.000.
Varadarajan, Hemmige D., 4,538,075, Cl. 307-454.000.

Agan Chemical Manufacturers, Ltd.: *See—*
Pikarski, Michael; Gabe, Julian; and Dykman, Edmund, 4,537,992, Cl. 564-437.000.

Agarwal, Pawan K.; and Lundberg, Robert D., to Exxon Research and Engineering Co. Gelation of hydrocarbon solutions of blends of associating and non-associating polymers. 4,537,919, Cl. 523-336.000.

Agency of Industrial Science and Technology: *See—*
Toraichi, Kazuo; Otsu, Nobuyuki; and Suzuki, Motomu, 4,538,227, Cl. 364-414.000.

Agfa-Gevaert Aktiengesellschaft: *See—*
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,537,486, Cl. 354-317.000.

AGFA-Gevaert N.V.: *See—*
Muylle, Wilfried E., 4,537,306, Cl. 206-455.000.
Van de Sande, Christian C.; Verhecken, Andre ; and Janssens, Wilhelmus, 4,537,853, Cl. 430-218.000.

Ahrel, Bo A.: *See—*
Henriksson, Sven-Erik D.; Ahrel, Bo A.; Svensson, Claes G. S.; and Franzen, Torsten A. H., 4,537,655, Cl. 162-23.000.

Air Products and Chemicals, Inc.: *See—*
Di Stefano, Frank V., 4,537,831, Cl. 428-514.000.

Airlette Manufacturing Corporation, Inc.: *See—*
Jarnot, Frank R., 4,537,119, Cl. 98-52.000.

Aisin Seiki Kabushiki Kaisha: *See—*
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.
Naramoto, Yuichi, 4,537,411, Cl. 280-6.00R.

Aizawa, Yukio: *See—*
Ohmori, Tadashi; Fujiso, Tokuo; Yasui, Eiji; Nomura, Soichi; and Aizawa, Yukio, 4,537,872, Cl. 502-230.000.

Ajiki, Yoshio; and Matsuura, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating apparatus. 4,537,164, Cl. 123-90.160.

Ajinomoto Company Incorporated: *See—*
Kato, Toshihisa; Iwagami, Hisao; and Yasuda, Naohiko, 4,537,719, Cl. 260-239.00A.

Akaba, Hayao; Yamada, Takeshi; and Jinbo, Masahiro, to Hoya Lens Corporation. Motor-driven subjective phorometer. 4,537,480, Cl. 351-235.000.

Akashi, Tetsuji: *See—*
Kato, Masaaki; and Akashi, Tetsuji, 4,537,352, Cl. 239-90.000.

Akiyama, Mitsuo: *See—*
Abe, Shunichi; Akiyama, Mitsuo; and Kudo, Yoshihiko, 4,538,231, Cl. 364-483.000.

Aklonis, Carol A.: *See—*
O'Sullivan, Joseph; Aklonis, Carol A.; and Singh, Pushpa, 4,537,858, Cl. 435-119.000.

Albert, Hans, to Scapa Inc. Papermakers fabric constructed of extruded slotted elements. 4,537,658, Cl. 162-348.000.

Albrecht, Eckart: *See—*
Maier, Siegfried; and Albrecht, Eckart, 4,537,424, Cl. 285-7.000.

Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, to Hermann C. Starck Berlin. Process for producing valve-metal anodes for electrolytic capacitors. 4,537,641, Cl. 148-11.50P.

Alcantara, Miguel A.: *See—*
Lazcano-Navarro, Arturo; and Alcantara, Miguel A., 4,537,629, Cl. 75-130.00R.

Alchas, Paul G., to Becton, Dickinson and Co. Self-venting, non-coring needle assembly. 4,537,593, Cl. 604-411.000.

Alcon Laboratories, Inc.: *See—*
York, Billie M., Jr., 4,537,892, Cl. 514-278.000.

Alexander, Jose; and Fix, Joseph A., to Merck & Co., Inc. Enhancing absorption of drugs from gastrointestinal tract using acylcarnitines. 4,537,772, Cl. 514-9.000.

Alexander, Rayburn G. Water shield for a metal disintegrator device. 4,538,043, Cl. 219-69.00V.

Alexander, Robert L.; Bequette, Robert J.; Kensler, Terry T.; and Scott, Joseph A., to Mead Johnson & Company. Lyophilized cyclophosphamide. 4,537,883, Cl. 514-110.000.

Alger, Terry W.: *See—*
Benett, William J.; and Alger, Terry W., 4,538,277, Cl. 372-33.000.

Allemand, Didier: *See—*
Degoix, Bernard; Boussemaer, Daniel; and Allemand, Didier, 4,537,468, Cl. 350-96.210.

Allen, Crowley C., Jr., to Research Triangle Institute. Fluid distributor. 4,537,217, Cl. 137-561.00A.

Alliages Frittes METAFRAM: *See—*
Eudier, Michel; Huret, Noel; and Meunier, Jean, 4,537,167, Cl. 123-193.00C.

Allied Colloids Limited: *See—*
Flesher, Peter; and Langley, John G., 4,537,513, Cl. 366-162.000.

Allied Corporation: *See—*
Adsett, David E., 4,538,186, Cl. 358-298.000.
Bart, Edward F.; Chu, Arthur S.; and Cook, George R., 4,537,635, Cl. 106-277.000.
Budzyn, Boleslaw L.; and Carlson, Charles E., 4,537,239, Cl. 164-423.000.
Chang, Irving B.; and Beckwith, Robert E., Jr., 4,537,922, Cl. 524-82.000.
De Metz, Frederick C.; and Rackliffe, John R., 4,538,250, Cl. 367-154.000.
Oxenrider, Bryce C.; and Long, David J., 4,537,728, Cl. 260-455.00R.
Thomas, Rudy V., 4,537,363, Cl. 242-107.40A.
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,537,823, Cl. 428-308.400.

Van Der Puy, Michael; Kolc, Jaroslav F.; Anello, Louis G.; Hendrickson, Larry L.; Rogic, Milorad M.; and Swerdloff, Michael D., 4,537,614, Cl. 71-28.000.

Alloy Surfaces Company, Inc.: *See—*
Baldi, Alfonso L., 4,537,927, Cl. 524-407.000.

Alma Piston Company: *See—*
Lech, Thaddeus, Jr.; and Popchock, Richard T., 4,537,296, Cl. 192-106.200.

Almeida, Robert. Apparatus for improving oil storage tanks. 4,537,211, Cl. 137-1.000.

Alps Electric Co., Ltd.: *See—*
Hiyama, Torao; and Nishizawa, Kazuo, 4,538,132, Cl. 336-221.000.

Alsenz, Richard H.; and Ansted, Roger C. Method and apparatus for controlling pressure in a single compressor refrigeration system. 4,537,038, Cl. 62-118.000.

Altherr, Russell G.: *See—*
Kaim, John W.; Berg, Norman A.; and Altherr, Russell G., 4,537,304, Cl. 206-335.000.

Alto, Kenneth W.: *See—*
Castellano, Gary M.; and Alto, Kenneth W., 4,537,404, Cl. 273-422.000.

Alzo, Inc.: *See—*
Fogel, Arnold W.; and Zofchak, Albert, 4,537,762, Cl. 424-70.000.

Amemiya, Yoichi: *See—*
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,538,084, Cl. 310-217.000.

American Commercial Barge Line Co.: *See—*
Nivin, James E., 4,537,147, Cl. 114-201.00R.

American Cyanamid Company: *See—*
Cerini, Costantino P., 4,537,769, Cl. 424-89.000.
Grasso, Charles P., 4,537,988, Cl. 562-478.000.
Petersen, Arthur W.; and Smialowicz, Dennis T., 4,537,638, Cl. 134-2.000.
Savides, Christos; and Robertson, Allan J., 4,537,993, Cl. 568-14.000.

American District Telegraph Company: *See—*
Harvey, Roy L.; Griffin, Kevin J.; Galvin, Aaron A.; and Auerbach, Louis H., 4,538,138, Cl. 340-521.000.

American Home Products Corporation: *See—*
Scotese, Anthony C.; Morris, Robert L.; Santilli, Arthur A.; and Strike, Donald P., 4,537,968, Cl. 546-209.000.

American Home Products Corporation (Del.): *See—*
Phillipps, Patrick G.; and Schenkel, Jeffrey, 4,537,196, Cl. 128-630.000.

American Screen Printing Equipment Co.: *See—*
Bubley, Henry J., 4,537,126, Cl. 101-123.000.

American Sterilizer Company: *See—*
Confer, Richard G., 4,537,276, Cl. 181-21.000.
Fisher, Kenneth J.; and Miller, William R., 4,538,214, Cl. 362-147.000.

Ameron Inc.: *See—*
Carter, J. Warne, Sr., 4,537,426, Cl. 285-110.000.

Amersfoort, Andre G., to Boldt Industries, Inc. Two stage meat strainer. 4,536,920, Cl. 17-46.000.

Amonett, Daniel K., to Emhart Industries, Inc. Clutch for a timing mechanism. 4,538,037, Cl. 200-38.00R.

AMP Incorporated: *See—*
Douty, George H.; Landis, John M.; and Snyder, Clair W., Jr., 4,537,454, Cl. 339-45.00M.
Manabe, Sakae, 4,537,462, Cl. 339-259.00R.
Wise, Joseph A.; and Green, Michael P., 4,538,024, Cl. 174-117.00F.

Ampex Corporation: *See—*
Louth, Kenneth, 4,538,190, Cl. 360-73.000.

AMSTED Industries Incorporated: *See—*
Kaim, John W.; Berg, Norman A.; and Altherr, Russell G., 4,537,304, Cl. 206-335.000.

Amtel Systems Corporation: *See—*
Drabing, Richard B., 4,538,136, Cl. 340-310.00R.

Anatros Corporation: *See—*
Danby, Hal C.; and Ciupke, Werner W., 4,537,387, Cl. 251-331.000.

Anderson, George F., to U.S. Leisure Incorporated. Nozzle for water tub. 4,537,358, Cl. 239-413.000.

Anderson, Marie T.; Michel, Karl H.; and Sands, Thomas H., to Eli Lilly and Company. A52688 Antibiotics and process for their production. 4,537,777, Cl. 514-521.000.

Anderson, Marie T.: *See—*
Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., 4,537,715, Cl. 260-112.50R.

Anderson, Richard N., to Hunter Douglas Inc. Insulated glass spacer support. 4,537,004, Cl. 52-788.000.

Anderson, Robert L., to Ford Motor Company. Output transistor driver diagnostic system. 4,538,106, Cl. 324-158.00T.

Anderson, Wayne R., to Sundstrand Corporation. Two member boost stage valve for a hydraulic control. 4,537,220, Cl. 137-625.640.

Andersson, Roger: *See—*
Johansson, Soren; Andersson, Roger; and Jonsson, Lennart, 4,537,581, Cl. 474-123.000.

Andersson, Sven A., to Nils Weibull AB. Arrangement in a silo or the like for storing pulverulent, granular or lumpy material, such as coal. 4,537,553, Cl. 414-302.000.

Ando, Hiroshi: *See—*
Noda, Masahiro; and Ando, Hiroshi, 4,537,287, Cl. 187-29.00R.

Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, to Mitsui Toatsu Chemicals, Inc.; and Toyo Engineering Corporation. Process for the preparation of polymer compositions having low volatile content. 4,537,954, Cl. 528-481.000.

Andren, Carl F.: *See—*
Mosley, William H., Jr.; and Andren, Carl F., 4,538,280, Cl. 375-1.000.

Anello, Louis G.: *See—*
Van Der Puy, Michael; Kolc, Jaroslav F.; Anello, Louis G.; Hendrickson, Larry L.; Rogic, Milorad M.; and Swerdloff, Michael D., 4,537,614, Cl. 71-28.000.

Ang, T. Liem; Van Arnam, Donald; and McFeaters, Earl, to Avery International Corporation. Van label having non-linear discontinuous score lines in the backing. 4,537,809, Cl. 428-41.000.

Angele, Werner, to Pfaff Industriemaschinen GmbH. Method and apparatus for manufacturing pantyhose. 4,536,891, Cl. 2-409.000.

Ansted, Roger C.: *See—*
Alsenz, Richard H.; and Ansted, Roger C., 4,537,038, Cl. 62-118.000.

Antol, Ronald F.: *See—*
Wilhelm, John J.; Kapoor, Anoop; Kobuck, Richard M.; Antol, Ronald F.; and Norris, George W., 4,537,711, Cl. 252-633.000.

Aoba, Takashi: *See—*
Mori, Leo; Tominaga, Mamoru; and Aoba, Takashi, 4,538,216, Cl. 362-311.000.

Apontoweil, Peter; and Kok, Johannes A. G., to Roussel Uclaf. Combined vaccine. 4,537,768, Cl. 424-89.000.

Appareillages et Materiels de Servitudes: *See—*
Tourneur, Auburt, deceased, 4,538,097, Cl. 318-490.000.

Applied Power Inc.: *See—*
Hense, Thomas R.; and Rudolph, Ronald M., 4,536,962, Cl. 33-516.000.

Apri, Edward W. Self-actuating drinking fountain/faucet. 4,537,350, Cl. 239-25.000.

APX Group, Inc.: *See—*
Harwood, Jon W.; Clegg, Michael W.; and Treadwell, Mark C., 4,537,027, Cl. 60-323.000.

Arai, Akio, to Fuji Electric Company, Ltd. Photosensitive element having roughened selenium-arsenic alloy surface. 4,537,849, Cl. 430-85.000.

Arai, Eisuke: *See—*
Yoshino, Hideo; Arai, Eisuke; and Kiuchi, Kazuhide, 4,538,167, Cl. 357-59.000.

Arai, Shigeharu, to Toyota Jidosha Kabushiki Kaisha. Engine mount. 4,537,381, Cl. 248-559.000.

Arakawa, Tatsumi: *See—*
Kambara, Shu; Arakawa, Tatsumi; and Takahashi, Akio, 4,537,950, Cl. 528-380.000.

Argiropoulos, George D.; and Sahachaisere, Somchai, to Sta-Rite Industries, Inc. Cartridge filter end cap. 4,537,681, Cl. 210-317.000.

Arima, Kiyoteru: *See—*
Miyako, Haruyoshi; and Arima, Kiyoteru, 4,538,258, Cl. 369-271.000.

Armando, John E.: *See—*
Brown, Vincent B.; Kozel, Charles A.; Scheitz, John T.; and Armando, John E., 4,537,456, Cl. 339-99.00R.

Armour Pharmaceutical Co.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,537,716, Cl. 260-112.50T.

Armstrong, Gordon P.; Flautt, Martin C.; and Williams, Gary L., to Owens-Corning Fiberglas Corporation. Apparatus for severing strand. 4,537,107, Cl. 83-694.000.

Armstrong, Gordon P.; and Flautt, Martin C., to Owens-Corning Fiberglas Corporation. Method and apparatus for producing chopped strands. 4,537,610, Cl. 65-3.440.

Arndt, Friedrich: *See—*
Boroschewski, Gerhard; and Arndt, Friedrich, 4,537,622, Cl. 71-108.000.

Arnold, Edward P.: *See—*
Crain, Stephen F.; Gray, Steven H.; Arnold, Edward P.; and Dodd, Timothy J., 4,538,221, Cl. 364-172.000.

Arzberger, William A.: *See—*
Brown, Merle S.; and Arzberger, William A., 4,537,332, Cl. 222-190.000.

Asahi-Dow Limited: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,537,935, Cl. 525-222.000.

Asahi Glass Company Ltd.: *See—*
Asawa, Tatsuro; Sajima, Yasuo; and Iwamoto, Junjiro, 4,537,673, Cl. 204-253.000.

Asahi Kasei Kogyo Kabushiki Hiraoka & Co.: *See—*
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Asahi Kasei Kogyo Kabushiki Kaisha: *See—*
Chono, Masazumi; and Ishida, Hiroshi, 4,537,757, Cl. 423-328.000.
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Asakawa, Shiroh: *See—*
Itoh, Yoshimasa; and Asakawa, Shiroh, 4,537,606, Cl. 55-158.000.

Asano, Masao; Fujimatsu, Wataru; Matsumoto, Kazumasa; Murata, Hideki; Sato, Toshihiko; and Watanabe, Kenji, to Konishiroku Photo Industry Co., Ltd. Magnetic recording medium. 4,537,824, Cl. 428-323.000.

Asanuma, Tetsu; and Inagaki, Satoru, to Fuji Xerox Co., Ltd. Fixing roller for a copying machine. 4,538,052, Cl. 219-469.000.

Asari, Akira; Tsuzuki, Hidehiro; Inoue, Yoichi; and Tabuchi, Takahisa, to Kabushiki Kaisha Kobe Seiko Sho. Hot isostatic pressing apparatus. 4,537,569, Cl. 425-405.00H.

Asawa, Tatsuro; Sajima, Yasuo; and Iwamoto, Junjiro, to Asahi Glass Company Ltd. Electrolytic cell. 4,537,673, Cl. 204-253.000.

ASC Incorporated: *See—*
Brockway, Patrick H.; Lehr, Howard C.; and George, Richard D., 4,537,440, Cl. 296-108.000.

Ascoe Felts, Inc.: *See—*
Booth, Ian K.; and Cunnane, Francis J., III, 4,537,816, Cl. 428-234.000.

ASEA Aktiebolag: *See—*
Dubon, Chantal; Hok, Bertil; and Ovren, Christer, 4,537,467, Cl. 350-96.200.

Ashida, Akira, to Hitachi, Ltd. Clock extraction circuit using an oscillator and phase-locked programmable divider. 4,538,119, Cl. 331-1.00A.

Ashley, Walter M., Jr.: *See—*
Inglett, Wilfred L., Jr.; Ashley, Walter M., Jr.; and Manfredonia, Abe J., 4,537,015, Cl. 53-386.000.

Ashton, Robert G.: *See—*
Wrobel, Stanley A.; and Ashton, Robert G., 4,537,068, Cl. 73-202.000.

Asoma, Yoshito, to Olympus Optical Co., Ltd. Objective lens system for microscopes. 4,537,472, Cl. 350-414.000.

Astero, Ulf J., to Optik Innovation AB OIAB. Optical system for projection. 4,537,474, Cl. 350-432.000.

Astro-Stream Corporation, The: *See—*
Cymbler, Murray J., 4,537,405, Cl. 273-428.000.

Asulab S.A.: *See—*
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, 4,537,515, Cl. 368-202.000.

AT&T Bell Laboratories: *See—*
Henry, Charles H.; and Logan, Ralph A., 4,536,940, Cl. 29-569.00L.
Peterson, Thomas A., 4,538,224, Cl. 364-200.000.

AT&T Bell Laboratories, Inc.: *See—*
Williamson, Andrew H., Jr., 4,538,021, Cl. 174-92.000.

AT&T Information Systems Inc.: *See—*
Fossett, Lawrence D.; and Michael, Steven C., 4,538,030, Cl. 179-7.1TP.
Kohs, Dwight W., 4,538,271, Cl. 371-49.000.

AT&T Technologies, Inc.: *See—*
Banks, Edward L.; Ellington, Thomas S., IV; and Zavecz, Terrence E., 4,537,498, Cl. 355-55.000.
Dorey, John K., II; Schmidt, Steven L.; and Townsend, Wesley P., 4,537,799, Cl. 427-259.000.
Hardesty, Edwin C.; and Hardesty, Ronald C., 4,536,939, Cl. 29-566.400.
Kuyel, Birol, 4,537,813, Cl. 428-209.000.
Macdonald, David I., 4,537,663, Cl. 204-14.100.
Ouellette, Paul J., 4,537,461, Cl. 339-258.00R.

AT&T Teletype Corporation: *See—*
Durkee, David B.; and Liebman, Alan J., 4,538,156, Cl. 346-21.000.

Athey, Roy L., to United Technologies Corporation. Method for eliminating low cycle fatigue cracking in integrally bladed disks. 4,536,932, Cl. 29-156.80B.

Atlantic Richfield Company: *See—*
Shum, Wilfred P.; White, John F.; and Beals, Eva M., 4,537,998, Cl. 568-483.000.

Atlas Steel Rule Die, Inc.: *See—*
Graboyes, Herman A., 4,537,124, Cl. 101-28.000.

Atomic Energy of Canada Limited: *See—*
Liu, Dirkson D. S., 4,537,503, Cl. 356-28.500.

Atteberry, Eldon A.: *See—*
LaRou, Albert M.; and Atteberry, Eldon A., 4,537,519, Cl. 384-478.000.

Atwell, Graham J.: *See—*
Rewcastle, Gordon W.; Atwell, Graham J.; Baguley, Bruce C.; and Denny, William A., 4,537,729, Cl. 260-944.000.

Audiovox Corp.: *See—*
Turner, Earl W., 4,538,135, Cl. 340-63.000.

Auerbach, Louis H.: *See—*
Harvey, Roy L.; Griffin, Kevin J.; Galvin, Aaron A.; and Auerbach, Louis H., 4,538,138, Cl. 340-521.000.

Ausschnitt, Christopher P., to Perkin-Elmer Corporation, The. Overlay test wafer. 4,538,105, Cl. 324-158.00R.

Automotive Products plc: *See—*
Davies, David A., 4,537,297, Cl. 192-106.200.
Hanson, William M., 4,537,524, Cl. 403-140.000.
Osborne, Duncan W., 4,537,293, Cl. 188-196.0BA.

Avery International Corporation: *See—*
Ang, T. Liem; Van Arnam, Donald; and McFeaters, Earl, 4,537,809, Cl. 428-41.000.

Aviram, Ari, to International Business Machines Corporation. Light induced capacitance changes in donor polymers (or small molecules) films and its use for information storage in video disks and the like. 4,538,252, Cl. 369-13.000.

Avra, Raymond E.: *See—*
Herrington, Lawrence; and Avra, Raymond E., 4,537,367, Cl. 242-198.000.

Axelrod, Lester: *See—*
Oster, Stanley M.; and Axelrod, Lester, 4,537,099, Cl. 225-93.000.

Ayata, Naoki: *See—*
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, 4,538,182, Cl. 358-280.000.

Babbitt, Richard W.: *See—*
Mariani, Elio A.; Stern, Richard A.; and Babbitt, Richard W., 4,538,123, Cl. 333-208.000.

Baer, Harold J.: *See—*
Smith, Roger D.; and Baer, Harold J., 4,537,401, Cl. 273-112.000.

Baer, Karl: *See—*
Goetz, Norbert; Laas, Harald; Tava, Peter; Hupfer, Leopold; and Baer, Karl, 4,538,009, Cl. 568-799.000.

Baguley, Bruce C.: *See—*
Rewcastle, Gordon W.; Atwell, Graham J.; Baguley, Bruce C.; and Denny, William A., 4,537,729, Cl. 260-944.000.

Bahr, Richard G.; and Moore, Russell L., to Prime Computer, Inc. Self-repairing ring communications network. 4,538,264, Cl. 371-8.000.

Baier, Manfred; and Rascher, Andreas, to BBC Brown, Boveri & Company, Ltd. Air-core choke coil. 4,538,131, Cl. 336-57.000.

Baker, Charles M. Automatic coal stove stoker. 4,537,140, Cl. 110-281.000.

Baker, Henry L.: *See—*
Gargini, Eric J.; and Baker, Henry L., 4,538,174, Cl. 358-86.000.

Baker, John N.: *See—*
Rogers, Colin C.; Baker, John N.; and Estebanez, Joseph, 4,537,212, Cl. 137-2.000.

Baker Perkins Exports Pty. Ltd.: *See—*
Willett, Paul E., 4,538,050, Cl. 219-388.000.

Balbes, Michael S.; Day, Charles E.; Hooper, Robert L.; and Lin, Hank S., to Microdyne Corporation. Receive only earth satellite ground station. 4,538,175, Cl. 358-86.000.

Baldi, Alfonso L., to Alloy Surfaces Company, Inc. Diffusion coating mixtures. 4,537,927, Cl. 524-407.000.

Baldwin, Bernard A.: *See—*
Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., 4,537,690, Cl. 252-48.400.

Ballarati, Vito; and Tajana, Franco, to Val Lesina S.p.A. Fabrics with a crepe effect constituted by continuous texturized synthetic yarns of high yarn/count/no. of filaments ratio. 4,537,227, Cl. 139-420.00R.

Ballatore, Daniel; Bonnet, Yves A.; Ferry, Michel F.; and Jacquart, Christian A., to International Business Machines Corporation. Interface circuit with impedance adaptation means. 4,538,032, Cl. 179-170.00D.

Baltes, Heinrich P.; Glass, Andrew S.; and Jauch, Karl, to LGZ Landis & Gyr Zug AG. Security blank with enhanced authenticating features, and a method and an apparatus for determining the genuineness of the security blank. 4,537,504, Cl. 356-71.000.

Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., to Eli Lilly and Company. Process for the production of mycaminosyltylonolide. 4,537,957, Cl. 336-7.100.

Baltzer, Karen L.; and Peterson, Jan B., to Kavouras, Inc. System for preparing aircraft driftdown plans. 4,538,229, Cl. 364-428.000.

Balzer, Norbert R., to Park-Ohio Industries, Inc. Method of shearing metal billets. 4,537,102, Cl. 83-16.000.

Bando, Yoshihide, to Omron Tateisi Electronics Co. Electromagnetic relay with symmetric reaction. 4,538,126, Cl. 335-78.000.

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Barth, Phillip W., to Leland Stanford Junior University, The Board of Trustees of the. Integral fluid filter and capillary. 4,537,680, Cl. 210-316.000.

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Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, 4,536,909, Cl. 15-4.000.
Goetz, Norbert; Laas, Harald; Tavs, Peter; Hupfer, Leopold; and Baer, Karl, 4,538,009, Cl. 568-799.000.
Grychtol, Klaus; and Baumann, Hans, 4,537,955, Cl. 534-696.000.
Lange, Arno; Merger, Franz; Hettinger, Peter; and Adolphi, Heinrich, 4,537,901, Cl. 514-404.000.
Merger, Franz; Nestler, Gerhard; and Towae, Friedrich, 4,537,960, Cl. 544-86.000.
Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, 4,537,701, Cl. 252-344.000.
Parg, Adolf; Ziegler, Hans; and Wuerzer, Bruno, 4,537,621, Cl. 71-103.000.
Plath, Peter; Eicken, Karl; Sauter, Hubert; and Wuerzer, Bruno, 4,537,617, Cl. 71-92.000.
Reissenweber, Gernot; Kersten, Siegfried; Ditter, Walter; and Jacobs, Peter, 4,537,986, Cl. 560-132.000.
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Schneider, Heinz-Walter; Richter, Wolfgang; Disteldorf, Walter; and Kummer, Rudolf, 4,537,987, Cl. 560-193.000.
Seufert, Walter; Varwig, Juergen; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,537,884, Cl. 514-127.000.
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Rohrmann, Charles A.; and Fullam, Harold T., 4,537,835, Cl. 423-502.000.
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Baumann, Heinz, to Schaum-Chemie W. Bauer GmbH & Co. KG. Method of preparing a urea-formaldehyde combination foam that is low in formaldehyde. 4,537,913, Cl. 521-107.000.
Baumgarth, Rolf: *See*—
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Brandes, Wilhelm; and Daum, Werner, 4,537,905, Cl. 514-521.000.
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Gabel, Eike; Blank, Heinz U.; and Behre, Horst, 4,538,007, Cl. 568-751.000.
Groll, Manfred; and Ockelmann, Dieter, 4,537,721, Cl. 260-242.200.
Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.
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Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; Bottenbruch, Ludwig; and Heitz, Walter, 4,537,951, Cl. 528-388.000.
Muller, Hanns P.; and Schafer, Karl, 4,537,596, Cl. 8-115.600.
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Starzewski, Karl-Heinz A. O.; and Witte, Josef, 4,537,982, Cl. 556-22.000.
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Baier, Manfred; and Rascher, Andreas, 4,538,131, Cl. 336-57.000.
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BBC Industries Inc.: *See*—
Brown, Claude D., 4,537,345, Cl. 236-11.000.
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Beck, Franklin L., to Sperry Corporation. Sway rod suspension system. 4,537,382, Cl. 248-568.000.
Beck, Harold K., to Halliburton Company. Low pressure responsive downhole tool. 4,537,258, Cl. 166-374.000.
Beckmann, Friedrich K.; Hoppe, Wolfgang; and Meyer, Wolfgang, to U.S. Philips Corporation. Device for microwave transmission between two bodies which are rotatable relative to each other. 4,538,125, Cl. 333-248.000.
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Alchas, Paul G., 4,537,593, Cl. 604-411.000.
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Rooke, David J.; and Burnstead, Barry W., 4,537,887, Cl. 514-197.000.
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Taylor, Andrew W.; and Cook, Richard T., 4,537,886, Cl. 514-193.000.
Behr-Thomson Degnstoffregler GmbH: *See*—
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Beitzer, George W., to Spectron Glass and Electronics, Incorporated. Tilt sensor and method of assembly. 4,536,967, Cl. 33-366.000.
Belanger, Patrice C.; and Gillard, John W., to Merck Frosst Canada, Inc. Substituted phenylalkenoic acids and esters. 4,537,906, Cl. 514-532.000.
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Benesh, Joseph C.: *See*—
Lewis, George A.; Collins, Kent L.; Benesh, Joseph C.; and Ward, Patrick C., 4,538,091, Cl. 313-625.000.
Benett, William J.; and Alger, Terry W., to United States of America, Energy. Inductive gas line for pulsed lasers. 4,538,277, Cl. 372-33.000.
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Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.
Benning, Gordon D.; Pascas, Brian J.; Blackhall, Robert K.; Wilker, Paul S.; and Neathway, Graham A., to Trillium Telephone Systems Inc. Home communications and control system. 4,538,031, Cl. 179-81.00B.
Benz, Gotlieb, to Machinenfabrik Flums AG. Method and apparatus for packing soft packages into boxes. 4,537,008, Cl. 53-438.000.
Bequette, Robert J.: *See*—
Alexander, Robert L.; Bequette, Robert J.; Kensler, Terry T.; and Scott, Joseph A., 4,537,883, Cl. 514-110.000.
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Kambanis, Stamatis M.; Berchem, Antoine; Gregoire, Dennis; and Rybicky, Jaroslav, 4,537,941, Cl. 527-403.000.
Berenz, John J.; and Nakano, Kenichi, to TRW Inc. Two-gate noncoplanar FET with self-aligned source. 4,537,654, Cl. 156-644.000.
Berg, Norman A.: *See*—
Kaim, John W.; Berg, Norman A.; and Altherr, Russell G., 4,537,304, Cl. 206-335.000.
Bergler, Otto, to Black & Decker Overseas AG. Circular cross-cut and miter saw box. 4,537,105, Cl. 83-471.300.
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Weber, Hans, to Basf Aktiengesellschaft. Navy blue mixtures of disperse mono-azo dyes for cellulose acetate. 4,537,597, Cl. 8-639.000.
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Tuten, William J.; Crosby, Kennith D.; and Bergquist, Bertil R., 4,538,100, Cl. 318-808.000.
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Lindahl, Jonas A. I.; and Bergstrom, John R., 4,537,656, Cl. 162-38.000.
Berman, Daniel. Ocean thermal energy system. 4,537,030, Cl. 60-641.700.
Bernard, Donald C., to Frito-Lay, Inc. Method of preparing low oil fried potato chips. 4,537,786, Cl. 426-438.000.
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Fogel, Arnold W.; and Zofchak, Albert, 4,537,762, Cl. 424-70.000.
Bernhard, Horst; and Esselborn, Reiner, to Merck Patent Gesellschaft mit beschrankter Haftung. Process for the preparation of nacreous pigments with improved gloss properties, products thereof, and compositions using said pigments. 4,537,636, Cl. 106-291.000.

Bero, Vernon L.; and Schultz, Fredrick W., to Gold Band Ice Cream, Inc. Apparatus for the manufacture of ice cream sandwiches. 4,537,121, Cl. 99-450.400.

Bertellotti, Ansano; and Traina, Anthony, to GTE Communication Systems Corporation. Printed wiring board file with variable printed wiring board spacings. 4,538,211, Cl. 361-415.000.

Best, Norman D.: *See*—
Wyle, Charles; Shea, Donald M.; and Best, Norman D., 4,536,935, Cl. 29-281.100.

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Bishop, Robert; and Bezjian, Krikor, 4,537,505, Cl. 356-237.000.

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Resnick, Brian J.; Messina, Elena R.; Bhatia, Madhukar; and Holmes, John G., 4,538,233, Cl. 364-513.000.

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bielomatik Leuze GmbH & Co.: *See*—
Kunzmann, Otto, 4,537,545, Cl. 412-7.000.

Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, to Paul Rauschert GmbH & Co. KG. Saddle filling member for gas-liquid contact. 4,537,731, Cl. 261-94.000.

Billiet, Colin T., to Domnick Hunter Filters Ltd. Apparatus for treating compressed air for breathing purposes. 4,537,748, Cl. 422-122.000.

Binks Manufacturing Company: *See*—
Culbertson, Samuel W.; and Dixon, George, 4,537,357, Cl. 239-290.000.

BIOGAL Gyogyszergyar: *See*—
Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, 4,537,899, Cl. 514-384.000.

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Birdy, Jal N.: *See*—
Chen, Jade; Birdy, Jal N.; and Watt, Brian J., 4,537,532, Cl. 405-217.000.

Bishop, Robert; and Bezjian, Krikor, to Beltronics Inc. Method for detecting pin holes and the like in sheet material for packaging and similar applications. 4,537,505, Cl. 356-237.000.

Bishop, Timothy E.; Pasternack, George; and Zimmerman, John M., to DeSoto, Inc. Radiation-curable copolymers of monoethylenic monomers. 4,537,667, Cl. 204-159.150.

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Lakshmanan, Vaikuntam I.; and Biskupski, Jurgen K., 4,537,628, Cl. 75-118.00R.

Bittner, Timothy, to Ioptex Inc. Vaulted intraocular lens. 4,536,895, Cl. 623-6.000.

Bittner, Timothy, to Ioptex Inc. Intraocular lens with appendage manipulation loop. 4,536,896, Cl. 623-6.000.

Bjerregaard, Richard S., to Eli Lilly and Company. Airborne particle dispenser. 4,537,333, Cl. 222-345.000.

Bjor, Hakon E., to Ingenior Thor Furuholmen A/S. Method and means for adjusting the feed support of a rock drilling unit into a given distance from the drilling location. 4,537,263, Cl. 173-1.000.

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Ryckman, William D., Jr., 4,538,049, Cl. 219-386.000.

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Black, John W.; Shupe, Richard D.; and Simon, Earl, to Pemco-Kalamazoo, Inc. Lifting apparatus for an injection mold. 4,537,570, Cl. 425-450.100.

Blackhall, Robert K.: *See*—
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Blain, Edward S.: *See*—
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Blanchard, Jean; and Panak, Edouard, to Sanofi, S.A. Methods of using compositions having antithrombotic and anti-blood-platelet-aggregating activity. 4,537,894, Cl. 514-301.000.

Blank, Heinz U.: *See*—
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Blass, Jaroslav; and Deal, Michael A., to Copeland Corporation. Valve assembly for a compressor. 4,537,566, Cl. 417-569.000.

Bleicher, Manfred: *See*—
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,537,264, Cl. 173-48.000.

Blizzard, John D.; and Swihart, Terence J., to Dow Corning Corporation. Curable silicone compositions comprising resins. 4,537,829, Cl. 428-429.000.

Block, William V.: *See*—
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Blum, David B.; and Gelbein, Abraham P. Activation of catalysts for synthesizing methanol from synthesis gas. 4,537,876, Cl. 502-342.000.

Blumensaadt, Hans C., to Gottlieb Weinmann Gerate fur Medizin und Arbeitsschutz G.m.b.H. & Co. Pump element of a device for artificial respiration. 4,537,191, Cl. 128-205.130.

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Morrow, Robert M.; Kuebker, William A.; and McGinity, James W., 4,537,689, Cl. 252-11.000.

Bock, Edward C.: *See*—
Ritter, Joachim A.; Bock, Edward C.; Spinelli, Richard A.; and Dennis, John R., 4,537,499, Cl. 355-58.000.

Bock, Robert E., to WPM, Inc. Stream-controlling device for faucets. 4,537,360, Cl. 239-553.300.

Boden, Richard M.: *See*—
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,537,704, Cl. 252-522.00R.

Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., to Eli Lilly and Company. Glycopeptide antibiotic CUC/CSV and process for its production. 4,537,715, Cl. 260-112.50R.

Boeing Company, The: *See*—
Foster, Clark B., 4,537,647, Cl. 156-245.000.
Miller, Dale D.; and Polky, John N., 4,537,502, Cl. 356-5.000.

Bogh, Ronald L.: *See*—
Caywood, Clayton D.; and Bogh, Ronald L., 4,536,989, Cl. 47-46.000.

Bohr, Mark T.; Yu, Ken K.; Yau, Leo D.; and Garg, Shyam G., to Intel Corporation. CMOS process for fabricating integrated circuits, particularly dynamic memory cells with storage capacitors. 4,536,947, Cl. 29-576.00C.

Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, to Agfa-Gevaert Aktiengesellschaft. Apparatus for the exposure and development of photographic images. 4,537,486, Cl. 354-317.000.

Boiron, Christian: *See*—
Boiron, Jean; Boiron, Christian; Abecassis, Jacky; and Favier, Andre-Marcel, 4,537,512, Cl. 366-132.000.

Boiron, Jean; Boiron, Christian; Abecassis, Jacky; and Favier, Andre-Marcel, to Laboratoires Boiron. Method and apparatus for Korsakovian dilution. 4,537,512, Cl. 366-132.000.

Boldt Industries, Inc.: *See*—
Amersfoort, Andre G., 4,536,920, Cl. 17-46.000.

Bolger, Thomas V., to RCA Corporation. Digital signal peaking apparatus with controllable peaking level. 4,538,178, Cl. 358-166.000.

Bollinger, Heinrich: *See*—
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Clemente, Anthony R., 4,538,139, Cl. 340-539.000.

Bolton, William W. Portable folding corral. 4,537,151, Cl. 119-20.000.

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Bone, George D., Jr., to Westinghouse Electric Corp. Self-calibration of stacked beam radar. 4,538,150, Cl. 343-17.700.

Bonnet, Yves A.: *See*—
Ballatore, Daniel; Bonnet, Yves A.; Ferry, Michel F.; and Jacquart, Christian A., 4,538,032, Cl. 179-170.00D.

Book, Ronald J.: *See*—
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Boorsma, Nancy B., to Pennwalt Corporation. Tamper resistant and tamper evident sealed end cartons. 4,537,309, Cl. 206-525.000.

Booth, Ian K.; and Cunnane, Francis J., III, to Ascoe Felts, Inc. Papermakers superimposed felt with voids formed by removing yarns. 4,537,816, Cl. 428-234.000.

Boothe, Nancy G.; and Potts, Anthony M., to Motorola, Inc. Belt clip assembly with a controlled failure mode. 4,536,925, Cl. 24-511.000.

Borbely, Gyula J.; Devuyst, Eric A.; Ettel, Victor A.; Mosoiu, Marcel A.; and Schitka, Konstantin J., to INCO Limited. Cyanide removal from aqueous streams. 4,537,686, Cl. 210-713.000.

Borchardt, Dieter. Lashing bar. 4,537,539, Cl. 410-77.000.

Borden Company, Limited, The: *See*—
Chan, Lock-Lim; and Lau, Patrick W., 4,537,807, Cl. 428-74.000.

Borg-Warner Corporation: *See*—
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Boro Recycling Center, Inc.: *See*—
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Boroschewski, Gerhard; and Arndt, Friedrich, to Schering Aktiengesellschaft. Diurethanes and selective herbicidal agent containing them. 4,537,622, Cl. 71-108.000.

Borrelli, Nicholas F.; Hares, George B.; Smith, Dennis W.; and Wedding, Brent M., to Corning Glass Works. Colored photochromic glasses and method. 4,537,612, Cl. 65-30.110.

Bortolani, Ermanno; Brembilla, Sandro; and Vassarotti, Enzo, to W. R. Grace & Co., Cryovac Div. Vacuum packaging. 4,537,011, Cl. 53-509.000.

Bose, Amar G., to Bose Corporation. Fixed bandpass tone controlling. 4,538,298, Cl. 381-98.000.

Bose Corporation: *See*—
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Boston University, Trustees of: *See*—
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Bottenbruch, Ludwig: *See*—
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Boughton, Thomas T., to T. T. Boughton & Sons, Ltd. Transport frames for vehicles. 4,537,540, Cl. 410-82.000.

Boussemaer, Daniel: *See*—
Degoix, Bernard; Boussemaer, Daniel; and Allemand, Didier, 4,537,468, Cl. 350-96.210.

Boutellier, Roman, to Kern & Co. Ltd. Infrared objective system lens. 4,537,464, Cl. 350-1.400.

Bowers, David L. Data entry systems. 4,537,150, Cl. 119-14.170.

Boyd, Robert D.: *See—*
Summers, Mark A.; Hagen, Wilhelm F.; and Boyd, Robert D., 4,537,475, Cl. 350-448.000.

Bracco, Al M., Edenfeld, Arthur R.; and Kotecha, Harish N., to International Business Machines Corporation. Method of making ROM/-PLA semiconductor device by late stage personalization. 4,536,944, Cl. 29-571.000.

Braddick, Britt O. Arrangement to prevent premature expansion of expandable seal means. 4,537,251, Cl. 166-196.000.

Braehler, Hermann: *See—*
Thiel, Rudolf; Weisbrod, Helmut; and Braehler, Hermann, 4,537,291, Cl. 188-73.380.

Bragg, Duncan D.: *See—*
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Bralorne Resources Limited: *See—*
Krepela, Josef; and Friedrich, Jaromir, 4,537,386, Cl. 251-302.000.

Bramwell, Frank; and DeSouza, John, to United Technologies Corporation. Grounding of a control rod extending through an opening in a structure. 4,538,019, Cl. 174-6.000.

Brandenstein, Manfred; and Hans, Rudiger, to SKF Kugellagerfabriken GmbH. Bearing arrangement for a driven wheel of a vehicle. 4,537,270, Cl. 180-70.100.

Brandes, Wilhelm; and Daum, Werner, to Bayer Aktiengesellschaft. Fungicidally active substituted oximinoacetanilides. 4,537,905, Cl. 514-521.000.

Brassoud, Gerard, to S. T. Dupont. Attachment device for a decorative article. 4,536,922, Cl. 24-265.00B.

Bray, Gilbert. Portable occasional table and seating. 4,537,443, Cl. 297-159.000.

Brearey, Nicholas J.; and Baumgarth, Rolf, to Knorr-Bremse GmbH. Hydraulic pressure actuated brake system for rail vehicles. 4,538,228, Cl. 364-426.000.

Bredbury, Seth K.; and Waterman, Harold J., Jr., to Colt Industries Operating Corp. Cylindrical rifle handguard assembly. 4,536,982, Cl. 42-71.00R.

Bredderman, David: *See—*
Bredderman, Theodore; Bredderman, Virginia; Bredderman, Kathryn; and Bredderman, David, 4,537,451, Cl. 312-6.000.

Bredderman, Kathryn: *See—*
Bredderman, Theodore; Bredderman, Virginia; Bredderman, Kathryn; and Bredderman, David, 4,537,451, Cl. 312-6.000.

Bredderman, Theodore; Bredderman, Virginia; Bredderman, Kathryn; and Bredderman, David. Hanging locker shelves. 4,537,451, Cl. 312-6.000.

Bredderman, Virginia: *See—*
Bredderman, Theodore; Bredderman, Virginia; Bredderman, Kathryn; and Bredderman, David, 4,537,451, Cl. 312-6.000.

Breen, Thomas B., to General Electric Company. Synchronism check relay. 4,538,197, Cl. 361-71.000.

Breisinger, Otto; and Burgbacher, Herbert, to Sulzer Brothers Limited. Lubricant distributor. 4,537,284, Cl. 184-7.400.

Brembilla, Sandro: *See—*
Bortolani, Ermanno; Brembilla, Sandro; and Vassarotti, Enzo, 4,537,011, Cl. 53-509.000.

Brendel, Richard; and Conrad, Herbert, to Geroh GmbH, Mechanische Systeme. Cable clamp. 4,536,921, Cl. 24-132.0WL.

Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., to Stewart Stamping Corporation. Jack for EMI/RFI shield terminating modular plug connector. 4,537,459, Cl. 339-143.00R.

Brereton, Colin, to Imperial Chemical Industries, PLC. Electrolytic cell. 4,537,672, Cl. 204-253.000.

Brian Watt Associates, Inc.: *See—*
Chen, Jade; Birdy, Jal N.; and Watt, Brian J., 4,537,532, Cl. 405-217.000.

Briggs, Stephen L.: *See—*
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,537,727, Cl. 260-455.00R.

Brinkhoff, Carl H.; and Scott, Gordon C., to Mine Safety Appliances Company. Riot faceshield assembly. 4,536,892, Cl. 2-424.000.

Briscoe, Milton R., to International Telephone and Telegraph Corporation. Programmable coding and decoding arrangement. 4,538,269, Cl. 371-22.000.

Brisson, Bruce A. Audio signal cable. 4,538,023, Cl. 174-115.000.

Bristol, William E.: *See—*
Gale, Ronald S.; Bristol, William E.; and Noonan, Carroll, 4,537,586, Cl. 493-220.000.

British Aerospace Public Limited Company: *See—*
Jackson, Graham; and Surawy, Ryszard, 4,537,075, Cl. 73-634.000.

British Aluminium Company plc, The: *See—*
Bryant, Greyham F.; Spooner, Peter D.; and Pearson, William K. J., 4,537,050, Cl. 72-8.000.

British Telecommunications: *See—*
Cox, William E.; and Hemmings, Kenneth L., 4,537,265, Cl. 175-19.000.

Britton, Walter. Splitter for electrical cable. 4,536,957, Cl. 30-90.400.

Brockhaus, Ernst, to Ed. Scharwachter GmbH & Co. KG. Torsion bar vehicle door hinge assembly with hold open mechanism. 4,536,918, Cl. 16-308.000.

Brockway, Patrick H.; Lehr, Howard C.; and George, Richard D., to ASC Incorporated. Vehicle with a convertible top. 4,537,440, Cl. 296-108.000.

Brown, Claude D., to BBC Industries Inc. Flame control system for heat exchanger. 4,537,345, Cl. 236-11.000.

Brown Group Recreational Products, Inc.: *See—*
Defibaugh, William L., 4,537,392, Cl. 272-85.000.

Brown, Merle S.; and Arzberger, William A., to Jet Spray Corp. Beverage dispenser with improved in-bowl whipper. 4,537,332, Cl. 222-190.000.

Brown, Patrick A.; and Murphy, William C. Conveyor lubricating apparatus. 4,537,285, Cl. 184-15.200.

Brown, Roger H.: *See—*
Little, Michael J.; Brown, Roger H.; Efron, Uzi; and Hoberg, Clarence P., 4,537,827, Cl. 428-409.000.

Brown, Vincent B.; Kozel, Charles A.; Scheitz, John T.; and Armando, John E., to Methode Electronics Inc. Electrical connector. 4,537,456, Cl. 339-99.00R.

Brown-Wensley, Katherine A.; and Sinclair, Robert A., to Minnesota Mining and Manufacturing Company. Polyhydridosilanes and their conversion to pyropolymers. 4,537,942, Cl. 528-12.000.

Brown, William F.: *See—*
Christiansen, David W.; Steffen, Jim M.; and Brown, William F., 4,537,741, Cl. 376-261.000.

Bruce, Duncan; and Conklin, Charles E., to Conklin Instrument Corporation. Data bridge with gating and/or testing. 4,538,033, Cl. 179-175.000.

Bruggeman, Bruce: *See—*
Ewing, Robert L.; Hughes, James S.; and Bruggeman, Bruce, 4,538,217, Cl. 362-375.000.

Brunner, Ernst, to TIBA AG Kochherdfabrik und Apparatebau. Combustion chamber for solid fuels. 4,537,141, Cl. 110-300.000.

Brunswick Corporation: *See—*
Petersen, Oscar J.; Barton, Ross J.; Dalke, Jack E.; Sheffield, Gerald W.; and Towle, Theodore, 4,537,384, Cl. 251-83.000.

Bruschtein, Fabio B.; Jahn, Robert G.; and Wittbrodt, Edwin L., to Dow Chemical Company, The. Structured latex particles which are film forming and a process for their preparation. 4,537,916, Cl. 523-201.000.

Brustle, Klaus: *See—*
Rock, Erich; and Brustle, Klaus, 4,536,917, Cl. 16-288.000.

Bruyere, Alain: *See—*
Bompard, Bruno P.; and Bruyere, Alain, 4,536,930, Cl. 29-33.00K.

Bryant, Greyham F.; Spooner, Peter D.; and Pearson, William K. J., to British Aluminium Company plc, The. Method of controlling a stand for rolling strip material. 4,537,050, Cl. 72-8.000.

Bryce, William D., to United Kingdom of Great Britain and Northern Ireland, The Secretary of State for Defence in Her Britannic Majesty's Government of the. Silencer for high velocity gas flow. 4,537,277, Cl. 181-214.000.

Bubley, Henry J., to American Screen Printing Equipment Co. Automatic peel control mechanism. 4,537,126, Cl. 101-123.000.

Buccola, Anthony A. Nozzle positioner for automatic fuel tank. 4,537,437, Cl. 296-1.00C.

Budzinski, Roger R., to Park-Ohio Industries, Inc. Rotating induction heating apparatus. 4,538,041, Cl. 219-10.750.

Budzyn, Boleslaw L.; and Carlson, Charles E., to Allied Corporation. Two piece casting wheel. 4,537,239, Cl. 164-423.000.

Buettner, Egon: *See—*
Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, 4,537,701, Cl. 252-344.000.

Buhler - Miag GmbH: *See—*
Gsponer, Arnold; Huber, Werner; and Petrovic, Milan, 4,537,302, Cl. 198-626.000.

Bujadoux, Karel; and Neyer, Jean-Marie, to Societe Chimique des Charbonnages S.A. Catalyst containing an aromatic silicon compound for the polymerization of ethylene. 4,537,868, Cl. 502-104.000.

Buku, Berniece. Frame for holding plastic bag. 4,537,376, Cl. 248-97.000.

Bulat, Bulent, to Dresser Industries, Inc. Photo transducer circuit for setting minimum and maximum current flow between power terminals. 4,538,063, Cl. 250-214.00R.

Bullock, Robert L., to Standard Car Truck Company. Radial trucks. 4,537,138, Cl. 105-168.000.

Buratovich, Prosper. Animal leash. 4,537,155, Cl. 119-109.000.

Burgbacher, Herbert: *See—*
Breisinger, Otto; and Burgbacher, Herbert, 4,537,284, Cl. 184-7.400.

Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, to BASF Aktiengesellschaft. Apparatus for treating flexible printing plates produced by photochemical methods. 4,536,909, Cl. 15-4.000.

Burleigh, John E.: *See—*
Uraneck, Carl A.; and Burleigh, John E., 4,537,932, Cl. 524-572.000.

Burnstead, Barry W.: *See—*
Rooke, David J.; and Burnstead, Barry W., 4,537,887, Cl. 514-197.000.

Burroughs Corp.: *See—*
Grow, Robert M., 4,538,147, Cl. 340-825.050.
Levin, Burton L.; Phelps, Andrew E.; and Potash, Hanan, 4,538,241, Cl. 364-900.000.

Burroughs, Robert H.; Wright, John D.; Secunda, Jeffrey A.; and Newbower, Ronald S., to Massachusetts General Hospital. Hand printer designed to enable a handicapped person to apply a signature to a document. 4,537,128, Cl. 101-407.0BP.

Bursa, Miloslav; Musil, Frantisek; and Podmela, Ladislav, to Prvni brnenska stojirna, koncernovy podnik. Gear transmission. 4,537,094, Cl. 74-804.000.

Burzin, Klaus: *See—*
Bartmann, Martin; Bax, Hanns-Jorg; Burzin, Klaus; and Ribbing, Wilfried, 4,537,948, Cl. 528-215.000.

Bussink, Jan; DeMunck, Johannes W. J.; and Marie van Abeelen, Petrus C. A., to General Electric Company. Composition of a polycarbonate resin and a selectively hydrogenated copolymer of a vinyl aromatic compound and an olefinic elastomer. 4,537,930, Cl. 524-505.000.
Butler, James R.; and Watson, James M., to Cosden Technology, Inc. Conversion of paraffins to aromatics. 4,538,017, Cl. 585-415.000.
Butler, James R., to Precision Monolithics, Inc. JFET Differential amplifier stage with method for controlling input current. 4,538,115, Cl. 330-253.000.
Buttinoni, Ada: *See*—
Doria, Gianfederico; Passarotti, Carlo; and Buttinoni, Ada, 4,537,962, Cl. 544-255.000.
Butts, Dennis D. Air vehicle having driven wheels and ducted fans. 4,537,373, Cl. 244-22.000.
Buxel, Ludwig M.; and Mulhaus, Ludwig, to Uhde GmbH. Process of and apparatus for reheating and conveying a granular heat carrier. 4,537,571, Cl. 432-27.000.
Buys, Romain J. B.; and Manouvrier, Jean-Aime . Method for treating the surface of a concrete slab. 4,537,796, Cl. 427-136.000.
Cableform Limited: *See*—
Stevens, Keith D.; Harrison, John; and Kaye, Stanley B., 4,538,171, Cl. 357-81.000.
Cadiergue, Joseph: *See*—
Tessier, Jean; Demoute, Jean-Pierre; and Cadiergue, Joseph, 4,537,897, Cl. 514-351.000.
Cagles', Inc.: *See*—
Cashwell, Miles L.; and Peterman, Worthy D., 4,536,919, Cl. 17-11.000.
Caillot, Luc; and Chopin, Claude, to SYNTHELABO. Process and device for controlling artificial respiration. 4,537,190, Cl. 128-204.220.
Caithness, Michael G.: *See*—
White, James N. J.; and Caithness, Michael G., 4,538,192, Cl. 360-98.000.
Calder, Oliver J., to Graham, Phyllis. Spray tip. 4,537,355, Cl. 239-119.000.
Cambridge Filter Corporation: *See*—
Elbers, Richard W., 4,537,812, Cl. 428-182.000.
Cameron, Donald S., to Johnson Matthey Public Limited Company. Fuel cell and method of purging a fuel cell. 4,537,839, Cl. 429-20.000.
Cameron Iron Works, Inc.: *See*—
Troxell, John N., Jr., 4,537,250, Cl. 166-55.000.
Campbell, Curtis B., to Chevron Research Company. Lubricating oil compositions containing methylol polyether amino ethanes. 4,537,693, Cl. 252-51.50R.
Canadian General Electric Company Limited: *See*—
Ferguson, Donald K., 4,538,202, Cl. 361-124.000.
Canon Kabushiki Kaisha: *See*—
Masuda, Shunichi, 4,537,497, Cl. 355-14.00R.
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, 4,538,182, Cl. 358-280.000.
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,537,489, Cl. 354-403.000.
Cappon, John. Time domain reflectometer apparatus for identifying the location of cable defects. 4,538,103, Cl. 324-52.000.
Caray, Andre : *See*—
Loizeau, Pierre; and Caray, Andre , 4,537,580, Cl. 464-68.000.
Carborundum Abrasives Company: *See*—
Radmore, Robert R.; and Hall, John T., 4,537,368, Cl. 242-58.600.
Carey, John C. Control apparatus. 4,538,134, Cl. 337-113.000.
Carle, Glenn C.; Kojiro, Daniel R.; and Humphry, Donald E., to United States of America, National Aeronautics and Space Administration. Modulated voltage metastable ionization detector. 4,538,066, Cl. 250-374.000.
Carlson, Charles E.: *See*—
Budzyn, Boleslaw L.; and Carlson, Charles E., 4,537,239, Cl. 164-423.000.
Carstensen, Jes: *See*—
Nau, Walter; and Carstensen, Jes, 4,537,423, Cl. 280-759.000.
Carter, Cecil O., to Phillips Petroleum Company. Surface conditioning in olefin dimerization reactors. 4,538,018, Cl. 585-512.000.
Carter, J. Warne, Sr., to Ameron Inc. Couplings for non-ferrous pipe. 4,537,426, Cl. 285-110.000.
Carter, John L.; Markowsky, George; and Wegman, Mark N., to International Business Machines Corporation. Method and apparatus for performing hashing operations using Galois field multiplication. 4,538,240, Cl. 364-754.000.
Carver, Herman C. Downhole retrieval tool. 4,537,435, Cl. 294-86.100.
Cascade Steel Rolling Mills, Inc.: *See*—
Caywood, Clayton D.; and Bogh, Ronald L., 4,536,989, Cl. 47-46.000.
Casci, John L.; Lowe, Barrie M.; and Whittam, Thomas V., to Imperial Chemical Industries PLC. Zeolite EU-1 and a method of making zeolite EU-1. 4,537,754, Cl. 423-277.000.
Cashwell, Miles L.; and Peterman, Worthy D., to Cagles', Inc. Breast processor. 4,536,919, Cl. 17-11.000.
Casio Computer Co.: *See*—
Sakurai, Keiichi; Ishida, Hideaki; and Hanzawa, Kohtaro, 4,537,110, Cl. 84-1.260.
Castaldi, Graziano; and Giordano, Claudio, to Zambon S.p.A. Alpha-substituted-alkylarylketals particularly useful for preparing alpha-arylalkanoic acids. 4,537,979, Cl. 549-347.000.
Castaneda, Henry B., to Chemetrics, Inc. Disposable device for sampling and diluting. 4,537,747, Cl. 422-100.000.
Castellano, Gary M.; and Alto, Kenneth W. Broadhead arrow head structure. 4,537,404, Cl. 273-422.000.
Caterpillar Tractor Co.: *See*—
Heinrich, Andrew L.; and Oljace, Richard L., 4,538,036, Cl. 200-11.0EA.
Marsh, John D.; and Nazzer, Craig A., 4,538,086, Cl. 310-258.000.
Satzler, Ronald L., 4,537,267, Cl. 180-9.100.
Cavestany, Adrian V.; and Zimmerman, Alan R., to Coleman Company, Inc., The. Fresh air device for mobile home or other dwelling. 4,537,117, Cl. 98-39.100.
Caviness, Robert J. Self-propelled, preprogrammable fishing lure. 4,536,985, Cl. 43-17.600.
Cawlfield, David W.; Moore, William M.; and Stubbs, John L., Jr., to Olin Corporation. Chelating resin and process for making same. 4,537,937, Cl. 525-417.000.
Caywood, Clayton D.; and Bogh, Ronald L., to Cascade Steel Rolling Mills, Inc. Cross arm unit. 4,536,989, Cl. 47-46.000.
Cegedur Societe de Transformation de L'Aluminim Pechiney: *See*—
Eudier, Michel; Huret, Noel; and Meunier, Jean, 4,537,167, Cl. 123-193.00C.
Cegedur Societe de Transformation de l'Aluminium Pechiney: *See*—
Huret, Noel; and Meunier, Jean, 4,537,161, Cl. 123-41.710.
Ceisel, Stephen G.: *See*—
Kilner, Peter H.; Egan, Joseph P., Jr.; Ceisel, Stephen G.; and Schammel, Wayne P., 4,537,978, Cl. 549-245.000.
Celanese Corporation: *See*—
Gillberg-La Force, Gunilla E.; and Kravas, Helen A., 4,537,931, Cl. 524-510.000.
Linstid, H. Clay, III; and Koermer, Gerald S., 4,537,995, Cl. 568-384.000.
Cerini, Costantino P., to American Cyanamid Company. Stabilization of influenza virus vaccine. 4,537,769, Cl. 424-89.000.
Cerutti, Rosanna. Steam ironing appliance. 4,536,978, Cl. 38-103.000.
Chacon, M. Frank: *See*—
Bielinski, Ralph F.; Chacon, M. Frank; Kramer, Dennis M.; Mathias, William R.; and Schneider, Stanley, 4,538,199, Cl. 361-93.000.
Chan, Fred N., to Ford Aerospace & Communications Corporation. Method and apparatus for thruster transient control. 4,537,375, Cl. 244-171.000.
Chan, Lock-Lim; and Lau, Patrick W., to Borden Company, Limited, The. Binder for pre-moistened paper products. 4,537,807, Cl. 428-74.000.
Chandler Evans, Inc.: *See*—
Cropper, George D.; and Gentile, Anthony J., 4,537,025, Cl. 60-39.281.
Chang, Chin-An; Chang, Leroy L.; Esaki, Leo; and Mendez, Emilio E., to International Business Machines Corporation. FET With heterojunction induced channel. 4,538,165, Cl. 357-22.000.
Chang, Clarence D.: *See*—
Miale, Joseph N.; and Chang, Clarence D., 4,538,014, Cl. 585-408.000.
Miale, Joseph N.; and Chang, Clarence D., 4,538,015, Cl. 585-408.000.
Miale, Joseph N.; and Chang, Clarence D., 4,538,016, Cl. 585-408.000.
Chang, Irving B.; and Beckwith, Robert E., Jr., to Allied Corporation. Sulfur stabilized oxidized polyolefin composition. 4,537,922, Cl. 524-82.000.
Chang, Leroy L.: *See*—
Chang, Chin-An; Chang, Leroy L.; Esaki, Leo; and Mendez, Emilio E., 4,538,165, Cl. 357-22.000.
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; McDonald, John; and Zambias, Robert A., to Merck & Co., Inc. Substituted cinnamyl-2,3-dihydrobenzofuran and analogs useful as anti-inflammatory agents. 4,537,903, Cl. 514-456.000.
Chao, Pane-Chane; and Ku, Walter H., to Cornell Research Foundation, Inc. Fabrication of T-shaped metal lines for semiconductor devices. 4,536,942, Cl. 29-571.000.
Charles Beseler Company: *See*—
Nemesnyik, John C., 4,537,500, Cl. 355-67.000.
Charles Stark Draper Laboratory, Inc., The: *See*—
Whitney, Daniel E., 4,537,557, Cl. 414-735.000.
Charles Wyle Engineering Corporation: *See*—
Wyle, Charles; Shea, Donald M.; and Best, Norman D., 4,536,935, Cl. 29-281.100.
Charney, Joseph C.; Goodman, Phillip M.; and Morgan, Robert H., to EPR Corporation. Paint dispensing applicator with safety features. 4,537,522, Cl. 401-218.000.
Chemetrics, Inc.: *See*—
Castaneda, Henry B., 4,537,747, Cl. 422-100.000.
Chemie und Filter GmbH Verfahrenstechnik KG: *See*—
Edler, Friedrich, 4,537,565, Cl. 417-413.000.
Chemische Werke Huels, AG: *See*—
Rombusch, Konrad; Maahs, Gunther; and Schafer, Wolfgang, 4,537,924, Cl. 524-103.000.
Chemische Werke Huls AG: *See*—
Bartmann, Martin; Bax, Hanns-Jorg; Burzin, Klaus; and Ribbing, Wilfried, 4,537,948, Cl. 528-215.000.
Donike, Wilhelm; Ulrich, Helmut; Thiemer, Heinz; and Pieper, Josefa, 4,538,013, Cl. 585-361.000.
Chemplex Company: *See*—
Adur, Ashok M.; Schmukler, Seymour; Maconis, John, Jr.; and Shida, Mitsuzo, 4,537,836, Cl. 428-522.000.
Chen, Jade; Birdy, Jal N.; and Watt, Brian J., to Brian Watt Associates, Inc. Composite load bearing outer skin for an arctic structure and a method for erecting same. 4,537,532, Cl. 405-217.000.

Chen, Ying-Ho: *See—*
Lunsford, Carl D.; and Chen, Ying-Ho, 4,538,001, Cl. 568-633.000.
Chenoweth, Terrence E.: *See—*
Dakin, Thomas W.; Studniarz, Stanley A.; and Chenoweth, Terrence E., 4,537,803, Cl. 427-385.500.
Cheskis, Harvey P.: *See—*
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., 4,537,627, Cl. 75-76.000.
Chevron Research Company: *See—*
Campbell, Curtis B., 4,537,693, Cl. 252-51.50R.
Elson, Thomas D.; and Millhone, Ralph S., 4,537,254, Cl. 166-278.000.
Feldman, Richard B., 4,538,141, Cl. 340-604.000.
Gouw, T. H., 4,537,605, Cl. 55-48.000.
Marcantonio, Paul J., 4,537,751, Cl. 423-114.000.
Miller, Stephen J., 4,538,012, Cl. 585-255.000.
Ward, Carl E., 4,537,623, Cl. 71-90.000.
Chevron Research Company, Inc.: *See—*
Platt, James L., Jr.; and Ellis, John R. B., 4,536,973, Cl. 34-182.000.
Chikami, Michio: *See—*
Okamoto, Eiji; Fukaya, Yasuhiro; and Chikami, Michio, 4,537,247, Cl. 165-104.140.
Chisso Corporation: *See—*
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.
Chiyoda Chem. Engineering & Constr. Co.: *See—*
Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.
Chonde, Yohannes, to Dow Chemical Company, The. Interface beads for mixed-bed ion exchange resins. 4,537,911, Cl. 521-28.000.
Chono, Masazumi; and Ishida, Hiroshi, to Asahi Kasei Kogyo Kabushiki Kaisha. Crystalline aluminosilicate AZ-1 and a process for producing the same. 4,537,757, Cl. 423-328.000.
Chopin, Claude: *See—*
Caillot, Luc; and Chopin, Claude, 4,537,190, Cl. 128-204.220.
Chou, Ta-Sen, to Eli Lilly and Company. Crystalline cephalosporin antibiotic salt. 4,537,959, Cl. 544-025.000.
Christensen, Inc.: *See—*
Illerhaus, Roland; and Jurgens, Rainer, 4,537,097, Cl. 76-108.00A.
Christensen, Richard M.: *See—*
Kulkarni, Satish V.; Christensen, Richard M.; and Toland, Richard H., 4,537,091, Cl. 74-572.000.
Christiansen, David W.; Steffen, Jim M.; and Brown, William F., to United States of America, Energy. Funnel for fuel pin loading system. 4,537,741, Cl. 376-261.000.
Christiansen, John A., to MTS Systems Corporation. Side loading specimen grip. 4,537,080, Cl. 73-857.000.
Christophliemk, Peter: *See—*
Greb, Wolfgang; Christophliemk, Peter; and Schroder, Christine, 4,537,771, Cl. 424-154.000.
Chu, Arthur S.: *See—*
Bart, Edward F.; Chu, Arthur S.; and Cook, George R., 4,537,635, Cl. 106-277.000.
Chu, Pochen; and Kuehl, Guenter H., to Mobil Oil Corporation. Process for preparing highly siliceous porous ZSM-12 type crystalline material. 4,537,758, Cl. 423-329.000.
Ciba-Geigy Corporation: *See—*
Fischer, Walter; and Zweifel, Hans, 4,537,977, Cl. 549-243.000.
Irving, Edward, 4,537,725, Cl. 556-138.000.
Lohse, Friedrich; and Zondler, Helmut, 4,537,946, Cl. 528-118.000.
Meyer, Willy; and Fory, Werner, 4,537,619, Cl. 71-93.000.
Schaetzer, Harry; Raisin, Helmut; and Mausezahl, Dieter, 4,537,598, Cl. 8-641.000.
Schurter, Rolf; Fory, Werner; and Meyer, Willy, 4,537,618, Cl. 71-92.000.
Slongo, Mario; and Karrer, Friedrich, 4,537,923, Cl. 524-100.000.
Watthey, Jeffrey W. H., 4,537,885, Cl. 514-183.000.
CIC Int'l Corp.: *See—*
Levine, Morris M., 4,536,914, Cl. 15-344.000.
Cii Honeywell Bull (Societe Anonyme): *See—*
Ugon, Michel; and Fouchard, Serge, 4,538,058, Cl. 235-380.000.
Cincinnati Milacron Inc.: *See—*
Resnick, Brian J.; Messina, Elena R.; Bhatia, Madhukar; and Holmes, John G., 4,538,233, Cl. 364-513.000.
Circello, Joseph C., to Honeywell Information Systems Inc. Method and apparatus for calculating the residue of a binary number. 4,538,237, Cl. 364-746.000.
Circello, Joseph C.; and Guenthner, Russell W., to Honeywell Information Systems Inc. Method and apparatus for calculating the residue of a signed binary number. 4,538,238, Cl. 364-746.000.
Citizen Watch Company Limited: *See—*
Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, 4,536,993, Cl. 51-165.800.
Ciupke, Werner W.: *See—*
Danby, Hal C.; and Ciupke, Werner W., 4,537,387, Cl. 251-331.000.
Claber S.p.A.: *See—*
Roman, Gianfranco, 4,537,215, Cl. 137-355.260.
Claeson, Carl G.; and Gustavsson, Stig I., to KabiVitrum AB. Thrombin inhibiting arylsulfonyl guanidinophenylalanine amides. 4,537,896, Cl. 514-330.000.
Clarion Co., Ltd.: *See—*
Ito, Tsukasa, 4,538,143, Cl. 340-719.000.
Clark, Alan D. Dental articulator. 4,537,574, Cl. 433-69.000.
Clark, Allen J.; and Maue, Dale N., to MTS Systems Corporation. Load dynamics compensation circuit for servohydraulic control systems. 4,537,077, Cl. 73-665.000.
Clark, Brian, to Schlumberger Technology Corporation. Apparatus and method for electromagnetic logging with reduction of spurious modes. 4,538,109, Cl. 324-338.000.
Clark Equipment Company: *See—*
Roney, Thomas W.; and Adams, Maynard L., 4,537,446, Cl. 297-464.000.
Clark, Robert W., Jr. Thermally powered heat transfer systems utilizing sequential displacement. 4,537,037, Cl. 62-116.000.
Clark, Robert W., III. Thermally powered heating system. 4,537,036, Cl. 62-116.000.
Clark, Ronald M. Spatula type hand tool. 4,536,910, Cl. 15-104.00S.
Clegg, Michael W.: *See—*
Harwood, Jon W.; Clegg, Michael W.; and Treadwell, Mark C., 4,537,027, Cl. 60-323.000.
Clem, Gladys M.: *See—*
Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., 4,537,715, Cl. 260-112.50R.
Clemente, Anthony R., to Bolt Beranek and Newman Inc. Signalling apparatus. 4,538,139, Cl. 340-539.000.
Clinkenbeard, Ivan L.: *See—*
Lawhorn, William S.; and Clinkenbeard, Ivan L., 4,537,371, Cl. 244-3.220.
Clipper, Donald; and Norfleet, James, to Colgate-Palmolive Company. Oral preparation. 4,537,778, Cl. 424-53.000.
Cluniat, Claude, to LGT Laboratoire General des Telecommunications. System for non linearity correction by intermediate frequency premodulation in television equipment. 4,538,180, Cl. 358-186.000.
Coates, Fredrica V. Adjustable diaper with a backband and fastening protection means. 4,537,591, Cl. 604-391.000.
Coca-Cola Company, The: *See—*
Hunter, George L. K.; Dennison, Daniel B.; and Stephens, Charles E., 4,537,637, Cl. 127-60.000.
Coe, Jerry R.; Pearce, Godfrey R.; and See, Francis R., to Emhart Industries, Inc. Anchoring apparatus for a capacitor. 4,538,025, Cl. 174-52.00S.
Cogan, Uri: *See—*
Schachter, David; Abbott, Richard E.; and Cogan, Uri, 4,537,718, Cl. 260-112.50R.
Cohen, Eli. Shoe with deflective and compressionable mid-sole. 4,536,974, Cl. 36-28.000.
Cohen, Sabatino, to Saint-Gobain Vitrage. Semi-reflective glazing comprising a nickel-chromium-molybdenum alloy anchoring layer. 4,537,798, Cl. 427-166.000.
Coiner, Russell E.; and Moore, Thomas W., to Virginia Panel Corporation. Spring contact holding shell having integral wire wrap post. 4,537,463, Cl. 339-276.00A.
Colburn, Richard P., to United States of America, Energy. Fission gas detection system. 4,537,740, Cl. 376-256.000.
Cole, Geoffrey V., to United Kingdom Atomic Energy Authority, The. Manipulator. 4,537,547, Cl. 414-5.000.
Coleman Company, Inc., The: *See—*
Cavestany, Adrian V.; and Zimmerman, Alan R., 4,537,117, Cl. 98-39.100.
Colgate-Palmolive Company: *See—*
Clipper, Donald; and Norfleet, James, 4,537,778, Cl. 424-53.000.
Gaffar, Abdul; Davis, Calvin B.; Donohue, John J.; and Moy, Debbie, 4,537,765, Cl. 424-53.000.
Collins, Earl R., Jr., to United States of America, National Aeronautics and Space Administration. Shuttle car loading system. 4,537,554, Cl. 414-328.000.
Collins, Kent L.: *See—*
Lewis, George A.; Collins, Kent L.; Benesh, Joseph C.; and Ward, Patrick C., 4,538,091, Cl. 313-625.000.
Colt Industries Operating Corp.: *See—*
Bredbury, Seth K.; and Waterman, Harold J., Jr., 4,536,982, Cl. 42-71.00R.
Columbia University in the City of New York: *See—*
Schachter, David; Abbott, Richard E.; and Cogan, Uri, 4,537,718, Cl. 260-112.50R.
Colvin, Howard A.; Muse, Joel, Jr.; and Hollingshead, William S., to Goodyear Tire & Rubber Company, The. Process for the production of hydroxyanisole and alkylated hydroxyanisoles. 4,538,002, Cl. 568-650.000.
Combs, Linsey L., to W.W.B. Developers. Wire rope spare tire carrier. 4,537,555, Cl. 414-463.000.
Commissariat a l'Energie Atomique: *See—*
Bardoux, Raymond; and Joffre, Henri, 4,538,071, Cl. 250-505.100.
Bompard, Bruno P.; and Bruyere, Alain, 4,536,930, Cl. 29-33.00K.
Gaussens, Gilbert; and Lemaire, Francis, 4,537,668, Cl. 204-159.170.
Communications Patents Limited: *See—*
Gargini, Eric J.; and Baker, Henry L., 4,538,174, Cl. 358-86.000.
Confer, Richard G., to American Sterilizer Company. Mask/microphone system for voice actuated control. 4,537,276, Cl. 181-21.000.
Conklin, Charles E.: *See—*
Bruce, Duncan; and Conklin, Charles E., 4,538,033, Cl. 179-175.000.
Conklin Instrument Corporation: *See—*
Bruce, Duncan; and Conklin, Charles E., 4,538,033, Cl. 179-175.000.

Connor, Philip J.: *See—*
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Conoco Inc.: *See—*
Gergely, John S., 4,538,278, Cl. 372-70.000.
Reust, Dennis K.; and Gergely, John S., 4,538,230, Cl. 364-433.000.
Conrad, Herbert: *See—*
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Container Corporation of America: *See—*
Everman, Wayne F.; Lewis, D. Michael; and Russell, Raymond L., 4,537,584, Cl. 493-93.000.
Continental Emsco Company: *See—*
Vroonland, Evart. J.; and Curtis, William M., 4,537,233, Cl. 141-387.000.
Continental-Wirt Electronics Corp.: *See—*
Worth, Sidney V., 4,537,458, Cl. 339-143.00R.
Control Data Corporation: *See—*
Shambroom, John R.; and Sliski, Alan P., 4,538,069, Cl. 250-491.100.
Conver Corporation: *See—*
Lloyd, Robert H. F., 4,537,246, Cl. 165-80.00B.
Convergent Technologies, Inc.: *See—*
Freige, Diab E.; Lockwood, John J.; Ramsay, Michael; and Keely, Leroy B., 4,538,073, Cl. 307-33.000.
Cook, George R.: *See—*
Bart, Edward F.; Chu, Arthur S.; and Cook, George R., 4,537,635, Cl. 106-277.000.
Cook, Richard T.: *See—*
Taylor, Andrew W.; and Cook, Richard T., 4,537,886, Cl. 514-193.000.
Cooke, Horise M., to Stratoflex, Inc. Clip for a fluid coupling. 4,537,427, Cl. 285-305.000.
Cooke, Theodore M.; Lin, Robert A.; Whitfield, Richard G.; and Hock, Allan G., to Exxon Research and Engineering Co. Ink jet ink formulation for reduced start-up problems. 4,537,631, Cl. 106-22.000.
Coons, Robert A., Jr., to Xerox Corporation. Sheet binding apparatus. 4,537,650, Cl. 156-384.000.
Cooper, Eugene R., to Procter & Gamble Company, The. Penetrating topical pharmaceutical compositions containing N-(2-hydroxyethyl) pyrrolidone. 4,537,776, Cl. 514-424.000.
Copeland Corporation: *See—*
Blass, Jaroslav; and Deal, Michael A., 4,537,566, Cl. 417-569.000.
Corbett, Sue. Electrode cap. 4,537,198, Cl. 128-639.000.
Cordis Corporation: *See—*
Tarjan, Peter P., 4,537,791, Cl. 427-2.000.
Core Laboratories, Inc.: *See—*
Barnaby, Harold T., 4,537,063, Cl. 73-38.000.
Corey, Frederick C.: *See—*
VonGrunberg, Hubertus; Rowell, Jonathan M.; and Corey, Frederick C., 4,537,289, Cl. 188-97.400.
Cornell Research Foundation, Inc.: *See—*
Chao, Pane-Chane; and Ku, Walter H., 4,536,942, Cl. 29-571.000.
Donaldson, William R.; and Tang, Chung L., 4,537,990, Cl. 564-63.000.
Corning Glass Works: *See—*
Borrelli, Nicholas F.; Hares, George B.; Smith, Dennis W.; and Wedding, Brent M., 4,537,612, Cl. 65-30.110.
Maschmeyer, Richard O., 4,537,473, Cl. 350-432.000.
Tick, Paul A., 4,537,864, Cl. 501-30.000.
Cosden Technology, Inc.: *See—*
Butler, James R.; and Watson, James M., 4,538,017, Cl. 585-415.000.
Coulter Systems Corporation: *See—*
Weber, Harold J., 4,538,204, Cl. 361-229.000.
Cowan, Arnold A., to Gem Products, Inc. Single seal pipeline tapping fixture having secure valve. 4,537,214, Cl. 137-318.000.
Cowher, Melvyn E.: *See—*
Shuskus, Alexander J.; and Cowher, Melvyn E., 4,537,651, Cl. 156-613.000.
Cox, William E.; and Hemmings, Kenneth L., to British Telecommunications. Self propelled reversible boring ram. 4,537,265, Cl. 175-19.000.
Coyle, Joseph P.: *See—*
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,537,823, Cl. 428-308.400.
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., to Merck & Co., Inc.; and Merck Sharp & Dohme (I.A.) Corp. 4-Substituted-3-hydroxy-3-pyrroline-2,5-dione inhibitors of glycolic acid oxidase. 4,537,902, Cl. 514-422.000.
Crain, Stephen F.; Gray, Steven H.; Arnold, Edward P.; and Dodd, Timothy J., to Halliburton Company. Apparatus and method for mixing a plurality of substances. 4,538,221, Cl. 364-172.000.
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Smith, James A.; and Murphy, Betty J., 4,537,914, Cl. 521-111.000.
Creative Technology, Inc.: *See—*
Tuten, William J.; Crosby, Kennith D.; and Bergquist, Bertil R., 4,538,100, Cl. 318-808.000.
Credo Stahlwarenfabrik Gustav Kracht, Firma: *See—*
Gilhaus, Heinz, 4,537,207, Cl. 132-76.400.
Crivello, James V., to General Electric Company. Photoresist compositions and method. 4,537,854, Cl. 430-283.000.
Cropper, George D.; and Gentile, Anthony J., to Chandler Evans, Inc. Electronic fuel control with manual training mode. 4,537,025, Cl. 60-39.281.
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Crouch, Michael D. Method for controlled reduction in temperature and preservation of embryos in a cryogenic state. 4,537,034, Cl. 62-62.000.
Crowe, Anthony. Method and equipment for processing a plasticizable material. 4,537,737, Cl. 264-40.400.
Cselt Centro Studi e Laboratori Telecommunicazioni SpA: *See—*
Gabrielli, Luciano; and Sposini, Maurizio, 4,538,263, Cl. 370-86.000.
CSELT Centro Studi e Laboratori Telecomunicazioni SPA: *See—*
Giusto, Pietro P., 4,538,111, Cl. 329-122.000.
Csongor, Eva: *See—*
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.
Culbertson, Samuel W.; and Dixon, George, to Binks Manufacturing Company. Spray guns. 4,537,357, Cl. 239-290.000.
Culligan International Company: *See—*
Norton, William W., 4,537,329, Cl. 220-465.000.
Cunnane, Francis J., III: *See—*
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Cunningham, Franklin E.: *See—*
Proctor, Valerie A.; and Cunningham, Franklin E., 4,537,788, Cl. 426-614.000.
Cuomo, Jerome J.; Harper, James M. E.; and Waters, Gary A., to International Business Machines Corporation. Single grid focussed ion beam source. 4,538,067, Cl. 250-396.00R.
Curtis, William M.: *See—*
Vroonland, Evart. J.; and Curtis, William M., 4,537,233, Cl. 141-387.000.
Cutter, James W. X-ray film cassette holder. 4,538,293, Cl. 378-181.000.
Cymbler, Murray J., to Astro-Stream Corporation, The. Aerial recreation device. 4,537,405, Cl. 273-428.000.
Dabonde, James T. Cartridge decapping tool. 4,537,112, Cl. 86-37.000.
Daicel Chemical Industries, Ltd.: *See—*
Kojima, Hidetaka; Horikawa, Takeshi; and Kagotani, Masahiro, 4,537,997, Cl. 568-454.000.
Daimler-Benz Aktiengesellschaft: *See—*
Stolz, Albert, 4,537,349, Cl. 237-12.30C.
Dakin, Thomas W.; Studniarz, Stanley A.; and Chenoweth, Terrence E., to Westinghouse Corp. Resins containing a low viscosity organopolysiloxane liquid dielectric and a method of insulating a conductor therewith. 4,537,803, Cl. 427-385.500.
Dale, Paul B.: *See—*
Banks, Edwin R.; Ray, Roger C.; and Dale, Paul B., 4,538,225, Cl. 364-200.000.
D'Alelio, Gaetano F., to University of Notre Dame du Lac. Chain-extending functional polyimides by dipole reactions. 4,537,947, Cl. 525-424.000.
Dalke, Jack E.: *See—*
Petersen, Oscar J.; Barton, Ross J.; Dalke, Jack E.; Sheffield, Gerald W.; and Towle, Theodore, 4,537,384, Cl. 251-83.000.
Danby, Hal C.; and Ciupke, Werner W., to Anatros Corporation. Precision valve assembly. 4,537,387, Cl. 251-331.000.
Dantzig, Jonathan A.: *See—*
Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., 4,537,242, Cl. 164-460.000.
Darling, Charles M., to Research Corporation. Pharmaceutically useful malonamides. 4,537,781, Cl. 514-616.000.
Darr, Robert E.: *See—*
Mojden, Wallace W.; and Darr, Robert E., 4,537,010, Cl. 53-447.000.
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Dart Industries Inc.: *See—*
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Daum, Werner: *See—*
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Germano, Carmen P.; and Davenport, John M., 4,538,087, Cl. 310-332.000.
Davies, David A., to Automotive Products plc. Friction clutch driven plate. 4,537,297, Cl. 192-106.200.
Davis, Albert P., Jr.; and Robinson, Leon H., to Exxon Production Research Co. Connector for providing electrical continuity across a threaded connection. 4,537,457, Cl. 339-117.00P.
Davis, Calvin B.: *See—*
Gaffar, Abdul; Davis, Calvin B.; Donohue, John J.; and Moy, Debbie, 4,537,765, Cl. 424-53.000.
Dawson, Peter L., to Lever Brothers Company. Abrasive agglomerates for use in scouring cleaning compositions. 4,537,604, Cl. 51-298.000.
Day, Charles E.: *See—*
Balbes, Michael S.; Day, Charles E.; Hooper, Robert L.; and Lin, Hank S., 4,538,175, Cl. 358-86.000.
Day, Michael N.; and Miller, Claude D., to International Business Machines Corporation. Method and apparatus for instruction parity error recovery. 4,538,265, Cl. 371-12.000.
de la Bretoniere, Andre B. Electric heating fabric. 4,538,054, Cl. 219-545.000.
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gor-

genyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, to EGYT Gyogyszervegyeszeti Gyar. Isoquinoline derivatives. 4,537,895, Cl. 514-307.000.

Deal, Michael A.: *See—*
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Deallenbach, Robert E.: *See—*
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,537,560, Cl. 416-198.00A.

Dealto, Michael E.; DiGiacomo, Joseph D.; and Marritt, Clifford R., to Molins, Ltd. Cutting head for filter assembler. 4,537,104, Cl. 83-348.000.

Debono, Manuel: *See—*
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,537,717, Cl. 260-112.50R.

DEC International, Inc.: *See—*
Thompson, Paul D., 4,537,152, Cl. 119-14.540.

Decoufle S.A.R.L.: *See—*
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Deere & Company: *See—*
Humke, Albert L., 4,537,028, Cl. 60-272.000.

Defibaugh, William L., to Brown Group Recreational Products, Inc. Foldable swing set. 4,537,392, Cl. 272-85.000.

DeForest, Sherman E., to International Remote Imaging Systems, Inc. Method and apparatus for locating the boundary of an object. 4,538,299, Cl. 382-21.000.

Degen, Helmut: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Weber, Hans, 4,537,597, Cl. 8-639.000.

Degoix, Bernard; Boussemaer, Daniel; and Allemand, Didier, to Les Cables de Lyon. Reinforced optical fiber butt weld connection. 4,537,468, Cl. 350-96.210.

Degoumois, Michel, to Meseltron S. A. Three-dimensional measuring device. 4,536,961, Cl. 33-169.00R.

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Hinrichs, Walter; Hammer, Friedrich; and Lange, Ludwig, 4,536,938, Cl. 29-527.500.

Delahoussaye, Ronald D.; and Kelly, Gary W., to Georgia Tech Research Institute. Dynamic brake for manual wheelchair. 4,537,415, Cl. 280-242.0WC.

Delle-Vedove, Daniel; Lallemand, Yves; and Hubert, Olivier, to Societe Europeenne de Propulsion. Process and device for detecting the response of the heart to an electrical stimulation pulse. 4,537,201, Cl. 128-697.000.

De Marsh, Melvin J. Halide and like light reflector and socket assembly. 4,538,215, Cl. 362-282.000.

Demetriades, Peter G. Floor cleaning pad. 4,536,911, Cl. 15-230.120.

De Metz, Frederick C.; and Rackliffe, John R., to Allied Corporation. Construction and method for elongated towed underwater sonar. 4,538,250, Cl. 367-154.000.

DeMeyer, Roy W.; and Kozi, Martin F., to Magnetrol International, Incorporated. Electronic level detector. 4,537,061, Cl. 73-290.00R.

Demizu, Michinosuke: *See—*
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.

Demoute, Jean-Pierre: *See—*
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Dennison, Daniel B.: *See—*
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Denny, William A.: *See—*
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Denpou, Kazuo; Eto, Kazumi; and Niida, Hideo, to Kabushiki Kaisha Toshiba. Refrigerator having temperature-responsive control means for combined direct and fan-cooled operation. 4,537,041, Cl. 62-199.000.

Denton, Gary A.: *See—*
Lubinsky, Anthony R.; Denton, Gary A.; Keller, Paul D.; and Williams, James E., 4,537,494, Cl. 355-3.0DD.

DeSantis, Damian G. Anti-snore pillow. 4,536,905, Cl. 5-434.000.

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Bishop, Timothy E.; Pasternack, George; and Zimmerman, John M., 4,537,667, Cl. 204-159.150.

DeSouza, John: *See—*
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Detweiler, Steven C. Method and apparatus for line-at-a-time printing. 4,538,162, Cl. 346-155.000.

Deutsch nee Juhasz, Ida: *See—*
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.

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Development of Finance Corporation of New Zealand: *See—*
Rewcastle, Gordon W.; Atwell, Graham J.; Baguley, Bruce C.; and Denny, William A., 4,537,729, Cl. 260-944.000.

De Vera, Dennis, to Eaton Corporation. Switching mechanism and method of making same. 4,536,953, Cl. 29-622.000.

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Borbely, Gyula J.; Devuyst, Eric A.; Ettel, Victor A.; Mosoiu, Marcel A.; and Schitka, Konstantin J., 4,537,686, Cl. 210-713.000.

Deyer, Craig E., to RCA Corporation. System for inputting a security code to a computer. 4,538,027, Cl. 178-22.010.

Diana, William D., to Exxon Research & Engineering Co. Alcohol recovery process. 4,538,010, Cl. 568-918.000.

Diefenthaler, David L. Tile layer. 4,537,531, Cl. 405-174.000.

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Yamada, Keiichi; and Kimura, Hideyuki, 4,537,170, Cl. 123-449.000.

Dietz, Dennis R., to Technicare Corporation. Annular array ultrasonic transducers. 4,537,074, Cl. 73-625.000.

DiGiacomo, Joseph D.: *See—*
Dealto, Michael E.; DiGiacomo, Joseph D.; and Marritt, Clifford R., 4,537,104, Cl. 83-348.000.

Digicon, Inc.: *See—*
Steetle, David R., 4,538,251, Cl. 367-154.000.

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Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, to Asulab S.A. Resonator temperature compensated time base and watch using said time base. 4,537,515, Cl. 368-202.000.

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Dischert, Robert A.; and Meise, William H., to RCA Corporation. Adaptive digital signal coring circuit. 4,538,236, Cl. 364-574.000.

Diskowski, Herbert: *See—*
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Di Stefano, Frank V., to Air Products and Chemicals, Inc. Crosslinking of chlorine-containing polymers. 4,537,831, Cl. 428-514.000.

Disteldorf, Walter: *See—*
Schneider, Heinz-Walter; Richter, Wolfgang; Disteldorf, Walter; and Kummer, Rudolf, 4,537,987, Cl. 560-193.000.

Ditchek, Brian M.; and Middleton, Thomas R., to GTE Laboratories Incorporated. Mo-Ti members with non-metallic sintering aids. 4,537,323, Cl. 220-2.10R.

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Dr.-Ing. Rudolf Hell GmbH: *See—*
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Doda, Margit: *See—*
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Crain, Stephen F.; Gray, Steven H.; Arnold, Edward P.; and Dodd, Timothy J., 4,538,221, Cl. 364-172.000.

Doi, Ryota: *See—*
Tsukui, Tsutomu; Shimizu, Toshio; Doi, Ryota; and Tsutsumi, Yasuyuki, 4,537,840, Cl. 429-33.000.

Domany, Gyorgy: *See—*
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.

Domnick Hunter Filters Ltd.: *See—*
Billiet, Colin T., 4,537,748, Cl. 422-122.000.

Donaldson, William R.; and Tang, Chung L., to Cornell Research Foundation, Inc. Method for growing single crystals of urea. 4,537,990, Cl. 564-63.000.

Donike, Wilhelm; Ulrich, Helmut; Thiemer, Heinz; and Pieper, Josefa, to Chemische Werke Huls AG. Process for producing Diels-Alder adducts while inhibiting the formation of polymeric by-products. 4,538,013, Cl. 585-361.000.

Donohue, John J.: *See—*
Gaffar, Abdul; Davis, Calvin B.; Donohue, John J.; and Moy, Debbie, 4,537,765, Cl. 424-53.000.

Dorey, John K., II; Schmidt, Steven L.; and Townsend, Wesley P., to AT&T Technologies, Inc. Selective metallization process. 4,537,799, Cl. 427-259.000.

Doria, Gianfederico; Passarotti, Carlo; and Buttinoni, Ada, to Farmitalia Carlo Erba, S.p.A. Substituted 1,3,4-thiadiazolo[3,2-A]pyrimidines and compositions containing them. 4,537,962, Cl. 544-255.000.

Dorner, Leonhard: *See—*
Schreder, Felix; Dorner, Leonhard; and Wilde, Eugen, 4,538,051, Cl. 219-466.000.

Douglas, Brian, to Subscan Systems Ltd. Pipeline vehicle. 4,537,136, Cl. 104-138.00G.

Douglas, Bruce S.; and Westergart, Chester V., to Test Point 1, Inc. In-circuit test apparatus for printed circuit board. 4,538,104, Cl. 324-158.00F.

Douklias, Nikolaos; and Grabmaier, Josef, to Siemens Aktiengesellschaft. Method for manufacturing glass from the gas phase. 4,537,611, Cl. 65-18.200.

Douty, George H.; Landis, John M.; and Snyder, Clair W., Jr., to AMP Incorporated. Intercard-extraction means. 4,537,454, Cl. 339-45.00M.

Dow Chemical Company, The: *See—*
Bruschtein, Fabio B.; Jahn, Robert G.; and Wittbrodt, Edwin L., 4,537,916, Cl. 523-201.000.
Chonde, Yohannes, 4,537,911, Cl. 521-28.000.
Purinton, Robert J., Jr., 4,537,700, Cl. 252-315.100.
Strange, Carl P.; Martin, Harold B., Jr.; and Tsang, Albert C., 4,537,958, Cl. 536-85.000.
Wilson, Daniel C., 4,537,351, Cl. 239-43.000.

Dow Corning Corporation: *See—*
Blizzard, John D.; and Swihart, Terence J., 4,537,829, Cl. 428-429.000.
Keil, Joseph W., 4,537,677, Cl. 208-370.000.

Downey, Gale D.; and Jones, Charles E., to FMC Corporation. Homogeneous laundry detergent slurries containing nonionic surface-active agents. 4,537,708, Cl. 252-554.000.

Doyel, John S. Portable, hand-held steaming or pressing device. 4,536,977, Cl. 38-77.830.

Doyle, Walter M., to Laser Precision Corporation. Interferometer spectrometer having improved scanning reference point. 4,537,508, Cl. 356-346.000.

Drabing, Richard B., to Amtel Systems Corporation. Power line communication system utilizing a local oscillator. 4,538,136, Cl. 340-310.00R.

Drago, Russell S.; Miller, James G.; and Weiss, Keith D., to University of Florida. Method for the preparation of halogen substituted methanes and ethanes. 4,538,011, Cl. 570-240.000.

Dresser Industries, Inc.: *See—*
Bulat, Bulent, 4,538,063, Cl. 250-214.00R.

Dubon, Chantal; Hok, Bertil; and Ovren, Christer, to ASEA Aktiebolag. Hermetic sealing of gallium arsenide components. 4,537,467, Cl. 350-96.200.

Dulux Australia Ltd.: *See—*
Parr, Rodney W., 4,538,000, Cl. 568-616.000.

Dunlop Limited: *See—*
Yardley, James F., 4,537,825, Cl. 428-327.000.

Duo-Matic/Olsen Inc.: *See—*
Hwang, Kyu S.; and Koestler, Dennis J., 4,537,178, Cl. 126-110.00R.

Du Pont de Nemours, E. I., and Company: *See—*
Farago, John, 4,537,733, Cl. 264-9.000.
Hormadaly, Jacob, 4,537,703, Cl. 252-518.000.
Rao, Velliyur N. M.; and Heinsohn, George E., 4,537,726, Cl. 260-453.00P.
Shenvi, Ashokkumar B., 4,537,773, Cl. 514-63.000.
Shenvi, Ashokkumar B., 4,537,963, Cl. 546-66.000.
Tam, Wilson, 4,538,003, Cl. 568-656.000.

Duprez, Wayne R., to Standard-Thomson Corporation. Fail-safe oil flow control apparatus. 4,537,346, Cl. 236-34.500.

Dupro AG: *See—*
Maier, Siegfried; and Albrecht, Eckart, 4,537,424, Cl. 285-7.000.

Durable Packaging Corporation: *See—*
Ulrich, Lawrence W.; and Walker, Connie W., 4,537,649, Cl. 156-355.000.

Duracell Inc.: *See—*
Wiacek, Marian; Markin, Charles; and Book, Ronald J., 4,537,841, Cl. 429-56.000.

Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., to Smith Kline & French Laboratories Limited. Pharmacologically active compounds. 4,537,779, Cl. 514-275.000.

Durisin, Bretislav, to Eaton Corporation. Engine component position indicating system. 4,537,168, Cl. 123-198.00R.

Durkee, David B.; and Liebman, Alan J., to AT&T Teletype Corporation. Ink jet printer. 4,538,156, Cl. 346-21.000.

Dwyer Instruments, Inc.: *See—*
Wrobel, Stanley A.; and Ashton, Robert G., 4,537,068, Cl. 73-202.000.

Dykman, Edmund: *See—*
Pikarski, Michael; Gabe, Julian; and Dykman, Edmund, 4,537,992, Cl. 564-437.000.

Dynamit Nobel AG: *See—*
Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,537,983, Cl. 556-479.000.

E.G.O. Elektro-Gerate Blanc U. Fischer: *See—*
Schreder, Felix; Dorner, Leonhard; and Wilde, Eugen, 4,538,051, Cl. 219-466.000.

E. R. Squibb & Sons, Inc.: *See—*
O'Sullivan, Joseph; Aklonis, Carol A.; and Singh, Pushpa, 4,537,858, Cl. 435-119.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,904, Cl. 514-469.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,981, Cl. 549-463.000.

E-Systems, Inc.: *See—*
Mosley, William H., Jr.; and Andren, Carl F., 4,538,280, Cl. 375-1.000.

Eagle-Picher Industries, Inc.: *See—*
Walker, Joe M.; and Potts, Thomas M., 4,537,759, Cl. 423-349.000.

Eastman Kodak Company: *See—*
Gupta, Mool C.; Wrobel, Joseph J.; and Howe, Dennis G., 4,538,159, Cl. 346-135.100.
Russel, Matthew J., 4,537,493, Cl. 355-3.0SH.
Stoudt, Michael D., 4,537,490, Cl. 355-3.00R.

Eaton Corporation: *See—*
Bielinski, Ralph F.; Chacon, M. Frank; Kramer, Dennis M.; Mathias, William R.; and Schneider, Stanley. 4,538,199, Cl. 361-93.000.
De Vera, Dennis, 4,536,953, Cl. 29-622.000.
Durisin, Bretislav, 4,537,168, Cl. 123-198.00R.
Jones, Michael E., 4,537,090, Cl. 74-502.000.
Speranza, Donald, 4,537,353, Cl. 239-102.000.

Eckert, Heiner. Process for the reduction of reducible groups and its use. 4,537,713, Cl. 260-112.50R.

Economics Laboratory, Inc.: *See—*
Mahoney, Dennis F.; and Block, William V., 4,537,705, Cl. 252-529.000.

Ed. Scharwachter GmbH & Co. KG: *See—*
Brockhaus, Ernst, 4,536,918, Cl. 16-308.000.

Edenfeld, Arthur R.: *See—*
Bracco, Al M.; Edenfeld, Arthur R.; and Kotecha, Harish N., 4,536,944, Cl. 29-571.000.

Edge, David J.; Naik, Appaya R.; and Scott, Melvin, to Lever Brothers Company. Liquid detergent composition comprising selected alkylbenzene sulphonates and alkyl ether sulphates. 4,537,709, Cl. 252-558.000.

Edler, Friedrich, to Chemie und Filter GmbH Verfahrenstechnik KG. Electromagnetically operated diaphragm pump. 4,537,565, Cl. 417-413.000.

Edwards, Ivan L.; and Macrander, Max S., to GTE Automatic Electric Incorporated. Prioritized clock selection circuit. 4,538,272, Cl. 371-61.000.

Efron, Uzi: *See—*
Little, Michael J.; Brown, Roger H.; Efron, Uzi; and Hoberg, Clarence P., 4,537,827, Cl. 428-409.000.

Egan, Joseph P., Jr.: *See—*
Kilner, Peter H.; Egan, Joseph P., Jr.; Ceisel, Stephen G.; and Schammel, Wayne P., 4,537,978, Cl. 549-245.000.

Egawa, Takeshi: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, 4,537,487, Cl. 354-400.000.

Eggert, Walter: *See—*
Becher, Friedrich; and Eggert, Walter, 4,537,537, Cl. 409-34.000.

EGYT Gyogyszervegyeszeti Gyar: *See—*
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

Ehlscheid, Gunter; and Frost, Heinz-Helmut, to Winkler & Dunnerbier Maschinenfabrik und Eisengiesserei GmbH & Co. KG. Punch device for making window cut-outs. 4,537,588, Cl. 493-342.000.

Eicken, Karl: *See—*
Plath, Peter; Eicken, Karl; Sauter, Hubert; and Wuerzer, Bruno, 4,537,617, Cl. 71-92.000.

Eike, Einar, to Golar Metall, Hilco Industries A/S. Ship/offshore window for permanent mounting in the external steel bulkhead of a wall. 4,536,999, Cl. 52-208.000.

Eith, Gerhard, to Siemens Aktiengesellschaft. Orifice valve for an ultrasonic liquid atomizer. 4,537,354, Cl. 239-102.000.

Elbers, Richard W., to Cambridge Filter Corporation. Corrugated spacers for pleated air filter media. 4,537,812, Cl. 428-182.000.

Electronic Concepts, Inc.: *See—*
Lavene, Bernard, 4,538,205, Cl. 361-308.000.

Electronique Serge Dassault: *See—*
Gaucher, Michel M. G., 4,537,125, Cl. 101-93.040.

Eli Lilly and Company: *See—*
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,537,717, Cl. 260-112.50R.
Anderson, Marie T.; Michel, Karl H.; and Sands, Thomas H., 4,537,777, Cl. 514-521.000.
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,537,957, Cl. 336-7.100.
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,537,727, Cl. 260-455.00R.
Bjerregaard, Richard S., 4,537,333, Cl. 222-345.000.
Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., 4,537,715, Cl. 260-112.50R.
Chou, Ta-Sen, 4,537,959, Cl. 544-025.000.
Gallick-Whitaker, Nancy G., 4,537,965, Cl. 546-82.000.
Hall, David A., 4,537,720, Cl. 260-239.00A.
Hamill, Robert L.; and Kastner, Ralph E., 4,537,879, Cl. 514-9.000.
Michel, Karl H.; and Kastner, Ralph E., 4,537,770, Cl. 424-118.000.
Schaus, John M., 4,537,964, Cl. 544-250.000.
Spitzer, Wayne A., 4,537,889, Cl. 514-243.000.
Titus, Robert D.; and Kornfeld, Edmund C., 4,537,893, Cl. 514-293.000.

Elings, Virgil B.; and Nicoli, David F. Apparatus and method for homogeneous immunoassay. 4,537,861, Cl. 436-518.000.
Elkem a/s: *See—*
Krogsrud, Harald, 4,537,551, Cl. 414-199.000.
Ellingson, Robert T., to Reese Enterprises, Inc. Glazing bead structure. 4,537,002, Cl. 52-403.000.
Ellington, Thomas S., IV: *See—*
Banks, Edward L.; Ellington, Thomas S., IV; and Zavecz, Terrence E., 4,537,498, Cl. 355-55.000.
Ellis, John R. B.: *See—*
Platt, James L., Jr.; and Ellis, John R. B., 4,536,973, Cl. 34-182.000.
Ellis Margaret D.; Ferencz, Richard L.; and Kalz, Dietmar, to Mobay Chemical Corporation. Process for the direct acetylation of aromatic amines. 4,537,991, Cl. 564-133.000.
Elmore, Walter A., to Westinghouse Electric Corp. Three terminal current differential protective relay. 4,538,195, Cl. 361-64.000.
Elscint Ltd.: *See—*
Kamil, Zvi, 4,537,033, Cl. 62-3.000.
Elson, Thomas D.; and Millhone, Ralph S., to Chevron Research Company. Steam injection well gravel pack material of sintered bauxite. 4,537,254, Cl. 166-278.000.
Emerson Electric Co.: *See—*
LaRou, Albert M.; and Atteberry, Eldon A., 4,537,519, Cl. 384-478.000.
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, to General Electric Company. Radial key for steam turbine wheels. 4,537,560, Cl. 416-198.00A.
Emhart Industries, Inc.: *See—*
Amonett, Daniel K., 4,538,037, Cl. 200-38.00R.
Coe, Jerry R.; Pearce, Godfrey R.; and See, Francis R., 4,538,025, Cl. 174-52.00S.
Shedigian, Vandos, 4,538,206, Cl. 361-315.000.
Shedigian, Vandos, 4,538,207, Cl. 361-317.000.
Shedigian, Vandos, 4,538,208, Cl. 361-319.000.
Emmerling, Hans-Jorg; and Hamm, Josef, to Robert Bosch GmbH. Packaging machine. 4,537,014, Cl. 53-570.000.
Emmett, John C.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,537,779, Cl. 514-275.000.
Endres, Douglas W.; McDaniel, Kenneth D., Jr.; and Griebel, Francis J., to FMC Corporation. Two person aerial platform. 4,537,281, Cl. 182-2.000.
Energy Conversion Devices, Inc.: *See—*
Ovshinsky, Stanford R.; Sapru, Krishna; and Liang, Gao, 4,537,674, Cl. 204-290.00R.
Strand, David A., 4,537,670, Cl. 204-224.00R.
Energy Sciences, Inc.: *See—*
Nablo, Sam V., 4,537,811, Cl. 428-166.000.
Engel, Isaac, to State of Israel, Ministry of Defence, Military Industries, The. Rear-sight for a weapon. 4,536,966, Cl. 33-257.000.
England, Thomas R., to Kollmorgen Technologies, Corporation. Flux contoured rotary electromagnetic machine. 4,538,080, Cl. 310-154.000.
Enomoto, Ryo; and Tsukada, Kiyotaka, to Ibiden Kabushiki Kaisha. Method of producing a silicon carbide sintered compact. 4,537,735, Cl. 264-63.000.
Entac Company, Limited: *See—*
Nozawa, Yoshikuni, 4,538,083, Cl. 310-198.000.
Environmental Research & Technology: *See—*
Wong-Chong, George M., 4,537,682, Cl. 210-611.000.
EPR Corporation: *See—*
Charney, Joseph C.; Goodman, Phillip M.; and Morgan, Robert H., 4,537,522, Cl. 401-218.000.
Eprova Ag Forschungsinstitut: *See—*
Muller, Hans-Rudolf; and Bollinger, Heinrich, 4,537,714, Cl. 260-112.50R.
Epstein, Saul. Electronic thermometer. 4,537,516, Cl. 374-1.000.
Erickson, Edward C., to Sales Tools, Inc. Needlework pattern booklet holder. 4,537,380, Cl. 248-460.000.
Ericsson, Thomas, to Papyrus Kopparfors AB. Particulate oil-absorbing composition to absorb oil. 4,537,877, Cl. 502-402.000.
Ernst, Werner, to Kohlensaure-Werke Rudolf Buse Sohn GmbH & Co. Method and apparatus for investigating the structure and porosity of earth and stony regions. 4,537,062, Cl. 73-38.000.
Esaki, Leo: *See—*
Chang, Chin-An; Chang, Leroy L.; Esaki, Leo; and Mendez, Emilio E., 4,538,165, Cl. 357-22.000.
Eschmann, Heinz: *See—*
Tetenborg, Konrad; and Eschmann, Heinz, 4,537,013, Cl. 53-570.000.
ESE Limited: *See—*
Lang, Gordon R.; Forney, George D., Jr.; Qureshi, Shahid; Longstaff, Fred M.; and Lee, Chi H., 4,538,284, Cl. 375-39.000.
Esge-Marby GmbH & Co. KG: *See—*
Belka, Heinrich, 4,537,338, Cl. 224-39.000.
Eskelinen, Pekka, to Valmet Oy. Procedure for boosting the ventilation in the hood of a paper machine. 4,536,970, Cl. 34-41.000.
ESPE Fabrik pharmazeutischer Praeparate GmbH: *See—*
Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, 4,538,070, Cl. 250-504.00R.
Esselborn, Reiner: *See—*
Bernhard, Horst; and Esselborn, Reiner, 4,537,636, Cl. 106-291.000.
Esser, Anton, to Deutsche Babcock Anlagen Aktiengesellschaft. Grate of incinerator. 4,537,139, Cl. 110-276.000.
Estebanez, Joseph: *See—*
Rogers, Colin C.; Baker, John N.; and Estebanez, Joseph, 4,537,212, Cl. 137-2.000.
Estes, Roy D.; and Wright, Beaumont B., to Rock Bit Industries U.S.A., Inc. Radial rock bit seal. 4,537,409, Cl. 277-83.000.
Etablissements Proteor: *See—*
Palfray, Michel R., 4,536,898, Cl. 623-33.000.
Ethyl Corporation: *See—*
Li, Hsueh M., 4,537,755, Cl. 423-300.000.
McKinnie, Bonnie G.; and Robinson, Gene C., 4,537,724, Cl. 260-400.000.
Roper, Jerry M., 4,537,920, Cl. 252-52.00R.
Stahly, G. Patrick, 4,538,004, Cl. 568-707.000.
Stahly, G. Patrick, 4,538,005, Cl. 568-707.000.
Stahly, G. Patrick, 4,538,006, Cl. 568-707.000.
Eto, Kazumi: *See—*
Denpou, Kazuo; Eto, Kazumi; and Niida, Hideo, 4,537,041, Cl. 62-199.000.
Ettel, Victor A.: *See—*
Borbely, Gyula J.; Devuyst, Eric A.; Ettel, Victor A.; Mosoiu, Marcel A.; and Schitka, Konstantin J., 4,537,686, Cl. 210-713.000.
Etudes et Fabrication Dowell Schlumberger: *See—*
Parcevaux, Philippe A.; Piot, Bernard M.; and Vercaemer, Claude J., 4,537,918, Cl. 523-130.000.
Eudier, Michel; Huret, Noel; and Meunier, Jean, to Cegedur Societe de Transformation de L'Aluminim Pechiney; and Alliages Frittes METAFRAM. Engine cylinder liners based on aluminum alloys and intermetallic compounds, and methods of obtaining them. 4,537,167, Cl. 123-193.00C.
Evans, Anthony C., to Kelsey-Hayes Company. Sliding caliper disc brake. 4,537,290, Cl. 188-73.310.
Everman, Wayne F.; Lewis, D. Michael; and Russell, Raymond L., to Container Corporation of America. Method and apparatus for forming plastic liners and inserting them into bulk containers. 4,537,584, Cl. 493-93.000.
Eversole, Frank A. Lug nut remover. 4,537,101, Cl. 81-180.100.
Ewing, Robert L.; Hughes, James S.; and Bruggeman, Bruce, to Manville Service Corporation. Floodlight luminaire. 4,538,217, Cl. 362-375.000.
Ex-Cell-O Corporation: *See—*
O'Rourke, Glenn R., 4,537,422, Cl. 280-705.000.
Rangwala, Badruddin K.; and Flack, Toney S., 4,537,335, Cl. 222-496.000.
Wise, Daniel J.; and Woodhall, Donna M., 4,537,815, Cl. 428-219.000.
Exanno Products Limited: *See—*
Sullivan, Michael T., 4,537,430, Cl. 285-364.000.
Excelermatic Inc.: *See—*
Kraus, Charles E., 4,537,093, Cl. 74-798.000.
Exxon Production Research Co.: *See—*
Davis, Albert P., Jr.; and Robinson, Leon H., 4,537,457, Cl. 339-117.00P.
Exxon Research and Engineering Co.: *See—*
Agarwal, Pawan K.; and Lundberg, Robert D., 4,537,919, Cl. 523-336.000.
Bearden, Roby; and Stuntz, Gordon F., 4,537,676, Cl. 208-251.00R.
Cooke, Theodore M.; Lin, Robert A.; Whitfield, Richard G.; and Hock, Allan G., 4,537,631, Cl. 106-22.000.
Diana, William D., 4,538,010, Cl. 568-918.000.
Fiato, Rocco A.; Soled, Stuart L.; and Montagna, Angelo A., 4,537,867, Cl. 502-74.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Pober, Kenneth W., 4,537,688, Cl. 252-8.50M.
Rossi, Albert; and Lewtas, Kenneth, 4,537,602, Cl. 44-62.000.
F & H Holdings, Inc.: *See—*
Holcomb, David A., 4,537,123, Cl. 100-125.000.
F & M Trading Company: *See—*
Griffin, Michael E., 4,537,315, Cl. 211-70.600.
Fabian, Klaus: *See—*
Hermann, Hans D.; and Fabian, Klaus, 4,537,830, Cl. 428-437.000.
Fabriques de Tabac Reunies S.A.: *See—*
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,537,204, Cl. 131-274.000.
Facchini, Libero, to Farmatic S.r.l. Apparatus for selecting and supplying capsules or like round articles of deformable material to the feed hopper of machines for handling these articles. 4,537,300, Cl. 198-453.000.
Fadler, Kurt; and Kittel, Friedrich, to Fichtel & Sachs AG. Clutch disc assembly with torsional oscillation dampers. 4,537,295, Cl. 192-106.200.
Fadner, Thomas A.; and Hycner, Stanley H., to Rockwell International Corporation. Black oxide lithographic ink metering roller. 4,537,127, Cl. 101-141.000.
Fairchild Research Center: *See—*
Venkateswaran, Kalyanasundaram, 4,538,247, Cl. 365-230.000.
Faitel, William M., to Lamb Technicon Corp. Rotary chain drive mechanism with periodic output dwell. 4,537,087, Cl. 74-394.000.
Falchle, Jorg: *See—*
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,537,264, Cl. 173-48.000.
Fanuc Ltd.: *See—*
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,538,084, Cl. 310-217.000.
Matsui, Mitsuo; and Matsumura, Teruyuki, 4,538,098, Cl. 318-567.000.

Farago, John, to Du Pont de Nemours, E. I., and Company. Nonwoven fiber-sheet process. 4,537,733, Cl. 264-9.000.
Farina, John. Golf club. 4,537,403, Cl. 273-164.000.
Farkas nee Kirjak, Maria: *See*—
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.
Farmatic S.r.l.: *See*—
Facchini, Libero, 4,537,300, Cl. 198-453.000.
Farmitalia Carlo Erba, S.p.A.: *See*—
Doria, Gianfederico; Passarotti, Carlo; and Buttinoni, Ada, 4,537,962, Cl. 544-255.000.
Fast, Jacob. Merchandise information display tag with guide means. 4,537,821, Cl. 428-121.000.
Favier, Andre-Marcel: *See*—
Boiron, Jean; Boiron, Christian; Abecassis, Jacky; and Favier, Andre-Marcel, 4,537,512, Cl. 366-132.000.
Fearon, Robert E. Vapor compression distilling and salt concentrating device. 4,537,039, Cl. 62-182.000.
Feder, Joseph: *See*—
Tolbert, William R.; Feder, Joseph; and Lewis, Charles, Jr., 4,537,860, Cl. 435-240.000.
Fekete, Marton: *See*—
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.
Feldman, Richard B., to Chevron Research Company. Water detection subassembly and method of forming same, for computer processing centers. 4,538,141, Cl. 340-604.000.
Ferag AG: *See*—
Reist, Walter, 4,538,161, Cl. 346-140.00R.
Ferencz, Richard L.: *See*—
Ellis Margaret D.; Ferencz, Richard L.; and Kalz, Dietmar, 4,537,991, Cl. 564-133.000.
Ferguson, Donald K., to Canadian General Electric Company Limited. Current transformer secondary voltage limiter. 4,538,202, Cl. 361-124.000.
Ferranti, plc: *See*—
Morison, John M., 4,538,177, Cl. 358-101.000.
Ferry, Michel F.: *See*—
Ballatore, Daniel; Bonnet, Yves A.; Ferry, Michel F.; and Jacquart, Christian A., 4,538,032, Cl. 179-170.00D.
Feyen, Peter; Seifert, Hermann; and Kohler, Egon, to Bayer Aktiengesellschaft. Preparation of O,S-dimethyl-thiolophosphoric acid amide. 4,537,730, Cl. 260-989.000.
Feyerl, Gunther; Minichshofer, Klaus; and Pum, Hans G., to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft. Apparatus for manufacturing endless needled paper machine felts. 4,536,927, Cl. 28-110.000.
Fiato, Rocco A.; Soled, Stuart L.; and Montagna, Angelo A., to Exxon Research and Engineering Co. Promoted iron-cobalt spinel catalyst for Fischer-Tropsch processes. 4,537,867, Cl. 502-74.000.
Fichtel & Sachs AG: *See*—
Fadler, Kurt; and Kittel, Friedrich, 4,537,295, Cl. 192-106.200.
Field Effects, Inc.: *See*—
Gluckstern, Robert L.; Holsinger, Ronald F.; and Lown, Robert R., 4,538,130, Cl. 335-306.000.
Figgie International Inc.: *See*—
Vicenzi, Reno L., 4,537,189, Cl. 128-202.130.
Young, Jorge A.; and Khandwala, Bhupendra J., 4,538,056, Cl. 235-377.000.
Fikentscher, Rolf: *See*—
Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, 4,537,701, Cl. 252-344.000.
Firestone Tire & Rubber Company, The: *See*—
Hall, James E.; and Schulz, Donald N., 4,537,939, Cl. 526-179.000.
Hergenrother, William L., 4,537,917, Cl. 523-209.000.
Firey, Joseph C. Cyclic char gasifier devolatilization process. 4,537,603, Cl. 48-197.00R.
Firth, Bruce E.; and Rosen, Terry J., to UOP Inc. Preparation of ortho-alkylated phenols. 4,538,008, Cl. 568-783.000.
Fischer, Walter; and Zweifel, Hans, to Ciba-Geigy Corporation. Tetrasubstituted phthalic acid derivatives, and a process for their preparation. 4,537,977, Cl. 549-243.000.
Fisher, Kenneth J.; and Miller, William R., to American Sterilizer Company. Magnetically supported surgical light. 4,538,214, Cl. 362-147.000.
Fisher, Richard T. Magnetic flux-shifting actuator. 4,538,129, Cl. 335-230.000.
Fisher, William M. Vehicle with pneumatic assembly for driving, braking, and reducing friction on bearings. 4,537,269, Cl. 180-10.000.
Fitzpatrick, Brian J., to North American Philips Corporation. Green luminescent cathode-ray tube device with improved color filtering system. 4,538,089, Cl. 313-478.000.
Fitzpatrick, William B., to Storage Technology Corporation. (1,8) Data encoder/decoder. 4,538,189, Cl. 360-40.000.
FitzSimons, Louis N. Earth retaining end element for use with overfilled load support structures. 4,537,529, Cl. 405-125.000.
Fix, Joseph A.: *See*—
Alexander, Jose; and Fix, Joseph A., 4,537,772, Cl. 514-9.000.
Flack, Toney S.: *See*—
Rangwala, Badruddin K.; and Flack, Toney S., 4,537,335, Cl. 222-496.000.
Flakt Aktiebolag: *See*—
Josefsson, Leif, 4,537,120, Cl. 98-115.200.
Flanagan, John J. Floor finishing, cleaning and burnishing compositions containing ucon polymers, and method of use. 4,537,802, Cl. 427-368.000.
Flanner, Philip D.; Morris, Harold D.; and Newell, Gerald R., to Systron Donner Corp. Passive mass-spring type of sensing device having electronic damping. 4,538,203, Cl. 361-159.000.
Flautt, Martin C.: *See*—
Armstrong, Gordon P.; Flautt, Martin C.; and Williams, Gary L., 4,537,107, Cl. 83-694.000.
Armstrong, Gordon P.; and Flautt, Martin C., 4,537,610, Cl. 65-3.440.
Fleet, Charles R. W.; and Hewinson, Vincent K., to Fogarty P.L.C. Processed feathers. 4,537,594, Cl. 8-94.10R.
Fleetwood Systems, Inc.: *See*—
Mojden, Wallace W.; and Darr, Robert E., 4,537,010, Cl. 53-447.000.
Mojden, Wallace W.; and Darr, Robert E., 4,537,550, Cl. 414-46.000.
Fleming, Ward. Pin screen. 4,536,980, Cl. 40-427.000.
Flesher, Peter; and Langley, John G., to Allied Colloids Limited. Process for dissolving polymeric material. 4,537,513, Cl. 366-162.000.
Flodin, Claes-Goran. Arrangement for a cutting device. 4,537,103, Cl. 83-174.000.
Floss, Josef G.: *See*—
Schmidt, Franz; Pipper, Gunter; Floss, Josef G.; and Zahradnik, Franz, 4,537,949, Cl. 528-335.000.
Flowers, Michael A.: *See*—
Barnett, Steve M.; Flowers, Michael A.; and Varos, John A., 4,536,890, Cl. 2-164.000.
Floyd, William C., to Sun Chemical Corporation. Compounds and their use as insolubilizers for binders for paper coating compositions. 4,537,634, Cl. 106-214.000.
FMC Corporation: *See*—
Downey, Gale D.; and Jones, Charles E., 4,537,708, Cl. 252-554.000.
Endres, Douglas W.; McDaniel, Kenneth D., Jr.; and Griebel, Francis J., 4,537,281, Cl. 182-2.000.
Jensen, Lyle B., 4,537,317, Cl. 212-189.000.
Kreamer, William C., 4,537,009, Cl. 53-441.000.
Foa , Marco; Francalanci, Franco; Gardano, Andrea; and Bencini, Elena, to Montedison S.p.A. Process for the preparation of esters or salts of aromatic or etheroaromatic acids. 4,537,970, Cl. 546-319.000.
Fock, Jurgen; and Schedlitzki, Dietmar, to Th. Goldschmidt AG. Thermosetting adhesive. 4,537,934, Cl. 525-123.000.
Fogarty P L.C.: *See*—
Fleet, Charles R. W.; and Hewinson, Vincent K., 4,537,594, Cl. 8-94.10R.
Fogarty, Terence M., to Mentor Corporation. Connector device for connecting elastic tubing of an implantable device. 4,537,183, Cl. 128-79.000.
Fogel, Arnold W.; and Zofchak, Albert, to Bernel Chemical Co.; and Alzo, Inc. Hair compositions containing mixtures of quaternary ammonium compounds and tertiary amine salts of long-chain acids. 4,537,762, Cl. 424-70.000.
Fohlen, George M.: *See*—
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,537,834, Cl. 428-413.000.
Fohler, Johann, to Voest-Alpine Aktiengesellschaft. Arrangement for exchanging measuring and/or sampling probes. 4,537,072, Cl. 73-432.00R.
Fontaine, Joseph S.: *See*—
Kennedy, Alvin B., III; Fontaine, Joseph S.; Kennard, Alfred J.; and Morrison, J. Bruce, 4,537,685, Cl. 210-709.000.
Ford Aerospace & Communications Corporation: *See*—
Chan, Fred N., 4,537,375, Cl. 244-171.000.
Pizzurro, Vito F., 4,537,370, Cl. 244-3.160.
Ford Motor Company: *See*—
Anderson, Robert L., 4,538,106, Cl. 324-158.00T.
Haesters, Hermann, 4,537,115, Cl. 98-2.180.
Forizs, Lorant. VTOL Aircraft. 4,537,372, Cl. 244-12.400.
Forney, George D., Jr.: *See*—
Lang, Gordon R.; Forney, George D., Jr.; Qureshi, Shahid; Longstaff, Fred M.; and Lee, Chi H., 4,538,284, Cl. 375-39.000.
Fory, Werner: *See*—
Meyer, Willy; and Fory, Werner, 4,537,619, Cl. 71-93.000.
Schurter, Rolf; Fory, Werner; and Meyer, Willy, 4,537,618, Cl. 71-92.000.
Fossett, Lawrence D.; and Michael, Steven C., to AT&T Information Systems Inc. Method and apparatus for establishing telephone calling costs. 4,538,030, Cl. 179-7.1TP.
Foster, Billy R. Unitary endotracheal tube holder. 4,537,192, Cl. 128-207.170.
Foster, Clark B., to Boeing Company, The. Method for applying turbulators to wind tunnel models. 4,537,647, Cl. 156-245.000.
Fouchard, Serge: *See*—
Ugon, Michel; and Fouchard, Serge, 4,538,058, Cl. 235-380.000.
Fountain, Michael W.: *See*—
Varndell, Sydney A.; Lawson, Douglas R.; and Fountain, Michael W., 4,536,906, Cl. 5-468.000.

Fourche , Jean-Pierre; and Milili, Marc, to Videocolor. Deviator for an auto convergent color picture tube and its method of manufacture. 4,538,128, Cl. 335-210.000.

Fowler, Randall C.; Ruby, Kenneth; and Sartor, Thomas F., Jr., to Identix Incorporated. Fingerprint imaging apparatus. 4,537,484, Cl. 354-62.000.

Fox, Joseph R.: *See—*
Tenhover, Michael A.; Henderson, Richard S.; and Fox, Joseph R., 4,537,625, Cl. 75-0.50A.

Fraden, Jacob, to Healthcheck Corporation. Power switch. 4,538,074, Cl. 307-126.000.

Francalanci, Franco: *See—*
Foa , Marco; Francalanci, Franco; Gardano, Andrea; and Bencini, Elena, 4,537,970, Cl. 546-319.000.

Francel, Josef; Horn, Uriah; and Stewart, Daniel R., to Owens-Illinois, Inc. Lead-free and cadmium-free glass frit compositions for glazing, enameling and decorating. 4,537,862, Cl. 501-14.000.

Franckowiak, Gerhard: *See—*
Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.

Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H.: *See—*
Theurer, Josef, 4,537,135, Cl. 104-12.000.

Franzen, Torsten A. H.: *See—*
Henriksson, Sven-Erik D.; Ahrel, Bo A.; Svensson, Claes G. S.; and Franzen, Torsten A. H., 4,537,655, Cl. 162-23.000.

Fredd, John V., to Otis Engineering Corporation. Valve. 4,537,383, Cl. 251-58.000.

Frederick, Russell A. Corner panel assembly. 4,536,995, Cl. 52-27.000.

Frees, David: *See—*
Schwartz, Edwin; and Frees, David, 4,537,216, Cl. 137-514.000.

Frei, Karl, to Telsonic AG Fur Elektronische Entwicklung Und Fabrikation. Apparatus for generating and radiating ultrasonic energy. 4,537,511, Cl. 366-127.000.

Freige, Diab E.; Lockwood, John J.; Ramsay, Michael; and Keely, Leroy B., to Convergent Technologies, Inc. Modular power supply system. 4,538,073, Cl. 307-33.000.

French, Alan. Earphone assembly. 4,538,034, Cl. 179-182.00R.

Frey, Elmer J.: *See—*
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., 4,537,067, Cl. 73-151.000.

Friedrich, Jaromir: *See—*
Krepela, Josef; and Friedrich, Jaromir, 4,537,386, Cl. 251-302.000.

Frito-Lay, Inc.: *See—*
Bernard, Donald C., 4,537,786, Cl. 426-438.000.

Frost, Heinz-Helmut: *See—*
Ehlscheid, Gunter; and Frost, Heinz-Helmut, 4,537,588, Cl. 493-342.000.

Fry, Daniel J. Reloader for muzzle loaders. 4,536,983, Cl. 42-90.000.

Fuchs, Helmut, to Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft. Process and apparatus for spinning a staple fiber joined to a previously spun yarn. 4,537,020, Cl. 57-263.000.

Fuji Electric Company, Ltd.: *See—*
Arai, Akio, 4,537,849, Cl. 430-85.000.
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.

Fuji Jukogyo Kabushiki Kaisha: *See—*
Sakai, Tatsuo, 4,537,163, Cl. 123-52.0MC.

Fuji Photo Film Co., Ltd.: *See—*
Kasuga, Akira; Yamamoto, Nobuyuki; and Miyatsuka, Hajime, 4,537,833, Cl. 428-328.000.
Ohba, Hisao; Uchida, Toshio; Ohashi, Azusa; and Kita, Nobuyuki, 4,537,496, Cl. 355-10.000.
Takeda, Hideo, 4,537,801, Cl. 427-356.000.
Tamura, Kaoru, 4,537,307, Cl. 206-455.000.
Tsutomu, Kimura; Nakayama, Hideo; and Fuseda, Yuichi, 4,538,179, Cl. 358-166.000.

Fuji Xerox Co., Ltd.: *See—*
Asanuma, Tetsu; and Inagaki, Satoru, 4,538,052, Cl. 219-469.000.
Kume, Hiroshi, 4,538,261, Cl. 370-85.000.
Uchida, Hiroyasu, 4,538,267, Cl. 371-20.000.

Fujihata, Isao: *See—*
Shimpo, Tetsuhiko; and Fujihata, Isao, 4,538,101, Cl. 323-272.000.

Fujii, Akio: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.

Fujikin International, Inc.: *See—*
Sekoguchi, Kotohiko; and Sonoda, Yoshiteru, 4,537,078, Cl. 73-744.000.

Fujimatsu, Wataru: *See—*
Asano, Masao; Fujimatsu, Wataru; Matsumoto, Kazumasa; Murata, Hideki; Sato, Toshihiko; and Watanabe, Kenji, 4,537,824, Cl. 428-323.000.

Fujiso, Tokuo: *See—*
Ohmori, Tadashi; Fujiso, Tokuo; Yasui, Eiji; Nomura, Soichi; and Aizawa, Yukio, 4,537,872, Cl. 502-230.000.

Fujita, Kazunori: *See—*
Okada, Makoto; and Fujita, Kazunori, 4,537,278, Cl. 181-227.000.

Fujita, Kazuyoshi: *See—*
Takayama, Yoshihisa; Gotoh, Kunihiko; Ito, Akihiko; Yamamura, Takeshi; and Fujita, Kazuyoshi, 4,536,949, Cl. 29-578.000.

Fujitsu Limited: *See—*
Nakano, Motoo, 4,538,166, Cl. 357-23.600.
Shimada, Hiroshi, 4,538,076, Cl. 307-475.000.
Sugo, Yasuhisa; and Takeshima, Tohru, 4,538,244, Cl. 365-155.000.
Takagi, Masayuki; Mugiya, Hiroshi; and Komaju, Shigeru, 4,538,102, Cl. 323-349.000.
Takayama, Yoshihisa; Gotoh, Kunihiko; Ito, Akihiko; Yamamura, Takeshi; and Fujita, Kazuyoshi, 4,536,949, Cl. 29-578.000.
Yano, Yasuhiro; Umino, Isamu; Ohsawa, Zenichi; and Ozaki, Takayuki, 4,538,121, Cl. 331-25.000.

Fujitsu Ten Limited: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,537,272, Cl. 180-176.000.

Fujiyama, Shigeo; and Ogata, Yasuhiro, to Mitsubishi Denki Kabushiki Kaisha. Semi-closed type refrigerant compressing machine. 4,537,046, Cl. 62-505.000.

Fukai, Toshiyuki: *See—*
Tsuchida, Yutaka; and Fukai, Toshiyuki, 4,537,240, Cl. 164-430.000.

Fukatani, Yasunobu, to Kabushiki Kaisha Daikin Seisakusho. Facing assembly of a friction clutch disc. 4,537,299, Cl. 192-107.00C.

Fukawa, Susumu: *See—*
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.

Fukaya, Yasuhiro: *See—*
Okamoto, Eiji; Fukaya, Yasuhiro; and Chikami, Michio, 4,537,247, Cl. 165-104.140.

Fukuda, David S.: *See—*
Abbott, Bernard J.; Debono, Manuel; and Fukuda, David S., 4,537,717, Cl. 260-112.50R.

Fukuhara, Tetsukazu: *See—*
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Fukuoka, Takeyo: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.

Fukushima, Akira; and Sugimoto, Yutaka, to Kabushiki Kaisha Komatsu Seisakusho. Hydraulic connection means between a vehicle body and a track-mounted hydraulic motor. 4,537,268, Cl. 180-9.100.

Fullam, Harold T.: *See—*
Rohrmann, Charles A.; and Fullam, Harold T., 4,537,835, Cl. 423-502.000.

Funabashi, Katsunori, to Honda Giken Kogyo Kabushiki Kaisha. Radiator system for motorcycle. 4,537,273, Cl. 180-229.000.

Funabashi, Tetsuji; and Kobayashi, Shingo, to Kabushiki Kaisha Komatsu Seisakusho. Blade control device. 4,537,259, Cl. 172-4.500.

Furukawa, Hiroshi: *See—*
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.

Furutsu, Akira, to Japan Bano'k Co., Ltd. Device for connecting ends of filamentary fastener. 4,536,933, Cl. 29-235.000.

Fuseda, Yuichi: *See—*
Tsutomu, Kimura; Nakayama, Hideo; and Fuseda, Yuichi, 4,538,179, Cl. 358-166.000.

Fuss, Peter: *See—*
Sucrow, Wolfgang; Schatull, Wolfgang; and Fuss, Peter, 4,537,698, Cl. 252-299.610.

Fuwa, Shigehiro: *See—*
Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, 4,536,993, Cl. 51-165.800.

Fuziwara, Osami: *See—*
Ito, Katsumi; and Fuziwara, Osami, 4,537,271, Cl. 180-131.000.

Gabe, Julian: *See—*
Pikarski, Michael; Gabe, Julian; and Dykman, Edmund, 4,537,992, Cl. 564-437.000.

Gabel, Eike; Blank, Heinz U.; and Behre, Horst, to Bayer Aktiengesellschaft. Process for the simultaneous recovery of 4-hydroxy-diphenyl and 4,4'-dihydroxydiphenyl. 4,538,007, Cl. 568-751.000.

Gabrielli, Luciano; and Sposini, Maurizio, to Cselt Centro Studi e Laboratori Telecommunicazioni SpA. Variable-band switching system for voice and data communication. 4,538,263, Cl. 370-86.000.

Gadelius Kabushiki Kaisha: *See—*
Okamoto, Eiji; Fukaya, Yasuhiro; and Chikami, Michio, 4,537,247, Cl. 165-104.140.

Gaffar, Abdul; Davis, Calvin B.; Donohue, John J.; and Moy, Debbie, to Colgate-Palmolive Company. Peroxydiphosphate toothpaste composition. 4,537,765, Cl. 424-53.000.

Gaide, Albert, to Mistral Windsurfing AG. Apparatus for the stabilizing of the direction of travel of watercraft, specifically a sword or fin for sailboards. 4,537,143, Cl. 114-39.000.

Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, to Fabriques de Tabac Reunies S.A. Method of tobacco treatment to produce flavors. 4,537,204, Cl. 131-274.000.

Galante, Jorge O.; and Rostoker, William. Hip prosthesis with flared porous bony ingrowth pads. 4,536,894, Cl. 623-22.000.

Gale, Ronald S.; Bristol, William E.; and Noonan, Carroll, to Willamette Industries, Inc. Method and apparatus for applying coupon strips to paper bags. 4,537,586, Cl. 493-220.000.

Gallick-Whitaker, Nancy G., to Eli Lilly and Company. Method of preparing 4aR,8aR-5-permissibly substituted-6-oxo-octahydro-1H(and 2H)-pyrazolo[3,4-g]quinolines, useful as intermediates. 4,537,965, Cl. 546-82.000.

Gallup, Darrell L.; and Jost, John W., to Union Oil Company of California. Control of metal-containing scale deposition from high temperature brine. 4,537,684, Cl. 210-696.000.
Galluzzi, Giovanni, to Giulio Fiocchi S.p.A. Self-propelling projectile for firearms. 4,537,134, Cl. 102-380.000.
Galvin, Aaron A.: *See—*
Harvey, Roy L.; Griffin, Kevin J.; Galvin, Aaron A.; and Auerbach, Louis H., 4,538,138, Cl. 340-521.000.
Ganellin, Charon R.: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,537,779, Cl. 514-275.000.
Gardano, Andrea: *See—*
Foa , Marco; Francalanci, Franco; Gardano, Andrea; and Bencini, Elena, 4,537,970, Cl. 546-319.000.
Garg, Shyam G.: *See—*
Bohr, Mark T.; Yu, Ken K.; Yau, Leo D.; and Garg, Shyam G., 4,536,947, Cl. 29-576.00C.
Gargini, Eric J.; and Baker, Henry L., to Communications Patents Limited. Two-way subscriber TV system with multiple subscriber's sets. 4,538,174, Cl. 358-86.000.
Garitty, James P.: *See—*
Sun, Shan C.; and Garitty, James P., 4,538,196, Cl. 361-64.000.
Gartner, Karl, to Yoshida Kogyo K. K. Thermal insulating window for application in curtain walls. 4,537,000, Cl. 52-235.000.
Gates, Charles C., Jr.: *See—*
Peltzman, William S.; Rohlfing, Raymond A.; and Gates, Charles C., Jr., 4,537,736, Cl. 264-130.000.
Gates Rubber Company, The: *See—*
Peltzman, William S.; Rohlfing, Raymond A.; and Gates, Charles C., Jr., 4,537,736, Cl. 264-130.000.
Gaucher, Michel M. G., to Electronique Serge Dassault. Endless drive belt apparatus for processing card tickets with magnetic track. 4,537,125, Cl. 101-93.040.
Gaussens, Gilbert; and Lemaire, Francis, to Commissariat a l'Energie Atomique. Process for the production of a cation exchange diaphragm and the diaphragm obtained by this process. 4,537,668, Cl. 204-159.170.
Gavin, Thomas O.: *See—*
Heinemann, Frederick F.; and Gavin, Thomas O., 4,537,129, Cl. 101-415.100.
Gazzoli, Italo; and Keller, Frank, to General Telephone of Florida. Apparatus for use with key telephone system with wireless telephone device. 4,538,028, Cl. 179-2.0EA.
Gazzoli, Italo; and Keller, Frank, to General Telephone of Florida. Apparatus for use with key telephone system with wireless telephone device. 4,538,029, Cl. 179-2.0EA.
Geiger, Kurt: *See—*
Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, 4,536,909, Cl. 15-4.000.
Geipel, Werner: *See—*
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,537,731, Cl. 261-94.000.
Gelbard, Edward, to Wilverly Mansions I.B.V. Bag dispensing system. 4,537,330, Cl. 221-26.000.
Gelbein, Abraham P.: *See—*
Blum, David B.; and Gelbein, Abraham P., 4,537,876, Cl. 502-342.000.
Gem Products, Inc.: *See—*
Cowan, Arnold A., 4,537,214, Cl. 137-318.000.
General Electric Company: *See—*
Breen, Thomas B., 4,538,197, Cl. 361-71.000.
Bussink, Jan; DeMunck, Johannes W. J.; and Marie van Abeelen, Petrus C. A., 4,537,930, Cl. 524-505.000.
Crivello, James V., 4,537,854, Cl. 430-283.000.
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,537,560, Cl. 416-198.00A.
Germano, Carmen P.; and Davenport, John M., 4,538,087, Cl. 310-332.000.
Keane, John J.; and Pauze, Denis R., 4,537,804, Cl. 427-118.000.
Luxon, Bruce A., 4,537,925, Cl. 524-151.000.
Pfeifer, George F., 4,538,078, Cl. 307-592.000.
Scheibengraber, Karl J., 4,538,289, Cl. 378-20.000.
Siemers, Paul A.; Kopp, Robert W.; and Jackson, Melvin R., 4,537,742, Cl. 419-8.000.
Syed, Asif A., 4,537,630, Cl, 73-589.000.
Yerman, Alexander J., 4,538,170, Cl. 357-80.000.
General Telephone of Florida: *See—*
Gazzoli, Italo; and Keller, Frank, 4,538,028, Cl. 179-2.0EA.
Gazzoli, Italo; and Keller, Frank, 4,538,029, Cl. 179-2.0EA.
Gentile, Anthony J.: *See—*
Cropper, George D.; and Gentile, Anthony J., 4,537,025, Cl. 60-39.281.
Georg Neumann GmbH: *See—*
Kern, Otmar, 4,538,255, Cl. 369-51.000.
George, E. Victor, to United States of America, Energy. Q-Switched Raman laser system. 4,538,274, Cl. 372-3.000.
George, Kurudamannil A., to Proctor & Schwartz, Inc. Skin removal apparatus for almonds. 4,537,122, Cl. 99-516.000.
George, Richard D.: *See—*
Brockway, Patrick H.; Lehr, Howard C.; and George, Richard D., 4,537,440, Cl. 296-108.000.
Georgia Tech Research Institute: *See—*
Delahoussaye, Ronald D.; and Kelly, Gary W., 4,537,415, Cl. 280-242.0WC.
Gergely, John S., to Conoco Inc. Apparatus and method for generating light in the near ultraviolet to infrared range. 4,538,278, Cl. 372-70.000.
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Reust, Dennis K.; and Gergely, John S., 4,538,230, Cl. 364-433.000.
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Gerry, Martin E. Bipolar magnetic pulse activated ignition system. 4,537,175, Cl. 123-649.000.
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Weirich, Walter; and Dettmers, Michael, 4,537,221, Cl. 137-637.200.
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Storandt, Ralf; and Mettenleiter, Karl, 4,536,916, Cl. 16-48.500.
Ghiste, Patrick D. L.: *See—*
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,537,204, Cl. 131-274.000.
Giannuzzi, Louis N. Anchor bolt assembly. 4,537,541, Cl. 411-55.000.
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Gielis, Gerardus C. M.; and Van Kessel, Antoon M. M., to U.S. Philips Corporation. FM-receiver for receiving FM-signals with transmission identification. 4,538,285, Cl. 375-104.000.
Giles, Oley; and Bragg, Duncan D., to Borg-Warner Corporation. Low emission valve. 4,537,385, Cl. 251-214.000.
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Gilson, Jean-Pierre, to UOP Inc. Method of preparing silicate composition. 4,537,866, Cl. 502-70.000.
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Girard, Theodore A., to Glyco, Inc. Method of enhancing solubility of halogenated hydantoins. 4,537,697, Cl. 252-90.000.
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Glass, John P.: *See—*
Hollander, Edward F., Jr., 4,537,308, Cl. 206-484.000.
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Pebeyre, Pierre-Jean; Gleyze, Rene ; and Montant, Charles, 4,537,613, Cl. 71-5.000.
Gloth, Richard E.; Tazuma, James J.; and Smith, Robert A., to Goodyear Tire & Rubber Company, The. Polymeric compounds prepared from diphenylamine and dialkylalkenylbenzene or dihydroxyalkylbenzene. 4,537,952, Cl. 528-392.000.
Gluckstern, Robert L.; Holsinger, Ronald F.; and Lown, Robert R., to Field Effects, Inc. Tunable segmented ring magnet and method of manufacture. 4,538,130, Cl. 335-306.000.
Glumac, Nick P. Mobile storage platform and liftable bed trailer. 4,537,378, Cl. 248-163.100.
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Goetz, Norbert; Laas, Harald; Tavs, Peter; Hupfer, Leopold; and Baer, Karl, to BASF Aktiengesellschaft. Preparation of substituted phenols. 4,538,009, Cl. 568-799.000.
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Eike, Einar, 4,536,999, Cl. 52-208.000.
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Bero, Vernon L.; and Schultz, Fredrick W., 4,537,121, Cl. 99-450.400.
Golden, Douglas B.: *See—*
Hamilton, Scott B.; and Golden, Douglas B., 4,538,142, Cl. 340-667.000.
Golinsky, Joseph J., Jr. Exercise apparatus for developing arm and wrist muscles. 4,537,394, Cl. 272-117.000.
Gomez, I. Luis, to Monsanto Company. Laminates comprising plasticized polyvinyl butyral interlayers. 4,537,828, Cl. 428-412.000.
Goodman, Phillip M.: *See—*
Charney, Joseph C.; Goodman, Phillip M.; and Morgan, Robert H., 4,537,522, Cl. 401-218.000.
Goodrich, Edgar R., Jr.; and Navratil, Philip, to Motorola, Inc. Method and apparatus for translating a predetermined Hamming code to an expanded class of Hamming codes. 4,538,270, Cl. 371-37.000.

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Colvin, Howard A.; Muse, Joel, Jr.; and Hollingshead, William S., 4,538,002, Cl. 568-650.000.
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Goralnik, Charles D. Dimmer and starting circuits for a fluorescent lamp. 4,538,092, Cl. 315-58.000.
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Gotoh, Kunihiko: *See*—
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Gotoh, Yoshitomo; and Iwamoto, Kiyofumi, to Hitachi, Ltd. Composite circuit breaker. 4,538,039, Cl. 200-144.00B.
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Gould Inc.: *See*—
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Graboyes, Herman A., to Atlas Steel Rule Die, Inc. Embosser mounting insert registering means. 4,537,124, Cl. 101-28.000.
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Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, 4,538,070, Cl. 250-504.00R.
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Calder, Oliver J., 4,537,355, Cl. 239-119.000.
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Zumbrunn, Jean-Pierre; Levielle, Jean; Thomas, Andre ; and Grangette, Francoise, 4,536,907, Cl. 8-149.100.
Grasselli, Robert K.: *See*—
Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., 4,537,624, Cl. 75-0.50B.
Grasso, Charles P., to American Cyanamid Company. Process for the preparation of 2-(4-hydroxyphenyl)-3-methylbutyric acid. 4,537,988, Cl. 562-478.000.
Gray, Bruce; Soundaranathan, Kasivisvanatha; and VanGieson, Franklin D., to National Semiconductor Corporation. Process for producing CMOS structures with Schottky bipolar transistors. 4,536,945, Cl. 29-571.000.
Gray, Steven H.: *See*—
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Green, Michael P.: *See*—
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Greenberg, Mitchell H. Portable and compactible scale. 4,537,266, Cl. 177-208.000.
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Greenwald, Edward H., Sr. Process for removing sulfur and ash from coal. 4,537,599, Cl. 44-1.0SR.
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Kambanis, Stamatis M.; Berchem, Antoine; Gregoire, Dennis; and Rybicky, Jaroslav, 4,537,941, Cl. 527-403.000.
Gretz, Ronald D.: *See*—
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Griebel, Francis J.: *See*—
Endres, Douglas W.; McDaniel, Kenneth D., Jr.; and Griebel, Francis J., 4,537,281, Cl. 182-2.000.
Griffin, Kevin J.: *See*—
Harvey, Roy L.; Griffin, Kevin J.; Galvin, Aaron A.; and Auerbach, Louis H., 4,538,138, Cl. 340-521.000.
Griffin, Michael E., to F & M Trading Company. Knife and/or steel storage unit. 4,537,315, Cl. 211-70.600.
Griffith, Ronald C.; and Kinsolving, Clyde R., to Pennwalt Corporation. He[illegible]es II treatment. 4,537,908, Cl. 514-659.000.
Griffiths, Trevor J.: *See*—
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Grinberg, Jan; and Little, Michael J., to Hughes Aircraft Company. Liquid crystal pixel driver circuit and matrix display. 4,537,471, Cl. 350-333.000.
Griswold, Azel A., to Reeves Brothers, Inc. Process for rapid curing of polyether polyurethane foam. 4,537,912, Cl. 521-53.000.
Groll, Manfred; and Ockelmann, Dieter, to Bayer Aktiengesellschaft. Cu-Pc dyestuffs. 4,537,721, Cl. 260-242.200.
Groom, James S.; and LaFleur, Paul J., Jr., to Package Machinery Company. Packaging machine with rotary actuated sealing jaws. 4,537,012, Cl. 53-552.000.
Grosjean, William C., to Solar Turbines, Incorporated. Turbine engines. 4,537,024, Cl. 60-39.161.
Gross, Franz; Wahl, Georg; and Nicoll, Andrew R., to BBC Aktiengesellschaft Brown, Boveri & Cie. High-temperature protection layer. 4,537,744, Cl. 420-446.000.
Gross, Rainer: *See*—
Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.
Grow Group, Inc.: *See*—
Kivel, Daniel M.; and Weber, Gerhard M., 4,537,926, Cl. 524-388.000.
Grow, Robert M., to Burroughs Corp. Bandwidth allocation in a token controlled loop communications network. 4,538,147, Cl. 340-825.050.
Gruber, Robert J.: *See*—
Yourd, Raymond A., III; Majumdar, Debesh; and Gruber, Robert J., 4,537,848, Cl. 430-110.000.
Grumman Aerospace Corporation: *See*—
Kircher, Hartmann J., 4,537,469, Cl. 350-96.240.
Gruning, Burghard; Holtschmidt, Ulrich; and Koerner, Gotz, to TH. Goldschmidt AG. Organopolysiloxanes with Bunte salt groups, their synthesis and use for the surface treatment of inorganic or organic materials. 4,537,595, Cl. 8-115.600.
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Gsponer, Arnold; Huber, Werner; and Petrovic, Milan, to Buhler - Miag GmbH. Deviating station for handling arrangement, and handling arrangement provided therewith. 4,537,302, Cl. 198-626.000.
GTE Automatic Electric Incorporated: *See*—
Edwards, Ivan L.; and Macrander, Max S., 4,538,272, Cl. 371-61.000.
Reimer, William A., 4,538,209, Cl. 361-395.000.
GTE Communication Systems Corporation: *See*—
Bertellotti, Ansano; and Traina, Anthony, 4,538,211, Cl. 361-415.000.
GTE Communications Products Corporation: *See*—
McNesby, John B.; and Krys, Joseph F., 4,538,286, Cl. 375-112.000.
GTE Laboratories Incorporated: *See*—
Ditchek, Brian M.; and Middleton, Thomas R., 4,537,323, Cl. 220-2.10R.
GTE Products Corporation: *See*—
Ritsko, Joseph E.; and Acla, Howard L., 4,537,750, Cl. 423-65.000.
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Guenthner, Russell W.: *See*—
Circello, Joseph C.; and Guenthner, Russell W., 4,538,238, Cl. 364-746.000.
Guglielmo, Jean. Machine for truing electrical collectors and the like. 4,536,915, Cl. 15-345.000.
Guillaume, Jean-Luc, to Societe a Responsabilite Limitee styled: Speri-France. Waterproof fabric and fabrication method thereof. 4,537,817, Cl. 428-260.000.
Gunda, Rajamouli; McCarty, Michael R.; and Rode, Melvin A., to Vickers, Incorporated. Power transmission. 4,537,029, Cl. 60-390.000.
Gunn, Walter H.; and Kennedy, Alexander W. Corrosion resistant metal composite with metallic undercoat and chromium topcoat. 4,537,837, Cl. 428-621.000.
Gupta, Mool C.; Wrobel, Joseph J.; and Howe, Dennis G., to Eastman Kodak Company. Ceramic overcoated optical recording element. 4,538,159, Cl. 346-135.100.
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Claeson, Carl G.; and Gustavsson, Stig I., 4,537,896, Cl. 514-330.000.
Gutschmit, Alan; and York, Paul W., to Monarch Knitting Machinery Corp.; and Monatex S.A. Pile loop forming and cutting elements for circular knitting machines. 4,537,048, Cl. 66-93.000.
Guyer, John R.: *See*—
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Gyorgy, Lajos: *See*—
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Gyugyi, Laszlo, to Westinghouse Electric Corp. Adjustable frequency AC motor drive using an unrestricted frequency changer system. 4,538,220, Cl. 363-161.000.
H. J. Langen & Sons Limited: *See*—
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Haefliger, William W.: *See*—
Parkinson, Delbert J., 4,536,979, Cl. 40-159.000.

Haesters, Hermann, to Ford Motor Company. Ventilation arrangement for a tailgate. 4,537,115, Cl. 98-2.180.

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Hahn, Robert E.: *See—*
Matteucci, John S.; Snyder, James K.; and Hahn, Robert E., 4,536,998, Cl. 52-171.000.

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Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, 4,538,176, Cl. 358-86.000.

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Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, 4,538,164, Cl. 346-209.000.

Halcon SD Group, Inc., The: *See—*
Rizkalla, Nabil, 4,537,871, Cl. 502-161.000.

Haldric, Bernard, to NACAM. Device for detecting the position of a shaft in a coupling element, and in particular a universal joint yoke. 4,537,523, Cl. 403-12.000.

Hall, David A., to Eli Lilly and Company. N-substituted-2-(R)-(sulfinic acid)-3-(S)-(acylamino)-4-oxo-azetidines and process. 4,537,720, Cl. 260-239.00A.

Hall, James E.; and Schulz, Donald N., to Firestone Tire & Rubber Company, The. Process for production of polymers having increased 1,2-microstructure. 4,537,939, Cl. 526-179.000.

Hall, John T.: *See—*
Radmore, Robert R.; and Hall, John T., 4,537,368, Cl. 242-58.600.

Hall, Joseph E.: *See—*
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Crain, Stephen F.; Gray, Steven H.; Arnold, Edward P.; and Dodd, Timothy J., 4,538,221, Cl. 364-172.000.
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Hamaji, Yukio: *See—*
Okabe, Shinsei; Komatsu, Hiroshi; Hamaji, Yukio; Kojima, Shozo; and Kato, Yoshiharu, 4,537,865, Cl. 501-135.000.

Hamill, Robert L.; and Kastner, Ralph E., to Eli Lilly and Company. A47934 Antibiotic and process for production thereof. 4,537,879, Cl. 514-9.000.

Hamilton, Scott B.; and Golden, Douglas B. Signal seat for children. 4,538,142, Cl. 340-667.000.

Hamm, Josef: *See—*
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Hammer, Friedrich: *See—*
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Hammond, Milton L.: *See—*
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; McDonald, John; and Zambias, Robert A., 4,537,903, Cl. 514-456.000.

Hampton, James E., to Sedco, Inc. Installation and levelling of subsea templates. 4,537,533, Cl. 405-227.000.

Haney, Steven J.; Stulen, Richard H.; and Toly, Norman F., to United States of America, Energy. Manipulator having thermally conductive rotary joint for transferring heat from a test specimen. 4,538,068, Cl. 250-443.100.

Hans, Rudiger: *See—*
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Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Weber, Hans, 4,537,597, Cl. 8-639.000.

Hanson, Derald F.: *See—*
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Hanson, Oliver D.; Nicolai, Donald R.; and Strong, Les O. Ice applicator for medicinal purposes. 4,537,194, Cl. 128-399.000.

Hanson, William M., to Automotive Products plc. Ball and socket joint. 4,537,524, Cl. 403-140.000.

Hanzawa, Kohtaro: *See—*
Sakurai, Keiichi; Ishida, Hideaki; and Hanzawa, Kohtaro, 4,537,110, Cl. 84-1.260.

Hara, Masahiro: *See—*
Sakai, Toshiyasu; Hara, Masahiro; and Teraura, Nobuyuki, 4,538,060, Cl. 235-472.000.

Hardesty, Edwin C.; and Hardesty, Ronald C., to AT&T Technologies, Inc. Tool for terminating telephone cordage with modular plugs. 4,536,939, Cl. 29-566.400.

Hardesty, Ronald C.: *See—*
Hardesty, Edwin C.; and Hardesty, Ronald C., 4,536,939, Cl. 29-566.400.

Hares, George B.: *See—*
Borrelli, Nicholas F.; Hares, George B.; Smith, Dennis W.; and Wedding, Brent M., 4,537,612, Cl. 65-30.110.

Harper, James M. E.: *See—*
Cuomo, Jerome J.; Harper, James M. E.; and Waters, Gary A., 4,538,067, Cl. 250-396.00R.

Harrell, Bruce W. Multi-purpose detachable pocket system. 4,536,975, Cl. 36-136.000.

Harrington, Edward R.: *See—*
Uffner, William E.; White, Robert N.; and Harrington, Edward R., 4,537,921, Cl. 524-59.000.

Harris, Clifford J.; and Barraclough, Paul. 2,4-Diazabicyclo[3.3.0]octane-3,7-diones. 4,537,972, Cl. 548-302.000.

Harris, William G., to United States of America, Energy. Heat flux limiting sleeves. 4,537,249, Cl. 165-134.00R.

Harrison, John: *See—*
Stevens, Keith D.; Harrison, John; and Kaye, Stanley B., 4,538,171, Cl. 357-81.000.

Harsanyi, Kalman: *See—*
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.

Hartag AG: *See—*
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Hartl, Werner, to Roller Bearing Company of America. Hub mounting device. 4,537,526, Cl. 403-370.000.

Harvey, Roy L.; Griffin, Kevin J.; Galvin, Aaron A.; and Auerbach, Louis H., to American District Telegraph Company. Integrated security system having a multiprogrammed controller. 4,538,138, Cl. 340-521.000.

Harwood, Jon W.; Clegg, Michael W.; and Treadwell, Mark C., to APX Group, Inc. Hybrid exhaust manifold. 4,537,027, Cl. 60-323.000.

Hashiba, Isao; Nishikimi, Tadashi; and Tsuchiya, Shuji, to Nissan Chemical Industries Ltd. Process for producing 2-(4-hydroxyphenoxy) propionate derivatives. 4,537,984, Cl. 560-061.000.

Hashimoto, Masaru: *See—*
Imanishi, Kazuo; Hashimoto, Masaru; and Mori, Makoto, 4,538,198, Cl. 361-86.000.

Hashimoto, Mitsuru, to Ricoh Co. Ltd. Electrophotographic element containing disazo compound. 4,537,844, Cl. 430-58.000.

Hashimoto, Nobuo: *See—*
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.

Haskell of Pittsburgh, Inc.: *See—*
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Haslanger, Martin F.: *See—*
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,904, Cl. 514-469.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,981, Cl. 549-463.000.

Hasskamp, Paul R., to Becton, Dickinson and Company. Dispenser apparatus for simultaneously dispensing predetermined equal volumes of liquid including a disposable dispenser module. 4,537,231, Cl. 141-238.000.

Hassler, Heinrich; Muller, Reiner; Kippenberg, Horst; and Prolss, Norbert, to Siemens Aktiengesellschaft. Method of producing copper-chromium fusion alloys as contact material for vacuum power switches. 4,537,745, Cl. 420-590.000.

Hata, Hideo: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,537,935, Cl. 525-222.000.

Hatakeyama, Kenichi; and Inui, Tetsuji, to Nippon Electric Co., Ltd. Electro-magnetic wave absorbing material. 4,538,151, Cl. 343-18.00A.

Hattori, Osamu; and Tamura, Shingo, to Hitachi, Ltd. Pickup device. 4,538,254, Cl. 369-43.000.

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Ootsuka, Yoshinori; Hattori, Tadashi; Yamamoto, Minoru; and Ozaki, Tadashi, 4,537,065, Cl. 73-117.300.

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Hatzell, Paul H. Combined chisel plow, rod weeder and drill. 4,537,261, Cl. 172-44.000.

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Hauni-Werke Korber & Co. KG.: *See—*
Lorenzen, Heinz-Christen; Heitmann, Uwe; Petersen, Kurt-Eckart; and Pinck, Peter, 4,537,206, Cl. 131-281.000.

Hawe, Malcolm; Marshall, David; and Walker, John R. Thermal energy storage compositions. 4,537,695, Cl. 252-70.000.

Hawkes, Thaddeus A., to RCA Corporation. Carrier recovery loop for reception of quadraphase shift keyed signals. 4,538,120, Cl. 331-12.000.

Hawley, Gil R., to Phillips Petroleum Company. Polyolefin polymerization process and catalyst. 4,537,870, Cl. 502-111.000.

Hayami, Seinoshin: *See—*
Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.

Hayashi, Kazuhiko: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,537,272, Cl. 180-176.000.

Hayashi, Masakazu, to Kabushiki Kaisha Hayashi Racing. Vehicle wheel attaching device. 4,537,449, Cl. 301-9.0CN.

Hayashi, Nobuaki: *See—*
Nonogaki, Saburo; Hayashi, Nobuaki; and Tomita, Yoshifumi, 4,537,851, Cl. 430-144.000.

Hayashi, Toshihiko: *See—*
Matsuzaki, Yoshitomi; Hayashi, Toshihiko; and Kushibiki, Keizou, 4,537,159, Cl. 123-41.270.

Hayes, Garrett P. Water conserving flush valve for toilets. 4,536,900, Cl. 4-324.000.

Hazama, Junji: *See—*
Kakizaki, Yukio; Izawa, Hisao; and Hazama, Junji, 4,537,501, Cl. 355-76.000.

Hazelett, Robert W.; and Wood, John F. B., to Hazelett Strip-Casting Corporation. Method of and apparatus for steam preheating endless flexible casting belt. 4,537,243, Cl. 164-481.000.

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Hazelett, Robert W.; and Wood, John F. B., 4,537,243, Cl. 164-481.000.

Healthcheck Corporation: *See—*
Fraden, Jacob, 4,538,074, Cl. 307-126.000.

Heath, Joseph R. System for aiding note transpositions for stringed instruments. 4,537,111, Cl. 84-473.000.

Heed, Bjorn. Welding method and equipment therefor. 4,538,048, Cl. 219-137.00R.

Heescher, Felix, to Rohm GmbH Chemische Fabrik. Reinforced construction panel. 4,536,997, Cl. 52-86.000.

Heffentrager, Joel L., to SMS Schloemann - Siemag, Inc. Rolling mill. 4,537,056, Cl. 72-238.000.

Heft, Josef: *See—*
Vertenten, Edward; and Heft, Josef, 4,537,455, Cl. 339-99.00R.

Hegedus, Bela: *See—*
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.

Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, to Bayer Aktiengesellschaft. 5-Nitro 1,4-dihydropyridines having a positive inotropic effect. 4,537,881, Cl. 514-25.000.

Heimerich, Henry R., to Boro Recycling Center, Inc. Apparatus for breaking glass bottles and crushing cans and like containers. 4,537,361, Cl. 241-81.000.

Heinemann, Frederick F.; and Gavin, Thomas O., to W. R. Grace & Co. Offset printing blanket. 4,537,129, Cl. 101-415.100.

Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, to Kali-Chemie Pharma GmbH. 1-Phenylindazol-3-one compounds. 4,537,975, Cl. 548-359.000.

Heinrich, Andrew L.; and Oljace, Richard L., to Caterpillar Tractor Co. Electrical switching apparatus. 4,538,036, Cl. 200-11.0EA.

Heinrich Greve GmbH: *See—*
Schmidt, Heinrich, 4,537,589, Cl. 493-373.000.

Heinsohn, George E.: *See—*
Rao, Velliyur N. M.; and Heinsohn, George E., 4,537,726, Cl. 260-453.00P.

Heiser, Richard: *See—*
Pollman, Frederic W.; Reynolds, David W.; and Heiser, Richard, 4,537,364, Cl. 242-86.510.

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Heitz, Walter: *See—*
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; Bottenbruch, Ludwig; and Heitz, Walter, 4,537,951, Cl. 528-388.000.

Held, Kurt. Metallic endless press band having an embossed surface for use in double band presses in the manufacture of laminates. 4,537,810, Cl. 428-156.000.

Hemmings, Kenneth L.: *See—*
Cox, William E.; and Hemmings, Kenneth L., 4,537,265, Cl. 175-19.000.

Henderson, Richard S.: *See—*
Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., 4,537,624, Cl. 75-0.50B.
Tenhover, Michael A.; Henderson, Richard S.; and Fox, Joseph R., 4,537,625, Cl. 75-0.50A.

Hendrickson, Larry L.: *See—*
Van Der Puy, Michael; Kolc, Jaroslav F.; Anello, Louis G.; Hendrickson, Larry L.; Rogic, Milorad M.; and Swerdloff, Michael D., 4,537,614, Cl. 71-28.000.

Hengstenberg, Eckart; and Disch, Heinrich, to Rich. Hengstenberg, Firma. Machine for filling jars with pieces of vegetables or fruits, in particular quartered pickles. 4,537,017, Cl. 53-515.000.

Henkel Kommanditgesellschaft auf Aktien: *See—*
Greb, Wolfgang; Christophliemk, Peter; and Schroder, Christine, 4,537,771, Cl. 424-154.000.

Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., to Magnetic Peripherals. Precision lapping system. 4,536,992, Cl. 51-109.00R.

Henning, Jerrold V., to Rockwell International Corporation. Microcomputer retriggerable interval counter. 4,538,235, Cl. 364-569.000.

Henriksson, Sven-Erik D.; Ahrel, Bo A.; Svensson, Claes G. S.; and Franzen, Torsten A. H., to MoDo-Chemetics AB. Process for producing and flash drying high yield mechanical cellulose pulp with steam and condensate recycle. 4,537,655, Cl. 162-23.000.

Henry, Charles H.; and Logan, Ralph A., to AT&T Bell Laboratories. Method of making a loss stabilized buried heterostructure laser. 4,536,940, Cl. 29-569.00L.

Hense, Thomas R.; and Rudolph, Ronald M., to Applied Power Inc. Datum point location apparatus. 4,536,962, Cl. 33-516.000.

Hercules Incorporated: *See—*
Keim, Gerald I., 4,537,657, Cl. 162-164.300.

Herd, Richard S.: *See—*
Horodysky, Andrew G.; and Herd, Richard S., 4,537,692, Cl. 252-49.600.

Hergenrother, William L., to Firestone Tire & Rubber Company, The. Composites and size coated glass fibers used therein. 4,537,917, Cl. 523-209.000.

Hermann C. Starck Berlin: *See—*
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,537,641, Cl. 148-11.50P.

Hermann, Hans D.; and Fabian, Klaus, to Hoechst Aktiengesellschaft. Thermoplastic molding compositions of polyvinylbutyral containing plasticizer. 4,537,830, Cl. 428-437.000.

Hermann Pfauter GmbH & Co.: *See—*
Becher, Friedrich; and Eggert, Walter, 4,537,537, Cl. 409-34.000.

Herold, Wolf-Dietrich; Grafwallner, Karl L.; and Keller, Michael, to ESPE Fabrik pharmazeutischer Praeparate GmbH. Apparatus for treating dental prosthetic parts with radiation. 4,538,070, Cl. 250-504.00R.

Herrington, Lawrence; and Avra, Raymond E., to MegaTape Corporation. High speed bidirectional magnetic tape transport with constant tension. 4,537,367, Cl. 242-198.000.

Herrmann, Anna: *See—*
Herrmann, Christian W., 4,537,559, Cl. 416-119.000.

Herrmann, Christian W., to Herrmann, Christian W.; and Herrmann, Anna. Venturi rotor apparatus for the generation of power. 4,537,559, Cl. 416-119.000.

Hershberger, Charles L.: *See—*
Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., 4,537,715, Cl. 260-112.50R.

Hess, Cecil, to Spectron Development Laboratories, Inc. Dual beam maximum intensity laser sizing system. 4,537,507, Cl. 356-336.000.

Hettinger, Peter: *See—*
Lange, Arno; Merger, Franz; Hettinger, Peter; and Adolphi, Heinrich, 4,537,901, Cl. 514-404.000.

Hewinson, Vincent K.: *See—*
Fleet, Charles R. W.; and Hewinson, Vincent K., 4,537,594, Cl. 8-94.10R.

HGM, Inc.: *See—*
Tanner, Howard M. C., 4,537,193, Cl. 128-303.100.

Hick & Co. GmbH: *See—*
Hick, Werner, 4,537,749, Cl. 422-304.000.

Hick, Werner, to Hick & Co. GmbH. Process and device for sterilizing tub-shaped containers. 4,537,749, Cl. 422-304.000.

Hickam, William M.: *See—*
Lee, Pang K.; and Hickam, William M., 4,537,661, Cl. 204-1.00T.

Hiestand, Karl, to SMW Schneider & Weisshaupt GmbH. Arrangement for supplying a chuck with pressure fluid. 4,537,410, Cl. 279-4.000.

Higgins, George D.: *See—*
McCain, William B.; and Higgins, George D., 4,537,342, Cl. 227-78.000.

Hihn, Gerhard: *See—*
Stoll, Kurt; and Hihn, Gerhard, 4,537,113, Cl. 92-24.000.

Hijiya, Hiromi: *See—*
Miyake, Toshio; and Hijiya, Hiromi, 4,537,763, Cl. 424-49.000.

Hill, Harold I.; Norem, Stanley D.; and Targowski, Roger, to Perkin-Elmer Corporation, The. Assembly for positioning a thermogravimetric furnace. 4,537,572, Cl. 432-55.000.

Hill, Walter F. Multi-season ski sled. 4,537,412, Cl. 280-7.120.

Hilton-Davis Chemical Co., The: *See—*
Rebhahn, Robert W. J.; Kassner, James E.; and Werner, Raymond E., 4,537,971, Cl. 546-320.000.

Hinke, Walter; and Kaiser, Harry, to Robert Bosch GmbH. High-output magnetic field transducer. 4,538,082, Cl. 310-152.000.

Hinrichs, Walter; Hammer, Friedrich; and Lange, Ludwig, to Degussa Aktiengesellschaft. Process for the continuous production of solid alkali metal strands. 4,536,938, Cl. 29-527.500.

Hirano, Makoto: *See—*
Honda, Shoichi; Nakano, Yoshikatsu; Hirano, Makoto; and Matsuura, Masaaki, 4,537,165, Cl. 123-90.160.

Hirasuna, Alan R.; and Veal, Gordon R., to L'Garde, Inc. Hostile environment joint seal and method for installation. 4,537,406, Cl. 277-1.000.

Hirata, Michitoshi: *See—*
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,537,645, Cl. 149-3.000.

Hirnbock, Rudolf; and Haudum, Adolf, to Kastle Gesellschaft m.b.H. Ski, particularly a cross country ski. 4,537,417, Cl. 280-602.000.

Hirokazu, Aoki: *See—*
Toyooka, Takashi; Hirokazu, Aoki; Sugie, Mamoru; and Sugita, Yutaka, 4,538,242, Cl. 365-8.000.

Hirose, Kikuji: *See—*
Kitayama, Minoru; Nakamura, Motoharu; Hirose, Kikuji; and Tanida, Masashi, 4,537,792, Cl. 427-13.000.

Hirose Manufacturing Co., Ltd.,: *See—*
Hirose, Tokuzo, 4,537,142, Cl. 112-231.000.

Hirose, Tokuzo, to Hirose Manufacturing Co., Ltd.,. Shuttle stopper for lock stitch sewing machine. 4,537,142, Cl. 112-231.000.

Hiseman, Robert Allen: *See—*
Ross, Mark A., 4,536,959, Cl. 30-161.000.

Hitachi, Ltd.: *See—*
Ashida, Akira, 4,538,119, Cl. 331-1.00A.
Gotoh, Yoshitomo; and Iwamoto, Kiyofumi, 4,538,039, Cl. 200-144.00B.
Hattori, Osamu; and Tamura, Shingo, 4,538,254, Cl. 369-43.000.
Kajiwara, Toshiyuki; and Kojima, Tatsuji, 4,537,057, Cl. 72-243.000.
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, 4,537,873, Cl. 502-242.000.
Kunimi, Nobuo; Shimizu, Koichi; and Suzuki, Toshiro, 4,538,114, Cl. 330-253.000.

Mitamura, Sachio; and Kuroume, Hirotsugu, 4,537,538, Cl. 409-217.000.
Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, 4,538,176, Cl. 358-86.000.
Nonogaki, Saburo; Hayashi, Nobuaki; and Tomita, Yoshifumi, 4,537,851, Cl. 430-144.000.
Shishikura, Toshikazu; Konuma, Hiroshi; Nakamura, Hidenori; and Kobayashi, Yukio, 4,537,843, Cl. 429-197.000.
Takahasi, Kenichiro, 4,537,510, Cl. 356-435.000.
Tsukui, Tsutomu; Shimizu, Toshio; Doi, Ryota; and Tsutsumi, Yasuyuki, 4,537,840, Cl. 429-33.000.

Hitachi Zosen Corporation: *See*—
Nakano, Teruo; Ohtani, Hideji; Miyawaki, Kunio; and Mogi, Shigeo, 4,538,047, Cl. 219-125.100.

Hiyama, Torao; and Nishizawa, Kazuo, to Alps Electric Co., Ltd. Impedance converting transformer formed of conductors extending through a magnetic housing. 4,538,132, Cl. 336-221.000.

Hoberg, Clarence P.: *See*—
Little, Michael J.; Brown, Roger H.; Efron, Uzi; and Hoberg, Clarence P., 4,537,827, Cl. 428-409.000.

Hochschild, James R., to Texas Instruments Incorporated. Integrated circuit PSK modem phase locked loop. 4,538,282, Cl. 375-9.000.

Hock, Allan G.: *See*—
Cooke, Theodore M.; Lin, Robert A.; Whitfield, Richard G.; and Hock, Allan G., 4,537,631, Cl. 106-22.000.

Hoechst Aktiengesellschaft: *See*—
Hermann, Hans D.; and Fabian, Klaus, 4,537,830, Cl. 428-437.000.
Rottgen, Karl; Stendel, Joachim; and Diskowski, Herbert, 4,537,756, Cl. 423-323.000.

Hoechst-Roussel Pharmaceuticals Inc.: *See*—
Ong, Helen H.; and Profitt, James A., 4,537,976, Cl. 549-54.000.

Hoff, Dieter; and Ramsch, Klaus-Dieter, to Bayer Aktiengesellschaft. Liquid formulations of dihydropyridines. 4,537,898, Cl. 514-356.000.

Hoffman, Kevin R.: *See*—
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,537,795, Cl. 427-39.000.

Hoffmann-La Roche Inc.: *See*—
Liu, Chao-Min; and Westley, John, 4,537,956, Cl. 536-1.100.
Wei, Chung-Chen; and Weigele, Manfred, 4,537,969, Cl. 546-210.000.

Hogen, Delman R., to Lemna Corporation, The. Aquatic biomass containment barrier and method of assembling same. 4,536,988, Cl. 47-1.500.

Hogge, Charles R., Jr., to Rockwell International Corporation. Adaptive equalizer suitable for use with fiber optics. 4,538,283, Cl. 375-14.000.

Hoglund, Nils O., Jr., to Hoglund Tri-Ordinate Corporation. Worktable with lateral and rotational movement. 4,536,991, Cl. 51-101.00R.

Hoglund Tri-Ordinate Corporation: *See*—
Hoglund, Nils O., Jr., 4,536,991, Cl. 51-101.00R.

Hok, Bertil: *See*—
Dubon, Chantal; Hok, Bertil; and Ovren, Christer, 4,537,467, Cl. 350-96.200.

Holcomb, David A., to F & H Holdings, Inc. Device for pressing garlic and the like. 4,537,123, Cl. 100-125.000.

Holden, Scott C., to Varian Associates, Inc. Method for optimum conductive heat transfer with a thin flexible workpiece. 4,537,244, Cl. 165-1.000.

Hollaar, Leendert J.; Zoetman, Herman; and Verbeek, Robert J. M., to U.S. Philips Corporation. High-stability clock signal regenerator with a stable fixed frequency backup clock generator. 4,538,110, Cl. 328-63.000.

Hollander, Edward F., Jr., to Glass, John P. Rupturable packages. 4,537,308, Cl. 206-484.000.

Hollingshead, William S.: *See*—
Colvin, Howard A.; Muse, Joel, Jr.; and Hollingshead, William S., 4,538,002, Cl. 568-650.000.

Hollingsworth, John D. Metallic card clothing and method and apparatus for making same. 4,537,096, Cl. 76-1.000.

Hollingsworth (U.K.) Limited: *See*—
Parker, Alan, 4,537,021, Cl. 57-401.000.

Holmes, John G.: *See*—
Resnick, Brian J.; Messina, Elena R.; Bhatia, Madhukar; and Holmes, John G., 4,538,233, Cl. 364-513.000.

Holmes, Paul A., to Imperial Chemical Industries PLC. Process for orienting partially crystallized 3-hydroxybutyrate polymers. 4,537,738, Cl. 264-210.500.

Holmstrand, Allan L.: *See*—
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,536,992, Cl. 51-109.00R.

Holopainen, Weikko R. Branch cutter mounted on front loader bucket. 4,536,976, Cl. 37-117.500.

Holsinger, Ronald F.: *See*—
Gluckstern, Robert L.; Holsinger, Ronald F.; and Lown, Robert R., 4,538,130, Cl. 335-306.000.

Holtschmidt, Ulrich: *See*—
Gruning, Burghard; Holtschmidt, Ulrich; and Koerner, Gotz, 4,537,595, Cl. 8-115.600.

Honda Giken Kogyo Kabushiki Kaisha: *See*—
Ajiki, Yoshio; and Matsuura, Masaaki, 4,537,164, Cl. 123-90.160.
Funabashi, Katsunori, 4,537,273, Cl. 180-229.000.
Honda, Shoichi; Nakano, Yoshikatsu; Hirano, Makoto; and Matsuura, Masaaki, 4,537,165, Cl. 123-90.160.
Kadowaki, Satoshi; and Ikeda, Yuzi, 4,538,044, Cl. 219-80.000.
Kimura, Kenji; and Nishikawa, Masayasu, 4,537,166, Cl. 123-90.360.

Honda, Masaaki; Itakura, Fumitada; and Kitawaki, Nobuhiko, to Nippon Telegraph & Telephone Public Corporation. Adaptive predictive processing system. 4,538,234, Cl. 364-513.500.

Honda, Mitsuo: *See*—
Tominaga, Jiro; Yada, Hiroshi; and Honda, Mitsuo, 4,537,644, Cl. 148-36.000.

Honda, Shoichi; Nakano, Yoshikatsu; Hirano, Makoto; and Matsuura, Masaaki, to Honda Giken Kogyo Kabushiki Kaisha. Valve actuating mechanism having stopping function for internal combustion engines. 4,537,165, Cl. 123-90.160.

Honeywell Inc.: *See*—
Lasser, George A., 4,538,273, Cl. 371-62.000.
Nicklas, Roger W.; Reynolds, John E.; and Schiestl, Randall L., 4,536,928, Cl. 29-1.200.

Honeywell Information Systems Inc.: *See*—
Circello, Joseph C., 4,538,237, Cl. 364-746.000.
Circello, Joseph C.; and Guenthner, Russell W., 4,538,238, Cl. 364-746.000.

Honeywell Ltd.: *See*—
Watson, Francis M., 4,538,218, Cl. 362-802.000.

Hong, Won P., to Suk, Suh Kyung. Portland cement, process for preparing same, and compositions containing same. 4,537,633, Cl. 106-96.000.

Hooper, Lindsay A., to Repco Ltd. Energy absorber for exercising machines. 4,537,396, Cl. 272-130.000.

Hooper, Robert L.: *See*—
Balbes, Michael S.; Day, Charles E.; Hooper, Robert L.; and Lin, Hank S., 4,538,175, Cl. 358-86.000.

Hoppe, Axel: *See*—
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,537,641, Cl. 148-11.50P.

Hoppe, Wolfgang: *See*—
Beckmann, Friedrich K.; Hoppe, Wolfgang; and Meyer, Wolfgang, 4,538,125, Cl. 333-248.000.

Hori, Kiyoshi, to NEC Corporation. Buffer control system. 4,538,226, Cl. 364-200.000.

Horikawa, Takeshi: *See*—
Kojima, Hidetaka; Horikawa, Takeshi; and Kagotani, Masahiro, 4,537,997, Cl. 568-454.000.

Horiuchi, Toshiaki: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.

Hormadaly, Jacob, to Du Pont de Nemours, E. I., and Company. Borosilicate glass compositions. 4,537,703, Cl. 252-518.000.

Horn, Uriah: *See*—
Francel, Josef; Horn, Uriah; and Stewart, Daniel R., 4,537,862, Cl. 501-14.000.

Horodniceanu, Florian; and Le Fur, Raphael, to Institut Pasteur. Process for growing cell cultures of diploid cells on cell supports. 4,537,790, Cl. 427-2.000.

Horodysky, Andrew G.; and Herd, Richard S., to Mobil Oil Corporation. Etherdiamine borates and lubricants containing same. 4,537,692, Cl. 252-49.600.

Horodysky, Andrew G., to Mobil Oil Corporation. Diamine carboxylates and lubricant compositions containing same. 4,537,694, Cl. 252-51.50A.

Horton, Derek; and Priebe, Waldemar, to Ohio State University. 4-Demethoxy-3'-desamino-2'-halo-anthracycline and pharmaceutical composition containing same. 4,537,882, Cl. 514-34.000.

Horton, Jerry L., to Small Waters, Inc. Propelled water craft. 4,537,144, Cl. 114-61.000.

Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, to BIOGAL Gyogyszergyar. Antiviral acylated 1,2,4-triazole derivatives. 4,537,899, Cl. 514-384.000.

Horvath nee Gaal, Maria: *See*—
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

House Food Industrial Company Ltd: *See*—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,537,789, Cl. 426-634.000.

Howatt, John R.: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., 4,537,067, Cl. 73-151.000.

Howe, Dennis G.: *See*—
Gupta, Mool C.; Wrobel, Joseph J.; and Howe, Dennis G., 4,538,159, Cl. 346-135.100.

Hoya Lens Corporation: *See*—
Akaba, Hayao; Yamada, Takeshi; and Jinbo, Masahiro, 4,537,480, Cl. 351-235.000.

Hoyland, Trevor B., to Thurne Engineering Co. Ltd. Bag tying machine. 4,537,005, Cl. 53-131.000.

Hoyle, James E. Lap desk. 4,537,646, Cl. 156-212.000.

Hruda, Robert M., to Westinghouse Electric Corp. Method of electrically shorting an electrolytic cell. 4,537,662, Cl. 204-1.00R.

Hu, Chenming: *See*—
Wang, Samuel T.; Hu, Chenming; and Shum, Ying, 4,538,246, Cl. 365-226.000.

Huber, Reinhold; and Koster, Waldemar, to Kober AG. Elastomeric sectional strip for expansion joints. 4,537,003, Cl. 52-573.000.

Huber, Werner: *See*—
Gsponer, Arnold; Huber, Werner; and Petrovic, Milan, 4,537,302, Cl. 198-626.000.
Hubert, Olivier: *See*—
Delle-Vedove, Daniel; Lallemand, Yves; and Hubert, Olivier, 4,537,201, Cl. 128-697.000.
Hughes Aircraft Company: *See*—
Grinberg, Jan; and Little, Michael J., 4,537,471, Cl. 350-333.000.
Lau, Kreisler S. Y., 4,537,974, Cl. 548-328.000.
Little, Michael J.; Brown, Roger H.; Efron, Uzi; and Hoberg, Clarence P., 4,537,827, Cl. 428-409.000.
Hughes, James S.: *See*—
Ewing, Robert L.; Hughes, James S.; and Bruggeman, Bruce, 4,538,217, Cl. 362-375.000.
Hulka, Jaroslav F. Disposable fetal oxygen monitor. 4,537,197, Cl. 128-633.000.
Humes, Arnold F. Ladder assembly. 4,537,283, Cl. 182-127.000.
Humke, Albert L., to Deere & Company. Exhaust port. 4,537,028, Cl. 60-272.000.
Humphry, Donald E.: *See*—
Carle, Glenn C.; Kojiro, Daniel R.; and Humphry, Donald E., 4,538,066, Cl. 250-374.000.
Hunt, Peter: *See*—
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, 4,537,578, Cl. 464-31.000.
Hunter Douglas Inc.: *See*—
Anderson, Richard N., 4,537,004, Cl. 52-788.000.
Hunter, George L. K.; Dennison, Daniel B.; and Stephens, Charles E., to Coca-Cola Company, The. Hydration drying process. 4,537,637, Cl. 127-60.000.
Hupfer, Leopold: *See*—
Goetz, Norbert; Laas, Harald; Tavs, Peter; Hupfer, Leopold; and Baer, Karl, 4,538,009, Cl. 568-799.000.
Huret, Noel; and Meunier, Jean, to Cegedur Societe de Transformation de l'Aluminium Pechiney. Inserts for pistons of diesel engines of aluminum-silicon alloys having an improved thermal resistance and machinability. 4,537,161, Cl. 123-41.710.
Huret, Noel: *See*—
Eudier, Michel; Huret, Noel; and Meunier, Jean, 4,537,167, Cl. 123-193.00C.
Huschelrath, Gerhard; and Lein, Wilfried, to NUKEM GmbH. Testing arrangement for ferromagnetic bodies including magnetic field detectors extending between two pairs of poles of magnetic field generators spaced longitudinally along the body. 4,538,108, Cl. 324-232.000.
Hutchins, Clinton E.: *See*—
Nguyen, Trung H.; and Hutchins, Clinton E., 4,537,665, Cl. 204-29.000.
Hwang, Kyu S.; and Koestler, Dennis J., to Duo-Matic/Olsen Inc. High efficiency furnace. 4,537,178, Cl. 126-110.00R.
Hycner, Stanley H.: *See*—
Fadner, Thomas A.; and Hycner, Stanley H., 4,537,127, Cl. 101-141.000.
Hydril Company: *See*—
Landriault, L. Steven, 4,537,428, Cl. 285-333.000.
Landriault, L. Steven, 4,537,429, Cl. 285-334.000.
Hydromagnetics, Inc.: *See*—
Shalhoob, William N.; and Kaspaul, Alfred F., 4,537,181, Cl. 128-1.300.
Hyodo, Motoi: *See*—
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.
Ibiden Kabushiki Kaisha: *See*—
Enomoto, Ryo; and Tsukada, Kiyotaka, 4,537,735, Cl. 264-63.000.
Ibrahim, Fayez F., to Tyler Refrigeration Corporation. Automated energy conserving cover for refrigerated cabinet access openings. 4,537,040, Cl. 62-186.000.
Ichikawa, Kozo: *See*—
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.
Ide, Hiroshi, to Mitsubishi Chemical Industries Limited. Photopolymerizable photosensitive composition. 4,537,855, Cl. 430-285.000.
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; Bottenbruch, Ludwig; and Heitz, Walter, to Bayer Aktiengesellschaft. Process for the production of optionally branched polyarylene sulfides. 4,537,951, Cl. 528-388.000.
Identix Incorporated: *See*—
Fowler, Randall C.; Ruby, Kenneth; and Sartor, Thomas F., Jr., 4,537,484, Cl. 354-62.000.
Iizuka, Yo: *See*—
Kawakami, Yukichika; Shiiki, Zenya; and Iizuka, Yo, 4,537,953, Cl. 528-388.000.
Ikeda, Yuzi: *See*—
Kadowaki, Satoshi; and Ikeda, Yuzi, 4,538,044, Cl. 219-80.000.
Ikuta, Hiroshi: *See*—
Suzuki, Akihiro; Souda, Keiichi; Kuno, Masao; and Ikuta, Hiroshi, 4,538,191, Cl. 360-88.000.
Illerhaus, Roland; and Jurgens, Rainer, to Christensen, Inc. Method and apparatus for manufacturing cutting elements particularly for deep drilling. 4,537,097, Cl. 76-108.00A.
Imai, Akio: *See*—
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.
Imai, Takafumi; and Kobayashi, Fumihiko, to Toshiba Silicone Co., Ltd. Room temperature curable polyorganosiloxane composition. 4,537,944, Cl. 528-18.000.
Imanishi, Kazuo; Hashimoto, Masaru; and Mori, Makoto, to Tokyo Shibaura Denki Kabushiki Kaisha. Protection circuit for an output transistor. 4,538,198, Cl. 361-86.000.
Imasco-CDC Research Foundation: *See*—
Saringer, John H., 4,537,083, Cl. 74-89.150.
Immler, Josef; and van der Sel, Cornelis, to Siemens Aktiengesellschaft. Optical wand for reading OCR characters and bar code marks. 4,538,072, Cl. 250-568.000.
Imperial Chemical Industries Limited: *See*—
Greenshields, James N., 4,537,980, Cl. 549-370.000.
Imperial Chemical Industries, PLC: *See*—
Brereton, Colin, 4,537,672, Cl. 204-253.000.
Casci, John L.; Lowe, Barrie M.; and Whittam, Thomas V., 4,537,754, Cl. 423-277.000.
Holmes, Paul A., 4,537,738, Cl. 264-210.500.
Saunders, Peter J., 4,537,131, Cl. 102-217.000.
In-Situ, Inc.: *See*—
Silver, Howard F.; and Miller, Ronald L., 4,537,675, Cl. 208-8.0LE.
Inagaki, Kouichi: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.
Inagaki, Satoru: *See*—
Asanuma, Tetsu; and Inagaki, Satoru, 4,538,052, Cl. 219-469.000.
INCO Limited: *See*—
Borbely, Gyula J.; Devuyst, Eric A.; Ettel, Victor A.; Mosoiu, Marcel A.; and Schitka, Konstantin J., 4,537,686, Cl. 210-713.000.
Infilco Degremont Inc.: *See*—
Piper, Louis H., 4,537,687, Cl. 210-793.000.
Ingenior Thor Furuholmen A/S: *See*—
Bjor, Hakon E., 4,537,263, Cl. 173-1.000.
Inglett & Company, Inc.: *See*—
Inglett, Wilfred L., Jr.; Ashley, Walter M., Jr.; and Manfredonia, Abe J., 4,537,015, Cl. 53-386.000.
Inglett, Wilfred L., Jr.; Ashley, Walter M., Jr.; and Manfredonia, Abe J., to Inglett & Company, Inc. Bag placer for a packaging machine. 4,537,015, Cl. 53-386.000.
Innovative Surgical Products, Inc.: *See*—
Talcott, Thomas D., 4,537,943, Cl. 528-15.000.
Inoi, Takeshi: *See*—
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.
Inomata, Koichiro; and Murata, Shinichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Temperature sensitive amorphous magnetic alloy. 4,537,517, Cl. 374-21.000.
Inoue, Michihiro: *See*—
Sadamatsu, Hideaki; Inoue, Michihiro; Kanda, Akihiro; and Matsuzawa, Akira, 4,536,950, Cl. 29-578.000.
Inoue, Yoichi: *See*—
Asari, Akira; Tsuzuki, Hidehiro; Inoue, Yoichi; and Tabuchi, Takahisa, 4,537,569, Cl. 425-405.00H.
Inoue, Yoshio: *See*—
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.
Institut Pasteur: *See*—
Horodniceanu, Florian; and Le Fur, Raphael, 4,537,790, Cl. 427-2.000.
Instituto Mexicano de Investigaciones Siderurgicas: *See*—
Lazcano-Navarro, Arturo; and Alcantara, Miguel A., 4,537,629, Cl. 75-130.00R.
Intel Corporation: *See*—
Bohr, Mark T.; Yu, Ken K.; Yau, Leo D.; and Garg, Shyam G., 4,536,947, Cl. 29-576.00C.
International Business Machines Corporation: *See*—
Aviram, Ari, 4,538,252, Cl. 369-13.000.
Ballatore, Daniel; Bonnet, Yves A.; Ferry, Michel F.; and Jacquart, Christian A., 4,538,032, Cl. 179-170.00D.
Bracco, Al M.; Edenfeld, Arthur R.; and Kotecha, Harish N., 4,536,944, Cl. 29-571.000.
Carter, John L.; Markowsky, George; and Wegman, Mark N., 4,538,240, Cl. 364-754.000.
Chang, Chin-An; Chang, Leroy L.; Esaki, Leo; and Mendez, Emilio E., 4,538,165, Cl. 357-22.000.
Cuomo, Jerome J.; Harper, James M. E.; and Waters, Gary A., 4,538,067, Cl. 250-396.00R.
Day, Michael N.; and Miller, Claude D., 4,538,265, Cl. 371-12.000.
Moore, Brian B., 4,538,259, Cl. 370-60.000.
International Computers Limited: *See*—
Gudgeon, Bryan, 4,536,955, Cl. 29-840.000.
International Flavors & Fragrances Inc.: *See*—
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,537,704, Cl. 252-522.00R.
International Paper Company: *See*—
Thomas, Gilles R., 4,537,344, Cl. 229-34.00R.
International Remote Imaging Systems, Inc.: *See*—
DeForest, Sherman E., 4,538,299, Cl. 382-21.000.
International Standard Electric Corporation: *See*—
Szabo, Laszlo; and Schunemann, Klaus, 4,538,122, Cl. 331-96.000.
Wuyts, Oscar; Ruelens, Remy F.; and Van Camp, Lucien J. M., 4,538,201, Cl. 361-124.000.
International Telephone and Telegraph Corporation: *See*—
Briscoe, Milton R., 4,538,269, Cl. 371-22.000.

Morris, David; and Schwarz, Albrecht, 4,538,219, Cl. 363-26.000.
VonGrunberg, Hubertus; Rowell, Jonathan M.; and Corey, Frederick C., 4,537,289, Cl. 188-97.400.

Intini, Thomas D. Child-resistant tamper-evident package. 4,537,312, Cl. 206-531.000.

Inui, Tetsuji: *See—*
Hatakeyama, Kenichi; and Inui, Tetsuji, 4,538,151, Cl. 343-18.00A.

Ioptex Inc.: *See—*
Bittner, Timothy, 4,536,895, Cl. 623-6.000.
Bittner, Timothy, 4,536,896, Cl. 623-6.000.

Iota Engineering Co.: *See—*
Perper, Lloyd J., 4,538,094, Cl. 315-221.000.

Irie, Namio: *See—*
Ito, Hideo; Kuroki, Junsuke; and Irie, Namio, 4,537,420, Cl. 280-661.000.

Irving, Edward, to Ciba-Geigy Corporation. Diaryliodosyl salts. 4,537,725, Cl. 556-138.000.

Isacoff, Eric G.; and Neely, James W., to Rohm and Haas Company. Trihalomethane precursor removal using ion exchange emulsions. 4,537,683, Cl. 210-667.000.

Ishibashi, Masaya; and Tada, Atuki, to Pioneer Electronic Corporation. Disc playing system with continuous playing function. 4,538,253, Cl. 369-34.000.

Ishida, Hideaki: *See—*
Sakurai, Keiichi; Ishida, Hideaki; and Hanzawa, Kohtaro, 4,537,110, Cl. 84-1.260.

Ishida, Hiroshi: *See—*
Chono, Masazumi; and Ishida, Hiroshi, 4,537,757, Cl. 423-328.000.

Ishihama, Masao: *See—*
Kimura, Akira; Ishihama, Masao; Abe, Toshiro; Shimada, Kiyoshi; and Matsui, Shinichi, 4,537,275, Cl. 180-300.000.

Ishihara, Hideo: *See—*
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.

Ishikawa, Norio: *See—*
Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, 4,537,487, Cl. 354-400.000.

Ishikawajima-Harima Jukogyo Kabushiki Kaisha: *See—*
Tsuchida, Yutaka; and Fukai, Toshiyuki, 4,537,240, Cl. 164-430.000.

Ishimura, Koichi: *See—*
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,537,051, Cl. 72-12.000.

Iskra, Michael J.: *See—*
Pieniak, Heinz A.; and Iskra, Michael J., 4,537,590, Cl. 604-379.000.

Itakura, Fumitada: *See—*
Honda, Masaaki; Itakura, Fumitada; and Kitawaki, Nobuhiko, 4,538,234, Cl. 364-513.500.

Itek Corporation: *See—*
Lein, Juergen G.; and Robbins, Daniel H., 4,537,492, Cl. 355-3.0FU.

Ito, Akihiko: *See—*
Takayama, Yoshihisa; Gotoh, Kunihiko; Ito, Akihiko; Yamamura, Takeshi; and Fujita, Kazuyoshi, 4,536,949, Cl. 29-578.000.

Ito, Hideo; Kuroki, Junsuke; and Irie, Namio, to Nissan Motor Company, Limited. Swing-arm-type suspension with a lateral rod for an automotive vehicle. 4,537,420, Cl. 280-661.000.

Ito, Katsumi; and Fuziwara, Osami, to Kubota, Ltd. Running vehicle. 4,537,271, Cl. 180-131.000.

Ito, Norifumi: *See—*
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.

Ito, Tsukasa, to Clarion Co., Ltd. Light-emitting diode displayer. 4,538,143, Cl. 340-719.000.

Itoh, Toshiyasu; and Mori, Takaaki, to Toyoda Gosei Co., Ltd. Resin article having a ceramics coating layer. 4,537,814, Cl. 428-217.000.

Itoh, Yoshimasa; and Asakawa, Shiroh, to Matsushita Electric Industrial Co., Ltd. Oxygen enriched gas supply arrangement for combustion. 4,537,606, Cl. 55-158.000.

ITR International Timelimited: *See—*
Rudland, Peter E., 4,538,059, Cl. 235-468.000.

ITT Industries, Inc.: *See—*
Stoka, Roberto, 4,537,288, Cl. 188-71.800.
Thiel, Rudolf; Weisbrod, Helmut; and Braehler, Hermann, 4,537,291, Cl. 188-73.380.

ITW Limited: *See—*
Meeks, Alan M. G., 4,537,432, Cl. 292-318.000.

Itzkovitch, Irwin J.: *See—*
Reed, Gordon A. D.; and Itzkovitch, Irwin J., 4,537,761, Cl. 423-644.000.

Iwagami, Hisao: *See—*
Kato, Toshihisa; Iwagami, Hisao; and Yasuda, Naohiko, 4,537,719, Cl. 260-239.00A.

Iwagami, Kenji; and Yamamoto, Hachizou, to Sharp Kabushiki Kaisha. Cash accounting system. 4,538,057, Cl. 235-379.000.

Iwamatsu, Noboru: *See—*
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,538,084, Cl. 310-217.000.

Iwamatsu, Seiichi, to Kabushiki Kaisha Suwa Seikosha. X-ray source. 4,538,291, Cl. 378-119.000.

Iwamoto, Junjiro: *See—*
Asawa, Tatsuro; Sajima, Yasuo; and Iwamoto, Junjiro, 4,537,673, Cl. 204-253.000.

Iwamoto, Kiyofumi: *See—*
Gotoh, Yoshitomo; and Iwamoto, Kiyofumi, 4,538,039, Cl. 200-144.00B.

Iwamoto, Yoshinao: *See—*
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.

Iwasaki, Masayoshi: *See—*
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.

Iwase, Seiichiro; and Komori, Shinichi, to Sony Corporation. Analog to digital converting system for composite video signal. 4,538,172, Cl. 358-13.000.

Izaki, Katsura, to Mitsubishi Denki Kabushiki Kaisha. Air conditioning apparatus for cars. 4,537,114, Cl. 98-2.060.

Izawa, Hisao: *See—*
Kakizaki, Yukio; Izawa, Hisao; and Hazama, Junji, 4,537,501, Cl. 355-76.000.

Izawa, Kouji: *See—*
Kanno, Masayuki; Tezuka, Hisao; Izawa, Kouji; and Kamiyama, Tadanobu, 4,538,183, Cl. 358-280.000.

Izawa, Toshio: *See—*
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.

Izumi, Akio: *See—*
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.

J. I. Case Company: *See—*
Moneta, Casimir, 4,537,089, Cl. 74-493.000.
Parquet, Donald J., 4,537,274, Cl. 180-270.000.

Jackson, Graham; and Surawy, Ryszard, to British Aerospace Public Limited Company. Position control. 4,537,075, Cl. 73-634.000.

Jackson, Melvin R.: *See—*
Siemers, Paul A.; Kopp, Robert W.; and Jackson, Melvin R., 4,537,742, Cl. 419-8.000.

Jacmorr Manufacturing Limited: *See—*
Baxter, Alan R., 4,537,450, Cl. 308-3.800.

Jacobs, Peter: *See—*
Reissenweber, Gernot; Kersten, Siegfried; Ditter, Walter; and Jacobs, Peter, 4,537,986, Cl. 560-132.000.

Jacobsson, Sten A. L.: *See—*
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., 4,537,767, Cl. 424-78.000.

Jacquart, Christian A.: *See—*
Ballatore, Daniel; Bonnet, Yves A.; Ferry, Michel F.; and Jacquart, Christian A., 4,538,032, Cl. 179-170.00D.

Jacquin, Yves: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,537,875, Cl. 502-314.000.

Jaeger, Erhard: *See—*
Achinger, Michael; Jaeger, Erhard; Lipp, Reinhold; and Streitenberger, Walter, 4,537,238, Cl. 164-169.000.

Jahn, Robert G.: *See—*
Bruschtein, Fabio B.; Jahn, Robert G.; and Wittbrodt, Edwin L., 4,537,916, Cl. 523-201.000.

James, Benjamin B.; and Peel, Edward, to Westcode, Inc. Door panel position sensor assembly. 4,538,038, Cl. 200-61.710.

James C. Barber and Associates, Inc.: *See—*
Barber, James C., 4,537,615, Cl. 71-36.000.

Jansen, Harley W.: *See—*
Zylstra, Henry J.; and Jansen, Harley W., 4,538,194, Cl. 361-42.000.

Jansen, Herbert; Schiffers, Hans-Gunter; and Gerretz, Richard, to Mannesmann Demag Wean. Apparatus for testing pipes by a pipe tester. 4,537,407, Cl. 277-2.000.

Janssens, Wilhelmus: *See—*
Van de Sande, Christian C.; Verhecken, Andre ; and Janssens, Wilhelmus, 4,537,853, Cl. 430-218.000.

Japan Bano'k Co., Ltd.: *See—*
Furutsu, Akira, 4,536,933, Cl. 29-235.000.

Jaquet, Andre , to SIG Societe Industrielle Suisse. Railway work machine. 4,538,061, Cl. 250-201.000.

Jardin, Hans, to Webasto-Werk W. Baier GmbH & Co. Sliding and tilting roof for motor vehicles. 4,537,442, Cl. 296-221.000.

Jarnot, Frank R., to Airlette Manufacturing Corporation, Inc. Weather protective cover ventilator. 4,537,119, Cl. 98-52.000.

Jas, Jean-Noel, to Rhone-Poulenc Specialites Chimiques "Les Miroirs". Process for improving the rheological properties of a suspension of precipitated silica. 4,537,699, Cl. 252-313.200.

Jasserand, Daniel: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,537,975, Cl. 548-359.000.

Jauch, Karl: *See—*
Baltes, Heinrich P.; Glass, Andrew S.; and Jauch, Karl, 4,537,504, Cl. 356-71.000.

Jemec, Raoul: *See—*
Zollinger, Max; and Jemec, Raoul, 4,537,671, Cl. 204-243.00R.

Jensen, Lyle B., to FMC Corporation. Heavy duty travel crane. 4,537,317, Cl. 212-189.000.

Jensen, Norman P.: *See—*
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; McDonald, John; and Zambias, Robert A., 4,537,903, Cl. 514-456.000.

JEOL Ltd.: *See—*
Takagi, Toshijiro; and Watanabe, Eiji, 4,537,477, Cl. 350-507.000.

Jet Research Center, Inc.: *See—*
Regalbuto, John A.; and Dines, Jack E., 4,537,255, Cl. 166-297.000.

Jet Spray Corp.: *See—*
Brown, Merle S.; and Arzberger, William A., 4,537,332, Cl. 222-190.000.

Jetter, Heinz: *See—*
Jetter, Rudolf; and Jetter, Heinz, 4,537,838, Cl. 429-9.000.

Jetter, Rudolf; and Jetter, Heinz, to Hartag AG. System with several panels containing photoelectric elements for the production of electric current. 4,537,838, Cl. 429-9.000.

Jinbo, Masahiro: *See—*
Akaba, Hayao; Yamada, Takeshi; and Jinbo, Masahiro, 4,537,480, Cl. 351-235.000.

Jochnick & Norrman Press AB: *See—*
Larsson, Gosta, 4,537,568, Cl. 418-202.000.

Joffre, Henri: *See—*
Bardoux, Raymond; and Joffre, Henri, 4,538,071, Cl. 250-505.100.

Johansson, Curt R. Tool for fastening an elongated object on a supporting surface. 4,537,343, Cl. 227-120.000.

Johansson, Soren; Andersson, Roger; and Jonsson, Lennart, to Stiga AB. Cone belt tightening device. 4,537,581, Cl. 474-123.000.

Johnson, Gary D.: *See—*
Stravitz, David M.; and Johnson, Gary D., 4,537,176, Cl. 124-62.000.

Johnson, Marvin M.; and McDaniel, Max P., to Phillips Petroleum Company. Rubber compositions containing aluminum phosphate. 4,537,928, Cl. 524-417.000.

Johnson Matthey Public Limited Company: *See—*
Cameron, Donald S., 4,537,839, Cl. 429-20.000.

Johnstone, James S.: *See—*
Lax, David R.; Page, Michael; and Johnstone, James S., 4,537,076, Cl. 73-662.000.

Jones, Charles E.: *See—*
Downey, Gale D.; and Jones, Charles E., 4,537,708, Cl. 252-554.000.

Jones, David E., to Mead Corporation, The. Fluid jet printer and method of operation. 4,538,157, Cl. 346-75.000.

Jones, Michael E., to Eaton Corporation. Vernier control device. 4,537,090, Cl. 74-502.000.

Jones, Robert A.; and Reichert, Jack R., to Kohler Co. Insulating liner for a water closet tank. 4,536,901, Cl. 4-416.000.

Jonsson, Lennart: *See—*
Johansson, Soren; Andersson, Roger; and Jonsson, Lennart, 4,537,581, Cl. 474-123.000.

Joost, Friedrich. Method of forming a folder for reports or statements of account and cover to effect the method. 4,537,544, Cl. 412-5.000.

Josefsson, Leif, to Flakt Aktiebolag. Surface treatment plant and a method of ventilating same. 4,537,120, Cl. 98-115.200.

Jost, John W.: *See—*
Gallup, Darrell L.; and Jost, John W., 4,537,684, Cl. 210-696.000.

Juhola, Mauno O.; and Numminen, Matti, to Pohjavahvistus Oy. Means for providing a vertical drain in soil. 4,537,527, Cl. 405-50.000.

Julius Blum Gesellschaft m.b.H.: *See—*
Rock, Erich; and Brustle, Klaus, 4,536,917, Cl. 16-288.000.

Jurgens, Rainer: *See—*
Illerhaus, Roland; and Jurgens, Rainer, 4,537,097, Cl. 76-108.00A.

KabiVitrum AB: *See—*
Claeson, Carl G.; and Gustavsson, Stig I., 4,537,896, Cl. 514-330.000.

Kabushiki Kaisha Daikin Seisakusho: *See—*
Fukatani, Yasunobu, 4,537,299, Cl. 192-107.00C.

Kabushiki Kaisha Hayashi Racing: *See—*
Hayashi, Masakazu, 4,537,449, Cl. 301-9.0CN.

Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo: *See—*
Miyake, Toshio; and Hijiya, Hiromi, 4,537,763, Cl. 424-49.000.
Sugimoto, Kaname, 4,537,852, Cl. 435-215.000.

Kabushiki Kaisha Ishida Koki Seisakusho: *See—*
Sashiki, Takashi; and Sakaeda, Keiko, 4,537,229, Cl. 141-83.000.

Kabushiki Kaisha Kobe Seiko Sho: *See—*
Asari, Akira; Tsuzuki, Hidehiro; Inoue, Yoichi; and Tabuchi, Takahisa, 4,537,569, Cl. 425-405.00H.
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.

Kabushiki Kaisha Komatsu Seisakusho: *See—*
Fukushima, Akira; and Sugimoto, Yutaka, 4,537,268, Cl. 180-9.100.
Funabashi, Tetsuji; and Kobayashi, Shingo, 4,537,259, Cl. 172-4.500.

Kabushiki Kaisha Sankyo Seiki Seisakusho: *See—*
Miyako, Haruyoshi; and Arima, Kiyoteru, 4,538,258, Cl. 369-271.000.

Kabushiki Kaisha Suwa Seikosha: *See—*
Iwamatsu, Seiichi, 4,538,291, Cl. 378-119.000.
Moriya, Tatsuo, 4,537,514, Cl. 368-107.000.
Shinohara, Toshihide; and Okazaki, Sakiho, 4,537,479, Cl. 351-169.000.
Teraishi, Katsuhiro, 4,537,653, Cl. 156-620.000.

Kabushiki Kaisha Toshiba: *See—*
Denpou, Kazuo; Eto, Kazumi; and Niida, Hideo, 4,537,041, Cl. 62-199.000.

Kabushiki Kaisha Toyoda Jidoshokki Seisakusho: *See—*
Tooka, Takuzo, 4,537,018, Cl. 57-90.000.

Kabushiki Kaisha Tsumurajuntendo: *See—*
Kooda, Akihide; Nishioka, Itsuo; Nishiyori, Takeshi; and Yahara, Shoji, 4,537,996, Cl. 568-442.000.

Kadowaki, Satoshi; and Ikeda, Yuzi, to Honda Giken Kogyo Kabushiki Kaisha. Apparatus for assembling motorcar body. 4,538,044, Cl. 219-80.000.

Kadowaki, Takashi: *See—*
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, 4,537,857, Cl. 430-549.000.

Kagotani, Masahiro: *See—*
Kojima, Hidetaka; Horikawa, Takeshi; and Kagotani, Masahiro, 4,537,997, Cl. 568-454.000.

Kaim, John W.; Berg, Norman A.; and Altherr, Russell G., to AMSTED Industries Incorporated. Railway, coupler yoke, draft gear and follower assembly. 4,537,304, Cl. 206-335.000.

Kaiser, Harry: *See—*
Hinke, Walter; and Kaiser, Harry, 4,538,082, Cl. 310-152.000.

Kajita, Hideo: *See—*
Ueda, Hiroshi; Saito, Mitsuru; and Kajita, Hideo, 4,537,732, Cl. 264-1.100.

Kajiwara, Toshiyuki; and Kojima, Tatsuji, to Hitachi, Ltd. Method for RD rolling sheet metal. 4,537,057, Cl. 72-243.000.

Kaken Pharmaceutical Co., Ltd.: *See—*
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.

Kakizaki, Yukio; Izawa, Hisao; and Hazama, Junji, to Nippon Kogaku K.K. Apparatus for the attitude control of plate-form body. 4,537,501, Cl. 355-76.000.

Kakumu, Masakazu, to Tokyo Shibaura Denki Kabushiki Kaisha. Method of manufacturing a FET. 4,536,943, Cl. 29-571.000.

Kali-Chemie Pharma GmbH: *See—*
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,537,975, Cl. 548-359.000.

Kalz, Dietmar: *See—*
Ellis Margaret D.; Ferencz, Richard L.; and Kalz, Dietmar, 4,537,991, Cl. 564-133.000.

Kambanis, Stamatis M.; Berchem, Antoine; Gregoire, Dennis; and Rybicky, Jaroslav, to Reichhold Limited. Lignin-modified phenolic adhesives for pressed wood products. 4,537,941, Cl. 527-403.000.

Kambara, Shu; Arakawa, Tatsumi; and Takahashi, Akio, to Director-General of Agency of Industrial Science and Technology. Polyvinylene sulfide and polyvinylene selenide. 4,537,950, Cl. 528-380.000.

Kamiishi, Hirofumi: *See—*
Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,537,938, Cl. 526-97.000.

Kamil, Zvi, to Elscint Ltd. Cryogenic magnet systems. 4,537,033, Cl. 62-3.000.

Kamiya, Masashi; Sumiya, Mitsuo; and Yamaguchi, Ryoji, to Tokyo Shibaura Denki Kabushiki Kaisha. Electric motor with hydrodynamic pressure and magnetic thrust bearings. 4,538,081, Cl. 310-90.000.

Kamiyama, Tadanobu: *See—*
Kanno, Masayuki; Tezuka, Hisao; Izawa, Kouji; and Kamiyama, Tadanobu, 4,538,183, Cl. 358-280.000.

Kamo, Tomoichi: *See—*
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, 4,537,873, Cl. 502-242.000.

Kamyr, Inc.: *See—*
Sherman, Michael I., 4,536,969, Cl. 34-9.000.

Kanamori, Toshio, to Sumitomo Heavy Industries, Ltd. Metal supporting structure for continuous casting machines. 4,537,241, Cl. 164-442.000.

Kancnik, Adolph V.; and Klancnik, Kenneth A., to Universal Automatic Corporation. Machine tool fixture. 4,537,389, Cl. 269-34.000.

Kanda, Akihiro: *See—*
Sadamatsu, Hideaki; Inoue, Michihiro; Kanda, Akihiro; and Matsuzawa, Akira, 4,536,950, Cl. 29-578.000.

Kanehara, Kenji; Kohama, Tokio; Kawai, Hisasi; and Tokura, Norihito, to Nippon Soken, Inc. Fuel supply control apparatus for an internal-combustion engine. 4,537,172, Cl. 123-527.000.

Kaneko, Takashi: *See—*
Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, 4,537,935, Cl. 525-222.000.

Kanno, Masayuki; Tezuka, Hisao; Izawa, Kouji; and Kamiyama, Tadanobu, to Tokyo Shibaura Denki Kabushiki Kaisha. Image editing apparatus. 4,538,183, Cl. 358-280.000.

Kansas State University Research Foundation: *See—*
Proctor, Valerie A.; and Cunningham, Franklin E., 4,537,788, Cl. 426-614.000.

Kanyicska, Bela: *See—*
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

Kaplan, Uri, to Ormat Turbines (1965) Ltd. Parallel-stage modular Rankine cycle turbine with improved control. 4,537,032, Cl. 60-662.000.

Kapoor, Anoop: *See—*
Wilhelm, John J.; Kapoor, Anoop; Kobuck, Richard M.; Antol, Ronald F.; and Norris, George W., 4,537,711, Cl. 252-633.000.

Karrer, Friedrich: *See*—
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Kaspaul, Alfred F.: *See*—
Shalhoob, William N.; and Kaspaul, Alfred F., 4,537,181, Cl. 128-1.300.
Kassner, James E.: *See*—
Rebhahn, Robert W. J.; Kassner, James E.; and Werner, Raymond E., 4,537,971, Cl. 546-320.000.
Kastle Gesellschaft m.b.H.: *See*—
Hirnbock, Rudolf; and Haudum, Adolf, 4,537,417, Cl. 280-602.000.
Kastner, Ralph E.: *See*—
Hamill, Robert L.; and Kastner, Ralph E., 4,537,879, Cl. 514-9.000.
Michel, Karl H.; and Kastner, Ralph E., 4,537,770, Cl. 424-118.000.
Kasuga, Akira; Yamamoto, Nobuyuki; and Miyatsuka, Hajime, to Fuji Photo Film Co., Ltd. Magnetic recording medium. 4,537,833, Cl. 428-328.000.
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, to Hitachi, Ltd. Catalyst for catalytic combustion. 4,537,873, Cl. 502-242.000.
Kato, Masaaki; and Akashi, Tetsuji, to Nippondenso Co., Ltd. Fuel injection apparatus. 4,537,352, Cl. 239-90.000.
Kato, Masaji: *See*—
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.
Kato, Masanori: *See*—
Tsuge, Noboru; Taguchi, Masahiro; Kato, Masanori; and Kuwakado, Satosi, 4,537,169, Cl. 123-325.000.
Kato, Toshihisa; Iwagami, Hisao; and Yasuda, Naohiko, to Ajinomoto Company Incorporated. 4-Methylsulfonyl-azetidinone derivatives. 4,537,719, Cl. 260-239.00A.
Kato, Yoshiharu: *See*—
Okabe, Shinsei; Komatsu, Hiroshi; Hamaji, Yukio; Kojima, Shozo; and Kato, Yoshiharu, 4,537,865, Cl. 501-135.000.
Katsuhiko Ohki: *See*—
Ogawa, Tetsuo, 4,537,563, Cl. 417-226.000.
Kavouras, Inc.: *See*—
Baltzer, Karen L.; and Peterson, Jan B., 4,538,229, Cl. 364-428.000.
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, to Fanuc Ltd. Stator of motor. 4,538,084, Cl. 310-217.000.
Kawada, Yasuyuki: *See*—
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,537,253, Cl. 166-274.000.
Kawagoshi, Hiroshi: *See*—
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, 4,537,873, Cl. 502-242.000.
Kawaguchi, Susumu; and Morinushi, Ken, to Mitsubishi Denki Kabushiki Kaisha. Rolling piston type compressor. 4,537,567, Cl. 418-63.000.
Kawai, Hisasi: *See*—
Kanehara, Kenji; Kohama, Tokio; Kawai, Hisasi; and Tokura, Norihito, 4,537,172, Cl. 123-527.000.
Kawai, Tohru: *See*—
Tsubonuma, Yoshio; and Kawai, Tohru, 4,537,536, Cl. 405-267.000.
Kawakami, Hidehiko: *See*—
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.
Kawakami, Hironori: *See*—
Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.
Kawakami, Yukichika; Shiiki, Zenya; and Iizuka, Yo, to Kureha Kagaku Kogyo Kabushiki Kaisha. Process for producing aromatic sulfide polymer with alkaline earth metal oxide dehydrating agent. 4,537,953, Cl. 528-388.000.
Kawamura, Eiichi: *See*—
Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, 4,538,164, Cl. 346-209.000.
Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, to Sumitomo Electric Industries, Ltd.; and Nippon Telegraph & Telephone Public Corp. Process for preparing single crystal. 4,537,652, Cl. 156-617.0SP.
Kawasaki Jukogyo Kabushiki Kaisha: *See*—
Shirai, Tetsuaki, 4,537,160, Cl. 123-41.580.
Kawasaki, Kanzirou: *See*—
Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, 4,538,164, Cl. 346-209.000.
Kay, Fern. Safety vest or harness for pets or small children. 4,537,154, Cl. 119-96.000.
Kaye, Stanley B.: *See*—
Stevens, Keith D.; Harrison, John; and Kaye, Stanley B., 4,538,171, Cl. 357-81.000.
Kazlauskas, Gasparas. Precise positioning for a welding electrode which follows a three dimensional weld path. 4,538,046, Cl. 219-125.100.
Keane, John J.; and Pauze, Denis R., to General Electric Company. Corona-resistant wire enamel compositions and conductors insulated therewith. 4,537,804, Cl. 427-118.000.
Keats, Dennis R.: *See*—
Vahlstrom, Richard; and Keats, Dennis R., 4,538,223, Cl. 364-200.000.
Keck, John F. Tool for straightening jewelry chain. 4,537,098, Cl. 81-488.000.
Keely, Leroy B.: *See*—
Freige, Diab E.; Lockwood, John J.; Ramsay, Michael; and Keely, Leroy B., 4,538,073, Cl. 307-33.000.
Keesee, Kenneth M.; and Guyer, John R., to Keesee Tank and Pump Co., Inc. Storage tank. 4,537,328, Cl. 220-445.000.
Keesee Tank and Pump Co., Inc.: *See*—
Keesee, Kenneth M.; and Guyer, John R., 4,537,328, Cl. 220-445.000.
Kehrer, Hans-Peter; Villain, Juergen; and Reiff, Werner, to Siemens Aktiengesellschaft. Method for generating hard, wear-proof surface layers on a metallic material. 4,537,793, Cl. 427-35.000.
Keil, Joseph W., to Dow Corning Corporation. Oil emulsions of fluorosilicone fluids. 4,537,677, Cl. 208-370.000.
Keim, Gerald I., to Hercules Incorporated. Wet strength resins. 4,537,657, Cl. 162-164.300.
Keledjian, Gaston: *See*—
Passemard, Jean R.; and Keledjian, Gaston, 4,537,084, Cl. 74-89.220.
Keller, Frank: *See*—
Gazzoli, Italo; and Keller, Frank, 4,538,028, Cl. 179-2.0EA.
Gazzoli, Italo; and Keller, Frank, 4,538,029, Cl. 179-2.0EA.
Keller, Michael: *See*—
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Keller, Paul D.: *See*—
Lubinsky, Anthony R.; Denton, Gary A.; Keller, Paul D.; and Williams, James E., 4,537,494, Cl. 355-3.0DD.
Keller, Wolfgang, to Siemens Aktiengesellschaft. Induction coil in the form of a pancake coil for crucible-free zone melting. 4,538,279, Cl. 373-139.000.
Kelly, Gary W.: *See*—
Delahoussaye, Ronald D.; and Kelly, Gary W., 4,537,415, Cl. 280-242.0WC.
Kelly, Oscar. Nursing bottle holder. 4,537,341, Cl. 224-202.000.
Kelsey-Hayes Company: *See*—
Evans, Anthony C., 4,537,290, Cl. 188-73.310.
Kendall Company, The: *See*—
Schortmann, Walter E.; and Metrick, Dennis, 4,537,819, Cl. 428-284.000.
Kennard, Alfred J.: *See*—
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Kennedy, Alexander W.: *See*—
Gunn, Walter H.; and Kennedy, Alexander W., 4,537,837, Cl. 428-621.000.
Kennedy, Alvin B., III; Fontaine, Joseph S.; Kennard, Alfred J.; and Morrison, J. Bruce, to Methods Engineering, Inc. Method for separating intermixed solids and liquids. 4,537,685, Cl. 210-709.000.
Kensler, Terry T.: *See*—
Alexander, Robert L.; Bequette, Robert J.; Kensler, Terry T.; and Scott, Joseph A., 4,537,883, Cl. 514-110.000.
Kern & Co. Ltd.: *See*—
Boutellier, Roman, 4,537,464, Cl. 350-1.400.
Kern, Hans, to Siemens Aktiengesellschaft. Speed control circuit for a DC motor. 4,538,096, Cl. 318-314.000.
Kern, Otmar, to Georg Neumann GmbH. Method of and system for cutting a phonograph record with two-channel modulation. 4,538,255, Cl. 369-51.000.
Kersten, Siegfried: *See*—
Reissenweber, Gernot; Kersten, Siegfried; Ditter, Walter; and Jacobs, Peter, 4,537,986, Cl. 560-132.000.
Ketterer, Klaus, to Voest Alpine AG. Excavating head with pick-controlled water supply. 4,537,448, Cl. 299-81.000.
Ketterson, John B.: *See*—
Abraham, Bernard M.; Miyano, Kenjiro; and Ketterson, John B., 4,537,064, Cl. 73-54.000.
Khandwala, Bhupendra J.: *See*—
Young, Jorge A.; and Khandwala, Bhupendra J., 4,538,056, Cl. 235-377.000.
Kiamco, Roberto C.; and Skipor, Eugene, Jr., to Rockwell International Corporation. High speed folder fly. 4,537,390, Cl. 270-53.000.
Kienle, Gerhard K. Internal combustion engine having a rotating piston assembly. 4,537,162, Cl. 123-43.00R.
Kiernan, James T. Skiing accessory. 4,537,419, Cl. 280-607.000.
Kilner, Peter H.; Egan, Joseph P., Jr.; Ceisel, Stephen G.; and Schammel, Wayne P., to Standard Oil Company (Indiana). Process for the production of trimellitic anhydride. 4,537,978, Cl. 549-245.000.
Kimura, Akira; Ishihama, Masao; Abe, Toshiro; Shimada, Kiyoshi; and Matsui, Shinichi, to Nissan Motor Co., Ltd. Vibration responsive mounting arrangement for automotive engine. 4,537,275, Cl. 180-300.000.
Kimura, Hideyuki: *See*—
Yamada, Keiichi; and Kimura, Hideyuki, 4,537,170, Cl. 123-449.000.
Kimura, Kenji; and Nishikawa, Masayasu, to Honda Giken Kogyo Kabushiki Kaisha. Lubricating arrangement in valve mechanism of an overhead camshaft engine. 4,537,166, Cl. 123-90.360.
Kimura, Sosaku: *See*—
Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, 4,536,993, Cl. 51-165.800.
Kimura, Tetsuo, to Nittan Company, Limited. Fire detector. 4,538,137, Cl. 340-512.000.
King, Francis X.: *See*—
Shanklin, Frank G.; and King, Francis X., 4,537,016, Cl. 53-493.000.

Kinney, Richard G.: *See—*
McGill, Leland S., 4,536,902, Cl. 4-476.000.

Kinoshita, Akira: *See—*
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Kinsolving, Clyde R.: *See—*
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Kippenberg, Horst: *See—*
Hassler, Heinrich; Muller, Reiner; Kippenberg, Horst; and Prolss, Norbert, 4,537,745, Cl. 420-590.000.

Kircher, Hartmann J., to Grumman Aerospace Corporation. Multifunction composite material utilizing embedded optical fibers. 4,537,469, Cl. 350-96.240.

Kirjavainen, Kari; and Riekkinen, Asko S. Imprint control system with feedback feature. 4,538,173, Cl. 358-75.000.

Kishi, Norimasa: *See—*
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Kita, Nobuyuki: *See—*
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Kitawaki, Nobuhiko: *See—*
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Kitayama, Minoru; Nakamura, Motoharu; Hirose, Kikuji; and Tanida, Masashi, to Nippon Steel Corporation. Method of applying an annealing separator to grain oriented magnetic steel sheets. 4,537,792, Cl. 427-13.000.

Kittel, Friedrich: *See—*
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Kiuchi, Kazuhide: *See—*
Yoshino, Hideo; Arai, Eisuke; and Kiuchi, Kazuhide, 4,538,167, Cl. 357-59.000.

Kivel, Daniel M.; and Weber, Gerhard M., to Grow Group, Inc. Aqueous chip resistant coating composition. 4,537,926, Cl. 524-388.000.

Klancnik, Kenneth A.: *See—*
Kancnik, Adolph V.; and Klancnik, Kenneth A., 4,537,389, Cl. 269-34.000.

Klinger, Lance T., to Xerox Corporation. Adaptively stabilized recording for direct read after write optical memories. 4,538,257, Cl. 369-106.000.

Klockner-Humboldt-Deutz AG: *See—*
Pfeiffer, Roland; and Waldhecker, Heinz-Dieter, 4,537,626, Cl. 75-35.000.

Klockner-Humboldt-Deutz Aktiengesellschaft: *See—*
Knepper, Herbert, 4,537,260, Cl. 172-9.000.
Nau, Walter; and Carstensen, Jes, 4,537,423, Cl. 280-759.000.

Klufas, Oleg: *See—*
Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,537,560, Cl. 416-198.00A.

Knabel, Walter R.; and Sedlmair, Gerhard J., to Marker International. Ski brake. 4,537,418, Cl. 280-605.000.

Knels, Kenneth J. Bale carrier. 4,537,549, Cl. 414-24.500.

Knepper, Herbert, to Klockner-Humboldt-Deutz Aktiengesellschaft. Apparatus with rear and front power lift, common regulating and control elements, and changeover valve. 4,537,260, Cl. 172-9.000.

Knorr-Bremse GmbH: *See—*
Brearey, Nicholas J.; and Baumgarth, Rolf, 4,538,228, Cl. 364-426.000.

Kobayashi, Atsushi: *See—*
Mitani, Ryo; Moriya, Yoshiaki; and Kobayashi, Atsushi, 4,538,145, Cl. 340-805.000.

Kobayashi, Fumihiko: *See—*
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Kobayashi, Kunihilo: *See—*
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Kobayashi, Shingo: *See—*
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Kobayashi, Yukio: *See—*
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Kober AG: *See—*
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Kober, Rainer: *See—*
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,537,731, Cl. 261-94.000.

Koboshi, Shigeharu: *See—*
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Kobuck, Richard M.: *See—*
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Koch, Wolfgang: *See—*
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Koermer, Gerald S.: *See—*
Linstid, H. Clay, III; and Koermer, Gerald S., 4,537,995, Cl. 568-384.000.

Koerner, Gotz: *See—*
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Koestler, Dennis J.: *See—*
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Kohama, Tokio: *See—*
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Kohlensaure-Werke Rudolf Buse Sohn GmbH & Co.: *See—*
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Kohler Co.: *See—*
Jones, Robert A.; and Reichert, Jack R., 4,536,901, Cl. 4-416.000.

Kohler, Egon: *See—*
Feyen, Peter; Seifert, Hermann; and Kohler, Egon, 4,537,730, Cl. 260-989.000.

Kohmoto, Osamu; Takasugi, Yasufumi; Sugihara, Hiroshi; and Nishimatsu, Masaharu, to TDK Corporation. Magnetic recording medium. 4,537,832, Cl. 428-216.000.

Kohs, Dwight W., to AT&T Information Systems Inc. Single parity bit generation circuit. 4,538,271, Cl. 371-49.000.

Kojima, Hidetaka; Horikawa, Takeshi; and Kagotani, Masahiro, to Daicel Chemical Industries, Ltd.; and Kuraray Co., Ltd. Process for treating hydroformylation catalyst. 4,537,997, Cl. 568-454.000.

Kojima, Shozo: *See—*
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Kojiro, Daniel R.: *See—*
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Kok, Johannes A. G.: *See—*
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Kokusai Denshin Denwa Co., Ltd.: *See—*
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.

Kolc, Jaroslav F.: *See—*
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Kollmorgen Technologies: *See—*
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Kollmorgen Technologies, Corporation: *See—*
England, Thomas R., 4,538,080, Cl. 310-154.000.

Komada, Kenya; Yuasa, Kazuhiro; and Kondoh, Shiroh, to Ricoh Company, Ltd. Development apparatus for developing latent electrostatic images. 4,537,491, Cl. 355-3.0DD.

Komaju, Shigeru: *See—*
Takagi, Masayuki; Mugiya, Hiroshi; and Komaju, Shigeru, 4,538,102, Cl. 323-349.000.

Komakine, Shigeo: *See—*
Ochiai, Kuniaki; and Komakine, Shigeo, 4,537,520, Cl. 400-124.000.

Komamura, Tawara: *See—*
Takahashi, Jiro; Sawada, Kiyoshi; Kinoshita, Akira; Komamura, Tawara; Goto, Satoshi; and Sasaki, Osamu, 4,537,847, Cl. 430-58.000.

Komarneni, Sridhar; and Roy, Della M., to United States of America, Energy. Method of storing radioactive wastes using modified tobermorite. 4,537,710, Cl. 252-628.000.

Komatsu, Hiroshi: *See—*
Okabe, Shinsei; Komatsu, Hiroshi; Hamaji, Yukio; Kojima, Shozo; and Kato, Yoshiharu, 4,537,865, Cl. 501-135.000.

Komori, Shinichi: *See—*
Iwase, Seiichiro; and Komori, Shinichi, 4,538,172, Cl. 358-13.000.

Kondoh, Shiroh: *See—*
Komada, Kenya; Yuasa, Kazuhiro; and Kondoh, Shiroh, 4,537,491, Cl. 355-3.0DD.

Konishi, Tadashi: *See—*
Nakayama, Taesuke; and Konishi, Tadashi, 4,538,079, Cl. 310-74.000.

Konishiroku Photo Industry Co., Ltd.: *See—*
Abe, Shunichi; Akiyama, Mitsuo; and Kudo, Yoshihiko, 4,538,231, Cl. 364-483.000.
Asano, Masao; Fujimatsu, Wataru; Matsumoto, Kazumasa; Murata, Hideki; Sato, Toshihiko; and Watanabe, Kenji, 4,537,824, Cl. 428-323.000.
Kurematsu, Masayuki; and Koboshi, Shigeharu, 4,537,856, Cl. 430-372.000.
Saito, Kaneo, 4,537,485, Cl. 354-304.000.
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, 4,537,857, Cl. 430-549.000.
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Konuma, Hiroshi: *See—*
Shishikura, Toshikazu; Konuma, Hiroshi; Nakamura, Hidenori; and Kobayashi, Yukio, 4,537,843, Cl. 429-197.000.

Kooda, Akihide; Nishioka, Itsuo; Nishiyori, Takeshi; and Yahara, Shoji, to Kabushiki Kaisha Tsumurajuntendo. Hydroxybiphenyl compounds. 4,537,996, Cl. 568-442.000.

Kopko, John J., to Zerox Corporation. Multispeed development system. 4,537,495, Cl. 355-3.0DD.

Kopp, Harold W. Football kicking tee. 4,537,397, Cl. 273-55.00B.

Kopp, Robert W.: *See—*
Siemers, Paul A.; Kopp, Robert W.; and Jackson, Melvin R., 4,537,742, Cl. 419-8.000.

Koppel, Gary A.: *See—*
Barton, Russell L.; Briggs, Stephen L.; and Koppel, Gary A., 4,537,727, Cl. 260-455.00R.

Kornfeld, Edmund C.: *See—*
Titus, Robert D.; and Kornfeld, Edmund C., 4,537,893, Cl. 514-293.000.

Koroncai, Adam; Nowak, Alfred; and Piber, Herbert, to U.S. Philips Corporation. Reciprocatingly drivable cutter for a dry-shaving apparatus. 4,536,956, Cl. 30-43.920.

Koski, Erkki, to Valmet Oy. Supporting beam for a foil in a paper machine. 4,537,659, Cl. 162-352.000.

Koslow, Evan E., to Pall Corporation. System for removing contaminant particles from a gas. 4,537,608, Cl. 55-337.000.

Koster, Waldemar: *See—*
Huber, Reinhold; and Koster, Waldemar, 4,537,003, Cl. 52-573.000.

Kosuge, Wataru: *See—*
Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, 4,538,176, Cl. 358-86.000.

Kotani, Toshihiro: *See—*
Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, 4,537,652, Cl. 156-617.0SP.

Kotecha, Harish N.: *See—*
Bracco, Al M.; Edenfeld, Arthur R.; and Kotecha, Harish N., 4,536,944, Cl. 29-571.000.

Kotter, Wolfgang, to Robert Bosch GmbH. Hydraulic directional valve for controlling double-acting motor. 4,537,218, Cl. 137-596.130.

Koumura, Noboru: *See—*
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, 4,538,182, Cl. 358-280.000.

Kovacic, Guido: *See—*
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,537,486, Cl. 354-317.000.

Kovacs, Paul. Device for the monitoring of ice formation. 4,538,064, Cl. 250-231.00R.

Kowal, Leon. Retrieval device for fishing tackle. 4,536,984, Cl. 43-17.200.

Koyama, Kiyomi, to Tokyo Shibaura Denki Kabushiki Kaisha. Electron-beam lithographic apparatus. 4,538,232, Cl. 364-491.000.

Kozel, Charles A.: *See—*
Brown, Vincent B.; Kozel, Charles A.; Scheitz, John T.; and Armando, John E., 4,537,456, Cl. 339-99.00R.

Kozi, Martin F.: *See—*
DeMeyer, Roy W.; and Kozi, Martin F., 4,537,061, Cl. 73-290.00R.

Kracke, Alan G.: *See—*
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,536,992, Cl. 51-109.00R.

Krallmann, Reinhold: *See—*
Bergmann, Udo; Degen, Helmut; Hansen, Guenter; Krallmann, Reinhold; and Weber, Hans, 4,537,597, Cl. 8-639.000.

Kramer, Dennis M.: *See—*
Bielinski, Ralph F.; Chacon, M. Frank; Kramer, Dennis M.; Mathias, William R.; and Schneider, Stanley, 4,538,199, Cl. 361-93.000.

Kraus, Charles E., to Excelermatic Inc. Fixed ratio traction roller transmission. 4,537,093, Cl. 74-798.000.

Kravas, Helen A.: *See—*
Gillberg-La Force, Gunilla E.; and Kravas, Helen A., 4,537,931, Cl. 524-510.000.

Kreamer, William C., to FMC Corporation. Method and apparatus for packaging articles such as fruit. 4,537,009, Cl. 53-441.000.

Krebs, William T. Curved surface sanding device. 4,536,994, Cl. 51-328.000.

Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, to Richter Gedeon Vegyeszeti Gyar R.T. Cimetidine Z, a new crystal modification of cimetidine. 4,537,900, Cl. 514-400.000.

Kreisel, Rudolf; and Meyer, Walter, to Schering Aktiengesellschaft. Rinsing of articles to remove an adhering substance. 4,537,640, Cl. 134-18.000.

Krepela, Josef; and Friedrich, Jaromir, to Bralorne Resources Limited. Engine shutdown valve. 4,537,386, Cl. 251-302.000.

Kristensson, Sten K.: *See—*
Stamvik, Anders R.; Kristensson, Sten K.; and Lundvall, Karl-Erik, 4,537,722, Cl. 260-397.400.

Krogsrud, Harald, to Elkem a/s. Method and means of charging electrothermic smelting furnaces. 4,537,551, Cl. 414-199.000.

Kronfeld, Leonard E., to Nortronics Company, Inc. Optical inspection and alignment verification system. 4,537,509, Cl. 356-399.000.

Krys, Joseph F.: *See—*
McNesby, John B.; and Krys, Joseph F., 4,538,286, Cl. 375-112.000.

Ku, Walter H.: *See—*
Chao, Pane-Chane; and Ku, Walter H., 4,536,942, Cl. 29-571.000.

Kubo, Keishi: *See—*
Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, 4,538,164, Cl. 346-209.000.

Kubota, Ltd.: *See—*
Ito, Katsumi; and Fuziwara, Osami, 4,537,271, Cl. 180-131.000.

Kubota, Shikibu, to Nissan Motor Company, Limited. Column shift type gear selector device for an automatic power transmission of an automotive vehicle. 4,537,088, Cl. 74-473.0SW.

Kudo, Yoshiaki: *See—*
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,537,691, Cl. 252-49.600.

Kudo, Yoshihiko: *See—*
Abe, Shunichi; Akiyama, Mitsuo; and Kudo, Yoshihiko, 4,538,231, Cl. 364-483.000.

Kuebker, William A.: *See—*
Morrow, Robert M.; Kuebker, William A.; and McGinity, James W., 4,537,689, Cl. 252-11.000.

Kuehl, Guenter H.: *See—*
Chu, Pochen; and Kuehl, Guenter H., 4,537,758, Cl. 423-329.000.

Kuhl, Henry Y. Horizontal flat destacker. 4,537,208, Cl. 134-124.000.

Kuhnert, Volker: *See—*
Wilhelm, Dieter; and Kuhnert, Volker, 4,538,090, Cl. 313-578.000.

Kulju, Sakari, to Valmet Oy. Grab harvester. 4,537,236, Cl. 144-336.000.

Kulkarni, Satish V.; Christensen, Richard M.; and Toland, Richard H., to United States of America, Energy. Matched metal die compression molded structural random fiber sheet molding compound flywheel. 4,537,091, Cl. 74-572.000.

Kume, Hiroshi, to Fuji Xerox Co., Ltd. Channel access system. 4,538,261, Cl. 370-85.000.

Kummer, Rudolf: *See—*
Schneider, Heinz-Walter; Richter, Wolfgang; Disteldorf, Walter; and Kummer, Rudolf, 4,537,987, Cl. 560-193.000.

Kunimi, Nobuo; Shimizu, Koichi; and Suzuki, Toshiro, to Hitachi, Ltd. Differential amplifier. 4,538,114, Cl. 330-253.000.

Kuno, Masao: *See—*
Suzuki, Akihiro; Souda, Keiichi; Kuno, Masao; and Ikuta, Hiroshi, 4,538,191, Cl. 360-88.000.

Kunzmann, Otto, to bielomatik Leuze GmbH & Co. Method and apparatus for aligning a pile of sheets provided with perforations for bindings. 4,537,545, Cl. 412-7.000.

Kuo, Chang-Kiang; and Tsaur, Shyh-Chang. Method of making high density dynamic memory cell. 4,536,941, Cl. 29-571.000.

Kuraray Co., Ltd.: *See—*
Kojima, Hidetaka; Horikawa, Takeshi; and Kagotani, Masahiro, 4,537,997, Cl. 568-454.000.
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,537,940, Cl. 526-278.000.

Kureha Kagaku Kogyo Kabushiki Kaisha: *See—*
Kawakami, Yukichika; Shiiki, Zenya; and Iizuka, Yo, 4,537,953, Cl. 528-388.000.

Kurematsu, Masayuki; and Koboshi, Shigeharu, to Konishiroku Photo Industry Co., Ltd. Method of processing silver halide color photographic materials. 4,537,856, Cl. 430-372.000.

Kuroda, Nobuyuki: *See—*
Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,537,938, Cl. 526-97.000.

Kuroda, Toshio: *See—*
Nozawa, Koohei; Yoshizawa, Toyokichi; and Kuroda, Toshio, 4,537,967, Cl. 546-141.000.

Kuroki, Junsuke: *See—*
Ito, Hideo; Kuroki, Junsuke; and Irie, Namio, 4,537,420, Cl. 280-661.000.

Kuroume, Hirotsugu: *See—*
Mitamura, Sachio; and Kuroume, Hirotsugu, 4,537,538, Cl. 409-217.000.

Kuroyanagi, Masatoshi; and Suzuki, Masahiko, to Nippondenso Co., Ltd. Fuel injection device. 4,537,171, Cl. 123-449.000.

Kusch, Richard J. Neck exerciser. 4,537,393, Cl. 272-94.000.

Kushibiki, Keizou: *See—*
Matsuzaki, Yoshitomi; Hayashi, Toshihiko; and Kushibiki, Keizou, 4,537,159, Cl. 123-41.270.

Kuwakado, Satosi: *See—*
Tsuge, Noboru; Taguchi, Masahiro; Kato, Masanori; and Kuwakado, Satosi, 4,537,169, Cl. 123-325.000.

Kuwata, Satoshi: *See—*
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,537,691, Cl. 252-49.600.

Kuyel, Birol, to AT&T Technologies, Inc. Photomask encapsulation. 4,537,813, Cl. 428-209.000.

Kuziemka, Edmund J., to Material Sciences Corporation. One step method of applying polysiloxane and PTFE coating composition. 4,537,800, Cl. 427-327.000.

Laarman, Timothy D.: *See—*
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,537,795, Cl. 427-39.000.

Laas, Harald: *See—*
Goetz, Norbert; Laas, Harald; Tavs, Peter; Hupfer, Leopold; and Baer, Karl, 4,538,009, Cl. 568-799.000.

Laboratoires Boiron: *See—*
Boiron, Jean; Boiron, Christian; Abecassis, Jacky; and Favier, Andre-Marcel, 4,537,512, Cl. 366-132.000.

Laclede Professional Products, Inc.: *See—*
Pellico, Michael A.; and Montgomery, Robert E., 4,537,764, Cl. 424-50.000.

LaFleur, Paul J., Jr.: *See—*
Groom, James S.; and LaFleur, Paul J., Jr., 4,537,012, Cl. 53-552.000.

L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude: *See—*
Zumbrunn, Jean-Pierre; Levielle, Jean; Thomas, Andre ; and Grangette, Francoise, 4,536,907, Cl. 8-149.100.

Lakshmanan, Vaikuntam I.; and Biskupski, Jurgen K., to Ontario Research Foundation. Recovery of precious metals. 4,537,628, Cl. 75-118.00R.

Lallemand, Yves: *See—*
Delle-Vedove, Daniel; Lallemand, Yves; and Hubert, Olivier, 4,537,201, Cl. 128-697.000.

Lamb Technicon Corp.: *See—*
Faitel, William M., 4,537,087, Cl. 74-394.000.

Landis, John M.: *See—*
Douty, George H.; Landis, John M.; and Snyder, Clair W., Jr., 4,537,454, Cl. 339-45.00M.

Landriault, L. Steven, to Hydril Company. Joint and joint components for pipe sections subjected to axial compression loads. 4,537,428, Cl. 285-333.000.

Landriault, L. Steven, to Hydril Company. Tubular connection with cylindrical and tapered stepped threads. 4,537,429, Cl. 285-334.000.

Lang, Gordon R.; Forney, George D., Jr.; Qureshi, Shahid; Longstaff, Fred M.; and Lee, Chi H., to ESE Limited. Signal structures with data encoding/decoding for QCM modulations. 4,538,284, Cl. 375-39.000.

Lang, Tibor: *See—*
Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, 4,537,899, Cl. 514-384.000.

Lange, Arno; Merger, Franz; Hettinger, Peter; and Adolphi, Heinrich, to BASF Aktiengesellschaft. Insecticidal carbamates. 4,537,901, Cl. 514-404.000.

Lange, Ludwig: *See—*
Hinrichs, Walter; Hammer, Friedrich; and Lange, Ludwig, 4,536,938, Cl. 29-527.500.

Langen, Marinus J. M., to H. J. Langen & Sons Limited. Carton opening mechanism. 4,537,587, Cl. 493-315.000.

Langley, John G.: *See—*
Flesher, Peter; and Langley, John G., 4,537,513, Cl. 366-162.000.

LaRou, Albert M.; and Atteberry, Eldon A., to Emerson Electric Co. Shaft locking device for bearing assemblies. 4,537,519, Cl. 384-478.000.

Larsson, Gosta, to Jochnick & Norrman Press AB. Force pump. 4,537,568, Cl. 418-202.000.

Laser Precision Corporation: *See—*
Doyle, Walter M., 4,537,508, Cl. 356-346.000.

Lasser, George A., to Honeywell Inc. Dual input watchdog timer. 4,538,273, Cl. 371-62.000.

Lattanzi, Ettore. Process and plant for endless-cycle sterilization of sheet material utilized in aseptic packaging of pre-sterilized fluid products. 4,537,007, Cl. 53-425.000.

Lau, Kreisler S. Y., to Hughes Aircraft Company. Diethynylated phenylbenzimidazole compounds. 4,537,974, Cl. 548-328.000.

Lau, Patrick W.: *See—*
Chan, Lock-Lim; and Lau, Patrick W., 4,537,807, Cl. 428-74.000.

Lavene, Bernard, to Electronic Concepts, Inc. Means and method for fabricating planar terminated capacitors. 4,538,205, Cl. 361-308.000.

Lavie, Ram, to Technion Research and Development Foundation, Inc. Process for the manufacture of ammonia. 4,537,760, Cl. 423-359.000.

Lawhorn, William S.; and Clinkenbeard, Ivan L., to LTV Aerospace and Defense Company. Small caliber guided projectile. 4,537,371, Cl. 244-3.220.

Lawson, Douglas R.: *See—*
Varndell, Sydney A.; Lawson, Douglas R.; and Fountain, Michael W., 4,536,906, Cl. 5-468.000.

Lawson, Kenneth L., to Rain Bird Sprinkler Mfg. Corp. Drive assembly for a reaction drive sprinkler. 4,537,356, Cl. 239-230.000.

Lax, David R.; Page, Michael; and Johnstone, James S., to Schlumberger Electronics (U.K.) Limited. Apparatus for and method of random vibration control. 4,537,076, Cl. 73-662.000.

Lazcano-Navarro, Arturo; and Alcantara, Miguel A., to Instituto Mexicano de Investigaciones Siderurgicas. Method for obtaining high purity ductile iron. 4,537,629, Cl. 75-130.00R.

Lazes, Richard J. Pipe thread gauge. 4,536,964, Cl. 33-199.00R.

Lech, Thaddeus, Jr.; and Popchock, Richard T., to Alma Piston Company. Clutch driven plate assembly. 4,537,296, Cl. 192-106.200.

Lectron Products, Inc.: *See—*
Slavin, Michael; and Miller, Ellsworth S., 4,538,045, Cl. 219-91.210.

Lee, Arnold S. J. Multi-pressure manometer. 4,537,079, Cl. 73-747.000.

Lee, Chi H.: *See—*
Lang, Gordon R.; Forney, George D., Jr.; Qureshi, Shahid; Longstaff, Fred M.; and Lee, Chi H., 4,538,284, Cl. 375-39.000.

Lee, Pang K.; and Hickam, William M., to Westinghouse Electric Corp. Technique for monitoring the oxidation/reduction potential characteristics of a steam environment. 4,537,661, Cl. 204-1.00T.

Le Fur, Raphael: *See—*
Horodniceanu, Florian; and Le Fur, Raphael, 4,537,790, Cl. 427-2.000.

Leggett & Platt, Incorporated: *See—*
Whitehead, Larry W., 4,536,904, Cl. 5-201.000.

Lehr, Howard C.: *See—*
Brockway, Patrick H.; Lehr, Howard C.; and George, Richard D., 4,537,440, Cl. 296-108.000.

Lein, Juergen G.; and Robbins, Daniel H., to Itek Corporation. Heater-drier for fusing toner images on wet printing plates. 4,537,492, Cl. 355-3.0FU.

Lein, Wilfried: *See—*
Huschelrath, Gerhard; and Lein, Wilfried, 4,538,108, Cl. 324-232.000.

Leland Stanford Junior University, The Board of Trustees of the: *See—*
Barth, Phillip W., 4,537,680, Cl. 210-316.000.
Widrow, Bernard, 4,537,200, Cl. 128-696.000.

Lemaire, Francis: *See—*
Gaussens, Gilbert; and Lemaire, Francis, 4,537,668, Cl. 204-159.170.

Lemna Corporation, The: *See—*
Hogen, Delman R., 4,536,988, Cl. 47-1.500.

Lena, Richard M., to Wang Laboratories, Inc. Detector using delayed and undelayed inputs for demodulating FM or PM signals. 4,538,112, Cl. 329-145.000.

Lenhardt, Wilfred K., to Mobil Oil Corporation. Recording system for a borehole logging tool. 4,538,248, Cl. 367-25.000.

Lersmacher, Bernhard; Wassall, Michael P.; and Connor, Philip J. Atomizer for atomic absorption spectroscopy. 4,537,506, Cl. 356-312.000.

Les Cables de Lyon: *See—*
Degoix, Bernard; Boussemaer, Daniel; and Allemand, Didier, 4,537,468, Cl. 350-96.210.

Leuenberger, Claude-Eric: *See—*
Dinger, Rudolf; Michel, Jean-Georges; and Leuenberger, Claude-Eric, 4,537,515, Cl. 368-202.000.

Lever Brothers Company: *See—*
Dawson, Peter L., 4,537,604, Cl. 51-298.000.
Edge, David J.; Naik, Appaya R.; and Scott, Melvin, 4,537,709, Cl. 252-558.000.

Levielle, Jean: *See—*
Zumbrunn, Jean-Pierre; Levielle, Jean; Thomas, Andre ; and Grangette, Francoise, 4,536,907, Cl. 8-149.100.

Levin, Burton L.; Phelps, Andrew E.; and Potash, Hanan, to Burroughs Corporation. Address translation buffer. 4,538,241, Cl. 364-900.000.

Levine, Morris M., to CIC Int'l Corp. Wet-dry vacuum cleaner. 4,536,914, Cl. 15-344.000.

Lewandowski, Thomas: *See—*
Steere, Robert E., Jr.; and Lewandowski, Thomas, 4,537,177, Cl. 125-13.00R.

Lewis, Charles, Jr.: *See—*
Tolbert, William R.; Feder, Joseph; and Lewis, Charles, Jr., 4,537,860, Cl. 435-240.000.

Lewis, D. Michael: *See—*
Everman, Wayne F.; Lewis, D. Michael; and Russell, Raymond L., 4,537,584, Cl. 493-93.000.

Lewis, George A.; Collins, Kent L.; Benesh, Joseph C.; and Ward, Patrick C., to North American Philips Lighting Corp. High-pressure sodium lamp spring clip cross piece for electrode and end plug support. 4,538,091, Cl. 313-625.000.

Lewtas, Kenneth: *See—*
Rossi, Albert; and Lewtas, Kenneth, 4,537,602, Cl. 44-62.000.

L'Garde, Inc.: *See—*
Hirasuna, Alan R.; and Veal, Gordon R., 4,537,406, Cl. 277-1.000.

LGT Laboratoire General des Telecommunications: *See—*
Cluniat, Claude, 4,538,180, Cl. 358-186.000.

LGZ Landis & Gyr Zug AG: *See—*
Baltes, Heinrich P.; Glass, Andrew S.; and Jauch, Karl, 4,537,504, Cl. 356-71.000.

Li, Hsueh M., to Ethyl Corporation. Selective oligomer production. 4,537,755, Cl. 423-300.000.

Liang, Gao: *See—*
Ovshinsky, Stanford R.; Sapru, Krishna; and Liang, Gao, 4,537,674, Cl. 204-290.00R.

Liebman, Alan J.: *See—*
Durkee, David B.; and Liebman, Alan J., 4,538,156, Cl. 346-21.000.

Liepa, Alexander L., to Procter & Gamble Company, The. Control of particle size distribution during continuous heat-setting of meat analog. 4,537,783, Cl. 426-243.000.

Lin, Fan-Nan; and Pennella, Filippo, to Phillips Petroleum Company. Alcohol synthesis. 4,537,909, Cl. 518-713.000.

Lin, Hank S.: *See—*
Balbes, Michael S.; Day, Charles E.; Hooper, Robert L.; and Lin, Hank S., 4,538,175, Cl. 358-86.000.

Lin, Robert A.: *See—*
Cooke, Theodore M.; Lin, Robert A.; Whitfield, Richard G.; and Hock, Allan G., 4,537,631, Cl. 106-22.000.

Lin, Shiow C., to W. R. Grace & Co. Reactive plastisol dispersion. 4,537,805, Cl. 427-54.100.

Linaburg, Clyde P. Trailer hitch alignment device. 4,537,416, Cl. 280-478.00R.

Lincoln Laser Company: *See—*
Sherman, Randy J.; and Hanson, Derald F., 4,537,465, Cl. 350-68.000.

Lind, Leif I. Flow distributor. 4,537,118, Cl. 98-40.010.

Lindahl, Jonas A. I.; and Bergstrom, John R., to Mo och Domsjo Aktiebolag. Method for delignifying or bleaching cellulose pulp wherein chlorine is added to recycle liquor to regenerate chlorine dioxide. 4,537,656, Cl. 162-38.000.

Linde Aktiengesellschaft: *See—*
Weber, Gunter, 4,537,752, Cl. 423-224.000.

Linden, Enok S. R. Dental instrument for optimal positioning of an X-ray film support. 4,538,292, Cl. 378-169.000.

Lindmark, Malte; and Lindmark, Margareta. Pump. 4,537,562, Cl. 417-215.000.

Lindmark, Margareta: *See—*
Lindmark, Malte; and Lindmark, Margareta, 4,537,562, Cl. 417-215.000.

Lindstrom, Merlin R.: *See—*
Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., 4,537,690, Cl. 252-48.400.

Linstid, H. Clay, III; and Koermer, Gerald S., to Celanese Corporation. Isomerization of branched aldehydes to ketones. 4,537,995, Cl. 568-384.000.

Lion Corporation: *See*—
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,537,253, Cl. 166-274.000.

Lipp, Reinhold: *See*—
Achinger, Michael; Jaeger, Erhard; Lipp, Reinhold; and Streitenberger, Walter, 4,537,238, Cl. 164-169.000.

Liquid Carbonic Inc.: *See*—
Reed, Gordon A. D.; and Itzkovitch, Irwin J., 4,537,761, Cl. 423-644.000.

Lish, Charles A., to Standard Microsystems Corporation. Switched capacitor filter. 4,538,113, Cl. 330-126.000.

Little, Michael J.; Brown, Roger H.; Efron, Uzi; and Hoberg, Clarence P., to Hughes Aircraft Company. Optically flat semiconductor baseplate structure. 4,537,827, Cl. 428-409.000.

Little, Michael J.: *See*—
Grinberg, Jan; and Little, Michael J., 4,537,471, Cl. 350-333.000.

Liu, Chao-Min; and Westley, John, to Hoffmann-La Roche Inc. Antibiotics X-14889 A, C and D. 4,537,956, Cl. 536-1.100.

Liu, Dean-Yuan, to Sanders Associates, Inc. Plotter paper slitter. 4,537,582, Cl. 493-38.000.

Liu, Dirkson D. S., to Atomic Energy of Canada Limited. Multiple measuring control volume laser doppler anemometer. 4,537,503, Cl. 356-28.500.

Liu, Tung: *See*—
Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., 4,537,823, Cl. 428-308.400.

Lloyd, Robert H. F., to Conver Corporation. Vertical heat sink. 4,537,246, Cl. 165-80.00B.

LMT Radio Professionnelle: *See*—
Petitjean, Christian; and Marchand, Maurice, 4,538,148, Cl. 343-17.20R.

Lobdell, George H. Work holding stackable step stool. 4,537,282, Cl. 182-46.000.

Lockhart, Billy J. Combination hay hauler and stock trailer. 4,537,548, Cl. 414-24.500.

Lockwood, John J.: *See*—
Freige, Diab E.; Lockwood, John J.; Ramsay, Michael; and Keely, Leroy B., 4,538,073, Cl. 307-33.000.

Loczenski, Martin: *See*—
Barnicol-Ottler, Max; Loczenski, Martin; Mieschke, Norbert; Ott, Gerhard; Przybylski, Gerhard; and Weber, Dietmar, 4,538,022, Cl. 174-113.00R.

Logan, Ralph A.: *See*—
Henry, Charles H.; and Logan, Ralph A., 4,536,940, Cl. 29-569.00L.

Lohse, Friedrich; and Zondler, Helmut, to Ciba-Geigy Corporation. Curable mixtures containing epoxy resins and isomelamines. 4,537,946, Cl. 528-118.000.

Loizeau, Pierre, to Valeo. Torsional dampers. 4,537,298, Cl. 192-106.200.

Loizeau, Pierre, to Valeo. Torsional damper device. 4,537,579, Cl. 464-68.000.

Loizeau, Pierre; and Caray, Andre , to Valeo. Torsional damper device. 4,537,580, Cl. 464-68.000.

Long, David J.: *See*—
Oxenrider, Bryce C.; and Long, David J., 4,537,728, Cl. 260-455.00R.

Longstaff, Fred M.: *See*—
Lang, Gordon R.; Forney, George D., Jr.; Qureshi, Shahid; Longstaff, Fred M.; and Lee, Chi H., 4,538,284, Cl. 375-39.000.

Longuet, Michel: *See*—
Oberle, Patrick; Longuet, Michel; and Walker, David, 4,537,915, Cl. 521-84.100.

Lopiccolo, Jerome J. Adjustable water level device. 4,536,968, Cl. 33-367.000.

Lorenzen, Heinz-Christen; Heitmann, Uwe; Petersen, Kurt-Eckart; and Pinck, Peter, to Hauni-Werke Korber & Co. KG. Apparatus for perforating and testing the permeability of running webs of cigarette paper or the like. 4,537,206, Cl. 131-281.000.

Lorieux, Roland, to Thomson CSF. Transistor amplifier operating at ultra high frequency under pulse operating conditions. 4,538,118, Cl. 330-286.000.

Louth, Kenneth, to Ampex Corporation. Programmable non-linear speed control for a recording and/or reproducing apparatus. 4,538,190, Cl. 360-73.000.

Louthan, Rector P.: *See*—
Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., 4,537,690, Cl. 252-48.400.

Lowe, Barrie M.: *See*—
Casci, John L.; Lowe, Barrie M.; and Whittam, Thomas V., 4,537,754, Cl. 423-277.000.

Lowe, Henry E., Jr. Package of litter material for cats and other small animals. 4,537,148, Cl. 119-1.000.

Lown, Robert R.: *See*—
Gluckstern, Robert L.; Holsinger, Ronald F.; and Lown, Robert R., 4,538,130, Cl. 335-306.000.

LTV Aerospace and Defense Company: *See*—
Lawhorn, William S.; and Clinkenbeard, Ivan L., 4,537,371, Cl. 244-3.220.

Lu, Shih-Lai, to Minnesota Mining and Manufacturing Company. Tape closure for a can end. 4,537,327, Cl. 220-359.000.

Lubinsky, Anthony R.; Denton, Gary A.; Keller, Paul D.; and Williams, James E., to Xerox Corporation. Multi-roll development system. 4,537,494, Cl. 355-3.0DD.

Lucas Industries Limited: *See*—
Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, 4,537,578, Cl. 464-31.000.

Lucas Industries, p.l.c.: *See*—
Skinner, Robert T. J., 4,537,359, Cl. 239-533.600.

Lucas, Robert L. Bookbinding device. 4,537,546, Cl. 412-10.000.

Luhrig, Hermann: *See*—
Boie, Immo; Luhrig, Hermann; and Kovacic, Guido, 4,537,486, Cl. 354-317.000.

Lundberg, Robert D.: *See*—
Agarwal, Pawan K.; and Lundberg, Robert D., 4,537,919, Cl. 523-336.000.
Peiffer, Dennis G.; Lundberg, Robert D.; and Pober, Kenneth W., 4,537,688, Cl. 252-8.50M.

Lundvall, Karl-Erik: *See*—
Stamvik, Anders R.; Kristensson, Sten K.; and Lundvall, Karl-Erik, 4,537,722, Cl. 260-397.400.

Lunsford, Carl D.; and Chen, Ying-Ho, to A. H. Robins Company, Inc. 1-Aryloxy-4-amino-2-butanols. 4,538,001, Cl. 568-633.000.

Luper, Charles R., to Sensormedics Corporation. Volume calibration syringe. 4,537,058, Cl. 73-1.00G.

Lupoli, Peter J., to Sun Chemical Corporation. Control circuit for locking mechanism of vehicle door. 4,537,049, Cl. 70-277.000.

Luxon, Bruce A., to General Electric Company. Polyphenylene ether blends containing electrostatically bound additive. 4,537,925, Cl. 524-151.000.

M.A.N.-Roland Druckmaschinen Aktiengesellschaft: *See*—
Theilacker, Klaus, 4,537,130, Cl. 101-425.000.

Maahs, Gunther: *See*—
Rombusch, Konrad; Maahs, Gunther; and Schafer, Wolfgang, 4,537,924, Cl. 524-103.000.

MacBain, John W. Rock reinforcement. 4,537,535, Cl. 405-260.000.

Macdonald, David I., to AT&T Technologies, Inc. Method of and apparatus for plating using controlled progressive immersion. 4,537,663, Cl. 204-14.100.

Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., to Phillips Petroleum Co. Aqueous metalworking composition containing 2-hydroxyethyl-(3-chloro-2-hydroxypropyl)sulfide. 4,537,690, Cl. 252-48.400.

Macerata, Alberto: *See*—
Mancini, Paolo; Taddei, Alessandro; Macerata, Alberto; and Marchesi, Carlo, 4,537,202, Cl. 128-712.000.

Machida, Kaoru, to Tokyo Shibaura Denki Kabushiki Kaisha. Abnormal cell detecting device. 4,537,203, Cl. 128-734.000.

Machinenfabrik Flums AG: *See*—
Benz, Gotlieb, 4,537,008, Cl. 53-438.000.

Mackowiak, Jerzy: *See*—
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,537,731, Cl. 261-94.000.

Maconis, John, Jr.: *See*—
Adur, Ashok M.; Schmukler, Seymour; Maconis, John, Jr.; and Shida, Mitsuzo, 4,537,836, Cl. 428-522.000.

Macrander, Max S.: *See*—
Edwards, Ivan L.; and Macrander, Max S., 4,538,272, Cl. 371-61.000.

Maeda, Tetsuo: *See*—
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.

Maekawa, Toshikazu: *See*—
Soneda, Mitsuo; Maekawa, Toshikazu; and Otsu, Kouji, 4,538,288, Cl. 377-76.000.

Maeno, Fumio: *See*—
Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, 4,536,993, Cl. 51-165.800.

Maeshima, Kaoru: *See*—
Takahashi, Takeo; Shimago, Kozo; and Maeshima, Kaoru, 4,537,973, Cl. 548-303.000.

Magar, Surendar S., to Texas Instruments Incorporated. High-speed multiplier for microcomputer used in digital signal processing system. 4,538,239, Cl. 364-759.000.

Magnetic Peripherals: *See*—
Hennenfent, Douglas J.; Holmstrand, Allan L.; and Kracke, Alan G., 4,536,992, Cl. 51-109.00R.

Magnetrol International, Incorporated: *See*—
DeMeyer, Roy W.; and Kozi, Martin F., 4,537,061, Cl. 73-290.00R.

Mahoney, Dennis F.; and Block, William V., to Economics Laboratory, Inc. Aqueous alkaline polyamine paint stripping compositions. 4,537,705, Cl. 252-529.000.

Maier, Siegfried; and Albrecht, Eckart, to Dupro AG. Cleaning apparatus. 4,537,424, Cl. 285-7.000.

Mainiero, Richard J., to United States of America, Interior. Non-incendive rock-breaking explosive charge. 4,537,133, Cl. 102-316.000.

Majumdar, Debesh: *See*—
Yourd, Raymond A., III; Majumdar, Debesh; and Gruber, Robert J., 4,537,848, Cl. 430-110.000.

Malish, Terrance J. Coupler device for floor maintenance pad or the like. 4,536,912, Cl. 15-230.170.

Malone, Edgar W., to Reynolds Industries, Inc. Spark gap device. 4,538,088, Cl. 313-325.000.

Manabe, Sakae, to AMP Incorporated. Electrical connector. 4,537,462, Cl. 339-259.00R.

Mancini, Paolo; Taddei, Alessandro; Macerata, Alberto; and Marchesi, Carlo, to Remco Italia S.p.A. Device for displaying electrical signals of the periodic and/or synchronizable type. 4,537,202, Cl. 128-712.000.

Manfredonia, Abe J.: *See*—
Inglett, Wilfred L., Jr.; Ashley, Walter M., Jr.; and Manfredonia, Abe J., 4,537,015, Cl. 53-386.000.

Mannesmann Demag Wean: *See*—
Jansen, Herbert; Schiffers, Hans-Gunter; and Gerretz, Richard, 4,537,407, Cl. 277-2.000.

Manning, David T., to Union Carbide Corporation. Herbicidal 2,6-dioxocyclohexylidene derivatives. 4,537,616, Cl. 71-92.000.

Manouvrier, Jean-Aime : *See*—
Buys, Romain J. B.; and Manouvrier, Jean-Aime , 4,537,796, Cl. 427-136.000.

Manville Service Corporation: *See*—
Ewing, Robert L.; Hughes, James S.; and Bruggeman, Bruce, 4,538,217, Cl. 362-375.000.

Manyai, Sandor: *See*—
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

Marcantonio, Paul J., to Chevron Research Company. Treatment of alumina-base catalysts. 4,537,751, Cl. 423-114.000.

Marchand, Maurice: *See*—
Petitjean, Christian; and Marchand, Maurice, 4,538,148, Cl. 343-17.20R.

Marchesi, Carlo: *See*—
Mancini, Paolo; Taddei, Alessandro; Macerata, Alberto; and Marchesi, Carlo, 4,537,202, Cl. 128-712.000.

Mariani, Elio A.; Stern, Richard A.; and Babbitt, Richard W., to United States of America, Army. Dielectric waveguide bandpass apparatus. 4,538,123, Cl. 333-208.000.

Marie van Abeelen, Petrus C. A.: *See*—
Bussink, Jan; DeMunck, Johannes W. J.; and Marie van Abeelen, Petrus C. A., 4,537,930, Cl. 524-505.000.

Marker International: *See*—
Knabel, Walter R.; and Sedlmair, Gerhard J., 4,537,418, Cl. 280-605.000.

Markin, Charles: *See*—
Wiacek, Marian; Markin, Charles; and Book, Ronald J., 4,537,841, Cl. 429-56.000.

Markowsky, George: *See*—
Carter, John L.; Markowsky, George; and Wegman, Mark N., 4,538,240, Cl. 364-754.000.

Marritt, Clifford R.: *See*—
Dealto, Michael E.; DiGiacomo, Joseph D.; and Marritt, Clifford R., 4,537,104, Cl. 83-348.000.

Marsh, John D.; and Nazzer, Craig A., to Caterpillar Tractor Co. Stator for an electromagnetic machine. 4,538,086, Cl. 310-258.000.

Marsh, Richard O., Jr. Drive fit coupling for precast concrete piles. 4,537,534, Cl. 405-252.000.

Marshall, David: *See*—
Hawe, Malcolm; Marshall, David; and Walker, John R., 4,537,695, Cl. 252-70.000.

Martin, Harold B., Jr.: *See*—
Strange, Carl P.; Martin, Harold B., Jr.; and Tsang, Albert C., 4,537,958, Cl. 536-85.000.

Martin, Jessie A. Vehicle headlight attachment. 4,538,213, Cl. 362-61.000.

Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, to Toyota Jidosha Kogyo Kabushiki Kaisha; and Aisin Seiki Kabushiki Kaisha. Occupant's side holding device for the seat back of a seat. 4,537,444, Cl. 297-284.000.

Maschmeyer, Richard O., to Corning Glass Works. Fiducial surfaces. 4,537,473, Cl. 350-432.000.

Mashino, Zenichi: *See*—
Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.

Massachusetts General Hospital: *See*—
Burroughs, Robert H.; Wright, John D.; Secunda, Jeffrey A.; and Newbower, Ronald S., 4,537,128, Cl. 101-407.0BP.

Masters, Richard M.: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., 4,537,067, Cl. 73-151.000.

Masuda, Jiro: *See*—
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,537,272, Cl. 180-176.000.

Masuda, Shunichi, to Canon Kabushiki Kaisha. Image recording apparatus. 4,537,497, Cl. 355-14.00R.

Material Sciences Corporation: *See*—
Kuziemka, Edmund J., 4,537,800, Cl. 427-327.000.

Mathias, William R.: *See*—
Bielinski, Ralph F.; Chacon, M. Frank; Kramer, Dennis M.; Mathias, William R.; and Schneider, Stanley, 4,538,199, Cl. 361-93.000.

Matsubara, Tetsuyuki: *See*—
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.

Matsuda, Shinpei: *See*—
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, 4,537,873, Cl. 502-242.000.

Matsui, Isamu; and Mima, Hiroshi, to Murata Kikai Kabushiki Kaisha. Spliced joint of spun yarns. 4,537,019, Cl. 57-202.000.

Matsui, Mitsuo; and Matsumura, Teruyuki, to Fanuc Ltd. Method and apparatus for controlling electric discharge machine. 4,538,098, Cl. 318-567.000.

Matsui, Shinichi: *See*—
Kimura, Akira; Ishihama, Masao; Abe, Toshiro; Shimada, Kiyoshi; and Matsui, Shinichi, 4,537,275, Cl. 180-300.000.

Matsui, Takashi: *See*—
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.

Matsumoto, Kazumasa: *See*—
Asano, Masao; Fujimatsu, Wataru; Matsumoto, Kazumasa; Murata, Hideki; Sato, Toshihiko; and Watanabe, Kenji, 4,537,824, Cl. 428-323.000.

Matsumura, Teruyuki: *See*—
Matsui, Mitsuo; and Matsumura, Teruyuki, 4,538,098, Cl. 318-567.000.

Matsumura, Yasushi: *See*—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,537,789, Cl. 426-634.000.

Matsushita Electric Industrial Co., Ltd.: *See*—
Itoh, Yoshimasa; and Asakawa, Shiroh, 4,537,606, Cl. 55-158.000.
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.
Sadamatsu, Hideaki; Inoue, Michihiro; Kanda, Akihiro; and Matsuzawa, Akira, 4,536,950, Cl. 29-578.000.

Matsushita Graphic Communication Systems, Inc.: *See*—
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.

Matsuura, Ichiro; and Yamaguchi, Fumio, to Nippon Electric Glass Company, Ltd. Low temperature sealing composition. 4,537,863, Cl. 501-15.000.

Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, to Nippon Oil Company, Limited. Process for preparing polyolefins. 4,537,938, Cl. 526-97.000.

Matsuura, Masaaki: *See*—
Ajiki, Yoshio; and Matsuura, Masaaki, 4,537,164, Cl. 123-90.160.
Honda, Shoichi; Nakano, Yoshikatsu; Hirano, Makoto; and Matsuura, Masaaki, 4,537,165, Cl. 123-90.160.

Matsuzaki, Yoshitomi; Hayashi, Toshihiko; and Kushibiki, Keizou, to Nissan Motor Co., Ltd.; and Nihon Radiator Co., Ltd. Coolant reserve tank. 4,537,159, Cl. 123-41.270.

Matsuzawa, Akira: *See*—
Sadamatsu, Hideaki; Inoue, Michihiro; Kanda, Akihiro; and Matsuzawa, Akira, 4,536,950, Cl. 29-578.000.

Matteucci, John S.; Snyder, James K.; and Hahn, Robert E., to Optical Coating Laboratory, Inc. Flexible selective energy control sheet and assembly using the same. 4,536,998, Cl. 52-171.000.

Matula, Joseph J. Apparatus for dispensing viscous materials. 4,537,331, Cl. 222-165.000.

Maue, Dale N.: *See*—
Clark, Allen J.; and Maue, Dale N., 4,537,077, Cl. 73-665.000.

Mausezahl, Dieter: *See*—
Schaetzer, Harry; Raisin, Helmut; and Mausezahl, Dieter, 4,537,598, Cl. 8-641.000.

Max, John K. Flow metering circuit and method. 4,537,081, Cl. 73-861.770.

Mayer, Donald K., to Westinghouse Electric Corp. Combination refrigerant receiver, accumulator and heat exchanger. 4,537,045, Cl. 62-503.000.

Mayo, John H. Device and method to enable detection and measurement of deformities in well components. 4,537,069, Cl. 73-432.00R.

McCabe, Francis B. Adjustable tensioning device. 4,537,388, Cl. 254-232.000.

McCaig, John R., to McNold Corp. Quick release clamp for battery cable connector. 4,537,460, Cl. 339-235.000.

McCain Manufacturing Corporation: *See*—
McCain, William B.; and Higgins, George D., 4,537,342, Cl. 227-78.000.

McCain, William B.; and Higgins, George D., to McCain Manufacturing Corporation. Binding machine for a signature machine. 4,537,342, Cl. 227-78.000.

McCarty, Michael R.: *See*—
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McCleary, Donald J. Camper-trailer. 4,537,441, Cl. 296-181.000.

McCord, James W. Vapor generating and recovering apparatus. 4,537,660, Cl. 202-170.000.

McDaniel, Kenneth D., Jr.: *See*—
Endres, Douglas W.; McDaniel, Kenneth D., Jr.; and Griebel, Francis J., 4,537,281, Cl. 182-2.000.

McDaniel, Max P., to Phillips Petroleum Company. Tetravalent titanium treated calcined vanadium catalyst with trialkylaluminum cocatalyst. 4,537,869, Cl. 502-107.000.

McDaniel, Max P.: *See*—
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McDonald, John: *See—*
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman P.; McDonald, John; and Zambias, Robert A., 4,537,903, Cl. 514-456.000.
McDonnell, Roy E. Electrical control of body discharges and headaches. 4,537,195, Cl. 128-422.000.
McEathron, Eugene D., to PPG Industries, Inc. Stone trap and method of using for making glass fibers. 4,537,609, Cl. 65-1.000.
McFeaters, Earl: *See—*
Ang, T. Liem; Van Arnam, Donald; and McFeaters, Earl, 4,537,809, Cl. 428-41.000.
McGill, Leland S., to Kinney, Richard G. Toilet assemblies. 4,536,902, Cl. 4-476.000.
McGinity, James W.: *See—*
Morrow, Robert M.; Kuebker, William A.; and McGinity, James W., 4,537,689, Cl. 252-11.000.
McInnes, Robert. Apparatus for cleaning, plating and/or coating articles. 4,537,669, Cl. 204-201.000.
McKinnie, Bonnie G.; and Robinson, Gene C., to Ethyl Corporation. Alkanoyloxybenzenesulfonate salt production. 4,537,724, Cl. 260-400.000.
McMurtrey, David K. Bicycle handlebar stem. 4,537,525, Cl. 403-191.000.
McNesby, John B.; and Krys, Joseph F., to GTE Communications Products Corporation. Data rate conversion and supervisory bit insertion in a data system. 4,538,286, Cl. 375-112.000.
McNold Corp.: *See—*
McCaig, John R., 4,537,460, Cl. 339-235.000.
McNulty, Frank E. Conduit having waterproof layer of uniform thickness and method of manufacture. 4,537,225, Cl. 138-145.000.
Mead Corporation, The: *See—*
Jones, David E., 4,538,157, Cl. 346-75.000.
Mead Johnson & Company: *See—*
Alexander, Robert L.; Bequette, Robert J.; Kensler, Terry T.; and Scott, Joseph A., 4,537,883, Cl. 514-110.000.
Medical Technology, Ltd.: *See—*
Xanthopoulos, Piritheos E., 4,537,561, Cl. 417-63.000.
Meeks, Alan M. G., to ITW Limited. Security seals. 4,537,432, Cl. 292-318.000.
MegaTape Corporation: *See—*
Herrington, Lawrence; and Avra, Raymond E., 4,537,367, Cl. 242-198.000.
Meighen, Terrence: *See—*
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,537,459, Cl. 339-143.00R.
Meiko Industrial Co., Ltd.: *See—*
Neuhoff, Uredat, 4,537,445, Cl. 297-300.000.
Meise, William H.: *See—*
Dischert, Robert A.; and Meise, William H., 4,538,236, Cl. 364-574.000.
Melai, Henri A. I., to U.S. Philips Corporation. Variable frequency start circuit for discharge lamp with preheatable electrodes. 4,538,093, Cl. 315-219.000.
Meline, Harry R.; and Meyer, Richard A., to MTS Systems Corporation. Reference frame and hold-down support system for remote supported axial torsional extensometer. 4,537,082, Cl. 73-794.000.
Mendez, Emilio E.: *See—*
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Mens, Jacques M. N.: *See—*
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Mentor Corporation: *See—*
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Mercer, James B. Therapeutic treatment for viral infections. 4,537,775, Cl. 514-398.000.
Mercier, Marc: *See—*
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Merck & Co., Inc.: *See—*
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Merck Patent Gesellschaft mit beschrankter Haftung: *See—*
Bernhard, Horst; and Esselborn, Reiner, 4,537,636, Cl. 106-291.000.
Sucrow, Wolfgang; Schatull, Wolfgang; and Fuss, Peter, 4,537,698, Cl. 252-299.610.
Merck Sharp & Dohme (I.A.) Corp.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,537,902, Cl. 514-422.000.
Merger, Franz; Nestler, Gerhard; and Towae, Friedrich, to BASF Aktiengesellschaft. Preparation of carbamates. 4,537,960, Cl. 544-86.000.
Merger, Franz: *See—*
Lange, Arno; Merger, Franz; Hettinger, Peter; and Adolphi, Heinrich, 4,537,901, Cl. 514-404.000.
Merisinter S.p.A.: *See—*
Tosi, Riccardo, 4,536,958, Cl. 30-120.300.
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Barnoin, Pierre; Mens, Jacques M. N.; and Merle, Gilbert, 4,537,374, Cl. 244-102.00R.
Merlin Gerin: *See—*
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Meseltron S. A.: *See—*
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Messer Griesheim GmbH: *See—*
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Messina, Elena R.: *See—*
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Methode Electronics Inc.: *See—*
Brown, Vincent B.; Kozel, Charles A.; Scheitz, John T.; and Armando, John E., 4,537,456, Cl. 339-99.00R.
Methods Engineering Inc.: *See—*
Kennedy, Alvin B., III; Fontaine, Joseph S.; Kennard, Alfred J.; and Morrison, J. Bruce, 4,537,685, Cl. 210-709.000.
Metrick, Dennis: *See—*
Schortmann, Walter E.; and Metrick, Dennis, 4,537,819, Cl. 428-284.000.
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Meunier, Jean: *See—*
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Huret, Noel; and Meunier, Jean, 4,537,161, Cl. 123-41.710.
Meyer, Richard A.: *See—*
Meline, Harry R.; and Meyer, Richard A., 4,537,082, Cl. 73-794.000.
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Meyer, Willy: *See—*
Schurter, Rolf; Fory, Werner; and Meyer, Willy, 4,537,618, Cl. 71-92.000.
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Beckmann, Friedrich K.; Hoppe, Wolfgang; and Meyer, Wolfgang, 4,538,125, Cl. 333-248.000.
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Miale, Joseph N.; and Chang, Clarence D., to Mobil Oil Corporation. Catalysis over activated zeolites. 4,538,015, Cl. 585-408.000.
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Michael, Steven C.: *See—*
Fossett, Lawrence D.; and Michael, Steven C., 4,538,030, Cl. 179-7.1TP.
Michel, Jean-Georges: *See—*
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Michel, Karl H.; and Kastner, Ralph E., to Eli Lilly and Company. A41030 antibiotics. 4,537,770, Cl. 424-118.000.
Michel, Karl H.: *See—*
Anderson, Marie T.; Michel, Karl H.; and Sands, Thomas H., 4,537,777, Cl. 514-521.000.
Boeck, LaVerne D.; Clem, Gladys M.; Hershberger, Charles L.; Anderson, Marie T.; and Michel, Karl H., 4,537,715, Cl. 260-112.50R.
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Miki, Yasuhiko, to Sony/Tektronix Corporation. Diagnostic apparatus for digital-to-analog converters. 4,538,266, Cl. 371-15.000.
Milili, Marc: *See—*
Fourche , Jean-Pierre; and Milili, Marc, 4,538,128, Cl. 335-210.000.
Milish, William P., to Transamerica Delaval Inc. Magnetically responsive circuit-element module for liquid-level monitoring and probe therefrom. 4,537,070, Cl. 73-313.000.
Milish, William P., to Transamerica DeLaval, Inc. Fluid-sampling valve for a hydraulic system. 4,537,219, Cl. 137-614.190.
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Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,537,975, Cl. 548-359.000.
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Day, Michael N.; and Miller, Claude D., 4,538,265, Cl. 371-12.000.
Miller, Dale D.; and Polky, John N., to Boeing Company, The. Multiple discrete frequency ranging with error detection and correction. 4,537,502, Cl. 356-5.000.

Miller, Ellsworth S.: *See*—
Slavin, Michael; and Miller, Ellsworth S., 4,538,045, Cl. 219-91.210.
Miller, James G.: *See*—
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Miller, Ronald L.: *See*—
Silver, Howard F.; and Miller, Ronald L., 4,537,675, Cl. 208-8.0LE.
Miller, Stephen J., to Chevron Research Company. Oligomerization of liquid olefin over a nickel-containing silicaceous crystalline molecular sieve. 4,538,012, Cl. 585-255.000.
Miller, William R.: *See*—
Fisher, Kenneth J.; and Miller, William R., 4,538,214, Cl. 362-147.000.
Millet, Catherine; Ser, Jean-Claude; and N'Guyen, Quang L., to Societe Anonyme dite: L'Oreal. Emulsifying system based on a fatty acid or a protein condensate, a polyoxyethylenated sterol and a phosphatide, and a cosmetic or pharmaceutical composition containing the same. 4,537,782, Cl. 514-774.000.
Millhone, Ralph S.: *See*—
Elson, Thomas D.; and Millhone, Ralph S., 4,537,254, Cl. 166-278.000.
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Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, to Olympus Optical Company Ltd. Multiconductive layer electrophotographic photosensitive device and method of manufacture thereof. 4,537,845, Cl. 430-58.000.
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Minami, Kunihiko, to Sasakura Engineering Co., Ltd. Air-cooled heat exchanger. 4,537,248, Cl. 165-113.000.
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Brinkhoff, Carl H.; and Scott, Gordon C., 4,536,892, Cl. 2-424.000.
Minichshofer, Klaus: *See*—
Feyerl, Gunther; Minichshofer, Klaus; and Pum, Hans G., 4,536,927, Cl. 28-110.000.
Ministry of International Trade and Industry: *See*—
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Minnesota Mining and Manufacturing Company: *See*—
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Uchiyama, Tadamitsu, 4,538,160, Cl. 346-140.00R.
Ueda, Hiroshi; Saito, Mitsuru; and Kajita, Hideo, 4,537,732, Cl. 264-1.100.
Minor, John W. Solar heating and storage unit. 4,537,180, Cl. 126-437.000.
Mistral Windsurfing AG: *See*—
Gaide, Albert, 4,537,143, Cl. 114-39.000.
Mitamura, Sachio; and Kuroume, Hirotsugu, to Hitachi, Ltd. Apparatus for working on turbine blade mounting grooves. 4,537,538, Cl. 409-217.000.
Mitani, Ryo; Moriya, Yoshiaki; and Kobayashi, Atsushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Data transfer control device. 4,538,145, Cl. 340-805.000.
Mitchell, Charles S.: *See*—
Dimmick, W. Scott; Mitchell, Charles S.; and Moon, William G., 4,538,193, Cl. 360-137.000.
Mitsubishi Chemical Industries Limited: *See*—
Ide, Hiroshi, 4,537,855, Cl. 430-285.000.
Mitsubishi Denki Kabushiki Kaisha: *See*—
Fujiyama, Shigeo; and Ogata, Yasuhiro, 4,537,046, Cl. 62-505.000.
Hattori, Takatoshi, 4,536,954, Cl. 29-736.000.
Izaki, Katsura, 4,537,114, Cl. 98-2.060.
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Nakayama, Taesuke; and Konishi, Tadashi, 4,538,079, Cl. 310-74.000.
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,537,051, Cl. 72-12.000.
Noda, Masahiro; and Ando, Hiroshi, 4,537,287, Cl. 187-29.00R.
Shinryo, Yuko; and Yamamoto, Takashi, 4,536,952, Cl. 29-596.000.
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Mitsubishi Gas Chemical Company, Inc.: *See*—
Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, 4,537,023, Cl. 60-39.050.
Mitsui Engineering & Shipbuilding Co., Ltd.: *See*—
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Mitsui Toatsu Chemicals, Inc.: *See*—
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.
Mitutoyo Mfg. Co., Ltd.: *See*—
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Miyake, Kazuo: *See*—
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.
Miyake, Toshio; and Hijiya, Hiromi, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Products sweetened with α-glycosyl glycyrrhizin. 4,537,763, Cl. 424-49.000.
Miyako, Haruyoshi; and Arima, Kiyoteru, to Kabushiki Kaisha Sankyo Seiki Seisakusho. Record. 4,538,258, Cl. 369-271.000.
Miyamura, Masataka; Sakamoto, Masanori; and Nakajima, Yuko, to Tokyo Shibaura Denki Kabushiki Kaisha. Electrochromic display element. 4,537,826, Cl. 428-328.000.
Miyano, Kenjiro: *See*—
Abraham, Bernard M.; Miyano, Kenjiro; and Ketterson, John B., 4,537,064, Cl. 73-54.000.
Miyatsuka, Hajime: *See*—
Kasuga, Akira; Yamamoto, Nobuyuki; and Miyatsuka, Hajime, 4,537,833, Cl. 428-328.000.
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Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, 4,537,652, Cl. 156-617.0SP.
Miyoshi, Mituji: *See*—
Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,537,938, Cl. 526-97.000.
Miyoshi, Motosuke; and Sano, Tetsuya, to Tokyo Shibaura Denki Kabushiki Kaisha. Stroboscopic scanning electron microscope. 4,538,065, Cl. 250-310.000.
Mo och Domsjo Aktiebolag: *See*—
Lindahl, Jonas A. I.; and Bergstrom, John R., 4,537,656, Cl. 162-38.000.
Mobay Chemical Corporation: *See*—
Ellis Margaret D.; Ferencz, Richard L.; and Kalz, Dietmar, 4,537,991, Cl. 564-133.000.
Mobil Oil Corporation: *See*—
Chu, Pochen; and Kuehl, Guenter H., 4,537,758, Cl. 423-329.000.
Horodysky, Andrew G.; and Herd, Richard S., 4,537,692, Cl. 252-49.600.
Horodysky, Andrew G., 4,537,694, Cl. 252-51.50A.
Lenhardt, Wilfred K., 4,538,248, Cl. 367-25.000.
Miale, Joseph N.; and Chang, Clarence D., 4,538,014, Cl. 585-408.000.
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Miale, Joseph N.; and Chang, Clarence D., 4,538,016, Cl. 585-408.000.
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Moisson, Marc F.; and Wisecarver, Martin L., to Raychem Corporation. Optical fiber chuck including a cover comprising an idler wheel and a V-shaped insert. 4,537,466, Cl. 350-96.200.
Mojden, Wallace W.; and Darr, Robert E., to Fleetwood Systems, Inc. Palletizing system. 4,537,010, Cl. 53-447.000.
Mojden, Wallace W.; and Darr, Robert E., to Fleetwood Systems, Inc. Automatic. stack developing and loading system. 4,537,550, Cl. 414-46.000.
Molina, Domingo F. Double flapper check valve. 4,537,213, Cl. 137-269.500.
Molins, Ltd.: *See*—
Dealto, Michael E.; DiGiacomo, Joseph D.; and Marritt, Clifford R., 4,537,104, Cl. 83-348.000.
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Monatex S.A.: *See*—
Gutschmit, Alan; and York, Paul W., 4,537,048, Cl. 66-93.000.
Moneta, Casimir, to J. I. Case Company. Steering wheel. 4,537,089, Cl. 74-493.000.
Monogram Industries, Inc.: *See*—
Pratt, John D.; and Ramirez, Raymond, 4,537,542, Cl. 411-55.000.
Monsanto Company: *See*—
Gomez, I. Luis, 4,537,828, Cl. 428-412.000.
Tolbert, William R.; Feder, Joseph; and Lewis, Charles, Jr., 4,537,860, Cl. 435-240.000.
Monsanto Europe, S.A.: *See*—
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Montage Computer Corporation: *See*—
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Montagna, Angelo A.: *See*—
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Montant, Charles: *See*—
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Montedison S.p.A.: *See—*
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Montgomery, Gary V., to Sunbeam Plastics Corp. Dispensing closure lock and seal. 4,537,318, Cl. 215-232.000.
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Pellico, Michael A.; and Montgomery, Robert E., 4,537,764, Cl. 424-50.000.
Montgomery, Rodney L. Shelter. 4,537,210, Cl. 135-87.000.
Montgomery, William P., to Sprague Electric Company. Electrolytic capacitor. 4,538,212, Cl. 361-433.000.
Moon, Ronald R., to Quantum Corporation. Amplifier circuit. 4,538,099, Cl. 318-678.000.
Moon, William G.: *See—*
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Moore, Brian B., to International Business Machines Corporation. System for digitized voice and data with means to compensate for variable path delays. 4,538,259, Cl. 370-60.000.
Moore, Russell L.: *See—*
Bahr, Richard G.; and Moore, Russell L., 4,538,264, Cl. 371-8.000.
Moore, Thomas W.: *See—*
Coiner, Russell E.; and Moore, Thomas W., 4,537,463, Cl. 339-276.00A.
Moore, William M.: *See—*
Cawlfield, David W.; Moore, William M.; and Stubbs, John L., Jr., 4,537,937, Cl. 525-417.000.
Morawski, Janusz. Paint guard hand tool. 4,536,913, Cl. 15-257.00R.
Morehead, Clyde D. Protector for drink opening. 4,537,326, Cl. 220-269.000.
Morgan Construction Company: *See—*
Woodrow, Harold E.; and Smola, Raymond L., 4,537,055, Cl. 72-235.000.
Morgan, Robert H.: *See—*
Charney, Joseph C.; Goodman, Phillip M.; and Morgan, Robert H., 4,537,522, Cl. 401-218.000.
Morganstern, Kennard H., to Radiation Dynamics, Inc. Method for reducing the monomer content in acrylonitrile containing polymers. 4,537,734, Cl. 264-22.000.
Mori, Leo; Tominaga, Mamoru; and Aoba, Takashi, to Tokyo Shibaura Denki Kabushiki Kaisha. Lighting apparatus. 4,538,216, Cl. 362-311.000.
Mori, Makoto: *See—*
Imanishi, Kazuo; Hashimoto, Masaru; and Mori, Makoto, 4,538,198, Cl. 361-86.000.
Mori, Masami: *See—*
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Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, to Shin-Etsu Chemical Co. Ltd. Silicone-based working fluid composition. 4,537,691, Cl. 252-49.600.
Mori, Takaaki: *See—*
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Morinushi, Ken: *See—*
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Morisawa, Kunio, to Toyota Jidosha Kabushiki Kaisha. Transverse type automatic transmission with through lay shaft. 4,537,092, Cl. 74-695.000.
Morisawa, Kunio, to Toyota Jidosha Kogyo Kabushiki Kaisha. Hydraulic control system for automatic transmission. 4,537,095, Cl. 74-868.000.
Morison, John M., to Ferranti, plc. Automatic equipment. 4,538,177, Cl. 358-101.000.
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, to Lion Corporation. Micellar slug for oil recovery. 4,537,253, Cl. 166-274.000.
Morita, Masao: *See—*
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.
Moriya, Tatsuo, to Kabushiki Kaisha Suwa Seikosha. Multi-function analog display stopwatch. 4,537,514, Cl. 368-107.000.
Moriya, Yoshiaki: *See—*
Mitani, Ryo; Moriya, Yoshiaki; and Kobayashi, Atsushi, 4,538,145, Cl. 340-805.000.
Morris, Arnold M.; and Trivedi, Jitendra K., to Westinghouse Electric Corp. Elevator system. 4,537,286, Cl. 187-1.00A.
Morris, David; and Schwarz, Albrecht, to International Telephone and Telegraph Corporation. Multiwinding inductor and associated apparatus. 4,538,219, Cl. 363-26.000.
Morris, Dennis E., to National Semiconductor Corporation. Integrated circuit output pins used for input signals. 4,538,146, Cl. 340-814.000.
Morris, Harold D.: *See—*
Flanner, Philip D.; Morris, Harold D.; and Newell, Gerald R., 4,538,203, Cl. 361-159.000.
Morris, Robert L.: *See—*
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Morrison, J. Bruce: *See—*
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Morrison, Melvin M., to RCA Corporation. Planar microwave circuit component mounting system. 4,538,124, Cl. 333-246.000.
Morrow, Danny G.; and Oiwa, Thomas Y., to Raychem Corporation. Termination apparatus for heaters in hazardous environments. 4,538,053, Cl. 219-541.000.
Morrow, Robert M.; Kuebker, William A.; and McGinity, James W., to Board of Regents, University of Texas System, The. Oral lubricant for athletic mouth protector. 4,537,689, Cl. 252-11.000.
Mosley, William H., Jr.; and Andren, Carl F., to E-Systems, Inc. Coherent spread spectrum pseudonoise tracking loop. 4,538,280, Cl. 375-1.000.
Mosoiu, Marcel A.: *See—*
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Moss, Morris C.: *See—*
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Mosser, Mark F., to Sermatech International, Inc. Spherical aluminum particles in coatings. 4,537,632, Cl. 106-14.120.
Motorola, Inc.: *See—*
Boothe, Nancy G.; and Potts, Anthony M., 4,536,925, Cl. 24-511.000.
Goodrich, Edgar R., Jr.; and Navratil, Philip, 4,538,270, Cl. 371-37.000.
Smith, William R.; and Myers, Theodore R., 4,538,169, Cl. 357-76.000.
Vyne, Robert L., 4,538,116, Cl. 330-271.000.
Moy, Debbie: *See—*
Gaffar, Abdul; Davis, Calvin B.; Donohue, John J.; and Moy, Debbie, 4,537,765, Cl. 424-53.000.
MTS Systems Corporation: *See—*
Christiansen, John A., 4,537,080, Cl. 73-857.000.
Clark, Allen J.; and Maue, Dale N., 4,537,077, Cl. 73-665.000.
Meline, Harry R.; and Meyer, Richard A., 4,537,082, Cl. 73-794.000.
Mugiya, Hiroshi: *See—*
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Muhlbauer, Ernst. Device and method for mixing liquid and powdery components, particularly for dental purposes. 4,537,303, Cl. 206-219.000.
Mulhaus, Ludwig: *See—*
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Muller, Frank: *See—*
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,537,264, Cl. 173-48.000.
Muller, Hanns P.; and Schafer, Karl, to Bayer Aktiengesellschaft. Polyetheresters, their preparation, and their use for treating textiles. 4,537,596, Cl. 8-115.600.
Muller, Hans-Rudolf; and Bollinger, Heinrich, to Eprova Ag Forschungsinstitut. Process for the preparation of lower alkyl esters of N-L-α-aspartyl-L-phenylalanine and of new intermediates for their preparation. 4,537,714, Cl. 260-112.50R.
Muller, Reiner: *See—*
Hassler, Heinrich; Muller, Reiner; Kippenberg, Horst; and Prolss, Norbert, 4,537,745, Cl. 420-590.000.
Murakami, Shoetsu, to Yoshida Kogyo K.K. Separable slide fastener. 4,536,923, Cl. 24-433.000.
Muranaka, Yuuichi, to Tokyo Shibaura Denki Kabushiki Kaisha. Ultrasonic diagnostic apparatus. 4,537,199, Cl. 128-660.000.
Muraoka, Masami: *See—*
Ono, Keiichi; Sugie, Akihiko; Muraoka, Masami; and Yamamoto, Michihiro, 4,537,989, Cl. 562-501.000.
Muraoka, Yasuhiko: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.
Murase, Masakazu, to Terumo Kabushiki Kaisha. Electronic clinical thermometer. 4,537,518, Cl. 374-188.000.
Murata, Hideki: *See—*
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Murata Kikai Kabushiki Kaisha: *See—*
Matsui, Isamu; and Mima, Hiroshi, 4,537,019, Cl. 57-202.000.
Murata Manufacturing Co., Ltd.: *See—*
Okabe, Shinsei; Komatsu, Hiroshi; Hamaji, Yukio; Kojima, Shozo; and Kato, Yoshiharu, 4,537,865, Cl. 501-135.000.
Murata, Shinichi: *See—*
Inomata, Koichiro; and Murata, Shinichi, 4,537,517, Cl. 374-21.000.
Murphy, Betty J.: *See—*
Smith, James A.; and Murphy, Betty J., 4,537,914, Cl. 521-111.000.
Murphy, William C.: *See—*
Brown, Patrick A.; and Murphy, William C., 4,537,285, Cl. 184-15.200.
Murray, Alexander P.; and Snyder, Thomas S., to Westinghouse Electric Corp. Decontamination using electrolysis. 4,537,666, Cl. 204-129.950.
Murray, Robert J., to Pennwalt Corporation. 1-(Aminobenzoyl)-1H-indazol-3-ols. 4,537,966, Cl. 546-120.000.
Muse, Joel, Jr.: *See—*
Colvin, Howard A.; Muse, Joel, Jr.; and Hollingshead, William S., 4,538,002, Cl. 568-650.000.
Musil, Frantisek: *See—*
Bursa, Miloslav; Musil, Frantisek; and Podmela, Ladislav, 4,537,094, Cl. 74-804.000.
Muti, Elliott J. Calipers arranged for remote reading. 4,536,960, Cl. 33-143.00M.

Muylle, Wilfried E., to AGFA-Gevaert N.V. Radiographic film package. 4,537,306, Cl. 206-455.000.

Myers, Theodore R.: *See—*
Smith, William R.; and Myers, Theodore R., 4,538,169, Cl. 357-76.000.

Naarden International N.V.: *See—*
van der Weerdt, Antonius J. A.; and Renes, Harrie, 4,537,702, Cl. 252-522.00R.

Nablo, Sam V., to Energy Sciences, Inc. Electron beam irradiating process for rendering rough or topographically irregular surface substrates smooth; and coated substrates produced thereby. 4,537,811, Cl. 428-166.000.

NACAM: *See—*
Haldric, Bernard, 4,537,523, Cl. 403-12.000.

Nagai, Isao: *See—*
Sato, Takahisa; Takata, Masahiro; Ueshima, Michio; and Nagai, Isao, 4,537,874, Cl. 502-311.000.

Nagasaka, Yasumasa, to Toyota Jidosha Kogyo Kabushiki Kaisha. Process of manufacturing auto bumpers. 4,536,937, Cl. 29-460.000.

Nagasawa, Masao, to Nippondenso Co., Ltd. Output supply control apparatus for internal combustion engine magneto generator. 4,537,174, Cl. 123-604.000.

Nagase, Yoshinori: *See—*
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,537,940, Cl. 526-278.000.

Nagata, Masayuki: *See—*
Saito, Shigeo; and Nagata, Masayuki, 4,537,642, Cl. 148-11.50Q.

Nagatome, Yoshiaki: *See—*
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Nagel, Rudolf: *See—*
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Naik, Appaya R.: *See—*
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Naiman, Michael I., to Petrolite Corporation. Antistats containing acrylonitrile copolymers and polyamines. 4,537,601, Cl. 44-62.000.

Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, to Hitachi, Ltd.; and Nippon Telegraph & Telephone Public Corporation. Buffer memory dispersion type video/audio transmission system. 4,538,176, Cl. 358-86.000.

Nakajima, Yuko: *See—*
Miyamura, Masataka; Sakamoto, Masanori; and Nakajima, Yuko, 4,537,826, Cl. 428-328.000.

Nakamura, Hidenori: *See—*
Shishikura, Toshikazu; Konuma, Hiroshi; Nakamura, Hidenori; and Kobayashi, Yukio, 4,537,843, Cl. 429-197.000.

Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, to Mitsubishi Gas Chemical Company, Inc. Regenerative gas turbine cycle. 4,537,023, Cl. 60-39.050.

Nakamura, Kazumasa: *See—*
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,537,272, Cl. 180-176.000.

Nakamura, Keijiro: *See—*
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.

Nakamura, Motoharu: *See—*
Kitayama, Minoru; Nakamura, Motoharu; Hirose, Kikuji; and Tanida, Masashi, 4,537,792, Cl. 427-13.000.

Nakamura, Yasushi, to Tokyo Shibaura Denki Kabushiki Kaisha. Apparatus for detecting an abnormality in paperlike material. 4,538,290, Cl. 378-44.000.

Nakano, Kenichi: *See—*
Berenz, John J.; and Nakano, Kenichi, 4,537,654, Cl. 156-644.000.

Nakano, Motoo, to Fujitsu Limited. Semiconductor memory device. 4,538,166, Cl. 357-23.600.

Nakano, Teruo; Ohtani, Hideji; Miyawaki, Kunio; and Mogi, Shigeo, to Hitachi Zosen Corporation. Method of controlling robotic automatic welding apparatus. 4,538,047, Cl. 219-125.100.

Nakano, Yoshikatsu: *See—*
Honda, Shoichi; Nakano, Yoshikatsu; Hirano, Makoto; and Matsuura, Masaaki, 4,537,165, Cl. 123-90.160.

Nakatani, Tokuji: *See—*
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.

Nakayama, Hideo: *See—*
Tsutomu, Kimura; Nakayama, Hideo; and Fuseda, Yuichi, 4,538,179, Cl. 358-166.000.

Nakayama, Taesuke; and Konishi, Tadashi, to Mitsubishi Denki Kabushiki Kaisha. Flywheel device with compensation for non parallel plates. 4,538,079, Cl. 310-74.000.

Nakazato, Katsuo: *See—*
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.

Nangrani, Khemchand J., to Plastic Specialties and Technologies, Inc. High impact nylon composition. 4,537,929, Cl. 524-504.000.

Nanjo, Yusuke, to Sony Corporation. Retro-focus type wide angle lens. 4,537,476, Cl. 350-461.000.

Nanri, Shosuke; and Tsuchida, Kazuyoshi, to Toyo Boseki Kabushiki Kaisha. Three-layered fabric material. 4,537,822, Cl. 428-212.000.

Naramoto, Yuichi, to Aisin Seiki Kabushiki Kaisha. Vehicle body position control system. 4,537,411, Cl. 280-6.00R.

Narazaki, Norio: *See—*
Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, 4,537,023, Cl. 60-39.050.

Nassof, Martin, to Nassof, Martin. Air drape. 4,537,116, Cl. 98-36.000.

Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., to Sovonics Solar Systems. Method for introducing sweep gases into a glow discharge deposition apparatus. 4,537,795, Cl. 427-39.000.

National Distillers and Chemical Corporation: *See—*
Beimesch, Bruce J., 4,537,696, Cl. 252-75.000.

National Semiconductor Corporation: *See—*
Gray, Bruce; Soundaranathan, Kasivisvanatha; and VanGieson, Franklin D., 4,536,945, Cl. 29-571.000.
Morris, Dennis E., 4,538,146, Cl. 340-814.000.
Wang, Samuel T.; Hu, Chenming; and Shum, Ying, 4,538,246, Cl. 365-226.000.

Nau, Walter; and Carstensen, Jes, to Klockner-Humboldt-Deutz Aktiengesellschaft. Ballast weight arrrangement on agricultural prime movers. 4,537,423, Cl. 280-759.000.

Naumann, Klaus; Scheinpflug, Hans; Rosslenbroich, Hans-Jurgen; and Paul, Volker, to Bayer Aktiengesellschaft. Substituted benzoxazine derivatives and fungicidal use. 4,537,888, Cl. 514-228.000.

Navratil, Philip: *See—*
Goodrich, Edgar R., Jr.; and Navratil, Philip, 4,538,270, Cl. 371-37.000.

Naya, Eizo: *See—*
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.

Nazzer, Craig A.: *See—*
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Neathway, Graham A.: *See—*
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NEC Corporation: *See—*
Hori, Kiyoshi, 4,538,226, Cl. 364-200.000.
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Neely, James W.: *See—*
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Neimy, Daniel T.: *See—*
Seshadri, Jayaram; and Neimy, Daniel T., 4,537,047, Cl. 62-510.000.

Nemesnyik, John C., to Charles Beseler Company. Photographic contrast control device. 4,537,500, Cl. 355-67.000.

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Neturen Co., Ltd.: *See—*
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Neuhoff, Uredat, to Meiko Industrial Co., Ltd. Chair. 4,537,445, Cl. 297-300.000.

Newbower, Ronald S.: *See—*
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Newell, Gerald R.: *See—*
Flanner, Philip D.; Morris, Harold D.; and Newell, Gerald R., 4,538,203, Cl. 361-159.000.

Neyer, Jean-Marie: *See—*
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Millet, Catherine; Ser, Jean-Claude; and N'Guyen, Quang L., 4,537,782, Cl. 514-774.000.

Nguyen, Trung H.; and Hutchins, Clinton E., to Sprague Electric Company. Production of aluminum foil capacitor electrodes. 4,537,665, Cl. 204-29.000.

Nichols, Galen N.: *See—*
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Nichols, Ralph A. Process for producing preserved fish food and fish food produced. 4,537,785, Cl. 426-332.000.

Nickerson, Harvey R.: *See—*
Press, Irving D.; Nickerson, Harvey R.; and Rink, Helm A., 4,537,425, Cl. 285-55.000.

Nicklas, Roger W.; Reynolds, John E.; and Schiestl, Randall L., to Honeywell Inc. Manufacture of projectiles. 4,536,928, Cl. 29-1.200.

Nicolai, Donald R.: *See—*
Hanson, Oliver D.; Nicolai, Donald R.; and Strong, Les O., 4,537,194, Cl. 128-399.000.

Nicoli, David F.: *See—*
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Nicoll, Andrew R.: *See—*
Gross, Franz; Wahl, Georg; and Nicoll, Andrew R., 4,537,744, Cl. 420-446.000.

Nielsen, Steven T. Centrifuge tube having removable crown and swage fitting. 4,537,320, Cl. 215-276.000.

Nightingale, Douglas J., to Rolls-Royce Inc. Variable area nozzles for turbomachines. 4,537,026, Cl. 60-264.000.

Nihon Radiator Co., Ltd.: *See—*
Matsuzaki, Yoshitomi; Hayashi, Toshihiko; and Kushibiki, Keizou, 4,537,159, Cl. 123-41.270.

Niida, Hideo: *See—*
Denpou, Kazuo; Eto, Kazumi; and Niida, Hideo, 4,537,041, Cl. 62-199.000.

Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, to Mitsubishi Denki Kabushiki Kaisha. Control device for successive rolling mill. 4,537,051, Cl. 72-12.000.
Nikaido, Tadanobu, to Nippon Telegraph & Telephone Public Corporation. Electronic time switch. 4,538,260, Cl. 370-66.000.
Nikka Chemical Industry Co., Ltd.: *See—*
Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.
Nils Weibull AB: *See—*
Andersson, Sven A., 4,537,553, Cl. 414-302.000.
Nilssen, Ole K. Series-resonant electronic ballast circuit. 4,538,095, Cl. 315-244.000.
Nippon Chemi-Con Corporation: *See—*
Shimpo, Tetsuhiko; and Fujihata, Isao, 4,538,101, Cl. 323-272.000.
Nippon Electric Co., Ltd.: *See—*
Hatakeyama, Kenichi; and Inui, Tetsuji, 4,538,151, Cl. 343-18.00A.
Sone, Junichi, 4,538,077, Cl. 307-476.000.
Nippon Electric Glass Company, Ltd.: *See—*
Matsuura, Ichiro; and Yamaguchi, Fumio, 4,537,863, Cl. 501-15.000.
Nippon Kogaku K.K.: *See—*
Kakizaki, Yukio; Izawa, Hisao; and Hazama, Junji, 4,537,501, Cl. 355-76.000.
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Nippon Oil Company, Limited: *See—*
Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,537,938, Cl. 526-97.000.
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Nippon Seiko Kabushiki Kaisha: *See—*
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Nippon Shokubai Kagaku Kogyo Co Ltd: *See—*
Sato, Takahisa; Takata, Masahiro; Ueshima, Michio; and Nagai, Isao, 4,537,874, Cl. 502-311.000.
Nippon Soken, Inc.: *See—*
Kanehara, Kenji; Kohama, Tokio; Kawai, Hisasi; and Tokura, Norihito, 4,537,172, Cl. 123-527.000.
Ootsuka, Yoshinori; Hattori, Tadashi; Yamamoto, Minoru; and Ozaki, Tadashi, 4,537,065, Cl. 73-117.300.
Tsuge, Noboru; Taguchi, Masahiro; Kato, Masanori; and Kuwakado, Satosi, 4,537,169, Cl. 123-325.000.
Nippon Steel Corporation: *See—*
Kitayama, Minoru; Nakamura, Motoharu; Hirose, Kikuji; and Tanida, Masashi, 4,537,792, Cl. 427-13.000.
Tominaga, Jiro; Yada, Hiroshi; and Honda, Mitsuo, 4,537,644, Cl. 148-36.000.
Nippon Telegraph & Telephone Public Corporation: *See—*
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Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, 4,537,652, Cl. 156-617.0SP.
Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, 4,538,176, Cl. 358-86.000.
Nikaido, Tadanobu, 4,538,260, Cl. 370-66.000.
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Nippondenso Co., Ltd.: *See—*
Kato, Masaaki; and Akashi, Tetsuji, 4,537,352, Cl. 239-90.000.
Kuroyanagi, Masatoshi; and Suzuki, Masahiko, 4,537,171, Cl. 123-449.000.
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Nishi, Yasuyuki; Sakurai, Masao; and Takagi, Masashi, 4,537,042, Cl. 62-208.000.
Nishimura, Masao; Mori, Masami; and Yoshimi, Akirou, 4,537,245, Cl. 165-22.000.
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Suzuki, Akihiro; Souda, Keiichi; Kuno, Masao; and Ikuta, Hiroshi, 4,538,191, Cl. 360-88.000.
Nishi, Yasuyuki; Sakurai, Masao; and Takagi, Masashi, to Nippondenso Co., Ltd. Automotive refrigeration system. 4,537,042, Cl. 62-208.000.
Nishikawa, Masayasu: *See—*
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Nishikimi, Tadashi: *See—*
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Nishimatsu, Masaharu: *See—*
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Nishimura, Masao; Mori, Masami; and Yoshimi, Akirou, to Nippondenso Co., Ltd. Zone air-conditioning control system for motor vehicle compartment. 4,537,245, Cl. 165-22.000.
Nishioka, Itsuo: *See—*
Kooda, Akihide; Nishioka, Itsuo; Nishiyori, Takeshi; and Yahara, Shoji, 4,537,996, Cl. 568-442.000.
Nishiyori, Takeshi: *See—*
Kooda, Akihide; Nishioka, Itsuo; Nishiyori, Takeshi; and Yahara, Shoji, 4,537,996, Cl. 568-442.000.
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Nishizawa, Kazuo: *See—*
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Nissan Chemical Industries Ltd.: *See—*
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Nissan Motor Co., Ltd.: *See—*
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Matsuzaki, Yoshitomi; Hayashi, Toshihiko; and Kushibiki, Keizou, 4,537,159, Cl. 123-41.270.
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Nivin, James E., to American Commercial Barge Line Co. Plastic sheet barge hatch cover. 4,537,147, Cl. 114-201.00R.
NLB Corp.: *See—*
Shook, Forrest A., 4,537,639, Cl. 134-10.000.
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Noda, Masahiro; and Ando, Hiroshi, to Mitsubishi Denki Kabushiki Kaisha. Apparatus for detecting abnormality in the cage of an elevator. 4,537,287, Cl. 187-29.00R.
Noda, Norio: *See—*
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.
Noll, Brian J.: *See—*
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Noll, Robert W.; and Noll, Brian J. Bi-directional air diffuser. 4,537,347, Cl. 236-49.000.
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Ohmori, Tadashi; Fujiso, Tokuo; Yasui, Eiji; Nomura, Soichi; and Aizawa, Yukio, 4,537,872, Cl. 502-230.000.
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Nonogaki, Saburo; Hayashi, Nobuaki; and Tomita, Yoshifumi, to Hitachi, Ltd. Process of forming powder pattern using positive diazonium salt photoresist. 4,537,851, Cl. 430-144.000.
Noonan, Carroll: *See—*
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Norem, Stanley D.: *See—*
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Normalair-Garrett (Holdings) Limited: *See—*
Rogers, Brian H.; and Tucker, Paul A., 4,537,607, Cl. 55-163.000.
Norman, Rodric H. Continuous heat sealer for sacks and bags in thermoplastic material. 4,537,585, Cl. 493-205.000.
Norris, Claude R. Free-running rotary induction system. 4,537,173, Cl. 123-592.000.
Norris, George W.: *See—*
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North American Philips Corporation: *See—*
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North American Philips Lighting Corp.: *See—*
Lewis, George A.; Collins, Kent L.; Benesh, Joseph C.; and Ward, Patrick C., 4,538,091, Cl. 313-625.000.
Norton, Thomas E., Sr. Shelf lowering and vial stoppering freeze-drying apparatus. 4,536,972, Cl. 34-92.000.
Norton, William W., to Culligan International Company. Tank lining system. 4,537,329, Cl. 220-465.000.
Nortronics Company, Inc.: *See—*
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Noso, Kazunori; and Kishi, Norimasa, to Nissan Motor Company, Limited. Speech recognition system for an automotive vehicle. 4,538,295, Cl. 381-43.000.
Novacek, William G., to Sprague Electric Company. Method for continuously monitoring oxide thickness on moving aluminum foil. 4,537,664, Cl. 204-28.000.
Nowak, Alfred: *See—*
Koroncai, Adam; Nowak, Alfred; and Piber, Herbert, 4,536,956, Cl. 30-43.920.
Nowobilski, Jeffert J.; and Owens, William J., to Union Carbide Corporation. Insulation board and process of making. 4,537,820, Cl. 428-285.000.
Nozawa, Koohei; Yoshizawa, Toyokichi; and Kuroda, Toshio, to Wakamoto Pharmaceutical Co., Ltd. 1-Oxo-1,2,3,4-tetrahydro-3-isoquinoline carboxylic acid derivatives. 4,537,967, Cl. 546-141.000.
Nozawa, Yoshikuni, to Entac Company, Limited. Rotor/stator winding and method and apparatus for producing same. 4,538,083, Cl. 310-198.000.
NUKEM GmbH: *See—*
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Numminen, Matti: *See—*
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Nusbaum, Ronnie W. Combination car seat and stroller. 4,537,414, Cl. 280-47.410.

Oakley, Raymond E.: *See*—
Rhodes, Stephen J.; and Oakley, Raymond E., 4,536,951, Cl. 29-589.000.

Obara, Heitaro: *See*—
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.

Oberle, Patrick; Longuet, Michel; and Walker, David, to Polysar International S.A. Char resistant foams. 4,537,915, Cl. 521-84.100.

Occidental Chemical Corporation: *See*—
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Ochiai, Kuniaki; and Komakine, Shigeo, to Tokyo Electric Co., Ltd. Dot printer head with reduced magnetic interference. 4,537,520, Cl. 400-124.000.

Ockelmann, Dieter: *See*—
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Emeterio, Eloy V.; Deallenbach, Robert E.; O'Connor, Martin F.; and Klufas, Oleg, 4,537,560, Cl. 416-198.00A.

Ogata, Yasuhiro: *See*—
Fujiyama, Shigeo; and Ogata, Yasuhiro, 4,537,046, Cl. 62-505.000.

Ogawa, Tetsuo, to Katsuhiko Ohki. Ram pumps. 4,537,563, Cl. 417-226.000.

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Tamura, Kaoru; and Ogo, Yoshimasa, 4,538,294, Cl. 378-187.000.

Ogunbiyi, Lai; Scott, Francis L.; and Smith, Francis X., to Bausch & Lomb Incorporated. Methods for disinfecting and preserving contact lenses. 4,537,746, Cl. 422-28.000.

Oh, Se-Kyung, to Boston University, Trustees of. Non-specific suppressive factors and process. 4,537,712, Cl. 260-112.00R.

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Ohba, Hisao; Uchida, Toshio; Ohashi, Azusa; and Kita, Nobuyuki, 4,537,496, Cl. 355-10.000.

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Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,537,051, Cl. 72-12.000.

Ohio State University: *See*—
Horton, Derek; and Priebe, Waldemar, 4,537,882, Cl. 514-34.000.

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Ohsawa, Zenichi: *See*—
Yano, Yasuhiro; Umino, Isamu; Ohsawa, Zenichi; and Ozaki, Takayuki, 4,538,121, Cl. 331-25.000.

Ohtani, Hideji: *See*—
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Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, 4,537,600, Cl. 44-51.000.

Oishi, Yaichi: *See*—
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.

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Morrow, Danny G.; and Oiwa, Thomas Y., 4,538,053, Cl. 219-541.000.

Okabe, Shinsei; Komatsu, Hiroshi; Hamaji, Yukio; Kojima, Shozo; and Kato, Yoshiharu, to Murata Manufacturing Co., Ltd. Process for preparing a particulate ceramic material. 4,537,865, Cl. 501-135.000.

Okada, Hisafumi; Suzuki, Yoshio; and Takenaka, Shigeo, to Tokyo Shibaura Denki Kabushiki Kaisha. Glass envelope for a cathode-ray tube. 4,537,322, Cl. 220-2.10A.

Okada, Makoto; and Fujita, Kazunori, to Nissan Motor Company, Limited. Exhaust duct connector. 4,537,278, Cl. 181-227.000.

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Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,537,845, Cl. 430-58.000.
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,537,846, Cl. 430-58.000.

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Okamoto, Ken: *See*—
Niino, Shuhei; Ishimura, Koichi; Okamoto, Ken; and Ohba, Koichi, 4,537,051, Cl. 72-12.000.

Okazaki, Sakiho: *See*—
Shinohara, Toshihide; and Okazaki, Sakiho, 4,537,479, Cl. 351-169.000.

Okoshi, Hideo, to Nippon Seiko Kabushiki Kaisha. Infinitely variable toric transmission. 4,537,086, Cl. 74-201.000.

Okumura, Akio: *See*—
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.

Okumura, Mitsuhiro: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.

Olin Corporation: *See*—
Cawlfield, David W.; Moore, William M.; and Stubbs, John L., Jr., 4,537,937, Cl. 525-417.000.
Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., 4,537,242, Cl. 164-460.000.
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., 4,537,627, Cl. 75-76.000.

Oljace, Richard L.: *See*—
Heinrich, Andrew L.; and Oljace, Richard L., 4,538,036, Cl. 200-11.0EA.

Olsson, Bengt G. Transistor amplifier. 4,538,117, Cl. 330-277.000.

Olympus Optical Co., Ltd.: *See*—
Asoma, Yoshito, 4,537,472, Cl. 350-414.000.
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,537,845, Cl. 430-58.000.
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Otani, Yutaka, 4,537,182, Cl. 128-4.000.
Sasa, Hiroyuki, 4,537,209, Cl. 134-166.00C.
Shishido, Yoshio, 4,538,062, Cl. 250-201.000.
Takeuchi, Haruo, 4,537,453, Cl. 339-33.000.

Omron Tateisi Electronics Co.: *See*—
Bando, Yoshihide, 4,538,126, Cl. 335-78.000.

Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, to Kuraray Co., Ltd. Adhesive compositions. 4,537,940, Cl. 526-278.000.

Ong, Helen H.; and Profitt, James A., to Hoechst-Roussel Pharmaceuticals Inc. Benzo[b]thiophenes. 4,537,976, Cl. 549-54.000.

Ono, Keiichi; Sugie, Akihiko; Muraoka, Masami; and Yamamoto, Michihiro, to Sumitomo Chemical Company, Limited. Imino-bicyclo (3.3.0) octane derivatives. 4,537,989, Cl. 562-501.000.

Ono, Takayuki: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,537,645, Cl. 149-3.000.

Onodera, Kaoru: *See*—
Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, 4,537,857, Cl. 430-549.000.

Onsrud, Charles R. Routing machines. 4,537,234, Cl. 144-134.00A.

Ontario Research Foundation: *See*—
Lakshmanan, Vaikuntam I.; and Biskupski, Jurgen K., 4,537,628, Cl. 75-118.00R.

Oogai, Michiharu; Seita, Toru; Takeshige, Kosuke; and Shuyama, Hideo, to Toyo Soda Manufacturing Co., Ltd. Method of producing cation-exchange membrane having roughed surface. 4,537,910, Cl. 521-27.000.

Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, to Kabushiki Kaisha Kobe Seiko Sho. Inspection method of square billet using electronic scanning. 4,537,073, Cl. 73-602.000.

Ootsuka, Yoshinori; Hattori, Tadashi; Yamamoto, Minoru; and Ozaki, Tadashi, to Nippon Soken, Inc.; and Nippondenso Co., Ltd. Device for detection of abnormality in pressure detector for internal combustion engine. 4,537,065, Cl. 73-117.300.

Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, to BASF Aktiengesellschaft. Demulsifiers for breaking crude-oil emulsions and their use. 4,537,701, Cl. 252-344.000.

Optical Coating Laboratory, Inc.: *See*—
Matteucci, John S.; Snyder, James K.; and Hahn, Robert E., 4,536,998, Cl. 52-171.000.

Optik Innovation AB OIAB: *See*—
Astero, Ulf J., 4,537,474, Cl. 350-432.000.

Orlowski, Ronald C.; and Seyler, Jay K., to Armour Pharmaceutical Co. Des-serine^2 or des-glycine^2-leucine^{22} calcitonin. 4,537,716, Cl. 260-112.50T.

Ormat Turbines (1965) Ltd.: *See*—
Kaplan, Uri, 4,537,032, Cl. 60-662.000.

O'Rourke, Glenn R., to Ex-Cell-O Corporation. Sealing system for road wheel suspension. 4,537,422, Cl. 280-705.000.

Orth, Hans: *See*—
Sabranski, Udo; and Orth, Hans, 4,537,132, Cl. 102-307.000.

Osborne, Duncan W., to Automotive Products plc. Hydraulic cylinder assemblies. 4,537,293, Cl. 188-196.0BA.

Oster, Stanley M.; and Axelrod, Lester. Tensioning and braking pliers. 4,537,099, Cl. 225-93.000.

Ostlinning, Edgar: *See*—
Idel, Karsten; Ostlinning, Edgar; Koch, Wolfgang; Bottenbruch, Ludwig; and Heitz, Walter, 4,537,951, Cl. 528-388.000.

O'Sullivan, Joseph; Aklonis, Carol A.; and Singh, Pushpa, to E. R. Squibb & Sons, Inc. Plastatin. 4,537,858, Cl. 435-119.000.

Otani, Kozo; and Yamada, Yoshio, to Toyo Tire & Rubber Company Limited. Polyether derivative and a poly(urethane)ureamide obtained therefrom. 4,537,945, Cl. 528-68.000.

Otani, Syuichi, to Nissan Motor Co., Ltd. Ash tray assembly of vehicle. 4,537,439, Cl. 296-37.900.

Otani, Yutaka, to Olympus Optical Co., Ltd. Endoscope. 4,537,182, Cl. 128-4.000.

Otis Engineering Corporation: *See*—
Fredd, John V., 4,537,383, Cl. 251-58.000.

Otsu, Kouji: *See*—
Soneda, Mitsuo; Maekawa, Toshikazu; and Otsu, Kouji, 4,538,288, Cl. 377-76.000.

Otsu, Nobuyuki: *See*—
Toraichi, Kazuo; Otsu, Nobuyuki; and Suzuki, Motomu, 4,538,227, Cl. 364-414.000.

Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, to Matsushita Electric Industrial Company, Limited; and Matsushita Graphic Communication Systems, Inc. Method and apparatus for processing video signals. 4,538,184, Cl. 358-283.000.

Ott, Gerhard: *See*—
Barnicol-Ottler, Max; Loczenski, Martin; Mieschke, Norbert; Ott, Gerhard; Przybylski, Gerhard; and Weber, Dietmar, 4,538,022, Cl. 174-113.00R.

Ouellette, Paul J., to AT&T Technologies, Inc. Lead having a solder-preform and preform-carrying finger engageable directly with a contact pad. 4,537,461, Cl. 339-258.00R.

Ovren, Christer: *See*—
Dubon, Chantal; Hok, Bertil; and Ovren, Christer, 4,537,467, Cl. 350-96.200.

Ovshinsky, Stanford R.; Sapru, Krishna; and Liang, Gao, to Energy Conversion Devices, Inc. Electrolytic cell anode. 4,537,674, Cl. 204-290.00R.

Owens-Corning Fiberglas Corporation: *See*—
Armstrong, Gordon P.; Flautt, Martin C.; and Williams, Gary L., 4,537,107, Cl. 83-694.000.
Armstrong, Gordon P.; and Flautt, Martin C., 4,537,610, Cl. 65-3.440.
Uffner, William E.; White, Robert N.; and Harrington, Edward R., 4,537,921, Cl. 524-59.000.

Owens-Illinois, Inc.: *See*—
Francel, Josef; Horn, Uriah; and Stewart, Daniel R., 4,537,862, Cl. 501-14.000.
Whitney, Ralph H., 4,537,319, Cl. 215-252.000.

Owens, William J.: *See*—
Nowobilski, Jeffert J.; and Owens, William J., 4,537,820, Cl. 428-285.000.

Oxenrider, Bryce C.; and Long, David J., to Allied Corporation. Fluorinated and non-fluorinated terminally halogenated alkyl pyromellitates. 4,537,728, Cl. 260-455.00R.

Ozaki, Tadashi: *See*—
Ootsuka, Yoshinori; Hattori, Tadashi; Yamamoto, Minoru; and Ozaki, Tadashi, 4,537,065, Cl. 73-117.300.

Ozaki, Takayuki: *See*—
Yano, Yasuhiro; Umino, Isamu; Ohsawa, Zenichi; and Ozaki, Takayuki, 4,538,121, Cl. 331-25.000.

Ozawa, Kunitaka: *See*—
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, 4,538,182, Cl. 358-280.000.

Package Machinery Company: *See*—
Groom, James S.; and LaFleur, Paul J., Jr., 4,537,012, Cl. 53-552.000.

Page, Michael: *See*—
Lax, David R.; Page, Michael; and Johnstone, James S., 4,537,076, Cl. 73-662.000.

Palfray, Michel R., to Etablissements Proteor. Device for the alignment research, alignment and orientation of prosthesis of the lower limbs. 4,536,898, Cl. 623-33.000.

Pall Corporation: *See*—
Koslow, Evan E., 4,537,608, Cl. 55-337.000.

Pallos, Ferenc M., to Stauffer Chemical Company. Aryloxyphenoxy proponyl isothioureas and use as herbicides. 4,537,620, Cl. 71-94.000.

Palm, Bernhard. Push-on/quick release locking arrangement for socket wrench extension. 4,537,100, Cl. 81-177.850.

Panak, Edouard: *See*—
Blanchard, Jean; and Panak, Edouard, 4,537,894, Cl. 514-301.000.

Pankoke, Werner, to Theodor Hymmen KG., Firma. Device for applying surface pressure to advancing workpieces. 4,537,408, Cl. 277-74.000.

Pantaleo, Victor. Ski clip holding device. 4,536,926, Cl. 24-523.000.

Papp, Uwe: *See*—
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,537,641, Cl. 148-11.50P.

Papyrus Kopparfors AB: *See*—
Ericsson, Thomas, 4,537,877, Cl. 502-402.000.

Parcevaux, Philippe A.; Piot, Bernard M.; and Vercaemer, Claude J., to Etudes et Fabrication Dowell Schlumberger. Cement compositions for cementing wells, allowing pressure gas-channeling in the cemented annulus to be controlled. 4,537,918, Cl. 523-130.000.

Parg, Adolf; Ziegler, Hans; and Wuerzer, Bruno, to BASF Aktiengesellschaft. Herbicidal diphenyl ethers and their use for controlling undesirable plant growth. 4,537,621, Cl. 71-103.000.

Park-Ohio Industries, Inc.: *See*—
Balzer, Norbert R., 4,537,102, Cl. 83-16.000.
Budzinski, Roger R., 4,538,041, Cl. 219-10.750.

Parker, Alan, to Hollingsworth (U.K.) Limited. Friction spinning. 4,537,021, Cl. 57-401.000.

Parker, John A.: *See*—
Achar, Bappalige N.; Fohlen, George M.; and Parker, John A., 4,537,834, Cl. 428-413.000.

Parker, Leslie L. Device for manipulating invalid bed patients. 4,536,903, Cl. 5-61.000.

Parkinson, Delbert J., to Parkinson, Delbert J.; and Haefliger, William W., a part interest. Record jacket frame permitting record removal. 4,536,979, Cl. 40-159.000.

Parquet, Donald J., to J. I. Case Company. Seat belt assembly. 4,537,274, Cl. 180-270.000.

Parr, Rodney W., to Dulux Australia Ltd. Non-ionic unsaturated chemical compounds. 4,538,000, Cl. 568-616.000.

Parravicini, Roberto. Implant device for substaining the activity of the myocardium. 4,536,893, Cl. 623-3.000.

Pascas, Brian J.: *See*—
Benning, Gordon D.; Pascas, Brian J.; Blackhall, Robert K.; Wilker, Paul S.; and Neathway, Graham A., 4,538,031, Cl. 179-81.00B.

Pass & Seymour, Inc.: *See*—
Ronemus, DeHertburn N.; and Tice, Victor M., 4,538,040, Cl. 200-159.00A.

Passarotti, Carlo: *See*—
Doria, Gianfederico; Passarotti, Carlo; and Buttinoni, Ada, 4,537,962, Cl. 544-255.000.

Passemard, Jean R.; and Keledjian, Gaston, to Regie Nationale des Usines Renault. Rectilinear transfer mechanism with pulleys and belts. 4,537,084, Cl. 74-89.220.

Pasternack, George: *See*—
Bishop, Timothy E.; Pasternack, George; and Zimmerman, John M., 4,537,667, Cl. 204-159.150.

Paul Rauschert GmbH & Co. KG: *See*—
Billet, Reinhard; Kober, Rainer; Mackowiak, Jerzy; and Geipel, Werner, 4,537,731, Cl. 261-94.000.

Paul, Volker: *See*—
Naumann, Klaus; Scheinpflug, Hans; Rosslenbroich, Hans-Jurgen; and Paul, Volker, 4,537,888, Cl. 514-228.000.

Pauze, Denis R.: *See*—
Keane, John J.; and Pauze, Denis R., 4,537,804, Cl. 427-118.000.

Peacock Investments (Proprietary) Limited: *See*—
Raubenheimer, Johann N., 4,536,908, Cl. 15-1.700.

Pearce, Godfrey R.: *See*—
Coe, Jerry R.; Pearce, Godfrey R.; and See, Francis R., 4,538,025, Cl. 174-52.00S.

Pearson, Beverly. Umbrella support. 4,537,339, Cl. 224-188.000.

Pearson, William K. J.: *See*—
Bryant, Greyham F.; Spooner, Peter D.; and Pearson, William K. J., 4,537,050, Cl. 72-8.000.

Pebeyre, Pierre-Jean; Gleyze, Rene ; and Montant, Charles, to S. A. Pebeyre. Product for the fertilization of mycorhizal mushrooms and application to the fertilization of truffle-beds. 4,537,613, Cl. 71-5.000.

Peel, Edward: *See*—
James, Benjamin B.; and Peel, Edward, 4,538,038, Cl. 200-61.710.

Peiffer, Dennis G.; Lundberg, Robert D.; and Pober, Kenneth W., to Exxon Research and Engineering Co. Low and high temperature drilling fluids based on sulfonated terpolymer ionomers. 4,537,688, Cl. 252-8.50M.

Pellico, Michael A.; and Montgomery, Robert E., to Laclede Professional Products, Inc. Stabilized enzymatic dentifrice containing B-D-glucose and glucose oxidase. 4,537,764, Cl. 424-50.000.

Peltzman, William S.; Rohlfing, Raymond A.; and Gates, Charles C., Jr., to Gates Rubber Company, The. Method for curing a flexible hose. 4,537,736, Cl. 264-130.000.

Pemco-Kalamazoo, Inc.: *See*—
Black, John W.; Shupe, Richard D.; and Simon, Earl, 4,537,570, Cl. 425-450.100.

Pennella, Filippo: *See*—
Lin, Fan-Nan; and Pennella, Filippo, 4,537,909, Cl. 518-713.000.

Pennwalt Corporation: *See*—
Boorsma, Nancy B., 4,537,309, Cl. 206-525.000.
Griffith, Ronald C.; and Kinsolving, Clyde R., 4,537,908, Cl. 514-659.000.
Murray, Robert J., 4,537,966, Cl. 546-120.000.

Percel, Phillip J.; and Perkins, Douglas W., to SCM Corporation. Process of preparing a particulate food acidulant. 4,537,784, Cl. 426-303.000.

Perkin-Elmer Corporation, The: *See*—
Ausschnitt, Christopher P., 4,538,105, Cl. 324-158.00R.
Hill, Harold I.; Norem, Stanley D.; and Targowski, Roger, 4,537,572, Cl. 432-55.000.

Perkins, Douglas W.: *See*—
Percel, Phillip J.; and Perkins, Douglas W., 4,537,784, Cl. 426-303.000.

Perlegos, George: *See*—
Smarandoiu, George; and Perlegos, George, 4,538,245, Cl. 365-200.000.

Perper, Lloyd J., to Iota Engineering Co. Lamp ballast with near unity power factor and low harmonic content. 4,538,094, Cl. 315-221.000.

Perry, Huntley H., to United States of America, Navy. Adapter for towing aircraft. 4,537,369, Cl. 244-1.00R.

Personal Products Company: *See*—
Pieniak, Heinz A.; and Iskra, Michael J., 4,537,590, Cl. 604-379.000.

Peterman, Worthy D.: *See*—
Cashwell, Miles L.; and Peterman, Worthy D., 4,536,919, Cl. 17-11.000.

Petersen, Arthur W.; and Smialowicz, Dennis T., to American Cyanamid Co. Method for removal of undesirable organic matter. 4,537,638, Cl. 134-2.000.

Petersen, Kurt-Eckart: *See*—
Lorenzen, Heinz-Christen; Heitmann, Uwe; Petersen, Kurt-Eckart; and Pinck, Peter, 4,537,206, Cl. 131-281.000.

Petersen, Oscar J.; Barton, Ross J.; Dalke, Jack E.; Sheffield, Gerald W.; and Towle, Theodore, to Brunswick Corporation. In-line check valve having combined downstream poppet support and flow control elements. 4,537,384, Cl. 251-83.000.

Peterson, Jan B.: *See*—
Baltzer, Karen L.; and Peterson, Jan B., 4,538,229, Cl. 364-428.000.

Peterson, Richard M.: *See*—
Sinniger, Joseph O.; and Peterson, Richard M., 4,538,262, Cl. 370-85.000.
Peterson, Thomas A., to AT&T Bell Laboratories. Direct memory access peripheral unit controller. 4,538,224, Cl. 364-200.000.
Petho, Hajnalka: *See*—
Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela ; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.
Petitjean, Christian; and Marchand, Maurice, to LMT Radio Professionnelle. Coherent radar. 4,538,148, Cl. 343-17.20R.
Petrolite Corporation: *See*—
Naiman, Michael I., 4,537,601, Cl. 44-62.000.
Petrovic, Milan: *See*—
Gsponer, Arnold; Huber, Werner; and Petrovic, Milan, 4,537,302, Cl. 198-626.000.
Pfaff Industriemaschinen GmbH: *See*—
Angele, Werner, 4,536,891, Cl. 2-409.000.
Pfeifer, George F., to General Electric Company. Base drive circuit controller. 4,538,078, Cl. 307-592.000.
Pfeiffer, Roland; and Waldhecker, Heinz-Dieter, to Klockner-Humboldt-Deutz AG. Method for the production of reaction gases. 4,537,626, Cl. 75-35.000.
Pflanz, Herbert M., to Phoenix Electric Corporation. Passively detonated explosively-assisted fuse. 4,538,133, Cl. 337-4.000.
Pfortmiller, Donald D. Boot carrier. 4,537,436, Cl. 294-150.000.
Pham Van Cang, Luc, to Thomson-CSF. Test-signal generating device for testing electronic equipment. 4,538,268, Cl. 371-20.000.
Pharmacia Aktiebolag: *See*—
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., 4,537,767, Cl. 424-78.000.
Phelps, Andrew E.: *See*—
Levin, Burton L.; Phelps, Andrew E.; and Potash, Hanan, 4,538,241, Cl. 364-900.000.
Philippe, Calin, to Regie Nationale des Usines Renault. Locking device, particularly for a spare wheel cradle. 4,537,431, Cl. 292-216.000.
Phillipps, Patrick G.; and Schenkel, Jeffrey, to American Home Products Corporation (Del.). Systems and methods for processing physiological signals. 4,537,196, Cl. 128-630.000.
Phillips Petroleum Company: *See*—
Carter, Cecil O., 4,538,018, Cl. 585-512.000.
Hawley, Gil R., 4,537,870, Cl. 502-111.000.
Johnson, Marvin M.; and McDaniel, Max P., 4,537,928, Cl. 524-417.000.
Lin, Fan-Nan; and Pennella, Filippo, 4,537,909, Cl. 518-713.000.
Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., 4,537,690, Cl. 252-48.400.
McDaniel, Max P., 4,537,869, Cl. 502-107.000.
Roberts, John S., 4,537,994, Cl. 568-59.000.
Uraneck, Carl A.; and Burleigh, John E., 4,537,932, Cl. 524-572.000.
Phillipson, Walter M.: *See*—
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,537,459, Cl. 339-143.00R.
Phoenix Electric Corporation: *See*—
Pflanz, Herbert M., 4,538,133, Cl. 337-4.000.
Phuc, Tran N., to Senki Medical Instrument Mfg. Co., Ltd. Gas jet device for use in respirators. 4,537,188, Cl. 128-200.210.
Piber, Herbert: *See*—
Koroncai, Adam; Nowak, Alfred; and Piber, Herbert, 4,536,956, Cl. 30-43.920.
Pieniak, Heinz A.; and Iskra, Michael J., to Personal Products Company. Superthin absorbent product. 4,537,590, Cl. 604-379.000.
Pieper, Hartwig: *See*—
Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, 4,536,909, Cl. 15-4.000.
Pieper, Josefa: *See*—
Donike, Wilhelm; Ulrich, Helmut; Thiemer, Heinz; and Pieper, Josefa, 4,538,013, Cl. 585-361.000.
Piercy, William B., to United States of America, Navy. Adjustable self-releasing hook. 4,537,434, Cl. 294-82.310.
Pieri, Vincenzo, to SORMA S.r.l. Automatic apparatus for individually enshrouding fruit and vegetable containers in a net provided with a reinforcing strip and a label. 4,537,006, Cl. 53-134.000.
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Butler, James R., 4,538,115, Cl. 330-253.000.
Press, Inc., The: *See*—
Thul, James L., 4,537,310, Cl. 206-526.000.
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Liepa, Alexander L., 4,537,783, Cl. 426-243.000.
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Ong, Helen H.; and Profitt, James A., 4,537,976, Cl. 549-54.000.

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Morganstern, Kennard H., 4,537,734, Cl. 264-22.000.
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Lawson, Kenneth L., 4,537,356, Cl. 239-230.000.
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Walker, Leigh E.; and Ranade, Gautam R., 4,537,933, Cl. 525-71.000.
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Rao, Velliyur N. M.; and Heinsohn, George E., to Du Pont de Nemours, E. I., and Company. Multi-stage process with adiabatic reactors for the preparation of isocyanates. 4,537,726, Cl. 260-453.00P.
Rascher, Andreas: *See*—
Baier, Manfred; and Rascher, Andreas, 4,538,131, Cl. 336-57.000.
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Raubenheimer, Johann N., to Peacock Investments (Proprietary) Limited. Suction cleaners. 4,536,908, Cl. 15-1.700.
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Raychem Corporation: *See*—
Moisson, Marc F.; and Wisecarver, Martin L., 4,537,466, Cl. 350-96.200.
Morrow, Danny G.; and Oiwa, Thomas Y., 4,538,053, Cl. 219-541.000.
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RCA Corporation: *See*—
Bolger, Thomas V., 4,538,178, Cl. 358-166.000.
Deyer, Craig E., 4,538,027, Cl. 178-22.010.
Dischert, Robert A.; and Meise, William H., 4,538,236, Cl. 364-574.000.
Hawkes, Thaddeus A., 4,538,120, Cl. 331-12.000.
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Sinniger, Joseph O.; and Peterson, Richard M., 4,538,262, Cl. 370-85.000.
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Rebhahn, Robert W. J.; Kassner, James E.; and Werner, Raymond E., to Hilton-Davis Chemical Co., The. Process for preparing quinolinic acid. 4,537,971, Cl. 546-320.000.
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Reed, Gordon A. D.; and Itzkovitch, Irwin J., to Liquid Carbonic Inc. Hydrogen storage system. 4,537,761, Cl. 423-644.000.
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Griswold, Azel A., 4,537,912, Cl. 521-53.000.
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Philippe, Calin, 4,537,431, Cl. 292-216.000.
Rehfeldt, Karl H., to U.S. Philips Corporation. Method of and circuit arrangement for recording a color video signal. 4,538,187, Cl. 358-330.000.
Rehrig, B. Houston. Plastic basket for use with a cart having front and rear baskets. 4,537,413, Cl. 280-33.99B.
Reichert, Jack R.: *See*—
Jones, Robert A.; and Reichert, Jack R., 4,536,901, Cl. 4-416.000.
Reichhold Limited: *See*—
Kambanis, Stamatis M.; Berchem, Antoine; Gregoire, Dennis; and Rybicky, Jaroslav, 4,537,941, Cl. 527-403.000.
Reid, John H. Conservation of momentum in a barrier oxidation ditch. 4,537,679, Cl. 210-194.000.
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Sepulveda, Frank J.; and Silva, Robert R., 4,537,237, Cl. 160-201.000.
Reiff, Werner: *See*—
Kehrer, Hans-Peter; Villain, Juergen; and Reiff, Werner, 4,537,793, Cl. 427-35.000.
Reimer, William A., to GTE Automatic Electric Incorporated. Double file printed wiring board module. 4,538,209, Cl. 361-395.000.
Reissenweber, Gernot; Kersten, Siegfried; Ditter, Walter; and Jacobs, Peter, to BASF Aktiengesellschaft. Preparation of pyrocatechol methylcarbamate. 4,537,986, Cl. 560-132.000.
Reist, Walter, to Ferag AG. Apparatus for addressing newspapers, journals and other printed products. 4,538,161, Cl. 346-140.00R.
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Renaud, Pierre, to VALEO. Clutch release bearing with spacer member. 4,537,294, Cl. 192-98.000.
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Hooper, Lindsay A., 4,537,396, Cl. 272-130.000.
Replicap Products, Inc.: *See*—
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Research Corporation: *See*—
Darling, Charles M., 4,537,781, Cl. 514-616.000.
Research Triangle Institute: *See*—
Allen, Crowley C., Jr., 4,537,217, Cl. 137-561.00A.
Resnick, Brian J.; Messina, Elena R.; Bhatia, Madhukar; and Holmes, John G., to Cincinnati Milacrón Inc. Apparatus and method for oscillatory motion control. 4,538,233, Cl. 364-513.000.
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Malone, Edgar W., 4,538,088, Cl. 313-325.000.
Reynolds, John E.: *See—*
Nicklas, Roger W.; Reynolds, John E.; and Schiestl, Randall L., 4,536,928, Cl. 29-1.200.
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Sabranski, Udo; and Orth, Hans, 4,537,132, Cl. 102-307.000.
Rhoades, Reginald L. Shelving means. 4,537,379, Cl. 248-222.200.
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Jas, Jean-Noel, 4,537,699, Cl. 252-313.200.
Ribbing, Wilfried: *See—*
Bartmann, Martin; Bax, Hanns-Jorg; Burzin, Klaus; and Ribbing, Wilfried, 4,537,948, Cl. 528-215.000.
Rice, Thomas E.; and Staropoli, Paul R., to Haskell of Pittsburgh, Inc. Lateral file receding posting shelf. 4,537,452, Cl. 312-314.000.
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Hengstenberg, Eckart; and Disch, Heinrich, 4,537,017, Cl. 53-515.000.
Richard, Joseph D. Ultrasonic doppler fish detector. 4,538,249, Cl. 367-94.000.
Richards, Oliver L., Jr., to Sprague Electric Company. Linear signal strength detector in AM radio. 4,538,300, Cl. 455-161.000.
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Kreidl, Janos; Farkas nee Kirjak, Maria; Harsanyi, Kalman; Benke, Bela; Rado, Andras; Domany, Gyorgy; Hegedus, Bela; Csongor, Eva; Deutsch nee Juhasz, Ida; and Petho, Hajnalka, 4,537,900, Cl. 514-400.000.
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Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, 4,538,164, Cl. 346-209.000.
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Riehle, Harald. Slide rule. 4,538,055, Cl. 235-70.00R.
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Rink, Helm A.: *See—*
Press, Irving D.; Nickerson, Harvey R.; and Rink, Helm A., 4,537,425, Cl. 285-55.000.
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Hinke, Walter; and Kaiser, Harry, 4,538,082, Cl. 310-152.000.
Kotter, Wolfgang, 4,537,218, Cl. 137-596.130.
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Roberts, Harold D. Denture support frame. 4,537,575, Cl. 433-176.000.
Roberts, John S., to Phillips Petroleum Company. Sulfide metathesis. 4,537,994, Cl. 568-59.000.
Roberts, Peter, to Thrush Incorporated. Exhaust extension pipe replacement kit. 4,537,280, Cl. 181-243.000.
Robertson, Allan J.: *See—*
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Robinson, Leon H.: *See—*
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Rock Bit Industries U.S.A., Inc.: *See—*
Estes, Roy D.; and Wright, Beaumont B., 4,537,409, Cl. 277-83.000.
Rock, Erich; and Brustle, Klaus, to Julius Blum Gesellschaft m.b.H. Furniture hinge having a spring biased pivoting pressure member. 4,536,917, Cl. 16-288.000.
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Fadner, Thomas A.; and Hycner, Stanley H., 4,537,127, Cl. 101-141.000.
Henning, Jerrold V., 4,538,235, Cl. 364-569.000.
Hogge, Charles R., Jr., 4,538,283, Cl. 375-14.000.
Kiamco, Roberto C.; and Skipor, Eugene, Jr., 4,537,390, Cl. 270-53.000.
Rajan, John A., 4,538,281, Cl. 375-2.200.
Williams, Richard J., 4,536,936, Cl. 29-447.000.
Rode, Melvin A.: *See—*
Gunda, Rajamouli; McCarty, Michael R.; and Rode, Melvin A., 4,537,029, Cl. 60-390.000.
Rodime Limited: *See—*
White, James N. J.; and Caithness, Michael G., 4,538,192, Cl. 360-98.000.
Rogers, Brian H.; and Tucker, Paul A., to Normalair-Garrett (Holdings) Limited. Gas flow controllers for aircraft molecular sieve type gas separation systems. 4,537,607, Cl. 55-163.000.
Rogers, Colin C.; Baker, John N.; and Estebanez, Joseph, to Shell Oil Company. Method and system for tank overfill protection. 4,537,212, Cl. 137-2.000.
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Nightingale, Douglas J., 4,537,026, Cl. 60-264.000.
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Simpson, Philip A., 4,537,066, Cl. 73-117.400.
Roman, Gianfranco, to Claber S.p.A. Portable winding device for flexible pipe, particularly for cars, caravans, coaches, crafts, balconies and small gardens. 4,537,215, Cl. 137-355.260.
Rombusch, Konrad; Maahs, Gunther; and Schafer, Wolfgang, to Chemische Werke Huels, AG. Quadratic acid amide derivatives, their use as stabilizers, and synthetic resins treated therewith. 4,537,924, Cl. 524-103.000.
Ronemus, DeHertburn N.; and Tice, Victor M., to Pass & Seymour, Inc. Electrical switch means particularly adapted to GFCI test and reset switches. 4,538,040, Cl. 200-159.00A.
Roney, Thomas W.; and Adams, Maynard L., to Clark Equipment Company. Safety seat. 4,537,446, Cl. 297-464.000.
Rooke, David J.; and Burnstead, Barry W., to Beecham Group Limited. Pharmaceutical formulation. 4,537,887, Cl. 514-197.000.
Rooney, Clarence S.: *See—*
Cragoe, Edward J., Jr.; Rooney, Clarence S.; and Williams, Haydn W. R., 4,537,902, Cl. 514-422.000.
Roper, Jerry M., to Ethyl Corporation. 4H-1-benzopyrans and lubricant compositions containing same. 4,537,920, Cl. 252-52.00R.
Roper, Ralph E., to Wallace Expanding Machines, Inc. Bearing burnishing method and apparatus. 4,536,931, Cl. 29-90.00R.
Rosen, Terry J.: *See—*
Firth, Bruce E.; and Rosen, Terry J., 4,538,008, Cl. 568-783.000.
Ross, Mark A., to Ross, Mark Anthony; and Hiseman, Robert Allen. Folding knife. 4,536,959, Cl. 30-161.000.
Ross, Mark Anthony: *See—*
Ross, Mark A., 4,536,959, Cl. 30-161.000.
Rossi, Albert; and Lewtas, Kenneth, to Exxon Research & Engineering Co. Additive concentrates for distillate fuels. 4,537,602, Cl. 44-62.000.
Rosslenbroich, Hans-Jurgen: *See—*
Naumann, Klaus; Scheinpflug, Hans; Rosslenbroich, Hans-Jurgen; and Paul, Volker, 4,537,888, Cl. 514-228.000.
Rostoker, William: *See—*
Galante, Jorge O.; and Rostoker, William, 4,536,894, Cl. 623-22.000.
Rothman, Ulf S. E.; and Jacobsson, Sten A. L., to Pharmacia Aktiebolag. Method for cleansing fluid discharging skin surfaces, wounds and mucous membranes and means for carrying out the method. 4,537,767, Cl. 424-78.000.
Rottgen, Karl; Stendel, Joachim; and Diskowski, Herbert, to Hoechst Aktiengesellschaft. Process for the electrothermal production of yellow phosphorus. 4,537,756, Cl. 423-323.000.
Roussel Uclaf: *See—*
Apontoweil, Peter; and Kok, Johannes A. G., 4,537,768, Cl. 424-89.000.

Tessier, Jean; Demoute, Jean-Pierre; and Cadiergue, Joseph, 4,537,897, Cl. 514-351.000.
Rowe International, Inc.: *See*—
Verduin, Lee C.; and St. Clair, Michael J., 4,537,336, Cl. 222-641.000.
Rowell, Jonathan M.: *See*—
VonGrunberg, Hubertus; Rowell, Jonathan M.; and Corey, Frederick C., 4,537,289, Cl. 188-97.400.
Roy, Della M.: *See*—
Komarneni, Sridhar; and Roy, Della M., 4,537,710, Cl. 252-628.000.
Ruby, Kenneth: *See*—
Fowler, Randall C.; Ruby, Kenneth; and Sartor, Thomas F., Jr., 4,537,484, Cl. 354-62.000.
Rudland, Peter E., to ITR International Timelimited. Identification card with concealed coding and a simple reader module to decode it. 4,538,059, Cl. 235-468.000.
Rudolph, Ronald M.: *See*—
Hense, Thomas R.; and Rudolph, Ronald M., 4,536,962, Cl. 33-516.000.
Ruelens, Remy F.: *See*—
Wuyts, Oscar; Ruelens, Remy F.; and Van Camp, Lucien J. M., 4,538,201, Cl. 361-124.000.
Ruhl, Gerald F., to Replicap Products, Inc. Production of molded plastic articles with artwork thereon. 4,537,739, Cl. 264-247.000.
Russ, Julio G.; and Barrom, Donna L., to Plough, Inc. Long-wearing eyeshadow compositions. 4,537,766, Cl. 424-63.000.
Russel, Matthew J., to Eastman Kodak Company. Copy sheet positioning apparatus. 4,537,493, Cl. 355-3.0SH.
Russell, Raymond L.: *See*—
Everman, Wayne F.; Lewis, D. Michael; and Russell, Raymond L., 4,537,584, Cl. 493-93.000.
Ryan, William J. Method and apparatus for cleaning tainted shellfish. 4,537,149, Cl. 119-4.000.
Rybicky, Jaroslav: *See*—
Kambanis, Stamatis M.; Berchem, Antoine; Gregoire, Dennis; and Rybicky, Jaroslav, 4,537,941, Cl. 527-403.000.
Ryckman, William D., Jr., to Black & Decker, Inc. Toaster oven. 4,538,049, Cl. 219-386.000.
S. A. Pebeyre: *See*—
Pebeyre, Pierre-Jean; Gleyze, Rene ; and Montant, Charles, 4,537,613, Cl. 71-5.000.
S. T. Dupont: *See*—
Brassoud, Gerard, 4,536,922, Cl. 24-265.00B.
Sabranski, Udo; and Orth, Hans, to Rheinmetall GmbH. Hollow-charge insert for armor-piercing projectile. 4,537,132, Cl. 102-307.000.
Sach, George S., to Smith Kline & French Laboratories Limited. 2-(3,5-Substituted-2-pyridylalkylamino)-5-oxopyridylmethyl-4-pyrimidones useful as histamine H_1-antagonists. 4,537,890, Cl. 514-272.000.
Sach, George S., to Smith Kline & French Laboratories Limited. 2-(3,5-Substituted-2-pyridylalkylamino)-5-benzyl-4-pyrimidones. 4,537,891, Cl. 514-272.000.
Sadamatsu, Hideaki; Inoue, Michihiro; Kanda, Akihiro; and Matsuzawa, Akira, to Matsushita Electric Industrial Co., Ltd. Method for making semiconductor device. 4,536,950, Cl. 29-578.000.
Sahachaisere, Somchai: *See*—
Argiropoulos, George D.; and Sahachaisere, Somchai, 4,537,681, Cl. 210-317.000.
Sahara, Kousuke: *See*—
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.
St. Clair, Michael J.: *See*—
Verduin, Lee C.; and St. Clair, Michael J., 4,537,336, Cl. 222-641.000.
Saint-Gobain Vitrage: *See*—
Cohen, Sabatino, 4,537,798, Cl. 427-166.000.
Saito, Kaneo, to Konishiroku Photo Industry Co., Ltd. Automatic developing machine. 4,537,485, Cl. 354-304.000.
Saito, Mitsuru: *See*—
Ueda, Hiroshi; Saito, Mitsuru; and Kajita, Hideo, 4,537,732, Cl. 264-1.100.
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, to Canon Kabushiki Kaisha. Image processing apparatus. 4,538,182, Cl. 358-280.000.
Saito, Shigeo; and Nagata, Masayuki, to Sumitomo Electric Industries, Ltd. Method of manufacturing Al-stabilized superconductor. 4,537,642, Cl. 148-11.50Q.
Saito, Yuichi: *See*—
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.
Saitoh, Shinichi: *See*—
Ogawa, Tetsuya; Saitoh, Shinichi; Inoi, Takeshi; Kato, Masaji; and Obara, Heitaro, 4,537,999, Cl. 568-584.000.
Sajima, Yasuo: *See*—
Asawa, Tatsuro; Sajima, Yasuo; and Iwamoto, Junjiro, 4,537,673, Cl. 204-253.000.
Sakaeda, Keiko: *See*—
Sashiki, Takashi; and Sakaeda, Keiko, 4,537,229, Cl. 141-83.000.
Sakaguchi, Hifumi: *See*—
Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, 4,537,530, Cl. 405-160.000.
Sakai, Tatsuo, to Fuji Jukogyo Kabushiki Kaisha. Intake passages in cylinder heads of an opposed six-cylinder engine. 4,537,163, Cl. 123-52.0MC.
Sakai, Toshiyasu; Hara, Masahiro; and Teraura, Nobuyuki, to Nippondenso Co., Ltd. Optical reading apparatus having a reading sensor of electronic scanning type. 4,538,060, Cl. 235-472.000.
Sakamoto, Masanori: *See*—
Miyamura, Masataka; Sakamoto, Masanori; and Nakajima, Yuko, 4,537,826, Cl. 428-328.000.
Sakata, Hideo: *See*—
Yamamoto, Takeshi; and Sakata, Hideo, 4,536,963, Cl. 33-178.00E.
Sakurai, Keiichi; Ishida, Hideaki; and Hanzawa, Kohtaro, to Casio Computer Co. Envelope control apparatus. 4,537,110, Cl. 84-1.260.
Sakurai, Koichi, to Sakuraya Corporation. Dish with a melody sounding function. 4,537,109, Cl. 84-1.030.
Sakurai, Masao: *See*—
Nishi, Yasuyuki; Sakurai, Masao; and Takagi, Masashi, 4,537,042, Cl. 62-208.000.
Sakuraya Corporation: *See*—
Sakurai, Koichi, 4,537,109, Cl. 84-1.030.
Sales Tools, Inc.: *See*—
Erickson, Edward C., 4,537,380, Cl. 248-460.000.
Salminen, Reijo K. Hockey stick having laminated blade structure. 4,537,398, Cl. 273-67.00A.
Sanborn, James R.; and Tieman, Charles H., to Shell Oil Company. Alpha-aminooxy isovalerate insecticides. 4,537,780, Cl. 514-464.000.
Sanders Associates, Inc.: *See*—
Liu, Dean-Yuan, 4,537,582, Cl. 493-38.000.
Sanders, Clifford; and Sanders, Joanne. Fishing lure. 4,536,987, Cl. 43-42.340.
Sanders, Joanne: *See*—
Sanders, Clifford; and Sanders, Joanne, 4,536,987, Cl. 43-42.340.
Sands, Thomas H.: *See*—
Anderson, Marie T.; Michel, Karl H.; and Sands, Thomas H., 4,537,777, Cl. 514-521.000.
Sankyo Company Limited: *See*—
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.
Terahara, Akira; and Tanaka, Minoru, 4,537,859, Cl. 435-146.000.
Sannomiya, Kunio: *See*—
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.
Sano, Tetsuya: *See*—
Miyoshi, Motosuke; and Sano, Tetsuya, 4,538,065, Cl. 250-310.000.
Sanofi, S.A.: *See*—
Blanchard, Jean; and Panak, Edouard, 4,537,894, Cl. 514-301.000.
Sansome, Terry; and Simmel, Thomas L. Toy vehicle and track assembly. 4,537,577, Cl. 446-445.000.
Santilli, Arthur A.: *See*—
Scotese, Anthony C.; Morris, Robert L.; Santilli, Arthur A.; and Strike, Donald P., 4,537,968, Cl. 546-209.000.
Sapru, Krishna: *See*—
Ovshinsky, Stanford R.; Sapru, Krishna; and Liang, Gao, 4,537,674, Cl. 204-290.00R.
Saringer, John H., to Imasco-CDC Research Foundation. Device for imparting continuous passive motion to human joints. 4,537,083, Cl. 74-89.150.
Sartor, Thomas F., Jr.: *See*—
Fowler, Randall C.; Ruby, Kenneth; and Sartor, Thomas F., Jr., 4,537,484, Cl. 354-62.000.
Sasa, Hiroyuki, to Olympus Optical Co., Ltd. Device for cleaning endoscopes. 4,537,209, Cl. 134-166.00C.
Sasaki, Osamu: *See*—
Takahashi, Jiro; Sawada, Kiyoshi; Kinoshita, Akira; Komamura, Tawara; Goto, Satoshi; and Sasaki, Osamu, 4,537,847, Cl. 430-58.000.
Sasakura Engineering Co., Ltd.: *See*—
Minami, Kunihiko, 4,537,248, Cl. 165-113.000.
Sashiki, Takashi; and Sakaeda, Keiko, to Kabushiki Kaisha Ishida Koki Seisakusho. Automatic weighing apparatus and method. 4,537,229, Cl. 141-83.000.
Sato, Kazuyoshi: *See*—
Yamamoto, Susumu; and Sato, Kazuyoshi, 4,537,808, Cl. 428-36.000.
Sato, Shinsaku: *See*—
Tsunoda, Sachio; and Sato, Shinsaku, 4,537,558, Cl. 415-1.000.
Sato, Takahisa; Takata, Masahiro; Ueshima, Michio; and Nagai, Isao, to Nippon Shokubai Kagaku Kogyo Co Ltd. Catalyst for production of unsaturated aldehydes. 4,537,874, Cl. 502-311.000.
Sato, Toshihiko: *See*—
Asano, Masao; Fujimatsu, Wataru; Matsumoto, Kazumasa; Murata, Hideki; Sato, Toshihiko; and Watanabe, Kenji, 4,537,824, Cl. 428-323.000.
Sato, Toshio: *See*—
Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, 4,537,648, Cl. 156-351.000.
Satzler, Ronald L., to Caterpillar Tractor Co. Belt tensioning mechanism. 4,537,267, Cl. 180-9.100.
Saunders, Peter J., to Imperial Chemical Industries PLC. Apparatus for initiating explosions and method therefor. 4,537,131, Cl. 102-217.000.
Saur, Roland, to Behr-Thomson Degnstoffregler GmbH. Apparatus for cooling an internal combustion engine. 4,537,158, Cl. 123-41.100.

Sauter, Hubert: *See—*
Plath, Peter; Eicken, Karl; Sauter, Hubert; and Wuerzer, Bruno, 4,537,617, Cl. 71-92.000.

Savides, Christos; and Robertson, Allan J., to American Cyanamid Company. Bis(β-carboxyethyl)isobutyl, sec. butyl and t-butyl phosphine oxide and polyamides containing the same. 4,537,993, Cl. 568-14.000.

Sawada, Kiyoshi: *See—*
Takahashi, Jiro; Sawada, Kiyoshi; Kinoshita, Akira; Komamura, Tawara; Goto, Satoshi; and Sasaki, Osamu, 4,537,847, Cl. 430-58.000.

Sayama, Norio: *See—*
Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, 4,537,023, Cl. 60-39.050.

Scapa Inc.: *See—*
Albert, Hans, 4,537,658, Cl. 162-348.000.

Schachter, David; Abbott, Richard E.; and Cogan, Uri, to Columbia University in the City of New York. Impermeant spectroscopic probes. 4,537,718, Cl. 260-112.50R.

Schaetzer, Harry; Raisin, Helmut; and Mausezahl, Dieter, to Ciba-Geigy Corporation. Process for trichromatic dyeing or printing of polyamide. 4,537,598, Cl. 8-641.000.

Schafer, Karl: *See—*
Muller, Hanns P.; and Schafer, Karl, 4,537,596, Cl. 8-115.600.

Schafer, Wolfgang: *See—*
Rombusch, Konrad; Maahs, Gunther; and Schafer, Wolfgang, 4,537,924, Cl. 524-103.000.

Schaller, Werner, to Siemens Aktiengesellschaft. Mounting and contacting assembly for plate-shaped electrical device. 4,538,210, Cl. 361-401.000.

Schammel, Wayne P.: *See—*
Kilner, Peter H.; Egan, Joseph P., Jr.; Ceisel, Stephen G.; and Schammel, Wayne P., 4,537,978, Cl. 549-245.000.

Scharff, Karl-Heinz: *See—*
Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, 4,536,909, Cl. 15-4.000.

Schatull, Wolfgang: *See—*
Sucrow, Wolfgang; Schatull, Wolfgang; and Fuss, Peter, 4,537,698, Cl. 252-299.610.

Schaum-Chemie W. Bauer GmbH & Co. KG: *See—*
Baumann, Heinz, 4,537,913, Cl. 521-107.000.

Schaus, John M., to Eli Lilly and Company. Method of preparing permissibly-substituted 1H(and 2H)pyrazolo[3,4-g]quinolines; pyrimido[4,5,g]quinolines; thiazolo[4,5,g]quinolines and intermediates therefore. 4,537,964, Cl. 544-250.000.

Schedlitzki, Dietmar: *See—*
Fock, Jurgen; and Schedlitzki, Dietmar, 4,537,934, Cl. 525-123.000.

Scheibengraber, Karl J., to General Electric Company. Reflective alignment light for computerized tomography. 4,538,289, Cl. 378-20.000.

Scheinpflug, Hans: *See—*
Naumann, Klaus; Scheinpflug, Hans; Rosslenbroich, Hans-Jurgen; and Paul, Volker, 4,537,888, Cl. 514-228.000.

Scheitz, John T.: *See—*
Brown, Vincent B.; Kozel, Charles A.; Scheitz, John T.; and Armando, John E., 4,537,456, Cl. 339-99.00R.

Schenkel, Jeffrey: *See—*
Phillipps, Patrick G.; and Schenkel, Jeffrey, 4,537,196, Cl. 128-630.000.

Schering Aktiengesellschaft: *See—*
Boroschewski, Gerhard; and Arndt, Friedrich, 4,537,622, Cl. 71-108.000.
Kreisel, Rudolf; and Meyer, Walter, 4,537,640, Cl. 134-18.000.

Schetina, Otto: *See—*
Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, 4,537,447, Cl. 299-1.000.

Schiestl, Randall L.: *See—*
Nicklas, Roger W.; Reynolds, John E.; and Schiestl, Randall L., 4,536,928, Cl. 29-1.200.

Schiffers, Hans-Gunter: *See—*
Jansen, Herbert; Schiffers, Hans-Gunter; and Gerretz, Richard, 4,537,407, Cl. 277-2.000.

Schindel, Hugo, to Rationator-Maschinenbau GmbH. Apparatus for moving dispensing pistons and filling tubes. 4,537,230, Cl. 141-146.000.

Schitka, Konstantin J.: *See—*
Borbely, Gyula J.; Devuyst, Eric A.; Ettel, Victor A.; Mosoiu, Marcel A.; and Schitka, Konstantin J., 4,537,686, Cl. 210-713.000.

Schlumberger Electronics (U.K.) Limited: *See—*
Lax, David R.; Page, Michael; and Johnstone, James S., 4,537,076, Cl. 73-662.000.

Schlumberger Technology Corporation: *See—*
Clark, Brian, 4,538,109, Cl. 324-338.000.

Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, to Robert Bosch GmbH. Power-driven hand tool. 4,537,264, Cl. 173-48.000.

Schmidt, Franz; Pipper, Gunter; Floss, Josef G.; and Zahradnik, Franz, to BASF Aktiengesellschaft. Continuous preparation of nylon with diamine recycling. 4,537,949, Cl. 528-335.000.

Schmidt, Heinrich, to Heinrich Greve GmbH. Apparatus for removing the waste edge pieces from punched blanks. 4,537,589, Cl. 493-373.000.

Schmidt, Steven L.: *See—*
Dorey, John K., II; Schmidt, Steven L.; and Townsend, Wesley P., 4,537,799, Cl. 427-259.000.

Schmitt, Marshall: *See—*
Puskas, Imre; and Schmitt, Marshall, 4,537,985, Cl. 560-96.000.

Schmukler, Seymour: *See—*
Adur, Ashok M.; Schmukler, Seymour; Maconis, John, Jr.; and Shida, Mitsuzo, 4,537,836, Cl. 428-522.000.

Schnee, Gunther: *See—*
Burger, Arnulf; Scharff, Karl-Heinz; Geiger, Kurt; Schnee, Gunther; and Pieper, Hartwig, 4,536,909, Cl. 15-4.000.

Schneider, Heinz-Walter; Richter, Wolfgang; Disteldorf, Walter; and Kummer, Rudolf, to BASF Aktiengesellschaft. Preparation of pure monoesters of adipic acid. 4,537,987, Cl. 560-193.000.

Schneider, Stanley: *See—*
Bielinski, Ralph F.; Chacon, M. Frank; Kramer, Dennis M.; Mathias, William R.; and Schneider, Stanley, 4,538,199, Cl. 361-93.000.

Schneider, William P., to Upjohn Company, The. Derivatives of leukotrienes A and C. 4,537,723, Cl. 260-400.000.

Schnyder, Erika. Toilet with flushing device and self-cleaning seat. 4,536,899, Cl. 4-233.000.

Schoeppel, Roger J.: *See—*
Terry, Lynn E.; and Schoeppel, Roger J., 4,537,031, Cl. 60-649.000.

Schoppmeyer, Johannes, to Dr.-Ing. Rudolf Hell GmbH. Screen systems for multicolor printing. 4,537,470, Cl. 350-317.000.

Schortmann, Walter E.; and Metrick, Dennis, to Kendall Company, The. Scrub-wipe fabric. 4,537,819, Cl. 428-284.000.

Schramm, Matthias: *See—*
Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.

Schreder, Felix; Dorner, Leonhard; and Wilde, Eugen, to E.G.O. Elektro-Gerate Blanc U. Fischer. Heating element for heating boiling plates, hotplates and the like. 4,538,051, Cl. 219-466.000.

Schroder, Christine: *See—*
Greb, Wolfgang; Christophliemk, Peter; and Schroder, Christine, 4,537,771, Cl. 424-154.000.

Schuettenberg, Alexander D.: *See—*
Macdonell, Gary D.; Lindstrom, Merlin R.; Baldwin, Bernard A.; Louthan, Rector P.; and Schuettenberg, Alexander D., 4,537,690, Cl. 252-48.400.

Schuler, Chester L.: *See—*
Barker, Ronald C.; and Schuler, Chester L., 4,538,188, Cl. 360-14.300.

Schulthess, Dieter: *See—*
Gaisch, Helmut; Ghiste, Patrick D. L.; and Schulthess, Dieter, 4,537,204, Cl. 131-274.000.

Schultz, Fredrick W.: *See—*
Bero, Vernon L.; and Schultz, Fredrick W., 4,537,121, Cl. 99-450.400.

Schulz, Donald N.: *See—*
Hall, James E.; and Schulz, Donald N., 4,537,939, Cl. 526-179.000.

Schunemann, Klaus: *See—*
Szabo, Laszlo; and Schunemann, Klaus, 4,538,122, Cl. 331-96.000.

Schurter, Rolf; Fory, Werner; and Meyer, Willy, to Ciba Geigy Corporation. N-phenylsulfonyl-N'-pyrimidinylureas. 4,537,618, Cl. 71-92.000.

Schwartz, Edwin; and Frees, David. Anti-knock liquid flow control valve. 4,537,216, Cl. 137-514.000.

Schwartz, Erich: *See—*
Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, 4,537,701, Cl. 252-344.000.

Schwarz, Albrecht: *See—*
Morris, David; and Schwarz, Albrecht, 4,538,219, Cl. 363-26.000.

Schwarz, Hans G., to Polyflex Schwarz GmbH & Co. High-pressure hose and method for the manufacture of same. 4,537,222, Cl. 138-130.000.

Schwarze, Rigobert. Pipe bending machine. 4,537,053, Cl. 72-157.000.

SCM Corporation: *See—*
Percel, Phillip J.; and Perkins, Douglas W., 4,537,784, Cl. 426-303.000.

Scotese, Anthony C.; Morris, Robert L.; Santilli, Arthur A.; and Strike, Donald P., to American Home Products Corporation. Thiophene derivatives with antisecretory activity. 4,537,968, Cl. 546-209.000.

Scott, Francis L.: *See—*
Ogunbiyi, Lai; Scott, Francis L.; and Smith, Francis X., 4,537,746, Cl. 422-28.000.

Scott, Gordon C.: *See—*
Brinkhoff, Carl H.; and Scott, Gordon C., 4,536,892, Cl. 2-424.000.

Scott, Joseph A.: *See—*
Alexander, Robert L.; Bequette, Robert J.; Kensler, Terry T.; and Scott, Joseph A., 4,537,883, Cl. 514-110.000.

Scott, Melvin: *See—*
Edge, David J.; Naik, Appaya R.; and Scott, Melvin, 4,537,709, Cl. 252-558.000.

Scott, Robert T. Earplug. 4,537,187, Cl. 128-151.000.

Scott, Tommy L.; and Moss, Morris C. Security locking bolt. 4,537,543, Cl. 411-371.000.

Secunda, Jeffrey A.: *See—*
Burroughs, Robert H.; Wright, John D.; Secunda, Jeffrey A.; and Newbower, Ronald S., 4,537,128, Cl. 101-407.0BP.

Sedco, Inc.: *See—*
Hampton, James E., 4,537,533, Cl. 405-227.000.

Sedlmair, Gerhard J.: *See—*
Knabel, Walter R.; and Sedlmair, Gerhard J., 4,537,418, Cl. 280-605.000.

See, Francis R.: *See—*
Coe, Jerry R.; Pearce, Godfrey R.; and See, Francis R., 4,538,025, Cl. 174-52.00S.

SEEQ Technology, Inc.: *See—*
Smarandoiu, George; and Perlegos, George, 4,538,245, Cl. 365-200.000.

Seifert, Hermann: *See—*
Feyen, Peter; Seifert, Hermann; and Kohler, Egon, 4,537,730, Cl. 260-989.000.

Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, to Dynamit Nobel AG. Method of preparing 2-phenylethylchlorosilanes. 4,537,983, Cl. 556-479.000.

Seita, Toru: *See—*
Oogai, Michiharu; Seita, Toru; Takeshige, Kosuke; and Shuyama, Hideo, 4,537,910, Cl. 521-27.000.

Sekoguchi, Kotohiko; and Sonoda, Yoshiteru, to Sekoguchi, Kotohiko; and Fujikin International, Inc. Precision pressure gauge. 4,537,078, Cl. 73-744.000.

Sengoku, Kouji: *See—*
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,537,789, Cl. 426-634.000.

Senki Medical Instrument Mfg. Co., Ltd.: *See—*
Phuc, Tran N., 4,537,188, Cl. 128-200.210.

Seno, Eugene T.: *See—*
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,537,957, Cl. 336-7.100.

Sensormedics Corporation: *See—*
Luper, Charles R., 4,537,058, Cl. 73-1.00G.

Seppelt, Wolfgang: *See—*
Seufert, Walter; Varwig, Juergen; Seppelt, Wolfgang; and Adolphi, Heinrich, 4,537,884, Cl. 514-127.000.

Sepulveda, Frank J.; and Silva, Robert R., to Reid, Robert E., a part interest. Louvering overhead sectional door. 4,537,237, Cl. 160-201.000.

Sequeira, Hermann B.; and Taylor, Jay E., to University of Delaware. Direct modulation of injection lasers. 4,538,276, Cl. 372-26.000.

Ser, Jean-Claude: *See—*
Millet, Catherine; Ser, Jean-Claude; and N'Guyen, Quang L., 4,537,782, Cl. 514-774.000.

Seregi, Andras: *See—*
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

Sermatech International, Inc.: *See—*
Mosser, Mark F., 4,537,632, Cl. 106-14.120.

Seshadri, Jayaram; and Neimy, Daniel T., to Thermo King Corporation. Truck transport refrigeration unit. 4,537,047, Cl. 62-510.000.

Seufert, Walter; Varwig, Juergen; Seppelt, Wolfgang; and Adolphi, Heinrich, to BASF Aktiengesellschaft. 2-Trifluoromethylphenyl (di)thiophosphates, and their use for pest control. 4,537,884, Cl. 514-127.000.

Severson, Roland G., Jr., to Procter & Gamble Company, The. Liquid detergents containing boric acid to stabilize enzymes. 4,537,706, Cl. 252-545.000.

Severson, Roland G., Jr., to Procter & Gamble Company, The. Liquid detergents containing boric acid and formate to stabilize enzymes. 4,537,707, Cl. 252-545.000.

Seyler, Jay K.: *See—*
Orlowski, Ronald C.; and Seyler, Jay K., 4,537,716, Cl. 260-112.50T.

Shaikh, Maqboolhusein G., to A. O. Smith Corp. Power connection apparatus having integrated surge arrestor. 4,538,200, Cl. 361-117.000.

Shalhoob, William N.; and Kaspaul, Alfred F., to Hydromagnetics, Inc. Hydromagnetic apparatus for non-surgical in vivo removal of calcium deposits. 4,537,181, Cl. 128-1.300.

Shambroom, John R.; and Sliski, Alan P., to Control Data Corporation. Capacitance height gage applied in reticle position detection system for electron beam lithography apparatus. 4,538,069, Cl. 250-491.100.

Shanklin Corporation: *See—*
Shanklin, Frank G.; and King, Francis X. (said Francis Xavier King, Jr. assors. to), 4,537,016, Cl. 53-493.000.

Shanklin, Frank G.; and King, Francis X., to Shanklin Corporation, by said Francis Xavier King, Jr. Horizontal form, fill, seal machines. 4,537,016, Cl. 53-493.000.

Shanton, Kenneth J., to Wiggins Teape Group Limited, The. Process for the production of record material. 4,537,797, Cl. 427-150.000.

Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., to Wilson Industries, Inc. Inertial borehole survey system. 4,537,067, Cl. 73-151.000.

Sharp Kabushiki Kaisha: *See—*
Iwagami, Kenji; and Yamamoto, Hachizou, 4,538,057, Cl. 235-379.000.

Sharp, Russell G.: *See—*
Wilkinson, William R.; and Sharp, Russell G., 4,537,311, Cl. 206-529.000.

Sharpe, Raymond; Griffiths, Trevor J.; and Hunt, Peter, to Lucas Industries Limited. Couplings. 4,537,578, Cl. 464-31.000.

Shea, Donald M.: *See—*
Wyle, Charles; Shea, Donald M.; and Best, Norman D., 4,536,935, Cl. 29-281.100.

Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor. 4,538,206, Cl. 361-315.000.

Shedigian, Vandos, to Emhart Industries, Inc. Dielectric fluid for a capacitor. 4,538,207, Cl. 361-317.000.

Shedigian, Vandos, to Emhart Industries, Inc. Alternating current capacitor. 4,538,208, Cl. 361-319.000.

Sheffield, Gerald W.: *See—*
Petersen, Oscar J.; Barton, Ross J.; Dalke, Jack E.; Sheffield, Gerald W.; and Towle, Theodore, 4,537,384, Cl. 251-83.000.

Shell Oil Company: *See—*
Rogers, Colin C.; Baker, John N.; and Estebanez, Joseph, 4,537,212, Cl. 137-2.000.
Sanborn, James R.; and Tieman, Charles H., 4,537,780, Cl. 514-464.000.
Simpson, Wayne F., 4,537,528, Cl. 405-72.000.
Todd, David B., 4,537,257, Cl. 166-369.000.

Shenvi, Ashokkumar B., to Du Pont de Nemours, E. I., and Company. α-Aminoboronic acid derivatives. 4,537,773, Cl. 514-63.000.

Shenvi, Ashokkumar B., to Du Pont de Nemours, E. I., and Company. Intermediates for octahydrobenzofuro[3,2-E]isoquinolines. 4,537,963, Cl. 546-66.000.

Sheridon, Nicholas K., to Xerox Corporation. Fluid jet assisted ion projection and printing apparatus. 4,538,163, Cl. 346-155.000.

Sherman, Michael I., to Kamyr, Inc. Hot water drying of low rank coal. 4,536,969, Cl. 34-9.000.

Sherman, Randy J.; and Hanson, Derald F., to Lincoln Laser Company. Apparatus with two input beams for generating optical scans. 4,537,465, Cl. 350-68.000.

Sherrard, Muriel. Compact ornament. 4,537,806, Cl. 428-7.000.

Shewchuk, W. Donald. Bag holder. 4,537,377, Cl. 248-99.000.

Shiba, Kazuo: *See—*
Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, 4,536,993, Cl. 51-165.800.

Shibata, Yoji: *See—*
Nakajima, Hirohito; Haji, Katsumi; Shibata, Yoji; and Kosuge, Wataru, 4,538,176, Cl. 358-86.000.

Shida, Mitsuzo: *See—*
Adur, Ashok M.; Schmukler, Seymour; Maconis, John, Jr.; and Shida, Mitsuzo, 4,537,836, Cl. 428-522.000.

Shiiki, Zenya: *See—*
Kawakami, Yukichika; Shiiki, Zenya; and Iizuka, Yo, 4,537,953, Cl. 528-388.000.

Shiino, Kouji; Hashimoto, Nobuo; Wada, Shozo; Nakamura, Keijiro; Izumi, Akio; Sato, Toshio; and Matsui, Takashi, to Sankyo Company Limited; and Fuji Electric Company Ltd. Automatic specimen sealing system. 4,537,648, Cl. 156-351.000.

Shikatani, Yutaka: *See—*
Matsuura, Kazuo; Shikatani, Yutaka; Kamiishi, Hirofumi; Kuroda, Nobuyuki; and Miyoshi, Mituji, 4,537,938, Cl. 526-97.000.

Shimada, Hiroshi, to Fujitsu Limited. Level converter circuit. 4,538,076, Cl. 307-475.000.

Shimada, Kiyoshi: *See—*
Kimura, Akira; Ishihama, Masao; Abe, Toshiro; Shimada, Kiyoshi; and Matsui, Shinichi, 4,537,275, Cl. 180-300.000.

Shimago, Kozo: *See—*
Takahashi, Takeo; Shimago, Kozo; and Maeshima, Kaoru, 4,537,973, Cl. 548-303.000.

Shimizu Construction Co., Ltd., The: *See—*
Tsubonuma, Yoshio; and Kawai, Tohru, 4,537,536, Cl. 405-267.000.

Shimizu, Koichi: *See—*
Kunimi, Nobuo; Shimizu, Koichi; and Suzuki, Toshiro, 4,538,114, Cl. 330-253.000.

Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, to Terumo Corporation. Hot-water extracts of neem bark. 4,537,774, Cl. 424-195.100.

Shimizu, Masami; Yoshikawa, Hisao; Kimura, Sosaku; Shiba, Kazuo; Maeno, Fumio; Fuwa, Shigehiro; and Mihara, Kuniyuki, to Citizen Watch Company Limited. Grinding machine. 4,536,993, Cl. 51-165.800.

Shimizu, Toshio: *See—*
Tsukui, Tsutomu; Shimizu, Toshio; Doi, Ryota; and Tsutsumi, Yasuyuki, 4,537,840, Cl. 429-33.000.

Shimpo, Tetsuhiko; and Fujihata, Isao, to Nippon Chemi-Con Corporation. Power supply device. 4,538,101, Cl. 323-272.000.

Shin-Etsu Chemical Co. Ltd.: *See—*
Mori, Shigeru; Kudo, Yoshiaki; and Kuwata, Satoshi, 4,537,691, Cl. 252-49.600.

Shinohara, Toshihide; and Okazaki, Sakiho, to Kabushiki Kaisha Suwa Seikosha. Progressive multifocal ophthalmic lens. 4,537,479, Cl. 351-169.000.

Shinryo, Yuko; and Yamamoto, Takashi, to Mitsubishi Denki Kabushiki Kaisha. Preparation of laminated iron core of electric device. 4,536,952, Cl. 29-596.000.

Shirai, Tetsuaki, to Kawasaki Jukogyo Kabushiki Kaisha. Air cleaner for an air-cooled engine. 4,537,160, Cl. 123-41.580.

Shiramizu, Takami, to Victor Company of Japan, Limited. Electronic musical instrument having variable frequency dividers. 4,537,108, Cl. 84-1.010.

Shishido, Tomio: *See—*
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Shishido, Yoshio, to Olympus Optical Co., Ltd. Focusing detecting device with coaxial source and detector. 4,538,062, Cl. 250-201.000.

Shishikura, Toshikazu; Konuma, Hiroshi; Nakamura, Hidenori; and Kobayashi, Yukio, to Showa Denko Kabushiki Kaisha; and Hitachi, Ltd. Secondary battery. 4,537,843, Cl. 429-197.000.

Shook, Forrest A., to NLB Corp. Method for cleaning weld smut from a surface. 4,537,639, Cl. 134-10.000.
Short, Robert S.; and Utter, Mark S. Sound inhibitor for audio transducers. 4,538,296, Cl. 381-72.000.
Showa Denko Kabushiki Kaisha: *See—*
Shishikura, Toshikazu; Konuma, Hiroshi; Nakamura, Hidenori; and Kobayashi, Yukio, 4,537,843, Cl. 429-197.000.
Shum, Wilfred P.; White, John F.; and Beals, Eva M., to Atlantic Richfield Company. Process for the oxidation of isobutylene oxide to methacrolein. 4,537,998, Cl. 568-483.000.
Shum, Ying: *See—*
Wang, Samuel T.; Hu, Chenming; and Shum, Ying, 4,538,246, Cl. 365-226.000.
Shupe, Richard D.: *See—*
Black, John W.; Shupe, Richard D.; and Simon, Earl, 4,537,570, Cl. 425-450.100.
Shuskus, Alexander J.; and Cowher, Melvyn E., to United Technologies Corporation. Method for removing semiconductor layers from salt substrates. 4,537,651, Cl. 156-613.000.
Shuyama, Hideo: *See—*
Oogai, Michiharu; Seita, Toru; Takeshige, Kosuke; and Shuyama, Hideo, 4,537,910, Cl. 521-27.000.
Siegrist, Gary D.; and Blain, Edward S., to Sundstrand Corporation. Torsionally stiff lightweight refrigerator/freezer door. 4,536,990, Cl. 49-501.000.
Siemens Aktiengesellschaft: *See—*
Barnicol-Ottler, Max; Loczenski, Martin; Mieschke, Norbert; Ott, Gerhard; Przybylski, Gerhard; and Weber, Dietmar, 4,538,022, Cl. 174-113.00R.
Douklias, Nikolaos; and Grabmaier, Josef, 4,537,611, Cl. 65-18.200.
Eith, Gerhard, 4,537,354, Cl. 239-102.000.
Hassler, Heinrich; Muller, Reiner; Kippenberg, Horst; and Prolss, Norbert, 4,537,745, Cl. 420-590.000.
Immler, Josef; and van der Sel, Cornelis, 4,538,072, Cl. 250-568.000.
Kehrer, Hans-Peter; Villain, Juergen; and Reiff, Werner, 4,537,793, Cl. 427-35.000.
Keller, Wolfgang, 4,538,279, Cl. 373-139.000.
Kern, Hans, 4,538,096, Cl. 318-314.000.
Rekewitz, Rudolf; and Wambach, Hermann, 4,537,521, Cl. 400-637.600.
Schaller, Werner, 4,538,210, Cl. 361-401.000.
Vertenten, Edward; and Heft, Josef, 4,537,455, Cl. 339-99.00R.
Wirth, Wulf D., 4,538,152, Cl. 343-5.0VQ.
Zehner, Bernd, 4,538,243, Cl. 365-49.000.
Siemers, Paul A.; Kopp, Robert W.; and Jackson, Melvin R., to General Electric Company. Method for controlling dimensions of RSPD articles. 4,537,742, Cl. 419-8.000.
SIG Societe Industrielle Suisse: *See—*
Jaquet, Andre , 4,538,061, Cl. 250-201.000.
Silicon Technology: *See—*
Steere, Robert E., Jr.; and Lewandowski, Thomas, 4,537,177, Cl. 125-13.00R.
Silva, Robert R.: *See—*
Sepulveda, Frank J.; and Silva, Robert R., 4,537,237, Cl. 160-201.000.
Silver, Howard F.; and Miller, Ronald L., to In-Situ, Inc. Upgraded solvents in coal liquefaction processes. 4,537,675, Cl. 208-8.0LE.
Simmel, Thomas L.: *See—*
Sansome, Terry; and Simmel, Thomas L., 4,537,577, Cl. 446-445.000.
Simon, Earl: *See—*
Black, John W.; Shupe, Richard D.; and Simon, Earl, 4,537,570, Cl. 425-450.100.
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., to Thomas A. Schutz Co., Inc. Modular display for cigarette packs. 4,537,316, Cl. 211-133.000.
Simpson, Philip A., to Rolls-Royce Limited. Aeroengine test cells. 4,537,066, Cl. 73-117.400.
Simpson, Wayne F., to Shell Oil Company. Fireproof boom. 4,537,528, Cl. 405-72.000.
Sinclair, Robert A.: *See—*
Brown-Wensley, Katherine A.; and Sinclair, Robert A., 4,537,942, Cl. 528-12.000.
Singh, Pushpa: *See—*
O'Sullivan, Joseph; Aklonis, Carol A.; and Singh, Pushpa, 4,537,858, Cl. 435-119.000.
Singleton, Mary L.: *See—*
Reasor, Warren; and Singleton, Mary L., 4,537,438, Cl. 296-17.000.
Sinniger, Joseph O.; and Peterson, Richard M., to RCA Corporation. Multiplex bus system for controlling the transmission of data between a master control unit and a plurality of remotely located receiver-transmitter units. 4,538,262, Cl. 370-85.000.
Skalski, John S.: *See—*
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,537,316, Cl. 211-133.000.
Skardal, Karl A. Vortex cleaner. 4,537,314, Cl. 209-211.000.
SKF Kugellagerfabriken GmbH: *See—*
Brandenstein, Manfred; and Hans, Rudiger, 4,537,270, Cl. 180-70.100.
Skinner, Robert T. J., to Lucas Industries, p.l.c. Fuel injection nozzles. 4,537,359, Cl. 239-533.600.
Skipor, Eugene, Jr.: *See—*
Kiamco, Roberto C.; and Skipor, Eugene, Jr., 4,537,390, Cl. 270-53.000.
Slavin, Michael; and Miller, Ellsworth S., to Lectron Products, Inc. Electric wiring terminal and method of making same. 4,538,045, Cl. 219-91.210.
Slee, Robert K., to South London Electrical Equipment Company Limited. Apparatus for feeding components to a work station. 4,537,552, Cl. 414-222.000.
Sliski, Alan P.: *See—*
Shambroom, John R.; and Sliski, Alan P., 4,538,069, Cl. 250-491.100.
Slob, Arie: *See—*
Te Velde, Ties S.; and Slob, Arie, 4,536,948, Cl. 29-577.00C.
Slongo, Mario; and Karrer, Friedrich, to Ciba Geigy Corporation. Polyalkylpiperidinesulfonic acid esters. 4,537,923, Cl. 524-100.000.
Slotman, Wilhelmus: *See—*
Oppenlaender, Knut; Fikentscher, Rolf; Buettner, Egon; Slotman, Wilhelmus; Schwartz, Erich; and Mohr, Rudolf, 4,537,701, Cl. 252-344.000.
Small Waters, Inc.: *See—*
Horton, Jerry L., 4,537,144, Cl. 114-61.000.
Smarandoiu, George; and Perlegos, George, to SEEQ Technology, Inc. Enabling circuit for redundant word lines in a semiconductor memory array. 4,538,245, Cl. 365-200.000.
Smeiman, Wilfred. Process and apparatus for rejuvenating electrostatic copy machine toner. 4,537,850, Cl. 430-137.000.
Smialowicz, Dennis T.: *See—*
Petersen, Arthur W.; and Smialowicz, Dennis T., 4,537,638, Cl. 134-2.000.
Smit, Jan W.: *See—*
Verschoof, Karel J. H.; and Smit, Jan W., 4,537,186, Cl. 128-130.000.
Smith, Dennis W.: *See—*
Borrelli, Nicholas F.; Hares, George B.; Smith, Dennis W.; and Wedding, Brent M., 4,537,612, Cl. 65-30.110.
Smith, Francis X.: *See—*
Ogunbiyi, Lai; Scott, Francis L.; and Smith, Francis X., 4,537,746, Cl. 422-28.000.
Smith, James A.; and Murphy, Betty J., to Creative Products Resource Associates, Ltd. Floor cleaning and waxing composition. 4,537,914, Cl. 521-111.000.
Smith Kline & French Laboratories Limited: *See—*
Durant, Graham J.; Emmett, John C.; and Ganellin, Charon R., 4,537,779, Cl. 514-275.000.
Sach, George S., 4,537,890, Cl. 514-272.000.
Sach, George S., 4,537,891, Cl. 514-272.000.
Smith, Robert A.: *See—*
Gloth, Richard E.; Tazuma, James J.; and Smith, Robert A., 4,537,952, Cl. 528-392.000.
Smith, Roger D.; and Baer, Harold J. Game apparatus. 4,537,401, Cl. 273-112.000.
Smith, William R.; and Myers, Theodore R., to Motorola, Inc. Integrated alternator bridge heat sink. 4,538,169, Cl. 357-76.000.
Smola, Raymond L.: *See—*
Woodrow, Harold E.; and Smola, Raymond L., 4,537,055, Cl. 72-235.000.
SMS Schloemann - Siemag, Inc.: *See—*
Heffentrager, Joel L., 4,537,056, Cl. 72-238.000.
SMW Schneider & Weisshaupt GmbH: *See—*
Hiestand, Karl, 4,537,410, Cl. 279-4.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. Compositions of 7-oxabicycloheptane and 7-oxabicycloheptene compounds and a method for their use in inhibiting bronchoconstriction. 4,537,904, Cl. 514-469.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., to E. R. Squibb & Sons, Inc. 7-Oxabicycloheptane and 7-oxabicycloheptene compounds. 4,537,981, Cl. 549-463.000.
Snyder, Clair W., Jr.: *See—*
Douty, George H.; Landis, John M.; and Snyder, Clair W., Jr., 4,537,454, Cl. 339-45.00M.
Snyder, James K.: *See—*
Matteucci, John S.; Snyder, James K.; and Hahn, Robert E., 4,536,998, Cl. 52-171.000.
Snyder, Thomas S.: *See—*
Murray, Alexander P.; and Snyder, Thomas S., 4,537,666, Cl. 204-129.950.
Societe a Responsabilite Limitee styled: Speri-France: *See—*
Guillaume, Jean-Luc, 4,537,817, Cl. 428-260.000.
Societe Anonyme dite: L'Oreal: *See—*
Millet, Catherine; Ser, Jean-Claude; and N'Guyen, Quang L., 4,537,782, Cl. 514-774.000.
Societe Chimique des Charbonnages S.A.: *See—*
Bujadoux, Karel; and Neyer, Jean-Marie, 4,537,868, Cl. 502-104.000.
Societe Europeenne de Propulsion: *See—*
Delle-Vedove, Daniel; Lallemand, Yves; and Hubert, Olivier, 4,537,201, Cl. 128-697.000.
Societe Francaise des Produits pour Catalyse Pro-Catalyse: *See—*
Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, 4,537,875, Cl. 502-314.000.
Societe J. Brochier & Fils: *See—*
Bompard, Bruno P.; and Bruyere, Alain, 4,536,930, Cl. 29-33.00K.
Societe Nationale Industrielle Aerospatiale: *See—*
Barnoin, Pierre; Mens, Jacques M. N.; and Merle, Gilbert, 4,537,374, Cl. 244-102.00R.
Soden, Laurence M.; and West, John B. Building structure. 4,536,996, Cl. 52-67.000.

Sogabe, Masatoyo: *See*—
Kawada, Shigeki; Amemiya, Yoichi; Sogabe, Masatoyo; and Iwamatsu, Noboru, 4,538,084, Cl. 310-217.000.
Sokolovsky, Paul J., to Advanced Micro Devices, Inc. Automatic brushing machine. 4,537,059, Cl. 73-7.000.
Solar Turbines, Incorporated: *See*—
Grosjean, William C., 4,537,024, Cl. 60-39.161.
Soled, Stuart L.: *See*—
Fiato, Rocco A.; Soled, Stuart L.; and Montagna, Angelo A., 4,537,867, Cl. 502-74.000.
Somet Societa' Meccanica Tessile S.p.A.: *See*—
Viscardi, Ettore, 4,537,228, Cl. 139-453.000.
Somorai, Tamas: *See*—
Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, 4,537,899, Cl. 514-384.000.
Sone, Junichi, to Nippon Electric Co., Ltd. Circuit utilizing Josephson effect. 4,538,077, Cl. 307-476.000.
Soneda, Mitsuo; Maekawa, Toshikazu; and Otsu, Kouji, to Sony Corporation. Shift register circuit with multiple, tapped outputs having pull-down transistors. 4,538,288, Cl. 377-76.000.
Sonoda, Yoshiteru: *See*—
Sekoguchi, Kotohiko; and Sonoda, Yoshiteru, 4,537,078, Cl. 73-744.000.
Sony Corporation: *See*—
Iwase, Seiichiro; and Komori, Shinichi, 4,538,172, Cl. 358-13.000.
Nanjo, Yusuke, 4,537,476, Cl. 350-461.000.
Soneda, Mitsuo; Maekawa, Toshikazu; and Otsu, Kouji, 4,538,288, Cl. 377-76.000.
Sony/Tektronix Corporation: *See*—
Miki, Yasuhiko, 4,538,266, Cl. 371-15.000.
SORMA S.r.l.: *See*—
Pieri, Vincenzo, 4,537,006, Cl. 53-134.000.
Souda, Keiichi: *See*—
Suzuki, Akihiro; Souda, Keiichi; Kuno, Masao; and Ikuta, Hiroshi, 4,538,191, Cl. 360-88.000.
Soundaranathan, Kasivisvanatha: *See*—
Gray, Bruce; Soundaranathan, Kasivisvanatha; and VanGieson, Franklin D., 4,536,945, Cl. 29-571.000.
South London Electrical Equipment Company Limited: *See*—
Slee, Robert K., 4,537,552, Cl. 414-222.000.
Sovonics Solar Systems: *See*—
Nath, Prem; Hoffman, Kevin R.; and Laarman, Timothy D., 4,537,795, Cl. 427-39.000.
Spectron Development Laboratories, Inc.: *See*—
Hess, Cecil, 4,537,507, Cl. 356-336.000.
Spectron Glass and Electronics, Incorporated: *See*—
Beitzer, George W., 4,536,967, Cl. 33-366.000.
Spengler, William E.; and Ramsey, William C., to Tolco Corporation. Portable pressure sprayer. 4,537,334, Cl. 222-401.000.
Speranza, Donald, to Eaton Corporation. Low-power acoustic injector drive circuit with enhanced turn-on. 4,537,353, Cl. 239-102.000.
Sperry Corporation: *See*—
Beck, Franklin L., 4,537,382, Cl. 248-568.000.
Spicer, Denis F., to Texas Instruments Incorporated. Magnetic quadripole. 4,538,127, Cl. 335-210.000.
Spiegel, Leo: *See*—
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., 4,537,067, Cl. 73-151.000.
Spinelli, Gene A. Exercise device. 4,537,395, Cl. 272-123.000.
Spinelli, Richard A.: *See*—
Ritter, Joachim A.; Bock, Edward C.; Spinelli, Richard A.; and Dennis, John R., 4,537,499, Cl. 355-58.000.
Spitzer, Wayne A., to Eli Lilly and Company. Inotropic agents. 4,537,889, Cl. 514-243.000.
Spooner, Peter D.: *See*—
Bryant, Greyham F.; Spooner, Peter D.; and Pearson, William K. J., 4,537,050, Cl. 72-8.000.
Sposini, Maurizio: *See*—
Gabrielli, Luciano; and Sposini, Maurizio, 4,538,263, Cl. 370-86.000.
Sprague Electric Company: *See*—
Montgomery, William P., 4,538,212, Cl. 361-433.000.
Nguyen, Trung H.; and Hutchins, Clinton E., 4,537,665, Cl. 204-29.000.
Novacek, William G., 4,537,664, Cl. 204-28.000.
Richards, Oliver L., Jr., 4,538,300, Cl. 455-161.000.
Sprague, Peter W.: *See*—
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,904, Cl. 514-469.000.
Snitman, David L.; Haslanger, Martin F.; and Sprague, Peter W., 4,537,981, Cl. 549-463.000.
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., to International Flavors & Fragrances Inc. Alkyl substituted and unsubstituted para-carboalkoxy cyclohexanones and organoleptic uses thereof. 4,537,704, Cl. 252-522.00R.
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Zylstra, Henry J.; and Jansen, Harley W., 4,538,194, Cl. 361-42.000.
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Argiropoulos, George D.; and Sahachaisere, Somchai, 4,537,681, Cl. 210-317.000.
Staehlin, John H., to Westinghouse Electric Corp. Antenna stow mechanism. 4,538,154, Cl. 343-705.000.
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Stahlecker, Fritz, 4,537,022, Cl. 57-401.000.
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Stamvik, Anders R.; Kristensson, Sten K.; and Lundvall, Karl-Erik, to Ab Leo. Steroid esters preparation. 4,537,722, Cl. 260-397.400.
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Bullock, Robert L., 4,537,138, Cl. 105-168.000.
Standard Microsystems Corporation: *See*—
Lish, Charles A., 4,538,113, Cl. 330-126.000.
Standard Oil Company (Indiana): *See*—
Kilner, Peter H.; Egan, Joseph P., Jr.; Ceisel, Stephen G.; and Schammel, Wayne P., 4,537,978, Cl. 549-245.000.
Puri, Rajen, 4,537,252, Cl. 166-245.000.
Puskas, Imre; and Schmitt, Marshall, 4,537,985, Cl. 560-96.000.
Standard Oil Company (Ohio), The: *See*—
Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., 4,537,624, Cl. 75-0.50B.
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Duprez, Wayne R., 4,537,346, Cl. 236-34.500.
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Rice, Thomas E.; and Staropoli, Paul R., 4,537,452, Cl. 312-314.000.
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Engel, Isaac, 4,536,966, Cl. 33-257.000.
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Pallos, Ferenc M., 4,537,620, Cl. 71-94.000.
Stednitz, Denis P., to Stednitz, Denis P. Cannulated fixation screw. 4,537,185, Cl. 128-92.00B.
Steere, Robert E., Jr.; and Lewandowski, Thomas, to Silicon Technology. Balanced rotary saw assembly and a method of balancing the same. 4,537,177, Cl. 125-13.00R.
Steetle, David R., to Digicon, Inc. Marine seismic streamer cable for providing selectable detector array connections. 4,538,251, Cl. 367-154.000.
Steffen, Jim M.: *See*—
Christiansen, David W.; Steffen, Jim M.; and Brown, William F., 4,537,741, Cl. 376-261.000.
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Rottgen, Karl; Stendel, Joachim; and Diskowski, Herbert, 4,537,756, Cl. 423-323.000.
Stephens, Charles E.: *See*—
Hunter, George L. K.; Dennison, Daniel B.; and Stephens, Charles E., 4,537,637, Cl. 127-60.000.
Stern, Richard A.: *See*—
Mariani, Elio A.; Stern, Richard A.; and Babbitt, Richard W., 4,538,123, Cl. 333-208.000.
Stevens, Keith D.; Harrison, John; and Kaye, Stanley B., to Cableform Limited. High power semiconductor heat sink assembly. 4,538,171, Cl. 357-81.000.
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Francel, Josef; Horn, Uriah; and Stewart, Daniel R., 4,537,862, Cl. 501-14.000.
Stewart Stamping Corporation: *See*—
Brennan, Robert J.; Meighen, Terrence; and Phillipson, Walter M., 4,537,459, Cl. 339-143.00R.
Stewart, William H. Antenna mount with rotary positionable feature. 4,538,155, Cl. 343-715.000.
Stiga AB: *See*—
Johansson, Soren; Andersson, Roger; and Jonsson, Lennart, 4,537,581, Cl. 474-123.000.
Stiles, Jack L. Air conditioning system. 4,537,035, Cl. 62-89.000.
Stoka, Roberto, to ITT Industries, Inc. Spot-type disc brake for automotive vehicles. 4,537,288, Cl. 188-71.800.
Stoll, Kurt; and Hihn, Gerhard. Braking device for a fluid power actuator. 4,537,113, Cl. 92-24.000.
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Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.
Stolz, Albert, to Daimler-Benz Aktiengesellschaft. Motor vehicle with an internal-combustion engine and with means for heating a payload space. 4,537,349, Cl. 237-12.30C.
Storage Technology Corporation: *See*—
Fitzpatrick, William B., 4,538,189, Cl. 360-40.000.
Storandt, Ralf; and Mettenleiter, Karl, to Geze GmbH. Door holder-closer having a control signal operated hold-open function and a mechanical override facility. 4,536,916, Cl. 16-48.500.
Stoudt, Michael D., to Eastman Kodak Company. Apparatus and method for electrophotographically producing copy having continuous-tone and other content. 4,537,490, Cl. 355-3.00R.
Stout, Larry E. Method of construction of skirt for fishing lures. 4,536,986, Cl. 43-42.270.

Strand, David A., to Energy Conversion Devices, Inc. Apparatus for making a stamping master for video disk replication. 4,537,670, Cl. 204-224.00R.

Strange, Carl P.; Martin, Harold B., Jr.; and Tsang, Albert C., to Dow Chemical Company, The. Process for preparing cellulose ethers. 4,537,958, Cl. 536-85.000.

Stratoflex, Inc.: *See—*
Cooke, Horise M., 4,537,427, Cl. 285-305.000.

Stravitz, David M.; and Johnson, Gary D., to Johnson, Gary D. Blow dart game including hollow tube and dart with target impacting member and shock-absorbing portion. 4,537,176, Cl. 124-62.000.

Streitenberger, Walter: *See—*
Achinger, Michael; Jaeger, Erhard; Lipp, Reinhold; and Streitenberger, Walter, 4,537,238, Cl. 164-169.000.

Strike, Donald P.: *See—*
Scotese, Anthony C.; Morris, Robert L.; Santilli, Arthur A.; and Strike, Donald P., 4,537,968, Cl. 546-209.000.

Strong, Les O.: *See—*
Hanson, Oliver D.; Nicolai, Donald R.; and Strong, Les O., 4,537,194, Cl. 128-399.000.

Stubbs, John L., Jr.: *See—*
Cawlfield, David W.; Moore, William M.; and Stubbs, John L., Jr., 4,537,937, Cl. 525-417.000.

Studniarz, Stanley A.: *See—*
Dakin, Thomas W.; Studniarz, Stanley A.; and Chenoweth, Terrence E., 4,537,803, Cl. 427-385.500.

Stulen, Richard H.: *See—*
Haney, Steven J.; Stulen, Richard H.; and Toly, Norman F., 4,538,068, Cl. 250-443.100.

Stuntz, Gordon F.: *See—*
Bearden, Roby; and Stuntz, Gordon F., 4,537,676, Cl. 208-251.00R.

Subscan Systems Ltd.: *See—*
Douglas, Brian, 4,537,136, Cl. 104-138.00G.

Sucrow, Wolfgang; Schatull, Wolfgang; and Fuss, Peter, to Merck Patent Gesellschaft mit beschrankter Haftung. Liquid crystalline piperidine derivatives. 4,537,698, Cl. 252-299.610.

Sudo, Tadashi: *See—*
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, 4,537,774, Cl. 424-195.100.

Sugie, Akihiko: *See—*
Ono, Keiichi; Sugie, Akihiko; Muraoka, Masami; and Yamamoto, Michihiro, 4,537,989, Cl. 562-501.000.

Sugie, Mamoru: *See—*
Toyooka, Takashi; Hirokazu, Aoki; Sugie, Mamoru; and Sugita, Yutaka, 4,538,242, Cl. 365-8.000.

Sugihara, Hiroshi: *See—*
Kohmoto, Osamu; Takasugi, Yasufumi; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,537,832, Cl. 428-216.000.

Sugimoto, Kaname, to Kabushiki Kaisha Hayashibara Seibutsu Kagaku Kenkyujo. Process for the production of human urokinase. 4,537,852, Cl. 435-215.000.

Sugimoto, Yutaka: *See—*
Fukushima, Akira; and Sugimoto, Yutaka, 4,537,268, Cl. 180-9.100.

Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, to House Food Industrial Company Ltd. Process for preparing retort tofu. 4,537,789, Cl. 426-634.000.

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Toyooka, Takashi; Hirokazu, Aoki; Sugie, Mamoru; and Sugita, Yutaka, 4,538,242, Cl. 365-8.000.

Sugo, Yasuhisa; and Takeshima, Tohru, to Fujitsu Limited. Semiconductor memory device. 4,538,244, Cl. 365-155.000.

Suk, Suh Kyung: *See—*
Hong, Won P., 4,537,633, Cl. 106-96.000.

Sullivan, Michael T., to Exanno Products Limited. Duct joining system. 4,537,430, Cl. 285-364.000.

Sulzer Brothers Limited: *See—*
Breisinger, Otto; and Burgbacher, Herbert, 4,537,284, Cl. 184-7.400.
Rees, Karl, 4,537,156, Cl. 122-6.00A.

Sumitani, Katsuyoshi, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Rubber tube for dredging work. 4,537,223, Cl. 138-139.000.

Sumitani, Katsuyoshi; and Takehara, Yasuo, to Sumitomo Gomu Kogyo Kabushiki Kaisha. Rubber tube for dredging work. 4,537,224, Cl. 138-139.000.

Sumitomo Chemical Company, Limited: *See—*
Ono, Keiichi; Sugie, Akihiko; Muraoka, Masami; and Yamamoto, Michihiro, 4,537,989, Cl. 562-501.000.
Takahashi, Takeo; Shimago, Kozo; and Maeshima, Kaoru, 4,537,973, Cl. 548-303.000.
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.

Sumitomo Electric Industries, Ltd.: *See—*
Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, 4,537,652, Cl. 156-617.0SP.
Saito, Shigeo; and Nagata, Masayuki, 4,537,642, Cl. 148-11.50Q.
Yamamoto, Susumu; and Sato, Kazuyoshi, 4,537,808, Cl. 428-36.000.

Sumitomo Gomu Kogyo Kabushiki Kaisha: *See—*
Sumitani, Katsuyoshi, 4,537,223, Cl. 138-139.000.
Sumitani, Katsuyoshi; and Takehara, Yasuo, 4,537,224, Cl. 138-139.000.

Sumitomo Heavy Industries, Ltd.: *See—*
Kanamori, Toshio, 4,537,241, Cl. 164-442.000.

Sumitomo Rubber Industries, Limited: *See—*
Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, 4,537,936, Cl. 525-236.000.

Sumiya, Mitsuo: *See—*
Kamiya, Masashi; Sumiya, Mitsuo; and Yamaguchi, Ryoji, 4,538,081, Cl. 310-90.000.

Summers, Mark A.; Hagen, Wilhelm F.; and Boyd, Robert D., to United States of America, Energy. Scattering apodizer for laser beams. 4,537,475, Cl. 350-448.000.

Sun Chemical Corporation: *See—*
Floyd, William C., 4,537,634, Cl. 106-214.000.
Lupoli, Peter J., 4,537,049, Cl. 70-277.000.

Sun, Shan C.; and Garitty, James P., to Westinghouse Electric Corp. Protective relay apparatus and method for providing single-pole tripping. 4,538,196, Cl. 361-64.000.

Sunada, Imao, to Noburu Onuki. Detector for diagnosing dental caries. 4,537,573, Cl. 433-32.000.

Sunbeam Plastics Corp.: *See—*
Montgomery, Gary V., 4,537,318, Cl. 215-232.000.

Sundberg, Erik G. Thin tubular positive electrodes for lead-acid batteries and method of making same. 4,537,842, Cl. 429-140.000.

Sundstrand Corporation: *See—*
Anderson, Wayne R., 4,537,220, Cl. 137-625.640.
Pollman, Frederic W.; Reynolds, David W.; and Heiser, Richard, 4,537,364, Cl. 242-86.510.
Siegrist, Gary D.; and Blain, Edward S., 4,536,990, Cl. 49-501.000.

Surawy, Ryszard: *See—*
Jackson, Graham; and Surawy, Ryszard, 4,537,075, Cl. 73-634.000.

Suzuki, Akihiro; Souda, Keiichi; Kuno, Masao; and Ikuta, Hiroshi, to Nippondenso Co., Ltd. Magnetic card reader. 4,538,191, Cl. 360-88.000.

Suzuki, Hidetoshi: *See—*
Saito, Seiji; Ayata, Naoki; Suzuki, Hidetoshi; Ozawa, Kunitaka; and Koumura, Noboru, 4,538,182, Cl. 358-280.000.

Suzuki, Masahiko: *See—*
Kuroyanagi, Masatoshi; and Suzuki, Masahiko, 4,537,171, Cl. 123-449.000.

Suzuki, Motomu: *See—*
Toraichi, Kazuo; Otsu, Nobuyuki; and Suzuki, Motomu, 4,538,227, Cl. 364-414.000.

Suzuki, Norio: *See—*
Ooshiro, Takehiko; Iwasaki, Masayoshi; Sahara, Kousuke; Suzuki, Norio; Utsumi, Hitoshi; Miyake, Kazuo; and Aburatani, Kenji, 4,537,073, Cl. 73-602.000.

Suzuki, Ryoichi; and Tokuda, Ryuji, to Canon Kabushiki Kaisha. Automatic focusing device. 4,537,489, Cl. 354-403.000.

Suzuki, Sobei: *See—*
Nishizawa, Junichi; Suzuki, Sobei; and Tamamushi, Takashige, 4,536,946, Cl. 29-571.000.

Suzuki, Toshiro: *See—*
Kunimi, Nobuo; Shimizu, Koichi; and Suzuki, Toshiro, 4,538,114, Cl. 330-253.000.

Suzuki, Yoshio: *See—*
Okada, Hisafumi; Suzuki, Yoshio; and Takenaka, Shigeo, 4,537,322, Cl. 220-2.10A.

Svensson, Claes G. S.: *See—*
Henriksson, Sven-Erik D.; Ahrel, Bo A.; Svensson, Claes G. S.; and Franzen, Torsten A. H., 4,537,655, Cl. 162-23.000.

Swenson, Kirk A.; and Swenson, Robert E. Roll container. 4,537,366, Cl. 242-137.000.

Swenson, Robert E.: *See—*
Swenson, Kirk A.; and Swenson, Robert E., 4,537,366, Cl. 242-137.000.

Swerdloff, Michael D.: *See—*
Van Der Puy, Michael; Kolc, Jaroslav F.; Anello, Louis G.; Hendrickson, Larry L.; Rogic, Milorad M.; and Swerdloff, Michael D., 4,537,614, Cl. 71-28.000.

Swihart, Terence J.: *See—*
Blizzard, John D.; and Swihart, Terence J., 4,537,829, Cl. 428-429.000.

Swiss Aluminium Ltd.: *See—*
Zollinger, Max; and Jemec, Raoul, 4,537,671, Cl. 204-243.00R.

Syed, Asif A., to General Electric Company. Acoustic impedance measurement. 4,537,630, Cl. 73-589.000.

SYNTHELABO: *See—*
Caillot, Luc; and Chopin, Claude, 4,537,190, Cl. 128-204.220.

Systron Donner Corp.: *See—*
Flanner, Philip D.; Morris, Harold D.; and Newell, Gerald R., 4,538,203, Cl. 361-159.000.

Szabo, Laszlo; and Schunemann, Klaus, to International Standard Electric Corporation. Diode oscillator with independently variable frequency and power. 4,538,122, Cl. 331-96.000.

Szilagyi, Geza: *See—*
Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, 4,537,899, Cl. 514-384.000.

Szu, Harold H. Synergistic quasi-free electron laser. 4,538,275, Cl. 372-4.000.

T. T. Boughton & Sons, Ltd.: *See—*
Boughton, Thomas T., 4,537,540, Cl. 410-82.000.

Tabuchi, Takahisa: *See—*
Asari, Akira; Tsuzuki, Hidehiro; Inoue, Yoichi; and Tabuchi, Takahisa, 4,537,569, Cl. 425-405.00H.

Tada, Atuki: *See—*
Ishibashi, Masaya; and Tada, Atuki, 4,538,253, Cl. 369-34.000.

Tada, Kohji: *See*—
Kawasaki, Akihisa; Tada, Kohji; Kotani, Toshihiro; and Miyazawa, Shintaro, 4,537,652, Cl. 156-617.0SP.

Taddei, Alessandro: *See*—
Mancini, Paolo; Taddei, Alessandro; Macerata, Alberto; and Marchesi, Carlo, 4,537,202, Cl. 128-712.000.

Taga, Kazumitsu: *See*—
Sugisawa, Ko; Matsumura, Yasushi; Taga, Kazumitsu; Sengoku, Kouji; and Nagatome, Yoshiaki, 4,537,789, Cl. 426-634.000.

Taga, Tokio, to Nippon Telegraph & Telephone Public Corp. Directivity diversity communication system with microstrip antenna. 4,538,153, Cl. 343-700.0MS.

Taguchi, Masahiro: *See*—
Tsuge, Noboru; Taguchi, Masahiro; Kato, Masanori; and Kuwakado, Satosi, 4,537,169, Cl. 123-325.000.

Taisei Corporation: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,537,645, Cl. 149-3.000.

Tajana, Franco: *See*—
Ballarati, Vito; and Tajana, Franco, 4,537,227, Cl. 139-420.00R.

Tajima, Hiroto; Kawakami, Hironori; Mashino, Zenichi; Hayami, Seinoshin; and Ohzeki, Osamu, to Chiyoda Chem. Engineering & Constr. Co.; and Nikka Chemical Industry Co., Ltd. Method for the preparation of pitch-in-water slurry. 4,537,600, Cl. 44-51.000.

Takada, Shun; Onodera, Kaoru; and Kadowaki, Takashi, to Konishiroku Photo Industry Co., Ltd. Silver halide photographic light-sensitive material. 4,537,857, Cl. 430-549.000.

Takagi, Masashi: *See*—
Nishi, Yasuyuki; Sakurai, Masao; and Takagi, Masashi, 4,537,042, Cl. 62-208.000.

Takagi, Masayuki; Mugiya, Hiroshi; and Komaju, Shigeru, to Fujitsu Limited. Power supply circuit. 4,538,102, Cl. 323-349.000.

Takagi, Toshijiro; and Watanabe, Eiji, to JEOL Ltd. Scanning electron microscope with an optical microscope. 4,537,477, Cl. 350-507.000.

Takahashi, Akio: *See*—
Kambara, Shu; Arakawa, Tatsumi; and Takahashi, Akio, 4,537,950, Cl. 528-380.000.

Takahashi, Jiro; Sawada, Kiyoshi; Kinoshita, Akira; Komamura, Tawara; Goto, Satoshi; and Sasaki, Osamu, to Konishiroku Photo Industry Co., Ltd. Disazo photoreceptors for electrophotography. 4,537,847, Cl. 430-58.000.

Takahashi, Katsutoshi: *See*—
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.

Takahashi, Takehiko: *See*—
Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, 4,537,023, Cl. 60-39.050.

Takahashi, Takeo; Shimago, Kozo; and Maeshima, Kaoru, to Sumitomo Chemical Company, Limited. Process for preparing biotin. 4,537,973, Cl. 548-303.000.

Takahasi, Kenichiro, to Hitachi, Ltd. Output control device for light detectors for photometers. 4,537,510, Cl. 356-435.000.

Takanashi, Nobuyasu, to Terumo Kabushiki Kaisha. Package for storage of medical container. 4,537,305, Cl. 206-438.000.

Takao, Hiroyoshi; Yamamoto, Keisaku; Imai, Akio; Yoshida, Nobuyuki; Furukawa, Hiroshi; Saito, Yuichi; and Okumura, Akio, to Sumitomo Chemical Company, Limited; and Sumitomo Rubber Industries, Limited. Diene rubber composition, method of preparing the same and tire employing said composition. 4,537,936, Cl. 525-236.000.

Takasugi, Yasufumi: *See*—
Kohmoto, Osamu; Takasugi, Yasufumi; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,537,832, Cl. 428-216.000.

Takata, Masahiro: *See*—
Sato, Takahisa; Takata, Masahiro; Ueshima, Michio; and Nagai, Isao, 4,537,874, Cl. 502-311.000.

Takayama, Yoshihisa; Gotoh, Kunihiko; Ito, Akihiko; Yamamura, Takeshi; and Fujita, Kazuyoshi, to Fujitsu Limited. Method for fabricating an integrated circuit with multi-layer wiring having opening for fuse. 4,536,949, Cl. 29-578.000.

Takeda, Hideo, to Fuji Photo Film Co., Ltd. Coating method and apparatus. 4,537,801, Cl. 427-356.000.

Takehara, Yasuo: *See*—
Sumitani, Katsuyoshi; and Takehara, Yasuo, 4,537,224, Cl. 138-139.000.

Takenaka, Shigeo: *See*—
Okada, Hisafumi; Suzuki, Yoshio; and Takenaka, Shigeo, 4,537,322, Cl. 220-2.10A.

Takeshige, Kosuke: *See*—
Oogai, Michiharu; Seita, Toru; Takeshige, Kosuke; and Shuyama, Hideo, 4,537,910, Cl. 521-27.000.

Takeshima, Tohru: *See*—
Sugo, Yasuhisa; and Takeshima, Tohru, 4,538,244, Cl. 365-155.000.

Takeuchi, Haruo, to Olympus Optical Co., Ltd. Connecting mechanism of light source device for endoscope. 4,537,453, Cl. 339-33.000.

Takeya, Yasushi: *See*—
Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, 4,537,743, Cl. 419-38.000.

Takigawa, Nobuhiro; Watanabe, Hideo; Kawasaki, Kanzirou; Kubo, Keishi; Hakiri, Minoru; and Kawamura, Eiichi, to Ricoh Co., Ltd. Heat-sensitive transfer medium. 4,538,164, Cl. 346-209.000.

Talcott, Thomas D., to Innovative Surgical Products, Inc. Correction of defects in the eye and compositions therefor. 4,537,943, Cl. 528-15.000.

Tam, Wilson, to Du Pont de Nemours, E. I., and Company. Monoorganylation of dihaloaromatics. 4,538,003, Cl. 568-656.000.

Tamamushi, Takashige: *See*—
Nishizawa, Junichi; Suzuki, Sobei; and Tamamushi, Takashige, 4,536,946, Cl. 29-571.000.

Tamura, Kaoru, to Fuji Photo Film Co., Ltd. Daylight film loading method and apparatus, film and film package used for same. 4,537,307, Cl. 206-455.000.

Tamura, Kaoru; and Ogo, Yoshimasa, to Tokyo Shibaura Denki Kabushiki Kaisha. X-Ray film-holding device with convex cushion members. 4,538,294, Cl. 378-187.000.

Tamura, Koichi, to Tokico Ltd. Friction pad assembly for a disc brake. 4,537,292, Cl. 188-73.390.

Tamura, Shingo: *See*—
Hattori, Osamu; and Tamura, Shingo, 4,538,254, Cl. 369-43.000.

Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, to Neturen Co., Ltd.; Asahi Kasei Kogyo Kabushiki Kaisha; and Asahi Kasei Kogyo Kabushiki Hiraoka & Co. Method and apparatus for forming reinforcing cage for prestressed concrete pile. 4,538,042, Cl. 219-58.000.

Tanaka, Minoru: *See*—
Terahara, Akira; and Tanaka, Minoru, 4,537,859, Cl. 435-146.000.

Tanaka, Toshinori, to Mitsubishi Denki Kabushiki Kaisha. Magneto-type D-C electric motor. 4,538,085, Cl. 310-239.000.

Tang, Chung L.: *See*—
Donaldson, William R.; and Tang, Chung L., 4,537,990, Cl. 564-63.000.

Tanida, Masashi: *See*—
Kitayama, Minoru; Nakamura, Motoharu; Hirose, Kikuji; and Tanida, Masashi, 4,537,792, Cl. 427-13.000.

Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, to Fujitsu Ten Limited; and Toyota Jidosha Kabushiki Kaisha. Automotive vehicle speed control device based on a preselected speed. 4,537,272, Cl. 180-176.000.

Taniguchi, Nobuyuki; Ishikawa, Norio; and Egawa, Takeshi, to Minolta Camera Kabushiki Kaisha. Automatic focus control system with backlash correcting arrangement. 4,537,487, Cl. 354-400.000.

Tanner, Howard M. C., to HGM, Inc. Laser endocoagulator apparatus. 4,537,193, Cl. 128-303.100.

Targowski, Roger: *See*—
Hill, Harold I.; Norem, Stanley D.; and Targowski, Roger, 4,537,572, Cl. 432-55.000.

Tarjan, Peter P., to Cordis Corporation. Carbon coating of grafts or catheters. 4,537,791, Cl. 427-2.000.

Tavs, Peter: *See*—
Goetz, Norbert; Laas, Harald; Tavs, Peter; Hupfer, Leopold; and Baer, Karl, 4,538,009, Cl. 568-799.000.

Taylor, Andrew W.; and Cook, Richard T., to Beecham Group p.l.c. β-lactam antibacterial agents and compositions containing them. 4,537,886, Cl. 514-193.000.

Taylor, Jay E.: *See*—
Sequeira, Hermann B.; and Taylor, Jay E., 4,538,276, Cl. 372-26.000.

Taylor, Kevin D.; and Nichols, Galen N., to TNF Enterprises. Face and nose wiper holding device for skiers. 4,536,889, Cl. 2-160.000.

Taylor, William H., to Kollmorgen Technologies. Optical scanner. 4,538,181, Cl. 358-208.000.

Tazuma, James J.: *See*—
Gloth, Richard E.; Tazuma, James J.; and Smith, Robert A., 4,537,952, Cl. 528-392.000.

TDK Corporation: *See*—
Kohmoto, Osamu; Takasugi, Yasufumi; Sugihara, Hiroshi; and Nishimatsu, Masaharu, 4,537,832, Cl. 428-216.000.

Teachout, Paul H. Foldable dolly. 4,537,421, Cl. 280-654.000.

Tebel Machinefabrieken B.V.: *See*—
van der Velde, Ype Y.; and Zantinge, Jan, 4,537,787, Cl. 426-478.000.

Technicare Corporation: *See*—
Dietz, Dennis R., 4,537,074, Cl. 73-625.000.

Technion Research and Development Foundation, Inc.: *See*—
Lavie, Ram, 4,537,760, Cl. 423-359.000.

TELDEC Telefunken-Decca Schallplatten GmbH: *See*—
Redlich, Horst, 4,538,256, Cl. 369-88.000.

Telsonic AG Fur Elektronische Entwicklung Und Fabrikation: *See*—
Frei, Karl, 4,537,511, Cl. 366-127.000.

Tenhover, Michael A.; Henderson, Richard S.; and Grasselli, Robert K., to Standard Oil Company (Ohio), The. Amorphous metal alloy powders and synthesis of same by solid state decomposition reactions. 4,537,624, Cl. 75-0.50B.

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Terada, Takami: *See*—
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.

Terahara, Akira; and Tanaka, Minoru, to Sankyo Company, Limited. Process for preparing 3-hydroxy-ML-236B derivatives known as M-4 and M-4'. 4,537,859, Cl. 435-146.000.

Teraishi, Katsuhiro, to Kabushiki Kaisha Suwa Seikosha. Synthesis of beryl crystals. 4,537,653, Cl. 156-620.000.

Teraura, Nobuyuki: *See*—
Sakai, Toshiyasu; Hara, Masahiro; and Teraura, Nobuyuki, 4,538,060, Cl. 235-472.000.

Terry, Lynn E.; and Schoeppel, Roger J. Power cycles based upon cyclical hydriding and dehydriding of a material. 4,537,031, Cl. 60-649.000.
Terui, Nobuhiko, to Nippon Kogaku K.K. Camera system. 4,537,488, Cl. 354-402.000.
Terumo Corporation: *See*—
Shimizu, Masaki; Sudo, Tadashi; and Nomura, Takeo, 4,537,774, Cl. 424-195.100.
Terumo Kabushiki Kaisha: *See*—
Murase, Masakazu, 4,537,518, Cl. 374-188.000.
Takanashi, Nobuyasu, 4,537,305, Cl. 206-438.000.
Tessier, Jean; Demoute, Jean-Pierre; and Cadiergue, Joseph, to Roussel Uclaf. 3-(1,2-Propadienyl)-cyclopropane-carboxylates. 4,537,897, Cl. 514-351.000.
Test Point 1, Inc.: *See*—
Douglas, Bruce S.; and Westergart, Chester V., 4,538,104, Cl. 324-158.00F.
Tetenborg, Konrad; and Eschmann, Heinz, to Windmoller & Holscher. Bag-filling apparatus. 4,537,013, Cl. 53-570.000.
Te Velde, Ties S.; and Slob, Arie, to U.S. Philips Corporation. Method of manufacturing programmable semiconductor device. 4,536,948, Cl. 29-577.00C.
Texas Instrume 's Incorporated: *See*—
Hochschild, James R., 4,538,282, Cl. 375-9.000.
Magar, Surendar S., 4,538,239, Cl. 364-759.000.
Roberts, Charles G.; and Hall, Joseph E., 4,538,287, Cl. 377-60.000.
Spicer, Denis F., 4,538,127, Cl. 335-210.000.
Ty, Henry; and White, Alfred J., 4,537,365, Cl. 242-107.600.
Textilmaschinenfabrik Dr. Ernst Fehrer Aktiengesellschaft: *See*—
Feyerl, Gunther; Minichshofer, Klaus; and Pum, Hans G., 4,536,927, Cl. 28-110.000.
Fuchs, Helmut, 4,537,020, Cl. 57-263.000.
Tezuka, Hisao: *See*—
Kanno, Masayuki; Tezuka, Hisao; Izawa, Kouji; and Kamiyama, Tadanobu, 4,538,183, Cl. 358-280.000.
Th. Goldschmidt AG: *See*—
Fock, Jurgen; and Schedlitzki, Dietmar, 4,537,934, Cl. 525-123.000.
Gruning, Burghard; Holtschmidt, Ulrich; and Koerner, Gotz, 4,537,595, Cl. 8-115.600.
Tharp, Emery C. Reciprocating backhoe bucket. 4,537,556, Cl. 414-725.000.
Theilacker, Klaus, to M.A.N.-Roland Druckmaschinen Aktiengesellschaft. Stripper for a roller cleaning device. 4,537,130, Cl. 101-425.000.
Theodor Hymmen KG., Firma: *See*—
Pankoke, Werner, 4,537,408, Cl. 277-34.000.
Thermo King Corporation: *See*—
Seshadri, Jayaram; and Neimy, Daniel T., 4,537,047, Cl. 62-510.000.
Theurer, Josef, to Franz Plasser Bahnbaumaschinen Industriegesellschaft m.b.H. Tamping unit. 4,537,135, Cl. 104-12.000.
Thiel, Rudolf; Weisbrod, Helmut; and Braehler, Hermann, to ITT Industries, Inc. Brake shoe assembly including brake shoe spring. 4,537,291, Cl. 188-73.380.
Thiemer, Heinz: *See*—
Donike, Wilhelm; Ulrich, Helmut; Thiemer, Heinz; and Pieper, Josefa, 4,538,013, Cl. 585-361.000.
Thissen, Christopher P., to Walker Process Corporation. Rotary biological contactor. 4,537,678, Cl. 210-150.000.
Thomas A. Schutz Co., Inc.: *See*—
Simon, Virgil S.; Adenau, Marvin L.; and Skalski, John S., 4,537,316, Cl. 211-133.000.
Thomas, Andre : *See*—
Zumbrunn, Jean-Pierre; Levielle, Jean; Thomas, Andre ; and Grangette, Francoise, 4,536,907, Cl. 8-149.100.
Thomas, Gilles R., to International Paper Company. Interlocking corner structure on tray for frozen fruits and vegetables. 4,537,344, Cl. 229-34.00R.
Thomas, Gunter: *See*—
Heiker, Fred R.; Stoltefuss, Jurgen; Franckowiak, Gerhard; Schramm, Matthias; Thomas, Gunter; and Gross, Rainer, 4,537,881, Cl. 514-25.000.
Thomas, John E.; Gretz, Ronald D.; and Tippins, George W., to Tippins Machinery Company, Inc. Method for thermomechanically rolling hot strip product to a controlled microstructure. 4,537,643, Cl. 148-12.00R.
Thomas Jourdan PLC: *See*—
Varndell, Sydney A.; Lawson, Douglas R.; and Fountain, Michael W., 4,536,906, Cl. 5-468.000.
Thomas, Rudy V., to Allied Corporation. Lock-up mechanism for a vehicle sensitive automotive seat belt retractor. 4,537,363, Cl. 242-107.40A.
Thompson, Paul D., to DEC International, Inc. Milking claw. 4,537,152, Cl. 119-14.540.
Thomson CSF: *See*—
Lorieux, Roland, 4,538,118, Cl. 330-286.000.
Pham Van Cang, Luc, 4,538,268, Cl. 371-20.000.
Thorsheim, Howard I.; and Roberts, Bruce B. Educational book with interactive elements. 4,537,576, Cl. 434-404.000.
Thrush Incorporated: *See*—
Roberts, Peter, 4,537,280, Cl. 181-243.000.
Thul, James L., to Press, Inc., The. Tear-off pad rail clip. 4,537,310, Cl. 206-526.000.
Thurne Engineering Co. Ltd.: *See*—
Hoyland, Trevor B., 4,537,005, Cl. 53-131.000.
TIBA AG Kochherdfabrik und Apparatebau: *See*—
Brunner, Ernst, 4,537,141, Cl. 110-300.000.
Tice, Victor M.: *See*—
Ronemus, DeHertburn N.; and Tice, Victor M., 4,538,040, Cl. 200-159.00A.
Tick, Paul A., to Corning Glass Works. Metal fluoride glasses in the CdF_2-PbF_2-AlF_3-(LiF) system. 4,537,864, Cl. 501-30.000.
Tieman, Charles H.: *See*—
Sanborn, James R.; and Tieman, Charles H., 4,537,780, Cl. 514-464.000.
Tildeblad, Bernhard. Optical aiming device. 4,536,965, Cl. 33-233.000.
Tippins, George W.: *See*—
Thomas, John E.; Gretz, Ronald D.; and Tippins, George W., 4,537,643, Cl. 148-12.00R.
Tippins Machinery Company, Inc.: *See*—
Thomas, John E.; Gretz, Ronald D.; and Tippins, George W., 4,537,643, Cl. 148-12.00R.
Titus, Robert D.; and Kornfeld, Edmund C., to Eli Lilly and Company. Octahydrothiazolo[4,5-g]quinolines and use as prolactin secretion inhibitors. 4,537,893, Cl. 514-293.000.
TNF Enterprises: *See*—
Taylor, Kevin D.; and Nichols, Galen N., 4,536,889, Cl. 2-160.000.
TNI Pharmaceuticals, Inc.: *See*—
Plotnikoff, Nicholas P., 4,537,878, Cl. 514-2.000.
Toda, Akitoshi: *See*—
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,537,845, Cl. 430-58.000.
Mimura, Yoshiyuki; Okada, Takao; and Toda, Akitoshi, 4,537,846, Cl. 430-58.000.
Todd, David B., to Shell Oil Company. Submersible pump. 4,537,257, Cl. 166-369.000.
Tohoku Metal Industries, Ltd.: *See*—
Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, 4,537,645, Cl. 149-3.000.
Tokico Ltd.: *See*—
Tamura, Koichi, 4,537,292, Cl. 188-73.390.
Tokita, Kiyoshi, to Tokyo Shibaura Denki Kabushiki Kaisha. Cathode-ray tube. 4,537,321, Cl. 220-2.10A.
Tokuda, Ryuji: *See*—
Suzuki, Ryoichi; and Tokuda, Ryuji, 4,537,489, Cl. 354-403.000.
Tokura, Norihito: *See*—
Kanehara, Kenji; Kohama, Tokio; Kawai, Hisasi; and Tokura, Norihito, 4,537,172, Cl. 123-527.000.
Tokyo Electric Co., Ltd.: *See*—
Ochiai, Kuniaki; and Komakine, Shigeo, 4,537,520, Cl. 400-124.000.
Tokyo Shibaura Denki Kabushiki Kaisha: *See*—
Imanishi, Kazuo; Hashimoto, Masaru; and Mori, Makoto, 4,538,198, Cl. 361-86.000.
Inomata, Koichiro; and Murata, Shinichi, 4,537,517, Cl. 374-21.000.
Kakumu, Masakazu, 4,536,943, Cl. 29-571.000.
Kamiya, Masashi; Sumiya, Mitsuo; and Yamaguchi, Ryoji, 4,538,081, Cl. 310-90.000.
Kanno, Masayuki; Tezuka, Hisao; Izawa, Kouji; and Kamiyama, Tadanobu, 4,538,183, Cl. 358-280.000.
Koyama, Kiyomi, 4,538,232, Cl. 364-491.000.
Machida, Kaoru, 4,537,203, Cl. 128-734.000.
Mitani, Ryo; Moriya, Yoshiaki; and Kobayashi, Atsushi, 4,538,145, Cl. 340-805.000.
Miyamura, Masataka; Sakamoto, Masanori; and Nakajima, Yuko, 4,537,826, Cl. 428-328.000.
Miyoshi, Motosuke; and Sano, Tetsuya, 4,538,065, Cl. 250-310.000.
Mori, Leo; Tominaga, Mamoru; and Aoba, Takashi, 4,538,216, Cl. 362-311.000.
Muranaka, Yuuichi, 4,537,199, Cl. 128-660.000.
Nakamura, Yasushi, 4,538,290, Cl. 378-44.000.
Okada, Hisafumi; Suzuki, Yoshio; and Takenaka, Shigeo, 4,537,322, Cl. 220-2.10A.
Tamura, Kaoru; and Ogo, Yoshimasa, 4,538,294, Cl. 378-187.000.
Tokita, Kiyoshi, 4,537,321, Cl. 220-2.10A.
Tsunoda, Sachio; and Sato, Shinsaku, 4,537,558, Cl. 415-1.000.
Yamagami, Nobuhiko, 4,538,144, Cl. 340-747.000.
Toland, Richard H.: *See*—
Kulkarni, Satish V.; Christensen, Richard M.; and Toland, Richard H., 4,537,091, Cl. 74-572.000.
Tolbert, William R.; Feder, Joseph; and Lewis, Charles, Jr., to Monsanto Company. Static cell culture maintenance system. 4,537,860, Cl. 435-240.000.
Tolco Corporation: *See*—
Spengler, William E.; and Ramsey, William C., 4,537,334, Cl. 222-401.000.
Toldy, Lajos: *See*—
Horvath, Istvan; Lang, Tibor; Pongo, Laszlo ; Reiter, Jozsef; Somorai, Tamas; Szilagyi, Geza; and Toldy, Lajos, 4,537,899, Cl. 514-384.000.
Toly, Norman F.: *See*—
Haney, Steven J.; Stulen, Richard H.; and Toly, Norman F., 4,538,068, Cl. 250-443.100.
Tominaga, Jiro; Yada, Hiroshi; and Honda, Mitsuo, to Nippon Steel Corporation. High-tension high-toughness steel having excellent resistance to delayed fracture and method for producing the same. 4,537,644, Cl. 148-36.000.
Tominaga, Mamoru: *See*—
Mori, Leo; Tominaga, Mamoru; and Aoba, Takashi, 4,538,216, Cl. 362-311.000.
Tomita, Yoshifumi: *See*—
Nonogaki, Saburo; Hayashi, Nobuaki; and Tomita, Yoshifumi, 4,537,851, Cl. 430-144.000.

Tooka, Takuzo, to Kabushiki Kaisha Toyoda Jidoshokki Seisakusho. Apparatus for sliver can controlling in a spinning mill. 4,537,018, Cl. 57-90.000.

Toraichi, Kazuo; Otsu, Nobuyuki; and Suzuki, Motomu, to Agency of Industrial Science and Technology; and Ministry of International Trade and Industry. Medical image processor. 4,538,227, Cl. 364-414.000.

Toshiba Silicone Co., Ltd.: *See*—
Imai, Takafumi; and Kobayashi, Fumihiko, 4,537,944, Cl. 528-18.000.

Tosi, Riccardo, to Merisinter S.p.A. Twin element, cylindrically disassemblably hinged tool. 4,536,958, Cl. 30-120.300.

Toth nee Pecsi, Erzsebet: *See*—
Deak, Gyula; Zara nee Kaczian, Erzsebet; Gyorgy, Lajos; Fekete, Marton; Doda, Margit; Seregi, Andras; Kanyicska, Bela; Toth nee Pecsi, Erzsebet; Horvath nee Gaal, Maria; Manyai, Sandor; Gorgenyi, Frigyes; and Vaszovics nee Reichmann, Gyorgyi, 4,537,895, Cl. 514-307.000.

Toulhoat, Herve ; Plumail, Jean-Claude; Mercier, Marc; and Jacquin, Yves, to Societe Francaise des Produits pour Catalyse Pro-Catalyse. Crushed catalysts containing alumina, silica or silica-alumina, and process for their manufacture. 4,537,875, Cl. 502-314.000.

Tourneur, Auburt, deceased (by Tourneur, Monique, legal representative), to Appareillages et Materiels de Servitudes. Process and apparatus for recovering energy, in the form of electric energy, from a motor test bench. 4,538,097, Cl. 318-490.000.

Tourneur, Monique, legal representative: *See*—
Tourneur, Auburt, deceased, 4,538,097, Cl. 318-490.000.

Towae, Friedrich: *See*—
Merger, Franz; Nestler, Gerhard; and Towae, Friedrich, 4,537,960, Cl. 544-86.000.

Towle, Theodore: *See*—
Petersen, Oscar J.; Barton, Ross J.; Dalke, Jack E.; Sheffield, Gerald W.; and Towle, Theodore, 4,537,384, Cl. 251-83.000.

Townsend, Wesley P.: *See*—
Dorey, John K., II; Schmidt, Steven L.; and Townsend, Wesley P., 4,537,799, Cl. 427-259.000.

Toyo Boseki Kabushiki Kaisha: *See*—
Nanri, Shosuke; and Tsuchida, Kazuyoshi, 4,537,822, Cl. 428-212.000.

Toyo Engineering Corporation: *See*—
Ando, Toshihiko; Ito, Norifumi; Matsubara, Tetsuyuki; Ichikawa, Kozo; Fukawa, Susumu; and Maeda, Tetsuo, 4,537,954, Cl. 528-481.000.

Toyo Soda Manufacturing Co., Ltd.: *See*—
Oogai, Michiharu; Seita, Toru; Takeshige, Kosuke; and Shuyama, Hideo, 4,537,910, Cl. 521-27.000.

Toyo Tire & Rubber Company Limited: *See*—
Otani, Kozo; and Yamada, Yoshio, 4,537,945, Cl. 528-68.000.

Toyoda Gosei Co., Ltd.: *See*—
Itoh, Toshiyasu; and Mori, Takaaki, 4,537,814, Cl. 428-217.000.

Toyooka, Takashi; Hirokazu, Aoki; Sugie, Mamoru; and Sugita, Yutaka. Signal processing circuit for magnetic bubble memory devices. 4,538,242, Cl. 365-8.000.

Toyota Jidosha Kabushiki Kaisha: *See*—
Arai, Shigeharu, 4,537,381, Cl. 248-559.000.
Morisawa, Kunio, 4,537,092, Cl. 74-695.000.
Tanigawa, Kou; Masuda, Jiro; Nakamura, Kazumasa; and Hayashi, Kazuhiko, 4,537,272, Cl. 180-176.000.

Toyota Jidosha Kogyo Kabushiki Kaisha: *See*—
Maruyama, Katsuaki; Oishi, Yaichi; Noda, Norio; Terada, Takami; and Hyodo, Motoi, 4,537,444, Cl. 297-284.000.
Morisawa, Kunio, 4,537,095, Cl. 74-868.000.
Nagasaka, Yasumasa, 4,536,937, Cl. 29-460.000.

Traina, Anthony: *See*—
Bertellotti, Ansano; and Traina, Anthony, 4,538,211, Cl. 361-415.000.

Transamerica Delaval Inc.: *See*—
Milish, William P., 4,537,070, Cl. 73-313.000.
Milish, William P., 4,537,219, Cl. 137-614.190.

Treadwell, Mark C.: *See*—
Harwood, Jon W.; Clegg, Michael W.; and Treadwell, Mark C., 4,537,027, Cl. 60-323.000.

Trillium Telephone Systems Inc.: *See*—
Benning, Gordon D.; Pascas, Brian J.; Blackhall, Robert K.; Wilker, Paul S.; and Neathway, Graham A., 4,538,031, Cl. 179-81.00B.

Trivedi, Jitendra K.: *See*—
Morris, Arnold M.; and Trivedi, Jitendra K., 4,537,286, Cl. 187-1.00A.

Troxell, John N., Jr., to Cameron Iron Works, Inc. Shearing type blowout preventer. 4,537,250, Cl. 166-55.000.

TRW Inc.: *See*—
Berenz, John J.; and Nakano, Kenichi, 4,537,654, Cl. 156-644.000.

Tsang, Albert C.: *See*—
Strange, Carl P.; Martin, Harold B., Jr.; and Tsang, Albert C., 4,537,958, Cl. 536-85.000.

Tsang, Peter H.; Coyle, Joseph P.; Liu, Tung; and VanderPoorte, John G., to Allied Corporation. Method of manufacturing a friction article. 4,537,823, Cl. 428-308.400.

Tsaur, Shyh-Chang: *See*—
Kuo, Chang-Kiang; and Tsaur, Shyh-Chang, 4,536,941, Cl. 29-571.000.

Tsubonuma, Yoshio; and Kawai, Tohru, to Shimizu Construction Co., Ltd., The. Process and apparatus of constructing a water tight underground pile wall. 4,537,536, Cl. 405-267.000.

Tsuchida, Kazuyoshi: *See*—
Nanri, Shosuke; and Tsuchida, Kazuyoshi, 4,537,822, Cl. 428-212.000.

Tsuchida, Yutaka; and Fukai, Toshiyuki, to Ishikawajima-Harima Jukogyo Kabushiki Kaisha. Apparatus for continuous casting. 4,537,240, Cl. 164-430.000.

Tsuchiya, Hiroyoshi: *See*—
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.

Tsuchiya, Shuji: *See*—
Hashiba, Isao; Nishikimi, Tadashi; and Tsuchiya, Shuji, 4,537,984, Cl. 560-061.000.

Tsuge, Noboru; Taguchi, Masahiro; Kato, Masanori; and Kuwakado, Satosi, to Nippon Soken, Inc. Fuel injection device of diesel engine. 4,537,169, Cl. 123-325.000.

Tsukada, Kiyotaka: *See*—
Enomoto, Ryo; and Tsukada, Kiyotaka, 4,537,735, Cl. 264-63.000.

Tsukui, Tsutomu; Shimizu, Toshio; Doi, Ryota; and Tsutsumi, Yasuyuki, to Hitachi, Ltd. Fuel cell using organic, high-molecular weight electrolyte. 4,537,840, Cl. 429-33.000.

Tsunoda, Sachio; and Sato, Shinsaku, to Tokyo Shibaura Denki Kabushiki Kaisha. Multi-stage hydraulic machine and control method for a multi-stage hydraulic machine. 4,537,558, Cl. 415-1.000.

Tsutomu, Kimura; Nakayama, Hideo; and Fuseda, Yuichi, to Fuji Photo Film Co., Ltd. Image processing for unsharp masking of image. 4,538,179, Cl. 358-166.000.

Tsutsumi, Yasuyuki: *See*—
Tsukui, Tsutomu; Shimizu, Toshio; Doi, Ryota; and Tsutsumi, Yasuyuki, 4,537,840, Cl. 429-33.000.

Tsuzuki, Hidehiro: *See*—
Asari, Akira; Tsuzuki, Hidehiro; Inoue, Yoichi; and Tabuchi, Takahisa, 4,537,569, Cl. 425-405.00H.

Tucker, Donald, to Raychem Corporation. Device to separate wires to be encapsulated in a connector. 4,538,020, Cl. 174-65.00R.

Tucker, Paul A.: *See*—
Rogers, Brian H.; and Tucker, Paul A., 4,537,607, Cl. 55-163.000.

Tuerenwerke Riexinger GmbH & Co. KG: *See*—
Riexinger sen., Gustav; and Nagel, Rudolf, 4,536,929, Cl. 29-33.00K.

Tungatt, Paul D.: *See*—
Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., 4,537,627, Cl. 75-76.000.

Turner, Earl W., to Audiovox Corp. Vehicular security system. 4,538,135, Cl. 340-63.000.

Turner, Roger S. Optical projection viewing system. 4,537,483, Cl. 353-39.000.

Tuten, William J.; Crosby, Kennith D.; and Bergquist, Bertil R., to Creative Technology, Inc. DC to AC inverter and motor control system. 4,538,100, Cl. 318-808.000.

Ty, Henry; and White, Alfred J., to Texas Instruments Incorporated. Safety seat belt system and latch release mechanism used therein. 4,537,365, Cl. 242-107.600.

Tyler, Derek E.; Cheskis, Harvey P.; and Tungatt, Paul D., to Olin Corporation. Technique for removing impurities from a copper melt. 4,537,627, Cl. 75-76.000.

Tyler Refrigeration Corporation: *See*—
Ibrahim, Fayez F., 4,537,040, Cl. 62-186.000.

Uchida, Hideo: *See*—
Otsuka, Hirotaka; Nakazato, Katsuo; Sannomiya, Kunio; Kawakami, Hidehiko; Tsuchiya, Hiroyoshi; and Uchida, Hideo, 4,538,184, Cl. 358-283.000.

Uchida, Hiroyasu, to Fuji Xerox Co., Ltd. Protecting device in self-diagnosis. 4,538,267, Cl. 371-20.000.

Uchida, Toshio: *See*—
Ohba, Hisao; Uchida, Toshio; Ohashi, Azusa; and Kita, Nobuyuki, 4,537,496, Cl. 355-10.000.

Uchiyama, Tadamitsu, to Minolta Camera Kabushiki Kaisha. Ink jet recording apparatus. 4,538,160, Cl. 346-140.00R.

Ueda, Hiroshi; Saito, Mitsuru; and Kajita, Hideo, to Minolta Camera Kabushiki Kaisha. System and process for producing molded optical elements. 4,537,732, Cl. 264-1.100.

Uemura, Fumiko: *See*—
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,537,940, Cl. 526-278.000.

Ueshima, Michio: *See*—
Sato, Takahisa; Takata, Masahiro; Ueshima, Michio; and Nagai, Isao, 4,537,874, Cl. 502-311.000.

Uffner, William E.; White, Robert N.; and Harrington, Edward R., to Owens-Corning Fiberglas Corporation. Blended pressure-sensitive asphaltic based adhesives. 4,537,921, Cl. 524-59.000.

Ugon, Michel; and Fouchard, Serge, to Cii Honeywell Bull (Societe Anonyme). Power supply system of a device designed to cooperate with a removable electronic medium such as a card and device equipped with such a system. 4,538,058, Cl. 235-380.000.

Uhde GmbH: *See*—
Buxel, Ludwig M.; and Mulhaus, Ludwig, 4,537,571, Cl. 432-27.000.

Ukigai, Toshiyuki: *See*—
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,537,253, Cl. 166-274.000.

Ulrich, Helmut: *See*—
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Nowobilski, Jeffert J.; and Owens, William J., 4,537,820, Cl. 428-285.000.

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Gallup, Darrell L.; and Jost, John W., 4,537,684, Cl. 210-696.000.

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Cole, Geoffrey V., 4,537,547, Cl. 414-5.000.

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Bryce, William D., 4,537,277, Cl. 181-214.000.

U.S. Leisure Incorporated: *See—*
Anderson, George F., 4,537,358, Cl. 239-413.000.

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Army: *See—*
Mariani, Elio A.; Stern, Richard A.; and Babbitt, Richard W., 4,538,123, Cl. 333-208.000.
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Abraham, Bernard M.; Miyano, Kenjiro; and Ketterson, John B., 4,537,064, Cl. 73-54.000.
Benett, William J.; and Alger, Terry W., 4,538,277, Cl. 372-33.000.
Christiansen, David W.; Steffen, Jim M.; and Brown, William F., 4,537,741, Cl. 376-261.000.
Colburn, Richard P., 4,537,740, Cl. 376-256.000.
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Haney, Steven J.; Stulen, Richard H.; and Toly, Norman F., 4,538,068, Cl. 250-443.100.
Harris, William G., 4,537,249, Cl. 165-134.00R.
Komarneni, Sridhar; and Roy, Della M., 4,537,710, Cl. 252-628.000.
Kulkarni, Satish V.; Christensen, Richard M.; and Toland, Richard H., 4,537,091, Cl. 74-572.000.
Quinby, Thomas C., 4,537,818, Cl. 428-262.000.
Summers, Mark A.; Hagen, Wilhelm F.; and Boyd, Robert D., 4,537,475, Cl. 350-448.000.
Interior: *See—*
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Carle, Glenn C.; Kojiro, Daniel R.; and Humphry, Donald E., 4,538,066, Cl. 250-374.000.
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Perry, Huntley H., 4,537,369, Cl. 244-1.00R.
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Beckmann, Friedrich K.; Hoppe, Wolfgang; and Meyer, Wolfgang, 4,538,125, Cl. 333-248.000.
Gielis, Gerardus C. M.; and Van Kessel, Antoon M. M., 4,538,285, Cl. 375-104.000.
Hollaar, Leendert J.; Zoetman, Herman; and Verbeek, Robert J. M., 4,538,110, Cl. 328-63.000.
Koroncai, Adam; Nowak, Alfred; and Piber, Herbert, 4,536,956, Cl. 30-43.920.
Melai, Henri A. I., 4,538,093, Cl. 315-219.000.
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Te Velde, Ties S.; and Slob, Arie, 4,536,948, Cl. 29-577.00C.
Wilhelm, Dieter; and Kuhnert, Volker, 4,538,090, Cl. 313-578.000.

United Technologies Corporation: *See—*
Athey, Roy L., 4,536,932, Cl. 29-156.80B.
Bramwell, Frank; and DeSouza, John, 4,538,019, Cl. 174-6.000.
Shuskus, Alexander J.; and Cowher, Melvyn E., 4,537,651, Cl. 156-613.000.

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Drago, Russell S.; Miller, James G.; and Weiss, Keith D., 4,538,011, Cl. 570-240.000.

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Uno, Shigeo: *See—*
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Uppstrom, Leif R. Building elements. 4,537,001, Cl. 52-311.000.

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Seiler, Claus-Dietrich; and Vahlensieck, Hans-Joachim, 4,537,983, Cl. 556-479.000.

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Valentine, Al L. Pivotal lift apparatus. 4,537,085, Cl. 74-99.00A.

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Loizeau, Pierre, 4,537,298, Cl. 192-106.200.
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Immler, Josef; and van der Sel, Cornelis, 4,538,072, Cl. 250-568.000.

van der Velde, Ype Y.; and Zantinge, Jan, to Tebel Machinefabrieken B.V. Method of preparing a pressed cheese curd having a closed rind. 4,537,787, Cl. 426-478.000.

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Varian Associates, Inc.: *See—*
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Varndell, Sydney A.; Lawson, Douglas R.; and Fountain, Michael W., to Thomas Jourdan PLC. Mattress with apertured insert. 4,536,906, Cl. 5-468.000.

Varone, Richard B. Cable failure detection system. 4,538,107, Cl. 324-206.000.

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Varwig, Juergen: *See—*
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Veal, Gordon R.: *See—*
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Verjux, Jean, to Decoufle S.A.R.L. Cutting guide for cigarette making machines. 4,537,205, Cl. 131-280.000.

Verschoof, Karel J. H.; and Smit, Jan W. Contraceptive device. 4,537,186, Cl. 128-130.000.

Vertenten, Edward; and Heft, Josef, to Siemens Aktiengesellschaft. Electrical connector. 4,537,455, Cl. 339-99.00R.

Vicenzi, Reno L., to Figgie International Inc. Breathing device. 4,537,189, Cl. 128-202.130.

Vickers, Incorporated: *See—*
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Victor Company of Japan, Limited: *See—*
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Vidal, Stella M. Device with pouches for receiving animal waste. 4,537,153, Cl. 119-95.000.

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Villain, Juergen: *See—*
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Virginia Panel Corporation: *See—*
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Viscardi, Ettore, to Somet Societa' Meccanica Tessile S.p.A. Weft presenting device for weaving looms. 4,537,228, Cl. 139-453.000.

Voest Alpine AG: *See—*
Ketterer, Klaus, 4,537,448, Cl. 299-81.000.

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Fohler, Johann, 4,537,072, Cl. 73-432.00R.
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Volkamer, Klaus: *See—*
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Volker, Wolfgang; and Glastra, Hendrik, to Messer Griesheim GmbH. Procedure for creating an inert gas atmosphere with constant composition of nitrogen and carbon dioxide in a refrigerated container. 4,537,043, Cl. 62-239.000.

Volks, Gunter, to BBC Brown, Boveri & Company, Limited. Vertical, collector-type high-pressure feed water preheater, with a desuperheater casing. 4,537,157, Cl. 122-412.000.

VonGrunberg, Hubertus; Rowell, Jonathan M.; and Corey, Frederick C., to International Telephone and Telegraph Corporation. Dust boot for a disc-brake actuating cylinder-and-piston unit. 4,537,289, Cl. 188-97.400.

Vroonland, Evart. J.; and Curtis, William M., to Continental Emsco Company. Spring balance assembly. 4,537,233, Cl. 141-387.000.

Vyne, Robert L., to Motorola, Inc. Output stage for an operational amplifier. 4,538,116, Cl. 330-271.000.

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W. R. Grace & Co., Cryovac Div.: *See—*
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Wagner, Eckhart; Volkamer, Klaus; and Wagner, Ulrich, to BASF Aktiengesellschaft. Removal of CO_2 and H_2S from natural gases. 4,537,753, Cl. 423-228.000.

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Wainwright, Barry. Aerofoils. 4,537,146, Cl. 114-103.000.

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Waldhecker, Heinz-Dieter: *See—*
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Walker, Leigh E.; and Ranade, Gautam R., to Occidental Chemical Corporation. Blends of polyolefin graft polymers and ASA polymers. 4,537,933, Cl. 525-71.000.

Walker Process Corporation: *See—*
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Wallace Expanding Machines, Inc.: *See—*
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Waller, James, Jr. Aurally sensitized flat frequency response noise reduction compansion system. 4,538,297, Cl. 381-94.000.

Waltzer, Jeremy. Support bracket for electronic remote control module. 4,537,340, Cl. 224-202.000.

Wambach, Hermann: *See—*
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Wang Laboratories, Inc.: *See—*
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Wang, Ming-Sheng. Automatic straw-emerging device for easy-to-open beverage can of press-down type sealing tap. 4,537,324, Cl. 220-90.200.

Wang, Samuel T.; Hu, Chenming; and Shum, Ying, to National Semiconductor Corporation. Nonvolatile memory cell. 4,538,246, Cl. 365-226.000.

Wanner, Karl: *See—*
Schmid, Wolfgang; Wanner, Karl; Falchle, Jorg; Bleicher, Manfred; and Muller, Frank, 4,537,264, Cl. 173-48.000.

Ward, Carl E., to Chevron Research Company. Herbicidal 2-(oxa or thia heterocycle)5-amino-3-oxo-4-(substituted-phenyl)-2,3-dihydrofurans. 4,537,623, Cl. 71-90.000.

Ward, Francis P. Shade cloth pin inserter. 4,536,934, Cl. 29-278.000.

Ward, Patrick C.: *See—*
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Watkiss, Christopher R.; and Watkiss, Michael C., to Watkiss Automation Limited. Rotary collating and/or inserting machines and method of collating and/or inserting sheet material. 4,537,391, Cl. 271-101.000.

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Westinghouse Corp.: *See—*
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Lee, Pang K.; and Hickam, William M., 4,537,661, Cl. 204-1.00T.
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Staehlin, John H., 4,538,154, Cl. 343-705.000.
Sun, Shan C.; and Garitty, James P., 4,538,196, Cl. 361-64.000.
Wilhelm, John J.; Kapoor, Anoop; Kobuck, Richard M.; Antol, Ronald F.; and Norris, George W., 4,537,711, Cl. 252-633.000.
Westley, John: *See—*
Liu, Chao-Min; and Westley, John, 4,537,956, Cl. 536-1.100.
White, Alfred J.: *See—*
Ty, Henry; and White, Alfred J., 4,537,365, Cl. 242-107.600.
White, Christopher R. Wind propelled vessel. 4,537,145, Cl. 114-91.000.
White, Eugene B., Jr., to White Machinery Corporation. Combination railcar moving vehicle and trailer spotter. 4,537,137, Cl. 105-26.00R.
White, James N. J.; and Caithness, Michael G., to Rodime Limited. Ventilation system for computer disc drive hub assembly. 4,538,192, Cl. 360-98.000.
White, John F.: *See—*
Shum, Wilfred P.; White, John F.; and Beals, Eva M., 4,537,998, Cl. 568-483.000.
White Machinery Corporation: *See—*
White, Eugene B., Jr., 4,537,137, Cl. 105-26.00R.
White, Robert N.: *See—*
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Whitehead, Larry W., to Leggett & Platt, Incorporated. Foldable bed frame. 4,536,904, Cl. 5-201.000.
Whitfield, Richard G.: *See—*
Cooke, Theodore M.; Lin, Robert A.; Whitfield, Richard G.; and Hock, Allan G., 4,537,631, Cl. 106-22.000.
Whitney, Daniel E., to Charles Stark Draper Laboratory, Inc., The. Remote center compliance gripper system. 4,537,557, Cl. 414-735.000.
Whitney, Ralph H., to Owens-Illinois, Inc. Concentric tamper-indicating band. 4,537,319, Cl. 215-252.000.
Whittam, Thomas V.: *See—*
Casci, John L.; Lowe, Barrie M.; and Whittam, Thomas V., 4,537,754, Cl. 423-277.000.
Wincek, Marian; Markin, Charles; and Book, Ronald J., to Duracell Inc. Metal-supported seals for galvanic cells. 4,537,841, Cl. 429-56.000.
Widrow, Bernard, to Leland Stanford Junior University, The Board of Trustees of the. ECG enhancement by adaptive cancellation of electrosurgical interference. 4,537,200, Cl. 128-696.000.
Wiegers, Wilhelmus J.: *See—*
Sprecker, Mark A.; Wiegers, Wilhelmus J.; Belko, Robert P.; and Boden, Richard M., 4,537,704, Cl. 252-522.00R.
Wiggins, Douglas G., to Xerox Corporation. Platen cover for document boundary detection in raster scanners. 4,538,185, Cl. 358-285.000.
Wiggins Teape Group Limited, The: *See—*
Shanton, Kenneth J., 4,537,797, Cl. 427-150.000.
Wild, Gene M.: *See—*
Baltz, Richard H.; Wild, Gene M.; and Seno, Eugene T., 4,537,957, Cl. 336-7.100.
Wilde, Eugen: *See—*
Schreder, Felix; Dorner, Leonhard; and Wilde, Eugen, 4,538,051, Cl. 219-466.000.
Wilhelm, Dieter; and Kuhnert, Volker, to U.S. Philips Corporation. Lamp/reflector unit. 4,538,090, Cl. 313-578.000.
Wilhelm, John J.; Kapoor, Anoop; Kobuck, Richard M.; Antol, Ronald F.; and Norris, George W., to Westinghouse Electric Corp. Fuel assembly skeleton compaction. 4,537,711, Cl. 252-633.000.
Wilker, Paul S.: *See—*
Benning, Gordon D.; Pascas, Brian J.; Blackhall, Robert K.; Wilker, Paul S.; and Neathway, Graham A., 4,538,031, Cl. 179-81.00B.
Wilkins, Ebtisam S.; and Wilkins, Michael G. Polymer-gel covered solar energy collector and storage unit. 4,537,179, Cl. 126-415.000.
Wilkins, Michael G.: *See—*
Wilkins, Ebtisam S.; and Wilkins, Michael G., 4,537,179, Cl. 126-415.000.
Wilkinson, William R.; and Sharp, Russell G., to Sharp, Russell G. Seamless suppository dispenser. 4,537,311, Cl. 206-529.000.
Willamette Industries, Inc.: *See—*
Gale, Ronald S.; Bristol, William E.; and Noonan, Carroll, 4,537,586, Cl. 493-220.000.
Willett, Paul E., to Baker Perkins Exports Pty. Ltd. Baker's oven. 4,538,050, Cl. 219-388.000.
Williams, Gary L.: *See—*
Armstrong, Gordon P.; Flautt, Martin C.; and Williams, Gary L., 4,537,107, Cl. 83-694.000.
Williams, Haydn W. R.: *See—*
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Williams, James E.: *See—*
Lubinsky, Anthony R.; Denton, Gary A.; Keller, Paul D.; and Williams, James E., 4,537,494, Cl. 355-3.0DD.
Williams, James T., Jr. Portable orthopaedic splint system. 4,537,184, Cl. 128-90.000.
Williams, Richard J., to Rockwell International Corporation. Method of forming a brake drum. 4,536,936, Cl. 29-447.000.
Williamson, Andrew H., Jr., to AT&T Bell Laboratories, Inc. Cable closure having asymmetrical end plate assembly. 4,538,021, Cl. 174-92.000.
Willoughby, Patrick. One piece clamping device. 4,536,924, Cl. 24-487.000.
Wilson, Daniel C., to Dow Chemical Company, The. Liquid air freshener dispenser. 4,537,351, Cl. 239-43.000.
Wilson Industries, Inc.: *See—*
Sharp, Harper E.; Spiegel, Leo; Masters, Richard M.; Frey, Elmer J.; Howatt, John R.; and Walker, Gary E., 4,537,067, Cl. 73-151.000.
Wilverly Mansions I.B.V.: *See—*
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Windmoller & Holscher: *See—*
Tetenborg, Konrad; and Eschmann, Heinz, 4,537,013, Cl. 53-570.000.
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Winter, Joseph: *See—*
Pryor, Michael J.; Winter, Joseph; and Dantzig, Jonathan A., 4,537,242, Cl. 164-460.000.
Wirth, Wulf D., to Siemens Aktiengesellschaft. Surveillance radar system which is protected from anti-radar missiles. 4,538,152, Cl. 343-5.0VQ.
Wise, Daniel J.; and Woodhall, Donna M., to Ex-Cell-O Corporation. Laminated paperboard container with absorption resistance means, and blank for constructing same. 4,537,815, Cl. 428-219.000.
Wise, Joseph A.; and Green, Michael P., to AMP Incorporated. Flat multiconductor cable extruded on a wheel. 4,538,024, Cl. 174-117.00F.
Wisecarver, Martin L.: *See—*
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Wittbrodt, Edwin L.: *See—*
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Witte, Josef: *See—*
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Witty, Craig D. Process and apparatus for creating traveling mattes. 4,537,481, Cl. 352-89.000.

Wolf, Rudiger: *See—*
Albrecht, Wolf-Wigand; Hoppe, Axel; Papp, Uwe; and Wolf, Rudiger, 4,537,641, Cl. 148-11.50P.

Wong-Chong, George M., to Environmental Research & Technology. Activated sludge wastewater treating process. 4,537,682, Cl. 210-611.000.

Wood, John F. B.: *See—*
Hazelett, Robert W.; and Wood, John F. B., 4,537,243, Cl. 164-481.000.

Woodhall, Donna M.: *See—*
Wise, Daniel J.; and Woodhall, Donna M., 4,537,815, Cl. 428-219.000.

Woodrow, Harold E.; and Smola, Raymond L., to Morgan Construction Company. Single strand block-type rolling mill. 4,537,055, Cl. 72-235.000.

Workman, Eleanor. Flexible insulated container. 4,537,313, Cl. 206-545.000.

Worth, Sidney V., to Continental-Wirt Electronics Corp. Conductive shielding housing for flat cable connector. 4,537,458, Cl. 339-143.00R.

WPM, Inc.: *See—*
Bock, Robert E., 4,537,360, Cl. 239-553.300.

Wright, Beaumont B.: *See—*
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Wrobel, Joseph J.: *See—*
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Wrobel, Stanley A.; and Ashton, Robert G., to Dwyer Instruments, Inc. Thermal anemometer. 4,537,068, Cl. 73-202.000.

Wrulich, Herwig: *See—*
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Wuerzer, Bruno: *See—*
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Plath, Peter; Eicken, Karl; Sauter, Hubert; and Wuerzer, Bruno, 4,537,617, Cl. 71-92.000.

Wuyts, Oscar; Ruelens, Remy F.; and Van Camp, Lucien J. M., to International Standard Electric Corporation. Surge protector. 4,538,201, Cl. 361-124.000.

Wyle, Charles; Shea, Donald M.; and Best, Norman D., to Charles Wyle Engineering Corporation. Apparatus for moving, handling and mounting attachments onto a length of flexible material. 4,536,935, Cl. 29-281.100.

Xanthopoulos, Piritheos E., to Medical Technology, Ltd. Peristaltic infusion pump and disposable cassette for use therewith. 4,537,561, Cl. 417-63.000.

Xerox Corporation: *See—*
Coons, Robert A., Jr., 4,537,650, Cl. 156-384.000.
Klinger, Lance T., 4,538,257, Cl. 369-106.000.
Lubinsky, Anthony R.; Denton, Gary A.; Keller, Paul D.; and Williams, James E., 4,537,494, Cl. 355-3.0DD.
Ritter, Joachim A.; Bock, Edward C.; Spinelli, Richard A.; and Dennis, John R., 4,537,499, Cl. 355-58.000.
Sheridon, Nicholas K., 4,538,163, Cl. 346-155.000.
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Yourd, Raymond A., III; Majumdar, Debesh; and Gruber, Robert J., 4,537,848, Cl. 430-110.000.

Yada, Hiroshi: *See—*
Tominaga, Jiro; Yada, Hiroshi; and Honda, Mitsuo, 4,537,644, Cl. 148-36.000.

Yahara, Shoji: *See—*
Kooda, Akihide; Nishioka, Itsuo; Nishiyori, Takeshi; and Yahara, Shoji, 4,537,996, Cl. 568-442.000.

Yamada, Junichi: *See—*
Morita, Hiroshi; Kawada, Yasuyuki; Yamada, Junichi; and Ukigai, Toshiyuki, 4,537,253, Cl. 166-274.000.

Yamada, Keiichi; and Kimura, Hideyuki, to Diesel Kiki Co., Ltd. Distribution type fuel injection pump. 4,537,170, Cl. 123-449.000.

Yamada, Takeshi: *See—*
Akaba, Hayao; Yamada, Takeshi; and Jinbo, Masahiro, 4,537,480, Cl. 351-235.000.

Yamada, Tominori: *See—*
Yamato, Isao; and Yamada, Tominori, 4,537,564, Cl. 417-313.000.

Yamada, Yoshio: *See—*
Otani, Kozo; and Yamada, Yoshio, 4,537,945, Cl. 528-68.000.

Yamagami, Nobuhiko, to Tokyo Shibaura Denki Kabushiki Kaisha. Graphic display device having graphic generator for shading graphs. 4,538,144, Cl. 340-747.000.

Yamaguchi, Fumio: *See—*
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Yamaguchi, Ryoji: *See—*
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Yamaguchi, Tadashi; Ono, Takayuki; Hirata, Michitoshi; and Yokoyama, Toshihiko, to Tohoku Metal Industries, Ltd.; and Taisei Corporation. Magnetically traceable explosives with stability and a method for the preparation thereof. 4,537,645, Cl. 149-3.000.

Yamamoto, Hachizou: *See—*
Iwagami, Kenji; and Yamamoto, Hachizou, 4,538,057, Cl. 235-379.000.

Yamamoto, Kazuo: *See—*
Nakamura, Hiromi; Takahashi, Takehiko; Narazaki, Norio; Yamamoto, Kazuo; and Sayama, Norio, 4,537,023, Cl. 60-39.050.

Yamamoto, Keisaku: *See—*
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Yamamoto, Michihiro: *See—*
Ono, Keiichi; Sugie, Akihiko; Muraoka, Masami; and Yamamoto, Michihiro, 4,537,989, Cl. 562-501.000.

Yamamoto, Minoru: *See—*
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Yamamoto, Nobuyuki: *See—*
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Yamamoto, Susumu; and Sato, Kazuyoshi, to Sumitomo Electric Industries, Ltd. Electrically conductive composite material. 4,537,808, Cl. 428-36.000.

Yamamoto, Takashi: *See—*
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Yamamoto, Takeshi; and Sakata, Hideo, to Mitutoyo Mfg. Co., Ltd. Digital indication type measuring machine. 4,536,963, Cl. 33-178.00E.

Yamamura, Kazuomi; Ishihara, Hideo; Iwamoto, Yoshinao; Sakaguchi, Hifumi; Morita, Masao; and Izawa, Toshio, to Kokusai Denshin Denwa Co., Ltd. Marine cable burying method and device therefor. 4,537,530, Cl. 405-160.000.

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Yamanaka, Takashi; Takeya, Yasushi; Yorita, Mitsumasa; Horiuchi, Toshiaki; Inagaki, Kouichi; Naya, Eizo; Demizu, Michinosuke; and Okumura, Mitsuhiro, to Mitsubishi Denki Kabushiki Kaisha. Electrode composition for vacuum switch. 4,537,743, Cl. 419-38.000.

Yamashita, Hisao: *See—*
Kato, Akira; Kamo, Tomoichi; Uno, Shigeo; Kawagoshi, Hiroshi; Yamashita, Hisao; and Matsuda, Shinpei, 4,537,873, Cl. 502-242.000.

Yamato, Isao; and Yamada, Tominori, to Mitsui Engineering & Shipbuilding Co., Ltd. Pumping system for oil production. 4,537,564, Cl. 417-313.000.

Yamauchi, Junichi: *See—*
Omura, Ikuo; Yamauchi, Junichi; Nagase, Yoshinori; and Uemura, Fumiko, 4,537,940, Cl. 526-278.000.

Yang, Sung H. Auxiliary handle for a shovel. 4,537,433, Cl. 294-58.000.

Yano, Yasuhiro; Umino, Isamu; Ohsawa, Zenichi; and Ozaki, Takayuki, to Fujitsu Limited. High frequency generator with output shut-off or reduced by biasing multiplier diode. 4,538,121, Cl. 331-25.000.

Yao, Yugo: *See—*
Tanaka, Masaho; Shishido, Tomio; Fukuhara, Tetsukazu; Yao, Yugo; Kobayashi, Kunihilo; and Inoue, Yoshio, 4,538,042, Cl. 219-58.000.

Yardley, James F., to Dunlop Limited. Bonded composites of a thermoplastic elastomeric blend with a vulcanized epom or epm rubber composition. 4,537,825, Cl. 428-327.000.

Yasuda, Naohiko: *See—*
Kato, Toshihisa; Iwagami, Hisao; and Yasuda, Naohiko, 4,537,719, Cl. 260-239.00A.

Yasue, Kazuo, to NEC Corporation. Loop back system for loop transmission line. 4,538,026, Cl. 178-2.00R.

Yasui, Eiji: *See—*
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Yau, Leo D.: *See—*
Bohr, Mark T.; Yu, Ken K.; Yau, Leo D.; and Garg, Shyam G., 4,536,947, Cl. 29-576.00C.

Yavordios, Dimitri: *See—*
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Yerman, Alexander J., to General Electric Company. Power chip package. 4,538,170, Cl. 357-80.000.

Yokoyama, Toshihiko: *See—*
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York, Billie M., Jr., to Alcon Laboratories, Inc. Spiro-tricyclicaromatic succinimide derivatives as inhibitors of aldose reductase. 4,537,892, Cl. 514-278.000.

York, Paul W.: *See—*
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Yoshida Kogyo K. K.: *See—*
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Yoshida Kogyo K.K.: *See—*
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Yoshida, Nobuyuki: *See—*
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Yoshikawa, Hisao: *See*—
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Yoshimi, Akirou: *See*—
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Yoshimura, Isao; Hata, Hideo; and Kaneko, Takashi, to Asahi-Dow Limited. Composition for cold drawn film. 4,537,935, Cl. 525-222.000.

Yoshino, Hideo; Arai, Eisuke; and Kiuchi, Kazuhide, to Nippon Telegraph & Telephone Public Corporation. Shorted junction type programmable read only memory semiconductor devices. 4,538,167, Cl. 357-59.000.

Yoshizawa, Toyokichi: *See*—
Nozawa, Koohei; Yoshizawa, Toyokichi; and Kuroda, Toshio, 4,537,967, Cl. 546-141.000.

Young, Jorge A.; and Khandwala, Bhupendra J., to Figgie International, Inc. Card reader for time and attendance. 4,538,056, Cl. 235-377.000.

Yourd, Raymond A., III; Majumdar, Debesh; and Gruber, Robert J., to Xerox Corporation. Positively charged toner compositions containing phosphonium charge enhancing additives. 4,537,848, Cl. 430-110.000.

Yu, Ken K.: *See*—
Bohr, Mark T.; Yu, Ken K.; Yau, Leo D.; and Garg, Shyam G., 4,536,947, Cl. 29-576.00C.

Yuasa, Kazuhiro: *See*—
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Z. Bavelloni S.p.A.: *See*—
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Zahradnik, Franz: *See*—
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Zaidan Hojin Biseibutsu Kagaku Kenkyu Kai: *See*—
Umezawa, Hamao; Fujii, Akio; Muraoka, Yasuhiko; Nakatani, Tokuji; Fukuoka, Takeyo; and Takahashi, Katsutoshi, 4,537,880, Cl. 514-19.000.

Zambias, Robert A.: *See*—
Chang, Michael N.; Hammond, Milton L.; Jensen, Norman R.; McDonald, John; and Zambias, Robert A., 4,537,903, Cl. 514-456.000.

Zambon S.p.A.: *See*—
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Zantinge, Jan: *See*—
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Zara nee Kaczian, Erzsebet: *See*—
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Zavecz, Terrence E.: *See*—
Banks, Edward L.; Ellington, Thomas S., IV; and Zavecz, Terrence E., 4,537,498, Cl. 355-55.000.

Zehner, Bernd, to Siemens Aktiengesellschaft. Associative memory with improved memory cell and method for operating same. 4,538,243, Cl. 365-49.000.

Zerox Corporation: *See*—
Kopko, John J., 4,537,495, Cl. 355-3.0DD.

Zeugner, Horst: *See*—
Heinemann, Henning; Jasserand, Daniel; Milkowski, Wolfgang; Yavordios, Dimitri; and Zeugner, Horst, 4,537,975, Cl. 548-359.000.

Zieff, Mark P., to Dart Industries Inc. Storage container closure. 4,537,325, Cl. 220-234.000.

Ziegler, Hans: *See*—
Parg, Adolf; Ziegler, Hans; and Wuerzer, Bruno, 4,537,621, Cl. 71-103.000.

Zimmerman, Alan R.: *See*—
Cavestany, Adrian V.; and Zimmerman, Alan R., 4,537,117, Cl. 98-39.100.

Zimmerman, John M.: *See*—
Bishop, Timothy E.; Pasternack, George; and Zimmerman, John M., 4,537,667, Cl. 204-159.150.

Zitz, Alfred; Schetina, Otto; and Wrulich, Herwig, to Voest-Alpine Aktiengesellschaft. Device for cooling the bits of cutting machine. 4,537,447, Cl. 299-1.000.

Zoetman, Herman: *See*—
Hollaar, Leendert J.; Zoetman, Herman; and Verbeek, Robert J. M., 4,538,110, Cl. 328-63.000.

Zofchak, Albert: *See*—
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Zollinger, Max; and Jemec, Raoul, to Swiss Aluminium Ltd. Cathode pot of an aluminum reduction cell. 4,537,671, Cl. 204-243.00R.

Zondler, Helmut: *See*—
Lohse, Friedrich; and Zondler, Helmut, 4,537,946, Cl. 528-118.000.

Zuloaga, Jose M. A., to Biomasa, S.A. System for mechanically gathering trees, bushes and branches. 4,537,362, Cl. 241-101.700.

Zumbrunn, Jean-Pierre; Levielle, Jean; Thomas, Andre ; and Grangette, Francoise, to L'Air Liquide, Societe Anonyme Pour L'Etude Et L'Exploitation Des Procedes Georges Claude. Process for effecting an accelerated neutralization of cellulose textile substrates impregnated with alkaline hydroxide. 4,536,907, Cl. 8-149.100.

Zweifel, Hans: *See*—
Fischer, Walter; and Zweifel, Hans, 4,537,977, Cl. 549-243.000.

Zylstra, Henry J.; and Jansen, Harley W., to Square D Company. Ground fault desensitization circuit for electronic breaker. 4,538,194, Cl. 361-42.000.

LIST OF REISSUE PATENTEES

TO WHOM

PATENTS WERE ISSUED ON THE 27TH DAY OF AUGUST, 1985

NOTE.—Arranged in accordance with the first significant character or word of the name (in accordance with city and telephone directory practice).

Analog and Digital Systems, Inc.: *See*—
DeFreitas, Richard E., Re. 31,976, Cl. 332-11.00D.

Brownlee Labs, Inc.: *See*—
Brownlee, Robert, Re. 31,974, Cl. 210-198.200.

Brownlee, Robert, to Brownlee Labs, Inc. Cartridge type separation column and holder assembly for liquid chromatographs. Re. 31,974, Cl. 210-198.200.

Comstock, Lowell R.; and Smith, Percy L., to Union Carbide Corp. Polyester compositions. Re. 31,975, Cl. 523-514.000.

DeFreitas, Richard E., to Analog and Digital Systems, Inc. Circuitry for generating reference signal for delta encoding systems. Re. 31,976, Cl. 332-11.00D.

Ott, Granville E., to Texas Instruments Incorporated. Digital computing system having auto-incrementing memory. Re. 31,977, Cl. 364-200.000.

Smith, Percy L.: *See*—
Comstock, Lowell R.; and Smith, Percy L., Re. 31,975, Cl. 523-514.000.

Texas Instruments Incorporated: *See*—
Ott, Granville E., Re. 31,977, Cl. 364-200.000.

Union Carbide Corp.: *See*—
Comstock, Lowell R.; and Smith, Percy L., Re. 31,975, Cl. 523-514.000.

LIST OF REEXAMINATION PATENTEES

TO WHOM

CERTIFICATES WERE ISSUED

Bausch & Lomb Incorporated: *See*—
Yeiser, John O., B1 1,031,684, Cl. 346-68.000.

Yeiser, John O., to Bausch & Lomb Incorporated. X-Y Plotter. B1 1,031,684, 8-27-85, Cl. 346-68.000.

LIST OF DESIGN PATENTEES

Aavid Engineering, Inc.: *See*—
McCarthy, Alfred F., 280,319, Cl. D13-23.000.
McCarthy, Alfred F., 280,320, Cl. D13-23.000.

Aldrich, Thomas B., III; and Muscatiello, Ralph A., to Gillette Company, The. Bottle. 280,289, 8-27-85, Cl. D9-338.000.

Allen, James H., to 'Totes', incorporated. Combined briefcase and overnight case. 280,266, 8-27-85, Cl. D3-71.000.

Anderson, John W., Jr.; and Roche, William J., to GTE Products Corporation. Fluorescent lamp or the like. 280,344, 8-27-85, Cl. D26-3.000.

Ardito, Gerald J. Vanity mirror. 280,352, 8-27-85, Cl. D28-64.100.

Asano, Tamoru, to Kai Jirushi Hamano Center. Scissors. 280,283, 8-27-85, Cl. D8-57.000.

Aspenwall, John E. Fluorescent lamp holder. 280,346, 8-27-85, Cl. D26-75.000.

AT&T Technologies, Inc.: *See*—
Joffe, Richard M.; and McGarvey, John N., 280,325, Cl. D14-60.000.

Bachmann, Walfred R. File holder. 280,284, 8-27-85, Cl. D8-71.000.

Bakic, Dieter. Cosmetic case. 280,354, 8-27-85, Cl. D28-82.000.

Bakus, Steven L., to Felt Products Mfg. Co. Combined packaging and mixing container. 280,290, 8-27-85, Cl. D9-347.000.

Barone, Sam A. Portable electric power supply. 280,318, 8-27-85, Cl. D13-11.000.

Bausch & Lomb Incorporated: *See*—
Chuboff, David P.; Greb, Francis J.; and Markovitz, Aaron M., 280,261, Cl. D3-34.000.

Beechuk, Timothy J.; Damron, Max E.; and Vanderman, Ralph B., to Procter & Gamble Company, The. Bottle. 280,292, 8-27-85, Cl. D9-355.000.

Blaivas, Marilyn. Armband pouch. 280,255, 8-27-85, Cl. D2-383.000.

Bouman, Mark H., to Century Mfg. Co. Welding machine. 280,329, 8-27-85, Cl. D15-144.000.

Bowers, Ty S.: *See*—
Druecker, Mark T.; and Bowers, Ty S., 280,315, Cl. D12-158.000.

Boyd, Jeffrey A.; Pusateri, Vincent J.; Hooke, John; and Rockett, Danny F., to General Electric Company. Rechargable battery pack. 280,317, 8-27-85, Cl. D13-5.000.

Briggery Myles, Jacquelyn A. Swimwear. 280,252, 8-27-85, Cl. D2-40.000.

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Brown Jordan Company: *See*—
Criqui, Eugene A.; and Homestead, Peter W., 280,274, Cl. D6-487.000.
Criqui, Eugene A.; and Homestead, Peter W., 280,275, Cl. D6-487.000.

Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 280,277, 8-27-85, Cl. D6-505.000.

Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 280,278, 8-27-85, Cl. D6-508.000.

Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., to Simmons Universal Corporation. Crib footboard. 280,279, 8-27-85, Cl. D6-508.000.

Bryant, William C.; and Ferguson, William C., to Empire Brushes, Inc. Flexibly-backed brush. 280,267, 8-27-85, Cl. D4-130.000.

Buchet, Marcel, to L'Oreal, S.A. Single pressed powder compact. 280,353, 8-27-85, Cl. D28-78.000.

Carlisle, Floyd L., to Theratronics, Inc. Muscle stimulator. 280,341, 8-27-85, Cl. D24-36.000.

Carre, Alain: *See*—
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Carry-It, Inc.: *See*—
Jackson, Kenneth W.; Simon, James; and Simon, Robert, 280,313, Cl. D12-157.000.

Carvajal Pavon, Guadalupe. Sandal. 280,254, 8-27-85, Cl. D2-283.000.

Cashmere, Raymond A., to Luckit Pty. Limited. Toboggan. 280,308, 8-27-85, Cl. D12-11.000.

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Chairmakers, Inc.: *See*—
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Chuboff, David P.; Greb, Francis J.; and Markovitz, Aaron M., to Bausch & Lomb Incorporated. Carrying case for sunglasses or the like. 280,261, 8-27-85, Cl. D3-34.000.

Clairol Incorporated: *See*—
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Collins, Walter W. Handle for folding pocket knife. 280,287, 8-27-85, Cl. D8-99.000.
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Conti, Rino; and Daenen, Robert H. C. M., to Dart Industries Inc. Food storage container or the like. 280,281, 8-27-85, Cl. D7-79.000.
Copsey, Joan C.; McNamara, John J., Jr.; and Parker, Jeremy L., to Miles Laboratories, Inc. Bottle. 280,291, 8-27-85, Cl. D9-349.000.
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Creamer, Joan K., to Dart Industries Inc. Reversible comb or the like. 280,349, 8-27-85, Cl. D28-29.000.
Criqui, Eugene A.; and Homestead, Peter W., to Brown Jordan Company. Table. 280,274, 8-27-85, Cl. D6-487.000.
Criqui, Eugene A.; and Homestead, Peter W., to Brown Jordan Company. Table. 280,275, 8-27-85, Cl. D6-487.000.
Daenen, Robert H. C. M.: *See*—
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D'Amour, Richard; and D'Amour, Ronald. Bottle cooler. 280,293, 8-27-85, Cl. D9-373.000.
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Dart Industries Inc.: *See*—
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Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Powered platform scale. 280,304, 8-27-85, Cl. D10-87.000.
Del Rosso, Victor, to Hi-Speed Checkweigher Co., Inc. Powered platform scale. 280,305, 8-27-85, Cl. D10-87.000.
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Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 280,278, Cl. D6-508.000.
Brunner, Merlin A.; Robinson, David W.; and Draheim, Harvey J., 280,279, Cl. D6-508.000.
Druecker, Mark T.; and Bowers, Ty S., to Daystar, Inc. Motorcycle luggage carrier. 280,315, 8-27-85, Cl. D12-158.000.
Dummar, Richard W. Toy transportation vehicle. 280,335, 8-27-85, Cl. D21-87.000.
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Erbach, Arthur R., to Weber-Stephen Products Co. Wire cooking rack. 280,282, 8-27-85, Cl. D7-404.000.
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Ferguson, William C.: *See*—
Bryant, William C.; and Ferguson, William C., 280,267, Cl. D4-130.000.
Forbes, Gloria J. Convertible jeans. 280,251, 8-27-85, Cl. D2-28.000.
Forbes, Robert C.; and VanderKam, John, to Huffy Corporation. Recumbent tricycle body. 280,309, 8-27-85, Cl. D12-112.000.
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Gibbs, Richard B. Garment bag. 280,265, 8-27-85, Cl. D3-71.000.
Gillette Company, The: *See*—
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Goldman, Paul R. Step tube table. 280,273, 8-27-85, Cl. D6-474.000.
Gooden, David S. Anchor for small boats. 280,316, 8-27-85, Cl. D12-215.000.
Greb, Francis J.: *See*—
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GTE Products Corporation: *See*—
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Paget, Fredrick W., 280,345, Cl. D26-3.000.
Hafer, Carl W.; and Schwoeppe, Eric S., to Procter & Gamble Company, The. Solid product elevator cup. 280,298, 8-27-85, Cl. D9-434.000.
Halbritter, David K. Combined decal and protective cover sheet. 280,334, 8-27-85, Cl. D20-11.000.
Harwell, Betty L. Booster fan and deflector for floor vent. 280,339, 8-27-85, Cl. D23-155.000.
Hi-Speed Checkweigher Co., Inc.: *See*—
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Del Rosso, Victor, 280,305, Cl. D10-87.000.
Holden, M. James, to Mobil Oil Corporation. Packaging tray. 280,296, 8-27-85, Cl. D9-425.000.
Holden, M. James, to Mobil Oil Corporation. Packaging tray. 280,297, 8-27-85, Cl. D9-425.000.
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Criqui, Eugene A.; and Homestead, Peter W., 280,275, Cl. D6-487.000.
Hood, J. Vincent. Runner's hand grip. 280,337, 8-27-85, Cl. D21-198.000.
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Hoye, Thomas M. Beverage holder for boats. 280,263, 8-27-85, Cl. D3-40.000.
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Miller, Benson L., 280,258, Cl. D2-400.000.
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Joffe, Richard M.; and McGarvey, John N., to AT&T Technologies, Inc. Telephone stand for a handset. 280,325, 8-27-85, Cl. D14-60.000.
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Knoll International, Inc.: *See*—
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Kohler, Herbert V., Jr., to Kohler Co. Hydrotherapy spa or the like. 280,342, 8-27-85, Cl. D24-38.000.
Kunimune, Terry T. Automobile alarm. 280,307, 8-27-85, Cl. D10-106.000.
Leiserson, Steven G. Carrying case. 280,260, 8-27-85, Cl. D3-33.000.
Lickton, Robert J. Chain link. 280,288, 8-27-85, Cl. D8-499.000.
Lipsig, Robert J., to Ero Industries, Inc. Carryall for sleeping bag and accessories. 280,264, 8-27-85, Cl. D3-48.000.
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McCarthy, Alfred F., to Aavid Engineering, Inc. Twisted-fin heat sink for electrical devices. 280,320, 8-27-85, Cl. D13-23.000.
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McKay, Stewart K. Lounge chair frame. 280,276, 8-27-85, Cl. D6-501.000.
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Miller, Benson L., to Ignitor Products International, Inc. Carrier for gas torch and fuel tank. 280,258, 8-27-85, Cl. D2-400.000.
Miller, Leslie D. Baton carrier for use with belt. 280,256, 8-27-85, Cl. D2-400.000.
Miller, Ronnie R.; and Rogers, Michael W. Wheel alignment tool or similar article. 280,285, 8-27-85, Cl. D8-72.000.
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Holden, M. James, 280,297, Cl. D9-425.000.
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Rhoades, Nolan K., 280,333, Cl. D19-85.000.
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Rhoades, Nolan K., to Parker Pen Company, The. Desk pen base. 280,333, 8-27-85, Cl. D19-85.000.
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Skilten Electronics Limited: *See—*
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Velinsky, Ira L., to Commodore Business Machines, Inc. Videogame cartridge case. 280,322, 8-27-85, Cl. D14-11.000.
Wada, Masaru, to Terumo Corporation. Artificial lung with a built-in heat exchanger. 280,340, 8-27-85, Cl. D24-8.000.
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Williams, Cal R. Male formal-wear coat. 280,253, 8-27-85, Cl. D2-187.000.
Williams, David P. G., to Chairmakers, Inc. Sofa. 280,269, 8-27-85, Cl. D6-379.000.
Wilson, Robert A., to Waste Compaction Systems, Inc. Material compactor. 280,327, 8-27-85, Cl. D15-123.000.
Yurdin, Carl, to Clairol Incorporated. Hairsetter. 280,350, 8-27-85, Cl. D28-38.000.
Zampini, Louis, Jr. Housing for sanders, grinders or the like. 280,328, 8-27-85, Cl. D15-124.000.

LIST OF PLANT PATENTEES

B. V. Handelskwekerij, M.C. van Staaveren: *See*—
van Andel, Jacob, 5,542, Cl. 68.000.
van Andel, Jacob, 5,544, Cl. 70.000.

Ellison, J. Howard; and Kinelski, John J., to Rutgers University. Asparagus plant-female plant No. 53 Inez. 5,546, 8-27-85, Cl. 89.000.

Fischer, Arnold, to Pan American Plant Company. African Violet plant named Marguerite. 5,543, 8-27-85, Cl. 69.000.

Hilverda B.V.: *See*—
Hilverda, Jan J., 5,545, Cl. 71.000.

Hilverda, Jan J., to Hilverda B.V. Carnation named Hilkari. 5,545, 8-27-85, Cl. 71.000.

Kinelski, John J.: *See*—
Ellison, J. Howard; and Kinelski, John J., 5,546, Cl. 89.000.

Pan American Plant Company: *See*—
Fischer, Arnold, 5,543, Cl. 69.000.

Rutgers University: *See*—
Ellison, J. Howard; and Kinelski, John J., 5,546, Cl. 89.000.

van Andel, Jacob, to B. V. Handelskwekerij, M.C. van Staaveren. Alstroemeria named Staltang. 5,542, 8-27-85, Cl. 68.000.

van Andel, Jacob, to B. V. Handelskwekerij M. C. van Staaveren. Carnation named Stanquin. 5,544, 8-27-85, Cl. 70.000.

CLASSIFICATION OF PATENTS

ISSUED AUGUST 27, 1985

NOTE.—First number, class; second number, subclass; third number, patent number

CLASS 2

160	4,536,889
164	4,536,890
409	4,536,891
424	4,536,892

CLASS 4

233	4,536,899
324	4,536,900
416	4,536,901
476	4,536,902

CLASS 5

61	4,536,903
201	4,536,904
434	4,536,905
468	4,536,906

CLASS 8

94.1 R	4,537,594
115.6	4,537,595
	4,537,596
149.1	4,536,907
639	4,537,597
641	4,537,598

CLASS 15

1.7	4,536,908
4	4,536,909
104 S	4,536,910
230.12	4,536,911
230.17	4,536,912
257 R	4,536,913
344	4,536,914
345	4,536,915

CLASS 16

48.5	4,536,916
288	4,536,917
308	4,536,918

CLASS 17

11	4,536,919
46	4,536,920

CLASS 24

132 WL	4,536,921
265 B	4,536,922
433	4,536,923
487	4,536,924
511	4,536,925
523	4,536,926

CLASS 28

110	4,536,927

CLASS 29

1.2	4,536,928
33 K	4,536,929
	4,536,930
90 R	4,536,931
156.8 B	4,536,932
235	4,536,933
278	4,536,934
281.1	4,536,935
447	4,536,936
460	4,536,937
527.5	4,536,938
566.4	4,536,939
569 L	4,536,940
571	4,536,941
	4,536,942
	4,536,943
	4,536,944
	4,536,945
	4,536,946
576 C	4,536,947
577 C	4,536,948
578	4,536,949
	4,536,950
589	4,536,951
596	4,536,952
622	4,536,953
736	4,536,954
840	4,536,955

CLASS 30

43.92	4,536,956
90.4	4,536,957
120.3	4,536,958
161	4,536,959

CLASS 33

143 M	4,536,960
169 R	4,536,961
178 E	4,536,963
199 R	4,536,964
233	4,536,965
257	4,536,966
366	4,536,967
367	4,536,968
516	4,536,962

CLASS 34

9	4,536,969
41	4,536,970
89	4,536,971
92	4,536,972
182	4,536,973

CLASS 36

28	4,536,974
136	4,536,975

CLASS 37

117.5	4,536,976

CLASS 38

77.83	4,536,977
103	4,536,978

CLASS 40

159	4,536,979
427	4,536,980

CLASS 42

69 B	4,536,981
71 R	4,536,982
90	4,536,983

CLASS 43

17.2	4,536,984
17.6	4,536,985
42.27	4,536,986
42.34	4,536,987

CLASS 44

1 SR	4,537,599
51	4,537,600
62	4,537,601
	4,537,602

CLASS 47

1.5	4,536,988
46	4,536,989

CLASS 48

197 R	4,537,603

CLASS 49

501	4,536,990

CLASS 51

101 R	4,536,991
109 R	4,536,992
165.8	4,536,993
298	4,537,604
328	4,536,994

CLASS 52

27	4,536,995
67	4,536,996
86	4,536,997
171	4,536,998
208	4,536,999
235	4,537,000
311	4,537,001
403	4,537,002
573	4,537,003
788	4,537,004

CLASS 53

131	4,537,005
134	4,537,006
386	4,537,015
425	4,537,007
438	4,537,008
441	4,537,009
447	4,537,010
493	4,537,016
509	4,537,011
515	4,537,017
552	4,537,012
570	4,537,013
	4,537,014

CLASS 55

48	4,537,605
158	4,537,606
163	4,537,607
337	4,537,608

CLASS 57

90	4,537,018
202	4,537,019
263	4,537,020
401	4,537,021
	4,537,022

CLASS 60

39.05	4,537,023
39.161	4,537,024
39.281	4,537,025
264	4,537,026
272	4,537,028
323	4,537,027
390	4,537,029
641.7	4,537,030
649	4,537,031
662	4,537,032

CLASS 62

3	4,537,033
62	4,537,034
89	4,537,035
116	4,537,036
	4,537,037
118	4,537,038
182	4,537,039
186	4,537,040
199	4,537,041
208	4,537,042
239	4,537,043
371	4,537,044
503	4,537,045
505	4,537,046
510	4,537,047

CLASS 65

1	4,537,609
3.44	4,537,610
18.2	4,537,611
30.11	4,537,612

CLASS 66

93	4,537,048

CLASS 70

277	4,537,049

CLASS 71

5	4,537,613
28	4,537,614
36	4,537,615
90	4,537,623
92	4,537,616
	4,537,617
	4,537,618
93	4,537,619
94	4,537,620
103	4,537,621
108	4,537,622

CLASS 72

8	4,537,050
12	4,537,051
154	4,537,052
157	4,537,053
224	4,537,054
235	4,537,055
238	4,537,056
243	4,537,057

CLASS 73

1 G	4,537,058
7	4,537,059
12	4,537,060
38	4,537,062
	4,537,063
54	4,537,064
117.3	4,537,065
117.4	4,537,066
151	4,537,067
202	4,537,068
290 R	4,537,061
313	4,537,070
432 R	4,537,069
	4,537,071
	4,537,072
589	4,537,630
602	4,537,073
625	4,537,074
634	4,537,075
662	4,537,076
665	4,537,077
744	4,537,078
747	4,537,079
794	4,537,082
857	4,537,080
861.77	4,537,081

CLASS 74

89.15	4,537,083
89.22	4,537,084
99 A	4,537,085
201	4,537,086
394	4,537,087
473 SW	4,537,088
493	4,537,089
502	4,537,090
572	4,537,091
695	4,537,092
798	4,537,093
804	4,537,094
868	4,537,095

CLASS 75

0.5 A	4,537,625
0.5 B	4,537,624
35	4,537,626
76	4,537,627
118 R	4,537,628
130 R	4,537,629

CLASS 76

1	4,537,096
108 A	4,537,097

CLASS 81

177.85	4,537,100
180.1	4,537,101
488	4,537,098

CLASS 83

16	4,537,102
174	4,537,103
348	4,537,104
471.3	4,537,105
650	4,537,106
694	4,537,107

CLASS 84

1.01	4,537,108
1.03	4,537,109
1.26	4,537,110
473	4,537,111

CLASS 86

37	4,537,112

CLASS 92

24	4,537,113

CLASS 98

2.06	4,537,114
2.18	4,537,115
36	4,537,116
39.1	4,537,117
40.01	4,537,118
52	4,537,119
115.2	4,537,120

CLASS 99

450.4	4,537,121
516	4,537,122

CLASS 100

125	4,537,123

CLASS 101

28	4,537,124
93.04	4,537,125
123	4,537,126
141	4,537,127
407 BP	4,537,128
415.1	4,537,129
425	4,537,130

CLASS 102

217	4,537,131
307	4,537,132
316	4,537,133
380	4,537,134

CLASS 104

12	4,537,135
138 G	4,537,136

CLASS 105

26 R	4,537,137
168	4,537,138

CLASS 106

14.12	4,537,632
22	4,537,631
96	4,537,633
214	4,537,634
277	4,537,635
291	4,537,636

CLASS 110

276	4,537,139
281	4,537,140
300	4,537,141

CLASS 112

231	4,537,142

CLASS 114

39	4,537,143
61	4,537,144
91	4,537,145
103	4,537,146
201 R	4,537,147

CLASS 119

1	4,537,148
4	4,537,149
14.17	4,537,150
14.54	4,537,152
20	4,537,151
95	4,537,153
96	4,537,154
109	4,537,155

CLASS 122

6 A	4,537,156
412	4,537,157

CLASS 123

41.1	4,537,158
41.27	4,537,159
41.58	4,537,160
41.71	4,537,161
43 R	4,537,162
52 MC	4,537,163
90.16	4,537,164
	4,537,165
90.36	4,537,166
193 C	4,537,167
198 R	4,537,168
325	4,537,169
449	4,537,170
	4,537,171
527	4,537,172
592	4,537,173
604	4,537,174
649	4,537,175

CLASS 124

62	4,537,176

CLASS 125

13 R	4,537,177

CLASS 126

110 R	4,537,178
415	4,537,179
437	4,537,180

CLASS 127

60	4,537,637

CLASS 128

1.3	4,537,181
4	4,537,182
79	4,537,183
90	4,537,184
92 B	4,537,185
130	4,537,186
151	4,537,187
200.21	4,537,188
202.13	4,537,189
204.22	4,537,190
205.13	4,537,191
207.17	4,537,192
303.1	4,537,193
399	4,537,194
422	4,537,195
630	4,537,196
633	4,537,197
639	4,537,198
660	4,537,199
696	4,537,200
697	4,537,201
712	4,537,202
734	4,537,203

CLASS 131

274	4,537,204
280	4,537,205
281	4,537,206

CLASS 132

76.4	4,537,207

CLASS 134

2	4,537,638
10	4,537,639
18	4,537,640
124	4,537,208
166 C	4,537,209

CLASS 135

87	4,537,210

CLASS 137

1	4,537,211
1	4,537,212
269.5	4,537,213
318	4,537,214
355.26	4,537,215
514	4,537,216
561 A	4,537,217
596.13	4,537,218
614.19	4,537,219
625.64	4,537,220
637.2	4,537,221

CLASS 138

130	4,537,222
139	4,537,223
	4,537,224
145	4,537,225

CLASS 139

100	4,537,226
420 R	4,537,227
453	4,537,228

CLASS 141

83	4,537,229
146	4,537,230
238	4,537,231
382	4,537,232
387	4,537,233

CLASS 144

134 A	4,537,234
193 C	4,537,235
336	4,537,236

CLASS 148

11.5 P	4,537,641
11.5 Q	4,537,642
12 R	4,537,643
36	4,537,644

CLASS 149

3	4,537,645

CLASS 156

212	4,537,646
245	4,537,647
351	4,537,648
355	4,537,649
384	4,537,650
613	4,537,651
617 SP	4,537,652
620	4,537,653
644	4,537,654

CLASS 160

201	4,537,237

CLASS 162

23	4,537,655
38	4,537,656
164.3	4,537,657
348	4,537,658
352	4,537,659

CLASS 164

169	4,537,238
423	4,537,239
430	4,537,240
442	4,537,241

460 4,537,242
481 4,537,243

CLASS 165

1 4,537,244
22 4,537,245
80 B 4,537,246
104.14 4,537,247
113 4,537,248
134 R 4,537,249

CLASS 166

55 4,537,250
196 4,537,251
245 4,537,252
274 4,537,253
278 4,537,254
297 4,537,255
299 4,537,256
369 4,537,257
374 4,537,258

CLASS 172

4.5 4,537,259
9 4,537,260
44 4,537,261
146 4,537,262

CLASS 173

1 4,537,263
48 4,537,264

CLASS 174

6 4,538,019
52 S 4,538,025
65 R 4,538,020
92 4,538,021
113 R 4,538,022
115 4,538,023
117 F 4,538,024

CLASS 175

19 4,537,265

CLASS 177

208 4,537,266

CLASS 178

2 R 4,538,026
22.01 4,538,027

CLASS 179

2 EA 4,538,028
4,538,029
7.1 TP 4,538,030
81 B 4,538,031
170 D 4,538,032
175 4,538,033
182 R 4,538,034

CLASS 180

9.1 4,537,267
4,537,268
10 4,537,269
70.1 4,537,270
131 4,537,271
176 4,537,272
229 4,537,273
270 4,537,274
300 4,537,275

CLASS 181

21 4,537,276
214 4,537,277
227 4,537,278
241 4,537,279
243 4,537,280

CLASS 182

2 4,537,281
46 4,537,282
127 4,537,283

CLASS 184

7.4 4,537,284
15.2 4,537,285

CLASS 187

1 A 4,537,286
29 R 4,537,287

CLASS 188

71.8 4,537,288
73.31 4,537,290
73.38 4,537,291
73.39 4,537,292
97.4 4,537,289
196 BA 4,537,293

CLASS 192

98 4,537,294
106.2 4,537,295
4,537,296
4,537,297
4,537,298
107 C 4,537,299

CLASS 198

453 4,537,300
626 4,537,301
4,537,302

CLASS 200

6 A 4,538,035
11 EA 4,538,036
38 R 4,538,037
61.71 4,538,038
144 B 4,538,039
159 A 4,538,040

CLASS 202

170 4,537,660

CLASS 204

1 R 4,537,662
1 T 4,537,661
14.1 4,537,663
28 4,537,664
29 4,537,665
129.95 4,537,666
159.15 4,537,667
159.17 4,537,668
201 4,537,669
224 R 4,537,670
243 R 4,537,671
253 4,537,672
4,537,673
290 R 4,537,674

CLASS 206

219 4,537,303
335 4,537,304
438 4,537,305
455 4,537,306
4,537,307
484 4,537,308
525 4,537,309
526 4,537,310
529 4,537,311
531 4,537,312
545 4,537,313

CLASS 208

8 LE 4,537,675
251 R 4,537,676
370 4,537,677

CLASS 209

211 4,537,314

CLASS 210

150 4,537,678
194 4,537,679
198.2 Re.31,974
316 4,537,680
317 4,537,681
611 4,537,682
667 4,537,683
696 4,537,684
709 4,537,685
713 4,537,686
793 4,537,687

CLASS 211

70.6 4,537,315
133 4,537,316

CLASS 212

189 4,537,317

CLASS 215

232 4,537,318
252 4,537,319
276 4,537,320

CLASS 219

10.75 4,538,041
58 4,538,042
69 V 4,538,043
80 4,538,044
91.21 4,538,045
125.1 4,538,046
4,538,047
137 R 4,538,048
386 4,538,049
388 4,538,050
466 4,538,051
469 4,538,052
541 4,538,053
545 4,538,054

CLASS 220

2.1 A 4,537,321
4,537,322
2.1 R 4,537,323
90.2 4,537,324
234 4,537,325
269 4,537,326
359 4,537,327
445 4,537,328
465 4,537,329

CLASS 221

26 4,537,330

CLASS 222

165 4,537,331
190 4,537,332
345 4,537,333
401 4,537,334
496 4,537,335
641 4,537,336

CLASS 223

114 4,537,337

CLASS 224

39 4,537,338
188 4,537,339
202 4,537,340
4,537,341

CLASS 225

93 4,537,099

CLASS 227

78 4,537,342
120 4,537,343

CLASS 229

34 R 4,537,344

CLASS 235

70 R 4,538,055
377 4,538,056
379 4,538,057
380 4,538,058
468 4,538,059
472 4,538,060

CLASS 236

11 4,537,345
34.5 4,537,346
49 4,537,347

CLASS 237

8 A 4,537,348
12.3 C 4,537,349

CLASS 239

25 4,537,350
43 4,537,351
90 4,537,352
102 4,537,353
4,537,354
119 4,537,355
230 4,537,356
290 4,537,357
413 4,537,358
533.6 4,537,359
553.3 4,537,360

CLASS 241

81 4,537,361
101.7 4,537,362

CLASS 242

58.6 4,537,368
86.51 4,537,364
107.4 A 4,537,363
107.6 4,537,365
137 4,537,366
198 4,537,367

CLASS 244

1 R 4,537,369
3.16 4,537,370
3.22 4,537,371
12.4 4,537,372
22 4,537,373
102 R 4,537,374
171 4,537,375

CLASS 248

97 4,537,376
99 4,537,377
163.1 4,537,378
222.2 4,537,379
460 4,537,380
559 4,537,381
566 4,537,382

CLASS 250

201 4,538,061
4,538,062
214 R 4,538,063
231 R 4,538,064
310 4,538,065
374 4,538,066
396 R 4,538,067
443.1 4,538,068
491.1 4,538,069
504 R 4,538,070
505.1 4,538,071
568 4,538,072

CLASS 251

58 4,537,383
83 4,537,384
214 4,537,385
302 4,537,386
331 4,537,387

CLASS 252

8.5 M 4,537,688
11 4,537,689
48.4 4,537,690
49.6 4,537,691
4,537,692
51.5 A 4,537,694
51.5 R 4,537,693
52 R 4,537,920
70 4,537,695
75 4,537,696
90 4,537,697
299.61 4,537,698
313.2 4,537,699
315.1 4,537,700
344 4,537,701
518 4,537,703
522 R 4,537,702
4,537,704
529 4,537,705
545 4,537,706
4,537,707
554 4,537,708
558 4,537,709
628 4,537,710
633 4,537,711

CLASS 254

232 4,537,388

CLASS 260

112 R 4,537,712
112.5 R 4,537,713
4,537,714
4,537,715
4,537,717
4,537,718
112.5 T 4,537,716
239 A 4,537,719
4,537,720
242.2 4,537,721
397.4 4,537,722
400 4,537,723
4,537,724
453 P 4,537,726
455 R 4,537,727
4,537,728
944 4,537,729
989 4,537,730

CLASS 261

94 4,537,731

CLASS 264

1.1 4,537,732
9 4,537,733
22 4,537,734
40.4 4,537,737
63 4,537,735
130 4,537,736
210.5 4,537,738
247 4,537,739

CLASS 269

34 4,537,389

CLASS 270

53 4,537,390

CLASS 271

101 4,537,391

CLASS 272

85 4,537,392
94 4,537,393
117 4,537,394
123 4,537,395
130 4,537,396

CLASS 273

55 B 4,537,397
67 A 4,537,398
75 4,537,399
4,537,400
112 4,537,401
116 4,537,402
164 4,537,403
422 4,537,404
428 4,537,405

CLASS 277

1 4,537,406
2 4,537,407
34 4,537,408
83 4,537,409

CLASS 279

4 4,537,410

CLASS 280

6 R 4,537,411
7.12 4,537,412
33.99 B 4,537,413
47.41 4,537,414
242 WC 4,537,415
478 R 4,537,416
602 4,537,417
605 4,537,418
607 4,537,419
654 4,537,421
661 4,537,420
705 4,537,422
759 4,537,423

CLASS 285

7 4,537,424
55 4,537,425
110 4,537,426
305 4,537,427
333 4,537,428
334 4,537,429
364 4,537,430

CLASS 292

216 4,537,431
318 4,537,432

CLASS 294

58 4,537,433
82.31 4,537,434
86.1 4,537,435
150 4,537,436

CLASS 296

1 C 4,537,437
17 4,537,438
37.9 4,537,439
108 4,537,440
181 4,537,441
221 4,537,442

CLASS 297

159 4,537,443
284 4,537,444
300 4,537,445
464 4,537,446

CLASS 299

1 4,537,447
81 4,537,448

CLASS 301

9 CN 4,537,449

CLASS 307

33 4,538,073
126 4,538,074
454 4,538,075
475 4,538,076
476 4,538,077
592 4,538,078

CLASS 308

3.8 4,537,450

CLASS 310

74 4,538,079
90 4,538,081
152 4,538,082
154 4,538,080
198 4,538,083
217 4,538,084
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314 4,537,452

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463 4,537,981

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22		4,537,982	478		4,537,988	384	4,537,995		4,538,006	408	4,538,014		
138		4,537,725	501		4,537,989	442	4,537,996	751	4,538,007		4,538,015		CLASS 623
479		4,537,983		CLASS 564		454	4,537,997	783	4,538,008				
	CLASS 560		63		4,537,990	483	4,537,998	799	4,538,009		4,538,016	3	4,536,893
96		4,537,985	133		4,537,991	584	4,537,999	918	4,538,010	415	4,538,017	6	4,536,895
061		4,537,984	437		4,537,992	616	4,538,000		CLASS 570	512	4,538,018		4,536,896
132		4,537,986		CLASS 568		633	4,538,001	240	4,538,011		CLASS 604		4,536,897
193		4,537,987	14		4,537,993	650	4,538,002		CLASS 585	379	4,537,590	22	4,536,894
						656	4,538,003	255	4,538,012	391	4,537,591	33	4,536,898
						707	4,538,004						

CLASSIFICATION OF DESIGNS

D2—	27	280,250	D6—	379	280,269		93	280,286			280,304		24	280,321	D23—	77	280,338
	28	280,251		380	280,270		99	280,287			280,305	D14—	11	280,322		155	280,339
	40	280,252		381	280,271		499	280,288		103	280,306		12	280,323	D24—	8	280,340
	187	280,253		422	280,272	D9—	338	280,289		106	280,307		53	280,324		36	280,341
	283	280,254		474	280,273		347	280,290	D12—	11	280,308		60	280,325		38	280,342
	383	280,255		487	280,274		349	280,291		112	280,309		115	280,326	D25—	56	280,343
	400	280,256			280,275		355	280,292		114	280,310	D15—	123	280,327	D26—	3	280,344
		280,257		501	280,276		373	280,293		117	280,311		124	280,328			280,345
		280,258		505	280,277		385	280,294		155	280,312		144	280,329		75	280,346
D3—	33	280,260		508	280,278		408	280,295		157	280,313	D17—	20	280,330		93	280,347
	34	280,261			280,279		425	280,296		158	280,315	D18—	16	280,331		140	280,348
	35	280,262		566	280,280			280,297		177	280,314	D19—	84	280,332	D28—	29	280,349
	40	280,263		596	280,259		434	280,298		215	280,316		85	280,333		38	280,350
	48	280,264	D7—	79	280,281	D10—	40	280,299	D13—	5	280,317	D20—	11	280,334		57	280,351
	71	280,265		404	280,282		71	280,300		11	280,318	D21—	87	280,335		64.1	280,352
		280,266	D8—	57	280,283		73	280,301		23	280,319		191	280,336		78	280,353
D4—	130	280,267		71	280,284		74	280,302			280,320		198	280,337		82	280,354
	136	280,268		72	280,285		87	280,303									

CLASSIFICATION OF PLANTS

P.—	68	5,542	69	5,543	70	5,544	71	5,545	89	5,546	

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PATENTS

01 : 4,537,102	4,537,328	4,538,046	4,537,382	4,536,910	4,537,715
4,537,615	4,537,341	4,538,053	4,537,541	4,536,926	4,537,717
4,537,781	4,537,347	4,538,056	4,537,572	4,536,953	4,537,720
02 : 4,537,528	4,537,350	4,538,066	4,537,608	4,536,990	4,537,727
04 : 4,537,036	4,537,355	4,538,068	4,537,627	4,537,010	4,537,770
4,537,037	4,537,356	4,538,073	4,537,631	4,537,052	4,537,777
4,537,151	4,537,367	4,538,075	4,537,651	4,537,064	4,537,802
4,537,373	4,537,370	4,538,088	4,537,819	4,537,089	4,537,879
4,537,465	4,537,375	4,538,099	4,537,925	4,537,126	4,537,883
4,538,094	4,537,384	4,538,104	4,537,993	4,537,127	4,537,889
4,538,100	4,537,385	4,538,115	4,538,019	4,537,137	4,537,893
4,538,116	4,537,387	4,538,136	4,538,049	4,537,138	4,537,929
4,538,169	4,537,395	4,538,141	4,538,063	4,537,267	4,537,947
4,538,237	4,537,406	4,538,146	4,538,074	4,537,269	4,537,957
4,538,238	4,537,413	4,538,149	4,538,105	4,537,304	4,537,959
4,538,286	4,537,421	4,538,162	4,538,109	4,537,313	4,537,964
05 : 4,537,225	4,537,434	4,538,163	4,538,147	4,537,316	4,537,965
06 : Re.31,974	4,537,435	4,538,189	4,538,300	4,537,329	4,538,037
4,536,895	4,537,466	4,538,190	10 : 4,537,703	4,537,342	4,538,206
4,536,896	4,537,471	4,538,193	4,537,726	4,537,380	4,538,207
4,536,903	4,537,475	4,538,203	4,537,773	4,537,389	4,538,208
4,536,905	4,537,478	4,538,223	4,537,963	4,537,390	4,538,272
4,536,935	4,537,484	4,538,235	4,538,003	4,537,403	19 : 4,537,028
4,536,945	4,537,507	4,538,241	11 : 4,537,369	4,537,433	4,537,274
4,536,973	4,537,508	4,538,245	12 : 4,536,932	4,537,456	4,537,317
4,536,986	4,537,516	4,538,246	4,536,957	4,537,481	4,537,364
4,536,989	4,537,542	4,538,247	4,537,099	4,537,519	4,537,584
4,536,998	4,537,546	4,538,250	4,537,101	4,537,550	4,538,194
4,537,009	4,537,554	4,538,257	4,537,119	4,537,649	4,538,281
4,537,024	4,537,561	4,538,274	4,537,180	4,537,667	20 : 4,537,117
4,537,058	4,537,582	4,538,277	4,537,249	4,537,716	4,537,436
4,537,059	4,537,605	4,538,293	4,537,372	4,537,800	4,537,759
4,537,071	4,537,620	4,538,299	4,537,401	4,537,866	4,537,772
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4,537,079	4,537,646	08 : 4,537,074	4,537,791	4,537,978	4,537,788
4,537,081	4,537,654	4,537,345	4,537,803	4,537,985	21 : 4,537,004
4,537,091	4,537,680	4,537,357	4,537,821	4,538,008	4,537,147
4,537,150	4,537,684	4,537,736	4,538,011	4,538,036	4,537,281
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4,537,181	4,537,751	4,537,981	4,538,029	4,538,156	4,537,525
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4,537,185	4,537,780	4,538,271	4,538,195	4,538,211	4,537,696
4,537,187	4,537,809	09 : Re.31,975	4,538,196	4,538,224	4,538,025
4,537,189	4,537,827	4,536,982	4,538,249	4,538,273	22 : 4,536,964
4,537,192	4,537,850	4,536,995	4,538,280	18 : 4,536,902	4,537,034
4,537,198	4,537,861	4,537,025	13 : 4,536,919	4,536,931	4,537,069
4,537,200	4,537,943	4,537,049	4,537,015	4,537,124	4,537,144
4,537,214	4,537,974	4,537,070	4,537,026	4,537,318	4,537,415
4,537,216	4,538,012	4,537,219	4,537,637	4,537,326	4,537,676
4,537,237	4,538,020	4,537,232	4,538,021	4,537,366	4,537,724
4,537,246	4,538,023	4,537,242	16 : 4,537,333	4,537,378	4,537,755
4,537,254	4,538,035	4,537,266	17 : 4,536,890	4,537,379	4,537,920
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